CITY OF ALBUQUERQUE

PLANNING DEPARTMENT – Development Review Services

Richard J. Berry, Mayor

April 5, 2016

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

RE: Tierra Vista at the Trails, Unit 3 (File: C09D001E)
Grading and Drainage plans, Eng. Stamp Date 1-22-15
Eng. Certification dated 3-29-2016

Dear Mr. Steffen:

Based upon the information provided in your Certification received 3-29-2016, the above referenced Certification plan is accepted for Release of the SIA (Subdivision Improvement Agreement) and for Final Platting action. There is no Financial Guarantee in place for this project.

If you have any questions, you can contact me at 924-3695.

Sincerely,

Rita Harmon, P.E.
Senior Engineer, Planning Dept.
Development Review Services

Orig: Drainage file
c.pdf Addressee via Email, Charlotte LaBadie

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: Tierra Vista Unit 3 Building Permit #: City Drainage #: C9/D001E

DRB#: 1008799 EPC#: Work Order#:

Legal Description: Tract 8, Trails Unit 2

City Address:

Engineering Firm: BOHANNAN HUSTON INC Contact: SCOTT STEFFEN

Address: 7500 JEFFERSON ST NE COURTYARD I ALBUQUERQUE NM 87109

Phone#: 823-1000 Fax#: E-mail: SSTEFFEN@BHINC.COM

Owner: RCS Trails, LLC Contact: Brian Mulqueen

Address: 371 Centennial Parkway Suite 200 Louisville CO 80027

Phone#: 303-533-1615 Fax#: E-mail:

Architect: Contact:

Address:

Phone#: Fax#: E-mail:

Other Contact: Contact:

Address:

Phone#: Fax#: E-mail:

Check all that Apply:

DEPARTMENT:

__x__ HYDROLOGY/ DRAINAGE

_____ TRAFFIC/ TRANSPORTATION

_____ MS4/ EROSION & SEDIMENT CONTROL

TYPE OF SUBMITTAL:

__X__ 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 __X__ No

RECEIVED
MAR 29 2016
LAND DEVELOPMENT SECTION

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

__X__ 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) _____

DATE SUBMITTED: 3/29/16 By: SCOTT STEFFEN

COA STAFF: ELECTRONIC SUBMITTAL RECEIVED: ___

Scott Steffen

From: Scott Steffen
Sent: Tuesday, March 29, 2016 7:30 AM
To: Harmon Rita T. (rharmon@cabq.gov)
Cc: PLNDRS@cabq.gov; Hugh Floyd
Subject: Tierra Vista Unit 3 RoSIA certification
Attachments: Tierra Vista Unit 3 final SIA release cert submittal.pdf

Rita,

Attached is the Tierra Vista Unit 3 final certification requesting release of SIA. Per our past conversation, there is no financial guaranty in place for this project, just an SIA, which still needs to be released for acceptance of the infrastructure.

You should receive a hard copy this morning.

Let me know if you have any questions.

Thanks,

Scott J. Steffen
Vice President
Community Development and Planning
Bohannan Huston
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

RECEIVED
MAR 29 2016
LAND DEVELOPMENT SECTION

Bohannan Huston

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

March 29, 2016

Ms. Rita Harmon
Hydrology Section
City of Albuquerque
600 2nd Street NW
Albuquerque, NM 87102

Re: Grading and Drainage Certification, Tierra Vista Unit 3 at the Trails
DRB Case No. 1008799, (C9/D001E)

Dear Rita:

We are submitting the final grading and drainage certification for Tierra Vista Unit 3. Enclosed for your review is the DRB approved grading plan, dated 01/22/15, with as-built elevations. The as-built survey was provided by Surv-Tek Inc. After reviewing these as-built elevations and visiting the site on March 28, 2016, 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 Release for Tierra Vista Unit 3, Lots 1-58. I appreciate your time and consideration. As a reminder there is no Financial Guaranty in place for Tierra Vista Unit 3, therefore the request does not include release of financial guaranty. If you have questions or require additional information, please contact me at 823-1000.

Sincerely,

Scott J. Steffen, P.E.
Vice President
Community Development & Planning

Enclosure

cc: Hugh Floyd, Floyd Development Services

RECEIVED
MAR 29 2016
LAND DEVELOPMENT SECTION

Engineering ▲
Spatial Data ▲
Advanced Technologies ▲

CITY OF ALBUQUERQUE

March 10, 2016

Scott Steffen, PE
Bohannan-Huston
7500 Jefferson St NE Courtyard I
Albuquerque, NM 87109

Re: Tierra Vista Unit 3
Request Pad Certification for lots 1-58 - Accepted
Engineer's Stamp dated: 1-22-15 (C09D001E)
Certification dated: 3-7-16

Dear Mr. Steffen,

Based on the Certification received 3/8/2016, the above referenced Certification for Tierra Vista Unit 3 is acceptable for building permit by Hydrology.

When all grading is complete, request release of S.I.A. in lieu of ROFG, for Final Plat Action.

If you have any questions, you can contact me at 924-3695 or Totten Elliott at 924-3982.

Sincerely,

Rita Harmon, PE
Senior Engineer, Hydrology
Planning Department

TE/RH
C: CO Clerk, Cordova, Camille C.; Miranda, Rachel; Sandoval, Darlene M.; Blocker, Lois

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: Tierra Vista Unit 3 Building Permit #: _____ City Drainage #: C9/D001E

DRB#: 1008799 EPC#: _____ Work Order#: _____

Legal Description: Tract 8, Trails Unit 2

City Address: _____

Engineering Firm: BOHANNAN HUSTON INC Contact: SCOTT STEFFEN

Address: 7500 JEFFERSON ST NE COURTYARD I ALBUQUERQUE NM 87109

Phone#: 823-1000 Fax#: _____ E-mail: SSTEFFEN@BHINC.COM

Owner: RCS Trails, LLC Contact: Brian Mulqueen

Address: 371 Centennial Parkway Suite 200 Louisville CO 80027

Phone#: 303-533-1615 Fax#: _____ E-mail: _____

Architect: _____ Contact: _____

Address: _____

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

Other Contact: _____ Contact: _____

Address: _____

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

Check all that Apply:

DEPARTMENT:

__x__ HYDROLOGY/ DRAINAGE
_____ TRAFFIC/ TRANSPORTATION
_____ MS4/ EROSION & SEDIMENT CONTROL

TYPE OF SUBMITTAL:

__x__ 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 __x__ No

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
__x__ GRADING/ PAD CERTIFICATION
_____ WORK ORDER APPROVAL
_____ CLOMR/LOMR

_____ PRE-DESIGN MEETING
_____ OTHER (SPECIFY)

RECEIVED
MAR 08 2016
LAND DEVELOPMENT SECTION

DATE SUBMITTED: 3/7/16 By: SCOTT STEFFEN

COA STAFF: ELECTRONIC SUBMITTAL RECEIVED: ___

Bohannan Huston

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

March 7, 2016

Ms. Rita Harmon
Hydrology Section
City of Albuquerque
600 2nd Street NW
Albuquerque, NM 87102

Re: Grading and Drainage Certification, Tierra Vista Unit 3 at the Trails
DRB Case No. 1008799, (C9/D001E)

Dear Rita:

We are submitting a partial grading and drainage certification for Tierra Vista Unit 3. Enclosed for your review is the DRB approved grading plan, dated 01/22/15, with as-built elevations. The as-built survey was provided by Surv-Tek Inc. After reviewing these as-built elevations and visiting the site on March 1, 2016, 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 Pad Certification for Tierra Vista Unit 3, Lots 1-58. I appreciate your time and consideration. If you have questions or require additional information, please contact me at 823-1000.

Sincerely,

Scott J. Steffen, P.E.
Vice President
Community Development & Planning

Enclosure

cc: Hugh Floyd, Floyd Development Services

RECEIVED
MAR 08 2016
LAND DEVELOPMENT SECTION

Engineering ▲

Spatial Data ▲

Advanced Technologies ▲

Harmon Rita T.

From: Harmon Rita T.
Sent: Wednesday, March 11, 2015 12:10 PM
To: Scott J. Steffen (ssteffen@bhinc.com); Hugh Floyd
Cc: Romo, Phillip
Subject: FW: Tierra Vista Unit 3 Universe Blvd storm drain connection
Attachments: Tierra Vista Unit 3 preliminary plat.pdf; Tierra Vista Unit 3 storm drain connection.pdf

Scott, Hugh,

After discussion with Phil Romo, it was decided to keep the manhole completely outside of the sidewalk. The Maximum reach of the tube on the Vactor Truck is about 20'. Put the manhole just outside the sidewalk, with the access hole closer to the street.

Rita Harmon, P.E.
Planning Department
505-924-3695

From: Scott Steffen [mailto:ssteffen@bhinc.com]
Sent: Thursday, February 19, 2015 2:49 PM
To: Gallegos, Wilfred A.
Cc: Cherne, Curtis; Harmon Rita T.; Hugh Floyd (Hugh@developnm.com)
Subject: Tierra Vista Unit 3 Universe Blvd storm drain connection

Wilfred,

We are in the process of putting together the construction plans for the Tierra Vista Unit 3 subdivision at the southwest corner of Woodmont Avenue and Universe Boulevard. I have attached a copy of the DRB approved preliminary plat for reference. There is an existing 54" storm drain that runs diagonally through the site, connecting to the storm drain in Universe Blvd. The reason for the existing storm drain alignment is to avoid a sanitary sewer lift station, which will be removed as part of the Unit 3 development. We will be removing a portion of the 54" storm drain and realigning as shown in the attached storm drain connection exhibit. We are proposing to connect to the existing storm drain with a new manhole at the Universe Blvd right-of-way line, with the access just outside the right-of-way. The reason for tying at the proposed location instead of in the street is minimize/eliminate the disruption of traffic on Universe Blvd. The manhole is about 12' deep. It is likely that a rock breaker will be required to remove basalt for the new 8' manhole. The construction duration could be 2-4 weeks depending on the amount of rock and how hard the rock is to remove.

In reviewing the proposed connection Curtis is concerned that the proposed location of the access (12' from face of curb) would be an issue for maintenance and he asked that we coordinate with you on this issue. Do you have an issue with the proposed location? If yes, what would be the maximum dimension from the face of curb to the access lid? If we need to move it closer to the curb, does DMD have an issue w/manholes in the sidewalk? Transportation has indicated that as long as we maintain 4' clear in the sidewalk it would be acceptable.

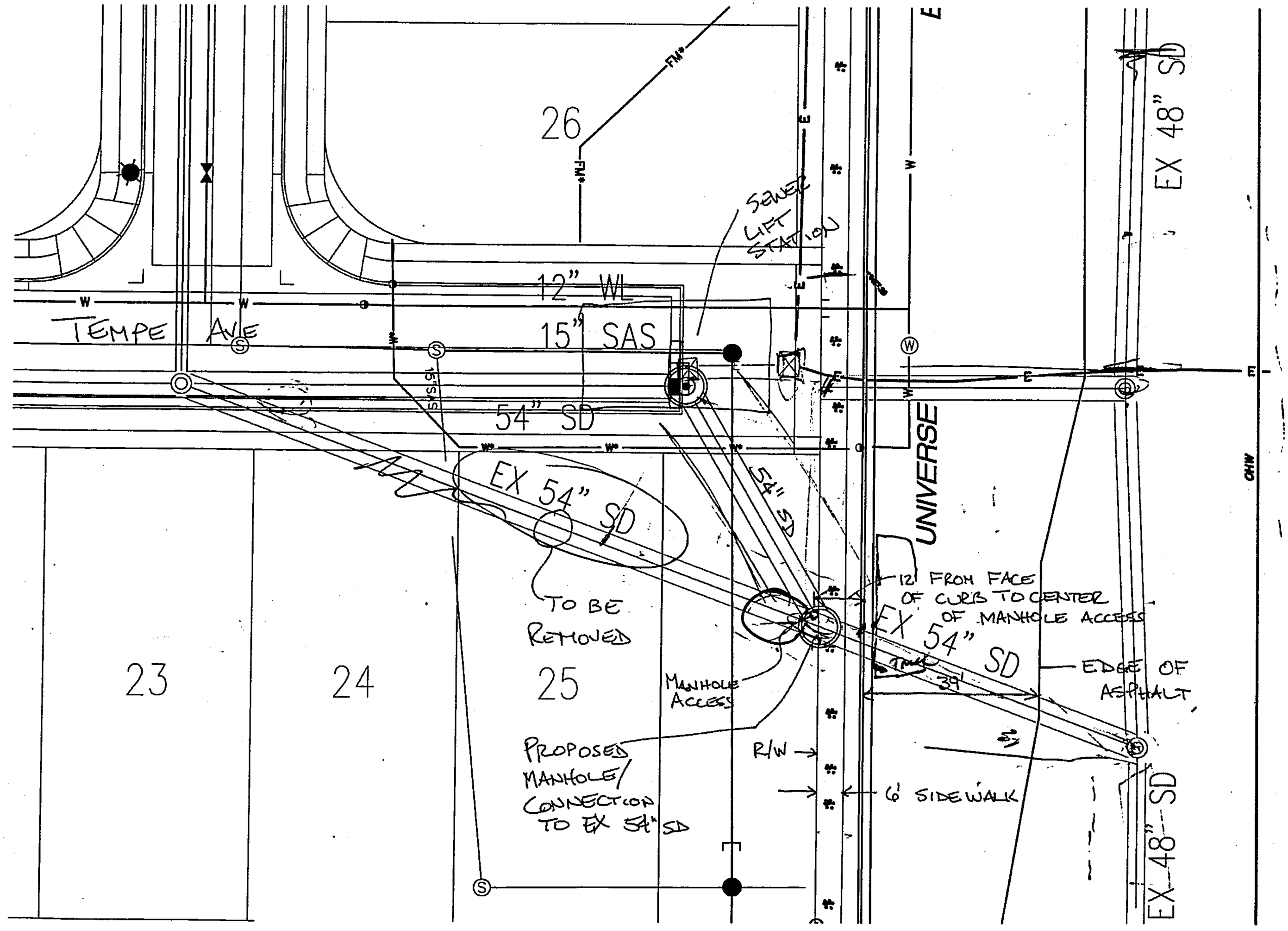
I am available to meet if that would be helpful.

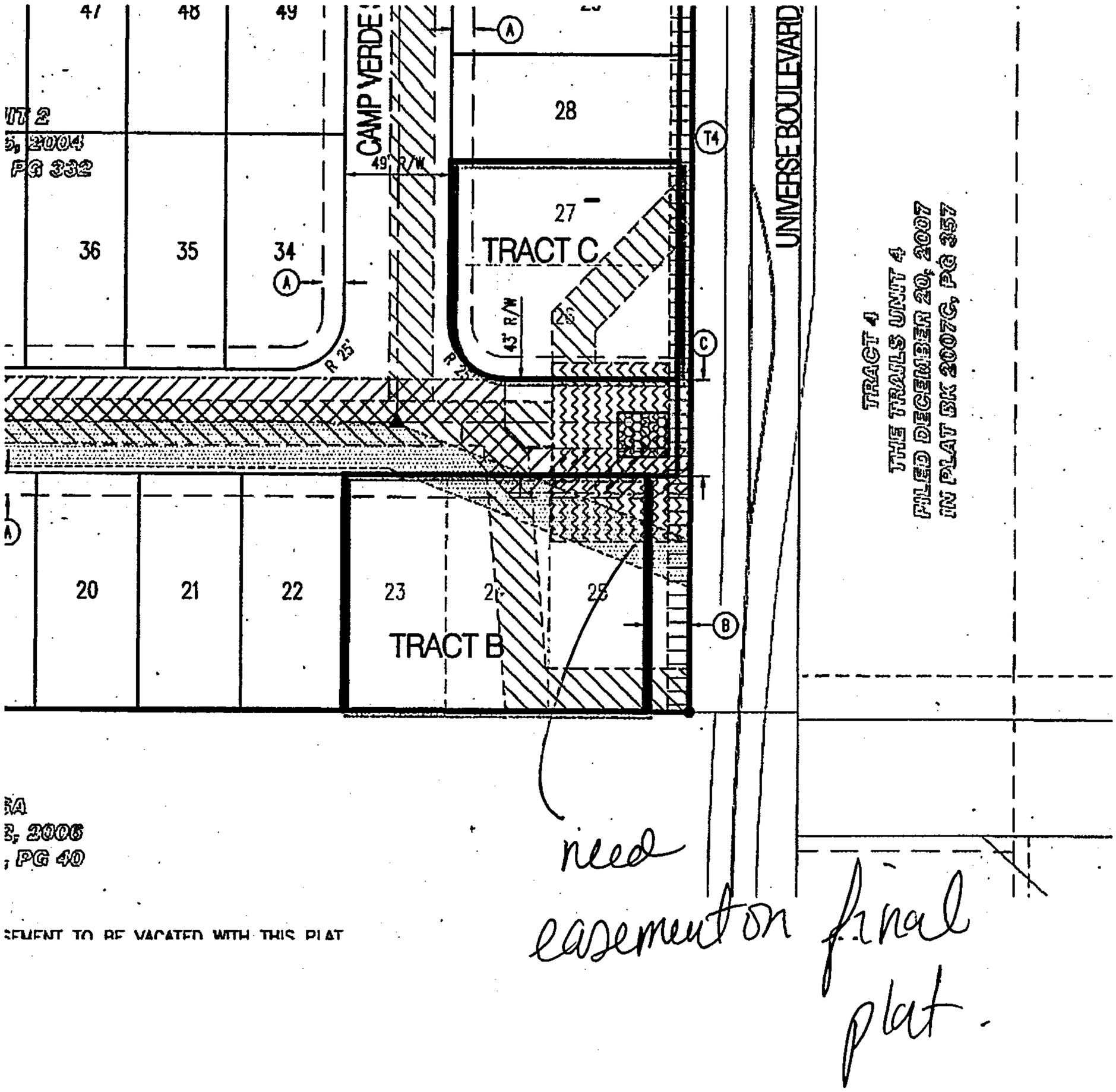
Let me know if you have questions or need more information.

Thanks,

Scott J. Steffen
Vice President
Community Development and Planning
Bohannan Huston
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

20' each from front or side of each house





Tierra Vista Unit 3

CPN: #730070

DRB # 1007050

W*

15"SAS*

S

15"SAS

54" SD

W*

W*

W*

EX 54" SD

54"SD*

24

25

10 5 0 10

1"=10'

E

E

E

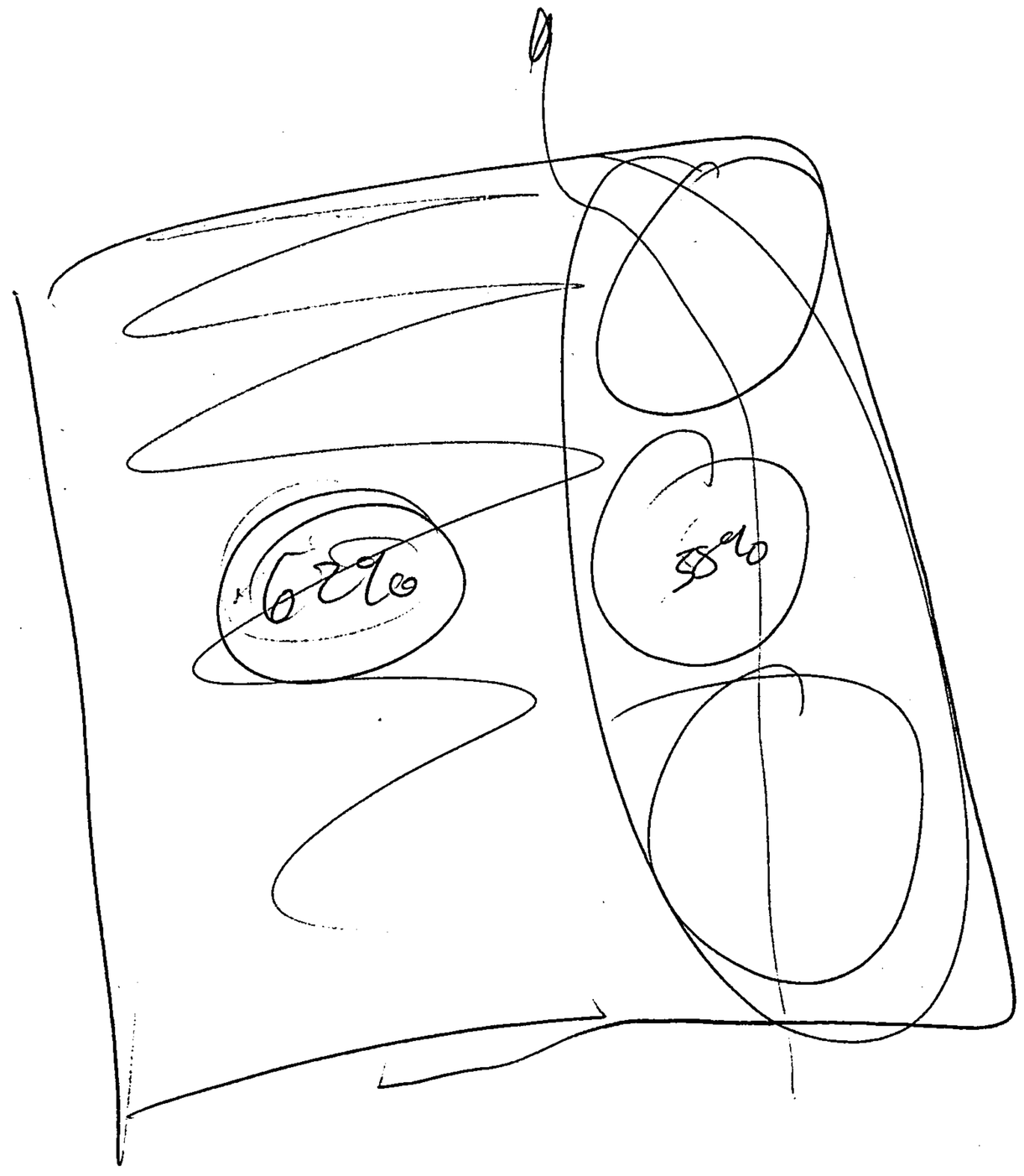
W

W

UNIVERSE

EX 54" SD

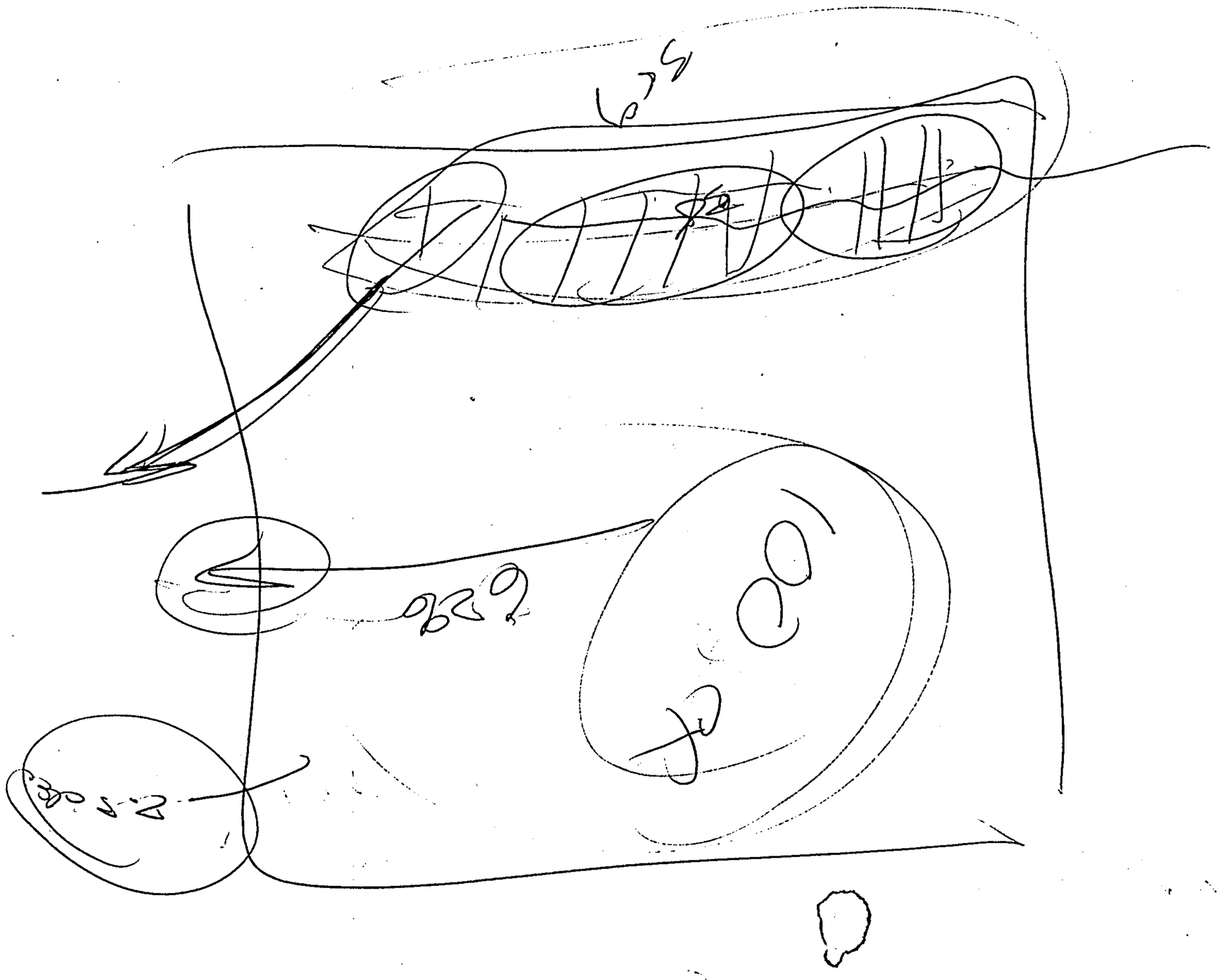
54"SD*

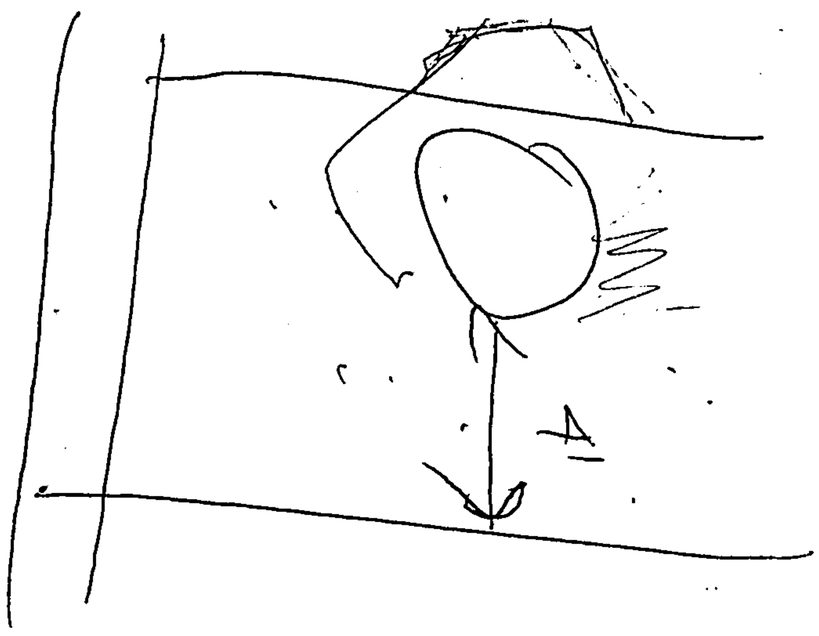


R

TIERRA VISTA
CADIE

54"SD*
15"SAS*
8"±SAS
15"SAS*
15"SAS*
15"SAS*
15"SAS*
15"SAS*
54" SD
EX 54" SD
54"SD*
W*
W*
W*
W
W
W





Current DRC
Project No. _____

ORIGINAL

Date Submitted: April 30, 2014
Date Site Plan for Bldg Permit Approv _____
Date Site Plan for Sub. Approved: _____
Date Preliminary Plat Approved: 5-7-14
Date Preliminary Plat Expires: 5-7-15

DRB Project No. 1007050

Figure 12

INFRASTRUCTURE LIST

EXHIBIT 'A'
TO SUBDIVISION IMPROVEMENTS AGREEMENT
DEVELOPMENT REVIEW BOARD (D.R.B.) REQUIRED INFRASTRUCTURE LIST

TIERRA VISTA UNIT 3 AT THE TRAILS
(REPLAT OF TRACT 8 AT THE TRAILS UNIT 2)

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 appurtenant 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 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 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.

