

City of Albuquerque P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

January 28, 2004

Richard Beltramo, P.E. Bohannan Huston, Inc. 7500 Jefferson NE – Courtyard 1 Albuquerque, NM 87109

Re:

Ridge Pointe Subdivision, NW Corner of Comanche Rd. and Tramway Rd.,

SIA/Financial Guarantee Release

Engineer's Stamp dated 5-06-03 (G22/D14)

Certification dated 1-28-04

Dear Mr. Beltramo,

Based upon the information provided in your submittal received 1-28-04, the above referenced certification is approved for release of SIA and Financial Guarantee.

If you have any questions, you can contact me at 924-3981.

Sincerely,

Kristal D. Metro

Engineering Associate, Planning Dept. Development and Building Services

C: Arlene Portillo, COA# 710781 file

G-22/D14

DRAINAGE AND TRANSPORTATION INFORMATION SHEET

(REV. 1/28/2003rd)

PROJECT TITLE: RI	DGE POINTE SUBDIVISION		ZONE MAP/DRG. FILE #G22/D14
DRB #: <u>1000234</u>	EPC#:		WORK ORDER#:
LEGAL DESCRIPTION:_			LIDAY PARK SUBDIVISION
CITY ADDRESS:	NW CORNER OF	COMANCHE	ROAD AND TRAMWAY BLVD.
ENGINEERING FIRM:	Bohannan Huston, Inc.		CONTACT: Rick Beltramo
ADDRESS:	7500 Jefferson NE – Courtya	ard I	CONTACT: Rick Beltramo PHONE: (505) 823-1000
CITY, STATE:	Albuquerque, NM	<u> </u>	ZIP CODE: 87109
	, do aquo, quo, run		
OWNER:	Mike Williams		CONTACT: Mike Williams
ADDRESS:	PO Box 14876		PHONE: (505) 269-6016
CITY, STATE: _	Albuquerque, NM		` ZIP CODE:87111
ARCHITECT:			CONTACT:
ADDRESS:	<u></u>		PHONE:
CITY, STATE:_			ZIP CODE:
SURVEYOR:			CONTACT:
ADDRESS:			PHONE:
CITY, STATE:	**************************************		ZIP CODE:
CONTRACTOR:			CONTACT:
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CITY, STATE:_			ZIP CODE:
DRAINAGE PLA CONCEPTUAL GRADING PLAN EROSION CON ENGINEER'S C CLOMR/LOMR TRAFFIC CIRCU ENGINEERS CE ENGINEERS CE	N 1 st SUBMITTAL, <i>REQUIRES</i> N RESUBMITTAL GRADING & DRAINAGE PLAN		X SIA / FINANCIAL GUARANTEE RELEASE PRELIMINARY PLAT APPROVAL S. DEV. PLAN FOR SUB'D. APPROVAL S. DEV. PLAN FOR BLDG. PERMIT APPROVAL SECTOR PLAN APPROVAL FINAL PLAT APPROVAL FOUNDATION PERMIT APPROVAL BUILDING PERMIT APPROVAL CERTIFICATE OF OCCUPANCY (PERM.) CERTIFICATE OF OCCUPANCY (TEMP.) GRADING PERMIT APPROVAL PAVING PERMIT APPROVAL WORK ORDER APPROVAL OTHER (SPECIFY)
WAS A PRE-DESIGN COMMENT OF THE PROPERTY OF TH	ONFERENCE ATTENDED: Need Stanyonto > 5/	6/03	JAN 2 8 2004 HYDROLOGY SECTION
DATE SUBMITTED:	January 26, 2004	BY:	Rick Beltramo
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	• • • • • • • • • • • • • • • • • • •		vision Plats shall be accompanied by a drainage submittal opment defines the degree of drainage detail. One or more

1. Conceptual Grading and Drainage Plan: Required for approval of Site Development Plans greater than five

2. Drainage Plans: Required for building permits, grading permits, paving permits and site plans less than five (5)

3. Drainage Report: Required for subdivisions containing more than ten (10) lots or constituting five (5) acres or

of the following levels of submittal may be required based on the following:

(5) acres and Sector Plans.

acres.

more.

Courtyard I 7500 Jefferson NE Albuquerque, NM 87109-4335 www.bhinc.com

voice: 505.823.1000 fax: 505.798.7988 toll free: 800.877.5332

January 27, 2004

Bradley Bingham, P.E.
Hydrology Division
City of Albuquerque
600 2nd Street NW
Albuquerque, NM 87102

Re: Grading and Drainage Certification

Ridge Pointe Subdivision, City Project No. 710781

Dear Mr. Bingham:

Enclosed for your review is the DRB approved grading plan with as-built elevations. The as-built survey was provided by Walker Surveying Co. After reviewing these as-built elevations, it is my belief that the site has been graded in substantial compliance with the approved grading plan. Your review and approval is requested for SIA/financial guaranty release of the project.

I appreciate your time and consideration. If you have questions or require additional information, please contact me at 823-1000.

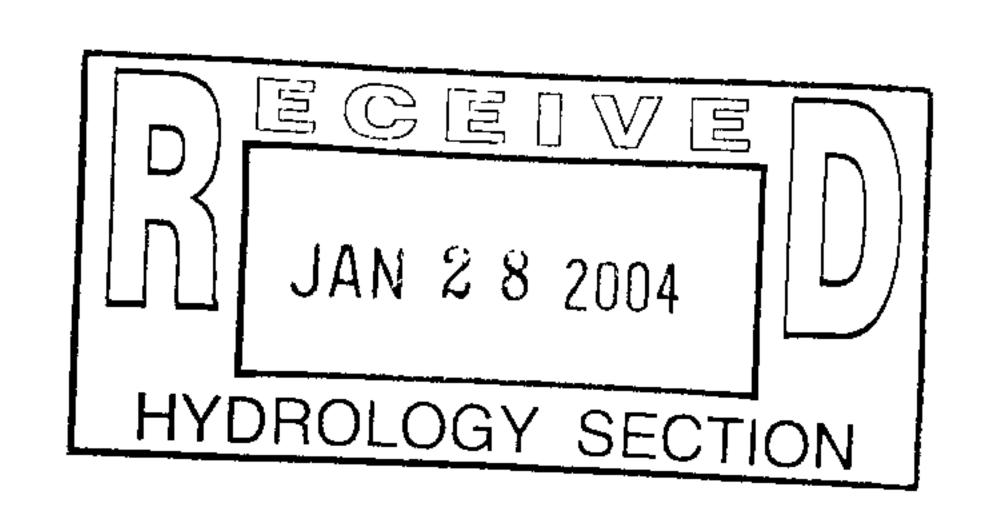
Sincerely,

Vice President, Community Development

and Planning Group

Rick Beltramo, P.E.

Enclosure



ENGINEERING A

SPATIAL DATA A

ADVANCED TECHNOLOGIES A

Bohannan A Hustone

CLIENT/COURIER TRANSMITTAL

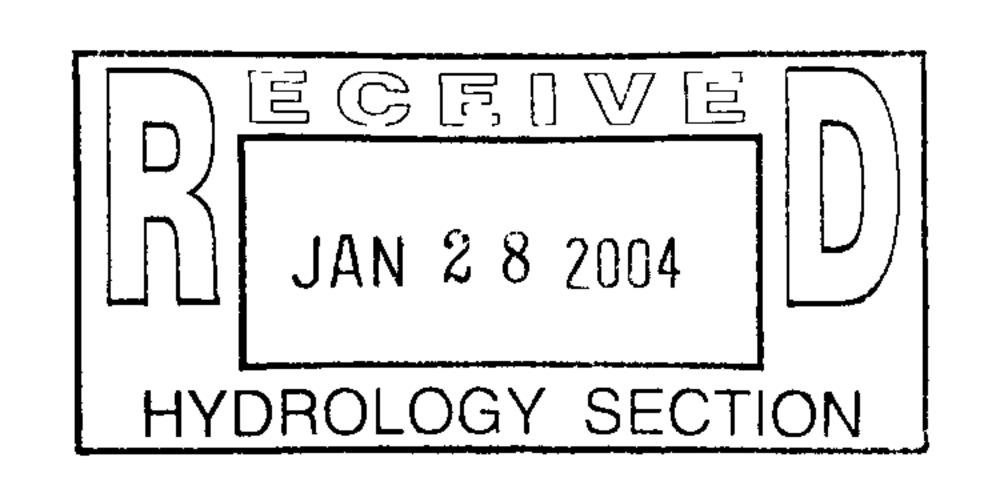
Courtyard I 7500 Jefferson St. NE Albuquerque, NM 87109-4335

www.bhinc.com

voice: 505.823.1000 facsimile: 505.798.7988 toll free: 800.877.5332

ro: Brad Bingham COA	Requested by: Nina Lung Date:
	Time Due: This A.M. This P.M. Rush By Tomorrow
Phone:	
Job No.:	Job Name: Ridge Pointe
DELIVERY VIA Courier Federal Express Mail UPS Other	PICK UP Item:
ITEM NO. QUANTITY DESCRIPTION Grading + Dra	inge Certification

COMMENTS / INSTRUCTIONS



			ENGINEERING
REC'D BY:	DATE:	TIME:	SPATIAL DATA



City of Albuquerque P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

May 19, 2003

Scott Steffen, PE Bohannan Huston, Inc. 7500 Jefferson NE Albuquerque, NM 87109

Re: Ridge Point Subdivision Revised Grading Plan

Engineer's Stamp dated 5-6-03 (G22/D14)

Dear Mr. Steffen,

Based upon the information provided in your submittal dated 5-8-03, the above referenced plan is approved for Grading Permit. This is now the plan that must be certified prior to release the SIA and Financial Guarantee.

If you have any questions, you can contact me at 924-3986.

Bull L

Sincerely,

Bradley L. Bingham, PE Sr. Engineer, Planning Dept.

Development and Building Services

C: file

DRAINAGE AND TRANSPORTATION INFORMATION SHEET

(REV. 1/28/2003rd)

PROJECT TITLE: Ridge Pointe Subdivision	ZONE MAP/DRG. FILE #_G22/D14
DRB #:1000234	WORK ORDER#:
LEGAL DESCRIPTION: Tract A, Block 1, Unit 10, Holiday Park Subdivis	
CITY ADDRESS: NW corner of Comanche Road and Tramway I	BIVQ.
ENGINEERING FIRM: Bohannan Huston, Inc.	CONTACT: Scott Steffen
ADDRESS: 7500 Jefferson NE – Courtyard I	PHONE: (505) 823-1000
CITY, STATE: Albuquerque, NM	ZIP CODE: 87109
OWNER: Mike Williams	CONTACT: Mike Williams
ADDRESS: PO BOX 14876	PHONE: 269-6016
CITY, STATE: <u>Albuquerque, NM</u>	ZIP CODE: 87111
ARCHITECT:	CONTACT:
ADDRESS:	PHONE:
CITY, STATE:	ZIP CODE:
SURVEYOR:	CONTACT:
ADDRESS:	PHONE:
CITY, STATE:	ZIP CODE:
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CONTRACTOR: ADDRESS:	CONTACT: PHONE:
CITY, STATE:	ZIP CODE:
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Requests for approvals of Site Development Plans and/or Subdivision Plats shall be accombanied by a drainage submittal The particular nature, location and scope of the proposed development defines the degree of drainage detail. One or more of the following levels of submittal may be required based on the following:

- 1. Conceptual Grading and Drainage Plan: Required for approval of Site Development Plans greater than five (5) acres and Sector Plans.
- 2. Drainage Plans: Required for building permits, grading permits, paving permits and site plans less than five (5) acres.
- 3. Drainage Report: Required for subdivisions containing more than ten (10) lots or constituting five (5) acres or more.

