HYDROLOGY

E19/D23

APARTMENTS - ACADEMY

+ TRUCHAS DR.

E19 - D23

1 PLAN

INFORMATION SHEET

PROJECT TITLE Apartments @ Academy & Truchas TYPE OF SUBMITTAL Conceptual Drainage Report

ZONE ATLAS PAGE NO. E-19 CITY ADDRESS NE Cor. Academy & Truchas

LEGAL DESCRIPTION Tract K, Unit 2, Bear Canyon Village

ENGINEERING FIRM Wilson & Co CONTACT R.F. Sykes or Sharon Petney

ADDRESS PO Box 3528, Alb. NM 87190 PHONE 262-2116

OWNER Cowards & Davis CONTACT Rick Davis

ADDRESS 1116 Pennsylvania NE PHONE 266-5711

ARCHITECT _____ CONTACT _____

ADDRESS _____ PHONE _____

SURVEYOR _____ CONTACT _____

ADDRESS _____ PHONE _____

CONTRACTOR _____ CONTACT _____

ADDRESS _____ PHONE _____

PRE-DESIGN MEETING:

X YES
___ NO
X COPY OF CONFERENCE RECAP SHEET PROVIDED

PLEASE CHECK TYPE OF APPROVAL EXPECTED WITH THIS SUBMITTAL:

___ SKETCH PLAT APPROVAL
___ PRELIMINARY PLAT APPROVAL
___ SITE DEVELOPMENT PLAN APPROVAL
___ FINAL PLAT APPROVAL
___ BUILDING PERMIT APPROVAL
___ CERTIFICATE OF OCCUPANCY APPROVAL
___ ROUGH GRADING PERMIT APPROVAL
___ GRADING/PAVING PERMIT APPROVAL
___ OTHER _____ (SPECIFY)

DATE SUBMITTED: 21 Feb 1984

BY: Robert A. Lyon

RECEIVED FEB 21 1984 DRAINAGE SECTION

WILSON & COMPANY
ENGINEERS & ARCHITECTS

505 262-2116

Office Location... 1321 SAN PEDRO N.E. ▪ ALBUQUERQUE, NEW MEXICO 87110

Mailing Address... P.O. BOX 3548 ▪ ALBUQUERQUE, NEW MEXICO 87190

ENGINEERS
ARCHITECTS
PLANNERS

An Equal Opportunity Employer

E19-D33

February 20, 1984

Mr. Billy Goolsby
Hydrology Section
City of Albuquerque
P. O. Box 1293
Albuquerque, NM 87103

Re: Apartments at Northeast Corner of
Academy Road and Truchas Drive
WCEA File: 84-504

Dear Mr. Goolsby:

Enclosed is the conceptual drainage report for the proposed apartments at the northeast corner of Academy Road and Truchas Drive.

Please give me a call if you have any questions.

Very truly yours,
WILSON & COMPANY

Robert F. Sykes, P.E.

xc: Bob Davis
Cauwels & Davis

Enclosure

-sap

RECEIVED
FEB 22 1984
HYDROLOGY SECTION

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

March 15, 1984

Mr. Robert Sykes
Wilson & Company
1321 San Pedro, N.E.
Albuquerque, New Mexico 87110

RE: CONCEPTUAL DRAINAGE PLAN FOR APARTMENTS AT NORTHEAST CORNER OF ACADEMY ROAD AND TRUCHAS DRIVE (E19-D23) RECEIVED FEBRUARY 22, 1984

Dear Bob:

The above referenced conceptual plan is approved. Consequently, finalization of the site development plans can proceed.

Please be advised that approved alley and street grades adjacent to the property will be required for final grading of the site. Also, the run-off generated from Area 3 will need to be directed through sidewalk culverts or other means and not across the surface of the Public R/W.

If I can be of further assistance, please contact me.

Yours truly,

Billy J. Goolsby

Billy J. Goolsby, P.E.
City/County Flood Ordinance Administrator

BJG/ca

INFORMATION SHEET

PROJECT TITLE Rancho Verde Apartments TYPE OF SUBMITTAL Final Grading & Drainage Plan

ZONE ATLAS PAGE NO. E-19 CITY ADDRESS

LEGAL DESCRIPTION Tract K - Unit 2 Bear Canyon Village

ENGINEERING FIRM Wilson & Co CONTACT Robert F Sykes

ADDRESS P.O. Box 3548, Abq 87190 PHONE 262-2116

OWNER Cauwels & Davis CONTACT Rick Davis

ADDRESS 1116 Pennsylvania NE, Abq 87110 PHONE

ARCHITECT CONTACT

ADDRESS PHONE

SURVEYOR Wilson & Co CONTACT

ADDRESS PHONE

CONTRACTOR CONTACT

ADDRESS PHONE

PRE-DESIGN MEETING:

X YES
___ NO
X COPY OF CONFERENCE RECAP SHEET PROVIDED

PLEASE CHECK TYPE OF APPROVAL EXPECTED WITH THIS SUBMITTAL:

___ SKETCH PLAT APPROVAL
___ PRELIMINARY PLAT APPROVAL
___ SITE DEVELOPMENT PLAN APPROVAL
___ FINAL PLAT APPROVAL
___ BUILDING PERMIT APPROVAL
___ CERTIFICATE OF OCCUPANCY APPROVAL
___ ROUGH GRADING PERMIT APPROVAL
___ GRADING/PAVING PERMIT APPROVAL
___ OTHER _____ (SPECIFY)

RECEIVED APR 10 1984 HYDROLOGY SECTION

DATE SUBMITTED: 9 April 84

BY: [signature]

WILSON & COMPANY
ENGINEERS & ARCHITECTS

505 262-2116

ENGINEERS
ARCHITECTS
PLANNERS

Office Location... 1321 SAN PEDRO N.E. ▪ ALBUQUERQUE, NEW MEXICO 87110 ▪ An Equal Opportunity Employer

Mailing Address... P.O. BOX 3548 ▪ ALBUQUERQUE, NEW MEXICO 87190

April 9, 1984

Mr. Billy J. Goolsby
Hydrology Section
City of Albuquerque
P. O. Box 1293
Albuquerque, NM 87103

RECEIVED
APR 10 1984
HYDROLOGY SECTION

Re: Rancho Verde Apartments Located at
NE Corner Academy Rd. & Truchas Dr.
Conceptual Report (E19-D23)
WCEA File: 84-504

Dear Mr. Goolsby:

Enclosed is the final drainage report and grading plan for the Rancho Verde Apartment project at Academy Rd. and Truchas Dr.

There has been no significant change in grading plan and the increased runoff does not change the conclusion of the conceptual drainage report. The increased runoff factor. The maximum 100-year depth of flow in Academy Rd. is still below the maximum allowable depth of flow.

Please give me a call if you have any questions.

Very truly yours,
WILSON & COMPANY

Robert F. Sykes, P.E.

Enclosure

-sap

FILE COPY

City of Albuquerque

P.O. BOX 129, ALBUQUERQUE, NEW MEXICO 87103

DESIGN HYDROLOGY SECTION
123 Central NW, Albuquerque, NM 87102
(505) 766-7644

April 13, 1984

Mr. Robert Sykes
Wilson & Company
1321 San Pedro NE
Albuquerque, New Mexico 87110

RE: DRAINAGE PLAN FOR RANCHO VERDE APARTMENTS
(E19-D23) RECEIVED APRIL 10, 1984

Dear Bob,

I have reviewed the above referenced submittal and all I can give you is drainage approval. I cannot give final approval for permit purposes.

The grading plan is not of sufficient detail for inclusion in the construction set provided the contractor. The contractor cannot build with flow arrows and outlines of sidewalks. Also, paved access with City approved street grades is required for development of this site.

Should you have any questions or comments, please contact me.

Yours truly,

Billy J. Goolsby

Billy J. Goolsby, P.E.
City/County Flood Ordinance Administrator

BJG/ca

WILSON
& COMPANY
ENGINEERS &
ARCHITECTS

505 262-2110

ENGINEERS
ARCHITECTS
PLANNERS

Office Location... 1321 SAN PEDRO N.E. ■ ALBUQUERQUE, NEW MEXICO 87110 ■ An Equal Opportunity Employer

Mailing Address... P.O. BOX 3548 ■ ALBUQUERQUE, NEW MEXICO 87190

April 19, 1984

Mr. Billy Goolsby
Hydrology Section
City of Albuquerque
P. O. Box 1293
Albuquerque, NM 87103

Re: Rancho Verde Apartments (E19 - D23)
WCEA File: 84-504

Dear Mr. Goolsby:

Enclosed is the revised grading plan for the Rancho Verde Apartments. I believe we have complied with requirements of your letter dated April 13, 1984.

The construction plans for Academy Place have been delivered to the City for review and comment.

Very truly yours,
WILSON & COMPANY

Robert F. Sykes, P.E.

Enclosure

xc: Cauwels & Davis

-sap

RECEIVED
APR 20 1984
HYDROLOGY SECTION

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

DESIGN HYDROLOGY SECTION
123 Central NW, Albuquerque, NM 87102
(505) 766-7644

May 11, 1984

Mr. Robert Sykes
Wilson & Co.
1321 San Pedro NE
Albuquerque, NM 87110

RE: REVISED GRADING AND DRAINAGE PLAN FOR RANCHO VERDE APARTMENTS (E19-D23) RECEIVED APRIL 20, 1984

Dear Bob,

The above referenced plan is approved. Since this plan does not have any date on it, revision or otherwise, assurance by you and our staff that this same plan is incorporated in the construction set will be required prior to release of the building permit.

Also, please attach a copy of the appropriately approved "Construction Within Public R/W" document prior to final sign-off.

If I can be of further assistance, please contact me.

Sincerely yours,

Billy J. Goolsby

Billy J. Goolsby, P.E.
City/County Flood Plain Admin.

BJG/dlw

cc: Greg Olson, Assistant City Engineer/Design

WILSON & COMPANY
ENGINEERS & ARCHITECTS

505 345-5345

ENGINEERS
ARCHITECTS
PLANNERS

Office Location... 6611 GULTON CT., N.E. • ALBUQUERQUE, NEW MEXICO 87109 • An Equal Opportunity Employer

Mailing Address... P.O. BOX 3548 • ALBUQUERQUE, NEW MEXICO 87190

11 February 1985

RECEIVED
FEB 12 1985
HYDROLOGY SECTION

Mr. Fred Aquirre
Hydrology Section
City of Albuquerque
P. O. Box 1293
Albuquerque, NM 87103

Re: Rancho Verde Apartments
Drainage Certificate of Occupancy
Report (E19-D23)
WCEA File: 84-504

Dear Mr. Aquirre:

Enclosed is a print showing the "as-built" elevation along Academy. The dashed green line shows the revised drainage areas.

The project is basically built in accordance with the approved drainage plan and the problem areas are A-2 and A-6-1 and A-6-2 which have roof drains which discharge to grassed areas which then drain across public sidewalks.

The following is a summary of the total flow and flow from the roofs for Areas A-2, A-6-1 and A-6-2:

Area No.	Q_{100} Total	Q_{100} Roof	Length of Sidewalk	cfs/ft. Sidewalk
A-2	0.38	0.27	130 ft.	.0029
A-6-1	0.63	0.32	190 ft.	.0033
A-6-2	0.26	0.17	120 ft.	.0022

Assuming uniform flow across the sidewalk and with a flow of 0.0033 cfs/ft. of sidewalk and assuming an "n" value of 0.02 and a slope of 1% the depth of flow across the sidewalk would be about 0.12 of an inch. These assumptions may not be completely valid but they do show how inconsequential the flow across the sidewalks might be.

We are requesting the certificate of occupancy be issued since the project is basically in compliance with the approved drainage plan.

Please give me a call if you have any questions.

WILSON & COMPANY

Robert F. Sykes, P.E.
Partner

Enc.

-nab

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

DESIGN HYDROLOGY SECTION
123 Central NW, Albuquerque, NM 87102
(505) 766-7644

February 13, 1985

Robert F. Sykes
Wilson & Company
Post Office Box 3548
Albuquerque, New Mexico 87190

RE: RANCHO VERDE APARTMENTS CERTIFICATION
(E-19/D23)

Dear Mr. Sykes:

Based on the information provided on your February 12, 1985 submittal, listed are certain items that will need to be addressed before certification is acceptable.

