K23/D2

2 Plans

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

February 6, 1980

Mr. Christopher L. Weiss
President
1100-C Alvarado N.E.
Albuquerque, New Mexico 87110

Reference: City View Apartments

Dear Mr. Weiss:

I have received your letter dated January 30, 1980, and I find that it reflects the concern expressed, that all the runoff will inflow into the detention area. Therefore, the water proofing of the adjacent walls must, as you recommend, be executed taking this occurrence into account. The drainage report as amended by the reference letter is therefore, hereby, approved.

Very truly yours,

Bruno Conegliano
Assistant City Engineer-Hydrology

BC/lc
xc: Richard Leonard, AMAFCA
Richard Heller, City Engineer
Fred Aguirre, Civil Engineer
Drainage File

consultants, inc.
ENGINEERING - PLANNING

January 30, 1980

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RECEIVED
FEB 05 1980
CITY ENGINEER

Municipal Development Department
Engineering Division
P. O. Box 1293
Albuquerque, New Mexico 87102

Attention: Mr. Bruno Conegliano

RE: Drainage Report for City View Apartments, your letter of January 25, 1980.

Dear Bruno:

I talked with Jim Lewis of Schlegel-Lewis Architects concerning your review comments for the above referenced project. He will adjust the grading plan to provide a 2 ft. high berm adjacent to Copper Ave. to protect the site. The access from Copper Ave. will also be raised to form an effective water block from the flows in Copper Ave.

In regard to the internal drainage, provisions will be made to waterproof the existing walls in the area of the proposed detention pond. The water surface elevations shown on the drainage plan reflect two conditions: 1.) the heights of water for the required pond volume assuming an open oriface condition, and, 2.) the height of water for the required pond volume assuming a plugged oriface. If the second condition occurs, the spillway at the outlet will be utilized. This elevation (5814.56) represents the approximate maximum height the water may rise. However, you requested the elevations for the water for a maximum condition of the developed 100 year volume of 13,756 ft^3 with no outlet. This elevation has been determined to be 5815.6. It would be unlikely that this elevation would ever be reached because of the available spillway condition, but waterproofing will be provided to the adjacent walls to match this elevation.

1100-C ALVARADO NE ■ ALBUQUERQUE, NEW MEXICO 87110 ■ (505) 268-2666

Schlegel-Lewis Architects are submitting the plans to the Building Inspection Department this week, so your prompt attention to the report approval will be appreciated.

Thank you.

Respectfully,

Christopher L. Weiss, P. E.
President

CLW/bl

Attachments

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

January 25, 1980

Mr. Christopher L. Weiss
President
1100-C Alvarado NE
Albuquerque, New Mexico 87110

Reference: Drainage Report for City View Apartments

Dear Mr. Weiss:

I have reviewed the drainage report for the reference development, and I find that some additional considerations must be entertained in preparing the construction plans for this development.

Recent studies indicate that a flow of 700 c.f.s. to 800 c.f.s., may flow down the existing and inadequate Copper channel and Copper Avenue. At this time, it is unknown when the City will be able to concrete line the Copper channel so that the properties adjacent to Copper Avenue will be protected. It is therefore my recommendation, that a 2 ft. high protective wall be constructed along the north property line of this development.

It is also recommended that the access to the property from Copper Avenue be designed so to form an effective water block and protect the property from the flows in Copper Avenue.

In regard to the provisions for the internal drainage, I want to point out that the computation performed were made on the basis of the difference between the undeveloped and the developed flows. In reality, the total flows and volumes must be considered and the height of the water surface produce by the extreme event needs to be evaluated.

It is in fact necessary to determine the height at which the water surface may rise, in order to provide sufficient protection to the existing garden walls along the south and west property lines. Water proofing or other such provisions must be made to preserve the intergrity of the foundations of the existing walls.

Very truly yours,

Bruno Conegliano
Assistant City Engineer-Hydrology

BC/lc

xc: Richard Leonard, AMAFCA

DRAINAGE REPORT & GRADING PLAN

for

CITY VIEW APARTMENTS

November 1979

DRAINAGE REPORT & GRADING PLAN

for

CITY VIEW APARTMENTS

November 1979

Prepared for

SCHLEGEL & LEWIS, ARCHITECTS

consultants, inc.
ENGINEERING - PLANNING

November 30, 1979

Mr. Bruno Conegliano
Municipal Development
City of Albuquerque
400 Marquette N. W.
Albuquerque, New Mexico 87103

RE: City View Apartments

Dear Bruno:

We are submitting the attached report, prepared for your review and approval.

