CITY OF
Albuquerque
Public Works Department

June 9, 1997

Martin J. Chávez, Mayor

Robert E. Gurulé, Director

Ronald Bohannan, PE
Tierra West Development
4421 McLeod Road NE
Albuquerque, New Mexico 87109

RE: CERTIFICATION FOR THE PLAZA AT JOURNAL CENTER- PHASE II(D-17/D3B2)
ENGINEER'S CERTIFICATION STATEMENT MAY 19, 1997.

Dear Mr. Bohannan:

Based on the information provided on your May 29, 1997 submittal, the above referenced project is approved for Certificate of Occupancy release.

If you should have any questions, please feel free to contact me at 924-3986

Sincerely,

Bernie Montoya
Engineering Associate

c: Andrew Garcia
File

CITY OF
Albuquerque

Public Works Department

March 13, 1997

Martin J. Chávez, Mayor

Robert E. Gurulé, Director

Ronald Bohannan, P.E.
Tierra West
4421 McLeod Road NE
Suite D
Albuquerque, NM 87109

RE: THE PLAZA AT JOURNAL CENTER PHASE 7 - 5130 SAN FRANCISCO ROAD NE (D17-D3B2). ENGINEER'S CERTIFICATION FOR CERTIFICATE OF OCCUPANCY. ENGINEER'S CERTIFICATION DATED 3-4-97.

Dear Mr. Bohannan:

Based on the information provided on your March 5, 1997 submittal, the above referenced project is approved for Certificate of Occupancy.

If I can be of further assistance, please feel free to contact me at 924-3984.

Sincerely,

Lisa Ann Manwill, P.E.
Engineering Assoc./Hyd.

c: Andrew Garcia
File

CITY OF
Albuquerque

Public Works Department

February 25, 1997

Martin J. Chávez, Mayor

Robert E. Gurulé, Director

Ronald Bohannan, P.E.
Tierra West
4421 McLeod Road NE
Suite D
Albuquerque, NM 87109

RE: THE PLAZA AT JOURNAL CENTER PHASE 5 - 5100 SAN FRANCISCO ROAD NE (D17-D3B2). ENGINEER'S CERTIFICATION FOR CERTIFICATE OF OCCUPANCY. ENGINEER'S CERTIFICATION DATED 12-24-96.

Dear Mr. Bohannan:

Based on the information provided on your February 21, 1997 submittal, the above referenced project is approved for Certificate of Occupancy

If I can be of further assistance, please feel free to contact me at 924-3984.

Sincerely,

Lisa Ann Manwill, P.E.
Engineering Assoc./Hyd.

c: Andrew Garcia
File

CITY OF
Albuquerque
Public Works Department

February 5, 1997

Martin J. Chávez, Mayor

Robert E. Gurulé, Director

Ronald Bohannan
Tierra West
4421 McLeod Road NE
Suite D
Albuquerque, NM 87109

RE: THE PLAZA AT JOURNAL CENTER PHASE 1 - 5140 SAN FRANCISCO ROAD NE (D17-D3B2). ENGINEER'S CERTIFICATION FOR CERTIFICATE OF OCCUPANCY. ENGINEER'S CERTIFICATION DATED 12-24-96.

Dear Mr. Bohannan:

Based on the information provided on your February 3, 1997 submittal, the abouve referenced project is approved for Certificate of Occupancy

If I can be of further assistance, please feel free to contact me at 924-3984.

Sincerely,

Lisa Ann Manwill
Engineering Assoc./Hyd.

c: Andrew Garcia
File

CITY OF
Albuquerque

December 27, 1996

Martin J. Chávez, Mayor

Ronald Bohannan
Tierra West
4421 McLeod Road NE
Suite D
Albuquerque, NM 87109

RE: THE PLAZA AT JOURNAL CENTER PHASE 6(D17-D3B2). ENGINEER'S CERTIFICATION FOR CERTIFICATE OF OCCUPANCY. ENGINEER'S CERTIFICATION DATED 12-24-96.

