CITY OF ALBUQUERQUE

Richard J. Berry, Mayor

February 14, 2017

Scott J. Steffen, P.E.
Bohannan Huston, Inc.
7500 Jefferson St NE Courtyard 1
Albuquerque, NM, 87109

RE: **Taos II @ The Trails**
Grading Plan
Stamp Date 1/11/2017 (File:C09D001G)

Dear Mr. Steffen:

Based upon the information provided in your submittal received 1/19/2017 and updated information provided on 2/14/17, the above referenced Grading Plan is approved for Grading Permit. Since the previous submittal, the following actions have been taken:

1. The discrepancy with the allowable discharge as described by the Update to the Amendment to the Drainage Master Plan, by RESPEC and Thompson Engineering, dated 9/14/2016 has been corrected and a new Drainage Master Plan, stamped 2/10/17, has been provided.
2. Details related to the modifications to the Pond F inlet and outlet, per the infrastructure list approved by under DRB Project# 1002962, have been provided.

The Erosion and Sediment Plan has been received and approved. If you have any questions, you can contact me at 924-3695.

Sincerely,

Dana Peterson, P.E.
Senior Engineer, Planning Dept.
Development Review Services

Orig: Drainage file

PO Box 1293
Albuquerque
New Mexico 87103
www.cabq.gov

City of Albuquerque

Planning Department

Development & Building Services Division

DRAINAGE AND TRANSPORTATION INFORMATION SHEET (REV 09/2015)

Project Title: TAOS II AT THE TRAILS Building Permit #. _____ City Drainage #: C09D0016

DRB#: 1002962 EPC#: _____ Work Order#: _____

Legal Description: Tract 1 at the Trails Unit 2 and Unplatted Lands of Manuel R. Pili

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 TRACT 1, LLC Contact: BRIAN MULQUEEN

Address: 371 CENTENNIAL PARKWAY 200 LOUISVILLE CO 80027

Phone#: 303-533-1615 Fax#: _____ E-mail: BMULQUEEN@REALCAPITALSOLUTIONS COM

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:

_____ ENGINEER/ ARCHITECT CERTIFICATION

_____ CONCEPTUAL G & D PLAN
__X__ GRADING PLAN
_____ DRAINAGE MASTER PLAN
_____ DRAINAGE REPORT
_____ CLOMR/LOMR

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

_____ OTHER (SPECIFY) _____

RECEIVED
FEB 14 2017
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
_____ SIA/ RELEASE OF FINANCIAL GUARANTEE
FOUNDATION PERMIT APPROVAL
__X__ GRADING PERMIT APPROVAL
_____ SO-19 APPROVAL
_____ PAVING PERMIT APPROVAL
_____ GRADING/ PAD CERTIFICATION
_____ WORK ORDER APPROVAL
_____ CLOMR/LOMR

_____ PRE-DESIGN MEETING
_____ OTHER (SPECIFY) _____

IS THIS A RESUBMITTAL?: __X__ Yes _____ No

DATE SUBMITTED: 2/13/17 By: SCOTT STEFFEN

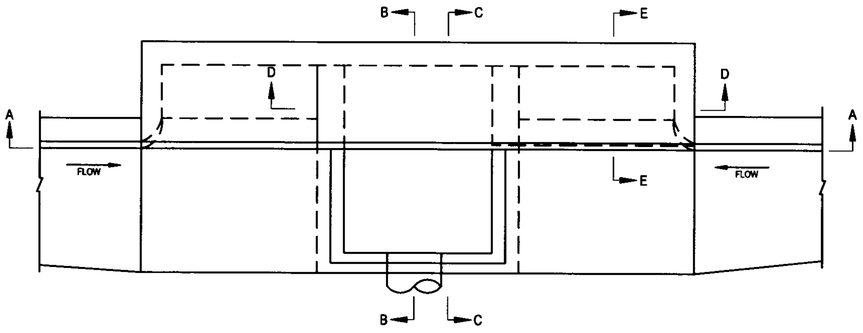
COA STAFF ELECTRONIC SUBMITTAL RECEIVED ___

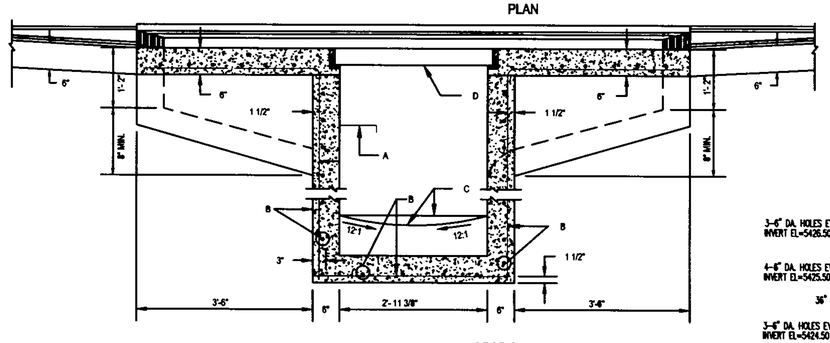
Scott Steffen

From: Scott Steffen
Sent: Monday, February 13, 2017 2:24 PM
To: PLNDRS@cabq.gov
Subject: Taos II at the Trails Grading Plan resubmittal C09D00G1
Attachments: 20140037_GP01_SHT02.pdf; DRS-DRAINAGE INFO SHEET_ELECTRONIC.pdf

Attached is the electronic submittal for the revised Sheet 2 of the Taos II grading plan.

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





SECTION A-A

SINGLE GRATE DOUBLE WING TYPE "A" STORM DRAIN INLET
NOT TO SCALE

GENERAL NOTES:

1. SEE DWG. 2202 FOR TYPE "A" INLET SECTIONS.
2. FOR STORM INLET GUTTER TRANSITION, SEE DWG. 2207.
3. OUTLET PIPE SIZE, PER DESIGN REQUIREMENT.
4. FOR FRAME & GRATING, SEE DWG. 2216, 2220 & 2221.

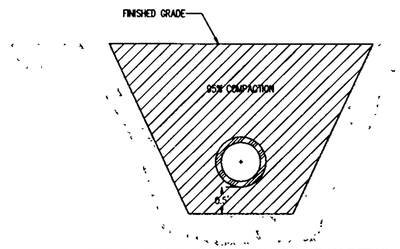
CONSTRUCTION NOTES:

A. FOR STORM INLET DEPTHS GREATER THAN 4', INSTALL STD. STEPS, SEE DWG. 2223. STEPS ARE TO BE INSTALLED ON DOWNSTREAM FACE OF INLET.

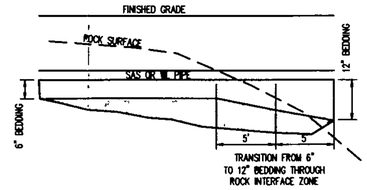
B. NO. 4 BARS AT 6" O.C. EACH WAY.

C CONCRETE FILL, MINIMUM SLOPE SHOWN IN SECTION A-A.

D GRATE



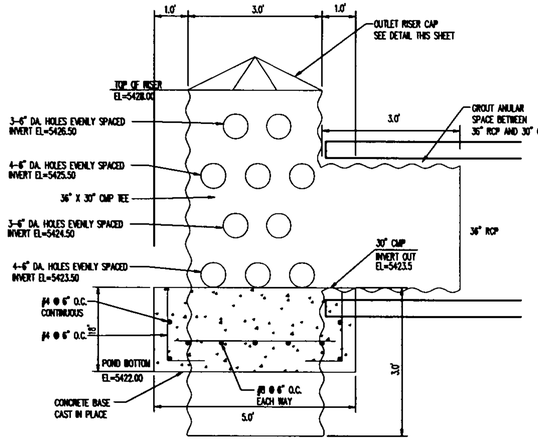
ABCWUA TYPICAL TRENCH COMPACTION DETAIL FOR PUBLIC WATER AND SANITARY SEWER LINES
NOT TO SCALE



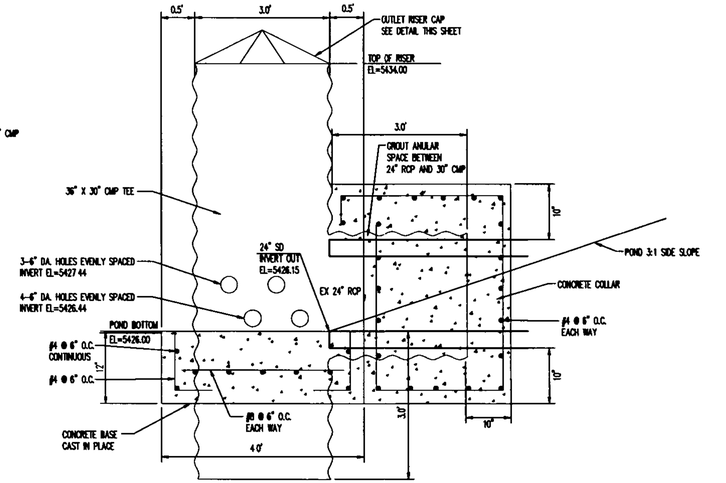
ROCK TRENCH DETAIL
NOT TO SCALE

NOTE: NO CRUSHED/BLASTED BASALT WITHIN 1' OF SAS OR WL PIPE

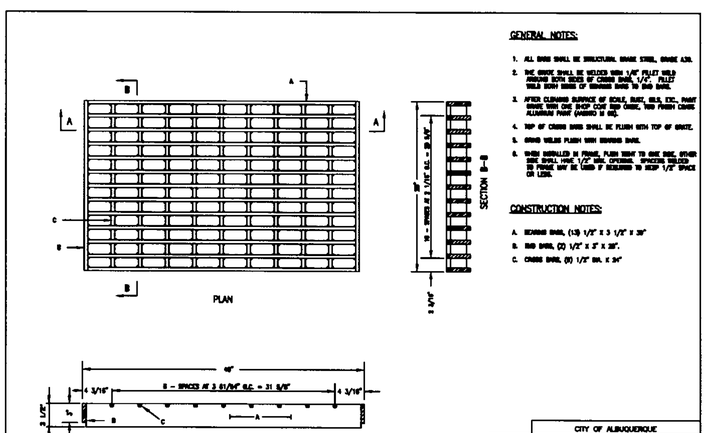
SUPPLEMENTAL SPECIFICATION



POND 'F-5' OUTLET RISER DETAIL
NOT TO SCALE



POND 'D' OUTLET RISER DETAIL
NOT TO SCALE

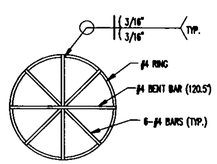


GENERAL NOTES:

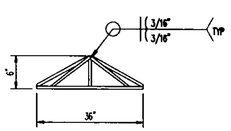
1. ALL BARS SHALL BE REINFORCING GRADE STEEL, GRADE A36.
2. THE GRATE SHALL BE WELDED WITH 1/4" FILLET WELD AROUND EACH SIDES OF CROSS BAR, 1/2" FILLET WELD EVERY ENDS OF CROSSING BARS TO END BARS.
3. AFTER CLEANING SURFACE OF SCALE, RUST, OIL, ETC., PAINT GRATE WITH ONE SHOP COAT RED OXIDE, TWO FINISH COATS ALUMINUM PAINT (ANODIZED IS OK).
4. TOP OF CROSS BARS SHALL BE FLUSH WITH TOP OF GRATE.
5. GRIND WELDS FLUSH WITH BEARING BARS.
6. WHEN INSTALLED IN STORM, PLACE RIBS TIGHT TO END BARS, OTHER SIDE SHALL HAVE 1/2" MAX. OPENING. SPACERS REQUIRED TO PROVIDE MAY BE USED IF REQUIRED TO KEEP 1/2" SPACE OR LESS.

CONSTRUCTION NOTES:

A. BEARING BARS, (13) 1/2" X 3 1/2" X 28"
B. END BARS, (2) 1/2" X 3" X 28".
C. CROSS BARS, (6) 1/2" DIA. X 24"

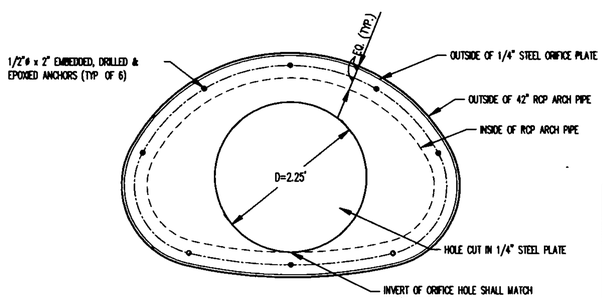


PLAN



PROFILE

OUTLET RISER CAP DETAIL



POND 'F' ORIFICE PLATE DETAIL
NOT TO SCALE

NOTE: CONTRACTOR TO INSTALL ORIFICE PLATE IN EXISTING JUNCTION BOX IN TREE LINE AVENUE ON 42" ARCH PIPE OUTFALL, DOWNSTREAM OF TRAILS POND 'F'. COORDINATE WITH ENGINEER ON LOCATION.

