



City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

March 8, 1999

Rick Beltramo, PE
Bohannon-Huston Inc.
7500 Jefferson NE
Albuquerque, NM 87109

**RE: ENGINEER'S CERTIFICATION FOR OFFICE/WAREHOUSE (C-17/D19)
RECEIVED JAN 19, 1999 FOR CERTIFICATE OF OCCUPANCY
ENGINEER'S STAMP DATED 1/18/99**

Dear Mr. Beltramo:

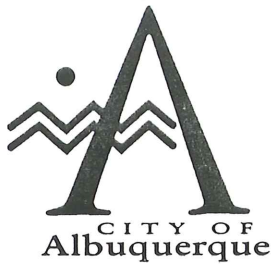
Based on the information included in the submittal referenced above, City Hydrology accepts the Engineer's Certification for Certificate of Occupancy. Contact Vicki Chavez at Code Administration to obtain the Certificate of Occupancy for 3711 Paseo del Norte NE.

If I can be of further assistance, You may contact me at 768-2727.

Sincerely,

John P. Curtin, P.E.
Project Manager, PWD/Hyd

Notified Vicki on 3-10-99
MC



March 5, 1998

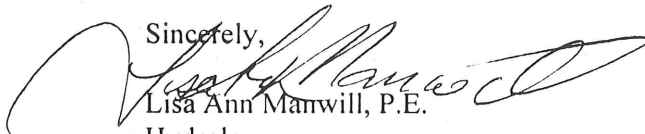
Jean Swalley
Bohannon-Huston, Inc.
7500 Jefferson NE
Albuquerque, NM 87109

**RE: OFFICE - WAREHOUSE (C17-D19). GRADING AND DRAINAGE PLAN FOR BUILDING
AND GRADING PERMIT APPROVALS. ENGINEER'S STAMP DATED 1-7-98.**

Dear Ms. Swalley:

Based on the information provided on your January 12, 1998 submittal, the above referenced project is approved for Building Permit.

Prior to Certificate of Occupancy, a Engineer's Certification will be required. If I can be of further assistance, please feel free to contact me at 924-3984.

Sincerely,

Lisa Ann Manwill, P.E.
Hydrology

c: Andrew Garcia
File

Good for You, Albuquerque!



**REVISED DRAINAGE REPORT
FOR
BRADBURY & STAMM CONSTRUCTION**

OCTOBER 22, 1997

Prepared by:

**BOHANNAN HUSTON
COURTYARD I
7500 JEFFERSON NE
ALBUQUERQUE, NEW MEXICO 87109**

Prepared for:

**BRADBURY & STAMM CONSTRUCTION
1217 1ST ST. NW
ALBUQUERQUE, NM 87102**

PREPARED BY:

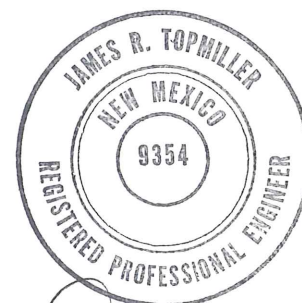
UNDER THE SUPERVISION OF:

Jean Swalley
Jean Swalley, E.I.

10-22-97
Date

James R. Topmiller
James R. Topmiller, P.E.

10/22/97
Date



PEAK DISCHARGE (cfs/acre)

CURRENT CONDITIONS

BASIN	AREA (ACRES)	% LAND TREATMENT*				PEAK DISCHARGE - (CFS/ACRE)**				Q(100-YR) UNDEVELOPED
		A	B	C	D	A	B	C	D	(CFS)
1	9.60	85.00	15.00	0.00	0.00	1.56	2.28	3.14	4.7	16.01
2	4.10	85.00	15.00	0.00	0.00	1.56	2.28	3.14	4.7	6.84
3	1.68	85.00	15.00	0.00	0.00	1.56	2.28	3.14	4.7	2.80
4	2.94	85.00	15.00	0.00	0.00	1.56	2.28	3.14	4.7	4.90
5	2.96	85.00	15.00	0.00	0.00	1.56	2.28	3.14	4.7	4.94
										35.50

