

CITY OF ALBUQUERQUE



December 28, 2006

Mr. Scott Steffen, PE
BOHANNAN-HUSTON, INC.
7500 Jefferson St. NE – Courtyard I
Albuquerque, NM 87109

RE: MESA RIDGE SUBDIVISION (E-11/D7A)
Engineers Certification for Release of Financial Guaranty
Engineers Stamp dated 7/7/2005
Engineers Certification dated 12/28/2006

Dear Scott:

Based upon the information provided in your Engineer's Certification Submittal dated 12/28/2006, the above referenced plan is adequate to satisfy the Grading and Drainage Certification for Release of Financial Guaranty.

If you have any questions, you can contact me at 924-3982

Sincerely,

Arlene V. Portillo
Plan Checker, Planning Dept.- Hydrology
Development and Building Services

C: Marilyn Maldonado, COA# 765881
File

P.O. Box 1293

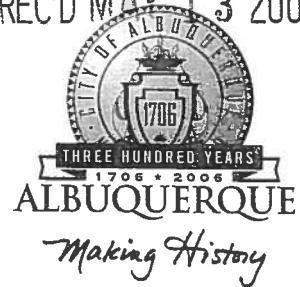
Albuquerque

New Mexico 87103

www.cabq.gov

CITY OF ALBUQUERQUE

REC'D MAY 13 2005



May 12, 2005

Mr. Scott J. Steffen, P.E.
Bohannon Huston, Inc.
7500 Jefferson St. NE
Albuquerque, NM 87109-4335

RE: Water and Sanitary Sewer Availability
Tract Z1, Saddle Ridge Unit 2
Request Received March 30, 2005

E-11

Mr. Steffen:

Property Information: The 7-acre parcel on the south side of Montano between Taylor Ranch and San Idelfonso was the subject of a previous availability statement released December 14, 2000, see attached. At that time the developer requested zone change from SU-1 Equestrian Center to SU-1 for PRD in order to build a 45-lot residential subdivision, see DRB #1001628. The zone change was denied. Over the last few years the case was subsequently appealed and the development process has now resumed. The developer now plans a 35-lot single family subdivision.

Existing Sanitary Sewer and Water Lines: Existing public lines include a 12-inch master plan zone 2WR water line in Montano and an 18-inch sanitary sewer (SAS) interceptor in Montano that discharges to the 48-inch SAS interceptor in the flood control easement east of the site.

Service: Conditions of service remain as given in the previous statement. SAS service will require construction of 8-inch public lines in the internal streets. Outfall shall be to a manhole on either the 18-inch line in Montano or the 48-inch line, but connecting to the 48-inch will require an inverted siphon upstream of the manhole. Rather than constructing a new manhole, it may be possible to outfall via existing Manhole #651; have your surveyor verify this. Water lines must be public and looped through the internal streets of the subdivision. The number and location of the hydrants must be approved by the Fire Marshall prior to design approval.

Easements: City of Albuquerque public water and sanitary sewer easements are required for all lines to be constructed outside of dedicated right-of-ways. Minimum width per the DPM is 20 feet for public water or sewer only, and 25 feet for both public water and sewer.

Design and construction of all required improvements will be at the developer / property owner's expense and must be coordinated through the City of Albuquerque via the DRC / City Work Order process. Designs must be by a New Mexico registered professional engineer. Construction must be by a licensed, bonded public utility contractor.

Utility Expansion Charges: In addition to installation and construction costs, both sanitary sewer and metered water service will be subject to Utility Expansion Charges (UEC's). These charges are payable at the time service is requested.

Tract Z1, Saddle Ridge Unit 2
May 12, 2005
Page 2

Closure: This statement of availability will remain in effect for a period of one year from the date of issue and applies only to the development identified herein. Its validity is, in part, contingent upon the continuing accuracy of the information supplied by the developer. Changes in the proposed development may require reevaluation of availability and should be brought to the attention of the Utility Development Section of the City of Albuquerque as soon as possible. Any outstanding pro rata and standby assessments must be paid at the time service is taken. All charges and rates collected will be based on the ordinances and policies in effect at the time service is actually requested and authorized.