AS-BUILT INFORMATION
CONTRACTOR — DATE
STAKED BY — DATE
INSPECTOR'S FIELD VERIFICATION BY — DATE
DRAWING CORRECTED BY — DATE

BENCH MARKS
ACS MONUMENT "UNION"
GEOGRAPHIC POSITION CENTRAL ZONE (NAD 83)
N.M. STATE PLANE COORDINATES STATE PLANE
X = 1,483,555.095 1,523,503.475
GROUND-TO-GRID FACTOR = 0.999854360
Δα = -00°16'58.80"
NAVD 1988 ELEVATION = 5524.950

MICROFILM INFORMATION
DATE
RECORDED BY
NO

SURVEY INFORMATION
FIELD NOTES

NO.	BY	DATE

ENGINEER'S SEAL

No.	Date	By	REMARKS
			REVISIONS
			DESIGN
			DATE: 09/2016
			DATE: 09/2016
			DATE: 09/2016

Designed By: SJS
Drawn By: BJS
Checked By: SJS

Bohannan Huston
www.bhinc.com 800 877 5332

CITY OF ALBUQUERQUE
PUBLIC WORKS DEPARTMENT

TAOS II AT THE TRAILS
MISCELLANEOUS UTILITY DETAILS

Design Review Committee	City Engineer Approval	Last Design Update	Mo./Day/Yr.	Mo./Day/Yr.

City Project No 738487 | Zone Map No C-09-Z | Sheet 21 | Of 21

P:\20140037\CDP\Plans\General\CD'S\20140037_MD02.dwg
8/29/2016 2:41 PM

City of Albuquerque

Planning Department

Development & Building Services Division

DRAINAGE AND TRANSPORTATION INFORMATION SHEET (REV 09/2015) To: Dana

Project Title: TAOS II AT THE TRAILS Building Permit #: _____ City Drainage #: C09D001G

DRB#: 1002962 EPC#: _____ Work Order#: _____

Legal Description: Tract 1 at the Trails Unit 2 and Unplatted Lands of Manuel R. Pili

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 TRACT 1, LLC Contact: BRIAN MULQUEEN

Address: 371 CENTENNIAL PARKWAY 200 LOUISVILLE CO 80027

Phone#: 303-533-1615 Fax#: _____ E-mail: BMULQUEEN@REALCAPITALSOLUTIONS COM

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:

_____ ENGINEER/ ARCHITECT CERTIFICATION

_____ CONCEPTUAL G & D PLAN
__x__ 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?: __x__ Yes _____ 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
__x__ GRADING PERMIT APPROVAL
_____ SO-19 APPROVAL
_____ PAVING PERMIT APPROVAL
_____ GRADING/ PAD CERTIFICATION
_____ WORK ORDER APPROVAL
_____ CLOMR/LOMR

_____ PRE-DESIGN MEETING
_____ OTHER (SPECIFY) _____

RECEIVED
JAN 19 2017
LAND DEVELOPMENT SECTION

DATE SUBMITTED: 1/19/17 By: SCOTT STEFFEN

COA STAFF ELECTRONIC SUBMITTAL RECEIVED. ___

Peterson, Dana M.

From: Peterson, Dana M.
Sent: Thursday, February 02, 2017 4:23 PM
To: 'Scott Steffen'
Cc: Biazar, Shahab; 'hugh.floyd@respec.com'
Subject: RE: Taos II @ the Trails Grading Permit

Good Afternoon Scott-
This email is being sent in lieu of a response letter for your grading plan submitted on 1/19/17. Replies to this email are not considered a resubmittal. After meeting with Hugh this afternoon I understand that this will be resubmitted with a revised drainage report to hopefully remove the below conditions:

1. Consolidate the discrepancy with the allowable discharge as described by the Update to the Amendment to the Drainage Master Plan, by RESPEC and Thompson Engineering, dated 9-14-2016. The allowable discharge on Table 7 is approximately 52 cfs, and the subdivision is proposed to discharge approximately 58 cfs. Although the discrepancy might not be significant, Pond F5, (the outfall for Taos II), will not have much freeboard to work with.
2. Modifications to the Pond F inlet and outlet, per the infrastructure list approved by under DRB Project# 1002962, will be included in the public work order set.

The Erosion and Sediment Plan has been received and approved. If you have any questions, you can contact me at 924-3695.
v/r,
Dana

* Bypass to Pond-F not req'd if pipe is >2' equivilent
* Pond-F orifice plate may be req'd- check infr. list

Dana M. Peterson, P.E.
Senior Engineer- Hydrology
Planning Department
City of Albuquerque
(505) 924-3695
dpeterson@cabq.gov
600 2nd Street NW
Albuquerque, NM 87102

From: Peterson, Dana M.
Sent: Thursday, January 26, 2017 10:44 AM
To: 'Scott Steffen'; 'hugh.floyd@respec.com'
Cc: Biazar, Shahab; Carrillo, Abiel X.
Subject: RE: Taos II @ the Trails Grading Permit

Hugh-
Can you provide the updated exhibit/model showing that the 52cfs to 58 cfs increase will work with pond F-5? Abiel had discussed this with you in the Fall and we would like to ensure the system will still function before approving. We don't need a fully revised report until ROFG.

Scott- I received the updated sheets for the grading plan and swapped them out- thank you.

v/r,
Dana

From: Scott Steffen [mailto:ssteffen@bhinc.com]
Sent: Tuesday, January 24, 2017 3:56 PM
To: Peterson, Dana M.
Cc: 'hugh.floyd@respec.com'; Biazar, Shahab
Subject: RE: Taos II @ the Trails Grading Permit

Dana,

I am sending a hard copy of the entire grading plan since Sheet 2 changed from what I provided to you at DRC last week. You should receive it in the morning.

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: Peterson, Dana M. [mailto:dpeterson@cabq.gov]
Sent: Tuesday, January 24, 2017 2:39 PM
To: Scott Steffen <ssteffen@bhinc.com>
Cc: 'hugh.floyd@respec.com' <hugh.floyd@respec.com>; Biazar, Shahab <sbiazar@cabq.gov>
Subject: RE: Taos II @ the Trails Grading Permit

Thank you Scott-
Please send down a hardcopy of sheet 3. Regarding item 2, we're ok with this and will include as a condition on the approval letter.
-Dana

From: Scott Steffen [mailto:ssteffen@bhinc.com]
Sent: Tuesday, January 24, 2017 11:12 AM
To: Peterson, Dana M.
Cc: 'hugh.floyd@respec.com'; Biazar, Shahab
Subject: RE: Taos II @ the Trails Grading Permit

Dana,

See my responses below in red.

Let me know if you have any questions or 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: Peterson, Dana M. [mailto:dpeterson@cabq.gov]
Sent: Monday, January 23, 2017 10:14 AM
To: Scott Steffen <ssteffen@bhinc.com>
Cc: 'hugh.floyd@respec.com' <hugh.floyd@respec.com>
Subject: Taos II @ the Trails Grading Permit

Scott-
A few items to move your grading permit along:

- Electronic submittal. Please email the grading plan to plndrs@cabq.gov Sent the grading plan, including detail sheet, this morning.
- Sheet 3- the set you gave me on Wednesday was missing sheet 3 (Typ. Details) Included Sheet 3 in electronic submittal, do you need a hard copy?
- I've attached the last memo from Abiel with Hugh's comments. I need to confirm that several grading permit items are addressed:
  1. I'll leave this as a condition for ROFG. No action, unless you'd like to send a revised report now Agreed
  2. 2a and 2b. I don't see how these were addressed on sheet 1 or 2, hopefully they're addressed on sheet 3 with a detail dwg and notes For Ponds D and F5 the pond outfall risers are called out on the Sheet 2 of the grading plan and the riser details are shown in the construction plans (Sheet 21) since they are integrated w/the storm drain construction. We had to make minor changes to the Pond F5 riser. I have attached Sheet 21 w/the revised riser detail, which matches Sheet 2 of the grading plan that was submitted electronically this morning.

     For Pond F, we are working through the orifice plate design for the existing concrete box (referenced in Abiel's notes). Once we have the design concept ready, Hugh and I would like to sit down w/Shahab and you to discuss before we final the design. Our hope is to get the construction plans approved, then change order the Pond F modifications into the public work order set. It does not make sense to me to note anything on the Taos II grading plan for Pond F since Pond F is downstream of the project and somewhat stand alone.

  3. Sounds like this detail just needs to be removed Detail has been removed, see electronic submittal.
  4. The ESC is submitted and approved. No action Okay

Any questions, call or email,
Dana

Dana M. Peterson, P.E.
Senior Engineer- Hydrology
Planning Department
City of Albuquerque
(505) 924-3695
dpeterson@cabq.gov
600 2nd Street NW
Albuquerque, NM 87102

Scott Steffen

From: Scott Steffen
Sent: Tuesday, January 24, 2017 10:59 AM
To: PLNDRS@cabq.gov
Subject: Taos II at the Trails Grading Plan resubmittal C09D00G1
Attachments: TAOS II GRADING PLAN SUBMITTAL C09D00G1.pdf

Attached is the electronic submittal for the revised Taos II grading plan.

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

CITY OF ALBUQUERQUE

Richard J. Berry, Mayor

September 20, 2016

Scott J. Steffen, P.E.
Bohannan Huston, Inc.
7500 Jefferson St NE Courtyard 1
Albuquerque, NM, 87109

RE: **Taos II @ The Trails**
Grading and Drainage Plan & Report
Stamp Date 7-13-16 (File:C09D00G1)

Dear Mr. Steffen:

Based upon the information provided in your submittal received 7-14-2016, the above referenced Grading and Drainage Plan & Report is approved for Preliminary Plat with the following conditions:

1. The Work Order Set will need to include sufficient survey information to show that the tie in to the existing Hearthstone Roadway section is completed with a smooth transition.

2. If the project is phased, the Work Order Set will be expected to include temporary/desiltation ponds where needed.

3. Forward a copy of any correspondence related to the permission for grading that will be needed for the perched access road from Oakridge St. on the adjacent property prior to Hydrology's sign off of the DRC Set.

4. The DRC Set will need to include enough survey information at the West end of Hearthstone to ensure that a smooth transition to the existing road.

Prior to approval for Grading Permit, the following items will need to be addressed. Segments of the existing Grading and Drainage Plan & Report can be replaced where needed:

1. Consolidate the discrepancy with the allowable discharge as described by the Update to the Amendment to the Drainage Master Plan, by RESPEC and Thompson Engineering, dated 9-14-2016. The allowable discharge on Table 7 is approximately 52 cfs, and the subdivision is proposed to discharge approximately 58 cfs. Although the discrepancy might not be significant, Pond F5, (the outfall for Taos II), will not have much freeboard to work with.

PO Box 1293
Albuquerque
New Mexico 87103
www.cabq.gov

2. The improvements referenced on the Infrastructure List need to be shown on the Grading Plan:

   a. The Improvements related to Ponds F, F5 and D. The orifice plate can be included by reference or as a specific note/exhibit of the improvements required.

   b. The outfall conditions into Pond F5. Note that the Drainage Master Plan elevations are based on NGVD 29 datum.

3. It is not clear where the wall drain detail will be used since it appears that all lots drain to the roadway. Any planned rear-lot ponding would require an easement.

4. An approved ESC Plan will be required.

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

PO Box 1293

Albuquerque

New Mexico 87103

Sincerely,

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

Orig: Drainage file

Carrillo, Abiel X.

From: Hugh Floyd <Hugh.Floyd@respec.com>
Sent: Tuesday, September 20, 2016 10:09 AM
To: Carrillo, Abiel X.; Scott Steffen
Cc: Harmon Rita T.
Subject: RE: Taos II DRB 1002962

Abiel,

The reason for the difference in flowrate to pond F-5 is that Scott did a more detailed analysis for our subdivision looking at the capacity of the individual inlets. As such, he includes some by-pass flows coming from the Heritage subbasin upstream. We stuck with the original subbasins from Dave's original report to stay within the same level of detail as the overall master plan. The net affect of Scott's change would be that Pond D would receive a little less flow, Pond F-5 would receive a little more. We are running a test model now to verify that there are no ill effects, but my expectation is that we are ok, since the critical point in the system is at Pond F where both of those ponds discharge to.

Hugh Floyd, PE

RESPEC
505.253.9810 office (direct)
505.366.4187 cell

www.respec.com

From: Carrillo, Abiel X. [mailto:acarrillo@cabq.gov]
Sent: Tuesday, September 20, 2016 9:32 AM
To: Scott Steffen <ssteffen@bhinc.com>
Cc: Hugh Floyd <Hugh.Floyd@respec.com>; Harmon Rita T. <rharmon@cabq.gov>
Subject: RE: Taos II DRB 1002962

Sounds good, if I can just get a tentative answer from Hugh that the capacity issue won't be an issue for now, I'll just make it a condition of Grading Permit (I realize it won't be possible to get a complete answer by tomorrow).

Abiel Carrillo, PE, CFM
Principal Engineer - Hydrology
Planning Department
Development Review Services Division
City of Albuquerque
505-924-3986
acarrillo@cabq.gov
600 2nd Street NW
Albuquerque, NM 87102

From: Scott Steffen [mailto:ssteffen@bhinc.com]
Sent: Tuesday, September 20, 2016 8:02 AM
To: Carrillo, Abiel X.
Cc: hugh.floyd@respec.com; Harmon Rita T.
Subject: RE: Taos II DRB 1002962

Abiel,

See responses below in red.

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: Carrillo, Abiel X. [mailto:acarrillo@cabq.gov]
Sent: Monday, September 19, 2016 4:57 PM
To: Scott Steffen <ssteffen@bhinc.com>
Cc: hugh.floyd@respec.com; Harmon Rita T. <rharmon@cabq.gov>
Subject: RE: Taos II DRB 1002962

Scott,

I am done reviewing the Taos II Submittal, and expect an approval for this week's DRB. Before sending the letter, though , I had a few questions:

1. The access from Oakridge will be through the access/WUA easement, but the road is perched; what is the mechanism to get permission from the adjacent land owner for the grading that is needed. Temporary slope easement? Or are there development agreements that could be referenced? I believe that The Trails developer (Wexford) is reviewing the grading plan to make sure they are okay with what we are proposing. Hugh – can you speak to coordination efforts w/adjacent land owner for the grading that is needed?

