City of Albuquerque

P.O. BOX 1293   ALBUQUERQUE, NEW MEXICO 87103

March 5, 1999

James Topmiller, P.E.
Bohannan-Huston, Inc.
7500 Jefferson NE
Albuquerque, NM 87109

Attn: John C.Alexander, P.E.

RE: *TRACT A-2A, SEVEN BAR NORTH, COTTONWOOD HILLS SUBDIVISION,*
MIRADOR SANDIA SUBDIVISION (A13-D8). Revised DRAINAGE REPORT AND
FINAL GRADING & DRAINAGE PLAN FOR Amended PRELIMINARY PLAT
AND Amended ROUGH GRADING PERMIT APPROVALS. ENGINEER'S STAMP
DATED FEBRUARY 2, 1999.
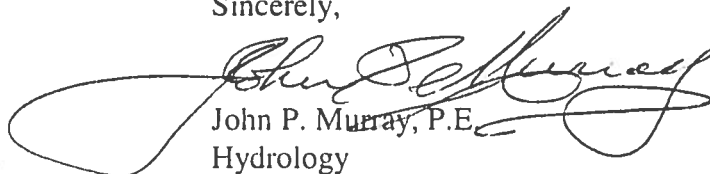
Dear Mr. Alexander:

Based on the information provided on your February 9,1999 resubmittal, the above referenced
project is apprroved for Preliminary Plat and Rough Grading Permit. See also City Consultant's
letter dated February 25, 1999 (copy enclosed).

Please attach a copy of this approved plan to the construction sets prior to sign-off by Hydrology.

Prior to Certificate of Occupancy approval, an Engineer's Certification per the DPM will be
required.

If I can be of further assistance, please feel free to contact me at 924-3984.

Sincerely,

John P. Murray, P.E.
Hydrology

c: Andrew Garcia
      File

REVISED DRAINAGE STUDY
FOR
TRACT A-2A, SEVEN BAR NORTH
COTTONWOOD HILLS SUBDIVISION
MIRADOR SANDIA SUBDIVISION

FEBRUARY 2, 1999

PREPARED BY:

BOHANNAN-HUSTON INC.
COURTYARD I, 7500 JEFFERSON STREET NE
ALBUQUERQUE, NM 87109

PREPARED FOR:

BROWN/NZ DEVELOPMENT JOINT VENTURE
3411 CANDELARIA NE
ALBUQUERQUE, NM 87107

PREPARED BY: **UNDER THE SUPERVISION OF:**

Colleen Garcia   2/2/99   _John C. Alexander_   2-2-99
Colleen Garcia   Date   **John Alexander, P.E.**   Date

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APPENDICES

PLATES

I. INTRODUCTION

The original drainage study dated July 30, 1998 was approved by the City of Albuquerque Hydrology Department on September 23, 1998. However, the developer and engineer re-evaluated the grading scheme and deemed it necessary to raise a majority of the site to reduce the earthwork export. Thus, we are submitting the revised grading plans and drainage report to identify these changes.

Since the entire site could not be raised the same amount, we have a couple of streets with slopes that differ from the original report. We have attached all street capacity and drainage calculations in the Appendix. We have also expanded the original appendix to incorporate backyard pond calculations. In addition, we have included the Off-Site Conditions, per your comments dated August 20, 1998, in Appendix F. For your convenience, a copy of your letter has also been attached to Appendix F.

This Drainage Study addresses the storm runoff for the development of the property legally described as Tract A-2A of Seven Bar Ranch (described as Tract F in the Seven Bar Ranch Sector Plan). Tract A-2A is approximately 45 acres of vacant land bounded by Ellison Dr. on the north, Seven Bar Loop Rd. on the south, the Black Diversion Channel on the east and Tract A-2B on the west. This property is in the process of being subdivided into two minor subdivisions, Tract A-2A-1 and Tract A-2A-2, but this study addresses the entire Tract and thus refer to it as Tract A-2A. See **Figure 1** for the vicinity map. It is zoned R-1 and it is proposed to develop 203 total lots of detached, single family, residential housing, as well as related streets and infrastructure, in the two subdivisions.

This study was revised in order to obtain agency approval for the revised preliminary platting and revised rough grading of Tract A-2A. Prior to final plat and building permit approvals, final grading plans and work order construction plans must be approved by the City of Albuquerque (CoA) and the Albuquerque Metropolitan Arroyo Flood Control Authority (AMAFCA).

II. METHODOLOGY

Existing and proposed site hydrological conditions were analyzed for the 100-year, 6-hour storm in accordance with the revised Section 22.2, Hydrology, of the Development Process Manual (DPM) for the City of Albuquerque, dated January 1993. Street capacities were analyzed using Manning's equation,

consistent with the revised DPM Section 22.2. All data and calculations supporting this report are located in **Appendix B** of this report. The new rational method hydrologic procedures identified within the revised DPM Section 22.2 are utilized to determine peak flow rates for design of the storm drainage improvements within the projects. The 100-year, 6-hour storm is used as the design event.

The storm sewer system internal to the subdivision is analyzed using current DPM methods for pressure flow conditions. Inlet capacity computations along with all hydraulic computations are included in **Appendix B**.

III. LAND TREATMENTS

The minimum lot is 50' x 110' (see **Figure 2** and **Plate 1**). Since there are numerous lots deeper than the 110' minimum (to account for slopes), the percent impervious will be determined using the following formula from Table A-5 of the DPM, Section 22.2.

$$\text{percent "D"} = 7 * \sqrt{((N^*N) + (5^*N))}$$

where N = units/acre. Substituting 4.44 for N, % D = 45. Approximately 10% of the area will have slopes at 20% or greater (type "C"), with the remaining 45% being a type "B", irrigated lawns with 0-10% slopes.

IV. EXISTING CONDITIONS

A. *Topography and Existing Drainage Patterns*

Tract A-2A is undeveloped land with slopes approximately ranging from 5% to 33%. Soils are highly absorptive sandy soils with occasional clay lenses. Vegetation is light, consisting of grasses and small sagebrush. The site is not located within a FEMA floodplain, as shown on the FEMA Flood Insurance Rate Map shown on **Plate 2** and **Plate 3**. The existing drainage conditions are shown graphically on the Existing Conditions, Onsite Basins Map, on **Plate 2.**

An east-west ridge divides Tract A-2A into three main drainage basins, Basin EX-1 on the northern portion, Basin EX-2 on the southern portion, and Basin EX-3 on the eastern portion. Basin EX-3

approximately, 31.1 acres, currently drains to the east side of the tract, where it collects in a natural depression and discharges into the Black Diversion Channel. The 100-year storm currently generates approximately 14.40 cfs of peak flow from undeveloped conditions of Basin EX-3.

Basin EX-1, approximately 5.0 acres, currently drains to the northwest corner of the tract, where it collects in a swale and discharges into the Black Diversion Channel. The 100-year storm currently generates approximately 7.11 cfs of peak flow from undeveloped conditions of Basin EX-1.

Basin EX-2, approximately 10.1 acres, currently drains to the south and enters the right-of-way of Seven Bar Loop Rd. and ultimately into the Black Diversion Channel via the existing storm drain system. The 100-year storm generates approximately 14.4 cfs. See **Plate 2** for a summary of the historic basins and flows.

B.   *Offsite Drainage*

A small portion of adjoining land currently drains onto the northwest portion of Tract A-2A. With coordination with the land owner (Albuquerque Public Schools) and their engineer, a small amount of offsite grading can be accomplished to keep the runoff onsite until it enters the Seven Bar Loop or Ellison rights-of-way. See **Plate 7**. For further off-site information, please refer to Appendix F.

On the eastern boundary lies the Black Diversion Channel, which is a concrete-lined, rectangular open channel structure, currently managed by AMAFCA, but owned and originally constructed by the Soil Conservation Service (SCS).

V.   PROPOSED DEVELOPED CONDITIONS

The proposed development is two single-family, detached-unit residential subdivisions with 203 lots on 44.7 acres, producing a density of 4.44 D.U. per acre. Proposed street configurations are shown on the Preliminary Plat.

The two subdivisions are divided into six basins for analysis purposes. See **Plate 3**. Basins 1, 2 and 3, which will drain only a portion of the backyards of lots adjoining Ellison Dr., the Black Diversion

Channel and Seven Bar Loop Rd., respectively. These backyards will be graded to a 3:1 slope with retaining walls where necessary. Runoff will be released through a grout joint opening or a turned block in the property wall. Basin A drains developed flows of 47.5 cfs to the southeast corner of the basin where it is picked up by storm inlets and conveyed thru a 30' wide utility easement to connect to the storm drain system in Basin C. Basin B drains developed flows of 55.9 cfs to the northeast where the it will be picked up by storm inlets and conveyed to the AMAFCA channel via a 25' wide drainage and access easement. This connection must be approved by AMAFCA and the SCS. Basin C drains developed flows of 22.5 cfs to the southeast and is collected in storm inlets and then enters the Seven Bar Loop system and eventually into the Black Diversion Channel. All of these collection points in a sump condition and the storm drain system will be designed for twice the 100-year event. Total combined flows from Basins A + C = 69.9 cfs. This is the amount entering the storm drain system in Seven Bar Loop Rd.

The peak developed flows from Basin 1 are approximately 4.8 cfs. This flow will drain to the existing swale at Ellison and enter the Black Diversion Channel near the Ellison Dr. crossing. Basin 2 will drain to a small swale at the property boundary and cross the Channel access road through small culverts at critical locations. The developed flows from this basin will approximate 8.3 cfs. Basin 3 will drain into the Seven Bar Loop R/W and then enter the existing storm drain system. The peak developed flows equal 4.2 cfs.

