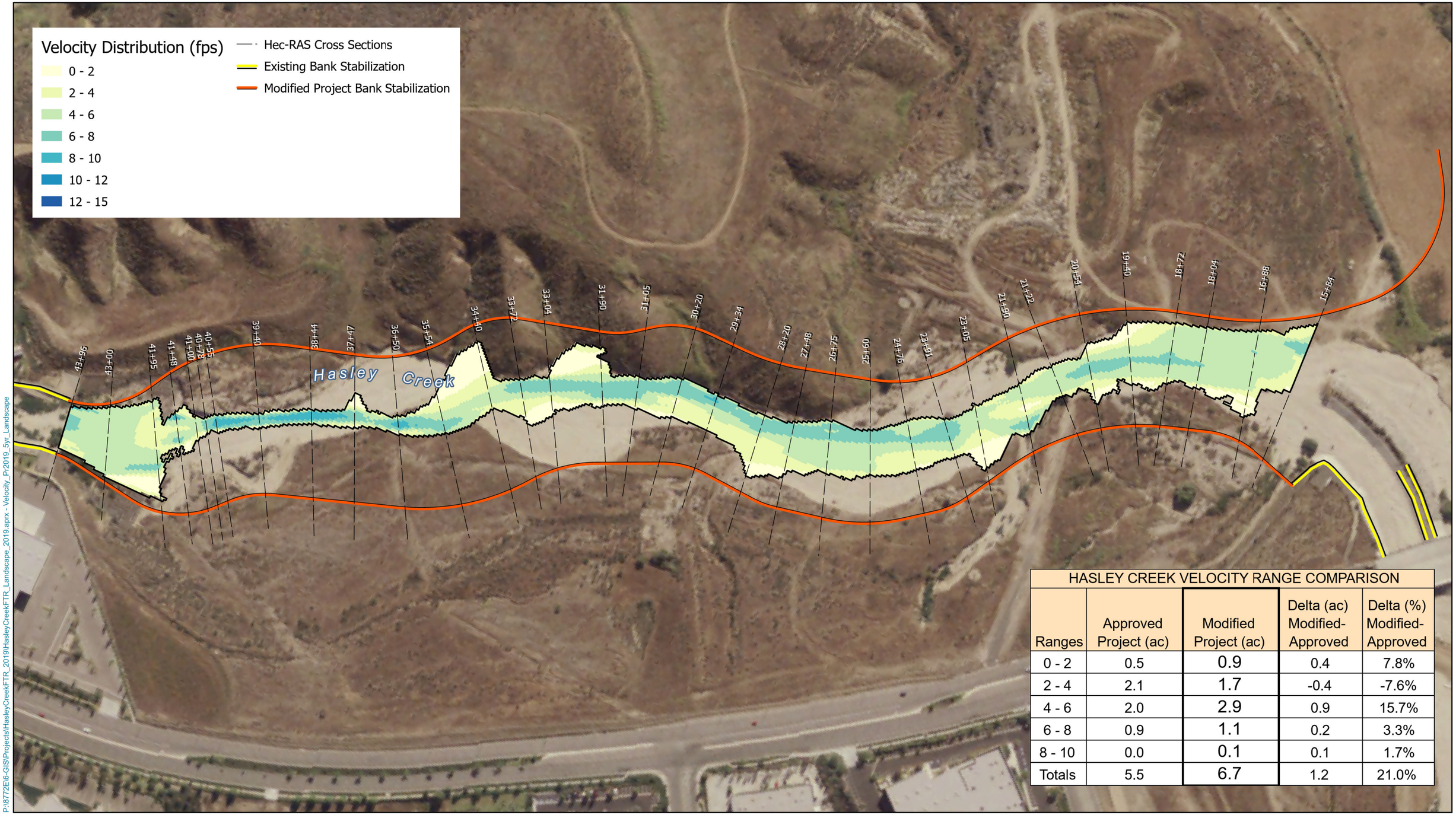
Appendix 5.5 (Continued)

Hydrology (Part 13 of 15)



HASLEY CREEK VELOCITY RANGE COMPARISON				
Ranges	Approved Project (ac)	Modified Project (ac)	Delta (ac) Modified-Approved	Delta (%) Modified-Approved
0 - 2	0.5	0.9	0.4	7.8%
2 - 4	2.1	1.7	-0.4	-7.6%
4 - 6	2.0	2.9	0.9	15.7%
6 - 8	0.9	1.1	0.2	3.3%
8 - 10	0.0	0.1	0.1	1.7%
Totals	5.5	6.7	1.2	21.0%

P:\8772E\6-GIS\Projects\HasleyCreekFTR_2019\HasleyCreekFTR_Landscape_2019.aprx - Velocity_Pr2019_5yr_Landscape

CASTAIC CREEK AND HASLEY CREEK FLOOD TECHNICAL REPORT

5-YEAR EVENT MODIFIED PROJECT VELOCITY DISTRIBUTION

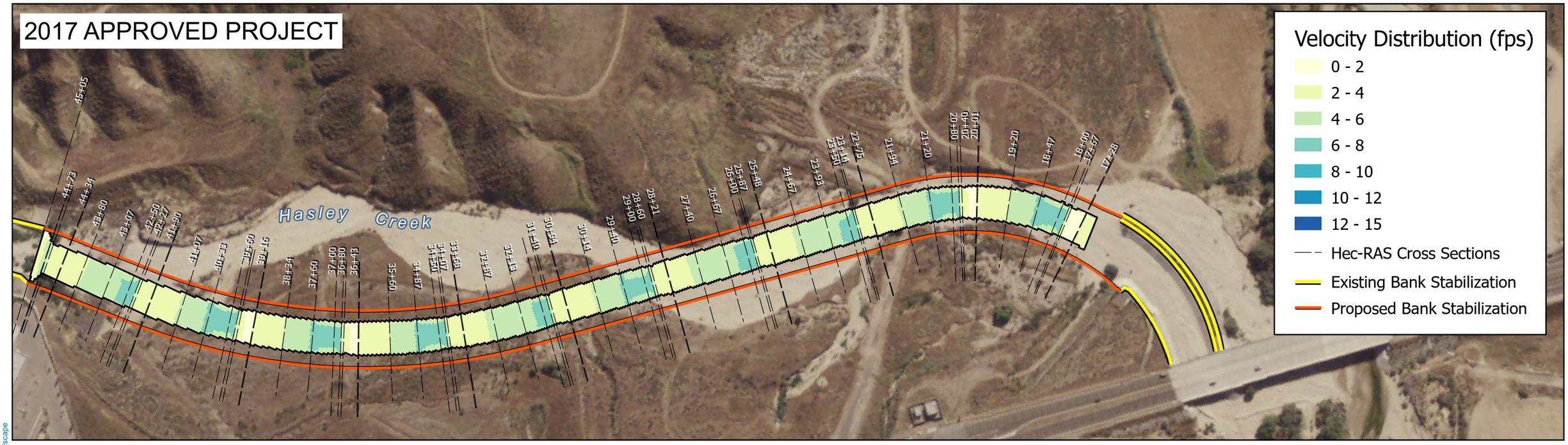
PACE Advanced Water Engineering

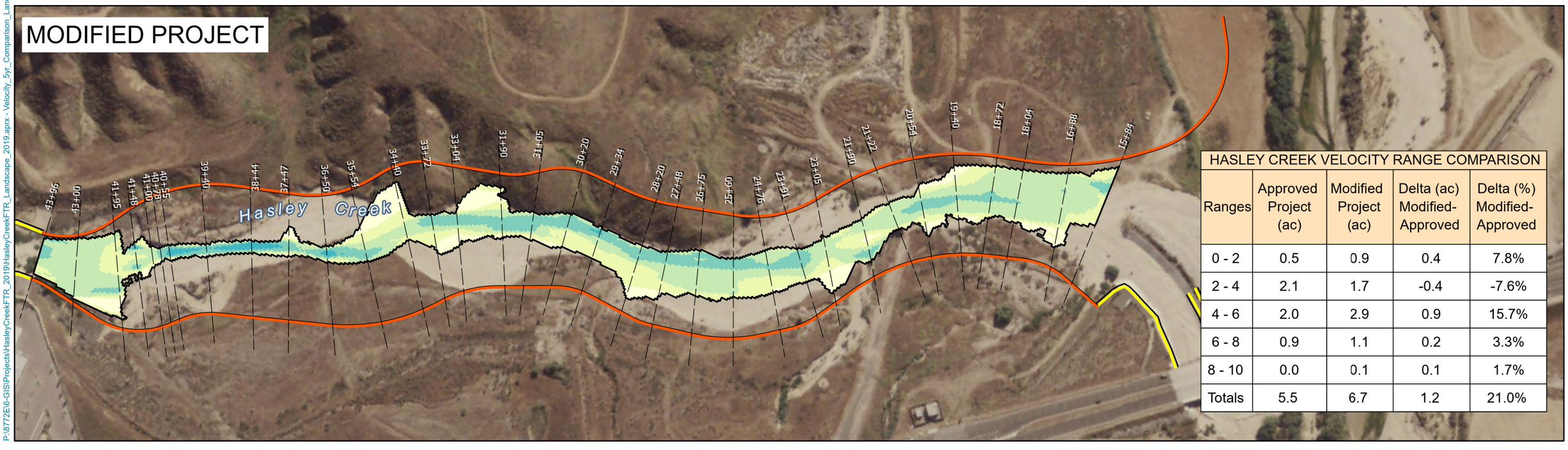
0 100 200 400 Feet

Date: 11/7/2024

Job Number: 8772

Figure 3.59





HASLEY CREEK VELOCITY RANGE COMPARISON				
Ranges	Approved Project (ac)	Modified Project (ac)	Delta (ac) Modified-Approved	Delta (%) Modified-Approved
0 - 2	0.5	0.9	0.4	7.8%
2 - 4	2.1	1.7	-0.4	-7.6%
4 - 6	2.0	2.9	0.9	15.7%
6 - 8	0.9	1.1	0.2	3.3%
8 - 10	0.0	0.1	0.1	1.7%
Totals	5.5	6.7	1.2	21.0%

P:\8772E\6-GIS\Projects\HasleyCreekFTR_2019\HasleyCreekFTR_Landscape_2019.aprx - Velocity_5yr_Comparison_Landscape

CASTAIC CREEK AND HASLEY CREEK FLOOD TECHNICAL REPORT

5-YEAR EVENT VELOCITY COMPARISON

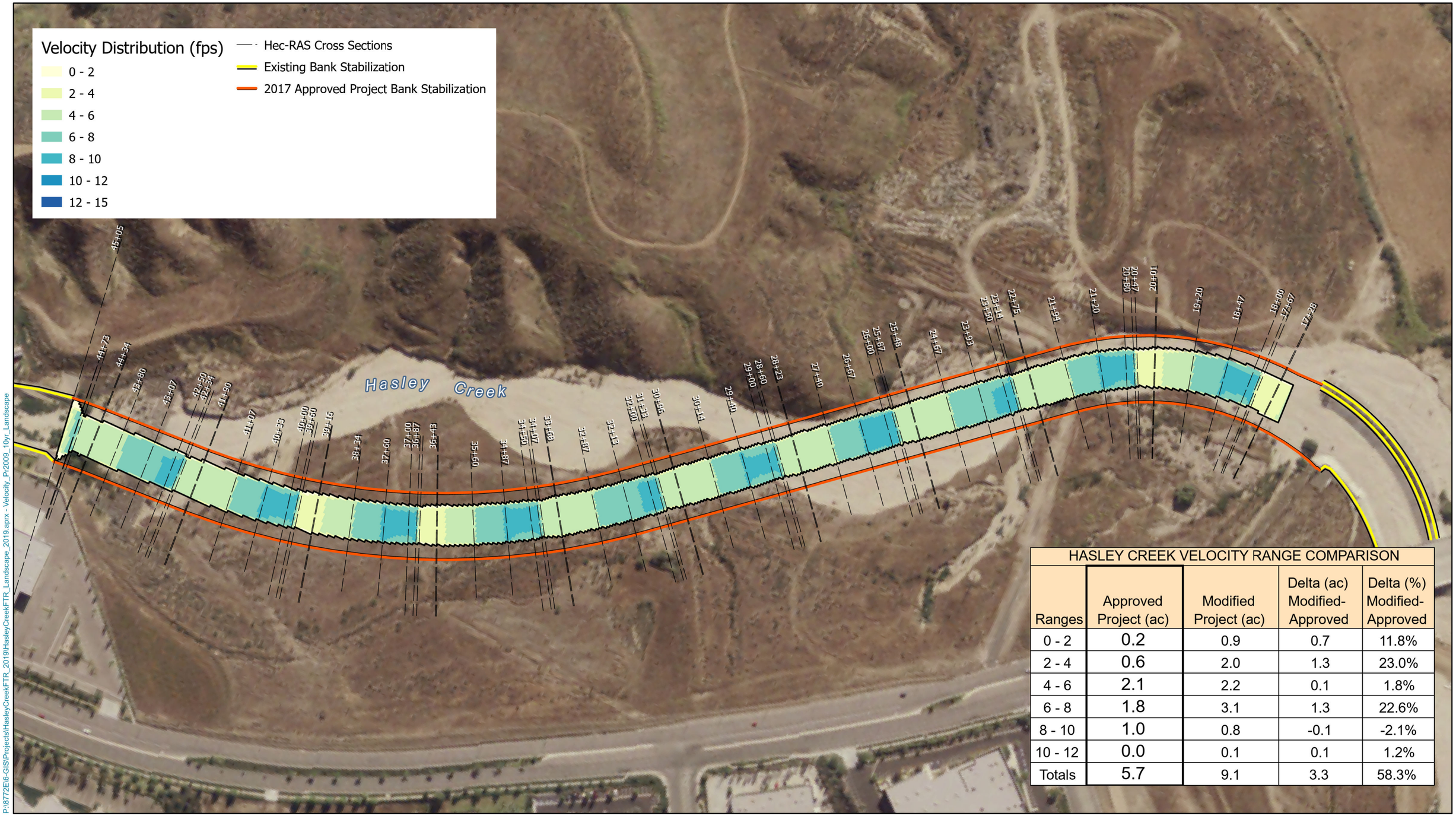
PACE Advanced Water Engineering

0 125 250 500 Feet

Date: 11/7/2024

Job Number: 8772

Figure 3.60



HASLEY CREEK VELOCITY RANGE COMPARISON				
Ranges	Approved Project (ac)	Modified Project (ac)	Delta (ac) Modified-Approved	Delta (%) Modified-Approved
0 - 2	0.2	0.9	0.7	11.8%
2 - 4	0.6	2.0	1.3	23.0%
4 - 6	2.1	2.2	0.1	1.8%
6 - 8	1.8	3.1	1.3	22.6%
8 - 10	1.0	0.8	-0.1	-2.1%
10 - 12	0.0	0.1	0.1	1.2%
Totals	5.7	9.1	3.3	58.3%

P:\8772E16-GIS\Projects\HasleyCreekFTR_2019\HasleyCreekFTR_Landscape_2019.aprx - Velocity_Pr2009_10yr_Landscape

CASTAIC CREEK AND HASLEY CREEK FLOOD TECHNICAL REPORT

10-YEAR EVENT 2017 APPROVED PROJECT VELOCITY DISTRIBUTION

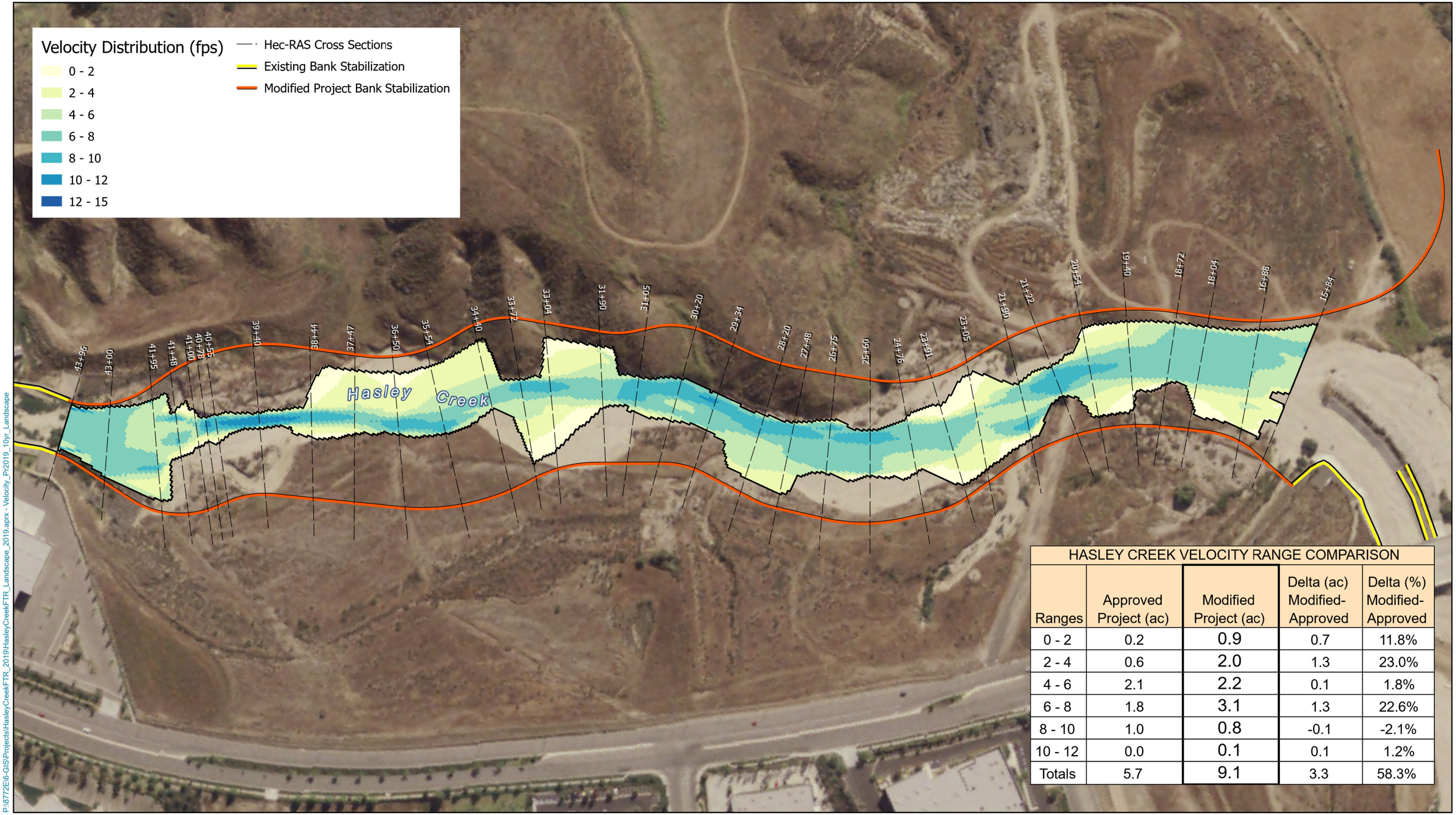
PACE Advanced Water Engineering

0 100 200 400 Feet

Date: 11/7/2024

Job Number: 8772

Figure 3.61



HASLEY CREEK VELOCITY RANGE COMPARISON

Ranges	Approved Project (ac)	Modified Project (ac)	Delta (ac) Modified-Approved	Delta (%) Modified-Approved
0 - 2	0.2	0.9	0.7	11.8%
2 - 4	0.6	2.0	1.3	23.0%
4 - 6	2.1	2.2	0.1	1.8%
6 - 8	1.8	3.1	1.3	22.6%
8 - 10	1.0	0.8	-0.1	-2.1%
10 - 12	0.0	0.1	0.1	1.2%
Totals	5.7	9.1	3.3	58.3%

P:\8772E\6-GIS\Projects\HasleyCreekFTR_2019\HasleyCreekFTR_Landscape_2019.aprx - Velocity_Pr2019_10yr_Landscape

CASTAIC CREEK AND HASLEY CREEK FLOOD TECHNICAL REPORT

10-YEAR EVENT MODIFIED PROJECT VELOCITY DISTRIBUTION

PACE Advanced Water Engineering

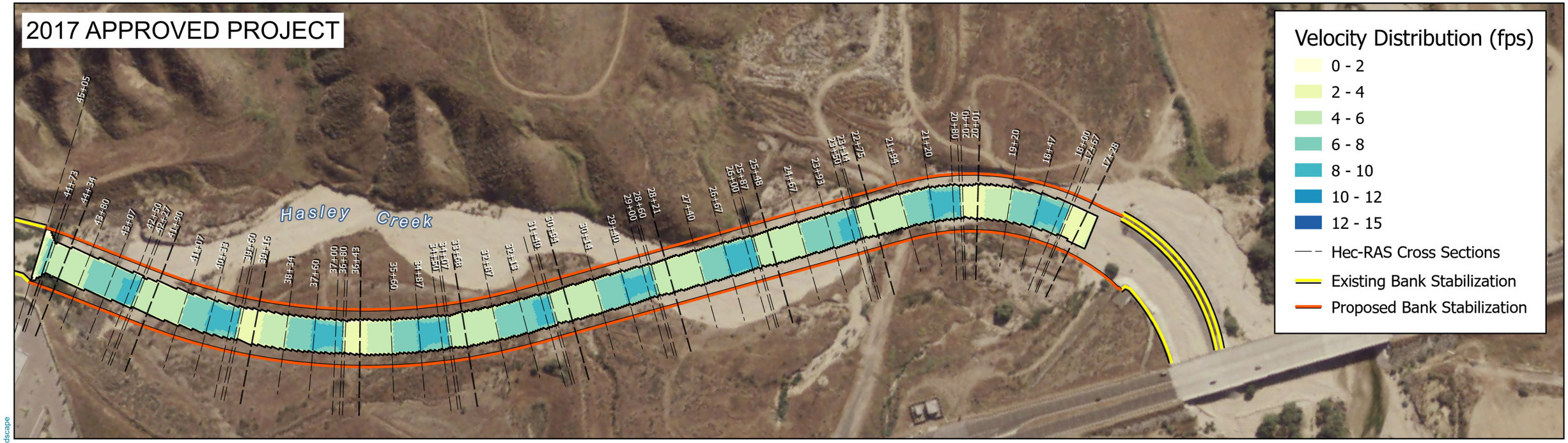
0 100 200 400 Feet

Date: 11/7/2024

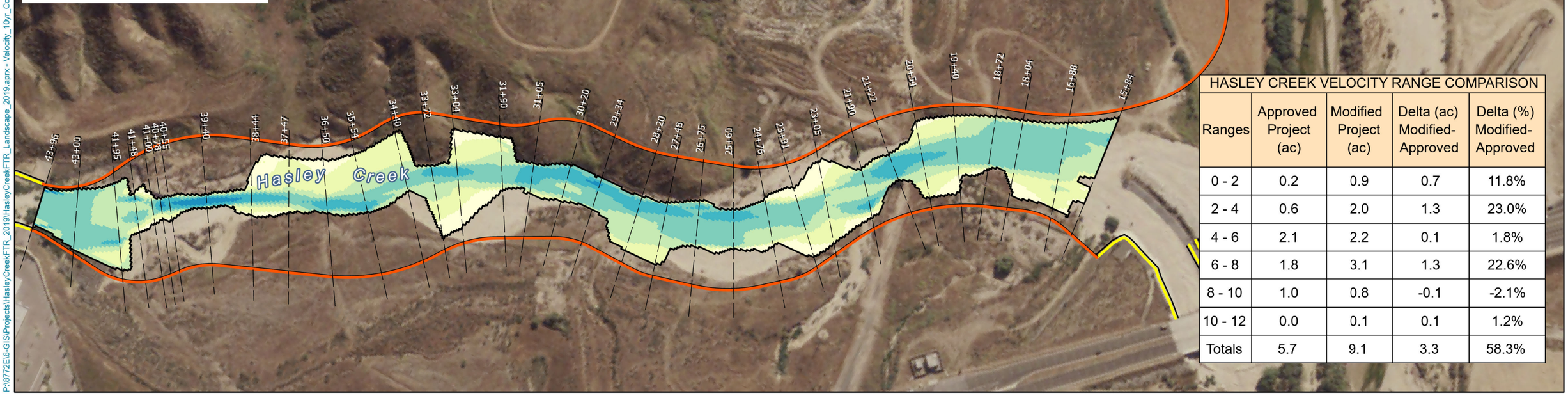
Job Number: 8772

Figure 3.62

2017 APPROVED PROJECT



MODIFIED PROJECT



HASLEY CREEK VELOCITY RANGE COMPARISON				
Ranges	Approved Project (ac)	Modified Project (ac)	Delta (ac) Modified-Approved	Delta (%) Modified-Approved
0 - 2	0.2	0.9	0.7	11.8%
2 - 4	0.6	2.0	1.3	23.0%
4 - 6	2.1	2.2	0.1	1.8%
6 - 8	1.8	3.1	1.3	22.6%
8 - 10	1.0	0.8	-0.1	-2.1%
10 - 12	0.0	0.1	0.1	1.2%
Totals	5.7	9.1	3.3	58.3%

P:\8772E\6-GIS\Projects\HasleyCreekFTR_2019\HasleyCreekFTR_Landscape_2019.aprx - Velocity_10yr_Comparison_Landscape

CASTAIC CREEK AND HASLEY CREEK FLOOD TECHNICAL REPORT

10-YEAR EVENT VELOCITY COMPARISON

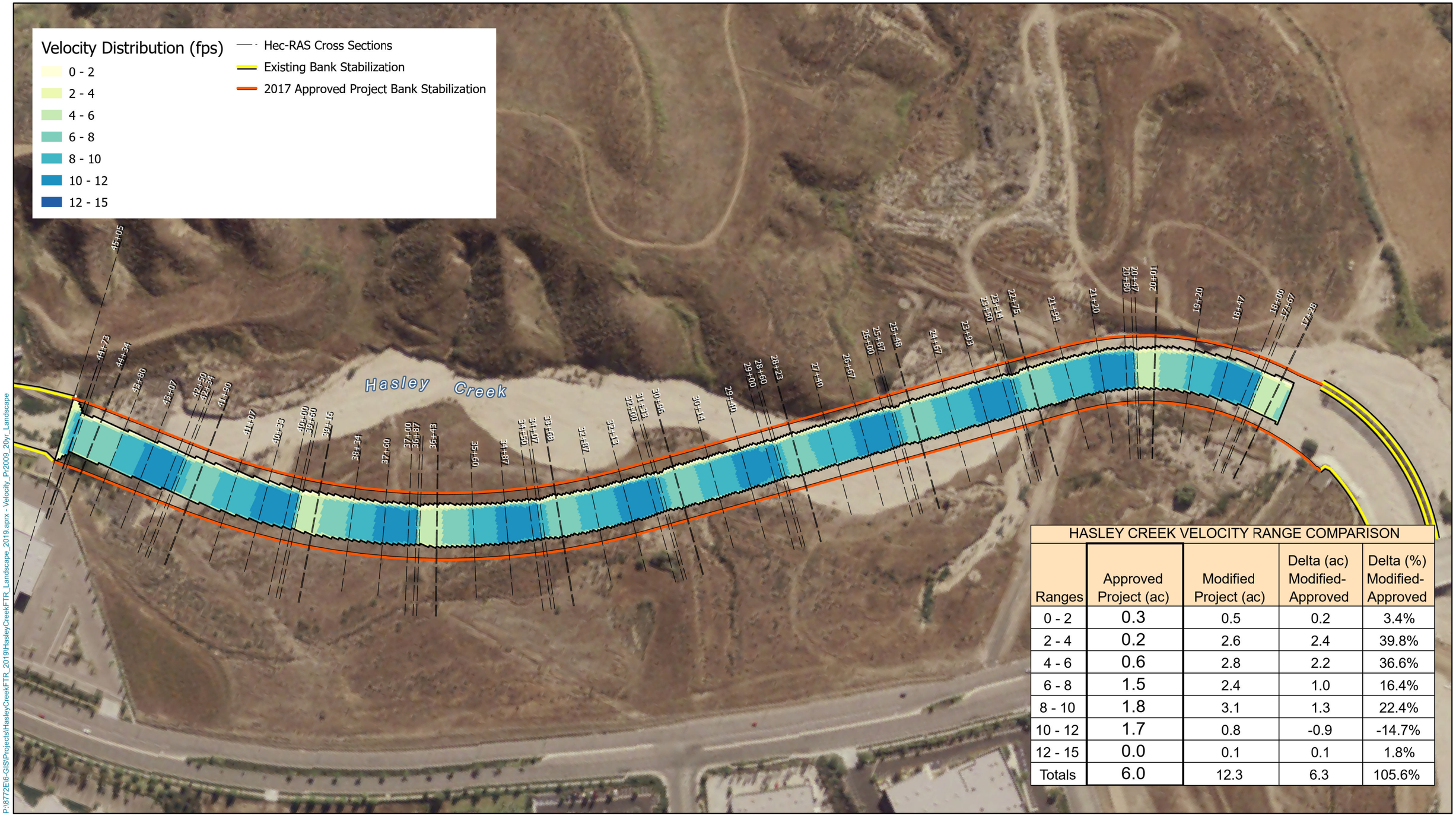
PACE Advanced Water Engineering

0 125 250 500 Feet

Date: 11/7/2024

Job Number: 8772

Figure 3.63



HASLEY CREEK VELOCITY RANGE COMPARISON				
Ranges	Approved Project (ac)	Modified Project (ac)	Delta (ac) Modified-Approved	Delta (%) Modified-Approved
0 - 2	0.3	0.5	0.2	3.4%
2 - 4	0.2	2.6	2.4	39.8%
4 - 6	0.6	2.8	2.2	36.6%
6 - 8	1.5	2.4	1.0	16.4%
8 - 10	1.8	3.1	1.3	22.4%
10 - 12	1.7	0.8	-0.9	-14.7%
12 - 15	0.0	0.1	0.1	1.8%
Totals	6.0	12.3	6.3	105.6%

P:\8772E\6-GIS\Projects\HasleyCreekFTR_2019\HasleyCreekFTR_Landscape_2019.aprx - Velocity_Pr2009_20yr_Landscape

CASTAIC CREEK AND HASLEY CREEK FLOOD TECHNICAL REPORT

20-YEAR EVENT 2017 APPROVED PROJECT VELOCITY DISTRIBUTION

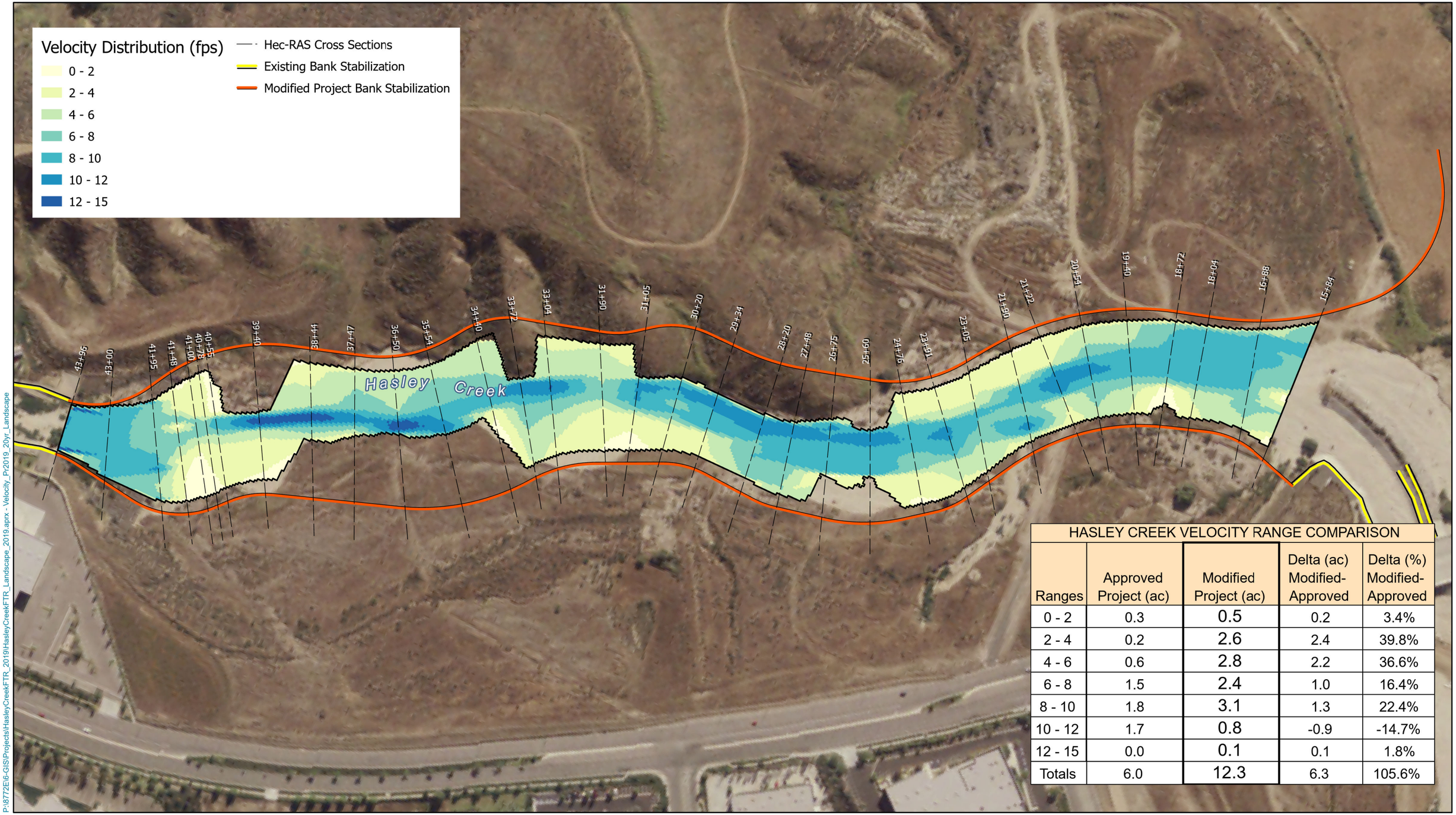
PACE Advanced Water Engineering

0 100 200 400 Feet

Date: 11/7/2024

Job Number: 8772

Figure 3.64



HASLEY CREEK VELOCITY RANGE COMPARISON

Ranges	Approved Project (ac)	Modified Project (ac)	Delta (ac) Modified-Approved	Delta (%) Modified-Approved
0 - 2	0.3	0.5	0.2	3.4%
2 - 4	0.2	2.6	2.4	39.8%
4 - 6	0.6	2.8	2.2	36.6%
6 - 8	1.5	2.4	1.0	16.4%
8 - 10	1.8	3.1	1.3	22.4%
10 - 12	1.7	0.8	-0.9	-14.7%
12 - 15	0.0	0.1	0.1	1.8%
Totals	6.0	12.3	6.3	105.6%

P:\8772E\6-GIS\Projects\HasleyCreekFTR_2019\HasleyCreekFTR_Landscape_2019.aprx - Velocity_Pr2019_20yr_Landscape

