

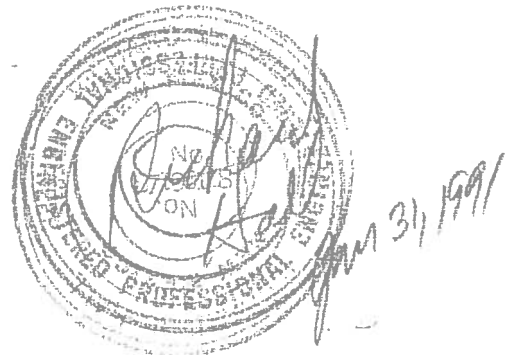
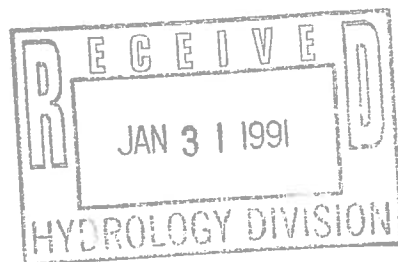


HALL ENGINEERING COMPANY INC.
ENGINEERING • SURVEYING • PLANNING • CONSTRUCTION

DRAINAGE REPORT

TRACTS D-1-A AND D-1-B
ACADEMY ACRES UNIT 17

January, 1991



PURPOSE

This report has been prepared for the purpose of defining and delineating upstream contributory areas and on-site drainage basins, quantification of flows entering and being conveyed through the study site, identification of outlet points and exit flows and, with that information, proposing methods, both infrastructure and legal, which will ensure the Southerly portion of the study site (Tract D-1-A as it appears on the preliminary replat) a continued and unimpeded flow routing to the Pino Arroyo across the Northerly portion (Tract D-1-B) with a minimum of encumbrance upon that Tract.

SITE DESCRIPTION

The subject of this report ("study site") is located in the Northeast quadrant of the City of Albuquerque. Its total area is 14.23 acres, more or less. It is bounded on the West by Louisiana Boulevard, on the North by Pino Arroyo Drainage right-of-way, on the East by a partially developed church tract (Lands of Lutheran Church in America), and on the South by a single family residential subdivision (Academy Acres Unit 15). The extreme Southeast corner of the study site abuts street right-of-way at the intersection of Vickrey Drive, NE and Truchas Drive, NE. The Southerly portion of the study site (Tract D-1-A) contains about 9.30 acres and is fully developed with an apartment complex which includes seventeen buildings, parking lots and drives, sidewalks, and finished, well-maintained landscaping. The Northerly portion (Tract D-1-B) covers approximately 4.94 acres and, with the exception of five three-foot wide concrete rundowns, a twenty-five foot wide paved access road across it from San Antonio Drive to Tract D-1-A and a graded swale running parallel the the Pino Arroyo right-of-way, is relatively unimproved. Although it has been graded, no attempt to landscape or otherwise improve the surface conditions of this portion has been made. Vegetation is natural, annual low growth which is sparse. Most of Tract D-1-B overlays a vacated Temporary Easement For Storm Water Diversion which was released by the Albuquerque Metropolitan Flood Control Authority on April 5, 1990 and recorded in Book BCR 90-6, page 2173. It is also referenced to Vacation Ordinance No. 90-66. This easement was at one time deemed necessary by A.M.A.F.C.A. for transitional

grading the Phase I development of the apartment complex and the then-as-yet partially improved Pino Arroyo channel. Since that time the Pino Arroyo has been physically realigned and fully improved with concrete lining.

The concrete rundowns across Tract D-1-B appear to be temporary improvements and to have been so placed for the purpose of minimizing local erosion resulting from concentrated flows exiting parking lots and drives of the Phase I development pending Phase II completion. The rundowns release into the graded swale which conveys stormwaters to outlet points along the concrete Pino Arroyo channel. Field inspection revealed that some erosion both parallel to and at the ends of these rundowns has occurred. Evidence also exists of sedimentation in the graded swale. The rundowns do not appear to be regularly maintained and some of the parallel erosion may be attributed to debris blocking free flow in them. Neither the erosion noted nor the sedimentation of the swale may be considered major problems. Judging from the particulate size and pattern of sediment in the swale, it appears to be adequate for interception and conveyance of flows to outlet points along the arroyo channel.

CONTRIBUTORY AREAS OFF-SITE

Both Louisiana Boulevard and Pino Arroyo rights-of-way are lower in elevation than the study site and are non-contributory. Residential area lying to the South drains South to Vivian Drive. A six foot concrete block wall separates the apartment complex from the residential area. There are no weeps or other evidence of off-site contribution through this wall. On the east side, however, two easily identified contributory drainage basins do exist. Both impact the study site at concentrated flow points. They are identified as Areas "A" and "B" on the plan drawings included with this report (Sheet 2 of 2). Analysis points "1" and "2" are likewise indicated on the same sheet where concentrated flows enter the study site.

The first (Area "A") contains 8.2 acres and drains a fully developed residential neighborhood with paved streets and typical single-family dwellings including drives, walks and landscaped yards. Peak flow from this area currently enters the study site at the extreme Southeast corner at the previously mentioned intersection of Vickrey Drive and Truchas Drive. It is indicated as analysis point "1" on the plan.

Exhibit 1 at the end of this report outlines this basin on a copy of a portion of Flood Boundary and Floodway Map Panel 17 of 50, City of Albuquerque. Calculations in Exhibit 2 quantify expected peak flows during 100-year and 10-year storms. The expected peak inflow is 25.8 cubic feet per second for the 100-year storm. No accumulation of debris or sediment was noted at the analysis point. Existing route of flow across the study site is over asphalt drives to outlets located in the center-span of the access road bridge across the Pino Arroyo channel.

The second (Area "B") includes approximately 4.18 acres and is, at this time, about two-third undeveloped. For the sake of maximizing expected future flows impacting the study site, this contributory area has been considered fully developed with coverage similar to that which is in place. Further, no consideration has been taken for the possibility of future routing which would dispose of runoff into the Pino Arroyo channel to the east of the defined analysis point ("2" on plan). This area may be expected to contribute 18.02 cubic feet per second, peak, during a 100-year storm. See Exhibits 1 and 2 at the end of this report.

ON-SITE DRAINAGE PATTERNS

The plan included with this report shows the existing interior drainage basins, their areas and selected analysis points. Calculations included for areas within Tract D-1-A take into consideration the measured pervious/impervious percentages of cover for each and specific runoff coefficients have been calculated for each. See Exhibit 3 at the end of this report. All interior drainage areas and subareas were determined by actual field measurements and inspection within the developed portion of the study site. For Tract D-1-B, the undeveloped area, coefficients were assumed based upon original development site plan. A copy of that plan is included as Exhibit 4. Subbasins appearing on the overall plan were analyzed and identified for the purpose of separating concentrated and sheet flows exiting Tract D-1-A.