SUMMARY

	Historic	Developed
Runoff Entering Ellison Dr.	7.1 cfs	4.8 cfs
Runoff Entering AMAFCA R/W	44.4 cfs	8.3 cfs
Runoff Entering Seven Bar Loop	14.4 cfs	4.3 cfs
Channel Connection		55.9 cfs
Seven Bar Connection		69.9 cfs

VI.   BACKYARD PONDS

Seven lots will require backyard ponds due to elevation differences between street and backyards. The ponds will only retain backyard flows, all impervious flows, with the exception of a 100-square-foot patio, which will be routed to the front of the lots and onto their respective streets. The ponds are designed to contain the 100-year, 10-day volume. Pond locations are shown on the grading plans enclosed in the Plates section of this report. Pond calculations are enclosed in Appendix E.
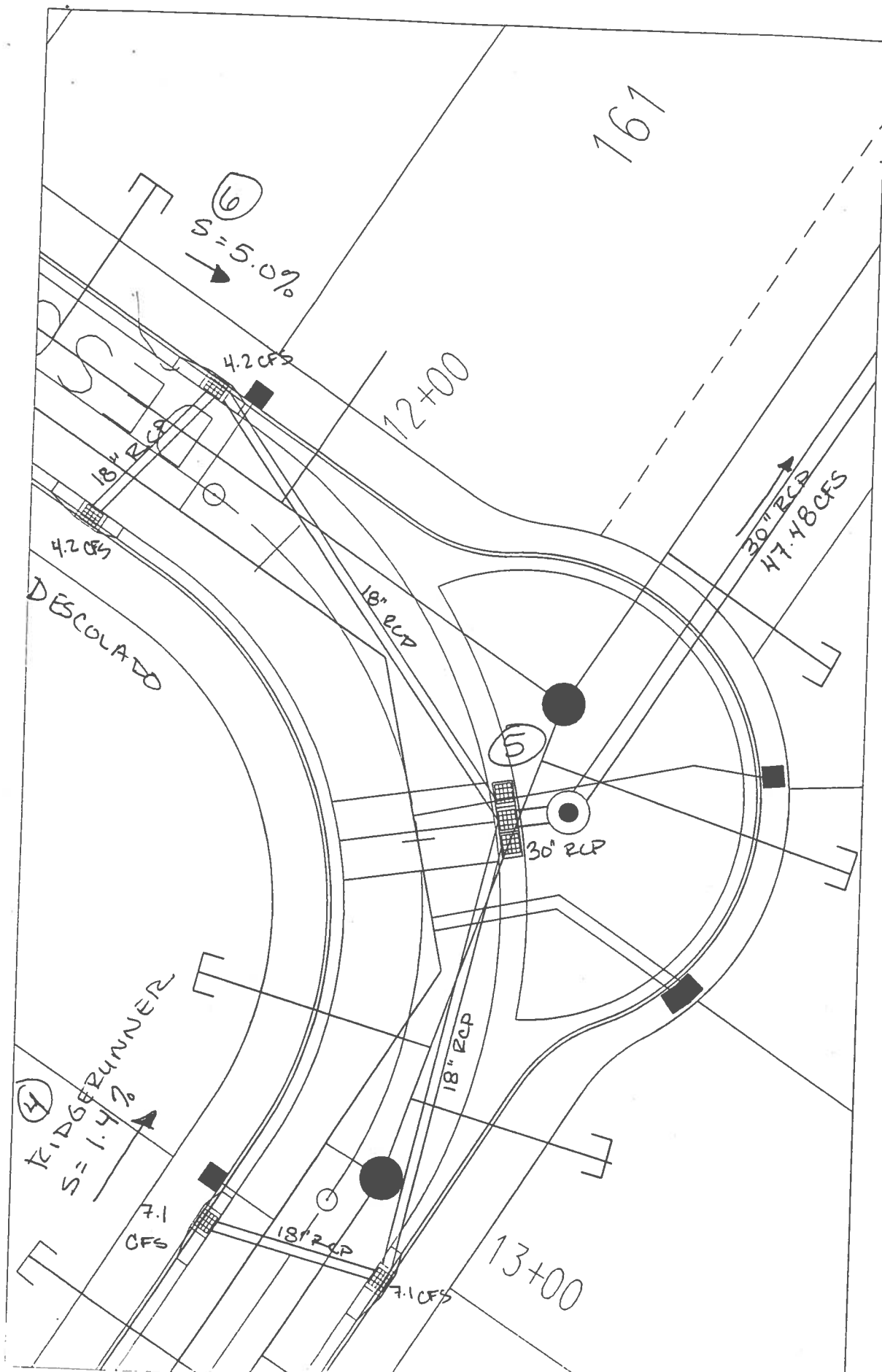
VII.   CONCLUSION

The runoff from the site will enter the Black Diversion Channel from 2 different points along its course. Good drainage management dictates that it is best to get the developed flows into the Black as quickly as possible so as not to add to the peak from upstream basins. Dividing the flows into 2 major access points minimizes the hydraulic changes in the channel and allows runoff to enter it faster. The development of this property substantially decreases the surface runoff to the Channel thus reducing erosion.
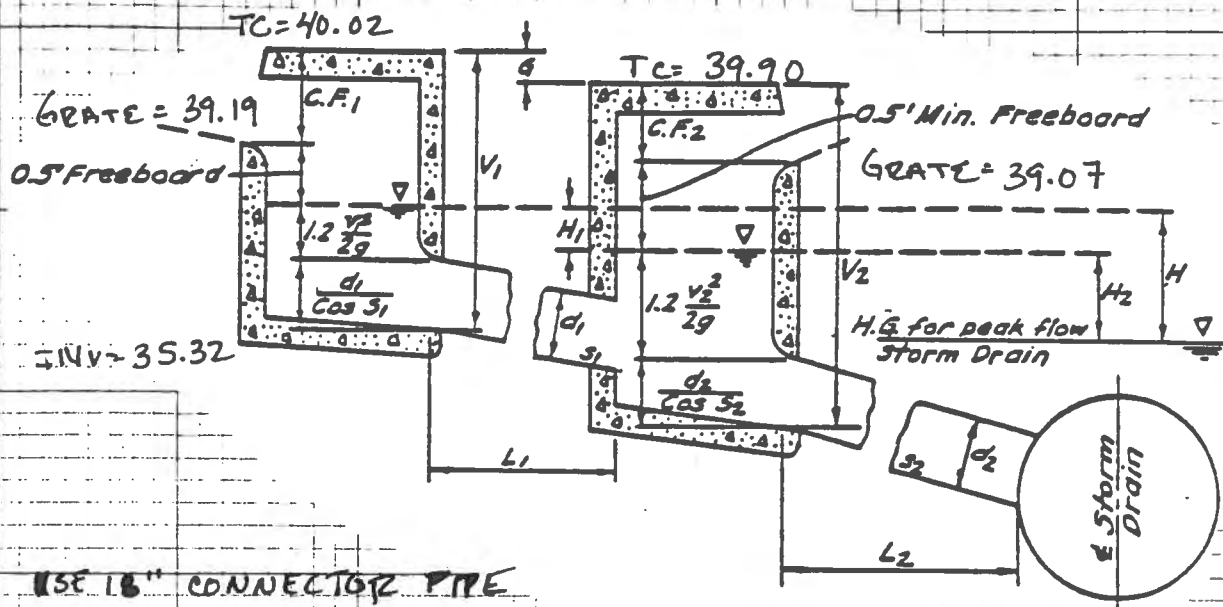
N

1" = 20'

BASIN A

INTERSECTION
DESCOLLADO &
RIDGERUNNER
@ SUMP

161

6

S=5.0%

12+00

4.2 CFS

18" RCP

4.2 CFS

DESCOLADO

18" RCP

30" RCP
47.48 CFS

5

30" RCP

18" RCP

RIDGERUNNER

4

S=1.47%

7.1
CFS

18" RCP

13+00

7.1 CFS

B-7

④ RIDGE RUNNER ENTERING SUMP @ DESCOLLADO

TC = 40.02

GRATE = 39.19

0.5 Freeboard

1.2 $\frac{v^2}{2g}$

$\frac{d_1}{\cos S_1}$

INV = 35.32

TC = 39.90

C.F.$_2$

0.5' Min. Freeboard

GRATE = 39.07

H_1

V_2

1.2 $\frac{v_2^2}{2g}$

$\frac{d_1}{S_1}$

$\frac{d_2}{\cos S_2}$

H.G for peak flow Storm Drain

H_2

H

L_1

L_2

S_2 d_2

₡ Storm Drain

USE 18" CONNECTOR PIPE

$Q_1 = 7.1$ CFS

$V = \dfrac{Q}{A} = \dfrac{7.1}{1.767} = 4.02$ FT/S

$h_1 = \dfrac{1.2v^2}{2g} = 0.30'$

$H = 1.33' + 0.30' + 18"$

$= 3.13'$

USE 4.0'

$Q_2 = 14.2$ CFS

$V = \dfrac{Q}{A} = 8.04$ FT/S

$h_1 = \dfrac{1.2v^2}{2g} = 1.2'$
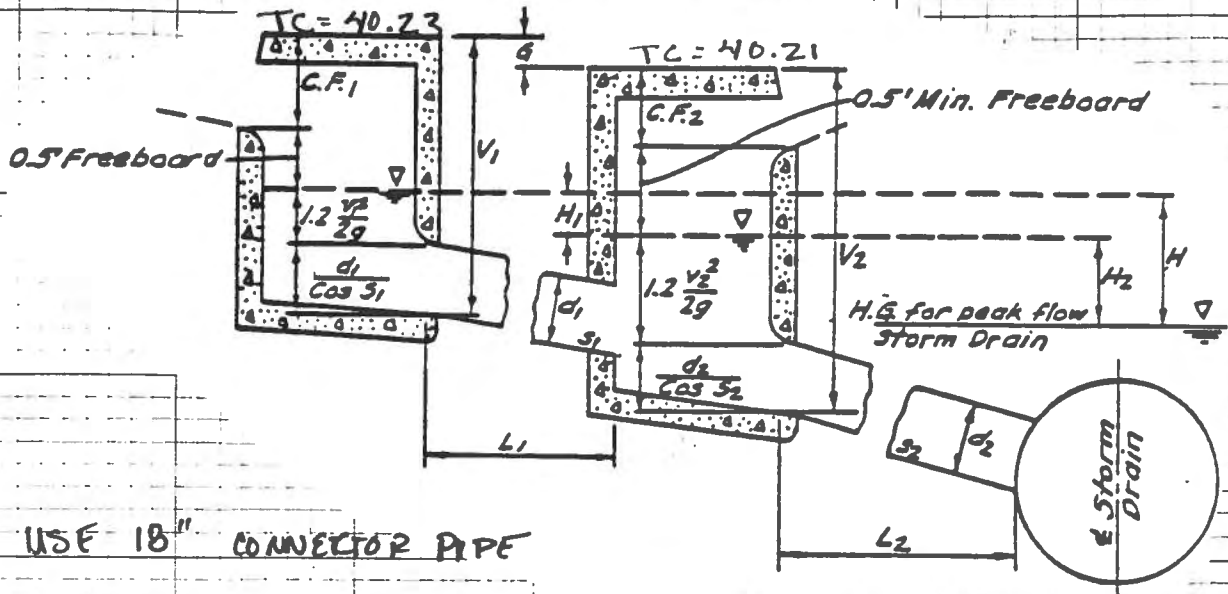
$H = 1.33' + 1.2' + 18"$

$H = 4.03'$

USE 4.5'

BOHANNAN-HUSTON INC.

B-9

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

SIZING SUMP @ HOPEWINGFF

USE 18" CONNECTOR PIPE

$Q_1 = 4.2 CFS$

$v = \dfrac{4.2}{1.767} = 2.37 FT/S$

$h_1 = \dfrac{v^2 (1.2)}{2g} = 0.10'$

$H = 1.33 + 0.10' + 18'' = 2.93'$

USE 4.0'

$Q_2 = 8.4 CFS$

$v = \dfrac{8.4}{1.767} = 4.75 FT/S$

$h_1 = 0.42'$

$H = 0.42' + 1.33 + 18'' = 3.25'$

USE 4.5'

BOHANNAN-HUSTON INC.

