ENGINEER'S DRAINAGE REPORT

GLENWOOD VILLAGE
NORTHEAST CORNER
MONTGOMERY AND TRAMWAY

CITY OF ALBUQUERQUE
HYDROLOGY SECTION
FILE: F23/D4

WILSON & COMPANY
ENGINEERS & ARCHITECTS
6611 GULTON CT., NE
ALBUQUERQUE, NM 87109

FEBRUARY 1988
(87-520A)

WILSON & COMPANY
ENGINEERS & ARCHITECTS

ENGINEER'S DRAINAGE REPORT
GLENWOOD VILLAGE
CITY OF ALBUQUERQUE HYDROLOGY SECTION
FILE: F23/04

DESCRIPTION

Block 3, Unit 1, Glenwood Hills Subdivision

PURPOSE AND SCOPE

Peterson & Reneau plan to develop this 13.85 acre site as a commercial center. The development will include a supermarket, gas station/convenience store, retail tenant spaces, and paved parking and drives.

SITE LOCATION, USE, AND TOPOGRAPHY

The site is bounded by Montgomery Blvd. on the south, Tramway Blvd. on the west, the Tierra Amada Subdivision on the north, and the back of residential lots fronting on Larchmont Drive to the east. A 20' alley right-of-way is located between the site and the residential lots to the east and north.

The site is presently undeveloped. It generally slopes from east to west. An unimproved arroyo crosses the northwest corner of the site within a drainage easement. The site currently has an SU-1 zoning. It is governed by an EPC-approved development plan: EPC Case No. Z 87-31-1 DRB Case No. 88-18.

SOIL PROFILE

The soil for the subject property is shown in the USCS Soil Survey to consist of Embudo series soils, Hydrologic Soil Group B.

DESIGN CRITERIA

The SCS method is used to compute run-off and the dimensionless unit hydrograph method is used to compute flows and stored volumes using criteria set forth in Volume 2, City of Albuquerque, Development Process Manual. The composite curve number is based on the land use shown on the site plan. The undeveloped and developed 10-year and 100-year run-off calculations are appended to this report.

OFF-SITE DRAINAGE

The entire area between the east property line and Larchmont Drive 190' to the east drains into the subject property. This area is developed as single-family residences on 1-acre lots. Backyard run-off from a small area to the north of the subject property also constitutes off-site flows. Additionally, a 10.39 acre area of the Tierra Amada Townhouse development

to the north drains into a detention pond to the north of the subject property. Stormwater is released at a controlled rate from this pond into the unimproved channel in the northwest corner of the site.

EXISTING CONDITIONS

The north 1/3 of the site and a similar portion of the off-site area drain into an unimproved channel within a drainage easement in the northwest corner of the site. The peak flow rates for the 10-year and 100-year events are 5.00 CFS and 13.73 CFS, respectively. This channel also carries flows from a controlled outlet from the detention pond for Tierra Amada Townhouses (File F23/D1). These flows are limited to a maximum of 8.04 CFS.

PROPOSED CONDITIONS

Drainage areas and 10-year and 100-year discharges are summarized on the Drainage Plan and in the table below. Off-site and on-site areas are combined based on drainage basin considerations.

Drainage Basin	Area (Acres)	Composite CN	Tc (Minutes)	Q 10 (CFS)	Q 100 (CFS)
A-1+0-3	2.70 > 17.5	79	10	4.29	9.81
A-2+0-2+0-1	6.71	90	10	25.89	48.74
A-3+0-4	8.10	88	10	25.73	47.80
A-4	1.85	94	10	9.65	16.78
A-5	0.29	95	10	1.58	2.63
A-6	0.19	98	10	1.47	2.24

With the exception of the small entrance drive areas A-5 and A-6, all on-site and off-site flows, including the discharge from the detention pond to the north, will be routed to the public storm drain which begins at the intersection of Tramway and Montgomery and discharges into the Glenwood Hills Arroyo. At the time of the construction of this storm drain, the design 100-year discharge from the Glenwood Village site was 49 AFS. A copy of a portion of the "Upland Drainage Areas" map prepared by the consultant for that project has been included in the appendix. A 30" stub-out was provided as part of the construction of the public storm drain to accomodate the flows from the Glenwood Village site.

On-Site Detention

Including the peak discharge of 8.02 CFS from the Tierra Amada Townhouses' detention pond, total developed peak 100-year run-off from this site will be 131.1 CFS. In order to limit the 100-year discharge to 49 CFS, an on-site detention structure will be built. This structure will consist of a 930 foot long 6' x 8' box culvert combined with a detention pond at the upstream end. Run-off from the Tierra Amada pond will be routed into the on-site detention pond and subsequently into the box culvert. Run-off from all the off-site drainage areas, and areas A-1, A-2, and A-3 will be routed

$Q_{in} = 131.1$

$Q_o = 49$

$V_{stor} = \cancel{44,640}\ ft^3$
$70,100\ ft^3$ TOTAL

through catch basins and underground storm drains into the box culvert system. The box culvert will have a controlled outlet discharging into the public storm drain. Area A-4 will discharge directly into the public storm drain. Calculations in the appendix show that a 20" diameter orifice will result in a 100-year water surface elevation within the detention reservoir of 34.92 and a peak discharge rate of 39.1 CFS. The discharge from the detention reservoir will combine with the flows from area A-4 and discharge to the public storm drain system. Because the discharge from the detention reservior peaks later than the direct discharge from area A-4, the combined 100-year discharge reaches a maximum of 49.9 CFS.

The 10-year water surface within the detention reservoirs is at elevation 30.72 and the peak 10 year-discharge is 30.5 CFS.

APPENDIX A

CONFERENCE RECAP AND PRIOR STUDIES

ITY OF ALBUQUERQUE
MUNICIPAL DEVELOPMENT DEPARTMENT
ENGINEERING DIVISION/DESIGN HYDROLOGY SECTION

CONFERENCE RECAP

DRAINAGE FILE/ZONE ATLAS PAGE NO.: F23 DATE: 7-22-87

PLANNING DIVISION NOS: EPC: _____ DRB: _____

SUBJECT: Glenwood Village

STREET ADDRESS (IF KNOWN): Corner

SUBDIVISION NAME: _____

APPROVAL REQUESTED:

____	PRELIMINARY PLAT	____	FINAL PLAT
X	SITE DEVELOPMENT PLAN	____	BUILDING PERMIT
____	OTHER	____	ROUGH GRADING

ATTENDANCE:	WHO	REPRESENTING
	Howard Kaplan	_____
	Carlos A Montoya	_____
	Steve Metro	_____

FINDINGS:

(1) Conceptual Drainage plan needed for Site Plan Approval

(2) Need to address public infrastructure in more detail

(3) Need to accept off-site flow on site and convey to historic outfall. Need to design to City standard and Work Order process.

(4) Tie-in to Monzano Tramway storm drain - Need to proportion capacity to the two east tracts. The storm drain tie in needs to go through the work order process.

(5) Need to coordinate with County Rd and State on the Tramway Rd grades.

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.

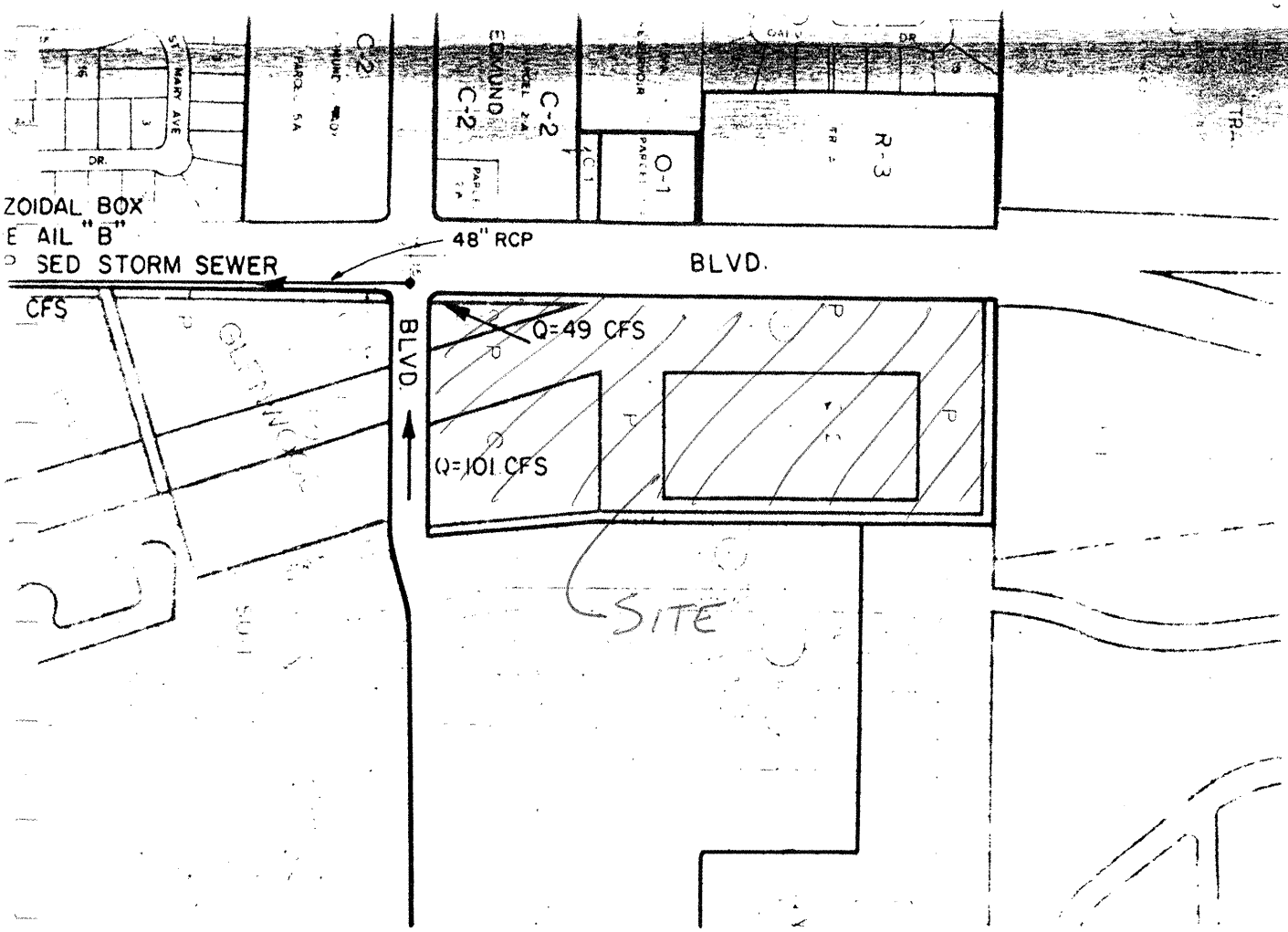
SIGNED:	Carlos A Montoya	SIGNED:	Steven J. Metro
TITLE:	_____	TITLE:	_____
DATE:	7-22-87	DATE:	7-22-87

BY JEB DATE 1-9-81 SUBJECT Tierra Amada SHEET NO. 10 OF 10
CHKD. BY ...... DATE ...... Drainage Calculations JOB NO. 81-00-01

FLOOD ROUTING TABLE FOR MAIN POND

TIME	INFLOW Q_i	INFLOW V_i	OUTFLOW Q_o	OUTFLOW V_o	STORAGE	ACCUM. STORAGE	H
0	0	0	0	0	0	0	0
3	8.83	795	6.84	616	179	179	0.03
6	17.66	2384	6.84	1231	1153	1332	0.19
9	26.50	3974	6.84	1231	2743	4075	0.56
12	29.44	5035	6.84	1231	3804	7879	1.04
15	29.44	5299	6.86	1233	4066	11945	1.51
18	29.44	5299	7.11	1250	4061	15985	1.95
21	29.44	5299	7.30	1300	3999	19985	2.35
24	29.44	5299	7.58	1330	3961	23946	2.73
27	29.44	5299	7.72	1372	3927	27872	3.09
30	20.61	4505	7.88	1404	3101	30973	3.36
33	11.78	2916	8.01	1431	1484	32458	3.49
36	2.94	1325	8.07	1447	-122	32336	3.48
39	0	265	8.06	1452	-1187	31149	3.38
42	0	0	8.02	1447	-1447	29,702	3.25
45	0	0	7.96	1438	-1438	28,264	3.13
48	0	0	7.90	1427	-1427	26,836	3.00
51	0	0	7.84	1417	-1417	25,420	2.87
54	0	0	7.78	1406	-1406	24014	2.74
57	0	0	7.72	1395	-1395	22,619	2.61
60	0	0	7.66	1384	-1384	21235	2.47
63	0	0	7.59	1372	-1372	19,863	2.34
66	0	0	7.53	1361	-1361	18,503	2.21
69	0	0	7.46	1348	-1348	17,155	2.07
72	0	0	7.39	1336	-1336	15819	1.93
75	0	0	7.32	1324	-1324	14,492	1.79
78	0	0	7.25	1312	-1312	13,181	1.65
81	0	0	7.18	1299	-1299	11,882	1.51
84	0	0	7.11	1286	-1286	10,596	1.36
87	0	0	7.03	1272	-1272	9323	1.21
90	0	0	6.95	1258	-1258	8065	1.06

47,753 ft³



Q=100 YEAR FLOW RATE
(25 YR. APPROX. 75%)

* WITH PIEDRA LISA DAM IN PLACE
** WITH GLENWOOD HILLS DAM IN PLACE
*** WITH GLENWOOD HILLS DAM IN PLACE AND CHANNEL IMPROVED

Tom,
I believe this is what you need. Actual field conditions since 1980 may change the drainage basin to the intersection.
James T.

Date	Revision

TRAMWAY BOULEVARD
I-40 TO MONTGOMERY

Project No. NMP
M-4067(4)

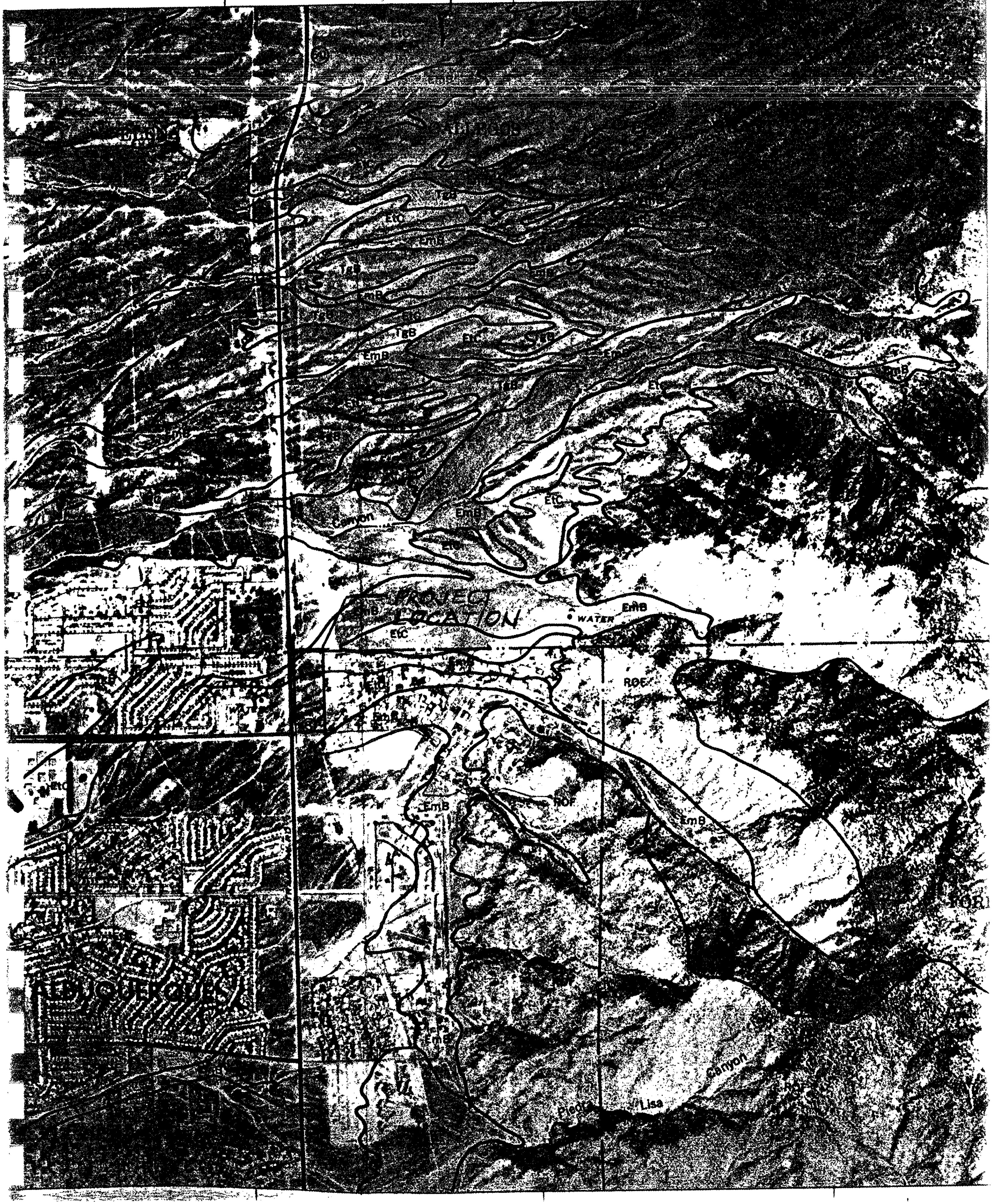
Seal

UPLAND DRAINAGE AREAS

ALBUQUERQUE, NEW MEXICO

Job. No. 78-192 | Sheet 1

Drawn By: | Date:


PROJECT LOCATION
WATER
EmB
EtC
TrB
ROF
Canyon
Lisa
Canyon

APPENDIX B

CALCULATIONS

WILSON & COMPANY ENGINEERS & ARCHITECTS

FROM: T. BOOTHBY

TO: FILE

VSDM

DATE: 2-2-88 FILE 87-520A

SUBJECT: DRAINAGE DESIGN

ASSUMPTIONS

V_{6HR} = 2.6" 100YR

1.7" 10YR

SOIL GROUP B

WILSON & COMPANY ENGINEERS & ARCHITECTS

FROM: T. BOOTHBY

TO: FILE
✓ SSM

DATE: 2-19-88 FILE 87-520A

SUBJECT: GLENWOOD VILLAGE - DRAINAGE

EXISTING CONDITIONS

NORTH 1/3 SITE + O-1 + O-2

NORTH 1/3 SITE = .33(13.85) = 4.57 Ac UNDEVELOPED CN = 70

O-1 + O-2 = 1.06 + 0.42 1.48 Ac RES CN = 72

$$\text{COMPOSITE CN} = \frac{4.57(70) + 1.48(72)}{4.57 + 1.48} = 70.48 \text{ SAY } 70 \checkmark$$

