CITY OF ALBUQUERQUE

January 31, 2018

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

RE: Heritage Trails Subdivision
Drainage Report and Grading Plan
Engineers Stamp Date: 1/16/18
Hydrology File: N08D006F

Dear Ms. Hoelzer:

Based on the information provided in your submittal received on 1/16/18, the Drainage Report and Grading Plan cannot be approved for Preliminary Plat or Grading Permit until the following are corrected and a revised Drainage Report and Grading Plan are submitted.

If providing an additional Drainage Report prior to Work Order approval, only the items in bold will need to be addressed for Preliminary Plat/Grading Permit.

Hydrology:

1. **What is the drainage plan for tracts D, Y, and Z? These seem to drain to low areas, but not onto 118th. Please define low areas and size for the contributing drainage (these tracts are not part of the other defined subbasins). These should be sized for the 10-day, 100 year volume and accompanied by with a drainage covenant.**
2. **Offsite drainage is not adequately addressed with regard to flows entering 118th St north of the powerline ponds and at the intersection of 118th and Amole Mesa. Provide analysis of flows entering in these areas; a temporary berm, with covenant is likely necessary to keep flows from entering the road in these areas.**
3. **How are flows along Amole Mesa being addressed? Construction of the south half street needs to provide adequate street capacity. It seems that a storm drain plug was left at Messina and Amole Mesa for the purpose of intercepting the south half street with a new inlet once constructed.**
4. **The east half of Tract Z is graded to drain into Tract A-1-B. Please grade to drain to Amole Mesa or retain on-site. If cross-lot drainage is necessary, a new easement will need to be granted by the owner of Tract A-1-B.**
5. **Add 0.87' high waterblocks on Emerald Peak Trail, north and south of Crest Trail Drive to contain Subbasin 17 on Crest Trail Drive.**

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Orig: Drainage File

6. **Add 0.87' high waterblocks on Tyler Peak Trail, north and south of Crest Trail Drive to contain Subbasin 17 on Crest Trail Drive.**
7. **Add 0.87' high waterblocks on Three Rivers Road, north and south of Crest Trail Drive to contain Subbasin 21 on Crest Trail Drive.**
8. At DRC, waterblock height will be verified. If waterblocks are not designed to 0.87', the Drainage Report will need to be revised to address the new subbasins and potential split flows.
9. **It is unclear how flows in the south half street of Crest Trail Drive are turned south onto Deer Horn Peak Trail in Subbasin 3. It seems as though the valley gutter crossing Deer Horn Peak should be deleted and the grades around the SW corner of the intersection be adjusted to prevent a split flow scenario here.**
10. In the AHYMO Model, the summary table for subbasin 2 reports %impervious as 52.94% but the input file and the excel table for subbasin 2 report only 45% land treatment D. Please recheck land treatments and resolve. This issue may also be the cause of the inconsistent street capacity analysis at analysis point "Bord Peak -26-MTB-2.40%" and the sump at Bord Peak and Banner Peak described below.

Grading Plan:

11. **Provide a phasing plan for each unit demonstrating how offsite, undeveloped flows will be managed. Demonstrate that the downstream units will not be impacted by the temporary lack of upstream drainage infrastructure. Items such as ponds, berms and swales will need to be included on the infrastructure list of the downstream phase, with Drainage Covenants signed by the underlying landowner.**
12. **Provide wall sections along the boundary with Arrowhead Subdivision showing: property lines, existing grades, finished grades, existing retaining wall/garden wall, proposed retaining wall/garden wall, footers, and dimensional data. Demonstrate that the adjoining properties are not damaged or constrained in their use by the new grade at property line.**
13. **Provide typical sections around the entire perimeter of this project showing property lines and horizontal and vertical dimensions. Show the existing wall to remain or to be removed.**
14. **Please define the swales along Tracts A and C. Show cross sections, slopes, and capacity to demonstrate that these will be able to safely convey flows out to the streets and will not cause damage along the backs of the residential lots and their walls. These swales need to be included on the Infrastructure List with Drainage Covenants.**
15. Unit 3, Block 2. A double retaining wall may be more desirable between Lots 1-5 and 6-10 to support the 6-7' grade change, plus garden wall.
16. Unit 3, Block 3. A double retaining wall may be more desirable along the backs of Lots 10-12 and 17-19 to support the 6'+ grade change, plus garden wall.
17. Unit 2, Block 1. A double retaining wall may be more desirable between Lots 36-44 and Colobel to support the 5'-11' grade change, plus garden wall.

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18. **Unit 1, Block 3, Lot 28. The double retaining wall is shown crossing the property line and onto Tract A-1-B. Please revise to show as contained on Lot 28 and provide a cross section here.**
19. **In anticipation of grading for the park on Lot A-1-B, provide proposed grades on Tract A-1-B and how they will support grading along Unit 1, Block 3, Lots 44-49. Presumably the temporary pond will be filled and grades restored to where retaining walls/ cross lot drainage is not necessary here.**
20. **Tract R is graded towards the backs of Unit 2, Block 11, Lots 1-6. Please provide a swale with Drainage Covenant to divert stormwater south to Crag Peak and include on the Infrastructure List.**
21. **Tract M appears to slope towards the side-yard of Unit 2, Block 9, Lot 19. Please provide a swale with Drainage Covenant to divert stormwater east to Alta Peak Trail and include on the Infrastructure List.**
22. **Tract L appears to slope towards the side-yard of Unit 2, Block 10, Lot 6. Please provide a swale with Drainage Covenant to divert stormwater east to Alta Peak Trail and include on the Infrastructure List.**
23. On sheet 1 of the Grading Plan between Tracts C and Tract R and on sheet 2 of the Grading Plan, between Tracts N and I, the road is called "Hawkins Peak Way"; on the Plat it is "Crest Trail Drive". Please resolve.
24. **Unit 2, Block 11, Lot 16. Provide the Finished Pad elevation.**
25. **Unit 1, Block 12, Lot 10. The north lot line does not match the Plat and the pad size may be too wide for the sideyard setbacks.**
26. **On sheet 3 of the Grading Plan, please provide bottom of wall grades between Blocks 13 and 14 and the Colobel ROW, similar to sheets 1 and 2.**
27. Provide valley gutter across Tyler Peak Trail, north and south of Crest Trail Drive.
28. Provide valley gutter across Tyler Peak Trail, north of Basin Peak Way.
29. Provide valley gutter across Crest Trail Drive, east and west of Alta Peak Trail.
30. Provide valley gutter across Three Rivers Road, north and south of Crest Trail Drive.
31. Provide valley gutter across Quail Canyon Road, north of Colobel.
32. Provide valley gutter across Quail Canyon Road, south of West Fork Road.
33. Provide valley gutter across Gold Hill Road west of Grass Mountain Road.
34. Provide valley gutter across Rider Ridge Drive, south of Amole Mesa.

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Street Flow Capacity:

35. **Add a footnote to the infrastructure list that all curb and gutter shall be 8" standard, unless adequate street capacity has been demonstrated.**
36. Analysis point "Bord Peak -26-MTB-2.40%" has a known Q of 9.00 cfs but subbasin 2 reports a peak runoff of 10.12 cfs. Additionally, the sump at the junction of Banner Peak and Bord Peak Trail reports a peak flow of only 20.98cfs whereas the sum of the peak flows from the contributing subbasins 1 and 2 is 22.10 cfs. 1.12 cfs appears to be unaccounted for; if true, 1.12 cfs will also need to be added to the WSPGW model.
37. At analysis point "Banner Peak-26-MTB-2.70%", flow depth exceeds the curb height. Either add inlets on Banner Peak or use standard curb.

38. At analysis point "Bord Peak-26-MTB-1.0%", flow depth exceeds the curb height. Either add inlets on Bord Peak or use standard curb.
39. At analysis point "Costilla Peak-26-MTB-2.55%", flow depth exceeds the curb height. Either add inlets on Costilla Peak or use standard curb.
40. At analysis point "Deer Horn-26-MTB-4.0%", the EGL exceeds 0.53'. However it seems unlikely that 10 cfs is generated at this point in the subbasin when the entire subbasin runoff is only 15.59 cfs. Consider reducing the estimated flow, otherwise an inlet or standard curb will be required on this street.
41. Where does the runoff from the proposed park on Tract A-1-B go? It is not accounted for at analysis point "Crag Peak-26-Std-3.2%". Assuming these flows (4.80cfs) route here, the street capacity analysis will need to be updated at this analysis point and all the downstream analysis points until there are no bypass flows to account for (all the way to the sump at Alta Peak and Basin Peak). The WSPGW model will then need to be updated as well.
42. **The EGL in Basin Peak Way exceeds 0.87'. Extend stormdrain and add inlets along Basin Peak Way upstream of inlet B3, in the vicinity of Block 1, Lot 40, to keep the EGL from entering residential lots in this area.**
43. Please relook the street capacity analysis and grading at Windsor Trail Street and Horseshoe Lake Road. There appear to be a few unintended sump points around this corner on the grading plan and it is difficult to tell what the intended sump is. Two single-A inlets appear to be planned for this point, but only one inlet is shown. Also consider the constructability of building anything bigger than a single-C around a curve.
44. **Please include the Colobel street capacity results. Will the Colobel inlets near the Morrissey intersection be in sumps or are they adequately sized to remove all flows prior to the intersection?**

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WSPGW Analysis:

45. **Add a footnote to the Infrastructure List that stormdrain sizes are subject to change at DRC, pending Hydrology approval of the HGL calculations.**
46. **Provide a single storm drain for Colobel, sized to carry existing, System-A, and System-B flows. Parallel pipes are not desirable, if the existing pipe is now overcapacity, it should be replaced with a larger one. Alternately, provide trenching prisms showing the location of the new and old pipe, the new inlet laterals, other utilities, and ROW.**
47. **Do not show curvilinear pipe in Colobel.**
48. **The storm drain in Colobel will need to be constructed prior to paving Colobel, please update the infrastructure list to reflect.**
49. Include an inlet summary table describing inlet size, type, inlet ID, inflow, and downstream manhole/inlet.
50. In the WSPGW printouts, label the structures.
51. Provide stormdrain profiles showing finished grade, Q, V, and HGL.

Basin B Model

52. Provide hydraulic analysis for the 24" pipe connecting SDMH #2B and SDMH 8B. As discussed in above in the street flow capacity analysis, additional inlets are also needed in Basin Peak Way (EGL over 0.87'), which will likely lengthen this section of pipe and add a new manhole.
53. Bypass flows originating from Tract A1B, which were not considered in the street capacity analysis, will need to be added to the Basin B model.
54. SDMH 8B appears to be erroneously called 51E in Table 3.

Basin C Model

55. In Table 3, Add descriptors that the first several manholes are existing, part of Anderson Heights Unit 2, and not the same as the new manholes having the same IDs in Heritage Trails.
56. Please provide hydraulic analysis for the stormdrain pipe connecting SDMH #4C and south Inlet #C14 under West Fork Road.
57. Please provide hydraulic analysis for the stormdrain pipe connecting SDMH #6C and south Inlet #C12 under Gold Hill Road.
58. Please provide hydraulic analysis for the stormdrain pipe connecting SDMH #7C and south Inlet #C11 under Crest Trail Drive.
59. Add inflows from Inlets #C5 separately at SDMH 16C and SDMH 17C.
60. It appears SDMH 19C was not modeled and its inlet inflows were instead added at SDMH 18C; 19C should be at Sta. 4625.80, according to Table 3.
61. Please provide hydraulic analysis for the stormdrain pipe connecting SDMH #23C and south Inlet #C2 under Diamond Peak Way.
62. Please provide hydraulic analysis for the stormdrain pipe connecting SDMH #23C and north Inlet #C2 under Diamond Peak Way.

Basin A Model

63. This model will need to be updated to show the single stormdrain in Colobel.
64. According to the Basin C model, 110.86 cfs are added at SDMH-57; according to this model 140.04 cfs are added here. Please quantify and clarify what flows are being added at this junction and where they are coming from.
65. Please provide hydraulic analysis for the stormdrain system upstream of SDMH 21.

First Flush Ponding:

66. **The first flush ponding on individual lots cannot be used towards meeting the first flush requirement; a central pond(s) or payment of fee-in-lieu is required.**
67. **The proposal to deepen Pond 10 in order to meet first flush requirements cannot be accepted. This pond is publicly maintained; meaning the on-going maintenance of the increased size would become the city's responsibility. On-site ponding with private maintenance of the pond(s) is required.**
68. **Include subbasin 33 and the new impervious section of subbasin 32 in the first flush volume calculations.**

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Preliminary Plat:

69. **A storm drain easement is required across Block 11, Lot 18 and Block 12, Lot11 for the proposed storm drain running from Pine Town Way to South Peak Road.**
70. **A storm drain easement is required across Block 14, Lot 38 and Tract JJ for the proposed storm drain running from Grass Mountain Road to Colobel Road.**
71. **Please label the new 25' drainage easement across Tract Q and move the easement language to the easement notes to be consistent with the other easements.**
72. **All drainage easements within Units 2 and 3 need to be private drainage easements.**
73. **All drainage infrastructure within Units 2 and 3 need to private, and stated as private on the Infrastructure List**
74. **Tract WW needs to be noted as a private surface and subsurface drainage easement, to be maintained by the HOA.**

If you have any questions, please contact me at 924-3695 or dpeterson@cabq.gov.

Sincerely,

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

PO Box 1293

Albuquerque

NM 87103

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Orig: Drainage File

City of Albuquerque

Planning Department

Development & Building Services Division

DRAINAGE AND TRANSPORTATION INFORMATION SHEET (REV 09/2015)

Project Title: Heritage Trails (AKA Anderson Heights Unit 4) Building Permit #: _____ City Drainage #: N8 / D006F

DRB#: 1002739 EPC#: _____ Work Order#: _____

Legal Description: Tract A-1-A and tract B-1, Anderson Heights Unit 4

City Address: 118th street and Amole Mesa Avenue

Engineering Firm: MARK GOODWIN AND ASSOCIATES, PA Contact: Diane Hoelzer, PE

Address: PO BOX 90606, ABQ, NM 87199

Phone#: 828-2200 Fax#: _____ E-mail: diane@goodwinengineers.com

Owner: KB Home New Mexico Inc. Contact: Morris Barbera or Bo Johnson

Address: 7807 E.Peakview Avenue, Ste. 300, Centennial, Colorado, 80111

Phone#: (303)908-0575 or (505)450-4616 Fax#: _____ E-mail: _____

Architect: N/A Contact: _____

Address: _____

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

Other Contact: N/A Contact: _____

Address: _____

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

Check all that Apply:

DEPARTMENT:

X HYDROLOGY/ DRAINAGE

_____ TRAFFIC/ TRANSPORTATION

_____ MS4/ EROSION & SEDIMENT CONTROL

TYPE OF SUBMITTAL:

_____ ENGINEER/ ARCHITECT CERTIFICATION

_____ CONCEPTUAL G & D PLAN

X GRADING PLAN

_____ DRAINAGE MASTER PLAN

X DRAINAGE REPORT

_____ CLOMR/LOMR

_____ TRAFFIC CIRCULATION LAYOUT (TCL)

_____ TRAFFIC IMPACT STUDY (TIS)

_____ EROSION & SEDIMENT CONTROL PLAN (ESC)

_____ OTHER (SPECIFY) _____

CHECK TYPE OF APPROVAL/ACCEPTANCE SOUGHT:

_____ BUILDING PERMIT APPROVAL

_____ CERTIFICATE OF OCCUPANCY

X PRELIMINARY PLAT APPROVAL

_____ SITE PLAN FOR SUB'D APPROVAL

_____ SITE PLAN FOR BLDG. PERMIT APPROVAL

_____ FINAL PLAT APPROVAL

_____ SIA/ RELEASE OF FINANCIAL GUARANTEE

_____ FOUNDATION PERMIT APPROVAL

X GRADING PERMIT APPROVAL

_____ SO-19 APPROVAL

_____ PAVING PERMIT APPROVAL

_____ GRADING/ PAD CERTIFICATION

_____ WORK ORDER APPROVAL

_____ CLOMR/LOMR

_____ PRE-DESIGN MEETING

_____ OTHER (SPECIFY) _____

IS THIS A RESUBMITTAL?: X Yes X No

DATE SUBMITTED: January 16, 2018 By: Diane Hoelzer, PE

COA STAFF: ELECTRONIC SUBMITTAL RECEIVED: ___

Heritage Trails
(Residential Subdivision)

Drainage Management Plan

Prepared by
Mark Goodwin & Associates, P.A.

January 2018

Heritage Trails
Table of Contents

I. PROJECT DESCRIPTION

The Heritage Trails project site covers an area of approximately 87 acres. It was formerly known as Anderson Heights Unit 4, 6 and 9, (drainage file: N-8/D006F) and was part of a larger development also known as Anderson Heights. The site is located at the southeast corner of the intersection of Amole Mesa and 118th street SW.

This project is an amendment to the previously approved Drainage Management Plan for Anderson Heights Unit 4 that consisted of 474 lots. This project proposes to develop 427 single family residential lots, in three phases or Units as shown on the amended preliminary plat. Unit 2 and 3 is still a private gated community with private streets that are encumbered with a public storm drain easement (COA) and water and sanitary sewer easements (ABCWUA). There is an internal 1.0 acre private park along with substantial community open space areas. The project will tie into existing roads and existing water, sanitary sewer and storm drain infrastructure located in Amole Mesa to the north, 118th street to the west and to Colobel Avenue to the south. There are existing subdivisions to the north, south and east of this project. On a larger scale, this project is located between Gibson Blvd. and Dennis Chavez Blvd. and west of 98th street in the southwest part of Albuquerque.

II. DESIGN CRITERIA AND PREVIOUS DEVELOPMENT

The design criteria used in this report was in accordance with Section 22.2 Hydrology of the Development Process Manual, Volume 2, Design Criteria, January 1993 edition. The 100-year 6-hour storm event was analyzed to determine street capacities and sizing of the storm drain system using P(1 hr)=1.90", P(6 hr)=2.23". The onsite Land Treatment values used were based on Table A-5, in the DPM.

A. HISTORY

This project site was formerly known as Anderson Heights Unit 4 and 6 and Unit 9. Upon initial DRB approval of the grading and drainage plan and preliminary plat for Units 4, 6 and 9, the site was mass graded. At a later date, the lot layout was changed for Unit 4 and 6 and a new grading and drainage plan and preliminary plat was submitted and approved but the site was never regraded to this new layout configuration. The client moved forward with Unit 9, completing construction plans and filing the plat but no construction was ever initiated beyond rough grading. And then development was suspended indefinitely due to the poor economy. In 2007-2008, an interim grading plan was approved with interim ponds to retain onsite runoff for the purpose of protecting downstream development. This grading plan was implemented and certified. Under current conditions, the project site reflect the original grading scheme and the interim ponds.

In March of 2015, a bulk land plan was approved and recorded that dissolved all internal lot, tract and right of way lines and created two new parcels: Tracts A-1 and B-1. In June of 2017, a 2 acre parcel was separated from Tract A-1 for the purpose of letting the City create a Memorial Park.

A LOMR was approved by FEMA for the 118th street ponds that ultimately took this project site out of the floodplain (refer to Figure 3 – FEMA panel 35001C0317).

The original Master Drainage Plan for Anderson Heights included drainage solutions for all the Units (1 thru 9) in Anderson Heights, which included detention ponds and storm drain systems. The drainage plan for the proposed site involves collection of all the onsite runoff to the southeast corner where it is to be intercepted by an existing 72"-78" RCP storm drain and conveyed south through Gault Trail in the existing Anderson Heights Unit 3 subdivision to an existing regional detention pond (POND 10). The construction plan for this existing storm drain can be found in Appendix C. There is also an existing storm drain in Colobel Avenue that was constructed to intercept flows at several locations along the southern boundary of the project site. This storm drain will require some modification to accommodate the new layout configuration. The RECORD DRAWING as builts can be found in Appendix C.

III. EXISTING DRAINAGE CONDITIONS

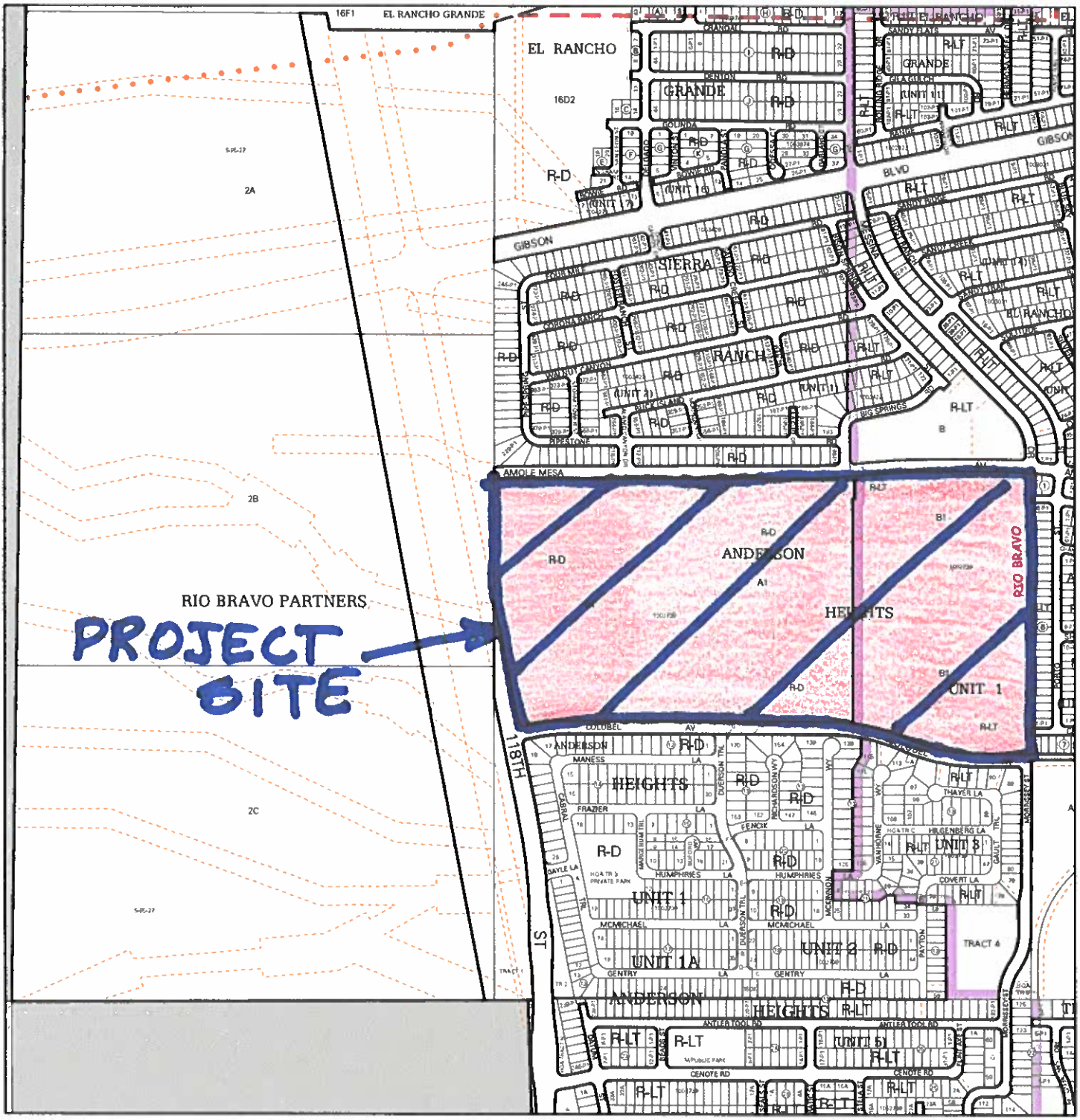
Under existing drainage conditions, onsite runoff is conveyed to a number of onsite temporary retention ponds. The topography in the area is generally in an eastward direction. There are no offsite flows that enter the site. The 118th street ponds along the western boundary intercept offsite flows from the major arroyos to the west and convey runoff south to the existing concrete channel located along the north side of Dennis Chavez Blvd. There is an existing storm drain in Colobel Avenue and in Gault Trail that was designed to intercept all the runoff from this site and discharge into the existing Pond 10. The RECORD DRAWING as builts for these existing storm drains can be found in Appendix C.

IV. DEVELOPED DRAINAGE CONDITIONS

Under developed conditions, onsite runoff will be conveyed as surface street flow within the street right of way. At the point that runoff approached top of curb, inlets and an underground storm system is designed to intercept and convey the runoff to the Regional Pond 10 located in the existing Anderson Heights Unit 3 subdivision.

The first flush retention volume will be captured in the depressed areas between the back of curb and the sidewalk with the bulk being stored in the regional detention pond 10. Separate volume calculations for these depressed areas was not accounted for in the first flush volume calculations associated with deepening Pond 10 by 8.4 inches.

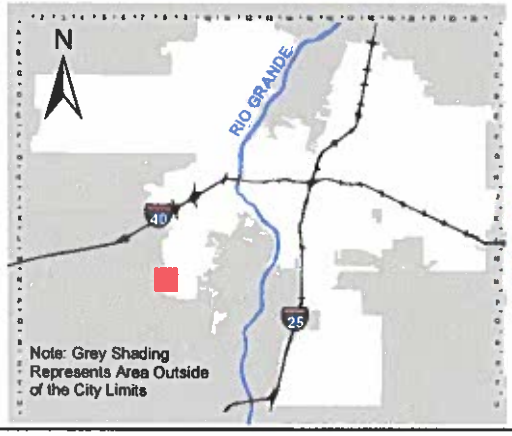
The AHYMO hydrology analysis and summary table can be found in Appendix A.
The summary of the street capacity calculations and exhibit can be found in Appendix B.
The preliminary storm drain design analysis and preliminary layout and first flush volume calcs, can be found in Appendix C.



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

Albuquerque Geographic Information System

Map amended through: 1/28/2016



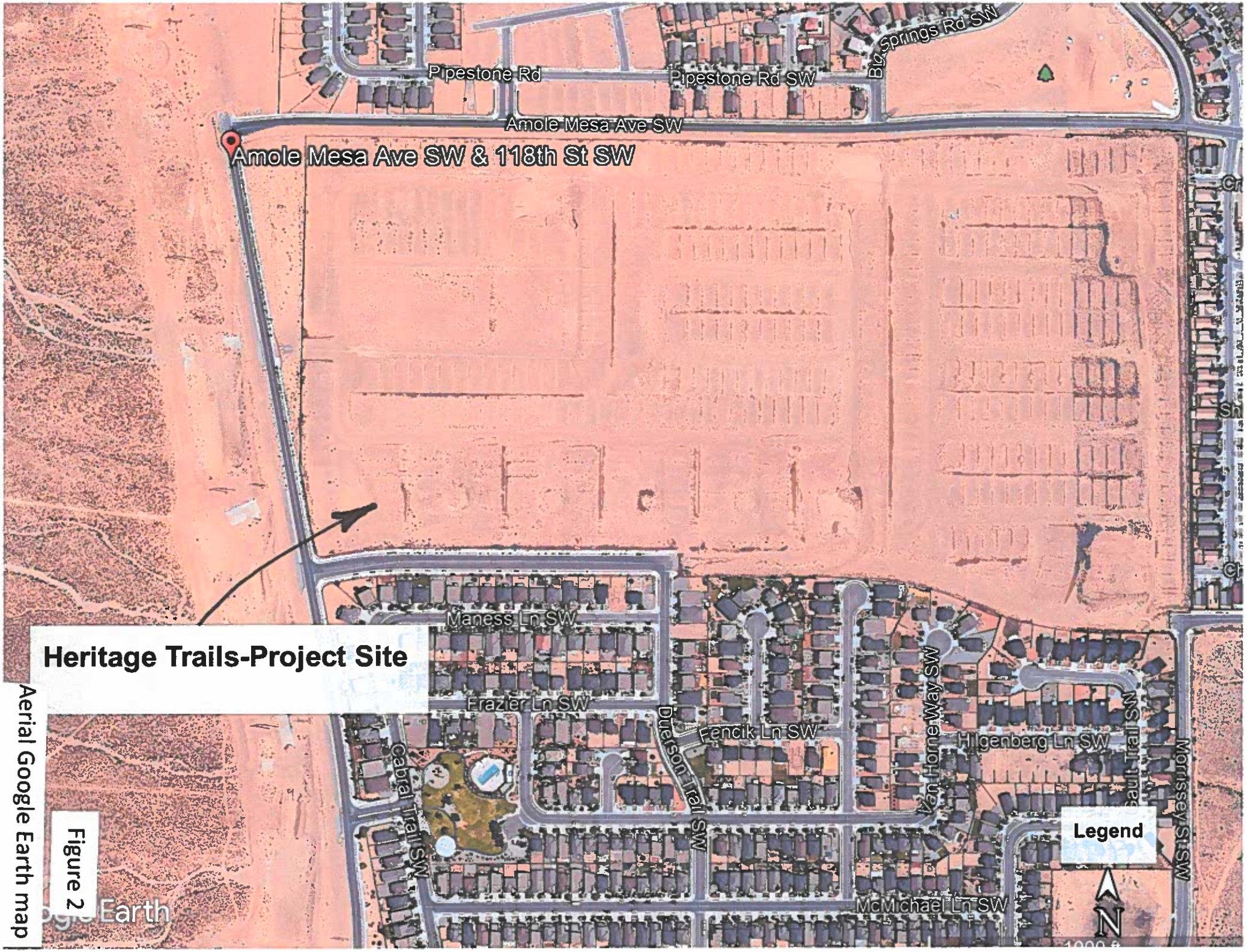
Zone Atlas Page:

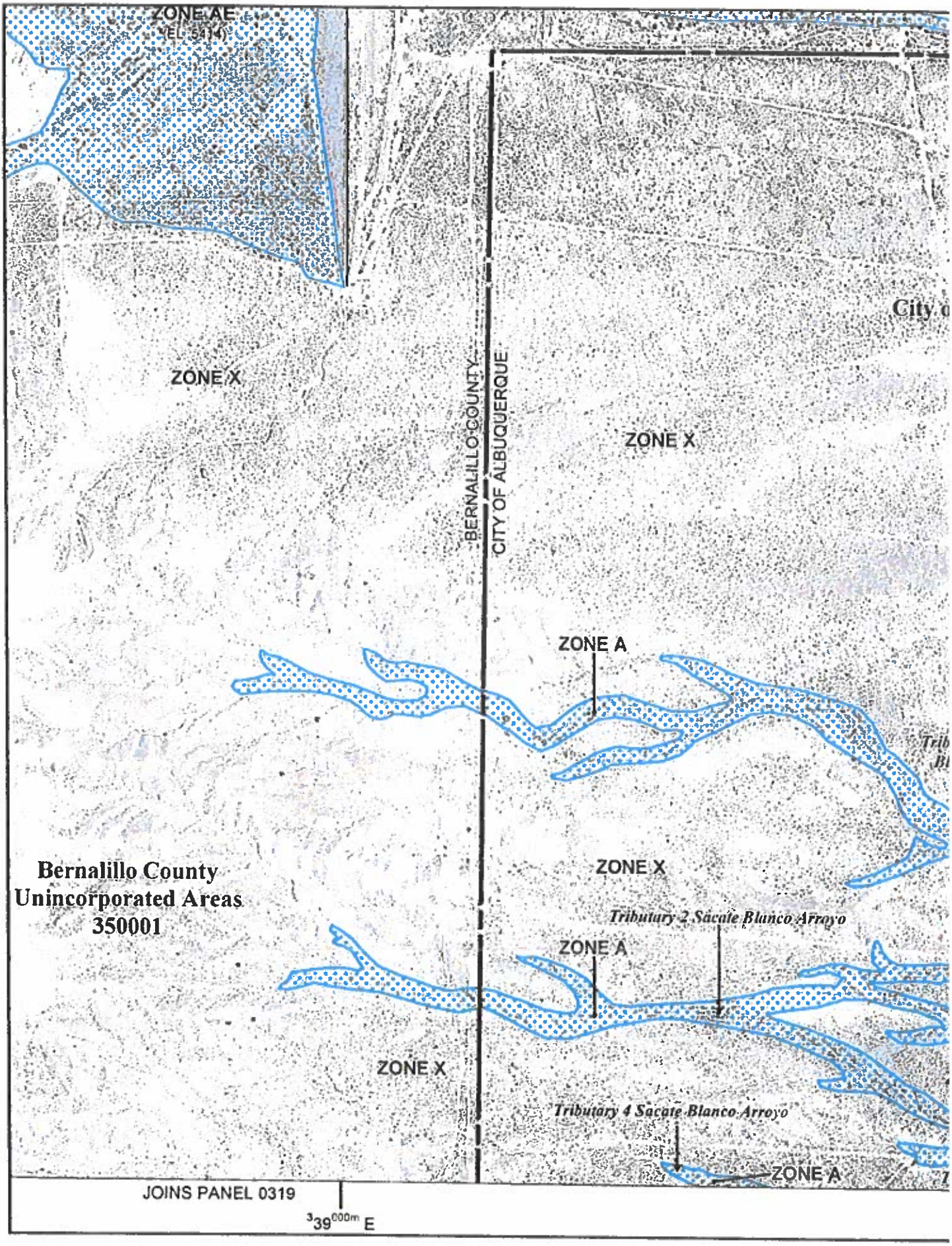
N-08-Z

Selected Symbols

- SECTOR PLANS
- Design Overlay Zones
- City Historic Zones
- H-1 Buffer Zone
- Petroglyph Mon.
- Escarpment
- 2 Mile Airport Zone
- Airport Noise Contours
- Wall Overlay Zone

Figure 1 Vicinity Map


Pipestone Rd
Pipestone Rd SW
Big Springs Rd SW
Amole Mesa Ave SW
Amole Mesa Ave SW & 118th St SW
Heritage Trails-Project Site
Maness Ln SW
Frazier Ln SW
Fencik Ln SW
Duerson Trail SW
Cabral Trail SW
Higenberg Ln SW
McMichael Ln SW
Morrissey St SW
Legend
N
Aerial Google Earth map
Figure 2


ZONE AE
(EL 5914)
ZONE X
BERNALILLO COUNTY
CITY OF ALBUQUERQUE
City o
ZONE X
ZONE A
Trib
Bl
Bernalillo County
Unincorporated Areas
350001
ZONE X
Tributary 2 Sacate Blanco Arroyo
ZONE A
ZONE X
Tributary 4 Sacate Blanco Arroyo
ZONE A
JOINS PANEL 0319
3 39 000m E

Current DRC
Project Number:_____

FIGURE 12

INFRASTRUCTURE LIST

EXHIBIT "A"

TO SUBDIVISION IMPROVEMENTS AGREEMENT

DEVELOPMENT REVIEW BOARD (D.R.B.) REQUIRED INFRASTRUCTURE LIST

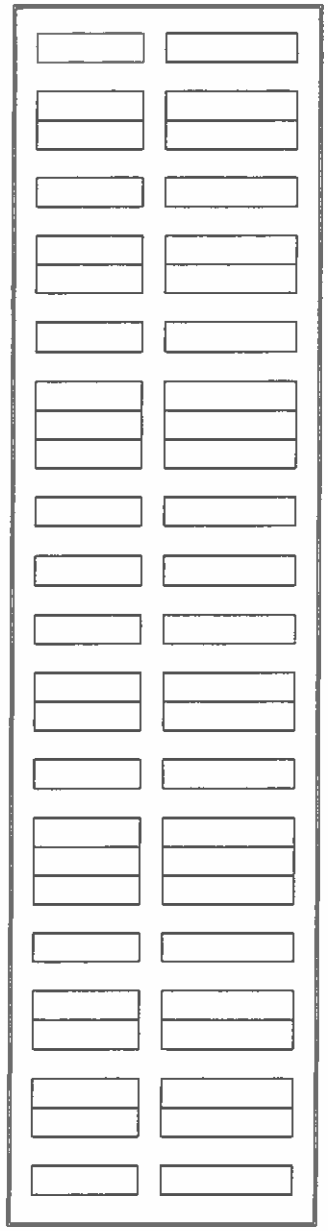
Heritage Trails
PROPOSED NAME OF PLAT

Tract A-1-A, Tract B-1, Anderson Heights Unit 4
EXISTING LEGAL DESCRIPTION PRIOR TO PLATTING ACTION

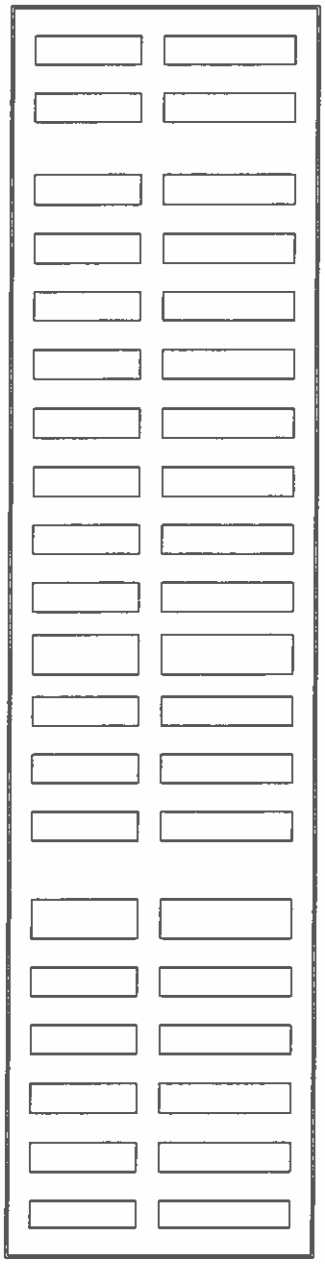
Date Submitted: 1/17/2018
Date Site Plan Approved:_____
Date Preliminary Plat Approved:_____
Date Preliminary Plat Expires:_____
DRB Project No.: 1002739
DRB Application No.:_____
*Extended 4-19-17 to 4-19-18

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.

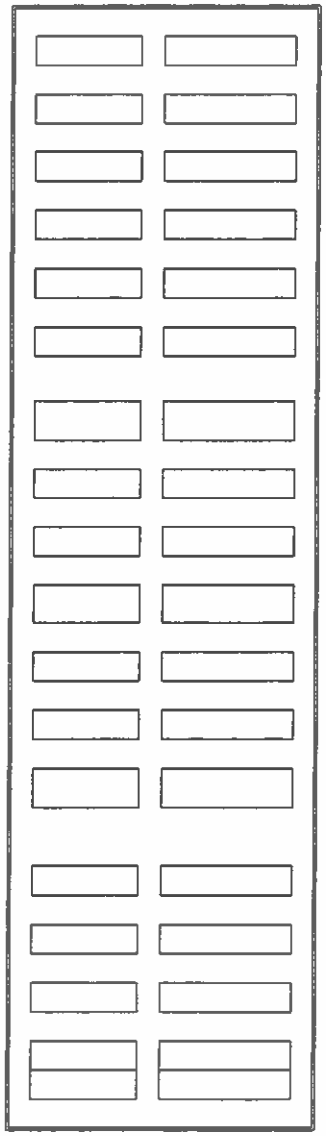
SIA Sequence #	COA DRC Project #	Size	Type of Improvement	Location	From	To	Private Inspector	City Inspector	City Cnst Engineer
			OFF-SITE PAVING - UNIT 1						
		36' FF	Perm Pvmt (Collector)	Amole Mesa Ave.	118th Street	Lot 12 Block 12	/	/	/
			C&G (south side only)						
		6'	Sidewalk (south side)	Amole Mesa Ave.	118th Street	East Property Line	/	/	/
					Duerson Trail				
		48' FF	Perm Pvmt (Collector)	Colobel Avenue	Exist Pavement	Lot 38 Block 14	/	/	/
			C&G (both sides)			Exist Pvmt at Morrissey			
		6'	Sidewalk (north side)				/	/	/
			PAVING - UNIT 1						
		46' FF	Perm Pvmt	Crest Trail Drive	Three Rivers Road	Unit 1/2 Boundary	/	/	/
		6'	Sidewalk (both sides)						
		6'	Median				/	/	/
		6'	C&G (both sides)				/	/	/
		26' FF	Perm Pvmt	Crest Trail Drive (2)	Three Rivers Road	Grass Mountain Road	/	/	/
			C&G (both sides)						
		4'	Sidewalk (both sides) (1)				/	/	/
		4'	Sidewalk	Tract DD, EE, II, HH			/	/	/
		28' FF	Perm Pvmt	South Peak Road (2)	Three Rivers Road	Winsor Street	/	/	/
			C&B (both sides)						
		4'	Sidewalk (both sides) (1)				/	/	/
		4'	Sidewalk	Tract GG			/	/	/



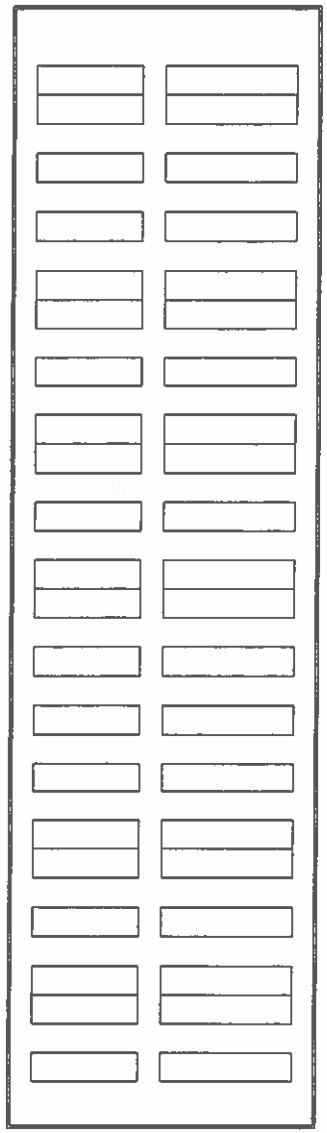
26' FF	Perm Pvmt	Horseshoe Lake Road (2)	Three Rivers Road	Winsor Street	
	C&G (both sides)				
4'	Sidewalk (both sides) (1)				
4'	Sidewalk	Tract GG, HH, CC, DD			
26' FF	Perm Pvmt	Gold Hill Road	Three Rivers Road	Grass Mountain Road	
	C&G (both sides)				
4'	Sidewalk (both sides) (1)				
4'	Sidewalk	Tract II, EE, FF			
26' FF	Perm Pvmt	West Fork Road (2)	Three Rivers Road	Grass Mountain Road	
	C&G (both sides)				
4'	Sidewalk (north side) (1)				
4'	Sidewalk (south side)				
4'	Sidewalk (south side) (1)	Lot 13,14			
48' R	Perm Pvmt Culdesac	West Fork Road			
	C&G (both sides)				
4'	Sidewalk (both sides) (1)				
28' FF	Perm Pvmt	Three Rivers Road (2)	South Peak Road	West Fork Road	
	C&G (both sides)				
4'	Sidewalk (west side) (1)				
4'	Sidewalk (east side)	Tract CC, DD, EE, FF			
26' FF	Perm Pvmt	Grass Mountain Road (2)	Crest Trail Drive Road	End 48' Radius Culdesac	
	C&G (both sides)				
4'	Sidewalk (both sides) (1)				
4'	Sidewalk (west side)	Lot 11, 12, Block 18			
4'	Sidewalk (west side)	Lot 13, 14, Block 19			
26' FF	Perm Pvmt	Winsor Street (2)	South Peak Road	Horseshoe Lake Road	
	C&G (both sides)				
4'	Sidewalk (1) (north, east, south)				
4'	Sidewalk (west side)	Lot 2, 3, Block 16			
32' FF	Perm Pvmt	Rider Ridge Drive	Amole Mesa Ave.	Crest Trail Drive Drive	
4'	Median				
	C&G (both sides)				
4'	Sidewalk (both sides)				



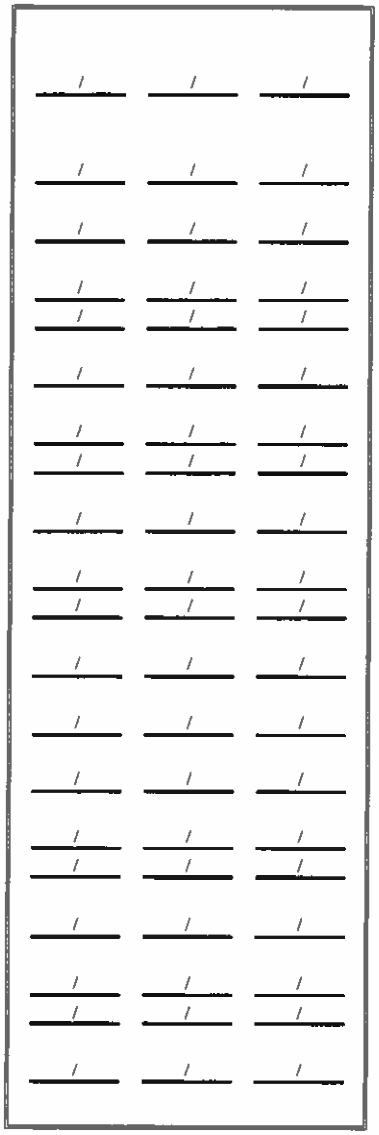
28' FF	Perm Pvmt C&G (both sides)	Quail Canyon Road	West Fork Road	Colobel Ave.			
4'	Sidewalk (both sides)						
	WATER - UNIT 1						
10"	Waterline	Grass Mountain Rd.	Colobel Ave. Exist 10" WL	Crest Trail Dr.			
8"	Waterline	Rider Ridge Drive	Amole Mesa Exist 12" WL	South Peak Rd.			
8"	Waterline	Rider Ridge Drive	Horseshoe Lake Rd.	Crest Trail Dr.			
8"	Waterline	Three Rivers Rd.	South Peak Rd.	West Fork Rd.			
4"	Waterline	West Fork Dr.	Culdesac (7 Lots)				
8"	Waterline	Winsor St.	South Peak Road	Horseshoe Lake Rd.			
8"	Waterline	South Peak Rd.	Three Rivers Rd.	Winsor St.			
8"	Waterline	Horseshoe Lake Rd.	Three Rivers Rd.	Winsor St.			
8"	Waterline	Crest Trail Dr.	Grass Mountain Rd.	Unit 1/2 Bndry (L27 B11/L1 B12)			
8"	Waterline	Gold Hill Rd.	Grass Mountain Rd.	Three Rivers Rd.			
8"	Waterline	West Fork Rd.	Grass Mountain Rd.	Three Rivers Rd.			
8"	Waterline Stub (1 Each)	Colobel Ave. (*)	Rem & Dispose Cap at Main				
	SANITARY SEWER - UNIT 1						
8"	Sanitary Sewer	Quail Canyon Rd.	West Fork Rd.	Exist 8" SAS Colobel Ave.			
8"	Sanitary Sewer	West Fork Rd.	Lot 14, Block 19	Three Rivers Road			
8"	Sanitary Sewer	West Fork Rd. Culdesac	7 Lots				
8"	Sanitary Sewer	Three Rivers Rd.	West Fork Rd.	Lot 1, Block 13			
8"	Sanitary Sewer	Grass Mountain Rd.	Existing SAS Colobel Ave.	Crest Trail Dr.			
8"	Sanitary Sewer	Gold Hill Rd.	Grass Mountain Rd.	Lot 22 Blk 18/Lot 1 Blk 19			

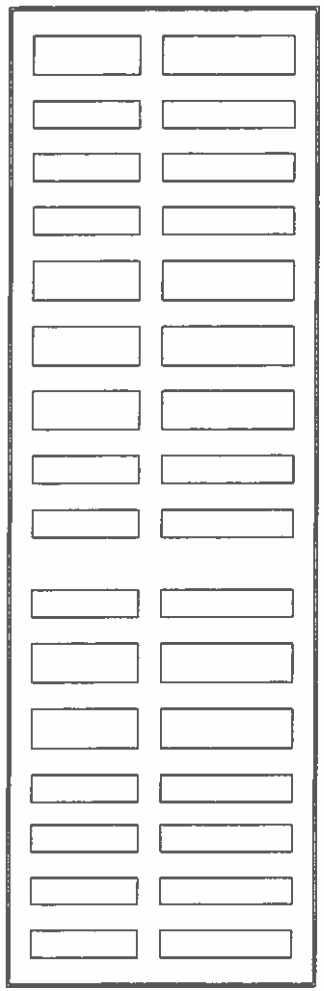


8"	Sanitary Sewer	Crest Trail Dr.	Grass Mountain Rd.	Three Rivers Rd.	/	/	/
8"	Sanitary Sewer	Three Rivers Rd.	Crest Trail Dr.	South Peak Rd.	/	/	/
8"	Sanitary Sewer	Rider Ridge Dr.	Crest Trail Dr.	Horseshoe Lake Rd.	/	/	/
8"	Sanitary Sewer	Horseshoe Lake Rd.	Winsor St.	L18 B15, L1 B17	/	/	/
8"	Sanitary Sewer	Winsor St.	Horseshoe Lake Rd.	South Peak Rd.	/	/	/
8"	Sanitary Sewer	South Peak Lake Rd.	Three Rivers Rd.	Winsor St.	/	/	/
	STORM DRAIN - UNIT 1						
54"- 78"	Storm Drain	Grass Mountain Rd.	Colobel Ave Exist. MH 57	20' Esmt (Lot 13&20, Blk 14)	/	/	/
18"	Storm Drain	West Fork Rd.	Lot 14, Blk 19		/	/	/
18"- 24"	Storm Drain	Crest Trail Dr.	Grass Mountain Rd.	Rider Ridge Dr.	/	/	/
48"	Storm Drain	20' Esmt (Lot 13&20, Blk 14)	Crest Trail Dr.	Horseshoe Lake Rd.	/	/	/
42"	Storm Drain	Winsor St.	Horseshoe Lake Rd.	South Peak Rd.	/	/	/
36"	Storm Drain	South Peak Rd.	Winsor St.	Three Rivers Rd.	/	/	/
36"	Storm Drain	20' Easement	Three Rivers Rd.	Unit 1/2 Bndry, L 11, Block 12	/	/	/
	PAVING - UNIT 2						
28' FF	Perm Pvmt (Access/Normal Local)	Emerald Peak Trail	Crag Peak Way	Crest Trail Drive	/	/	/
	C&G (both sides)						
4'	Sidewalks (both sides) (1)				/	/	/
26' FF	Perm Pvmt	Emerald Peak Trail	Crest Trail Drive	Basin Park Way	/	/	/
	C&G (both sides)						
4'	Sidewalk (both sides) (1)				/	/	/
4'	Sidewalk (both sides)	Tract G, I, H, J			/	/	/



42' - 54'	Perm Pvmt (Major Local)	Emerald Peak Trail	Amole Mesa Ave	Crag Peak Way	
10'	Median & Turnaround				
	C&G (both sides)				
6'	Sidewalks (both sides)				
26' FF	Perm Pvmt (Access)	Pine Town Way (2)	Tyler Peak Trail	Alta Peak Trail	
	C&G (both sides)				
4'	Sidewalks (north side) (1)				
4'	Sidewalk (south side)	Tract T			
26' FF	Perm Pvmt (Access)	Tyler Peak Trail	Pine Town Way	Crest Trail Drive	
	C&G (both sides)				
4'	Sidewalks (both sides) (1)				
4'	Sidewalk (east side)	Tract M			
26' FF	Perm Pvmt	Tyler Peak Trail	Crest Trail Drive	Basin Peak Way	
	C&G (both sides)				
4'	Sidewalk (both sides (1)				
4'	Sidewalk (both side)	Tract I, L, J, K			
26' FF	Perm Pvmt	Crest Trail Drive	Unit 2/3 Boundary	Alta Peak Trail	
	C&G (both sides)				
4'	Sidewalk	Tract O, G, N, I, M, L, BB			
46' FF	Perm Pvmt	Crest Trail Drive	Alta Peak Trail	Unit 1/2 Boundary	
	C&G (both sides)				
6'	Median				
6'	Sidewalk (both sides)				
26' FF	Perm Pvmt (Access)	Alta Peak Trail (2)	Basin Peak Way	Pine Town Way	
	C&G (both sides)				
4'	Sidewalk (both sides) (1)				
4'	Sidewalk	Tract M, L, BB, K			
4'	Sidewalk (Private Access)	Tract AA	Basin Peak Way	Colobel Avenue	



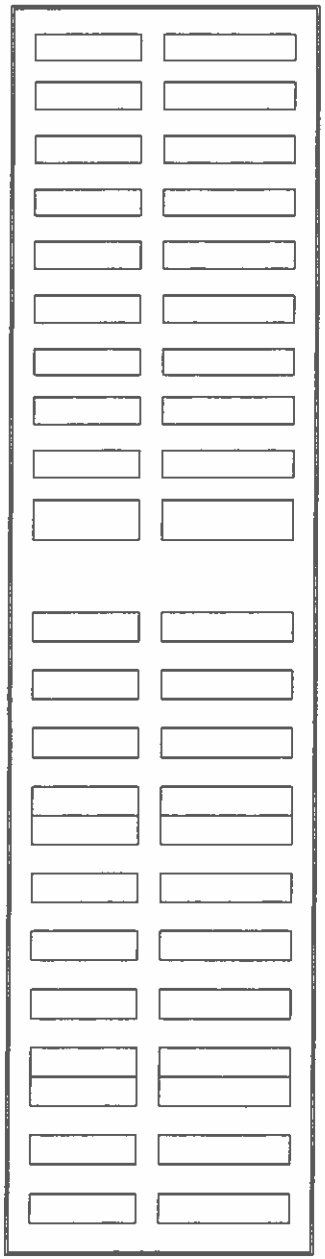


WATER - UNIT 2

8"	Waterline	Emerald Peak Trail	Amole Mesa Existing 12" WL	Basin Peak Way	/	/	/
8"	Waterline	Pine Town Way	Tyler Peak Trail	Alta Peak Trail	/	/	/
8"	Waterline	Tyler Peak Trail	Pine Town Way	Basin Peak Way	/	/	/
8"	Waterline	Alta Peak Trail	Basin Peak Way	Pine Town Way	/	/	/
8"	Waterline	Basin Peak Way	Unit 2/3 Boundary Lot 35/36	Alta Peak Trail	/	/	/
8"	Waterline	Crest Trail Drive	Alta Peak Trail	Unit 1/2 Boundary L27 B11/Lot1 B12	/	/	/
8"	Waterline	Crag Peak Way	Tyler Peak Trail	Unit 2/3 Boundary Lot 49/50 B 3	/	/	/
8"	Waterline	Tract AA	Colobel Ave. Ext. 10" WL	Basin Peak Way	/	/	/
8"	Waterline Stub (2 Each)	Colobel Ave. (*)	Rem & Dispose Cap at Main		/	/	/