SIA Sequence #	COA DRC Project #	Size	Type of Improvement	Location	From	To	Private Inspector	City Inspector	City Cnst Engineer
		PAVING							
		32' F-F	RESIDENTIAL (NORMAL LOCAL) PAVING W/PCC CURB & GUTTER, PCC 4' WIDE SIDEWALK ON BOTH SIDES	BLACK CANYON STREET	WOODMONT AVENUE	TEMPE AVENUE	/	/	/
		28' F-F	RESIDENTIAL PAVING W/ PCC CURB & GUTTER, PCC 4' WIDE SIDEWALK ON BOTH SIDES	ORO VALLEY ROAD	BLACK CANYON STREET	CAMP VERDE STREET	/	/	/
		28' F-F	RESIDENTIAL PAVING W/ PCC CURB & GUTTER, PCC 4' WIDE SIDEWALK ON BOTH SIDES*	CAMP VERDE STREET	TEMPE AVENUE	ORO VALLEY ROAD	/	/	/
		28' F-F	RESIDENTIAL PAVING W/ PCC CURB & GUTTER, PCC 4' WIDE SIDEWALK ON EAST SIDE*	CAMP VERDE STREET	ORO VALLEY ROAD	STUB STREET (END)	/	/	/
		28' F-F	RESIDENTIAL PAVING W/ PCC CURB & GUTTER, PCC 4' WIDE SIDEWALK ON BOTH SIDES*	TEMPE AVENUE	WEST BOUNDARY	CAMP VERDE STREET	/	/	/
		28' F-F	RESIDENTIAL PAVING W/ PCC CURB & GUTTER, PCC 4' WIDE SIDEWALK ON BOTH SIDES * WITH 4' SIDEWALK CONNECTION TO UNIVERSE BOULEVARD	TEMPE AVENUE	CAMP VERDE STREET	STUB STREET (END)	/	/	/

* SIDEWALKS TO BE BUILT/DEFERRED IN ACCORDANCE W/APPROVED SIDEWALK EXHIBIT

PUBLIC STORM DRAIN IMPROVEMENTS

		18" DIA	RCP W/ MH & INLETS	TEMPE AVENUE	VARIOUS LOCATIONS IN TEMPE AVENUE	TIE TO EXISTING 54" STORM DRAIN IN TEMPE AVENUE	/	/	/
		18" - 24" DIA	RCP W/ MH & INLETS	CAMP VERDE STREET	ORO VALLEY ROAD	TEMPE AVENUE	/	/	/
		54" DIA	RCP W/ MH & INLETS	TEMPE AVENUE	CAMP VERDE STREET	UNIVERSE BLVD	/	/	/
		54" DIA	REMOVE/ABANDON EXISTING RCP STORM DRAIN	TEMPE AVENUE	CAMP VERDE STREET	UNIVERSE BLVD	/	/	/
			MODIFIY POND H INLET AND OUTLET PER APRIL 2014 AMENDED TRAILS, UNITS 1-3 DMP Part of Valle Prado Unit 1	POND H	WEST END OF TEMPE AVENUE		/	/	/

NOTE: CERTIFICATION OF THE GRADING AND DRAINAGE PLAN IS REQUIRED FOR RELEASE OF FINANCIAL GUARANTEES

may change

SIA Sequence #	COA DRC Project #	Size	Type of Improvement	Location	From	To	Private Inspector	City Inspector	City Cnst Engineer
		PUBLIC WATERLINE IMPROVEMENTS							
		EX 12" DIA	WATERLINE W/ NEC. VALVES FH'S, MJ'S & RJ'S	TEMPE AVENUE	BUILT UNDER COA 730084		/	/	/
		8" DIA	WATERLINE W/ NEC. VALVES FH'S, MJ'S & RJ'S	BLACK CANYON STREET	TEMPE AVENUE	ORO VALLEY ROAD	/	/	/
		6" DIA	WATERLINE W/ NEC. VALVES FH'S, MJ'S & RJ'S	BLACK CANYON STREET	ORO VALLEY ROAD	LOT 1	/	/	/
		8" DIA	WATERLINE W/ NEC. VALVES FH'S, MJ'S & RJ'S	ORO VALLEY ROAD	BLACK CANYON STREET	CAMP VERDE STREET	/	/	/
		8" DIA	WATERLINE W/ NEC. VALVES FH'S, MJ'S & RJ'S	CAMP VERDE STREET	TEMPE AVENUE	ORO VALLEY ROAD	/	/	/
		4" DIA	WATERLINE W/ NEC. VALVES FH'S, MJ'S & RJ'S	CAMP VERDE STREET	ORO VALLEY ROAD	STUB STREET (END)	/	/	/
		PUBLIC SANITARY SEWER IMPROVEMENTS							
		EX 8" DIA	SANITARY SEWER W/ NEC. MH'S & SERVICES	CAMP VERDE STREET	BUILT UNDER COA 730084		/	/	/
		EX 15" DIA	SANITARY SEWER W/ NEC. MH'S & SERVICES	TEMPE AVENUE	BUILT UNDER COA 730084		/	/	/
		8" DIA	SANITARY SEWER W/ NEC. MH'S & SERVICES	BLACK CANYON STREET	TEMPE AVENUE	LOT 1	/	/	/
		8" DIA	SANITARY SEWER W/ NEC. MH'S & SERVICES	ORO VALLEY ROAD	LOT 42	CAMP VERDE STREET	/	/	/
		15" DIA	SANITARY SEWER W/ NEC. MH'S & SERVICES	UNIVERSE BLVD	TEMPE AVENUE	APPROX 1050' SOUTH TO EXIST 15" SAS @ VVHS	/	/	/
		15" DIA	SANITARY SEWER W/ NEC. MH'S & SERVICES	TEMPE AVENUE	LOT 24	UNIVERSE BLVD	/	/	/
			• REMOVE, SALVAGE AND DISPOSE EXISTING SANITARY SEWER LIFT STATION						

AGENT/OWNER	DEVELOPMENT REVIEW BOARD MEMBER APPROVALS			
SCOTT STEFFEN 5/7/2014 PREPARED BY: PRINT NAME DATE		DRB CHAIR	5-7-14 DATE	Carl S. Dumont 5-7-14 PARKS & ~~GENERAL SERVICES~~ Recreation DATE
BOHANNAN HUSTON, INC. FIRM		TRANSPORTATION DEVELOPMENT	05-07-14 DATE	AMAFCA DATE
SIGNATURE		ABCWUA	05/07/14 DATE	CITY ENGINEER 5-7-14 DATE
MAXIMUM TIME ALLOWED TO CONSTRUCT IMPROVEMENTS WITHOUT A DRB EXTENSION				DATE

DESIGN REVIEW COMMITTEE REVISIONS

REVISION	DATE	DRC CHAIR	USER DEPARTMENT	AGENT/OWNER

CITY OF ALBUQUERQUE

PLANNING DEPARTMENT – Development Review Services

Richard J. Berry, Mayor

February 27, 2015

Scott J. Steffen, P.E.
Bohannan-Huston, Inc.
7500 Jefferson Street NE, Courtyard I
Albuquerque, New Mexico 87109

RE: **Tierra Vista Unit 3** (Replat of Tract 8 of The Trails, Unit 2) File: **C09-D001E**
Revised Grading & Drainage Plan **PE Stamp: 1-22-2015**

Dear Mr. Steffen:

Based upon the information provided in your submittal received 1/22/15, the subject Grading & Drainage Plan is approved for Grading Permit.

Residential Building Permits will be conditioned upon Pad Certification, to Hydrology Section, of compliance with this Grading Plan.

If you have questions, please email me or telephone 505-924-3695.

PO Box 1293

Sincerely,

Albuquerque

Rita Harmon, P.E.
Senior Engineer
New Mexico 87103 Development Review Services

www.cabq.gov

Orig: Drainage file: **C09/D001E**
c.pdf Addressee via Email SSteffen@BHInc.com

C09D001E_GP_Revised_appr.doc

City of Albuquerque

Planning Department

Development & Building Services Division

DRAINAGE AND TRANSPORTATION INFORMATION SHEET

(REV 02/2013)

C09D001E

Project Title: Tierra Vista Unit 3 Building Permit #: _____ City Drainage #: C9

DRB#: 1007050 EPC#: _____ Work Order#: _____

Legal Description: Tract 8 at the Trails, Unit 2

City Address: _____

Engineering Firm: Bohannan Huston, Inc. Contact: Scott Steffen

Address: Courtyard I 7500 Jefferson Street NE Albuquerque NM 87109

Phone#: 505-823-1000 Fax#: _____ E-mail: ssteffen@bhinc.com

Owner: RCS Trails Tract 8, LLC Contact: Brian Paul

Address: 371 Centennial Parkway Suite 200 Louisville CO 80027

Phone#: 303-533-1615 Fax#: _____ E-mail: bpaul@realcapitalsolutions.com

Architect: _____ Contact: _____

Address: _____

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

Surveyor: _____ Contact: _____

Address: _____

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

Contractor: _____ Contact: _____

Address: _____

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

TYPE OF SUBMITTAL:

____ DRAINAGE REPORT
____ DRAINAGE PLAN 1st SUBMITTAL
____ DRAINAGE PLAN RESUBMITTAL
____ CONCEPTUAL G & D PLAN
X GRADING PLAN
____ EROSION & SEDIMENT CONTROL PLAN (ESC)
____ ENGINEER'S CERT (HYDROLOGY)
____ CLOMR/LOMR
____ TRAFFIC CIRCULATION LAYOUT (TCL)
____ ENGINEER'S CERT (TCL)
____ ENGINEER'S CERT (DRB SITE PLAN)
____ ENGINEER'S CERT (ESC)
____ SO-19
____ OTHER (SPECIFY)

CHECK TYPE OF APPROVAL/ACCEPTANCE SOUGHT:

____ SIA/FINANCIAL GUARANTEE RELEASE
____ PRELIMINARY PLAT APPROVAL
____ S. DEV. PLAN FOR SUB'D APPROVAL
____ S. DEV. FOR BLDG. PERMIT APPROVAL
____ SECTOR PLAN APPROVAL
____ FINAL PLAT APPROVAL
____ CERTIFICATE OF OCCUPANCY (PERM)
____ CERTIFICATE OF OCCUPANCY (TCL TEMP)
____ FOUNDATION PERMIT APPROVAL
____ BUILDING PERMIT APPROVAL
X GRADING PERMIT APPROVAL
____ PAVING PERMIT APPROVAL
____ WORK ORDER APPROVAL
____ GRADING CERTIFICATION
____ SO-19 APPROVAL
____ ESC PERMIT APPROVAL
____ ESC CERT. ACCEPTANCE
____ OTHER (SPECIFY)

RECEIVED
JAN 22 2015
LAND DEVELOPMENT SECTION

WAS A PRE-DESIGN CONFERENCE ATTENDED: ____ Yes X No ____ Copy Provided

DATE SUBMITTED: January 23, 2015 By: Scott J. Steffen

Complete Submittal 1/26/15

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

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 subdivision containing more than ten (10) lots or constituting five (5) acres or more
4. **Erosion and Sediment Control Plan:** Required for any new development and redevelopment site with 1-acre or more of land disturbing area, including project less than 1-acre than are part of a larger common plan of development

Scott Steffen

From: Scott Steffen
Sent: Thursday, January 22, 2015 2:29 PM
To: 'Cherne, Curtis'
Cc: Hugh Floyd (Hugh@developnm.com)
Subject: Tierra Vista Unit 3 Grading Plan
Attachments: Tierra Vista Unit 3 Grading Plan revision 20150122.pdf

Curtis,

Attached is the revised grading plan for Tierra Vista Unit 3. The revision covers the following:

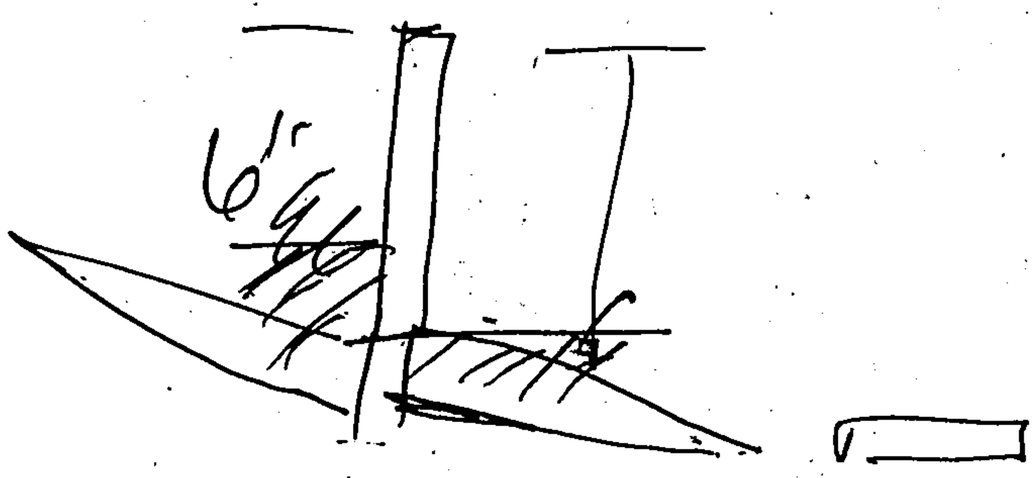
- Lots 17-25: Lots were shifted west to provide more room for the construct of the sewer and storm drain at the east end of Tempe Avenue. There is minimum change in pad elevations as the grades in Tempe Ave are flat.
- Lots 26-33: This change is based on the meeting that Hugh Floyd, yourself and I 4-6 weeks ago. The rear yards drain to the back wall along Universe Blvd and a 3:1 max slope from the Universe Blvd right-of-way line to the rear wall to eliminate any rear wall split to allow for a maximum height privacy wall as allowed by the Volcano Trails Sector Plan. The slope height from the r/w line to the wall is about 1.5'. Wall drains were added to the rear yard wall. The wall drain detail has been added to the grading details sheet.
- LOTS 4/6-4/8 owners also Reseed

You should receive a hard copy either this afternoon or tomorrow morning.

Let me know if you have any questions.

Thanks,

Scott J. Steffen
Vice President
Community Development and Planning
Bohannan Huston
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



RECEIVED
JAN 22 2015
LAND DEVELOPMENT SECTION

once project is complete Hugh will sign affidavit + send us an electronic copy.

THIS letter suffices in the interim

RTH

C09D001F

C9D001E

Ray Powell, M.S., D.V.M.
COMMISSIONER

State of New Mexico
Commissioner of Public Lands

310 OLD SANTA FE TRAIL
P.O. BOX 1148
SANTA FE, NEW MEXICO 87504-1148

COMMISSIONER'S OFFICE
Phone (505) 827-5760
Fax (505) 827-5766
www.nmstatelands.org

November 20, 2014

Easterling Consultants LLC
Attn: Hugh W. Floyd
3613 NM 528 NW, Ste. E-2
Albuquerque, NM 87114

Re: New Mexico State Right of Way Lease No. R-34167(Tierra Vista Unit 3/TR 8)
Real Capital Solutions

Dear Mr. Floyd:

Enclosed for your files is your original grant of right of way, an affidavit of completion and a cultural resources notice. Please return the affidavit to this office within 60 days of the completion of the right of way. Failure to return the affidavit within the year the grant was finalized will make the right of way subject to termination.

If you have any questions, please feel free to contact me at 505-827-5734 or Melissa Armijo at 505-827-5728.

Thank you for doing business with the New Mexico State Land Office.

Sincerely,

Patricia Esquibel
Management Analyst
Surface Resources Division

Enclosures
XC: File

STATE OF NEW MEXICO
COMMISSIONER OF PUBLIC LANDS
GRANT OF RIGHT-OF-WAY

Right-of-Way Easement No.R-34167
Tierra Vista Unit 3 (Tract 8)

This indenture made this 19th day of November, 2014 by and between the State of New Mexico, acting by and through its Commissioner of Public Lands, "Grantor", Real Capital Solutions whose address is 371 Centennial Parkway, Suite 200 Louisville, Colorado 80027 Grantee;

WITNESSETH:

That Grantor, for and in consideration of the sum of $2,080.00---------- Two Thousand Eighty Dollars and 00/100----------cash in hand, receipt of which is hereby acknowledged, and other good and valuable consideration, hereby conveys to grantee a right-of-way for the sole and exclusive purpose of a 30' wide easement to perform slope grading on state trust lands due to a residential development occuring in basakt bedrock including the right to enter upon the real estate hereinafter described at any time that it may see fit to construct, maintain and repair the structures upon the right-of-way, together with the right to remove trees, brush, undergrowth, and other obstructions interfering with the location, construction, and maintenance of said right-of-way.

The right-of-way hereby granted covers a strip of land 30 feet in width in Bernalillo County, as more particularly described by the attached centerline description and survey plats, which are incorporated herein as **Exhibit A.**

This grant is made upon the following express terms and conditions:

1. This right-of-way is granted for a term of 10 years. The grant may be renewed for additional periods upon application to Grantor. Any such renewals are subject to such terms and conditions as the Grantor may require, and payment of compensation.

2. Grantor reserves the right to authorize or grant rights-of-way or other easements to third parties, which may be parallel to, cross over or bisect this right-of-way. In such cases, the subsequent grantee may, at the discretion of the Grantor, be required to post a bond guaranteeing payment for damages to the installations and improvements of Grantee herein. In crossing any right-of-way for a highway, road, telephone, telegraph, transmission line, etc. Grantee herein will exercise due care so as not to interfere with said rights-of-way and will comply with all applicable laws, rules, and regulations in connection with the making of such crossings

3. The right to grant additional rights-of-way or easements within this right-of-way belongs exclusively to Grantor. Grantor hereby agrees, however, that in the event Grantor elects to exercise such right and if Grantee herein is the New Mexico State Highway and Transportation Department, Grantor will secure in writing the agreement of subsequent right-of-way grantee that no facilities will be constructed or installed within the right-of-way subsequently granted without first obtaining from the Department a permit prescribing the conditions under which facilities may be placed within such right-of-way in accordance with the Department's applicable rules and regulations.

GRANTEE EXPRESSLY AGREES THAT PRIOR TO THE CONSTRUCTION OR INSTALLATION OF ANY FACILITIES WITHIN THE RIGHT-OF-WAY GRANTED HEREIN, GRANTEE WILL DETERMINE WHETHER THE RIGHT-OF-WAY IS WITHIN A PREVIOUSLY ESTABLISHED NEW MEXICO STATE HIGHWAY AND TRANSPORTATION DEPARTMENT RIGHT-OF-WAY, AND IF IT IS, GRANTEE WILL OBTAIN FROM THE NEW MEXICO STATE HIGHWAY AND TRANSPORATION DEPARTMENT A PERMIT THAT PRESCRIBES THE CONDITIONS UNDER WHICH FACILITIES MAY BE PLACED

FACILITIES MAY BE PLACED WITHIN THE RIGHT-OF-WAY IN ACCORDANCE WITH THE DEPARTMENT'S APPLICABLE RULES AND REGULATIONS. GRANTEE FURTHER UNDERSTANDS AND AGREES THAT THE FAILURE TO OBTAIN SUCH PERMIT SHALL RESULT IN THE FORCIBLE REMOVAL BY THE DEPARTMENT OF ANY FACILITIES THAT MAY BE CONSTRUCTED OR INSTALLED WITHIN THE RIGHT-OF-WAY.

4. In clearing the right-of-way, Grantee agrees to dispose of brush and other debris so as not to interfere with the movement of livestock of state agriculture lessees.

5. All pipelines placed on said lands by virtue of this grant shall be buried not less than twenty inches (20") deep. An exception to this requirement may be granted on other than agricultural lands when hard rock is encountered which would require blasting, or when a temporary pipeline is necessary and will not unduly hamper other surface uses. Deviation of the twenty-inch depth must be shown on the plat accompanying the application for right-of-way or by the filing of an amended plat upon completion of construction.

6. Grantee hereby agrees to carefully avoid destruction or injury to any improvements or livestock lawfully upon the premises described herein, to close all gates immediately upon passing through same, and to pay promptly the reasonable and just damages for any injury or destruction arising from construction or maintenance of this right-of way.

7. Grantee shall not assign this right-of-way without the prior written approval of Grantor. Such approval may be conditioned upon the agreement by Grantee's assignee to additional conditions and covenants and may require payment of additional compensation to Grantor. This right-of-way is for the sole purpose stated and no other. Grantee agrees not to sell or otherwise grant to any person or entity any interest therein or the right to use any portion thereof.

8. The rights granted herein are subject to valid existing rights.

9. Grantor reserves the right to execute leases for oil and gas, coal, and minerals of whatsoever kind and for geothermal resources development and operation, the right to sell or dispose of same and the right to grant rights-of-way and easements related to such leasing.

10. In all matter affecting the premises described herein or operations thereon, Grantee, its employees, agents and contractors shall, at their own expense, fully comply with all laws, regulations, rules, ordinances, and requirements of any governmental authority or agency, which may be enacted or promulgated, including, but not limited to, requirements or enactment's pertaining to conservation, sanitation, aesthetics, pollution, cultural properties, fire, or ecology, including those provisions of the New Mexico Cultural Properties Act, §§18-6-1 through 17, NMSA 1978, that attach criminal penalties to the appropriation, excavation, injury or destruction of any site or object of historical, archaeological, architectural, or scientific value located on state lands. In addition, Grantee, its employees, agents and contractors must comply with the provisions of the Pipeline Safety Act, §§ 70-3-11 through 20, NMSA 1978, and rules enacted pursuant to the Act, and agree to provide the Public Regulation Commission access to records of compliance.