Thank you.

Respectfully,

Christopher L. Weiss

Christopher L. Weiss, P. E.
President

CLW/bl

Attachments

RECEIVED
DEC 26 1979
CITY ENGINEER

1100-C ALVARADO NE ■ ALBUQUERQUE, NEW MEXICO 87110 ■ (505) 268-2666

DRAINAGE REPORT, GRADING PLAN FOR
CITY VIEW APARTMENTS

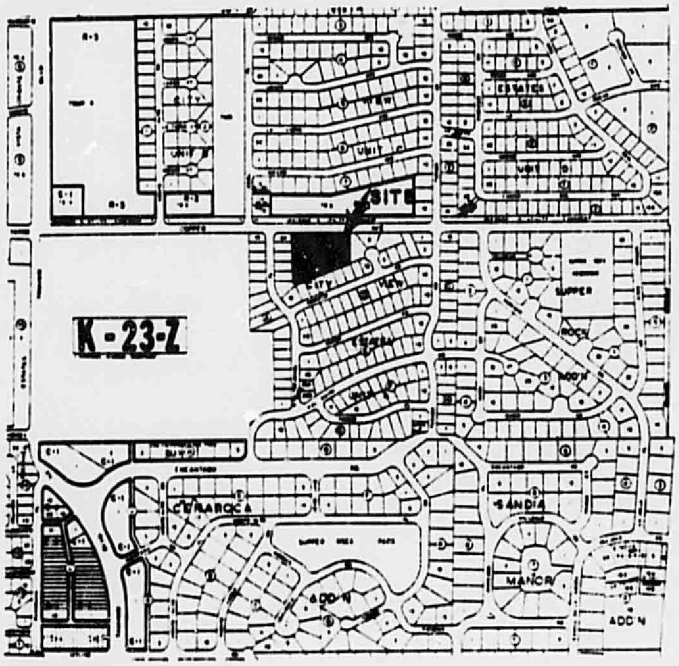
NOVEMBER 1979

INTRODUCTION

At the request of SCHLEGEL & LEWIS, ARCHITECTS, Consultants, Inc., has investigated the storm drainage for the site. This investigation follows the criteria set forth by the City Engineers Interim Drainage Guidelines, as released in November, 1979.

SITE LOCATION

The proposed site (1.94 Acres) is located in the NE quadrand of the City. It lies adjacent to Copper Avenue NE and is east of Tramway Blvd. and is bounded by developed residential property on the east, south and west sides.



CITY VIEW APARTMENTS NOVEMBER 1979

PROPOSED DEVELOPMENT

The area of study concerns an open tract of land zoned R-2. The proposed development will consist of five individual apartment buildings, support facilities, a pool and paved access and parking.

Drainage features which are pertinent are as follows:

1. Each structure's roof will drain to the rear, with runoff being collected by rear yard swales for discharge into a common ponding area located in a parking area. No ponding will occur adjacent to any individual structure.

Runoff from the swales will be routed either directly into the common pond, or be routed through the parking/access areas to the pond.

2. No offsite drainage affects the site due to existing development around the site perimeter. Copper Ave., adjacent to the north side of the site, carries its flows within the combined street right-of-way and a drainage channel on the north side of the street.

3. On-site runoff will discharge at the southwest corner of the site into an existing asphalt drainage channel at a controlled rate.

4. The area proposed for a pond detention basin will double as a parking area for the apartments. Controlled rates of release are generally large enough so that water is ponded only during the larger storms. Theoretically, therefore, once in a 100 years, the ponding volume of the parking area would be used to its maximum capacity. For a design storm having a recurrence period of five years, the depth of ponding would be 26% of that of a 100 year storm. The inconvenience to the apartment users would not be significant for this duel use of the parking/ ponding area.

TOPOGRAPHIC MAP

The topographic map used as a basis for the grading plan was supplied by SCHLEGEL & LEWIS, ARCHITECTS. This map represents the topography for the site as it now exists.