CASTAIC CREEK AND HASLEY CREEK FLOOD TECHNICAL REPORT

20-YEAR EVENT MODIFIED PROJECT VELOCITY DISTRIBUTION

PACE Advanced Water Engineering

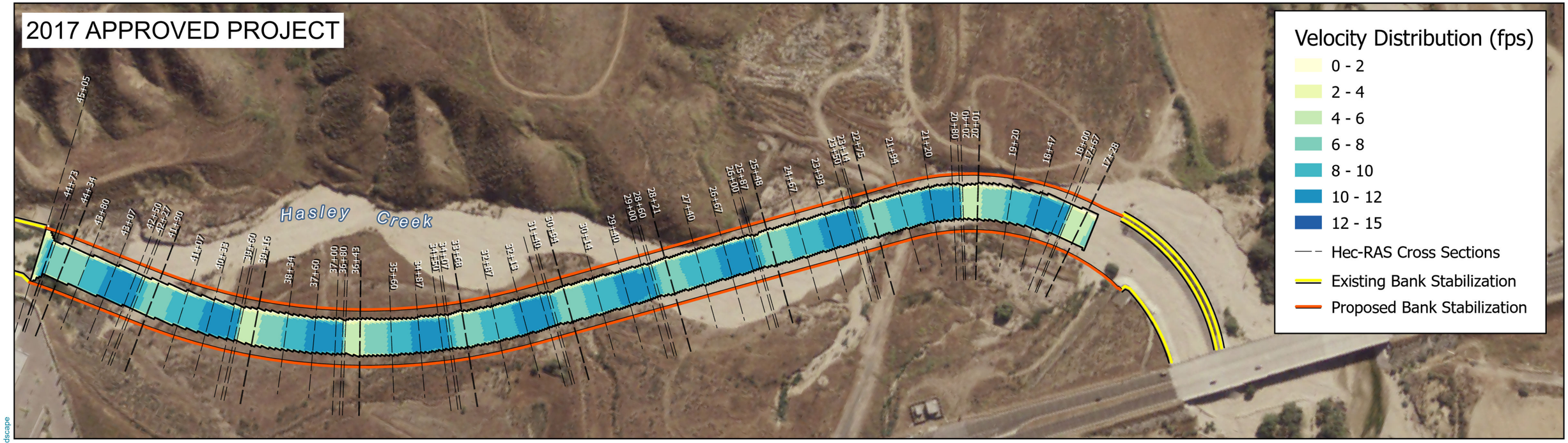
0 100 200 400 Feet

Date: 11/7/2024

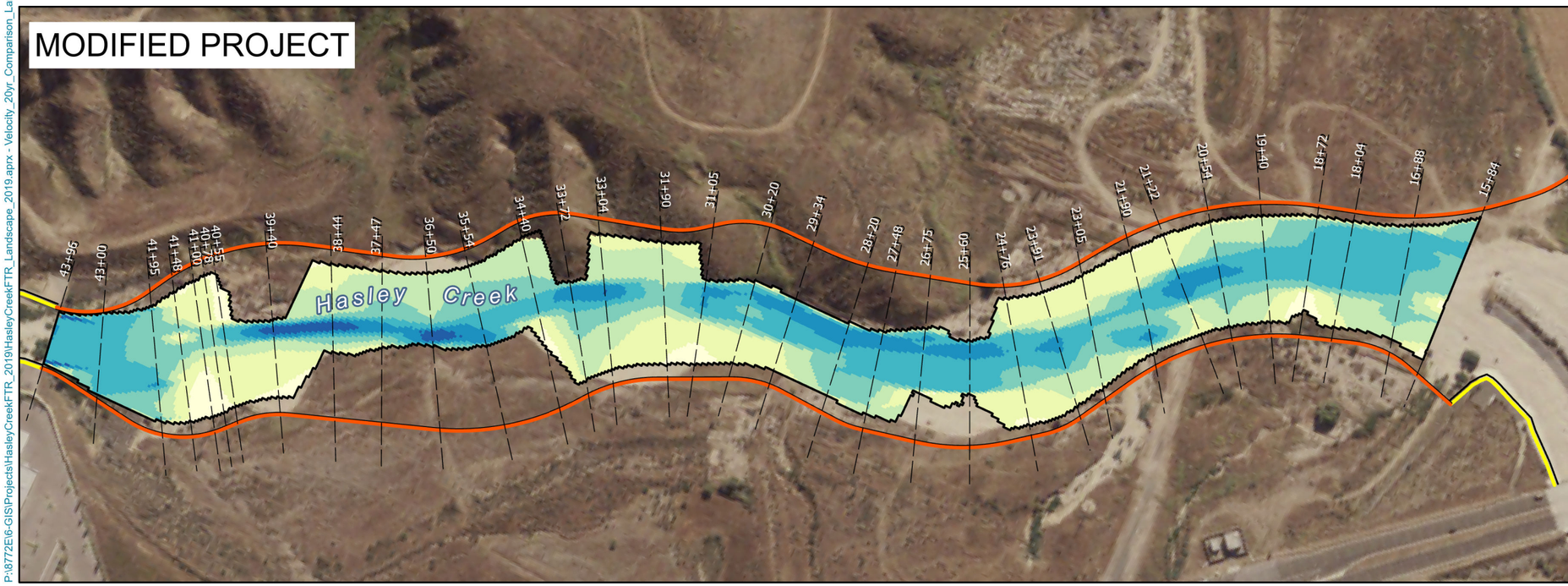
Job Number: 8772

Figure 3.65

2017 APPROVED PROJECT



MODIFIED PROJECT



HASLEY CREEK VELOCITY RANGE COMPARISON

Ranges	Approved Project (ac)	Modified Project (ac)	Delta (ac) Modified-Approved	Delta (%) Modified-Approved
0 - 2	0.3	0.5	0.2	3.4%
2 - 4	0.2	2.6	2.4	39.8%
4 - 6	0.6	2.8	2.2	36.6%
6 - 8	1.5	2.4	1.0	16.4%
8 - 10	1.8	3.1	1.3	22.4%
10 - 12	1.7	0.8	-0.9	-14.7%
12 - 15	0.0	0.1	0.1	1.8%
Totals	6.0	12.3	6.3	105.6%

P:\8772E\6-GIS\Projects\HasleyCreekFTR_2019\HasleyCreekFTR_Landscape_2019.aprx - Velocity_20yr_Comparison_Landscape

CASTAIC CREEK AND HASLEY CREEK FLOOD TECHNICAL REPORT

20-YEAR EVENT VELOCITY COMPARISON

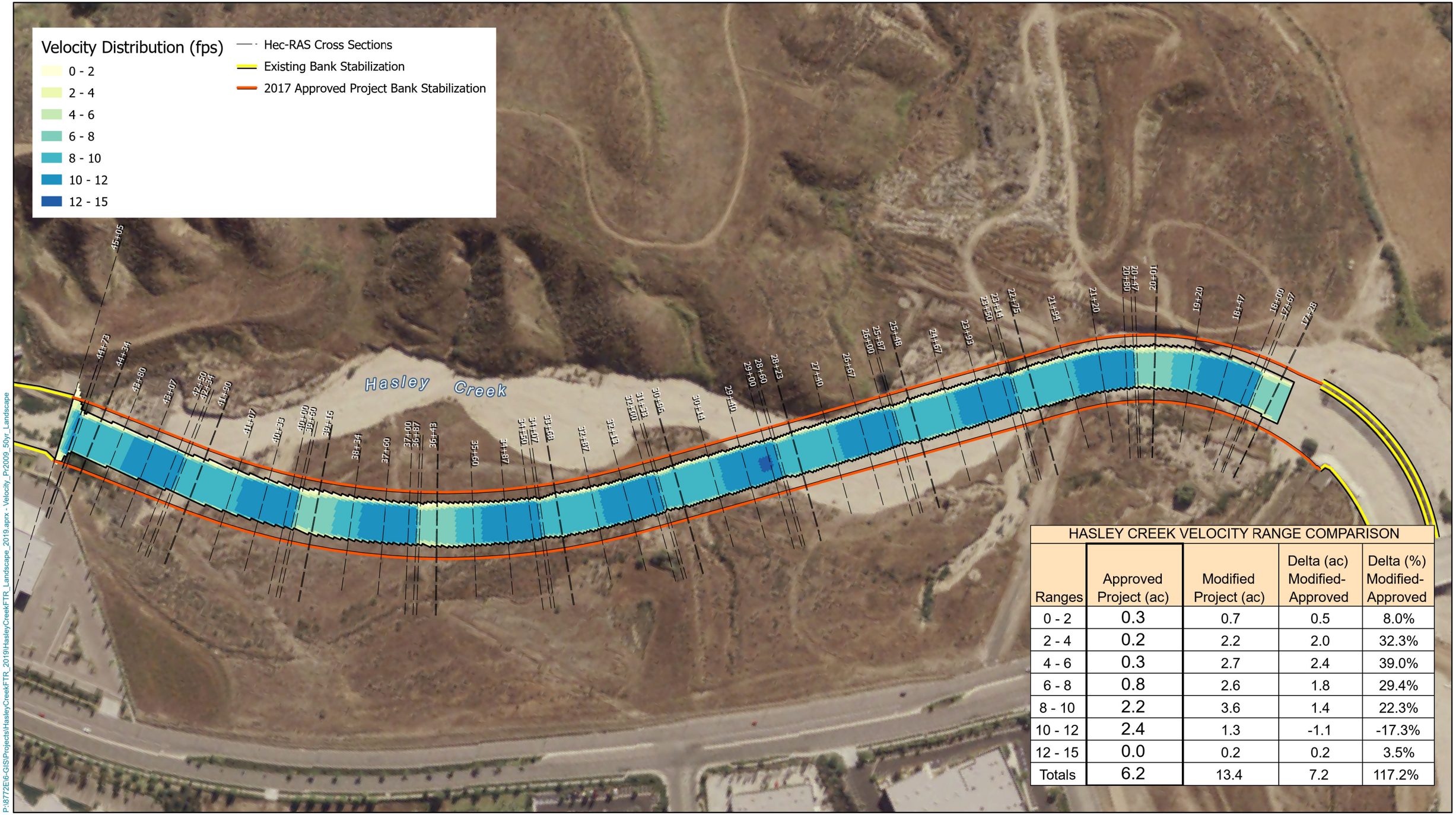
PACE Advanced Water Engineering

0 125 250 500 Feet

Date: 11/7/2024

Job Number: 8772

Figure 3.66



HASLEY CREEK VELOCITY RANGE COMPARISON				
Ranges	Approved Project (ac)	Modified Project (ac)	Delta (ac) Modified-Approved	Delta (%) Modified-Approved
0 - 2	0.3	0.7	0.5	8.0%
2 - 4	0.2	2.2	2.0	32.3%
4 - 6	0.3	2.7	2.4	39.0%
6 - 8	0.8	2.6	1.8	29.4%
8 - 10	2.2	3.6	1.4	22.3%
10 - 12	2.4	1.3	-1.1	-17.3%
12 - 15	0.0	0.2	0.2	3.5%
Totals	6.2	13.4	7.2	117.2%

P:\8772E\6-GIS\Projects\HasleyCreekFTR_2019\HasleyCreekFTR_Landscape_2019.aprx - Velocity_Pr2009_50yr_Landscape

CASTAIC CREEK AND HASLEY CREEK FLOOD TECHNICAL REPORT

50-YEAR EVENT 2017 APPROVED PROJECT VELOCITY DISTRIBUTION

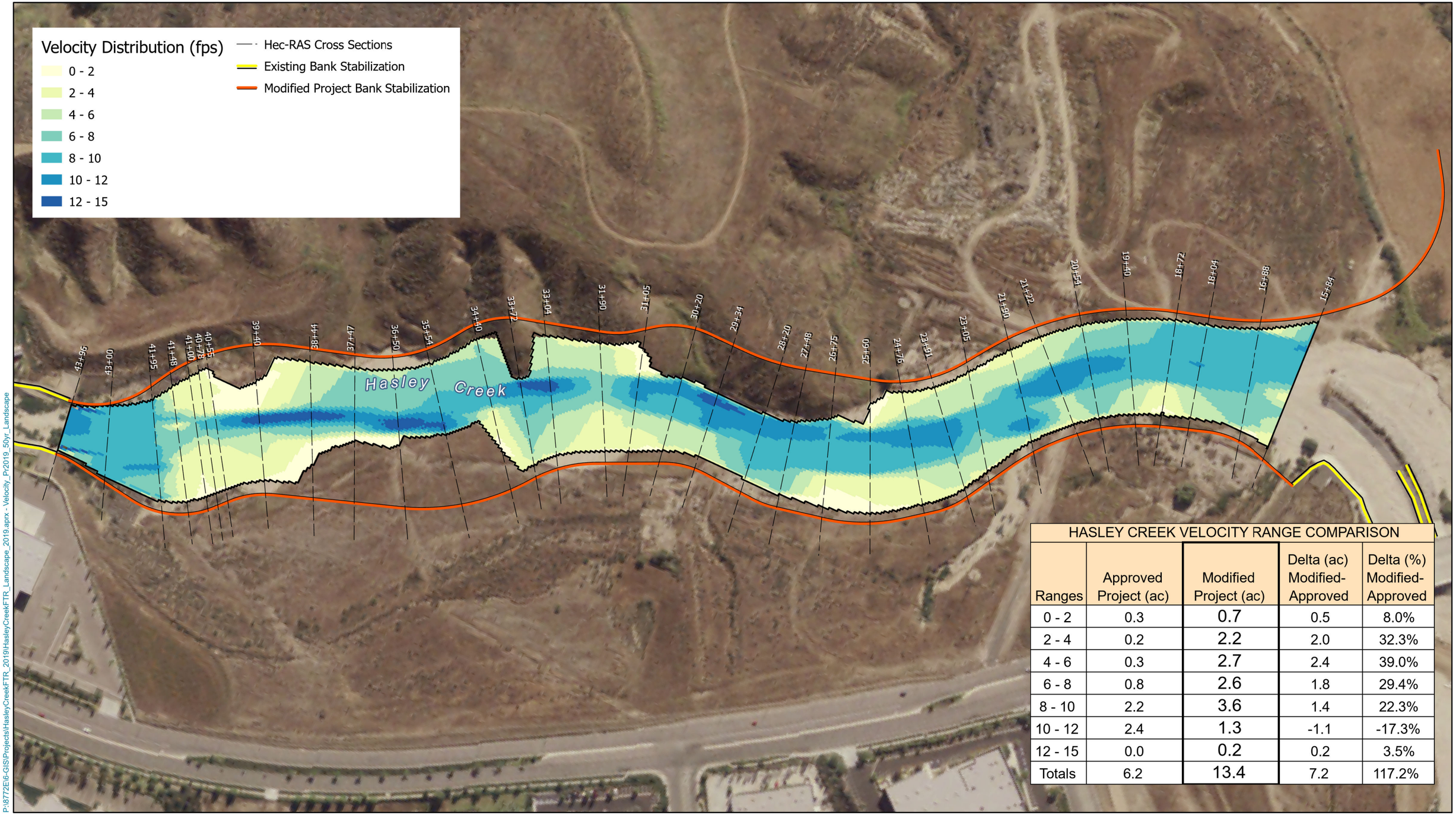
PACE Advanced Water Engineering

0 100 200 400 Feet

Date: 11/7/2024

Job Number: 8772

Figure 3.67



HASLEY CREEK VELOCITY RANGE COMPARISON

Ranges	Approved Project (ac)	Modified Project (ac)	Delta (ac) Modified-Approved	Delta (%) Modified-Approved
0 - 2	0.3	0.7	0.5	8.0%
2 - 4	0.2	2.2	2.0	32.3%
4 - 6	0.3	2.7	2.4	39.0%
6 - 8	0.8	2.6	1.8	29.4%
8 - 10	2.2	3.6	1.4	22.3%
10 - 12	2.4	1.3	-1.1	-17.3%
12 - 15	0.0	0.2	0.2	3.5%
Totals	6.2	13.4	7.2	117.2%

P:\8772E\6-GIS\Projects\HasleyCreekFTR_2019\HasleyCreekFTR_Landscape_2019.aprx - Velocity_Pr2019_50yr_Landscape

CASTAIC CREEK AND HASLEY CREEK FLOOD TECHNICAL REPORT

50-YEAR EVENT MODIFIED PROJECT VELOCITY DISTRIBUTION

PACE Advanced Water Engineering

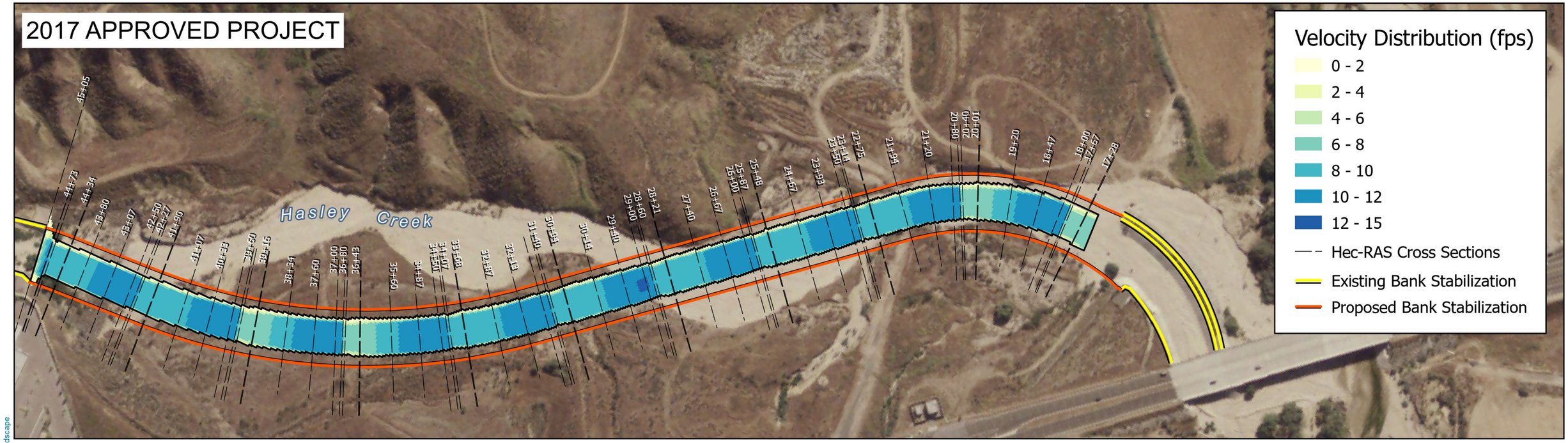
0 100 200 400 Feet

Date: 11/7/2024

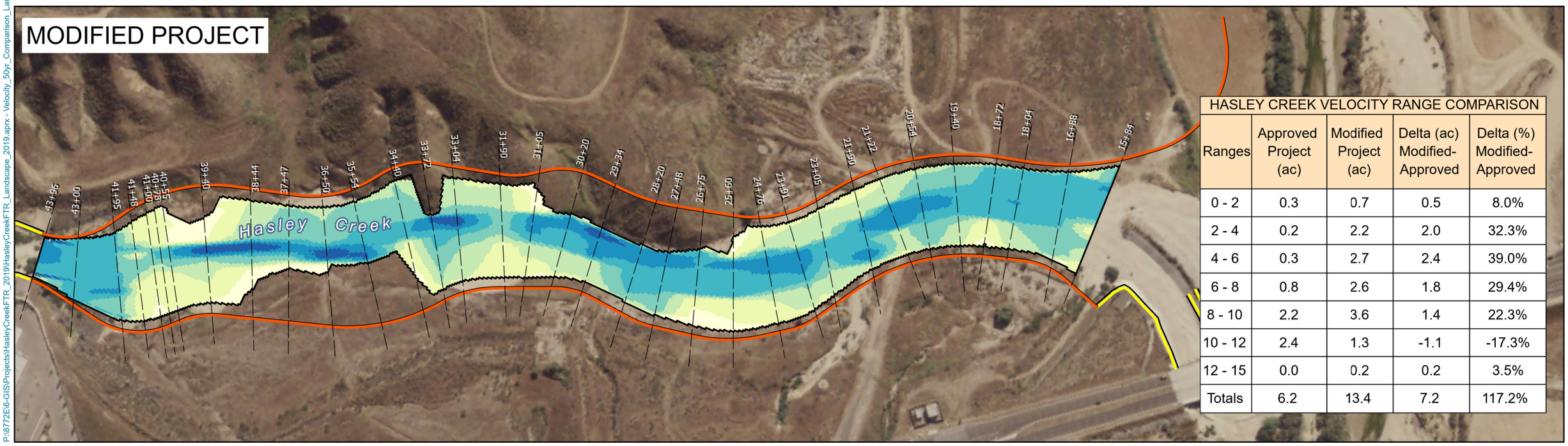
Job Number: 8772

Figure 3.68

2017 APPROVED PROJECT



MODIFIED PROJECT



HASLEY CREEK VELOCITY RANGE COMPARISON

Ranges	Approved Project (ac)	Modified Project (ac)	Delta (ac) Modified-Approved	Delta (%) Modified-Approved
0 - 2	0.3	0.7	0.5	8.0%
2 - 4	0.2	2.2	2.0	32.3%
4 - 6	0.3	2.7	2.4	39.0%
6 - 8	0.8	2.6	1.8	29.4%
8 - 10	2.2	3.6	1.4	22.3%
10 - 12	2.4	1.3	-1.1	-17.3%
12 - 15	0.0	0.2	0.2	3.5%
Totals	6.2	13.4	7.2	117.2%

P:\8772E\6-GIS\Projects\HasleyCreekFTR_2019\HasleyCreekFTR_Landscape_2019.aprx - Velocity_50yr_Comparison_Landscape

CASTAIC CREEK AND HASLEY CREEK FLOOD TECHNICAL REPORT

50-YEAR EVENT VELOCITY COMPARISON

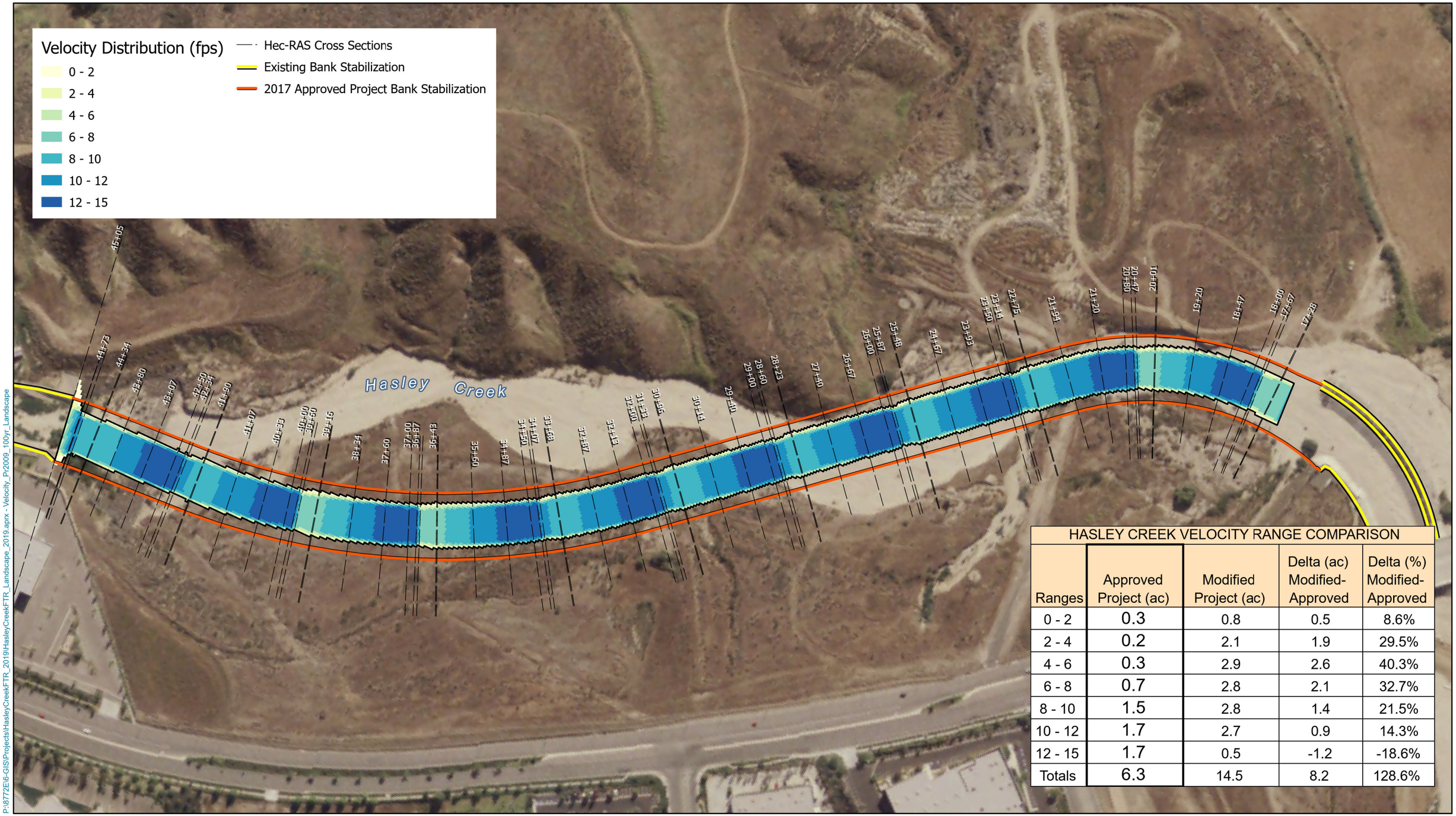
PACE Advanced Water Engineering

0 125 250 500 Feet

Date: 11/7/2024

Job Number: 8772

Figure 3.69



HASLEY CREEK VELOCITY RANGE COMPARISON				
Ranges	Approved Project (ac)	Modified Project (ac)	Delta (ac) Modified-Approved	Delta (%) Modified-Approved
0 - 2	0.3	0.8	0.5	8.6%
2 - 4	0.2	2.1	1.9	29.5%
4 - 6	0.3	2.9	2.6	40.3%
6 - 8	0.7	2.8	2.1	32.7%
8 - 10	1.5	2.8	1.4	21.5%
10 - 12	1.7	2.7	0.9	14.3%
12 - 15	1.7	0.5	-1.2	-18.6%
Totals	6.3	14.5	8.2	128.6%

P:\8772E\6-GIS\Projects\HasleyCreekFTR_2019\HasleyCreekFTR_Landscape_2019.aprx - Velocity_P2009_100yr_Landscape

CASTAIC CREEK AND HASLEY CREEK FLOOD TECHNICAL REPORT

100-YEAR EVENT 2017 APPROVED PROJECT VELOCITY DISTRIBUTION

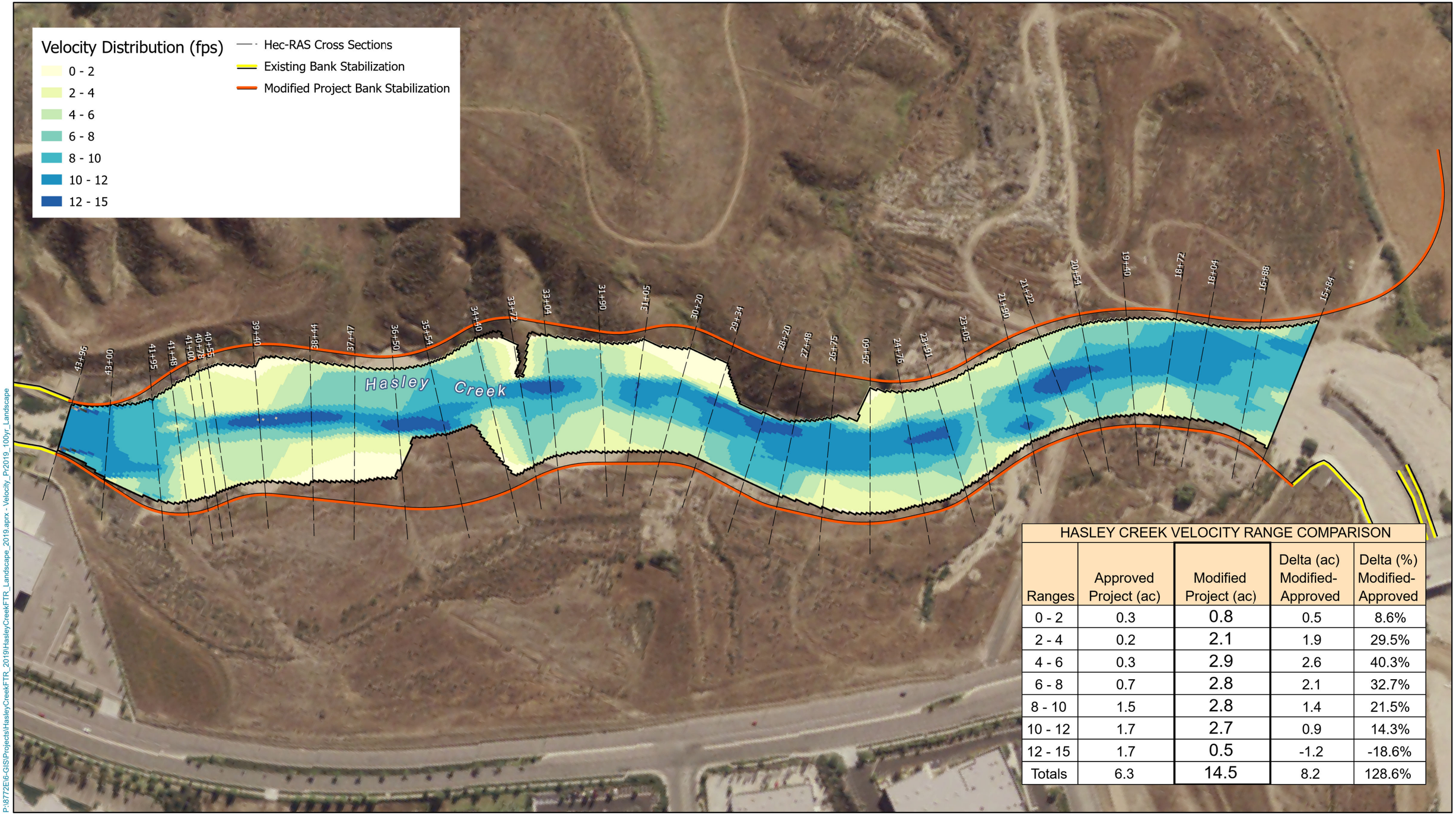
PACE Advanced Water Engineering

0 100 200 400 Feet

Date: 11/7/2024

Job Number: 8772

Figure 3.70



HASLEY CREEK VELOCITY RANGE COMPARISON

Ranges	Approved Project (ac)	Modified Project (ac)	Delta (ac) Modified-Approved	Delta (%) Modified-Approved
0 - 2	0.3	0.8	0.5	8.6%
2 - 4	0.2	2.1	1.9	29.5%
4 - 6	0.3	2.9	2.6	40.3%
6 - 8	0.7	2.8	2.1	32.7%
8 - 10	1.5	2.8	1.4	21.5%
10 - 12	1.7	2.7	0.9	14.3%
12 - 15	1.7	0.5	-1.2	-18.6%
Totals	6.3	14.5	8.2	128.6%

P:\8772E\6-GIS\Projects\HasleyCreekFTR_2019\HasleyCreekFTR_Landscape_2019.aprx - Velocity_Pr2019_100yr_Landscape

CASTAIC CREEK AND HASLEY CREEK FLOOD TECHNICAL REPORT

100-YEAR EVENT MODIFIED PROJECT VELOCITY DISTRIBUTION

PACE Advanced Water Engineering

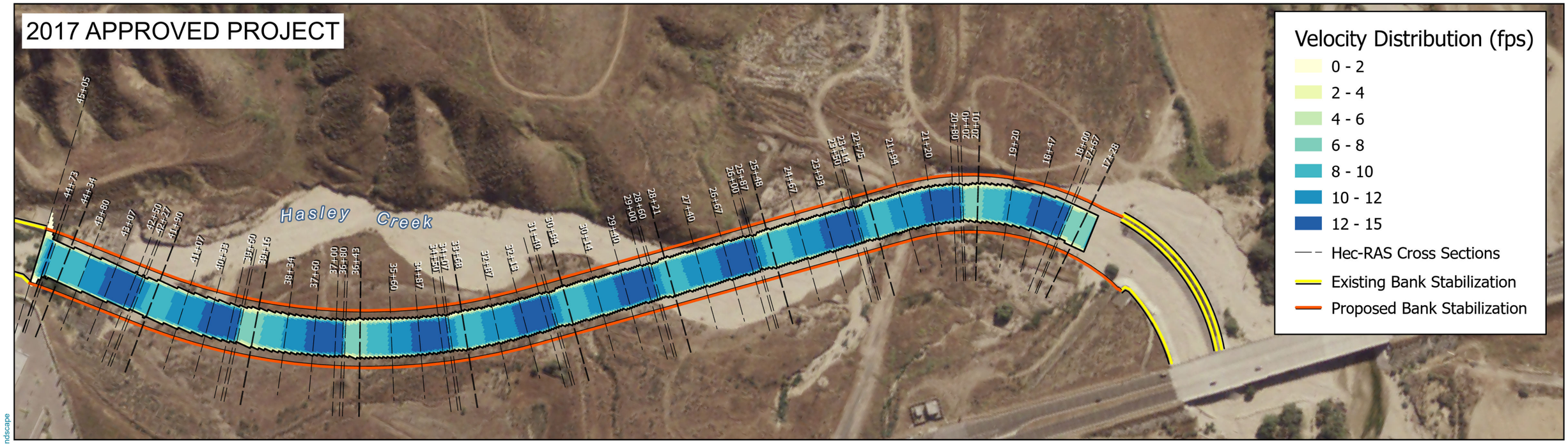
0 100 200 400 Feet

Date: 11/7/2024

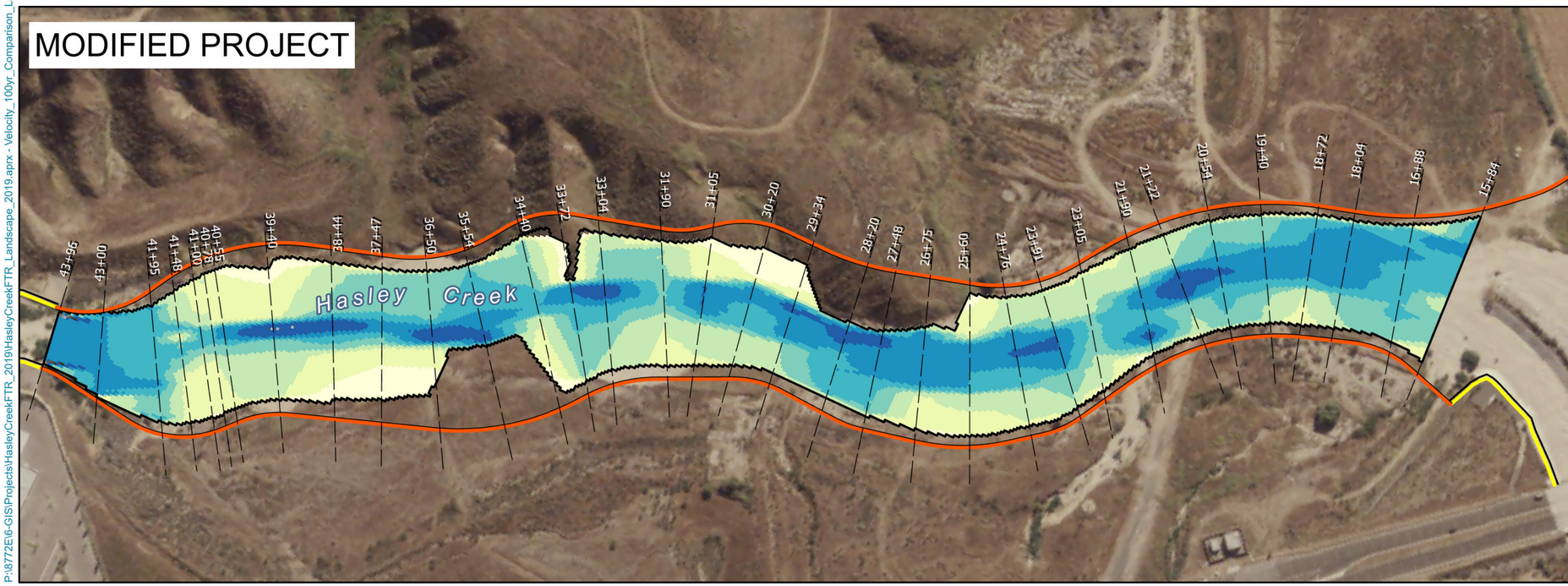
Job Number: 8772

Figure 3.71

2017 APPROVED PROJECT



MODIFIED PROJECT



HASLEY CREEK VELOCITY RANGE COMPARISON

Ranges	Approved Project (ac)	Modified Project (ac)	Delta (ac) Modified-Approved	Delta (%) Modified-Approved
0 - 2	0.3	0.8	0.5	8.6%
2 - 4	0.2	2.1	1.9	29.5%
4 - 6	0.3	2.9	2.6	40.3%
6 - 8	0.7	2.8	2.1	32.7%
8 - 10	1.5	2.8	1.4	21.5%
10 - 12	1.7	2.7	0.9	14.3%
12 - 15	1.7	0.5	-1.2	-18.6%
Totals	6.3	14.5	8.2	128.6%

P:\8772\E16-GIS\Projects\HasleyCreekFTR_2019\HasleyCreekFTR_Landscape_2019.aprx - Velocity_100yr_Comparison_Landscape

CASTAIC CREEK AND HASLEY CREEK FLOOD TECHNICAL REPORT

100-YEAR EVENT VELOCITY COMPARISON

PACE Advanced Water Engineering

0 125 250 500 Feet

Date: 11/7/2024

Job Number: 8772

Figure 3.72

Appendix 5.5f

Hasley Canyon Creek County Floodplain Report

LAND DEVELOPMENT DIVISION
STORM DRAIN & HYDROLOGY UNIT

TO: PACE Advanced Water Engineering
17520 Newhope St, Suite 200
Fountain Valley, CA 92708
ATTN: Jose Cruz
CC: Jason Fukumitsu

DATE 08/13/2024

REVIEW OF HYDROLOGY STUDY

PARCEL MAP: 18108

DATE OF REPORT : 5/2024
PLAN CASE NO.: ESTU2023000298

The LA County Floodplain and Floodway Map Revision for Hasley Canyon Creek has been approved.

