HYDROLOGY H16/D24 2 PLANS

H16/D24

2 PLANS

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

June 23, 1978

John Esquibel
A & E Engineering
5813 Lomas Blvd.,NE
Albuquerque, New Mexico

RE: Western "6" Motel

Dear Mr. Esquibel:

I have reviewed the drainage report for Western "6" Motel and I am in agreement with the concept provided that the storm sewer pipe size be increased to 18" as discussed. The construction drawings will have to include a profile of the storm sewer line including details of the outfall in the AMAFCA inlet.

Very truly yours,

Bruno Conegliano
Asst. City Engineer-Hydrology

BC/gm

cc; V.M. Kimmick
Richard Leonard
Drainage file

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

May 11, 1978

John Esquibel
A & E Engineering
5823 Lomas NE
Albuquerque, New Mexico 87110

RE: The Western "6" Motel

Dear Mr. Esquibel:

I have reviewed the drainage report for the above referenced project. I cannot concur with the proposal submitted. The method of handling the surface water must be contained within the confines of the property and not conveyed to the AMAFCA channel across other's land. This surface water conveyance needs to include the runoff from the adjacent property to the northeast which presently drains across the subject parcel.

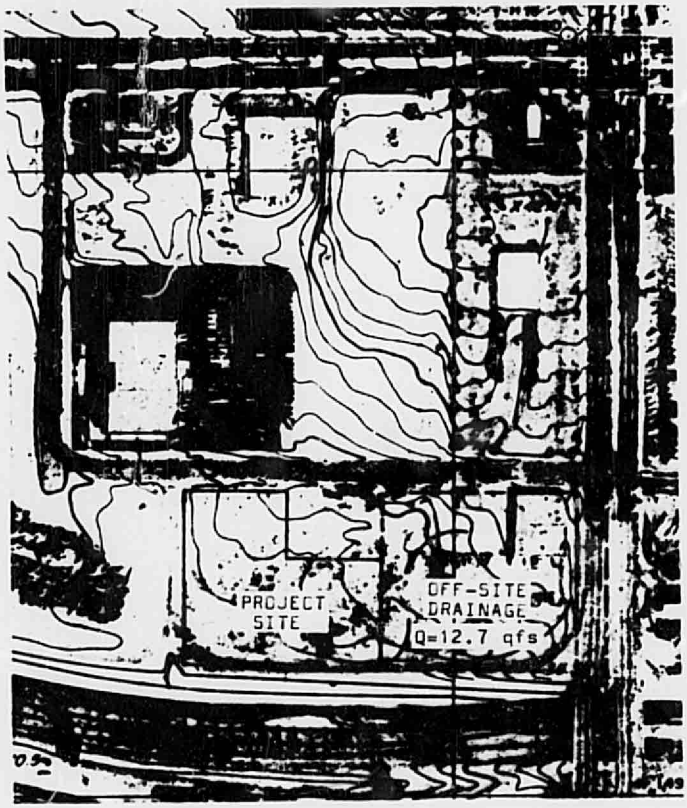
Two copies of the drainage will be necessary for AMAFCA use.