OUTFALL

Excepting Areas "J" and "R" which drain into the Louisiana Boulevard right-of-way, all areas drain into the concrete-lined Pino Arroyo channel. Analysis points 17 through 22 show expected 100-year and 10-year rates of discharge into the channel. Points 4, 18 and 19 do not include the existing contributory flows from Area "A". Figures at those analysis point assume that particular off-site flow will be via subsurface conveyance through the study site in a storm drain. Points 16 and 23 indicate peak expected flow rates exiting the site to Louisiana Boulevard. All points of discharge into the channel are depressed rundowns cast into its south lip. A simplified schematic of the existing drainage pattern appears in Exhibit 5.

PROPOSED DEVELOPMENT AND MANAGEMENT

No immediate construction on Tract D-1-B is foreseen. However, it would be reasonable to assume given that it is already zoned SU for residential uses and as a result the maximum density of units and pad coverage has been determined to some extent, future development would very likely be similar to the original Phase II proposal. That particular proposal included twelve buildings of similar design to those on Tract D-1-A together with similar landscaping and parking arrangements. Therefore, the responses to the existing drainage conditions will take this into account.

Two responses to the site conditions are directly warranted. One involves legal and continuing guarantee of unimpeded conveyance of surface flows from Tract D-1-A across Tract D-1-B for the benefit of the former. The second response involves completion of infrastructure improvements (a storm drain) which were originally designed with Project 2311 in 1985 and which were intended to be completed along with Phase II of the original apartment complex. Specifically, the remaining twenty-two feet of a 24" RCP storm drain along with a "Double-C" catch basin at the intersection of Vickrey Drive and Truchas Drive are to be constructed. Exhibit 6 shows the adequacy of a Double-C catch for the expected peak flow with containment of excess waters within right-of-way per typical street design. Exhibit 7 shows the excess available capacity of a 24" concrete pipe. The peak expected flow generated within Area "A"

as prepared by Hall Engineering compares favorably with the figure indicated on the profile of the proposed storm drain of Project 2311. Sheet 11 of 12 of that planset has been amended and annotated to reflect existing improvements and has been resubmitted to the City as Sheet 2 Of 2, Project No. 2311.91. A copy of this sheet is included as Exhibit 8. A letter of Escrow from the developer, American Federal Bank, F.S.B. of Dallas, Texas dated January 25, 1991 has been returned to City Public Works together with the new planset. The continuing guarantee involves proposed grant of Surface Drainage Easements across Tract D-1-B. Exhibit 9 demonstrates the adequacy of minimum 10-foot wide easement widths; Exhibit 10 shows the locations of the proposed easements, if deemed necessary considering the wording of note 10 on Sheet 2 of 3 of the proposed replat.

SUMMARY

What has been presented in this report is essentially an as-built study of the existing development. In this report it has been demonstrated that existing improvements made to date appear to be adequate for the time being and for the near future. Adequacy of proposed infrastructure improvements (storm drain to be completed under Project 2311.91) has also been confirmed. Comparison of gathered field information with the original intended drainage scheme shows that, with minor exceptions, it was followed during construction of the first phase of the apartment development. Deviations included only minor interior adjustments of interior basin areas and the number of actual outfalls into the constructed channel as compared to the number originally envisioned in the initial plan.

A

CONTRIBUTORY DRAINAGE AREA 8.2 ACRES

STREETS 1.4 AC (17.5%)

ROOFS, IMPERVIOUS LOT COVERAGE 3.9 AC (35%)

LANDSCAPING 3.9 AC (47.5%)

NO RETENTION IS ASSUMED NOR IS CREDIT TAKEN FOR ANY.

100 YEAR 6 HOUR STORM 2.4 INCHES

TIME OF CONCENTRATION 10 MINUTES

INTENSITY $(2.4 \times 6.84 \times 10^{-51}) = 5.07 \text{ IN/HR.}$

$$\text{WEIGHTED 'C'} = [(.175 + .35) \times .95] + (.475 \times .25) = .62$$

$$Q_{100} = .62 \times 5.07 \text{ IN/HR} \times 8.2 \text{ AC.} = \underline{25.8 \text{ CFS}}, \text{ PEAK}$$

$$Q_{10} = .657 Q_{100} = \underline{16.9 \text{ CFS}}$$

B

CONTRIBUTORY DRAINAGE AREA 4.18 ACRES

PARTIALLY DEVELOPED. FULL DEVELOPMENT ASSUMED
SIMILAR TO EXISTING ON REMAINDER OF TRACT

DRIVES, PARKING, ROOF 85%

LANDSCAPING 15%

NO RETENTION IS ASSUMED NOR IS CREDIT TAKEN FOR ANY.

FLOW PATTERN AND OVERALL CONTRIBUTORY BASIN IS
ASSUMED TO REMAIN UNCHANGED IN THE FUTURE. UPSTREAM
DISCHARGE POINT TO PINO ARROYO CHANNEL IS NOT
CONSIDERED.

$$\text{WEIGHTED 'C'} = (.85 \times .95) + (.15 \times .25) = .85$$

$$Q_{100} = .85 \times 5.07 \text{ IN/HR} \times 4.18 \text{ AC} = \underline{18.02 \text{ CFS}}, \text{ PEAK}$$

$$Q_{10} = .657 Q_{100} = \underline{11.84 \text{ CFS}}$$

INTERIOR BASINS, TRACT D-1-A

Area	%Impervious	C =	Acres	Q ₁₀₀ cfs	Q ₁₀ cfs
C-1	70	.74	.55	2.06	1.36
C-2	45	.56	.10	.28	.19
D-1	80	.81	1.11	4.56	2.99
D-2	40	.53	.38	1.02	.67
E-1	65	.71	.76	2.74	1.80
E-2	45	.56	.20	.57	.37
F-1	70	.74	1.60	6.00	3.94
F-2	60	.67	.31	1.05	.69
G-1	55	.64	1.72	5.58	3.67
G-2	80	.81	.36	1.48	.97
H-1	60	.67	.81	2.75	1.81
H-2	65	.71	.47	1.69	1.11
J-1	70	.74	.33	3.30	2.17
J-2	5	.29	.05	.07	.05

INTERIOR BASINS, TRACT D-1-B

Area	%Impervious	C =	Acres	Q ₁₀₀ cfs	Q ₁₀ cfs
K	57	.65	.05	.16	.11
L	57	.65	.38	1.25	.82
M	100	.95	.05	.24	.16
N	57	.65	1.17	3.86	2.53
P	57	.65	1.22	4.02	2.64
Q	57	.65	1.66	5.47	3.59
R	57	.65	.41	1.35	.89



