City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

DESIGN HYDROLOGY SECTION
123 Central NW, Albuquerque, NM 87102
(505) 766-7644

November 27, 1984

Mr. Tom Mann
Tom Mann & Associates, Inc.
811 Dallas NE
Albuquerque, NM 87110

REF: DRAINAGE REPORT FOR THOMAS VILLAGE ESTATES PHASE IV (G12-D11)

Dear Tom:

The above referenced plan, dated September 25, 1984 is approved.

Please attach a copy of this approved plan to the construction set prior to Hydrology sign-off.

If I can be of further assistance, please contact me at 766-7644.

Sincerely yours,

Carlos A. Montoya
City/County Flood Plain Admin.

CAM:mrk

cc: Thomas Krupiak, 505 Marquette NW 87103

DRAINAGE REPORT

FOR

THOMAS VILLAGE ESTATES PHASE IV

AUGUST, 1984

Prepared For: Krupiak Construction & Development Company Inc.
Western Bank Building
505 Marquette Avenue N.W.
Albuquerque, New Mexico 87102

Prepared By: Tom Mann & Associates, Inc.
811 Dallas N.E.
Albuquerque, New Mexico 87110

TABLE OF CONTENTS

PURPOSE AND SCOPE

The purpose of this drainage report is to establish the criteria for controlling runoff resulting from development in a manner consistent with the City of Albuquerque Drainage Ordinance and the Development Process Manual.

The report analyzes the runoff resulting from a 100-year frequency, 6-hour duration storm under existing and developed conditions.

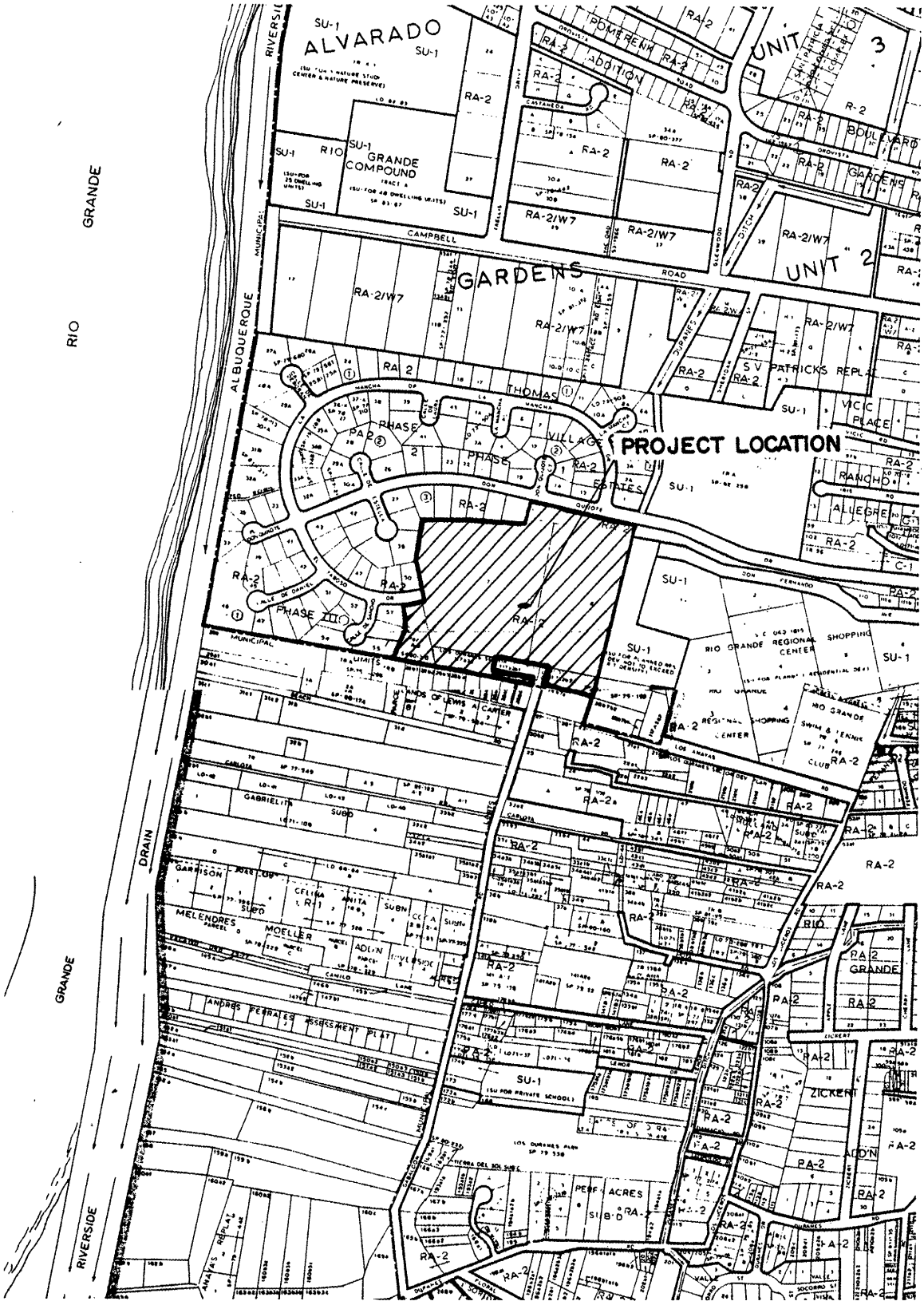
The scope of the plan is to ensure that the proposed development will be protected from storm runoff and will not increase the flooding potential of adjacent properties.

