HYDROLOGY F19/D10 TWO PLANS

F19/D10
2 Plans

FILE COPY

City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

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

August 23, 1984

Mr. Victor Chavez
Chavez-Grieves
4520 Montgomery Blvd. Suite 3
Albuquerque, New Mexico 87109

RE: REVISED GRADING AND DRAINAGE PLAN FOR MULTI-PURPOSE BUILDING FOR FIRST FAMILY CHURCH (F19-D10) RECEIVED AUGUST 10, 1984

Dear Vic:

The above referenced plan, dated August 10, 1984 is approved.

Please attach a copy of this approved plan to the construction set prior to issuance of the building permit.

If I can be of further assistance, please contact me at 766-7644.

Sincerely yours,

Billy J. Goolsby

Billy J. Goolsby
Civil Engineer/Hydrology

BJG:bm

INFORMATION SHEET

PROJECT TITLE MULTI-PURPOSE BUILDING FOR FIRST FAMILY CHURCH TYPE OF SUBMITTAL DRAINAGE PLAN

ZONE ATLAS PAGE NO. F-19 CITY ADDRESS 4701 WYOMING BLVD. N.E. 87109

LEGAL DESCRIPTION TRACT A, LOT 4, SECTION 31, T11N., R4E OF N.M.P.M.

ENGINEERING FIRM CHAVEZ-GRIEVES CONSUL.ENGS.INC CONTACT VICTOR J. CHAVEZ

ADDRESS 4520 MONTGOMERY N.E., ALBUQ.,N.M. PHONE (505) 881-7376

OWNER FIRST FAMILY CHURCH CONTACT REV. KENNETH GEORGE-PASTOR

ADDRESS 4701 WYOMING BLVD. N.E. ALBUQ.,N.M. PHONE (505) 299-7202

ARCHITECT THE BURNS/PETERS GOURP CONTACT RON PETERS

ADDRESS 8000 PENNSYLVANIA CIRCLE N.E. 87110 PHONE (505) 265-3645

SURVEYOR AS BUILT INFORMATION PROVIDED BY OWNER 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
X BUILDING PERMIT APPROVAL
CERTIFICATE OF OCCUPANCY APPROVAL
ROUGH GRADING PERMIT APPROVAL
GRADING/PAVING PERMIT APPROVAL
OTHER (SPECIFY)

DATE SUBMITTED JULY 5, 1984

BY: VICTOR J. CHAVEZ, P.E.

RECEIVED
AUG 10 1984
HYDROLOGY SECTION

CHAVEZ GRIEVES / CONSULTING ENGINEERS, INC.
4520 MONTGOMERY BLVD., SUITE 3
ALBUQUERQUE, N.M. 87109
(505) 881-7376

LETTER OF TRANSMITTAL

TO: FRED AGUIRRE
THE CITY OF ALBUQUERQUE
HYDROLOGY DEPT.
123 CENTRAL N.W. 87103

DATE: AUGUST 10, 1984
JOB NO. B01-109-00
RE: MULTI-PURPOSE BLDG.
FOR FIRST FAMILY CHURCH

GENTLEMEN: F19D10

We are sending you X ATTACHED ___ UNDER SEPARATE COVER the following items:

__ SHOP DRAWINGS __ CHANGE ORDER __ SPECIFICATIONS
X COPY OF LETTER __ PLANS X INFORMATION SHEET
X PRINTS __ SAMPLES

COPIES	DATE	NO.	DESCRIPTION
1	7/5/84		INFORMATION SHEET
1	4/18/83		CONFERENCE RECAP SHEET
2			DRAINAGE PLAN

THESE ARE TRANSMITTED as checked below:

X FOR APPROVAL
__ FOR YOUR USE
__ AS REQUESTED
__ FOR REVIEW AND COMMENT
__ APPROVED AS SUBMITTED
__ APPROVED AS NOTED
__ RETURNED FOR CORRECTIONS
__ RESUBMIT ___ COPIES FOR APPROVAL
__ SUBMIT ___ COPIES FOR DISTRIBUTION
__ RETURN ___ CORRECTED PRINTS
__ PRINTS RETURNED AFTER LOAN TO US
__ FOR BIDS DUE _____ 19___

REMARKS:

RECEIVED AUG 10 1984 HYDROLOGY SECTION

COPY TO: FILE

SIGNED: VICTOR J. CHAVEZ, P.E.

If enclosures are not as noted, kindly notify us at once.

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

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

July 29, 1984

Mr. Victor Chavez
Chavez-Grieves
4520 Montgomery Boulevard, Suite 3
Albuquerque, NM 87109

REF: GRADING AND DRAINAGE PLAN FOR MULTI-PURPOSE BUILDING FOR FIRST FAMILY CHURCH (F19-D10) RECEIVED JULY 5, 1984

Dear Vic:

I have reviewed the above referenced plan and forward the following comments:

1. The plan has not been dated. For inclusion in a construction set the plan will have to be dated to insure that the correct one is attached.

2. What/where is the concrete channel as indicated in the calculations? How does the runoff leave the site? The grading is toward the southwest corner but no outfall is identified.

Should you have any questions or comments, please contact me at 766-7644.

Yours truly,

Billy J. Goolsby

Billy J. Goolsby, PE
City/County Flood Plain Admin.

BJG:mrk

Job FIRST FAMILY CHURCH
Subject HYDROLOGY CALCULATION
Client BURNS & PETERS

Sheet No. 1 of 6
Job No. B01-109-50
By B.T. Date 6-26-84

CHAVEZ - GRIEVES / CONSULTING ENGINEERS, Inc. Albuquerque, NM

CONTRIBUTING AREA A. (SEE PAGE 3)

AREA = 23.38 AC. SOIL TYPE: Etc, HYDROLOGIC SOIL TYPE B (P.76)

$L = 2050'$

$S = \frac{434-378}{2050} = 0.0273$

$$T_c = 0.0078 \times \frac{(2050)^{0.77}}{(0.0273)^{0.385}} = 0.0078 \times \frac{354.85}{0.249} = 11.07 \text{ MIN}$$

$$V = \frac{2050}{11.07 \times 60} = 3.08 \text{ f.p.s}$$

$3.0 < V < 6.0$ ∴ ABOVE EQ. IS ADEQUATE

ASSUMING 60 % AREA (SEE SEPARATE SHEETS FOR 38 %) IS IMPERVIOUS. (PLATE 22.2 C-2)

THEN 'C' FACTOR = 0.63. (PLATE 22.2 C-1)

$I = 2.4 \times 2.1 = 5.04$ in (PLATE 22.2 D-1 & D-2)

$Q = 0.63 \times 5.04 \times 23.38 = 74.24$ C.F.S.

AVAILABLE DROP INLET TO CATCH STREET FLOW

{ 3 - DOUBLE C
1 - DOUBLE D } > at SLOPE S = 0.0273

RECEIVED
JUL 05 1984
HYDROLOGY SECTION

Job FIRST FAMILY CHURCH
Subject
Client BURNS & PETERS

Sheet No. 2 of 6
Job. No.
By BT Date 6-26-84

CHAVEZ - GRIEVES / CONSULTING ENGINEERS, Inc. Albuquerque, NM

CONTRIBUTING AREA B.