2. Who's responsibility is it to show/build the outfall into Pond F5? I'm assuming that the Grading Permit I have from July would have been supplemented with the pond grading and outfall information through a review iteration. If that's the case I could make it a condition of the Grading Permit to provide revised sheets. Our final grading plans need to show complete outfall information. Our grading plan will show the outfall to Pond F5, including the pond grading. It seems reasonable to make it a condition of Grading Permit to provide revised sheets.

3. I have a few other minor comments that I will summarize as conditions for DRC or for Grading Permit. However, there is one that Hugh might have to help address before DRB: I agree that Hugh needs to address this comment.

    a. The discharge from Taos II into Pond F5 is about 60 cfs, but the master plan update expects about 52 cfs. It is not a huge discrepancy, but Pond F5 does not appear to have much freeboard to work with. Rita is working on the approval for the master plan update. If the model is able to accept the difference, then we can just replace the sheets in the DMP update, with updated information. If it can't, then we would need to coordinate before approving for Preliminary Plat.

Any question just let me know.

Abiel Carrillo, PE, CFM
Principal Engineer - Hydrology
Planning Department
Development Review Services Division

City of Albuquerque
505-924-3986
acarrillo@cabq.gov
600 2nd Street NW
Albuquerque, NM 87102

From: Scott Steffen [mailto:ssteffen@bhinc.com]
Sent: Thursday, September 15, 2016 4:41 PM
To: Cloud, Jack W.
Cc: Carrillo, Abiel X.; 'kcadena@abcwua.org'; Michel, Racquel M.; Dumont, Carol S.; 'Hugh Floyd'
Subject: RE: Taos II DRB 1002962

Jack,

Attached is the transmittal w/the "Received" stamp from the front counter. Not sure why no one received the package. I will resubmit again tomorrow.

Scott J. Steffen
Vice President
Community Development and Planning
Bohannan Huston
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From: Cloud, Jack W. [mailto:jcloud@cabq.gov]
Sent: Thursday, September 15, 2016 4:07 PM
To: Scott Steffen <ssteffen@bhinc.com>
Cc: Carrillo, Abiel X. <acarrillo@cabq.gov>; 'kcadena@abcwua.org' <kcadena@abcwua.org>; Michel, Racquel M. <rmichel@cabq.gov>; Dumont, Carol S. <cdumont@cabq.gov>; 'Hugh Floyd' <Hugh.Floyd@respec.com>
Subject: RE: Taos II DRB 1002962

I don't have a supplemental from last Friday, nor does Kris, so I recommend you do the whole thing for everybody -

---

From: Scott Steffen [mailto:ssteffen@bhinc.com]
Sent: Thursday, September 15, 2016 3:53 PM
To: Cloud, Jack W.
Cc: Carrillo, Abiel X.; kcadena@abcwua.org; Michel, Racquel M.; Dumont, Carol S.; Hugh Floyd
Subject: Taos II DRB 1002962

Jack,

The only change to the DRB submittal package, including the supplemental submittal dated 9/9/16, are modifications to the infrastructure list based on comments from Kris regarding sewer and water. Attached is the revised infrastructure list.

Do I need to make a hard copy submittal to the counter as well?

Thanks,

Scott J. Steffen
Vice President
Community Development and Planning
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CITY OF ALBUQUERQUE

Richard J. Berry, Mayor

September 20, 2016

Responses from Hugh in blue
-AC

Scott J. Steffen, P.E.
Bohannan Huston, Inc.
7500 Jefferson St NE Courtyard 1
Albuquerque, NM, 87109

RE: **Taos II @ The Trails**
Grading and Drainage Plan & Report
Stamp Date 7-13-16 (File:C09D00G1)

Dear Mr. Steffen:

Based upon the information provided in your submittal received 7-14-2016, the above referenced Grading and Drainage Plan & Report is approved for Preliminary Plat with the following conditions:

1. The Work Order Set will need to include sufficient survey information to show that the tie in to the existing Hearthstone Roadway section is completed with a smooth transition. Will address with note
2. If the project is phased, the Work Order Set will be expected to include temporary/desiltation ponds where needed. Everything will be built at once
3. Forward a copy of any correspondence related to the permission for grading that will be needed for the perched access road from Oakridge St. on the adjacent property prior to Hydrology's sign off of the DRC Set.
4. The DRC Set will need to include enough survey information at the West end of Hearthstone to ensure that a smooth transition to the existing road.

Prior to approval for Grading Permit, the following items will need to be addressed. Segments of the existing Grading and Drainage Plan & Report can be replaced where needed:

1. Consolidate the discrepancy with the allowable discharge as described by the Update to the Amendment to the Drainage Master Plan, by RESPEC and Thompson Engineering, dated 9-14-2016. The allowable discharge on Table 7 is approximately 52 cfs, and the subdivision is proposed to discharge approximately 58 cfs. Although the discrepancy might not be significant, Pond F5, (the outfall for Taos II), will not have much freeboard to work with.

Model will be updated with pond information from BTL, so we should expect a revised report as a condition of ROFG.

PO Box 1293
Albuquerque
New Mexico 87103
www.cabq.gov

CITY OF ALBUQUERQUE

Richard J. Berry, Mayor

Hugh will add viser information to not have items on DRC that need new submittals.

2. The improvements referenced on the Infrastructure List need to be shown on the Grading Plan:

   a. The Improvements related to Ponds F, F5 and D. The orifice plate can be included by reference or as a specific note/exhibit of the improvements required.

   b. The outfall conditions into Pond F5. Note that the Drainage Master Plan elevations are based on NGVD 29 datum.

~~Ort~~ OK, will be included

3. It is not clear where the wall drain detail will be used since it appears that all lots drain to the roadway. Any planned rear-lot ponding would require an easement. — should be removed

4. An approved ESC Plan will be required. — submitted - confirm w/ curtis - approved

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

PO Box 1293

Albuquerque

New Mexico 87103

www.cabq.gov

Sincerely,

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

This will require tying in to the existing Reinforced conc. box, so a special detail to protect the reinforcement will be needed.

Orig: Drainage file

Albuquerque - Making History 1706-2006

City of Albuquerque

Planning Department

Development & Building Services Division

DRAINAGE AND TRANSPORTATION INFORMATION SHEET (REV 09/2015)

Project Title: TAOS II AT THE TRAILS Building Permit #: _____ City Drainage #: C09D001G

DRB#: 1002962 EPC#: _____ Work Order#: _____

Legal Description: Tract 1 at the Trails Unit 2 and Unplatted Lands of Manuel R. Pili

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 TRACT 1, LLC Contact: BRIAN MULQUEEN

Address: 371 CENTENNIAL PARKWAY 200 LOUISVILLE CO 80027

Phone#: 303-533-1615 Fax#: _____ E-mail: BMULQUEEN@REALCAPITALSOLUTIONS COM

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:

_____ ENGINEER/ ARCHITECT CERTIFICATION

_____ CONCEPTUAL G & D PLAN
__x__ GRADING PLAN
_____ DRAINAGE MASTER PLAN
_____ DRAINAGE REPORT
_____ CLOMR/LOMR

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

_____ OTHER (SPECIFY) _____

CHECK TYPE OF APPROVAL/ACCEPTANCE SOUGHT:

_____ BUILDING PERMIT APPROVAL
_____ CERTIFICATE OF OCCUPANCY

__x__ PRELIMINARY PLAT APPROVAL 109
__x__ SITE PLAN FOR SUB'D APPROVAL
_____ SITE PLAN FOR BLDG. PERMIT APPROVAL
_____ FINAL PLAT APPROVAL
_____ SIA/ RELEASE OF FINANCIAL GUARANTEE
_____ FOUNDATION PERMIT APPROVAL
__x__ GRADING PERMIT APPROVAL 40
_____ SO-19 APPROVAL
_____ PAVING PERMIT APPROVAL
_____ GRADING/ PAD CERTIFICATION
_____ WORK ORDER APPROVAL
_____ CLOMR/LOMR

_____ PRE-DESIGN MEETING Paid $1,150.00
_____ OTHER (SPECIFY) _____

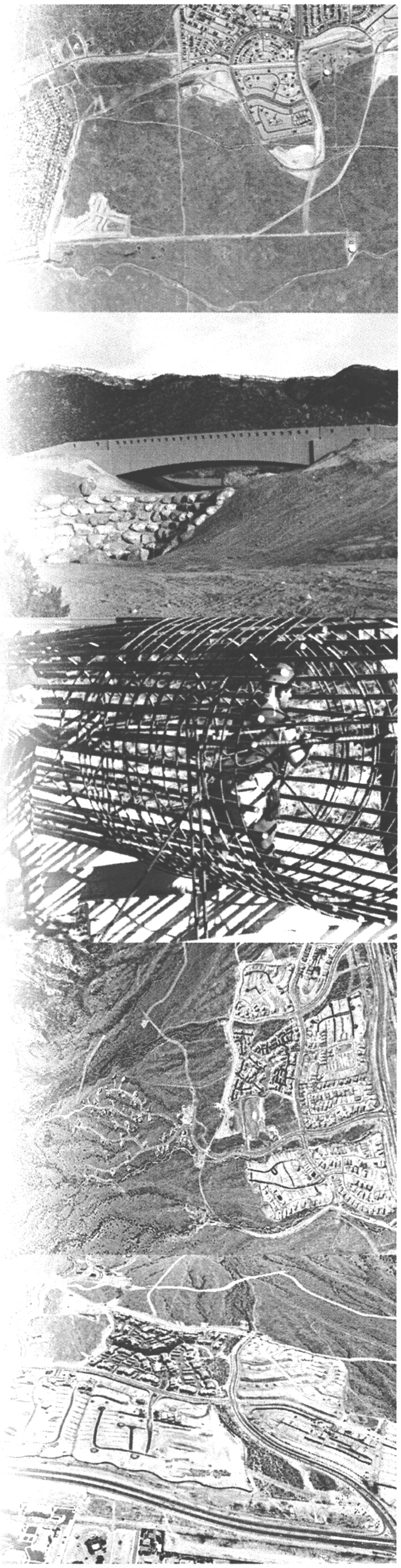
RECEIVED
JUL 14
LAND DEVELOPMENT SECTION

IS THIS A RESUBMITTAL?: _____ Yes _____ No

DATE SUBMITTED: 7/14/16 By: SCOTT STEFFEN

COA STAFF ELECTRONIC SUBMITTAL RECEIVED. ___

DRAINAGE REPORT
FOR
TAOS II AT THE TRAILS
SUBDIVISION



JULY 2016

Prepared for:

Real Capital Solutions

371 Centennial Parkway – Suite 200

Louisville, CO 80027

Prepared by:

Bohannan Huston

Engineering

Spatial Data

Advanced Technologies

DRAINAGE REPORT
FOR
TAOS II @ THE TRAILS
SUBDIVISION

JULY 13, 2016

Prepared for:

REAL CAPITAL SOLUTIONS

371 CENTENNIAL PARKWAY, SUITE 200

LOUISVILLE, CO 80027

Prepared by:

BOHANNAN HUSTON, INC.

COURTYARD I

7500 JEFFERSON STREET NE

ALBUQUERQUE, NM 87109

Prepared By:

7/13/16

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

Bohannan Huston

TABLE OF CONTENTS

TABLES

APPENDICES

EXHIBITS

I. PURPOSE

This report establishes a drainage management plan for Taos II at the Trails. The proposed development consists of 109 single family detached residential lots on approximately 17.4 acres. This project is located within the Volcano Trails Sector Plan area, in northwest Albuquerque, east of The Trails Heritage Unit 2 and west of Tract 2 The Trails Unit 2. Taos II at the Trails is in the Trails Units 1-3 Drainage Master Plan (DMP) area and has free discharge of developed flows to Pond F5. Flows from Pond F5 are conveyed through an existing 42-inch storm drain that runs through the Sierra at the Trails subdivision, ultimately reaching the Trails storm drain outfall in Universe Boulevard. 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.

The following document was referenced in the preparation of this report:

- *Update to the Amendment to the Drainage Master Plan for the Trails Units 1, 2, and 3* prepared by Respec, Inc., dated July 2016.

III. SITE LOCATION AND CHARACTERISTICS

Taos II at the Trails is currently undeveloped with grades ranging from one percent to three percent. The site generally slopes from west to east. It is bounded by Paseo Del Norte Blvd to the north, Tract 2 at the Trails Unit 2 to the east, Heritage at the Trails Unit 2 to the west and Tract OS-3 to the south. Access to Taos II will be from Hearthstone Road through the Heritage subdivision and from Oakridge Street through Tract 2 at the Trails.

IV. DEVELOPED HYDRAULIC AND HYDROLOGIC CONDITIONS

Taos II at the Trails is a proposed single-family residential development with 109 lots on 17.4 acres. Proposed street and lot configurations are shown on the *Preliminary Plat*, **Exhibit 1.** Taos II at the Trails, is represented by Basin D5, F6, and F8 in the Trails Units 1-3 DMP. The DMP allows for full discharge of developed flows from Taos II at the Trails to the storm drain southeast of the development.

The percent impervious land treatment for the proposed conditions is determined from Table A-5 of the DPM, Section 22.2. The composite percent impervious land treatment value used in the Trails DMP AHYMO analysis that encompasses Taos II is 59.0%. The composite percent impervious land treatment for Taos II at the Trails' (D varies between 42-60% for sub basins) is 58.9%.

