HYDROLOGY F21/D1 THREE PLANS

F21/D1

3 Plans

JAMES D. SMITH
EXECUTIVE ENGINEER

B. H. SWINBURNE, CHAIRMAN
WILLIAM V. HEREFORD, VICE-CHAIRMAN
FRANCES McCOY, SECRETARY-TREASURER
VERNON DOAK, DIRECTOR
RICHARD H. CLOUGH, DIRECTOR

Albuquerque
Metropolitan
Arroyo
Flood
Control
Authority
2600 PROSPECT AVE. N.E.
P. O. BOX 25851 - ALBUQUERQUE, N. M. 87125
TELEPHONE 344-3516

RECEIVED
JAN 31 1978
CITY ENGINEERS

January 27, 1978

Mr. Bruno Conegliano, Engineer
Public Works Department
City of Albuquerque
Post Office Box 1293
Albuquerque, New Mexico 87103

Re: Academy Knolls Subdivision

Dear Bruno:

We have reviewed the revised grading plan for the above captioned subdivision and find no objection to this proposed development.

Sincerely yours,

James D. Smith

James D. Smith
Executive Engineer

cc: Mr. Tom Mann
Goldberg - Mann Associates
2929 Wisconsin, N.E., Suite E
Albuquerque, New Mexico 87110

WS:sls

REALTOR

5200 Copper Avenue, N.E. / 505-265-9593 / Albuquerque, New Mexico 87108

DATE: January 18, 1978

TO: Bruno Conegliano, City of Albuquerque

FROM: Richard L. Bock, Agent

RE: Academy Knolls Subdivision, as related to drainage on the South Boundary on the easement which is a part of the Subdivisions to the South

Please find attached, two copies of revised drainage solution.

We feel this solution is ideal for the development problem and does not impose undue restrictions on the builder - homeowner as related to the design grades and retaining problem at the rear of the lots backing into the drainage channel. The builder - homeowner is hereby allowed to reach their own design solution acceptable to the "powers that be" on their private lot.

We hope this design meets with your acceptance and you do not have to concern the rear line of the private lots for anything further.

Richard L Bock

City of Albuquerque
P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

MAYOR
Harry E. Kinney

CHIEF
ADMINISTRATIVE OFFICER
Frank A. Kleinhenz

November 2, 1977

F21-D1

Mr. Thomas T. Mann Jr.
Goldberg Mann & Assoc.
2329 Wisconsin SE
Albuquerque, NM 87110

RE: Drainage Report for Academy Knoll

Dear Tom:

I just realized that after the review of the drainage report for Academy Knoll and after my verbal concurrence with the plan submitted, I have never followed with a formal letter communicating my acceptance of the drainage plan. Well, this letter is to indicate to you and to the developer that the drainage report submitted is acceptable to the City.

Very truly yours,

Bruno Conegliano
Asst. City Engineer-Hydrology

BC/gm

cc; Jim Smith
V.M. Kimmick
Drainage file

Goldberg · Mann & Associates
Engineers·Planners
911 Pennsylvania St. Albuquerque, New Mexico 87110 (505) 265-3521

June 13, 1978

7-23

Mr. Bruno Conegliano
P.O. Box 1293
Albuquerque, NM 87103

Re: Academy Knolls Drainage Channel

Dear Bruno:

As per your request, transmitted herewith is a plan and sections showing the proposed channel along the south boundary of Academy Knolls Subdivision.

We request that you allow us to shift the channel alignment to make it symetrical about the centerline of the easement rather than as shown on sheet 4 of 6 of the construction drawings.

Your signature below and the return of this letter will signify your concurrance with our request.

Thank you.

