CITY OF
Albuquerque

July 2, 1996

Martin J. Chávez, Mayor

Dennis Lorenz, PE
Brasher & Lorenz, Inc.
4425 Juan Tabo NE
Suite 202
Albuquerque, NM 87111

RE: SCHIFFER BUILDING (C18-D26). ENGINEER'S CERTIFICATION FOR CERTIFICATE OF OCCUPANCY APPROVAL. ENGINEER'S CERTIFICATION STAMPED 6-4-96.

Dear Mr. Lorenz:

Based on the information provided on your June 6, 1996 submittal, the above referenced project is approved for Certificate of Occupancy.

If I can be of further assistance, please feel free to contact me at 768-3622.

Sincerely,

Lisa Ann Manwill
Engineering Assoc./Hyd.

c: John Schiffer - Owner
Andrew Garcia
File

DRAINAGE INFORMATION SHEET

PROJECT TITLE: SCHIFFER BLDG ZONE ATLAS/DRNG. FILE #: C18-D26

DRB #: 95-479 EPC #: _____ WORK ORDER #: 5304

LEGAL DESCRIPTION: LOT 30 BLK 29 TR 'A' UNIT 'B' NAA

CITY ADDRESS: 6101 SIGNAL AVE NE

ENGINEERING FIRM: BRASHER & LORENZ, INC. CONTACT: Dennis A. Lorenz, PE

ADDRESS: 4425 Juan Tabo Blvd. NE Suite 202 PHONE: 296-0422

OWNER: JOHN SCHIFFER CONTACT: SAME

ADDRESS: 11212 HOLLY NE PHONE: 263-1921

ARCHITECT: NA CONTACT: _____

ADDRESS: _____ PHONE: _____

SURVEYOR: NA CONTACT: _____

ADDRESS: _____ PHONE: _____

CONTRACTOR: OWNER CONTACT: _____

ADDRESS: _____ PHONE: _____

TYPE OF SUBMITTAL:

____ DRAINAGE REPORT

____ DRAINAGE PLAN

____ CONCEPTUAL GRADING & DRAINAGE PLAN

____ GRADING PLAN

____ EROSION CONTROL PLAN

X ENGINEER'S CERTIFICATION

____ OTHER: _____

PRE-DESIGN MEETING:

X YES

____ NO

____ COPY PROVIDED

CHECK TYPE OF APPROVAL SOUGHT:

____ SKETCH PLAT APPROVAL

____ PRELIMINARY PLAT APPROVAL

____ S. DEV. PLAN FOR SUB'D. APPROVAL

____ S. DEV. PLAN FOR BLDG. PERMIT APPROVAL

____ SECTOR PLAN APPROVAL

____ FINAL PLAT APPROVAL

____ FOUNDATION PERMIT APPROVAL

____ BUILDING PERMIT APPROVAL

X CERTIFICATE OF OCCUPANCY APPROVAL

____ GRADING PERMIT APPROVAL

____ PAVING PERMIT APPROVAL

____ S.A.D. DRAINAGE REPORT

____ DRAINAGE REQUIREMENTS

____ OTHER _____ (SPECIFY)

DATE SUBMITTED: 6-4-96

BY: Dennis A. Lorenz

City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

December 19, 1995

Dennis Lorenz, PE
Brasher & Lorenz, Inc.
4425 Juan Tabo NE
Suite 202
Albuquerque, NM 87111

RE: SCHIFFER BUILDING (C18-D26) DRAINAGE PLAN AND WORK ORDER DRAWINGS FOR BUILDING PERMIT APPROVAL. ENGINEER'S STAMP DATED 12-12-95.

Dear Mr. Lorenz:

Based on the information provided on your December 18, 1995 submittal, the above referenced project is approved for Building Permit.

My letter dated November 7, 1995 suggests the use of a type "A" inlet instead of a type "D." This design suggestion, as you pointed out, was not possible. Sorry about that. The City has been informed of numerous maintenance problems (clogging) with the type "D" inlet. While I understand that the maintenance of the pond and the inlet are the owners responsibility and not the City's, I thought it wise to inform you of the problems occurring with this type of inlet. If at all possible, you may want to consider another type of inlet.

If I can be of further assistance, please feel free to contact me at 768-3622.

Sincerely,

Lisa Ann Manwill
Engineering Assoc./Hyd.

c: John Schiffer - Owner
Andrew Garcia
File

SUPPLEMENTAL CALCULATIONS

FOR

SCHIFFER BUILDING

BRASHER & LORENZ, INC.
Consulting Engineers

OCTOBER 1995

10-20-95
12-12-95

PROJECT NAME SCHIFFER BLDG JOB NO. 5059

SUBJECT

BY CHECKED BY DATE 10-20-95 PAGE OF

DOWNSTREAM CAPACITY

GIVEN: • PER REPORT FOR SONORA SUBN (EXHIBIT 'A')
EXIST 48" SD IN SAN PEDRO HAS
160 CFS MAX CAPACITY.

