

DRAINAGE INFORMATION SHEET

PROJECT TITLE: Grading and Drainage Plan
8 Townhouses ZONE ATLAS/DRNG. FILE #: F 21/ 456

LEGAL DESCRIPTION: Tracts A-3 through A-10 of DEL CHAPARRAL

CITY ADDRESS: Gutierrez Road N. E.

ENGINEERING FIRM: Marvin R Kortum CONTACT: Marvin R Kortum
 ADDRESS: 1605 Speakman Dr. SE PHONE: (505) 299-0774
Albuquerque, NM 87123

OWNER: Keith MacDuffee CONTACT: _____
3240 Juan Tabo N.E. PHONE: 299-7666
 ADDRESS: Albuquerque, N.M. 87111

ARCHITECT: _____ CONTACT: _____
 ADDRESS: _____ PHONE: _____

SURVEYOR: S.W. Survey CONTACT: Frank Wilson
 ADDRESS: _____ PHONE: 247-4444

CONTRACTOR: _____ CONTACT: _____
 ADDRESS: _____ PHONE: _____

PRE-DESIGN MEETING:

☐ YES
☒ NO
☐ COPY OF CONFERENCE RECAP
 SHEET PROVIDED

DRB NO. 95-130
 EPC NO. _____
 PROJ. NO. _____

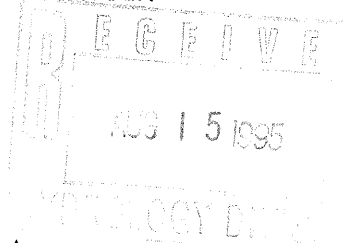
TYPE OF SUBMITTAL:

☐ DRAINAGE REPORT
☒ DRAINAGE PLAN
☐ CONCEPTUAL GRADING & DRAINAGE PLAN
☐ GRADING PLAN
☐ EROSION CONTROL PLAN
☐ ENGINEER'S CERTIFICATION

CHECK TYPE OF APPROVAL SOUGHT:

☐ SKETCH PLAT APPROVAL
☐ PRELIMINARY PLAT APPROVAL
☐ SITE DEVELOPMENT PLAN APPROVAL
☒ FINAL PLAT APPROVAL
☒ BUILDING PERMIT APPROVAL
☐ FOUNDATION PERMIT APPROVAL
☐ CERTIFICATE OF OCCUPANCY APPROVAL
☐ ROUGH GRADING PERMIT APPROVAL
☐ GRADING/PAVING PERMIT APPROVAL
☐ OTHER _____ (SPECIFY)

DATE SUBMITTED: AUGUST 10 1995
 BY: M. R. KORTUM



EASEMENT AGREEMENT

For the consideration of Ten Dollars and other valuable consideration, the receipt and adequacy of which is hereby acknowledged, LINCOLN MEADOWS ALBUQUERQUE LIMITED PARTNERSHIP, a New Mexico limited partnership (hereinafter "Grantor") does hereby grant, bargain and convey unto Curtis and Ann Bryant, (hereinafter "Grantee") its successors and assigns a permanent easement for drainage purposes over and across Grantors real property ("Grantor's Property") located in Bernalillo County, New Mexico and more fully described on Exhibit "A", which is attached hereto and by this reference made a part hereof (hereinafter the "Easement"). Said easement and all rights incidental thereto shall be appurtenant to Grantee's real property (Grantee's Property") situated in Bernalillo County, New Mexico and more fully described on Exhibit "B" attached hereto and by this reference made a part hereof.

Grantor hereby covenants that Grantor is lawfully seized and possessed with title to the above described real property, that Grantor has good and lawful right to grant the Easement created hereby and all rights incidental thereto.

Grantor hereby covenants that Grantee may construct at no expense to Grantor, four storm drainage outlet chute structures as shown on attached Exhibit "C" and to discharge storm drainage through these structures onto Grantors property at the places indicated on Exhibit "D".

Grantor grants this easement in consideration of Grantee's covenants and warranties as described below;

1. Grantee covenants and warrants that Grantee will build a Day Care Center in accordance with the approved plans drawn by CMA Architects, their Plan No. 8610; especially with regard to the footprint of the building and the landscaping as shown on Sheet 2 of the approved plans.
2. Grantee covenants and warrants that it will allow a maximum discharge onto Grantor's property of no more than 4.0 CFS of water.
3. Grantee covenants and warrants that it will not allow silting to occur onto Grantor's property.
4. Grantee covenants and warrants that it shall construct and maintain a block wall on Grantee's Property whose specifications and appearance shall exactly match that of the screening wall ("Screening Wall") which runs on Grantor's property adjacent to Morris Street; except that the height shall be as shown on Exhibit "E" and further, the wall must be stuccoed on Grantor's side of the wall (south and west) with the stucco color matching the Screening Wall.
5. Grantee covenants and warrants that should Grantee fail to comply with any of the covenants and warranties recited herein, then Grantee shall be obligated to correct the situation at Grantee's own expense as soon as reasonably possible after receiving Grantor's written or oral request. If Grantee fails to rectify the situation within a reasonable period of time, Grantor shall correct the problem and shall pay all attendant expenses which Grantee shall reimburse in full within

thirty days of receipt of an invoice from the Grantor. If Grantee fails to reimburse Grantor for such expenses, Grantor may place a lien on Grantee's property to secure such debt, including legal fees, which lien shall be subject to judicial foreclosure in the same manner as any mortgage or other lien. Grantor may enforce payment of the debt by an action on the debt, or by judicial foreclosure, or both, at Grantor's option and shall be entitled to recover reasonable attorney's fees and court costs in any such action.

6. Grantee hereby indemnifies Grantor against any and all damages to Grantor's property arising from Grantee's use of this Easement and the construction of Grantee's Day Care Center including, but not limited to, any damage to Grantor's plants, walls, sprinkler system, curbs and driveways.

The Easement created hereby and all rights, restrictions and obligations incidental thereto shall be binding upon and inure to the benefit of the parties hereto, their heirs, devisees, personal representatives, successors and assigns.

Dated this 26th day of September, 1986.

LINCOLN MEADOWS ALBUQUERQUE
LIMITED PARTNERSHIP, a New
Mexico Limited Partnership

Curtis Bryant
Curtis Bryant

Ann Bryant
Ann Bryant

By: Lincoln Property Company
No. 1022 Limited Partnership,
its general partner

By: Nicholas Keipert, Jr.
Its: General Partner

CONSENT TO EASEMENT

FRONTIER FEDERAL SAVINGS AND LOAN ASSOCIATION as lender, hereby gives its consent to the granting and recording of this Drainage Easement Agreement between Lincoln Meadows Albuquerque Limited Partnership and Curtis and Ann Bryant.

By: [Signature]
Its: Vice-President

ACKNOWLEDGMENTS

[illegible]

The foregoing instrument was acknowledged before me this

20 day of November 1986, by Douglas W. Dixon,
(Name of Officer)
Dr. Vice-President of Frontier Federal,
(Title of Officer) (Corporation Acknowledging) a
corporation, on behalf of said corporation. 1

Notary Public

My Commission expires: March 18, 1990

[illegible]

This instrument was acknowledged before me this 29th day of September, 1986, by Nicholas Keipert, Jr. on behalf of Lincoln Property Company No. 1022 Limited Partnership.

~~Notary Public~~

My Commission Expires: My Commission Expires on 25.1.1977

[illegible]

This instrument was acknowledged before me this 26th day of September, 1986 by Curtis Bryant.

Notary Public

My Commission Expires: 10-12-87

[illegible]

This instrument was acknowledged before me this 26th day of September, 1986 by Ann Bryant.

Notary Public

My Commission Expires: 10-12-87

EXHIBIT "A"

Tract A-1 LINCOLN MEADOWS APARTMENTS, a subdivision in the City of Albuquerque, New Mexico, as the same is shown and designated on the plat thereof, filed in the Office of the County Clerk of Bernalillo County, New Mexico, on August 1, 1986, in Volume C31, Folio 34.
Also described as item 43 in Special Assessment District 204.

AB
CB

EXHIBIT "B"

Tract A Del Chaparral as the same is shown and designated on the plat thereof filed in the office of the County Clerk of Bernalillo County, New Mexico on August 25, 1986, Volume C-31, Folio 85.
Also described as item 44 in Special Assessment District 204.