Bohannan A Hustong

CLIENT/COURIER TRANSMITTAL

Courtyard I 7500 Jefferson St. NE Albuquerque, NM 87109-4335

www.bhinc.com

voice: 505.823.1000 facsimile: 505.798.7988 toll free: 800.877.5332

Brad Bingham To:

> COA – Hydrology Development Plaza del Sol 2nd Floor West

924-3986

May 8, 2003 Date:

Requested By: Scott Steffen

Time Due:

★ This A.M.

☐ This P.M.

☐ Rush ___ ☐ By Tomorrow

Job No.: 030307

Job Name: Ridge Pointe Subdivision

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	Other			

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TIME:

<u>ITEM NO.</u>	<u>QUANTITY</u>	DESCRIPTION
1	1	Drainage information sheet
2	1	Copy of revised grading plan

COMMENTS / INSTRUCTIONS

	了 [B G B I W E]	
	MAY 0 8 2003	
REC'D BY:	HYDROLOGY SECTION	DATE:_

ENGINEERING ®

SPATIAL DATA ®



City of Albuquerque P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

March 11, 2003

Scott Steffen, PE Bohannan Huston, Inc. 7500 Jefferson NE Albuquerque, NM 87109

Re: Ridge Point Subdivision Drainage Report

Engineer's Stamp dated 3-6-03 (G22/D14)

Dear Mr. Steffen,

file

Based upon the information provided in your submittal dated 3-6-03, the above referenced report is approved for Site Development Plan for Subdivision, Site Developments Plan for Building Permit and Preliminary Plat action by the DRB.

If you have any questions, you can contact me at 924-3986.

Sincerely,

Bradley L. Bingham, PE

Sr. Engineer, Planning Dept.

Development and Building Services

DRAINAGE AND TRANSPORTATION INFORMATION SHEET

(REV. 1/28/2003rd)

	(G-2-) D14
PROJECT TITLE: Ridge Pointe Subdivision	ZONE MAP/DRG. FILE #
DRB #: 1000234 EPC#:	WORK ORDER#:
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LEGAL DESCRIPTION: Tract A, Block 1, Unit 10, Holiday Park CITY ADDRESS: NW corner of Comanche Road and Tramway E	
OH I ADDITEOU.	71 V Q .
ENGINEERING FIRM: Bohannan Huston, Inc.	CONTACT: Scott Steffen .
ADDRESS: 7500 Jefferson NE – Courtyard I	PHONE: (505) 823-1000 '
CITY, STATE: <u>Albuquerque, NM</u>	ZIP CODE: 87109
OWNER: Mike Williams	CONTACT: Mike Williams
ADDRESS: PO BOX 14876	PHONE: 269-6016
CITY, STATE: <u>Albuquerque, NM</u>	ZIP CODE: 87109
ARCHITECT:	CONTACT:
ADDRESS:	PHONE:
CITY, STATE:	ZIP CODE:
SURVEYOR:	CONTACT:
ADDRESS:	PHONE:
CITY, STATE:	ZIP CODE:
CONTRACTOR:	CONTACT:
ADDRESS:	PHONE:
CITY, STATE:	ZIP CODE:
CHECK TYPE OF SUBMITTAL: DRAINAGE REPORT DRAINAGE PLAN 1 st SUBMITTAL, REQUIRES TCL or equal	CHECK TYPE OF APPROVAL SOUGHT: SIA / FINANCIAL GUARANTEE RELEASE X PRELIMINARY PLAT APPROVAL
DRAINAGE PLAN RESUBMITTAL	S. DEV. PLAN FOR SUB'D. APPROVAL
CONCEPTUAL GRADING & DRAINAGE PLAN	S. DEV. PLAN FOR BLDG. PERMIT APPROVAL
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EROSION CONTROL PLAN ENCINEED'S CERTIFICATION (HYDROLOGY)	FINAL PLAT APPROVAL
ENGINEER'S CERTIFICATION (HYDROLOGY) CLOMR/LOMR	FOUNDATION PERMIT APPROVAL BUILDING PERMIT APPROVAL
TRAFFIC CIRCULATION LAYOUT (TCL)	CERTIFICATE OF OCCUPANCY (PERM.)
ENGINEERS CERTIFICATION (TCL)	CERTIFICATE OF OCCUPANCY (TEMP.)
ENGINEERS CERTIFICATION (DRB APPR. SITE PLAN)	X GRADING PERMIT APPROVAL
OTHER	PAVING PERMIT APPROVAL
WAS A PRE-DESIGN CONFERENCE ATTENDED: MAR 0	THER (SPECIFY)
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	SY SECTION
COPY PROVIDED	

Requests for approvals of Site Development Plans and/or Subdivision Plats shall be accompanied by a drainage submittal. The particular nature, location and scope of the proposed development defines the degree of drainage detail. One or more of the following levels of submittal may be required based on the following:

DATE SUBMITTED:

March 4, 2003

- 1. Conceptual Grading and Drainage Plan: Required for approval of Site Development Plans greater than five (5) acres and Sector Plans.
- 2. Drainage Plans: Required for building permits, grading permits, paving permits and site plans less than five (5) acres.
- 3. Drainage Report: Required for subdivisions containing more than ten (10) lots or constituting five (5) acres or more.

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Bohannan A Huston =

CLIENT/COURIER TRANSMITTAL

Courtyard I 7500 Jefferson St. NE Albuquerque, NM 87109-4335

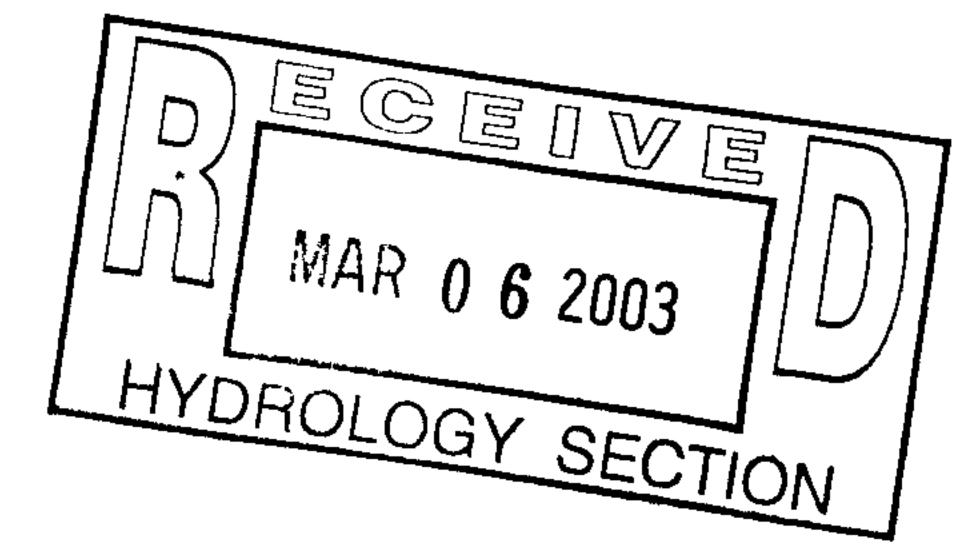
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			www.bhin
To:	Brad Bingham COA – Hydrology Development Plaza del Sol 2 nd Floor West	Requested By: Scott Steffen	voice: 505.823 facsimile: 505.798 toll free: 800.873
	924-3986	Date: March 6, 2003	
			☐ This P.M. ☐ By Tomorrow
Job N	o.: 030307	Job Name: Ridge Pointe Sub	odivision
	DELIVERY VIA	PICK UP	
X	Courier	ltem:	· •
	Mail UPS		
	Other		

ITEM NO.	QUANTITY	DESCRIPTION
1	1	Grading and Drainage information sheet
2	1	Copy of drainage report