SANITARY SEWER - UNIT 2

8"	Sanitary Sewer	Basin Peak Way	Unit 2/3 Bndry Lot 35/36	Alta Peak Trail	/	/	/
8"	Sanitary Sewer	Tract AA	Basin Peak Way	Existing 8" SAS Colobel Ave.	/	/	/
8"	Sanitary Sewer	Crag Peak Way	Unit 2/3 Boundary Lot 49/50	Tyler Peak Trail	/	/	/
8"	Sanitary Sewer	Emerald Peak Trail	Crag Peak Way	Basin Peak Way	/	/	/
8"	Sanitary Sewer	Tyler Peak Trail	Basin Peak Way	Pine Town Way	/	/	/
8"	Sanitary Sewer	Pine Town Way	Tyler Peak Trail	Alta Peak Trail	/	/	/
8"	Sanitary Sewer	Alta Peak Trail	Pine Town Way	Basin Peak Way	/	/	/



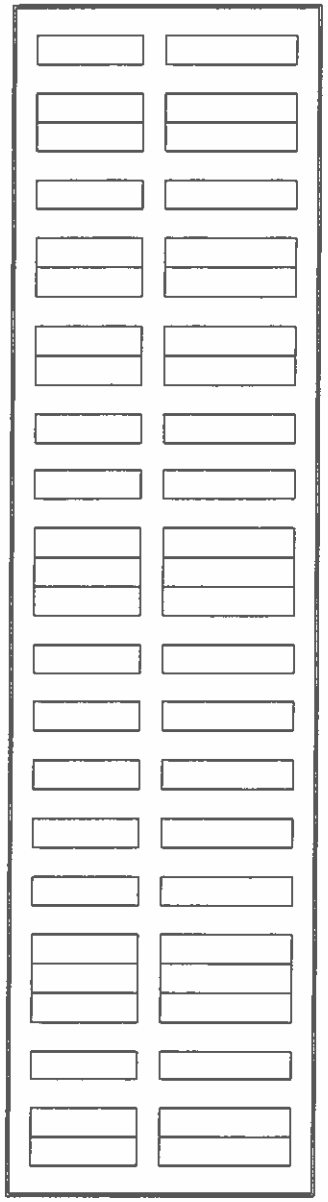
STORM DRAIN - UNIT 2

18"-36"	Storm Drain	Alta Peak Trail	Bain Peak Way	Lot 27, Blk 17	/	/	/
18"-42"	Storm Drain	Bain Peak Way	Alta Peak Trail	Near Crest Trail Dr. Tyler Peak Trail	/	/	/
48"	Storm Drain	Tract AA	Basin Peak Way	Colobel Ave.	/	/	/
48"	Storm Drain	Colobel Ave. (*)	Tract AA	MH 51	/	/	/
30"	Storm Drain	Colobel Ave. (*)	Existing MH 51	Existing 72" SD MH 58	/	/	/
36"	Storm Drain	Colobel Ave.	MH 58	MH 57	/	/	/
36"	Storm Drain	20' Easement	Pine Town Way	L 18, B 11 Unit 1/2 Bndry	/	/	/
30"-36"	Storm Drain	Pine Town way	20' Easement	Tyler Peak Trail	/	/	/
30"	Storm Drain	Tyler Peak Trail	Pine Town Way	Crag Peak St.	/	/	/
24"-30"	Storm Drain	Crag Peak St.	Tyler Peak Trail	Unit 2/3 Bndry, L 48/49 B 3	/	/	/

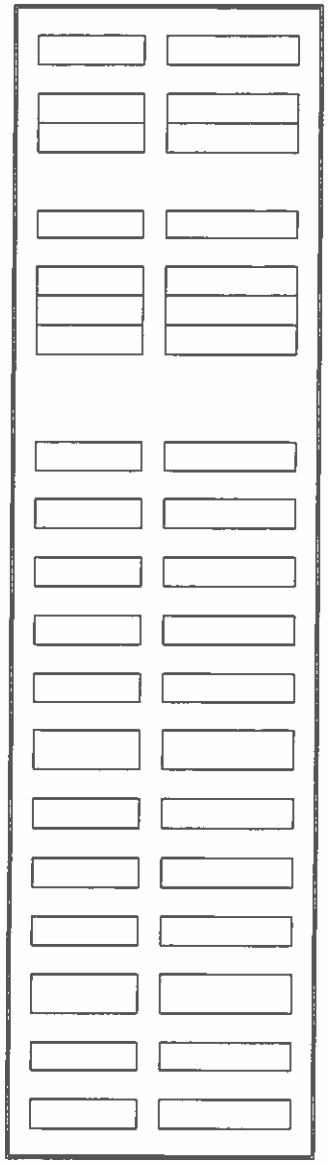
(*) Colobet to include remove & replace asphalt, remove unused existing storm pipe and stubs

PAVING - UNIT 3

26' FF	Perm Pvmt (Access) C&G (both sides)	Cirque Peak Way (2)	Eagle Peak Trail	Bord Peak Trail	/	/	/
4'	Sidewalk (both sides) (1)				/	/	/
26' FF	Perm Pvmt (Access) C&G (both sides)	Eagle Peak Trail (2)	Costilla Peak Way	Cirque Peak Way	/	/	/
4'	Sidewalk (west side) (1)				/	/	/
4'	Sidewalk (east side)	Tract OO			/	/	/
26' FF	Perm Pvmt (Access) C&G (both sides)	Costilla Peak Way (2)	Eagle Peak Trail	Bord Peak Trail	/	/	/
4'	Sidewalk (both sides) (1)				/	/	/
26' FF	Perm Pvmt (Access) C&G (both sides)	Bord Peak Trail	Cirque Peak Way	Costilla Peak Way	/	/	/
4'	Sidewalk (east side) (1)				/	/	/
4'	Sidewalk (west side)	Tract NN			/	/	/
28' FF	Perm Pvmt (Normal Local) C&G both sides	Bord Peak Trail	Costilla Peak Way	Crest Trail Drive	/	/	/
4'	Sidewalks (both sides)	Tract X, Tract V, Tract W, Tract C			/	/	/



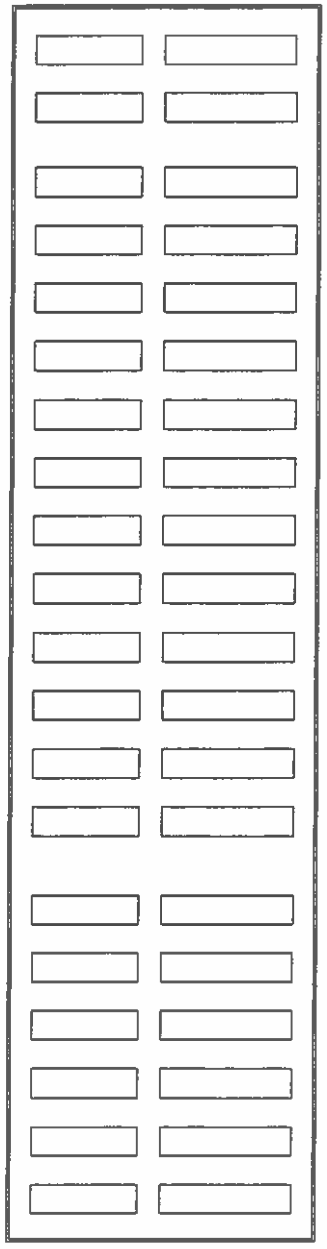
26' FF	Perm Pvmt (Access)	Bord Peak Trail	Crest Trail Drive	Banner Peak Way	/ / /
	C&G both sides				
4'	Sidewalks (both sides) (1)				/ / /
4'	Sidewalks	Tract E, Tract F			/ / /
26' FF	Perm Pvmt (Access)	Diamond Peak Way	Bord Peak Trail	Deer Horn Peak Trail	/ / /
	C&G (both sides)				
4'	Sidewalk (north side) (1)				/ / /
4'	Sidewalk (south side)	Tract W			/ / /
56 FF'	Perm Pvmt (Normal Local) (9)	Barrow Way	118th Street	Bord Peak Trail	/ / /
12'	Median (Varies) & Turnaround				/ / /
	C&G (both sides)				
6'	Sidewalk (both sides)				/ / /
28' FF	Perm Pvmt (Access)	Crest Trail Drive	Bord Peak Trail	Unit 2/3 Boundary	/ / /
	C&G (both sides)				
4'	Sidewalk (north side)	Tract W, O			/ / /
4'	Sidewalk (south side) (1)				/ / /
4'	Sidewalk (south side)	Tract G			/ / /
26' FF	Perm Pvmt (Access)	Crest Trail Drive (2)	Adams Peak Trail	Bord Peak Trail	/ / /
	C&G (both sides)				
4'	Sidewalk (both sides)	Tract C, Tract E			/ / /
26' FF	Perm Pvmt (Access)	Adams Peak Trail (2)	Crest Trail Drive	Banner Peak Way	/ / /
	C&G (both sides)				
4'	Sidewalks (both sides) (1)				
26' FF	Perm Pvmt (Access)	Banner Peak Way (2)	Adams Peak Trail	Bord Peak Trail	/ / /
	C&G (both sides)				
4'	Sidewalk (south side) (1)				/ / /
4'	Sidewalk (north side)	Tract F			/ / /
4'	Sidewalk (south side)	Tract B			/ / /
26'	Perm Pvmt (Normal Local)	Crag Peak Way (2)	Deer Horn Peak Trail	Unit 2/3 Boundary	/ / /
	C&G (both sides)				
4'	Sidewalk (Northside) (1)				/ / /
4'	Sidewalk (south side)	Tract P			/ / /



26'	Perm Pvmt (Access) C&G (both sides)	Deer Horn Peak Trail (2)	Crag Peak Way	Basin Peak Way			
4'	Sidewalks (west side)	Tract W, U, Lot 25					
4'	Sidewalks (both sides) (1)						
26' FF	Perm Pvmt (Access) C&G (both sides)	Basin Peak Way (2)	Deer Horn Peak Trail	Unit 2/3 Boundary			
4'	Sidewalks (south sides) (1)						
4'	Sidewalks (north side)	Tract H					
4'	Sidewalk (Private Access)	Tract T	Banner Peak Way	Colobel Avenue			

WATER - UNIT 3

8"	Waterline	Cirque Peak Way	Eagle Peak Trail	Bord Peak Trail			
8"	Waterline	Eagle Peak Trail	Costilla Peak Way	Cirque Peak Way			
8"	Waterline	Costilla Peak Way	Eagle Peak Trail	Bord Peak Trail			
8"	Waterline	Bord Peak Trail	Cirque Peak Way	Banner Peak Way			
8"	Waterline	Diamond Peak Way	Bord Peak Trail	Deer Horn Peak Trail			
10"	Waterline	Barrow Way	118th Street Existing 18" WL	Bord Peak Trail			
8"	Waterline	Crest Trail Drive	Adams Peak Trail	Deer Horn Peak Trail			
8"	Waterline	Adams Peak Trail	Crest Trail Drive	Banner Peak Way			
8"	Waterline	Banner Peak Way	Adams Peak Trail	Bord Peak Trail			
8"	Waterline	Tract B	Banner Peak Way	Existing 10" WL Colobel Stub			
8"	Waterline	Crag Peak Way	Deer Horn Peak Trail	Unit 2/3 Bndry Lot 49/50			
8"	Waterline	Deer Horn Peak Trail	Crag Peak Way	Basin Peak Way			



8"	Waterline	Basin Peak Way	Deer Horn Peak Trail	Unit 2/3 Bndry Lot 35/36	/ / /
8"	Waterline Stub (2 Each)	Colobel Ave. (*)	Rem & Dispose Cap at Main		/ / /

SANITARY SEWER - UNIT 3

8"	Sanitary Sewer	Cirque Peak Way	Eagle Peak Trail	Bord Peak Trail	/ / /
8"	Sanitary Sewer	Eagle Peak Trail	Costilla Peak Way	Cirque Peak Way	/ / /
8"	Sanitary Sewer	Costilla Peak Way	Eagle Peak Trail	Bord Peak Trail	/ / /
8"	Sanitary Sewer	Bord Peak Trail	Cirque Peak Way	Banner Peak Way	/ / /
8"	Sanitary Sewer	Diamond Peak Way	Lot 35 B3	Deer Horn Peak Trail	/ / /
8"	Sanitary Sewer	Crest Trail Drive	Lot 21 B1	Deer Horn Peak Trail	/ / /
8"	Sanitary Sewer	Adams Peak Trail	Lot 1 Crest Trail Drive	Banner Peak Way	/ / /
8"	Sanitary Sewer	Banner Peak Way	Adams Peak Trail	Bord Peak Trail	/ / /
8"	Sanitary Sewer	Tract B	Banner Peak Way	Colobel Ave. Exst SAS	/ / /
8"	Sanitary Sewer	Crag Peak Way	Lot 49/50 B 3	Deer Horn Peak Rd.	/ / /
8"	Sanitary Sewer	Deer Horn Peak Rd.	Crag Peak Way	Basin Peak Way	/ / /
8"	Sanitary Sewer	Basin Peak Way	Deer Horn Peak Rd.	Unit 2/3 Bndry Lot 35/36	/ / /

STORM DRAIN - UNIT 3

18" - 24"	Storm Drain	Crag Peak St.	Unit 2/3 Boundary	Dear Horn Peak Tr.	/ / /
18" - 24"	Storm Drain	Dear Horn Peak Tr.	Crag Peak St.	Diamond Peak Way	/ / /
18"	Storm Drain	Diamond Peak Way	Dear Horn Peak Tr.	Lot 37/38 Blk 3	/ / /
24"	Storm Drain	Colobel Ave (*)	Tract B	Existing MH 1A	/ / /
24"	Storm Drain	Tract B	Existing SD Colobel Ave.	Banner Peak Way	/ / /
18" - 24"	Storm Drain	Banner Peak Way	Tract B	Bord Peak Trail	/ / /

Colobel (*) To include remove and replace asphalts; remove unused existing storm pipe and stubs

approval of this listing. The items listed below are subject to the standard SIA requirements.

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. Sidewalks to be Deferred per Exhibit
2. Includes Knuckles
3. Street Lights Per DPM
4. Water Infrastructure includes Valves, Fittings, Valve Boxes, Fire Hydrants, and Appurtenances.
5. Sanitary Sewer includes manholes and service connection to property line
6. Storm Drain includes manholes & inlets
7. Grading & Drainage certification per DPM for release of SIA & Financial Guaranty's. Financial Guaranty's are not required for grading.
8. Colobel (*) to include remove and replace asphalts; remove unused existing storm pipe and stubs or water or sewer stubs

AGENT / OWNER

Diane Hoelzer, P.E.
NAME (print)

MARK GOODWIN & ASSOCIATES
FIRM

Diane Hoelzer 1-17-18
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

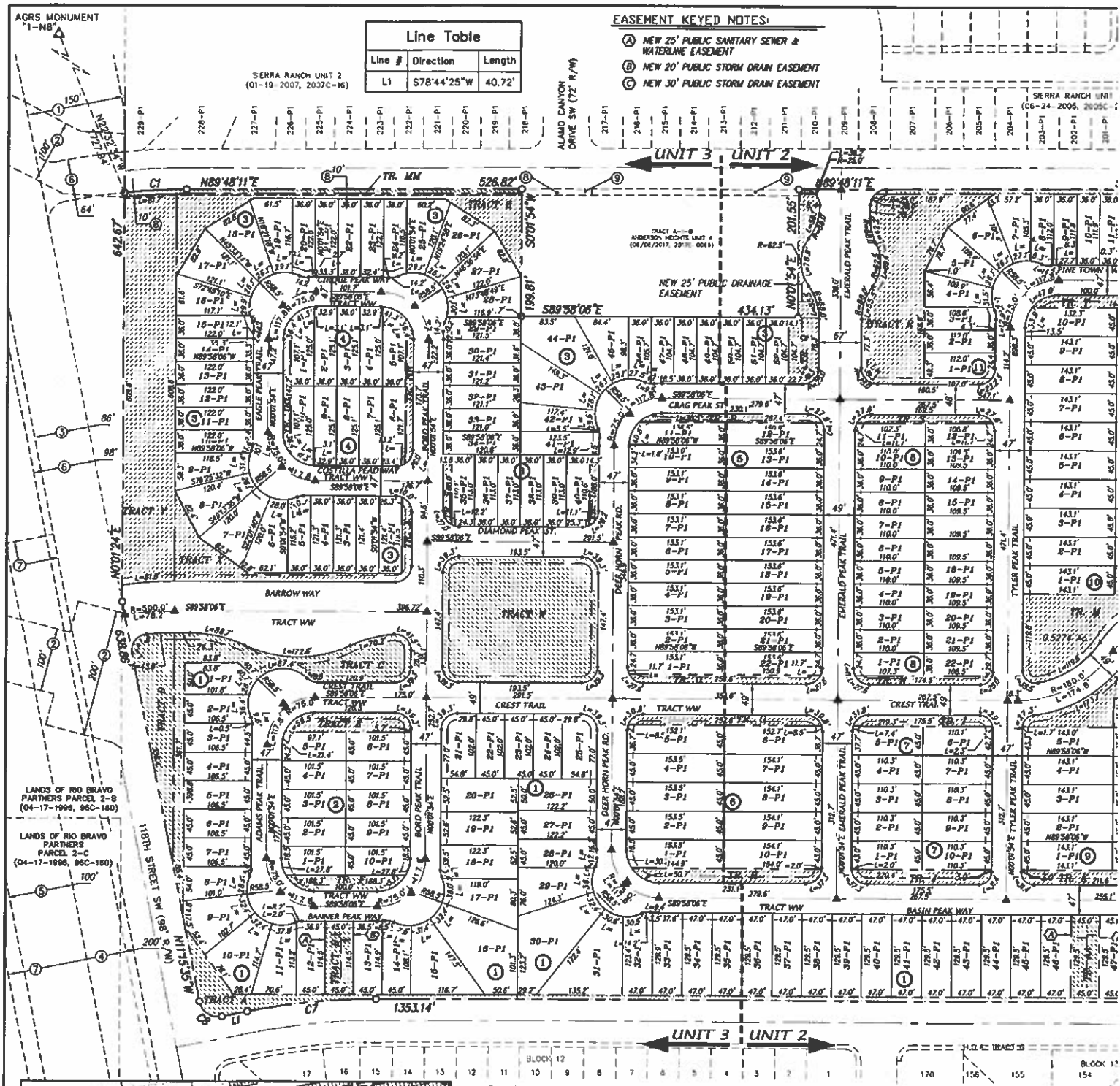
_____ **- date**

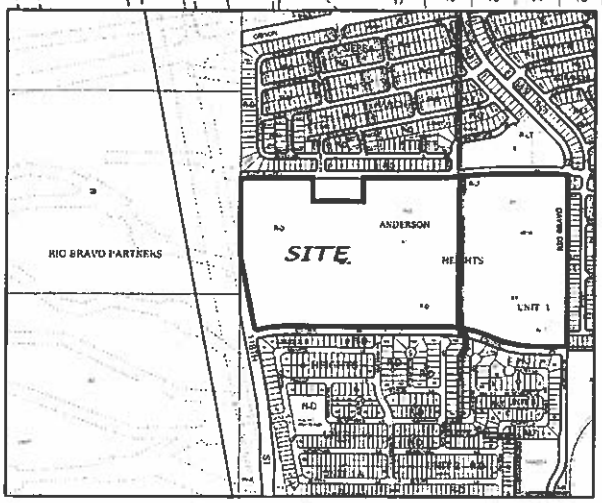
CITY ENGINEER - date

_____ **- date**

DESIGN REVIEW COMMITTEE REVISIONS

REVISION	DATE	DRC CHAIR	USER DEPARTMENT	AGENT /OWNER





VICINITY MAP

ZONE MAP: N-8-Z

SUBDIVISION DATA

GROSS ACREAGE	84.9303 AC
ZONE ATLAS NO.	N-8-Z
NO. OF LOTS CREATED	427 LOTS
NO. OF TRACTS CREATED	43 TRACTS
DATE OF SURVEY	MARCH, 2015

LEGAL DESCRIPTION

A tract of land situate within the Town of Atrisco Grant, projected Sections 5 and 8, Township 9 North, Range 2 East, New Mexico Principal Meridian, City of Albuquerque, Bernalillo County, New Mexico, being all of TRACT A-1-A, ANDERSON HEIGHTS UNIT 4, 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 June 06, 2017 in Plat Book 2017C, Page 0069, together with TRACT B-1, ANDERSON HEIGHTS UNIT 4, 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 23, 2015, in Plat Book 2015C, Page 29, and containing 84.9303 acres more or less.

PURPOSE OF PLAT

1. SUBDIVIDE TRACTS A-1-A, B-1 ANDERSON HEIGHTS INTO 438 RESIDENTIAL LOTS & 43 TRACTS AS SHOWN.
3. DEDICATED NEW RIGHT-OF-WAY AS SHOWN.
3. GRANT NEW EASEMENTS AS SHOWN.

NOTES

1. UNLESS OTHERWISE NOTED, ALL BO... REBAR WITH YELLOW PLASTIC CAP
2. ALL STREET CENTERLINE MONUMENT... ANGLE POINTS, AND STREET INTERS... FOUR INCH (4") ALUMINUM CAP ST... "CITY OF ALBUQUERQUE ... "DO NO... N.M...
3. BOUNDARY SHALL BE TIED TO ... SYSTEM AS SHOWN.
4. BASIS OF BEARING SHALL BE ...
5. ALL DISTANCES SHALL BE GRO...
6. MANHOLES WILL BE OFFSET AT ... TANGENCY, STREET INTERSECTI... USE OF CENTERLINE MONUMEN...
7. TRACT WW IS A PRIVATE ACCE... WATERLINE & SANITARY SEWE... LOTS WITHIN UNIT 2&3 AND ...
8. TRACTS "A-00" ARE PRIVATE ... WITHIN UNIT 2&3. TRACTS WIL... H.O.A. AND WILL BE MAINTAIN...

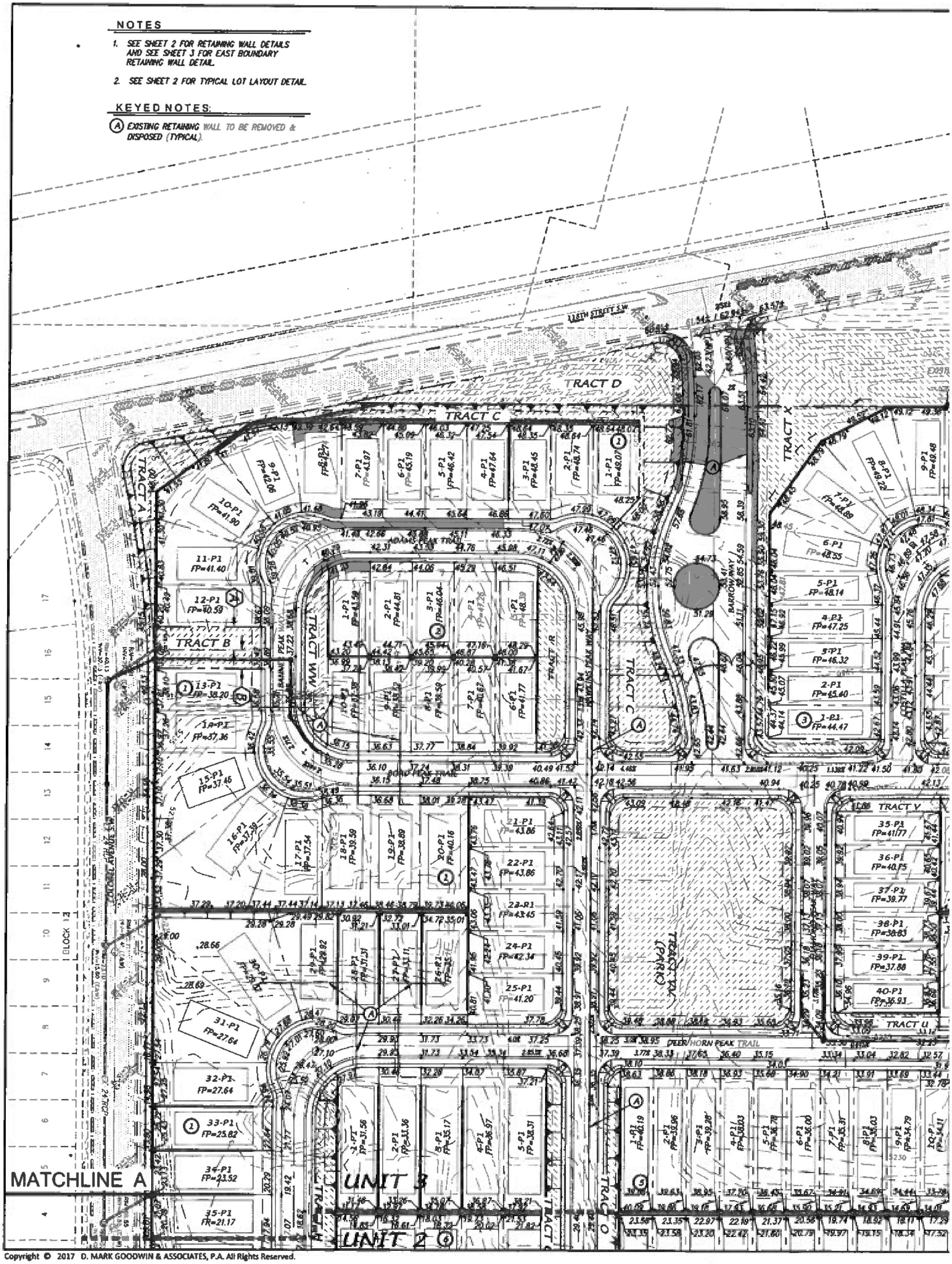
F:\A17005\A17022 - Anderson Heights 2017\PLATS\SKETCH PLAT\SHEET\17022.dwg, 12/4/2017 8:40:39 AM, SPS

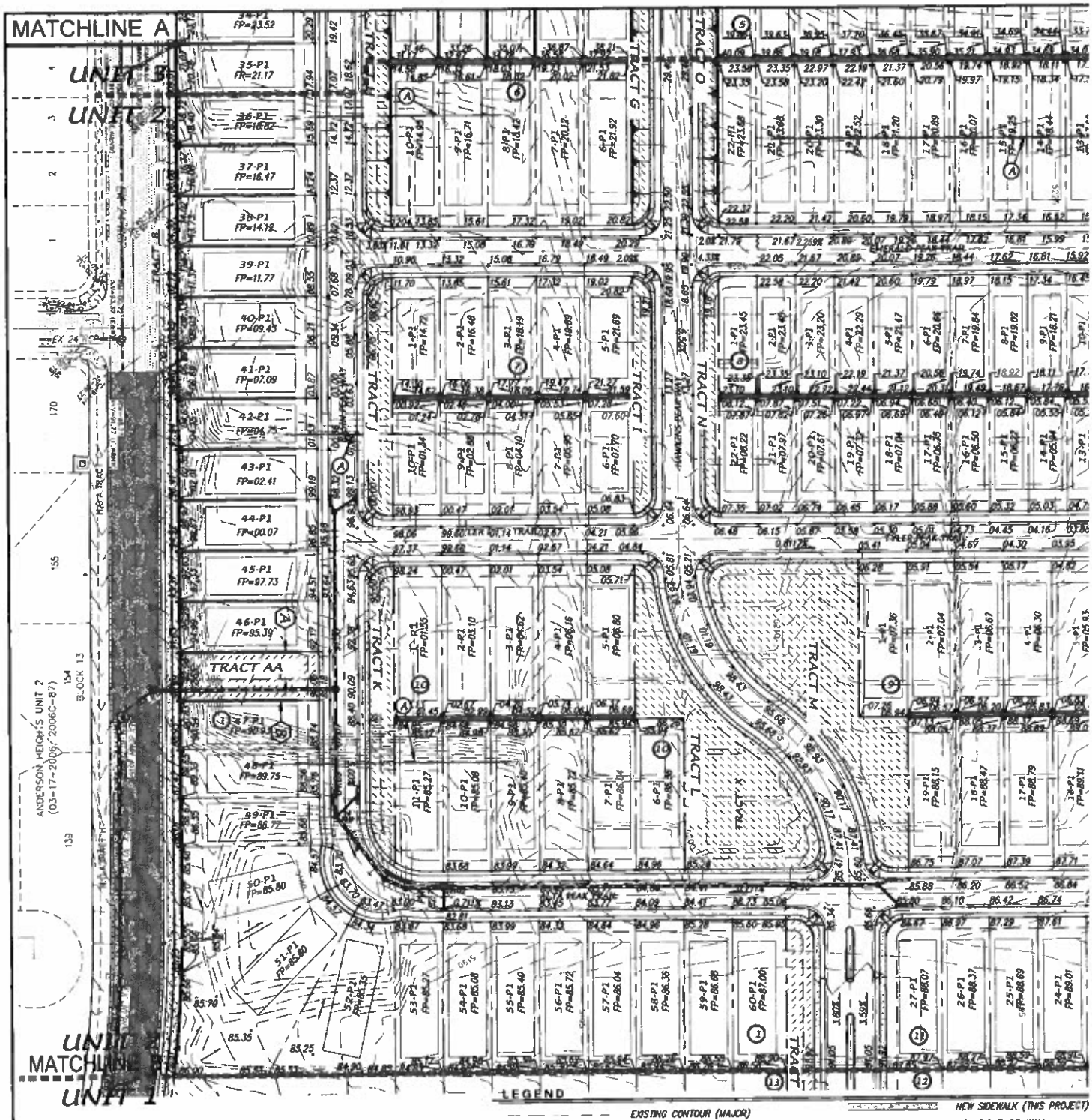
NOTES

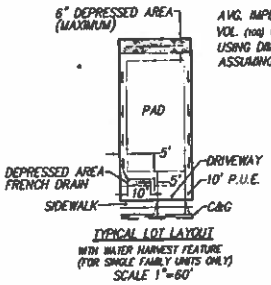
1. SEE SHEET 2 FOR RETAINING WALL DETAILS AND SEE SHEET 3 FOR EAST BOUNDARY RETAINING WALL DETAIL.
2. SEE SHEET 2 FOR TYPICAL LOT LAYOUT DETAIL.

KEYED NOTES:

(A) EXISTING RETAINING WALL TO BE REMOVED & DISPOSED (TYPICAL).



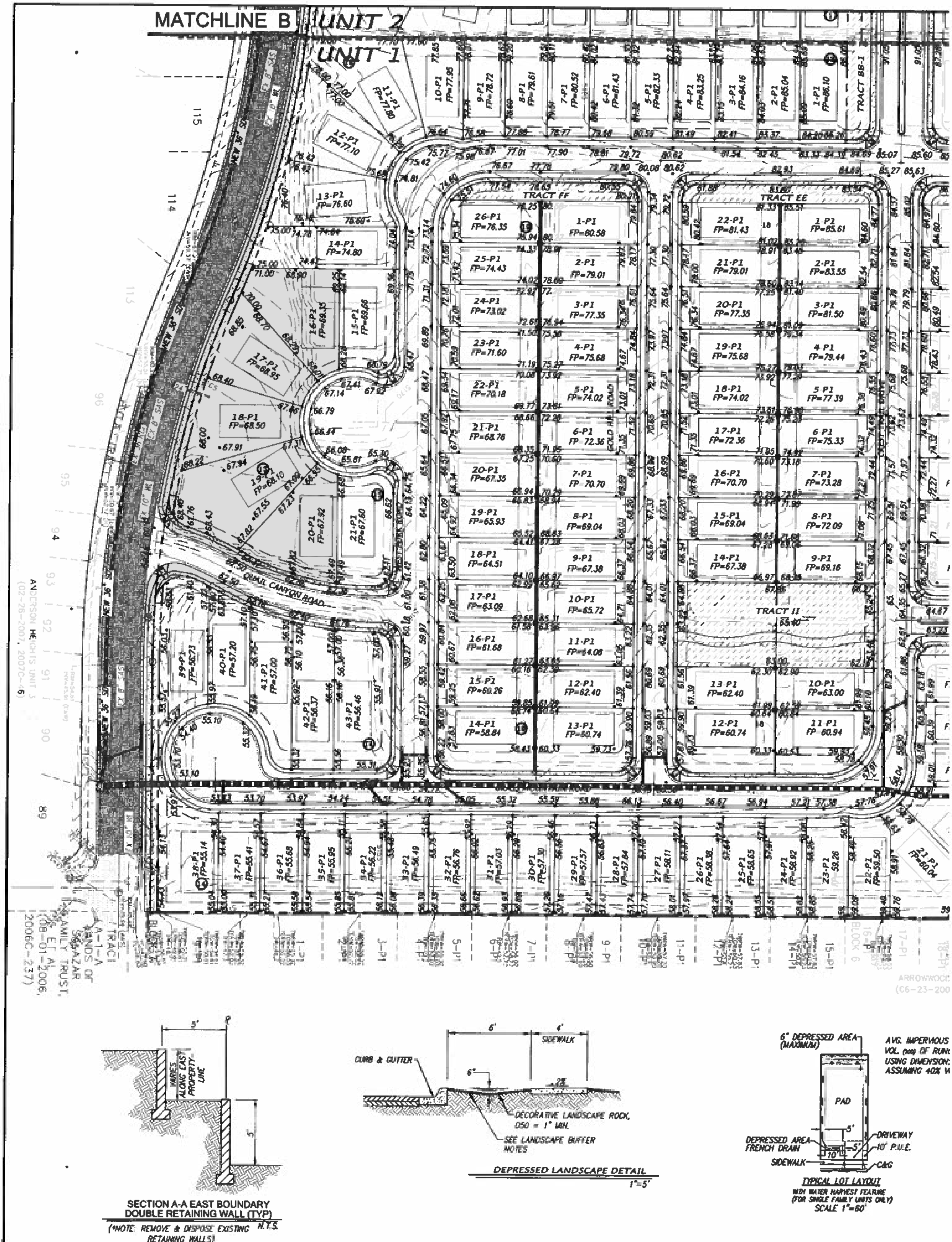




AVG. IMPERVIOUS AREA = 2500 SQ. FT.
VOL. (req) OF RUNOFF = 0.34 in. (2500 SQ. FT.)= 71 CU. FT.
USING DIMENSIONS 5x10'x5' = 100 CU. FT.
ASSUMING 40% VOIDS

TYPICAL LOT LAYOUT
WITH WATER HARVEST FEATURE
(FOR SINGLE FAMILY UNITS ONLY)
SCALE 1"=60'

P:\A17\2085\A17022 - Anderson Heights 2017\GRADE & DRAIN\A17022_GD.dwg, 1/16/2018 11:54:59 PM, 1_OCE ARCH D BOND.ctb, CHRIS



APPENDIX A - HYDROLOGY

Table 1 Summary of Hydrologic Parameters
Sub Basin Boundary Exhibit

AHYMO Input file

AHYMO Summary files (100y-6h)

TABLE 1

Heritage Trails Residential

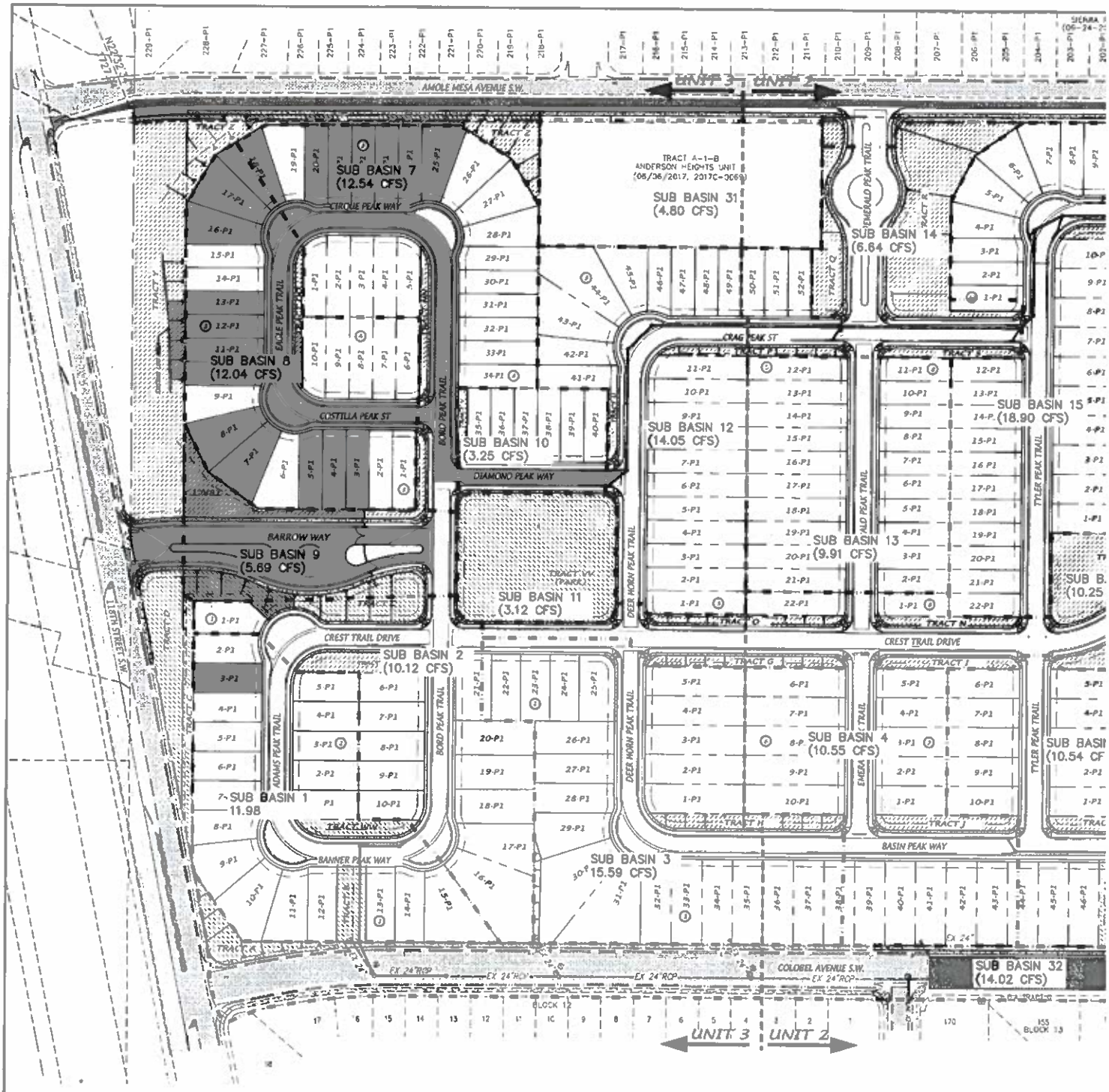
Summary of Hydrology Parameters

Sub Basin	Area	Area	Area	Land Treatment Values				Runoff Volume	Discharge value	Discharge value
ID	sq.ft	acre	sq.mi.	A	B	C	D	acre-ft	cfs	cfs
								100yr 6 hr	100-yr 6-hr	Totals
1	136,116.0	3.12	0.004882	0.0	25.0	15.0	60.0	0.410	11.98	
2	118,581.0	2.72	0.004254	0.0	24.0	16.0	45.0	0.341	10.12	22.10
3	184,551.0	4.24	0.006620	0.0	29.5	19.5	51.0	0.524	15.59	
4	124,767.0	2.86	0.004475	0.0	29.4	19.4	51.2	0.354	10.55	
5	124,416.0	2.86	0.004463	0.0	29.3	19.3	51.4	0.354	10.54	
6	174,647.0	4.01	0.006265	0.0	32.6	21.7	45.7	0.477	14.38	
7	142,490.0	3.27	0.005111	0.0	25.0	15.0	60.0	0.429	12.54	
8	136,839.0	3.14	0.004908	0.0	25.0	15.0	60.0	0.412	12.04	
9	63,185.0	1.45	0.002266	0.0	23.0	12.0	65.0	0.196	5.69	
10	36,818.0	0.85	0.001321	0.0	25.0	15.0	60.0	0.111	3.25	
11	47,544.0	1.09	0.001705	0.0	63.0	30.0	7.0	0.092	3.12	
12	159,689.0	3.67	0.005728	0.0	25.0	15.0	60.0	0.481	14.05	
13	112,524.0	2.58	0.004036	0.0	25.0	15.0	60.0	0.339	9.91	
14	81,491.0	1.87	0.002923	0.0	37.0	18.0	45.0	0.220	6.64	
15	214,811.0	4.93	0.007705	0.0	25.0	15.0	60.0	0.647	18.90	
16	175,842.0	4.04	0.006307	0.0	28.3	18.9	52.8	0.505	14.99	
17	121,839.0	2.80	0.004370	0.0	30.0	20.0	50.0	0.343	10.25	76.3
18	218,495.0	5.02	0.007837	0.0	25.0	15.0	60.0	0.658	19.22	
19	178,699.0	4.10	0.006410	0.0	26.5	17.7	55.8	0.524	15.45	
20	125,963.0	2.89	0.004518	0.0	31.0	20.7	48.3	0.351	10.51	
21	225,668.0	5.18	0.008095	0.0	26.8	17.9	55.3	0.660	19.46	
22	165,024.0	3.79	0.005919	0.0	25.0	15.0	60.0	0.497	14.52	
23	269,100.0	6.18	0.009653	0.0	28.1	18.7	53.2	0.775	22.97	
24	132,662.0	3.05	0.004759	0.0	27.7	18.5	53.8	0.384	11.36	199.63

Heritage Trails Residential
Summary of Hydrology Parameters

Sub Basin	Area	Area	Area	Land Treatment Values				Runoff Volume	Discharge value	Discharge value
ID	sq.ft	acre	sq.mi.	A	B	C	D	acre-ft	cfs	cfs
								100yr 6 hr	100-yr 6-hr	Totals
31	84,116.0	1.93	0.003017	0	100.0	0.0	0.0	0.139	4.80	4.800
32	150,209.0	3.45	0.005388	0	0.0	36.0	64.0	0.480	14.02	
33	67,368.0	1.55	0.002416	0	0.0	40.0	60.0	0.211	6.21	20.230

F:/PROJECTS/17022 Heritage Trails -Summary Table 1 Hydrology (12-21-17)



AHYMO PROGRAM SUMMARY TABLE (AHYMO-S4) - Ver. S4.01a, Rel: 01a RUN DATE (MON/DAY/YR) =12/22/2017
INPUT FILE = C:\Program Files (x86)\AHYMO-S4\HTRAILS_6.DAT USER NO.= M-GoodwinNMSiteA90075759

COMMAND	HYDROGRAPH IDENTIFICATION	FROM ID NO.	TO ID NO.	AREA (SQ MI)	PEAK DISCHARGE (CFS)	RUNOFF VOLUME (AC-FT)	RUNOFF (INCHES)	TIME TO PEAK (HOURS)	CFS PER ACRE	NOTATION	
START										TIME=	0.00
LOCATION	NEW MEXICO										
*S**********											
*S**********	FILE:HTrails_6.DAT REV: 12-21-17 DLH										
*S**********											
*S**********											
*S	100 YEAR 6 HOUR STORM EVENT										
*S**********											
*S**********											
RAINFALL	TYPE= 1 NOAA 14									RAIN6=	2.230
*S**********											
*S	SUB BASIN 1										
*S	(3.12 ACRES)										
*S**********											
COMPUTE NM HYD		100.10	-	1	0.00488	11.98	0.410	1.57350	1.500	3.834 PER IMP=	60.00
*S**********											
*S	SUB BASIN 2										
*S	(2.72 ACRES)										
*S**********											
COMPUTE NM HYD		100.20	-	1	0.00425	10.12	0.341	1.50336	1.500	3.717 PER IMP=	52.94
*S**********											
*S	SUB BASIN 3										
*S	(4.24 ACRES)										
*S**********											
COMPUTE NM HYD		100.30	-	1	0.00662	15.59	0.524	1.48324	1.500	3.680 PER IMP=	51.00
*S**********											
*S	SUB BASIN 4										
*S	(2.86 ACRES)										
*S**********											
COMPUTE NM HYD		100.40	-	1	0.00448	10.55	0.354	1.48525	1.500	3.685 PER IMP=	51.20
*S**********											
*S	SUB BASIN 5										
*S	(2.86 ACRES)										
*S**********											
COMPUTE NM HYD		100.50	-	1	0.00446	10.54	0.354	1.48726	1.500	3.689 PER IMP=	51.40
*S**********											
*S	SUB BASIN 6										
*S	(4.01 ACRES)										
*S**********											
COMPUTE NM HYD		100.60	-	1	0.00627	14.38	0.477	1.42905	1.500	3.587 PER IMP=	45.70
*S**********											
*S	SUB BASIN 7										
*S	(3.27 ACRES)										
*S**********											
COMPUTE NM HYD		100.70	-	1	0.00511	12.54	0.429	1.57350	1.500	3.834 PER IMP=	60.00
*S**********											
*S	SUB BASIN 8										
*S	(3.14 ACRES)										
*S**********											
COMPUTE NM HYD		100.80	-	1	0.00491	12.04	0.412	1.57350	1.500	3.834 PER IMP=	60.00
*S**********											
*S	SUB BASIN 9										

```
*S      (1.45 ACRES)
*S*************************************************************
COMPUTE NM HYD        100.90   -    1       0.00227        5.69       0.196      1.62219    1.500    3.922 PER IMP=  65.00
*S*************************************************************
*S      SUB BASIN 10
*S      (0.85 ACRES)
*S*************************************************************
COMPUTE NM HYD        100.10   -    1       0.00132        3.25       0.111      1.57350    1.500    3.849 PER IMP=  60.00
*S*************************************************************
*S      SUB BASIN 11
*S      (1.09 ACRES)
*S*************************************************************
COMPUTE NM HYD        100.11   -    1       0.00171        3.12       0.092      1.01447    1.500    2.858 PER IMP=   7.00
*S*************************************************************
*S      SUB BASIN 12
*S      (3.67 ACRES)
*S*************************************************************
                                FROM  TO                   PEAK        RUNOFF               TIME TO   CFS       PAGE =   2
                   HYDROGRAPH   ID    ID        AREA     DISCHARGE     VOLUME     RUNOFF     PEAK     PER
COMMAND          IDENTIFICATION NO.   NO.      (SQ MI)     (CFS)       (AC-FT)   (INCHES)   (HOURS)   ACRE       NOTATION

COMPUTE NM HYD        100.12   -    1       0.00573       14.05       0.481      1.57350    1.500    3.834 PER IMP=  60.00
*S*************************************************************
*S      SUB BASIN 13
*S      (2.58 ACRES)
*S*************************************************************
COMPUTE NM HYD        100.13   -    1       0.00404        9.91       0.339      1.57350    1.500    3.835 PER IMP=  60.00
*S*************************************************************
*S      SUB BASIN 14
*S      (1.87 ACRES)
*S*************************************************************
COMPUTE NM HYD        100.14   -    1       0.00292        6.64       0.220      1.41210    1.500    3.549 PER IMP=  45.00
*S*************************************************************
*S      SUB BASIN 15
*S      (4.93 ACRES)
*S*************************************************************
COMPUTE NM HYD        100.15   -    1       0.00771       18.90       0.647      1.57350    1.500    3.833 PER IMP=  60.00
*S*************************************************************
*S      SUB BASIN 16
*S      (4.04 ACRES)
*S*************************************************************
COMPUTE NM HYD        100.16   -    1       0.00631       14.99       0.505      1.50196    1.500    3.712 PER IMP=  52.80
*S*************************************************************
*S      SUB BASIN 17
*S      (2.80 ACRES)
*S*************************************************************
COMPUTE NM HYD        100.17   -    1       0.00437       10.25       0.343      1.47320    1.500    3.665 PER IMP=  50.00
*S*************************************************************
*S      SUB BASIN 18
*S      (5.02 ACRES)
*S*************************************************************
COMPUTE NM HYD        100.18   -    1       0.00784       19.22       0.658      1.57350    1.500    3.832 PER IMP=  60.00
*S*************************************************************
*S      SUB BASIN 19
*S      (4.10 ACRES)
*S*************************************************************
COMPUTE NM HYD        100.19   -    1       0.00641       15.45       0.524      1.53273    1.500    3.766 PER IMP=  55.80
*S*************************************************************
*S      SUB BASIN 20
```

```
*S      (2.89 ACRES)
*S***********************************************************
COMPUTE NM HYD         100.20   -    1      0.00452        10.51        0.351      1.45581    1.500    3.634 PER IMP=   48.30
*S***********************************************************
*S      SUB BASIN 21
*S      (5.18 ACRES)
*S***********************************************************
COMPUTE NM HYD         100.21   -    1      0.00810        19.46        0.660      1.52760    1.500    3.756 PER IMP=   55.30
*S***********************************************************
*S      SUB BASIN 22
*S      (3.79 ACRES)
*S***********************************************************
COMPUTE NM HYD         100.22   -    1      0.00592        14.52        0.497      1.57350    1.500    3.834 PER IMP=   60.00
*S***********************************************************
*S      SUB BASIN 23
*S      (6.18 ACRES)
*S***********************************************************
COMPUTE NM HYD         100.23   -    1      0.00965        22.97        0.775      1.50598    1.500    3.718 PER IMP=   53.20
*S***********************************************************
*S      SUB BASIN 24
*S      (3.05 ACRES)
*S***********************************************************
COMPUTE NM HYD         100.24   -    1      0.00476        11.36        0.384      1.51222    1.500    3.731 PER IMP=   53.80
*S***********************************************************
*S***********************************************************
*S      SUB BASIN 31
*S      (1.93 ACRES)
*S***********************************************************
COMPUTE NM HYD         100.31   -    1      0.00302         4.80        0.139      0.86197    1.500    2.484 PER IMP=    0.00
*S***********************************************************
*S      SUB BASIN 32
*S      COLOBEL WEST
*S      (3.45 ACRES)
*S***********************************************************
                                FROM  TO                    PEAK        RUNOFF                TIME TO   CFS      PAGE =    3
                    HYDROGRAPH  ID    ID       AREA      DISCHARGE      VOLUME      RUNOFF     PEAK     PER
COMMAND         IDENTIFICATION  NO.   NO.     (SQ MI)       (CFS)       (AC-FT)    (INCHES)   (HOURS)   ACRE      NOTATION

COMPUTE NM HYD         100.32   -    1      0.00539        14.02        0.480      1.67143    1.500    4.065 PER IMP=   64.00
*S***********************************************************
*S      SUB BASIN 33
*s      COLOBEL EAST
*S      (1.55 ACRES)
*S***********************************************************
COMPUTE NM HYD         100.33   -    1      0.00242         6.21        0.211      1.63648    1.500    4.017 PER IMP=   60.00
*S***********************************************************
FINISH
```

```
START                TIME=0.0 HR PUNCH CODE=0 PRINT LINES=-6
LOCATION             NEW MEXICO
*S************************************************************
*S*******************  FILE:HTrails_6.DAT  REV: 12-21-17  DLH
*S************************************************************
*S************************************************************
*S                    100 YEAR 6 HOUR STORM EVENT
*S************************************************************
*S************************************************************
RAINFALL             TYPE=1 RAIN QUARTER=0.0
                     RAIN ONE=1.90 IN RAIN SIX=2.23 IN
                     RAIN DAY=2.67 IN DT=0.05 HRS
*S************************************************************
*S       SUB BASIN 1
*S       (3.12 ACRES)
*S************************************************************
COMPUTE NM HYD       ID=1  HYD NO=100.1 AREA= 0.004882 SQ MI
                     PER A=0  PER B=25  PER C=15  PER D=60
                     TP=-.1333 HR  MASS RAIN=-1
PRINT HYD            ID=1 CODE=1
*S************************************************************
*S       SUB BASIN 2
*S       (2.72 ACRES)
*S************************************************************
COMPUTE NM HYD       ID=1  HYD NO=100.2 AREA= 0.004254 SQ MI
                     PER A=0  PER B=24  PER C=16  PER D=45
                     TP=-.1333 HR  MASS RAIN=-1
PRINT HYD            ID=1 CODE=1
*S************************************************************
*S       SUB BASIN 3
*S       (4.24 ACRES)
*S************************************************************
COMPUTE NM HYD       ID=1  HYD NO=100.3 AREA= 0.006620 SQ MI
                     PER A=0  PER B=29.5  PER C=19.5  PER D=51
                     TP=-.1333 HR  MASS RAIN=-1
PRINT HYD            ID=1 CODE=1
*S************************************************************
*S       SUB BASIN 4
*S       (2.86 ACRES)
*S************************************************************
COMPUTE NM HYD       ID=1  HYD NO=100.4 AREA= 0.004475 SQ MI
                     PER A=0  PER B=29.4  PER C=19.4  PER D=51.2
                     TP=-.1333 HR  MASS RAIN=-1
PRINT HYD            ID=1 CODE=1
*S************************************************************
*S       SUB BASIN 5
*S       (2.86 ACRES)
*S************************************************************
COMPUTE NM HYD       ID=1  HYD NO=100.5 AREA= 0.004463 SQ MI
                     PER A=0  PER B=29.3  PER C=19.3  PER D=51.4
                     TP=-.1333 HR  MASS RAIN=-1
PRINT HYD            ID=1 CODE=1
*S************************************************************
*S       SUB BASIN 6
*S       (4.01 ACRES)
*S************************************************************
COMPUTE NM HYD       ID=1  HYD NO=100.6 AREA= 0.006265 SQ MI
                     PER A=0  PER B=32.6  PER C=21.7  PER D=45.7
                     TP=-.1333 HR  MASS RAIN=-1
PRINT HYD            ID=1 CODE=1
*S************************************************************
*S       SUB BASIN 7
*S       (3.27 ACRES)
*S************************************************************
COMPUTE NM HYD       ID=1  HYD NO=100.7 AREA= 0.005111 SQ MI
                     PER A=0  PER B=25  PER C=15  PER D=60
                     TP=-.1333 HR  MASS RAIN=-1
PRINT HYD            ID=1 CODE=1
*S************************************************************
*S       SUB BASIN 8
*S       (3.14 ACRES)
*S************************************************************
COMPUTE NM HYD       ID=1  HYD NO=100.8 AREA= 0.004908 SQ MI
                     PER A=0  PER B=25  PER C=15  PER D=60
                     TP=-.1333 HR  MASS RAIN=-1
PRINT HYD            ID=1 CODE=1


*S************************************************************
```

```
*S      SUB BASIN 9
*S      (1.45 ACRES)
*S************************************************************
COMPUTE NM HYD       ID=1  HYD NO=100.9 AREA= 0.002266 SQ MI
                     PER A=0  PER B=23  PER C=12  PER D=65
                     TP=-.1333 HR  MASS RAIN=-1
PRINT HYD            ID=1 CODE=1
*S************************************************************
*S      SUB BASIN 10
*S      (0.85 ACRES)
*S************************************************************
COMPUTE NM HYD       ID=1  HYD NO=100.10 AREA= 0.001321 SQ MI
                     PER A=0  PER B=25  PER C=15  PER D=60
                     TP=-.1333 HR  MASS RAIN=-1
PRINT HYD            ID=1 CODE=1
*S************************************************************
*S      SUB BASIN 11
*S      (1.09 ACRES)
*S************************************************************
COMPUTE NM HYD       ID=1  HYD NO=100.11 AREA= 0.001705 SQ MI
                     PER A=0  PER B=63  PER C=30  PER D=7
                     TP=-.1333 HR  MASS RAIN=-1
PRINT HYD            ID=1 CODE=1
*S************************************************************
*S      SUB BASIN 12
*S      (3.67 ACRES)
*S************************************************************
COMPUTE NM HYD       ID=1  HYD NO=100.12 AREA= 0.005728 SQ MI
                     PER A=0  PER B=25  PER C=15  PER D=60
                     TP=-.1333 HR  MASS RAIN=-1
PRINT HYD            ID=1 CODE=1
*S************************************************************
*S      SUB BASIN 13
*S      (2.58 ACRES)
*S************************************************************
COMPUTE NM HYD       ID=1  HYD NO=100.13 AREA= 0.004036 SQ MI
                     PER A=0  PER B=25  PER C=15  PER D=60
                     TP=-.1333 HR  MASS RAIN=-1
PRINT HYD            ID=1 CODE=1
*S************************************************************
*S      SUB BASIN 14
*S      (1.87 ACRES)
*S************************************************************
COMPUTE NM HYD       ID=1  HYD NO=100.14 AREA= 0.002923 SQ MI
                     PER A=0  PER B=37  PER C=18  PER D=45
                     TP=-.1333 HR  MASS RAIN=-1
PRINT HYD            ID=1 CODE=1
*S************************************************************
*S      SUB BASIN 15
*S      (4.93 ACRES)
*S************************************************************
COMPUTE NM HYD       ID=1  HYD NO=100.15 AREA= 0.007705 SQ MI
                     PER A=0  PER B=25  PER C=15  PER D=60
                     TP=-.1333 HR  MASS RAIN=-1
PRINT HYD            ID=1 CODE=1
*S************************************************************
*S      SUB BASIN 16
*S      (4.04 ACRES)
*S************************************************************
COMPUTE NM HYD       ID=1  HYD NO=100.16 AREA= 0.006307 SQ MI
                     PER A=0  PER B=28.3  PER C=18.9  PER D=52.8
                     TP=-.1333 HR  MASS RAIN=-1
PRINT HYD            ID=1 CODE=1
*S************************************************************
*S      SUB BASIN 17
*S      (2.80 ACRES)
*S************************************************************
COMPUTE NM HYD       ID=1  HYD NO=100.17 AREA= 0.004370 SQ MI
                     PER A=0  PER B=30  PER C=20  PER D=50
                     TP=-.1333 HR  MASS RAIN=-1
PRINT HYD            ID=1 CODE=1
*S************************************************************
*S      SUB BASIN 18
*S      (5.02 ACRES)
*S************************************************************
COMPUTE NM HYD       ID=1  HYD NO=100.18 AREA= 0.007837 SQ MI
                     PER A=0  PER B=25  PER C=15  PER D=60
                     TP=-.1333 HR  MASS RAIN=-1
PRINT HYD            ID=1 CODE=1
```

```
*S************************************************************
*S      SUB BASIN 19
*S      (4.10 ACRES)
*S************************************************************
COMPUTE NM HYD       ID=1  HYD NO=100.19 AREA= 0.006410 SQ MI
                     PER A=0  PER B=26.5  PER C=17.7  PER D=55.8
                     TP=-.1333 HR  MASS RAIN=-1
PRINT HYD            ID=1 CODE=1
*S************************************************************
*S      SUB BASIN 20
*S      (2.89 ACRES)
*S************************************************************
COMPUTE NM HYD       ID=1  HYD NO=100.20 AREA= 0.004518 SQ MI
                     PER A=0  PER B=31  PER C=20.7  PER D=48.3
                     TP=-.1333 HR  MASS RAIN=-1
PRINT HYD            ID=1 CODE=1
*S************************************************************
*S      SUB BASIN 21
*S      (5.18 ACRES)
*S************************************************************
COMPUTE NM HYD       ID=1  HYD NO=100.21 AREA= 0.008095 SQ MI
                     PER A=0  PER B=26.8  PER C=17.9  PER D=55.3
                     TP=-.1333 HR  MASS RAIN=-1
PRINT HYD            ID=1 CODE=1
*S************************************************************
*S      SUB BASIN 22
*S      (3.79 ACRES)
*S************************************************************
COMPUTE NM HYD       ID=1  HYD NO=100.22 AREA= 0.005919 SQ MI
                     PER A=0  PER B=25  PER C=15  PER D=60
                     TP=-.1333 HR  MASS RAIN=-1
PRINT HYD            ID=1 CODE=1
*S************************************************************
*S      SUB BASIN 23
*S      (6.18 ACRES)
*S************************************************************
COMPUTE NM HYD       ID=1  HYD NO=100.23 AREA= 0.009653 SQ MI
                     PER A=0  PER B=28.1  PER C=18.7  PER D=53.2
                     TP=-.1333 HR  MASS RAIN=-1
PRINT HYD            ID=1 CODE=1
*S************************************************************
*S      SUB BASIN 24
*S      (3.05 ACRES)
*S************************************************************
COMPUTE NM HYD       ID=1  HYD NO=100.24 AREA= 0.004759 SQ MI
                     PER A=0  PER B=27.7  PER C=18.5 PER D=53.8
                     TP=-.1333 HR  MASS RAIN=-1
PRINT HYD            ID=1 CODE=1
*S************************************************************
*S************************************************************
*S      SUB BASIN 31
*S      (1.93 ACRES)
*S************************************************************
COMPUTE NM HYD       ID=1  HYD NO=100.31 AREA= 0.003017 SQ MI
                     PER A=0  PER B=100  PER C=0  PER D=0
                     TP=-.1333 HR  MASS RAIN=-1
PRINT HYD            ID=1 CODE=1
*S************************************************************
*S      SUB BASIN 32
*S      COLOBEL WEST
*S      (3.45 ACRES)
*S************************************************************
COMPUTE NM HYD       ID=1  HYD NO=100.32 AREA= 0.005388 SQ MI
                     PER A=0  PER B=0  PER C=36  PER D=64
                     TP=-.1333 HR  MASS RAIN=-1
PRINT HYD            ID=1 CODE=1
*S************************************************************
*S      SUB BASIN 33
*s      COLOBEL EAST
*S      (1.55 ACRES)
*S************************************************************
COMPUTE NM HYD       ID=1  HYD NO=100.33 AREA= 0.002416 SQ MI
                     PER A=0  PER B=0  PER C=40  PER D=60
                     TP=-.1333 HR  MASS RAIN=-1
PRINT HYD            ID=1 CODE=1
*S************************************************************
FINISH
```