• UNDER INTERIM DEVELOPED CONDITIONS
UNIT DISCHARGE = 0.61 CFS / AC

• WHEN DIVERSIONS OCCUR AT
LOUISIANA, TO LOWER NDB DAM
UNIT DISCHARGE = 1.18 CFS / AC

THIS APPROACH IGNORES SIGNAL AVE STREET CAPACITY:

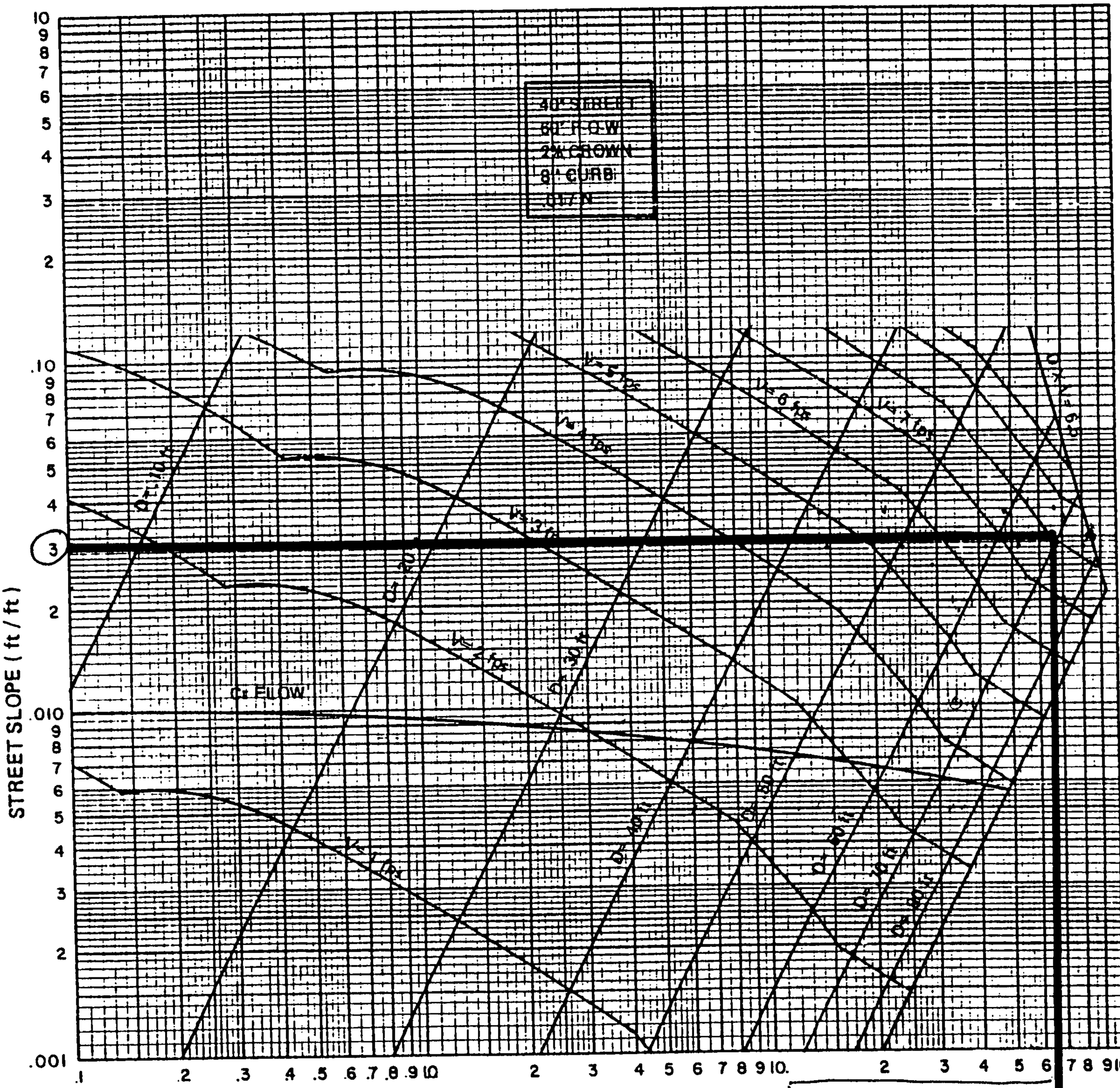
AT S = 3%, 40' FF, PER DPM PLATE 22.3 D2
Q_{MAX} = 130 CFS.

• UNDER INTERIM DEV CONDITIONS
UNIT DISCHARGE = 130 CFS / 47.45 AC = 2.74 CFS / AC
ADD PIPE CAPACITY (0.61 CFS / AC) = 3.35 CFS / AC

• UNDER FUTURE CONDITIONS
UNIT DISCHARGE = 130 CFS / 16.6 AC = 7.8 CFS / AC
ADD PIPE CAPACITY (1.18 CFS / AC) = 9.0 CFS / AC