Bruno Conegliano

Thomas T. Mann, Jr., P.E.
President

c.c. R. Bock

home planning development co.
2900 Louisiana Blvd., N.E. Suite 210
Albuquerque, New Mexico 87110
Phone 505-296-5451

June 8, 1977

Assistant City Engineer, Hydrology
City of Albuquerque
P.O. Box 1293
Albuquerque, New Mexico 87103
ATTN: Mr. Bruno Conegliano

RE: Tract K (Academy Knolls) drainage

Dear Mr. Conegliano:

From our recent conversation it is Home Planning's understanding that no ponding will be necessary on the 2.768 acre O-1 tract north of Academy Knolls if Home Planning Development Company builds a structure to carry the water through to the canal south of the subdivision.

If this is the case, please sign the appropriate space below.

Thank you for your cooperation.

Sincerely,

HOME PLANNING DEVELOPMENT COMPANY, INC.

Joseph Horvath

Joseph Horvath
Project Engineer

Approved: _____ Date _____

Approved: _____ Date _____

homes with the ACCENT on individuality

ENGINEERS & PHOTOGRAMMETRISTS

BOHANNAN WESTMAN HUSTON & ASSOCIATES INC.

4125 CARLISLE BLVD., N.E.
ALBUQUERQUE, NEW MEXICO 87107
PHONE 505 881-2000

May 24, 1977

Mr. Bruno Conegliano
Assistant City Engineer,
Hydrology
City of Albuquerque
P. O. Box 1293
Albuquerque, New Mexico 87103

RECEIVED
MAY 27 1977
CITY ENGINEERS

Re: Academy Knolls Drainage Report

Dear Mr. Conegliano:

As agents for Home Planning Development Company, we are submitting this drainage report for Academy Knolls.

If you should have any questions regarding this matter, please feel free to contact this office. We are looking forward to hearing from you in the near future.

Sincerely,

Michial M. Emery

Michial M. Emery, P. E.
Chief Design Engineer

Enclosure

cc: Home Planning

MJI/dlh
Job No. 77-101

DRAINAGE REPORT

for

ACADEMY KNOLLS

subdivision

Goldberg · Mann & Associates
Engineers · Planners
2329 Wisconsin N.E., Albuquerque, New Mexico 87110

DRAINAGE REPORT

for

ACADEMY KNOLLS

subdivision

Goldberg · Mann & Associates
Engineers · Planners
2329 Wisconsin N.E., Albuquerque, New Mexico 87110

Goldberg · Mann & Associates
Engineers · Planners
2329 Wisconsin N.E., Suite 5 Albuquerque, New Mexico 87110 (505) 292-1092

October 7, 1977

Mr. Richard L. Bock
4821 Todd N.E.
Albuquerque, New Mexico

Re: Academy Knolls Subdivision

We are herewith transmitting three (3) copies of the drainage plan for the Academy Knolls Subdivision.

This plan is in accordance with the requirements of the City of Albuquerque and Resolution 1972-2, Albuquerque Metropolitan Arroyo Flood Control Authority.

We have enjoyed working with you on this project and look forward to future opportunities to assist you.