APPENDIX B - HYDRAULICS

Table 2 Summary of Street Capacity Calculations
Street Capacity Exhibit
Hydraflow Street Capacity Reports

TABLE 2

Heritage Trails Subdivision

Summary of Street Capacity Calculations												
LOCATION	**WIDTH**	**CROWN**	**Std or Mtb**	**SLOPE %**	**Q cfs**	**DEPTH ft.**	**EG (ft)**	**INLET Q cfs**	**TYPE INLET**	**INLET ID**	**INLET BYPASS**	**ADD Q cfs**
Bord Peak	26	Y	Mtb	2.40	9.00	0.32	0.48					
Banner Peak	26	Y	Mtb	2.70	11.98	0.35	0.52					9.00
Banner/Bord		Y	Std	**SUMP**	**22.10**			**22.1**	**(2)DBL A**	A1	0	
Cirque Park	26	Y	Mtb	4.00	5.70	0.27	0.43					
Bord Peak	26	Y	Mtb	1.00	7.00	0.34	0.41					
Costilla Peak	26	Y	Mtb	2.55	12.04	0.35	0.52					
Barrow Rd	42	Y	Mtb	4.51	5.69	0.26	0.46					
Diamond Peak	26	Y	Std	2.70	32.20	0.45	0.87	8.7(2)	DBL A	C1	14.80	+2.88
Diamond Peak	26	Y	Std	2.70	17.68	0.38	0.63	5.7(2)	SGL C	C2	6.28	+14.05+1.56
Crag Peak	26	Y	Std	4.90	21.89	0.37	0.81	6.8(2)	SGL A	C3	8.29	
Emerald Peak	26	Y	Std	2.34	9.91	0.33	0.49					
Crag Peak	26	Y	Std	3.20	24.84	0.41	0.77	6.2(2)	SGL A	C4	12.44	
Tyler Peak	26	Y	Std	0.80	25.26	0.51	0.67	5.8(2)	SGL C	C5	13.66	
Pine Town Way	26	Y	Std	3.40	19.74	0.38	0.7	5.8(2)	SGL C	C6	8.14	+14.99
Alta Peak Trail	26	Y	Std	0.71	23.13	0.50	0.65	5.8(2)	SGL C	B1	11.53	+10.25
Alta Peak Trail	26	Y	Std	0.71	21.78	0.49	0.63					
Alta Peak Trail	26	Y	Std	0.71	31.01	0.56	0.74	7.2(2)	SGL C	B2	16.61	+5.15
Alta Peak Trail	26	Y	Std	0.71	21.76							
Basin Peak	26	Y	Std	5.00	15.59	0.34	0.68					
Basin Peak	26	Y	Std	5.00	26.14	0.39	0.88	8.0(2)	DBL A	B3	10.14	10.54
Basin Peak	26	Y	Std	5.00	20.68	0.36	0.81	6.6(2)	SGL C	B4	7.48	21.76
Alta Pk/Basin Pk	**26**	**Y**	**Std**	**SUMP**	**29.24**			**29.24**	**(2)TRP A**	**B5**		

TABLE 2

Heritage Trails Subdivision

Summary of Street Capacity Calculations

LOCATION	WIDTH	CROWN	Std or Mtb	SLOPE %	Q cfs	DEPTH ft.	EG (ft)	INLET Q cfs	TYPE INLET	INLET ID	INLET BYPASS	ADD Q cfs
Three Rivers Rd	26	Y	Std	2.00	5.27	0.28	0.39					
South Peak Rd	26	Y	Std	2.77	19.22	0.39	0.66					
South Peak Rd	26	Y	Std	2.77	21.43	0.4	0.7	6.8(2)	DBL A	C7	7.83	7.31
Winsor Street	26	Y	Std	0.6	15.14	0.45	0.54	4.0(2)	SGL C	C8	7.14	TO SUMP
Horseshoe lake	26	Y	Std	4.07	15.45	0.35	0.64	5.3(2)	SGL A	C9	4.85	2.21
Horseshoe/Winsor	26	No	Std	**SUMP**	**14.2**			**14.2**	**(2)SGL A**	**C10**		
Crest Trail	26	Y	Std	4.57	12.97	0.32	0.64	4.6(2)	SGL A	C11	3.77	
Gold Hill Rd	26	Y	Std	3.69	14.52	0.35	0.6	5.0(2)	SGL A	C12	4.52	
Grass Mtn Rd	26	Y	Std	0.6	17.87	0.47	0.58	4.3(2)	SGL A	C13	9.27	
West Fork Rd	26	Y	Std	3.15	22.97	0.4	0.74	6.0(2)	SGL A	C14	10.97	
Grass Mtn Rd	26	Y	Std	0.6	20.24	0.49	0.61	5.0(2)	SGL C	C15	10.24	
Grass Mtn Culdesac				**SUMP**	**18.51**			**18.51**	**(1)DBL A**	**C16**		
									(1)SGL A			

Note: Sump inlets are designed for 2 times the 100 year discharge value.

CALCULATIONS FOR SUMP INLETS
for
Heritage Trails Subdivision

Capacity is measured by the weir equation at the lip of the gutter assuming an allowable ponding elevation equal to the lowest adjacent right of way elevation. The length of the double grate facing the street is 6.5' and the maximum depth is 0.725' at the lip of the gutter. The sides are each 2' long and the average depth is 0.892'. These depths assume an 8" curb with right of way 9' behind the curb for an additional depth of 0.18' above the top of curb. From the weir equation:

FOR SINGLE 'C' INLET

*Front Q cap = (3.0) x (3.0') x (0.725) **1.5 = 5.56 cfs*

*Sides Q cap = (3.0) x (4.0') x (0.892) **1.5 = 10.11 cfs*

Total Q cap = 5.56 cfs + 10.11 cfs = 15.67 cfs

FOR DOUBLE 'C' INLET

*Front Q cap = (3.0) x (6.5') x (0.725) **1.5 = 12.04 cfs*

*Sides Q cap = (3.0) x (4.0') x (0.892) **1.5 = 10.11 cfs*

Total Q cap = 12.04 cfs + 10.11 cfs = 22.15 cfs

FOR TRIPLE 'C' INLET

*Front Q cap = (3.0) x (9.75') x (0.725) **1.5 = 18.06 cfs*

*Sides Q cap = (3.0) x (4.0') x (0.892) **1.5 = 10.11 cfs*

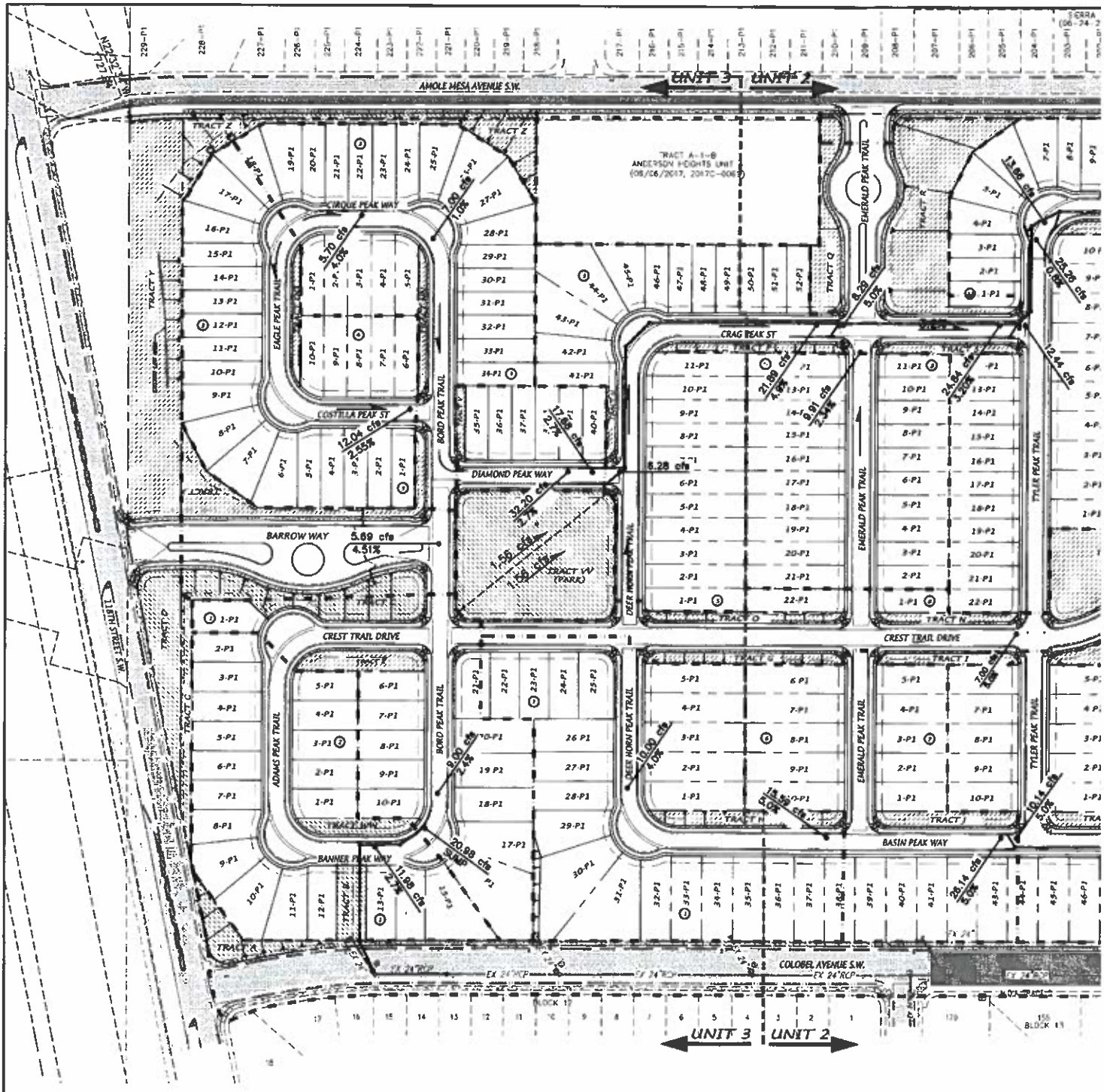
Total Q cap = 12.04 cfs + 10.11 cfs = 28.17 cfs

The 100 year flow to the sump inlet at Banner-Bord Peak (Unit 3) is 22.10 cfs. Design for 44.20 cfs ---- Use (2) Double "C" inlets (minimun)

The 100 year flow to the sump inlet at Basin Peak-Alta Peak (Unit 2) is 29.24 cfs. Design for 58.48 cfs ---- Use (2) Triple "C" inlets (minimum)

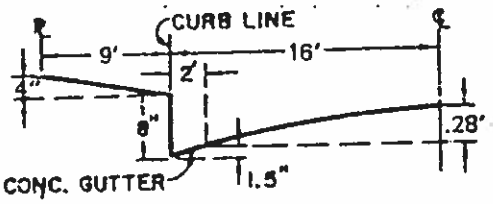
The 100 year flow to the sump inlet at Horseshoe-Winsor (Unit 1) is 14.2 cfs. Design for 28.40 cfs ---- Use (2) Single "C" inlets (minimum)

The 100 year flow to the sump inlet at Grass Mountain (Unit 1) is 18.51 cfs. Design for 37.02 cfs ---- Use (1)Single and (1) Double "C" inlets (minimum)



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

GRATING & GUTTER PLAN



TYPICAL HALF STREET SECTION
(ABOVE BASIN)

Channel Report

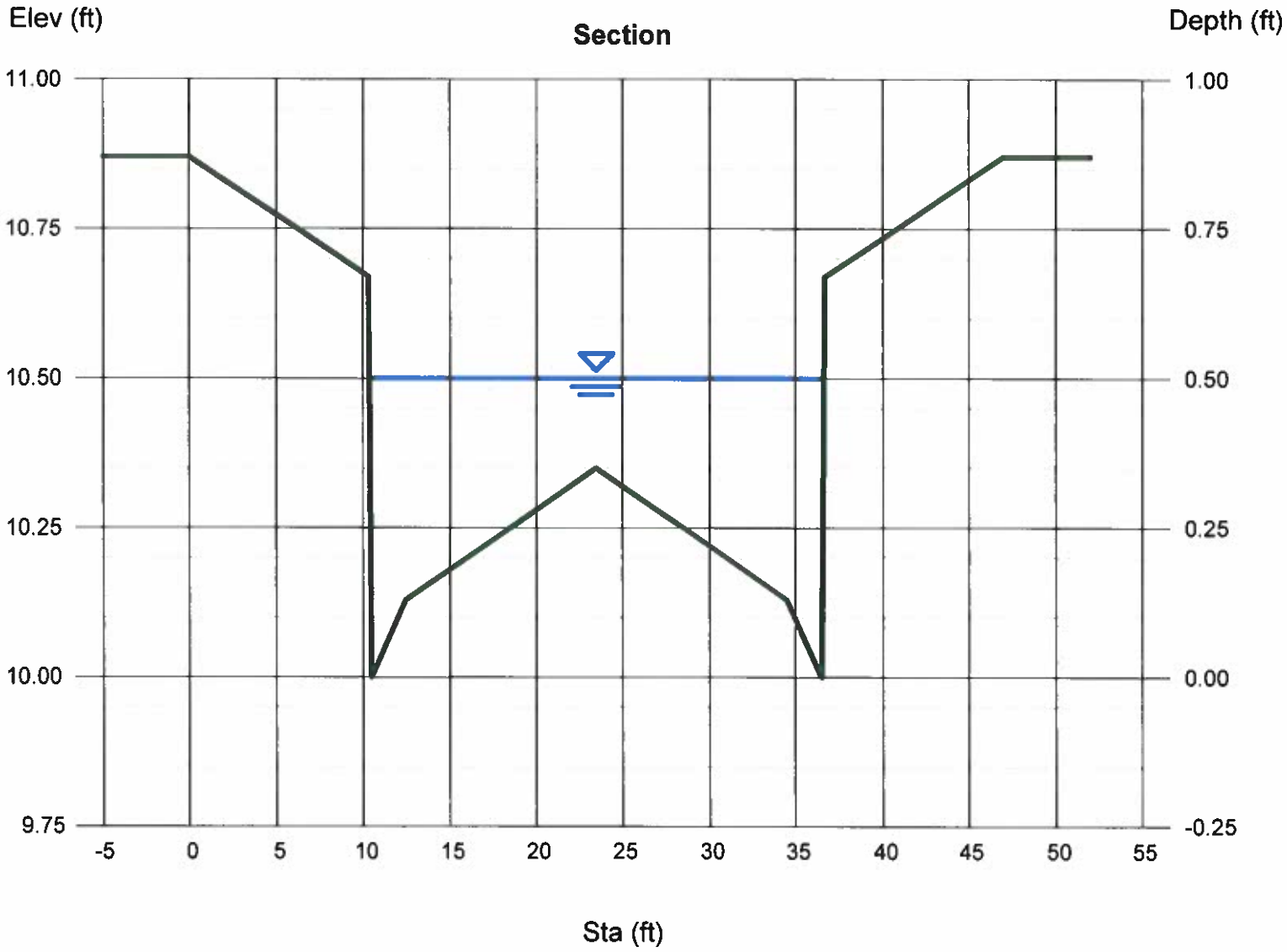
Hydraflow Express Extension for Autodesk® AutoCAD® Civil 3D® by Autodesk, Inc. Thursday, Dec 28 2017

Alta Peak Trail-26-Std-0.711%

User-defined		Highlighted	
Invert Elev (ft)	= 10.00	Depth (ft)	= 0.50
Slope (%)	= 0.71	Q (cfs)	= 23.13
N-Value	= 0.017	Area (sqft)	= 7.52
		Velocity (ft/s)	= 3.07
Calculations		Wetted Perim (ft)	= 27.04
Compute by:	Known Q	Crit Depth, Yc (ft)	= 0.51
Known Q (cfs)	= 23.13	Top Width (ft)	= 26.25
		EGL (ft)	= 0.65

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

(0.00, 10.87)-(10.33, 10.67, 0.017)-(10.50, 10.00, 0.017)-(12.50, 10.13, 0.017)-(23.50, 10.35, 0.017)-(34.50, 10.13, 0.017)-(36.50, 10.00, 0.017) -(36.67, 10.67, 0.017)-(47.00, 10.87, 0.017)



Channel Report

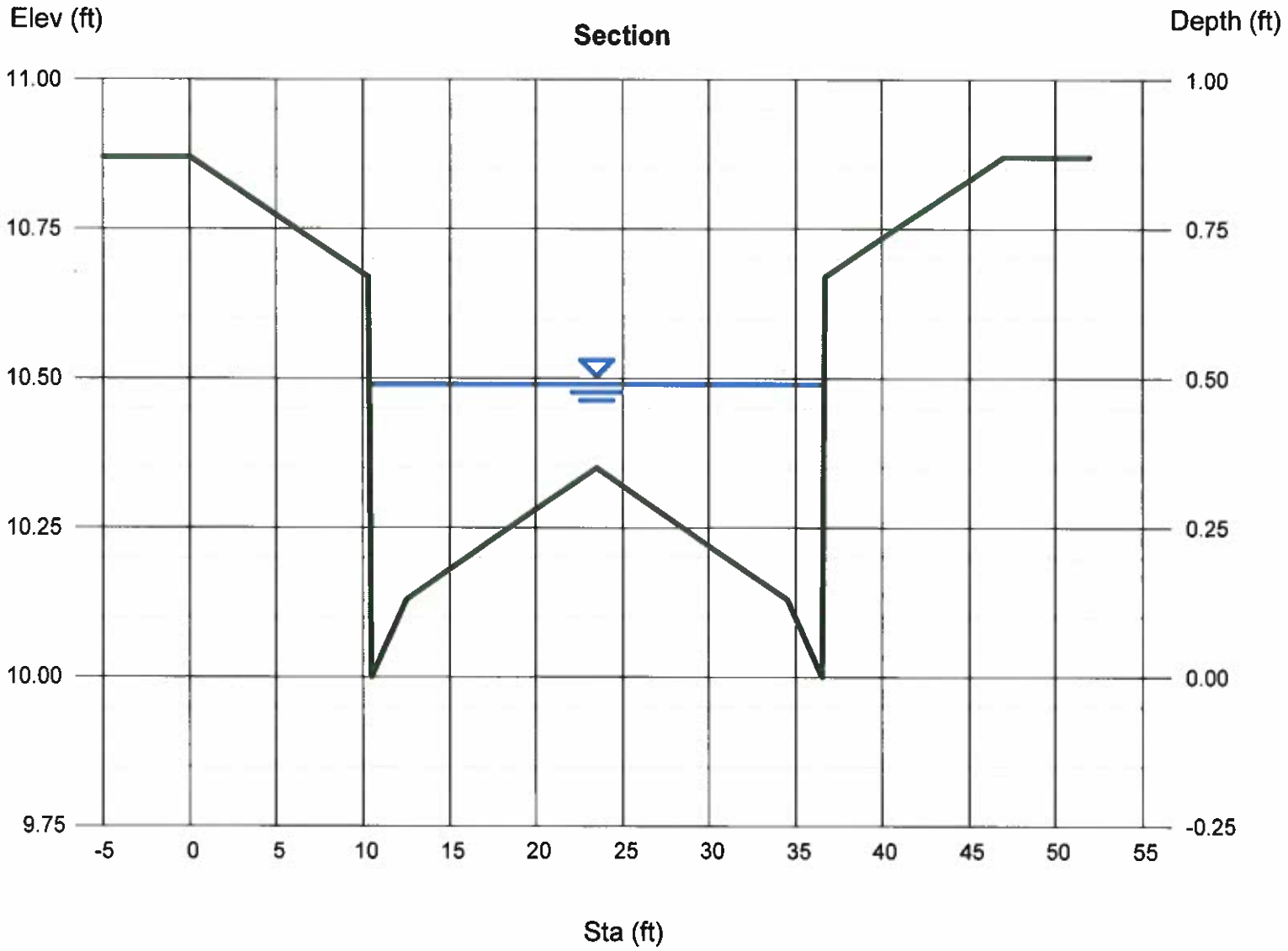
Hydraflow Express Extension for Autodesk® AutoCAD® Civil 3D® by Autodesk, Inc. Thursday, Dec 28 2017

Alta Peak Trail-26-Std-0.711%(2)

User-defined		Highlighted	
Invert Elev (ft)	= 10.00	Depth (ft)	= 0.49
Slope (%)	= 0.71	Q (cfs)	= 21.78
N-Value	= 0.017	Area (sqft)	= 7.26
		Velocity (ft/s)	= 3.00
Calculations		Wetted Perim (ft)	= 27.02
Compute by:	Known Q	Crit Depth, Yc (ft)	= 0.50
Known Q (cfs)	= 21.78	Top Width (ft)	= 26.25
		EGL (ft)	= 0.63

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

(0.00, 10.87)-(10.33, 10.67, 0.017)-(10.50, 10.00, 0.017)-(12.50, 10.13, 0.017)-(23.50, 10.35, 0.017)-(34.50, 10.13, 0.017)-(36.50, 10.00, 0.017) -(36.67, 10.67, 0.017)-(47.00, 10.87, 0.017)



Channel Report

Hydraflow Express Extension for Autodesk® AutoCAD® Civil 3D® by Autodesk, Inc. Thursday, Dec 28 2017

Alta Peak Trail-26-Std-0.711%(3)

User-defined

Invert Elev (ft)	= 10.00
Slope (%)	= 0.71
N-Value	= 0.017

Calculations

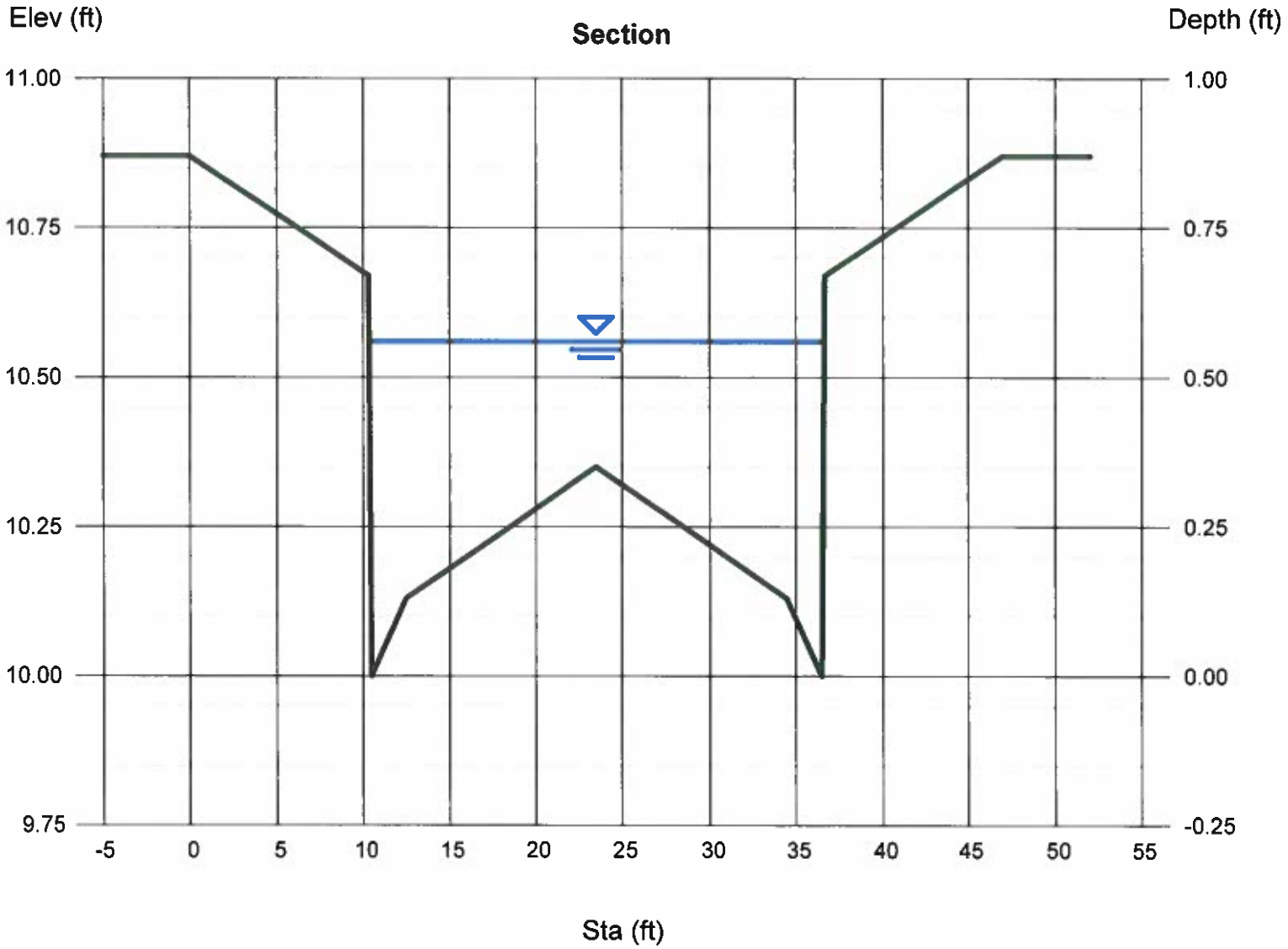
Compute by:	Known Q
Known Q (cfs)	= 31.01

Highlighted

Depth (ft)	= 0.56
Q (cfs)	= 31.01
Area (sqft)	= 9.10
Velocity (ft/s)	= 3.41
Wetted Perim (ft)	= 27.17
Crit Depth, Yc (ft)	= 0.57
Top Width (ft)	= 26.28
EGL (ft)	= 0.74

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

(0.00, 10.87)-(10.33, 10.67, 0.017)-(10.50, 10.00, 0.017)-(12.50, 10.13, 0.017)-(23.50, 10.35, 0.017)-(34.50, 10.13, 0.017)-(36.50, 10.00, 0.017) -(36.67, 10.67, 0.017)-(47.00, 10.87, 0.017)



Channel Report

Hydraflow Express Extension for Autodesk® AutoCAD® Civil 3D® by Autodesk, Inc. Thursday, Dec 28 2017

Banner Peak-26-MTB-2.70%

User-defined

Invert Elev (ft)	= 10.00
Slope (%)	= 2.70
N-Value	= 0.017

Calculations

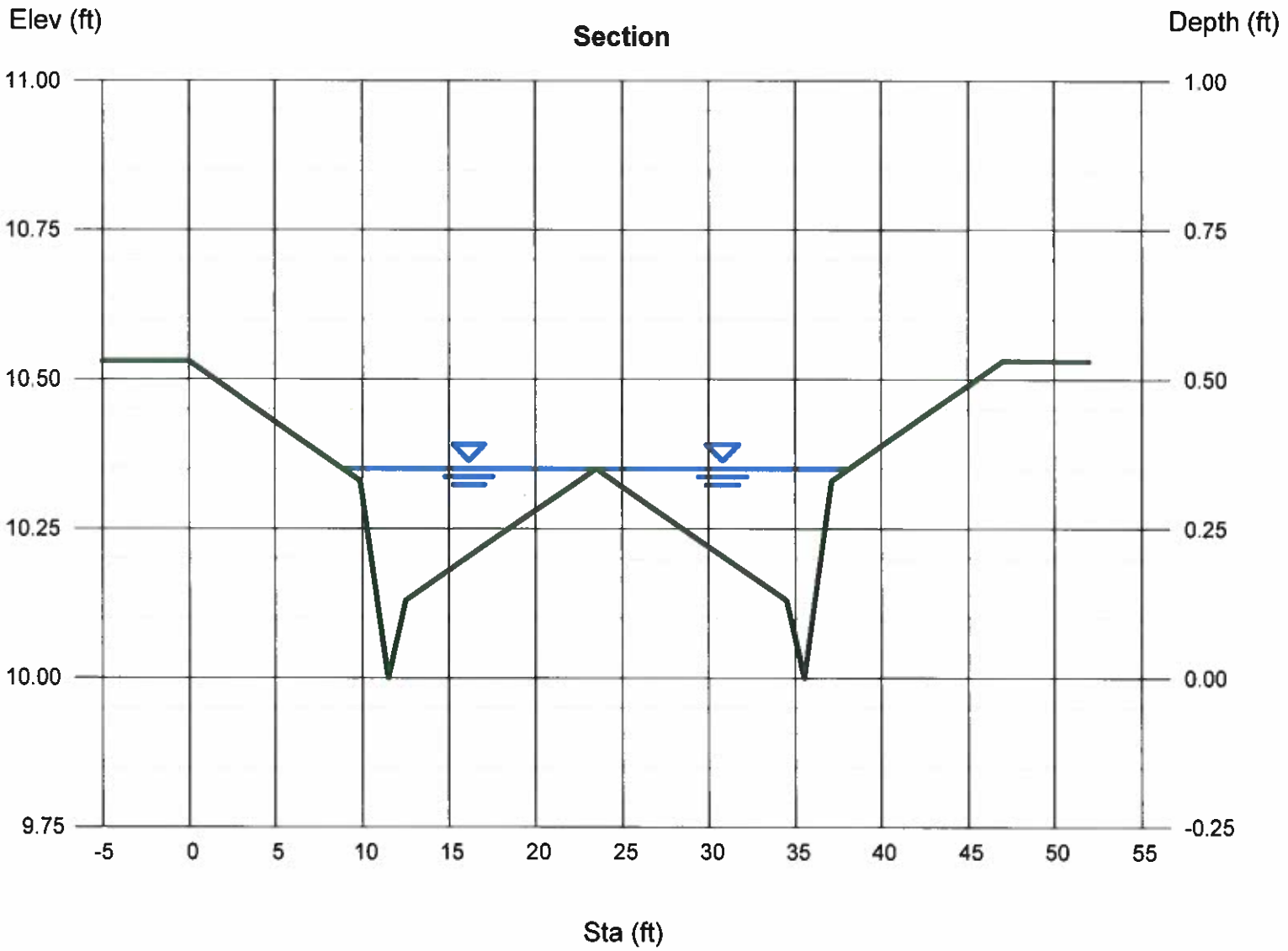
Compute by:	Known Q
Known Q (cfs)	= 11.98

Highlighted

Depth (ft)	= 0.35
Q (cfs)	= 11.98
Area (sqft)	= 3.62
Velocity (ft/s)	= 3.31
Wetted Perim (ft)	= 29.32
Crit Depth, Yc (ft)	= 0.41
Top Width (ft)	= 29.23
EGL (ft)	= 0.52

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

(0.00, 10.53)-(9.87, 10.33, 0.017)-(11.47, 10.00, 0.017)-(12.50, 10.13, 0.017)-(23.50, 10.35, 0.017)-(34.50, 10.13, 0.017)-(35.53, 10.00, 0.017) -(37.13, 10.33, 0.017)-(47.00, 10.53, 0.017)



Channel Report

Hydraflow Express Extension for Autodesk® AutoCAD® Civil 3D® by Autodesk, Inc. Thursday, Dec 28 2017

Barrow Road-42-MTB-4.51%

User-defined

Invert Elev (ft)	= 10.00
Slope (%)	= 4.51
N-Value	= 0.017

Calculations

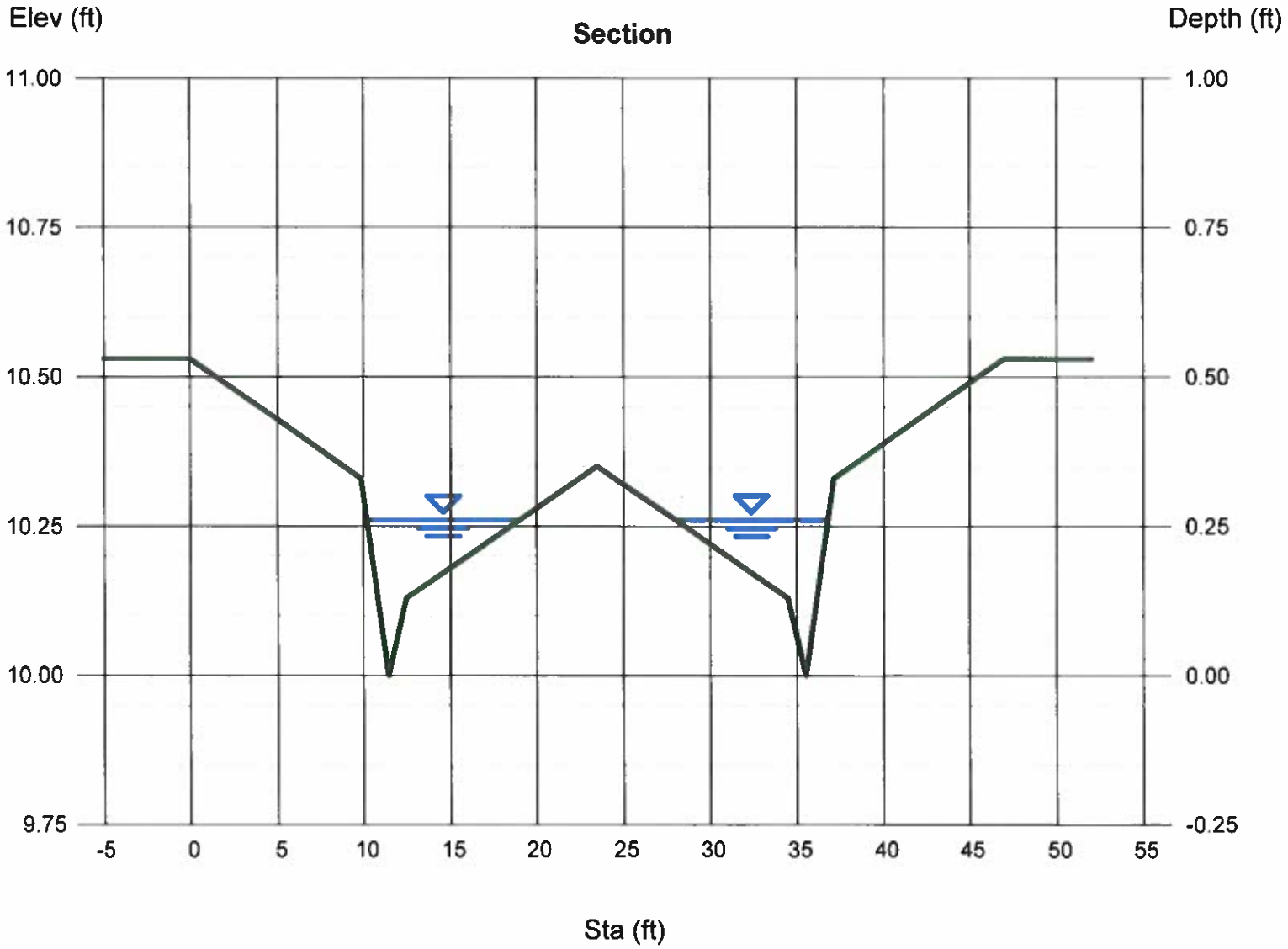
Compute by:	Known Q
Known Q (cfs)	= 5.69

Highlighted

Depth (ft)	= 0.26
Q (cfs)	= 5.690
Area (sqft)	= 1.57
Velocity (ft/s)	= 3.61
Wetted Perim (ft)	= 17.65
Crit Depth, Yc (ft)	= 0.33
Top Width (ft)	= 17.58
EGL (ft)	= 0.46

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

(0.00, 10.53)-(9.87, 10.33, 0.017)-(11.47, 10.00, 0.017)-(12.50, 10.13, 0.017)-(23.50, 10.35, 0.017)-(34.50, 10.13, 0.017)-(35.53, 10.00, 0.017)
-(37.13, 10.33, 0.017)-(47.00, 10.53, 0.017)



Channel Report

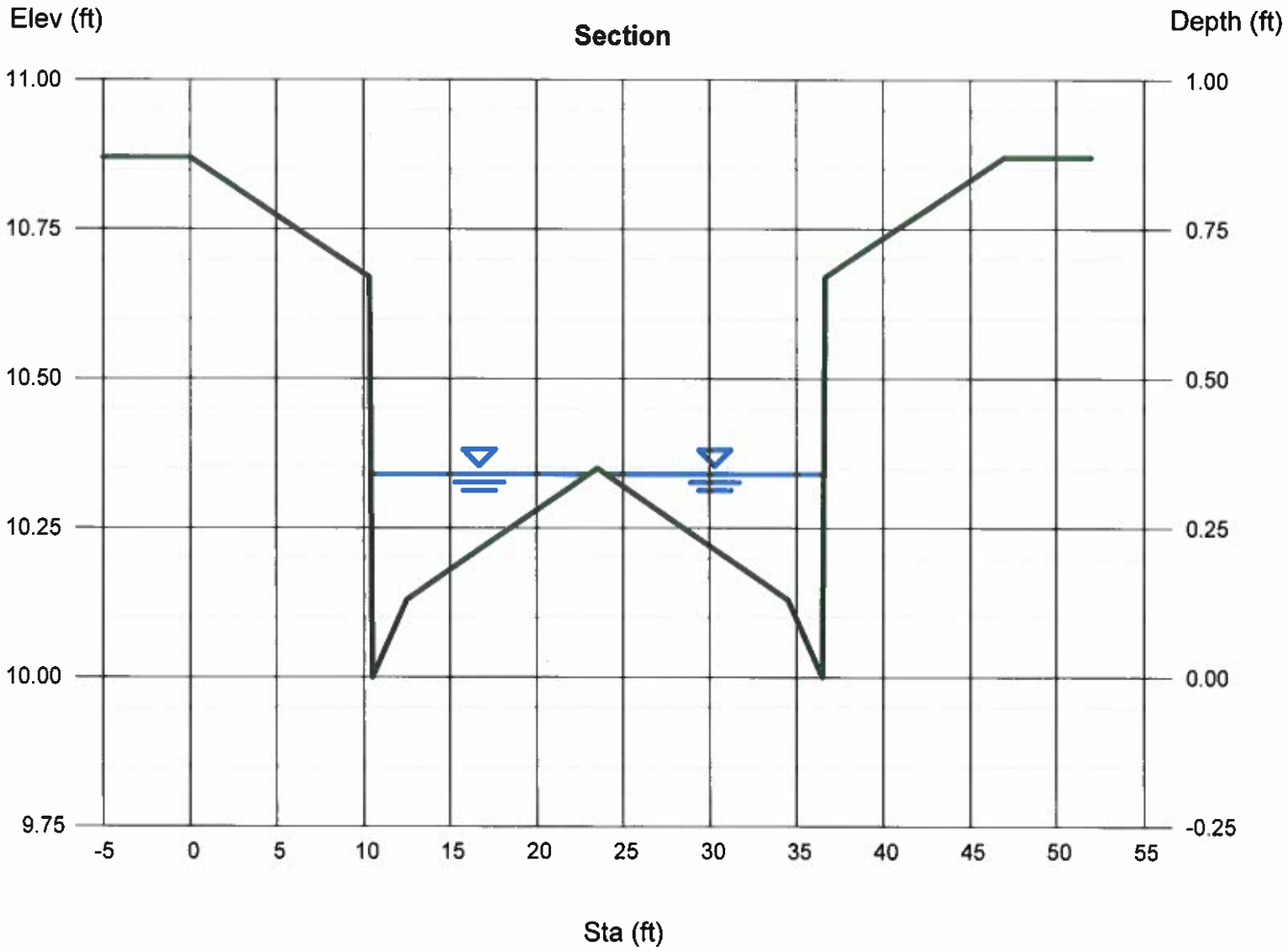
Hydraflow Express Extension for Autodesk® AutoCAD® Civil 3D® by Autodesk, Inc. Friday, Dec 29 2017

Basin Peak-26-Std-5.0%

User-defined		Highlighted	
Invert Elev (ft)	= 10.00	Depth (ft)	= 0.34
Slope (%)	= 5.00	Q (cfs)	= 15.59
N-Value	= 0.017	Area (sqft)	= 3.33
		Velocity (ft/s)	= 4.68
Calculations		Wetted Perim (ft)	= 25.71
Compute by:	Known Q	Crit Depth, Yc (ft)	= 0.44
Known Q (cfs)	= 15.59	Top Width (ft)	= 25.17
		EGL (ft)	= 0.68

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

(0.00, 10.87)-(10.33, 10.67, 0.017)-(10.50, 10.00, 0.017)-(12.50, 10.13, 0.017)-(23.50, 10.35, 0.017)-(34.50, 10.13, 0.017)-(36.50, 10.00, 0.017) -(36.67, 10.67, 0.017)-(47.00, 10.87, 0.017)



Channel Report

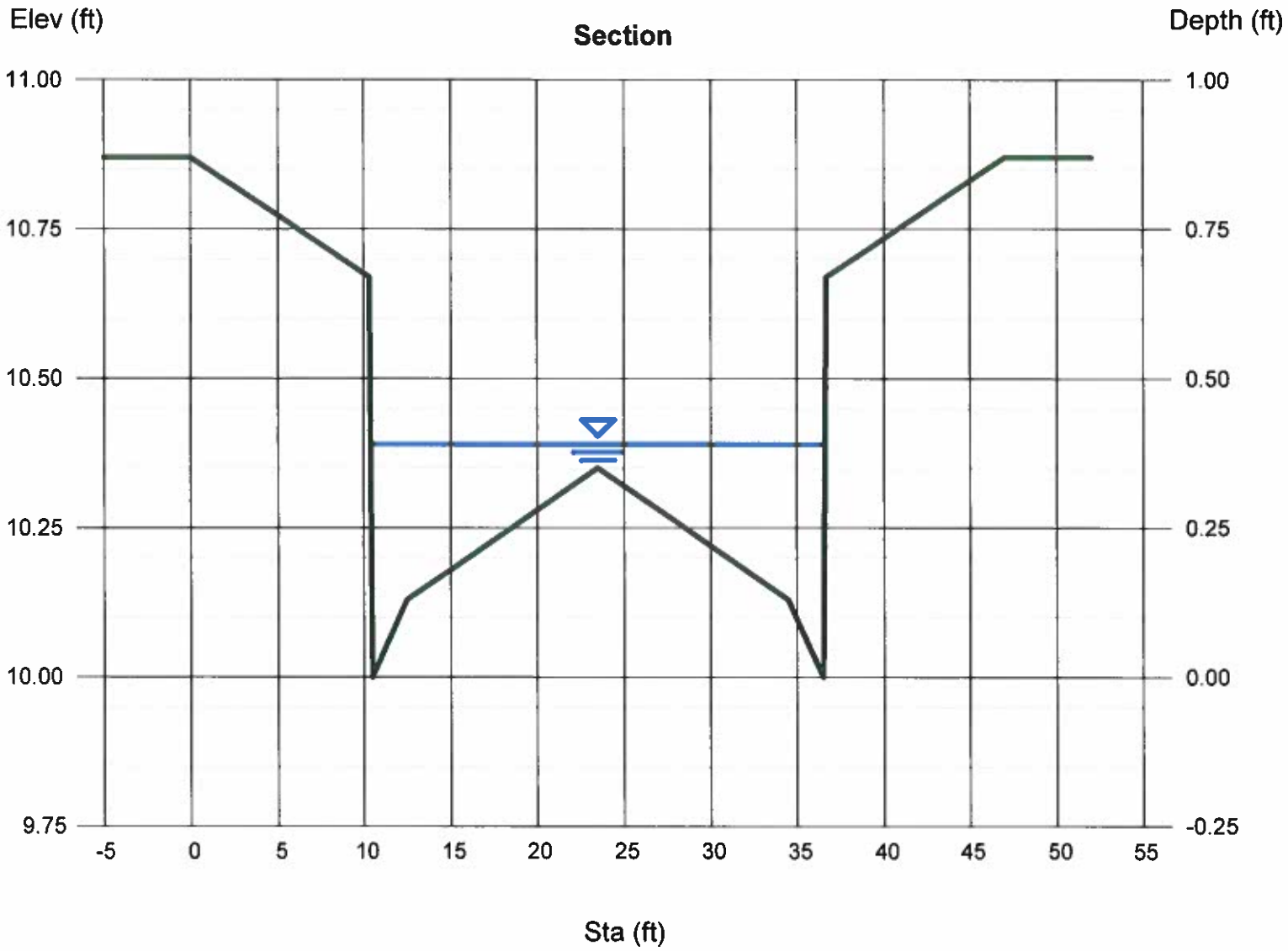
Hydraflow Express Extension for Autodesk® AutoCAD® Civil 3D® by Autodesk, Inc. Friday, Dec 29 2017

Basin Peak-26-Std-5.0%(2)

User-defined		Highlighted	
Invert Elev (ft)	= 10.00	Depth (ft)	= 0.39
Slope (%)	= 5.00	Q (cfs)	= 26.14
N-Value	= 0.017	Area (sqft)	= 4.64
		Velocity (ft/s)	= 5.64
Calculations		Wetted Perim (ft)	= 26.82
Compute by:	Known Q	Crit Depth, Yc (ft)	= 0.53
Known Q (cfs)	= 26.14	Top Width (ft)	= 26.20
		EGL (ft)	= 0.88

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

(0.00, 10.87)-(10.33, 10.67, 0.017)-(10.50, 10.00, 0.017)-(12.50, 10.13, 0.017)-(23.50, 10.35, 0.017)-(34.50, 10.13, 0.017)-(36.50, 10.00, 0.017) -(36.67, 10.67, 0.017)-(47.00, 10.87, 0.017)