COMMENTS / INSTRUCTIONS

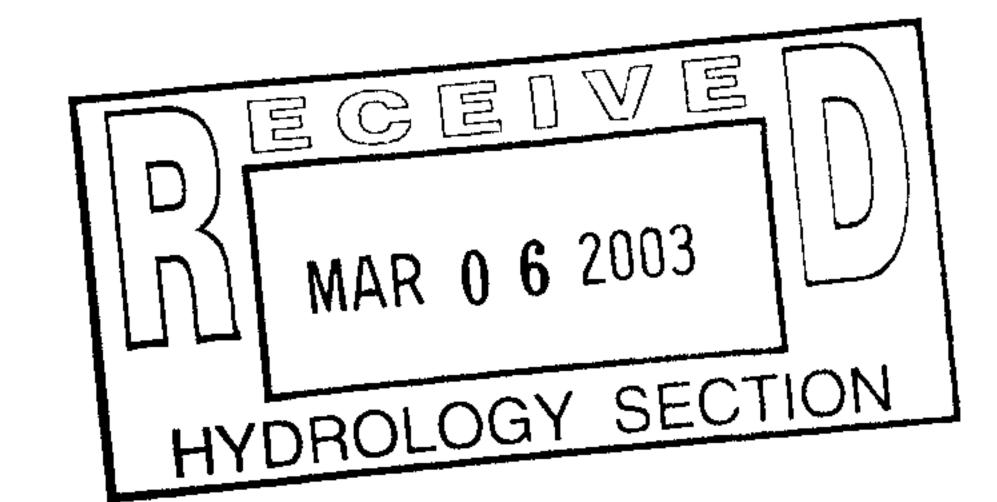


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DRAINAGE STUDY FOR RIDGE POINTE SUBDIVISION

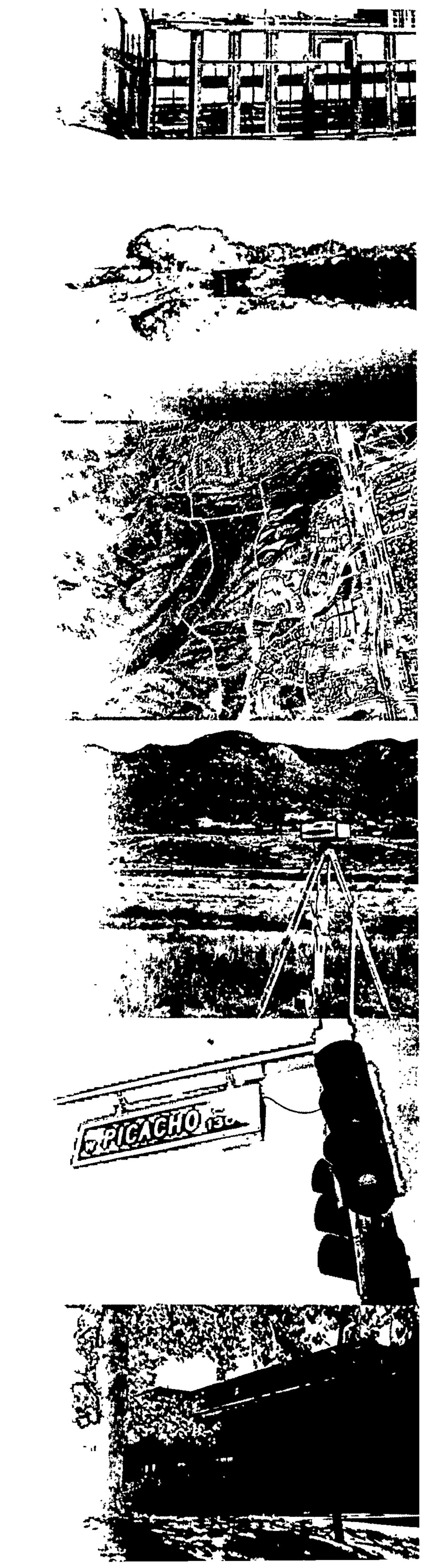
MARCH 5, 2003

Prepared for:
Mike Williams
PO Box 14876
Albuquerque, NM 87109



Bohannan A Huston

- * ENGINEERING
- A ADVANCED TECHNOLOGIES
- * SPATIAL DATA



REGISTRAN POFESSIONAL LINES

DRAINAGE STUDY FOR RIDGE POINTE SUBDIVISION

MARCH 5, 2003

Prepared for:

MIKE WILLIAMS
PO BOX 14876
ALBUQUERQUE, NM 87109

Prepared by:

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

Prepared by:

Scott J. Steffen P.E. Date

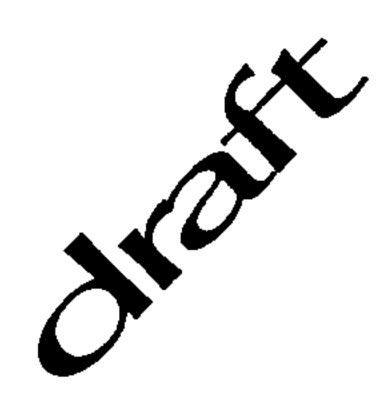


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PLATE 1 - PRELIMINARY PLAT

PLATE 2 - GRADING PLAN

PLATE 3 - DEVELOPED CONDITIONS BASIN MAP



I. INTRODUCTION

This drainage study establishes a drainage management plan for the proposed development of the property legally described as Lot A, Block 1, Holiday Park, Unit 10. Lot A is approximately 4.6 acres of residential (SU-1 for PRD) land to be subdivided as the "Ridge Pointe Subdivision". The subject property is located in Albuquerque at the northwest corner of Tramway Boulevard and Comanche Road. (See vicinity map on the *Preliminary Plat* for location, *Plate 1*). Ridge Pointe is planned to consist of 41 multiple-unit, attached residential dwellings.

This study provides hydrologic and hydraulic analysis and provides a drainage management plan as necessary to support the planned 41-unit development. More specifically, this report is submitted in conjunction with the preliminary plat application. Preliminary plat approval and grading plan approval is requested. 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 are 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 AHYMO computer program is utilized to determine peak flow rates to determine the need for storm drain improvements for the project. The 100-year, 6-hour storm is used as the design event. The results are included in *Appendix A*. Street capacities are analyzed using Manning's equation, consistent with the revised DPM Section 22.2. All data and calculations supporting this study are located in *Appendix B*. The 10-year, 6-hour storm is analyzed to evaluate the street hydraulics in Comanche Road to determine if additional storm drain facilities are required in Comanche Road.

III. EXISTING CONDITIONS

A. Topography

Ridge Pointe is currently undeveloped land, sloping from northeast to southwest with grades ranging from approximately 5% to 6%. Soils at the site have an SCS soil classification of EtC (Embudo-Tijeras complex). EtC soils consist of deep, well-drained gravelly fine sandy loam, with moderate permeability, medium runoff characteristics, and moderate hazard for water erosion. Vegetation is mostly mesa dropseed, blue grama, black grama and some cholla cactus.

B. Existing Drainage Patterns

Ridge Pointe is located at the northwest corner of Tramway Boulevard and Comanche Road. The existing topography directs runoff from the site to Comanche Road. Adjacent properties, public roadways, and the site topography prevent off-site runoff from entering the Ridge Pointe property. The Holiday Park subdivision, to the north and west of the site, direct runoff to internal streets and away from the site; the Tramway Boulevard right-of-way prevents runoff from entering the property from the east; and the site is higher than Comanche Road to the south.

IV. PROPOSED CONDITIONS

Ridge Pointe Subdivision is a proposed multiple, attached-unit residential development with 41 lots on 4.6 acres, producing a density of approximately 9 dwelling units per acre.

Proposed street configurations are shown on *Plate 1*, the *Preliminary Plat*.

A. Onsite Flows

The internal street system conveys surface flow south and west to Comanche Road. An internal street hydraulic analysis shows that the proposed streets have the



capacity to convey the developed runoff to Comanche Road without the need for storm drain. This analysis is provided in *Appendix B*.

B. Offsite Flows

Ridge Pointe Subdivision will not be affected by offsite flows. However, developed flows from Ridge Pointe will join flows in Comanche Road from the Holiday Park subdivision at the intersection of Comanche Road and Big Bend Road. A hydraulic analysis of the flows in Comanche Road conclude that the addition of developed flows from the Ridge Pointe subdivision do not significantly impact the existing street hydraulics and that it is not necessary to extend the Comanche Road storm drain to the east of Big Bend Road. A more detailed analysis is included in *Appendix C*.

C. FEMA Floodplain

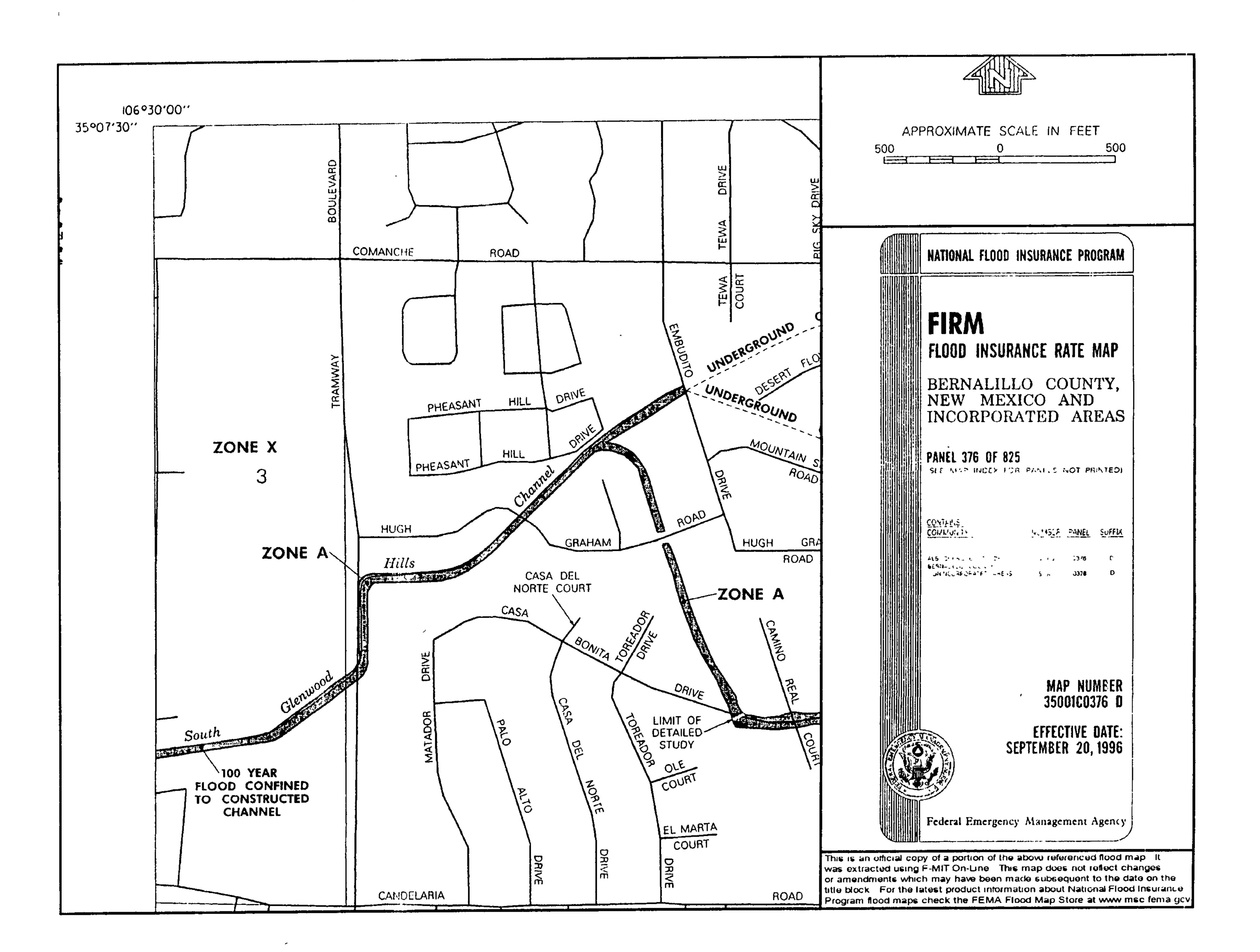
The property does not lie within a flood hazard zone, as designated on Panel 376 of 825 of the National Flood Insurance Program, Flood Insurance Rate Map published by FEMA for Bernalillo County, New Mexico (September 20, 1996). See the FEMA Floodplain exhibit provided at the end of the report text.

V. CONCLUSION

This report provides a detailed study of the developed runoff and street capacities for the proposed Ridge Pointe Subdivision. Included is the preliminary plat, proposed conditions basin map, grading plan, infrastructure list, and all necessary hydrologic and hydraulic analyses. This drainage plan allows for safe management of storm runoff in the developed condition.

