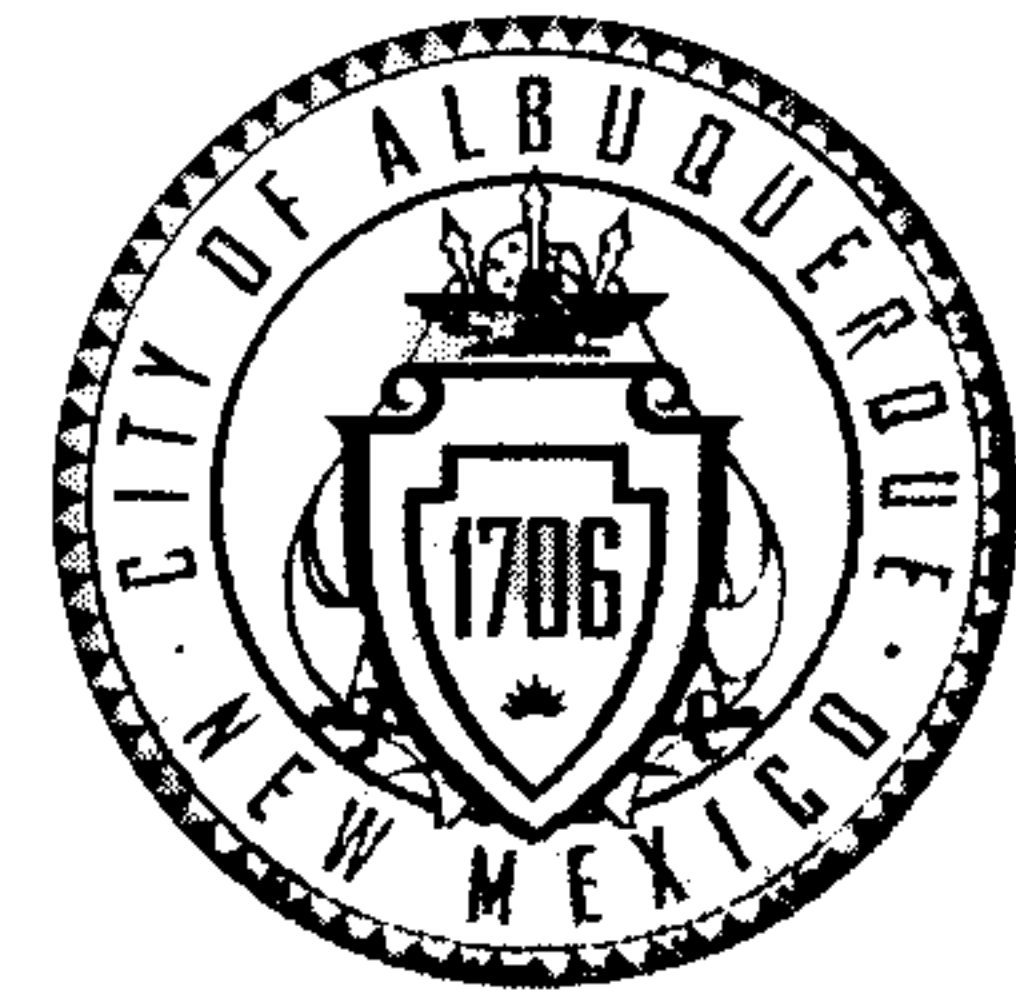


CITY OF ALBUQUERQUE

PLANNING DEPARTMENT – Development Review Services



Richard J. Berry, Mayor

October 17, 2016

Robert J. Fierro, P.E., P.S.
Fierro & Company
6300 Montano Rd. Suite F3
Albuquerque, NM, 87120

RE: **Beehive Homes**
Grading & Drainage Plan/Report
Engineer's Stamp Date 9-8-2016 (File: E10D027)

Dear Mr. Fierro:

Based upon the information provided in your submittal received 9-15-2016, the above referenced Grading and Drainage Plan and Report is approved for Building Permit with the following condition:

PO Box 1293

- Provide a desiltation pond, or other method to decrease sediment transport onto the adjacent property, since much of the existing on-site vegetation will be cleared with Phase I.

Albuquerque

Please attach a copy of this approved plan in the construction sets when submitting for a building permit. Prior to Certificate of Occupancy release, Engineer Certification per the DPM checklist and completion of the item above will be required.

New Mexico 87103

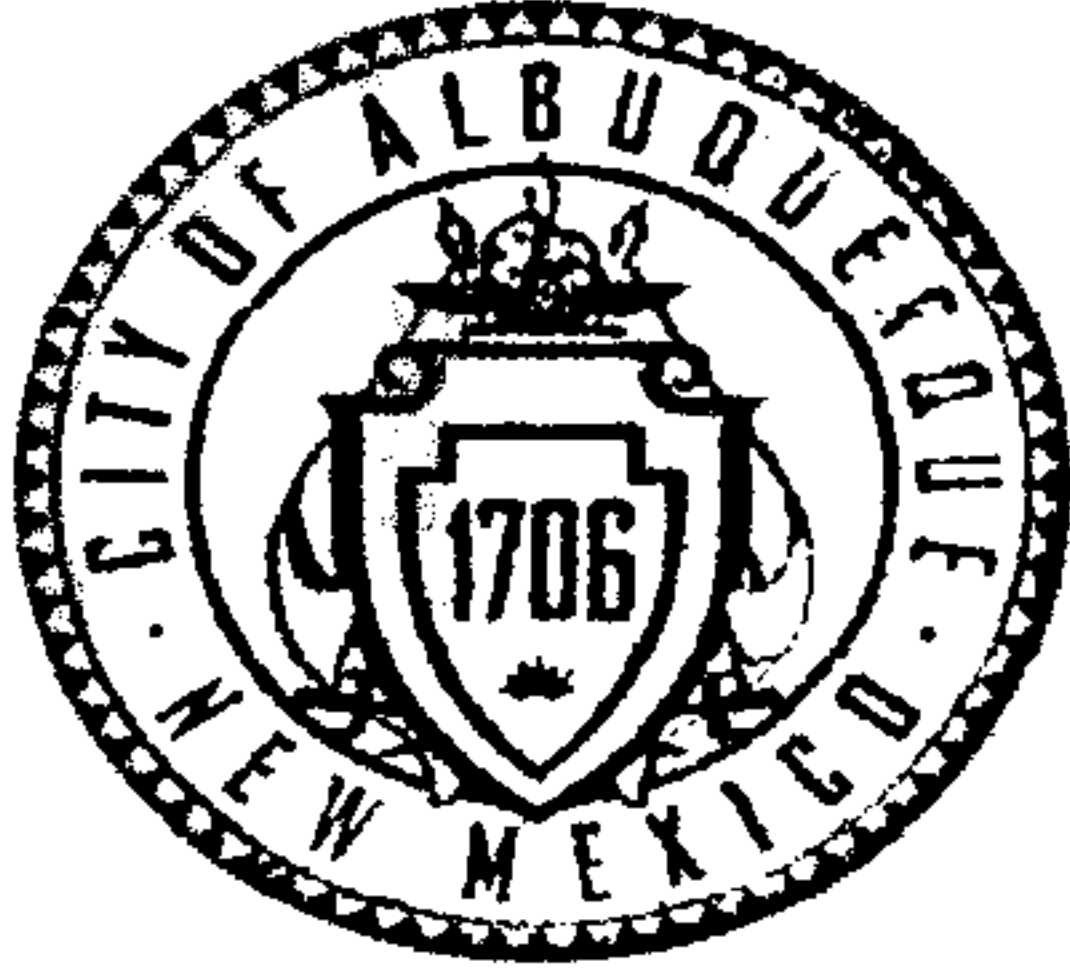
If you have any questions you can contact me at 924-3986.

www.cabq.gov

Sincerely,

Abiel Carrillo, P.E.
Principal Engineer, Planning Dept.
Development Review Services

Orig: Drainage file



City of Albuquerque

Planning Department

Development & Building Services Division

DRAINAGE AND TRANSPORTATION INFORMATION SHEET (REV 09/2015)

Project Title: Beehive Homes at Volcano Cliffs Building Permit #: _____ City Drainage #: E100027

DRB#: _____ EPC#: _____ Work Order#: _____

Legal Description: Lot 0-26, 0-27, 0-28, 0-29, 0-30, AND 0-31 OF THE AMENDED PLAT OF VOLCANO CLIFFS SUBDIVISION UNIT 1

City Address: 6230 Montano Rd NW, Albuquerque, NM 87120

Engineering Firm: Fierro & Company, LLC Contact: Robert Fierro

Address: 5508 Costa Verde Rd, Albuquerque, NM 87120

Phone#: (505) 503-9546 Fax#: _____ E-mail: robertfierro@fierrocompany.com

Owner: 3 HN Healthcare Properties, LLC Contact: Gerald Hamilton

Address: 7612 Rio Penasco Ct NW

Phone#: (505) 270-9989 Fax#: _____ E-mail: jhoward@beehivehomes.com

Architect: RBA Architecture Contact: David McEachem

Address: 1104 Park Ave., SW, Albuquerque, NM 87102

Phone#: (505) 242-1859 Fax#: _____ E-mail: david@rba81.com

Other Contact: _____ Contact: _____

Address: _____

Phone#: _____ Fax#: _____ E-mail: _____

Check all that Apply:

DEPARTMENT:

- ☒ HYDROLOGY/ DRAINAGE
☐ TRAFFIC/ TRANSPORTATION
☐ MS4/ EROSION & SEDIMENT CONTROL

TYPE OF SUBMITTAL:

- ☐ ENGINEER/ ARCHITECT CERTIFICATION
☐ CONCEPTUAL G & D PLAN
☒ GRADING PLAN
☐ DRAINAGE MASTER PLAN
☒ DRAINAGE REPORT
☐ CLOMR/LOMR