Channel Report

Hydraflow Express Extension for Autodesk® AutoCAD® Civil 3D® by Autodesk, Inc. Friday, Dec 29 2017

Basin Peak-26-Std-5.0%(3)

User-defined

Invert Elev (ft)	= 10.00
Slope (%)	= 5.00
N-Value	= 0.017

Calculations

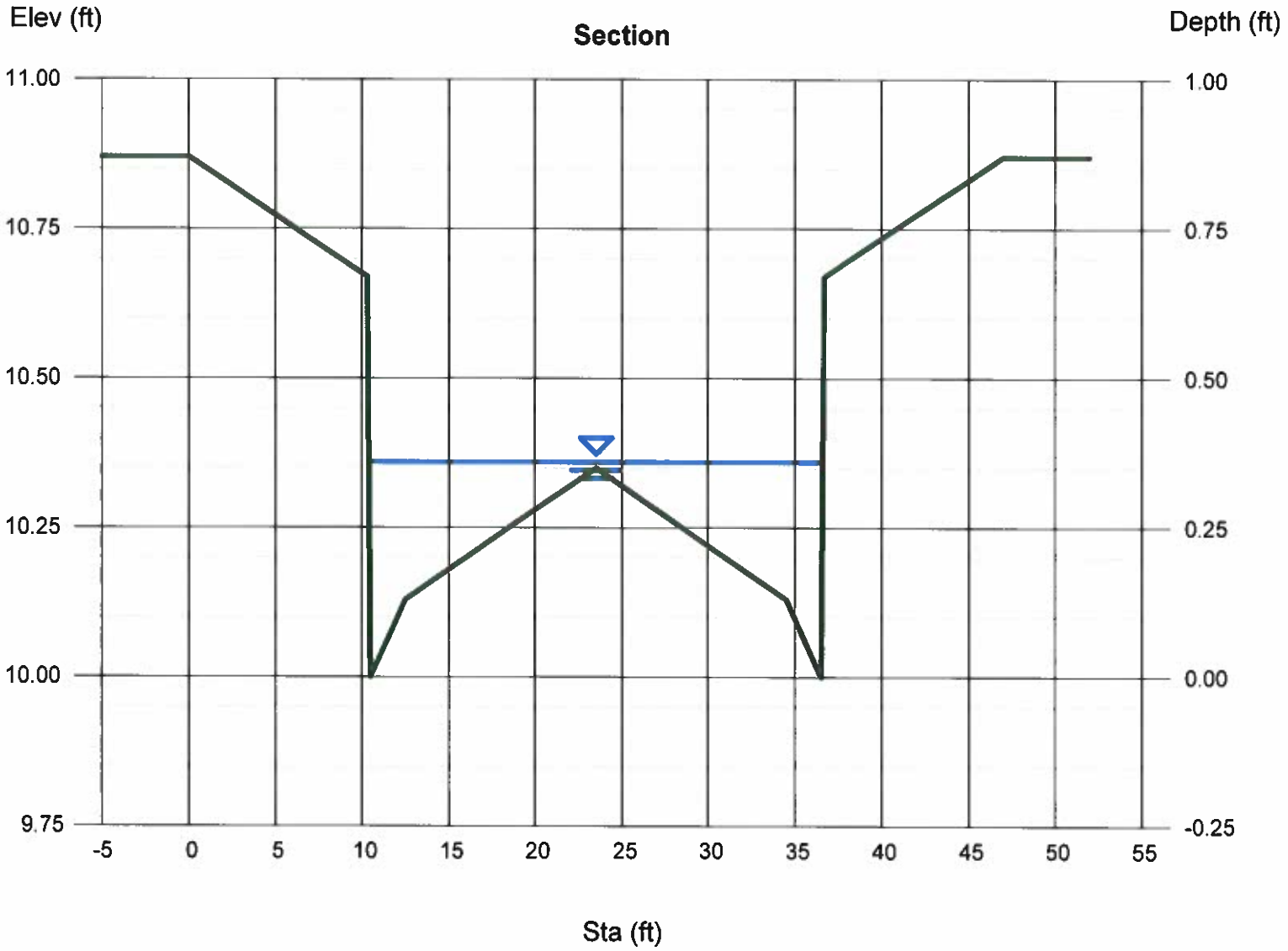
Compute by:	Known Q
Known Q (cfs)	= 20.68

Highlighted

Depth (ft)	= 0.36
Q (cfs)	= 20.68
Area (sqft)	= 3.85
Velocity (ft/s)	= 5.37
Wetted Perim (ft)	= 26.76
Crit Depth, Yc (ft)	= 0.49
Top Width (ft)	= 26.18
EGL (ft)	= 0.81

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

(0.00, 10.87)-(10.33, 10.67, 0.017)-(10.50, 10.00, 0.017)-(12.50, 10.13, 0.017)-(23.50, 10.35, 0.017)-(34.50, 10.13, 0.017)-(36.50, 10.00, 0.017) -(36.67, 10.67, 0.017)-(47.00, 10.87, 0.017)



Channel Report

Hydraflow Express Extension for Autodesk® AutoCAD® Civil 3D® by Autodesk, Inc. Thursday, Dec 28 2017

Bord Peak-26-MTB-1.0%

User-defined

Invert Elev (ft)	= 10.00
Slope (%)	= 1.00
N-Value	= 0.017

Calculations

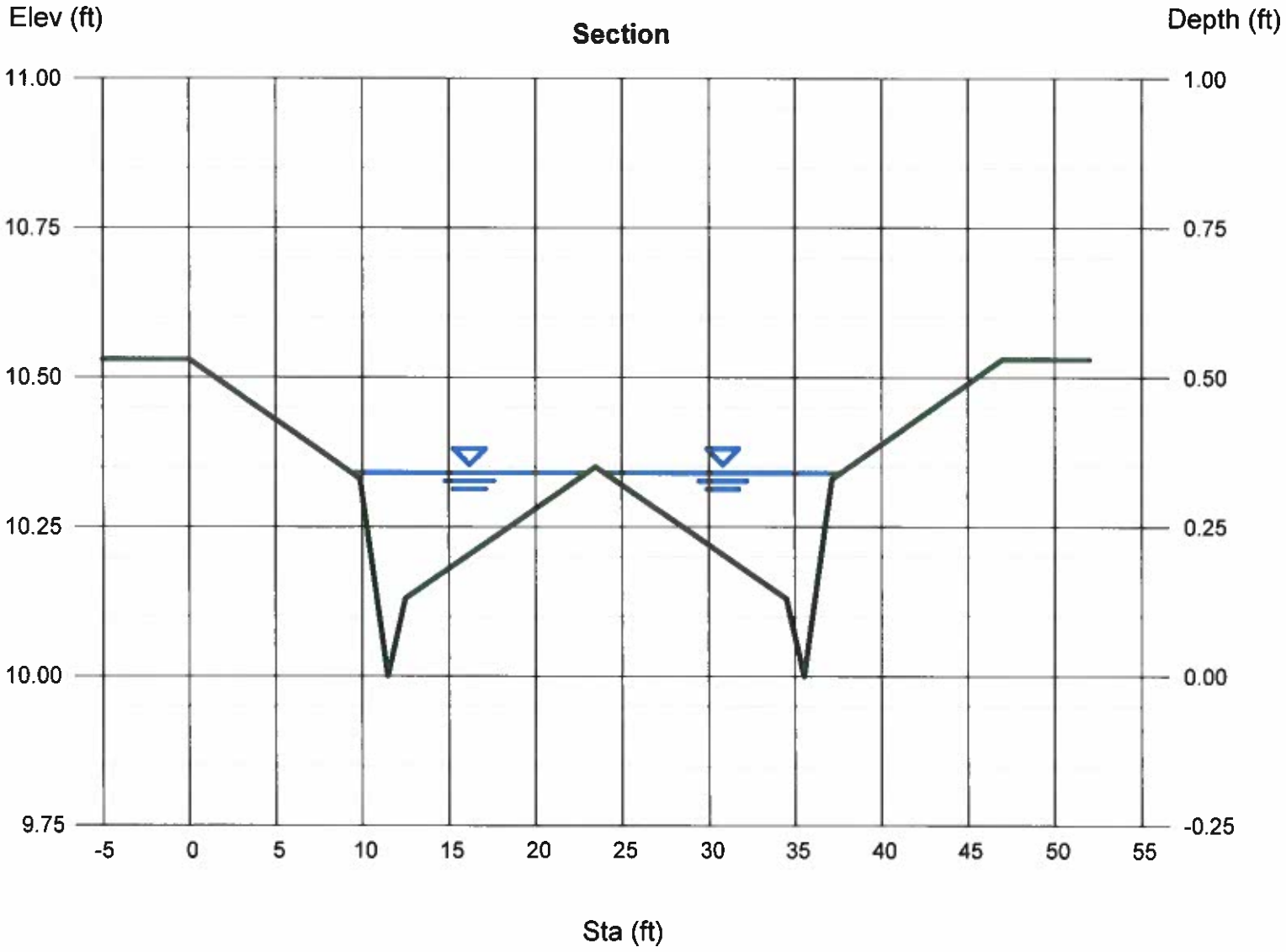
Compute by:	Known Q
Known Q (cfs)	= 7.00

Highlighted

Depth (ft)	= 0.34
Q (cfs)	= 7.000
Area (sqft)	= 3.34
Velocity (ft/s)	= 2.10
Wetted Perim (ft)	= 27.34
Crit Depth, Yc (ft)	= 0.35
Top Width (ft)	= 27.25
EGL (ft)	= 0.41

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

(0.00, 10.53)-(9.87, 10.33, 0.017)-(11.47, 10.00, 0.017)-(12.50, 10.13, 0.017)-(23.50, 10.35, 0.017)-(34.50, 10.13, 0.017)-(35.53, 10.00, 0.017) -(37.13, 10.33, 0.017)-(47.00, 10.53, 0.017)



Channel Report

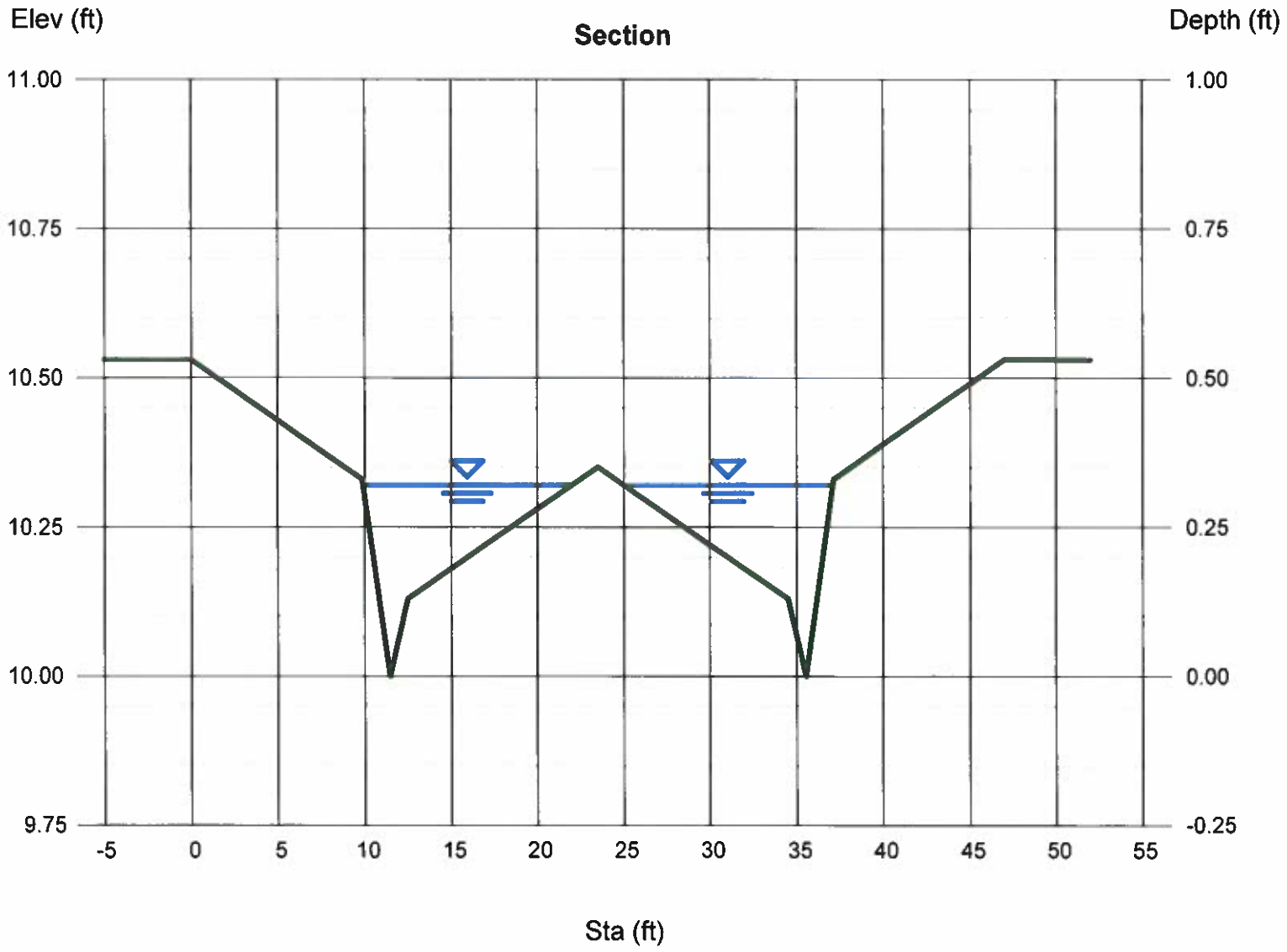
Hydraflow Express Extension for Autodesk® AutoCAD® Civil 3D® by Autodesk, Inc. Thursday, Dec 28 2017

Bord Peak-26-MTB-2.40%

User-defined		Highlighted	
Invert Elev (ft)	= 10.00	Depth (ft)	= 0.32
Slope (%)	= 2.40	Q (cfs)	= 9.000
N-Value	= 0.017	Area (sqft)	= 2.83
		Velocity (ft/s)	= 3.18
Calculations		Wetted Perim (ft)	= 24.25
Compute by:	Known Q	Crit Depth, Yc (ft)	= 0.38
Known Q (cfs)	= 9.00	Top Width (ft)	= 24.16
		EGL (ft)	= 0.48

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

(0.00, 10.53)-(9.87, 10.33, 0.017)-(11.47, 10.00, 0.017)-(12.50, 10.13, 0.017)-(23.50, 10.35, 0.017)-(34.50, 10.13, 0.017)-(35.53, 10.00, 0.017) -(37.13, 10.33, 0.017)-(47.00, 10.53, 0.017)



Channel Report

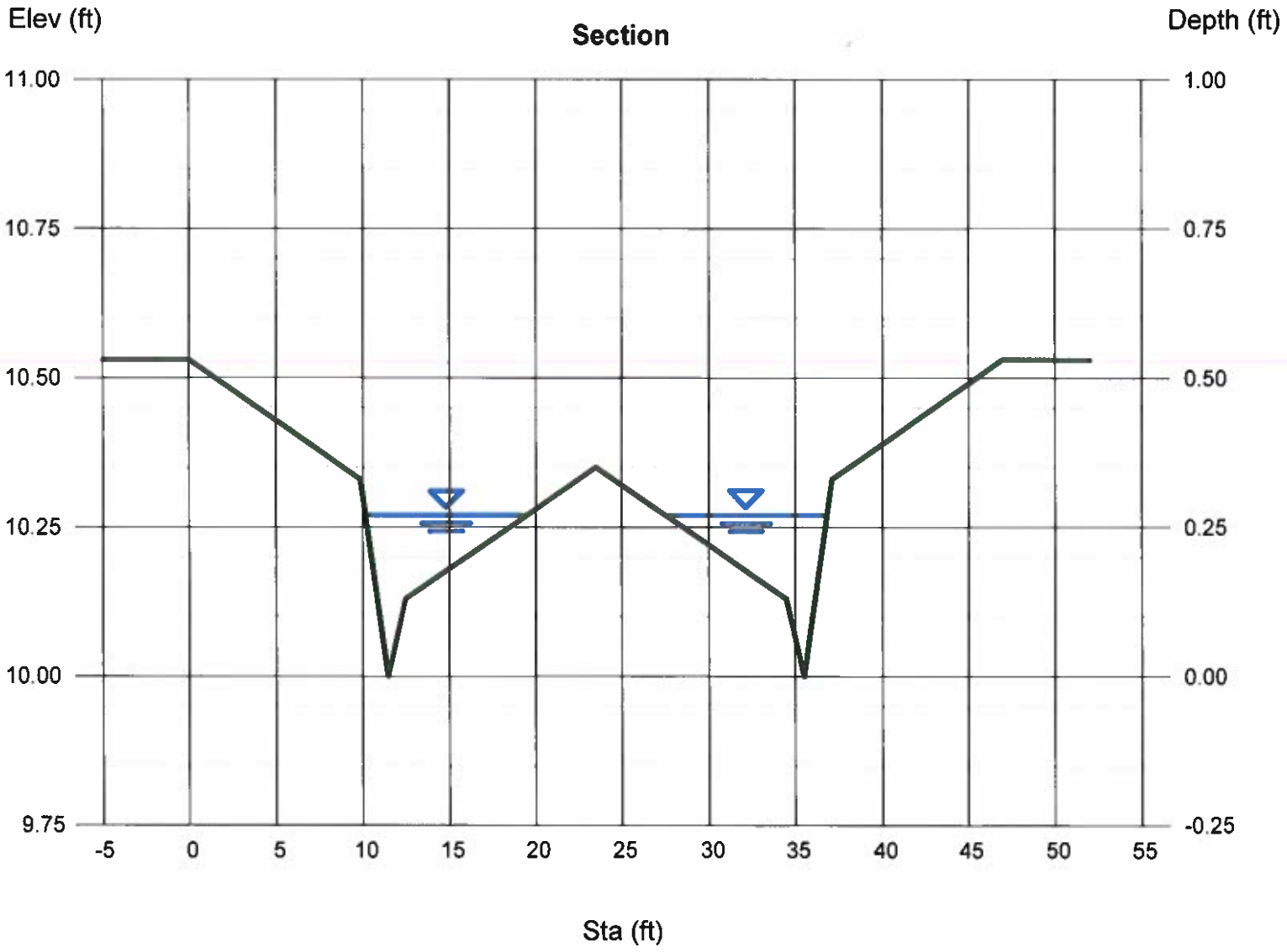
Hydraflow Express Extension for Autodesk® AutoCAD® Civil 3D® by Autodesk, Inc. Thursday, Dec 28 2017

Cirque Park-26-MTB-4.0%

User-defined		Highlighted	
Invert Elev (ft)	= 10.00	Depth (ft)	= 0.27
Slope (%)	= 4.00	Q (cfs)	= 5.700
N-Value	= 0.017	Area (sqft)	= 1.76
		Velocity (ft/s)	= 3.25
Calculations		Wetted Perim (ft)	= 18.75
Compute by:	Known Q	Crit Depth, Yc (ft)	= 0.33
Known Q (cfs)	= 5.70	Top Width (ft)	= 18.68
		EGL (ft)	= 0.43

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

(0.00, 10.53)-(9.87, 10.33, 0.017)-(11.47, 10.00, 0.017)-(12.50, 10.13, 0.017)-(23.50, 10.35, 0.017)-(34.50, 10.13, 0.017)-(35.53, 10.00, 0.017) -(37.13, 10.33, 0.017)-(47.00, 10.53, 0.017)



Channel Report

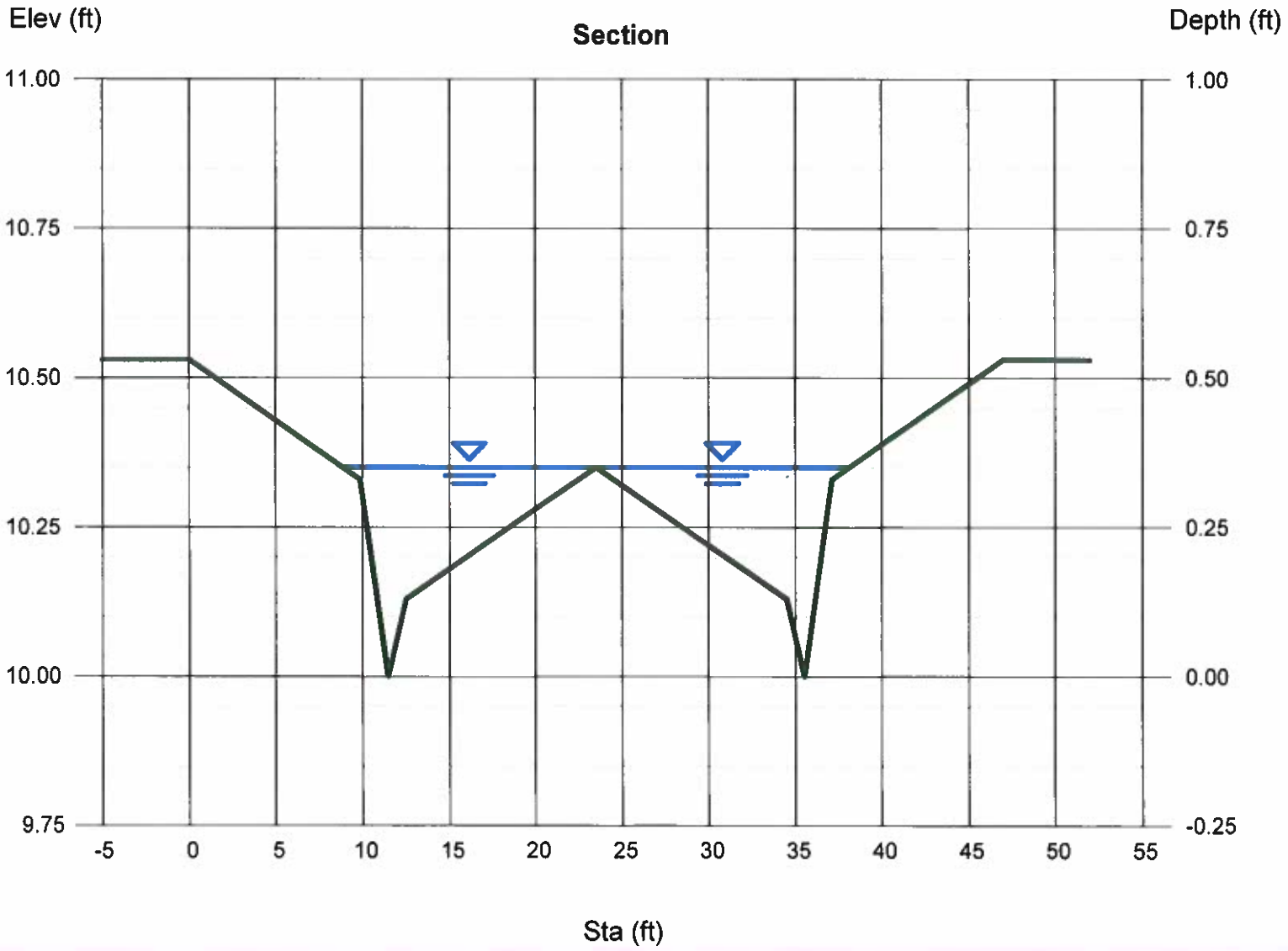
Hydraflow Express Extension for Autodesk® AutoCAD® Civil 3D® by Autodesk, Inc. Thursday, Dec 28 2017

Costilla Peak-26-MTB-2.55%

User-defined		Highlighted	
Invert Elev (ft)	= 10.00	Depth (ft)	= 0.35
Slope (%)	= 2.55	Q (cfs)	= 12.04
N-Value	= 0.017	Area (sqft)	= 3.62
		Velocity (ft/s)	= 3.33
Calculations		Wetted Perim (ft)	= 29.32
Compute by:	Known Q	Crit Depth, Yc (ft)	= 0.41
Known Q (cfs)	= 12.04	Top Width (ft)	= 29.23
		EGL (ft)	= 0.52

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

(0.00, 10.53)-(9.87, 10.33, 0.017)-(11.47, 10.00, 0.017)-(12.50, 10.13, 0.017)-(23.50, 10.35, 0.017)-(34.50, 10.13, 0.017)-(35.53, 10.00, 0.017) -(37.13, 10.33, 0.017)-(47.00, 10.53, 0.017)



Channel Report

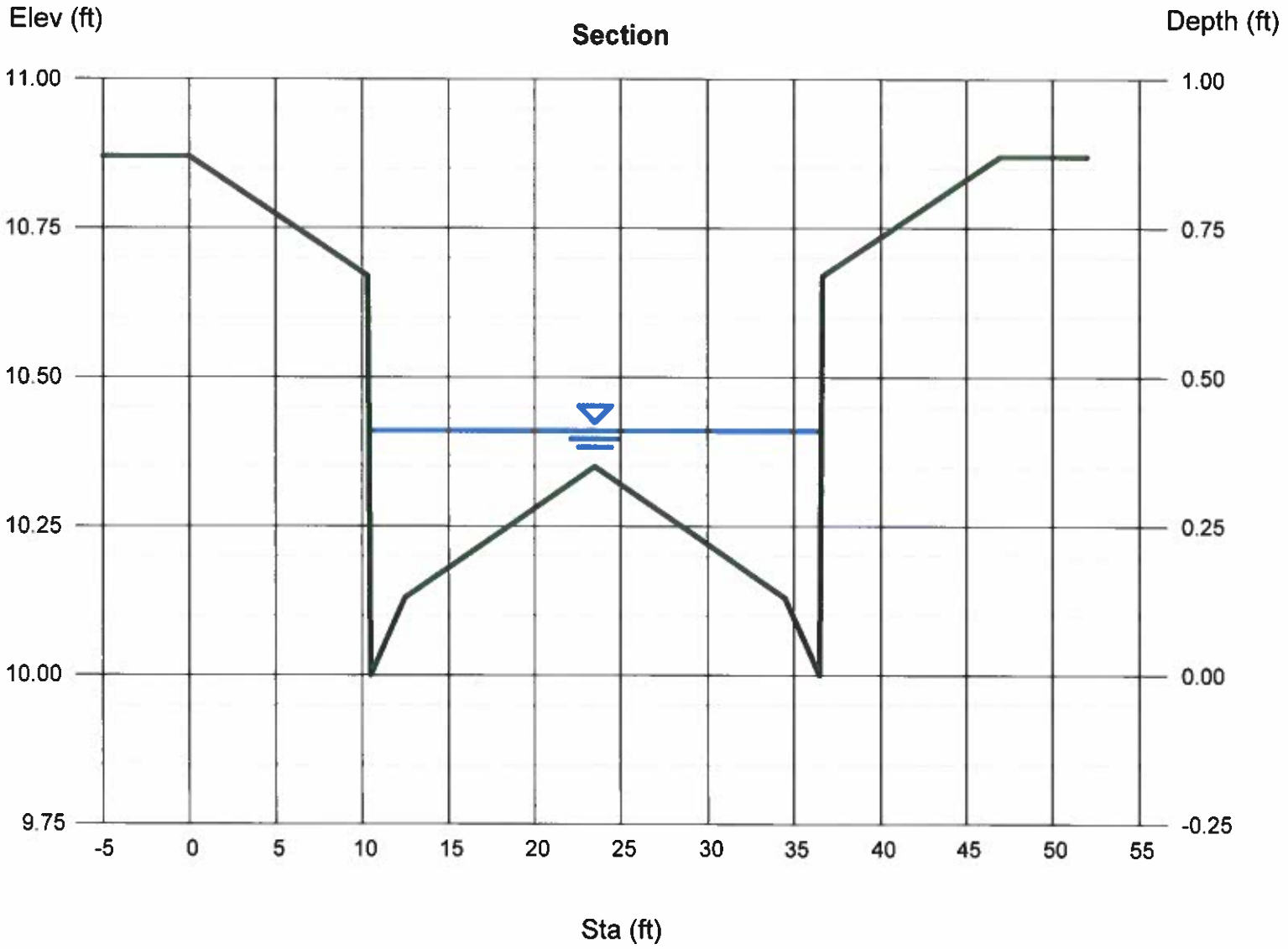
Hydraflow Express Extension for Autodesk® AutoCAD® Civil 3D® by Autodesk, Inc. Thursday, Dec 28 2017

Crag Peak-26-Std-3.2%

User-defined		Highlighted	
Invert Elev (ft)	= 10.00	Depth (ft)	= 0.41
Slope (%)	= 3.20	Q (cfs)	= 24.84
N-Value	= 0.017	Area (sqft)	= 5.16
		Velocity (ft/s)	= 4.81
Calculations		Wetted Perim (ft)	= 26.86
Compute by:	Known Q	Crit Depth, Yc (ft)	= 0.52
Known Q (cfs)	= 24.84	Top Width (ft)	= 26.21
		EGL (ft)	= 0.77

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

(0.00, 10.87)-(10.33, 10.67, 0.017)-(10.50, 10.00, 0.017)-(12.50, 10.13, 0.017)-(23.50, 10.35, 0.017)-(34.50, 10.13, 0.017)-(36.50, 10.00, 0.017) -(36.67, 10.67, 0.017)-(47.00, 10.87, 0.017)



Channel Report

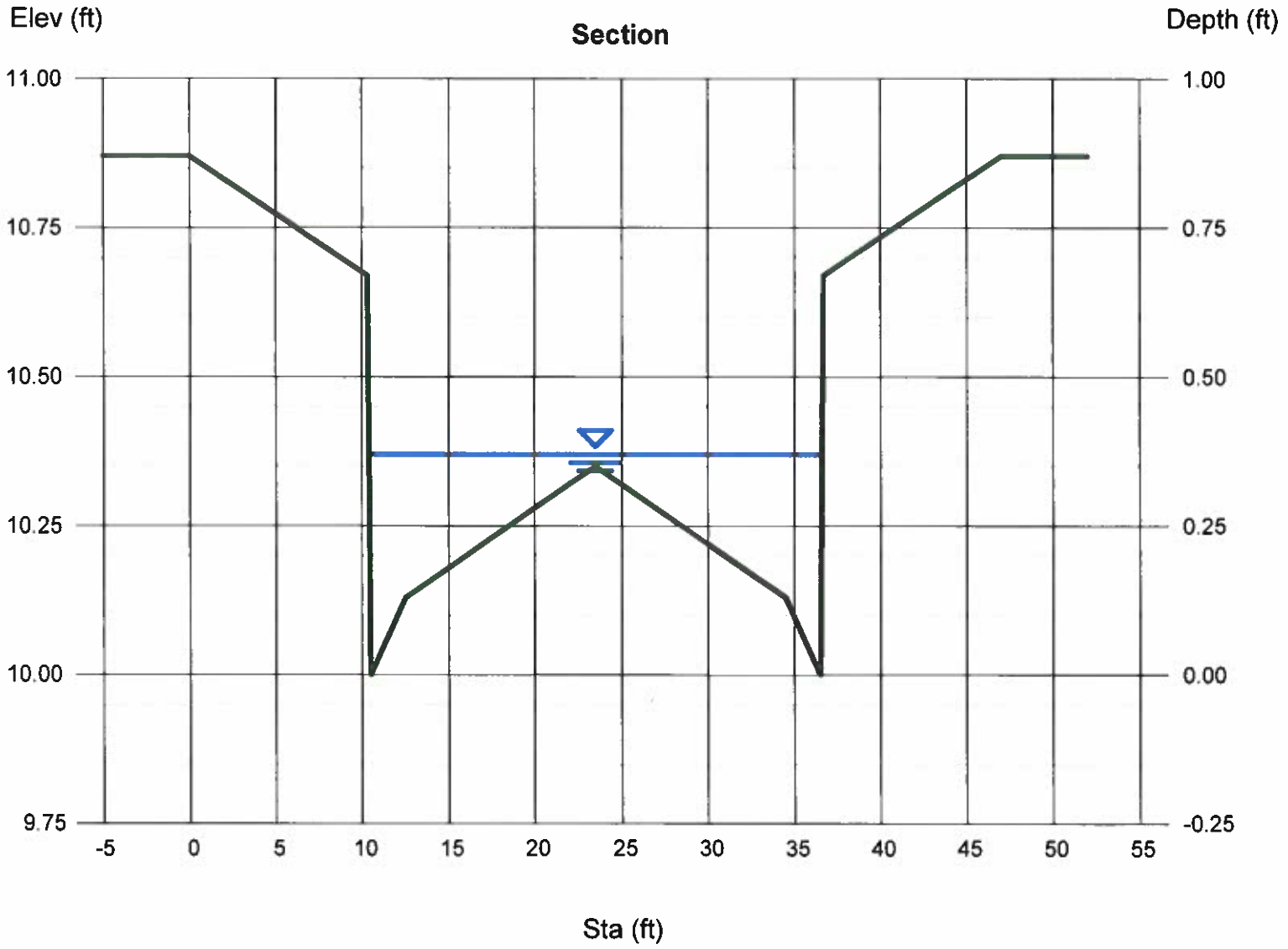
Hydraflow Express Extension for Autodesk® AutoCAD® Civil 3D® by Autodesk, Inc. Thursday, Dec 28 2017

Crag Peak-26-Std-4.9% (2)

User-defined		Highlighted	
Invert Elev (ft)	= 10.00	Depth (ft)	= 0.37
Slope (%)	= 4.90	Q (cfs)	= 21.89
N-Value	= 0.017	Area (sqft)	= 4.11
		Velocity (ft/s)	= 5.32
Calculations		Wetted Perim (ft)	= 26.78
Compute by:	Known Q	Crit Depth, Yc (ft)	= 0.50
Known Q (cfs)	= 21.89	Top Width (ft)	= 26.19
		EGL (ft)	= 0.81

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

(0.00, 10.87)-(10.33, 10.67, 0.017)-(10.50, 10.00, 0.017)-(12.50, 10.13, 0.017)-(23.50, 10.35, 0.017)-(34.50, 10.13, 0.017)-(36.50, 10.00, 0.017)
-(36.67, 10.67, 0.017)-(47.00, 10.87, 0.017)



Channel Report

Hydraflow Express Extension for Autodesk® AutoCAD® Civil 3D® by Autodesk, Inc. Friday, Dec 29 2017

Crest Trail-26-Std-4.57%

User-defined

Invert Elev (ft)	= 10.00
Slope (%)	= 4.57
N-Value	= 0.017

Calculations

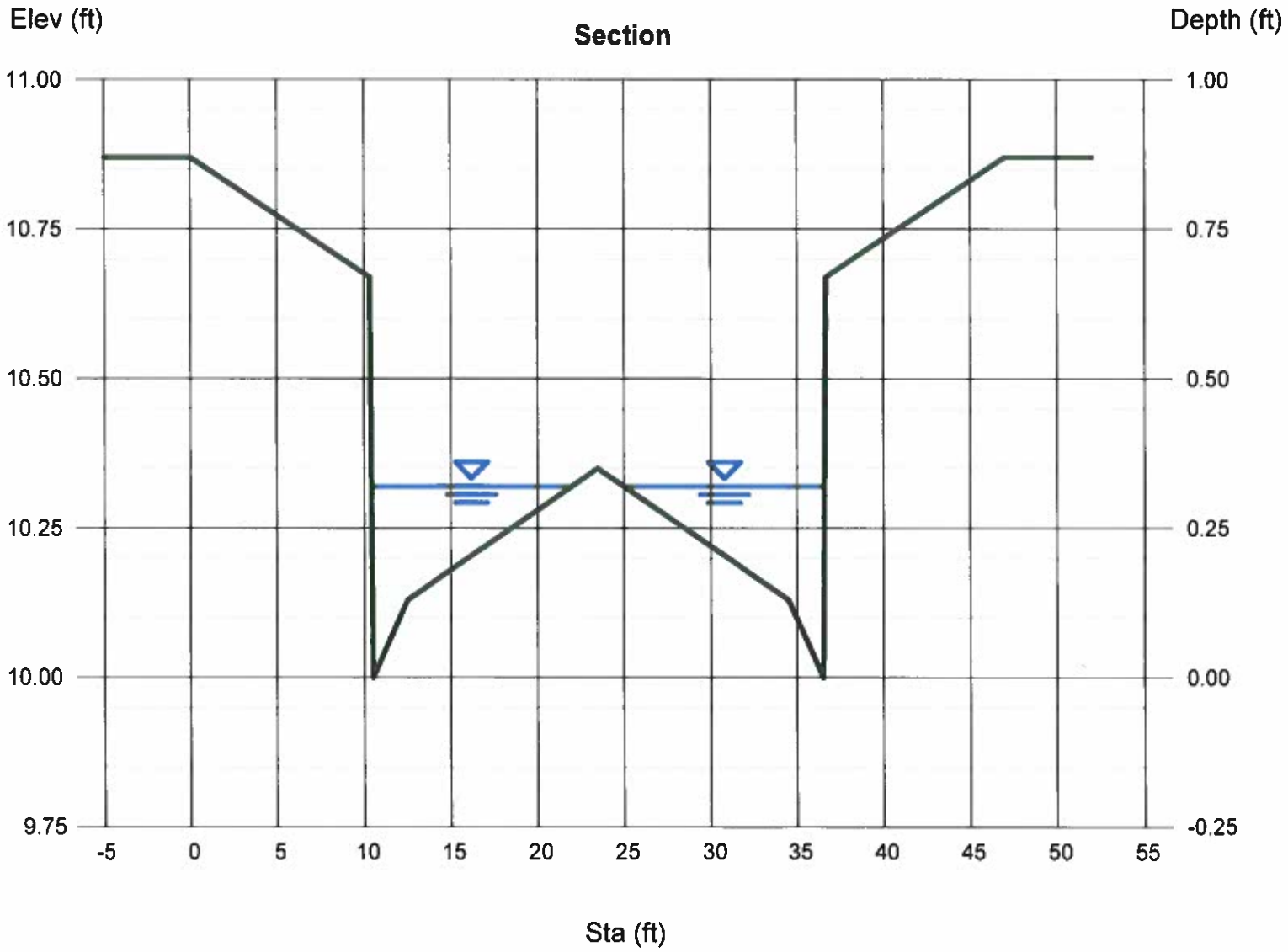
Compute by:	Known Q
Known Q (cfs)	= 12.97

Highlighted

Depth (ft)	= 0.32
Q (cfs)	= 12.97
Area (sqft)	= 2.85
Velocity (ft/s)	= 4.55
Wetted Perim (ft)	= 23.67
Crit Depth, Yc (ft)	= 0.41
Top Width (ft)	= 23.16
EGL (ft)	= 0.64

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

(0.00, 10.87)-(10.33, 10.67, 0.017)-(10.50, 10.00, 0.017)-(12.50, 10.13, 0.017)-(23.50, 10.35, 0.017)-(34.50, 10.13, 0.017)-(36.50, 10.00, 0.017) -(36.67, 10.67, 0.017)-(47.00, 10.87, 0.017)



Channel Report

Hydraflow Express Extension for Autodesk® AutoCAD® Civil 3D® by Autodesk, Inc. Thursday, Dec 28 2017

Deer Horn-26-MTB-4.0%

User-defined

Invert Elev (ft)	= 10.00
Slope (%)	= 4.00
N-Value	= 0.017

Calculations

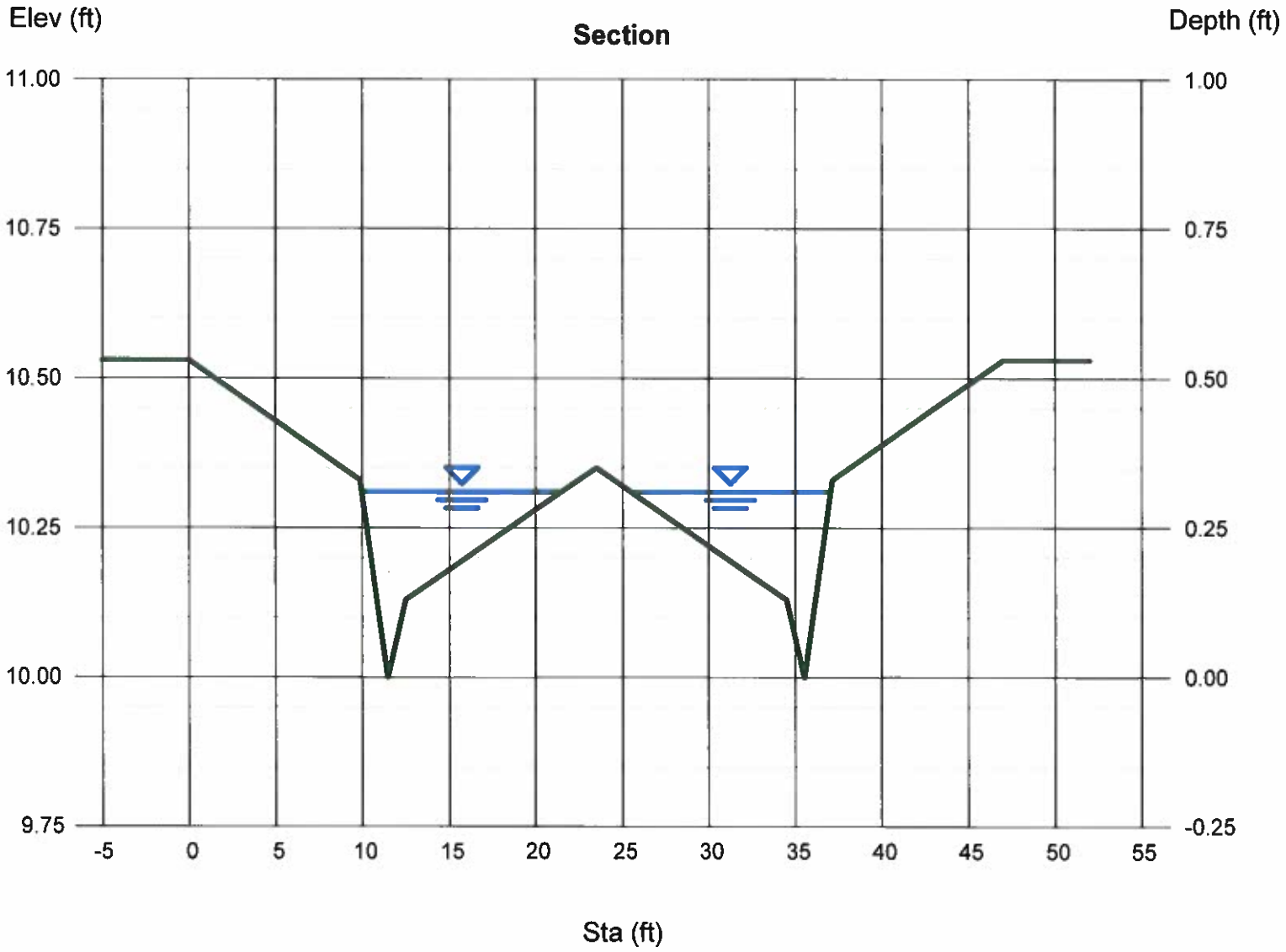
Compute by:	Known Q
Known Q (cfs)	= 10.00

Highlighted

Depth (ft)	= 0.31
Q (cfs)	= 10.00
Area (sqft)	= 2.59
Velocity (ft/s)	= 3.86
Wetted Perim (ft)	= 23.15
Crit Depth, Yc (ft)	= 0.39
Top Width (ft)	= 23.07
EGL (ft)	= 0.54

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

(0.00, 10.53)-(9.87, 10.33, 0.017)-(11.47, 10.00, 0.017)-(12.50, 10.13, 0.017)-(23.50, 10.35, 0.017)-(34.50, 10.13, 0.017)-(35.53, 10.00, 0.017) -(37.13, 10.33, 0.017)-(47.00, 10.53, 0.017)



Channel Report

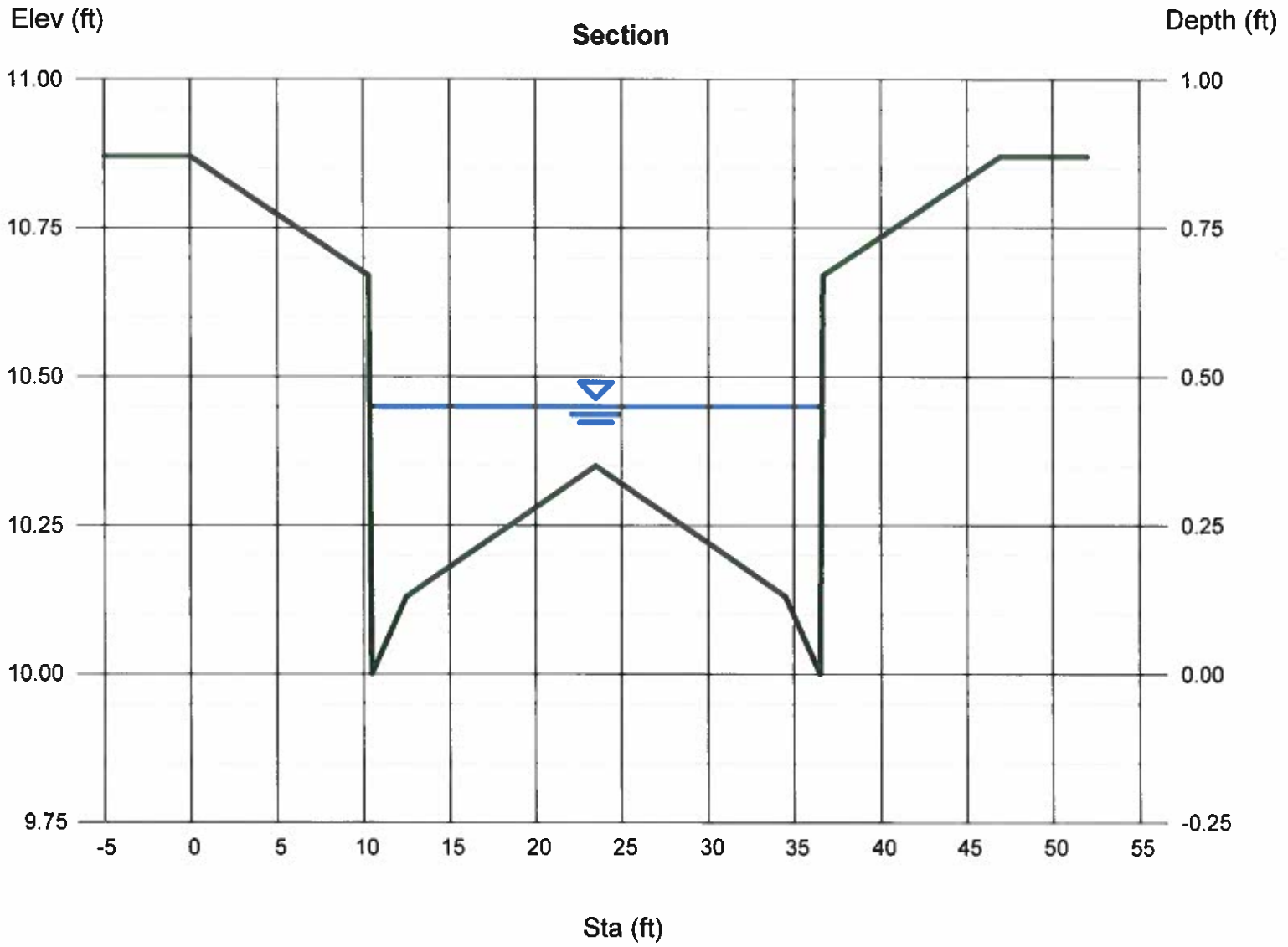
Hydraflow Express Extension for Autodesk® AutoCAD® Civil 3D® by Autodesk, Inc. Thursday, Dec 28 2017

Diamond Peak-26-Std-2.7%

User-defined		Highlighted	
Invert Elev (ft)	= 10.00	Depth (ft)	= 0.45
Slope (%)	= 2.70	Q (cfs)	= 32.20
N-Value	= 0.017	Area (sqft)	= 6.21
		Velocity (ft/s)	= 5.18
Calculations		Wetted Perim (ft)	= 26.94
Compute by:	Known Q	Crit Depth, Yc (ft)	= 0.58
Known Q (cfs)	= 32.20	Top Width (ft)	= 26.23
		EGL (ft)	= 0.87

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

(0.00, 10.87)-(10.33, 10.67, 0.017)-(10.50, 10.00, 0.017)-(12.50, 10.13, 0.017)-(23.50, 10.35, 0.017)-(34.50, 10.13, 0.017)-(36.50, 10.00, 0.017)
-(36.67, 10.67, 0.017)-(47.00, 10.87, 0.017)



Channel Report

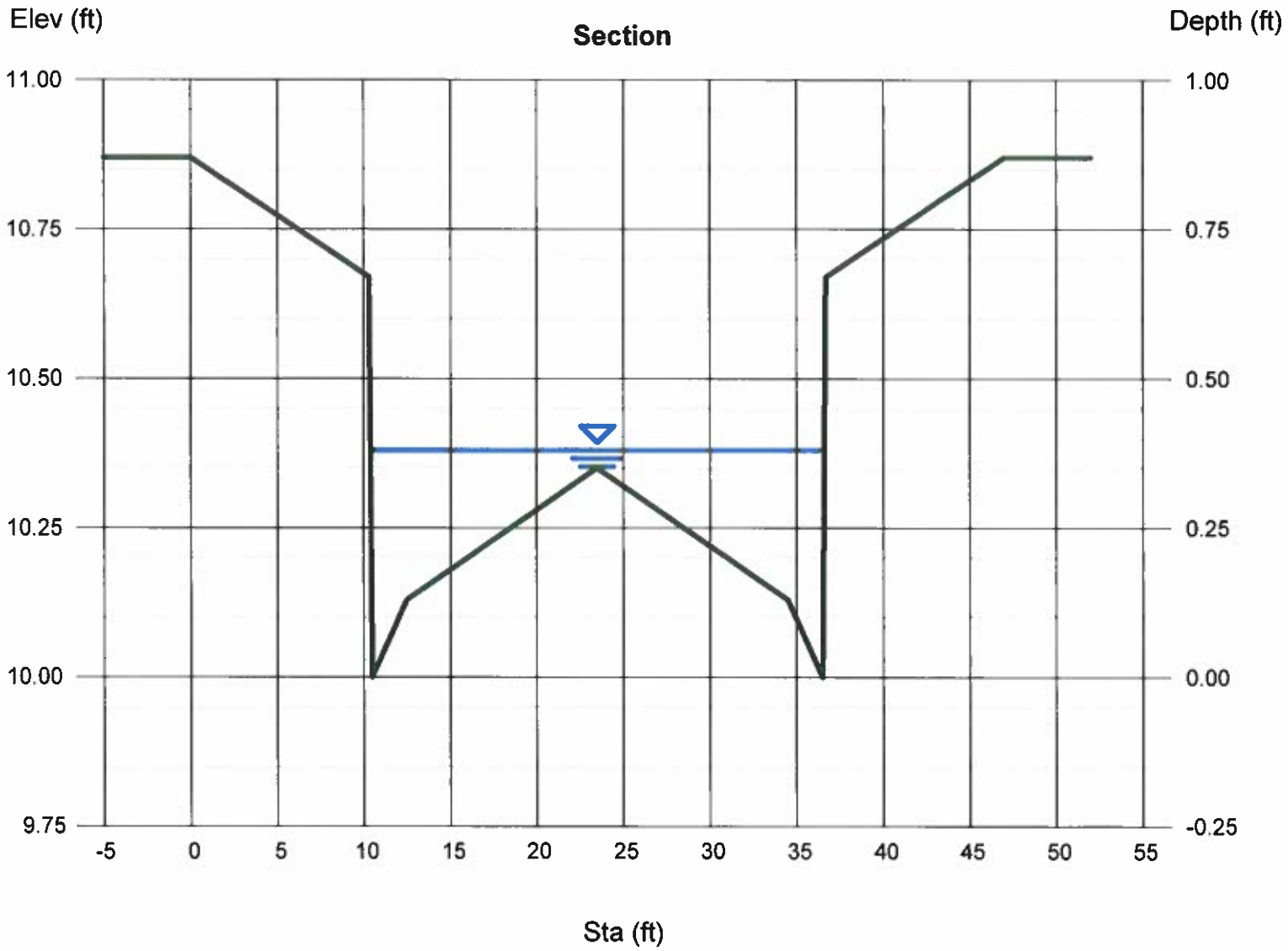
Hydraflow Express Extension for Autodesk® AutoCAD® Civil 3D® by Autodesk, Inc. Thursday, Dec 28 2017

Diamond Peak-26-Std-2.7% (2)

User-defined		Highlighted	
Invert Elev (ft)	= 10.00	Depth (ft)	= 0.38
Slope (%)	= 2.70	Q (cfs)	= 17.68
N-Value	= 0.017	Area (sqft)	= 4.38
		Velocity (ft/s)	= 4.04
Calculations		Wetted Perim (ft)	= 26.80
Compute by:	Known Q	Crit Depth, Yc (ft)	= 0.46
Known Q (cfs)	= 17.68	Top Width (ft)	= 26.19
		EGL (ft)	= 0.63

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

(0.00, 10.87)-(10.33, 10.67, 0.017)-(10.50, 10.00, 0.017)-(12.50, 10.13, 0.017)-(23.50, 10.35, 0.017)-(34.50, 10.13, 0.017)-(36.50, 10.00, 0.017) -(36.67, 10.67, 0.017)-(47.00, 10.87, 0.017)



Channel Report

Hydraflow Express Extension for Autodesk® AutoCAD® Civil 3D® by Autodesk, Inc. Thursday, Dec 28 2017

