



City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

MAYOR
Harry E. Kinney

CHIEF
ADMINISTRATIVE OFFICER
Frank A. Kleinhenz

September 16, 1975

Mr. John Robert
AMAFCA
P. O. Box 25851
Albuquerque, New Mexico 87125

RE: GRANADA VIEW DRAINAGE STUDY
LOT 208, UNIT 6, TOWN OF ATRISCO GRANT

Dear Mr. Robert:

The subject drainage study was approved and the plat signed on September 15, 1975. The attached reports are the amendments requested of the original report. I understand Tyree Surveying delivered the original report.

Very truly yours,

Kleston H. Laws
Assistant City Engineer-Hydrology

KHL/fs
Enclosures

cc: Mr. Fred Burns, 1721 Girard Blvd. N.E. 87106



MacCORNACK & BURNS
CONSULTING ENGINEERS, INC.

1721 GIRARD BLVD., N.E.
ALBUQUERQUE, NEW MEXICO 87106

(505) 266-7789

September 12, 1975

TYREE SURVEYING COMPANY
201 Eubank, NE
Albuquerque, N. M. 87123

Re: Storm Drainage Study
Lot 208, Unit 6
Town of Atrisco

Gentlemen:

Attached is the revised Drainage Plan drawing incorporating your typical street section. Drainage capacity of the revised section is approximately 37 cfs at a slope of 0.0025.

Also included are revisions to the final grading plan which will insure flow from trailer roofs and driveways to the planned ponding areas. Typical ponds are to be forty (40) by thirty (30) feet with a maximum depth of 2.5 inches.

Your help in resolving these questions is appreciated. Please feel free to call us at any time.

Very truly yours,

MacCORNACK & BURNS, INC.

Fred Burns
Fred Burns

JFB:mt
Encls.



MacCORNACK & BURNS
CONSULTING ENGINEERS, INC.
1721 GIRARD BLVD., N.E.
ALBUQUERQUE, NEW MEXICO 87106

(505) 266-7789

August 28, 1975

TYREE SURVEYING COMPANY
201 Eubank, NE
Albuquerque, N. M. 87123

ATTENTION: Dwain Weaver

Re: Storm Drainage Study
Lot 208, Unit 6
Town of Atrisco

Gentlemen:

Transmitted herein is an addendum to the referenced storm drainage study addressing the following questions:

1. How will the closed contours and natural ponding on the site affect the undeveloped storm runoff?
2. Will flood protection efforts be ineffective due to the site being located in an area subject to sheet flow?

The attached contour map, revised to reflect your corrected survey, indicates a greatly reduced ponding volume when compared to the originally submitted plan. Reductions in the volume are due to elimination of the eight (8) foot contour line, originally located near the southeast corner of the lot, and a reduction in the closed contour at seven (7) feet, which originally encompassed areas well over the seven foot elevation. The remaining ponding volume will be filled in less than ten minutes, resulting in an undeveloped runoff of 6.46 cfs. The ponding volumes originally planned for the site will be adequate to maintain this existing runoff.

Sheet flows generated in the area, in the event of a 100 year storm, will be diverted on the north by Sunset Gardens Road and on the west by developed properties and a man-made

TYREE SURVEYING COMPANY
August 28, 1975
Page 2

berm between Coors and the site being considered. A small amount of flow due to local runoff will enter the property along Sunset Gardens Road and will be transported to the south boundary, where natural drainage now occurs. The planned street will have a capacity of 37 cfs.

If you have any questions, please feel free to call us at any time.

Very truly yours,

MacCORNACK & BURNS, INC.

Fred Burns
Fred Burns

JFB:mt
Encls.

Job Grenada View - Lot 208

Sheet No. R-1 of 1

Subject Drainage Study

Job No. _____

Client Tyree Surveying

By J/C Date 8/75

MAC CORNACK & BURNS Consulting Engineers, Inc., Albuquerque, NM

Outlet Elevation = 7.1'

Ponding Area 1 - Surface Area = 1960 ft²

$$Vol = (7.1 - 6.9)(.33)(1960) = 130 \text{ ft}^3$$

Ponding Area 2 - Surface Area = 8000 ft²

$$Vol = (7.1 - 6.75)(.33)(8000) = 924 \text{ ft}^3$$

$$\text{Total Ponding} = 1053 \text{ ft}^3$$

$$\text{Existing runoff} = (1.155)(4.7)(43560)/12 = 9384 \text{ ft}^3$$

Existing Coefficient of Runoff = .25 (Revised from .1)

Source - Design by Seelye 9.18-02

$$\text{Existing Runoff} = .25(5.5)(4.7) = 6.46 \checkmark$$

Developed Coefficient of Runoff

139,99' x 40' = 29599	Trailers	Area 26460	Coeff. (.9)	23874	23814
	Roadway	21140	(.9)	19026	26639
	Driveways	3640	(.9)	7776	7776
	50% Grass	7406	(.07)	5184	4888
	50% Sandy	7406	(.25)	18515	17458
		<u>204362</u>		<u>74315</u>	<u>80575</u>
				<u>1204362</u>	<u>1204362</u>

$$\text{Developed Runoff} = .36(5.5)(4.7) = 9.3 \text{ cfs} \checkmark$$

To determine effect of existing storage on runoff use 39
I = 1.82 and calculate time req. to fill existing ponding,
2.25
See Sheet R-2 for calculation of ponded volume.