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APPENDICES

APPENDIX A - AHYMO INPUT, SUMMARY FILES

APPENDIX B - INTERNAL STREET CAPACITY ANALYSIS

APPENDIX C - COMANCHE ROAD STREET HYDRAULIC ANALYSIS

APPENDIX D - INFRASTRUCTURE LIST

APPENDIXA

AHYMO INPUT, SUMMARY FILES

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ADD HYD
PRINT HYD ID=3 CODE=1
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ADD HYD
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PROJECT NAME: RIDGE POINTE SUBDIVISION

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FEBRUARY 27, 2003
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             PROJECT NUMBER:
                        030307
*S*
                    10 YEAR-6 HOUR STORM
             COMMENTS:
*S*
*S
TIME=0.0 HR PUNCH CODE=0
START
                   RAIN QUARTER=0.0
             TYPE=1
RAINFALL
             RAIN ONE=1.47 IN RAIN SIX=1.80 IN
             RAIN DAY=2.20 IN DT=0.05
       BASIN 1-DEVELOPED CONDITIONS
*S
             ID=1 HYD NO=1
                          DA=0.002312 SQ MI
COMPUTE NM HYD
             PER A=0.0 PER B=15.0 PER C=15.0 PER D=70.0
                        MASSRAIN=-1
             TP = -0.1333 HR
                  CODE=1
             ID=1
PRINT HYD
BASIN 2-DEVELOPED CONDITIONS
COMPUTE NM HYD ID=2 HYD NO=2 DA=0.0014884 SQ MI
            PER A=0.0 PER B=15.0 PER C=15.0 PER D=70.0
             TP=-0.1333 HR MASSRAIN=-1
PRINT HYD ID=2 CODE=1
*S ADD BASINS A AND C
       ID=3 HYD NO=1.2 ID I=1 ID II=2
ADD HYD
PRINT HYD ID=3 CODE=1
BASIN 3-DEVELOPED CONDITIONS
*S
COMPUTE NM HYD ID=4 HYD NO=3 DA=0.0039308 SQ MI
             PER A=0.0 PER B=15.0 PER C=15.0 PER D=70.0
             TP=-0.1333 HR MASSRAIN=-1
PRINT HYD ID=4 CODE=1
TOTAL DEVELOPED FLOW FROM RIDGE POINTE
*S
             ID=5 HYD NO=TOTAL ID I=4 ID II=3
ADD HYD
PRINT HYD ID=5 CODE=1
FINISH
```

PROJECT NAME:

S

RIDGE POINTE SUBDIVISION

AHYMO PROGRAM SUMMARY TABLE (AHYMO_97) INPUT FILE = 10YR.HYM

111101 1111											
	HYDROGRAPH	ID	TO ID	AREA	PEAK DISCHARGE	RUNOFF VOLUME	RUNOFF	TIME TO PEAK (HOURS)	CFS PER ACRE	PAGE =	
COMMAND	IDENTIFICATION	NO.	NO.	(SQ MI)	(CFS)	(AC-FT)	(THCHES)	(HOOKS)	ACILL	14011111	
S *S* *S*	DATE:	T NAME: FEBRUA	ARY 27,	E POINTE SUBD 2003 DYR.HYM	IVISION						
S	OUTUPU	T FILE	NAME:	10YR.OUT							
S	PROJEC	T NUMBE	ER: 030	0307							
S	O C	OMMENTS	: 10 YEA	AR-6 HOUR STO	RM						
* C											
*S //////// START	//////////////////////////E= 1 *******									TIME= RAIN6==	.00
*S	BASIN	1-DEVE	LOPED C	CONDITIONS .00231	4.23	.154	1.24654	1.500	2.858	PER IMP=	70.00
*S	BASIN	2-DEVE	LOPED C	CONDITIONS .00149	2.73	.099	1.24654	1.500	2.862	PER IMP=	70.00
* \$	ADD B	ASINS A	AND C	.00380	6.96	.253	1.24641	1.500	2.860		
*S	BASIN	3-DEVE	LOPED C	CONDITIONS .00393	7.18	.261	1.24654	1.500	2.855	PER IMP=	70.00
*S	TOTAL	DEVELC 4 & 3	PED FLC	W FROM RIDGE .00773	POINTE 14.14	.514	1.24644	1.500	2.857		
-											

- VERSION: 1997.02c RUN DATE (MON/DAY/YR) =02/27/2003

USER NO.= AHYMO-S-9702c1BohanHu-AH

FINISH

APPENDIXB

INTERNAL STREET CAPACITY ANALYSIS

RIDGE POINTE SUBDIVISION Internal Street Capacity Calculations March 3, 2003

1. Outlook Point Avenue

Basin 1 (See Basin Map) S = 6.42% Q = 3.5 cfs

Total flow from Basin 1 is 6.7 cfs. At 6.42%, a road with mountable curb can handle 5.4 cfs. Therefore, roll curb will be placed until Lot 32. See PC stream output. Water flows into Ridge Pointe Drive.

2. Summit Ridge Drive

Basin 2 (See Basin Map) S = 5.87%Q = 4.3 cfs

Total flow from Basin 2 is 4.3 cfs. At 5.87%, a road with mountable curb can handle 6 cfs. Therefore, no inlets are needed. Roll curb will be placed along the entire length of Summit Ridge Drive. See PC stream output. Water flows into Sun Mesa Road.

3. Sun Mesa Road

Basin 3 (See Basin Map) S = 6.73% Q = 11.3 cfs

Total flow from Basins 2 and 3 is 15.6 cfs. Roll curb will be placed until Lot 10. See PC stream output. Water flows into Ridge Pointe Drive.

4. Ridge Pointe Drive

Basin 3 (See Basin Map) S = 3.5% Q = 22.3 cfs

The total flow from Ridge Pointe Subdivision is 22.3 cfs. At 3.5%, a road with standard curb can handle 33 cfs. Therefore, no inlets are needed. Standard curb will be placed along the entire length of Ridge Pointe Drive. See PC stream output. Water flows into Comanche Road.

OUTLOOK POINT AVENUE

MANNING'S N = .017 SLOPE= .0642

ACTUAL Q=6.7 CFS — ROLL CURB LIMIT — STANDARD CURP LIMIT	0.32 0.33 0.34 0.36 0.38 0.41 0.43 0.43 0.43 0.43 0.54 0.57 0.60 0.69 0.76 0.76 0.79 0.88 0.96 1.03 1.17 1.23 ENERGY HEAD (FT) 1.43	17 63 00 0 VEL HEAD) 10.02340570.00.00.00.00.00.00.00.00.00.00.00.00.0	9 37. 10 37. 11 44. 12 0. TOPWID (FT) 0.31 0.63 0.94 1.25 1.56 1.88 2.19 2.50 2.81 3.13 3.44 3.75 4.07 4.93 5.79 6.65 7.51 8.38 9.24 10.10 10.96 11.83 12.69 13.55 14.41 15.27 16.14 17.00 17.86 18.72 19.59 20.45 21.31 22.17 23.03 23.90 24.76 25.62 26.48 27.35 28.21 28.22 TOPWID (FT) 28.23 28.23	6.03 6.17 6.30 6.43 6.55 6.68 7.19 FLOW VEL (FPS) 7.68 7.92	9.54 10.42 11.30 12.18 13.06 13.93 14.81 15.69 16.57 17.45 18.32 19.20 20.96 21.84 22.71 23.59 24.47 25.35 26.23 27.10 27.98 28.86 28.90 WETTED PER (FT) 28.96	RATE (CFS) 0 0 0 0 0 1 1 2 3 3 5 6 7 9 0 2 5 8 1 5 9 5 0 7 4 2 1 1 1 3 5 8 3 8 4 2 0 0 0 2 5 0 3 5 6 7 9 0 2 5 8 1 5 9 5 0 7 4 2 1 1 1 1 2 2 2 2 3 3 8 0 W RATE (45 . 1 4 9 .	5.35 FLOW AREA SQ.FT. 5.91 6.19	0.42 0.43 DEPTH INC (FT) 0.45 0.46	POINT 1 2 3 4 WSEL (FT) 0.01 0.02 0.03 0.04 0.05 0.06 0.07 0.08 0.09 0.10 0.12 0.13 0.14 0.15 0.16 0.17 0.18 0.19 0.20 0.21 0.22 0.23 0.24 0.25 0.26 0.27 0.28 0.33 0.34 0.35 0.37 0.38 0.39 0.40 0.41 0.42 0.43 USEL (FT) 0.45 0.46 0.47
	ENERGY HEAD (FT) 1.37	0.80 VEL HEAD (FT) 0.92	28.22 TOPWID (FT) 28.23 28.23 28.24 28.24 28.25 28.25	7.19 FLOW VEL (FPS) 7.68	28.90 WETTED PER (FT) 28.94 28.96 28.98 29.01 29.03 29.05 29.07 29.09 29.11	38.4 FLOW RATE (CFS) 45.4	5.35 FLOW AREA SQ.FT. 5.91 6.19 6.48 6.76 7.04 7.32 7.61	0.43 DEPTH INC (FT) 0.45 0.46 0.47 0.48 0.49 0.50 0.51 0.52	0.43 WSEL (FT) 0.45

SUMMIT RIDGE DRIVE

MANNING	'S N= .	017 SLOP	E= .058	7					
POINT 1 2 3 4	DIST 0.00 8.38 8.83 9.00 DEPTH INC (FT) 0.02 0.03 0.04 0.05 0.06 0.07 0.08 0.09 0.11 0.12 0.13 0.14 0.15 0.16 0.17 0.18 0.20 0.21 0.25 0.25 0.25	ELEV 0.83 0.67 0.00 FLOW AREA SQ.FT. 0.01 0.03 0.04 0.08 0.10 0.13 0.16 0.23 0.36 0.36 0.36 0.58 0.66 0.76 0.98 1.10 1.23 1.37 1.52 1.68	7 8	DIST 11.00 23.00 35.00 FTTER (FT) 0.69 1.69 1.69 1.30 2.69 2.29 3.69 1.30 12.10 13.06 13.93 14.81 15.69 16.57	ELEV 0.13 0.41 0.00 FLOW (FPS 0.95 1.75 1.99 2.59 2.79 1.31 3.25 3.38 3.47 3.59 4.21 4.34 4.47 4.60	9 37. 10 37. 11 42.	17 0. 63 0. 00 0.	LEV 67 77 00 ENERD (FT) 0.03 0.05 0.12 0.14 0.17 0.25 0.27 0.30 0.31 0.33 0.35 0.37 0.44 0.46 0.49 0.54 0.57 0.60	-KOLL CUKB