⇒ • USE INTERIM DEV RATE OF 3.35 CFS / AC

STREET CAPACITY



REV. 3-83

PLATE 22.3 D-2

PROJECT NAME SCHIFFER BLDG JOB NO. 5059

SUBJECT

BY CHECKED BY DATE 10-20-95 PAGE OF

PROJECT HYDROGRAPH

$A_D = 0.76$ AC $A_D / A_T = 0.85$ $E = 2.19$

$A_T = 0.88$ AC

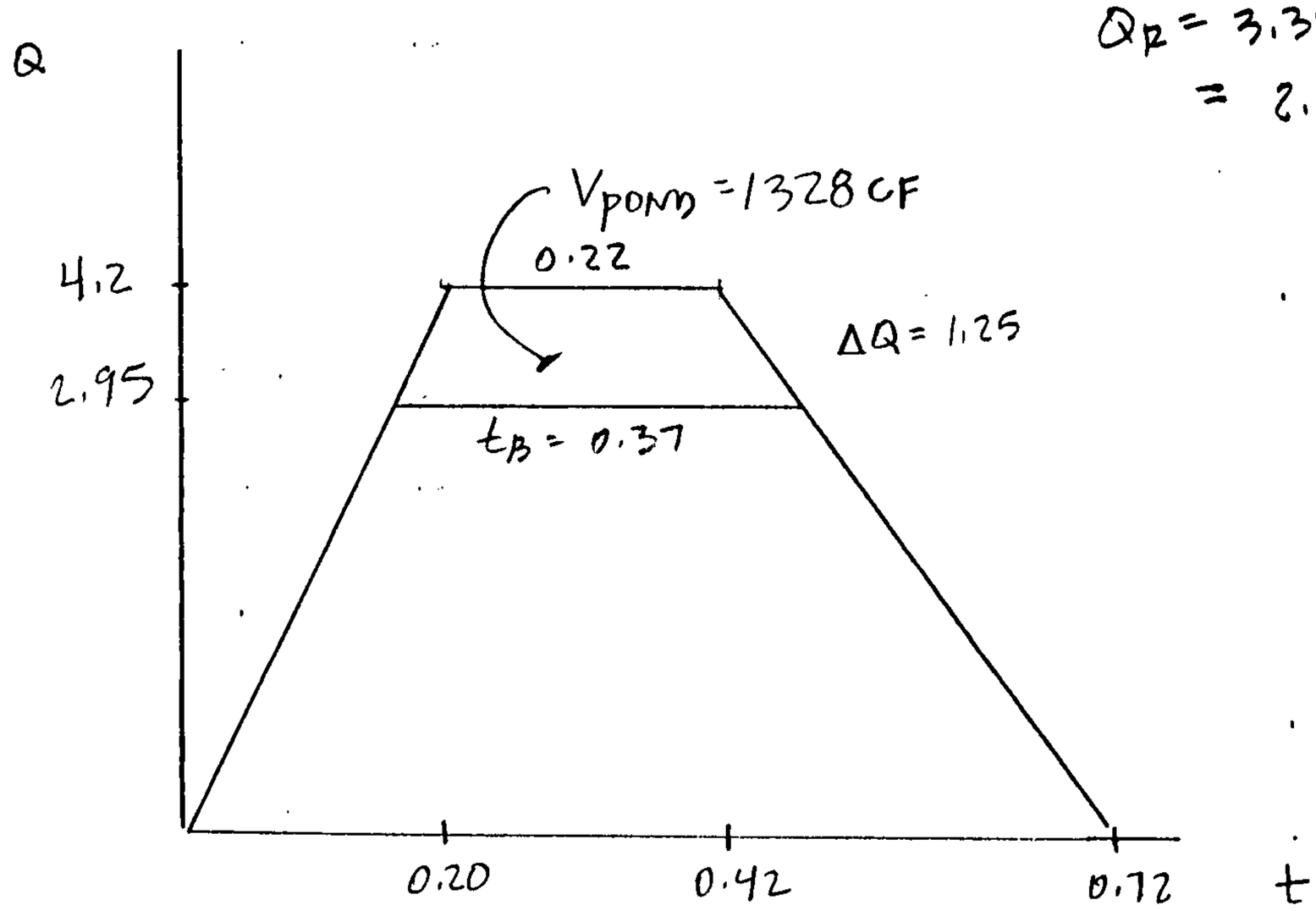
$T_c = 0.2$ hrs

$T_P = 0.7\,t_c + (1.6 - 0.85)/12 = 0.2$ hrs

$0.25\ A_D/A_t = 0.22$

$t_B = 2.107\ E\ (0.86/4.2) - 0.22 = 0.72$ hrs

$Q_R = 3.35$ CFS/AC $(0.88$ AC$)$
$= 2.95$ CFS



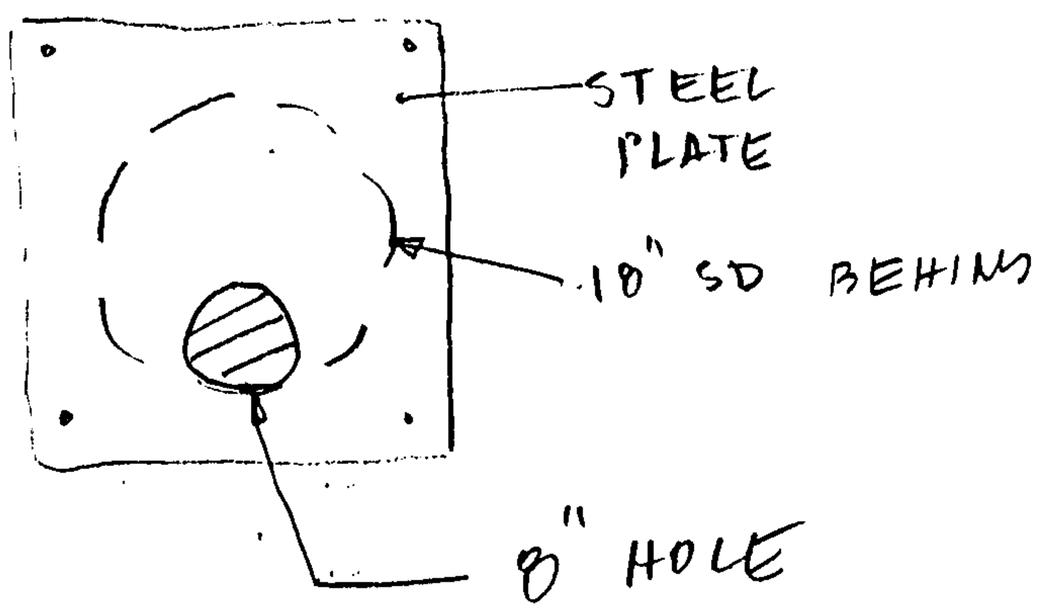
PROJECT NAME SCHIFFER BLDG JOB NO. 5059

SUBJECT

BY CHECKED BY DATE 10-20-95 PAGE OF

POND OUTLET

PROVIDE TYPE 'D' INLET W/ COVER PLATE TO LIMIT Q_R @ 2.95 CFS:



USE ORIFICE EQN TO SOLVE FOR AREA:

$Q = CA\sqrt{2gh}$

$A = Q/C\sqrt{2gh}$

$A = 0.39$ SF

h = POND WS (37.5) − DI INV (34.0) = 3.5'

g = 32.2 f/s²

Q = 2.95 CFS

C = 0.5

A(8") = 0.34 SF

A(9") = 0.44 SF

USE 8" HOLE

PROJECT NAME SCHIFFER BLDG JOB NO. 5059

SUBJECT

BY CHECKED BY DATE 10-20-95 PAGE OF

WEST SWALE

Q BASIN 1 = 2.2 CFS

PER CIVIL TOOLS COMPUTER PROGRAM USING MANNING'S EQN:

MAN-MADE CHANNELS

VARIABLES LIST:

Y - FLOW DEPTH
B - CHANNEL BOTTOM WIDTH
S - CHANNEL SLOPE
Q - FLOWRATE
M - CHANNEL SIDE SLOPE
N - CHANNEL ROUGHNESS

VARIABLE TO BE SOLVED (Y,Q,B,M,S OR N) ? Y

Q (CFS) ? 2.2
B (FT) ? 0
M (FT/FT) ? 1.67
S (FT/FT) ? .006
N (FT^1/6) ? .03

RESULTS

Y= 0.83 FT
A= 1.14 SF
P= 3.22 FT
V= 1.92 FPS
F= 0.53 SUB-CRITICAL FLOW

SEE PLAN DETAIL (A)

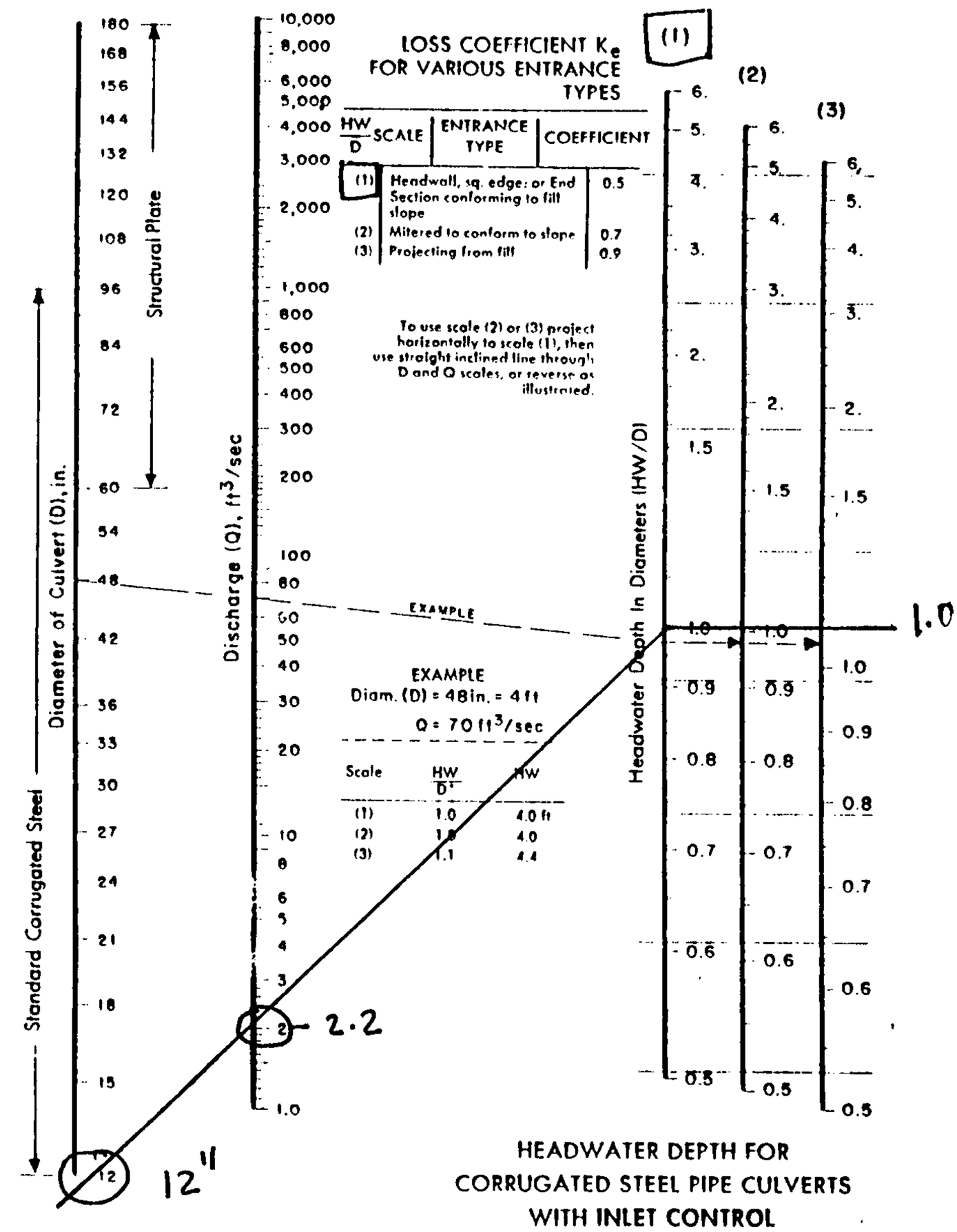
PROJECT NAME SCHIFFER BLDG JOB NO. 5059

SUBJECT

BY CHECKED BY DATE 10-20-95 PAGE OF

CULVERT SIZING

Q (BASIN 1) = 2.2 cfs LET HW/D = 1.0 ;
⇒ USE 12" CMP



HEADWATER DEPTH FOR
CORRUGATED STEEL PIPE CULVERTS
WITH INLET CONTROL

FHWA HEC 5

Figure 4-28 *Inlet control* nomograph for corrugated steel *pipe* culverts. The manufacturers recommended keeping *HW/D* to a maximum of 1.5 and preferably to no more than 1.0.

