FILE COPY

City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

March 16, 1990

Louis Gross
Louis Gross & Associates, Inc.
925 Sixth Street, NW
Albuquerque, New Mexico 87103

RE: GRADING PLAN FOR LOT 12A, COMANCHE TOWNHOMES
(G-20/D14A) ENGINEER'S STAMP DATED MARCH 3, 1990

Dear Mr. Gross:

Based on the information provided on your submittal of March 9, 1990, the referenced grading plan is approved for construction.

Please be advised that Engineer's Certification will be required.

If I can be of further assistance, please feel free to call me at 768-2650.

Cordially,

for Bernie J. Montoya
Fred J. Aguirre, P.E.
Hydrologist

BJM:FJA/bsj
(WP+1727)

DRAINAGE INVESTIGATION

Lot 12-A, Comanche Road Townhomes

8809 Comanche Road N.E.

Albuquerque, N.M.

September, 1989

Prepared for

Mr. & Mrs Zimmerman

7835 Academy Trail N.E.

Albuquerque, N.M.

Prepared by

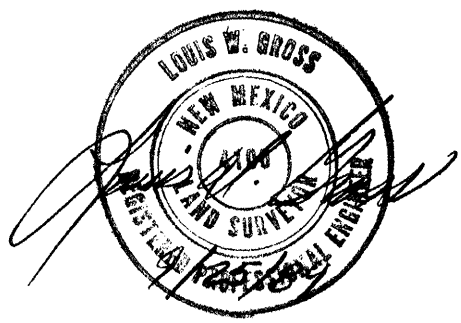
Louis Gross & Assoc. Inc.

925 Sixth Street N.W.

Albuquerque, N.M. 87102

Ph 243-6353

RECEIVED
MAR 9 1990
HYDROLOGY DIVISION



INTRODUCTION

The plat & plans for Comanche Road Town Homes were prepared in August and September of 1982. The project consisted of eight town home lots fronting on Comanche Road N.E. The plat was filed on September 17, 1982. A drainage plan was received by the City of Albuquerque Engineering on September 5, 1982 (See Appendix A). At some time between then and now eight town homes were built on the lots.

Attorney Ron Valencia contacted me to investigate and report on the condition of the drainage facilities for Lot 12-A. Ron Valencia, Mr & Mrs Zimmerman and I met on site on August 30, 1989. We inspected the lot. We had copies of a recent topographic map prepare by S.W. Surveyors and a drainage plan prepared by Mr J.E. Blackwell in August, 1982. It was evident that the drainage facilities were not as the drainage plan that we had. We agreed that I would gather more information and analyze City approved plan versus existing conditions. I later had a conference with Mr Bernie Montoya of the City Hydrology Section and obtained a copy of the official drainage plan that the City had on file (See Appendix A). The notes of the conference is also in Appendix A.

OBSERVATIONS

On September 8, 1989 I returned to the site with my surveyors helper. We made more measurements and took photographs to show discrepancies between the planned drainage facilities and those existing. The drainage plan shows that the back yard should be drained by an open swale along the East side of the townhouse. As can be seen by the topographic map in Appendix B and photos 1, 2, 3, & 4 the swale is not constructed.

The finished floor of the northern most section of the dwelling was constructed 0.10 foot higher than the finish floor elevation shown on the drainage plan. The finish floor elevation of the middle section of the dwelling was constructed 1.36 feet lower than shown on the drainage plan. The finish floor in the garage was constructed 0.27 foot higher than shown on the Drainage plan. The elevation northern most section of the building is the most critical in that water would have to run over it to get to the rest of the house. By comparing the topographic map and Photo No.1, it can be seen that the water would have to raise 1.48 feet above the finish floor level of the dwelling inside the back door before it would start to run beside the dwelling to Comanche Road.

The drainage plan notes that no off site water enters this lot. As can be seen from elevations on the topographic map offsite water does enter this lot from the lot to the North and the lot to the West. Photos 5 & 6 show sediment where water entered the lot from the North. I observed an area at the northwest corner of the plank deck where flow patterns left in the earth indicated that a substantial amount of water run around the northeast corner of the adjacent townhouse then under the plank deck.

While on the roof it was noted the canale on the north side of the dwelling had been blocked with concrete so that no roof water is directed to the back. Several pictures were taken from the roof for reference study.

