City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

March 24, 1999

Dennis A. Lorenz
Brasher & Lorenz, Inc.
2201 San Pedro NE
Bldg.1 Suite 210
Albuquerque, New Mexico 87110

RE: ENGINEER'S CERTIFICATION FOR ALEXIS PARK (C-18/D30) ENGINEER'S CERTIFICATION STATEMENT DATED 3/15/99.

Dear Mr. Lorenz:

Based on the information provided on your March 16, 1999 submittal, Engineer's Certification for the above referenced site is approved.

If I can be of any further assistance, please feel free to contact me at 924-3330.

Sincerely,

Andrew Garcia
Drainage Inspector

c: file

821-0439

CITY OF
Albuquerque

July 28, 1998

Dennis A. Lorenz, P.E.
Brasher & Lorenz, Inc.
2201 San Pedro NE, Bldg. 1, Suite 210
Albuquerque, New Mexico 87110

RE: Revised Drainage Plan for Alexis Park, Lots 9 & 10, Tract A, Unit B, NAA (C18/D30) Submitted for Building Permit Approval, Engineer's Stamp Dated 7/28/98.

Dear Mr. Lorenz:

Based on the information provided in the submittals of July 13, 1998 and July 28, 1998, the above referenced plan is approved for Building Permit release.

As you are aware, the Engineer's Certification must be submitted to and approved by this office prior to release of the Certificate of Occupancy.

If you have any questions, or if I may be of further assistance to you, please call me at 924-3982.

Sincerely,

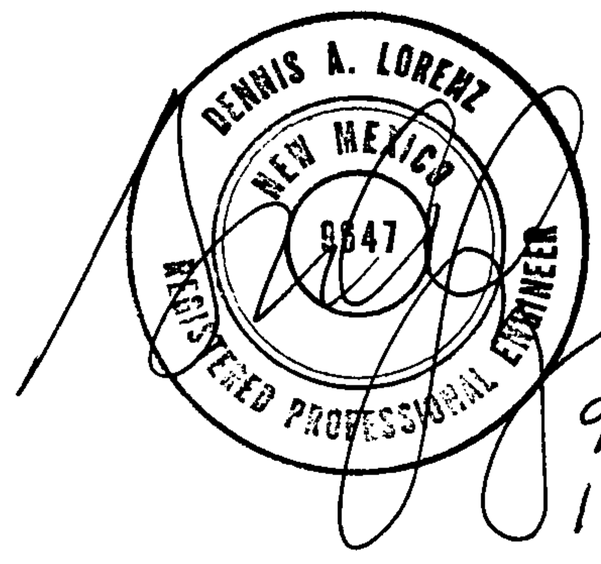
Susan M. Calongne, P.E.
City/County Floodplain Administrator

c: File

SUPPLEMENTAL CALCULATIONS

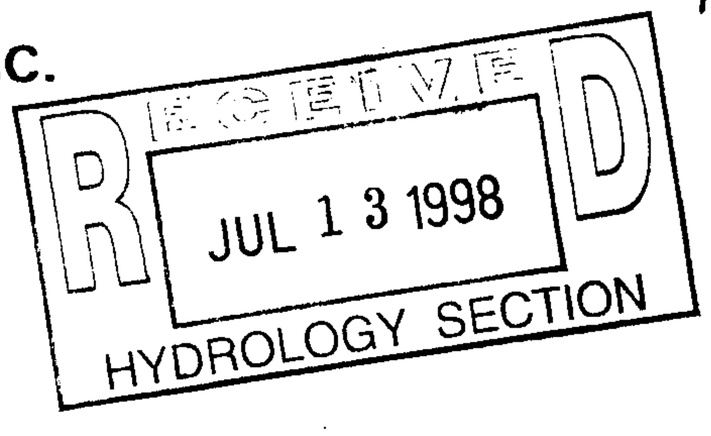
FOR

ALEXIS PARK



9-25-96
11-1-96
7-28-98

BRASHER & LORENZ, INC.
Consulting Engineers
September 1996



PROJECT NAME ALEXIS PARK JOB NO. 6044.

SUBJECT POND ROUTING

BY _____ CHECKED BY _____ DATE 9.25.96 PAGE 1 OF 3

AS ESTABLISHED BY THE DRAINAGE REPORT FOR MOTEL 6 (CIB·D27). MAX DISCHARGE IS LIMITED TO HISTORIC.

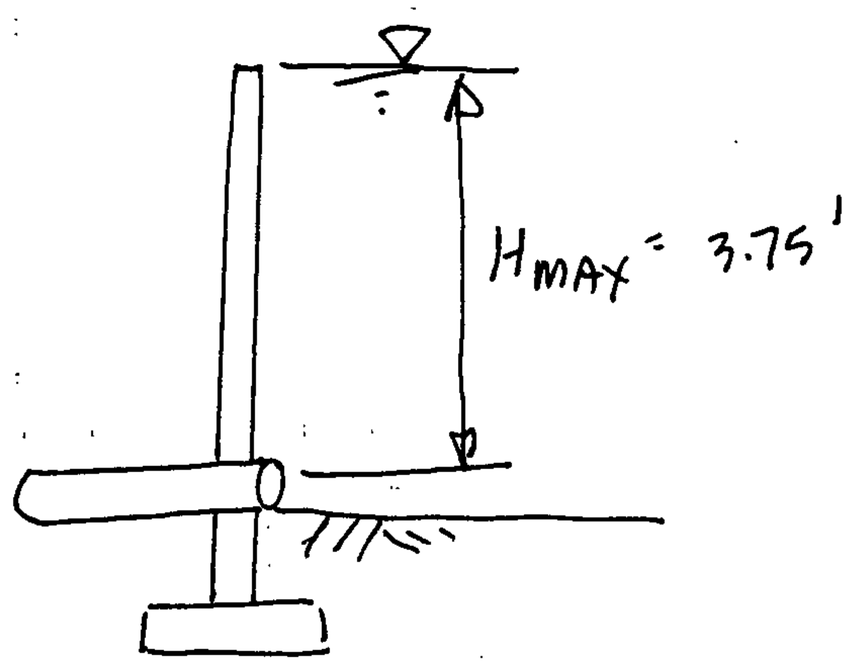
PER AHYMO: $Q_{UNDEV} = 2.4$ CFS

1. SIZE OUTLET FOR 2.4 CFS

BY ORIFICE EQN:

$$Q = CA\sqrt{2gh}$$

$Q = Q_{OUT} = 2.4$ CFS
$C = 0.6$
$g = 32.2$ F/s²
$h = 3.75'$



SOLVING FOR A: $A = 0.25$ SF

$\Rightarrow A$ (6" PIPE) $= 0.20$ SF

PROJECT NAME ALEXIS PARK JOB NO. 6044

SUBJECT POND ROUTING

BY _____ CHECKED BY _____ DATE 9-25-96 PAGE 2 OF 3

ROUT RES TABLE

ELEV	H.	QOUT	VOL
97.5	0	0	0
98.5	0.75'	0.83	1350 CF
99.5	1.75	1.27	2700
100.5	2.75	1.60	4050
101.5	3.75	1.86	5400

PER ATHYMO OUTPUT:

QOUT PEAK = 1.75 CFS

VOLUME = 0.1114 AF

= 4853 CF

MAX WSE = 5101.09

PROJECT NAME ALEXIS PARK JOB NO. 6044

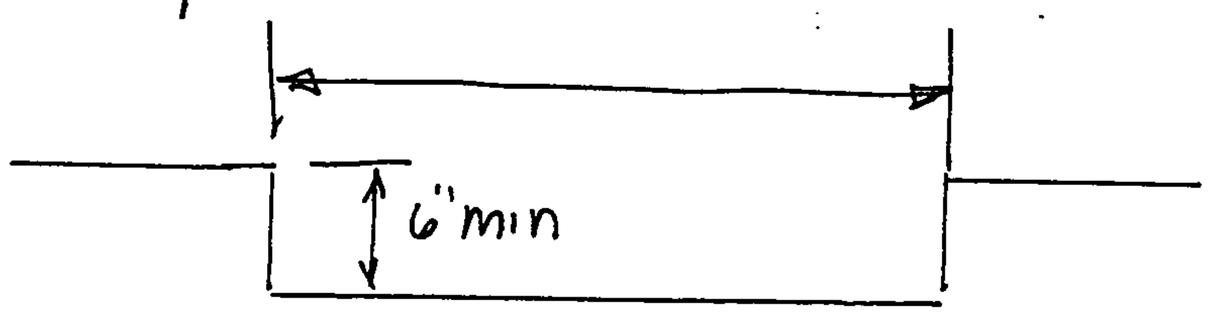
SUBJECT POND RUNDOWN + SPILLWAY

BY _____ CHECKED BY _____ DATE 9-25-96 PAGE 3 OF 3

SIZE RUNDOWN FROM PARKING LOT AND POND OVERFLOW SPILLWAY.

Q_{100} = 6.1 CFS

RUNDOWN + SPILLWAY WILL HAVE SAME GEOMETRY.



SECTION

NTS

WEIRS

Enter up to 10 weirs.
Enter <Return> only for flowrate and length to end.