Emerald Peak-26-MTB-2.34%

User-defined

Invert Elev (ft)	= 10.00
Slope (%)	= 2.34
N-Value	= 0.017

Calculations

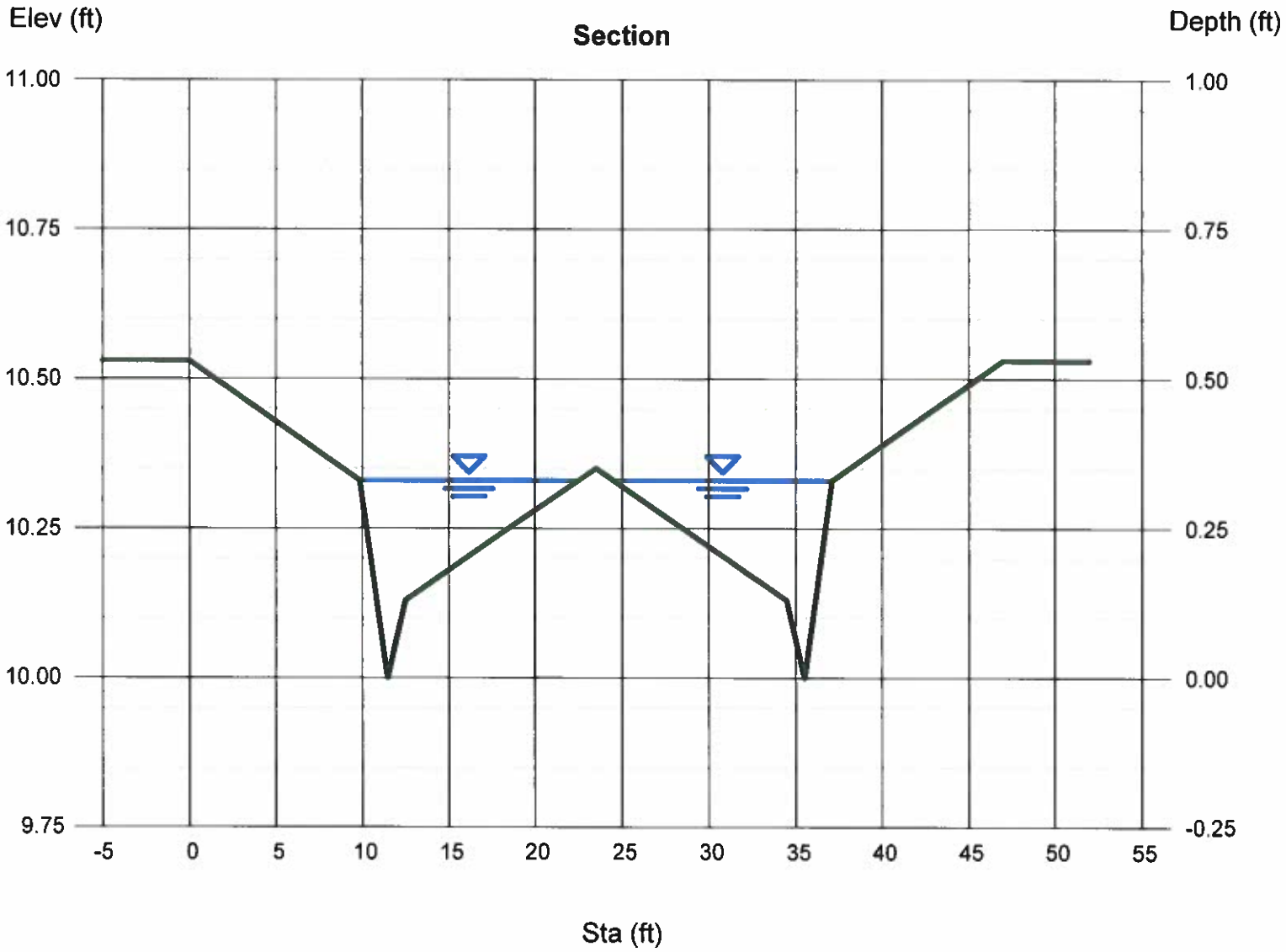
Compute by:	Known Q
Known Q (cfs)	= 9.91

Highlighted

Depth (ft)	= 0.33
Q (cfs)	= 9.910
Area (sqft)	= 3.07
Velocity (ft/s)	= 3.22
Wetted Perim (ft)	= 25.35
Crit Depth, Yc (ft)	= 0.39
Top Width (ft)	= 25.26
EGL (ft)	= 0.49

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

(0.00, 10.53)-(9.87, 10.33, 0.017)-(11.47, 10.00, 0.017)-(12.50, 10.13, 0.017)-(23.50, 10.35, 0.017)-(34.50, 10.13, 0.017)-(35.53, 10.00, 0.017) -(37.13, 10.33, 0.017)-(47.00, 10.53, 0.017)



Channel Report

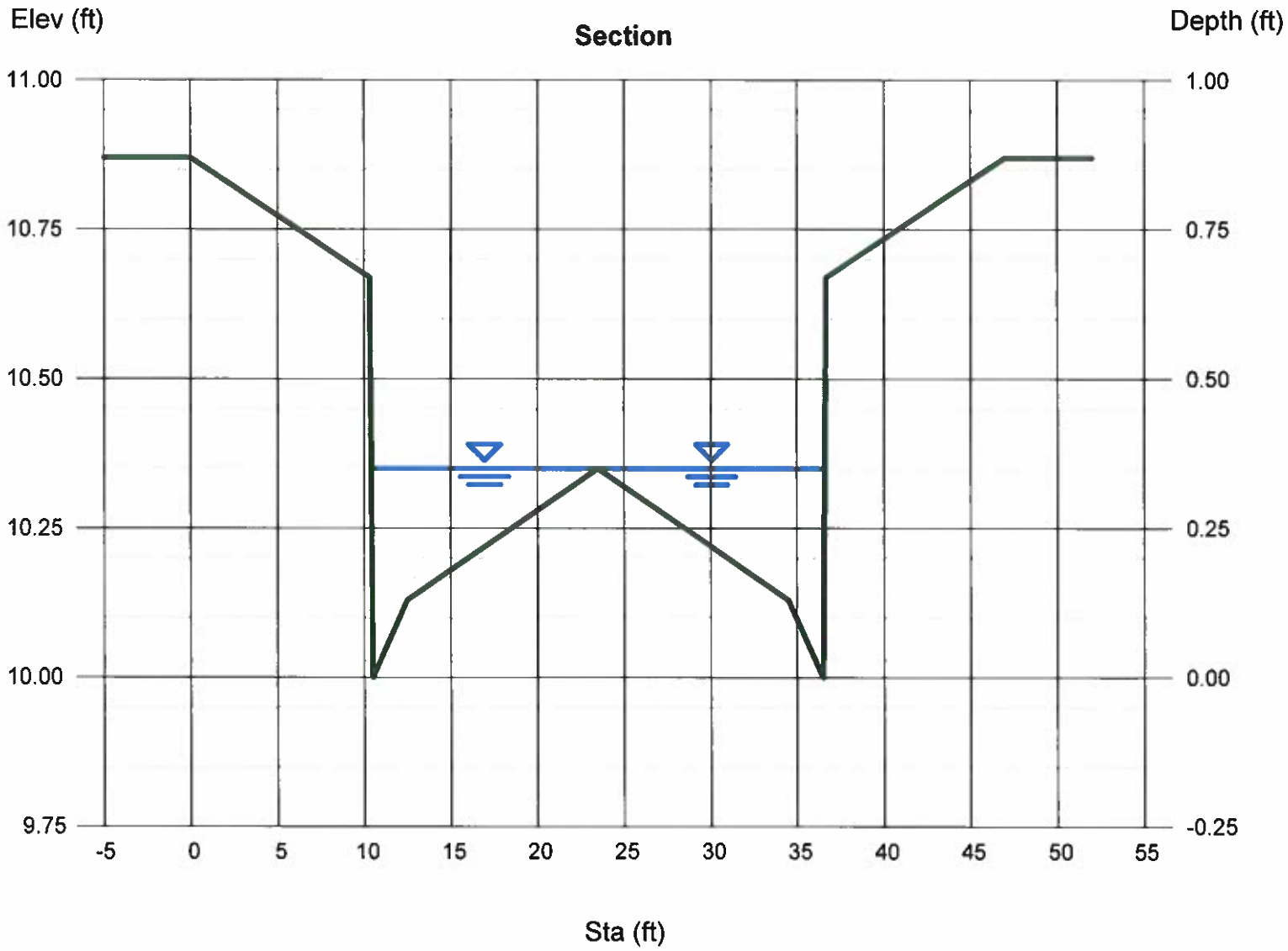
Hydraflow Express Extension for Autodesk® AutoCAD® Civil 3D® by Autodesk, Inc. Friday, Dec 29 2017

Gold Hill-26-Std-3.69%

User-defined		Highlighted	
Invert Elev (ft)	= 10.00	Depth (ft)	= 0.35
Slope (%)	= 3.69	Q (cfs)	= 14.52
N-Value	= 0.017	Area (sqft)	= 3.59
		Velocity (ft/s)	= 4.04
Calculations		Wetted Perim (ft)	= 26.74
Compute by:	Known Q	Crit Depth, Yc (ft)	= 0.43
Known Q (cfs)	= 14.52	Top Width (ft)	= 26.18
		EGL (ft)	= 0.60

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

(0.00, 10.87)-(10.33, 10.67, 0.017)-(10.50, 10.00, 0.017)-(12.50, 10.13, 0.017)-(23.50, 10.35, 0.017)-(34.50, 10.13, 0.017)-(36.50, 10.00, 0.017) -(36.67, 10.67, 0.017)-(47.00, 10.87, 0.017)



Channel Report

Hydraflow Express Extension for Autodesk® AutoCAD® Civil 3D® by Autodesk, Inc. Wednesday, Jan 3 2018

Grass Mountain Road-26-Std-0.6%

User-defined

Invert Elev (ft)	= 10.00
Slope (%)	= 0.60
N-Value	= 0.017

Calculations

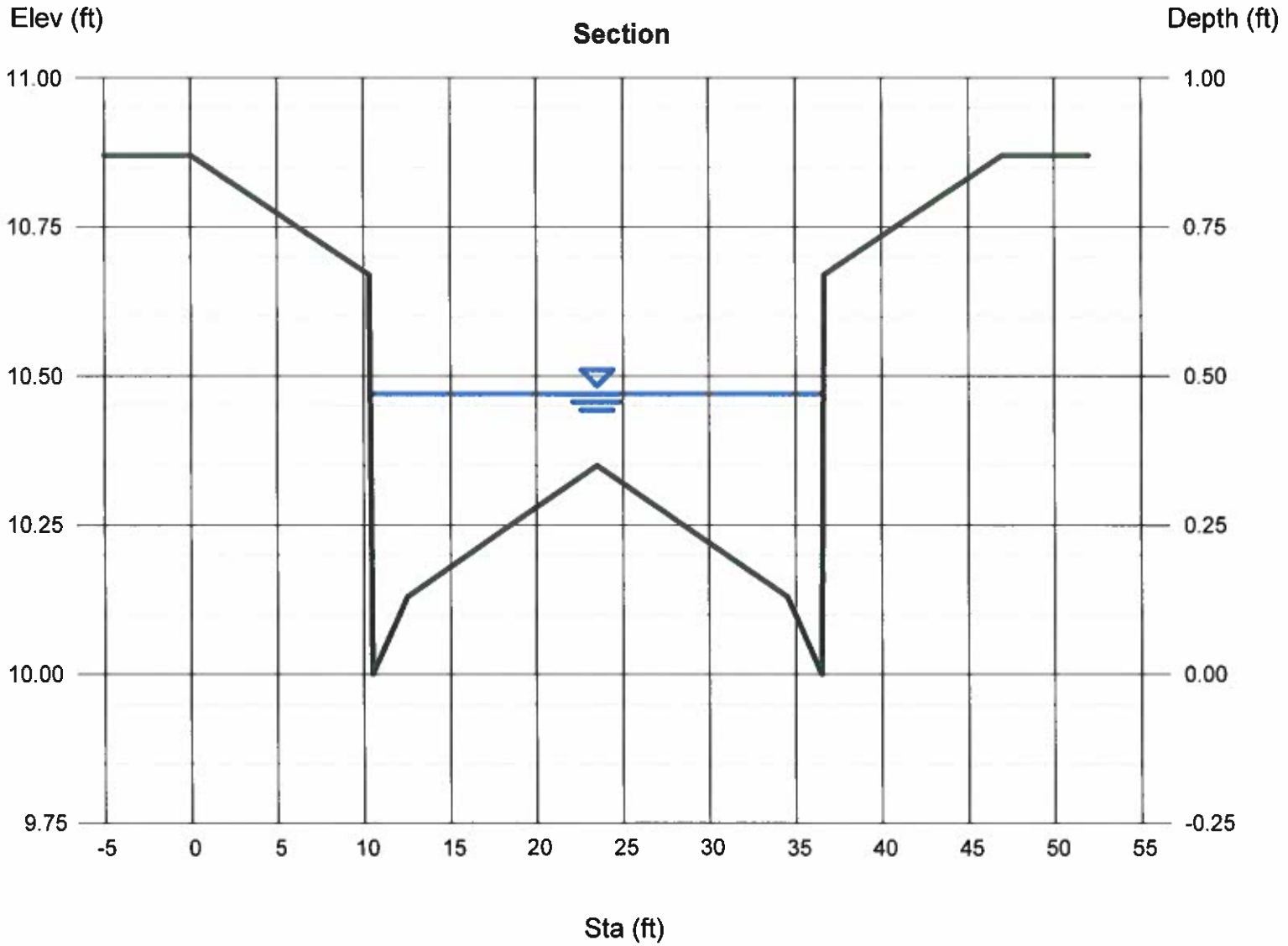
Compute by:	Known Q
Known Q (cfs)	= 17.87

Highlighted

Depth (ft)	= 0.47
Q (cfs)	= 17.87
Area (sqft)	= 6.74
Velocity (ft/s)	= 2.65
Wetted Perim (ft)	= 26.98
Crit Depth, Yc (ft)	= 0.46
Top Width (ft)	= 26.24
EGL (ft)	= 0.58

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

(0.00, 10.87)-(10.33, 10.67, 0.017)-(10.50, 10.00, 0.017)-(12.50, 10.13, 0.017)-(23.50, 10.35, 0.017)-(34.50, 10.13, 0.017)-(36.50, 10.00, 0.017) -(36.67, 10.67, 0.017)-(47.00, 10.87, 0.017)



Channel Report

Hydraflow Express Extension for Autodesk® AutoCAD® Civil 3D® by Autodesk, Inc. Wednesday, Jan 3 2018

Grass Mountain Road-26-Std-0.6%(2)

User-defined

Invert Elev (ft)	= 10.00
Slope (%)	= 0.60
N-Value	= 0.017

Calculations

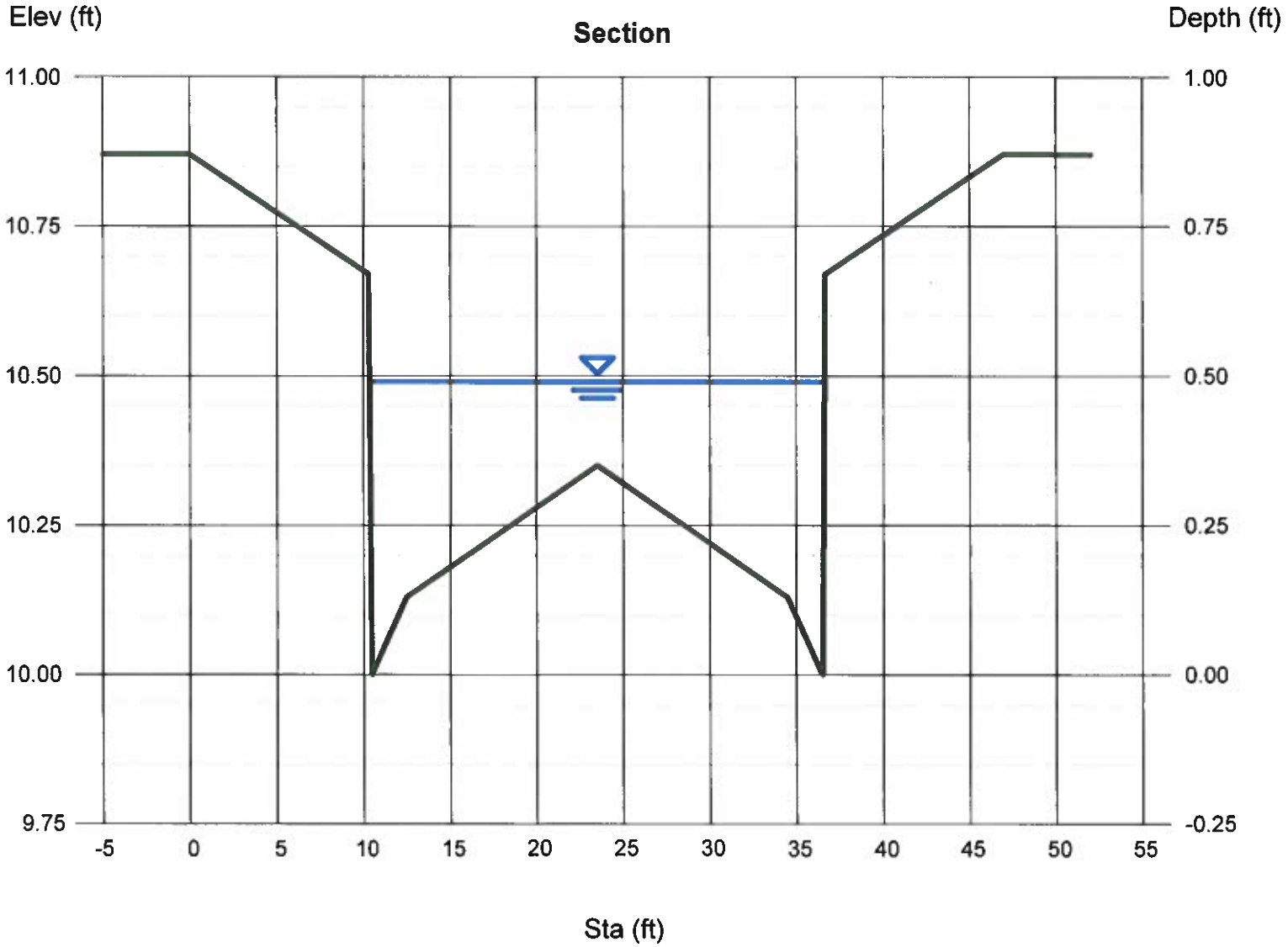
Compute by:	Known Q
Known Q (cfs)	= 20.24

Highlighted

Depth (ft)	= 0.49
Q (cfs)	= 20.24
Area (sqft)	= 7.26
Velocity (ft/s)	= 2.79
Wetted Perim (ft)	= 27.02
Crit Depth, Yc (ft)	= 0.48
Top Width (ft)	= 26.25
EGL (ft)	= 0.61

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

(0.00, 10.87)-(10.33, 10.67, 0.017)-(10.50, 10.00, 0.017)-(12.50, 10.13, 0.017)-(23.50, 10.35, 0.017)-(34.50, 10.13, 0.017)-(36.50, 10.00, 0.017) -(36.67, 10.67, 0.017)-(47.00, 10.87, 0.017)



Channel Report

Hydraflow Express Extension for Autodesk® AutoCAD® Civil 3D® by Autodesk, Inc. Friday, Dec 29 2017

Horseshoe-26-Std-4.07%

User-defined

Invert Elev (ft)	= 10.00
Slope (%)	= 4.07
N-Value	= 0.017

Calculations

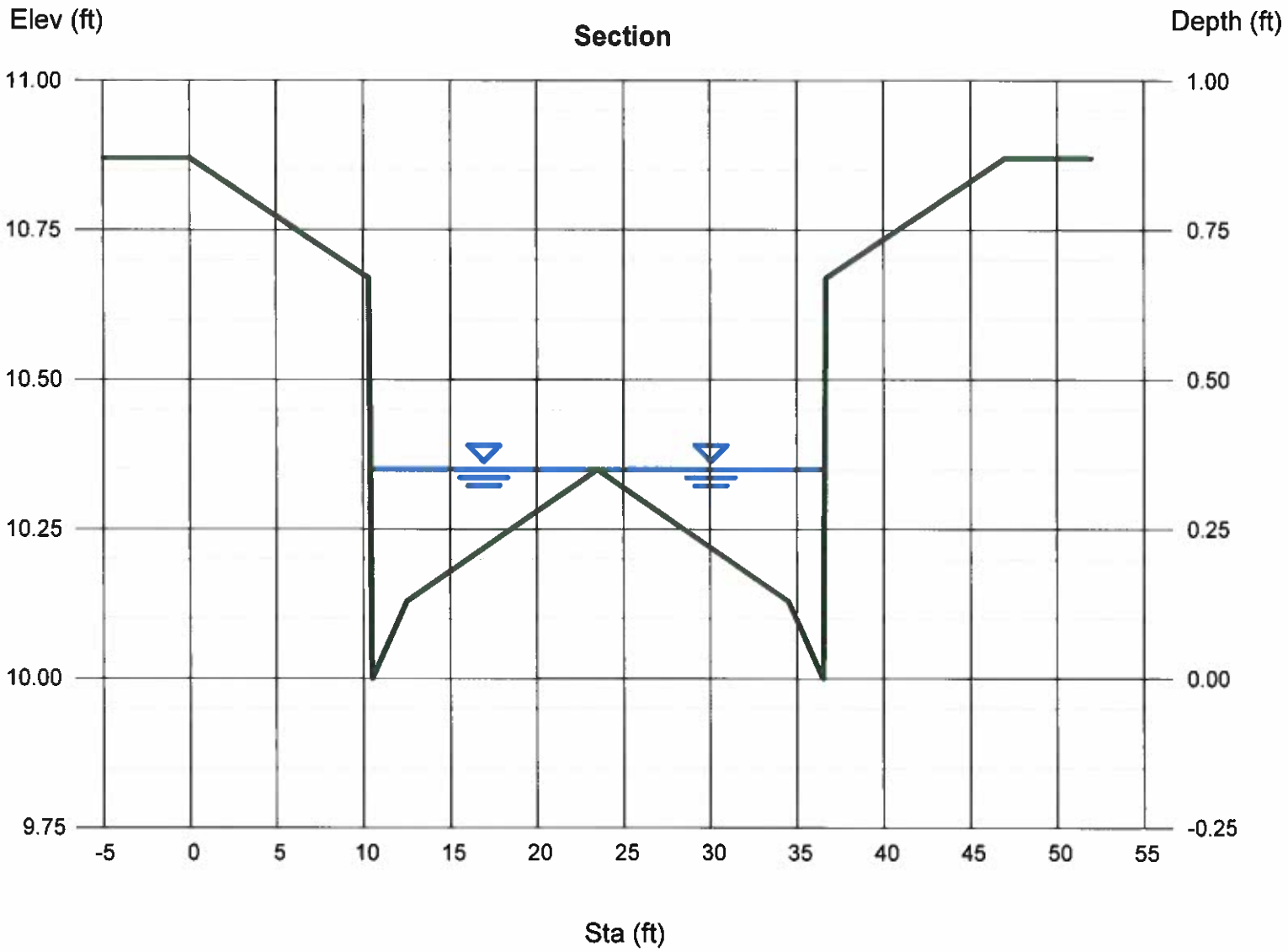
Compute by:	Known Q
Known Q (cfs)	= 15.45

Highlighted

Depth (ft)	= 0.35
Q (cfs)	= 15.45
Area (sqft)	= 3.59
Velocity (ft/s)	= 4.30
Wetted Perim (ft)	= 26.74
Crit Depth, Yc (ft)	= 0.44
Top Width (ft)	= 26.18
EGL (ft)	= 0.64

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

(0.00, 10.87)-(10.33, 10.67, 0.017)-(10.50, 10.00, 0.017)-(12.50, 10.13, 0.017)-(23.50, 10.35, 0.017)-(34.50, 10.13, 0.017)-(36.50, 10.00, 0.017) -(36.67, 10.67, 0.017)-(47.00, 10.87, 0.017)



Channel Report

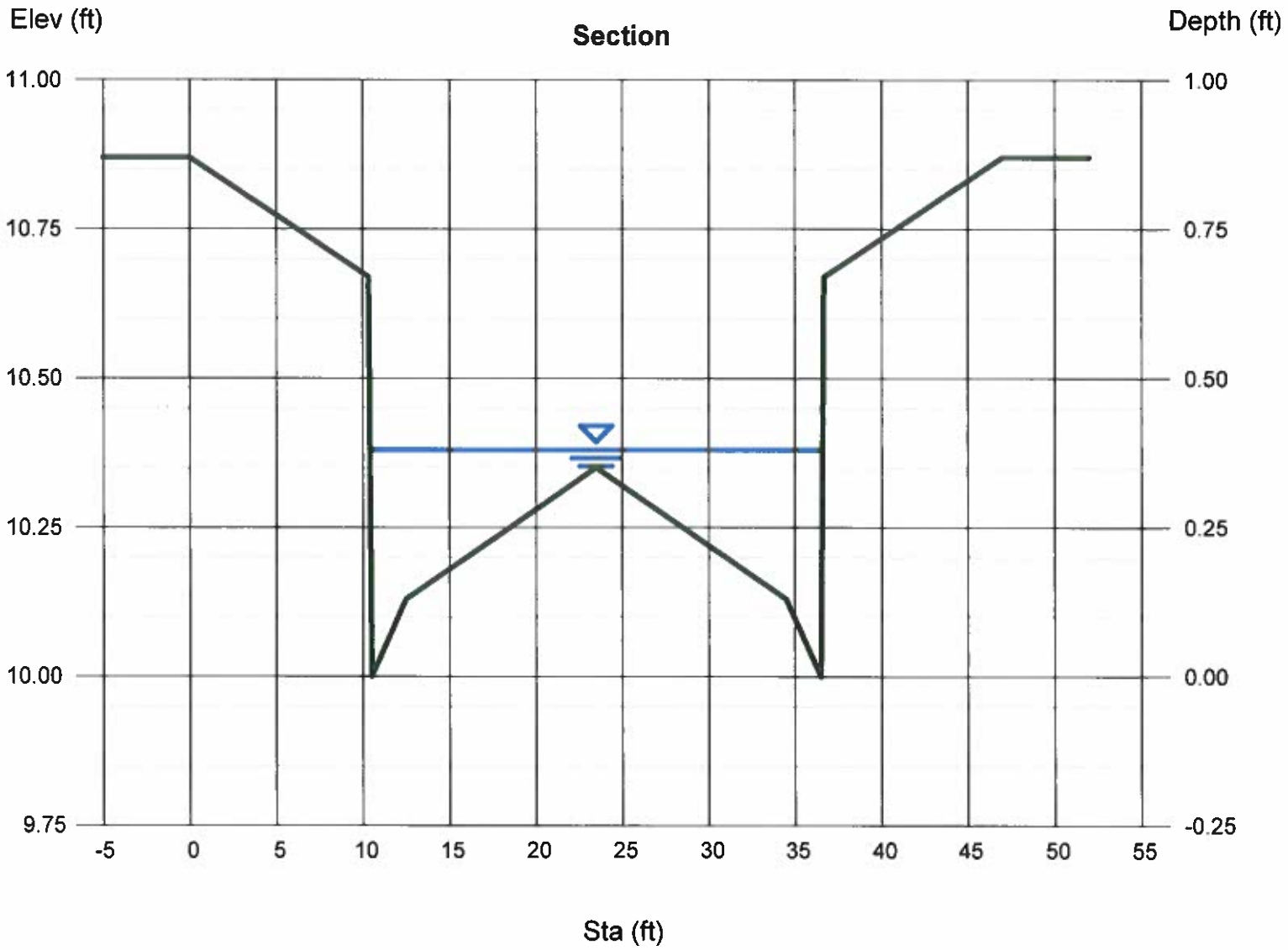
Hydraflow Express Extension for Autodesk® AutoCAD® Civil 3D® by Autodesk, Inc. Thursday, Dec 28 2017

Pine Town Way-26-Std-3.4%

User-defined		Highlighted	
Invert Elev (ft)	= 10.00	Depth (ft)	= 0.38
Slope (%)	= 3.40	Q (cfs)	= 19.74
N-Value	= 0.017	Area (sqft)	= 4.38
		Velocity (ft/s)	= 4.51
Calculations		Wetted Perim (ft)	= 26.80
Compute by:	Known Q	Crit Depth, Yc (ft)	= 0.48
Known Q (cfs)	= 19.74	Top Width (ft)	= 26.19
		EGL (ft)	= 0.70

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

(0.00, 10.87)-(10.33, 10.67, 0.017)-(10.50, 10.00, 0.017)-(12.50, 10.13, 0.017)-(23.50, 10.35, 0.017)-(34.50, 10.13, 0.017)-(36.50, 10.00, 0.017) -(36.67, 10.67, 0.017)-(47.00, 10.87, 0.017)



Channel Report

Hydraflow Express Extension for Autodesk® AutoCAD® Civil 3D® by Autodesk, Inc. Wednesday, Jan 3 2018

South Peak-26-Std-2.77%(2)

User-defined

Invert Elev (ft)	= 10.00
Slope (%)	= 2.77
N-Value	= 0.017

Calculations

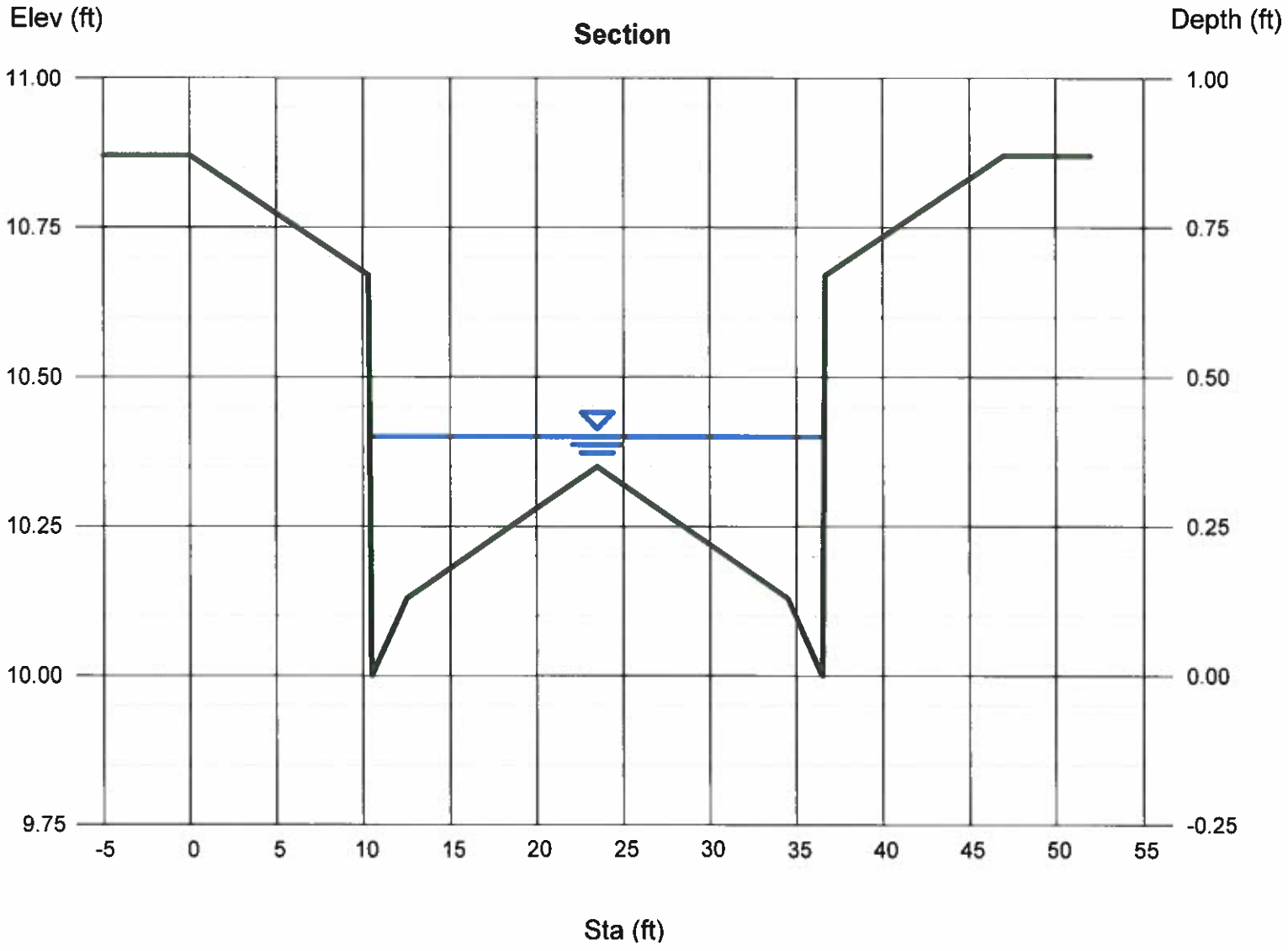
Compute by:	Known Q
Known Q (cfs)	= 21.43

Highlighted

Depth (ft)	= 0.40
Q (cfs)	= 21.43
Area (sqft)	= 4.90
Velocity (ft/s)	= 4.37
Wetted Perim (ft)	= 26.84
Crit Depth, Yc (ft)	= 0.49
Top Width (ft)	= 26.20
EGL (ft)	= 0.70

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

(0.00, 10.87)-(10.33, 10.67, 0.017)-(10.50, 10.00, 0.017)-(12.50, 10.13, 0.017)-(23.50, 10.35, 0.017)-(34.50, 10.13, 0.017)-(36.50, 10.00, 0.017) -(36.67, 10.67, 0.017)-(47.00, 10.87, 0.017)



Channel Report

Hydraflow Express Extension for Autodesk® AutoCAD® Civil 3D® by Autodesk, Inc. Friday, Dec 29 2017

Three Rivers-26-Std-2.0%

User-defined

Invert Elev (ft)	= 10.00
Slope (%)	= 2.00
N-Value	= 0.017

Calculations

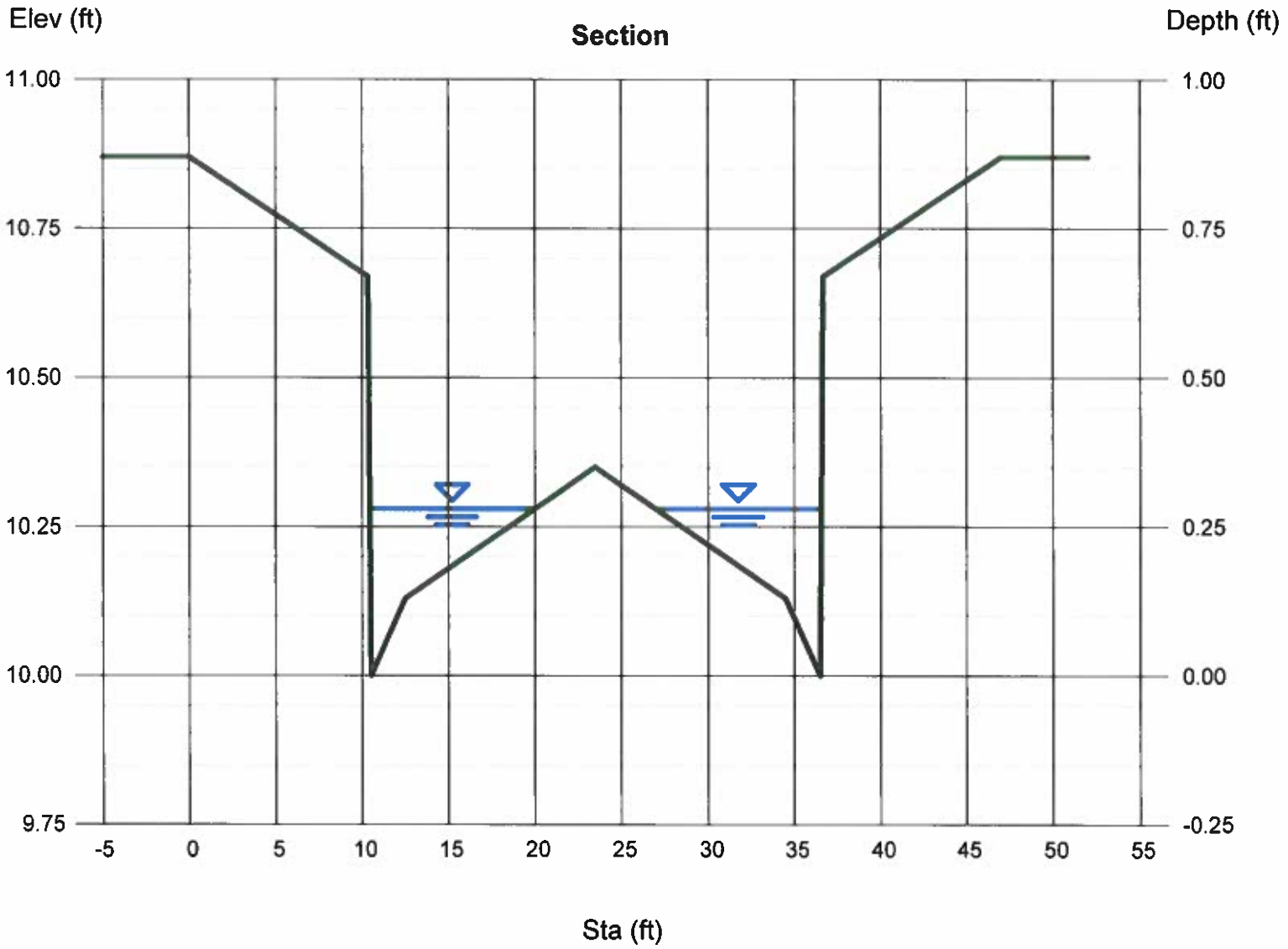
Compute by:	Known Q
Known Q (cfs)	= 5.27

Highlighted

Depth (ft)	= 0.28
Q (cfs)	= 5.270
Area (sqft)	= 2.00
Velocity (ft/s)	= 2.63
Wetted Perim (ft)	= 19.59
Crit Depth, Yc (ft)	= 0.32
Top Width (ft)	= 19.14
EGL (ft)	= 0.39

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

(0.00, 10.87)-(10.33, 10.67, 0.017)-(10.50, 10.00, 0.017)-(12.50, 10.13, 0.017)-(23.50, 10.35, 0.017)-(34.50, 10.13, 0.017)-(36.50, 10.00, 0.017) -(36.67, 10.67, 0.017)-(47.00, 10.87, 0.017)



Channel Report

Hydraflow Express Extension for Autodesk® AutoCAD® Civil 3D® by Autodesk, Inc. Thursday, Dec 28 2017

Tyler Peak-26-Std-0.8%

User-defined

Invert Elev (ft)	= 10.00
Slope (%)	= 0.80
N-Value	= 0.017

Calculations

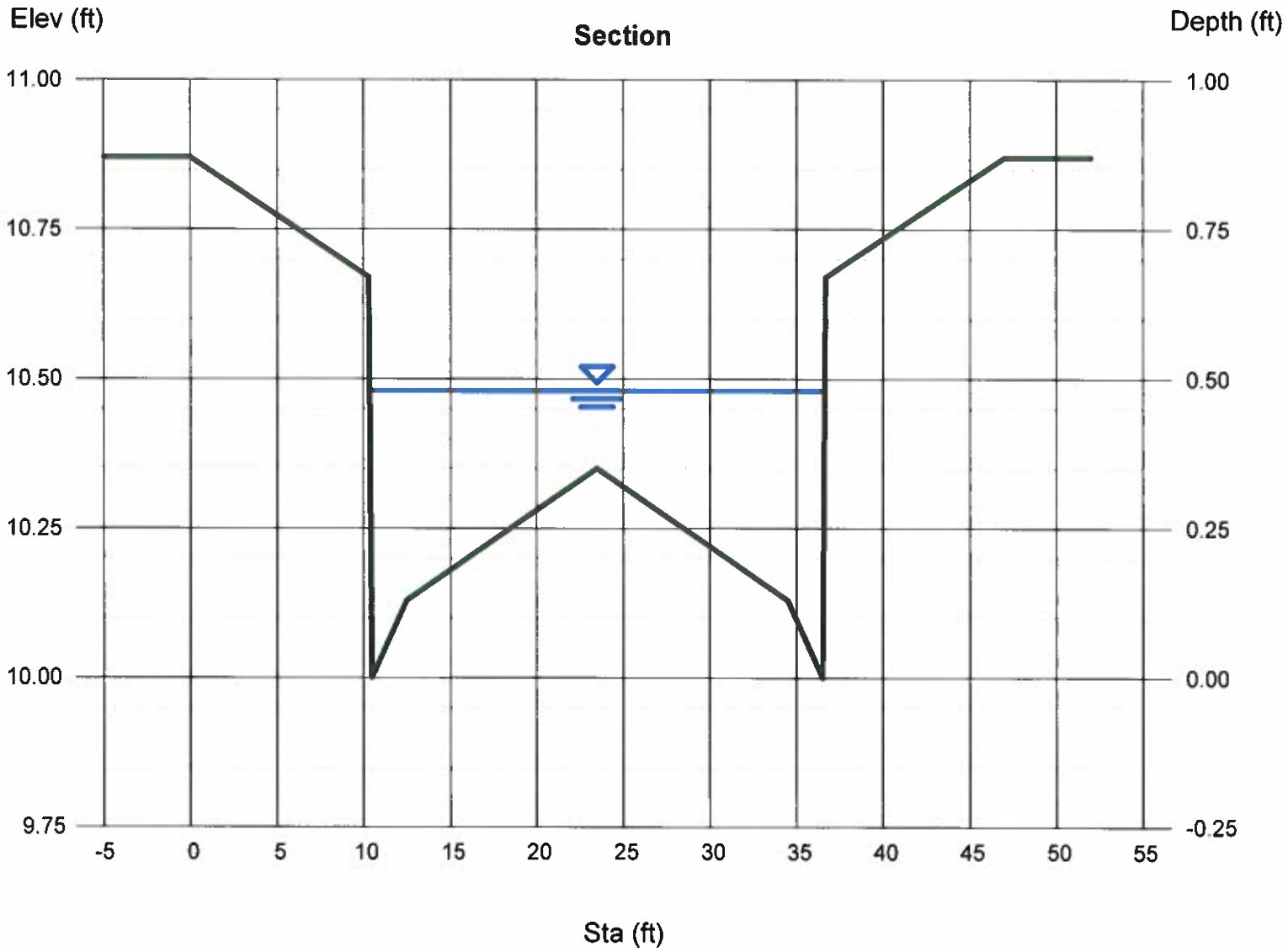
Compute by:	Known Q
Known Q (cfs)	= 21.89

Highlighted

Depth (ft)	= 0.48
Q (cfs)	= 21.89
Area (sqft)	= 7.00
Velocity (ft/s)	= 3.13
Wetted Perim (ft)	= 27.00
Crit Depth, Yc (ft)	= 0.50
Top Width (ft)	= 26.24
EGL (ft)	= 0.63

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

(0.00, 10.87)-(10.33, 10.67, 0.017)-(10.50, 10.00, 0.017)-(12.50, 10.13, 0.017)-(23.50, 10.35, 0.017)-(34.50, 10.13, 0.017)-(36.50, 10.00, 0.017)
-(36.67, 10.67, 0.017)-(47.00, 10.87, 0.017)



Channel Report

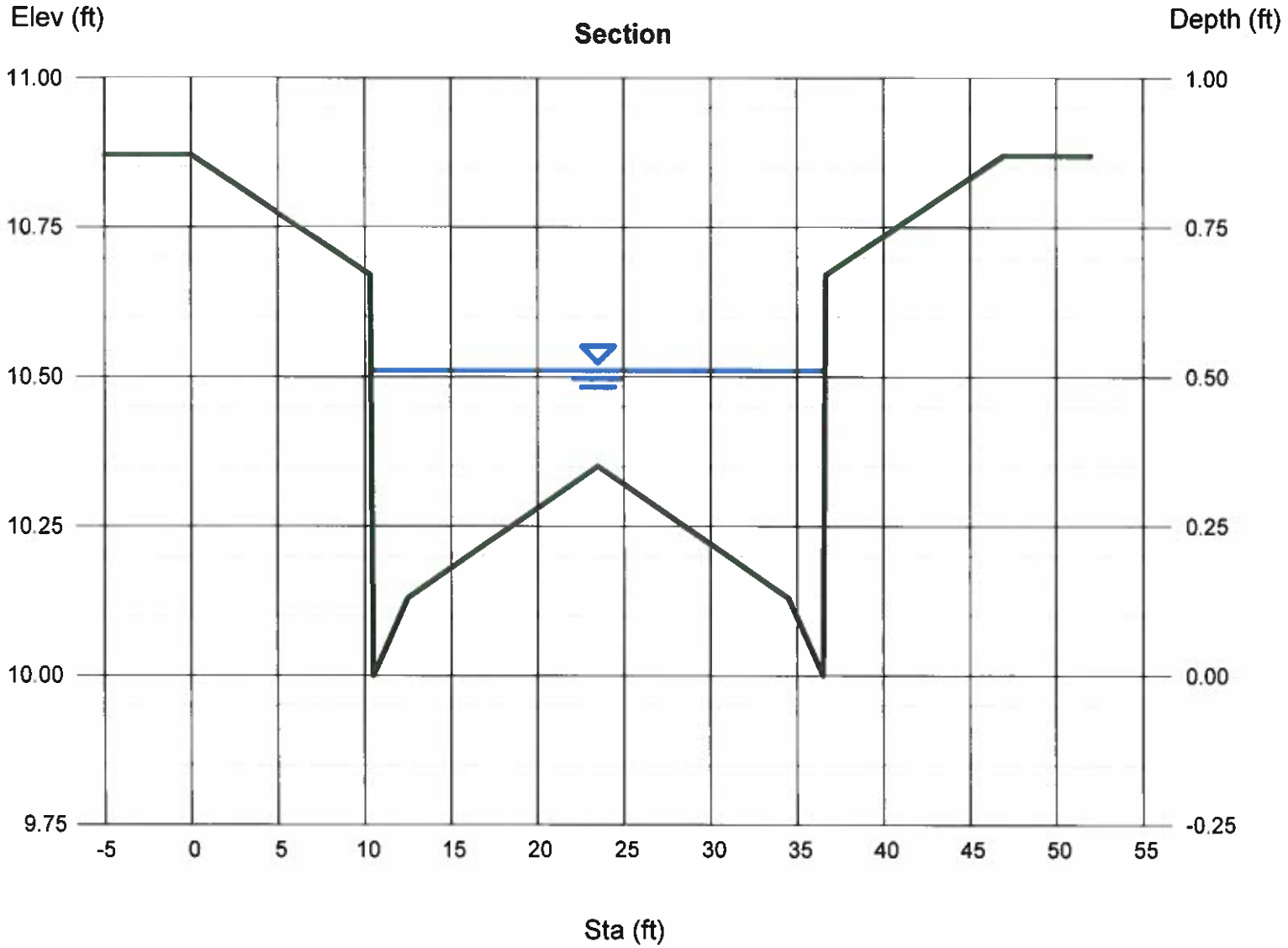
Hydraflow Express Extension for Autodesk® AutoCAD® Civil 3D® by Autodesk, Inc. Thursday, Dec 28 2017

Tyler Peak-26-Std-0.8% (2)

User-defined		Highlighted	
Invert Elev (ft)	= 10.00	Depth (ft)	= 0.51
Slope (%)	= 0.80	Q (cfs)	= 25.26
N-Value	= 0.017	Area (sqft)	= 7.79
		Velocity (ft/s)	= 3.24
Calculations		Wetted Perim (ft)	= 27.07
Compute by:	Known Q	Crit Depth, Yc (ft)	= 0.52
Known Q (cfs)	= 25.26	Top Width (ft)	= 26.26
		EGL (ft)	= 0.67

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

(0.00, 10.87)-(10.33, 10.67, 0.017)-(10.50, 10.00, 0.017)-(12.50, 10.13, 0.017)-(23.50, 10.35, 0.017)-(34.50, 10.13, 0.017)-(36.50, 10.00, 0.017)
-(36.67, 10.67, 0.017)-(47.00, 10.87, 0.017)



Channel Report

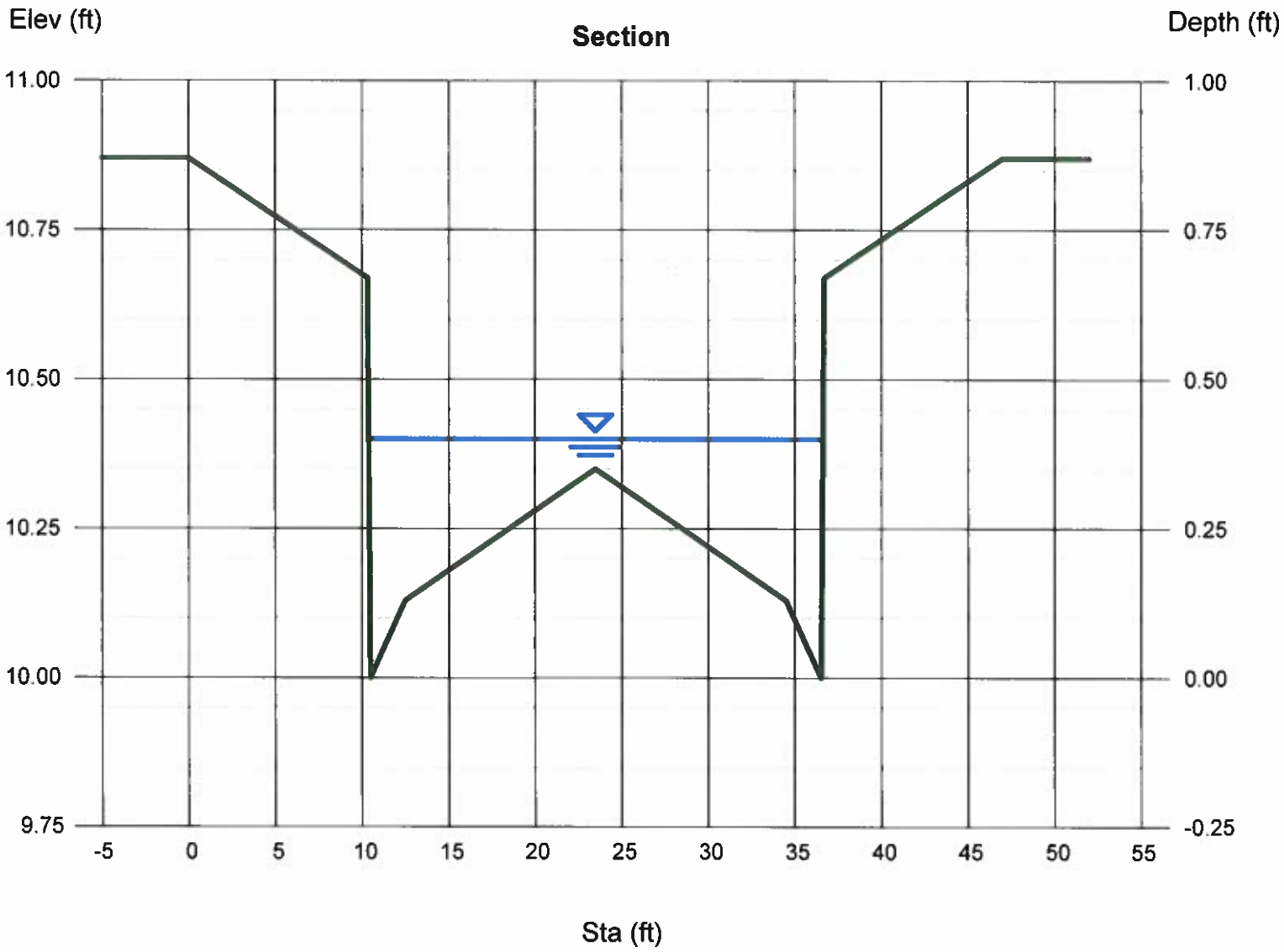
Hydraflow Express Extension for Autodesk® AutoCAD® Civil 3D® by Autodesk, Inc. Friday, Dec 29 2017

West Fork-26-Std-3.15%

User-defined		Highlighted	
Invert Elev (ft)	= 10.00	Depth (ft)	= 0.40
Slope (%)	= 3.15	Q (cfs)	= 22.97
N-Value	= 0.017	Area (sqft)	= 4.90
		Velocity (ft/s)	= 4.69
Calculations		Wetted Perim (ft)	= 26.84
Compute by:	Known Q	Crit Depth, Yc (ft)	= 0.51
Known Q (cfs)	= 22.97	Top Width (ft)	= 26.20
		EGL (ft)	= 0.74

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

(0.00, 10.87)-(10.33, 10.67, 0.017)-(10.50, 10.00, 0.017)-(12.50, 10.13, 0.017)-(23.50, 10.35, 0.017)-(34.50, 10.13, 0.017)-(36.50, 10.00, 0.017) -(36.67, 10.67, 0.017)-(47.00, 10.87, 0.017)



Channel Report

Hydraflow Express Extension for Autodesk® AutoCAD® Civil 3D® by Autodesk, Inc. Wednesday, Jan 3 2018