CALCULATIONS

The following calculations are to show how much off site flow enters the subject lot and what frequency rain will flood the dwelling.

Rainfall

100 yr - 6 hr = 2.4" I = 5.1 in / hr
50 yr - 6 hr = 2.2" I = 4.6 in / hr
10 yr - 6 hr = 1.6" I = 3.4 in / hr
5 yr - 6 hr = 1.3" I = 1.3 in / hr
2 yr - 6 hr = 1.1" I = 2.3 in / hr

Offsite Runoff

Area = 5,028 sf = 0.115 ac

Natural Ground	= 1,500	X 0.40	=	600
Roof	= 1,750	X 0.90	=	1,575
Lawn	= 1,778	X 0.25	=	445
	5,028			2,620

C = 2,620 / 5,028 = 0.52

Peak Flows

Q(100 yr) = 0.52 X 5.1 X 0.115 = 0.30 cfs
Q(50 yr) = 0.52 X 4.6 X 0.115 = 0.27 cfs
Q(10 yr) = 0.52 X 3.4 X 0.115 = 0.20 cfs
Q(5 yr) = 0.52 X 2.7 X 0.115 = 0.16 cfs
Q(2 yr) = 0.52 X 2.3 X 0.115 = 0.13 cfs

Volumes

CN = 75

V(100 yr) = 0.60 / 12 X 5,028 = 251 cf
V(50 yr) = 0.50 / 12 X 5,028 = 210 cf
V(10 yr) = 0.20 / 12 X 5,028 = 84 cf
V(5 yr) = 0.05 / 12 X 5,028 = 21 cf

This illustrates that a substantial amount of off site water enters the back yard of this tract.

Flows On Site & Off Site

Roof (off site)	=	1,750 X 0.90	=	1,575
Lawn (off site)	=	1,778 X 0.25	=	445
Natural Ground (off site)	=	1,500 X 0.40	=	600
S.W. Landscape (off site)	=	540 X 0.40	=	216
S.W. Landscape (on site)	=	540 X 0.40	=	216
Wood Deck	=	200 X 0.70	=	140
Compacted Earth	=	36 X 0.50	=	18
		6,344		3,210

C = 3210 / 6344 = 0.51

Q = CIA C = 0.51 A = 0.146

Q = 0.074 I

Q(100) = 0.074 X 5.1 = 0.38 cfs
Q(50) = 0.074 X 4.6 = 0.34 cfs
Q(10) = 0.074 X 3.4 = 0.25 cfs
Q(5) = 0.074 X 2.7 = 0.20 cfs
Q(2) = 0.074 X 2.3 = 0.17 cfs

Volumes for Off Site & On Site

CN = 75

V(100 yr) = 0.60 / 12 X 6,344 = 317 cf
V(50 yr) = 0.50 / 12 X 6,344 = 264 cf
V(10 yr) = 0.20 / 12 X 6,344 = 106 cf
V(5 yr) = 0.10 / 12 X 6,344 = 53 cf
V(2 yr) = 0.04 / 12 X 6,344 = 21 cf

Area in patio and around the North and East side of the patio is 96 sf. Depth of water which will cause water to enter the back doors of the dwelling is 61.10 - 60.61 = 0.49 foot.

Depth (100 yr) = 317 / 96 = 3.30 ft
Depth (50 yr) = 264 / 96 = 2.75 ft
Depth (10 yr) = 106 / 96 = 1.10 ft
Depth (5 yr) = 53 / 96 = 0.55 ft
Depth (2 yr) = 21 / 96 = 0.22 ft

This analysis shows that storm water will enter the dwelling as a result of slightly more than a 5 yr occurrence.

If the 4 inch outfall pipe is working at full capacity (with no screen over the entrance and with a clean entrance) it will handle the following flow with a depth of water of 0.49. This depth is just before water will begin to enter the dwelling.

$$Q = CA(2gH)^{0.5} = 0.50 \times 0.087 \times (2 \times 32.2 \times 0.49)^{0.50} = 0.24 \text{ cfs}$$

This means that if the pipe is working correctly approximately a 10 year or over will enter the building.

CONCLUSIONS

1. The drainage facilities on Lot 12-A are not constructed according to the approved drainage plan as shown in Appendix A. The major difference between the plan and the existing conditions is that the swale along the East side of the townhome has been not constructed.

