HYDROLOGY G22/D9 1 PLAN

G22/D9

1 PLAN

DRAINAGE STUDY
for
HUSKY STATION
3700 JUAN TABO N.E.

NOVEMBER, 1975

PREPARED FOR:
ROBERTS OIL COMPANY
408 ARIZONA S.E.
ALBUQUERQUE, NEW MEXICO

PREPARED BY:
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3240-C JUAN TABO N.E.
ALBUQUERQUE, NEW MEXICO

APPROVED FOR DRAINAGE
14 Nov 75
KH Lamb ACE Hyd
SIGNATURE
CONTINGENCIES

Location & Terrain:

The proposed development lies on the northeast corner of Juan Tabo Boulevard N.E & Comanche Road N.E. The area under consideration comprises the westerly 130' of Tract F, Block 1 Holiday Park, Unit VI. The acreage under development would then be 0.597 ac. The slope of the natural ground is approximately 4½% and falls off to the southwest corner.

Proposed Development

The area under consideration will be developed as a light commercial business area, with all the area under consideration to be covered with an impervious surface.

Design Criteria:

A One Hundred Year frequency storm was used in conjunction with the rational method to compute the rate of flow resulting from the development of this tract. A One Hundred year, six hour rain was used to compute the volume of the resulting runoff.

The runoff was computed for both the undeveloped and developed state.

Internal Drainage:

In order not to increase the runoff after development it will be necessary to construct three ponding

AREAS within the AREA UNDER CONSIDERATION. The ponds will be approximately ONE AND ONE-half feet deep, with six inches of GRAVEL placed in the bottom of each pond. With this scheme the AREA will not increase the volume of RUNOFF AFTER development.

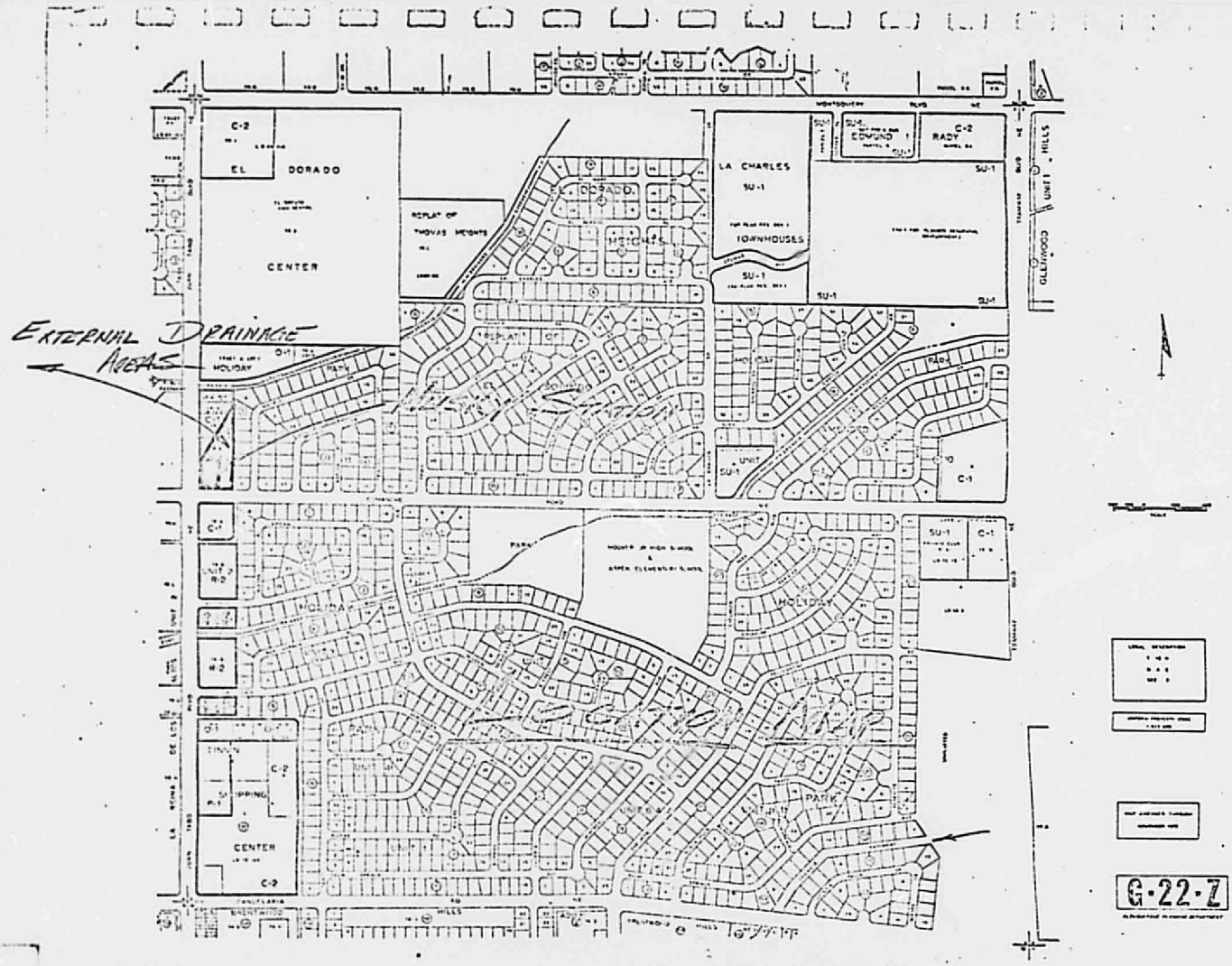
EXTERNAL DRAINAGE:

EXTERNAL drainage AREA that affect the subject property lie to the NORTH & EAST. The AREA to the NORTH comprises approximately 0.85 ACRES AND would produce A RUNOFF of 2 CFS in the EVENT of A ONE HUNDRED YEAR FREQUENCY STORM. This flow would ENTER the SUBJECT PROPERTY ON THE NORTH boundary AND would OCCUR AS sheet flow, with NO well defined path. The AREA to the EAST comprises the REMAINDER of TRACT F of Holiday Park UNIT II. The ACREAGE of this PARCEL is 0.44 ACRES. This AREA would produce 1 CFS of RUNOFF during the design STORM. As with the AREA to the NORTH, the AREA to the EAST drains with NO well defined path.

Conclusion:

The TOTAL POND volume NECESSARY for the RETENTION of the EXPECTED RUNOFF is 2231.4 ft³. The TOTAL volume AVAILABLE for PONDING is 2957 ft³. THEREFORE THE PONDS CAN ACCOMMODATE the RUNOFF.

APPENDIX


EXTERNAL DRAINAGE AREAS
EL DORADO
CENTER
C-2
REPLAT OF THOMAS HEIGHTS
LA CHARLES
SU-1
TOWNHOUSES
EDMUND
RADY
GLENWOOD UNIT 1 HILLS
HOLIDAY
PARK
C-1
C-2
CENTER
G-22-Z

Drainage Calculations
Roberts Oil Company
3700 Juan Tabo

Area under consideration = 200' x 130'
= 26000 ft^2 = .597 ac

Undeveloped State - 100 year storm - 6 hour rainfall

Length of Run = 210 ft
Fall ≅ 11 ft
Slope = 11/210 = 4.6%
Ground cover = Poor grass

Time of Concentration = 12 min
(From Design Vol 1 by Seelye, p. 18-01. Fig 4)

$I = \frac{189}{TC+25} = 5.1$ in/hr

$C = 0.45$

$Q = CIA = .45 \times 5.1 \times .597 = 1.37$ cfs.
Volume = $.45 \times .597 \times 2.8^* \times 1/12 = 0.063$ ac-ft.

Developed State - 100 year storm - 6 hour rain

Length of Run = 210 ft
Fall ≅ 11 ft
Slope = 4.6%
Ground Cover = Asphalt.

Time of Concentration = 5 mins
Use minimum TC of 10 mins

$I = \frac{189}{TC+25} = 5.4$ in/hr

$C = .92$

$Q = CIA = .92 \times 5.4 \times .597 = 2.96$ cfs

Volume $= .92 \times 2.8'' \times .597 \times 1/12 = 0.128$ AC·FT

INCREASED Volume $= 0.128$ AC·FT $- 0.063$ AC·FT

$= 0.065$ AC.FT

$= \underline{\underline{2831.4}}$ FT^3

Calculation of Total Pond Volume

→ Area of Pond on West Rd.

$= 4 \times 93 + \frac{93+79}{2} \times 8$

$= 372 + 688 = 1060 \text{ FT}^2$

Volume $= 1 \times 1060 + 1/2 \times 1060 \times .25$

$= 1060 + 132.5$

$= 1192.5 \text{ FT}^3$

→ Area of Pond on Southwest corner

$= 1/4\ \overline{25}^2 \times \pi + 22 \times 31 + 25 \times 6$

$= 491 + 682 + 150$

$= 1323 \text{ ft}^2$

Volume $= 1 \times 1323 + 1/2 \times 1323 \times .25$

$= 1323 + 165.4$

$= 1488.4 \text{ FT}^3$

→ Area of Pond on South Rd

$= 41 \times 6 = 246 \text{ FT}^2$

Volume $= 1 \times 246 + 1/2 \times 246 \times .25$

$= 246 + 30.75$

$= 276.75$

Total Pond Volume $= \underline{2957.65} \text{ FT}^3$

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