

# CITY OF ALBUQUERQUE



**Planning Department  
Transportation Development Services**

July 17, 2014

Åsa Nilsson-Weber, P.E.  
Isaacson & Arfman, P.A.  
128 Monroe St. N.E.  
Albuquerque, NM 87108

**Re: Inland Kenworth, 7711 Fortuna Rd. NW**  
**Certificate of Occupancy – Transportation Development**  
Administrative Amendment dated 09-17-13 (J10-D044)  
Certification dated 07-16-14

Dear Mrs. Nilsson-Weber,

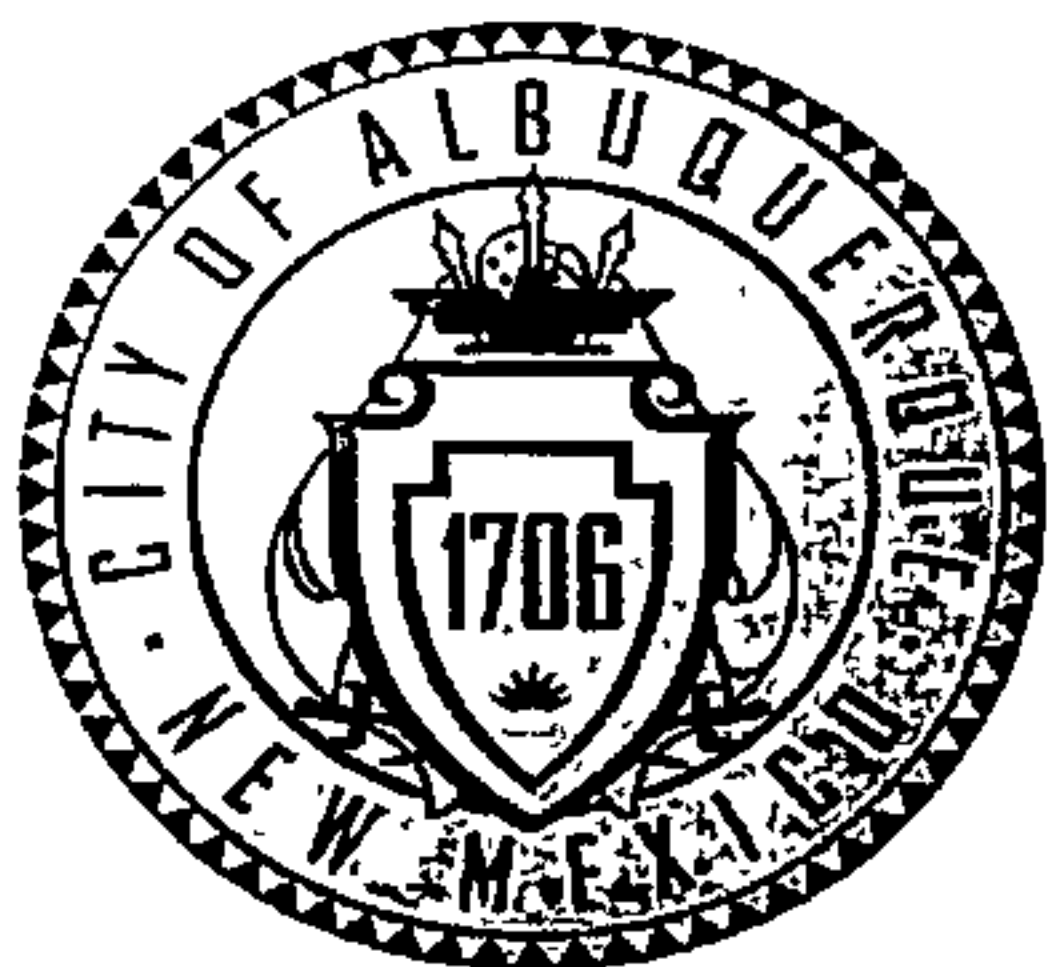
Based upon the information provided in your submittal received 07-16-14, Transportation Development has no objection to the issuance of a Permanent Certificate of Occupancy. This letter serves as a "green tag" from Transportation Development for a Permanent Certificate of Occupancy to be issued by the Building and Safety Division.

If you have any questions, please contact me at (505)924-3630.

Sincerely,

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

c: File  
CO Clerk



# City of Albuquerque

Planning Department

Development & Building Services Division

## DRAINAGE AND TRANSPORTATION INFORMATION SHEET

(REV 02/2013)

Project Title: ~~Trappnell Orthodontics~~ Inland Kenworth Building Permit #: \_\_\_\_\_ City Drainage #: J1012044

DRB#: \_\_\_\_\_ EPC#: \_\_\_\_\_ Work Order#: \_\_\_\_\_

Legal Description: Tract Q-7-A-1-A, Atrisco Business Park, Unit 4

City Address: \_\_\_\_\_

Engineering Firm: Isaacson & Arfman, P.A. Contact: Genny Donart

Address: 128 Monroe Street NE - Albuquerque, NM 87108

Phone#: (505) 268-8828 Fax#: \_\_\_\_\_ E-mail: gennyd@iacivil.com

Owner: \_\_\_\_\_ Contact: \_\_\_\_\_

Address: \_\_\_\_\_

Phone#: \_\_\_\_\_ Fax#: \_\_\_\_\_ E-mail: \_\_\_\_\_

Architect: Rick Bennet & Assoc. Contact: \_\_\_\_\_

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

Phone#: 242-1859 Fax#: \_\_\_\_\_ E-mail: rick@rba81.com

Surveyor: Harris Surveying, Inc. Contact: Tony Harris

Address: 2412 Monroe St NE, Albuquerque, NM 87110

Phone#: 889-8056 Fax#: \_\_\_\_\_ E-mail: Surveyh@swcp.com

Contractor: \_\_\_\_\_ Contact: \_\_\_\_\_

Address: \_\_\_\_\_

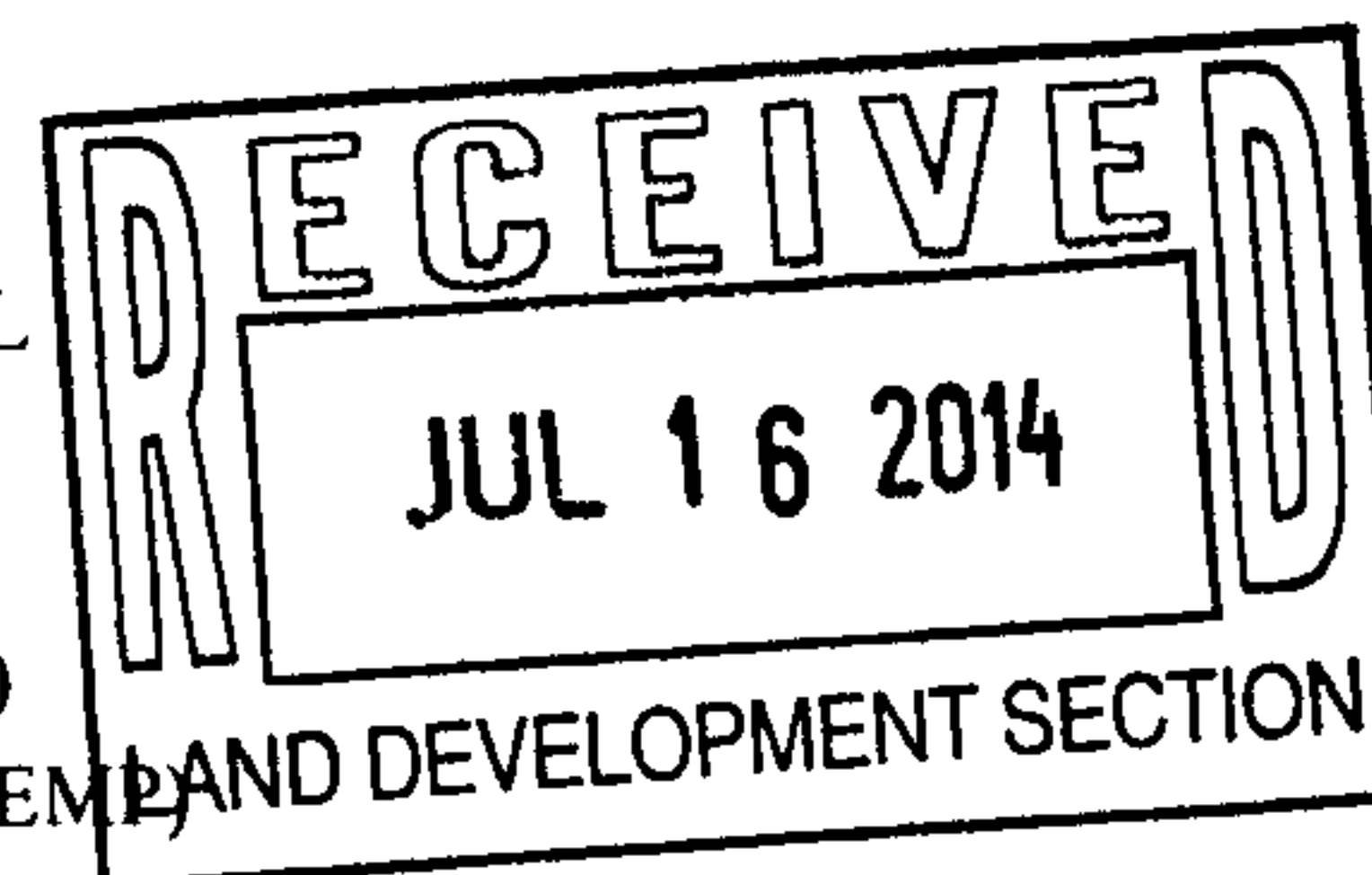
Phone#: \_\_\_\_\_ Fax#: \_\_\_\_\_ E-mail: \_\_\_\_\_

### TYPE OF SUBMITTAL:

- ☐ DRAINAGE REPORT
- ☐ DRAINAGE PLAN 1st SUBMITTAL
- ☐ DRAINAGE PLAN RESUBMITTAL
- ☒ CONCEPTUAL G & D PLAN
- ☐ 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
- ☐ GRADING PERMIT APPROVAL
- ☐ PAVING PERMIT APPROVAL
- ☐ WORK ORDER APPROVAL
- ☐ GRADING CERTIFICATION
- ☐ SO-19 APPROVAL
- ☐ ESC PERMIT APPROVAL
- ☐ ESC CERT. ACCEPTANCE
- ☐ OTHER (SPECIFY) \_\_\_\_\_



WAS A PRE-DESIGN CONFERENCE ATTENDED: \_\_\_\_\_ Yes ☒ No \_\_\_\_\_ Copy Provided

DATE SUBMITTED: 2014 By: Genevieve Donart, PE

Isaacson & Arfman, P.A.

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 following:

- 1 **Conceptual Grading and Drainage Plan** Required for approval of Site Development Plans greater than five (5) acres and Sector Plans
- 2 **Drainage Plans** Required for building permits, grading permits, paving permits and site plans less than five (5) acres
- 3 **Drainage Report** Required for 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

## Asa Weber

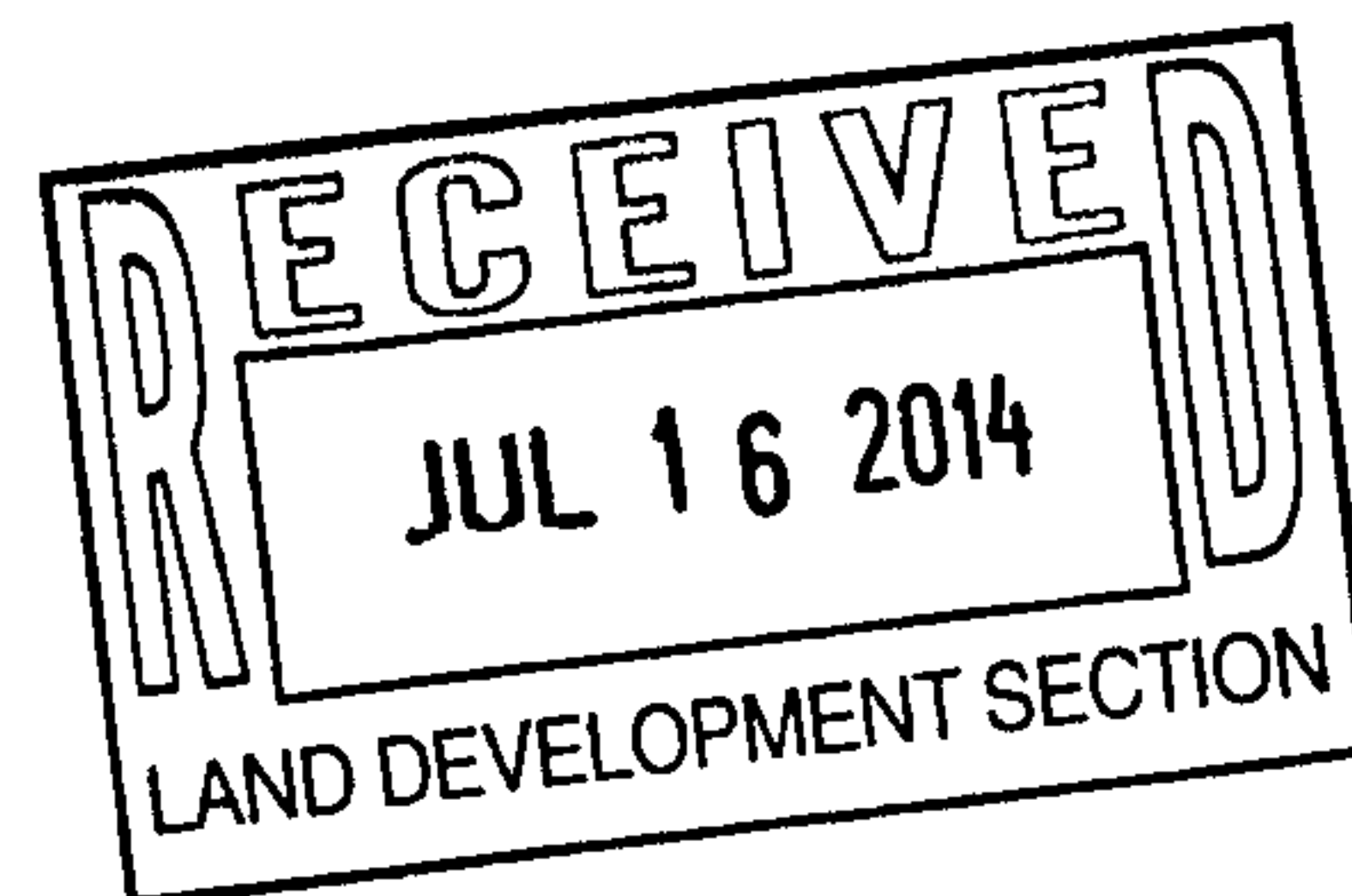
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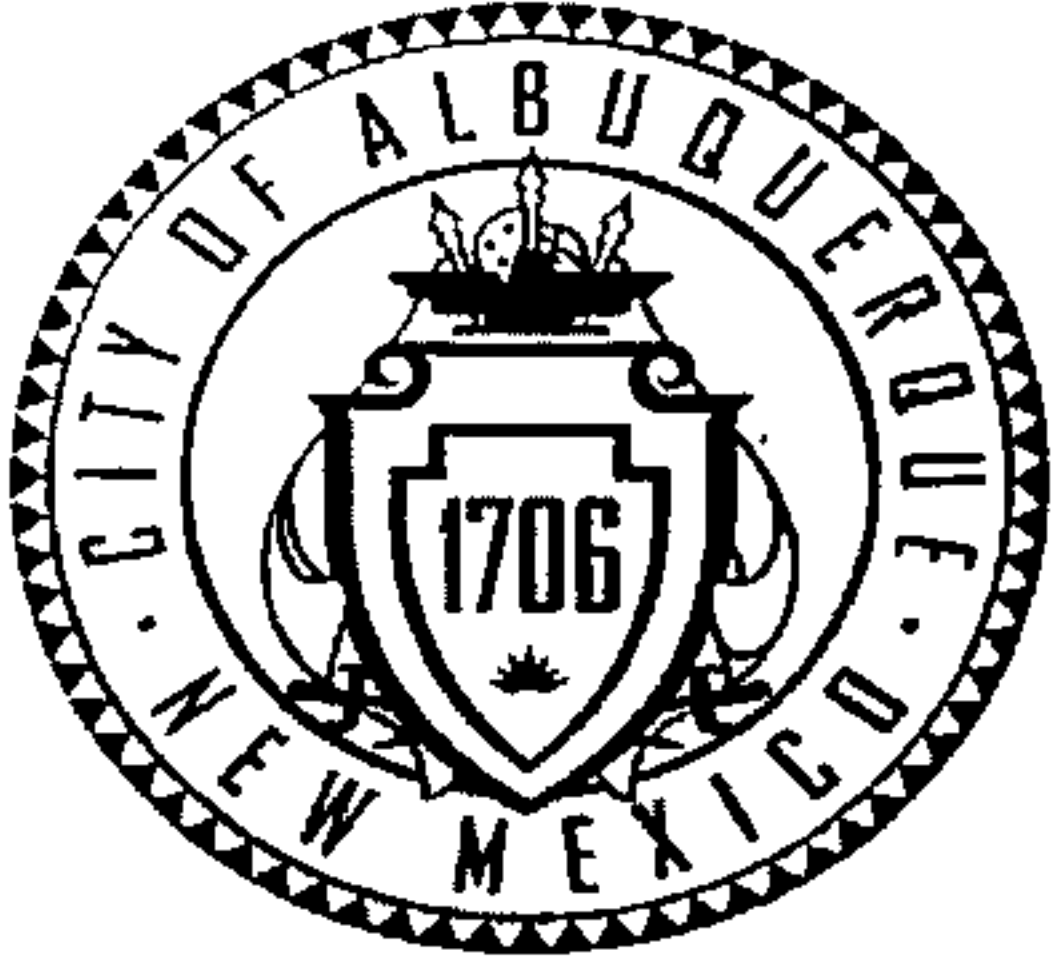
**From:** Michel, Racquel M. [rmichel@cabq.gov]  
**To:** Asa Weber  
**Sent:** Wednesday, July 16, 2014 11:26 AM  
**Subject:** Read: Inland Kenworth

Your message

**To:** Michel, Racquel M.  
**Cc:** Sims, Timothy E.; Ortiz, Monica  
**Subject:** Inland Kenworth  
**Sent:** Wed, 16 Jul 2014 11:14:07 -0600

was read on Wed, 16 Jul 2014 11:26:17 -0600





# City of Albuquerque

Planning Department

Development & Building Services Division

## DRAINAGE AND TRANSPORTATION INFORMATION SHEET

(REV 02/2013)

Project Title: Inland Kenworth Building Permit #: \_\_\_\_\_ City Drainage #: J-10/D044

DRB#: \_\_\_\_\_ EPC#: \_\_\_\_\_ Work Order#: \_\_\_\_\_

Legal Description: Portion of Tract 182, Tracts 183, 184, & 185-A

City Address: Fortuna Road NE

Engineering Firm: Isaacson & Arfman, P.A. Contact: Asa Nilsson-Weber

Address: 128 Monroe Street NE - Albuquerque, NM 87108

Phone#: (505) 268-8828 Fax#: \_\_\_\_\_ E-mail: asaw@iacivil.com

Owner: LCI, LLC Contact: Jim Allman

Address: 1920 W. 11th Street - Upland, CA 91786

Phone#: \_\_\_\_\_ Fax#: \_\_\_\_\_ E-mail: \_\_\_\_\_

Architect: \_\_\_\_\_ Contact: \_\_\_\_\_

Address: \_\_\_\_\_

Phone#: \_\_\_\_\_ Fax#: \_\_\_\_\_ E-mail: \_\_\_\_\_

Surveyor: Surv-Tek, Inc. Contact: Russ P. Hugg

Address: \_\_\_\_\_

Phone#: 897-3366 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
- ☐ 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) \_\_\_\_\_

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- ☐ S. DEV. FOR BLDG. PERMIT APPROVAL
- ☐ SECTOR PLAN APPROVAL
- ☐ FINAL PLAT APPROVAL
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- ☐ CERTIFICATE OF OCCUPANCY (TCL TEMP)
- ☐ FOUNDATION PERMIT APPROVAL
- ☐ BUILDING PERMIT APPROVAL
- ☐ GRADING PERMIT APPROVAL
- ☐ PAVING PERMIT APPROVAL
- ☐ WORK ORDER APPROVAL
- ☐ GRADING CERTIFICATION
- ☐ SO-19 AND DEVELOPMENT SECTION
- ☐ ESC PERMIT APPROVAL
- ☐ ESC CERT. ACCEPTANCE
- ☐ OTHER (SPECIFY) \_\_\_\_\_

WAS A PRE-DESIGN CONFERENCE ATTENDED: \_\_\_\_\_ Yes \_\_\_\_\_ No \_\_\_\_\_ Copy Provided

DATE SUBMITTED: July 14, 2014 By: Asa Nilsson-Weber

Isaacson & Arfman, P.A.

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 following:

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## Åsa Weber

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**From:** Cherne, Curtis [CCherne@cabq.gov]  
**Sent:** Monday, July 14, 2014 3:12 PM  
**To:** Åsa Weber  
**Subject:** RE: Inland Kenworth As-Built G&D--Drainage File J10/D044I

ok

**From:** Åsa Weber [mailto:asaw@iacivil.com]  
**Sent:** Monday, July 14, 2014 3:09 PM  
**To:** Cherne, Curtis  
**Cc:** Sims, Timothy E.  
**Subject:** FW: Inland Kenworth As-Built G&D--Drainage File J10/D044I

Here's the email again. Forgot to turn on "read receipt".

Åsa

**From:** Åsa Weber [mailto:asaw@iacivil.com]  
**Sent:** Monday, July 14, 2014 3:06 PM  
**To:** Curtis Cherne (ccherne@cabq.gov)  
**Cc:** Sims, Timothy E.  
**Subject:** Inland Kenworth As-Built G&D--Drainage File J10/D044I

Tim/Curtis,

Please see attached for pdfs of G&D as-builts.

**Åsa Nilsson-Weber, P.E.**  
**Principal / Vice President**

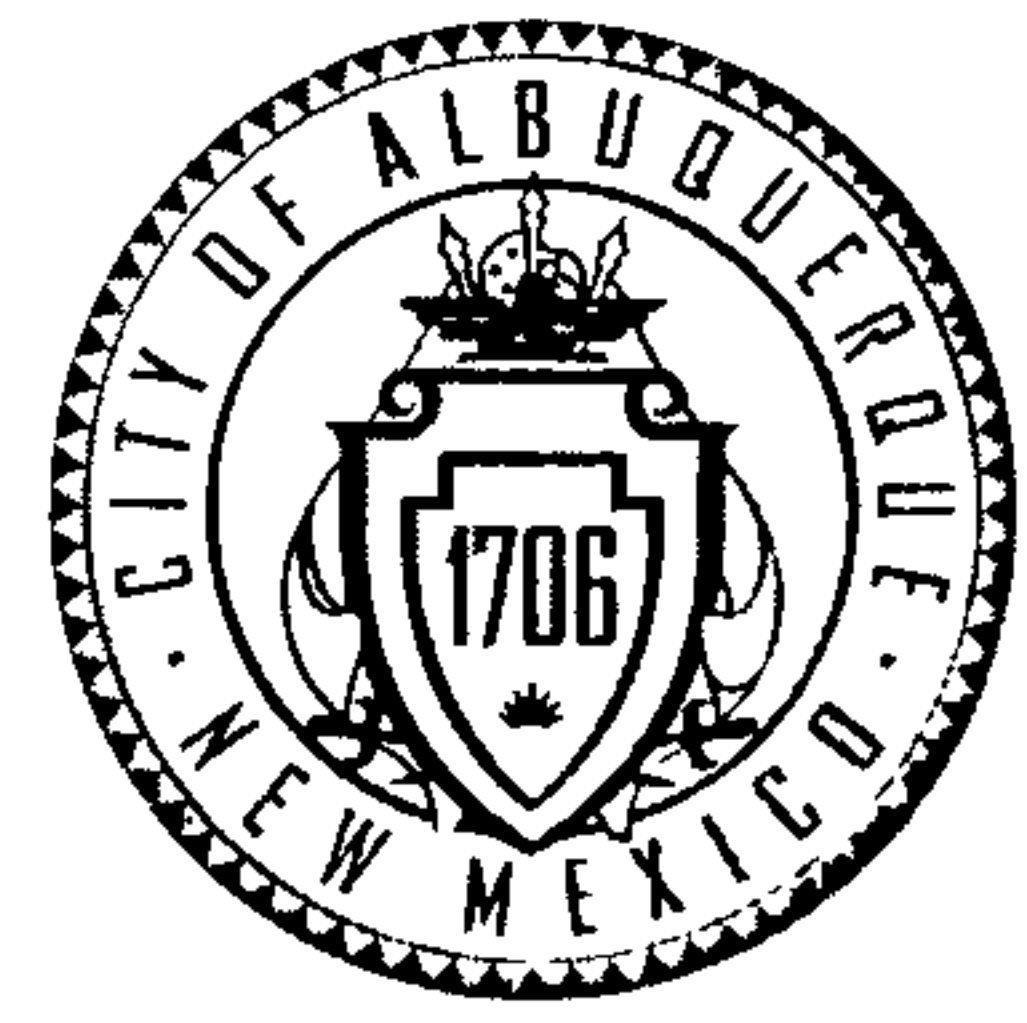
 **Isaacson & Arfman, P.A.**  
Consulting Engineering Associates  
128 Monroe St. N.E.  
Albuquerque, NM 87108  
Phone: (505)268-8828  
Fax: (505)268-2632  
[asaw@iacivil.com](mailto:asaw@iacivil.com)

**CONFIDENTIALITY STATEMENT and CONTENT NOTIFICATION:** This message and any accompanying attachment(s) contain information which may be confidential or privileged and is intended only for the individual or entity named above. It is prohibited to disclose, copy, or distribute the contents of this message. If you received this message in error, please notify us immediately.

Recipient acknowledges that any attached electronic files may not contain all of the information on the approved construction documents and are not intended to be relied upon as a replacement for the approved construction document(s). This information is provided to the user as a courtesy by I&A for this project only and shall not be used for any other purpose without the express written consent of Isaacson & Arfman, PA.



# CITY OF ALBUQUERQUE



July 15, 2014

Åsa Nilsson-Weber, PE  
Isaacson & Arfman, P.A.  
128 Monroe St NE  
Albuquerque, NM 87108

**Re: Inland Kenworth  
7711 Fortuna Rd NW  
Request Permanent C.O. - Accepted  
Engineer's Stamp dated: 6-18-13 (J10D044)  
Certification dated: 7-14-14**

Dear Ms. Nilsson-Weber,

Based on the Certification received 7/14/2014, the site is acceptable for release of Certificate of Occupancy by Hydrology.

PO Box 1293

If you have any questions, you can contact me at 924-3695 or Rudy Rael at 924-3977.

Albuquerque

New Mexico 87103

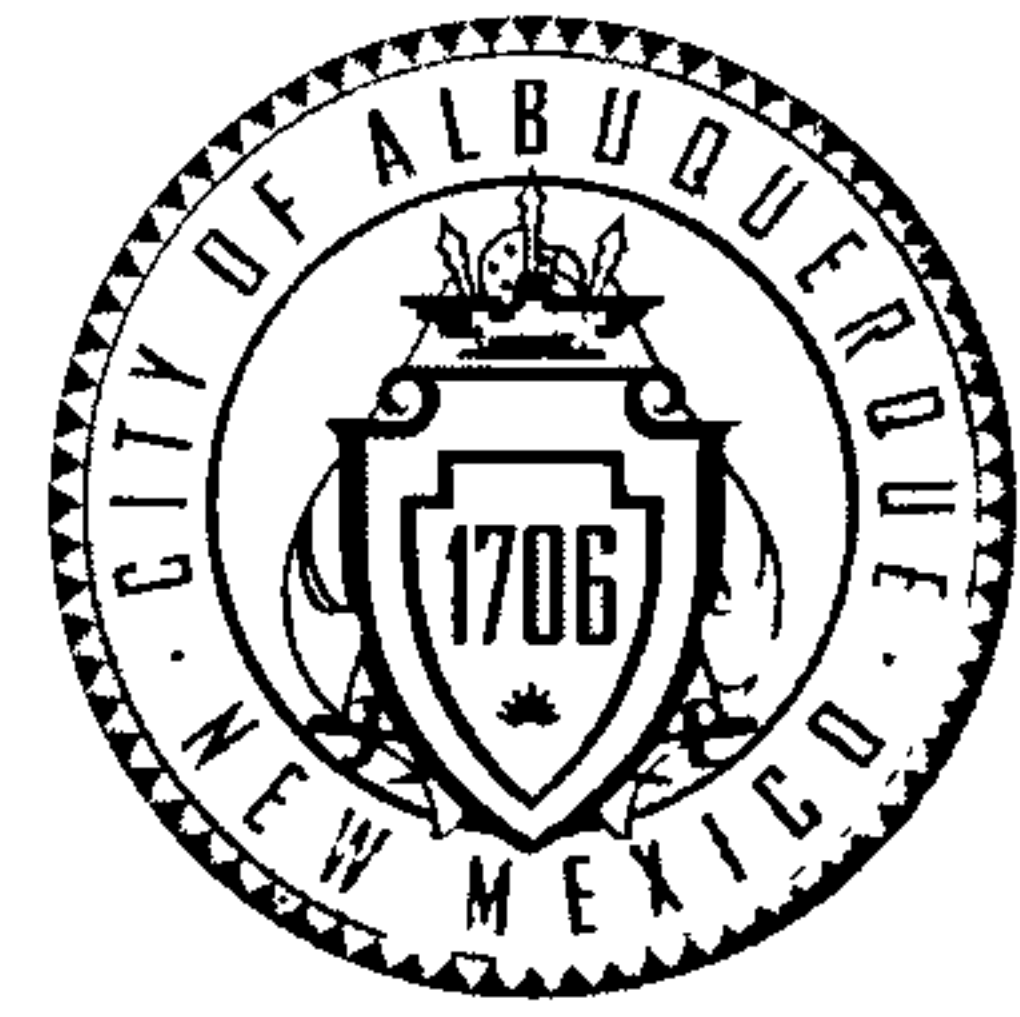
[www.cabq.gov](http://www.cabq.gov)

Sincerely,

Curtis Cherne, P.E.  
Principal Engineer, Planning Dept.  
Development and Review Services

RR/CC  
C: CO Clerk—Katrina Sigala  
email

# CITY OF ALBUQUERQUE



June 24, 2013

Fred Arfman, P.E.  
Isaacson & Arfman, P.A.  
128 Monroe St NE  
Albuquerque, NM 87108

**Re: Inland Kenworth, Grading and Drainage Plan**  
**Engineer's Stamp 6-18-13 (J10/D044)**

Dear Mr. Arfman,

Based upon the information provided in your submittal received 6-19-13, the above referenced plan is approved for building permit.

This project requires a National Pollutant Discharge Elimination System (NPDES) permit for storm water discharge for disturbing one acre or more and a Topsoil Disturbance Permit for disturbing  $\frac{3}{4}$  of an acre or more. Please attach a copy of this approved plan to the construction sets prior to sign-off by Hydrology. Prior to Certificate of Occupancy release, Engineer Certification per the DPM checklist will be required.