A. OFFSITE FLOWS

Limited offsite flows reach Taos II at the Trails. No flows reach the site from Paseo del Norte (PdN) to the north, as the site is higher in elevation than Paseo del Norte. DMP Basin J10 (14.3 cfs) identifies the flows in PdN across the Taos II frontage for the full build out scenario for PdN. The DMP identifies storm drain and inlet requirements for PdN (see Exhibit 5). A single inlet is required in PdN at the Taos II east boundary. There is no storm drain required in PdN across the Taos frontage. PdN is currently only 2 lanes wide with no permanent curb and gutter or storm drain improvements. Construction of PdN improvements across existing Trails subdivision frontage has been deferred so that the PdN can be built as a single project in lieu of piece meal construction with the development each Tract. This same approach holds for Taos II.

No flows reach the site from the east as Taos II at the Trails is greater in elevation than Tract 2. There is no flow from the south as Taos II is higher in elevation than Tract OS-3. Flow enters Taos II at the Trails in Hearthstone Road from the Heritage subdivision to the west. Existing inlets in Heritage at the east end of Hearthstone Road capture 8 cfs from Basin H1 (13.4 cfs), with the remaining 5.4 cfs of flow continuing into Taos II as bypass flow in Hearthstone Road. This 5.4 cfs was analyzed in the street hydraulic and storm drain analyses for Taos II at the Trails.

B. ONSITE FLOWS

Developed flows from Taos II at the Trails will be directed to Pond F5 utilizing the proposed street network combined with the proposed storm drain system (see Basin Map for basin locations and the Grading Plan for storm drain and inlet locations). Flows from Taos II will combine with flows from Basins F5 and F7 per the Amended DMP. Pond F5 grading is

shown on the Taos II Grading Plan (Exhibit 3). The total runoff from Taos II at the Trails is 53.5 cfs. This is slightly less than the combined Basin D5, D6, and F8 runoff (58.3 cfs) in the Trails Units 1-3 DMP. The difference is due to DMP Basin D5 including the portion of Pond D in Tract OS-3, which is not included in the Taos II analysis. The Amended DMP reduces the size of Pond D. The revised Pond D grading is shown on the Taos II Grading Plan (Exhibit 3). ↳ It actually just reshapes it, it is not smaller

Basin 1 (8.8 cfs), Basin 2 (15.8 cfs), Basin 3 (6.4 cfs), and Basin 5 (3.6 cfs) drain to a low point in Red Stone Road at AP#1. Basin 4 (18.9 cfs) drains to a low point in Red Stone Road at point AP#2. The storm drain inlets at the low points in Red Stone Road are in a sump condition and have capacity that is greater than two times the one-hundred year flow. The roadway high points are below the right-of-way elevations at the low point in the street. The Pond F5 serves as an emergency overflow for both points AP#1 and AP #2. See Exhibit 4 for storm drain capacity calculations.

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

Table 1 – Taos II at the Trails Onsite Proposed Conditions

Basin Data Table

100 Year – 6 Hour Storm						
Basin ID	**Area (AC.)**	**LAND TREATMENT**				**Q(100) (CFS)**
		A	**B**	**C**	**D**	
1	2.8	0.0%	20.0%	20.0%	60.0%	**8.8**
2	5.0	0.0%	19.5%	19.5%	61.0%	**15.8**
3	2.1	0.0%	20.5%	20.5%	59.0%	**6.4**
4	6.1	0.0%	20.0%	20.0%	60.0%	**18.9**
5	1.3	0.0%	29.0%	29.0%	42.0%	**3.6**

Σ%D = 10.2

C. FIRST FLUSH REQUIREMENTS

This project is required to meet the first flush requirements of the new City Drainage Ordinance. The first flush requirement will be met with on lot ponding and is calculated as 0.34 in. (0.44 in. - 0.1 in. initial abstraction) times the roof area that can drain to the on lot pond (taken as one half the pad area). There are two pad sizes, 30 feet x 85 feet and 35 feet x 85 feet, in this project with a first flush requirement of 36 and 42 cubic feet respectively.

First flush will be accommodated by a combination of ponding between the back of curb and sidewalk, supplemented by onsite front yard ponding on each lot. 30 cubic-feet per

lot can be stored in the landscape strip between the sidewalk and curb within the Right-of-Way. As a result, a maximum of 12 cubic-feet per lot of ponding (42 cubic-feet required minus 30 cubic-feet) is needed within the lot itself. This on-lot storage can be accomplished by a small bermed pond at the low side of each lot in front of the pad and consists of either an 8-inch or 12-inch berm. This on-lot front yard pond will be constructed as part of the landscaping by the building contractor.

V. CONCLUSION

This report provides a detailed study of the developed runoff and street capacities for the proposed Taos II at the Trails Subdivision. Included is the preliminary plat, proposed conditions basin map, grading plan, and all necessary hydrologic and hydraulic analyses. The proposed drainage plan for Taos II at the Trails 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 A

DEVELOPED CONDITIONS AHYMO SUMMARY, OUTPUT, AND INPUT FILES

Bohannan Huston

DEVELOPED CONDITIONS AHYMO SUMMARY FILE

Bohannan Huston

```
*S  TAOS II AT THE TRAILS 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 1
**************************************************
*
COMPUTE NM HYD        ID=1 HYD=1  AREA=0.004389  PER A=0 PER B=20
                PER C=20 PER D=60  TP=-0.1333  RAINFALL=-1
PRINT HYD        ID=1   CODE=1
*
*S COMPUTE BASIN 2
**************************************************
COMPUTE NM HYD       ID=2 HYD=2  AREA=0.007869  PER A=0 PER B=19.5
                PER C=19.5 PER D=61  TP=-0.1333  RAINFALL=-1
PRINT HYD        ID=2   CODE=1
*
*S COMPUTE BASIN 3
**************************************************
COMPUTE NM HYD       ID=3 HYD=3  AREA=0.003211  PER A=0 PER B=20.5
                PER C=20.5 PER D=59  TP=-0.1333  RAINFALL=-1
PRINT HYD        ID=3   CODE=1
*
*S COMPUTE BASIN 4
**************************************************
COMPUTE NM HYD       ID=4 HYD=4  AREA=0.009483  PER A=0 PER B=20
                PER C=20 PER D=60  TP=-0.1333  RAINFALL=-1
```

```
PRINT HYD        ID=4    CODE=1
*
PUNCH HYD        ID=4
*
*S COMPUTE BASIN 5
**********************************************
COMPUTE NM HYD       ID=5 HYD=5  AREA=0.001969  PER A=0 PER B=29
                PER C=29 PER D=42  TP=-0.1333  RAINFALL=-1
PRINT HYD        ID=5    CODE=1
*
*S COMPUTE BASIN H1
**********************************************
COMPUTE NM HYD       ID=6 HYD=H1  AREA=0.007025  PER A=0 PER B=25
                PER C=25 PER D=50  TP=-0.1333  RAINFALL=-1
PRINT HYD        ID=6  CODE=1
*
*S DIVIDE BASIN HERITAGE
**********************************************
DIVIDE HYD           ID=6 Q=5.39 ID=20 HYD NO=BYPASS.D
                                 ID=21 HYD NO=POND.D
PRINT HYD        ID=20   CODE=1
PRINT HYD        ID=21   CODE=1
*
*S ADD BASINS 2 AND 3 TO CREATE TEMP A
**********************************
ADD HYD              ID=10 HYD=TEMP.A ID I=2 II=3
PRINT HYD             ID=10 CODE=1
*
*S ADD BASINS DIVIDE H1 AND 1 TO CREATE TEMP B
**********************************
ADD HYD              ID=11 HYD=TEMP.B ID I=20 II=1
PRINT HYD             ID=11 CODE=1
*
*S ADD BASINS TEMP A AND TEMP B TO CREATE TEMP C
**********************************
ADD HYD              ID=12 HYD=TEMP.C ID I=10 II=11
PRINT HYD             ID=12 CODE=1
*
*S ADD BASINS TEMP C AND 5 TO CREATE AP.1
**********************************
ADD HYD              ID=14 HYD=AP.1 ID I=12 II=5
PRINT HYD             ID=14 CODE=1
*
PUNCH HYD        ID=14
*S
FINISH
```

DEVELOPED CONDITIONS AHYMO OUTPUT FILE

Bohannan Huston

```
     AHYMO PROGRAM (AHYMO_97) -                          - Version:  1997.02c
         RUN DATE (MON/DAY/YR) = 06/30/2016
         START TIME (HR:MIN:SEC) = 08:03:45     USER NO.= AHYMO-S-9702c1BohanHu-AH
         INPUT FILE = DEV_Cond.HYM

*S  TAOS II AT THE TRAILS 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 1*****************************************************
*
COMPUTE NM HYD       ID=1 HYD=1  AREA=0.004389  PER A=0 PER B=20
                          PER C=20 PER D=60  TP=-0.1333  RAINFALL=-1

     K =   .072649HR    TP =   .133300HR    K/TP RATIO =   .545000     SHAPE CONSTANT, N =  7.106420
     UNIT PEAK =   10.397    CFS   UNIT VOLUME =    1.029       B =   526.28      P60 = 1.8400
     AREA =      .002633 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .100000


     K =   .118524HR    TP =   .133300HR    K/TP RATIO =   .889153     SHAPE CONSTANT, N =  3.989065
     UNIT PEAK =   4.6681    CFS   UNIT VOLUME =    1.004       B =   354.44      P60 = 1.8400
     AREA =      .001756 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

                                        OUTFLOW HYDROGRAPH REACH     1.00

    RUNOFF VOLUME =     1.77627 INCHES     =        .4158 ACRE-FEET
    PEAK DISCHARGE RATE =       8.77 CFS  AT   1.500 HOURS   BASIN AREA =   .0044 SQ. MI.


*
*S COMPUTE BASIN 2*****************************************************
COMPUTE NM HYD       ID=2 HYD=2  AREA=0.007869  PER A=0 PER B=19.5
                          PER C=19.5 PER D=61  TP=-0.1333  RAINFALL=-1

     K =   .072649HR    TP =   .133300HR    K/TP RATIO =   .545000     SHAPE CONSTANT, N =  7.106420
     UNIT PEAK =   18.951    CFS   UNIT VOLUME =    1.029       B =   526.28      P60 = 1.8400
     AREA =      .004800 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .100000


     K =   .118524HR    TP =   .133300HR    K/TP RATIO =   .889153     SHAPE CONSTANT, N =  3.989065
     UNIT PEAK =   8.1601    CFS   UNIT VOLUME =    1.006       B =   354.44      P60 = 1.8400
     AREA =      .003069 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

                                        OUTFLOW HYDROGRAPH REACH     2.00


    RUNOFF VOLUME =     1.79256 INCHES     =        .7523 ACRE-FEET
    PEAK DISCHARGE RATE =      15.79 CFS  AT   1.500 HOURS   BASIN AREA =   .0079 SQ. MI.


*
*S COMPUTE BASIN 3*****************************************************
COMPUTE NM HYD       ID=3 HYD=3  AREA=0.003211  PER A=0 PER B=20.5
                          PER C=20.5 PER D=59  TP=-0.1333  RAINFALL=-1

     K =   .072649HR    TP =   .133300HR    K/TP RATIO =   .545000     SHAPE CONSTANT, N =  7.106420
     UNIT PEAK =   7.4795    CFS   UNIT VOLUME =    1.029       B =   526.28      P60 = 1.8400
     AREA =      .001894 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .100000


     K =   .118524HR    TP =   .133300HR    K/TP RATIO =   .889153     SHAPE CONSTANT, N =  3.989065
     UNIT PEAK =   3.5006    CFS   UNIT VOLUME =    1.004       B =   354.44      P60 = 1.8400
     AREA =      .001317 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

                                        OUTFLOW HYDROGRAPH REACH     3.00
```

```
    RUNOFF VOLUME =     1.75997 INCHES     =         .3014 ACRE-FEET
    PEAK DISCHARGE RATE =       6.39 CFS  AT    1.500 HOURS   BASIN AREA =    .0032 SQ. MI.


*
*S COMPUTE BASIN 4*****************************************************
COMPUTE NM HYD      ID=4 HYD=4  AREA=0.009483  PER A=0 PER B=20
                         PER C=20 PER D=60  TP=-0.1333  RAINFALL=-1

     K =   .072649HR    TP =   .133300HR    K/TP RATIO =   .545000     SHAPE CONSTANT, N =  7.106420
     UNIT PEAK =   22.464    CFS   UNIT VOLUME =    1.029       B =   526.28      P60 = 1.8400
     AREA =      .005690 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .100000


     K =   .118524HR    TP =   .133300HR    K/TP RATIO =   .889153     SHAPE CONSTANT, N =  3.989065
     UNIT PEAK =   10.086    CFS   UNIT VOLUME =    1.006       B =   354.44      P60 = 1.8400
     AREA =      .003793 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

                                  OUTFLOW HYDROGRAPH REACH     4.00

    RUNOFF VOLUME =     1.77627 INCHES     =         .8984 ACRE-FEET
    PEAK DISCHARGE RATE =      18.94 CFS  AT    1.500 HOURS   BASIN AREA =    .0095 SQ. MI.


*
PUNCH HYD           ID=4
*
*S COMPUTE BASIN 5*****************************************************
COMPUTE NM HYD      ID=5 HYD=5  AREA=0.001969  PER A=0 PER B=29
                         PER C=29 PER D=42  TP=-0.1333  RAINFALL=-1

     K =   .072649HR    TP =   .133300HR    K/TP RATIO =   .545000     SHAPE CONSTANT, N =  7.106420
     UNIT PEAK =   3.2650    CFS   UNIT VOLUME =    1.027       B =   526.28      P60 = 1.8400
     AREA =      .000827 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .100000


     K =   .118524HR    TP =   .133300HR    K/TP RATIO =   .889153     SHAPE CONSTANT, N =  3.989065
     UNIT PEAK =   3.0366    CFS   UNIT VOLUME =    1.004       B =   354.44      P60 = 1.8400
     AREA =      .001142 SQ MI    IA =    .42500 INCHES    INF =   1.04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .100000

PRINT HYD           ID=5   CODE=1

                                  OUTFLOW HYDROGRAPH REACH     5.00


    RUNOFF VOLUME =     1.48295 INCHES     =         .1557 ACRE-FEET
    PEAK DISCHARGE RATE =       3.62 CFS  AT    1.500 HOURS   BASIN AREA =    .0020 SQ. MI.


*
*S COMPUTE BASIN H1****************************************************
COMPUTE NM HYD      ID=6 HYD=H1  AREA=0.007025  PER A=0 PER B=25
                         PER C=25 PER D=50  TP=-0.1333  RAINFALL=-1

     K =   .072649HR    TP =   .133300HR    K/TP RATIO =   .545000     SHAPE CONSTANT, N =  7.106420
     UNIT PEAK =   13.868    CFS   UNIT VOLUME =    1.029       B =   526.28      P60 = 1.8400
     AREA =      .003513 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .100000


     K =   .118524HR    TP =   .133300HR    K/TP RATIO =   .889153     SHAPE CONSTANT, N =  3.989065
     UNIT PEAK =   9.3396    CFS   UNIT VOLUME =    1.006       B =   354.44      P60 = 1.8400
     AREA =      .003513 SQ MI    IA =    .42500 INCHES    INF =   1.04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .100000

PRINT HYD           ID=6  CODE=1
```