Dear Mr. Bohannan:

Based on the information provided on your December 26, 1996 submittal, the abouve referenced project is approved for Certificate of Occupancy

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

Sincerely,

Lisa Ann Manwill
Engineering Assoc./Hyd.

c: Andrew Garcia
File

760002
~~DRB 960039~~
cc: ~~Mark Goodwin~~

CITY OF
Albuquerque

P.O. Box 1293 Albuquerque, NM 87103

November 1, 1996

Martin J. Chávez, Mayor

Ronald R. Bohannan, PE
Tierra West Dev Mgt Ser
4421 Mcleod Rd NE Suite D
Albuquerque, NM 87109

RE: DRAINAGE REPORT FOR THE PLAZA @ J.C. (D-17/D3B2)
RECEIVED OCTOBER 21, 1996 FOR SITE DEV PLAN & BUILDING PERMIT
ENGINEER'S STAMP DATED 10-21-96

Dear Mr. Bohannan:

Based on the information included in the submittal referenced above, City Hydrology accepts the Drainage Report for Site Development Plan & Building Permit.

Include a copy of the drainage & grading plan, dated 10-21-96, in the set of construction documents that will be submitted to Code Administration for the Building Permit. The Contractor must obtain permission from Sunwest Bank before constructing the rundown on their property.

Engineer's Certification of grading & drainage per DPM checklist must be accepted by City Hydrology before any Certificate of Occupancy will be released. A separate certification will be required for each phase/building.

If you have any questions about this project, You may contact me at 768-2727.

Sincerely,

John P. Curtin, P.E.
Civil Engineer, Hydrology

c: Andrew Garcia
Fred Aguirre, DRB 94-225
Bill Chapman, Chapman Companies, 1500 St Francis Dr, Santa Fe, NM 87505

CITY OF
Albuquerque

P.O. Box 1293 Albuquerque, NM 87103

November 1, 1996

Martin J. Chávez, Mayor

Ronald R. Bohannan, PE
Tierra West Dev Mgt Ser
4421 Mcleod Rd NE Suite D
Albuquerque, NM 87109

RE: DRAINAGE REPORT FOR THE PLAZA @ J.C. (D-17/D3B2)
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Sincerely,

John P. Curtin, P.E.
Civil Engineer, Hydrology

c: Andrew Garcia
Fred Aguirre, DRB 94-225
Bill Chapman, Chapman Companies, 1500 St Francis Dr, Santa Fe, NM 87505

DRAINAGE REPORT

for

The Plaza at Journal Center

Prepared by

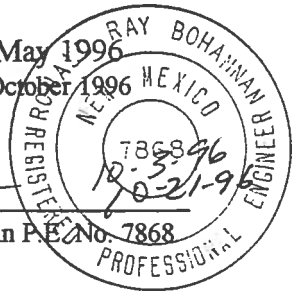
Tierra West Development Management Sevices
4421 McLeod Road NE, Suite D
Albuquerque, New Mexico 87109

Prepared for

Bill Chapman
Chapman Companies
1500 St. Francis Drive
Santa Fe, New Mexico 87505

Submitted: May 1996
Resubmitted: October 1996

Ronald R. Bohannan P.E. No. 7868



Location

The Plaza at the Journal Center is located south of San Francisco Road between Jefferson Street and Sun Lane. The site is approximately 2.7347 acres and is the location of several proposed commercial buildings. The site is identified as Tract 3A-1B Journal Center. The purpose of this report is to provide the drainage analysis and management plan for the site.

Existing Drainage Conditions

The site is currently undeveloped. The natural slope is from east to west at approximately 2.5 percent. There is one existing basin on the site. This basin sheet flows west into Jefferson Street. No upland flows enter the site. All off-site flows are captured in the adjacent streets before they reach the site.

FEMA Map and Soil Conditions

The site is located on FEMA Map section 350002 panel 9 as shown on the attached excerpt. The map shows that the site does not lie within any 100 year flood plains.

The site contains one soil type from the Soil Conservation Service Soil Survey of Bernalillo County. This soil is an Embudo gravelly fine sandy loam. It has a moderate hazard of water erosion and runoff is medium.

On-Site Drainage Management Plan

The site has one proposed drainage basin with a discharge flow of 12.2 cfs. The Drainage Plan for Journal Center, Tract 3A-1 (by BHI dated 9-22-94), indicates that Tract 3A-1B may discharge 10.5 cfs to Tract 3A-2 (Sunwest Bank). All flows will be routed towards the southwest side of the site where a proposed parking lot pond will collect the flow. Extended stem walls will be used around Phases 2, 3, 4, and 5 as the grades of the buildings are lower than the surrounding area. A 6.5 foot wide break in the curb will allow the flow to enter six 8" PVC pipes.