COMMENTS:

1. This approval supersedes the original approved report dated September 2023.

REVIEWED BY _____
Chung, Lonnie - (626) 458-7102

APPROVED BY: _____
Ngov, Thong

Valencia Commerce Center TPM No. 18108

Los Angeles County Floodplain and Floodway Map Revision for Hasley Canyon Creek
ESTU No. 2023000298

May 2024
Revised September 2023
Revised July 2023
Revised May 2023

HYDROLOGY STUDY APPROVED

REVIEWED BY: _____ DATE 7/25/2024

APPROVED BY: Thong Ngov DATE 8/13/2024

COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS
LAND DEVELOPMENT DIVISION

Prepared for:

FivePoint Communities, LLC
25124 Springfield Court
Valencia, CA 91335

Submitted to:

Los Angeles County Department of Public Works
900 South Fremont Avenue
Alhambra, CA 91803

Prepared by:

Pacific Advanced Civil Engineering, Inc.
17520 Newhope Street, Suite 200
Fountain Valley, CA 92708
714-481-7300

Contact Person:
Jose Cruz, MS, PE
Madeline Howell, MS, PE

REGISTERED PROFESSIONAL ENGINEER
JOSE CRUZ
No. 72249
Exp. 06-30-24
CIVIL
STATE OF CALIFORNIA

PACE JN A535

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Figures

Appendices

1 Introduction

1.1 Objective

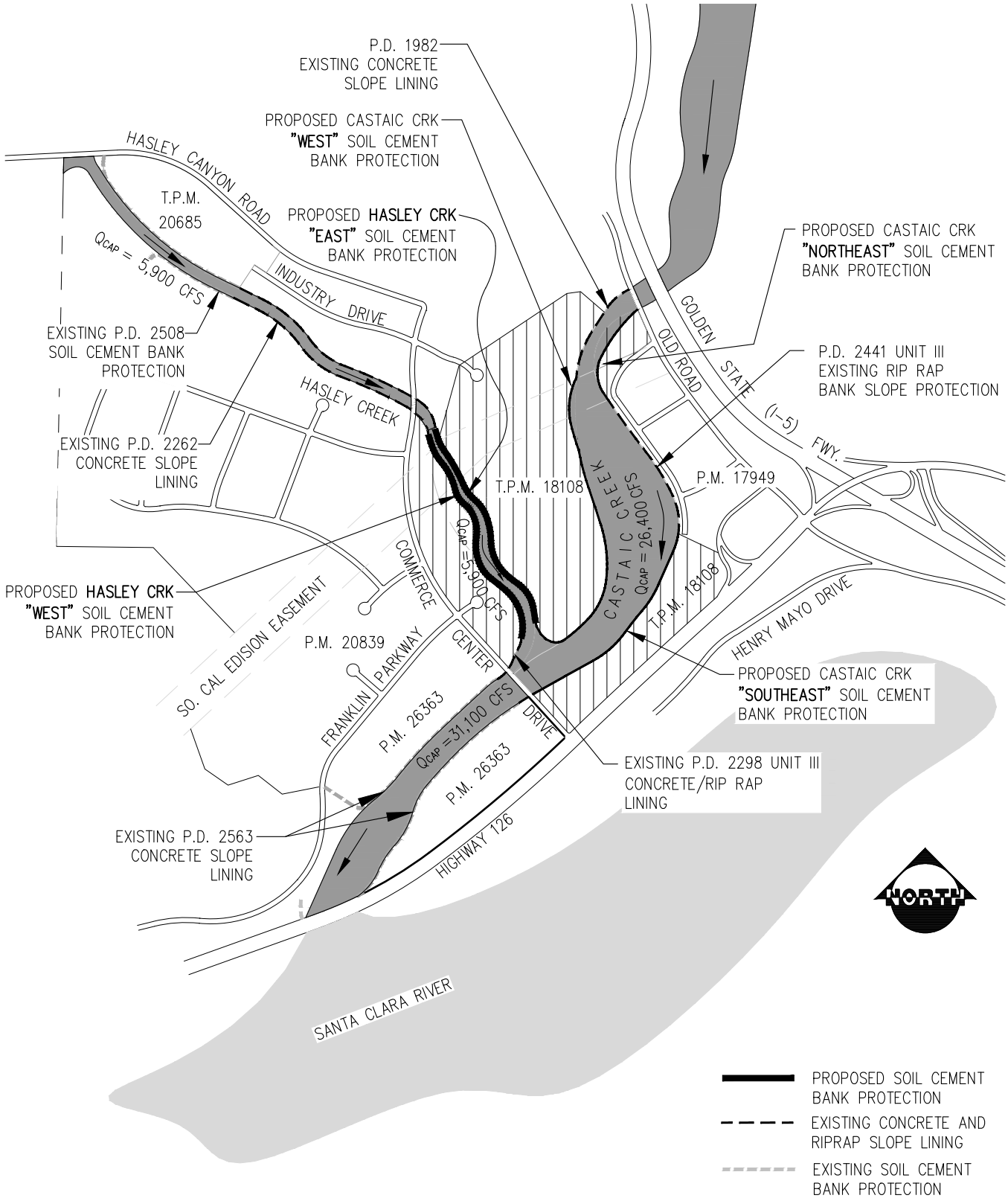
Pacific Advanced Civil Engineering, Inc. (PACE) has been retained by FivePoint Communities to prepare a revision to the Los Angeles (L.A.) County Floodway Maps, herein referred to as ML Maps, along Hasley Canyon Creek for the proposed creek improvements at Valencia Commerce Center (VCC) Industrial Park Development in Tentative Parcel Map (TPM) No. 18108. The purpose of this report is to describe the hydrology and hydraulic analysis for the Lower Hasley Canyon Creek, for a 3,700-ft study reach that extents from approximately 600 ft downstream of the Commerce Center Drive Bridge over Hasley Canyon Creek to the confluence with Castaic Creek. Additionally, this report presents updated existing conditions and proposed conditions floodplain and floodway limits for this study reach, on L.A. County floodway map no. 335-ML1 and 388-ML1.

1.2 Project Description

The VCC project site is located in an unincorporated area of Los Angeles County, west of the Interstate 5 freeway (I-5) and north of highway State Route 126 (SR-126). Please see **Figure 1-1** for a vicinity map displaying the project site location. The proposed improvements consist of buried soil cement bank protection, a proposed drop structure/stilling basin, two grade control structures, the Franklin Parkway Bridge over Hasley Canyon Creek, and modifications to the existing concrete/rip-rap lined berm constructed per P.D. 2298 Unit III. Design and analysis of these proposed improvements are described in detail in *Drainage Concept Report Volume III of V, Hasley Canyon Creek Bank Protection, EIMP No. 2019000489*, which was approved by LACPW in March 2022 (PACE, October 2021).

The bank protection improvements will be located east of Commerce Center Drive and west of Castaic Creek, along the east and west banks of Hasley Canyon Creek. The proposed bank protection along the east and west banks of Hasley Canyon Creek will be approximately 3,000 linear feet and will protect the VCC Industrial Park Development from potential flooding and erosion. At the upstream end, the bank protection along both the east and west banks will join with the existing concrete slope lining along Hasley Canyon Creek per P.D. 2262. At the downstream end, the proposed Hasley Canyon Creek “East” bank protection joins the proposed Castaic Creek “West” bank protection, and the Hasley Canyon Creek “West” bank protection joins the existing concrete/rip-rap lining, per P.D. 2298-Unit III. The proposed soil cement bank protection will consist of an 8-foot wide soil cement section with varied height and a 1.5:1 (H:V) slope. The bank will then be buried with soil backfill with a variable slope of 3:1 (H:V) or flatter. The river bed excavation required to construct the bank protection will be backfilled and returned to existing grade. A workmap displaying the proposed improvements is included in **Figure 1-2**, and the proposed drop structure is shown in **Figure 1-3.**

In addition to the proposed soil cement bank protection, the proposed improvements include the Franklin Parkway Bridge over Hasley Canyon Creek, which is situated approximately 1,100 ft upstream of the Commerce Center Drive Bridge over Castaic Creek. Improvements also include shortening the existing concrete/rip-rap lined berm, per P.D. 2298, Unit III, to a length of 150-ft to allow flow from Hasley Canyon Creek to enter Castaic Creek upstream of the Commerce Center Drive Bridge. The modified diversion berm is shown in **Figure 1-4**.



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SCALE	N.T.S.
DESIGNED	JC
DRAWN	BDP
CHECKED	JC
DATE	REV. 02/20/2023
JOB NO.	A535-E

HASLEY CREEK
SOIL CEMENT BANK PROTECTION
TPM @ 18108

VICINITY MAP

FIGURE
1-1

PARCEL MAP No. 20839

FRANKLIN PARKWAY

LIVINGSTON AVE

HARRISON PARKWAY

COMMERCE CENTER DRIVE

PROPERTY BOUNDARY

CASTAIC CREEK
Q_{CAP} = 31,100 cfs

EXISTING CASTAIC CREEK SOIL CEMENT BANK PROTECTION PER P.D. NO. 2563

EXISTING HASLEY CREEK CONCRETE/RIPRAP LINING (PER P.D. 2298 UNIT III)

STA 10+50.89
BEGIN WEST BANK SOIL CEMENT
=TIE-IN EXISTING HASLEY CREEK LINING

EXISTING FLOW DIVERSION BERM PER PD 2298 UNIT III (LENGTH TO BE MODIFIED AS SHOWN)

PROPOSED GRADE CONTROL STRUCTURE #1

PROPOSED FRANKLIN PARKWAY BRIDGE

HASLEY CREEK
Q_{CAP} = 5,900 cfs

PROPOSED GRADE CONTROL STRUCTURE #2

PROPOSED DROP/STILLING BASIN STRUCTURE

STA 39+89.01
END WEST BANK SOIL CEMENT JOIN EXISTING CONCRETE SLOPE LINING

EXISTING CONCRETE SLOPE LINING PER P.D. 2262

STA 10+00.00
BEGIN EAST BANK SOIL CEMENT
=STA 10+00 TIE-IN
TO CASTAIC CREEK WEST BANK

CASTAIC CREEK SOIL CEMENT BANK PROTECTION PER DCR VOL. II OF V PREPARED BY PACE

STA 39+91.02
END EAST BANK SOIL CEMENT JOIN EXISTING CONCRETE SLOPE LINING

CASTAIC CREEK
Q_{CAP} = 31,100 cfs

CASTAIC CREEK
Q_{CAP} = 26,400 cfs

TENTATIVE
PARCEL MAP No. 18108
(GRADING PLAN BY OTHERS)

TENTATIVE
PARCEL MAP No. 18108
(GRADING PLAN BY OTHERS)

100 0 100 200
SCALE 1"=100'

NO	BY	DATE		DATE	APP.

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HASLEY CANYON CREEK FLOODPLAIN AND FLOODWAY MAPPING

LOS ANGELES COUNTY CA.

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PREPARED	
PROJECT ENGINEER	
R.C.E. NO.	
EXP.	
DRAWN	SCALE 1"=100'
DESIGNED	
CHECKED	DATE

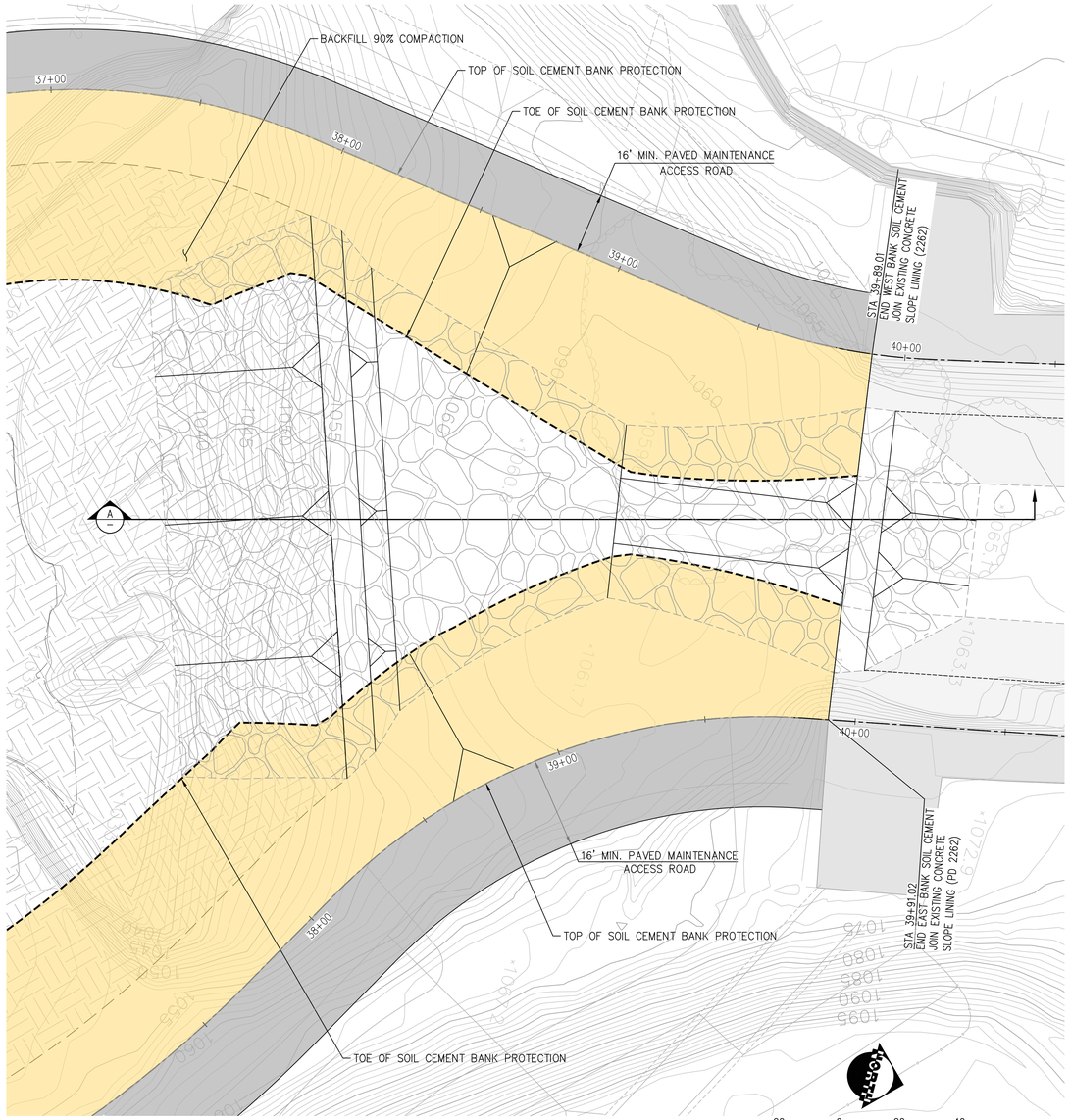
REGISTERED PROFESSIONAL ENGINEER JOSE CRUZ No. 72249 CIVIL STATE OF CALIFORNIA

TITLE

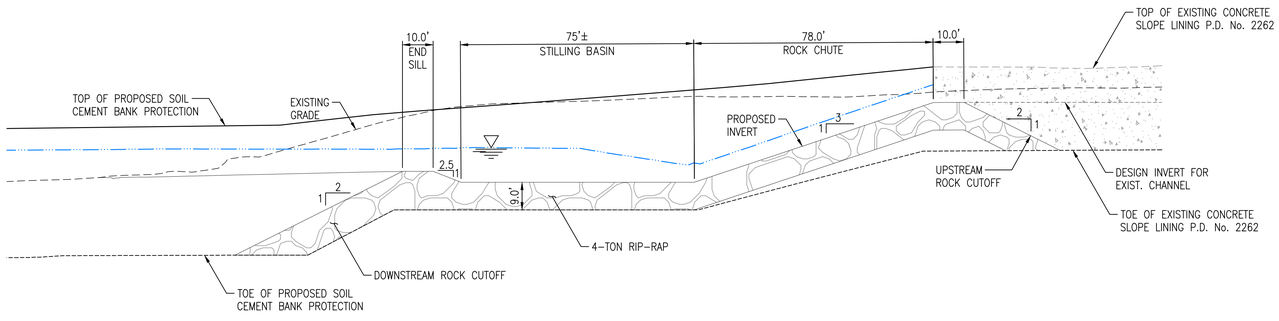
HASLEY CANYON CREEK PROPOSED IMPROVEMENTS

FIGURE 1-2

JOB NO. A535



TYPICAL DROP STRUCTURE PLAN



DROP STRUCTURE SECTION 'A'

SCALE 1"=20'

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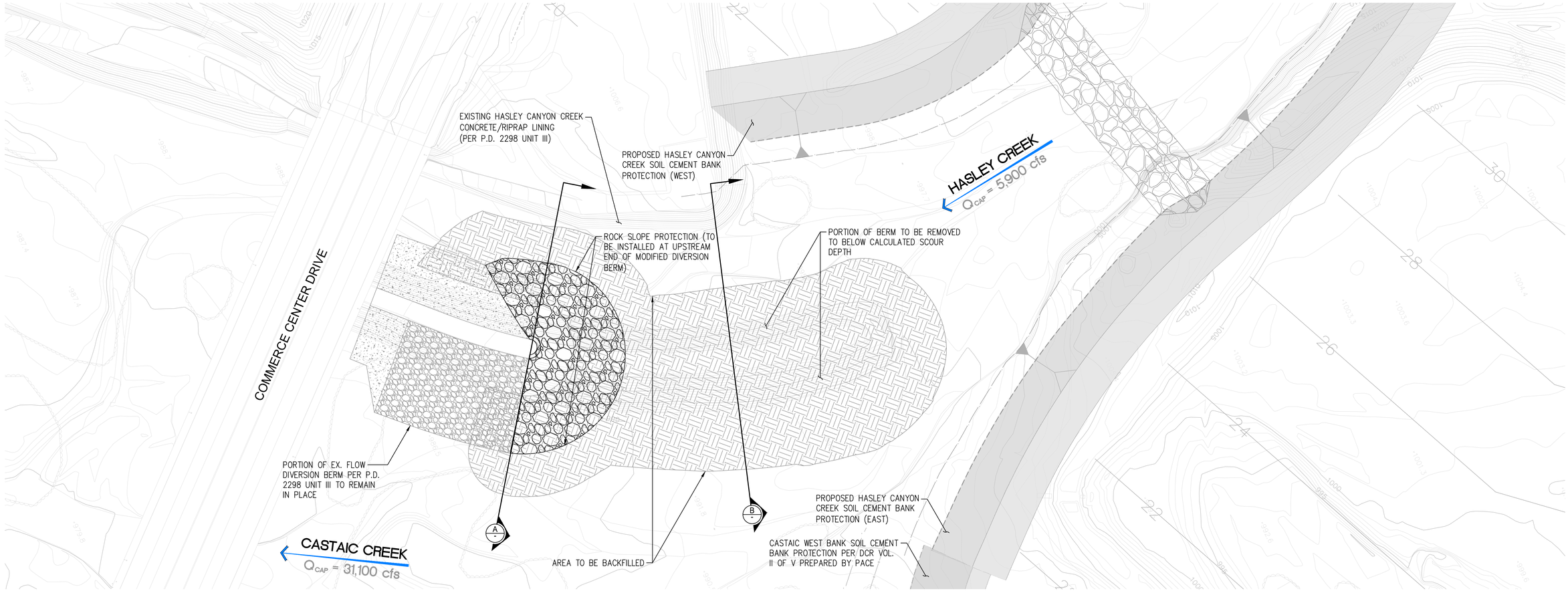
TITLE

PROPOSED DROP STRUCTURE

FIGURE 1-3

JOB NO. A535

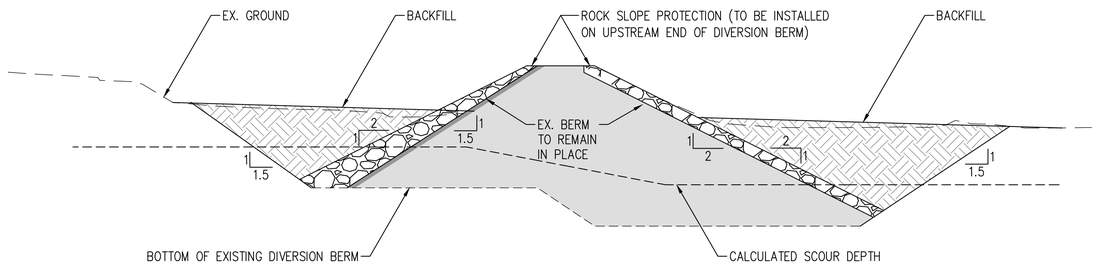


PLAN - MODIFIED DIVERSION BERM

NORTH

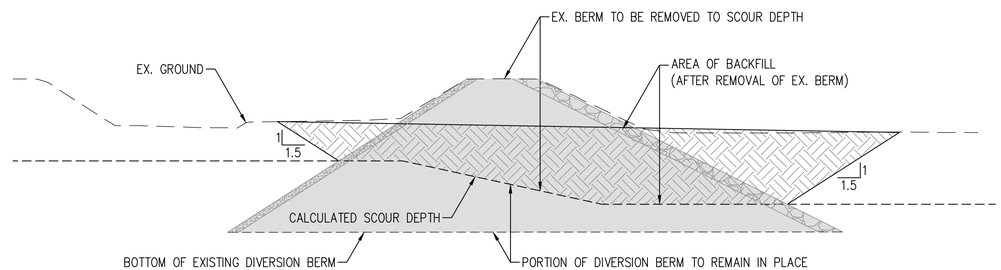
40 0 40 80

SCALE 1"=40'



SECTION A - PORTION OF DIVERSION BERM TO REMAIN

SCALE 1"=20'



SECTION B - PORTION OF DIVERSION BERM TO BE MODIFIED

SCALE 1"=20'

NO	BY	DATE		DATE	APP.

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HASLEY CANYON CREEK FLOODPLAIN AND FLOODWAY MAPPING

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STATE OF CALIFORNIA

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PROPOSED MODIFICATION OF DIVERSION BERM

FIGURE

1-4

JOB NO. A535

P:\A535\Engineering\A535-83-Hasley Canyon Creek ML\exhibits\A535- Proposed Modication of Diversion Berm.dwg - Tab: Layout By: mturner on Jul. 21, 2023 at 04:08 pm

1.3 L.A. County Adopted Floodway Maps

The study reach of Hasley Canyon Creek is located on existing Los Angeles County Capital Floodway maps (ML maps) 388-ML1 and the confluence with Castaic Creek is shown on 335-ML1. Map No. 388-ML1 was adopted by the Board of Supervisors in November 1980 by Ordinance No. 12260. Map No. 335-ML1 was adopted by the Board of Supervisors in August 1984 by Ordinance No. 84-0136. These ML Maps are included in **Appendix A**.

PACE prepared revisions to the existing ML Maps within Castaic Creek, between Commerce Center Drive and Hwy 126. These revisions are part of a report entitled *Los Angeles County Capital Floodway Revision ML Map No's 335-ML-1&2 Castaic Creek Bank Protection (P.D. No. 2563) for P.M. No. 26363*, which were submitted by L.A. County Department of Public Works for review in December 2006 and approved on October 2, 2007 (PACE, December 2006). The approved ML Maps from the 2007 revision are included in **Appendix B**, and the depicted floodway and floodplain are considered in this study as the existing L.A. County floodway and floodplain within Castaic Creek. The 2007-approved floodway and floodplain in Castaic Creek are narrower than the capital floodway and floodplain adopted in 1980.

2 Hydrology

Hasley Canyon Creek lies within the jurisdiction of the LACPW, which has completed an extensive hydrologic analysis of the watershed and provided updated Capital Flood flow rates for this reach of the Creek.

L.A. County floodplain and floodway maps are based on the Capital Flood (Q_{CAP}), which assumes a burned watershed and resulting bulked flows, and is defined as follows:

1. The design storm is assumed to occur on saturated soils over a period of four days, with the maximum rainfall falling on the fourth day. During the 24-hour period of maximum rainfall, the rainfall intensity typically increases during the first 70-90% of the period and decreases in the remaining time. Furthermore, approximately 80% of the amount of the 24-hour rainfall falls within the same 70-90% of the period.
2. When converting rainfall to runoff, rainfall that is not lost due to hydrologic processes of interception, evaporation, transpiration, depression storage, infiltration or percolation is assumed to be surface runoff.
3. The natural portions of the watershed are assumed to have been burned by fire, which decreases soil infiltration.
4. A bulking factor is assumed. In the area where a watershed is burned, the runoff would carry with it a large layer of eroded topsoil, burned trees and brush. To account for the quantity of debris, the design flow rate is artificially increased by a percentage increase in flow rate, or bulking factor.

PACE obtained hydrology data for the Hasley Canyon Creek Watershed from the LACPW Water Resources Division (WRD) on May 5, 2014, which indicates a peak flow rate of **5,900 cfs** within Hasley Canyon Creek during the Capital Flood. In February 2023, PACE confirmed with LACPW that the hydrology is up-to-date, therefore, a Q_{CAP} of 5,900 cfs was used for floodplain and floodway analysis and mapping. The hydrology data for Lower Hasley Canyon Creek obtained from LACPW is included in **Appendix C**.

3 Hydraulic Analysis

PACE developed updated existing and proposed conditions HEC-RAS hydraulic models (Version 6.2) of the study reach, extending from approximately 600 ft downstream of the Commerce Center Drive Bridge over Hasley Canyon Creek, to approximately 25 ft downstream of the Commerce Center Drive Bridge over Castaic Creek. These HEC-RAS models are steady-state, with subcritical flow regime. The model results were used to delineate updated existing and proposed conditions floodplain and floodway limits within Hasley Canyon Creek. The HEC-RAS hydraulic models are based on the models completed for the Drainage Concept Report Volume III of V (PACE, October 2021), with refinements made to improve results for floodplain mapping.

3.1 Updated Existing Conditions HEC-RAS Model

3.1.1 Cross-Section Geometry

The updated existing condition cross-section geometry are based on 2013 topographic data, consistent with concurrent studies, including the Hasley Canyon DCR Volume III and the Castaic Creek ML Revision, per ESTU No. 109 (PACE, October 2021). This topography includes existing concrete slope lining (per P.D. 2262) at the upstream end of the study reach, existing Hasley Creek concrete/rip rap lining (per P.D. 2298 Unit II) upstream of Commerce Center Drive, existing Castaic Creek soil cement bank protection (per P.D. 2563) downstream of Commerce Center Drive Bridge, and the existing flow diversion berm (per P.D. 2298 Unit III) between Hasley Creek and Castaic Creek. A HEC-RAS workmap showing the HEC-RAS cross-sections, 2013 topographic contours, and ineffective flow areas is included in **Figure 3-1.**

3.1.2 Ineffective Flow Areas

Ineffective flow markers were used to define area with ineffective flow, including at abrupt contractions in the available flow area. A contraction ratio of 1:1 was used to define ineffective flow in these areas, including upstream of cross-section 1448, downstream of cross section 2122, and upstream of cross-section 3105. Additionally, flow east of the diversion berm was assumed to be ineffective at cross-section 1584. Finally, ineffective flow markers were used at cross-section 1080, immediately downstream of the bridge, to restrict effective flow to the Hasley side of the berm. Ineffective flow areas are shown in **Figure 3-1**, and are summarized below:

- Ineffective flow markers are used at cross sections 1080 and 1584 to restrict flow in Hasley Side of the existing Berm
- 1:1 contraction from cross section 1448 to 1804
- Ineffective flow makers are placed at high spots in the terrain between cross-sections 1872 and 2305 to ensure isolated flow areas within the overbank were modeled as ineffective
- Ineffective flow markers at cross section 2391 and 2305 for flows outside of the main channel
- 1:1 contraction from cross section 3105 to 3190

3.1.3 Manning's Roughness

Manning's roughness was set to 0.060 throughout the model, which is the standard roughness value for floodplain mapping.

3.1.4 Hydraulic Structures

The updated existing condition hydraulic model includes the Commerce Center Drive Bridge over Castaic Creek (Bridge No. B3794) as well as a lateral structure used to model the existing flow diversion berm (per P.D. 2298 Unit III). Geometry for the Commerce Center Drive Bridge over Castaic Creek was obtained from as-built plans provided in **Appendix D**. The modeled bridge only includes the portion of the bridge within Hasley Creek, north of the flow diversion berm. This portion of the bridge includes a single pier and a span of approximately 120 ft. The bridge is situated between cross-sections 1189 and 1080.

Debris loading is applied at the existing Commerce Center Drive Bridge in accordance with the USACE (US Army Corps of Engineers) Memorandum of Record, “Hydrology and Hydraulics Policy Memorandum No 4., Debris Loading on Bridges and Culvert.” The Commerce Center Drive Bridge piers do not have slopeing extension, so they fall under debris loading case 1. This case assumes 2 feet of debris loading on each side of each pier for the full depth of flow.

The existing flow diversion berm (per P.D. 2298 Unit III) was represented in the model using a lateral structure with a weir. This lateral structure extends from cross-section 1518 to cross-section 1294. Weir elevations were set at the top of the existing flow diversion berm, which were obtained from as-built plans of the flow diversion berm, included in **Appendix D**. The weir was modeled with a coefficient of 2.0, following HEC-RAS guidance for lateral broad-crested weirs. Note that the existing results show no overtopping of the berm.

3.1.5 Boundary Conditions

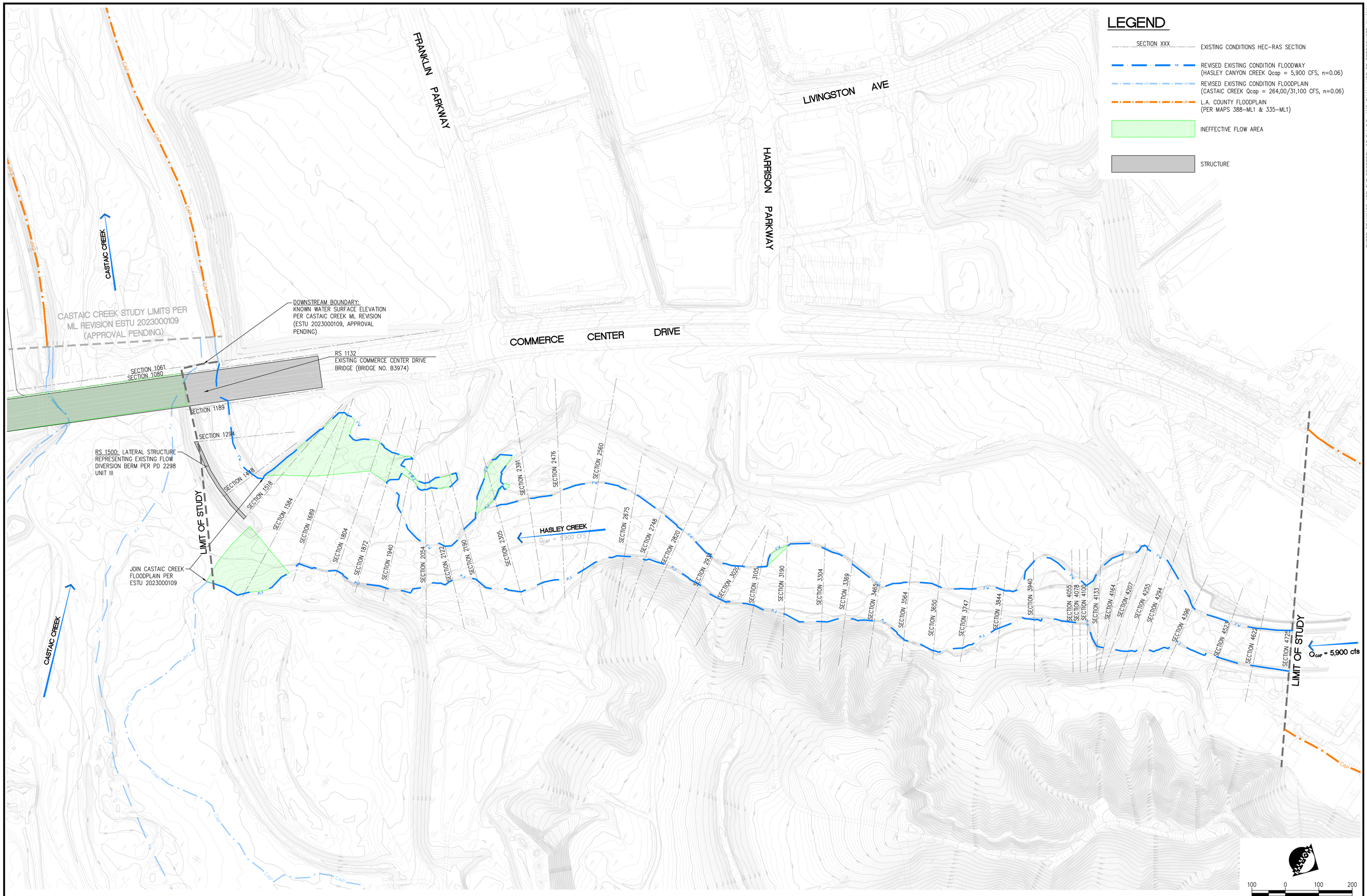
The downstream boundary condition of the model is a known water surface elevation of 993.72 ft for floodplain mapping and 994.11 ft for floodway mapping. These water surface elevations were obtained from the Castaic Creek ML Revision (per ESTU No. 2023000109, approval pending) updated existing conditions model. These water surface elevations are applied to cross-section 1061 in the Hasley Creek model, which is equivalent to cross-section 5434.68 in the Castaic Creek ML Revision HEC-RAS model (per ESTU No. 2023000109, approval pending).

3.1.6 Flow Rates

The updated existing conditions HEC-RAS model features a constant flow of 5,900 cfs, which is the Q_{CAP} for the creek, described in **Section 2** . The model extends approximately 25 ft downstream of the Commerce Center Drive Bridge, downstream of the confluence between Hasley Creek and Castaic Creek. Downstream of the Commerce Center Drive Bridge, cross-sections 1080 and 1061 span both Hasley Creek and Castaic Creek. Within cross-section 1080, an ineffective flow marker is used to restrict flow to the Hasley Creek side of the Commerce Center Drive Bridge, therefore, the modeled flow rate at this section only includes Hasley Creek flow (5,900 cfs). Additionally, cross-section 1061 does not feature a flow rate change, since the water surface elevation at 1061 is set by the known water surface elevation downstream boundary condition of the model (see **Section 3.1.5**) and is therefore independent of the flow rate. Note that the known water surface elevation boundary condition was obtained from the Castaic Creek ML Revision model (per ESTU No. 2023000109, approval pending), which uses a Q_{CAP} of 31,100 cfs, considering the combination of flow within Castaic Creek and Hasley Creek.

