DRAINAGE REPORT FOR ELLISON DRIVE IMPROVEMENTS

(COORS BOULEVARD BYPASS TO GOLF COURSE ROAD)

Prepared for:

BROWN/NZD DEVELOPMENT JOINT VENTURE
C/O BROWN & ASSOCIATES
3411 CANDELARIA NE
ALBUQUERQUE, NEW MEXICO 87107

Prepared by:

Job No. 94306.40

BOHANNAN-HUSTON INC.
ENGINEERS ARCHITECTS PHOTOGRAMMETRISTS SURVEYORS
COURTYARD I, 7500 JEFFERSON NE ALBUQUERQUE, NM 87109 TEL (505) 823-1000 FAX (505) 821-0892

F-9

This eastern portion of the site has slopes ranging from 0.5% to 2% in a generally eastern direction. Soils are highly absorptive sandy soils with occasional clay lenses. Vegetation is light outside of the road and shoulder, consisting of grasses and small sagebrush.

Offsite Drainage Basins

The only offsite basins that impact the site are those of Tracts A-2A and A-2B to the south of Ellison Drive from Seven Bar Loop Road (South) to the Black Diversion Channel. This basin is shown on Plate 6 (Existing Conditions Map inset on the Conceptual Drainage Plan for the platting of Tracts A-1A, A-2A and A-2B Seven Bar Ranch dated September, 1994 by Bohannan Huston, Inc. (CoA Hydrology File # A13/D8)). The basin generates an undeveloped flow of 11.29 cfs during the 100-year storm.

IV. PROPOSED DEVELOPED CONDITIONS

The proposed project has been divided into two phases on both of the portions east and west of the Black Diversion Channel. Ellison Drive will ultimately consist of six traffic lanes and a median from Golf Course Road to the Coors Boulevard Bypass. Phase I will construct the outer 4 traffic lanes and Phase II will complete the inner 2 lanes, median and bridge widening at the Black Diversion Channel. Currently, the SAD 223 is under construction and is anticipated to be complete by the Fall of 1996. Phase I of this project will be complete by the end of 1995. The start of Phase II construction will depend on the development of the tracts to the north of Ellison Drive and east of the Black Diversion Channel, it is not anticipated that Phase II will be required prior to the completion of the SAD 223.

Construction east of the Black Diversion Channel

Phase II construction of Ellison Drive east of the Black Diversion Channel includes two inside traffic lanes and a median from the Black Diversion Channel to the Coors Boulevard Bypass, and an extension of the Phase I storm drain from the intersection of Ellison Drive and Cibola Loop East to the intersection of Ellison Drive and Cibola Loop West. This storm drain extension will convey the off-site flows from Tract B-9G, a portion of Tract B-9H and the Cibola Loop West right-of-way, and will be built either with the Phase II pavement or with the development of Tracts B-9G and B-9H, whichever occurs first. The Phase I storm drain is designed for the flows at the full build-out (Phase II) of Ellison and the tracts to the north (see Offsite Basins below). The Phase I median is wide enough to accommodate the construction of this storm drain extension prior to the inner two traffic lanes being built, if this is necessary. Please refer to Plate 8.

Offsite Basins west of Black Diversion Channel

Most of the residential lots planned for Tract A-2A and located adjacent to Ellison Drive require either backyard ponds or curb drains to Ellison Drive due to elevation differences between pads and Ellison Drive. The street section and the storm drain in Ellison Drive west of the Diversion Channel has been design to accommodate these flows should a curb drain option be approved for this subdivision.

Tract A-2B, the site planned for a school by APS, is currently under design by Wilson and Company. The Conceptual Drainage Plan for the platting of Tracts A-1A, A-2A and A-2B Seven Bar Ranch (dated September, 1994 by Bohannan Huston, Inc. (CoA Hydrology File # A13/D8)), allows for free discharge from the northern portion of this tract. The street section and the storm drain in Ellison Drive west of the Diversion Channel has been design to accommodate the free discharge of these flows up to 21.67 cfs without ponding onsite. Please refer to Plate 6.

As discussed in the existing conditions section above, the tracts to the south of Ellison Drive generate 11.29 cfs in their undeveloped conditions. Prior to development of these site, a swale on the south side of the proposed Ellison Drive and in the right-of-way will convey existing flows east to the maintenance road adjacent to the Black Diversion Channel. This swale will discharge less flow onto the maintenance road than currently because the curb and gutter being built with Ellison Drive will intercept all impervious flow.

Offsite Basins east of Black Diversion Channel

For all the Tracts that eventually discharge into the Ellison Drive storm drain system as designed herein, the flows were taken directly from the SAD No. 223 Drainage Management Plan dated May, 1991 by Easterling and Associates, Inc. (CoA Hydrology File # A01/D223). That report describes detailed requirements for onsite ponding and allowable release rates, no attempt was made here to justify or modify these. Please refer to Plate 7.

V. PHASING/BUILDING PERMIT/FINAL PLAT APPROVALS

This report requests CoA/Hydrology approval for the phased infrastructure improvement plans for Ellison Drive between the Coors Boulevard Bypass and Golf Course Road. These improvements include the construction of 4 traffic lanes, a masterplan sanitary sewer line and the phased construction of two storm drain systems.

As discussed in the existing conditions section above, the tracts to the south of Ellison Drive generate 11.29 cfs in their undeveloped conditions. Prior to development of these site, a swale on the south side of the proposed Ellison Drive and in the right-of-way will convey existing flows east to the maintenance road adjacent to the Black Diversion Channel. This swale will discharge less flow onto the maintenance road than currently because the curb and gutter being built with Ellison Drive will intercept all impervious flow.

Offsite Basins east of Black Diversion Channel

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CONNECTION TO EXISTING STORM DRAIN

1+00 2+00 3+00 4+00 5+00 6+00 7+00 8+00

STA 3+63.27 21.60' LT
INV=82.00

STA 4+18.05 10' RT
BUILD 1-4' SD MH

STA 6+18.37 10' RT
BUILD 1-6' SD MH

CHANDLER DRIVE
SEE CITY PROJECT
#5010.90

STA 6+47.13 18' LT
BUILD 1-DOUBLE "C"
CATCH BASIN

STA 6+47.13 18' RT
BUILD 1-DOUBLE "C"
CATCH BASIN

STA 6+72.83 18' LT
BUILD I-TYPE "A"
CATCH BASIN

STA 6+72.15
BUILD I-TYP
CATCH BAS

BLACK'S-[illegible] CHANNEL

"PIPE A"