T_c - $L = 760'$ $S = \frac{73-33}{760} = 0.052$

$V = 1.15$ f/s $T_c = \frac{760}{1.15(60)} = 11$ min

$V_{100} = 2.6"$

$V_{10} = .657(2.6) = 1.7"$

$R_{100} = 0.55"$

$R_{10} = 0.20"$

$$Q_{100} = \frac{45.4A}{t_c} \times R = \frac{45.4(6.05)}{11} \times 0.55 = 13.73 \text{ CFS}$$

$$Q_{10} = \frac{45.4(6.05)}{11} \times 0.2 = 5.00 \text{ CFS}$$

WILSON & COMPANY ENGINEERS & ARCHITECTS

FROM: T. BOOTHBY

TO: FILE
✓ SFM

DATE: 2-22-88 FILE 87-520A

SUBJECT: GLENWOOD VILLAGE - DRAINAGE

EXISTING CONDITIONS

SOUTH 2/3 SITE + 0-4 + 0-3

SOUTH 2/3 SITE = .67(13.85) = 9.28 Ac UNDEVELOPED (CN=7

0-3-0-4 = 1.70 + 2.77 = 4.47 Ac RES. CN=72

COMPOSITE CN = 70 ✓

t_c = 10 min

$$Q_{100} = \frac{45.4(13.75)}{10} \times 0.55 = 34.3 \text{ CFS}$$

$$Q_{10} = \frac{45.4(13.75)}{0} \times 0.20 \quad 12.48 \text{ CFS}$$

FROM: T. BOOTHBY

TO: FILE
✓ SSM

WILSON & COMPANY ENGINEERS & ARCHITECTS

DATE: 2-2-88 FILE 87-520A

SUBJECT: DRAINAGE DESIGN

AREA A-2+0-2+01

COMPOSITE CN

0.35 Ac LANDSCAPING CN = 61
4.87 Ac IMPERVIOUS CN = 98
1.06 Ac RESIDENTIAL CN = 72
+0.43
6.71 Ac TOTAL

$$\text{COMPOSITE CN} = \frac{(0.35)(61) + 4.87(98) + 1.49(72)}{6.71} = 90$$

TIME OF CONCENTRATION ① 170' O.L.F @ 5' FALL (3%)
② 400' PAVEMENT @ 6' FALL (1.5%)

$V_① = 1.05$ f/s = 162 sec
$V_② = 1.65$ f/s 242 sec
404 sec = 6.74 min = 10 min

RUNOFF R = 1.6" (100 YR)

$$V_{6HR} = \frac{1.6}{12}(6.71) = 0.89 \text{ Ac-ft}$$

$$q_{100} = \frac{45.4(6.71)}{10} = 30.46 \text{ CFS/in}$$

$$Q_{100} = 30.46\,(1.6) = 48.74 \text{ CFS}$$

R = 0.85" (10 YR)

$$Q_{10} = 30.46(0.85) = 25.89 \text{ CFS}$$

WILSON & COMPANY ENGINEERS & ARCHITECTS

FROM: T. BOOTHBY

TO: FILE
VSTM

DATE: 2-2-88 FILE 87-520A

SUBJECT: DRAINAGE DESIGN

AREA A-1 + O-3

COMPOSITE CN

0.15 Ac	LANDSCAPING	CN = 61
0.84 Ac	IMPERVIOUS	CN = 98
1.71 Ac	RESIDENTIAL	CN = 72
2.70	LOTS > 1 AC	

$$\text{COMPOSITE CN} = \frac{61(0.15) + 98(0.84) + 72(1.705)}{2.70} = 79$$

TIME OF CONCENTRATION = 10 MINUTES BY INSPECTION ✓

RUNOFF R = 0.8 IN (100 YEAR)

$$V_{6HR} = \frac{0.8''}{12}(2.70) = 0.18 \text{ Ac-ft}$$

$$q_{100} = \frac{45.4A}{T_p} = \frac{45.4(2.70)}{10} = 12.25 \text{ CFS/IN}$$

$$Q_{100} = 12.25(0.8) = 9.81 \text{ CFS}$$

RUNOFF R = 0.35

$$Q_{10} = 4.29 \text{ CFS} \checkmark$$

WILSON & COMPANY ENGINEERS & ARCHITECTS

FROM: T. BOOTHBY
TO: FILE
✓ SFM

DATE: 7-2-88 FILE 87-520A
SUBJECT: DRAINAGE DESIGN

AREA A-3 + O-4

COMPOSITE CN

0.33 Ac	LANDSCAPING	CN=61
5.00 Ac	IMPERVIOUS	CN=98
2.77 Ac	RESIDENTIAL	CN=72
8.10 Ac	TOTAL	

$$\text{COMPOSITE CN} = \frac{0.33(61) + 5.00(98) + 2.77(72)}{8.10} = 88$$

RUNOFF $R_{100} = 1.3"$ ✓

$$V_{6HR} = \frac{1.3}{12}(8.10) = 0.88 \text{ Ac-ft}$$

$$q_{100} = \frac{45.4(8.10)}{10} = 36.77 \text{ CFS/in}$$

$$Q_{100} = 36.77(1.3) = 47.8 \text{ CFS}$$

$R_{10} = 0.7"$ ✓

$$Q_{10} = 36.77(0.7) = 25.73 \text{ cfs}$$

FROM: T. BOOTHBY

TO: FILE
✓ SFM

WILSON & COMPANY ENGINEERS & ARCHITECTS

DATE: 2-2-88 FILE 87-520A

SUBJECT: DRAINAGE DESIGN

AREA A-4

COMPOSITE CN 0.21 AC LANDSCAPING CN=61
1.64 AC IMPERVIOUS CN=98

$CN = 94$

$R_{100} = 2.0"$

$V_6 = \frac{1.1}{12}(1.85) = 0.17$ AC-FT

$q_{100} = \frac{45.4(1.85)}{10} = 8.39$ CFS/IN

$Q_{100} = 8.39(2.0) = 16.78$ CFS

$R_{10} = 1.15"$

$Q_{10} = 8.39(1.15) = 9.65$

AREA A-5 - TOTAL AREA = 0.29 AC
UNDISTURBED 6×150 = 1050 SF = 0.02 AC

$CN = \frac{61(.02) - 98(.27)}{.29} = 95$

$R_{100} = 2.0"$

$R_{10} = 1.2"$

$Q_{100} = \frac{45.4(.29)}{10} \times 2.0 = 2.63$ CFS

$Q_{10} = \frac{45.4(.29)}{10} \times 1.2 = 1.58$ CFS

22.2

100 YR

HYDROGRAPH COMPUTATION WORKSHEET

DATE 2-22-88
COMPUTED BY JEB
CHECK BY SDM

FROM TIERRA ANADA

PROJECT GLENWOOD VILLAGE

LOCATION BOX CULVERT

ANALYSIS POINT # 1

(DR. AREA) A = 17.51 ACRES

T_c 10 MIN

POINT RAINFALL 2.6 IN. FROM PLATE 22.2 D-1

CN = 86 FROM PLATES 22.2 C-2, 22.2 C-3

RUNOFF VOLUME R = 1.35 IN. FROM PLATE 22.2 C-4

COMPUTED T_p = 10 MIN. ($T_p = T_c$ Rounded to even minute)

$q_p = \frac{45.4A}{T_p}$ = 79.5 CFS./INCH OF RUNOFF

$(R \times q_p) = Q_{peak}$ = 107.3 CFS

$t(COLUMN) = (t/T_p)$ $t = T_p(t/T_p)$

$y = \frac{Q}{Q_{peak}}$ $Q = y(Q_{peak})$

	(t/T_p)	t (min.)	y	Q (cfs)	
1	0	0	0	0	
2	.1	1	.03	3.22	6.84
3	.2	2	.10	10.73	
4	.3	3	.190	20.38	
5	.4	4	.310	33.26	
6	.5	5	.470	50.43	
7	.6	6	.660	70.82	
8	.7	7	.820	87.99	
9	.8	8	.930	99.79	
10	.9	9	.990	106.23	
11	1.0	10	1.00	107.3	
12	1.1	11	.990	106.22	
13	1.2	12	.930	99.79	6.86
14	1.3	13	.860	92.28	
15	1.4	14	.780	83.69	
16	1.5	15	.680	72.96	7.11
17	1.6	16	.560	60.09	
18	1.7	17	.460	49.35	
19	1.8	18	.390	41.87	7.33
20	1.9	19	.330	35.40	
21	2.0	20	.280	30.04	
22	2.2	22	.207	22.21	7.53
23	2.4	24	.147	15.77	
24	2.6	26	.107	11.48	7.72
25	2.8	28	.077	8.26	
26	3.0	30	.055	5.90	7.88
27	3.2	32	.040	4.29	
28	3.4	34	.029	3.11	8.01
29	3.6	36	.021	2.25	
30	3.8	38	.015	1.61	
31	4.0	40	.011	1.18	8.02
32	4.5	45	.005	0.54	
33	5.0	50	.000	0	7.87

COMPOSITE CN = $\frac{2.7(79) + 6.71(90) + 8.10(58)}{17.51} = 87$

200' OVERLAND) 10' FALL S = .05 V = 1.15 F/S

460' PAVEMENT 6' FALL S = .013 V = 1.6 F/S

900' 30" CULVERT SAY V = 5 F/S

PLATE 22.2 F-1

$T_c = \left(\frac{200}{1.15} + \frac{460}{1.6} + \frac{900}{5}\right)\left(\frac{1}{60}\right) = 10.7$ MIN. SAY 10 min

22.2

100 YR
HYDROGRAPH COMPUTATION WORKSHEET

DATE 2-22-88
COMPUTED BY TEB
CHECK BY _____

PROJECT GLENWOOD VILLAGE

LOCATION A-4

ANALYSIS POINT # 2

(DR. AREA) A = 1.85 ACRES

T_c 10 MIN

POINT RAINFALL 2.6 IN. FROM PLATE 22.2 D-1

CN = 94 FROM PLATES 22.2 C-2, 22.2 C-3

RUNOFF VOLUME R = 2.0 IN. FROM PLATE 22.2 C-4

COMPUTED T_p = 10 MIN. ($T_p = T_c$) (Rounded to even minute)

$q_p = \frac{45.4A}{T_p}$ = 8.40 CFS./INCH OF RUNOFF

$(R \times q_p) = Q_{peak}$ = 16.80 CFS

$t(COLUMN) = (t/T_p)$ $t = T_p(t/T_p)$

$y = \frac{Q}{Q_{peak}}$ $Q = y(Q_{peak})$

	(t/T_p)	t (min.)	y	Q (cfs)
1	0	0	0	0
2	.1	1	.03	0.50
3	.2	2	.10	1.68
4	.3	3	.190	3.19
5	.4	4	.310	5.21
6	.5	5	.470	7.90
7	.6	6	.660	11.08
8	.7	7	.820	13.78
9	.8	8	.930	15.62
10	.9	9	.990	16.63
11	1.0	10	1.00	16.80
12	1.1	11	.990	16.63
13	1.2	12	.930	15.62
14	1.3	13	.860	14.45
15	1.4	14	.780	13.10
16	1.5	15	.680	11.42
17	1.6	16	.560	9.41
18	1.7	17	.460	7.73
19	1.8	18	.390	6.55
20	1.9	19	.330	5.54
21	2.0	20	.280	4.70
22	2.2	22	.207	3.48
23	2.4	24	.147	2.47
24	2.6	26	.107	1.80
25	2.8	28	.077	1.29
26	3.0	30	.055	0.92
27	3.2	32	.040	0.67
28	3.4	34	.029	0.49
29	3.6	36	.021	0.35
30	3.8	38	.015	0.25
31	4.0	40	.011	0.18
32	4.5	45	.005	0.08
33	5.0	50	.000	0

PLATE 22.2 F-1

WILSON & COMPANY ENGINEERS & ARCHITECTS

FROM: T. BOOTHBY
TO: FILE
DATE: 2-23-88 FILE 87-520A
SUBJECT: DRAINAGE DESIGN

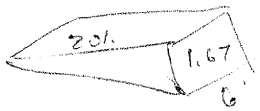
STORAGE VOLUMES

POND AT NORTH END

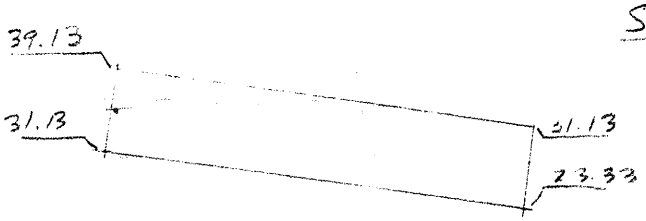
STAGE	AREA	INCREMENTAL VOLUME	STORED VOLUME CF
32	1780 SF	0	0
34	3200 SF	6400	6,400
36	4600 SF	9200	15600
38	5200 SF	10,400	26,000

BOX CULVERT (940' LONG INV. @ TAILWATER 23.33 S=.0083)
INV. @ HEADWATER 31.13

STAGE	DEPTH	STORED VOLUME
25	1.67	1008
28	4.67	7880
30	6.67	16,080
32	8.67	22,560 + 3,600 = 26,160
34	10.67	22,560 + 12,480 = 35,042
36	12.67	22,560 + 18,460 = 41,020
38	14.67	22,560 + 21,540 = 44,100



TOTAL STORAGE



STAGE	d	h	STORAGE
25	1.67	0.79	1000
28	4.67	3.79	7880
30	6.68	5.79	16,080
32	8.67	7.79	26,160
34	10.67	9.79	41,440
36	12.67	11.79	56,620
38	14.67	13.79	70,[illegible]

WILSON & COMPANY ENGINEERS & ARCHITECTS

FROM: DATE: FILE

TO: SUBJECT:

TRY 21" ϕ ORIFICE (SHARP-EDGED) for h = head ABOVE ℄ ORIFICE

d = depth to invert

$d = h + 0.875'$

$Q = C_d A \sqrt{2gh}$

$= 0.62\left(\frac{240}{\pi}\right)\sqrt{(2)(32.2)h}$

$= 11.94\sqrt{h}$

EXPRESS h AS A QUARTIC FUNCTION OF STORED VOLUME

$h = AV^4 + BV^3 + CV^2 + DV$

USE VALUES FOR STAGE 29, 32, 36, 38

$$\begin{bmatrix} 7880^4 & 7880^3 & 7880^2 & 7880 \\ 26{,}160^4 & 26{,}160^3 & 26160^2 & 26160 \\ 56{,}620^4 & 56{,}620^3 & 56620^2 & 56{,}620 \\ 70{,}100^4 & 70{,}100^3 & 70{,}100^2 & 70{,}100 \end{bmatrix} \begin{bmatrix} A \\ B \\ C \\ D \end{bmatrix} = \begin{bmatrix} 3.79 \\ 9.79 \\ 11.79 \\ 13.79 \end{bmatrix}$$

A = -1.5719 E-18

B = 2.8779 E-13

C = -1.8320E-8

D = 6.0822E-4

CHECK. V = 56,620 h = 11.79 ✓

V = 41,440 h = 19.59 ≈ 9.79 ✓

FOR 10-YEAR CALCULATIONS USE 29, 28, 30, 32

$$\begin{bmatrix} 1000^4 & 1000^3 & 1000^2 & 1000 \\ 7850^4 & 7850^3 & 7850^2 & 7850 \\ 16080^4 & 16{,}080^3 & 16{,}080^2 & 16.080 \\ 26{,}160^4 & 26{,}160^3 & 26{,}160^2 & 26{,}160 \end{bmatrix} \begin{bmatrix} A \\ B \\ C \\ D \end{bmatrix} = \begin{bmatrix} 0.79 \\ 3.79 \\ 5.79 \\ 7.79 \end{bmatrix}$$

A = -6.0913E-17

B = 3.5214E-12

C = -7.1865E-8

D = 8.5840E-4 ✓

22.2

10 YR

HYDROGRAPH COMPUTATION WORKSHEET

DATE 2-23-88
COMPUTED BY JEB
CHECK BY _____

PROJECT GLENWOOD VILLAGE

LOCATION A-4

ANALYSIS POINT # 2

(DR. AREA) A = 1.85 ACRES

T_c 10 MIN

POINT RAINFALL 1.7 IN. FROM PLATE 22.2 D-1

CN = 94 FROM PLATES 22.2 C-2, 22.2 C-3

RUNOFF VOLUME R = 1.15 IN. FROM PLATE 22.2 C-4

COMPUTED T_p = 10 MIN. ($T_p = T_c$) (Rounded to even minute)

$q_p = \frac{45.4A}{T_p}$ = 8.39 CFS./INCH OF RUNOFF

$(R \times q_p) = Q_{peak}$ = 9.65 CFS

$t(COLUMN) = (t/T_p)$ $\quad t = T_p(t/T_p)$

$y = \frac{Q}{Q_{peak}}$ $\quad Q = y(Q_{peak})$

	(t/T_p)	t (min.)	y	Q (cfs)
1	0	0	0	0
2	.1	1	.03	0.29
3	.2	2	.10	0.97
4	.3	3	.190	1.83
5	.4	4	.310	2.99
6	.5	5	.470	4.53
7	.6	6	.660	6.37
8	.7	7	.820	7.91
9	.8	8	.930	8.97
10	.9	9	.990	9.55
11	1.0	10	1.00	9.65
12	1.1	11	.990	9.55
13	1.2	12	.930	8.97
14	1.3	13	.860	8.30
15	1.4	14	.780	7.53
16	1.5	15	.680	6.56
17	1.6	16	.560	5.40
18	1.7	17	.460	4.44
19	1.8	18	.390	3.76
20	1.9	19	.330	3.18
21	2.0	20	.280	2.70
22	2.2	22	.207	2.00
23	2.4	24	.147	1.42
24	2.6	26	.107	1.03
25	2.8	28	.077	0.74
26	3.0	30	.055	0.53
27	3.2	32	.040	0.39
28	3.4	34	.029	0.28
29	3.6	36	.021	0.20
30	3.8	38	.015	0.14
31	4.0	40	.011	0.10
32	4.5	45	.005	0.05
33	5.0	50	.000	0

PLATE 22.2 F-1

DATE: FEBRUARY 23, 1988
COMPUTED BY: TE BOOTHBY
CHECKED BY:
PROJECT: GLENWOOD VILLAGE
LOCATION: MONTGOMERY & TRAMWAY, ALBUQUERQUE, NM
ANALYSIS POINT #1
DESCRIPTION: BOX CULVERT SYSTEM WITH 20" DIAMETER OUTLET