☐ TRAFFIC CIRCULATION LAYOUT (TCL)
☐ TRAFFIC IMPACT STUDY (TIS)
☐ EROSION & SEDIMENT CONTROL PLAN (ESC)

☐ OTHER (SPECIFY) _____

IS THIS A RESUBMITTAL?: ☐ Yes ☒ No

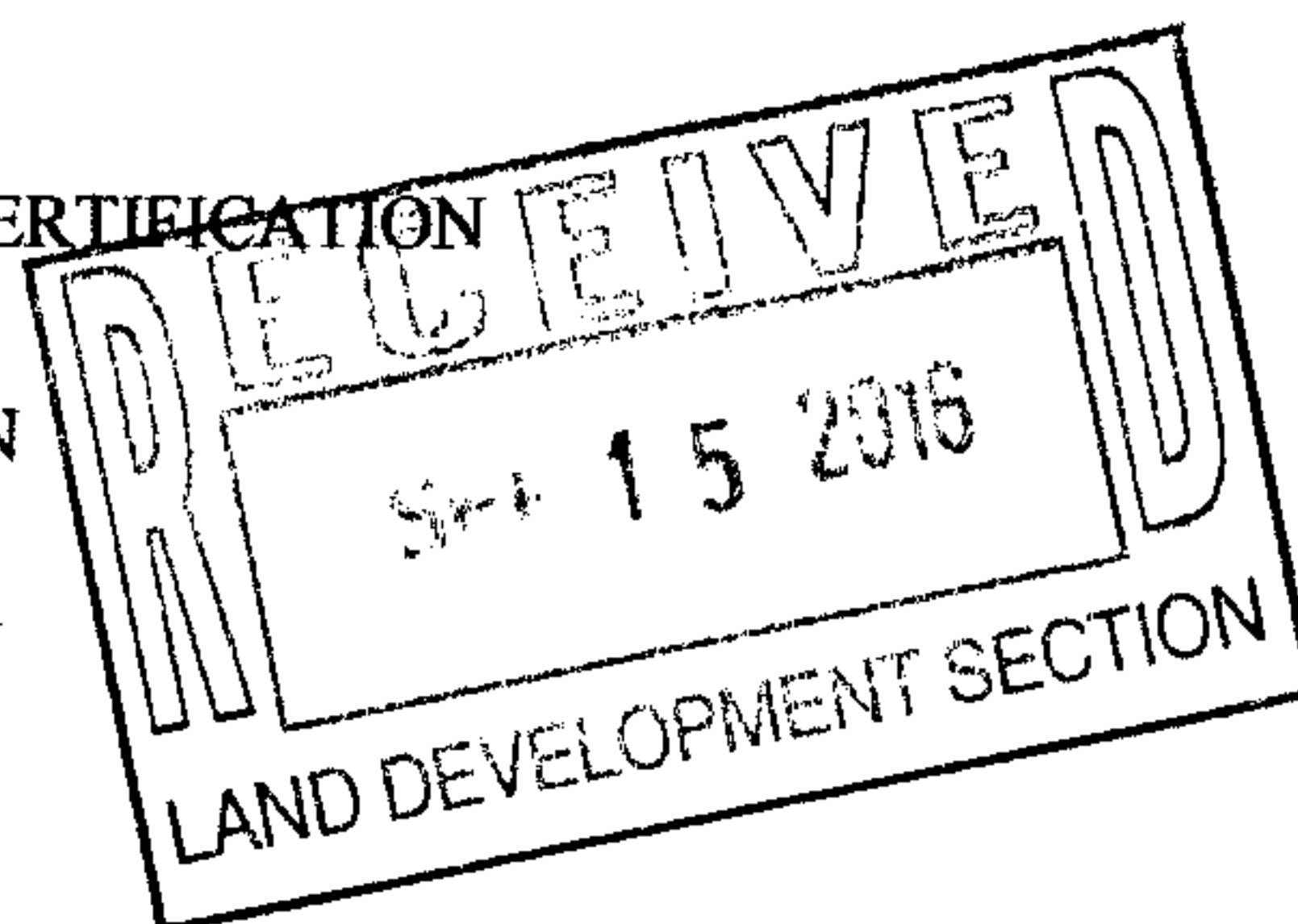
DATE SUBMITTED: 9/9/2016 By: Fierro & Company, LLC

CHECK TYPE OF APPROVAL/ACCEPTANCE SOUGHT:

- ☒ BUILDING PERMIT APPROVAL
☐ CERTIFICATE OF OCCUPANCY

☐ PRELIMINARY PLAT APPROVAL
☐ SITE PLAN FOR SUB'D APPROVAL
☐ SITE PLAN FOR BLDG. PERMIT APPROVAL
☐ FINAL PLAT APPROVAL
☐ SIA/ RELEASE OF FINANCIAL GUARANTEE
☐ FOUNDATION PERMIT APPROVAL
☐ GRADING PERMIT APPROVAL
☐ SO-19 APPROVAL
☐ PAVING PERMIT APPROVAL
☐ GRADING/ PAD CERTIFICATION
☐ WORK ORDER APPROVAL
☐ CLOMR/LOMR

☐ PRE-DESIGN MEETING
☐ OTHER (SPECIFY) _____



\$100.00

COA STAFF: ELECTRONIC SUBMITTAL RECEIVED: _____

***DRAINAGE REPORT
FOR
BEEHIVE HOMES
AT VOLCANO CLIFFS,
LOTS 0-26 through 0-31
VOLCANO CLIFFS, UNIT 1***

Prepared For:

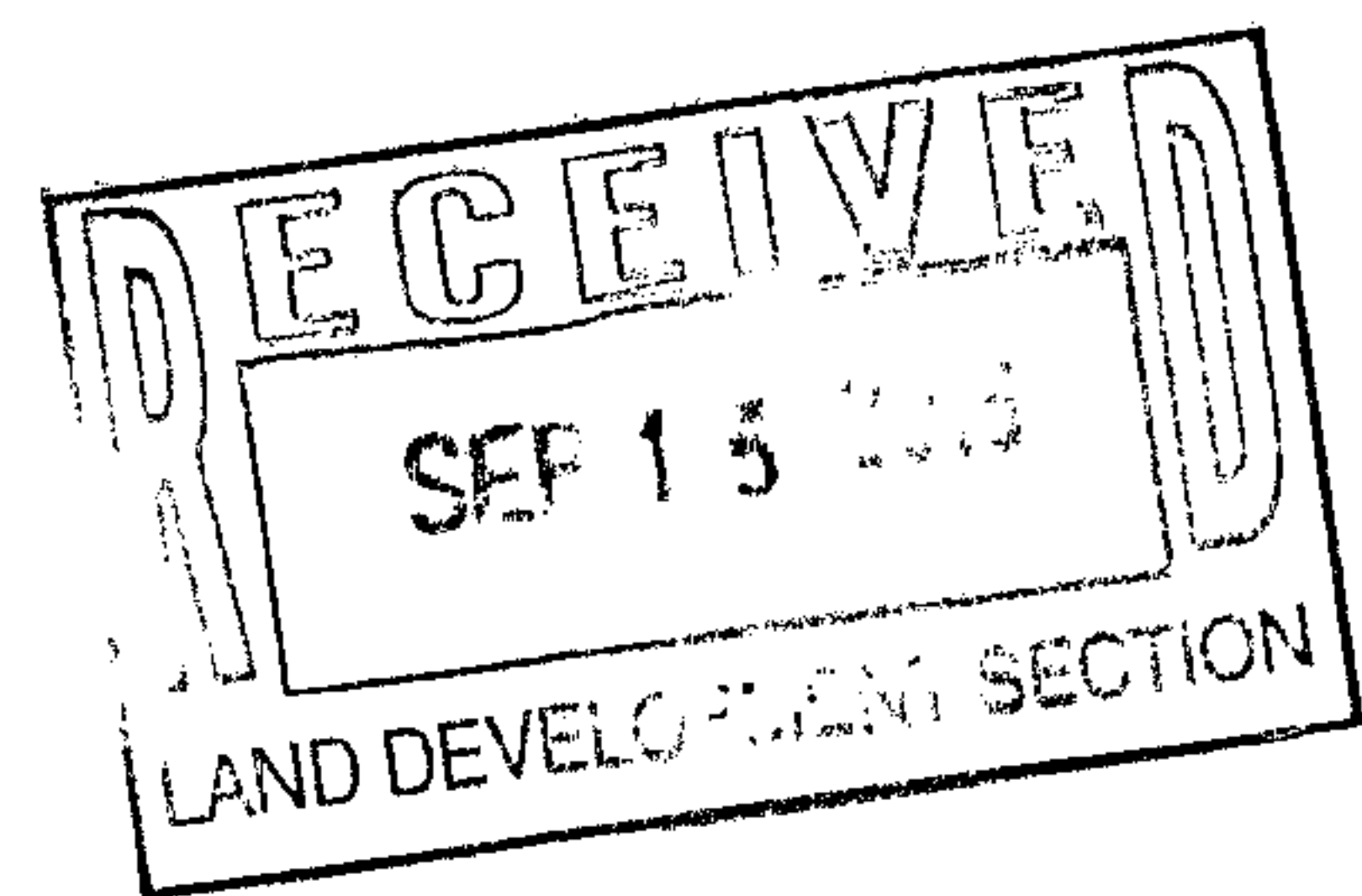
RBA Architects
1104 Park Ave SW
Albuquerque, NM 87102

Prepared by:



Fierro & Company
ENGINEERING | SURVEYING

September 2016



**BEEHIVE HOMES
AT VOLCANO CLIFFS
DRAINAGE REPORT**

September 2016

I, Robert J. Fierro, P.E., do hereby certify that this report was prepared by me or under my direction and that I am a duly registered Professional Engineer under the laws of the State of New Mexico.