Please contact me at (505) 924-3988 or by fax at (505) 924-3864 if you have questions or need additional information.

Sincerely,



Nancy Musinski, P.E.
Senior Engineer
Utility Development Section

Attachments: Availability Statement December 14, 2000; system maps

c: f/ availability E-11
f/ DRB #1001628
f/ readers #50405

**DRAINAGE STUDY
FOR
MESA RIDGE SUBDIVISION**

July 7, 2005

Prepared for:

**Jude Baca
3913 72nd Street NW
Albuquerque, NM 87120**

Prepared by:

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

PREPARED BY:

 7-7-05
Scott Steffen, P.E. Date



Bohannon  Huston INC.

I. INTRODUCTION

This drainage study establishes a drainage management plan for the proposed development of Mesa Ridge. This subdivision is approximately 7.7 acres of residential land to be subdivided into 34 single family residential lots. The property lies in the southwest corner of the intersection of Montano Road and the Mariposa Diversion Channel. It can most easily be found by traveling due west from the intersection of Montano Road and Coors Boulevard.

This study provides hydrologic and hydraulic analysis and provides a drainage management plan as necessary to support the planned 34-unit development. Prior to final plat and building permit approvals of this project, the City of Albuquerque (COA) must approve final grading plans and work order construction plans.

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. The Arid-lands Hydrologic Model (AHYMO) was utilized to determine peak flow rates for design of the storm drainage improvements within the project. The 100-year, 6-hour storm is used as the design event. The results are included in **Appendix A**. Street capacities were analyzed using Manning's equation, consistent with the revised DPM Section 22.2.

III. EXISTING CONDITIONS

A. Topography

Mesa Ridge is a vacant tract of land that was most recently used as an equestrian center. The site generally slopes from northwest to southeast. Vegetation is limited due to site disturbance for use as an equestrian center.

B. Existing Drainage Patterns

Areas surrounding the site are currently developed. No offsite flows will enter the site. This will be ensured by way of a water block constructed at the northern entrance from Montano Road.

IV. PROPOSED DEVELOPED CONDITIONS

Mesa Ridge subdivision is a proposed single-family residential development with 34 lots on 7.7 acres. Proposed street configurations are shown on the *Preliminary Plat*, **Exhibit 1**. The drainage plan proposes to discharge storm flows at two locations. The southern half of the site will discharge into the Mariposa Diversion channel. The northern half of the site will discharge into an existing storm drain inlet in Montano Road.

The percent impervious land treatment for the proposed conditions is determined from Table A-5 of the DPM, Section 22.2. The land treatment values used in the AHYMO analysis are 60% - Type 'D', 20% - Type 'C', and 20% - Type 'B'.

30% 10%

A. Offsite Flows

No offsite flows enter the site. Offsite flows to the north are contained in the Montano Road right-of-way, flows to the west and south are blocked by existing developments and the site itself is higher than the Mariposa Diversion Channel to the east.

B. Onsite Flows

Developed runoff from Mesa Ridge will be conveyed by the internal street system to one of two discharge points. At the end of each street system, a single inlet (Type A-sump condition) will accept flow at the termination of the stub street. Emergency overflows will be provided to the Montano Road and Mariposa Diversion Channel rights-of-way. To the south 13.4 cfs will discharge into the Mariposa Diversion Channel through a water quality manhole system. Low flows will be conveyed into the existing polyethylene pipe system in the Mariposa Diversion Channel. To the north 14.5 cfs will be conveyed into an existing storm drain inlet in Montano Blvd. See **Appendix B**