3.1.7 Floodway Encroachments

The proposed Hasley Canyon Creek is a well-defined channelized area. This built-out condition means there will be no future development within the channel area, so as discussed with LACPW Land Development Division (LDD) and Storm Water Engineering Division (SWED), the floodway encroachment limits are set equal to the floodplain limits. At the confluence with Castaic Creek, the existing condition floodway transitions to the Castaic Creek floodplain limits, as there is a mapped floodway within Castaic Creek.



NO	BY	DATE		DATE	APP.

JOB VALENCIA COMMERCE CENTER

HASLEY CANYON CREEK FLOODPLAIN AND FLOODWAY MAPPING

LOS ANGELES COUNTY CA.

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PREPARED	
PROJECT ENGINEER	
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EXP.	
DRAWN	SCALE 1"=100'
DESIGNED	
CHECKED	DATE

REGISTERED PROFESSIONAL ENGINEER JOSE CRUZ No. 72249 CIVIL STATE OF CALIFORNIA

TITLE

EXISTING CONDITIONS HEC-RAS WORKMAP

FIGURE 3-1

JOB NO. A535

3.2 Proposed Conditions HEC-RAS Model

3.2.1 Cross-Section Geometry

The proposed conditions cross-section geometry is based on the proposed Hasley Canyon Creek finished grade contours, which tie into the existing 2013 topographic data. The finished grade backfill consists of an earthen terrace, elevated about four feet above the existing channel thalweg, and a 3:1 side slope above the terrace that extends to the top of the soil cement banks. The proposed cross-sections also include the proposed drop structure and stilling basin at the upstream end of the creek, extending from HEC-RAS cross-section 4396 to cross-section 4265. Finally, the proposed cross-section geometry includes shortening the flow diversion berm at the downstream end of the creek at the confluence of Hasley Canyon Creek with Castaic Creek. Note that some of the cross-section locations differ in the updated existing and proposed conditions geometries, as cross-sections were repositioned in the proposed conditions to span the proposed channel and to be oriented perpendicular to the flow direction. Additional cross-sections are also included at the proposed drop structure and surrounding the proposed Franklin Parkway Bridge. A proposed condition workmap showing the HEC-RAS cross-sections, proposed finished grade contours, 2013 topographic contours, and ineffective flow areas is included in **Figure 3-2.** Note that interpolated cross-sections were used to refine results along the proposed drop structure and within the proposed stilling basin, which experience high energy loss and abrupt changes in water surface elevations. These interpolated sections are not included in **Figure 3-2.**

3.2.2 Ineffective Flow Areas

Ineffective flow areas were defined at cross-section 1518, to account for the abrupt contraction in flow area where the West bank of Hasley Canyon Creek joins the existing concrete/ rock slope near Commerce Center Drive Bridge, approximately between cross-section 1518 and 1448. Similar to the updated existing conditions model, a contraction ratio of 1:1 was used to define ineffective flow. An ineffective flow marker was also used at cross-section 1080, immediately downstream of the Commerce Center Drive bridge, to restrict effective flow to the Hasley side of the diversion berm. Ineffective flow areas are shown in **Figure 3-2**.

3.2.3 Manning's Roughness

Manning's roughness was set to 0.060 throughout the model, which is the standard roughness value for floodplain mapping.

3.2.4 Hydraulic Structures

The proposed conditions hydraulic model includes the existing Commerce Center Drive Bridge over Castaic Creek (Bridge No. B3974), a lateral structure to model the modified flow diversion berm, and the proposed Franklin Parkway Bridge. The Commerce Center Drive Bridge is modeled with the same geometry as the existing conditions model, following as-built plans provided in **Appendix D**. Note that the modeled bridge only includes the portion of the bridge within Hasley Creek, north of the flow diversion berm.

Debris loading is applied at Commerce Center Drive Bridge in accordance with the USACE (US Army Corps of Engineers) Memorandum of Record, "Hydrology and Hydraulics Policy Memorandum No 4., Debris Loading on Bridges and Culvert." Two feet of debris loading is applied to each side of each pier for the full depth of flow.

The proposed Franklin Parkway Bridge is situated between proposed HEC-RAS cross-sections 2305.5 and HEC-RAS cross-section 2190.5. The bridge contains two 6-ft wide bridge piers spaced approximately 110-ft apart, a bridge span of approximately 300-ft, and a bridge deck width of 88 ft. Additional debris loading is not required at Franklin Parkway Bridge. Per the USACE Debris Loading Memorandum, the best practice is to omit standard debris loading assumptions for piers that have a width equal to or greater than six feet.

Similar to the updated existing condition, the flow diversion berm (per P.D. 2298 Unit III) was represented in the model using a lateral structure with a weir. This lateral structure extends from cross-section 1518 to cross-section 1294. The modeled lateral structure is shorter in the proposed condition because a portion of the berm is removed as part of the improvements to the area.

The existing concrete and riprap lined berm was designed to divert flows from Hasley Canyon Creek into Castaic Creek downstream of the Commerce Center Drive Bridge. However, a large storm in January 2005 caused flows to bifurcate the berm. This change caused the berm to become an obstruction to flows and increased chances of blockages to either flow path, into Castaic Creek or under Commerce Center Drive. In the proposed condition, the upstream portion of the flow diversion berm will be removed and lowered to the scour depth. This will remove the obstruction to the flow path and allow water into Castaic Creek Upstream of Commerce Center Drive Bridge.

Approximately 240-ft of the upstream portion of the modeled lateral structure was lowered to reflect the proposed modification to the berm. The weir is modeled with a weir coefficient of 2.0, based on HEC-RAS guidance for lateral broad-crested weirs 3-ft or higher above the natural ground elevation.

3.2.5 Boundary Conditions

The downstream boundary condition of the model is a known water surface elevation of 993.62 ft for floodplain mapping and 994.03 ft for floodway mapping. These water surface elevations were obtained from the Castaic Creek ML Revision (per ESTU No. 2023000109, approval pending) proposed conditions model. These water surface elevations are applied to cross-section 1061 in the Hasley Creek model, which is equivalent to cross-section 5434.68 in the Castaic Creek model.

3.2.6 Flow Rates

The updated existing condition HEC-RAS model features an inflow of 5,900 cfs, which is the Q_{CAP} for Hasley Canyon Creek, described in **Section 2** . Note that flow over the lateral structure reduces the modeled flow rate between cross-sections 1518 and 1189. While the model includes two cross-sections (1081 and 1060) that span Castaic Creek downstream of Commerce Center Drive, the flow rate was not increased at these sections. Ineffective flow markers at cross-section 1081 restrict flow to the Hasley Creek side of the berm. Cross-section 1060 is modeled with a known water surface elevation, thus is not dependent on the modeled flow rate. Please refer to **Section 3.1.6** for further discussion.

3.2.7 Floodway Encroachments

The proposed condition for Hasley Canyon Creek involves the channelization of the creek. This built-out condition means there will be no future development within the channel area, so as discussed with LACPW Land Development Division (LDD) and Storm Water Engineering Division (SWED), the floodway encroachment limits are set equal to the floodplain limits. At the downstream study limits of the Hasley Canyon Creek model, the floodway will transition to the Castaic Creek floodplain and floodway, as seen on Figure 4-2.

3.3 Hasley Canyon Creek and Castaic Creek Confluence Modeling Approach

The confluence of Hasley Canyon Creek with Castaic Creek was extensively studies as part of the proposed bank protection design detailed in the project Drainage Concept Report (DCR) for the subject project under (EIMP No. 2019000489). There are two possible flow paths that can form at the confluence.

Case 1 - Flow will travel from Hasley Canyon Creek into Castaic Creek upstream of the flow diversion berm, with little or no flow traveling through the north side of the flow diversion berm.

Case 2 - All flow from Hasley will travel through the north side of the flow diversion berm and enter Castaic Creek downstream of Commerce Center Drive.

In the Drainage Concept Report (DCR) both conditions are important to model since they capture different elements associated with the design of the soil cement top and toe. When flow enters Castaic

Creek upstream of Commerce Center Drive Bridge (Case 1), no flow is mapped north of the berm because the invert of Castaic Creek is much lower than the invert of Halsey Canyon Creek. However, this modeling approach best captures the water surface and velocities to design the Hasley Canyon Creek East bank connection to the Castaic Creek "West" Soil cement Bank Protection. When the Hasley Canyon Creek flow is modeled going through the north side of the flow diversion berm before entering Castaic Creek downstream of Commerce Center Drive (Case 2), it captures the highest water surface elevation and velocities for the design of the Halsey Canyon Creek West Bank.

For the Hasley Canyon Creek floodplain and floodway analysis, the existing and proposed conditions are modeled in a way that will produce the widest floodplain. In the existing condition, the flow diversion berm either funnels flows from Hasley Canyon Creek through the north side of the flow diversion berm or flows will circumvent the berm and flow into Castaic Creek upstream of Commerce Center Drive. The flows then confluence with Castaic Creek downstream of Commerce Center Drive Bridge (Case 2). Although the existing condition model uses a lateral structure to define the flow diversion berm, it is important to note that in the existing condition, no flows from Hasley Canyon Creek travel over the lateral structure into Castaic Creek. This modeling approach was selected as it produces the widest floodplain along the north side of the berm. If the Case 1 flow condition was used, the area to the north of the berm would be mapped with no floodplain, as the Hasley flow would be contained within the Castaic Creek main channel, which has a much lower invert than the invert within the north side of the diversion berm.

In the proposed condition, Hasley Canyon Creek flows will either enter Castaic Creek upstream of Commerce Center Diver Bridge or flow along the north side of the berm and confluence with Castaic Creek downstream of Commerce Center Drive Bridge. For the purposes of floodplain mapping, the proposed condition Hasley Canyon Creek model analyzes the condition where all flow from Hasley flows on the North side of the berm (Case 2).

A lateral structure is used to model the flow diversion berm because it best captures the proposed berm modifications. As discussed in Section 3.2.4, a large storm in January 2005 caused flows to bifurcated the berm and caused the berm to become an obstruction of Hasley Canyon Creek flows into Castaic Creek. The berm will be modified in a way that will allow storm water for flow unobstructed into Castaic Creek upstream of the Bridge, while continuing to provide protection for the bridge pier located at the diversion berm. In the proposed condition, the lateral structure is lowered to the proposed berm design height, which allows for some flow to leave Hasley Canyon Creek and enter Castaic Creek. Using the Case 2 methodology will capture the highest water surface elevations and widest floodplain for the north side of the berm. Like in the existing condition, if flow was modeled using the Case 1 condition, there would be no mapped floodplain on the north side of the flow diversion berm since the Hasley flows would be contained within the Castaic Creek main channel.

The Castaic Creek HEC-RAS model captures the widest floodplain within the confluence through the use of a flow change upstream of the confluence of Castaic and Hasley Canyon Creek. This flow change captures a condition where all of the Hasley Canyon Creek flow enters Castaic Creek upstream of Commerce Center Drive, with no flows from Hasley Canyon Creek going through the north side of the flow diversion berm (Case 1). Both the existing condition and proposed condition models use the flow change upstream of the confluence. This modeling approach will produce the highest water surface elevations in Castaic Creek in the vicinity of the confluence. More detailed discussion can be found in the Castaic Creek Capital Floodway Revision Analysis, (per ESTU No. 2023000109, approval pending).

The Hasley Canyon Creek floodplain ties into the Castaic Creek floodplain at the study limits along the soil cement bank protection. Engineering judgement is used at the Hasley Canyon Creek downstream limits to ensure that the Castaic Creek Floodway ties into the Hasley Creek Floodway.

PARCEL MAP No. 20839

FRANKLIN PARKWAY

LIVINGSTON AVE

HARRISON PARKWAY

COMMERCE CENTER DRIVE

CASTAIC CREEK

CASTAIC CREEK STUDY LIMITS PER ML REVISION ESTU 2023000109 (APPROVAL PENDING)

DOWNSTREAM BOUNDARY: KNOWN WATER SURFACE ELEVATION PER CASTAIC CREEK ML REVISION PER ESTU 2023000109 (APPROVAL PENDING)

RS 1132
EXISTING COMMERCE CENTER DRIVE BRIDGE (BRIDGE NO. B3974)

STA 10+50.89
BEGIN WEST BANK SOIL CEMENT
=TIE-IN EXISTING HASLEY CREEK LINING

RS 2250
PROPOSED FRANKLIN PARKWAY BRIDGE

TOP OF SOIL CEMENT (WEST BANK)

TOE OF SOIL CEMENT (WEST BANK)

LIMITS OF EXCAVATION (WEST BANK)

PROPOSED DROP/STILLING BASIN STRUCTURE

RS 1500:
LATERAL STRUCTURE REPRESENTING MODIFIED FLOW DIVERSION BERM

JOIN CASTAIC CREEK FLOODPLAIN PER ESTU 2023000109

LIMIT OF STUDY

HASLEY CREEK
Q_{CAP} = 5,900 CFS

STA 10+00.00
BEGIN EAST BANK SOIL CEMENT
=STA 10+00 TIE-IN
TO CASTAIC CREEK WEST BANK

CASTAIC CREEK SOIL CEMENT BANK PROTECTION PER DCR VOL. II OF V PREPARED BY PACE

TOE OF SOIL CEMENT (EAST BANK)

TOP OF SOIL CEMENT (EAST BANK)

LIMITS OF EXCAVATION (EAST BANK)

STA 39+89.01
END WEST BANK SOIL CEMENT JOIN EXISTING CONCRETE SLOPE LINING

STA 39+91.02
END EAST BANK SOIL CEMENT JOIN EXISTING CONCRETE SLOPE LINING

LIMIT OF STUDY

Q_{CAP} = 5,900 cfs

LEGEND

- INEFFECTIVE FLOW AREA
- STRUCTURE
- PROPOSED SOIL CEMENT BANK PROTECTION (33+00 — 32+00)
- XXXX — PROPOSED CONDITIONS HEC-RAS SECTION
- PROPOSED CONDITION FLOODWAY (HASLEY CANYON CREEK QCAP = 5,900 CFS, n=0.06)
- CAP — PROPOSED CONDITION FLOODPLAIN (CASTAIC CREEK QCAP = 26,400/31,100 CFS, n=0.06)
- CAP — L.A. COUNTY FLOODPLAIN (PER MAPS 388-MLI & 335-MLI)

100 0 100 200
SCALE 1"=100'

NO	BY	DATE		DATE	APP.

JOB VALENCIA COMMERCE CENTER

HASLEY CANYON CREEK FLOODPLAIN AND FLOODWAY MAPPING

LOS ANGELES COUNTY CA.

PREPARED
PROJECT ENGINEER
R.C.E. NO.
EXP.
DRAWN | SCALE 1"=100'
DESIGNED
CHECKED | DATE

REGISTERED PROFESSIONAL ENGINEER JOSE CRUZ No. 72249 CIVIL STATE OF CALIFORNIA

TITLE

PROPOSED CONDITIONS HEC-RAS WORKMAP

FIGURE 3-2

JOB NO. A535

4 Floodway and Floodplain Mapping

The results of the updated existing and proposed conditions hydraulic models were used to delineate the updated existing conditions and the proposed conditions capital floodplain and floodway within Hasley Canyon Creek, for a study reach extending from approximately 600 ft downstream of the Commerce Center Drive Bridge over Hasley Canyon Creek to the confluence with Castaic Creek. The updated existing and proposed floodplain and floodway are described below.

4.1 Updated Existing Conditions Floodplain/ Floodway

The updated existing conditions capital floodplain and floodway are shown in **Figure 4-1** alongside the adopted L.A. County capital floodplain. Note that downstream of Commerce Center Drive Bridge, the L.A. County capital floodplain shown on the exhibit reflects revisions that are part of the Castaic Creek ML Revision approved in 2007 (PACE, December 2006). Additionally, **Figure 4-1** shows the updated existing conditions floodplain for Castaic Creek reflecting the Castaic Creek ML Revision (per ESTU No. 2023000109, approval pending). For the purposes of this analysis, the floodway encroachment stations were defined at the limits of the floodplain (see **Section 3.1.7)**. Here-in, for the updated existing conditions analysis the term floodplain denotes both the limits of the floodplain and floodway.

The Hasley Canyon updated existing conditions floodplain more accurately follows the existing conditions topography compared with the L.A. County capital floodplain. The updated existing conditions floodplain is narrower than the L.A. County capital floodplain in most areas. The largest differences are noted along the west bank of Hasley Canyon Creek, in which the updated existing conditions floodplain is situated east of the L.A. County capital floodplain. The updated existing conditions capital floodplain results, including the flow rate, water surface elevation, channel velocity, and top width, are included in **Table 4-1**, and detail out-puts from the HEC-RAS model are provided in **Appendix E**.

Table 4-1: Updated Existing Conditions Capital Floodplain Results

Cross-Section	Flow (cfs)	Water Surface Elevation (ft)	Channel Velocity (ft/s)	Top Width (ft)
4725	5,900	1075.0	9.2	119
4622	5,900	1073.0	9.9	114
4523	5,900	1071.4	9.7	112
4396	5,900	1067.7	11.8	116
4294	5,900	1062.8	9.1	260
4255	5,900	1060.3	8.5	309
4207	5,900	1051.2	8.8	277
4164	5,900	1045.0	3.7	283
4133	5,900	1045.0	2.8	230
4100.5	5,900	1044.3	6.8	119
4078	5,900	1044.1	7.3	129
4055.5	5,900	1043.9	7.2	132
3940.5	5,900	1041.9	9.2	166
3844	5,900	1039.2	10.5	112
3747	5,900	1037.7	8.3	178
3650	5,900	1035.9	8.2	193
3564	5,900	1035.4	5.9	170
3465	5,900	1033.8	9.0	103
3369	5,900	1032.3	8.6	168
3304	5,900	1031.2	7.4	218
3190.5	5,900	1029.9	6.7	204
3105	5,900	1028.6	8.5	118
3020	5,900	1027.9	7.7	118

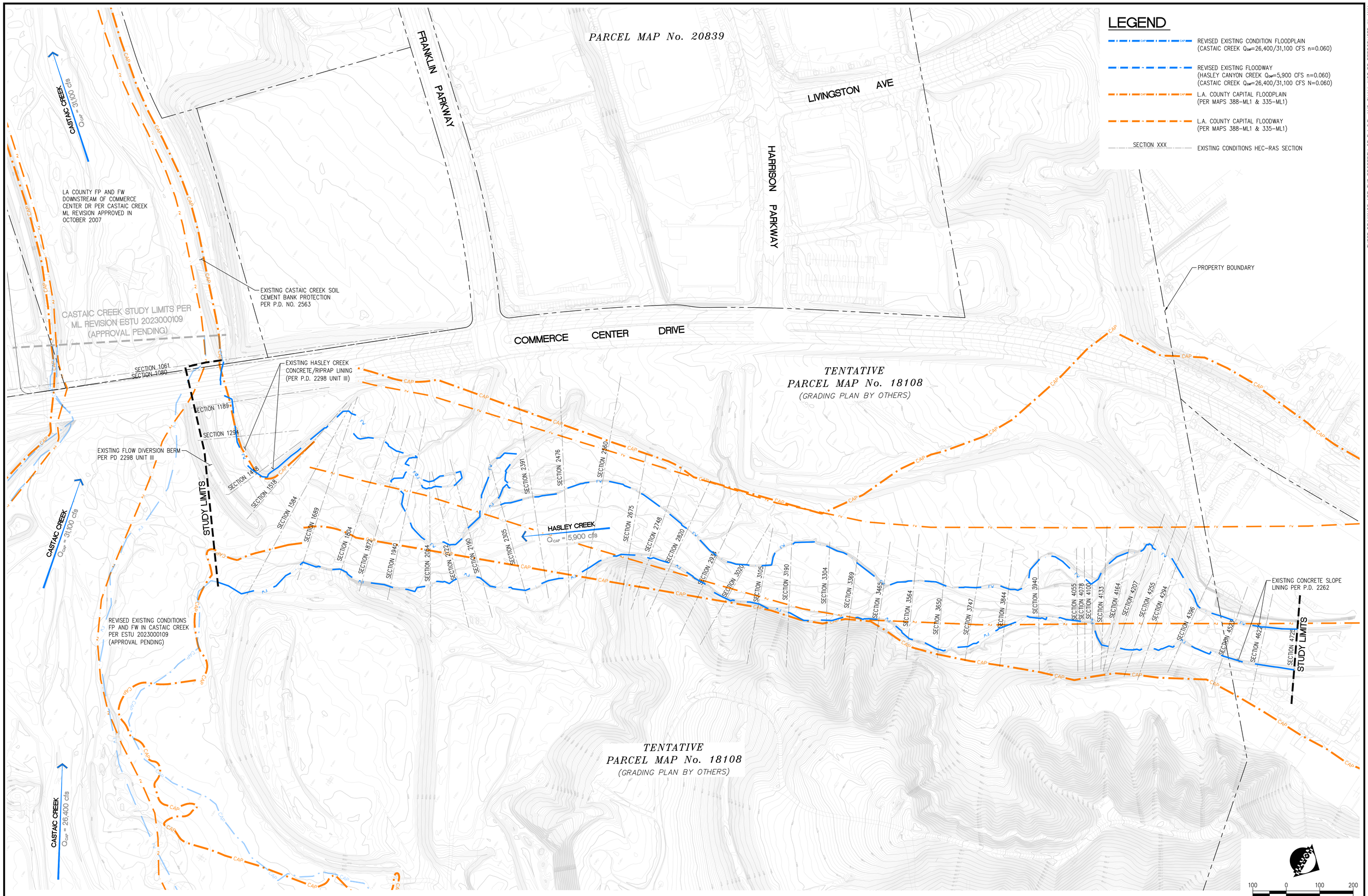
Cross-Section	Flow (cfs)	Water Surface Elevation (ft)	Channel Velocity (ft/s)	Top Width (ft)
2934	5,900	1025.0	12.5	92
2820.5	5,900	1022.1	10.9	118
2748	5,900	1021.0	8.9	147
2675.5	5,900	1019.9	8.0	188
2560.5	5,900	1017.7	7.5	266
2476	5,900	1016.3	6.7	262
2391	5,900	1014.8	7.2	257
2305	5,900	1013.6	6.3	354
2190	5,900	1012.6	6.3	195
2122	5,900	1011.0	9.9	133
2054	5,900	1008.9	11.2	145
1940	5,900	1007.2	8.3	239
1872	5,900	1006.3	7.3	385
1804	5,900	1004.4	9.4	363
1689	5,900	1003.8	4.5	472
1584	5,900	1003.6	3.9	617
1518	5,900	1003.0	5.8	338
1448	5,900	1001.6	9.4	101
1294	5,900	999.9	8.7	105
1189	5,900	999.5	6.6	112
1132		Commerce Center Drive Bridge		
1080	5,900	993.0	12.2	511
1061	5,900	993.7	1.2	513

Notes:

1. *Known water surface elevation based on existing conditions results presented in Castaic Creek ML Revision (per ESTU No. 2023000109, approval pending).*

The updated existing conditions floodplain is unable to tie into the L.A. County capital floodplain at the upstream end of the study limit, because the L.A. County capital floodplain is significantly wider than in existing conditions, and lies west of the existing channel. The upstream end of the updated existing conditions floodplain follows the existing contours for the channel improvements per P.D. 2262. The L.A. County capital floodplain on 388-ML1 has not been updated to reflect these channel improvements, thus the updated existing conditions floodplain does not tie in with the current floodplain on 388-ML1.

The floodplain along the west bank of Hasley Canyon Creek ties in with the Castaic Creek ML Revision (per ESTU No. 2023000109, approval pending) updated existing conditions floodplain at the existing Hasley Creek Concrete/ Rip-rap lining (per P.D. 2298 Unit III). The Castaic Creek ML Revision existing conditions floodplain subsequently ties in with the L.A. County capital floodplain downstream of Commerce Center Drive Bridge. The Hasley Creek existing conditions floodplain along the east bank of Hasley Canyon Creek ties in with the Castaic Creek ML Revision existing conditions floodplain along its north bank, upstream of the flow diversion berm. The Hasley Creek existing conditions floodplain along the east bank at cross-section 1584 was extended downstream, toward Castaic Creek, until it tied in with the Castaic Creek existing conditions floodplain. The Castaic Creek ML revision existing conditions floodplain ties in with the L.A. County capital floodplain upstream of the I-5 Bridge over Castaic Creek.



LEGEND

- REVISED EXISTING CONDITION FLOODPLAIN (CASTAIC CREEK Q_{CAP}=26,400/31,100 CFS n=0.060)
- REVISED EXISTING FLOODWAY (HASLEY CANYON CREEK Q_{CAP}=5,900 CFS n=0.060) (CASTAIC CREEK Q_{CAP}=26,400/31,100 CFS N=0.060)
- L.A. COUNTY CAPITAL FLOODPLAIN (PER MAPS 388-ML1 & 335-ML1)
- L.A. COUNTY CAPITAL FLOODWAY (PER MAPS 388-ML1 & 335-ML1)
- SECTION XXX — EXISTING CONDITIONS HEC-RAS SECTION

NO	BY	DATE		DATE	APP.

JOB VALENCIA COMMERCE CENTER

HASLEY CANYON CREEK FLOODPLAIN AND FLOODWAY MAPPING

LOS ANGELES COUNTY CA.

PACE
Advanced Water Engineering
17520 Newhope Street, Suite 200 | Fountain Valley, CA 92708
P: (714) 481-7300 | www.pacewater.com

PREPARED	
PROJECT ENGINEER	
R.C.E. NO.	
EXP.	
DRAWN	SCALE 1"=100'
DESIGNED	
CHECKED	DATE

REGISTERED PROFESSIONAL ENGINEER JOSE CRUZ No. 72249 CIVIL STATE OF CALIFORNIA

TITLE

UPDATED EXISTING CONDITIONS CAPITAL FLOODPLAIN AND FLOODWAY

FIGURE 4-1

JOB NO. A535

P:\A535\Engineering\A535-83-Hasley Canyon Creek ML\exhibits\A535-Existing on Effective FP_FW.dwg — Tab: Layout By: erandig on May 30, 2024 at 03:41 pm

4.2 Proposed Conditions Floodplain

The proposed conditions capital floodplain is shown in **Figure 4-2**. Similar to the existing condition analysis, the proposed condition floodway limits are set equal to the floodplain limits (see **Section 3.2.7**). For the proposed condition, here-in, the term proposed floodplain denotes both the floodplain and floodway limits.

The proposed conditions capital floodplain follows the proposed backfilled soil cement banks. The results of the hydraulic modeling indicate a narrow proposed floodplain at cross-section 3554, where the west floodplain extent is near the center of the channel, and does not meet the proposed backfilled west bank. Lateral erosion of the soil backfill is anticipated due to the wide floodplain limits upstream and downstream of this location. Therefore, the floodplain was adjusted to reflect a wider and more smoothed floodplain. This procedure of widening and smoothing floodplains has been used on previous map revisions processed through FEMA and is commonly referred to as an Administrative Floodplain. The model shows similar results for cross-sections 2820, 2748, and 2675, where the east floodplain extent does not meet the backfilled east bank. The floodplain was also intentionally adjusted (widened) at these cross-sections.

The hydraulic model results used to delineate the proposed capital floodplain are included in **Table 4-2,** and detail out-puts from the HEC-RAS model are provided in **Appendix F**. The results show narrow top widths at cross-section 3554, 2820, 2748, and 2675, which are intentionally widened in **Figure 4-2.** The results also indicate a reduction in flow rate near the downstream end of the model, downstream of cross-section 1518. This reduction in flow rate is caused by flow discharging into Castaic Creek over the modified flow diversion berm, which is modeled as a lateral weir in HEC-RAS. Note that the known water surface elevation boundary condition at cross-section 1061 was obtained from the Castaic Creek ML revision (per ESTU No. 2023000109, approval pending), which models the total flow within Hasley Creek and Castaic Creek during the capital flood event (31,100 cfs). Therefore, the flow rate in the Hasley Creek model does not need to be increased at this cross-section. Additionally, effective flow at cross-section 1080 is restricted to the Hasley Creek side of the Commerce Center Drive Bridge with an ineffective flow marker, thus the modeled flow rate at this section only considers flow within Hasley Creek.

Figure 4-2 also compares the proposed conditions floodplain in Hasley Canyon Creek with the updated existing conditions floodplain. At the upstream end of the model, at cross-sections 4622 and 4725, the proposed conditions floodplain matches the updated existing conditions, since no changes are proposed in this area. Elsewhere, the proposed floodplain differs from the existing, and is wider in some areas and narrower in others. The width of the proposed floodplain is more consistent throughout Hasley Creek than in the existing conditions.

Like the updated existing condition, the upstream end of the proposed conditions capital floodplain cannot tie into the L.A. County adopted floodplain, as the proposed conditions floodplain is significantly narrower. This difference is caused by the fact that the L.A. County adopted floodplain shown on 388-ML1 does not take into account the existing channel improvements per P.D. 2262. At the downstream end of the study limits, the western floodplain extent ties in with the Castaic Creek proposed floodplain (per ESTU No. 2023000109, approval pending) at cross-section 1080. An administrative floodway is mapped between cross-sections 1189 and 1080 in order to tie the Hasley Canyon Creek floodway into the Castaic Creek floodway.

The eastern extent of the Hasley Creek proposed floodplain (and floodway) ties in with the Castaic Creek proposed floodplain (per ESTU No. 2023000109, approval pending) along its north bank, upstream of the flow diversion berm. The east extent of the Hasley Creek proposed floodplain was extended along the backfilled east bank of Hasley Creek, until it tied in with the Castaic Creek proposed floodplain along its West bank. The flow diversion berm is mapped in the floodplain, since flow is expected to overtop the berm during the capital flood event.

PARCEL MAP No. 20839

FRANKLIN PARKWAY

LIVINGSTON AVE

HARRISON PARKWAY

COMMERCE CENTER DRIVE

CASTAIC CREEK
Q_{cap} = 31,100 cfs

LA COUNTY FP AND FW DOWNSTREAM OF COMMERCE CENTER DR PER CASTAIC CREEK ML REVISION APPROVED IN OCTOBER 2007

EXISTING CASTAIC CREEK SOIL CEMENT BANK PROTECTION PER P.D. NO. 2563

CASTAIC CREEK STUDY LIMITS PER ML REVISION ESTU 2023000109 (APPROVAL PENDING)

EXISTING HASLEY CREEK CONCRETE/RIPRAP LINING (PER P.D. 2298 UNIT III)

STA 10+50.89
BEGIN WEST BANK SOIL CEMENT
=TIE-IN EXISTING HASLEY CREEK LINING

EXISTING FLOW DIVERSION BERM PER PD 2298 UNIT III (LENGTH TO BE MODIFIED AS SHOWN)

BURIED GRADE CONTROL STRUCTURE

STUDY LIMITS

HASLEY CREEK
Q_{CAP} = 5,900 cfs

BS 2250: PROPOSED FRANKLIN PARKWAY BRIDGE

STA 10+00.00
BEGIN EAST BANK SOIL CEMENT
=STA 10+00 TIE-IN
TO CASTAIC CREEK WEST BANK

ADMINISTRATIVE FLOODPLAIN AND FLOODWAY ADJUSTMENT (WIDENING)

REVISED EXISTING CONDITIONS FP AND FW IN CASTAIC CREEK PER ML REVISION ESTU 2023000109 (APPROVAL PENDING)

CASTAIC CREEK SOIL CEMENT BANK PROTECTION PER DCR VOL. II OF V PREPARED BY PACE

CASTAIC CREEK
Q_{cap} = 26,400 cfs

TENTATIVE
PARCEL MAP No. 18108
(GRADING PLAN BY OTHERS)

PROPERTY BOUNDARY

BURIED GRADE CONTROL STRUCTURE

ADMINISTRATIVE FLOODPLAIN AND FLOODWAY ADJUSTMENT (WIDENING)

PROPOSED DROP/STILLING BASIN STRUCTURE

STA 39+89.01
END WEST BANK SOIL CEMENT JOIN EXISTING CONCRETE SLOPE LINING

EXISTING CONCRETE SLOPE LINING PER P.D. 2262

STUDY LIMITS

STA 39+91.02
END EAST BANK SOIL CEMENT JOIN EXISTING CONCRETE SLOPE LINING

TENTATIVE
PARCEL MAP No. 18108
(GRADING PLAN BY OTHERS)

LEGEND

- REVISED EXISTING CONDITION FLOODPLAIN (CASTAIC CREEK, Q_{cap}=26,400/31,100 CFS n=0.060)
- REVISED EXISTING CONDITION FLOODWAY (HASLEY CANYON CREEK Q_{cap}=5,900 CFS n=0.060) (CASTAIC CREEK Q_{cap}=26,400/31,100 CFS N=0.060)
- PROPOSED CONDITION FLOODPLAIN (CASTAIC CREEK, Q_{cap}=26,400/31,100 CFS N=0.060)
- PROPOSED CONDITION FLOODWAY (HASLEY CANYON CREEK Q_{cap}=5,900 CFS N=0.060) (CASTAIC CREEK Q_{cap}=26,400/31,100 CFS N=0.060
- L.A. COUNTY CAPITAL FLOODPLAIN (PER MAPS 388-ML1 & 335-ML1)
- L.A. COUNTY CAPITAL FLOODWAY (PER MAPS 388-ML1 & 335-ML1)
- PROPOSED SOIL CEMENT BANK PROTECTION
- LIMITS OF EXCAVATION
- XXXX PROPOSED CONDITIONS HEC-RAS SECTION

FLOODPLAIN/WAY STUDY APPROVED
REVIEWED BY: DATE: 7/25/2024
APPROVED BY: Thang Nguyen DATE: 8/13/2024
COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS
LAND DEVELOPMENT DIVISION

100 0 100 200
SCALE 1"=100'

NO	BY	DATE		DATE	APP.

JOB VALENCIA COMMERCE CENTER

HASLEY CANYON CREEK FLOODPLAIN AND FLOODWAY MAPPING

LOS ANGELES COUNTY CA.

PACE
Advanced Water Engineering
17520 Newhope Street, Suite 200 | Fountain Valley, CA 92708
P: (714) 481-7300 | www.paceware.com

PREPARED
PROJECT ENGINEER
R.C.E. NO.
EXP.
DRAWN SCALE 1"=100'
DESIGNED
CHECKED DATE

REGISTERED PROFESSIONAL ENGINEER JOSE CRUZ No. 72249 CIVIL STATE OF CALIFORNIA

TITLE
PROPOSED CONDITIONS CAPITAL FLOODPLAIN AND FLOODWAY

FIGURE 4-2

JOB NO. A535

Table 4-2: Proposed Conditions Capital Floodplain Results

Cross-Section[1]	Flow (cfs)	Water Surface Elevation (ft)	Channel Velocity (ft/s)	Top Width (ft)
4725	5,900	1074.9	9.2	119
4622	5,900	1073.4	9.3	115
4523	5,900	1070.3	12.1	108
4396	5,900	1064.5	12.3	102
4300	5,900	1045.7	13.3	81
4282	5,900	1042.8	8.7	88
4276	5,900	1043.1	5.4	131
4270	5,900	1043.2	3.7	183
4265	5,900	1042.9	5.4	195
4258	5,900	1042.9	5.1	210
4157	5,900	1042.9	2.9	285
4055.5	5,900	1042.3	5.3	292
3940.5	5,900	1040.7	7.4	283
3844	5,900	1038.4	6.9	281
3747	5,900	1037.4	5.6	281
3650	5,900	1035.4	7.8	287
3554	5,900	1033.2	8.3	169
3440.5	5,900	1032.3	5.2	330
3372	5,900	1030.4	8.6	283
3304	5,900	1029.6	6.1	279
3190.5	5,900	1028.9	5.0	251
3105	5,900	1027.9	6.8	262
3020	5,900	1027.1	5.6	275
2934	5,900	1024.9	9.0	253
2820.5	5,900	1021.9	9.0	160
2748	5,900	1021.0	7.2	218
2675.5	5,900	1019.8	7.1	205
2560.5	5,900	1017.6	8.5	279
2476	5,900	1016.2	6.2	262
2391	5,900	1015.1	6.6	243
2305.5	5,900	1014.8	4.9	241
2250		Franklin Parkway Bridge		
2190.5	5,900	1011.4	7.2	221
2122	5,900	1009.8	7.8	218
2054	5,900	1008.3	7.8	219
1940.5	5,900	1007.3	6.3	223
1872	5,900	1005.6	8.3	218
1804	5,900	1003.8	8.6	211
1688.62	5,900	1002.5	6.2	230
1584	5,900	1002.5	3.4	310
1518	5,900	1001.5	6.1	227
1448	4,829[3]	999.5	8.0	157
1294	2,853[3]	997.1	7.2	95
1189	2,853[3]	996.8	4.9	107
1132		Commerce Center Drive Bridge		
1080	2,853[3,4]	993.3	5.5	513
1061	2,853[3,5]	993.6[6]	0.6	513

Notes:

1. *Interpolated cross-sections not included.*
2. *Floodplain shown on **Figure 4-2** has wider top widths at these sections due to administrative adjustment completed to smooth the proposed floodplain.*
3. *Reduction in modeled flow rate in Hasley Creek due to flow over lateral weir (to Castaic Creek).*
4. *Ineffective flow area restricted to Hasley Creek side of the bridge, therefore, Castaic Creek flow not included at this section.*
5. *Hydraulic results are not dependent on flow rate at this cross-section, since it is modeled with a known water surface elevation.*
6. *Known water surface elevation based on proposed conditions results presented in Castaic ML Revision (per ESTU No. 2023000109, approval pending).*

4.3 Existing vs. Proposed Water Surface Elevation Comparison

Table 4-3 provides a comparison of the water surface elevation results between the existing condition and proposed condition models. The comparison shows decreases in water surface elevations along most of the study reach, as the proposed bank protection provides a wider flow area than that in the existing condition. There is a maximum increase in water surface elevation at the location of the proposed Franklin Parkway Bridge of 1.2 feet.

