HYDROLOGY

G16/D45

PROPOSED FOUR PLEX

G16—D45

1 PLAN

INFORMATION SHEET

PROJECT TITLE Proposed Four-Plex TYPE OF SUBMITTAL Drainage Plan

ZONE ATLAS PAGE NO. G-16 CITY ADDRESS 3420 Wellesley Dr. N.E.

LEGAL DESCRIPTION Lot 5 - Replat of Lot 3, Block "B".

Indian Acres Subdivision

ENGINEERING FIRM NM Engineering Services CONTACT R.T. Williams, P.E.

ADDRESS 1108 Alvarado N.E. - Suite 8 PHONE 268-8568

OWNER John & Raymond Van Cleve CONTACT John Van Cleve

ADDRESS 1701 Camino Gusto, N.W. PHONE 344-9222

ARCHITECT CONTACT

ADDRESS PHONE

SURVEYOR CONTACT

ADDRESS PHONE

CONTRACTOR John Van Cleve, Builder CONTACT John Van Cleve

ADDRESS 1701 Camino Gusto, N.W. PHONE 344-9222

DATE SUBMITTED NOV 8, 1983

BY RTWilliams

Use this Information Sheet when submitting the following:

Drainage report of plan, conceptual grading and drainage plan, engineer's certification plan, erosion plan and grading plan. Provide the information applicable to your submittal.

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NOV 0 9 1983

ENGINEERING

NEW MEXICO ENGINEERING SERVICES
1108 Alvarado Dr. NE • Suite 8
Albuquerque, NM 87110
(505) 265-8568

616-045

John Van Cleve
3449222

November 8, 1983

John Armstrong, P.E.
Civil Engineer/Hydrology
City of Albuquerque
P.O. Box 1293
Albuquerque, NM 87103

SUBJECT: Drainage Plan for Proposed Four-Plex, 3420 Wellesley Dr. N.E.

Dear Mr. Armstrong:

This is to submit the referenced drainage plan. The site is not in the 100-year flood hazard zone. On-site flows will be conveyed to either side of the proposed structure by an earth channel three feet wide at 0.50% slope. Thence they will be conveyed to the parking lot at the front of the structure by a concrete channel two feet wide at 1% slope. The flows will pass through the parking lot and be conveyed to Wellesley Dr. over the drivepad.

Offsite flows are generated over an area of approximately 1.64 acres. Under emergency conditions these flows will pass through the property and over the drivepad at a depth of 0.20 feet.

An erosion control plan has not been submitted because the site is less than 1.0 acre and grading will involve less than 500 cubic yards. I will instruct the contractor to take precautions to insure that sediment is not deposited on the public right-of-way.

Please contact me if you require additional information.

Sincerely,

RTWilliams

Richard T. Williams, P.E.
New Mexico Engineering Services

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ENGINEERING

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

FILE COPY

November 30, 1983

Mr. Richard T. Williams
New Mexico Engineering Services
1108 Alvarado Drive NE Suite 8
Albuquerque, NM 87110

REF: DRAINAGE PLAN FOR FOUR-PLEX AT 3420 WELLESLEY DRIVE NE (G16-D45), 11-8-83

Dear Mr. Williams:

The above mentioned plan is hereby approved.

If you have any questions, please feel free to call me at 766-7644.

Thank you,

John Armstrong
Civil Eningeer/Hydrology

JA:mrk

83-12 PROPOSED FOUR-PLEX
3420 WELLESLEY DR NE

USE RATIONAL FORMULA $Q = CIA$

$A = 60 \times 133.75 = 8025$ SF / $= 0.18$ AC /

IMPERVIOUS AREAS:

ROOF - 90 × 33.25	2992.5	SF /
PARKING LOT - 28 × 60	1680	/
SIDEWALKS - 17 × 2.5 × 4	170	/
SIDEWALKS - 80 × 2.5	200	/
	5043	SF /

% IMPERVIOUS $= \frac{5043}{8025} = 0.63$ /

SOIL SERIES - EmB - EMBUDO GRAVELLY FINE SANDY LOAM. RUNOFF IS MEDIUM, HAZARD of WATER EROSION IS MODERATE. CONTROL of MOISTURE NEEDED for PROPER COMPACTION. (SOIL SURVEY of BERNALILLO CO., NM, SCS, p. 18 + map 21).