PHASE I CONDITIONS

Construction of Office/Warehouse Only

BASIN	AREA (ACRES)	% LAND TREATMENT*				PEAK DISCHARGE - (CFS/ACRE)**				Q(100-YR) DEVELOPED
		A	B	C	D	A	B	C	D	(CFS)
1	9.60	85.00	15.00	0.00	0.00	1.56	2.28	3.14	4.7	16.01
2	4.10	85.00	15.00	0.00	0.00	1.56	2.28	3.14	4.7	6.84
3	1.68	0.00	15.00	15.00	70.00	1.56	2.28	3.14	4.7	6.89
4	2.94	0.00	10.00	30.00	60.00	1.56	2.28	3.14	4.7	11.73
5	2.96	0.00	20.00	30.00	50.00	1.56	2.28	3.14	4.7	11.09
										52.57

FULLY DEVELOPED CONDITIONS

Construction of Office Building and East Side Development

BASIN	AREA (ACRES)	% LAND TREATMENT*				PEAK DISCHARGE - (CFS/ACRE)**				Q(100-YR) DEVELOPED
		A	B	C	D	A	B	C	D	(CFS)
1	9.60	85.00	15.00	0.00	0.00	1.56	2.28	3.14	4.7	16.01
2	4.10	0.00	10.00	15.00	75.00	1.56	2.28	3.14	4.7	17.32
3	1.68	0.00	15.00	15.00	70.00	1.56	2.28	3.14	4.7	6.89
4	2.94	0.00	10.00	30.00	60.00	1.56	2.28	3.14	4.7	11.73
5	2.96	0.00	15.00	15.00	70.00	1.56	2.28	3.14	4.7	12.14
										64.10

NOTES:

Obtained from Section 22.2, Hydrology of the Development Process Manual, Volume 2, Design Criteria for the City of Albuquerque, Jan. 1993

* Table A-4

** Table A-9

CUL-DE-SAC STREET HYDRAULICS

FLOW CAPACITY

Manning's Coefficient 0.017 (street)
Slope 0.010 (minimum)

Section Coordinates (ft.) .5,0
 0,0
 .2,40
 .7,40

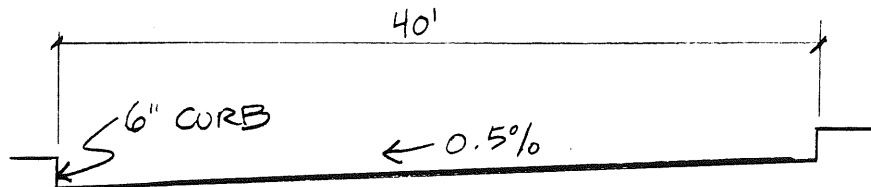
DEPTH	FLOW AREA	FLOW RATE	WETTED PERIMETER	FLOW VELOCITY	TOP WIDTH
INC	(SF)	(CFS)	(FT)	(FPS)	(FT)
0.10	1.00	1.20	20.10	1.20	20.00
0.20	4.00	7.50	40.20	1.90	40.00
0.30	9.00	23.80	40.30	2.80	40.00
0.40	16.00	46.50	40.30	3.65	40.00
0.50	16.00	74.90	40.80	4.70	40.00

100-YEAR STORM FLOW

BASINS	B-1 (Phase III)	16.01	CFS
	B-2 (Phase III)	17.32	
	B-3 (Phase III)	<u>6.89</u>	

TOTAL FLOW 40.22 CFS

DEPTH = 0.37 FT
VELOCITY = 3.65 FPS



SECTION B
N.T.S.