CB8 CB8A

MH6 CB7 CB7A

SEVEN BAR LOOP ROAD

NNEL & SEVEN BAR LOOP ROAD
EL STA 61+42.80

FOR STORM PIPE CONNECTION
DETAIL SEE SHEET 11

Proposed Entrance Road

Proposed SD conn. 36"ø@1.0% 130.53 LF

STA 6+31.29 140.55' RT
INV=5101.91

NOT CONSTRUCTED

NOT TO EXCEED 3:1 SLOPE

95% COMPACTION

DESILTING POND

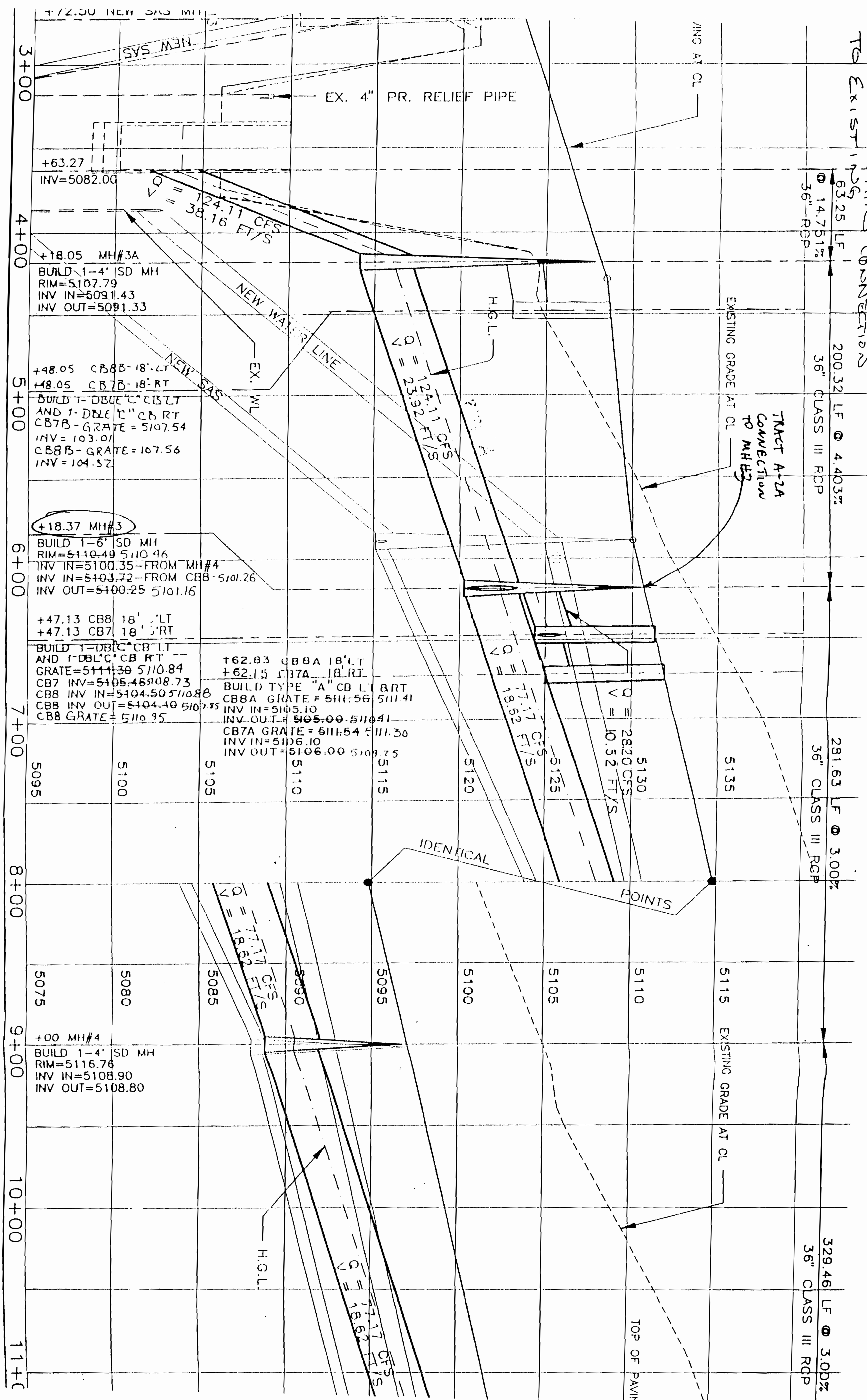
Tract A-2A

N

7 BAR LOOP ROAD AS BUILTS - 7-95

F-21

Bar Loop Road As-Builts 7-28-95



F-22

7-Bar Loop Road Drainage Calculations
Worksheet for Irregular Channel

Sta 13+95 ?

36' F-F

Project Description	
Project File	c:\haestad\fmw\7-barlp.fm2
Worksheet	7-barlp
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Water Elevation

Input Data				
Channel Slope	0.080000 ft/ft ✓			
Elevation range: 99.64 ft to 100.64 ft.				
Station (ft)	Elevation (ft)	Start Station	End Station	Roughness
100.00	100.64	100.00	168.00	0.014
116.00	100.31 Gutter Lip			n=0.017
116.05 118	99.64 99.86			
134.00	100.00 100.18			
151.95 150	99.64 99.86			
152.00	100.31			
168.00	100.64			
Discharge	14.30 cfs ✓	Existing Downstream		

Results		
Wtd. Mannings Coefficient	0.014	
Water Surface Elevation	99.85	ft
Flow Area	2.18	ft²
Wetted Perimeter	21.24	ft
Top Width	20.85	ft
Height	0.21	ft
Critical Depth	99.99	ft
Critical Slope	0.005244	ft/ft
Velocity	6.57	ft/s
Velocity Head	0.67	ft
Specific Energy	100.52	ft
Froude Number	3.59	
Flow is supercritical.		
Flow is divided.		

Attachment

7-Bar Loop Road Drainage Calculations
Worksheet for Irregular Channel

Sta 10+00?
36' F-F

Project Description	
Project File	c:\haestad\fmw\7-barlp.fm2
Worksheet	7-barlp
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Water Elevation

Input Data				
Channel Slope	0.017930 ft/ft	✓		
Elevation range: 99.64 ft to 100.64 ft.				
Station (ft)	Elevation (ft)	Start Station	End Station	Roughness
100.00	100.64	100.00	168.00	0.014
116.00	100.31			
116.05	99.64			
134.00	100.00			
151.95	99.64			
152.00	100.31			
168.00	100.64			
Discharge	7.50 cfs	✓	EXISTING UPSTREAM	

Results		
Wtd. Mannings Coefficient	0.014	
Water Surface Elevation	99.86	ft
Flow Area	2.35	ft²
Wetted Perimeter	22.07	ft
Top Width	21.66	ft
Height	0.22	ft
Critical Depth	99.91	ft
Critical Slope	0.005717	ft/ft
Velocity	3.19	ft/s
Velocity Head	0.16	ft
Specific Energy	100.02	ft ✓
Froude Number	1.71	
Flow is supercritical.		
Flow is divided.		

A

7-Bar Loop Road Drainage Calculations
Worksheet for Irregular Channel

Sta 13+95

Project Description	
Project File	c:\haestad\fmw\7-barlp.fm2
Worksheet	7-barlp
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Water Elevation

Input Data		
Channel Slope	0.080000	ft/ft

CRITICAL AVENUE

Elevation range: 99.64 ft to 100.64 ft.

Station (ft)	Elevation (ft)	Start Station	End Station	Roughness
100.00	100.64	100.00	168.00	0.014
116.00	100.31			n=0.017
116.05	99.64	~~99.86~~ 99.86		
118 134.00	100.00	99.86		100.18 Gutter Lip
150 151.95	99.64			
152.00	100.31			
168.00	100.64			
Discharge	28.90	cfs ✓		PROPOSED

Results		
Wtd. Mannings Coefficient	0.014	
Water Surface Elevation	99.91	ft
Flow Area	3.69	ft²
Wetted Perimeter	27.65	ft
Top Width	27.14	ft
Height	0.27	ft d = 0.37'
Critical Depth	100.09	ft
Critical Slope	0.004549	ft/ft
Velocity	7.84	ft/s V = 6.9 fps
Velocity Head	0.95	ft
Specific Energy	100.87	ft ✓ E = 0.37 + (6.9)²/2g = 1.11'
Froude Number	3.75	
Flow is supercritical.		
Flow is divided.		