EXHIBIT A

EASEMENT EXHIBIT
TRACT B
ANCIENT MESA
CITY OF ALBUQUERQUE
BERNALILLO COUNTY, NEW MEXICO
MAY, 2014

TRACT B
TIERRA VISTA UNIT 1
AT THE TRAILS
Filed December 12, 2012, Plat Book 2012C, Page 144

TRACT A
ANCIENT MESA
Filed February 2, 2006 in Plat Book 2006C, Page 40

GOVERNMENT LOT 1
SECTION 16
TOWNSHIP 11 NORTH
RANGE 2 EAST
N.M.P.M.

TRACT B
ANCIENT MESA
Filed February 2, 2006 in Plat Book 2006C, Page 40

GOVERNMENT LOT 1
SECTION 16
TOWNSHIP 11 NORTH
RANGE 2 EAST
N.M.P.M.

TRACT B
ANCIENT MESA
Filed February 2, 2006 in Plat Book 2006C, Page 40

TRACT B
THE TRAILS UNIT 2
Filed October 18, 2004 in Plat Book 2004C, Page 332

Albuquerque Control Survey Monument "UNION"
New Mexico State Plane Coordinates, Central Zone (NAD 83) as published:
Y= 1,523,503.475
X= 1,493,655.030
Ground to grid factor= 0.999664360
Delta Alpha= -0076'58.95"
Elevation= 5524.950 (NAVD88)

N53°31'34"W
4071.93'

Point of BEGINNING
Fd. 5/8" Rebar & Cap "LS 9750"

TEMPORARY CONSTRUCTION PERMIT– SLOPE EASEMENT

S89°40'43"E 298.99'

N89°40'43"W 1084.29'

S89°40'43"E 715.69'

SOUTH BOUNDARY LINE TOWN OF ALAMEDA GRANT

Found 3-1/4" Brass cap in place, 3.08 feet South

USGLO BRASS CAP T. 11 N. 15 15 T.A. R. 2 E. N.M.P.M.

L1

UNIVERSE BLVD N.W.

GOVERNMENT LOT 1
NE 1/4 SECTION 16, T11N, R2 E, NMPM
Said Easement is 1084.29 feet in length or 65.72 Rods
Easement Contains 0.7521 acres

LINE TABLE		
LINE	LENGTH	BEARING
L1	30.00	S00°19'17"W
L2	33.80	N27°06'32"W

N

NOT TO SCALE

SURVTEK, INC.
Consulting Surveyors
9384 Valley View Dr. N.W. Albuquerque, New Mexico 87114
Phone: 505-897-3368
Fax: 505-897-3377

LEGAL DESCRIPTION

An easement situate within Government Lot 1, Section 16, Township 11 North, Range 2 East, New Mexico Principal Meridian, Albuquerque, Bernalillo County, New Mexico, comprising a Northerly portion of Tract B, Ancient Mesa, as the same is shown and designated on the plat entitled, "PLAT OF TRACTS A, B AND C, ANCIENT MESA, ALBUQUERQUE, BERNALILLO COUNTY, NEW MEXICO, JUNE, 2005", filed in the office of the County Clerk of Bernalillo County, New Mexico, on February 2, 2006, in Volume 2006C, Folio 40, being more particularly described by survey performed by Russ P. Hugg, New Mexico Professional Surveyor Number 9750 using New Mexico State Plane Grid Bearings (Central Zone - NAD83) and ground distances as follows:

Beginning at a point on the Northerly boundary line of said Tract B, Ancient Mesa, said point also being (1) the Southeast corner of Tract B, Tierra Vista Unit 1 at the Trails, as the same is shown and designated on the plat entitled, "PLAT OF TIERRA VISTA UNIT 1 AT THE TRAILS, (BEING A REPLAT OF TRACT 9-A, THE TRAILS UNIT 2), WITHIN THE TOWN OF ALAMEDA GRANT, IN PROJECTED SECTION 16, TOWNSHIP 11 NORTH, RANGE 2 EAST, NEW MEXICO PRINCIPAL MERIDIAN, CITY OF ALBUQUERQUE, BERNALILLO COUNTY, NEW MEXICO, JANUARY, 2012", filed in the office of the County Clerk of Bernalillo County, New Mexico, on December 12, 2012, in Volume 2012C, Folio 144, and (2) the Southwest corner of Tract 8, The Trails Unit 2, as the same is shown and designated on the plat entitled, "BULK LAND PLAT OF THE TRAILS UNIT 2, (BEING A REPLAT OF TRACTS G AND J, THE TRAILS AND UNPLATTED DEED PARCELS), WITHIN THE TOWN OF ALAMEDA GRANT, IN PROJECTED SECTION 16, TOWNSHIP 11 NORTH, RANGE 2 EAST, NEW MEXICO PRINCIPAL MERIDIAN, CITY OF ALBUQUERQUE, BERNALILLO COUNTY, NEW MEXICO, AUGUST, 2004", filed in the office of the County Clerk of Bernalillo County, New Mexico, on October 18, 2004, in Volume 2004C, Folio 332, (a 5/8" Rebar stamped "LS 9750", found in place), whence the Albuquerque Control Survey Monument "UNION" bears N 53°31'34" W, 4071.93 feet distant; Thence,

S 89°40'43" E, 715.69 feet along a line common to said Tract B, Ancient Mesa and said Tract 8, The Trails Unit 2, to the Northeast corner of the easement herein described; Thence,

S 00°19'17" W 30.00 feet to the Southeast corner of the easement herein described; Thence,

N 89°40'43" W 1084.29 feet to the Southwest corner of the easement herein described, a point on the Westerly boundary of said Tract B, Ancient Mesa; Thence,

N 27°06'32" E 33.80 feet along said Westerly boundary of said Tract B, Ancient Mesa to the Northwest corner of the easement herein described, said point also being the Northwest corner of said Tract B, Ancient Mesa; Thence,

S 89°40'43" E, 298.99 feet along a line common to said Tract B, Ancient Mesa and said Tract B, Tierra Vista Unit 1 at the Trails, to the point of beginning of the easement herein described.

Said easement being 1084.29 feet in length or 65.72 Rods and containing 0.7521 acres more or less and allocated within the NE 1/4, S16, T11N, R2E, NMPM, Government Lot 1.

COPY

STATE OF NEW MEXICO
COMMISSIONER OF PUBLIC LANDS
GRANT OF RIGHT-OF-WAY

Right-of-Way Easement No. R-34167
Tierra Vista Unit 3 (Tract 8)

This indenture made this____day of _____, 2014 by and between the State of New Mexico, acting by and through its Commissioner of Public Lands, "Grantor" and, Real Capital Solutions whose address is 371 Centennial Parkway, Suite 200, Louisville, CO 80027 Grantee;

WITNESSETH:

That Grantor, for and in consideration of the sum of $2080.00----------Two Thousand Eight Dollars and 00/100----------cash in hand, receipt of which is hereby acknowledged, and other good and valuable consideration, hereby conveys to grantee a right-of-way for the sole and exclusive purpose of an a 30' wide easement to perform slope grading on state trust lands due to a residential development occurring a basalt bedrock including the right to enter upon the real estate hereinafter described at any time that it may see fit to construct, maintain and repair the structures upon the right-of-way, together with the right to remove trees, brush, undergrowth, and other obstructions interfering with the location, construction, and maintenance of said right-of-way.

The right-of-way hereby granted covers a strip of land 30 feet in width in Bernalillo County (ies), as more particularly described by the attached centerline description and survey plats, which are incorporated herein as Exhibit A.

This grant is made upon the following express terms and conditions:

1. This right-of-way is granted for a term of 10 years. The grant may be renewed for additional periods upon application to Grantor. Any such renewals are subject to such terms and conditions as the Grantor may require, and payment of compensation.

2. Grantor reserves the right to authorize or grant rights-of-way or other easements to third parties, which may be parallel to, cross over or bisect this right-of-way. In such cases, the subsequent grantee may, at the discretion of the Grantor, be required to post a bond guaranteeing payment for damages to the installations and improvements of Grantee herein. In crossing any right-of-way for a highway, road, telephone, telegraph, transmission line, etc. Grantee herein will exercise due care so as not to interfere with said rights-of-way and will comply with all applicable laws, rules, and regulations in connection with the making of such crossings

3. The right to grant additional rights-of-way or easements within this right-of-way belongs exclusively to Grantor. Grantor hereby agrees, however, that in the event Grantor elects to exercise such right and if Grantee herein is the New Mexico State Highway and Transportation Department, Grantor will secure in writing the agreement of subsequent right-of-way grantee that no facilities will be constructed or installed within the right-of-way subsequently granted without first obtaining from the Department a permit prescribing the conditions under which facilities may be placed within such right-of-way in accordance with the Department's applicable rules and regulations.

GRANTEE EXPRESSLY AGREES THAT PRIOR TO THE CONSTRUCTION OR INSTALLATION OF ANY FACILITIES WITHIN THE RIGHT-OF-WAY GRANTED HEREIN, GRANTEE WILL DETERMINE WHETHER THE RIGHT-OF-WAY IS WITHIN A PREVIOUSLY ESTABLISHED NEW MEXICO STATE HIGHWAY AND TRANSPORTATION DEPARTMENT RIGHT-OF-WAY, AND IF IT IS, GRANTEE WILL OBTAIN FROM THE NEW MEXICO STATE HIGHWAY AND TRANSPORATION DEPARTMENT A PERMIT THAT PRESCRIBES THE CONDITIONS UNDER WHICH

NEW MEXICO STATE LAND OFFICE
AFFIDAVIT OF COMPLETION
OF RIGHT-OF-WAY CONSTRUCTION

_____ of
(Name of Individual or Entity Holding Right-of-Way)

_____
(Address)

holder of Right-of-Way No. _____, issued for construction operation and location of a _____
(type of right-of-way)

hereby certifies:

☐ Construction of the subject right-of-way has been completed, and that all guidelines of the State Land Office relating to reseeding and reclamation of disturbed areas have been followed, or will be completed by no later than _____ .

OR

☐ No construction was required as the right-of-way is for an existing_____.

_____
Authorized Representative

_____
Position

ACKNOWLEDGEMENT

STATE OF _____)
) SS.
COUNTY _____)

The foregoing instrument was acknowledged before me this _____ day of _____, 20____, by _____, _____ of _____,
(Title of Officer, if applicable, and name of Corporation)

My Commission Expires:_____

_____
Notary Public

Note:
Rule 10.013 Affidavit of Completion. Upon the completion of construction of any right-of-way, the applicant shall promptly file with the Commissioner of Public Lands an Affidavit of Completion. Failure to file such Affidavit in accordance with this section shall subject the right-of-way to cancellation in accordance with the provisions of these rules.

(Revised 01/2007)

Ray Powell, M.S., D.V.M.
COMMISSIONER

State of New Mexico
Commissioner of Public Lands

310 OLD SANTA FE TRAIL
P.O. BOX 1148
SANTA FE, NEW MEXICO 87504-1148

COMMISSIONER'S OFFICE
Phone (505) 827-5760
Fax (505) 827-5766
www.nmstatelands.org

NOTICE
CULTURAL RESOURCE PROTECTION

All easement holders that will be engaging in right of way, salt water disposal, or water easement construction on state trust lands should be aware that it is a criminal offense to damage or destroy an archeological site [§ 18-6-9 NMSA]. Although a survey is not requisite for approval, applicants and lessees should exercise due caution to ensure that cultural properties are not inadvertently excavated, injured or destroyed by any person. A cultural resource survey prior to any surface disturbing activity may assist in –site identification and avoidance of criminal liability associated with disturbance or destruction of sites. For further information please contact the State Land Office Surface Resources Division at 505-827-5831 or the New Mexico Historic Preservation Division at 505-827-6320.

18-6-9. Cultural property; unauthorized excavation, injury or destruction; criminal damage to property.

A. Any person who knowingly excavates, injures or destroys cultural property located on state land without a permit is guilty of criminal damage to property.

B. Any person who solicits, employs or counsels another person to excavate, injure or destroy cultural property located on state land without a permit is guilty of criminal damage to property.

C. Whoever commits criminal damage to property pursuant to the provisions of this section and the value of the property excavated, injured or destroyed is:

(1) less than one thousand dollars ($1,000) is guilty of a petty misdemeanor and shall be sentenced according to the provisions of Section 31-19-1 NMSA 1978; or

(2) one thousand dollars ($1,000) or more is guilty of a fourth degree felony and shall be sentenced according to the provisions of Section 31-18-15 NMSA 1978.

18-6-9.1. Cultural property; unauthorized appropriation; larceny.

A. Any person who knowingly appropriates cultural property located on state land without a permit is guilty of larceny.

B. Any person who solicits, employs or counsels another person to appropriate cultural property located on state land without a permit is guilty of larceny.

C. Any person who receives, traffics in or sells cultural property appropriated from state land without a valid permit is guilty of larceny.

D. Whoever commits larceny pursuant to the provisions of this section and the value of the property appropriated is:

(1) less than one hundred dollars ($100) is guilty of a petty misdemeanor and shall be sentenced pursuant to the provisions of Section 31-19-1 NMSA 1978;

(2) over one hundred dollars ($100) but less than two hundred fifty dollars ($250) is guilty of a misdemeanor and shall be sentenced pursuant to the provisions of Section 31-19-1 NMSA 1978;

(3) two hundred dollars ($200) or more but less than two thousand five hundred ($2,500) is guilty of a fourth degree felony and shall be sentenced pursuant to the provisions of Section 31-18-15 NMSA 1978;

(4) two thousand five hundred dollars ($2,500) or more but less than twenty thousand dollars ($20,000) is guilty of a third degree felony and shall be sentenced pursuant to the provisions of Section 31-18-15 NMSA 1978; or

(5) more than twenty thousand dollars ($20,000) is guilty of a second degree felony and shall be sentenced pursuant to the provisions of Section 31-18-15 NMSA 1978.

18-6-9.2. Cultural property; unauthorized damage or appropriation; civil penalties.

Any person violating the provisions of the Cultural Properties Act [18-6-1 NMSA 1978] shall be liable for civil damages to the state agency, department, institution or political subdivision having jurisdiction over the cultural property in an amount equal to the cost or, in the discretion of the court, in an amount equal to twice the cost of restoration, stabilization and interpretation of the cultural property.

18-6-9.3. Cultural property; forfeiture of instruments.

Any instrument, vehicle, tool or equipment used or intended to be used to violate the provisions of the Cultural Properties Act [18-6-1 NMSA 1978] is subject to forfeiture, and the provisions of the Forfeiture Act [31-27-1 NMSA 1978] apply to the seizure, forfeiture and disposal of such property.

CITY OF ALBUQUERQUE

PLANNING DEPARTMENT – Development Review Services

Richard J. Berry, Mayor

May 5, 2014

Scott J. Steffen, P.E.
Bohannan-Huston, Inc.
7500 Jefferson Street NE, Courtyard I
Albuquerque, New Mexico 87109

RE: **Tierra Vista Unit 3** (Replat of Tract 8 of The Trails, Unit 2) File: **C09-D001E**
Grading & Drainage Plan and Drainage Report **PE Stamp: 3-23-2014**
4-23-14
cc

Dear Mr. Steffen:

Based upon the information provided in your submittal received 3/25/14, the subject Grading & Drainage Plan and Drainage Report are approved for DRB action on the Site Plan, Preliminary Plat and Grading Permit.

This approval is conditioned upon documentation of approval from the State Land Office for the proposed, offsite grading on the south side of the site. If such concurrence cannot be obtained, a revised grading plan will be required, providing a retaining wall at that location.

PO Box 1293

Albuquerque

New Mexico 87103

www.cabq.gov

The Work Order plans submitted for this development must include the modifications to "Pond H" inlet, outlet and overflow facilities, referenced in the amended Infrastructure List.

Residential Building Permits will be conditioned upon Pad Certification, to Hydrology Section, of compliance with this Grading Plan.

Since the disturbed area on this site exceeds 1.0 acre, an Erosion and Sediment Control (ESC) Plan, prepared by a NM PE and approved by the City's Storm Water Engineer, will be required for this site, prior to Hydrology approval of a Grading Permit or Work Order.

If you have questions, please email me or telephone 505-924-3994.

Sincerely,

5/5/14

Gregory R. Olson, P.E.
Senior Engineer
Development and Building Services

Orig: Drainage file: **C09/D001E**
c.pdf Addressee via Email SSteffen@BHInc.com

C09D001E_PPlat-SP-GP_Cond-approval

City of Albuquerque

Planning Department

Development & Building Services Division

DRAINAGE AND TRANSPORTATION INFORMATION SHEET

(REV 02/2013)

C09D001E

Project Title: Tierra Vista Unit 3 Building Permit #: _____ City Drainage #: C9

DRB#: 1007050 EPC#: _____ Work Order#: _____

Legal Description: Tract 8 at the Trails, Unit 2

City Address: _____

Engineering Firm: Bohannan Huston, Inc. Contact: Scott Steffen

Address: Courtyard I 7500 Jefferson Street NE Albuquerque NM 87109

Phone#: 505-823-1000 Fax#: _____ E-mail: ssteffen@bhinc.com

Owner: RCS Trails Tract 8, LLC Contact: Brian Paul

Address: 371 Centennial Parkway Suite 200 Louisville CO 80027

Phone#: 303-533-1615 Fax#: _____ E-mail: bpaul@realcapitalsolutions.com

Architect: _____ Contact: _____

Address: _____

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

Surveyor: _____ Contact: _____

Address: _____

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

Contractor: _____ Contact: _____

Address: _____

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

TYPE OF SUBMITTAL:

- X DRAINAGE REPORT
- ____ DRAINAGE PLAN 1st SUBMITTAL
- X DRAINAGE PLAN RESUBMITTAL
- ____ CONCEPTUAL G & D PLAN
- X GRADING PLAN
- ____ EROSION & SEDIMENT CONTROL PLAN (ESC)
- ____ ENGINEER'S CERT (HYDROLOGY)
- ____ CLOMR/LOMR
- ____ TRAFFIC CIRCULATION LAYOUT (TCL)
- ____ ENGINEER'S CERT (TCL)
- ____ ENGINEER'S CERT (DRB SITE PLAN)
- ____ ENGINEER'S CERT (ESC)
- ____ SO-19
- ____ OTHER (SPECIFY)

CHECK TYPE OF APPROVAL/ACCEPTANCE SOUGHT:

- ____ SIA/FINANCIAL GUARANTEE RELEASE
- X PRELIMINARY PLAT APPROVAL
- X S. DEV. PLAN FOR SUB'D APPROVAL
- ____ S. DEV. FOR BLDG. PERMIT APPROVAL
- ____ SECTOR PLAN APPROVAL
- ____ FINAL PLAT APPROVAL
- ____ CERTIFICATE OF OCCUPANCY (PERM)
- ____ CERTIFICATE OF OCCUPANCY (TCL TEMP)
- ____ FOUNDATION PERMIT APPROVAL
- ____ BUILDING PERMIT APPROVAL
- X GRADING PERMIT APPROVAL
- ____ PAVING PERMIT APPROVAL
- ____ WORK ORDER APPROVAL
- ____ GRADING CERTIFICATION
- ____ SO-19 APPROVAL
- ____ ESC PERMIT APPROVAL
- ____ ESC CERT. ACCEPTANCE
- ____ OTHER (SPECIFY)

RECEIVED
APR 25 2014
AND DEVELOPMENT SECTION

WAS A PRE-DESIGN CONFERENCE ATTENDED: ____ Yes X No ____ Copy Provided

DATE SUBMITTED: April 25, 2014 By: Scott J. Steffen

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

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 subdivision containing more than ten (10) lots or constituting five (5) acres or more
4. **Erosion and Sediment Control Plan:** Required for any new development and redevelopment site with 1-acre or more of land disturbing area, including project less than 1-acre than are part of a larger common plan of development

Bohannan ▲ Huston

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7500 Jefferson St. NE
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facsimile: 505.798.7988
toll free: 800.877.5332

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APR 25 2014
LAND DEVELOPMENT SECTION

April 25, 2014

Greg Olson, P. E.
Planning Department
Hydrology Review Section
City of Albuquerque
P. O. Box 1293
Albuquerque, NM 87103

Re: Tierra Vista Unit 3, Grading and Drainage Plan (C09/D001E)

Dear Greg:

This letter provides a written response to your comments dated April 17, 2014:

1. *The plan shows offsite, slope grading along the south side of the site. Platting and grading approvals will require documentation of approval and/or grant of easement from the adjacent landowner.* **Hugh Floyd is coordinating with the State Land Office to obtain the approval, which will be provided to you once it is received from SLO.**

2. *Some of the existing infrastructure in The Trails drainage system will require modification to function in accordance with the amended DMP prepared by Thompson Engineering Consultants – April 2014. Tract 8 of the Trails Unit II (Tierra Vista Unit 3) is responsible for modifications to Pond H, which must be included in this plan as follows:*

   - *Provide outlet control (orifice) to limit the pond bypass flow plus routed discharge through the pond to a maximum of 26.8 cfs, when the pond water surface is at Vol(100) pond elevation*
   - *Provided outlet bypass capacity around the orifice at the Max. WSE to accommodate the 26.8 cfs if the orifice gets clogged.*
   - *Provide pond inflow capacity to match the DMP inflow (Bypass plus Surge) of 111 cfs.*

   This language has been added to Section IV.A "Offsite Flows" of the Drainage report.

3. *Show grade break lines on the legend and on the Grading Plan where basin boundaries cross the roads. Confirm that they match the basin map. (Check the location of the K-2.B to K-2.D line crossing Tempe).* **A "high point" symbol has been added to the legend and to the streets where the high points occur. The basin map has been adjusted to match the grading plan high points. The AHYMO and street hydraulics have been adjusted as well.**

4. *Labe the Pedestrian Access way at the east end of Tempe, which serves as an emergency overflow to Universe.* **Label added to the Grading Plan.**

5. *The grades along Tempe show the K-2.D basin boundary at Camp Verde to be the north edge of the valley gutter, which could overflow to Basin K-2.C, which has not emergency outfall. Provide a more defined water block on Camp Verde.* **A 0.27 foot water block has been added to Camp Verde. The Basin Map and Grading Plan have been updated to reflect the water block.**

6. *On the grading plan, clarify the existing and proposed segments of the 54" Storm Drain. Label the existing (skewed) 54" RCP to be removed from the MH at Tempe and Camp Verde to the back of curb on the west side of Universe. The portion under Universe pavement to the manhole in Universe may be left in place, if plugged and grouted full with lean fill.* **Additional labels added to the 54" storm drain. Also added keyed notes regarding the removal of the existing 54" storm drain.**

7. *At the NE corner of the site, this plan shows a retaining wall in an area where there is an existing 4' to 6' CMU wall and "The Trails" decorative wall panel. Will these walls need to be removed and rebuilt to retain the required heights?* **The existing wall is currently not on the property line and is being moved/rebuilt to accommodate the proposed lots that back to Universe.**

8. *Modify the Infrastructure List, Storm Drainage Improvements section to include:* **The 3 items have been added to the infrastructure list.**

In response to additional comments received via email on April 22, 2014:

1. *The southwest corner of the proposed grading does not reflect the proposed (or as-built) grading adjacent to Unit 2. Please include that on the plan for continuity in the record.* **The design contours for Tierra Vista Unit 2 have been added to the Grading Plan.**

2. *The double Type "A" inlet is a non-standard configuration and how it will fit on the 54" pipe. Please refine the design with notes on the Grading Plan so there is no confusion when it gets to DRC.* **The double "A" inlet has been called out on the Grading Plan. In addition a proposed detail of the double "A" inlet has been provided. The inside dimension of the inlet is 6.5'. The outside dimension of 54" pipe is about 5.5'. Therefore, the 54" pipe fits inside the width of the inlet. The depth of the inlet would be around 11', resulting in a minimum height of 6' of inlet box wall above the 54" pipe.**

If you have any questions or require further information in order to approve the Grading and Drainage Plan, please feel free to contact me at 823-1000.

Sincerely,

Scott J. Steffen, P.E.
Vice President
Community Development and Planning Group

Enclosures

CITY OF ALBUQUERQUE

PLANNING DEPARTMENT – Development Review Services

Richard J. Berry, Mayor

April 17, 2014

Scott J. Steffen, P.E.
Bohannan-Huston, Inc.
7500 Jefferson Street NE, Courtyard I
Albuquerque, New Mexico 87109

RE: **Tierra Vista Unit 3** (Replat of Tract 8, The Trails, Unit 2) File: **C09-D001E**
Grading & Drainage Plan for Preliminary Plat, Site Plan, and Grading Permit
PE Stamp: **3-20-2014**

Dear Mr. Steffen:

Based upon the information provided in your submittal received 3/21/14, the subject Grading and Drainage Plan cannot be approved for DRB action on the Preliminary Plat nor Grading Permit. Please address the following items and resubmit for approval:

1. The plan shows offsite, slope grading along the south side of the site. Platting and grading approvals will require documentation of approval and/or grant of easement from the adjacent landowner.

