SHAVER BLDG.
ON RANKIN RD.

G15-D5

1 PLAN

City of Albuquerque
P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

June 2, 1981

Mr. Joe Allen
Fred Denney & Associates
2400 Comanche Rd. N.E.
Albuquerque, New Mexico 87107

Dear Joe:

The drainage report submitted for the Shaver Building on Rankin Road N.E. is hereby approved.

Very truly yours,

Brian G. Burnett
Civil Engineer/Hydrology

BGB/fs

MUNICIPAL DEVELOPMENT DEPARTMENT
Richard S. Heller, P.E., City Engineer ENGINEERING DIVISION Telephone (505) 766-7467

DENNEY-GROSS & ASSOCIATES, INC.
CONSULTING ENGINEERS
2400 COMANCHE ROAD, N.E.
ALBUQUERQUE, NEW MEXICO 87107
(505) 884-0696

November 24, 1982

Mr. Fred Aguirre
Hydrology Dept.
City of Albuquerque
P.O. Box 1293
Albuquerque, NM 87103

Re: Drainage Plan Amendments
Rankin Road
DGA Job No. 548.22

Dear Fred:

We have been requested by Patty Shaver, owner, to amend the approved drainage report to reflect the following:

1. Additional asphalt parking areas in the rear of the building;

2. Change in channel section. The section has changed to reflect asphalt lining instead of the earth channel with gravel breakers as originally proposed.

By adding this additional hard surface the volume of the pond has changed slightly. The new calculations are as follows:

Roofed Area = 1680 + 5070 = 6750 SF

Paved Area = 10,894 SF

Landscaped or Yard Area = 7500 SF

Composite Runoff Coefficient

Paving & Roofed = (6750 + 10,894)(.9) = 15,879

Yard, Landscaped & Natural Soil = (51,860 + 7500)(.4) = 23,744

Composite Runoff Coefficient:

(23,744 + 15,879)/77,000 = 0.51

Volume Detention Pond

Area of 27.5 contour = 3640 SF = Volume of 2030 CF

Area of 28.0 contour = 4480 SF = Volume of 4890 CF

Area of 29.0 contour = 5300 SF = ø

TOTAL VOLUME 6920 CF

Fred, please let me or Ms. Shaver know if you need any additional information.

Very truly yours,

Joseph M. Allen

JMA/lm

cc: Patty Shaver

City of Albuquerque

April 27, 1983

Mr. Joe Cruz
Star Paving
2522 Coors, SW
P.O. Box 12333
Albuquerque, NM 87195

REF: 704 Rankin Road, NE G15-D5

Dear Mr. Cruz:

On January 14, 1983 a field survey was conducted to determine if the above mentioned site was in close compliance to the approved drainage plan. Our survey revealed that the approved drainage plan was not complied with. In order to provide fair effective enforcement of drainage policy, three alternatives were available to you.

1. Comply with the original approved drainage plan.

2. Have an Engineer submit an as-built plan showing that what exists is in close compliance to the original approved drainage requirements for the site.

3. Submit a new drainage plan in compliance with the new drainage ordinance.

You choose alternative No. 1 and again a field survey was conducted on April 22, 1983 to determine if the original approved drainage plan was complied with. Our survey again revealed that the majority of the site was in non-compliance.

The only alternatives that are available to you now, are No. 2 and No. 3. If arrangements for said concerns to be taken care of aren't made within 15 days of the above date, this office will take necessary legal steps to invoke Section 12, B4 of the Albuquerque Drainage Ordinance, which states that "no further paving permits will be issued to your company".

If you have any question concerning this matter, do not hesitate to call me at 766-7644.