LOCATION AND DESCRIPTION

Thomas Village Estates, Phase IV, is located in the northwest quadrant of the City of Albuquerque, and is bounded by Thomas Village Estates, Phase II, on the north; Tract 8 of the Estate of Charles Mann Jr. on the east; Tracts B2, 28b1, 28b2, 28b3, 28b4, 28b4b, 28b4c, 28b5, 28b6, and 28b7a of the Middle Rio Grande Conservancy District Map Number 35 on the south, and Thomas Village Estates, Phase III, on the west. Figure 1, the Vicinity Map, depicts the location of the site.

The parcel is zoned RA-2 for residential and agricultural type development. The parcel contains approximately 20.1 acres and will be developed into 52 single family residences. The homes will be custom built. Presently the site exists as an irrigated pasture.

According to the National Flood Insurance Program Flood Boundary Maps, Plate 22, the site does not lie within the 100-year Flood Hazard Zone.



VICINITY MAP

FIGURE 1

DESIGN CRITERIA

The analysis of storm runoff for the site is based upon the Rational Method, as outlined in the City of Albuquerque's "Development Process Manual, Volume II." This approach determines the peak discharge and associated volume of runoff for the specified design storm (100-year frequency, 6-hour duration) falling on the study area. Pond volumes are calculated by the Average End-Area Method.

EXISTING DRAINAGE CONDITIONS

The site is bounded on the north by Don Quijote Drive N.W., on the east by an irrigation ditch, and on the south and west by residential housing. The natural topography of the site slopes east to west at less than one percent. Storm water runoff is largely retained on site in the existing state.

The residential development to the west, Thomas Village Estates Phase III, has been developed in such a manner that all runoff is contained on site (See Drainage Report for Thomas Village Estates Phase III, October, 1980) thus contributing no runoff to the project site. Don Quijote Drive N.W. effectively intercepts offsite flows from the north, conveying the flows westward. Offsite flows generated on the site to the east will be negligible due to the pervious nature of the soil, and flat slopes. It is presently used as an irrigated pasture. Residential sites on the south have also been developed in a manner such that offsite flows are conveyed away from the project site. From these observations, it can be concluded that no offsite flows significantly impact the subject site from any adjacent sites, nor does the project site contribute flows to adjacent property.

The soil on the site has been classified by the Soil Conservation Service as Bs (Brazito). This is indicated on Plate 20 of the Soil Survey of Bernalillo County, New Mexico. The Brazito belongs to Hydrological Soil Group A, which indicates a low runoff potential and high seepage rates. Runoff calculations are contained in Appendix A.

PROPOSED DRAINAGE CONDITIONS

The proposed Drainage Plan, Figure 2, is included at the back of this report. The plan shows 1) existing contours at 1' 0" intervals, 2) proposed spot elevations, 3) proposed drainage conditions, and 4) limit and character of proposed ponding.