Robert J. Fierro

Robert J. Fierro, P.E.
NMPE No. 20585

9-9-16

Date

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PROPOSED CONDITION	2
CONCLUSION	3

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HYDROLOGIC DATA & RESULTS	A
PRECIPITATION DATA	
AHYMO CALCULATIONS – EXISTING CONDITIONS	
AHYMO CALCULATIONS – PROPOSED CONDITIONS	
HYDRAULIC DATA & RESULTS	B
CULVERT REPORT – POND OUTLET	
EXHIBITS	C
SHEET C-3.0: PHASE I GRADING PLAN	
SHEET C-3.1: DETAILS	
SHEET C-3.2: BASIN MAP	

INTRODUCTION

Authorization

RBA Architecture authorized Fierro & Company, LLC to prepare a Grading & Drainage Plan for the Beehive Homes Inc. at Volcano Cliffs project.

Study Area Location

The project is located within Zone Atlas Map: E-10-Z. See Sheet C-3.0.

Purpose

The purpose of this drainage report is to 1) determine the pre-develop and proposed runoff conditions for the 100-year, 6-hour storm event, 2) outline the criteria for development of the site, and 3) demonstrate that the downstream basins will not be inversely impacted by this development.

HYDROLOGY

Methodology

Drainage Basin Delineation

A topographic survey with 1-foot contour intervals was obtained by Harris Surveying, Inc. in October 2015. Spot checks were performed by Fierro & Company, LLC in June 2016. This data was used to delineate the existing basins.

Hydrological Method

Hydrologic procedures presented in the Hydrology Section of the City of Albuquerque's DMP, Section 22.2, revised April 7, 1993 were followed. AHYMO-S4 program was used to produce the peak flow and runoff volume values for the 100-year, 6-hour storm event.

Hydrological Characteristics

Precipitation

Rainfall depths for a range of durations were acquired from National Oceanographic and Atmospheric Administration's (NOAA) Precipitation Frequency Data Server (PFDS), Atlas 14, as shown on Table 1. The PFDS requires a location to be entered and Google Earth was used to obtain the site location in latitude and longitude. The location entered into the PFDS is latitude 35.1525° N, longitude 106.7117° W.

Table 1. NOAA Precipitation Depths (in inches)	
Duration	100-year
15-min	1.01
1-hr	1.69
2-hr	1.93
3-hr	1.98
6-hr	2.15
12-hr	2.24
24-hr	2.49

Existing Condition

The site is vacant, approximately 1.51 acres, and slopes south. A public utility easement is located on the south 7-feet of the property. The site is bound by Montano Road to the north, vacant lots to the east, developed residential lots to the south, and a dental office to the west. An offsite basin with an area of 0.8576 acres drains into the site at the southeast corner. This runoff and the runoff from the site drain to two gate openings located on Lot 6 and Lot 8 of Volcano Cliffs Subdivision, Unit 1. Approximately 2.56 cfs flows through these gates. Refer to Sheet C-3.2 for the existing basins. Refer to the table below for the pre-developed hydrologic results.

Table 2. Pre-developed Hydrologic Data, Peak Discharge, and Volumetric Runoff							
Basin	Area	Land Treatment Percentage (%)				Q100-year, 6-hour	V100-year, 6-hour
	(acres)	A	B	C	D	(cfs)	(acre-ft)
OS1	0.8576	0	100	0	0	1.85	0.052
101	1.515	0	100	0	0	3.27	0.092

Proposed Condition

The site will be developed into senior housing and will be constructed in two phases. This report only covers Phase I development. Phase I includes a 9,000 sq.ft. building, parking lot, water quality features, and a pond. Refer to sheets C-3.0 and C-3.2. Basin 201 will drain to the pond. Basin 202 under Phase I will remain 80% undeveloped and free discharge to the two gate openings.

There are no adverse implications to the two lots that receive runoff from Phase I development. The peak discharge through each gate opening is reduced from 2.56 to 2.18 CFS. The pond also retains the net volume from the existing to proposed condition. Refer to the table below for the post-developed hydrologic results.

Table 3: Proposed Hydrologic Data, Peak Discharge, and Volumetric Runoff							
Basin	Area	Land Treatment Percentage (%)				1000-year, 6-hour (cfs)	100-year, 3-hour (ac-ft)
	(acres)	A	B	C	D		
201	0.7185	0	11.5	8.5	80	2.72	0.100
202	0.7959	0	0	80	20	2.49	0.076

90th Percentile Storm

The City of Albuquerque's Drainage Ordinance 14-15-2-12 is met for this new development. The first flush will be routed through and retained in depressed landscaping. See Sheet C-3.3 for the depressed landscaping areas. Calculations below show compliance to Ordinance 14-15-2-12.

Basin 201

Land Treatment D Area = 25,014 sq.ft.

Water Quality Volume Needed = $25,014 \text{ sq. ft. (.34")} \times \frac{1 \text{ ft}}{12 \text{ in}} = 709 \text{ ft}^3 = 0.01627 \text{ ac-ft}$

Water Quality Volume provided in landscaping = $975 \text{ sq. ft. (3")} \times \frac{1 \text{ ft}}{12 \text{ in}} = 244 \text{ ft}^3 = 0.00560 \text{ ac-ft}$

Water Quality Volume provided in pond = $709 \text{ ft}^3 - 244 \text{ ft}^3 = 465 \text{ ft}^3 = 0.01067 \text{ ac-ft}$

Therefore; Water Quality Volume Provided = Water Quality Volume Required

Basin 202

Land Treatment D Area = 6,465 sq.ft.

Water Quality Volume Needed = $6,465 \text{ sq. ft. (.34")} \times \frac{1 \text{ ft}}{12 \text{ in}} = 183 \text{ ft}^3 = 0.00421 \text{ ac-ft}$

Water Quality Volume provided = $613 \text{ sq. ft. (4")} \times \frac{1 \text{ ft}}{12 \text{ in}} = 204 \text{ ft}^3 = 0.00469 \text{ ac-ft}$

Therefore; Water Quality Volume Provided > Water Quality Volume Required

CONCLUSION

The proposed development meets the City's drainage requirements. Phase I does not increase the peak runoff volume nor peak discharge leaving the site. A grading & drainage plan will be submitted for Phase II. Phase II drainage will discharge approximately 2.56 cfs through each gate opening.

APPENDIX A



NOAA Atlas 14, Volume 1, Version 5
Location name: Albuquerque, New Mexico, US*
Latitude: 35.1525°, Longitude: -106.7117°
Elevation: 5136 ft*
 * source: Google Maps



POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Sarah Dietz, Sarah Heim, Lillian Hiner, Kazungu Maitaria, Deborah Martin, Sandra Pavlovic, Ishani Roy, Carl Trypaluk, Dale Unruh, Fenglin Yan, Michael Yekta, Tan Zhao, Geoffrey Bonnin, Daniel Brewer, Li-Chuan Chen, Tye Parzybok, John Yarchoan

NOAA, National Weather Service, Silver Spring, Maryland

[PF tabular](#) | [PF graphical](#) | [Maps & aerals](#)

