HYDROLOGY K11/D2 3 PLANS

K11/D2

3 PLANS

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

April 25, 1978

Fred C. Arfman
Chambers, Campbell, Isaacson & Chaplin, Inc.
3500 Indian School Rd.,NE
Albuquerque, New Mexico 87106

RE: Avalon West Townhouses Drainage

Dear Fred:

I have reviewed the revised drainage plan for the Avalon West Townhouses and I concur with the proposed scheme. The drainage report is therefore approved.

Very truly yours,

Bruno Conegliano
Asst. City Engineer-Hydrology

BC/gm

cc; V.M. Kimmick
Jim Smith
Drainage file

SERGENT, HAUSKINS & BECKWITH CONSULTING SOIL AND FOUNDATION ENGINEERS

APPLIED SOIL MECHANICS • ENGINEERING GEOLOGY • MATERIALS ENGINEERING

B. DWAINE SERGENT, P.E.
DALE V. BEDENKOP, P.E.
JOHN B. HAUSKINS, P.E.
ROBERT D. BOOTH, P.E.
GEORGE H. BECKWITH, P.E.
BENNY E. McMILLAN, P.E.
BUD WOODWARD

March 27, 1978

Chambers, Campbell, Isaacson
& Chaplin, Inc.
3500 Indian School Road, N.E.
Albuquerque, New Mexico

SHB Job No. E78-1004
Addendum No. 1

Bruno?

Re: Avalon West
Avalon Road West of
63rd Street, N.W.
Albuquerque, New Mexico

Gentlemen:

In accordance with the request of Mr. Fred Arfman, with Chambers, Campbell, Isaacson & Chaplin, Inc., we have reviewed our original Soil and Foundation Investigation Report relative to ponding of storm waters on the individual lots involved. Review of the drainage plan of Avalon West Townhouse Development prepared by Chambers, Campbell, Isaacson & Chaplin, Inc. indicates that approximately 508 square feet of ponding area is necessary. This would involve ponding of waters essentially adjacent to the structures.

As indicated in our original Soil and Foundation Investigation Report, the subsoils underlying the site are susceptable to weakening and subsequent settlements upon moisture increase. Thus, it was recommended that ponding areas be maintained at least 20 feet away from the perimeters of the structure. It does not appear that this would be possible. Thus, it is recommended that an alternative method of pondage of storm water be considered for the project.

REPLY TO: 2821 GIRARD BLVD., N.E., ALBUQUERQUE, NEW MEXICO 87107

PHOENIX (602) 272 6848 ALBUQUERQUE (505) 345 8606 EL PASO (915) 591 8188 TUCSON (602) 884 9333

Avalon West
Avalon Road West of
63rd Street, N.W.
Albuquerque, New Mexico
SHB Job No. E78-1004
Addendum No. 1

Should any questions arise concerning this addendum we would be pleased to discuss them with you. This addendum should be attached to the original report and made a part thereof.

Respectfully submitted,
Sergent, Hauskins & Beckwith

By _____
Robert D. Booth, P.E.

ROBERT D. BOOTH
NEW MEXICO
REGISTERED PROFESSIONAL ENGINEER

Copies: Addressee (4)