2. Some of the existing infrastructure in The Trails drainage system will require modification to function in accordance with the amended DMP prepared by Thompson Engineering Consultants – April 2014. Tract 9 of Trails Unit II (Tierra Vista Unit 3) is responsible for modifications to Pond H, which must be included in this plan as follows:
   a. Provide outlet control (orifice) to limit the pond bypass flow plus routed discharge through the pond to a maximum of 26.8 cfs, when the pond water surface is at Vol_{100} pond elevation.
   b. Provide outlet bypass capacity around the orifice at the Max. WSE to accommodate the 26.80 cfs if the orifice gets clogged.
   c. Provide pond inflow capacity to match the DMP inflow (Bypass plus Surge) of 111 cfs.

3. Show grade break lines on the legend, and on the Grading Plan where basin the boundaries cross the roads. Confirm that they match the basin map. (Check the location of the K-2.B to K-2.D line crossing Tempe).

4. Label the Pedestrian Access way at the east end of Tempe, which serves as an emergency overflow to Universe.

cond. of 5/5/14 App. MO

PO Box 1293
Albuquerque
NM 87103
www.cabq.gov

5. The grades along Tempe shown show the K-2.D basin boundary at Camp Verde to be the north edge of the valley gutter, which could overflow to Basin K-2.C, which has not emergency outfall. Provide a more defined water block on Camp Verde.

6. On the grading plan, clarify the existing and proposed segments of 54'' Storm Drain. Label the existing (skewed) 54" RCP to be removed from the MH at Tempe and Camp Verde to the back of curb on the west side of Universe. The portion under Universe pavement to the manhole in Universe may be left in place, if plugged and grouted full with lean fill.

7. At the NE corner of the site, this plan shows a retaining wall in an area where there is an existing 4' to 6' CMU wall and "The Trails" decorative wall panel. Will these walls need to be removed and rebuilt to retain the required heights?

8. Modify the Infrastructure List, Storm Drainage Improvements section to include
   a. Remove/Abandon existing 54" RCP from Tempe & Camp Verde to manhole on Universe, south of Tempe
   b. Construct 54" Storm Drain in Tempe, from west side of Universe to Camp Verde, including Double Type-A Inlet at the east end of Tempe
   c. Construct modifications to the Pond H Inlet and Outlet (west end of Tempe), per the April 2014 Amended DMP for The Trails, Units 1-3.

Include I.D.O. by

Since the disturbed area on this site exceeds 1.0 acre, an Erosion and Sediment Control (ESC) Plan, prepared by a NM PE and approved by the City's Stormwater Engineer, will be required for this site, prior to Hydrology approval of a Grading Permit or Work Order.

If you have questions, please email me or telephone 505-924-3994.

Sincerely,

4/17/14

Gregory R. Olson, P.E.
Senior Engineer
Development and Building Services

Orig: Drainage file: **C09/D001E**
c.pdf Addressee via Email SSteffen@BHInc.com

City of Albuquerque

Planning Department

Development & Building Services Division

DRAINAGE AND TRANSPORTATION INFORMATION SHEET

(REV 02/2013)

Project Title: Tierra Vista Unit 3 Building Permit #: _____ City Drainage #: C9D001E

DRB#: 1007050 EPC#: _____ Work Order#: _____

Legal Description: Tract 8 at the Trails, Unit 2

City Address: _____

Engineering Firm: Bohannan Huston, Inc. Contact: Scott Steffen

Address: Courtyard I 7500 Jefferson Street NE Albuquerque NM 87109

Phone#: 505-823-1000 Fax#: _____ E-mail: ssteffen@bhinc.com

Owner: RCS Trails Tract 8, LLC Contact: Brian Paul

Address: 371 Centennial Parkway Suite 200 Louisville CO 80027

Phone#: 303-533-1615 Fax#: _____ E-mail: bpaul@realcapitalsolutions.com

Architect: _____ Contact: _____

Address: _____

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

Surveyor: _____ Contact: _____

Address: _____

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

Contractor: _____ Contact: _____

Address: _____

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

TYPE OF SUBMITTAL:

- X DRAINAGE REPORT
- ___ DRAINAGE PLAN 1st SUBMITTAL
- ___ DRAINAGE PLAN RESUBMITTAL
- ___ CONCEPTUAL G & D PLAN
- X GRADING PLAN
- ___ EROSION & SEDIMENT CONTROL PLAN (ESC)
- ___ ENGINEER'S CERT (HYDROLOGY)
- ___ CLOMR/LOMR
- ___ TRAFFIC CIRCULATION LAYOUT (TCL)
- ___ ENGINEER'S CERT (TCL)
- ___ ENGINEER'S CERT (DRB SITE PLAN)
- ___ ENGINEER'S CERT (ESC)
- ___ SO-19
- ___ OTHER (SPECIFY)

CHECK TYPE OF APPROVAL/ACCEPTANCE SOUGHT:

- ___ SIA/FINANCIAL GUARANTEE RELEASE
- X PRELIMINARY PLAT APPROVAL
- X S. DEV. PLAN FOR SUB'D APPROVAL
- ___ S. DEV. FOR BLDG. PERMIT APPROVAL
- ___ SECTOR PLAN APPROVAL
- ___ FINAL PLAT APPROVAL
- ___ CERTIFICATE OF OCCUPANCY (PERM)
- ___ CERTIFICATE OF OCCUPANCY (TCL TEMP)
- ___ FOUNDATION PERMIT APPROVAL
- ___ BUILDING PERMIT APPROVAL
- X GRADING PERMIT APPROVAL
- ___ PAVING PERMIT APPROVAL
- ___ WORK ORDER APPROVAL
- ___ GRADING CERTIFICATION
- ___ SO-19 APPROVAL
- ___ ESC PERMIT APPROVAL
- ___ ESC CERT. ACCEPTANCE
- ___ OTHER (SPECIFY)

584 580 5 $1,630

WAS A PRE-DESIGN CONFERENCE ATTENDED: ___ Yes X No ___ Copy Provided

DATE SUBMITTED: March 21, 2014 By: Scott J. Steffen

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

1. **Conceptual Grading and Drainage Plan**: Required for approval of Site Development Plans greater than five (5) acres and Sector Plans
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RsC 3/21/14

Bohannan Huston

Engineering
Spatial Data
Advanced Technologies

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Albuquerque, NM
87109-4335
www.bhinc.com
voice: 505.823.1000
facsimile: 505.798.7988
toll free: 800.877.5332

CLIENT/COURIER TRANSMITTAL

To: Curtis Cherne
Hydrology Section
City of Albuquerque
600 2nd St NW

Phone: 924-3988
Job No.: 20140036.004.01.cdp

Requested by: Scott Steffen

Date: March 21, 2014

Time Due:
- ☒ This A.M.
- ☐ This P.M.
- ☐ Rush _____
- ☐ By Tomorrow

Job Name: Tierra Vista Unit 3

DELIVERY VIA

- ☒ Courier ☐ Federal Express
- ☐ Mail ☐ UPS
- ☐ Other

PICK UP

Item: _____

ITEM NO.	QUANTITY	DESCRIPTION
1	1	Grading Plan and Drainage Report submittal

COMMENTS / INSTRUCTIONS

Curtis,

Enclosed is the drainage report for Tract 8 at the Trails, to be known as Tierra Vista Unit 3.

Scott

RECEIVED
MAR 21 2014
LAND DEVELOPMENT SECTION

REC'D BY:_____ **DATE:**_____ **TIME:**_____

DRAINAGE REPORT
FOR
TIERRA VISTA UNIT 3
SUBDIVISION

APRIL 2014

Prepared for:

RCS Trails Tract 8, LLC

371 Centennial Parkway – Suite 200

Louisville, CO 80027

RECEIVED
APR 25 2014
LAND DEVELOPMENT SECTION

Prepared by:

Bohannan Huston

Engineering

Spatial Data

Advanced Technologies

DRAINAGE REPORT
FOR
TIERRA VISTA UNIT 3
SUBDIVISION

APRIL 23, 2014

Prepared for:

RCS – TRAILS TRACT 8, LLC

371 CENTENNIAL PARKWAY, SUITE 200

LOUISVILLE, CO 80027

Prepared by:

BOHANNAN HUSTON, INC.

COURTYARD I

7500 JEFFERSON STREET NE

ALBUQUERQUE, NM 87109

Prepared By:

Scott J Steffen 4/23/14

Scott J. Steffen, P.E. Date
Vice President

Bohannan Huston

TABLE OF CONTENTS

I. PURPOSE 1

II. CONCEPTS AND METHODOLOGIES 1

III. SITE LOCATION AND CHARACTERISTICS 1

IV. DEVELOPED HYDRAULIC AND HYDROLOGIC CONDITIONS 1

A. Offsite Flows 2

B. Onsite Flows 2

V. CONCLUSION 3

TABLES

TABLE 1 – TIERRA VISTA UNIT 3 ONSITE PROPOSED CONDITIONS BASIN DATA TABLE 3

APPENDICES

APPENDIX A – DEVELOPED CONDITIONS AHYMO SUMMARY, OUTPUT, AND INPUT FILES

APPENDIX B – STREET HYDRAULICS AND STORM DRAIN INLET ANALYSIS

APPENDIX C – INFRASTRUCTURE LIST

EXHIBITS

EXHIBIT 1 – PRELIMINARY PLAT

EXHIBIT 2 – BASIN MAP

EXHIBIT 3 – GRADING PLAN

EXHIBIT 4 – STORM DRAIN CAPACITY CALCULATIONS

I. PURPOSE

This report establishes a drainage management plan for Tierra Vista Unit 3 at the Trails. The proposed development consists of 58 single family detached residential lots on approximately 9.5 acres. This project is located within the Volcano Trails Sector Plan area, in northwest Albuquerque, east of the Tierra Vista Unit 2 Subdivision and west of Universe Boulevard. Tierra Vista Unit 3 is in the Trails Units 1-3 Drainage Master Plan (DMP) area and has free discharge of developed flows to an existing 54-inch storm drain that runs through the site. The Trails drainage outfall is to the Boca Negra Dam through a storm drain in Universe Boulevard. Discharge to the Boca Negra Dam is limited by the Trails Universe storm drain capacity. Flows in excess of the storm drain capacity surge to detention ponds east of Universe Boulevard. This report is submitted in support of grading approval and preliminary plat approval by the DRB.

II. CONCEPTS AND METHODOLOGIES

Drainage conditions were analyzed utilizing the 100-year, 24-hour storm event (P_{60}=1.84 in, P_{360}=2.20 in, P_{1440}=2.66 in), in accordance with the City of Albuquerque DPM. The use of the 24-hour storm event is consistent with the Trails Units 1-3 DMP. The Arid-lands Hydrologic Model (AHYMO) was utilized to determine peak flow rates for design of the storm drainage improvements within the project. The results are included in Appendix A. Street capacity and storm drain inlet calculations supporting this study are located in Appendix B.

III. SITE LOCATION AND CHARACTERISTICS

Tierra Vista Unit 3 is currently undeveloped with grades ranging from one percent to three percent. The site generally slopes from west to east. It is bounded by Woodmont Avenue to the north, Universe Boulevard to the east, Tierra Vista Unit 2 to the west and State Land Office property (currently undeveloped) to the south. Access to Tierra Vista Unit 3 will be from Woodmont Avenue and from Tierra Vista Unit 2 (Tempe Avenue).

IV. DEVELOPED HYDRAULIC AND HYDROLOGIC CONDITIONS

Tierra Vista Unit 3 is a proposed single-family residential development with 58 lots on 9.5 acres. Proposed street and lot configurations are shown on the *Preliminary Plat*, **Exhibit 1.** Tract 8 at the Trails Unit 2, to be developed as Tierra Vista Unit 3, is represented by Basin K-2 in the Trails Units 1-3 DMP. The DMP allows for full discharge of developed

flows from Tierra Vista Unit 3 to the backbone storm drain in Tempe Avenue running through the development.

The percent impervious land treatment for the proposed conditions is determined from Table A-5 of the DPM, Section 22.2. The percent impervious land treatment value used in the Trails DMP AHYMO analysis assumed a multi-family residential development (D=70%). The Tierra Vista Unit 3 percent impervious land treatment (D=60%) is based on a 6 DU/acre single family residential development.

A. OFFSITE FLOWS

Limited offsite flows reach Tierra Vista Unit 3. Offsite flows from the north are intercepted by an existing storm drain in Woodmont Avenue. No flows reach the site from the east or south as Tierra Vista Unit 3 is higher in elevation than Universe Boulevard to the east and the State Land Office property to the south. Approximately 22.4 cfs enters Tierra Vista Unit 3 via Tempe Avenue from Tierra Vista Unit 2. This flow is intercepted by storm drain inlets in a sump at the west end of Tempe Avenue. These inlets will be constructed with the Tierra Vista Unit 2 infrastructure.

In addition, the existing 54-inch backbone storm drain in Tempe Avenue runs through the proposed development and serves as the outfall from the Trails Pond H, located at the west end of Tempe Avenue. The Amended Trails Units 1-3 DMP, April 2014, requires modification to the Pond H inlet and outlet structures to meet the revised inflow and outflow flow rates. The Pond H modifications will be constructed as part of the Tierra Vista Unit 3 development to include the following:

- Provide outlet control (orifice) to limit the pond bypass flow plus routed discharge through the pond to a maximum of 26.8 cfs, when the pond water surface is at the 100-year pond volume elevation.
- Provide outlet bypass capacity around the orifice at the maximum pond water surface elevation to accommodate the 26.8 cfs if the orifice gets clogged.
- Provide pond inflow capacity to match the DMP inflow (bypass plus surge) of 111 cfs.

B. ONSITE FLOWS

Developed flows from Tierra Vista Unit 3 will be directed to the existing 54-inch backbone storm drain in Tempe Avenue utilizing the proposed street network combined with a proposed storm drain system (see Basin Map for basin locations and the Grading Plan for

POND "H"

storm drain and inlet locations). The total runoff from Tierra Vista Unit 3 is 27.3 cfs. This is slightly less than the Basin K-2 runoff (29.4 cfs) in the Trails Units 1-3 DMP.

Basins K-2.A (1 cfs), K-2.B (10.5 cfs) and K-2.D (5.1 cfs) drain to three separate low points in Tempe Avenue. The storm drain inlets at the low points in Tempe Avenue are in a sump condition and have capacity that is greater than two times the one-hundred year flow. The high points separating Basins K-2.A and K-2.B serve as the emergency overflow if the inlets at either of these sumps were to clog. The roadway high points are below the right-of-way elevations at the low point in the street. A pedestrian connection to Universe Boulevard at the east end of Tempe Avenue is the emergency overflow for Basin K-2.D.

Basin K-2.C (10.7 cfs) drains to a low point at the north end of Camp Verde Street. The storm drain inlets at this low point are in a sump condition and have capacity that is greater than two times the one-hundred year flow. The flows from Basin K-2.C will be collected by a storm drain system, which will connect to the existing 54-inch storm drain in Tempe Avenue. There is no emergency overflow for Basin K-2.C. See Exhibit 4 for storm drain capacity calculations.

A summary of the developed onsite flows is presented in the table below.

Table 1 – Tierra Vista Unit 3 Onsite Proposed Conditions

Basin Data Table

100 Year – 6 Hour Storm						
Basin ID	**Area (AC.)**	**LAND TREATMENT**				**Q(100) (CFS)**
		A	**B**	**C**	**D**	
K-2.A	0.3	0.0%	20.0%	20.0%	60.0%	**1.0**
K-2.B	3.6	0.0%	20.0%	20.0%	60.0%	**10.5**
K-2.C	3.7	0.0%	20.0%	20.0%	60.0%	**10.7**
K-2.D	1.6	0.0%	20.0%	20.0%	60.0%	**5.1**

V. CONCLUSION

This report provides a detailed study of the developed runoff and street capacities for the proposed Tierra Vista Unit 3 Subdivision. Included is the preliminary plat, proposed conditions basin map, grading plan, infrastructure list, and all necessary hydrologic and hydraulic analyses. The proposed drainage plan for Tierra Vista Unit 3 can be safely conveyed by the existing and proposed improvements in this drainage plan. This drainage plan maintains the overall drainage pattern of the area, is consistent with the Trails Units 1-3

DMP and allows for the safe management of storm runoff in the fully developed condition as well as interim conditions.

Appendix

APPENDICES

APPENDIX A: DEVELOPED CONDITIONS AHYMO SUMMARY, OUTPUT, AND INPUT FILES

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APPENDIX C: INFRASTRUCTURE LIST

APPENDIX A

DEVELOPED CONDITIONS AHYMO SUMMARY, OUTPUT, AND INPUT FILES

Bohannan Huston

DEVELOPED CONDITIONS AHYMO SUMMARY FILE

Bohannan Huston

AHYMO PROGRAM SUMMARY TABLE (AHYMO_97) - - VERSION: 1997.02c RUN DATE (MON/DAY/YR) =04/21/2014
INPUT FILE = DEV_Cond.HYM USER NO.= AHYMO-S-9702c1BohanHu-AH

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	NOTATION

*S TIERRA VISTA UNIT 3 SUBDIVISION DRAINAGE BASIN (D) PROPOSED
*S 100 YEAR - 24 HOUR STORM
*S
START TIME= .00
LOCATION DEFAULT
RAINFALL TYPE= 2 RAIN24= 2.660
*S
*S **********
*S *COMPUTE ONSITE BASINS*
*s **********
*S
*S
*S
*S COMPUTE BASIN K-2.A **********
COMPUTE NM HYD K_2.A - 1 .00051 .96 .048 1.77627 1.500 2.959 PER IMP= 60.00
*S COMPUTE BASIN K-2.B **********
COMPUTE NM HYD K_2.B - 2 .00563 10.53 .533 1.77627 1.500 2.923 PER IMP= 60.00
*S COMPUTE BASIN K-2.C **********
COMPUTE NM HYD K_2.C - 3 .00573 10.73 .543 1.77627 1.500 2.923 PER IMP= 60.00
*S COMPUTE BASIN K-2.D **********
COMPUTE NM HYD K_2.D - 4 .00271 5.07 .256 1.77627 1.500 2.929 PER IMP= 60.00
*S
FINISH

A-1

DEVELOPED CONDITIONS AHYMO OUTPUT FILE

Bohannan Huston

```
    AHYMO PROGRAM (AHYMO_97) -                          - Version:  1997.02c
         RUN DATE (MON/DAY/YR) = 04/21/2014
         START TIME (HR:MIN:SEC) = 16:46:34     USER NO.= AHYMO-S-9702c1BohanHu-AH
         INPUT FILE = DEV_Cond.HYM

*S  TIERRA VISTA UNIT 3 SUBDIVISION DRAINAGE BASIN (D) PROPOSED
*S  100 YEAR - 24 HOUR STORM
*S
*  REVISED 2005 AHYMO TO REFLECT UPDATED LAND TREATMENTS
*
*
*CONVERT TO NMHYMO
START                 TIME=0.0 HR  PUNCH CODE=0
**********************************************************
LOCATION              NM
     Soil infiltration values (LAND FACTORS) for this location are not available.
     The following default values were used.
     Land Treatment     Initial Abstr.(in)    Unif. Infilt.(in/hour)
          A             0.65                  1.67
          B             0.50                  1.25
          C             0.35                  0.83
          D             0.10                  0.04

*
**********************************************************
*
**********************************************************
*100 YEAR - 24 HOUR
RAINFALL              TYPE=2  RAIN QUARTER=0
                              RAIN ONE=1.84 IN  RAIN SIX=2.20 IN
                              RAIN DAY=2.66 IN  DT=0.10 HRS


                COMPUTED 24-HOUR RAINFALL DISTRIBUTION BASED ON NOAA ATLAS 2 - PEAK AT 1.40 HR.
                DT =    .100000 HOURS       END TIME =    24.000000 HOURS
                   .0000   .0060   .0124   .0193   .0266   .0347   .0435
                   .0532   .0640   .0764   .0908   .1071   .1906   .4476
                   .9796  1.3314  1.5028  1.6393  1.7527  1.8488  1.9308
                  1.9485  1.9639  1.9776  1.9899  2.0013  2.0117  2.0215
                  2.0306  2.0393  2.0475  2.0553  2.0627  2.0698  2.0766
                  2.0832  2.0895  2.0956  2.1015  2.1072  2.1128  2.1182
                  2.1234  2.1285  2.1335  2.1383  2.1431  2.1477  2.1522
                  2.1566  2.1610  2.1652  2.1694  2.1734  2.1774  2.1814
                  2.1852  2.1890  2.1927  2.1964  2.2000  2.2039  2.2078
                  2.2117  2.2155  2.2193  2.2231  2.2268  2.2305  2.2342
                  2.2379  2.2416  2.2452  2.2488  2.2524  2.2559  2.2595
                  2.2630  2.2665  2.2700  2.2734  2.2768  2.2802  2.2836
                  2.2870  2.2903  2.2937  2.2970  2.3002  2.3035  2.3068
                  2.3100  2.3132  2.3164  2.3196  2.3227  2.3259  2.3290
                  2.3321  2.3352  2.3383  2.3413  2.3444  2.3474  2.3504
                  2.3534  2.3563  2.3593  2.3622  2.3652  2.3681  2.3710
                  2.3739  2.3767  2.3796  2.3824  2.3853  2.3881  2.3909
                  2.3937  2.3965  2.3992  2.4020  2.4047  2.4074  2.4101
                  2.4128  2.4155  2.4182  2.4208  2.4235  2.4261  2.4287
                  2.4314  2.4340  2.4365  2.4391  2.4417  2.4442  2.4468
                  2.4493  2.4518  2.4543  2.4568  2.4593  2.4618  2.4643
                  2.4667  2.4692  2.4716  2.4740  2.4765  2.4789  2.4813
                  2.4837  2.4860  2.4884  2.4908  2.4931  2.4955  2.4978
                  2.5001  2.5024  2.5047  2.5070  2.5093  2.5116  2.5139
                  2.5161  2.5184  2.5206  2.5229  2.5251  2.5273  2.5295
                  2.5317  2.5339  2.5361  2.5383  2.5404  2.5426  2.5448
                  2.5469  2.5490  2.5512  2.5533  2.5554  2.5575  2.5596
                  2.5617  2.5638  2.5659  2.5680  2.5700  2.5721  2.5741
                  2.5762  2.5782  2.5803  2.5823  2.5843  2.5863  2.5883
                  2.5903  2.5923  2.5943  2.5963  2.5982  2.6002  2.6022
                  2.6041  2.6061  2.6080  2.6099  2.6119  2.6138  2.6157
                  2.6176  2.6195  2.6214  2.6233  2.6252  2.6271  2.6290
                  2.6308  2.6327  2.6346  2.6364  2.6383  2.6401  2.6419
                  2.6438  2.6456  2.6474  2.6492  2.6510  2.6528  2.6546
                  2.6564  2.6582  2.6600

*S
*S                    ************************
*S                    *COMPUTE ONSITE BASINS*
*s                    ************************
*S
*S
*S
*S COMPUTE BASIN K-2.A ***************************************************
*
COMPUTE NM HYD        ID=1 HYD=K_2.A  AREA=0.000505  PER A=0 PER B=20
```


