CITY OF ALBUQUERQUE

PLANNING DEPARTMENT – Development Review Services

Richard J. Berry, Mayor

November 18, 2014

Diane Hoelzer, P.E.
Mark Goodwin & Associates, P.A.
P.O. Box 90606
Albuquerque, NM 87199

RE: **Anasazi Ridge, Unit 3**
Drainage Report, and Grading and Drainage Plan
Engineer's Stamp Date 10-24-2014 (File: A10D002G)

Dear Ms. Hoelzer:

Based upon the information provided in your submittal received 10-24-14, the above referenced plan cannot be approved for Preliminary Plat and Site Plan for Subdivision until the following comments are addressed:

1. AMAFCA has submitted comments, but has not yet approved the project. The following comments are in response to AMAFCA's comments:
   a. The owner of the SE corner of McMahon and Kayenta should be determined. But more importantly, since the blanket drainage easement is to AMAFCA, they should maintain the structure. The City and AMAFCA will have to work this out, and verbiage may need to be put on the plat.
   b. The 10ft wide channel rundown cannot be added to the infrastructure list since the M.O.A. between AMAFCA and the City was never completed.
2. AMAFCA comments for DRB for July 16, 2014 requested that the 100-yr flow rate be shown on the plan for the concrete channel.
3. Page 3 in the report is duplicated, the first seems to be obsolete.
4. Show proposed contours in Tract E, additional spot elevations in Lot 1, and TW/BW elevations of wall bounding both.
5. Show the Benchmark and Datum information. Verify the existing contours are in the '88 datum.
6. In order that future development to southwest, in Seville Tract 1-A-1, does not discharge into this subdivision via Parsons Blvd., show a waterblock, High Point, or extended proposed grades where Parsons connects to Westside Blvd.
7. Discharge to Calle Vizcaya should utilize the existing concrete rundown, and the discharge details should be shown on the plan.
8. Sidewalk culverts at Sipapu/Westside Blvd should be replaced with an inlet and storm drain to the detention pond.
9. Due to the depth, the detention pond appears to need a fence/railing around it. The pond should be called out on the plan and details shown on the plan.
10. The Land treatments in AHYMO do not match the treatments shown in Table 1.

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11. What is the parcel between Lot 23-P1 and Tract A? Is Tract A in a public drainage easement?
12. There is some apprehension about utilizing such a deep pond, depending on who will be maintaining it. The subdivision is small and there may not be an HOA. The Seville Subdivision- Unit 7 (Wilson & Co, A10D2E) accepts flows from a portion of this subdivision (10.87 cfs), but 6.57cfs was intended to discharge to McMahon. Hydrology would like to discuss this further.
13. Regarding the street flow capacity in McMahon:
    a. It appears that Street depth for the 10-yr storm allows for a10' of a drive lane. This is important in determining whether additional flows can be discharged in McMahon.
    b. Revise the second to last paragraph in the report (page 6) to indicate the new flow rates, depth and velocity in McMahon.

Please call Hydrology to set up a meeting to discuss the drainage scheme. If you have any questions, you can contact me at 924-3695.

Sincerely,

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

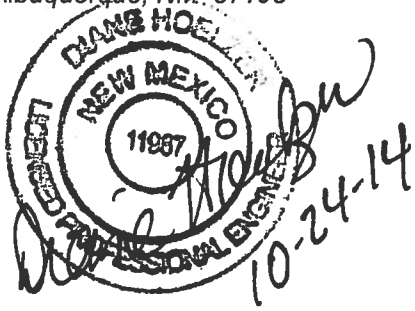
Orig: Drainage file
c.pdf Addressee via Email

DRAINAGE REPORT

for

ANASAZI RIDGE UNIT 3 SUBDIVISION

Prepared for
ANASAZI RIDGE, LLC
PO Box 12317
Albuquerque, NM 87195



Prepared by
Mark Goodwin & Associates, PA
PO Box 90606
Albuquerque, NM 87199
(505) 828-2200
October 2014

Anasazi Ridge Unit 3

Drainage Report Comments

1. Since the project drains to the Callabacillas Arroyo, AMAFCA approval is a perquisite for approval.

   This project site now drains to the east to the Seville Unit 7 Calle Vizcaya street. The maximum allowable discharge from our site of 10.87 cfs was determined as part of the Seville Unit 7 approved Drainage Report. As requested a copy of the drainage report and G&D plan will be sent to Lynn Mazer at AMAFCA.

2. Regarding the street flow capacity in McMahon:

   -Street depth is high, show that at least one driving lane is free of discharge.

   Street flows on McMahon have been reduced due to all on-site flows being collected in an onsite detention pond of a maximum allowable controlled discharge of 10.87 cfs to Calle Vizcaya road to the east.

   -What is the depth of flow at the valley gutters crossing Kayenta? Do the valley gutters have enough capacity to convey 44 cfs to the 26' wide curb cut?

   The depth of flow at McMahon due to the expansion is adequate for the curb cut. Since we are now only conveying the 19.25 cfs for the McMahon Boulevard expansion all on-site flows are conveyed to the Seville Unit 7 subdivision.

3. Drainage Report for the Seville Subdivision- Unit 7 (Wilson & Co, 2003) states that the storm drain system was designed to pick up some developed flows from this subdivision and enters through lot 23-P1.It is recommended that this flow path be considered in order to reduce the runoff into the street and crossing Kayenta Ave. It will also reduce the number of sidewalk required, as 6 culverts in series are not desirable.

   This alternative was used and on-site runoff is conveyed via street surface flows into a detention pond in Tract E with a controlled outfall of 10.87 cfs as stated by the Seville Subdivision Unit 7 Drainage Report.

4. Water harvesting pond is upstream from the runoff, and cannot capture first flush. The first flush is intended to capture developed runoff, to comply with EPA requirements.

   The majority of the runoff from the project site will be conveyed to the detention pond located at the SE corner. Only DB-1 will outfall to the McMahon. This is due to an awkward parcel shape as well as existing grade ties that won't allow drainage to the east without the use of huge retaining wall that would be both undesirable and economically unfeasible.

5. Since the status of Lot 9 will change, the street stub provided to lot 9 will also change, and may affect the drainage scheme.

   Lot 9 has been incorporated into the overall design of the project, allowing a full build out of the McMahon Boulevard right-of-way expansion from 78 ft. to 156 ft. The stub has been removed and replaced by an appropriate sized lot.

6. Show grade contours beyond property boundary to the south.

   Survey data has been added to the G&D Plan.

CITY OF ALBUQUERQUE

PLANNING DEPARTMENT – Development Review Services

Richard J. Berry, Mayor

July 15, 2014

Mark Goodwin, P.E.
Mark Goodwin & Associates, P.A.
P.O. Box 90606
Albuquerque, NM 87199

RE: **Anasazi Ridge, Unit 3**
Drainage Report, and Grading and Drainage Plan
Engineer's Stamp Date 6-19-2014 (File: A10D002G)

Dear Mr. Goodwin:

Based upon the information provided in your submittal received 6-20-14, the above referenced plan cannot be approved for Preliminary Plat and Site Plan for Subdivision until the following comments are addressed:

1. Since the property drains to the Calabacillas Arroyo, AMAFCA approval is a prerequisite for approval.
2. Regarding the street flow capacity in McMahon:
   -Street depth is high, show that at least one driving lane is free of discharge.
   -what is the depth of flow at the valley gutters crossing Kayenta? Do the valley gutters have enough capacity to convey 44cfs flows to the 26' wide curb cut?
3. Drainage Report for the Seville Subdivision- Unit 7 (Wilson & Co, 2003) states that the storm drain system was designed to pick up some developed flows from this subdivision and enters through lot 23-P1. It is recommended that this flow path be considered in order to reduce the runoff into the street and crossing Kayenta Ave. It will also reduce the number of sidewalk required, as 6 culverts in series are not desirable.
4. Water harvesting pond is upstream from the runoff, and cannot capture first flush. The first flush is intended to capture ***developed*** runoff, to comply with EPA requirements.
5. Since the status of Lot 9 will change, the street stub provided to Lot 9 will also change, and may affect the drainage scheme.
6. Show grade contours beyond property boundary to the south.

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

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

Sincerely,

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

Orig: Drainage file
c.pdf Addressee via Email

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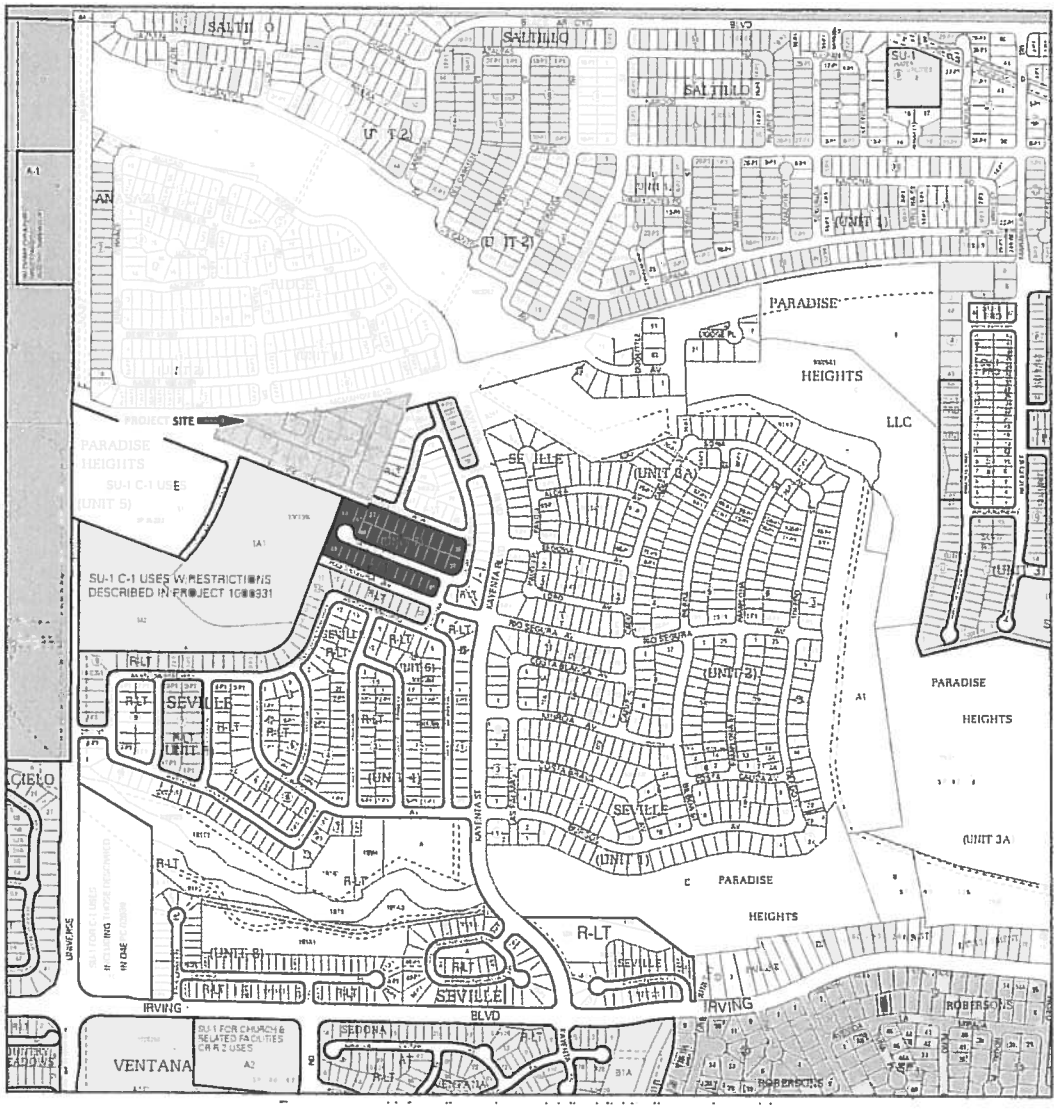
INTRODUCTION

This report has been prepared in support of a proposed 6.76 acre site located on Albuquerque's west side (Zone Atlas A-10). The project includes a 5.92 acre single family residential development with a .84 acre expansion of the McMahon Boulevard roadway adjacent to the development. The site is bounded on the north by the McMahon Blvd. right-of-way and the Anasazi Ridge Subdivision Units 1 & 2; on the east by the Seville Subdivision Units 7 & 7A; and on the southwest by the undeveloped Seville Tract 1-A-1 and Westside Boulevard right-of-way. Once the site is subdivided into 23 lots and 2 tracts, it will be named Anasazi Ridge Unit 3 Subdivision (to be referred to as "ARS" in this report). This report is being submitted as part of the Anasazi Ridge Unit 3 preliminary plat submittal requirement.



LOCATION MAP *(Zone Atlas A-10-Z)*
NTS

EXISTING CONDITIONS

The ARS is vacant and covered by sparse native vegetation. The existing topography on this 6.76 acre site falls from southwest to northeast. An existing retaining wall along the southwestern edge of the Seville, Unit 7 subdivision intercepts portions of the existing runoff flow generated from the site. Once encountering the wall, flows are routed to the north to the future McMahon Blvd. right-of-way. All on-site runoff flows to the McMahon Blvd. right-of-way and then east to the Kayenta Blvd. intersection where it enters a curb opening located at the southeast corner of the intersection and flows into the Calabacillas Arroyo via an unlined ditch.

The planned expansion of the McMahon Blvd. right-of-way from 78 ft. to 156 ft. will allow for the construction of two east bound lanes, converting it from 2-lanes to a 4-lane urban principal arterial. Presently, the north side of McMahon Blvd is constructed adjacent to our project site. One section is a portion of median curb and gutter and a left turn lane fronting the ARS, the other section is the McMahon Blvd./Kayenta Blvd. intersection where the east bound lanes are constructed from the intersection west to the ARS western boundary. This project will complete the construction of the expanded McMahon Blvd. fronting the ARS and will tie to these existing road sections.

No off-site runoff impacts the ARS; the undeveloped land to the south flows to the south-east. The project site is not encumbered by a flood plain.

DEVELOPED CONDITIONS

The ARS will include 23 single family residential lots with one street connection to McMahon Blvd. and a street stub intended for a future connection to Parsons Blvd. which will occur in conjunction with the future development of the adjacent Seville Tract 1-A-1 site to the south. The south half of McMahon Blvd. fronting the ARS will be constructed and tied to the existing sections currently in place.

It is proposed that on-site storm runoff be conveyed via street surface flow to a detention pond that outfalls to the Seville Unit 7 subdivision to the east. The surface flow will be routed through a proposed series of sidewalk culverts located at the intersection of Sipapu Dr. and Westside Blvd. in the southeast corner of the site. These flows will then be routed through a detention pond in Tract A, which will accommodate the first flush volume and outfall through an 18" RCP pipe to Calle Vizcaya in the Seville Unit 7. It is proposed that Tract E be graded to McMahon Blvd. routing all runoff generated within the Tract. The ARS will utilize both mountable and standard curb and gutter. See Figure 1 for the on-site drainage basin map.

It is proposed that the existing drainage outfall to the Calabacillas Arroyo at the intersection of McMahon Blvd. and Kayenta Blvd. be maintained and improved by widening the curb cut and constructing a lined drainage channel to convey runoff to the Arroyo. This interim structure is

located within the proposed 156 ft. McMahon Blvd. right-of-way and would be replaced by future storm drain improvements constructed in concurrence with the construction of McMahon Blvd. east of the McMahon Blvd./Kayenta Blvd. intersection.

DRAINAGE DESIGN PROCEDURES AND RELATED STUDIES

The design criteria used in this report was in accordance with Section 22.2 of the Development Process Manual (DPM), Volume 2, Design Criteria, 1997 Edition. The hydrologic calculation procedures used to calculate the peak 10-YR and 100-YR flow rates for developed conditions are based on the DPM and the Arid Land Hydrologic Modeling (AHYMO-S4) program. Precipitation values are taken from NOAA Atlas 14. The 100-YR, 6-HR storm precipitation values are P_{60}=1.72", P_{360}=2.25", and P_{24}=2.59". The 10-YR, 6-HR storm precipitation values are P_{60}=1.07", P_{360}=1.46", and P_{24}=1.75". The hydrology input data and 100-YR and 10-YR runoff peak flow rates are summarized in Table 1. Appendix A contains the NOAA Precipitation Data and the AHYMO input and output data.

DRAINAGE MANAGEMENT PLAN

The on-site watershed was subdivided into six (6) drainage sub-basins (see Figure 1) which allows for hydraulic analysis at critical points within the subdivision to determine street flow carrying capacity and acceptable curb type.

Table 1- Summary of Hydrology

STREET	CONTRIBUTING BASINS	Q10 (cfs)	V10 (fps)	FLOW DEPTH (ft.)	RECOMMEND CURB
Atlatl Dr.	DB-2	1.75	2.18	0.19	Roll Type
Westside Blvd.	DB-3	3.19	1.77	0.27	Roll Type
Sipapu Dr.*	DB-3, DB-5	5.1	2.58	0.28	Roll Type
Canty Ct.	DB-4	2.05	1.92	0.22	Roll Type
Sipapu Dr.	DB-3, 4, 5, & 6	9.86	2.88	0.35	Standard

BASIN ID	AREA		LAND TREATMENT (%)				t_p	PEAK 100-YR FLOW		PEAK 10-YR FLOW	
	(AC)	(SQ MI)	A	B	C	D	(HR)	Inc. (cfs)	Cum (cfs)	Inc. (cfs)	Cum (cfs)
DEVELOPED CONDITIONS (See Figure 1)											
DB-1	0.25	0.00036	0	0	100	0	0.1333	0.68		0.34	
DB-2	1.01	0.00129	0	0	44	56	0.1333	3.02		1.75	
DB-3	1.28	0.00234	0	0	42	58	0.1333	5.49	8.51	3.19	4.94
DB-4	1.38	0.00158	0	0	52	48	0.1333	3.58		2.05	
DB-5	1.05	0.00212	0	0	54	46	0.1333	4.77	8.35	2.71	4.76
DB-6	0.95	0.00149	0	0	54	46	0.1333	3.36	20.22	1.91	11.61
Subtotal	5.92	0.00918									

located within the proposed 156 ft. McMahon Blvd. right-of-way and would be replaced by future storm drain improvements constructed in concurrence with the construction of McMahon Blvd. east of the McMahon Blvd./Kayenta Blvd. intersection.

DRAINAGE DESIGN PROCEDURES AND RELATED STUDIES

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DRAINAGE MANAGEMENT PLAN

The on-site watershed was subdivided into six (6) drainage sub-basins (see Figure 1) which allows for hydraulic analysis at critical points within the subdivision to determine street flow carrying capacity and acceptable curb type.

Table 1- Summary of Hydrology

STREET	CONTRIBUTING BASINS	Q10 (cf)	V10 (fps)	FLOW DEPTH (ft.)	RECOMMEND CURB
Atlatl Dr.	DB-2	1.75	1.36	0.23	Roll Type
Westside Blvd.	DB-3	4.94	1.79	0.32	Roll Type
Sipapu Dr.*	DB-3, DB-5	4.76	1.73	0.32	Roll Type
Canty Ct.	DB-4	2.05	1.38	0.25	Roll Type
Sipapu Dr.	DB-3, 4, 5, & 6	11.61	2.61	0.39	Standard

BASIN ID	AREA		LAND TREATMENT (%)				t_p	PEAK 100-YR FLOW		PEAK 10-YR FLOW	
	(AC)	(SQ MI)	A	B	C	D	(HR)	Inc. (cfs)	Cum (cfs)	Inc. (cfs)	Cum (cfs)
DEVELOPED CONDITIONS (See Figure 1)											
DB-1	0.25	0.00036	0	0	100	0	0.1333	0.68		0.34	
DB-2	1.01	0.00129	0	0	44	56	0.1333	3.02		1.75	
DB-3	1.28	0.00234	0	0	42	58	0.1333	5.49	8.51	3.19	4.94
DB-4	1.38	0.00158	0	0	52	48	0.1333	3.58		2.05	
DB-5	1.05	0.00212	0	0	54	46	0.1333	4.77	8.35	2.71	4.76
DB-6	0.95	0.00149	0	0	54	46	0.1333	3.36	20.22	1.91	11.61
Subtotal	5.92	0.00918									

The hydraulic calculation procedures utilize the DPM Section 22 to establish the drainage design criteria for this project. It requires that the 100-YR water spread be contained within the road right-of-way and that the 10-YR design discharge may not exceed 0.5' in any collector or arterial street and will allow for one lane to remain open in both directions on arterial streets.

The Sipapu Dr. drainage outfall will consist of seven (7) sidewalk culverts in series connected to a concrete channel which conveys the on-site runoff to a detention pond which outfalls a controlled discharge to Calle Vizcaya. The maximum amount of discharge allowed from the ARS site to the adjacent subdivision is 10.87 cfs, which was determined from the Seville Subdivision Unit 7 Drainage Report. Using the weir equation, a 24" sidewalk culvert has the capacity of approximately 2.9 cfs and a series of seven sidewalk culverts has the capacity for 7 x 2.9 cfs, or 20.3 cfs. A 16' wide concrete channel will connect the sidewalk culverts to the detention pond which contains the first flush. This channel constructed with a 2.0% slope will convey the design flow of 20.2 cfs at a flow depth of 0.37 ft. (4.4") and a velocity of 5.3 fps.

Autodesk Civil 3D hydraulic analysis software which uses Manning's Equation to calculate street flow depths and velocities and the fundamental weir equation for curb opening flow capacity calculations was used to determine the hydraulic characteristics within a street cross-section at a given slope and flow rate. The results of this analysis are summarized in Table 2.

Table 2- Summary of On-site Street Capacity Results

STREET	CONTRIBUTING BASINS	Q10 (cfs)	V10 (fps)	FLOW DEPTH (ft.)	RECOMMEND CURB
Atlatl Dr.	DB-2	1.75	1.36	0.23	Roll Type
Westside Blvd.	DB-2,DB-3	4.94	1.79	0.32	Roll Type
Sipapu Dr.	DB-4, DB-5	4.76	1.73	0.32	Roll Type
Canty Ct.	DB-4	2.05	1.38	0.25	Roll Type
Sipapu Dr. *	DB-2,3, 4, 5, & 6	11.61	2.61	0.39	Standard

STREET	CONTRIBUTING BASINS	Q100 (cfs)	V100 (fps)	FLOW DEPTH (ft.)	RECOMMEND CURB
Atlatl Dr.	DB-2	3.02	1.54	0.27	Roll Type
Westside Blvd.	DB-2,DB-3	8.51	1.91	0.39	Roll Type
Sipapu Dr.	DB-4, DB-5	8.35	2.81	0.33	Roll Type
Canty Ct.	DB-4	3.58	1.66	0.29	Roll Type
Sipapu Dr. *	DB-2,3, 4, 5, & 6	20.2	3.63	0.43	Standard

* Section of Sipapu Dr. south of Canty Court intersection.

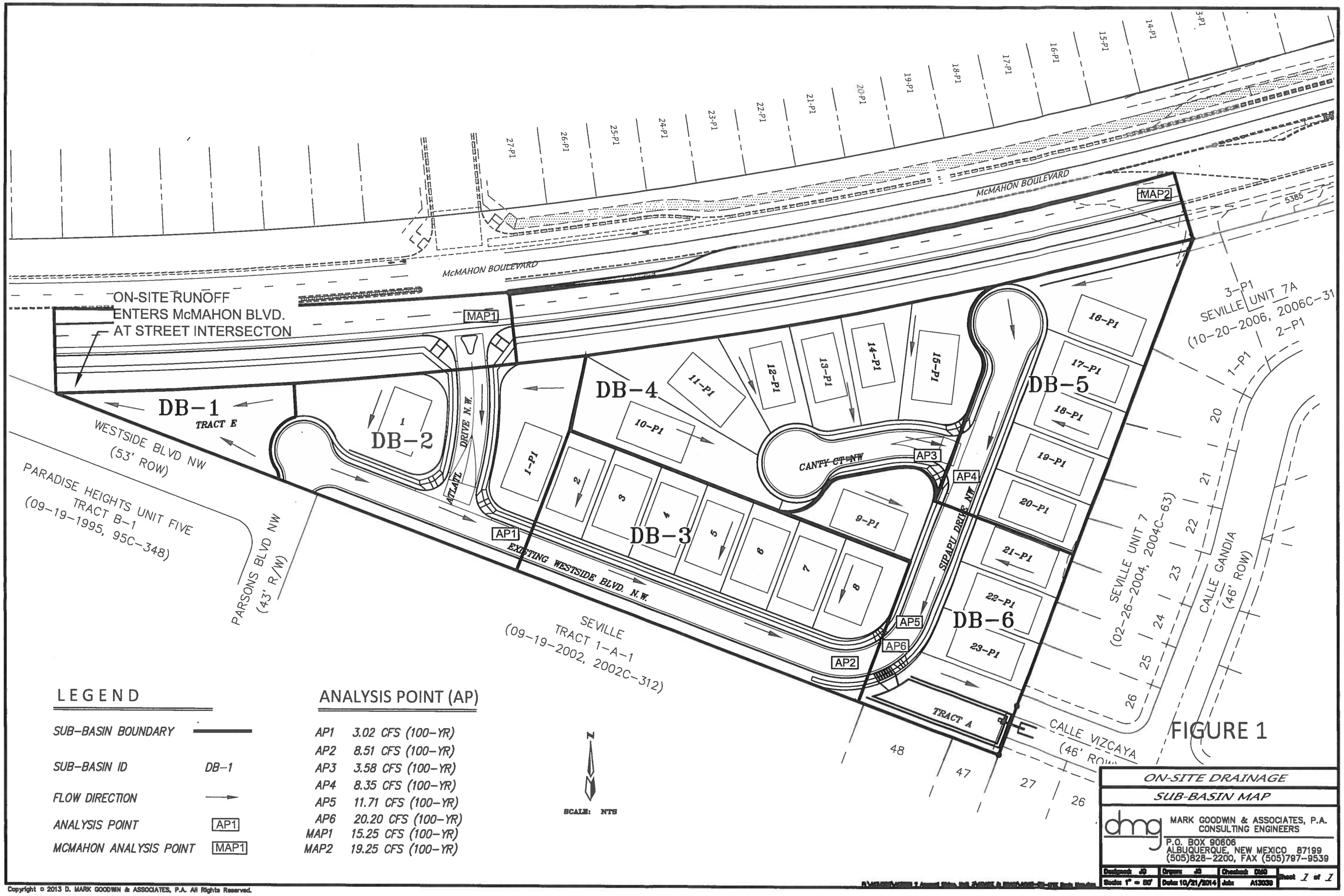
For all on-site streets, the 100-YR storm is contained within the road right-of-way. See Appendix B for both 10-YR and 100-YR street hydraulic data output sheets.