DRAINAGE / GRADING EXHIBIT

The drainage/grading plan in the back of this report shows the method of handling the onsite runoff to the common pond and the proposed final grades of the site.

EXISTING / DEVELOPED DRAINAGE

Existing conditions show that the site is isolated from the influence of offsite flows because of surrounding R-1 development. Existing on-site flows presently discharge at the same point that will be used in the developed conditions, the asphalt drainage channel at the SW corner of the site.

The November 1979 Interim Drainage Guidelines have established that where ponds are required, as in this case, the following general characteristics apply: (See Drainage/ Grading Plan for details)

a. Volume to be ponded = Developed 100 year volume - undeveloped 100 year volume.

Undeveloped = (2.6/12)(0.4)(1.94 Ac)(43,560) = 7337 ft^3
Developed = (2.6/12)(0.75)(1.94)(43,560) = 13,756
Difference = volume to be ponded = 6419 ft^3

b. Positive discharge = Q_5 undeveloped to asphalt drainageway.

$$I_5 = \frac{80}{t+10} = \frac{80}{12+10} = 3.64$$

$$Q = (0.4)(3.64)(1.94) = 3 \text{ cfs}$$

c. Overflow spillway = Q_{100} developed. The final pond configuration will involve the use of a portion of the parking area as a storage detention area. This area is surrounded with a block wall on the west and south sides and a 10% yard slope up to an apartment building on the east side. The outlet will consist of constructing a block wall across the present channel

opening with a pipe at the flow line of the downstream asphalt channel (5813.00) to release the Q_3 undeveloped flow of 3 cfs. Should a pipe blockage occur, the maximum volume of storage to back up in the pond area could be 13,756 ft^3 from a 100 year-6 hour storm.

To prevent this, a spillway opening through the block wall will be provided at an elevation of 5814.56'. At this elevation, the volume of storage behind the wall would equal 6419 ft^3, or the difference between the undeveloped and developed runoff. The volume to flow over the spillway would equal 7337 ft^3, or the undeveloped runoff volume. The size of the opening will be based on the Q_{100} developed discharge rate of 6 cfs. Using the general form of equation for horizontal-crested weirs, $Q = CLH^{3/2}$, with a value of C=2.5 for broad-crested weirs at a H=1', the breadth of crest = 2.5'.

In the situation where the pipe flow remains open, the maximum volume stored in the pond will be less than 6419 ft^3 because of the simultaneous release of flows while the pondbuilds up its storage. With a Q_5 of 3 cfs, the time to reach maximum volume is 33.6 minutes. The maximum volume stored = 5429 ft^3. The elevation pond limits for this volume is 5814.40'.

With the flow line at 5813.00, the head on the pipe would be 1.4'. The area of the discharge pipe is found from the formula $Q = CA\sqrt{2gh}$, where C=0.8 from trial and error solutions. The pipe area = 0.39 ft^2, or use one 8¼" pipe.

RECOMMENDATIONS

1. Grade site with positive drainage swales in the rear of each structure to carry runoff to common pond area.

2. Build site entrance as a water block to prevent flows from entering from Copper Avenue.

3. Locate common pond area in southwest corner of site with a positive discharge pipe emptying onto an existing asphalt drainage channel. Pipe size = 8¼" at a flow line invert of 5813.00.

4. Construct an overflow spillway weir through the block wall to be constructed across the present channel opening above the pipe to discharge the undeveloped flow volume should a pipe blockage occur. Build the weir 16" high by 2.5' long with the flow line at 5814.56'.

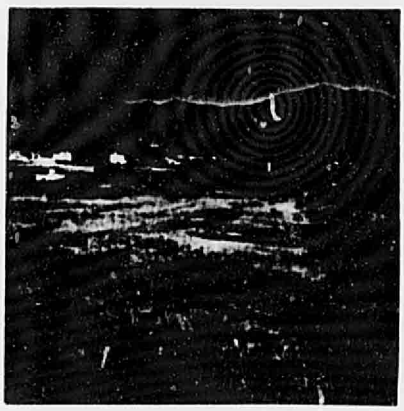
CONCLUSION

The proposed site will discharge runoff at the same location as presently exists at a smaller runoff rate. Overflow protection for the discharge of the pond will be provided in case of pipe blockage without adverse affect on the proposed development, or the areas downstream from the discharge point. These factors enable the proposed site to meet the drainage criteria established by the City for the area.