1. Complete information sheet designating certification.
2. Professional Certification - Engineer's stamp dated and signed accompanied with a statement indicating substantial compliance with the approved drainage report and/or plan.
3. Proposed water block must be constructed and acceptable to you before revised certification can be processed. Please include a detail of proposed water block on your resubmittal.
4. It is strongly recommended that in future submittals that roof runoff be routed away from public sidewalks and onto an approved drivepad or other acceptable structure.

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

Cordially,

Bernie J. Montoya

Bernie J. Montoya, C.E.
Engineering Assistant

BJM/bsj

DRAINAGE INFORMATION SHEET

PROJECT TITLE: Rancho Verde Apartments ZONE ATLAS/DRNG. FILE #: E19/D23

LEGAL DESCRIPTION: Tract K, Unit 2, Bear Canyon Village

CITY ADDRESS:

ENGINEERING FIRM: Wilson & Co CONTACT: RF Sylva

ADDRESS: PO Box 3548 - 87190 PHONE: 345-5345

OWNER: Cauwels & Davis CONTACT: Rick Davis

ADDRESS: 1116 Pennsylvania NE 87110 PHONE: 266-5711

ARCHITECT: CONTACT:

ADDRESS: PHONE:

SURVEYOR: CONTACT:

ADDRESS: PHONE:

CONTRACTOR: CONTACT:

ADDRESS: PHONE:

PRE-DESIGN MEETING:

X YES

___ NO

___ COPY OF CONFERENCE RECAP SHEET PROVIDED

RECEIVED FEB 25 1985 HYDROLOGY SECTION

DRB NO.

EPC NO.

PROJ. NO.

TYPE OF SUBMITTAL:

___ DRAINAGE REPORT

___ DRAINAGE PLAN

___ CONCEPTUAL GRADING & DRAINAGE PLAN

___ GRADING PLAN

___ EROSION CONTROL PLAN

X ENGINEER'S CERTIFICATION

CHECK TYPE OF APPROVAL SOUGHT:

___ SKETCH PLAT APPROVAL

___ PRELIMINARY PLAT APPROVAL

___ SITE DEVELOPMENT PLAN APPROVAL

___ FINAL PLAT APPROVAL

___ BUILDING PERMIT APPROVAL

___ FOUNDATION PERMIT APPROVAL

X CERTIFICATE OF OCCUPANCY APPROVAL

___ ROUGH GRADING PERMIT APPROVAL

___ GRADING/PAVING PERMIT APPROVAL

___ OTHER _____ (SPECIFY)

DATE SUBMITTED:

BY:

WILSON & COMPANY
ENGINEERS & ARCHITECTS

505 345-5345

ENGINEERS
ARCHITECTS
PLANNERS

Office Location... 6611 GULTON CT., N.E. • ALBUQUERQUE, NEW MEXICO 87109 • An Equal Opportunity Employer

Mailing Address... P.O. BOX 3546 • ALBUQUERQUE, NEW MEXICO 37190

22 February 1985

RECEIVED
FEB 25 1985
HYDROLOGY SECTION

Mr. Bernie J. Montoya
Design Hydrology Section
City of Albuquerque
P. O. Box 1293
Albuquerque, NM 87103

Re: Rancho Verde Apartments Certification
(E-19/D23)
WCEA File: 84-504

Dear Mr. Montoya:

Enclosed are the completed information sheet, the revised drawing with certification the project was completed in substantial compliance with approved drainage report and with the detail and the date of construction of the curb water block.

Please give me a call if you have any questions.

WILSON & COMPANY

Robert F. Sykes, P.E.
Partner

Enc.

cc: Mr. Rick Davis

-nab

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

DESIGN HYDROLOGY SECTION
123 Central NW, Albuquerque, NM 87102
(505) 766-7644

February 26, 1985

Robert F. Sykes, P.E.
Wilson & Company Engineers & Architects
Post Office Box 3548
Albuquerque, New Mexico 87198

RE: CERTIFICATION FOR RANCHO VERDE APARTMENTS
(E-19/D23)

Dear Mr. Sykes:

Based on the information provided on your February 25, 1985 resubmittal, certification for the above referenced drainage plan is acceptable.

If you have any questions or comments, please call me at 766-7644.

Cordially,

Bernie J. Montoya

Bernie J. Montoya, C.E.
Engineering Assistant

BJM/bsj

ENGINEER'S DRAINAGE REPORT

RANCHO VERDE APARTMENTS

LOCATED AT NORTHEAST CORNER

OF TRUCHAS DRIVE AND ACADEMY ROAD

TRACT K IN UNIT NO. 2

BEAR CANYON VILLAGE

ZONE MAP E-19

WILSON & COMPANY ENGINEERS & ARCHITECTS

1321 SAN PEDRO DRIVE N.E.

ALBUQUERQUE, NM 87110

RECEIVED

APR 10 1984

HYDROLOGY SECTION

ROBERT F. SYKES

NEW MEXICO

459

REGISTERED PROFESSIONAL ENGINEER

APRIL 1984

(84-504)

WILSON & COMPANY ENGINEERS ARCHITECTS

84-504

CITY OF ALBUQUERQUE
MUNICIPAL DEVELOPMENT DEPARTMENT
ENGINEERING DIVISION

HYDROLOGY SECTION PROJ. NO. E-19 DATE: 2/14/84

PLANNING DIVISION NO. _____

CONFERENCE RECAP

SUBJECT: Tract K Unit 2 Bear Canyon Village

WHO	REPRESENTING
ATTENDANCE: Bob Sykes	
Sharon Petney	
Billy Goolsby	

FINDINGS: ① Conceptual Grading & Drainage Plan per DPM

② Free discharge allowed if demonstrated that there is capacity downstream or that there will be a negligable impact.

③ Nuisance flows to be controlled on-site

④ Roof drains should be directed toward parking areas if feasible. Runoff should not cross over Public R/W (sidewalk culverts preferred).

⑤ Street on east side & alley to north to be developed with this site

The undersigned agrees that the above findings are summarized accurately and are only subject to change if further investigation reveals that they are not reasonable or that they are based on inaccurate information.

SIGNED: Billy J. Goolsby SIGNED: [illegible]

TITLE: CE/Hydrology TITLE: Wilson & Co. Partner

DATE: 2/14/84 DATE: 2/14/84

ENGINEER'S DRAINAGE REPORT

APARTMENTS AT NORTHEAST CORNER OF

TRUCHAS DRIVE AND ACADEMY ROAD

TRACT K IN UNIT NO. 2 BEAR CANYON VILLAGE

ZONE MAP E-19

PURPOSE AND SCOPE: Cauwels and Davis is planning to develop the 2.99 acre site for 65 unit two-story apartments.

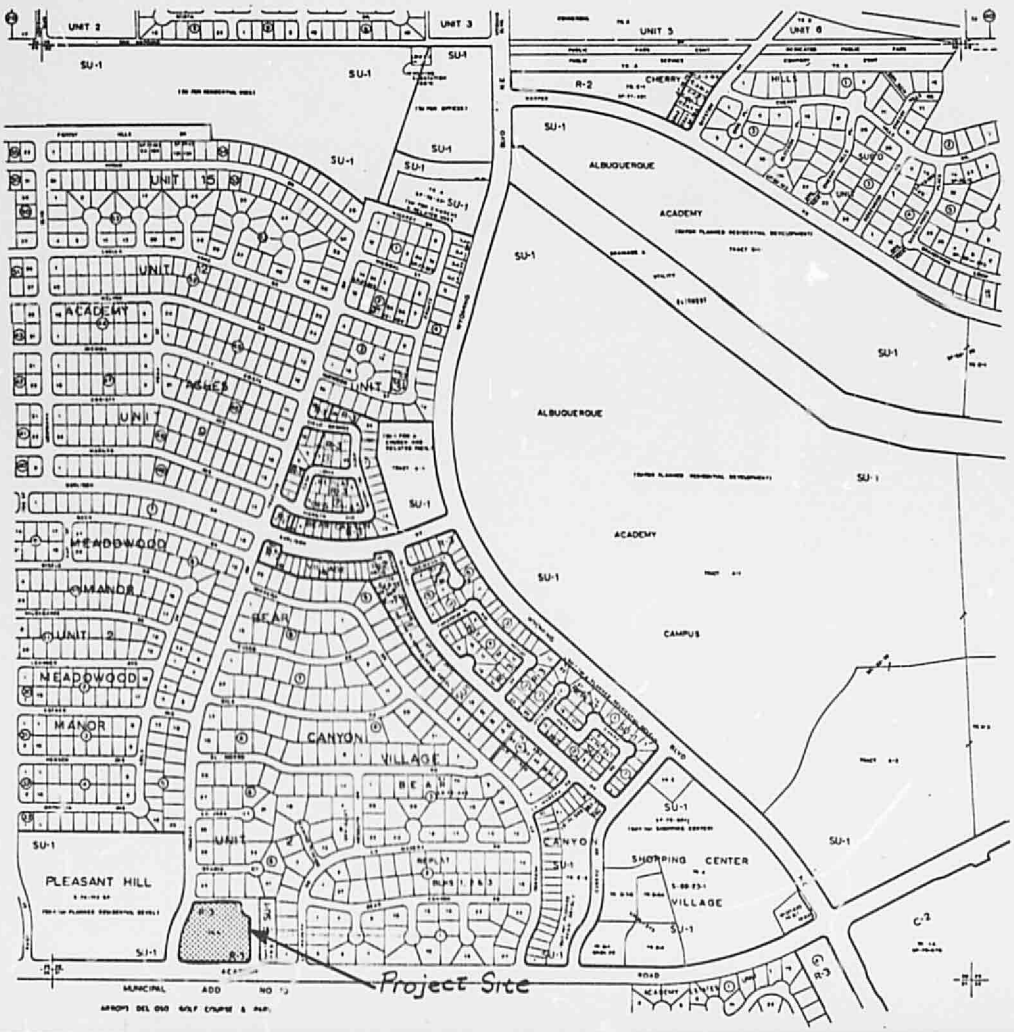
SITE LOCATION AND TOPOGRAPHY: The site is Tract K in Unit No. 2, Bear Canyon Village. The tract is located on the north side of Academy Road, between Truchas Drive and an unnamed street, and bounded on the north by an alley with a six-foot high block wall. The soil is classified EtC (SCS Soil Group B).

DESIGN CRITERIA: The Rational Method is used to compute the design flows using criteria in Volume 2, City of Albuquerque Development Procedures Manual. The runoff coefficient is based on land use shown on site development plan.

OFFSITE DRAINAGE: Flows north of Tract K are intercepted to the north by a six-foot high block wall. Flows to the west are carried south by the unnamed street, and flows to the west are carried by Truchas Drive. Academy Road intercepts all the flows and carries them to a cattleguard on Academy near Marcheta Avenue.
type drop inlet

ONSITE DRAINAGE: The attached plan depicts the five onsite drainage areas and their points of discharge. Areas 1, 2, and 5 combine and discharge to Truchas Drive. The maximum 100-year combined discharge rate is 2.08 cfs. Areas 3 and 4 discharge directly to Academy Road and have a maximum 100-year combined discharge rate of 6.75 cfs. The development increases the maximum flow by 3.46 cfs.

DISCUSSION: In the predesign meeting with the City, WCEA was advised that free discharge to Academy would be allowed if analysis showed the capacity of the street was not exceeded (0.87' depth). A previous report of the discharges to the street from basins in the area was received and modified to reflect the increased flow from the new site development. The results show an increase in depth of approximately .004'; maximum depth from a 100-year flood would then be expected at approximately 0.792'.