HYDROLOGIC SOIL GROUP - B (op. cit., p. 77)

$C = 0.65$ (DPM Vol 2, # 22.2 C-1)

$R = 2.2$ (DPM Vol 2, # 22.2 D-1)

ASSUME $t_c = 10$ min

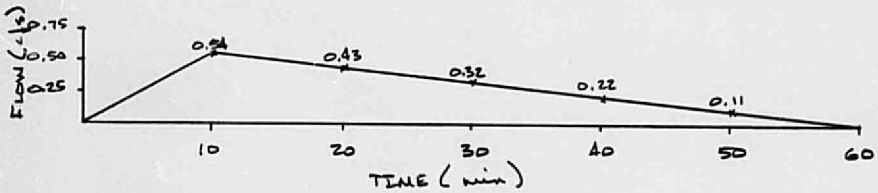
$I = 2.2\,(6.84)(10)^{-0.51} = 4.65$ /

$Q_{100} = 0.65\,(4.65)(0.18) = 0.54$ cfs /

$Q_{10} = 0.657(Q_{100}) = 0.657(0.54) = 0.35$ cfs

$V_{100} = CRA = 0.65\left(\frac{2.2}{12}\right)(8025) = 956$ CF

DURATION of RUNOFF $= \frac{2V}{Q_{100}} = \frac{2(956)}{0.54} = 3540$ SEC $= 59$ USE 60 min



INFLOW

T	AVG FLOW	VOLUME	ACCUM VOLUME
0	0	0	0
10	0.27	162	162
20	0.49	294	456
30	0.37	222	678
40	0.27	162	840
50	0.17	102	942
60	0.05	30	972

SWALE - BACK of LOT

$A = 60 \times 15.75 = 945$ SF $= 0.02$ AC

ALL PERVIOUS - $C = 0.34$ (DPM Vol 2, Pt 22.2 C-1)

$I = 4.65$

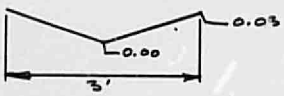
$Q_{100} = 0.34(4.65)(0.02) = 0.03$ cfs

EARTH LINED CHANNEL (SMOOTH) - $n = 0.030$

$S = 0.005$

$Q = \frac{1.486}{n} A r^{\frac{2}{3}} S^{\frac{1}{2}} \Rightarrow A r^{\frac{2}{3}} = \frac{Qn}{1.486 S^{\frac{1}{2}}} = \frac{0.03(0.030)}{1.486(.005)^{\frac{1}{2}}} = 0.0086$ /

try 3' WIDTH - 2% SIDE SLOPE



$A = \frac{1}{2}(.03)(1.5)(2) = 0.045$ /

$A r^{\frac{2}{3}} = 0.045(3)^{\frac{2}{3}} = 0.094$ / OK

SWALE - W SIDE of LOT

WIDTH AVAILABLE $= 5.75 - 0.5 = 5.25'$ /

$A = 22 \times 105.5 = 2321$ SF $= 0.05$ AC /

ALL IMPERVIOUS - $C = 1$

$I = 4.65$

$Q_{100} = 1(4.65)(0.05) = 0.23$ cfs /

try poured concrete rundown, $n = 0.013$, $S = 0.01$

$A r^{\frac{2}{3}} = \frac{0.23(0.013)}{1.486(.01)^{\frac{1}{2}}} = 0.020$ /

try 2' width, 2% side slope

$A = \frac{1}{2}(0.02)(1)(2) = 0.02$ /

$r = 2'$

$Ar^{\frac{2}{3}} = 0.02(2)^{\frac{2}{3}} = 0.032$ / OK

SWALE - E. SIDE of LOT

WIDTH AVAILABLE = 2.5'

$A = 37 \times 105.5 = 3904$ SF = 0.09 AC /

PERVIOUS AREA = $3(20)(15.5) = 930$ SF /

IMPERVIOUS AREA = $3904 - 930 = 2974$ SF /

% IMPERVIOUS = $\frac{2974}{3904} = 76\%$

$C = 0.74$ (DPW Vol 2, Pl 22.2 C-1)

$I = 4.65$

$Q_{100} = 0.74(4.65)(0.09) = 0.31$ cfs /

try poured concrete rundown, $n = 0.013$, $S = .01$

$Ar^{\frac{2}{3}} = \frac{0.31(0.013)}{1.486(.01)^{\frac{1}{2}}} = 0.027$

2' WIDTH, 2% SIDE SLOPE ($Ar^{\frac{2}{3}} = 0.032$, SEE CALCULATION ABOVE, IS OK)

OFF SITE IFLOWS

1 PU = .01 in^2

1 in^2 = 200×200 = 40,000 SF

1 PU = 400 SF

DRAINAGE AREA

180
177

357 ÷ 2 = 179 P.U. × 400 = 71,600 SF/ = 1.64 AC

ASSUME FULLY DEVELOPED - 100% IMPERVIOUS - C = 1

I = 4.65

Q_{100} = 1 (4.65)(1.64) = 7.63 cfs ✓

Q_{10} = 0.657 (7.63) = 5.01 cfs

WEIR FORMULA $Q = CLH^{\frac{3}{2}}$, C = 2.6, L = 32'

$H^{\frac{3}{2}} = \frac{Q}{CL} = \frac{7.63}{2.6(32)} = 0.0917$

H = 0.20'