PROPOSED DRAINAGE CHUTE STRUCTURES

PROPERTY LINE

22-141 50 SHEETS
22-142 100 SHEETS
22-144 200 SHEETS



EXISTING CURB

EXISTING CURB

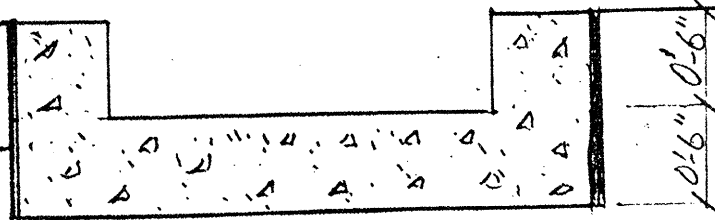
SAW CUT

SAW CUT

10'-6" 2'-0" 10'-6"
3'-0"

5'-0"



1/2" EXPANSION
JOINT

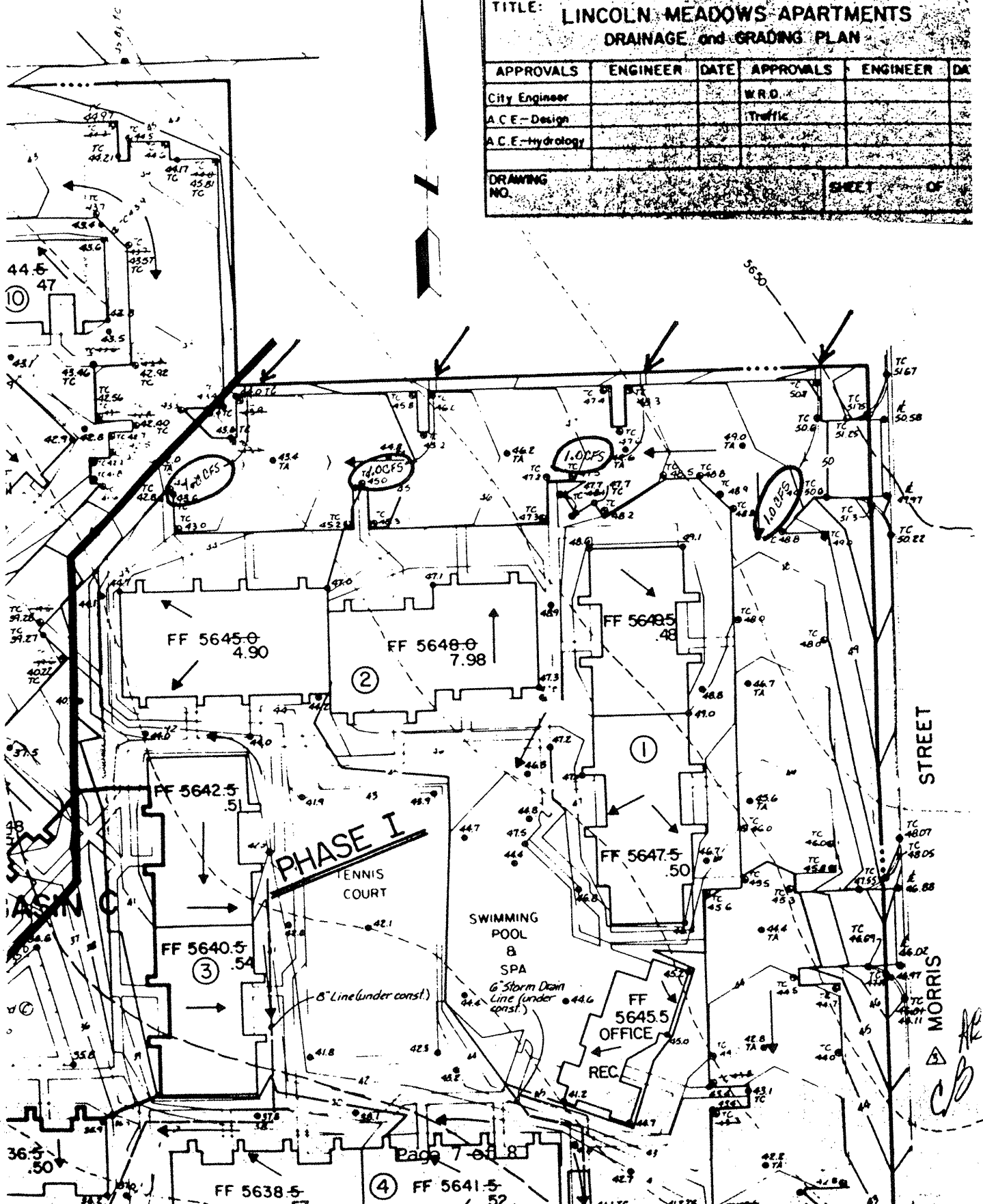


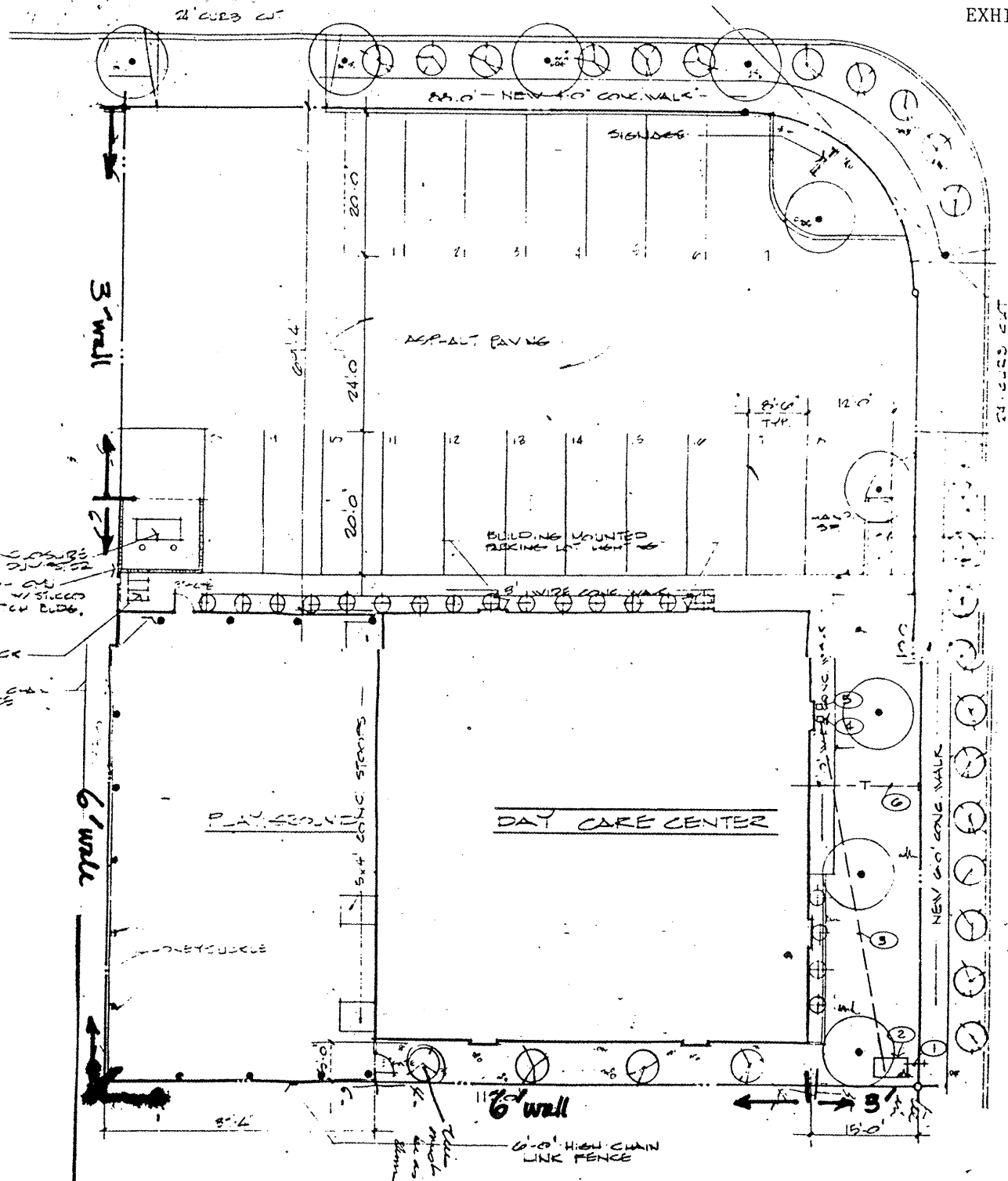
NOTE: SEE EXHIBIT A FOR LOCATIONS

AB
CB

AS-BUILT PHASE III PLAN

		CITY OF ALBUQUERQUE MUNICIPAL DEVELOPMENT DEPARTMENT ENGINEERING DIVISION			
TITLE: LINCOLN MEADOWS APARTMENTS DRAINAGE and GRADING PLAN					
APPROVALS	ENGINEER	DATE	APPROVALS	ENGINEER	DATE
City Engineer			W.R.O.		
A.C.E.-Design			Traffic		
A.C.E.-Hydrology					
DRAWING NO.			SHEET OF		





MORRIS ST. N.E.
94' R.O.W.