ACCESS STREET HYDRAULICS

FLOW CAPACITY

Manning's Coefficient 0.017
Slope 0.010

Section Coordinates (ft.) .5,0
 0,0
 .3,15
 0,30
 .5,30

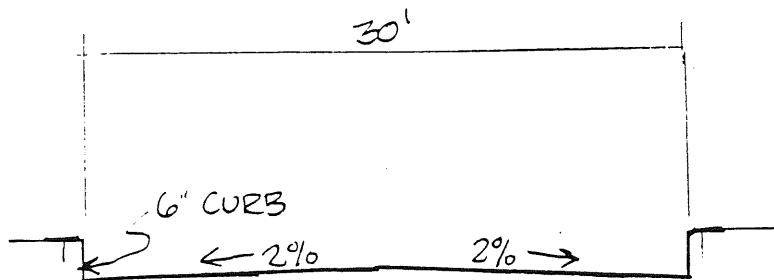
DEPTH	FLOW AREA	FLOW RATE	WETTED PERIMETER	FLOW VELOCITY	TOP WIDTH
INC	(SF)	(CFS)	(FT)	(FPS)	(FT)
0.10	0.50	0.60	10.20	1.20	10.00
0.20	2.00	3.70	20.40	1.90	20.00
0.30	4.50	11.00	30.60	2.40	30.00
0.40	7.50	25.60	30.80	3.40	30.00
0.50	10.50	44.60	31.00	4.20	30.00

100-YEAR STORM FLOW

BASINS B-3 (Phase III) 6.89 CFS

TOTAL FLOW 6.89 CFS

DEPTH = 0.25 FT
VELOCITY = 2.13 FPS



SECTION C
N.T.S.

RUNDOWN WEIR OPENING

WEIR CAPACITY

Weir Coefficient 3.000

Section Coordinates (ft.) .8 ,0
 0,0
 0,30
 .8 ,30

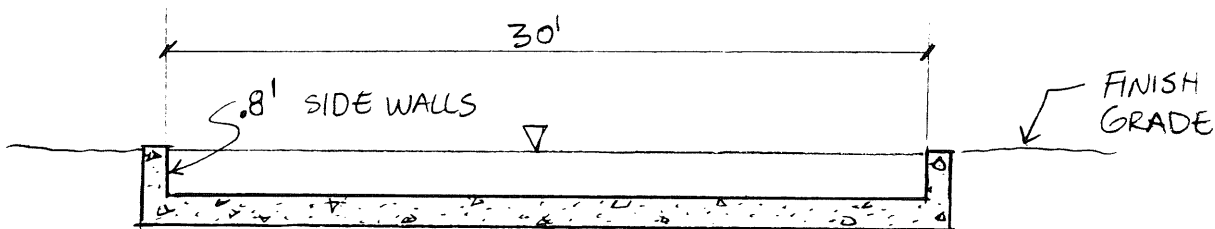
DEPTH	FLOW AREA	FLOW RATE	FLOW VELOCITY	TOP WIDTH
INC	(SF)	(CFS)	(FPS)	(FT)
0.10	3.00	2.85	0.95	30.00
0.20	6.00	8.05	1.34	30.00
0.30	9.00	14.79	1.64	30.00
0.40	12.00	22.77	1.90	30.00
0.50	15.00	31.82	2.12	30.00
0.60	18.00	41.83	2.32	30.00

100-YEAR STORM FLOW

BASINS	B-1 (Phase III)	16.01	CFS
	B-2 (Phase III)	17.32	
	B-3 (Phase III)	6.89	
	B-4 (Phase III)	11.73	
	B-5 (Phase III)	12.14	

TOTAL FLOW 64.09 CFS

DEPTH = 0.797 FT
 VELOCITY = 2.68 FPS



SECTION D
 N.T.S.