Table 4-3: Water Surface Elevation Comparison for Existing and Proposed Condition (Q_{CAP} = 5,900 cfs)

Cross Section	Existing Condition Water Surface Elevation (ft)	Cross Section	Proposed Condition Water Surface Elevation (ft)	Difference [Proposed - Existing] (ft)
4725	1075.0	4725	1074.9	0.0
4622	1073.0	4622	1073.4	0.4
4523	1071.4	4523	1070.3	-1.1
4396	1067.7	4396	1064.5	-3.2
4055.5	1043.9	4055.5	1042.3	-1.6
3940.5	1041.9	3940.5	1040.7	-1.2
3844	1039.2	3844	1038.4	-0.8
3747	1037.7	3747	1037.4	-0.4
3650	1035.9	3650	1035.4	-0.4
3564	1035.4	3554	1033.2	-2.2
3304	1031.2	3304	1029.6	-1.6
3190.5	1029.9	3190.5	1028.9	-1.1
3105	1028.6	3105	1027.9	-0.7
3020	1027.9	3020	1027.1	-0.8
2934	1025.0	2934	1024.9	-0.1
2820.5	1022.1	2820.5	1021.9	-0.2
2748	1021.0	2748	1021.0	0.0
2675.5	1019.9	2675.5	1019.8	0.0
2560.5	1017.7	2560.5	1017.6	-0.1
2476	1016.3	2476	1016.2	-0.1
2391	1014.8	2391	1015.1	0.4
2305 [2]	1013.6	2305.5 [2]	1014.8	1.2
2250	Proposed Franklin Parkway Bridge			

Cross Section	Existing Condition Water Surface Elevation (ft)	Cross Section	Proposed Condition Water Surface Elevation (ft)	Difference [Proposed - Existing] (ft)
2190	1012.6	2190.5	1011.4	-1.3
2122	1011.0	2122	1009.8	-1.2
2054	1008.9	2054	1008.3	-0.6
1940	1007.2	1940.5	1007.3	0.1
1872	1006.3	1872	1005.6	-0.7
1804	1004.4	1804	1003.8	-0.6
1689	1003.8	1688.6	1002.5	-1.3
1584	1003.6	1584	1002.5	-1.1
1518	1003.0	1518	1001.5	-1.5
1448	1001.6	1448	999.5	-2.0
1294	999.9	1294	997.1	-2.7
1189	999.5	1189	996.8	-2.7
1132	Commerce Center Drive Bridge			
1080	993.0	1080	993.3	0.3
1061	993.7	1061	993.6	-0.1

Notes:

1. *Only cross sections that are in both the existing and proposed condition models are compared on this table.*
2. *It is important to note that cross sections 2305 and 2305.5 are in approximately the same location, but have different cross section lengths and placements between the existing and proposed geometry. They are shown here for comparative purposes at the bridge.*

5 Summary

PACE prepared an LA County Floodplain and Floodway Map Revision along the lower Hasley Canyon Creek for the proposed channel improvements at Valencia Commerce Center Industrial Park Development. The ML Revision presented in this study includes updated existing conditions and proposed conditions capital floodplains and floodways for a study reach extending from approximately 620 ft downstream of Commerce Center Drive Bridge over Hasley Canyon Creek to approximately 25 ft downstream of Commerce Center Drive Bridge over Castaic Creek. This 3,670-ft study reach is situated on L.A. County map no. 335-ML1 and 388-ML1.

The updated existing conditions and proposed conditions floodplain limits were delineated using results of HEC-RAS hydraulic models of the study reach. The existing and proposed condition floodway limits are set equal to the limits of the floodplain. The HEC-RAS steady-state models feature a capital flood event peak flow rate of 5,900 cfs and known water surface elevation downstream boundary conditions obtained from the Castaic Creek ML Revision (ESTU No. 2023000109, approval pending).

The existing conditions HEC-RAS model was developed using 2013 topographic contours, while the proposed conditions model was developed using finished grade contours reflecting the proposed channel improvements. These improvements include buried soil cement bank protection, back-filled soil cement side slopes, a drop structure near the upstream end of the study reach, and modifications to the flow diversion berm upstream of the Commerce Center Drive Bridge. The resulting updated existing conditions and proposed conditions floodplain and floodway limits are shown on **Figure 4-1** and **Figure 4-2**. The updated existing and proposed conditions floodplain and floodway limits are narrower than the LA County floodplain and floodway shown on the current adopted Floodway Map, 388-ML-1. The floodplains and floodways presented in this study tie in with the Castaic Creek ML Revision floodplains and floodways (ESTU No. 2023000109, approval pending) upstream of the flow diversion berm on Hasley Creek's east bank, and downstream of Commerce Center Drive on Hasley Creek's west bank.

References

PACE. (December 2006). *Los Angeles County Capital Floodway Revision ML Map No's 225-ML-1&2, Castaic Creek Bank Protection (P.D. No. 2563) for P.M. No. 26363.*

PACE. (Approval Pending). *Los Angeles County Floodway Revision ML Map No.'s 335-ML-1 and 2 for Castaic Creek, ESTU No. 2023000109.*

PACE. (October 2021). *Drainage Concept Report Volume III of V, Hasley Canyon Creek Bank Protection, EIMP No. 2019000489.*

USACE. (August 2004). *Hydrology and Hydraulics Memorandum No. 4, Debris Loading on Bridges and Culverts.*

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Appendix A – Los Angeles County Flood Control District Floodway Maps

Hasley Canyon Floodway Map, Castaic Creek to Del Valle Rd.

PACE

LEGEND

CAPITAL FLOOD PLAIN BOUNDARY

FLOODWAY BOUNDARY

WATER SURFACE ELEVATIONS

ADOPTED BY BOARD OF SUPERVISORS ON NOVEMBER 16, 1960 ORDINANCE NO. 6240

REVISED	REFERENCES

LOS ANGELES COUNTY FLOOD CONTROL DISTRICT

HASLEY CANYON

FLOODWAY MAP

CASTAIC CREEK TO DEL VALLE ROAD

	10-3-80	1" = 100'
	W.O. 388-ML1	

388-M-1

388-M-2

388-M-3

Castaic Creek Floodway Map, From 700' D/S of Henry May Dr. to 7700' U/S of Henry Mayo Dr.

PACE

LEGEND

CAPITAL FLOOD PLAIN BOUNDARY

FLOODWAY BOUNDARY

WATER SURFACE ELEVATIONS

ADOPTED BY BOARD OF SUPERVISORS
AUGUST 28, 1984
ORDINANCE NO. 84-0136

REVISED	REFERENCES
	335 T7
	335 T8
	(10/80)

DRAWN: J.DOMENICHELLI

LOS ANGELES COUNTY FLOOD CONTROL DISTRICT

CASTAIC CREEK
FLOODWAY MAP
FROM 700' D/S OF HENRY MAYO DR.
TO 7700' U/S OF HENRY MAYO DR.

7/6/84 1" = 100'

NO. 335-MLI

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Advanced Water Engineering

Appendix B – Castaic Creek Floodway Map No. 355-ML1, from 170’ D/S of Henry mayo Dr. to 7700’ U/S of

County of Los Angeles
CHIEF EXECUTIVE OFFICE
713 KENNETH HAHN HALL OF ADMINISTRATION
LOS ANGELES, CALIFORNIA 90012
(213) 974-1101
http://ceo.lacounty.gov

WILLIAM T FUJIOKA
Chief Executive Officer

ADOPTED
BOARD OF SUPERVISORS
COUNTY OF LOS ANGELES

29 OCT 0 2 2007

October 2, 2007

The Honorable Board of Supervisors
County of Los Angeles
383 Kenneth Hahn Hall of Administration
500 West Temple Street
Los Angeles, CA 90012

Sachi A. Hamai
SACHI A. HAMAI
EXECUTIVE OFFICER

Dear Supervisors:

DEPARTMENT OF PUBLIC WORKS: CASTAIC CREEK FLOODWAY SOIL CEMENT BANK PROTECTION - VESTING TENTATIVE PARCEL MAP 26363, PRIVATE DRAIN 2563 REVISION OF THE ADOPTED FLOODWAY (ML MAP 335 1 AND 2) (SUPERVISORIAL DISTRICT 5) (3 VOTES)

IT IS RECOMMENDED THAT YOUR BOARD ACTING AS THE GOVERNING BODY OF THE LOS ANGELES COUNTY FLOOD CONTROL DISTRICT:

1. Conditionally approve the revision of the Castaic Creek floodway map to allow construction of the proposed flood control channel improvements as part of the Valencia Commerce Center Project, Phases 1 and 2, Vesting Tentative Parcel Map 26363.

2. Authorize the Chief Engineer or his designee of the Los Angeles County Flood Control District to accept the improvements upon completion to County standards.

PURPOSE/JUSTIFICATION OF RECOMMENDED ACTION

The purpose of the recommended action is to obtain approval to revise the Castaic Creek floodway, as shown on Attachment A. Approval of the recommendation would allow flood control channel improvements to commence as approved under Vesting Tentative Parcel Map 26363.

Following the completion of the proposed flood control channel improvements and acceptance by the Los Angeles County Flood Control District, a revised floodway map depicting the as-built drainage conditions will be prepared and submitted to your Board for approval.

Implementation of Strategic Plan Goals

The Countywide Strategic Plan directs that we provide Service Excellence (Goal 1) by providing flood protection and a safe habitable environment and Community Services (Goal 6) by enhancing the quality of life for the residents in the County of Los Angeles.

FISCAL IMPACT/FINANCING

There will be no impact to the County General Fund.

FACTS AND PROVISIONS/LEGAL REQUIREMENTS

On August 14, 1984, your Board approved and adopted Ordinance 84-0136 to establish floodway and water surface elevations for Castaic Creek. The ordinance provides for the regulation of construction-related activities within the established floodway to ensure that new developments are adequately protected from anticipated severe flood events.

The Castaic Creek floodway was adopted in accordance with the County's participation in the National Flood Insurance Program administered by the Federal Emergency Management Agency (FEMA).

Vesting Tentative Parcel Map 26363 proposes a new development that includes flood control channel improvements that will affect the Castaic Creek floodway. The engineering calculations and construction plans for the proposed channel improvements have been reviewed and approved by the Department of Public Works in conformance with the Castaic Creek Floodway Ordinance.

ENVIRONMENTAL DOCUMENTATION

In accordance with Section 15378(b)(4) of the California Environmental Quality Act (CEQA) Guidelines, approval of the recommended action does not constitute a project and, hence, is not subject to the requirements of CEQA.

IMPACT ON CURRENT SERVICES (OR PROJECTS)

The recommended action will not have an impact on current County services or projects.

CONCLUSION

Please return three adopted copies of this letter to the Department of Public Works, Watershed Management Division.

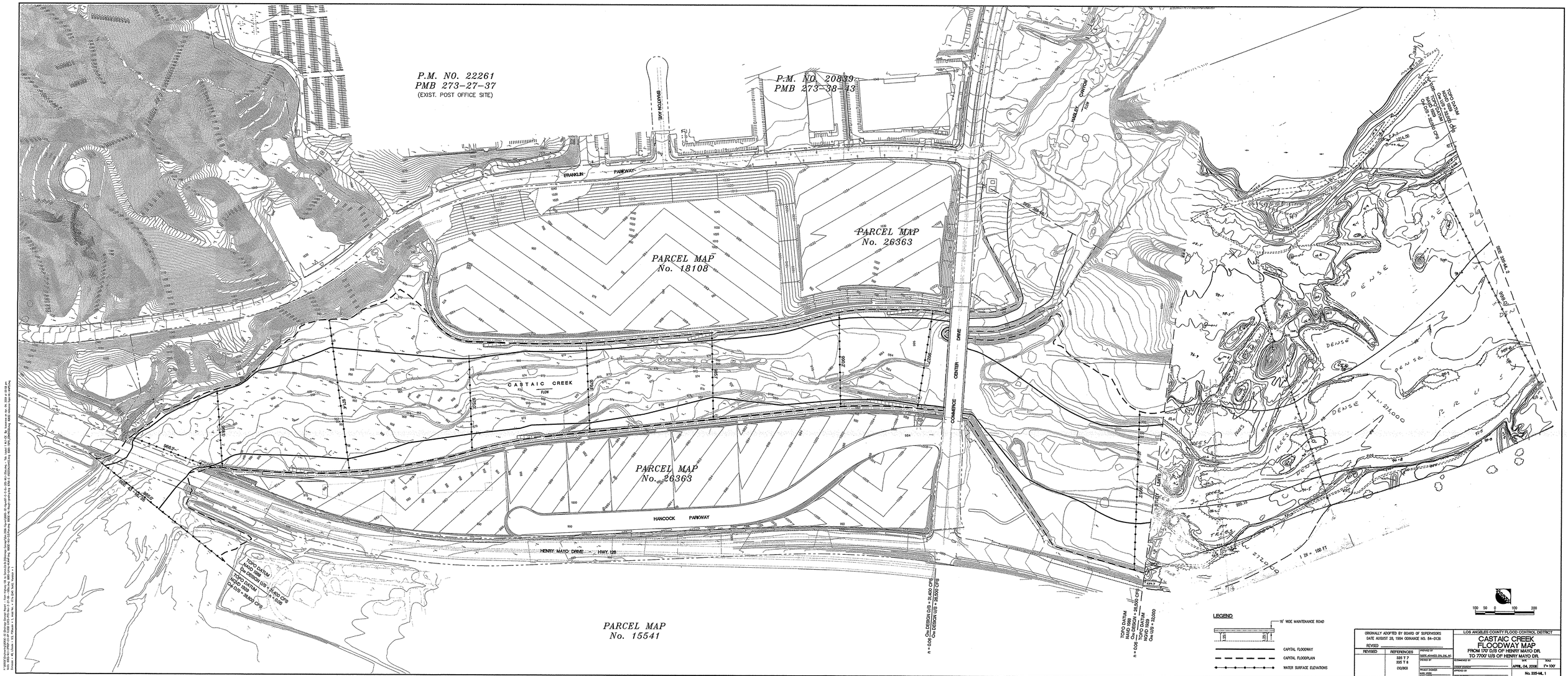
Respectfully submitted,

WILLIAM T FUJIOKA
Chief Executive Officer

WTF:DLW
MP:ad

Attachment

c: County Counsel


P.M. NO. 22261
PMB 273-27-37
(EXIST. POST OFFICE SITE)
P.M. NO. 20829
PMB 273-38-43
PARCEL MAP
No. 18108
PARCEL MAP
No. 26363
PARCEL MAP
No. 26363
PARCEL MAP
No. 15541
CASTAIC CREEK
FLOW
BRIGHTON WAY
FRANKLIN PARKWAY
COMMERCE CENTER DRIVE
HANCOCK PARKWAY
HENRY MAYO DRIVE HWY 126
HASLEY CANYON
DENSE TREES
TOPO DATUM
NAD 1927
Qw DESIGN U/S = 31,400 CFS
n = 0.035
TOPO DATUM
NAD 1927
Qw DESIGN = 28,500 CFS
n = 0.035
Qw DESIGN U/S = 28,500 CFS
TOPO DATUM
NAD 1927
Qw DESIGN = 28,500 CFS
n = 0.035
Qw DESIGN U/S = 28,500 CFS
TOPO DATUM
NAD 1927
Qw DESIGN U/S = 25,500 CFS
n = 0.035
LEGEND
16' WIDE MAINTENANCE ROAD
CAPITAL FLOODWAY
CAPITAL FLOODPLAIN
WATER SURFACE ELEVATIONS
100 50 0 100 200
ORIGINALLY ADOPTED BY BOARD OF SUPERVISORS
DATE AUGUST 28, 1984 ORDINANCE NO. 84-0136
REVISED
REVISED
REFERENCES
335 7 7
335 7 8
010/193
LOS ANGELES COUNTY FLOOD CONTROL DISTRICT
CASTAIC CREEK
FLOODWAY MAP
FROM 170' D/S OF HENRY MAYO DR.
TO 7700' U/S OF HENRY MAYO DR.
DESIGNED BY
DRAWN BY
CHECKED BY
APPROVED BY
DATE
APRIL 04, 2006
SCALE
1"= 100'
No. 335-48, 1

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Appendix C – Hasley Canyon Creek Hydrology Data

WATER RESOURCES DIVISION
HYDROLOGY SECTION

Q-2305

INFORMATION REQUEST SUMMARY

Date: 05/05/2014

Project Name: Hasley Canyon		
Project Location: Hasley Canyon from Hasley Canyon Rd to Commerce Center Dr	T.G. Page: 4459	Grid: E-5 to H-7
Project Engineer: Long Thang		
Technical Review by: Martin Araiza		
Information Requested: Q50 clear, Q50 burn, Q50 burn & bulk, and any other available flow rates		
Information Requested By: Jose Cruz, PACE, Advanced Water Engineering		
Information To Be Used: hydraulics study		
Will Information Be Used In Any Litigation? ☐*Yes* ☒*No*		

Information Provided:
The available flow rates within the specified reach of Hasley Canyon are listed below. Also attached is a map of the referenced reaches.

Reach	Q50 Clear (cfs)	Q50 Burned (cfs)	Q50 Burned & Bulked (cfs)	Q100 (cfs)	Q500 (cfs)
O	3,900	4,200	5,500	7,000	12,800
P	4,000	4,300	5,600		
Q	4,100	4,500	5,700		
R	4,300	4,700	5,900		

Date Provided: 05/01/2014 via e-mail (jcruz@pacewater.com)

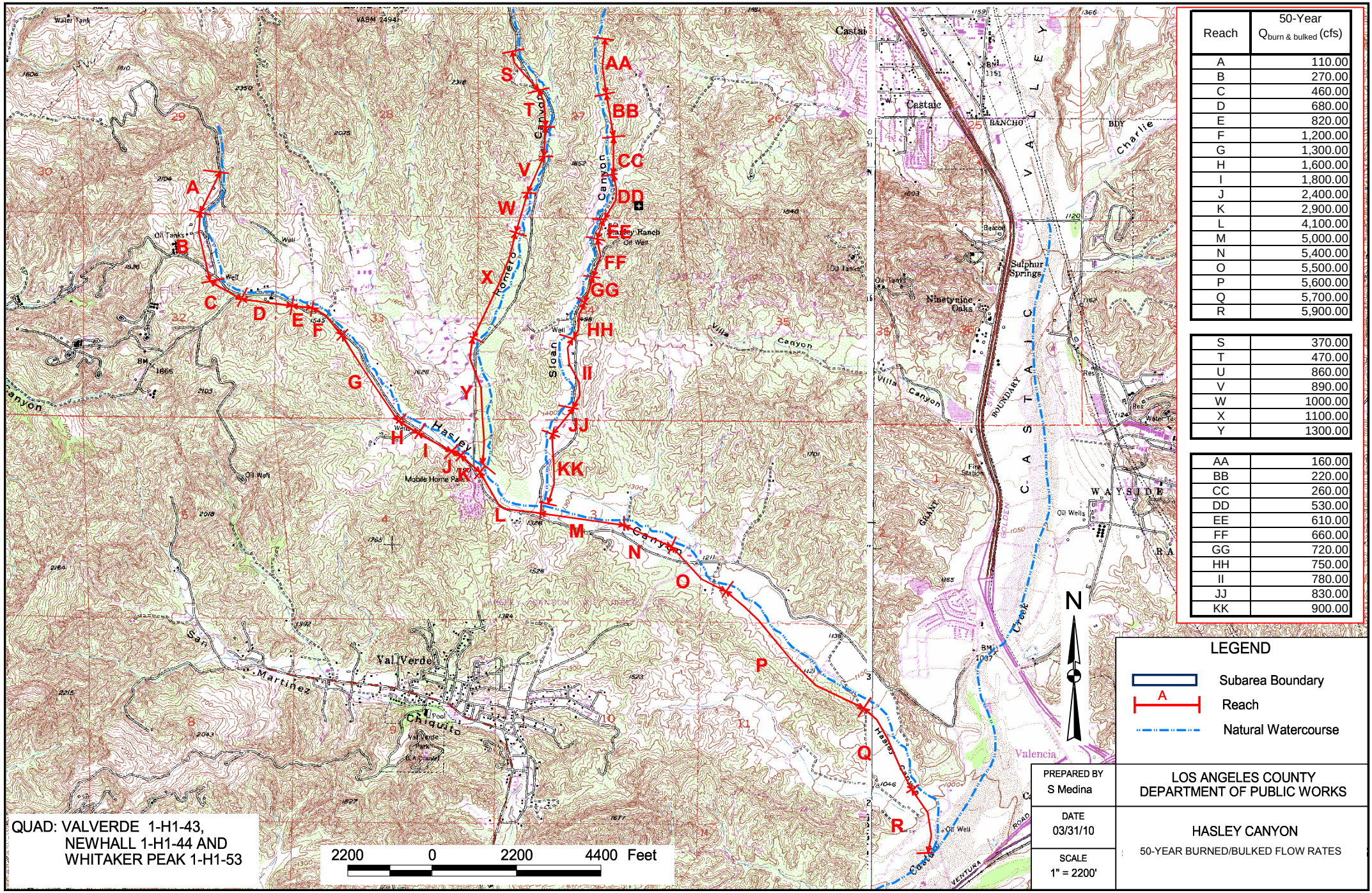
References:

- 2004 SCR Hydrology Study
- Santa Clarita Valley Flood Insurance Study, Vol. II dated 1979

Calculations, Comments, Etc.

The FEMA flow rates were calculated using a modified version of a regression equation developed by the US Army Corps of Engineers as stated in the 1979 study.

The Q50 Clear, Q50 Burn, and Q50 Burn & Bulk flow rates provided were calculated using the revised hydrologic method based on “rainfall isohyets” (Depth Method) (refer to the 2006 Hydrology Manual). The hydrologic study calculated flows resulting from a 50-year design storm. Landuse and drainage conditions may differ than those used/assumed in the 2004 study. The information provided should be used for planning purposes.



QUAD: VALVERDE 1-H1-43,
NEWHALL 1-H1-44 AND
WHITAKER PEAK 1-H1-53

Reach	50-Year $Q_{burn\ \&\ bulked}$ (cfs)
A	110.00
B	270.00
C	460.00
D	680.00
E	820.00
F	1,200.00
G	1,300.00
H	1,600.00
I	1,800.00
J	2,400.00
K	2,900.00
L	4,100.00
M	5,000.00
N	5,400.00
O	5,500.00
P	5,600.00
Q	5,700.00
R	5,900.00

S	370.00
T	470.00
U	860.00
V	890.00
W	1000.00
X	1100.00
Y	1300.00

AA	160.00
BB	220.00
CC	260.00
DD	530.00
EE	610.00
FF	660.00
GG	720.00
HH	750.00
II	780.00
JJ	830.00
KK	900.00

LEGEND

Subarea Boundary

A Reach

Natural Watercourse

PREPARED BY S Medina	LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS
DATE 03/31/10	HASLEY CANYON 50-YEAR BURNED/BULKED FLOW RATES
SCALE 1" = 2200'	

PACE
Advanced Water Engineering

Appendix D – As-Built Drawings

Commerce Center Drive Bridge

PACE

LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS

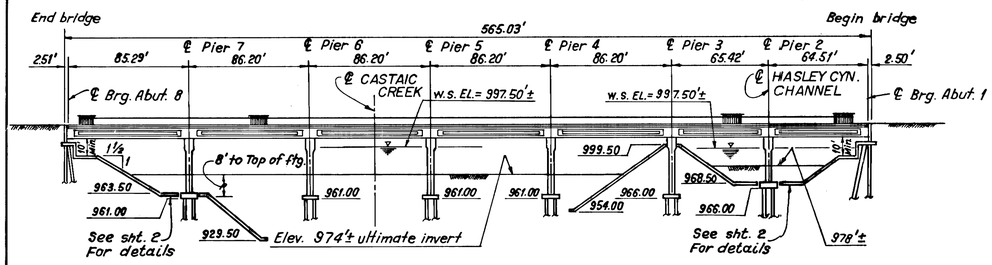
PLANS FOR BRIDGE

ON

COMMERCE CENTER DRIVE

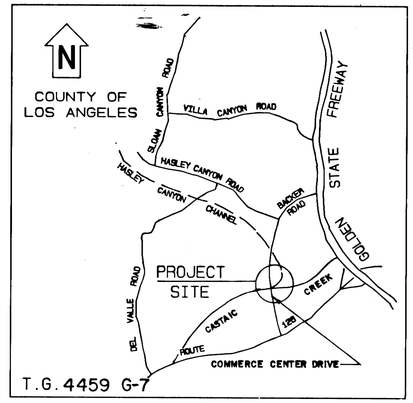
OVER

CASTAIC CREEK



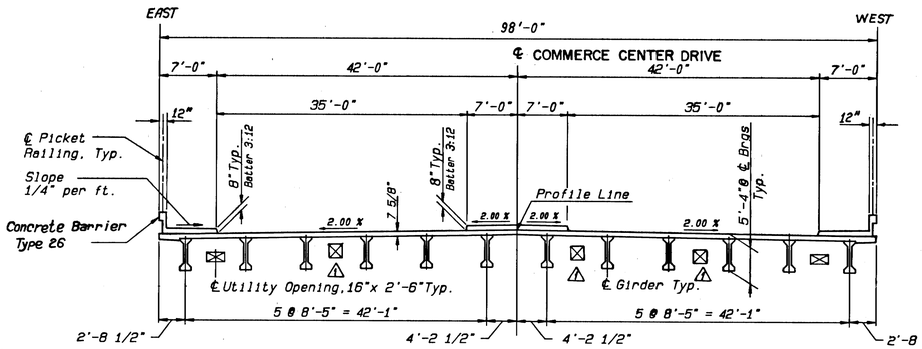
ELEVATION

Scale : 1"= 50'



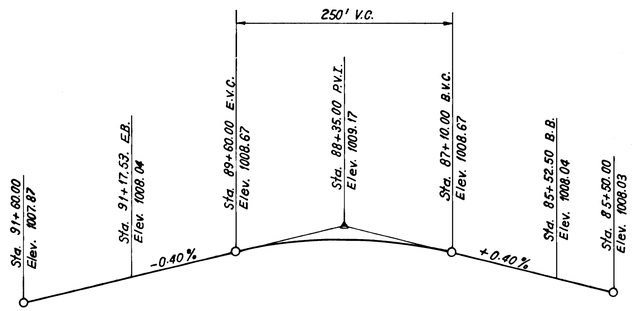
PROJECT LOCATION

No Scale



TYPICAL SECTION

Scale : 1" = 10'



PROFILE

No Scale

AS BUILT

Date: 1-26-01 Corrections by: G. Pereda

Resident Engineer: Zaven Abrahamian

No Changes

INDEX TO STANDARD PLANS

The Following State of California Department of Transportation Standard Plans, Dated July 1992, Are a Part of These Contract Drawings.

A 62-C --------Limits of Payment for Excavation and Backfill-Bridge
AT7-D --------Guard Rail Flares
AT7-F --------Miscellaneous Guard Rail Details
B2-5 --------Pile Details-Class 45 and Class 70
B6-21 --------Joint Seals
B7-5 --------Deck Drains
B11-54 --------Concrete Barrier Type 26
B0-5 -------- Deck Construction Joint

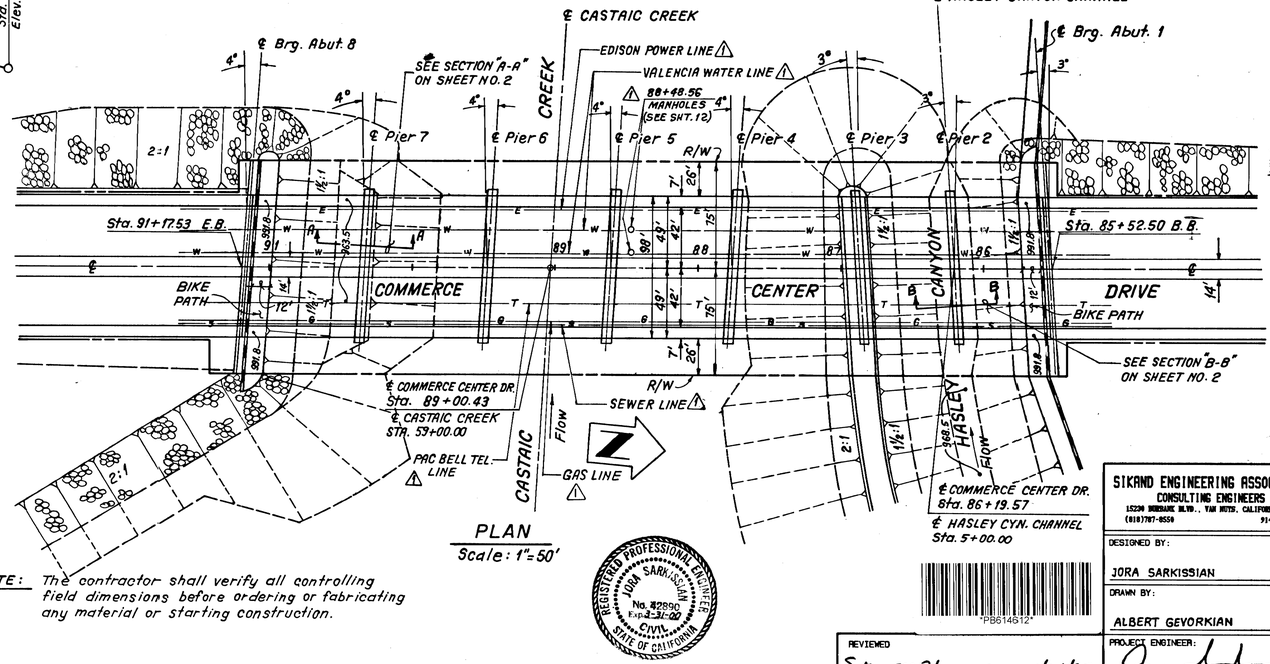
The Following Los Angeles County Department of Public Works Standard Plans, Latest Editon, are Part of These Contract Drawings.

6102--------Picket Railing

AMERICAN PUBLIC WORKS ASSOCIATION (APWA)

STANDARD PLANS FOR PUBLIC WORKS CONSTRUCTION, 1994 EDITION

460-0---------Pull Boxes
465-0---------Conduit Expansion Details



PLAN

Scale: 1"=50'

NOTE: The contractor shall verify all controlling field dimensions before ordering or fabricating any material or starting construction.

INDEX	
SHEET	TITLE
1	TITLE SHEET
2	TOPOGRAPHY
3	PILE LAYOUT & WINGWALL DETAILS
4	ABUTMENTS
5	PIERS
6-8	PRESTRESSED GIRDER DETAILS
9	GIRDER DIAPHRAGMS
10-11	DECK DETAIL SHEETS
12	MISCELLANEOUS DETAILS
13-15	LOG OF TEST BORINGS

SPECIFICATIONS

DESIGN: Load Factor Design
Bridge Design Specifications (1989 A.A.S.H.T.O. with Interims and Caltrans Supplements)
Design Loading:
Dead Load: Includes 35 psf for future wearing surface
Live Load: HS20-44 and P13 overload
Seismic Load: Peak Rock Acceleration 0.60g., Depth to Alluvium 80'-150 ft.
Design Stresses: Reinforced Concrete: fy = 60,000 psi
f'c = 3,250 psi
n = 9
Transverse deck slab
fs = 20,000 psi
fc = 1,200 psi
n = 10
Prestressed Concrete: See "Prestressing Notes"
Structural Steel (A36): fy = 36,000 psi
Design Soil Pressure (net): 3,000 psf
Pile Design Load: Abuts 45 ton, Piers 70 ton

CONSTRUCTION:
Standard Specifications for Public Works Construction (1994) W/Current Supplements

DATUM:
NEWHALL 1983, RDBM TAG IN CB 4 FT N BCR 70 FT N & 32 FT E CL INT OLD ROAD & HASLEY CANYON ROAD OFF RAMP EL.1065.685 CL 3976

REVIEWED
Steve M. Hemmasee 11/24/97
STRUCTURAL SECTION DATE

REGISTERED PROFESSIONAL ENGINEER JORA SARKISSIAN No. 42890 Exp. 3-31-00 CIVIL STATE OF CALIFORNIA

"PB614612"

SIKAND ENGINEERING ASSOCIATES CONSULTING ENGINEERS 15230 BURBANK BLVD., VAN NUYS, CALIFORNIA (818)787-8550 91411	LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS DESIGN DIVISION STRUCTURES SECTION
DESIGNED BY: JORA SARKISSIAN	COMMERCE CENTER DRIVE OVER CASTAIC CREEK
DRAWN BY: ALBERT GEVORKIAN	TITLE SHEET
PROJECT ENGINEER: JORA SARKISSIAN	SUBMITTED: 11/24/97 CONSTRUCTION SECTION DIVISION DATE
	APPROVED: MARK W. PESTRELLA DIRECTOR OF PUBLIC WORKS BY: 11-25-97 COUNTY DIRECTOR DATE
	BRIDGE NO.: 3794 PROJECT NO.: SHT.: 1 OF: 15 DWG. NO.: 614612

1020-252-20

DRAWN	CHECKED	REVISIONS	⚠ ADDED MANHOLES, UTILITY OPENINGS AND UTILITY LINES.

SCALE: 1"= 60'

COMMERCE CENTER DRIVE

CASTAIC CREEK

HASLEY CREEK

ROUTE 126

STREET IMPROVEMENTS PER P.M. NO. 22261

STORM DRAIN PER P.D. 2298 (UNIT II)

STA. 86+19.57 ℄ COMMERCE CTR. DR.
STA. 5+00.00 ℄ HASLEY CREEK

STA. 89+00.43 ℄ COMMERCE CTR. DR.
STA. 59+00.00 ℄ CASTAIC CREEK

RIP-RAP SLOPE PROTECTION (TYP.) SEE DETAIL "B" HEREON

SEE SECTION "A-A" HEREON

SEE SECTION "B-B" HEREON

FUTURE LINING

℄ PIER 7 ℄ PIER 6 ℄ PIER 5 ℄ PIER 4 ℄ PIER 3 ℄ PIER 2

1000.0 TOP OF LINING

TOP ELEV. 1000.0

TOP OF SLOPE

BIKE PATH

CURB LINE

℄ OF STREET

R/W

S.D.