Existing outfall facilities dictate that Thomas Village Estates, Phase IV, retain 100% of the runoff generated by a 100-year frequency, 6-hour duration storm falling on the site. The streets in Thomas Village, Phase III were not designed for storm conveyance, nor was any underground storm conveyance system incorported. The existing storm drain in Don Quijote Drive N.W., is too high an elevation to drain the project site. Rentention will be accomplished by providing front and rear lot ponds adequately sized to retain 100% of the runoff volume. A Typical Lot Detail, Figure 3, illustrates the manner in which each lot will be developed. A seven foot utility and drainage easement is being provided to accommodate the front lot pond. The front lot pond will combine public and private runoff. The front lot pond will retain the runoff generated within the street, on the front portion of the lot, the front half of the roof, and the drivepad. The Typical Street Section, Figure 3, shows how the front yard

pond will be constructed adjacent to the street. The drivepads will act as check structures to develop the pond volume. The drivepads will also act as the overflow point in the event of heavy flooding (in excess of the 100-year frequency storm). The rear lot pond will retain the runoff generated on the rear portion of the lot and the rear half of the roof. In the event of heavy flooding (in excess of the 100-year frequency storm), rear lot ponds will overflow into neighboring rear lot ponds. In all cases of flooding, houses will be protected by requiring housepad elevations to be a minimum of one foot above the maximum water surface level of the ponds on that particular lot. A four foot sidewalk easement is located adjacent to the drainage easement. The sidewalk will not be within the limits of any proposed ponding areas. Runoff calculations for a Typical Lot are contained in Appendix B and Pond Volumes are contained in Appendix C.

The existing irrigation ditch at the easterly property line will be removed. A berm will be constructed to retain offsite storm flows and irrigation flows on the existing irrigated pasture to the east of the project site.

CONCULSIONS AND RECOMMENDATIONS

The following conculsions and recommendations are presented for the development of Thomas Village Estates Phase IV.

1. Develop the subdivision so as to retain V_{100} = 52,900 cf (developed condition) on the site.
2. Construct the streets utilizing a residential estate type paving section as shown on Figure 3.
3. Drain one-half of the street, the drivepad, the front yard and the front half of the roof into a front lot pond.
4. Drain the rear yard and the rear half of the roof into a rear lot pond.
5. Construct rear lot ponds accordingly:
   a. A minimum distance of 15 feet from the house pad.
   b. A maximum depth of 18 inches.
   c. Using 3:1 side slopes.
   d. Retaining the runoff from a 100-year frequency, 6-hour duration storm.
6. Construct front lot ponds accordingly:
   a. Combining public and private runoff within the street right-of-way and seven foot drainage easement.
   b. A minimum distance of 15 feet from the house pad.
   c. A maximum depth of 12 inches.
   d. Using 5:1 side slopes.
   e. Retaining the runoff from a 100-year frequency, 6-hour duration storm.

7. Construct the housepad a minimum of 12 inches above pond limit elevations.
8. Construct the house pad to provide positive drainage away from the pad in all directions.
9. Construct a four-foot concrete sidewalk within the sidewalk easement.
10. Construct a berm on the easterly property line to retain storm and irrigation water within the existing irrigated pasture to the east of the project site.

APPENDIX A

RUNOFF CALCULATIONS - EXISTING CONDITION

THOMAS VILLAGE ESTATES PHASE IV - EXISTING CONDITION

SITE:

area = 874,360 sf = 20.07 Ac

% impervious = 0%

'C' = 0.16 (DPM Plate 22.2 C-1)

$Q_{100} = CiA$

$i = 6.84\ P_6\ T_c^{-0.51} = 3.21$ inches/hour

where P_6 = 2.2 inches (DPM Plate 22.1 D-1)

$T_c = 0.0078\ L^{0.77}\ S^{-0.385} = 20.7$ minutes

where L = 1400 feet

S = 3.5'/1400' = 0.0025 ft/ft

$Q_{100} = 0.16\ (3.21)(20.07) = 10.3$ cfs

$V_{100} = CP_6A = 0.16\ (2.2/12)(874,360) = 25,650$ cf

APPENDIX B

RUNOFF CALCULATIONS - DEVELOPED CONDITION

THOMAS VILLAGE ESTATES PHASE IV - DEVELOPED CONDITION

Typical Lot

Front Lot and Street Basin:

Area = 7,200 sf = 0.17 Ac
Area (impervious) = 3,715 sf

% impervious = 52%

'C' = 0.44 (DPM Plate 22.2 C-1)

$Q_{100} = CiA$

$i = 6.84\ P_6\ T_c^{-0.51} = 4.65$ inches/hour

where P_6 = 2.2 inches (DPM Plate 22.1 D-1)

T_c = 10 minutes (minimum)

$Q_{100} = 0.44\ (4.65)(0.17) = 0.35$ cfs

$V_{100} = CP_6A = 0.44\ (2.2/12)(7,200) = 580$ cf

5PO x 52 = 30,160 cf

Rear Lot Basin:

Area = 7,200 sf = 0.17 Ac

Area (impervious) = 1,250 sf

% impervious = 17%

'C' = 0.24 (DPM PLate 22.2 C-1)

$Q_{100} = CiA$

$i = 6.84\ P_6\ T_c^{-0.51} = 4.65$ inches/hour

where P_6 = 2.2 inches (DPM Plate 22.1 D-1)

T_c = 10 minutes (minimum)

$Q_{100} = 0.24\ (4.65)(0.17) = 0.19$ cfs

$V_{100} = CP_6A = 0.24\ (2.2/12)(7,200) = 316$ cf

316 x 52 = 16432 cf

46,552 cf

Site:

Area = 874,360 sf = 20.07 Ac

Area = (impervious) = 301,650 sf (estimate)

% impervious = 34%

'C' = 0.33 (DPM Plate 22.2 C-1)

$V_{100} = CP_6A$

where P_6 = 2.2 inches (DPM Plate 22.1 D-1)

V_{100} = 0.33 (2.2/12)(874,360) = 52,900 cf

APPENDIX C

POND VOLUME CALCULATIONS

RUNOFF CALCULATIONS

THOMAS VILLAGE ESTATES PHASE IV - DEVELOPED CONDITIONS

Typical Lot

Front Lot and Street Basin

Area = 9,450 sf = 0.22 Ac
Area (impervious) = 4,965 sf
% impervious = 53%
'C' = 0.44 (DPM Plate 22.2 C-1)

$Q_{100} = CiA$

$i = 6.84\ P_6\ T_c^{-0.51} = 4.65$ inches/hour

where $P_6 = 2.2$ inches (DPM Plate 22.1 D-1)

$T_c = 10$ minutes (minimum)

$Q_{100} = 0.44(4.65)(0.22) = 0.45$ cfs

$V_{100} = CP_6A = 0.44(2.2/12)(9,450) = 762$ cf

Rear Lot Basin

Area = 4,950 sf = 0.11 Ac
Area (impervious) = 0 sf
% impervious) = 0%
'C' = 0.16 (DPM Plate 22.2 C-1)

$Q_{100} = CiA$

$i = 6.84\ P_6\ T_c^{-0.51} = 4.65$ inches/hour

where $P_6 = 2.2$ inches (DPM Plate 22.1 D-1)

$T_c = 10$ minutes (minimum)

$Q_{100} = 0.16\ (4.65)(0.11) = 0.08$ cfs

$V_{100} = CP_6A = 0.16(2.2/12)(4,950) = 145$ cf

POND VOLUME

Typical Lot

Front-Yard Pond

Volume = $1/2\ [A_{\text{surface elev}} + A_{\text{bottom elev}}]\ (1.0')$

$= 1/2[1155\text{ sf} + 390\text{ sf}](1.0')$

Volume = 772 cf

POND VOLUMES - TYPICAL LOT

Rear Yard Pond:

Volume = $1/2[A_{\text{surface elev}} + A_{\text{bottom elev}}](1.5')$

= 1/2[750 sf + 246 sf](1.5')

Volume = 747 cf

Front Yard Pond:

Volume = $1/2[A_{\text{surface elev}} + A_{\text{bottom elev}}](1.0')$

= 1/2[1155 sf + 390 sf](1.0')