Tp= 10

DISCHARGE COEFFICIENT= 11.94 (Q-OUT = DISCHARGE COEFFICIENT * SQUARE ROOT

STAGE AS FUNCTION OF STORAGE

A (QUARTIC)	-1.6E-18
B (CUBIC)	2.9E-13
C (SQUARE)	-1.8E-08
D (LINEAR)	6.1E-04

(A-4) DISCHARGE FROM CB-3

	t/Tp	t (min)	y	Q (CFS)	DELTA V	CUMUL V	TRIAL h	h	Q out	DELTA V out	CUMUL V out	V in - V out	
1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2.00	0.10	1.00	0.03	10.06	301.80	301.80	0.11	0.11	3.97	119.08	119.08	182.72	
3.00	0.20	2.00	0.10	17.57	828.90	1130.70	0.40	0.40	7.53	344.91	463.99	666.71	
4.00	0.30	3.00	0.19	27.22	1343.70	2474.40	0.85	0.85	10.99	555.49	1019.47	1454.93	
5.00	0.40	4.00	0.31	40.10	2019.60	4494.00	1.52	1.52	14.70	770.73	1790.20	2703.80	
6.00	0.50	5.00	0.47	57.27	2921.10	7415.10	2.45	2.45	18.68	1001.52	2791.72	4623.38	
7.00	0.60	6.00	0.66	77.66	4047.90	11463.00	3.62	3.62	22.72	1242.05	4033.77	7429.23	
8.00	0.70	7.00	0.82	94.83	5174.70	16637.70	4.87	4.87	26.36	1472.33	5506.10	11131.60	
9.00	0.80	8.00	0.93	106.63	6043.80	22681.50	6.01	6.01	29.27	1668.77	7174.86	15506.64	
10.00	0.90	9.00	0.99	113.07	6591.00	29272.50	6.93	6.93	31.44	1821.25	8996.12	20276.38	16.80 48.24
11.00	1.00	10.00	1.00	114.14	6816.30	36088.80	7.66	7.66	33.04	1934.56	10930.68	25158.12	16.63 49.67
12.00	1.10	11.00	0.99	113.06	6816.00	42904.80	8.25	8.25	34.30	2020.20	12950.88	29953.92	15.62 49.92
13.00	1.20	12.00	0.93	106.65	6591.30	49496.10	8.76	8.76	35.35	2089.29	15040.17	34455.93	14.45 49.80
14.00	1.30	13.00	0.86	99.14	6173.70	55669.80	9.23	9.23	36.27	2148.61	17188.77	38481.03	13.10 49.37
15.00	1.40	14.00	0.78	90.55	5690.70	61360.50	9.66	9.66	37.10	2201.24	19390.01	41970.49	11.42 48.52
16.00	1.50	15.00	0.68	80.04	5117.70	66478.20	10.03	10.03	37.81	2247.45	21637.46	44840.74	9.41 47.22
17.00	1.60	16.00	0.56	67.20	4417.20	70895.40	10.32	10.32	38.36	2285.25	23922.70	46972.70	7.73 46.09
18.00	1.70	17.00	0.46	56.46	3709.80	74605.20	10.52	10.52	38.73	2312.73	26235.44	48369.76	
19.00	1.80	18.00	0.39	49.17	3168.90	77774.10	10.64	10.64	38.95	2330.49	28565.92	49208.18	
20.00	1.90	19.00	0.33	42.73	2757.00	80531.10	10.70	10.70	39.07	2340.56	30906.49	49624.61	
21.00	2.00	20.00	0.28	37.37	2403.00	82934.10	10.71	10.71	39.08	2344.40	33250.89	49683.21	PEAK
22.00	2.20	22.00	0.21	29.74	4026.60	86960.70	10.62	10.62	38.91	4679.22	37930.11	49030.59	
23.00	2.40	24.00	0.15	23.30	3182.40	90143.10	10.41	10.41	38.52	4645.39	42575.50	47567.60	
24.00	2.60	26.00	0.11	19.20	2550.00	92693.10	10.12	10.12	37.99	4590.33	47165.83	45527.27	
25.00	2.80	28.00	0.08	15.98	2110.80	94803.90	9.80	9.80	37.38	4522.21	51688.04	43115.86	
26.00	3.00	30.00	0.06	13.78	1785.60	96589.50	9.47	9.47	36.74	4447.15	56135.19	40454.31	
27.00	3.20	32.00	0.04	12.17	1557.00	98146.50	9.13	9.13	36.08	4368.93	60504.13	37642.37	
28.00	3.40	34.00	0.03	11.12	1397.40	99543.90	8.80	8.80	35.41	4289.58	64793.71	34750.19	
29.00	3.60	36.00	0.02	10.26	1282.80	100826.70	8.47	8.47	34.74	4209.26	69002.97	31823.73	
30.00	3.80	38.00	0.02	9.62	1192.80	102019.50	8.13	8.13	34.03	4126.48	73129.45	28890.05	
31.00	4.00	40.00	0.01	9.20	1129.20	103148.70	7.77	7.77	33.28	4038.67	77168.11	25980.59	
32.00	4.50	45.00	0.01	8.56	2664.00	105812.70	6.73	6.72	30.98	9637.78	86805.89	19006.81	
33.00	5.00	50.00	0.00	7.84	2460.00	108272.70		5.43	0.00	4646.36	91452.25	16820.45	

22.2

10 YR

HYDROGRAPH COMPUTATION WORKSHEET

DATE 2-23-88
COMPUTED BY TEB
CHECK BY

FROM TIERRA AMADA

PROJECT GLENWOOD VILLAGE

LOCATION BOX CULVERT

ANALYSIS POINT # .1.

(DR. AREA) A = 17.51 ACRES

T_c 10 MIN

POINT RAINFALL 1.7 IN. FROM PLATE 22.2 D-1

CN = 87 FROM PLATES 22.2 C-2, 22.2 C-3

RUNOFF VOLUME R = 0.65 IN. FROM PLATE 22.2 C-4

COMPUTED T_p = 10 MIN. ($T_p = T_c$) (Rounded to even minute)

$q_p = \frac{45.4A}{T_p}$ = 79.49 CFS./INCH OF RUNOFF

$(R \times q_p) = Q_{peak}$ = 51.67 CFS

$t(COLUMN) = (t/T_p)$ $t = T_p(t/T_p)$

$y = \frac{Q}{Q_{peak}}$ $Q = y(Q_{peak})$

SAY $Q_{10} = 6.84$

	(t/T_p)	t (min.)	y	Q (cfs)
1	0	0	0	0
2	.1	1	.03	1.55
3	.2	2	.10	5.17
4	.3	3	.190	9.82
5	.4	4	.310	16.02
6	.5	5	.470	24.28
7	.6	6	.660	34.10
8	.7	7	.820	42.37
9	.8	8	.930	48.05
10	.9	9	.990	51.15
11	1.0	10	1.00	51.67
12	1.1	11	.990	51.15
13	1.2	12	.930	48.05
14	1.3	13	.860	44.43
15	1.4	14	.780	40.30
16	1.5	15	.680	35.13
17	1.6	16	.560	28.94
18	1.7	17	.460	23.77
19	1.8	18	.390	20.15
20	1.9	19	.330	17.05
21	2.0	20	.280	14.47
22	2.2	22	.207	10.70
23	2.4	24	.147	7.60
24	2.6	26	.107	5.53
25	2.8	28	.077	3.98
26	3.0	30	.055	2.84
27	3.2	32	.040	2.07
28	3.4	34	.029	1.50
29	3.6	36	.021	1.09
30	3.8	38	.015	0.78
31	4.0	40	.011	0.57
32	4.5	45	.005	0.26
33	5.0	50	.000	0

PLATE 22.2 F-1

DATE: FEBRUARY 23, 1988
COMPUTED BY: TE BOOTHBY
CHECKED BY:
PROJECT: GLENWOOD VILLAGE
LOCATION: MONTGOMERY & TRAMWAY, ALBUQUERQUE, NM
ANALYSIS POINT #1
DESCRIPTION: BOX CULVERT SYSTEM WITH 2" DIAMETER OUTLET
10 YEAR STORM

Tp= 10

DISCHARGE COEFFICIENT= 11.94 (Q-OUT = DISCHARGE COEFFICIENT * SQUARE ROOT

STAGE AS FUNCTION OF STORAGE

A (QUARTIC)	-6.1E-17
B (CUBIC)	3.5E-12
C (SQUARE)	-7.2E-08
D (LINEAR)	8.6E-04

	t/Tp	t (min)	y	Q (CFS)	DELTA V	CUMUL V	TRIAL h	h	Q out	DELTA V out	CUMUL V out	V in - V out	
1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2.00	0.10	1.00	0.03	8.39	251.70	251.70	0.11	0.11	3.99	119.85	119.85	131.85	
3.00	0.20	2.00	0.10	12.01	612.00	863.70	0.34	0.34	7.00	329.75	449.60	414.10	
4.00	0.30	3.00	0.19	16.66	860.10	1723.80	0.63	0.63	9.46	493.73	943.32	780.48	
5.00	0.40	4.00	0.31	22.86	1185.60	2909.40	1.02	1.02	12.04	644.97	1588.30	1321.10	
6.00	0.50	5.00	0.47	31.12	1619.40	4528.80	1.54	1.54	14.81	805.40	2393.70	2135.10	
7.00	0.60	6.00	0.66	40.94	2161.80	6690.60	2.18	2.18	17.63	973.25	3366.95	3323.65	
8.00	0.70	7.00	0.82	49.21	2704.50	9395.10	2.86	2.86	20.18	1134.50	4501.45	4893.65	
9.00	0.80	8.00	0.93	54.89	3123.00	12518.10	3.47	3.47	22.26	1273.18	5774.63	6743.47	
10.00	0.90	9.00	0.99	57.99	3386.40	15904.50	4.01	4.01	23.91	1384.94	7159.57	8744.93	
11.00	1.00	10.00	1.00	58.51	3495.00	19399.50	4.49	4.49	25.29	1476.04	8635.61	10763.89	9.65 349
12.00	1.10	11.00	0.99	57.99	3495.00	22894.50	4.94	4.94	26.54	1554.93	10190.54	12703.96	9.55 36.1
13.00	1.20	12.00	0.93	54.92	3387.30	26281.80	5.37	5.37	27.67	1626.30	11816.83	14464.97	9.47 36.6
14.00	1.30	13.00	0.86	51.27	3185.70	29467.50	5.76	5.76	28.65	1689.70	13506.54	15960.96	9.30 37.0
15.00	1.40	14.00	0.78	47.14	2952.30	32419.80	6.08	6.08	29.45	1743.02	15249.55	17170.25	9.2 37.0
16.00	1.50	15.00	0.68	41.97	2673.30	35093.10	6.33	6.33	30.03	1784.36	17033.91	18059.19	9.16 36.6
17.00	1.60	16.00	0.56	35.78	2332.50	37425.60	6.47	6.47	30.36	1811.84	18845.75	18579.85	9.4 35.8
18.00	1.70	17.00	0.46	30.61	1991.70	39417.30	6.51	6.51	30.47	1825.08	20670.82	18746.48	PEAK
19.00	1.80	18.00	0.39	26.99	1728.00	41145.30	6.49	6.49	30.41	1826.38	22497.21	18648.09	
20.00	1.90	19.00	0.33	23.89	1526.40	42671.70	6.41	6.41	30.22	1818.89	24316.09	18355.61	
21.00	2.00	20.00	0.28	21.31	1356.00	44027.70	6.28	6.28	29.93	1804.56	26120.66	17907.04	
22.00	2.20	22.00	0.21	17.54	2331.00	46358.70	5.95	5.95	29.14	3543.97	29664.63	16694.07	
23.00	2.40	24.00	0.15	14.44	1918.80	48277.50	5.55	5.55	28.14	3436.28	33100.91	15176.59	
24.00	2.60	26.00	0.11	12.37	1608.60	49886.10	5.13	5.13	27.03	3310.09	36411.00	13475.10	
25.00	2.80	28.00	0.08	10.82	1391.40	51277.50	4.70	4.70	25.89	3175.39	39586.39	11691.11	
26.00	3.00	30.00	0.06	9.68	1230.00	52507.50	4.28	4.28	24.71	3036.06	42622.45	9885.05	
27.00	3.20	32.00	0.04	8.91	1115.40	53622.90	3.85	3.85	23.43	2888.33	45510.78	8112.12	
28.00	3.40	34.00	0.03	8.34	1035.00	54657.90	3.38	3.38	21.95	2722.55	48233.33	6424.57	
29.00	3.60	36.00	0.02	7.93	976.20	55634.10	2.85	2.85	20.16	2526.28	50759.60	4874.50	
30.00	3.80	38.00	0.02	7.62	933.00	56567.10	2.27	2.27	18.01	2289.84	53049.44	3517.66	
31.00	4.00	40.00	0.01	7.41	901.80	57468.90	1.70	1.70	15.55	2013.45	55062.89	2406.01	
32.00	4.50	45.00	0.01	7.10	2176.50	59645.40	0.50	0.78	8.44	3599.11	58662.00	983.40	
33.00	5.00	50.00	0.00	6.84	2091.00	61736.40	0.00	1.34	0.00	1266.43	59928.43	1807.97	

WILSON & COMPANY ENGINEERS & ARCHITECTS

FROM: T. BOOTHBY
TO: FILE
DATE: 2-18-88 FILE 87-520A
SUBJECT: DRAINAGE DESIGN

DESIGN BRANCH LINES

CB-2 TO BOX CULVERT A-2 Q_{100} = 48.7

TAILWATER H.G. = 23.33 + 10.34 = 33.67' - TOTAL HEAD

Q_{100} = 12.25 CFS - 9.8 cfs

TRY 18" ϕ RCP K = 105

$S_F = \left(\frac{Q}{K}\right)^2 = 0.013$

$V = \frac{Q}{A} = 6.96$ FPS

$h_V = 0.75'$

CB.1 $h_T = 33.67 + 0.013(400)$
$= 38.87$

HG = 38.57 - 0.75 = 38.12

T/GRATE @ CB.1 DECK = 46.5 - 0.25 = 42.25 > 38.12
OK

TRY 12" RCP K = 35.6
A = 0.785 FT²

$S_F = 0.12$

$h_T = 33.67 + 0.12(400) = 81$ N.G.

USE 18" ϕ RCP

WILSON & COMPANY ENGINEERS & ARCHITECTS

FROM: T. BOOTHBY
TO: FILE
DATE: 2-18-88 FILE 87-520A
SUBJECT:

CB-3 TO MH-1

TAILWATER H.G. (ASSUMED - WORST CASE) = 18.00

Q_{100} = 9.23 CFS ? 16.8 cfs

TRY 12" ϕ RCP

A = 0.785 FT²
K 35.6
V = 11.76 FT/SEC

FRICTION LOSS MH-7 TO MH-1

L = 20'

$S_F = \left(\frac{9.23}{35.6}\right)^2 = 0.0672$

$h_F = 0.0672 \times 20 = 1.34'$

MANHOLE LOSS - MH-7 Δ = 45°
$K_D = 1.5$

$h_M = 1.5 \frac{V^2}{2g} = 3.22'$

FRICTION LOSS CB-3 TO MH-7

L = 115'

$h_F = 0.0672(115) = 7.73'$

CB-3 H.G = 18.0 + 1.34 + 3.22 + 7.73 = 30.29

T/GRATE = 31.0 ≈ 30.29
USE 18" ϕ RCP

FROM: T. BOOTHBY

TO: FILE

WILSON & COMPANY ENGINEERS & ARCHITECTS

DATE: 2-18-88 FILE 87-520A

SUBJECT: DRAINAGE DESIGN

CB-1 TO BOX CULVERT L = 25'

T/GRATE = 40.00

H.G.L. AT TAILWATER = 33.67

Q_{100} = 48.74 CFS

USE 2 DOUBLE C INLETS

COLLECTOR PIPE - ASSUME 1 INLET PLUGGED

TRY 24" ϕ A = 3.14 FT²

K = 726

$S_f = \left(\frac{48.74}{726}\right)^2 = 0.046$

H.G.L. AT INLET ≤ 33.67 + 25(0.0467) = 34.53 < 40 OK

USE 2 DOUBLE C INLETS w/ 24" ϕ COLLECTOR

Where is C.B. # 2, #4 ?

and inlet calculations ?

WILSON & COMPANY ENGINEERS & ARCHITECTS

FROM: T. BOOTHBY
TO: FILE

DATE: 2-18-88 FILE P7-520A
SUBJECT: DRAINAGE DESIGN

CHECK REACH BETWEEN MH 2 + MH 1 FOR UNSEALED FLOW

$Q = 34.56$ CFS
24" d RCP
$S = 5.5\%$

THY $d/D = 0.8$ $\quad A = C.613 D^2$
$r = 0.30 + 2D$

$$K = \frac{1.486(0.673)(2)^2[(0.30+2)(2)]^{2/3}}{0.013} = 221$$

$Q = K\sqrt{S}$
$Q = 221\sqrt{0.055} = 51.83$ CFS > 34.56

THY $d/D = 0.6$ $\quad A = 0.7970\, d^2 = 1.97$ FT^2
$r = 0.2776\, d = 0.555$ FT

$$K = \frac{1.486(1.97)(0.555)^{2/3}}{0.013} = 152.2$$

$Q = 152.2\sqrt{0.055} = 35.6 > 34.56$

$V = \frac{35.6}{1.97} = 18.1$ F/S ✓

WILSON & COMPANY ENGINEERS & ARCHITECTS

FROM: T. BOOTHBY

TO: FILE

DATE: 2-24-88 FILE 87-519J

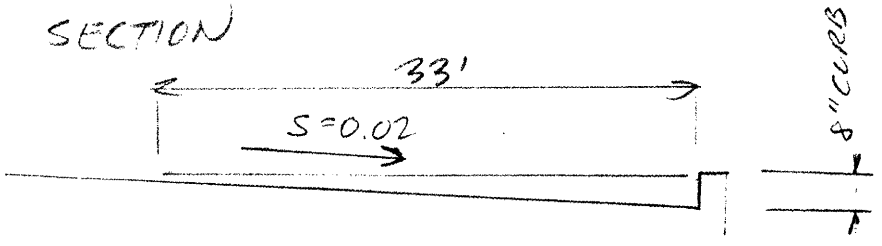
SUBJECT: GLENWOOD - DRAINAGE

CHECK CAPACITY OF CURB @ WEST END

Area = $\frac{1}{2}(560)(460) = 128,800$ SF = 2.96 AC

$Q_{100} = \frac{45.4(2.96)}{10} \times 2.5 = 33.6$ CFS

SECTION



SLOPE = 0.01

$A = 0.5(0.67)(33) = 11.05$ FT²

$r_H = 0.333'$

$Q = A \frac{1.486\, r_H^{2/3} S^{1/2}}{n}$ $n = 0.017$ STREET FLOW

$= 11.05 \frac{(1.486)(0.333)^{2/3}(.01)^{1/2}}{.017} = 46.4$ CFS

> 33.6 OK

FROM: T. BOOTHBY
TO: FILE

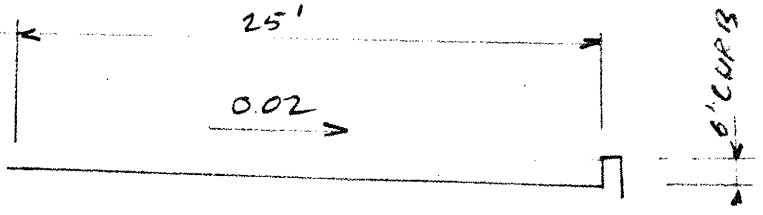
WILSON & COMPANY ENGINEERS & ARCHITECTS

DATE: 2-24-88 FILE 87-519J
SUBJECT:

CHECK CAPACITY OF C&G SECTION - AREA A-3

Q_{100} = 47.8 CFS ×

SECTION



S = .01

CAPACITY $A = \frac{1}{2}(0.5)(25) = 6.25\ ft^2$

W.P. = 25.5'

r_H = 0.25'

$$Q = \frac{A\ 1.486\ r_H^{2/3}\ S^{1/2}}{n}$$

n = 0.017 STREET FLOW

$$= \frac{6.25(1.486)(.25)^{2/3}(.01)^{1/2}}{.017} = 21.7\ CFS \quad N.G.$$

TRY 8' CURB $A = \frac{1}{2}(.667)(33.33) = 11.1\ ft^2$

r_H = 0.333'

Q = 46.64 CFS

N 1,504,750 N 1,504,500 N 1,504,250 N 1,504,000 N 1,503,750 N 1,503,500

E 426,750 E 426,500 E 426,250

EXISTING SINGLE FAMILY RESIDENCE

EXISTING 20' ALLEY

SMITH'S SERVICE EASEMENT

FUTURE PHASE DEVELOPMENT AREA

EXISTING SINGLE FAMILY RESIDENCE

EXISTING 20' ALLEY

MARKET
69,890 SF
(N.I.C.)