2. There is not an adequate drain for the backyard, therefore major damage could occur to the town home from storm water resulting from greater than the 10 yr -6 hr rain.

3. The drainage plan states that no off site water enters the lot. Off site water enters this lot from the North and from the West.

4. We could not find the lower end of the 4" pipe that supposedly runs from the back yard to the trickle pond.

5. No swale exists in front to lead the water from the back to the trickle pond and sidewalk culvert.

RECOMMENDATIONS

1. The railroad ties that are blocking the flow of water on the East side of the dwelling should be removed from the front and back of the dwelling. Earth should be removed between the East side of the dwelling and the East property line to provide a channel with at least a 1.00% grade downward to the South.

2. A retaining wall will have to be constructed on the East side of the swale to prevent undermining of the CMU wall.

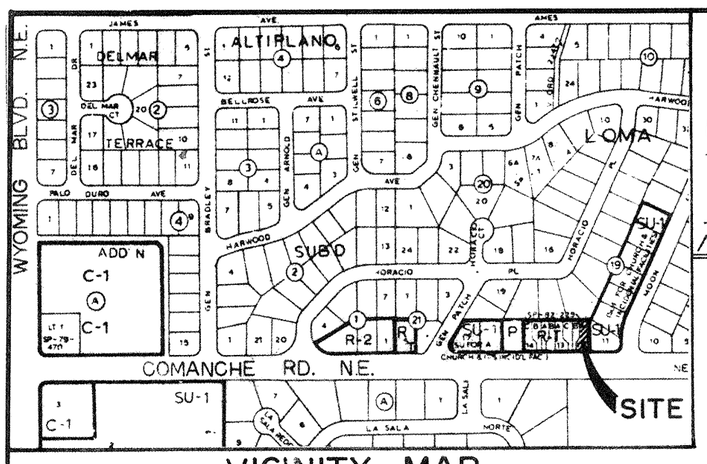
3. The wall of the dwelling has been treated with a bituminous material to prevent water from penetrating the wall. This material should be removed and the wall be treated to provide a good appearance.

4. A swale should be constructed in front to lead this water to the "Trickle Pond" thence to the sidewalk culvert.

DRAINAGE PLAN

LOT 12-A, COMANCHE ROAD TOWNHOMES
ALBUQUERQUE, NM

ZONE MAP G-20 BENCHMARK "8-G20" ELEVATION = 5444.38
FLOOD MAP 24 SOIL TYPE "B"
FILE NO. G20/ APPROVED _____



VICINITY MAP

1"=500'

Lot 21

Lot 22

FENCE, 3± CMU BOTTOM PICKET TOP

• 62.46

N89°26'00"W CEDAR PICKET FENCE

T/G=61.00 30.00' T/G=62.21 T/G=62.24 30.00' T/G=62.91 T/G=63.1

• 63.3 • 63.5 • 63.6 • 63.8

• 62.8

T/G=60.49

T/G=60.80 T/G=61.45 T/G=61.51 T/G=61.05 T/G=60.92

FLOW FLOW FLOW

U/D=61.18 U/D=61.3

Wood Deck
F.F. 5461.77

U/D=61.18 U/D=61.3 T/G=60.82

PRESENT PONDING AREA
• 62.6

Patio
F.F. 5460.8

2' WOOD WALK

4" PVC PIPE EL=60.61
Sta. 0+00 Inv. = 60.61
C=2.48
Begin Retaining Wall
C.M.U. WALL

• 62.58

Sta. 0+10 Inv. = 60.00
C=2.40

• 62.5

CEDAR PICKET FENCE

R.E. TIE WALL

Residence
F.F. 5461.10

LOT 12A

Adjacent Building

67.98'

12-C

12-B

N00°34'00"E 119.98'

N00°34'00"E 67.98'

B B

• 60.7

Sta. 0+35 Inv. = 59.75
C=1.55

F.F. 5458.64

N00°34'00"E

N44°26'00"W 22.63'

N00°34'00"E 36.00'

• 57.33 N45°34'00"E 22.63' • 57.35

Garage
F.F. 5457.77

Sta. 0+52.50 Inv. = 59.38
C=0.97
End Retaining Wall

N00°34'00"E 36.00'