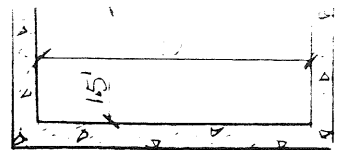
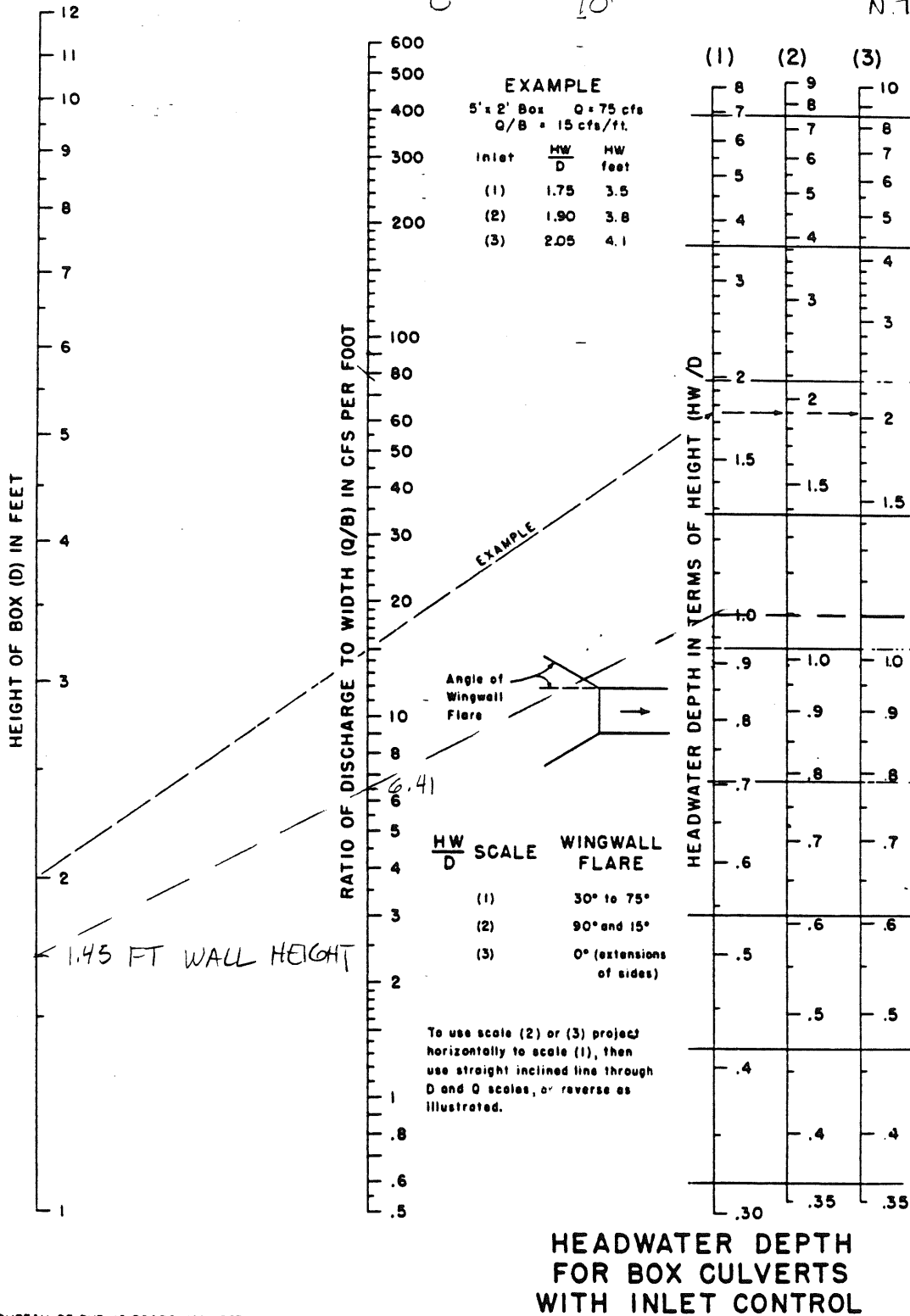


CHART 8

10' WIDE RUNDOWN

$$\frac{Q}{B} = \frac{64.1 \text{ CFS}}{10'} = 6.41$$

SECTION E
N.T.S.



BUREAU OF PUBLIC ROADS JAN. 1963

1.5 FT WALL HEIGHT ACCOMMODATES FLOW OF 64.10 CFS IN THE 10' WIDE NECK.

RUNDOWN STREAM CALCULATIONS

FLOW CAPACITY

Manning's Coefficient 0.013 (concrete)
Slope 0.0122

Section Coordinates (ft.) 1.5,0
 0,0
 0,10
 1.5,10

DEPTH	FLOW AREA	FLOW RATE	WETTED PERIMETER	FLOW VELOCITY	TOP WIDTH
INC	(SF)	(CFS)	(FT)	(FPS)	(FT)
0.10	1.00	2.70	10.20	2.70	10.00
0.20	2.00	8.40	10.40	4.20	10.00
0.30	3.00	16.30	10.60	5.40	10.00
0.40	4.00	26.00	10.80	6.50	10.00
0.50	5.00	37.30	11.00	7.50	10.00
0.60	6.00	50.00	11.20	8.30	10.00
0.70	7.00	64.09	11.40	9.12	10.00
0.90	9.00	94.90	11.80	10.50	10.00
1.00	10.00	111.80	12.00	11.20	10.00
1.10	11.00	129.60	12.20	11.80	10.00
1.20	12.00	148.20	12.40	12.40	10.00
1.30	13.00	167.60	12.60	12.90	10.00
1.40	14.00	187.60	12.80	13.40	10.00
1.50	15.00	208.30	13.00	13.90	10.00