UNIT 2
UNIT 3
UNIT 5
UNIT 6
SU-1
R-2
CHERRY
HILLS
UNIT 15
UNIT 12
ACADEMY
HOMES
UNIT 11
MEADOWOOD
MANOR
UNIT 2
BEAR
CANYON
VILLAGE
ALBUQUERQUE
ACADEMY
CAMPUS
SHOPPING CENTER
VILLAGE
PLEASANT HILL
C-2
R-3
Project Site

E-19-Z

COMP.
CK.
DATE

WILSON & COMPANY
ENGINEERS & ARCHITECTS

LOC. Albuquerque FILE 84-504
PROJ. APARTMENTS AT ACADEMY RD. AND TRUCKAS DRIVE SHEET 1
SUBJ. OF 2

Undeveloped Flow Conditions

Area = 2.99 acres
6-hr., 100 yr. rainfall = 2.4"
C = 0.34 (SCS Soils Group B)
$t_c \leq 10$ min.
$I_{100} = 2.2 \times 2.4" = 5.28$ in/hr

$Q_{100} = CIA = 0.34(5.28)\,2.99 = 5.37$ cfs

Developed Conditions

Roofs, drives, and parking = 1.44 acres

% Area occupied by parking and roofs $= \frac{1.44}{2.99} \times 100 = 48\%$
From Design Criteria, Process Manual, C = 0.56

6-hr., 100 yr rainfall = 2.4"
$t_c \leq 10$ min.
$I_{100} = 2.2 \times 2.4" = 5.28$ in/hr.

Area #1
$A_1 = 0.302$ acres
$Q_{100} = CIA = 0.56(5.28)(0.302) = 0.89$ cfs

Area #2
$A_2 = 0.170$ acres
$Q_{100} = CIA = 0.56(5.28)(0.170) = 0.50$ cfs

Area #3
$A_3 = 1.883$ acres
$Q_{100} = CIA = 0.56(5.28)(1.883) = 5.57$ cfs

Area #4
$A_4 = 0.400$ acres
$Q_{100} = CIA = 0.56(5.28)(0.400) = 1.18$ cfs

Area #5
$A_5 = 0.234$ acres
$Q_{100} = CIA = 0.56(5.28)(0.234) = 0.69$ cfs

TOTAL FLOW 8.83 cfs

$A_1 + A_2 + A_5 = 0.89 + 0.50 + 0.69 = 2.08$ cfs

$A_3 + A_4 = 5.57 + 1.18 = 6.75$ cfs

Increased flow due to developed conditions:

$8.83 - 5.37 = 3.46$ cfs

Using Analysis Point as Cottlequard on Academy near Marcheta Ave:

$t_c = 13.22$ min
$I = 1.9 \times 2.4 = 4.58$

$Q = .50(4.58)(3) = 7.69$
$- \; 5.37$
2.32 cfs increase due to development.

<u>No significant change in hydrograph for basins in the area.</u>

Depth of flow: (Manning's Eqn)

$$\frac{1}{2} Q = \frac{1.49}{.017} \frac{\left(\frac{1}{2}(.49)(24.67) + 24.67(d-.49) + \frac{(d-.67)^2}{2(.02)}\right)^{5/3}}{\left(24.67 + .67 + (d-.49) + \frac{(d-.67)}{.02}\right)^{2/3}} (.027)^{1/2}$$

$$\frac{233}{2} = \frac{1.49}{.017} \frac{(25d^2 - 8.83d + 5.17)^{5/3}}{(-8.65 + 50d)^{2/3}} (.027)^{1/2}$$

$d = 0.792$

Max allowable depth as per drainage ordinance
$= 0.87'$

Change in depth due to site development.

$.792 - .788 = \underline{.004'}$

COMP. RFS
CK.
DATE 9 April 84

WILSON & COMPANY
ENGINEERS ARCHITECTS

LOC. Albuquerque FILE 84-504
PROJ. Rancho Verde Adds SHEET 1
SUBJ. Drainage Plan OF 1

Undeveloped Conditions
Area = 2.99 Ac.
6 hr -100yr. rainfall- 2.4"
C = 0.34 SCS hydrologic soils group B
t_c < 10 min
i_{100} = 2.2 x 2.4 = 5.28 in/hr
Q_{100} = CiA = 0.34 x 5.28 x 2.99 = 5.37 cfs

Developed Conditions

Area No	A Area	min t_c	i	% Impervious	C	(CiA) Q_{100}		Point of Discharge
A-1	0.31	<10	5.28	84%	0.80	1.31		Truchas Dr
A-2	0.14	<10	5.28	40%	0.52	.38		" "
A-5	0.86	<10	5.28	72%	0.70	3.18	Σ = 4.87	" "
A-3	0.72	<10	5.28	50%	0.58	2.20		Academy Rd
A-4	0.65	<10	5.28	84%	0.80	2.75		" "
A-6	0.31	<10	5.28	25%	0.45	0.74	Σ = 5.69	" "
					Total		10.56 cfs	

Ave developed $C = \left(\frac{.31}{2.99}\right)(.80) + \frac{.14}{2.99}(.52) + \frac{.86}{2.99}(.70) + \frac{.72}{2.99}(.58) + \frac{.65}{2.99}(.80) + \frac{.31}{2.99}(.45) =$
$= .08 + .02 + .20 + .14 + .17 + .05 = .66$

Using Analysis Point as Cattle Guard Inlet on Academy near Marcheta Ave
From previous report
t_c = 13.22 min i = 1.9 x 2.4 = 4.58
Q = CiA = .66 x 4.58 x 3 = 9.07
Q increase due to development = 9.07 - 5.37 = 4.4

Depth Flow (Mannings Equation)

$$\frac{1}{2}Q = \frac{1.49}{0.017}\left(\frac{25d^2 - 8.83d + 5.17}{(-8.65 + 50d)^{2/3}}\right)^{5/3}(.027)^{1/2}$$

$$\frac{235}{2} = 14.4\left(\frac{25d^2 - 8.83d + 5.17)^{5/3}}{(-8.65 + 50d)^{2/3}}\right)$$

d = 0.794
Max allowable d = 0.87'

Change in depth due to site development
.794 - .788 = 0.006'

WILSON & COMPANY
ENGINEERS ARCHITECTS

FILE ____ SHEET ____ OF ____
LOC. ____ PROJ. ____ SUBJ. ____
COMP. ____ CK. ____ DATE ____

BASIN B_3 - modified to reflect:

undeveloped area = 3.5 Ac
(C = 0.34)

developed area = 56.6 Ac
(C = 0.50 53.6 Ac
C = 0.56 3.0 Ac)

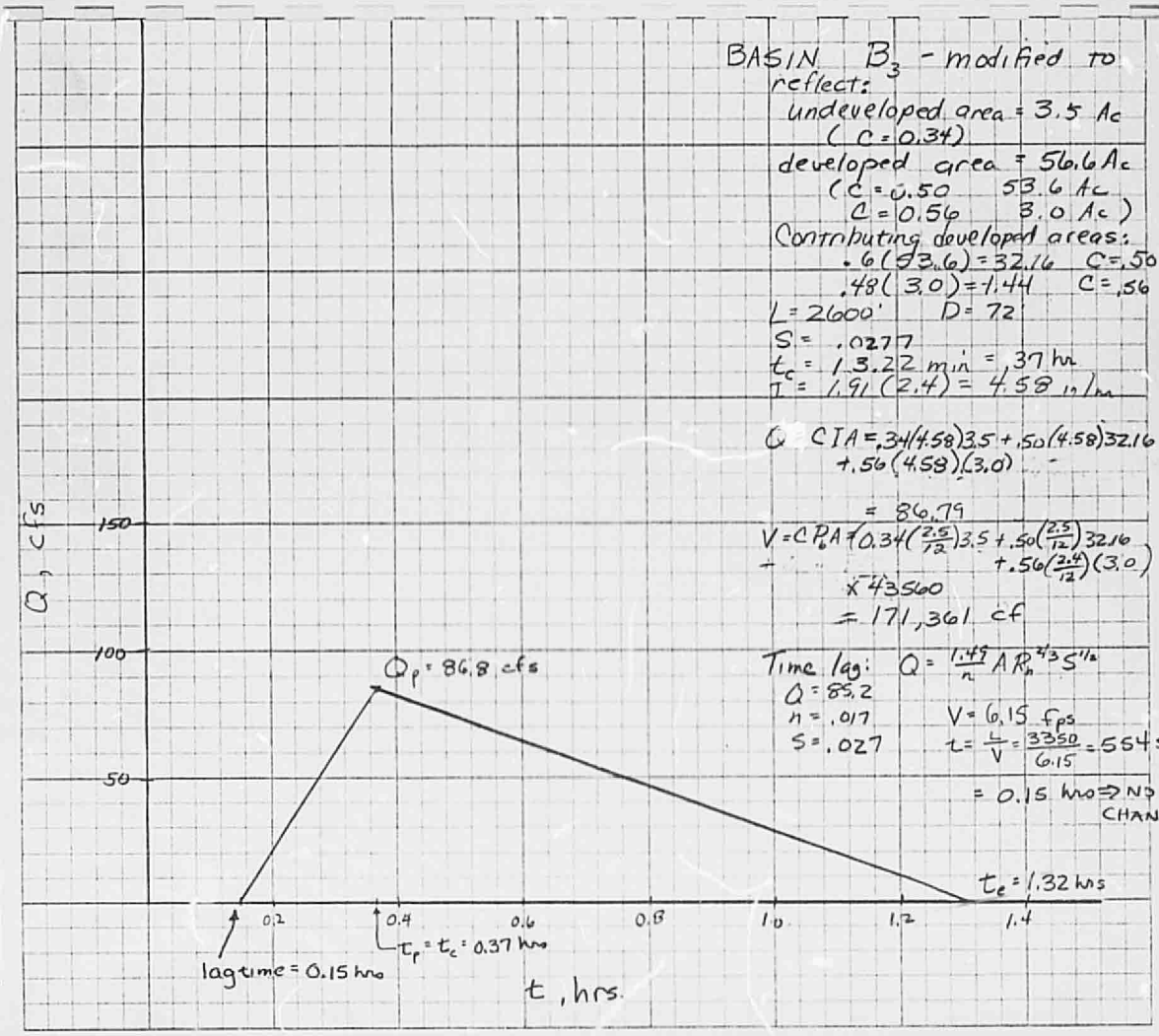
Contributing developed areas:
.6 (53.6) = 32.16 C = .50
.48 (3.0) = 1.44 C = .56

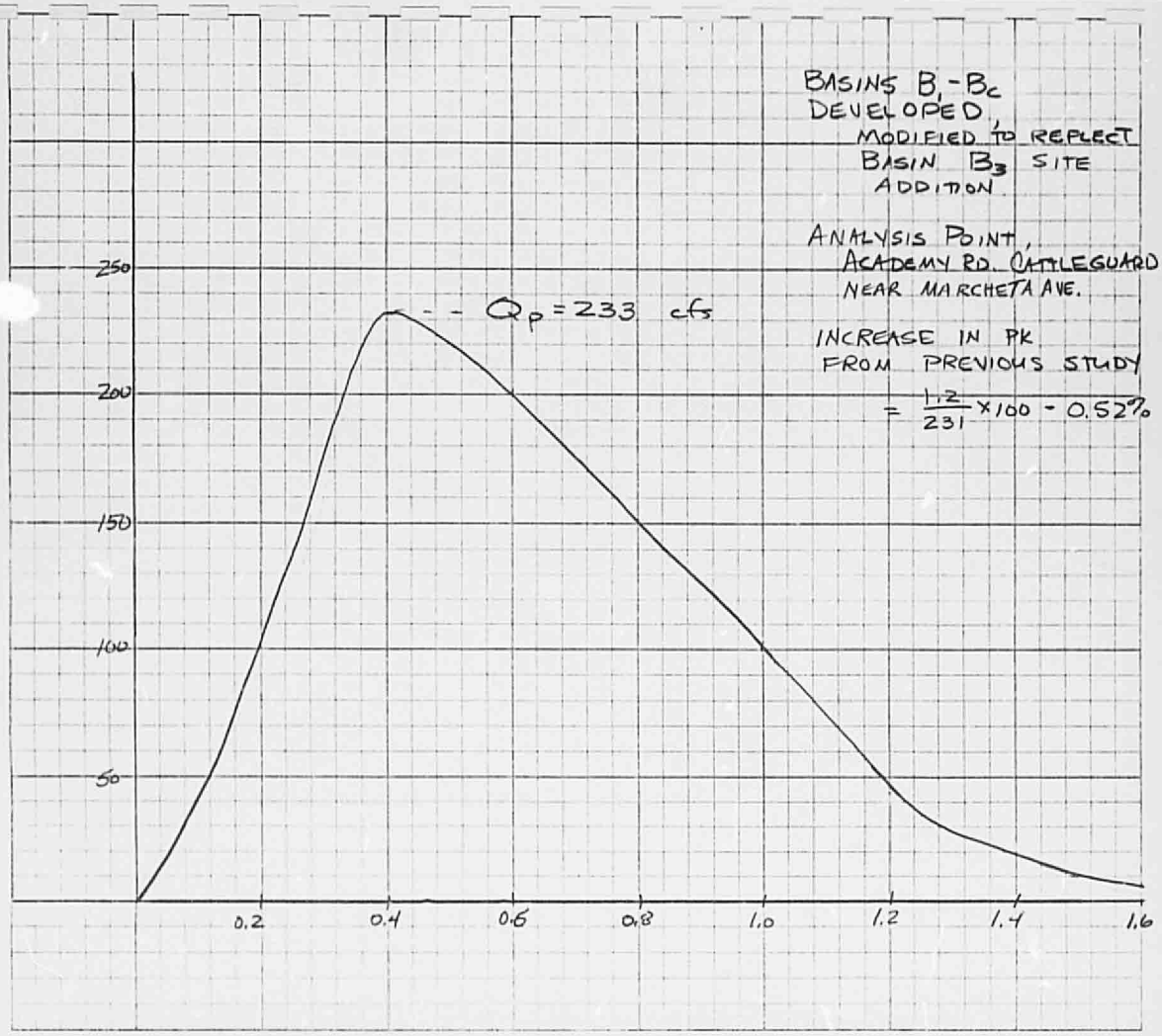
L = 2600' D = 72
S = .0277
t_c = 13.22 min = .37 hr
I = 1.91 (2.4) = 4.58 in/hr