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

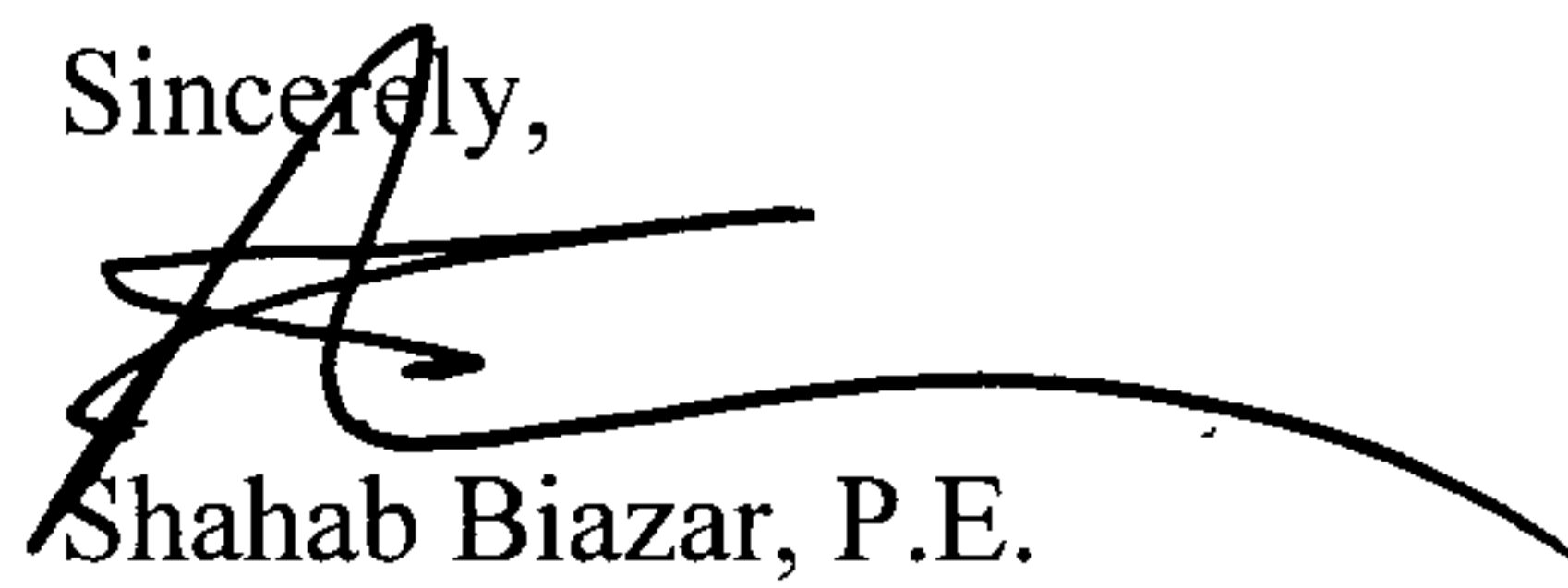
PO Box 1293

Albuquerque

New Mexico 87103

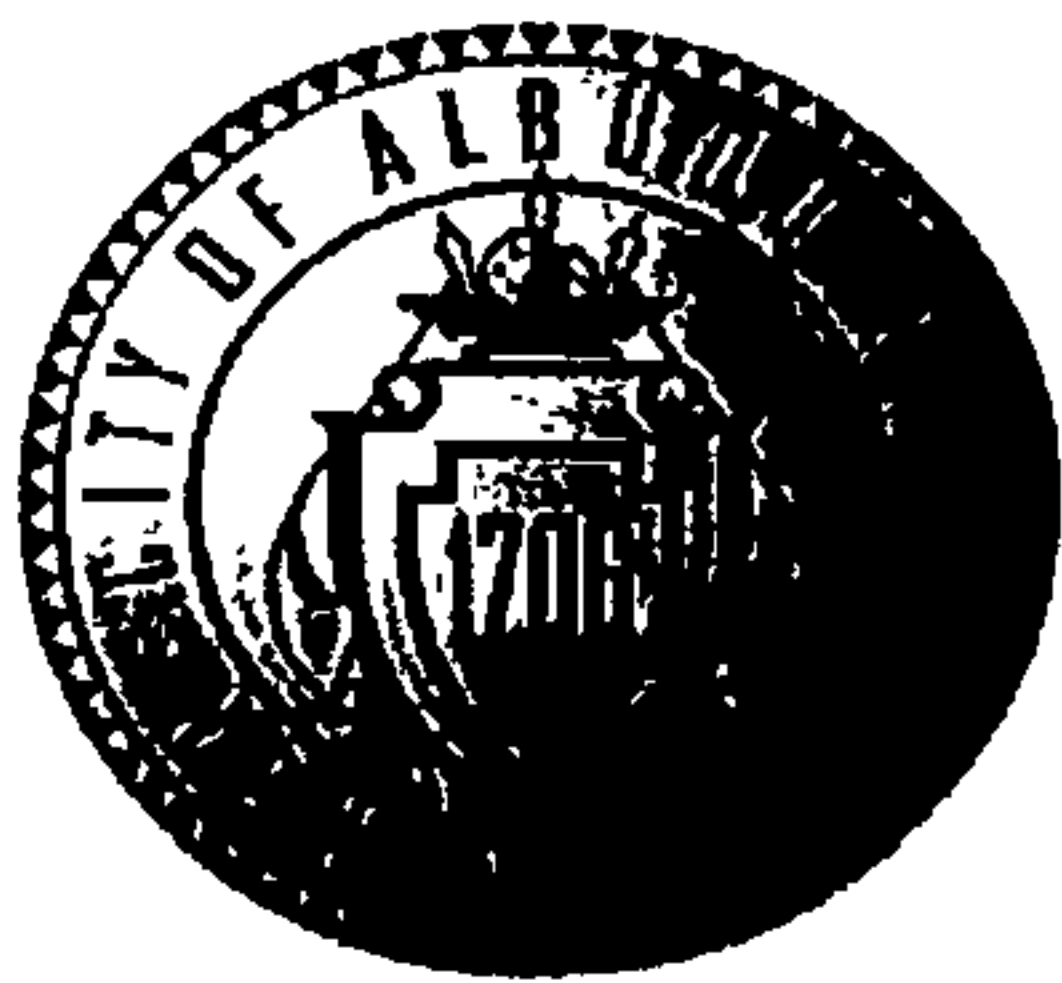
[www.cabq.gov](http://www.cabq.gov)

Sincerely,



Shahab Biazar, P.E.  
Senior Engineer, Planning Dept.  
Development Review Services

C: e-mail



# City of Albuquerque

Planning Department

Development & Building Services Division

## DRAINAGE AND TRANSPORTATION INFORMATION SHEET

(REV 02/2013)

Project Title: Inland Kenworth Building Permit #: \_\_\_\_\_ City Drainage #: J-10/D044

DRB#: \_\_\_\_\_ EPC#: \_\_\_\_\_ Work Order#: 578086

Legal Description: Portion of Tract 182, Tracts 183, 184, and 185-A

City Address: Fortuna Road NW

Engineering Firm: Isaacson & Arfman, P.A. Contact: Åsa Nilsson-Weber

Address: 128 Monroe Street NE, Albuquerque, NM 87108

Phone#: 268-8828 Fax#: N/A E-mail: asaw@iacivil.com

Owner: LCI, LLC Contact: Jim Allman

Address: 1920 W. 11th Street, Upland, CA 91786

Phone#: \_\_\_\_\_ Fax#: \_\_\_\_\_ E-mail: \_\_\_\_\_

Architect: \_\_\_\_\_ Contact: \_\_\_\_\_

Address: \_\_\_\_\_

Phone#: \_\_\_\_\_ Fax#: \_\_\_\_\_ E-mail: \_\_\_\_\_

Surveyor: Surv-Tek, Inc. Contact: Russ P. Hugg

Address: \_\_\_\_\_

Phone#: 897-3366 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  
☒ 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) Supplemental/Amended Drainage Information

### 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 (TEMP)  
☐ FOUNDATION PERMIT APPROVAL  
☒ BUILDING PERMIT APPROVAL  
☒ GRADING PERMIT APPROVAL  
☐ PAVING PERMIT APPROVAL  
☒ WORK ORDER APPROVAL  
☐ GRADING CERTIFICATION  
☐ SO-19 APPROVAL  
☐ ESC PERMIT APPROVAL  
☐ ESC CERT. ACCEPTANCE  
☐ OTHER (SPECIFY)

RECEIVED  
JUN 19 2013

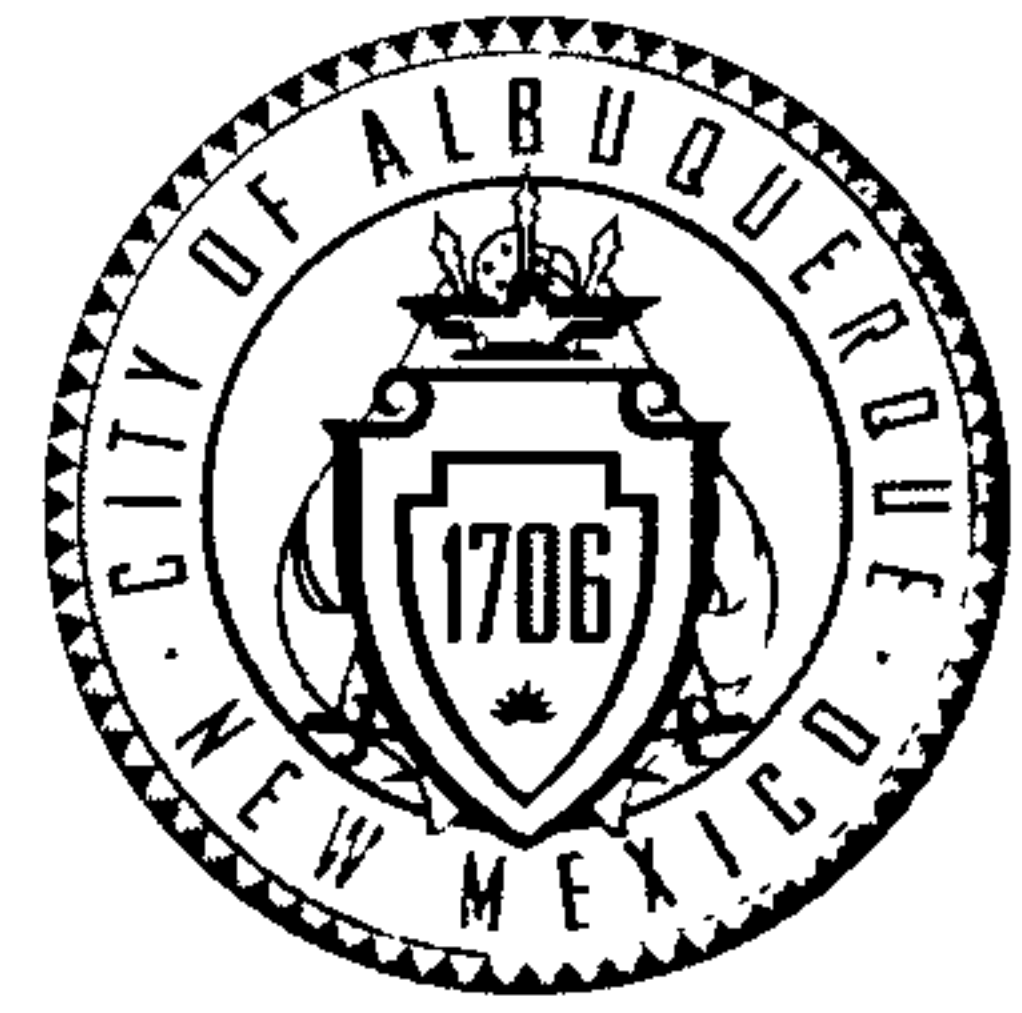
WAS A PRE-DESIGN CONFERENCE ATTENDED: ☒ Yes ☐ No ☐ Copy Provided

DATE SUBMITTED: June 19, 2013 By: Åsa Nilsson-Weber

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 following:

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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# CITY OF ALBUQUERQUE



June 5, 2013

Fred Arfman, P.E.  
Isaacson & Arfman, P.A.  
128 Monroe St NE  
Albuquerque, NM 87108

**Re: Inland Kenworth, Grading and Drainage Plan**  
**Engineer's Stamp 5-29-13 (J10/D044)**

Dear Mr. Arfman,

Based upon the information provided in your submittal received 5-29-13, the above referenced plan is approved for rough grading. The following items should be addressed prior to building permit approval:

- 1) Two sheets are numbered CG-101.
- 2) Please include proposed flow lines and back of sidewalk elevations along Fortuna Rd.
- 3) Provide inlet capacity calculations. Assume 50% clogging factor in your calculations.
- 4) Add all the curb opening sizes on the plans.
- 5) Provide calculations for the channel located east side of Basin 2. Include a section for the channel on the plan. Can the runoff overflow the channel when making a 90 degree turn?
- 6) Add all the storm drain pipe sizes to the plan.
- 7) The runoff appears to be block at the north east corner of the property where the offsite runoff enters the site.
- 8) Based on the documents provided the allowable discharge is 3.76 cfs/ac. Therefore, the total discharge is (8.86 ac x 3.76 cfs/ac) 33.31 cfs, and the plan shows an allowable discharge of 34.60 cfs. Please clarify.

PO Box 1293

Albuquerque

New Mexico 87103

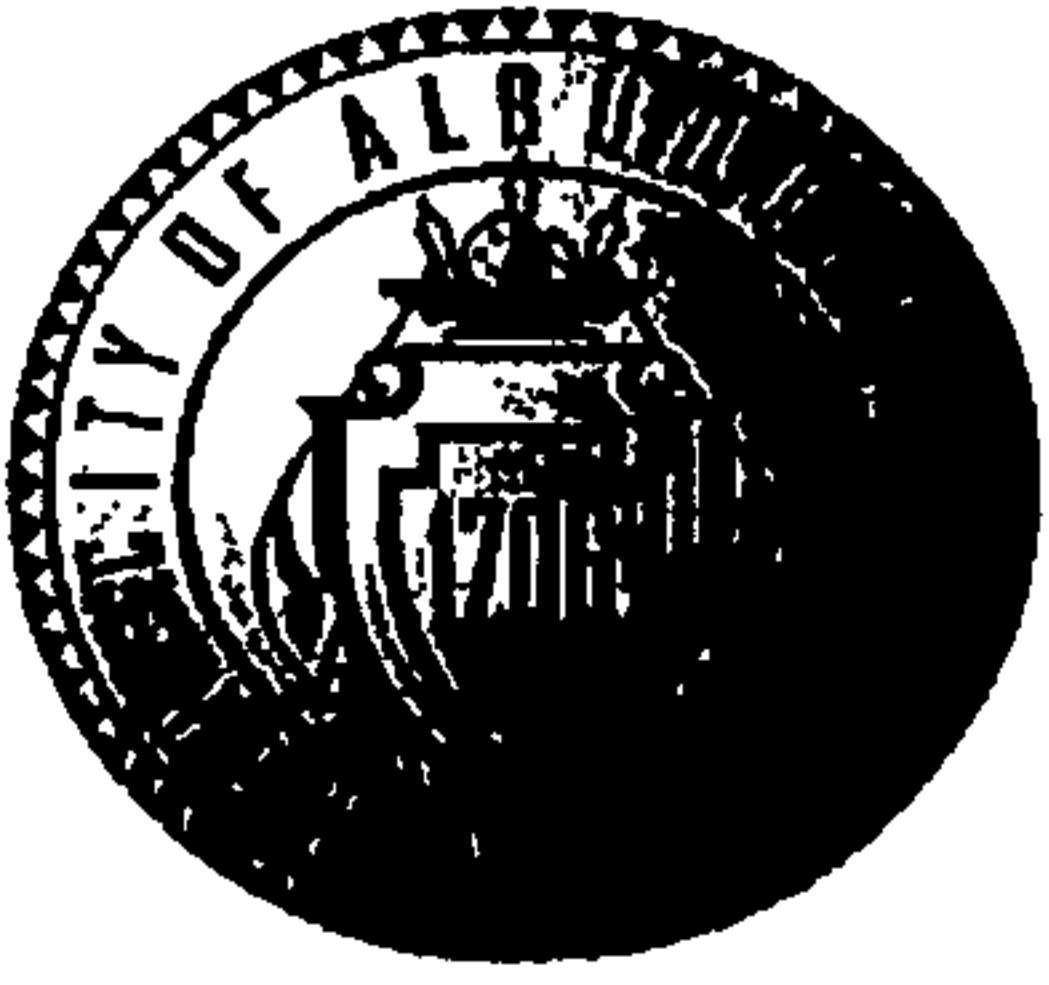
[www.cabq.gov](http://www.cabq.gov)

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

Sincerely,

Shahab Biazar, P.E.  
Senior Engineer  
Development Review Services

C: e-mail



# City of Albuquerque

Planning Department

Development & Building Services Division

## DRAINAGE AND TRANSPORTATION INFORMATION SHEET

(REV 02/2013)

Project Title: Inland Kenworth Building Permit #: \_\_\_\_\_ City Drainage #: J-10/D044

DRB#: \_\_\_\_\_ EPC#: \_\_\_\_\_ Work Order#: \_\_\_\_\_

Legal Description: Portion of Tract 182, Tracts 183, 184, and 185-A

City Address: Fortuna Road NW

Engineering Firm: Isaacson & Arfman, P.A. Contact: Åsa Nilsson-Weber

Address: 128 Monroe Street NE, Albuquerque, NM 87108

Phone#: 268-8828 Fax#: N/A E-mail: asaw@iacivil.com

Owner: LCI, LLC Contact: Jim Allman

Address: 1920 W. 11th Street, Upland, CA 91786

Phone#: \_\_\_\_\_ Fax#: \_\_\_\_\_ E-mail: \_\_\_\_\_

Architect: \_\_\_\_\_ Contact: \_\_\_\_\_

Address: \_\_\_\_\_

Phone#: \_\_\_\_\_ Fax#: \_\_\_\_\_ E-mail: \_\_\_\_\_

Surveyor: Surv-Tek, Inc. Contact: Russ P. Hugg

Address: \_\_\_\_\_

Phone#: 897-3366 Fax#: \_\_\_\_\_ E-mail: \_\_\_\_\_

Contractor: FRANKLIN EARTHMOVING Contact: GUS HARBAUGH

Address: \_\_\_\_\_

Phone#: 884-6947 Fax#: \_\_\_\_\_ E-mail: \_\_\_\_\_

### TYPE OF SUBMITTAL:

☐ DRAINAGE REPORT

☒ DRAINAGE PLAN 1st SUBMITTAL

☐ DRAINAGE PLAN RESUBMITTAL

☐ CONCEPTUAL G & D PLAN

☒ GRADING PLAN

☐ EROSION & SEDIMENT CONTROL PLAN (ESC)

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☐ 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:

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☐ 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

☒ GRADING PERMIT APPROVAL

☐ PAVING PERMIT APPROVAL

☐ WORK ORDER APPROVAL

☐ GRADING CERTIFICATION

☐ SO-19 APPROVAL

☒ ESC PERMIT APPROVAL

☐ ESC CERT. ACCEPTANCE

☐ OTHER (SPECIFY)

WAS A PRE-DESIGN CONFERENCE ATTENDED:

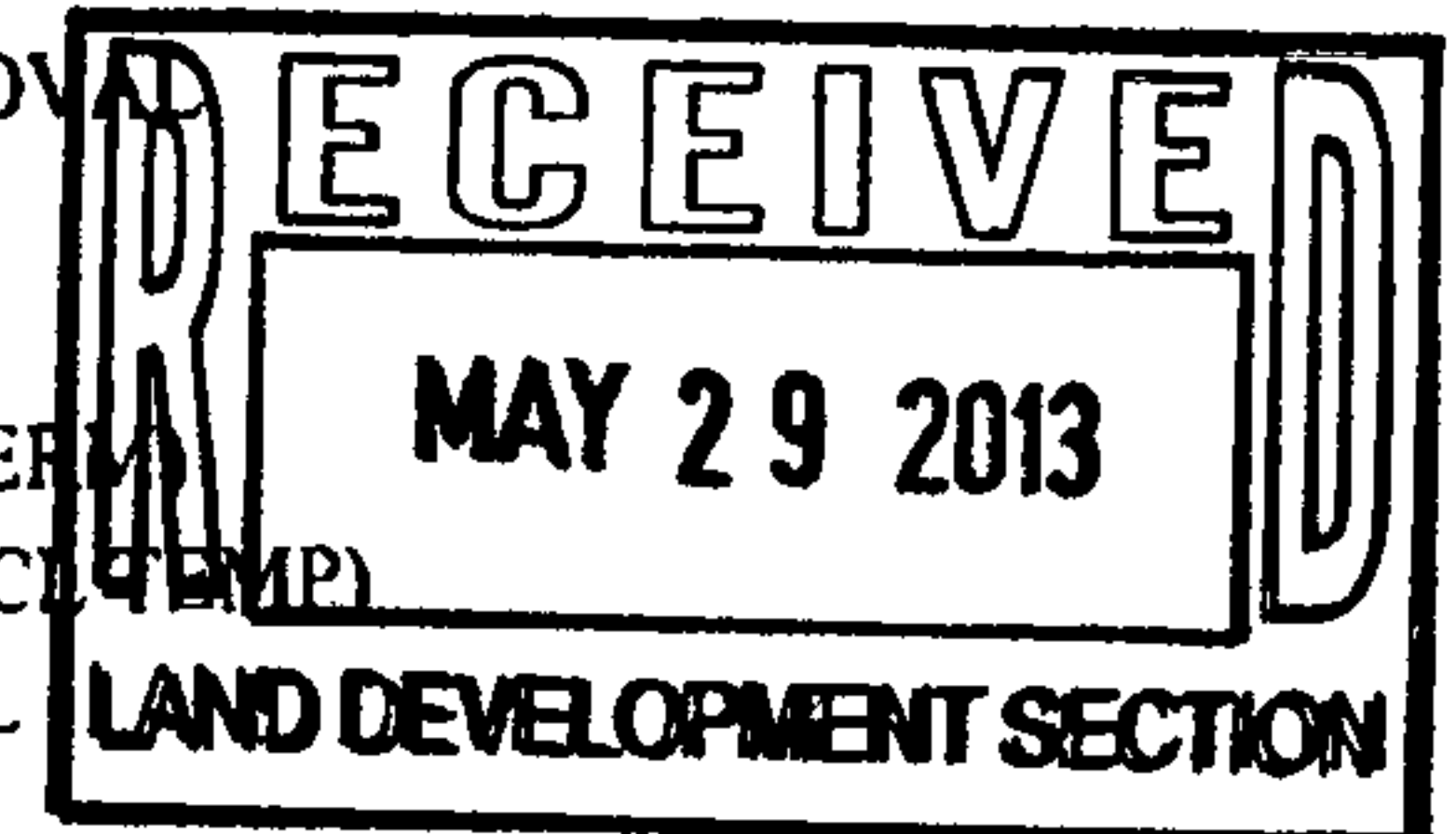
☒ Yes ☐ No ☐ Copy Provided

DATE SUBMITTED: May 29, 2013

By: Åsa Nilsson-Weber

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 following:

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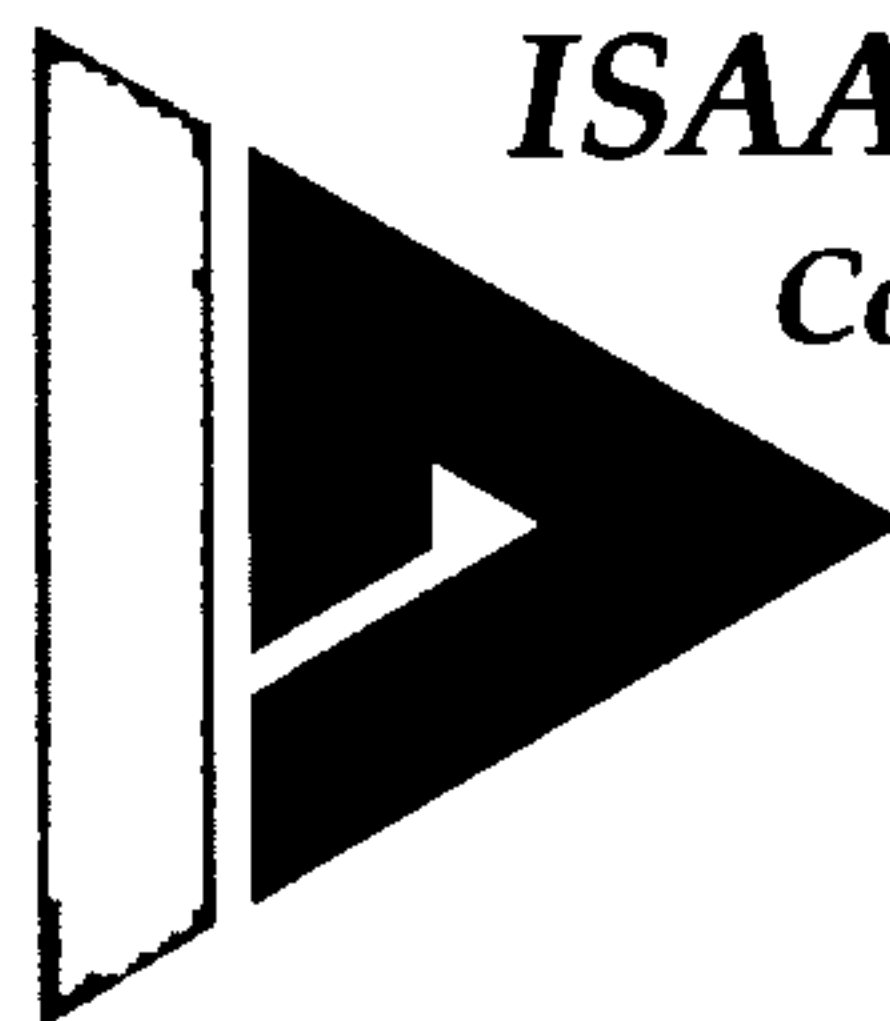
JUNE 19, 2013

SUPPLEMENTAL/AMENDED INFORMATION  
TO DRAINAGE REPORT  
DATED APRIL 23, 2013

FOR

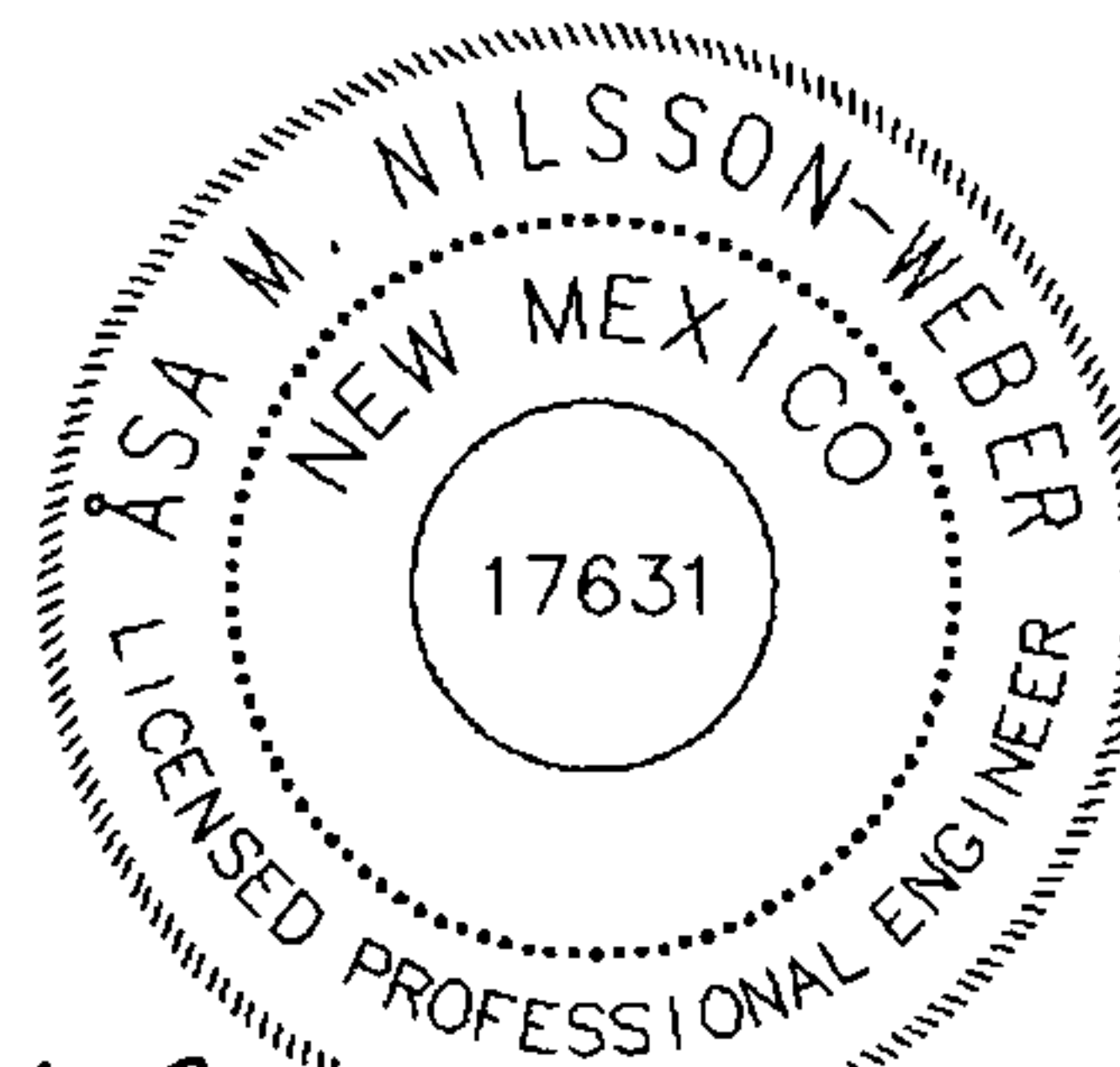
INLAND KENWORTH  
Fortuna Rd West of 76<sup>th</sup> Street NW

BY



**ISAACSON & ARFMAN, P.A.**  
*Consulting Engineering Associates*

Thomas O. Isaacson, PE (Ret.) & LS  
Fred C. Arfman, PE  
Åsa Nilsson-Weber, PE



Prepared by:

*Åsa Nilsson-Weber*

Åsa Nilsson-Weber, PE

6-19-13

Date

RECEIVED  
JUN 19 2013

# **SUMMARY OF SUPPLEMENTAL/AMENDED INFORMATION**

This supplemental/amended information submittal includes the following revisions to the drainage report dated April 23, 2013 and grading plan dated May 29, 2013:

- Channel at east property line was eliminated and replaced with 2-Type C inlets and storm drain.
- Storm drain from inlet #1 was extended to pick up flows from loading dock area and roof drains.
- Onsite Basin Map (Appendix B) was revised.
- Hydraflow Storm Sewer Calculations (Appendix D) were revised.
- Inlet Capacity Calculations were added

## **RESPONSES OF CITY OF ALBUQUERQUE COMMENTS:**

Responses to comments No. 1-4 in letter dated May 13, 2013, for the drainage report dated April 23, 2013 (attached).

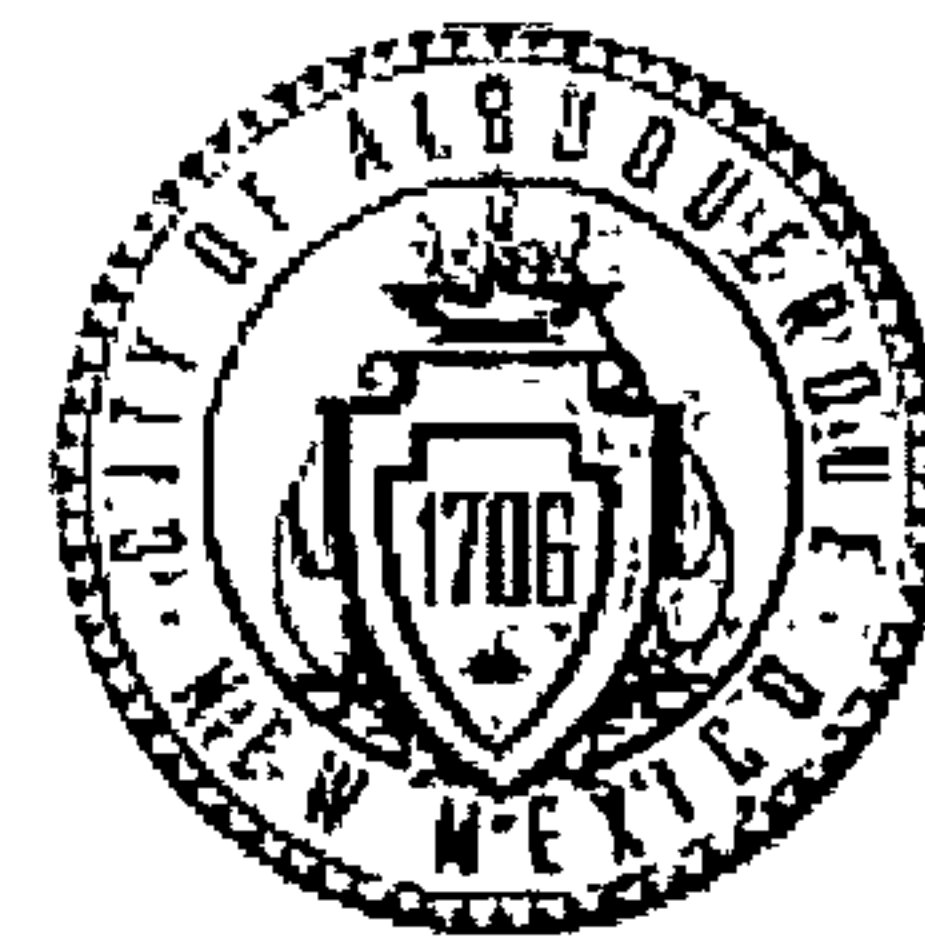
1. The storm drain has been revised to provide a max. 30 degree angle of confluence—see attached grading plan and storm drain calculations.
2. Capacity calculations for inlets are included.
3. Channel has been eliminated and replaced with 2- Type C inlets and storm drain.
4. Channel has been eliminated.

Responses to comments No. 1) - 8) in letter dated June 5, 2013, for the grading plan for rough earthwork signed May 29, 2013 (attached).

- 1) A new grading plan is attached—Sheets CG-101, CG-102, CG-103 and CG-105.
- 2) Flowline and back of sidewalk grades along Fortuna are included.
- 3) Capacity calculations for inlets are included.
- 4) Curb opening sizes are included on plan.
- 5) Channel has been eliminated and replaced with 2-Type C inlets and storm drain.

- 6) Storm drain sizes have been added to the plan—see sheet CG-103 for details.
- 7) There is a small stilling basin at the outlet of the culverts at the northwest corner of the site. Inverts of the culverts are 33.4 and 33.6, and storm water will overflow to the drainage swale in the NMDOT easement at an elevation of 34.
- 8) Drainage calculations on grading plan were incorrect. Calculations included in approved drainage report dated April 23, 2013 are correct showing 32.2 cfs discharging from site which is less than the 33.3 cfs allowable.