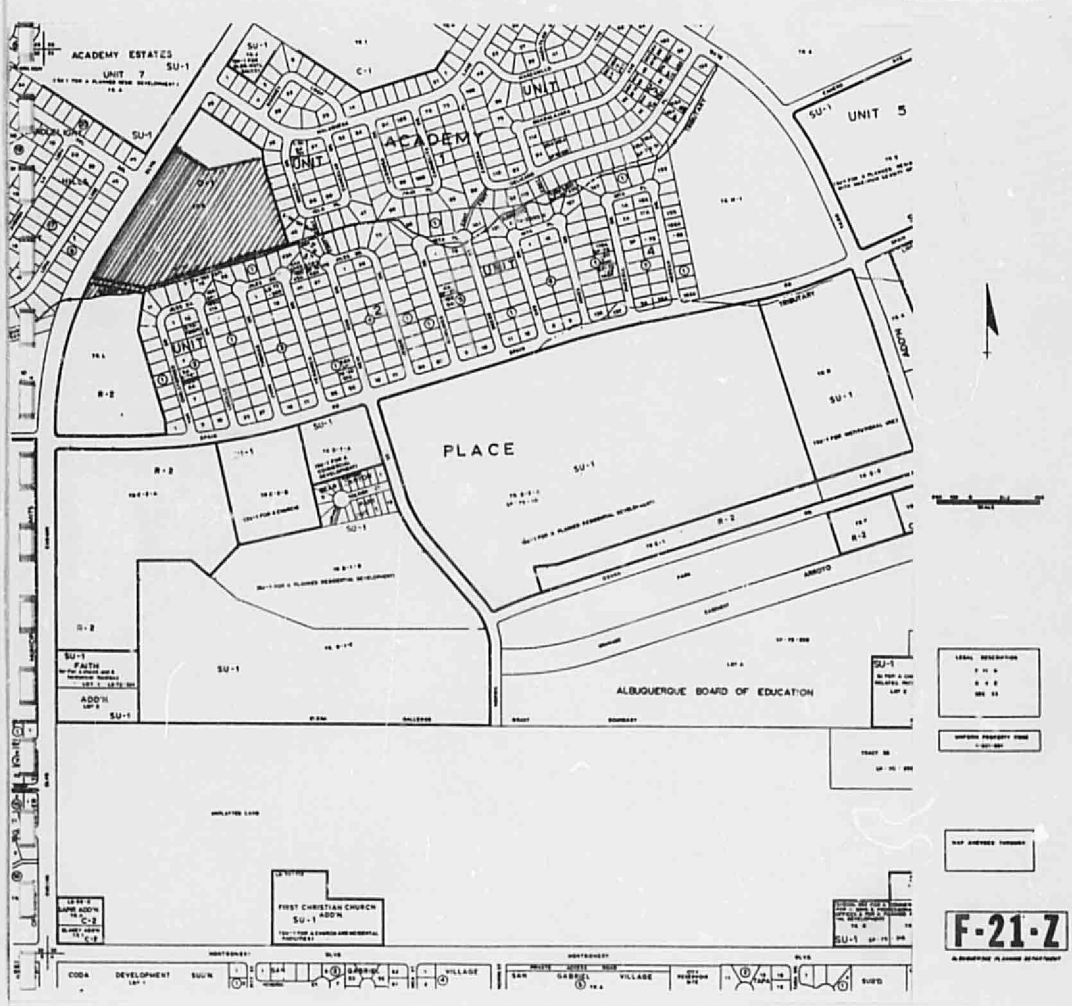
Yours sincerely,

Thomas T. Mann Jr. P.E.
President

TTM:eg

FIGURE 1.
LOCATION MAP

DATE
RECEIVED_____



APPLICANT

NAME: Richard L. Bock
ADDRESS: 4821 Todd N.E.
Albuquerque, N.M.
PHONE: 299-0137
SIGNATURE: Richard L. Bock

LOCATION OF PARCEL

LOT NO: 1 - 9 BLOCK NO: Tract K
SUBDIVISION: Academy Place Unit 4
STREET ADDRESS: Eubank Blvd. and
Camino del Sol
CURRENT ZONING: O-1 / R-1

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Purpose and Scope

The purpose of this drainage plan is to establish the criteria for controlling surface runoff from a particular development in a manner that is acceptable to the City of Albuquerque and to the Albuquerque Metropolitan Arroyo Flood Control Authority.

This plan will determine the runoff resulting from a 100-year frequency storm falling on the site of the Academy Knolls Subdivision under existing and developed conditions.

The scope of this plan is to insure that the proposed project will be protected from storm runoff and that the construction of this project will not increase the flooding potential of the adjacent properties.

Location and Description of Project

The Academy Knolls Subdivision is located within the corporate limits of the City of Albuquerque in the Northeast Heights. The parcel is located on the east side of Eubank Boulevard between Spain Road and Malaguena Lane. The legal description is Township 11 North, Range 4 East Section 33.