Winsor Street-26-Std-0.6%

User-defined

Invert Elev (ft)	= 10.00
Slope (%)	= 0.60
N-Value	= 0.017

Calculations

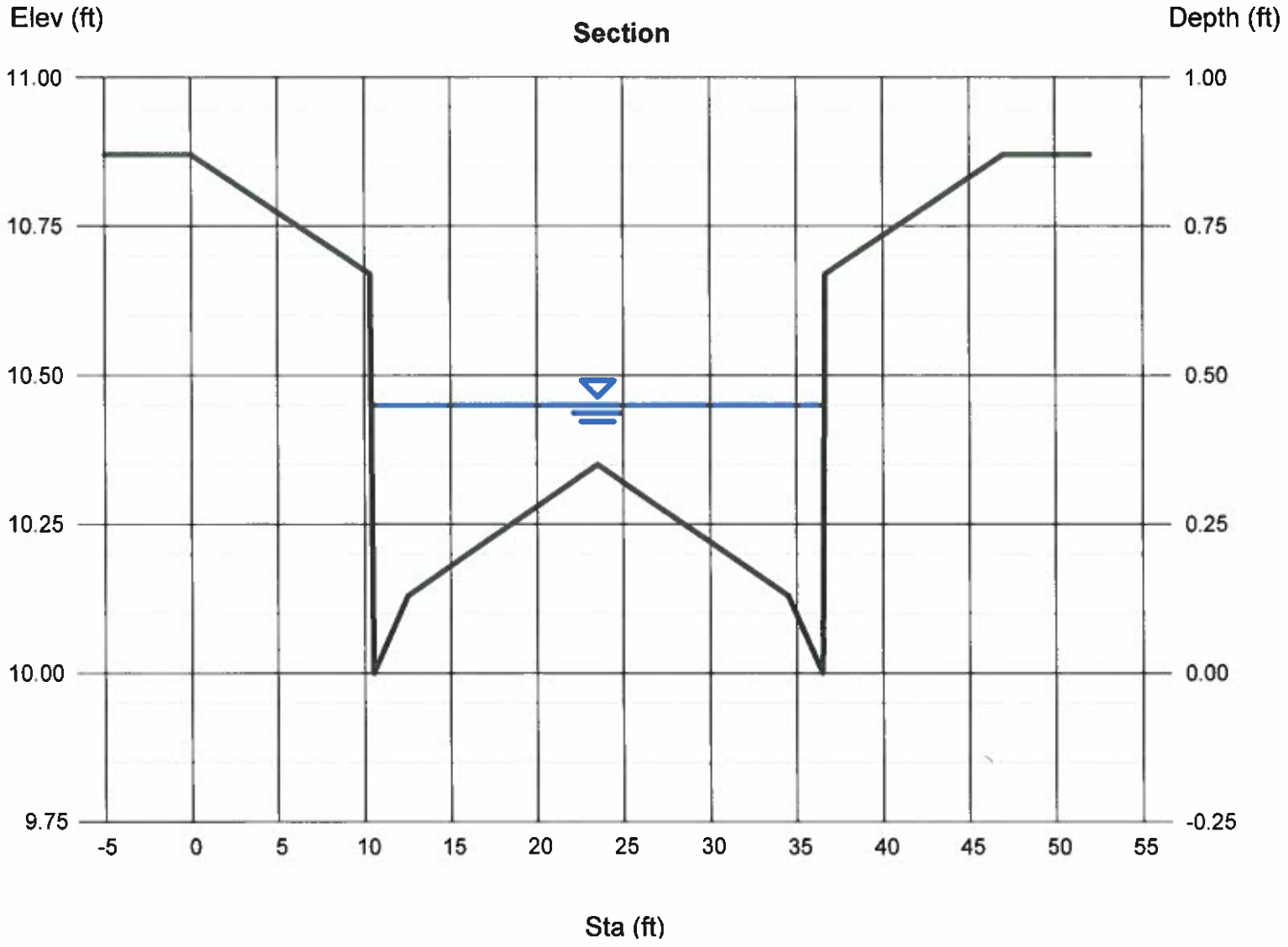
Compute by:	Known Q
Known Q (cfs)	= 15.14

Highlighted

Depth (ft)	= 0.45
Q (cfs)	= 15.14
Area (sqft)	= 6.21
Velocity (ft/s)	= 2.44
Wetted Perim (ft)	= 26.94
Crit Depth, Yc (ft)	= 0.44
Top Width (ft)	= 26.23
EGL (ft)	= 0.54

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

(0.00, 10.87)-(10.33, 10.67, 0.017)-(10.50, 10.00, 0.017)-(12.50, 10.13, 0.017)-(23.50, 10.35, 0.017)-(34.50, 10.13, 0.017)-(36.50, 10.00, 0.017) -(36.67, 10.67, 0.017)-(47.00, 10.87, 0.017)



APPENDIX C – STORM DRAIN DESIGN

Table 3 Storm Drain Analysis Summary
Preliminary Storm Drain Layout Exhibit
Table 4 First Flush Calcs
Pond10 Exhibit
Sump Inlet Calculations
WSPGW Civil design storm analysis printouts

Table 3

Heritage Trails Subdivision							
WSPGW - Storm Drain Analysis							
Storm Drain "C"							
Manhole # - WSPGW Station ID							
Manhole ID	WSPGW Station	Rim Estimate	WSEL	Manhole ID	WSPGW Station	Rim Estimate	WSEL
1A	1207.1	48.82	42.06	11C	2966.8	58.5	56.05
	1217.1				2972.8		
SD Size	78"			SD Size	42"		
2A	1407.4	50.12	45.41	12C	3131.8	59	56.77
	1417.4				3137.8		
SD Size	78"			SD Size	36"		
3A	1594.4	51.62	46.15	13C	3206.8	61.5	59.5
					3210.8		
SD Size	78"			SD Size	36"		
57	1778.9	51.52	48.47	14C	3749.3	76.8	71.5
	1786.9						
SD Size	78"			SD Size	36"		
1C	1816.3	53.3	48.56	15C	4123.3	90	85.27
					4127.3		
SD Size	78"			SD Size	36"		
2C	1905.3	53.3	48.55	16C	4388.3	99	93.69
	1913.3				4392.3		
SD Size	66"			SD Size	30"		
3C	2069.3	54.4	49.18	17C	4454.3	101.5	94.42
	2075.3						
SD Size	66"			SD Size	30"		
4C	2097.3	54.6	49.22	18C	4595.8	103	97.27
	2103.3				4599.8		
SD Size	60"			SD Size	30"		
5C	2150.8	54.8	49.23	19C	4625.8	105.5	
	2156.8						
SD Size	54"			SD Size	30"		
6C	2356.3	56.7	50.72	20C	4898.8	115.2	109.4
	2362.3				4902.8		
SD Size	54"			SD Size	24"		
7C	2612.8	57.9	51.79	21C	5200.8	129.7	124.11
	2618.8				5204.8		
SD Size	48"			SD Size	24"		
8C	2654.3	58.9	52.26	22C	5224.3	129.5	124.89
	2660.3				5228.3		
SD Size	48"			SD Size	24"		
9C	2855.8	59.6	53.93	23C	5409.3	133.3	130.16
	2861.8				5413.3		
SD Size	48"						
10C	2896.8	60.5	54.83				
	2902.8						
SD Size	42"						

F:/projects/17046/Manhole ID Table 17046

Table 3

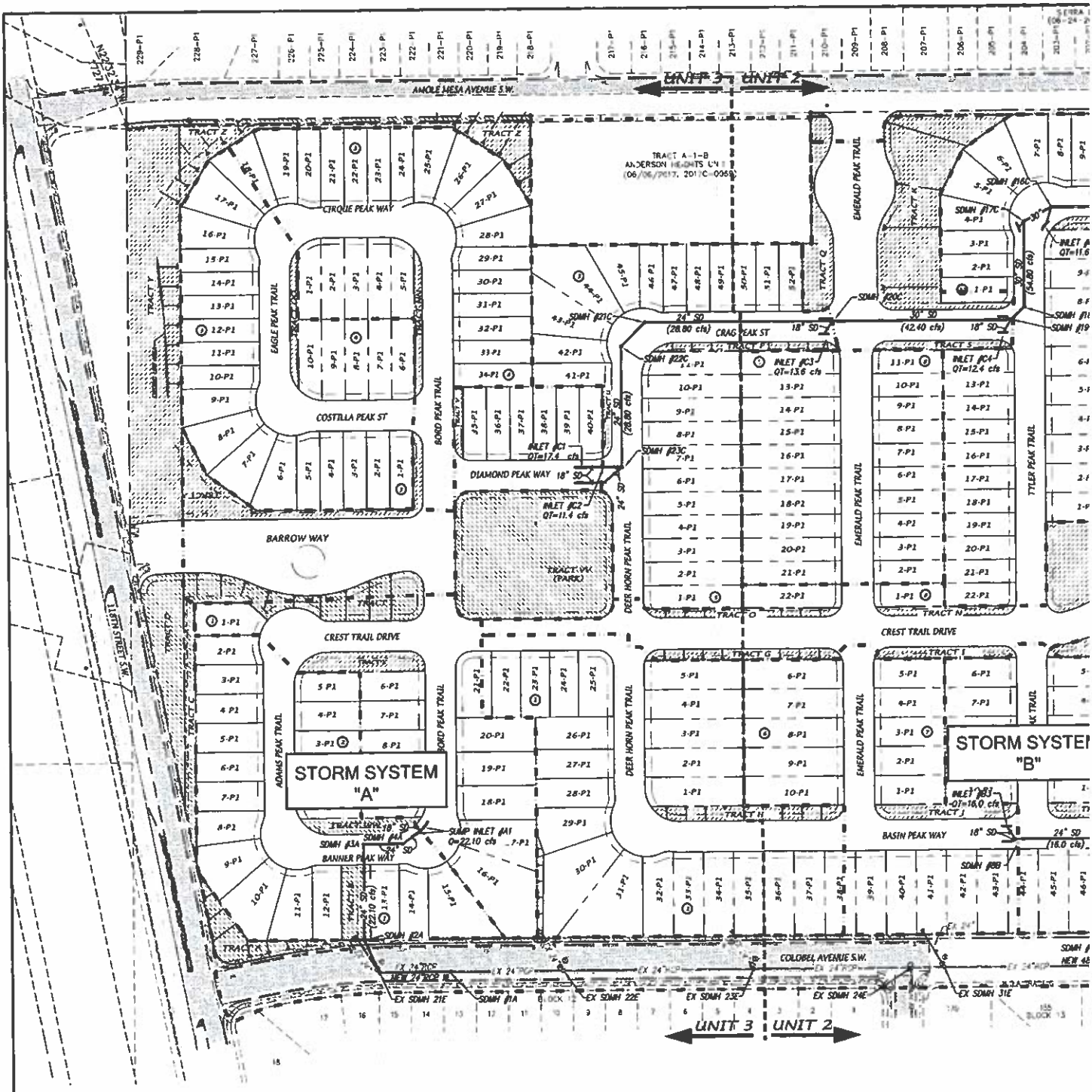
Heritage Trails Subdivision							
WSPGW - Storm Drain Analysis							
Storm Drain B - Basin Peak Way							
Manhole ID	WSPGW Station	Rim Estimate	WSEL	Manhole ID	WSPGW Station	Rim Estimate	WSEL
51E	1000	184.3	177.68	4B	1386.2 1390.2	182.5	181.1
SD Size	48"			SD Size	42"		
1B	1029.6	189.4	177.92	5B	1407.7 1411.7	182.5	180.85
SD Size	48"			SD Size	30"		
2B	1195.6 1199.6	189.5	178.88	6B	1443.2 1447.2	182.8	181.75
SD Size	42"			SD Size	24"		
3B	1313 1317	184.3	180.01	7B	1847.2	185.8	182.81
SD Size	42"						

f:/projects/17046/Manhole ID Table-Basin Peak 17046

Table 3

Heritage Trails Subdivision							
WSPGW - Storm Drain Analysis							
Colobel Storm Drain							
Manhole # - WSPGW Station ID							
Manhole ID	WSPGW Station	Rim Estimate	WSEL	Manhole ID	WSPGW Station	Rim Estimate	WSEL
57	1000	151.52	148.6	52	1943	176.6	170.72
SD Size	36"			SD Size	30"		
58	1032.5	149.2	148.28	51	2162.5	184.3	177.68
SD Size	30"			SD Size	24"		
56	1131.3	151.8	150.81	31	2454.5	195.54	190.02
SD Size	30"			SD Size	24"		
55	1281	155.9	154.57	24	2509.1	197.87	194.62
SD Size	30"			SD Size	24"		
54	1433	160.5	158.39	23	2749.5	206.9	201.26
SD Size	30"			SD Size	24"		
53	1542	164.3	161.16	22	3044.5	220.34	213.48
SD Size	30"			SD Size	24"		
52A	1814	172	166.28	21	3328.7	237.39	230.98
SD Size	30"						

f:/projects/17046/Manhole ID Table-Colobel 17046



LEGEND

- EXISTING SANITARY SEWER MANHOLE
- EXISTING SAS LINE
- EXISTING FIRE HYDRANT
- EXISTING WATER LINE
- EXISTING STORM DRAIN
- EXISTING STORM DRAIN MANHOLE
- NEW RIGHT-OF-WAY
- NEW LOT LINES
- NEW EASEMENTS
- NEW STORM DRAIN INLET
- NEW STORM DRAIN
- NEW STORM DRAIN MANHOLE

```
T1 Heritage Trails                                                                          0
T2 Storm Drain B - Basin Peak Way
T3 File: HT-SD-B.WSW
SO    1000.000 172.250  1                          177.680
R     1029.600 172.350  1       .013                                         .000  45.000 1
R     1195.600 173.350  1       .013                                         .000  45.000 1
JX    1199.600 173.450  3  2    .013   16.000          174.200              -90.0         .000
R     1313.000 174.130  3       .013                                         .000  45.000 1
JX    1317.000 174.230  6  4   5.013    6.650    6.650 175.600 175.600 45.0 45.0          .000
R     1386.200 174.650  6       .013                                         .000  30.000 1
JX    1390.200 174.750  8  7    .013   29.240          176.300               90.0         .000
R     1407.700 174.860  8       .013                                         .000  30.000 1
JX    1411.700 175.360  9       .013
R     1443.200 175.560  9       .013                                         .000    .000 1
JX    1447.200 175.660 12 10 11.013     7.200    7.200 176.800 176.800 90.0 90.0          .000
R     1847.200 178.100 12       .013                                         .000    .000 1
SH    1847.200 178.100 12                          179.800
CD    1   4    1     .000    4.000     .000  .000  .000   .00
CD    2   4    1     .000    2.000     .000  .000  .000   .00
CD    3   4    1     .000    3.500     .000  .000  .000   .00
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CD   10   4    1     .000    1.500     .000  .000  .000   .00
CD   11   4    1     .000    1.500     .000  .000  .000   .00
CD   12   4    1     .000    2.000     .000  .000  .000   .00
Q               11.600   .0
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Program Package Serial Number: 1454

WATER SURFACE PROFILE LISTING Date: 1-15-2018 Time:11:30: 7

Heritage Trails
Storm Drain B - Basin Peak Way
File: HT-SD-B.WSW

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
1000.000	172.250	5.430	177.680	84.54	6.73	.70	178.38	.00	2.79	.00	4.000	.000	.00	1 .0
29.600	.0034					.0035	.10	5.43	.00	3.33	.013	.00	.00	PIPE
1029.600	172.350	5.572	177.922	84.54	6.73	.70	178.62	.00	2.79	.00	4.000	.000	.00	1 .0
166.000	.0060					.0035	.57	5.57	.00	2.60	.013	.00	.00	PIPE
1195.600	173.350	5.287	178.637	84.54	6.73	.70	179.34	.00	2.79	.00	4.000	.000	.00	1 .0
JUNCT STR	.0250					.0041	.02	5.29	.00		.013	.00	.00	PIPE
1199.600	173.450	5.428	178.878	68.54	7.12	.79	179.67	.00	2.59	.00	3.500	.000	.00	1 .0
113.400	.0060					.0046	.53	5.43	.00	2.55	.013	.00	.00	PIPE
1313.000	174.130	5.431	179.561	68.54	7.12	.79	180.35	.00	2.59	.00	3.500	.000	.00	1 .0
JUNCT STR	.0250					.0038	.02	5.43	.00		.013	.00	.00	PIPE
1317.000	174.230	5.784	180.014	55.24	5.74	.51	180.53	.00	2.33	.00	3.500	.000	.00	1 .0
69.200	.0061					.0030	.21	5.78	.00	2.17	.013	.00	.00	PIPE
1386.200	174.650	5.649	180.299	55.24	5.74	.51	180.81	.00	2.33	.00	3.500	.000	.00	1 .0
JUNCT STR	.0250					.0018	.01	5.65	.00		.013	.00	.00	PIPE
1390.200	174.750	6.353	181.103	26.00	2.70	.11	181.22	.00	1.57	.00	3.500	.000	.00	1 .0
17.500	.0063					.0007	.01	6.35	.00	1.37	.013	.00	.00	PIPE
1407.700	174.860	6.272	181.132	26.00	2.70	.11	181.25	.00	1.57	.00	3.500	.000	.00	1 .0
JUNCT STR	.1250					.0023	.01	6.27	.00		.013	.00	.00	PIPE

Heritage Trails
Storm Drain B - Basin Peak Way
File: HT-SD-B.WSW

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1411.700	175.360	5.493	180.853	26.00	5.30	.44	181.29	.00	1.74	.00	2.500	.000	.00	1 .0
31.500	.0063					.0040	.13	5.49	.00	1.68	.013	.00	.00	PIPE
1443.200	175.560	5.441	181.001	26.00	5.30	.44	181.44	.00	1.74	.00	2.500	.000	.00	1 .0
JUNCT STR	.0250					.0033	.01	5.44	.00		.013	.00	.00	PIPE
1447.200	175.660	6.087	181.747	11.60	3.69	.21	181.96	.00	1.22	.00	2.000	.000	.00	1 .0
400.000	.0061					.0026	1.05	6.09	.00	1.18	.013	.00	.00	PIPE
1847.200	178.100	4.709	182.809	11.60	3.69	.21	183.02	.00	1.22	.00	2.000	.000	.00	1 .0

```
T1 Heritage Trails                                                                 0
T2 Grass Mtn-South Peak
T3 File: HTrails-SD-A-2.WSW  Revised 1-12-18
SO    1000.000  34.000  1                                  37.310
TS    1008.000  34.100  2      .014                                                .000
JX    1008.100  34.150  3      .013
R     1207.100  35.100  3      .013                                                .000     .000 1
JX    1217.100  35.200  6   4  5.013   18.380    18.380  41.100  39.300 45.0 90.0     .000
R     1407.400  36.500  6      .013                                                .000     .000 1
JX    1417.400  36.600  8   7  .013  102.400             40.370         90.0          .000
R     1594.400  37.000  8      .013                                                .000   17.000 1
R     1778.900  38.080  8      .013                                                .000  -17.000 1
JX    1786.900  38.180  8   9  .013  110.860             40.080         90.0          .000
R     1816.300  39.250  8      .013                                                .000  -10.000 1
R     1905.300  39.780  8      .013                                                .000     .000 1
JX    1913.300  40.780 12 11   .013   18.510             44.280         90.0          .000
R     2069.300  41.720 12      .013                                                .000     .000 1
JX    2075.300  41.820 14 13   .013   10.000             45.320         45.0          .000
R     2097.300  41.950 14      .013                                                .000     .000 1
JX    2103.300  42.450 16 15   .013   12.000             43.950        -90.0          .000
R     2150.800  42.740 16      .013                                                .000     .000 1
JX    2156.800  43.240 19 17 18.013    4.300     4.300  45.940  45.940 45.0 45.0     .000
R     2356.300  44.440 19      .013                                                .000     .000 1
JX    2362.300  44.540 21 20   .013   10.000             47.040        -90.0          .000
R     2612.800  46.040 21      .013                                                .000   16.000 1
JX    2618.800  46.540 23 22   .013    9.200             48.740        -90.0          .000
R     2654.300  46.750 23      .013                                                .000   16.000 1
JX    2660.300  46.850 24      .013
R     2855.800  48.020 24      .013                                                .000  -16.000 1
JX    2861.800  48.120 25      .013
R     2896.800  48.330 25      .013                                                .000   16.000 1
JX    2902.800  48.830 28 26 27.013   10.600    14.200  50.330  50.330-90.0-45.0     .000
R     2966.800  49.210 29      .013                                                .000     .000 1
JX    2972.800  49.310 31 30   .013    8.000             51.310         45.0          .000
R     3131.800  50.260 31      .013                                                .000  -90.000 1
JX    3137.800  50.760 32      .013
R     3206.800  54.500 32      .013                                                .000     .000 1
JX    3210.800  54.600 35 33 34.013    6.800     6.800  56.000  56.000-10.0 45.0     .000
R     3749.300  69.800 35      .013                                                .000     .000 1
R     4123.300  83.500 35      .013                                                .000     .000 1
JX    4127.300  83.600 37 36   .013   11.600             84.100         30.0          .000
R     4388.300  91.100 37      .013                                                .000   45.000 1
JX    4392.300  91.600 39 38   .013   11.600             92.000         80.0          .000
R     4454.300  92.500 39      .013                                                .000   45.000 1
R     4595.800  95.500 39      .013                                                .000   90.000 1
JX    4599.800  96.000 41 40   .013   12.400             99.000         45.0          .000
R     4898.800 108.200 41      .013                                                .000     .000 1
JX    4902.800 108.300 43 42   .013   13.600            108.200         45.0          .000
R     5200.800 122.500 43      .013                                                .000   45.000 1
JX    5204.800 122.600 44      .013
R     5224.300 123.100 44      .013                                                .000   45.000 1
JX    5228.300 123.200 45      .013
R     5409.300 126.000 45      .013                                                .000   90.000 1
JX    5413.300 126.100 48 46 47.013   14.400    14.400 126.100 126.100 90.0 45.0     .000
SH    5413.300 126.100 48                                 126.100
CD    1   2    0     .000  13.000     7.500  .000  .000  -.01
CD    2   2    0     .000   7.500     7.500  .000  .000  -.01
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CD  33  4   1     .000    1.500      .000  .000  .000   .00
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CD  43  4   1     .000    2.000      .000  .000  .000   .00
CD  44  4   1     .000    2.000      .000  .000  .000   .00
CD  45  4   1     .000    2.000      .000  .000  .000   .00
CD  46  4   1     .000    2.000      .000  .000  .000   .00
CD  47  4   1     .000    2.000      .000  .000  .000   .00
CD  48  4   1     .000    2.000      .000  .000  .000   .00
Q                .001    .0
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Program Package Serial Number: 1454

WATER SURFACE PROFILE LISTING Date: 1-12-2018 Time: 9: 4:24

Heritage Trails
Grass Mtn-South Peak
File: HTrails-SD-A-2.WSW Revised 1-12-18

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1000.000	34.000	3.043	37.043	442.73	19.40	5.85	42.89	.00	4.77	7.50	13.000	7.500	.00	0 .0
TRANS STR	.0125					.0169	.13	3.04	1.96		.014	-.01	.00	RECTANG
1008.000	34.100	3.025	37.125	442.73	19.52	5.92	43.04	.00	4.77	7.50	7.500	7.500	.00	0 .0
JUNCT STR	.5002					.0107	.00	3.02	1.98		.013	.00	.00	RECTANG
---------- WARNING - Junction Analysis - Change in Channel Type ----------														
1008.100	34.150	5.569	39.719	442.73	14.63	3.32	43.04	.00	5.57	4.55	6.500	.000	.00	1 .0
32.607	.0048					.0064	.21	5.57	1.00	6.50	.013	.00	.00	PIPE
1040.707	34.306	5.925	40.231	442.73	13.95	3.02	43.25	.00	5.57	3.69	6.500	.000	.00	1 .0
166.393	.0048					.0064	1.07	5.93	.84	6.50	.013	.00	.00	PIPE
1207.100	35.100	6.451	41.551	442.73	13.36	2.77	44.32	.00	5.57	1.12	6.500	.000	.00	1 .0
JUNCT STR	.0100					.0063	.06	6.45	.43		.013	.00	.00	PIPE
1217.100	35.200	6.861	42.061	405.97	12.23	2.32	44.39	.00	5.37	.00	6.500	.000	.00	1 .0
190.300	.0068					.0060	1.14	6.86	.00	4.99	.013	.00	.00	PIPE
1407.400	36.500	6.818	43.318	405.97	12.23	2.32	45.64	.00	5.37	.00	6.500	.000	.00	1 .0
JUNCT STR	.0100					.0047	.05	6.82	.00		.013	.00	.00	PIPE
1417.400	36.600	8.814	45.414	303.57	9.15	1.30	46.71	.00	4.68	.00	6.500	.000	.00	1 .0
177.000	.0023					.0034	.59	8.81	.00	6.50	.013	.00	.00	PIPE

Heritage Trails
Grass Mtn-South Peak
File: HTrails-SD-A-2.WSW Revised 1-12-18

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1594.400	37.000	9.145	46.145	303.57	9.15	1.30	47.44	.00	4.68	.00	6.500	.000	.00	1 .0
184.500	.0059					.0034	.62	9.15	.00	4.23	.013	.00	.00	PIPE
1778.900	38.080	8.822	46.902	303.57	9.15	1.30	48.20	.00	4.68	.00	6.500	.000	.00	1 .0
JUNCT STR	.0125					.0024	.02	8.82	.00		.013	.00	.00	PIPE
1786.900	38.180	10.292	48.472	192.71	5.81	.52	49.00	.00	3.70	.00	6.500	.000	.00	1 .0
29.400	.0364					.0014	.04	10.29	.00	1.93	.013	.00	.00	PIPE
1816.300	39.250	9.306	48.556	192.71	5.81	.52	49.08	.00	3.70	.00	6.500	.000	.00	1 .0
89.000	.0060					.0014	.12	9.31	.00	3.16	.013	.00	.00	PIPE
1905.300	39.780	8.922	48.702	192.71	5.81	.52	49.23	.00	3.70	.00	6.500	.000	.00	1 .0
JUNCT STR	.1250					.0020	.02	8.92	.00		.013	.00	.00	PIPE
1913.300	40.780	7.766	48.546	174.20	7.33	.83	49.38	.00	3.69	.00	5.500	.000	.00	1 .0
156.000	.0060					.0027	.42	7.77	.00	3.29	.013	.00	.00	PIPE
2069.300	41.720	7.287	49.007	174.20	7.33	.83	49.84	.00	3.69	.00	5.500	.000	.00	1 .0
JUNCT STR	.0167					.0025	.02	7.29	.00		.013	.00	.00	PIPE
2075.300	41.820	7.359	49.179	164.20	6.91	.74	49.92	.00	3.58	.00	5.500	.000	.00	1 .0
22.000	.0059					.0024	.05	7.36	.00	3.19	.013	.00	.00	PIPE
2097.300	41.950	7.319	49.269	164.20	6.91	.74	50.01	.00	3.58	.00	5.500	.000	.00	1 .0
JUNCT STR	.0833					.0029	.02	7.32	.00		.013	.00	.00	PIPE

Program Package Serial Number: 1454

WATER SURFACE PROFILE LISTING Date: 1-12-2018 Time: 9: 4:24

Heritage Trails
Grass Mtn-South Peak
File: HTrails-SD-A-2.WSW Revised 1-12-18

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip Type Ch
2103.300	42.450	6.772	49.222	152.20	7.75	.93	50.16	.00	3.54	.00	5.000	.000	.00	1 .0
47.500	.0061					.0034	.16	6.77	.00	3.22	.013	.00	.00	PIPE
2150.800	42.740	6.691	49.431	152.20	7.75	.93	50.36	.00	3.54	.00	5.000	.000	.00	1 .0
JUNCT STR	.0833					.0044	.03	6.69	.00		.013	.00	.00	PIPE
2156.800	43.240	5.987	49.227	143.60	9.03	1.27	50.49	.00	3.52	.00	4.500	.000	.00	1 .0
199.500	.0060					.0053	1.06	5.99	.00	3.47	.013	.00	.00	PIPE
2356.300	44.440	5.914	50.354	143.60	9.03	1.27	51.62	.00	3.52	.00	4.500	.000	.00	1 .0
JUNCT STR	.0167					.0050	.03	5.91	.00		.013	.00	.00	PIPE
2362.300	44.540	6.184	50.724	133.60	8.40	1.10	51.82	.00	3.40	.00	4.500	.000	.00	1 .0
250.500	.0060					.0046	1.16	6.18	.00	3.27	.013	.00	.00	PIPE
2612.800	46.040	5.953	51.993	133.60	8.40	1.10	53.09	.00	3.40	.00	4.500	.000	.00	1 .0
JUNCT STR	.0833					.0061	.04	5.95	.00		.013	.00	.00	PIPE
2618.800	46.540	5.251	51.791	124.40	9.90	1.52	53.31	.00	3.35	.00	4.000	.000	.00	1 .0
35.500	.0059					.0075	.27	5.25	.00	4.00	.013	.00	.00	PIPE
2654.300	46.750	5.464	52.214	124.40	9.90	1.52	53.74	.00	3.35	.00	4.000	.000	.00	1 .0
JUNCT STR	.0167					.0075	.05	5.46	.00		.013	.00	.00	PIPE
2660.300	46.850	5.409	52.259	124.40	9.90	1.52	53.78	.00	3.35	.00	4.000	.000	.00	1 .0
195.500	.0060					.0075	1.47	5.41	.00	4.00	.013	.00	.00	PIPE

Heritage Trails
Grass Mtn-South Peak
File: HTrails-SD-A-2.WSW Revised 1-12-18

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
2855.800	48.020	5.862	53.882	124.40	9.90	1.52	55.40	.00	3.35	.00	4.000	.000	.00	1 .0
JUNCT STR	.0167					.0075	.05	5.86	.00		.013	.00	.00	PIPE
2861.800	48.120	5.807	53.927	124.40	9.90	1.52	55.45	.00	3.35	.00	4.000	.000	.00	1 .0
35.000	.0060					.0075	.26	5.81	.00	4.00	.013	.00	.00	PIPE
2896.800	48.330	6.016	54.346	124.40	9.90	1.52	55.87	.00	3.35	.00	4.000	.000	.00	1 .0
JUNCT STR	.0833					.0087	.05	6.02	.00		.013	.00	.00	PIPE
2902.800	48.830	6.002	54.832	99.60	10.35	1.66	56.50	.00	3.06	.00	3.500	.000	.00	1 .0
64.000	.0059					.0098	.63	6.00	.00	3.50	.013	.00	.00	PIPE
2966.800	49.210	6.332	55.542	99.60	10.35	1.66	57.21	.00	3.06	.00	3.500	.000	.00	1 .0
JUNCT STR	.0167					.0090	.05	6.33	.00		.013	.00	.00	PIPE
2972.800	49.310	6.742	56.052	91.60	9.52	1.41	57.46	.00	2.97	.00	3.500	.000	.00	1 .0
159.000	.0060					.0083	1.32	6.74	.00	3.50	.013	.00	.00	PIPE
3131.800	50.260	7.599	57.859	91.60	9.52	1.41	59.27	.00	2.97	.00	3.500	.000	.00	1 .0
JUNCT STR	.0833					.0136	.08	7.60	.00		.013	.00	.00	PIPE
3137.800	50.760	6.008	56.768	91.60	12.96	2.61	59.38	.00	2.86	.00	3.000	.000	.00	1 .0
69.000	.0542					.0189	1.30	6.01	.00	1.66	.013	.00	.00	PIPE
3206.800	54.500	3.700	58.200	91.60	12.96	2.61	60.81	.00	2.86	.00	3.000	.000	.00	1 .0
JUNCT STR	.0250					.0163	.07	3.70	.00		.013	.00	.00	PIPE

Heritage Trails
Grass Mtn-South Peak
File: HTrails-SD-A-2.WSW Revised 1-12-18

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
3210.800	54.600	4.904	59.504	78.00	11.03	1.89	61.39	.00	2.75	.00	3.000	.000	.00	1 .0
55.663	.0282					.0137	.76	4.90	.00	1.84	.013	.00	.00	PIPE
3266.463	56.171	4.103	60.274	78.00	11.03	1.89	62.16	.00	2.75	.00	3.000	.000	.00	1 .0
HYDRAULIC JUMP														
3266.463	56.171	1.843	58.014	78.00	17.13	4.56	62.57	.00	2.75	2.92	3.000	.000	.00	1 .0
2.347	.0282					.0282	.07	1.84	2.42	1.84	.013	.00	.00	PIPE
3268.810	56.237	1.843	58.080	78.00	17.13	4.56	62.64	.00	2.75	2.92	3.000	.000	.00	1 .0
211.723	.0282					.0283	5.99	1.84	2.42	1.84	.013	.00	.00	PIPE
3480.533	62.214	1.839	64.053	78.00	17.17	4.58	68.63	.00	2.75	2.92	3.000	.000	.00	1 .0
195.213	.0282					.0302	5.90	1.84	2.43	1.84	.013	.00	.00	PIPE
3675.746	67.724	1.767	69.491	78.00	18.00	5.03	74.52	.00	2.75	2.95	3.000	.000	.00	1 .0
73.554	.0282					.0341	2.51	1.77	2.62	1.84	.013	.00	.00	PIPE
3749.300	69.800	1.699	71.499	78.00	18.88	5.54	77.04	.00	2.75	2.97	3.000	.000	.00	1 .0
149.097	.0366					.0353	5.26	1.70	2.82	1.69	.013	.00	.00	PIPE
3898.397	75.262	1.728	76.990	78.00	18.50	5.31	82.30	.00	2.75	2.97	3.000	.000	.00	1 .0
97.239	.0366					.0324	3.15	1.73	2.73	1.69	.013	.00	.00	PIPE
3995.636	78.824	1.798	80.622	78.00	17.64	4.83	85.45	.00	2.75	2.94	3.000	.000	.00	1 .0
45.913	.0366					.0287	1.32	1.80	2.53	1.69	.013	.00	.00	PIPE

Heritage Trails
Grass Mtn-South Peak
File: HTrails-SD-A-2.WSW Revised 1-12-18

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
4041.549	80.505	1.871	82.376	78.00	16.82	4.39	86.77	.00	2.75	2.91	3.000	.000	.00	1 .0
28.510	.0366					.0254	.72	1.87	2.35	1.69	.013	.00	.00	PIPE
4070.060	81.550	1.950	83.500	78.00	16.03	3.99	87.49	.00	2.75	2.86	3.000	.000	.00	1 .0
19.827	.0366					.0226	.45	1.95	2.17	1.69	.013	.00	.00	PIPE
4089.886	82.276	2.034	84.310	78.00	15.29	3.63	87.94	.00	2.75	2.80	3.000	.000	.00	1 .0
14.504	.0366					.0201	.29	2.03	2.00	1.69	.013	.00	.00	PIPE
4104.391	82.807	2.124	84.931	78.00	14.58	3.30	88.23	.00	2.75	2.73	3.000	.000	.00	1 .0
10.856	.0366					.0179	.19	2.12	1.83	1.69	.013	.00	.00	PIPE
4115.247	83.205	2.221	85.426	78.00	13.90	3.00	88.43	.00	2.75	2.63	3.000	.000	.00	1 .0
8.053	.0366					.0161	.13	2.22	1.68	1.69	.013	.00	.00	PIPE
4123.300	83.500	2.328	85.828	78.00	13.25	2.73	88.55	.00	2.75	2.50	3.000	.000	.00	1 .0
JUNCT STR	.0250					.0214	.09	2.33	1.52		.013	.00	.00	PIPE
4127.300	83.600	1.673	85.273	66.40	16.39	4.17	89.44	.00	2.61	2.98	3.000	.000	.00	1 .0
65.548	.0287					.0271	1.78	1.67	2.48	1.65	.013	.00	.00	PIPE
4192.848	85.484	1.694	87.178	66.40	16.13	4.04	91.22	.00	2.61	2.97	3.000	.000	.00	1 .0
79.596	.0287					.0250	1.99	1.69	2.42	1.65	.013	.00	.00	PIPE
4272.443	87.771	1.762	89.533	66.40	15.38	3.67	93.21	.00	2.61	2.95	3.000	.000	.00	1 .0
39.540	.0287					.0221	.87	1.76	2.24	1.65	.013	.00	.00	PIPE

Heritage Trails
Grass Mtn-South Peak
File: HTrails-SD-A-2.WSW Revised 1-12-18

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
4311.983	88.907	1.833	90.740	66.40	14.66	3.34	94.08	.00	2.61	2.93	3.000	.000	.00	1 .0
24.699	.0287					.0196	.48	1.83	2.08	1.65	.013	.00	.00	PIPE
4336.682	89.617	1.910	91.527	66.40	13.98	3.04	94.56	.00	2.61	2.89	3.000	.000	.00	1 .0
17.142	.0287					.0174	.30	1.91	1.92	1.65	.013	.00	.00	PIPE
4353.824	90.109	1.991	92.100	66.40	13.33	2.76	94.86	.00	2.61	2.83	3.000	.000	.00	1 .0
12.396	.0287					.0154	.19	1.99	1.77	1.65	.013	.00	.00	PIPE
4366.220	90.466	2.077	92.543	66.40	12.71	2.51	95.05	.00	2.61	2.77	3.000	.000	.00	1 .0
8.954	.0287					.0138	.12	2.08	1.63	1.65	.013	.00	.00	PIPE
4375.174	90.723	2.171	92.894	66.40	12.12	2.28	95.17	.00	2.61	2.68	3.000	.000	.00	1 .0
6.416	.0287					.0123	.08	2.17	1.49	1.65	.013	.00	.00	PIPE
4381.589	90.907	2.273	93.180	66.40	11.56	2.07	95.25	.00	2.61	2.57	3.000	.000	.00	1 .0
4.331	.0287					.0111	.05	2.27	1.36	1.65	.013	.00	.00	PIPE
4385.920	91.032	2.385	93.417	66.40	11.02	1.89	95.30	.00	2.61	2.42	3.000	.000	.00	1 .0
2.379	.0287					.0100	.02	2.39	1.23	1.65	.013	.00	.00	PIPE
4388.300	91.100	2.512	93.612	66.40	10.51	1.71	95.33	.00	2.61	2.21	3.000	.000	.00	1 .0
JUNCT STR	.1250					.0134	.05	2.51	1.10		.013	.00	.00	PIPE
4392.300	91.600	2.092	93.692	54.80	12.49	2.42	96.11	.00	2.35	1.85	2.500	.000	.00	1 .0
28.498	.0145					.0178	.51	2.09	1.43	2.50	.013	.00	.00	PIPE

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WATER SURFACE PROFILE LISTING Date: 1-12-2018 Time: 9: 4:24

Heritage Trails
Grass Mtn-South Peak
File: HTrails-SD-A-2.WSW Revised 1-12-18

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
4420.798	92.014	2.015	94.029	54.80	12.92	2.59	96.62	.00	2.35	1.98	2.500	.000	.00	1 .0
33.502	.0145					.0194	.65	2.02	1.56	2.50	.013	.00	.00	PIPE
4454.300	92.500	1.919	94.419	54.80	13.55	2.85	97.27	.00	2.35	2.11	2.500	.000	.00	1 .0
70.295	.0212					.0198	1.39	1.92	1.73	1.89	.013	.00	.00	PIPE
4524.595	93.990	1.974	95.964	54.80	13.18	2.70	98.66	.00	2.35	2.04	2.500	.000	.00	1 .0
48.468	.0212					.0183	.89	1.97	1.63	1.89	.013	.00	.00	PIPE
4573.063	95.018	2.078	97.096	54.80	12.56	2.45	99.55	.00	2.35	1.87	2.500	.000	.00	1 .0
22.737	.0212					.0167	.38	2.08	1.45	1.89	.013	.00	.00	PIPE
4595.800	95.500	2.200	97.700	54.80	11.98	2.23	99.93	.00	2.35	1.63	2.500	.000	.00	1 .0
JUNCT STR	.1250					.0283	.11	2.20	1.26		.013	.00	.00	PIPE
4599.800	96.000	1.269	97.269	42.40	16.94	4.46	101.73	.00	2.18	2.50	2.500	.000	.00	1 .0
126.929	.0408					.0394	5.00	1.27	2.98	1.27	.013	.00	.00	PIPE
4726.729	101.179	1.292	102.471	42.40	16.55	4.25	106.73	.00	2.18	2.50	2.500	.000	.00	1 .0
68.425	.0408					.0359	2.46	1.29	2.88	1.27	.013	.00	.00	PIPE
4795.154	103.971	1.342	105.313	42.40	15.78	3.87	109.18	.00	2.18	2.49	2.500	.000	.00	1 .0
32.635	.0408					.0317	1.03	1.34	2.68	1.27	.013	.00	.00	PIPE
4827.790	105.303	1.395	106.698	42.40	15.05	3.52	110.21	.00	2.18	2.48	2.500	.000	.00	1 .0
20.523	.0408					.0280	.57	1.40	2.49	1.27	.013	.00	.00	PIPE

Heritage Trails
Grass Mtn-South Peak
File: HTrails-SD-A-2.WSW Revised 1-12-18

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
4848.313	106.140	1.451	107.591	42.40	14.35	3.20	110.79	.00	2.18	2.47	2.500	.000	.00	1 .0
14.457	.0408					.0247	.36	1.45	2.31	1.27	.013	.00	.00	PIPE
4862.770	106.730	1.509	108.239	42.40	13.68	2.91	111.15	.00	2.18	2.45	2.500	.000	.00	1 .0
10.631	.0408					.0219	.23	1.51	2.14	1.27	.013	.00	.00	PIPE
4873.400	107.164	1.572	108.736	42.40	13.04	2.64	111.38	.00	2.18	2.42	2.500	.000	.00	1 .0
8.140	.0408					.0194	.16	1.57	1.98	1.27	.013	.00	.00	PIPE
4881.540	107.496	1.638	109.134	42.40	12.44	2.40	111.54	.00	2.18	2.38	2.500	.000	.00	1 .0
6.253	.0408					.0172	.11	1.64	1.83	1.27	.013	.00	.00	PIPE
4887.793	107.751	1.709	109.460	42.40	11.86	2.18	111.64	.00	2.18	2.33	2.500	.000	.00	1 .0
4.814	.0408					.0154	.07	1.71	1.69	1.27	.013	.00	.00	PIPE
4892.608	107.947	1.785	109.732	42.40	11.31	1.98	111.72	.00	2.18	2.26	2.500	.000	.00	1 .0
3.636	.0408					.0137	.05	1.79	1.55	1.27	.013	.00	.00	PIPE
4896.244	108.096	1.867	109.963	42.40	10.78	1.80	111.77	.00	2.18	2.17	2.500	.000	.00	1 .0
2.556	.0408					.0123	.03	1.87	1.41	1.27	.013	.00	.00	PIPE
4898.800	108.200	1.958	110.158	42.40	10.28	1.64	111.80	.00	2.18	2.06	2.500	.000	.00	1 .0
JUNCT STR	.0250					.0297	.12	1.96	1.28		.013	.00	.00	PIPE
4902.800	108.300	1.097	109.397	28.80	16.32	4.14	113.53	.00	1.84	1.99	2.000	.000	.00	1 .0
51.818	.0477					.0476	2.47	1.10	3.05	1.10	.013	.00	.00	PIPE

Program Package Serial Number: 1454

WATER SURFACE PROFILE LISTING Date: 1-12-2018 Time: 9: 4:24

Heritage Trails
Grass Mtn-South Peak
File: HTrails-SD-A-2.WSW Revised 1-12-18

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
4954.618	110.769	1.097	111.866	28.80	16.32	4.14	116.00	.00	1.84	1.99	2.000	.000	.00	1 .0
118.741	.0477					.0460	5.47	1.10	3.05	1.10	.013	.00	.00	PIPE
5073.359	116.427	1.121	117.548	28.80	15.89	3.92	121.47	.00	1.84	1.99	2.000	.000	.00	1 .0
53.646	.0477					.0418	2.24	1.12	2.93	1.10	.013	.00	.00	PIPE
5127.005	118.984	1.165	120.149	28.80	15.15	3.56	123.71	.00	1.84	1.97	2.000	.000	.00	1 .0
25.869	.0477					.0370	.96	1.17	2.72	1.10	.013	.00	.00	PIPE
5152.874	120.216	1.213	121.429	28.80	14.44	3.24	124.67	.00	1.84	1.95	2.000	.000	.00	1 .0
16.415	.0477					.0328	.54	1.21	2.52	1.10	.013	.00	.00	PIPE
5169.289	120.998	1.263	122.262	28.80	13.77	2.95	125.21	.00	1.84	1.93	2.000	.000	.00	1 .0
11.543	.0477					.0290	.34	1.26	2.33	1.10	.013	.00	.00	PIPE
5180.832	121.549	1.316	122.865	28.80	13.13	2.68	125.54	.00	1.84	1.90	2.000	.000	.00	1 .0
8.536	.0477					.0258	.22	1.32	2.15	1.10	.013	.00	.00	PIPE
5189.368	121.955	1.373	123.328	28.80	12.52	2.43	125.76	.00	1.84	1.86	2.000	.000	.00	1 .0
6.463	.0477					.0230	.15	1.37	1.98	1.10	.013	.00	.00	PIPE
5195.831	122.263	1.435	123.698	28.80	11.94	2.21	125.91	.00	1.84	1.80	2.000	.000	.00	1 .0
4.969	.0477					.0206	.10	1.44	1.82	1.10	.013	.00	.00	PIPE
5200.800	122.500	1.502	124.002	28.80	11.38	2.01	126.01	.00	1.84	1.73	2.000	.000	.00	1 .0
JUNCT STR	.0250					.0192	.08	1.50	1.66		.013	.00	.00	PIPE

Program Package Serial Number: 1454

WATER SURFACE PROFILE LISTING Date: 1-12-2018 Time: 9: 4:24

Heritage Trails
Grass Mtn-South Peak
File: HTrails-SD-A-2.WSW Revised 1-12-18

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
5204.800	122.600	1.515	124.115	28.80	11.28	1.98	126.09	.00	1.84	1.71	2.000	.000	.00	1 .0
9.040	.0256					.0185	.17	1.52	1.63	1.35	.013	.00	.00	PIPE
5213.840	122.832	1.558	124.390	28.80	10.97	1.87	126.26	.00	1.84	1.66	2.000	.000	.00	1 .0
10.460	.0256					.0171	.18	1.56	1.54	1.35	.013	.00	.00	PIPE
5224.300	123.100	1.638	124.738	28.80	10.46	1.70	126.44	.00	1.84	1.54	2.000	.000	.00	1 .0
JUNCT STR	.0250					.0158	.06	1.64	1.38		.013	.00	.00	PIPE
5228.300	123.200	1.685	124.885	28.80	10.20	1.61	126.50	.00	1.84	1.46	2.000	.000	.00	1 .0
65.623	.0155					.0155	1.02	1.69	1.29	1.69	.013	.00	.00	PIPE
5293.923	124.215	1.685	125.900	28.80	10.20	1.61	127.51	.00	1.84	1.46	2.000	.000	.00	1 .0
88.793	.0155					.0152	1.35	1.69	1.29	1.69	.013	.00	.00	PIPE
5382.716	125.589	1.727	127.316	28.80	9.98	1.55	128.86	.00	1.84	1.37	2.000	.000	.00	1 .0
26.583	.0155					.0145	.39	1.73	1.21	1.69	.013	.00	.00	PIPE
5409.300	126.000	1.843	127.843	28.80	9.52	1.41	129.25	.00	1.84	1.08	2.000	.000	.00	1 .0
JUNCT STR	.0250					.0070	.03	1.84	1.00		.013	.00	.00	PIPE
---------- WARNING - Junction Analysis - Large Lateral Flow(s) ----------														
5413.300	126.100	4.060	130.160	.00	.00	.00	130.16	.00	.01	.00	2.000	.000	.00	1 .0

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T1 Heritage Trails                                                               0
T2 Colobel Storm Drain Revised
T3 File: HT-Colobel-R1.WSW
SO   1000.000 139.540  1                             148.600
R    1026.500 139.950  1      .013                                          .000     .000 1
JX   1032.500 140.000  4  2  3.013     6.150    6.150 141.500 141.500 45.0-45.0     .000
R    1131.300 143.000  4      .013                                          .000     .000 1
R    1281.000 148.000  4      .013                                          .000     .000 1
R    1433.000 152.700  4      .013                                          .000     .000 1
R    1542.000 156.500  4      .013                                          .000     .000 1
R    1808.000 164.320  4      .013                                          .000     .000 1
JX   1814.000 164.500  7  5  6.013     4.900    4.900 165.400 165.400 45.0-45.0     .000
R    1943.000 168.500  7      .013                                          .000     .000 1
R    2156.500 172.150  7      .013                                          .000     .000 1
JX   2162.500 172.250  9  8   .013    84.440          172.250          45.0           .000
R    2454.500 188.600  9      .013                                          .000     .000 1
R    2503.100 190.560  9      .013                                          .000     .000 1
JX   2509.100 190.610 11 10   .013    11.400          190.560         -90.0           .000
R    2749.500 200.290 11      .013                                          .000     .000 1
R    3044.500 212.600 11      .013                                          .000     .000 1
R    3328.700 229.300 11      .013                                          .000   45.000 1
SH   3328.700 229.300 11                             229.300
CD    1  4    2      .000    3.000     .000  .000  .000    .00
CD    2  4    1      .000    1.500     .000  .000  .000    .00
CD    3  4    1      .000    1.500     .000  .000  .000    .00
CD    4  4    2      .000    2.500     .000  .000  .000    .00
CD    5  4    1      .000    1.500     .000  .000  .000    .00
CD    6  4    1      .000    1.500     .000  .000  .000    .00
CD    7  4    2      .000    2.500     .000  .000  .000    .00
CD    8  4    1      .000    3.000     .000  .000  .000    .00
CD    9  4    1      .000    2.000     .000  .000  .000    .00
CD   10  4    1      .000    2.000     .000  .000  .000    .00
CD   11  4    1      .000    2.000     .000  .000  .000    .00
Q            22.100    .0
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Heritage Trails
Colobel Storm Drain Revised
File: HT-Colobel-R1.WSW

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1000.000	139.540	9.060	148.600	140.04	9.91	1.52	150.12	.00	2.66	.00	3.000	.000	.00	2 .0
26.500	.0155					.0110	.29	9.06	.00	2.11	.013	.00	.00	PIPE
1026.500	139.950	9.018	148.968	140.04	9.91	1.52	150.49	.00	2.66	.00	3.000	.000	.00	2 .0
JUNCT STR	.0083					.0176	.11	9.02	.00		.013	.00	.00	PIPE
1032.500	140.000	8.283	148.283	127.74	13.01	2.63	150.91	.00	2.42	.00	2.500	.000	.00	2 .0
98.800	.0304					.0242	2.40	8.28	.00	1.84	.013	.00	.00	PIPE
1131.300	143.000	7.810	150.810	127.74	13.01	2.63	153.44	.00	2.42	.00	2.500	.000	.00	2 .0
149.700	.0334					.0242	3.63	7.81	.00	1.77	.013	.00	.00	PIPE
1281.000	148.000	6.571	154.571	127.74	13.01	2.63	157.20	.00	2.42	.00	2.500	.000	.00	2 .0
152.000	.0309					.0242	3.69	6.57	.00	1.83	.013	.00	.00	PIPE
1433.000	152.700	5.688	158.388	127.74	13.01	2.63	161.02	.00	2.42	.00	2.500	.000	.00	2 .0
109.000	.0349					.0242	2.64	5.69	.00	1.74	.013	.00	.00	PIPE
1542.000	156.500	4.663	161.163	127.74	13.01	2.63	163.79	.00	2.42	.00	2.500	.000	.00	2 .0
266.000	.0294					.0242	6.45	4.66	.00	1.87	.013	.00	.00	PIPE
1808.000	164.320	3.424	167.744	127.74	13.01	2.63	170.37	.00	2.42	.00	2.500	.000	.00	2 .0
JUNCT STR	.0300							3.42	.00		.013	.00	.00	PIPE
1814.000	164.500	1.784	166.284	117.94	15.74	3.84	170.13	.00	2.39	2.26	2.500	.000	.00	2 .0
27.104	.0310					.0275	.75	1.78	1.52	1.72	.013	.00	.00	PIPE

Heritage Trails
Colobel Storm Drain Revised
File: HT-Colobel-R1.WSW

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1841.104	165.340	1.810	167.151	117.94	15.49	3.72	170.87	.00	2.39	2.23	2.500	.000	.00	2 .0
47.041	.0310					.0256	1.21	1.81	1.48	1.72	.013	.00	.00	PIPE
1888.145	166.799	1.895	168.694	117.94	14.76	3.39	172.08	.00	2.39	2.14	2.500	.000	.00	2 .0
26.823	.0310					.0230	.62	1.90	1.35	1.72	.013	.00	.00	PIPE
1914.968	167.631	1.989	169.620	117.94	14.08	3.08	172.70	.00	2.39	2.02	2.500	.000	.00	2 .0
17.146	.0310					.0209	.36	1.99	1.22	1.72	.013	.00	.00	PIPE
1932.114	168.162	2.095	170.258	117.94	13.42	2.80	173.06	.00	2.39	1.84	2.500	.000	.00	2 .0
10.886	.0310					.0192	.21	2.10	1.08	1.72	.013	.00	.00	PIPE
1943.000	168.500	2.220	170.720	117.94	12.80	2.54	173.26	.00	2.39	1.58	2.500	.000	.00	2 .0
HYDRAULIC DROP														
1943.000	168.500	2.872	171.372	117.94	12.01	2.24	173.61	.00	2.39	.00	2.500	.000	.00	2 .0
47.379	.0171					.0207	.98	2.87	.00	2.50	.013	.00	.00	PIPE
1990.379	169.310	3.065	172.375	117.94	12.01	2.24	174.62	.00	2.39	.00	2.500	.000	.00	2 .0
HYDRAULIC JUMP														
1990.379	169.310	2.126	171.436	117.94	13.25	2.73	174.16	.00	2.39	1.78	2.500	.000	.00	2 .0
42.537	.0171					.0202	.86	2.13	1.05	2.50	.013	.00	.00	PIPE
2032.917	170.037	2.037	172.074	117.94	13.77	2.94	175.02	.00	2.39	1.94	2.500	.000	.00	2 .0
40.079	.0171					.0220	.88	2.04	1.15	2.50	.013	.00	.00	PIPE