Q = CIA = .34(4.58)3.5 + .50(4.58)32.16 + .56(4.58)(3.0)
= 86.79

$V = CP_6A = \left(0.34\left(\frac{2.5}{12}\right)3.5 + .50\left(\frac{2.5}{12}\right)32.16 + .56\left(\frac{2.4}{12}\right)(3.0)\right) \times 43560$
= 171,361 cf

Time lag: $Q = \frac{1.49}{n} A R_h^{2/3} S^{1/2}$
Q = 85.2
n = .017 V = 6.15 fps
S = .027 $t = \frac{L}{V} = \frac{3350}{6.15} = 554$ sec
= 0.15 hrs ⇒ NO CHANGE





WILSON & COMPANY
ENGINEERS
ARCHITECTS

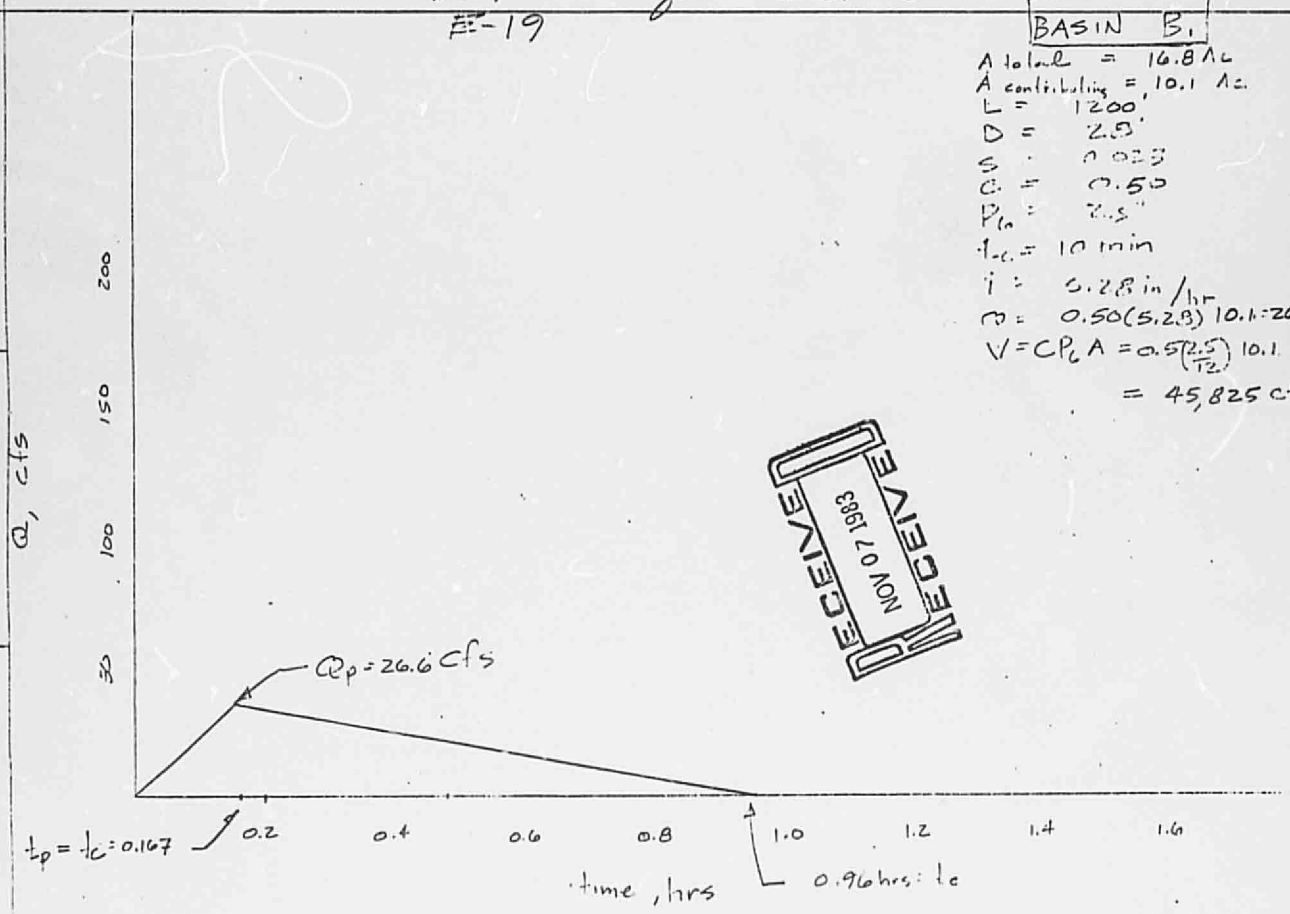
FILE
LOC.
SHEET
PROJ.
OF
SURV.
COMP.
CK.
DATE

Deer Canyon Estates

E-19

BASIN B1

A total = 16.8 Ac
A contributing = 10.1 Ac.
L = 1200'
D = 2.5'
S = 0.025
C = 0.50
P_{10} = 2.5"
t_c = 10 min
i = 5.28 in/hr
Q = 0.50(5.28) 10.1 = 26.6
V = CP_6 A = 0.5(2.5/12) 10.1
= 45,825 cf



RECEIVED
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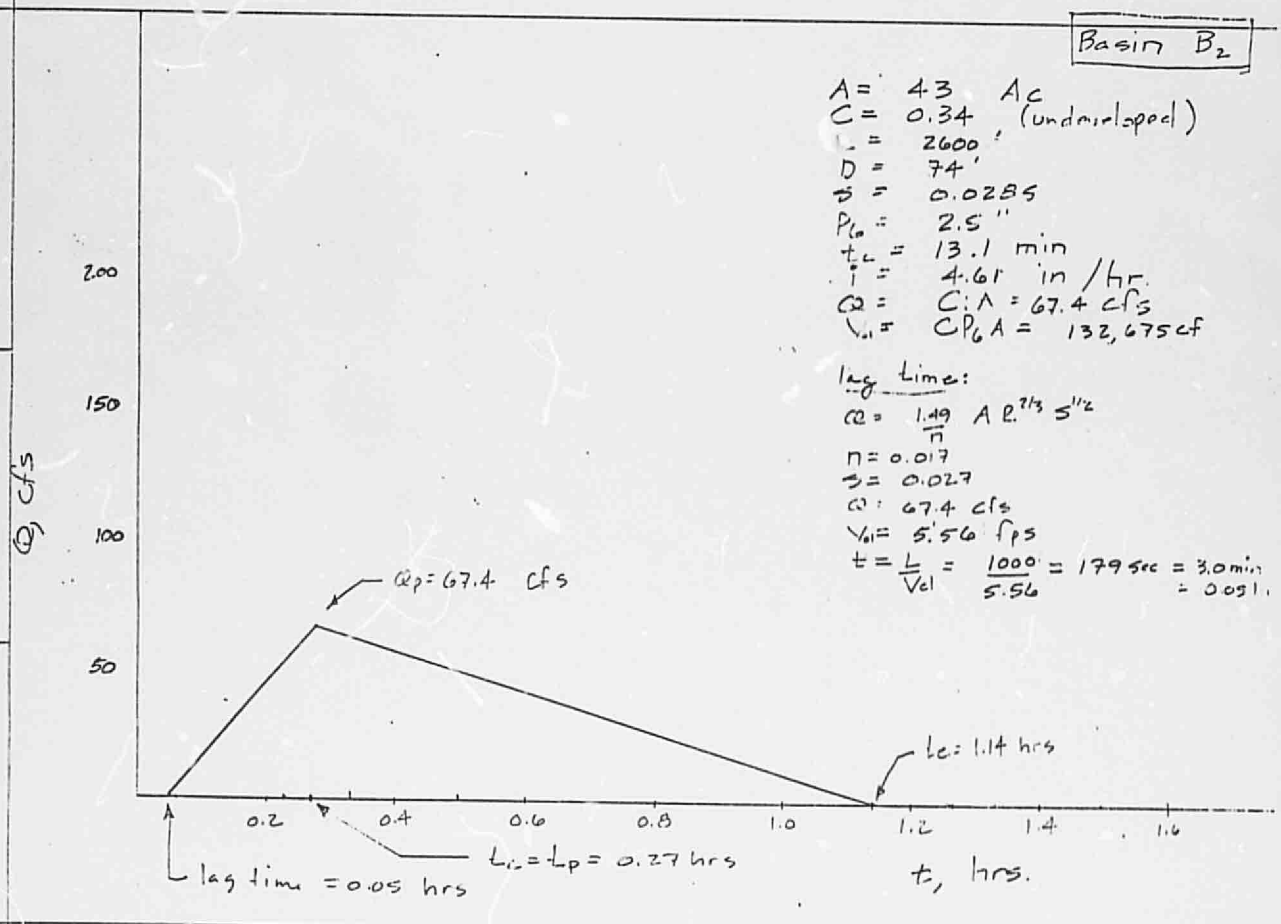
RECEIVED

Basin B_2

$A = 43$ Ac
$C = 0.34$ (undeveloped)
$L = 2600'$
$D = 74'$
$S = 0.0285$
$P_{10} = 2.5''$
$t_c = 13.1$ min
$i = 4.61$ in/hr.
$Q = C \cdot A = 67.4$ cfs
$V_{ol} = C P_6 A = 132{,}675$ cf

lag time:
$Q = \frac{1.49}{n} A R^{2/3} S^{1/2}$
$n = 0.017$
$S = 0.027$
$Q = 67.4$ cfs
$V_{el} = 5.56$ fps
$t = \frac{L}{Vel} = \frac{1000'}{5.56} = 179$ sec $= 3.0$ min $= 0.05$ h.