0.28 0.29 0.30 0.31 0.32 0.33 0.35 0.37 0.38 0.40 0.42 0.43 WSEL (FT) 0.46 0.47 0.48 0.49 0.50 0.51 0.53 0.53	0.28 0.30 0.31 0.32 0.33 0.35 0.35 0.37 0.38 0.41 0.42 0.43 DEPTH INC (FT) 0.46 0.47 0.48 0.49 0.50 0.53	1.84 2.20 2.39 2.59 2.59 2.80 3.42 3.78 4.50 4.78 5.38 AREA SQ.FT. 5.48 7.61 7.89 8.17	8.7 9.8 11.0 12.3 13.6 15.1 16.7 18.3 20.1 22.0 23.9 26.0 28.2 30.6 33.6 36.8	16.45 17.45 18.20 20.96 20.96 21.79 23.47 25.23 27.26 28.80 WETTED PER (FT) 28.98 29.03 29.05 29.07 29.13	4.737 5.136 5.29 5.32 5.32 5.32 5.32 5.32 5.32 6.29 6.29 6.29 6.29 7.30 8.24 8.89 9.28	17.00 17.86 18.72 19.59 20.45 21.31 22.17 23.03 23.90 24.76 25.62 26.48 27.35 28.21 28.21 28.22 TOPWID (FT) 28.23 28.23 28.24 28.24	0.35 0.37 0.37 0.39 0.43 0.45 0.49 0.49 0.54 0.68 0.73 VEL HEAD (FT) 0.89 0.94 1.05 1.17 1.22 1.34	0.63 0.63 0.69 0.75 0.78 0.88 0.98 0.98 1.04 1.10 1.16 ENERGY (FT) 1.35 1.41 1.54 1.61 1.88	LIMIT

* + + * *

* * * *

MANNING'S N = .017 SLOPE= .0673

MAMMING	2 M= .	OI/ SLOP	E.= .007	5					
POINT 1 2 3 4 (FT) 0.01 0.02 0.03 0.04 0.05 0.06 0.07 0.08 0.09 0.10	DIST 0.00 8.38 9.00 DEPTH INC (FT) 0.01 0.02 0.03 0.04 0.05 0.06 0.07 0.08 0.09 0.10	ELEV 0.85 0.67 0.00 FLOW AREA SQ.FT. 0.00 0.01 0.03 0.05 0.08 0.11 0.15 0.20 0.25 0.31	POINT 5 6 7	DIST 11.00 23.00 35.00 41.00 ETTED PER (FT) 0.64 1.27 1.91 2.55 3.18 3.82 4.46 5.09 5.73 6.36	ELEV 0.13 0.41 0.00 FLOW VEL (FPS) 0.65 1.36 1.64 1.91 2.15 2.39 2.61 2.82 3.03	9 41. 10 41. 11 50.	.63	ELEV 0.67 0.67 0.85 0.00 ENERGY HEAD (FT) 0.02 0.04 0.06 0.08 0.11 0.13 0.16 0.19 0.21 0.24	BASIN 2=4.3 cfs BASIN 3=11.3 cf
0.11 0.12 0.13 0.14 0.15 0.16 0.17 0.18 0.19 0.20 0.21 0.22 0.23 0.24 0.25 0.26 0.27	0.11 0.12 0.13 0.14 0.15 0.16 0.17 0.18 0.19 0.20 0.21 0.22 0.23 0.24 0.25 0.26 0.27	0.38 0.45 0.52 0.61 0.70 0.81 0.92 1.04 1.16 1.30 1.45 1.60 1.76 1.93 2.11 2.30 2.50	1.2 1.5 1.9 2.7 3.8 4.1 5.8 7.8 9.2 12.5 13.9	7.00 7.64 8.27 9.15 10.03 10.91 11.79 12.66 13.54 14.42 15.30 16.18 17.05 17.93 18.81 19.69 20.57	3.22 3.42 3.60 3.72 3.85 3.99 4.13 4.27 4.42 4.56 4.70 4.85 4.99 5.14 5.28 5.42 5.56	6.83 7.45 8.07 8.93 9.79 10.65 11.51 12.38 13.24 14.10 14.96 15.83 16.69 17.55 18.41 19.27 20.14	0.16 0.20 0.22 0.23 0.25 0.26 0.30 0.32 0.34 0.37 0.39 0.41 0.43 0.43	0.27 0.30 0.33 0.36 0.38 0.41 0.43 0.49 0.52 0.55 0.62 0.65 0.65 0.72	-ROLL CURB LIMIT
0.28 0.29 0.30 0.31 0.32 0.33 0.34 0.35 0.36 0.37 0.38 0.39 0.40 0.41 0.42 0.43 WSEL	0.28 0.29 0.30 0.31 0.32 0.33 0.35 0.36 0.37 0.38 0.39 0.40 0.41 0.42 0.43 DEPTH INC	2.70 2.92 3.14 3.37 3.61 3.86 4.12 4.39 4.66 4.94 5.24 5.54 5.54 5.84 6.16 6.48 6.48 FLOW AREA	15.4 17.0 18.8 20.6 22.6 24.7 26.9 29.2 31.6 34.2 36.9 39.7 42.7 45.8 49.8 54.0 FLOW RATE	21.44 22.32 23.20 24.08 24.96 25.83 26.71 27.59 23.47 29.35 30.22 31.10 31.98 32.86 32.86 32.88 32.90 WETTED PER	5.70 5.84 5.98 6.12 6.25 6.39 6.52 6.65 6.72 7.18 7.30 7.43 7.68 7.93 FLOW VEL	21.00 21.86 22.72 23.59 24.45 25.31 26.17 27.03 27.90 28.76 29.62 30.48 31.35 32.21 32.21 32.21 32.22 TOPWID	0.50 0.53 0.58 0.61 0.63 0.69 0.72 0.74 0.77 0.80 0.83 0.92 0.98 VEL HEAD	0.82 0.89 0.89 0.93 0.96 1.03 1.03 1.11 1.15 1.23 1.27 1.34 1.41 ENERGY HEAD	
(FT) 0.45 0.46 0.47 0.48 0.49 0.50 0.51 0.52 0.53 0.54	(FT) 0.45 0.46 0.47 0.48 0.49 0.50 0.51 0.52	SQ.FT. 7.45 7.77 8.10 8.42 8.74 9.06 9.39 9.71 10.03	(CFS) 62.7 67.3 72.0 76.8 81.7 86.8 91.9 97.2 102.6 108.1	(FT) 32.94 32.98 33.00 33.02 33.04 33.06	(FPS) 8.42 8.66 8.89 9.35 9.57 9.79 10.01 10.23 10.44	(FT) 32.23 32.24 32.24 32.25 32.25 32.26 32.26 32.27 32.27	(FT) 1.10 1.16 1.23 1.29 1.36 1.42 1.49 1.56 1.63	(FT) 1.55 1.62 1.70 1.77 1.85 1.92 2.00 2.08 2.16	

PC PROGRAM STREAM SEPTEMBER 1994 *****

RIDGE POINTE DRIVE

MANNING'S N=.017 SLOPE= .0235

POINT	DIST	ELEV	POINT	DIST	ELEV	POINT D)IST]	ELEV	
1	0.00	0.83	5	11.00	0.13	9 37.		.67	
2	8.38	0.67	6	23.00	0.41	10 37.		. 67	
ろ 4	8.83 9.00	0.67 0.00	8	35.00 37.00	0.13	11 44. 12 0.		.77	
□ WSEL	DEPTH	FLOW		WETTED	FLOW	TOPWID	VEL	ENERGY	
/ TT (T) \	INC	AREA	RATE	PER	VEL /EDS)	۱ تس ۱	HEAD	HEAD	
(FT) 0.01	(FT) 0.01	SQ.FT. 0.00	(CFS) 0.0	(FT) 0.33	(FPS) 0.38	(FT) 0.31	(FT) 0.00	(FT) 0.01	
0.02	0.02	0.01	0.0	0.66	0.60	0.63	0.01	0.03	
0.03	0.03	0.01	0.0	0.99 1.32	0.79 0.95	0.94 1.25	0.01	0.04 0.05	
0.04 0.05	0.04 0.05	0.03 0.04	0.0	1.64	1.11	1.56	0.01	0.03	
0.06	0.06	0.06	0.1	1.97	1.25	1.88	0.02	0.08	
0.07 0.08	0.07 0.08	0.08 0.10	0.1	2.30 2.63	1.39 1.52	2.19 2.50	0.03 0.04	0.10 0.12	
0.09	0.09	0.13	0.2	2.96	1.64	2.81	0.04	0.12	
0.10	0.10	0.16	0.3	3.29	1.76	3.13	0.05	0.15	
0.11	0.11	0.19 0.23	$0.4 \\ 0.4$	3.62 3.95	1.87 1.99	3.44 3.75	0.05 0.06	0.16 0.18	
0.12	0.12	0.26	0.6	4.28	2.09	4.07	0.07	0.20	
0.14	0.14	0.31	0.6	5.15	2.05	4.93	0.07	0.21	
0.15 0.16	0.15 0.16	0.36 0.43	0.7	6.03 6.91	2.06 2.09	5.79 6.65	0.07	0.22 0.23	
0.17	0.17	0.50	1.1	7.79	2.14	7.51	0.07	0.24	
0.18	0.18	0.58	1.3	8.67	2.20	8.38	0.07	0.25	
0.19	0.19	0.66 0.76	1.5 1.8	9.54 10.42	2.27 2.34	9.24 10.10	0.08	0.27 0.28	
0.21	0.21	0.87	2.1	11.30	2.42	10.96	0.09	0.30	
0.22	0.22	0.98	2.4	12.18	2.50	11.83	0.10	0.32	
0.23	0.23 0.24	1.10 1.23	2.8 3.3	13.06 13.93	2.58 2.66	12.69 13.55	$0.10 \\ 0.11$	0.33 0.35	
0.25	0.25	1.37		14.81	2.74	14.41	0.12	0.37	
0.26	0.26	1.52		15.69	2.83	15.27 16.14	0.12	0.38	
0.27	0.27 0.28	1.68 1.84		16.57 17.45	2.91 3.00	17.00	0.13	0.40	
0.29	0.29	2.02	6.2	18.32	3.08	17.86	0.15	0.44	
0.30	0.30	2.20 2.39	7.0 7.8	19.20 20.08	3.16 3.24	18.72 19.59	0.16 0.16	0.46 0.47	
0.31 0.32	0.31	2.59	8.6		3.33	20.45	0.17	0.49	
0.33	0.33	2.80	9.6	21.84	3.41	21.31	0.18	0.51	-ROLL CURB
0.34	0.34 0.35	3.02 3.25	10.5 11.6	22.71	3.49	22.17 23.03	0.19	0.55	LIMIT
0.35		3.43	12.7		3.65	23.90	0.21	0.57	
0.37	0.37	3.72	13.9		3.73 3.81	24.76 25.62	0.22	0.59 0.61	
0.38	0.38 0.39	3.98 4.24	15.1 16.5	27.10	3.89	26.48	0.23	0.62	
0.40	0.40	4.50	17.9	27.98	3.97	27.35	0.24	0.64	
0.41	0.41	4.78 5.06	19.3 21.3	28.86 28.88	4.04 4.20	28.21 28.21	0.25 0.27	0.66 0.69	
0.43	0.42	5.35	23.3	28.90	4.35	28.22	0.29	0.72	-ACTUAL FLOW
□ WSEL	DEPTH	FLOW	FLOW	WETTED	FLOW VEL	TOPWID	VEL HEAD	ENERGY HEAD	=22.3 cfs
(FT)	INC (FT)	AREA SQ.FT.	RATE (CFS)	PER (FT)	(FPS)	(FT)	(FT)	(FT)	
0.45	0.45	5.91	27.5	28.94	4.65	28.23	0.34	0.79	
0.46	0.46	6.19 6.48	29.7 32.0	28.96 28.98	4.79 4.93	28.23 28.24	0.36 0.38	0.82	
0.47	0.48	6.76	34.3	29.01	5.07	28.24	0.40	0.88	- 2 IANDAKO CURB
0.49		7.04	36.7	29.03	5.21	28.25	0.42	0.91 0.94	LIMIT
0.50 0.51		7.32 7.61	39.2 41.7	29.05 29.07	5.35 5.48	28.25 28.26	$0.44 \\ 0.47$	0.94	
0.52	0.52	7.89	44.3	29.09	5.61	28.26	0.49	1.01	
0.53			46.9 49.7		5.74 5.87	28.27 28.27	0.51	1.04	
0.54	0.54	0.40	47.1	<i>_ , , , ,</i>	5.07	20,21	♥. J. T	4.00	

PC PROGRAM STREAM SEPTEMBER 1994

RIDGE POINTE DRIVE

* * * *

MANNING'S N = .017 SLOPE= .035

POINT	DIST	ELEV	POINT	DIST	ELEV	POINT D	IST E	LEV	
1 2	0.00 8.38	0.83 0.67	5 6	11.00 23.00	0.13 0.41	9 41. 10 41.		67 67	
3	8.83	0.67	7	35.00	0.13	11 48.	00 0.	83	
□ WSEL	9.00 DEPTH	0.00 FLOW		41.00 ETTED	0.00 FLOW	12 0. TOPWID	00 0. VEL	00 ENERGY	
/ ፫ጥ ነ	INC	AREA SQ.FT.	RATE (CFS)	PER (FT)	VEL (FPS)	(FT)	HEAD (FT)	HEAD (FT)	