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JOB Telegraph Hill
SUBJECT Drainage
JOB NO. _____ SHEET 2 OF _____
BY ZMG DATE 10-3-91
CHECKED _____ DATE _____

Collector Channel -

Worst Case - $Q = 16.97 - 2.75 = 14 \text{ cfs.}$
 $S = .0175$
 $n = .017 \text{ (Asphalt conc.)}$

Try  Asphaltic conc.

$$Q(n) = 14 \times (.017) = 0.24$$

From att. nomograph

$$d_n = 0.70 \text{ ft}$$

$$v_n = 0.105$$

$$Q = \frac{0.105}{.017} = 6 \text{ cfs.}$$

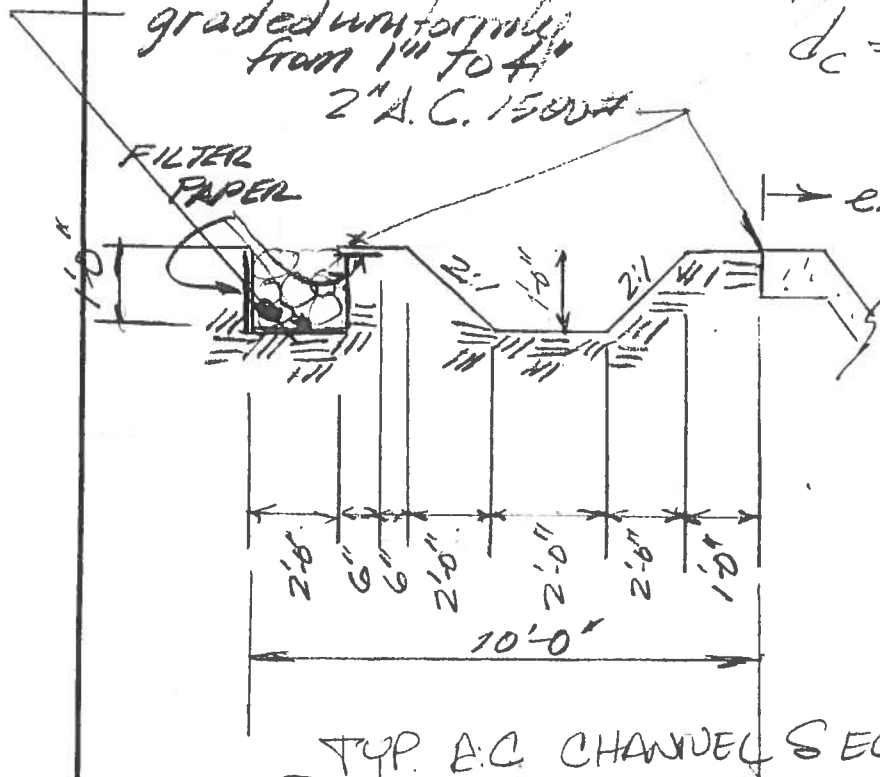
$$d_c = 0.6, \text{ so flow is subcritical}$$

Rock Rubble
graded uniformly
from 1" to 4"

2" A.C. 1500#

FILTER
PAPER

→ exist Pino Arroyo Channel



OCT



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JOB Telegraph Hill
SUBJECT Drainage
JOB NO. _____ SHEET 1 OF _____
BY DMG DATE 10-3-91
CHECKED _____ DATE _____

5' ¹⁷ CROSS CHANNELS CARRYING DRAINAGE FROM
ADJACENT PAVED PARKING AREAS -

Worst case:



$$17 = 1015$$

$$S = 0.0077$$

$$Q = 5.58 \text{ CFS}$$

From attached manhole -

$$d = 0.6 \text{ ft}$$

$$V = 5 \text{ fps}$$

Design channel:

CSS 1
Biphenyl



8" Asphalt Curb
per City Std Dwg 2445

EXIST. CONC. RUNDOWN



OCT 9



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JOB Telegraph Hill
SUBJECT Drainage
JOB NO. _____ SHEET 1 OF 2
BY DMG DATE 10-3-91
CHECKED _____ DATE _____

5' ¹⁷ CROSS CHANNELS ¹¹ CARRYING DRAINAGE FROM
ADJACENT PAVED PARKING AREAS -

Worst Case:



$$n = \frac{.017}{.017} \\ S = 0.0077$$

$$Q = 5.58 \text{ CFS}$$

From attached manhole -

$$Q_m = 5.58 (0.17) = 0.949$$

$$d = \frac{0.65}{0.6} \text{ ft } \checkmark$$

$$V_n = 0.07 \quad V = \frac{.07}{.017} = 4 \text{ fps}$$

$$V = \frac{5}{4} \text{ fps } \checkmark$$

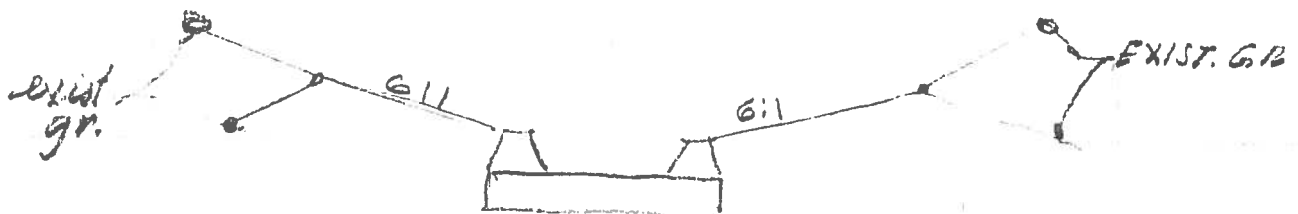
Design channel:

CSS 1
Bipump



8" Asphalt Curb
per City Std Dwg 2445

EXIST. CONC. RUNDOWN



OCT 18 1991



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JOB Telegraph Hill
SUBJECT Hydraulics
JOB NO. _____ SHEET 1 OF _____
BY ZG DATE 10-16-91
CHECKED _____ DATE _____