963.5

961.00

966.00

997.00

2.146%

0.41%

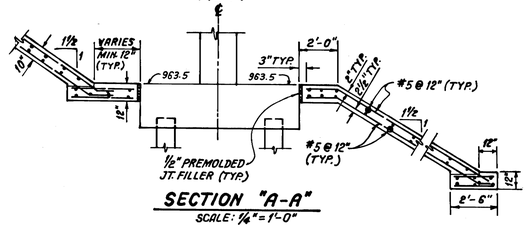
0.30%

0.50%

0.40%

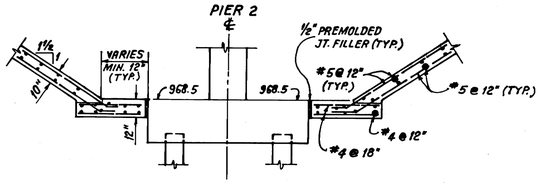
5.0%

PIER 7

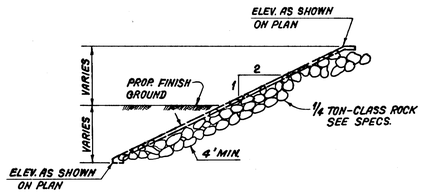


SECTION "A-A"
SCALE: ¼"= 1'-0"

PIER 2



SECTION "B-B"
SCALE: ¼"= 1'-0"



DETAIL "B"
NOT TO SCALE

AS BUILT
Date: 1-26-01 Corrections by: G. Pereda
Resident Engineer: Zaven Abrahamian
No Changes

NOTE: UNLESS OTHERWISE INDICATED:

1. EXISTING TOPOGRAPHY SHALL BE VERIFIED IN THE FIELD BY THE CONTRACTOR.
2. FOR RELOCATION OR REMOVAL OF EXISTING UTILITIES; SEE SPECS.
3. ☐ INDICATES BOTTOM OF FOOTING ELEVATION.
4. SLOPE PAVING MAY BE PORTLAND CEMENT CONCRETE OR AIR-BLOWN MORTAR. SEE SPECS.
5. FOR GUARD RAIL DETAILS, SEE CALTRANS STD. PLAN A77-D, TYPE I FLARE AND A77-F, A77-E. FOR ANCHORAGE TO BRIDGE SIDEWALK, SEE STD. B11-54. TYP.
6. FOR SITE AND EMBANKMENT PREPARATION, SEE SPECS.
7. FOR TYPICAL SLOPE PAVING DETAILS SEE "MISCELLANEOUS DETAILS" ON SHEET NO. 12
8. LINING AND BIKE PATH TO BE CONSTRUCTED PER P.D. NO. 2298 (UNIT III)

NOTE:
CONTRACTOR'S ATTENTION IS DIRECTED TO THE PRESENCE OF GROUND WATER AT ELEVATION OF 2 TO 4 FEET BELOW THE RIVER BED GRADE. CONTRACTOR WILL BE REQUIRED TO PROVIDE ALL NECESSARY DEWATERING FACILITIES TO ADEQUATELY DEWATER BELOW THE SOFFIT OF PIER FOOTING OR BOTTOM OF THE FOOTING OF THE SLOPE PAVING PRIOR TO THE PLACEMENT OF ANY REINFORCEMENT AND STRUCTURAL OR AIR BLOWN CONCRETE. DEWATERING SHALL CONTINUE UNTIL THE STRENGTH OF STRUCTURAL OR AIR BLOWN CONCRETE BELOW THE WATER TABLE HAS REACHED THE STRENGTH OF 2000 P.S.I.

REGISTERED PROFESSIONAL ENGINEER JORA SARKISSIAN No. 32890 Exp. 3-31-00 CIVIL STATE OF CALIFORNIA

"PB614611"

REVISIONS | CHECKED | DRAWN

SIKAND ENGINEERING ASSOCIATES
CONSULTING ENGINEERS
(818)787-8558

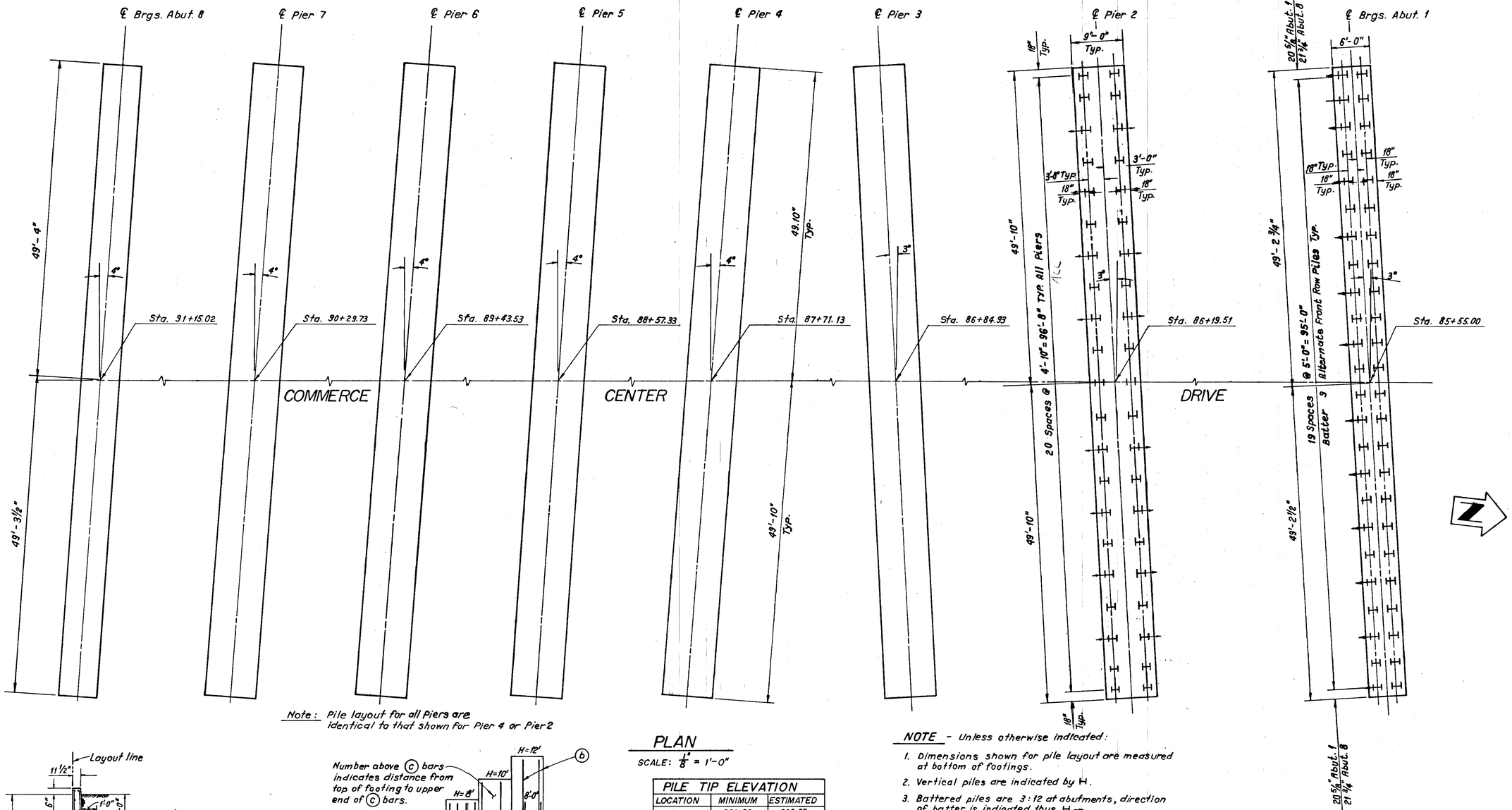
LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS
DESIGN DIVISION
STRUCTURES SECTION

DESIGNED BY: JORA SARKISSIAN
DRAWN BY: ALBERT GEVORKIAN
PROJECT ENGINEER: JORA SARKISSIAN

COMMERCE CENTER DRIVE OVER CASTAIC CREEK
TOPOGRAPHY

REVIEWED
Steve M. Hemmasi 11/24/97
STRUCTURAL SECTION DATE

BRIDGE NO.: 3794
PROJECT NO.:
SHT.: 2 OF: 15
DWG. NO.: 614611



Note: Pile layout for all Piers are identical to that shown for Pier 4 or Pier 2

PLAN

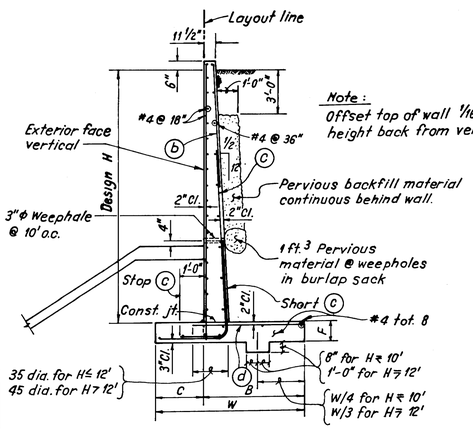
SCALE: 1/8" = 1'-0"

PILE TIP ELEVATION		
LOCATION	MINIMUM	ESTIMATED
ABUT 1	960.00	960.00
ABUT 8	950.00	950.00
PIER 2 & 3	926.00	926.00
PIERS 4,5,6,7	922.00	922.00

NOTE - Unless otherwise indicated:

1. Dimensions shown for pile layout are measured at bottom of footings.
2. Vertical piles are indicated by H.
3. Battered piles are 3:12 at abutments, direction of batter is indicated thus H→.
4. Lugs for steel pile shall be ¾" x 5" plates cut to fit. Welded to each side of web and shall be placed as directed by the Engineer. See Specs.
5. Estimated pile tip elevations as shown on this sheet shall be used for bidding purposes.
6. For pile driving, See Specs.
7. For pile details See Caltrans Std. Plan B2-5.
8. All piles are HP 12x53, with
   - Abuts. 40 ton capacity
   - Piers 70 ton capacity

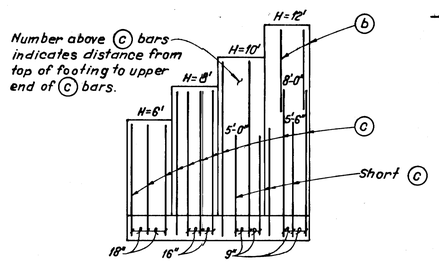
Note: Pile layout for Abut. 8 is identical but opposite hand to that shown for Abut. 1



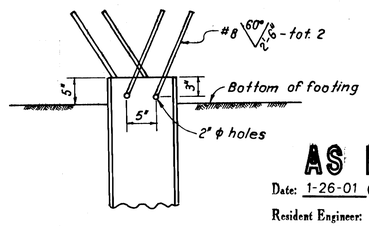
Note: Offset top of wall 1/16" per ft. of height back from vertical.

TYPICAL WINGWALL DETAILS

NO SCALE



Design H	6'	8'	10'	12'
W	4'-2"	5'-2"	6'-2"	7'-2"
C	1'-4"	1'-8"	2'-0"	2'-4"
B	2'-10"	3'-6"	4'-2"	4'-10"
F	1'-2"	1'-2"	1'-2"	1'-2"
(b)	—	—	—	#4@18"
©	#5@18"	#5@16"	#5@9"	#6@9"
(d)	#5@18"	#4@16"	#4@9"	#5@9"



STEEL PILE ANCHOR

NO SCALE

AS BUILT

Date: 1-26-01 Corrections by: G. Pereda

Resident Engineer: Zoven Abrahamian

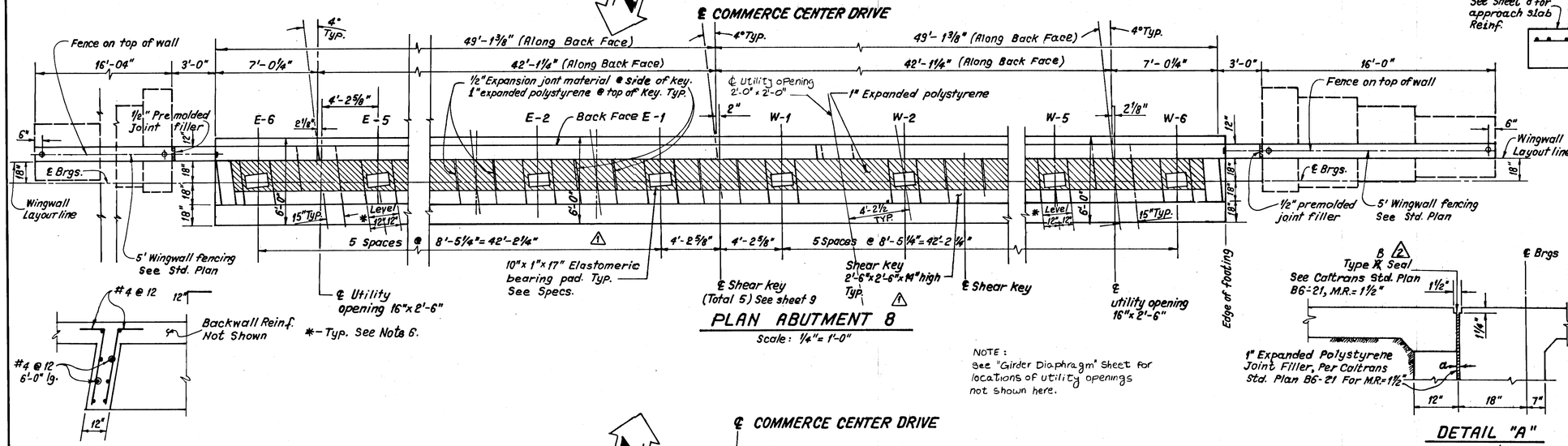
No Changes

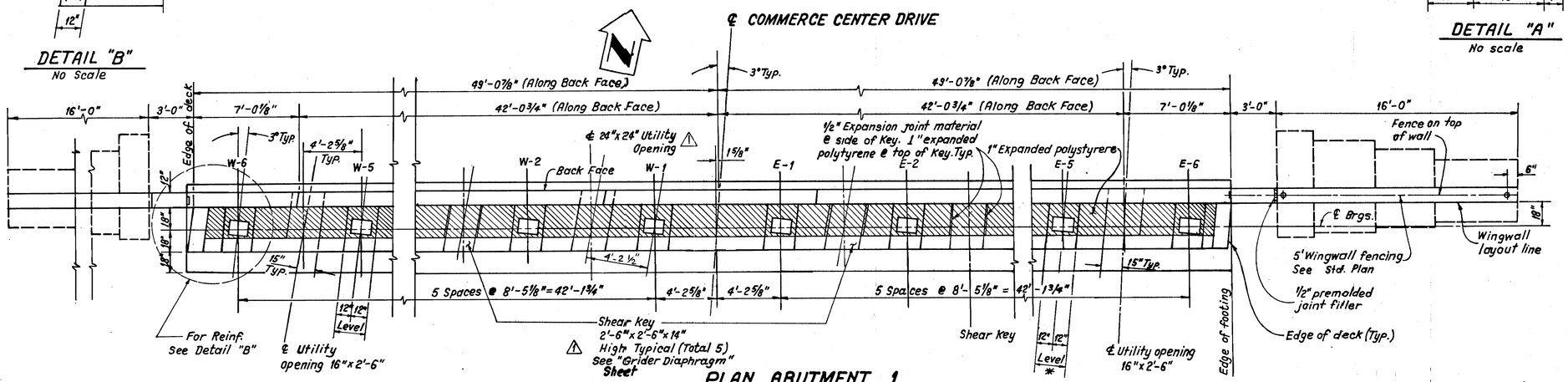
REGISTERED PROFESSIONAL ENGINEER JORA SARKISSIAN No. 45289 Exp. 3-31-00 CIVIL STATE OF CALIFORNIA

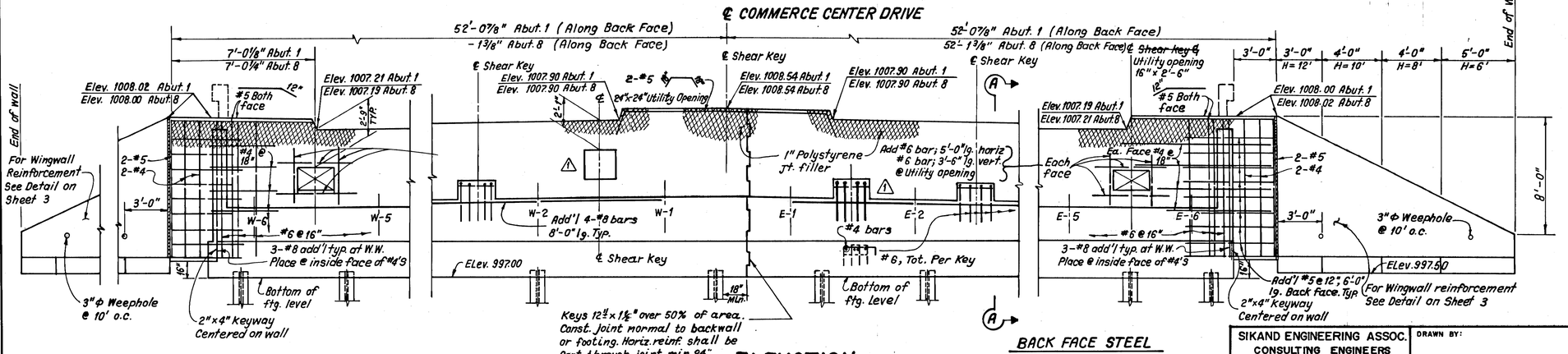
SIKAND ENGINEERING ASSOCIATES CONSULTING ENGINEERS 15230 BURBANK BLVD., VAN NUYS, CALIFORNIA 91411 (818)787-8550	LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS DESIGN DIVISION STRUCTURES SECTION
DESIGNED BY: JORA SARKISSIAN DRAWN BY: ALBERT GEVORKIAN PROJECT ENGINEER: JORA SARKISSIAN	COMMERCE CENTER DRIVE OVER CASTAIC CREEK PILE LAYOUT & WINGWALL DETAILS REVIEWED Steve M. Hennessee 11/24/97 STRUCTURAL SECTION DATE
	BRIDGE NO.: 3794 PROJECT NO.: SHT.: 3 OF: 15 DWG. NO.: 614610

"PB614610"

REVISIONS | CHECKED | DRAWN







BEARING SEAT ELEVATION		
GIRDER	ABUTMENT 1	ABUTMENT 8
E-1	1002.56	1002.56
E-2	1002.39	1002.39
E-3	1002.22	1002.21
E-4	1002.04	1002.04
E-5	1001.87	1001.87
E-6	1001.70	1001.70
W-1	1002.56	1002.56
W-2	1002.39	1002.39
W-3	1002.22	1002.23
W-4	1002.06	1002.06
W-5	1001.89	1001.89
W-6	1001.72	1001.72

NOTE - Unless otherwise indicated:

1. Elevation shown is for back face of abutments and wing walls.
2. Bearing seat elevations are top of concrete and are Located at the intersection of ℄ bearing and ℄ girder.
3. Reinforcing steel shall have 2" cover in walls and 3" cover in footings.
4. Premolded joint filler should be fastened with 8 d galvanized nails @ 12" o.c. staggered.
5. Reinforcing steel shall be continuous through construction joints.
6. Bearing seats shall be parallel to roadway grade and level perpendicular to ℄ girder.

REGISTERED PROFESSIONAL ENGINEER JORA SARKISSIAN No. 42890 Exp. 9-31-00 CIVIL STATE OF CALIFORNIA

2 JOINT TYPE SEALS CHANGED TO TYPE "B" SEAL

AS BUILT

Date 1-26-01 Corrections by: G. Pereda

Resident Engineer: Zaven Abrahamian

REVISIONS	CHECKED	DRAWN
1 ADDED ABUTMENT UTILITY OPENING & REVISED SHEAR KEY LOCATIONS.		

SIKAND ENGINEERING ASSOC.
CONSULTING ENGINEERS
15230 BURBANK BLVD. VAN NUYS, CALIF. 91411
(818) 787-8550

DESIGNED BY: JORA SARKISSIAN

DRAWN BY: ALBERT GEVORKIAN

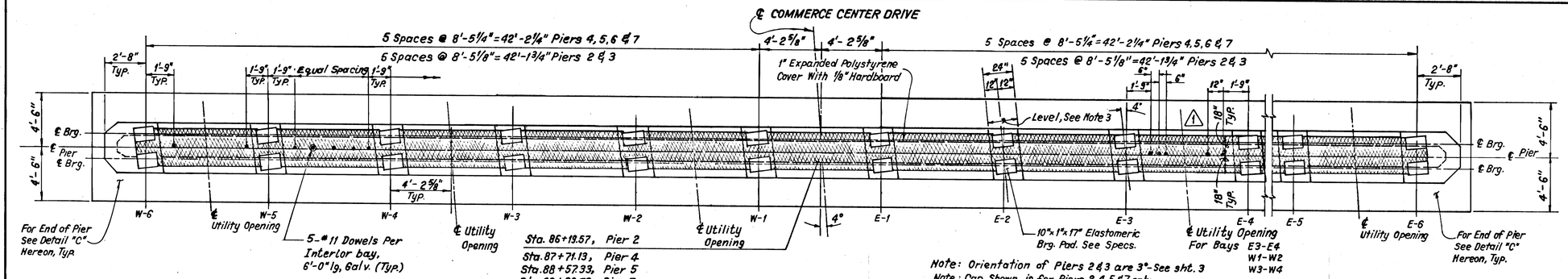
PROJECT ENGINEER: JORA SARKISSIAN

LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS
DESIGN DIVISION
STRUCTURES SECTION

COMMERCE CENTER DRIVE OVER CASTAIC CREEK
ABUTMENTS

REVIEWED
Steve Mikrogeorgis 11/24/97
STRUCTURAL SECTION DATE

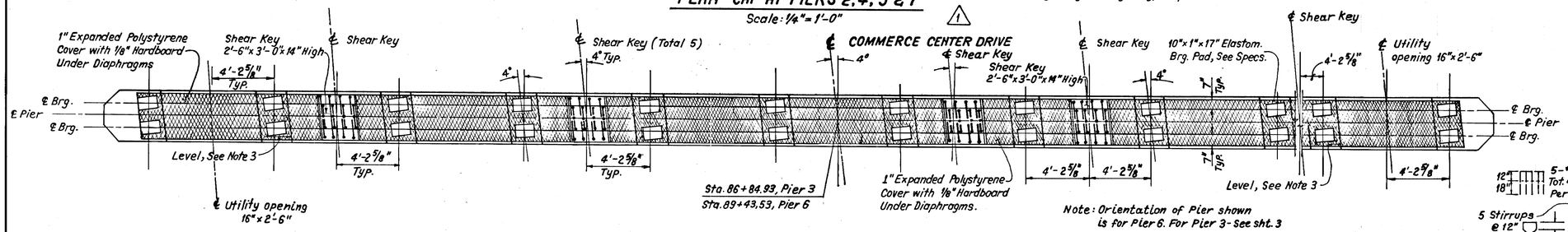
BRIDGE NO.: 3794
PROJECT NO.:
SHT.: 4 OF: 15
DWG. NO.: 614609



Note: Orientation of Piers 2 & 3 are 3°-See sht. 3
Note: Cap Shown is for Piers 2, 4, 5 & 7 only.
Stem footing and girder layout typ. all piers.

PLAN-CAP AT PIERS 2, 4, 5 & 7

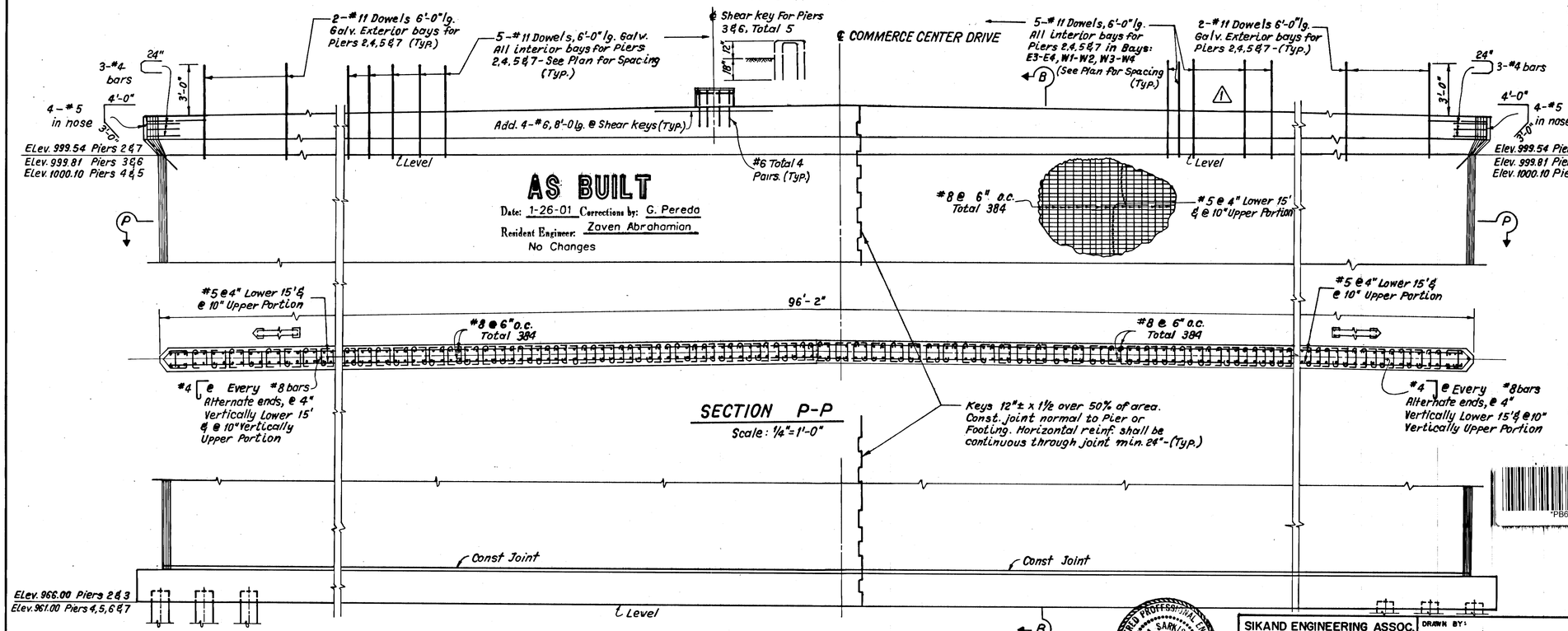
Scale: ¼"=1'-0"



Note: Orientation of Pier shown is for Pier 6. For Pier 3-See sht. 3

PLAN-CAP AT PIERS 3 & 6

Scale: ¼"=1'-0"



AS BUILT
Date: 1-26-01 Corrections by: G. Pereda
Resident Engineer: Zaven Abrahamian
No Changes

SECTION P-P

Scale: ¼"=1'-0"

ELEVATION

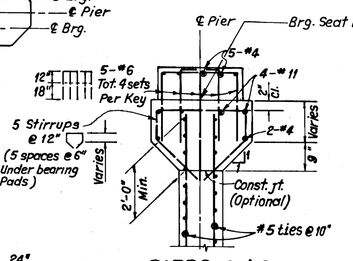
Scale: ¼"=1'-0"

NOTE: Reinforcement Shown is Typ. for both faces of Pier.

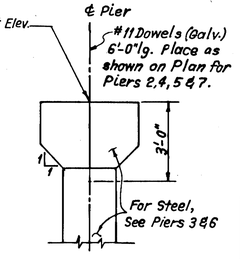
BEARING SEAT ELEVATION						
GIRDER	PIER 2	PIER 3	PIER 4	PIER 5	PIER 6	PIER 7
E-1	1002.81	1003.07	1003.37	1003.42	1003.23	1002.90
E-2	1002.64	1002.89	1003.20	1003.25	1003.07	1002.73
E-3	1002.47	1002.73	1003.03	1003.08	1002.90	1002.55
E-4	1002.29	1002.55	1002.86	1002.91	1002.72	1002.38
E-5	1002.12	1002.38	1002.69	1002.74	1002.55	1002.21
E-6	1001.95	1002.21	1002.52	1002.57	1002.38	1002.04
W-1	1002.81	1003.07	1003.36	1003.42	1003.24	1002.90
W-2	1002.64	1002.90	1003.19	1003.25	1003.07	1002.73
W-3	1002.47	1002.73	1003.02	1003.08	1002.91	1002.57
W-4	1002.31	1002.56	1002.85	1002.91	1002.74	1002.40
W-5	1002.14	1002.40	1002.68	1002.74	1002.57	1002.23
W-6	1001.97	1002.23	1002.51	1002.57	1002.40	1002.06

NOTE: Unless otherwise indicated:

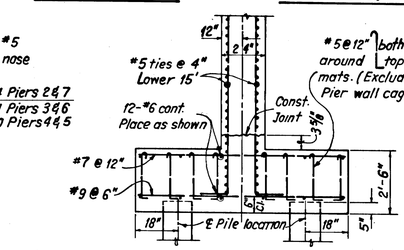
1. Elevations shown in table are at ℄ of pier. See Sect. B-B.
2. Reinforcing steel shall have 2" cover in cap and 3" cover in walls and footing.
3. Finish bearing seats parallel to roadway grade and level transverse to girders.
4. See Sheet 3 for pile layout.



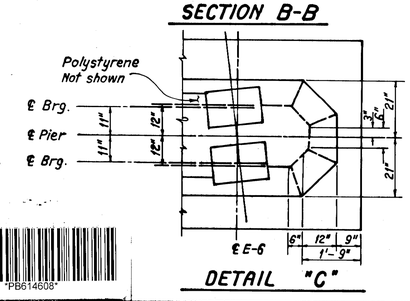
PIERS 3 & 6



PIERS 2, 4, 5 & 7



SECTION B-B



DETAIL "C"

PB614608

REVISED SHEAR KEY LOCATIONS AT PIERS & DOWEL SPACING AT UTILITY OPENINGS.

REVISIONS	CHECKED	DRAWN
△		

LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS
DESIGN DIVISION
STRUCTURES SECTION

COMMERCE CENTER DRIVE
OVER
CASTAIC CREEK
PIERS

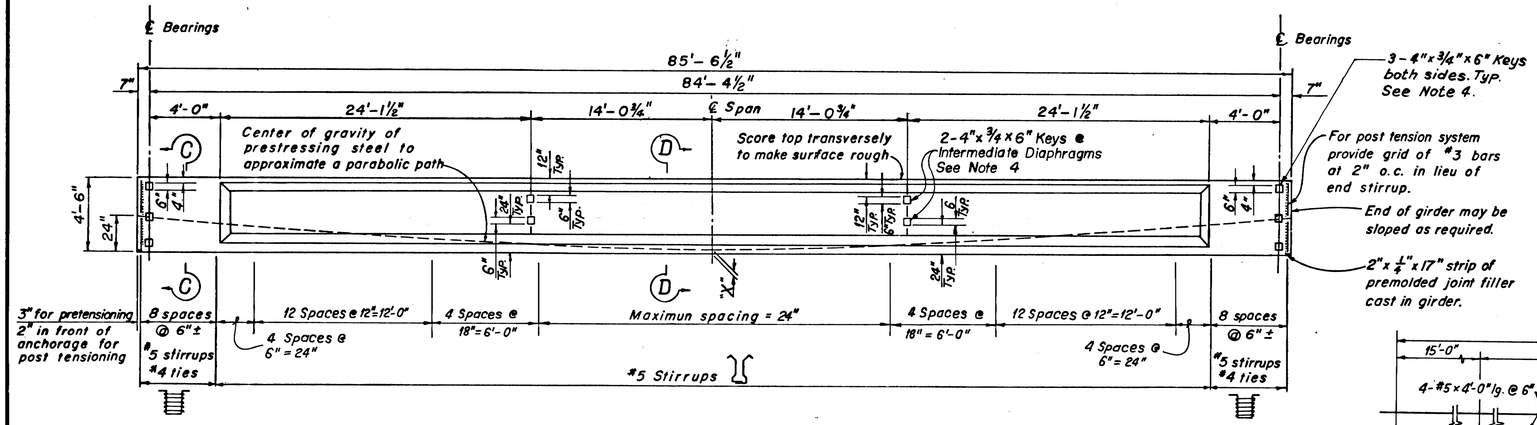
REVIEWED
Steve M. Hennessey 11/24/97
STRUCTURAL SECTION DATE

BRIDGE NO.: 3794
PROJECT NO.:
SHT.: 5 OF: 15
DWG. NO.: 614608

SIKAND ENGINEERING ASSOC.
CONSULTING ENGINEERS
15230 BURBANK BLVD. VAN NUYS, CALIF. 91411
(818) 787-8550

DESIGNED BY: JORA SARKISSIAN
DRAWN BY: ALBERT GEVORKIAN
PROJECT ENGINEER: JORA SARKISSIAN

REGISTERED PROFESSIONAL ENGINEER JORA SARKISSIAN No. 42690 Exp. 3-31-00 Civil STATE OF CALIFORNIA



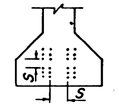
GIRDER ELEVATION FOR PIER 4 TO ABUT. 8

No Scale

CLEARANCES FOR POST TENSIONED UNITS

1. Units may be bundled vertically in groups of 3 max.
2. Horizontal clearance between units equal to 2 1/2" min.
3. Vertical clearance between bundled units equal to 3" min.
4. Any deviation shall be approved by the Engineer.

CLEARANCES FOR PRETENSIONED STRANDS



1. Strands may be bundled in groups consisting of 3 vertically and 2 horizontally, and separated at the ends.
2. The minimum distance "S" between groups or individual strands is 1½" for ⅜" strands, 1¾" for ½" strands and 2" for ⅝" strands.
3. "S" is measured between centers of adjacent strands.
4. Any deviation shall be approved by the Engineer.

GIRDER PRESTRESSING NOTES FOR PIER 4 TO ABUT. 8

"X"	DESIGN STRESSES	Post tension	Pretension
4" 8"	P = Working force, lbs	615,000 700,000	675,000 765,000
	Concrete strength, psi	f'c = 5,000 f'ci = 4,900	f'c = 5,000 f'ci = 4,900

CONCRETE STRENGTH:

f'ci is at time of initial stressing. (Force transfer to conc.) f'c is at 28 days.

WORKING FORCE:

The force remaining per girder after all losses.

CABLE PATH:

Where impractical to obtain cable path shown with a proposed prestressing system, it may vary within limits from 4" to 8" at ℄ girder and from 22" to 26" at the end of the girder subject to the approval of the Engineer. See Specs.

LOSSES:

The stress loss in prestressing steel due to shrinkage, creep, and sequence stressing shall be assumed to be;

pretension steel: 42,000 psi.
post tension steel: 32,000 psi.

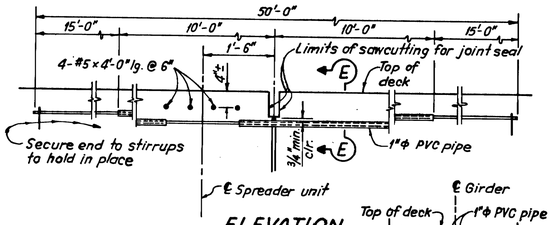
Provision shall be made for any other losses peculiar to the system of prestressing used.

GIRDER DEFLECTIONS: (PRE-TENSION) FOR "X"=4"

Time	Condition		Deflection
Initial	Prestress + D.L.Girder		- 1 3/8"
	Prestress + D.L.Girder		- 2 ¼"
3 months	D.L. Slab	½ pt.	+ 1 5/8"
		¼ pt.	+ 1 1/8"
	Prestress + D.L. Girder + D.L. Slab		- ⅝"
Final	Prestress + D.L. Girder + SD.L. Slab		- ¾"

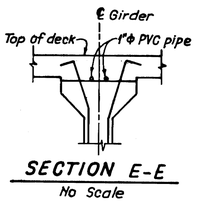
A minus(-) sign indicates upward deflection. Deflections measured at ℄ Span and are based on the assumption that the deck will not be placed on precast girders until 3 months after prestressing. Final deflection is assumed to occur 4 years after initial prestressing.

* Includes other dead loads.