BASIN B_3

$A_{Total} = 10{,}875$

$A_{contributing} = 6525$

$\%contributing = 60$

typical lot

Total Area = 60.1 Acres

Undeveloped Area = 6.5 Ac (C=0.3

developed Area = 53.6 Ac (C=0.5

contributing developed Area = .6(53.6) =

L = 2600' D = 72'

S = 0.0277

t_c = 13.22 min = 0.22 hrs

i = 4.58 in/hr

$Q = CiA = 0.34(4.58)6.5 + 0.50(4.58)32.2 = 84$ cfs

$V = CP_LA = 0.34\left(\frac{2.5}{12}\right)6.5 + .50\left(\frac{2.5}{12}\right)32.2 =$ 166,150 cf

Time lag:

$Q = \frac{1.49}{n} A R^{2/3} S^{1/2}$

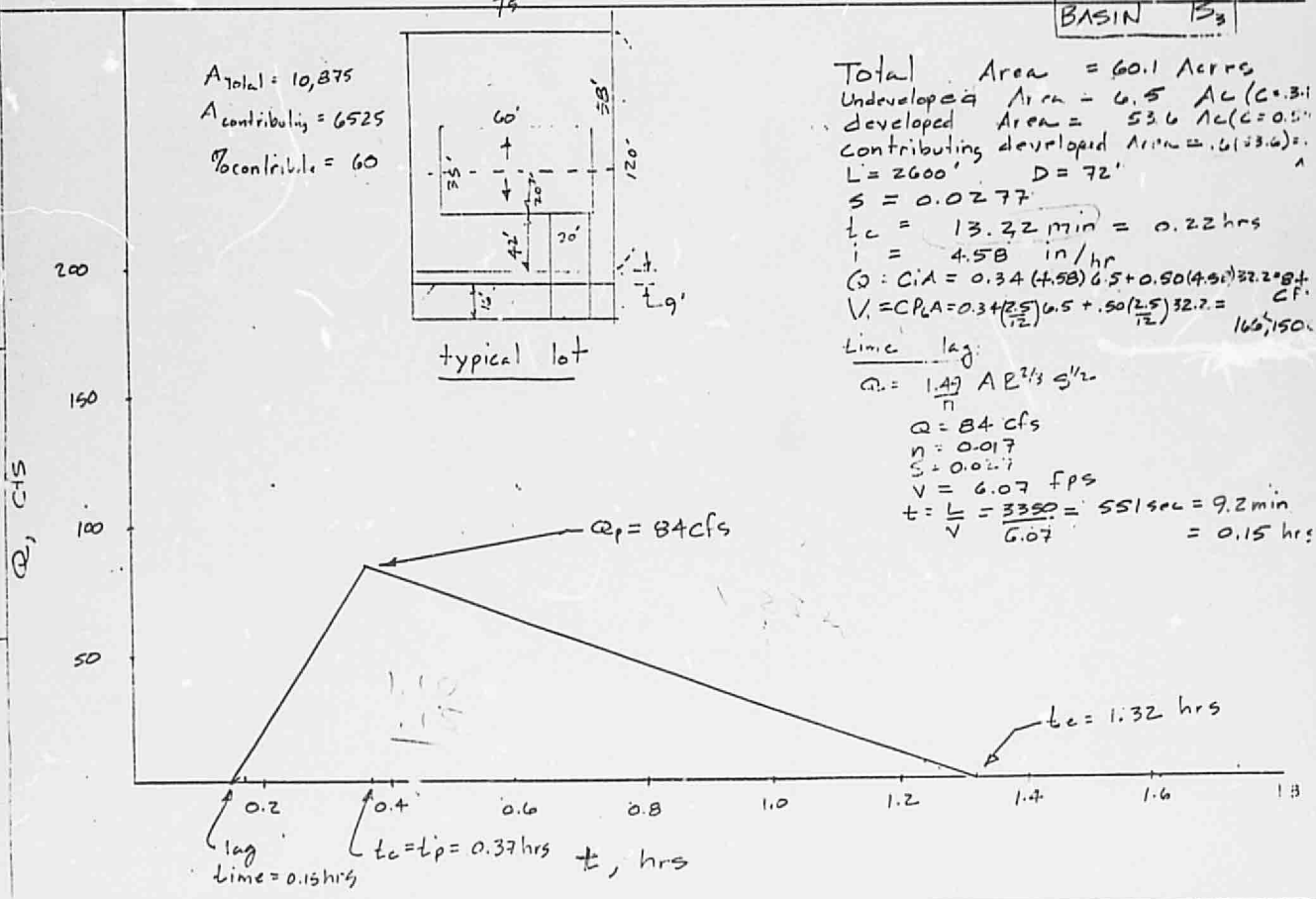
Q = 84 cfs

n = 0.017

S = 0.0277

V = 6.07 fps

$t = \frac{L}{V} = \frac{3350}{6.07} = 551$ sec = 9.2 min = 0.15 hrs

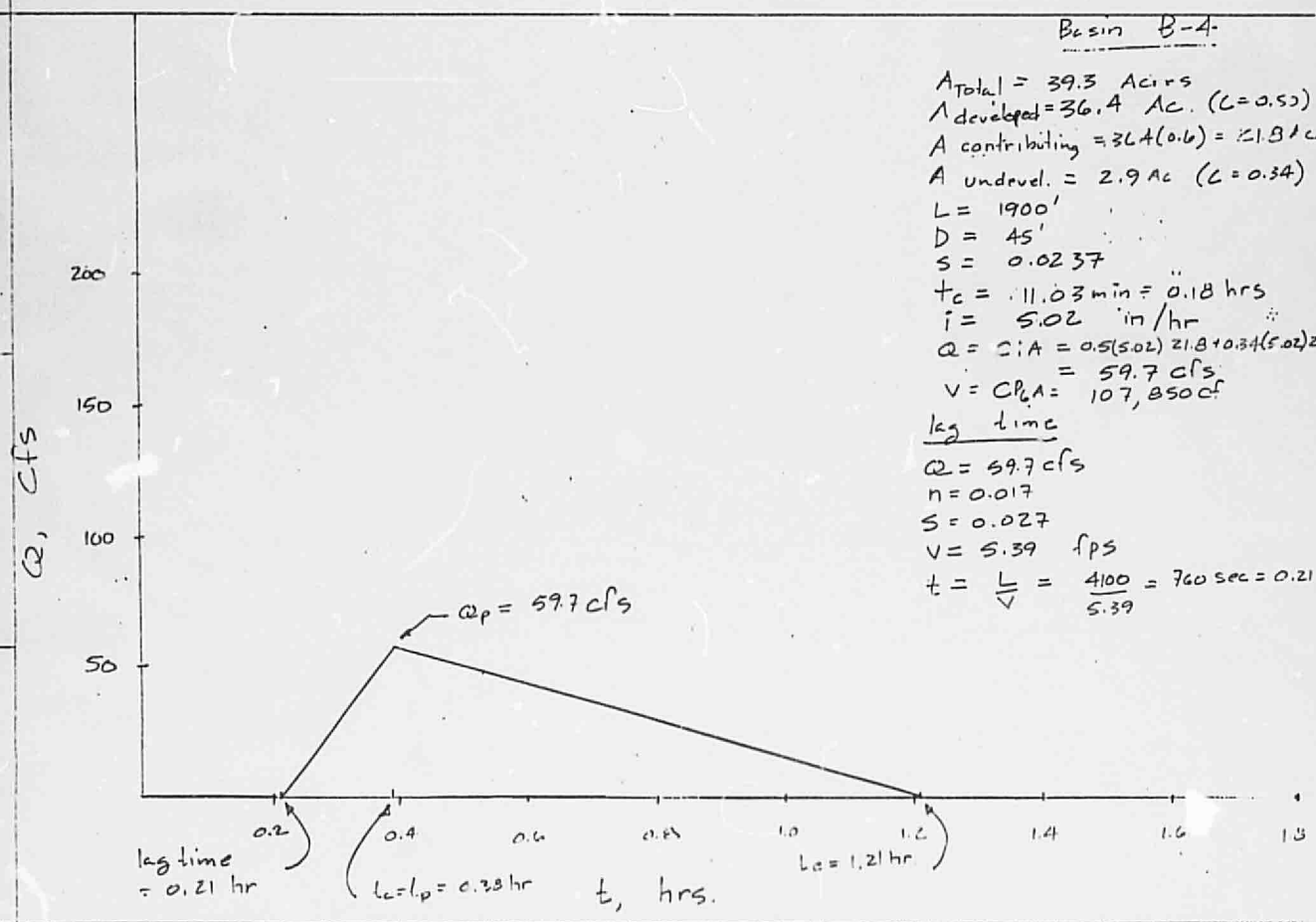


Basin B-4

A_{Total} = 39.3 Acirs
$A_{developed}$ = 36.4 Ac. (C = 0.50)
A contributing = 36.4(0.6) = 21.8 Ac
A undevel. = 2.9 Ac (C = 0.34)
L = 1900'
D = 45'
S = 0.0237
t_c = 11.03 min = 0.18 hrs
i = 5.02 in/hr
Q = CiA = 0.5(5.02) 21.8 + 0.34(5.02)2
= 59.7 cfs
V = $C P_6 A$ = 107,850 cf

lag time

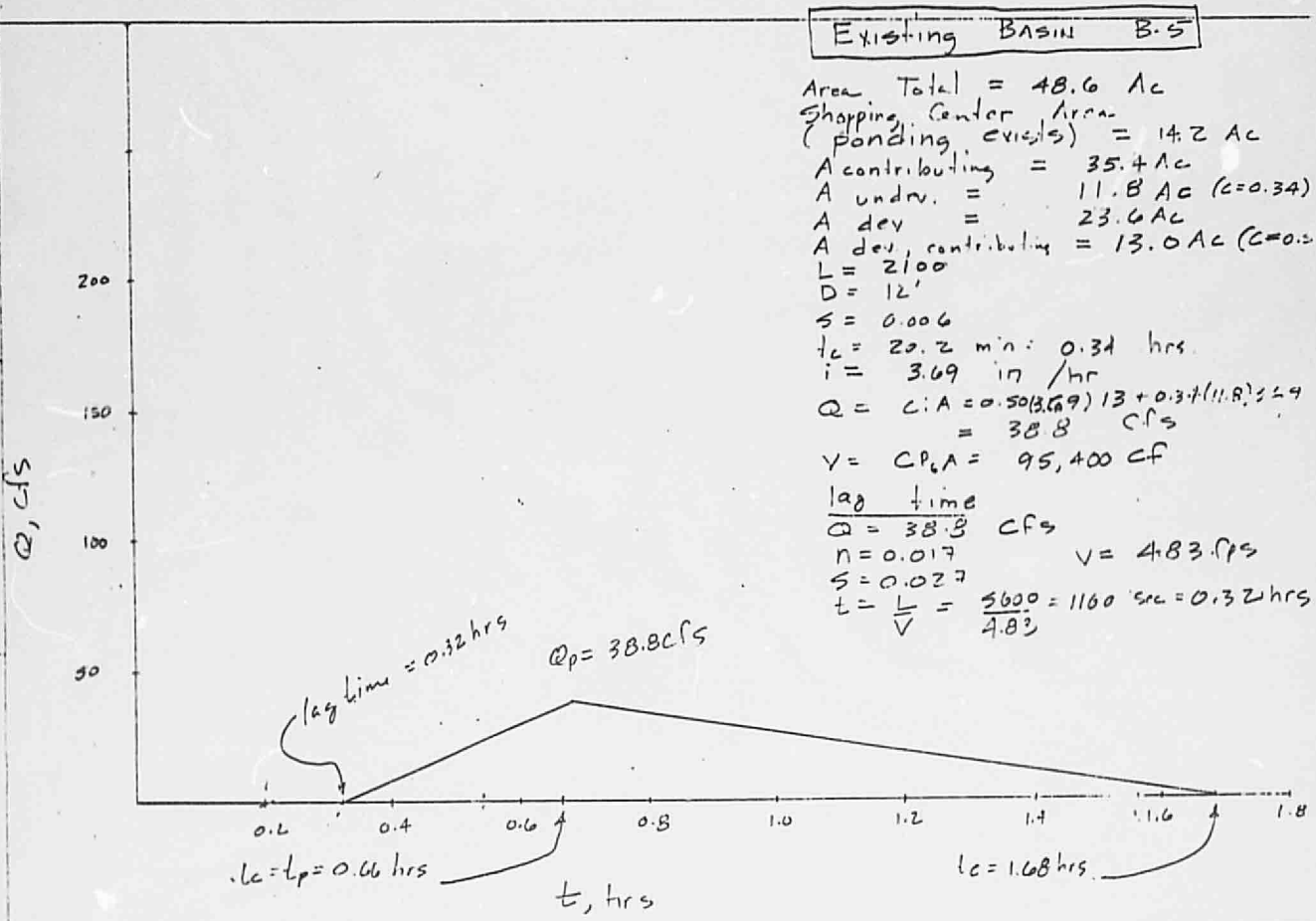
Q = 59.7 cfs
n = 0.017
S = 0.027
V = 5.39 fps
$t = \frac{L}{V} = \frac{4100}{5.39}$ = 760 sec = 0.21



Existing BASIN B-5

Area Total = 48.6 Ac
Shopping Center Area
(ponding exists) = 14.2 Ac
A contributing = 35.4 Ac
A undev. = 11.8 Ac (c=0.34)
A dev = 23.6 Ac
A dev, contributing = 13.0 Ac (C=0.5
L = 2100
D = 12'
S = 0.006
t_c = 20.2 min = 0.34 hrs
i = 3.69 in /hr
Q = CiA = 0.50(3.69) 13 + 0.34(11.8) = 4
= 38.8 cfs
V = CP_6A = 95,400 cf

lag time
Q = 38.8 cfs
n = 0.017 V = 4.83 fps
S = 0.027
$t = \frac{L}{V} = \frac{5600}{4.83}$ = 1160 sec = 0.32 hrs