THIS MICROIMAGE IS THE BEST POSSIBLE REPRODUCTION DUE TO THE POOR QUALITY OF THE ORIGINAL DOCUMENT

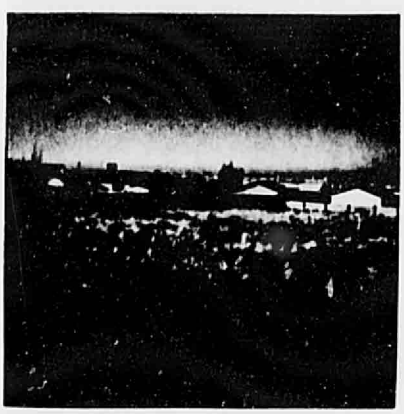
CITY VIEW APARTMENTS NOVEMBER 1979

NW corner looking east along Copper Avenue



Middle of site looking to NE corner of site.

Looking upstream of existing asphalt channel toward site



Middle of site looking toward existing asphalt channel at SW corner

INTERIM DRAINAGE GUIDELINES
November 1979

Due to the time necessary in the publication of the Storm Drainage Manual, and at the request of various developers and the engineering community, the following are guidelines to be considered as aids in the preparation and approval of drainage reports and plans and their review:

(A) Flow in Streets:

1) All flow in streets will be confined within the street R/W (Q_{100}).
2) The maximum flows (Q_{10}) in streets is established from the calculation of velocity times depth which may not exceed 4.8. When this parameter is exceeded, a storm drain is required. If downstream facilities are adequate, no interim ponding will be required; if downstream facilities are inadequate, a common pond meeting the criteria of Paragraph B5 will be required.
3) Special consideration must be given for all flows at T-intersections. Both the Q_{10} and Q_{100} must be analyzed to prove no encroachment at the R/W line on the downhill portion of the T-intersection and that the momentum will not carry the flow over the curb across from the intersecting street.

(B) Ponding:

1) No ponding will be required on any lot or development of less than one acre, unless said lot or development is part of a previously approved Master Drainage report or plan.
2) No ponding will be required for any development of less than five acres where the composite C-factor, including streets, is less than C=.50.
3) No ponding will be required on any individual lots within a subdivision. Common ponding areas are a preferred solution with the approval of the City Engineer.
4) As much as practicable, all flows for a development shall be routed through required pond(s).
5) Required ponds shall have the following general characteristics:
    a) Volume = Developed 100 year volume - Undeveloped 100 - year volume.
    b) Positive discharge = Q_5 undeveloped to street or storm drain.
    c) Overflow spillway = Q_{100} developed.
6) Developments within the valley area shall have ponding regardless of size. The pond(s) shall have a volume equivalent to the 50-year developed runoff volumes with Q_1 positive discharge. An overflow must be provided.

Approved:
Richard S. Heller
Richard S. Heller
City Engineer

DRAINAGE REPORT

CHURCH SUBDIVISION

DRAINAGE REPORT
FOR
CITY VIEW ASSOCIATES
TOWNHOUSE DEVELOPMENT
CHURCH SUBDIVISION
(Being a Replat of Tract "H", CITY VIEW ESTATES, Unit A)

December 26, 1978

PREPARED BY
ENCHANTMENT ENGINEERING
1517 EUBANK BOULEVARD, N.E.
ALBUQUERQUE, NEW MEXICO 87111

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Plate 1	Site Location
Plate 2	Drainage and Grading Plan Computations Pond Designs
Plate 3	Street Profile on Copper Ct.

DRAINAGE REPORT
FOR
CITY VIEW ASSOCIATES

Purpose:

The purpose of this report is to present to governing agencies a reasonable method of complying with City Ordinance 59-1976 and thereby lessen runoff from the proposed development to an amount not in excess of the flow to be expected from the property in its present state. This report is composed of a narrative of existing and proposed conditions and computations to determine recommended runoff control structures.