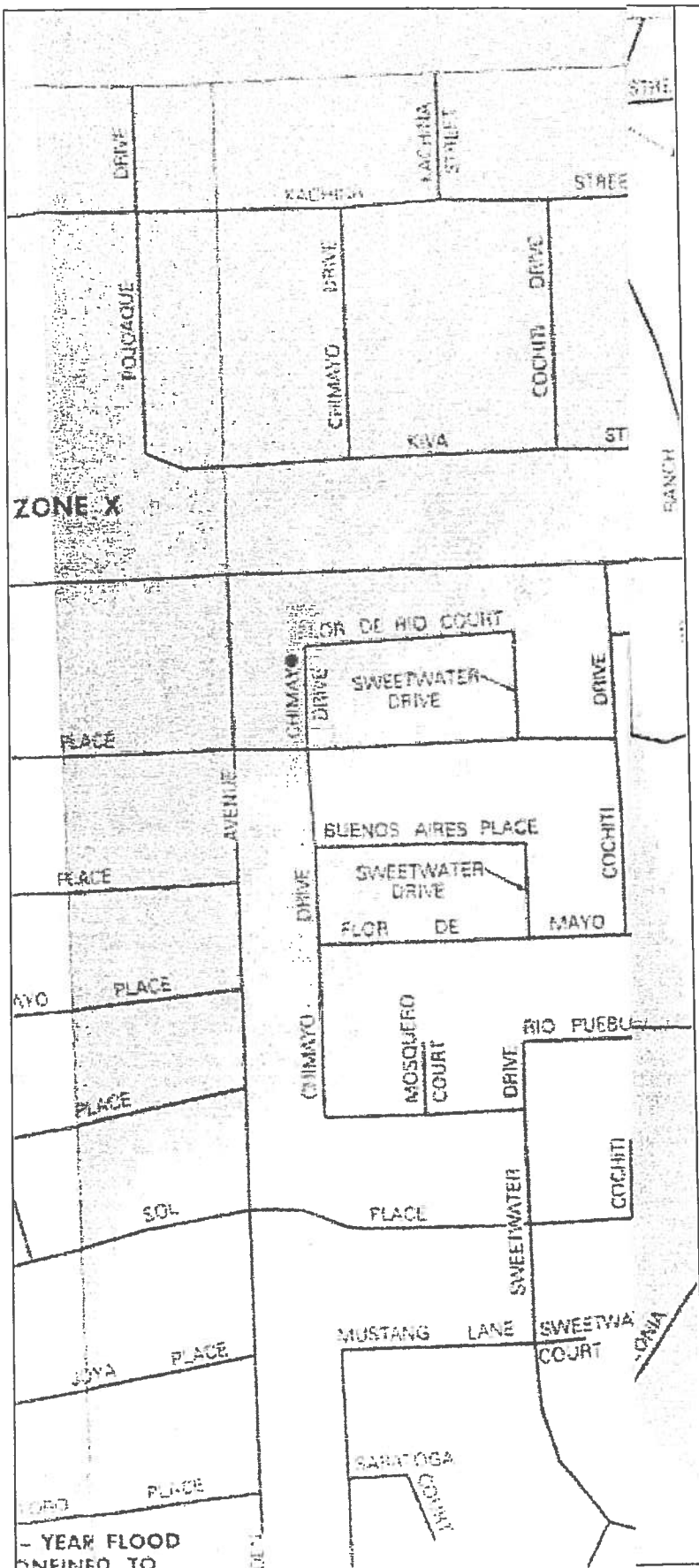
for street capacity and inlet capacity calculations as well as **Appendix C** for drainage structure analyzer reports.

C. FEMA Floodplain

As designated on Panel 114 of 825 (Map # 35001C0114 D) of the National Flood Insurance Program, Flood Insurance Rate Maps published by FEMA for Bernalillo County, New Mexico, effective date September 20, 1996 there is no existing flood hazard zone within the proposed development. See the FEMA Floodplain exhibit provided at the end of the report text.

V. CONCLUSION

This report provides a detailed study of the developed runoff and street capacities for the proposed Mesa Ridge Subdivision. Included are the Preliminary Plat, proposed conditions basin map, grading plan and all necessary hydrologic and hydraulic analyses. This drainage plan maintains the overall drainage pattern of the area and allows for the safe management of storm runoff in permanent conditions.