HYDROGRAPH FROM AREA H1

RUNOFF VOLUME = 1.61332 INCHES = .6045 ACRE-FEET
PEAK DISCHARGE RATE = 13.39 CFS AT 1.500 HOURS BASIN AREA = .0070 SQ. MI.

```
*
*S DIVIDE BASIN HERITAGE
*****************************************************
DIVIDE HYD              ID=6 Q=5.39 ID=20 HYD NO=BYPASS.D
                                          ID=21 HYD NO=POND.D
PRINT HYD           ID=20   CODE=1
```

HYDROGRAPH FROM AREA BYPASS.D

RUNOFF VOLUME = 1.61328 INCHES = .4506 ACRE-FEET
PEAK DISCHARGE RATE = 5.39 CFS AT 1.400 HOURS BASIN AREA = .0052 SQ. MI.

```
PRINT HYD           ID=21   CODE=1
```

HYDROGRAPH FROM AREA POND.D

RUNOFF VOLUME = 1.61328 INCHES = .1538 ACRE-FEET
PEAK DISCHARGE RATE = 8.00 CFS AT 1.500 HOURS BASIN AREA = .0018 SQ. MI.

```
*
*S ADD BASINS 2 AND 3 TO CREATE TEMP A **********************************
ADD HYD             ID=10 HYD=TEMP.A ID I=2 II=3
PRINT HYD            ID=10 CODE=1
```

HYDROGRAPH FROM AREA TEMP.A

RUNOFF VOLUME = 1.78305 INCHES = 1.0537 ACRE-FEET
PEAK DISCHARGE RATE = 22.18 CFS AT 1.500 HOURS BASIN AREA = .0111 SQ. MI.

```
*
```

```
*S ADD BASINS DIVIDE H1 AND 1 TO CREATE TEMP B **********************************
ADD HYD             ID=11 HYD=TEMP.B ID I=20 II=1
PRINT HYD            ID=11 CODE=1

                                        HYDROGRAPH FROM AREA TEMP.B


    RUNOFF VOLUME =     1.68756 INCHES     =         .8664 ACRE-FEET
    PEAK DISCHARGE RATE =      14.16 CFS  AT    1.500 HOURS   BASIN AREA =    .0096 SQ. MI.


*
```

```
*S ADD BASINS TEMP A AND TEMP B TO CREATE TEMP C ********************************
ADD HYD             ID=12 HYD=TEMP.C ID I=10 II=11
PRINT HYD            ID=12 CODE=1

                                        HYDROGRAPH FROM AREA TEMP.C


    RUNOFF VOLUME =     1.73866 INCHES     =       1.9200 ACRE-FEET
    PEAK DISCHARGE RATE =      36.35 CFS  AT   1.500 HOURS   BASIN AREA =    .0207 SQ. MI.



*
*S ADD BASINS TEMP C AND 5 TO CREATE AP.1 **********************************
ADD HYD             ID=14 HYD=AP.1 ID I=12 II=5
PRINT HYD            ID=14 CODE=1

                                        HYDROGRAPH FROM AREA AP.1


    RUNOFF VOLUME =     1.71645 INCHES     =       2.0757 ACRE-FEET
    PEAK DISCHARGE RATE =      39.96 CFS  AT   1.500 HOURS   BASIN AREA =    .0227 SQ. MI.


*
PUNCH HYD            ID=14
*S
FINISH

    NORMAL PROGRAM FINISH          END TIME (HR:MIN:SEC) = 08:03:45
```

DEVELOPED CONDITIONS AHYMO INPUT FILE

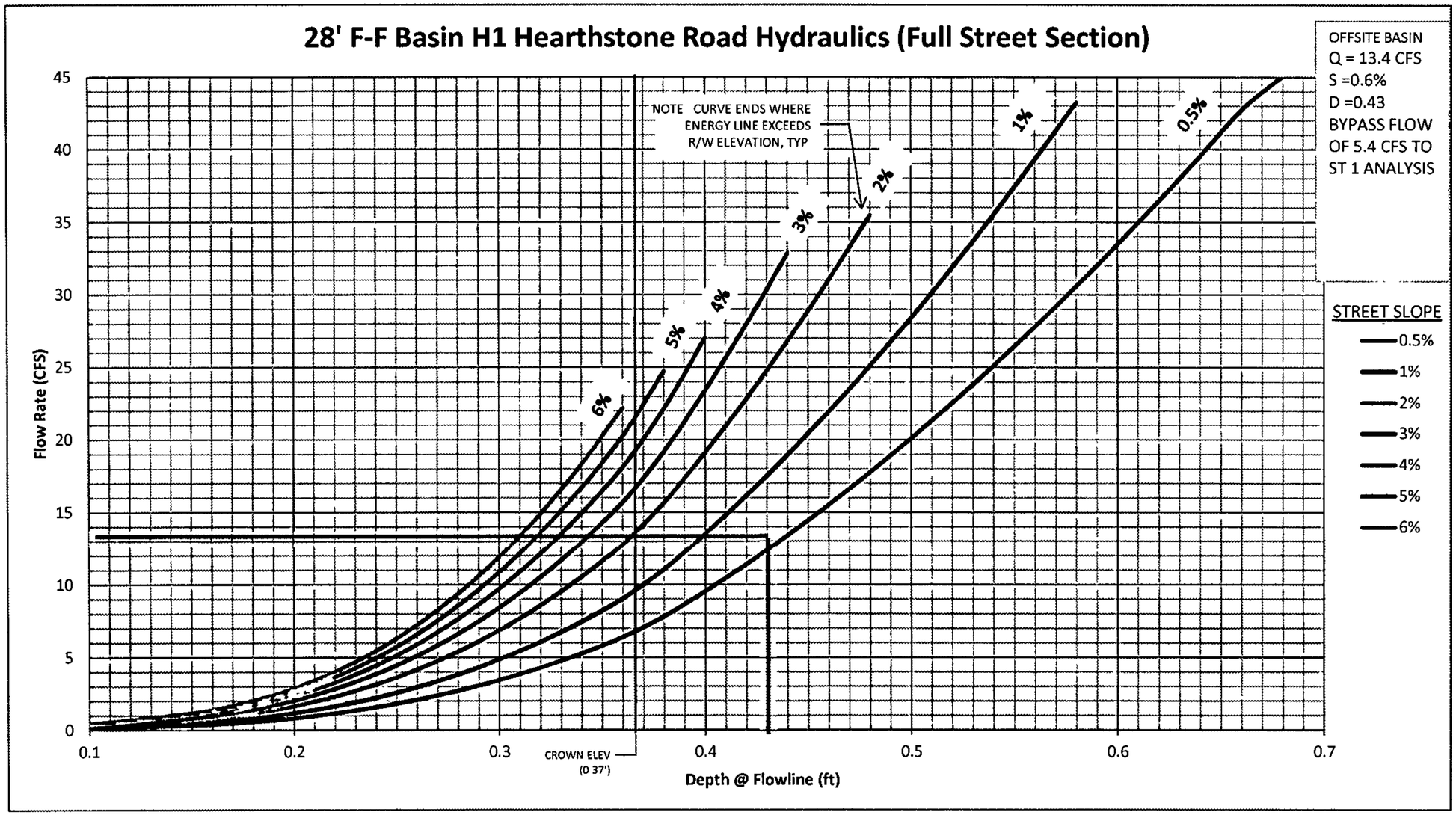
Bohannan Huston

```
 AHYMO PROGRAM SUMMARY TABLE (AHYMO_97) -                        - VERSION:  1997.02c      RUN DATE (MON/DAY/YR) =06/30/2016
INPUT FILE = DEV_Cond.HYM                                                                 USER NO.= AHYMO-S-9702c1BohanHu-AH

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

*S  TAOS II AT THE TRAILS 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 1*****************************************************
COMPUTE NM HYD          1.00   -     1        .00439         8.77        .416      1.77627    1.500     3.123 PER IMP=  60.00
*S COMPUTE BASIN 2*****************************************************
COMPUTE NM HYD          2.00   -     2        .00787        15.79        .752      1.79256    1.500     3.136 PER IMP=  61.00
*S COMPUTE BASIN 3*****************************************************
COMPUTE NM HYD          3.00   -     3        .00321         6.39        .301      1.75997    1.500     3.110 PER IMP=  59.00
*S COMPUTE BASIN 4*****************************************************
COMPUTE NM HYD          4.00   -     4        .00948        18.94        .898      1.77627    1.500     3.121 PER IMP=  60.00
*S COMPUTE BASIN 5*****************************************************
COMPUTE NM HYD          5.00   -     5        .00197         3.62        .156      1.48295    1.500     2.871 PER IMP=  42.00
*S COMPUTE BASIN H1****************************************************
COMPUTE NM HYD            H1   -     6        .00703        13.39        .604      1.61332    1.500     2.979 PER IMP=  50.00
*S DIVIDE BASIN HERITAGE
DIVIDE HYD          BYPASS.D    6   20        .00524         5.39        .451      1.61328    1.400     1.608
                      POND.D  and   21        .00179         8.00        .154      1.61328    1.500     6.993
*S ADD BASINS 2 AND 3 TO CREATE TEMP A *********************************
ADD HYD               TEMP.A  2& 3  10        .01108        22.18       1.054      1.78305    1.500     3.128
*S ADD BASINS DIVIDE H1 AND 1 TO CREATE TEMP B *************************************
ADD HYD               TEMP.B 20& 1  11        .00963        14.16        .866      1.68756    1.500     2.299
*S ADD BASINS TEMP A AND TEMP B TO CREATE TEMP C ***********************************
ADD HYD               TEMP.C 10&11  12        .02071        36.35       1.920      1.73866    1.500     2.743
*S ADD BASINS TEMP C AND 5 TO CREATE AP.1 *********************************
ADD HYD                 AP.1 12& 5  14        .02267        39.96       2.076      1.71645    1.500     2.754
*S
FINISH
```