MUNICIPAL DEVELOPMENT DEPARTMENT

Richard S. Heller, P.E., City Engineer
LaMonte J. Urban, P.L.S., Chief City Surveyor

ENGINEERING DIVISION

123 Central Avenue N.W.
Albuquerque, New Mexico 87102
Telephone (505) 766-5040

Sincerely,

Bernie J. Montoya

Bernie J. Montoya,
Hydrologic Engineering Tech.

mrk

cc: Bill Shaver
704 Rankin Road, NE
Albuquerque, NM 87107

DENNEY-GROSS & ASSOCIATES, INC.
CONSULTING ENGINEERS
2400 COMANCHE ROAD, N.E.
ALBUQUERQUE, NEW MEXICO 87107
(505) 884-0696

October 27, 1983

Mr. Bernie Montoya
Hydrology Department
City of Albuquerque
123 Central N.W.
Albuquerque, NM 87102

Re: Shavers Welding Drainage
Improvements - 704 Rankin
DGA Job No. 548.32

Dear Mr. Montoya:

Transmitted herewith for your files is a record grading and drainage plan which reflects the actual position of facilities that were recently constructed at subject location.

We trust this information will be of help to you in completing your file on the project.

Very truly yours,

Gary W. Tibljas, P.E.

GWT/lm

Enclosures

INFORMATION SHEET

PROJECT TITLE METAL BUILDING ADDITION DATE OF SUBMITTAL _____

ZONE ATLAS PAGE NO. G15-D5 CITY ADDRESS 704 RALPH ROAD ~~NW~~ NE.

LEGAL DESCRIPTION BLOCK 1, LOT 23 REPLAT OF COMAN INDUSTRIAL ~~ADDITION~~ DISTRICT ADDITION

ENGINEERING FIRM FRED DELINEY ASSOCIATES

ADDRESS 2400 COMANCHE ROAD NE

OWNER WILLIAM & PATSY SHAVER CONTACT _____

ADDRESS 704 RALPH ROAD NW PHONE _____

ARCHITECT WILLIAM A. MCCONNELL CONTACT _____

ADDRESS 610 GOLD AVENUE SW. PHONE 243-4559

SURVEYOR FRED DELINEY ASSOCIATES CONTACT _____

ADDRESS _____ PHONE _____

CONTRACTOR C & R CONSTRUCTION CONTACT REV. MCILRATH.

ADDRESS BOX 185, EDGEWOOD PHONE 281-9223.

PRE-DESIGN MEETING:

___ YES
___ NO
___ COPY OF CONFERENCE RECAP SHEET PROVIDED

PLEASE CHECK TYPE OF APPROVAL EXPECTED WITH THIS SUBMITTAL:

___ SKETCH PLAT APPROVAL
___ PRELIMINARY PLAT APPROVAL
___ SITE DEVELOPMENT PLAN APPROVAL
___ FINAL PLAT APPROVAL
✓ BUILDING PERMIT APPROVAL
___ CERTIFICATE OF OCCUPANCY APPROVAL
___ ROUGH GRADING PERMIT APPROVAL
___ GRADING/PAVING PERMIT APPROVAL
___ OTHER _____ (SPECIFY)

DATE SUBMITTED: FEBRUARY 14, 1984.

BY: _____

RECEIVED
FEB 14 1984
HYDROLOGY SECTION

City of Albuquerque
P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

February 16, 1984

Mr. William A. McConnell
610 Gold Avenue SW
Albuquerque, NM 87102

REF: SHAVERS WELDING DRIANAGE IMPROVEMENTS (G15-D5)

Dear Mr. McConnell:

Based on the information provided on your February 14, 1984 submittal of the above referenced drainage plan, listed you will find certain items that will need to be addressed before final approval is granted.

1. I need existing pond volume calculations.

2. Provide calculations for proposed developed area in as far as volume that will be generated with comparison to existing pond volume.

3. Professional's stamp with signature and date.

   A. Engineer who prepared the drainage plan.

I have talked to Gary Tibljas of Denny-Gross & Associates, Inc. and have explained what I will need as far as revisions before final approval is granted.

If you have any questions regarding the above comments, please feel free to call me at 766-7644.

Sincerely,

Bernie J. Montoya

Bernie J. Montoya
Hydrologic Engineering Tech.
C.E.