Location and Terrain:

The proposed development is located on the south side of Copper Avenue, N.E. approximately 1200 feet east of the southeast corner of the intersection of Tramway Boulevard and Copper Avenue in the Northeast Quadrant of the city. (See Plate 1)

The property slopes from the northeast corner to the extreme southwest corner at a rate of approximately five percent. The soil is composed primarily of sandy silt with small amounts of clay with vegetation being limited to common weeds. Considering the existing slope, the infiltration may be assumed to be no more than one-half inch per hour with the storage of runoff almost negligible because of the grade.

Proposed Development :

The site and drainage plan included with this report shows the location of all the buildings included in the development together with driveways, walks, streets, and stormwater ponding areas as well as proposed grading for drainage purposes. Driveways are to be concrete, the street will be asphalt, and the buildings will be frame and stucco with flat composition roofs. All stormwater ponding areas will have natural surfaces.

(See Plate 2)

Upland Drainage :

Most of the upland drainage generated to the east is diverted past the property on Copper Avenue. Immediately south of the intersection of the proposed Copper Court with Copper Avenue there will be a water block which will be .66 foot higher (minimum) than the adjacent gutter elevation on the south side of Copper Avenue. Any portion of the flows which may enter the development will be routed via the gutters on Copper Court to a paved, ten foot wide drainage channel at the west end of the court. This channel will convey the flows to an exit at the southwest corner of the development into an already existing channel. The existing channel discharges into Jewel Place, N.E.

(See Plate 3)