FLOWRATE (CFS)	LENGTH (FT)	COEFF (-)	HEAD (FT)
6.10	6.9	2.500	0.50

7' PROVIDED.

AHYMO SUMMARY TABLE (AHYMO194) - AMAFCA Hydrologic Model - January, 1994 RUN DATE (MON/DAY/YR) =09/23/1996
INPUT FILE = 6044P.DAT USER NO.= BRASHERE.I01

COMMAND	HYDROGRAPH IDENTIFICATION	FROM ID NO.	TO ID NO.	AREA (SQ MI)	PEAK DISCHARGE (CFS)	RUNOFF VOLUME (AC-FT)	RUNOFF (INCHES)	TIME TO PEAK (HOURS)	CFS PER ACRE	PAGE = 1 NOTATION
START										TIME= .00
RAINFALL TYPE= 1										RAIN6= 2.600
COMPUTE NM HYD	101.00	-	1	.00202	2.42	.070	.65514	1.533	1.878	PER IMP= .00
COMPUTE NM HYD	102.00	-	2	.00183	5.56	.212	2.17822	1.500	4.753	PER IMP= 86.00
COMPUTE NM HYD	103.00	-	3	.00019	.59	.022	2.17823	1.500	4.877	PER IMP= 86.00
COMPUTE NM HYD	104.00	-	4	.00202	6.13	.234	2.17823	1.500	4.752	PER IMP= 86.00
COMPUTE NM HYD	105.00	-	5	.00063	1.53	.050	1.50307	1.500	3.813	PER IMP= 20.00
ROUTE RESERVOIR	106.00	4	6	.00202	1.75	.234	2.17808	1.900	1.360	AC-FT= .111
FINISH										

OFF-SITE ANALYSIS

PURPOSE

The purpose of this off-site analysis is to determine the storm drainage improvement requirements for Wilshire Avenue, between San Pedro Drive NE and the I-25 East Frontage Road. This analysis studies the existing and future developed drainage basins contributing to the roadway, and recommends improvements to safely convey excess runoff to improved drainage facilities.

EXISTING CONDITIONS

Presently the contributing off-site basin is partially developed. The basin consists of developed land along Wilshire Avenue between San Pedro and the East Frontage Road, and undeveloped land east of San Pedro. The existing peak flow rate is estimated at 56.3 cfs. Runoff is conveyed by Wilshire Avenue, which consists of a temporary pavement section from San Pedro to the East Frontage Road. A short permanent section exists along the Imaging Concepts frontage. The basin presently outfalls to a private detention pond located within the I-25 right-of-way, just west of Imaging Concepts. This pond has a storage capacity of approximately 31,000 cubic feet and drains by a 30 inch storm drain.

The Drainage Report for Imaging Concepts, prepared by D. Mark Goodwin & Associates, 1994, anticipated a peak developed flowrate in the Wilshire north curb of 25.7 cfs (see appendix).

DEVELOPED CONDITIONS

Under fully developed conditions the contributing off-site basin will be truncated at San Pedro, due to City drainage criteria which prohibits surface drainage from crossing collector streets. It is anticipated that a storm drain will be constructed in San Pedro to collect upstream flows from Signal and Wilshire. The storm drain will likely connect to a storm drain proposed in Corona. The resulting developed surface flow in Wilshire Avenue at the Frontage Road is estimated at 57.5 cfs. Since Imaging Concepts anticipated only 25.7 cfs the excess flow will be routed south along the Frontage Road to the Corona culverts, which have excess capacity. Alexis Park will provide a drainage structure at the Wilshire/Frontage Road intersection to drain 31.8 cfs south into the I-25 right-of-way. Runoff will be conveyed in a roadside swale to 2-24 inch culverts located at the Motel 6 access drive, then on to the 8-48 inch culverts located at Corona.

FINDINGS

This off-site analysis makes the following findings:

1. Developed conditions result in a peak flowrate of 57.5 cfs.

2. Wilshire Avenue has sufficient capacity to carry developed flows to the East Frontage Road.

3. Imaging Concepts anticipated 25.7 cfs in the Wilshire north curb, which drains to an existing private detention pond located within the I-25 right-of-way.

4. Alexis Park will construct the south one-half of Wilshire along the project frontage.

5. A drainage structure will be constructed to drain the difference between future developed flowrate of 57.5 cfs and the Imaging Concepts flowrate of 25.7 cfs (31.8 cfs) south to the Corona culverts.

6. Two 24 inch culverts will be provided at the Motel 6 access drive to drain future developed flows along the Frontage Road to the Corona culverts.

7. The Corona culverts have capacity to drain the excess runoff from Wilshire Avenue.

PROJECT NAME ALEXIS PARK JOB NO. 6044

SUBJECT STREET DEPTH

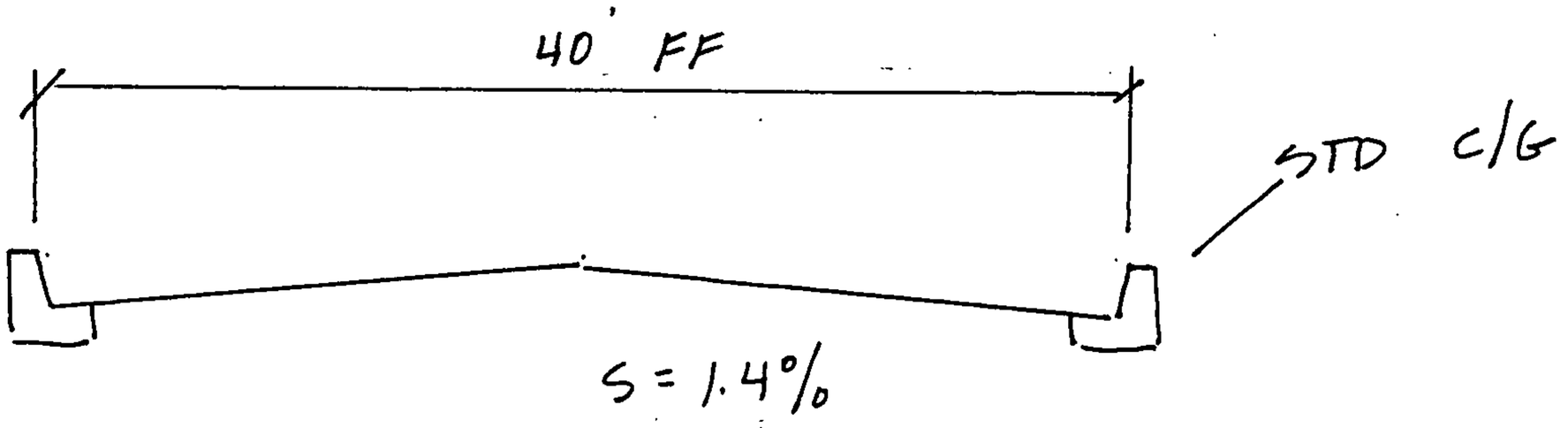
BY _____ CHECKED BY _____ DATE 11-1-96 PAGE 1 OF 5

WILSHIRE STREET DEPTH:

Q_{100} EXIST = 56.3 CFS BASIN (A) HYD 101

Q_{100} DEV = 57.5 CFS BASIN (B) HYD 103

TEST FOR DEV CONDITION @ Q = 57.5 CFS




```
VARIABLES LIST:
        Y - FLOW ELEVATION     Q - FLOWRATE      S - CHANNEL SLOPE

VARIABLE TO BE SOLVED (Y,Q OR S) ? Y        Enter up to 20 cross-section points.
                                          Enter <Return> only for distance to end.
Q (CFS)    ? 57.5
S (FT/FT)  ? .014                                  CROSS-SECTION POINTS
                                          DIST  ELEV  COEFF   DIST  ELEV  COEFF
                                          ----------------- -----------------
                                          0     100.67.017
                                          0     100.00.017
                                          20    100.40.017
                                          40    100.00.017
     RESULTS                              40    100.67.017
=================
Y=     100.51 FT  <=
A=      12.24 SF
P=      41.02 FT
V=       4.70 FPS
F=       1.50   SUPER-CRITICAL FLOW
```

PROJECT NAME ALEXIS PARK JOB NO. 6044

SUBJECT

BY CHECKED BY DATE 11-1-96 PAGE 2 OF 5

WILSHIRE DOWNSTREAM CAPACITY:

PER APPROVED REPORT FOR IMAGING CONCEPTS DESIGN FLOW FOR NORTH CURB = 25.7 CFS.

COMPUTED DESIGN FLOW FOR WILSHIRE (BASIN 'A') = 57.5 CFS. EXCESS RUNOFF NOT ANTICIPATED BY IMAGING CONCEPTS WILL BE DRAINED FROM THE SOUTH CURB AND CONVEYED TO THE EXISTING CULVERTS LOCATED AT CORONA, WHERE EXCESS CAPACITY EXISTS.

DIVERTED Q = 57.5 - 25.7 = 31.8 CFS.