# CITY OF ALBUQUERQUE



May 13, 2013

Asa Nilsson-Weber, P.E.  
Isaacson & Arfman, P.A.  
128 Monroe St NE  
Albuquerque, NM 87108

**Re: Inland Kenworth, Fortuna Road, Drainage Report and Conceptual Grading  
and Drainage Plan**

**Engineer's Stamp 4-23-13 (J10D044)**

Dear Ms. Nilsson-Weber,

Based upon the information provided in your submittal received 4-24-13, the above referenced report and plan are approved for Site Plan for Building Permit action by the DRB.

Hydrology did not perform a Building Permit level review of this plan as it is conceptual. However, Hydrology provides the following comments for DRC and Building Permit approvals:

1. Per the DPM, p. 22-106, where the peak flow in the proposed lateral exceeds 10 percent of the main line, the angle of confluence should not exceed 30 degrees. This can be worked out at DRC.
2. Provide calculations for the "D" inlets assuming a 50% clogging factor.
3. Flows from Basin 2 may have difficulty turning 90 degrees as they enter the channel at the northern end. Improving this entry point should help maintain flow in the channel.
4. Provide calculations to support the sizing of the channel draining Basin 2.

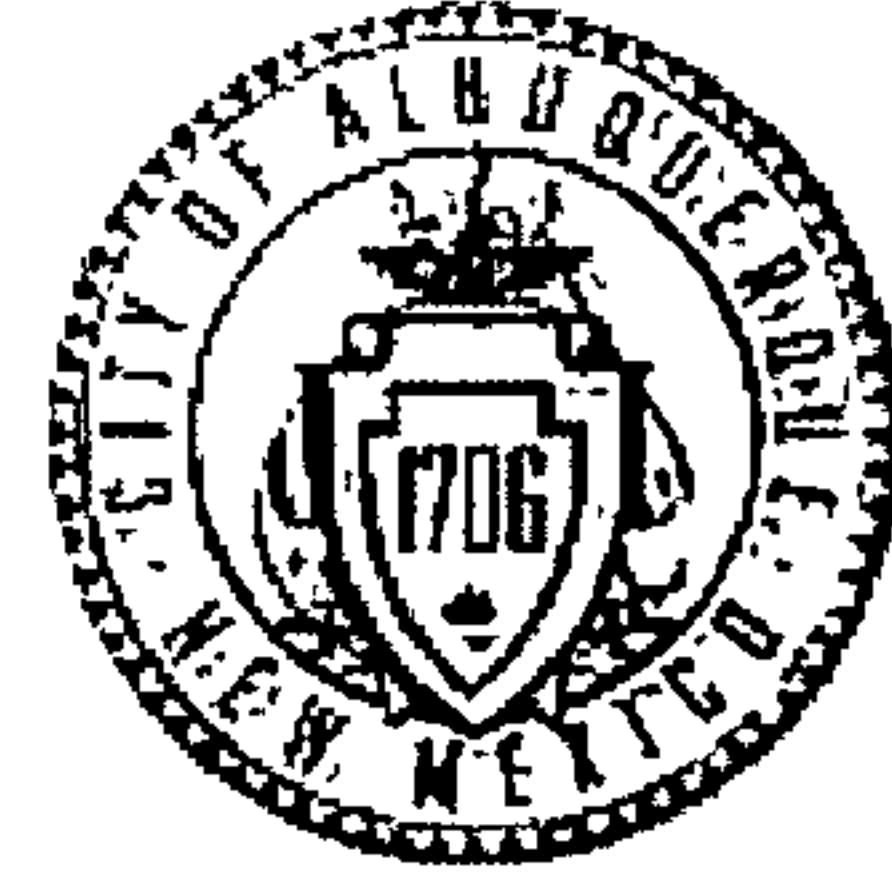
If you have any questions, you can contact me at 924-3986.

Sincerely,

Curtis Cherne, P.E.  
Principal Engineer  
Development Review Services

C: asaw@iacivil.com

# CITY OF ALBUQUERQUE



June 5, 2013

Fred Arfman, P.E.  
Isaacson & Arfman, P.A.  
128 Monroe St NE  
Albuquerque, NM 87108

**Re: Inland Kenworth, Grading and Drainage Plan**  
**Engineer's Stamp 5-29-13 (J10/D044)**

Dear Mr. Arfman,

Based upon the information provided in your submittal received 5-29-13, the above referenced plan is approved for rough grading. The following items should be addressed prior to building permit approval:

- 1) Two sheets are numbered CG-101.
- 2) Please include proposed flow lines and back of sidewalk elevations along Fortuna Rd.
- 3) Provide inlet capacity calculations. Assume 50% clogging factor in your calculations.
- 4) Add all the curb opening sizes on the plans.
- 5) Provide calculations for the channel located east side of Basin 2. Include a section for the channel on the plan. Can the runoff overflow the channel when making a 90 degree turn?
- 6) Add all the storm drain pipe sizes to the plan.
- 7) The runoff appears to be block at the north east corner of the property where the offsite runoff enters the site.
- 8) Based on the documents provided the allowable discharge is 3.76 cfs/ac. Therefore, the total discharge is (8.86 ac x 3.76 cfs/ac) 33.31 cfs, and the plan shows an allowable discharge of 34.60 cfs. Please clarify.

PO Box 1293

Albuquerque

New Mexico 87103

[www.cabq.gov](http://www.cabq.gov)

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

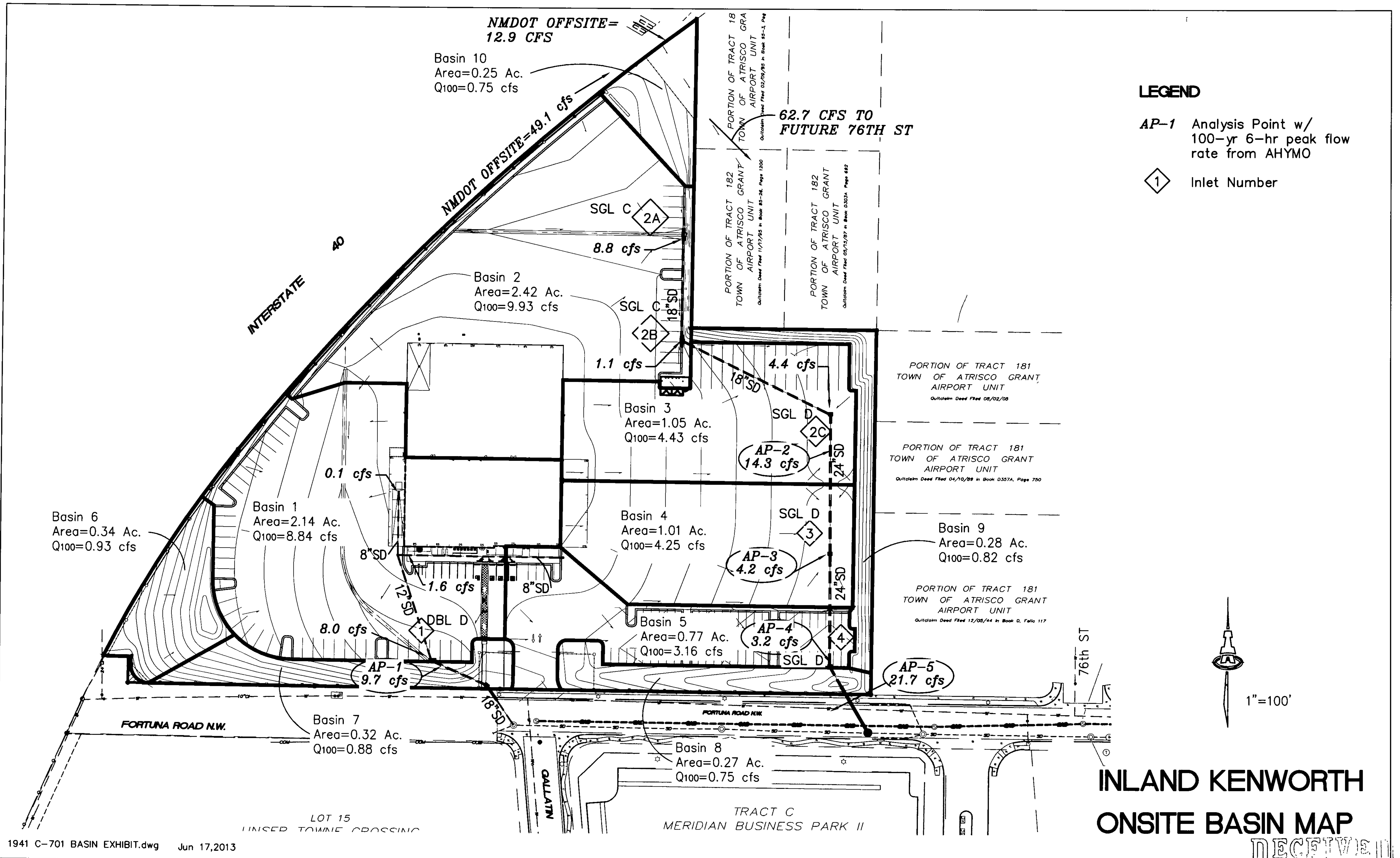
Sincerely,

Shahab Biazar, P.E.  
Senior Engineer  
Development Review Services

C: e-mail

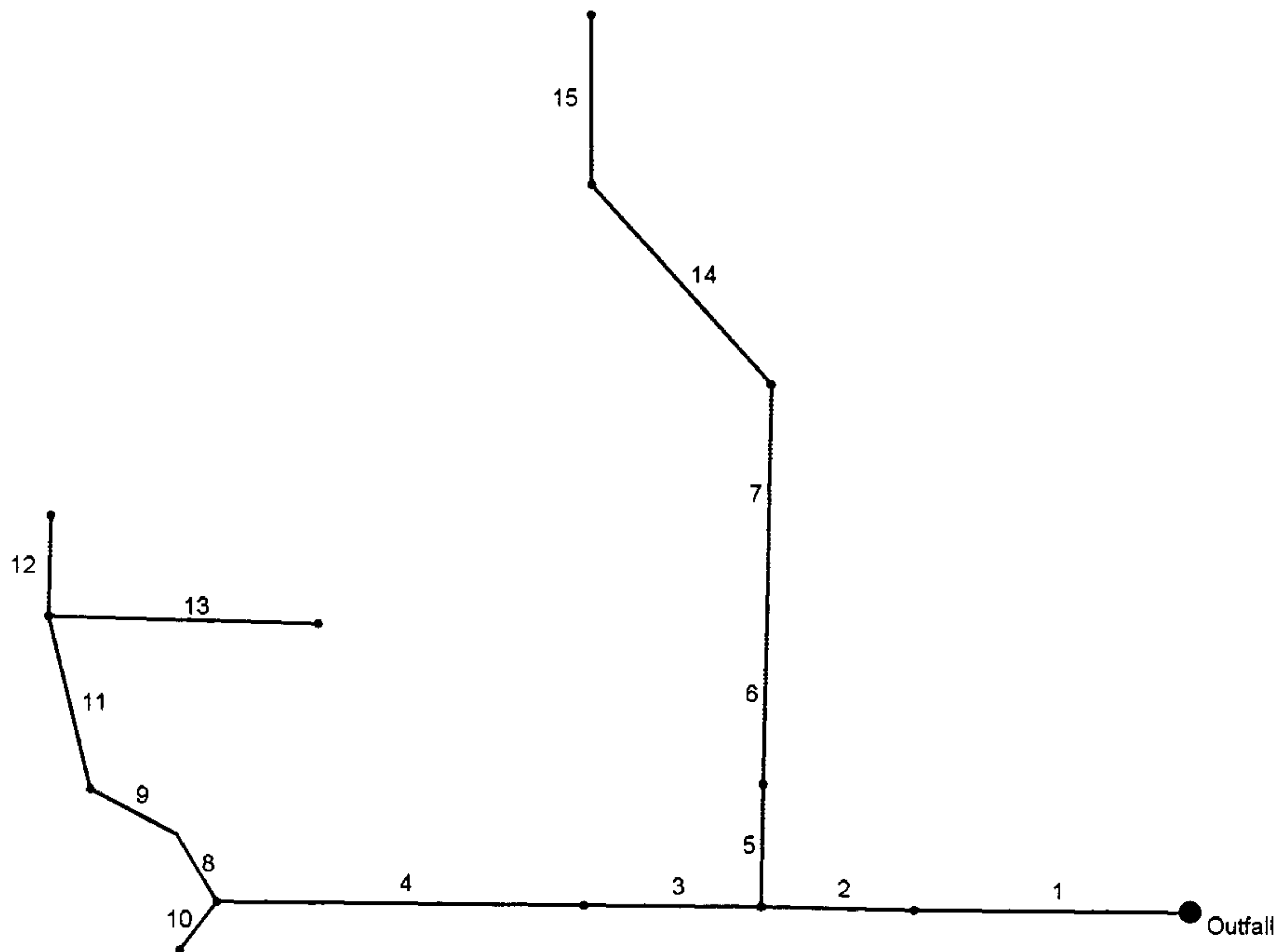
# **EXHIBITS/CALCULATIONS**

- **REVISED ONSITE BASIN MAP  
(APPENDIX B)**
- **REVISED STORM DRAIN CALCULATIONS  
(APPENDIX D)**
- **INLET CAPACITY CALCULATIONS**



# INLAND KENWORTH ONSITE BASIN MAP

DECEMBER  
JUN 18 2013

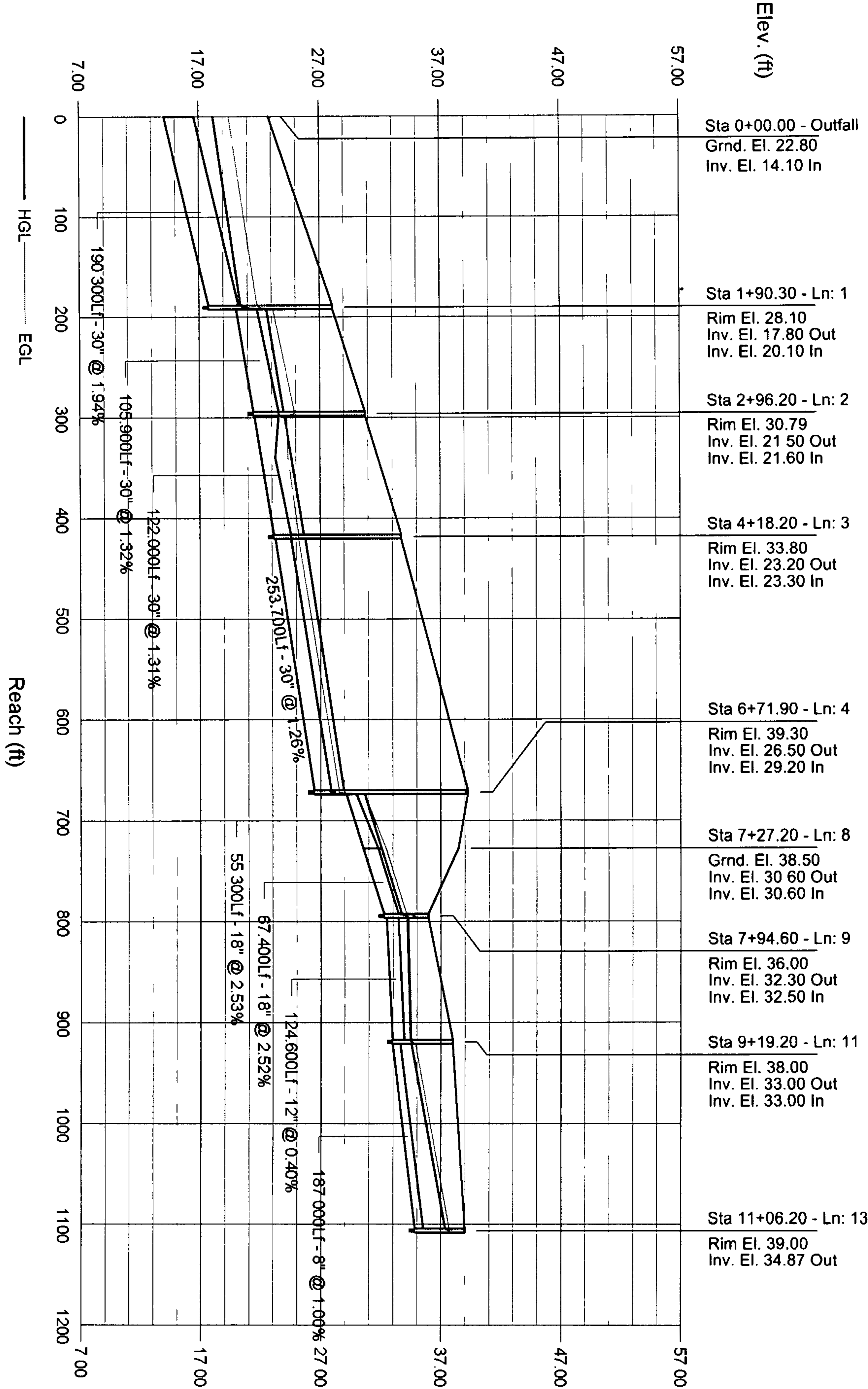


RECEIVED  
JUN 19 2013

Storm Sewer Profile

Proj. file: 1941 SD.stm

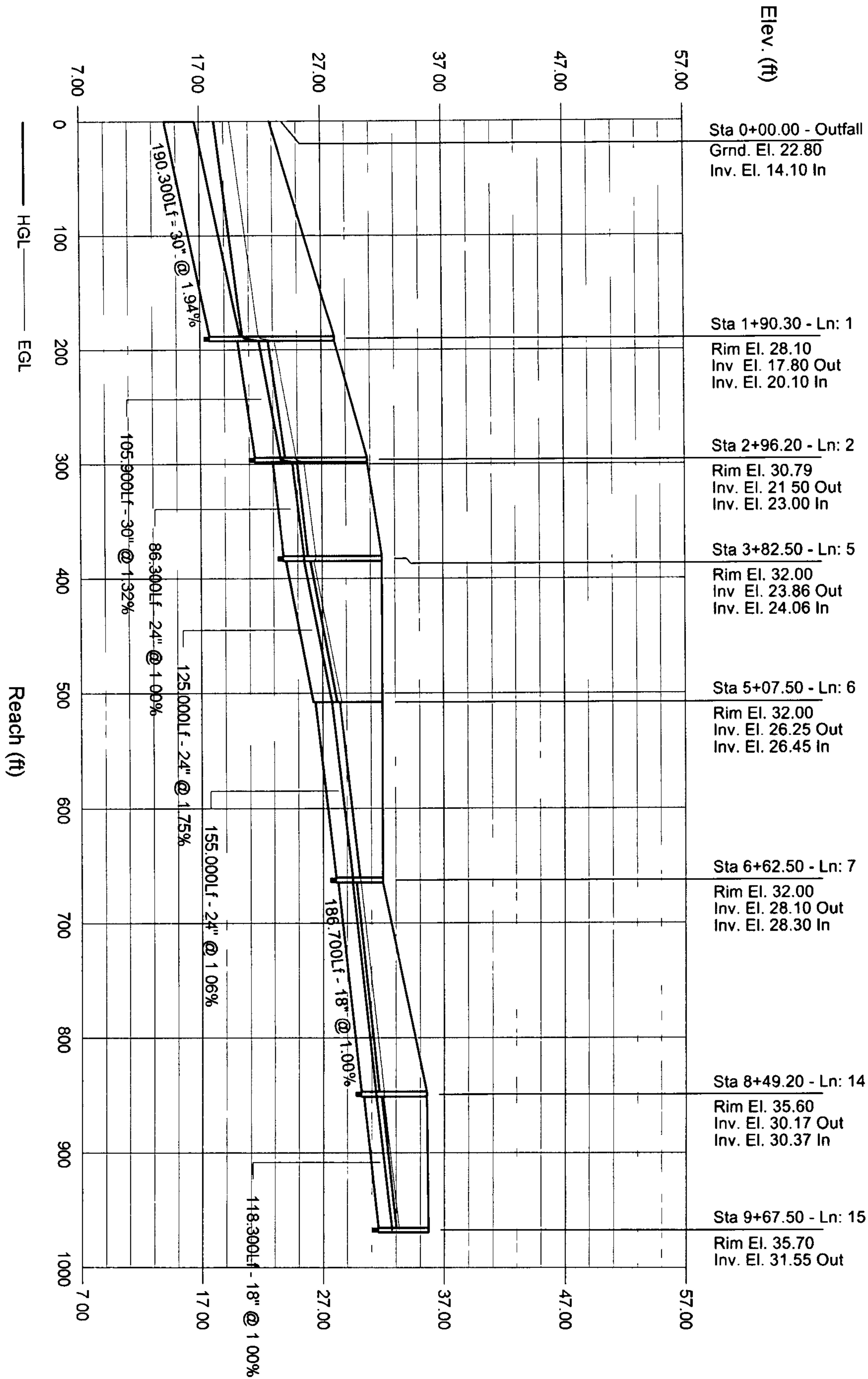
West Storm  
Drain



Storm Sewer Profile

Proj. file: 1941 SD.stm

East Storm  
Drain



# Storm Sewer Inventory Report

Line No.	Alignment				Flow Data				Physical Data								Line ID
	Dnstr Line No.	Line Length (ft)	Defl angle (deg)	Junc Type	Known Q (cfs)	Drng Area (ac)	Runoff Coeff (C)	Inlet Time (min)	Invert El Dn (ft)	Line Slope (%)	Invert El Up (ft)	Line Size (in)	Line Shape	N Value (n)	J-Loss Coeff (K)	Inlet/ Rim El (ft)	
1	End	190.300	-179.285	MH	5.40	0.00	0.00	0.0	14.10	1.94	17.80	30	Cir	0.013	0.15	28.10	
2	1	105.900	0.510	MH	0.00	0.00	0.00	0.0	20.10	1.32	21.50	30	Cir	0.013	1.00	30.79	
3	2	122.000	-0.490	MH	0.00	0.00	0.00	0.0	21.60	1.31	23.20	30	Cir	0.013	0.15	33.80	
4	3	253.700	-0.010	MH	0.00	0.00	0.00	0.0	23.30	1.26	26.50	30	Cir	0.013	0.88	39.30	
5	2	86.300	90.000	Genr	3.20	0.00	0.00	0.0	23.00	1.00	23.86	24	Cir	0.013	0.50	32.00	
6	5	125.000	0.000	Genr	4.20	0.00	0.00	0.0	24.06	1.75	26.25	24	Cir	0.013	0.50	32.00	
7	6	155.000	0.000	Genr	4.40	0.00	0.00	0.0	26.45	1.06	28.10	24	Cir	0.013	1.09	32.00	
8	4	55.300	59.000	None	0.00	0.00	0.00	0.0	29.20	2.53	30.60	18	Cir	0.013	0.58	38.50	
9	8	67.400	-32.000	Genr	8.00	0.00	0.00	0.0	30.60	2.52	32.30	18	Cir	0.013	1.19	36.00	
10	4	42.800	-53.522	Genr	8.10	0.00	0.00	0.0	34.00	1.17	34.50	18	Cir	0.013	1.00	40.20	
11	9	124.600	49.000	MH	0.00	0.00	0.00	0.0	32.50	0.40	33.00	12	Cir	0.012	1.00	38.00	
12	11	70.700	15.000	Genr	0.10	0.00	0.00	0.0	33.00	0.40	33.28	8	Cir	0.012	1.00	35.40	
13	11	187.000	105.000	Genr	1.60	0.00	0.00	0.0	33.00	1.00	34.87	8	Cir	0.012	1.00	39.00	
14	7	186.700	-42.682	Genr	1.10	0.00	0.00	0.0	28.30	1.00	30.17	18	Cir	0.013	1.06	35.60	
15	14	118.300	41.457	Genr	8.80	0.00	0.00	0.0	30.37	1.00	31.55	18	Cir	0.013	1.00	35.70	
1941												Number of lines: 15				Date: 6/19/2013	

# Storm Sewer Summary Report

Line No.	Line ID	Flow rate (cfs)	Line Size (in)	Line shape	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.	Junction Type
1		44.90	30	Cir	190.300	14.10	17.80	1.944	18.20*	20.48*	0.20	20.68	End	Manhole
2		39.50	30	Cir	105.900	20.10	21.50	1.322	21.85	23.62	1.24	23.62	1	Manhole
3		17.80	30	Cir	122.000	21.60	23.20	1.311	23.62	24.63	n/a	24.63 j	2	Manhole
4		17.80	30	Cir	253.700	23.30	26.50	1.261	24.63	27.93	n/a	27.93	3	Manhole
5		21.70	24	Cir	86.300	23.00	23.86	0.997	24.57	25.52	n/a	25.52	2	Generic
6		18.50	24	Cir	125.000	24.06	26.25	1.752	25.52	27.80	0.39	27.80	5	Generic
7		14.30	24	Cir	155.000	26.45	28.10	1.065	27.80	29.46	n/a	29.46	6	Generic
8		9.70	18	Cir	55.300	29.20	30.60	2.532	30.02	31.80	n/a	31.80	4	None
9		9.70	18	Cir	67.400	30.60	32.30	2.522	31.80	33.50	n/a	34.26	8	Generic
10		8.10	18	Cir	42.800	34.00	34.50	1.168	34.94	35.60	0.53	35.60	4	Generic
11		1.70	12	Cir	124.600	32.50	33.00	0.401	34.26*	34.50*	0.07	34.57	9	Manhole
12		0.10	8	Cir	70.700	33.00	33.28	0.396	34.57*	34.58*	0.00	34.58	11	Generic
13		1.60	8	Cir	187.000	33.00	34.87	1.000	34.57*	37.37*	0.33	37.70	11	Generic
14		9.90	18	Cir	186.700	28.30	30.17	1.002	29.46	31.38	n/a	31.38	7	Generic
15		8.80	18	Cir	118.300	30.37	31.55	0.997	31.42	32.70	n/a	32.70	14	Generic
1941									Number of lines: 15				Run Date 6/19/2013	
NOTES Return period = 2 Yrs. ; *Surcharged (HGL above crown) , j - Line contains hyd. jump.														

# Storm Sewer Tabulation

Station		Len (ft)	Drng Area		Rnoff coeff (C)	Area x C		Tc		Rain (l) (in/hr)	Total flow (cfs)	Cap full (cfs)	Vel (ft/s)	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line		Incr (ac)	Total (ac)		Incr	Total	Inlet (min)	Syst (min)					Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
1	End	190.300	0.00	0.00	0.00	0.00	0.00	0.0	7.4	0.0	44.90	57.19	9.15	30	1.94	14.10	17.80	18.20	20.48	22.80	28.10	
2	1	105.900	0.00	0.00	0.00	0.00	0.00	0.0	7.2	0.0	39.50	47.15	9.84	30	1.32	20.10	21.50	21.85	23.62	28.10	30.79	
3	2	122.000	0.00	0.00	0.00	0.00	0.00	0.0	6.6	0.0	17.80	46.97	5.17	30	1.31	21.60	23.20	23.62	24.63	30.79	33.80	
4	3	253.700	0.00	0.00	0.00	0.00	0.00	0.0	5.4	0.0	17.80	46.06	6.44	30	1.26	23.30	26.50	24.63	27.93	33.80	39.30	
5	2	86.300	0.00	0.00	0.00	0.00	0.00	0.0	1.9	0.0	21.70	22.58	7.98	24	1.00	23.00	23.86	24.57	25.52	30.79	32.00	
6	5	125.000	0.00	0.00	0.00	0.00	0.00	0.0	1.5	0.0	18.50	29.94	7.30	24	1.75	24.06	26.25	25.52	27.80	32.00	32.00	
7	6	155.000	0.00	0.00	0.00	0.00	0.00	0.0	1.0	0.0	14.30	23.34	6.32	24	1.06	26.45	28.10	27.80	29.46	32.00	32.00	
8	4	55.300	0.00	0.00	0.00	0.00	0.00	0.0	5.3	0.0	9.70	16.71	8.10	18	2.53	29.20	30.60	30.02	31.80	39.30	38.50	
9	8	67.400	0.00	0.00	0.00	0.00	0.00	0.0	5.1	0.0	9.70	16.68	6.40	18	2.52	30.60	32.30	31.80	33.50	38.50	36.00	
10	4	42.800	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	8.10	11.35	6.40	18	1.17	34.00	34.50	34.94	35.60	39.30	40.20	
11	9	124.600	0.00	0.00	0.00	0.00	0.00	0.0	4.1	0.0	1.70	2.44	2.16	12	0.40	32.50	33.00	34.26	34.50	36.00	38.00	
12	11	70.700	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	0.10	0.82	0.29	8	0.40	33.00	33.28	34.57	34.58	38.00	35.40	
13	11	187.000	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	1.60	1.31	4.58	8	1.00	33.00	34.87	34.57	37.37	38.00	39.00	
14	7	186.700	0.00	0.00	0.00	0.00	0.00	0.0	0.4	0.0	9.90	10.51	6.61	18	1.00	28.30	30.17	29.46	31.38	32.00	35.60	
15	14	118.300	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	8.80	10.49	6.36	18	1.00	30.37	31.55	31.42	32.70	35.60	35.70	
1941																Number of lines: 15				Run Date: 6/19/2013		

NOTES Intensity = 69.87 / (Inlet time + 13.10) ^ 0.87 , Return period = Yrs. 2 , c = cir e = ellip b = box

Inland Kenworth--1941

ANALYZE SUMP INLETS

GRATE OPEN AREA:

(per COA std dwg #2220, single grate)

GROSS AREA FOR ONE GRATE = (25 in/12)(40 in/12) =6.94 SF

LESS BEARING BARS = (0.5 in/12)(3.33 ft)(13) =1.80 SF

LESS CROSS BARS = (0.5 in/12)(7)[(25 in/12)-(13)(0.5 in/12)] =0.45 SF

NET GRATE OPEN AREA = 4.69 SF

GRATE OPEN AREA (assuming 50% clogging factor) = 2.35 SF

ORIFICE EQUATION:

Q = CA(2gh)<sup>1/2</sup>

Where:

C = 0.67

A = 2.35 ft<sup>2</sup>

g = 32.2 ft/sec<sup>2</sup>

h = height of the water surface above the grate

CAPACITY CALCULATIONS:

INLET #	1
TYPE	DBL D

h = 0.5 ft

Q<sub>(capacity)</sub> = 8.917478 cfs

REQUIRED Q = 8 cfs

NUMBER OF GRATES REQUIRED = 1

Note DBL D used

INLET #	2A
TYPE	SGL C

h = 0.5 ft

Q<sub>(capacity)</sub> = 8.917478 cfs

REQUIRED Q = 8.8 cfs

NUMBER OF GRATES REQUIRED = 1

INLET #	2B
TYPE	SGL C

h = 0.5 ft

Q<sub>(capacity)</sub> = 8.917478 cfs

REQUIRED Q = 1.1 cfs

NUMBER OF GRATES REQUIRED = 1

INLET #	2C
TYPE:	SGL D

h = 0.5 ft

Q<sub>(capacity)</sub> = 8.917478 cfs

REQUIRED Q = 4.4 cfs

NUMBER OF GRATES REQUIRED = 1

INLET #	3
LOCATION:	SGL D

h = 0.5 ft

Q<sub>(capacity)</sub> = 8.917478 cfs

REQUIRED Q = 4.2 cfs

NUMBER OF GRATES REQUIRED = 1

INLET #	4
LOCATION	SGL D

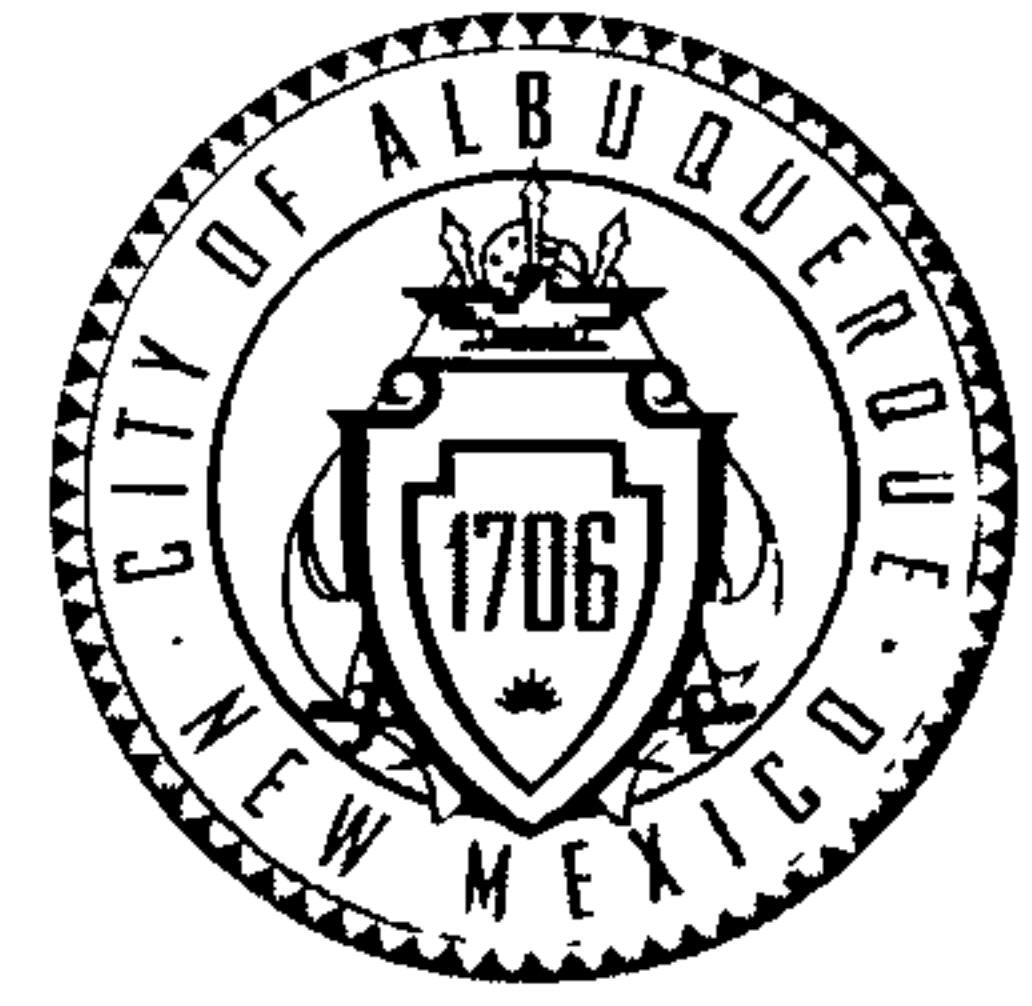
h = 0.5 ft

Q<sub>(capacity)</sub> = 8.917478 cfs

REQUIRED Q = 3.2 cfs

NUMBER OF GRATES REQUIRED = 1

# CITY OF ALBUQUERQUE



May 13, 2013

Asa Nilsson-Weber, P.E.  
Isaacson & Arfman, P.A.  
128 Monroe St NE  
Albuquerque, NM 87108

**Re: Inland Kenworth, Fortuna Road, Drainage Report and Conceptual Grading  
and Drainage Plan**

**Engineer's Stamp 4-23-13 (J10D044)**

Dear Ms. Nilsson-Weber,

Based upon the information provided in your submittal received 4-24-13, the above referenced report and plan are approved for Site Plan for Building Permit action by the DRB.