Volume = 772 cf

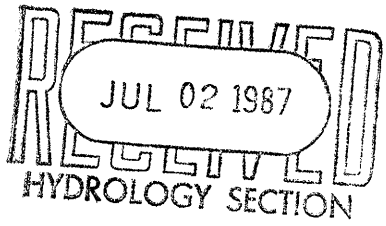
91595

REVISION TO

DRAINAGE REPORT (G12-D11) FOR

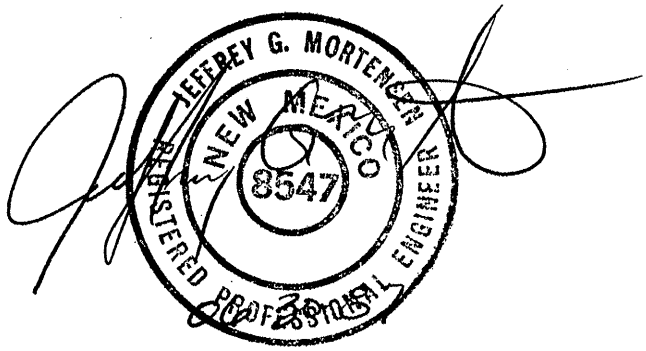
THOMAS VILLAGE ESTATES PHASE IV

JUNE 1987



PREPARED FOR: Leslie Homes
1600 Rio Grande Blvd. N.W.
Albuquerque, NM 87104

PREPARED BY: Tom Mann & Associates, Inc.
811 Dallas N.E.
Albuquerque, New Mexico 87110



INTRODUCTION

On August 13, 1984, the Drainage Report for Thomas Village Phase IV was submitted to the Hydrology Section of the City of Albuquerque. On November 27, 1984, the grading and drainage plan was approved. Construction plans for the development of Thomas Village Estates Phase IV were approved for construction on August 26, 1985.

Based upon the previously approved drainage plan, front lot ponds would be utilized for controlling runoff generated from the Thomas Village Phase IV development. The construction plans were designed such that ponds would be constructed between the street and sidewalk located within an easement in the front of the lots. The sidewalks are to be constructed in conjunction with the development of the individual lots. Some of the lots are presently under development and the developer has requested that the sidewalks be relocated closer to the street, within the right-of-way and not the previously mentioned easement.

This revision to the drainage report addresses the proposed drainage conditions on the site due to the relocation of the sidewalks. A revised grading and drainage plan is included along with the necessary hydrological calculations and a set of revised construction plans.

PROPOSED DRAINAGE REVISIONS

The proposed drainage revisions are shown on the grading plan included with this report. The original plan has only been revised to relocate the sidewalks. By relocating the sidewalks, ponding volumes in the front yards are affected, therefore, the major concern is in maintaining adequate front yard ponding volumes.

As shown in the proposed drainage plan, the lengths of the front yard ponds have either been maintained or extended, therefore, only a comparison of the cross sectional areas between the original pond design versus the proposed design needs to be addressed to assure adequate pond volume.

As shown by the calculations, the cross sectional area of the original pond design is 11.4 sq. ft. In the proposed design, the sidewalk has been relocated and the sidewalk easement vacated. The drainage and utility easement has been extended to 11.5 feet in width. The cross sectional area of the proposed design is 11.6 sq. ft., which is sufficient to maintain the previous pond volume.

CONCLUSIONS

The following conclusions and recommendations are presented for the relocation of the sidewalks for Thomas Village Estates Phase IV.

1. Relocate the sidewalk 3 feet behind the back of curb.

2. Vacate the existing sidewalk easement.

3. Expand the drainage and utility easement to 11 1/2 feet to maintain the ponding volume.

4. Construct front lot ponds accordingly:
   a. Combining public and private runoff within the street right-of-way and new 11 1/2 foot drainage easement.

   b. A minimum distance of 15 feet from the house pad.