PROJECT NAME _____ SHEET _____ OF _____

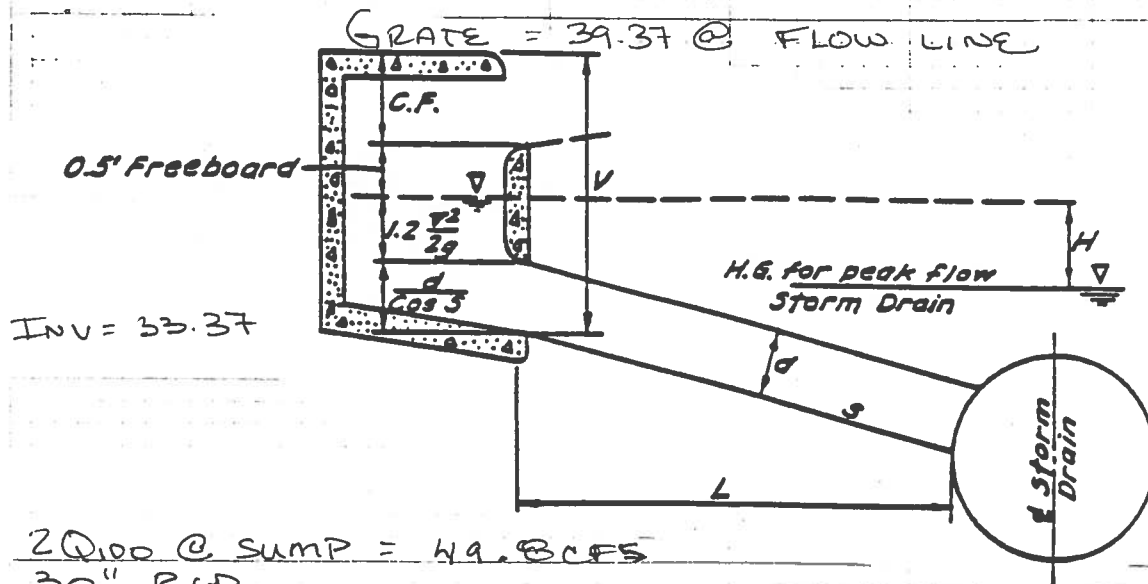PROJECT NO. _____ BY _____ DATE _____   B-11

SUBJECT _____ CH'D _____ DATE _____

(5) SUMP @ RIDGERUNNER & DESCOLLADO
TRIPLE GRATE

GRATE = 39.37 @ FLOW LINE

C.F.

0.5' Freeboard

V

$1.2 \frac{V^2}{2g}$

$\frac{d}{\cos S}$

INV = 33.37

H

H.G. for peak flow
Storm Drain

d

S

L

¢ Storm Drain

$2Q_{100}$ @ SUMP = 49.8 CFS
30" RCP

$$V = \frac{Q}{A} = \frac{49.8 \, CFS}{4.91 \, FT^2} = 10.14 \, FT/SEC$$

$$h = \frac{1.2 \, V^2}{2g} = 1.92'$$

$$H = 1.92 + 1.33 + 30''$$

$$H = 5.75'$$

USE 6.0'

BOHANNAN-HUSTON INC.

BASIN A: PIPE SIZING
RIDGERUNNER AND DESCOLLADO INTERSECTION
ANALYSIS POINT 5

Entrance Street	Q (CFS)	H (FT)	$A=\dfrac{Q}{0.6(2Gh)^{1/2}}$	$d=12*(4A/\pi)^{1/2}$ (IN)	PIPE SIZE
RIDGERUNNER	7.1	4.0	0.74	11.65	18″
RIDGERUNNER	14.2	4.5	1.39	15.96	18″
DESCOLLADO	4.2	4.0	0.44	8.98	18″
DESCOLLADO	8.4	4.5	0.82	12.26	18″
GRATE TO MH	47.5	6.0	4.03	27.18	30″
MH TO BASIN C	47.5	6.0	4.03	27.18	30″

BASIN B

SUMP @ INTERSECTION OF RIDING CIRCLE, CHANDLER, & PAIUAUTE

20' = 1"

28.45
- 7.6
- 10.5

7.6 CFS

18" RCP

S = 3.0%

⑭

15+00

CIRCLE

10.5 CFS

Q = 55.89 CFS
30" RCP

⑯

Q = 60.2 CFS

18" RCP

24" RCP

⑬

S = 4.0%

7+00

S = 1.36%

⑮

18" RCP

18" RCP

4.0 CFS

18" RCP

2.9 CFS

4.0 CFS

B-23
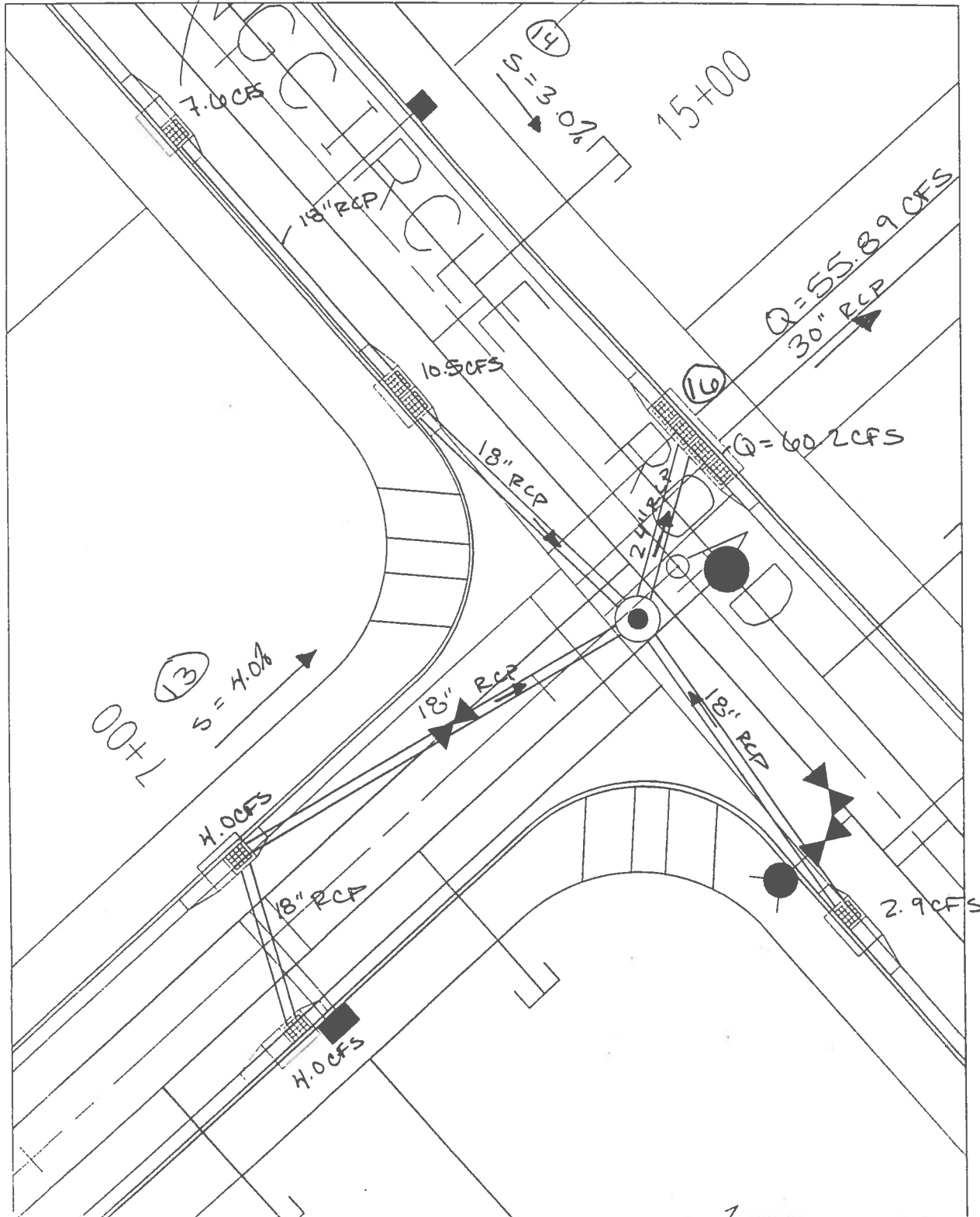
(15) TACKAWAY ENTERING SUMP @ RIDING CIRCLE

d. Catch Basins in Series
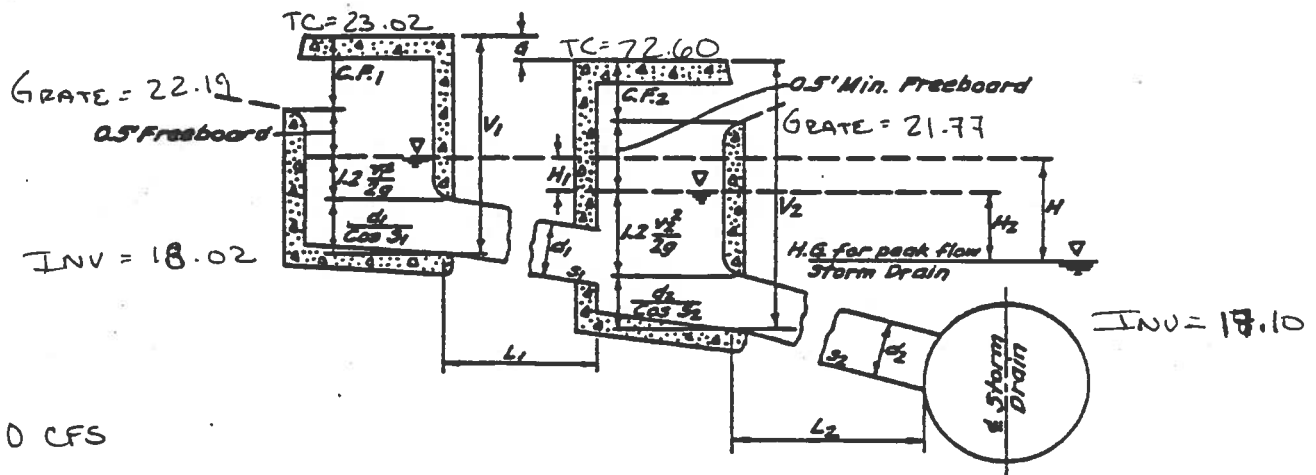
$Q_1 = 4.0$ CFS

USE 18" CONNECTOR PIPE

$$V = \frac{Q}{A} = \frac{4.0}{1.767} = 2.26 \text{ FT/S}$$

$$h_1 = \frac{1.2 v^2}{2g} = 0.10'$$

$H = 1.33' + 0.10' + 18''$

$H = 3.19'$

USE $H = \underline{5.0'}$ (AVOIDS WL CROSSING)