• 56.95 • 57.18

• 59.4

Sta. 0+70 Inv. = 59.0
C=0.40

• 57.4 • 60.3

• 56.3

15' Private Drainage Easement

• 56.55 • 54.6 • 57.6

• 58.3

Trickle Pond
46.00'

• 54.49

14.00' 14.00'

N89°26'00"W

FL=55.50

DRIVEWAY

Existing S.W.I Culvert

Conc. Sidewalk

TC = 54.93
F/L = 54.30

FL=54.62

TBM = T.C. 5477.67
F/L = 55.03

EROSION CONTROL NOTES

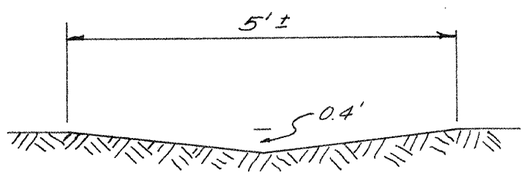
The contractor shall be responsible for compliance of the following:

1. No sediment bearing water shall be allowed to discharge from the site during construction.
2. During grading operations and until the project has been completed all adjacent property, rights of way and easements shall be protected from flooding.
3. Any and all sedimentation originating from the site which is deposited within public right of way shall be promptly removed by the contractor.
4. Control of sediment laden waters will be accomplished by use of a compacted earth berm of adequate height. The berm shall be located along the downstream perimeters of the property.

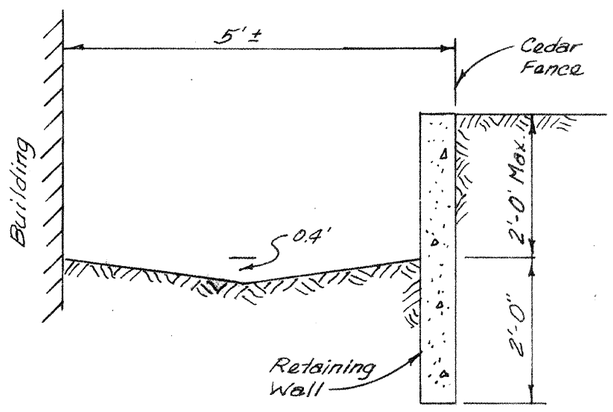
LEGEND

*Property line	P.
Existing contours	4930
Proposed contours	4925
Flow direction	→
Existing spot elevations	⊕
Proposed spot elevations	⊕
Top of ground	T/G
Top of pavement	T/P
Top of concrete	T/Conc.
Top of curb	T/C
Flowline Gutter or swale	F.

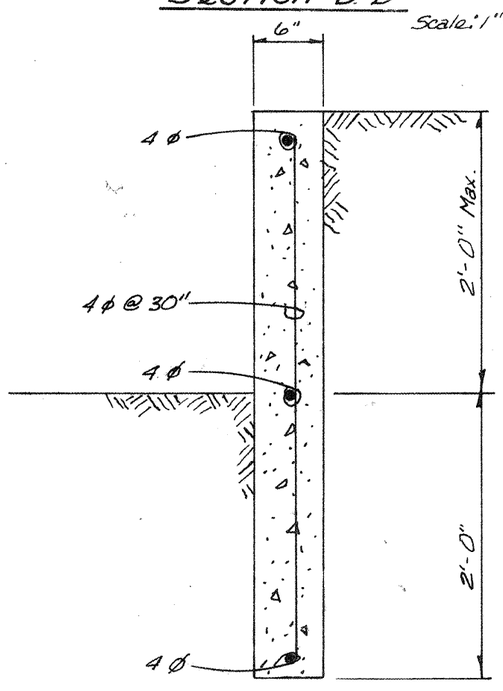
*A property boundary survey was not performed in the preparation of this plan.



Section A-A
Scale: 1"=2'



Section B-B
Scale: 1"=2'



Retaining Wall Detail
Scale: 1"=1'

8809 COMANCHE RD NE

LEGEND

⊕ EXISTING ELEVATIONS BY FRANK WILSON
• EXISTING ELEVATIONS BY LOUIS GROSS

N

SCALE: 1"=10'

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MAR 9 1990
HYDROLOGY DIVISION

LOUIS M. GROSS NEW MEXICO 4100 REGISTERED PROFESSIONAL ENGINEER

3/9/90

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Date 3/9/90
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Sheet 1 of 1