SONORA SUBDIVISION

ENGINEER'S DRAINAGE REPORT

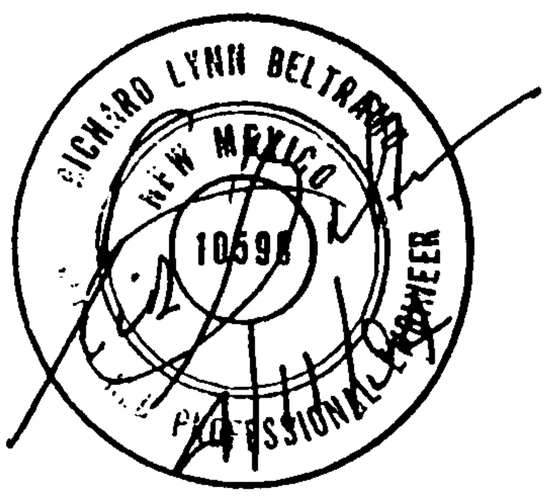
submitted by

AVID ENGINEERING, INC
Civil ▪ Structural ▪ Transportation

6100 Seagull Street NE ▪ Suite 102
Albuquerque, NM 87109

prepared for

GARRETT GROUP, INC.



March 1994

REVISED DEC 11, 1994

HYDROLOGIC ANALYSIS

Analysis is based on the AHYMO method in accordance with Section 22.2 of the City of Albuquerque Development Procedures Manual (DPM). Included in the calculations are copies of the AHYMO computer analysis and summary tables. Analysis is based on a 100-year 6-hour design storm, Zone 3.

EXISTING CONDITIONS

A natural high point exists in the middle of the property. Storm runoff is directed to the north and south boundaries of the property by way of natural contours and arroyos. The majority of the project is located on a ridge between two arroyo systems. Under existing conditions, some off-site flows from the east pass across Louisiana Boulevard onto the project site. Flow rates are shown at key analysis points (Refer to Exhibit II).

DEVELOPED CONDITIONS

The drainage management plan proposed calls for collecting all on-site flows within a storm drain which discharges to a temporary detention pond. The plan calls for collecting flows from Wilshire Ave. and discharging to the detention pond. Under the 100-yr design stofm approximately 25 cfs is discharged to Signal Ave. storm drain from the pond.

Off-site contributing basins east of Louisiana Blvd. are assumed to be developed at a density of 1.0 Du's/acre. This is probably a conservative assumption when considering that it is very unlikely that development can take place to the density suggested.

On-site runoff is collected by residential streets and conveyed to the west end of the property and discharged into the detention pond via rundowns or catch basins. The detention pond is, in turn, drained by the proposed 24" storm sewer located in Signal Ave. which in turn outfalls into the existing 48" storm drain located in San Pedro Boulevard. The pond is designed to detain developed runoff and discharge at rates less than undeveloped flow rates.

Allowable discharge from the pond is based on the capacity of the San Pedro Storm Drain. The capacity was determined to be 160 cfs. The contributing basin was prorated resulting in an allowable discharge from the development of approximately 25 cfs.

The pond is designed to detain the 100-year 6-hour storm of approximately 80 cfs and 2.0 ac-ft of volume. The pond outlet is designed and the future storm drain system is designed to collect 2 times the 100 year storm event.

The net flow under developed conditions is 25 cfs at AP4 versus 62 cfs under undeveloped conditions. At AP3 the proposed plan reduces street flows from 36 cfs to 0 cfs. See "HYDROLOGIC SUMMARY TABLE" for additional flow rates.

FUTURE CONDITIONS

A natural basin divide runs east to west dividing the site in half. Areas north of the divide eventually drain to the La Cueva Arroyo. Areas south of the divide drain to the FEMA. Both of these arroyos are major arroyo systems with established FEMA floodplains.

North Arroyo De Domingo Baca

Currently the Lower Baca dam is being designed. The outfall storm drain from the dam is under construction (The dam will intercept the Arroyo De Domingo Baca. Portions of the basins are not intercepted by the dam. These areas will contribute a significant flow to the NDB arroyo and therefore some floodplain (possibly a smaller area) will remain after the dam is constructed.

Basins east of Louisiana Blvd. which eventually reach the NDB system should be diverted approximately 250ft south of Wilshire Ave. to the main channel at Louisiana Blvd. via surface flow in the street or storm drains. This report recommends that this criteria be established for future projects and as such incorporates the diversion into the Future Analysis Conditions. The ultimate street section for Louisiana has adequate capacity for conveying this flow up to Signal Ave.

La Cueva Arroyo

North of Signal Ave. is the La Cueva Arroyo (LCA) which also is a major arroyo system with an established floodplain. This report recommends that all flow generated from basins east of Louisiana Blvd. which eventually discharge into the LCA should be diverted north to the LCA at Louisiana Blvd. via surface street flow or storm drains. The ultimate street section for Louisiana has adequate capacity for conveying this flow up to Signal Ave.