$Q_2 = 8.0$ CFS

USE 18" CONNECTOR PIPE

$$V = \frac{8.0 \text{ CFS}}{1.767} = 4.52 \text{ FT/S}$$

$$h_1 = \frac{1.2(4.52)^2}{2g} = 0.38'$$

$H = 1.33' + 0.38' + 18''$
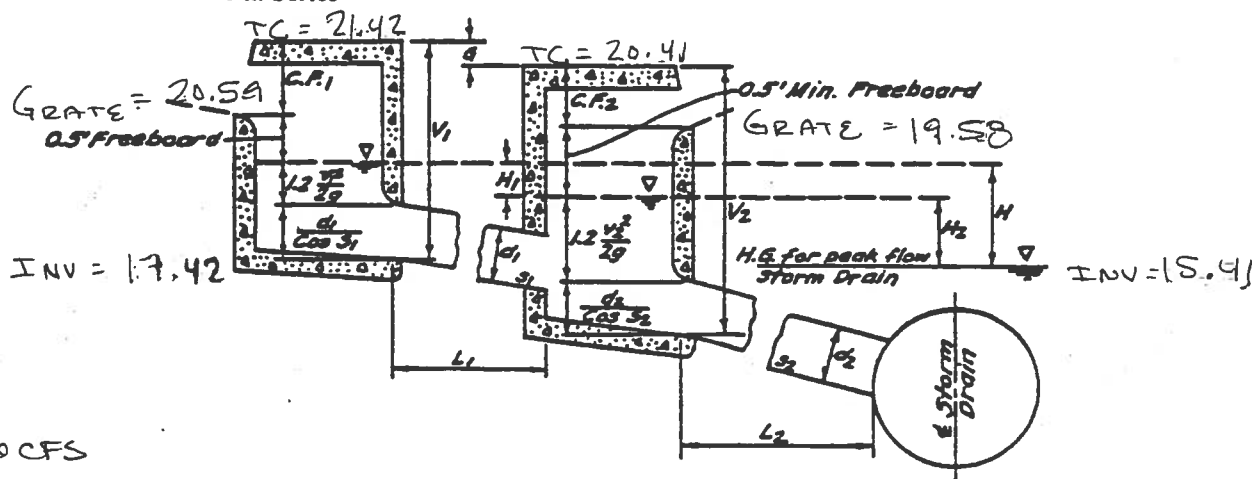
$H = 3.21'$

USE $H = \underline{5.5'}$ (AVOIDS WL CROSSIN)

B-25

Chapter 22 - Drainage, Flood Control and Erosion Control

SINGLE   DOUBLE

d. Catch Basins in Series

$Q_1 = 7.6$ CFS

USE 18" CONNECTOR PIPE

$V = \dfrac{Q}{A} = \dfrac{7.6 \text{ CFS}}{1.767 \text{ FT}^2} = 4.30$ FT/s

$h = \dfrac{1.2 v^2}{2g} = \dfrac{1.2(4.30)^2}{2g} = 0.34'$

$H = 1.33' + 0.34' + 1.5'$

$H = 3.17'$

USE $H = 4.0'$

$Q_2 = 7.6 + 10.5 = 18.1$ CFS

USE AN 18" CONNECTOR

$V = \dfrac{Q}{A} = \dfrac{18.1}{1.767} = 10.24$ FT/s

$h = \dfrac{1.2 v^2}{2g} = 1.96'$

$H = 1.33' + 1.96' + 1.5'$

$H = 4.78'$

USE $H = 5.0'$

Chapter 22 - Drainage, Flood Control and Erosion Control

    c. **Connector Pipe and "V" Depth Calculation**

    (1) Single Catch Basins
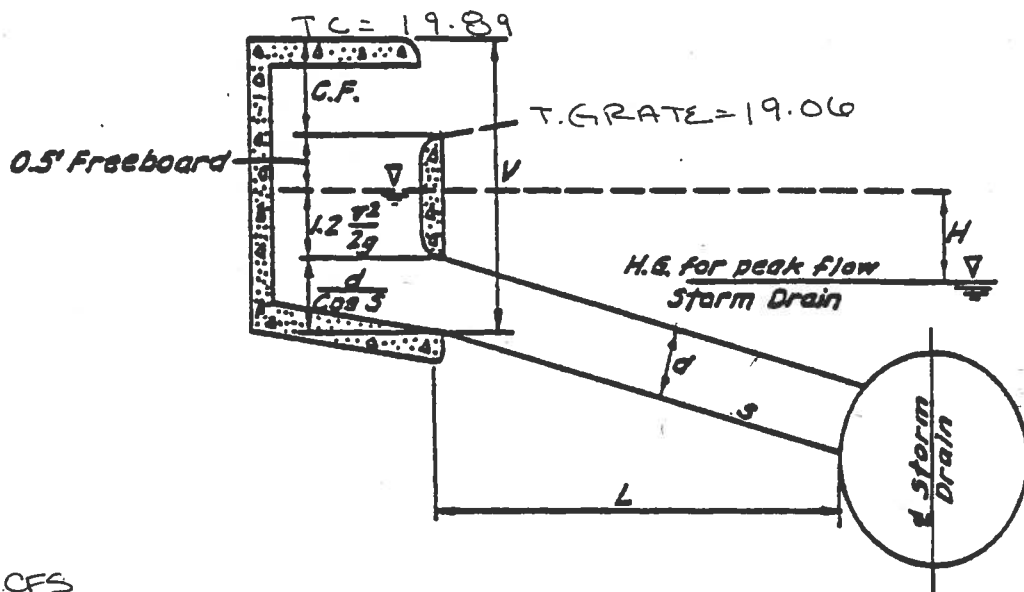
$$Q = 2.9 \ \text{CFS}$$

USE 18" CONNECTOR PIPE

$$V = \frac{Q}{A} = \frac{2.9}{1.767} = 1.64$$

$$h = \frac{1.2\,v^2}{2g} = 0.50'$$
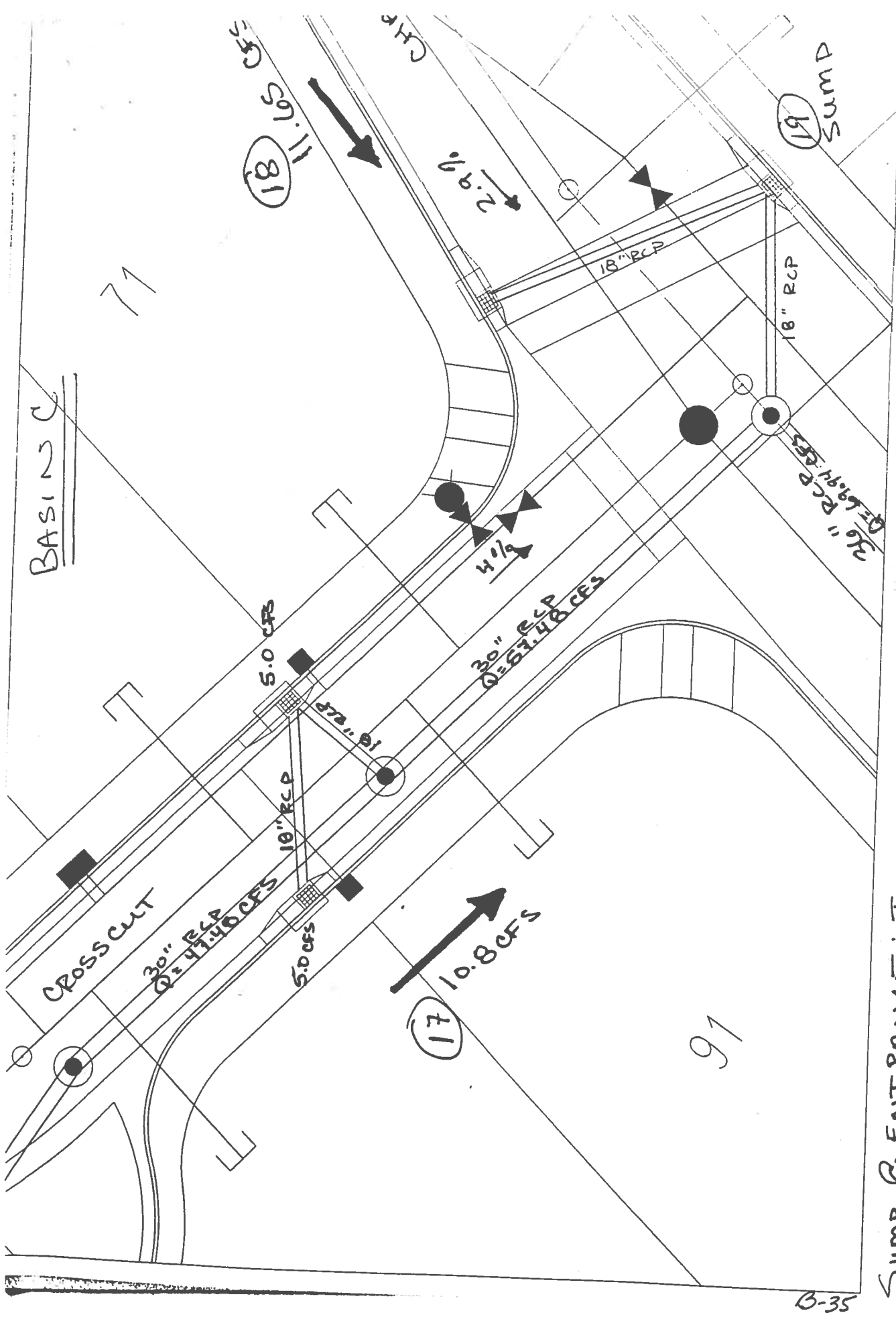
$$H = 1.33 + 1.5 + 0.5'$$

$$H = 2.88'$$

USE H = **5.5'** (AVOIDS WL TO HYDRANT)

BASIN B:PIPE SIZING
RIDING CIRCLE, CHANDLER, AND PACKAWAY INTERSECTION
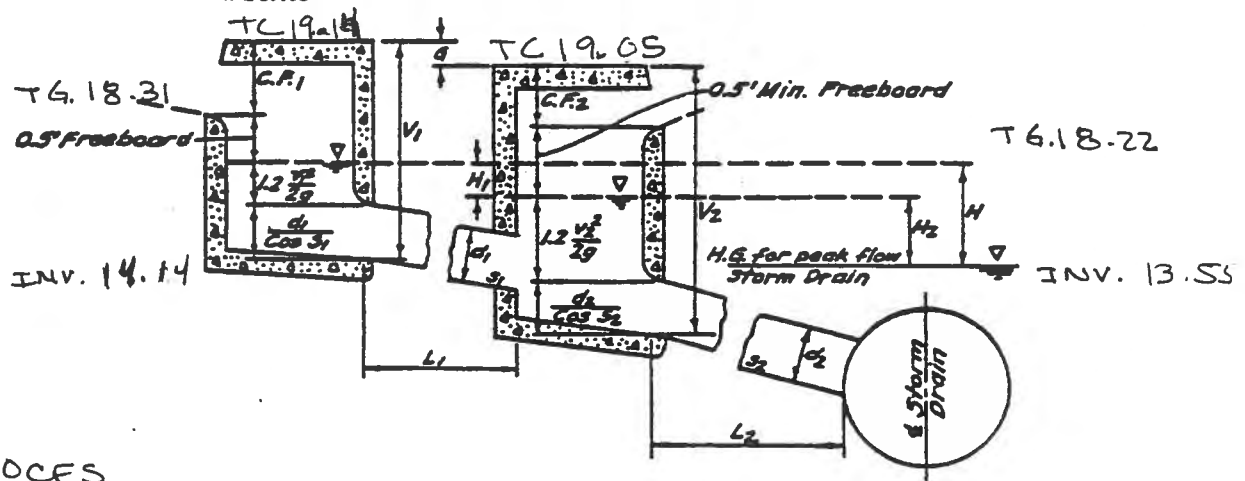ANALYSIS POINT 16