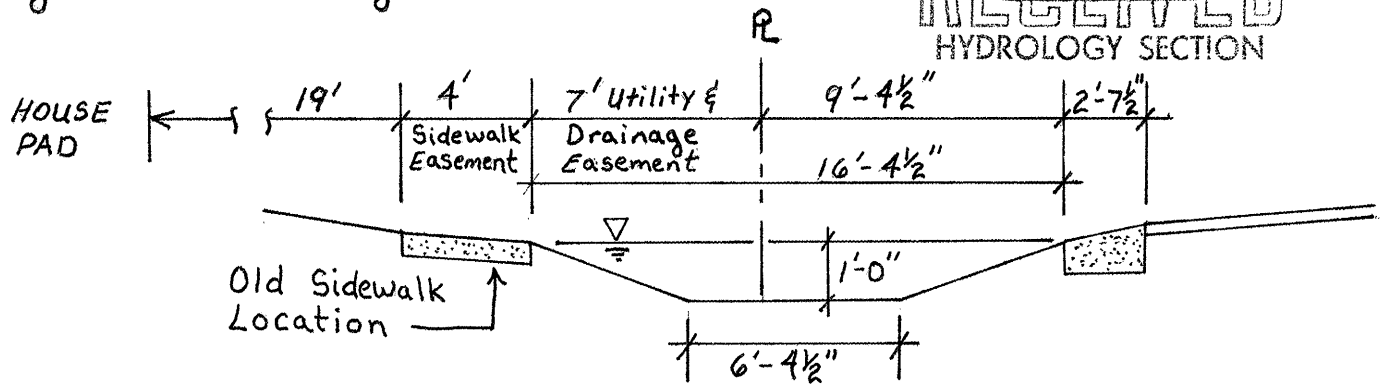
   c. A maximum depth of 12 inches.

   d. Using 5:1 side slopes.

   e. Retaining the runoff from a 100-year frequency, 6-hour duration storm.

CALCULATIONS

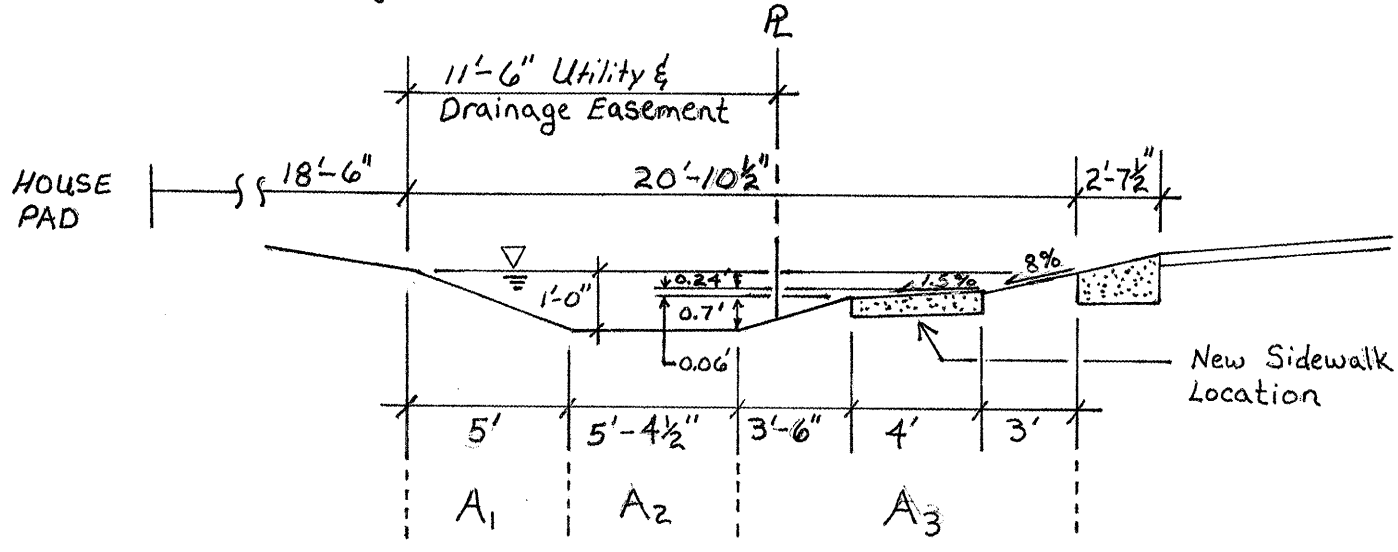
Original Pond Design:



TYPICAL SECTION

A = cross sectional area of the pond in square feet.
A = ½ (1) (16.375 + 6.375)
= 11.4 sf

