HYDROLOGY K18/D1 NO PLANS

K18/D1

NO PLANS

Rec 12/20

STORM DRAINAGE STUDY

FOR

CONSUELO Y ANNA COMPLEX SITE

DECEMBER 1979

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December 13, 1978

Mitchell Associates, P.A.
205 Fourth Street, S.W.
Albuquerque, New Mexico 87102

Attention: Mr. Don Mitchell

Dear Sir:

Transmitted herewith is the "Storm Drainage Study for the Consuelo y Anna Complex Site", located on the northeast corner of Palomas Drive and Highland Avenue. The recommendations in this report are in accordance with the requirements of the City of Albuquerque and the Albuquerque Metropolitan Arroyo Flood Control Authority.

Thank you for the opportunity of serving you.

Respectfully submitted,

Jacob A. Vigil

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JAV/bvm

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STORM DRAINAGE STUDY

FOR CONSUELO Y ANNA

COMPLEX SITE

I. PURPOSE: The purpose of this report is to formulate a comprehensive study of drainage affecting the site development and to show that the development does not restrict drainage in a manner to cause damage to adjacent land owners.

II. SCOPE: This report is limit to runoff originating within the development; however, based on available data on localized flooding from the City, off site drainage was taken into consideration. General engineering procedures are presented for calculation of storm runoff and storage.

III. LOCATION: The site is located east of San Mateo Boulevard and north of Zuni Road and is bounded on the north by Acoma Road, on the south by Highland Avenue, on the west by Palomas Drive and on the east by Alvarado Drive. The area consists of approximately 30,000 square feet of sparse grass to bare soil. The site consists of Block 51 of the Tijeras Place Addition with existing paved streets.

IV. EXISTING DRAINAGE: The existing paved streets with curb and gutter serve as water carrying improvements to handle existing

runoff. Based on available information from the City of Albuquerque, flooding in the area has occurred and it is their recommendation that the finish floor elevations of the proposed buildings be at least 1.0 feet above top of curb.

V. PROPOSED DEVELOPMENT: The proposed development will consist of an apartment complex containing three buildings, swimming pool, and parking.

VI. PROPOSED DRAINAGE PLAN: The proposed drainage plan is to contain excess runoff from the tract after development by the use of landscaped ponding and sumps. The peak discharge after development will be maintained to the peak discharge before development by the use of two parking areas with a concrete curb eight inches above the paved section with a curb opening six inches width for the full depth.

VII. CONCLUSIONS AND RECOMMENDATIONS: On the basis of this report, the property under consideration can be adequately developed as proposed, if the proposed grading is incorporated into the construction stage.

CONSUELO Y ANNA COMPLEX

JACOB A. VIGIL
DECEMBER 8, 1973
SHT. 1 OF 5

1. PONDING CALCULATIONS FOR CONSUELO Y ANNA.

LAND SIZE	30,000 SQ.FT.
BUILDING SIZE	8,450 SQ.FT.
PAVING	9,024
SIDEWALKS & MISC. CONC.	4,311
SUBTOTAL	21,785 SQ.FT.
GRASS AREA	6,725 SQ.FT.
GRAVEL	1,440
TREE SUMPS	50
SUBTOTAL	8,216 SQ FT.
TOTAL	30,000 SQ. FT.

2. RUNOFF DETERMINATIONS:

a. BEFORE DEVELOPMENT:

$$Q = 30{,}000 \times 0.30 \times \frac{2.4}{12} = 1{,}300 \text{ CU.FT.}$$

b. AFTER DEVELOPMENT:

$$Q = [21{,}785 \times 1.0] + [8216 \times 0.25] \times \frac{2.4}{12}$$

$$Q = 4768 \text{ CU.FT.}$$

c. TOTAL RETENTION REQUIRED:

$$Q_T = Q_1 - Q_2$$
$$= 4768 - 1{,}800$$
$$= \underline{\underline{2968 \text{ CU. FT.}}}$$

CONSUELO Y ANNA COMPLEX

JACOB A. VIGIL
DECEMBER 11, 1978
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3. FOUNDATION SCHEDULE & CAPACITY:

SYMBOL	SIZE	CAPACITY
A	14'x10' x 2'	280 C.F.
B	14'x10' x 2'	280.C.F.
C	10'x 20'x 2'	400. C.F.
D	10'x20'x 2'	400C.F.
E	12'x7'x2'	168 C.F.
F	24'x4'x2'	192 C.F.
G	16'x7'x 2'	224 C.F.
H	12'x7'x 2'	168 C.F.
I	20'x 20'x2'	800 C.F.
J	5'x5' x 5' x 0.30 VOID RATIO	45C.F.
K	5'x5' x 5' x 0.30 VOID RATIO	45C.F.
L (16EA)	2' DIA. x 2'	100C.F.

TOTAL RET. PROVIDED 3,102 C.F. > 2,968. C.F. O.K.

4. RETENTION BASIN DESIGN:

(UNDEVELOPED) $Q = CIA$

$Q = 0.40 \times 5.4 \times \frac{30,000}{43,560}$

$Q = 1.5$ CFS

$I = \frac{189}{T+25} = \frac{189}{35}$; $T_c = 10$ MIN

$I = 5.4$ INCHES/HR

$Q_o = \frac{\text{ALLOWABLE OUTFLOW}}{\text{AREAGE} \times \text{RUNOFF COEFFICIENT}}$

$Q_o = \frac{1.5}{0.69 \times 0.90}$

$Q_o = 2.42$

$T = -25 + \sqrt{\frac{7,087.5}{Q_o}}$

$T = -25 + \sqrt{\frac{7,087.5}{2.42}}$

$T = 29$ MIN

CONSUELO Y ANNA

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DECEMBER 12, 1978
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4. (CONT'D)

$$V_S = \frac{11340T}{T+25} - 40Q_oT$$

$$V_S = \frac{11340(29)}{29+25} - 40(2.42)(29)$$

$$V_S = 3283$$

$$V_T = 3283 \times 0.69 \times 0.90$$

$$V_T = 2039\ FT^3$$

STORAGE TO OCCUR AT TWO EQUAL PARKING AREAS:

$$V_1 = \frac{2039}{2} = 1020\ FT^3 = V_2$$

$$V = \frac{A}{3} \times \text{DEPTH} \quad ; \text{ MAX DEPTH} = 0.67\ FT.$$

$$A = \frac{3(1020)}{0.67} = 4,567\ FT^2 \text{ REQ'D}$$

ACTUAL AREA = 65' x 75'
= 4875 FT^2 > 4,567 FT^2 O.K.

CURB OPENING FOR EACH PARKING LOT:

$$Q = 3.0\ L H^{3/2} \quad ; \quad Q = \frac{1.5}{2} = 0.75$$

$$L = \frac{0.75}{3.0\ H^{3/2}}$$

$$L = \frac{0.75}{3.0(.05)}$$

L = 0.45 FT USE 0.50 FT OR 6" OPENING