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches) ¹										
Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	0.159 (0.136-0.186)	0.206 (0.176-0.241)	0.278 (0.235-0.325)	0.335 (0.284-0.391)	0.411 (0.347-0.480)	0.472 (0.397-0.549)	0.536 (0.448-0.623)	0.605 (0.501-0.703)	0.698 (0.573-0.813)	0.773 (0.629-0.899)
10-min	0.242 (0.207-0.283)	0.314 (0.268-0.367)	0.423 (0.358-0.495)	0.509 (0.433-0.594)	0.626 (0.529-0.730)	0.718 (0.605-0.836)	0.817 (0.682-0.949)	0.921 (0.763-1.07)	1.06 (0.872-1.24)	1.18 (0.957-1.37)
15-min	0.299 (0.257-0.350)	0.389 (0.332-0.455)	0.524 (0.444-0.614)	0.631 (0.536-0.737)	0.776 (0.655-0.905)	0.890 (0.749-1.04)	1.01 (0.846-1.18)	1.14 (0.946-1.33)	1.32 (1.08-1.53)	1.46 (1.19-1.70)
30-min	0.403 (0.346-0.472)	0.524 (0.446-0.612)	0.705 (0.598-0.827)	0.850 (0.722-0.992)	1.05 (0.882-1.22)	1.20 (1.01-1.40)	1.36 (1.14-1.58)	1.54 (1.27-1.79)	1.77 (1.46-2.06)	1.96 (1.60-2.28)
60-min	0.499 (0.428-0.584)	0.648 (0.552-0.758)	0.873 (0.740-1.02)	1.05 (0.894-1.23)	1.29 (1.09-1.51)	1.48 (1.25-1.73)	1.69 (1.41-1.96)	1.90 (1.58-2.21)	2.19 (1.80-2.55)	2.43 (1.98-2.83)
2-hr	0.585 (0.503-0.680)	0.747 (0.641-0.870)	0.992 (0.848-1.15)	1.19 (1.01-1.37)	1.47 (1.24-1.68)	1.69 (1.42-1.94)	1.93 (1.61-2.21)	2.18 (1.80-2.49)	2.53 (2.08-2.90)	2.82 (2.29-3.23)
3-hr	0.620 (0.543-0.720)	0.790 (0.689-0.918)	1.04 (0.908-1.20)	1.24 (1.08-1.43)	1.51 (1.30-1.74)	1.74 (1.49-2.00)	1.98 (1.69-2.27)	2.24 (1.89-2.57)	2.59 (2.16-2.98)	2.88 (2.38-3.32)
6-hr	0.717 (0.630-0.823)	0.909 (0.802-1.04)	1.18 (1.04-1.35)	1.39 (1.22-1.59)	1.68 (1.47-1.92)	1.91 (1.66-2.17)	2.15 (1.85-2.44)	2.40 (2.05-2.72)	2.75 (2.33-3.13)	3.04 (2.55-3.47)
12-hr	0.793 (0.702-0.897)	1.00 (0.886-1.13)	1.28 (1.12-1.44)	1.50 (1.31-1.69)	1.78 (1.56-2.01)	2.01 (1.75-2.26)	2.24 (1.94-2.52)	2.49 (2.14-2.80)	2.82 (2.40-3.17)	3.09 (2.61-3.49)
24-hr	0.917 (0.810-1.04)	1.15 (1.02-1.31)	1.45 (1.28-1.64)	1.68 (1.48-1.90)	1.99 (1.75-2.26)	2.24 (1.96-2.52)	2.49 (2.17-2.81)	2.75 (2.38-3.09)	3.10 (2.67-3.48)	3.37 (2.89-3.79)
2-day	0.947 (0.845-1.06)	1.19 (1.06-1.33)	1.49 (1.33-1.66)	1.72 (1.53-1.92)	2.04 (1.81-2.27)	2.28 (2.02-2.54)	2.53 (2.23-2.82)	2.78 (2.44-3.10)	3.12 (2.73-3.51)	3.39 (2.94-3.82)
3-day	1.10 (0.993-1.21)	1.37 (1.24-1.51)	1.69 (1.53-1.87)	1.95 (1.76-2.15)	2.29 (2.06-2.52)	2.55 (2.29-2.81)	2.81 (2.52-3.10)	3.08 (2.75-3.39)	3.44 (3.05-3.80)	3.71 (3.28-4.11)
4-day	1.25 (1.14-1.36)	1.55 (1.42-1.69)	1.90 (1.73-2.07)	2.17 (1.98-2.37)	2.54 (2.31-2.77)	2.82 (2.56-3.08)	3.10 (2.81-3.38)	3.38 (3.06-3.68)	3.75 (3.38-4.09)	4.03 (3.61-4.40)
7-day	1.43 (1.30-1.55)	1.77 (1.62-1.92)	2.15 (1.97-2.33)	2.44 (2.24-2.65)	2.83 (2.59-3.07)	3.12 (2.85-3.38)	3.40 (3.11-3.69)	3.68 (3.35-3.98)	4.03 (3.67-4.37)	4.29 (3.89-4.66)
10-day	1.58 (1.45-1.72)	1.95 (1.80-2.13)	2.39 (2.20-2.59)	2.73 (2.51-2.96)	3.18 (2.92-3.43)	3.51 (3.22-3.79)	3.85 (3.52-4.16)	4.18 (3.81-4.51)	4.60 (4.18-4.97)	4.91 (4.45-5.32)
20-day	1.97 (1.80-2.15)	2.44 (2.24-2.66)	2.96 (2.72-3.22)	3.35 (3.08-3.64)	3.85 (3.53-4.17)	4.21 (3.85-4.56)	4.55 (4.16-4.92)	4.88 (4.45-5.27)	5.28 (4.81-5.71)	5.56 (5.06-6.02)
30-day	2.35 (2.15-2.54)	2.91 (2.67-3.15)	3.49 (3.21-3.78)	3.93 (3.60-4.24)	4.46 (4.10-4.81)	4.84 (4.44-5.21)	5.20 (4.77-5.60)	5.54 (5.07-5.95)	5.93 (5.42-6.38)	6.20 (5.67-6.68)
45-day	2.87 (2.65-3.10)	3.55 (3.28-3.84)	4.22 (3.90-4.56)	4.70 (4.34-5.07)	5.28 (4.87-5.69)	5.67 (5.23-6.11)	6.02 (5.56-6.47)	6.32 (5.84-6.80)	6.65 (6.15-7.15)	6.84 (6.35-7.35)
60-day	3.29 (3.04-3.57)	4.08 (3.76-4.41)	4.85 (4.48-5.24)	5.40 (4.99-5.83)	6.06 (5.61-6.53)	6.51 (6.02-7.01)	6.92 (6.40-7.45)	7.27 (6.73-7.84)	7.67 (7.11-8.27)	7.91 (7.35-8.52)

¹ Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS). Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values. Please refer to NOAA Atlas 14 document for more information.

[Back to Top](#)

*S BEEHIVE LOTS 0-26 TO 0-31
 *S Drainage Basin Analysis
 *S "Existing" CONDITION MODEL
 *S COMBINED BASIN ANALYSIS
 *

START TIME=0.0 PUNCH CODE=0 PRINT CODE=0
 LOCATION City of Albuquerque
 *

* RAINFALL FROM NOAA COA DEVELOPMENT PROCESS MANUAL

*S RAINFALL DATA FROM NOAA ATLAS 14

*S*****

*S 100 YEAR 6HR STORM EXISTING CONDITION

RAINFALL TYPE=1
 QUARTER=1.01 IN
 HOUR= 1.69 IN
 SIX HR= 2.15 IN
 DAY= 2.49 IN DT=0.01

*
 ****Adding Sediment Bulk Factor to all Basins

SEDIMENT BULK CODE=1 BULK FACTOR=1.00

*
 *S*****

*** BASIN OS1 ****

*
 COMPUTE LT TP LCODE=1 UPLAND/LAG TIME METHOD
 NK=1 ISLOPE=1
 LENGTH=315 FT SLOPE=0.015 K=0.7
 KN=0.05 CENTROID DIST=.5
 COMPUTE NM HYD ID=1 HYD NO=OS1 DA=0.00134 SQ MI
 PER A=0 PER B=100 PER C=0 PER D=0
 TP=0.0 MASSRAIN=-1

*
 PRINT HYD ID=1 CODE=1
 *

*** BASIN 101 ****

*
 COMPUTE LT TP LCODE=1 UPLAND/LAG TIME METHOD
 NK=1 ISLOPE=1
 LENGTH=315 FT SLOPE=0.01 K=0.7
 KN=0.05 CENTROID DIST=.5
 COMPUTE NM HYD ID=2 HYD NO=101 DA=0.00237 SQ MI
 PER A=0 PER B=100 PER C=0 PER D=0
 TP=0.0 MASSRAIN=-1

*
 PRINT HYD ID=2 CODE=1
 *

*
 * Total Flow from Basin (OS1 + 101)
 ADD HYD ID=1 HYD NO=101SUM ID I=1 ID II=2
 PRINT HYD ID=1 CODE=1
 *

*
 FINISH

16220E

AHYMO PROGRAM SUMMARY TABLE (AHYMO-S4)

- Ver. S4.01a, Rel: 01a

RUN DATE (MON/DAY/YR) =09/08/2016

INPUT FILE = \\Seagate-4004ED\Public\PROJECTS\SURVEYING\162020\AE DATA\AHYMO\16220E.txt

USER NO.= Fierro-NMSingleA32007641

COMMAND	HYDROGRAPH IDENTIFICATION	FROM ID NO.	TO ID NO.	AREA (SQ MI)	PEAK DISCHARGE (CFS)	RUNOFF VOLUME (AC-FT)	RUNOFF (INCHES)	TIME TO PEAK (HOURS)	CFS PER ACRE	PAGE = 1	NOTATION
*S	BEEHIVE LOTS 0-26 TO 0-31										
*S	Drainage Basin Analysis										
*S	"Existing" CONDITION MODEL										
*S	COMBINED BASIN ANALYSIS										
START											
LOCATION			DEFAULT							TIME=	0.00
*S	RAINFALL DATA FROM NOAA ATLAS 14										
*S	*****										
*S	100 YEAR 6HR STORM EXISTING CONDITION										
RAINFALL	TYPE= 1 NOAA 14									RAIN6=	2.150
SEDIMENT BULK										PK BF =	1.00
*S	*****										
COMPUTE NM HYD	OS1	-	1	0.00134	1.85	0.052	0.72521	1.540	2.157	PER IMP=	0.00
COMPUTE NM HYD	101.00	-	2	0.00237	3.27	0.092	0.72521	1.540	2.153	PER IMP=	0.00
ADD HYD	101SUM	1&	2 1	0.00371	5.12	0.143	0.72518	1.540	2.154		
FINISH											

16220P

*S BEEHIVE LOTS 0-26 TO 0-31
*S Drainage Basin Analysis
*S "Proposed" CONDITION MODEL
*S COMBINED BASIN ANALYSIS
*

START TIME=0.0 PUNCH CODE=0 PRINT CODE=0
LOCATION City of Albuquerque
*

* RAINFALL FROM NOAA COA DEVELOPMENT PROCESS MANUAL
*S RAINFALL DATA FROM NOAA ATLAS 14

*S*****

*S 100 YEAR 6HR STORM PROPOSED CONDITION

RAINFALL TYPE=1
QUARTER=1.01 IN
HOUR= 1.69 IN
SIX HR= 2.15 IN
DAY= 2.49 IN DT=0.01

*
****Adding Sediment Bulk Factor to all Basins
SEDIMENT BULK CODE=1 BULK FACTOR=1.00

*
*S*****
*S*****
*

*
*** BASIN OS1 ***
*

COMPUTE LT TP LCODE=1 UPLAND/LAG TIME METHOD
NK=1 ISLOPE=1
LENGTH=315 FT SLOPE=0.015 K=0.7
KN=0.05 CENTROID DIST=.5
COMPUTE NM HYD ID=1 HYD NO=OS1 DA=0.00134 SQ MI
PER A=0 PER B=100 PER C=0 PER D=0
TP=0.0 MASSRAIN=-1

