HYDROLOGY E18/D19 1 PLAN

E18/D19

1 Plans

Oct.20, 1972

V. M. Kimmich, City Engineer and
Q. R. Kielich, Assistant City Engineer
City of Albuquerque, New Mexico.

Gentlemen:

The enclosed Drainage Study was just completed by GEBB Engineering Inc., relative to our proposed Apartment Complex development of the site, located on San Mateo, near I-25; consisting of 16.4 Acres and known as the RUST ADDITION to the City of Albuquerque.

We have the design of the Apartment Complex completed, and hope to be able to make application for the building permit soon.

We would greatly appreciate your consideration and approval of this plan, together with design specifications using the minimum amount of rip-rap, etc. possible to accomplish the required protection for the channel and adjoining property.

Sincerely,

M. L. Lewis

M.L.Lewis, Regional Operations Director.

ARREL A. FARR
EVELOPMENT CORP.
Offices in Denver, Colorado — Minneapolis, Minnesota
TELEPHONE 505/296-5488
300 WYOMING BOULEVARD, N.E.
ALBUQUERQUE, NEW MEXICO 87123

GEBB ENGINEERING INC.

civil engineering, land planning and surveying

December 18, 1972

Mr. John Robert, Executive Engineer
A.M.A.F.C.A.
2112 Girard N.E.
Albuquerque, New Mexico 87103

Dear Mr. Robert,

Submitted herewith pursuant to our recent discussion regarding the flood control channel adjacent to the D. A. Farr apartment development is our calculation for a lined channel.

Calculations for the improved channel were based on the following parameters:

(a) Lining to a depth to accomodate a ten-year design flood (622 c.f.s.)

(b) Total channel capacity to accomodate a one-hundred-year flood (904 c.f.s.)

It is hoped that this preliminary design concept meets with your approval. Should you have any comment please let us know at your earliest convenience.

Very truly yours,

GEBB Engineering, Inc.

John F. Esquibel
Vice-President

JFE:tb
Enclosure
Larry Lewis

File under Farr.

DRAINAGE REPORT

Darrel A. Farr Development Corporation
Apartment Complex
City of Albuquerque

Prepared For: Darrel A. Farr
Development Corporation
300 Wyoming Boulevard SE
Albuquerque, New Mexico

Prepared By: GEBB Engineering Inc.
4100 Silver SE - Suite F
Albuquerque, New Mexico
266-8791

Revised December 18, 1972
Added sheets: 6, 7, and 8

Carl E. Serna

Carl E. Serna P. E. # 4256

Dec. 18, 1972
J.F. Esquibel

Darrel A. Farr Development Corp.

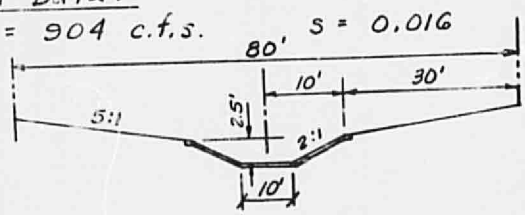
Apartment Development

Preliminary Design of Drainage Channel

Design Concept: Construct an improved channel, with gunite or concrete lined slopes, to carry moderate flows with an overflow section combined capable of carrying the 100-yr. design storm. The area between the improved channel and the 80-foot drainage easement could then be used as a park or other such feature.

Design Data:

Q_{100} = 904 c.f.s. $S = 0.016$



Design improved channel for $Q_{10} = 0.688\ Q_{100}$
$= 622$ c.f.s.

$n = 0.016$ $b = 10$ $b^{8/3} = 464$

$$K' = \frac{Qn}{b^{8/3} S^{1/2}} = \frac{622(0.016)}{464(0.1265)} = 0.170$$

$D_n/b = 0.245$

$\therefore D_n = 2.45'$

Set channel depth = 2.5'

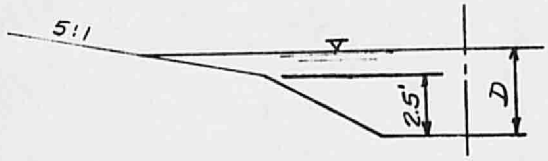
$$A_n = 2(2.45)^2 + 10(2.45) = 36.5\ ^{\#}$$

$$V_n = \frac{622}{36.5} = 17.0 \text{ ft/sec.}$$

Reference: Handbook of Hydraulics; King

Sht. 6

Design combined section for Q = 904 c.f.s.