FIRM

FLOOD INSURANCE RATE MAP

BERNALILLO COUNTY,
NEW MEXICO AND
INCORPORATED AREAS

PANEL 114 OF 825

(SEE MAP INDEX FOR PANELS NOT PRINTED)

CONTAINS
COMMUNITY

NUMBER PANEL SUPPL

ALBUQUERQUE CITY OF
BERNALILLO COUNTY
UNINCORPORATED AREAS

15000 015 0
01000 015 0

MAP NUMBER
35001C0114 D

EFFECTIVE DATE:
SEPTEMBER 20, 1996



Federal Emergency Management Agency

Bohannon & Huston

Courtyard I 7500 Jefferson St. NE Albuquerque, NM 87109-4335
ENGINEERING • SPATIAL DATA • ADVANCED TECHNOLOGIES

Equestrian.SUM

```
- VERSION: 1997.02c
```

```
- VERSION: 1997.02c
```

CFS	PAGE = 1	FROM	TO	PEAK	RUNOFF	TIME TO
PER		HYDROGRAPH	ID	DISCHARGE	VOLUME	PEAK
ACRE	COMMAND	IDENTIFICATION	NO.	(SQ MI)	(AC-FT)	(HOURS)
	NOTATION					

*S Mesa Ridge Sub-D DEVELOPED CONDITIONS

```

START
TIME= .00
RAINFALL TYPE= 1
RAIN6= 2.200
*****Basin NORTH
      COMPUTE NM HYD
3.613 PER IMP= 60.00
*****Basin SOUTH
      COMPUTE NM HYD
3.613 PER IMP= 60.00
FINISH

```

Page 1

$$A = \frac{2}{2}$$

Mesa Vista Circle (Entrance)

Street 1 is a short access street and was considered negligible for street flow capacity calculations.

Mesa Vista Circle (North Leg)

Street 2 is a 46' R/W, 26' F-F street with a critical slope of 1.24%. At this point street flow is approximately 8.7 cfs. Roll curb capacity is 6.9 cfs and standard curb capacity is 38.1 cfs. This street conveys flow into Street 4. **No inlets needed.**

Mesa Vista Circle (West Leg)

Street 3 is a 44' R/W, 26' F-F street with a critical slope of 1.82%. At this point street flow is approximately 5.9 cfs. Roll curb capacity is 8.4 cfs and standard curb capacity is 34.5 cfs. This flow combines with approximately 5.9 cfs from street 4 and then flows into a 36' R/W, 22' F-F stub street. This street can handle 38.7 cfs with standard curb. A single grate type A inlet will be placed at the end of this stub street in sump condition. At 15 cfs water is contained within the street. This exceeds the requirement of 13.4 cfs

Mesa Vista Circle (East Leg)

Street 4 is a 46' R/W, 26' F-F street with a critical slope of 0.6%. The street has a high point and splits roughly half its flow in each direction. Heading south, approximately 6 cfs is carried at the 0.6% slope. This street can handle 4.8 cfs with roll curb and 40.4 cfs with standard curb. This flow then combines with Street 3.

To the north, approximately 4 cfs flows at a slope of 0.6%. As stated previously, this street can handle 4.8 cfs with roll curb and 40.4 cfs with standard curb. Flow combines with that of Street 2 and then flows into a 38' R/W, 24' F-F stub street at a slope of 0.79%. At this slope the street can carry 37.7 cfs with standard curb. A single grate type A inlet will be placed at the end of this stub street in sump condition. At 15 cfs water is contained within the street. This exceeds the requirement of 14.5 cfs.

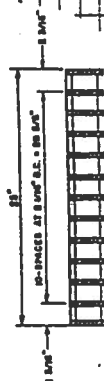
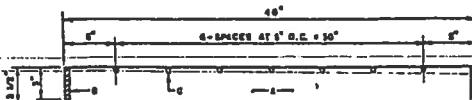
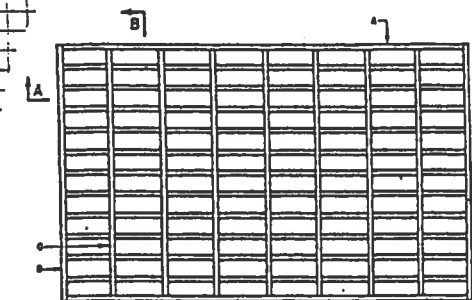
90