BJM:mck

DENNEY-GROSS & ASSOCIATES, INC.
CONSULTING ENGINEERS
2400 COMANCHE ROAD, N.E.
ALBUQUERQUE, NEW MEXICO 87107
(505) 884-0696

February 23, 1984

RECEIVED
FEB 27 1984
CITY ENGINEER

Mr. Bernie J. Montoya
Hydrologic Engineering Tech.
City of Albuquerque
P.O. Box 1293
Albuquerque, NM 87103

Re: Shavers Welding Drainage Improvements (G15-D5)
DGA Job #548.32

Dear Mr. Montoya:

This is in response to your letter of February 16, 1984, to Mr. William A. McConnell in which you requested additional information regarding subject drainage plan.

Analysis of the site in accordance with procedures given in the DPM indicates that the present ponding capacity on the site is sufficient to contain the runoff generated from the site after the proposed improvements are in place. Please see the enclosed calculations.

By way of specific response to your comments:

1. Pond volume calculations are included.
2. Volume that will be generated is calculated and compared with existing pond volume.
3. Professional's stamp with signature and date is furnished.

Please contact me if you need further information.

Very truly yours,

RTWilliams

Richard T. Williams, P.E.

RTW/gw
Enclosures

cc: Mr. William A. McConnell
Patty Shaver

DENNEY - GROSS & ASSOCIATES, INC.
ENGINEERS SURVEYORS PLANNERS
2400 COMANCHE ROAD N.E.
ALBUQUERQUE, NEW MEXICO 87107
(505) 884-0695

LOCATION SHANDS WELNESS DRAINAGE IMP.
PROJ. NO. 548.32
DATE FEB 23, 1984
DESIGNER RTW
PAGE 1

1. DETERMINATION of "C" FACTOR:

TOTAL AREA = 192(100+105)/2 + 442(100+102)/2 = 64,322 SF
= 1.45 AC

IMPERVIOUS AREA

ROOFING = 21 x 63 + 50(150) = 9,132 SF

PAVING = (100+101)/2 (49) + 10(71) + 150(3+35)/2
+ 40(51) + 6(234) = 14,209

23,341 SF

PERVIOUS AREA = 64,322 - 23,341 = 40,981 SF

SOIL SERIES - GF (GILA COMPLEX. SOILS ARE 15% GRAVEL. RUNOFF IS MEDIUM, HAZARD of WATER EROSION IS MODERATE, HAZARD of SOIL BLOWING IS SEVERE. LOCAL FLOODING from SIDE DRAINAGES OCCURS IN PLACES. USED for COMMUNITY DEVELOPMENT, WATERSHED, AND WILDLIFE HABITAT). (SCS - SOIL SURVEY of BERNALILLO COUNTY, NM, MAP 21 & P. 20.)

HYDROLOGIC SOIL GROUP - B (op. cit., P. 76-77).

% IMPERVIOUS = $\frac{23,341}{64,322}$ = 36

C = 0.50 (DPM, VOL 2, PLATE 22.2 C-1)

2. DETERMINATION of "I" FACTOR

6-HR 100-YR RAINFALL = 2.2" (DPM VOL 2, PLATE 22.2 D-1)

ASSUME t_c = 10 MIN

$I = 2.2 \times 6.84 \times 10^{-0.51} = 4.65$

DENNEY - GROSS & ASSOCIATES, INC.
ENGINEERS SURVEYORS PLANNERS
2400 COMANCHE ROAD N.E.
ALBUQUERQUE, NEW MEXICO 87107
(505) 884-0695

LOCATION _____
PROJ. NO. _____
DATE _____
DESIGNER _____
PAGE 2

3. DETERMINATION of Q, V, T

$Q_{100} = CIA = 0.50(4.65)(1.48) = 3.44$ CFS

→ $V_{100} = CRA = 0.50\left(\frac{2.2}{12}\right)(64{,}322) = 5{,}896$ CF

$T = \frac{2V}{Q} = \frac{2(5896)}{3.44} = 57.1$ MIN USE ± 60 MIN

4. VOLUME of RETENTION POND

AREA of 27.5 CONTOUR = 3640 SF

AREA of 28.0 CONTOUR = 4480 SF

AREA of 29.0 CONTOUR = 5,300 SF

VOLUME = (3640+4480)/2 (.5) + (4480+5300)/2 (1)

→ = 6,520 CF > 5,896 CF

RICHARD T. HILLIN
REGISTERED PROFESSIONAL ENGINEER
12209
STATE OF NEW MEXICO

City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

February 28, 1984

Mr. Richard T. Williams, P.E.
Denney-Gross & Associates, Inc.
2400 Comanche Road NE
Albuquerque, NM 87107

REF: SHAVERS WELDING DRAINAGE IMPROVEMENTS (G15-D5)

Dear Mr. Williams:

Based on the information provided on your February 27, 1984 submittal, the above referenced drainage plan for the addition is approved.