Hydrology did not perform a Building Permit level review of this plan as it is conceptual. However, Hydrology provides the following comments for DRC and Building Permit approvals:

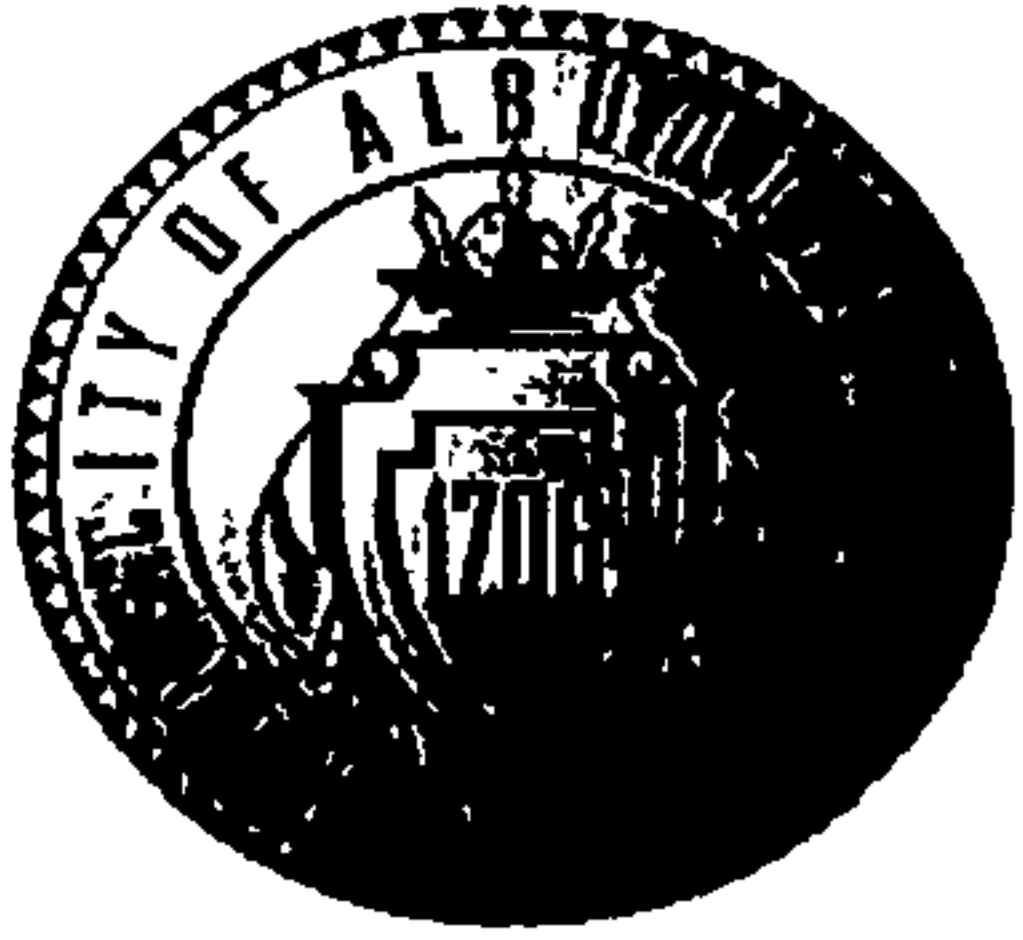
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4. Provide calculations to support the sizing of the channel draining Basin 2.

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

Sincerely,

Curtis Cherne, P.E.  
Principal Engineer  
Development Review Services

C: asaw@iacivil.com



# City of Albuquerque

Planning Department

Development & Building Services Division

## DRAINAGE AND TRANSPORTATION INFORMATION SHEET

(REV 02/2013)

Project Title: Inland Kenworth Building Permit #: \_\_\_\_\_ City Drainage #: J-10/D044

DRB#: \_\_\_\_\_ EPC#: \_\_\_\_\_ Work Order#: \_\_\_\_\_

Legal Description: Portion of Tract 182, Tracts 183, 184, and 185-A

City Address: Fortuna Road NW

Engineering Firm: Isaacson & Arfman, P.A. Contact: Åsa Nilsson-Weber

Address: 128 Monroe Street NE, Albuquerque, NM 87108

Phone#: 268-8828 Fax#: N/A E-mail: asaw@iacivil.com

Owner: LCI, LLC Contact: Jim Allman

Address: 1920 W. 11th Street, Upland, CA 91786

Phone#: \_\_\_\_\_ Fax#: \_\_\_\_\_ E-mail: \_\_\_\_\_

Architect: \_\_\_\_\_ Contact: \_\_\_\_\_

Address: \_\_\_\_\_

Phone#: \_\_\_\_\_ Fax#: \_\_\_\_\_ E-mail: \_\_\_\_\_

Surveyor: Surv-Tek, Inc. Contact: Russ P. Hugg

Address: \_\_\_\_\_

Phone#: 897-3366 Fax#: \_\_\_\_\_ E-mail: \_\_\_\_\_

Contractor: \_\_\_\_\_ Contact: \_\_\_\_\_

Address: \_\_\_\_\_

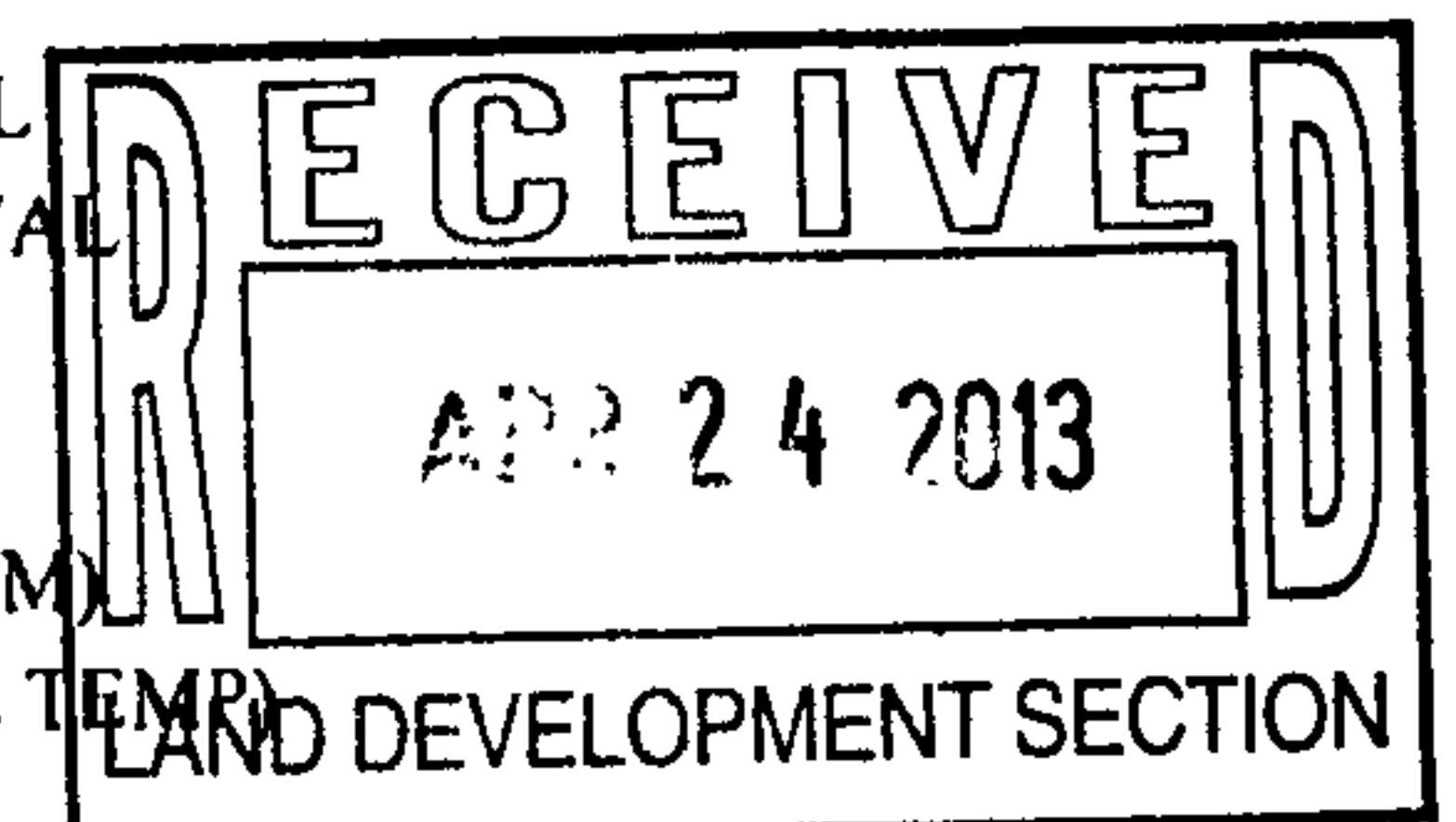
Phone#: \_\_\_\_\_ Fax#: \_\_\_\_\_ E-mail: \_\_\_\_\_

### TYPE OF SUBMITTAL:

- ☐ DRAINAGE REPORT
- ☐ DRAINAGE PLAN 1st SUBMITTAL
- ☒ DRAINAGE PLAN RESUBMITTAL
- ☒ CONCEPTUAL G & D PLAN
- ☐ 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
- ☐ GRADING PERMIT APPROVAL
- ☐ PAVING PERMIT APPROVAL
- ☐ WORK ORDER APPROVAL
- ☐ GRADING CERTIFICATION
- ☐ SO-19 APPROVAL
- ☐ ESC PERMIT APPROVAL
- ☐ ESC CERT. ACCEPTANCE
- ☐ OTHER (SPECIFY) \_\_\_\_\_



WAS A PRE-DESIGN CONFERENCE ATTENDED: ☒ Yes ☐ No ☐ Copy Provided

DATE SUBMITTED: April 23, 2013 By: Åsa Nilsson-Weber

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 following:

1. **Conceptual Grading and Drainage Plan:** Required for approval of Site Development Plans greater than five (5) acres and Sector Plans
2. **Drainage Plans:** Required for building permits, grading permits, paving permits and site plans less than five (5) acres
3. **Drainage Report:** Required for 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



January 8, 2013

ASA M. Nilsson-Weber, P.E.  
Isaacson & Arfman, P.A.  
128 Monroe St NE  
Albuquerque, NM 87108

**Re: Inland Kenworth Drainage Report  
Engineer's Stamp Date 1-6-13 (J10/D044)**

Dear Mrs. Nilsson-Weber,

Based upon the information provided in your submittal received 1-7-13, the above referenced report is approved for Site Plan for Building Permit action by the DRB.

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

PO Box 1293

Albuquerque

NM 87103

[www.cabq.gov](http://www.cabq.gov)

Sincerely,

Curtis Cherne, P.E.  
Principal Engineer, Planning Dept.  
Development and Building Services

C: e-mail

**DRAINAGE AND TRANSPORTATION INFORMATION SHEET**  
(Rev. 12/05)

PROJECT TITLE: Inland Kenworth ZONE MAP/DRG.FILE# J-10/1044  
DRB#: \_\_\_\_\_ EPC#: \_\_\_\_\_ WORK ORDER#: \_\_\_\_\_

LEGAL DESCRIPTION: Tracts 183, 184, and 185-A  
CITY ADDRESS: Fortuna Rd.

ENGINEERING FIRM: ISAACSON AND ARFMAN  
ADDRESS: 128 MONROE N.E.  
CITY, STATE: ALBUQUERQUE, NM

CONTACT: Åsa Nilsson-Weber  
PHONE: 268-8828  
ZIP CODE: 87108

OWNER: Lord Constructors, Inc.  
ADDRESS: 1920 West Eleventh St.  
CITY, STATE: Upland, CA

CONTACT: Jim Allman  
PHONE: \_\_\_\_\_  
ZIP CODE: 91786

ARCHITECT: \_\_\_\_\_  
ADDRESS: \_\_\_\_\_  
CITY, STATE: \_\_\_\_\_

CONTACT: \_\_\_\_\_  
PHONE: \_\_\_\_\_  
ZIP CODE: \_\_\_\_\_

SURVEYOR: Surv-Tek, Inc.  
ADDRESS: \_\_\_\_\_  
CITY, STATE: \_\_\_\_\_

CONTACT: Russ P. Hugg  
PHONE: 897-3366  
ZIP CODE: \_\_\_\_\_

CONTRACTOR: \_\_\_\_\_  
ADDRESS: \_\_\_\_\_  
CITY, STATE: \_\_\_\_\_

CONTACT: \_\_\_\_\_  
PHONE: \_\_\_\_\_  
ZIP CODE: \_\_\_\_\_

**TYPE OF SUBMITTAL:**

- ☒ DRAINAGE REPORT  
☐ DRAINAGE PLAN 1<sup>st</sup> SUBMITTAL  
☐ DRAINAGE PLAN RESUBMITTAL  
☐ CONCEPTUAL G & D PLAN  
☐ GRADING PLAN  
☐ EROSION CONTROL PLAN  
☐ ENGINEER'S CERT (HYDROLOGY)  
☐ CLOMR/LOMR  
☐ TRAFFIC CIRCULATION LAYOUT  
☐ ENGINEER/ARCHITECT CERT (TCL)  
☐ ENGINEER/ARCHITECT CERT (DRB S.P.)  
☐ ENGINEER/ARCHITECT CERT (AA)  
☐ OTHER (SPECIFY) \_\_\_\_\_

**CHECK TYPE OF APPROVAL 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  
☐ FOUNDATION PERMIT APPROVAL  
☐ BUILDING PERMIT APPROVAL  
☐ CERTIFICATE OF OCCUPANCY (PERM)  
☐ CERTIFICATE OF OCCUPANCY (TEMP)  
☐ GRADING PERMIT APPROVAL  
☐ PAVING PERMIT APPROVAL  
☐ WORK ORDER APPROVAL  
☐ OTHER (SPECIFY) \_\_\_\_\_

**WAS A PRE-DESIGN CONFERENCE ATTENDED:**

- ☒ YES  
☐ NO  
☐ COPY PROVIDED

**RECEIVED**  
**JAN - 7 - 2013**

SUBMITTED BY: Åsa Nilsson-Weber, PE  
Isacson & Arfman, P.A.

DATE: January 6, 2013

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 define the degree of drainage detail. One or more of the following levels of submittal may be required based on the following:

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

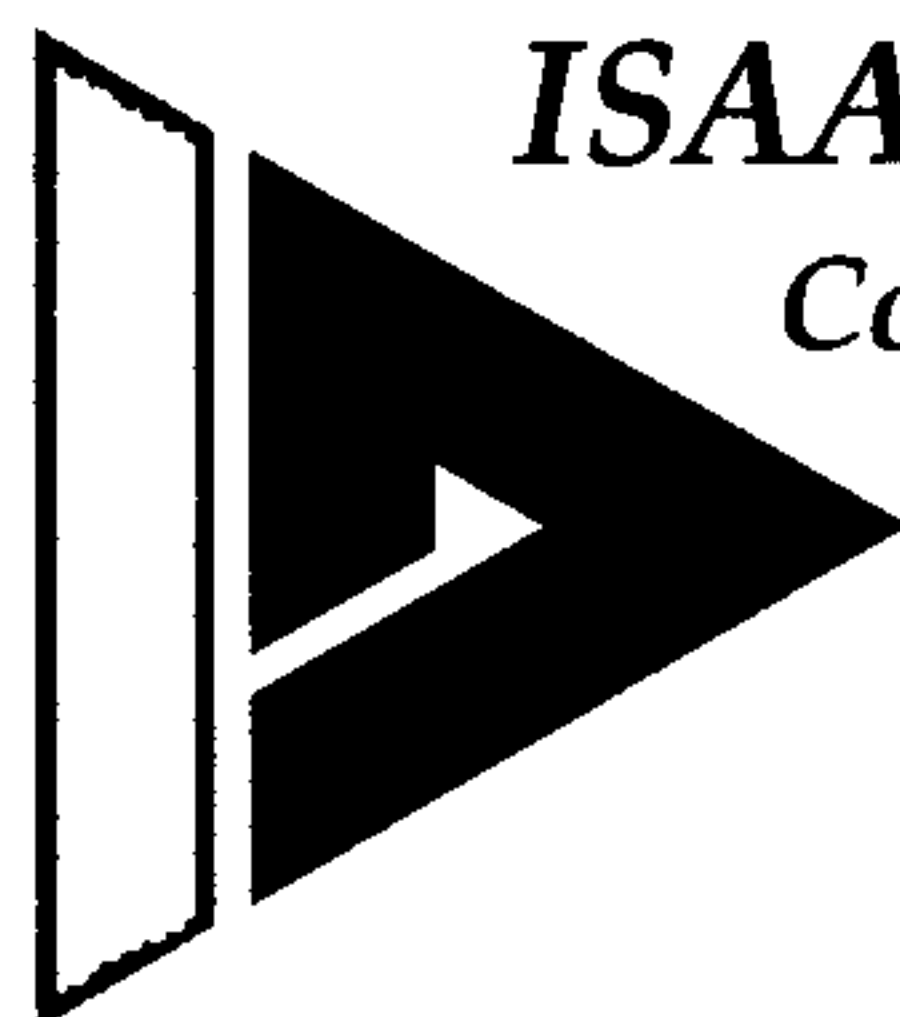
APRIL 23, 2013

# DRAINAGE REPORT

FOR

INLAND KENWORTH  
Fortuna Rd West of 76<sup>th</sup> Street NW

BY



**ISAACSON & ARFMAN, P.A.**

*Consulting Engineering Associates*

*Thomas O. Isaacson, PE (Ret.) & LS (Ret.)*

*Fred C. Arfman, PE (Ret.) & LS (Ret.)*

*Åsa Nilsson-Weber, PE*

*I&A Project No. 1941*

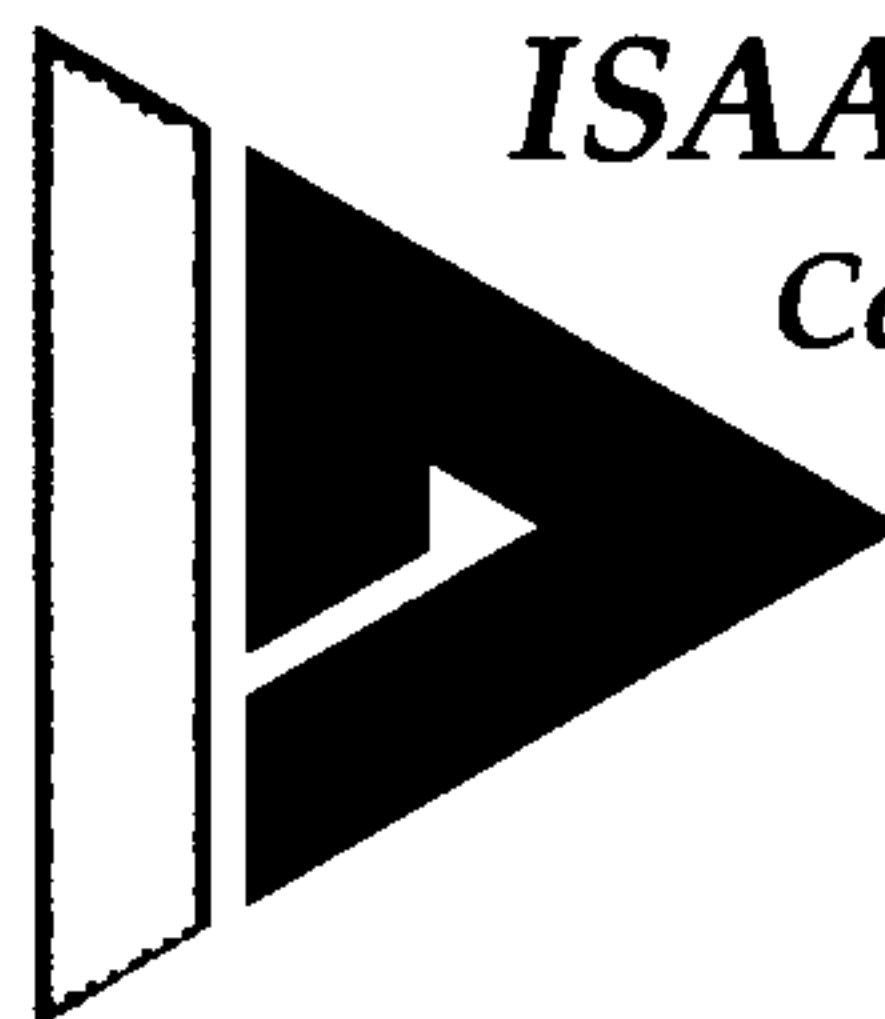
APRIL 23, 2013

# DRAINAGE REPORT

FOR

INLAND KENWORTH  
Fortuna Rd West of 76<sup>th</sup> Street NW

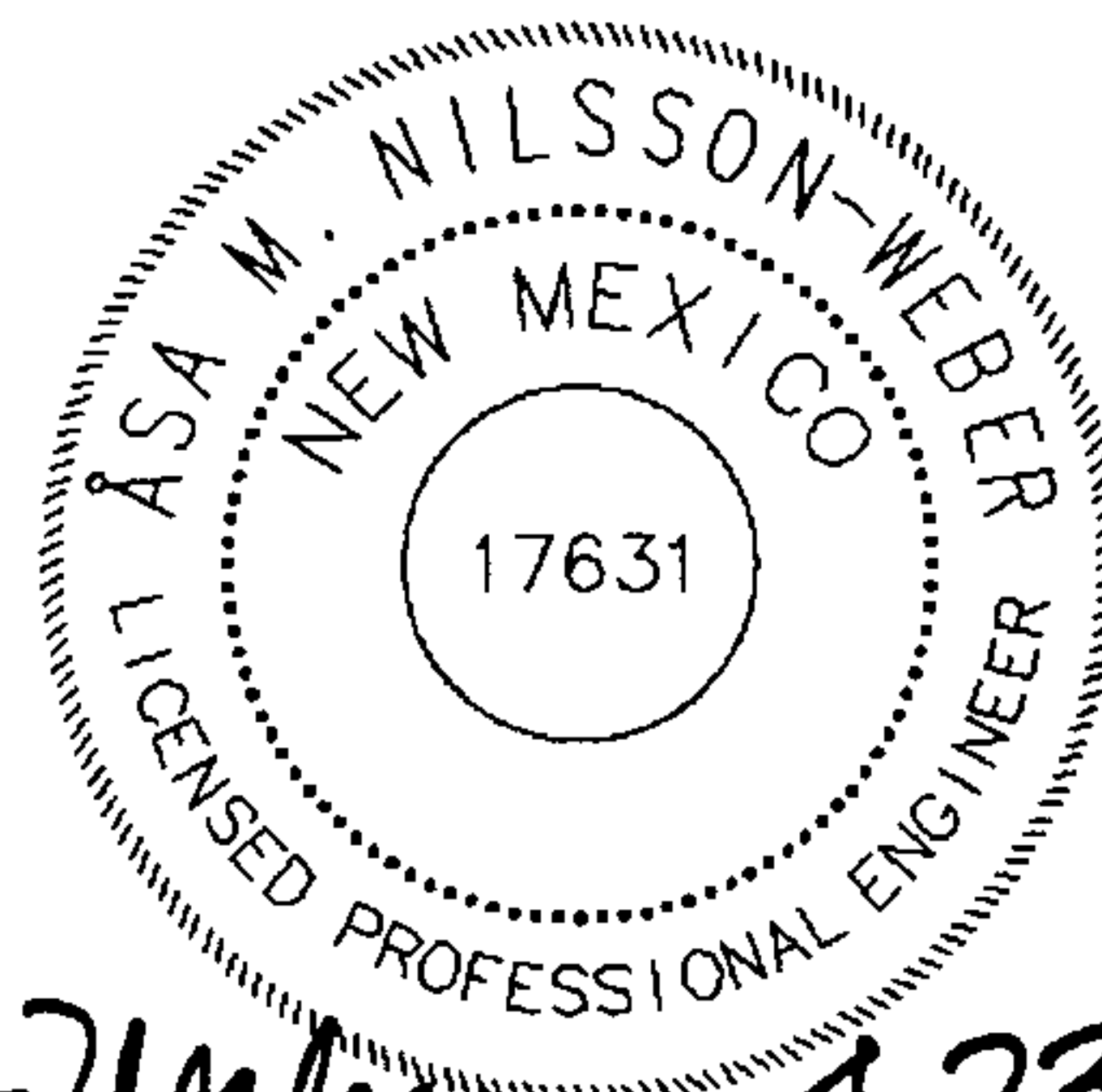
BY



**ISAACSON & ARFMAN, P.A.**  
*Consulting Engineering Associates*

*Thomas O. Isaacson, PE (Ret.) & LS (Ret)*  
*Fred C. Arfman, PE*  
*Åsa Nilsson-Weber, PE*

*I&A Project No. 1941*



Prepared by:

*Åsa Nilsson-Weber*

Åsa Nilsson-Weber, PE

*4-23-13*

Date

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**FLOODPLAIN MAP**

- I. PROJECT INFORMATION**
- II. INTRODUCTION**
- III. EXISTING CONDITIONS**
- IV. PREVIOUS DRAINAGE REPORTS**
- V. PROPOSED CONDITIONS**
- VI. SUMMARY & CONCLUSIONS**

## **APPENDICES**

**APPENDIX A: Excerpts from Previous Drainage Reports**

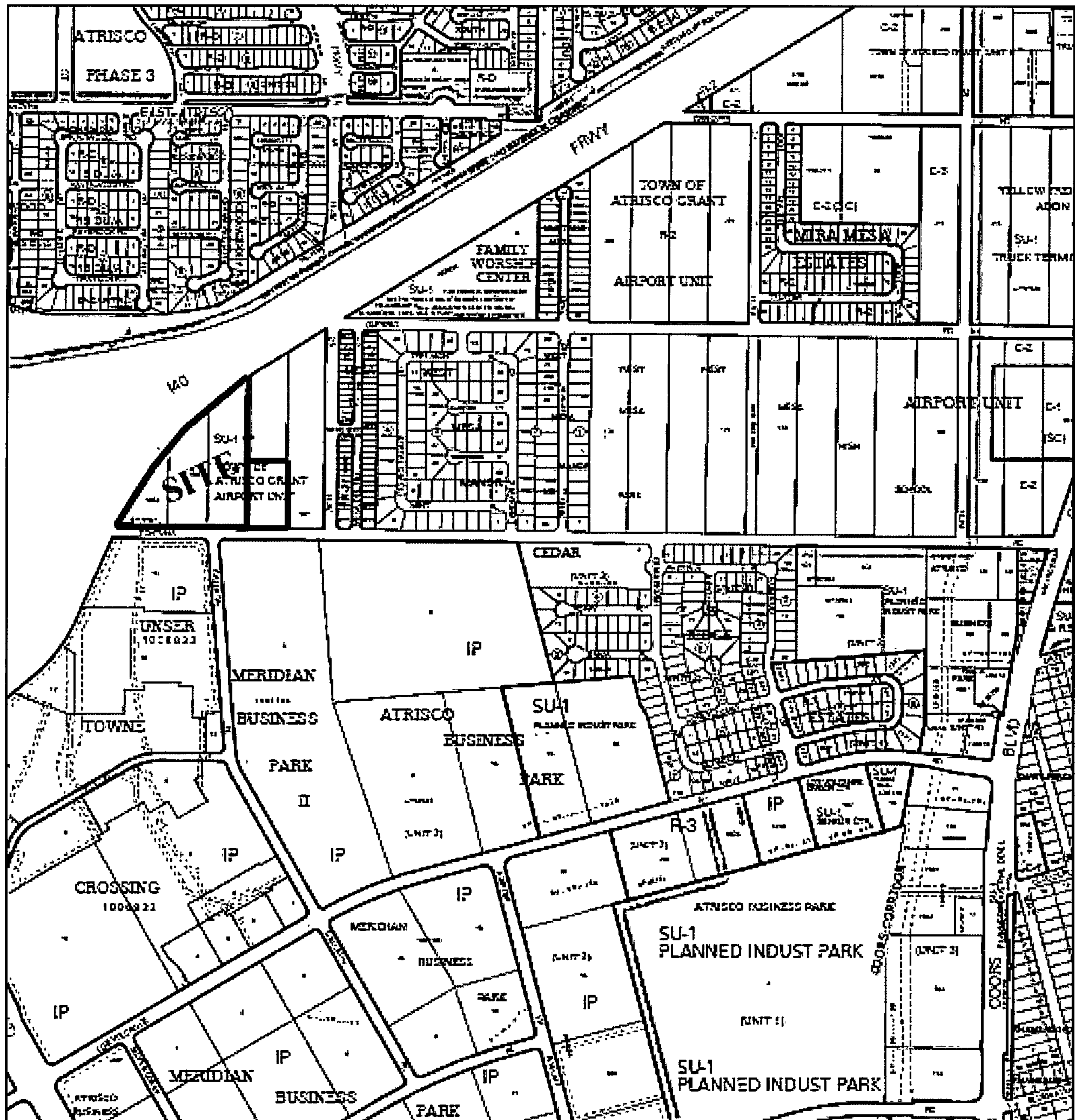
**APPENDIX B: Onsite Basin Map  
Offsite NMDOT Drainage Basin Exhibit  
Onsite AHYMO Calculations**

**APPENDIX C: Fortuna Road Storm Drain As-Builts**

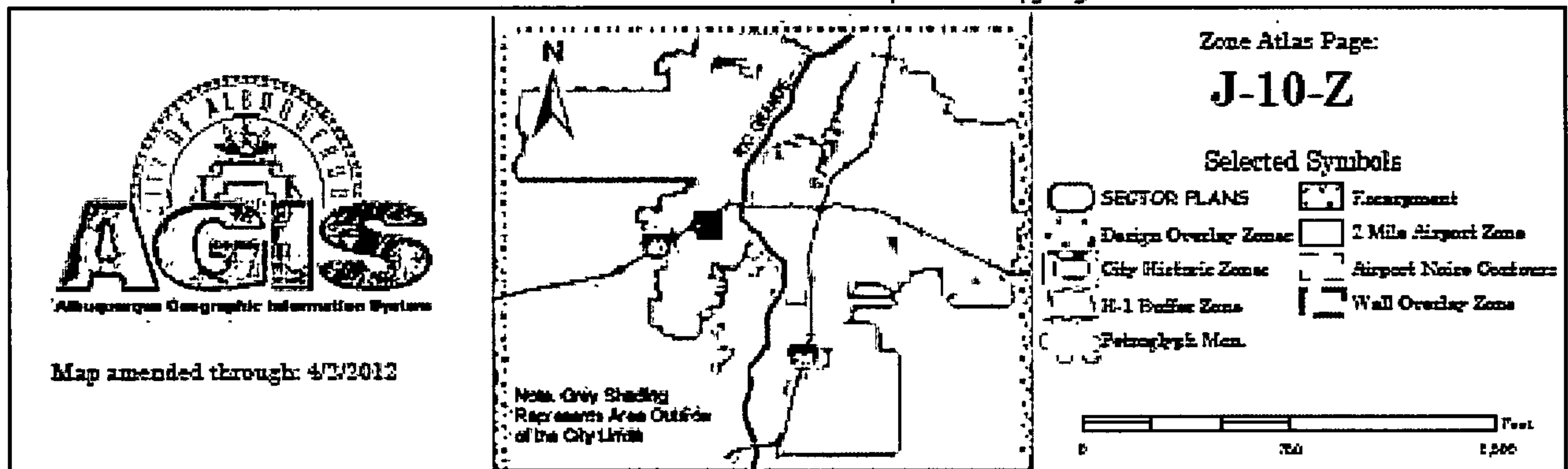
**APPENDIX D: Storm Drain/Street Flow Exhibit  
ArcGIS Explorer Storm Drain Exhibit  
Hydraflow Storm Sewer Calculations  
Street Flow Calculations**

## **POCKET**

**Grading & Drainage Plan**



For more current information and details visit: <http://www.cabq.gov/gis>



## VICINITY MAP



**NATIONAL FLOOD INSURANCE PROGRAM**

**PANEL 0326H**

**FIRM**

**FLOOD INSURANCE RATE MAP**

**BERNALILLO COUNTY, NEW MEXICO**

**AND INCORPORATED AREAS**

**PANEL 326 OF 825**

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

**CONTAINS**

COMMUNITY	NUMBER	PANEL	SHEET
ALBUQUERQUE CITY OF	35002	0326	H
BERNALILLO COUNTY UNINCORPORATED AREAS	35001	0326	H

Notes to User: The Map Number shown below should be used when placing map orders the Community Number shown above should be used on insurance applications for the subject community.

