HYDROLOGY G22/D6 1 PLAN

G 22/D6

1 PLAN

DRAINAGE REPORT

EL SOLINDO
An Addition To The City Of
ALBUQUERQUE, NEW MEXICO

March, 1970

BOHANNAN ENGINEERS, INC.
4201 Carlisle Blvd. NE
Albuquerque, New Mexico
Phone: 345-2681

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FOR

EL SOLINDO

AN ADDITION TO THE CITY OF

ALBUQUERQUE, NEW MEXICO

MARCH, 1970

BOHANNAN ENGINEERS, INC.
4201 Carlisle Blvd. N E
Albuquerque, New Mexico
Phone: 345 2681

SPONSOR:

Property Management Company of
New Mexico
939 San Mateo Blvd. NE
Albuquerque, New Mexico

SUBMITTED BY:

Jerry R. Bohannan
N.M.P.E. & L.S. No. 2455

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DRAINAGE REPORT

EL SOLINDO

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ALBUQUERQUE, NEW MEXICO

I. PURPOSE OF REPORT: The purpose of this report is to determine the amount of storm water occurring within El Solindo, an addition to the City of Albuquerque, New Mexico, and to determine the methods of safely carrying this water through the future inhabited areas.without endangering life or property.

II. LOCATION: El Solindo Addition, referenced above is located in Section Three (3), Township Ten North (T10N), Range Four East (R4E), New Mexico Principal Meridian in the Northeasterly portion of the City of Albuquerque, Bernalillo County, and is bounded as follows:

Trinidad Street on the West;

La Charles Drive on the East;

Delamar Avenue on the North;

Commanche Blvd. on the South.

III. TERRAIN: The subdivision is located within one-half ($\frac{1}{2}$) mile of the foothills of the Sandia Mountains on the relatively constant slope of alluvial fans of dry arroyos discharging to the west from these mountains. This grade varies 3% to $3\frac{1}{2}$% and slopes from East to West. The elevation varies from 5,805 feet

above mean sea level at the northeasterly boundary of the addition to 5.710 feet at the southwesterly boundary.

Embudito Canyon, a large drainage area, lies to the north and northeast of the addition and discharges through a drainage easement at the northwest corner of the addition. This drainage area will have no effect on the drainage in the addition. All drainage from the east is intercepted by La Charles Drive and will not need to be considered in drainage calculations within the subdivision.

IV. SOIL: No exact sieve analysis was run but from visual inspection the soil found within El Solindo is coarse decayed granite with few fines. The coarseness of the soil is due to the close proximity of the foothills to the east. The soil in all adjoining areas has similar characteristics.

V. VEGETATION: The existing vegetation within the subdivision and adjacent areas consists of sparse grass with scattered cactus.

VI. FUTURE DEVELOPMENT: For the purpose of this report and the analysis of drainage, all land is assumed to be developed with paving of streets and houses for residential purposes.

VII. DRAINAGE CALCULATIONS: There are several drainage formulae; The Burkli-Ziegler Formula, the Rational Formula, the Talbot

Formula, the Unit Hydrograph and many others, same theoretical and others justified by documented experiments. The Rational Formula was selected for this report for reasons of common usage, simplicity and accepted accuracy. The Rational Formula is as follows:

$Q = C\ i\ A$, where

Q = Runoff = Peak discharge of water shed in cubic feet per second (c.f.s.) due to maximum storm assumed.

A = Area of watershed in acres.

C = Coefficient of runoff.

i = Intensity of rainfall in inches per hour based on concentration time. (Concentration time = time required for rain falling at most remote point to reach discharge point.)

The design storm of 100 years was used with the intensity taken from Technical Paper No. 40, "Rainfall Frequency Atlas of United States for Durations From 30 Minutes to 24 Hours and Return Periods from 1 to 100 years". The coefficient of runoff "C" has been selected as 0.50, an amount commonly used for developed areas. Concentration time is based upon a combination of overland time and street time. Street time is based on the Manning Formula,

$$V = \frac{1.486}{n} \quad I^{2/3} \quad S^{1/2}$$

A tabulation of all drainage areas with areas in acres and

quantities in cubic feet per second is included in the Drainage Analysis sheet. The storm water carrying capacity of streets within El Solindo are tabulated in Table 4, Sheets

VIII. RECOMMENDATIONS: It is hereby recommended that the drainage within El Solindo be as follows:

a. The house pad elevations of the lots adjacent and to the west of La Charles Drive be developed a minimum of two feet above the west top of curb on the west side of La Charles Drive and that the street grade of El Solindo Avenue at La Charles Drive be raised to prevent any excess runoff from La Charles Drive from entering the subdivision.

b. That the runoff on Burma Drive be carried to the northwest corner of the subdivision on Tracy Street and emptied into the drainage channel for Embudito Arroyo.

c. That the house pad elevations of the lots to the west and adjacent to Tracy Street be graded a minimum of two (2) feet above the west curb of Tracy Street.

d. That Tracy Street be a minimum of forty (40) feet, curb to curb.

DRAINAGE ANALYSIS

Rational Formula
(Q = cia)

SPONSOR:

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939 San Mateo Blvd.
Albuquerque, New Mexico

PROJECT El Solindo Addition

DATE: March 16, 1970

By Bohannan Engineers, Inc.

Design Storm Frequency 100 yrs.

"C" Value 0.50

Designation	Area Acres	Length & Time Overland Flow	Length & Time Channel Flow	Total Time Min.	Intensity Inches per Hour	Q cfs
1	16.6	200' - 12 min.	2000 - 5 min.	17	4.1	34.03
2	9.5	170' - 13 min.	1150 - 3 min.	16	4.4	20.90
3	24.1	170' - 13 min.	1660 - 4 min.	17	4.1	49.41
4	12.4	140' - 11 min.	1300 - 3 min.	14	4.6	28.52
	62.6					132.89

IX. REFERENCES:

1. "Data Book for Civil Engineers" by Elwyn E. Seelye.
2. "Highway Engineering" by Ritter and Paquette.
3. "Hydrology" by Wisler and Brater.
4. "Geology for Engineers" by Trefethen.
5. "Rainfall Intensity-Duration Curves" by D. L. Yarnell.