If you have any questions or comments, please feel free to call me at 766-7644.

Sincerely,

Bernie J. Montoya

Bernie J. Montoya
Hydrologic Engineering Tech.
C.E.

BJM:mrk

cc: Patty Shavers, 704 Rankin Road NW

DRAINAGE PLAN
SHAVER BUILDING
704 RANKIN ROAD N.E.
ALBUQUERQUE, NEW MEXICO

RECEIVED
MAY - 2 1981
CITY ENGINEER

Prepared For:
J.J. Johnson

MAY, 1981
F.D. Job No. 548.12

Prepared By:
Fred Denney & Associates, Inc.
2400 Comanche Road, N.E.
Albuquerque, New Mexico 87107

I, Louis W. Gross, hereby certify that the enclosed documents and drawings were prepared under my supervision and are true and correct to the best of my knowledge and belief.

Louis W. Gross

New Mexico Registered Professional Engineer and Land Surveyor No. 4100

DRAINAGE PLAN
SHAVER BUILDING
704 RANKIN ROAD N.E.
ALBUQUERQUE, NEW MEXICO

I. GENERAL:

The location of this project is shown on the Location Map (G-15-Z, Exhibit I). Both buildings shown on the Grading Plan (Exhibit III) are existing.

A retention pond is proposed and will be located on the southwestern corner of the property. This pond is designed to hold the volume of runoff produced by a 50-year storm on-site and an off-site area of 7,500 SF (see Exhibit II).

A proposed ditch beginning at the southern end of the proposed parking lot will carry the runoff generated in the parking lot area to the retention pond. The ditch is utilized to avoid erosion and sediment buildup in the retention pond. Positive discharge from the retention pond will be realized at a rate not to exceed the flow of runoff generated by a one-year storm event. Also, an overflow spillway will be constructed at a location to enable it to route water overflowing the pond in the event that a 50-year developed storm is exceeded.

This tract is located on Flood Hazard Map No. 9 of the Flood Hazard Boundary Map H-01-37, Department of Housing and Urban Development Federal Insurance Administration, which shows that the tract is not in a designated flood hazard area.

II. CRITERIA:

The volume of runoff for a 50-year frequency developed storm will be computed.

Rainfall from Precipitation Frequency Atlas of the Western United States, Volume IV - New Mexico, for a 50-year, 6-hour storm (see Exhibit IV) = 2.0 inches.

Runoff Factors:

Yards & Landscaped = 0.40

Natural Soil = 0.40

Paving & Roofed = 0.90

The average velocity of runoff is equal to:

2 fps or 120 feet/minute

III. CALCULATIONS:

Runoff Area

Roofed Area = 1,680 + 5,070 = 6,750 SF

Paved Area = 9,084 SF

Landscaped - Yard Area = 53,670 SF

Outside Drainage Area = 7,500 SF

Composite Runoff Coefficient

Paving & Roofed = (6,750 + 9,084)(.9) = 14,251

Yard, Landscaped and Natural Soil:

= (53,670 + 7,500)(.4) = 24,468

Composite Runoff Coefficient:

= (24,468 + 14,251)/(77,000) = .50

Retention Pond Sizing (Using 50-year, 6-hour total depth of 2.0 inches)

Total Runoff After Development

Runoff Area (A) = (69,500 + 7,500) = 77,000 SF

Runoff Factor (R) = 0.50

Precipitation (P) = 2.0 inches

Volume Runoff (V) = (P/12)(A)(R):

= (2/12)(77,000)(.50) = 6,417 cf

Volume of Retention Pond (End Area Method)

Area of 27.5 ft contour = 3,060 SF

Area of 28 ft contour = 4,032 SF

Area of 29 ft contour = 5,300 SF

Volume:

= [(3,060 + 4,032)/2](.5) + [(4,032 + 5,300)/2](1)

= 1,773 + 4,666 = 6,439 cf

The ponding area as proposed in this report will retain 6,439 cf which is greater than 6,417 cf required per development.