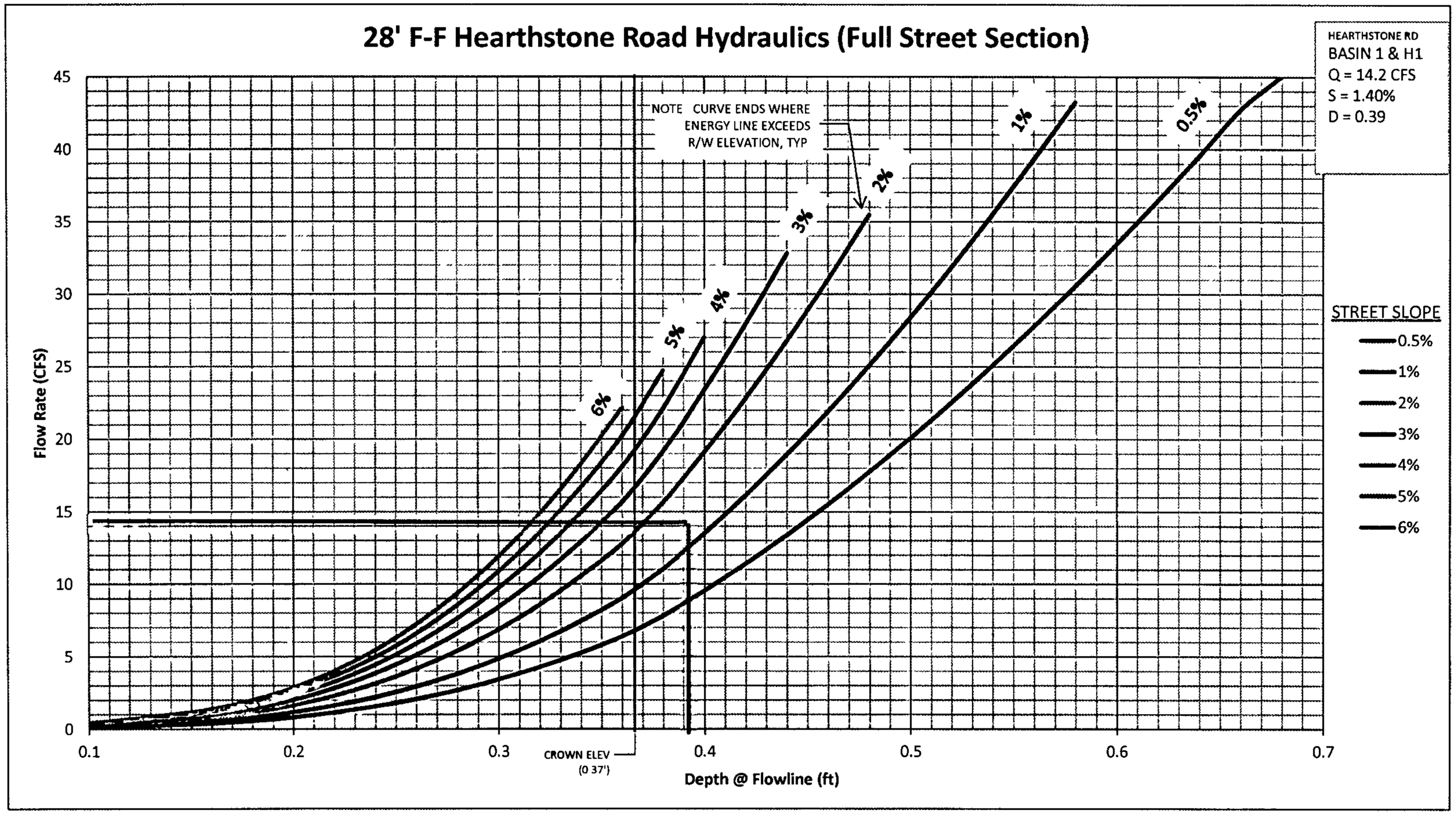
APPENDIX B

STREET HYDRAULICS AND STORM DRAIN INLET ANALYSIS

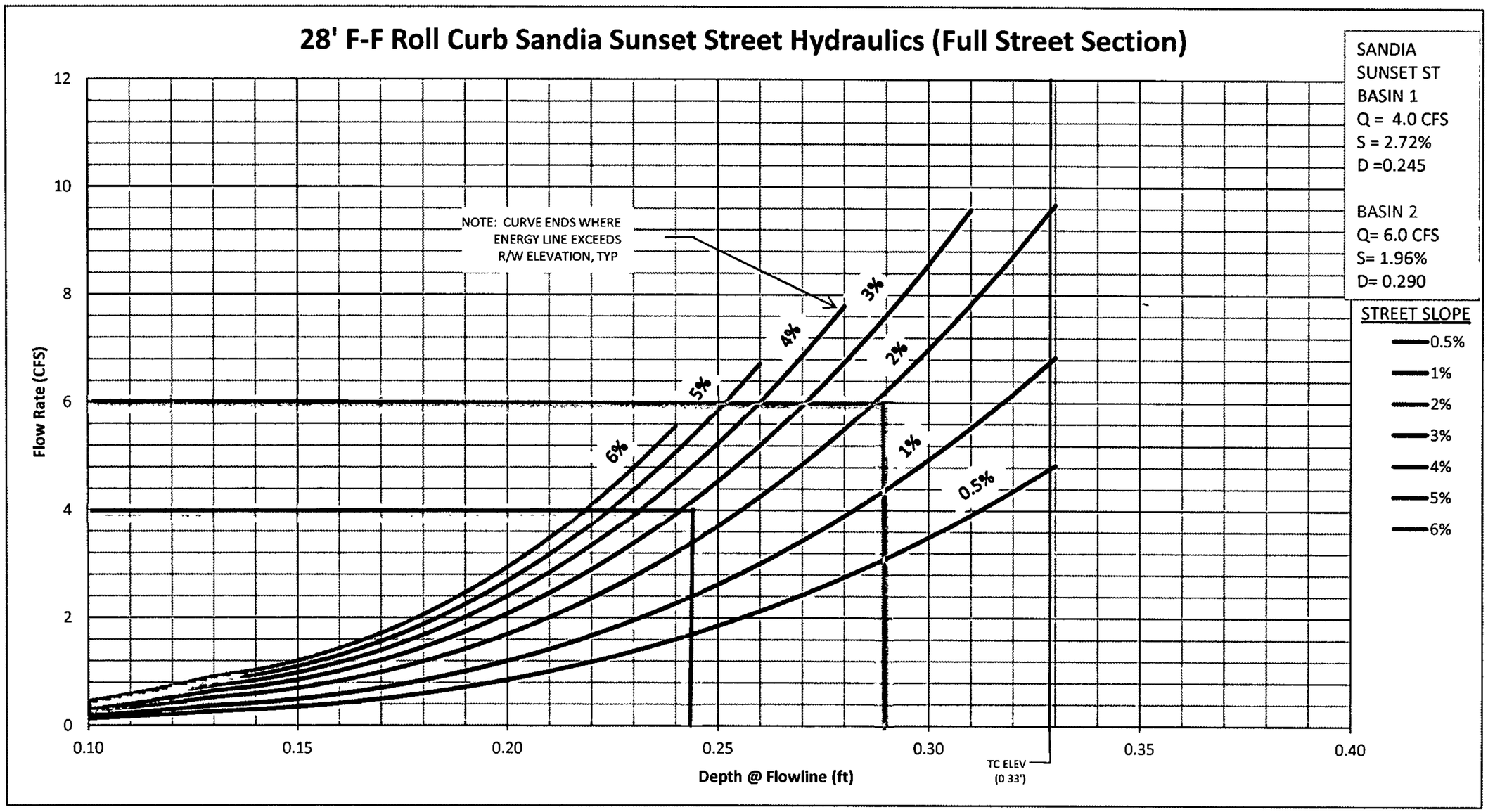
Bohannan Huston


28' F-F Basin H1 Hearthstone Road Hydraulics (Full Street Section)
OFFSITE BASIN
Q = 13.4 CFS
S =0.6%
D =0.43
BYPASS FLOW
OF 5.4 CFS TO
ST 1 ANALYSIS
NOTE CURVE ENDS WHERE
ENERGY LINE EXCEEDS
R/W ELEVATION, TYP
STREET SLOPE
0.5%
1%
2%
3%
4%
5%
6%
Flow Rate (CFS)
45
40
35
30
25
20
15
10
5
0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
CROWN ELEV
(0 37')
Depth @ Flowline (ft)

28' F-F Hearthstone Road Hydraulics (Full Street Section)



28' F-F Roll Curb Sandia Sunset Street Hydraulics (Full Street Section)



28' F-F Roll Curb Desert Sands Road Hydraulics (Full Street Section)

DESERT SANDS RD
BASIN 4
Q = 3 CFS
S = 0.6%
D = 0.265
BASIN 3
BASIN 3
Q = 1.5 CFS
S= 0.6%

NOTE CURVE ENDS WHERE ENERGY LINE EXCEEDS R/W ELEVATION, TYP.

STREET SLOPE
- 0.5%
- 1%
- 2%
- 3%
- 4%
- 5%
- 6%

Flow Rate (CFS)