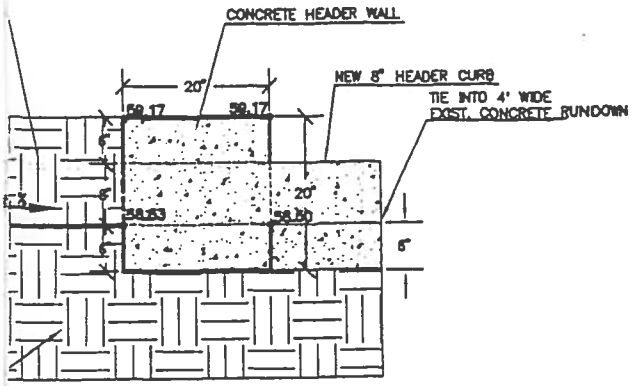
The pipes will limit the flow to 8.85 cfs which is less than the allowable of 10.5 cfs. The pipes will limit the flow by acting as an orifice. The remaining volume will pond in the parking lot and drain in less than 24 hours. The six 8" pipes will then tie into an existing concrete rundown that drains into the Sunwest bank site. From that point the drainage will continue to follow the drainage management plan for Tract 3A-2.

The pond shown on the plat was specifically designed to prevent sediment from leaving the site. The development of the site eliminates all sediment transportation and relieves the need for the pond. Interim erosion control measures around each building will be built during construction. This action will eliminate the sediment pond.