This parcel is 10.87 acres in size and will be developed as a single family residential subdivision. The natural topography of the area slopes from the northeast to southwest at approximately 3.1 percent. The vegetation is sparce and the soils are composed of decomposed granite.

Design Criteria

In analyzing the storm runoff, the Rational Formula, $Q = CIA\ C_f$ is used.

Where:

Q = Runoff quantity in cubic feet/second.

A = Contributing area in acres.

C_f = Frequency factor for Rational Formula.

I = Intensity in inches/hour for a duration equal to the time of accumulation (duration) measured in minutes and obtained from Figure 2, Intensity Duration Frequency Curves, Albuquerque Area 1961. (Note: Where a Time of Concentration [Tc] is less than ten minutes, the intensity value derived from a Tc of ten minutes is employed.)

C = Runoff Coefficient (No Units). This coefficient represents the integrated effects of infiltration, detention storage, evaporation, retention, flow routing, and interception which all affect the time distribution and peak rate of runoff.

ACADEMY KNOLLS

EXISTING DRAINAGE CONDITIONS

The existing countours and drainage basins are shown in Figure 4. The property to the east has been developed in single family residences and retaining walls essentially prevent flows from leaving the lots. The property to the south and west is lower than the proposed subdivision. The property to the north is undeveloped and will discharge approximately 4.0 cfs into the proposed subdivision. Eubank Blvd. collects flows from the north and currently discharges into the Bear Canyon Arroyo Tributary which is adjacent to the south boundary of the proposed subdivision. The tributary carries flows from the east. The existing flows in the tributary are estimately to 52.5 cfs. The east end of the tributary has a soil bottom and the middle portion has an asphalt bottom. The easement is 15 feet wide.

PROPOSED DRAINAGE CONDITIONS

The grading plan for the proposed subdivision is shown in Figure 5. The offsite flows from the north plus the flows from the O-1 property will be conveyed through the subdivision to the tributary utilizing pipe. The pipe will be sized to convey the undeveloped flow of 9.0 cfs.

All lots within the subdivision will have rear yard ponding areas as shown in Figure 3. The runoff from the front of the lots will be carried in the streets until

it reaches the storm drain in the vicinity of lots 2, 3, 30 and 31. A single 'C' type inlet will be constructed in each gutter to intercept the flow and introduce the flow into the drainage system. The inlets and downstream piping will convey approximately 58% of flows of the developed state. Excess flows will continue to Eubank Blvd. and on to the tributary. The pipe downstream of the inlets will be sized to convey approximately 19 cfs.

The storm drain will discharge into the tributary. At the discharge point, appropriate facilities will be designed to divert the flow down the tributary. Downstream from the storm drain a 7.5 foot wide asphalt strip will be constructed to protect wall footings adjacent to the tributary. The lining will be simlar to the upstream asphalt lining.

CONCLUSIONS

The following conclusions and recommendations are made for the development of Academy Knolls.

1. Backyard ponding for all lots.
2. A storm drain system to convey storm water from offsite and the O-1 property into the Bear Canyon Arroyo Tributary.
3. Two drop inlet in Academy Knolls Drive to divert flows into the storm drain system.
4. A 7.5 foot wide asphalt strip along wall footings adjacent to the tributary.

CALCULATIONS

UNDEVELOPED FLOWS

Area 1

area = 2.5 acres

length = 520'

slope = 26 - 520 = 0.05

Tc* = 16 minutes

$I = \frac{189}{25 + 16} = 4.61$ inches/hour

Q = 0.35(4.61)2.5 = 4.0 cfs

Area 2

area = 2.8 acres

length = 260'

slope = 14 - 260 = 0.054

Tc = 12 minutes

$I = \frac{189}{25 + 12} = 5.11$ inches/hour

Q = 0.35(5.11)2.8 = 5.0 cfs

Area 3

area = 6.4 acres

length = 1040'

slope = 40 - 1040 = 0.038

Tc = 22 minutes

$I = \frac{189}{25 + 22} = 4.02$ inches/hour

Q = 0.35(4.02)6.4 = 9.0 cfs

*Tc was determined from nomograph contained in USDA publication No. 204 by David L. Yarnell.

