HYDROLOGY G12/D7 1 PLAN

G12/D7

1 PLAN

A DRAINAGE ANALYSIS

FOR

SAN PATRICIO TOWNHOMES

Albuquerque, New Mexico

AUGUST 1978

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Prepared for:

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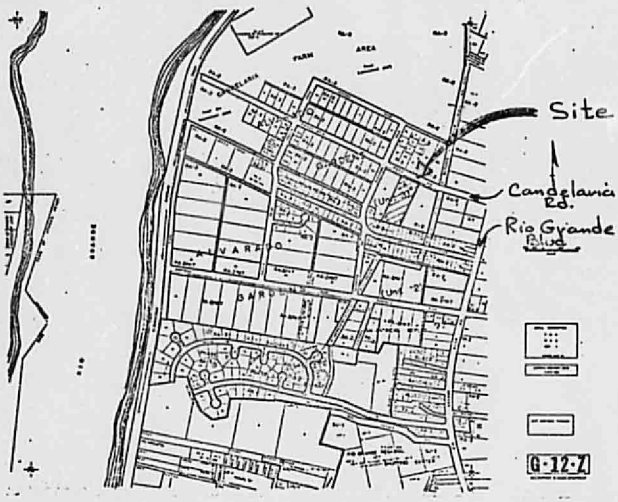
INTRODUCTION

This report will analyze the 100-year storm drainage characteristics of a proposed townhome development called the San Patricio Complex. The site is located west of Rio Grande Boulevard and borders the south side of Candelaria Road, N.W., with the City Limits of Albuquerque, New Mexico.



General information concerning the site is as follows: at the north end of the site, there exists a single-family house and assorted small structures nearby, with the remainder of the tract unimproved. The grade of the land is very flat, as are the adjoining tracts of land to the east and west. There are no cross-drainage characteristics for the area, and each tract is, for all practical purposes, self-ponding.

DRAINAGE RESULTS

Runoff from the development will be completely retained within the site boundaries. Ponded runoff will be accommodated in two ways: individual rear lot ponds to handle the majority of the roof flows, and a central common street pond to accommodate the remainder of the roof flows, front yard and street flows. (See Fig. 3 & 4)

The common street ponding will occur within a private street easement. Because of the flat grade of the site, the street can be constructed with a zero centerline grade. The street will be designed as an inverted crown section with a planting medium strip along the centerline to accommodate the existing large trees as well as future landscaping. Estimated runoff will be contained completely within the limits of the street section, which will have 36% greater capacity than required for the 6 hr.-100 yr. storm.

In addition to the street serving as storm water pond, the entire street will also act as an infiltration area. This will be accomplished by using Turfstone for the surface material. This type of material will allow the infiltration of the ponded waters into the subsoil without destroying the integrity of the riding surface.

RECOMMENDATIONS

Lot Grading

1. The developer plans to leave the grade of each lot as natural as possible, with the exception of the house pad area. Each house pad area should be raised up a minimum of 6" above natural ground or have a minimum one percent grade to the street. Minimum grade to the rear yard pond should also be 1%.

2. Rear yard ponding will require a minimum of 12% of the area drained to the pond, where the front area of the lot drains to the street. (See Fig. 3). The example used in Fig. 3 reflects the largest type structure planned for a typical 57' x 90' lot. The limits of the ponded waters should be kept a minimum distance of 5 feet away from any house foundation.[1]

3. It is recommended that the developer use Turfstone for all paved areas such as the street and driveways. It is also strongly recommended that the manufacturers recommendations be followed closely to insure minimum settlement of the paved areas from wheel loads. Planting grass in the in the Turfstone areas will further increase the infiltration - evapotransipiration rate of ponded storm waters.

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[1]These general recommendations are only intended to call the Developer's attention to potential settlement problems. A qualified Soils Engineer should prepare specific guidelines for ponding waters around structures.