AREA = 45.21 AC

SOIL TYPE: Etc (HYDROLOGY SOIL TYPE B)

L = 2010'

S = 0.0273

$$T_c = 0.0078 \times \frac{(2010)^{0.77}}{(0.0273)^{0.385}} = 10.95 \text{ min}$$

$$V = \frac{2010}{10.95 \times 60} = 3.06 \text{ FPS}$$

'C' FACTOR = 0.63 (ASSUMING 60% AREA IMPERVIOUS

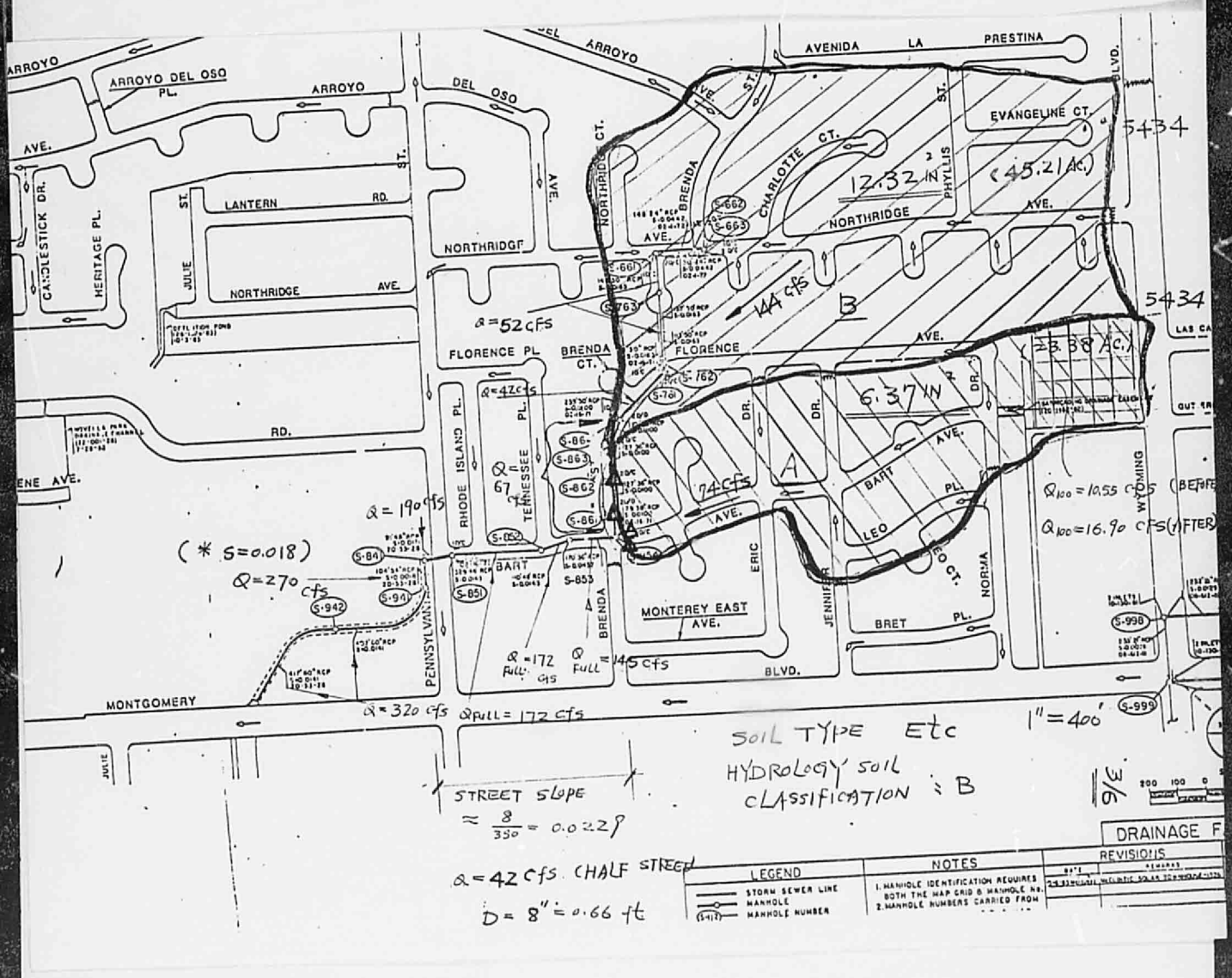
I = 2.4 x 2.1 = 5.04 IN

Q = 0.63 x 5.04 x 45.21 = 143.55 C.F.S.

THEREFORE TOTAL DOWNSTREAM FLOW RATE:

74.24 + 143.55 = 217.79 C.FS

NOTE: FROM ALBUQUERQUE MASTER DRAINAGE STUDY, AT AP 1401 (ON BART AVE. AT PENNSYLVANIA STREET) IT SHOWS, PEAK DISCHARGE RATE = 119 cfs


ARROYO DEL OSO PL.
ARROYO
DEL OSO
AVENIDA LA PRESTINA
EVANGELINE CT.
CHARLOTTE CT.
PHYLLIS ST.
NORTHRIDGE AVE.
BRENDA CT.
FLORENCE PL.
FLORENCE AVE.
LANTERN RD.
CANDLESTICK DR.
HERITAGE PL.
JULIE ST.
RHODE ISLAND PL.
TENNESSEE PL.
BART AVE.
BART PL.
LEO DR.
ERIC DR.
NORMA CT.
BRET PL.
MONTEREY EAST AVE.
BLVD.
WYOMING
MONTGOMERY
PENNSYLVANIA
12.32 IN
(45.21 Ac.)
6.37 IN
(23.38 Ac.)
44 cfs
74 cfs
B
A
5434
Q=52 cfs
Q=42 cfs
Q=67
Q=190 cfs
(* S=0.018)
Q=270 cfs
Q=172 Q full cfs
Q full = 145 cfs
Q=320 cfs Q full = 172 cfs
Q100 = 10.55 cfs (BEFORE)
Q100 = 16.90 cfs (AFTER)
S-661
S-662
S-663
S-763
S-762
S-761
S-86
S-863
S-862
S-861
S-860
S-852
S-851
S-853
S-84
S-94
S-942
S-998
S-999
1"=400'
SOIL TYPE Etc
HYDROLOGY SOIL
CLASSIFICATION : B
STREET SLOPE
≈ 8/350 = 0.0229
Q=42 cfs CHALF STREET
D = 8" = 0.66 ft
DRAINAGE F
LEGEND
STORM SEWER LINE
MANHOLE
MANHOLE NUMBER
NOTES
1. MANHOLE IDENTIFICATION REQUIRES BOTH THE MAP GRID & MANHOLE NO.
2. MANHOLE NUMBERS CARRIED FROM
REVISIONS

Job
Subject DROP INLET CAPACITY REVIEW
Client

Sheet No. 4 of 6
Job. No. B01-109-50
By B.T Date 6-26-84

CHAVEZ - GRIEVES / CONSULTING ENGINEERS, Inc. Albuquerque, NM

USE PLATE 22.3, D-6, ASSUMING 4 DROP INLETS
(Q = 74.24 cfs FOR AREA A)

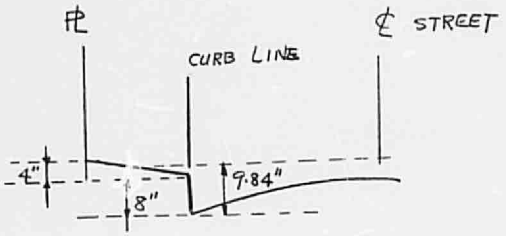
$\frac{Q}{4}$ = 18.56 C.F.S. WITH S = 0.0273. DEPTH OF FLOW = 0.78' = 9.36"

CONSIDERING THE IMPACT OF INCREASED PEAK FLOW RATE DUE TO FIRST FAMILY CHURCH DEVELOPMENT.

$\Delta Q = \underset{\text{DEVELO.}}{16.90} - \underset{\text{UNDE.}}{10.55} = 6.45$ cfs

$Q_{DEVE} = 74.24 + 6.45 = 80.69$ cfs

80.69 ÷ 4 = 20.17 C.F.S. DEPTH OF FLOW = 0.82' = 9.84"



TYPICAL HALF STREET SECTION

THEREFORE GUTTER FLOW DEPTH: (FOR 100-YEAR STORM)

h = 9.36" (EXISTING CONDITION)
h = 9.84" (PROPOSED DEVELOPMENT)

Job FIRST FAMILY CHURCH
Subject DRAINAGE CALCULATION
Client BURNS & PETERS

Sheet No. 5 of 6
Job. No. B01-109-50
By BT Date 6-26-84

CHAVEZ - GRIEVES / CONSULTING ENGINEERS, Inc. Albuquerque, NM

DOWNSTREAM PIPE CAPACITY:

MAXIMUM: 320 cfs (SEE PAGE 3) > 119 cfs

MINIMUM: 145 cfs > 119 cfs

(ACCORDING TO ALBQ MASTER DRAINAGE STUDY, STORM PIPE IS ADEQUATE)

CONSIDERING STREET CAPACITY:

R/W = 50', 32' STREET., 2% CROWN., 8" CURB

ASSUMING WATER DEPTH = 8" = 0.67'

Q = 42 CFS (HALF STREET)

∴ TOTAL FLOW CAPACITY INCLUDING STREET FLOW & STORM PIPES FLOWING FULL,

2 x 42 + 145 = 229 cfs > 217.79 CFS

CONSIDERSING ΔQ = 6.45 cfs (DUE TO DEVELOPMENT)

IT IS STILL O.K. (229 > 217.8 + 6.45 = 224.25)

(100 YEAR FLOW IS LIMITED TO STREET)

EXISTING DRAINAGE CHANNEL REVIEW:

$S = \frac{18.22 - 17.06}{45} = 0.0186$, $n = 0.013$ Q = 19.60 cfs

h = 0.27' (WATER DEPTH)

CHANNEL WIDTH = 10'

Job FIRST FAMILY CHURCH Sheet No. 6 of 6
Subject CONCLUSION FOR DRAINAGE CALCULATION Job. No. B01-109-50
Client BURNS & PETERS GROUP By BT Date 6-29-84

CHAVEZ - GRIEVES / CONSULTING ENGINEERS, Inc. Albuquerque, NM

SINCE THE INCREASED PEAK FLOW RATE DUE TO THE PROPOSED RATE IS ONLY 6.45 CFS. IT IS REASONABLE TO ASSUME THAT THE IMPACT TO THE DOWNSTREAM CHANNEL IS NEGIBILE.