SERVICE STATION

THIS AREA N.I.C.
(EXCEPT GRADING)

THIS AREA N.I.C.
(EXCEPT GRADING)

BLDG. "C" RETAIL
10,212 SF (N.I.C.-EXCEPT GRADING)

BLDG. "A" RETAIL (N.I.C.-EXCEPT GRADING)
19,390 S.F.

BLDG. "B" RETAIL
14,184 S.F. (N.I.C.-EXCEPT GRADING)

MONTGOMERY BLVD.
92' R.O.W.

BUS ROUTE #5

TRAMWAY BLVD.
173' R.O.W.

KEYED NOTES

1. Project sign; see Details Sht. 6.
2. Fire Hydrant by others.
3. Six cubic yard refuse bin and pad- N.I.C.
4. Six cubic yard refuse compactor and enclosure; see Details Sht. 5.
5. Six cubic yard refuse compactor, enclosure, and gate; see Details Sht. 5.
6. Refuse Compactor location - N.I.C.
7. Concrete loading, dock and retaining wall - N.I.C.
8. Concrete sidewalk.
9. Bike rack, minimum capacity of seven each.
10. Retaining wall; see Sht. 9 for type and location.
11. Highway barrier.
12. Terraced Retaining Wall, see Sht. 9 for type and locations.
13. Storm drainage structure, see Sht. 9 for type and location.
    Number Not Used.
14. Wall-mounted sign.
15. Electric transformer pad as per PNM requirements.
16. Concrete stairs.
17. Gas meter location - N.I.C.
18. Six-foot wide sidewalk as per infrastructure improvements, C.O.A. Project.
19. Valley gutter as per infrastructure improvements, C.O.A. Project.
20. Handicap ramp as per infrastructure improvements, C.O.A. Project.
21. Curb & Gutter as per infrastructure improvements, C.O.A. Project.
22. Revised Median as per infrastructure improvements, C.O.A. Project.
23. Temporary Asphalt as per infrastructure improvements, C.O.A. Project.
24. Temporary Median as per infrastructure improvements, C.O.A. Project.
25. Existing PNM transmission pole to be removed by PNM.
26. Future pedestrian access to Tramway Bikeway.
27. Existing 6' concrete sidewalk.
28. Line of canopy - N.I.C.
29. Line of roof overhang.
30. Gasoline pump island - N.I.C.
31. Future Bikeway.
32. Future Tramway Blvd.
33. Stop Sign - see Detail Sht. 5.
34. "One-Way" Sign - see Detail Sht. 5.
35. Painted directional arrow - see Detail Sht. 5.
36. New PNM transmission pole by PNM.
37. PNM distribution pole & guywire to be relocated by PNM.
38. New PNM distribution pole & guywire by PNM.
39. New PNM guywire by PNM.
40. Remove existing sign.
41. 90-foot wide PNM easement.
42. 100-foot wide drainage easement.
43. Parking lot area light and pole - see electrical plan.
44. Planting area.
45. 2" asphalt over 6" compacted subgrade.
46. Limit of asphalt.
47. Graded, compacted and oiled earth.
48. 2 hour area separation wall = (N.I.C).
49. 6" reinforced concrete pavement-N.I.C.
50. Handicap access ramp - see Detail Sht. 5.
51. Concrete header curb (typical) - see grading and drainage plan for median curb and gutter location. Sidewalks adjacent to asphalt pavement have turn down edge. See Details Sht. 5.
52. Speed limit sign - see Detail Sht. 5.
53. Existing PNM distribution pole.
54. 4" wide painted stripe, dashed-white
55. Steel bollard - See Detail 14/5.

LEGEND

- Concrete Pavement
- Handicap Parking Stall: 12.0' x 20.0'
- C Compact Parking Stall: 7.5' x 15.0'
- Existing Cedar Fence
- Existing Construction
- Future Construction
- 4" Wide Paint Stripe At 2'-0" O.C. White
- Proposed Manhole
- Property Line

DESIGN DATA

Building Square Footage:	
Market	69,890
Building "A": Retail	19,390
Building "B": Retail	14,184
Building "C": Retail	10,212
Service Station	2,165
	115,841
Parking:	
Required: Retail: 117,571 SF 200 SF per parking stall = 580	
Less 10% for public transportation = 58	
Total Required = 522	
Provided: 564 Total	
Handicap: 16	
Compact: 30 (5%)	
Regular: 518	
Lot Coverage:	
Buildings =	115,841
Paved Surface (Total A.C. & P.C.C) =	373,464
Landscaping =	64,663
Undeveloped Area =	49,438
Total Lot Coverage =	603,406 SF
	13.852 Acres

VICINITY MAP F-23

W-A-C-E

PROJECT SITE

SITE DEVELOPMENT PLAN

SCALE: 1"=50'

RECEIVED
FEB 26 1988
HYDROLOGY SECTION

W-A-C-E

0 50 100 150 200
SCALE IN FEET

REVISION	DATE	BY

WILSON & COMPANY
ENGINEERS & ARCHITECTS
ALBUQUERQUE
NEW MEXICO

GLENWOOD VILLAGE
SHOPPING CENTER - SITE DEVELOPMENT
DEVELOPER: PETERSON & RENEAU
2325 SAN PEDRO NE
ALBUQ. NM 87110 (505) 884-3578

DESIGN	FHM
DRAWN	FHM/JEC
DATE	22 FEB,1988
FILE NO.	87-520A
SHEET NO.	2

WILSON & COMPANY
ENGINEERS & ARCHITECTS

F-23/04

GLENWOOD Village SHOPPING CENTER

5/13/88
R. GREEN
1 of 2

Calculate max. discharge of:

1. Type "D" inlet w/ 1.62' head
2. 6" dia perforated PVC risers w/ open top and 2.0' head.

---

1. Inlet size 2' x 3' (Same as Neenah R-3334-C or 6671-C1)
   opening sq ft² = 3.0 ft²

$$Q = CA\sqrt{2gh}$$
$$= (0.6)(3.0)\sqrt{(2)(32.2)(1.62)}$$
$$= 18.4 \text{ cfs}$$

capacity of Type "D" inlet.

Check inlet control of 18" RCP w/ HW = 4.5'

$\frac{HW}{D} = 3.0 \Rightarrow Q = 16$ cfs

2. Capacity of 6" dia PVC: (S.C.S. EFM pg 8-102, EXHIBIT 8-5)
   Top opening $H = 2.0' \Rightarrow Q = 1.33$ cfs
   @ Bottom of perforated riser $H = 4.0' \Rightarrow Q = 1.88$ cfs

3. TOTAL INLET CAPACITIES = $18.4 + 2(1.88)$
   $= 22.16$ cfs

Capacity of 18" outlet RCP = 16 cfs
∴ Max outflow downstream = 16 cfs.

Drainage Report Required Maximum outflow of 7.84 cfs which required a 10" dia outflow orifice

Glenwood Village
5/13/88
R. Green

Check capacity of 10" outflow orifice.

Inlet control w/ 10" dia RCP = $\frac{Hw}{D} = \frac{4.5}{1.2} = 5.4$

$\Rightarrow Q = 5.4$ cfs (Inlet Control charts, USBPR, 1965)

Try orifice equation

$Q = CA\sqrt{2gh}$

$= (.6)(0.545)\sqrt{(2)(32.2)(4.083)}$

$= 5.3$ cfs ≈ 5.4 ∴ checks

Find orifice size required:

$7.84 = .6(A)\sqrt{(2)(32.2)(4.0)}$ (assume 12" dia)

$A = 0.814$ ft^2 $= \frac{\pi D^2}{4}$

$\Rightarrow D = 1.018$ ft^2

$= 12.2$ in, use 12" orifice

Check orifice equation for 18" dia RCP

$Q = (.6)(1.767)\sqrt{(64.4)(3.75)}$

$= 16.476$ cfs

F-23/04

GLENWOOD Village SHOPPING CENTER

5/13/88
R. GREEN
1 of 2

Calculate max. discharge of:

1. Type "D" inlet w/ 1.62' head
2. 6" dia perforated PVC risers w/ open top and 2.0' head.

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$$= 18.4 \text{ cfs}$$

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Check inlet control of 18" RCP w/ HW = 4.5'

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   Top opening $H = 2.0' \Rightarrow Q = 1.33$ cfs
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Capacity of 18" outlet RCP = 16 cfs
∴ Max outflow downstream = 16 cfs.

Drainage Report Required Maximum outflow of 7.84 cfs which required a 10" dia outflow orifice

Glenwood Village
5/13/88
R. Green

Check capacity of 10" outflow orifice.

Inlet control w/ 10" dia RCP = $\frac{Hw}{D} = \frac{4.5}{1.2} = 5.4$

$\Rightarrow Q = 5.4$ cfs (Inlet Control charts, USBPR, 1965)

Try orifice equation

$Q = CA\sqrt{2gh}$

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Find orifice size required:

$7.84 = .6(A)\sqrt{(2)(32.2)(4.0)}$ (assume 12" dia)

$A = 0.814$ ft^2 $= \frac{\pi D^2}{4}$

$\Rightarrow D = 1.018$ ft^2

$= 12.2$ in, use 12" orifice

Check orifice equation for 18" dia RCP

$Q = (.6)(1.767)\sqrt{(64.4)(3.75)}$

$= 16.476$ cfs

F23/104

8801014
#3521

8844921

RECEIVED
MAY 23 1988
HYDROLOGY SECTION

908

DRAINAGE COVENANT

This Drainage Covenant, between [state the name of the present real property owner exactly as shown on the real estate document conveying title to the present owner and ~~state~~ the legal status of the owner, for example, "single person," "husband and wife," "corporation of the State of X," "partnership":] Peterson & Reneau, A New Mexico General Partnership ("Owner"), whose address is 2325 San Pedro NE, Suite 2-A, Albuquerque, NM 87110, and the City of Albuquerque, a New Mexico municipal corporation ("City"), whose address is P. O. Box 1293, Albuquerque, New Mexico 87103, is made in Albuquerque, Bernalillo County, New Mexico and is entered into as of the date Owner signs this Easement.

1. Recital. Owner is the owner of certain real property located at [give general description, for instance, subdivision, lot and block or street address:] Lots 1-4, Block 3, Glenwood Hills Addition Unit 1 in Bernalillo County, New Mexico (the "Property").

Pursuant to City ordinances, regulations and other applicable laws, the Owner is required to construct and maintain certain drainage facilities on the Property, and the parties wish to enter into this agreement to establish the obligations and responsibilities of the parties.

2. Description and Construction of Drainage Facilities. Owner shall construct the following "Drainage Facility" within the Property at Owner's sole expense in accordance with the standards, plans and specifications approved by the City: Detention Pond located in the N.W. corner of Tract "F" as shown on the attached Exhibit "A".

The Drainage Facility is more particularly described in the attached Exhibit A. The Owner will not permit the Drainage Facility to constitute a hazard to the health or safety of the general public.

3. Maintenance of Drainage Facility. The Owner will maintain the Drainage Facility at Owner's cost in accordance with the approved Drainage Report and plans.

4. City's Right of Entry. The City has the right to enter upon the Property at any time and perform whatever inspection of the Drainage Facility it deems appropriate, without liability to the Owner.

5. Demand for Construction or Repair. The City may send written notice ("Notice") to the Owner requiring the Owner to construct or repair the Drainage Facility within 30 days ("Deadline") of receipt of the Notice, as provided in Section 12, and the Owner will comply promptly with the requirements of

(Approved by Legal Dept. as to form only-5/28/86)

the Notice. The Owner will perform all required work by the Deadline, at Owner's sole expense.

6. Failure to Perform by Owner and Emergency Work by City. If the Owner fails to comply with the terms of the Notice by the Deadline, or if the City determines that an emergency condition exists, the City may perform the work itself. The City then may assess the Owner for the cost of the work and for any other expenses or damages which result from Owner's failure to perform. The Owner agrees promptly to pay the City the amount assessed. If the Owner fails to pay the City within thirty (30) days after the City gives the Owner written notice of the amount due, the City may impose a lien against Owner's Property for the total resulting amount.

7. Liability of City for Repair after Notice or as a Result of Emergency. The City shall not liable to the Owner for any damages resulting from the City's repair or maintenance following notice to the Owner as required in this agreement or in an emergency unless the damages are the result of the reckless conduct or gross negligence of the City.

8. Indemnification. As a part of the consideration for this grant, subject to the provisions of the New Mexico Tort Claims Act and all other applicable New Mexico laws, the City agrees to save Owner harmless from any and all liability arising from the City's negligent use of the Drainage Facility. The City does not agree to save Owner harmless from any liability which may arise from Owner's use of the Drainage Facility and the Property.

9. Cancellation of Agreement and Release of Covenant. This agreement may be cancelled and Owner's covenants released by the City following by the City's mailing to the Owner notice of the City's intention to record a Cancellation and Release with the Bernalillo County Clerk. The Cancellation and Release will be effective thirty (30) days after the date of mailing the notice to the User unless a later date is stated in the notice or in the Cancellation and Release. After the effective date, the City will record the Cancellation and Release with the Bernalillo County Clerk.

10. Assessment. Nothing in this agreement shall be construed to relieve the Owner, his heirs, assigns and successors from an assessment against Owner's Property for improvements to the Property under a duly authorized and approved Special Assessment District. The parties specifically agree that the value of the (Drainage Facility) will not reduce the amount assessed by the City.

(Approved by Legal Dept.
as to form only-5/28/86)

11. Notice. For purposes of giving formal written notice to the Owner, Owner's address is:

Peterson & Reneau
2325 San Pedro NE, Suite 2-A
Albuquerque, NM 87110

Notice may be given to the Owner either in person or by mailing the notice by regular U.S. mail, postage paid. Notice will be considered to have been received by the Owner within 6 days after the notice is mailed if there is no actual evidence of receipt. The Owner may change Owner's address by giving written notice of the change by certified mail, return receipt requested, to the City Public Works Department, P.O. Box 1293, Albuquerque, New Mexico 87103.

12. Term. This agreement shall continue until terminated by the City pursuant to Section 7 above.

13. Binding on Owner's Property. The covenants and obligations of the Owner set forth herein shall be binding on Owner, his heirs, assigns and successors and on Owner's Property and constitute covenants running the Owner's Property until released by the City.

14. Entire Agreement. This agreement contains the entire agreement of the parties and supersedes any and all other agreements or understandings, oral or written, whether previous to the execution hereof or contemporaneous herewith.

15. Changes to Agreement. Changes to this agreement are not binding unless made in writing, signed by both parties.

16. Construction and Severability. If any part of this agreement is held to be invalid or unenforceable, the remainder of the agreement will remain valid and enforceable if the remainder is reasonably capable of completion.

17. Captions. The captions to the sections or paragraphs of this agreement are not part of this agreement and will not affect the meaning or construction of any of its provisions.

18. Form Not Changed. Owner agrees that changes to the wording of this form are not binding upon the City unless initialed by the Owner and approved and signed by the City Legal Department in writing on this form.

OWNER: Peterson & Reneau
A New Mexico General Partnership

By: _____
Its: Managing General Partner
Dated: 5-5-88

STATE OF NEW MEXICO
COUNTY OF BERNALILLO
FILED FOR RECORD

88 MAY 19 PM 1:25

MS 6224 PG 908-912
GLADYS M. DAVIS
CO. CLERK & RECORDER
_____ DEPUTY

(Approved by Legal Dept.
as to form only-5/28/86)

STATE OF New Mexico)
) ss
COUNTY OF Bernalillo)

911

5th. The foregoing instrument was acknowledged before me this day of May, 1988, by [name of person signing:] Peterson, James A., [title or capacity for instance, "President" or "Owner":] Managing General Partner of [name of the entity which owns the Property if other than the individual signing, for instance, the name of the corporation, partnership, or joint venture:] Peterson & Reneau.

Deborah A. Herrera
Notary Public

OFFICIAL SEAL
DEBORAH A. HERRERA
NOTARY PUBLIC - STATE OF NEW MEXICO
Notary Bond Filed with Secretary of State
My Commission Expires: 5-12-92

My Commission Expires:
5-12-92

CITY OF ALBUQUERQUE:

Approved:

By: Fred J. Cogswell for the City Engineer
Title: City Hydrologist
Dated: 5/12/88

RAH 5/12/88

(EXHIBIT A ATTACHED)

(Approved by Legal Dept.
as to form only-5/28/86)

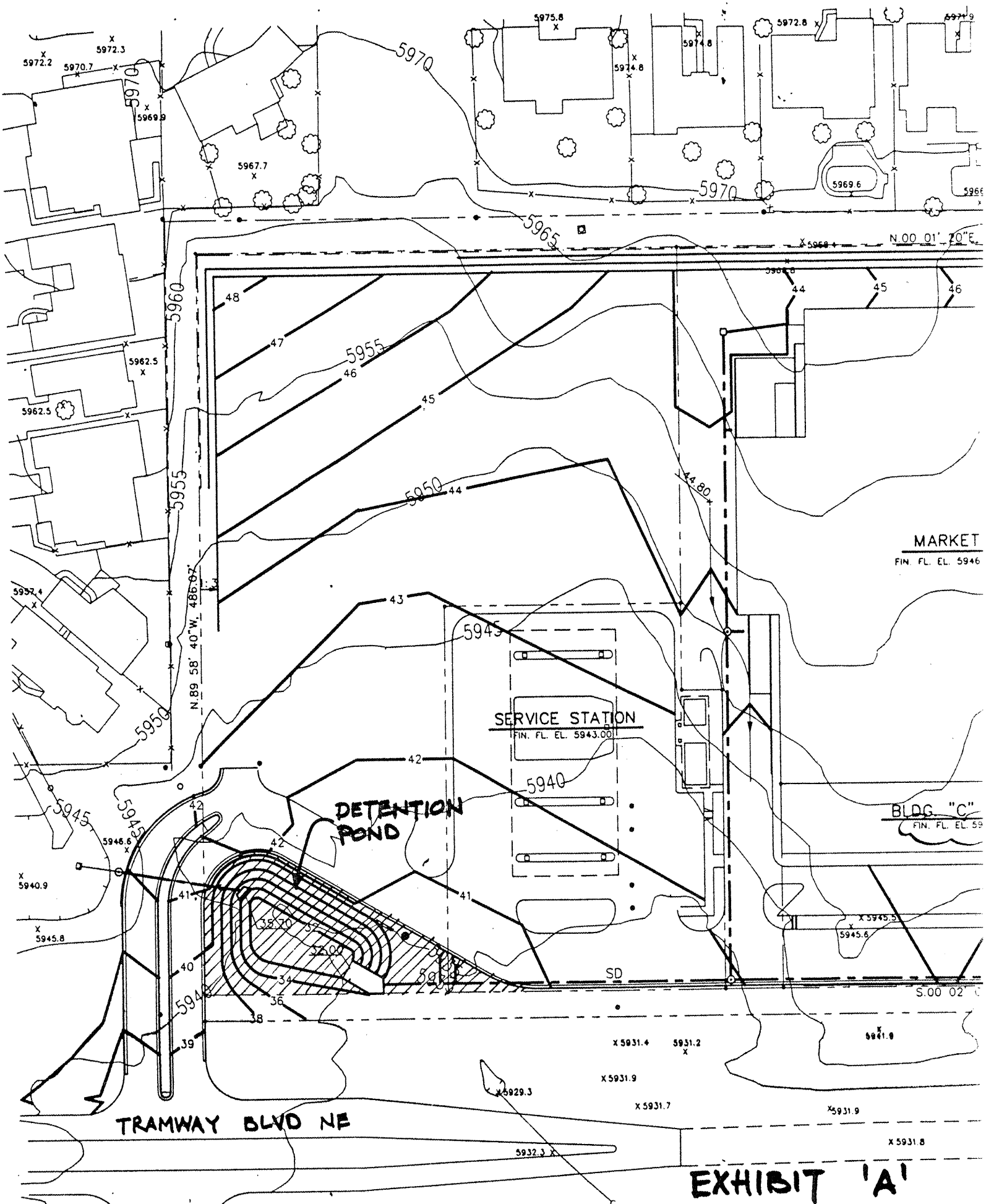

MARKET
FIN. FL. EL. 5946
SERVICE STATION
FIN. FL. EL. 5943.00
BLDG. "C"
DETENTION POND
TRAMWAY BLVD NE
N.89 58' 40"W. 486.07'
N.00 01' 20"E.
S.00 02'
SD
5970
5965
5960
5955
5950
5945
5940
5975.8
5972.8
5974.8
5972.3
5972.2
5970.7
5969.9
5967.7
5969.6
5962.5
5962.4
5940.9
5945.8
5946.6
5945.5
5945.6
5931.4
5931.2
5931.9
5929.3
5931.7
5931.8
5932.3
44.80

EXHIBIT 'A'

WILSON & COMPANY ENGINEERS & ARCHITECTS

FROM: T. BOOTHBY

TO: FILE

DATE: 3-29-88 FILE 87-520A

SUBJECT: SUPPLEMENTAL DRAINAGE CALCS.