The off-site runoff is conveyed via surface flow on McMahon Blvd. to the southeast corner of the McMahon Blvd. and Kayenta Blvd. intersection. It is propose that the existing curb cut be widened to 26 ft. with removable bollards in place and connected to a temporary 10' wide concrete channel. The proposed channel conveys runoff to the Calabacillas Arroyo where the channel will be tied to the top of the existing soil cement bank protection located on the north bank and south of the McMahon Blvd. bridge crossing.

The 100-YR flow rate (47.4 cfs) out falling at this location, and used in the hydraulic analysis of the channel, accounts for the additional roadway area between the Sipapu Dr. outfall and the Kayenta Blvd. intersection. The weir equation was used to determine the required 26' width of the curb cut/channel entrance at a flow depth of 0.67' (8"), or the height of the existing standard curb at this location. Manning's Equation was used to analize the hydraulic characteristics of the proposed concrete channel at three sections where the channel slope changes. The results show a maximum flow depth of 0.64' (7.7") and a maximum flow velocity of 12.6 fps. See Appendix B for the McMahon Blvd. street flow capacity calculations and Appendix D for the results of the hydraulic analysis of the proposed drainage structures.

CONCLUSION

As seen on the Grading & Drainage Plan, there are no storm drain improvements required within Anasazi Ridge Unit 3. All storm flows discharging to the Seville Unit 7 will be routed within the subdivision streets to a detention pond located at the Westside Blvd. / Sipapu Dr. intersection and into an outfall structure at Calle Vizcaya Rd. Street drainage criteria is maintained in McMahon Blvd. where the road grade becomes 0.5% at the vertical curve fronting the project site, but both the 10-YR and 100-YR flow rates are contained within McMahon Blvd. An interim, adequately sized, concrete drainage channel at the Kayenta Blvd. intersection will safely convey storm flow to the Calabacillas Arroyo. This design maintains and improves the existing storm flow outfall and will be replaced when the future eastward expansion of McMahon Blvd. occurs allowing for permanent storm drain solution.



LEGEND

SUB-BASIN BOUNDARY	
SUB-BASIN ID	DB-1
FLOW DIRECTION	
ANALYSIS POINT	AP1
MCMAHON ANALYSIS POINT	MAP1

ANALYSIS POINT (AP)

AP1	3.02 CFS (100-YR)
AP2	8.51 CFS (100-YR)
AP3	3.58 CFS (100-YR)
AP4	8.35 CFS (100-YR)
AP5	11.71 CFS (100-YR)
AP6	20.20 CFS (100-YR)
MAP1	15.25 CFS (100-YR)
MAP2	19.25 CFS (100-YR)

N

SCALE: NTS

FIGURE 1

ON-SITE DRAINAGE
SUB-BASIN MAP

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CONSULTING ENGINEERS
P.O. BOX 90606
ALBUQUERQUE, NEW MEXICO 87199
(505)828-2200, FAX (505)797-9539

Designed: JG | Drawn: JG | Checked: DMG | Sheet 1 of 1
Scale: 1" = 50' | Date: 10/21/2014 | Job: A13039

Appendix A

NOAA Precipitation Data & AHYMO Input and Output Data

NOAA Atlas 14, Volume 1, Version 5
Location name: Albuquerque, New Mexico, US*
Latitude: 35.2116°, Longitude: -106.7231°
Elevation: 5393 ft*
* source: Google Maps

POINT PRECIPITATION FREQUENCY ESTIMATES

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

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	**0.163** (0.140-0.190)	**0.211** (0.180-0.247)	**0.284** (0.242-0.333)	**0.341** (0.290-0.399)	**0.420** (0.355-0.490)	**0.482** (0.406-0.562)	**0.548** (0.458-0.637)	**0.617** (0.512-0.718)	**0.712** (0.585-0.829)	**0.787** (0.642-0.916)
10-min	**0.248** (0.213-0.290)	**0.321** (0.274-0.376)	**0.432** (0.368-0.507)	**0.519** (0.442-0.607)	**0.639** (0.540-0.746)	**0.733** (0.618-0.855)	**0.833** (0.696-0.970)	**0.939** (0.779-1.09)	**1.08** (0.889-1.26)	**1.20** (0.977-1.39)
15-min	**0.307** (0.264-0.359)	**0.398** (0.340-0.466)	**0.536** (0.456-0.628)	**0.644** (0.548-0.753)	**0.792** (0.670-0.925)	**0.909** (0.766-1.06)	**1.03** (0.863-1.20)	**1.16** (0.966-1.35)	**1.34** (1.10-1.56)	**1.49** (1.21-1.73)
30-min	**0.414** (0.355-0.484)	**0.536** (0.458-0.627)	**0.721** (0.614-0.846)	**0.867** (0.738-1.01)	**1.07** (0.902-1.25)	**1.23** (1.03-1.43)	**1.39** (1.16-1.62)	**1.57** (1.30-1.82)	**1.81** (1.49-2.11)	**2.00** (1.63-2.33)
60-min	**0.512** (0.439-0.599)	**0.663** (0.567-0.776)	**0.892** (0.760-1.05)	**1.07** (0.913-1.25)	**1.32** (1.12-1.54)	**1.51** (1.28-1.77)	**1.72** (1.44-2.00)	**1.94** (1.61-2.26)	**2.24** (1.84-2.61)	**2.48** (2.02-2.88)
2-hr	**0.602** (0.513-0.711)	**0.769** (0.655-0.912)	**1.02** (0.867-1.21)	**1.22** (1.03-1.43)	**1.50** (1.26-1.76)	**1.73** (1.45-2.02)	**1.97** (1.64-2.31)	**2.23** (1.83-2.60)	**2.59** (2.10-3.02)	**2.88** (2.32-3.36)
3-hr	**0.659** (0.571-0.777)	**0.840** (0.724-0.988)	**1.10** (0.950-1.29)	**1.31** (1.13-1.54)	**1.60** (1.36-1.87)	**1.84** (1.56-2.14)	**2.09** (1.76-2.43)	**2.35** (1.96-2.74)	**2.72** (2.25-3.17)	**3.02** (2.47-3.52)
6-hr	**0.759** (0.661-0.884)	**0.960** (0.839-1.12)	**1.24** (1.08-1.44)	**1.46** (1.27-1.69)	**1.76** (1.52-2.04)	**2.00** (1.72-2.31)	**2.25** (1.92-2.60)	**2.51** (2.13-2.89)	**2.87** (2.41-3.31)	**3.17** (2.64-3.66)
12-hr	**0.849** (0.747-0.969)	**1.07** (0.943-1.22)	**1.36** (1.19-1.55)	**1.59** (1.39-1.81)	**1.90** (1.65-2.15)	**2.13** (1.85-2.42)	**2.38** (2.06-2.70)	**2.64** (2.26-3.00)	**2.99** (2.54-3.39)	**3.27** (2.75-3.72)
24-hr	**0.957** (0.846-1.09)	**1.20** (1.06-1.37)	**1.51** (1.33-1.71)	**1.75** (1.54-1.98)	**2.07** (1.82-2.35)	**2.33** (2.04-2.63)	**2.59** (2.26-2.93)	**2.86** (2.48-3.22)	**3.21** (2.77-3.63)	**3.50** (3.00-3.95)
2-day	**1.03** (0.911-1.15)	**1.29** (1.15-1.45)	**1.61** (1.44-1.82)	**1.87** (1.66-2.10)	**2.22** (1.96-2.49)	**2.49** (2.19-2.79)	**2.76** (2.42-3.10)	**3.05** (2.66-3.42)	**3.42** (2.97-3.86)	**3.72** (3.21-4.19)
3-day	**1.18** (1.06-1.30)	**1.47** (1.33-1.63)	**1.82** (1.65-2.02)	**2.10** (1.89-2.32)	**2.48** (2.22-2.74)	**2.76** (2.48-3.06)	**3.06** (2.73-3.38)	**3.35** (2.98-3.71)	**3.75** (3.31-4.15)	**4.05** (3.56-4.50)
4-day	**1.33** (1.22-1.46)	**1.65** (1.51-1.81)	**2.03** (1.85-2.22)	**2.33** (2.13-2.54)	**2.73** (2.49-2.98)	**3.04** (2.76-3.32)	**3.35** (3.03-3.66)	**3.66** (3.30-3.99)	**4.07** (3.66-4.45)	**4.38** (3.92-4.80)
7-day	**1.53** (1.40-1.67)	**1.90** (1.74-2.07)	**2.32** (2.13-2.52)	**2.64** (2.42-2.87)	**3.07** (2.81-3.34)	**3.39** (3.10-3.69)	**3.71** (3.39-4.04)	**4.03** (3.66-4.38)	**4.43** (4.02-4.82)	**4.74** (4.28-5.16)
10-day	**1.69** (1.55-1.84)	**2.10** (1.93-2.29)	**2.58** (2.37-2.80)	**2.95** (2.71-3.20)	**3.45** (3.16-3.73)	**3.82** (3.49-4.13)	**4.19** (3.82-4.54)	**4.57** (4.15-4.94)	**5.05** (4.57-5.47)	**5.41** (4.88-5.87)
20-day	**2.14** (1.96-2.33)	**2.65** (2.44-2.90)	**3.23** (2.96-3.51)	**3.66** (3.36-3.98)	**4.21** (3.86-4.57)	**4.62** (4.22-5.00)	**5.01** (4.57-5.42)	**5.38** (4.89-5.82)	**5.84** (5.30-6.33)	**6.17** (5.59-6.70)
30-day	**2.57** (2.36-2.79)	**3.19** (2.93-3.46)	**3.85** (3.53-4.16)	**4.33** (3.98-4.68)	**4.94** (4.53-5.33)	**5.38** (4.92-5.80)	**5.79** (5.30-6.24)	**6.18** (5.65-6.66)	**6.66** (6.06-7.18)	**6.99** (6.36-7.54)
45-day	**3.13** (2.89-3.39)	**3.88** (3.58-4.20)	**4.64** (4.27-5.00)	**5.17** (4.77-5.58)	**5.83** (5.37-6.28)	**6.28** (5.78-6.77)	**6.69** (6.16-7.21)	**7.06** (6.49-7.60)	**7.48** (6.88-8.06)	**7.76** (7.13-8.35)
60-day	**3.61** (3.33-3.91)	**4.47** (4.13-4.84)	**5.33** (4.93-5.77)	**5.96** (5.50-6.43)	**6.70** (6.19-7.24)	**7.21** (6.66-7.79)	**7.69** (7.10-8.30)	**8.11** (7.49-8.77)	**8.60** (7.94-9.30)	**8.91** (8.24-9.64)

[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

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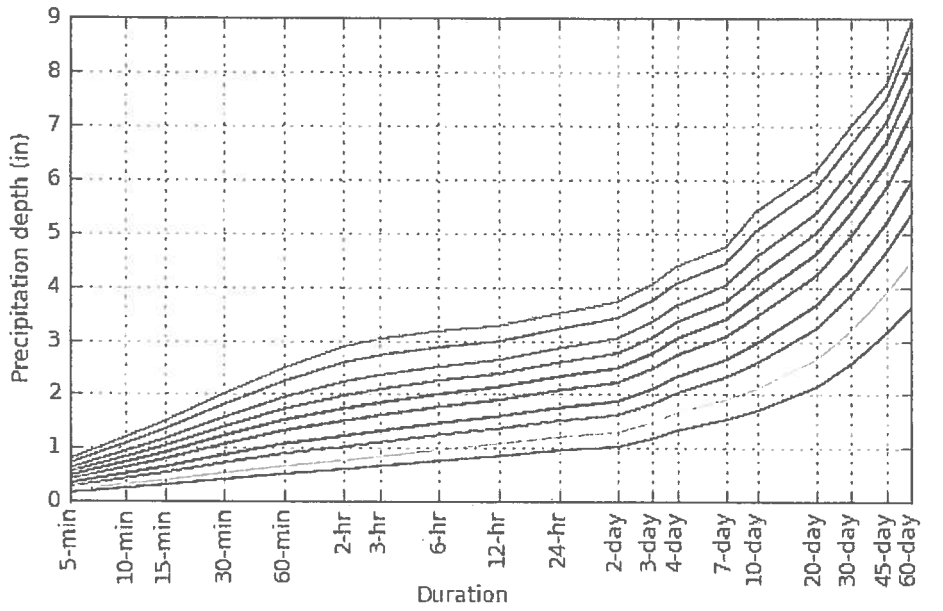
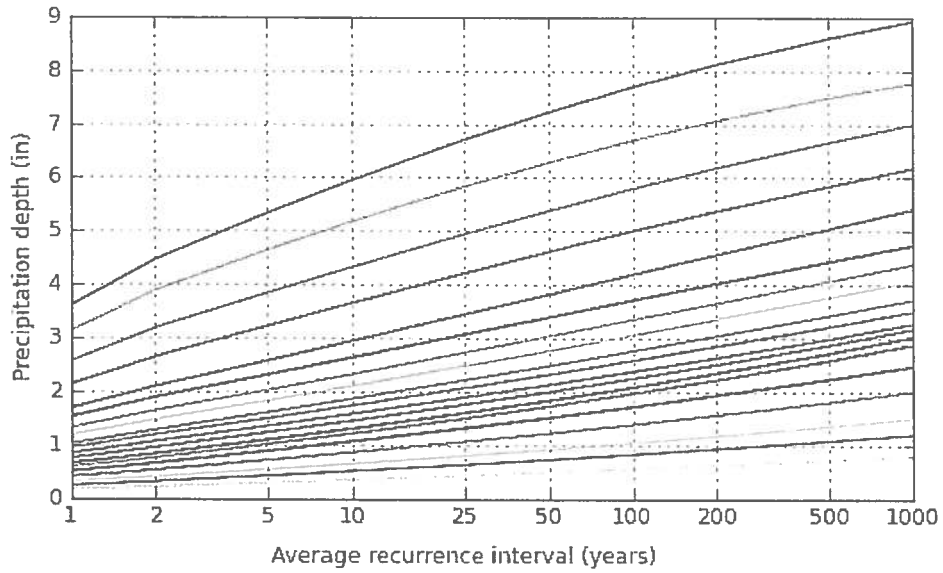
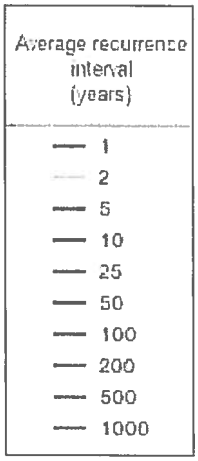
PF graphical

PDS-based depth-duration-frequency (DDF) curves
Latitude: 35.2116°, Longitude: -106.7231°







NOAA Atlas 14, Volume 1, Version 5

Created (GMT): Tue Oct 14 15:46:31 2014

Duration	
5-min	2-day
10-min	3-day
15-min	4-day
30-min	7-day
60-min	10-day
2-hr	20-day
3-hr	30-day
6-hr	45-day
12-hr	60-day
24-hr	

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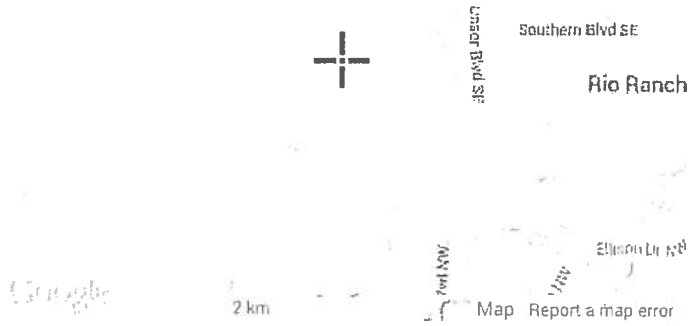
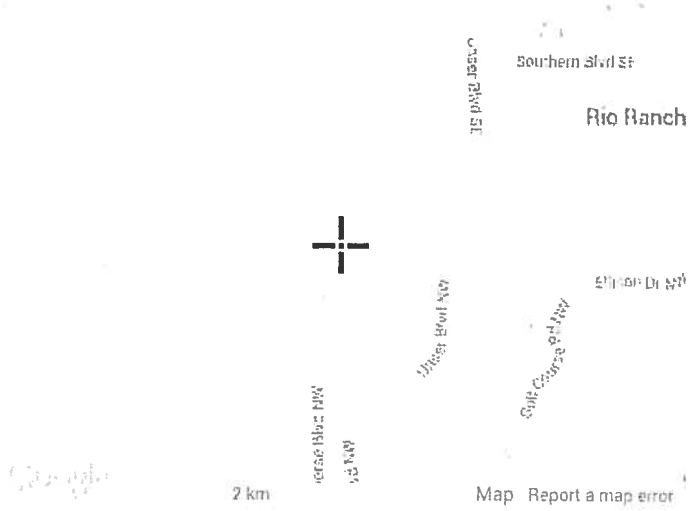
Maps & aerials

Small scale terrain

Large scale terrain



Large scale map



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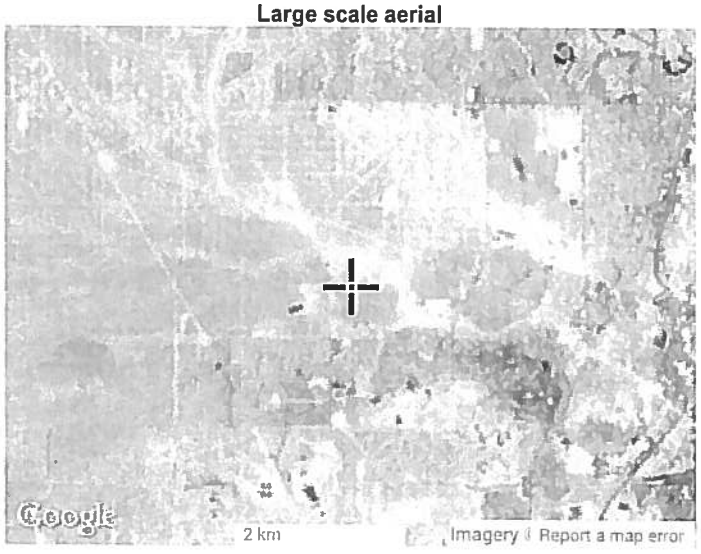

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US Department of Commerce
National Oceanic and Atmospheric Administration
National Weather Service
Office of Hydrologic Development
1325 East West Highway
Silver Spring, MD 20910
Questions?: HDSC.Questions@noaa.gov

Disclaimer

```
5' Depth - Bottom Pond El. 83.5

*S*********************************************************
*S
*S                    ANASAZI RIDGE UNIT 3
*S                    100 YEAR 24 HOUR STORM EVENT
*S
*S                    FILE: ANASAZI.DAT
*S                    LAST REVISED: 9-17-14
*S                    NOAA ATLAS 2, VOL IV ZONE: A 10
START                 TIME=0.0 HR PUNCH CODE=0 PRINT LINES=-6
LOCATION              NEW MEXICO
RAINFALL              TYPE=2 RAIN QUARTER=0.0
                      RAIN ONE=1.72 IN RAIN SIX=2.25 IN
                      RAIN DAY=2.59 IN DT=0.0333 HRS
*S*********************************************************
*** ********************
*S  TOTAL SITE
*S  DEVELOPED CONDITIONS
*** ********************
*** SUB BASIN 100
*** AREA = 6.763 ACRES
*** AREA = .010567
*** ******************
COMPUTE NM HYD        ID=1  HYD NO=100 AREA= 0.010567 SQ MI
                      PER A=0  PER B=30  PER C=030  PER D=40
                      TP=-.1333 HR  MASS RAIN=-1
PRINT HYD             ID=1 CODE=1

*s* ROUTE THRU SE POND (2 YR STORM)
*s*********************************************************************
ROUTE RESERVOIR       ID=12  HYD=POND.12   INFLOW=1   CODE=50
                      OUTFLOW(CFS)   STORAGE(ACFT)     ELEV(FT)
                      0.00             0.0000          83.5
                      0.01             0.08            84.5
                      6.27             0.16            85.5
                      9.38             0.24            86.5
                     10.87            0.32            87.5


PRINT HYD             ID=12 CODE=1
FINISH
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~(s16.67h8.5v0T &l8D

      AHYMO PROGRAM (AHYMO-S4)                    - Version: S4.01a - Rel: 01a
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           START TIME (HR:MIN:SEC) = 09:13:12     USER NO.= M-GoodwinNMSiteA90075759
           INPUT FILE = C:\Users\hiram\Desktop\Anasazi DR\ANASAZI-10_10.20.014.txt

   *S**********************************************************
   *S
   *S                  ANASAZI RIDGE UNIT 3
   *S                  100 YEAR 24 HOUR STORM EVENT
   *S
   *S                  FILE: ANASAZI.DAT
   *S                  LAST REVISED: 9-17-14
   *S                  NOAA ATLAS 2, VOL IV ZONE: A 10
   START              TIME=0.0 HR PUNCH CODE=0 PRINT LINES=-6
   LOCATION           NEW MEXICO
        State of New Mexico soil infiltration values (LAND FACTORS) used for computations.
        Land Treatment     Initial Abstr.(in)    Unif. Infilt.(in/hour)
              A            0.65                  1.67
              B            0.50                  1.25
              C            0.35                  0.83
              D            0.10                  0.04

   RAINFALL           TYPE=2 RAIN QUARTER=0.0
                      RAIN ONE=1.72 IN RAIN SIX=2.25 IN
                      RAIN DAY=2.59 IN DT=0.0333 HRS

                  24-HOUR RAINFALL DIST. - BASED ON NOAA ATLAS 14 FOR CONVECTIVE AREAS (NM & AZ) - D1
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                    0.1215  0.1312  0.1414  0.1521  0.1628  0.1748  0.1869
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                2.5329  2.5336  2.5342  2.5348  2.5354  2.5361  2.5367
                2.5373  2.5380  2.5386  2.5392  2.5398  2.5405  2.5411
                2.5417  2.5424  2.5430  2.5436  2.5443  2.5449  2.5455
                2.5461  2.5468  2.5474  2.5480  2.5487  2.5493  2.5499
                2.5505  2.5512  2.5518  2.5524  2.5531  2.5537  2.5543
                2.5549  2.5556  2.5562  2.5568  2.5575  2.5581  2.5587
                2.5593  2.5600  2.5606  2.5612  2.5619  2.5625  2.5631
                2.5638  2.5644  2.5650  2.5656  2.5663  2.5669  2.5675
                2.5682  2.5688  2.5694  2.5700  2.5707  2.5713  2.5719
                2.5726  2.5732  2.5738  2.5744  2.5751  2.5757  2.5763
                2.5770  2.5776  2.5782  2.5788  2.5795  2.5801  2.5807
                2.5814  2.5820  2.5826  2.5832  2.5839  2.5845  2.5851
                2.5858  2.5864  2.5870  2.5877  2.5883  2.5889  2.5895
                2.5900

*S************************************************************
*** *********************
*S  TOTAL SITE
*S  DEVELOPED CONDITIONS
*** *********************
*** SUB BASIN 100
*** AREA = 6.763 ACRES
*** AREA = .010567
*** ******************
COMPUTE NM HYD       ID=1  HYD NO=100 AREA= 0.010567 SQ MI
                     PER A=0  PER B=30  PER C=030  PER D=40
                     TP=-.1333 HR  MASS RAIN=-1

     K =  0.072649HR    TP =  0.133300HR    K/TP RATIO =  0.545000     SHAPE CONSTANT, N =  7.106428
     UNIT PEAK =   16.688    CFS   UNIT VOLUME =   0.9986       B =   526.28      P60 = 1.7200
     AREA =     0.004227 SQ MI    IA =   0.10000 INCHES    INF =   0.04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  0.033300
```

K = 0.118903HR TP = 0.133300HR K/TP RATIO = 0.891996 SHAPE CONSTANT, N = 3.975355
UNIT PEAK = 16.815 CFS UNIT VOLUME = 0.9996 B = 353.53 P60 = 1.7200
AREA = 0.006340 SQ MI IA = 0.42500 INCHES INF = 1.04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = 0.033300

PRINT HYD ID=1 CODE=1

PARTIAL HYDROGRAPH 100.00

RUNOFF VOLUME = 1.45084 INCHES = 0.8176 ACRE-FEET
PEAK DISCHARGE RATE = 21.60 CFS AT 1.532 HOURS BASIN AREA = 0.0106 SQ. MI.

s ROUTE THRU SE POND (2 YR STORM)
*s**********

ROUTE RESERVOIR ID=12 HYD=POND.12 INFLOW=1 CODE=50

OUTFLOW(CFS)	STORAGE(ACFT)	ELEV(FT)
0.00	0.0000	83.5
	0.01	0.08 84.5
6.27	0.16	85.5
9.38	0.24	86.5
	10.87	0.32 87.5

* * * * * * * * * * * * * * * * *

TIME (HRS)	INFLOW (CFS)	ELEV (FEET)	VOLUME (AC-FT)	OUTFLOW (CFS)
0.00	0.00	83.50	0.000	0.00
0.80	0.43	83.53	0.002	0.00
1.60	17.73	87.06	0.285	10.21
2.40	0.94	84.81	0.105	1.94
3.20	0.14	84.53	0.082	0.19
4.00	0.09	84.51	0.081	0.09
4.80	0.09	84.51	0.081	0.09
5.59	0.10	84.51	0.081	0.10
6.39	0.06	84.51	0.081	0.07
7.19	0.05	84.51	0.081	0.05
7.99	0.05	84.51	0.081	0.05
8.79	0.05	84.51	0.081	0.05
9.59	0.05	84.51	0.081	0.05
10.39	0.05	84.51	0.081	0.05
11.19	0.05	84.51	0.081	0.05
11.99	0.05	84.51	0.081	0.05
12.79	0.05	84.51	0.081	0.05

13.59	0.05	84.51	0.081	0.05
14.39	0.05	84.51	0.081	0.05
15.18	0.05	84.51	0.081	0.05
15.98	0.05	84.51	0.081	0.05
16.78	0.05	84.51	0.081	0.05
17.58	0.05	84.51	0.081	0.05
18.38	0.05	84.51	0.081	0.05
19.18	0.05	84.51	0.081	0.05
19.98	0.05	84.51	0.081	0.05
20.78	0.05	84.51	0.081	0.05
21.58	0.05	84.51	0.081	0.05
22.38	0.05	84.51	0.081	0.05
23.18	0.05	84.51	0.081	0.05
23.98	0.05	84.51	0.081	0.05
24.78	0.00	84.50	0.080	0.01
25.57	0.00	84.49	0.079	0.01
26.37	0.00	84.48	0.078	0.01
27.17	0.00	84.47	0.078	0.01
27.97	0.00	84.47	0.077	0.01
28.77	0.00	84.46	0.077	0.01
29.57	0.00	84.45	0.076	0.01
30.37	0.00	84.44	0.075	0.01
31.17	0.00	84.43	0.075	0.01
31.97	0.00	84.43	0.074	0.01
32.77	0.00	84.42	0.073	0.01
33.57	0.00	84.41	0.073	0.01
34.37	0.00	84.40	0.072	0.01
35.16	0.00	84.40	0.072	0.01
35.96	0.00	84.39	0.071	0.01
36.76	0.00	84.38	0.070	0.01
37.56	0.00	84.37	0.070	0.01
38.36	0.00	84.37	0.069	0.01
39.16	0.00	84.36	0.069	0.01
39.96	0.00	84.35	0.068	0.01
40.76	0.00	84.35	0.068	0.01
41.56	0.00	84.34	0.067	0.01
42.36	0.00	84.33	0.067	0.01
43.16	0.00	84.32	0.066	0.01
43.96	0.00	84.32	0.065	0.01