Ten minutes into the storm, storage will no longer effect runoff

$$Q_2 = .25(5.4)(4.7) = 6.35$$

Job Granada View - Lot 208Sheet No. R-2 of 2Subject Drainage Study

Job No. _____

Client Tyree SurveyingBy U/C Date 8/75

MAC CORNACK & BURNS Consulting Engineers, Inc., Albuquerque, N.M.

Time	L	Q	Q Δt (%)	Vol.	Σ Vol.
0	7.56	8.88	8.71 (60) (48.5)	61.5	61.5
1	7.27	8.54	8.38 (60) (48.5)	118.3	179.8
2	7.0	8.22	8.08 (60) (48.5)	171.0	350.8
3	6.75	7.93	7.79 (60) (48.5)	220.0	571.0
4	6.51	7.65	7.52 (60) (48.5)	265.4	836.0
5	6.3	7.40	7.28 (60) (48.5)	308.3	1144.0
6	6.1	7.17	7.05 (60) (48.5)	348	1492.0
7	5.91	6.94	6.83 (60) (48.5)		
8	5.73	6.73	6.63 (60)		
9	5.56	6.53			
10	5.4	6.35			
11	4.72	5.55			

Ponding area will fill in less than the time of concentration. A Ten minute rain intensity has been used to compensate for areas that will not drain into existing ponds.

Superimposing the new undeveloped runoff rate on the original graph indicated by inspection that ponding areas as outlined will be adequate.

file copy

STORM DRAINAGE STUDY
RELATIVE TO DEVELOPMENT OF LOT 208
UNIT 6, TOWN OF ATRISCO
ALBUQUERQUE, NEW MEXICO

RECEIVED
JUN 14 1975
ALBUQUERQUE

JUNE 1975

266-7789



MacCORNACK & BURNS
CONSULTING ENGINEERS, INC.
1721 GIRARD BLVD., N.E.
ALBUQUERQUE, NEW MEXICO 87106

STORM DRAINAGE STUDY
RELATIVE TO DEVELOPMENT OF LOT 208
UNIT 6, TOWN OF ATRISCO
ALBUQUERQUE, NEW MEXICO

JUNE 1975





MacCORNACK & BURNS
CONSULTING ENGINEERS, INC.
1721 GIRARD BLVD., N.E.
ALBUQUERQUE, NEW MEXICO 87106

(505) 266-7789

July 1, 1975

TYREE SURVEYING COMPANY
201 Eubank, NE
Albuquerque, N. M. 87123

ATTENTION: Dwain Weaver

Re: Storm Drainage Study
Lot 208, Unit 6
Town of Atrisco

Gentlemen:

Transmitted herewith is the "Storm Drainage Study
Relative to Development of Lot 208, Unit 6, Town of
Atrisco. This study comprises a comprehensive analysis
in accordance with the requirements of Resolution No.
1972-2, Albuquerque Metropolitan Arroyo Flood Control
Authority, and the City of Albuquerque.

Thank you for the opportunity of participating in your
project.

Very truly yours,

MacCORNACK & BURNS, INC.

Fred Burns

Fred Burns

JFB:mt
Encl.

STORM DRAINAGE STUDY
RELATIVE TO DEVELOPMENT OF LOT 208
UNIT 6, TOWN OF ATRISCO
ALBUQUERQUE, NEW MEXICO

1. PURPOSE:

This report is to transmit the findings of a study of storm runoff drainage conditions in an area proposed for development described as Lot 208, Unit 6, Town of Atrisco.

2. LOCATION:

The area proposed for development is located in Sections 23 and 26 of Township 10 North, Range 2 East, N.M.P.M. The area is bounded on the north by Sunset Gardens Road, SW, and on the south by Salvador Road, SW, and is located 50 feet east of Coors Boulevard on its northern boundary. Total land area of the tract is approximately 4.69 acres. K&L, II

3. EXISTING DRAINAGE CONDITIONS:

A. General: The tract under consideration is presently undeveloped. Areas upslope of the site are presently only partially developed. There are no major drainage problems within the site. *shows in 180 yr F.P. of Phase A*

B. Topography: The land is located on the West Mesa in an area of low gradient sandy surfaces. The elevation of the land ranges from 5001 to 5015 MSL, with a natural slope downward to the southeast. The area is covered



with sparse vegetation.