Overflow Weir

The overflow weir will be designed to handle a 50-year storm event. Should be indicated on plans.

Tc = (Length of longest drainage path/average velocity)

= 800 ft/120 = 6.66 minutes Use 7 minutes

The method outlined within the NOAA (National Oceanic and Atmospheric Administration) Atlas, Volume IV for New Mexico was utilized to determine the rainfall intensities for the 50-year storm as follows:

$y_2 = -0.011 + 0.942\ (X_1)(X_1/X_2)$

Y_2 = 2-year, 10-hour estimated value

X_1 = 2-year, 6-hour value from precipitation frequency maps = 1.0

X_2 = 2-year, 24-hour value from precipitation frequency maps = 1.2

Y_{100} = 100-year, 1-hour estimated value

$Y_{100} = 0.494 + 0.755\ (X_3)(X_3/X_4)$

X_3 = 100-year, 6-hour value from precipitation frequency maps = 2.2

X_4 = 100-year, 24-hour value from precipitation frequency maps = 2.8

$Y_2 = -0.011 + 0.942[(1.0)(1.0/1.2)] = 0.77$

$Y_{100} = 0.494 + 0.755[(2.2)(2.2/2.8)] = 1.80$

From Exhibit V, the 50-year, 1-hour storm precipitation is approximately 1.5 inches, THEREFORE:

50-year, 5-minutes = 0.29 x 1.5 = .44 in. = 5.28 in/hr

50-year, 10-minutes = 0.45 x 1.5 = .68 in. = 4.05 in/hr

50-year, 15-minutes = 0.57 x 1.5 = .86 in. = 3.42 in/hr

50-year, 30-minutes = 0.79 x 1.5 = 1.19 in. = 2.37 in/hr

50-year, 60-minutes = 1.00 x 1.5 = 1.50 in. = 1.50 in/hr

From the intensity/duration curve (Exhibit VI) the 7-minute intensity is 4.6 in/hr.

The overflow spillway will be designed to handle the volume of runoff equal to:

$Q = AIR$

$Q = (77{,}000/43{,}560)(4.60)(.50) = 4.06$ cfs

Overflow Spillway Sizing

$Q = 2.86\ LH^{1.5}$

H = 6 in. = .5 ft.

Q = 3.58 cfs

$L = [Q/(H^{1.5})(2.86)] = [4.06/(.5^{1.5})(2.86)]$

= 4.01 ft. Use 4 ft.

The characteristics of the spillway are:

L = 4 ft.

H = 0.5 ft.

Positive Drainage System For Pond

The pond must exhibit a positive discharge system which will not discharge a total runoff from its site greater than the developed 1-year storm.

A = 77,000 SF (1 Ac/43,560 SF) = 1.77 Acres

I = (.27 in/ten minute duration)(6) = 1.62 in/hr

R = .50

The maximum allowable rate of positive discharge from the site is equal to:

Q = AIR

Q = (1.77)(1.62)(.5) = 1.43 cfs

Maximum Positive Discharge From Site

The runoff leaving the site will flow thru a 6-inch pipe. The maximum discharge will be governed by the capacity of the 6-inch steel pipe at maximum slope.

Maximum Slope = (29.0 - 27.0)/(50) = 0.04

n = 0.013 $R^{2/3}$ = .25

A = 196 $S^{1/2}$ = .2

R = 1.25 S = 0.04

$Q = (1.486/n)(R^{2/3})(S^{1/2})(A)$

$= (1.486/0.013)(.25)(.2)(.196) =$ 1.12 cfs

The maximum positive discharge from the site is equal to 1.12 cfs which is less than the allowage 1.43 cfs.