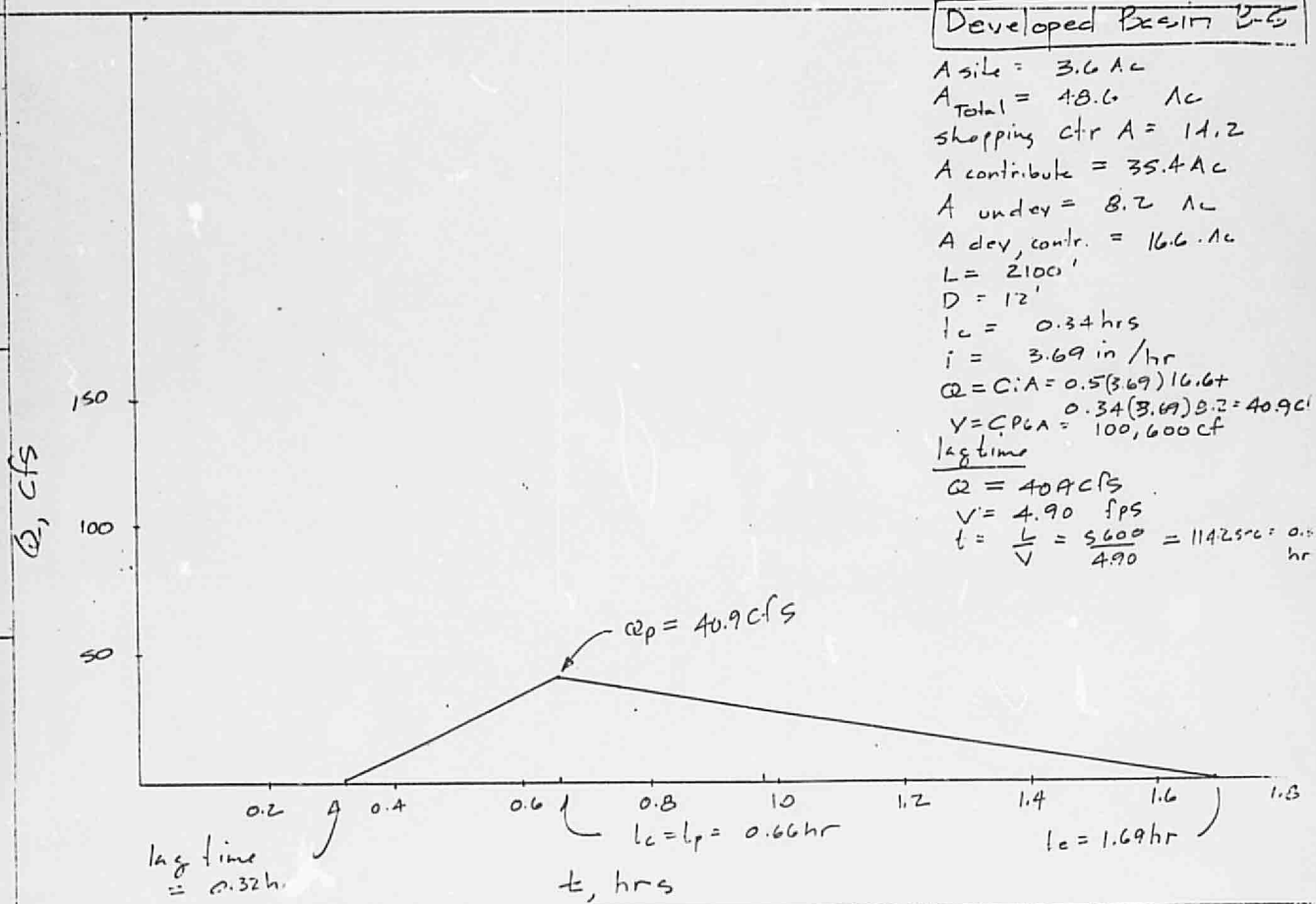


Developed Basin B-5

A site = 3.6 Ac
A_{Total} = 48.6 Ac
shopping ctr A = 14.2
A contribute = 35.4 Ac
A undev = 8.2 Ac
A dev, contr. = 16.6 Ac
L = 2100'
D = 12'
t_c = 0.34 hrs
i = 3.69 in/hr
Q = CiA = 0.5(3.69)16.6+
0.34(3.69)8.2 = 40.9 cfs
V = CPCA = 100,600 cf

lag time

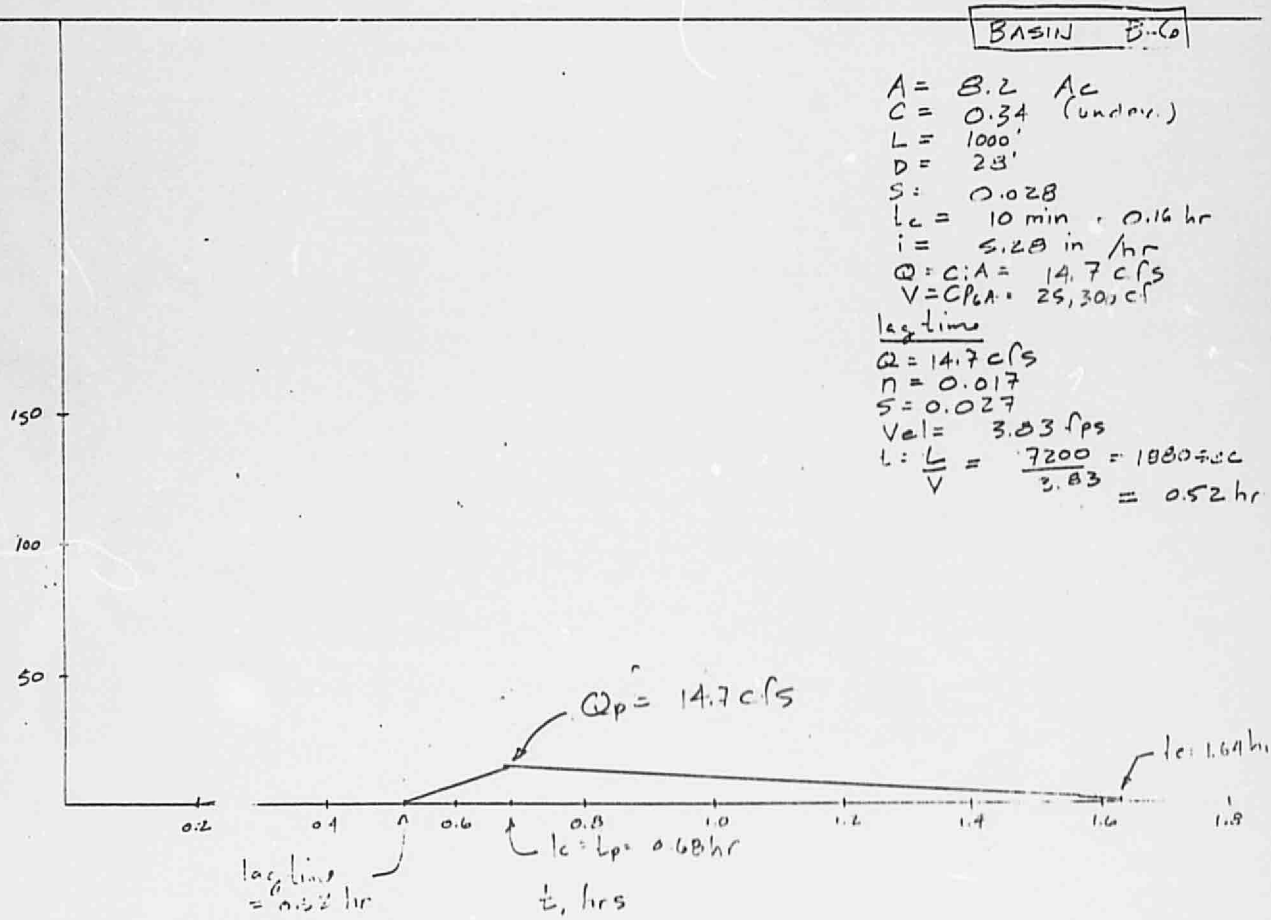
Q = 40.9 cfs
V = 4.90 fps
$t = \frac{L}{V} = \frac{5600}{4.90} = 1142.5\,sec = 0.3$ hr



BASIN B-6

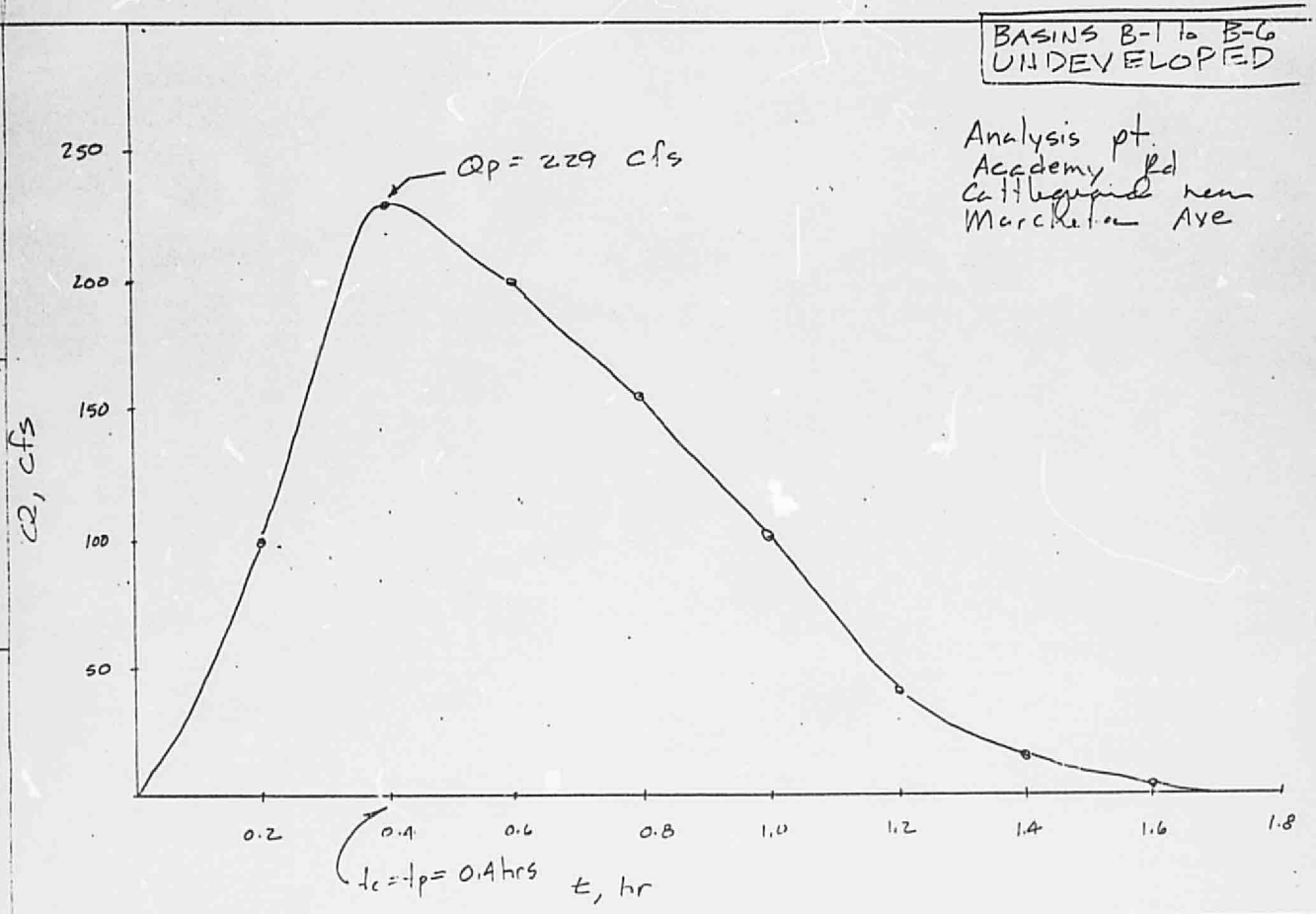
A = 8.2 Ac
C = 0.34 (undev.)
L = 1000'
D = 23'
S = 0.028
t_c = 10 min = 0.16 hr
i = 5.28 in/hr
Q = CiA = 14.7 cfs
V = CPGA = 25,300 cf

lag time
Q = 14.7 cfs
n = 0.017
S = 0.027
Vel = 3.83 fps
$t = \frac{L}{V} = \frac{7200}{3.83} = 1880$ sec
= 0.52 hr

