HYDROLOGY L21/D2 ONE PLAN

L21/D2

1 PLAN

DRAINAGE STUDY

LOTS 1, 3, 4, 5 & 6, BLOCK No. 17
EAST CENTRAL BUSINESS ADDITION
PROPOSED DU-PLEX & FOUR-PLEX CONSTRUCTION
ALBUQUERQUE, NEW MEXICO

PREPARED FOR

MALLAK CONSTRUCTION

APRIL, 1977

PREPARED BY
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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

LOUIS W. GROSS
SEAL
NEW MEXICO
4100
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REGISTERED PROFESSIONAL ENGINEER

DRAINAGE STUDY

LOTS 1, 3, 4, 5 & 6, Block No. 17

East Central Business Addition

MALLAK CONSTRUCTION

I. INTRODUCTION: This study includes the investigation of the effects on the drainage from Lots 1, 3, 4, 5 and 6, Block No. 17, East Central Business Addition which would be caused by the construction of duplexes on Lots 3 - 6 and a four-plex on Lot 1 and to make recommendations for the accommodation of the drainage from these lots after construction.

Since lots 3 through 6 are indentical in size and the same construction is proposed for each of the four lots, one lot will be analyzed as typical of all four lots. Lot 1 is analyzed separately since the lot size and proposed building is different.

The volumetric method is used for the purposes of this study. A total rainfall depth of 2.6 inches is used for computations of allowable runoff and required storage for the 100 year frequency storm. From this rainfall, a straight area-volume relationship is used for computations.

II. COMPUTATIONS:

1. LOTS 3 - 6:

Total Area of Each Lot = 6500 SF

Volume of runoff before construction:

$V = 2.6/12 \times 6500 \times 0.40 = \underline{563 \text{ cu.ft.}}$

This is the allowable runoff.

Volume of runoff after construction:

Composite Runoff Factor:

Roof =	1842.5 SF x 0.95	=	1750.4
Asphalt =	1200 SF x 0.95	=	1140.0
Concrete =	140 SF x 0.95	=	133.0
Grass/ Landscape =	3317.5 SF x 0.40	=	1327.0
	6500		4350.4

Composite Factor = 4350.4/6500 = 0.67

Volume of Runoff after construction:

V = 2.6/12 x 6500 x 0.67 = 944 cf

Storage Required = 944 - 563 = 381 cf

If all the water that falls on the back yard is retained in the back yard from the end of the building to the property line, the volume would do:

2.6/12 x 40 x 50 = 433 cf

2. LOT 1:

Total Area of Lot = 9601 SF

Volume of runoff before construction:

V = 2.6/12 x 9601 x 0.40 = 832 cf

This is allowable runoff.

Volume of runoff after construction:

Composite Runoff Factor:

Roof =	2035 SF x 0.95 =	1933
Asphalt =	2349 SF x 0.95 =	2232
Concrete =	541 SF x 0.95 =	514
Grass/ Landscaped =	4676 SF x 0.40 =	1870
	9601 SF	6549

Composite Factor = 6549/9601 = .68

Volume of runoff after construction:

V = 2.6/12 x 9601 x 0.68 = 1415 cf

Storage Required = 1415 - 832 = 583 cu.ft.

If all the rain that falls on the retention area plus 35 feet of the asphalt parking area is drained to the retention area, the retained volume would be:

Area in Retention Area = 1475 SF

Area of Asphalt Parking Area= 40 x 35 = 1400 SF

V = 2.6/12 x 1475 + 2.6/12 x 1400 x 0.95 =

320 + 288 = 608 cf.

III. RECOMMENDATIONS:

1. Drain Lots 3, 4, 5, and 6 as shown on the attached grading plan, providing curbing or some positive method of retaining all the rain which fall in the retention area as shown on the grading plan. A 4-inch high curb around the retention area would provide the necessary storage.

2. Drain Lot 1 as shown on the attached grading plan providing curbing are some positive method of retaining the runoff as shown on the grading plan. A 6-inch high curb around the retention area would provide the necessary storage.