- C. Drainage Areas: Upslope watershed areas consist of partially developed land, 1.6 acres immediately west and 2.0 acres immediately north of the property under consideration. Runoff from these areas crosses the property from the northwest to the southeast in a natural swale, having an average slope of less than 1 percent. Slopes as high as 13 percent along the east and southern boundaries drain excessive runoff to nearby natural ponding areas, or to the area of the Arenal Canal.

4. PROPOSED DRAINAGE PLANS:

A. Criteria:

- 1) General: Resolution No. 1972-2, Albuquerque Metropolitan Arroyo Flood Control Authority.
- 2) Project Storm: 100-year intensity; frequency-duration as shown in Fig. III-8, "Western Albuquerque Metropolitan Area Drainage Management Plan", as prepared by William Matotan & Associates, Inc., Consulting Engineers.
- 3) Aerial Data: Orthophoto Topographic Map Portion of West Mesa, Bernalillo County, New Mexico, for AMAFCA, 1973.

B. Hydrologic Features:

- 1) Existing Conditions: Area - 4.7 Acres



- 1) Existing Conditions: Length - 714 feet
(Con't.) Slope - .7 percent
Character - Sparse vegetation
to bare
Runoff - 2.6 cfs
- 2) Future Condition: Development of the property will include both a mobile home parking facility and an access road with corresponding increases in site runoff. Adjacent upslope drainage areas have been included in the analysis, and the recommendations will allow for transportation of runoff across the property in question. To comply with AMAFCA Resolution No. 1972-2, the calculated increase in site runoff will be retained on the site for percolation into the sub-surface.

5. CONCLUSIONS AND RECOMMENDATIONS:

On the basis of the study of this report, the following recommendations are proposed:

- A. Provide site grading on each individual lot, such that detention ponds will maintain the existing flow rates and total runoff volumes. Each detention pond must be capable of storing one hundred and eleven (111) cubic feet.
(Example: 40' x 20' x .14')
- B. Provide access road grading to match existing grades of

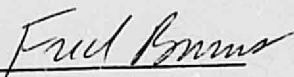


Sunset Gardens Road and Salvador Road, with drainage capacities to handle both on-site and upslope drainage.

- C. Align facilities such that location of runoff does not change.

Provided that the above listed recommendations are implemented concurrent with the development of the tract, it is concluded that such development will not create flood hazard to surrounding properties, nor will the property itself be in danger of flooding.

MacCORNACK & BURNS
Consulting Engineers, Inc.


Fred Burns
New Mexico Registration No. 4000



Job Tree Drainage StudySheet No. 2 of Subject Job No. 75-60Client By TJC Date 6/72

MAC CORNACK & BURNS Consulting Engineers, Inc., Albuquerque, NM

Required Storage time to maintain 2.6 cfs runoff.

$$V_{10} = \left(\frac{8.5}{1.3}\right)(7.3-2.6)^{3/2} + (7.3-2.6)(1.5) + (1.06)(7.3-2.6)^{3/2} = 31.62$$

$$V_{15} = \left(\frac{8.5}{1.2}\right)(3.6)^{3/2} + 3.6(6.5) + 1.06(3.6)^{3/2} = 39.15$$

$$V_{20} = \left(\frac{8.5}{1.1}\right)(2.7)^{3/2} + 2.7(11.5) + 1.06(2.7)^{3/2} = 49.95 \quad \leftarrow$$

$$V_{25} = \left(\frac{8.5}{1.0}\right)(2.2)^{3/2} + 2.2(16.5) + 1.06(2.2)^{3/2} = 43.15$$

$$V_{30} = \left(\frac{8.5}{0.9}\right)(1.8)^{3/2} + 1.8(21.5) + 1.06(1.8)^{3/2} = 43.54$$

$$V_{35} = \left(\frac{8.5}{0.8}\right)(1.4)^{3/2} + 1.4(26.5) + 1.06(1.4)^{3/2} = 40.2$$

$$\text{Max Reg. Storage} = 49.95(60) = \underline{2997 \text{ ft}^3} \quad \leftarrow$$

$$\text{Orig. Vol Runoff} = 8.5(2.6)(60) = 1326 \text{ ft}^3$$

$$\text{Dev. Vol Runoff} = 8.5(8)(60) = 1020 \text{ ft}^3$$

Retention Vol. is greater than the increased flow \therefore total runoff will not be increased.

Ch. Road Section.

$$Q = \frac{1.49}{n} A^{6/5} S^{1/2} \quad (\text{King's handbook of Hydraulics})$$

$$\text{Min. } S = .0017 \quad S^{1/2} = .0422$$

$$b = 2 \quad O = .5$$

$$k = 8.95 \quad n = .025$$

$$Q = \frac{8.95}{.025} (.5)^{2.66} (.0422) = 2.38 \text{ cfs.}$$

$$\text{Total } Q = 2(2.38) = 4.76 > 4.3 \quad \text{OK.}$$

how will you drive across?