A-2

```
                                PER C=20 PER D=60  TP=-0.1715  RAINFALL=-1

     K =   .093468HR    TP =   .171500HR    K/TP RATIO =   .545000     SHAPE CONSTANT, N =  7.106420
     UNIT PEAK =   .92980    CFS   UNIT VOLUME =    .9965       B =   526.28      P60 = 1.8400
     AREA =      .000303 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .100000


     K =   .152490HR    TP =   .171500HR    K/TP RATIO =   .889153     SHAPE CONSTANT, N =  3.989068
     UNIT PEAK =   .41747    CFS   UNIT VOLUME =    .9789       B =   354.44      P60 = 1.8400
     AREA =      .000202 SQ MI    IA =    .42500 INCHES    INF =   1.04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .100000

PRINT HYD                ID=1   CODE=1

                                HYDROGRAPH FROM AREA K_2.A


    RUNOFF VOLUME =     1.77627 INCHES     =        .0478 ACRE-FEET
    PEAK DISCHARGE RATE =        .96 CFS  AT   1.500 HOURS   BASIN AREA =   .0005 SQ. MI.

*
*S COMPUTE BASIN K-2.B ************************************************************
COMPUTE NM HYD       ID=2 HYD=K_2.B  AREA=0.005626  PER A=0 PER B=20
                                PER C=20 PER D=60  TP=-0.1715  RAINFALL=-1

     K =   .093468HR    TP =   .171500HR    K/TP RATIO =   .545000     SHAPE CONSTANT, N =  7.106420
     UNIT PEAK =   10.359    CFS   UNIT VOLUME =    1.005       B =   526.28      P60 = 1.8400
     AREA =      .003376 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .100000


     K =   .152490HR    TP =   .171500HR    K/TP RATIO =   .889153     SHAPE CONSTANT, N =  3.989068
     UNIT PEAK =   4.6509    CFS   UNIT VOLUME =    1.002       B =   354.44      P60 = 1.8400
     AREA =      .002250 SQ MI    IA =    .42500 INCHES    INF =   1.04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .100000

PRINT HYD                ID=2   CODE=1

                                HYDROGRAPH FROM AREA K_2.B


    RUNOFF VOLUME =     1.77627 INCHES     =        .5330 ACRE-FEET
    PEAK DISCHARGE RATE =      10.53 CFS  AT   1.500 HOURS   BASIN AREA =   .0056 SQ. MI.


*
*S COMPUTE BASIN K-2.C ************************************************************
COMPUTE NM HYD       ID=3 HYD=K_2.C  AREA=0.005733  PER A=0 PER B=20
                                PER C=20 PER D=60  TP=-0.1715  RAINFALL=-1

     K =   .093468HR    TP =   .171500HR    K/TP RATIO =   .545000     SHAPE CONSTANT, N =  7.106420
     UNIT PEAK =   10.556    CFS   UNIT VOLUME =    1.005       B =   526.28      P60 = 1.8400
     AREA =      .003440 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .100000


     K =   .152490HR    TP =   .171500HR    K/TP RATIO =   .889153     SHAPE CONSTANT, N =  3.989068
     UNIT PEAK =   4.7394    CFS   UNIT VOLUME =    1.002       B =   354.44      P60 = 1.8400
     AREA =      .002293 SQ MI    IA =    .42500 INCHES    INF =   1.04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .100000

PRINT HYD                ID=3   CODE=1

                                HYDROGRAPH FROM AREA K_2.C


    RUNOFF VOLUME =     1.77627 INCHES     =        .5431 ACRE-FEET
    PEAK DISCHARGE RATE =      10.73 CFS  AT   1.500 HOURS   BASIN AREA =   .0057 SQ. MI.


*
*S COMPUTE BASIN K-2.D ************************************************************
COMPUTE NM HYD       ID=4 HYD=K_2.D  AREA=0.002707  PER A=0 PER B=20
                                PER C=20 PER D=60  TP=-0.1715  RAINFALL=-1

     K =   .093468HR    TP =   .171500HR    K/TP RATIO =   .545000     SHAPE CONSTANT, N =  7.106420
     UNIT PEAK =   4.9841    CFS   UNIT VOLUME =    1.004       B =   526.28      P60 = 1.8400
```


A-3

```
      AREA =      .001624 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
      RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .100000


      K =   .152490HR    TP =   .171500HR    K/TP RATIO =   .889153     SHAPE CONSTANT, N =  3.989068
      UNIT PEAK =   2.2378    CFS   UNIT VOLUME =    .9987       B =   354.44      P60 = 1.8400
      AREA =      .001083 SQ MI    IA =    .42500 INCHES    INF =   1.04000 INCHES PER HOUR
      RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .100000

PRINT HYD                 ID=4   CODE=1

                                        HYDROGRAPH FROM AREA K_2.D


    RUNOFF VOLUME =     1.77627 INCHES     =        .2564 ACRE-FEET
    PEAK DISCHARGE RATE =       5.07 CFS  AT   1.500 HOURS   BASIN AREA =    .0027 SQ. MI.


*
*S
FINISH

    NORMAL PROGRAM FINISH          END TIME (HR:MIN:SEC) = 16:46:34
```


A-4

DEVELOPED CONDITIONS AHYMO INPUT FILE

Bohannan Huston

```
*S  TIERRA VISTA UNIT 3 SUBDIVISION DRAINAGE BASIN (D) PROPOSED
*S  100 YEAR - 24 HOUR STORM
*S
*   REVISED 2005 AHYMO TO REFLECT UPDATED LAND TREATMENTS
*
*
*CONVERT TO NMHYMO
START                    TIME=0.0 HR  PUNCH CODE=0
**********************************************************
LOCATION   NM
*
**********************************************************
*
**********************************************************
*100 YEAR - 24 HOUR
RAINFALL                 TYPE=2  RAIN QUARTER=0
                  RAIN ONE=1.84 IN  RAIN SIX=2.20 IN
                  RAIN DAY=2.66 IN  DT=0.10 HRS

*S
*S                        ************************
*S                        *COMPUTE ONSITE BASINS*
*s                        ************************
*S
*S
*S
*S COMPUTE BASIN K-2.A ************************************************
*
COMPUTE NM HYD        ID=1 HYD=K_2.A  AREA=0.000505  PER A=0 PER B=20
                PER C=20 PER D=60  TP=-0.1715  RAINFALL=-1
PRINT HYD         ID=1   CODE=1
*
*S COMPUTE BASIN K-2.B ************************************************
COMPUTE NM HYD        ID=2 HYD=K_2.B  AREA=0.005626  PER A=0 PER B=20
                PER C=20 PER D=60  TP=-0.1715  RAINFALL=-1
PRINT HYD         ID=2   CODE=1
*
*S COMPUTE BASIN K-2.C ************************************************
COMPUTE NM HYD        ID=3 HYD=K_2.C  AREA=0.005733  PER A=0 PER B=20
                PER C=20 PER D=60  TP=-0.1715  RAINFALL=-1
PRINT HYD         ID=3   CODE=1
*
*S COMPUTE BASIN K-2.D ************************************************
COMPUTE NM HYD        ID=4 HYD=K_2.D  AREA=0.002707  PER A=0 PER B=20
                PER C=20 PER D=60  TP=-0.1715  RAINFALL=-1
PRINT HYD         ID=4   CODE=1
*
*S

FINISH
```

APPENDIX B

STREET HYDRAULICS AND STORM DRAIN INLET ANALYSIS

Bohannan Huston

Tempe Ave S=0.5% AP#1.txt

MANNING'S N = 0.017 SLOPE = 0.005

POINT	DIST	ELEV	POINT	DIST	ELEV	POINT	DIST	ELEV
1.0	0.0	0.9	5.0	11.5	0.1	9.0	37.7	0.7
2.0	8.9	0.7	6.0	23.5	0.4	10.0	38.1	0.7
3.0	9.3	0.7	7.0	35.5	0.1	11.0	47.0	0.9
4.0	9.5	0.0	8.0	37.5	0.0			

WSEL FT.	DEPTH INC	FLOW AREA SQ.FT.	FLOW RATE (CFS)	WETTED PER (FT)	FLOW VEL (FPS)	TOPWID PLUS OBSTRUCTIONS	TOTAL ENERGY (FT)	
0.050	0.050	0.039	0.020	1.645	0.511	2.484	0.054	
0.100	0.100	0.156	0.127	3.290	0.811	4.048	0.110	
0.150	0.150	0.366	0.338	6.318	0.925	6.996	0.163	
0.200	0.200	0.795	0.832	11.423	1.046	12.021	0.217	
0.250	0.250	1.476	1.823	16.527	1.235	17.047	0.274	
0.300	0.300	2.408	3.444	21.631	1.430	22.072	0.332	
0.350	0.350	3.591	5.822	26.735	1.621	27.098	0.391	
0.400	0.400	4.981	9.547	28.839	1.917	29.123	0.457	
0.450	0.450	6.391	14.433	28.942	2.258	29.148	0.529	
0.500	0.500	7.803	20.082	29.045	2.574	29.174	0.603	
0.550	0.550	9.217	26.441	29.148	2.869	29.199	0.678	
0.600	0.600	10.631	33.466	29.251	3.148	29.224	0.754	
0.650	0.650	12.047	41.123	29.354	3.413	29.250	0.831	CAPACITY
0.700	0.700	13.536	45.935	33.273	3.394	32.217	0.879	
0.750	0.750	15.270	51.215	38.202	3.354	37.144	0.925	
0.800	0.800	17.250	57.881	43.131	3.355	42.072	0.975	

BASIN K-2.A - 1 cfs

TIERRA VISTA UNIT 2 - 22.4 cfs

23.4 cfs < 41.1 cfs CAPACITY ∴ OK

FLOW DEPTH @ 23.4 cfs ≈ 0.53'

INLET CAPACITY @ SUMP = 14 cfs (SEE NOMOGRAPH)

2 INLETS @ 14 cfs = 28 cfs > 23.4 cfs ∴ OK

CAPACITY @ TOP OF CURB = 28 cfs

2 INLETS = 56 cfs > 46.8 cfs (2 x 100-YR)

B-1

GRATE OPEN AREA - 7.06 SF / GRATE

60" WING 40"@TC

18.5" 18.5" NET OPEN AREA

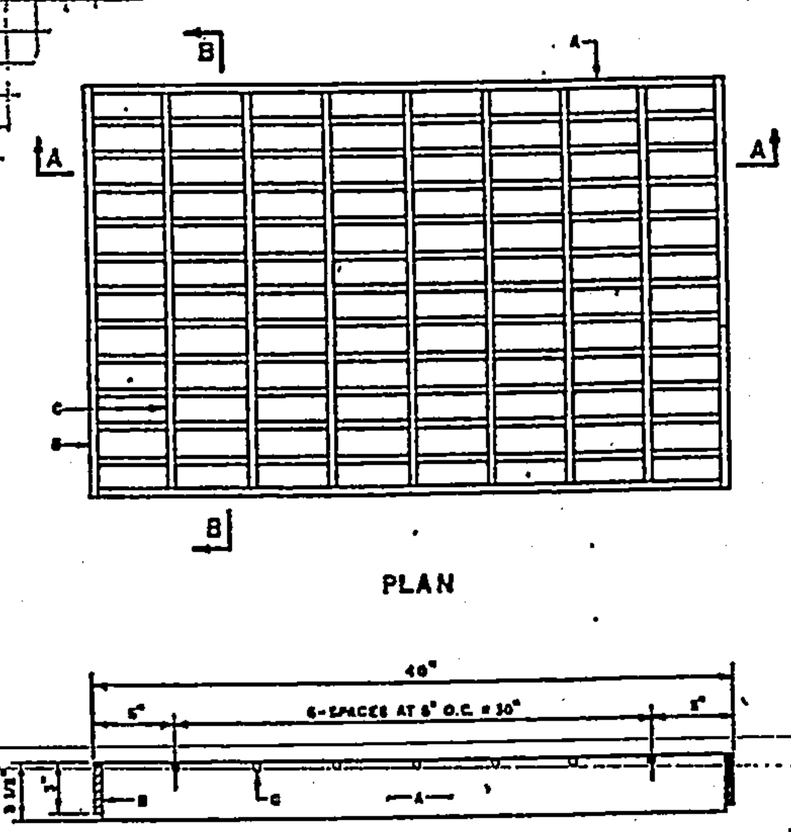
35.5"

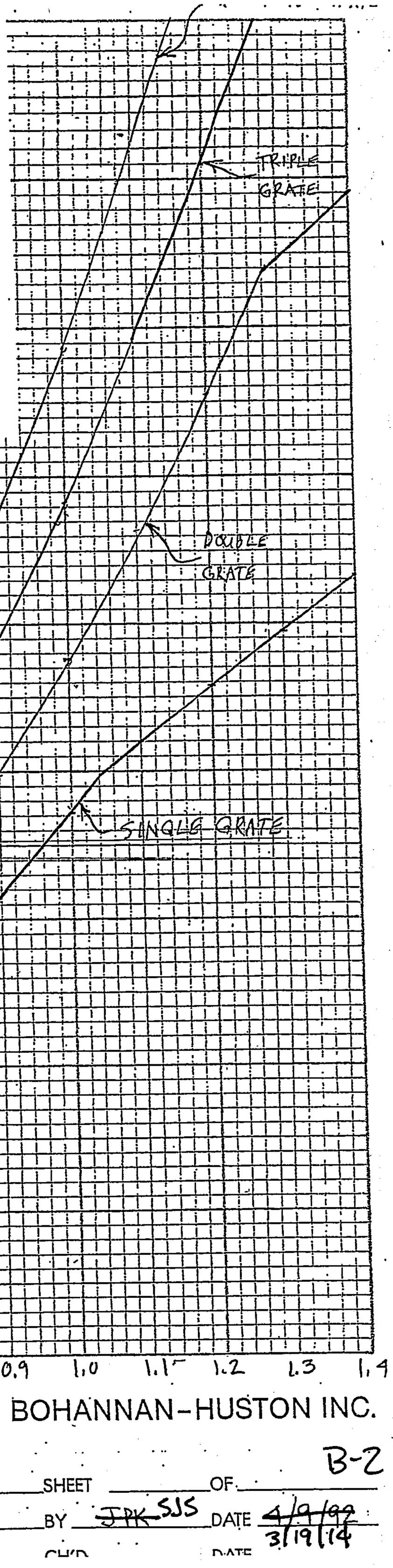
GRATE @ 10" (0.83') BELOW TC

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 ($h \le 0.83'$)	$36.4\,h^{1.5}$	$46.2\,h^{1.5}$	$56.0\,h^{1.5}$	$65.7\,h^{1.5}$
3) 4-SIDED WEIR ($h > 0.83'$)	ADD TO 2): $11(h-.83)^{1.5}$	ADD TO 2): $22(h-.83)^{1.5}$	ADD TO 2): $33(h-.83)^{1.5}$	ADD TO 2): $44(h-.83)^{1.5}$

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

2) & 3) $Q = 3.3\,Ph^{1.5}$





h = 0.53'

Q = 14 cfs

BOHANNAN-HUSTON INC.

B-2

PROJECT NAME TIERRA VISTA UNIT 3 SHEET ____ OF ____

PROJECT NO. TEMPE AVE AP #1 BY ~~JPK~~ SJS DATE ~~4/9/99~~ 3/19/14

SUBJECT RATING CURVE FOR TYPE I INLETS CHK'D DATE

Tempe Ave S=0.6% AP#2.txt

MANNING'S N = 0.017 SLOPE = 0.006

POINT	DIST	ELEV	POINT	DIST	ELEV	POINT	DIST	ELEV
1.0	0.0	0.9	5.0	11.5	0.1	9.0	37.7	0.7
2.0	8.9	0.7	6.0	23.5	0.4	10.0	38.1	0.7
3.0	9.3	0.7	7.0	35.5	0.1	11.0	47.0	0.9
4.0	9.5	0.0	8.0	37.5	0.0			

WSEL FT.	DEPTH INC	FLOW AREA SQ.FT.	FLOW RATE (CFS)	WETTED PER (FT)	FLOW VEL (FPS)	TOPWID PLUS OBSTRUCTIONS	TOTAL ENERGY (FT)
0.050	0.050	0.039	0.022	1.645	0.560	2.484	0.055
0.100	0.100	0.156	0.139	3.290	0.889	4.048	0.112
0.150	0.150	0.366	0.371	6.318	1.013	6.996	0.166
0.200	0.200	0.795	0.911	11.423	1.146	12.021	0.220
0.250	0.250	1.476	1.996	16.527	1.353	17.047	0.278
0.300	0.300	2.408	3.773	21.631	1.567	22.072	0.338
0.350	0.350	3.591	6.377	26.735	1.776	27.098	0.399
0.400	0.400	4.981	10.458	28.839	2.100	29.123	0.469
0.450	0.450	6.391	15.811	28.942	2.474	29.148	0.545
0.500	0.500	7.803	21.999	29.045	2.819	29.174	0.624
0.550	0.550	9.217	28.965	29.148	3.143	29.199	0.704
0.600	0.600	10.631	36.660	29.251	3.448	29.224	0.785
0.650	0.650	12.047	45.048	29.354	3.739	29.250	0.867
0.700	0.700	13.536	50.320	33.273	3.717	32.217	0.915
0.750	0.750	15.270	56.104	38.202	3.674	37.144	0.960
0.800	0.800	17.250	63.405	43.131	3.676	42.072	1.010

CAPACITY

BASIN K-2.B - 10.5 cfs < 45.0 cfs CAPACITY ∴ OK

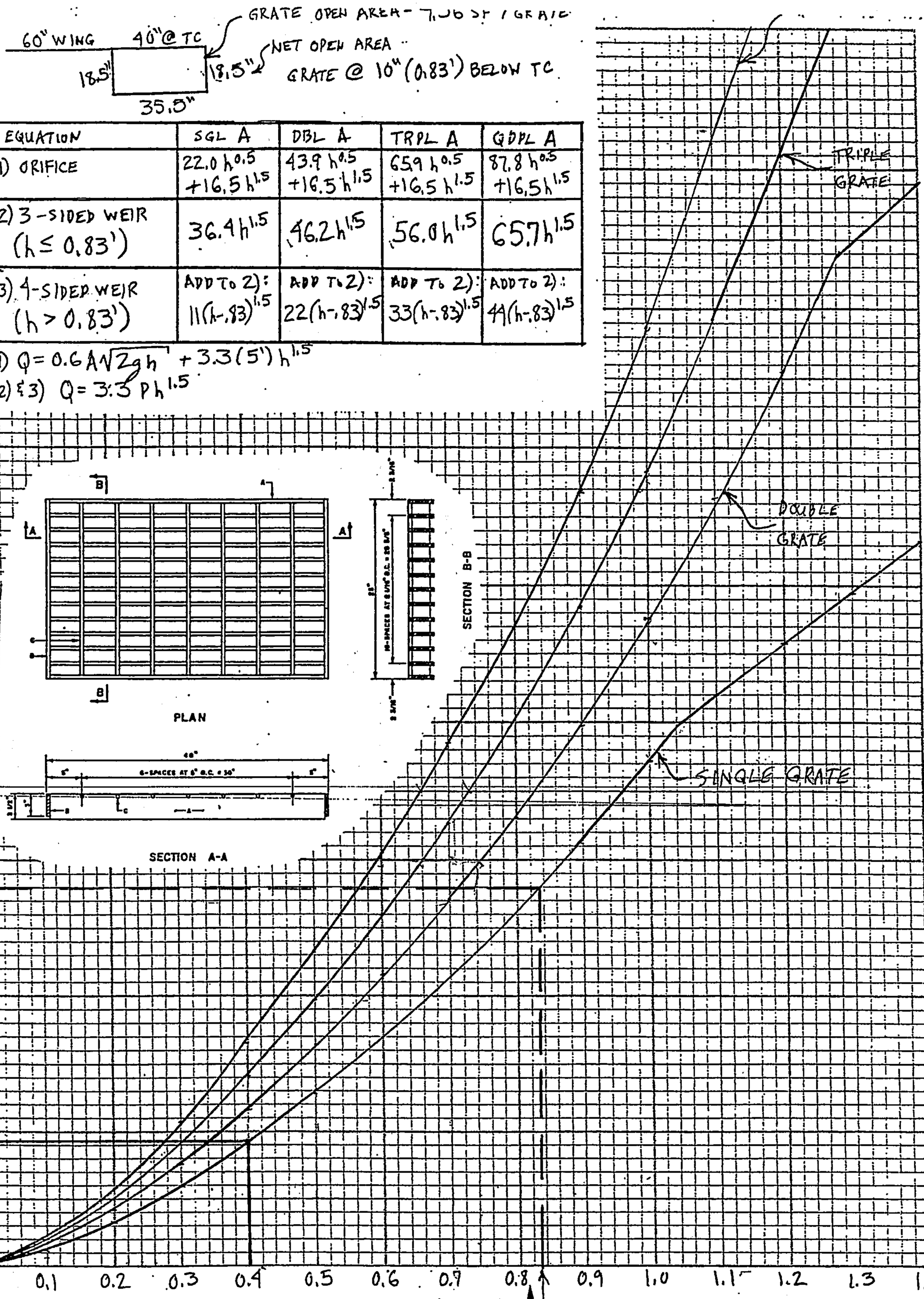
FLOW DEPTH @ 10.5 cfs ≈ 0.40'

INLET CAPACITY @ SUMP: 9.2 cfs (SEE NOMOGRAPH)

2 INLETS @ 9.2 cfs = 18.4 cfs > 10.5 cfs ∴ OK

CAPACITY @ TOP OF CURB = 28 cfs

2 INLETS = 56 cfs > 21 cfs (2x100 YR)



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 ($h \le 0.83'$)	$36.4\,h^{1.5}$	$46.2\,h^{1.5}$	$56.0\,h^{1.5}$	$65.7\,h^{1.5}$
3) 4-SIDED WEIR ($h > 0.83'$)	ADD TO 2): $11(h-.83)^{1.5}$	ADD TO 2): $22(h-.83)^{1.5}$	ADD TO 2): $33(h-.83)^{1.5}$	ADD TO 2): $44(h-.83)^{1.5}$

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

2) & 3) $Q = 3.3\,P\,h^{1.5}$

$h = 0.40'$

$Q = 9.2$ cfs

BOHANNAN-HUSTON INC.

PROJECT NAME Tierra Vista Unit 3 SHEET ____ OF B-4

PROJECT NO. Tempe Ave AP#2 BY JPKSJS DATE ~~4/9/92~~ 4/21/14

SUBJECT RATING CURVE FOR TYPE A INLETS CH'D DATE

Tempe Ave S=1.13% AP#4.txt

MANNING'S N = 0.017 SLOPE = 0.011

POINT	DIST	ELEV	POINT	DIST	ELEV	POINT	DIST	ELEV
1.0	0.0	0.9	5.0	11.5	0.1	9.0	37.7	0.7
2.0	8.9	0.7	6.0	23.5	0.4	10.0	38.1	0.7
3.0	9.3	0.7	7.0	35.5	0.1	11.0	47.0	0.9
4.0	9.5	0.0	8.0	37.5	0.0			

WSEL FT.	DEPTH INC	FLOW AREA SQ.FT.	FLOW RATE (CFS)	WETTED PER (FT)	FLOW VEL (FPS)	TOPWID PLUS OBSTRUCTIONS	TOTAL ENERGY (FT)
0.050	0.050	0.039	0.030	1.645	0.768	2.484	0.059
0.100	0.100	0.156	0.191	3.290	1.219	4.048	0.123
0.150	0.150	0.366	0.508	6.318	1.390	6.996	0.180
0.200	0.200	0.795	1.250	11.423	1.572	12.021	0.238
0.250	0.250	1.476	2.740	16.527	1.856	17.047	0.304
0.300	0.300	2.408	5.177	21.631	2.150	22.072	0.372
0.350	0.350	3.591	8.752	26.735	2.437	27.098	0.442
0.400	0.400	4.981	14.353	28.839	2.882	29.123	0.529
0.450	0.450	6.391	21.698	28.942	3.395	29.148	0.629
0.500	0.500	7.803	30.191	29.045	3.869	29.174	0.733
0.550	0.550	9.217	39.750	29.148	4.313	29.199	0.839
0.600	0.600	10.631	50.311	29.251	4.732	29.224	0.948
0.650	0.650	12.047	61.821	29.354	5.132	29.250	1.060
0.700	0.700	13.536	69.056	33.273	5.102	32.217	1.105
0.750	0.750	15.270	76.994	38.202	5.042	37.144	1.145
0.800	0.800	17.250	87.014	43.131	5.044	42.072	1.196

CAPACITY

BASIN K-2.D - 5.1 cfs < 61.8 cfs CAPACITY ∴ OK

FLOW DEPTH @ 5.1 cfs ≈ 0.30'

INLET CAPACITY @ SUMP = 7.5 cfs (SEE NOMOGRAPH)

| DOUBLE 'A' INLET @ 7.5 cfs > 5.1 cfs ∴ OK

CAPACITY @ TOP OF CURB = 35.3 cfs

| DOUBLE 'A' INLET @ 35.3 cfs > 10.2 cfs

(2x 100 YR)

GRATE OPEN AREA = 7.36 SF / GRATE

60" WING | 40"@TC

18.5" | 18.5" — NET OPEN AREA

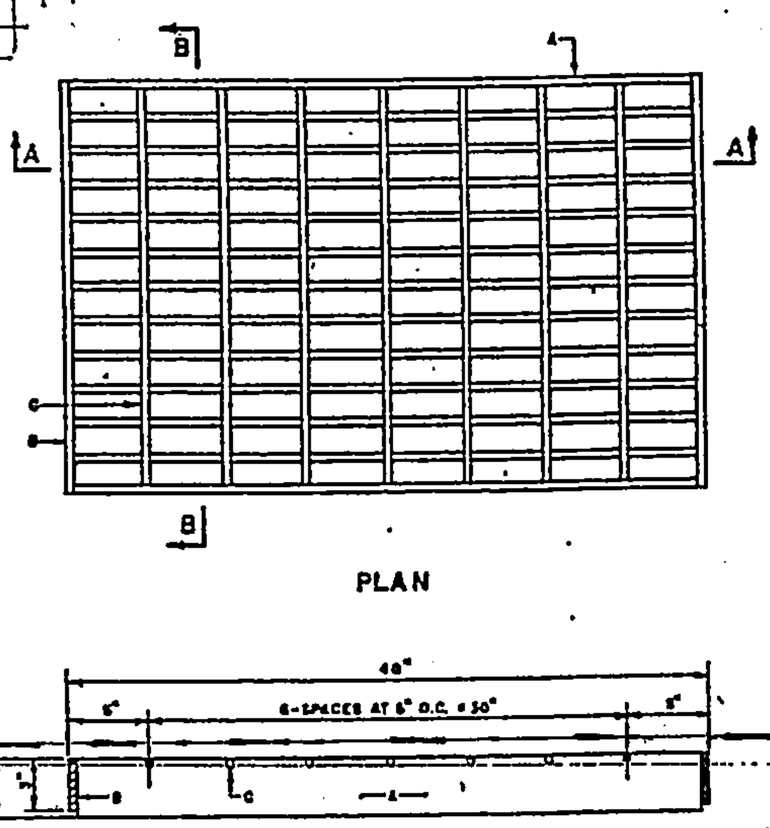
35.5"

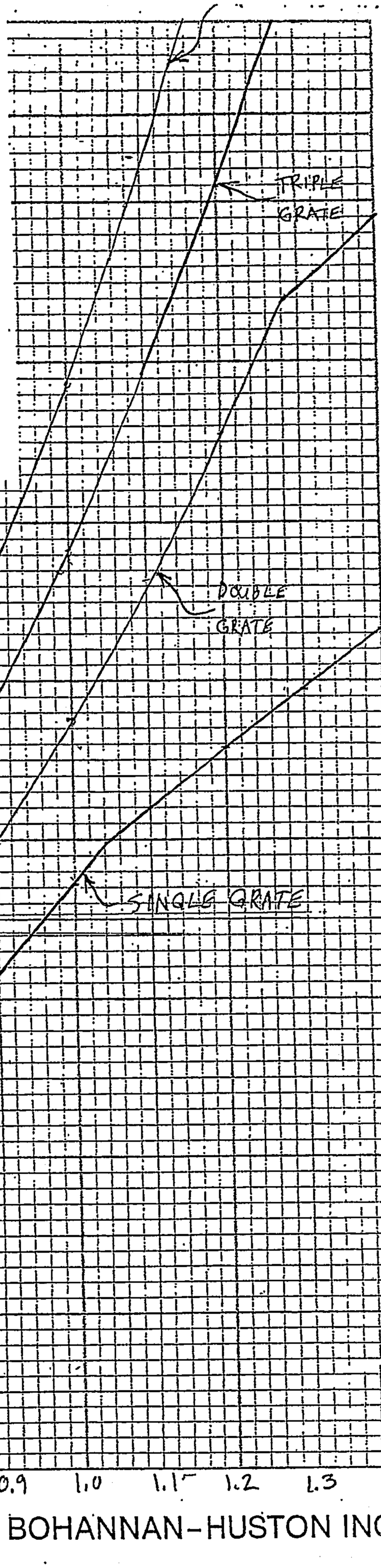
GRATE @ 10" (0.83') BELOW TC

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 ($h \le 0.83'$)	$36.4\,h^{1.5}$	$46.2\,h^{1.5}$	$56.0\,h^{1.5}$	$65.7\,h^{1.5}$
3) 4-SIDED WEIR ($h > 0.83'$)	ADD TO 2): $11(h-.83)^{1.5}$	ADD TO 2): $22(h-.83)^{1.5}$	ADD TO 2): $33(h-.83)^{1.5}$	ADD TO 2): $44(h-.83)^{1.5}$

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

2) & 3) $Q = 3.3\,Ph^{1.5}$





h = 0.30'

Q = 7.5 cfs

BOHANNAN-HUSTON INC.