TIME (HRS)	INFLOW (CFS)	ELEV (FEET)	VOLUME (AC-FT)	OUTFLOW (CFS)
44.76	0.00	84.31	0.065	0.01
45.55	0.00	84.30	0.064	0.01
46.35	0.00	84.30	0.064	0.01
47.15	0.00	84.29	0.063	0.01
47.95	0.00	84.29	0.063	0.01
48.75	0.00	84.28	0.062	0.01
49.55	0.00	84.27	0.062	0.01
50.35	0.00	84.27	0.061	0.01

51.15	0.00	84.26	0.061	0.01
51.95	0.00	84.25	0.060	0.01
52.75	0.00	84.25	0.060	0.01
53.55	0.00	84.24	0.059	0.01
54.35	0.00	84.23	0.059	0.01
55.14	0.00	84.23	0.058	0.01
55.94	0.00	84.22	0.058	0.01
56.74	0.00	84.22	0.057	0.01
57.54	0.00	84.21	0.057	0.01
58.34	0.00	84.21	0.056	0.01
59.14	0.00	84.20	0.056	0.01
59.94	0.00	84.19	0.055	0.01
60.74	0.00	84.19	0.055	0.01
61.54	0.00	84.18	0.055	0.01
62.34	0.00	84.18	0.054	0.01
63.14	0.00	84.17	0.054	0.01
63.94	0.00	84.17	0.053	0.01
64.74	0.00	84.16	0.053	0.01
65.53	0.00	84.15	0.052	0.01
66.33	0.00	84.15	0.052	0.01
67.13	0.00	84.14	0.052	0.01
67.93	0.00	84.14	0.051	0.01
68.73	0.00	84.13	0.051	0.01
69.53	0.00	84.13	0.050	0.01
70.33	0.00	84.12	0.050	0.01
71.13	0.00	84.12	0.049	0.01
71.93	0.00	84.11	0.049	0.01
72.73	0.00	84.11	0.049	0.01
73.53	0.00	84.10	0.048	0.01
74.33	0.00	84.10	0.048	0.01
75.12	0.00	84.09	0.047	0.01
75.92	0.00	84.09	0.047	0.01
76.72	0.00	84.08	0.047	0.01
77.52	0.00	84.08	0.046	0.01
78.32	0.00	84.07	0.046	0.01
79.12	0.00	84.07	0.046	0.01
79.92	0.00	84.06	0.045	0.01
80.72	0.00	84.06	0.045	0.01
81.52	0.00	84.06	0.044	0.01
82.32	0.00	84.05	0.044	0.01
83.12	0.00	84.05	0.044	0.01
83.92	0.00	84.04	0.043	0.01
84.72	0.00	84.04	0.043	0.01
85.51	0.00	84.03	0.043	0.01
86.31	0.00	84.03	0.042	0.01
87.11	0.00	84.02	0.042	0.01
87.91	0.00	84.02	0.042	0.01
88.71	0.00	84.02	0.041	0.01

TIME (HRS)	INFLOW (CFS)	ELEV (FEET)	VOLUME (AC-FT)	OUTFLOW (CFS)

```
      89.51       0.00      84.01       0.041       0.01
      90.31       0.00      84.01       0.041       0.01
      91.11       0.00      84.00       0.040       0.01
      91.91       0.00      84.00       0.040       0.00
   PEAK DISCHARGE =       10.811 CFS - PEAK OCCURS AT HOUR    1.70
   MAXIMUM WATER SURFACE ELEVATION =       87.393
   MAXIMUM STORAGE =        0.3114 AC-FT      INCREMENTAL TIME=    0.033300HRS

  PRINT HYD            ID=12 CODE=1

                                        HYDROGRAPH FROM AREA POND.12


      RUNOFF VOLUME =     1.40460 INCHES     =       0.7916 ACRE-FEET
      PEAK DISCHARGE RATE =      10.81 CFS  AT   1.698 HOURS   BASIN AREA =  0.0106 SQ. MI.


  FINISH

      NORMAL PROGRAM FINISH          END TIME (HR:MIN:SEC) = 09:13:12
(s0p10h4099T"&l6D
```

Appendix B

Street Capacity Analysis

Channel Report

Hydraflow Express Extension for AutoCAD® Civil 3D® 2013 by Autodesk, Inc. Friday, Oct 10 2014

Atlatl Dr. Q10 Street Capacity

User-defined

Invert Elev (ft)	= 0.01
Slope (%)	= 0.60
N-Value	= 0.016

Calculations

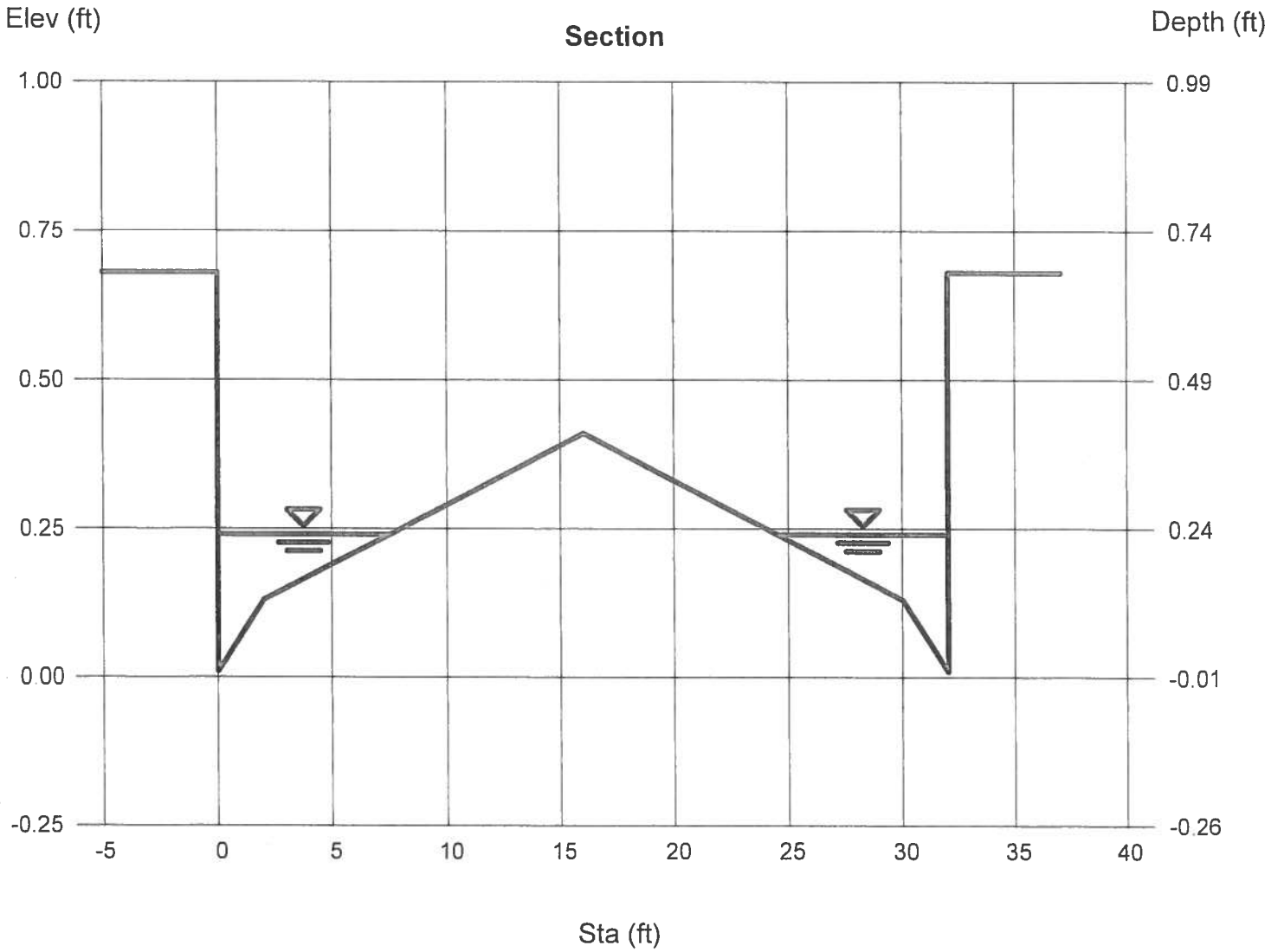
Compute by:	Known Q
Known Q (cfs)	= 1.75

Highlighted

Depth (ft)	= 0.23
Q (cfs)	= 1.750
Area (sqft)	= 1.29
Velocity (ft/s)	= 1.36
Wetted Perim (ft)	= 15.47
Crit Depth, Yc (ft)	= 0.22
Top Width (ft)	= 15.01
EGL (ft)	= 0.26

(Sta, El, n)-(Sta, El, n)...

(0.00, 0.68)-(0.01, 0.01, 0.013)-(2.01, 0.13, 0.013)-(16.01, 0.41, 0.017)-(30.01, 0.13, 0.017)-(32.01, 0.01, 0.013)-(32.02, 0.68, 0.013)



Channel Report

Hydraflow Express Extension for AutoCAD® Civil 3D® 2013 by Autodesk, Inc. Friday, Oct 10 2014

Atlatl Dr. Q100 Street Capacity

User-defined

Invert Elev (ft)	= 0.01
Slope (%)	= 0.60
N-Value	= 0.016

Calculations

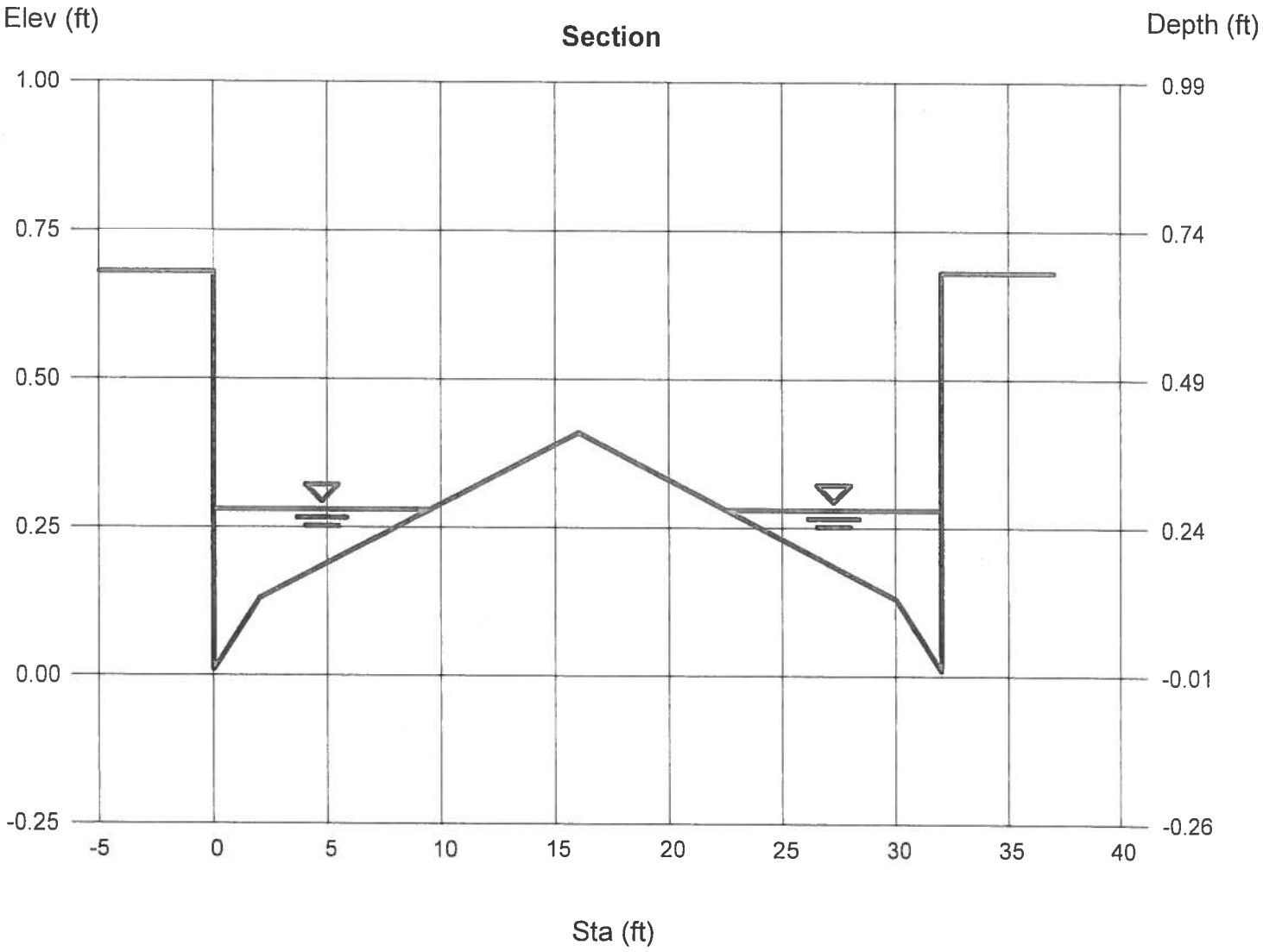
Compute by:	Known Q
Known Q (cfs)	= 3.02

Highlighted

Depth (ft)	= 0.27
Q (cfs)	= 3.020
Area (sqft)	= 1.97
Velocity (ft/s)	= 1.54
Wetted Perim (ft)	= 19.55
Crit Depth, Yc (ft)	= 0.26
Top Width (ft)	= 19.01
EGL (ft)	= 0.31

(Sta, El, n)-(Sta, El, n)...

(0.00, 0.68)-(0.01, 0.01, 0.013)-(2.01, 0.13, 0.013)-(16.01, 0.41, 0.017)-(30.01, 0.13, 0.017)-(32.01, 0.01, 0.013)-(32.02, 0.68, 0.013)



Channel Report

Hydraflow Express Extension for AutoCAD® Civil 3D® 2013 by Autodesk, Inc | Friday, Oct 10 2014

Canty Ct. Q10 Street Capacity (28' F-F)

User-defined

Invert Elev (ft)	= 0.01
Slope (%)	= 0.60
N-Value	= 0.016

Calculations

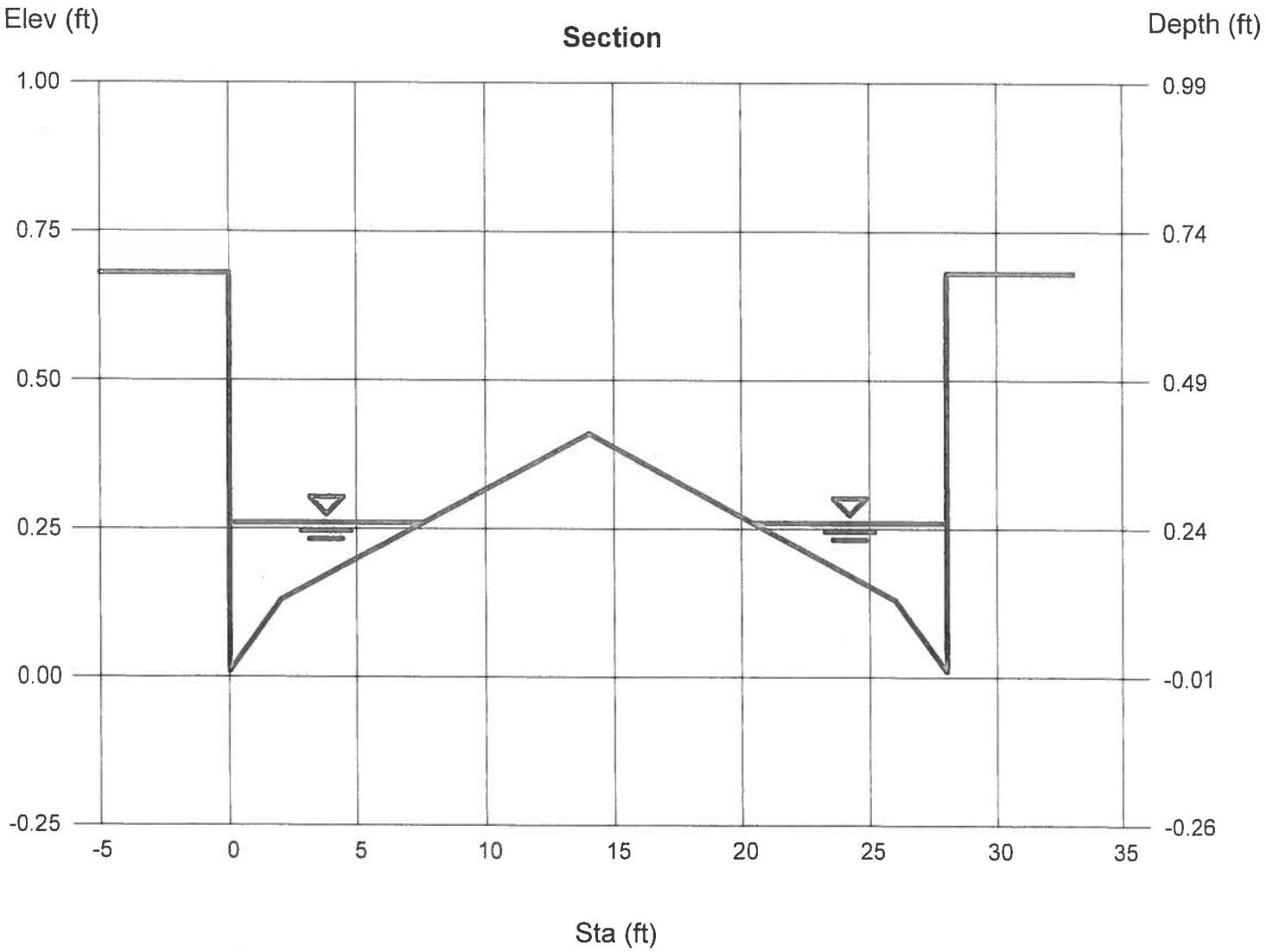
Compute by:	Known Q
Known Q (cfs)	= 2.05

Highlighted

Depth (ft)	= 0.25
Q (cfs)	= 2.050
Area (sqft)	= 1.49
Velocity (ft/s)	= 1.38
Wetted Perim (ft)	= 15.65
Crit Depth, Yc (ft)	= 0.24
Top Width (ft)	= 15.15
EGL (ft)	= 0.28

(Sta, El, n)-(Sta, El, n)...

(0.00, 0.68)-(0.01, 0.01, 0.013)-(2.01, 0.13, 0.013)-(14.01, 0.41, 0.017)-(26.01, 0.13, 0.017)-(28.01, 0.01, 0.013)-(28.02, 0.68, 0.013)



Channel Report

Hydraflow Express Extension for AutoCAD® Civil 3D® 2013 by Autodesk, Inc — Friday, Oct 10 2014

Canty Ct. Q100 Street Capacity (28' F-F)

User-defined

Invert Elev (ft)	= 0.01
Slope (%)	= 0.60
N-Value	= 0.016

Calculations

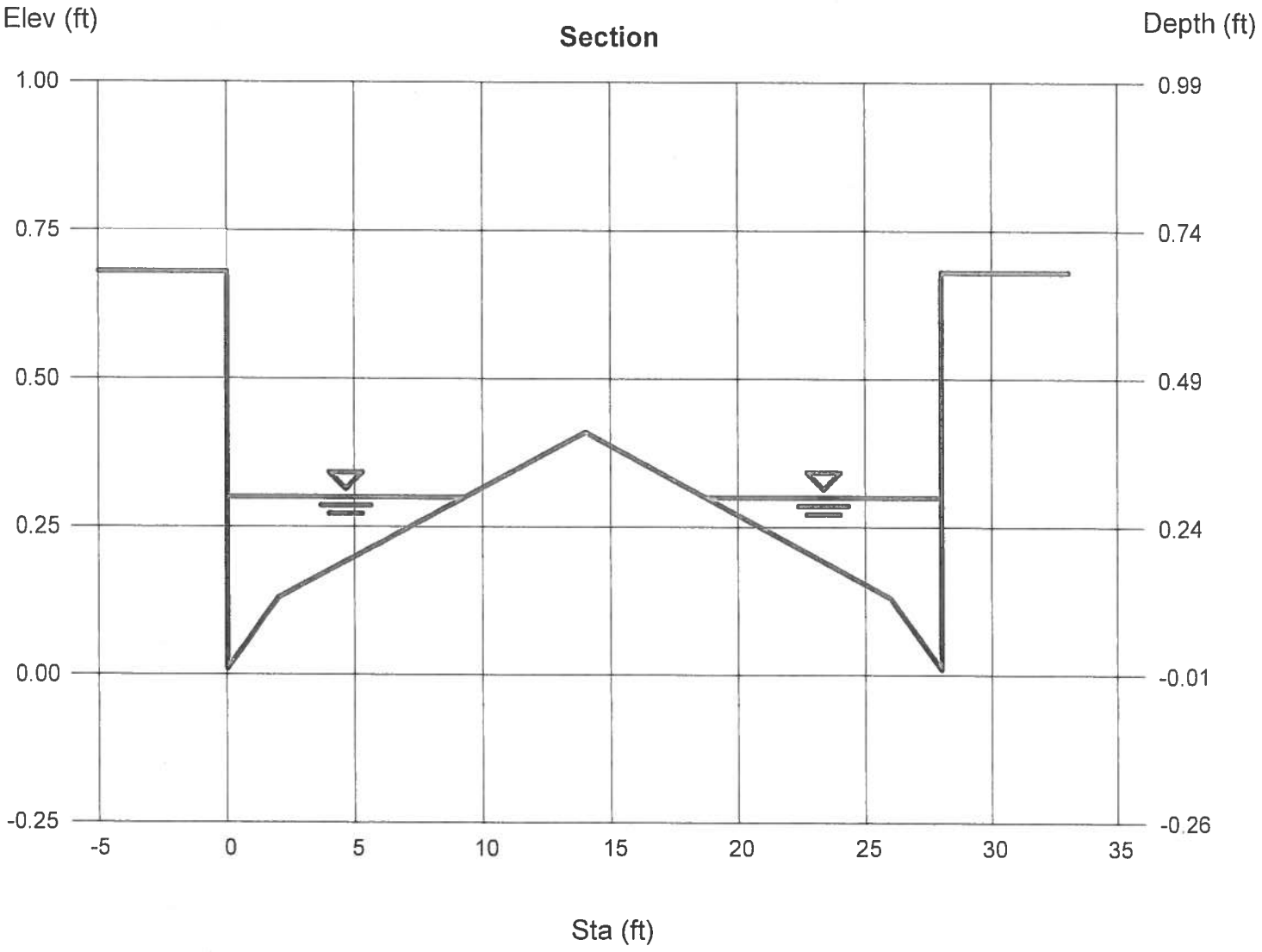
Compute by:	Known Q
Known Q (cfs)	= 3.58

Highlighted

Depth (ft)	= 0.29
Q (cfs)	= 3.580
Area (sqft)	= 2.16
Velocity (ft/s)	= 1.66
Wetted Perim (ft)	= 19.16
Crit Depth, Yc (ft)	= 0.28
Top Width (ft)	= 18.58
EGL (ft)	= 0.33

(Sta, El, n)-(Sta, El, n)...

(0.00, 0.68)-(0.01, 0.01, 0.013)-(2.01, 0.13, 0.013)-(14.01, 0.41, 0.017)-(26.01, 0.13, 0.017)-(28.01, 0.01, 0.013)-(28.02, 0.68, 0.013)



Channel Report

Hydraflow Express Extension for AutoCAD® Civil 3D® 2013 by Autodesk, Inc. Monday, Oct 13 2014

Westside Blvd Q10 Street Capacity (28' F-F), DB-6

User-defined

Invert Elev (ft)	= 0.01
Slope (%)	= 0.60
N-Value	= 0.016

Calculations

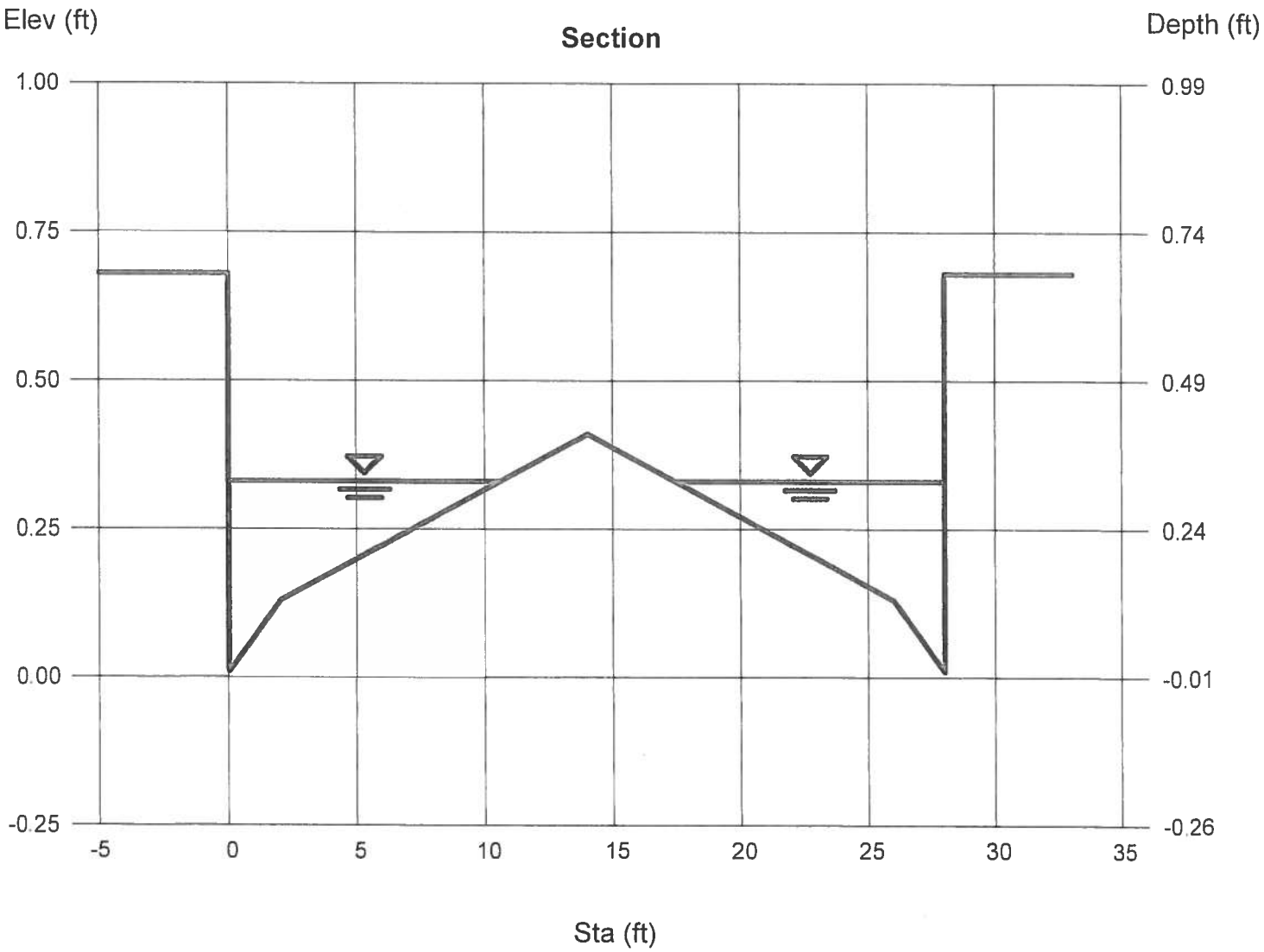
Compute by:	Known Q
Known Q (cfs)	= 4.94

Highlighted

Depth (ft)	= 0.32
Q (cfs)	= 4.940
Area (sqft)	= 2.76
Velocity (ft/s)	= 1.79
Wetted Perim (ft)	= 21.79
Crit Depth, Yc (ft)	= 0.31
Top Width (ft)	= 21.15
EGL (ft)	= 0.37

(Sta, El, n)-(Sta, El, n)...