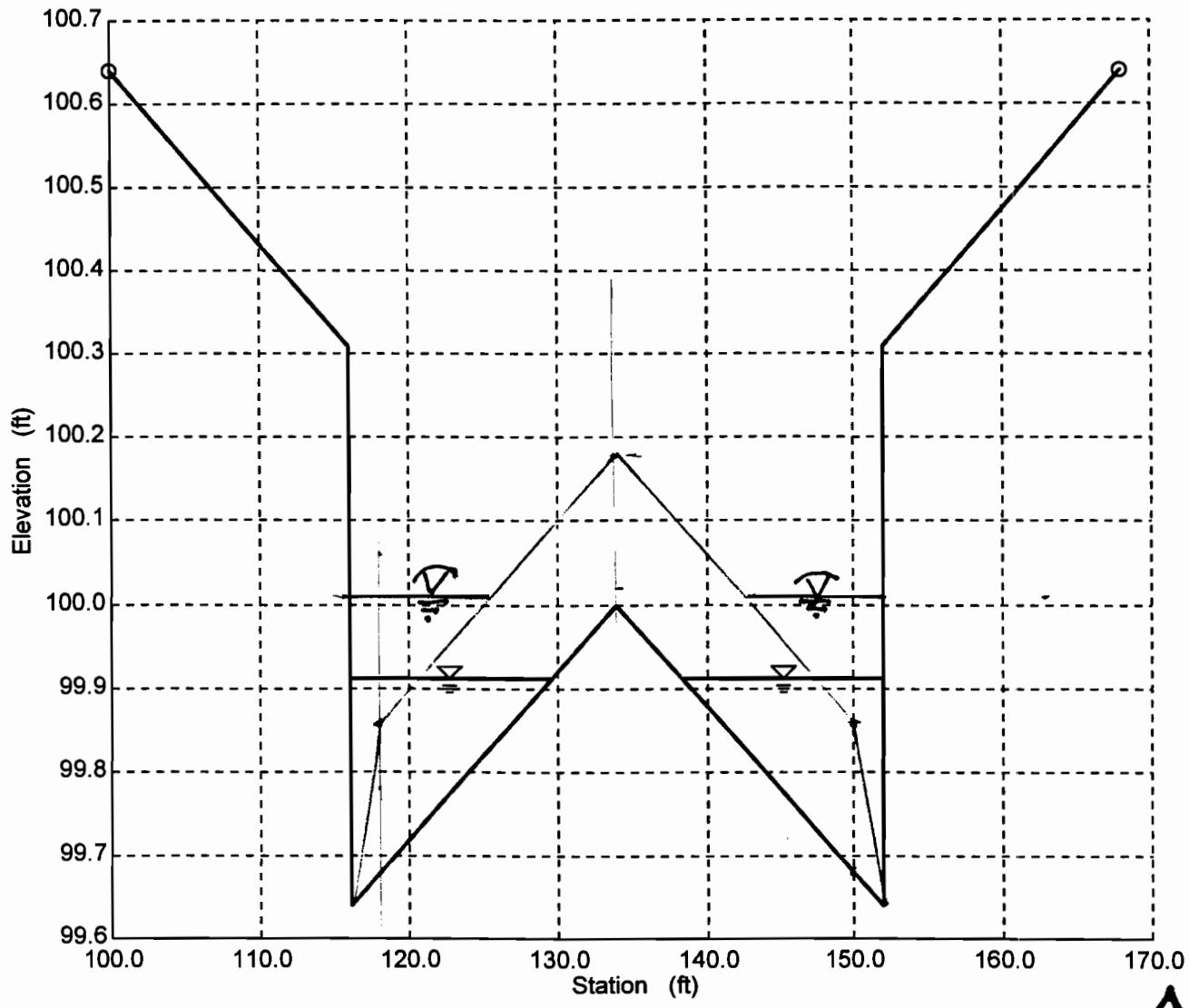
= 100.75'

A

Cross Section
Cross Section for Irregular Channel

Project Description	
Project File	c:\haestad\fmw\7-barlp.fm2
Worksheet	7-barlp
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Water Elevation

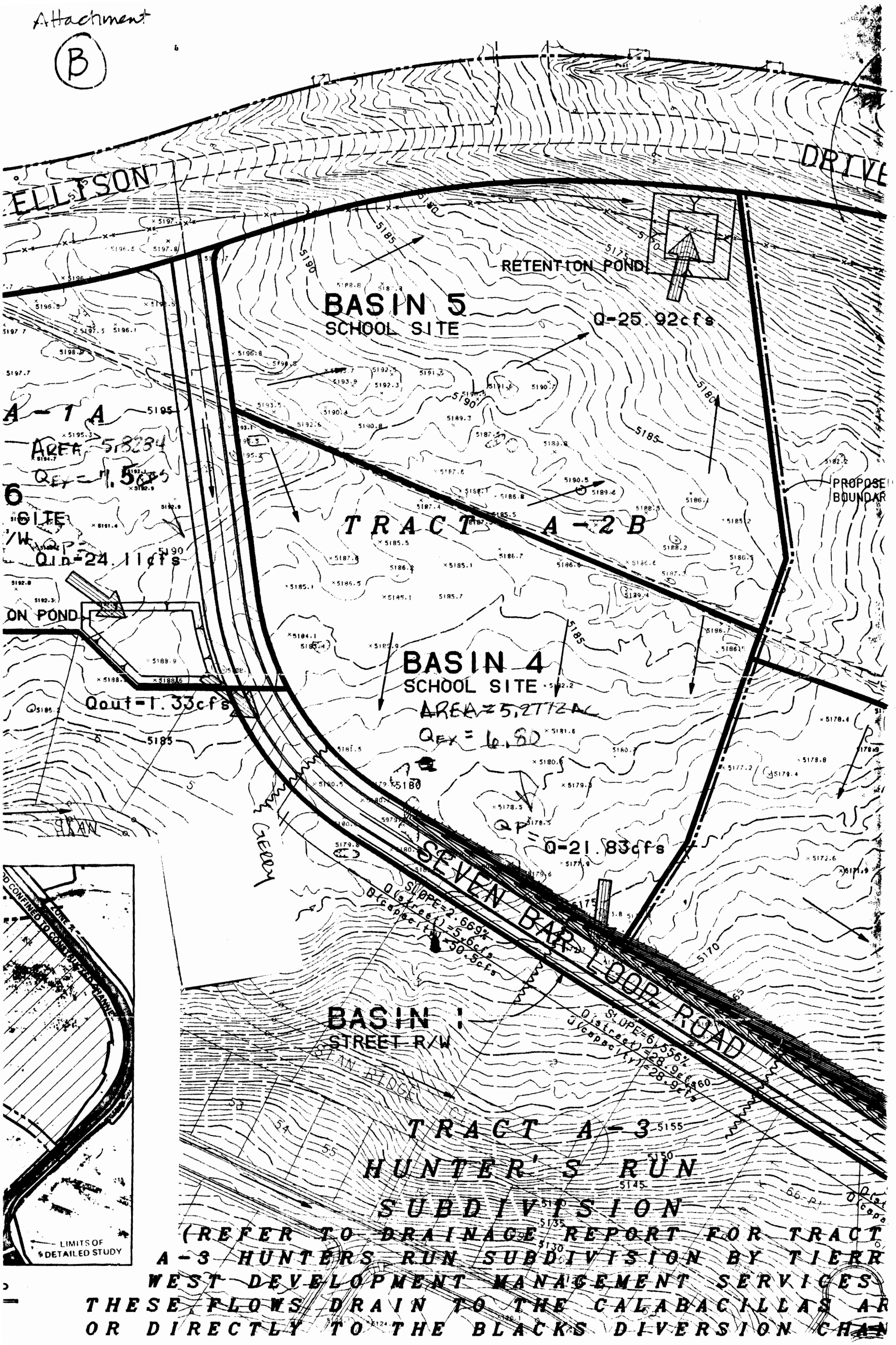
Section Data		
Wtd. Mannings Coefficient	0.014	
Channel Slope	0.080000	ft/ft
Water Surface Elevation	99.91	ft
Discharge	28.90	cfs



A

Attachment

(B)



(REFER TO DRAINAGE REPORT FOR TRACT A-3 HUNTERS RUN SUBDIVISION BY TIERRA WEST DEVELOPMENT MANAGEMENT SERVICES)

THESE FLOWS DRAIN TO THE CALABACILLAS AR
OR DIRECTLY TO THE BLACKS DIVERSION CHAN

HYDROLOGIC BASIN SUMMARY DATA
PROPOSED CONDITIONS - TRACTS C-1 & F - 100 YEAR STORM

FILE:CDP:[C9416540.HYDRO]BASINS.WK4
DATE: SEPTEMBER 8, 1994

BASIN ID	AREA (ACRES)	COMPOSITE % LAND TREATMENT A	B	C	D	RATIONAL METHOD PEAK DISCHARGE CI(cfs/ac)	RATIONAL METHOD RUNOFF Q-100(cfs)	RATIONAL METHOD RUNOFF Q-10(cfs)	COMPOSITE EXCESS PRECIP. E	RATIONAL METHOD 24-HR VOLUME V-100(ac-ft)
	3.2872	0	28	0	72	3.71	12.21	7.54	1.61	0.44
2	23.4938	0	29	29	42	3.26	76.51	43.85	1.31	2.56
3	19.2441	0	29	29	42	3.26	62.67	35.92	1.31	2.10
4	5.1407	0	10	0	90	4.14	21.26	13.76	1.84	0.79
5	6.3596	0	10	0	90	4.14	26.30	17.02	1.84	0.98
6	5.7821	0	10	0	90	4.14	23.91	15.48	1.84	0.89
	63.3075						222.8630			7.7512

NOTE:

RAINFALL DATA FOR 100-YEAR, 24-HOUR STORM

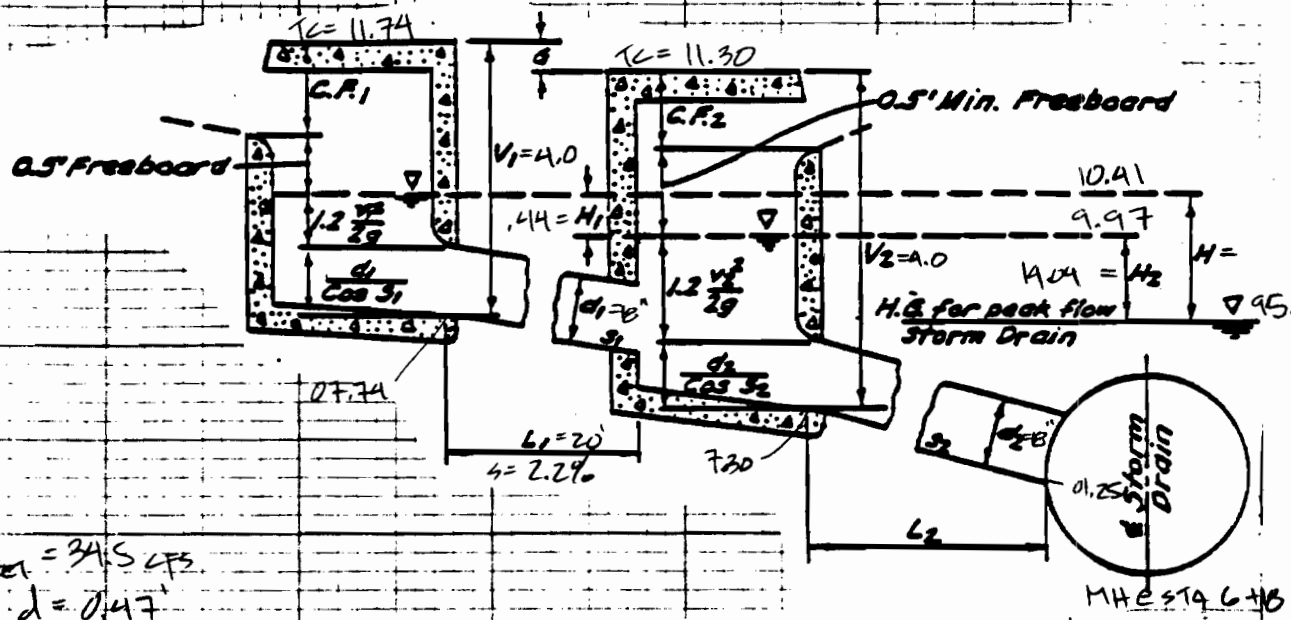
PEAK DISCHARGE (C*I) IN cfs/ac BY LAND TREATMENTS

	100yr	10yr
C*I(a)=	1.29	0.24
C*I(b)=	2.03	0.76
C*I(c)=	2.87	1.49
C*I(d)=	4.37	2.89

EXCESS PRECIPITATION (E) IN inches BY LAND TREATMENTS

E(a)=	0.44
E(b)=	0.67
E(c)=	0.99
E(d)=	1.97

SEVEN BAR LOOP ROAD - STA 5+88.91 TO 6+47



Q_{STREET} = 34.5 cfs
d = 0.47'

Q_{GRATE} = 7.8 cfs × 2

Q_{STREET} = 18.9 cfs

Q_1 = 7.8 cfs

V_1 = 4.41 fps

$H_1 = \frac{1.2 V_1^2}{2g}$ = 0.36'

V_1 = 0.83 + 0.50 + 0.36 + .5' = 3.19' USE 4'

HV = 11.74' - 4.00' = 7.74

$H_{1,AVAIL}$ = 0.44' > 0.36' REQ'D

Q_{STREET} = 18.9 cfs
d = 0.40 cfs

Q_{GRATE} = 6.4 cfs × 2

Q_{STREET} = 6.1 cfs

Q_2 = 6.4 + 7.8 = 14.2 cfs

V_2 = 8.04 fps

$H_2 = \frac{1.2 V_2^2}{2g}$ = 1.2'

V_2 = 0.83 + 0.50 + 1.2' + 1.5' = 4.0'

HV = 11.30 - 4.0 = 7.30'

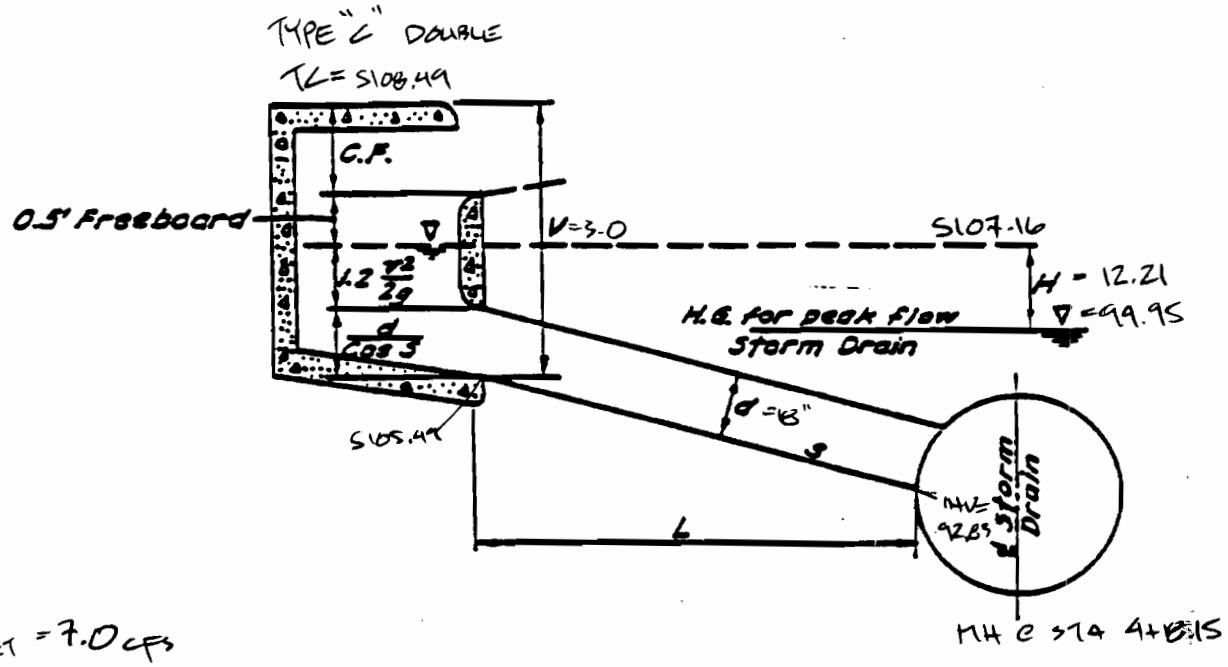
$H_{2,AVAIL}$ = 14.04 > 1.2' REQ'D

MH @ STA 6+18

BOHANNAN-HUSTON INC.

PROJECT NAME Seven Bar - Tract A-2A, A-2B SHEET 1 OF 2
PROJECT NO. 94165.40 BY DATE
SUBJECT Seven Bar Loop Road Inlets CH'D DATE

Seven Bar Loop Rd - Sta 4+28



$Q_{STREET} = 7.0$ cfs

$\therefore d = 0.33'$

$Q_{GRATE} = 3.0$ cfs $\times 2$

$\therefore Q_{STREET} = 1.0$ cfs RESIDUAL

$Q = 3.0$ cfs

$V_i = 1.70$ fps

$H = \frac{1.2\,V^2}{2g} = 0.05'$

$V = 0.83 + 0.50 + 0.05 + 1.5 > 2.88$, USE $3'$

$INV = 5108.49 - 3 = 5105.49$

$H_{AVAIL} = 12.21 \gg 0.05 = H_{REQ'D.}$

BOHANNAN-HUSTON INC.