*
PRINT HYD ID=1 CODE=1
*

*** BASIN 201 ***
*

COMPUTE LT TP LCODE=1 UPLAND/LAG TIME METHOD
NK=2 ISLOPE=1
LENGTH=100 FT SLOPE=0.06 K=0.7
LENGTH=240 FT SLOPE=0.005 K=2.0
KN=0.05 CENTROID DIST=.5
COMPUTE NM HYD ID=2 HYD NO=201 DA=0.00112 SQ MI
PER A=0 PER B=11.5 PER C=8.5 PER D=80
TP=0.0 MASSRAIN=-1

*
PRINT HYD ID=2 CODE=1
*

*
*
*
*
*
*

16220P

*S Route through Pond. WQ Volume from 5135.3 to 5135.60 =0.011 ac-ft

*

ROUTE RESERVOIR	ID=30	HYD NO=Pond	INFLOW ID=2	CODE=1
	OUTFLOW (CFS)		STORAGE (AC FT)	ELEV
	0.0		0.00	5135.60
	0.01		0.039	5136.60
	0.02		0.077	5137.60
	0.15		0.093	5138.00
	0.25		0.097	5138.10
	0.40		0.104	5138.30

*

*

* Total Flow from Basin (OS1 + 201)

ADD HYD ID=1 HYD NO=201SUM ID I=1 ID II=30

PRINT HYD ID=1 CODE=1

*

*

*** BASIN 202 ****

*

COMPUTE LT TP LCODE=1 UPLAND/LAG TIME METHOD
NK=1 ISLOPE=1
LENGTH=250 FT SLOPE=0.01 K=0.7
KN=0.05 CENTROID DIST=.5
COMPUTE NM HYD ID=2 HYD NO=202 DA=0.001244 SQ MI
PER A=0 PER B=0 PER C=80 PER D=20
TP=0.0 MASSRAIN=-1

*

PRINT HYD ID=2 CODE=1

*

* Total Flow from Basin (201SUM + 202)

ADD HYD ID=1 HYD NO=202SUM ID I=1 ID II=2

PRINT HYD ID=1 CODE=1

*

*

*

*

FINISH

16220P AHYMO

AHYMO PROGRAM SUMMARY TABLE (AHYMO-S4)

- Ver. S4.01a, Rel: 01a

RUN DATE (MON/DAY/YR) =09/09/2016

INPUT FILE = \\Seagate-4004ED\Public\PROJECTS\SURVEYING\162020\AE DATA\AHYMO\16220P.txt

USER NO.= Fierro-NMSingleA32007641

COMMAND	HYDROGRAPH IDENTIFICATION	FROM ID NO.	TO ID NO.	AREA (SQ MI)	PEAK DISCHARGE (CFS)	RUNOFF VOLUME (AC-FT)	RUNOFF (INCHES)	TIME TO PEAK (HOURS)	CFS PER ACRE	PAGE = 1	NOTATION
*S	BEEHIVE LOTS 0-26 TO 0-31										
*S	Drainage Basin Analysis										
*S	"Proposed" CONDITION MODEL										
*S	COMBINED BASIN ANALYSIS										
START										TIME=	0.00
LOCATION			DEFAULT								
*S	RAINFALL DATA FROM NOAA ATLAS 14										
*S	*****										
*S	100 YEAR 6HR STORM PROPOSED CONDITION										
RAINFALL	TYPE= 1 NOAA 14									RAIN6=	2.150
SEDIMENT BULK										PK BF =	1.00
*S	*****										
*S	*****										
COMPUTE NM HYD	OS1 - 1	0.00134	1.85	0.052	0.72521	1.540	2.157	PER IMP=	0.00		
COMPUTE NM HYD	201.00 - 2	0.00112	2.72	0.100	1.68104	1.530	3.799	PER IMP=	80.00		
*S	Route through Pond. WQ Volume from 5135.3 to 5135.60 =0.011 ac-ft										
ROUTE RESERVOIR	Pond 2 30	0.00112	0.12	0.063	1.04912	2.430	0.164	AC-FT=	0.089		
ADD HYD	201SUM 1&30 1	0.00246	1.86	0.114	0.87266	1.540	1.182				
COMPUTE NM HYD	202.00 - 2	0.00124	2.49	0.076	1.14143	1.530	3.134	PER IMP=	20.00		
ADD HYD	202SUM 1& 2 1	0.00370	4.35	0.190	0.96286	1.540	1.834				
FINISH											

APPENDIX B

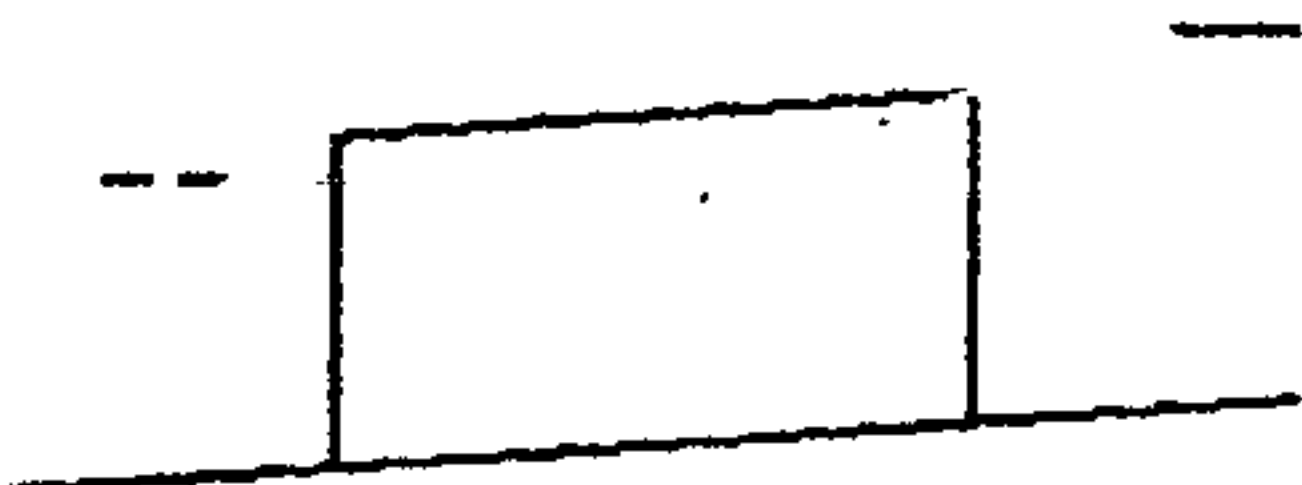
Culvert Report

4in PVC Pond Outlet

Invert Elev Dn (ft)	=	5137.60
Pipe Length (ft)	=	2.00
Slope (%)	=	2.49
Invert Elev Up (ft)	=	5137.65
Rise (in)	=	4.0
Shape	=	Circular
Span (in)	=	4.0
No. Barrels	=	1
n-Value	=	0.012
Culvert Type	=	Circular Culvert
Culvert Entrance	=	Smooth tapered inlet throat
Coeff. K,M,c,Y,k	=	0.534, 0.555, 0.0196, 0.9, 0.2

Embankment		
Top Elevation (ft)	=	5138.30
Top Width (ft)	=	1.00
Crest Width (ft)	=	3.00

Calculations		
Qmin (cfs)	=	0.00
Qmax (cfs)	=	0.50
Tailwater Elev (ft)	=	(dc+D)/2
Highlighted		
Qtotal (cfs)	=	0.20
Qpipe (cfs)	=	0.20
Qovertop (cfs)	=	0.00
Veloc Dn (ft/s)	=	2.46
Veloc Up (ft/s)	=	2.79
HGL Dn (ft)	=	5137.89
HGL Up (ft)	=	5137.91
Hw Elev (ft)	=	5138.05
Hw/D (ft)	=	1.20
Flow Regime	=	Inlet Control



CITY OF ALBUQUERQUE



July 25, 2016

Richard R. Bennett
RBA Architecture, PC
1104 Park Ave., SW
Albuquerque, NM

Re: Beehive at Montano
Traffic Circulation Layout
Engineer's/Architect's Stamp dated 7-12-16 (E10-D027)

Dear Mr. Bennett,

The TCL submittal received 07-25-16 is approved for Building Permit. A copy of the stamped and signed plan will be needed for each of the building permit plans. Please keep the original to be used for certification of the site for final C.O. for Transportation.

When the site construction is completed and a Certificate of Occupancy (C.O.) is requested, use the original City stamped approved TCL for certification. Redline any minor changes and adjustments that were made in the field. A NM registered architect or engineer must stamp, sign, and date the certification TCL along with indicating that the development was built in "substantial compliance" with the TCL. Submit this certification TCL with a completed Drainage and Transportation Information Sheet to front counter personnel for log in and evaluation by Transportation.

Once verification of certification is completed and approved, notification will be made to Building Safety to issue Final C.O. To confirm that a final C.O. has been issued, call Building Safety at 924-3690.