60" WING 40" @ TC
 18.5" 18.5" 35.5"
 GRATE OPEN AREA - 7.06 SF / GRADE
 NET OPEN AREA
 GRATE @ 10" (0.83') BELOW TC

EQUATION	SGL A	DBL A	TRPL A	QDPL A
1) ORIFICE	$22.0 h^{0.5}$ $+16.5 h^{1.5}$	$43.9 h^{0.5}$ $+16.5 h^{1.5}$	$65.9 h^{0.5}$ $+16.5 h^{1.5}$	$87.8 h^{0.5}$ $+16.5 h^{1.5}$
2) 3-SIDED WEIR ($h \leq 0.83'$)	$36.4 h^{1.5}$	$46.2 h^{1.5}$	$56.0 h^{1.5}$	$65.7 h^{1.5}$
3) 4-SIDED WEIR ($h > 0.83'$)	ADD TO 2): $11(h-0.83)^{1.5}$	ADD TO 2): $22(h-0.83)^{1.5}$	ADD TO 2): $33(h-0.83)^{1.5}$	ADD TO 2): $44(h-0.83)^{1.5}$

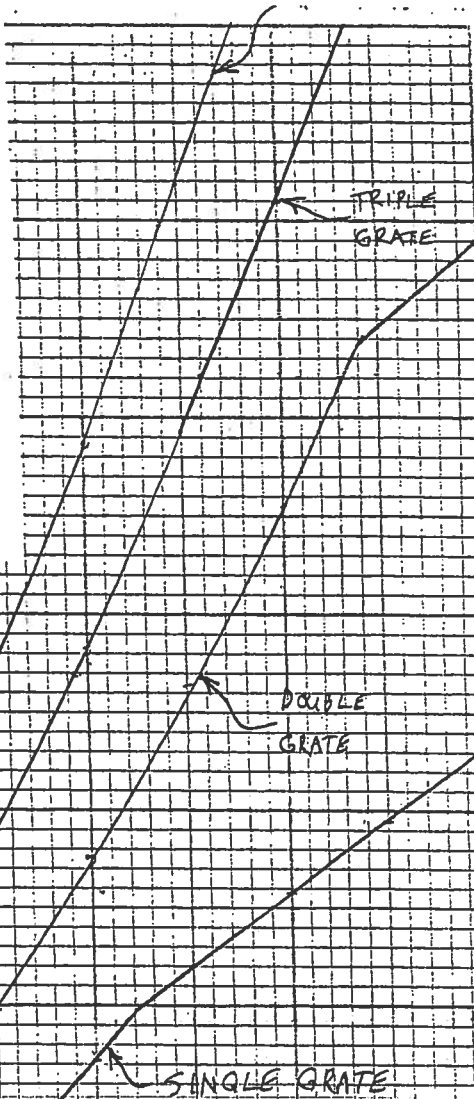
1) $Q = 0.6 A \sqrt{2gh} + 3.3(5') h^{1.5}$
 2) $Q = 3.3 P h^{1.5}$

GRATE CAPACITY (Q) IN CFS



SECTION B-B

SECTION A-A



TC 0.83'
 HEAD (h) IN FEET

BOHANNAN-HUSTON INC.

Analyzer Report

=====

Drainage Structure Analyzer

Pipe Hydraulic Analysis

Date: Thursday, June 30, 2005 3:57:00 PM

=====

Input Data

Shape	Circular
Material	RC C76-A
Roughness	0.013000
Method	Manning
Flow Rate	14.5000 cfs
Slope	1.0000%
Size (W x T):	24.00 x 2.5000

Output Results

Flow Rate	14.5000 cfs
Slope	1.0000%
d/D	0.5820
Capacity	22.6224 cfs
Velocity	7.6424 ft/s
Depth	1.1640 ft
Critical Depth	1.3700 ft
Size (W x T):	24.00 x 2.5000