Composite 'C' Factor

50' R/W		68' R/W	
0.95 x 0.61 =	0.58	0.95 x 0.67 =	0.64
0.35 x 0.39 =	0.14	0.35 x 0.33 =	0.12
	0.72		0.76

Length of Streets

68' R/W = 723'

50' R/W = 1004'

Width of Area Adjacent to Street

68' R/W = 153'

50' R/W = 135'

153 x 723 - 43560 = 3.11 acres

135 x 1004 - 43560 = 2.54 acres

total 5.65 acres

Q = 0.72(4.11)3.11 = 9.2

Q = 0.76(4.11)2.54 = 7.9

17.1 cfs

Undeveloped Flow = 15.5 cfs

Developed Flow = 17.1 cfs

Area of Pond

72.5 x 75 x .1 = 544 c.f.

size $\frac{544}{60 \times 30}$ = .3

Pond size = 60' x 30'

Avg. depth = 0.3'

Area 4

area = 4.5 acres

length = 1000'

slope = 42 - 1000 = 0.042

Tc = 21 minutes

$I = \frac{189}{25 + 21} = 4.11$ inches/hour

Q = 0.35(4.11)4.5 = 6.5 cfs

DEVELOPED FLOWS

Area Draining to Street

50' R/W

Impervious Area

House	= 17.5 x 60 = 1050			
Driveway	= 18 x 30 = 540			
Street and sidewalk	= 20 x 75 = 1500	3090	s.f.	= 61%

Pervious Area

67.5 x 75 - 3090	= 1972.5	s.f.	= 39%
Total Area	= 5062.5	s.f.	= 100%

68' R/W

Impervious Area

House	= 17.5 x 60 = 1050			
Driveway	= 18 x 30 = 540			
Street and sidewalk	= 36 x 75 = 2700	4290	s.f.	= 67%