(0.00, 0.68)-(0.01, 0.01, 0.013)-(2.01, 0.13, 0.013)-(14.01, 0.41, 0.017)-(26.01, 0.13, 0.017)-(28.01, 0.01, 0.013)-(28.02, 0.68, 0.013)



Channel Report

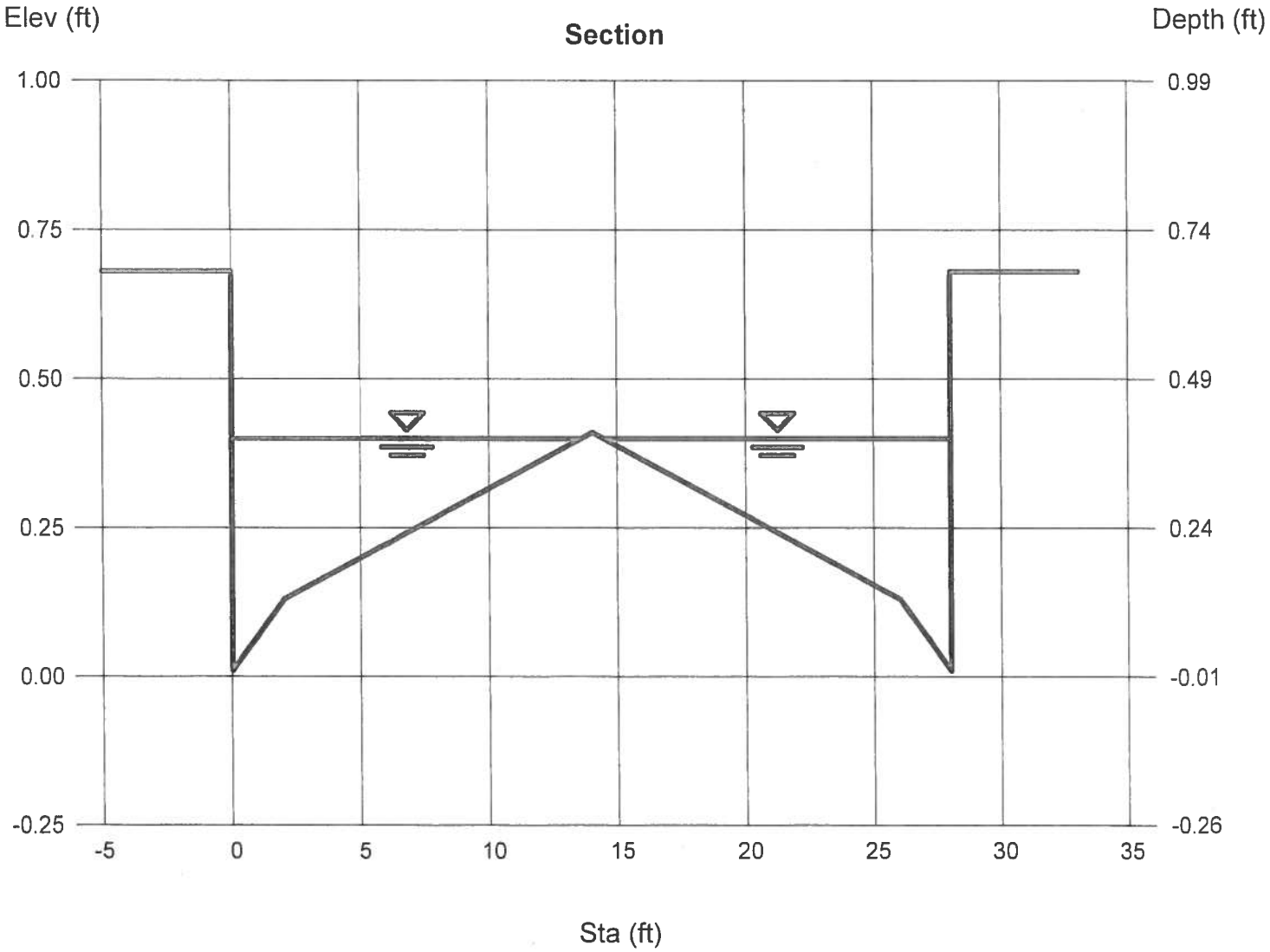
Hydraflow Express Extension for AutoCAD® Civil 3D® 2013 by Autodesk, Inc | Monday, Oct 13 2014

Westside Blvd.. Q100 Street Capacity (28' F-F), DB-3

User-defined		Highlighted	
Invert Elev (ft)	= 0.01	Depth (ft)	= 0.39
Slope (%)	= 0.60	Q (cfs)	= 8.510
N-Value	= 0.016	Area (sqft)	= 4.45
		Velocity (ft/s)	= 1.91
Calculations		Wetted Perim (ft)	= 27.94
Compute by:	Known Q	Crit Depth, Yc (ft)	= 0.37
Known Q (cfs)	= 8.51	Top Width (ft)	= 27.15
		EGL (ft)	= 0.45

(Sta, El, n)-(Sta, El, n)...

(0.00, 0.68)-(0.01, 0.01, 0.013)-(2.01, 0.13, 0.013)-(14.01, 0.41, 0.017)-(26.01, 0.13, 0.017)-(28.01, 0.01, 0.013)-(28.02, 0.68, 0.013)



Channel Report

Hydraflow Express Extension for AutoCAD® Civil 3D® 2013 by Autodesk, Inc | Monday, Oct 13 2014

Sipapu Dr. Q10 Street Capacity (28' F-F), DB-5

User-defined

Invert Elev (ft)	= 0.01
Slope (%)	= 0.60
N-Value	= 0.016

Calculations

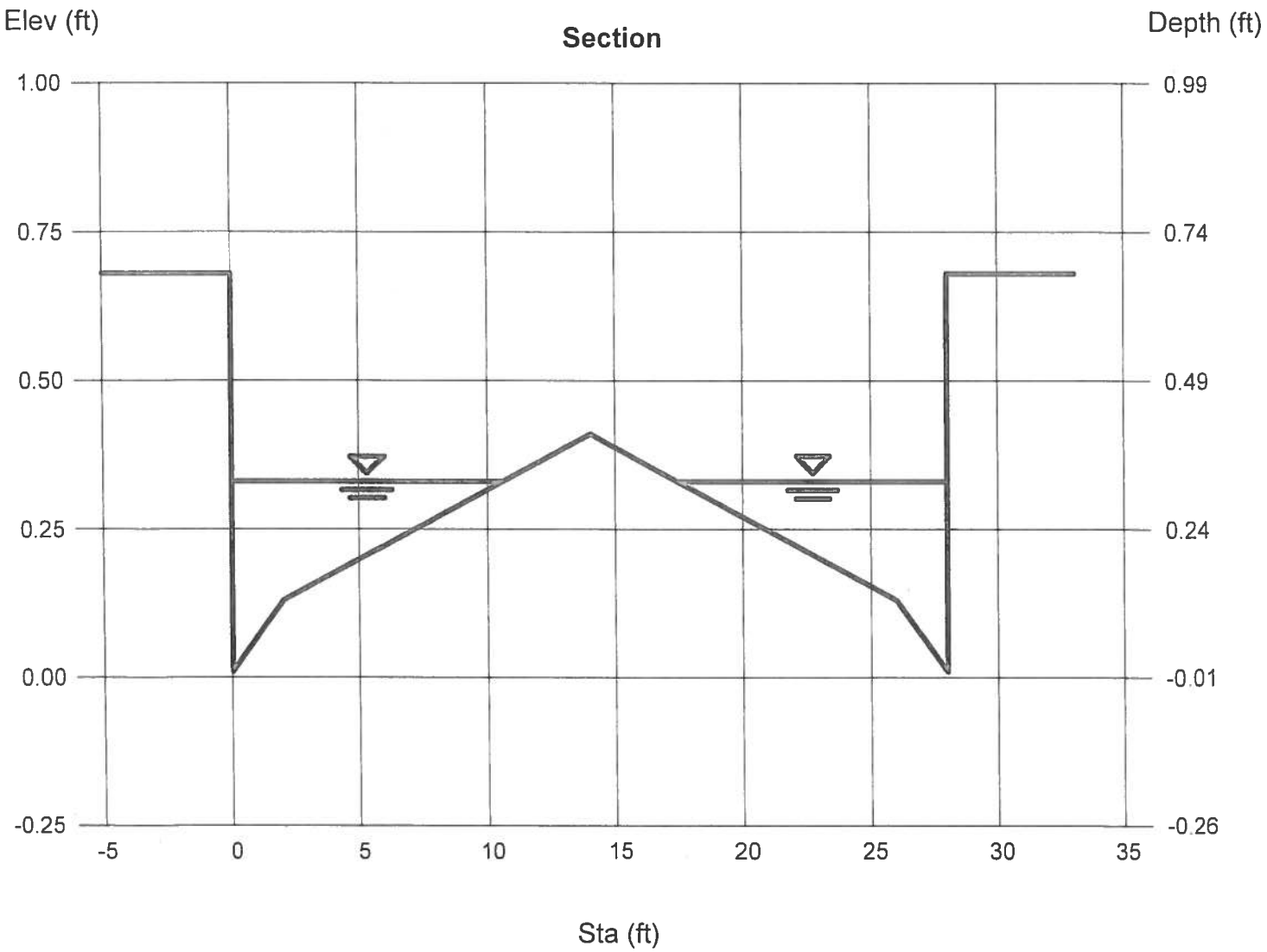
Compute by:	Known Q
Known Q (cfs)	= 4.76

Highlighted

Depth (ft)	= 0.32
Q (cfs)	= 4.760
Area (sqft)	= 2.76
Velocity (ft/s)	= 1.73
Wetted Perim (ft)	= 21.79
Crit Depth, Yc (ft)	= 0.31
Top Width (ft)	= 21.15
EGL (ft)	= 0.37

(Sta, El, n)-(Sta, El, n)...

(0.00, 0.68)-(0.01, 0.01, 0.013)-(2.01, 0.13, 0.013)-(14.01, 0.41, 0.017)-(26.01, 0.13, 0.017)-(28.01, 0.01, 0.013)-(28.02, 0.68, 0.013)



Channel Report

Hydraflow Express Extension for AutoCAD® Civil 3D® 2013 by Autodesk, Inc. Monday, Oct 13 2014

Sipapu Dr. Q100 Street Capacity (28' F-F), DB-5

User-defined

Invert Elev (ft)	= 0.01
Slope (%)	= 1.50
N-Value	= 0.016

Calculations

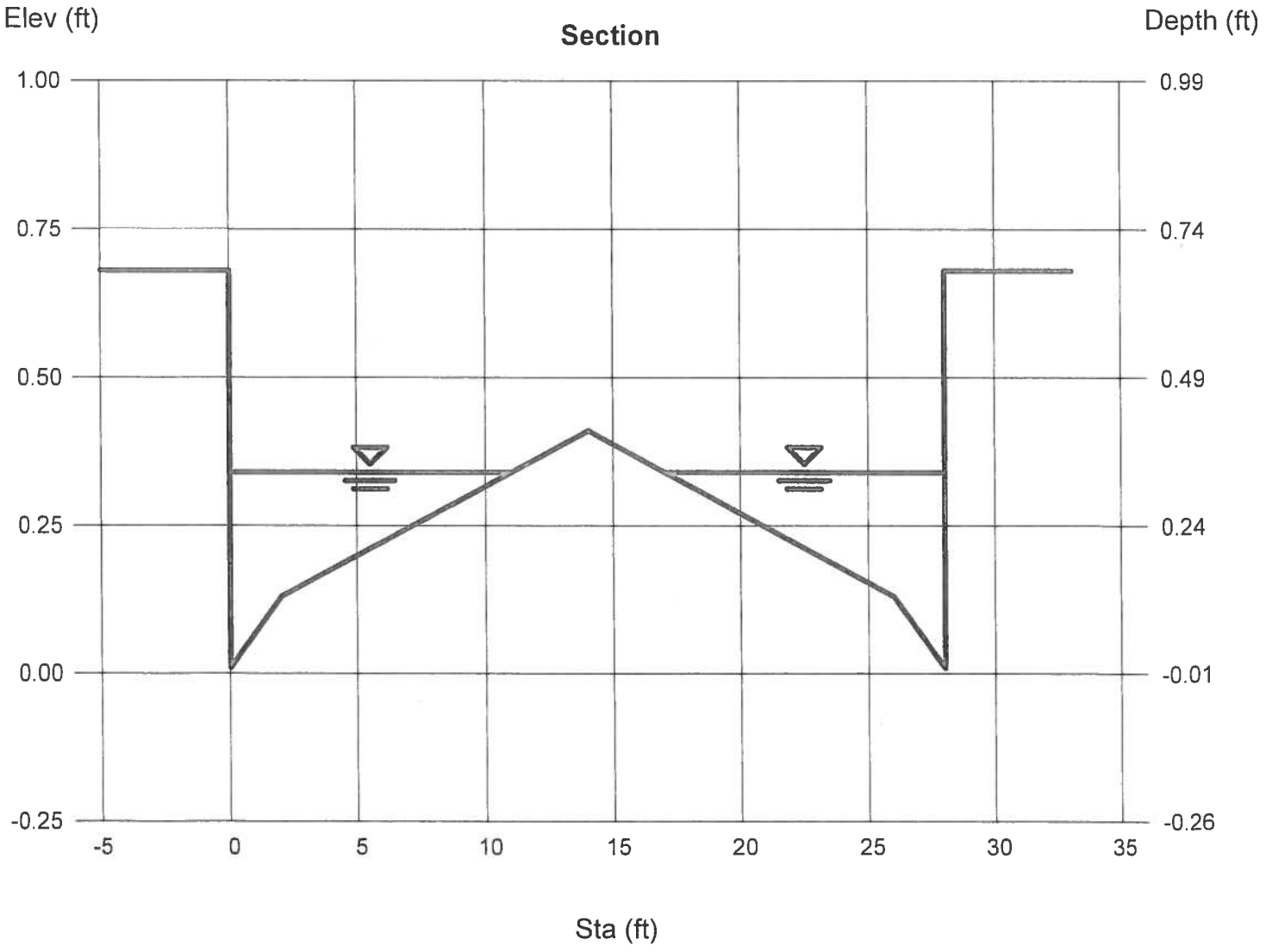
Compute by:	Known Q
Known Q (cfs)	= 8.35

Highlighted

Depth (ft)	= 0.33
Q (cfs)	= 8.350
Area (sqft)	= 2.97
Velocity (ft/s)	= 2.81
Wetted Perim (ft)	= 22.67
Crit Depth, Yc (ft)	= 0.37
Top Width (ft)	= 22.01
EGL (ft)	= 0.45

(Sta, El, n)-(Sta, El, n)...

(0.00, 0.68)-(0.01, 0.01, 0.013)-(2.01, 0.13, 0.013)-(14.01, 0.41, 0.017)-(26.01, 0.13, 0.017)-(28.01, 0.01, 0.013)-(28.02, 0.68, 0.013)



Channel Report

Hydraflow Express Extension for AutoCAD® Civil 3D® 2013 by Autodesk, Inc — Monday, Oct 13 2014

Sipapu Dr. Q10 Street Capacity (28' F-F), DB-6

User-defined

Invert Elev (ft)	= 0.01
Slope (%)	= 1.00
N-Value	= 0.016

Calculations

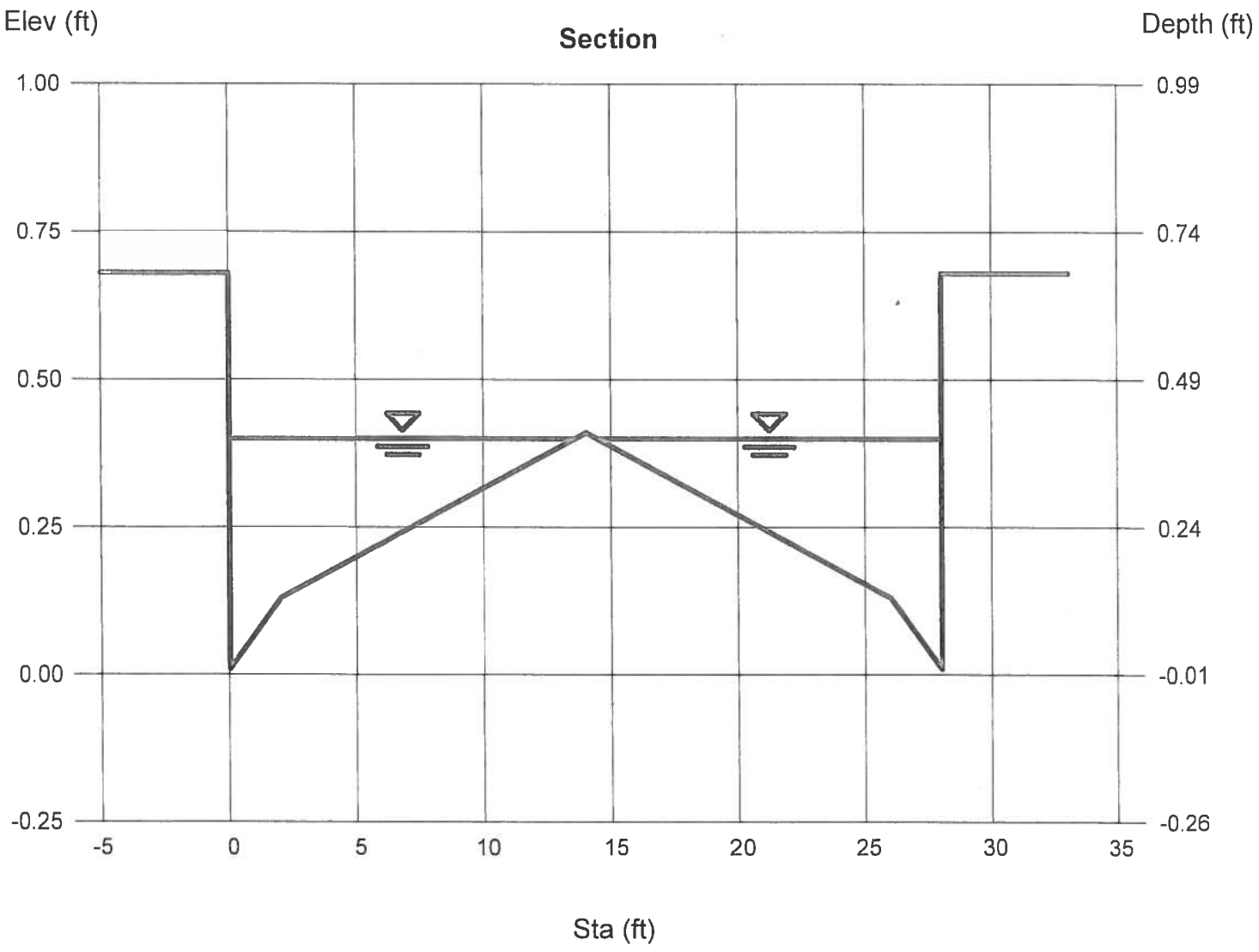
Compute by:	Known Q
Known Q (cfs)	= 11.61

Highlighted

Depth (ft)	= 0.39
Q (cfs)	= 11.61
Area (sqft)	= 4.45
Velocity (ft/s)	= 2.61
Wetted Perim (ft)	= 27.94
Crit Depth, Yc (ft)	= 0.41
Top Width (ft)	= 27.15
EGL (ft)	= 0.50

(Sta, El, n)-(Sta, El, n)...

(0.00, 0.68)-(0.01, 0.01, 0.013)-(2.01, 0.13, 0.013)-(14.01, 0.41, 0.017)-(26.01, 0.13, 0.017)-(28.01, 0.01, 0.013)-(28.02, 0.68, 0.013)



Channel Report

Hydraflow Express Extension for AutoCAD® Civil 3D® 2013 by Autodesk, Inc. Monday, Oct 13 2014

Sipapu Dr. Q100 Street Capacity (28' F-F), DB-6

User-defined

Invert Elev (ft)	= 0.01
Slope (%)	= 1.50
N-Value	= 0.016

Calculations

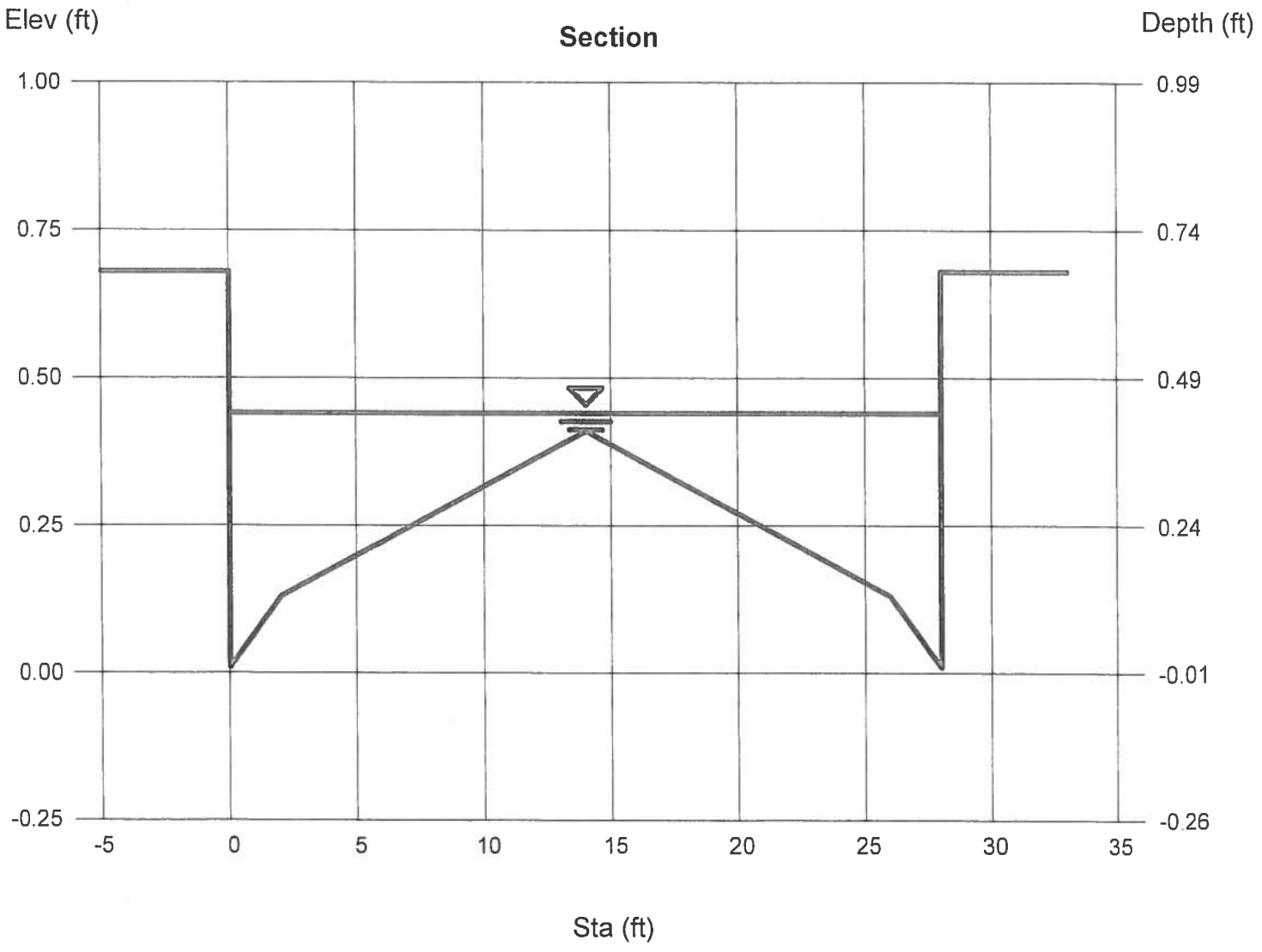
Compute by:	Known Q
Known Q (cfs)	= 20.20

Highlighted

Depth (ft)	= 0.43
Q (cfs)	= 20.20
Area (sqft)	= 5.56
Velocity (ft/s)	= 3.63
Wetted Perim (ft)	= 28.87
Crit Depth, Yc (ft)	= 0.49
Top Width (ft)	= 28.01
EGL (ft)	= 0.64

(Sta, El, n)-(Sta, El, n)...

(0.00, 0.68)-(0.01, 0.01, 0.013)-(2.01, 0.13, 0.013)-(14.01, 0.41, 0.017)-(26.01, 0.13, 0.017)-(28.01, 0.01, 0.013)-(28.02, 0.68, 0.013)



Appendix C

McMahon Boulevard Runoff Flow Rate Analysis

D. Mark Goodwin & Associates, P.A.
Consulting Engineers
P.O. BOX 90606, ALBUQUERQUE, NM 87199
(505) 828-2200 FAX 797-9539

PROJECT: Anasazi Ridge Unit 3
SUBJECT: McMahon Blvd Q_{100} + Q_{10}
BY: HLC DATE: 10/20/2014
CHECKED: DATE:
SHEET 1 OF 2

Determine Q_{100}, Q_{10} in McMahon Blvd at intersection with Atlatl Dr and at the end of proposed McMahon expansion.

Q_{100}, Q_{10} in McMahon Blvd under future developed conditions were calculated in the McMahon Boulevard Extension Preliminary Drainage Report, July 2009, prepared by URS. The future developed flow rates in McMahon Blvd. pertain to the full cross-section of McMahon, and include flows from one off-site drainage basin (OS-1B).