This concludes the recommendations for San Patricio Complex. The following section, The Appendix, contains the calculations, graphs and plats used in arriving at the conclusions presented here.

APPENDIX

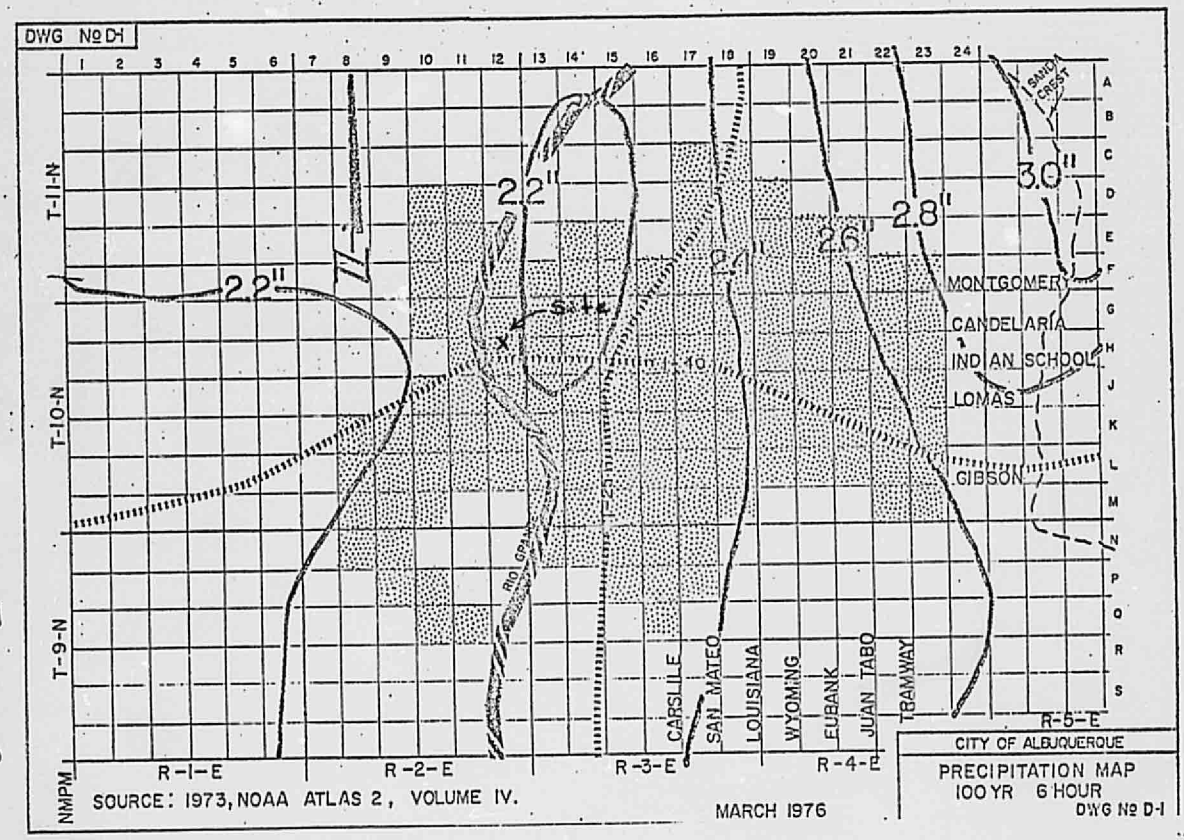

DWG Nº D-1
T-11-N
T-10-N
T-9-N
NMPM
R-1-E
R-2-E
R-3-E
R-4-E
R-5-E
2.2"
2.2"
2.6"
2.8"
3.0"
MONTGOMERY
CANDELARIA
INDIAN SCHOOL
LOMAS
GIBSON
SANDIA CREST
RIO GRANDE
CARSLILE
SAN MATEO
LOUISIANA
WYOMING
EUBANK
JUAN TABO
TRAMWAY
CITY OF ALBUQUERQUE
PRECIPITATION MAP
100 YR 6 HOUR
DWG Nº D-1
SOURCE: 1973, NOAA ATLAS 2, VOLUME IV.
MARCH 1976