City of Albuquerque
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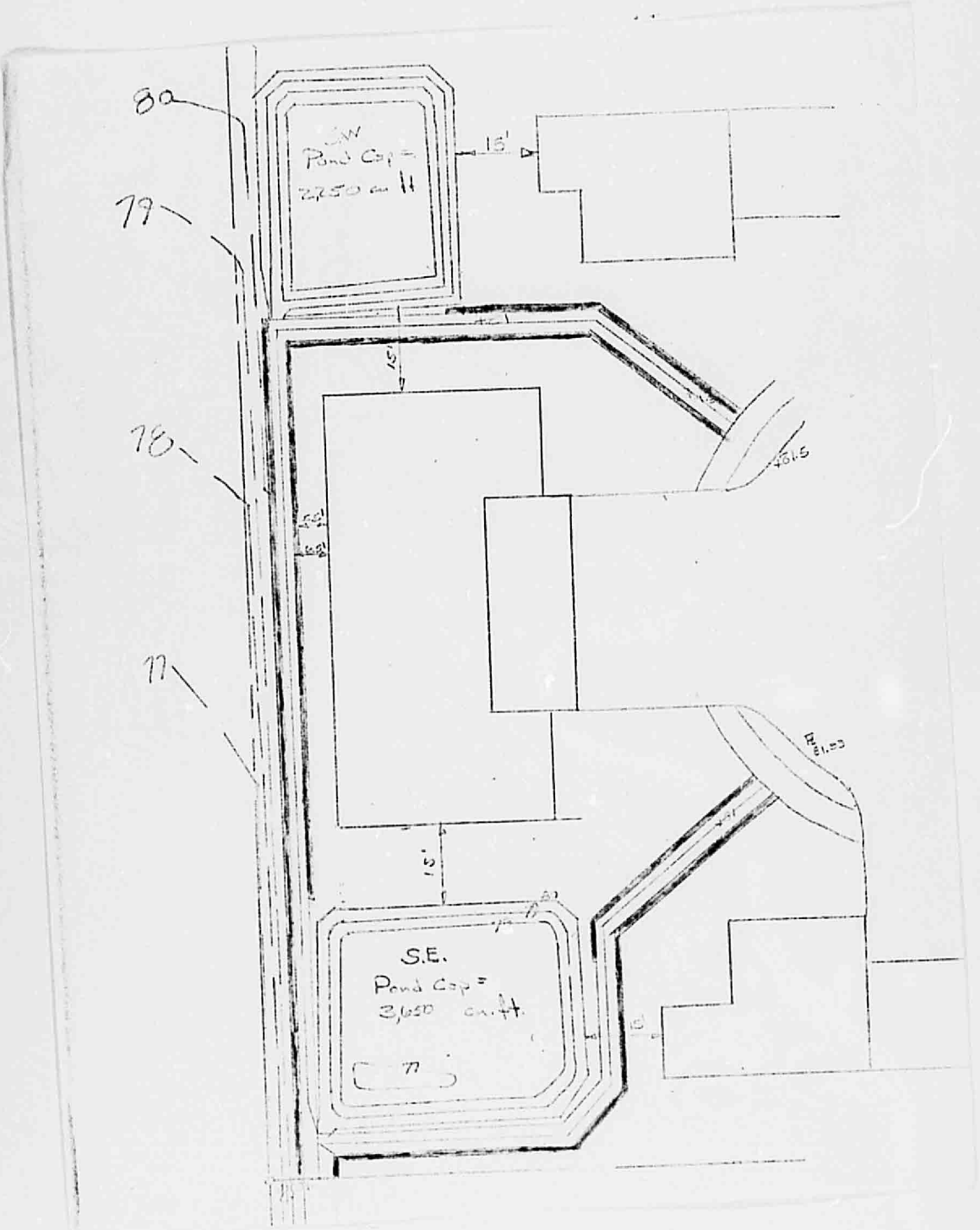
80
79
78
77
N.W.
Pond Cap =
2,250 cu ft
15'
15'
S.E.
Pond Cap =
3,650 cu ft.
15'
15'

Bruno —
Recommendation:
L.

February 6, 1978

Mr. Vern Kimmick
City Engineer
City Engineering Department
P.O. Box 1293
Albuquerque, New Mexico 87103

RECEIVED
FEB 06 1978
CITY ENGINEERS

RE: Avalon West Townhouses Drainage

Dear Mr. Kimmick:

The purpose of this letter is to summarize the discussion with representatives from the City of Albuquerque and AMAFCA concerning the runoff associated with Avalon West Townhouses to be developed by Pronto Enterprises.

On February 1, 1978, a meeting was held with Jim Smith of AMAFCA, Vern Kimmick, City Engineer, Bruno Conegliano, Assistant City Engineer - Hydrology, and myself, of CCIC, representing Pronto Enterprises. Discussion was centered on Avalon West, a project of 26 townhouses situated on 3.07 acres of R-2 land.

Jim Smith proposed two alternate solutions. First, the establishment of a home-owners association to maintain the commumity retention/detention ponds. Secondly, an assessment to the developer on a lot by lot basis a fee yet to be determined for future expansion or improvements of drainage facilities to accept an increase runoff.

On February 2, 1978, a meeting was held with Dale Bolton, president of Pronto Enterprises, in which the above two alternatives were discussed. Mr. Bolton informed CCIC, that a homeowners association has never been considered due to the nature of this project. Mr. Bolton instructed CCIC to develop a plan of action in regards to alternate solution No. 2, that CCIC would deem acceptable to both the City of Albuquerque and Pronto Enterprises.