SITE PLAN

PARKING REQUIREMENTS:

250 + 3600 ÷ 500 = 9.2 ≈ 10 REQ'D.
15 PROV. INCL. 1 HANDICAP SP.



project:
**DAY CARE CENTER FOR,
CURTIS BRYANT**

ROGER CINELLI, JIM MEDLEY
ema ARCHITECTS P. A.
 1020 Tijeras N.E. Albuquerque, NM 87106
 Phone (505) 948-8888

date 6/16
 drawn CINELLI
 checked
 100%

sheet description:
SITE PLAN

Sheet
 2 of 12



December 9, 1995

Martin J. Chávez, Mayor

Marvin R. Kortum
1605 Speakman Dr. SE
Albuquerque, NM 87123

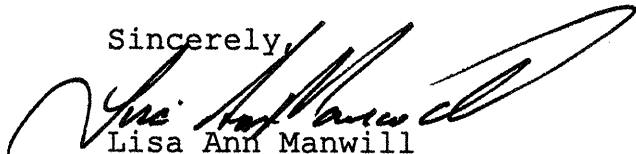
**RE: EIGHT TOWNHOUSES (F21-D56). ENGINEER'S CERTIFICATION FOR
CERTIFICATE OF OCCUPANCY APPROVAL. ENGINEER'S CERTIFICATION
DATED DECEMBER 5, 1996.**

Dear Mr. Kortum:

Based on the information provided on your December 5, 1996
submittal, the above referenced project is approved for
Certificate of Occupancy.

If I can be of further assistance, please feel free to contact me
at 768-3622.

Sincerely,



Lisa Ann Manwill
Engineering Assoc./Hyd.

c: Andrew Garcia
File

Good for You, Albuquerque!



DRAINAGE INFORMATION SHEET

PROJECT TITLE: Grading and Drainage Plan
8 Townhouses ZONE ATLAS/DRNG. FILE #: F 21/ 1156

LEGAL DESCRIPTION: Tracts A-3 through A-10 of DEL CHAPARRAL

CITY ADDRESS: Gutierrez Road N. E.

ENGINEERING FIRM: Marvin R Kortum CONTACT: Marvin R Kortum

ADDRESS: 1605 Speakman Dr. SE
Albuquerque, NM 87123 PHONE: (505) 299-0774

OWNER: Keith MacDuffee CONTACT: _____

ADDRESS: 3240 Juan Tabo N.E.
Albuquerque, N.M. 87111 PHONE: 299-7666

ARCHITECT: _____ CONTACT: _____

ADDRESS: _____ PHONE: _____

SURVEYOR: _____ CONTACT: _____

ADDRESS: _____ PHONE: _____

CONTRACTOR: _____ CONTACT: _____

ADDRESS: _____ PHONE: _____

PRE-DESIGN MEETING:

☐ YES

☐ NO

☐ COPY OF CONFERENCE RECAP
 SHEET PROVIDED

DRB NO. _____

EPC NO. _____

PROJ. NO. _____

TYPE OF SUBMITTAL:

☐ DRAINAGE REPORT

☐ DRAINAGE PLAN

☐ CONCEPTUAL GRADING & DRAINAGE PLAN

☐ GRADING PLAN

☐ EROSION CONTROL PLAN

☒ ENGINEER'S CERTIFICATION

CHECK TYPE OF APPROVAL SOUGHT:

☐ SKETCH PLAT APPROVAL

☐ PRELIMINARY PLAT APPROVAL

☐ SITE DEVELOPMENT PLAN APPROVAL

☒ FINAL PLAT APPROVAL

☐ BUILDING PERMIT APPROVAL

☐ FOUNDATION PERMIT APPROVAL

☒ CERTIFICATE OF OCCUPANCY APPROVAL

☐ ROUGH GRADING PERMIT APPROVAL

☐ GRADING/PAVING PERMIT APPROVAL

☐ OTHER _____ (SPECIFY)

DATE SUBMITTED: Dec 5 1996

BY: MARVIN R KORTUM

DRAINAGE INFORMATION SHEET

PROJECT TITLE: Grading and Drainage Plan
8 Townhouses ZONE ATLAS/DRNG. FILE #: F 21/ D 56

LEGAL DESCRIPTION: Tracts A-3 through A-10 of DEL CHAPARRAL

CITY ADDRESS: Gutierrez Road N. E.

ENGINEERING FIRM: Marvin R Kortum CONTACT: Marvin R Kortum
1605 Speakman Dr. SE
 ADDRESS: Albuquerque, NM 87123 PHONE: (505) 299-0774

OWNER: Keith MacDuffee CONTACT: _____
3240 Juan Tabo N.E.
 ADDRESS: Albuquerque, N.M. 87111 PHONE: 299-7666

ARCHITECT: _____ CONTACT: _____
 ADDRESS: _____ PHONE: _____

SURVEYOR: _____ CONTACT: _____
 ADDRESS: _____ PHONE: _____

CONTRACTOR: _____ CONTACT: _____
 ADDRESS: _____ PHONE: _____

PRE-DESIGN MEETING:

☐ YES

☐ NO

☐ COPY OF CONFERENCE RECAP
 SHEET PROVIDED

DRB NO. 95-130

EPC NO. _____

PROJ. NO. _____

TYPE OF SUBMITTAL:

☐ DRAINAGE REPORT

☐ DRAINAGE PLAN

☐ CONCEPTUAL GRADING & DRAINAGE PLAN

☐ GRADING PLAN

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☒ ENGINEER'S CERTIFICATION

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☐ FINAL PLAT APPROVAL

☐ BUILDING PERMIT APPROVAL

☐ FOUNDATION PERMIT APPROVAL

☐ CERTIFICATE OF OCCUPANCY APPROVAL

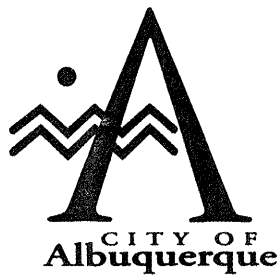
☐ ROUGH GRADING PERMIT APPROVAL

☐ GRADING/PAVING PERMIT APPROVAL

☒ OTHER Release of Financial Guarantee (SPECIFY)

DATE SUBMITTED: December 11, 1996

BY: Marvin R Kortum



December 12, 1996

Martin J. Chávez, Mayor

Marvin R. Kortum
1605 Speakman Dr. SE
Albuquerque, NM 87123

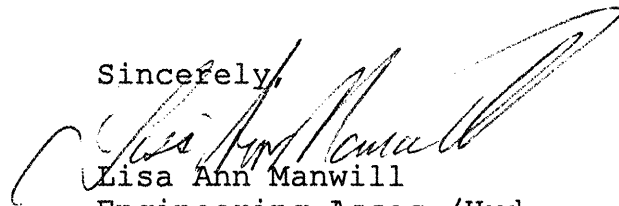
**RE: EIGHT TOWNHOUSES (F21-D56). ENGINEER'S CERTIFICATION FOR
RELEASE OF FINANCIAL GUARANTEES. ENGINEER'S CERTIFICATION
DATED DECEMBER 5, 1996.**

Dear Mr. Kortum:

Based on the information provided on your December 5, 1996
submittal, City Hydrology accepts the Engineer's Certification of
grading and drainage. Contact Terri Martin to obtain the
Financial Guaranty Release.

If I can be of further assistance, please feel free to contact me
at 768-3622.

Sincerely,



Lisa Ann Manwill
Engineering Assoc./Hyd.

c: Terri Martin
Andrew Garcia
File

Good for You, Albuquerque!



LEGEND

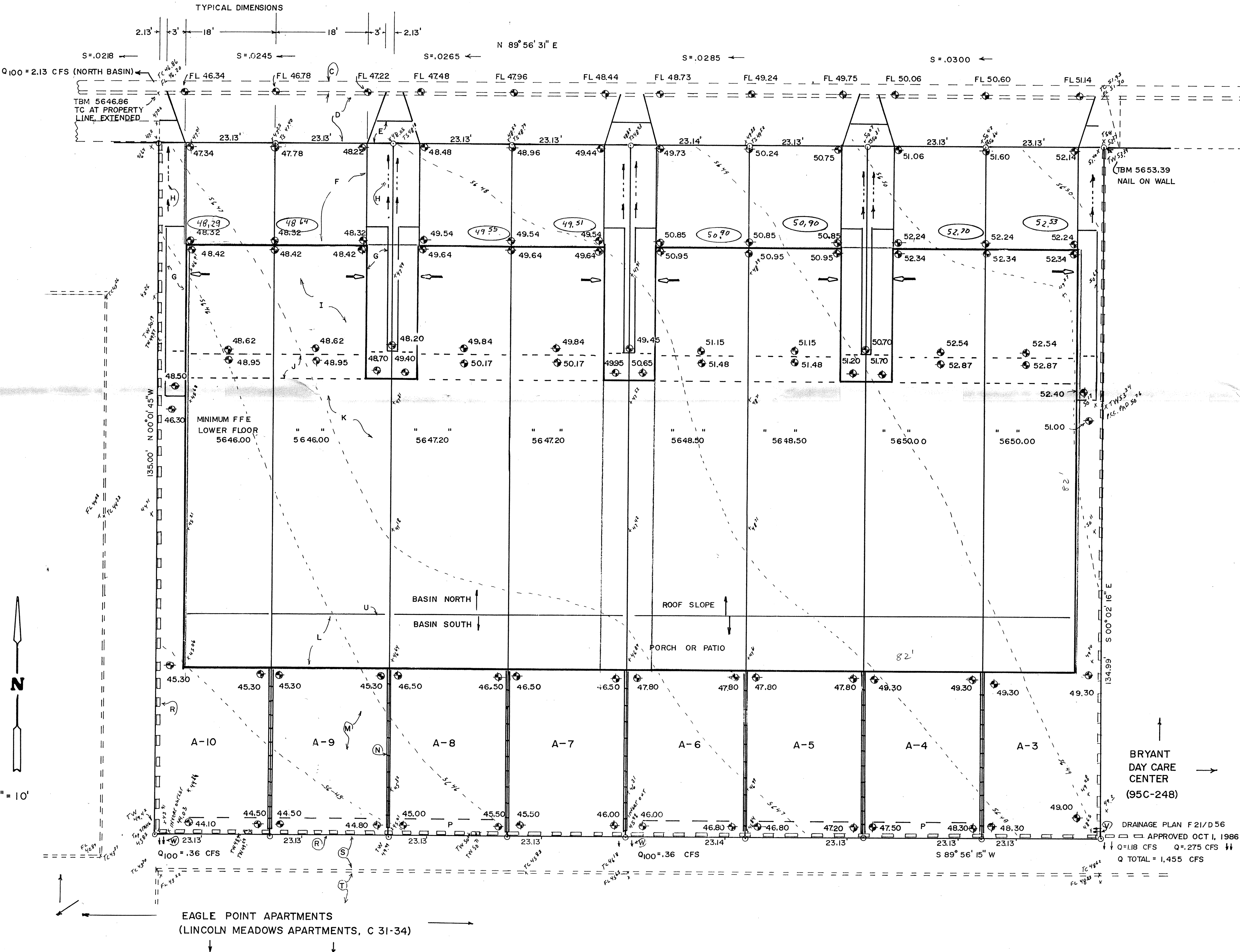
SPOT ELEVATION
FLOW LINE
TOP OF CURB
TOP OF WALL
CONTOUR LINE
WALL
STRUCTURE
SWALE
DRAIN OUTLET
ROOF DRAIN
FINISHED FLOOR ELEVATION