PROJECT NAME Seven Bar - Tract A-2A, A-2B SHEET 2 OF 2

PROJECT NO 9416S.40 BY DATE

SUBJECT Seven Bar Loop Road Inlets CH'D DATE

TRACTS A-1 & A-1 SEVEN BAR RANCH
***** HYDRAULIC GRADE LINE CALCULATIONS *****

Station	Structure	Diam.	Q	Area	Vel.	K	Sf	Length	MH Dia.	JNCT Angle	Hf	Hb	Hj	Hmh	Ht	Total Losses	HGL(dn)	HGL(up)	Low Point	HV	EGL(dn)	EGL(up)
3+63.27	OUTLET								0.00	0.00		0.00	0.00	0.00	0.00	0.00	5085.51	5085.51	5216.02	3.79	5089.30	5089.30
		36	110.41	7.07	15.62	667	0.0274	63.25			1.73					1.73						
4+16.15	MH								6.00	30.00		0.21	1.37	0.00	0.38	1.95	5087.24	5092.46	5107.79	0.52	5091.03	5092.98
		30	28.40	4.91	5.79	410	0.0048	200.32			0.96					0.96						
6+16.37	MH								4.00	0.00		0.00	0.46	0.00	0.02	0.50	5093.42	5093.44	5110.49	1.00	5093.94	5094.44
		18	14.20	1.77	8.04	105	0.0183	261.63			5.15					5.15						

Manning's n = 0.013
for pipe

SEVEN BAR TRACTS A-2A & A-2B SEDIMENT YIELD ANALYSIS
UNIVERSAL SOIL LOSS EQUATION

DESCRIPTION	VARIABLE	UNIT			
Drainage Area	DA	Sq. Mi.	0.045		
Slope	S	Ft/Ft	0.050		
Slope Angle	THETA	Radians	0.050		
	L	Feet	400.000		
Rainfall	R		25.000		
Soil Erodability*	K		0.280		
Slope Length Factor	LS		0.902		
Cover*	C		0.170		
Support Practice Factor	P		1.000		
Sediment Yield	A	Tons/Acre	1.073		
		Tons	30.738		
		Cy	22.769		
			Total Annual Sediment Yield	22.769	Cy
Estimated Soil Unit Weight	100.000	Lbs/Cf	Adjustment Factor	4.000	

			Adjusted Sediment Yield	91.076	Cy

NOTE: The Universal Soil Loss Equation typically underestimates the actual sediment yield by 4 times so a factor of 4 is applied to the total annual sediment yield.

West Boundary Swales

- adjacent to site, on APS land

tmp#1.txt

Channel Calculator

Given Input Data:

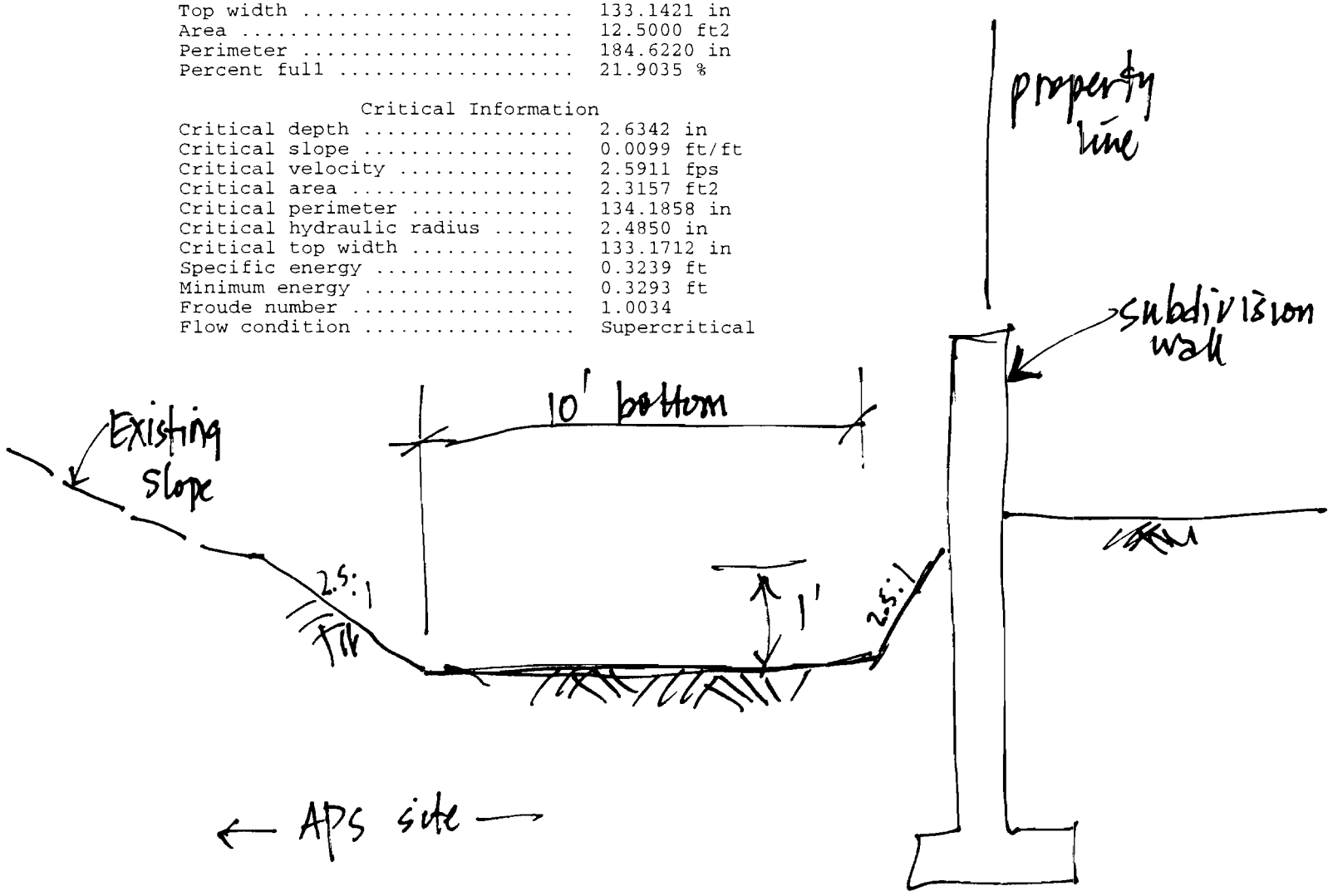
Shape	Trapezoidal
Solving for	Depth of Flow
Flowrate	6.0000 cfs
Slope	0.0100 ft/ft
Manning's n	0.0200
Height	12.0000 in
Bottom width	120.0000 in
Left slope	0.4000 ft/ft
Right slope	0.4000 ft/ft

Computed Results:

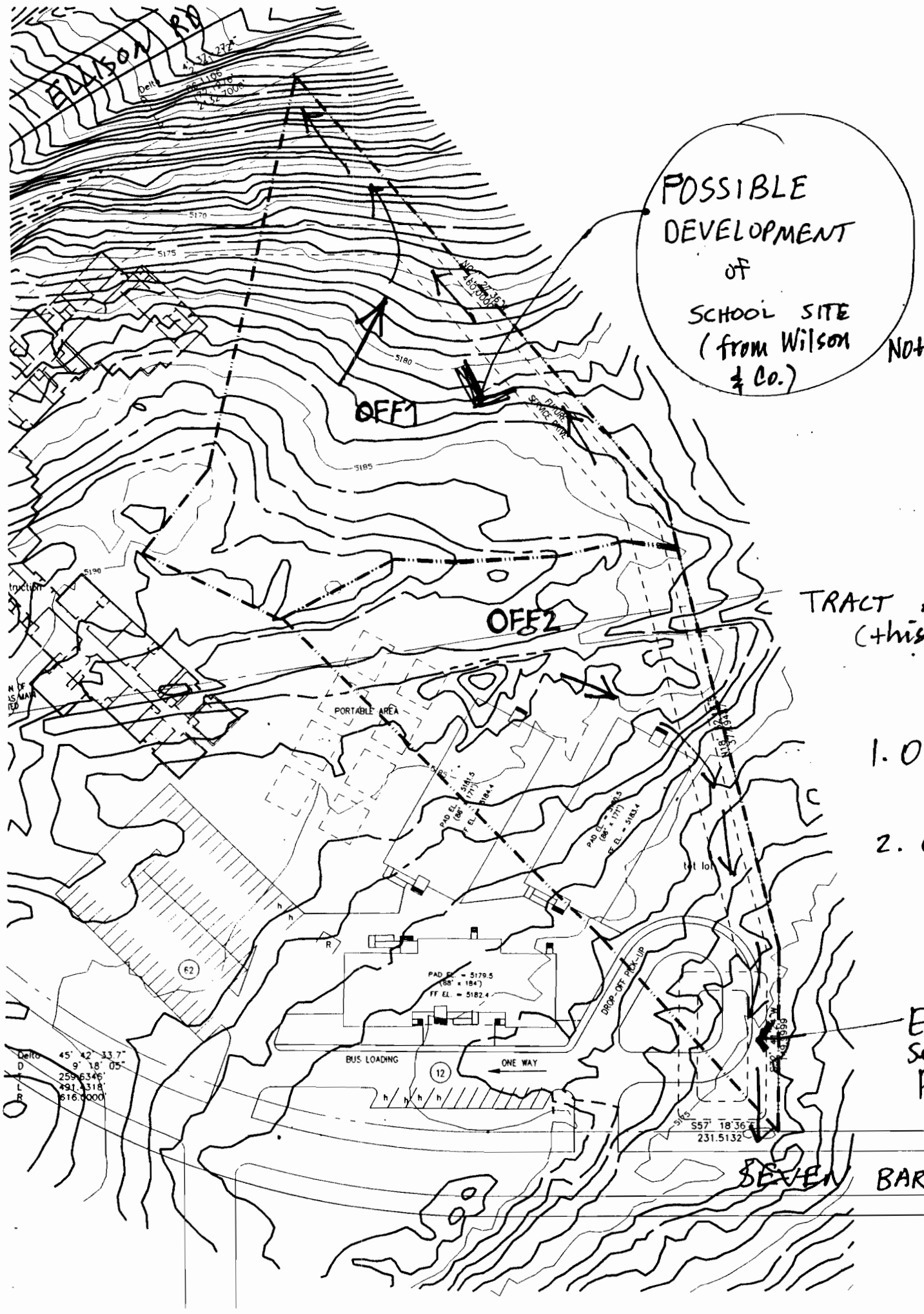
Depth	2.6284 in
Velocity	2.5971 fps
Flow area	2.3103 ft2
Flow perimeter	134.1545 in
Hydraulic radius	2.4798 in
Top width	133.1421 in
Area	12.5000 ft2
Perimeter	184.6220 in
Percent full	21.9035 %

Critical Information

Critical depth	2.6342 in
Critical slope	0.0099 ft/ft
Critical velocity	2.5911 fps
Critical area	2.3157 ft2
Critical perimeter	134.1858 in
Critical hydraulic radius	2.4850 in
Critical top width	133.1712 in
Specific energy	0.3239 ft
Minimum energy	0.3293 ft
Froude number	1.0034
Flow condition	Supercritical



OFFSITE MAP



POSSIBLE DEVELOPMENT of SCHOOL SITE (from Wilson & Co.)

Note: Due to slopes and site plan, these basins will be "developed" as playing fields.

TRACT A-2A (this report)

1. OFF-1 developed flow = 4.16 cfs
2. OFF-2 developed flow = 5.08 cfs

Existing Sedimentation Pond

SEVEN BAR LOOP

ALBUQUERQUE PUBLIC SCHOOLS

DEPARTMENT OF FACILITIES PLANNING AND CONSTRUCTION
915 OAK STREET S.E.
P.O. BOX 25704
ALBUQUERQUE, NEW MEXICO 87125
(505) 242-5865
FAX (505) 246-9020

GENERAL NOTES

PROJECT

7-BAR SITE PLAN

REVISIONS

⚠	

DATE: X-XX-95
DRAWN BY: X.X.X
CHECKED BY: X.Y.X.
APPROVED BY: P. McM.

SHEET

A — X

1 OF: 1

DRAINAGE REPORT FOR ELLISON DRIVE IMPROVEMENTS

(COORS BOULEVARD BYPASS TO GOLF COURSE ROAD)

Prepared for:

BROWN/NZD DEVELOPMENT JOINT VENTURE
C/O BROWN & ASSOCIATES
3411 CANDELARIA NE
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63.25 LF @ 14.751% 36" RCP

200.32 LF @ 4.403% 36" CLASS III RCP

281.63 LF @ 3.00% 36" CLASS III RCP

329.46 LF @ 3.00% 36" CLASS III RCP

TRACT A-2A CONNECTION TO MH#3

EXISTING GRADE AT CL

VING AT CL

EX. 4" PR. RELIEF PIPE

NEW SAS

H.G.L.

PIPE A

Q = 124.11 CFS
V = 23.92 FT/S

Q = 124.11 CFS
V = 38.16 FT/S

NEW WATER LINE

EX. WL

NEW SAS

Q = 28.20 CFS
V = 10.52 FT/S

Q = 77.17 CFS
V = 18.62 FT/S

IDENTICAL POINTS

Q = 77.17 CFS
V = 18.62 FT/S

H.G.L.

Q = 77.17 CFS
V = 18.62 FT/S

TOP OF PAVIN

+/-2.50 NEW SAS MH

+63.27
INV=5082.00

+18.05 MH#3A
BUILD 1-4' SD MH
RIM=5107.79
INV IN=5091.43
INV OUT=5091.33

+48.05 CB8B-18'-LT
+48.05 CB7B-18'-RT
BUILD 1-DBLE "C" CB LT
AND 1-DBLE "L" CB RT
CB7B-GRATE = 5107.54
INV=103.01
CB8B-GRATE=107.56
INV=104.32

+18.37 MH#3
BUILD 1-6' SD MH
RIM=5110.49 5110.46
INV IN=5100.35-FROM MH#4
INV IN=5103.72-FROM CB8-5101.26
INV OUT=5100.25 5101.16

+47.13 CB8 18' LT
+47.13 CB7 18' RT
BUILD 1-DBLE "C" CB LT
AND 1-DBLE "C" CB RT
GRATE=5111.30 5110.84
CB7 INV=5105.46 5108.73
CB8 INV IN=5104.50 5110.88
CB8 INV OUT=5104.40 5107.85
CB8 GRATE=5110.95

+62.83 CB8A 18'LT
+62.15 CB7A 18'RT
BUILD TYPE "A" CB LT & RT
CB8A GRATE=5111.56 5111.41
INV IN=5105.10
INV OUT=5105.00 5110.41
CB7A GRATE=5111.54 5111.30
INV IN=5106.10
INV OUT=5106.00 5108.25

+00 MH#4
BUILD 1-4' SD MH
RIM=5116.76
INV IN=5108.90
INV OUT=5108.80

5135 5130 5125 5120 5115 5110 5105 5100 5095 5090 5085 5080 5075

5115 5110 5105 5100 5095

3+00 4+00 5+00 6+00 7+00 8+00 9+00 10+00 11+0

1+00 2+00 3+00 4+00 5+00 6+00 7+00 8+00

STA 3+63.27 21.60' LT
INV=82.00

STA 4+18.05 10' RT
BUILD 1-4' SD MH

STA 6+18.37 10' RT
BUILD 1-6' SD MH

STA 6+47.13 18' LT
BUILD 1-DOUBLE "C"
CATCH BASIN

STA 6+47.13 18' RT
BUILD 1-DOUBLE "C"
CATCH BASIN

STA 6+72.83-18' LT
BUILD I-TYPE "A"
CATCH BASIN

STA 6+72.15
BUILD I-TYP
CATCH BAS

CHANDLER DRIVE
SEE CITY PROJECT
#5010.90

BLACK'S DIVERSION CHANNEL

"PIPE A"

CB8 CB8A

MH6 CB7 CB7A

36" SD

SEVEN BAR LOOP ROAD

NNEL & SEVEN BAR LOOP ROAD
EL STA 61+42.80

FOR STORM PIPE CONNECTION
DETAIL SEE SHEET 11

Proposed Entrance Road

Proposed SD cont. 36"ø@1.0% 130.53 LF

STA 6+31.29 140.55' RT
INV=5101.91

NOT CONSTRUCTED

Tract A-2A

N

NOT TO EXCEED
3:1 SLOPE

95% COMPACTION

DESILTING POND

N

SCALE: 1" = 100'

RESIDENTIAL LOTS ADJACENT TO ELLISON DRIVE SHALL BE PROVIDED WITH EITHER BACK YARD PONDS OR 4" CURB DRAIN OUTLETS TO ELLISON DRIVE.