IV. CONCLUSIONS:

1. The retention pond (as outlined in this report) is designed to retain the volume produced on-site plus the 7,500 SF outside the drainage area.
2. All drainage requirements and guidelines of the City of Albuquerque have been met in this report.
3. A positive drainage system as well as an overflow spillway are encompassed in this improvement.
4. A ditching system will be utilized in order to avoid erosion and for sediment control.

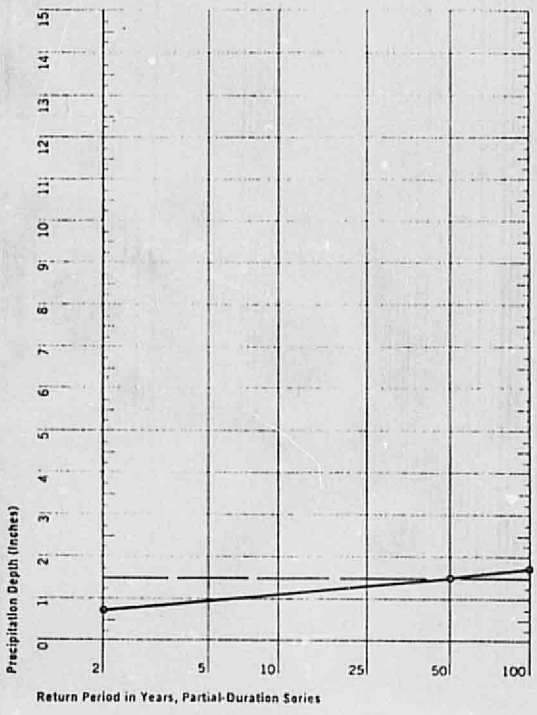


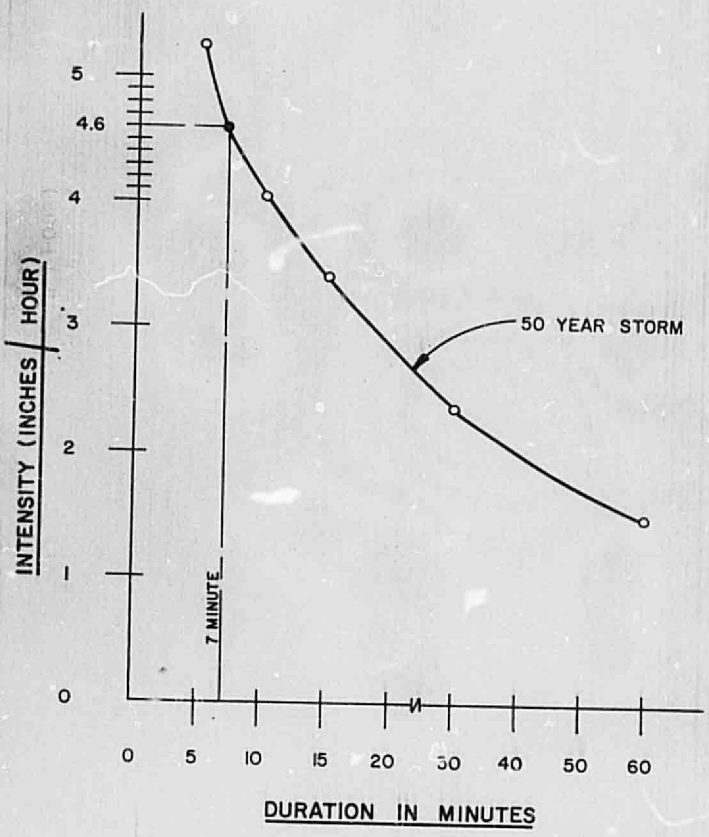
Figure 6. *Precipitation depth versus return period for partial-duration series.*

Duration (min)	5	10	15	30
Ratio to 1-hr	0.29	0.45	0.57	0.79

(Adopted from *U.S. Weather Bureau Technical Paper* No. 40, 1961.)

Table 12. *Adjustment factors to obtain n-min estimates from 1-hr values*

EXHIBIT V



INTENSITY/DURATION
FREQUENCY CURVE
FOR A 50-YEAR STORM

EXHIBIT VI