INLET CAPACITIES

CB-2 TYPE 'D' INLET IN SUMP

USE WEIR EQUATION

$Q = CL H^{3/2}$ USE $C = 3$

FOR SINGLE D $L = 2(3.25) + 2(2.125) = 10.75'$

USE $L = 10.75/1.5 = 7.17'$

$$H = \left(\frac{Q}{CL}\right)^{2/3}$$

$$= \left[\frac{9.8}{(3)(7.17)}\right]^{2/3} = 0.59' > 0.5'$$ BASIN DEPTH

USE DOUBLE 'D' INLET

CB-1 - CURB INLET - USE ORIFICE EQUATION $h = 0.67$

$Q = CA\sqrt{2gh}$

FOR 2 DOUBLE 'C' $L = 13'-0"$ $L = 3.25 \times 4 = 13.00$

$A = 13 \times 0.50 = 6.5$

$C = 0.6$

$Q = 0.6(6.5)\sqrt{(2)(32.2)(0.67)} = 25.6$ CFS < 48.7

USE 4 - DOUBLE 'C' INLETS

CB-3 CURB INLET - USE ORIFICE EQUATION

TRY 1 DOUBLE 'C' AND 1 SINGLE C $L = 9.5'$

$A = 9.5 \times 0.5 = 4.75\ FT^2$ $3.25 \times 3 = 9.75$

$C = 0.6$

$Q = 0.6(4.75)\sqrt{2(32.2)(0.67)} = 18.72 > 16.8$

OR USE DOUBLE 'A' INLET

FROM: T. BOOTHBY

TO: FILE

WILSON & COMPANY ENGINEERS & ARCHITECTS

DATE: 3-29-88 FILE 87-520A

SUBJECT: SUPPLEMENTAL DRAINAGE CALCS.

CB-2

H.G.L. AT M.H. 6 $S_F = \left(\frac{Q}{K}\right)^2 = \left(\frac{9.8}{105}\right)^2 = 0.0087$

H.G. = 33.67 + 220(0.0087) = 35.58

(T/GRATE) (FREEBOARD)

H = 42.5 - 0.5' - 35.58 = 6.42'

L = 190'

D = 18"

Q = 9.8 CFS

USE 18" ϕ

CB-1

H.G.L. = 33.67

H = 40.00 - 0.5 - 33.67 = 5.83

L = 25'

Q = ½ (48.7) = 24.35

USE 24" ϕ

CB-3 Q = 16.8

H.G.L. @ M.H. 7 = $18.00 + \left(\frac{16.8}{105}\right)^2 (12) = 18.30$

H = 31 - 0.5 - 18.3 = 12.2'

L = 113'

USE 18" ϕ

FROM: T. BOOTHBY

TO: FILE

WILSON & COMPANY ENGINEERS & ARCHITECTS

DATE: 3-29-88 FILE 87-520A

SUBJECT:

CB - 4

DRAINAGE AREA - A 0.45 ACRE PORTION OF A-3

$R = 2.8"$

$Q_{100} = \frac{45.4(.45)}{10} \times 2.8 = 5.7$ CFS

$L = 25'$

$H = 34.6 - 0.5 - 33.67 = 0.43'$

USE 18" ϕ CONNECTOR

CB-1

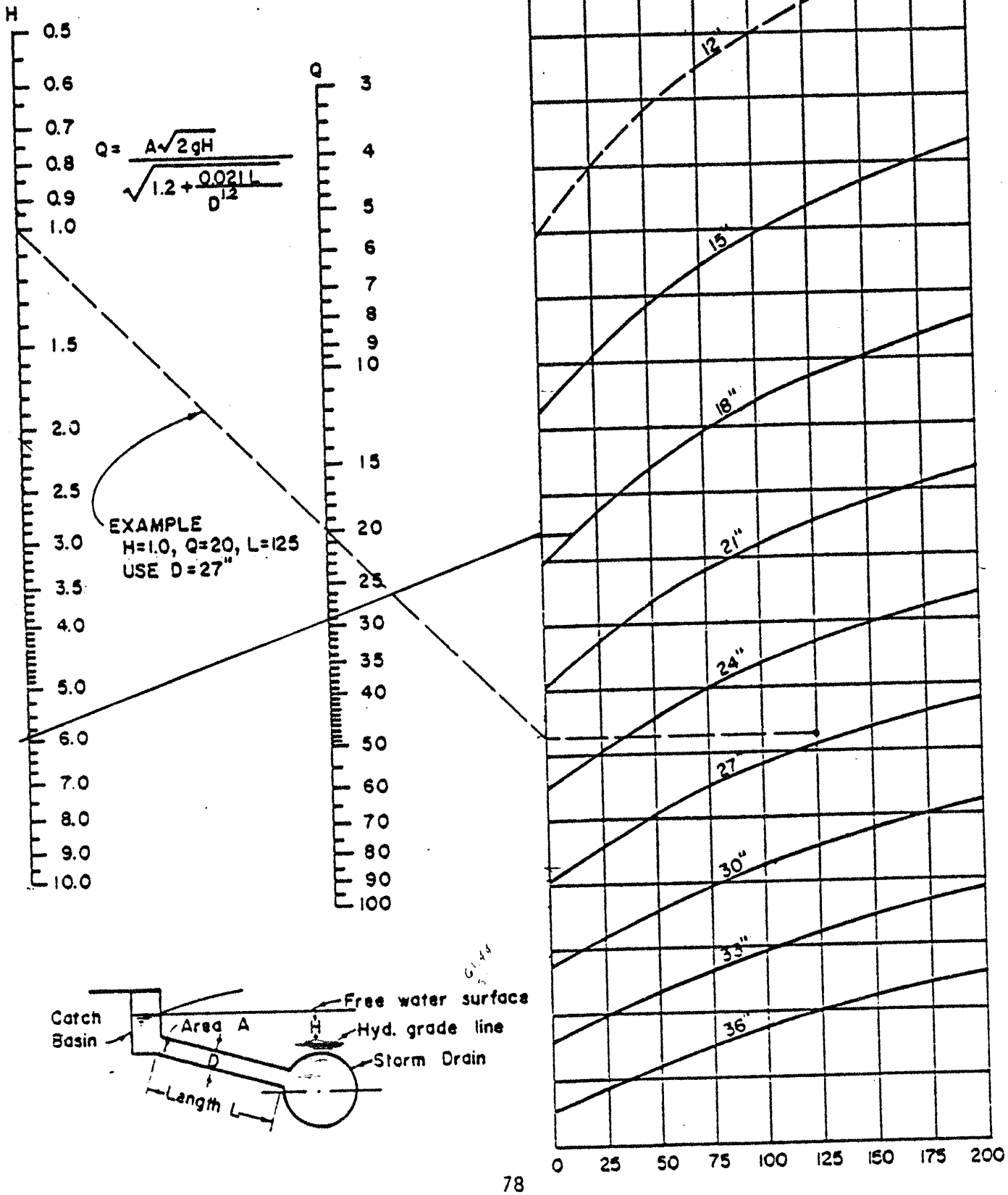
22.3

DESIGN OF SPUN CONCRETE CONNECTOR PIPES FLOWING FULL

Page G-35

$$Q = \frac{A\sqrt{2gH}}{\sqrt{1.2 + \frac{0.0211L}{D^{1.2}}}}$$

EXAMPLE
H=1.0, Q=20, L=125
USE D=27"



CB-2

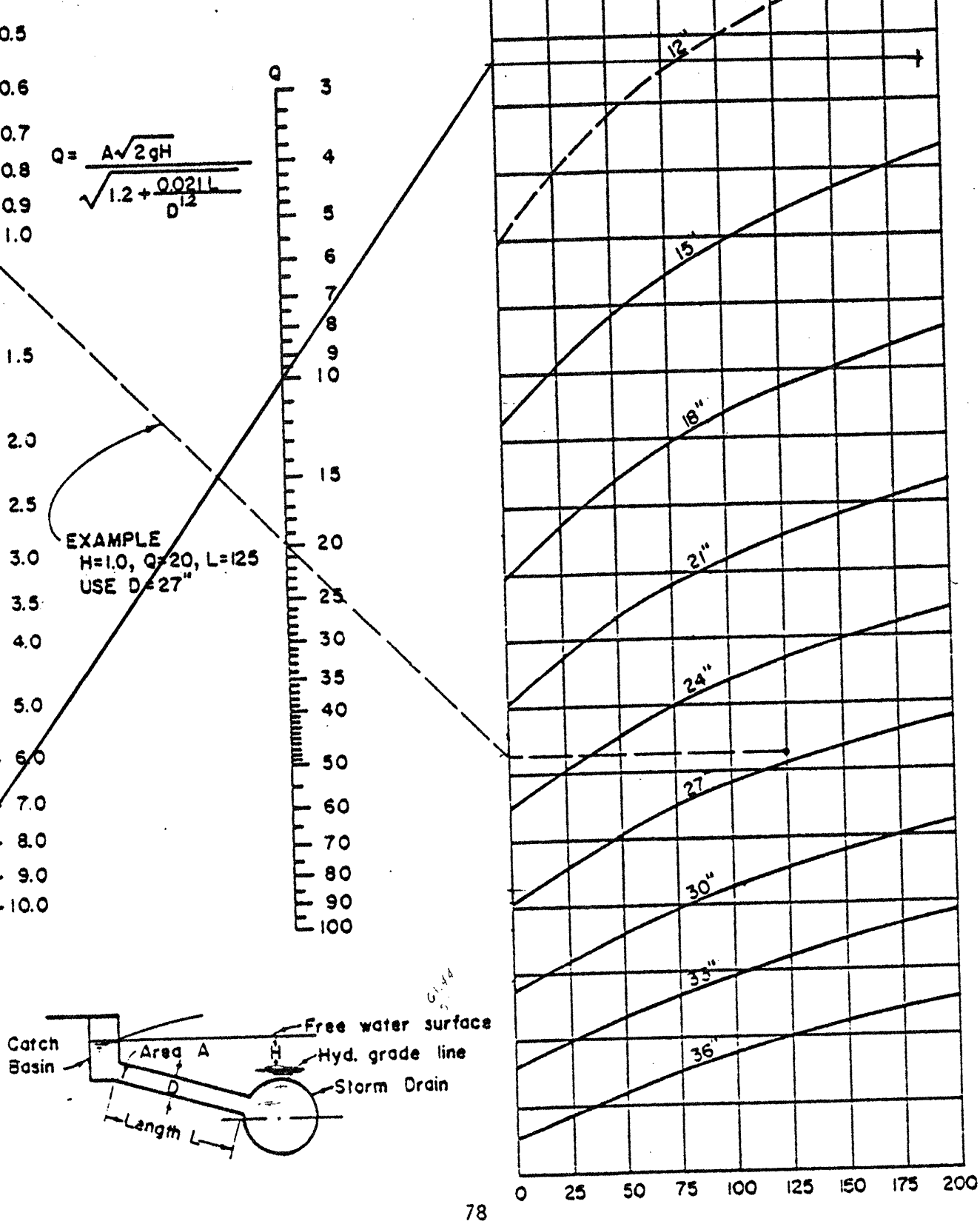
22.3

DESIGN OF SPUN CONCRETE CONNECTOR PIPES FLOWING FULL

Page G-35

$$Q = \frac{A\sqrt{2gH}}{\sqrt{1.2 + \frac{0.021L}{D^{12}}}}$$

EXAMPLE
H=1.0, Q=20, L=125
USE D=27"



CB-3

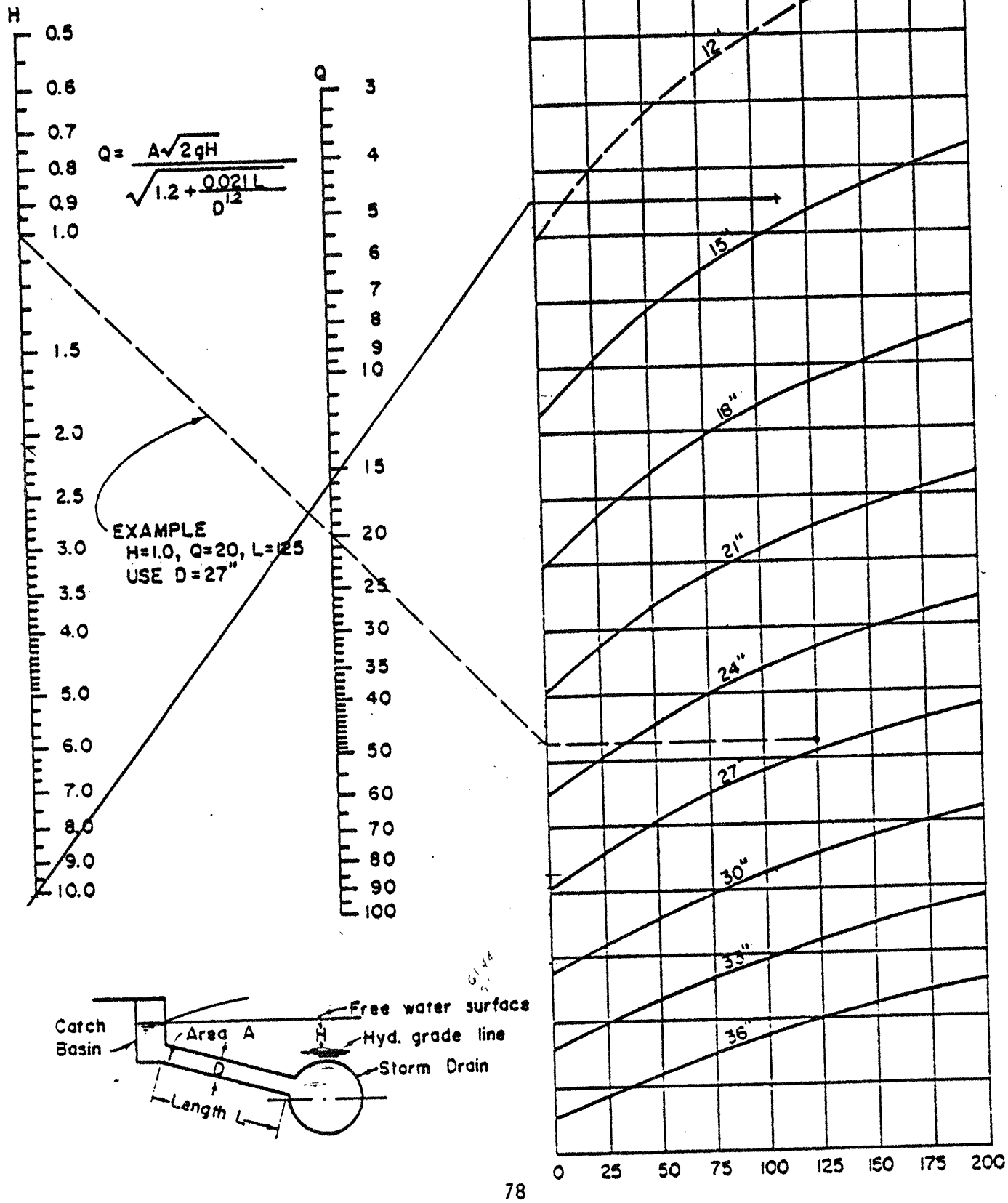
22.3

DESIGN OF SPUN CONCRETE CONNECTOR PIPES FLOWING FULL

Page G-35

$$Q = \frac{A\sqrt{2gH}}{\sqrt{1.2 + \frac{0.021L}{D^{1.2}}}}$$

EXAMPLE
H=1.0, Q=20, L=125
USE D=27"