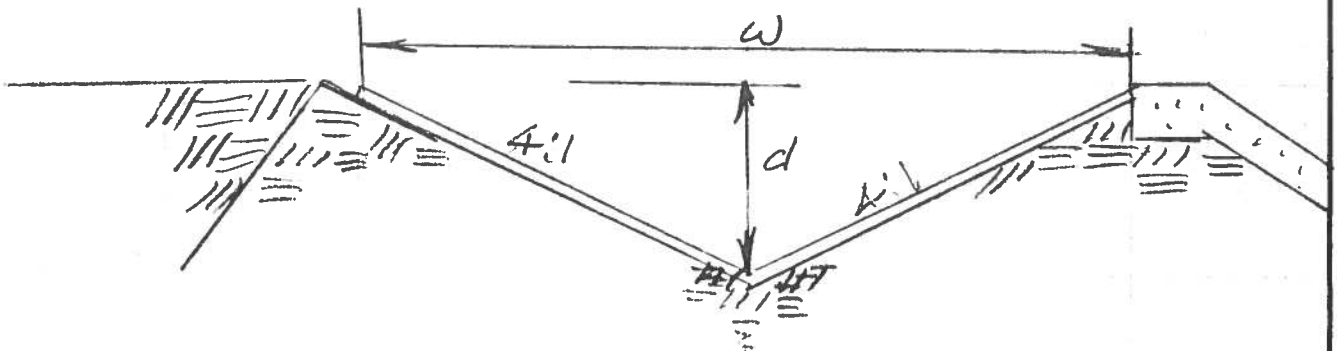
A.C. Channel -

Divide into indiv. sections to optimize channel design -

See layout (sheet 1) for designation of Segments 1 thru 5, and sheets 2 through 7 for calculation of channel sections - 4:1 side slopes, V-ditches

Summary:

Seg. #	Q	S	d	W
1	14.2 CFS	0.0170	0.80'	6.40'
2	8.6 CFS	0.0179	0.65'	5.20'
3	7.8 CFS	0.0216	0.60'	4.80'
4	10.0 CFS	0.0177	0.70'	5.60'
5	5.5 CFS	0.020	0.55'	4.40'



OCT 18 1991



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JOB TELEGRAPH HILL
SUBJECT HYDRAULICS
JOB NO. _____ SHEET 2 OF _____
BY ZB DATE 10-16-91
CHECKED _____ DATE _____

Segment 1:

$$\Delta = 45.2 - 40.3 = 4.90 \text{ ft}$$

$$\text{dwt.} = 238 \text{ ft}$$

$$S = 0.0170 \quad \sqrt{S} = 0.13$$

$$Q = 14.2 \text{ CFS.}$$



sides = 4:1

Try $d = 0.8$

$$W = 2(4 \times 0.8) = 6.40'$$

$$C = \sqrt{0.8^2 + 3.2^2} = \sqrt{0.64 + 10.24} = 3.30$$

$$WP = 2(3.30) = 6.60$$

$$A = \frac{1}{2}(6.40 \times 0.8) = 2.56$$

$$TR = \frac{2.56}{6.60} = 0.39$$

$$\frac{Q}{A} = \frac{14.2}{2.56} = 5.55 = \frac{1.49}{17} (R^{2/3} S^{1/2}) = 87.65 \times 0.53 \times 0.13 = 6.04$$

Try $d = 0.7$

$$W = 2(4 \times 0.7) = 5.60$$

$$C = \sqrt{0.7^2 + 2.8^2} = (0.49 + 7.84)^{1/2} = 2.89$$

$$WP = 2(2.89) = 5.78$$

$$A = \frac{1}{2}(5.60 \times 0.70) = 1.96$$

$$TR = \frac{1.96}{5.78} = 0.34$$

$$\frac{Q}{A} = \frac{14.2}{1.96} = 7.24 = 87.65(0.49)(0.13) = 5.58$$

So, make $d = 0.8$

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JOB TELEGRAPH HILL

SUBJECT HYDRAULICS

JOB NO. _____ SHEET 3 OF _____

BY ZB DATE 10-16-91

CHECKED _____ DATE _____

Segment 2:

$$\Delta = 51.15 - 45.2 = 5.95$$

$$d_{int} = 332$$

$$S = 0.0179$$

$$Q = 8.6 \text{ CFS}$$

Try $d = 0.50$

$$W = 2(4 \times 0.50) = 4$$

$$C = \sqrt{1/0.50^2 + 2^2} = \sqrt{1.25 + 4} = 2.06$$

$$W_p = 2(2.06) = 4.12$$

$$A = 4(1.5) \div 2 = 1.00$$

$$TR = \frac{3-1}{4.12} = 0.49 \rightarrow 0.24$$

$$\frac{Q}{A} = \frac{8.6}{1} = 8.6 = 87.65 \times (0.38) \times (0.13) = 4.33$$

Try $d = 0.60$

$$W = 2(4 \times 0.6) = 4.80$$

$$C = \sqrt{1/0.6^2 + 2.4^2} = (1.36 + 5.76)^{\frac{1}{2}} = 2.47$$

$$W_p = 2(2.47) = 4.94$$

$$A = (4.80 \times 0.6) \div 2 = 1.44$$

$$TR = 0.29 \rightarrow$$

$$\frac{8.6}{1.44} = 5.97 = 87.65 \times 0.44 \times 0.13 = 5.01$$

Try $d = 0.65$

$$W = 2(4 \times 0.65) = 5.20$$

$$C = \sqrt{1/0.65^2 + 2.6^2} = (0.42 + 6.76)^{\frac{1}{2}} = 2.68$$

$$W_p = 2(2.68) = 5.36$$

$$A = 5.2 \times 0.65 \div 2 = 1.69$$

$$TR = \frac{1.69}{5.36} = 0.32$$

$$\frac{8.6}{1.69} = 5.09 = 87.65 \times 0.47 \times 0.13 = 5.36$$

Set $d = 0.65$



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JOB TELEGRAPH HILL
SUBJECT HYDRAULICS
JOB NO. _____ SHEET 4 OF _____
BY ZB DATE 10-16-91
CHECKED _____ DATE _____

Segment 3:

$$\Delta = 61.1 - 52.8 = 8.30$$

$$\text{dist} = 385$$

$$S = 0.0216 \quad (S^{\frac{1}{2}} = 0.15)$$

$$Q = 7.81 \text{ CFS.}$$

$$\text{Try } d = 0.60$$

$$W = 2(4 \times 6) = 4.80$$

$$C = \sqrt{0.6^2 + 2.4^2} = (0.36 + 5.76)^{\frac{1}{2}} = 2.47$$

$$WP = 2(2.47) = 4.94$$

$$A = \frac{1}{2} \times 0.6 \times 4.8 = 1.44$$

$$TR = 0.29$$

$$\frac{7.81}{1.44} = 5.42 = 87.65 \times 0.44 \times 0.15 = 5.78$$

Set $d = 0.60 \text{ ft.}$

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JOB TELEGRAPH HILL
SUBJECT HYDRAULICS
JOB NO. _____ SHEET 5 OF _____
BY ZL DATE 10-16-91
CHECKED _____ DATE _____