**MAP NUMBER**  
**35001C0326H**

**MAP REVISED**  
**AUGUST 16, 2012**

**Federal Emergency Management Agency**

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on its title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at [www.maf.fema.gov](http://www.maf.fema.gov)

## FLOODPLAIN MAP

# **I. PROJECT INFORMATION**

## **LEGAL DESCRIPTION:**

Tract 185-A, and a portion of Tracts 182 thru 184, Town of Atrisco Grant Airport Unit,  
City of Albuquerque, Bernalillo County, New Mexico

## **TOTAL AREA:**

8.86 Acres

## **FLOOD PLAIN:**

Zone X

This site lies outside the 100-year flood based on FIRM Map No. 35001C0326H

Map Revision date: August 16, 2012

## **ENGINEER:**

Isaacson & Arfman, P.A.

128 Monroe Street NE

Albuquerque, NM 87108

(505) 268-8828

Attn: Åsa Nilsson-Weber

## **SURVEYOR:**

Surv-Tek, Inc.

(505) 897-3366

Attn: Russ P. Hugg, NMPLS No. 9750

## **LAND OWNER:**

Lord Constructors, Inc.

1920 West Eleventh Street

Upland, CA 91786

Attn: Jim Allman

## II. INTRODUCTION

This drainage report includes the following changes to the drainage report dated January 6, 2013:

- A portion of Tract 182 has been incorporated into the site
- Onsite drainage basins and storm drain calculations have been revised.
- Offsite drainage swale within the NMDOT right-of-way has been eliminated.

The site is bound by Fortuna Rd. NW to the south and by Interstate 40 to the west and will be developed with a truck sales and service facility and parking. There are currently offsite flows entering the site from the I-40 corridor. These flows will be re-directed to a New Mexico Department of Transportation (NMDOT) drainage easement at the north end of the site. The onsite flows will be captured in inlets and conveyed to a storm drain in Fortuna Rd.

## III. EXISTING CONDITIONS

The site is currently undeveloped except for the NMDOT easement area at the northwest corner of the site where two culverts discharge flows from the I-40 corridor into a drainage channel that is directed to the future 76<sup>th</sup> Street located on the property to the east.

The existing public storm drain system at the intersection of Fortuna Rd. and the entrance to the site includes a 30" pipe with stubouts for two inlets. There are also four additional curb inlets in Fortuna Rd. west of 76<sup>th</sup> Street.

## IV. PREVIOUS DRAINAGE REPORTS (PDR)

This site has been studied in the following drainage reports:

- PDR-1. *Master Drainage Plan for Atrisco Business Park*, dated September 1992, Revised March 1993/October 1993, by Wilson & Co.
- PDR-2. *West Mesa Diversion Project Drainage Analysis, Draft Report*, dated May 1997, by Smith Engineering.
- PDR-3. *Mesa del Rio Subdivision*, dated October 2005, by Rio Grande Engineering.
- PDR-4. *Drainage Report for Meridian Business Park II, Supplement to the Master Drainage Plan for Atrisco Business Park*, dated August 2007, by Wilson & Company.
- PDR-5. *Drainage Report for FedEx Freight Albuquerque*, dated April 2008, by Wilson & Co.

Per these reports, the approved discharge from this site (portion of tract 182 and tracts 183, 184 and 185A) is 33.3 cfs (3.76 cfs/acre). See excerpt from PDR-4 in Appendix A. The offsite flows from the I-40 corridor currently flows across the site. Per PDR-2, these offsite

flows shall be directed to the NMDOT easement at the north end of the site via a swale in the NMDOT right-of-way paralleling the west property line. See excerpt from PDR-2 in Appendix A.

Per the previous master drainage reports (PDR-1 through PDR-4), all flows from properties south of Fortuna Rd. shall be directed south. However, PDR-5 shows that the FedEx development is discharging 10.1 cfs to Fortuna Rd. This flow was programmed to enter a temporary retention pond via a rundown from the street. See excerpt from PDR-5 and a photo of the rundown in Appendix A. The photo shows that the rundown does not convey street flows to the pond. Therefore, the 10.1 cfs will be directed east in Fortuna Rd.

## V. PROPOSED CONDITIONS

The site will be developed with a truck sales and service facility, parking and landscaping. Land treatments were calculated based on the impervious and pervious areas shown on the site plan. See Appendix B for Basin Map and AHYMO 100-year, 6-hour flow calculations.

- Basins 1 & 7 will drain to onsite inlet 1 west of the entrance with a connection to an existing 18" storm drain stub in Fortuna Rd.
- Basins 2, 3, 4 & 5 will drain to onsite inlets 2, 3 & 4 with a manhole connection in the 30" storm drain in Fortuna Rd.
- Basins 6, 8 & 9 will be landscaped retention areas for water harvesting.
- Basin 10—the NMDOT easement area at north corner of the site—will drain toward the Fortuna Rd. storm drain system via future 76<sup>th</sup> Street.

See below summary table for discharge from each basin:

Basin ID	Q <sub>100</sub> (cfs)	Discharge Location
1	8.84	Onsite inlet 1
2	9.93	Onsite inlet 2
3	4.43	Onsite inlet 2
4	4.25	Onsite inlet 3
5	3.16	Onsite inlet 4
6	0.93	Retained
7	0.88	Onsite inlet 1
8	0.75	Retained
9	0.82	Retained
10	0.75	To Fortuna Rd Storm Drain via Future 76 <sup>th</sup> St
TOTAL	34.74	

The site will discharge 32.2 cfs to the onsite storm drain system (including 0.8 cfs via future 76<sup>th</sup> St), which is 1.1 cfs less than the 33.3 cfs allowed. The remaining 2.5cfs will be retained in the depressed landscape areas.

## **OFFSITE DRAINAGE**

OK The Offsite NMDOT Drainage Basin Exhibit in Appendix B shows the offsite NMDOT basins and flow calculations. The Federal Highway Administration (FHWA) denied the request for grading within the NMDOT right-of-way. Therefore, the swale that was shown on the first drainage submittal has been eliminated. Instead, a diversion swale shall be constructed on the Inland Kenworth property along the west property line to divert the 41.9 cfs to the drainage easement at the north end of the site where two culverts discharge an additional 20.1 cfs for a total of 62 cfs. See Offsite NMDOT Drainage Basin Exhibit in Appendix B for section of the diversion swale.

## **STORM DRAIN**

The existing storm drain was designed for the basins north of Fortuna Rd. only, including the offsite flows from NMDOT right-of-way. However, the Fed-Ex development located south of Fortuna Rd. discharges 10.1 cfs to Fortuna Rd. (See Appendix A for excerpt from PDR-5). These flows were shown to discharge into a temporary pond via a rundown from the street, but per the photo included in Appendix A, there is no curb opening to convey the flows to this temporary pond. Per directives of Curtis Cherne, City Hydrology, the storm drain should be evaluated to determine whether capacity exists to include this flow and also flows from a portion of Lot 15, Unser Towne Crossing located west of the Fed-Ex tract since the existing topography indicates that the northerly portion of this lot would drain to Fortuna Rd. The drainage calculations shown on Storm Drain/Street Flow Exhibit in Appendix D show that the Lot 15 basin (OFF-1) would generate 8.1 cfs.

The storm drain system conveys flows to a pond south of Fortuna Rd. approximately 900' east of the site. There is an existing 30" storm drain adjacent to the site with two 18" stubs for future inlets just upstream of the entrance to the site. There are 4 inlets in Fortuna Rd. west of 76<sup>th</sup> Street—the inlets on the north side have been constructed though they are not shown on the as-builts included in Appendix B, and a stub for future inlets in 76<sup>th</sup> St. The future inlets in 76<sup>th</sup> St. will capture flows from the remaining portion of Lot 82 and Lot 81 and the NMDOT offsite flows.

The site will discharge 9.7 cfs to inlet 1 with an 18" storm drain connection to the existing stub in Fortuna Rd west of entrance, and 21.7 cfs to inlets 2-4 with a 24" storm drain and manhole connection to the existing 30" storm drain in Fortuna Rd. Since the flows from this site do not discharge into the street but directly to the storm drain, additional inlets on the north side of Fortuna Rd. will not be required.

Storm Drain Calculations are included in Appendix D. The storm drain was modeled from the existing manhole at 76<sup>th</sup> Street. The starting HGL was approximated at 17.7' from the Fortuna Rd. storm drain as-builts (See Appendix C). In order to account for the additional 10.1 cfs from the Fed-Ex tract that will be captured in inlets further downstream, an additional 0.5' was added to the starting HGL for a total of 18.2'. The storm drain calculations assume that an inlet at the south stub will be installed with the development of Lot 15. The need for this inlet depends on the discharge location of this basin, to be determined with the Lot 15 development. Should an inlet not be installed, the 8.1 cfs from Lot 15 would be captured in the four inlets west of 76<sup>th</sup> St.

## **STREET CAPACITY**

Fortuna Rd. has a 60' right-of-way width and 40' face-to-face standard curb. Until Tract 181 is developed and inlets constructed to capture the offsite NMDOT flows, these flows will surface discharge to Fortuna Rd. at 76<sup>th</sup> St. The total undeveloped street flow at this location is 88.5 cfs. Per street capacity calculations in Appendix D, the flow depth at this location is 0.64'. At a flow depth of 0.67' (top of curb) and a slope of 1.0%, street has capacity for 95.8 cfs.

## **VI. SUMMARY AND CONCLUSIONS**

The site will be developed with a truck sales and service facility, parking and landscaping. A private onsite storm drain and minor flows from the NMDOT easement area will discharge 32.2 cfs to the Fortuna Rd. storm drain (1.1 cfs less than allowed). The remaining flows of 2.5 cfs will be retained in the depressed water harvesting ponds in the landscaping areas.

The site will discharge 9.7 cfs to inlet 1 with an 18" storm drain connection to the existing stub in Fortuna Rd west of entrance, and 21.7 cfs to inlets 2-4 with a 24" storm drain and manhole connection to the existing 30" storm drain in Fortuna Rd

Offsite flows from the NMDOT right-of-way will be diverted in a swale to the NMDOT easement at the north end of the site and be directed to the future 76<sup>th</sup> St. inlets as shown in the West Mesa Diversion Project Drainage Analysis.

An additional 8.1 cfs from Lot 15, Unser Towne Centre, shall be allowed to discharge into the Fortuna Rd. storm drain system. An inlet may be installed west of Gallatin Pl. at the existing 18" stub with the Lot 15 development. The storm drain calculations in Appendix D show that the system has capacity for these added flows.

Until Lot 181 is developed, offsite NMDOT flows shall continue to surface discharge to Fortuna Rd. Per street capacity calculations in Appendix D, street has capacity to carry those flows in addition to the 10.1 cfs being discharged from the Fed-Ex development.

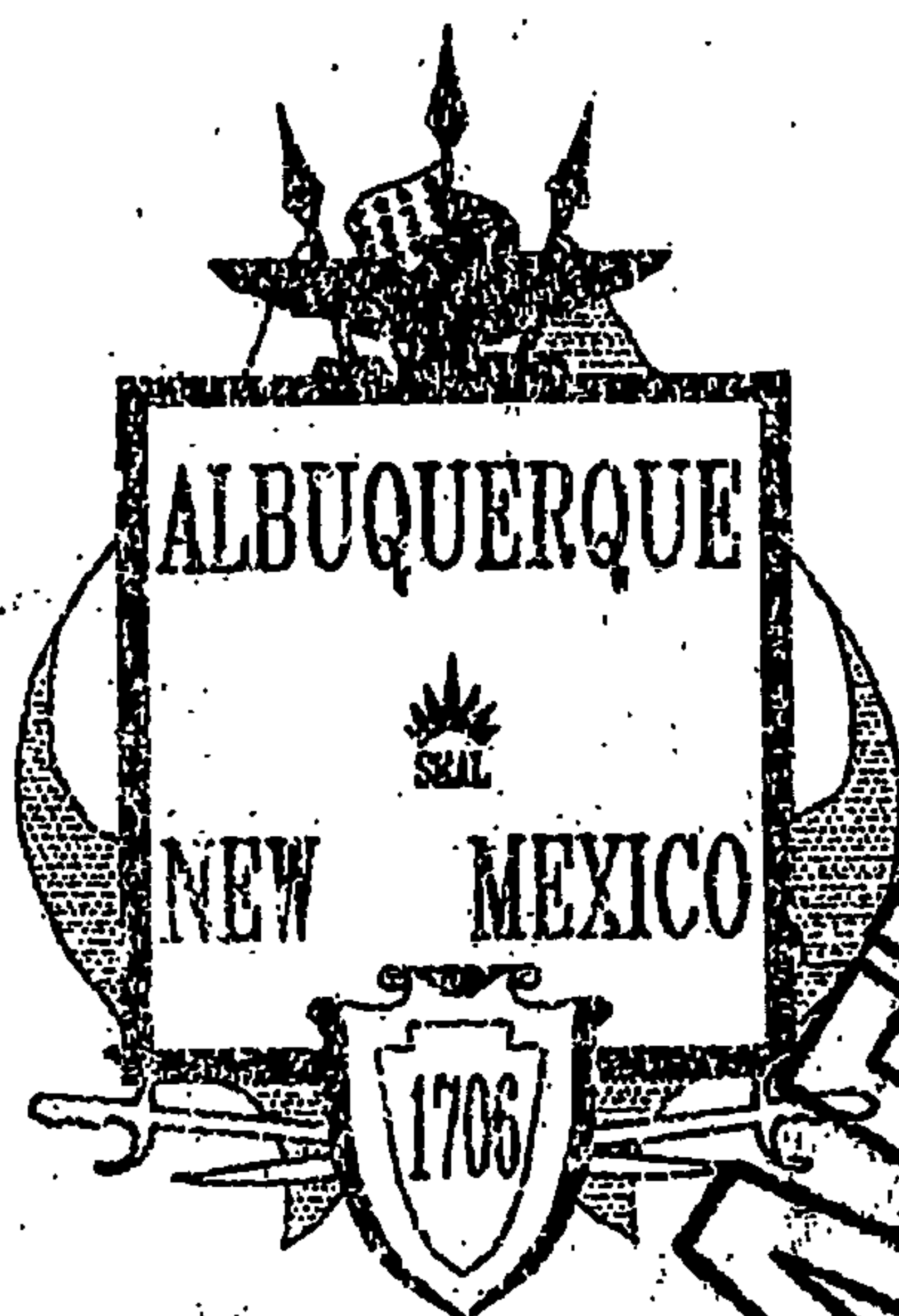
## APPENDIX A

*Excerpts from Previous Drainage Reports*

PDR-2

CITY OF ALBUQUERQUE, NEW MEXICO

# WEST MESA DIVERSION PROJECT DRAINAGE ANALYSIS



COPY



CITY OF  
Albuquerque

DRAFT

SOA PROJECT NO. 5381-01  
PUBLIC WORKS DEPARTMENT  
HYDROLOGY DIVISION

Prepared by



**Smith Engineering Company**

A Full Service Engineering Company

Eric

DRAFT REPORT: MAY, 1997

PDR-2

**TABLE 1**  
**WEST MESA DIVERSION PROJECT**  
**DRAINAGE ANALYSIS**  
**LAND TREATMENTS**

ZONE DESIGNATION	LAND TREATMENTS			
	"A"	"B"	"C"	"D"
<u>RESIDENTIAL</u>				
R-1		43		57
R-2		30		70
<u>INDUSTRIAL</u>				
IP		20		80
<u>COMMERCIAL</u>				
C-1		10		90
C-2		10		90
C-3		10		90
<u>SCHOOLS</u>				
WEST MESA HIGH SCHOOL		50		50
<u>PARKS</u>				
SUB-BASIN C6-D		93		7
<u>NMSHTD RIGHT OF WAY</u>				
<u>SUB-BASINS</u>				
I-40D-1 & I-40D-2	75			25
I-40D-3, I-40D-4, I-40D-5	36			64

Percent land treatment "D" taken from Table A-5, DPM Section 22.2

PDR-2

2-48" CMP

D4

64AD

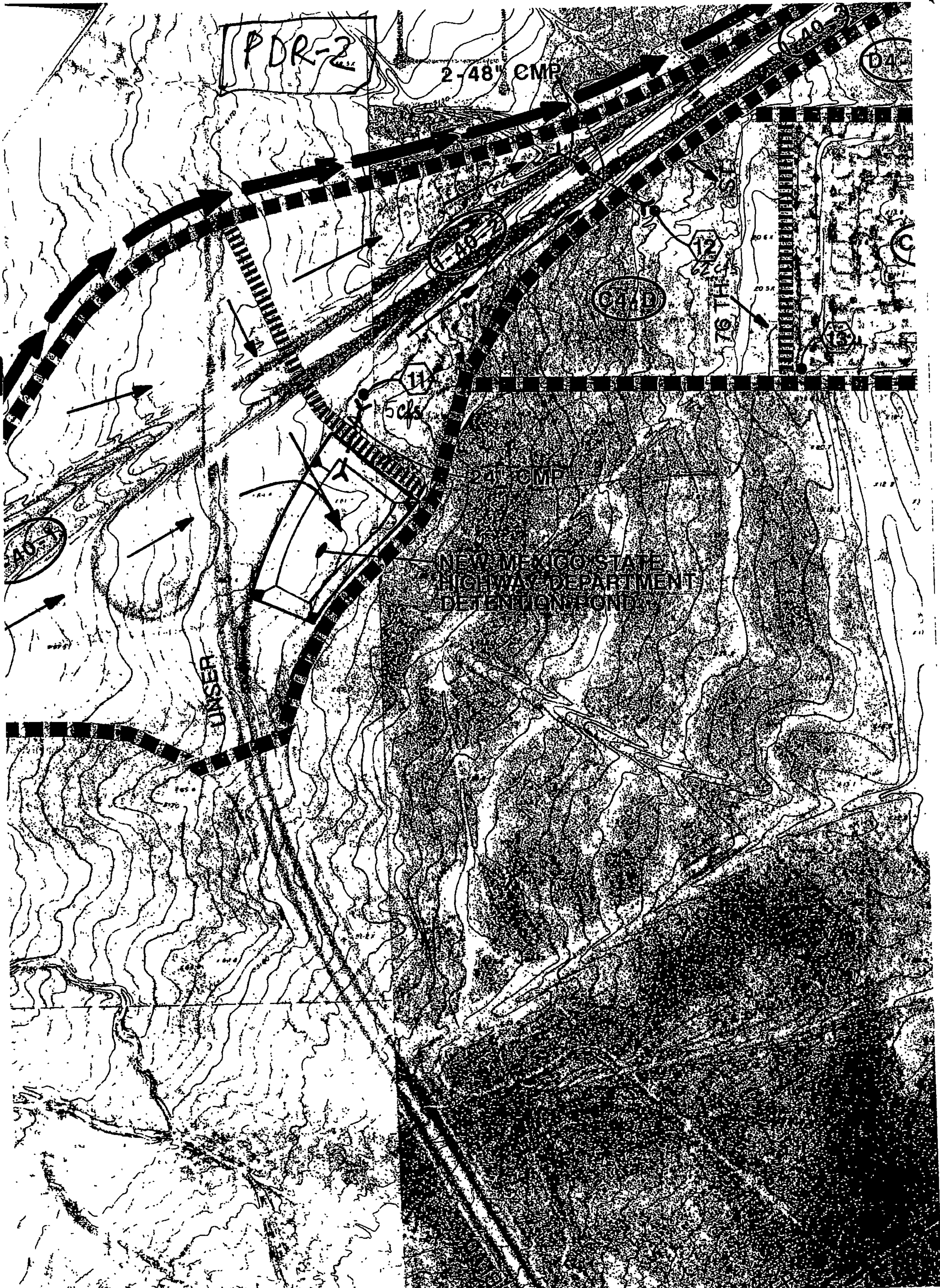
11

50 ft

2-48" CMP

NEW MEXICO STATE  
HIGHWAY DEPARTMENT  
DEFINITION FOND

UNSER



# SUMMARY OF PEAK DISCHARGES AND PEAK VOLUMES

ALTERNATIVE 2A1

DEVELOPED CONDITIONS

(ALL FLOWS INCLUDE A 2.5% BULKING FACTOR)

ANALYSIS POINT	Q(10) (6hr) (cfs)	V(10) (24hr) (ac-ft)	Q(100) (6hr) (cfs)	V(100) (24hr) (ac-ft)
1	55	1.3	88	7.1
2	27	1.4	42	2.3
3	48	2.0	76	3.2
4	60	3.2	94	6.2
5	107	8.9	173	13.5
6	57	3.1	93	6.1
7	162	12.0	261	19.6
8	26	1.1	43	1.8
9	196	14.3	320	23.5
10	19	1.2	30	1.9
11	2	2.1	5	1.6
12	27	3.2	62	7.0
13	75	5.5	141	10.8
14	118	7.6	215	14.3
15	121	1.8	220	13.0
16	137	8.9	241	16.8
16A	332	23.2	560	40.2
17	84	32.1	129	38.6
18	23	1.5	40	2.7
19	92	23.6	145	41.1
20	20	1.4	35	2.4
21	102	25.0	167	43.6
22	34	2.0	49	2.1
23	10	0.5	16	0.8
24	28	1.4	47	2.9
25	64	3.6	128	6.1
26	80	5.0	161	8.3
27	178	32.0	311	55.0
28	40	2.5	62	4.1
29	12	0.2	20	1.2
30	29	1.6	33	1.9
31	10	0.2	16	0.8
32	20	1.4	35	2.4

PDR-2

PDR-4

# **Drainage Report**

for

## **MERIDIAN BUSINESS PARK II**

**A Supplement to the  
Master Drainage Plan for  
Atrisco Business Park  
Dated September 1992  
Revised March 1993/ October 1993**

**Prepared by:**

**Wilson & Company, Inc.  
4900 Lang Ave NE  
Albuquerque, New Mexico 87109  
(505) 348-4191**

**August 2007  
WCI File No: 0760004400**

**WILSON  
& COMPANY**

Pond 3 & 3A will discharge a total of 2.2 cfs into the proposed 24" storm drain that will be located within this site and will tie into the existing 24" storm drain in Los Volcanes Road NW.

Pond 4 will have a discharge of 2 cfs into the proposed 24" SD that will run along Lot 1A in a 20' easement and will tie into the existing 24" SD in Los Volcanes Road NW.

An ultimate discharge of 9.2 cfs of the 13.3 cfs will discharge into the North/South Coors Connection, adhering to the Master Drainage Plan.

An extension of the storm drain in Fortuna Road NW will be required to collect the flow generated from Basin C4-D of the "West Mesa Diversion Project Drainage Analysis". This basin is comprised of Lots 185A, 184, 183, 182, and 181. Per this Drainage Analysis, a discharge of 3.76 cfs/acre to the street was determined for the fully developed conditions. Refer to Table 3 below for the allowable discharge.

Table 3: Summary of Allowable Free Discharge to Street – Fully Developed		
Lot	Area (acres)	100 <sup>year</sup> -24 <sup>hour</sup> Peak Flow (Q <sub>100</sub> ) cfs
185A	1.37	5.15
184	2.37	8.91
183	3.46	13.01
182	4.21	15.83
181	4.54	17.07

A street flow analysis was completed to determine the location of the of the storm drain extension. See Appendix A. Inlets will be provided at the return of Fortuna Road NW and Gallatin Place NW, and between Lots 182 and 181 with a 30" storm drain tying into the existing 30" cap provided.

Inlets will also be required in 76<sup>th</sup> Street to accommodate the 60 cfs generated from Basin 1-40-2 of the "West Mesa Diversion Project Drainage Analysis". These inlets will be located at the curb returns of 76<sup>th</sup> Street and Fortuna Road NW intersection. An extension of the 36" storm drain will be required from the east side of Mesa del Rio Street into the retention pond located in Tract A of the Cedar Ridge Estates.

### Conclusion

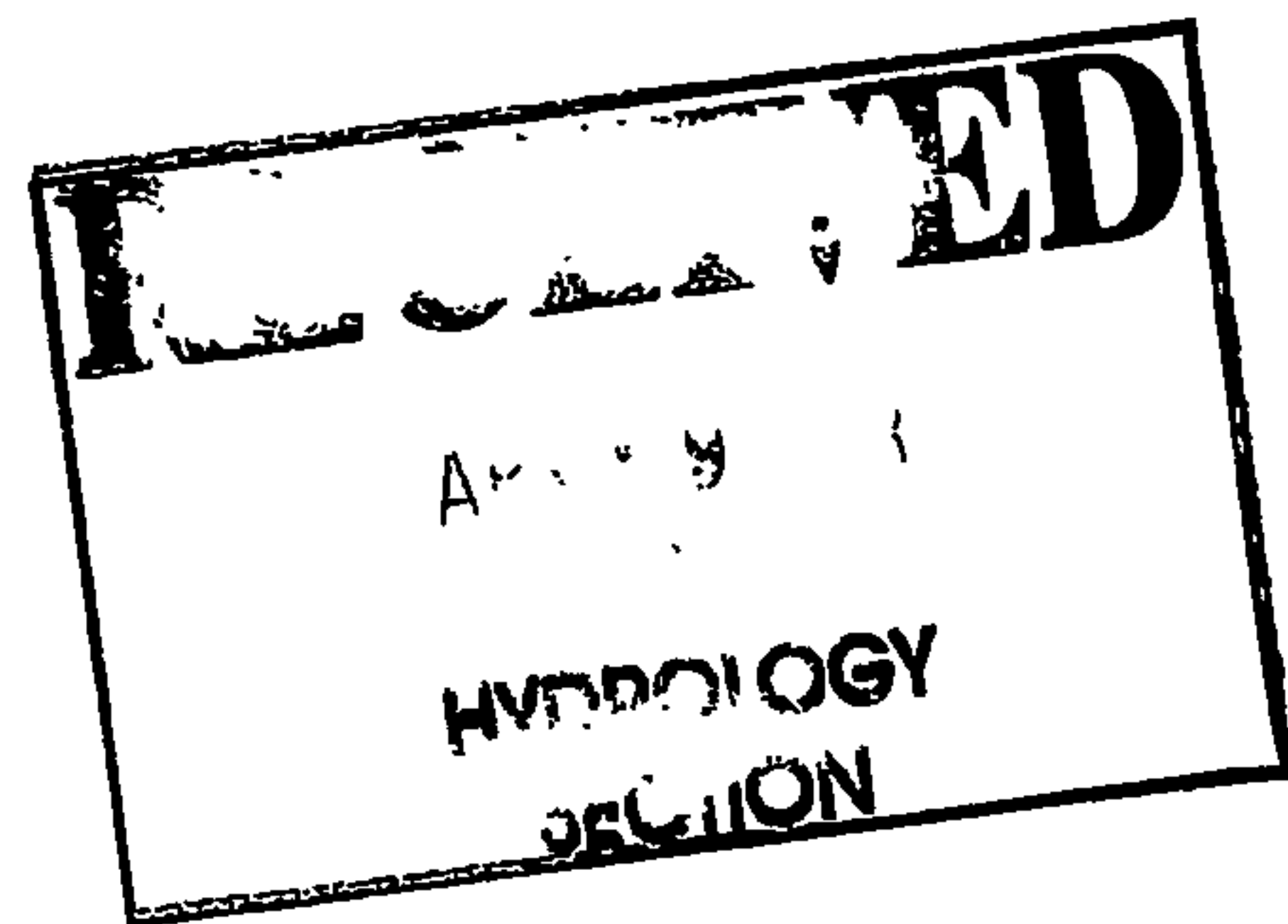
The development of Meridian Business Park II has been analyzed in this report. The project's design is adhering to the requirements of the approved "Master Drainage Plan for Atrisco Business Park" dated September 1992, Revised March 1993/October 1993, with an ultimate discharge of 9.2 cfs into the North/South Coors Connection Watershed. As part of this development a segment of Fortuna Road NW will be constructed. A portion of the drainage system will be required to be built with the roadway in accordance with the "West Mesa Diversion Project Drainage Analysis" as described above.