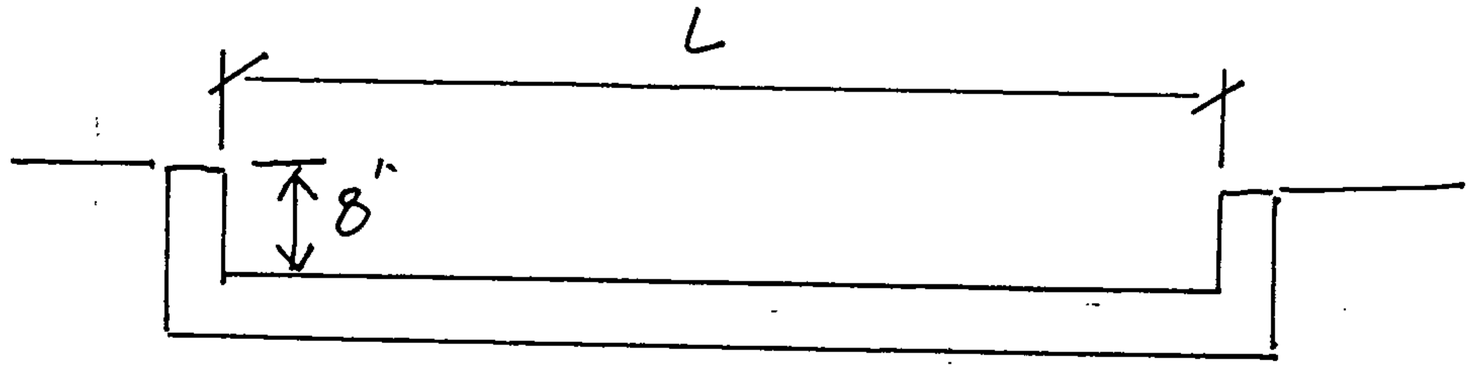
STREET DESIGN FOR WILSHIRE (SOUTH SIDE) TO PROVIDE RUNDOWN WITH 31.8 CFS CAPACITY.

PROJECT NAME ALEXIS PARK JOB NO. 6044

SUBJECT RUNDOWN.

BY _____ CHECKED BY _____ DATE 11.1.96 PAGE 3 OF 5

PROVIDE RUNDOWN AT WILSHIRE SOUTH CURB:



SECTION

NTS

BY WEIR EQN:

$Q = C L H^{3/2}$

$H = 0.67$ (CURB HT)

$C = 2.70$

$Q = 31.8$ CFS

Enter up to 10 weirs.
Enter <Return> only for flowrate and length to end.

FLOWRATE (CFS)	LENGTH (FT)	COEFF (-)	HEAD (FT)
32.00	21.6	2.700	0.67

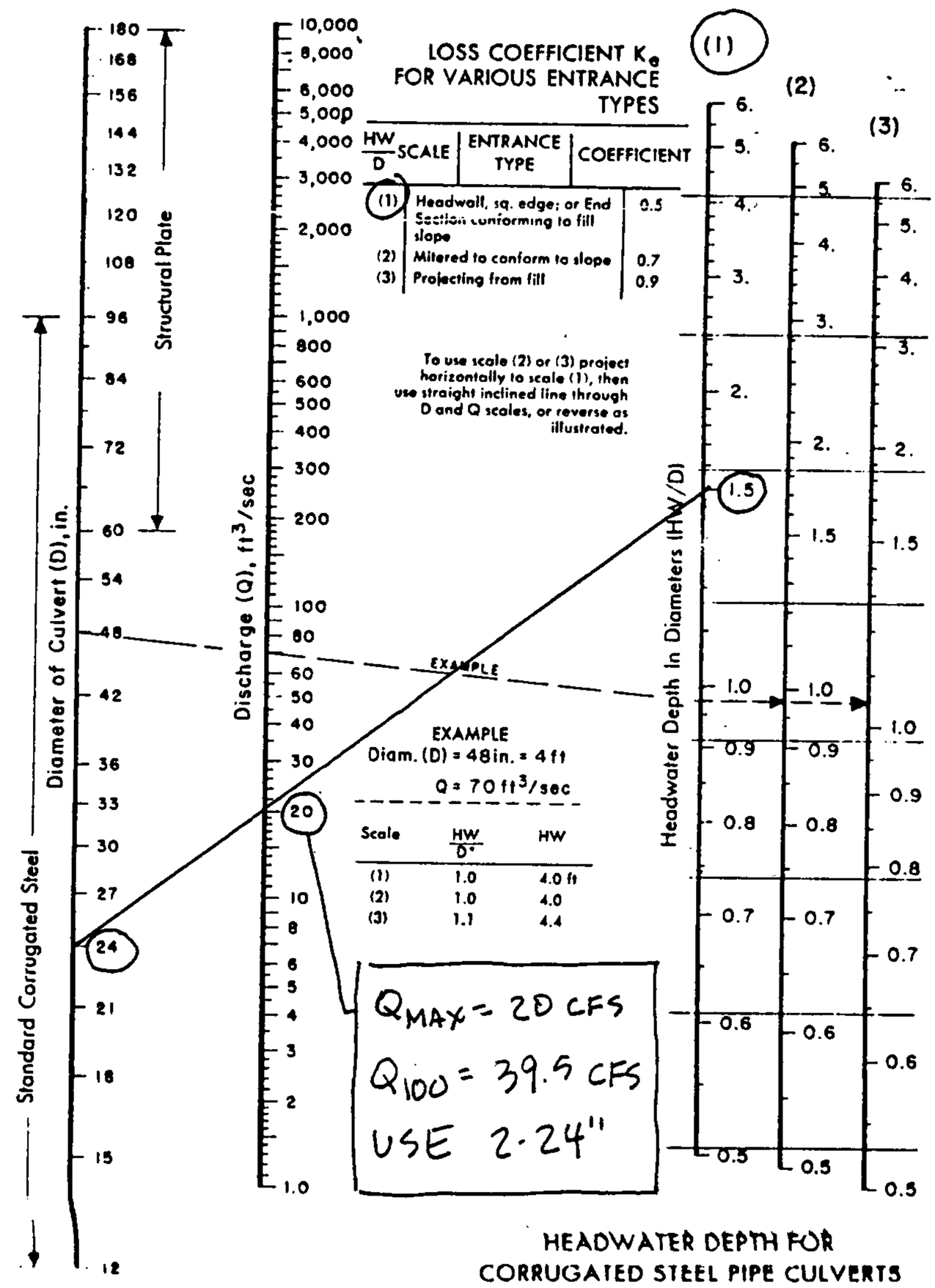
USE 22'

PROJECT NAME ALEXIS PARK JOB NO. 6044

SUBJECT CULVERT DESIGN @ MOTEL 6

BY _____ CHECKED BY _____ DATE 9-25.96 PAGE 4 OF 5

CAPACITY @ 24" CMP'S PROVIDED BY MOTEL 6



HEADWATER DEPTH FOR CORRUGATED STEEL PIPE CULVERTS WITH INLET CONTROL

FHWA HEC 5

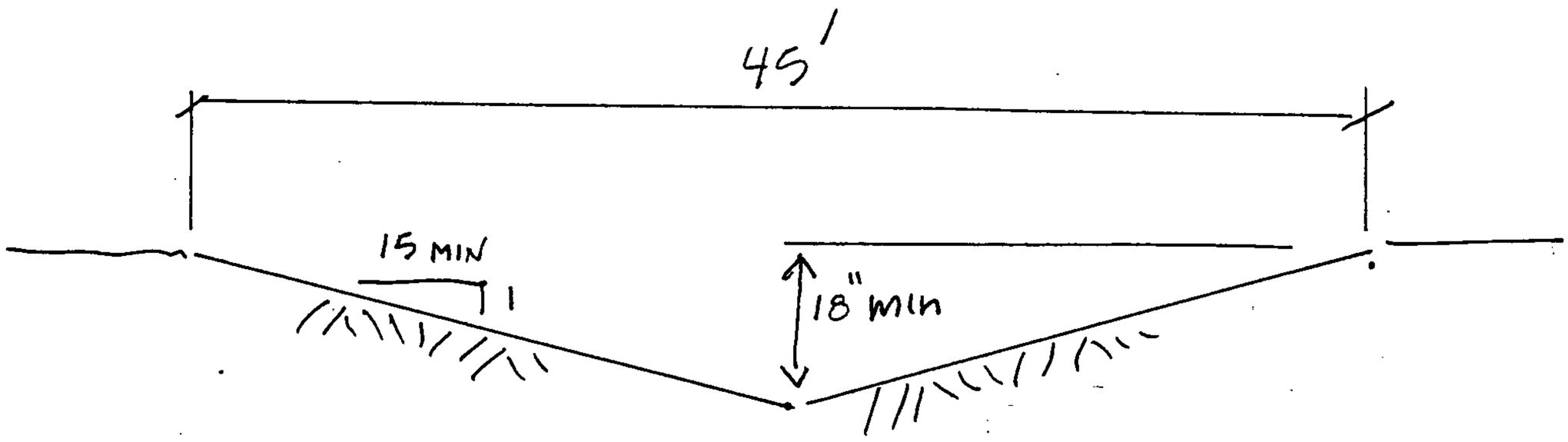
Figure 4-28 *Inlet control* nomograph for corrugated steel *pipe* culverts. The manufacturers recommended keeping *HWID* to a maximum of 1.5 and preferably to no more than 1.0.