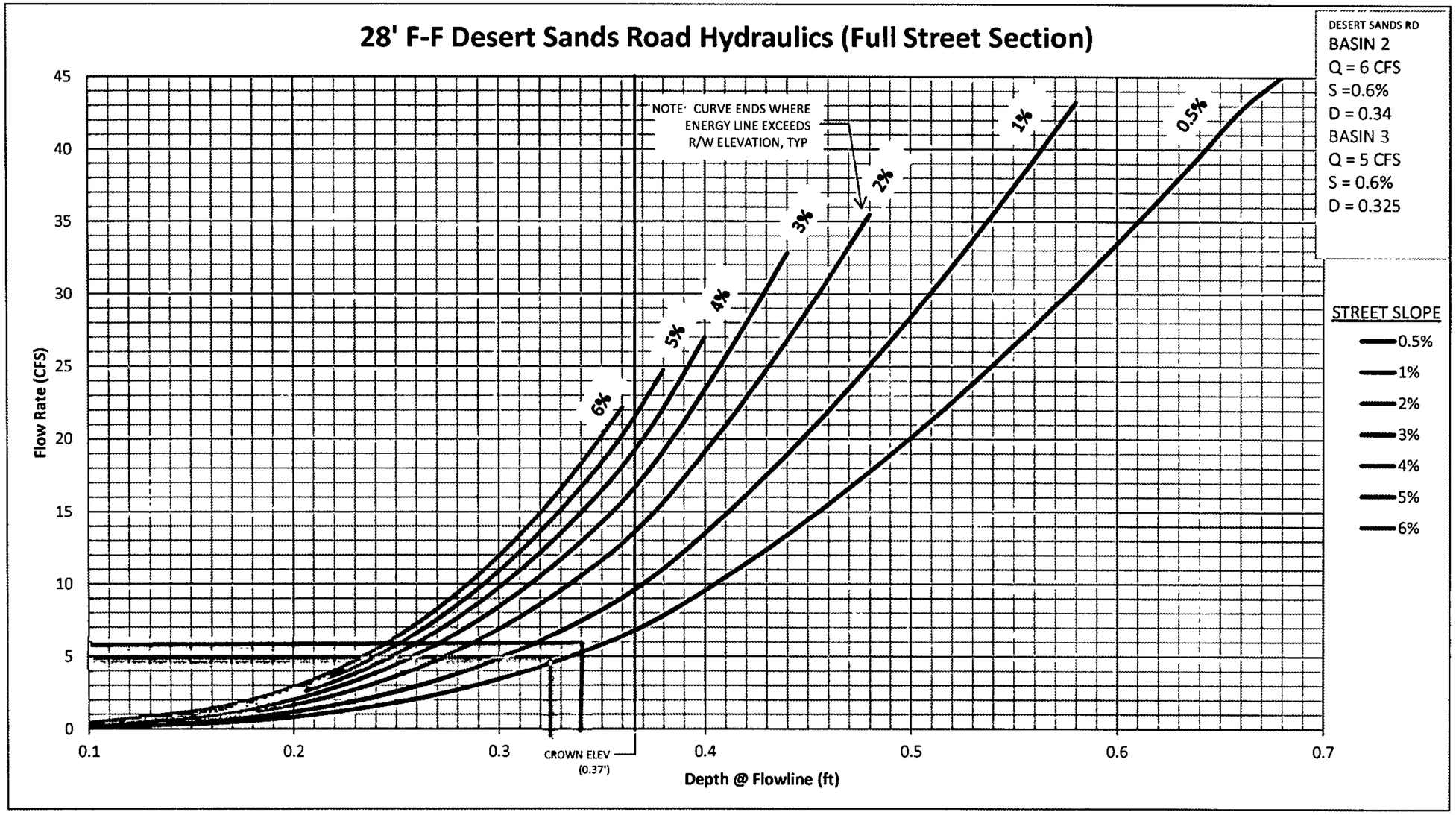
12
10
8
6
4
2
0

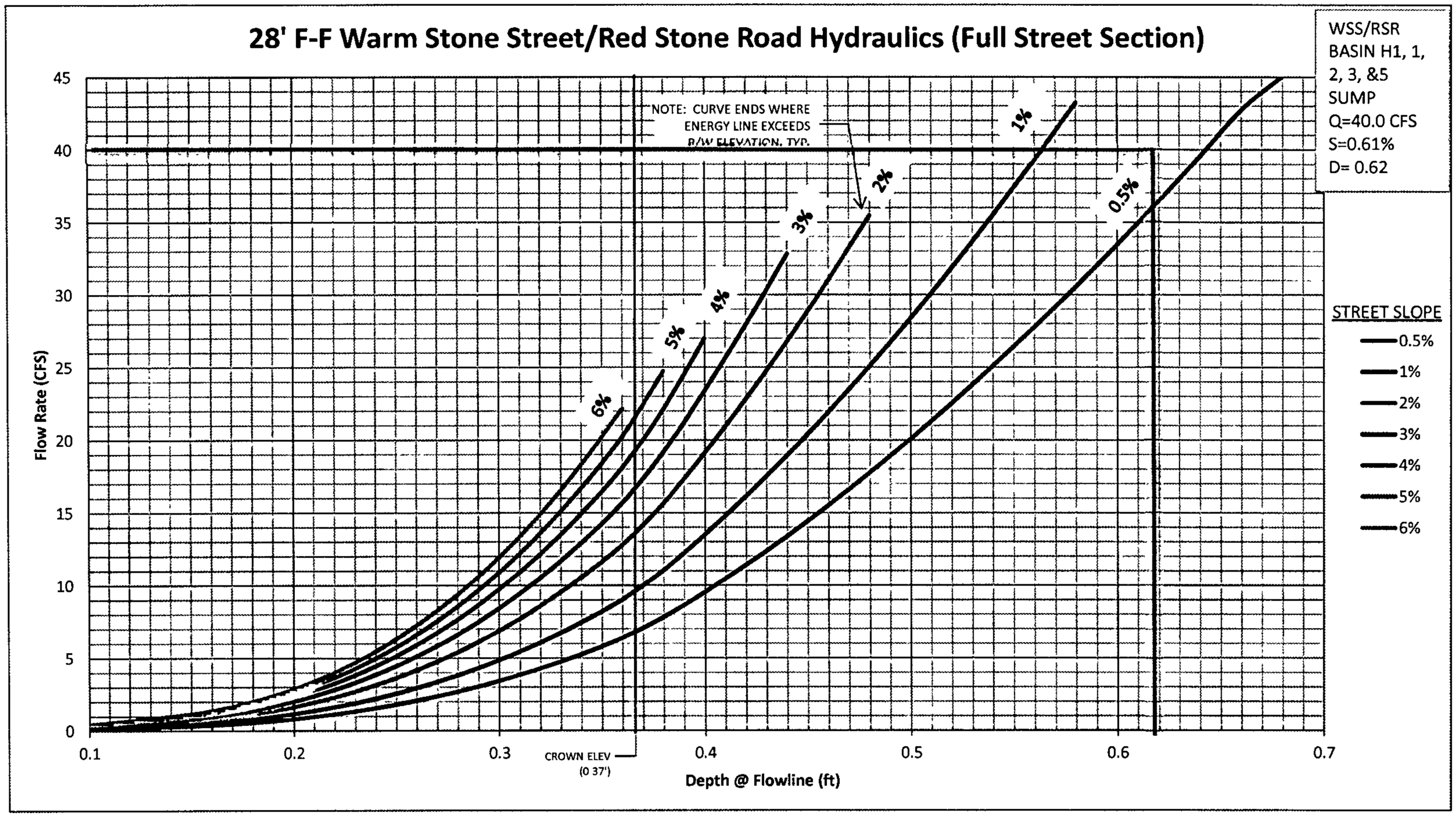
0.10
0.15
0.20
0.25
0.30
0.35
0.40

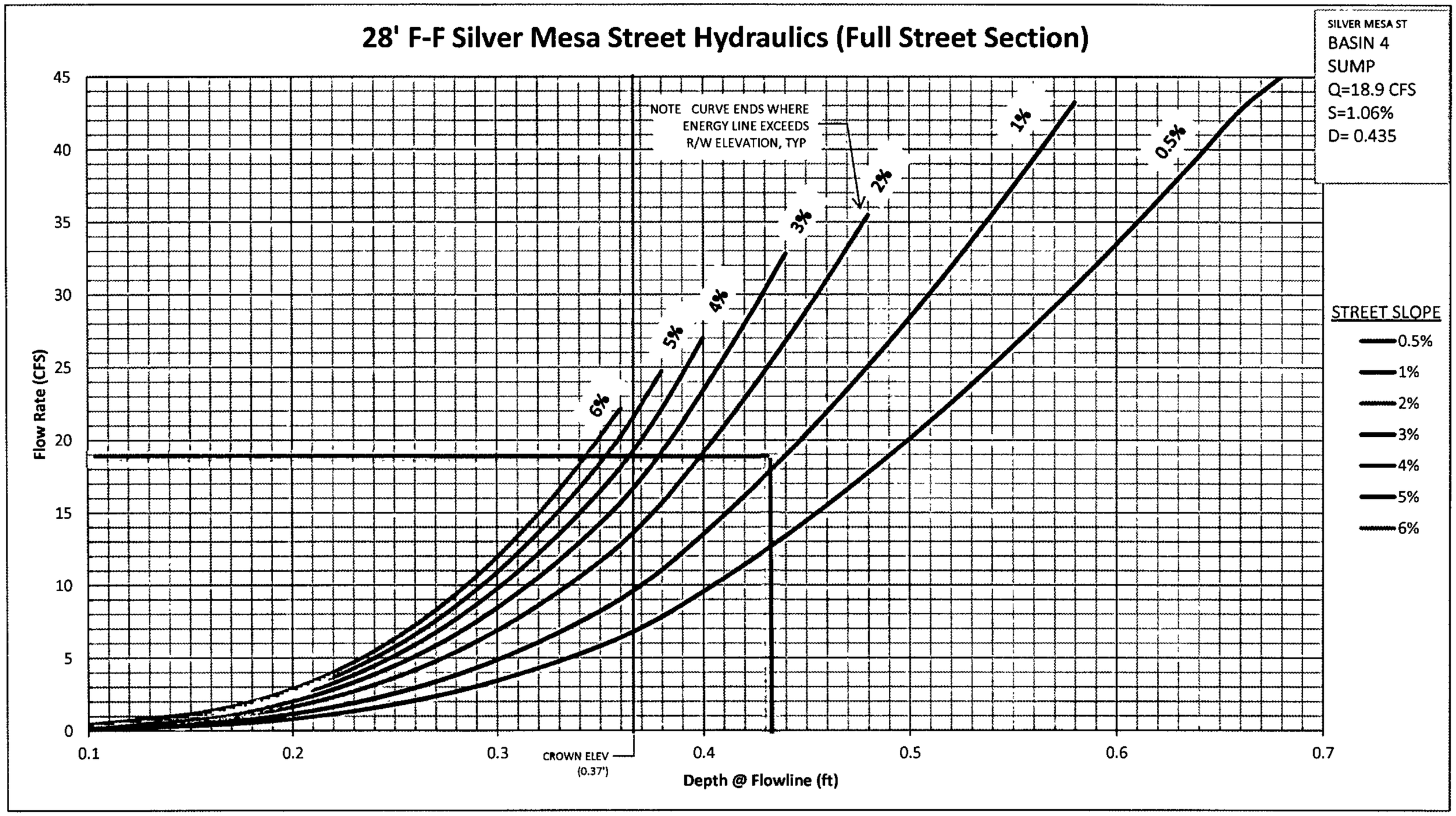
Depth @ Flowline (ft)

TC ELEV (0 33')

28' F-F Desert Sands Road Hydraulics (Full Street Section)

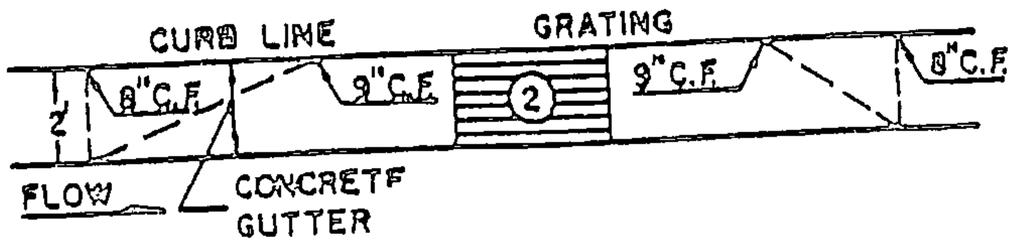



28' F-F Warm Stone Street/Red Stone Road Hydraulics (Full Street Section)
WSS/RSR
BASIN H1, 1, 2, 3, &5
SUMP
Q=40.0 CFS
S=0.61%
D= 0.62
NOTE: CURVE ENDS WHERE ENERGY LINE EXCEEDS B/W ELEVATION, TYP.
1%
2%
3%
4%
5%
6%
0.5%
STREET SLOPE
0.5%
1%
2%
3%
4%
5%
6%
Flow Rate (CFS)
45
40
35
30
25
20
15
10
5
0
0.1
0.2
0.3
CROWN ELEV (0 37')
0.4
0.5
0.6
0.7
Depth @ Flowline (ft)

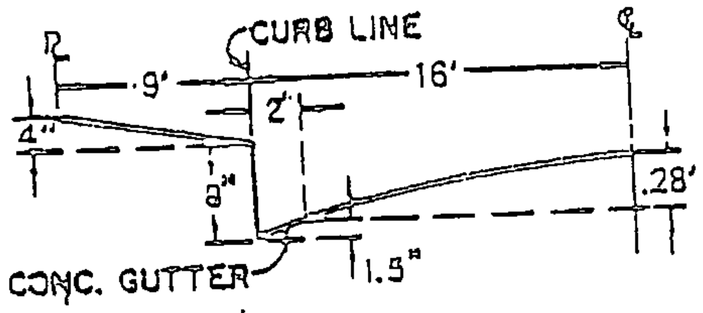

28' F-F Silver Mesa Street Hydraulics (Full Street Section)
SILVER MESA ST
BASIN 4
SUMP
Q=18.9 CFS
S=1.06%
D= 0.435
NOTE CURVE ENDS WHERE ENERGY LINE EXCEEDS R/W ELEVATION, TYP
STREET SLOPE
0.5%
1%
2%
3%
4%
5%
6%
Flow Rate (CFS)
Depth @ Flowline (ft)
CROWN ELEV (0.37')
0
5
10
15
20
25
30
35
40
45
0.1
0.2
0.3
0.4
0.5
0.6
0.7

Basin H1 to Street 1
Q = 13.4 CFS
S = 0.6 %
D = 0.43
IC = 4 CFS.

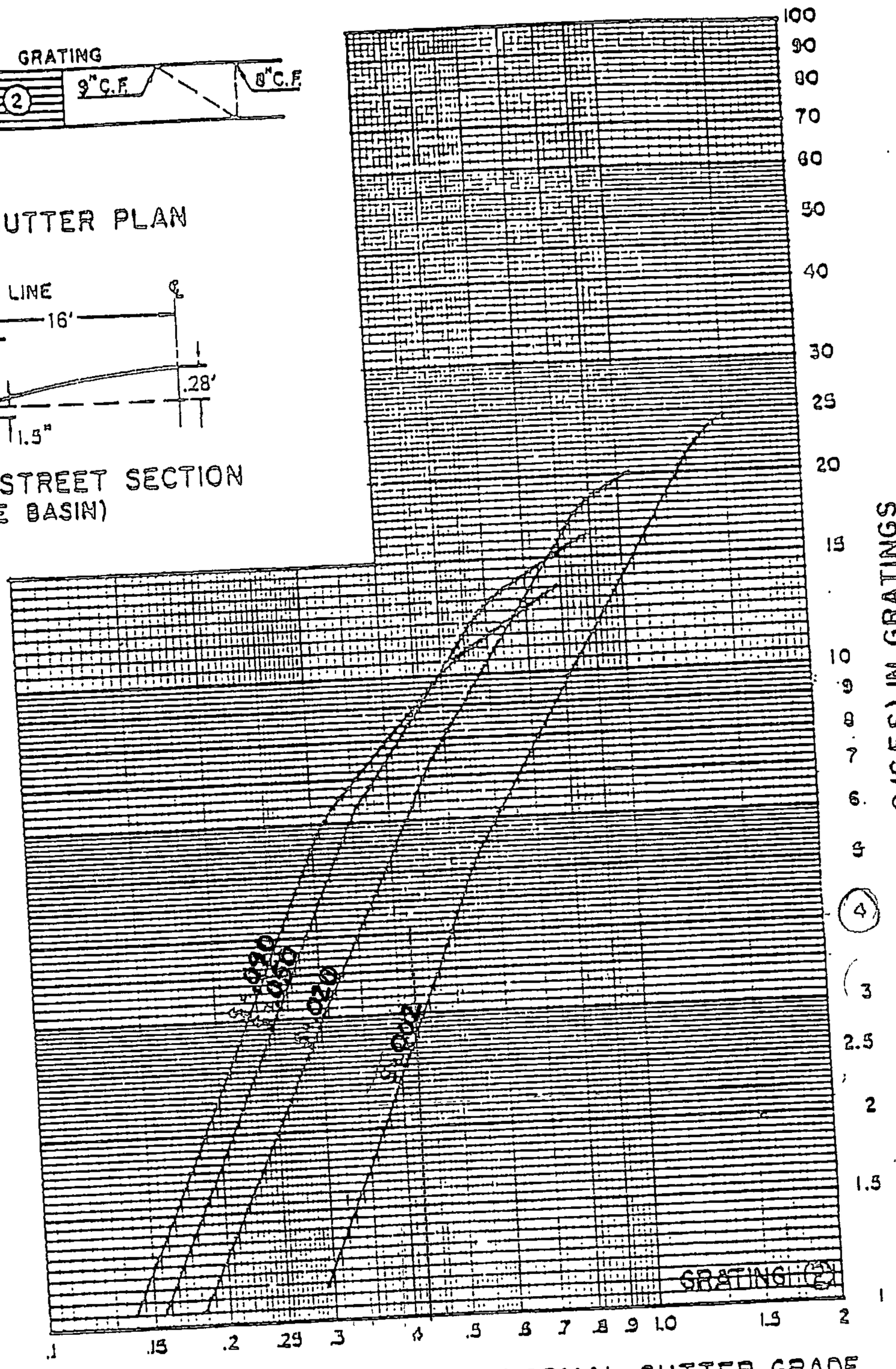
GRATING CAPACITIES FOR TYPE "A", "C" and "D"

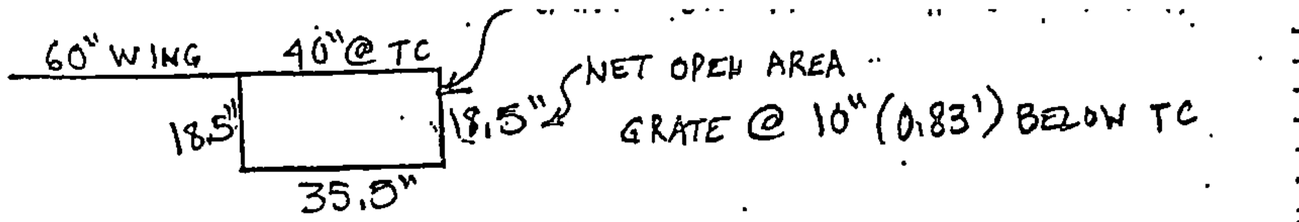


GRATING & GUTTER PLAN



TYPICAL HALF STREET SECTION
(ABOVE BASIN)