PDR-5

# Drainage Report

for

## FedEx Freight Albuquerque



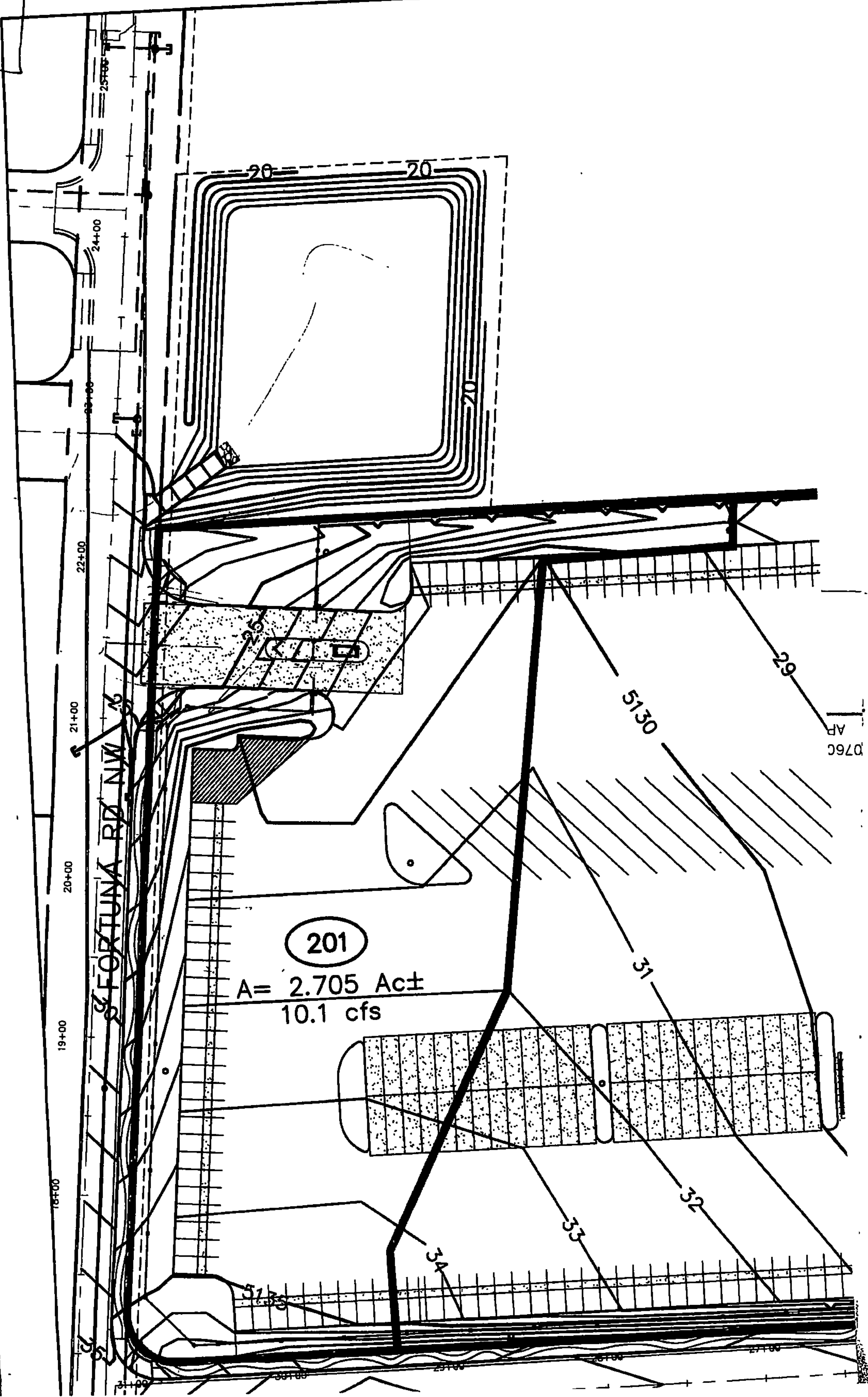
Prepared by:

**Wilson & Company, Inc.**  
4900 Lang Ave NE  
Albuquerque, New Mexico 87109  
(505) 348-4191

April 2008  
WCI File No: 0760004400

**WILSON**  
& COMPANY

"PDR-5"



AP 076C

FED-EX RUNDOWN IN BASIN  
201 (PDR-5) - NO CURB OPENING  
IN FORTUNARD TO CONVEY FLOWS  
TO TEMP. POND. —

FED-EX

WEST  
FORTUNA  
RD



"PDR-5"

MP. JMF  
CK. KLS/DSA  
DATE 11/30/07

**WILSON  
& COMPANY**

LOC. FILE 076000-4400  
PROJ. GALLATINE FORTUNA SHEET 1  
SUBJ. FORTUNA RD OF 1  
HYDROLOGY CALCS

FULLY DEVELOPED

FORTUNA RD SD MH-1

$$480 \text{ LF RDWY} \cdot 60 \text{ R/W} = 28,800 \text{ SF} = 0.66 \text{ ACRES}$$

$$\text{AREA D} = 0.66 \text{ ACRES} \quad \text{ZONE 1}$$

$$Q_p = 4.37 \text{ CFS/ACRE} \cdot 0.66 \text{ ACRES} = 2.88 \text{ CFS}$$

$$Q_{SSA} = 5.15 \text{ CFS}$$

$$Q_{RH} = 8.91 \text{ CFS}$$

$$Q_{SDMH-1} = Q_{RDWY} + Q_{SSA} + Q_{RH} = 2.88 + 5.15 + 8.91 = 16.94 \text{ CFS}$$

FORTUNA RD SD MH-2

$$420 \text{ LF RDWY} \cdot 60 \text{ R/W} = 25,200 \text{ LF} = 0.58 \text{ ACRES}$$

$$\text{AREA D} = 0.58 \text{ ACRES} \quad \text{ZONE 1}$$

$$Q_p = 4.37 \text{ CFS/ACRE} \cdot 0.58 \text{ ACRES} = 2.53 \text{ CFS}$$

$$Q_{R3} = 13.01 \text{ CFS}$$

$$Q_{R2} = 5.83 \text{ CFS}$$

$$Q_{R1} = 17.07 \text{ CFS}$$

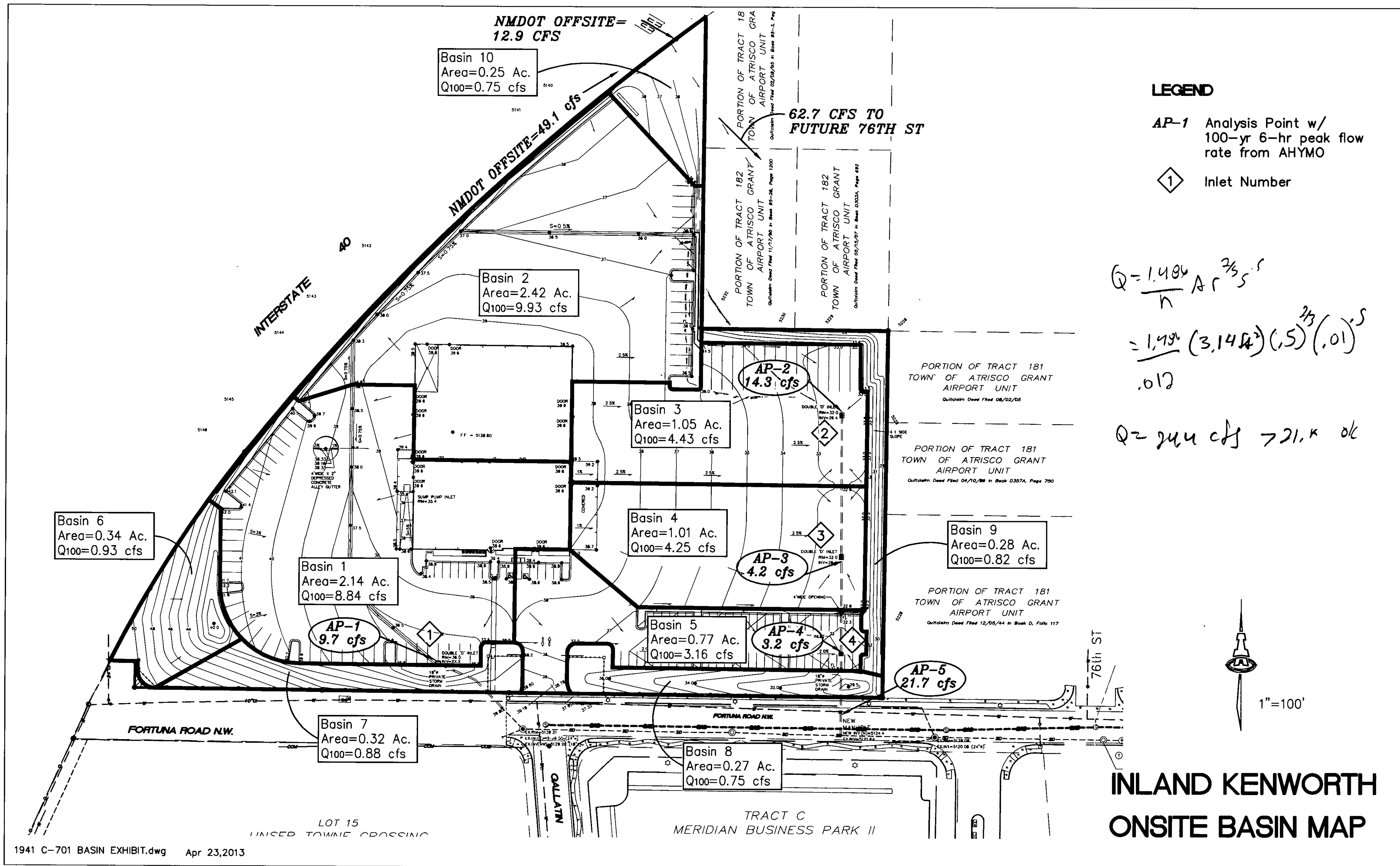
$$Q_{SDMH-2} = Q_{RDWY} + Q_{R3} + Q_{R2} + Q_{R1} = 2.53 + 13.01 + 5.83 + 17.07 = 48.44 \text{ CFS}$$

# ***APPENDIX B***

*Onsite Basin Map*

*Offsite NMDOT Drainage Basin Exhibit*

*Onsite AHYMO Calculations*



NOTES:

LEGAL DESCRIPTION:  
TRACT 185-A AND A PORTION OF TRACTS 182  
THRU 184 TOWN OF ATRISCO GRANT AIRPORT  
UNIT, CITY OF ALBUQUERQUE, BERNALILLO  
COUNTY, NEW MEXICO

SITE AREA: 8.86 ACRES

FLOOD ZONE: PER FEMA MAP 35001C0326H, THE SITE FALLS  
WITHIN FLOODZONE X DESIGNATED AS AREAS  
OUTSIDE THE 0.2-PERCENT-ANNUAL-CHANCE  
FLOODPLAIN

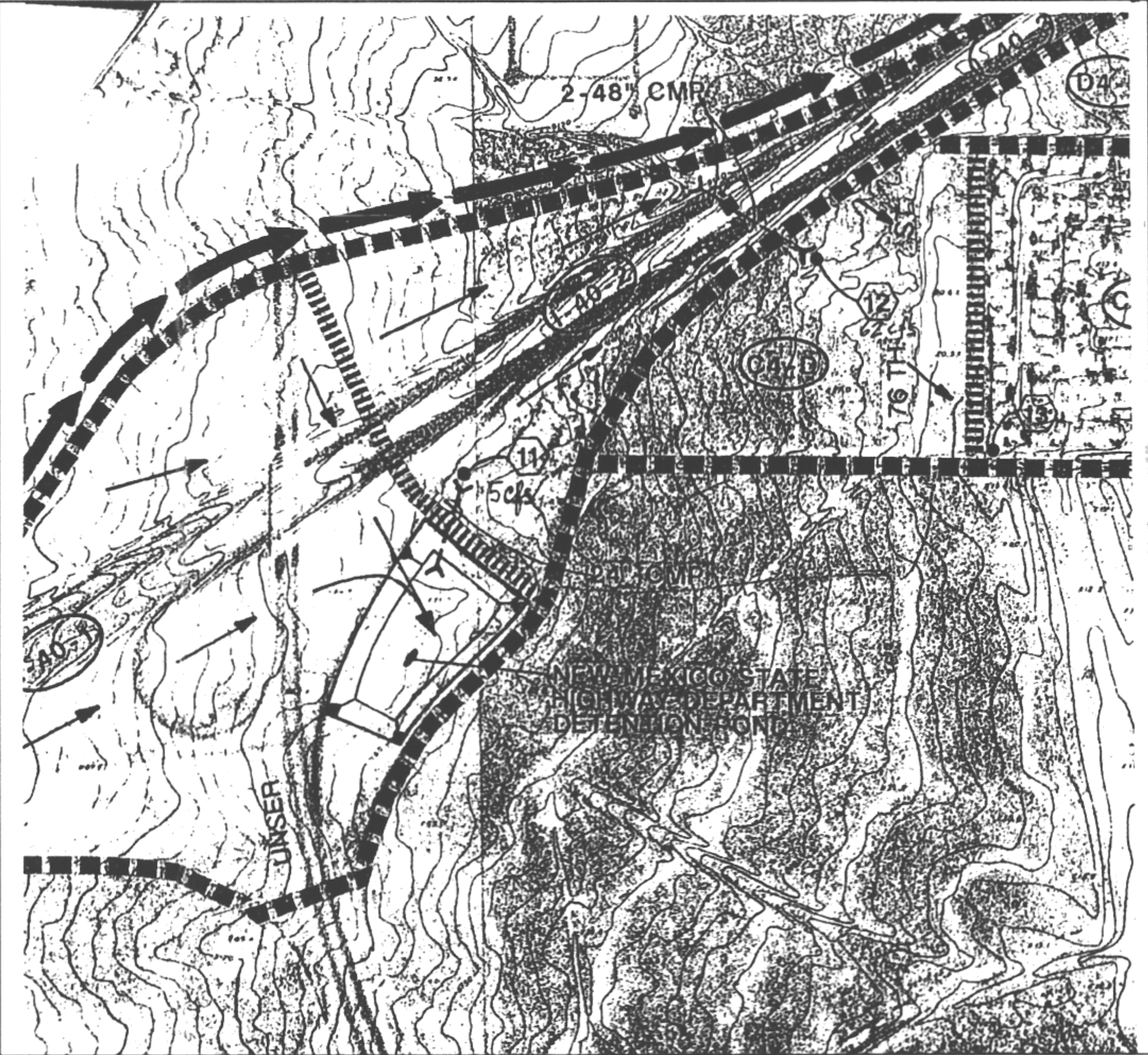
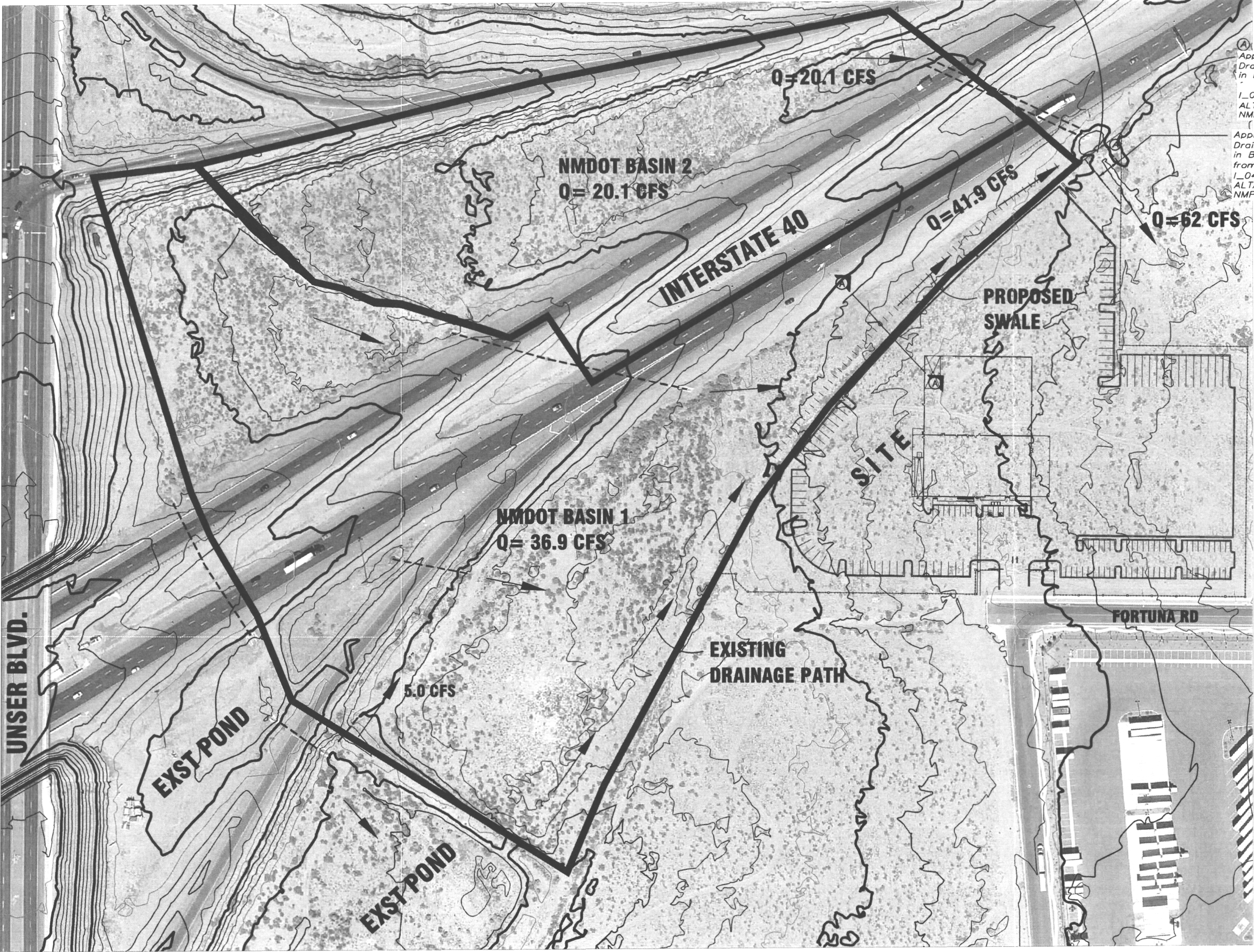
CONTOURS: BERNALILLO COUNTY CONTOURS, 2' INTERVAL

PER THE WEST MESA DIVERSION PROJECT, OFFSITE FLOWS FROM  
NMDOT RIGHT-OF-WAY SHALL BE DIVERTED TO THE 2'-48" CMP  
CULVERTS AT THE NORTHWEST CORNER OF THE SITE. SEE DRAINAGE  
MAP THIS SHEET FROM THE WEST MESA DIVERSION PROJECT  
DRAINAGE ANALYSIS BY SMITH ENGINEERING CO., MAY 1997.

THE PORTION OF THE OFFSITE BASIN CONTRIBUTING TO THE  
SURFACE FLOW ADJACENT TO THE SITE IS SHOWN ON THE NMDOT  
BASIN MAP BELOW.

THERE IS A DEFINED DRAINAGE PATH SOUTH OF THE SITE. THIS  
DRAINAGE PATH ENDS AT THE SOUTH END OF THE SITE, AND FLOWS  
ENTER THE PROPERTY. A SWALE WILL BE GRADED ALONG THE  
WEST PROPERTY LINE TO DIRECT THE OFFSITE FLOWS TO THE  
EXISTING DRAINAGE SWALE IN THE NMDOT EASEMENT AT THE  
NORTHWEST CORNER OF THE SITE. NMDOT DID NOT APPROVE  
GRADING WITHIN THE NMDOT RIGHT-OF-WAY.

NMDOT DRNG  
EASEMENT



DRAINAGE MAP FROM WEST MESA DIVERSION PROJECT  
DRAINAGE ANALYSIS BY SMITH ENGINEERING CO., MAY 1997

BASIN NO.	1	DESCRIPTION	BASIN DRAINING TO NMDOT EASEMENT
Area of basin flows =	780637 SF		17.9 Ac
The following calculations are based on Treatment areas as shown in table to the right			
Sub-basin Weighted Excess Precipitation (see formula above)			LAND TREATMENT
Weighted E = 0.82 in			A = 75%
Sub-basin Volume of Runoff (see formula above)			B = 0%
V <sub>360</sub> = 53506 CF			C = 0%
Sub-basin Peak Discharge Rate: (see formula above)			D = 25%
Q <sub>p</sub> = 36.9 cfs			
BASIN NO.	2	DESCRIPTION	BASIN DRAINING TO CULVERT & NMDOT EASEMENT
Area of basin flows =	424720 SF		9.8 Ac
The following calculations are based on Treatment areas as shown in table to the right			
Sub-basin Weighted Excess Precipitation (see formula above)			LAND TREATMENT
Weighted E = 0.82 in			A = 75%
Sub-basin Volume of Runoff (see formula above)			B = 0%
V <sub>360</sub> = 29111 CF			C = 0%
Sub-basin Peak Discharge Rate: (see formula above)			D = 25%
Q <sub>p</sub> = 20.1 cfs			

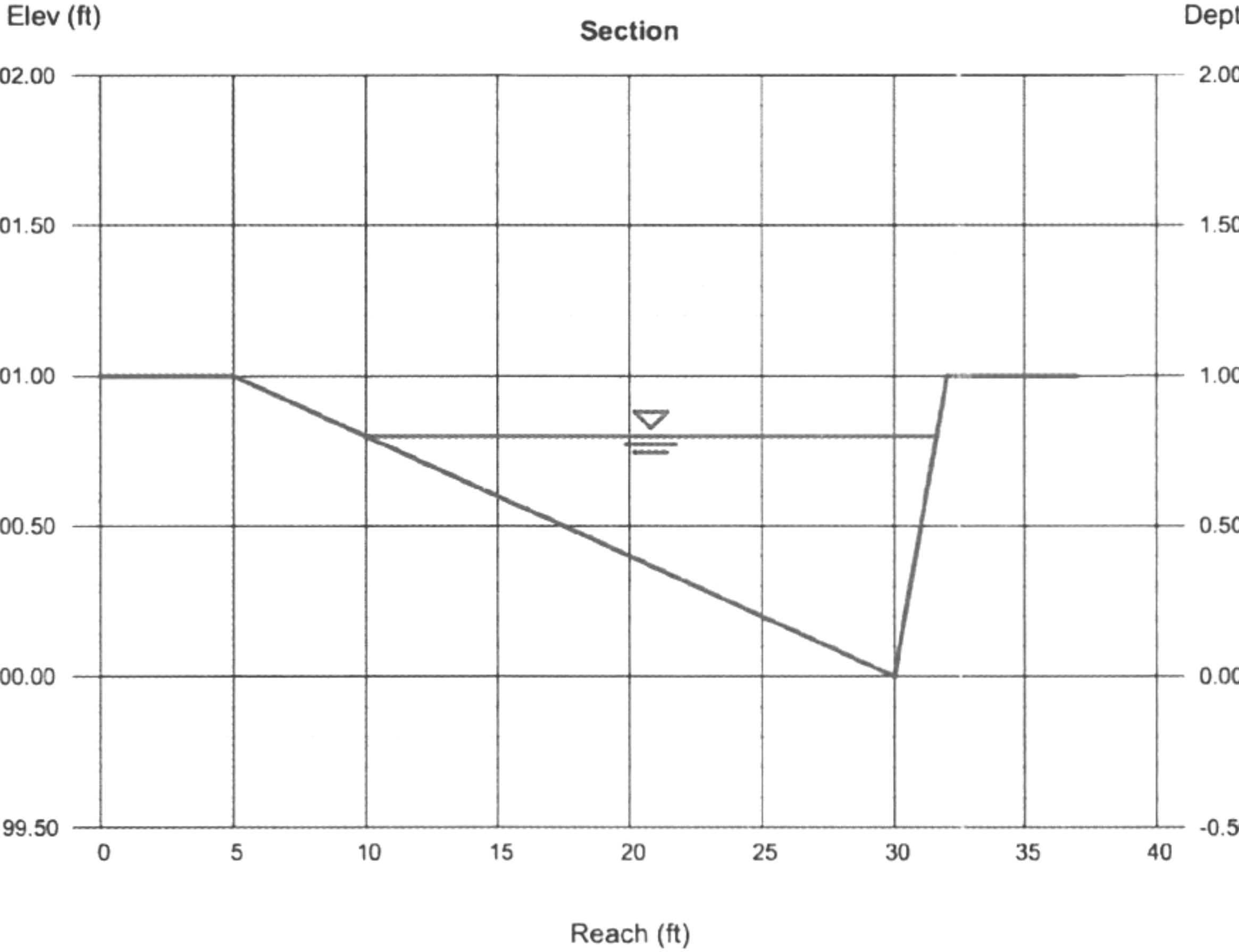
DRAINAGE CALCULATIONS FOR OFFSITE NMDOT BASINS  
LAND TREATMENTS FROM WEST MESA DIVERSION PROJECT DRAINAGE ANALYSIS

Channel Report

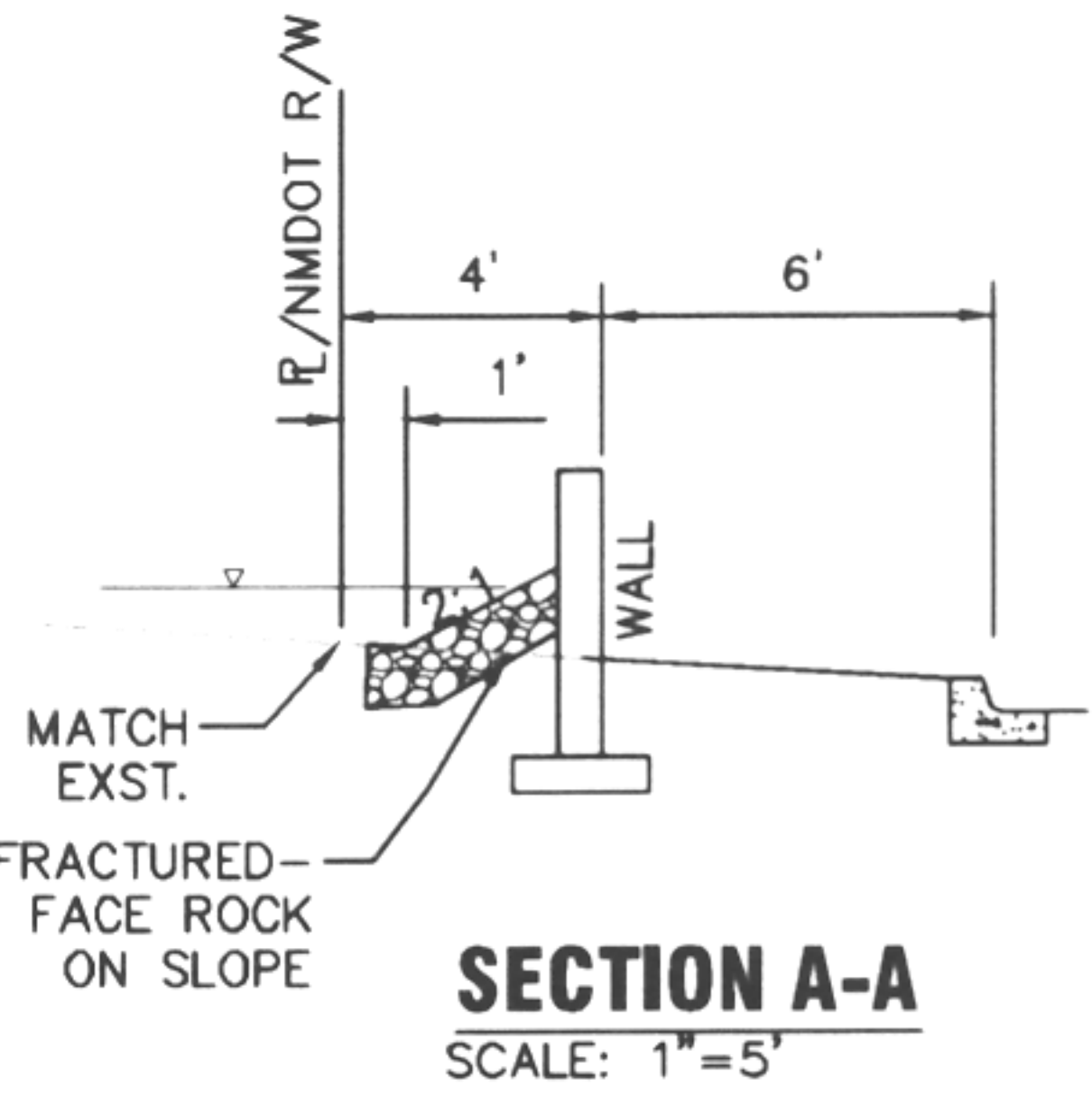
Hydroware Express Extension for AutoCAD® Civil 3D® 2013 by Autodesk, Inc. Friday, Apr 5 2013

DEFLECTION SWALE ADJACENT TO NMDOT RIGHT-OF-WAY

Triangular		Highlighted	
Side Slopes (z:1)	= 25.00, 2.00	Depth (ft)	= 0.80
Total Depth (ft)	= 1.00	Q (cfs)	= 41.90
		Area (sqft)	= 8.64
Invert Elev (ft)	= 100.00	Velocity (ft/s)	= 4.85
Slope (%)	= 1.50	Wetted Perim (ft)	= 21.80
N-Value	= 0.020	Crit Depth, Yc (ft)	= 0.91
		Top Width (ft)	= 21.60
		EGL (ft)	= 1.17
Calculations			
Compute by:	Known Q		
Known Q (cfs)	= 41.90		



DIVERSION SWALE



ISAACSON & ARFMAN, P.A.  
Consulting Engineering Associates  
128 Monroe Street N.E.  
Albuquerque, New Mexico 87108  
Ph: 505-268-8828 www.isaacson.com  
1941 C-701 NMDOT EXH.dwg Apr 05,2013

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INLAND KENWORTH  
FORTUNA WEST OF 76TH STREET

OFFSITE NMDOT DRAINAGE BASIN

Date:	No.	Revision:	Date:	Job No.
4/5/13				
Drawn By:				PAGE
ANW				SH OF
Chk By:				

**1941--INLAND KENWORTH**  
**ONSITE BASIN AREAS AND LAND TREATMENTS**

BASIN	AREA			LAND TREATMENTS			
	SF	AC.	SQ. MI.	%A	%B	%C	%D
1	93093	2.14	0.003339	0	2	2	96
2	105431	2.42	0.003782	0	3	3	94
3	45878	1.05	0.001646	0	0	0	100
4	44050	1.01	0.001580	0	0	0	100
5	33394	0.77	0.001198	0	3	3	94
6	14865	0.34	0.000533	0	35	65	0
7	13984	0.32	0.000502	0	35	65	0
8	11915	0.27	0.000427	0	35	65	0
9	12032	0.28	0.000432	0	35	65	0
10	11092	0.25	0.000398	0	35	65	0
		8.86	0.013836				



NOAA Atlas 14, Volume 1, Version 5  
 Location name: Albuquerque, New Mexico, US\*  
 Coordinates: 35.0953, -106.7234  
 Elevation: 5128ft\*  
 \* source Google Maps



### POINT PRECIPITATION FREQUENCY ESTIMATES

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

NOAA, National Weather Service, Silver Spring, Maryland

[PF\\_tabular](#) | [PF\\_graphical](#) | [Maps & aerals](#)

### PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches) <sup>1</sup>										
Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	0.165 (0.141-0.193)	0.214 (0.183-0.250)	0.288 (0.245-0.336)	0.346 (0.294-0.402)	0.425 (0.359-0.493)	0.487 (0.410-0.565)	0.552 (0.461-0.641)	0.622 (0.516-0.721)	0.717 (0.588-0.832)	0.792 (0.645-0.919)
10-min	0.251 (0.216-0.293)	0.326 (0.278-0.380)	0.438 (0.372-0.511)	0.526 (0.447-0.612)	0.647 (0.546-0.751)	0.741 (0.623-0.860)	0.841 (0.702-0.975)	0.948 (0.785-1.10)	1.09 (0.895-1.27)	1.21 (0.982-1.40)
15-min	0.311 (0.267-0.363)	0.404 (0.345-0.471)	0.543 (0.462-0.634)	0.652 (0.554-0.758)	0.802 (0.677-0.931)	0.919 (0.773-1.07)	1.04 (0.870-1.21)	1.17 (0.974-1.36)	1.35 (1.11-1.57)	1.49 (1.22-1.73)
30-min	0.419 (0.360-0.489)	0.544 (0.464-0.634)	0.731 (0.622-0.853)	0.878 (0.746-1.02)	1.08 (0.912-1.25)	1.24 (1.04-1.44)	1.40 (1.17-1.63)	1.58 (1.31-1.83)	1.82 (1.50-2.12)	2.01 (1.64-2.34)
60-min	0.519 (0.445-0.605)	0.673 (0.575-0.785)	0.905 (0.770-1.06)	1.09 (0.923-1.26)	1.34 (1.13-1.55)	1.53 (1.29-1.78)	1.74 (1.45-2.02)	1.96 (1.62-2.27)	2.26 (1.85-2.62)	2.49 (2.03-2.89)
2-hr	0.589 (0.505-0.697)	0.754 (0.644-0.893)	1.00 (0.852-1.18)	1.20 (1.02-1.41)	1.48 (1.24-1.73)	1.70 (1.42-1.99)	1.94 (1.61-2.27)	2.19 (1.80-2.55)	2.55 (2.07-2.97)	2.84 (2.28-3.31)
3-hr	0.639 (0.553-0.752)	0.812 (0.701-0.958)	1.07 (0.922-1.25)	1.27 (1.09-1.49)	1.55 (1.32-1.82)	1.78 (1.51-2.08)	2.02 (1.71-2.36)	2.28 (1.91-2.66)	2.64 (2.18-3.08)	2.94 (2.40-3.44)
6-hr	0.738 (0.643-0.860)	0.932 (0.814-1.09)	1.20 (1.05-1.40)	1.42 (1.23-1.65)	1.72 (1.48-1.98)	1.94 (1.67-2.25)	2.19 (1.87-2.53)	2.44 (2.07-2.82)	2.80 (2.35-3.24)	3.09 (2.57-3.58)
12-hr	0.825 (0.725-0.941)	1.04 (0.916-1.19)	1.32 (1.16-1.51)	1.54 (1.35-1.76)	1.84 (1.60-2.09)	2.07 (1.80-2.35)	2.31 (1.99-2.62)	2.56 (2.19-2.90)	2.90 (2.46-3.29)	3.17 (2.67-3.61)
24-hr	0.927 (0.819-1.05)	1.16 (1.03-1.32)	1.45 (1.29-1.65)	1.68 (1.49-1.90)	2.00 (1.76-2.26)	2.24 (1.96-2.52)	2.49 (2.18-2.80)	2.74 (2.38-3.08)	3.08 (2.66-3.46)	3.34 (2.88-3.76)
2-day	0.980 (0.873-1.10)	1.23 (1.10-1.38)	1.53 (1.37-1.71)	1.77 (1.58-1.98)	2.09 (1.85-2.33)	2.33 (2.06-2.60)	2.59 (2.28-2.88)	2.84 (2.49-3.17)	3.18 (2.77-3.55)	3.44 (2.99-3.85)
3-day	1.11 (0.999-1.22)	1.38 (1.25-1.52)	1.70 (1.54-1.88)	1.96 (1.76-2.16)	2.30 (2.07-2.53)	2.56 (2.29-2.81)	2.82 (2.52-3.10)	3.08 (2.75-3.40)	3.43 (3.05-3.79)	3.70 (3.27-4.09)
4-day	1.23 (1.13-1.35)	1.53 (1.40-1.67)	1.87 (1.71-2.04)	2.14 (1.95-2.33)	2.50 (2.28-2.73)	2.78 (2.53-3.03)	3.05 (2.77-3.32)	3.33 (3.01-3.62)	3.69 (3.32-4.02)	3.96 (3.55-4.33)
7-day	1.41 (1.29-1.53)	1.75 (1.60-1.90)	2.12 (1.95-2.30)	2.41 (2.21-2.62)	2.79 (2.56-3.02)	3.08 (2.82-3.33)	3.36 (3.07-3.64)	3.63 (3.31-3.93)	3.98 (3.62-4.31)	4.23 (3.84-4.59)
10-day	1.56 (1.43-1.69)	1.93 (1.77-2.10)	2.36 (2.17-2.56)	2.69 (2.48-2.92)	3.14 (2.88-3.39)	3.47 (3.17-3.74)	3.80 (3.47-4.10)	4.12 (3.76-4.45)	4.54 (4.12-4.91)	4.85 (4.39-5.24)
20-day	1.95 (1.79-2.12)	2.42 (2.22-2.63)	2.93 (2.69-3.18)	3.32 (3.05-3.60)	3.81 (3.49-4.13)	4.16 (3.81-4.51)	4.50 (4.12-4.87)	4.82 (4.41-5.21)	5.22 (4.76-5.65)	5.50 (5.01-5.96)
30-day	2.34 (2.15-2.53)	2.89 (2.66-3.13)	3.48 (3.20-3.76)	3.91 (3.59-4.22)	4.45 (4.08-4.79)	4.83 (4.43-5.20)	5.19 (4.76-5.58)	5.52 (5.06-5.94)	5.92 (5.41-6.37)	6.19 (5.66-6.67)
45-day	2.85 (2.63-3.08)	3.52 (3.26-3.81)	4.19 (3.87-4.52)	4.67 (4.31-5.03)	5.24 (4.85-5.65)	5.63 (5.21-6.06)	5.98 (5.53-6.43)	6.28 (5.81-6.75)	6.61 (6.13-7.11)	6.81 (6.33-7.31)
60-day	3.28 (3.03-3.55)	4.06 (3.75-4.39)	4.83 (4.47-5.22)	5.38 (4.98-5.81)	6.05 (5.59-6.52)	6.50 (6.01-7.00)	6.90 (6.39-7.44)	7.26 (6.72-7.83)	7.67 (7.10-8.26)	7.91 (7.35-8.52)

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

[Back to Top](#)

### PF graphical

```

RUN DATE (MON/DAY/YR) =04/04/2013
USER NO.= AHYMO_Temp_User:20122010

```

```
TIME=      0.00
RAIN6=     2.190
```

COMMAND		HYDROGRAPH IDENTIFICATION	FROM ID NO.	TO ID NO.	AREA (SQ MI)	PEAK DISCHARGE (CFS)	RUNOFF VOLUME (AC-FT)	RUNOFF (INCHES)	TIME TO PEAK (HOURS)	CFS PER ACRE	PAGE = 2 NOTATION
*S ADD FLOWS AT INLET 2											
*S * * * AP 2 * * *											
ADD HYD		112.00	2& 3	12	0.00543	14.36	0.548	1.89342	1.500	4.133	
*S ADD FLOWS FROM INLETS 2, 3 & 4 -											
*S TOTAL FLOWS AT EAST SD CONNECTION											
*S * * * AP 5 * * *											
222	ADD HYD	113.00	12& 4	13	0.00701	18.61	0.711	1.90347	1.500	4.148	
	ADD HYD	114.00	13& 5	14	0.00821	21.76	0.831	1.89915	1.500	4.144	
*S TOTAL FLOW TO FORTUNA RD SD											
	ADD HYD	115.00	11&14	15	0.01205	31.45	1.193	1.85665	1.500	4.079	
*S TOTAL FLOW RETAINED IN LANDSCAPE AREAS											
	ADD HYD	116.00	6& 8	16	0.00096	1.68	0.046	0.90444	1.533	2.729	
	ADD HYD	117.00	16& 9	17	0.00139	2.49	0.069	0.92787	1.533	2.798	
FINISH											

AHYMO PROGRAM (AHYMO-S4)

- Version: S4.01a - Rel: 01a

RUN DATE (MON/DAY/YR) = 04/04/2013

START TIME (HR:MIN:SEC) = 15:05:04

USER NO.= AHYMO\_Temp\_User:20122010

INPUT FILE = C:\Users\Public\AHYMOdata\1941.DAT

\*S\*\*\*\*\*

\*S INLAND KENWORTH

\*S 100-YR, 6-HR STORM

\*S 1941.DAT

\*S BY ASA NILSSON-WEBER

\*S ISAACSON & ARFMAN, P.A.