PROJECT NAME ALEXIS PARK JOB NO. 6044

SUBJECT

BY CHECKED BY DATE 11-1-96 PAGE 5 OF 5

SWALE SECTION W/IN ±-25 R/W:



SECTION

NTS

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)     ? 40
B (FT)      ? 0
M (FT/FT)   ? 15
S (FT/FT)   ? .01
N (FT^1/6)  ? .025
```

```
      RESULTS
================
Y=        0.88 FT
A=       11.64 SF
P=       26.49 FT
V=        3.44 FPS
F=        0.91      SUB-CRITICAL FLOW
```

NON-EROSIVE. PROVIDE EROSION CONTROL AT END OF RUNDOWN, POND OUTLET + 24" CMP INLETS PER DETAIL C/6.

North and South Domingo Baca Arroyos and Paseo del Norte Corridor Drainage Management Plan

SUBMITTED TO:

Albuquerque Metropolitan Arroyo
Flood Control Authority
Albuquerque, New Mexico

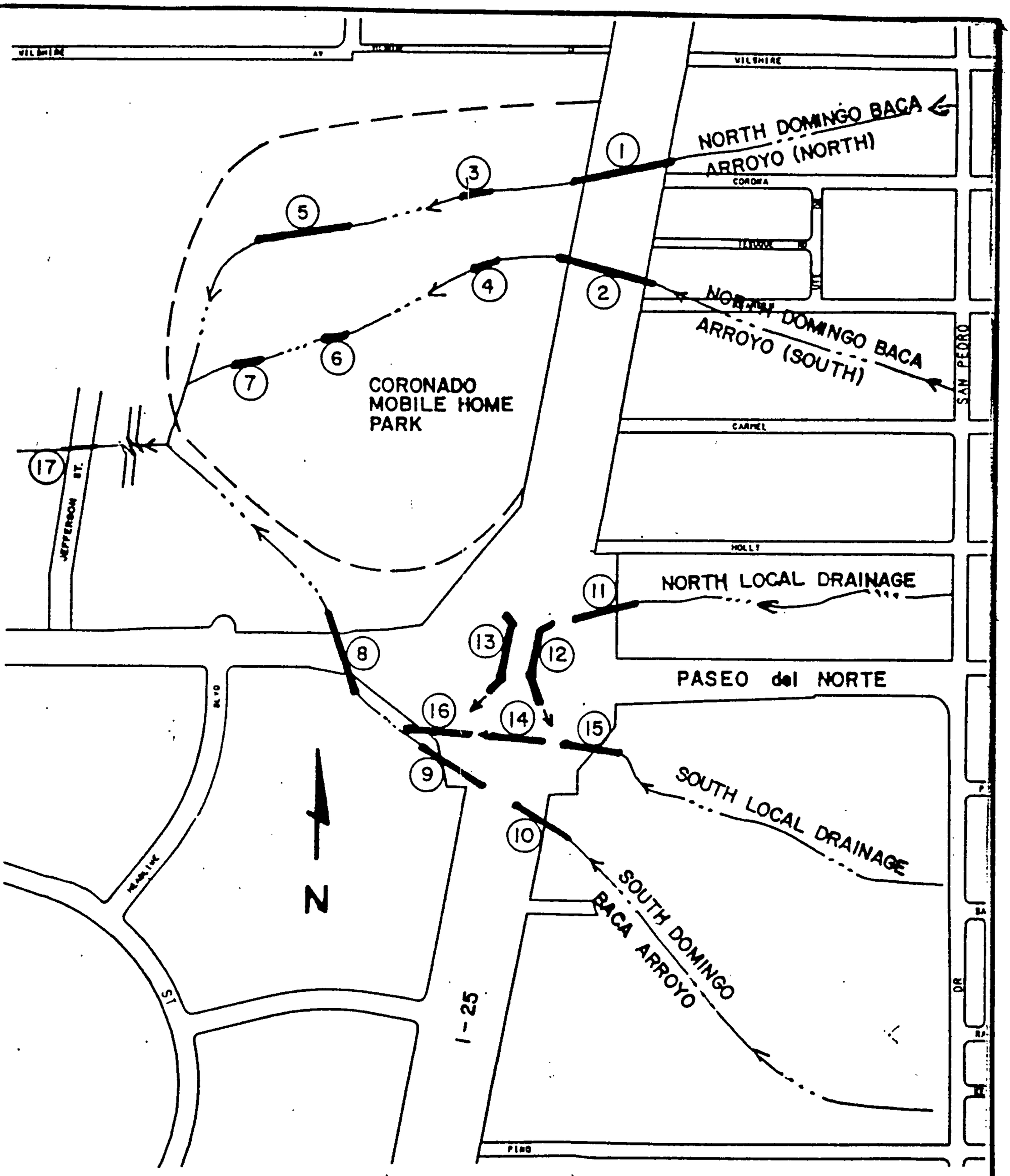
Resource Technology, Inc.
ENGINEERS & ENVIRONMENTAL SCIENTISTS
2129 OSUNA NE – SUITE 200, ALBUQUERQUE, NEW MEXICO 87113
TELEPHONE – (505) 345 – 3115

in association with

Holmes & Narver Inc.

RTI PROJECT NO. 90 - 090

DECEMBER 1991



SUMMARY OF I-25, PASEO DEL NORTE AND CORONADO MOBILE HOME PARK CULVERTS

FIGURE 6 -1

TABLE

SUMMARY OF I-25, PASEO DEL NORTE AND CORONADO MOBILE HOME PARK CULVERTS
ASSUMING CULVERT FLOW

STRUCTURE NUMBER	QUANTITY AND DESCRIPTION	MAXIMUM FLOW DEPTH NO SEDIMENT (ft)	EXISTING AVAILABLE FLOW DEPTH INLET (ft)	EXISTING AVAILABLE FLOW DEPTH OUTLET (ft)	EXISTING MAXIMUM CAPACITY Assuming Culvert Flow (cfs) (a)	CAPACITY AT LOW CHORD OR SOFFIT Assuming Uniform Flow (cfs)	100-YR HYDROLOGIC RESULTS EXISTING CONDITION (cfs)	100-YR HYDROLOGIC RESULTS FUTURE CONDITION OPTION H6-1 (cfs) (b)	100-YR HYDROLOGIC RESULTS FUTURE CONDITION OPTION G2/J (cfs) (c)
(1)	8 - CMP'S 4'	4.00	4.00	4.00	(600)		630	650	420
2	4 - CBC'S 4'H X 9'W	4.00	4.00	4.00	1250		390	90	360
(3)	1 - CMP 5.67'H X 8.5'W	5.67	5.67	5.50	(360)		630	680	(e)
4	2 - CMP'S 5.67'H X 8'W	5.67	5.67	5.67	500		390	90	780(f)
(5)	1 - CMP 5.5'H X 8'W	5.50	5.00	1.70	(200)		630	670	(e)
6	2 - CMP'S 5.5'H X 8'W	5.50	3.70	3.70	300		390	90	900(f)
7	1 - CMP 5'H X 13'W	5.00	4.70	4.70	450		390	90	900(f)
8	4 - CBC'S 8'H X 10'W	8.00	5.97	6.50	3500	10450	3340	8690	5980
9	4 - CBC'S 8'H X 10'W	8.00	7.57	8.00	3600		2840	8150	5440
10	4 - CBC'S 8'H X 10'W	8.00	6.29	8.00*	3500	10850	2840	8150	5450
11	4 - CMP'S 4'	4.00	4.00	4.00	450		240	330	330
12	2 - CMP'S 4'	4.00	4.00	4.00	120		310	400	400
13	1 - CMP 4'	4.00	4.00	4.00	140		NC	NC	NC
14	2 - RCP'S 5'	5.00	5.00	5.00	350		490	620	620
15	2 - CMP/RCP' 5'	5.00	5.00	5.00	300		160	170	170
16	2 - RCP'S 5'	5.00	5.00	5.00	300		490	620	620
17	4- CBC's 8'H X 10'W	8.00	4.00	5.50	3500	10450	4360	9760	7080

NC Not Computed.

(a) Computed based on culvert hydraulics - assuming open culvert.

(b) Diversions from North Domingo Baca Basin at Ventura, Wyoming and San Pedro to Paseo del Norte Channel, outfall to South Domingo Baca Arroyo west of San Pedro.

(c) Based on Option G2/J - Paseo del Norte Diversion to South Domingo Baca Arroyo west of San Pedro and a detention dam near Louisiana on the North Domingo Baca Arroyo.

(e) Recommend that these culverts be abandoned in future. Divert runoff from outfall of structure 1 to outfall of structure 2 in a concrete channel (recommended).

(f) Culverts must be replaced.

* Not surveyed.

C:\MAIN\WRITE\DOMINGO\REPORT\CULHYD.SUM

RESOURCE TECHNOLOGY, INC.
ENGINEERS & ENVIRONMENTAL SCIENTISTS
2129 Osuna Road, NE Suite 200
Albuquerque, NM 87113
Phone: (505) 345-3115
Fax: (505) 345-4182

CHECKED _____ DATE _____ PROJECT NO. _____
APPROVED _____ DATE _____ SHEET _____ OF _____
TITLE _____ BY RR DATE 08/03/98

DESCRIPTION OF CULVERT STRUCTURES

Structure No.	Quantity	Opening Size (a)	Description	Inlet Invert Elev. (b)	Outlet Invert Elev. (b)	Existing available flow depth (ft) Inlet	Outlet
(1)	8	4 ft dia (L = 350 ft)	RCP @ Inlet CMP @ Outlet	5194.80	5185.90	4	4
2	4	4 ft (H) x 9 ft (W) (L = 300 ft)	Concrete Box Culverts	5198.42	5188.42	3.58	3.58
3	1	5.8 ft (R) x 7.5 (S) (L = 30 ft)	CMP - Arch (Structural Plate)	5180.20	5180.20	5.8	5.8
4	2	5.6 ft (R) x 9.0 (S) (L = 30 ft)	CMP - Arch (Struct. Plate)	5183.30	5182.50	5.6	5.6
5	1	5.9 ft (R) x 8.5 (S) (L = 460 ft)	CMP - Arch (Struct. Plate)	5138.29	5135.80	5.9	5.9
6	2	4.3 ft (R) x 9.5 (S) (L = 30 ft)	CMP - Arch (Struct. Plate)	5157.10	5156.20	4.3	4.3
7	1	4.0 ft (R) x 12.4 (S) (L = 35 ft)	CMP - Arch (Struct. Plate)	5153.10	5152.90	4.0	3.50

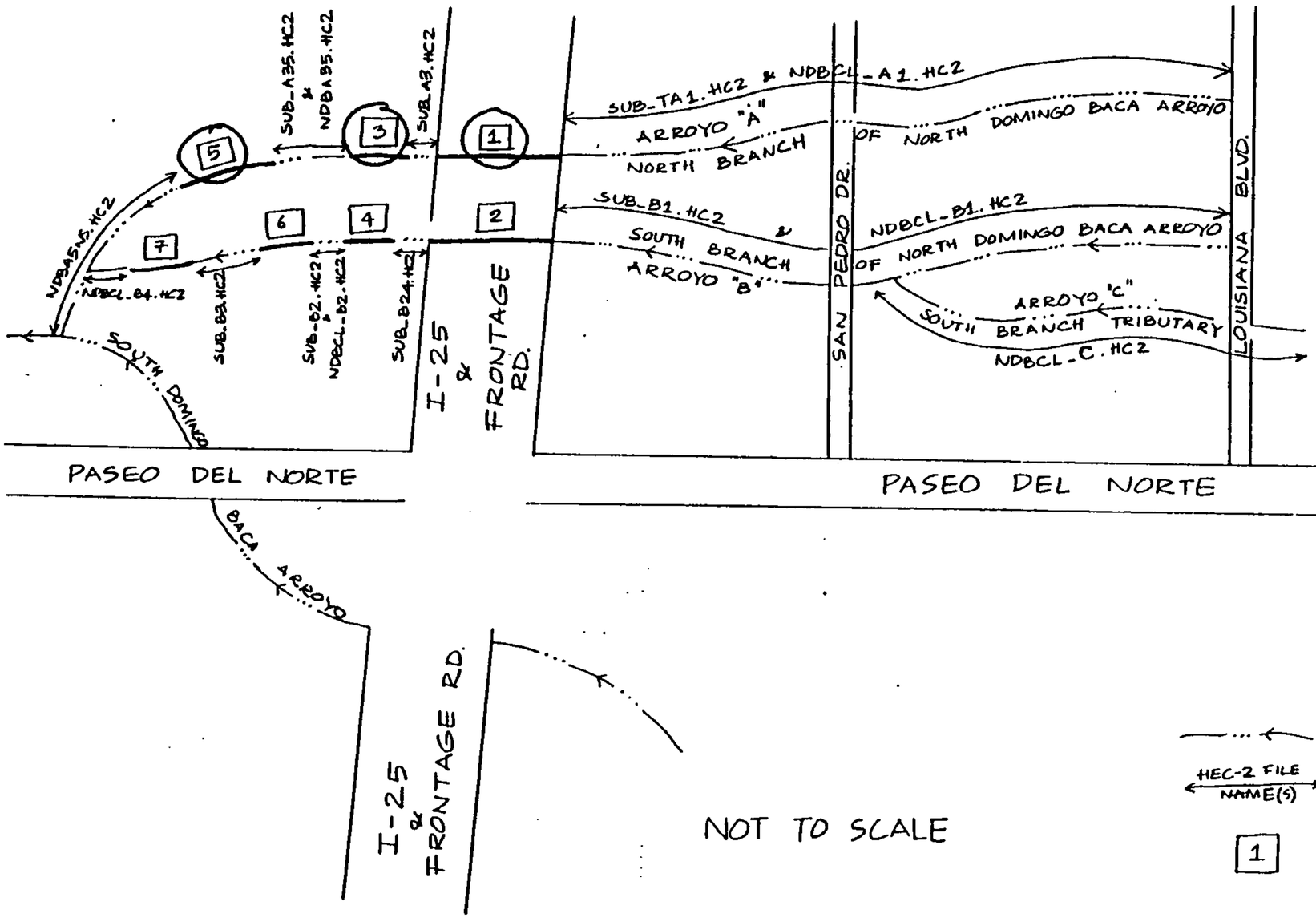
(a) The given sizes are "actual size" available for flow.

(b) These inlet and outlet invert elevations represent elevations of ~~tops~~ of sediment deposition in culverts. If there was no sediment deposition in culvert, these elevations represent true invert elevations. If the rise or height in "Opening Size" column is equal to existing available flow depth, it means that there is no sediment in it (for the particular structure.)

Top elev. of opening for struct ② = 5193.42 + 3.58 = 5197.0