PROJECT NAME Tierra Vista Unit 3 SHEET ____ OF B-6

PROJECT NO. Tempe Ave AP #4 BY ~~JPK~~ SJS DATE ~~4/9/92~~

SUBJECT RATING CURVE FOR TYPE K INLETS CH'D DATE 3/9/14

MANNING'S N = 0.02 SLOPE = 0.01

POINT	DIST	ELEV	POINT	DIST	ELEV	POINT	DIST	ELEV
1.0	0.0	0.9	5.0	11.5	0.1	9.0	39.7	0.7
2.0	8.9	0.7	6.0	24.5	0.4	10.0	40.1	0.7
3.0	9.3	0.7	7.0	37.5	0.1	11.0	49.0	0.9
4.0	9.5	0.0	8.0	39.5	0.0			

WSEL FT.	DEPTH INC	FLOW AREA SQ.FT.	FLOW RATE (CFS)	WETTED PER (FT)	FLOW VEL (FPS)	TOPWID PLUS OBSTRUCTIONS	TOTAL ENERGY (FT)	
0.05	0.05	0.04	0.03	1.64	0.72	2.48	0.06	
0.10	0.10	0.16	0.18	3.29	1.15	4.05	0.12	
0.15	0.15	0.37	0.47	6.48	1.29	7.16	0.18	
0.20	0.20	0.82	1.19	12.01	1.46	12.60	0.23	
0.25	0.25	1.54	2.65	17.53	1.72	18.05	0.30	
0.30	0.30	2.53	5.06	23.05	2.00	23.49	0.36	
0.35	0.35	3.79	8.63	28.57	2.27	28.93	0.43	
0.40	0.40	5.28	14.23	30.84	2.70	31.12	0.51	
0.45	0.45	6.79	21.60	30.94	3.18	31.15	0.61	
0.50	0.50	8.30	30.13	31.04	3.63	31.17	0.70	
0.55	0.55	9.82	39.74	31.15	4.05	31.20	0.80	
0.60	0.60	11.33	50.37	31.25	4.44	31.22	0.91	
0.65	0.65	12.85	61.95	31.35	4.82	31.25	1.01	CAPACITY
0.70	0.70	14.44	69.56	35.27	4.82	34.22	1.06	
0.75	0.75	16.27	77.81	40.20	4.78	39.14	1.11	
0.80	0.80	18.35	88.04	45.13	4.80	44.07	1.16	

BASIN K-2.C 10.7 cfs < 62.0 cfs CAPACITY ∴ OK

FLOW DEPTH @ 10.7 cfs ≈ 0.37'

INLET CAPACITY @ SUMP = 8.2 cfs (SEE NOMOGRAPH)

2 INLETS @ 8.2 cfs = 16.4 cfs > 10.7 cfs ∴ OK

CAPACITY @ TOP OF CURB = 28 cfs

2 INLETS = 56 cfs > 21.4 cfs (2x 100-YR)

GRATE OPEN AREA = 7.06 SF / GRATE

60" WING 40"@TC

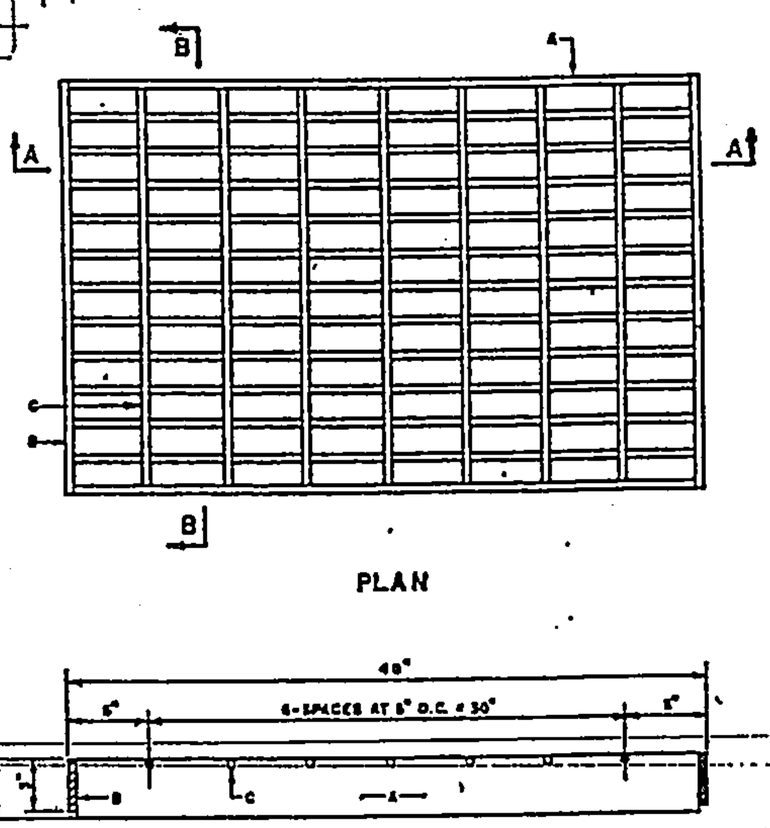
18.5" × 35.5" NET OPEN AREA

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 ($h \le 0.83'$)	$36.4\,h^{1.5}$	$46.2\,h^{1.5}$	$56.0\,h^{1.5}$	$65.7\,h^{1.5}$
3) 4-SIDED WEIR ($h > 0.83'$)	ADD TO 2): $11(h-.83)^{1.5}$	ADD TO 2): $22(h-.83)^{1.5}$	ADD TO 2): $33(h-.83)^{1.5}$	ADD TO 2): $44(h-.83)^{1.5}$

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

2) & 3) $Q = 3.3\,Ph^{1.5}$



CAPACITY (Q) IN CFS

HEAD (h) IN FEET

TRIPLE GRATE

DOUBLE GRATE

SINGLE GRATE

TC 0.83'

h = 0.37'

Q = 8.2 cfs

BOHANNAN-HUSTON INC.

PROJECT NAME Tierra Vista Unit 3 SHEET ____ OF B-8

PROJECT NO. Camp Verde St. AP #3 BY JPK SJS DATE ~~4/9/92~~ 3/19/14

SUBJECT Rating Curve for Type K Inlets CH'D ____ DATE ____

Black Canyon Street S=0.84%.txt

MANNING'S N = 0.017 SLOPE = 0.008

POINT	DIST	ELEV	POINT	DIST	ELEV	POINT	DIST	ELEV
1.0	0.0	0.9	5.0	12.5	0.1	9.0	42.7	0.7
2.0	9.9	0.7	6.0	26.5	0.4	10.0	43.1	0.7
3.0	10.3	0.7	7.0	40.5	0.1	11.0	53.0	0.9
4.0	10.5	0.0	8.0	42.5	0.0			

WSEL FT.	DEPTH INC	FLOW AREA SQ.FT.	FLOW RATE (CFS)	WETTED PER (FT)	FLOW VEL (FPS)	TOPWID PLUS OBSTRUCTIONS	TOTAL ENERGY (FT)	
0.050	0.050	0.039	0.026	1.645	0.662	2.484	0.057	
0.100	0.100	0.156	0.164	3.290	1.051	4.048	0.117	
0.150	0.150	0.366	0.438	6.318	1.199	6.996	0.172	
0.200	0.200	0.795	1.078	11.423	1.356	12.021	0.229	
0.250	0.250	1.476	2.362	16.527	1.601	17.047	0.290	
0.300	0.300	2.408	4.464	21.631	1.854	22.072	0.353	
0.350	0.350	3.591	7.546	26.735	2.101	27.098	0.419	
0.400	0.400	5.026	11.759	31.839	2.340	32.123	0.485	
0.450	0.450	6.631	18.248	32.943	2.752	33.148	0.568	
0.500	0.500	8.243	26.171	33.046	3.175	33.174	0.657	
0.550	0.550	9.857	35.179	33.149	3.569	33.199	0.748	
0.600	0.600	11.471	45.205	33.252	3.941	33.224	0.842	
0.650	0.650	13.087	56.192	33.355	4.294	33.250	0.937	CAPACITY
0.700	0.700	14.776	63.876	37.278	4.323	36.221	0.991	
0.750	0.750	16.711	72.175	42.214	4.319	41.156	1.040	
0.800	0.800	18.892	82.257	47.150	4.354	46.091	1.095	
0.850	0.850	21.320	94.159	52.086	4.417	51.026	1.153	

BASIN K-2.B: 63% OF TOTAL BAISN

= 6.2 cfs < 56.2 cfs CAPACITY ∴ OK

NO INLETS NEEDED

MANNING'S N = 0.017 SLOPE = 0.021

POINT	DIST	ELEV	POINT	DIST	ELEV	POINT	DIST	ELEV
1.0	0.0	0.9	5.0	11.5	0.1	9.0	37.7	0.7
2.0	8.9	0.7	6.0	23.5	0.4	10.0	38.1	0.7
3.0	9.3	0.7	7.0	35.5	0.1	11.0	47.0	0.9
4.0	9.5	0.0	8.0	37.5	0.0			

WSEL FT.	DEPTH INC	FLOW AREA SQ.FT.	FLOW RATE (CFS)	WETTED PER (FT)	FLOW VEL (FPS)	TOPWID PLUS OBSTRUCTIONS	TOTAL ENERGY (FT)
0.050	0.050	0.039	0.041	1.645	1.045	2.484	0.067
0.100	0.100	0.156	0.259	3.290	1.658	4.048	0.143
0.150	0.150	0.366	0.692	6.318	1.891	6.996	0.206
0.200	0.200	0.795	1.700	11.423	2.138	12.021	0.271
0.250	0.250	1.476	3.726	16.527	2.525	17.047	0.349
0.300	0.300	2.408	7.041	21.631	2.924	22.072	0.433
0.350	0.350	3.591	11.902	26.735	3.314	27.098	0.521
0.400	0.400	4.981	19.519	28.839	3.919	29.123	0.639
0.450	0.450	6.391	29.509	28.942	4.617	29.148	0.782
0.500	0.500	7.803	41.059	29.045	5.262	29.174	0.931
0.550	0.550	9.217	54.059	29.148	5.865	29.199	1.085
0.600	0.600	10.631	68.422	29.251	6.436	29.224	1.244
0.650	0.650	12.047	84.076	29.354	6.979	29.250	1.408
0.700	0.700	13.536	93.915	33.273	6.938	32.217	1.449
0.750	0.750	15.270	104.710	38.202	6.857	37.144	1.481
0.800	0.800	17.250	118.337	43.131	6.860	42.072	1.532

CAPACITY

BASIN K-2.C: 63% OF TOTAL BASIN

= 7.0 cfs < 9.9 cfs CAPACITY ∴ OK

- ROLL CURB OK
- NO INLETS NEEDED

APPENDIX C

INFRASTRUCTURE LIST

Bohannan Huston

Current DRC
Project No. _____

Date Submitted: April 30, 2014
Date Site Plan for Bldg Permit Approv _____
Date Site Plan for Sub. Approved: _____

Date Preliminary Plat Approved: _____

Date Preliminary Plat Expires: _____

DRB Project No. _____

Figure 12

INFRASTRUCTURE LIST

EXHIBIT 'A'
TO SUBDIVISION IMPROVEMENTS AGREEMENT
DEVELOPMENT REVIEW BOARD (D.R.B.) REQUIRED INFRASTRUCTURE LIST

TIERRA VISTA UNIT 3 AT THE TRAILS
(REPLAT OF TRACT 8 AT THE TRAILS UNIT 2)

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 appurtenant 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 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 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.

SIA Sequence #	COA DRC Project #	Size	Type of Improvement	Location	From	To	Private Inspector	City Inspector	City Cnst Engineer
		PAVING							
		32' F-F	RESIDENTIAL (NORMAL LOCAL) PAVING W/PCC CURB & GUTTER, PCC 4' WIDE SIDEWALK ON BOTH SIDES	BLACK CANYON STREET	WOODMONT AVENUE	TEMPE AVENUE	/	/	/
		28' F-F	RESIDENTIAL PAVING W/ PCC CURB & GUTTER, PCC 4' WIDE SIDEWALK ON BOTH SIDES	ORO VALLEY ROAD	BLACK CANYON STREET	CAMP VERDE STREET	/	/	/
		28' F-F	RESIDENTIAL PAVING W/ PCC CURB & GUTTER, PCC 4' WIDE SIDEWALK ON BOTH SIDES*	CAMP VERDE STREET	TEMPE AVENUE	ORO VALLEY ROAD	/	/	/
		28' F-F	RESIDENTIAL PAVING W/ PCC CURB & GUTTER, PCC 4' WIDE SIDEWALK ON EAST SIDE*	CAMP VERDE STREET	ORO VALLEY ROAD	STUB STREET (END)	/	/	/
		28' F-F	RESIDENTIAL PAVING W/ PCC CURB & GUTTER, PCC 4' WIDE SIDEWALK ON BOTH SIDES*	TEMPE AVENUE	WEST BOUNDARY	CAMP VERDE STREET	/	/	/
		24' F-F	RESIDENTIAL PAVING W/ PCC CURB & GUTTER, PCC 4' WIDE SIDEWALK ON SOUTH SIDE*	TEMPE AVENUE	CAMP VERDE STREET	STUB STREET (END)	/	/	/
		* SIDEWALKS TO BE BUILT/DEFERRED IN ACCORDANCE W/APPROVED SIDEWALK EXHIBIT							
		PUBLIC STORM DRAIN IMPROVEMENTS							
		18" DIA	RCP W/ MH & INLETS	TEMPE AVENUE	VARIOUS LOCATIONS IN TEMPE AVENUE	TIE TO EXISTING 54" STORM DRAIN IN TEMPE AVENUE	/	/	/
		18" - 24" DIA	RCP W/ MH & INLETS	CAMP VERDE STREET	ORO VALLEY ROAD	TEMPE AVENUE	/	/	/
		54" DIA	RCP W/ MH & INLETS	TEMPE AVENUE	CAMP VERDE STREET	UNIVERSE BLVD	/	/	/
		54" DIA	REMOVE/ABANDON EXISTING RCP STORM DRAIN	TEMPE AVENUE	CAMP VERDE STREET	UNIVERSE BLVD	/	/	/
			MODIFIY POND H INLET AND OUTLET PER APRIL 2014 AMENDED TRAILS, UNITS 1-3 DMP	POND H	WEST END OF TEMPE AVENUE		/	/	/
		NOTE:	CERTIFICATION OF THE GRADING AND DRAINAGE PLAN IS REQUIRED FOR RELEASE OF FINANCIAL GUARANTEES						

C-1

SIA Sequence #	COA DRC Project #	Size	Type of Improvement	Location	From	To	Private Inspector	City Inspector	City Cnst Engineer
		PUBLIC WATERLINE IMPROVEMENTS							
		EX 12" DIA	WATERLINE W/ NEC. VALVES FH'S, MJ'S & RJ'S	TEMPE AVENUE	BUILT UNDER COA 730084		/	/	/
		8" DIA	WATERLINE W/ NEC. VALVES FH'S, MJ'S & RJ'S	BLACK CANYON STREET	TEMPE AVENUE	ORO VALLEY ROAD	/	/	/
		6" DIA	WATERLINE W/ NEC. VALVES FH'S, MJ'S & RJ'S	BLACK CANYON STREET	ORO VALLEY ROAD	LOT 1	/	/	/
		8" DIA	WATERLINE W/ NEC. VALVES FH'S, MJ'S & RJ'S	ORO VALLEY ROAD	BLACK CANYON STREET	CAMP VERDE STREET	/	/	/
		8" DIA	WATERLINE W/ NEC. VALVES FH'S, MJ'S & RJ'S	CAMP VERDE STREET	TEMPE AVENUE	ORO VALLEY ROAD	/	/	/
		4" DIA	WATERLINE W/ NEC. VALVES FH'S, MJ'S & RJ'S	CAMP VERDE STREET	ORO VALLEY ROAD	STUB STREET (END)	/	/	/
		PUBLIC SANITARY SEWER IMPROVEMENTS							
		EX 8" DIA	SANITARY SEWER W/ NEC. MH'S & SERVICES	CAMP VERDE STREET	BUILT UNDER COA 730084		/	/	/
		EX 15" DIA	SANITARY SEWER W/ NEC. MH'S & SERVICES	TEMPE AVENUE	BUILT UNDER COA 730084		/	/	/
		8" DIA	SANITARY SEWER W/ NEC. MH'S & SERVICES	BLACK CANYON STREET	TEMPE AVENUE	LOT 1	/	/	/
		8" DIA	SANITARY SEWER W/ NEC. MH'S & SERVICES	ORO VALLEY ROAD	LOT 42	CAMP VERDE STREET	/	/	/
		15" DIA	SANITARY SEWER W/ NEC. MH'S & SERVICES	UNIVERSE BLVD	TEMPE AVENUE	APPROX 1050' SOUTH TO EXIST 15" SAS @ VVHS	/	/	/
		15" DIA	SANITARY SEWER W/ NEC. MH'S & SERVICES	TEMPE AVENUE	LOT 24	UNIVERSE BLVD	/	/	/
		*	REMOVE, SALVAGE AND DISPOSE EXISTING SANITARY SEWER LIFT STATION						

C-2

AGENT/OWNER	DEVELOPMENT REVIEW BOARD MEMBER APPROVALS			
SCOTT STEFFEN 4/30/2014				
PREPARED BY: PRINT NAME DATE	DRB CHAIR	DATE	PARKS & GENERAL SERVICES	DATE
BOHANNAN HUSTON, INC.				
FIRM:	TRANSPORTATION DEVELOPMENT	DATE	AMAFCA	DATE
SIGNATURE	ABCWUA	DATE	CITY ENGINEER	DATE
MAXIMUM TIME ALLOWED TO CONSTRUCT IMPROVEMENTS WITHOUT A DRB EXTENSION				DATE

DESIGN REVIEW COMMITTEE REVISIONS

REVISION	DATE	DRC CHAIR	USER DEPARTMENT	AGENT/OWNER

C-3

EXHIBITS

EXHIBIT 1: PRELIMINARY PLAT

EXHIBIT 2: BASIN MAP

EXHIBIT 3: GRADING PLAN

EXHIBIT 4: STORM DRAIN CAPACITY CALCULATIONS

EXHIBIT 1

PRELIMINARY PLAT

Bohannan Huston

EXHIBIT 2

BASIN MAP

Bohannan Huston

EXHIBIT 3

GRADING PLAN

Bohannan Huston

EXHIBIT 4

STORM DRAIN CAPACITY CALCULATIONS

Bohannan Huston

Bohannan Huston

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

voice: 505.823.1000
facsimile: 505.798.7988
toll free: 800.877.5332

Las Cruces
425 S. Telshor Blvd.
Suite C-103
Las Cruces, NM
88011-8237

voice: 575.532.8670
facsimile: 575.532.8680

Denver
Meridian One
9785 Maroon Circle
Suite 140
Englewood, CO
80112-5928

voice: 303.799.5103
facsimile: 303.799.5104
toll free: 877.799.5103

www.bhinc.com

DOCUMENT A

730074

PERMANENT EASEMENT

12-18-2013

Grant of Permanent Easement, between RCS-NM HOLDINGS I, LLC ("Grantor"), whose address is 371 Centennial Parkway, Suite 200, Louisville, Colorado 80027 and the City of Albuquerque, a New Mexico municipal corporation ("City"), whose address is P.O. Box 1293, Albuquerque, NM, 87103.

Subject to existing rights of record, Grantor grants to the City an exclusive, permanent easement ("Easement") in, over, upon and across the real property described on Exhibit "A" attached hereto ("Property") for the construction, installation, maintenance, repair, modification, replacement and operation of storm sewer, together with the right to remove trees, bushes, undergrowth and any other obstacles upon the Property if the City determines they interfere with the appropriate use of this Easement.

In the event Grantor constructs any improvements ("Improvements") within the Easement, the City has the right to enter upon Grantor's property at any time and perform whatever inspection, installation, maintenance, repair, modification or removal ("Work") it deems appropriate without liability to the City. If the Work effects any Improvements or encroachments made by the Grantor, the City will not be financially or otherwise responsible for rebuilding or repairing the Improvements or encroachments. If in the opinion of the City, the Work to be performed by the City could endanger the structural integrity or otherwise damage the Improvements or encroachments, the Grantor shall, at its own expense, take whatever protective measures are required to safeguard the Improvements or encroachments.

Grantor covenants and warrants that Grantor is the owner in fee simple of the Property, that Grantor has a good lawful right to convey the Property or any part thereof and that Grantor will forever warrant and defend the title to the Property against all claims from all persons or entities.

The grant and other provisions of this Easement constitute covenants running with the Property for the benefit of the City and its successors and assigns until terminated.

This Easement shall not be effective until approved by the City Engineer in the signature block below.

WITNESS my hand and seal this _____ day of _____, 20___.

CITY OF ALBUQUERQUE:

By: _____
Bryan Wolfe, City Engineer
Date: 12/18/2013

12-18-13

GRANTOR: RCS-NM HOLDINGS I, LLC

By [signature]: _____
Name [print]: BRIAN PAUL
Title: Vice President
Date: 10-31-13

DocH 2014011198
02/07/2014 01:08 PM Page 1 of 4
EASE R $25.00 M Toulouse Oliver, Bernalillo County

B.A.

termination easement

GRANTOR'S NOTARY

STATE OF COLORADO)
) ss
COUNTY OF BOULDER)

This instrument was acknowledged before me on 31st day of October, 2013,
by Brian Paul (name), Vice President (title)
of RCS-NM Holdings I, LLC (entity), a Colorado (i.e. a
New Mexico) corporation, on behalf of the corporation.