Temporary Retention Pond Design

The pond is design to detain all on-site flows and portions of off-site flows. Once the Louisiana Blvd. improvements are constructed the ponds can be removed and replaced with an underground storm drain system located in a public drainage easements along the western most lot line. The pond area can then be replatted into 4 lots, and the pond easement vacated. A permanent storm drain will collect all flows in Wilshire Ave., Signal Ave., and the subdivision and discharge to the San Pedro Storm Drain. These diversions will also reduce the contributing area to the 48" storm drain. Therefore the allowable discharge of all remaining contributing areas will double. The allowable discharge to the existing San Pedro Storm Drain is 55cfs for this development.

CONCLUSION

The proposed plan allows development of the 73 lot subdivision while decreasing net flow when compared to existing flow conditions and substantially decreases street flow rates in Signal Ave. and Wilshire Ave. The plan establishes an allowable CFS/AC discharge from all contributing areas to the San Pedro Storm Drain. The plan also establishes reasonable drainage management criteria for future off-site basins as they relate to Louisiana Blvd. The proposed improvements adequately support the planned development and should allow for development as planned.

Figure 2

HYDROLOGIC SUMMARY TABLES

BASIN SUMMARY TABLE

BASIN	UNDEVELOPED AREA (sq. mi.)	UNDEVELOPED Q100 (cfs)	DEVELOPED AREA (sq. mi.)	DEVELOPED Q100 (cfs)	FUTURE AREA (sq. mi.)	FUTURE Q100 (cfs)
O-1	0.0428	48	0.0428	48	0.0000	0
O-2	0.0285	32	0.0285	32	0.0000	0
O-3	0.0054	6	0.0054	6	0.0000	0
O-4	0.0180	15	0.0042	4	0.0042	4
O-5	0.0023	2	0.0000	0	0.0000	0
O-6	0.0114	10	0.0058	5	0.0058	5
ONSITE	0.0000	0	0.0217	45	0.0217	45
	O.1084acres		0.1084acres		0.0317acres [1]	

ANALYSIS POINT SUMMARY TABLE

ANALYSIS POINT	UNDEVELOPED CONDITIONS	DEVELOPED CONDITIONS	FUTURE CONDITIONS
AP-1	54	54	0 [1]
AP-2	32	32	0 [1]
AP-3	36	0	0[1]
AP-4	62	25 [2]	54[1] [3] [4]

NOTES [1] Assumes basins east of Louisiana are diverted north and south to existing arroyos.
[2] 25 cfs in proposed storm drain.
[3] Detention pond removed, additional storm drain constructed.
[4] Total flow in storm drain

AVID ENGINEERING, INC.

COMPUTE ALLOWABLE DISCHARGE TO EXISTING 54" RCP SD, SYSTEM # 12-002-83, PROPOSED CONDITIONS

BASED ON APPROXIMATE HGL ANALYSIS, THE SYSTEM HAS A CAPACITY OF 160 cfs AT THE INTERSECTION OF ALAMEDA AND SAN PEDRO BLVD. THE STORM DRAIN HAS A CAPACITY OF 320 cfs DOWNSTREAM OF THIS INTERSECTION. ANALYSIS OF THE STORM DRAIN UPSTREAM (SOUTH) OF THE ALAMEDA INTERSECTION RESULTS IN THE MOST RESTRICTIVE CONDITIONS AND THEREFORE CONTROLS.

BY RED-RATIO DETERMINE THE ALLOWABLE DISCHARGE, IN CFS/ACRE. CONTRIBUTING AREA = 262 ACRES
160cfs / 262 acres = 0.61 cfs/acre.

DETERMINE ALLOWABLE DISCHARGE FROM SONORA DEVELOPMENT
SUM BASINS 01, 03, & 04 = 27.39 + 3.46 + 11.52 = 42.37 acres.

42.37 acres x 0.61 cfs/acre = 25.8 cfs, USE 26.0

SEE EXHIBIT III for developed conditions basins.

COMPUTE ALLOWABLE DISCHARGE TO EX. SD, FUTURE COND.

CONTRIBUTING AREA WILL BE REDUCED BY LOUISIANA BLVD. DIVERSION. 262 - 95.5 acres - 27.39 - 3.46 = 135.6 acres
160cfs / 135.6 = 1.18 cfs/acre. 1.18/.61 = 1.93 x 25.8
Allowable = 25.8 x 1.93 cfs = 49.8 cfs, USE 50 cfs.
SEE EXHIBIT IV, FUTURE CONDITIONS