LOTS ADJACENT TO THE BLACKS DIVERSION CHANNEL SHALL BE PROVIDED WITH EITHER BACK YARD PONDS OR A RIBBON CHANNEL TO THE BASIN 3 OUTFALL.

ELLISON DRIVE N.W. (PAVED - NO CURB)

GULF COURSE ROAD

RETENTION POND

BASIN 5
SCHOOL SITE
Q=26.30cfs

TRACT A-1A

BASIN 6
COMMERCIAL SITE
& STREET R/W
Qin=23.91cfs

DETENTION POND
Qout(100yr)=2.00cfs
Qout(10yr)=0.00cfs

TRACT A-2B

BASIN 4
SCHOOL SITE

PROPOSED TRACT BOUNDARY

BASIN 3
SINGLE FAMILY RESIDENTIAL
2.57 DU/ac

PROPOSED RELOCATED 10" & 4" GAS LINES

Q=62.87cfs
(NEW CHANNEL CONNECTION)

BLACK DIVERSION CHANNEL

TRACT A-2A

EXISTING GAS LINES TO BE RELOCATED

Q100yr=21.25cfs
Q10yr=12.75cfs

SEVEN BAR LOOP ROAD

BASIN 1
STREET R/W

TRACT A-
HUNTER'S RUN
SUBDIVISION
(REFER TO DRAINAGE REPORT FOR TRACT A-3 HUNTERS RUN SUBDIVISION BY TIERRA WEST DEVELOPMENT MANAGEMENT SERVICES - THESE FLOWS DRAIN TO THE CALABACILLAS ARROYO OR DIRECTLY TO THE BLACKS DIVERSION CHANNEL)

BASIN 2
SINGLE FAMILY RESIDENTIAL
2.57 DU/ac

RESIDENTIAL LOTS ADJACENT TO SEVEN BAR LOOP ROAD SHALL BE PROVIDED WITH EITHER BACK YARD PONDS OR 4" CURB DRAIN OUTLETS TO SEVEN BAR LOOP ROAD. ALL IMPERVIOUS AREAS OF THESE LOTS SHALL DRAIN NORTH TO THE LOT FRONTS AND INTO THE INTERIOR STREET.

TEMPORARY LINED V-DITCH SWALE (2:1 SIDE SLOPES AND DETENTION POND TO COLLECT UNDEVELOPED FLOWS FROM BASINS 2 & 4 (0.29.55cfs) SWALE AND POND TO BE REMOVED WITH DEVELOPMENT OF TRACTS A-2A AND A-2B

Q=78.61cfs

Q=10.91cfs
(BASINS 1+2+4+6)
(EXISTING CHANNEL CONNECTION)

BLACK DIVERSION CHANNEL

HYDROLOGIC BASIN SUMMARY DATA
PROPOSED CONDITIONS - TRACTS A-1A , A-2A & A-2B

BASIN ID	AREA (ACRES)	COMPOSITE % LAND TREATMENT A	B	C	D	RATIONAL METHOD PEAK DISCHARGE C1(cfs/ac)	RATIONAL METHOD RUNOFF 0-100(cfs)	RATIONAL METHOD RUNOFF 0-10(cfs)	COMPOSITE EXCESS PRECIP- E	RATIONAL METHOD 24-HR VOLUME V-100(ac-ft)
1	3.2872	0	28	0	72	3.71	12.21	7.54	1.61	0.44
2	23.4938	0	29	29	42	3.26	76.51	43.85	1.31	2.56
3	19.2441	0	29	29	42	3.26	62.67	35.92	1.31	2.10
4	5.1407	0	10	0	90	4.14	21.26	13.76	1.84	0.79
5	6.3596	0	10	0	90	4.14	26.30	17.02	1.84	0.98
6	5.7821	0	10	0	90	4.14	23.91	15.48	1.84	0.89
	63.3075						222.8630			7.7512

RAINFALL DATA FOR 100-YEAR, 24-HOUR STORM

PEAK DISCHARGE (C*I) IN cfs/ac BY LAND TREATMENTS

	100yr	10yr
C*I(a) =	1.29	0.24
C*I(b) =	2.03	0.76
C*I(c) =	2.87	1.49
C*I(d) =	4.37	2.89

EXCESS PRECIPITATION (E) IN inches BY LAND TREATMENTS

E(a) = 0.44
E(b) = 0.67
E(c) = 0.99
E(d) = 1.97

DRAINAGE MANAGEMENT PLAN
DEVELOPED CONDITIONS

1 THE DEVELOPED FLOWS IN BASIN 1, THE SEVEN BAR LOOP ROAD RIGHT-OF-WAY, ARE COLLECTED IN A SERIES OF CATCH BASINS AT THE SOUTHEAST END OF SEVEN BAR LOOP ROAD AND CONVEYED TO THE BLACK'S DIVERSION CHANNEL.

2 THE DEVELOPED FLOWS FROM BASIN 2, THE SOUTHERN PORTION OF TRACT A-2A, A PROPOSED SINGLE FAMILY RESIDENTIAL SUBDIVISION, ARE CONVEYED INTERNALLY AS STREET FLOWS TO THE SOUTHEAST CORNER OF BASIN 2. THE FLOWS ARE THEN COLLECTED IN A STORM DRAIN SYSTEM INSIDE THE SUBDIVISION WHICH CONNECTS TO THE STORM DRAIN BUILT IN SEVEN BAR LOOP ROAD AND DISCHARGES INTO THE BLACK'S DIVERSION CHANNEL.

3 THE DEVELOPED FLOWS FROM BASIN 3, THE NORTHERN PORTION OF TRACT A-2A, A PROPOSED SINGLE FAMILY RESIDENTIAL SUBDIVISION, ARE CONVEYED INTERNALLY AS STREET FLOWS TO A LOW POINT AT THE NORTHEAST SIDE OF BASIN 2. THE FLOWS ARE THEN COLLECTED IN A STORM DRAIN SYSTEM INSIDE THE SUBDIVISION AND DISCHARGE INTO THE BLACK'S DIVERSION CHANNEL VIA A NEW CHANNEL CONNECTION WITH THE APPROVAL OF AMAFCA/COE.

4 THE DEVELOPED FLOWS FROM BASIN 4, THE SOUTHERN PORTION OF TRACT A-2B, A PROPOSED SCHOOL SITE, ARE CONVEYED SOUTH TO SEVEN BAR LOOP ROAD WHERE THEY DISCHARGE INTO SEVEN BAR LOOP ROAD AS STREET FLOW.

5 THE DEVELOPED FLOWS FROM BASIN 5, THE NORTHERN PORTION OF TRACT A-2B, A PROPOSED SCHOOL SITE, MUST BE RETAINED ON SITE DUE TO GRADE CONSTRAINTS AND THE INABILITY TO DISCHARGE IN THE EXISTING ELLISON DRIVE RIGHT-OF-WAY. THE 100-YEAR, 10-DAY DEVELOPED VOLUME IS 1.65 AC-FT. WITH THE CONSTRUCTION OF THE FINAL PAVEMENT SECTION OF ELLISON DRIVE, THE RETENTION POND COULD BE CONVERTED TO A DETENTION POND WITH A CONTROLLED DISCHARGE TO ELLISON DRIVE, OR ELIMINATED ENTIRELY IF THE CAPACITY IN ELLISON IS PROVED TO EXIST AT THE TIME OF DEVELOPMENT OF THE SCHOOL SITE.

6 THE DEVELOPED FLOWS FROM BASIN 6, TRACT A-1A, A PROPOSED COMMERCIAL SITE, ARE CONVEYED TO THE SOUTHEAST CORNER OF BASIN 6 INTO A DETENTION POND WITH A CONTROLLED DISCHARGE OF 2.00 cfs INTO SEVEN BAR LOOP ROAD AS STREET FLOW.