(SEAL)

CARLA DI GREGORIO
NOTARY PUBLIC - STATE OF COLORADO
Notary Identification #20124033034
My Commission Expires 5/29/2018

Notary Public

My Commission Expires: 5-29-16

(EXHIBIT "A" ATTACHED)

Exhibit "A"

LEGAL DESCRIPTION

An Easement within Tract 8 of Trails Unit 2 as the same is shown and designated on the plat entitled "BULK LAND PLAT OF THE TRAILS UNIT 2 (BEING A REPLAT OF TRACTS G AND J, THE TRAILS AND UNPLATTED DEED PARCELS) WITHIN THE TOWN OF ALAMEDA GRANT IN PROJECTED SECTION 16, TOWNSHIP 11 NORTH, RANGE 2 EAST, NEW MEXICO PRINCIPAL MERIDIAN, CITY OF ALBUQUERQUE,BERNALILLO COUNTY, NEW MEXICO", filed in the office of the County Clerk of Bernalillo County, New Mexico, on October 18, 2004 in Plat Book 2004C, Page 332 more particularly described as follows:

An easement Twenty (20) feet in width, being ten (10) feet on each side of the following described centerline:

BEGINNING at a point on the Westerly line of said Tract 8, also being a point on the Easterly line of Tract 9-A, of the Trails Unit 2 as the same is shown and designated on the plat entitled "BULK LAND PLAT OF TTRACTS 9-A AND 10-A, THE TRAILS UNIT 2 (BEING A REPLAT OF TRACTS 9 AND 10, THE TRAILS UNIT 2) WITHIN THE TOWN OF ALAMEDA GRANT IN PROJECTED SECTION 16, TOWNSHIP 11 NORTH, RANGE 2 EAST, NEW MEXICO PRINCIPAL MERIDIAN, CITY OF ALBUQUERQUE,BERNALILLO COUNTY, NEW MEXICO", filed in the office of the County Clerk of Bernalillo County, New Mexico, on March 7, 2006 in Plat Book 2006C, Page 75 whence (1) the Southwest corner of said Tract 8 bears S 00° 19' 17" W, 120.02 feet distant and (2) the Albuquerque Control Survey Monument "7-C10" bears N 74° 23' 08" E, 2359.16 feet distant; Thence running as a centerline:

S 89° 39' 13" E ,	577.90 feet to a point; Thence,
S 68° 54' 06" E ,	147.30 feet to a point on the Westerly right of way line of Universe Boulevard N.W. and the terminus of the centerline herein described.

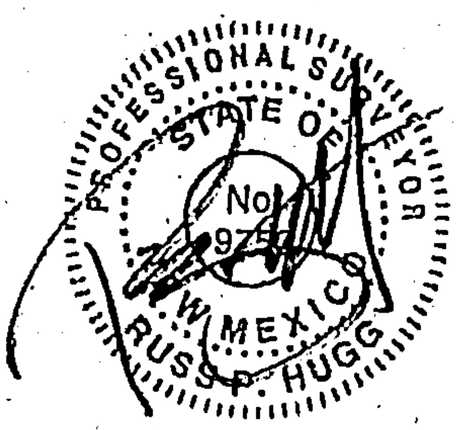
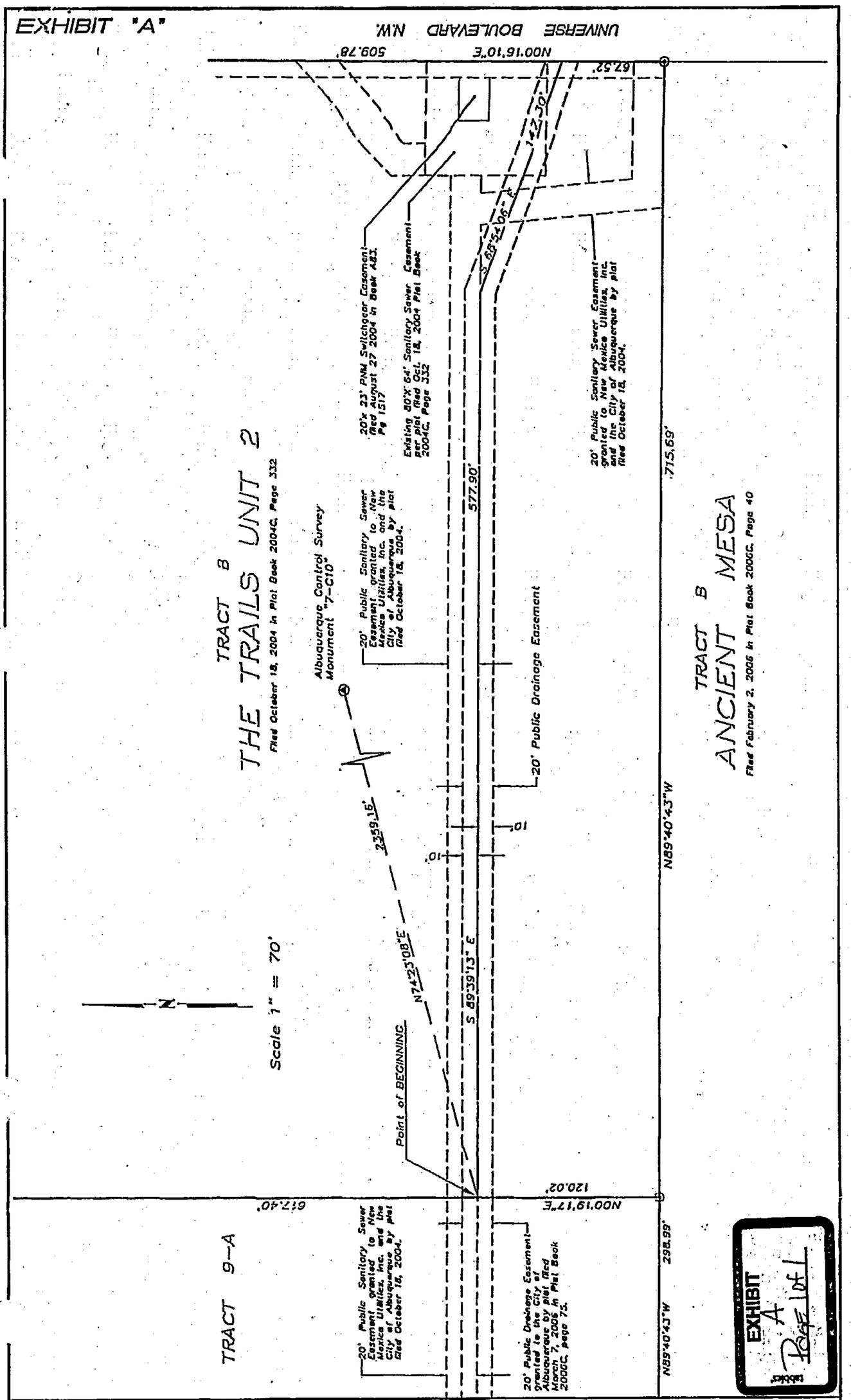


EXHIBIT "A"



SURV TEK, INC.
Consulting Surveyors
9384 Valley view Drive N.W. Albuquerque, New Mexico 87114
Phone: 505-897-3365
Fax: 505-897-3377

Cherne, Curtis

From: Martinez, Donald <dwmartinez@slo.state.nm.us>
Sent: Friday, May 02, 2014 4:43 PM
To: Cherne, Curtis
Subject: Re: Proposal for Grading on STL - Volcano Vista High School & Universe Blvd.

Curtis,

Good afternoon. I believe that is at your discretion. I can tell you that we are working with Mr. Floyd. Thanks.

Sent from my Verizon Wireless 4G LTE DROID

"Cherne, Curtis" <CCherne@cabq.gov> wrote:

From: Cherne, Curtis
Sent: Friday, May 02, 2014 2:46 PM
To: 'mailto:dwmartinez@slo.state.nm.us'
Subject: FW: Proposal for Grading on STL - Volcano Vista High School & Universe Blvd.

Donald,
Good afternoon.
I am in charge of Hydrology for the City of Albuquerque. I have not granted approval of the grading plan because it showed grading on SLO property. Is it Ok for me to approve their grading plan showing grading on SLO property?
Thanks,
Curtis Cherne, P.E.
924-3986

From: Hugh Floyd [mailto:Hugh@ecengr.com]
Sent: Friday, May 02, 2014 2:33 PM
To: Cherne, Curtis
Cc: Scott Steffen
Subject: FW: Proposal for Grading on STL - Volcano Vista High School & Universe Blvd.

Curtis and Scott,

The result of my meeting with NMSLO was that they are going to ask for a temporary construction permit for the grading that we will be doing on their property. Their assumption is that they will also have to raise their property when they develop. Please see Donald Martinez's email below confirming that they are willing to grant our use assuming we follow their process.

Hugh

From: Martinez, Donald [mailto:dwmartinez@slo.state.nm.us]
Sent: Wednesday, April 30, 2014 2:13 PM
To: Hugh Floyd
Subject: FW: Proposal for Grading on STL - Volcano Vista High School & Universe Blvd.

Mr. Floyd,

I apologize, I didn't get your email correct.

Donald W. Martinez
New Mexico State Land Office
Surface Resources Division Director
PH: (505) 827-5731
Fax: (505) 827-5741

From: Martinez, Donald
Sent: Wednesday, April 30, 2014 1:58 PM
To: 'jfloyd@ecengr.com'
Cc: Britt, Don; Johnson, Craig
Subject: Proposal for Grading on STL - Volcano Vista High School & Universe Blvd.

Mr. Floyd,

As per our discussion, NMSLO will work with you on obtaining a right of way for a temporary construction permit on State Trust Land adjacent Volcano Vista High School and Universe Blvd. After you have submitted an application allow for 4 to 6 weeks to process as long as the submittal is complete. Should you have any questions please do not hesitate to contact me. Thank you.

Donald W. Martinez
New Mexico State Land Office
Surface Resources Division Director
PH: (505) 827-5731
Fax: (505) 827-5741

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Cherne, Curtis

From: Cherne, Curtis
Sent: Friday, May 23, 2014 3:41 PM
To: steffen, scott; 'Hugh Floyd'
Cc: Biazar, Shahab
Subject: 75 feet of pipe missing in Universe Blvd

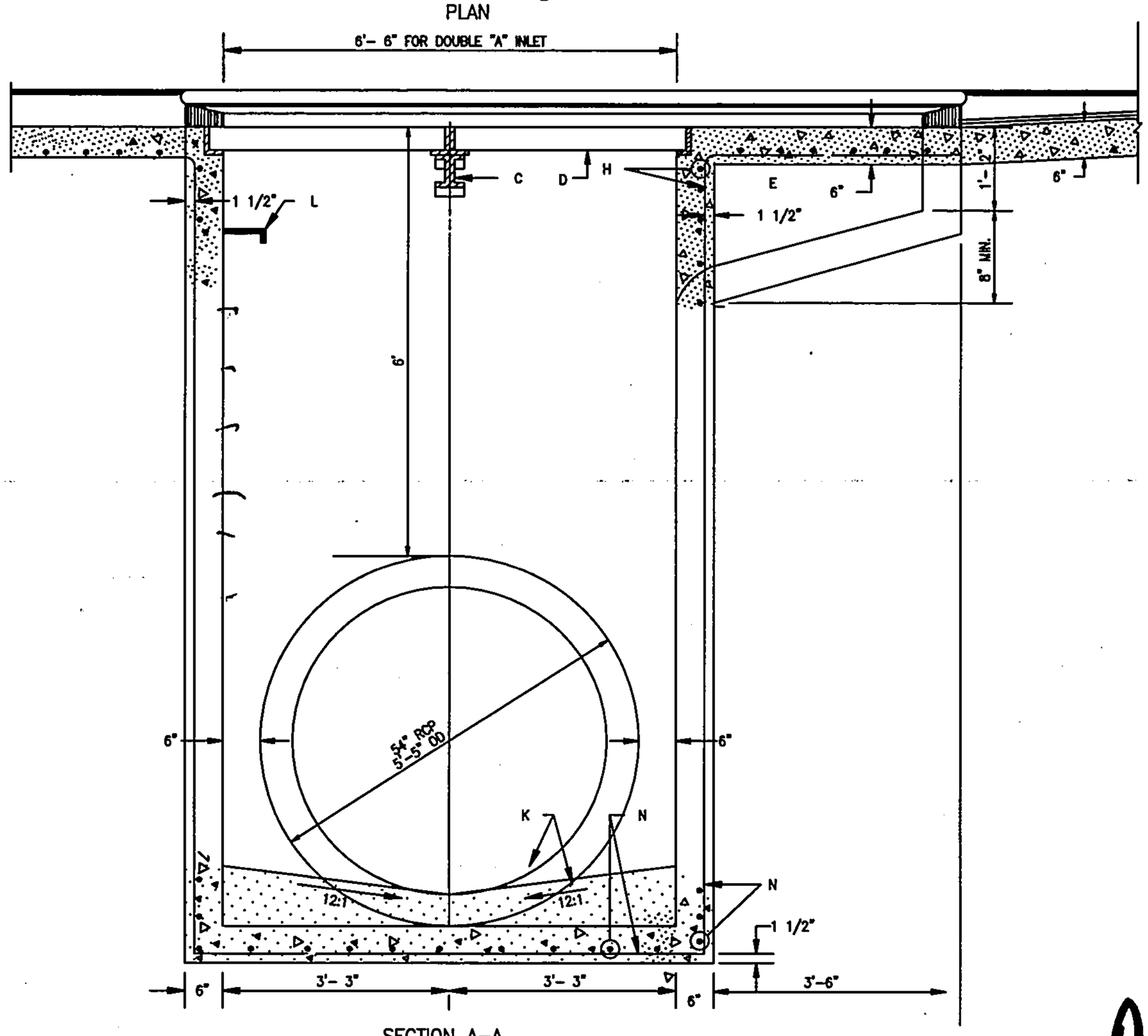
Scott/Hugh,
Rick B. should have informed you of the missing section of storm drain in Universe Blvd (STA 11+50 to 12+20 or so). As you know, this section of storm drain is required for the drainage report of Tierra Vista Unit 3 to function as submitted and approved.

I know that this piece of pipe is Longford's financial responsibility, however, it should be included in the Work Order for Tierra Vista Unit 3, else the HGL will be much higher in this subdivision and may impact houses in this development as well as house in Tierra Vista Unit 2.

I am hoping this is not a surprise.

Curtis

PLAN



SECTION A–A

DOUBLE "A" INLET DETAIL
NOT TO SCALE

Inlet Detail for east end of Tempe
5-6-14

Olson, Greg

From: Scott Steffen [ssteffen@bhinc.com]
Sent: Tuesday, May 06, 2014 4:30 PM
To: Olson, Greg
Subject: RE: C09-D001E Sketch Details or the Double A inlet on the 54" pipe
Attachments: Double A Inlet Detail w_54 in SD.pdf

Greg,

I agree with your comments and have updated the detail.

Let me know if you have any other comments.

Thanks,

Scott J. Steffen
Vice President
Community Development and Planning
Bohannan Huston
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

From: Olson, Greg [mailto:grolson@cabq.gov]
Sent: Tuesday, May 06, 2014 4:03 PM
To: Scott Steffen
Subject: RE: C09-D001E Sketch Details or the Double A inlet on the 54" pipe

Scott,

Please check the attached detail.
- 6'-6" to INSIDE of Inlet, not outside.
- 54" Id RCP has a 5 ½" wall, so OD = 5'-5"

Thanks,

Greg Olson, PE
Senior Engineer
Planning - Hydrology
505-924-3994

From: Scott Steffen [mailto:ssteffen@bhinc.com]
Sent: Tuesday, May 06, 2014 3:17 PM
To: Olson, Greg
Subject: RE: C09-D001E Sketch Details or the Double A inlet on the 54" pipe

Greg,

Here is a detail of the inlet showing the 54" pipe. I provided a dimension from outside wall of pipe to inside wall of the inlet box. I provided an approximate depth from projected flowline to top outside of pipe as well. The depth is subject to change with the final design of the storm drain.

I also removed what appeared to be some remnant notes for a type C inlet. The inside dimension for the Double A is 6' 6".

Let me know if you need any additional information.

Thanks,

Scott J. Steffen
Vice President
Community Development and Planning
Bohannan Huston
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

From: Olson, Greg [mailto:grolson@cabq.gov]
Sent: Tuesday, May 06, 2014 2:24 PM
To: Scott Steffen
Cc: Olson, Greg
Subject: FW: C09-D001E Sketch Details or the Double A inlet on the 54" pipe

Scott,

We approved the G&D to expedite the DRB process.

However, as we discussed a couple weeks ago, I still want to get some detail in our file as to how the 54 will fit in the proposed Double A inlet.

I also had some questions on the attached .pdf.

Thanks,

Greg Olson, PE
Senior Engineer
Planning - Hydrology
505-924-3994

From: Olson, Greg
Sent: Wednesday, April 23, 2014 4:58 PM
To: 'Scott Steffen'
Cc: Olson, Greg
Subject: RE: C09-D001E Tierra Vista Unit 3 G&D comments

Quick thoughts on attached markup.

Thanks,

Greg Olson, PE
Senior Engineer
Planning - Hydrology
505-924-3994

From: Scott Steffen [mailto:ssteffen@bhinc.com]
Sent: Wednesday, April 23, 2014 8:48 AM
To: Olson, Greg
Subject: RE: C09-D001E Tierra Vista Unit 3 G&D comments

Greg,

Here is the Double A inlet detail.

Scott J. Steffen
Vice President
Community Development and Planning
Bohannan Huston
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

From: Olson, Greg [mailto:grolson@cabq.gov]
Sent: Tuesday, April 22, 2014 12:06 PM
To: Scott Steffen
Cc: Olson, Greg
Subject: RE: C09-D001E Tierra Vista Unit 3 G&D comments

Scott,

Curtis was asking about how the double Type "A" inlet will fit on the 54" pipe.
Since it is a non-standard configuration, he would like to refine the design with notes on the G&D, so there is no confusion when it gets to DRC.

Please review and call or email me with info.

Thanks,

Greg Olson, PE
Senior Engineer
Planning - Hydrology
505-924-3994

From: Scott Steffen [mailto:ssteffen@bhinc.com]
Sent: Monday, April 21, 2014 3:08 PM
To: Olson, Greg
Subject: RE: C09-D001E Tierra Vista Unit 3 G&D comments

Greg,

Attached is the revised infrastructure list for your review.

I was able to get a 0.27' water block on Camp Verde which results in a maximum pad increase of 0.6'. I think this should work.

Thanks,

Scott J. Steffen
Vice President
Community Development and Planning
Bohannan Huston
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

From: Olson, Greg [mailto:grolson@cabq.gov]
Sent: Friday, April 18, 2014 8:35 AM
To: Scott Steffen
Cc: Olson, Greg; Hugh@ecengr.com
Subject: C09-D001E Tierra Vista Unit 3 G&D comments

Scott,

Attached is my comment letter on the subject Grading and Drainage submittal.

I wanted to commend you on the clear and well organized presentation of this submittal.
It made my review much more efficient and pleasant.

Comment 2, is a first run on the pending DMP requirement for modification of existing Trails infrastructure.
I am meeting later this morning with Hugh, Dave Thompson and Rick Beltromo on the DMP, and will advise you if any changes develop.

If you have any questions, please email or call me.

Thanks,

Greg Olson, PE
Senior Engineer
Planning - Hydrology
505-924-3994

CITY OF ALBUQUERQUE

August 24, 2006

Steve J. Salazar, P.E.
Wilson & Company, Inc.
2600 The American Road SE, Suite 100
Rio Rancho, NM 87124

Re: Taos at the Trails, Unit 2 – Engineer's Stamp dated 8-8-06 (C9/D1E)
Request for Preliminary Plat, Site Development Plan for Subdivision, Grading Permit

Dear Mr. Salazar,

Upon review of the information provided in your received on August 10, 2006, there are several items that must be addressed prior to approval of the subject requests. Those issues are detailed below.

1. The storm drain easement must be shown.
2. The total basin areas in the interim condition do not match the areas in the developed condition. Eleven (11) basins are shown on plate 1 but only nine (9) are tabularized on plate 2.
3. What does the "% Dev (acres)" column mean and how does it affect the calculations?
4. With the density you propose, ~ 6.8 dwelling units per acre, the impervious percentage would be on the order of 62% as per the DPM, Table A.5. Please provide justification of the 27.3 cfs runoff cited for the 9.44-acre development.
5. You provided flow rates ranging from 1.09 to 13.06 cfs per acre. At 100 % treatment A in Zone 1, we would expect no less than 1.29 cfs per acre. Based on the DPM evaluation procedure with the land treatments you propose, I am obtaining significantly different numbers than what is shown in your flow tables. Please revisit the flow calculations and correct as necessary.
6. W[illegible] it is permissible for the velocity head to extend above the top of the curb el[illegible]vation, the actual flow area must be contained between the curb faces. Your analysis indicates that the 4-inch roll curb will be overtopped and therefore does not meet this criterion. As such, the roll curb will need to be replaced with standard curb for the areas where design street flows exceed the 5.7 cfs capacity described in the report. Furthermore, as the southern inlets will be in a sump condition, all of the curb [illegible]ng that right-of-way must be standard curb.
7. The backyard flow arrows show water progressing from side yards, uphill to the backyards, and then out to the street. Please revise the plan so as to route the flows directly out to the public right-of-way.
8. The flow arrows for lots 42 and 43 do not fit with the proposed high point. The high point adjacent to lots 44 and 46 does not fit with the proposed basin boundaries. No graphical representation was given for the high point between lots 22 and 58.
9. The legend symbols for the retaining walls and storm drain inlets are not consistent with the plan drawings and no symbol is provided for the proposed curb and gutter – mountable or standard.

P.O. Box 1293

Albuquerque

New [illegible]03

www.cabq.gov

10. The Grading and Drainage Plan line types suggest that your project, not 7300.84, will be constructing the 54-inch storm drain. Furthermore, the construction drawings for that project call out the south-easternmost manhole as "future." Please revise the line types to better define the extent of the storm drain improvements specifically associated with your project.

11. The drawing in Appendix C page 7 needs revision to increase clarity.

12. The figure in Appendix D is illegible due to the overlapping text.

13. Please show the design grades of Universe. Depending on the grades at the intersection with Woodmont, it appears that an additional inlet may be necessary.

I would be willing to meet with you to discuss these issues. If you have any questions, you can contact me at 924-3990.

Sincerely,

Jeremy Hoover, P.E.
Senior Engineer
Hydrology Section
Development and Building Services

cc: file C9/D1E

Developed Conditions

BASIN	Given Area	A	B	C	D	Q 100	V100
D	58.3	0	25	25	50	198.66	6.8
H	7.43	0	15	25	60	27.06	0.94
H1	11.71	0	39.9	39.9	20.2	33.18	1.04
H2	5.77	0	0	10	90	24.35	0.9
G	31.93	0	25	25	50	202.84	6.69
F	82.94	0	25	25	50	282.62	9.68
J	32.92	0	25	25	50	112.2	3.84
K	45.12	0	25	25	50	153.75	5.26
L	27.03	0	25	25	50	92.1	3.15

303.15

E

H_3

77 % DEV

Interim Conditions

DPM

MODIFIED ??

BASIN	Given Area	% ???	A	B	C	D	Q 100	V100	Q100 Reduced	V 100 Reduced
D	58.3	73.0%	27	18.2	18.3	36.5	165.02	5.54	120.4646	4.0442
E	77.19	22.0%	78	5.5	5.5	11	134.27	4.12	29.5394	0.9064
H	19.88	16.0%	84	4	4	8	32.03	0.98	5.1248	0.1568
G	31.93	100.0%	0	25	25	50	108.8	3.73	108.8	3.73
F	82.94	55.0%	45	13.7	13.8	27.5	202.84	6.69	111.562	3.6795
J	32.92	15.0%	85	3.7	3.8	7.5	52.95	1.6	7.9425	0.24
K	45.12	14.0%	86	3.5	3.5	7	70.77	2.16	9.9078	0.3024
L	17.73	4.0%	96	1	1	2	24.02	0.7068	0.9608	0.028272
H1	11.71	100.0%	0	39.9	39.9	20.2	33.18	1.0347	33.18	1.0347
H2	5.77	73.0%	0	0	10	90	24.35	0.9	17.7755	0.657
H3	1.63	100.0%	0	0	10	90	6.88	0.25	6.88	0.25

$\Sigma = 385.12$

DRAINAGE REPORT

for

TRACT 8 AT THE TRAILS UNIT II
Albuquerque, New Mexico

AUGUST 2006

I, Steve J. Salazar, 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.