Segment 4:

$$\Delta = 64.5 - 62.2 = 2.30$$

$$dist = 130$$

$$S = 0.0177 \quad S^{\frac{1}{2}} = 0.13$$

$$Q = 10.0 \text{ CFS}$$

$$\text{Try } d = 0.70 \quad W = 2(4 \times 1.7) = 5.60$$

$$C = 7 / \sqrt{1.7^2 + 2.8^2} = (0.49 + 7.84)^{\frac{1}{2}} = 2.89$$

$$WP = 2(2.89) = 5.78$$

$$A = \frac{1}{2} \times 1.7 \times 5.6 = 1.96$$

$$TR = \frac{1.96}{5.78} = 0.34$$

$$\frac{10}{1.96} = 5.10 = 82.65 \times 0.49 \times 0.13 = 5.59$$

$$\text{Set } d = 0.70'$$

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JOB TELEGRAPH Hill

SUBJECT HYDRAULICS

JOB NO. _____ SHEET 6 OF _____

BY Z6 DATE 10-16-91

CHECKED _____ DATE _____

Segment 5:

$$\Delta = 69.3 - 64.3 = 5.00$$

$$\text{CHIT} = 250'$$

$$S = 0.02 \quad S^{\frac{1}{2}} = 0.14$$

$$Q = 5.5 \text{ CFS}$$

$$\text{Try } d = 0.40 \quad W = 2(0.4 \times 4) = 3.20$$

$$C = \sqrt{0.4^2 + 1.60^2} = (0.16 + 2.56)^{\frac{1}{2}} = 1.65$$

$$WP = 2(1.65) = 3.30$$

$$A = \frac{1}{2} \times 0.40 \times 3.20 = 0.64$$

$$TR = \frac{0.64}{3.30} = 0.19$$

$$\frac{5.5}{0.64} = 8.59 = 87.65 \times 0.33 \times 0.14 = 4.05$$

$$\text{Try } d = 0.30 \quad W = 2(0.3 \times 4) = 2.40$$

$$C = \sqrt{0.3^2 + 1.2^2} = (0.09 + 1.44)^{\frac{1}{2}} = 1.24$$

$$WP = 2(1.24) = 2.48$$

$$A = \frac{1}{2} \times 0.30 \times 2.40 = 0.36$$

$$TR = \frac{0.36}{2.48} = 0.15$$

$$\frac{5.5}{0.36} = 15.28 = 87.65 \times 0.28 \times 0.14 = 3.44$$

$$\text{Try } d = 0.50 \quad W = 4$$

$$C = 2.06$$

$$WP = 4.12$$

$$A = 1.00$$

$$TR = 0.24$$

$$\frac{5.5}{1} = 5.5 = 87.65 \times 0.38 \times 0.14 = 4.66$$



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JOB TELEGRAPH HILL

SUBJECT HYDRAULICS

JOB NO. _____

SHEET 7 OF _____

BY _____

DATE 10-16-91

CHECKED _____

DATE _____

Segment 5 (cont.)

$$\text{Try } d = 0.55 \quad W = 2(0.55 \times 4) = 4.40$$

$$C = \sqrt{0.55^2 + 2.20^2} = (0.25 + 4.84)^{\frac{1}{2}} = 2.26$$

$$Wp = 2(2.26) = 4.52$$

$$A = \frac{1}{2}(0.55 \times 4.40) = 1.21$$

$$R = \frac{1.21}{4.52} = 0.27 \quad R^{\frac{2}{3}} = 0.42$$

$$\frac{5.5}{7.21} = 4.55 = 87.65 \times 0.42 \times 0.114 = 5.15$$

Set $d = 0.55'$



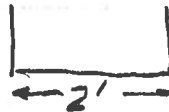
D. Mark Goodwin & Associates, P.A.
Consulting Engineers and Surveyors

JOB Telegraph Hill
SUBJECT DRAINAGE
JOB NO. _____ SHEET 1 OF 1
BY ZMB DATE 11-25-91
CHECKED _____ DATE _____

CROSS CHANNELS.

NOV 26 1991

Orig. Worst Case



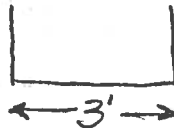
$$\begin{aligned}n &= .015 \\S &= .0077 \\Q &= 5.58\end{aligned}$$

SEE ATT. NOMOGRAPH $d = 0.6' = 7.2''$

$$V = 5 \text{ FPS}$$

USE 8" CURB

Rev. Worst Case



$$\begin{aligned}n &= .015 \\S &= .0077 \\Q &= 5.58\end{aligned}$$

SEE ATTACHED NOMOGRAPH.

$$d = 0.4 = 4.8'' \text{ USE 6'' CURB}$$

$$V = 4 \text{ FPS}$$

Bernie - what made this change possible was the discovery that all of the existing roundovers are 4' wide instead of 3' wide as is shown on Hill's survey.

ZG.

85 33265

Academy Acres
Unit 17

656

REAL PROPERTY ENCROACHMENT AGREEMENT

THIS AGREEMENT made this 29th day of APRIL, 1985, by and between the City of Albuquerque, a New Mexico municipal corporation (City), and Cimarron Equity Corporation (User).

RECITAL

The User is the owner of certain real property located at 7000 Louisiana NE in Albuquerque, New Mexico, and more particularly described as follows:

See Description Attached

The City is the owner of certain real property, easement, or public right-of-way adjoining, overlaying or abutting the above described property of the User. The User wishes to encroach upon the City's and AMAFCA's easement by constructing an improvement thereon upon the City's property as follows:

Channel Bank Protection on the south bank of Pino Arroyo

A sketch of the proposed improvement is attached hereto and made a part of this Agreement.

The City is agreeable to the encroachment of said improvement provided that the User comply with the provisions and covenants contained herein.

NOW THEREFORE, in consideration of the mutual covenants contained herein, it is agreed by and between the City and User that the User may construct and/or maintain, at his own expense, the improvement described herein. The improvement will be completed by User within 60 days of issuance of the building permit. If the improvement is not completed within 60 days of the issuance of the building permit, the City may construct the improvements and the User immediately will pay the City the cost of construction.

RESPONSIBILITY

The User shall be responsible for the construction and/or maintenance of said improvement and it shall conform to all laws and ordinances and administrative regulations applicable thereto. Said improvement shall not constitute a hazard to the health or safety of the general public and shall not interfere with the City's use of the property.

INDEMNIFICATION AND HOLD HARMLESS

The User shall agree to defend, indemnify, and hold harmless, the City its officials, agents, and employees from and against any and all claims, actions, suits or proceedings of any kind brought against said parties for or on account of any matter arising from the encroachment by the User or the User's failure to construct the improvement or to maintain, modify or remove the encroachment under this Agreement.