Very truly yours,

Bruno Conegliano
Asst. City Engineer-Hydrology

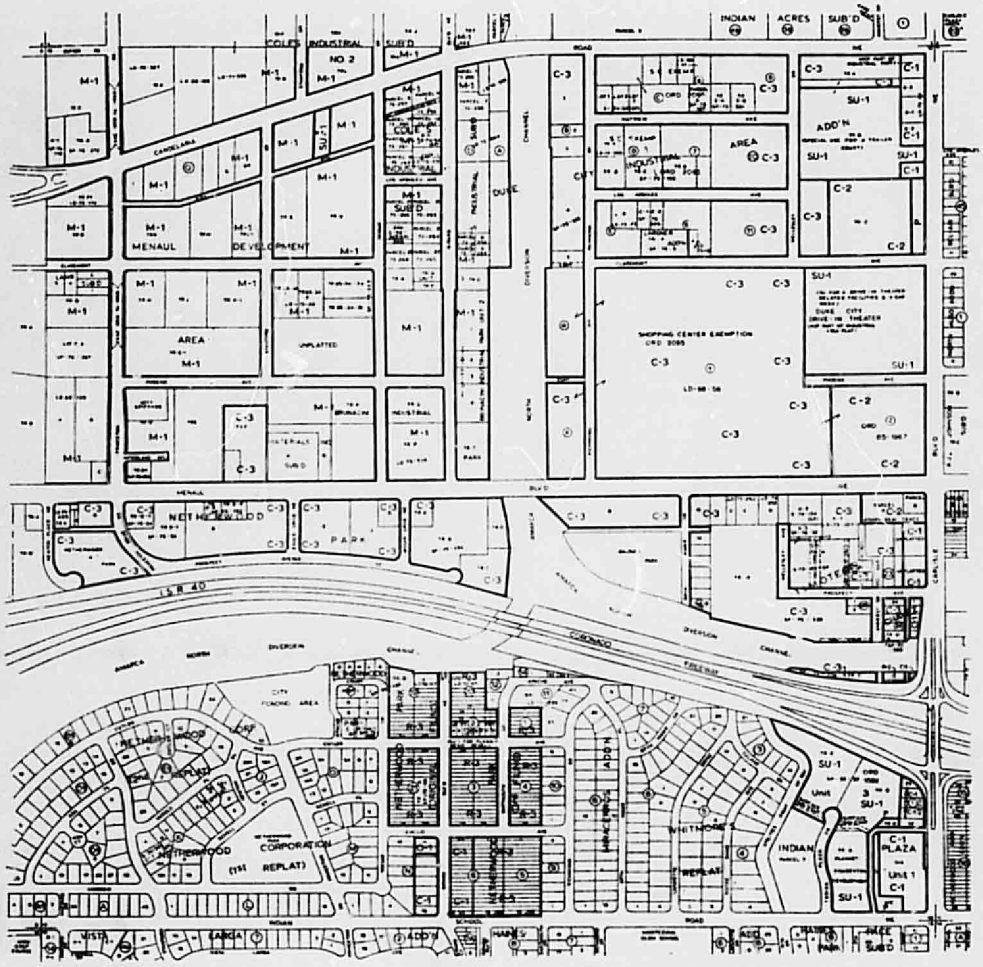
BC/gm

cc; V.M. Kimmick
Jim Smith
Drainage file



NORTH

OFF-SITE DRAINAGE PLAN


INDIAN
ACRES
SUB'D
COLES INDUSTRIAL SUB'D NO. 2
CANELLAS
MENAUL
DEVELOPMENT
AREA
UNPLATTED
ADD'N
SHOPPING CENTER EXEMPTION
NETHERWOOD
PARK
I.S.R. 40
CORPORATION
(1st REPLAT)
WETMORE
REPLAT
INDIAN
PLAZA
H-16-Z

DRAINAGE REPORT

FOR

THE WESTERN "6" MOTEL

ALBUQUERQUE, NEW MEXICO

PREPARED FOR:

RON WHITNEY

1156 SO. 7TH AVE.

HACIENDA HEIGHTS, CA.

BY:

A & E ENGINEERING, INC.

5823 LOMAS BOULEVARD, N.E.

ALBUQUERQUE, NEW MEXICO

Theodore M. Conrardy

THEODORE M. CONRARDY
REGISTERED PROFESSIONAL
ENGINEER NO. 2933

REGISTERED PROFESSIONAL ENGINEER AND LAND SURVEYOR
No. 2933
NEW MEXICO
T. M. CONRARDY

A&E ENGINEERING INC.
CIVIL ENGINEERING, LAND PLANNING, AND SURVEYING

March 7, 1978

Mr. Ron Whitney
California 6 Motels
Western 6 Motels
1156 So. 7th Ave.
Hacienda Heights, Ca. 91745

Dear Sir:

We are transmitting this drainage report on the Western "6" Motel in Albuquerque, New Mexico, located on the Southwest corner of Prospect Avenue and Amherst Drive. The control of the runoff shall comply with the requirements of the Albuquerque Metropolitan Arroyo Flood Control Authority and with present City of Albuquerque policies.

We do appreciate this opportunity to serve you. If any questions develop, we will be available to assist you in your response.

Very truly yours,

A & E ENGINEERING, INC.

John F. Esquibel, President

JFE/gk

5823 LOMAS N.E. ALBUQUERQUE, NEW MEXICO 87110 505/266-8791

DRAINAGE REPORT

FOR

THE WESTERN "6" MOTEL

ALBUQUERQUE, NEW MEXICO

REVISED 6/78

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Proposed Drainage Plans	2
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On-Site Drainage Calculations	3
Off-Site Drainage	4
Runoff Quantities	4
Hydrologic Calculations	5
Summary	5
Location Map	6
Plate; Drainage Plan	

GENERAL:

This drainage report consists of a hydrologic study of a probable 100-year storm affecting this proposed development on the southwest corner of the Prospect Avenue and Amherst Drive intersection.