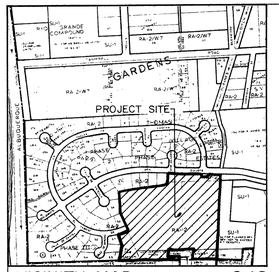
Proposed Pond Design:



TYPICAL SECTION

A_1 = ½ (1) 5 = 2.5 sf
A_2 = (1) 5.375 = 5.375 sf
A_3 = ½ (0.7) 3.5 + ½ (0.06) 4 + 0.06 (3.5) + ½ (0.24) 3 + 0.24 (7.5) = 3.715 sf

New A = $A_1 + A_2 + A_3$
= 2.5 + 5.375 + 3.715 = 11.6 sf > 11.4 sf



VICINITY MAP G-12

SCALE: 1" = 800'

SCALE: 1" = 50'

THOMAS VILLAGE ESTATES PHASE II
MARCH 1, 1979
A7-29

THOMAS VILLAGE ESTATES PHASE III
JULY 8, 1981
CONSTRUCTION FENCE

DON QUIJOTE CT.
LA MANCHA DR.
DON QUIJOTE DRIVE
EXIST. MOUNTABLE ESTATE TYPE CURB
MATCH EXIST. STREET GRADES
EXIST. 4' WOOD FENCE
EXIST. 6' WOOD FENCE
TOBOSO DRIVE NW
CALLE DEL ESTAVAN NW
CALLE DE PANZA NW
CALLE DE REAL NW
ROZINANTE DRIVE NW
WHEELCHAIR RAMP (TYPICAL)
FRONT YARD PONDING AREA (TYPICAL)
CONSTRUCT 18" BERM @ PROPERTY LINE, MAXIMUM 3:1 SLOPE.
REMOVE EXIST. 6' CONC. IRRIGATION DITCH
6' CHAINLINK FENCE

TRACT 8
ESTATE OF CHARLES MANN JR.
MARCH 2, 1971
04-113

TRACT B
SP 75-299

28b1 | 28b2 | 28b3 | 28b4a | 28b4b | 28b4c | 28b5 | 28b6 | 28b7a

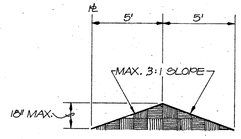
117a 2b1

S77°02'56"E 304.89'
S12°05'45"W 66.58'
S76°42'43"E
S12°57'04"W 5.30'
S77°02'56"E 50.00'
S15°08'58"W 200.30'
S01°33'36"W 157.51'
S15°00'03"W 200.16'
S07°00'00"W 117.32'
S15°00'03"W 199.36'
S75°00'00"E 14.92'
N12°46'00"E 117.33'
S85°15'23"E 285.04'
S89°52'20"E 240.00'
N09°10'29"E 220.56'
N00°00'00"W 165.97'
N24°02'30"E 111.27'
N79°00'00"E 43.76'
Δ = 06°29'07" R = 500.00 L = 56.60
Δ = 90°00'00" R = 25.00' L = 39.27'
Δ = 90°20'13" R = 25.00' L = 39.42'
N78°29'36"W 265.95'
S12°00'18"W 72.67'
S77°40'03"E 223.23'
N16°58'25"E 89.39'
S18°33'57"W 12.07'
N75°22'40"W 241.10'
N75°56'56"W
N79°13'35"W 44.62'
N77°54'23"W 74.81'
N78°40'18"W 224.15'
N77°40'03"W 358.05'

PAD @ 4965.00 | PAD @ 4966.50 | PAD @ 4966.30 | PAD @ 4965.90 | PAD @ 4965.50 | PAD @ 4965.40 | PAD @ 4965.20 | PAD @ 4964.90 | PAD @ 4964.80 | PAD @ 4964.60 | PAD @ 4964.50 | PAD @ 4964.40 | PAD @ 4964.20 | PAD @ 4964.00 | PAD @ 4963.80 | PAD @ 4963.70 | PAD @ 4963.60 | PAD @ 4963.50 | PAD @ 4963.30 | PAD @ 4963.20 | PAD @ 4963.00 | PAD @ 4964.70 | PAD @ 4965.10

LEGEND

- 4966 — EXIST. CONTOUR LINE
- 66.3 — EXIST. ELEVATION @ PROPERTY LINE
- 66. — PROPOSED SPOT ELEVATION
- HIGH POINT ELEVATION
- FLOW ARROW
- SWALE
- 19@63.6 — BOTTOM OF POND ELEVATION
- WATER SURFACE LEVEL OF POND
- TC 64.03 — TOP OF CURB ELEVATION
- TA 65.4 — TOP OF ASPHALT ELEVATION (EXIST.)