(FT) 0.01	(FT) 0.01	0.00	0.0	0.64	0.47	0.62	0.00	0.01	
0.02	0.02	0.01	0.0	1.27 1.91	0.75 0.98	1.24 1.86	0.01	0.03	
0.03	0.03	0.05	0.1	2.55	1.18	2.48	0.02	0.04	
0.05	0.05 0.06	0.08 0.11	0.1	3.18 3.82	1.37 1.55	3.10 3.72	0.03	0.08 0.10	
0.06 0.07	0.00	0.15	0.2	4.46	1.72	4.34	0.05	0.12	
0.08	0.08	0.20 0.25	0.4	5.09 5.73	1.88 2.03	4.96 5.58	0.05 0.06	0.13 0.15	
0.09 0.10	0.09	0.23	0.7	6.36	2.03	6.20	0.07	0.17	
0.11	0.11	0.38	0.9	7.00 7.64	2.33	6.83 7.45	0.08	0.19	
0.12 0.13	0.12	0.45 0.52	1.1 1.4	8.27	2.40	8.07	0.10	0.21	
0.14	0.14	0.61	1.6	9.15	2.69	8.93 9.79	0.11	0.25 0.27	
0.15 0.16	0.15 0.16	0.70 0.81	2.0	10.03 10.91	2.78 2.88	10.65	0.12	0.29	
0.17	0.17	0.92	2.7	11.79	2.98	11.51	0.14	0.31	
0.18 0.19	0.18 0.19	$1.04 \\ 1.16$	3.2 3.7	12.66 13.54	3.08 3.18	12.38 13.24	0.15	0.35	
0.20	0.20	1.30	4.3	14.42	3.29	14.10	0.17	0.37	
0.21	0.21	1.45 1.60		15.30 16.18	3.39 3.50	14.96 15.83		0.39	
0.23	0.23	1.76		17.05	3.60		0.20	0.43	TOTAL FLOW
0.24 0.25	0.24	1.93 2.11	7.2 8.0	17.93 18.81	3.70 3.81	17.55 18.41	0.21 0.23	0.45 0.48	= 22.3 cfs
0.26	0.26	2.30		19.69	3.91	19.27	0.24	0.50	
0.27	0.27 0.28	2.50 2.70		20.57 21.44	4.01 4.11	20.14 21.00	0.25 0.26	0.52 0.54	
0.29	0.29	2.92	12.3	22.32	4.21	21.86	0.28	0.57	
0.30		3.14 3.37		23.20 24.08	4.31 4.41	22.72 23.59	0.29 0.30	0.59 0.61	
0.32	0.32					24.45		0.64	
0.33	0.33	3.86 4.12	17.8 19.4	25.83 26.71	4.61 4.70	25.31 26.17	0.33 0.34	0.66 0.68	
0.35	0.35	4.39	21.0	27.59	4.80	27.03	0.36	0.71 0.73	
0.36 0.37	0.36 0.37	4.56	22.8	28.47 29.35	4.89 4.99	27.90 28.76	0.37 0.39	0.76	
0.38	0.38	5.24	26.6	30.22	5.08	29.62	0.40	0.78	
0.39		5.54 5.84	28.6 30.8	31.10 31.98	5.17 5.27	30.48 31.35	0.42	0.83	
0.41	0.41	6.16	33.0 35.9	32.86 32.88	5.36 5.54	32.21 32.21	0.45	0.86	-STREET CAPACITY
0.42	0.42	6.48 6.81	38.9	32.90	5.72	32.22	0.51	0.94	
□ WSEL	DEPTH	FLOW AREA	FLOW RATE	WETTED PER	FLOW VEL	TOPWID	VEL HEAD	ENERGY HEAD	
(FT)	(FT)	SQ.FT.	(CFS)	(FT)	(FPS)	(FT)	(FT)	(FT)	
0.45		7.45 7.77	45.2 48.5	32.94 32.96	6.07 6.24	32.23 32.23	0.57 0.61	1.02 1.07	
0.47	_	8.10	51.9	32.98	6.41	32.24	0.64	1.11	
0.48	_	8.42 8.74	55.4 58.9	33.00 33.02	6.58 6.74	32.24 32.25	0.67 0.71	1.15 1.20	
0.50	0.50	9.06	62.6	33.04	6.90	32.25	0.74	1.24	
0.51 0.52			66.3 70.1	33.06 33.09	7.06 7.22	32.26 32.26	0.77	1.28 1.33	
0.53	0.53	10.03	74.0	33.11	7.38	32.27	0.85	1.38	
0.54	0.54	10.35	78.0	33.13	7.53	32.27	0.88	1.42	B-1/

APPENDIX C

COMANCHE ROAD STREET HYDRAULIC ANALYSIS

RIDGE POINTE SUBDIVISION Comanche Road Street Hydraulics March 5, 2003

1. Holiday Park Subdivision Hydrology

The Holiday Park Subdivision hydrology is taken from the approved conceptual drainage plan (Plan) for the Osco at Tramway project. This Plan was approved on June 29, 1998 for a proposed Osco drugstore on the site now being proposed for the Ridge Pointe subdivision. Copies of the summary and approval letter are included in this analysis for reference. The Holiday Park runoff is carried via internal streets to Comanche Road, where the flows are collected by a series of storm drain inlets upstream of the North Glenwood Hills Arroyo. Developed runoff from the Holiday Park subdivision (Basin 101 in the Plan) for the 100-year storm is 97.5 cfs and the 10-year storm is 65.0 cfs (0.667 x 100-year storm). Basin 101 includes the north half of Comanche Road across the Holiday Park subdivision. For the hydraulic analysis it is assumed that half of the runoff is carried by Big Bend Road, 32.5 cfs, and half the flow is carried by Mt. Rainer Drive, 32.5 cfs.

2. Ridge Pointe Subdivision Hydrology

Developed runoff from the Ridge Pointe subdivision for the 100-year storm is 22.3 cfs and the 10-year storm is 14.1 cfs (see AHYMO output in Appendix A). Existing runoff for the 10-year storm is 3.4 cfs.

3. Comanche Road Hydraulics

Comanche Road is classified as a collector street on the Long Range Roadway System map. Street hydraulic design criteria in the City of Albuquerque DPM requires 1) that the conjugate and/or sequent depth in the 100-year storm to be contained in the street right-of-way and not exceed 0.2 feet above the curb height, 2) flow depths of the 10-year storm may not exceed 0.5 feet in any collector or arterial street and one 12-foot driving lane be free of flowing or standing water on arterial streets.

Under existing conditions, the flow in Comanche Road at the first inlet (downstream of Big Bend) is 35.9 cfs. From the Comanche Road as-builts, the longitudinal street slope at the first inlet is 3.08%. Under these conditions the depth of flow is 0.54 feet, velocity is 6.9 feet per second, and the spread is 22.6 feet. From the Comanche Road median reconstruction plans, the face-to-face street half width for the north half of Comanche Road is 27.5 feet. Under the existing conditions there is only 4.9 feet clear of running/standing water upstream of the first inlet during the 10-year storm. Both the depth of flow and clear width dimension do not meet the DPM criteria for the existing condition.

The first inlet will pick up about 10 cfs under the existing condition. This leaves about 25.9 cfs in the road with a depth of flow of 0.48 feet, velocity of 6.4 feet per second, and a spread of 19.9 feet. This still leaves only 7.6 feet clear with a 27.5 feet street half-width section. Therefore, looking at the existing condition, the current storm drain collection system in Comanche Road is insufficient to meet the one lane clear requirement and one could conclude that the Holiday

Park subdivision should have extended storm drain into Big Bend Road to pick up flows in order to meet this requirement.

For the developed condition where the Ridge Pointe subdivision is discharging flows into Comanche Road, the flow in Comanche Road at the first inlet is 46.6 cfs. Under these conditions the depth of flow is 0.58 feet, velocity is 7.4 feet per second, and the spread is 24.9 feet. Under the developed conditions the clear width dimension is reduced from 4.9 feet to 2.6 feet during the 10-year storm.

Upstream of Big Bend Road, the flow in Comanche Road is 14.1 cfs. Under these conditions the depth of flow is 0.40 feet, velocity is 5.6 feet per second, and the spread is 15.7 feet. This results in 11.8 feet of lane width clear of running/standing water during the 10-year storm.

Furthermore, the connector pipe from the first inlet on the north side of Comanche Road is probably 18 inches (the as-builts do not show a pipe size and the first main line pipe from the eastern most manhole is 24 inches). Under normal depth flow, an 18-inch RCP storm drain at 3.08% has a capacity of 19.9 cfs. Therefore, there is not enough capacity in the existing storm drain (under normal depth flow) to collect all of the flow from Ridge Point east of Big Bend Road. The previous analysis is based on the 10-year storm. Under the 100-year storm the inlets would collect more flow due to the greater depth of flow, resulting in the existing storm drain system in being even further under capacity and possibly surging water out of the inlets. A more detailed hydraulic analysis is not feasible, as the storm drain as-builts do not provide any hydraulic design information.