Note: There was no sediment deposition in culverts structures nos. ①, ③, ④ & ⑤.

SCHEMATIC DIAGRAM ILLUSTRATING CULVERT STRUCTURES AND REACHES COVERED BY HEC-2 FILES



NOT TO SCALE

LEGEND

- ARROYO/CHANNEL
- HEC-2 FILE NAME(S) — REACH COVERED BY GIVEN HEC-2 FILE(S)
- [1] — CULVERT STRUCTURE NO. 1.
- CULVERT STRUCTURE

D. Mark Goodwin & Associates, P.A.
Consulting Engineers and Surveyors

PROJECT Imaging Concepts
SUBJECT Drainage
BY JNM DATE 7/5/94
CHECKED _____ DATE _____
SHEET ___ OF ___

Grading and Drainage for Site Plan Approval

Pre-Design Conference Findings:

1. An approved drainage plan is required
2. Downstream capacity needs to be addressed based upon the developed condition of the contributing basin.
3. Existing capacity and ownership of the flow path for the 30" storm drain west of I-25 needs to be addressed.
4. The storm drainage capacity of Wilshire and Signal needs to be addressed.
5. Coordination and permits are required from the Highway Department.

Solutions Approach:

5A) 2. We will restrict the developed flows from our site to the historical rate. That means the contributing basin will remain as is: the existing developed condition (see attached off-site basin map) and all flows from this basin will be aimed into the 30" storm drain that passes beneath I-25.

D. Mark Goodwin & Associates, P.A.
Consulting Engineers and Surveyors

PROJECT Imaging Concepts
SUBJECT Drainage
BY JMM DATE 7/5/94
CHECKED _____ DATE _____
SHEET ____ OF ____

5A) 3. The capacity of the 30" SD system is controlled by its inlet just east of the I-25 frontage road (see attached orifice-controlled backwater calculation). For our development, the peak flow through this system will not change.

There is evidence that suggests this outfall west of I-25 is directed north toward the Alameda interchange and then west in the Alameda Blvd storm drain. The Highway Department has received a plan to verify this outfall.

5A) 4. Eventually, Wilshire and Signal will consist of new standard curb and gutter with 40' of face to face permanent pavement. These streets will be required to contain and convey all developed flow. From the attached AHYMO, the upstream off-site basin collects runoff from the area east of our site and discharges into the 1/2 street section (shown as $Q_{roadside}$ = 21.2 cfs for Signal and $Q_{roadside}$ = 25.7 cfs for Wilshire on our plan). From the attached street capacity chart, it can be shown that one half of the street conveys approximately 50 cfs. Therefore, we contend that the proposed surface features will be sufficiently sized to carry the anticipated roadside flows.

D. Mark Goodwin & Associates, P.A.
Consulting Engineers and Surveyors

PROJECT Imaging Concepts
SUBJECT Drainage
BY JMM DATE 7/5/94
CHECKED _____ DATE _____
SHEET ___ OF ___

SA) 4. (cont.)

Once flows reach the west ends of the respective streets, they will be directed into 6' concrete channels to be built along the frontage road. This width should provide sufficient access to perform maintenance.

SA) 5. The Highway Department will be receiving a copy of this plan for review and comment.

D. Mark Goodwin & Associates, P.A.
Consulting Engineers and Surveyors

PROJECT [illegible]
SUBJECT Drainage
BY SMM DATE 7/29/21
CHECKED DATE
SHEET OF

PROPOSED PONDING AREA

To design the proposed ponding area, the existing conditions must be evaluated. The existing ponding capacity was determined as follows:

Elevation	Area(ft^2)	Depth(ft)	Avg Area(ft^2)	Cumm. Volume(ft^3)
96.0	480			
		1.0	1120	
97.0	1760			4000
		1.0	2880	(0.092 Ac.F
98.0	4000			
		1.0	7450	
99.0	10900			30700
		1.0	19250	(0.705 Ac.F
100.0	27600			

At elevation 98.0, the pipe opening acts as a wei

$Q = 2.9 L H^{3/2} = 2.9(3.93)(1.25)^{3/2} = 15.9$ cfs

At elevation 100.0, the pipe opening acts as an or

$Q = CA\sqrt{2gH} = 0.65(4.91)\sqrt{2(32.2)(1.9)} = 35.3$ cfs

D. Mark Goodwin & Associates, P.A.
Consulting Engineers and Surveyors

PROJECT Imaging Concepts
SUBJECT Drainage
BY DMM DATE 7/29/94
CHECKED _____ DATE _____
SHEET ___ OF ___

Placing these parameters in the Allymo route reservoir routine revealed the following:

Peak discharge of 31.61 cfs occurs @ 1 hour and 40 minutes into the storm

The maximum water surface is 99.62

According to a letter issued by Ms. Raymunda Van Hoven of the State Highway Department on July 20, 1994, she suggests that a detention pond equivilent to a volume equal to approximately one-third of the basin's total volume, or 0.71 Ac.Ft. (30934 ft^3), would be adequate. She also suggests placing the bottom of the pond at 12 inches below the invert of the discharge pipe. Our proposed pond, as identified on the plan, will have a bottom at 94.90 and a top at 99.0. The average area of this pond between the top and bottom elevation is:

Elevation	Area	Depth	Avg Area	Volume