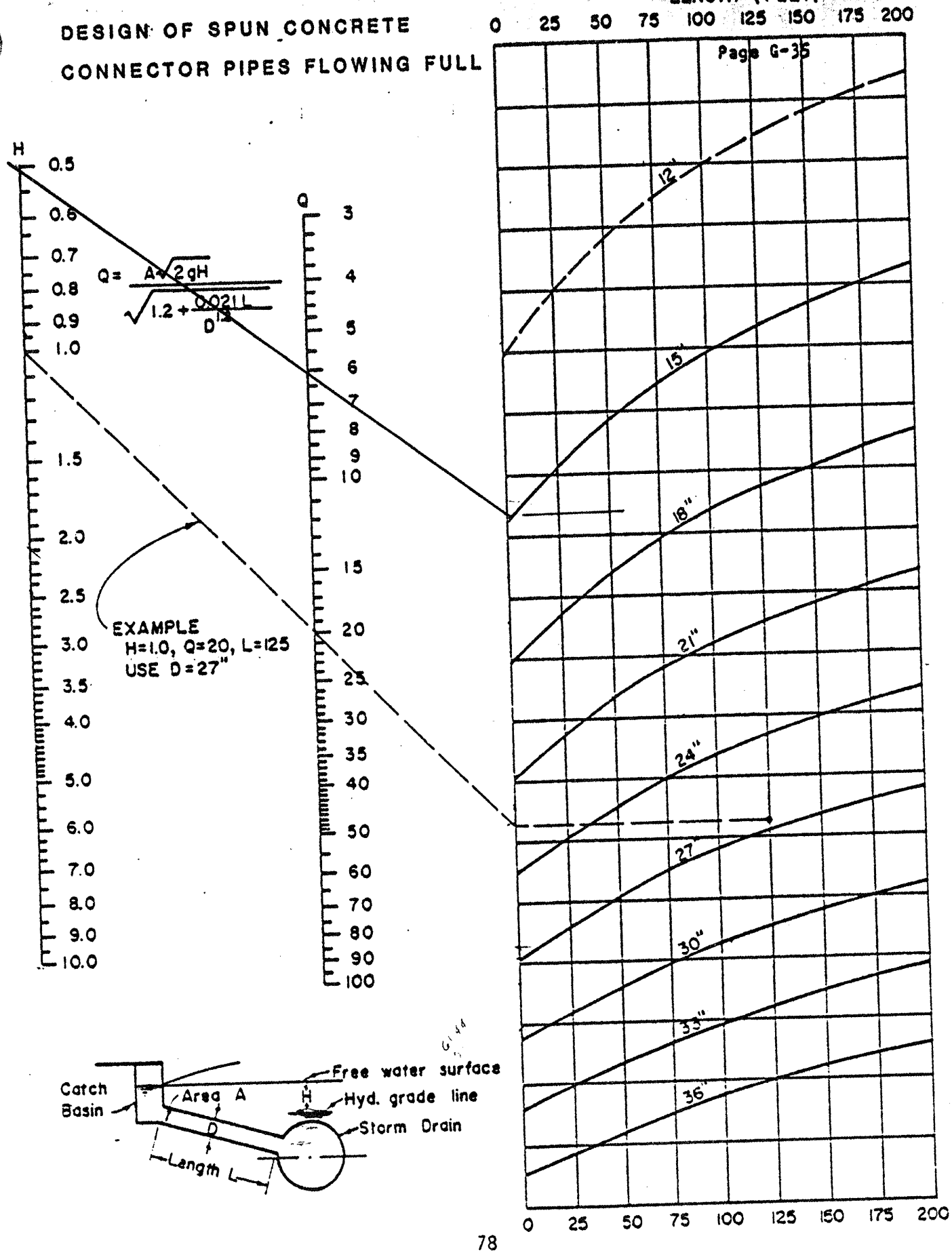


CB-4

22.3

DESIGN OF SPUN CONCRETE CONNECTOR PIPES FLOWING FULL

Page G-35



City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

F23/D4

RECEIVED
APR 26 1990
HYDROLOGY DIVISION

April 24, 1990

CERTIFICATE OF COMPLETION AND ACCEPTANCE

Mr. Dick Peterson
Peterson & Reneau
2325 San Pedro Dr. N.E.
Albuquerque, NM 87110

RE: PROJECT NO. 3521, GLENWOOD VILLAGE SHOPPING CENTER, (MAP NO. F-23)

Dear Mr. Peterson:

This is to certify that the City of Albuquerque accepts Project No. 3521 as being completed according to approved plans and construction specifications. The City of Albuquerque will accept for continuous maintenance all public infrastructure improvements constructed as part of Project No. 3521.

The project is described as follows:

- Contractor built 930 LF of 6' X 8' reinforced concrete box culvert. Also installed 214 LF of 24" RCP, 97 LF of 18" RCP and 6 LF of 30" RCP storm drain pipe. Work was done along the westside of Glenwood Village Shopping Center along Tramway Blvd.

- The contractor's correction period begins the date of this letter and will be effective for a period of one (1) year.

Sincerely,

Brian L. Speicher, P.E.
Chief Construction Engineer
Design/Construction Division
Engineering Group
Public Works Department

BLS:kt

F-23 / D4

February 2, 1990

Wilson & Company
P. O. Box 3548
Albuquerque, NM 87190

ATTENTION: HOWARD KAPLAN

RE: GLENWOOD VILLAGE
STORM DRAIN
CITY OF ALBUQUERQUE PROJECT #3521

Dear Howard,

The final inspection punch list dated January 10, 1990 is complete. Item ten (10) was the approval of Smith's roof drain as installed. This item per Tom Boothby was to be included on the as-built set of drawings. Tom indicated he had cleared this with Rodger Green. As we discussed, you did contact Tom to verify that this was the case.

If you have any questions or if I may further assist in any way, please do not hesitate to contact me.

Respectfully,

Edward D. Sims, Jr.
Vice President/Project Management

EDS/cmr

pc: Dick Peterson/Peterson Properties
Philip Fischer/City of Albuquerque
Brian Speicher/City of Albuquerque
Don Hogan/City of Albuquerque
Kevin Murphy/City of Albuquerque
C. John Baca/City of Albuquerque
Eddie Roybal/City of Albuquerque
File (2)

F23/04

City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

KEN SCHULTZ
MAYOR

June 22, 1989

CERTIFICATE OF COMPLETION AND ACCEPTANCE

Mr. Gene Reneau
Peterson and Reneau
2325 San Pedro N.E.
Suite 2A
Albuquerque, NM 87110

RE: PROJECT NO. 3500, GLENWOOD VILLAGE - STREET IMPROVEMENT, (MAP NO. F-23)

Dear Mr. Reneau:

This is to certify that the City of Albuquerque accepts Project No. 3500 as being completed according to approved plans and construction specifications. If all required right-of-ways and/or easements have been dedicated, the City of Albuquerque will accept for continuous maintenance all public infrastructure improvements constructed as part of Project No. 3500. If the required right-of-ways and/or easements have not been dedicated, the City of Albuquerque cannot accept the project for continuous maintenance and said maintenance will be the responsibility of the developer. When a final plat has been filed it will be the developer's responsibility to provide the Construction Management Division with a copy, at which time the City will fully accept Project No. 3500.

The project is described as follows:

- Built additional lane in Montgomery east of Tramway and relocated five (5) catch basins in the west bound lane. Built a new median and entrance on Tramway, north of Montgomery Blvd., for Glenwood Hills Shopping Center. Also installed conduit for resignalization.

- The contractor's warranty begins the date of this letter and will be effective for a period of one (1) year.

Sincerely,

Russell B. Givler, P.E.
Chief Construction Engineer
Construction Mgmt. Division
Engineering Group
Public Works Department

RBG:kt

xc: Wilson & Associates
Universal Constructors
Fred Aguirre, Engineering Group, PWD
Phil Fischer, Engineering Group, PWD
Ray Pang, Engineering Group, PWD
Terri Martin, Engineering Group, PWD
Jeanette Barrett, Special Assessments
Jim Olsen, Operations Group, PWD
A.N. Guame, Operations Group, PWD
Jim Fink, Operations Group, PWD
Ray Chavez, Operations Group, PWD
Jon Ertsgaard, Engineering Group, PWD
Dave Parks, Engineering Group, PWD
Tom Kennerly, Operations Group, PWD
Josie Gutierrez, New Meter Sales, Finance Group, PWD
Claudia Gallegos, Standby Clerk, Finance Group, PWD
Della Gallegos, Engineering Group, PWD
Connie Lujan, Engineering Group, PWD
Fred Gomez, Engineering Group, PWD
Judy Aguilar, Engineering Group, PWD
f/Project 3500
f/Warranty
f/Readers

(INP 137467)

FILE COPY

City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

KEN SCHULTZ
MAYOR

May 31, 1989

Thomas Boothby, P.E.
Wilson & Company
Post Office Box 3548
Albuquerque, NM 87190

RE: ENGINEER'S CERTIFICATION FOR GLENWOOD VILLAGE
(F-23/D4) ENGINEER'S STATEMENT DATED MAY 22, 1989

Dear Mr. Boothby,

Based on the information provided on your submittal of May 22, 1989, Certification is acceptable. Please be advised that the Certificate of Occupancy will not be released until a copy of the Letter of Acceptance for all work order work involved is received by our office.

If I can be of further assistance, please call me at 768-2650.

Cordially,

Bernie J. Montoya

Bernie J. Montoya, C.E.
Engineering Assistant

BJM/bsj
(WP+326)

DRAINAGE INFORMATION SHEET

PROJECT TITLE: Glenwood Village ZONE ATLAS/DRNG. FILE #: F-23/D4

LEGAL DESCRIPTION: Block 3, Glenwood Hills Unit No. 1

CITY ADDRESS: 4700 - 4720 Tramway, NE

ENGINEERING FIRM: Wilson & Company CONTACT: Tom Boothby

ADDRESS: P.O. Box 3548 Alb., NM 87190 PHONE: 345-5345

OWNER: Peterson & Reneau CONTACT: Dick Peterson

ADDRESS: 2325 San Pedro, NE Alb, NM 87110 PHONE: 884-3578

ARCHITECT: Wilson & Company CONTACT: Tom Boothby

ADDRESS: PHONE

SURVEYOR: Wilson & Company CONTACT: Bill Brewster

ADDRESS: PHONE:

CONTRACTOR: Jaynes Corporation CONTACT: Ed Sims

ADDRESS: P.O. Box 26841, Alb., NM 87125 PHONE: 345-8591

PRE-DESIGN MEETING

X YES

____ NO

____ COPY OF CONFERENCE RECAP SHEET PROVIDED

RECEIVED
MAY 2 2 1989
HYDROLOGY SECTION

DRB NO. 88-18

EPC NO. Z87-31-1

PROJECT NO. 3500, 3501, 3521

TYPE OF SUBMITTAL:

____ DRAINAGE REPORT

____ DRAINAGE PLAN

____ CONCEPTUAL GRADING AND 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: 22 May 1989

BY: Tom Boothby

City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

KEN SCHULTZ
MAYOR

April 14, 1989

CERTIFICATE OF COMPLETION AND ACCEPTANCE

Mr. Howard Kaplan
Peterson & Reneau
2325 San Pedro N.E.
Suite 2A
Albuquerque, NM 87110

RE: PROJECT NO. 3501, GLENWOOD VILLAGE SHOPPING CENTER, (MAP NO. F-23/D4

Dear Mr. Kaplan:

This is to certify that the City of Albuquerque accepts Project No. 3501 as being completed according to approved plans and construction specifications. If all required right-of-ways and/or easements have been dedicated, the City of Albuquerque will accept for continuous maintenance all public infrastructure improvements constructed as part of Project No. 3501. If the required right-of-ways and/or easements have not been dedicated, the City of Albuquerque cannot accept the project for continuous maintenance and said maintenance will be the responsibility of the developer.

The project is described as follows:

- Constructed 2,198 LF of eight inch (8") diameter waterline and installed eight (8) fire hydrants in Glenwood Village Shopping Center.

- The contractor's warranty begins the date of this letter and will be effective for a period of one (1) year.

Sincerely,

Russell B. Givler, P.E.
Chief Construction Engineer
Construction Mgmt. Division
Engineering Group
Public Works Department

RBG:kt

xc: Wilson & Company
NMC Construction Company, Inc.
Fred Aguirre, Engineering Group, PWD
Phil Fischer, Engineering Group, PWD
Ray Pang, Engineering Group, PWD
Terri Martin, Engineering Group, PWD
Jeanette Barrett, Special Assessments
Jim Olsen, Operations Group, PWD
Sam Cummins, Operations Group, PWD
Jim Fink, Operations Group, PWD
Ray Chavez, Operations Group, PWD
Jon Ertsgaard, Engineering Group, PWD
Dave Parks, Engineering Group, PWD
Tom Kennerly, Operations Group, PWD
Josie Gutierrez, New Meter Sales, Finance Group, PWD
Claudia Gallegos, Standby Clerk, Finance Group, PWD
Della Gallegos, Engineering Group, PWD
Fred Gomez, Engineering Group, PWD
Judy Aguilar, Engineering Group, PWD
f/Project 3501
f/Warranty
f/Readers

(INP 137419)

WILSON
&COMPANY
6611 Gulton Court, N.E.
Albuquerque, New Mexico 87109
P.O. Box 3548 87190
505-345-5345

Albuquerque
Colorado Springs
Kansas City
Phoenix
Salina, Kansas
Wichita

1 December 1988

Mr. Roger Green, P.E.
City of Albuquerque
Hydrology Section
P.O. Box 1293
Albuquerque, New Mexico 87103

Re: Glenwood Village Storm Drainage Improvements
City of Albuquerque Project No. 3521
Hydrology Section File F23/04 F-23/D4
WCEA File No.: 87-520A/Construction

Dear Mr. Green:

The contractor for the above referenced project proposes to use a 6" river-worn cobble material in place of the Type VL rip-rap shown on the plans for the detention pond invert. This change was requested because the pond is in a landscaped area and the appearance of the cobbles will be better. The pond invert is 16 feet wide and is downstream of an 18" pipe with a 12" orifice plate and a 6 foot long by 16 foot wide concrete apron at the point of discharge. In view of the low velocity of flows anticipated in the pond invert, this change will have no effect on the serviceability of the proposed drainage improvements.

Please call me if you have any questions.

WILSON & COMPANY

Tom E. Boothby, P.E.

TEB/lla

cc: Ed Sims, Jaynes Corporation
Phil Fisher, City of Albuquerque
Eddie Roybal, City of Albuquerque

Concurred:

Roger A. Green, PE
12/9/88

KEN SCHULTZ
MAYOR

City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

October 12, 1988

Thomas Boothby, P.E.
Wilson & Company
Post Office Box 3548
Albuquerque, NM 87190

RE: GRADING AND DRAINAGE PLAN SUBMITTAL OF GLENWOOD VILLAGE SHOPPING CENTER, RECEIVED OCTOBER 5, 1988, FOR PAVING PERMIT APPROVAL. (F-23/D4)

Dear Mr. Boothby,

The above referenced submittal, dated 10-4-88, is approved for Paving Permit. The contractor can proceed with the parking lot paving in accordance with these approved Plans. It is expected that construction sequence will be coordinated with the current storm drain construction and other site work to insure that all erosion and storm runoff is controlled on site.

If you have any further questions call me at 768-2650.

Cordially,

Roger A. Green, P.E.
C.E./ Hydrology Section

RAG/(WP+326)

PNM PUBLIC SERVICE COMPANY OF NEW MEXICO
ALVARADO SQUARE ALBUQUERQUE, NEW MEXICO 87158

DRB-88-0018

May 26, 1988

Mr. Howard Kaplan
Wilson and Company
Post Office Box 3548
Albuquerque, NM 87106

Dear Mr. Kaplan:

Subject: Water and Drainage Easement
in RE/ER Right of Way

Public Service Company of New Mexico (PNM) agrees to the location of the water line and storm drain easements within the PNM transmission line right of way at the northeast corner of Tramway and Montgomery. Exhibit 'A' is attached to show the specifics of the encroachment to which PNM agrees. It is understood that the City of Albuquerque will enter into an Encroachment Agreement with PNM for the facilities located within the easement. I will prepare the encroachment agreement and send it to you by Tuesday, May 31, 1988.

Sincerely,

Doug

Doug Hendren
Property Administrator

DH:blt
Attachments

City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

MAYOR KEN SCHULTZ

CHIEF ADMINISTRATIVE OFFICER GENE ROMO

DEPUTY CAO PUBLIC SERVICES FRANK MARTINEZ

DEPUTY CAO PLANNING/DEVELOPMENT BILL MUELLER

June 13, 1988

Thomas E. Boothby
Wilson & Company
Post Office Box 3548
Albuquerque, New Mexico 87190

RE: GLENWOOD VILLAGE/SMITH'S FOOD KING BUILDING PERMIT RELEASE (F-23/D4, F-23/D4A)

Dear Mr. Boothby

In response to your memos dated June 7, 1988, the building permit for Smith's Food King can be signed-off by the Hydrology Section. The Grading and Drainage Plan dated April 11, 1988 must be included with the construction sets routed for sign-off.

Subsequent Building Permit requests for other buildings within the Glenwood Village project will require submittal of separate detailed, Grading Plans for the building and immediately adjacent area.

If you have any questions, call me at 768-2650.

Cordially,

Roger A. Green, PE

Roger A. Green, P.E.
C.E./Hydrology Section

RAG/bsj

xc: Rick Duran, Drainage Inspector
Dick Peterson, Peterson & Reneau

Wpr 326

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

7 June 1988

Roger Green, P.E.
City of Albuquerque
Hydrology Section
P.O. Box 1293
Albuquerque, NM 87103

Re: Drainage Plan Submittal of Glenwood Village (F-23/D4)
WCEA File: 87-520A

Dear Mr. Green:

Your letter of 25 April 1988 required DRC approval of the storm drainage improvements prior to approval of the drainage plan and release of building permits. Submittal of an Erosion Control Plan and a Drainage Covenant for maintenance of the on-site detention pond was also required. As of last week, all of these conditions have been met. Please let me know if your office has any additional requirements prior to issuance of building permits.

WILSON & COMPANY

Thomas E. Boothby

TEB/db

No more requirements other than that separate Grading Plans be submitted for each Building Permit.

Approved Master Plan dated 4/11/88

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

5 April 1988

Mr. Roger Green
Hydrology Section
City of Albuquerque
P.O. Box 1293
Albuquerque, NM 87103

Re: Glenwood Village Drainage Report (F-23/D4)
WCEA File: 87-520A

Dear Roger:

I have received your comments dated 23 March 1988 on this referenced submittal. The following items address each of your comments:

1. The calculations on Page 16 are incorrectly identified as CB-1. The calculations refer to CB-2 which drains Areas A-1 and O-3 which have a combined Q_{100} of 9.8 cfs. The calculations on Page 17 refer to CB-3 which drains Area A-4 with a Q_{100} of 16.8 cfs. The calculations on Page 18 refer to CB-1 which drains Areas A-2, O-1 and O-2 with a Q_{100} of 48.7 cfs. Revised calculations including inlet capacity calculations are attached to this letter. Note that CB-1 has been revised to four from two double "C" inlets.

2. The bottom of wall elevations on Sheet 9 refer to the finish grade. this is noted in the legend on Sheet 9.

3. A revised Sheet 7 is enclosed showing proposed drainage easements.

4. The bottom of wall elevations on Sheet 9 refer to the bottom of wall in the current configuration of Tramway Boulevard. When Tramway is widened and a sidewalk/bike path is constructed, the entire right-of-way will be regraded. We have met with Steve Fritz at Holmes and Narver to coordinate the box culvert with the proposed Tramway grades and cross-sections. A copy of the basic cross-section agreed upon in enclosed. The Owner is committed to landscaping the right-of-way at the time that the Tramway widening is constructed. The proposed landscaping scheme is shown on the enclosed Sheet 2 of 7 as submitted to the DRB.

Please let me know if any additional information is required.