Pervious Area

85.5 x 75 - 4290	= 2122.5	s.f.	= 33%
Total Area	= 6412.5	s.f.	= 100%

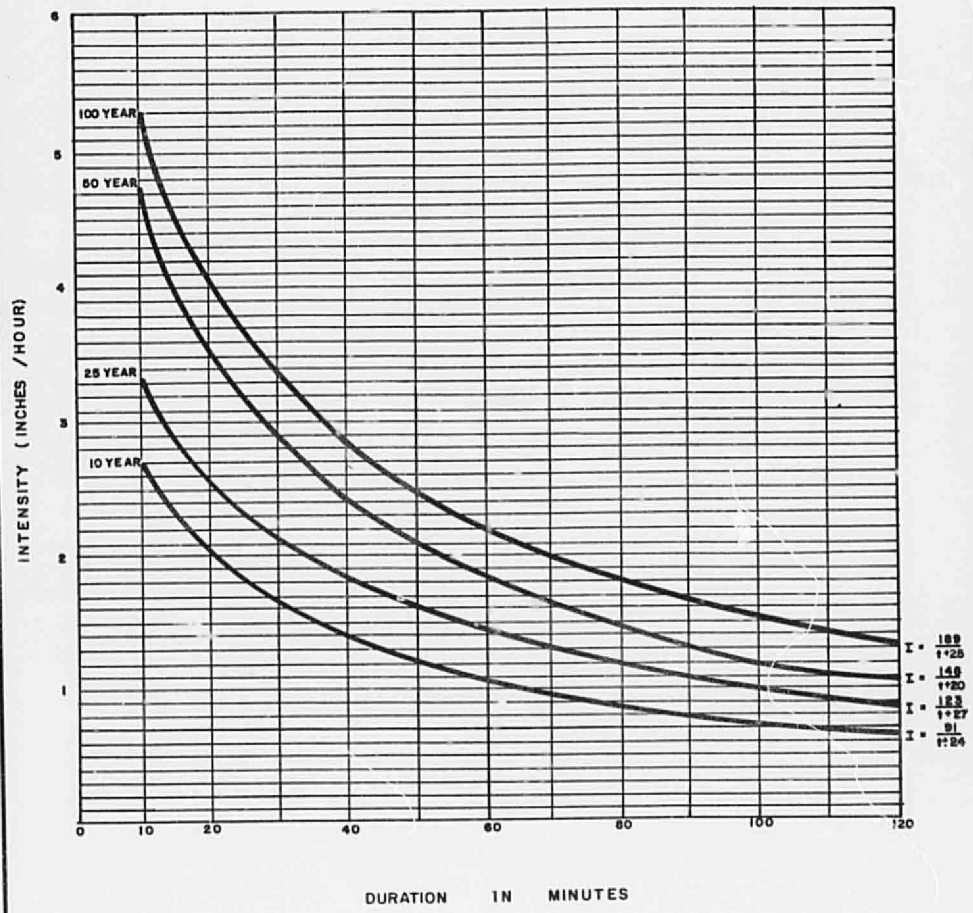
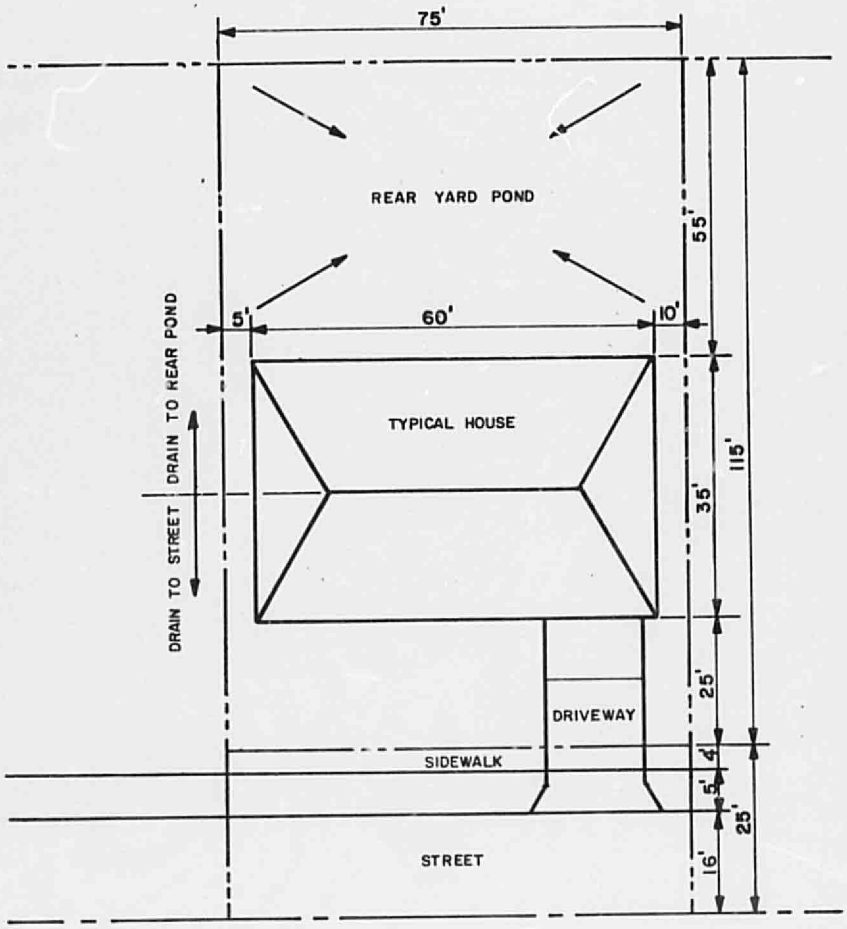