95.	4658 ft^2	4 ft	7757 ft	31028 ft^3
99.0	10857 ft^2			

OMPANY

SU-2

SU-1 FOR AUTO SALES SERV RE?

SU-2 IP

NORTH

SU-2

SIGNAL

SP-80---352

OFF-SITE BASIN C

OFF-SITE BASIN A

OFF-SITE BASIN B

SAN PEDRO BLVD

SP-80-424

WILSHIRE

SU-2 IP

SU-2 IP

25

12

13

14

NEW MEXICO STATE HIGHWAY AND TRANSPORTATION DEPARTMENT
DISTRICT THREE

P.O. BOX 91750
ALBUQUERQUE, NEW MEXICO 87199-1750
TELEPHONE (505) 841-2700
Fax (505) 841-2790

Telecopier (Fax) Transmittal Instructions

Date August 8, 1994

Attachments No. 2
(Incl. this sheet)

FAX TO: 827-5345

To: G. O. X District No. 3 Other ____

DRAINAGE SECTION Room 217

Attn: RAYMUNDA A. VAN HOVEN, DRAINAGE ENGINEER

Subject: Imaging Concepts Conceptual Grading and Drainage Plan Review; IDC dated 08/03/94

Remarks: THE OWNER SHOULD MAINTAIN THE POND FOR WEEDS, DEBRIS, AND LITER. WE CAN MOW THE SHOULDERS DURING ROUTINE MOWING OPERATIONS. THE OWNER WILL NEED TO CONSTRUCT SHOULDERS WITH A MINIMUM SLOPE OF 6:1 FROM THE ROADWAY TO THE FLOOR OF THE POND.

From: STEVEN P. HARRIS

DISTRICT MAINTENANCE ENGINEER

New Mexico State
Highway & Transportation Department

I N T R A - D E P A R T M E N T A L C O R R E S P O N D E N C E

SUBJECT: Comments for Imaging Concepts Conceptual Grading and Drainage Plan Review.

Date: 8-8-94

File Reference:
R/W General

TO: Raymunda A. Van Hoven
Drainage Engineer

Attention of:

FROM: Robert Lopez, Supervisor
Property Management

Your request for comments regarding the subject drainage project has been reviewed by the Property Management Unit and the Railroad and Utilities Section of the Right of Way Bureau. Since this project requires a drainage structure within right of way, District #3 will have to coordinate with Imaging Concepts through permit or agreement, however the District wants to handle it, approval of the project within the right of way.

If you have questions or need more information please contact me at 5349, ext. 218.

xc: J. Ruiz
T. Gallegos

New Mexico
State Highway and Transportation Department

I N T R A - D E P A R T M E N T A L C O R R E S P O N D E N C E

SUBJECT: Imaging Concept & Alameda Developments Date: 10/12/94

TO: Anthony Lopez
District Three Traffic Engineer File Ref:

Attention of:

FROM: Raymunda A. Van Hoven
Drainage Engineer R. Van Hoven

I have reviewed the subject developments and offer the following comments.

IMAGING CONCEPT

I concur with Mr. John Curtin's comments on his letter to Mr. John McKenzie dated 9/19/94 (copy attached), and should be addressed prior to issuance of the permit. It is determined from Mr. John McKenzie's calculation that the water will not overtop the Frontage Road as well as the Interstate at 100 year-6 hour rainfall.

An agreement between the developer and the Department should be prepared for the developers's maintenance of the detention pond. I have no further comments.

ALAMEDA DEVELOPMENT

The revised system is anticipated not to impact the roadway, however, since the pipe will be connected directly into the existing storm sewer system, it is advisable to regulate the discharge into the existing system.

I recommend to change the 12" outlet pipe from detention pond "B" to 8" outlet pipe. Otherwise, the drainage recommendations are reasonable.

If I can be of further assistance, please let me know.

/RVH

xc: Bill Moore
✓John McKenzie, DMG & Assoc.

D. Mark Goodwin & Associates, P.A.
Consulting Engineers and Surveyors

PROJECT Imaging Concepts
SUBJECT Drainage
BY JMM DATE 9/13/94
CHECKED _____ DATE _____
SHEET ____ OF ____

Design of features to be constructed at this site consist of the outlets for the ponding area in the north parking lot and for the ponding area in the south parking lot. On-site ponding for this site will consist of detention of developed flows with discharge into the Alameda Blvd. storm drain system at the historic rate of 3.81cfs (see AHYMO run). 75% of the discharge (based upon basin area) of on-site developed flow, in addition to the off-site flow that is being passed through, will be controlled from the north parking lot while the remaining 25% will be controlled discharge from the south parking lot.

A previously submitted AHYMO reservoir routing output was provided with a previous submittal and is again being included herewith. The anticipated maximum water surface was identified as 5199.41 With our design, this water surface elevation will not change.

D. Mark Goodwin & Associates, P.A.
Consulting Engineers and Surveyors

PROJECT Imagine Concepts
SUBJECT Drainage
BY DMM DATE 9/13/94
CHECKED _____ DATE _____
SHEET ____ OF ____

Frontage Road Channel

Channel North of CMP Culvert (from Signal Ave.)

Q = Off-site Basin "C" (previous submittal) = 21.2 cfs

Length of Opening w/ 8" curb = $L = \frac{21.2}{2.9(.67)^{1.5}} = 13.3'$