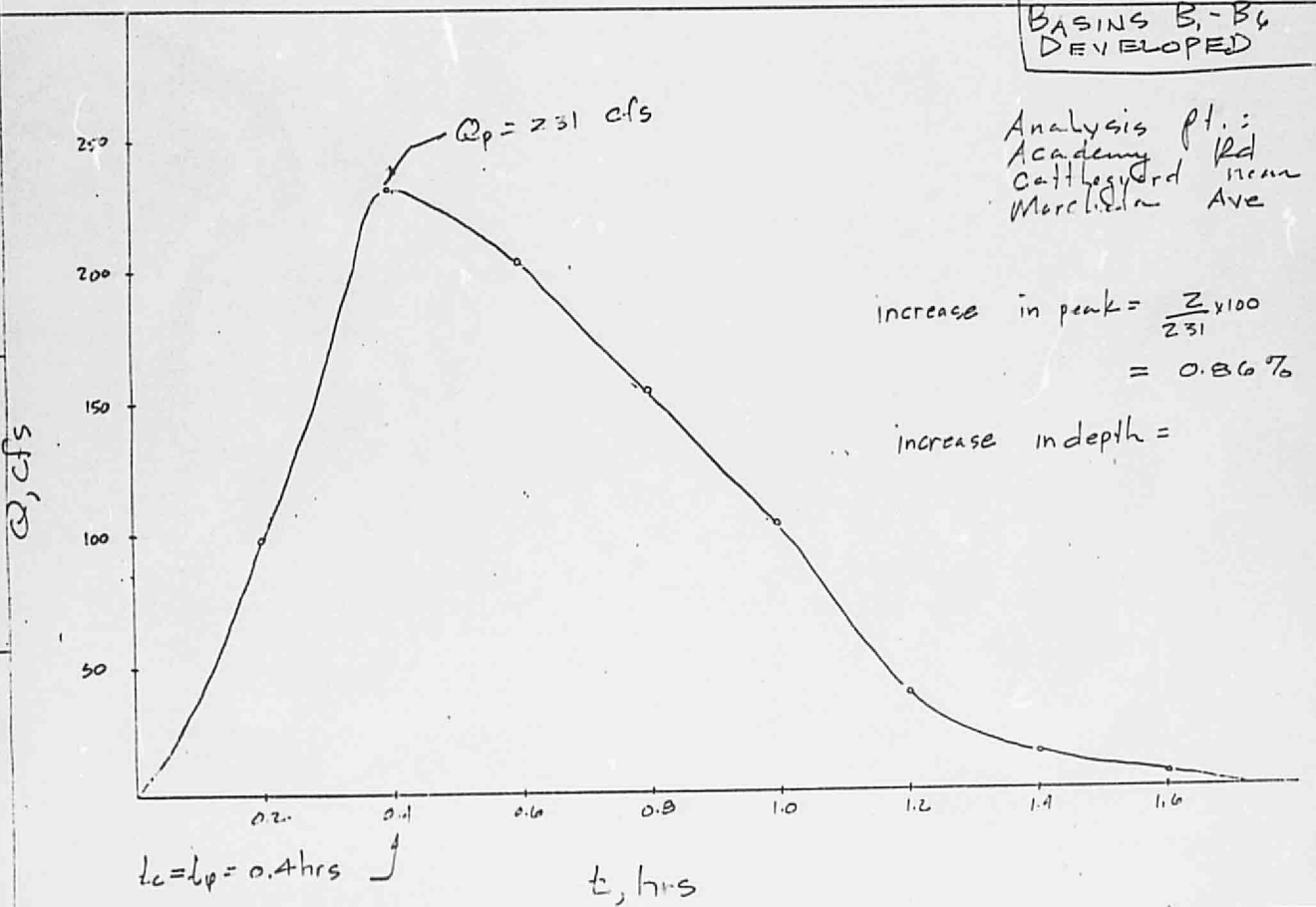


BASINS B-1 to B-6
UNDEVELOPED

Analysis pt.
Academy Rd
Cattleguard near
Marcheta Ave



BASINS B_1 - B_6
DEVELOPED



Analysis pt.:
Academy Rd
Cattlegard Ave
Meridian

increase in peak = $\frac{2}{231} \times 100$

= 0.86 %

increase in depth =

Basins $B_1 - B_6$ UNDEV - Summation of hydrograp

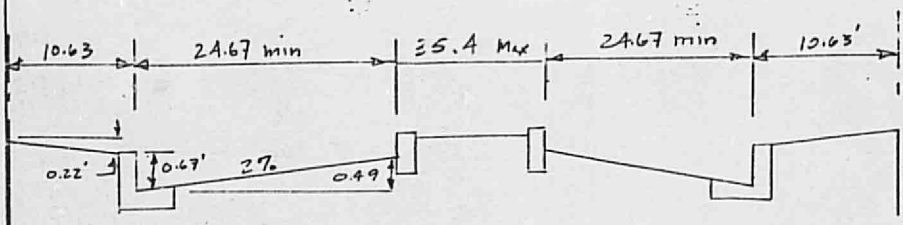
Q, cfs

time	B_1	B_2	B_3	B_4	B_5	B_6	total
0	0	→					
0.2	33	45	21	0	0	0	99
0.4	24	57	81	59	8	0	229
0.6	15	41	63	43	30	7	199
0.8	8	26	45	30	53	12	154
1.0	0	11	38	15	26	11	101
1.2	0	0	11	1	20	7	39
1.4	0	0	0	0	10	4	14
1.6	0	0	0	0	1	1	2

Basins $B_1 - B_6$ Dev. - Summation of hydrographs

time	B_1	B_2	B_3	B_4	B_5	B_6	total
0	0	→					
0.2	33	45	21	0	0	0	99
0.4	24	57	83	59	10	0	231
0.6	15	41	63	43	35	7	204
0.8	8	26	45	30	34	12	155
1.0	0	11	38	15	28	11	103
1.2	0	0	11	1	20	7	39
1.4	0	0	0	0	11	4	15
1.6	0	0	0	0	3	1	4

Academy Rd. Capacity:



max depth = 0.87 as per drainage ordinance

$S = 0.027$

$n = 0.017$

$\frac{1}{2} A = 24.67(0.49)\,0.5 + 0.38(24.67) + \frac{1}{2}(0.22)\,10.63$

$= 16.48$ sf

$R = A/P = \frac{16.48}{24.67 + .67 + .38 + 10.6} = 0.45$

$\frac{1}{2} Q = \frac{1.49}{n} A R^{2/3} S^{1/2} = \frac{1.49}{.017}(16.48)(0.45)^{2/3}(0.027)^{1/2}$

$= 139.0$ cfs

@ Total capacity $= 139 \times 2 = \underline{278}$ cfs

depth @ $Q = 229$ cfs $= 0.781$

depth @ $Q = 231$ cfs $= 0.788$

∴ increase in depth due to development $= \underline{\underline{0.007'}}$

CITY OF ALBUQUERQUE

Jerry S

DRAINAGE FACILITIES WITHIN CITY RIGHT - OF - WAY

RANCHO VERDE

4

LOCATION MAP

E-19-Z

E19-D23

NOTICE TO CONTRACTOR

1. An excavation/construction permit will be required before beginning any work within City right-of-way. An approved copy of these plans must be submitted at time of application for this permit.
2. All work detailed on these plans to be performed within City right-of-way shall be constructed in accordance with "Contract Documents Public Works Contract 84-1."
3. Two working days prior to any excavation, contractor must contact Line Locating Service, 765-1234, for location of existing utilities.
4. Prior to construction, the contractor shall excavate and verify the horizontal and vertical locations of all constructions. Should a conflict exist, the contractor shall notify the engineer so that the conflict can be resolved with a minimum amount of delay.
5. Backfill compaction shall be according to RESIDENTIAL street use.
6. Sidewalk culvert with steel plate top shall be in accordance with City of Albuquerque Drawing K-16-1.
7. Legal Description: Tract K, Unit 2, Bear Canyon Estates.
8. Adress: 5800 Truchas Dr. N.E.

ROBERT F. SYKES NEW MEXICO REGISTERED PROFESSIONAL ENGINEER

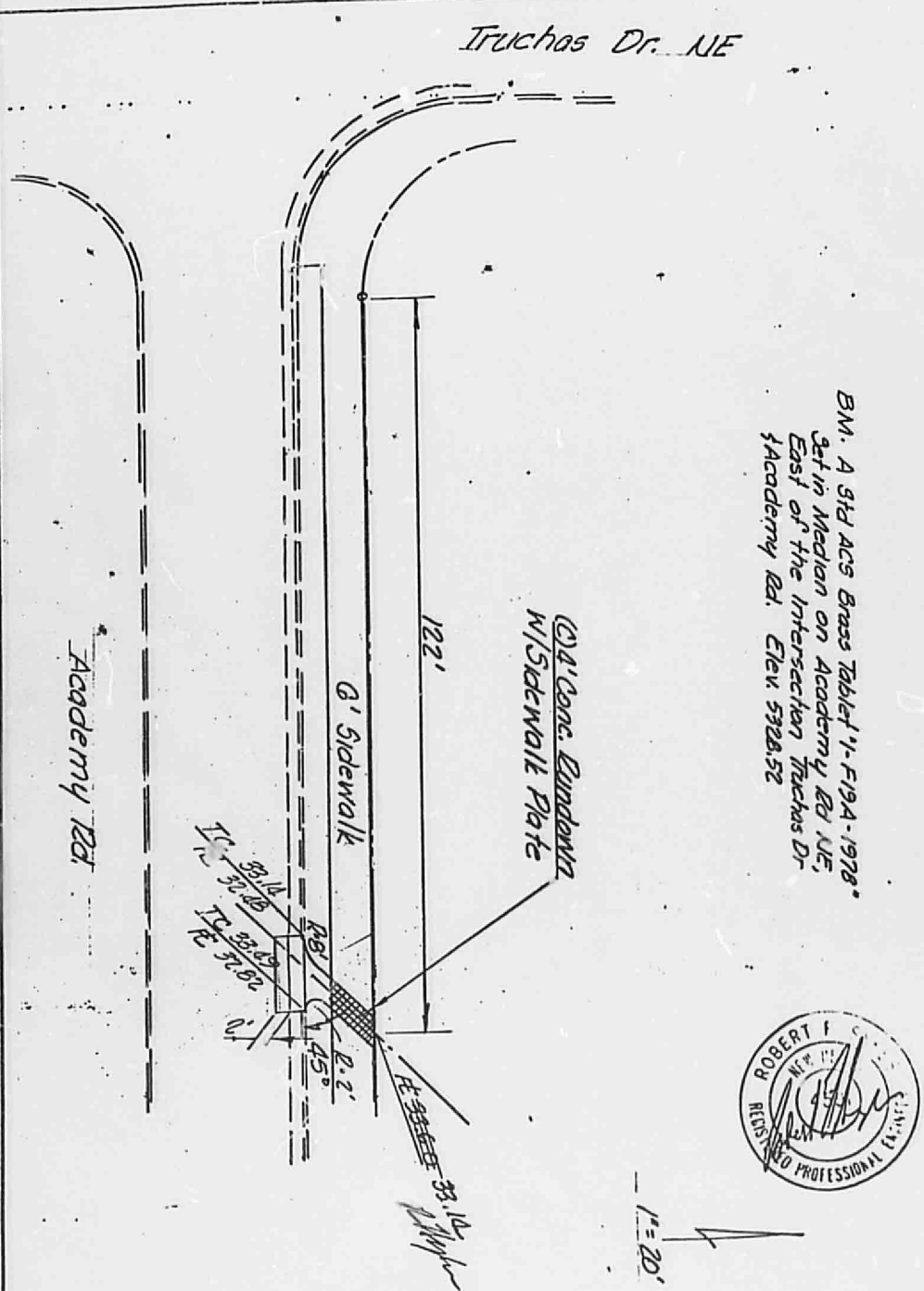
D-71

Farmer Corp

APPROVALS	NAME	DATE	TITLE: RANCHO VERDE APARTMENTS 5800 Truchas NE	
A.C.E./DESIGN	ARO	5/15/84		
INSPECTOR	Jerry S	11/20/84	PERMIT NO. 16156 SHEET 1 OF 4	MAP NO. E-19
A.C.E./FIELD	[illegible]	11/20/84		

CITY OF ALBUQUERQUE

DRAINAGE FACILITIES WITHIN CITY RIGHT-OF-WAY



D-71

APPROVALS	NAME	DATE
A.C.E./DESIGN	H. Olson	5/15/84
INSPECTOR	Jerry G	11/20/84
A.C.E./FIELD	W. M. Mamara	11/26/84

TITLE: RANCHO VERDE APARTMENTS 5800 Truchas Dr NE

PERMIT NO.