Heritage Trails
Colobel Storm Drain Revised
File: HT-Colobel-R1.WSW

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
2072.996	170.722	1.938	172.660	117.94	14.44	3.24	175.90	.00	2.39	2.09	2.500	.000	.00	2 .0
32.339	.0171					.0244	.79	1.94	1.29	2.50	.013	.00	.00	PIPE
2105.334	171.275	1.849	173.124	117.94	15.14	3.56	176.68	.00	2.39	2.19	2.500	.000	.00	2 .0
27.336	.0171					.0272	.74	1.85	1.42	2.50	.013	.00	.00	PIPE
2132.671	171.743	1.768	173.511	117.94	15.88	3.92	177.43	.00	2.39	2.28	2.500	.000	.00	2 .0
23.829	.0171					.0304	.72	1.77	1.55	2.50	.013	.00	.00	PIPE
2156.500	172.150	1.694	173.844	117.94	16.66	4.31	178.15	.00	2.39	2.34	2.500	.000	.00	2 .0
HYDRAULIC DROP														
2156.500	172.150	3.747	175.897	117.94	12.01	2.24	178.14	.00	2.39	.00	2.500	.000	.00	2 .0
JUNCT STR	.0167					.0213	.13	3.75	.00		.013	.00	.00	PIPE
2162.500	172.250	5.435	177.685	33.50	10.66	1.77	179.45	.00	1.91	.00	2.000	.000	.00	1 .0
51.486	.0560					.0219	1.13	5.43	.00	1.15	.013	.00	.00	PIPE
2213.986	175.133	3.694	178.827	33.50	10.66	1.77	180.59	.00	1.91	.00	2.000	.000	.00	1 .0
HYDRAULIC JUMP														
2213.986	175.133	1.149	176.282	33.50	17.93	4.99	181.27	.00	1.91	1.98	2.000	.000	.00	1 .0
78.415	.0560					.0550	4.31	1.15	3.25	1.15	.013	.00	.00	PIPE
2292.401	179.524	1.156	180.680	33.50	17.79	4.91	185.59	.00	1.91	1.98	2.000	.000	.00	1 .0
84.492	.0560					.0513	4.33	1.16	3.21	1.15	.013	.00	.00	PIPE

Heritage Trails
Colobel Storm Drain Revised
File: HT-Colobel-R1.WSW

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
2376.893	184.255	1.203	185.458	33.50	16.96	4.47	189.92	.00	1.91	1.96	2.000	.000	.00	1 .0
33.580	.0560					.0454	1.52	1.20	2.98	1.15	.013	.00	.00	PIPE
2410.472	186.135	1.253	187.388	33.50	16.17	4.06	191.45	.00	1.91	1.93	2.000	.000	.00	1 .0
20.135	.0560					.0402	.81	1.25	2.75	1.15	.013	.00	.00	PIPE
2430.608	187.262	1.305	188.567	33.50	15.42	3.69	192.26	.00	1.91	1.90	2.000	.000	.00	1 .0
13.804	.0560					.0357	.49	1.31	2.54	1.15	.013	.00	.00	PIPE
2444.411	188.035	1.361	189.396	33.50	14.70	3.36	192.75	.00	1.91	1.87	2.000	.000	.00	1 .0
10.089	.0560					.0318	.32	1.36	2.34	1.15	.013	.00	.00	PIPE
2454.500	188.600	1.422	190.022	33.50	14.02	3.05	193.07	.00	1.91	1.81	2.000	.000	.00	1 .0
7.554	.0403					.0294	.22	1.42	2.15	1.28	.013	.00	.00	PIPE
2462.054	188.905	1.446	190.351	33.50	13.77	2.94	193.29	.00	1.91	1.79	2.000	.000	.00	1 .0
15.323	.0403					.0273	.42	1.45	2.08	1.28	.013	.00	.00	PIPE
2477.377	189.523	1.514	191.037	33.50	13.13	2.68	193.71	.00	1.91	1.72	2.000	.000	.00	1 .0
10.724	.0403					.0245	.26	1.51	1.90	1.28	.013	.00	.00	PIPE
2488.101	189.955	1.588	191.543	33.50	12.52	2.43	193.98	.00	1.91	1.62	2.000	.000	.00	1 .0
7.574	.0403					.0222	.17	1.59	1.72	1.28	.013	.00	.00	PIPE
2495.676	190.261	1.672	191.933	33.50	11.94	2.21	194.14	.00	1.91	1.48	2.000	.000	.00	1 .0
5.066	.0403					.0204	.10	1.67	1.53	1.28	.013	.00	.00	PIPE

Program Package Serial Number: 1454

WATER SURFACE PROFILE LISTING Date: 1-15-2018 Time: 9:54: 8

Heritage Trails
Colobel Storm Drain Revised
File: HT-Colobel-R1.WSW

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
2500.741	190.465	1.772	192.237	33.50	11.38	2.01	194.25	.00	1.91	1.27	2.000	.000	.00	1 .0
2.359	.0403					.0193	.05	1.77	1.32	1.28	.013	.00	.00	PIPE
2503.100	190.560	1.906	192.466	33.50	10.85	1.83	194.29	.00	1.91	.85	2.000	.000	.00	1 .0
JUNCT STR	.0083					.0143	.09	1.91	1.00		.013	.00	.00	PIPE
2509.100	190.610	4.015	194.625	22.10	7.03	.77	195.39	.00	1.68	.00	2.000	.000	.00	1 .0
39.639	.0403					.0095	.38	4.01	.00	.98	.013	.00	.00	PIPE
2548.739	192.206	2.802	195.008	22.10	7.03	.77	195.78	.00	1.68	.00	2.000	.000	.00	1 .0
HYDRAULIC JUMP														
2548.739	192.206	.984	193.191	22.10	14.35	3.20	196.39	.00	1.68	2.00	2.000	.000	.00	1 .0
97.035	.0403					.0403	3.91	.98	2.88	.98	.013	.00	.00	PIPE
2645.774	196.113	.984	197.098	22.10	14.35	3.20	200.30	.00	1.68	2.00	2.000	.000	.00	1 .0
103.726	.0403					.0410	4.25	.98	2.88	.98	.013	.00	.00	PIPE
2749.500	200.290	.974	201.264	22.10	14.55	3.29	204.55	.00	1.68	2.00	2.000	.000	.00	1 .0
119.184	.0417					.0417	4.97	.97	2.94	.97	.013	.00	.00	PIPE
2868.684	205.263	.974	206.238	22.10	14.55	3.29	209.52	.00	1.68	2.00	2.000	.000	.00	1 .0
103.322	.0417					.0436	4.50	.97	2.94	.97	.013	.00	.00	PIPE
2972.006	209.575	.950	210.525	22.10	15.02	3.50	214.03	.00	1.68	2.00	2.000	.000	.00	1 .0
46.375	.0417					.0485	2.25	.95	3.08	.97	.013	.00	.00	PIPE

Heritage Trails
Colobel Storm Drain Revised
File: HT-Colobel-R1.WSW

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT) / SF Ave	Water Elev / HF	Q (CFS) / SE Dpth	Vel (FPS) / Froude N	Vel Head / Norm Dp	Energy Grd.El. / "N"	Super Elev / X-Fall	Critical Depth / ZR	Flow Top Width / Type Ch	Height/ Dia.-FT / No Wth Prs/Pip
3018.382	211.510	.916	212.426	22.10	15.75	3.85	216.28	.00	1.68	1.99	2.000
26.118	.0417					.0552	1.44	.92	3.31	.97	.013
3044.500	212.600	.883	213.483	22.10	16.52	4.24	217.72	.00	1.68	1.99	2.000
64.908	.0588					.0588	3.82	.88	3.55	.88	.013
3109.408	216.414	.883	217.297	22.10	16.52	4.24	221.53	.00	1.68	1.99	2.000
98.913	.0588					.0566	5.60	.88	3.55	.88	.013
3208.321	222.226	.902	223.128	22.10	16.06	4.00	227.13	.00	1.68	1.99	2.000
43.290	.0588					.0511	2.21	.90	3.40	.88	.013
3251.611	224.770	.936	225.706	22.10	15.31	3.64	229.35	.00	1.68	2.00	2.000
21.474	.0588					.0450	.97	.94	3.17	.88	.013
3273.085	226.032	.971	227.003	22.10	14.60	3.31	230.31	.00	1.68	2.00	2.000
13.759	.0588					.0396	.54	.97	2.96	.88	.013
3286.843	226.840	1.008	227.849	22.10	13.92	3.01	230.86	.00	1.68	2.00	2.000
9.814	.0588					.0349	.34	1.01	2.75	.88	.013
3296.658	227.417	1.047	228.464	22.10	13.27	2.73	231.20	.00	1.68	2.00	2.000
7.410	.0588					.0307	.23	1.05	2.56	.88	.013
3304.068	227.853	1.088	228.941	22.10	12.65	2.49	231.43	.00	1.68	1.99	2.000
5.816	.0588					.0271	.16	1.09	2.38	.88	.013

Station / L/Elem	Base Wt or I.D. / ZL / Type Ch
3018.382	.000 .00 1 .0
26.118	.00 .00 PIPE
3044.500	.000 .00 1 .0
64.908	.00 .00 PIPE
3109.408	.000 .00 1 .0
98.913	.00 .00 PIPE
3208.321	.000 .00 1 .0
43.290	.00 .00 PIPE
3251.611	.000 .00 1 .0
21.474	.00 .00 PIPE
3273.085	.000 .00 1 .0
13.759	.00 .00 PIPE
3286.843	.000 .00 1 .0
9.814	.00 .00 PIPE
3296.658	.000 .00 1 .0
7.410	.00 .00 PIPE
3304.068	.000 .00 1 .0
5.816	.00 .00 PIPE

Heritage Trails
Colobel Storm Drain Revised
File: HT-Colobel-R1.WSW

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
3309.884	228.194	1.130	229.324	22.10	12.06	2.26	231.58	.00	1.68	1.98	2.000	.000	.00	1 .0
4.581	.0588					.0240	.11	1.13	2.21	.88	.013	.00	.00	PIPE
3314.465	228.464	1.176	229.640	22.10	11.50	2.05	231.69	.00	1.68	1.97	2.000	.000	.00	1 .0
3.694	.0588					.0212	.08	1.18	2.05	.88	.013	.00	.00	PIPE
3318.159	228.681	1.224	229.905	22.10	10.97	1.87	231.77	.00	1.68	1.95	2.000	.000	.00	1 .0
2.995	.0588					.0188	.06	1.22	1.90	.88	.013	.00	.00	PIPE
3321.155	228.857	1.274	230.131	22.10	10.46	1.70	231.83	.00	1.68	1.92	2.000	.000	.00	1 .0
2.383	.0588					.0167	.04	1.27	1.76	.88	.013	.00	.00	PIPE
3323.538	228.997	1.328	230.325	22.10	9.97	1.54	231.87	.00	1.68	1.89	2.000	.000	.00	1 .0
1.873	.0588					.0148	.03	1.33	1.62	.88	.013	.00	.00	PIPE
3325.411	229.107	1.386	230.493	22.10	9.51	1.40	231.90	.00	1.68	1.84	2.000	.000	.00	1 .0
1.417	.0588					.0132	.02	1.39	1.49	.88	.013	.00	.00	PIPE
3326.828	229.190	1.449	230.639	22.10	9.06	1.28	231.91	.00	1.68	1.79	2.000	.000	.00	1 .0
1.022	.0588					.0118	.01	1.45	1.37	.88	.013	.00	.00	PIPE
3327.850	229.250	1.517	230.767	22.10	8.64	1.16	231.93	.00	1.68	1.71	2.000	.000	.00	1 .0
.632	.0588					.0106	.01	1.52	1.25	.88	.013	.00	.00	PIPE
3328.482	229.287	1.592	230.879	22.10	8.24	1.05	231.93	.00	1.68	1.61	2.000	.000	.00	1 .0
.218	.0588					.0096	.00	1.59	1.13	.88	.013	.00	.00	PIPE

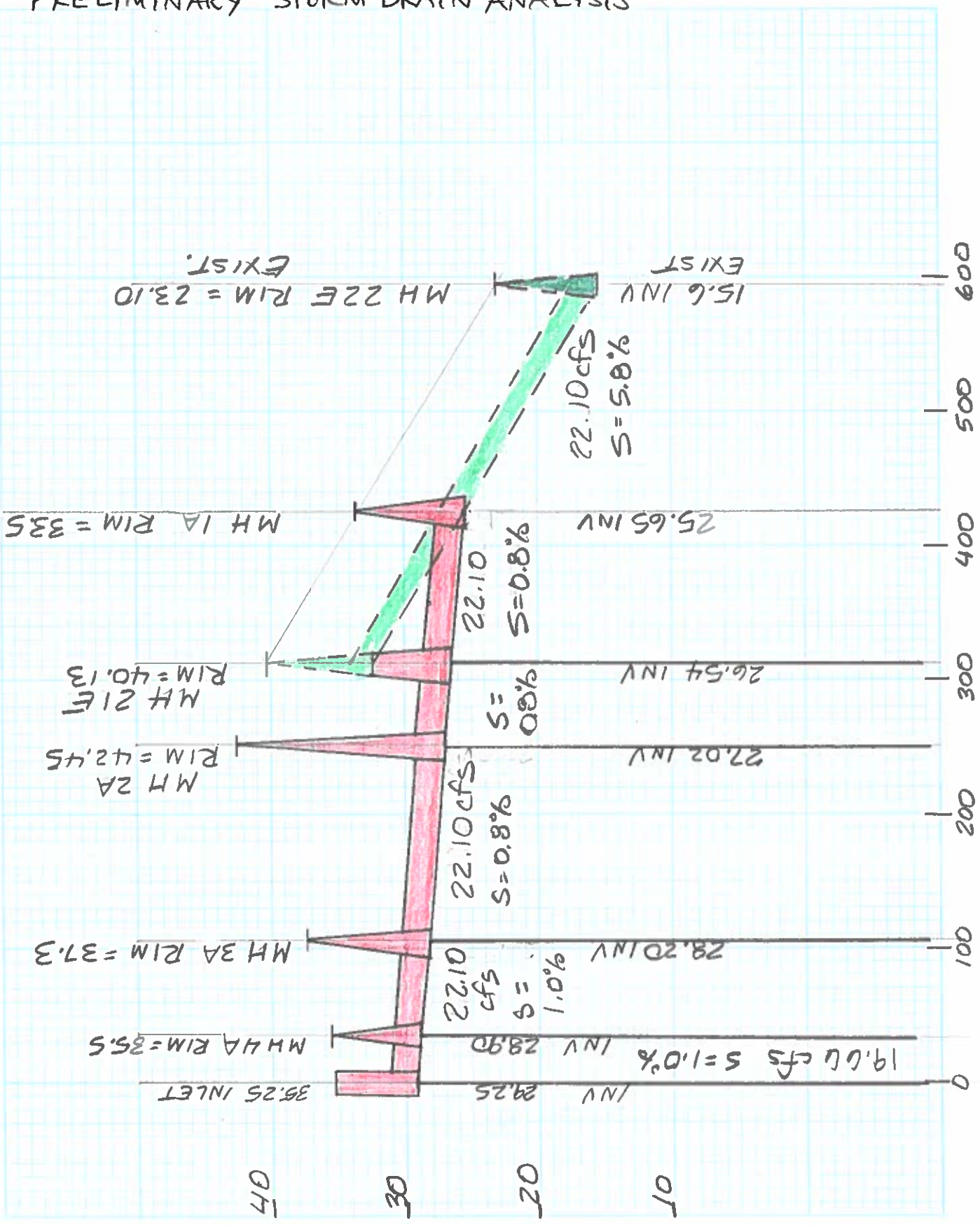
Heritage Trails
Colobel Storm Drain Revised
File: HT-Colobel-R1.WSW

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
3328.700	229.300	1.678	230.978	22.10	7.85	.96	231.94	.00	1.68	1.47	2.000	.000	.00	1 .0

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

PROJECT Anderso Heights 04
SUBJECT Banner/Bond Storm.
BY _____ DATE _____
CHECKED _____ DATE _____
SHEET ____ OF ____

PRELIMINARY STORM DRAIN ANALYSIS



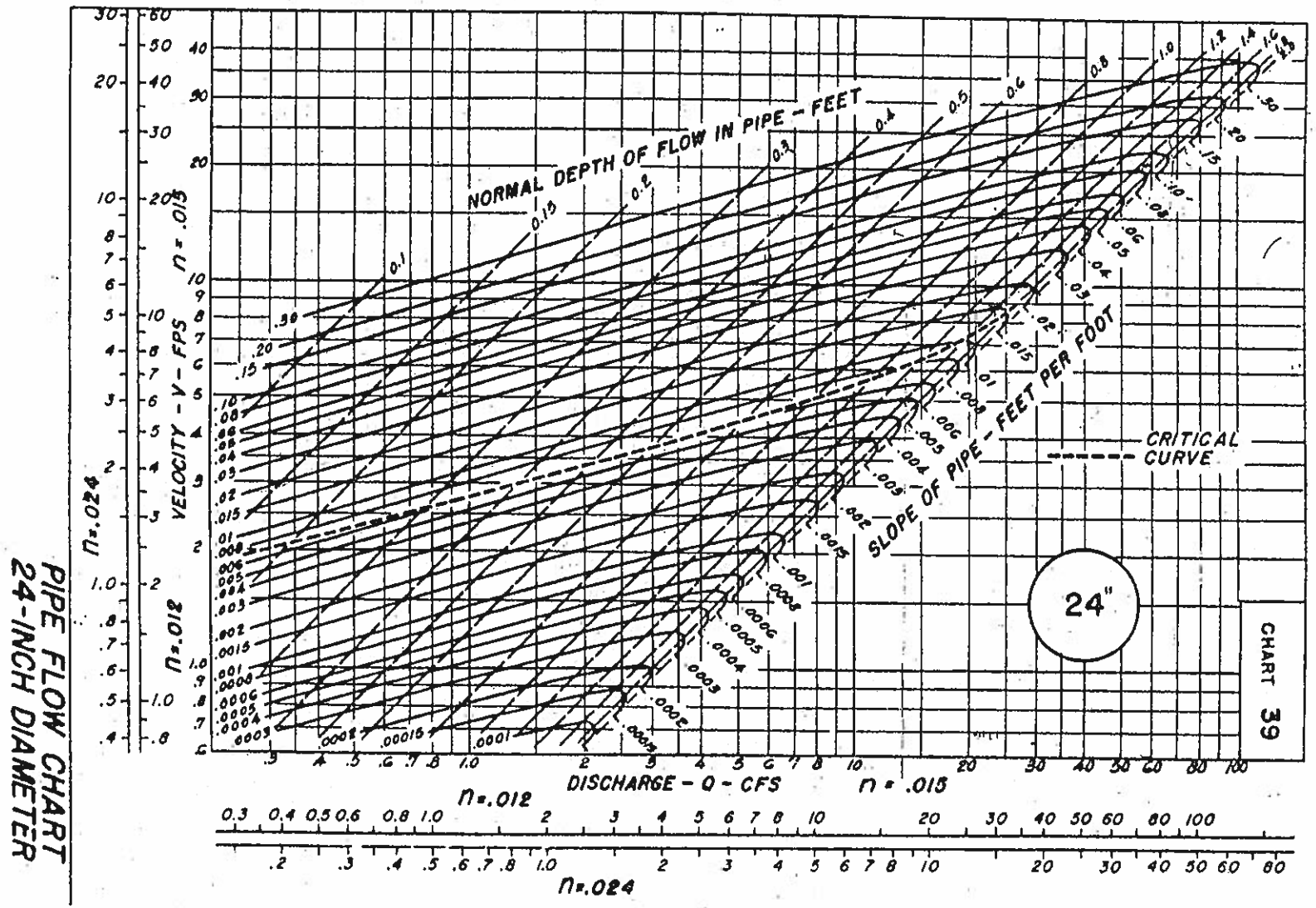

PIPE FLOW CHART
24-INCH DIAMETER
n=.024
n=.012
VELOCITY - V - FPS
n = .015
NORMAL DEPTH OF FLOW IN PIPE - FEET
SLOPE OF PIPE - FEET PER FOOT
CRITICAL CURVE
24"
CHART 39
n=.012
DISCHARGE - Q - CFS
n = .015
n=.024

Table 4

HeritageTrails Subdivision First Flush Calculations				
Sub Basin ID	Area sq.ft	Area acre	Land Trtmnt D	Impervious Area Sq.ft.
1	136,116.0	3.12	60.0	81,669.60
2	118,581.0	2.72	45.0	53,361.45
3	184,551.0	4.24	51.0	94,121.01
4	124,767.0	2.86	51.2	63,880.70
5	124,416.0	2.86	51.4	63,949.82
6	174,647.0	4.01	45.7	79,813.68
7	142,490.0	3.27	60.0	85,494.00
8	136,839.0	3.14	60.0	82,103.40
9	63,185.0	1.45	65.0	41,070.25
10	36,818.0	0.85	60.0	22,090.80
11	47,544.0	1.09	7.0	3,328.08
12	159,689.0	3.67	60.0	95,813.40
13	112,524.0	2.58	60.0	67,514.40
14	81,491.0	1.87	45.0	36,670.95
15	214,811.0	4.93	60.0	128,886.60
16	175,842.0	4.04	52.8	92,844.58
17	121,839.0	2.80	50.0	60,919.50
18	218,495.0	5.02	60.0	131,097.00
19	178,699.0	4.10	55.8	99,714.04
20	125,963.0	2.89	48.3	60,840.13
21	225,668.0	5.18	55.3	124,794.40
22	165,024.0	3.79	60.0	99,014.40
23	269,100.0	6.18	53.2	143,161.20
24	132,662.0	3.05	53.8	71,372.16
Total Impervious area subject to first flush =				**1,883,525.55**

Calculations:

First Flush Volume =

(Total Impervious Area) X(0.34")/12 =

(1,883,525.55)x(0.34)/12 =

= **53,366.56 cu.ft.**

Pond Bottom area = 76,343 sq.ft.

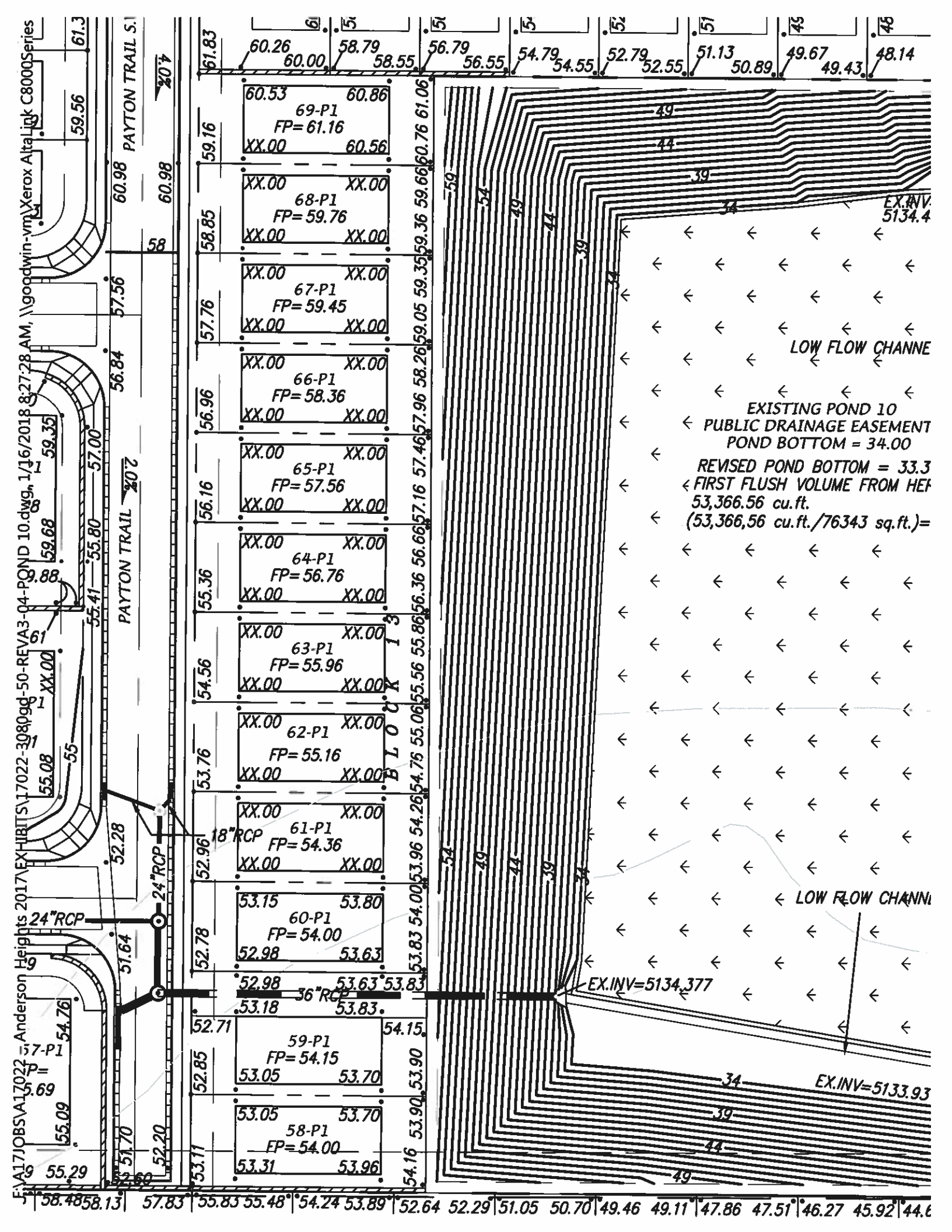
Additional pond depth for first flush =

53,366.56 cu.ft./76,343 sq. ft. =

0.70 ft. = 8.4 inches

The additional pond depth will be in the area north and west of the existing low flow channels as shown on the Pond 10 exhibit.

F:/PROJECTS/17046 Heritage Trails/First Flush Calc


PAYTON TRAIL S.
PAYTON TRAIL
20'
69-P1
FP= 61.16
68-P1
FP= 59.76
67-P1
FP= 59.45
66-P1
FP= 58.36
65-P1
FP= 57.56
64-P1
FP= 56.76
63-P1
FP= 55.96
62-P1
FP= 55.16
61-P1
FP= 54.36
60-P1
FP= 54.00
59-P1
FP= 54.15
58-P1
FP= 54.00
BLOCK 13
18"RCP
24"RCP
24"RCP
36"RCP
LOW FLOW CHANNE
EXISTING POND 10
PUBLIC DRAINAGE EASEMENT
POND BOTTOM = 34.00
REVISED POND BOTTOM = 33.3
FIRST FLUSH VOLUME FROM HEI
53,366.56 cu.ft.
(53,366,56 cu.ft./76343 sq.ft.)=
LOW FLOW CHANNI
EX.INV=5134.377
EX.INV=5133.93
F:\A17JOBS\A17022 - Anderson Heights 2017\EXHIBITS\17022-308\pd-50-REVA3-04-POND 10.dwg, 1/16/2018 8:27:28 AM, \\goodwin-vm\Xerox AltaLink C8000Series

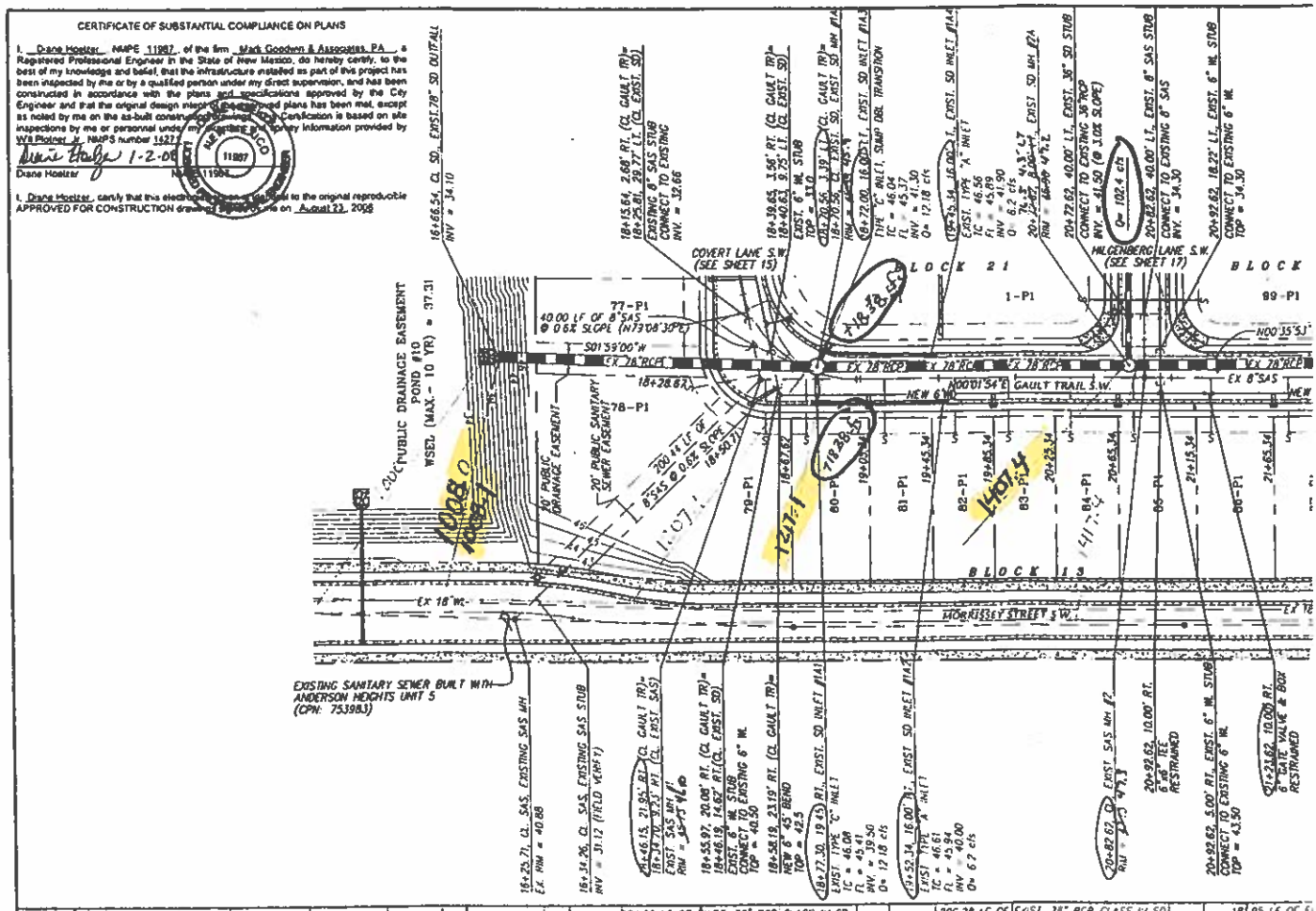
CERTIFICATE OF SUBSTANTIAL COMPLIANCE ON PLANS

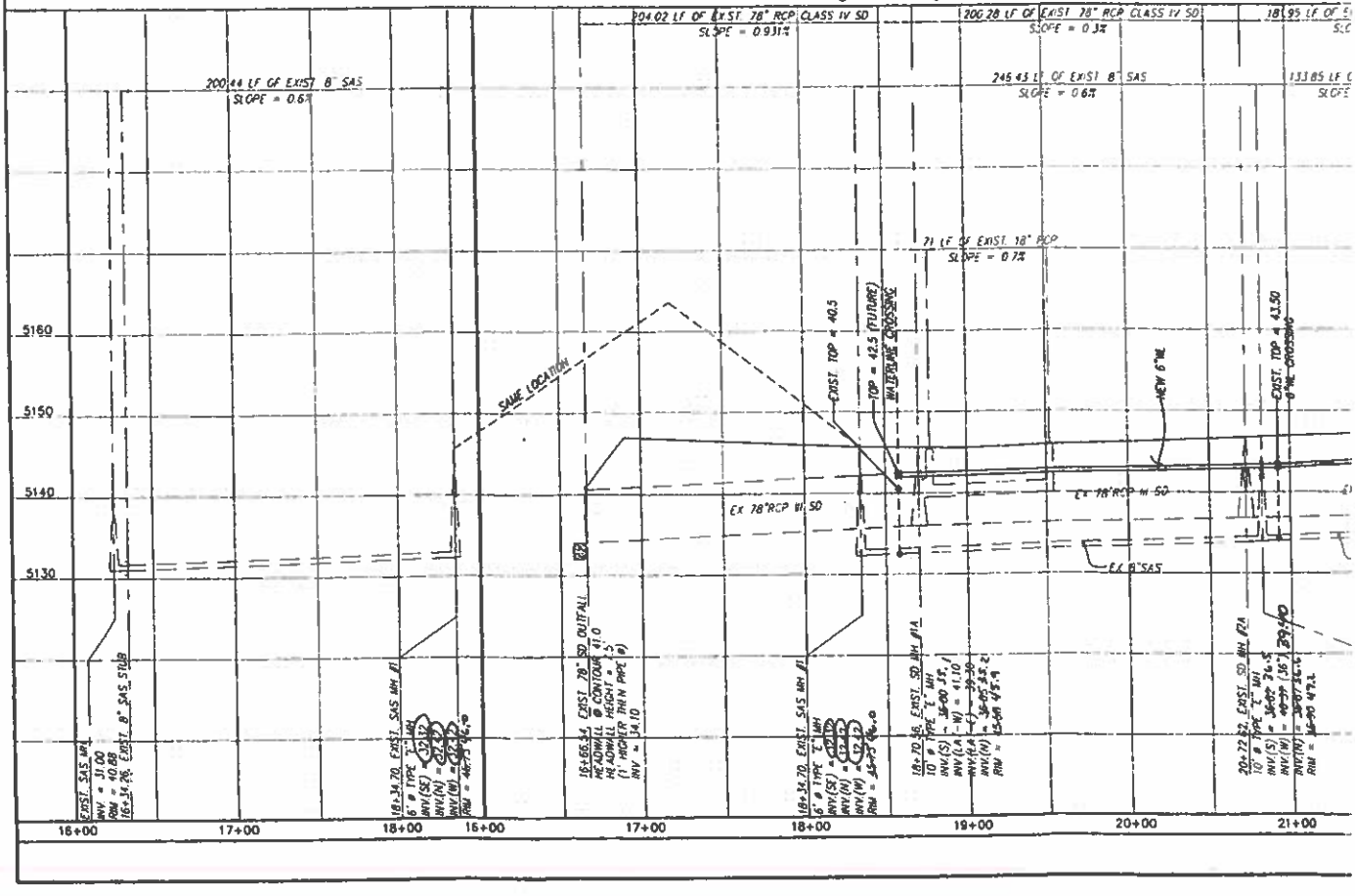
I, Drane Hoelzer, NMPE 11987, of the firm Mark Goodwin & Associates, P.A., a Registered Professional Engineer in the State of New Mexico, do hereby certify, to the best of my knowledge and belief, that the infrastructure installed as part of this project has been inspected by me or by a qualified person under my direct supervision, and has been constructed in accordance with the plans and specifications approved by the City Engineer and that the original design intent of the approved plans has been met, except as noted by me on the as-built construction drawings. This certification is based on site inspections by me or personnel under my supervision and survey information provided by WB Plotner, Jr. NMPS number 14271.

Drane Hoelzer 1-2-08

Drane Hoelzer NMPE 11987

I, Drane Hoelzer, certify that this electronic drawing file is true to the original reproducible APPROVED FOR CONSTRUCTION drawing signed and sealed on August 23, 2008





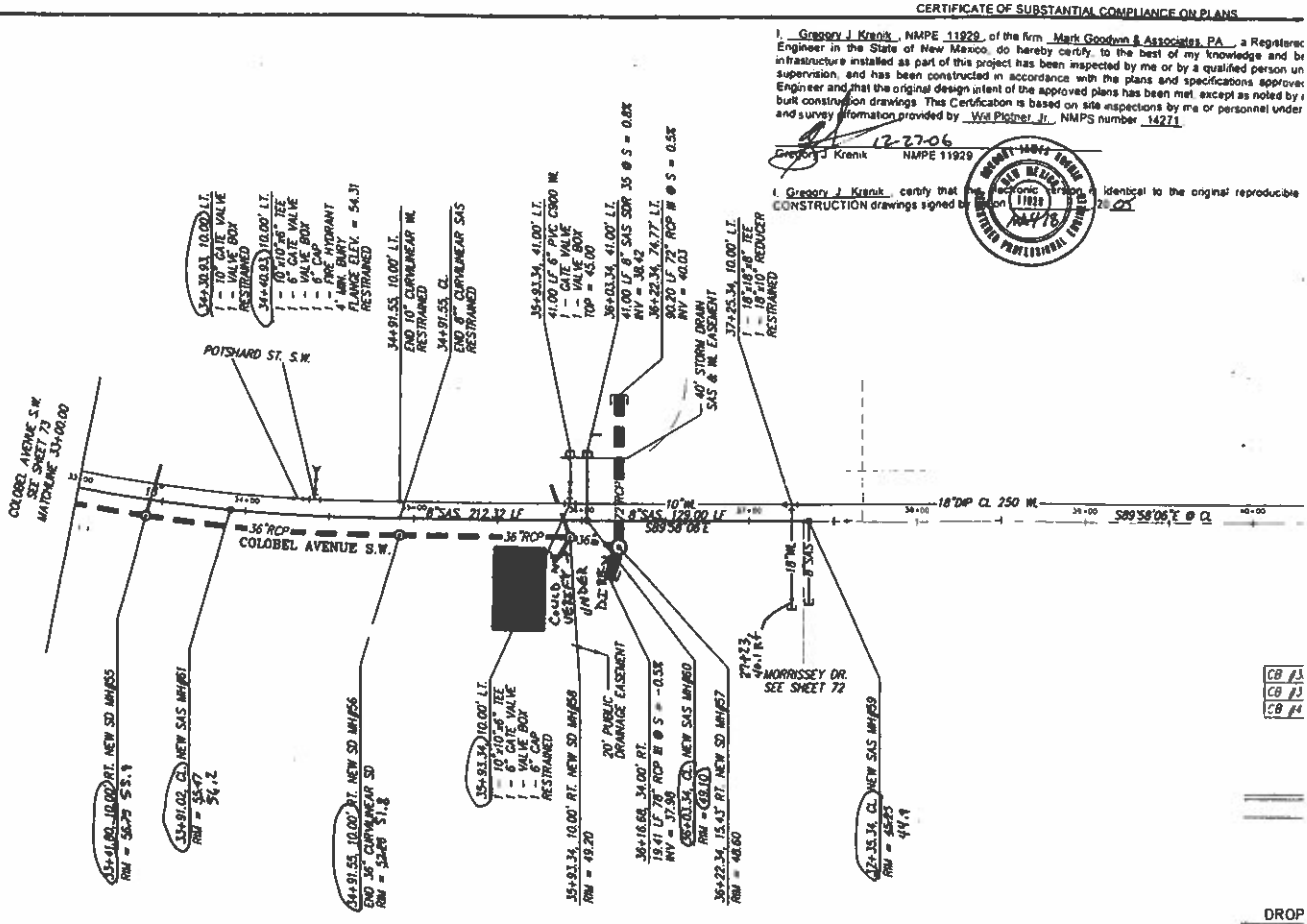
CERTIFICATE OF SUBSTANTIAL COMPLIANCE ON PLANS

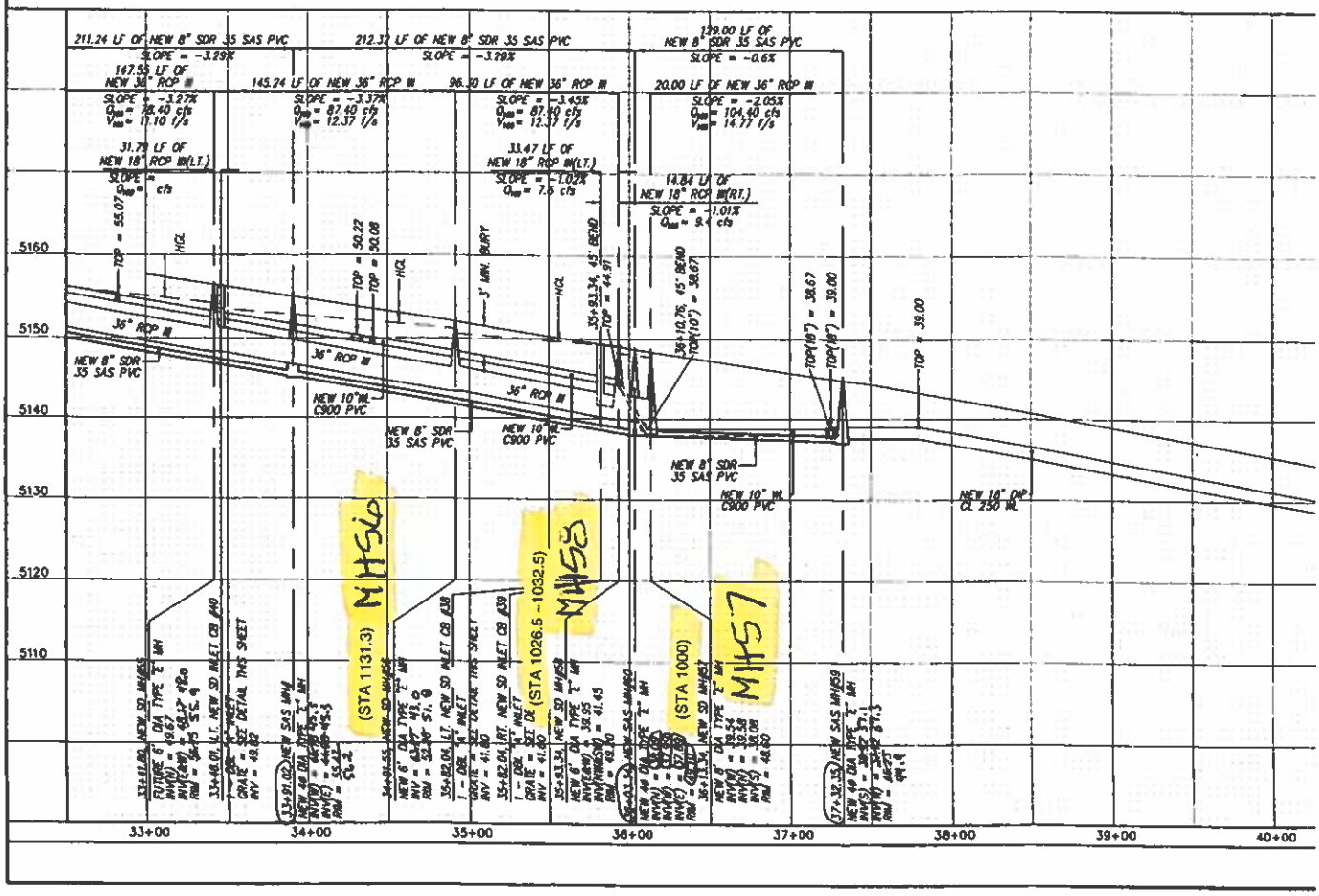
I, Gregory J Kranik, NMPE 11929, of the firm Mark Goodwin & Associates, PA, a Registered Engineer in the State of New Mexico, do hereby certify, to the best of my knowledge and b infrastructure installed as part of this project has been inspected by me or by a qualified person un supervision, and has been constructed in accordance with the plans and specifications approve Engineer and that the original design intent of the approved plans has been met, except as noted by built construction drawings. This Certification is based on site inspections by me or personnel under and survey information provided by Wal Pidgner, Jr. NMPS number 14271.

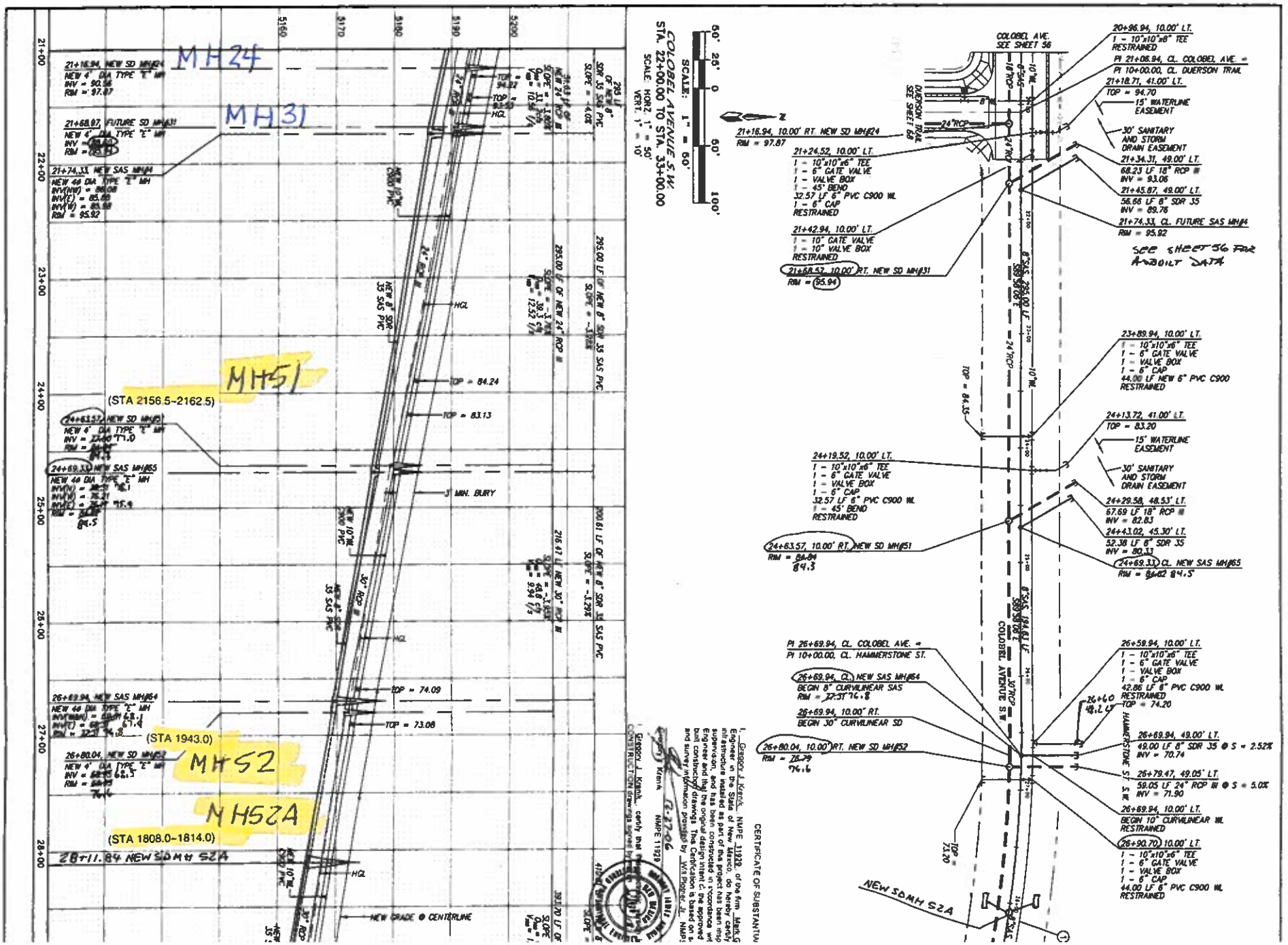
12-27-06

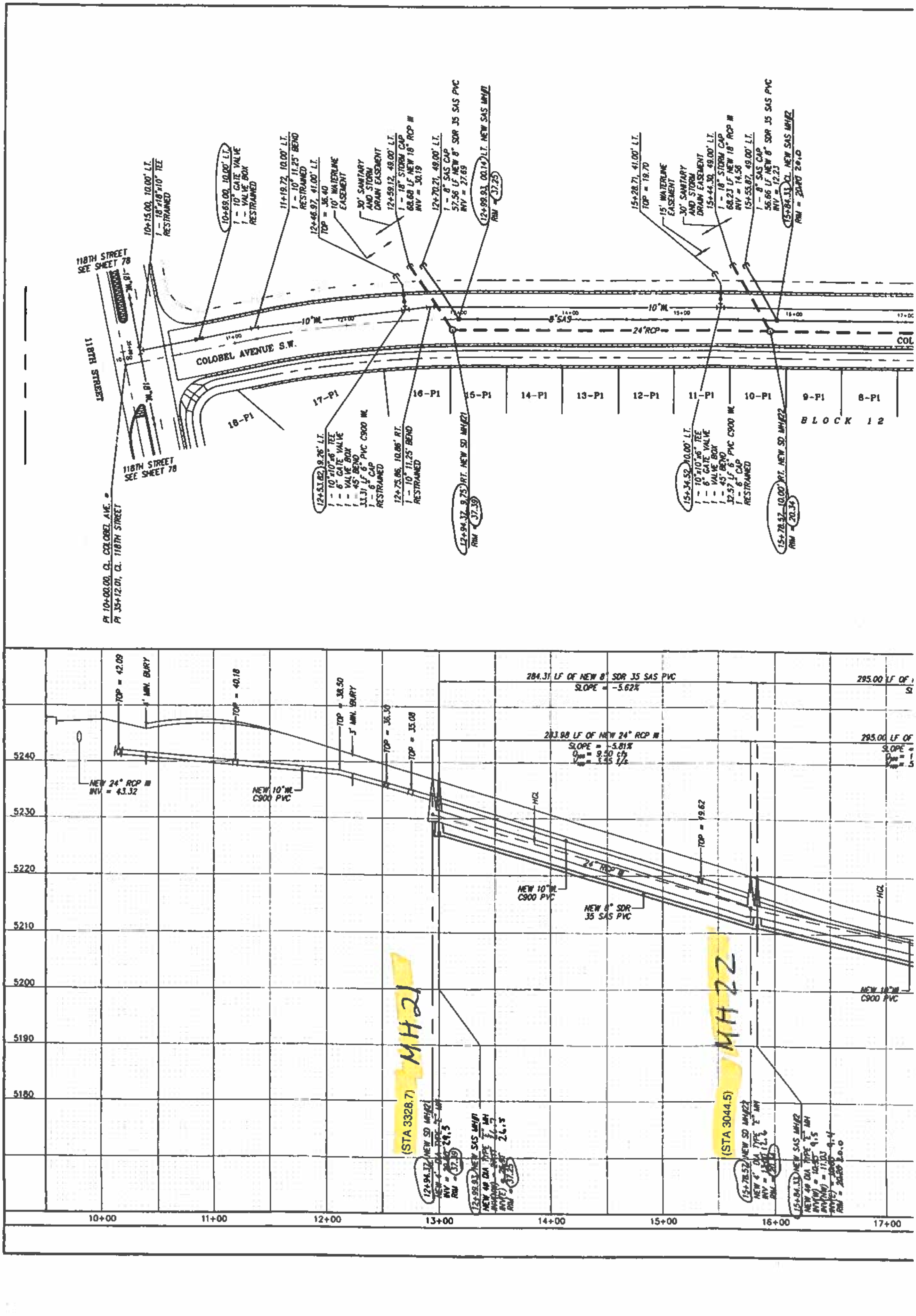
Gregory J Kranik NMPE 11929

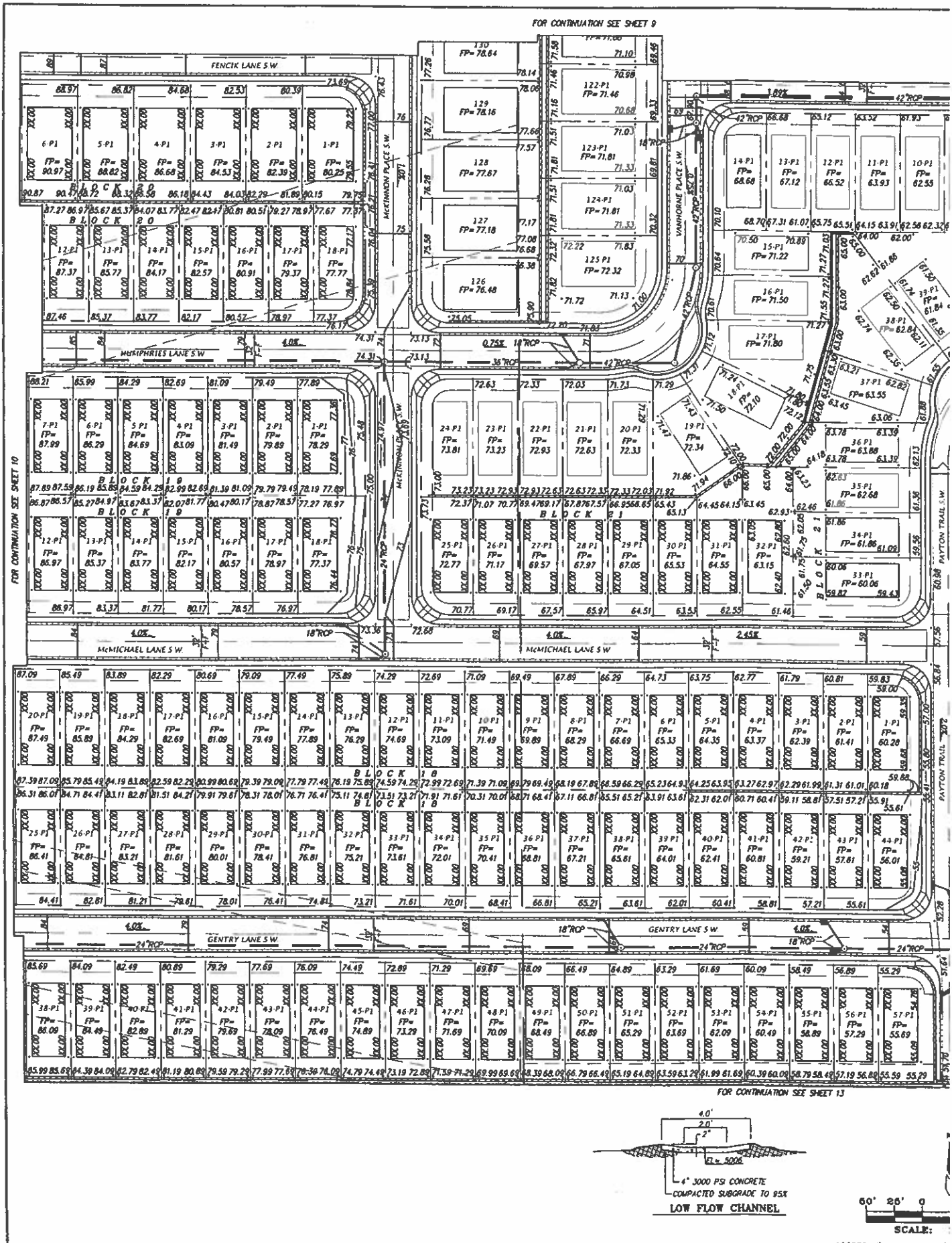
I, Gregory J Kranik, certify that the electronic version is identical to the original reproducible CONSTRUCTION drawings signed by me on 12-28-06








COLOBEL AVENUE S.W.
118TH STREET
118TH STREET SEE SHEET 78
BLOCK 12
18-P1
17-P1
16-P1
15-P1
14-P1
13-P1
12-P1
11-P1
10-P1
9-P1
8-P1
10"WL
8"SAS
24"RCP
284.31 LF OF NEW 8" SDR 35 SAS PVC
SLOPE = -5.62%
283.98 LF OF NEW 24" RCP III
SLOPE = -5.81%
NEW 24" RCP III
INV = 43.32
NEW 10" WL C900 PVC
NEW 8" SDR-35 SAS PVC
HGL
TOP = 42.09
TOP = 40.18
TOP = 38.50
TOP = 36.30
TOP = 35.08
TOP = 19.62
MH 21
MH 22
(STA 3328.7)
(STA 3044.5)
5240
5230
5220
5210
5200
5190
5180
10+00
11+00
12+00
13+00
14+00
15+00
16+00
17+00

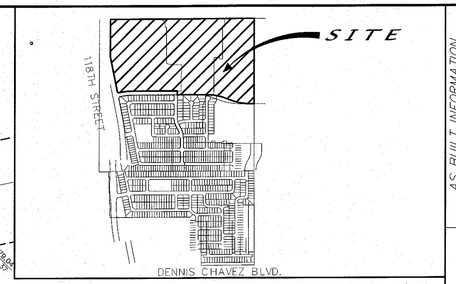

FOR CONTINUATION SEE SHEET 9
FENCIK LANE S.W.
McMICHAEL LANE S.W.
McMURPHRIES LANE S.W.
GENTRY LANE S.W.
PAYTON TRAIL S.W.
McKINNON PLACE S.W.
VANHORNE PLACE S.W.
FOR CONTINUATION SEE SHEET 10
FOR CONTINUATION SEE SHEET 13
BLOCK 20
BLOCK 19
BLOCK 21
BLOCK 18
4.0'
2.0'
2"
El = 5006
4" 3000 PSI CONCRETE
COMPACTED SUBGRADE TO 95%
LOW FLOW CHANNEL
60' 30' 0
SCALE:
A030B0AH\grade n drain\

NOTES

1. SEE SHEET 2 FOR RETAINING WALL DETAILS AND SEE SHEET 3 FOR EAST BOUNDARY RETAINING WALL DETAIL.
2. SEE SHEET 2 FOR TYPICAL LOT LAYOUT DETAIL.