LEGEND

- DRAINAGE FLOW
- DRAINAGE BASIN BOUNDARY
- TRACT BOUNDARY
- EXISTING COUNTOUR
- SEVEN BAR LOOP ROAD VP!
- BASIN DRAINAGE OUTFALL (DEVELOPED FLOWS)

NOTE:
BY DETAINING FLOWS ON BASIN 6 AND USING THE STREET FLOW CAPACITY IN SEVEN BAR LOOP ROAD, THE EXTENT OF THE STORM DRAIN SYSTEM IN SEVEN BAR LOOP ROAD AS SHOWN IN THE PREVIOUS DRAINAGE REPORT HAS BEEN REDUCED. THE SIZE AND LOCATION OF THE CONNECTION TO THE BLACK'S DIVERSION CHANNEL WILL REMAIN AS ORIGINALLY DESIGNED. THE SEVEN BAR LOOP ROAD STREET CAPACITY, D(spacity), IS BASED ON A 36' FACE-TO-FACE PAVEMENT WIDTH AND A 68' RIGHT-OF-WAY WIDTH WITH THE TOTAL ENERGY (WSEL+VELOCITY HEAD) BEING CONTAINED IN THE RIGHT-OF-WAY DURING THE 100-YEAR STORM EVENT.

CONCEPTUAL DRAINAGE PLAN
PROPOSED PLATTING:
TRACTS A-1A, A-2B AND A-2A
SEVEN BAR RANCH
NOVEMBER, 1994

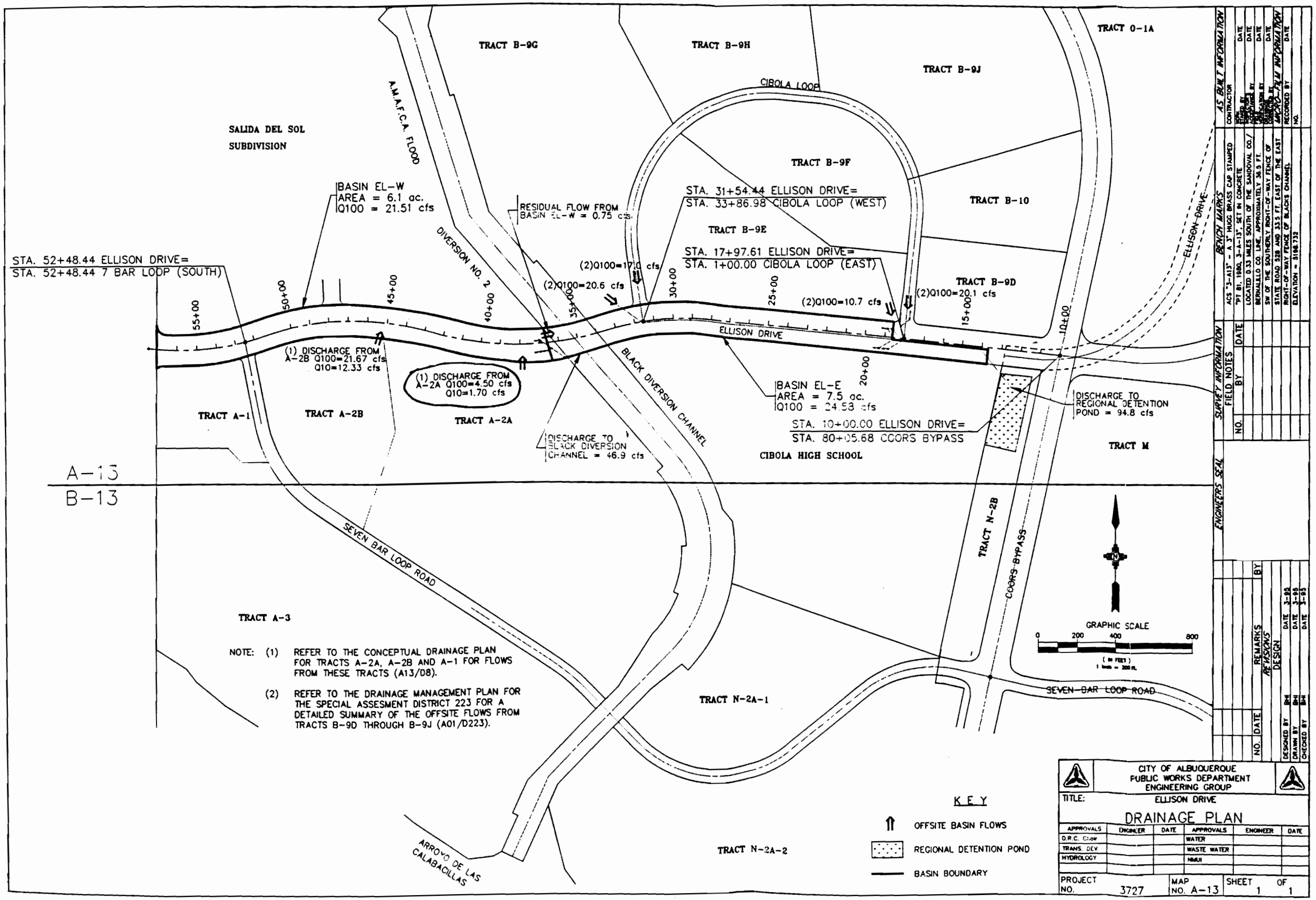
FLOOD HAZARD MAP
SCALE 1"=600'

SITE

LOCATION MAP
ZONE ATLAS MAP NO. A-13 & B-13
NO SCALE

EXISTING CONDITIONS MAP
EXISTING PLATTING: TRACTS A-1 & A-2
SEVEN BAR RANCH
SCALE 1"=400'

416540.PAD\DRAIN.BAF



NOTE: (1) REFER TO THE CONCEPTUAL DRAINAGE PLAN FOR TRACTS A-2A, A-2B AND A-1 FOR FLOWS FROM THESE TRACTS (A13/D8).

(2) REFER TO THE DRAINAGE MANAGEMENT PLAN FOR THE SPECIAL ASSESMENT DISTRICT 223 FOR A DETAILED SUMMARY OF THE OFFSITE FLOWS FROM TRACTS B-9D THROUGH B-9J (A01/D223).

AS BUILT INFORMATION
CONTRACTOR
DATE

BENCH MARKS
ACS "3-A13" - A 3" HUGG BRASS CAP STAMPED "PI BI, 1980, 3-A-13", SET IN CONCRETE
LOCATED 0.33 MILES SOUTH OF THE SANDOVAL CO./ BERNALILLO CO. LINE, APPROXIMATELY 36.5 FT. SW OF THE SOUTHERLY RIGHT-OF-WAY FENCE OF STATE ROAD 528 AND 33.5 FT. EAST OF THE EAST RIGHT-OF-WAY FENCE OF BLACK'S CHANNEL
ELEVATION = 5198.732

SURVEY INFORMATION
FIELD NOTES
NO. BY DATE

NO.	REMARKS	DATE	DESIGNED BY
	REVISIONS	DATE 3-95	DRAWN BY
	DESIGN	DATE 3-95	CHECKED BY

ENGINEERS SEAL

CITY OF ALBUQUERQUE
PUBLIC WORKS DEPARTMENT
ENGINEERING GROUP

TITLE: ELLISON DRIVE
DRAINAGE PLAN

APPROVALS	ENGINEER	DATE	APPROVALS	ENGINEER	DATE
D.R.C. Chair			WATER		
TRANS. DEV.			WASTE WATER		
HYDROLOGY			NMUI		

PROJECT NO. 3727 | MAP NO. A-13 | SHEET 1 OF 1

C94306.40 ELLDRN.DWG 050295

Descollado & Ridgrunner

$Q = 47.5 \times 2 = 95.0$ cfs

Q. Upstream inlets

17.2	Ridgerunner
26.4	Descollado
43.6	

$\therefore$ $95.0 - 43.6 = 51.4$ cfs in sump grate

$$A_{req} = \frac{51.4}{.6\sqrt{2(32.2)(.8)}} = 11.94 \text{ ft}^2$$

1 grate = 3.79 ft^2 use 4 grate

Ridingcircle @ Packway

$Q = 55.9$

$Q_{upstream} = 11 + 7.6 = 18.6$

$Q_{sump} = 55.9 - 18.6 = 37.6$

$\frac{37.6}{3.79} = 10$ grates