4. Conclusion

Based on the fact that 1) under existing conditions the storm drain system in Comanche Road is insufficient to meet the depth of flow and one lane clear requirement; 2) that under the fully developed condition the spread of flow in Comanche would only increase 2.3 feet and the depth of flow by 0.04 feet; and 3) under a proposed condition with a new inlet to the east of Big Bend Road that the existing 18-inch connector storm drain pipe would probably exceed its capacity, it can be concluded that the addition of developed flows from the Ridge Pointe subdivision does not significantly impact the existing street hydraulics in Comanche Road and that it is not necessary to extend a storm drain to the east of Big Bend Road.

Comanche ex cond.txt

Analyzer Report

Drainage Structure Analyzer

Gutter Hydraulic Analysis

Date: Wednesday, March 05, 2003 10:52:10 AM

Input Data

Shape Composite
Gutter Width 2.00 ft
Side Slope 6.250%
Transverse Slope 2.000%
Longitudinal Slope 3.080%
Roughness 0.017000
Flow Rate 35.9 cfs

Output Results

Depth 0.54 ft 6.94 ft/s Spread 22.55 ft

Comanche dev cond.txt

Analyzer Report

Drainage Structure Analyzer

Gutter Hydraulic Analysis

Date: Wednesday, March 05, 2003 10:58:41 AM

Input Data Composite Shape 2.00 ft Gutter Width Side Slope 6.250% Transverse Slope 2.000% Longitudinal Slope 3.080% 0.017000 Roughness 46.6 cfs Flow Rate Output Results

Depth 0.58 ft
Velocity 7.39 ft/s
Spread 24.93 ft



June 29, 1998

James D. Hughes, P.E. Mark Goodwin & Associated P.O. Box 90606 Albuquerque, NM 87199

RE: OSCO DRUG AT TRAMWAY BOULEVARD (G22-D14). CONCEPTUAL GRADING AND DRAINAGE PLAN FOR SITE DEVELOPMENT PLAN FOR BUILDING PERMIT. ENGINEER'S STAMP DATED MAY 29, 1998.

Dear Mr. Hughes:

Based on the information provided on your March 26, 1998 submittal, the above referenced project is approved for Site Development Plan for Building Permit.

Prior to Certificate of Occupancy approval, an Engineer's Certification 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

IT PRIOR

DRAINAGE NARRATIVE FOR OSCO @ TRAMWAY

RIGHT-OF-WAY.

WTO EXISTING

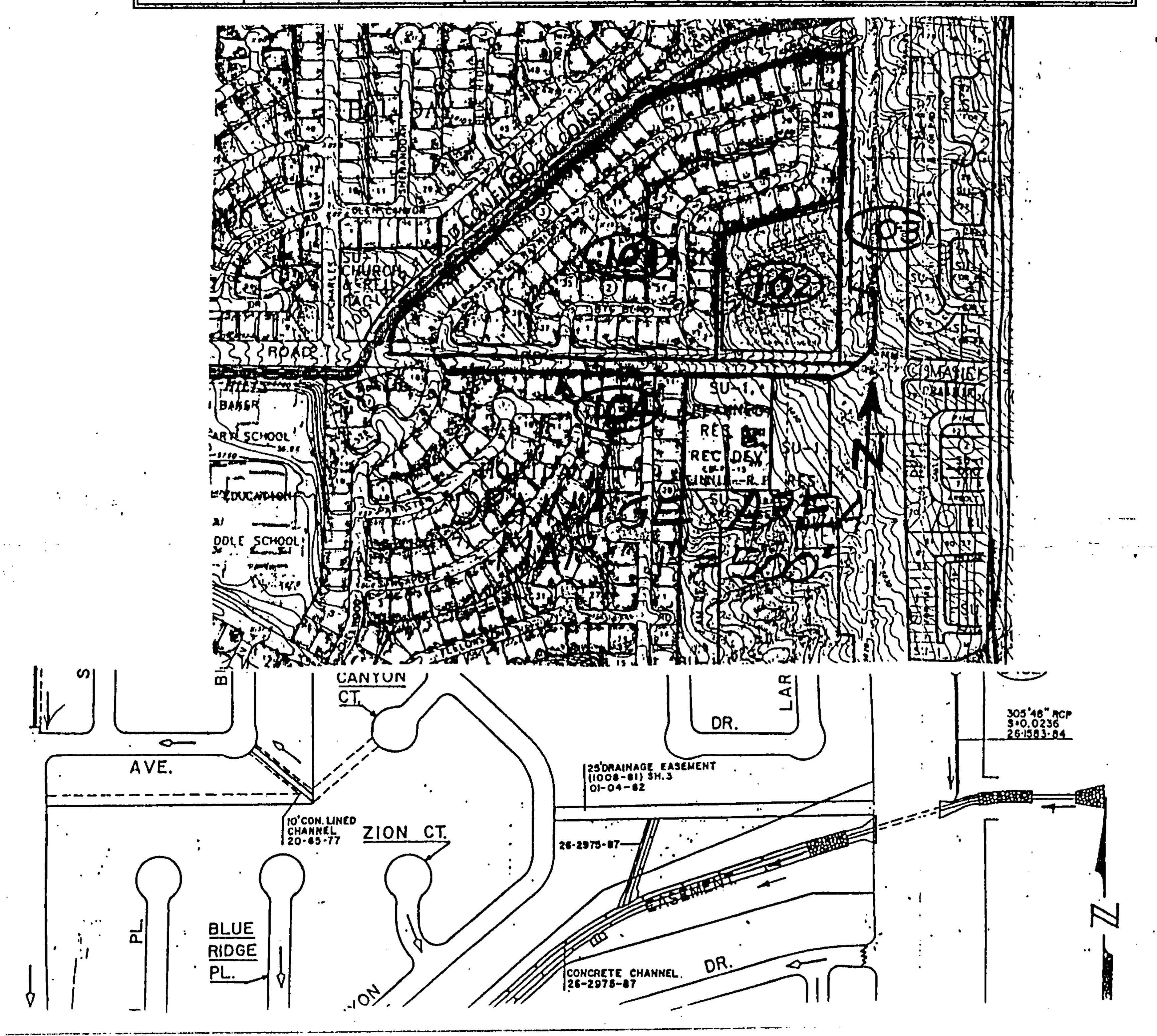
PRIOR TO

THIS 5.7 ACRE COMMERCIAL SITE IS THE LAST LOT TO BE DEVELOPED IN AN ALREADY ESTABLISHED PART OF TOWN (IE...AN INFILL PROJECT). NO OFFSITE DRAINAGE ENTERS THIS PROPERTY. IT IS BOUNDED ON THE EAST BY TRAMWAY BLVD, ON THE NORTH AND WEST BY HOLIDAY PARK RESIDENTIAL SUBDIVISION AND ON THE SOUTH BY COMANCHE ROAD.

THE STORMWATER OUTFALL IS VIA SURFACE DRAINAGE TO COMANCHE ROAD WHICH IS A DESIGNATED "COLLECTOR". COMANCHE DRAINS TO A BATTERY OF INLETS AT THE NORTH GLENWOOD HILLS ARROYO 1300' WEST OF THIS SITE. AT THE FIRST INLET THE 100 YEAR FLOW IN THE NORTH HALF OF COMANCHE ROAD IS ABOUT 85 CFS AT 2.8% SLOPE (INCLUDING ABOUT 25 CFS FROM THIS SITE) AND IS 0.78' DEEP AT 7.0 FPS. IT APPEARS THAT THE DOWNSTREAM FACILITIES HAVE ENOUGH CAPACITY TO ACCOMMODATE THIS DEVELOPMENT.

HYDROLOGY SUMMARY

BASIN	AREA ACRE	AREA SQ. MILE	CONTRIBUTING BASINS		LAND TREATMENT			Q100 INCREMENTAL	Q100 CUMULATIVE
		,		Α	В	C	D		•
101	24.68	0.0385625	192, 193		40	20	40	97.53 CFS	133.50
102	5.74	0.008969	103	_	0	10	90	28.96 CFS	35.97
103	1.84	0.002875		1	60	-	40	7.01 CFS	·
104	1.72	0.00269		1	0	10	90	8.70 CFS	



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APPENDIX D

INFRASTRUCTURE LIST

						•	Date Submitted		March 5, 2003
Current DRC Project No.							Date Site Plan App	roved _	
Figure 12								lat Approved _	
<u>INFRASTRUCTURE LIST</u>								lat Expiers _	
EXHIBIT "A" TO SUBDIVISION IMPROVEMENTS AGREEMENT DEVELOPMENT REVIEW BOARD (D R B) REQUIRED INFRASTRUCTURE LIST									1000234
				RIDGE POINTE SUBD PRELIMINARY PL			APPLICATION NO.		03DRB-00213
Following is a summary of PUBLIC/PRIVATE Infrastructure required to be constructed or financially guaranteed for the above development. This Listing is not necessarily a complete listing. During the SIA process and/or in the review of the construction drawings, if the DRC Chair determines that appurtenent items and/or unforeseen items have not been included in the infrastructure listing, the DRC Chair may include those items in the listing and related financial guarantees. All such revisions require guarantee. Likewise, if the DRC Chair determines that appurtenant or non-essential items can be deleted from the listing, those items may be deleted as well as the related portions of the financial guarantees. All such revisions require approval by the DRC Chair, the User Department and agent/owner. If such approvals are obtained, these revisions to the listing will be incorporated administratively. In addition, any unforeseen items which arise during construction which approval by the DRC Chair, the User Department and agent/owner. If such approvals are obtained, these revisions to the listing will be incorporated administratively. In addition, any unforeseen items which arise during construction which which are necessary to complete the project and which normally are the Subdivider's responsibility will be required as a condition of project acceptance and close out by the City.								<u>quire</u>	
SIA	COA DRC Project #	Size	Type of Improvement	Location	From	То	Inspector	Inspector	Engineer
Sequence #	_	ONSITE PUBLIC	ROADWAY IMPROVEMENTS						
		32' F-F	RESIDENTIAL PAVING W/ PCC CURB & GUTTER AND PCC 4' WIDE SIDEWALK ON EAST SIDE ONLY*	RIDGE POINTE ROAD	COMANCHE ROAD	SUN MESA DRIVE			
		28' F-F	RESIDENTIAL PAVING W/ PCC CURB & GUTTER AND PCC 4' WIDE SIDEWALK ON EAST SIDE ONLY*	RIDGE POINTE ROAD	SUN MESA DRIVE	OUTLOOK POINT AVENUE			
		28' F-F	RESIDENTIAL PAVING W/ PCC CURB & GUTTER AND PCC 4' WIDE SIDEWALK ON SOUTH SIDE ONLY*	OUTLOOK POINT AVE	RIDGE POINTE ROAD	SUMMIT RIDGE DRIVE			
		28' F-F	RESIDENTIAL PAVING W/ PCC CURB & GUTTER AND PCC 4' WIDE SIDEWALK ON EAST SIDE ONLY	SUMMIT RIDGE DRIVE	SUN MESA DRIVE	OUTLOOK POINT AVENUE			
		32' F-F	RESIDENTIAL PAVING W/ PCC CURB & GUTTER AND PCC 4' WIDE SIDEWALK ON BOTH SIDES*	SUN MESA DRIVE	RIDGE POINTE ROAD	SUMMIT RIDGE DRIVE			
		24' F-F	RESIDENTIAL PAVING W/ PCC CURB & GUTTER AND PCC 4' WIDE SIDEWALK ON SOUTH SIDE ONLY*	SUN MESA DRIVE	SUMMIT RIDGE DRIVE	EAST STUB TERMINUS			
			 SIDEWALKS TO BE DEFERRED WAI OUTLOOK POINT AVENUE, THE WES 	VER OF SIDEWALK ON WI T SIDE OF SUMMIT RIDGE	EST SIDE OF RIDGE POINT DRIVE, AND THE NORTH	TE ROAD, NORTH SIDE OF SIDE OF SUN MESA STUB			
		3	STREET LIGHTS AS PER COA DPM						
		ONSITE PUBLIC	STORM DRAIN IMPROVEMENTS						<u>.</u>
<u></u>	<u> </u>	1							أبيا فيستهي بالشائدي والتناق التي بدويها

NOTE