EXISTING
PROPOSED
54.67
FL
TC
TW
A
B
C
D
E
F
G
H
I
J
K
L
M
N
O
P
Q
R
S
T
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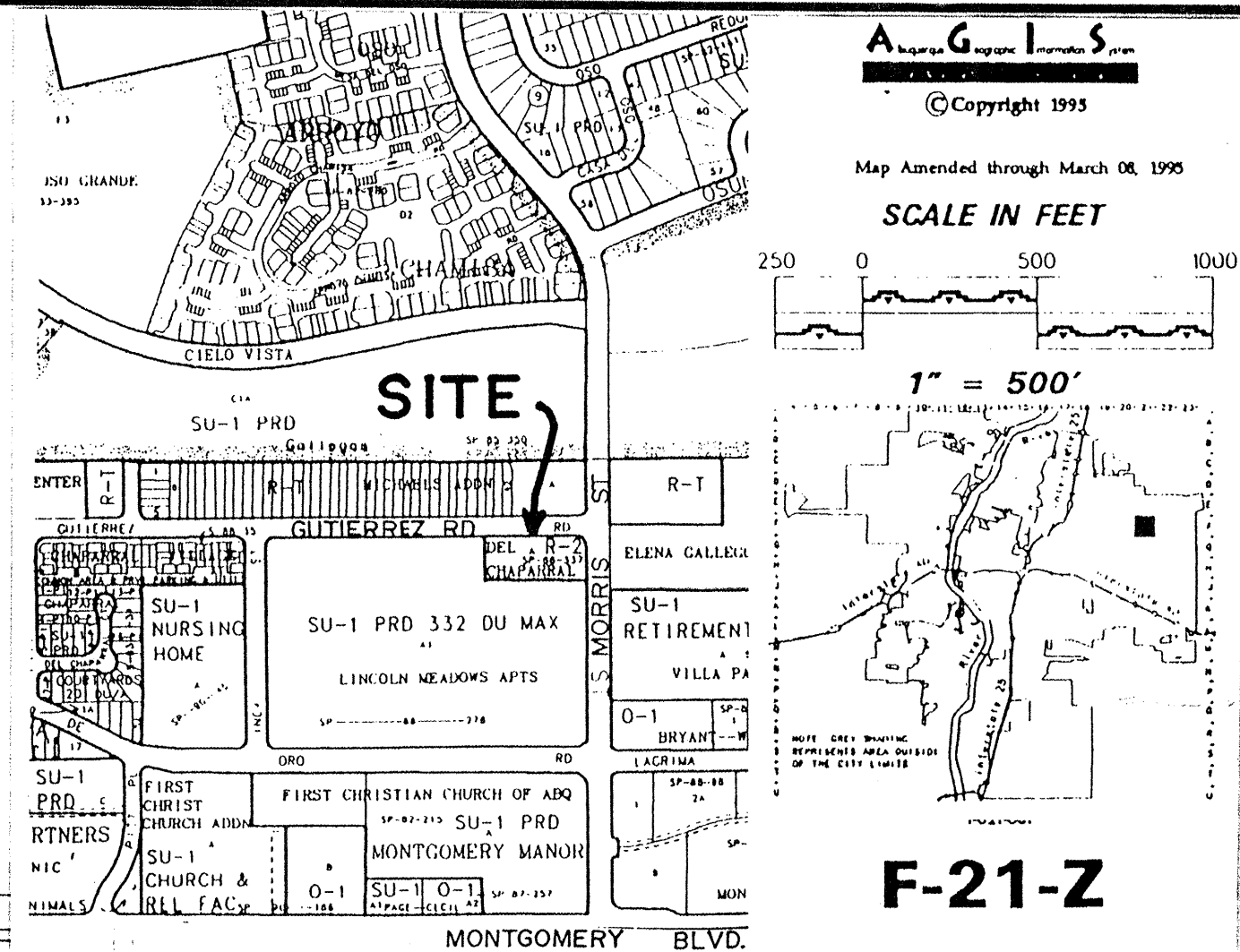
GUTIERREZ ROAD NE
60' ROW

BENCHMARK: 12-F21, a 60 penny nail in power pole NE-71, located 200 feet north of Gutierrez Road and 500 feet west of Morris Street, NE. Elevation 5640.67

LEGAL DESCRIPTION: Tracts A-3 through A-10 of DEL CHAPARRAL, situated within S 33, T11N, R4E, City of Albuquerque, New Mexico



1" = 10'



- NOTES:
- A Existing rollover curb and gutter.
 - B Existing asphalt pavement.
 - C Existing standard curb and gutter. Place new drivecuts as shown. Elevations shown are based on existing gutter, verify in field.
 - D New driveway pads as required by City of Albuquerque Standard Specifications for Public Works drawing 2425.
 - E New 4 feet wide sidewalk required by City of Albuquerque Standard Specifications for Public Works drawing 2430.
 - F New portland cement concrete driveway.
 - G Sidewalk access to house.
 - H Drainage swale and landscaped area. Landscaping may be turf, or shrubs and plants with 6" thick rock mulch over pervious membrane. Rocks shall be 2" diameter or larger.
 - I Garage.
 - J 4" high curb and storage area.
 - K Living quarters area. The number of stories and locations of steps and transitions between floor levels will vary.
 - L Paved or unpaved patio area. Alternative use may be enclosed building, with roof drainage to the south.
 - M Usable open area, with landscaping and minor impervious surfaces.
 - N Separation wall or fence. Bottom 18" of wall shall be impervious, 6" CMU or similar, top portion may be other material.
 - P Drainage swale and easement to permit cross lot drainage of runoff to existing through the wall drains.
 - R Existing 6" CMU wall, 5 to 6 feet high. Do not place additional earth materials against wall higher than 18" from surface on opposite side of wall.
 - S Existing 2" diameter rock mulch and landscaping.
 - T Existing asphalt pavement and drainage swale.
 - U General line for break in roof drainage direction (north and south).
 - V Existing hole in the wall to be closed.
 - W Existing through-the-wall drain.
 - X Structural outlines shown are general. Elevations shown for new construction are generally minimum elevations. Significant changes from elevations and structural outlines shown may require revision to this grading and drainage plan.

I certify that I have inspected the completed site and find that the construction has been completed and is in substantial compliance with the approved design. Specific elevations are noted:

House finished floor elevations are above the specified minimums, and roofs drain toward Gutierrez Avenue.
 Marvin R. Kortum
 NMPE 6519
 Date: Dec 5 1996

Approved by letter, City of Albuquerque, Public Works Department, Hydrology Section, (F21/D056), September 5, 1995.

PRELIMINARY	MRK	AUG	09, 1995
APPROVALS, REVISIONS	BY	DATE	

MARVIN R. KORTUM
 NEW MEXICO
 6519
 CIVIL ENGINEER
 1605 Speakman Drive, S.E.
 Albuquerque, New Mexico 87123
 (505) 299-0774

GRADING AND DRAINAGE PLAN
 TRACTS A-3 THROUGH A-10
 DEL CHAPARRAL
 GUTIERREZ ROAD NE

PROJECT NO. DRB 95-130
 MAP NO. F-21
 SHEET OF 1 2

AUGUST 9, 1995
RUNOFF FOR TRACTS A-3 THRU A-10 OF DEL CHAPARRAL

TABLE A
Runoff Estimate: For On-site Basin of .573 acres (8 LOTS).