WILSON & COMPANY

Thomas E. Boothby

enc.

kl

DRAINAGE INFORMATION SHEET

PROJECT TITLE: GLENWOOD VILLAGE ZONE ATLAS/DRNG. FILE #: F23/04 ~~F16/04~~

LEGAL DESCRIPTION: BLOCK 3, UNIT 1 GLENWOOD HILLS

CITY ADDRESS: NORTHEAST CORNER TRAMWAY & MONTGOMERY

ENGINEERING FIRM: WILSON & CO. CONTACT: TOM BOOTHBY

ADDRESS: P.O. BOX 3548 ALBUQ. 87190 PHONE: 345-5395

OWNER: PETERSON & RENEAU CONTACT: DICK PETERSON

ADDRESS: 7325 SAN PEDRO NE ALBUQ PHONE: 884 3578

ARCHITECT: WILSON & CO CONTACT: TOM BOOTHBY

ADDRESS: PHONE:

SURVEYOR: WILSON & CO. CONTACT: BILL BRENSTER

ADDRESS: PHONE:

CONTRACTOR: CONTACT:

ADDRESS: PHONE:

RECEIVED
APR 06 1988
HYDROLOGY SECTION

PRE-DESIGN MEETING:

X YES

___ NO

___ COPY OF CONFERENCE RECAP SHEET PROVIDED

DRB NO. 88-18

EPC NO. E 87-31-1

PROJ. NO.

TYPE OF SUBMITTAL:

X DRAINAGE REPORT

X DRAINAGE PLAN

___ CONCEPTUAL GRADING & DRAINAGE PLAN

___ GRADING PLAN

___ EROSION CONTROL PLAN

___ 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

___ CERTIFICATE OF OCCUPANCY APPROVAL

___ ROUGH GRADING PERMIT APPROVAL

___ GRADING/PAVING PERMIT APPROVAL

X OTHER RESPONSE TO (SPECIFY)
COMMENTS - DRAINAGE REPORT

DATE SUBMITTED: 5 APRIL 1988

BY:

FILE COPY

City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

Ken Schultz
Mayor

UTILITY DEVELOPMENT DIVISION
HYDROLOGY SECTION
(505) 768-2650

November 13, 1987

Thomas Boothby
Wilson & Company
Post Office Box 3548
Albuquerque, New Mexico 87190

RE: REVISED CONCEPTUAL GRADING & DRAINAGE PLAN SUBMITTAL OF GLENWOOD VILLAGE, RECEIVED NOVEMBER 2, 1987 FOR SITE DEVELOPMENT PLAN APPROVAL (F-23/D4)

Dear Thomas:

The above referenced submittal dated November 2, 1987, is approved for Site Development Plan sign-off by the City Engineer.

A detailed Drainage Report, Grading and Drainage Plan, and a downstream capacity analysis of Tramway and the storm drain will be required prior to Building Permit or Rough Grading approvals. Show specifically how the allowed discharge rate for the project site is determined.

If you have any questions, call me at 768-2650.

Cordially,

Roger A. Green, PE

Roger A. Green, P.E.
C.E./Hydrology Section

xc: Dick Peterson, Owner

RAG/bsj

KEN SCHULTZ
MAYOR

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

October 12, 1988

Thomas Boothby, P.E.
Wilson & Company
Post Office Box 3548
Albuquerque, NM 87190

RE: GRADING AND DRAINAGE PLAN SUBMITTAL OF GLENWOOD VILLAGE SHOPPING CENTER, RECEIVED OCTOBER 5, 1988, FOR PAVING PERMIT APPROVAL. (F-23/D4)

Dear Mr. Boothby,

The above referenced submittal, dated 10-4-88, is approved for Paving Permit. The contractor can proceed with the parking lot paving in accordance with these approved Plans. It is expected that construction sequence will be coordinated with the current storm drain construction and other site work to insure that all erosion and storm runoff is controlled on site.

If you have any further questions call me at 768-2650.

Cordially,

Roger A. Green PE

Roger A. Green, P.E.
C.E./ Hydrology Section

RAG/(WP+326)

X.C.

City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

May 13, 1988

Thomas E. Boothby
Wilson & Company
Post Office Box 3548
Albuquerque, New Mexico 87190

RE: GLENWOOD VILLAGE SHOPPING CENTER, SUBMITTAL OF EROSION CONTROL PLAN, RECEIVED MAY 12, 1988 FOR GRADING PERMIT APPROVAL (F-23/D4) (CITY PROJECT NO. 3521)

Dear Mr. Boothby:

The above referenced submittal dated May 11, 1988, is approved for Grading Permit. The contractor is authorized to proceed with site grading in accordance with this plan after a Topsoil Disturbance Permit is obtained from the Environmental Health Department. The original will be signed as "approved" when you bring it in and have Environmental Health approval.

This Grading Permit does not authorize the contractor to proceed with any utility or storm drain construction, since this work is part of the City Work Order process.

If you have any questions, call me at 768-2650.

Cordially,

Roger A. Green, PE

Roger A. Green, P.E.
C.E./Hydrology Section

xc: Dick Peterson

RAG/bsj

Y.C.

City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

April 25, 1988

Thomas E. Boothby
Wilson & Company
Post Office Box 3548
Albuquerque, New Mexico 87190

RE: DRAINAGE PLAN SUBMITTAL OF GLENWOOD VILLAGE RECEIVED APRIL 6, 1988 FOR DRAINAGE REPORT APPROVAL (F-23/D4)

Dear Mr. Boothby:

The above referenced submittal dated March 7, 1988 and April 11, 1988 are approved.

If a separate Grading Permit is requested prior to Building Permit approvals, a Topsoil Disturbance Permit from the Environmental Health Department and an Erosion Control Plan submitted to this office will be required.

Building Permits will not be released until the construction drawings of the public infrastructures have been through the D.R.C. review process. If construction of buildings will be phased, then each Drainage Plan must show how the improvements permitted with the Building Permit will stand alone and drain to the public outfall system. Also, prior to Building Permit releases, a Drainage Covenant for developer's maintenance of the detention pond must be signed and submitted for processing.

If you have any further questions, please call me at 768-2650.

Cordially,

Roger A. Green, P.E.

Roger A. Green, P.E.
C.E./Hydrology Section

RAG/bsj

X.C.

City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

March 23, 1988

Tom Boothby
Wilson & Company
Post Office Box 3548
Albuquerque, New Mexico 87190

RE: DRAINAGE REPORT SUBMITTAL OF GLENWOOD VILLAGE RECEIVED FEBRUARY 26, 1988 FOR BUILDING PERMIT AND ROUGH GRADING PERMIT (F-23/D4)

Dear Mr. Boothby:

I have reviewed the above referenced submittal dated February 22, 1988 and have the following comments to be addressed prior to report approval:

1. Pages 16 and 17 of the Report - it is not clear where your Q_{100} values are from. The storm drain laterals should carry the basin peak flow rate unless the parking areas are also to be used as ponding areas. Also include the catch basin designs and inlet capacity calculations for all the inlets in conjunction with page 18.

2. Sheet 6 and 9 - it is not clear where the B/W elevation applies on Sheet 6, Section 7-6; is it the finish grade point or bottom of wall on top of the box culvert?

3. Sheet 7 - show the drainage easements and label as Public or Private as required.

4. Sheet 7 and 9 - more spot elevations are required along the west property line and Tramway Boulevard showing how the finish grade at base of retaining wall will interface with future sidewalk and right-of-way line. It appears a steep slope will result, therefore what slope treatment will be required?

A Grading Permit cannot be approved until the Preliminary Plat and Site Development Plan is approved by the DRB, and the Drainage Report is approved. Detailed construction drawings will also be required of all the public storm drains for processing through the D.R.C.

The drawings provided with this Drainage Report are of sufficient detail for approval of Grading Permit, platting approval, and D.R.C. review when the above comments are addressed. Building Permit approvals will require site specific detailed Grading and Drainage Plans following the drainage scheme of this Drainage Report.

If you have any questions, call me at 768-2650.

Cordially,

Roger A. Green PE

Roger A. Green, P.E.
C.E./Hydrology Section

RAG/bsj

X.C.

City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

Ken Schultz
Mayor

UTILITY DEVELOPMENT DIVISION
HYDROLOGY SECTION
(505) 768-2650

November 13, 1987

Thomas Boothby
Wilson & Company
Post Office Box 3548
Albuquerque, New Mexico 87190

RE: REVISED CONCEPTUAL GRADING & DRAINAGE PLAN SUBMITTAL OF GLENWOOD VILLAGE, RECEIVED NOVEMBER 2, 1987 FOR SITE DEVELOPMENT PLAN APPROVAL (F-23/D4)

Dear Thomas:

The above referenced submittal dated November 2, 1987, is approved for Site Development Plan sign-off by the City Engineer.

A detailed Drainage Report, Grading and Drainage Plan, and a downstream capacity analysis of Tramway and the storm drain will be required prior to Building Permit or Rough Grading approvals. Show specifically how the allowed discharge rate for the project site is determined.

If you have any questions, call me at 768-2650.

Cordially,

Roger A. Green, PE

Roger A. Green, P.E.
C.E./Hydrology Section

xc: Dick Peterson, Owner

RAG/bsj

FHM

DEVELOPMENT REVIEW BOARD--SPEED MEMO

3500

CITY OF ALBUQUERQUE
PUBLIC WORKS DEPARTMENT/ENGINEERING GROUP

DRB CASE NO.: DRB-88-0018 AGENDA ITEM NO.: 12

SUBJECT:

_____(01) Sketch Plat	_____(02) Bulk Land Variance	_____(03) Sidewalk Variance
__X__(04) Preliminary Plat	__XX__(05) Site Development Plan	_____(06) Vacation
__X__(07) Final Plat	_____(08) Infrastructure Listing	_____(09) Sector Plan Bndry
_____(10) Sector Plan	_____(11) Other _____	

ACTION REQUESTED: _____ REV/CMT; __X__ APP; __XX__ SIGN-OFF; _____ EXTN; _____ AMEND

COMMENTS:

1. No objection to site plan/preliminary plat approval with the understanding that the required drainage report that identifies the storm drain capacity downstream and the required drainage easements on-site will be submitted prior to building permit approval. Additionally, it is understood that the proposed storm drain system will be permitted thru the City work order process and constructed and approved as a condition of Certificate of Occupancy sign-off by this office.

RESOLUTION:

APPROVED _____; DENIED _____; DEFERRED 3/1/88; COMMENTS PROVIDED _____; WITHDRAWN _____

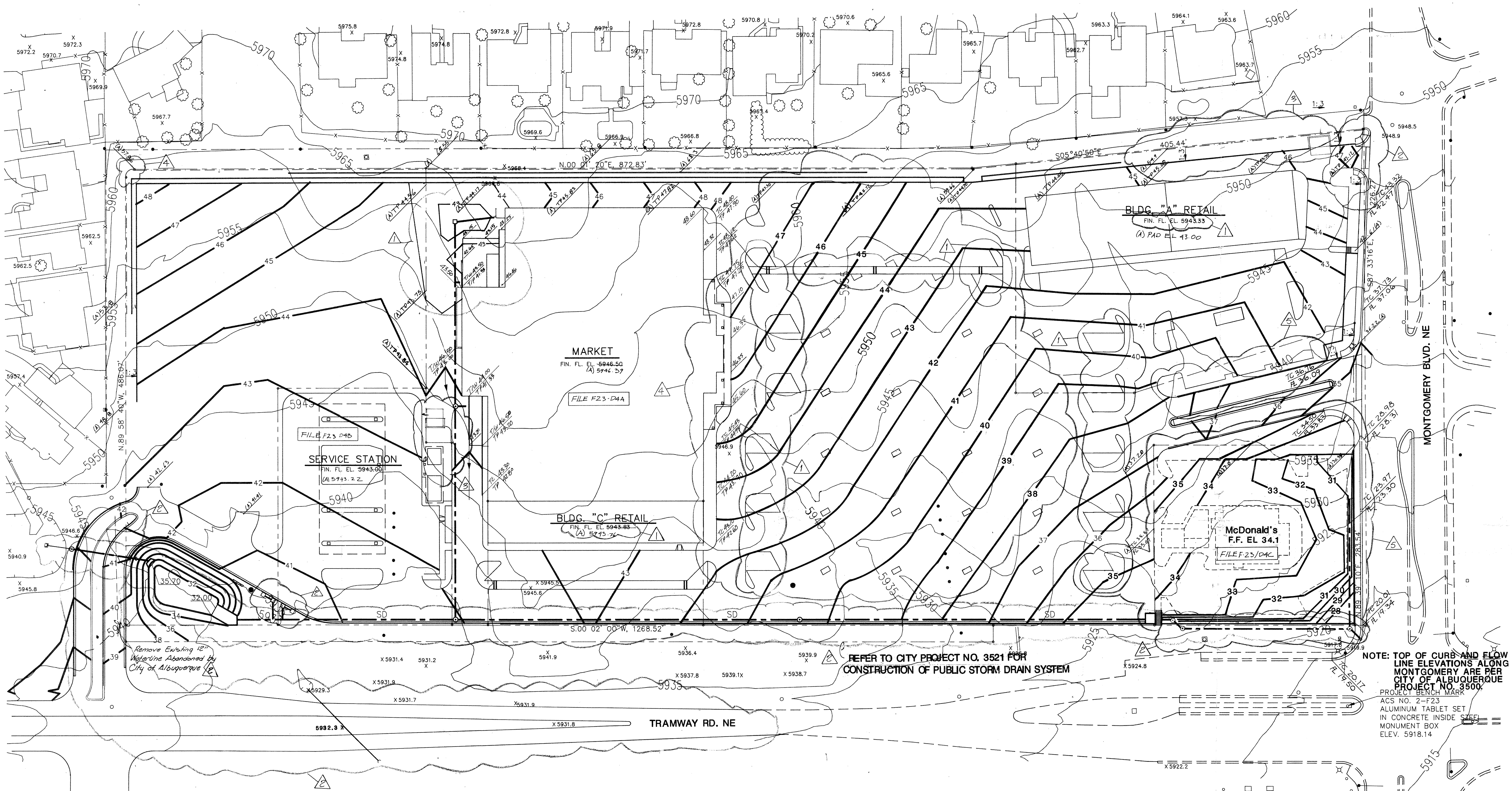
SIGNED-OFF: (SDP) (FP) (IL) (SP) BY: (WUD) (CE) (TRANS) (PRKS) (PLNG)

DELEGATED: (SDP) (FP) (IL) (SP) TO: (WUD) (CE) (TRANS) (PRKS) (PLNG)

FOR: _____

SIGNED: Fred J. Aguirre, Hydrologist
City Engineer/AMAFCA Designee

DATE: February 23, 1988



(A)59.00 AS-BUILT ELEVATION

GRADING & DRAINAGE PLAN

SCALE: 1"=50'

GENERAL NOTES - GRADING AND DRAINAGE PLAN

1. All pavement edges shown on plan shall be provided with a concrete curb.
   A. Adjacent to sidewalks, provide turned down sidewalk edge per Detail 6, Sheet 5.
   B. Provide curb and gutter per Detail 5, Sheet 5, at locations specifically shown on grading plan.
   C. Provide stand-up curb per Detail 4, Sheet 5, at all other locations.
   D. No curb is required along timber retaining walls at east end of site.
2. All contours and spot grades refer to top of pavement elevations. Top of curb elevations and finish grade of fill or sidewalk beyond curb is 0.50 foot higher.
3. See Sheet 9 for plans of storm drainage structures. See Sheet 8 for profiles of storm drainage system.
4. See Sheet 9 for plan of retaining walls.
5. Finish subgrade at Market Building is 0.83 foot below finish floor elevation. Finish subgrade for Service Station is 0.67 foot below finish floor. Finish subgrade at all other buildings is 0.33 foot below finish floor elevation. **Finish subgrado at McDonald's is 0.42 foot below finish floor.**

I certify that I am a Registered Professional Engineer and that this project was constructed in substantial compliance with the approved drainage report.

Thomas E. Boothby, P.E. No. 10510 — 5-22-89 Date

LEGEND

- EXISTING CURB & GUTTER
- NEW CURB & GUTTER
- NEW STORM DRAIN
- NEW MANHOLE
- NEW CATCH BASIN
- PROPERTY LINE
- RETAINING WALL WITH TOP/WALL BOT/WALL ELEVATION
- EXISTING CONTOUR
- NEW CONTOUR
- X5931.4 EXISTING SPOT GRADE
- NEW SPOT GRADE
- EXISTING CMU GARDEN WALL
- EXISTING CULVERT
- NEW SIDEWALK CULVERT
- 1:3 LANDSCAPED BERM SLOPE 1:3

SCALE IN FEET: 0 50 100 150 200

RECEIVED MAY 22 1989 HYDROLOGY SECTION

STEVEN J. ... 8220 REGISTERED PROFESSIONAL ENGINEER

STATE OF NEW MEXICO HOWARD M. KAPLAN No. 761 ALBUQUERQUE, N.M. REGISTERED ARCHITECT

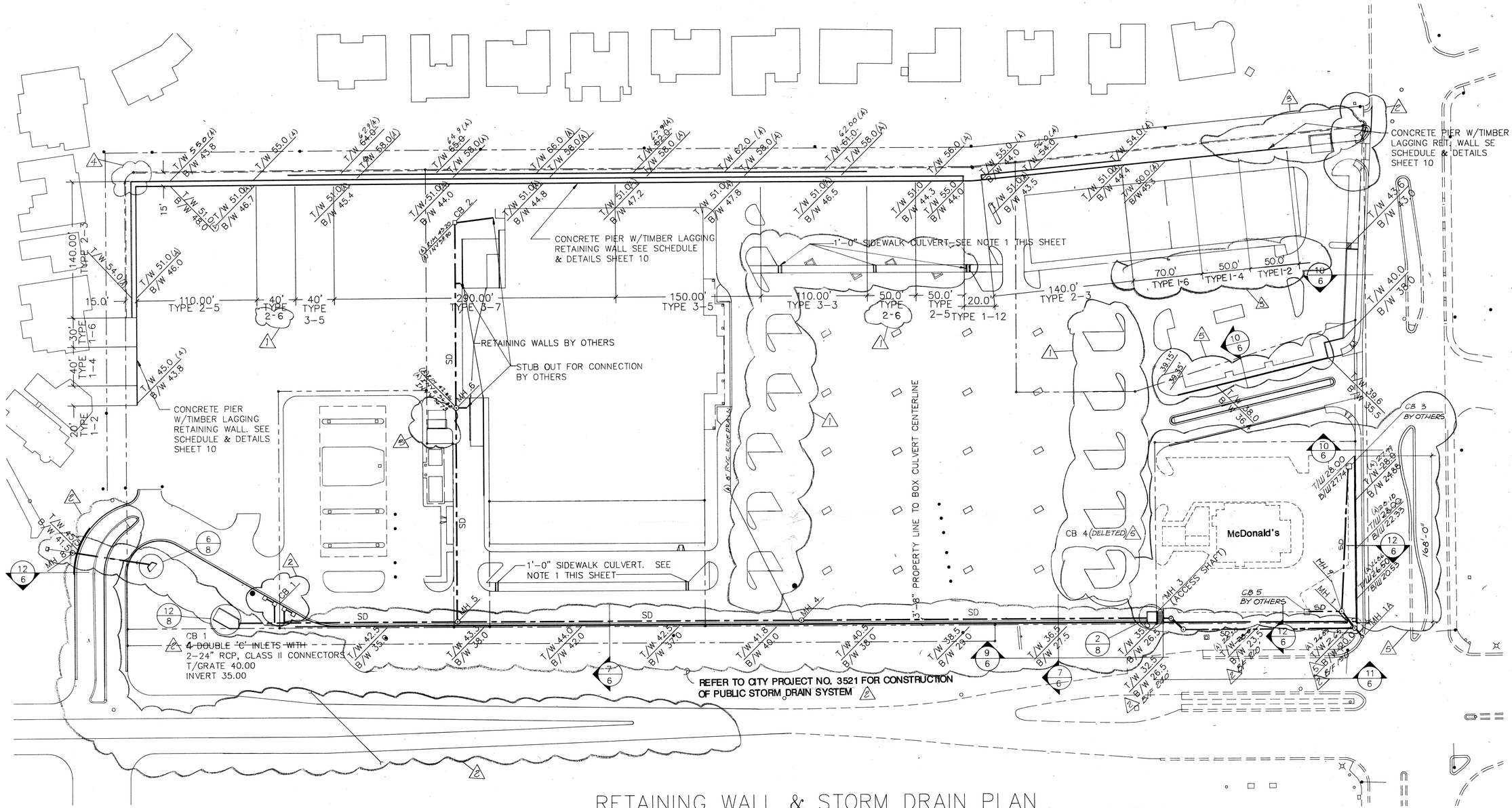
REVISION		DATE	BY
1	ADDENDUM #1 & #2	7/28/88	JEC
2	Revision #1 - D.R.B. Comments	30May88	JEC
3	Revision #2 Owner Revision	June 88	JEC
4	Revision #3 Change Order #1	Aug. 88	LVS
5	McDonald's Change Order	Aug. 88	LVS

WILSON & COMPANY
ENGINEERS & ARCHITECTS
ALBUQUERQUE NEW MEXICO

GLENWOOD VILLAGE
SHOPPING CENTER - SITE DEVELOPMENT
DEVELOPER: PETERSON & RENEAU
2325 SAN PEDRO NE
ALBUQ. NM 87110 (505) 884-3578

DESIGN TEB
DRAWN JEC
DATE REVISED JUNE 88
FILE NO. 87-520A
SHEET NO. 7

WILSON & COMPANY ENGINEERS & ARCHITECTS



RETAINING WALL & STORM DRAIN PLAN

SCALE: 1"=50'

GENERAL NOTES - RETAINING WALL AND STORM DRAIN PLAN

1. Sidewalk culverts shall be constructed per City of Albuquerque Standard Drawing K-16-1, modified for 6" curb height.
2. Type "S" manholes shall be constructed per City of Albuquerque Standard Drawing S-2-4.
3. Double Type "C" catch basin shall be constructed per City of Albuquerque Standard Drawing K-5-3.
4. Double Type "D" catch basin shall be constructed per City of Albuquerque Standard Drawing K-6-3.
5. Access manholes shall be constructed as Type "C" manholes per City of Albuquerque Standard Drawing S-1-4, modified to bear on top slab of box culvert.
6. Box Culvert Design Loading.