Entrance Street	Q (CFS)	H (FT)	$A=\dfrac{Q}{0.6(2Gh)^{1/2}}$	$d=12*(4A/\pi)^{1/2}$ (IN)	PIPE SIZE
RIDING CIRCLE	7.6	4.0	0.79	12.04	18″
RIDING CIRCLE	18.1	5.0	1.68	17.56	18″
CHANDLER	2.9	4.0	0.30	4.60	18″
PACKAWAY	4.0	4.0	0.42	8.73	18″
PACKAWAY	8.0	4.5	0.78	11.98	18″
MH TO GRATE	29.0	6	2.46	21.23	24″
GRATE TO CHAN.	55.9	6	4.73	29.45	30″

BASIN C

(18) 11.65 CFS

71

2.7"

18" RCP

4½"

5.0 CFS

30" RCP
Q = 67.48 CFS

16" RCP

18" RCP

30" RCP
Q = 47.48 CFS

CROSS CULT

5.0 CFS

(17) 10.8 CFS

91

18" RCP

16" RCP

(19) Sump

N
20 SCALE

Sump @ Entrance: Intersection of Chandler & Cross Cult

B-35

Analysis Pt 19

d. Catch Basins in Series

$Q_1 = 5.0 \, cfs$

USE 18" CONNECTOR

$V = \dfrac{Q}{A} = \dfrac{5}{1.767} = 2.83 \, fps$

$h_1 = \dfrac{1.2 v^2}{2g} = 0.15'$

$H = 1.33' + 18" + 0.15'$

$H_{min} = 2.98'$

USE $H = 5.0'$

$Q_2 = 10 \, cfs$

use 18" CONNECTOR

$V = \dfrac{Q}{A} = \dfrac{10}{1.767} = 5.66 \, fps$
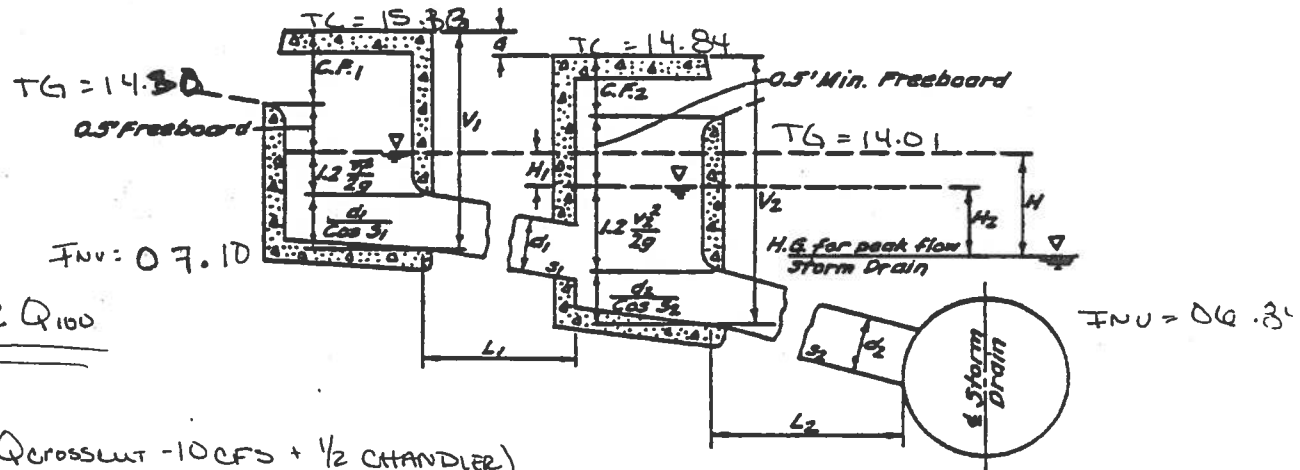
$h_1 = \dfrac{1.2 v^2}{2g} = 0.41'$

$H_{min} = 1.33' + 18" + 0.41'$

$H_{min} = 3.24'$

USE $H = 5.5'$

(AVOIDS WL CROSSING)

d. Catch Basins in Series

$Sump = 2 Q_{100}$

$Q_1 = 2 (Q_{crosscut} - 10 cfs + \frac{1}{2} CHANDLER)$

$= 2 (10.8 - 10 + \frac{11.65}{2})$

$= 13.25 cfs$ $\quad * (Q^{PIPE}_{ACTUAL} = 6.62 cfs)$

USE 18" CONNECTOR PIPE:

$V = \frac{Q}{A} = \frac{13.25}{1.767} = 7.50 FT/s$

$h_1 = \frac{1.2 v^2}{2g} = 1.05'$

$H = 1.05' + 18'' + 1.33'$

$H = 3.88'$ min.

USE $H = 7.20'$ (AVOIDS WL @ CROSSING)

$Q_2 = 2(\frac{1}{2} CHANDLER) + Q_1$

$= 11.65 + 13.25$

$= 24.90$ $* (Q^{PIPE}_{ACTUAL} = 12.44 cfs)$

USE 24" CONNECTOR PIPE

$V = \frac{Q}{A} = \frac{24.90}{3.141} = 7.92 FT/s$

$h = \frac{1.2 v^2}{2g} = 1.17'$

$H = 1.17' + 18'' + 1.33'$

$H = 4.00'$ min.

USE 7.17

* Q_{100} USED TO SIZE PIPES

BASIN C PIPE SIZING
CHANDLER-CROSSCUT INTERSECTION
ANALYSIS POINT 19

Entrance Street	Q (CFS)	H (FT)	A= $\dfrac{Q}{0.6(2Gh)^{1/2}}$	d=12*(4A/π)$^{1/2}$ (IN)	PIPE SIZE
CROSSCUT	5.00	5.0	0.46	9.23	18"
CROSSCUT	10.00	5.5	0.88	12.74	18"
MH ON CROSSCUT	57.50	7.19	4.45	28.58	30"
CHANDLER	6.62	7.2	0.51	9.70	18"
CHANDLER	12.44	7.17	0.96	13.30	24"*
CHAND./CROSS.	69.94	8.46	4.99	30.26	36"

*   24" RCP DECREASED THE REQUIRED H FOR THE INLET.

TRACT A-2A
BACKYARD POND DESIGN
FEBRUARY, 1999   **BACKYARD PONDS**

ASSUMING: (50% treatment "B" and 50% treatment "C") X (Backyard Area) + (100 sf X Treatment "D")
for 10 day, 100 year volumes

$$V(10) = \frac{V(360) + Ad*(P(10) - P(360))}{12 \text{ in/ft}}$$ Where E is the weighted excess percipitation   eq. a-7 DPM
A is the area in each treatment type

E for treatment "B" and "C" portions:

$$E = \frac{EaAa+EbAb+EcAc+EdAd}{Aa+Ab+Ac+Ad}$$ eq. a-5 DPM

Given: Ea = n/a   P10 = 3.67
Eb = 0.67   P360 = 2.20
Ec = 0.99
Ed = 1.97

$$E = \frac{[.67+.99]}{2*(12)} = 0.069 \text{ ft}$$ (converts inches to feet)

V(10) = [(X BACKYARD AREA -Ad) x E] + Ad*(3.67-2.20)/12   eq. a-9 DPM

TRACT A-2A

LOT # UNIT B-9	BACKYARD AREA (SQ. FT.)	REQUIRED V (100) (CU. FT.)	POND DIMENSION (FT.) (AVG. WIDTHS)				POND VOLUME (CU. FT.)	C	I	Q(100) cfs
			L	W1	W2	D				
74	1755	126	21	5.8	9.4	0.8	128	0.52	4.7	0.10
153	1558.8	113	22	6.1	6.7	0.8	113	0.52	4.7	0.09
154	1710	123	26	7.6	4.2	0.8	123	0.52	4.7	0.10
155	3660	258	23	14.1	13.9	0.8	258	0.52	4.7	0.21
156	7610.9	531	35	19.8	23.7	0.7	536	0.52	4.7	0.43
174	1585.3	115	23	7.3	7.5	0.7	117	0.52	4.7	0.09
175	1585.3	115	21	7.6	8.2	0.7	115	0.52	4.7	0.09

TOTAL =   **1.09**

100 yr – 10 day volume

E-1

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

GULF COURSE ROAD

LEGEND

DRAINAGE FLOW
DRAINAGE BASIN BOUNDARY
TRACT BOUNDARY
EXISTING CONTOUR
SEVEN BAR LOOP ROAD
BASIN DRAINAGE OUTFALL (DEVELOPED FLOWS)

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

DRAINAGE MANAGEMENT PLAN
DEVELOPED CONDITIONS

LOCATION MAP

FLOOD HAZARD MAP

EXISTING CONDITIONS MAP

STA. 52+48.44 ELLISON DRIVE =
STA. 52+48.44 7 BAR LOOP (SOUTH)

A-13
B-13

SALIDA DEL SOL
SUBDIVISION

55+00

TRACT A-1

50+00

TRACT A-2B

BASIN EL-W
AREA = 6.1 ac.
IO100 = 21.51 cfs

(1) DISCHARGE FROM
A-2B Q100=5.57 cfs
Q10=2.33 cfs

45+00

AMAFCA FLOOD

DIVERSION NO. 7

TRACT A-2A

(1) DISCHARGE FROM
A-2A Q100=4.50 cfs
Q10=1.70 cfs

40+00

TRACT B-9G

SEVEN BAR LOOP ROAD

DISCHARGE TO
BLACK DIVERSION
CHANNEL = 46.9 cfs

RESIDUAL FLOW FROM
BASIN EL-W = 0.75 cfs

35+00

(2)Q100=20.6 cfs

TRACT B-9H

(2)Q100=17.0 cfs

30+00

STA. 31+54.44 ELLISON DRIVE =
STA. 33+26.38 CIBOLA LOOP (WEST)

STA. 17+97.61 ELLISON DRIVE =
STA. 1+00.00 CIBOLA LOOP (EAST)

TRACT B-9E

CIBOLA LOOP

BLACK DIVERSION CHANNEL

NOTE: (1) REFER TO THE CONCEPTUAL DRAINAGE PLAN
FOR TRACTS A-2A, A-2B AND A-1 FOR FLOWS
FROM THESE TRACTS (A13/D08).