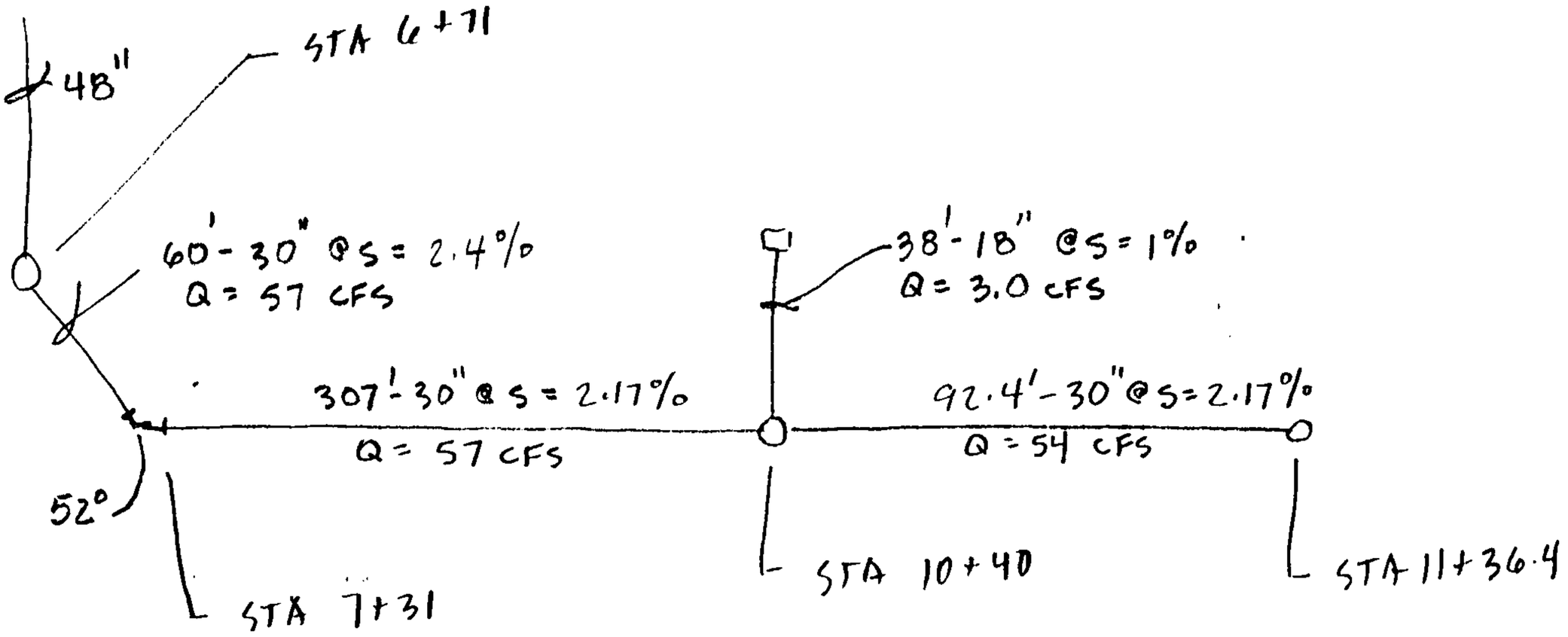
PROJECT NAME _____ SHEET _____ OF _____
PROJECT NO. _____ BY _____ DATE _____
SUBJECT _____ CH'D _____ DATE _____

HYDRAULIC GRADE LINE CALCULATIONS

PROJECT NAME SCHIFFER BLDG JOB NO. 5059

SUBJECT STORM DRAIN SCHEMATIC

BY _____ CHECKED BY _____ DATE 10-20-95 PAGE _____ OF _____



BRASHER & LORENZ, INC.

Consulting Engineers

REV. 3-83

SUMMARY OF HYDRAULIC CALCULATIONS

BY: DL
DATE: 12-12-95
SHEET: ____ OF: ____

CLOSED CONDUIT

PROJECT: SCHIFFER

LINE: 30" / 18"

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
STATION	STRUCT	D	Q	A	V	K	S_f	L	Δ	JUNCTION		LOSSES							E.G.	h_v	H.G.
										D	θ	h_f	h_b	h_l	h_{mh}	h_t	h_{misc}	Σ			
6+71	MH																				24.36
7+31	BEND	30	57	3.83	14.6	359.1	2.51	60	52			1.51	0.50	—	—	—	—	2.01		3.31	
10+40	MH	30	57	3.98	13.9	373.2	2.33	307	0			7.15	—	—	0.15	—	—	7.30		3.00	26.37
11+36.4	MH	30	54	3.83	13.9	359.1	2.26	92.4	0			2.09	—	—	0.15	—	—	2.24		3.00	33.67
																					35.91

REMARKS:

MANNING'S n: _____

CONTROL = HGL @ EX MH (SAN PEDRO) = 24.36

$K_b = 0.2\sqrt{\Delta/90}$

$K = 1.49 AR^{2/3}/n$

$h_f = \cdot Sf L$

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

$h_{mH} = 0.05 \frac{V^2}{2g}$

$h_b = K_b V^2/2g$

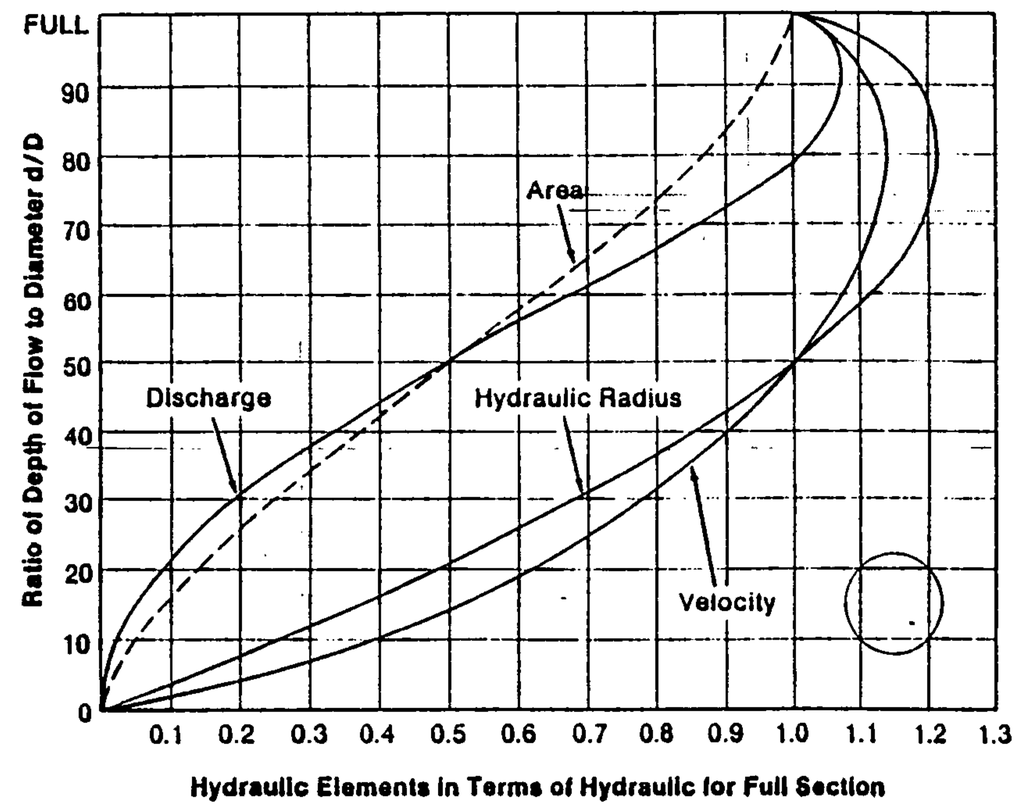
160

PLATE 22.8 B-5

22.8

HYDRAULIC VALUES

DIA	S	Q	Q_F	A_F	R_F	V_F	Q/Q_F	A/A_F	R/R_F	V/V_F	d/d_F	A	R	V	d	
18"	1%	3	10.5	1.77	0.38	5.9	0.29	0.33	0.82	0.88	0.38	0.58	0.31	5.2	0.57'	
30"	2.4%	57	63.4	4.91	0.62	12.9	0.90	0.78	1.2	1.13	0.72	3.83	0.74	14.6	1.80'	
30"	2.17	57	60.4	4.91	0.62	12.3	0.94	0.81	1.2	1.13	0.74	3.98	0.74	13.9	1.85'	
30"	2.17	54	60.4	4.91	0.62	12.3	0.89	0.78	1.2	1.13	0.72	3.83	0.74	13.9	1.80'	



City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

November 7, 1995

Dennis Lorenz, PE
Brasher & Lorenz, Inc.
4425 Juan Tabo NE
Suite 202
Albuquerque, NM 87111

RE: SCHIFFER BUILDING (C18-D26) DRAINAGE PLAN FOR SITE DEVELOPMENT PLAN FOR BUILDING PERMIT APPROVAL. ENGINEER'S STAMP DATED 10-20-95.

Dear Mr. Lorenz:

Based on the information provided on your October 30, 1995 submittal, the above referenced project is approved for Site Development Plan for Building Permit.

Prior to your next submittal, please address the following comments:

1. Determine allowable discharge from your site to the existing 30" storm sewer in Signal Ave. Is there capacity to discharge 2.95 cfs into the existing storm sewer line?

2. You will be required to install a manhole where you tie into the existing 30" storm sewer.

3. Please give a minimum cross slope for your channel along the west property line.

4. Your details are numbered incorrectly. There are two detail "A's" and two detail "B's."

5. Is south side of Signal Ave. paved? Please label on your detail.

6. Past experience shows that type "D" inlets clog very easily. A type "A" inlet is more desirable.

November 7, 1995
Dennis Lorenz, PE
Brasher & Lorenz, Inc.

7. Referring to your HYMO output summary, where are basins "A", "B", "C", and "D"?

If I can be of further assistance, please feel free to contact me at 768-3622.

Sincerely,

Lisa Ann Manwill
Engineering Assoc./Hyd.

c: Andrew Garcia
File

DRAINAGE INFORMATION SHEET

PROJECT TITLE: SCHIFFER BUILDING ZONE ATLAS/DRNG. FILE #: C-18/D26

DRB #: 95-479 EPC #: _____ WORK ORDER #: 5304.90

LEGAL DESCRIPTION: LOT 30, BLK 29, TR 'A', UNIT 'B' NAA

CITY ADDRESS: 6101 SIGNAL AVE NE

ENGINEERING FIRM: BRASHER & LORENZ, INC. CONTACT: Dennis A. Lorenz, PE

ADDRESS: 4425 Juan Tabo Blvd. NE Suite 202 PHONE: 296-0422

OWNER: JOHN SCHIFFER CONTACT: _____

ADDRESS: 11212 HOLLY NE 87122 PHONE: 263-1921

ARCHITECT: NA CONTACT: _____

ADDRESS: _____ PHONE: _____

SURVEYOR: PROFESSIONAL CONTRACTING CONTACT: B. SEITZ

ADDRESS: _____ PHONE: 294-2609

CONTRACTOR: NA CONTACT: _____

ADDRESS: _____ PHONE: _____

TYPE OF SUBMITTAL:

____ DRAINAGE REPORT
X DRAINAGE PLAN
____ CONCEPTUAL GRADING & DRAINAGE PLAN
____ GRADING PLAN
____ EROSION CONTROL PLAN
____ ENGINEER'S CERTIFICATION
____ OTHER: _____

PRE-DESIGN MEETING:

X YES
____ NO
____ COPY PROVIDED

CHECK TYPE OF APPROVAL SOUGHT:

____ SKETCH PLAT APPROVAL
____ PRELIMINARY PLAT APPROVAL
____ S. DEV. PLAN FOR SUB'D. APPROVAL
X S. DEV. PLAN FOR BLDG. PERMIT APPROVAL
____ SECTOR PLAN APPROVAL
____ FINAL PLAT APPROVAL
____ FOUNDATION PERMIT APPROVAL
____ BUILDING PERMIT APPROVAL
____ CERTIFICATE OF OCCUPANCY APPROVAL
____ GRADING PERMIT APPROVAL
____ PAVING PERMIT APPROVAL
____ S.A.D. DRAINAGE REPORT
____ DRAINAGE REQUIREMENTS
____ OTHER _____ (SPECIFY)

DATE SUBMITTED: 10-27-95

BY: Dennis A. Lorenz

OCT 30 1995