These flowrates are:

OS-1B: 7.35 cfs (100-yr), 2.36 cfs (10-yr)

BW-1C (McMahon): 48.32 cfs (100-yr), 28.95 cfs (10-yr)

Total Flowrates in McMahon: 55.67 cfs (100-yr), 31.31 cfs (10-yr)

The Anasazi Ridge Unit 3 analysis will only consider the southern half of McMahon Blvd., thus flowrates will be reduced by half. The drainage basin OS-1B will flow to the northern half of McMahon Blvd. and therefore will not be considered in this analysis.

Q_{100} = 48.32/2 = 24.16 cfs
(Q_{10}) = 28.95/2 = 14.47 cfs

Further reduction in flowrates will be calculated by reducing the size of BW-1C at two analysis points: 1) at the intersection with Atlatl Drive and 2) at the end of the McMahon Blvd expansion where it matches existing.

D. Mark Goodwin & Associates, P.A.
Consulting Engineers
P.O. BOX 90606, ALBUQUERQUE,NM 87199
(505) 828-2200 FAX 797-9539

PROJECT Anasazi Ridge Unit 3
SUBJECT McMahon Blvd Q100 + Q10
BY HLC DATE 10/20/2014
CHECKED DATE
SHEET 2 OF 2

The total length of RW-1C ≈ 3200', the length of RW-1C from the upstream end to Atlatl Dr ≈ 1900'
The portion of RW-1C accounted for at this analysis point is $\frac{1900'}{3200'} = .59$, or $Q_{100} = 24.16 \text{ cfs} (.59)$
$= 14.25$ cfs

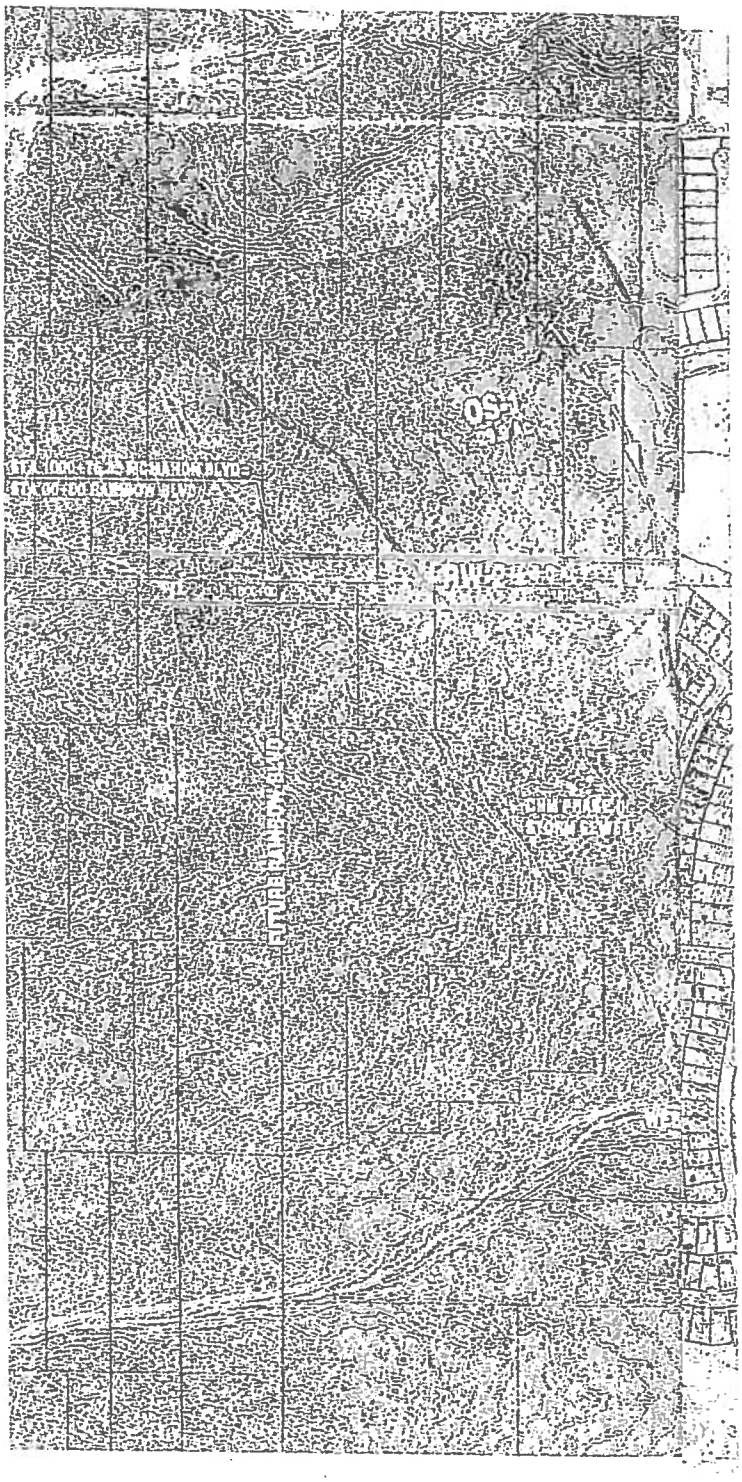
The length of RW-1C from the upstream end to to the end of the McMahon Expansion is ≈ 2500'
The portion of RW-1C accounted for at this analysis point is $\frac{2500'}{3200'} = .78$, or $Q_{100} = 24.16 \text{ cfs} (.78)$
$= 18.84$ cfs

To conclude:
The design discharge in McMahon Blvd at the Atlatl Dr and at the end of the McMahon Expansion are respectively:

$Q_{100} = 14.25 \text{ cfs (RW-1C)} + 1.0 \text{ cfs (DP-1)} = 15.25$ cfs
$Q_{100} = 18.25 \text{ cfs (RW-1C)} + 1.0 \text{ cfs (DP3-1)} = 19.25$ cfs

$Q_{10} = 20.95 \text{ (RW-1C)}/2 = 10.47$ cfs
$Q_{10} \text{ (Atlatl)} = 10.47 (.59) + .5 \text{ cfs} = 9.33$ cfs
$Q_{10} \text{ (McMahon Exp)} = 10.47 (.78) + .5 \text{ cfs} = 12.17$ cfs

From: McMahon Boulevard Extension
Drainage Report, 07-09
URS



GRAPHIC SCALE IN FEET

300 0 300 600

1" = 300'

N

LEGEND

- BASIN BOUNDARY
- OS-1 BASIN ID
- FLOW LINE
- EXISTING STORM SEWER
- FUTURE STORM SEWER
- WATER LINE
- EXISTING WATER LINE
- BASIN DIRECTION FLOW

SOURCE OF ORTHO PHOTOS: BERNALILLO COUNTY GIS WEB SITE; DATED 2008

SOURCE OF CONTOURS: BERNALILLO COUNTY GIS WEB SITE; DATED 2004

CITY OF ALBUQUERQUE

DEPARTMENT OF MUNICIPAL DEVELOPEMENT

DRAINAGE BASIN MAP FUTURE CONDITIONS

Figure 4

URS

Channel Report

Hydraflow Express Extension for AutoCAD® Civil 3D® 2013 by Autodesk, Inc. Tuesday, Oct 14 2014

Anasazi Unit 3, McMahon Blvd./Atlatl Dr. Intersection (S=2.0%), Q10=9.3 CFS

User-defined

Invert Elev (ft)	= 0.78
Slope (%)	= 2.00
N-Value	= 0.016

Calculations

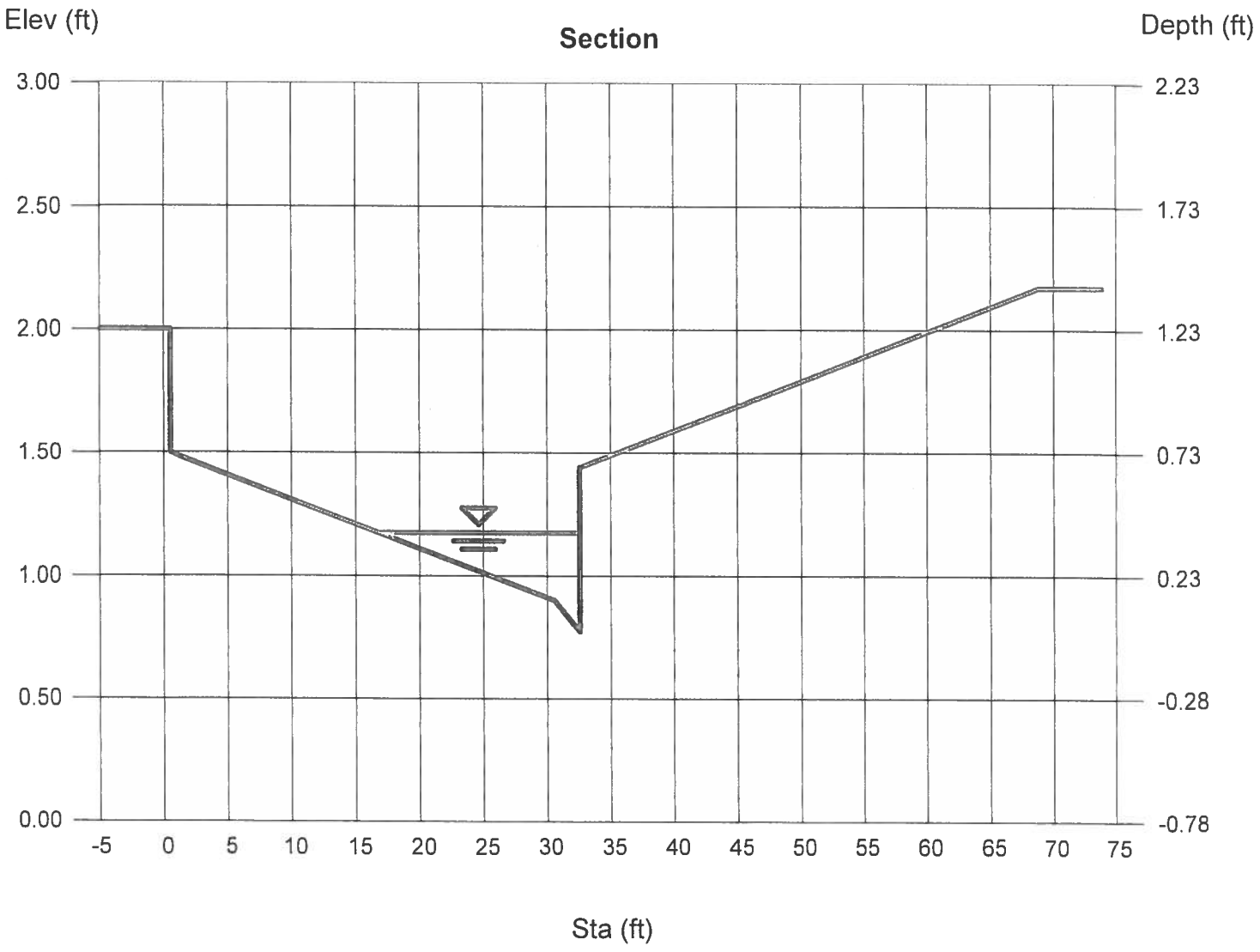
Compute by:	Known Q
Known Q (cfs)	= 9.30

Highlighted

Depth (ft)	= 0.40
Q (cfs)	= 9.300
Area (sqft)	= 2.58
Velocity (ft/s)	= 3.61
Wetted Perim (ft)	= 16.24
Crit Depth, Yc (ft)	= 0.47
Top Width (ft)	= 15.84
EGL (ft)	= 0.60

(Sta, El, n)-(Sta, El, n)...

(0.00, 2.00)-(0.50, 2.00, 0.013)-(0.51, 1.50, 0.013)-(1.34, 1.48, 0.013)-(30.51, 0.90, 0.017)-(32.51, 0.78, 0.013)-(32.52, 1.44, 0.013)
-(43.52, 1.66, 0.030)-(49.52, 1.78, 0.013)-(68.80, 2.17, 0.030)



Channel Report

Hydraflow Express Extension for AutoCAD® Civil 3D® 2013 by Autodesk, Inc. Tuesday, Oct 14 2014

Anasazi Unit 3, McMahon Blvd./Atlatl Dr. Intersection (S=2.0%), Q100=15.2 CFS

User-defined

Invert Elev (ft)	= 0.78
Slope (%)	= 2.00
N-Value	= 0.016

Calculations

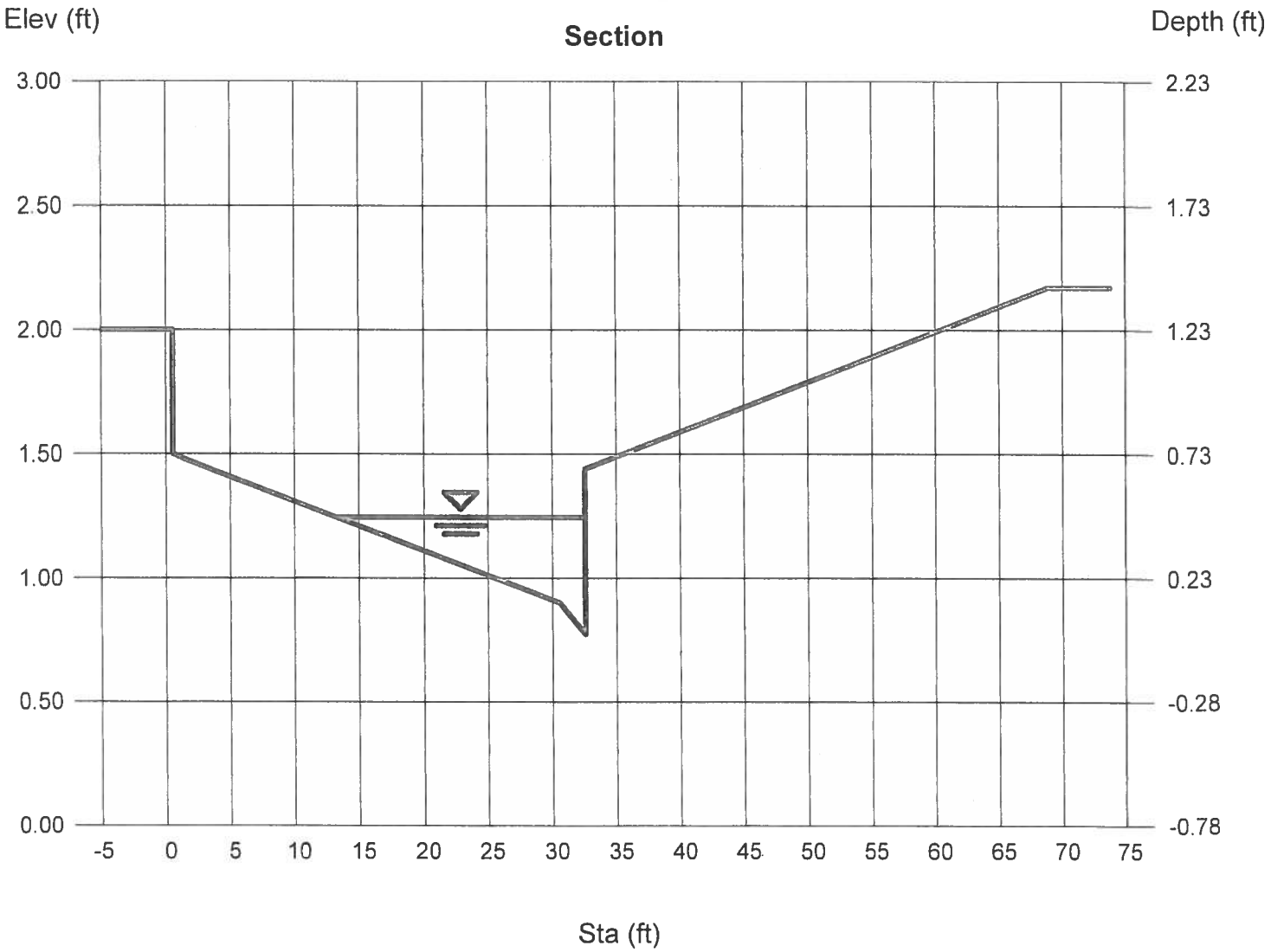
Compute by:	Known Q
Known Q (cfs)	= 15.20

Highlighted

Depth (ft)	= 0.47
Q (cfs)	= 15.20
Area (sqft)	= 3.81
Velocity (ft/s)	= 3.99
Wetted Perim (ft)	= 19.83
Crit Depth, Yc (ft)	= 0.55
Top Width (ft)	= 19.36
EGL (ft)	= 0.72

(Sta, El, n)-(Sta, El, n)...

(0.00, 2.00)-(0.50, 2.00, 0.013)-(0.51, 1.50, 0.013)-(1.34, 1.48, 0.013)-(30.51, 0.90, 0.017)-(32.51, 0.78, 0.013)-(32.52, 1.44, 0.013) -(43.52, 1.66, 0.030)-(49.52, 1.78, 0.013)-(68.80, 2.17, 0.030)



Channel Report

Hydraflow Express Extension for AutoCAD® Civil 3D® 2013 by Autodesk, Inc. Wednesday, Oct 22 2014

Anasazi Unit 3, End McMahon Blvd. Ext. (S=0.5%), Q10=12.17 CFS

User-defined

Invert Elev (ft)	= 0.78
Slope (%)	= 0.50
N-Value	= 0.017

Calculations

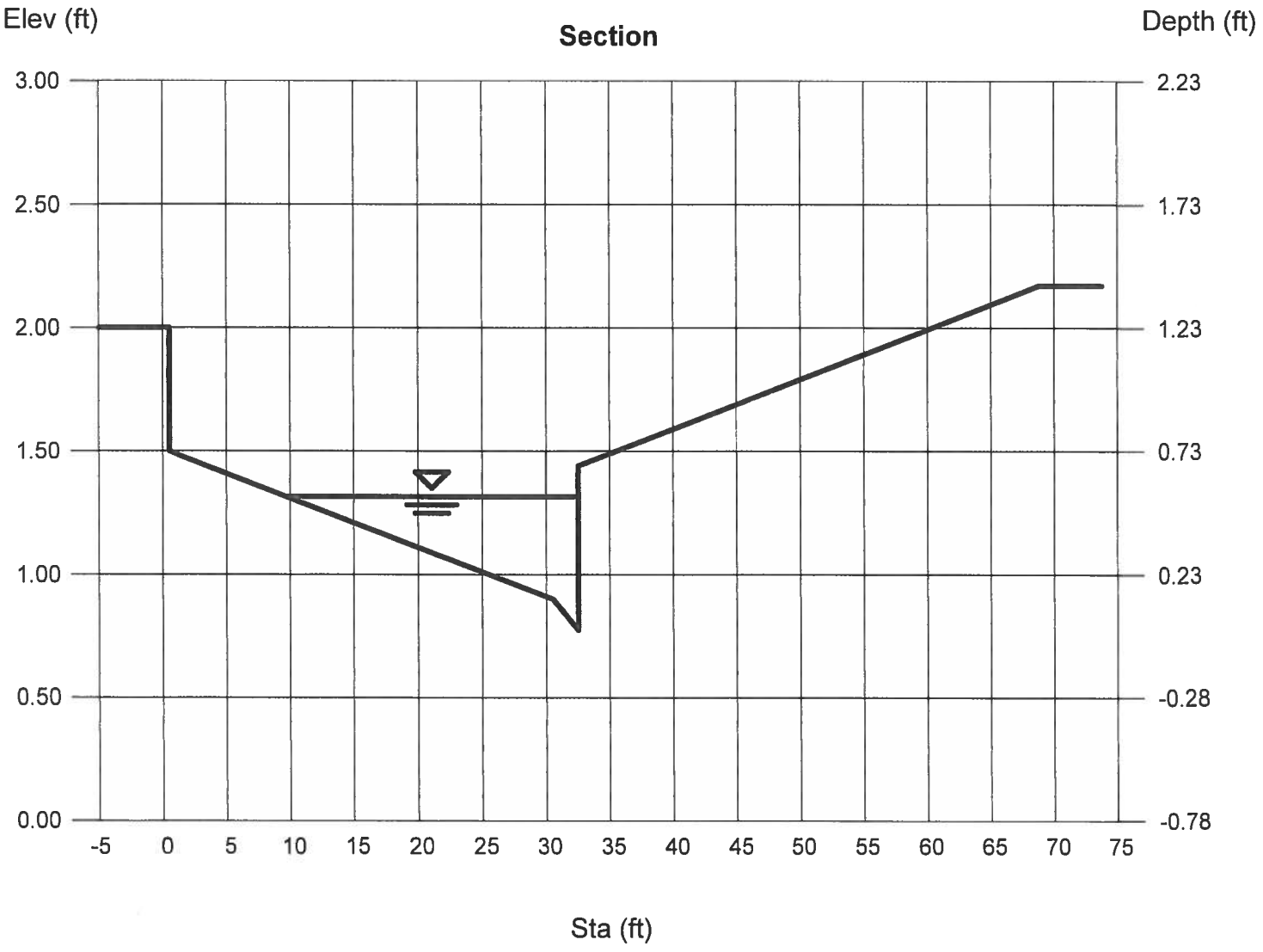
Compute by:	Known Q
Known Q (cfs)	= 12.17

Highlighted

Depth (ft)	= 0.54
Q (cfs)	= 12.17
Area (sqft)	= 5.29
Velocity (ft/s)	= 2.30
Wetted Perim (ft)	= 23.42
Crit Depth, Yc (ft)	= 0.51
Top Width (ft)	= 22.88
EGL (ft)	= 0.62

(Sta, El, n)-(Sta, El, n)...

(0.00, 2.00)-(0.50, 2.00, 0.013)-(0.51, 1.50, 0.013)-(1.34, 1.48, 0.013)-(30.51, 0.90, 0.017)-(32.51, 0.78, 0.013)-(32.52, 1.44, 0.013)
-(43.52, 1.66, 0.030)-(49.52, 1.78, 0.013)-(68.80, 2.17, 0.030)



Channel Report

Hydraflow Express Extension for AutoCAD® Civil 3D® 2013 by Autodesk, Inc. Wednesday, Oct 22 2014

Anasazi Unit 3, End McMahon Blvd. Ext. (S=0.5%), Q100=19.25 CFS

User-defined

Invert Elev (ft)	= 0.78
Slope (%)	= 0.50
N-Value	= 0.017

Calculations

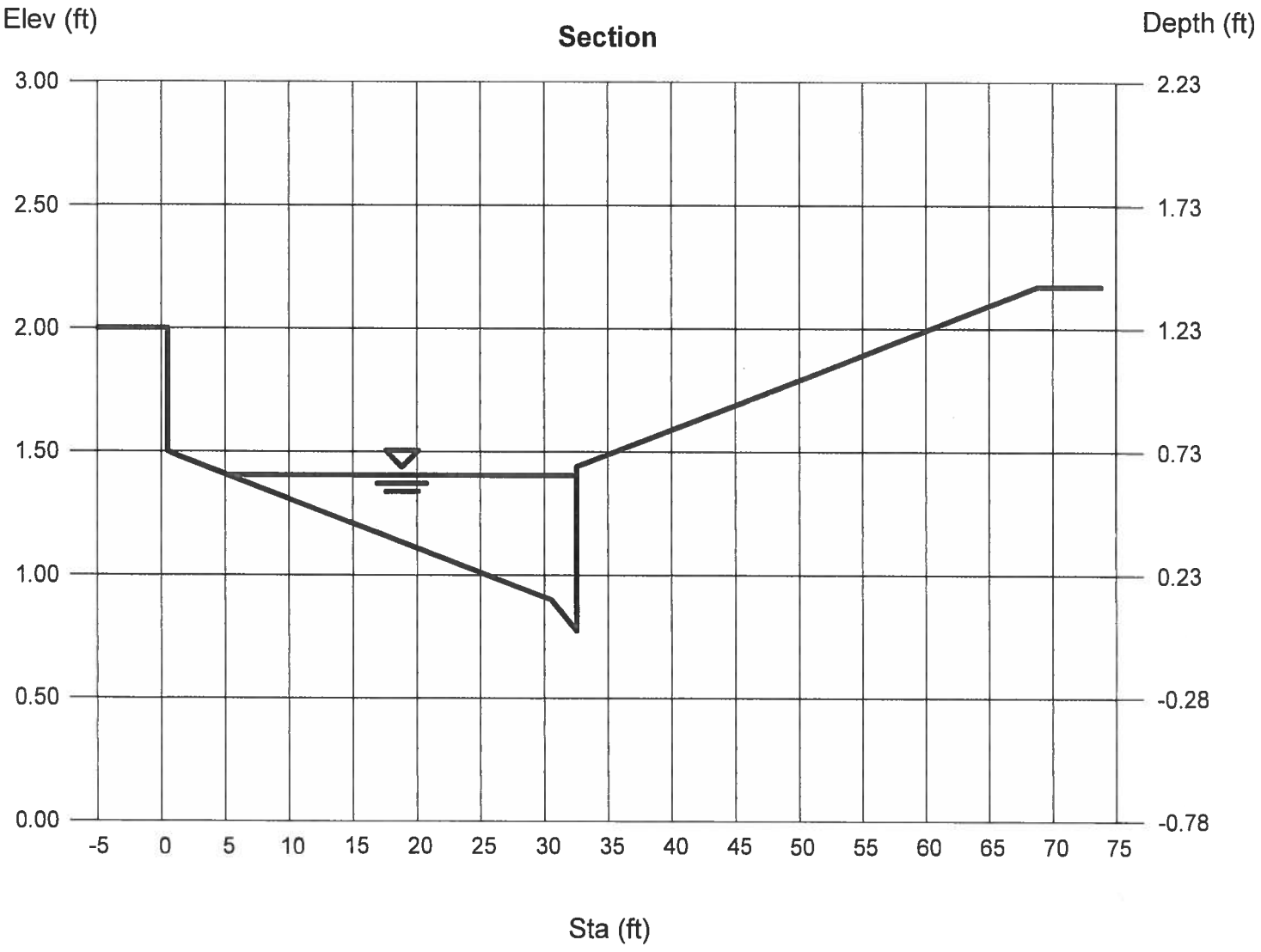
Compute by:	Known Q
Known Q (cfs)	= 19.25

Highlighted

Depth (ft)	= 0.63
Q (cfs)	= 19.25
Area (sqft)	= 7.55
Velocity (ft/s)	= 2.55
Wetted Perim (ft)	= 28.04
Crit Depth, Yc (ft)	= 0.60
Top Width (ft)	= 27.41
EGL (ft)	= 0.73

(Sta, El, n)-(Sta, El, n)...