Analyzer Report

=====

Drainage Structure Analyzer

Pipe Hydraulic Analysis

Date: Thursday, June 30, 2005 3:57:35 PM

=====

Input Data

Shape	Circular
Material	RC C76-A
Roughness	0.013000
Method	Manning
Flow Rate	14.5000 cfs
Slope	1.0000%
Size (W x T):	18.00 x 2.0000

Output Results

Flow Rate	14.5000 cfs
Slope	1.0000%
d/D	1.0000
Capacity	10.5043 cfs
Velocity	8.2053 ft/s
Depth	1.5000 ft
Critical Depth	1.5000 ft
Size (W x T):	18.00 x 2.0000

Ronald D. BROWN, Chair
 Daniel F. Lyon, Vice Chair
 Tim Eichenberg, Secretary-Treasurer
 Janet Salera, Asst. Secretary-Treasurer
 Danny Hernandez, Director

John P. Kelly, P.E.
 Executive Engineer



**Albuquerque
 Metropolitan
 Arroyo
 Flood
 Control
 Authority**

2400 Prospect N.E., Albuquerque, NM 87107
 Phone: (505) 884-2215 Fax: (505) 884-0214

Post-It® Fax Note 7671		Date 10-12	# of pages X 3
To BRAD BINGHAM		From LYNN MAZUR	
Co./Dept. HYDROLOGY		Co. AMAFCA	
Phone #		Phone #	
Fax #		Fax #	

October 12, 2005

Mr. Scott J. Steffen, P.E.
 Bohannon Huston, Inc.
 7500 Jefferson St. NE, Courtyard I
 Albuquerque, New Mexico 87109

Re: Preliminary Construction Plans for Mesa Ridge Subdivision, ZAP E-11

Dear Mr. Steffen:

AMAFCA approves the drainage plan and the storm drain outfall to the Mariposa Diversion Channel. See the attached for comments on the detail Sheet 13.

If you have any questions, please call me at 884-2215.