Runoff Factors			CURRENT USE				PROPOSED USE			
Zone 4										
Land use	Peak	Total	Area Percent		Peak	Total	Area Percent		Peak	Total
	CFS/acre	inches	SF		CFS	CF	SF		CFS	CF
A	2.26	0.66	24980.24	1.000	1.30	1373.9	0	0.000	0.00	0.0
B	3.05	0.85	0	0.000	0.00	0.0	5980	0.239	0.42	423.6
C	3.94	1.13	0	0.000	0.00	0.0	1000	0.040	0.09	94.2
D	5.74	2.57	0	0.000	0.00	0.0	18000	0.721	2.37	3855.0
TOTALS			24980	1.000	1.30	1373.9	24980	1.000	2.88	4372.7
			0.573 acre				0.573 acre			

TABLE B
Runoff Estimate: For On-site basin of .200 acres, south portion of lots.

Runoff Factors			CURRENT USE				PROPOSED USE			
Zone 4										
Land use	Peak	Total	Area Percent		Peak	Total	Area Percent		Peak	Total
	CFS/acre	inches	SF		CFS	CF	SF		CFS	CF
A	2.26	0.66	8700	1.000	0.45	478.5	0	0.000	0.00	0.0
B	3.05	0.85	0	0.000	0.00	0.0	7000	0.805	0.49	495.8
C	3.94	1.13	0	0.000	0.00	0.0	0	0.000	0.00	0.0
D	5.74	2.57	0	0.000	0.00	0.0	1700	0.195	0.22	364.1
TOTALS			8700	1.000	0.45	478.5	8700	1.000	0.71	859.9
			0.200 acre				0.200 acre			

TABLE B-1
Runoff Estimate: For On-site basin of .374 acres, north portion of lots.

Runoff Factors			CURRENT USE				PROPOSED USE			
Zone 4										
Land use	Peak	Total	Area Percent		Peak	Total	Area Percent		Peak	Total
	CFS/acre	inches	SF		CFS	CF	SF		CFS	CF
A	2.26	0.66	16280	1.000	0.84	895.4	0	0.000	0.00	0.0
B	3.05	0.85	0	0.000	0.00	0.0	0	0.000	0.00	0.0
C	3.94	1.13	0	0.000	0.00	0.0	280	0.017	0.03	26.4
D	5.74	2.57	0	0.000	0.00	0.0	16000	0.983	2.11	3426.7
TOTALS			16280	1.000	0.84	895.4	16280	1.000	2.13	3453.0
			0.374 acre				0.374 acre			

TABLE C
Runoff Estimate: For Off-site basin of .895 acres, south half of Gutierrez Road, Morris to Inca.

Runoff Factors			CURRENT USE				PROPOSED USE			
Zone 4										
Land use	Peak	Total	Area Percent		Peak	Total	Area Percent		Peak	Total
	CFS/acre	inches	SF		CFS	CF	SF		CFS	CF
A	2.26	0.66	39000	1.000	2.0	2145.0	0	0.000	0.0	0.0
B	3.05	0.85	0	0.000	0.0	0.0	0	0.000	0.0	0.0
C	3.94	1.13	0	0.000	0.0	0.0	0	0.000	0.0	0.0
D	5.74	2.57	0	0.000	0.0	0.0	39000	1.000	5.1	8352.5
TOTALS			39000	1.000	2.0	2145.0	39000	1.000	5.1	8352.5
			0.895 acre				0.895 acre			

- NOTES:
- Runoff factors from Section 22.2, Hydrology, of the Development Process Manual, Volume 2, Design Criteria, City of Albuquerque, Bernalillo County and AMAFCA, January, 1993
 - Land use descriptions: A. Uncompacted soil
B. Lawn, shrubs
C. Compacted soil
D. Impervious areas
 - Peak runoff = Area (acres) x factor (CFS/acre) = CFS
 - Total runoff = Area (SF) x factor (inches) / 12 (inches / foot) = CF
 - Peak and total runoff is based on 6 hour, 100 year frequency storm
 - The current use is for the site in its natural state, or partially developed if off-site.
The proposed use is for full development of the basin, under present zoning

PURPOSE: The purpose of this grading and drainage plan is to obtain approval for the subdivision of the site and construction of 8 townhouses on the tracts A-3 through A-10.

SOILS: Soils are identified by reference C as Tijeras gravelly fine sandy loam, 1 to 5% slopes. Runoff is moderate, and the hazard of water erosion is slight. The soils are suited for the intended purpose of construction of residential buildings. The surface has been disturbed, and presently the site contains a stockpile of soils and some broken concrete. The contour lines shown on the drawing represent the soil surface without the stockpiled materials.

DESCRIPTION OF SITE: The site is enclosed by a 6" CMU block wall of 5 to 6 feet in height on the east, south and west sides. The north side is the south right-of-way line of Gutierrez Road, NE, which is a paved street with standard curb and gutter on the south side of the street.

ON-SITE DRAINAGE:
UNDEVELOPED: Presently all runoff from the site flows from north to south, and leaves the property through two drains that have been constructed in south wall. Table A shows an estimated runoff from the undeveloped site as 1.3 CFS for the design 100 year, 6 hour storm (reference B).

DEVELOPED: Table A shows an estimated 2.88 CFS for the developed site. Table B shows an estimated runoff for the south portion of the developed site as 0.71 CFS, and Table B-1 shows an estimated runoff for the north portion of the developed site as 2.13 CFS. The reason for draining a portion of the site to the north is that the flow from the south must flow through the Eagle Point (previously Lincoln Meadows) apartments. There is an easement for these flows (reference E), permitting 4 CFS combined from the townhouse site, and the adjacent Day Care Center. The Day Care Center discharges 1.455 CFS, leaving 2.545 CFS permitted from the townhouse site. Rather than ponding and metering, or trying to control the outflow from the townhouse site, a portion of the outflow is proposed to be directed to the north. The portion directed to the south is 0.71 CFS, and is divided equally to be discharged through the established outlets in the walls (see drainage plan F21/D56, approved October 1, 1986). The estimated runoff for the south portion of the townhouse site is based on most of the area being landscaped. Because there will be no controls on the land use after development, the area flowing to the south is sized to permit total impervious surfaces without exceeding the permitted 2.545 CFS.

OFF-SITE DRAINAGE:
UNDEVELOPED: Off-site drainage flows through the apartment area to a detention pond at the corner of Lagrima de Oro and Pitt street, from which is flows into the underground storm drain system which flows to the Arroyo del Oso.

DEVELOPED: The south portion of the runoff will continue to flow as discussed above. The north portion of the runoff will enter the south curb and gutter of Gutierrez Road, and then flow to the west along south side of Gutierrez Road until the intersection with Inca Street, where it is directed to the west by a water block on Gutierrez Road. About 200 feet west of the intersection the flow enters the Arroyo del Oso through an unimproved ditch. The capacity of the curb and gutter along the south side of Gutierrez Road is not exceeded, the capacity being about 10 CFS at a depth of .3 feet, 39 CFS at a depth of .5 feet, and 85 CFS at curb height of .67 feet (Table D). As shown Table C, the estimated runoff from Gutierrez Road 5.1 CFS, and the runoff from the north portion of the townhouse lots is 2.13 CFS, for a total of 7.23 CFS, and a depth less than .3 feet. The estimated runoff from the south portion of Gutierrez Road does include that from adjacent property to the south, which is all developed, and does not contribute significantly to the flow. The estimate does not include possible overflow from the north side of the street and properties to the north. Additional flow from upstream to the east is not considered because of the water block at the intersection of Gutierrez Road with Morris Street, and the short (200 feet) portion of Morris Street west of the intersection that could contribute flows.

CONCLUSIONS:
A. The site is not within a FEMA 100 year floodplain (reference D).
B. Development of the site as proposed will not create additional hazards for this property or for properties downstream.

REFERENCES:
A. Standard Specifications for Public Works Construction, City of Albuquerque.

B. Section 22.2, Hydrology, of the Development Process Manual, Volume 2, Design Criteria, for the City of Albuquerque...Bernalillo County...AMAFCA, January 1993.

C. Soil Survey of Bernalillo County and Parts of Sandoval and Valencia Counties, New Mexico, USDA-SCS.

D. Flood Insurance Rate Map, City of Albuquerque, Bernalillo County, Federal Emergency Management Agency, Panel 18 of 50, effective date: October 14, 1983.

E. Easement Agreement, dated 26 September 1986, by LINCOLN MEADOWS ALBUQUERQUE LIMITED PARTNERSHIP, to Curtis and Ann Bryant.

Approved by letter, City of Albuquerque, Public Works Department, Hydrology Section, (F21/D056), September 5, 1995.