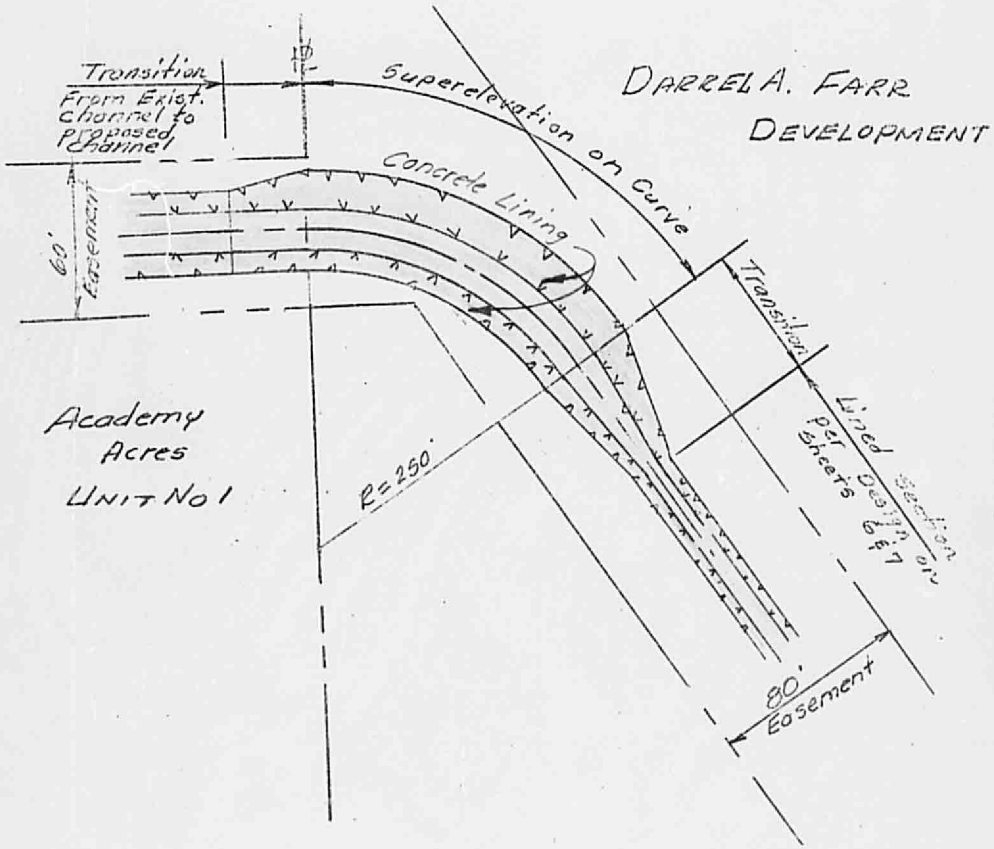
$D = 2.5'$ Area $= 2(2.5)^2 + 2.5(10)$
$= 12.5 + 25.0 = 37.5^{\phi}$

$wp = 2.235(2.5)(2) + 10$
$= 11.17 + 10 = 21.17'$

D	A	wp	R	$R^{2/3}$	$Q = \frac{1.486}{n} A R^{2/3} S^{1/2}$
3.5'	62.5	31.35	1.995	1.584	886 (n = 0.021)
3.6'	65.55	33.38	1.965	1.569	918

With Q = 904 c.f.s., the flow depth will be slightly less than 3.6' (which is 1.1' above the top of the improved channel).

Average Velocity $= \frac{Q}{A} = \frac{904}{65.5} = 13.8$ feet per second



Concrete Lining

Sheet 8

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