Steve J. Salazar, P.E.
NM No. 16241

8/8/06
Date

RECEIVED
AUG 10 2006
HYDROLOGY SECTION

Table of Contents

		Page
I.	Introduction	1
II.	Project Description	1
III.	Existing Conditions	2
IV.	Developed Conditions	2
V.	Grading Plan	3
VI.	Conclusion	3
VII.	Exhibits	4
VIII.	Appendices	5-10
IX.	Plates	11

List of Exhibits

Exhibit A: Vicinity Map

Exhibit B: FEMA Flood map with site

Exhibit C: Zone Atlas Sheet C-9-Z with site

Exhibit D: Soils Map

List of Plates

(Located in Pockets)

Plate 1: Overall Pond Grading & Drainage plan - Interim Conditions

Plate 2: Overall Pond Grading & Drainage plan - Future Developed Conditions (Drainage Master Plan)

Plate 3: Grading & Drainage Plan

Plate 4: Proposed Basin Map

Plate 5: Roll Curb Map

List of Appendices

Appendix A: AHYMO Input and Output for Interim Conditions

Appendix B: AHYMO Input and Output for Fully Developed Conditions

Appendix C: FLOWMASTER Street Capacity Analysis

Appendix D: HYDRAFLOW Storm Drain Sizing Analysis

Introduction

Wilson & Company prepared this drainage report under contract to Longford Homes. The document provides a basis for the design of storm water conveyance systems within Tract 8 of the Trails Unit II (subject property). The objective of this report is to analyze the hydrologic characteristics associated with the existing and developed conditions.

Tract 8 of the Trails Unit II is a single-family residential subdivision with 64 total lots within The Trails master planned community. The "Master Drainage Study for The Trails Subdivision", dated December 2003, prepared by Bohannan-Huston, Inc (BHI Study) outlines the major drainage requirements for the entire Trails development. This DMP covers a large area surrounding the subject property. The master planned area will drain through a series of detention surge ponds to the southeast corner of the Trails project to reduce flows. As established in the "Amendment to The Trails Subdivision Master Drainage Study", dated May 5, 2004 and prepared by Wilson & Company, a future storm drain system (currently under design, COA#761281) is scheduled to carry developed flows from the southeast corner of the Trails south to the Boca Negra Detention Dam. Wilson & Company has revised the BHI Study as the project progresses to more accurately model the drainage conditions. This revised Drainage Master Plan is included in this report as Plate 2 (also referred to as the Overall Pond Grading & Drainage Plan for Future Developed Conditions). The Drainage Master Plan establishes revised Basin, Pond and Hydrologic summary data. Tract 8 of The Trails Unit II drains to the South-Easement storm drain system of The Trails Unit II COA # 730084, which ultimately drains to the Universe Blvd. storm drain system to the Boca Negra dam scheduled to be built with Trails Unit II COA # 761281 as outlined in the "Amendment to The Trails Subdivision Master Drainage Study", dated May 5, 2004.

Project Description

The proposed development is located within the city limits of Albuquerque, New Mexico. The subject property consists of approximately 9.44 acres of undeveloped land on the west side of Albuquerque, south of Ventana Ranch subdivision. The Trails Subdivision is located on Albuquerque's Northwest Mesa, west of Universe Boulevard and south of Paseo Del Norte. The subject property is bound by Tract 9A of the Trails to the west, Universe Blvd. to the east, Town of Alameda Grant to the south, and Tract 7 at the Trails Unit II to the north. See Exhibit A, Vicinity Map.

There are currently eight other tracts within the Trails Subdivision that are developed or under construction - Santa Fe at the Trails (Tract C of the Trails), Taos at the Trails (Tract D of the Trails), Heritage at the Trails Units I and II (Tract A & B of the Trails respectively), The Reserve at the Trails (Tract F of the Trails), Santa Fe II at the Trails Unit II (Tract 6 of the Trails Unit II), Valle Vista at The Trails Unit II (Tract 11 of Trails Unit II) and Santa Fe III at The Trails (Tract 9A of Trails Unit II). The Trails Unit II (COA #730084) is also currently under construction, which includes the development of

Woodmont Avenue, Oakridge Street, Rainbow Boulevard, Paseo Del Norte and Universe Boulevard within the boundaries of The Trails Unit II. Also included is the construction of all major drainage facilities necessary for the development of The Trails Unit II, including facilities within Tract 8.

The current legal description of the proposed development is "Tract 8 of the Trails Unit II (Filed in Book 2004C, Page 332, on 10/18/2004). The site is located on Zone Atlas Sheet C-9-Z. See Exhibit C for site location on this Zone Atlas Sheet. Tract 8 of Trails Unit II is currently zoned R-D. No portion of Tract 8 lies within the 100-year flood zone based on FIRM Map #35001C0111D dated September 20, 1996. See Exhibit B for site location on the Flood Insurance Rate Map.

Existing Conditions

Tract 8 of Trails Unit II consists of approximately 9.44 acres of undeveloped land on the west side of Albuquerque, south of Ventana Ranch subdivision. Currently, the site is located in a local depression with slopes ranging from 2% to 5% and is covered with native grasses, scrub brush, and exposed basaltic ridges. The soils are classified as Alemeda Sandy Loam (AmB) for slopes based on sheet 10 of Soil survey of Bernalillo County. See Exhibit D for site location on the Soils map. A shallow basaltic layer runs subsurface of the natural grade, and varies in depth from 0 ft to 9 ft.

Developed Conditions

(Refer to Plates 1 & 2 – Interim and Developed Conditions)

The developed site will consist of 64 lots of single-family housing. Tract 8 of Trails Unit II is contained within Basins L of the Drainage Master Plan. Proposed flows for individual sub-basins are determined based on an area percentage of the overall Basin L flow. The overall Basin L has an area of 27.03 acres and a fully developed 100-year flow of 78.21 cfs. This plan develops 34.92% (9.44 acres) of the total 27.03acres. The total generated runoff for Tract 8 under fully developed conditions is27.31cfs.

This report divides the proposed development into sub-basins. (See the proposed Basin Map in Plate 4). Drainage & basin boundaries were determined based on the grades established in the grading & drainage plan, and by street flow capacity and storm drain requirements. (See the Grading & Drainage Plans in Plate 3 and Street Flow Capacity Calculations in Appendix C).

Proposed flows from Sub-Basins E1 and E2 are collected through a series of inlets on Road B. See the proposed Sub-Basin Map in Plate 4. (See the HydraFlow Storm Drain Calculations and Inlet Capacity Calculations in Appendix D).

See Plate 1, Overall Pond Grading & Drainage Plan - Interim Conditions for summary tables. See Appendix A for AHYMO input and output.

In the future developed conditions, all ponds will be detention surge ponds. According to the "Amendment to the Trails Subdivision Master Drainage Study", a maximum of flowrate of 200 cfs is allowed from the Trails Subdivision. According to the revised Drainage Master Plan, a maximum flowrate of 198 cfs will enter the Universe Blvd. storm drain system to the Boca Negra Dam. See Plate 2 for the Overall Pond Grading & Drainage Plan for Developed Conditions.

Once the storm drain from The Trails to the Boca Negra Detention Dam is completed, all of the plugs in the ponds within The Trails Unit II can be removed, creating detention facilities and eliminating the need to retain runoff from the Trails.

The hydrologic analysis for the interim and developed condition was completed using the Arid Lands Hydrologic Model (AHYMO) Version 1997.02. The 100-year 24-hour return frequency storm was used as the basis of analysis. (See Appendices A & B for input and output data). Methodology outlined in Section 22.2 of the City of Albuquerque Development Process Manual was also incorporated into this analysis. Street flows have been evaluated using Flow Master by Haested Methods. Street flows were analyzed for the use of roll type curb where capacities permitted. Inlets are located to prevent exceeding the street flow capacities per the DPM. See Appendix C for street capacity analysis. Storm Drain design and analysis was performed using *Hydraflow*. See Appendix D for *Hydraflow* output.

Grading Plan

The Tract 8 of Trails Unit II Grading Plan is attached as Plate 3. It illustrates the overall grading concept for the Tract 8 of Trails Unit 2 as well as the proposed storm drain.

Conclusion

The analysis performed for this report demonstrates that the proposed system of streets and storm drainage improvements will safely convey and adequately detain the 100-year storm runoff from the offsite and the onsite basins contributing to the site development. Wilson & Company recommends that the proposed storm drain system undergo regular maintenance activities. This should include removing debris from grate inlets, as well as removing sediment buildup within the pipe system. The Future area contributing flow to the Tract 8 storm drainage system should be analyzed in greater detail at the time of development to ensure that the runoff is within the constraints of this design.

Per The Trails Unit II Construction Plans, plugs at Pond E, Pond G and Pond K are scheduled to be installed. As a result of the interim conditions analysis, Wilson & Company recommends also installing temporary plugs at Pond D and Pond F to retain runoff from the 100-year, 10-day event, until the Universe storm drain to the Boca Negra Detention Dam is constructed.

AHYMO PROGRAM SUMMARY TABLE (AHYMO_97) - - VERSION: 1997.02c RUN DATE (MON/DAY/YR) =07/31/2006
INPUT FILE = trails.wpd USER NO.= AHYMO-C-9803c01UNMLIB-AH

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)	PER ACRE NOTATION
*S THE TRAILS OVERALL DRAINAGE - INTERIM CONDITIONS									
*SUMMARY	1 MID. B. PIEDRAS- DEV CONDS WITH BULK - MODIFIED 7/95								
START									
TIME= .00									
RAINFALL TYPE= 2									
RAIN24= 2.660									
SEDIMENT BULK									
PK BF = 1.00									
S									
*S**********									
*S**********									
*S********** COMPUTE ONSITE BASINS FROM THE TRAILS SUBDIVISION**********									
COMPUTE NM HYD	OFFSITE1	-	50	.19980	38.48	4.588	.43051	2.050	.301 PER IMP= .00
*S BASIN A IS CURRENTLY 0% DEVELOPED									
COMPUTE NM HYD	BASIN.A	-	20	.10480	86.57	2.406	.43051	1.500	1.291 PER IMP= .00
*S BASIN D IS CURRENTLY 73% DEVELOPED									
COMPUTE NM HYD	BASIN.D	-	25	.09110	122.40	6.205	1.27718	1.550	2.099 PER IMP= 36.50
*S BASIN C IS CURRENTLY 0% DEVELOPED									
COMPUTE NM HYD	BASIN.C	-	20	.02110	17.06	.484	.43051	1.500	1.263 PER IMP= .00
*S BASIN F IS CURRENTLY 55% DEVELOPED									
COMPUTE NM HYD	BASIN.F	-	20	.12960	196.82	7.347	1.06295	1.500	2.373 PER IMP= 27.50
*S WITH TRACT 6 IMPROVEMENTS, BASIN G IS CURRENTLY 100% DEVELOPED									
COMPUTE NM HYD	BASIN.G	-	20	.04990	105.96	4.292	1.61257	1.500	3.318 PER IMP= 50.00
COMPUTE NM HYD	OFFSITE2	-	55	.08050	14.42	1.848	.43051	2.050	.280 PER IMP= .00
*S BASIN B IS CURRENTLY 0% DEVELOPED									
COMPUTE NM HYD	BASIN.B	-	30	.03910	31.61	.898	.43051	1.500	1.263 PER IMP= .00
*S BASIN E IS CURRENTLY 22% DEVELOPED									
COMPUTE NM HYD	BASIN.E	-	30	.12060	132.88	4.377	.68044	1.500	

```
1.722 PER IMP=  11.00
    *S BASIN H IS CURRENTLY 16% DEVELOPED
    COMPUTE NM HYD       BASIN.H   -    20        .03110        28.24        1.015        .61193    1.550
1.419 PER IMP=   8.00
    *S BASIN L IS CURRENTLY 4% DEVELOPED
    COMPUTE NM HYD       BASIN.L   -    20        .02770        19.34         .703        .47583    1.550
1.091 PER IMP=   2.00
    *S BASIN J IS CURRENTLY 15% DEVELOPED
    COMPUTE NM HYD       BASIN.J   -    80        .05140        34.57        1.647        .60067    1.600
1.051 PER IMP=   7.50
    ROUTE RESERVOIR       POND.J   80   90        .05140         9.86        1.647        .60066    2.050
.300 AC-FT=     .863
    *S BASIN K IS CURRENTLY 14% DEVELOPED
    COMPUTE NM HYD       BASIN.K   -    85        .07050        55.37        2.215        .58923    1.550
1.227 PER IMP=   7.00
    *S*************************************************************************
    *S****RUNOFF FROM THE TRAILS IS CONVEYED TO THE BOCA NEGRA DETENTION FACILITY
    *S****VIA UNIVERSE SD PER "AMENDMENT TO THE TRAILS SUBDIVISION MASTER DRAINAGE S
    *S****DATED MAY 5, 2004 BY WILSON & CO.
    *S*************************************************************************
    *S****END OF THE TRAILS DRAINAGE ANALYSIS
    FINISH
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AHYMO PROGRAM SUMMARY TABLE (AHYMO_97) - - VERSION: 1997.02c RUN DATE (MON/DAY/YR) =07/31/2006
INPUT FILE = TRAILS3.WPD USER NO.= AHYMO-C-9803c01UNMLIB-AH

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)	PER ACRE NOTATION
*S THE TRAILS OVERALL DRAINAGE - FULLY DEVELOPED CONDITIONS									
*SUMMARY	1 MID. B. PIEDRAS- DEV CONDS WITH BULK - MODIFIED 7/95								
START									
TIME= .00									
RAINFALL TYPE= 2									
RAIN24= 2.660									
SEDIMENT BULK									
PK BF = 1.00									
S									
*S**********									
*S**********									
*S********** COMPUTE ONSITE BASINS FROM THE TRAILS SUBDIVISION**********									
COMPUTE NM HYD	OFFSITE1	-	50	.19980	38.48	4.588	.43051	2.050	.301 PER IMP= .00
ROUTE RESERVOIR	OFF.POND.1	50	53	.19980	9.40	4.588	.43051	3.250	.073 AC-FT= 2.420
COMPUTE NM HYD	BASIN.A	-	20	.10480	222.42	9.013	1.61257	1.500	3.316 PER IMP= 50.00
ADD HYD	1.A	53&20	52	.30460	224.45	13.601	.83721	1.500	1.151
ROUTE RESERVOIR	POND.A	52	50	.30460	16.94	13.601	.83721	2.400	.087 AC-FT= 6.375
COMPUTE NM HYD	BASIN.D	-	25	.09110	151.97	7.835	1.61257	1.550	2.606 PER IMP= 50.00
ADD HYD	1.A.D	50&25	30	.39570	164.89	21.436	1.01571	1.550	.651
DIVIDE HYD	BYPASS.D	30	31	.27474	16.00	14.883	1.01571	1.300	.091
	SURGE.D	and	32	.12096	148.89	6.553	1.01571	1.550	1.923
ROUTE RESERVOIR	POND.D	30	50	.39570	23.56	21.436	1.01571	2.700	.093 AC-FT= 5.387
COMPUTE NM HYD	BASIN.C	-	20	.02110	44.81	1.815	1.61257	1.500	3.319 PER IMP= 50.00
ADD HYD	1.A.D.C	50&20	25	.41680	63.88	23.250	1.04593	1.500	.239

AHYMO.SUM

COMPUTE NM HYD	BASIN.F	-	20	.12960	274.98	11.146	1.61257	1.500
3.315 PER IMP= 50.00								
ADD HYD	1.A.D.C.F	20&25	30	.54640	338.86	34.396	1.18033	1.500
.969								
DIVIDE HYD	BYPASS.F	30	31	.41899	46.00	26.376	1.18033	1.300
.172								
	SURGE.F	and	32	.12741	292.86	8.021	1.18033	1.500
3.591								
ROUTE RESERVOIR	POND.F	30	50	.54640	33.92	34.396	1.18033	2.450
.097 AC-FT= 9.405								
COMPUTE NM HYD	BASIN.G	-	20	.04990	105.96	4.292	1.61257	1.500
3.318 PER IMP= 50.00								
ADD HYD	1.A.D.C.F.G	20&50	30	.59630	138.81	38.688	1.21650	1.500
.364								
ROUTE RESERVOIR	POND.G	30	27	.59630	33.51	38.692	1.21664	3.400
.088 AC-FT= 3.656								
COMPUTE NM HYD	OFFSITE2	-	55	.08050	14.42	1.848	.43051	2.050
.280 PER IMP= .00								
ROUTE RESERVOIR	OFFPOND2	55	50	.08050	4.49	1.848	.43051	3.200
.087 AC-FT= .857								
COMPUTE NM HYD	BASIN.B	-	30	.04010	85.15	3.449	1.61257	1.500
3.318 PER IMP= 50.00								
ADD HYD	2.B	50&30	35	.12060	85.67	5.297	.82355	1.500
1.110								
ROUTE RESERVOIR	POND.B	35	50	.12060	3.38	5.297	.82350	6.450
.044 AC-FT= 3.150								
COMPUTE NM HYD	BASIN.E	-	30	.06494	46.06	1.491	.43051	1.550
1.108 PER IMP= .00								
COMPUTE NM HYD	BASIN.E1	-	32	.02480	31.45	.967	.73104	1.500
1.981 PER IMP= 7.00								
ADD HYD	2.B.E	50&30	40	.18554	48.64	6.788	.68595	1.550
.410								
ADD HYD	2.B.E.E1	40&32	41	.21034	78.13	7.755	.69126	1.550
.580								
COMPUTE NM HYD	BASIN.E8	-	**	.00748	15.91	.644	1.61257	1.500
3.321 PER IMP= 50.00								
ADD HYD	2.B.E.E1.E8	41&**	42	.21783	93.29	8.399	.72292	1.500
.669								
ROUTE RESERVOIR	POND.E	42	43	.21783	9.23	8.398	.72291	2.250
.066 AC-FT= 2.293								
COMPUTE NM HYD	BASIN.H1	-	33	.01830	32.46	1.101	1.12838	1.500
2.772 PER IMP= 20.20								
COMPUTE NM HYD	BASIN.H2	-	34	.00900	23.59	1.094	2.28007	1.500
4.096 PER IMP= 90.00								
ADD HYD	H1.H2	33&34	35	.02730	56.06	2.196	1.50804	1.500
3.208								
ADD HYD	2.B.E.E1.H1.	43&35	40	.24513	63.00	10.594	.81035	1.500
.402								

AHYMO.SUM

COMPUTE NM HYD	BASIN.H	-	20	.01161	26.30	1.109	1.79108	1.500
3.539 PER IMP= 60.00								
ADD HYD	2.B.E.H1.H2.	40&20	21	.25674	89.30	11.703	.85470	1.500
.543								
ROUTE RESERVOIR	POND.H	21	30	.25674	27.69	11.703	.85470	1.950
.169 AC-FT= 1.377								
DIVIDE HYD	BYPASS.H	21	35	.23804	37.00	10.851	.85470	1.400
.243								
	SURGE.H	and	36	.01870	52.30	.852	.85470	1.500
4.370								

□

CFS PAGE = 2

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)
PER ACRE	NOTATION							
COMPUTE NM HYD	BASIN.L	-	20	.04224	78.21	3.633	1.61257	1.550
2.893 PER IMP= 50.00								
ADD HYD	2BEHL	20&30	25	.29898	100.70	15.336	.96177	1.550
.526								
COMPUTE NM HYD	BASIN.J	-	80	.05140	82.74	4.421	1.61257	1.600
2.515 PER IMP= 50.00								
ROUTE RESERVOIR	POND.J	80	90	.05140	21.36	4.421	1.61256	2.100
.649 AC-FT= 2.140								
COMPUTE NM HYD	BASIN.K	-	85	.07050	128.14	6.063	1.61257	1.550
2.840 PER IMP= 50.00								
ADD HYD	J.K	90&85	91	.12190	136.13	10.484	1.61255	1.550
1.745								
ADD HYD	1ADCFG.JK	27&91	95	.71820	164.27	49.176	1.28384	1.550
.357								
ROUTE RESERVOIR	POND.K	95	70	.71820	101.37	49.176	1.28384	1.850
.221 AC-FT= 2.150								
DIVIDE HYD	BYPASS.K	95	97	.68793	80.00	47.103	1.28384	1.450
.182								
	SURGE.K	and	98	.03027	84.27	2.073	1.28384	1.550
4.350								
ADD HYD	TRAILS.ALL	25&70	**	1.01718	177.05	64.512	1.18917	1.600
.272								

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    *S*************************************************************************
    *S****RUNOFF FROM THE TRAILS IS CONVEYED TO THE BOCA NEGRA DETENTION FACILITY
    *S****VIA UNIVERSE SD PER "AMENDMENT TO THE TRAILS SUBDIVISION MASTER DRAINAGE S
    *S****DATED MAY 5, 2004 BY WILSON & CO.
    *S*************************************************************************
    *S****END OF THE TRAILS DRAINAGE ANALYSIS
    FINISH
```

Storm Sewer Summary Report

Line No.	Line ID	Flow rate (cfs)	Line size (in)	Line length (ft)	Invert EL Dn (ft)	Invert EL Up (ft)	Line slope (%)	HGL down (ft)	HGL up (ft)	Minor loss (ft)	HGL Junct (ft)	Dns line No.
1	Inserted Line	207.1	60 c	350.0	5390.35	5397.70	2.100	5394.41	5401.72	0.35	5401.72	End
2	Inserted Line	207.1	60 c	350.0	5397.80	5398.85	0.300	5402.80*	5405.01*	0.26	5405.27	1
3	Inserted Line	207.1	60 c	350.0	5398.95	5400.00	0.300	5405.27*	5407.49*	1.47	5408.96	2
4	Inserted Line	128.1	54 c	186.1	5400.10	5403.10	1.612	5409.68*	5410.47*	0.64	5411.10	3
5		91.37	54 c	312.4	5403.20	5404.14	0.301	5411.60*	5412.27*	0.08	5412.35	4
6	Inserted Line	78.17	54 c	256.0	5404.24	5405.01	0.301	5412.49*	5412.89*	0.15	5413.04	5
7		48.94	54 c	256.0	5405.11	5405.88	0.301	5413.27*	5413.43*	0.02	5413.45	6
8		48.94	54 c	256.0	5405.98	5406.75	0.301	5413.45*	5413.61*	0.02	5413.63	7
9		48.94	54 c	256.0	5406.85	5407.62	0.301	5413.63*	5413.79*	0.06	5413.85	8
10		18.78	48 c	282.9	5407.72	5408.58	0.304	5413.96*	5414.01*	0.01	5414.02	9
11		18.78	36 c	250.9	5408.68	5409.45	0.307	5414.02*	5414.22*	0.05	5414.27	10
12		13.30	30 c	320.3	5409.55	5410.32	0.240	5414.27*	5414.60*	0.02	5414.62	11
13		13.30	48 c	396.0	5410.42	5411.23	0.205	5414.72	5414.75	0.00	5414.75	12
14		13.30	36 c	194.7	5411.33	5413.71	1.222	5414.75	5414.87	n/a	5414.87 j	13
15		79.00	48 c	338.8	5400.10	5402.07	0.581	5410.07*	5411.10*	0.61	5411.71	3
16	(2)	79.00	42 c	89.5	5402.17	5404.86	3.006	5411.71*	5412.26*	1.05	5413.31	15
17	(2)	5.48	18 c	14.3	5416.18	5416.47	2.024	5417.68	5417.67	0.20	5417.87	11
18		2.74	18 c	23.4	5416.47	5416.94	2.009	5418.00	5417.99	0.07	5418.06	17
19		30.16	24 c	18.5	5415.39	5415.85	2.486	5417.39	5417.72	1.52	5417.72	9
20		15.08	24 c	23.4	5415.85	5416.44	2.523	5418.88*	5418.98*	0.36	5419.34	19
21		16.40	18 c	23.5	5413.42	5414.01	2.508	5414.92	5415.51	1.34	5416.85	6
22		8.20	18 c	23.4	5414.01	5414.59	2.481	5417.85*	5418.00*	0.33	5418.33	21

Project File: SD-SOUTH-EASEMENT-052606.stm | Number of lines: 22 | Run Date: 07-31-2006

NOTES: c = cir; e = ellip; b = box; Return period = 100 Yrs. ; *Surcharged (HGL above crown). ; j - Line contains hyd. jump.

Storm Sewer Summary Report

Line No.	Line ID	Flow rate (cfs)	Line size (in)	Line length (ft)	Invert EL Dn (ft)	Invert EL Up (ft)	Line slope (%)	HGL down (ft)	HGL up (ft)	Minor loss (ft)	HGL Junct (ft)	Dns line No.
1		14.08	24 c	43.8	5410.47	5411.35	2.008	5411.80	5412.68	n/a	5412.68	End
2		7.04	24 c	23.4	5411.45	5411.92	2.009	5413.45	5413.43	0.12	5413.55	1

Project File: SD-INLETS3&4.stm	Number of lines: 2	Run Date: 07-31-2006

NOTES: c = cir; e = ellip; b = box; Return period = 100 Yrs. ; j - Line contains hyd. jump.

Storm Sewer Summary Report

Line No.	Line ID	Flow rate (cfs)	Line size (in)	Line length (ft)	Invert EL Dn (ft)	Invert EL Up (ft)	Line slope (%)	HGL down (ft)	HGL up (ft)	Minor loss (ft)	HGL Junct (ft)	Dns line No.
1		13.23	24 c	23.4	5411.73	5412.20	2.011	5413.02	5413.49	n/a	5413.49	End
2		6.60	24 c	21.0	5412.30	5412.72	2.002	5414.30	5414.29	0.10	5414.39	1

Project File: SD-INLETS1&2.stm	Number of lines: 2	Run Date: 07-31-2006

NOTES: c = cir; e = ellip; b = box; Return period = 100 Yrs.