PRELIMINARY	MRK	AUG	09, 1995
APPROVALS, REVISIONS	BY	DATE	
<div><div><div><div><div></div><div>MARVIN R. KORTUM</div></div><div><div></div><div>6519</div></div><div><div></div><div>ALBUQUERQUE</div></div><div><div></div><div>REGISTERED PROFESSIONAL</div></div></div><div><div><div><div></div><div>MARVIN R. KORTUM, P.E.</div></div><div><div></div><div>Civil Engineering</div></div><div><div></div><div>NM PE 6519</div></div></div><div><div><div><div></div><div>1605 Speakman Drive, S.E.</div></div><div><div></div><div>Albuquerque, New Mexico 87123</div></div><div><div></div><div>(505) 299-0774</div></div></div></div></div></div></div>			

GRADING AND DRAINAGE PLAN
TRACTS A-3 THROUGH A-10
DEL CHAPARRAL
GUTIERREZ ROAD NE

PROJECT NO.	MAP NO.	SHEET	OF
DRB 95-130	F-21	2	2

AUGUST 9, 1995
TABLE D

Ditch capacities for street drainage, Gutierrez Road, Morris to Inca, for selected channel sections.

$Q = \text{Area} \times \text{Velocity}; \text{Velocity} = 1.486/n \times (Rh)^{.6667} \times (s)^{.5}$







Mannings	Ditch	Side	Bottom	Depth	Area	Top	Wetted	Hydraulic	Velocity	Capacity	Capacity	Froude #	Sequent depth	Sloped	Trapezoid
n	Slope	slope	width			Ft	Perimeter	Radius	FPS	V channel	1/2 V	V/(gD) ^{.5}	Rectangular	(E) Ft	(F) Ft
(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)	(I)	(J)	(K)	(L)	(M)	(N)	(O)	(P)
1	0.014	22.000	50	0.0	0.20	2.0	20.004	0.100	3.391	6.782	3.391	1.89	0.44	0.52	0.38
2	0.014	22.000	50	0.0	0.30	4.5	30.006	0.150	4.444	19.997	9.998	2.02	0.72	0.84	0.61
3	0.014	22.000	50	0.0	0.50	12.5	50.010	0.250	6.247	78.084	39.042	2.20	1.33	1.54	1.12
4	0.014	22.000	50	0.0	0.67	22.4	67.013	0.335	7.593	170.416	85.208	2.31	1.88	2.18	1.59
REQUIRED Q100 = 3.3 CFS, 1/4 MORRIS ST. + LOTS A-3 TO A-10 (1.3+2.1)															

GUTTER AND STREET SECTION 300 FEET WEST OF PITT STREET INTERSECTION

1	0.014	35.000	50	0.0	0.20	2.0	20.004	0.100	4.277	8.555	4.277	2.38	0.58	0.67	0.49
2	0.014	35.000	50	0.0	0.30	4.5	30.006	0.150	5.605	25.222	12.611	2.55	0.94	1.09	0.80
3	0.014	35.000	50	0.0	0.50	12.5	50.010	0.250	7.879	98.488	49.244	2.78	1.73	2.00	1.46
4	0.014	35.000	50	0.0	0.67	22.4	67.013	0.335	9.577	214.948	107.474	2.92	2.45	2.82	2.06
REQUIRED Q100 = 7.2 CFS, MORRIS STREET + LOTS A-3 TO A-10 (5.1+2.1)															

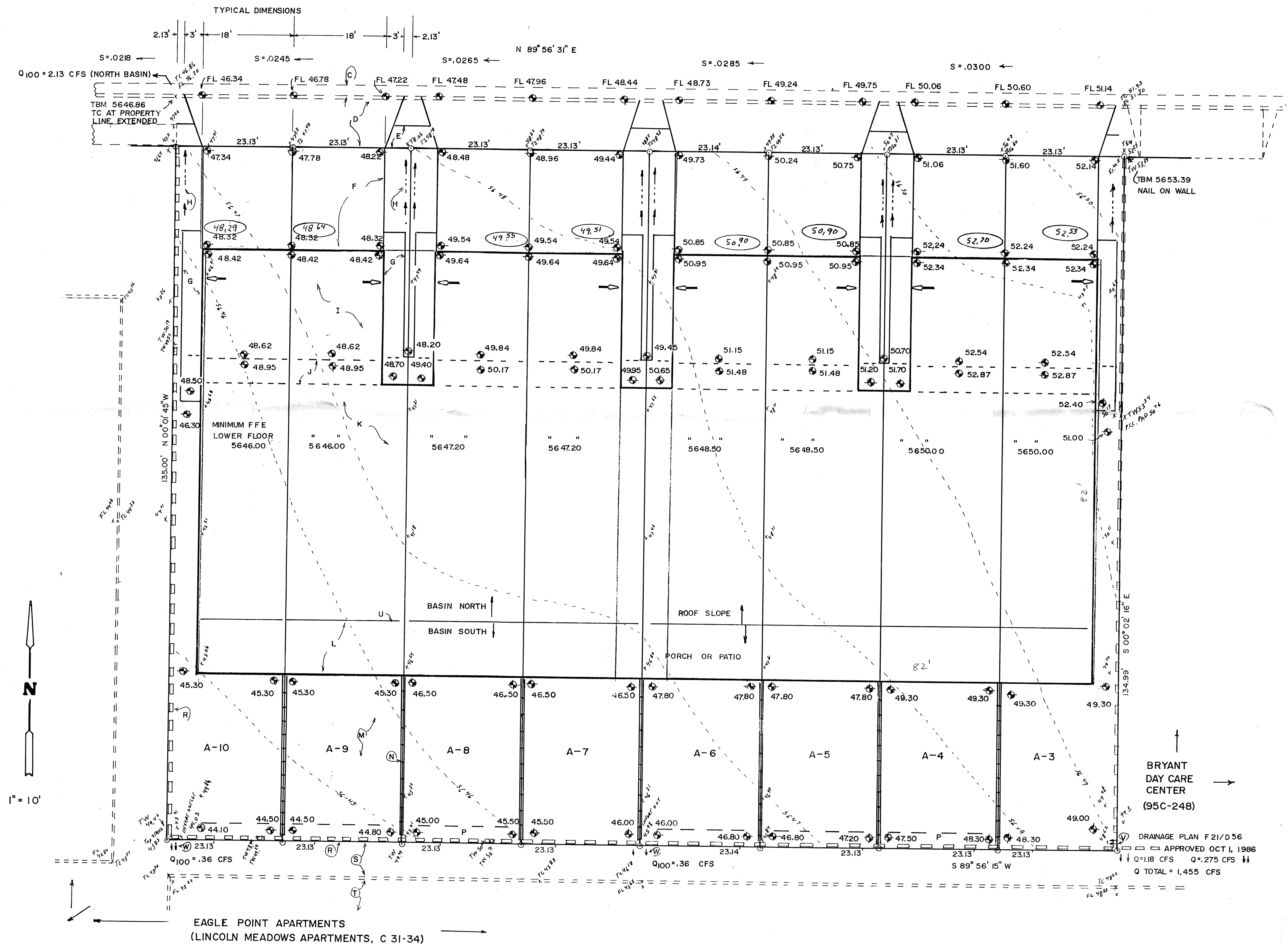
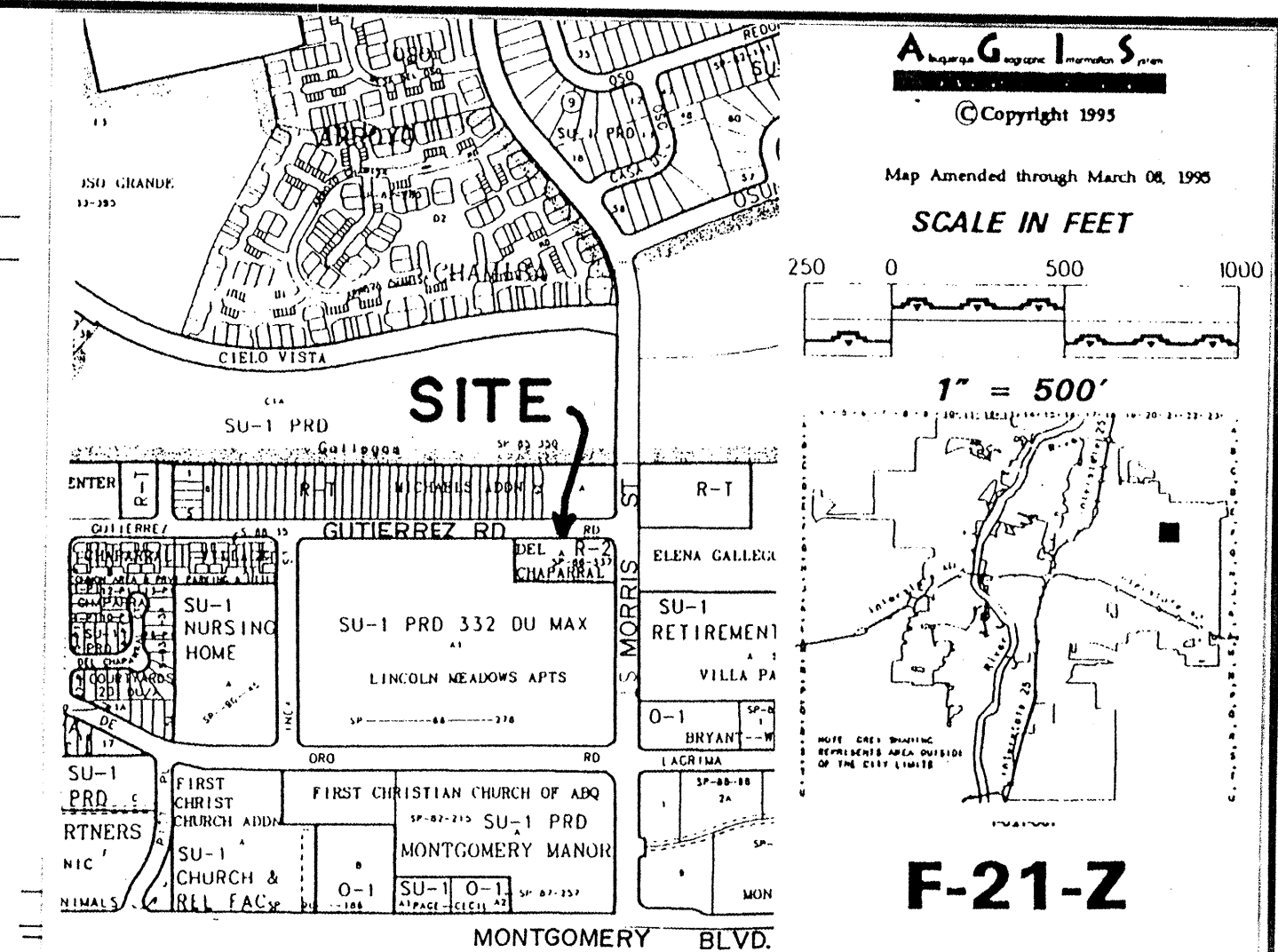
- (A) Ft(vertical)/1000 Ft(horizontal)
(B) Ft(horizontal)/1 Ft(vertical)
(C) Froude No. (Fn)=velocity/(g x area/top width)^{.5}
(D) Sequent depth for rectangular level channel, y2=(y1/2)x(((1+8 x Fn²)^{.5})-1)
(E) Sequent depth for sloping rectangular channel
y2=((y1/2)/cos slope angle) x (((1+8(((10^{-0.27} x slope angle)²) x Fn²)^{.5})-1)
(F) Correction factor for trapezoidal channel, figure 3.4
(G) Reference: Richard H French, Open Channel Hydraulics, 1985