\*S APRIL, 2013

\*S

\*S LATITUDE: 35.095263; LONGITUDE: -106.723423

\*S NOAA ATLAS 14

\*S\*\*\*\*\*

START RAINFALL BEGINS AT 0.0 HRS

RAINFALL TYPE=1 RAIN QUARTER=0 RAIN ONE=1.74

RAIN SIX=2.19 RAIN DAY=2.49 DT=0.03333HR

6-HOUR RAINFALL DIST. - BASED ON NOAA ATLAS 14 FOR CONVECTIVE AREAS (NM & AZ) - D1

DT = 0.033330 HOURS END TIME = 5.999400 HOURS

0.0000	0.0020	0.0040	0.0061	0.0083	0.0105	0.0130
0.0154	0.0181	0.0209	0.0237	0.0299	0.0360	0.0426
0.0495	0.0564	0.0639	0.0714	0.0791	0.0870	0.0948
0.1031	0.1113	0.1200	0.1292	0.1384	0.1487	0.1590
0.1726	0.1893	0.2061	0.2286	0.2511	0.2780	0.3094
0.3409	0.3881	0.4353	0.4995	0.5810	0.6625	0.8792
1.0963	1.2655	1.3859	1.5062	1.5670	1.6275	1.6769
1.7150	1.7531	1.7795	1.8060	1.8289	1.8482	1.8675
1.8822	1.8968	1.9090	1.9188	1.9285	1.9372	1.9458
1.9538	1.9610	1.9682	1.9748	1.9815	1.9880	1.9944
2.0008	2.0038	2.0068	2.0098	2.0127	2.0156	2.0183
2.0210	2.0237	2.0263	2.0289	2.0315	2.0340	2.0365
2.0389	2.0413	2.0436	2.0460	2.0482	2.0505	2.0528
2.0549	2.0571	2.0592	2.0613	2.0634	2.0654	2.0675
2.0695	2.0714	2.0734	2.0753	2.0772	2.0791	2.0810
2.0828	2.0847	2.0865	2.0883	2.0901	2.0919	2.0936
2.0954	2.0971	2.0988	2.1005	2.1022	2.1039	2.1056
2.1072	2.1089	2.1105	2.1121	2.1137	2.1153	2.1169
2.1185	2.1200	2.1216	2.1231	2.1246	2.1262	2.1277
2.1292	2.1306	2.1321	2.1336	2.1350	2.1365	2.1379
2.1394	2.1408	2.1422	2.1436	2.1450	2.1463	2.1477
2.1491	2.1504	2.1518	2.1531	2.1545	2.1558	2.1571
2.1584	2.1597	2.1610	2.1623	2.1636	2.1648	2.1661
2.1674	2.1686	2.1698	2.1711	2.1723	2.1735	2.1747
2.1760	2.1772	2.1784	2.1795	2.1807	2.1819	2.1831
2.1842	2.1854	2.1866	2.1877	2.1888	2.1900	

\*S

\*S ONSITE BASINS-DEVELOPED CONDITION

\*S

\*S BASIN 1 - TO INLET 1 WEST OF ENTRANCE

COMPUTE NM HYD ID=1 HYD NO=100 AREA=0.003339 SQ MI

PER A=0 PER B=2 PER C=2 PER D=96

TP=-0.1333 HR MASS RAIN=-1

K = 0.072649HR TP = 0.133300HR K/TP RATIO = 0.545000 SHAPE CONSTANT, N = 7.106428

UNIT PEAK = 12.655 CFS UNIT VOLUME = 0.9985 B = 526.28 P60 = 1.7400

AREA = 0.003205 SQ MI IA = 0.10000 INCHES INF = 0.04000 INCHES PER HOUR

RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = 0.033330

K = 0.118840HR TP = 0.133300HR K/TP RATIO = 0.891522 SHAPE CONSTANT, N = 3.977611

UNIT PEAK = 0.35437 CFS UNIT VOLUME = 0.9634 B = 353.68 P60 = 1.7400

AREA = 0.000134 SQ MI IA = 0.42500 INCHES INF = 1.04000 INCHES PER HOUR

RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = 0.033330

PRINT HYD ID=1 CODE=1

PARTIAL HYDROGRAPH 100.00

RUNOFF VOLUME = 1.89545 INCHES = 0.3375 ACRE-FEET

PEAK DISCHARGE RATE = 8.84 CFS AT 1.500 HOURS BASIN AREA = 0.0033 SQ. MI.

\*S BASIN 2 - TO PCC RUNDOWN AND ONSITE INLET 2

COMPUTE NM HYD ID=2 HYD NO=200 AREA=0.003782 SQ MI

PER A=0 PER B=3 PER C=3 PER D=94

TP=-0.1333 HR MASS RAIN=-1  
K = 0.072649HR TP = 0.133300HR K/TP RATIO = 0.545000 SHAPE CONSTANT, N = 7.106428  
UNIT PEAK = 14.036 CFS UNIT VOLUME = 0.9985 B = 526.28 P60 = 1.7400  
AREA = 0.003555 SQ MI IA = 0.10000 INCHES INF = 0.04000 INCHES PER HOUR  
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = 0.033330

K = 0.118840HR TP = 0.133300HR K/TP RATIO = 0.891522 SHAPE CONSTANT, N = 3.977611  
UNIT PEAK = 0.60208 CFS UNIT VOLUME = 0.9773 B = 353.68 P60 = 1.7400  
AREA = 0.000227 SQ MI IA = 0.42500 INCHES INF = 1.04000 INCHES PER HOUR  
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = 0.033330  
PRINT HYD ID=2 CODE=1

PARTIAL HYDROGRAPH 200.00

RUNOFF VOLUME = 1.87409 INCHES = 0.3780 ACRE-FEET  
PEAK DISCHARGE RATE = 9.93 CFS AT 1.500 HOURS BASIN AREA = 0.0038 SQ. MI.

\*S BASIN 3 - TO INLET 2

COMPUTE NM HYD ID=3 HYD NO=300 AREA=0.001646 SQ MI  
PER A=0 PER B=0 PER C=0 PER D=100  
TP=-0.1333 HR MASS RAIN=-1  
K = 0.072649HR TP = 0.133300HR K/TP RATIO = 0.545000 SHAPE CONSTANT, N = 7.106428  
UNIT PEAK = 6.4985 CFS UNIT VOLUME = 0.9976 B = 526.28 P60 = 1.7400  
AREA = 0.001646 SQ MI IA = 0.10000 INCHES INF = 0.04000 INCHES PER HOUR  
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = 0.033330  
PRINT HYD ID=3 CODE=1

HYDROGRAPH FROM AREA 300.00

RUNOFF VOLUME = 1.93818 INCHES = 0.1701 ACRE-FEET  
PEAK DISCHARGE RATE = 4.43 CFS AT 1.500 HOURS BASIN AREA = 0.0016 SQ. MI.

\*S BASIN 4-TO INLET 3

\*S \* \* \* AP 3 \* \* \*  
COMPUTE NM HYD ID=4 HYD NO=400 AREA=0.001580 SQ MI  
PER A=0 PER B=0 PER C=0 PER D=100  
TP=-0.1333 HR MASS RAIN=-1  
K = 0.072649HR TP = 0.133300HR K/TP RATIO = 0.545000 SHAPE CONSTANT, N = 7.106428  
UNIT PEAK = 6.2379 CFS UNIT VOLUME = 0.9976 B = 526.28 P60 = 1.7400  
AREA = 0.001580 SQ MI IA = 0.10000 INCHES INF = 0.04000 INCHES PER HOUR  
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = 0.033330  
PRINT HYD ID=4 CODE=1

HYDROGRAPH FROM AREA 400.00

RUNOFF VOLUME = 1.93818 INCHES = 0.1633 ACRE-FEET  
PEAK DISCHARGE RATE = 4.25 CFS AT 1.500 HOURS BASIN AREA = 0.0016 SQ. MI.

\*S BASIN 5 - TO INLET 4

\*S \* \* \* AP 4 \* \* \*  
COMPUTE NM HYD ID=5 HYD NO=500 AREA=0.001198 SQ MI  
PER A=0 PER B=3 PER C=3 PER D=94  
TP=-0.1333 HR MASS RAIN=-1  
K = 0.072649HR TP = 0.133300HR K/TP RATIO = 0.545000 SHAPE CONSTANT, N = 7.106428  
UNIT PEAK = 4.4460 CFS UNIT VOLUME = 0.9969 B = 526.28 P60 = 1.7400  
AREA = 0.001126 SQ MI IA = 0.10000 INCHES INF = 0.04000 INCHES PER HOUR  
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = 0.033330  
K = 0.118840HR TP = 0.133300HR K/TP RATIO = 0.891522 SHAPE CONSTANT, N = 3.977611  
UNIT PEAK = 0.19072 CFS UNIT VOLUME = 0.9292 B = 353.68 P60 = 1.7400  
AREA = 0.000072 SQ MI IA = 0.42500 INCHES INF = 1.04000 INCHES PER HOUR  
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = 0.033330  
PRINT HYD ID=5 CODE=1

OUTFLOW HYDROGRAPH RESERVOIR 500.00

RUNOFF VOLUME = 1.87409 INCHES = 0.1197 ACRE-FEET  
PEAK DISCHARGE RATE = 3.16 CFS AT 1.500 HOURS BASIN AREA = 0.0012 SQ. MI.

\*S BASIN 6 - WATER HARVESTING LANDSCAPE AREA

COMPUTE NM HYD ID=6 HYD NO=600 AREA=0.000533 SQ MI  
PER A=0 PER B=35 PER C=65 PER D=0  
TP=-0.1333 HR MASS RAIN=-1  
K = 0.114508HR TP = 0.133300HR K/TP RATIO = 0.859025 SHAPE CONSTANT, N = 4.139966  
UNIT PEAK = 1.4570 CFS UNIT VOLUME = 0.9916 B = 364.40 P60 = 1.7400  
AREA = 0.000533 SQ MI IA = 0.40250 INCHES INF = 0.97700 INCHES PER HOUR  
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = 0.033330

PRINT HYD ID=6 CODE=1

HYDROGRAPH FROM AREA 600.00

RUNOFF VOLUME = 0.90465 INCHES = 0.0257 ACRE-FEET  
PEAK DISCHARGE RATE = 0.93 CFS AT 1.533 HOURS BASIN AREA = 0.0005 SQ. MI.

\*S BASIN 7 - TO INLET 1 WEST OF ENTRANCE

COMPUTE NM HYD ID=7 HYD NO=700 AREA=0.000502 SQ MI  
PER A=0 PER B=35 PER C=65 PER D=0  
TP=-0.1333 HR MASS RAIN=-1

K = 0.114508HR TP = 0.133300HR K/TP RATIO = 0.859025 SHAPE CONSTANT, N = 4.139966  
UNIT PEAK = 1.3723 CFS UNIT VOLUME = 0.9907 B = 364.40 P60 = 1.7400  
AREA = 0.000502 SQ MI IA = 0.40250 INCHES INF = 0.97700 INCHES PER HOUR  
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = 0.033330

PRINT HYD ID=7 CODE=1

HYDROGRAPH FROM AREA 700.00

RUNOFF VOLUME = 0.90465 INCHES = 0.0242 ACRE-FEET  
PEAK DISCHARGE RATE = 0.88 CFS AT 1.533 HOURS BASIN AREA = 0.0005 SQ. MI.

\*S BASIN 8 - WATER HARVESTING LANDSCAPE AREA

COMPUTE NM HYD ID=8 HYD NO=800 AREA=0.000427 SQ MI  
PER A=0 PER B=35 PER C=65 PER D=0  
TP=-0.1333 HR MASS RAIN=-1

K = 0.114508HR TP = 0.133300HR K/TP RATIO = 0.859025 SHAPE CONSTANT, N = 4.139966  
UNIT PEAK = 1.1673 CFS UNIT VOLUME = 0.9887 B = 364.40 P60 = 1.7400  
AREA = 0.000427 SQ MI IA = 0.40250 INCHES INF = 0.97700 INCHES PER HOUR  
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = 0.033330

PRINT HYD ID=8 CODE=1

HYDROGRAPH FROM AREA 800.00

RUNOFF VOLUME = 0.90465 INCHES = 0.0206 ACRE-FEET  
PEAK DISCHARGE RATE = 0.75 CFS AT 1.533 HOURS BASIN AREA = 0.0004 SQ. MI.

\*S

\*S BASIN 9 - WATER HARVESTING LANDSCAPE AREA

COMPUTE NM HYD ID=9 HYD NO=900 AREA=0.000432 SQ MI  
PER A=0 PER B=5 PER C=95 PER D=0  
TP=-0.1333 HR MASS RAIN=-1

K = 0.105844HR TP = 0.133300HR K/TP RATIO = 0.794031 SHAPE CONSTANT, N = 4.515667  
UNIT PEAK = 1.2581 CFS UNIT VOLUME = 0.9897 B = 388.20 P60 = 1.7400  
AREA = 0.000432 SQ MI IA = 0.35750 INCHES INF = 0.85100 INCHES PER HOUR  
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = 0.033330

PRINT HYD ID=9 CODE=1

HYDROGRAPH FROM AREA 900.00

RUNOFF VOLUME = 0.98012 INCHES = 0.0226 ACRE-FEET  
PEAK DISCHARGE RATE = 0.82 CFS AT 1.533 HOURS BASIN AREA = 0.0004 SQ. MI.

\*S BASIN 10-TO FORTUNA SD VIA FUTURE 76TH ST

COMPUTE NM HYD ID=10 HYD NO=110 AREA=0.000398 SQ MI  
PER A=0 PER B=5 PER C=95 PER D=0  
TP=-0.1333 HR MASS RAIN=-1

K = 0.105844HR TP = 0.133300HR K/TP RATIO = 0.794031 SHAPE CONSTANT, N = 4.515667  
UNIT PEAK = 1.1591 CFS UNIT VOLUME = 0.9897 B = 388.20 P60 = 1.7400  
AREA = 0.000398 SQ MI IA = 0.35750 INCHES INF = 0.85100 INCHES PER HOUR  
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = 0.033330

PRINT HYD ID=10 CODE=1

PARTIAL HYDROGRAPH 110.00

RUNOFF VOLUME = 0.98012 INCHES = 0.0208 ACRE-FEET  
PEAK DISCHARGE RATE = 0.75 CFS AT 1.533 HOURS BASIN AREA = 0.0004 SQ. MI.

\*S ADD FLOWS AT INLET 1-TOTAL FLOWS AT WEST SD CONNECTION

\*S \* \* \* AP 1 \* \* \*

ADD HYD ID=11 HYD NO=111 ID I=1 ID II=7

PRINT HYD ID=11 CODE=1

PARTIAL HYDROGRAPH 111.00

RUNOFF VOLUME = 1.76585 INCHES = 0.3617 ACRE-FEET  
PEAK DISCHARGE RATE = 9.69 CFS AT 1.500 HOURS BASIN AREA = 0.0038 SQ. MI.

\*S

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*S ADD FLOWS AT INLET 2
*S * * * AP 2 * * *
ADD HYD ID=12 HYD NO=112 ID I=2 ID II=3
PRINT HYD ID=12 CODE=1
PARTIAL HYDROGRAPH 112.00

RUNOFF VOLUME = 1.89342 INCHES = 0.5481 ACRE-FEET
PEAK DISCHARGE RATE = 14.36 CFS AT 1.500 HOURS BASIN AREA = 0.0054 SQ. MI.

*S ADD FLOWS FROM INLETS 2, 3 & 4 -
*S TOTAL FLOWS AT EAST SD CONNECTION
*S * * * AP 5 * * *
ADD HYD ID=13 HYD NO=113 ID I=12 ID II=4
PRINT HYD ID=13 CODE=1
PARTIAL HYDROGRAPH 113.00

RUNOFF VOLUME = 1.90347 INCHES = 0.7114 ACRE-FEET
PEAK DISCHARGE RATE = 18.61 CFS AT 1.500 HOURS BASIN AREA = 0.0070 SQ. MI.

ADD HYD ID=14 HYD NO=114 ID I=13 ID II=5
PRINT HYD ID=14 CODE=1
PARTIAL HYDROGRAPH 114.00

RUNOFF VOLUME = 1.89915 INCHES = 0.8312 ACRE-FEET
PEAK DISCHARGE RATE = 21.76 CFS AT 1.500 HOURS BASIN AREA = 0.0082 SQ. MI.

*S TOTAL FLOW TO FORTUNA RD SD
ADD HYD ID=15 HYD NO=115 ID I=11 ID II=14
PRINT HYD ID=15 CODE=1
PARTIAL HYDROGRAPH 115.00

RUNOFF VOLUME = 1.85665 INCHES = 1.1929 ACRE-FEET
PEAK DISCHARGE RATE = 31.45 CFS AT 1.500 HOURS BASIN AREA = 0.0120 SQ. MI.

*S TOTAL FLOW RETAINED IN LANDSCAPE AREAS
ADD HYD ID=16 HYD NO=116 ID I=6 ID II=8
PRINT HYD ID=16 CODE=1
PARTIAL HYDROGRAPH 116.00

RUNOFF VOLUME = 0.90444 INCHES = 0.0463 ACRE-FEET
PEAK DISCHARGE RATE = 1.68 CFS AT 1.533 HOURS BASIN AREA = 0.0010 SQ. MI.

ADD HYD ID=17 HYD NO=117 ID I=16 ID II=9
PRINT HYD ID=17 CODE=1
PARTIAL HYDROGRAPH 117.00

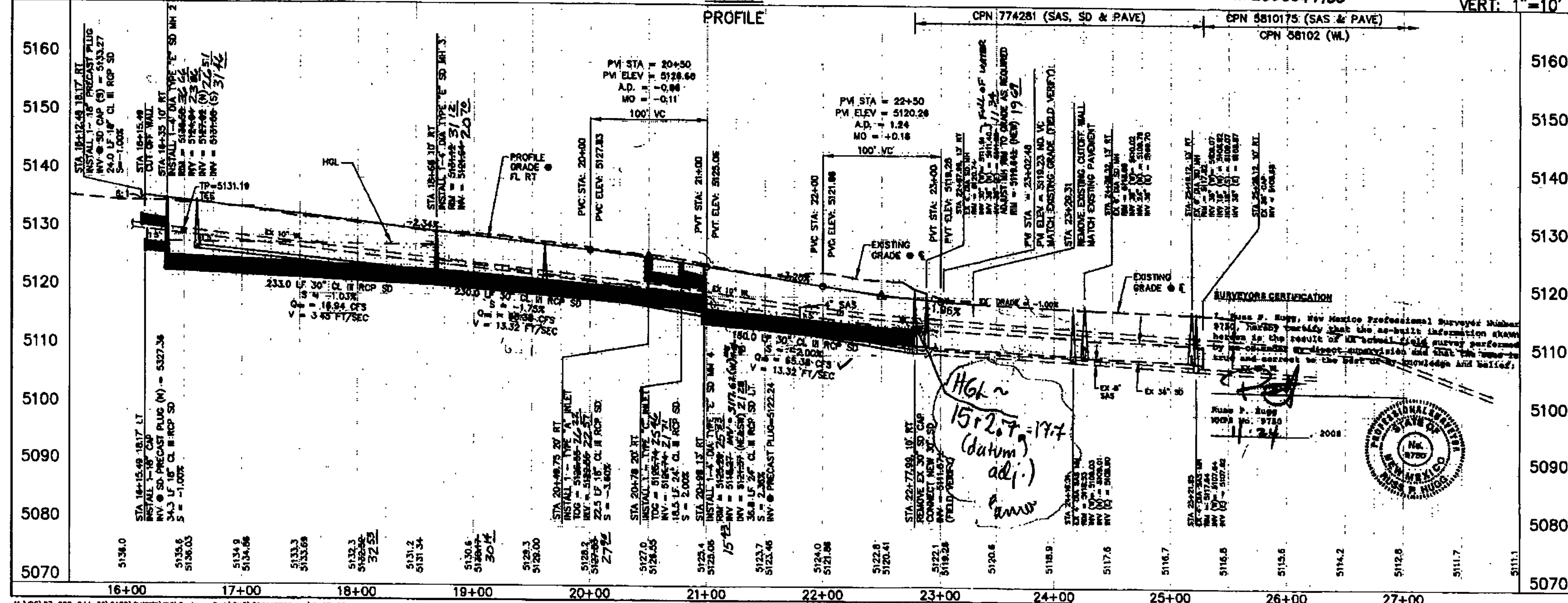
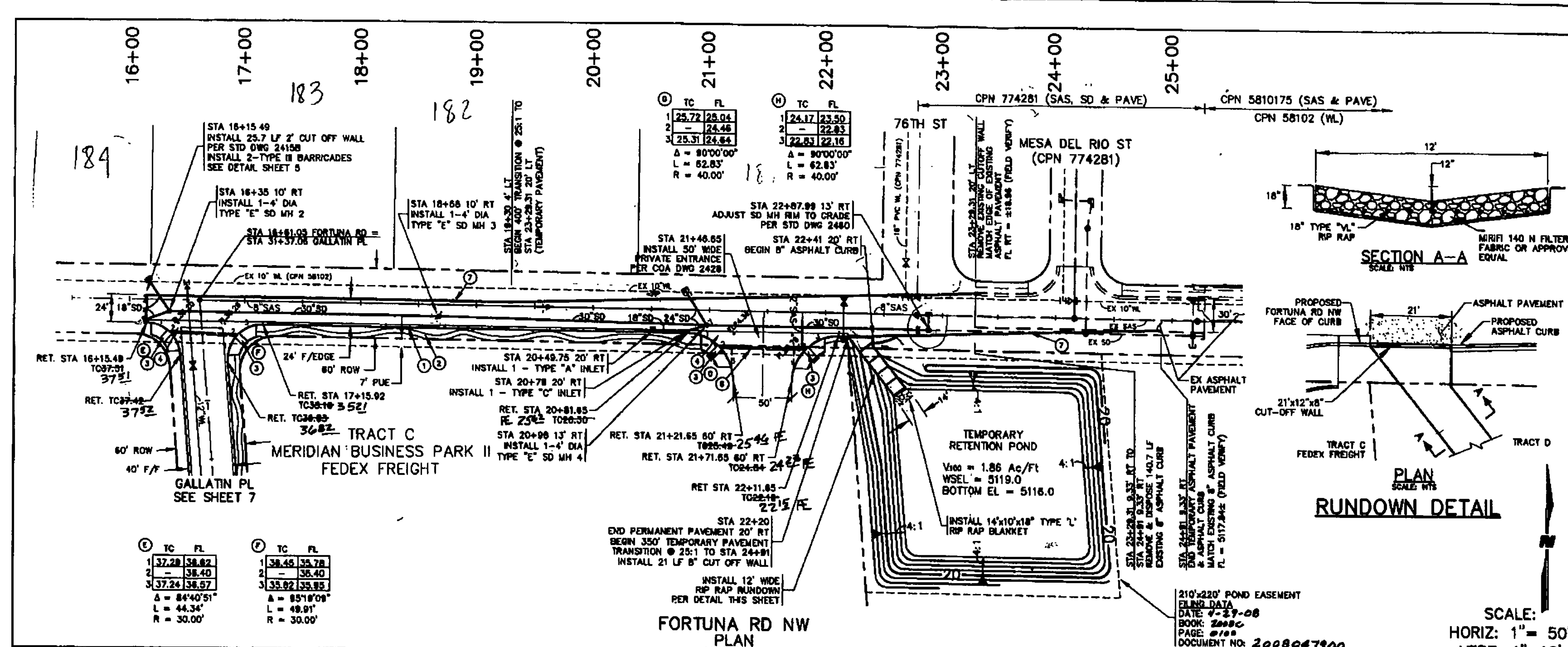
RUNOFF VOLUME = 0.92787 INCHES = 0.0689 ACRE-FEET
PEAK DISCHARGE RATE = 2.49 CFS AT 1.533 HOURS BASIN AREA = 0.0014 SQ. MI.

FINISH
NORMAL PROGRAM FINISH END TIME (HR:MIN:SEC) = 15:05:04

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## ***APPENDIX C***

***Fortuna Road Storm Drain As-Builts***



H:\V05\07-000-044-00\CA00\05\05\Business Park\PH\75044PP03.dwg\2-27-08

**NOTES**

SEE TYPICAL ROADWAY SECTION A SHEET 4

INSTALL TYPE "A" INLET PER STD DWG 2201 & 2202

INSTALL TYPE "C" INLET PER STD DWG 2205

INSTALL GRATES PER STD DWG 2220

ADJUST SD MH RIM TO GRADE PER STD DWG 2480

1. CONSTRUCT STANDARD CURB & GUTTER PER STD DWG 2415A

2. 4' MEANDERING SIDEWALK PER SITE PLAN FOR BUILDING PERMIT BY OTHERS

3. CONSTRUCT WHEELCHAIR RAMP PER STD DWG 2441 CASE II WITH TRUNCATED DOMES PER DETAIL SHEET 4. CONTRACTOR TO SUBMIT SPECS TO CITY OF ALBUQUERQUE CONSTRUCTION ENGINEER FOR EVALUATION PRIOR TO INSTALLATION

4. CONSTRUCT 6" VALLEY GUTTER PER STD DWG 2420

5. 50' CROWN REDUCTION PER STD DWG 2401

6. 2% CROSS SLOPE FOR ADA ACCESS PER DETAIL SHEET 4

7. 4" SOLID WHITE

**GENERAL NOTES**

1. THE CONTRACTOR SHALL VERIFY THE HORIZONTAL AND VERTICAL LOCATION OF ALL EXISTING UTILITIES WITHIN THE CONSTRUCTION AREA PRIOR TO CONSTRUCTION.

**AS-BUILT INFORMATION**

THE STA IS A 3' x 3' ALUMINUM CAP STAMPED TO 10-110

**BENCH MARKS**

THE STA IS A 3' x 3' ALUMINUM CAP STAMPED TO 10-110

**SURVEY INFORMATION**

FIELD NOTES BY DATE NO.

**ENGINEER'S SEAL**

**REVISIONS**

NO. DATE REMARKS

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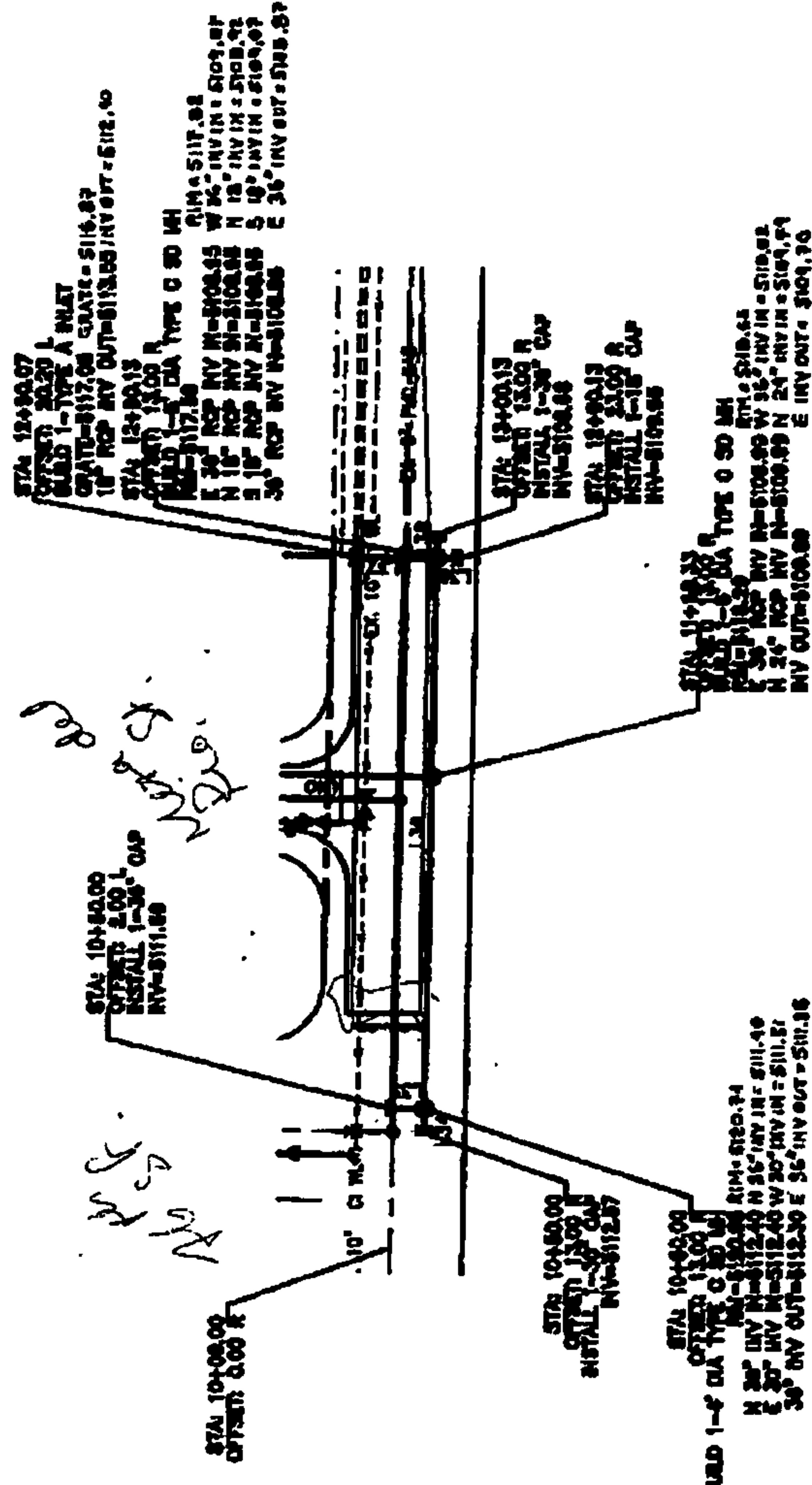
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BY: [initials]

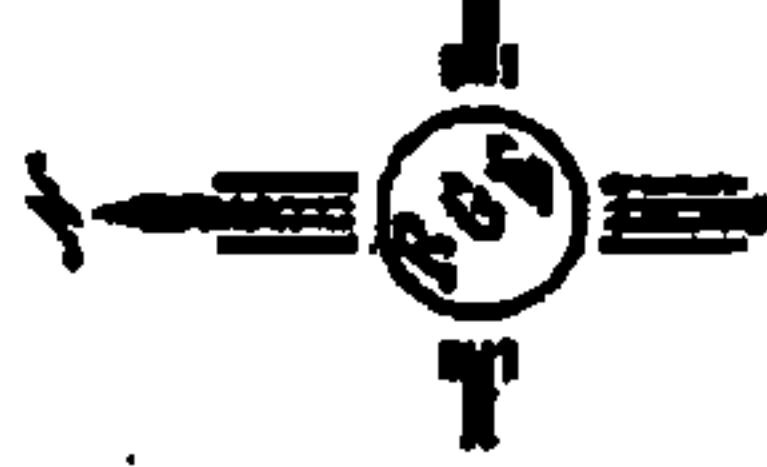
10+00 11+00 12+00 13+00



FORTUNA ROAD  
STA: 10+00.00 TO STA: 13+00.00  
ALL STATIONING BASED UPON PROPOSED CENTERLINE

CAUTION:  
THIS DRAWING IS NOT TO BE USED FOR CONSTRUCTION OF ANY STRUCTURE OR FOR ANY OTHER PURPOSE WITHOUT THE WRITTEN PERMISSION OF THE ENGINEER OF RECORD.