After complete on-site analysis of the drainage characteristics, we have determined that a fair assessment should be established on pond development cost to the developer, and should be assessed on a lot by lot basis. In order to arrive at this drainage assessment value, we have estimated construction cost of rundowns and ponds for the entire development (see accompanying sheet). Through this analysis a dollar figure of $101.00 per lot equals the construction cost of building the two community ponds.

Assessment of these fees and the form of payment shall be agreed upon in a written document between the City of Albuquerque and Pronto Enterprises.

Chambers, Campbell, Isaacson, Chaplin, Inc.
architects engineers planners 3500 indian school road ne albuquerque new mexico 87106 505 266 5521

We would appreciate your expeditious review and action on this matter, as our client is most anxious to proceed.

Thank you.

Very truly yours,

Fred C. Arfman

Fred C. Arfman, for
CHAMBERS, CAMPBELL, ISAACSON &
CHAPLIN, INC.

FCA:ysh

Enclosure

cc: Mr. Dale Bolton, Pronto Enterprises

COST ANALYSIS

1. Rundowns

Asphalt:
385 ft. @ 4 ft. width
385 x 4 = 1,540 sq. ft.
= 171 sq. yds.

171 sq. yds. x $3.00/sq. yd. = $513.00

Wood ties:
385 ft. + 220 ft. = 605 ft. (both sides)

605 ft. x $8.00/1-8 ft. tie = $605.00

Earthmoving:
220 cu. yds. @ $1.80/cu. yd. = $400.00

Outlet control:
Calls for construction of retaining wall with wier design. Estimated Cost = $400.00

Land that would be lost through dedication = 6000 sq. ft.
= .14 ac.
= .14 ac. x $5,000.00/ac = $700.00

Subtotal = $2,618.00

Ponding expense divided by number of lots (26 lots) = $ 101.00/Lot

A DRAINAGE STUDY

FOR

AVALON WEST TOWNHOUSES

ALBUQUERQUE, NEW MEXICO

APRIL 1978

Chambers, Campbell, Isaacson, Chaplin, Inc.
architects engineers planners 3500 indian school road ne albuquerque new mexico 87106 505 266-5521

This drainage study will analyze the post-development drainage of the Avalon West Townhouses. This site is located south off of Avalon Drive and west of 63rd. Street.

This site has 26 townhouse units in 13 distinct structures on 3.07 acres.

The following calculations show the pre-development and post-development runoff.

A. PRE-DEVELOPMENT RUNOFF

1. Runoff Rate, Q = CIA where C = 0.35
   Tc = 10 min., I - 5.4"/hr.
   A = 3.07 ac.

   Q = (.035)(5.4)(3.07)
   = 5.8 so use 6 cfs.

2. Runoff Volume, where precipitation for 100 yr., 24 hr. storm = 2.2"
   Volume = (2.2")(133,770 sq. ft.)(0.35)(1/12)
   = 8,584 cu. ft.

B. OFFSITE RUNOFF

(Area common with western boundry)
Q = CIA = (0.60)(5.4)(.43ac) = 1.4 cfs.
V = CDA (1/2) = (0.60)(2.2)(18,900)(1/2) = 2079 cu. ft.

C. POST-DEVELOPMENT RUNOFF
(Based on Roof Retention)

1. Roof Area that will pond

Unit Type	No. of Units	Roof Area	S-T(sq. ft.)
A	12	1800	21600
B	10	1200	12000
C	4	1300	5200
		G-T =	38800 sq. ft.

Vol. on Roofs
(38,800 sq. ft.)(2.2)(1/12) = 7113 cu. ft.

2. Remainder of Site
(3.07ac.)(43560 sq. ft./ac.) - 38,800 sq. ft. = 94930 sq. ft.

Composite "C" Value
walks, streets, concrete, etc. = 35910 sq. ft.
landscaped areas = 59020 sq. ft.

$(0.90)\left(\frac{35910}{94930}\right) = .34$

$(0.20)\left(\frac{59020}{94930}\right) = \frac{.12}{.46}$ = Composite "C"

3. Runoff Rate Q = CIA, where C = 0.46, I = 5.4"/hr.
A = 2.18 ac. (for 100 yr. - 6 hr. storm)

Q = (0.46)(5.4)(2.18)
= 5.4 cfs.

Runoff Volume V = CDA(1/12) D = 2.2"
V = (0.46)(2.2)(94930)(1/12)
= 8006 cu. ft.

D. SUMMARY OF RESULTS

	Q	V
Pre	6 cfs	8584 c.f.
Post	5 cfs	8006 c.f.