SPOT ELEVATION
FLOW LINE
TOP OF CURB
TOP OF WALL
CONTOUR LINE
WALL
STRUCTURE
SWALE
DRAIN OUTLET
ROOF DRAIN
FINISHED FLOOR ELEVATION

EXISTING		PROPOSED
r_{FL}^{FL}		54.67
FL	---	FL
TC	---	TC
r_{TW}^{TW}	---	TW
647	---	
		
		
		
		
		FFE

BENCHMARK: 12-F21, a 60 penny nail in power pole NE-71, located 200 feet north of Gutierrez Road and 500 feet west of Morris Street, NE. Elevation 5640.67

LEGAL DESCRIPTION: Tracts A-3 through A-10 of DEL CHAPARRAL,
situated within S 33, T11N, R4E, City of Albuquerque, New Mexico



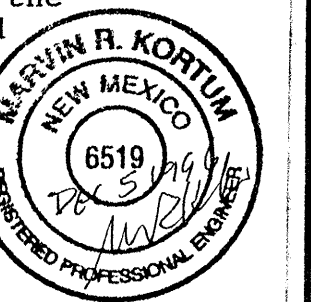
NOTES :

- A Existing rollover curb and gutter.
B Existing asphalt pavement.
C Existing standard curb and gutter. Place new drivecuts as shown. Elevations shown are based on existing gutter, verify in field.
D New driveway pads as required by City of Albuquerque Standard Specifications for Public Works drawing 2425.
E New 4 feet wide sidewalk required by City of Albuquerque Standard Specifications for Public Works drawing 2430.
F New portland cement concrete driveway.
G Sidewalk access to house.
H Drainage swale and easement to landscaped area. Landscaping may be turf, or shrubs and plants with 6" thick rock mulch over pervious membrane.
Rocks shall be 3" diameter or larger.
I Garage.
J 4" high curb and storage area.
K Living quarters area. The number of stories and locations of steps and transitions between floor levels will vary.
L Paved or unpaved patio area. Alternative use may be enclosed building, with roof drainage to the south.
M Usable open area, with landscaping and minor impervious surfaces.
N Separation wall or fence. Bottom 18" of wall shall be impervious, 6" CMU similar, top portion may be other material.
P Drainage swale and easement to permit cross lot drainage of runoff to existing through the wall drains.
R Existing 6" CMU wall, 5 to 6 feet high. Do not place additional earth materials against wall higher than 18" from surface on opposite side of wall.
S Existing 2" diameter rock mulch and landscaping.
T Existing asphalt pavement and drainage swale.
U General line for break in roof drainage direction (north and south).
V Existing hole in the wall to be closed.
W Existing through-the-wall drain.
X Structural outlines shown are general. Elevations shown for new construction are generally minimum elevations. Significant changes from elevations and structural outlines shown may require revision to this grading and drainage plan.
- OK DEC 1996
MRK

I certify that I have inspected the completed site and find that the construction has been completed and is in substantial compliance with the approved design. Specific elevations are noted:

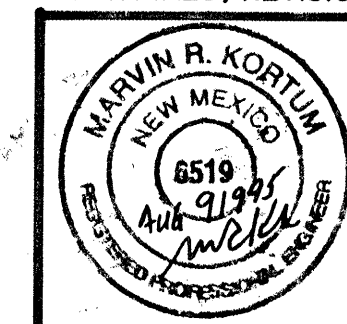
House finished floor elevations are above the specified minimums, and roofs drain toward Gutierrez Avenue.

Marvin R Kortum
NMPE 6519



Approved by letter, City of Albuquerque, Public Works Department, Hydrology Section, (F21/D056), September 5, 1995.

PRELIMINARY	MRK	AUG 09, 1995
APPROVALS, REVISIONS	RY	DATE



MARVIN R. KORTUM, P.E.
Civil Engineering
NM PE 6519

1605 Speakman Drive, S.E.
Albuquerque, New Mexico 87123
(505) 299-0774

GRADING AND DRAINAGE PLAN
TRACTS A-3 THROUGH A-10
DEL CHAPARRAL
GUTIERREZ ROAD NE

PROJECT NO.	MAP NO.	SHEET	OF
DRB 95-130	F-21	1	2

AUGUST 9, 1995
RUNOFF FOR TRACTS A-3 THRU A-10 OF DEL CHAPARRAL

TABLE A
Runoff Estimate: For On-site Basin of .573 acres (8 LOTS).

Land use	Runoff Factors		CURRENT USE				PROPOSED USE			
	Peak	Total	Area Percent		Peak	Total	Area Percent		Peak	Total
	CFS/acre	inches	SF	Runoff	CFS	CF	SF	Runoff	CFS	CF
A	2.26	0.66	24980.24	1.000	1.30	1373.9	0	0.000	0.00	0.0
B	3.05	0.85	0	0.000	0.00	0.0	5980	0.239	0.42	423.6
C	3.94	1.13	0	0.000	0.00	0.0	1000	0.040	0.09	94.2
D	5.74	2.57	0	0.000	0.00	0.0	18000	0.721	2.37	3855.0
TOTALS			24980	1.000	1.30	1373.9	24980	1.000	2.88	4372.7
			0.573 acre				0.573 acre			

TABLE B
Runoff Estimate: For On-site basin of .200 acres, south portion of lots.

Land use	Runoff Factors		CURRENT USE				PROPOSED USE			
	Peak	Total	Area Percent		Peak	Total	Area Percent		Peak	Total
	CFS/acre	inches	SF	Runoff	CFS	CF	SF	Runoff	CFS	CF
A	2.26	0.66	8700	1.000	0.45	478.5	0	0.000	0.00	0.0
B	3.05	0.85	0	0.000	0.00	0.0	7000	0.805	0.49	495.8
C	3.94	1.13	0	0.000	0.00	0.0	0	0.000	0.00	0.0
D	5.74	2.57	0	0.000	0.00	0.0	1700	0.195	0.22	364.1
TOTALS			8700	1.000	0.45	478.5	8700	1.000	0.71	859.9
			0.200 acre				0.200 acre			

TABLE B-1
Runoff Estimate: For On-site basin of .374 acres, north portion of lots.

Land use	Runoff Factors		CURRENT USE				PROPOSED USE			
	Peak	Total	Area Percent		Peak	Total	Area Percent		Peak	Total
	CFS/acre	inches	SF	Runoff	CFS	CF	SF	Runoff	CFS	CF
A	2.26	0.66	16280	1.000	0.84	895.4	0	0.000	0.00	0.0
B	3.05	0.85	0	0.000	0.00	0.0	0	0.000	0.00	0.0
C	3.94	1.13	0	0.000	0.00	0.0	280	0.017	0.03	26.4
D	5.74	2.57	0	0.000	0.00	0.0	16000	0.983	2.11	3426.7
TOTALS			16280	1.000	0.84	895.4	16280	1.000	2.13	3453.0
			0.374 acre				0.374 acre			

TABLE C
Runoff Estimate: For Off-site basin of .895 acres, south half of Gutierrez Road, Morris to Inca.