REMOVAL

The User shall remove, modify, maintain or cause same to be done and cause the premises to be returned to the original condition within 60 days after receipt of written Notice from the City. The City agrees to not demand

said removal and restoration to original condition until such time as the City is prepared to construct the concrete lined channel improvements of the Pino Arroyo east of Louisiana Boulevard NE. Notice shall be considered to have been received within six days after the notice is mailed if there is no actual evidence of receipt. In the event the User shall fail to comply with the Notice after the receipt of the same, the City may undertake the project, at the expense of the User, and enter upon the property and restore it to original condition as may be necessary to do so. The City shall assess the charge for same and any other expenses and damages arising therefrom to the User and file a lien therefor on the adjacent real property of the User.

LIABILITY

The City shall not be liable for any damages to the User's property or the improvement that may result from the maintenance, removal or any modification of the improvement.

NOTICE

The written notice provided for herein shall be accomplished by mailing same to:

Cimarron Equity Corporation
7700 San Felipe, Suite 400
Houston, TX 77063

The User may change said address by giving written notice, certified mail, return receipt requested, to the City Engineer, at 400 Marquette NW, Albuquerque, New Mexico 87102.

COVENANT RUNNING WITH THE PROPERTY

The obligation of the User set forth herein shall be binding upon the User, his heirs, and assigns, and the property of the User as described herein and will run with said property until released by the City..

USER * CIMARRON EQUITY CORPORATION

BY: C. H. Morrow
C. H. MORROW, VICE PRESIDENT

REVIEWED BY THE LEGAL DEPARTMENT

Adelia L. Kearney
Assistant City Attorney

[Signature]
City Attorney

CITY OF ALBUQUERQUE

[Signature]
Chief Administrative Officer

ATTEST:

[Signature]
City Clerk

ACKNOWLEDGEMENTS

STATE OF NEW MEXICO)
) ss.
COUNTY OF BERNALILLO)

The foregoing instrument was acknowledged before me this 18th day of April, 1985, by C. H. Morrow, Vice President of Cimarron Equity Corporation, a Texas corporation, on behalf of said corporation.

My Commission Expires:

11-2-86

Carolyn Hudson
Notary Public



OFFICIAL SEAL

Signature Carolyn Hudson

CAROLYN HUDSON

NOTARY PUBLIC - NEW MEXICO

Notary Bond Filed with Secretary of State

My Commission Expires: 11-2-86

STATE OF NEW MEXICO)
) ss.
COUNTY OF BERNALILLO)

The foregoing instrument was acknowledged before me on this 26th day of April, 1985, by Frank A. Kleinhens, Chief Administrative Officer of the City of Albuquerque, municipal corporation, on behalf of said corporation.

John P. Grant
Notary Public

My Commission Expires:

12/18/88

91104661

DRAINAGE AGREEMENT

This Drainage Agreement, entered into this 19TH day of DECEMBER, 1991, between AMERICAN FEDERAL BANK, F.S.B., a federal savings bank, whose address is 14001 N. Dallas Parkway, Dallas, Texas 75270 ("American Federal"), and the CITY OF ALBUQUERQUE, a New Mexico municipal corporation, whose address is P. O. Box 1293, Albuquerque, New Mexico 87103 ("City"), is made in Albuquerque, Bernalillo County, New Mexico.

1. **Recitals.** American Federal is the owner of certain improved real property located in Albuquerque, New Mexico, and lettered D-1-A of Academy Acres Unit 17 ("Tract D-1-A"), and of certain unimproved real property located in Albuquerque, New Mexico, adjacent to Tract D-1-A and lettered D-1-B of Academy Acres Unit 17 ("Tract D-1-B"), as the same are shown and designated on the attached proposed Subdivision Plat of Tracts D-1-A and D-1-B, Academy Acres Unit 17 (the "Plat"). Tract D-1-A and Tract D-1-B are sometimes hereinafter referred to collectively as the "Properties." It is anticipated by the parties that ownership of Tract D-1-A will be transferred before commencement of construction of improvements on Tract D-1-B. The parties intend to record the Plat in connection with said transfer.

The parties want to provide for the express grant by the owner of Tract D-1-A and the owner of Tract D-1-B of certain surface, drainage and flowage easements on the Properties. Private temporary drainage facilities consisting of 5 rundown channels have been constructed on said easements as shown on the "as-built" drawings prepared by D. Mark Goodwin & Associates, dated 10/18/91 (the "Drainage Facilities").

Pursuant to City ordinances, regulations and other applicable laws, the owner of Tract D-1-A is required to maintain the portion of the Drainage Facilities located on Tract D-1-A and the owner of Tract D-1-B is required to maintain the portion of the Drainage Facilities located on Tract D-1-B. The parties wish to enter into this Agreement to establish the obligations and responsibilities of the owner of Tract D-1-A and the owner of Tract D-1-B as to maintenance of the Drainage Facilities while Tract D-1-B is unimproved and after the commencement of construction of improvements thereon.

2. Declaration of Easements. The owner of Tract D-1-B hereby declares and grants, for the benefit of Tract D-1-A, the surface drainage and flowage easements, marked 1 through 5 on attached Exhibit A, for the flow of water from Tract D-1-A across Tract D-1-B to the Pino Arroyo (the "Easements"). The Easements are subject to the provisions of the existing waterline easements on the Properties. The City hereby reaffirms its obligation to promptly repair any damage to the Easements caused by the activities of the City or the employees, licensees or agents of the City in connection with such existing waterline easements and to restore the Easements to the same condition as, or as nearly as reasonably possible to, the condition of the Easements before commencement of such activities.

3. Maintenance of Drainage Facilities. For so long as construction of improvements on Tract D-1-B has not commenced, the owner of Tract D-1-A will maintain and keep in good repair the Drainage Facilities at the expense of the owner of Tract D-1-A. Upon and after the commencement of construction of improvements including, without limitation, any excavation or grading of any part of Tract D-1-B, the owner of Tract D-1-B and the owner of Tract D-1-A will be jointly and severally obligated to maintain that portion of the Drainage Facilities located on Tract D-1-B. In addition, the owner of Tract D-1-A will be obligated to maintain that portion of the Drainage Facilities located on Tract D-1-A. After the earlier of (i) issuance of a certificate of occupancy to the owner of Tract D-1-B, or (ii) certification by an engineer registered in New Mexico that permanent Drainage Facilities have been completed upon Tract D-1-B by the owner of Tract D-1-B in accordance with the approved site plan, the owner of Tract D-1-A will be obligated to maintain only that portion of the Drainage Facilities located on Tract D-1-A and the owner of Tract D-1-B will be obligated to maintain that portion of the Drainage Facilities located on Tract D-1-B.

4. City's Right of Entry. Subject to Section 8 hereof, the City has the right to enter upon the Properties at any time and perform whatever inspection of the Drainage Facilities it deems appropriate, without liability for such entry to the owner of Tract D-1-A or the owner of Tract D-1-B. In exercising such right, the City will take all reasonable steps to minimize any interference with the occupants of the Properties.