CONCLUSION :

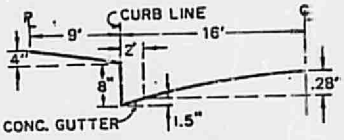
① THE MINIMUM DOWNSTREAM CAPACITY BASED ON OUR CALCULATION IS Q=145 C.F.S. CONSIDERING IF THE STREET IS FLOODED, THE TOTAL CAPACITY IS 229 C.F.S (SEE PAGE 5)

② DOWNSTREAM PEAK FLOW RATE, BASED ON OUR CALCULATION IS 217.79 CFS (ASSUMING 60% IMPERVIOUS). BASED ON ALBUQ. MASTER DRAINAGE STUDY IS 119 CFS (AP 1401), IN EITHER CASE, THE 100-YEAR STORM IS CONFINED IN STREET.

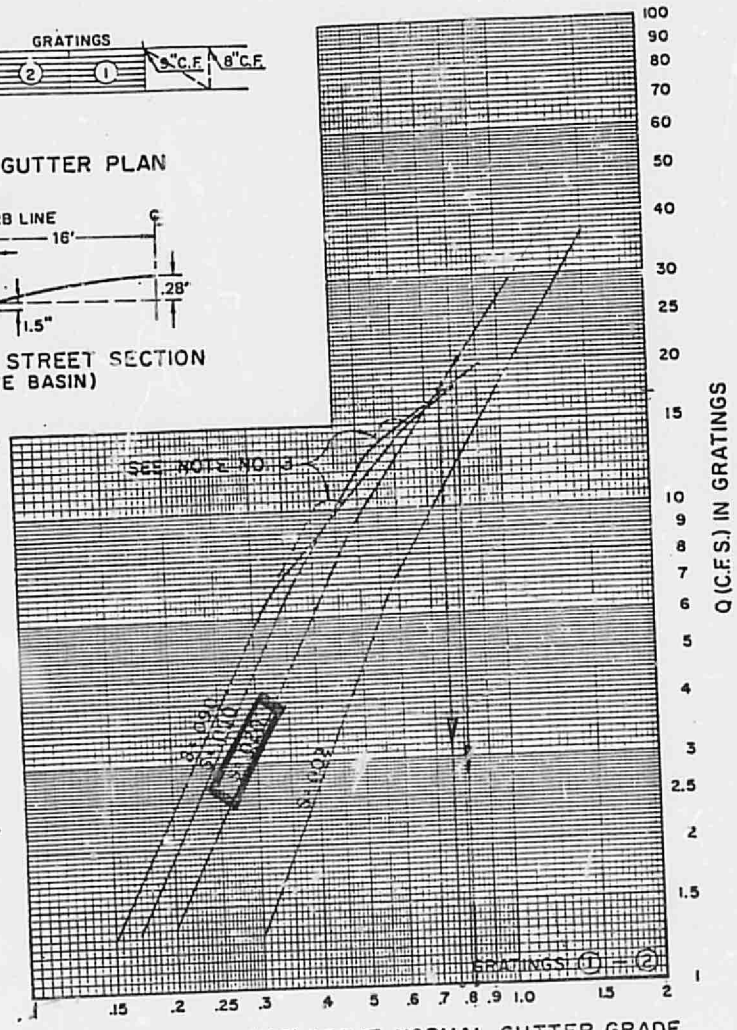
③ WATER DEPTH AT DROP INLETS IS 9.84" ABOVE GUTTER LINE, WHICH IS BELOW ELEVATION AT PROPERTY LINE

GRATING CAPACITIES FOR TYPE DOUBLE "C," AND "D"