(2) REFER TO THE DRAINAGE MANAGEMENT PLAN FOR
THE SPECIAL ASSESMENT DISTRICT 221 FOR A
DETAILED SUMMARY OF THE OFFSITE FLOWS FROM
TRACTS B-9D THROUGH B-9J (A01/D223).

TRACT A-3

ARROYO
CHACHACA = 0 cfs

TRACT N-2A-1

TRACT N-2A-2

CIBOLA HIGH SCHOOL

ELLISON DRIVE

BASIN EL-E
AREA = 7.5 ac.
IO100 = 24.53 cfs

STA. 13+00.00 ELLISON DRIVE =
STA. 30+35.68 COORS BYPASS

25+00

(2)Q100=10.7 cfs

TRACT B-9F

TRACT B-9J

20+00

TRACT B-9D

15+00
(2)Q100=20.1 cfs

TRACT B-10

TRACT N-2B

COORS BYPASS

SEVEN BAR LOOP ROAD

10+00

DISCHARGE TO
REGIONAL DETENTION
POND = 94.8 cfs

ELLISON DRIVE

TRACT M

TRACT 0-1A

K E Y

OFFSITE BASIN FLOWS

REGIONAL DETENTION POND

BASIN BOUNDARY

GRAPHIC SCALE
0   200   400   800
(IN FEET)

CITY OF ALBUQUERQUE
PUBLIC WORKS DEPARTMENT
ENGINEERING GROUP

TITLE:
DRAINAGE PLAN
ELLISON DRIVE

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

E-7

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.

ALBUQUERQUE
PUBLIC SCHOOL

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

GENERAL NOTES

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

PROJECT

7-BAR SITE PLAI

REVISIONS		
⚠		

DATE: X-XX-95

DRAWN BY: X.X.X.

CHECKED BY: X.X.X.

APPROVED BY: P. McM.

SHEET

A-X

1 OF 1

ELLISON DRIVE, N.W.

DEVELOPED FLOWS

BASIN	AREA	Q_{100}	Q_{10}
1	1.66 ac.	4.78 cfs	3.15 cfs
2	2.88 ac.	8.26 cfs	5.45 cfs
3	1.47 ac.	4.23 cfs	2.79 cfs
A	15.17 ac.	47.48 cfs	31.34 cfs
B	17.87 ac.	55.89 cfs	36.89 cfs
C	7.16 ac.	22.45 cfs	14.82 cfs

BASIN 1

CIBOLA
HIGH SCHOOL
Filed: May 17, 1982
(C21-72)
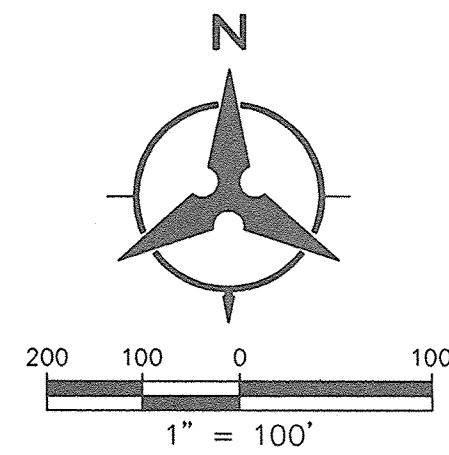
TRACT A-2B
11.4928 ACRES
(PROPOSED SCHOOL SITE)

CANADA PLACE

30" RCP SD

NEW CONNECTION TO
BLACK DIVERSION CHANNEL
SEE G4 FOR DETAILS

BASIN B

COTTONWOOD HILLS
SUBDIVISION

PACKAWAY ROAD

BASIN 2

CHAPARRO DRIVE

RIDGECIRCLE DRIVE

ANALYSIS PTS.

ANALYSIS PT.	Q_{100}
1	11.90
2	7.10
3	19.00
4	28.50
5	47.50
6	19.00
7	3.35
8	25.10
9	28.45
10	2.24
11	5.00
12	7.24
13	10.80
14	13.15
15	11.94
16	55.89
17	10.80
18	11.65
19	22.45
20	69.94

CAPROCK ROAD

BASIN A

MIRADOR SANDIAS
SUBDIVISION

EXISTING
DETENTION POND

RIDGERUNNER ROAD

BULK LAND PLAT
CRYSTAL RIDGE
SUBDIVISION
FILED: September 30, 1997
(97C-298)

BASIN 3

HUNTERS RUN
SUBDIVISION - UNIT I
FILED: October 19, 1994
(94C-353)
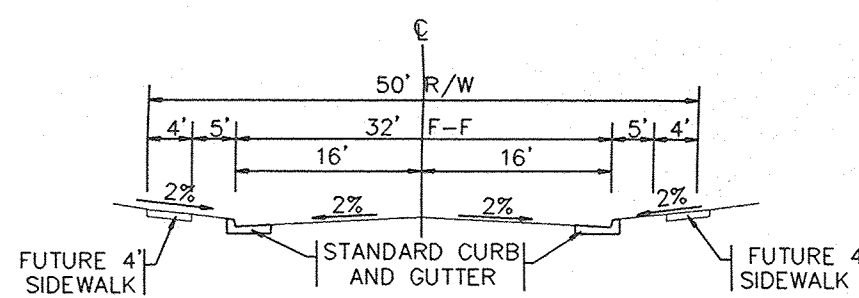
SEVEN BAR LOOP ROAD, N.W.

BASIN C

CROSSPOINT DRIVE

CHANDLER DRIVE

*doesn't
compare
to*

*Sheet B-21
in
appendix*

*? Appears to be
after inlet capacities
are subtracted from
Q = 33.15 CFS*

**LEGEND**

PROPERTY BOUNDARY
BASIN BOUNDARY
EXIST. STORM DRAIN LINE
EXIST. STORM DRAIN MANHOLE
EXIST. STORM DRAIN INLET
2.9% STREET FLOW
PIPE FLOW
PROPOSED STORM DRAIN INLET
PROPOSED STORM DRAIN MANHOLE
17 ANALYSIS POINT
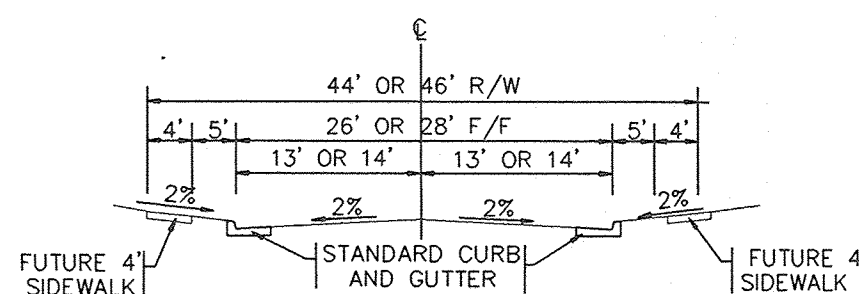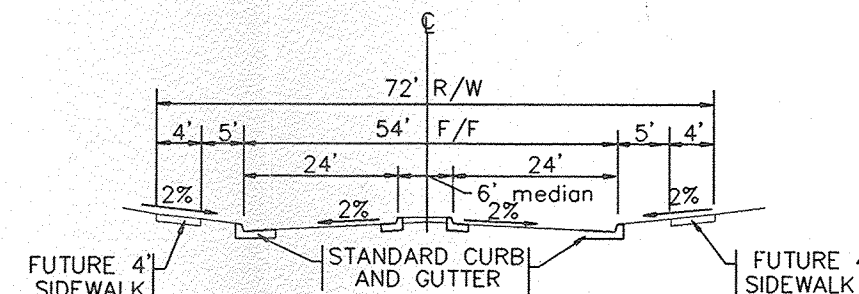
CONNECT TO EXISTING
SD MH IN SEVEN BAR
LOOP RD.

BLACK DIVERSION CHANNEL

VICINITY MAP
ZONE ATLAS MAP NO. A-13, B-13

SEVEN BAR
RANCH

BOARD
OF
EDUCATION

ELLISON DRIVE
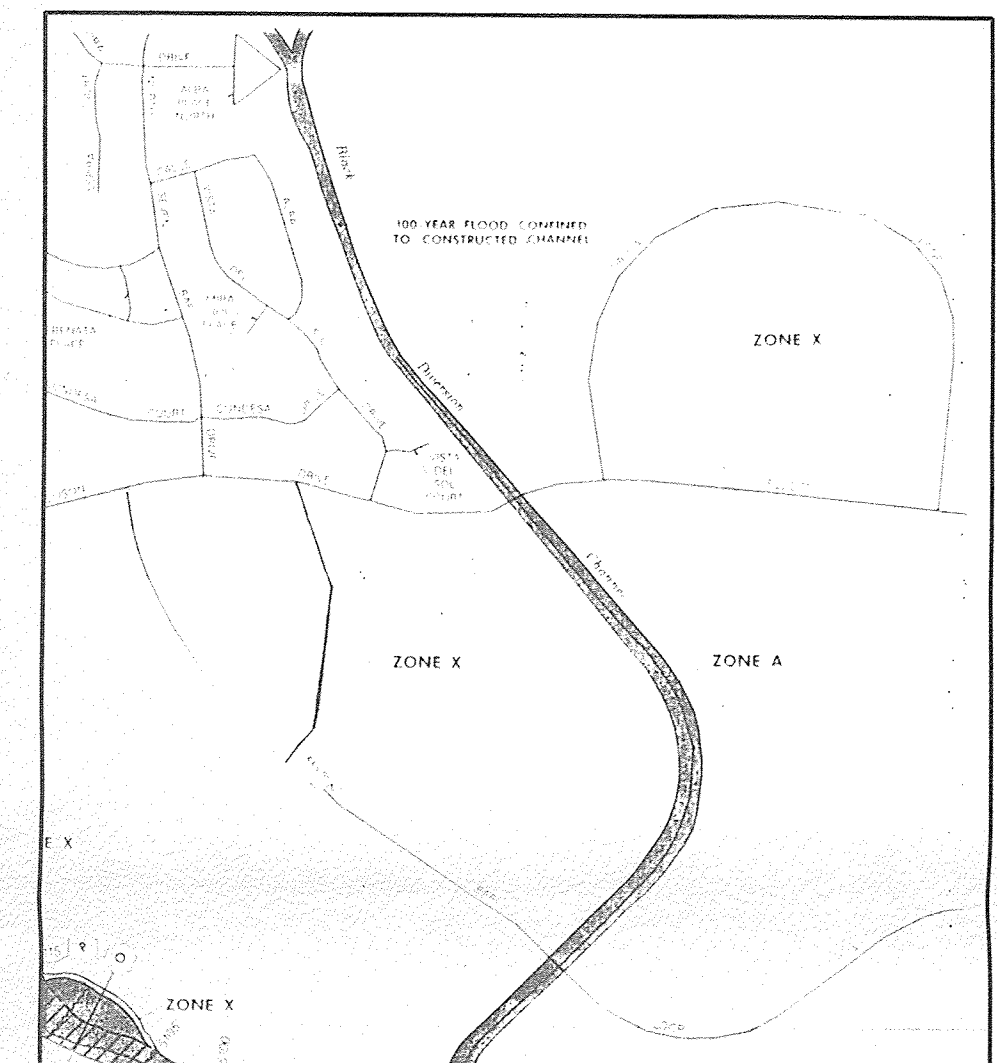
FEMA FLOOD INSURANCE RATE MAP
PANEL X OF X