Sincerely,

Racquel M. Michel, P.E.
Traffic Engineer, Planning Dept.
Development Review Services

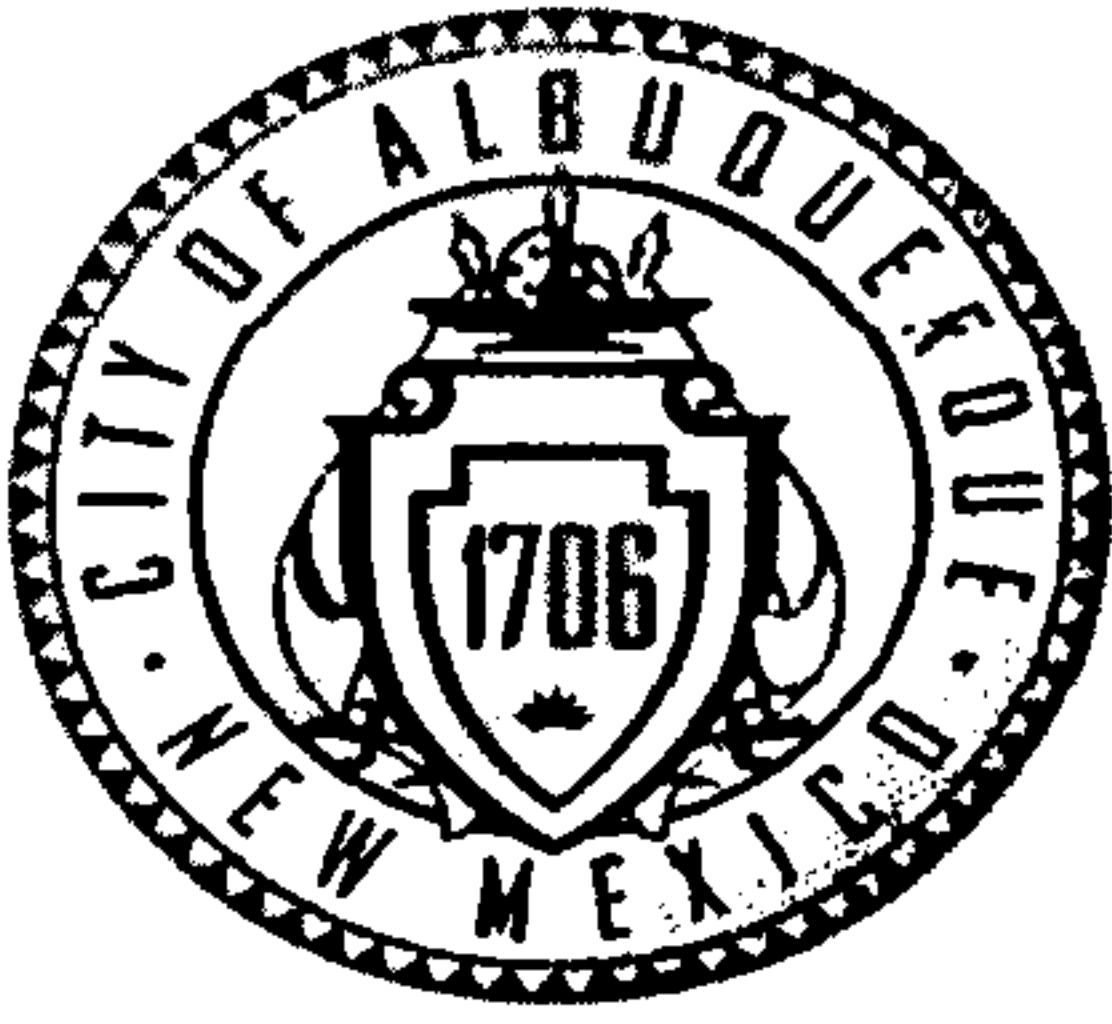
mao via: email
C: CO Clerk, File

PO Box 1293

Albuquerque

New Mexico 87103

www.cabq.gov



City of Albuquerque

Planning Department

Development & Building Services Division

DRAINAGE AND TRANSPORTATION INFORMATION SHEET (REV 09/2015)

Project Title: Beehive at Montano Building Permit #: _____ City Drainage #: E10D027

DRB#: _____ EPC#: _____ Work Order#: _____

Legal Description: Lots 0-26 through 0-31, Volcano Cliffs, Unit 1

City Address: 6230 Montano Rd NW Abq, Nm 87120

Engineering Firm: _____ Contact: _____

Address: _____

Phone#: _____ Fax#: _____ E-mail: _____

Owner: _____ Contact: _____

Address: _____

Phone#: _____ Fax#: _____ E-mail: _____

Architect: RBA Architecture, PC Contact: David

Address: 1104 Park Ave Sw Albuquerque, NM 87102

Phone#: 242-1859 Fax#: _____ E-mail: david@rba81.com

Other Contact: _____ Contact: _____

Address: _____

Phone#: _____ Fax#: _____ E-mail: _____

Check all that Apply:

DEPARTMENT:

- ☐ HYDROLOGY/ DRAINAGE
☐ TRAFFIC/ TRANSPORTATION
☐ MS4/ EROSION & SEDIMENT CONTROL

TYPE OF SUBMITTAL:

- ☐ ENGINEER/ ARCHITECT CERTIFICATION
- ☐ CONCEPTUAL G & D PLAN
☐ GRADING PLAN
☐ DRAINAGE MASTER PLAN
☐ DRAINAGE REPORT
☐ CLOMR/LOMR
- ☒ TRAFFIC CIRCULATION LAYOUT (TCL)
☐ TRAFFIC IMPACT STUDY (TIS)
☐ EROSION & SEDIMENT CONTROL PLAN (ESC)