GRATING & GUTTER PLAN

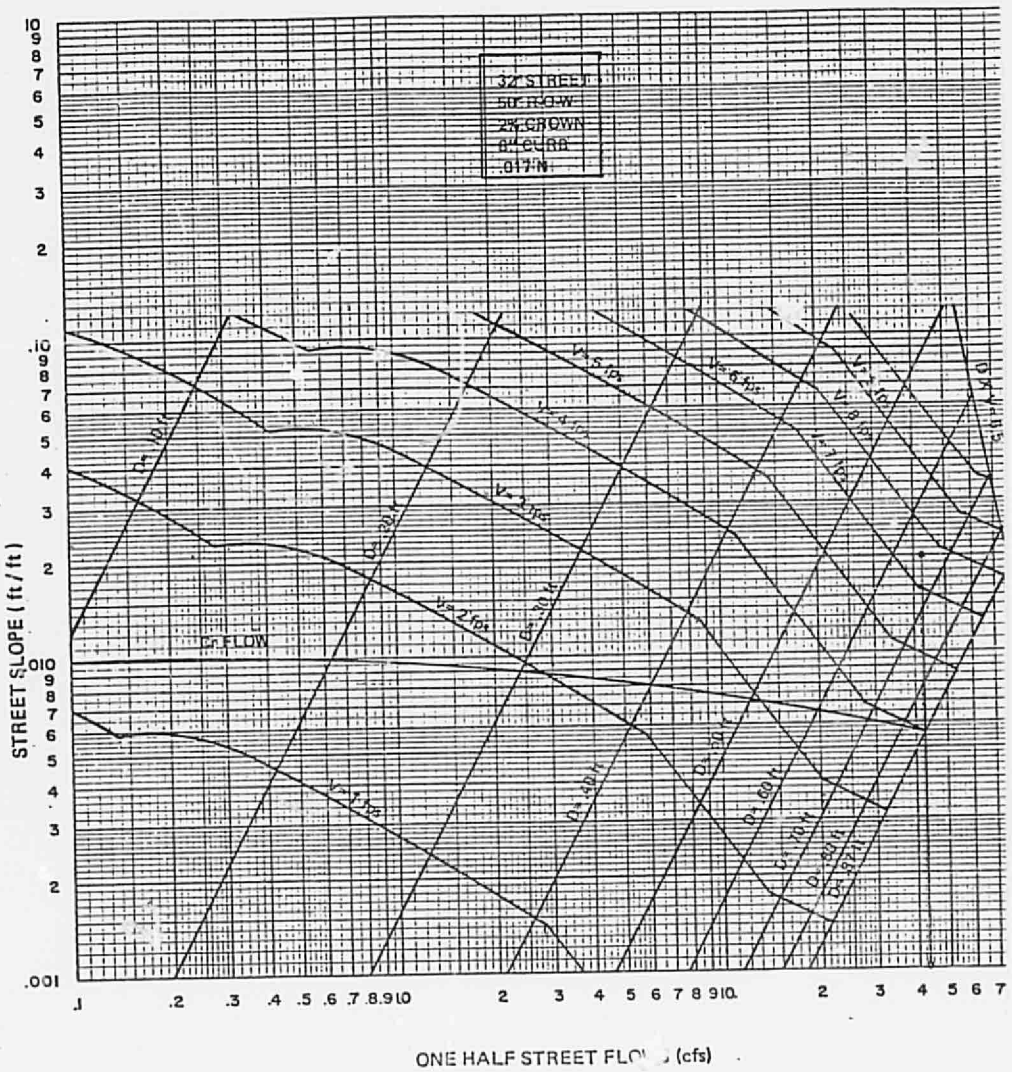


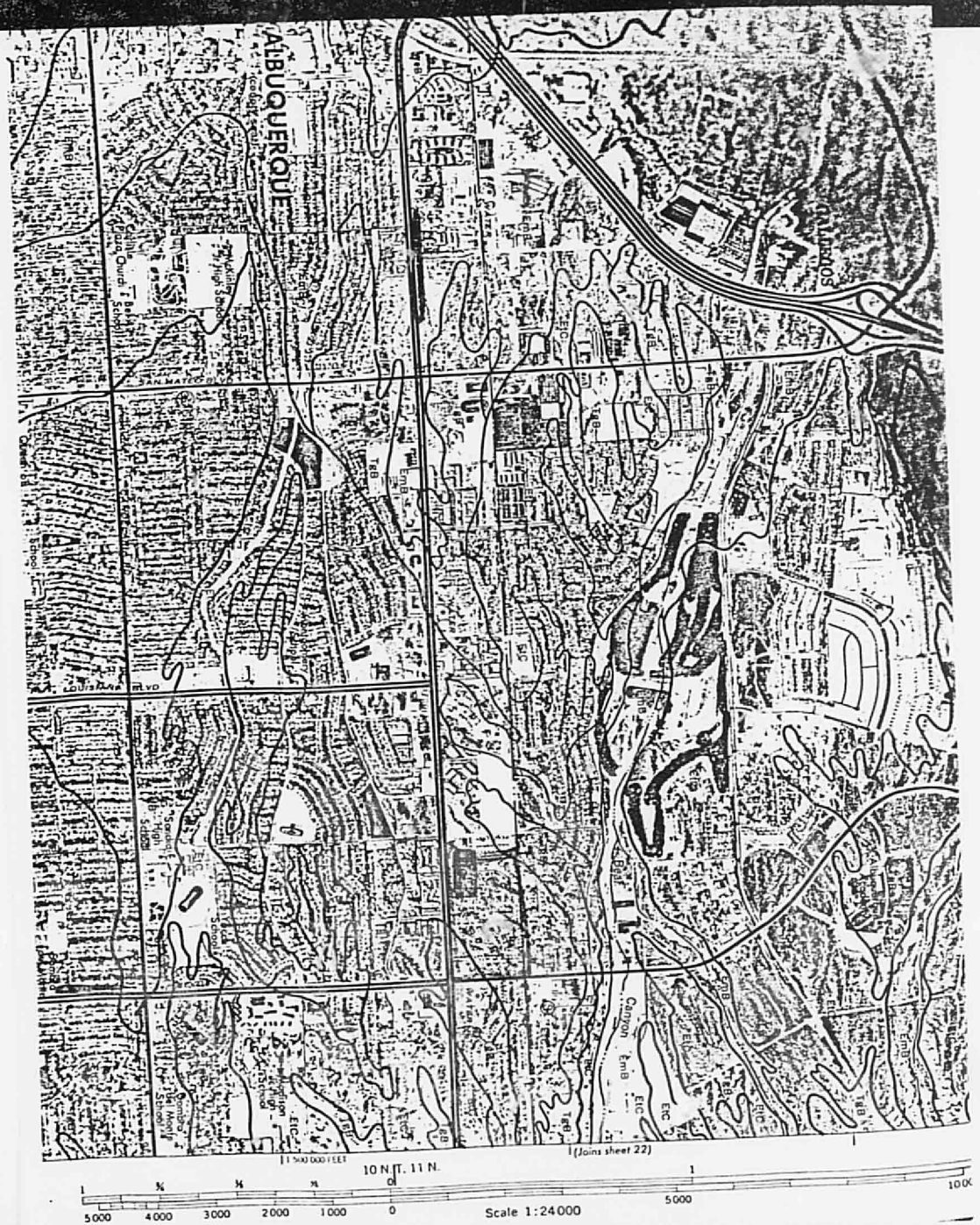
TYPICAL HALF STREET SECTION
(ABOVE BASIN)



D=DEPTH OF FLOW (FT.) ABOVE NORMAL GUTTER GRADE

STREET CAPACITY




ALBUQUERQUE
LOUISIANA BLVD
Canyon
(Joins sheet 22)
10 N. 11 N.
Scale 1:24000

Job FIRST FAMILY CHURCH
Subject HYDROLOGIC CALCULATION
Client BURNS & PETERS

Sheet No. 1 of 3
Job. No. B01-109-50
By BT Date 6-28-8

CHAVEZ - GRIEVES / CONSULTING ENGINEERS, Inc. Albuquerque, NM

FURTHER ASSUMING 38 % IMPERVIOUS (22.2 C-2)

'C' FACTOR = 0.52 (22.2 . C-1)

I = 2.4 x 2.1 = 5.04 IN

Q = 0.52 x 5.04 x 23.38 = 61.27 CFS

4-INLETS ARE AVAILABLE INTERCEPTING 61.27 CFS

$\frac{61.27}{4}$ = 15.31 CFS

S = 0.0273 USING PLATE 22.3. D-6

WATER DEPTH = 0.69' = 8.28"

CONSIDERING THE IMPACT OF INCREASED PEAK FLOW DUE TO PROPOSED DEVELOPMENT

ΔQ = 16.90 - 10.55 = 6.45 cfs

Q = 6.45 + 61.27 = 67.72 cfs

$\frac{67.72}{4}$ = 16.93 CFS WITH S = 0.0273

WATER DEPTH = 0.72' = 8.64"

Job FIRST FAMILY CHURCH
Subject STREET CAPACITY REVIEW (DOWNSTREM)
Client BURNS & PETERS

Sheet No. 2 of 3
Job. No. B01-109-50
By BT Date 6-28-84

CHAVEZ - GRIEVES / CONSULTING ENGINEERS, Inc. Albuquerque, NM

REVIEW OF STREET CAPACITY:

R/W = 50', WIDTH OF STREET = 32', 2% CROWN

8" CURB.

SINCE TOTAL DOWNSTREAM NOW BECOME

67.72 C.F.S. + 143.55 = 211.27 cfs

ASSUMING STREET FLOWING FULL, (i.e. ASSUMING WATER DEPTH = 8" AT GUTTER LINE

Q = 42 CFS (HALF STREET). (PLATE 22.3, D-1)

∴ TOTAL FLOW CAPACITY INCLUDING STREET FLOW & STORMS PIPES FLOWING FULL.

2 x 42 + 145 = 229 CFS > 211.27 CFS

CONSIDERING ΔQ = 6.45 cfs DUE TO PROPOSED DEVELOPMENT

211.27 + 6.45 = 217.72 < 229

∴ IT IS O.K

Job FIRST FAMILY CHURCH
Subject WATER DEPTH CALCULATION
Client BURNS & PETERS

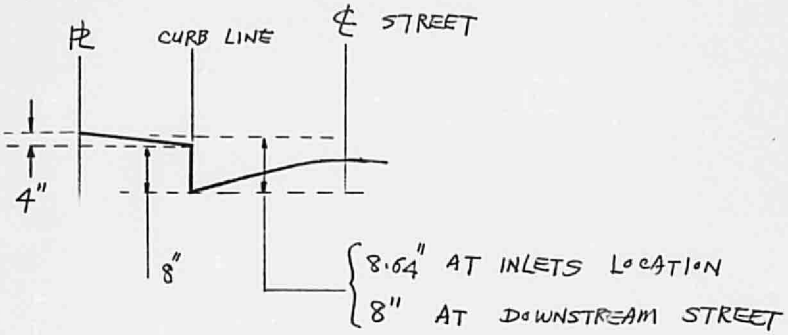
Sheet No. 3 of 3
Job. No. B01-109-50
By BT Date 6-28-84

CHAVEZ - GRIEVES / CONSULTING ENGINEERS, Inc. Albuquerque, NM

CONCLUSION :

① IN CASE OF 100-YEAR STORM. WATER DEPTH AT DROP INLETS ≈ 8.64"

② IN CASE OF 100-YEAR STORM. STREET WILL FLOW FULL (UP TO 8" HIGH AT GUTTER LINE)



CITY OF ALBUQUERQUE
MUNICIPAL DEVELOPMENT DEPARTMENT
ENGINEERING DIVISION

HYDROLOGY SECTION PROJ. NO._____ DATE: 4/18/83

PLANNING DIVISION NO._____

CONFERENCE RECAP

SUBJECT: F19-D10 (FIRST ASSEMBLY OF GOD) REVISED

	WHO	REPRESENTING
ATTENDANCE:	FRED S. KAUFM	
	BRIAN TONG	
	VIC. CHAVEZ	

FINDINGS:

1. PONDING REQUIRED – QP UNDER DISCHARGE RATE ALLOWED
2. DRAINAGE PLAN (REVISED) REQUIRED PER THE DPM VOL 2
3. REFER IRRIGATION RUNOFF ON-SITE.