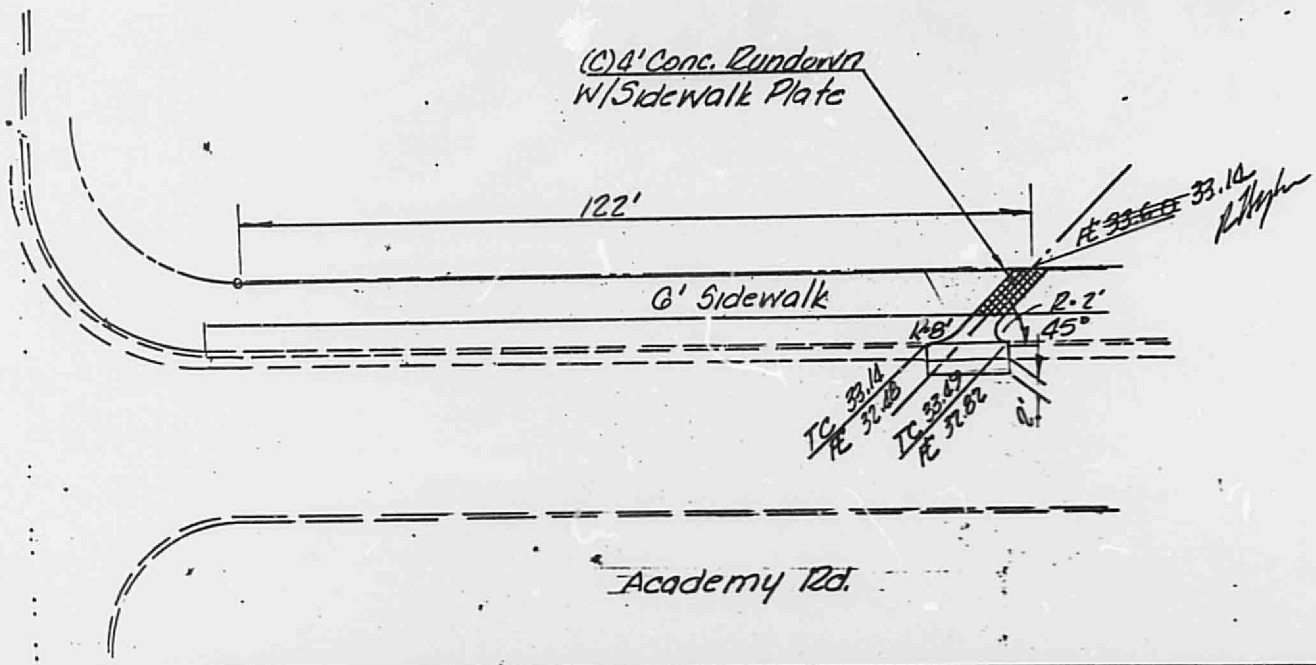
SHEET 2 OF 4

MAP NO. E-19

CITY OF ALBUQUERQUE

DRAINAGE FACILITIES WITHIN CITY RIGHT-OF-WAY

BM. A Std ACS Brass Tablet "1-F19A-1978"
Set in Median on Academy Rd NE,
East of the Intersection Truchas Dr
& Academy Rd. Elev. 5328.52



1" = 20'

D-71

APPROVALS	NAME	DATE
A.C.E./DESIGN		5/15/84
INSPECTOR		11/20/84
A.C.E./FIELD		11/26/84

TITLE: RANCHO VERDE APARTMENTS
5300 Truchas Dr NE

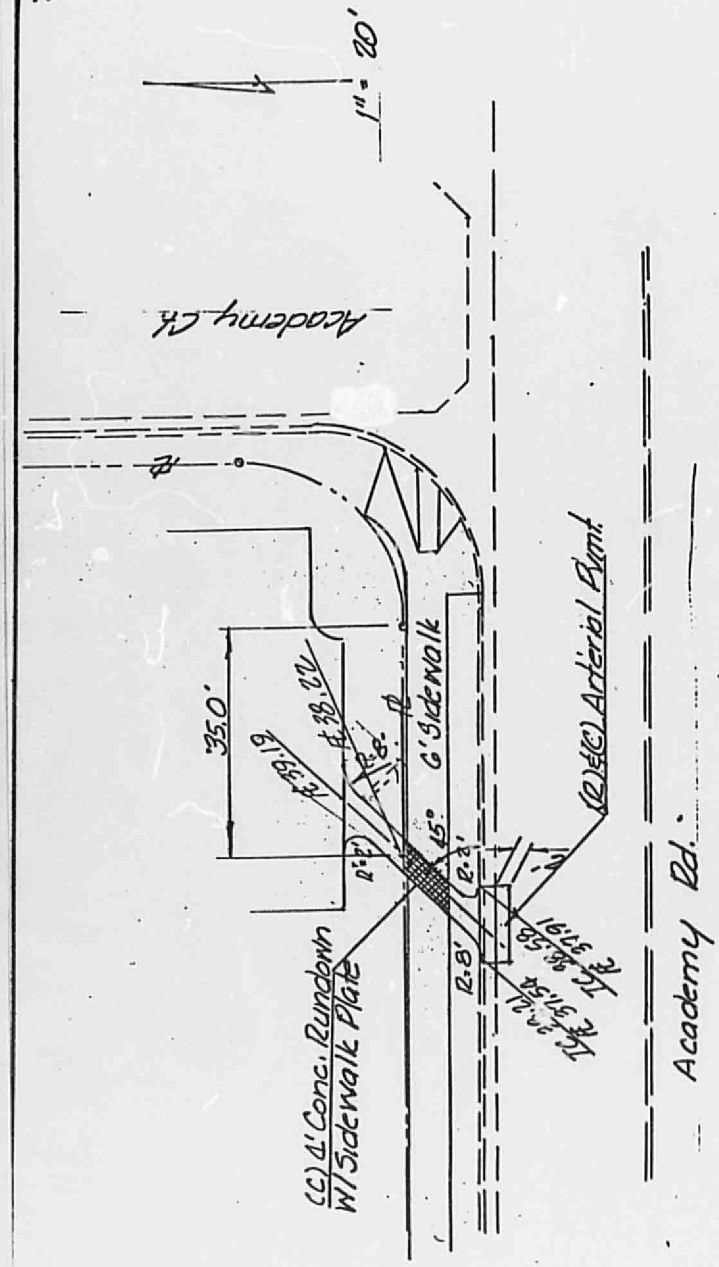
MAP NO. E-19

PERMIT NO.

SHEET 2 OF 4

CITY OF ALBUQUERQUE

DRAINAGE FACILITIES WITHIN CITY RIGHT-OF-WAY



D-71

APPROVALS	NAME	DATE
A.C.E./DESIGN	[illegible]	5/15/84
INSPECTOR	[illegible]	11/20/84
A.C.E./FIELD	[illegible]	11/26/84

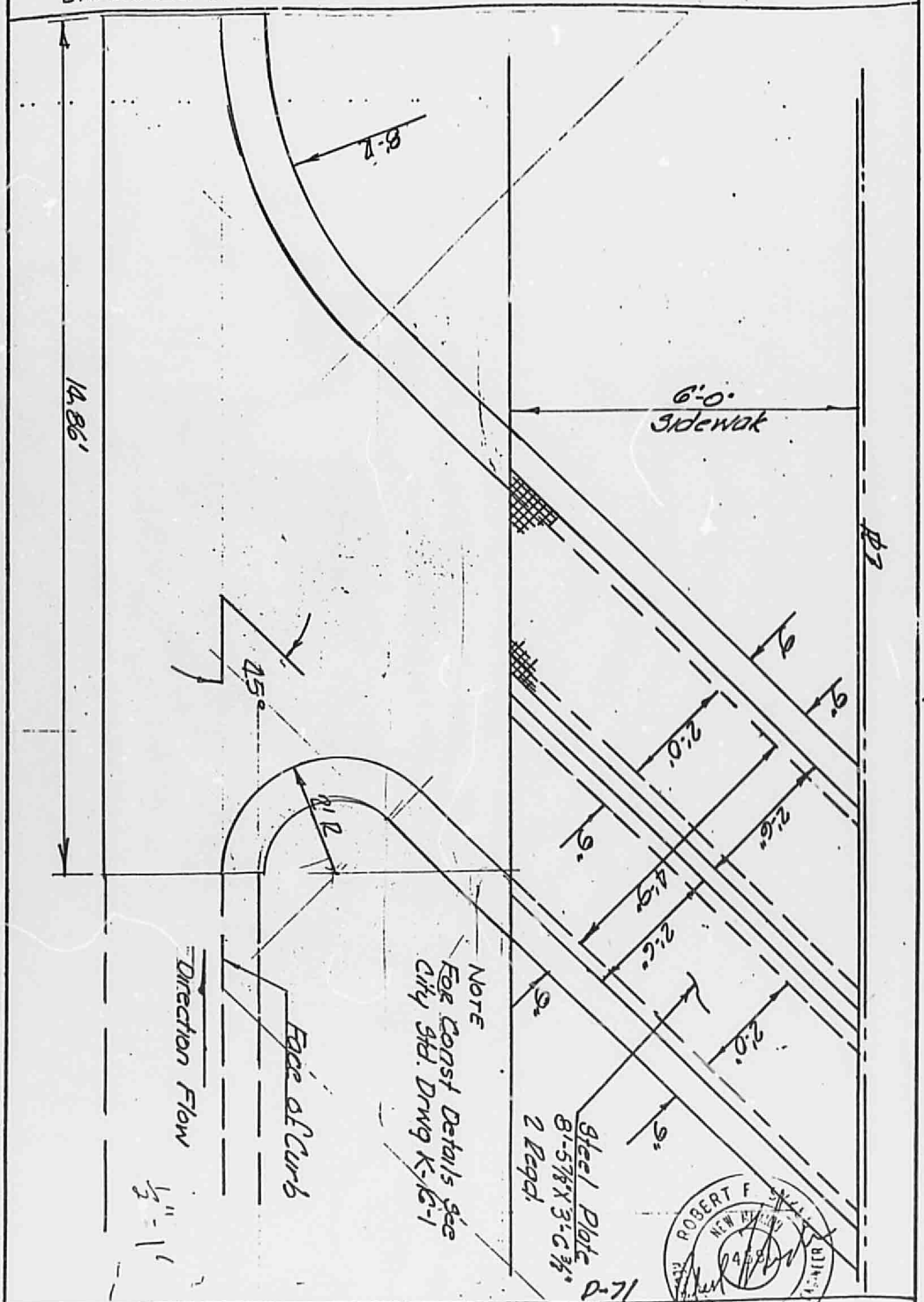
TITLE:
RANCHO VERDE APARTMENTS
5800 Trinidad Dr NE

PERMIT NO. -
SHEET 3 OF 4

MAP NO. E-19

CITY OF ALBUQUERQ''E

DRAINAGE FACILITIES WITHIN CITY RIGHT-OF-WAY



APPROVALS	NAME	DATE
A.C.E./DESIGN	R.L. Olson	5/15/84
INSPECTOR	Jerry G	11/20/84
A.C.E./FIELD	[illegible]	11/26/84

TITLE:

RANCHO VERDE APARTMENTS
5800 Tramway Dr NE

PERMIT NO.
SHEET 4 OF 4

MAP
NO. E-19