5. Demand for Repair. In accordance with the respective obligations set forth in Section 3 hereof, the City may send written notice ("Notice") to the owner of Tract D-1-A or to the owner of Tract D-1-B requiring the owner of Tract D-1-A or the owner of Tract D-1-B to repair the Drainage Facilities, such repairs to be commenced promptly and completed within 60 days (the "Deadline") of receipt of the Notice, as provided in Section 11. The recipient of such Notice will comply promptly with the requirements of any such Notice. The recipient of such Notice will perform all required work by the Deadline, at its sole expense in accordance with its obligations as set forth in Section 3. If performance of any act or obligation of either the owner of Tract D-1-A or the owner of Tract D-1-B is prevented or delayed by reason of an Act of God, war, labor dispute or other cause or causes beyond the reasonable control of such party (not including the payment of money), the rights and requirements for performance of such act or obligation will be abated for the period that performance of such act or obligation is delayed or prevented by any such cause.

6. Failure to Perform by the Owner of Tract D-1-A. If the owner of Tract D-1-A fails to comply with the terms of the Notice by the Deadline, or if the City determines that an emergency condition exists, the owner of Tract D-1-B or the City may, but neither is obligated to, take whatever steps are necessary to make the repairs required under the Notice. The owner of Tract D-1-A will reimburse, on demand, the owner of Tract D-1-B or the City for the cost and expense of the work on Tract D-1-A performed by the owner of Tract D-1-B or the City and for any other expenses or damages which result from the failure of the owner of Tract D-1-A to perform. If the owner of Tract D-1-A fails to reimburse the owner of Tract D-1-B or the City for any amounts due pursuant to this Section 6, within 30 days of demand for such amounts, the owner of Tract D-1-B or the City, as applicable, will have the right to pursue any remedy at law or in equity to obtain such payment, including enforcement of the City's lien rights under the City Drainage Ordinance Section 7-9-14, and Chapter 3, Article 36, NMSA 1978 and further will be entitled to interest on the unpaid amount from its due date until the date full payment is made by the owner of Tract D-1-A at

22

the rate of interest set forth in § 56-8-4 NMSA 1978 (the "Default Rate"). Subsequent transfer of title to Tract D-1-A will not affect the rights of the owner of Tract D-1-B or the City pursuant to this Section 6.

7. Failure to Perform by the Owner of Tract D-1-B. If the owner of Tract D-1-B fails to comply with the terms of the Notice by the Deadline, or if the City determines that an emergency condition exists, the owner of Tract D-1-A or the City may, but neither is obligated to, take whatever steps are necessary to make the repairs required under the Notice. The owner of Tract D-1-B will reimburse, on demand, the owner of Tract D-1-A or the City for the cost and expense of the work on Tract D-1-B performed by the owner of Tract D-1-A or the City and for any other expenses or damages which result from the failure of the owner of Tract D-1-B to perform. If the owner of Tract D-1-B fails to reimburse the owner of Tract D-1-A or the City for any amounts due pursuant to this Section 7, within 30 days of demand for such amounts, the owner of Tract D-1-A or the City, as applicable, will have the right to pursue any remedy at law or in equity to obtain such payment, including enforcement of the City's lien rights under the City Drainage Ordinance, Section 7-9-14, and Chapter 3, Article 36, NMSA 1978 and further will be entitled to interest on the unpaid amount from its due date until the date full payment is made by the owner of Tract D-1-B at the Default Rate. Subsequent transfer of title to Tract D-1-B will not affect the rights of the owner of Tract D-1-A or the City pursuant to this Section 7.

8. Liability of City for Repair after Notice or as a Result of Emergency. The City will not be liable to the owner of Tract D-1-A and the owner of Tract D-1-B, or either of them, for any damages resulting from the City's repair or maintenance following Notice as required in this Agreement or in an emergency unless the damages are the result of the reckless conduct or gross negligence of the City.

9. Indemnification. The owners of Tract D-1-A and Tract D-1-B will indemnify and hold harmless the City, its officials, agents and employees from any loss or expense arising out of the use of the Easements or maintenance of the Drainage Facilities and caused by the acts or omissions of the indemnifying party and the

employees, agents, licensees or invitees of the indemnifying party.

10. Termination of City's Rights and Obligations by City. The City may terminate its rights and release the obligations of the owner of Tract D-1-A and the owner of Tract D-1-B to the City under this Agreement upon mailing by the City to the owner of Tract D-1-A and the owner of Tract D-1-B notice of the city's intention to record a Release with the Clerk of Bernalillo County. The Release will be effective thirty (30) days after the date of mailing the notice unless a later date is stated in the notice or in the Release. After the effective date, the City will record the Release with the Clerk of Bernalillo County. The rights and obligations of the owner of Tract D-1-A and the owner of Tract D-1-B to the other will not be affected by the recording of the Release and will remain in full force and effect.

11. Notice. Any notice to be given as provided in this Agreement will be given in writing and will be deemed to have been given when delivered in person or sent by regular U.S. mail, postage paid, addressed:

If to American Federal:

American Federal Bank, F.S.B.
14001 N. Dallas Parkway
Dallas, Texas 75270

with a copy to:

Winstead Sachrest & Minick
8400 Renaissance Tower
1202 Elm Street
Dallas, Texas 75270
Attn: Kelley Fitzpatrick, Esq.

If to City:

City Public Works Department
P. O. Box 1293
Albuquerque, New Mexico 87103

Notice will be considered to have been received within 6 days after the notice is mailed if there is no actual evidence of receipt. Any party hereto may change its address by giving written notice of the change by

certified mail, return receipt requested, to the other parties.

12. Term. The covenants, rights and obligations established by this Agreement will remain in effect until terminated by the written agreement of the parties and their successors and assigns. Execution of such agreement by the City will not be required if the City has, prior to the effective date of termination, released its rights pursuant to Section 10 of this Agreement.

13. Covenants to Run with the Properties. The covenants and obligations of the owner of Tract D-1-A and the owner of Tract D-1-B set forth herein will be binding on the owner of Tract D-1-A and the owner of Tract D-1-B and their respective transferees, assigns and successors and on their respective properties and constitute covenants running with their respective properties until released by the City.

14. Entire Agreement. This Agreement contains the entire agreement of the parties with respect to the subject matter hereof and supersedes any and all other agreements or understandings, oral or written, whether previous to the execution hereof or contemporaneous herewith with respect to the subject matter hereof.

15. Changes to Agreement. Changes to this Agreement are not binding unless made in writing, signed by the parties.

16. Construction and Severability. If any part of this Agreement is held to be invalid or unenforceable, the remainder of the Agreement will remain valid and enforceable if the remainder is reasonably capable of completion.

17. Captions. The captions to the sections or paragraphs of this Agreement are not part of this Agreement and will not affect the meaning or construction of any of its provisions.