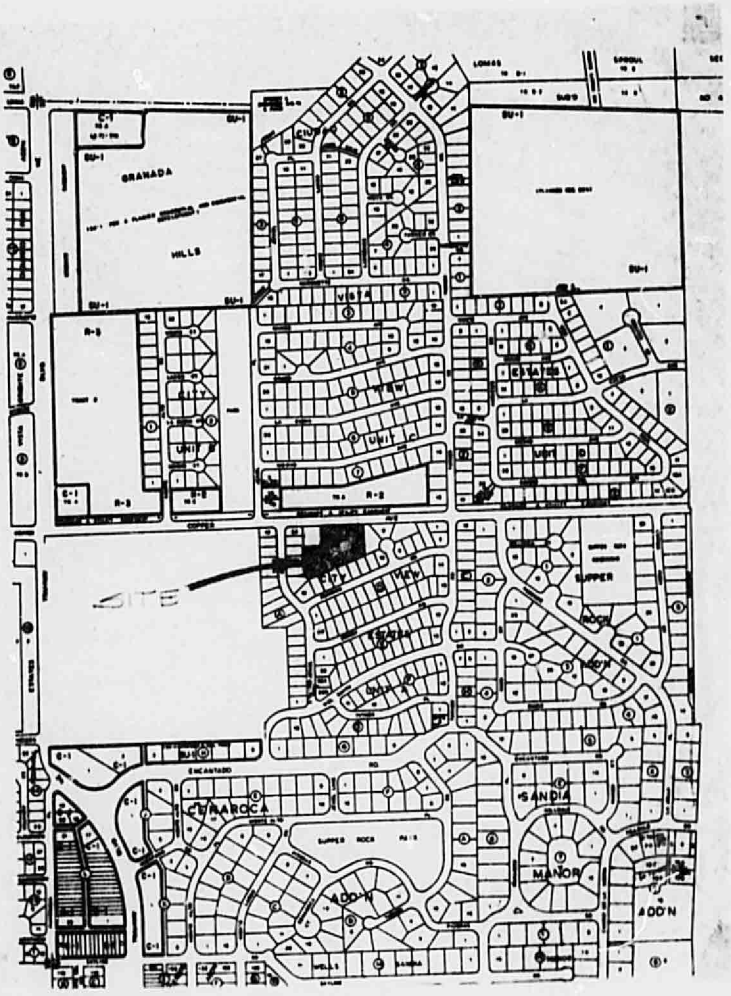
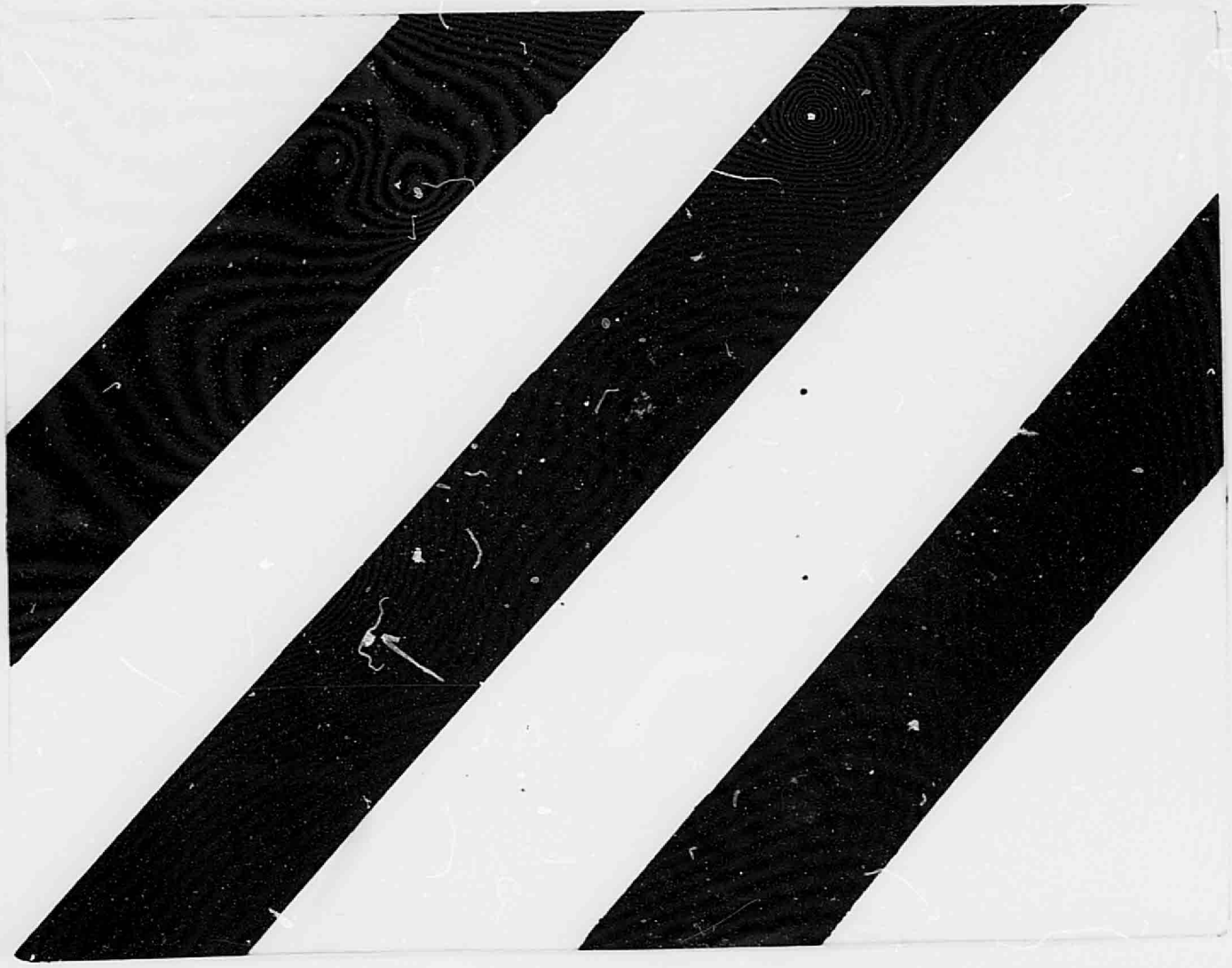
Internal Drainage :

Portions of the flows developed internally will be stored in ponds located at the front and rear of the individual

lots within the development. All of the ponds shall be designed and so constructed to contain the six-hour, 100-year frequency storm runoff that is in excess of that generated on the lots in their existing conditions. Stored runoff will be dissipated by infiltration and evaporation. (See details of pond designs and individual lot retention requirements, Plate 2)

Conclusions :

Flows generated by the proposed development will be partially stored on site. Flows in excess of the designed total storage capacity of the individual lots in the development will be allowed to exit the property through the aforementioned drainage channel. Volume of runoff from the development will be 8145.7 cubic feet and the maximum rate of runoff will be 4.21 feet/second during the 100-year project storm.

PLATE 1

LOCATION MAP
ZONE ATLAS: K-23-Z