(0.00, 2.00)-(0.50, 2.00, 0.013)-(0.51, 1.50, 0.013)-(1.34, 1.48, 0.013)-(30.51, 0.90, 0.017)-(32.51, 0.78, 0.013)-(32.52, 1.44, 0.013)
-(43.52, 1.66, 0.030)-(49.52, 1.78, 0.013)-(68.80, 2.17, 0.030)



Appendix D

Hydraulic Analysis of Drainage Structures

D. Mark Goodwin & Associates, P.A.
Consulting Engineers
P.O. BOX 90606, ALBUQUERQUE, NM 87199
(505) 828-2200 FAX 797-9539

PROJECT Anasazi Ridge Unit 3
SUBJECT McMahon Blvd Q_{100} & Q_{10}
BY HLC DATE 10/20/2014
CHECKED ____ DATE ____
SHEET 1 OF 2

Determine Q_{100}, Q_{10} in McMahon Blvd at intersection with Atlatl Dr and at the end of proposed McMahon expansion.

Q_{100}, Q_{10} in McMahon Blvd under future developed conditions were calculated in the McMahon Boulevard Extension Preliminary Drainage Report, July 2009, prepared by URS. The future developed flow rates in McMahon Blvd. pertain to the full cross-section of McMahon, and include flows from one off-site drainage basin (OS-1B).

These flowrates are:
OS-1B : 7.35 cfs (100-yr), 2.36 cfs (10-yr)
RW-1C (McMahon): 48.32 cfs (100-yr), 29.95 cfs (10-yr)

Total Flowrates in McMahon: 55.67 cfs (100-yr), 32.31 cfs (10-yr)

The Anasazi Ridge Unit 3 analysis will only consider the southern half of McMahon Blvd., these flowrates will be reduced by half. The drainage basin OS-1B will flow to the northern half of McMahon Blvd. and therefore will not be included in this analysis.

$(Q_{100}) = 48.32 / 2 = 24.16$ cfs
$(Q_{10}) = 29.95 / 2 = 14.97$ cfs

Further reduction in flowrates will be calculated by reducing the size of RW-1C at two analysis points: 1) at the intersection with Atlatl Drive and 2) at the end of the McMahon Blvd expansion where it matches existing.

D. Mark Goodwin & Associates, P.A.
Consulting Engineers
P.O. BOX 90606, ALBUQUERQUE, NM 87199
(505) 828-2200 FAX 797-9539

PROJECT Anasazi Ridge Unit 3
SUBJECT McMahon Blvd Q_{100} & Q_{10}
BY HLC DATE 10/20/2014
CHECKED ____ DATE ____
SHEET 2 OF 2

The total length of RW-1C ≈ 3200', the length of RW-1C from the upstream end to Atlatl Dr ≈ 1900'
The portion of RW-1C accounted for at this analysis point is $\frac{1900'}{3200'} = .59$, or $Q_{100} = 24.16 \text{ cfs} (.59)$
$= \underline{14.25} \text{ cfs}$

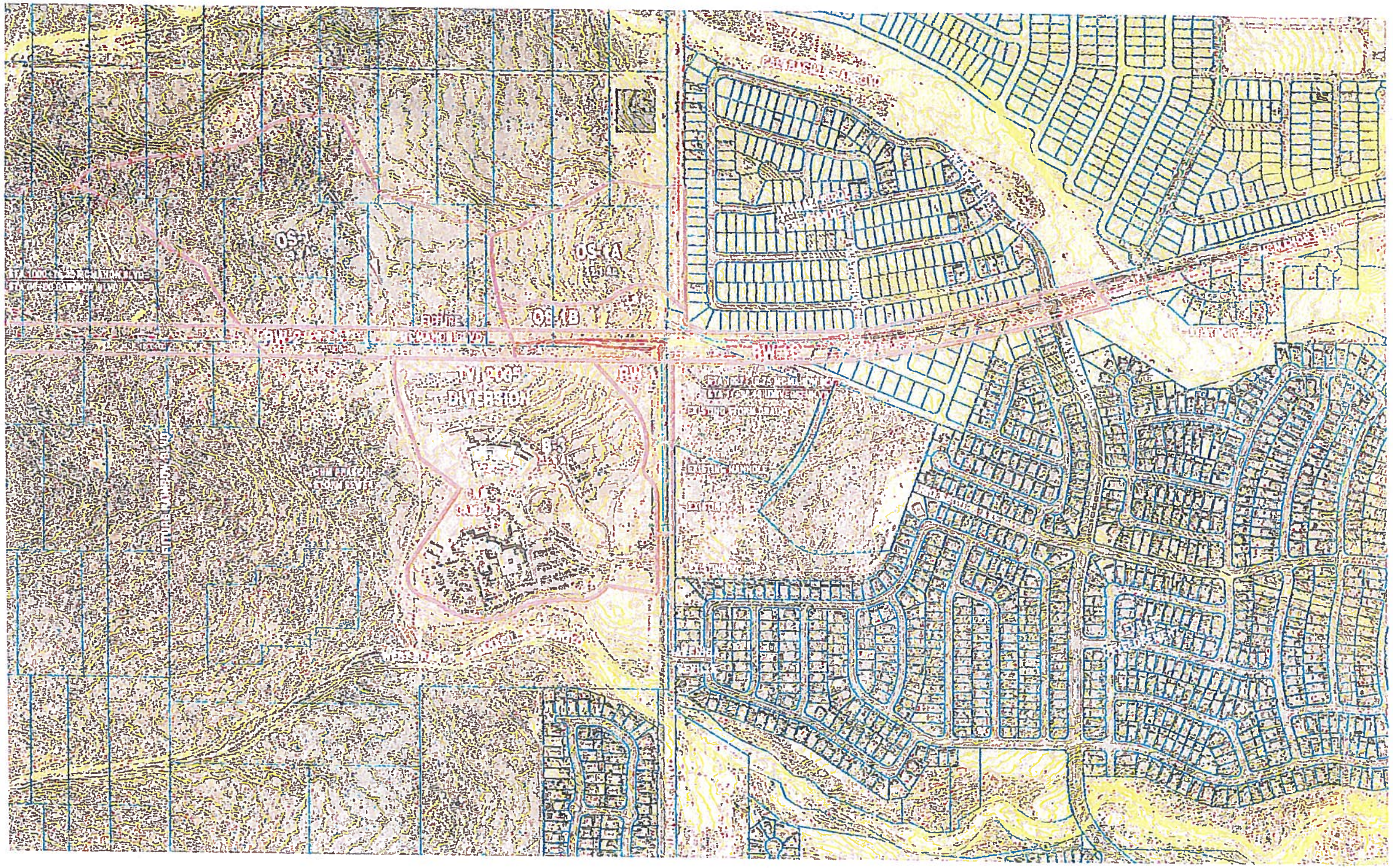
The length of RW-1C from the upstream end to to the end of the McMahon Expansion is ≈ 2500'
The portion of RW-1C accounted for at this analysis point is $\frac{2500'}{3200'} = .78$, or $Q_{100} = 24.16 \text{ cfs} (.78)$
$= \underline{18.84} \text{ cfs}$

To Conclude:
The design flowrate in McMahon Blvd at the Atlatl Dr and at the end of the McMahon Expansion are respectively:

$Q_{100} = 14.25 \text{ cfs (RW-1C)} + 1.0 \text{ cfs (DB-1)} = \underline{15.25} \text{ cfs}$
$Q_{100} = 18.25 \text{ cfs (RW-1C)} + 1.0 \text{ cfs (DB-1)} = \underline{19.25} \text{ cfs}$

$Q_{10} = 29.95 \text{ (RW-1C)}/2 = 14.97 \text{ cfs}$
$Q_{10} \text{ (Atlatl)} = 14.97 (.59) + .5 \text{ cfs} = \underline{9.33} \text{ cfs}$
$Q_{10} \text{ (McMahon Exp)} = 14.97 (.78) + .5 \text{ cfs} = \underline{12.17} \text{ cfs}$

From: McMahon Boulevard Extension
Drainage Report, 07-09
URS



LEGEND

- BASIN BOUNDARY
- OS-1 BASIN ID
- FLOW LINE
- EXISTING STORM SEWER
- FUTURE STORM SEWER
- WATER LINE
- EXISTING WATER LINE
- BASIN DIRECTION FLOW

SOURCE OF ORTHO PHOTOS: BERNALILLO COUNTY GIS WEB SITE; DATED 2008

SOURCE OF CONTOURS: BERNALILLO COUNTY GIS WEB SITE; DATED 2004

CITY OF ALBUQUERQUE
DEPARTMENT OF MUNICIPAL DEVELOPEMENT

DRAINAGE BASIN MAP
FUTURE CONDITIONS

Figure 4

URS

Weir Report

Hydraflow Express Extension for AutoCAD® Civil 3D® 2013 by Autodesk, Inc. Tuesday, Oct 14 2014

24 in. Sidewalk Culvert Capacity

Rectangular Weir

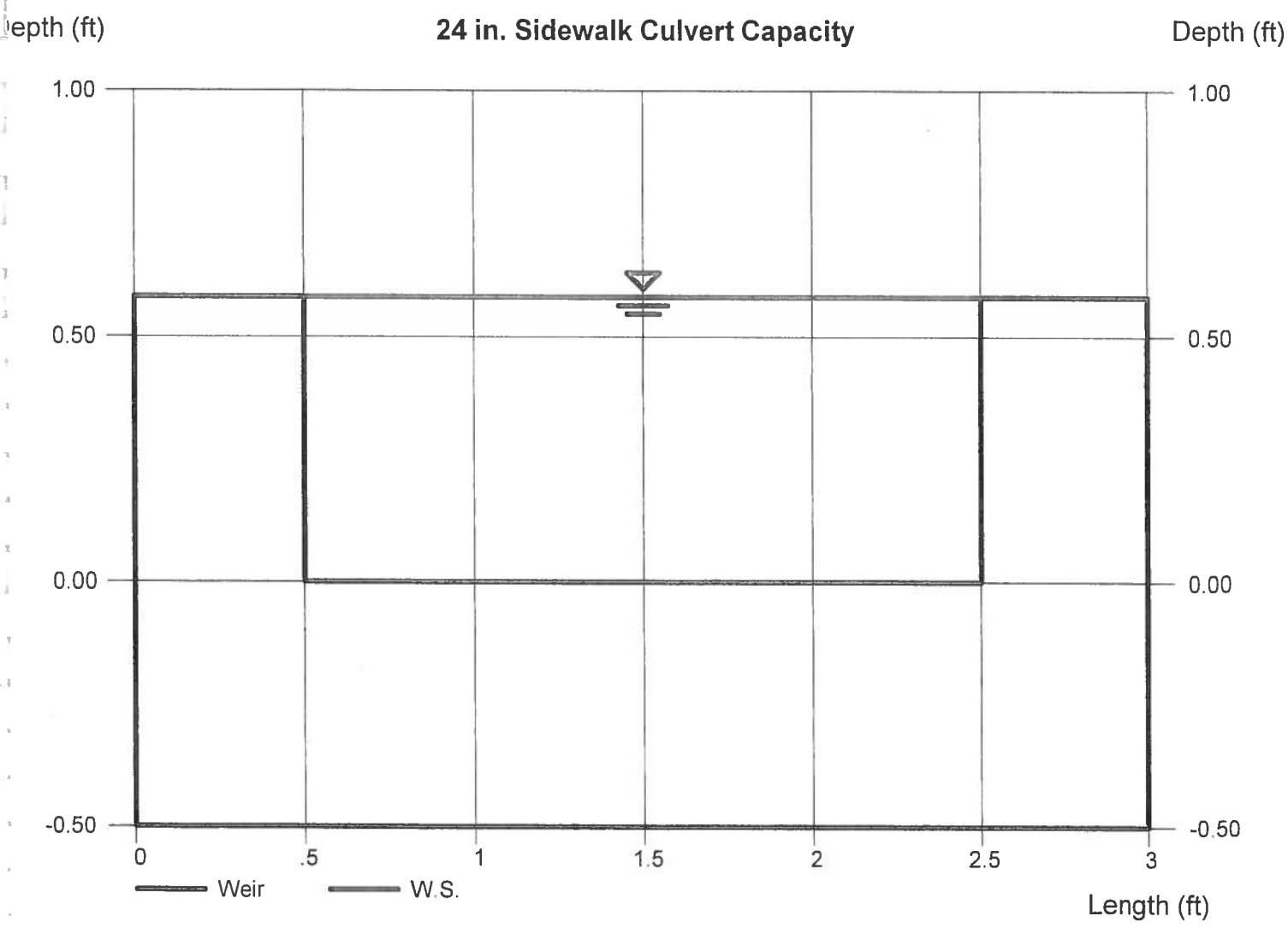
Crest	= Sharp
Bottom Length (ft)	= 2.00
Total Depth (ft)	= 0.58

Calculations

Weir Coeff. Cw	= 3.33
Compute by:	Known Depth
Known Depth (ft)	= 0.58

Highlighted

Depth (ft)	= 0.58
Q (cfs)	= 2.942
Area (sqft)	= 1.16
Velocity (ft/s)	= 2.54
Top Width (ft)	= 2.00



Channel Report

Hydraflow Express Extension for AutoCAD® Civil 3D® 2013 by Autodesk, Inc. Tuesday, Oct 14 2014

Outflow Channel Capacity (Sipapu Dr.)

User-defined

Invert Elev (ft)	= 0.67
Slope (%)	= 2.00
N-Value	= 0.013

Calculations

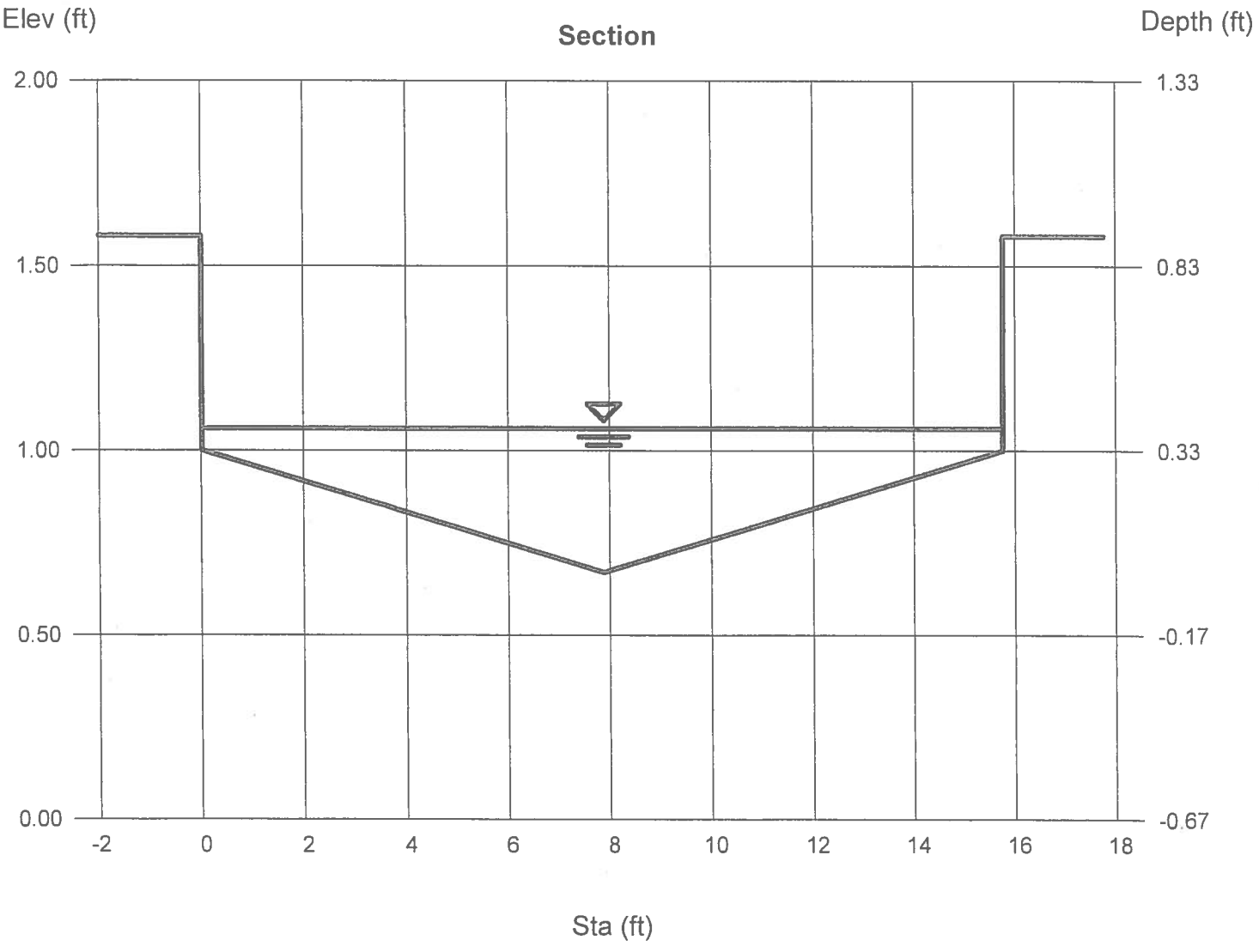
Compute by:	Known Q
Known Q (cfs)	= 20.20

Highlighted

Depth (ft)	= 0.39
Q (cfs)	= 20.20
Area (sqft)	= 3.54
Velocity (ft/s)	= 5.70
Wetted Perim (ft)	= 15.87
Crit Depth, Yc (ft)	= 0.54
Top Width (ft)	= 15.74
EGL (ft)	= 0.90

(Sta, El, n)-(Sta, El, n)...

(0.00, 1.58)-(0.01, 1.00, 0.013)-(7.88, 0.67, 0.013)-(15.75, 1.00, 0.013)-(15.76, 1.58, 0.013)



Weir Report

Hydraflow Express Extension for AutoCAD® Civil 3D® 2013 by Autodesk, Inc. Wednesday, Oct 22 2014

Calabacillas Arroyo Channel Entrance - Curb Cut

Rectangular Weir

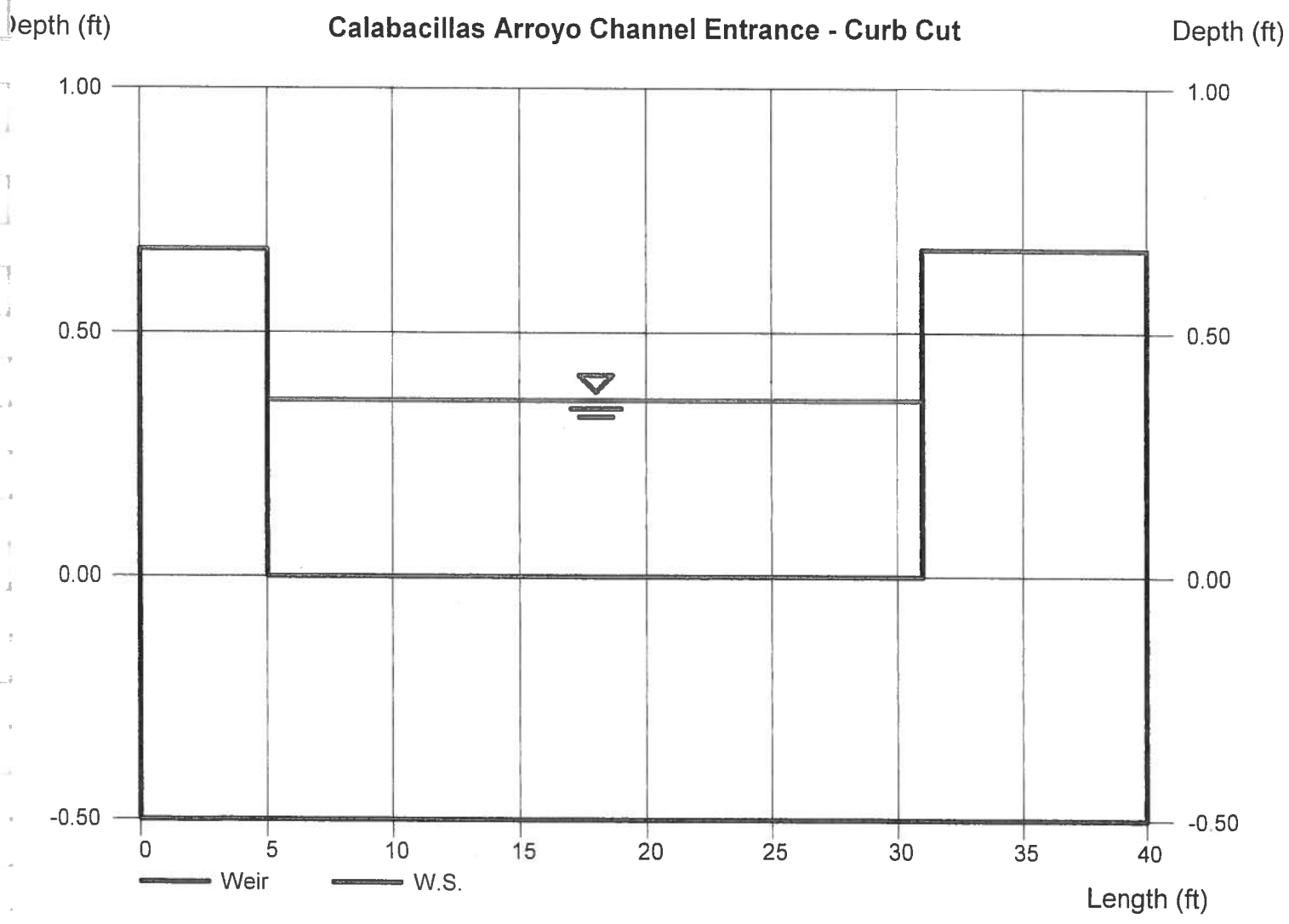
Crest	= Sharp
Bottom Length (ft)	= 26.00
Total Depth (ft)	= 0.67

Calculations

Weir Coeff. Cw	= 3.33
Compute by:	Known Q
Known Q (cfs)	= 18.80

Highlighted

Depth (ft)	= 0.36
Q (cfs)	= 18.80
Area (sqft)	= 9.39
Velocity (ft/s)	= 2.00
Top Width (ft)	= 26.00



Channel Report

Hydraflow Express Extension for AutoCAD® Civil 3D® 2013 by Autodesk, Inc. Wednesday, Oct 22 2014

Calabacillas Outflow Channel S=5.5%

User-defined

Invert Elev (ft)	= 0.67
Slope (%)	= 5.50
N-Value	= 0.017

Calculations

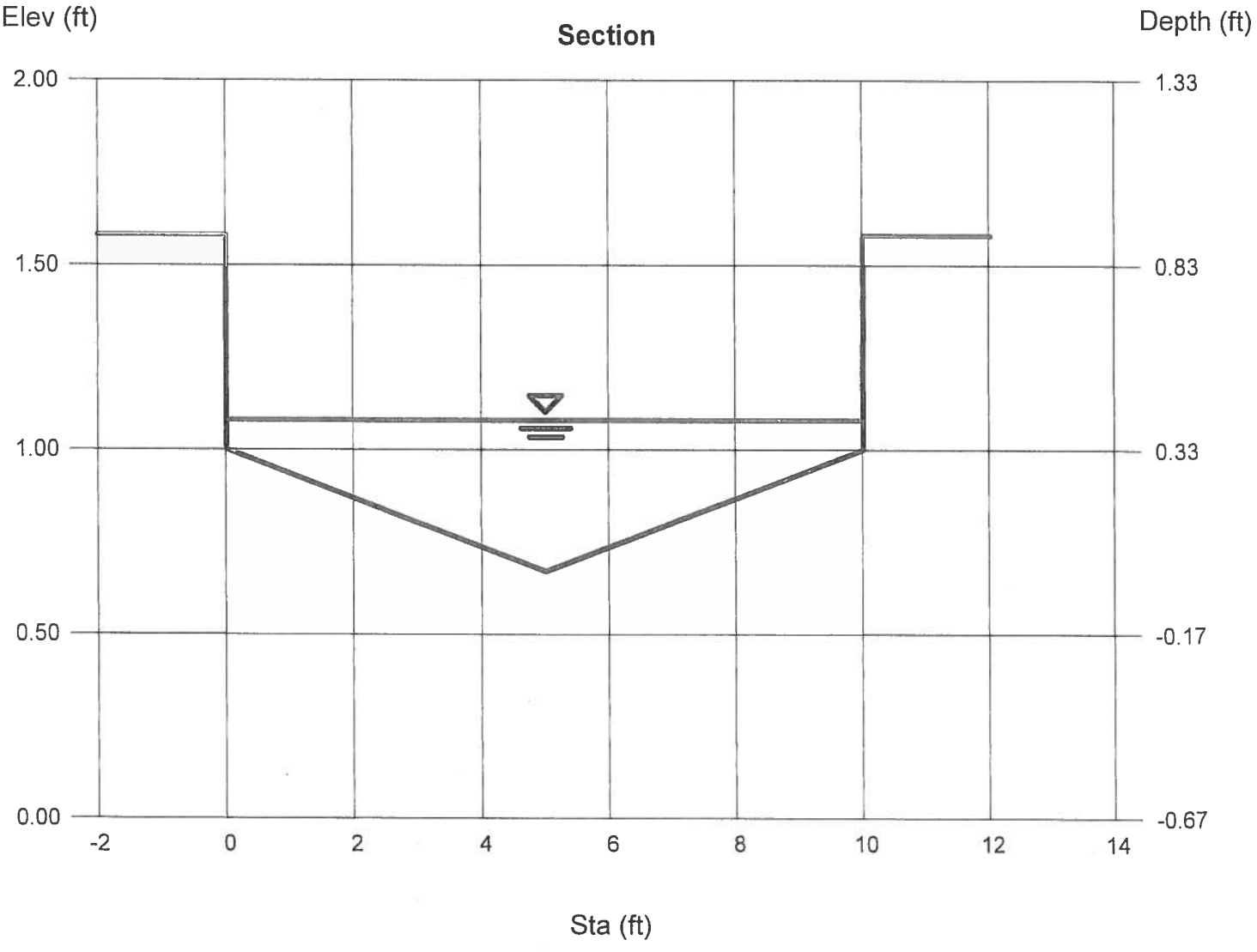
Compute by:	Known Q
Known Q (cfs)	= 18.80

Highlighted

Depth (ft)	= 0.41
Q (cfs)	= 18.80
Area (sqft)	= 2.45
Velocity (ft/s)	= 7.67
Wetted Perim (ft)	= 10.18
Crit Depth, Yc (ft)	= 0.65
Top Width (ft)	= 10.00
EGL (ft)	= 1.33

(Sta, El, n)-(Sta, El, n)...