18. Agreement Not Changed. American Federal and the City agree that changes to the wording of this Agreement are not binding upon the City unless initialed by the owner of Tract D-1-A and the owner of Tract D-1-B

and approved and signed by the City Legal Department in writing on this Agreement.

AMERICAN FEDERAL BANK,
F.B.B., a federal savings
bank

CITY OF ALBUQUERQUE

By *Dan Litauer*
Its Vice President

By *Arthur A. Blumenfeld*
Its Chief Administrative Officer

STATE OF New Mexico
COUNTY OF Bernalillo

ss.

James J. Hicks
CITY ENGINEER

12-19-91

The foregoing instrument was acknowledged before me on December 13, 1991, 1991, by Dan Litauer,
Vice Pres. of American Federal Bank, F.B.B.,
a federal savings bank, on behalf of the bank.

Lucho R. Garcia
Notary Public

My commission expires:

2-19-94

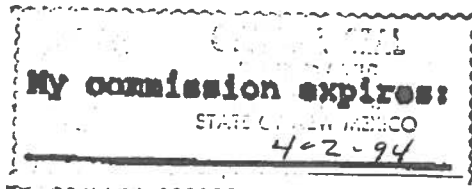
STATE OF NEW MEXICO
COUNTY OF BERNALILLO

ss.

The foregoing instrument was acknowledged before me on Dec. 19, 1991, 1991, by Arthur A. Blumenfeld,
Chief Administrative Officer of the City of Albuquerque, a New

0004398

Mexico municipal corporation, on behalf of the
corporation.



Ernie Davis
Notary Public

1404HND

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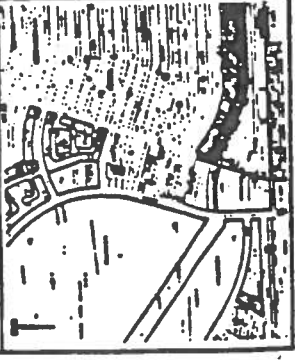
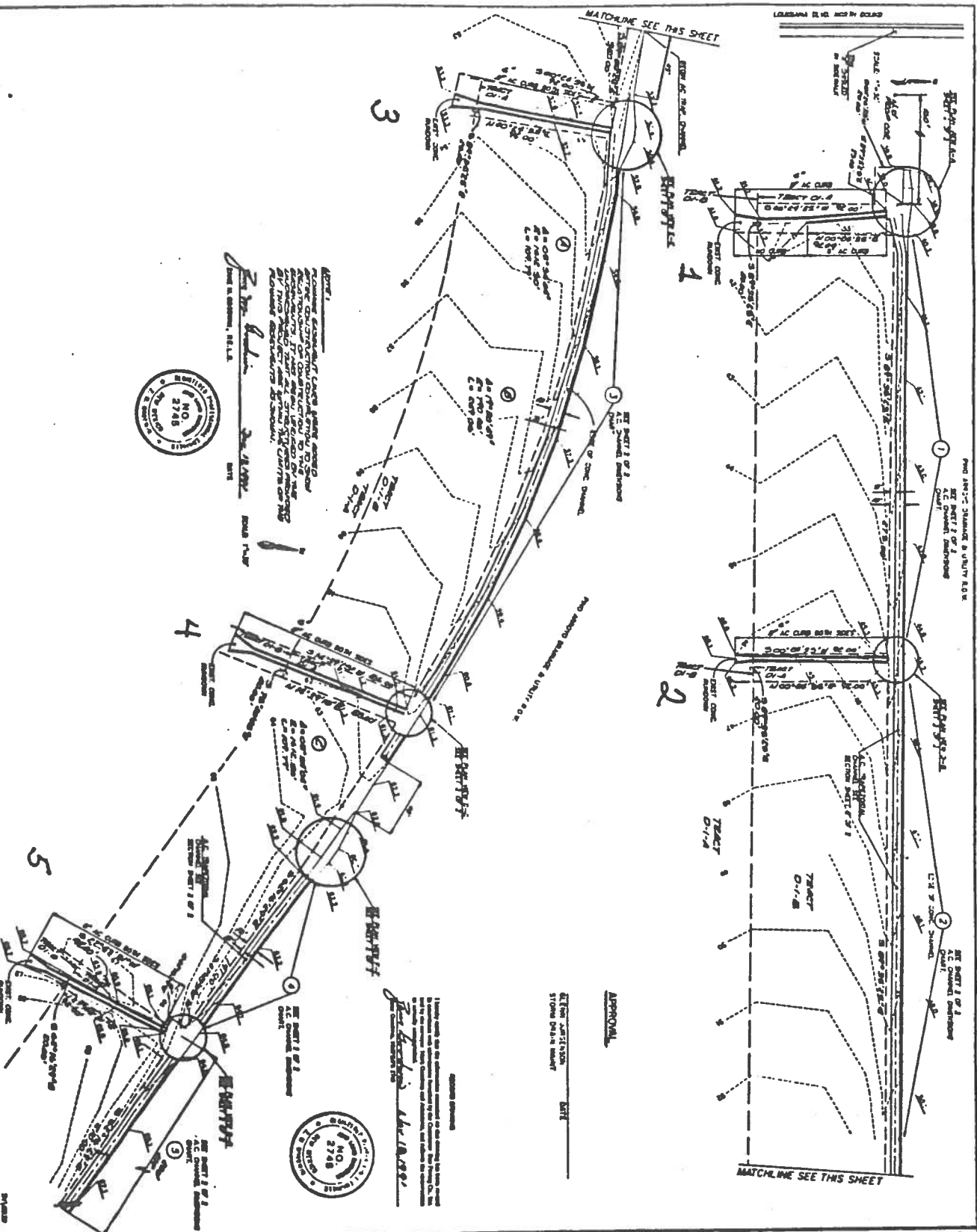
STATE OF NEW MEXICO
COUNTY OF BERNALILLO
FILED FOR RECORD

91 DEC 20 AM 8:04

BK 502 PG 4391-4399
GLADYS M. DAVIS
CO CLERK & RECORDER

[Signature]
DEPUTY

C6C4399



Depiction of Flowage and Drainage easements as constructed on proposed Tract D-1-B, being a portion of Tract D-1, as shown on the plat of Tract D-1 and D-2, Academy Acres, Unit 17, filed March 26, 1985 in the Office of the County Clerk of Bernalillo County, New Mexico, in Vol. C26, p. 162.

TELEGRAPH HILL APARTMENTS
GRADING & DRAINAGE PLAN
dmg
D. MARK GORDON & ASSOCIATES, P.A.
CONSULTING ENGINEERS & SURVEYORS
P.O. BOX 50804
ALBUQUERQUE, NEW MEXICO 87198
(505) 878-2100