   A. Unit Soil Weight - 125 pounds per cubic foot.
   B. Lateral Earth Pressure - 30 pounds per cubic foot equivalent fluid pressure.
   C. Top Slab Live Load - HS 20, minimum 2 feet of earth cover.
   D. Applied bending moment from retaining wall extension (not including surcharge effects).

Depth of Cover	Bending Moment
2'	40 ft - lb per ft
3'	135 ft - lb per ft
4'	320 ft - lb per ft
5'	625 ft - lb per ft
6'	1,080 ft - lb per ft

E. Hydrostatic Pressure - 11.5' head

LEGEND

- EXISTING CURB & GUTTER
- NEW CURB & GUTTER
- NEW STORM DRAIN
- NEW MANHOLE
- NEW CATCH BASIN
- PROPERTY LINE
- RETAINING WALL WITH TOP/WALL BOT/WALL ELEVATION BOT/WALL = FINISH GRADE

I certify that I am a Registered Professional Engineer and that this project was constructed in substantial compliance with the approved drainage report.

Thomas E. Boothby, P.E. No. 10510 — Date 5-22-89

(A) 1540 AS-BUILT ELEVATION

SCALE IN FEET: 0, 50, 100, 200

RECEIVED MAY 2 2 1989 HYDROLOGY SECTION

STATE OF NEW MEXICO — HOWARD M. KAPLAN — No. 761 — ALBUQUERQUE, N. M. — REGISTERED ARCHITECT

STATE OF NEW MEXICO — 8220 — REGISTERED PROFESSIONAL ENGINEER

ENGINEER'S CERTIFICATION SHEET 2 of 2

REVISION	DATE	BY
1 Addendum #1 & #2	THRU 88	JEC
2 Revision #1 - DRC Comments	September 88	JEC
3 Revision #2 - Owner Revision	June 88	JEC
4 Change Order #1	Aug. 88	LVS
5 McDonald's Change Order	Aug. 88	LVS

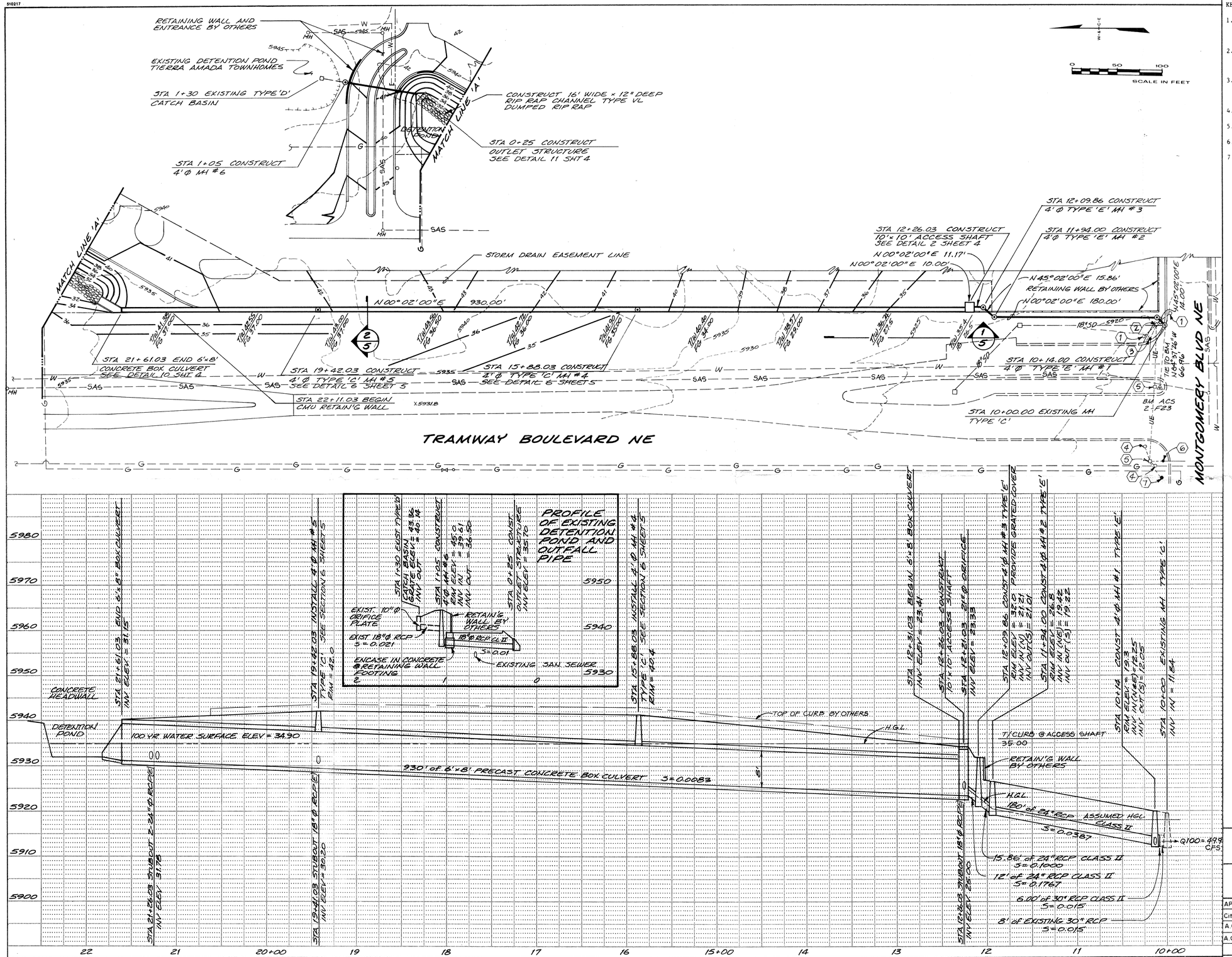
WILSON & COMPANY
ENGINEERS & ARCHITECTS
ALBUQUERQUE NEW MEXICO

GLENWOOD VILLAGE
SHOPPING CENTER - SITE DEVELOPMENT
DEVELOPER: PETERSON & RENEAU
2325 SAN PEDRO NE
ALBUQ. NM 87110 (505) 884-3578

DESIGN TEB
DRAWN JEC
DATE REVISED JUNE 88
FILE NO. 87-520A
SHEET NO. 9

WILSON & COMPANY
ENGINEERS & ARCHITECTS

510217



KEYED NOTES:

1. Existing traffic signal and conduit to be removed and relocated per City of Albuquerque Project No. 3500.
2. Existing electrical pullbox and conduit to be removed and relocated per City of Albuquerque Project No. 3500.
3. Existing mastarm traffic signal and conduit to be removed and relocated per City of Albuquerque Project No. 3500.
4. Existing traffic signal and conduit.
5. Existing electrical pullbox and conduit.
6. Existing mastarm traffic signal and conduit.
7. Existing controller.

0 50 100
SCALE IN FEET

AS BUILT INFORMATION
CONTRACTOR
WORK STARTED BY — DATE
INSPECTOR'S ACCEPTANCE BY — DATE
FIELD VERIFICATION BY — DATE
DRAWINGS CORRECTED BY — DATE
MICRO-FILM INFORMATION
RECORDED BY — DATE
NO.

BENCH MARKS
ACS 2-F23 A BRASS CAP LOCATED AT THE INTERSECTION OF TRAMWAY BLVD NE AND MONTGOMERY BLVD NE IN THE NORTH MEDIAN NOSE
ELEV. = 5918.14 MSLD

SURVEY INFORMATION
FIELD NOTES
NO. | BY | DATE

ENGINEER'S SEAL
STEVEN J. MOSES 9239 REGISTERED PROFESSIONAL ENGINEER
4-15-88

NO.	DATE	REMARKS REVISIONS	BY

WILSON & COMPANY, ENGINEERS & ARCHITECTS
DESIGNED BY T. BOOTHBY — DATE APRIL, 1988
DRAWN BY T. WITEK — DATE APRIL, 1988
CHECKED BY J. METRO

EXHIBIT 'A'

CITY OF ALBUQUERQUE

PLAN AND PROFILE

GLENWOOD VILLAGE SHOPPING CENTER STORM DRAIN IMPROVEMENTS

APPROVALS	ENGINEER	DATE	APPROVALS	ENGINEER	DATE
City Engineer			Liquid Waste	[illegible]	5/4/88
A.C.E.-Design			Traffic		
A.C.E.-Hydrology	[illegible]	5/3/88	Water	[illegible]	5/4/88

DRAWING NO. | MAP NO. F-23 | SHEET 3 OF 5

WILSON & COMPANY
ENGINEERS & ARCHITECTS
ALBUQUERQUE NEW MEXICO

1 SECTION-ACCESS SHAFT
8 SCALE: 3/8"= 1'
2 PLAN-ACCESS SHAFT
8 SCALE: 3/8"= 1'
3 DETAIL- BAR SCREEN
8 SCALE: 1/2"= 1'
4 DETAIL
8 SCALE: 1" = 1'-0"
5 SECTION
8 SCALE: 1" = 1'-0"
6 HEAD WALL
8 SCALE: 1/4"= 1'
7 CIRCULAR PIPE
8 NO SCALE
8 BOX CULVERT
8 NO SCALE
9 DETAIL
8 SCALE: 1-1/2"= 1'
10 DETAIL
8 SCALE: 1-1/2"= 1'
11 SECTION
8 SCALE: 3/8" = 1'-0"
12 PLAN DETAIL
8 SCALE: 1/8" = 1'-0"
TYPICAL BEDDING DETAILS
PROFILE: DETENTION POND TO MANHOLE 1A
PROFILE: CB-2 TO STA 2+20 BOX CULVERT
PROFILE EXISTING POND OUTLET TO NEW HEADWALL
PROFILE: CB-B TO MH-1
STORM DRAIN PROFILES - SCALES: 1"= 50' HORIZ., 1"= 10' VERT.

REVISION	DATE	BY
1 ADDENDUM #1	3/4/88	JEC

RECEIVED APR 06 1988 HYDROLOGY SECTION

WILSON & COMPANY
ENGINEERS & ARCHITECTS
ALBUQUERQUE NEW MEXICO

GLENWOOD VILLAGE
SITE DEVELOPMENT
DEVELOPER: PETERSON & RENEAU
2325 SAN PEDRO NE
ALBUQ, NM 87110 (505) 884-3578

DESIGN TEB
DRAWN FHM/LVS
DATE 22 FEB,1988
FILE NO. 87-520A
SHEET NO. 8

WILSON & COMPANY
ENGINEERS ARCHITECTS

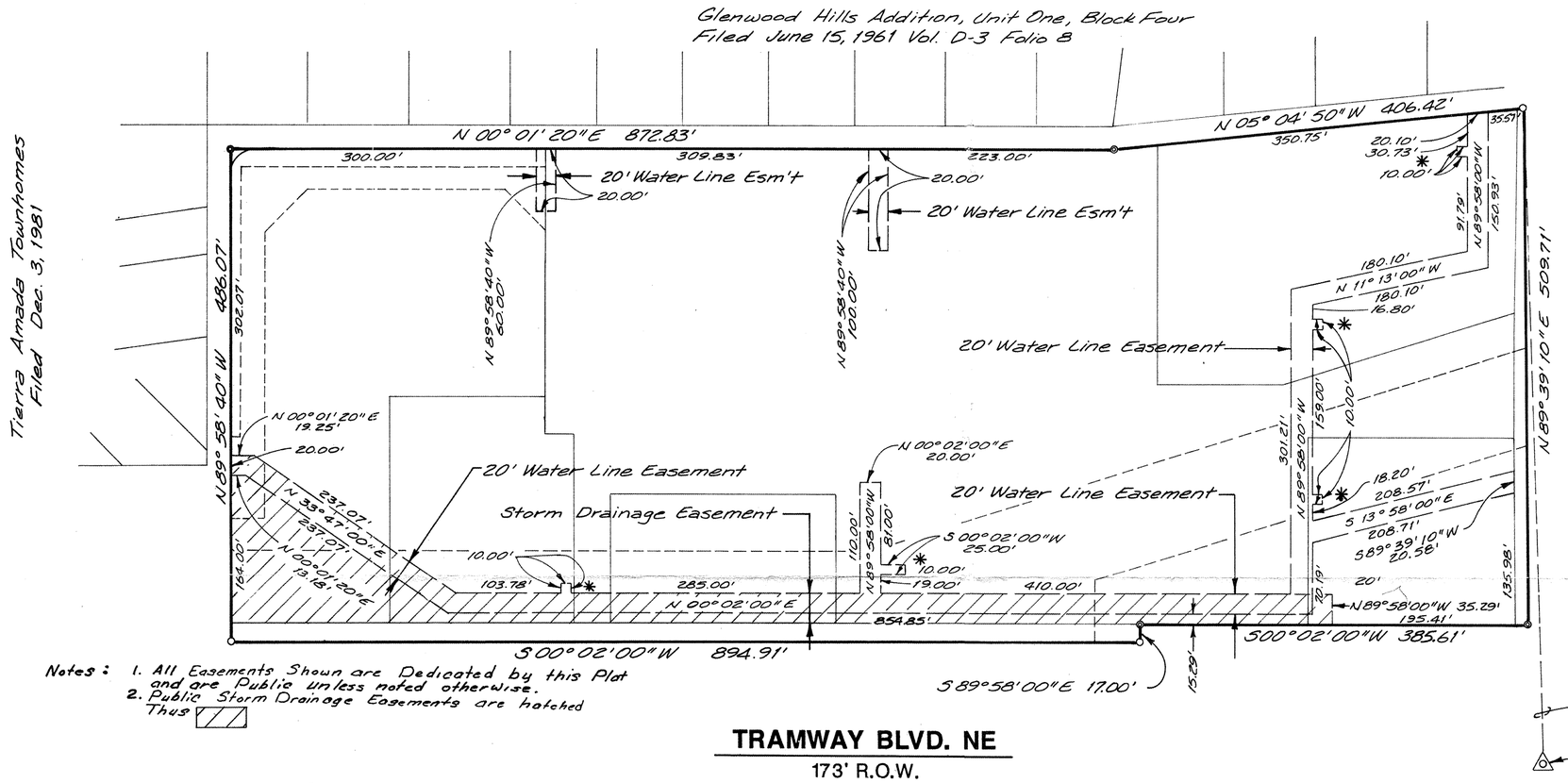
PLAT OF

TRACTS A THROUGH H

BEING A REPLAT OF

LOTS 1 THROUGH 4, BLOCK 3 GLENWOOD HILLS ADDITION UNIT 1

MARCH, 1988



MONTGOMERY BLVD. NE
92' R.O.W.

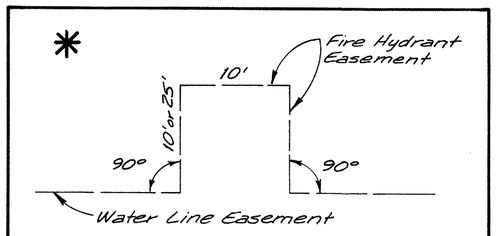
TRAMWAY BLVD. NE
173' R.O.W.

Notes:
1. All Easements Shown are Dedicated by this Plat and are Public unless noted otherwise.
2. Public Storm Drainage Easements are hatched Thus ▨

W-S-I-C-E

0 100 200 300 400
SCALE IN FEET

SCALE 1" = 100'



TYPICAL FIRE HYDRANT EASEMENT DETAIL

SURVEYOR'S CERTIFICATION

I, Steven J. Metro, New Mexico Registered Professional Engineer and Land Surveyor No. 10025, do hereby certify that this plat was prepared by me or under my supervision and directions, shows all easements of record, meets the minimum requirements for monumentation and surveys of the Albuquerque Subdivision Ordinance, and is true and accurate to the best of my knowledge and belief.

Steven J. Metro — 5-5-88

STEVEN J. METRO, NMLS NO. 10025 — DATE

STEVEN J. METRO 10025 REGISTERED PROFESSIONAL LAND SURVEYOR

STATE OF NEW MEXICO)
COUNTY OF BERNALILLO) SS:

The above Surveyor's Certification was acknowledged before me this _____ day of _____ 1987, by Steven J. Metro, New Mexico Registered Land Surveyor No. 10025.

_____
NOTARY PUBLIC

My Commission Expires: _____

WATER LINE AND STORM DRAINAGE EASEMENTS

WCEA FILE: 87-520A

WILSON & COMPANY ENGINEERS & ARCHITECTS ALBUQUERQUE NEW MEXICO

SHEET 3 OF 3