ZONE X
ZONE A

Bohannan ▲ Huston

Courtyard One 7500 JEFFERSON NE Albuquerque NEW MEXICO 87109

ENGINEERS PLANNERS PHOTOGRAMMETRISTS SURVEYORS SOFTWARE DEVELOPERS
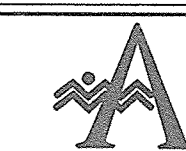
CITY OF ALBUQUERQUE
PUBLIC WORKS DEPARTMENT
ENGINEERING DEVELOPMENT GROUP

TITLE:
TRACT A-2A SEVEN BAR RANCH
PROPOSED DEVELOPED CONDITIONS
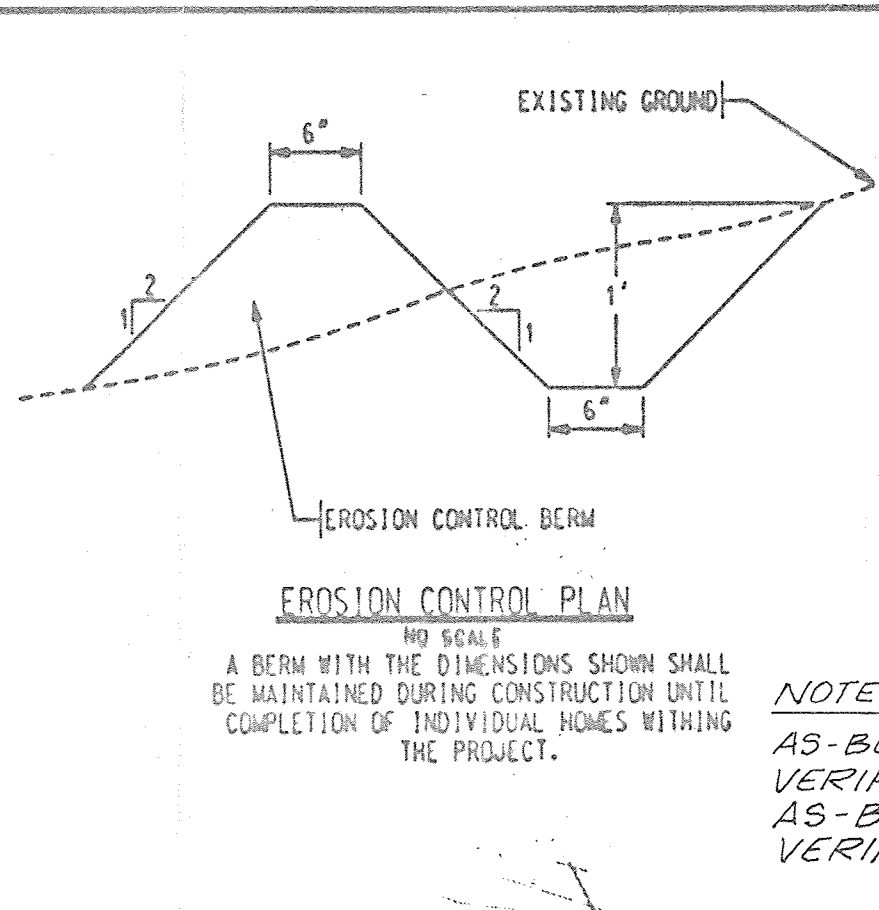DRAINAGE PLAN & ONSITE BASIN MAP

DESIGN REVIEW COMMITTEE | CITY ENGINEER APPROVAL | MO./DAY/YR. | MO./DAY/YR.

LAST DESIGN UPDATE

CITY PROJECT NO. | ZONE MAP NO. A13/B13 | SHEET NO. B-2 | OF

TYPICAL STREET SECTION A-A
NO SCALE

50' R/W
4' 5' 32' F-F 5' 4'
16' 16'
FUTURE 4' SIDEWALK | STANDARD CURB AND GUTTER | FUTURE 4' SIDEWALK

TYPICAL STREET SECTION A-A
NO SCALE

44' OR 46' R/W
4' 5' 26' OR 28' F/F 5' 4'
13' OR 14' 13' OR 14'
FUTURE 4' SIDEWALK | STANDARD CURB AND GUTTER | FUTURE 4' SIDEWALK

ENTRY STREET SECTION A-A
NO SCALE

72' R/W
4' 5' 54' F/F 5' 4'
24' 6' median 24'
FUTURE 4' SIDEWALK | STANDARD CURB AND GUTTER | FUTURE 4' SIDEWALK

VICINITY MAP
"AS BUILT" (HORIZONTAL AND VERTICAL LOCATION ONLY)

ZONE MAP NO. A-13/B-13

EXISTING GROUND

EROSION CONTROL BERM

EROSION CONTROL PLAN
NO SCALE

A BERM WITH THE DIMENSIONS SHOWN SHALL BE MAINTAINED DURING CONSTRUCTION UNTIL COMPLETION OF INDIVIDUAL HOMES WITHIN THE PROJECT.
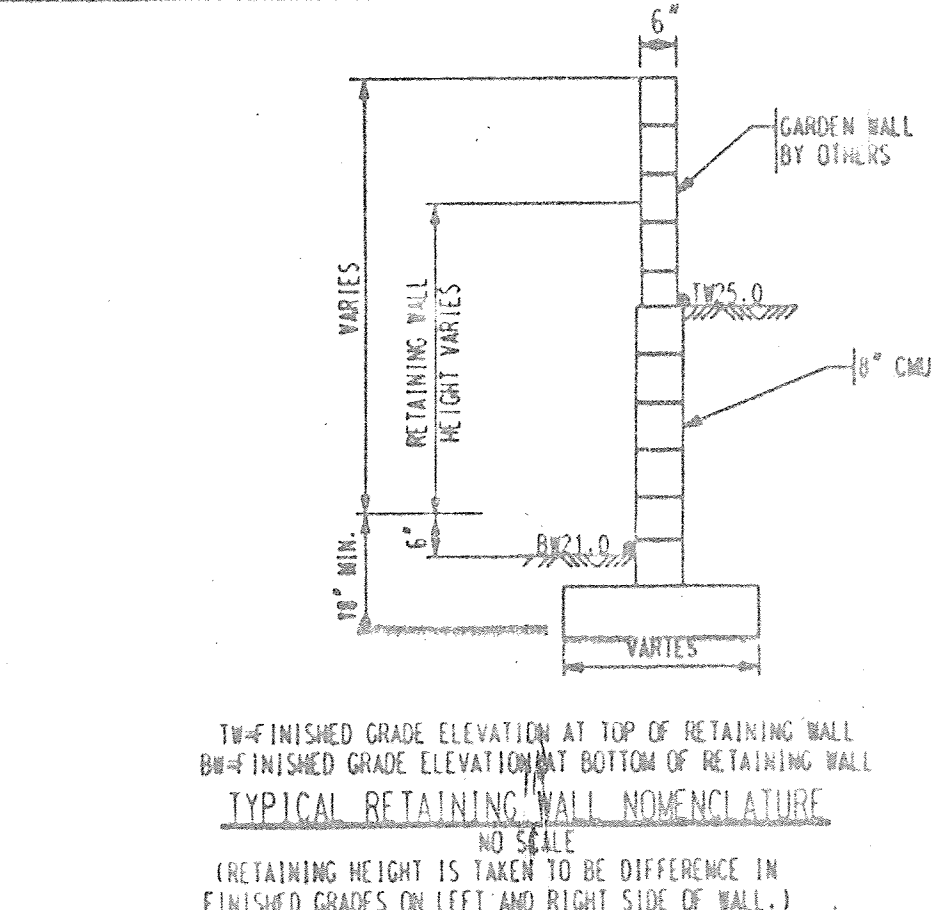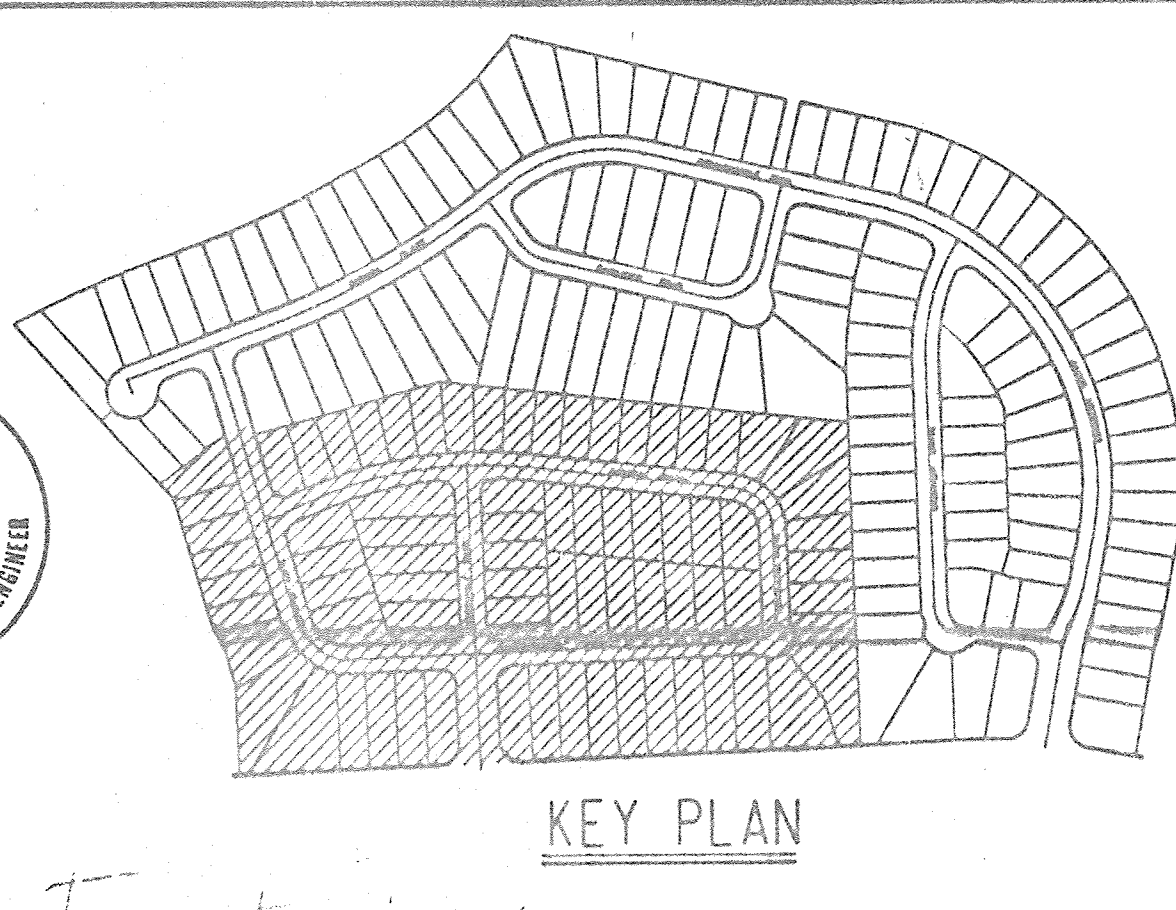
DRAINAGE CERTIFICATION