RECEIVED
AUG 10 1984
HYDROLOGY SECTION

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: Fred S. Kaufman SIGNED: V. A. Chavez

TITLE: Civil Engineer TITLE: Proj. Eng.

DATE: 4/18/83 DATE: 4/18/83

CHAVEZ GRIEVES / CONSULTING ENGINEERS, INC.
4520 MONTGOMERY BLVD., SUITE 3
ALBUQUERQUE, N.M. 87109
(505) 881-7376

F19010

LETTER OF TRANSMITTAL

TO: FRED AGUIRRE
HYDROLOGY DEPARTMENT
THE CITY OF ALBUQUERQUE
123 CENTRAL N.W. 87103

DATE: JULY 5,1984
JOB NO. B01-109-00
RE: MULTI-PURPOSE BULDG. FOR FIRST FAMILY CHURCH

GENTLEMEN:

We are sending you X ATTACHED ___UNDER SEPARATE COVER the following items:

__ SHOP DRAWINGS __ CHANGE ORDER __ SPECIFICATIONS
X COPY OF LETTER __ PLANS X INFORMATION SHEET
X PRINTS __ SAMPLES

COPIES	DATE	NO.	DESCRIPTION
1	7-5-84		INFORMATION SHEET
1	4-18-83		CONFERENCE RECAP SHEET
2			DRAINAGE PLAN
2			DRAINAGE CALCULATIONS

THESE ARE TRANSMITTED as checked below:

X FOR APPROVAL
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__ PRINTS RETURNED AFTER LOAN TO US
__ FOR BIDS DUE _____ 19___

REMARKS:

RECEIVED
JUL 05 1984
HYDROLOGY SECTION

COPY TO: file

SIGNED: VICTOR J. CHAVEZ, P.E.

If enclosures are not as noted, kindly notify us at once.

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

June 8, 1984

Mr. Victor J. Chavez
Chavez Grieves Consulting Engineers, Inc.
4520 Montgomery NE, Suite 3
Albuquerque, NM 87109

RE: Multi Purpose Building for First Family Church F19D10

Dear Mr. Chavez,

The drainage report submitted on May 8, 1984, has been reviewed and the following comments need to be addressed prior to approval.

1. The predesign meeting held on April 18, 1983 is over one year old and would not recommend this practice without reverifying design parameters in the future. However, in this case they are still applicable.

2. The Q_5 flow rate mentioned in the predesign meeting is based on undeveloped conditions assuming group B soil (see Sheet 21 of the SCS Soil Survey and Table 8 of the aforementioned publication) and is determined as follows: $Q_5 = (0.541)(2.4)(2.11)(4.28)(0.34) = 4$ c.f.s. not 5.7 c.f.s.

3. Using the volume of 33278 $ft.^3$ and a simplified routing technique I calculate a required pond volume of 21,195 cu.ft. not 12,866 cu.ft. Attached is a copy of my calculations.

4. Refer to page 106 of the DPM volume II Chapter 22, section 7. Item 6 of the General Information Section requires a minimum of 15 ft. of distance from the property line minus the building set back of the abutting property. Los Pastoras Shopping Center is a C-2 Zone which allow building on the property line hence the south edge of the pond in too close to the property line. The west edge abutting the residential zone is adequate since the backyard for R-1 setback is 15 feet.

5. The plan in concept is acceptable, but I would personally appreciate your consideration to use a parking lot type pond which would allow for a multi-use facility and eliminate the high maintenance pond system.

Please contact Billy Goolsby if you need any clarification on these comments.

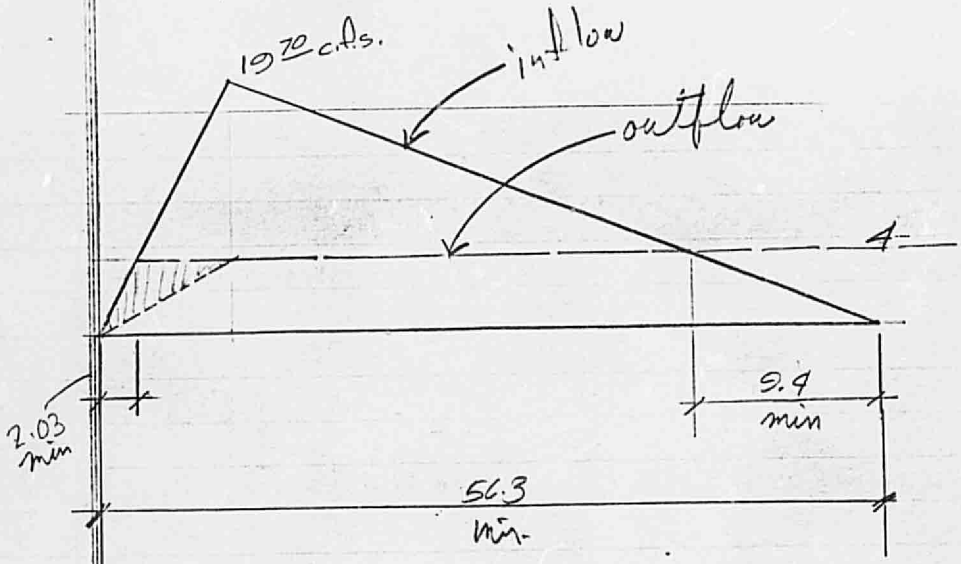
Sincerely

Fred Aguirre
City Hydrologist

FJA/AH/dlw

Attachment

cc: Hydrology File F19D10
Q. A. File



Vol = 33,278

$q_p = 19.70$

$t_p = \frac{2(V)}{Q} = \frac{2(33,278)}{19.70(60)} = \underline{\underline{56.3 \text{ minutes}}}$

$t_2 = 40$ m.

Volume req'd = $\frac{1}{2}(45)(60)[19.7 - 4] = 21,195$ ft.^{3}

INFORMATION SHEET

PROJECT TITLE MULTI-PURPOSE BUILDING FOR FIRST FAMILY CHURCH TYPE OF SUBMITTAL DRAINAGE PLAN

ZONE ATLAS PAGE NO. F-19 0/0 CITY ADDRESS 4701 WYOMING BLVD. N.E. 87109

LEGAL DESCRIPTION TRACT A, LOT 4, SECTION 31, T11N., R4E OF N.M.P.M.

ENGINEERING FIRM CHAVEZ-GRIEVES CONSUL.ENGS.INC CONTACT VICTOR J. CHAVEZ

ADDRESS 4520 MONTGOMERY N.E., ALBUQ.,N.M. PHONE (505) 881-7376

OWNER FIRST FAMILY CHURCH CONTACT REV. KENNETH GEORGE-PASTOR

ADDRESS 4701 WYOMING BLVD. N.E. ALBUQ.,N.M. PHONE (505) 299-7202

ARCHITECT THE BURNS/PETERS GOURP CONTACT RON PETERS

ADDRESS 8000 PENNSYLVANIA CIRCLE N.E. 87110 PHONE (505) 265-3645

SURVEYOR AS BUILT INFORMATION PROVIDED BY OWNER 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
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CERTIFICATE OF OCCUPANCY APPROVAL
ROUGH GRADING PERMIT APPROVAL
GRADING/PAVING PERMIT APPROVAL
OTHER (SPECIFY)

RECEIVED
JUL 05 1984
HYDROLOGY SECTION

DATE SUBMITTED JULY 5, 1984

BY: VICTOR J. CHAVEZ, P.E.

INFORMATION SHEET

PROJECT TITLE MULTI-PURPOSE BUILDING FOR FIRST FAMILY CHURCH TYPE OF SUBMITTAL DRAINAGE PLAN

ZONE ATLAS PAGE NO. F-19 CITY ADDRESS 4701 WYOMING BLVD. N.E. 87109

LEGAL DESCRIPTION TRACT A, LOT 4, SECTION 31, T11N., R4E OF N.M.P.M.