SCALE: HORIZ. 1"=50'  
VERT. 1"=10'

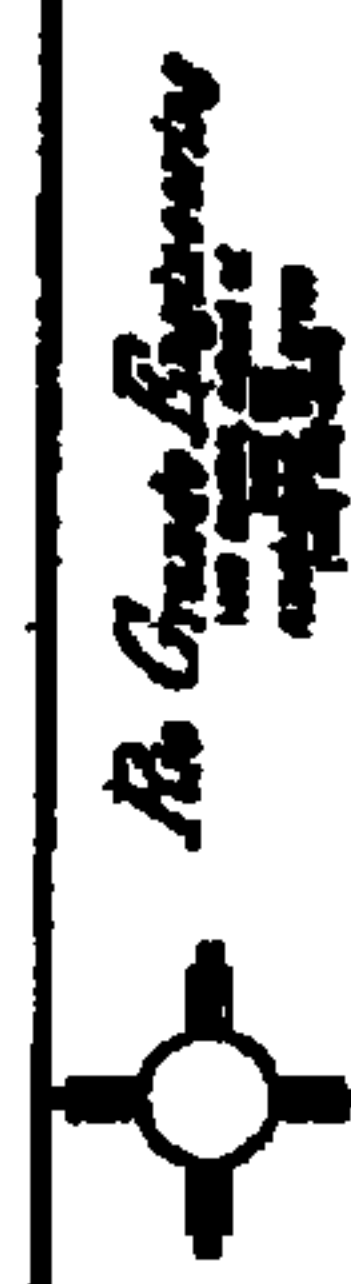


EXISTING STORM DRAIN LINE TABLE

LINE	LENGTH	STARTING	ENDING
1	10.00	10+00.00	10+10.00
2	10.00	10+10.00	10+20.00
3	10.00	10+20.00	10+30.00
4	10.00	10+30.00	10+40.00
5	10.00	10+40.00	10+50.00
6	10.00	10+50.00	10+60.00
7	10.00	10+60.00	10+70.00
8	10.00	10+70.00	10+80.00
9	10.00	10+80.00	10+90.00
10	10.00	10+90.00	11+00.00

1. CUSTOMER'S NAME, ADDRESS AND PHONE NUMBER  
2. CITY, STATE AND ZIP CODE  
3. PROJECT NAME  
4. PROJECT LOCATION  
5. PROJECT DESCRIPTION  
6. PROJECT START AND END DATES  
7. PROJECT BUDGET  
8. PROJECT STATUS  
9. PROJECT CONTACT PERSON  
10. PROJECT CONTACT PHONE NUMBER  
11. PROJECT CONTACT EMAIL ADDRESS  
12. PROJECT CONTACT ADDRESS  
13. PROJECT CONTACT CITY, STATE AND ZIP CODE  
14. PROJECT CONTACT FAX NUMBER  
15. PROJECT CONTACT WEBSITE  
16. PROJECT CONTACT SOCIAL MEDIA  
17. PROJECT CONTACT BLOG  
18. PROJECT CONTACT YOUTUBE  
19. PROJECT CONTACT INSTAGRAM  
20. PROJECT CONTACT TWITTER  
21. PROJECT CONTACT LINKEDIN  
22. PROJECT CONTACT PINTEREST  
23. PROJECT CONTACT SNAPCHAT  
24. PROJECT CONTACT TIKTOK  
25. PROJECT CONTACT REELS  
26. PROJECT CONTACT VIDEOS  
27. PROJECT CONTACT AUDIO  
28. PROJECT CONTACT IMAGES  
29. PROJECT CONTACT DOCUMENTS  
30. PROJECT CONTACT OTHER

AS-BUILT INFORMATION  
REVISIONS  
NO. BY DATE  
1. J. [initials] 10/10/2023  
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CITY OF ALBUQUERQUE  
PUBLIC WORKS DEPARTMENT  
ENGINEERING GROUP

TITLE: FORTUNA ROAD STORM DRAIN IMPROVEMENTS

REVIEW COMMITTEE

DATE	10/10/2023
BY	J. [initials]

CITY ENGINEER

CITY PROJECT NO. 774281

SHEET 15 OF 16



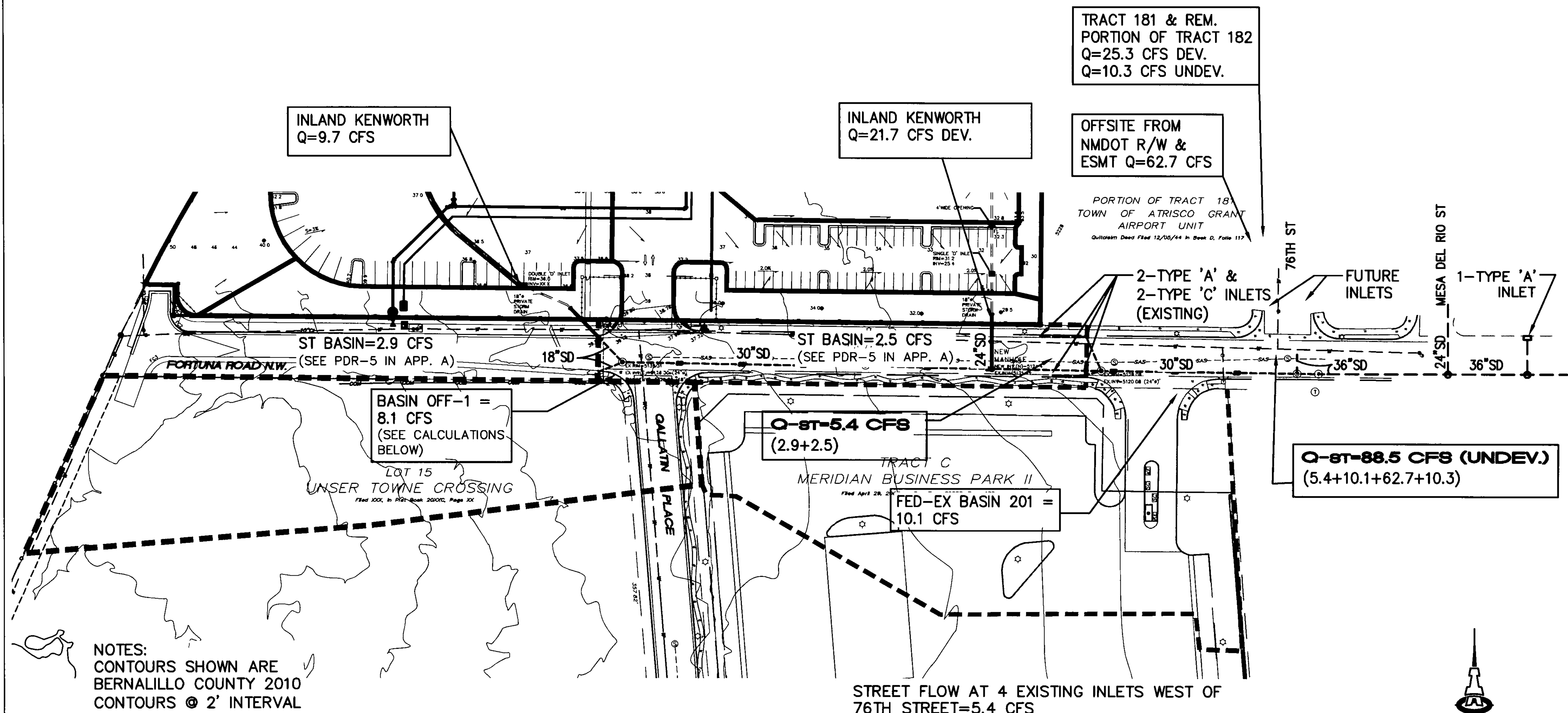
## ***APPENDIX D***

***Storm Drain/Street Flow Exhibit***

***ArcGIS Explorer Storm Drain Exhibit***

***Hydraflow Storm Sewer Calculations***

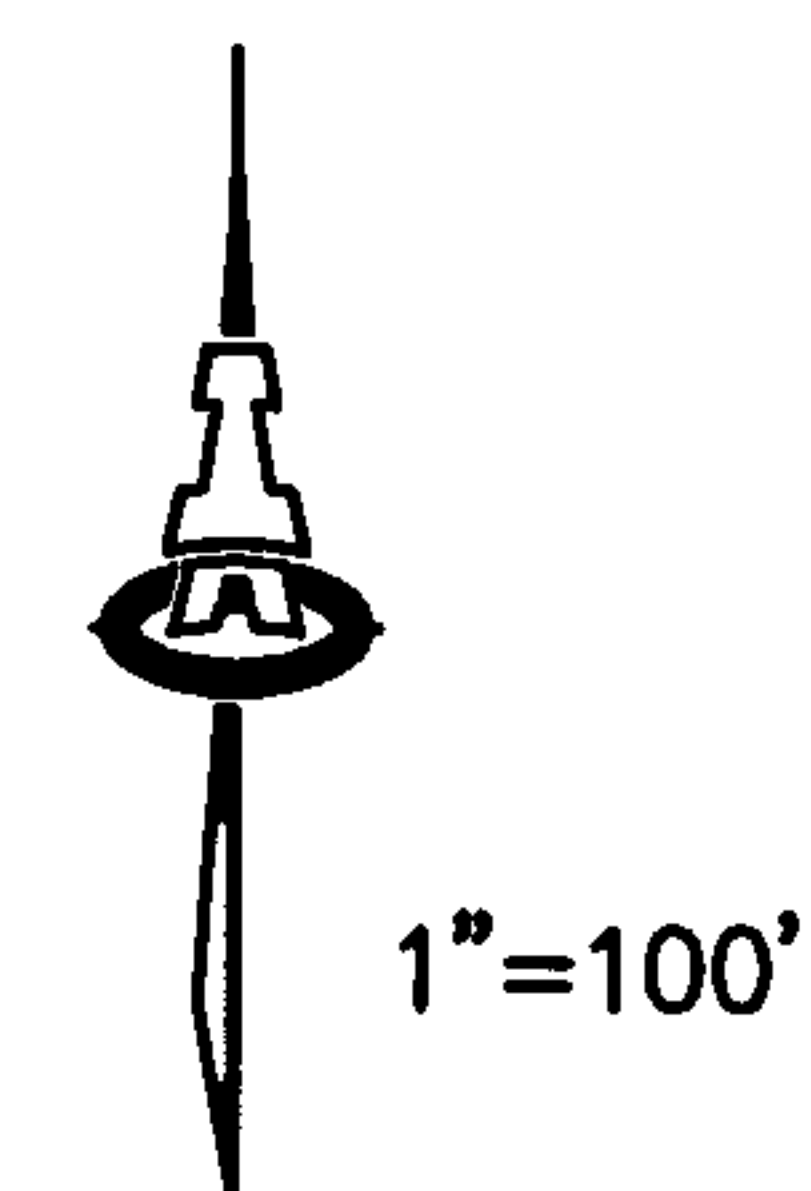
***Street Flow Calculations***



STREET FLOW AT 4 EXISTING INLETS WEST OF  
76TH STREET=5.4 CFS

STREET FLOW AT 76TH STREET=88.5 CFS

TOTAL STREET CAPACITY FOR FLOW DEPTH AT TOP  
OF CURB  
Q=95.8 CFS @ S=1.00%



# INLAND KENWORTH STORM DRAIN/ STREET FLOW EXHIBIT

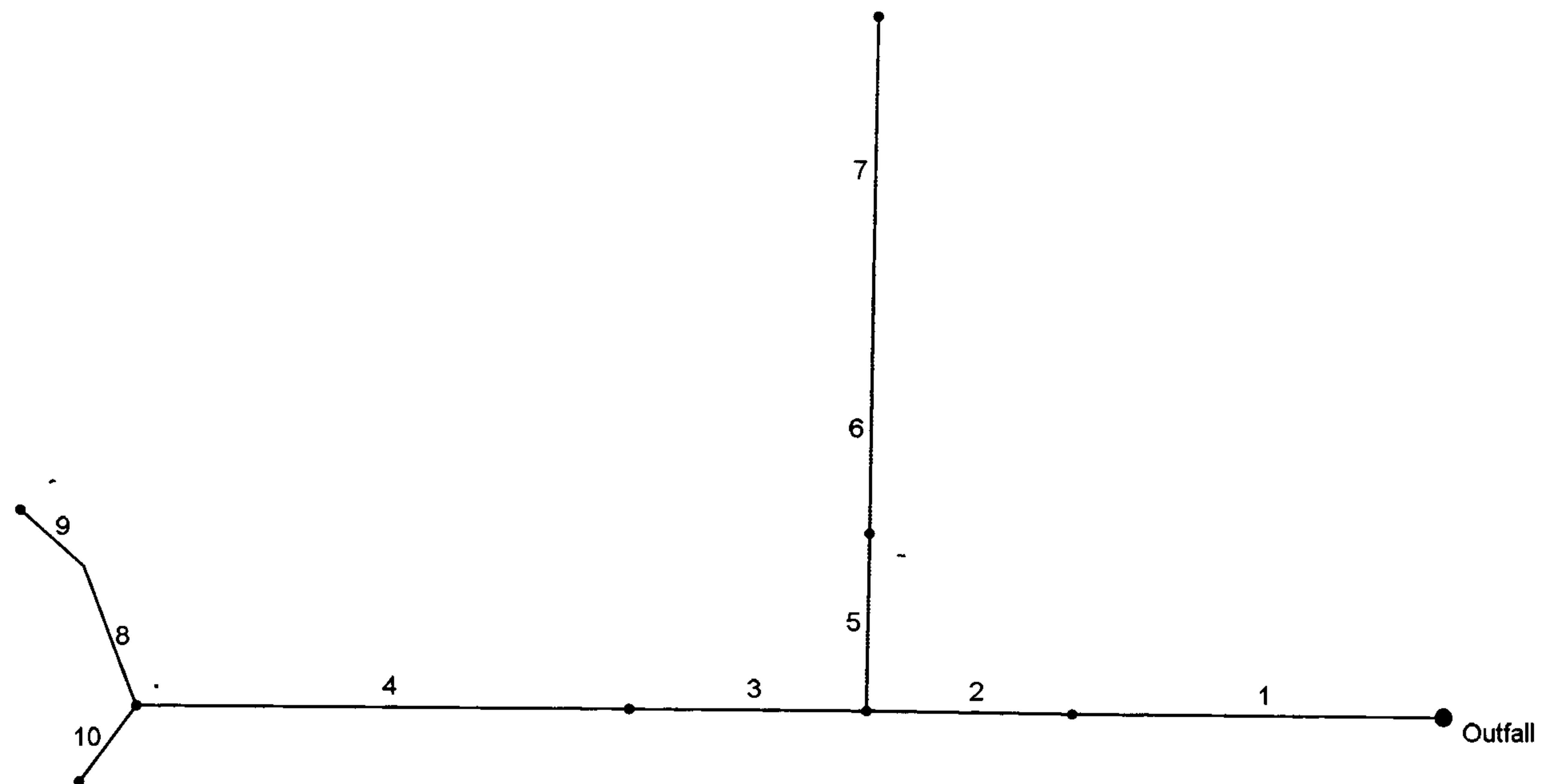
BASIN NO.	OFF-1	DESCRIPTION
Area of basin flows =	85032 SF	= 2.0 Ac.
The following calculations are based on Treatment areas as shown in table to the right		
Sub-basin Weighted Excess Precipitation (see formula above)		LAND TREATMENT
Weighted E =	1.82 in.	A = 0%
Sub-basin Volume of Runoff (see formula above)		B = 0%
V <sub>360</sub> =	12918 CF	C = 15%
Sub-basin Peak Discharge Rate: (see formula above)		D = 85%
Q <sub>P</sub> =	8.1 cfs	

## ArcGIS Explorer – COA and Bernalillo County

Zone Atlas J-10

Storm Drain





# Storm Sewer Inventory Report

Line No.	Alignment				Flow Data				Physical Data								Line ID
	Dnstr Line No.	Line Length (ft)	Defl angle (deg)	Junc Type	Known Q (cfs)	Drng Area (ac)	Runoff Coeff (C)	Inlet Time (min)	Invert El Dn (ft)	Line Slope (%)	Invert El Up (ft)	Line Size (in)	Line Shape	N Value (n)	J-Loss Coeff (K)	Inlet/ Rim El (ft)	
1	End	190.300	-179.285	MH	5.40	0.00	0.00	0.0	14.10	1.94	17.80	30	Cir	0.013	0.15	28.10	
2	1	105.900	0.510	MH	0.00	0.00	0.00	0.0	20.10	1.32	21.50	30	Cir	0.013	1.00	30.79	
3	2	122.000	-0.490	MH	0.00	0.00	0.00	0.0	21.60	1.31	23.20	30	Cir	0.013	0.15	33.80	
4	3	253.700	-0.010	MH	0.00	0.00	0.00	0.0	23.30	1.26	26.50	30	Cir	0.013	0.94	39.30	
5	2	92.500	90.000	Genr	3.20	0.00	0.00	0.0	24.40	1.08	25.40	24	Cir	0.013	0.50	32.00	
6	5	110.000	0.000	Genr	4.20	0.00	0.00	0.0	25.40	1.00	26.50	24	Cir	0.013	0.50	32.00	
7	6	160.000	0.000	Genr	14.30	0.00	0.00	0.0	26.50	1.00	28.10	24	Cir	0.013	1.00	32.00	
8	4	78.000	68.602	None	0.00	0.00	0.00	0.0	29.20	1.03	30.00	18	Cir	0.013	0.51	38.50	
9	8	44.000	-26.903	Genr	9.70	0.00	0.00	0.0	30.00	1.02	30.45	18	Cir	0.013	1.00	36.00	
10	4	50.000	-53.522	Genr	8.10	0.00	0.00	0.0	34.00	1.00	34.50	18	Cir	0.013	1.00	40.20	
1941												Number of lines: 10				Date: 4/23/2013	

Storm Sewer Summary Report

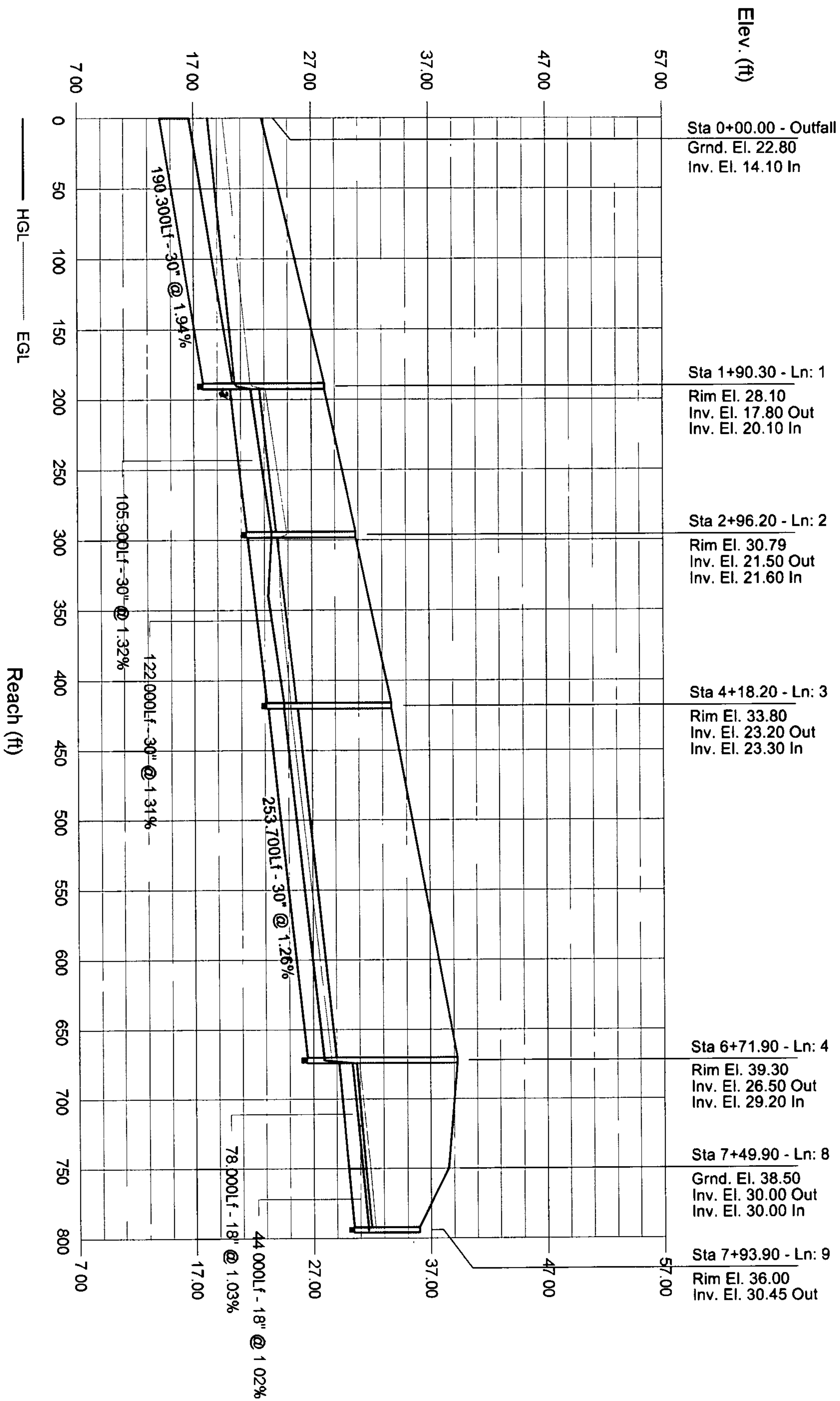
Line No.	Line ID	Flow rate (cfs)	Line Size (in)	Line shape	Line length (ft)	Invert EL Dn (ft)	Invert EL Up (ft)	Line Slope (%)	HGL Down (ft)	HGL Up (ft)	Minor loss (ft)	HGL Junct (ft)	Dns Line No.	Junction Type
1		44.90	30	Cir	190.300	14.10	17.80	1.944	18.20*	20.48*	0.20	20.68	End	Manhole
2		39.50	30	Cir	105.900	20.10	21.50	1.322	21.85	23.62	1.24	23.62	1	Manhole
3		17.80	30	Cir	122.000	21.60	23.20	1.311	23.62	24.63	n/a	24.63 j	2	Manhole
4		17.80	30	Cir	253.700	23.30	26.50	1.261	24.63	27.93	n/a	27.93	3	Manhole
5		21.70	24	Cir	92.500	24.40	25.40	1.081	25.92	27.06	0.47	27.06	2	Generic
6		18.50	24	Cir	110.000	25.40	26.50	1.000	27.06	28.05	n/a	28.05 j	5	Generic
7		14.30	24	Cir	160.000	26.50	28.10	1.000	28.05	29.46	n/a	29.46 j	6	Generic
8		9.70	18	Cir	78.000	29.20	30.00	1.026	30.33	31.20	n/a	31.20	4	None
9		9.70	18	Cir	44.000	30.00	30.45	1.023	31.20	31.65	n/a	31.65	8	Generic
10		8.10	18	Cir	50.000	34.00	34.50	1.000	34.99	35.60	0.53	35.60	4	Generic
1941									Number of lines 10			Run Date 4/23/2013		
NOTES. Return period = 2 Yrs. , *Surcharged (HGL above crown). ; j - Line contains hyd. jump.														

Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (l)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID	
Line	To Line		Incr	Total		Incr	Total	Inlet	Syst					Size	Slope	Dn	Up	Dn	Up	Dn	Up		
		(ft)	(ac)	(ac)	(C)			(min)	(min)	(in/hr)	(cfs)	(cfs)	(ft/s)	(in)	(%)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)		
1	End	190.300	0.00	0.00	0.00	0.00	0.00	0.0	2.3	0.0	44.90	57.19	9.15	30'	1.94	14.10	17.80	18.20	20.48	22.80	28.10		
2	1	105.900	0.00	0.00	0.00	0.00	0.00	0.0	2.1	0.0	39.50	47.15	9.84	30	1.32	20.10	21.50	21.85	23.62	28.10	30.79		
3	2	122.000	0.00	0.00	0.00	0.00	0.00	0.0	1.5	0.0	17.80	46.97	5.17	30	1.31	21.60	23.20	23.62	24.63	30.79	33.80		
4	3	253.700	0.00	0.00	0.00	0.00	0.00	0.0	0.4	0.0	17.80	46.06	6.44	30	1.26	23.30	26.50	24.63	27.93	33.80	39.30		
5	2	92.500	0.00	0.00	0.00	0.00	0.00	0.0	0.9	0.0	21.70	23.52	8.13	24	1.08	24.40	25.40	25.92	27.06	30.79	32.00		
6	5	110.000	0.00	0.00	0.00	0.00	0.00	0.0	0.6	0.0	18.50	22.62	6.86	24	1.00	25.40	26.50	27.06	28.05	32.00	32.00		
7	6	160.000	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	14.30	22.62	5.88	24	1.00	26.50	28.10	28.05	29.46	32.00	32.00		
8	4	78.000	0.00	0.00	0.00	0.00	0.00	0.0	0.1	0.0	9.70	10.63	6.61	18	1.03	29.20	30.00	30.33	31.20	39.30	38.50		
9	8	44.000	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	9.70	10.62	6.40	18	1.02	30.00	30.45	31.20	31.65	38.50	36.00		
10	4	50.000	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	8.10	10.50	6.19	18	1.00	34.00	34.50	34.99	35.60	39.30	40.20		
1941																Number of lines 10				Run Date 4/23/2013			
NOTES: Intensity = 69.87 / (Inlet time + 13.10) ^ 0.87 ; Return period = Yrs 2 ; c = cir e = ellip b = box																							

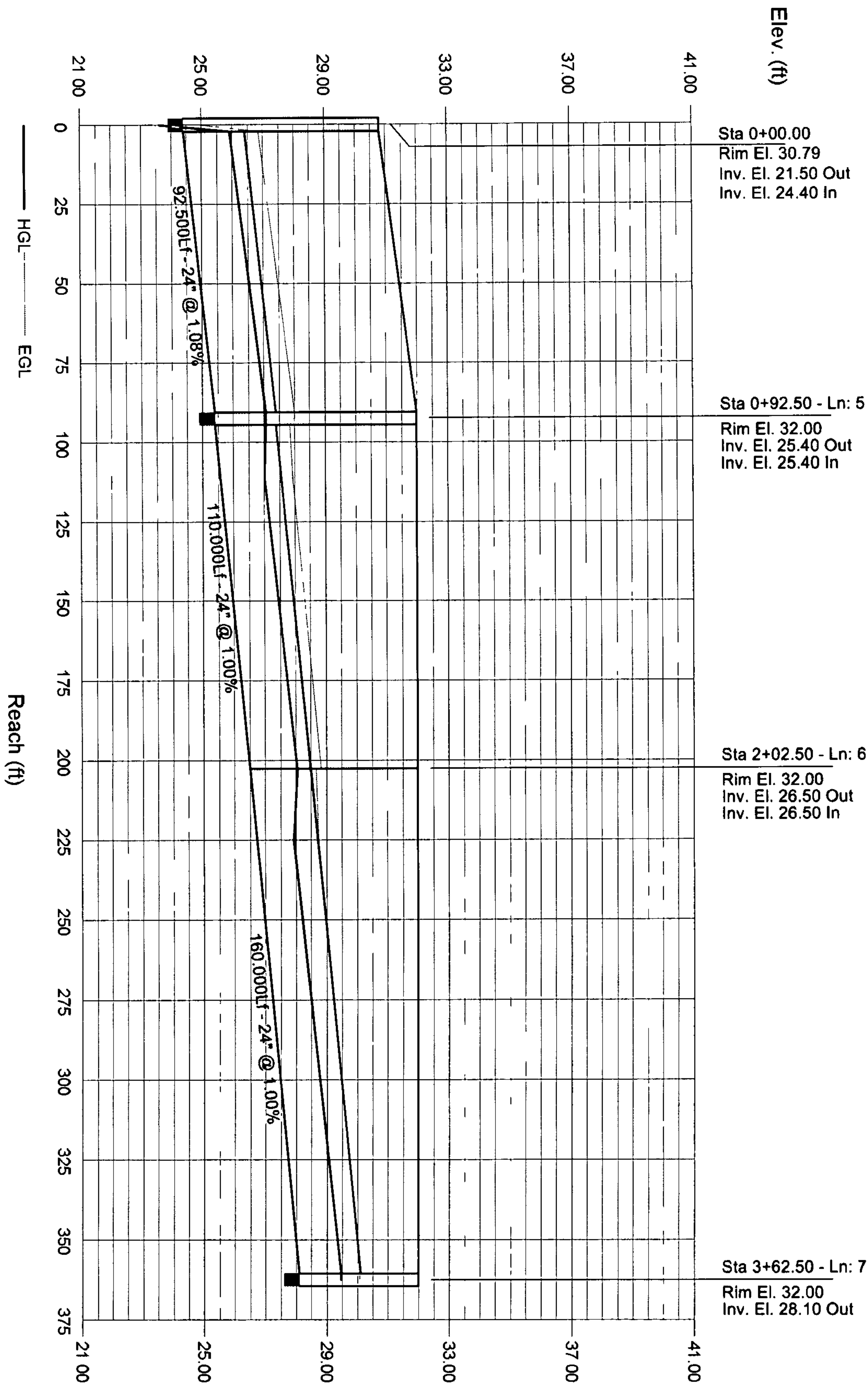
Storm Sewer Profile

Proj. file: 1941 SD.stm



Storm Sewer Profile

Proj. file: 1941 SD.stm



**STREET FLOW CAPACITY CALCULATIONS**

STREET NAME: FORTUNA RD3

LOCATION: EAST OF 76TH ST

STREET INFORMATION		HALF STREET CALCULATIONS	
Slope	0.01	Road Width/2	20
Q <sub>100</sub>	85.5	Curb Height	0.67
Right-of-way Width	60	1/2 Wetted Perimeter (P)	20.636
Road Width	40	1/2 Area(STD)	8.714
Curb Type	STD	1/2 Area(MDN)	----
Road Cross Slope	0.02	1/2 Area(MTBL)	----
Manning's N	0.017	Discharge (1/2 Q)	42.749

Depth0.636

RESULTS

HGL

Q<sub>100</sub> FLOW CAPACITY = 85.50 cfs

at an HGL Depth= 0.64 ft < Curb height = 0.67

OK

EGL

Velocity 4.91 fps

V<sup>2</sup>/2g 0.37 ft

EGL Depth = 1.01 ft > Right-of-way height = 0.86

STREET NAME: FORTUNA RD4

LOCATION: TOTAL STREET CAPACITY AT DEPTH OF 8"

STREET INFORMATION		HALF STREET CALCULATIONS	
Slope	0.01	Road Width/2	20
Q <sub>100</sub>	95.8	Curb Height	0.67
Right-of-way Width	60	1/2 Wetted Perimeter (P)	20.667
Road Width	40	1/2 Area(STD)	9.334
Curb Type	STD	1/2 Area(MDN)	----
Road Cross Slope	0.02	1/2 Area(MTBL)	----
Manning's N	0.017	Discharge (1/2 Q)	47.902

Depth0.667

RESULTS

HGL

Q<sub>100</sub> FLOW CAPACITY = 95.80 cfs

at an HGL Depth= 0.67 ft < Curb height = 0.67

OK

EGL

Velocity 5.13 fps

V<sup>2</sup>/2g 0.41 ft

EGL Depth = 1.08 ft > Right-of-way height = 0.86