ELEVATION

No Scale



SECTION E-E

No Scale

AS BUILT

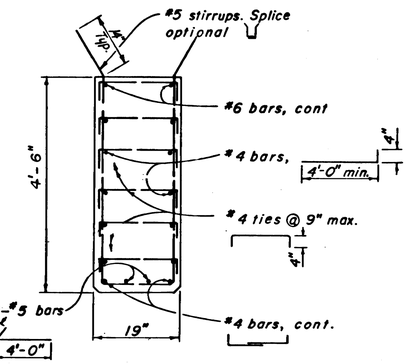
Date: 1-26-01 Corrections by: G. Pereda

Resident Engineer: Zaven Abrahamian

No Changes

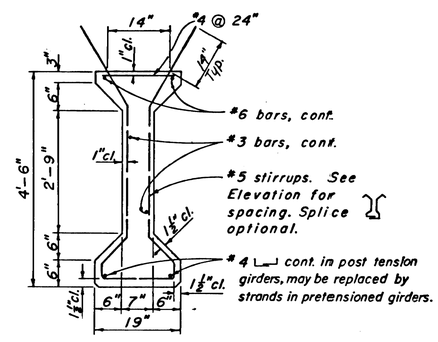
NOTE:

1. Girder length shown is for finished girder. Allowance shall be made for elastic shortening.
2. For dowels cast in girder, see Sht.
3. Extend #4 & #6 longitudinal reinforcing 8" post end of girder at Pier
4. Omit keys on exterior face of girder
5. Ends of girder shall be marked for span location.
6. Contractor shall submit shop drawings indicating location and size of holes for dowel through girders.



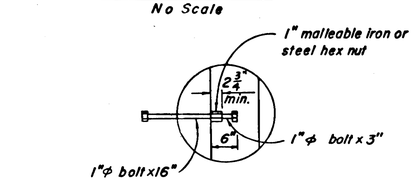
SECTION C-C

No Scale



SECTION D-D

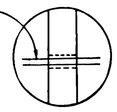
No Scale



ALTERNATE INSERT ASSEMBLY

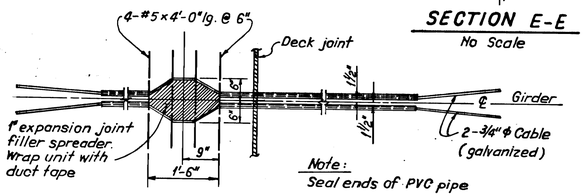
No Scale

"6 dowel 6'-0" long. Place through 1" holes formed in girder. Holes need not be grouted



ALTERNATE DOWEL ASSEMBLY

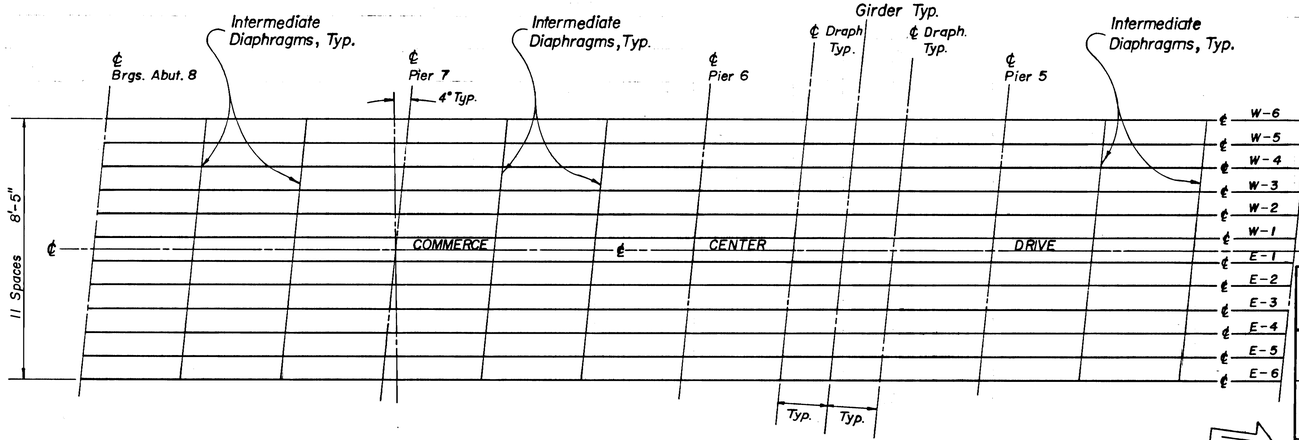
No Scale



Note: Seal ends of PVC pipe

RESTRAINER UNIT DETAIL

No Scale



TYPICAL GIRDER FRAMING PLAN

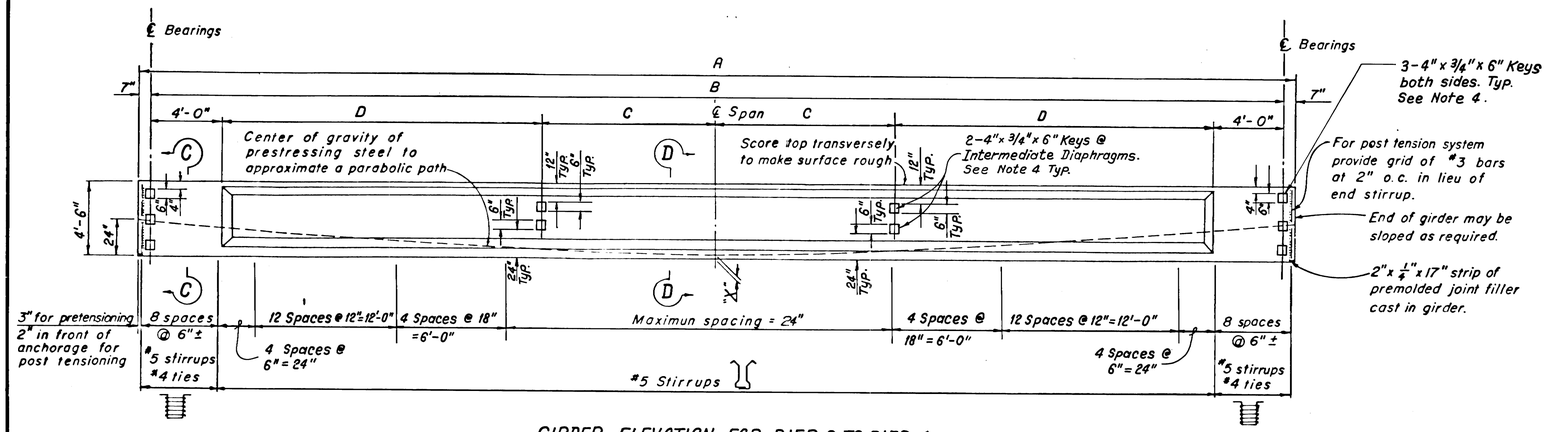
No Scale

PB614607

REGISTERED PROFESSIONAL ENGINEER JORA SARKISSIAN No. 42890 Exp. 3-31-00 CIVIL STATE OF CALIFORNIA

SIKAND ENGINEERING ASSOC. CONSULTING ENGINEERS 15230 BURBANK BLVD. VAN NUYS, CALIF. (818) 787-8550 91411	LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS DESIGN DIVISION STRUCTURES SECTION
DESIGNED BY: JORA SARKISSIAN	COMMERCE CENTER DRIVE OVER CASTAIC CREEK
DRAWN BY: ALBERT GEVORKIAN	PRESTRESSED GIRDER DETAILS NO. 1
PROJECT ENGINEER: JORA SARKISSIAN	REVIEWED Steve M. Hamasaee 11/24/97 STRUCTURAL SECTION DATE
	BRIDGE NO. 3794 JOB NO. SHT. 6 OF 15 DWG. NO. 614607

K-E ALBANENE® LA 4358



GIRDER ELEVATION FOR PIER 3 TO PIER 4

No Scale

AS BUILT

Date: 1-26-01 Corrections by: G. Pereda

Resident Engineer: Zaven Abrahamian

No Changes

PRESTRESSING FORCES FOR SPAN 3-4

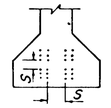
GIRDERS E-2, E-3, E-4, E-5 & E-6			
"X"	DESIGN STRESSES	POST TENSION	PRETENSION
4"	P=WORKING FORCE, lbs	670,000	750,000
8"		765,000	850,00
	CONCRETE STRENGTH, psi	f'c= 5,500	f'c= 5,500
		f'ci= 5,100	f'ci=4,900

GIRDERS E-1, W-1, W-2, W-3, W-4, W-5 & W-6			
"X"	DESIGN STRESSES	POST TENSION	PRETENSION
4"	P=WORKING FORCE, lbs.	615,000	675,000
8"		700,000	765,000
	CONCRETE STRENGTH, psi	f'c= 5,000	f'c= 5,000
		f'ci=4,900	f'ci=4,900

GIRDER DIMENSIONS FOR SPAN 3-4

LOC.	A	B	C	D
W-6	79'-10½"	78'-8½"	13'-1¼"	22'-2¾"
W-5	80'-10⅞"	79'-8⅞"	13'-3½"	22'-7"
W-4	81'-11⅛"	80'-9¼"	13'-5½"	22'-11⅞"
W-3	82'-11½"	81'-9½"	13'-7⅝"	23'-3⅛"
W-2	83'-11⅞"	82'-9⅞"	13'-9⅝"	23'-7⅛"
W-1	85'-0⅛"	83'-10⅛"	13'-11¾"	23'-11⅜"
E-1	86'-0½"	84'-10½"	14'-1¾"	24'-3½"
E-2	87'-0⅞"	85'-10⅞"	14'-3⅞"	24'-7⅝"
E-3	88'-1⅛"	86'-11⅛"	14'-5⅞"	24'-11¾"
E-4	89'-1⅝"	87'-11⅝"	14'-7⅞"	25'-3⅞"
E-5	90'-2"	89'-0"	14'-10"	25'-8"
E-6	91'-2¼"	90'-0¼"	15'-0"	26'-0⅛"

CLEARANCES FOR PRETENSIONED STRANDS



1. Strands may be bundled in groups consisting of 3 vertically and 2 horizontally, and separated at the ends.
2. The minimum distance "S" between groups or individual strands is 1½" for ⅜" strands, 1¾" for ½" strands and 2" for ½" strands.
3. "S" is measured between centers of adjacent strands.
4. Any deviation shall be approved by the Engineer.

PRESTRESSING NOTES FOR SPAN 3-4

"X"	DESIGN STRESSES	Post tension	Pretension
	P = Working force, lbs		
	Concrete strength, psi	f'c = / f'ci =	f'c = / f'ci =

CONCRETE STRENGTH :

f'_{ci} is at time of initial stressing. (Force transfer to conc)
f'_c is at 28 days.

WORKING FORCE :

The force remaining per girder after all losses.

CABLE PATH :

Where impractical to obtain cable path shown with a proposed prestressing system, it may vary within limits from 4" to 8" at ℄ girder and from 22" to 26" at the end of the girder subject to the approval of the Engineer. See Specs.

LOSSES :

The stress loss in prestressing steel due to shrinkage, creep, and sequence stressing shall be assumed to be;

pretension steel: 42,000 psi.
post tension steel: 32,000 psi.

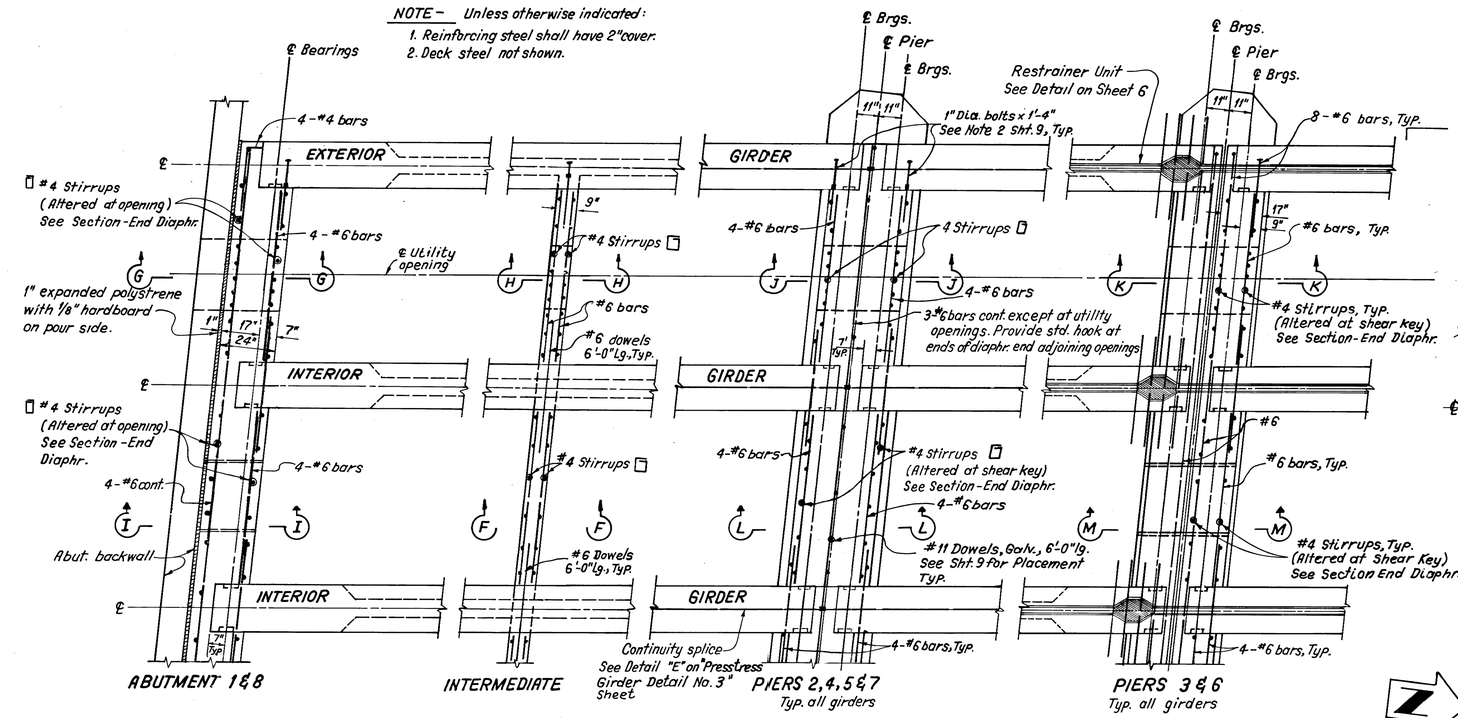
Provision shall be made for any other losses peculiar to the system of prestressing used.

GIRDER DEFLECTIONS: (PRE-TENSION) FOR "X"= 4"

Time	Condition		Deflection
Initial	Prestress † D.L. Girder		- 1¾
3 months	Prestress † D.L. Girder		- 2¼
	D.L. Slab	½ pt.	+ 1½
		¼ pt.	+ 1⅛
	Prestress † D.L. Girder † D.L. Slab		- ¾
Final	Prestress † D.L. Girder † ⅝ D.L. Slab		- ⅞

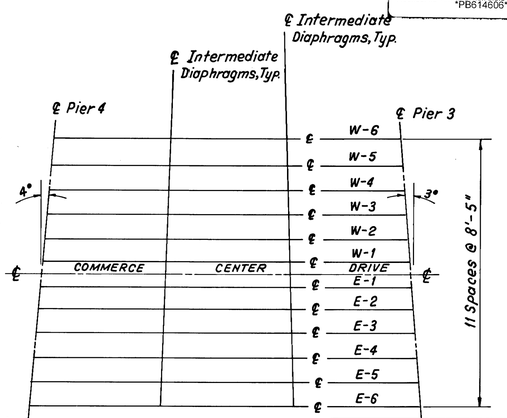
A minus(-) sign indicates upward deflection. Deflections measured at ℄ Span and are based on the assumption that the deck will not be placed on precast girders until 3 months after prestressing. Final deflection is assumed to occur 4 years after initial prestressing.

* Includes other dead loads.



DIAPHRAGM PLAN

Scale: 3/8" = 1'-0"



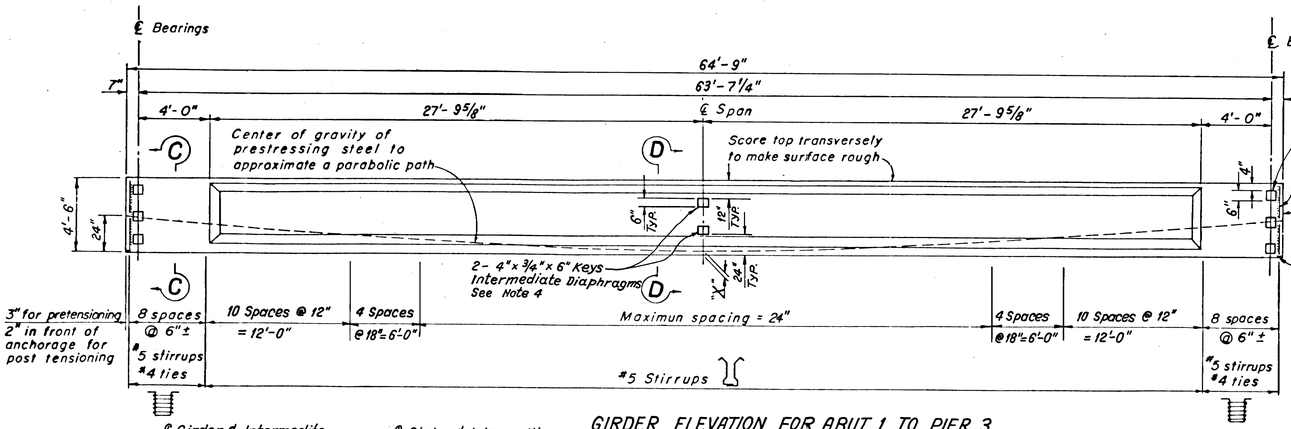
TYPICAL GIRDER FRAMING PLAN FOR SPAN 3-4

REGISTERED PROFESSIONAL ENGINEER JORA SARKISSIAN No. 42860 Exp. 3-31-00 CIVIL STATE OF CALIFORNIA

SIKAND ENGINEERING ASSOC. CONSULTING ENGINEERS 15230 BURBANK BLVD. VAN NUYS, CALIF. (818) 787-8550 91411	LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS DESIGN DIVISION STRUCTURES SECTION
DESIGNED BY: JORA SARKISSIAN	COMMERCE CENTER DRIVE OVER CASTAIC CREEK
DRAWN BY: ALBERT GEVORKIAN	PRESTRESSED GIRDER DETAILS NO. 2
PROJECT ENGINEER: JORA SARKISSIAN	REVIEWED Steve M. Hennessee 11/24/97 STRUCTURAL SECTION DATE
	BRIDGE NO. 3794 JOB NO.
	SHT. 7 OF 15 DWG. NO. 614606

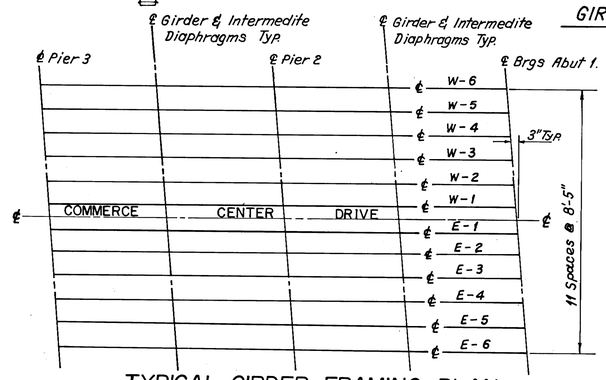
REVISIONS | CHECKED | DRAWN

K-E ALBUQUERQUE LA 4338



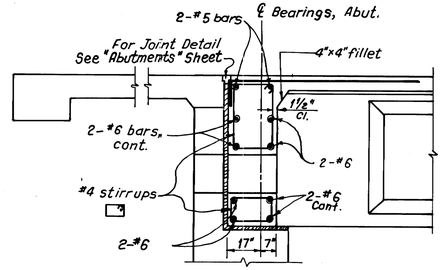
GIRDER ELEVATION FOR ABUT 1 TO PIER 3

No Scale



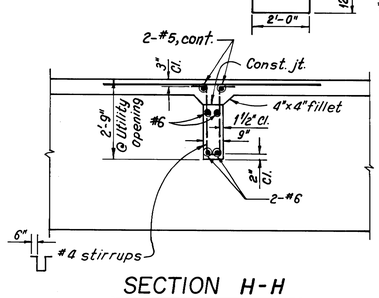
TYPICAL GIRDER FRAMING PLAN

No Scale



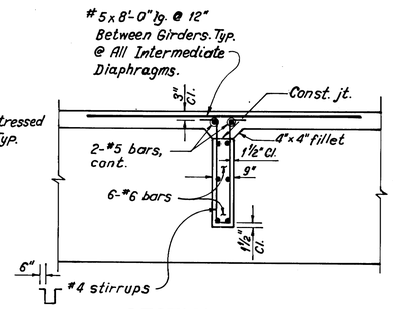
SECTION G-G

Scale: 3/8"= 1'-0"



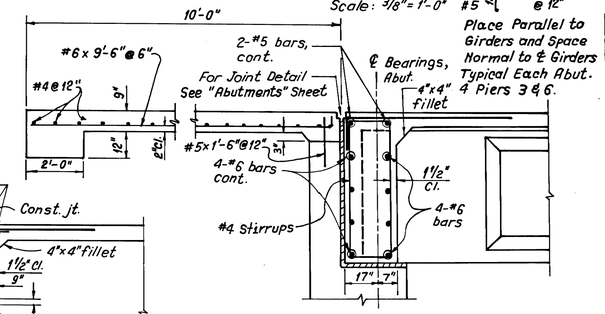
SECTION H-H

Scale: 3/8"= 1'-0"



SECTION F-F

Scale: 3/8"= 1'-0"



SECTION I-I

Scale: 3/8"= 1'-0"

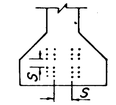
AS BUILT

Date: 1-26-01 Corrections by: G. Pereda

Resident Engineer: Zaven Abrahamian

No Changes

CLEARANCES FOR PRETENSIONED STRANDS



1. Strands may be bundled in groups consisting of 3 vertically and 2 horizontally, and separated at the ends.
2. The minimum distance "S" between groups or individual strands is 1½" for ⅜" strands, 1¾" for 7/16" strands and 2" for ½" strands.
3. "S" is measured between centers of adjacent strands.
4. Any deviation shall be approved by the Engineer.

GIRDER PRESTRESSING NOTES FOR ABUT 1 TO PIER 3

"X"	DESIGN STRESSES	Post tension	Pretension
4"	P = Working force, lbs	370,000	390,000
8"		420,000	445,000
	Concrete strength, psi	f'c = 5,000	f'c = 5,000
		f'ci= 4,000	f'ci= 4,000

CONCRETE STRENGTH:

f'ci is at time of initial stressing. (Force transfer to conc)
f'c is at 28 days.

WORKING FORCE:

The force remaining per girder after all losses.

CABLE PATH:

Where impractical to obtain cable path shown with a proposed prestressing system, it may vary within limits from 4" to 8" at ℄ girder and from 22" to 26" at the end of the girder subject to the approval of the Engineer. See Specs.

LOSSES:

The stress loss in prestressing steel due to shrinkage, creep, and sequence stressing shall be assumed to be;

pretension steel: 42,000 psi.
post tension steel: 32,000 psi.

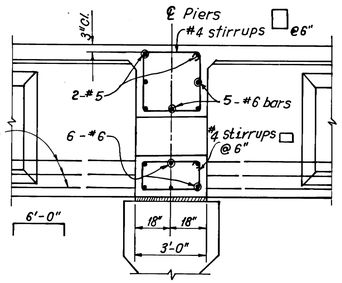
Provision shall be made for any other losses peculiar to the system of prestressing used.

GIRDER DEFLECTIONS: (PRE-TENSION) FOR "X"= 4"

Time	Condition		Deflection
Initial	Prestress † D.L.Girder		- 5/8"
3 months	Prestress † D.L.Girder		- ¾"
	D.L.Slab	½ pt.	+ ½"
		¼ pt.	+ ⅜"
	Prestress † D.L.Girder † D.L.Slab		- 5/8"
Final	Prestress † D.L.Girder † ½ D.L.Slab		-¼"

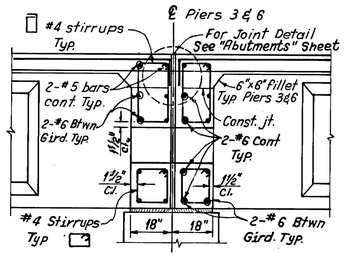
A minus(-) sign indicates upward deflection. Deflections measured at ℄ Span and are based on the assumption that the deck will not be placed on precast girders until 3 months after prestressing. Final deflection is assumed to occur 4 years after initial prestressing.

* Includes other dead loads.



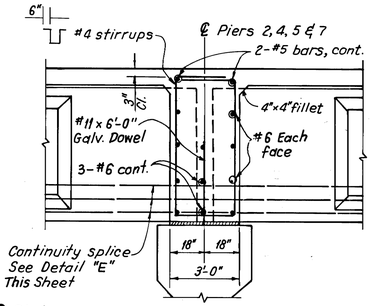
SECTION J-J

Scale: 3/8"= 1'-0"



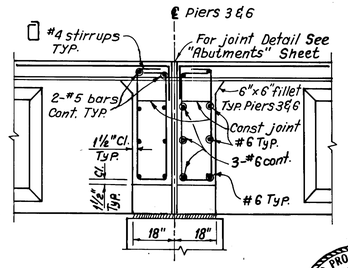
SECTION K-K

Scale: 3/8"= 1'-0"



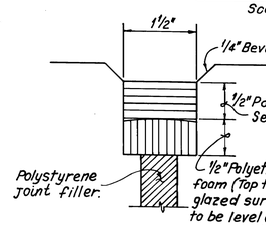
SECTION L-L

Scale: 3/8"= 1'-0"



SECTION M-M

Scale: 3/8"= 1'-0"



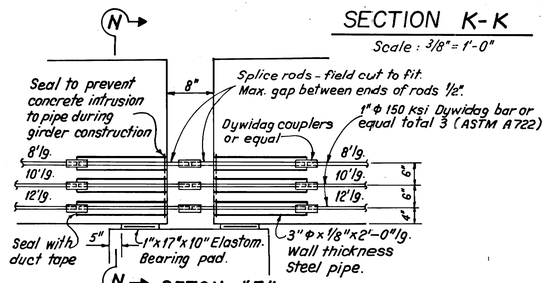
TYPE A SEAL

Full Scale

NOTE: Contractor may propose alternative continuity splice assembly, subject to approval by the Engineer.

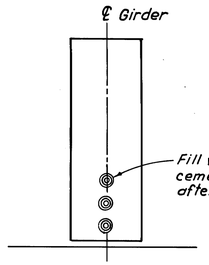
Pipes and rods to be securely wedged and braced in place to prevent displacement during girder concrete pour.

All threads to be oriented correctly.



CONTINUITY SPLICE

No Scale

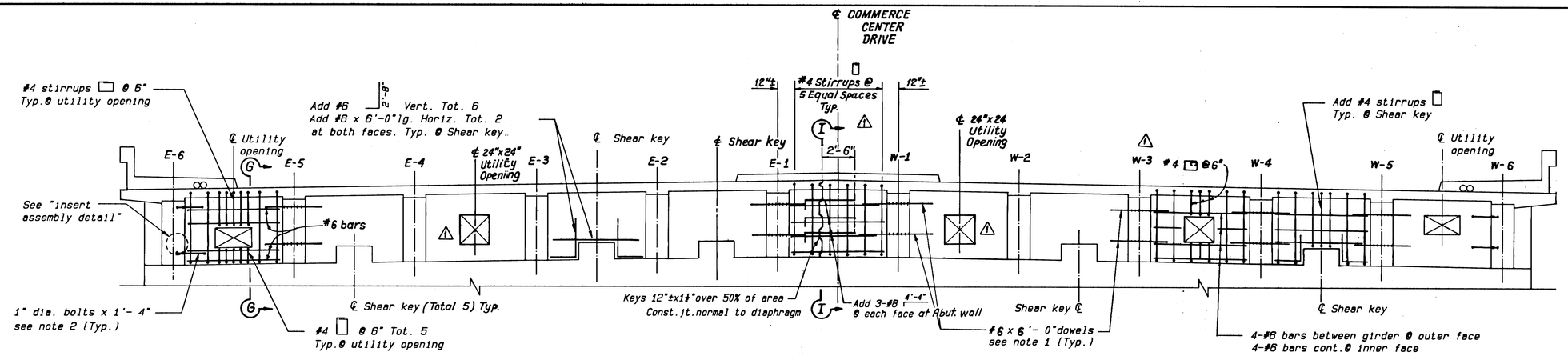


SECTION N-N

No Scale

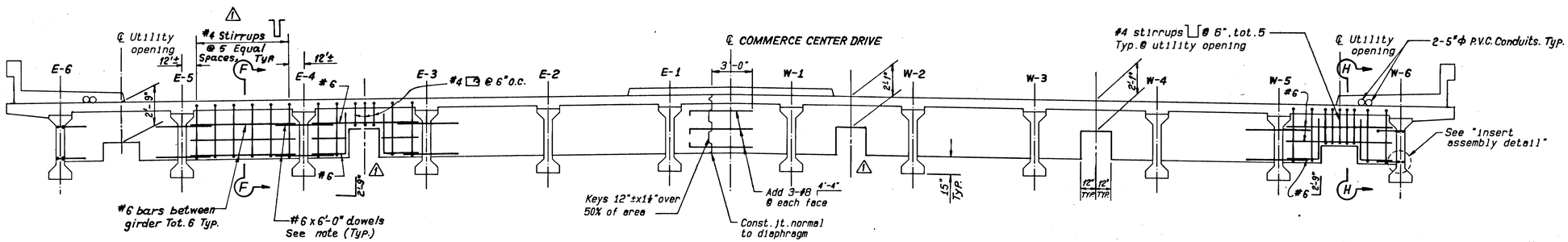
SIKAND ENGINEERING ASSOC. CONSULTING ENGINEERS 15230 BURBANK BLVD. VAN NUYS, CALIF. (818) 787-8550	LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS DESIGN DIVISION STRUCTURES SECTION
DESIGNED BY: JORA SARKISSIAN	COMMERCE CENTER DRIVE OVER CASTAIC CREEK
DRAWN BY: ALBERT GEVORKIAN	PRESTRESSED GIRDER DETAILS NO. 3
PROJECT ENGINEER: JORA SARKISSIAN	REVIEWED: Steve M. Hennessee 11/24/97 STRUCTURAL SECTION DATE
	BRIDGE NO. 3794 JOB NO. SHT. 8 OF 15 DWG. NO. 614605

K-E



NORMAL SECTION - END DIAPHRAGM AT ABUT. 1 & 8

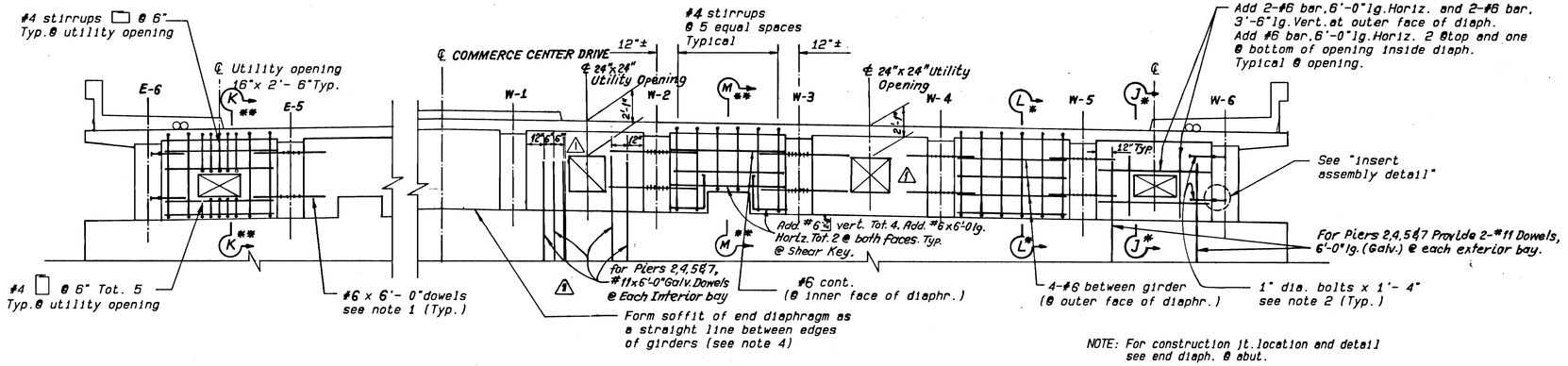
Scale : 1/4" = 1'- 0"



NORMAL SECTION - INTERMEDIATE DIAPHRAGM

Scale : 1/4" = 1'-0"

Note: For Joint Seal on Sidewalk at Abut. 1, Pier 3, Pier 6 and Abut. 8, See Caltrans Std. Plan B6-21.



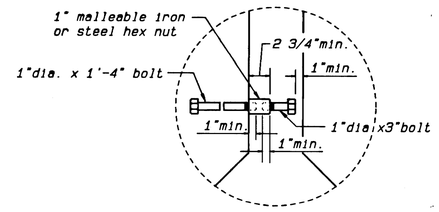
NOTE: For construction jt.location and detail see end diaph. @ abut.

NORMAL SECTION - END DIAPHRAGM AT PIER

Scale : 1/4"= 1'-0"

* @ Piers 2,4,5 & 7

** @ Piers 3 & 6



INSERT ASSEMBLY DETAIL

No Scale

NOTES :

1. #6 x 6'-0" dowels placed through 1 1/2" dia. hole formed in girder, when diaphragms are continuous. Hole need not be grouted.
2. 1"dia. bolts x 1'-4" with insert assemblies when diaphragms are discontinuous. Bolts required for exterior girder.
3. Intermediate and end diaphragms are to be placed 5 days before placing deck.
4. This note certifies forming so as to prevent spalling problems of thin unreinforced concrete under girders.