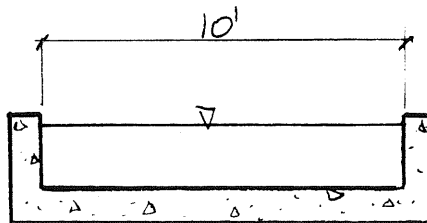
100-YEAR STORM FLOW

BASINS	B-1 (Phase III)	16.01	CFS
	B-2 (Phase III)	17.32	
	B-3 (Phase III)	6.89	
	B-4 (Phase III)	11.73	
	B-5 (Phase III)	12.14	
		<u>64.09</u>	

TOTAL FLOW

64.09 CFS

DEPTH = 0.702 FT
VELOCITY = 9.12 FPS



SECTION F

N.T.S.

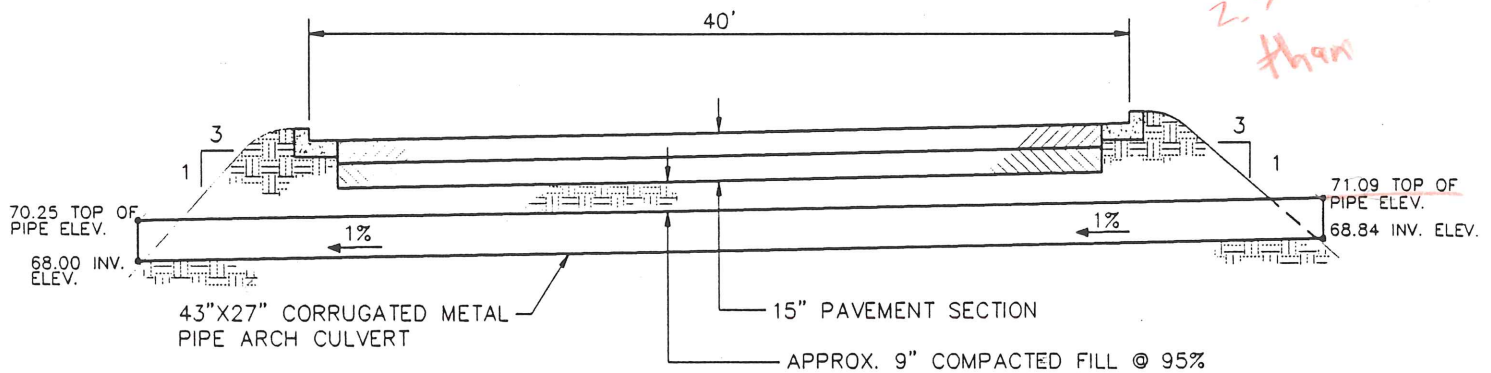
CULVERT CALCULATIONS

FLOW CAPACITY

Manning's Coefficient	0.022	(corrugated steel)
Slope	0.01	
Section	43" x 27" pipe-arch	
Area	6.4 sf	
Perimeter	Equivalent to a 36" circular pipe, or 9.42 ft	
Hydraulic Radius (R)	Area/Perimeter = 6.4/9.42 = 0.68	
Manning's Equation	$Q_{cfs} = (1.49/n) A \times R^{2/3} \times S^{1/2}$ $= (1.49/.022) 6.4 \times 0.68^{2/3} \times 0.01^{1/2}$ $= (67.73) 6.4 \times 0.7723 \times 0.1$ $= (67.73) 6.4 \times 0.7723 \times 0.1$ $= 33.48 \text{ cfs}$	
Velocity Equation	$V = Q/A$ $= 33.48/6.4$ $= 5.23 \text{ fps}$	

100-YEAR STORM FLOW

BASINS	B-1 (Phase III)	16.01	CFS
	B-2 (Phase III)	17.32	
TOTAL FLOW		33.33	CFS



SECTION G

N.T.S.