A GRADING AND DRAINAGE CERTIFICATION OF THE APPROVED GRADING PLAN IS REQUIRED PRIOR TO THE RELEASE OF FINANCIAL GUARANTEES

Se	SIA quence #	COA DRC Project #	Size	Type of Improvement	Location	From	To	Private Inspector	City Inspector	City Cnst Engineer
			ONSITE PUBLI	C WATERLINE IMPROVEMENTS				ر الرواي منظير و من منظم الرواي منظم الرواي من المنظم الرواي المنظم الرواي المنظم الرواي المنظم الرواي المنظم ا المنظم المنظم	<u></u>	
			6" DIA	WATERLINE W/ NEC VALVES FH'S, MJ'S & RJ'S	RIDGE POINTE ROAD	SUN MESA DRIVE	OUTLOOK POINT AVENUE			
			6" DIA	WATERLINE W/ NEC VALVES FH'S, MJ'S & RJ'S	OUTLOOK POINT AVE	RIDGE POINTE ROAD	TRAMWAY BLVD RIGHT-OF-WAY			
			6" DIA	WATERLINE W/ NEC VALVES FH'S, MJ'S & RJ'S	SUN MESA DRIVE	RIDGE POINTE ROAD	TRAMWAY BLVD RIGHT-OF-WAY	/		/
			6" DIA	WATERLINE W/ NEC. VALVES FH'S, MJ'S & RJ'S	SUMMIT RIDGE DRIVE	SUN MESA DRIVE	OUTLOOK POINT AVENUE			

	ONSITE PUBLIC	SANITARY SEWER IMPROVEMENTS					
	8" DIA	SANITARY SEWER W/ NEC MH'S & SERVICES	RIDGE POINTE ROAD	COMANCHE ROAD	OUTLOOK POINT AVENUE	 	
	8" DIA	SANITARY SEWER W/ NEC MH'S & SERVICES	SUN MESA DRIVE	RIDGE POINTE ROAD	EAST STUB TERMINUS	 	
	8" DIA	SANITARY SEWER W/ NEC. MH'S & SERVICES	OUTLOOK POINT AVE	RIDGE POINTE ROAD	SUMMIT RIDGE DRIVE	 	
	8" DIA	SANITARY SEWER W/ NEC. MH'S & SERVICES	SUMMIT RIDGE DRIVE	SUN MESA DRIVE	OUTLOOK POINT AVENUE	 	

\$		XXXX	**************************************	\$	*************************************
SCOTT STEFFEN PREPARED BY PRINT NAME.	03/05/03 DATE	DRB CHAIR	DATE	PARKS & RECREATION DEPARTMENT	DATE
BOHANNAN HUSTON INC FIRM		TRANSPORTATION DEVELOPMENT	DATE	AMAFCA	DATE
SIGNATURE	3 5 03 DATE	UTILITY DEVELOPMENT	DATE	CITY ENGINEER	DATE
MAXIMUM TIME ALLOW TO CONSIMPROVEMENTS WITHOUT A DRE	EXTENSION _	NEW MEXICO UTILITIES INC	DATE		DATE
**************************************	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX	\$	88888888888888888888888888888888888888	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX	*************************************
		DESIGN REVIEW COMM		, , , , , , , , , , , , , , , , , , ,	
	DATE	DRC CHAIR	USER DE	PARTMENT AGENT/	OWNER
REVISION	UAIL				
		<u> </u>			
REVISION	DATE				

•

PLATES

PLATE 1 - PRELIMINARY PLAT

PLATE 2 - GRADING PLAN

PLATE 3 - DEVELOPED CONDITIONS BASIN MAP

PLATE 1

PRELIMINARY PLAT

PLATE 2

GRADING PLAN

PLATE 3

DEVELOPED CONDITIONS BASIN MAP

Bohannan A Hustong

Courtyard I 7500 Jefferson St. NE Albuquerque, NM 87109-4335

www.bhinc.com

voice: 505.823.1000 facsimile: 505.798.7988

toll free: 800.877.5332

DRAINAGE INFORMATION SHEET

(REV. 11/01/2001)

6-22/014

PROJECT TITLE: Ridge Pointe Subdivision	ZONE MAP/DRG. FILE #_G-22-Z
DRB #:EPC#:	WORK ORDER#:
LEGAL DESCRIPTION: Lot A, Block 1, Holiday Park, Unit 10	
CITY ADDRESS:	
ENGINEERING FIRM: Bohannan Huston, Inc.	CONTACT: Scott Steffen
ADDRESS: 7500 Jefferson NE – Courtyard I	PHONE: (505) 823-1000
CITY, STATE: <u>Albuquerque, NM</u>	ZIP CODE: 87109
OWNER: Mike Williams	CONTACT: Mike Williams
ADDRESS: 3419 Juan Tabo NE	PHONE: 296-8606
CITY, STATE: <u>Albuquerque, NM</u>	ZIP CODE: 87111
ARCHITECT:	CONTACT:
ADDRESS:	PHONE:
CITY, STATE:	ZIP CODE:
SURVEYOR:	CONTACT:
ADDRESS:	PHONE:
CITY, STATE:	ZIP CODE:
CONTRACTOR:	CONTACT:
ADDRESS:	PHONE:
CITY, STATE:	ZIP CODE:
CHECK TYPE OF SUBMITTAL: DRAINAGE REPORT DRAINAGE PLAN CONCEPTUAL GRADING & DRAINAGE PLAN X GRADING PLAN EROSION CONTROL PLAN ENGINEER'S CERTIFICATION (HYDROLOGY) CLOMR/LOMR TRAFFIC CIRCULATION LAYOUT (TCL) ENGINEERS CERTIFICATION (TCL) ENGINEERS CERTIFICATION (DRB APPR. SITE PLAN) OTHER	CHECK TYPE OF APPROVAL SOUGHT: SIA / FINANCIAL GUARANTEE RELEASE X PRELIMINARY PLAT APPROVAL S. DEV. PLAN FOR SUB'D. APPROVAL S. DEV. PLAN FOR BLDG. PERMIT APPROVAL SECTOR PLAN APPROVAL FINAL PLAT APPROVAL FOUNDATION PERMIT APPROVAL BUILDING PERMIT APPROVAL CERTIFICATE OF OCCUPANCY (PERM.) CERTIFICATE OF OCCUPANCY (TEMP.) X GRADING PERMIT APPROVAL PAVING PERMIT APPROVAL WORK ORDER APPROVAL OTHER (SPECIFY)
WAS A PRE-DESIGN CONFERENCE ATTENDED: YESX NO COPY PROVIDED	FEB 1 3 2003 HYDROLOGY SECTION
DATE SUBMITTED: 2/13/03 BY:_	5-45-4
Requests for approvals of Site Development Plans and/or Subo	division Plats shall be accompanied by a drainage submittal.

Requests for approvals of Site Development Plans and/or Subdivision Plats shall be accompanied by a drainage submittal. The particular nature, location and scope of the proposed development defines the degree of drainage detail. One or more of the following levels of submittal may be required based on the following:

- Conceptual Grading and Drainage Plan: Required for approval of Site Development Plans greater than five (5) acres and Sector Plans.
- 2. Drainage Plans: Required for building permits, grading permits, paving permits and site plans less than five (5) acres.
- 3. Drainage Report: Required for subdivisions containing more than ten (10) lots or constituting five (5) acres or more.

MILLIMENS



June 29, 1998

James D. Hughes, P.E. Mark Goodwin & Associated P.O. Box 90606 Albuquerque, NM 87199

RE: OSCO DRUG AT TRAMWAY BOULEVARD (G22-D14), CONCEPTUAL GRADING AND DRAINAGE PLAN FOR SITE DEVELOPMENT PLAN FOR BUILDING PERMIT. ENGINEER'S STAMP DATED MAY 29, 1998.

Dear Mr. Hughes:

Based on the information provided on your March 26, 1998 submittal, the above referenced project is approved for Site Development Plan for Building Perput.

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

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

Sincerely,

John P. Murray, PÆ

Hydrology

c:

Andrew Garcia



DRAINAGE INFORMATION SHEET

PROJECT TITLE: OSCO @ Tramw	ZONE ATLAS/DRNG, FILE#: G-ZZ							
LEGAL DESCRIPTION: LOT A Block Holiday Park Unit 10								
CITY ADDRESS: Comanche @ Tramway								
ENGINEERING FIRM: D. Mork Goodwin	CONTACT: Doughes or Mar							
ADDRESS: P.O. Box 90606 Albuque	M 87199PHONE: 828-2200							
OWNER: American Stores Co. Agen	#							
ADDRESS: Ltah	PHONE:							
ARCHITECT:	CONTACT:							
ADDRESS:	PHONE:							
SURVEYOR:								
ADDRESS:								
CONTRACTOR:								
ADDRESS:	PHONE:							
TYPE OF SUBMITTAL:	CHECK TYPE OF APPROVAL SOUGHT:							
DRAINAGE REPORT	SKETCH PLAT APPROVAL							
DRAINAGE PLAN	PRELIMINARY PLAT APPROVAL							
CONCEPTUAL GRADING & DRAINAGE PLAN	S. DEV. PLAN FOR SUB'D APPROVAL							
GRADING PLAN	S. DEV. PLAN FOR BLDG PERMIT APPROVAL							
EROSION CONTROL PLAN	SECTOR PLAN APPROVAL							
ENGINEER'S CERTIFICATION	FINAL PLAT APPROVAL							
OTHER	FOUNDATION PERMIT APPROVAL							
	BUILDING PERMIT APPROVAL							
PRE-DESIGN MEETING:	CERTIFICATION OF OCCUPANCY APPROVAL							
YES	GRADING PERMIT APPROVAL							
NO NO	PAVING PERMIT APPROVAL							
COPY PROVIDED	S.A.D. DRAINAGE REPORT							
	DRAINAGE REQUIREMENTS							
	OTHER (Specify)							
DATE SUBMITTED: 5-29-98	MAY 2 9 1998 HYDROLOGY SECTION							
BY: Janes D. Aug Del	- ITTURULUGY SECTION							