Sincerely,
 AMAFCA

Lynn M. Mazur

Lynn M. Mazur, P.E., C.F.M.
 Development Review Engineer

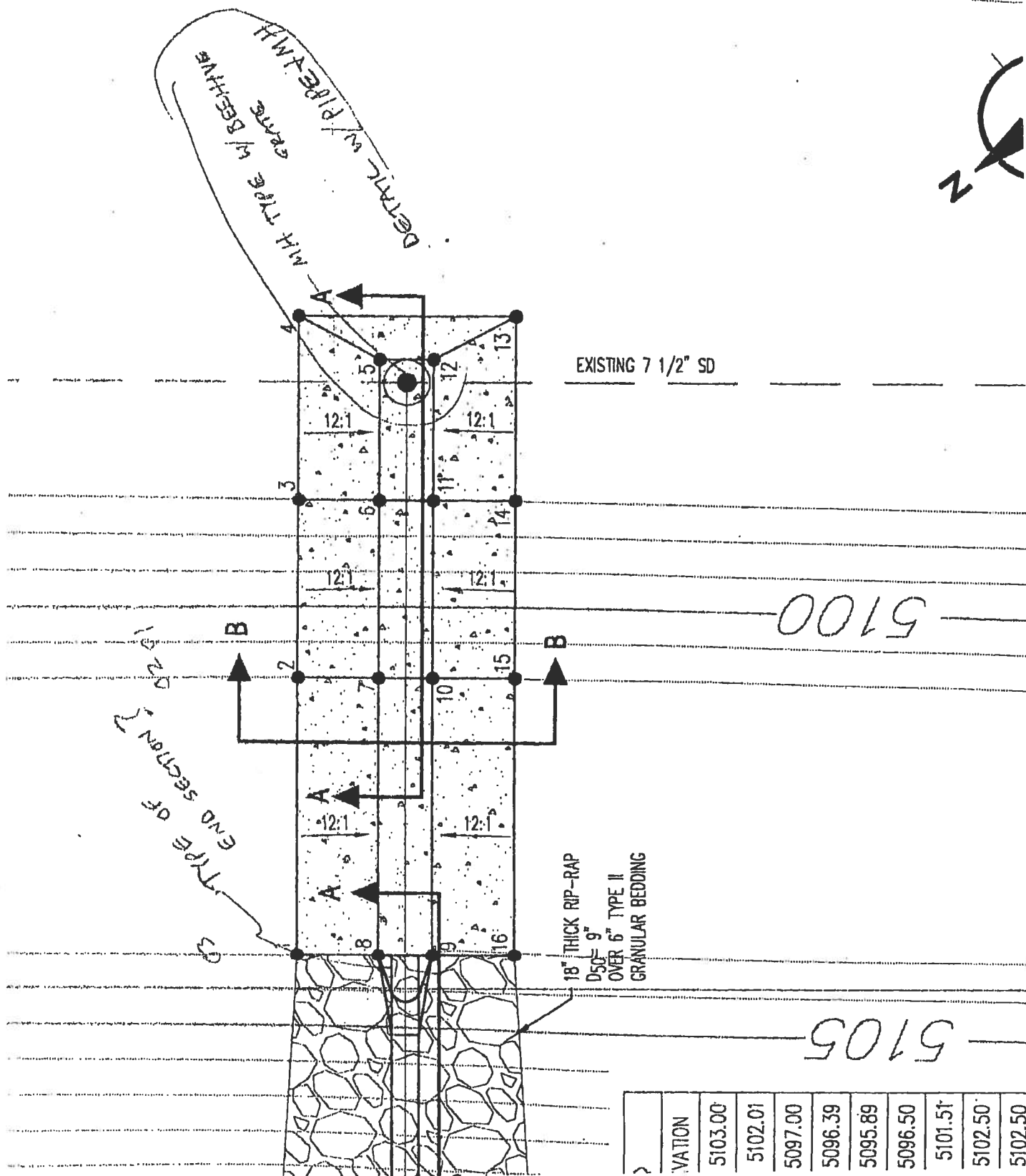
Cc: Brad Bingham, COA Hydrology

File:

E11 / D7A

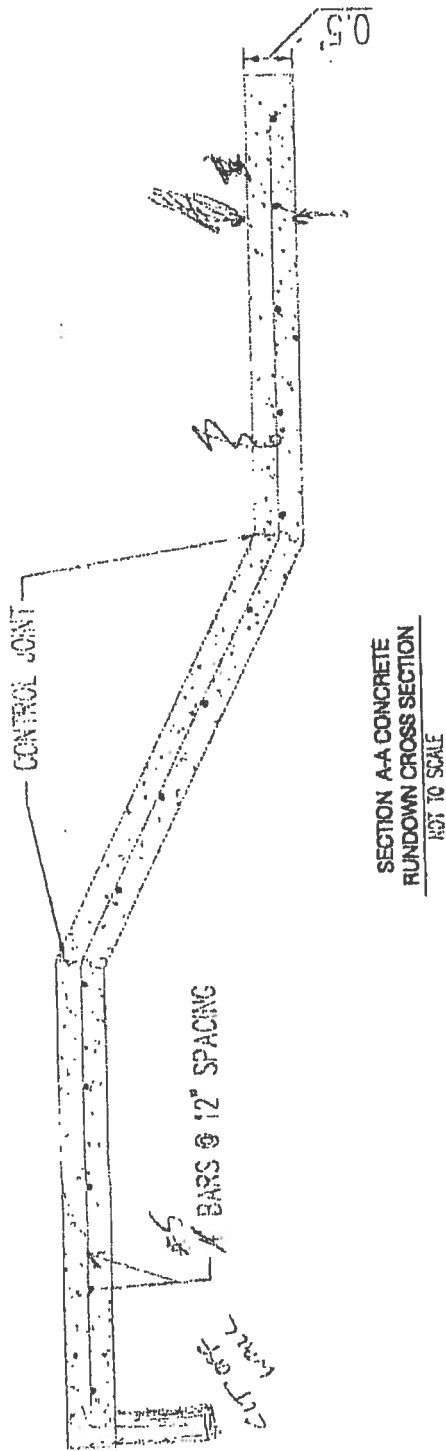
GENI

1. THE OCC NOTIFY
2. ALL CUI PIPE OF DIMENSI PARENT
3. GRADE CURB U
4. CONTRA OF EACI
5. CONTRA UTILITY
6. CONTRA PLAN. T
7. CONTRAI WITH NC
8. ANY DAI CONDUIT SHALL E
9. MH RIM: ELEVATI ADJUST
10. SAS STI
11. STATION OF CUR
12. FLOWLIN OF STAN
13. ALL WA
14. FOR SI PRIOR JOINTS
15. ALL WA