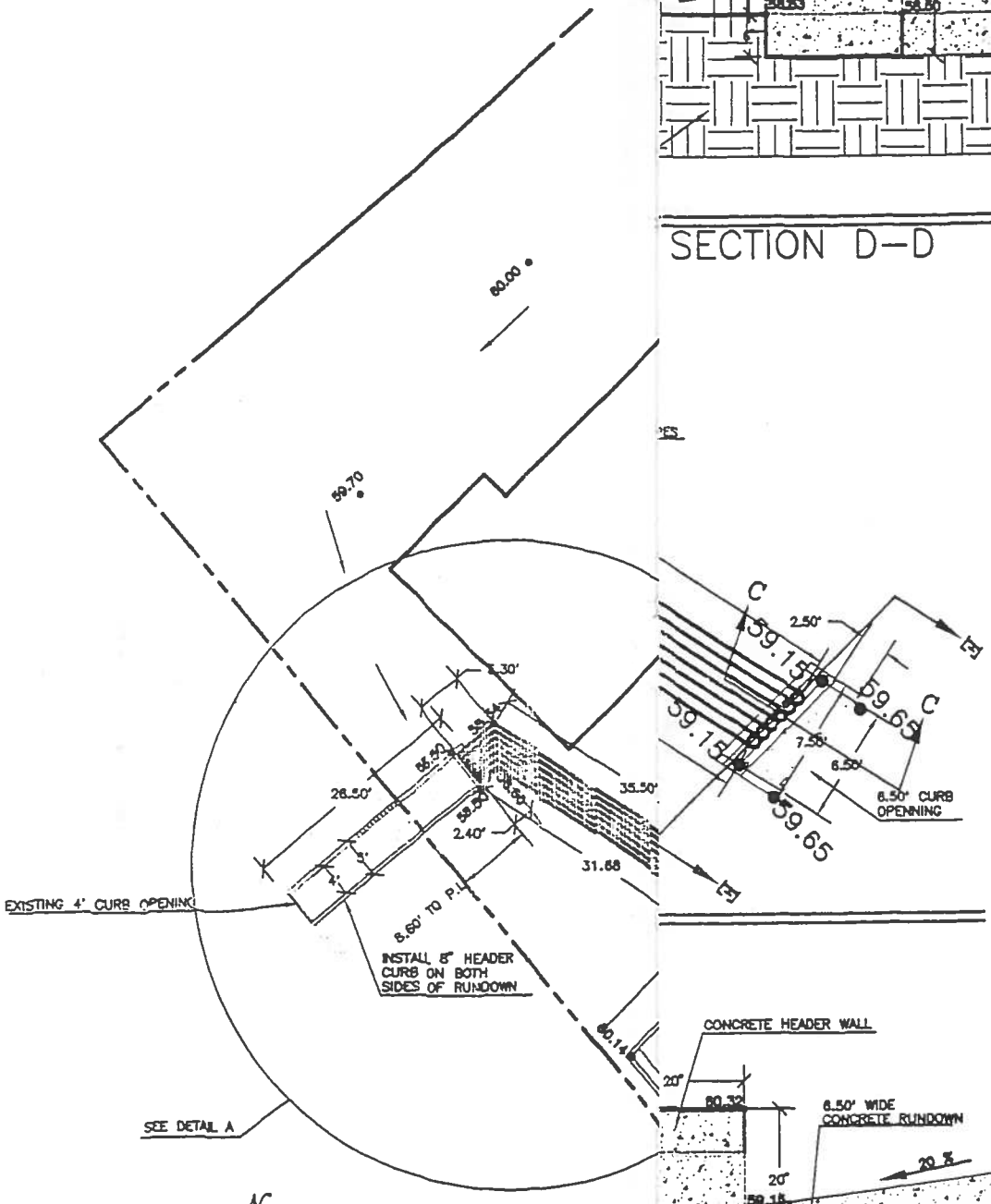
Summary

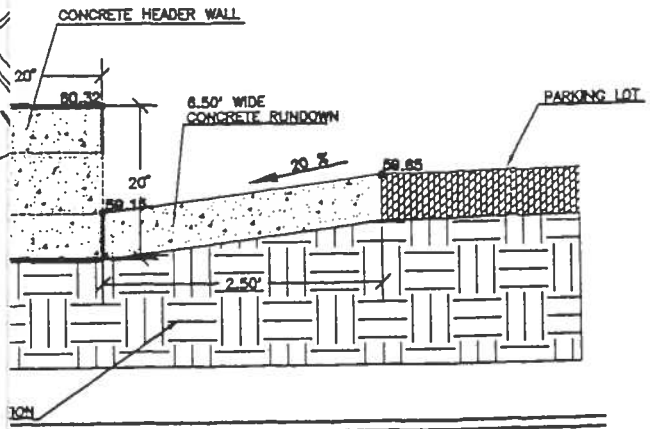
The single drainage basin on the site has a discharge flow of 12.2 cfs which is greater than the allowable discharge of 10.50 cfs. The runoff will be ponded on-site and released at a confined rate of 8.85 cfs into the adjoining Sunwest Bank site through six 8" pipes that will tie to an existing section of the Sunwest Bank site.

The following tables show the detailed runoff calculations for the site along with the AHYMO runs for review.



SECTION D–D





SECTION E–E

RUNOFF CALCULATIONS

The site is @ Zone 2

LAND TREATMENT

Proposed
B = 10%
D = 90 %

Existing
B = 100%

DEPTH (INCHES) @ 100-YEAR STORM

P_{60} = 2.01 inches

P_{360} = 2.35 inches

P_{1440} = 2.75 inches

DEPTH (INCHES) @ 10-YEAR STORM

P_{60} = 2.01 x 0.667
= 1.34 inches

P_{360} = 1.57

P_{1440} = 1.83

See the summary output from AHYMO calculations.

Also see the following summary tables.

DRAINAGE BASINS

EXISTING

BASIN	AREA (SF)	AREA (AC)	AREA (MI^2)
A	119124.00	2.7347	0.004273

PROPOSED

BASIN	AREA (SF)	AREA (AC)	AREA (MI^2)
A	119124.00	2.7347	0.004273

BASINS RUNOFF CALCULATION RESULTS

EXISTING

BASIN	Q-100 CFS	Q-10 CFS
A	12.2	7.9

PROPOSED

BASIN	Q-100 CFS	Q-10 CFS
A	6.23	2.56

SEE THE FOLLOWING SHEET FOR SAMPLE CALCULATION ON THE BASINS RUNOFF

POND VOLUME CALCULATIONS

Ab - Bottom Of The Pond Surface Area
At - Top Of The Pond Surface Area
D - Water Depth
Dt - Total Pond Depth
C - Change In Surface Area / Water Depth

Volume = $Ab * D + 0.5 * C * D^2$

C = (At - Ab) / Dt

Ab =	0.00	(@ Elevation 5159.15)
At =	15.00	(@ Elevation 5159.65)
Dt =	0.50	
C =	30.00	

Ab =	0.00	(@ Elevation 5159.65)
At =	7,205.30	(@ Elevation 5160.32)
Dt =	0.67	
C =	10754.18	