SECTION (2/1)
1" = 5'-0"

NOTES:

1. ALL HOMES SHALL BE CUSTOM BUILT.
2. DRIVEPAD LOCATIONS MAY VARY FROM THOSE SHOWN ON THE PLANS.
3. FRONT YARD PONDS SHALL BE CONSTRUCTED AS PER TYPICAL STREET SECTION AND THE TYPICAL LOT DETAIL; MAXIMUM DEPTH 1'-0".
4. REAR YARD PONDS SHALL BE CONSTRUCTED WITHIN THE PONDING LIMITS SHOWN USING A 3:1 SLOPE; MAXIMUM DEPTH SHALL BE NO GREATER THAN 18".
5. SIDEWALKS TO BE CONSTRUCTED BY INDIVIDUAL LOT OWNERS AS EACH HOUSE IS BUILT.
6. WHEELCHAIR RAMPS WILL BE CONSTRUCTED BY THE DEVELOPER.
7. DRIVEPADS TO BE CONSTRUCTED AS PER SECTION 7, SHEET 3 OF 12 BY INDIVIDUAL LOT OWNERS AS EACH HOUSE IS BUILT.

KEYED NOTES:

A. 11'-6" DRAINAGE & UTILITY EASEMENT

SURVEY INFORMATION

FIELD NOTES

NO.	BY	DATE

BENCH MARKS

A CHISELED "+" ON THE BOLT OF A FIRE HYDRANT LOCATED AT THE N.E. RETURN OF THE INTERSECTION OF EL TOBOSO, NW & DON QUIXOTE DRIVE NW. ELEVATION - 4965.01 FEET

AS BUILT INFORMATION

CONTRACTOR
WORK INSPECTOR'S ACCEPTANCE BY — DATE
FIELD VERIFICATION BY — DATE
REVISED DRAWINGS BY — DATE

ABOVE BENCHMARK IS ON THE SAME VERTICAL DATUM AS THE U.S.G.S. BRASS CAP SET IN A CONC. POST 0.9' ABOVE GROUND LOCATED AT THE INTERSECTION OF TED 121 FT. WEST OF EXTENDED CENTERLINE ON SHERIDAN ST. & 46 FEET SOUTH FROM THE FENCE LINE RIGHT BEHIND HOUSE No. 2715 (CITY OF ALB. B.M. # R-898-C-1) ELEVATION - 4967.32 FEET

MICRO-FILM INFORMATION

RECORDED BY — DATE — NO.

NO.	DATE	REMARKS	BY
1	6/87	REVISE SIDEWALK LOCATION	J.G.M.

81 DALLAS N.E. - ALBUQUERQUE - NEW MEXICO - 87110
ENGINEERS

REGISTERED PROFESSIONAL ENGINEER AND LAND SURVEYOR — STATE OF NEW MEXICO — THOMAS T. MANN JR. — 7201
8/13/87 11:54 7.1.87

2G 2279048G

APPROVED FOR CONSTRUCTION

CITY ENGINEER — DATE

CITY OF ALBUQUERQUE
PUBLIC WORKS DEPARTMENT
ENGINEERING DIVISION

TITLE: THOMAS VILLAGE ESTATES PHASE IV
GRADING & DRAINAGE PLAN

APPROVALS	ENGINEER	DATE	APPROVALS	ENGINEER	DATE
City Engineer	C.D. Shepard	11/26/87	Liquid Waste	R. Perea	11/28/87
A.C.E. - Design	J.G. Miller	7/9/85	Traffic	NA DwH	11/28/87
~~A.C.E.~~ - Hydrology	B.J. Bradley	11/28/87	Water	R. Perea	11/28/87

DRAWING NO. 2279 | MAP NO. G-12 | SHEET 4 OF 12