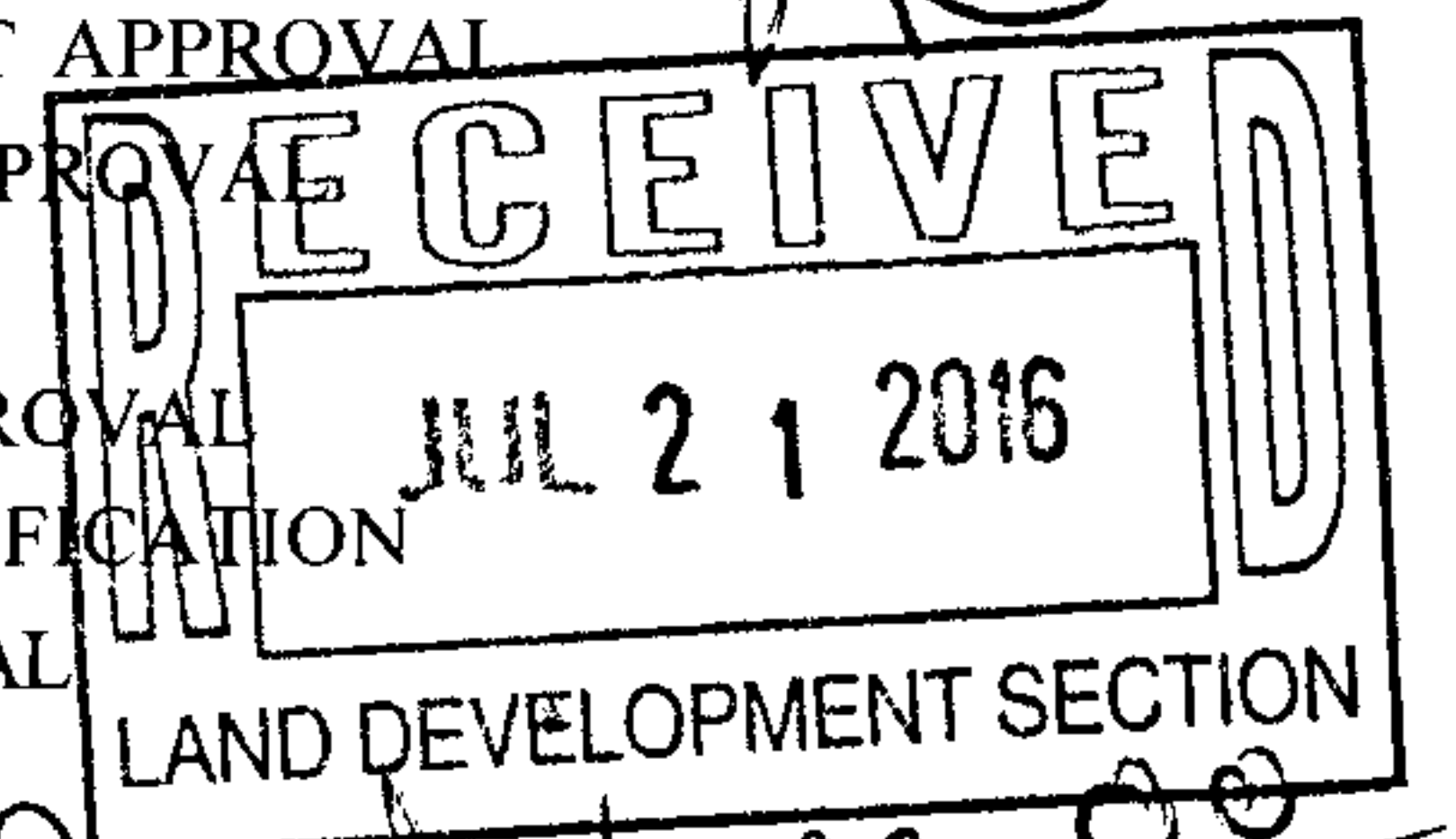
☐ OTHER (SPECIFY) _____

IS THIS A RESUBMITTAL?: ☒ Yes ☐ No

DATE SUBMITTED: 7-21-2016 By: David McEachern 

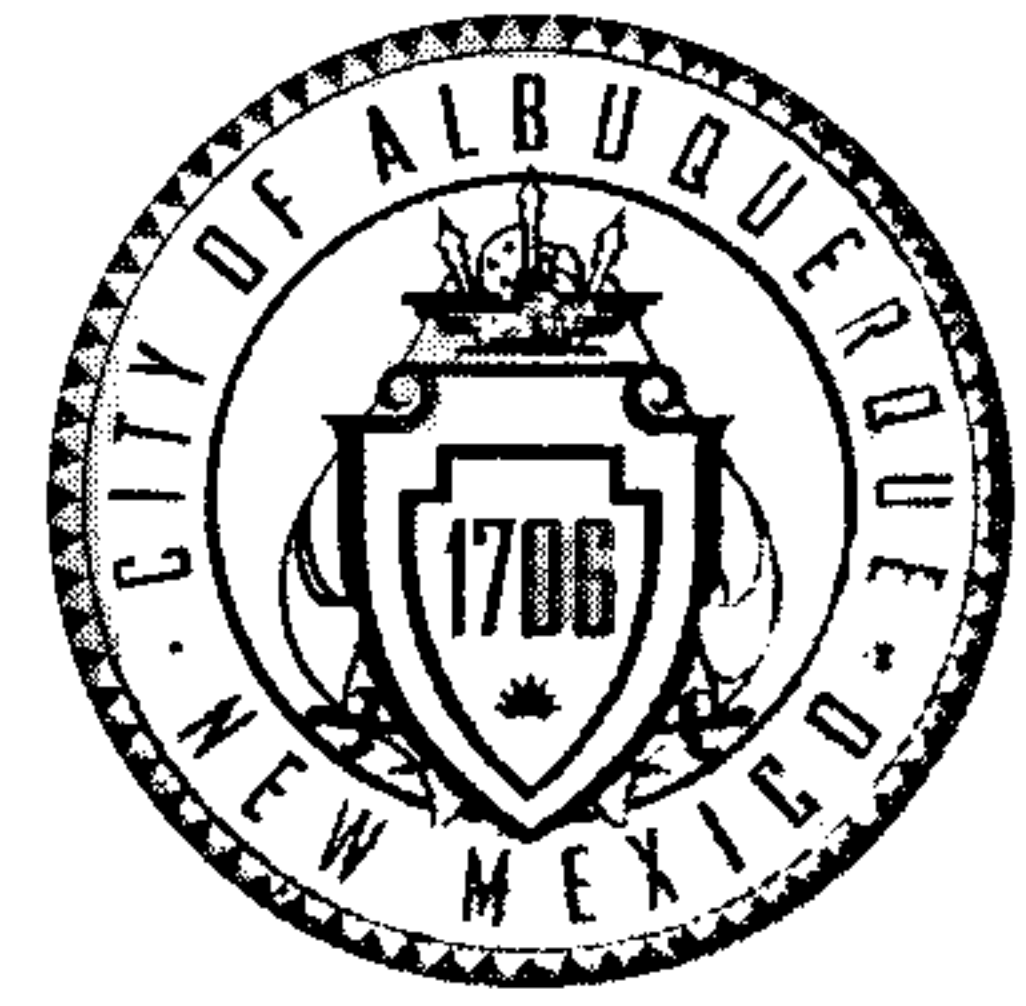
CHECK TYPE OF APPROVAL/ACCEPTANCE SOUGHT:

- ☐ BUILDING PERMIT APPROVAL
☐ CERTIFICATE OF OCCUPANCY
- ☐ PRELIMINARY PLAT APPROVAL
☐ SITE PLAN FOR SUB'D APPROVAL
☐ SITE PLAN FOR BLDG. PERMIT APPROVAL
☐ FINAL PLAT APPROVAL
☐ SIA/ RELEASE OF FINANCIAL GUARANTEE
☐ FOUNDATION PERMIT APPROVAL
☐ GRADING PERMIT APPROVAL
☐ SO-19 APPROVAL
☐ PAVING PERMIT APPROVAL
☐ GRADING/ PAD CERTIFICATION
☐ WORK ORDER APPROVAL
☐ CLOMR/LOMR
- ☐ PRE-DESIGN MEETING
☐ OTHER (SPECIFY) _____



COA STAFF: _____ ELECTRONIC SUBMITTAL RECEIVED: _____

CITY OF ALBUQUERQUE



July 20, 2016

David McEachern
RBA Architecture, PC
1104 Park Ave., SW
Albuquerque, NM

**Re: Beehive at Montano
Traffic Circulation Layout**
Engineer's/Architect's Stamp dated 7-19-16 (E10-D027)

Dear Mr. McEachern,

Based upon the information provided in your submittal received 7-19-16, the above referenced plan cannot be approved for Building Permit until the following comments are addressed:

1. Please review and revise plan to align the north east curb cut on Montano Rd. to the existing medians.
2. Please include two copies of the traffic circulation layout at the next submittal.

PO Box 1293

Resubmit acceptable package along with fully completed Drainage Transportation Information Sheet to front counter personnel for log in and evaluation by Transportation. If you have any questions, please contact Monic Ortiz (505) 924-3981 or me at 924-3991.

Albuquerque

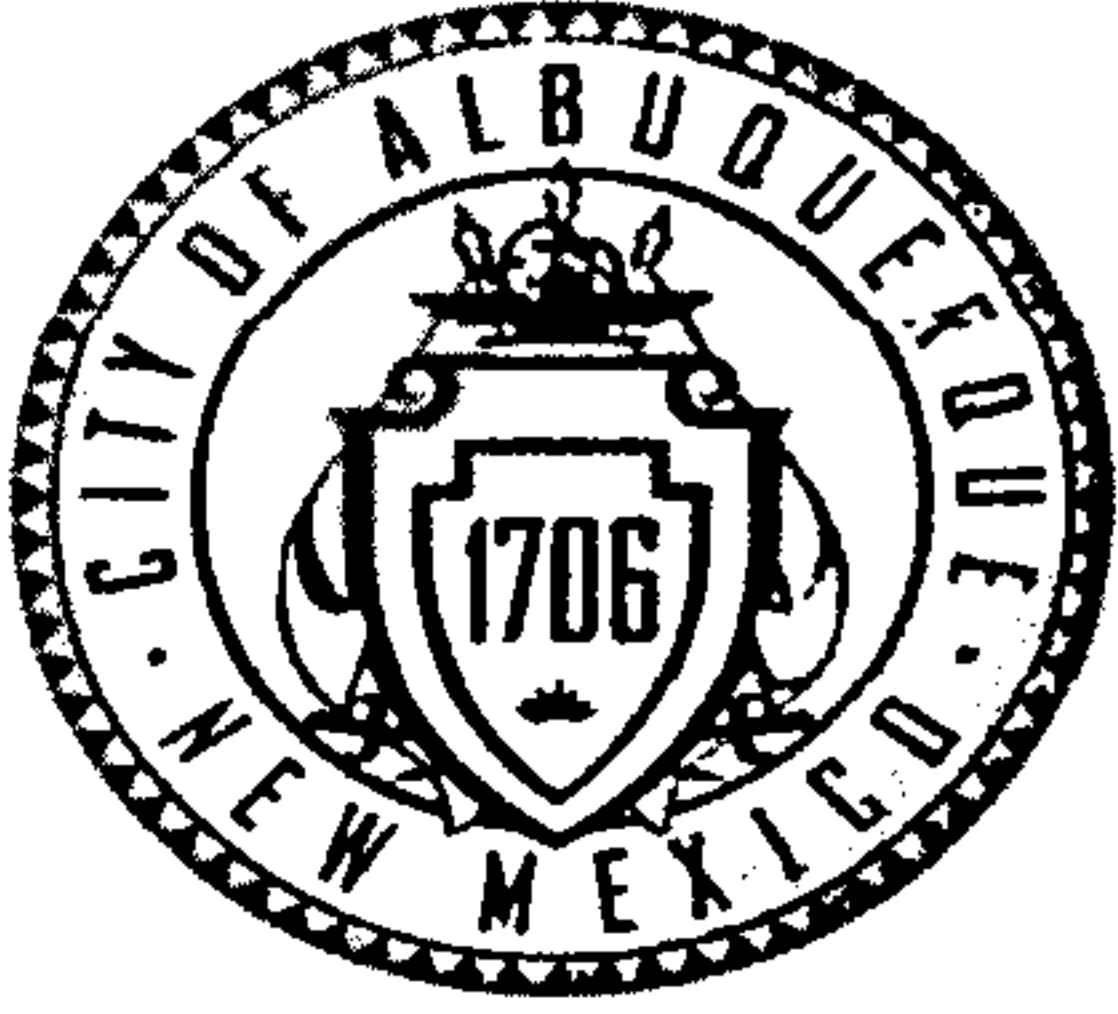
Sincerely,

New Mexico 87103

Racquel M. Michel, P.E.
Traffic Engineer, Planning Dept.
Development Review Services

www.cabq.gov

\gs via: email
C: CO Clerk, File



City of Albuquerque

Planning Department

Development & Building Services Division

DRAINAGE AND TRANSPORTATION INFORMATION SHEET (REV 09/2015)

Project Title: Beehive at Montano Building Permit #: _____ City Drainage #: E10D027
DRB#: _____ EPC#: _____ Work Order#: _____
Legal Description: Lots 0-26 through 0-31, Volcano Cliffs, Unit 1
City Address: _____

Engineering Firm: _____ Contact: _____
Address: _____
Phone#: _____ Fax#: _____ E-mail: _____

Owner: _____ Contact: _____
Address: _____
Phone#: _____ Fax#: _____ E-mail: _____

Architect: RBA Architecture, PC Contact: David
Address: 1104 Park Ave Sw Albuquerque, NM 87102
Phone#: 242-1859 Fax#: _____ E-mail: david@rba81.com

Other Contact: _____ Contact: _____
Address: _____
Phone#: _____ Fax#: _____ E-mail: _____

Check all that Apply:

DEPARTMENT:

☐ HYDROLOGY/ DRAINAGE
☐ TRAFFIC/ TRANSPORTATION
☐ MS4/ EROSION & SEDIMENT CONTROL

TYPE OF SUBMITTAL:

☐ ENGINEER/ ARCHITECT CERTIFICATION

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☐ TRAFFIC IMPACT STUDY (TIS)
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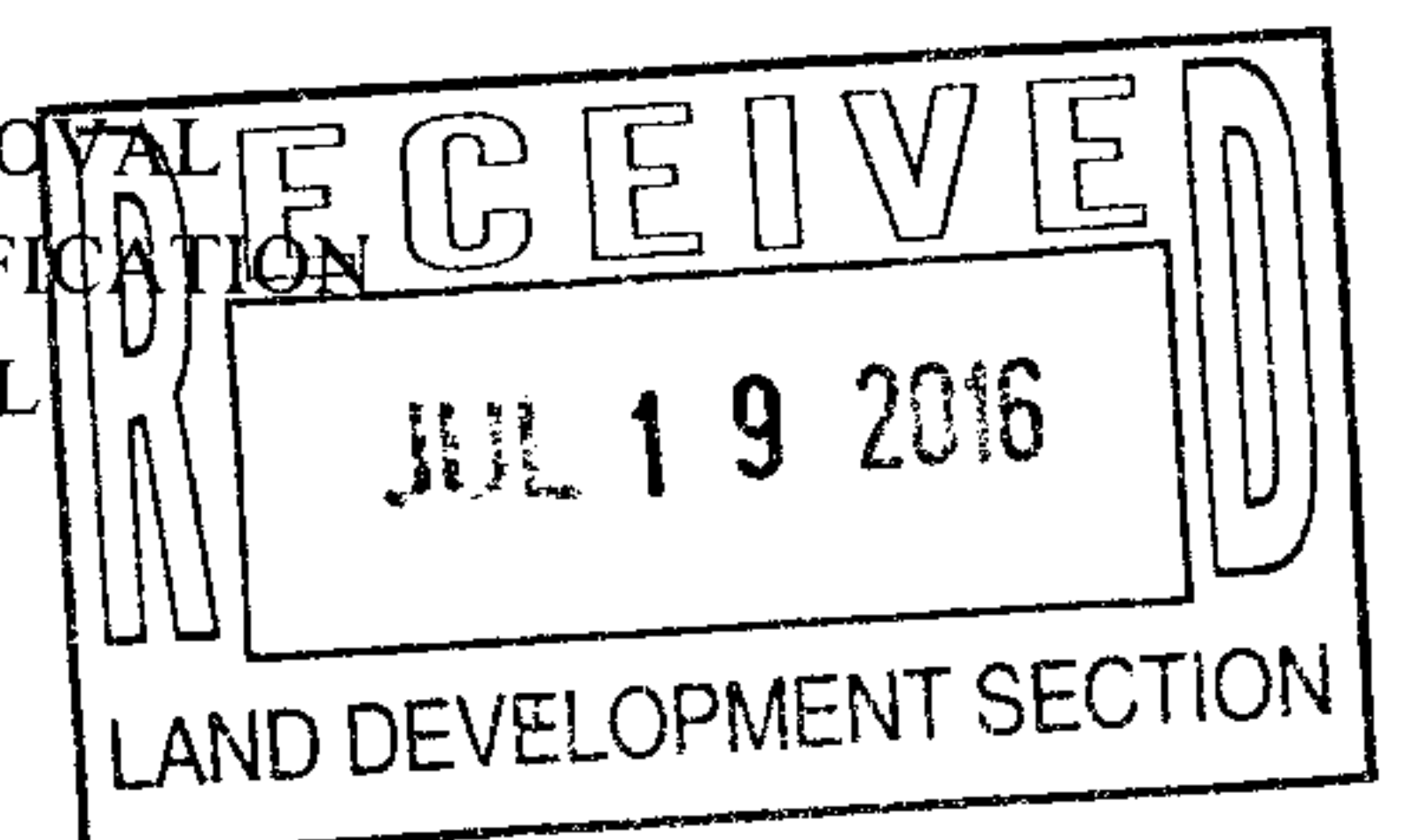
☐ OTHER (SPECIFY) _____

CHECK TYPE OF APPROVAL/ACCEPTANCE SOUGHT:

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☐ PAVING PERMIT APPROVAL
☐ GRADING/ PAD CERTIFICATION
☐ WORK ORDER APPROVAL
☐ CLOMR/LOMR

☐ PRE-DESIGN MEETING
☐ OTHER (SPECIFY) _____



IS THIS A RESUBMITTAL?: ☒ Yes ☐ No

DATE SUBMITTED: 7/19/16 By: David

COA STAFF: ELECTRONIC SUBMITTAL RECEIVED: _____



City of Albuquerque

Planning Department

Development & Building Services Division

DRAINAGE AND TRANSPORTATION INFORMATION SHEET (REV 09/2015)

7/19/16
Verbal NO

Project Title: Beehive at Montano Building Permit #: _____ City Drainage #: E10D027
DRB#: _____ EPC#: _____ Work Order#: _____
Legal Description: Lots 0-26 through 0-31, Volcano Cliffs, Unit 1
City Address: _____

Engineering Firm: _____ Contact: _____
Address: _____
Phone#: _____ Fax#: _____ E-mail: _____

Owner: _____ Contact: _____
Address: _____
Phone#: _____ Fax#: _____ E-mail: _____

Architect: RBA Architecture, PC Contact: David
Address: 1104 Park Ave Sw Albuquerque, NM 87102
Phone#: 242-1859 Fax#: _____ E-mail: david@rba81.com

Other Contact: _____ Contact: _____
Address: _____
Phone#: _____ Fax#: _____ E-mail: _____

Check all that Apply:

DEPARTMENT:

☐ HYDROLOGY/ DRAINAGE
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TYPE OF SUBMITTAL:

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☐ TRAFFIC IMPACT STUDY (TIS)
☐ EROSION & SEDIMENT CONTROL PLAN (ESC)

☐ OTHER (SPECIFY) _____

IS THIS A RESUBMITTAL?: ☐ Yes ☒ No

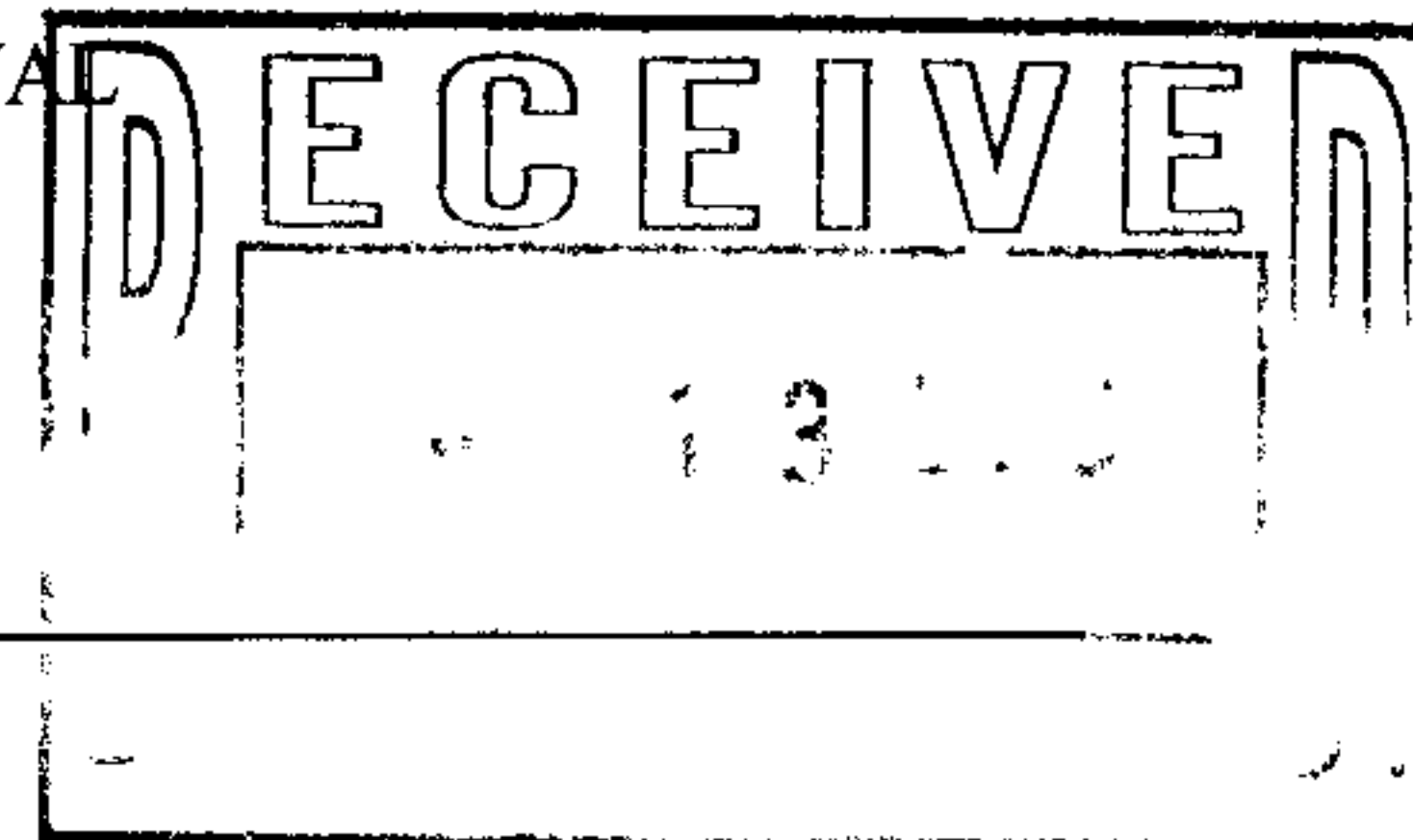
DATE SUBMITTED: 7/13/16 By: Dan

CHECK TYPE OF APPROVAL/ACCEPTANCE SOUGHT:

☒ BUILDING PERMIT APPROVAL
☐ CERTIFICATE OF OCCUPANCY

☐ PRELIMINARY PLAT APPROVAL
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☐ PRE-DESIGN MEETING
☐ OTHER (SPECIFY) _____



COA STAFF: _____ ELECTRONIC SUBMITTAL RECEIVED: _____