Maximum flow for this channel occurs where the 11.6 cfs joins the off-site flow of 21.2 cfs

Channel Dimensions: 6' x 8" WP = 7.34' Area = 4 ft²

$Q = \frac{1.49}{.015}(4)(0.55)^{.67}(.016)^{.5}$ min slope = 1.6%

$r_H = 0.55$

Q = 33.74 cfs capacity required = 32.7 cfs $V = \frac{Q}{A} = 8.4$ fps

Channel South of CMP Culvert (from Wilshire Ave.)

Q = Offsite Basin "B" (previous submittal) = 25.7 cfs

L = Length of opening w/ 8" curb = $\frac{25.7}{2.9(.67)^{1.5}} = 16' - 2"$

Maximum flow for south portion is 25.7 + 2.2 = 27.9 cfs

Capacity of this channel at 1.1% slope is

$Q = \frac{1.49}{.015}(4.0)(.55)^{.67}(.011) = 27.92$ cfs

South of the channel junction the capacity is:

$Q = \frac{1.49}{.015}(4.0)(0.55)^{.67}(.0093)^{.5} = 25.7$ cfs $V = 6.4$ fps

D. Mark Goodwin & Associates, P.A.
Consulting Engineers and Surveyors

PROJECT Imaging Concepts
SUBJECT Drainage
BY JMM DATE 9/13/94
CHECKED _____ DATE _____
SHEET ____ OF ____

North Ponding Area Outlet Structure & Spillway

Developed flow = (.75)(on-site developed) = 6.44 cfs
Off-site "Passed through flow" = 5.20 cfs
Historic On-Site = (.75)(on site historic) = 2.86 cfs

The controll device will restrict discharge to 8.06 cfs. Height of pond curbing is 18".

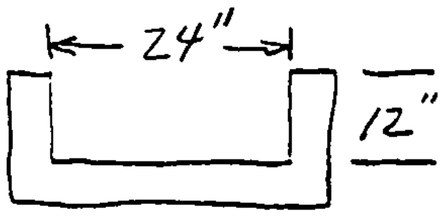
$$L = \frac{Q}{2.9(H)^{1.5}} = \frac{8.06}{2.9(1.5)^{1.5}} = 1.51' \quad \text{use 18" wide opening}$$

The spillway opening must be able to exclusively discharge the above rate and 75% of the developed flow from this area.

Q = 75% (developed flow) + off-site "pass through"
6.44 cfs + 5.20 cfs = 11.64 cfs

$$L = \frac{11.64}{2.9(.67)^{1.5}} = 7.32 \quad \text{use } 7'-4"$$

Channel Below Spillway



$$Q = \frac{1.49}{.015}(2)(.67)^{.67}(.01)^{.5} = 11.72 \text{ cfs}$$

WP = 3 Area = 2
r_H = 0.67 slope = 0.6%

CURVE TABLE			
CURVE	RADIUS	LENGTH	DELTA
1	25.00'	31.89'	94°29'56"
2	25.00'	28.59'	84°44'27"
3	25.00'	35.47'	81°16'54"

LEGEND

ITEM	EXISTING	PROPOSED
WATERLINE	6" W	6" W
SANITARY SEWER	8" SAS	8" SAS
STORM SEWER	36" SD	24" SD
FIRE HYDRANT		
VALVE		
WATER SERVICE (SINGLE)		
WATER SERVICE (DOUBLE)		
MANHOLE		
CURB		
DROP INLET		
OVERHEAD ELEC	OHE	
UNDERGROUND ELEC. GAS, TEL, TV	UGT	
FLOWLINE ELEV	FL 0.14	FL 0.14
TOP OF CURB ELEV.	99.3	99.31
SPOT ELEV.	x16.7	◆16.7
SEWER SERVICE		
RIGHT OF WAY		
POWER POLE (GUYED)	PP	
CHAIN LINK FENCE		
CENTERLINE		
RETAINING WALL		
TOP OF ASPHALT ELEV	TA 16.2	TA 16.2
EXISTING PAVEMENT TO BE REMOVED		

NOTES:

1. ALL STATIONING IS BASED ON CENTERLINE OF RIGHT-OF-WAY UNLESS OTHERWISE NOTED.

○ KEYED NOTES

1. STANDARD C&G PER COA STD DWG 2415
2. 4' SIDEWALK
3. VALLEY GUTTER PER COA STD DWG 2420
4. MODIFIED HANDICAP RAMP PER COA STD DWG 2426
5. SAW CUT REMOVE & DISPOSE EXISTING ASPHALT PAVEMENT
6. TRANSITION FROM 8" STD C&G TO 6" C&G THRU RETURN PER COA STD DWG 2418
7. CONSTRUCT HANDICAP RAMP - CASE B AT EXISTING CURB RETURN PER COA STD DWG 2441
8. ADJUST EXISTING MANHOLE TO GRADE PER STD DWG 2460
9. ADJUST EXISTING MANHOLE VALVE TO GRADE PER STD DWG 2460
10. NEW STREET PAVEMENT PER SECTION (B/3)
11. CONSTRUCT 5 LF NEW STD CURB & GUTTER TRANSITION FROM FULL CURB HEIGHT TO NO CURB
12. CONSTRUCT 30' WIDE CONCRETE DRIVEPAD PER STD DWG 2425
13. SAWCUT, REMOVE & DISPOSE EXISTING VALLEY GUTTER AND SOUTH CURB RETURN AS SHOWN

STA 7+29.81 ℄ I-25, EAST FRONTAGE ROAD
PI CR STA 7+65.91
TC= 5200.10
EX. WCR
STA 7+74.44 (20' RT) ℄ CONCRETE RUNDOWN FL= 5199.33
PC STA 7+87.44 (20' RT) TC= 5200.27
60' TRANSITION TO NO CROWN
ADJUST MH RIM
RIM= 5200.48
PC STA 8+62.57 (20' RT) TC= 5201.85
STA 9+78.00 (20' RT) ℄ 32' DRIVEPAD
ADJUST MH RIM
RIM= 5204.32
STA 10+00.00 PROJECTED NE PROPERTY CORNER LOT 9-A END CONSTRUCTION
STA 10+00.00 (20' RT) TC= 5204.72
5.9%
EX TC 5204.71
EXIST. PAVT.
STA 10+00 TO STA 10+25 REMOVE & REPLACE EXISTING PAVING TO PROVIDE SMOOTH GRADE. TRANSITION FROM NEW TO EXISTING PAVEMENT SECTIONS
EX TC 5200.40
EX FL 99.59
EX TC 5200.39
EX TC 5201.97
EXISTING PAVEMENT
EX TC 5203.47
EXISTING C&G AND SW
26'
60' R/W
40' TF
2% TYP
EXISTING EDGE PAVEMENT
N 80°00'00" W
214.73'
TSW 4.08
TSW 4.48
TA 4.92
TA 4.92
25'
S=4.80%
TA 2.07
S=5.00%
TA 2.60
I-25 EAST FRONTAGE ROAD
TC 5200.40
TC 5200.45
LOT 9-A
A 3
D 3

	FL
1	99.70
2	99.68
3	99.56

	FL
1	01.12
2	01.83
3	01.95

	FL
1	02.25
2	01.89
3	01.54

NOTE (5)
IF 'R' VALUE IS LESS THAN 50 CONTRACTOR SHALL REPLACE SUBGRADE WITH UPGRADED SOIL PER CITY STD SPECIFICATIONS

1-1/2" ASPHALT CONC. SURFACE COURSE 1800lb GRADATION 'B'
TACK COAT
1-1/2" ASPHALT CONC BASE COURSE 1800 lb GRADATION 'B'
6" AGGREGATE BASE COURSE @ 95% ASTM D-1557
12" COMPACTED SUBGRADE ASTM D-1557 95% MIN. COMPACTION

60' R.O.W
10' 40' 10'
6' 20' 7.5' 20'
2% TYP
EX STD C&G
EXIST PAVEMENT
EXISTING 4' SIDEWALK
NEW PAVEMENT PER SECTION (B/3)
SAWCUT REM & DISPOSE EXIST TEMP PAVEMENT
NEW 4' S/W
NEW STANDARD C/G (TYP)

STREET SECTION (A/3) 1"=10'

STREET PAVEMENT SECTION (B/3) PER STD DWG 2408 1"=10'

HORIZ: 1" = 20'