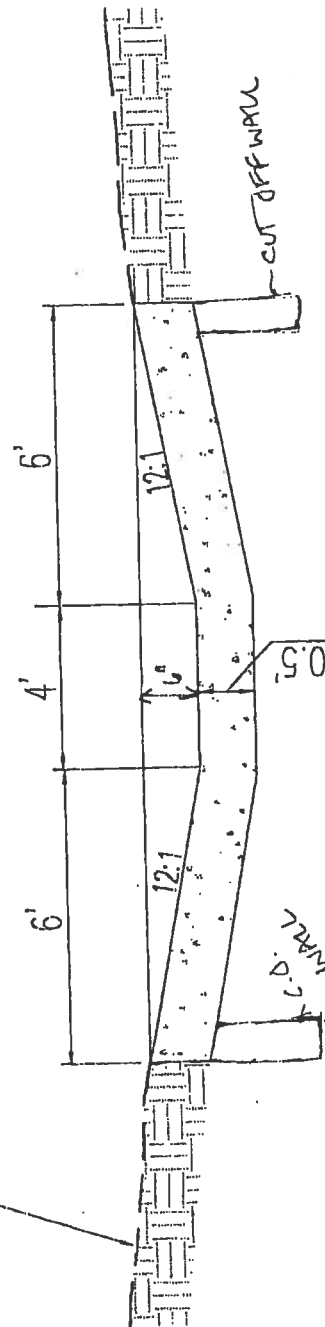
STATION	ELEVATION
5103.00	
5102.01	
5097.00	
5096.39	
5095.89	
5096.50	
5101.51	
5102.50	
5102.50	

ELEVATIONS ARE IN NGVD 29



WILL THIS WIDTH WORK?

EXISTING GROUND



SECTION B-B
CONCRETE RUNDOWN
NOT TO SCALE

15+00	16	17	18	19
1" = 50'				
SCALE: 1" = 5'				

Ronald D. Brown, Chair
Daniel F. Lyon, Vice Chair
Tim Eklundberg, Secretary-Treasurer
Jared Sapers, Asst. Secretary-Treasurer
Danny Hernandez, Director

John P. Kelly, P.E.
Executive Engineer



Albuquerque
Metropolitan
Arroyo
Flood
Control
Authority

2600 Prospect N.E., Albuquerque, NM 87107
Phone: (505) 884-2215 Fax: (505) 884-0214

Post-it® Fax Note

7671

Date	7-29	# of pages	2
To	BRAD BINGHAM		
From	LYNN MAZUR		
Co./Dept.	CITY HYDROLOGY		
Co.	AMAFCA		
Phone #			
Fax #			

July 29, 2005

Mr. Scott J. Steffen, P.E.
Bohannon Huston, Inc.
7500 Jefferson St. NE, Courtyard I
Albuquerque, New Mexico 87109

Re: Drainage Study for Mesa Ridge Subdivision, ZAP E-11

Dear Mr. Steffen:

AMAFCA approves the subdivision for Preliminary Plat on the condition that the Infrastructure List is amended to include the water quality manhole on the storm drain outfall to the Mariposa Diversion Channel and a water quality inlet on Mesa Vista Circle.

The following comments should be addressed for work order plans and Final Plat:

1. Label the AMAFCA right-of-way on the plans and plat.
2. Add AMAFCA standard notes for construction in AMAFCA right-of-way to the plans.

If you have any questions, please call me at 884-2215.

Sincerely,
AMAFCA

Lynn M. Mazur, P.E., C.F.M.
Development Review Engineer

Cc: Brad Bingham, COA Hydrology