Figure 2

Lot Drainage ~

1. To Rear & side pond
A = 3600 ft²
Roof, conc. = 2700 ft²
(C = 0.95)
Grass area = 900 ft²
(C = 0.20)
Composite "C" ~
$\frac{2700}{3600}(0.95) = 0.71$
$\frac{900}{3600}(0.20) = 0.05$
0.76

For a 2.2" 6hr-100yr storm, vol =
$\frac{(2.2)(3600)(0.76)}{12}$
= 502 ft³
Typ. pond depth = 1.5' for capacity

2. To median plant strip in Road ~
A = 2670 ft²
Roof = 165 ft²
Turfstone = 1581 ft²
Grass area = 924 ft²
Composite "C" ~
$\frac{165'}{2670}(0.95) = 0.06$
$\frac{1581}{2670}(0.40) = 0.24$
$\frac{924}{2670}(0.20) = 0.07$
0.37

For a 2.2" 6hr-100yr storm, vol =
$\frac{(2.2)(2670)(0.37)}{12}$
= 181 ft³
Typ. ½ road X-sect. with a 2½% inverted crown. X-sect area = 5 ft² x 57' lot width = 285 ft³ capacity from ℄ to road edge. Street capacity = 36% greater than 100 yr. storm

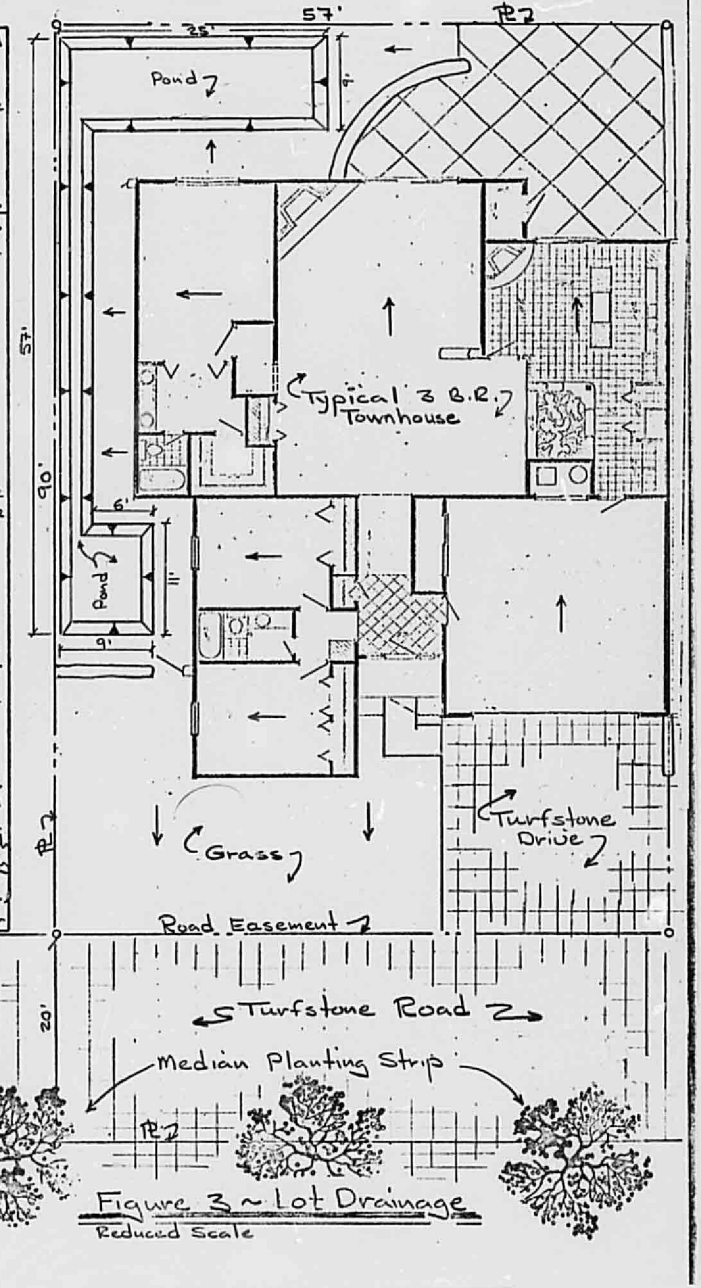
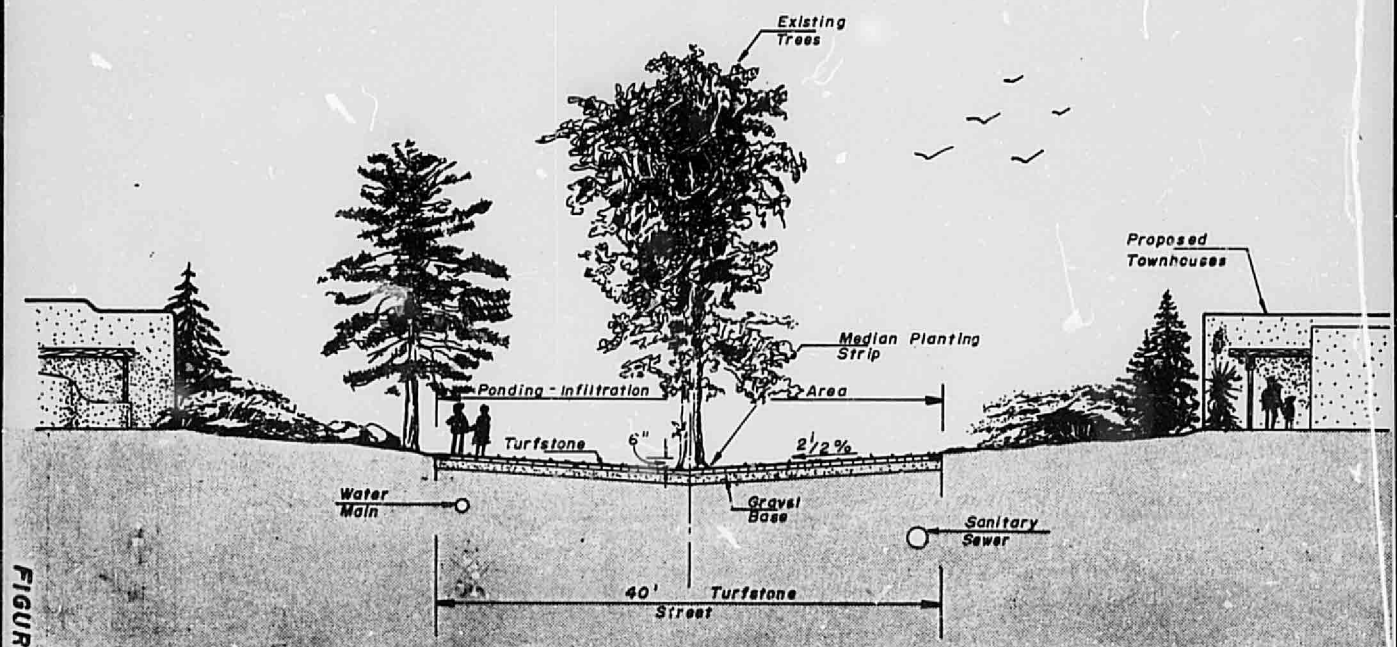


Figure 3 ~ Lot Drainage
Reduced Scale



TURFSTONE STREET SECTION

(PONDING - INFILTRATION AREA)

— Looking South —

FIGURE 4