LOCATION AND DESCRIPTION:

The property under study is a parcel of land zoned commercial (C-3) and contains approximately one and one-half (1.5) acres. It is located at the southwest corner of the intersection of Prospect Avenue and Amherst Drive. This property is more particularly described as Lot 3 of the "Land of Ray Shollenbarger"; and is bordered by Prospect Avenue on the North, Amherst drive on the East, Lot 2 of the "Land of Ray Shollenbarger on the West, and by AMAFCA North Diversion Channel.

The existing terrain for the parcel slopes to the southwest at about 2.0 per cent grade.

PROPOSED DEVELOPMENT:

This parcel of land is to be developed into Western "6" Motel. It will be graded, paved, and landscaped to shed storm water off the property, so that a percentage will flow into a pipe leading under the Hotel to the Southwest Corner of the lot and directly into the existing AMAFCA North Diversion Channel. The remaining runoff will drain to the Southwest corner of the lot and directly into the AMAFCA North Diversion Channel.

PROPOSED DRAINAGE PLANS:

In order to control the on-site drainage developed by this proposed development, the area has been designed with limiting grades in order to reduce runoff velocities.

The drainage has been divided into two (2) drainage areas to prevent concentration at only one point. Each of the areas will drain out at different locations which will result in a controlled runoff for the area. Area One's runoff will flow to the Southwest corner where an existing spillway on Lot 2 of the "Land of Ray Shollenbarger which will divert the water into the AMAFCA North Diversion Channel. Area two will flow through a pipe under the hotel and empty onto the existing spillway into AMAFCA North Diversion Channel.

The South Parking Area within the 25 foot drainage easement will be graded to carry runoff from the area between Amherst Drive and Carlisle Blvd., and between Prospect Avenue and the AMAFCA North Diversion Channel, (see location map), to the existing spillway draining into the AMAFCA North Diversion Channel. Said spillway being located in the Southeast corner of the adjacent Lot 2 of the "Land of Ray Shollenbarger." This maintains the established flow pattern.

DISCUSSION OF METHOD:

Development of this area will be controlled by the guidelines set forth in the recent Resolution of the Albuquerque Metropolitan Arroyo Flood Control Authority and the City ofAlbuquerque.

ON-SITE DRAINAGE CALCULATIONS:

The 100-year 6 hour precipitaiton factor for this area is 2.4 inches.

The area is 1.51 acres = 66,125 square feet.

Volume of runoff before development, allowing 65% percolation:

$\frac{2.4}{12}$ x 66,125 sq. ft. x 0.35 = 4,629 cu. ft.

Volume of runoff after development:

Landscaped areas (grassed and rock gravel)

$\frac{2.4}{12}$ x 981 sq. ft. x 0.35 = 169 cu. ft. of runoff

Paved areas (driveways, building, parking lots)

$\frac{2.4}{12}$ x 65,144 sq. ft. x 1.0 = 13,029 cu. ft. of runoff

Runoff after development	13,098
Runoff before development	4,629
Runoff generated by development	8,468

OFF-SITE DRAINAGE

The area east of the subject property is considered as off-site drainage. This off-site runoff accumulates in an existing earth drainage channel located on the South side of the subject property, within a 25 foot drainage easement. The runoff entering the channel was computed to be 12.7 cu. ft./per sec.

This area is presently undeveloped but for the purpose of this report was determined as a developed area for the purpose of determining the maximum runoff traversing through this proposed channel. As the channel traverses from East to West it will flow into the AMAFCA North Diversion Channel and the runoff is increased to a maximum of 25.1 cu. ft./per sec.

This off-site runoff will be controled by allowing it to traverse through this subject property by means of an asphalt paved channel and parking lot as can be seen in the drainage plan and the details attached herein.

RUNOFF QUANTITIES:

The quantity of off-site runoff that will flow into the proposed drainage channel from the area east of the subject property was determined by using the rational formula:

$$Q = CIA \text{ (Rational Formula method)}$$

$$t_c = \frac{11.2\,(L)^3}{H}^{0.385}$$

$$I = \frac{189}{t_c + 25} \quad \text{(100 year frequency)}$$

HYDROLOGIC CALCULATIONS

AREA EAST OF SUBJECT PROPERTY (DEVELOPED)

A = 2.07 H = 37 ft. L = 0.137 mi.

t_c = 2.787 min. I = 6.801 in/hr. C = 0.90

Q = CIA = 0.90 x 6.801 x 2.07 = 12.7 cu. ft. / per sec.