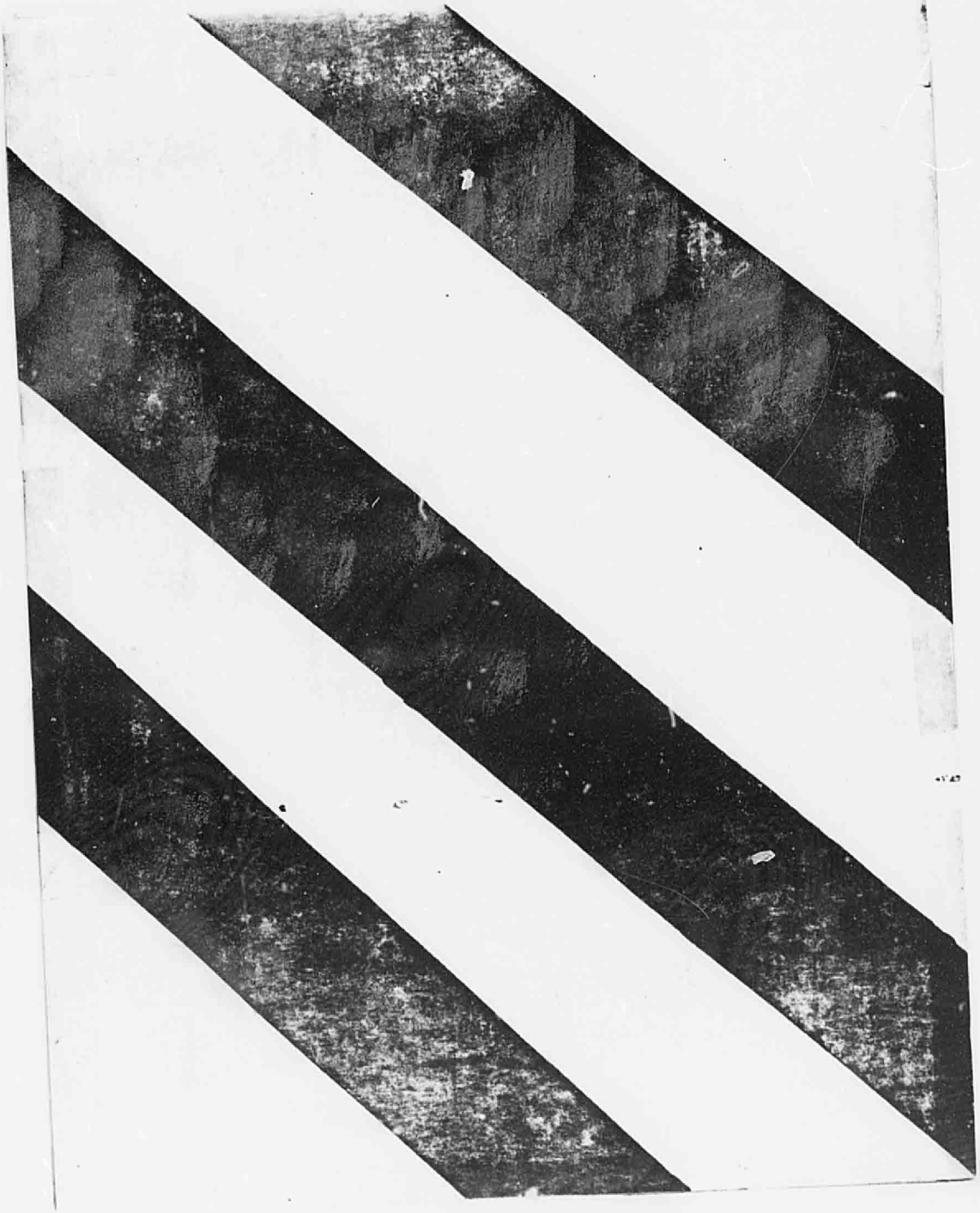
FIGURE 2

INTENSITY DURATION FREQUENCY CURVES



LEGEND

PROPERTY LINE
STREET CENTERLINE

FIGURE 3

TYPICAL LOT DRAINAGE