(0.00, 1.58)-(0.01, 1.00, 0.017)-(5.01, 0.67, 0.017)-(10.01, 1.00, 0.017)-(10.02, 1.58, 0.017)



Channel Report

Hydraflow Express Extension for AutoCAD® Civil 3D® 2013 by Autodesk, Inc. Wednesday, Oct 22 2014

Calabacillas Outflow Channel S=8.64%

User-defined

Invert Elev (ft)	= 0.67
Slope (%)	= 8.64
N-Value	= 0.017

Calculations

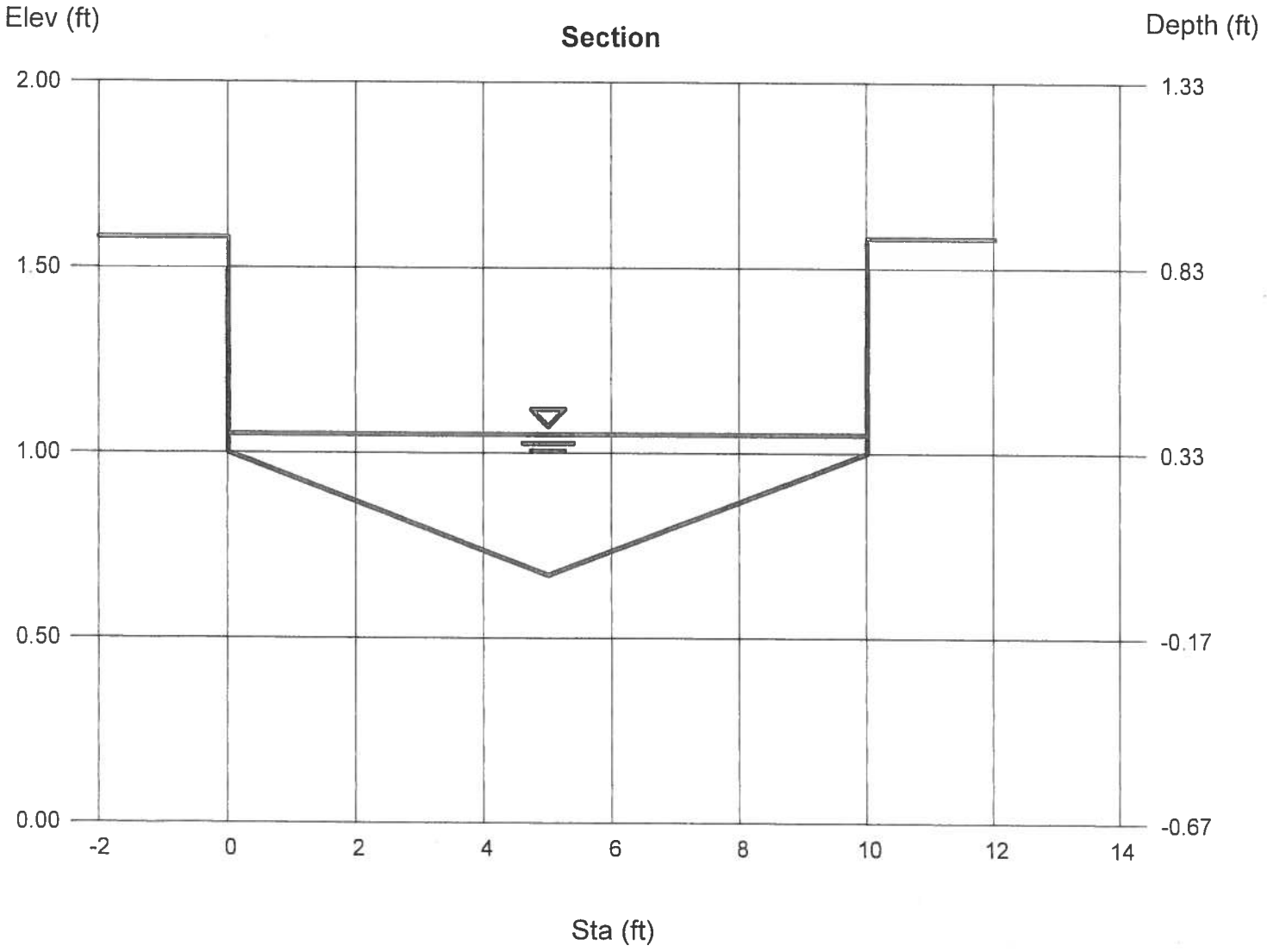
Compute by:	Known Q
Known Q (cfs)	= 18.80

Highlighted

Depth (ft)	= 0.38
Q (cfs)	= 18.80
Area (sqft)	= 2.15
Velocity (ft/s)	= 8.74
Wetted Perim (ft)	= 10.12
Crit Depth, Yc (ft)	= 0.65
Top Width (ft)	= 10.00
EGL (ft)	= 1.57

(Sta, El, n)-(Sta, El, n)...

(0.00, 1.58)-(0.01, 1.00, 0.017)-(5.01, 0.67, 0.017)-(10.01, 1.00, 0.017)-(10.02, 1.58, 0.017)



Channel Report

Hydraflow Express Extension for AutoCAD® Civil 3D® 2013 by Autodesk, Inc. Wednesday, Oct 22 2014

Calabacillas Outflow Channel S=3.8%

User-defined

Invert Elev (ft)	= 0.67
Slope (%)	= 3.80
N-Value	= 0.017

Calculations

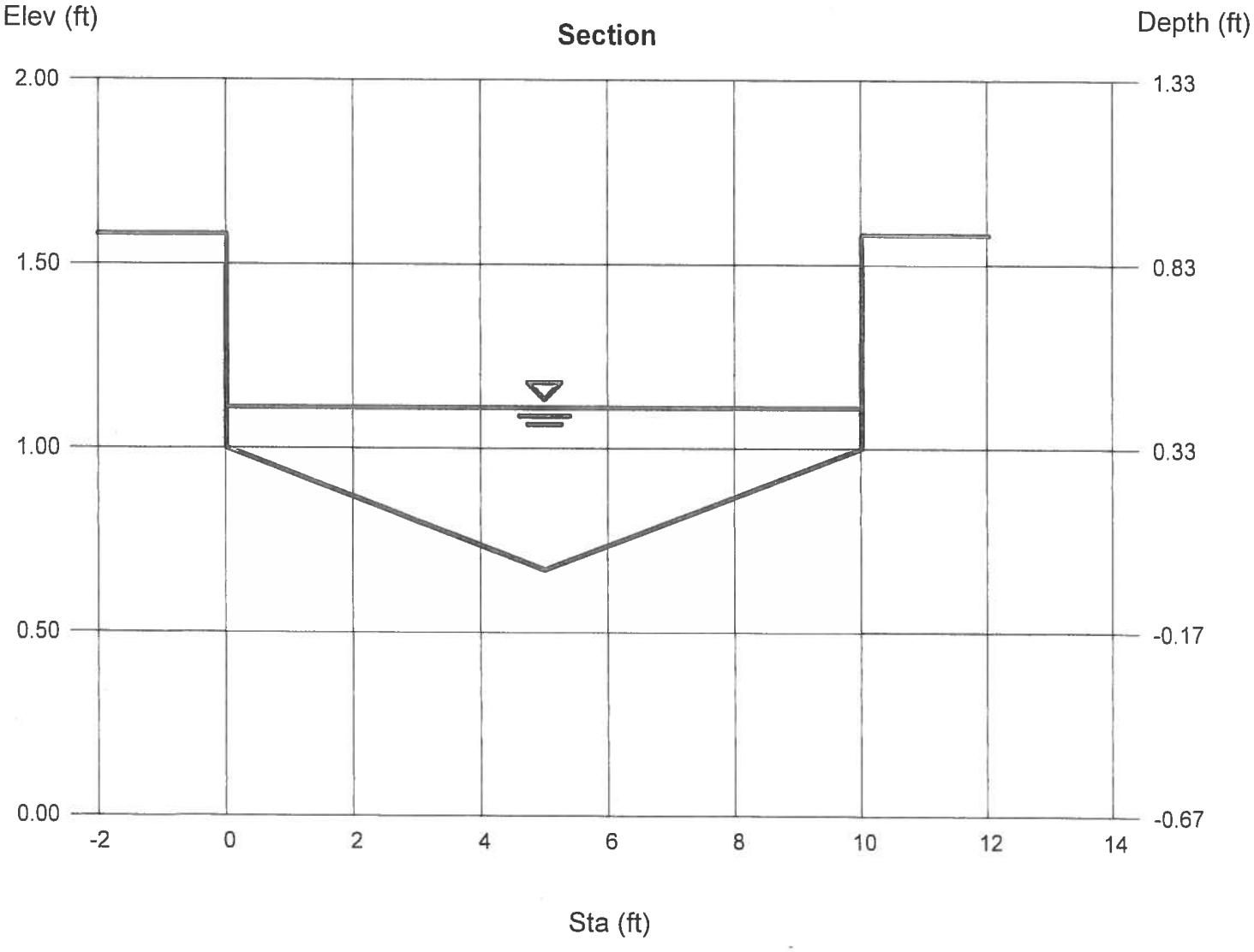
Compute by:	Known Q
Known Q (cfs)	= 18.80

Highlighted

Depth (ft)	= 0.44
Q (cfs)	= 18.80
Area (sqft)	= 2.75
Velocity (ft/s)	= 6.84
Wetted Perim (ft)	= 10.24
Crit Depth, Yc (ft)	= 0.65
Top Width (ft)	= 10.00
EGL (ft)	= 1.17

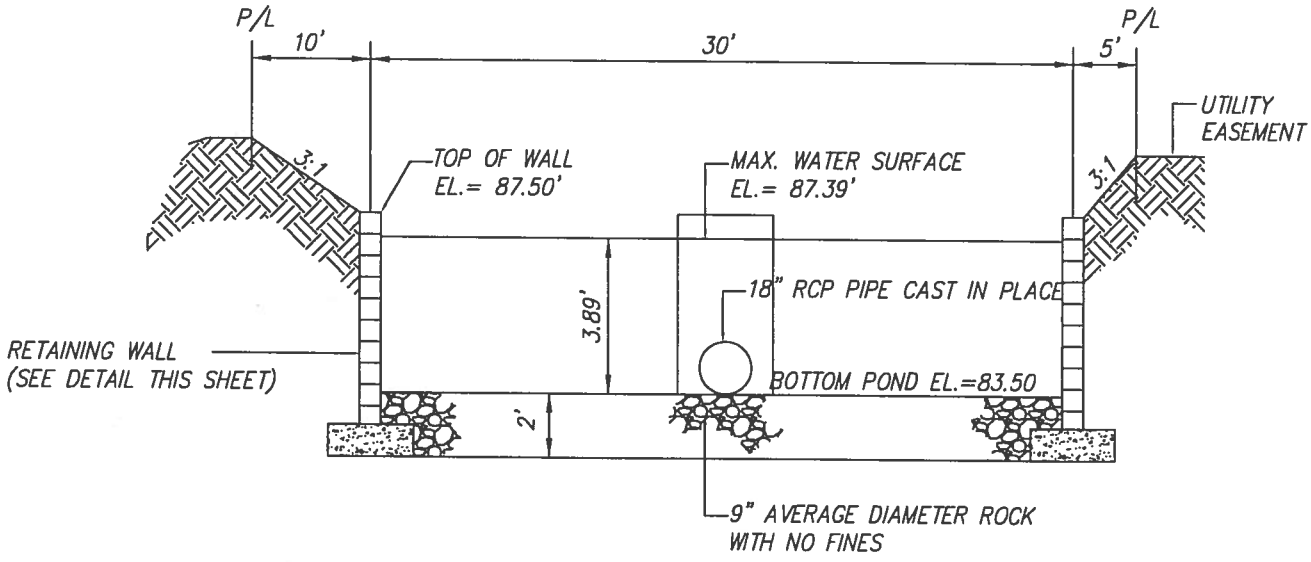
(Sta, El, n)-(Sta, El, n)...

(0.00, 1.58)-(0.01, 1.00, 0.017)-(5.01, 0.67, 0.017)-(10.01, 1.00, 0.017)-(10.02, 1.58, 0.017)



Appendix E

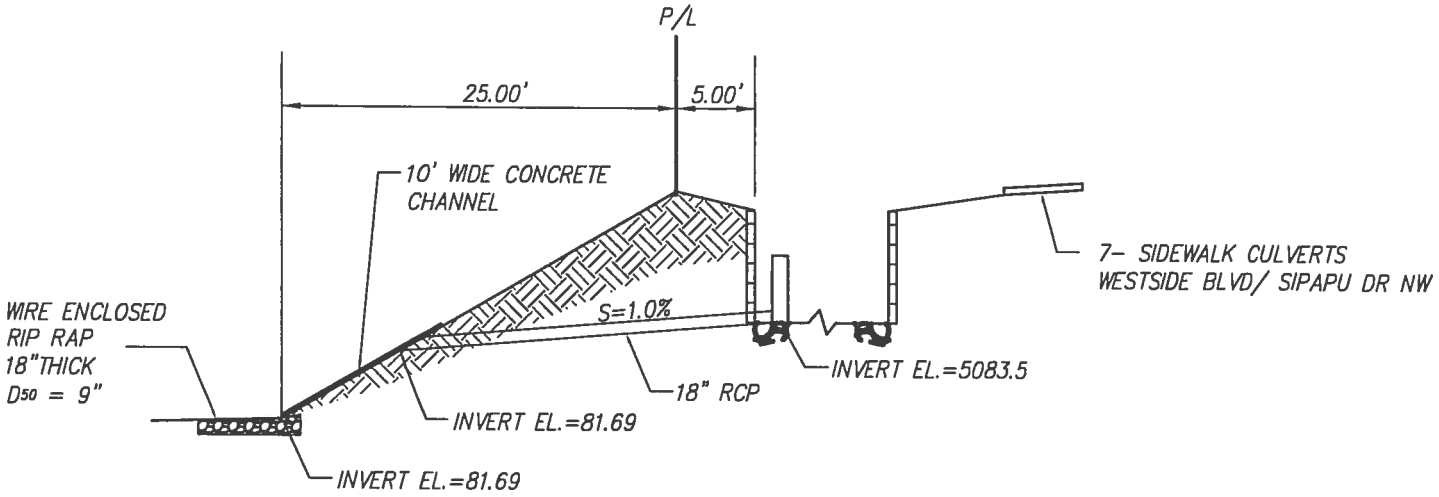
Pond Details



B/B DRAINAGE POND - TYPICAL SECTION

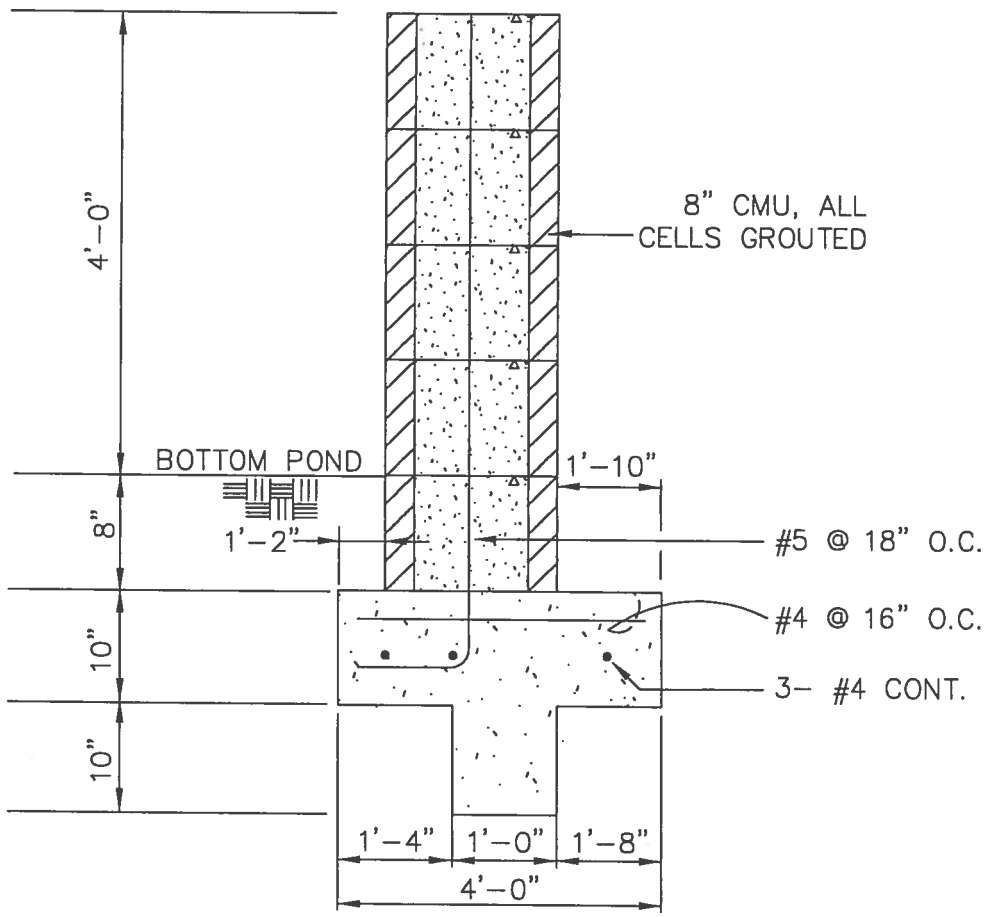
SCALE: NONE

NOTE: 42" HIGH PIPE GUARDRAIL TO BE PLACED ON TOP OF WALL FOR ENTIRE LENGTH.



1 POND OUTLET

SCALE: NONE



POND RETAINING WALL DETAIL

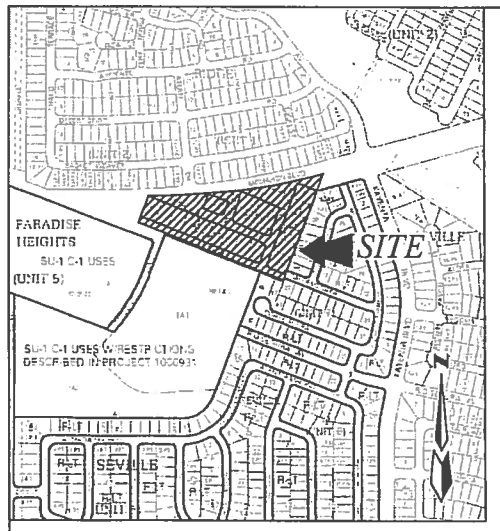
SCALE: NONE

GENERAL NOTES:

1. ALL CONCRETE IS TO BE 3000 PSI.
2. MINIMUM COMPACTION UNDER FOOTINGS IS TO BE 95% PER ASTM D 1557 FOR A DEPTH OF 12". MOISTURE CONTENT IS TO BE + 2.0%.
3. BACK FILL AGAINST WALLS IS TO BE HAND-PLACED AND COMPACTED.
4. ALL BARS ARE TO BE GRADE 40, ASTM 615.
5. TRUSS TYPE DUR-O-WALL EVERY OTHER COURSE.
6. BOND BEAM SHALL BE A #4 CONTINUOUS.

Appendix F

Anasazi Subdivision Unit 3 Plat



ZONE ATLAS MAP A-10-Z VICINITY MAP SCALE: NTS

LEGAL DESCRIPTION

A tract of land situate within the Town of Alameda Grant, projected Section 3, Township 11 North, Range 2 East, New Mexico Principal Meridian, City of Albuquerque, Bernalillo County, New Mexico being a portion of LOT 3 and all of LOTS 4 thru 9, BLOCK 7, all of LOTS 9 thru 13, BLOCK 8, all of LOT 12, BLOCK 9, all of LOTS 2 thru 10, BLOCK 14 and portions of NAVAJO DRIVE NW, GORDON AVENUE NW, MASON DRIVE NW, WESTSIDE BOULEVARD NW and McMAHON BOULEVARD NW, PARADISE HEIGHTS UNIT 5, as the same is shown and designated on said plat filed for record in the office of the County Clerk of Bernalillo County, New Mexico on March 12, 1973 in Volume D5, Folio 111 and 112, and containing 6.9826 acres more or less.

CURVE	ARC LENGTH	RADIUS	DELTA ANGLE	CHORD BEARING	CHORD LENGTH
C1	127.99'	5078.00'	01°26'39"	N 67°57'55" E	127.99'
C2	108.50'	5078.00'	01°13'27"	N 83°21'42" E	108.50'
C3	57.43'	5078.00'	00°38'53"	S 81°22'28" W	57.43'
C4	59.81'	5078.00'	00°40'29"	S 77°32'34" W	59.81'
C5	1.23'	5078.00'	00°00'50"	S 75°33'56" W	1.23'

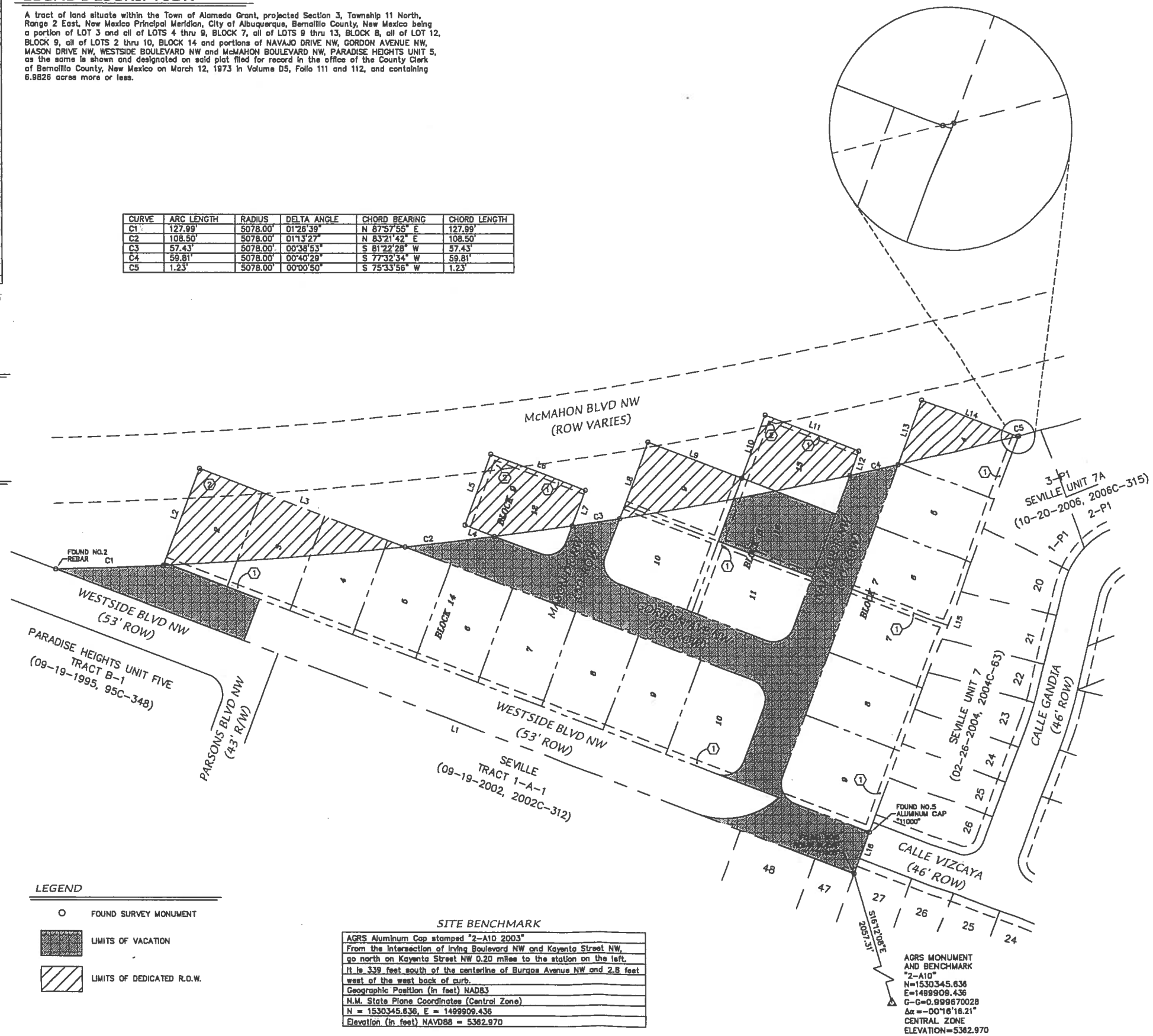
EASEMENTS

① EXISTING 7' ELECTRIC AND TELEPHONE EASEMENT (03-12-1973, D5-111 & 112) TO BE VACATED (BOCP TYPE) V-_____

② EXISTING PUBLIC ROADWAY EASEMENT (07-18-2006, Bk. A120, Pg. 6715)

LINE TABLE

LINE	BEARING	DISTANCE
L1	N 69°11'54" W	1018.47'
	(N69°09'38"W)	
L2	N 20°48'06" E	123.33'
	(N20°33'20"E)	
L3	S 69°11'54" E	262.17'
	(S69°26'40"E)	
L4	N 69°11'54" W	38.15'
	(N69°26'40"W)	
L5	N 20°50'24" E	90.00'
	(N20°33'20"E)	(90.00')
L6	S 69°09'36" E	119.92'
	(S69°26'40"E)	(120.00')
L7	S 20°50'24" W	45.36'
	(S20°33'20"W)	
L8	S 20°50'24" W	97.30'
	(N20°33'20"E)	
L9	S 69°09'36" E	119.98'
L10	N 20°50'24" E	80.00'
	(N20°33'20"E)	
L11	S 69°09'36" E	119.87'
	(S69°26'40"E)	(120.00')
L12	S 20°49'18" W	31.04'
	(S20°33'20"W)	
L13	N 20°49'18" E	81.84'
	(N20°33'20"E)	
L14	S 69°10'24" E	119.36'
	(S69°26'40"E)	
L15	S 20°49'18" W	504.18'
	(S20°49'18"W)	(504.24')
L16	S 20°45'12" W	53.00'
	(S20°50'22"W)	(53.00')



LEGEND

O FOUND SURVEY MONUMENT

LIMITS OF VACATION

LIMITS OF DEDICATED R.O.W.

SITE BENCHMARK

AGRS Aluminum Cap stamped "2-A10 2003"
From the intersection of Irving Boulevard NW and Kayenta Street NW, go north on Kayenta Street NW 0.20 miles to the station on the left.
It is 339 feet south of the centerline of Burgos Avenue NW and 2.8 feet west of the west back of curb.
Geographic Position (in feet) NAD83
N.M. State Plane Coordinates (Central Zone)
N = 1530345.636, E = 1499909.436
Elevation (in feet) NAVD88 = 5362.970

PRELIMINARY PLAT FOR
ANASAZI RIDGE UNIT 3
WITHIN THE
TOWN OF ALAMEDA GRANT
PROJECTED SECTION 3
TOWNSHIP 11 NORTH, RANGE 2 EAST, NMPM
CITY OF ALBUQUERQUE
BERNALILLO COUNTY, NEW MEXICO
JUNE, 2014

SUBDIVISION DATA

GROSS ACREAGE	6.7631 Ac.
ZONE ATLAS NO.	A-10-Z
NO. OF LOTS CREATED	23 LOTS
NO. OF TRACTS CREATED	2 TRACTS
RIGHT-OF-WAY AREA DEDICATED TO CITY	1.7823 AC
RIGHT-OF-WAY AREA VACATED	1.6248 AC
NEW PUBLIC EASEMENT	0.0591 AC
ZONING	R-1
DATE OF SURVEY	NOVEMBER, 2013

PURPOSE OF PLAT

1. SUBDIVIDE TRACT INTO 23 RESIDENTIAL LOTS AND 2 TRACTS.
2. DEDICATE RIGHT-OF-WAY AS SHOWN.
3. GRANT NEW EASEMENTS AS SHOWN.
4. VACATE EASEMENTS AND R/W AS SHOWN.