ENGINEERING FIRM CHAVEZ-GRIEVES CONSUL.ENGS.INC CONTACT VICTOR J. CHAVEZ

ADDRESS 4520 MONTGOMERY N.E., ALBUQ., N.M. PHONE (505) 881-7376

OWNER FIRST FAMILY CHURCH CONTACT REV. KENNETH GEORGE-PASTOR

ADDRESS 4701 WYOMING BLVD. N.E., ALBUQ., N.M. PHONE (505) 299-7202

ARCHITECT THE BURNS/PETERS GROUP CONTACT RON PETERS

ADDRESS 8000 PENNSYLVANIA CIRCLE N.E. 87110 PHONE (505) 265-3645

SURVEYOR AS BUILT INFORMATION PROVIDED BY OWNER 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
X BUILDING PERMIT APPROVAL
____ CERTIFICATE OF OCCUPANCY APPROVAL
____ ROUGH GRADING PERMIT APPROVAL
____ GRADING/PAVING PERMIT APPROVAL
____ OTHER _____ (SPECIFY)

DATE SUBMITTED APRIL 19, 1984

BY: VICTOR J. CHAVEZ, P.E.

CHAVEZ GRIEVES / CONSULTING ENGINEERS, INC.
4520 MONTGOMERY BLVD., SUITE 3
ALBUQUERQUE, N.M. 87109
(505) 881-7376

LETTER OF TRANSMITTAL

TO: FRED AGUIRRE
HYDROLOGY DEPT.
THE CITY OF ALBUQUERUQE
123 CENTRAL N.W. 87103

DATE: MAY 8, 1984
JOB NO. B01-109-00
RE: MULTI-PURPOSE BLDG. FOR
FIRST FAMILY CHURCH

GENTLEMEN:

We are sending you X ATTACHED ___ UNDER SEPARATE COVER the following items:

__ SHOP DRAWINGS
X COPY OF LETTER
X PRINTS
__ CHANGE ORDER
__ PLANS
__ SAMPLES
__ SPECIFICATIONS
X INFORMATION SHEET

upacde

F19-D10

COPIES	DATE	NO.	DESCRIPTION
1	4/19/84		INFORMATION SHEET
2			DRAINAGE PLAN
1	4/18/84		CONFERENCE RECAP (COPY)

THESE ARE TRANSMITTED as checked below:

X FOR APPROVAL
__ FOR YOUR USE
__ AS REQUESTED
__ FOR REVIEW AND COMMENT
__ APPROVED AS SUBMITTED
__ APPROVED AS NOTED
__ _____

__ RETURNED FOR CORRECTIONS
__ RESUBMIT ___ COPIES FOR APPROVAL
__ SUBMIT ___ COPIES FOR DISTRIBUTION
__ RETURN ___ CORRECTED PRINTS
__ PRINTS RETURNED AFTER LOAN TO US
__ FOR BIDS DUE _____ 19__

REMARKS:

RECEIVED MAY 08 1984 HYDROLOGY SECTION

COPY TO: FILE

SIGNED: VICTOR J. CHAVEZ, P.E.

If enclosures are not as noted, kindly notify us at once.

CITY OF ALBUQUERQUE
MUNICIPAL DEVELOPMENT DEPARTMENT
ENGINEERING DIVISION

HYDROLOGY SECTION PROJ. NO. _____ DATE: 4/18/83

PLANNING DIVISION NO. _____

CONFERENCE RECAP

SUBJECT: E19-D10 (First Assembly of God) Revision

	WHO	REPRESENTING
ATTENDANCE:	Fred J. Baumann	
	Brian Tong	
	Vic. Chavez	

FINDINGS:

1. Ponding required – Use under discharge rate allowed
2. Drainage Plan (Revision) required per the DPM Vol 2
3. Retain irrigation runoff on-site.

RECEIVED
JUL 05 1984
HYDROLOGY SECTION

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: Fred J. Baumann — SIGNED: V. A. Chavez

TITLE: Civil Engineer — TITLE: Proj. Eng.

DATE: 4/18/83 — DATE: 4/18/83

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

MAYOR
Harry E. Kinney

CHIEF
ADMINISTRATIVE OFFICER
Frank A. Kleinhenz

July 28, 1977

Professor Martinez
2820 Messilla, NE
Albuquerque, New Mexico 87110

RE: 4.28 ACRES TRACT ON WYOMING BLVD., NE.

Dear Professor Martinez:

I have reviewed your drainage plan regarding the proposed church site on Wyoming, and I have discussed the requirements with Mr. Jim Smith from AMAFCA who confirmed the essence of prior conversations that he had with you. I am, therefore, approving the drainage plan as revised and submitted with one request: That a drainage easement be granted to the City on the south side of the property from the drainage run-down provided in the subdivision to the west, to Wyoming Blvd.

This request results from an overview of the drainage problems in the area. Before development this tract was crossed by the north fork of the Hahn Arroyo. I expect that the City will have to extend a storm sewer from the west along Bart Avenue, cross Wyoming and intercept the flow from the streets to the east. These improvements will reduce the overloading presently affecting Montgomery Blvd.

If additional information is necessary, please do not hesitate to contact me.

Very truly yours,

Bruno Conegliano

Bruno Conegliano
Assistant City Engineer-Hydrology

BC/kr

cc - V. M. Kimmick, City Engineer
Drainage File

2820 Mesilla, N.E.
Albuquerque, New Mexico 87110
July 15, 1977

Board of Directors
First Assembly of God Church
P.O. Box 3555
Albuquerque, New Mexico 87110

Gentlemen:

Further study of the requirements of the Albuquerque Metropolitan Arroyo Flood Control Authority (AMAFCA) regarding the retention of storm water runoff on your 4.28 acre tract on Wyoming Blvd., N.E., in Albuquerque, has led to the following modification of the recommendations submitted to you in my report dated May 24, 1977.

Essentially, all surface runoff generated by the 100-year, 6-hour storm on this area should be retained on your property, i.e., a total of 37,750 cubic feet. In order to accommodate this volume of water, a ponding area, 80 feet by 200 feet, located in the southwest corner of the property, will be required. The elevation of the pond bottom should be 2.4 feet below the level of the concrete surface of the drainage easement. The concrete drainage easement will be used to conduct any additional storm water originating or passing through this tract. For this reason, the concrete paving in the easement must be left intact after the excavation of the pond area. In addition, the concrete section of the drainage easement should be protected with a concrete headwall extending down from the concrete paving a total of 4 feet for the entire width of the concrete paving. The concrete structure will then act as a weir to control the outflow of excess storm water from the retention pond.

Yours truly,

J. E. Martinez
N.M. PE & LS #904

bm

2820 Mesilla, N.E.
Albuquerque, New Mexico 87110
May 24, 1977

Board of Directors
First Assembly of God Church
P.O. Box 3555
Albuquerque, New Mexico 87110

Gentlemen:

In accordance with your request, I have studied the drainage characteristics of the 4.28 acre tract of land on Wyoming Boulevard near Montgomery Boulevard in Albuquerque. I am submitting to you a drainage report showing the computations necessary for the derivation of a 100- year 6-hour storm located over the subject tract of land. Also, computations are shown for the determination of "excess" rain from the 100-year storm. "Excess" rain is the equivalent of the volume of storm water runoff. The volume of storm water runoff thus computed takes into account the drainage area in its present condition as well as after completion of development.

Recommendations for retention of storm water runoff, in accordance with AMAFCA Drainage Resolution 1972-2, are given in the report. A ponding area capable of accommodating 15,000 cubic feet of water is necessary. A depressed playground, 12,000 square feet in area and 1.25 in depth, located on the southwest side of the tract is recommended.

Sincerely,

J. E. Martinez
N. M. PE & LS #904

Encl.

bm

D R A I N A G E R E P O R T

FIRST ASSEMBLY OF GOD TRACT

ON

WYOMING BOULEVARD

NEAR

MONTGOMERY BOULEVARD

May 19, 1977

J. E. Martinez
PE & LS #904
New Mexico

DRAINAGE REPORT
FIRST ASSEMBLY OF GOD TRACT
ON
WYOMING NEAR MONTGOMERY
Albuquerque, N. M.