JAMES R. TOPMILLER, OF BOHANNAN HUSTON, N.M.P.E. # 9354, HEREBY CERTIFY THAT THE AS-BUILT DRAINAGE CONDITIONS OF THE SITE ARE IN SUBSTANTIAL COMPLIANCE WITH THE APPROVED GRADING AND DRAINAGE PLAN, TO THE BEST OF MY KNOWLEDGE AND BELIEF. AS-BUILT ELEVATIONS ARE SHOWN ON THE PLAN WHERE THE ORIGINAL DESIGN ELEVATION HAS BEEN CROSSED OUT AND THE AS-BUILT ELEVATION ADDED. AS-BUILT ELEVATIONS WERE VERIFIED BY WALKER & ALDRICH SURVEYING, S.I. 6401. THIS STATEMENT DOES NOT REPRESENT CERTIFICATION OF CONTRACTOR'S METHODS OR MATERIALS.

JAMES R. TOPMILLER
NEW MEXICO 9354
REGISTERED PROFESSIONAL ENGINEER

DATE 3/18/00

NOTE:
AS-BUILT PAD & YARD ELEVATIONS VERIFIED BY WALKER SURVEYING.
AS-BUILT WALL ELEVATIONS VERIFIED BY ALDRICH SURVEYING.

STEPHEN E. WALKER
NEW MEXICO 6401
REGISTERED PROFESSIONAL SURVEYOR

KEY PLAN

TW=FINISHED GRADE ELEVATION AT TOP OF RETAINING WALL
BW=FINISHED GRADE ELEVATION AT BOTTOM OF RETAINING WALL

TYPICAL RETAINING WALL NOMENCLATURE
NO SCALE
(RETAINING HEIGHT IS TAKEN TO BE DIFFERENCE IN FINISHED GRADES ON LEFT AND RIGHT SIDE OF WALL.)

GARDEN WALL BY OTHERS

GENERAL NOTES

1. CONTRACTOR MUST OBTAIN A TOPSOIL DISTURBANCE PERMIT FROM THE ENVIRONMENTAL HEALTH DIVISION PRIOR TO CONSTRUCTION.

2. THE CONTRACTOR IS TO REFER TO EARTHWORK SPECIFICATION AS NOTED IN THE SOILS REPORT.

3. THE CONTRACTOR SHALL CONFORM TO ALL CITY, COUNTY, STATE, AND FEDERAL DUST CONTROL MEASURES AND REQUIREMENTS AND WILL BE RESPONSIBLE FOR PREPARING AND OBTAINING ALL NECESSARY APPLICATIONS AND APPROVALS.

4. THE CONTRACTOR SHALL ENSURE THAT NO SOIL ERODES FROM THE LOTS INTO PUBLIC RIGHT-OF-WAY. THIS CAN BE ACHIEVED BY CONSTRUCTING TEMPORARY BERMS AS PER THE DETAIL ON THIS SHEET AND WETTING THE SOIL TO KEEP IT FROM BLOWING AS PER THE EROSION CONTROL DETAIL ON THIS SHEET.

5. ALL STREET SPOT ELEVATIONS ARE TO TOP OF BERM UNLESS OTHERWISE NOTED. VALLEY GUTTER ELEVATIONS ARE SHOWN AT FLOWLINE ELEVATION.
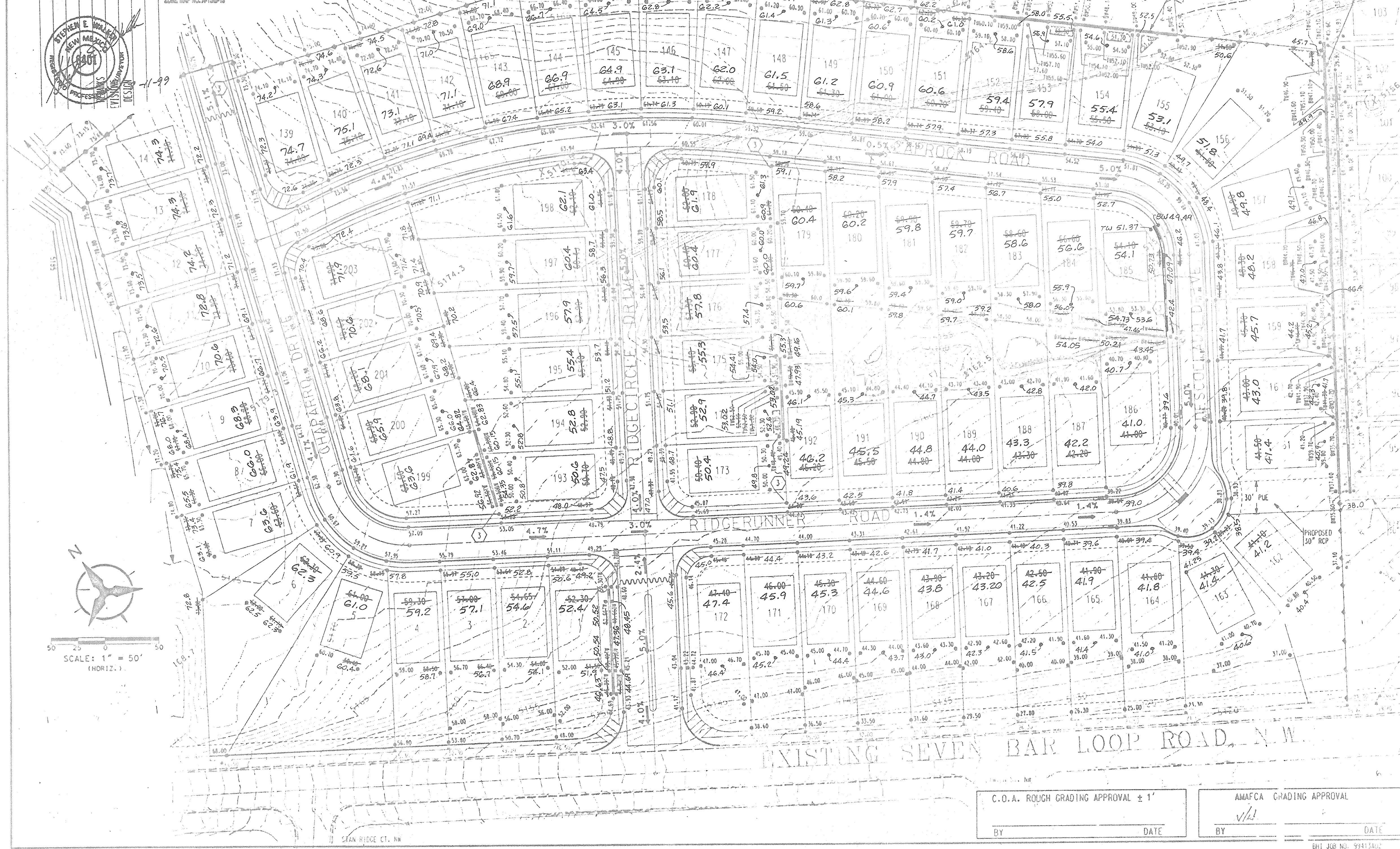
LEGAL DESCRIPTION
A PORTION OF TRACT A-2A SEVEN BAR SOUTH

KEYED NOTES:

1. CONCRETE MASONARY UNIT FENCE REQUIRED ALONG BACK OF LOT 1 THROUGH 14 AND 162 THROUGH 172. STANDARD C.M.U. 16" X 8" X 16" GROUT REINFORCED CELLS ONLY.

2. FENCING CONTRACTOR IS TO PROVIDE ONE TURNED OUT BLOCK IN LOWEST CORNER OF LOT JUST ABOVE GROUND SURFACE TO PROVIDE BACKYARD DRAINAGE TO SEVEN BAR LOOP ROAD RIGHT OF WAY.

3. FENCING CONTRACTOR IS TO PROVIDE ONE TURNED OUT BLOCK IN LOWEST CORNER OF LOT JUST ABOVE GROUND SURFACE TO PROVIDE BACKYARD DRAINAGE TO THE ADJACENT STREET RIGHT OF WAY. (LOTS 139, 173, 178, 185, 199.)

LEGEND

Symbol	Description
⊕ 5235.25	PROPOSED SPOT ELEVATION
⊕ 5235.75B	TOP OF ROLL CURB ELEVATION
⊕ 5235.25	EXISTING SPOT ELEVATION
◇ 5235.25	ROUGH SPOT ELEVATION
	PROPOSED RETAINING WALL
	EXISTING CONTOUR
	DIRECTION OF FLOW
	EXISTING STORM DRAIN LINE
	EXISTING STORM DRAIN MANHOLE
	PROPOSED STORM DRAIN INLET
	PROPOSED STORM DRAIN LINE
	PROPOSED STORM DRAIN MANHOLE
	PROPOSED WATER BLOCK
	PROPOSED BACKYARD POND
	EXISTING SAG MANHOLE
	PHASING BOUNDARY

JOHN C. ALEXANDER
NEW MEXICO 13470
REGISTERED PROFESSIONAL ENGINEER

CITY OF ALBUQUERQUE
PUBLIC WORKS DEPARTMENT
ENGINEERING DEVELOPMENT GROUP

MIRADOR SANDIAS SUBDIVISION
GRADING AND DRAINAGE PLAN

DEVELOPMENT REVIEW BOARD
DRB APPROVAL DATE

RECEIVED MAR 17 2000
HYDROLOGY SECTION

DRB# 98-138   ZONE MAP NO. A-13/B-13   SHEET 3 OF 11

C.O.A. ROUGH GRADING APPROVAL ± 1'
BY   DATE

AMAFCA GRADING APPROVAL
BY   DATE

BHI JOB NO. 9941SA02

SCALE: 1" = 50' (HORIZ.)

EXISTING SEVEN BAR LOOP ROAD, N.W.

ROCK ROAD

RIDGERUNNER ROAD

RIDGE CIRCLE DRIVE

CHAPARRON DR.