The post-development runoff rate and volume are less than the pre-development conditions. Therefore all drainage requirements are satisfied.

All runoffs entering Avalon Place from the site plus the offsite flows, shall exit onto 63rd. Street by means of a concrete run-down located between lots 14 and 15.

E. LOT ON 63rd. STREET SHALL HAVE PONDING AT CAPACITY FOR FUTURE DEVELOPMENT.

RECOMMENDATIONS

1. Final site grading to insure that all offsite and onsite runoff is directed to the southwest corner of the site.

2. Runoff to be drained off the street by means of sidewalk cuts and concrete rundowns. The rundown is located on the property line between lots 14 and 15. The rundown is the situated in a 20 foot sewage easement on a 50 ft. x 140 ft. lot.

3. The 50 ft. x 140 ft. lot will require ponding of 150 cubic feet for future development of lot.

4. A two foot sidewalk cut with 3/8" steel grate cover will be required to allow runoff off of Avalon Place and onto 63rd. Street.

A DRAINAGE STUDY

FOR

AVALON WEST TOWNHOUSES

ALBUQUERQUE, NEW MEXICO

MARCH 1978

This drainage study will analyze the post-development drainage of the Avalon West Townhouses. This site is located osuth off of Avalon Drive and west of 63rd Street.

The site has 26 townhouse units in 13 distinct structures on 3.07 acres.

The following calculations show the pre-development and post-development runoff.

A. PRE-DEVELOPMENT RUNOFF

1. Runoff Rate, Q=CIA where C=0.35, Tc=10 min., I=5.4 "/hr., A=3.07 ac.

$Q=(0.35)(5.4)(3.07)$
$= 5.8 \sim \underline{6\ cfs}$.

2. Runoff Volume, where precipitation for 100 yr. 24 hour storm = 2.2"

$Vol.=(2.2")(133,770\ sq.ft.)(0.35)(^1/12)$
$= \underline{\underline{8,584\ cu.ft.}}$

3. Offsite Vol., (area common with western boundary)

$Q = CIA = (0.60)(5.4)(.43\ ac.) = 1.4\ cfs$
$V = CDA(^1/12) = (0.60)(2.2)(18,900)(^1/12) = 2,079\ cu.ft.$

Q TOTAL = $\underline{\underline{7\ cfs}}$ TOTAL = $\underline{\underline{10,663\ cu.ft.}}$

B. POST-DEVELOPMENT

1. Composite "C" Factor

Roofs, parking, conc., etc. = 74,710 sq.ft. at C=0.90
Landscaped areas = 59,060 sq.ft. at C=0.20

$0.90\left(\frac{74,710}{133,770}\right) = .50$

$0.20\left(\frac{59,060}{133,770}\right) = .09$

$.59$ = Composite "C"

2. Runoff Rate, Q=CIA, where C=0.59, I=5.4, A=3.07 (for 100 yr.-6 hr. storm)

$Q=(0.59)(5.4)(3.07)$
$= 9.8 \sim \underline{\underline{10\ cfs}}$

3. Runoff Volume, $V=CDA(^1/12)$, D=2.2"

$Vol.=(0.59)(2.2)(133,770)(^1/12)$
$= \underline{\underline{14,469\ cu.ft.}}$

The following table shows an increase of 5,885 cubic feet of runoff that will have to be controlled.

SUMMARY OF RESULTS

	Pre-development	Post-development	Increase
Q	6 cfs	10 cfs	4 cfs
Vol.	8,584 cu. ft.	14,469 cu. ft.	5,885 cu. ft.

RECOMMENDATIONS

1. Final site grading to insure that all offsite and onsite runoff is directed to the southwest corner of the site.
2. Runoff to be drained off the street into a pond by means of a rundown located on the property line between units 14 and 15.
3. This proposed pond will permit storm runoff to permanently pond to a maximum capacity of 6400 cubic feet. (This is approximately 9% over the required ponding for this site.)
4. Construct an overflow wier to permit all runoff in excess of pond capacity to runoff to 63rd Street by means of a rundown.
5. The 2 ft. wide rundown from the pond to 63rd Street referred to in recommendation No. 4 is situated in a 20 ft. sewage easement on a 50 ft. x 140 ft. lot. This lot will require ponding of 700 cubic feet for future development of lot.
6. A two foot wide sidewalk cut with 3/8" steel grate cover will be required to allow runoff onto 63rd Street.