A. Introduction.

This report presents the results of a study of the drainage characteristics of the 4.28 acre tract of land located on Wyoming Boulevard, NE, north of Montgomery Boulevard, on which the First Assembly of God Church plans the construction of a sanctuary and other related facilities. The report is divided into three sections, as follows:

1. Computation of the 100-year storm for the area under study. Procedures outlined by the Weather Service were followed.

2. Computations of excess rain, i.e., storm water runoff for the area in its present condition, as well as after full development. Hydrologic parameters appropriate for the area in question were used in these computations.

3. Conclusions and recommendations regarding storm water retention on the property. AMAFCA Drainage Resolution 1972-2 was used as the guide in the preparation of this section of the report.

B. Computation of 100-Year Storm (Point Rainfall), Vicinity of Wyoming and Montgomery, Albuquerque, New Mexico.

1. Basic data was obtained from NOAA "Precipitation Frequency Atlas of the Western United States," Volume IV, New Mexico, as follows:

DURATION, HRS	INCHES OF RAINFALL FOR 100-YR STORM
24	3.30
6	2.75

2. The 100-year 1-hour storm was computed from the relationship developed by the U.S. Weather Service for the above mentioned locality, as follows:

$$Y = 0.494 + 0.755 \left[X_3 \left(\frac{X_3}{X_4} \right) \right]$$

where Y = 100-year 1-hour rainfall
X_3 = 100-year 6-hour rainfall
X_4 = 100-year 24-hour rainfall

$$Y = 0.494 + 0.755 \left[2.75 \left(\frac{2.75}{3.30} \right) \right]$$

$$Y = 2.224 \text{ inches}$$

3. The 100-year 2-hour and 3-hour storms were also computed, as follows:

2-HR VALUE = 0.341 (6-HR VALUE) + 0.659 (1-HR VALUE)

3-HR VALUE = 0.569 (6-HR VALUE) + 0.431 (1-HR VALUE)

2-HR VALUE = 0.341 (2.75) + 0.659 (2.22) = 2.40 inches

3-HR VALUE = 0.569 (2.75) + 0.431 (2.22) = 2.52 inches

4. The 5-, 10-, 15- and 30-minute point rainfall values were computed from information given in the NOAA Precipitation Frequency Atlas. The computations are given below for the 100-year storm:

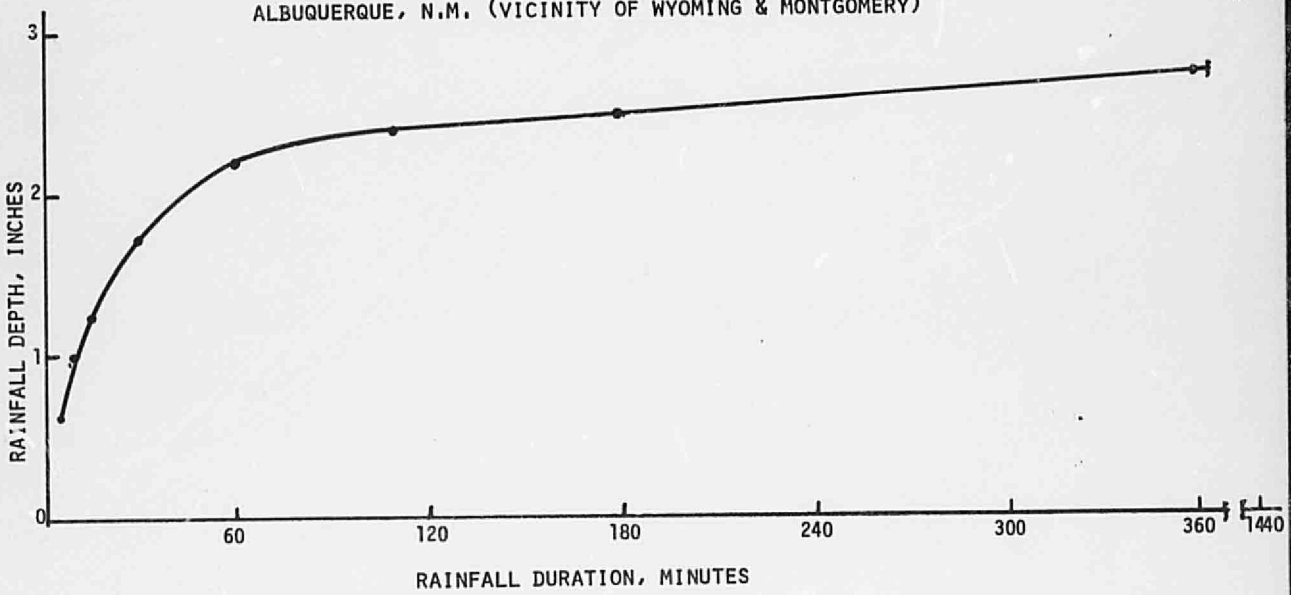
DURATION, MIN.	INCHES OF RAINFALL
30	(.79)(2.224) = 1.76
15	(.57)(2.224) = 1.27
10	(.45)(2.224) = 1.00
5	(.29)(2.224) = 0.64

5. The complete tabulation of point rainfall values for the 100-year storm for the locality in question are shown below:

DURATION, MIN.	INCHES OF RAINFALL
5	0.64
10	1.00
15	1.27
30	1.76
60 (1-HR)	2.22
120 (2-HR)	2.40
180 (3-HR)	2.52
360 (6-HR)	2.75
1440 (24-HR)	3.30

6. The mass curve of point rainfall for the 100-year storm is shown on page 3 of this report.

MASS CURVE OF
POINT RAINFALL DEPTH, INCHES
100-YR STORM
ALBUQUERQUE, N.M. (VICINITY OF WYOMING & MONTGOMERY)



7. The 10-minute incremental values of rainfall for the 100-year storm computed from the mass curve are as follows:

TIME, MIN.	POINT RAINFALL, INCHES
0	0
10	1.00
20	1.45
30	1.76
40	1.97
50	2.12
60	2.22
70	2.29
80	2.31
90	2.33
100	2.36
110	2.38
120	2.40
|	|
180	2.52
|	|
360	2.75
|	|
1440	3.30

C. Computation of Net or Excess Rain (Storm Runoff) from a 100-Year 6-Hour Storm Located on First Assembly of God Tract on Wyoming Boulevard near Montgomery Boulevard.

1. The table included on page 5 shows the computation of net or excess rain from a 100- year 6-hour storm located over the undeveloped area bordering on Wyoming Blvd. north of Montgomery Blvd. on which the First Assembly of God Church is planning the erection of a church sanctuary and educational facilities. Topography and soil characteristics of the drainage area were considered in selecting infiltration rates and other hydrologic abstractions.

2. The table included on page 6 shows the computation of net or excess rain, which is the equivalent of the volume of storm runoff, from the 100-year 6-hour storm over the subject area after development of the area. Total development of the area, as shown by the attached master plan, was assumed in determining the percent of impervious surface in the drainage area.

3. Total excess rain or volume of runoff from the undeveloped area is 0.528 acre feet or 23,000 cubic feet. Total volume of runoff from the area after complete development will be 0.867 acre feet or 37,767 cubic feet.

TABLE 1

COMPUTATION OF NET (EXCESS) RAINFALL, 100-YEAR 6-HOUR STORM

FIRST ASSEMBLY OF GOD TRACT, BEFORE DEVELOPMENT

VICINITY OF WYOMING AND MONTGOMERY

ALBUQUERQUE, N. M.

TIME, MIN.	TOTAL RAIN, INCHES	△ RAIN, INCHES	△ RAIN, (REARRANGED)	INFILTRATION,* INCHES	INITIAL LOSSES,** INCHES	EXCESS RAIN INCHES
0	0	0	0	0	0	0
10	1.00	1.00	0.21	0.08	0.30	0
20	1.45	0.45	0.45	0.08	0.17	0.20
30	1.76	0.31	1.00	0.08	0	0.92
40	1.97	0.21	0.31	0.08	0	0.23
50	2.12	0.15	0.15	0.08	0	0.07
60	2.22	0.10	0.10	0.08	0	0.02
70	2.29	0.07	0.07	0.03	0	0.04
80	2.31	0.02	0.03	0.03	0	0
90	2.33	0.02	0.02	0.03		
100	2.36	0.03	0.02	0.03		
110	2.38	0.02	0.02	0.03		
120	2.40	0.02	0.02	0.03		
---	---	---	---			
180	2.52	0.12	---			
---	---	---	---			
360	2.75	0.23	---			

Total Excess = 1.48 inches
or 0.528 ac. ft.
or 23,000 cu. ft.