VERT: 1" = 5'

WILSHIRE AVENUE NE

EXISTING PAVEMENT PROFILE @ ℄ ROW
S= 0.0210 FT/FT
S=0.05 FT/FT
PROPOSED RIGHT FLOW LINE PROFILE
I-25 EAST FRONTAGE ROAD
STA 7+74.44 (20' RT) ℄ CONCRETE RUNDOWN FL= 5199.33
PC STA 7+87.44 (20' RT) TC= 5200.27 FL= 5199.60
PC STA 8+62.57 (20' RT) TC= 5201.85 FL= 5201.18
STA 9+78.00 (20' RT) ℄ 32' DRIVEPAD
STA 10+00.00 PROJECTED NE PROPERTY CORNER LOT 9-A END CONSTRUCTION
EXISTING TEMP PAVEMENT
EXISTING CONSTRUCTION

22'
6"
6" TIP
6" CHANNEL LINING PER STD DWG 2260

RUNDOWN SECTION (C/3) NTS

10' 10'
RUNDOWN CURB
FL 99.33
FL 98.83
FL 98.50
6" CHANNEL LINING PER STD DWG 2260
12"
18" THICK RIP RAP D50= 9"
6" THICK GRANULAR BEDDING

RUNDOWN SECTION (D/3) NTS

GRADATION FOR RIP-RAP	
MIN DIMENSION	% SMALLER BY WEIGHT
12"	100
9"	35-55
4"	10

GRADATION FOR GRANULAR BEDDING	
SIEVE SIZE	% BY WEIGHT
1"	90-100
3/4"	20-55
#4	0-10
#8	---
#16	---
#50	---
#200	---

AS BUILT INFORMATION
CONTRACTOR
SUB-CONTRACTOR
SURVEYED BY
DRAFTING
ACCEPTANCE BY
DATE
LETTER ELEV'S BY
DATE
DRAWING CORRECTED BY
DATE
MICRO-FILM INFORMATION
DATE
RECORDED BY
DATE

BENCH MARKS
ACS BRASS CAP "9-C16 1985"
LOCATED AT THE SW CORNER OF THE INTERSECTION OF SAN PEDRO AVE NE AND WILSHIRE AVE NE.
ELEVATION 5229.79 FEET

SURVEY INFORMATION
FIELD NOTES BY DATE

NO.	BY	DATE

ENGINEER'S SEAL
11-18-98

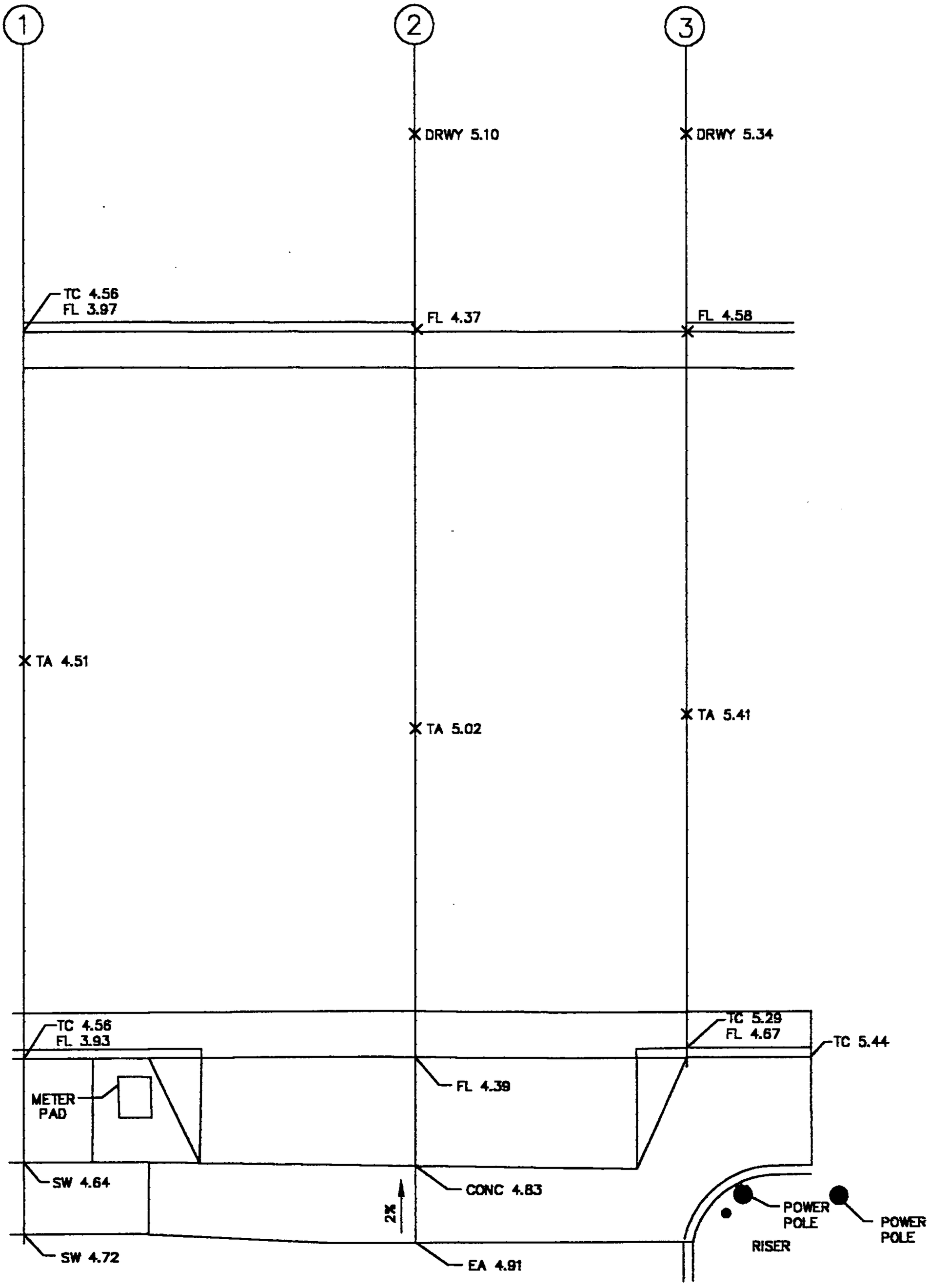
NO.	DATE	REMARKS	BY
		REVISIONS	
		DESIGN	DATE 6/98
		DESIGNED BY D.A.L.	DATE 6/98
		DRAWN BY D.D.E.	DATE 6/98
		CHECKED BY D.A.	DATE 6/98

BRASHER & LORENZ, INC.
Consulting Engineers
2201 San Pedro NE Building 1 Suite 210
Albuquerque New Mexico 87110
Ph 505-888-6688 Fax 505-888-6168

CITY OF ALBUQUERQUE
PUBLIC WORKS DEPARTMENT
ENGINEERING DEVELOPMENT GROUP

TITLE: WILSHIRE AVENUE NE
PLAN & PROFILE

Design Review Committee
City Engineer Approval
APPROVED
Mg Date/Yr
Mg Date/Yr



SCALE: 1 INCH = 10 FT

Plan: Plan 01 River: Wilshire Reach:1 Riv Sta: 1 Profile: PF#1

W.S. Elev (ft)	4.45	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.62	Wt. n-Val.		0.017	
E.G. Elev (ft)	5.07	Reach Len. (ft)			
Crit W.S. (ft)	4.62	Flow Area (sq ft)		9.09	
E.G. Slope (ft/ft)	0.033856	Area (sq ft)		9.09	
Q Total (cfs)	57.50	Flow (cfs)		57.50	
Top Width (ft)	36.40	Top Width (ft)		36.40	
Vel Total (ft/s)	6.32	Avg. Vel. (ft/s)		6.32	
Max Chl Dpth (ft)	0.52	Hydr. Depth (ft)		0.25	
Conv. Total (cfs)	312.5	Conv. (cfs)		312.5	
Length Wtd. (ft)		Wetted Per. (ft)		36.89	
Min Ch El (ft)	3.93	Shear (lb/sq ft)		0.52	
Alpha	1.00	Stream Power (lb/ft s)		3.29	
Frctn Loss (ft)	0.43	Cum Volume (acre-ft)			
C & E Loss (ft)	0.03	Cum SA (acres)			

Plan: Plan 01 River: Wilshire Reach:1 Riv Sta: 4 Profile: PF#1

W.S. Elev (ft)	5.50	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.20	Wt. n-Val.		0.017	
E.G. Elev (ft)	5.71	Reach Len. (ft)	0.00	0.00	0.00
Crit W.S. (ft)	5.50	Flow Area (sq ft)		16.01	
E.G. Slope (ft/ft)	0.006040	Area (sq ft)		16.01	
Q Total (cfs)	57.50	Flow (cfs)		57.50	
Top Width (ft)	40.75	Top Width (ft)		40.75	
Vel Total (ft/s)	3.59	Avg. Vel. (ft/s)		3.59	
Max Chl Dpth (ft)	0.82	Hydr. Depth (ft)		0.39	
Conv. Total (cfs)	739.8	Conv. (cfs)		739.8	
Length Wtd. (ft)	0.00	Wetted Per. (ft)		41.67	
Min Ch El (ft)	4.68	Shear (lb/sq ft)		0.14	
Alpha	1.00	Stream Power (lb/ft s)		0.52	
Frctn Loss (ft)	0.00	Cum Volume (acre-ft)		0.00	
C & E Loss (ft)	0.01	Cum SA (acres)		0.02	

Plan: Plan 01 River: Wilshire Reach:1 Riv Sta: 3 Profile: PF#1

W.S. Elev (ft)	5.27	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.41	Wt. n-Val.		0.017	
E.G. Elev (ft)	5.67	Reach Len. (ft)	11.00	6.50	6.50
Crit W.S. (ft)	5.40	Flow Area (sq ft)		11.23	
E.G. Slope (ft/ft)	0.018668	Area (sq ft)		11.23	
Q Total (cfs)	57.50	Flow (cfs)		57.50	
Top Width (ft)	39.88	Top Width (ft)		39.88	
Vel Total (ft/s)	5.12	Avg. Vel. (ft/s)		5.12	
Max Chl Dpth (ft)	0.69	Hydr. Depth (ft)		0.28	
Conv. Total (cfs)	420.8	Conv. (cfs)		420.8	
Length Wtd. (ft)	6.50	Wetted Per. (ft)		40.01	
Min Ch El (ft)	4.58	Shear (lb/sq ft)		0.33	
Alpha	1.00	Stream Power (lb/ft s)		1.68	
Frctn Loss (ft)	0.00	Cum Volume (acre-ft)		0.00	
C & E Loss (ft)	0.02	Cum SA (acres)		0.02	

Plan: Plan 01 River: Wilshire Reach:1 Riv Sta: 2 Profile: PF#1

W.S. Elev (ft)	4.81	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.70	Wt. n-Val.		0.017	
E.G. Elev (ft)	5.51	Reach Len. (ft)	11.00	11.00	19.00
Crit W.S. (ft)	5.00	Flow Area (sq ft)		8.56	
E.G. Slope (ft/ft)	0.045547	Area (sq ft)		8.56	
Q Total (cfs)	57.50	Flow (cfs)		57.50	
Top Width (ft)	39.59	Top Width (ft)		39.59	
Vel Total (ft/s)	6.72	Avg. Vel. (ft/s)		6.72	
Max Chl Dpth (ft)	0.44	Hydr. Depth (ft)		0.22	
Conv. Total (cfs)	269.4	Conv. (cfs)		269.4	
Length Wtd. (ft)	11.00	Wetted Per. (ft)		39.64	
Min Ch El (ft)	4.37	Shear (lb/sq ft)		0.61	
Alpha	1.00	Stream Power (lb/ft s)		4.12	
Frctn Loss (ft)	0.18	Cum Volume (acre-ft)		0.00	
C & E Loss (ft)	0.03	Cum SA (acres)		0.01	