KEYED NOTES:

(A) EXISTING RETAINING WALL TO BE REMOVED & DISPOSED (TYPICAL).



VICINITY MAP — ZONE ATLAS #N-8/P-8

SCALE: NONE

LEGEND

- EXISTING CONTOUR (MAJOR)
- EXISTING CONTOUR (MINOR)
- x 00.0 — EXISTING SPOT ELEVATION
- TC= / FL= — EXISTING TOP CURB/FLOWLINE ELEVATION
- TWRW=56.50 — EXISTING TOP WEST RETAINING WALL ELEV.
- TGW=59.20 — EXISTING TOP WEST GROUND ELEVATION
- TERW=53.90 — EXISTING TOP EAST RETAINING WALL ELEV.
- BW=50.6 — EXISTING BOTTOM WALL EAST GROUND ELEV.
- EXISTING SANITARY SEWER MANHOLE
- EXISTING FIRE HYDRANT
- EXISTING ELECTRIC TRANSFORMER
- EXISTING FENCE
- EXISTING POWER POLE
- 6"GAS — EXISTING GAS LINE
- 30"SD — EXISTING STORM DRAIN
- 8"SAS — EXISTING SAS LINE
- 10"WL — EXISTING WATER LINE
- NEW MOUNTABLE CURB & GUTTER
- NEW STANDARD CURB & GUTTER
- NEW SIDEWALK (THIS PROJECT)
- NEW RIGHT-OF-WAY
- NEW CENTERLINE
- NEW LOT LINES
- NEW EASEMENTS
- •81.77 — NEW SPOT ELEVATIONS
- NEW FLOW DIRECTION
- NEW SLOPE
- HIGH PT — NEW HIGH POINT
- NEW STORM DRAIN INLET
- ZONE BOUNDARY LINE
- NEW SINGLE RETAINING WALL
- NEW DOUBLE RETAINING WALL
- PVI / 94.60 — NEW POINT OF VERTICAL INTERSECTION
- 24" RCP — NEW STORM DRAIN
- NEW STORM DRAIN MANHOLE
- EXISTING ASPHALT PAVEMENT
- EXISTING CONCRETE

APPROVED ROUGH GRADING ±18" _____
CITY HYDROLOGY DATE

60' 30' 0 60' 120'
SCALE: 1" = 60'

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:
HERITAGE TRAILS SUBDIVISION
OVERALL GRADING & DRAINAGE PLAN

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

CITY PROJECT NO.	ZONE MAP NO.	SHEET OF
.	N-8-Z	1 3

AS BUILT INFORMATION
CONTRACTOR
WORK STAKED BY: DATE
WORK ACCEPTANCE BY: DATE
FIELD VERIFICATION BY: DATE
DRAWINGS CORRECTED BY: DATE
MICRO-FILM INFORMATION
RECORDED BY: DATE
NO.

SURVEY INFORMATION
BENCH MARKS
AGRS MONUMENT & BENCHMARK "1-N8"
N=1470741.879, E=1488701.820
G-G=0.999676466
ELEVATION=5307.250
(NAD83/NAVD88)
FIELD NOTES
NO. BY DATE

ENGINEER'S SEAL
DIANE HOELZER
NEW MEXICO
11967
REGISTERED PROFESSIONAL ENGINEER

NO.	BY	DATE	REMARKS
			REVISIONS
		DESIGN	DATE 10/17
DESIGNED BY	DLH		
DRAWN BY	DER		DATE 10/17
CHECKED BY	DMG		DATE 10/17

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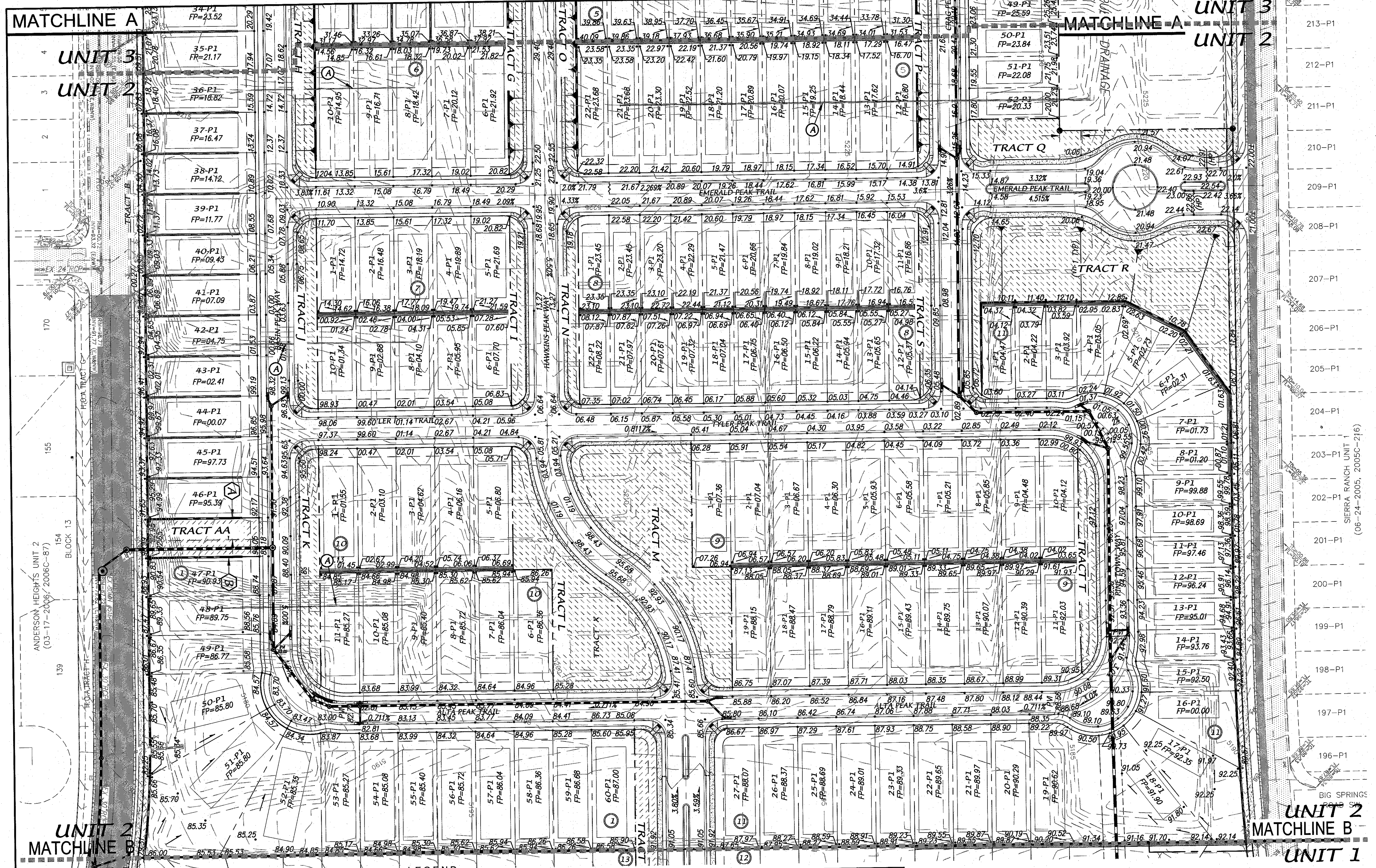
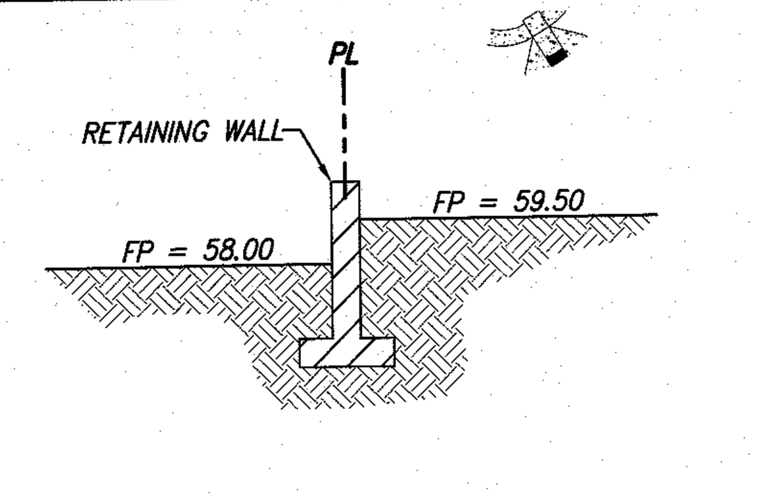
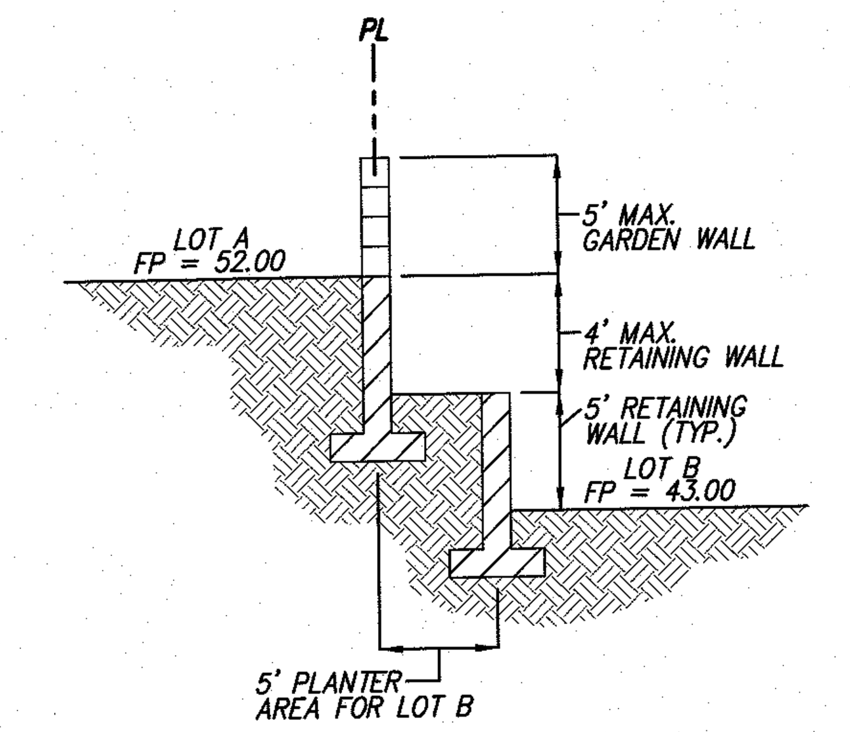




TYPICAL RETAINING WALL DETAIL

NTS

NOTE: RETAINING WALL REQUIRED WHEN THE DIFFERENCE BETWEEN PAD ELEVATIONS IS GREATER THAN 1.5



TYPICAL DOUBLE RETAINING WALL DETAIL

NTS

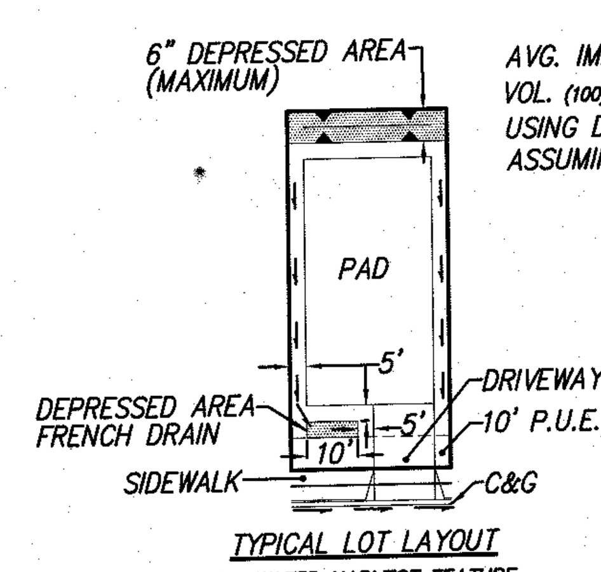
NOTES

1. SEE SHEET 3 FOR EAST BOUNDARY RETAINING WALL DETAIL.

KEYED NOTES:

(A) EXISTING RETAINING WALL TO BE REMOVED & DISPOSED (TYPICAL).

SCALE: 1" = 60'



AVG. IMPERVIOUS AREA = 2500 SQ. FT.
VOL. (100) OF RUNOFF = 0.34 in. (2500 SQ. FT.)= 71 CU. FT.
USING DIMENSIONS 5x10'x5' = 100 CU. FT.
ASSUMING 40% VOIDS

TYPICAL LOT LAYOUT
WITH WATER HARVEST FEATURE
(FOR SINGLE FAMILY UNITS ONLY)
SCALE 1"=60'

LEGEND

Symbol	Description
	EXISTING CONTOUR (MAJOR)
	EXISTING CONTOUR (MINOR)
x 00.0	EXISTING SPOT ELEVATION
TC= FL=	EXISTING TOP CURB/FLOWLINE ELEVATION
TWRW=56.50	EXISTING TOP WEST RETAINING WALL ELEV.
TGW=59.20	EXISTING TOP WEST GROUND ELEVATION
TERW=53.90	EXISTING TOP EAST RETAINING WALL ELEV.
BW=50.6	EXISTING BOTTOM WALL EAST GROUND ELEV.
(S)	EXISTING SANITARY SEWER MANHOLE
	EXISTING FIRE HYDRANT
(E)	EXISTING ELECTRIC TRANSFORMER
	EXISTING FENCE
	EXISTING POWER POLE
6"GAS	EXISTING GAS LINE
30"SD	EXISTING STORM DRAIN
8"SAS	EXISTING SAS LINE
10"WL	EXISTING WATER LINE
	NEW MOUNTABLE CURB & GUTTER
	NEW STANDARD CURB & GUTTER
	NEW SIDEWALK (THIS PROJECT)
	NEW RIGHT-OF-WAY
	NEW CENTERLINE
	NEW LOT LINES
	NEW EASEMENTS
•81.77	NEW SPOT ELEVATIONS
	NEW FLOW DIRECTION
	NEW SLOPE
HIGH PT	NEW HIGH POINT
	NEW STORM DRAIN INLET
	ZONE BOUNDARY LINE
	NEW SINGLE RETAINING WALL
	NEW DOUBLE RETAINING WALL
PVI 94.60	NEW POINT OF VERTICAL INTERSECTION
24" RCP	NEW STORM DRAIN
	NEW STORM DRAIN MANHOLE
	EXISTING ASPHALT PAVEMENT
	EXISTING CONCRETE

NOTE:

USE RETAINING WALLS:
WHERE THE DIFFERENCE IN ELEVATION BETWEEN THE ADJACENT PADS IS 3.0' OR MORE A RETAINING WALL MUST BE CONSTRUCTED BETWEEN THE LOTS AS SHOWN ON THE PLAN AND THERE WILL BE NO PRIVATE DRAINAGE EASEMENT.

USE STEM WALLS:
WHERE THE DIFFERENCE IN ELEVATION BETWEEN THE ADJACENT PADS IS GREATER THAN 1.5' BUT LESS THAN 3.0', A STEM WALL SHALL BE CONSTRUCTED BY THE BUILDER ON THE "HIGH SIDE" OF LOT PAD.

FOR ALL SIDE YARDS:
EACH LOT OWNER MUST CONSTRUCT, OPERATE, AND MAINTAIN HIS OWN SEPARATE DRAINAGE SWALE ALL THE WAY TO THE STREET AND CROSS LOT DRAINAGE WILL BE PREVENTED BY SOME COMBINATION OF WALLS AND BERMS ON THE COMMON LOT LINE TO BE JOINTLY MAINTAINED BY BOTH LOT OWNERS.

EROSION CONTROL 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.

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CITY OF ALBUQUERQUE
PUBLIC WORKS DEPARTMENT

TITLE: HERITAGE TRAILS SUBDIVISION
OVERALL GRADING & DRAINAGE PLAN

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

CITY PROJECT NO.	ZONE MAP NO.	SHEET	OF
	N-8-Z	2	3

AS BUILT INFORMATION

CONTRACTOR		
WORK STAKED BY		DATE
INSPECTOR'S ACCEPTANCE BY		DATE
FIELD VERIFICATION BY		DATE
DRAWINGS CORRECTED BY		DATE
MICRO-FILM INFORMATION		
RECORDED BY		DATE
NO.		

BENCH MARKS

AGRS MONUMENT & BENCHMARK "1-N8"
N=1470741.879, E=1488701.820
G-G=0.9996676466
$\Delta\alpha$=-00°17'27.70"
CENTRAL ZONE
ELEVATION=5307.250
(NAD83/NAVD88)

SURVEY INFORMATION

FIELD NOTES

NO.	BY	DATE

ENGINEER'S SEAL

DIANE HOELZER, NEW MEXICO, 11987, LICENSED PROFESSIONAL ENGINEER

NO.	DATE	REMARKS	BY
		REVISIONS	
		DESIGN	
DESIGNED BY	DLH	DATE	10/17
DRAWN BY	DER	DATE	10/17
CHECKED BY	DMG	DATE	10/17

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MATCHLINE B UNIT 2
UNIT 1

MATCHLINE B UNIT 2
UNIT 1

TRACT FF
TRACT EE
TRACT DD
TRACT CC
TRACT HH
TRACT GG
TRACT II
TRACT BB-1
THREE RIVERS ROAD
GOLD HILL ROAD
CREST STREET DRIVE
SOUTH PEAK ROAD
QUAIL CANYON ROAD
RIDER RIDGE DRIVE
WINSOR TRAIL
TRACT B
PUBLIC PARK SITE
BLOCK 6
BLOCK 1
ARROWWOOD HILLS UNIT 1
(06-23-2006, 2006C-199)
TRACT A-1-A LANDS OF SAMAZAR FAMILY TRUST, ET AL (08-01-2006, 2006C-237)
ANCHO GRANDE -24-2005, 20

SECTION A-A EAST BOUNDARY
DOUBLE RETAINING WALL (TYP)
(*NOTE: REMOVE & DISPOSE EXISTING RETAINING WALLS)
N.T.S.

DEPRESSED LANDSCAPE DETAIL
1"=5'

TYPICAL LOT LAYOUT
WITH WATER HARVEST FEATURE
(FOR SINGLE FAMILY UNITS ONLY)
SCALE 1"=60'

AVG. IMPERVIOUS AREA = 2500 SQ. FT.
VOL. (100) OF RUNOFF = 0.34 in. (2500 SQ. FT.)= 71 CU. FT.
USING DIMENSIONS 5x10'x5" = 100 CU. FT.
ASSUMING 40% VOIDS

NOTES
1. SEE SHEET 2 FOR RETAINING WALL DETAILS.

KEYED NOTES:
(A) EXISTING RETAINING WALL TO BE REMOVED & DISPOSED (TYPICAL).

SCALE: 1" = 60'

AS BUILT INFORMATION
CONTRACTOR — DATE
WORK STAKED BY — DATE
INSPECTOR'S ACCEPTANCE BY — DATE
AS BUILT VERIFICATION BY — DATE
FINAL AS BUILT CORRECTED BY — DATE
MICRO-FILM INFORMATION
RECORDED BY — DATE
NO.

BENCH MARKS
AGRS MONUMENT & BENCHMARK "1-N8"
ELEVATION=5307.250
(NAD83/NAVD88)

SURVEY INFORMATION
FIELD NOTES
NO. | BY | DATE

ENGINEER'S SEAL
DENNIS HOELZER
NEW MEXICO
11987
REGISTERED PROFESSIONAL ENGINEER

NO. | DATE | REMARKS | BY
REVISIONS
DESIGNED BY DLH 10/17
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CITY OF ALBUQUERQUE
PUBLIC WORKS DEPARTMENT

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

CITY PROJECT NO. .
ZONE MAP NO. N-8-Z
SHEET 3 OF 3

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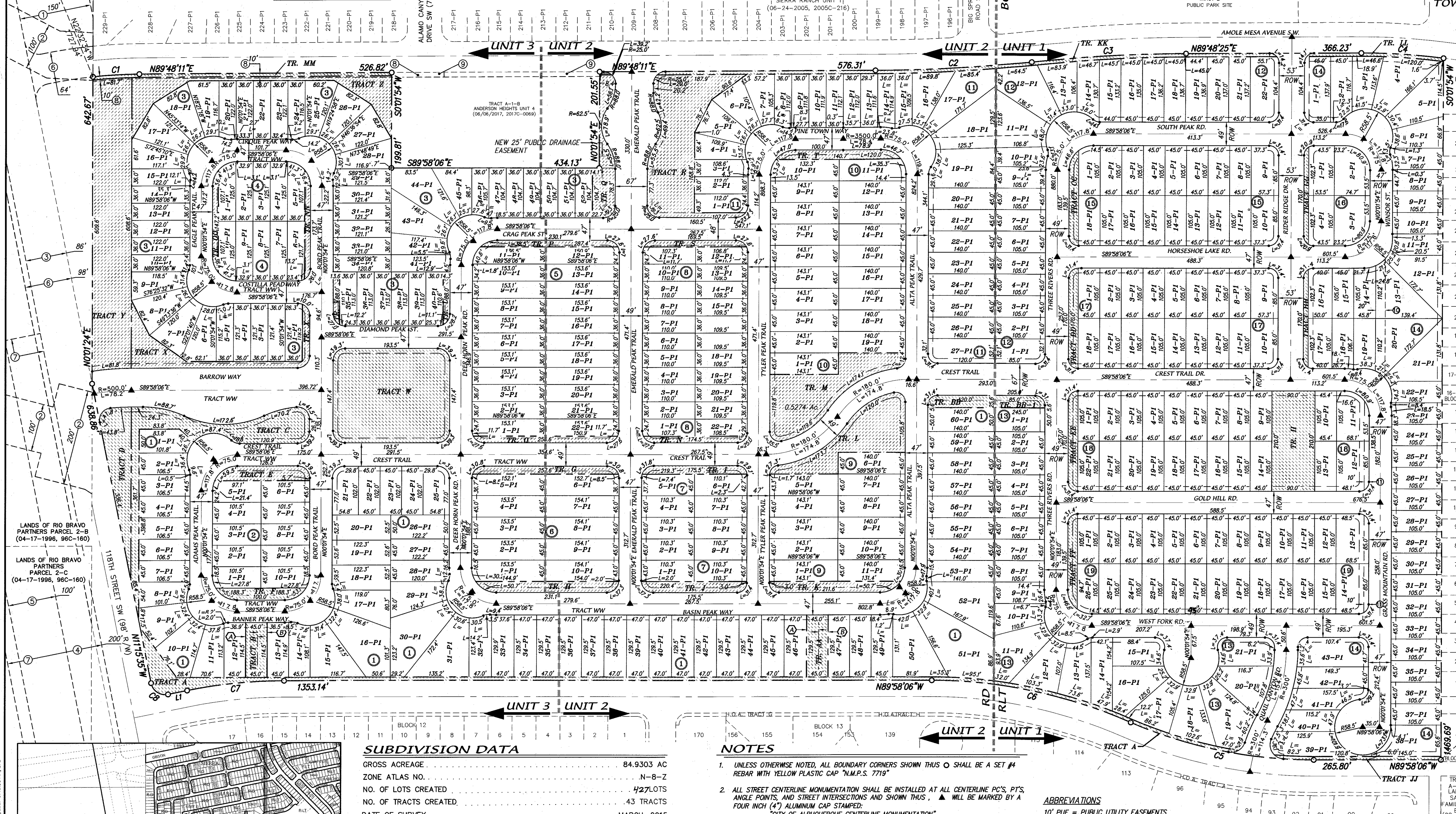
AMENDED PRELIMINARY PLAT
HERITAGE TRAILS
WITHIN THE TOWN OF ATRISCO GRANT
PROJECTED SECTIONS 5 AND 8
TOWNSHIP 9 NORTH, RANGE 2 EAST, NMPM
CITY OF ALBUQUERQUE
BERNALILLO COUNTY, NEW MEXICO
OCTOBER, 2017

Line Table		
Line #	Direction	Length
L1	S78°44'25"W	40.72'

EASEMENT KEYED NOTES:

- (A) NEW 25' PUBLIC SANITARY SEWER & WATERLINE EASEMENT
- (B) NEW 20' PUBLIC STORM DRAIN EASEMENT
- (C) NEW 30' PUBLIC STORM DRAIN EASEMENT



EASEMENTS

1. 150' AMAFCA DRAINAGE EASEMENT (04-17-1996, 96C-160)
2. 100' OR 200' AMAFCA DRAINAGE EASEMENT (07-19-1990, 90C-163)
3. 86' PUBLIC ROADWAY EASEMENT (04-17-1996, 96C-160)
4. 200' POWER LINE EASEMENT U.S.B.R. (02-05-1952, BK. D197, PG. 567) (06-16-2000, BK. A6, PG. 8301)
5. 100' PNM EASEMENT (04-20-1978, BK. MISC 602, PG. 558-561)
6. 64' OR 98' FUTURE R/W (05-04-2005, 2005C-138)
7. 200' C.O.A. PUBLIC DRAINAGE EASEMENT (04-20-2005, BK. A95, PG. 4276)
8. 10' PNM ELECTRIC EASEMENT (04-28-2009, DOC. 2009056097)
9. 10' PUE (GRANTED BY TRACT A-1-B (06/06/2017, 2017c-0069)
10. 20' PUBLIC DRAINAGE EASEMENT GRANTED BY THIS PLAT TO THE C.O.A.
11. 10' PUBLIC DRAINAGE EASEMENT GRANTED BY THIS PLAT TO THE C.O.A.

Curve Table					
C#	Length	Radius	Delta	Chord B.	Chord L.
C1	97.16'	966.00'	5°45'45"	N86°55'19"E	97.11'
C2	327.48'	3155.42'	5°56'47"	N86°47'47"E	327.33'
C3	322.44'	3087.42'	5°59'02"	N86°48'55"E	322.29'
C4	171.92'	1281.12'	7°41'21"	S86°20'55"E	171.80'
C5	392.99'	966.00'	23°18'33"	N78°18'49"W	390.28'
C6	428.62'	1034.00'	23°45'02"	N78°05'35"W	425.56'
C7	203.77'	1034.00'	11°17'29"	S84°23'10"W	203.44'
C8	47.12'	30.00'	90°00'00"	N56°15'35"W	42.43'

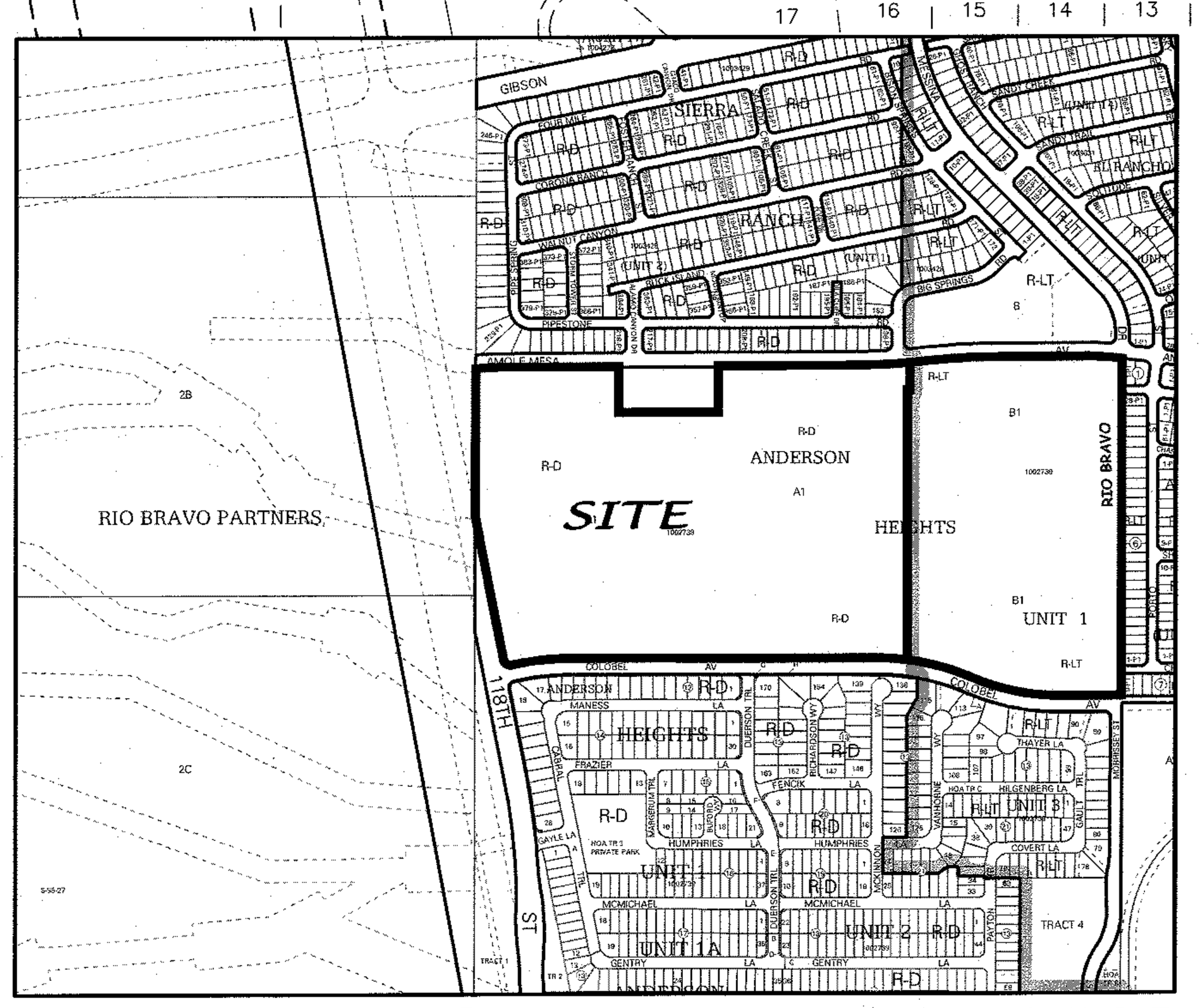
LEGEND

- 1-P1 — LOT NUMBER
- (1) — BLOCK NUMBER
- ▲ — CENTER LINE MONUMENT
- ROW — RIGHT-OF-WAY
- ▬ ▬ ▬ — ZONE BOUNDARY

PROPERTY CORNERS

- ● SET REBAR WITH CAP "ALS LS 7719" (TYP)
- ○ FOUND 5/8" REBAR WITH CAP "LS 7719" (TYP)

100' 50' 0 100' 200'
SCALE: 1" = 100'



VICINITY MAP

ZONE MAP: N-8-Z

SUBDIVISION DATA

GROSS ACREAGE	84.9303 AC
ZONE ATLAS NO.	N-8-Z
NO. OF LOTS CREATED	427 LOTS
NO. OF TRACTS CREATED	43 TRACTS
DATE OF SURVEY	MARCH, 2015

LEGAL DESCRIPTION

A tract of land situate within the Town of Atrisco Grant, projected Sections 5 and 8, Township 9 North, Range 2 East, New Mexico Principal Meridian, City of Albuquerque, Bernalillo County, New Mexico, being all of TRACT A-1-A, ANDERSON HEIGHTS UNIT 4, 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 June 06, 2017 in Plat Book 2017C, Page 0069, together with TRACT B-1, ANDERSON HEIGHTS UNIT 4, 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 23, 2015, in Plat Book 2015C, Page 29, and containing 84.9303 acres more or less.

PURPOSE OF PLAT

1. SUBDIVIDE TRACTS A-1-A, B-1 ANDERSON HEIGHTS INTO 438 RESIDENTIAL LOTS & 43 TRACTS AS SHOWN.
3. DEDICATED NEW RIGHT-OF-WAY AS SHOWN.
3. GRANT NEW EASEMENTS AS SHOWN.

NOTES

1. *UNLESS OTHERWISE NOTED, ALL BOUNDARY CORNERS SHOWN THUS ○ SHALL BE A SET #4 REBAR WITH YELLOW PLASTIC CAP "N.M.P.S. 7719"*
2. *ALL STREET CENTERLINE MONUMENTATION SHALL BE INSTALLED AT ALL CENTERLINE PC'S, PT'S, ANGLE POINTS, AND STREET INTERSECTIONS AND SHOWN THUS , ▲ WILL BE MARKED BY A FOUR INCH (4") ALUMINUM CAP STAMPED:*
   "CITY OF ALBUQUERQUE CENTERLINE MONUMENTATION"
   "DO NOT DISTURB"
   N.M.P.S.#7719
3. BOUNDARY SHALL BE TIED TO THE NEW MEXICO STATE PLANE COORDINATE SYSTEM AS SHOWN.
4. BASIS OF BEARING SHALL BE NEW MEXICO STATE PLANE GRID BEARINGS.
5. ALL DISTANCES SHALL BE GROUND DISTANCES.
6. MANHOLES WILL BE OFFSET AT ALL POINTS OF CURVATURE, POINTS OF TANGENCY, STREET INTERSECTIONS, AND ALL OTHER ANGLE POINTS TO ALLOW USE OF CENTERLINE MONUMENTATION.
7. TRACT WW IS A PRIVATE ACCESS, PRIVATE DRAINAGE EASEMENT AND PUBLIC WATERLINE & SANITARY SEWER EASEMENT. IT IS FOR THE BENEFIT OF ALL LOTS WITHIN UNIT 2&3 AND WILL BE MAINTAINED BY THE H.O.A.
8. TRACTS "A-OO" ARE PRIVATE COMMON AREAS FOR THE BENEFIT OF ALL LOTS WITHIN UNIT 2&3. TRACTS WILL BE DEEDED TO THE H.O.A. AND WILL BE MAINTAINED BY THE H.O.A.

ABBREVIATIONS

- *10' PUE = PUBLIC UTILITY EASEMENTS GRANTED WITH THIS PLAT*
- *ROW = RIGHT-OF-WAY*
- *H.O.A.= HOME OWNERS ASSOCIATION*
- *C.O.A.= CITY OF ALBUQUERQUE*
- *A.B.C.W.U.A.= ALBUQUERQUE BERNALILLO COUNTY WATER UTILITY AUTHORITY*

APPROVED

Loren N. Risenhoover P.S. 12/20/17
City Surveyor, City of Albuquerque, N.M. — Date

Owner: KB HOME NEW MEXICO Inc
Randy Carpenter 12-15-17
Randy Carpenter, President — Date

OWNERS

KB HOME NEW MEXICO Inc
7807 PeakView Ave
Suite 300
CENTENNIAL, COLORADO 80111
(303) 323-1130

SITE BENCHMARK

AGRS MONUMENT
"1-N8"
ELEVATION=5307.250
(NAD83/NAVD88)

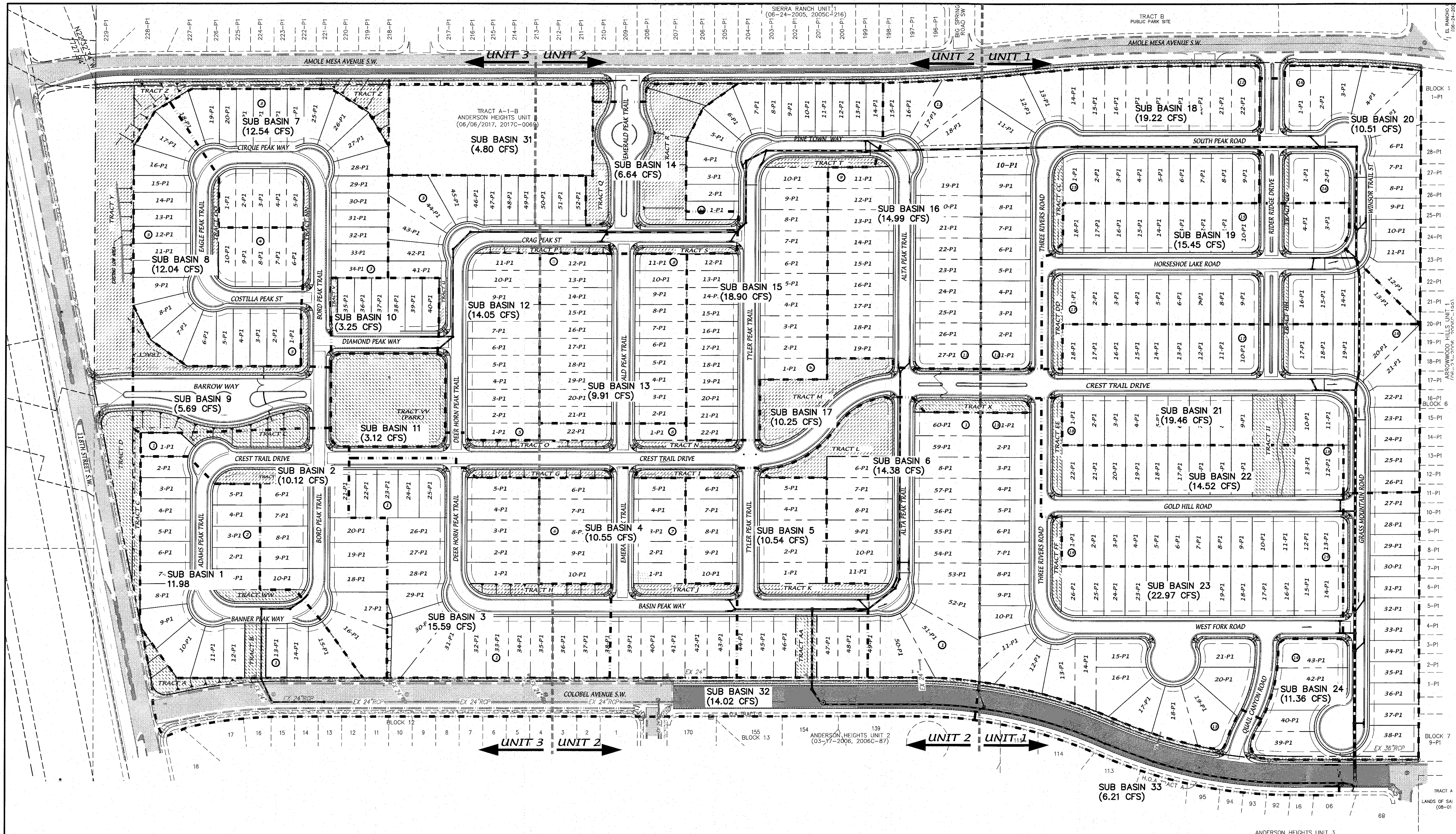
ENGINEERS

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

SURVEYOR

ALDRICH LAND SURVEY
P.O. BOX 30701
ALBUQUERQUE, NEW MEXICO 87190
(505) 884-1990

CITY PROJECT No. 1002739
SHEET 1 OF 1



AS BUILT INFORMATION

CONTRACTOR / WORK STARTED BY / INSPECTOR'S ACCEPTANCE BY / FIELD VERIFICATION BY / DRAWINGS CORRECTED BY — DATE

MICRO-FILM INFORMATION

RECORDED BY / NO.

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AGRS MONUMENT & BENCHMARK "1-N8"
N=1470741.879, E=1488701.820
G-G=0.999676466
Δα =-0011'27.70"
CENTRAL ZONE
ELEVATION=5307.250
(NAD83/NAVD88)

SURVEY INFORMATION — NO. / FIELD NOTES / BY / DATE

ENGINEER'S SEAL

DIANE HOELZER NEW MEXICO 11987 LICENSED PROFESSIONAL ENGINEER

NO.	DATE	REMARKS REVISIONS	BY
		DESIGN	
DESIGNED BY	DLH	DATE	12/17
DRAWN BY	DER	DATE	12/17
CHECKED BY	DMG	DATE	12/17

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CITY OF ALBUQUERQUE
PUBLIC WORKS DEPARTMENT

TITLE:
HERITAGE TRAILS SUBDIVISION
SUB BASIN BOUNDARY EXHIBIT

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

CITY PROJECT NO.	ZONE MAP NO.	SHEET	OF
	N-8-Z	1	1

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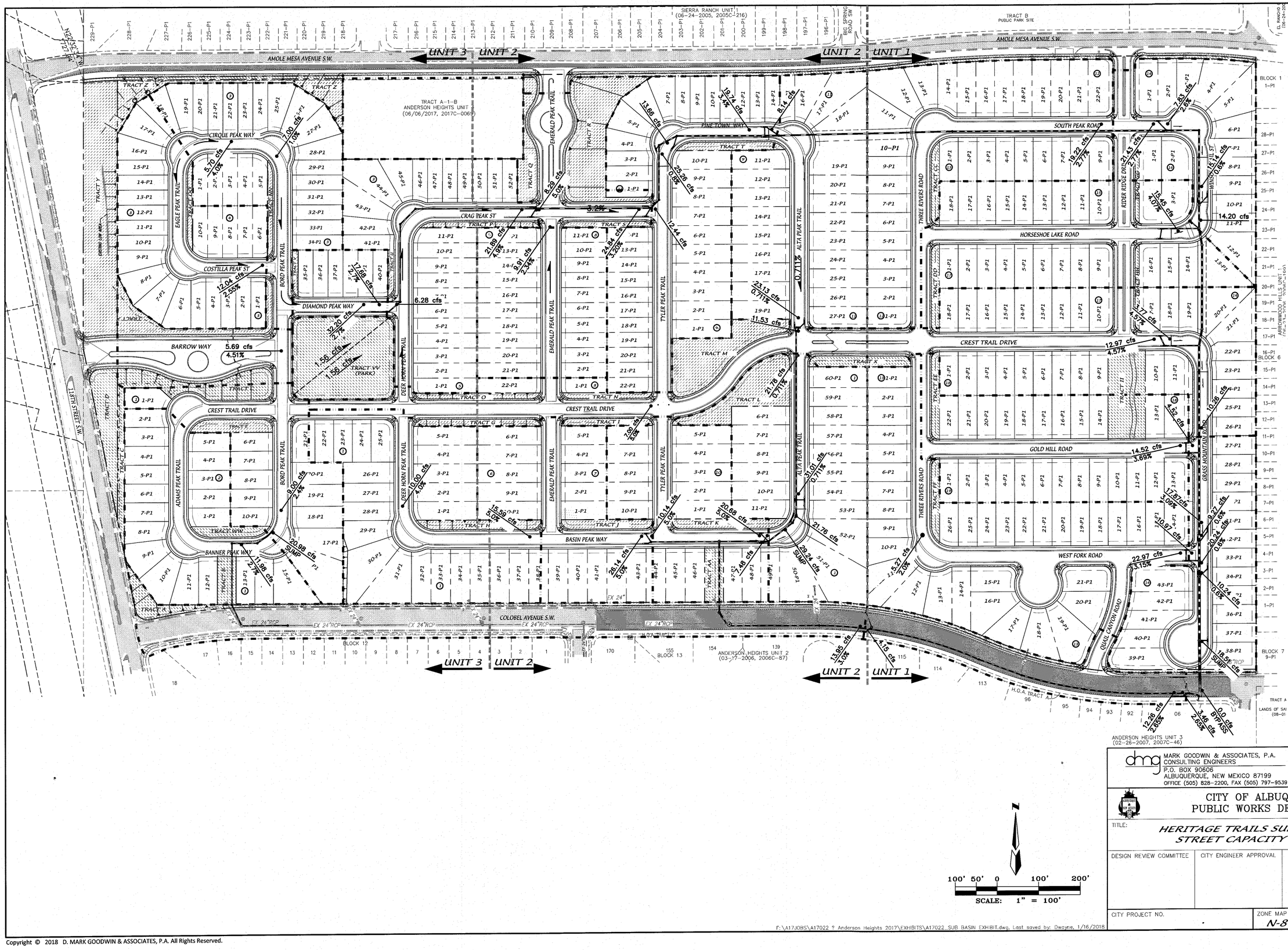

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SURVEY INFORMATION

FIELD NOTES

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G-G=0.999676466
Δα = -00°17'27.70"
CENTRAL ZONE
ELEVATION=5307.250
(NAD83/NAVD88)

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RECORDED BY:		
NO.		

ENGINEER'S SEAL

DANIEL HOELZER NEW MEXICO 19967 REGISTERED PROFESSIONAL ENGINEER

NO.	DATE	REMARKS / REVISIONS	BY	DATE
		DESIGN	DLH	12/17
			DER	12/17
			DMG	12/17

DESIGNED BY
DRAWN BY
CHECKED BY

dmg MARK GOODWIN & ASSOCIATES, P.A.
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CITY OF ALBUQUERQUE
PUBLIC WORKS DEPARTMENT

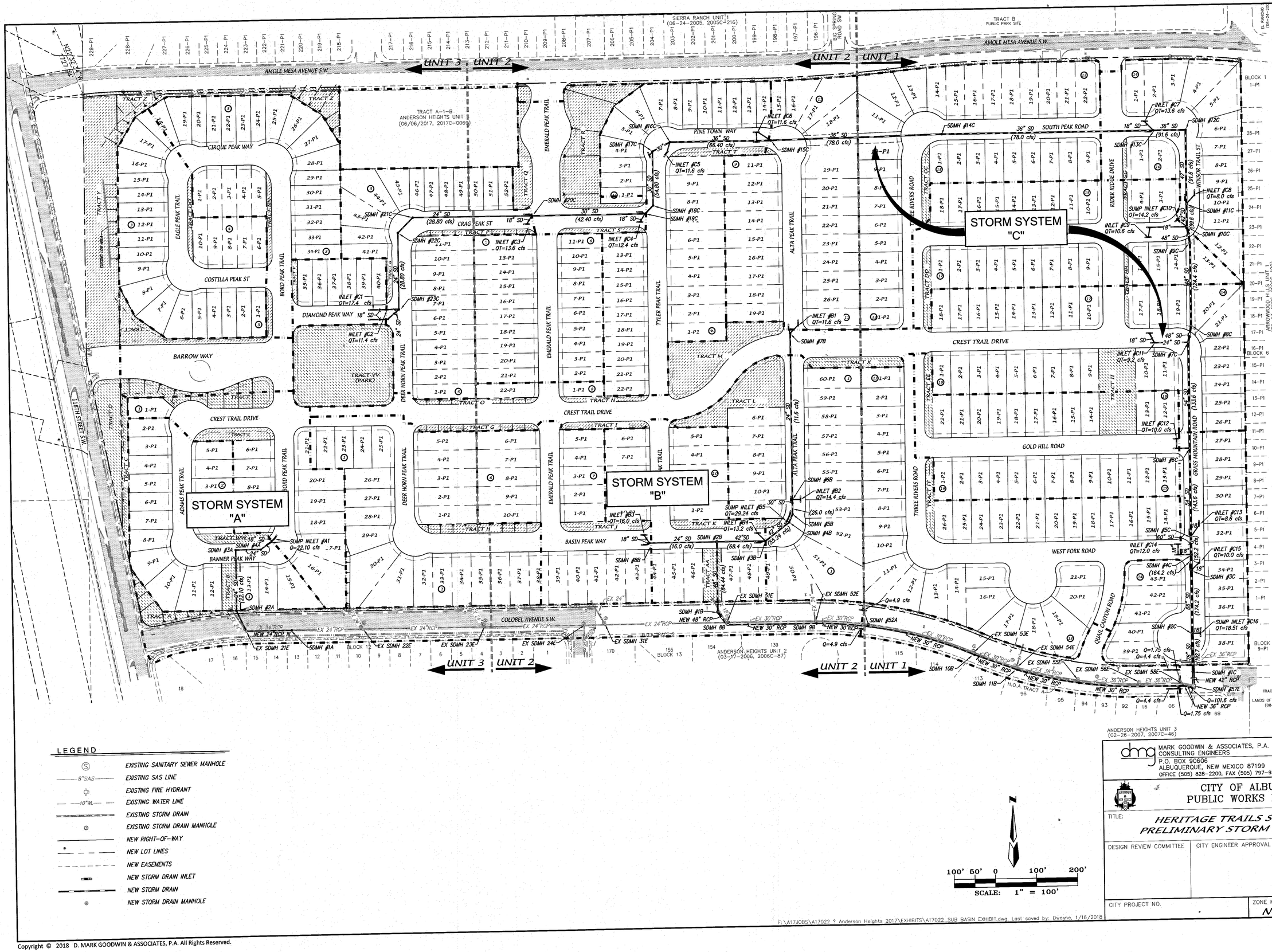
TITLE:
HERITAGE TRAILS SUBDIVISION
STREET CAPACITY EXHIBIT

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

CITY PROJECT NO. .

ZONE MAP NO. N-8-Z

SHEET 1 OF 1



LEGEND

- EXISTING SANITARY SEWER MANHOLE
- 8"SAS — EXISTING SAS LINE
- EXISTING FIRE HYDRANT
- 10"WL — EXISTING WATER LINE
- EXISTING STORM DRAIN
- EXISTING STORM DRAIN MANHOLE
- NEW RIGHT-OF-WAY
- NEW LOT LINES
- NEW EASEMENTS
- NEW STORM DRAIN INLET
- NEW STORM DRAIN
- NEW STORM DRAIN MANHOLE

AS BUILT INFORMATION

CONTRACTOR		DATE
WORK STAKED BY		
INSPECTOR'S NOTES MADE BY		DATE
FIELD VERIFICATION BY		DATE
AS-BUILTS DRAWN BY		
CORRECTED BY		DATE

MICRO-FILM INFORMATION

RECORDED BY: DATE:

NO.:

SURVEY INFORMATION

FIELD NOTES

NO.	BY	DATE

BENCH MARKS

AGRS MONUMENT & BENCHMARK "1-N8"
N=1470741.879, E=1488701.820
C-G=0.999676466
Δα = -001°27'27.70"
CENTRAL ZONE
ELEVATION=5307.250
(NAD83/NAVD88)

ENGINEER'S SEAL

DIANE MOELZER — NEW MEXICO — 15081 — REGISTERED PROFESSIONAL ENGINEER

NO.	DATE	REMARKS	BY
		REVISIONS	
		DESIGN	
		DESIGNED BY: DLH	DATE 12/17
		DRAWN BY: DER	DATE 12/17
		CHECKED BY: DMG	DATE 12/17

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

CITY OF ALBUQUERQUE
PUBLIC WORKS DEPARTMENT

TITLE:
HERITAGE TRAILS SUBDIVISION PRELIMINARY STORM DRAIN LAYOUT

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

CITY PROJECT NO. .

ZONE MAP NO. N-8-Z

SHEET 1 OF 1

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