*Infiltration rate: 0.48 in/hr for first hour: 0.18 in/hr thereafter
**Initial losses due to surface depression storage: 0.3 inch

TABLE 2

COMPUTATION OF NET (EXCESS) RAINFALL, 100-YR 6-HOUR STORM

FIRST ASSEMBLY OF GOD TRACT, AFTER DEVELOPMENT

VICINITY OF WYOMING AND MONTGOMERY

ALBUQUERQUE, N. M.

				PERVIOUS AREA, 15% OF TOTAL			
TIME, MIN.	TOTAL RAIN, INCHES	△ RAIN, INCHES	△ RAIN, (REARRANGED)	INFILTRATION, INCHES	INITIAL LOSS, INCHES	EXCESS RAIN, INCHES	15% EXCESS RAIN, INCHES
0	0	0	0	0	0	0	0
10	1.00	1.00	0.21	0.16	0.60	0	0
20	1.45	0.45	0.45	0.16	0.55	0	0
30	1.76	0.31	1.00	0.16	0.26	0.58	0.09
40	1.97	0.21	0.31	0.16	0	0.15	0.02
50	2.12	0.15	0.15	0.16	0	0	0
60	2.22	0.10	0.10	0.10			
70	2.29	0.07	0.07	0.08			
80	2.31	0.02	0.03	0.08			
90	2.33	0.02	0.02	0.08			
100	2.36	0.03	0.02	0.08			
110	2.38	0.02	0.02	0.08			
120	2.40	0.02	0.02	0.08			
|	|						
180	2.52						
|	|						
360	2.75						

NOTES:

Infiltration rates: 0.96 in/hr for first hour; 0.48 in/hr thereafter(high values used for lawn and shrubbery areas, zero infiltration for impervious areas).

Initial loss: 0.6 inch used for depression storage in lawns and shrubbery areas.
0.1 inch initial loss used for depression storage on roofs and pavements.

TABLE 2-CONTINUED

COMPUTATION OF NET (EXCESS) RAINFALL, 100-YR 6-HR STORM

FIRST ASSEMBLY OF GOD TRACT, AFTER DEVELOPMENT

VICINITY OF WYOMING AND MONTGOMERY

ALBUQUERQUE, N. M.

IMPERVIOUS AREA, 85%

INITIAL LOSS, INCHES	EXCESS RAIN, INCHES	85% EXCESS RAIN, INCHES	TOTAL EXCESS RAIN, INCHES
0	0	0	0
0.1	0.11	0.09	0.09
0	0.45	0.38	0.38
↓	1.00	0.85	0.94
	0.31	0.26	0.28
	0.15	0.13	0.13
	0.10	0.09	0.09
	0.07	0.06	0.06
	0.03	0.03	0.03
	0.02	0.02	0.02
	0.02	0.02	0.02
	0.02	0.02	0.02
	0.02	0.02	0.02
	|	|	|
	0.12	0.12	0.12
	|	|	|
	0.23	0.23	0.23
		Total Excess	2.43 inches

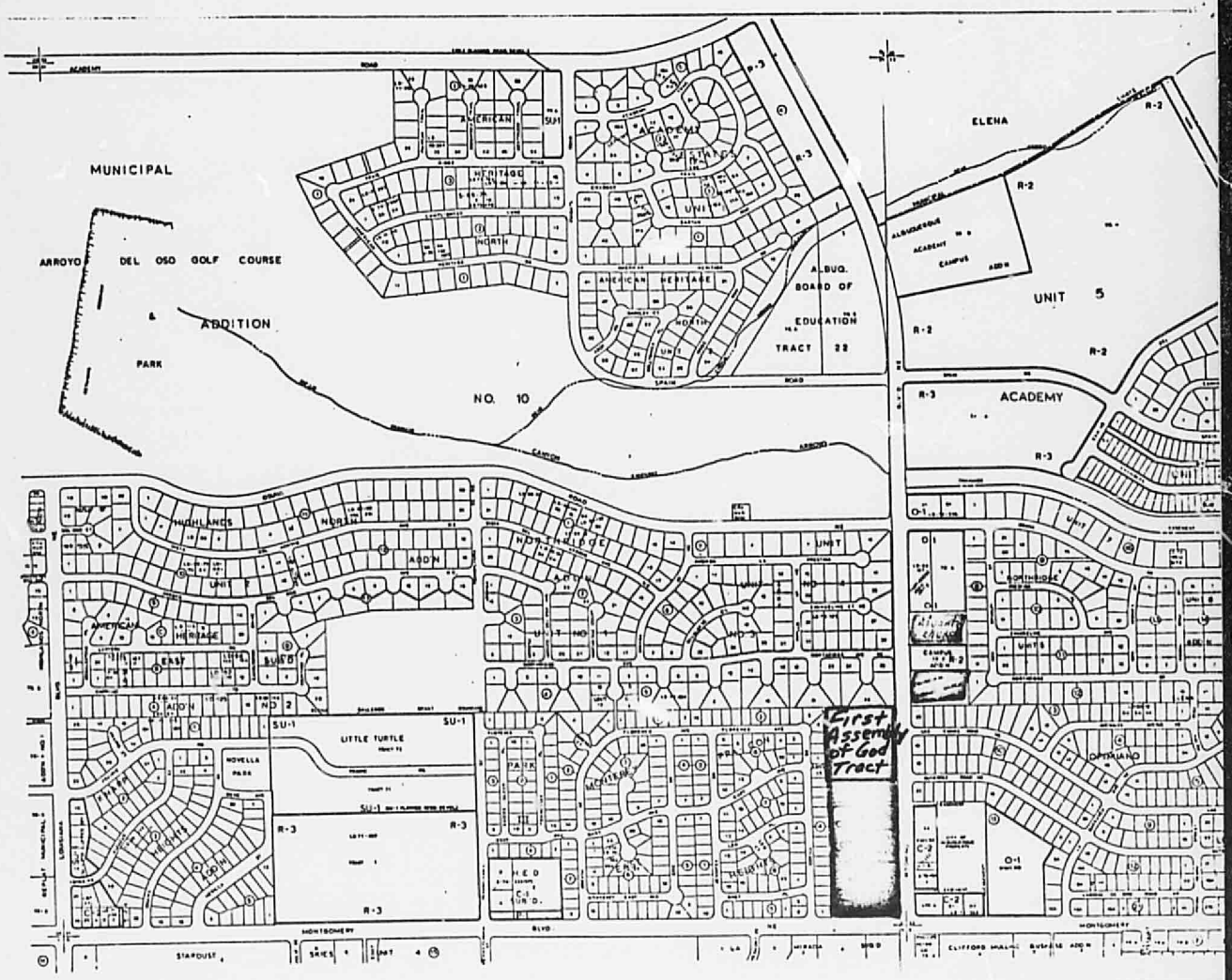
or 0.867 ac ft.
or 37,753 cu. ft.

The difference in volume of runoff before and after development is 0.339 acre feet or 14,767 cubic feet. Provision for retention of this additional storm water runoff on the premises will be required by the City of Albuquerque and by AMAFCA.

D. Conclusions and Recommendations.

1. Existing drainage conditions for the subject area are such that flood waters are directed towards the drainage easement on the west side of the property. Development plans for the area should retain the present drainage pattern. In addition, a ponding area, to accommodate the additional storm water runoff generated in the subject area after complete development of the area should be constructed in the southwest area of the tract of land. The recommended ponding area (12,000 square feet in area and 1.25 feet in depth) is shown on the attached site plan. This area may also be used as a playground for soccer, volley ball and similar activities.

2. Storm water runoff will enter the subject area from higher ground to the east only if it jumps the curb on Wyoming Boulevard. Provision should be made for whatever storm water enters the area from the east to pass through the tract in the same general direction as it does now prior to development. The collection point should be the retention pond and the drainage easement on the west side of the property.


MUNICIPAL
ARROYO DEL OSO GOLF COURSE
ADDITION
PARK
NO. 10
ELENA
UNIT 5
ACADEMY
ALBUQ. BOARD OF EDUCATION TRACT 22
AMERICAN HERITAGE
HIGHLANDS
NORTHRIDGE
LITTLE TURTLE
NOVELLA PARK
OPPIANO
First Assembly of God Tract
STARDUST
MONTGOMERY BLVD.