NOTES

1. Bearings are New Mexico State Plane Grid Bearings (Central Zone).
2. Distances are ground distances.
3. Bearings and distances in parenthesis are record.
4. Basis of boundary are the following plats and documents of record entitled:
   PLAT OF "ANASAZI RIDGE, UNIT 1", (06-29-2006, 2006C-207)
   PLAT OF "ANASAZI RIDGE, UNIT 2", (03-16-2007, 2007C-67)
   PLAT OF "PARADISE HEIGHTS, UNIT FIVE", (03-12-1973, D5-111 & 112)
   PLAT OF "PARADISE HEIGHTS, UNIT FIVE, TRACT B-1", (09-19-1995, 95C-348)
   PLAT OF "SEVILLE", (09-19-2002, 2002C-312)
   PLAT OF "SEVILLE, UNIT 7" (02-26-2004, 2004C-63)
   PLAT OF "SEVILLE, UNIT 7A", (10-20-2006, 2006C-315)
   records of Bernalillo County, New Mexico.
5. Date of Survey: November, 2013.
6. Title Report(s): provided by LandAmerica Albuquerque Title File No.: 237777TD (Effective Date: 01-15-04)

APPROVED

City Surveyor, City of Albuquerque, N.M. Date

ANASAZI RIDGE LLC

Michael Pickard, Managing Member Date

N

60' 30' 0 60' 120'

SCALE: 1" = 60'

OWNERS

ANASAZI RIDGE LLC
P.O. BOX 12317
ALBUQUERQUE, NEW MEXICO 87195
(505) 822-5582

ENGINEERS

D. MARK GOODWIN & ASSOCIATES, P.A.
CONSULTING ENGINEERS
P.O. BOX 90606
ALBUQUERQUE, NEW MEXICO 87199
(505) 828-2200

SURVEYOR

ALDRICH LAND SURVEYING
P.O. BOX 3001
ALBUQUERQUE, NEW MEXICO 87190
(505) 884-1990

Appendix G

Infrastructure List

Current DRC
Project Number: _____

FIGURE 12

INFRASTRUCTURE LIST

Date Submitted: _____
Date Site Plan Approved: _____
Date Preliminary Plat Approved: _____
Date Preliminary Plat Expires: _____
DRB Project No: 1004245
DRB Application No: _____

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

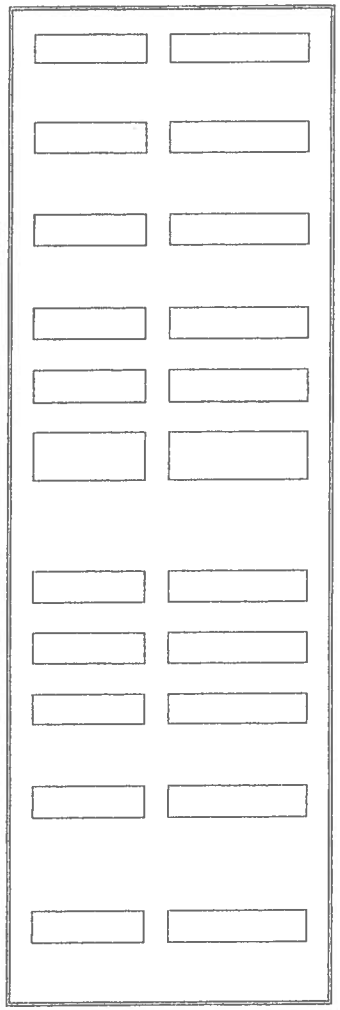
Anasazi Ridge Unit 3
PROPOSED NAME OF PLAT AND/OR SITE DEVELOPMENT PLAN

Portions of Lot 3, 4-9, Blk 7, Lots 9-13 Blk 8, Lot 12, Block 9, and Lots 2-10, Blk 14
EXISTING LEGAL DESCRIPTION PRIOR TO PLATTING ACTION

Following is a summary of PUBLIC/PRIVATE Infrastructure required to be constructed or financially guaranteed for the above development. This Listing is not necessarily a complete listing. During the SIA process and/or in the review of the construction drawings, if the DRC Chair determines that appurtenant items and/or unforeseen items have not been included in the infrastructure listing, the DRC Chair may include those items in the listing and related financial guarantee. Likewise, if the DRC Chair determines that appurtenant or non-essential items can be deleted from the listing, those items may be deleted as well as the related portions of the financial guarantees. All such revisions require approval by the DRC Chair, the User Department and agent/owner. If such approvals are obtained, these revisions to the listing will be incorporated administratively. In addition, any unforeseen items which arise during construction which are necessary to complete the project and which normally are the Subdivider's responsibility will be required as a condition of project acceptance and close out by the City.

SIA Sequence #	COA DRC Project #	Size	Type of Improvement	Location	From	To	Private Inspector	City Inspector	City Cnst Engineer
			PAVING						
		32' FF	Perm Pvmt	Atlatl Drive NW	Westside Blvd	McMahon Blvd	/	/	/
			C&G (both sides)						
		4'	Sidewalk (both sides)				/	/	/
		28' FF	Perm Pvmt	Westside Blvd	culdesac	Sipapu Drive NW	/	/	/
			C&G (both sides)		(Tract E)				
		4'	Sidewalk (North Side) (1)						
		28' FF	Perm Pvmt	Sipapu Drive NW	Westside Blvd	End Culdesac	/	/	/
			C&G (both sides)						
		4'	Sidewalk (both sides) (1)						
		4'	Sidewalk (westside)	Lot 8 & 9			/	/	/
		28' FF	Perm Pvmt	Canty Ct	End culdesac	Sipapu Drive NW	/	/	/
			C&G (both sides)						
		4'	Sidewalk (both side) (1)						
		32' FF	Perm Pvmt	McMahon Blvd	West prop Line	East Prop	/	/	/
			C&G (Southside)		(Tract E)	Existing Pvmt			
			Median C&G			Lot 16			
			6' Sidewalk (Southside)				/	/	/

Anasazi Ridge Unit 3 DRB 1004245



	WATER				
8"	Waterline	Atlatl Drive NW	Westside Blvd	Exist. 12" WL McMahon Blvd	/ / /
8"	Waterline	Westside Blvd	South P.L. Parsons Row	Sipapu Drive NW	/ / /
6"	Waterline	Sipapu Drive NW	Westside Blvd	Exist. 12" WL McMahon Blvd	/ / /
6"	Waterline	Canty Ct.	Cul-de-Sac	Sipapu Drive NW	/ / /
12"	Waterline	McMahon Blvd	Atlatl Drive NW	East P.L. (Lot 16)	/ / /
6"	Waterline	25' Public Utility Easement	Sipapu Drive NW	Exist. 8" WL Calle Vizcaya	/ / /
	SANITARY SEWER				
8"	Sanitary Sewer	Westside Blvd	South P.L.	Sipapu Drive NW	/ / /
8"	Sanitary Sewer	Sipapu Drive NW	Westside Blvd	Lot 16	/ / /
6"	Sanitary Sewer	Canty Ct	End Culdesac (Lot 10)	Sipapu Drive NW	/ / /
8"	Sanitary Sewer	25' Public Utility Easement	Sipapu Drive NW	Exist. 8" SAS Calle Vizcaya	/ / /
	DRAINAGE				
Per design	Outfall Connection	Tract A	Sipapu Dr. NW	Calle Vizcaya	/ / /

The items listed below are on the CCIP and approved for Impact Fee credits. Signatures from the Impact Fee Administrator and the City User Department is required prior to DRB approval

Financially Guaranteed DRC #	Constructed Under DRC #	Size	Type of Improvement	Location	From	To

Construction Certification

Private Inspector P.E.		City Cnst Engineer
/	/	/
/	/	/

Approval of Creditable Items:

Impact Fee Admistrator Signature Date

Approval of Creditable Items:

City User Dept. Signature Date

1 Deferred sidewalk
2 Waterline Infrastructure to include valves, fittings, service connections and fire hydrants
3 Storm Drain Infrastructure to include manholes and inlets
4 Grading & Drainage Certification required per DPM (Prior to release of Financial Guaranty) to includeretaining walls as defined on the approved Grading Plan
5 SAS Infrastructure include manholes and service connections
6

AGENT / OWNER

Diane Hoelzer, PE
NAME (print)

MARK GOODWIN & ASSOCIATES
FIRM

Diane Hoelzer 10-2-14
SIGNATURE - date

MAXIMUM TIME ALLOWED TO CONSTRUCT THE IMPROVEMENTS WITHOUT A DRB EXTENSION: N/A

DEVELOPMENT REVIEW BOARD MEMBER APPROVALS

DRB CHAIR - date

PARKS & GENERAL SERVICES - date

TRANSPORTATION DEVELOPMENT - date

AMAFCA - date

UTILITY DEVELOPMENT - date

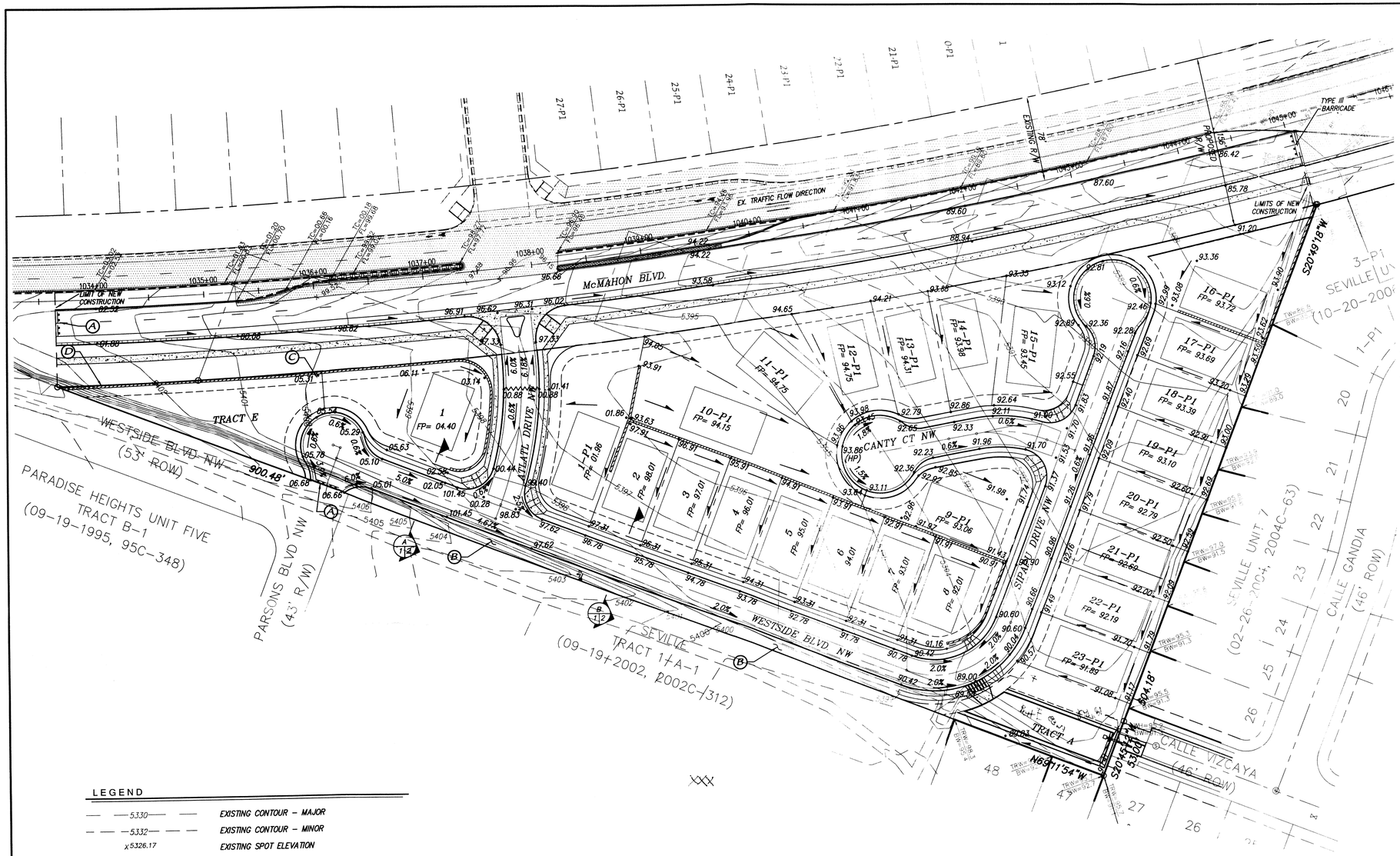
_____ - date

CITY ENGINEER - date

_____ - date

DESIGN REVIEW COMMITTEE REVISIONS

REVISION	DATE	DRC CHAIR	USER DEPARTMENT	AGENT /OWNER



LEGAL DESCRIPTION

A tract of land situate within the Town of Alameda Grant, projected Section 3, Township 11 North, Range 2 East, New Mexico Principal Meridian, City of Albuquerque, Bernalillo County, New Mexico being a portion of LOT 3 and all of LOTS 4 thru 9, BLOCK 7, all of LOTS 9 thru 13, BLOCK 8, all of LOT 12, BLOCK 9, all of LOTS 2 thru 10, BLOCK 14 and portions of NAVAJO DRIVE NW, GORDON AVENUE NW, MASON DRIVE NW, WESTSIDE BOULEVARD NW and McMAHON BOULEVARD NW, PARADISE HEIGHTS UNIT 5, as the same is shown and designated on said plat filed for record in the office of the County Clerk of Bernalillo County, New Mexico on March 12, 1973 in Volume D5, Folio 111 and 112, and containing 6.9826 acres more or less.

NOTES

1. CONTRACTOR MUST OBTAIN A TOPSOIL DISTURBANCE PERMIT FROM THE ENVIRONMENTAL HEALTH DIVISION PRIOR TO CONSTRUCTION.
2. CITY OF ALBUQUERQUE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION, LATEST EDITION SHALL GOVERN ALL WORK.
3. THE CONTRACTOR SHALL CONFORM TO ALL CITY, COUNTY, STATE AND FEDERAL DUST CONTROL MEASURES AND REQUIREMENTS AND WILL BE RESPONSIBLE FOR PREPARING AND OBTAINING ALL NECESSARY APPLICATIONS AND APPROVALS.
4. THE CONTRACTOR SHALL ENSURE THAT NO SOIL ERODES FROM THE LOTS INTO PUBLIC RIGHT-OF-WAY. THIS CAN BE ACHIEVED BY CONSTRUCTING TEMPORARY BERMS AND WETTING THE SOIL TO KEEP IT FROM BLOWING.
5. THE EARTHWORK CONTRACTOR SHALL STOCKPILE ENOUGH MATERIAL ADJACENT TO RETAINING WALL LOCATIONS TO BE UTILIZED FOR WALL BACKFILL.
6. SITE DOES NOT LIE IN A 100 YEAR FLOOD ZONE.
7. SIDEWALK CULVERTS ARE PER C.O.A. STANDARD DWG #2236.
8. ALL SITE WALLS SHALL CONFORM TO THE GENERAL HEIGHT AND DESIGN REGULATIONS CONTAINED IN SECTION 14-16-3-19 OF THE CITY ZONING CODE.

LEGEND

- EXISTING CONTOUR – MAJOR (5330)
- EXISTING CONTOUR – MINOR (5332)
- EXISTING SPOT ELEVATION (x5326.17)
- EXISTING ADJOINER LINE
- NEW BOUNDARY LINE
- NEW LOT LINES
- NEW SIDEWALK
- NEW STANDARD CURB & GUTTER
- NEW MOUNTABLE CURB & GUTTER
- NEW RETAINING WALL – TO BE CONSTRUCTED AT THE TIME OF ROUGH GRADING
- FLOW DIRECTION ARROW
- NEW SIDEWALK CULVERT
- FP=34.15 FINISHED PAD ELEVATION
- EXISTING ROADWAY

KEYED NOTES:

(A) CONSTRUCT HEADER CURB AT EDGE OF NEW PAVEMENT AND C&G, INSTALL TYPE-III BARRICADE

(B) TIE TO EXISTING GROUND, 3:1 MAX. SLOPE

(C) 2:1 SIDE SLOPE, INSTALL GRAVEL MULCH SLOPE STABILIZATION

(D) TURN 1 BLOCK SIDEWAYS FOR DRAINAGE OUTLET

(E) CONSTRUCT 6-24" SIDEWALK CULVERTS BOTH SIDES OF NEW 16' DRAINAGE CHANNEL, PER C.O.A. STD. DWGs 2236 & 2261

(F) CONSTRUCT HEADER CURB AT EDGE OF NEW PAVEMENT AND C&G

50' 25' 0 50' 100'

SCALE: 1" = 50'

CERTIFICATE OF SUBSTANTIAL COMPLIANCE

MARK GOODWIN & ASSOCIATES, P.A.
CONSULTING ENGINEERS
P.O. BOX 90606
ALBUQUERQUE, NEW MEXICO 87199
OFFICE (505) 828-2200, FAX (505) 797-9539

AS BUILT INFORMATION
CONTRACTOR
WORK STAKED BY — DATE
INSPECTED BY — DATE
FIELD LOCATIONS BY — DATE
DRAWINGS CORRECTED BY — DATE
MICRO-FILM INFORMATION
RECORDED BY — DATE
NO.

BENCH MARKS

SURVEY INFORMATION
FIELD NOTES
NO. | BY | DATE

ENGINEER'S SEAL
JAMES HOELZER — NEW MEXICO — 11087 — REGISTERED PROFESSIONAL ENGINEER
4-17-14

NO.	DATE	REMARKS	BY
		REVISIONS	
		DESIGN	
		DESIGNED BY JG	DATE 06/14
		DRAWN BY JG	DATE 06/14
		CHECKED BY DMG	DATE 06/14

CITY OF ALBUQUERQUE
PUBLIC WORKS DEPARTMENT

TITLE:
ANASAZI RIDGE UNIT 3
GRADING AND DRAINAGE PLAN

DESIGN REVIEW COMMITTEE	CITY ENGINEER APPROVAL	LAST DESIGN UPDATE	MO./DAY/YR.	MO./DAY/YR.

CITY PROJECT NO. XXXXXX | ZONE MAP NO. A-10-Z | SHEET 1 OF 2

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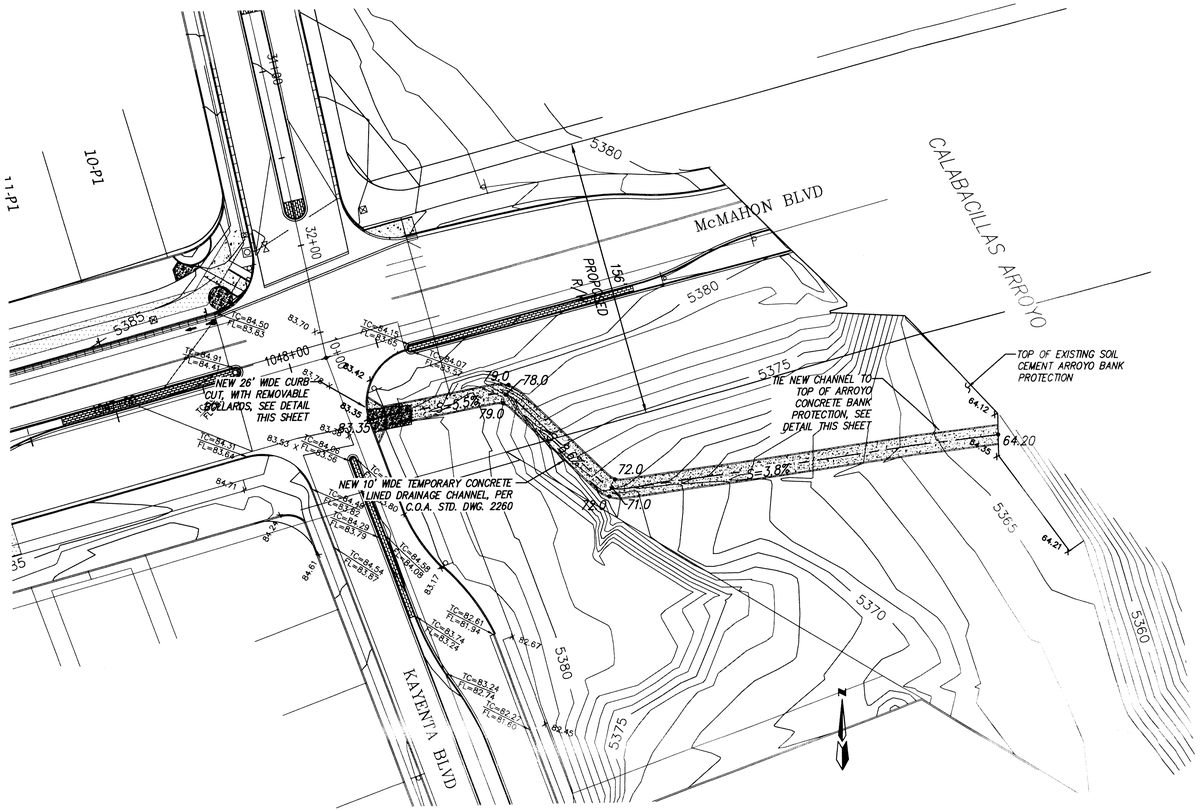
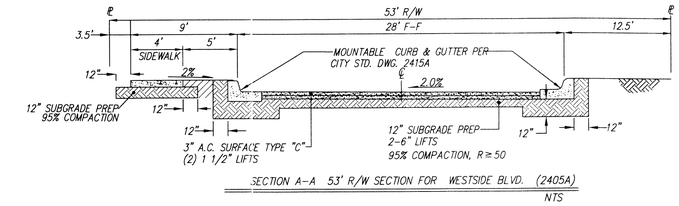


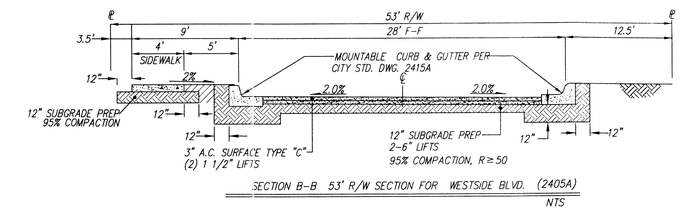
CALABACILLAS ARROYO CHANNEL OUTFALL

SCALE: 1" =40'



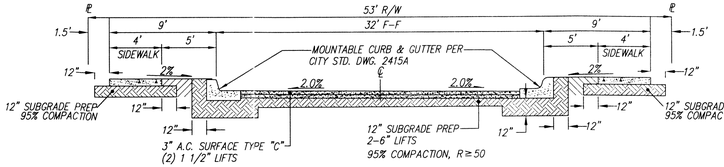
SECTION A-A 53' R/W SECTION FOR WESTSIDE BLVD. (2405A)

NTS



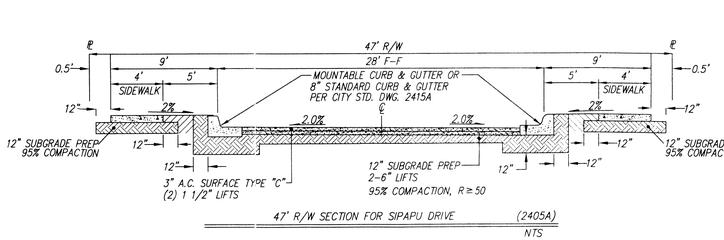
SECTION B-B 53' R/W SECTION FOR WESTSIDE BLVD. (2405A)

NTS



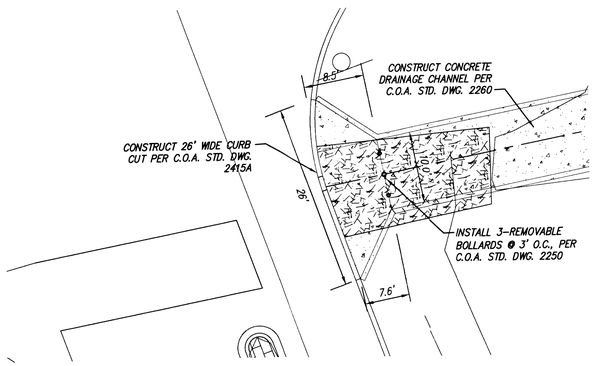
53' R/W SECTION FOR ATLATL DRIVE (2405A)

NTS



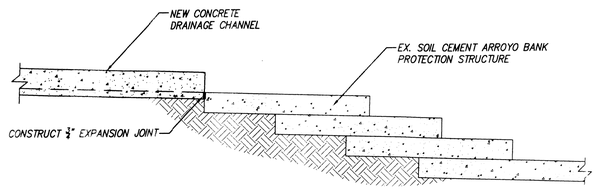
47' R/W SECTION FOR SIPAPU DRIVE (2405A)

NTS



26' CURB CUT & CHANNEL ENTRANCE DETAIL

SCALE: 1" =10'



DRAINAGE CHANNEL CONNECTION DETAIL

SCALE: 1" =10'

AS BUILT INFORMATION

CONTRACTOR — DATE
WORK STAKED BY — DATE
ACCEPTANCE BY — DATE
FIELD VERIFICATION BY — DATE
DRAWINGS CORRECTED BY — DATE

MICRO-FILM INFORMATION

RECORDED BY — DATE
NO.

BENCH MARKS

SURVEY INFORMATION

FIELD NOTES

NO.	BY	DATE

ENGINEER'S SEAL

DANIEL HOELLEN — NEW MEXICO — 11987 — REGISTERED PROFESSIONAL ENGINEER

10-24-14

NO.	REMARKS / REVISIONS	BY	DATE
	DESIGN	JG	06/14
	DESIGNED BY	JG	06/14
	DRAWN BY	DMG	06/14
	CHECKED BY		

CERTIFICATE OF SUBSTANTIAL COMPLIANCE

MARK GOODWIN & ASSOCIATES, P.A.
CONSULTING ENGINEERS
P.O. BOX 90606
ALBUQUERQUE, NEW MEXICO 87199
OFFICE (505) 828-2200, FAX (505) 797-9539

CITY OF ALBUQUERQUE
PUBLIC WORKS DEPARTMENT

TITLE:

ANASAZI RIDGE UNIT 3
GRADING AND DRAINAGE PLAN

DESIGN REVIEW COMMITTEE	CITY ENGINEER APPROVAL	LAST DESIGN UPDATE	MO./DAY/YR.	MO./DAY/YR.

CITY PROJECT NO. XXXXXX

ZONE MAP NO. A-10-Z

SHEET 2 OF 2

F:\A13\DBS\A13039 - Anasazi Ridge, Unit 3\GRADE & DRAIN\ACAD-A13039-GD50.dwg, 10/22/2014 6:54:18 AM, hiram, KIP 7200 local