PROJECT SITE AREA NO. 2

Q = 3.57 cfs

15" Diameter Conc. Pipe

n = 0.014 (Conc. Pipe)

D = 15" = 1.25'

A = 1.76 sq. ft.

R = A/P = 0.312

$R^{2/3}$ = 0.458

S = 0.00754

$S^{\frac{1}{2}}$ = 0.08684

$$V = \frac{1.486}{h} \cdot R^{2/3} S^{\frac{1}{2}}$$

$$V = \frac{1.486}{0.014} (0.458) (0.08684)$$

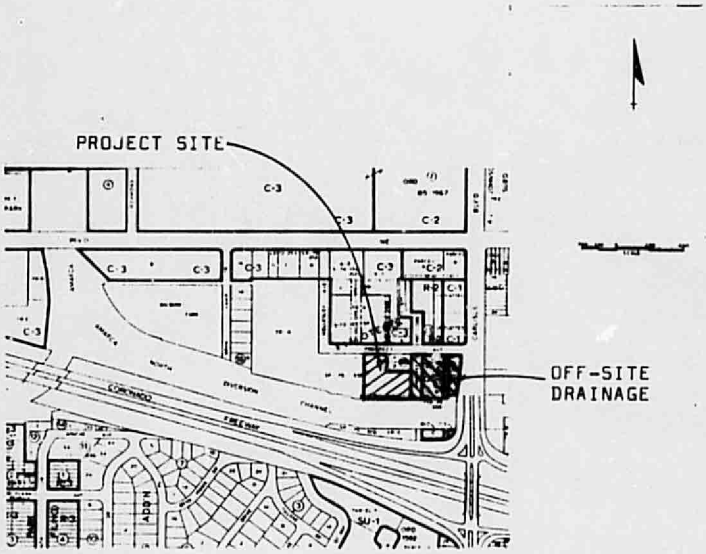
V = 4.22 fps

Q = A·V
1.76 x 4.22 = 7.43 cfs

This size of pipe will be capable of carrying the runoff for this area adequately including the loss due to bends in pipe.

SUMMARY:

It is recommended that this development be approved since the computations show that the proposed design is adequate to satisfactorily handle a 100-year storm.



LOCATION MAP

DRAINAGE REPORT
for

THE WESTERN "6" MOTEL

Albuquerque, New Mexico

Prepared by
A & E Engineering

Luxury at Economy Prices

California 6 MOTELS

1156 South Seventh Avenue
Hacienda Heights, California 91745
Phone (213) 961-1681

RON WHITNEY
Architectural Engineer

General Contractor

RICK TEJADA
CONSTRUCTION COMPANY
4801 Larchmont N.E.
Albuquerque 87111
505-296-8597

Commercial, Custom Homes & Remodeling

DRAINAGE REPORT

FOR

THE WESTERN "6" MOTEL

ALBUQUERQUE, NEW MEXICO

PREPARED FOR:

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Dear Sir:

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We do appreciate this opportunity to serve you. If any questions develop, we will be available to assist you in your response.

Very truly yours,

A & E ENGINEERING, INC.

John F. Esquibel, President

JFE/gk

5823 LOMAS N.E. ALBUQUERQUE, NEW MEXICO 87110 505/266-8791

DRAINAGE REPORT

FOR

THE WESTERN "6" MOTEL

ALBUQUERQUE, NEW MEXICO

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GENERAL:

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LOCATION AND DESCRIPTION:

The property under study is a parcel of land zoned commercial (C-3) and contains approximately one and one-half (1.5) acres. It is located at the southwest corner of the intersection of Prospect Avenue and Amherst Drive. This property is more particularly described as Lot 3 of the "Land of Ray Shollenbarger"; and is bordered by Prospect Avenue on the North, Amherst drive on the East, Lot 2 of the "Land of Ray Shollenbarger on the West, and by AMAFCA North Diversion Channel.

The existing terrain for the parcel slopes to the southwest at about 2.0 per cent grade.