Land use	Runoff Factors		CURRENT USE				PROPOSED USE			
	Peak	Total	Area Percent		Peak	Total	Area Percent		Peak	Total
	CFS/acre	inches	SF	Runoff	CFS	CF	SF	Runoff	CFS	CF
A	2.26	0.66	39000	1.000	2.0	2145.0	0	0.000	0.0	0.0
B	3.05	0.85	0	0.000	0.0	0.0	0	0.000	0.0	0.0
C	3.94	1.13	0	0.000	0.0	0.0	0	0.000	0.0	0.0
D	5.74	2.57	0	0.000	0.0	0.0	39000	1.000	5.1	8352.5
TOTALS			39000	1.000	2.0	2145.0	39000	1.000	5.1	8352.5
			0.895 acre				0.895 acre			

NOTES:

- Runoff factors from Section 22.2, Hydrology, of the Development Process Manual, Volume 2, Design Criteria, City of Albuquerque, Bernalillo County and AMAFCA, January, 1993
- Land use descriptions: A. Uncompacted soil
B. Lawn, shrubs
C. Compacted soil
D. Impervious areas
- Peak runoff = Area (acres) x factor (CFS/acre) = CFS
- Total runoff = Area (SF) x factor (inches /foot) = CF
- Peak and total runoff is based on 6 hour, 100 year frequency storm
- The current use is for the site in its natural state, or partially developed if off-site.
The proposed use is for full development of the basin, under present zoning

AUGUST 9, 1995

TABLE D

Ditch capacities for street drainage, Gutierrez Road, Morris to Inca, for selected channel sections.
 $Q = \text{Area} \times \text{Velocity}$; $\text{Velocity} = 1.486/n \times (Rh)^{.6667} \times (s)^{-.5}$

Mannings n	Ditch slope (A)	Side slope (B)	Bottom width (C)	Depth (D)	Area (SF)	Top width (E)	Wetted perimeter (F)	Hydraulic radius (G)	Velocity (FPS)	Capacity (CFS)	Capacity (1/2 V)	Froude # V/(g/L)^.5 (C)	Sequent depth Rectangular (D) Ft	Sloped (E) Ft	Trapezoid (F) Ft
GUTTER AND STREET SECTION EVEN WITH WEST PROPERTY LINE															
1	0.014	22.000	50	0.0 0.20	2.0	20.004	0.100	3.391	6.782	3.391	1.89	0.44	0.52	0.38	
2	0.014	22.000	50	0.0 0.30	4.5	30.006	0.150	4.444	19.997	9.998	2.02	0.72	0.84	0.61	
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4	0.014	22.000	50	0.0 0.67	22.4	67.013	0.335	7.593	170.416	85.208	2.31	1.88	2.18	1.59	
REQUIRED Q100 = 3.3 CFS, 1/4 MORRIS ST. + LOTS A-3 TO A-10 (1.3+2.1)															
GUTTER AND STREET SECTION 300 FEET WEST OF PITT STREET INTERSECTION															
1	0.014	35.000	50	0.0 0.20	2.0	20.004	0.100	4.277	8.555	4.277	2.38	0.58	0.67	0.49	
2	0.014	35.000	50	0.0 0.30	4.5	30.006	0.150	5.605	25.222	12.611	2.55	0.94	1.09	0.80	
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REQUIRED Q100 = 7.2 CFS, MORRIS STREET + LOTS A-3 TO A-10 (5.1+2.1)															

- (A) Ft(vertical)/1000 Ft(horizontal)
(B) Ft(horizontal)/1 Ft(vertical)
(C) Froude No. $(Fn) = \text{velocity} / (g \times \text{area/top width})^{.5}$
(D) Sequent depth for rectangular level channel, $y2 = (y1/2) \times ((1+8 \times Fn^2)^{.5}) - 1$
(E) Sequent depth for sloping rectangular channel
 $y2 = ((y1/2) / \cos \text{slope angle}) \times (((1+8 \times ((10 \times \cos \text{slope angle})^2) \times Fn^2)^{.5}) - 1)$
(F) Correction factor for trapezoidal channel, figure 3.4
(G) Reference: Richard B French, Open Channel Hydraulics, 1985

PURPOSE: The purpose of this grading and drainage plan is to obtain approval for the subdivision of the site and construction of 8 townhouses on the tracts A-3 through A-10.

SOILS: Soils are identified by reference C as Tijeras gravelly fine sandy loam, 1 to 5% slopes. Runoff is moderate, and the hazard of water erosion is slight. The soils are suited for the intended purpose of construction of residential buildings. The surface has been disturbed, and presently the site contains a stockpile of soils and some broken concrete. The contour lines shown on the drawing represent the soil surface without the stockpiled materials.

DESCRIPTION OF SITE: The site is enclosed by a 6" CMU block wall of 5 to 6 feet in height on the east, south and west sides. The north side is the south right-of-way line of Gutierrez Road, NE, which is a paved street with standard curb and gutter on the south side of the street.

ON-SITE DRAINAGE:

UNDEVELOPED: Presently all runoff from the site flows from north to south, and leaves the property through two drains that have been constructed in south wall. Table A shows an estimated runoff from the undeveloped site as 1.3 CFS for the design 100 year, 6 hour storm (reference B).

DEVELOPED: Table A shows an estimated 2.88 CFS for the developed site. Table B shows an estimated runoff for the south portion of the developed site as 0.71 CFS, and Table B-1 shows an estimated runoff for the north portion of the developed site as 2.13 CFS. The reason for draining a portion of the site to the north is that the flow from the south must flow through the Eagle Point (previously Lincoln Meadows) apartments. There is an easement for these flows (reference B), permitting 4 CFS combined from the townhouse site, and the adjacent Day Care Center. The Day Care Center discharges 1.455 CFS, leaving 2.545 CFS permitted from the townhouse site. Rather than ponding and metering, or trying to control the outflow from the townhouse site, a portion of the outflow is proposed to be directed to the north. The portion directed to the south is 0.71 CFS, and is divided equally to be discharged through the established outlets in the walls (see drainage plan F21/D56, approved October 1, 1986). The estimated runoff for the south portion of the townhouse site is based on most of the area being landscaped. Because there will be no controls on the land use after development, the area flowing to the south is sized to permit total impervious surfaces without exceeding the permitted 2.545 CFS.

OFF-SITE DRAINAGE:

UNDEVELOPED: Off-site drainage flows through the apartment area to a detention pond at the corner of Lagrima de Oro and Pitt street, from which is flows into the underground storm drain system which flows to the Arroyo del Oso.

DEVELOPED: The south portion of the runoff will continue to flow as discussed above. The north portion of the runoff will enter the south curb and gutter of Gutierrez Road, and then flow to the west along south side of Gutierrez Road until the intersection with Inca Street, where it is directed to the west by a water block on Gutierrez Road. About 200 feet west of the intersection the flow enters the Arroyo del Oso through an unimproved ditch. The capacity of the curb and gutter along the south side of Gutierrez Road is not exceeded, the capacity being about 10 CFS at a depth of .3 feet, 39 CFS at a depth of .5 feet, and 85 CFS at curb height of .67 feet (Table D). As shown Table C, the estimated runoff from Gutierrez Road is 5.1 CFS, and the runoff from the north portion of the townhouse lots is 2.13 CFS, for a total of 7.23 CFS, and a depth less than .3 feet. The estimated runoff from the south portion of Gutierrez Road does include that from adjacent property to the south, which is all developed, and does not contribute significantly to the flow. The estimate does not include possible overflow from the north side of the street and properties to the north. Additional flow from upstream to the east is not considered because of the water block at the intersection of Gutierrez Road with Morris Street, and the short (200 feet) portion of Morris Street west of the intersection that could contribute flows.


CONCLUSIONS:

- The site is not within a FEMA 100 year floodplain (reference D).
- Development of the site as proposed will not create additional hazards for this property or for properties downstream.

REFERENCES:

- Standard Specifications for Public Works Construction, City of Albuquerque.
- Section 22.2, Hydrology, of the Development Process Manual, Volume 2, Design Criteria, for the City of Albuquerque...Bernalillo County...AMAFCA, January 1993.
- Soil Survey of Bernalillo County and Parts of Sandoval and Valencia Counties, New Mexico, USDA-SCS.
- Flood Insurance Rate Map, City of Albuquerque, Bernalillo County, Federal Emergency Management Agency, Panel 18 of 50, effective date: October 14, 1983.
- Easement Agreement, dated 26 September 1986, by LINCOLN MEADOWS ALBUQUERQUE LIMITED PARTNERSHIP, to Curtis and Ann Bryant.

Approved by letter, City of Albuquerque, Public Works Department, Hydrology Section, (F21/D056), September 5, 1995.

PRELIMINARY	MRK	AUG 09, 1995
APPROVALS, REVISIONS	BY	DATE
	MARVIN R. KORTUM, P.E.	
	Civil Engineering NM PE 6519	
	1605 Speakman Drive, S.E. Albuquerque, New Mexico 87123 (505) 299-0774	

GRADING AND DRAINAGE PLAN
TRACTS A-3 THROUGH A-10
DEL CHAPARRAL
GUTIERREZ ROAD NE