6 Pipes

ACTUAL ELEV.	DEPTH (FT)	VOLUME (AC-FT)	Q (CFS)	h
5159.15	0	0.00000	0.00	
5159.55	0.4	0.00006	2.60	
5159.65	0.5	0.00009	4.12	
5159.75	0.6	0.00132	5.21	
5159.85	0.7	0.00502	6.11	0.37
5159.95	0.8	0.01120	6.89	
5160.05	0.9	0.01984	7.59	
5160.15	1	0.03095	8.23	0.67
5160.25	1.1	0.04452	8.83	
5160.32	1.17	0.05550	9.22	0.84

Orifice Equation
Q = CA SQRT(2gH)

C =	0.6
Diameter (in	8
Area (ft^2) =	0.349066
H (Ft) =	Depth of water above center of orifice
Q (CFS)=	Flow

$Q = 0.6(6 \times 0.349)\sqrt{64.4h}$

$= 10.08\sqrt{h}$

Rectangular Channel Analysis & Design
Open Channel - Uniform flow

Worksheet Name:

Comment: EXISTING CONCRETE RUNDOWN

Solve For Depth

Given Input Data:

Bottom Width.....	4.00 ft
Manning's n.....	0.013
Channel Slope....	0.0060 ft/ft
Discharge.....	8.85 cfs

Computed Results:

Depth.....	0.47 ft
Velocity.....	4.67 fps
Flow Area.....	1.90 sf
Flow Top Width...	4.00 ft
Wetted Perimeter.	4.95 ft
Critical Depth...	0.53 ft
Critical Slope...	0.0042 ft/ft
Froude Number....	1.20 (flow is Supercritical)

$$d_2 = \frac{d_1}{2}\left(\sqrt{1 + 8F^2} - 1\right)$$

$$= \frac{0.47}{2}\left(\sqrt{1 + 8(1.20)^2} - 1\right)$$

$$= 0.60'$$

$0.67' > 0.60'$ ok

Open Channel Flow Module, Version 3.12 (c) 1990
Haestad Methods, Inc. * 37 Brookside Rd * Waterbury, Ct 06708

AHYMO SUMMARY TABLE (AHYMO194) - AMAFCA Hydrologic Model - January, 1994 RUN DATE (MON/DAY/YR) =05/02/1996

INPUT FILE = A:S.DAT USER NO.= R_BOHANN.101

COMMAND	HYDROGRAPH IDENTIFICATION	FROM ID NO.	TO ID NO.	AREA (SQ MI)	PEAK DISCHARGE (CFS)	RUNOFF VOLUME (AC-FT)	RUNOFF (INCHES)	TIME TO PEAK (HOURS)	CFS PER ACRE	PAGE = 1 NOTATION
START										TIME= .00
RAINFALL TYPE= 1	Proposed 100yr									RAIN6= 2.350
COMPUTE NM HYD	101.10	-	1	.00427	12.20	.451	1.98165	1.500	4.463	PER IMP= 90.00
START										TIME= .00
RAINFALL TYPE= 1	10year									RAIN6= 1.570
COMPUTE NM HYD	101.30	-	1	.00427	7.90	.281	1.23172	1.500	2.889	PER IMP= 90.00
START										TIME= .00
RAINFALL TYPE= 1	Existing 100yr									RAIN6= 2.350
COMPUTE NM HYD	102.10	-	1	.00427	6.23	.177	.77821	1.533	2.280	PER IMP= .00
START										TIME= .00
RAINFALL TYPE= 1	10 year									RAIN6= 1.570
COMPUTE NM HYD	102.30	-	1	.00427	2.56	.063	.27828	1.533	.936	PER IMP= .00
FINISH										

AHYMO SUMMARY TABLE (AHYMO194) - AMAFCA Hydrologic Model - January, 1994 RUN DATE (MON/DAY/YR) =10/03/1996

INPUT FILE = a:sp2.dat USER NO.= R_BOHANN.I01

COMMAND	HYDROGRAPH IDENTIFICATION	FROM ID NO.	TO ID NO.	AREA (SQ MI)	PEAK DISCHARGE (CFS)	RUNOFF VOLUME (AC-FT)	RUNOFF (INCHES)	TIME TO PEAK (HOURS)	CFS PER ACRE	NOTATION	
START										TIME=	.00
RAINFALL TYPE= 1										RAIN6=	2.350
COMPUTE NM HYD	101.10	-	1	.00427	12.20	.451	1.98165	1.500	4.463	PER IMP=	90.00
ROUTE RESERVOIR	501.00	1	2	.00427	8.85	.451	1.98161	1.600	3.239	AC-FT=	.045
FINISH											