PROPOSED DEVELOPMENT:

This parcel of land is to be developed into Western "6" Motel. It will be graded, paved, and landscaped to shed storm water off the property, so that a small percentage will flow out into Prospect Avenue, and West along Prospect Avenue to the East side of Lot 2 thence it will flow across the East end of Lot 2 to the existing AMAFCA North Diversion Channel. The remaining runoff will drain to the Southwest corner of the lot and directly into the AMAFCA North Diversion Channel.

PROPOSED DRAINAGE PLANS:

In order to control the on-site drainage developed by this proposed development, the area has been designed with limiting grades in order to reduce runoff velocities.

The drainage has been divided into two (2) drainage areas to prevent concentration at only one point. Each of the areas will drain out at different locations which will result in a controlled runoff for the area. ~~Area~~ One's runoff will flow to the Southwest corner where an existing spillway on Lot 2 of the Land of Ray Shollenbarger which will divert the water into the AMAFCA North Diversion Channel. Area Two will flow out into Prospect Avenue, West a short distance and then South across the East end of Lot 2 of the Lands of Ray Shollenbarger to the existing spillway into the AMAFCA North Diversion Channel.

The South Parking Area within the 25 foot drainage easement will be graded to carry runoff from the area between Amherst Drive and Carlisle Blvd., and between Prospect Avenue and the AMAFCA North Diversion Channel, (see location map), to the existing spillway draining into the AMAFCA North Diversion Channel. Said spillway being located in the Southeast corner of the adjacent Lot 2 of the "Land of Ray Shollenbarger." This maintains the established flow pattern.

DISCUSSION OF METHOD:

Development of this area will be controlled by the guidelines set forth in the recent Resolution of the Albuquerque Metropolitan Arroyo Flood Control Authority and the City of Albuquerque.

The amount of storm water is computed by using a 100-year storm, this being a storm consisting of 100-year 6 hours precipitation is shown by the rainfall frequency maps for New Mexico, June 1967, published by the Special Studies Branch, Office of Hydrology, United States Weather Bureau.

The entire lot drains immediately into the AMAFCA North Diversion Channel and therefore requires no ponding of excess runoff created by development of this area.

ON-SITE DRAINAGE CALCULATIONS:

The 100-year 6 hour precipitaiton factor for this area is 2.4 inches.

The area is 1.51 acres = 66,125 square feet.

Volume of runoff before development, allowing 65% perculation:

$\frac{2.4}{12}$ x 66,125 sq. ft. x 0.35 = 4,629 cu. ft.

Volume of runoff after development:

Landscaped areas (grassed and rock gravel)

$\frac{2.4}{12}$ x 981 sq. ft. x 0.35 = 169 cu. ft. of runoff

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RUNOFF QUANTITIES:

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$$Q = CIA \text{ (Rational Formula method)}$$

$$t_c = \frac{11.2\,(L)^3}{H}^{0.385}$$

$$I = \frac{189}{t_c + 25} \quad \text{(100 year frequency)}$$

HYDROLOGIC CALCULATIONS

AREA EAST OF SUBJECT PROPERTY (DEVELOPED)

A = 2.07 Ac. H = 37 ft. L = 0.137 mi.

t_c = 2.787 min. I = 6.801 in/hr. C = 0.90

Q = CIA = 0.90 x 6.801 x 2.07 =12.7 cu. ft. / per sec.