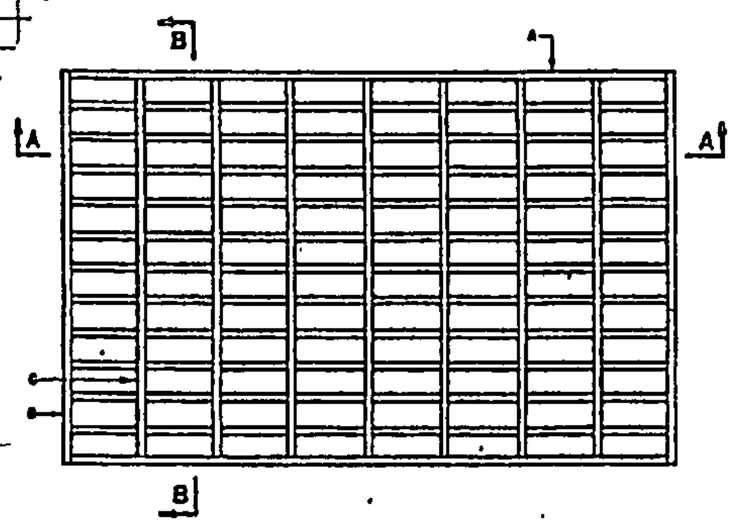


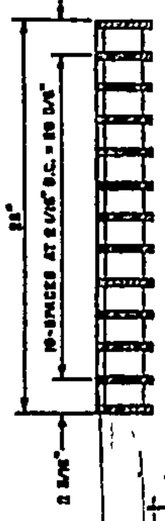


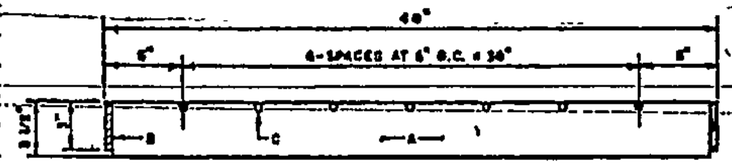
EQUATION	SGL A	DBL A	TRPL A	QDPL A
1) ORIFICE	$22.0h^{0.5}+16.5h^{1.5}$	$43.9h^{0.5}+16.5h^{1.5}$	$65.9h^{0.5}+16.5h^{1.5}$	$87.8h^{0.5}+16.5h^{1.5}$
2) 3-SIDED WEIR ($h \le 0.83'$)	$36.4h^{1.5}$	$46.2h^{1.5}$	$56.0h^{1.5}$	$65.7h^{1.5}$
3) 4-SIDED WEIR ($h > 0.83'$)	ADD TO 2): $11(h-.83)^{1.5}$	ADD 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) $Q = 3.3Ph^{1.5}$







GRATE CAPACITY (Q) IN CFS

HEAD (h) IN FEET

TC 0.83'

TRIPLE GRATE

DOUBLE GRATE

SINGLE GRATE

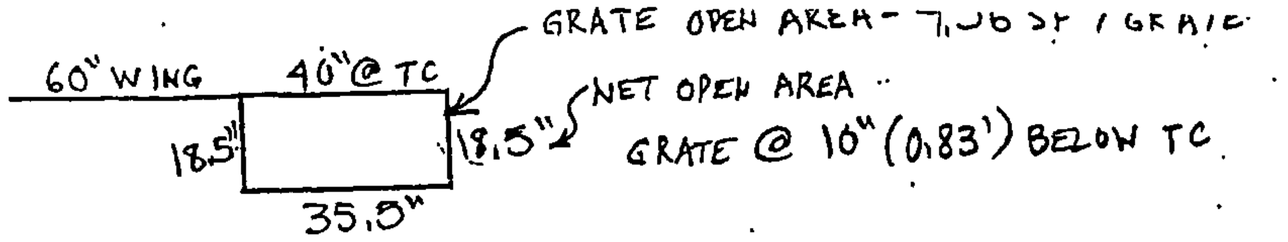
BOHANNAN-HUSTON INC.

APP. 1

PROJECT NAME INLET TYPES SHEET ____ OF ____

PROJECT NO. Q = 20 D.C.F.S/INCH BY JPK DATE 4/9/92

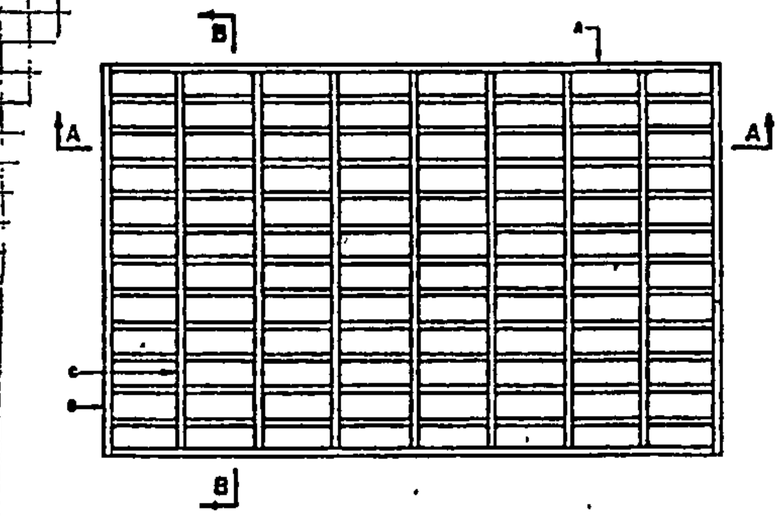
SUBJECT RATING CURVE FOR TYPE K INLETS CH'D DATE

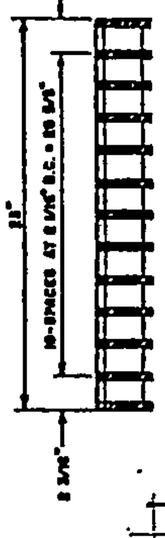


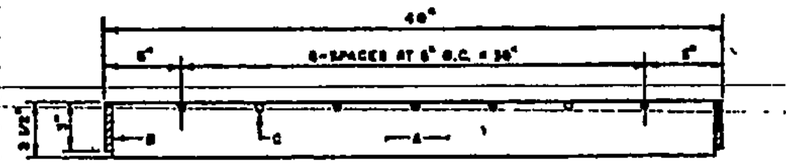
EQUATION	SGL A	DBL A	TRPL A	QDPL A
1) ORIFICE	$22.0\,h^{0.5} + 16.5\,h^{1.5}$	$43.9\,h^{0.5} + 16.5\,h^{1.5}$	$65.9\,h^{0.5} + 16.5\,h^{1.5}$	$87.8\,h^{0.5} + 16.5\,h^{1.5}$
2) 3-SIDED WEIR ($h \le 0.83'$)	$36.4\,h^{1.5}$	$46.2\,h^{1.5}$	$56.0\,h^{1.5}$	$65.7\,h^{1.5}$
3) 4-SIDED WEIR ($h > 0.83'$)	ADD 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): $44(h-.83)^{1.5}$

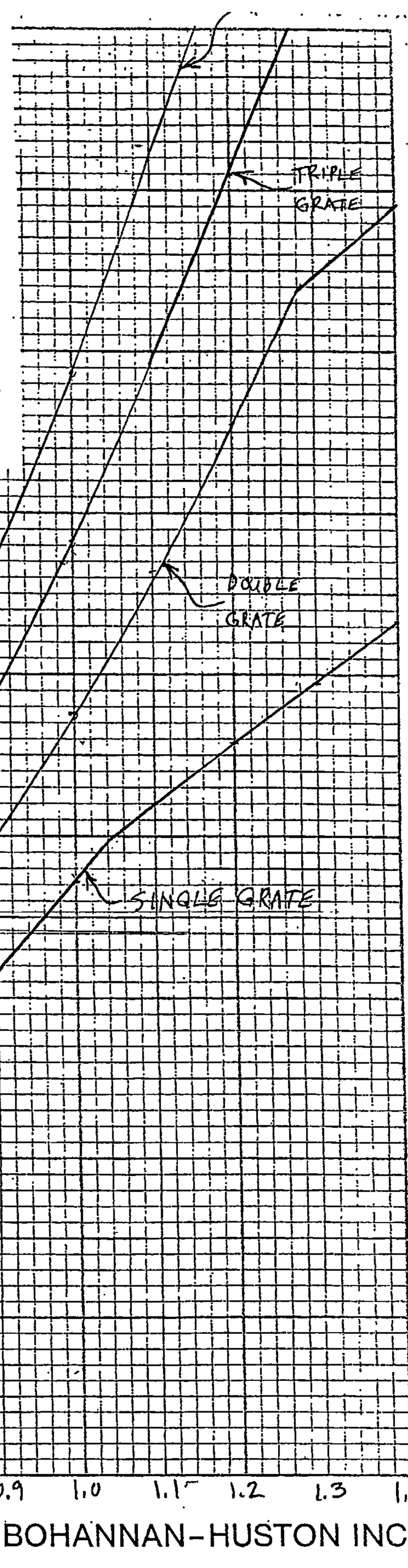
1) $Q = 0.6\,A\sqrt{2gh} + 3.3(5')\,h^{1.5}$

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









BOHANNAN-HUSTON INC.

PROJECT NAME TXDOT TY SIDE TRIPLE SHEET ____ OF ____

PROJECT NO. 0945 CES / [illegible] BY JPK DATE 4/9/92

SUBJECT RATING CURVE FOR TXDOT INLETS CH'D ____ DATE ____

EXHIBITS

EXHIBIT 1: PRELIMINARY PLAT

EXHIBIT 2: BASIN MAP

EXHIBIT 3: GRADING PLAN

EXHIBIT 4: STORM DRAIN CAPACITY CALCULATIONS

EXHIBIT 5: SUPPLEMENTAL EXHIBITS FROM TRAILS UNITS 1-3 DMP

Bohannan Huston

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

EXHIBIT 5

SUPPLEMENTAL EXHIBITS FROM TRAILS UNITS 1-3 DMP

Bohannan Huston

Bohannan Huston

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

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9785 Maroon Circle
Suite 140
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80112-5928

voice: 303.799.5103
facsimile: 303.799.5104
toll free: 877.799.5103

www.bhinc.com

CITY OF ALBUQUERQUE

PLANNING DEPARTMENT – Development Review Services

Richard J. Berry, Mayor

June 11, 2015

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

RE: **Tract 1 at the Trails Unit 2 (File: C09D001G)**
Mass Grading Plans, Stamp Date 6-11-15

Dear Mr. Steffen:

Based upon the information provided in your submittal received 6-11-15, the above referenced submittals cannot be approved for Grading Permit with the following conditions:

1. Per your email, import is required for the developed site. The fill material brought to the site is to be used for the initial phase of the permanent grading. As such, the site will be over-excavated per the geotechnical report and graded per specifications, as noted on the Mass Grading Plan.
2. Follow all the guidelines in the Volcano Trails Sector Development Plan for the case when a developer brings in fill prior to Preliminary Plat.

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

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 02/2013)

Project Title: Tract 1 at the Trails Unit 2 Building Permit #: _____ City Drainage #: C9D001G

DRB#: 1002962 EPC#: _____ Work Order#: _____

Legal Description: Tract 1 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)

Verified

RECEIVED
JUN 11 2015
LAND DEVELOPMENT SECTION

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

DATE SUBMITTED: June 10, 2015 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

City of Albuquerque

Planning Department

Development & Building Services Division

DRAINAGE AND TRANSPORTATION INFORMATION SHEET

(REV 02/2013)

Verbal No

C09D001G

Project Title: Tract 1 at the Trails Unit 2 Building Permit #: _____ City Drainage #: C9

DRB#: 1002962 EPC#: _____ Work Order#: _____

Legal Description: Tract 1 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
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X GRADING PLAN
___ EROSION & SEDIMENT CONTROL PLAN (ESC)
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___ ENGINEER'S CERT (ESC)
___ SO-19
___ OTHER (SPECIFY)

CHECK TYPE OF APPROVAL/ACCEPTANCE SOUGHT:

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___ PRELIMINARY PLAT APPROVAL
___ S. DEV. PLAN FOR SUB'D APPROVAL
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___ PAVING PERMIT APPROVAL
___ WORK ORDER APPROVAL
___ GRADING CERTIFICATION
___ SO-19 APPROVAL
___ ESC PERMIT APPROVAL
___ ESC CERT. ACCEPTANCE
___ OTHER (SPECIFY)

RECEIVED
MAY 05 2015
LAND DEVELOPMENT SECTION

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

DATE SUBMITTED: May 5, 2015 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

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Bohannan Huston

Engineering
Spatial Data
Advanced Technologies

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7500 Jefferson St. NE
Albuquerque, NM
87109-4335
www.bhinc.com
voice: 505.823.1000
facsimile: 505.798.7988
toll free: 800.877.5332

CLIENT/COURIER TRANSMITTAL

To: Rita Harmon
Hydrology Section
City of Albuquerque
600 2nd St NW

Requested by: Scott Steffen

Date: May 5, 2015

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

Phone: 924-3695
Job No.: 20140164.005.01.cdp

Job Name: Tract 1 at the Trails Unit 2

DELIVERY VIA

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

PICK UP

Item: _____

ITEM NO.	QUANTITY	DESCRIPTION
1	1	Mass Grading Plan

RECEIVED
MAY 05 2015
LAND DEVELOPMENT SECTION

COMMENTS / INSTRUCTIONS

Rita,

Attached is a mass grading plan for Tract 1 at the Trails Unit 2. The purpose of the mass grading plan is to allow the developer to bring in available import (fill) material prior to approval of the lot specific grading plan. A preliminary grading plan for the site shows import is required for the site based on the existing sanitary sewer outfall elevation and the presence of basalt on the site. I am available to meet and discuss.

Scott

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

Scott Steffen

From: Scott Steffen
Sent: Tuesday, May 05, 2015 9:38 AM
To: 'PLNDRS@cabq.gov'
Cc: Harmon Rita T. (rharmon@cabq.gov); Hugh Floyd (Hugh@developnm.com)
Subject: Tract 1 at the Trails Unit 2 Mass Grading Plan
Attachments: Tract 1 at the Trails Unit 2 Mass Grading Plan Submittal.pdf

Rita,

Attached it the Tract 1 at the Trails Unit 2 Mass Grading Plan. The purpose of the mass grading plan is to allow the developer to bring in available import (fill) material prior to approval of the lot specific grading plan. A preliminary grading plan for the site shows import is required for the site based on the existing sanitary sewer outfall elevation and the presence of basalt on the site.

You should receive the hard copy this morning.

I am available to meet and discuss.

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