PROJECT SITE

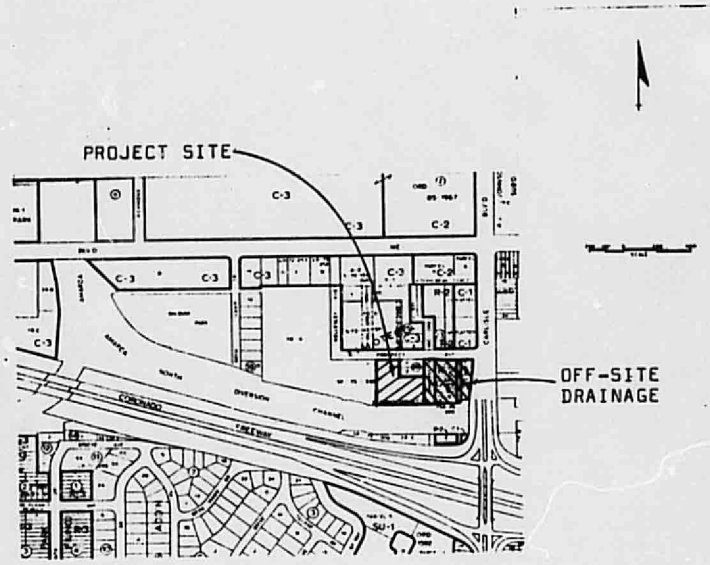
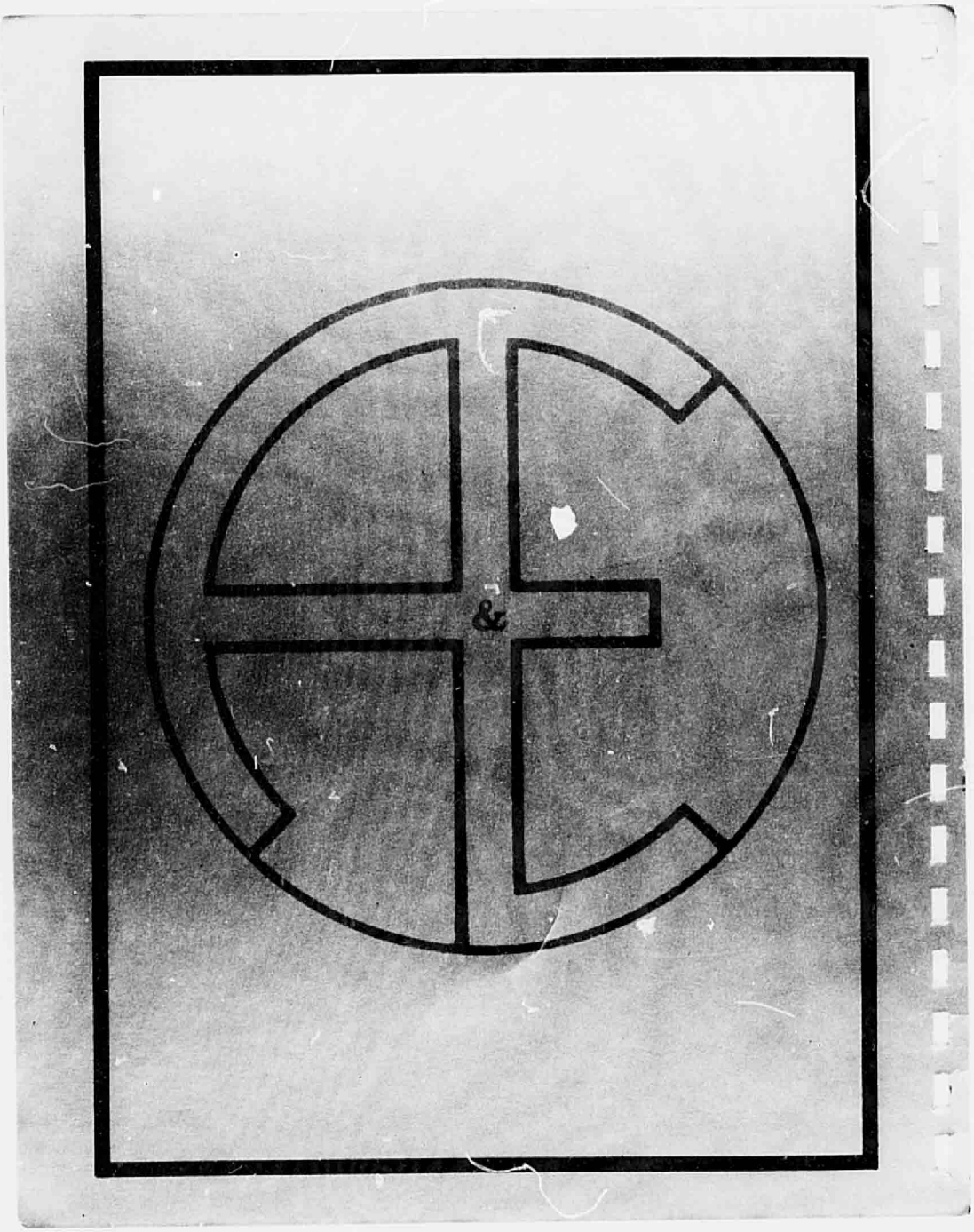
A = 1.83 Ac. H = 30.5 ft. L = 0.189 mi.

t_c = 5.956 min. I = 7.556 in/hr. C = 0.90

Q = CIA = 0.90 x 7.556 x 1.83 = 12.4 cu. ft. / per sec.

SUMMARY:

It is recommended that this development be approved since the computations show that the proposed design is adequate to satisfactorily handle a 100-year storm.



LOCATION MAP