AS BUILT

Date: 1-26-01 Corrections by: G. Pereda

Resident Engineer: Zaven Abrahamian

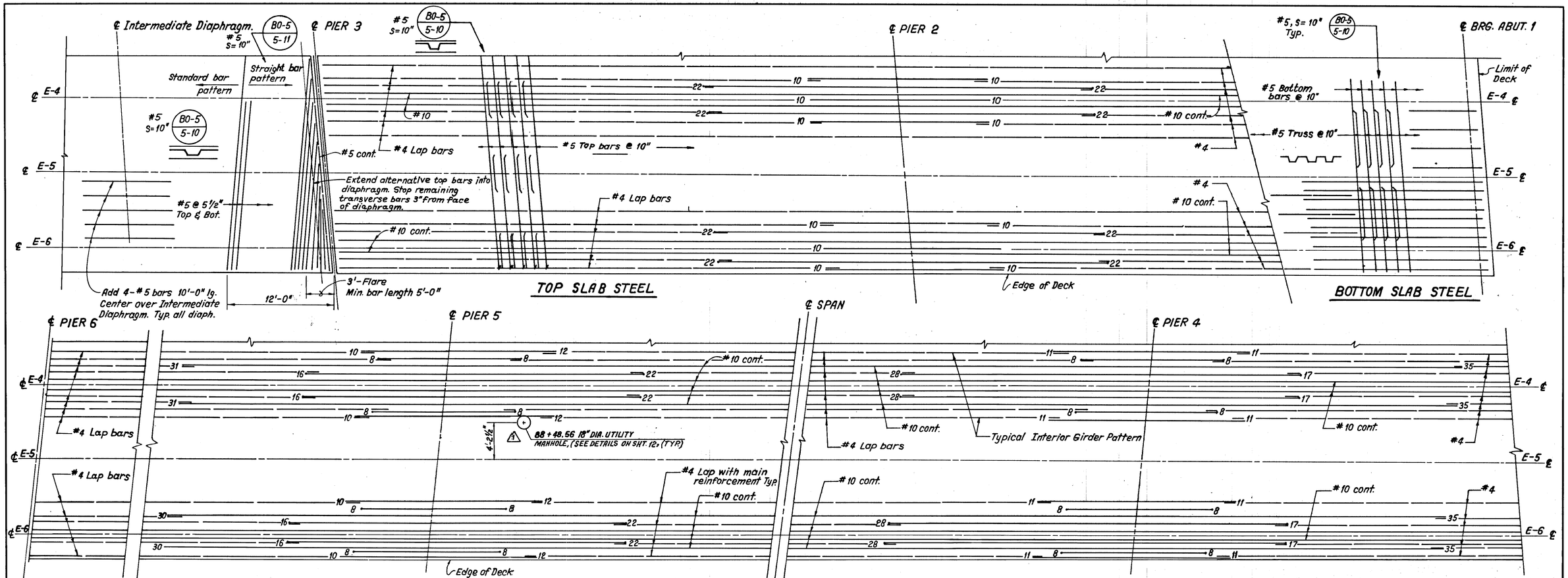
No Changes

REGISTERED PROFESSIONAL ENGINEER — JORA SARKISSIAN — No. 52896 Exp. 3-31-98 — CIVIL — STATE OF CALIFORNIA

DRAWN	⚠ ADDED UTILITY OPENING MODIFIED DOWEL SPACING OF UTILITY OPENING.	
CHECKED		
REVISIONS		

SIKAND ENGINEERING ASSOCIATES CONSULTING ENGINEERS 15230 BURBANK BLVD., VAN NUYS, CALIFORNIA (818)787-8550 91411	LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS DESIGN DIVISION STRUCTURES SECTION
DESIGNED BY: JORA SARKISSIAN	COMMERCE CENTER DRIVE OVER CASTAIC CREEK
DRAWN BY: ALBERT GEVORKIAN	GIRDER DIAPHRAGMS
PROJECT ENGINEER: JORA SARKISSIAN	REVIEWED Steve M. Hennessee 11/24/97 STRUCTURAL SECTION DATE
	BRIDGE NO.: 3794 PROJECT NO.: SHT.: 9 OF: 15 DWG. NO.: 614604

PB614604



AS BUILT

Date: 1-26-01 Corrections by: G. Pereda

Resident Engineer: Zaven Abrahamian

No Changes

NOTE - Unless otherwise indicated:

1. Grade 60 reinforcing steel shall be spliced as follows:
   a. Only one-half of the bars may be spliced within the required lap length.
   b. Minimum lap splices for No. 6 and smaller bars shall be 32 d No. 7, 8 and bars shall be 45 d and No. 10 and 11 bars shall be 60 d.
   c. Splice lengths shall be determined by the diameter, d of the smaller bar joined.
2. Type "A", "B" and "C" bar splices shall be staggered and identical splices of the same type bar shall be spaced at least 3'-0" apart.
3. Reinforcing steel shall have 2" cover.
4. Deck truss bends shall be 45°.
5. Premolded joint filler shall be fastened with 8d galvanized nails at 12" o.c. staggered.
6. For additional notes and details, see sheet No. 9.
7. All bars # 10. Unless otherwise noted.

Note: Splices for # 10 cont. bars shall be located 25' min. from ℄ piers.

Note: Numbers at ends of # 10 bars indicate distance from ℄ pier.

DECK PLAN

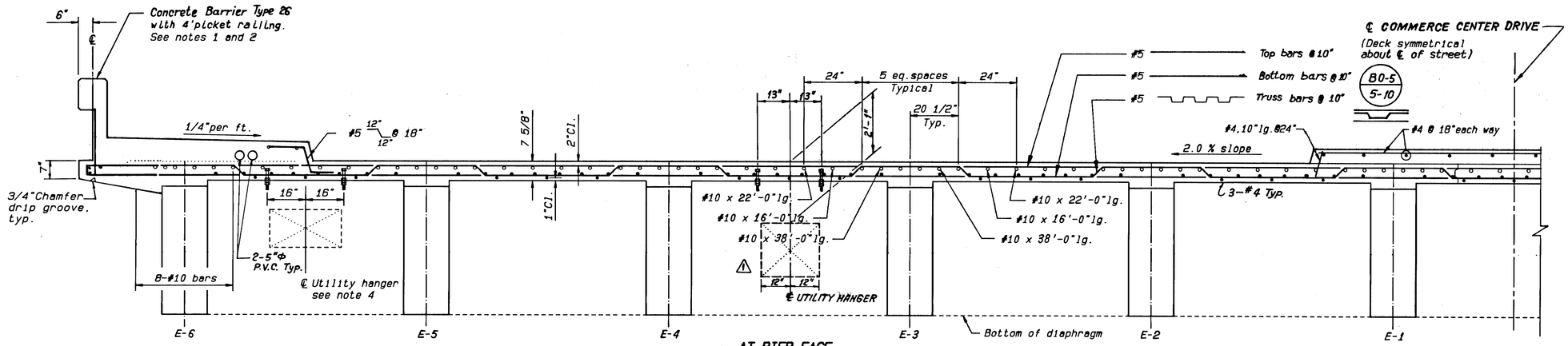
Scale: 3/16" = 1'-0"

SIKAND ENGINEERING ASSOC. CONSULTING ENGINEERS 15230 BURBANK BLVD. VAN NUYS, CALIF. (818) 787-8550 91411	LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS DESIGN DIVISION STRUCTURES SECTION
DESIGNED BY: JORA SARKISSIAN	COMMERCE CENTER DRIVE OVER CASTAIC CREEK
DRAWN BY: ALBERT GEVORKIAN	DECK DETAIL SHEET 1
PROJECT ENGINEER: JORA SARKISSIAN	REVIEWED Steve M Hennegar 11/24/97 STRUCTURAL SECTION DATE
	BRIDGE NO.: 3794 PROJECT NO.:
	SHT.: 10 OF: 15 DWG. NO.: 614603

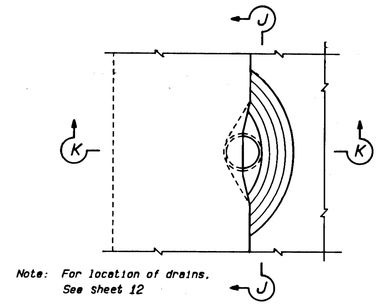
REGISTERED PROFESSIONAL ENGINEER JORA SARKISSIAN No. 42890 Exp. 3-31-00 CIVIL STATE OF CALIFORNIA

"PB614603"

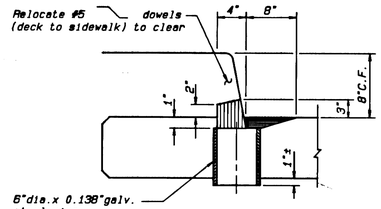
DRAWN | CHECKED | REVISIONS | ⚠ ADDED UTILITY MANHOLE LOCATION.



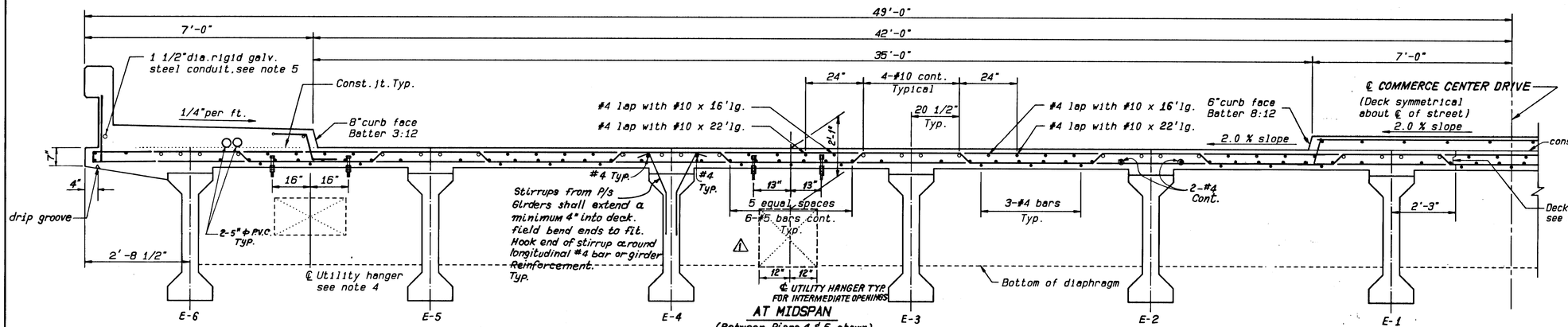
AT PIER FACE
(Pier 5 shown)



DECK DRAIN DETAIL
No Scale

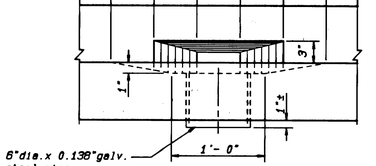


SECTION K-K
No Scale

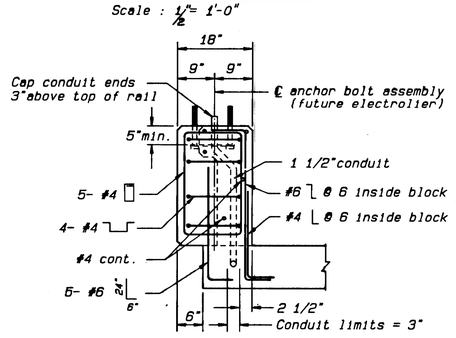


AT MIDSPAN
(Between Piers 4 & 5 shown)

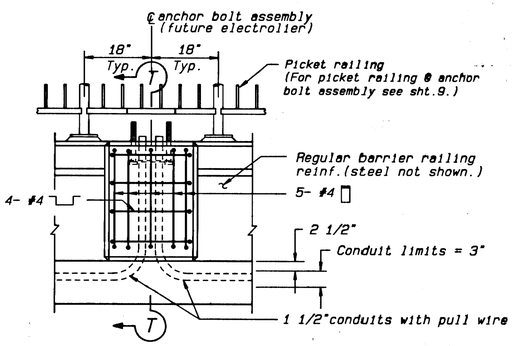
TYPICAL CROSS SECTION
Scale : 1/2"= 1'-0"



SECTION J-J
No Scale

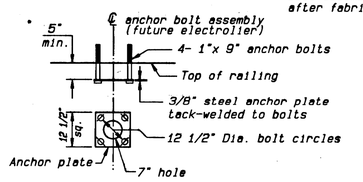


SECTION T-T

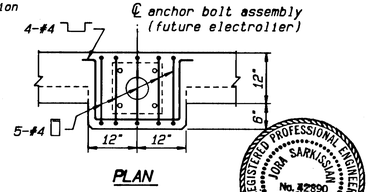


ELEVATION

NOTE: Galvanize anchor bolt assembly after fabrication



BASE DETAILS



PLAN

ANCHOR BOLT ASSEMBLY DETAILS
No Scale

NOTE – Unless otherwise indicated:

1. For Concrete Barrier Type 26, See Caltrans Std. Plan B11-54
2. For 4' picket railing, see L.A.C.D.P.W. Std. Plan 6102-0.
3. Where standard barrier railing expansion joints interfere with picket railing post spacing, joints may be relocated 9"from ℄ post.
4. Utility hangers shall consist of 1"dia.x 9"lg.bolts in pairs @ 10'±. Embed 5"in concrete. Bolt 1"-8UNC-2, thread 6". Furnish 2 nuts per bolt. All parts to be galvanized. See specs.
5. Provide 1 1/2"dia.rigid galvanized steel conduit with pull wire as shown on this plan. Provide expansion fittings at sidewalk joints and abutment per A.P.W.A. Std. Plan 465-0 in Specs.
6. For #5 pull box, see A.P.W.A. Std. Plan 460-0
7. For deck constr.jt, see CALTRANS std.plan B 0-5, bridge detail 5-2.

AS BUILT
Date: 1-26-01 Corrections by: G. Pereda
Resident Engineer: Zaven Abrahamian
No Changes

REVISIONS	CHECKED	DRAWN
⚠ ADDED UTILITY HANGER AND OPENING LOCATIONS.		

SIKAND ENGINEERING ASSOCIATES
CONSULTING ENGINEERS
16236 BURBANK BLVD., VAN NUYS, CALIFORNIA
(818)787-8550 91411

DESIGNED BY: JORA SARKISSIAN
DRAWN BY: ALBERT GEVORKIAN
PROJECT ENGINEER: JORA SARKISSIAN

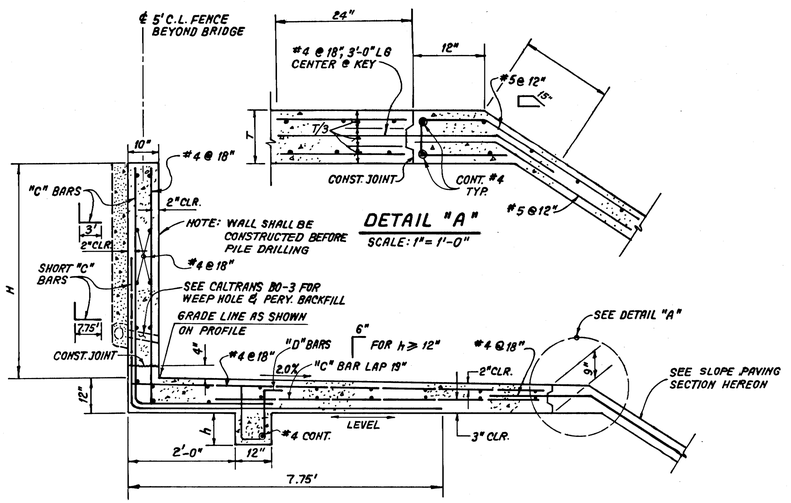
REGISTERED PROFESSIONAL ENGINEER JORA SARKISSIAN No. 32890 Exp. 2-31-00 CIVIL STATE OF CALIFORNIA

LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS
DESIGN DIVISION
STRUCTURES SECTION

COMMERCE CENTER DRIVE
OVER
CASTAIC CREEK
DECK DETAIL SHEET 2

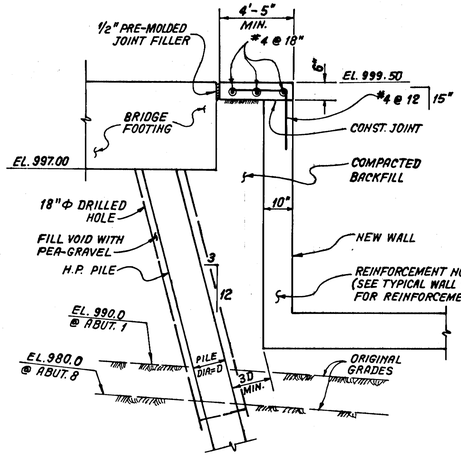
REVIEWED
Steve M. Hennessey 11/24/97
STRUCTURAL SECTION DATE

BRIDGE NO.: 3794
PROJECT NO.:
SHT.: 11 OF: 15
DWG. NO.: 614602



DETAIL "A"
SCALE: 1" = 1'-0"

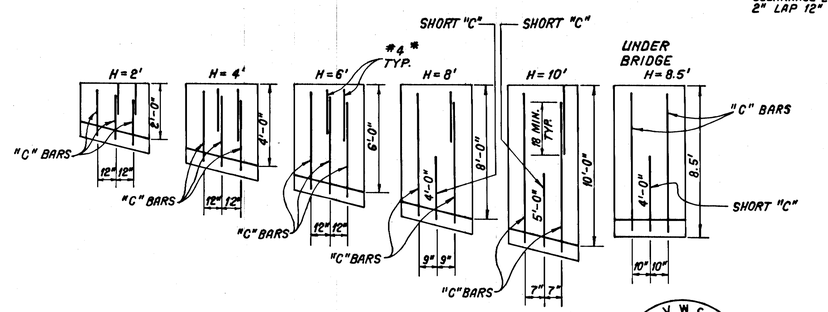
TYPICAL WALL SECTION
SCALE: 1/2" = 1'-0"



CAP CLOSURE UNDER BRIDGE
SCALE: 1/2" = 1'-0"

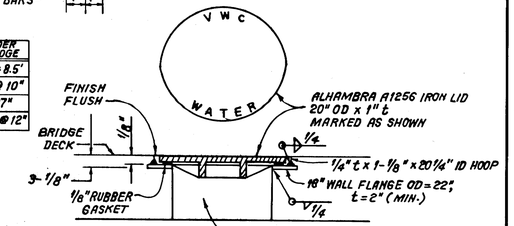
FIGURES AT TOP OF "C" BARS INDICATES DISTANCE FROM TOP OF FOOTING TO UPPER END OF "C" BARS

* * #4 EXTENSION BARS. PROVIDE WHENEVER CLEARANCE EXCEEDS 2" LAP 12"



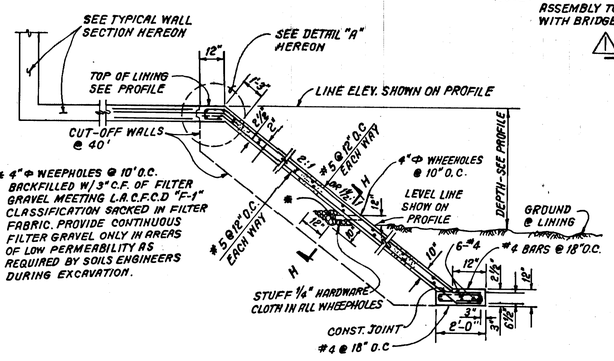
WALL REINFORCING BEYOND BRIDGE					
DESIGN H	2'	4'	6'	8'	10'
"C" BARS	#4 @ 12"	#4 @ 12"	#4 @ 12"	#5 @ 9"	#6 @ 7"
KEY DEPTH	-0-	6"	12"	18"	27"
"D" BARS	—	—	#4 @ 18"	#4 @ 12"	#5 @ 12"

UNDER BRIDGE
H=8.5'
#6 @ 10"
27"
#5 @ 12"

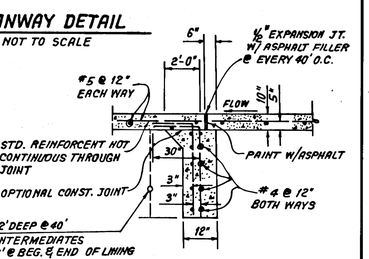


NOTE: SLEEVE AND FLANGE INSERT ASSEMBLY TO BE CAST INTEGRALLY WITH BRIDGE DECK.

⚠ MANWAY DETAIL
NOT TO SCALE

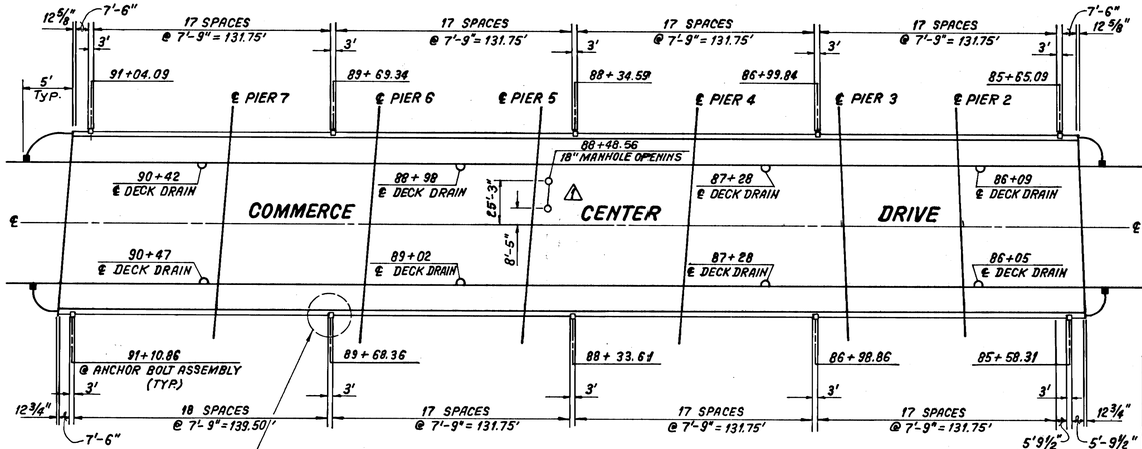


* 4"℄ WEEPHOLES @ 10'0.C. BACKFILLED W/ 3/8" C.F. OF FILTER GRAVEL MEETING L.A.C.F.C.D "F-1" CLASSIFICATION SACKED IN FILTER FABRIC. PROVIDE CONTINUOUS FILTER GRAVEL ONLY IN AREAS OF LOW PERMEABILITY AS REQUIRED BY SOILS ENGINEERS DURING EXCAVATION.

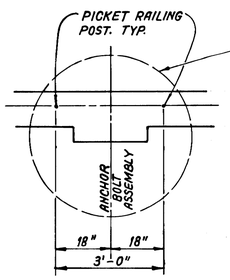


SECTION H-H EXPANSION JOINT
CUT-OFF WALL

NOTE: EXPANSION JOINT SHALL BE SPACED @ 40' INTERVALS



DECK DRAIN LOCATIONS AND PICKET RAILING POST SPACING
SCALE: 1" = 40'



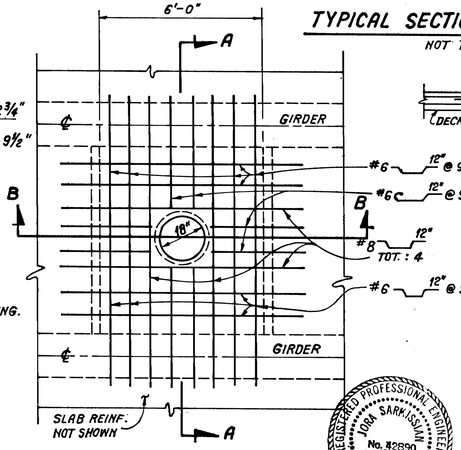
NOTE:

JOINTS SHALL BE PROVIDED IN THE BARRIER RAILINGS AT ABUT. 1, PIER 3, PIER 6 AND ABUT. 8 FOR EXPANSION AND CONTRACTION.
1/2" VERTICAL JOINTS SHALL BE PROVIDED IN THE BARRIER RAILINGS AT PIERS 2,4,5 AND 7.

WALL CONSTRUCTION SEQUENCE

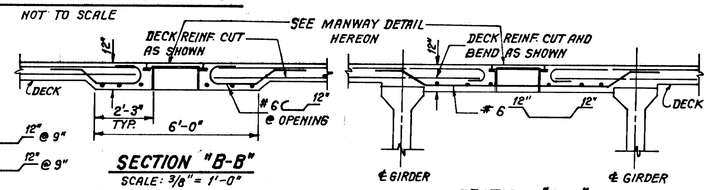
1. REMOVE 5' OF EXISTING SOIL.
2. CONSTRUCT AND COMPACT EMBANKMENT TO BOTTOM OF WALL FOOTING.
3. CONSTRUCT WALL.
4. CONSTRUCT AND COMPACT EMBANKMENT TO 6" ABOVE BOTTOM OF ABUTMENT FOOTING.
5. EXCAVATE TO BOTTOM OF ABUTMENT FOOTING 1 WEEK AFTER COMPLETION OF COMPACTED FILL PLACEMENT.
6. PRE-DRILL FOR PILES TO ORIGINAL GROUND LEVELS AND DRIVE PILES.
7. FILL VOID WITH PEA-GRAVEL AND CONSTRUCT ABUTMENT FOOTING.
8. CONTRACTOR MAY SUBMIT ALTERNATE CONSTRUCTION SEQUENCE FOR APPROVAL BY ENGINEER.

AS BUILT
Date: 1-26-01 Corrections by: G. Pereda
Resident Engineer: Zaven Abrahamian
No Changes



⚠ PLAN
SCALE: 3/8" = 1'-0"

TYPICAL SECTION - SLOPE PAVING
NOT TO SCALE



SECTION "B-B"
SCALE: 3/8" = 1'-0"

SECTION "A-A"
SCALE: 3/8" = 1'-0"

⚠ DECK REINFORCEMENT AT UTILITY OPENING
SCALE: 3/8" = 1'-0"

⚠ ADDED DECK REINFORCEMENT FOR MANWAY OPENING AND ADDED LOCATION OF MANHOLES.

REVISIONS | CHECKED | DRAWN

REGISTERED PROFESSIONAL ENGINEER JORA SARKISSIAN No. 42690 Exp. 2-31-02 CIVIL STATE OF CALIFORNIA

SIKAND ENGINEERING ASSOCIATES CONSULTING ENGINEERS 15230 MINNAMAR BLVD., VAN NUYS, CALIFORNIA 91411 (818)787-8558	LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS DESIGN DIVISION STRUCTURES SECTION
DESIGNED BY: JORA SARKISSIAN DRAWN BY: ALBERT GEVORKIAN PROJECT ENGINEER: JORA SARKISSIAN	COMMERCE CENTER DRIVE OVER CASTAIC CREEK MISCELLANEOUS DETAILS
REVIEWED Steve M. Hennessee 11/24/17 STRUCTURAL SECTION DATE	BRIDGE NO.: 3794 PROJECT NO.: SHT.: 12 OF: 15 DWG. NO.: 614601

LOG OF BORING 89-025-F6 — BORING NO. WB-F1

SAMPLE NO.	DEPTH	BLOWS	PENETRATION RESISTANCE PCF	MOISTURE CONTENT*	CONSISTENCY DRY DENSITY PCF	WEIGHT**	DEPTH IN FEET	DESCRIPTION
							0	SURFACE CONDITION: Northern side of Castaic Creek. ELEVATION: 979
							SP	SAND: Light brownish gray, slightly silty, gravelly, fine to very coarse
							SP/GP	SAND/GRAVEL: Change to tan, very gravelly, (mostly less than 1/2 inch) no silt
							5	
15		30/10"		13	124		15	
20		54+					20	Gravel increase in size to mostly 1/2 to 1 inch, no cobbles
30		50+					30	Average size of gravel 1/4 to 2 inches, sand alternating fine to medium with fine to very coarse in 6 to 48 inch layers
							35	3 inch silt layer
							40	

LOG OF BORING 89-025-F6 — BORING NO. WB-F1 (Cont'd)

SAMPLE NO.	DEPTH	BLOWS	PENETRATION RESISTANCE PCF	MOISTURE CONTENT*	CONSISTENCY DRY DENSITY PCF	WEIGHT**	DEPTH IN FEET	DESCRIPTION
	40	71+					40	Some cobbles 40 to 42 feet
							SP 45	Decrease in gravel content
							ML	SILT: Gray-brown
							SP/GP 50	SAND: Tan, very gravelly, fine to very coarse, occurs as 6 to 48 inch alternating layers of fine to medium at the top of each layer and grading down into very gravelly, medium to very coarse
							55	
	60	73+					60	
							65	
							70	
							75	
	80	60+					80	End of boring at 80 feet Water at 12 feet - no caving

LOG OF BORING 89-025-F6 — BORING NO. WB-F2

SAMPLE NO.	DEPTH	BLOWS	PENETRATION RESISTANCE PCF	MOISTURE CONTENT*	CONSISTENCY DRY DENSITY PCF	WEIGHT**	DEPTH IN FEET	DESCRIPTION
							0	SURFACE CONDITION: Center of concrete batch plant access road ELEVATION: 981
							Af	FILL: 3/4 inch gravel cap with gravelly sand base
							SP	SAND: Light gray, gravelly, fine to very coarse, pebbles at 6 and 16 feet
							5	
	15	30	15		111		15	
	20	38+					20	
							ML/CL	SILT/CLAY: Medium gray-brown, very clayey silt
							SP 25	SAND: Light tan, gravelly, fine to coarse gravel, mostly less than 1 inch size
							SP/GP 30	SAND/GRAVEL: Grades to very gravelly, fine to very coarse
	30	48+					35	
							ML	SILT: Medium brown
							SP/GP	SAND: Tan, very gravelly, fine to very coarse
							40	

LOG OF BORING 89-025-F6 — BORING NO. WB-F2 (Cont'd)

SAMPLE NO.	DEPTH	BLOWS	PENETRATION RESISTANCE PCF	MOISTURE CONTENT*	CONSISTENCY DRY DENSITY PCF	WEIGHT**	DEPTH IN FEET	DESCRIPTION
	40	73+					40	
							45	
							SP 50	SAND: Change to gravelly fine to medium, abundant mica
	60	71+					60	SAND: Tan, some fine gravel, abundant mica, fine to medium
							65	
							70	Grades to gravelly
							SP/GP 75	Grades to very gravelly, mostly less than 1/2 inch size
							GP/SP	GRAVEL: Very sandy, mostly to 1/2 inch size and maximum of 1 inch
	80	130+					80	Coarse gravel in sampler End of boring at 80 feet Water at 13 feet

* Percent
** Pounds per cubic foot
\+ SPT

AS BUILT
Date: 1-26-01 Corrections by: G. Pereda
Resident Engineer: Zaven Abrahamian
No Changes

REGISTERED PROFESSIONAL ENGINEER — JORA SARKISSIAN — No. 42890 Exp. 3-31-02 — CIVIL — STATE OF CALIFORNIA

REVISIONS | CHECKED | DRAWN

CLASSIFICATION OF MATERIAL BASED ON STANDARD GRADE SIZE LIMITS

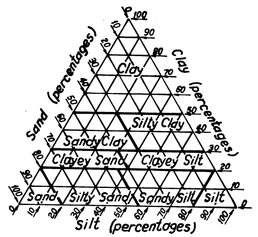


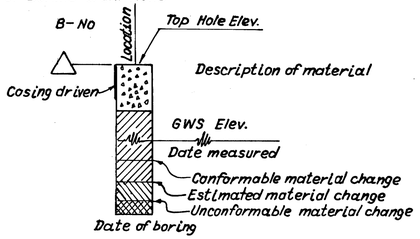
Diagram showing the basis for estimates of grade size distribution used in determination of class names.
If gravel is present in appreciable amounts the term "gravelly" may be added to the class name, via, "gravelly sand." The terms "coorse", "medium" and "fine" when used to describe sand, silt and gravel refer to standard grade size limits.

LEGEND OF EARTH MATERIALS

- Gravel
- Sand
- Silt
- Clay
- Sandy Clay or Clayey Sand
- Sandy Silt or Silty Sand
- Silty Clay or Clayey Silt
- Peat and/or Organic Matter
- Fill Material
- Igneous Rock
- Sedimentary Rock
- Metamorphic Rock

LEGEND OF BORING OPERATIONS

- Plan of any boring
- Rotary boring (wet)
- Auger boring (dry)
- Closed bottom bucker
- Test pit



PB614600

SIKAND ENGINEERING ASSOCIATES CONSULTING ENGINEERS 15239 BERDARE BLVD., VAN NUYS, CALIFORNIA 91411 (818)787-8550	LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS DESIGN DIVISION STRUCTURES SECTION
DESIGNED BY: JORA SARKISSIAN DRAWN BY: ALBERT GEVORKIAN PROJECT ENGINEER: JORA SARKISSIAN	COMMERCE CENTER DRIVE OVER CASTAIC CREEK LOG OF TEST BORINGS SHT. 1
REVIEWED: Steve M Wenmoore 11/24/97 STRUCTURAL SECTION DATE	BRIDGE NO.: 3794 PROJECT NO.: SHT.: 13 OF: 15 DWG. NO.: 614600

LOG OF BORING 89-025-F6 — BORING NO. WB-F3

SAMPLER	DEPTH	BLOWS	PCF	MOISTURE	CONTENT*	DRY DEN*	WET DEN**	DEPTH	IN FEET	DESCRIPTION
										SURFACE CONDITION: Plowed field, proposed bridge abutment
										ELEVATION: 990
								0		
									SM	SAND: Light grayish brown, very silty, gravelly, fine to very coarse gap graded
									SP	Grades to no silt
5	13		5.4		118			5		
									SP/GP	Grades to very gravelly
								10		
									SP	Change to less gravel
15	23+							15		
								20		
									SP/GP	Increase in 1/2 to 1 inch size gravel content
25	100+							25		2 inches of 3/4 inch gravel recovered in sampler
								30		
35	63+							35	GP/SP	Increase in gravel content, size mostly less than 2 inches
								40		Some caving at 38 to 40 feet depth

LOG OF BORING 89-025-F6 — BORING NO. WB-F3 (Cont'd)

SAMPLER	DEPTH	BLOWS	PCF	MOISTURE	CONTENT*	DRY DEN*	WET DEN**	DEPTH	IN FEET	DESCRIPTION
								40		Some coarse gravel 40 to 46 feet
								45		
									SP/GP	SAND/GRAVEL: Increase in fine to medium sand
		50	68+					50		Some coarse gravel
									GP/SP	GRAVEL/SAND: Increase in gravel, some cobbles
								55		6 inch silt layer
								60	SP	SAND: Change to gravelly, fine to coarse
		65	106+					65		End of boring at 65 feet Water at 21 feet - Caving at 38 to 40 feet
								70		
								75		
								80		

LOG OF BORING 89-025-F6 — BORING NO. WB-F4

SAMPLER	DEPTH	BLOWS	PCF	MOISTURE	CONTENT*	DRY DEN*	WET DEN**	DEPTH	IN FEET	DESCRIPTION
										SURFACE CONDITION: Edge of plowed field, southern abutment of Backer Road Bridge over Castaic Creek
										ELEVATION: 986
								0		
									SM	SAND: Light brown to tan, silty, some gravel, fine to coarse gap graded
									SP	No silt, change to gravelly
5	35		8		122			5		
									SP/GP	SAND/GRAVEL: Change to very gravelly
								10		
15	59+							15		Sampler contained 2 inches of 1/2 to 3/4 inch size gravel, bit plugged by 2 inch gravel
								20		
									SP	Change to less gravel
25	39+							25		Gravel confined to a few thin sandy gravel layers
								30		
35	51+							35		
								40		

LOG OF BORING 89-025-F6 — BORING NO. WB-F4 (Cont'd)

SAMPLER	DEPTH	BLOWS	PCF	MOISTURE	CONTENT*	DRY DEN*	WET DEN**	DEPTH	IN FEET	DESCRIPTION
								40	SP/GP	SAND/GRAVEL: Grades to very gravelly
									SP	SAND: Change to gravel in thin layers separated by 1 to 4 foot layers of fine to coarse sand
45	82+							45		
								50		Change to some disseminated gravel
								55		
									SP/GP	SAND/GRAVEL: Grading more gravel
								60	SP	SAND: Less gravel
									SP/GP	SAND/GRAVEL: Change to very gravelly
									ML	SILT: Grayish-brown
65	106+							65	SP/GP	SAND: Tan, very gravelly, fine to very coarse
										End of boring at 65 feet Water at 18 feet - no caving
								70		
								75		
								80		

AS BUILT

Date: 1-26-01 Corrections by: G. Pereda

Resident Engineer: Zaven Abrahamian

No Changes

* Percent
** Pounds per cubic foot
\+ SPT

REGISTERED PROFESSIONAL ENGINEER — JORA SARKISSIAN — No. 42890 — Exp. 3-31-00 — CIVIL — STATE OF CALIFORNIA

SIKAND ENGINEERING ASSOCIATES CONSULTING ENGINEERS 16230 BURBANK BLVD., VAN NUYS, CALIFORNIA 91406 (818)787-8550	LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS DESIGN DIVISION STRUCTURES SECTION
DESIGNED BY: JORA SARKISSIAN	COMMERCE CENTER DRIVE OVER CASTAIC CREEK
DRAWN BY: ALBERT GEVORKIAN	LOG OF TEST BORINGS SHT. 2
PROJECT ENGINEER: JORA SARKISSIAN	REVIEWED: Steve M. Hennessee 11/24/97 STRUCTURAL SECTION DATE
	BRIDGE NO.: 3794 PROJECT NO.: SHT.: 14 OF: 15 DWG. NO.: 614599

"PB614599"

REVISIONS | CHECKED | DRAWN

LOG OF BORING 89-025-F6 BORING NO. WB-F5

SAMPLE DEPTH	BLOWS PER FOOT	MOISTURE CONTENT *	DRY UNIT WT **	WASH DEPTH	IN FEET	DESCRIPTION
					0	SURFACE CONDITION: Located in center of road ELEVATION: 980
					Af	FILL: Road surfaced with 3/4 inch gravel, base is locally derived sand and gravel
					SP	SAND: Tan, gravelly, fine to very coarse, graded layers 1 to 4 feet thick
					5	
					10	
					15	
					20	

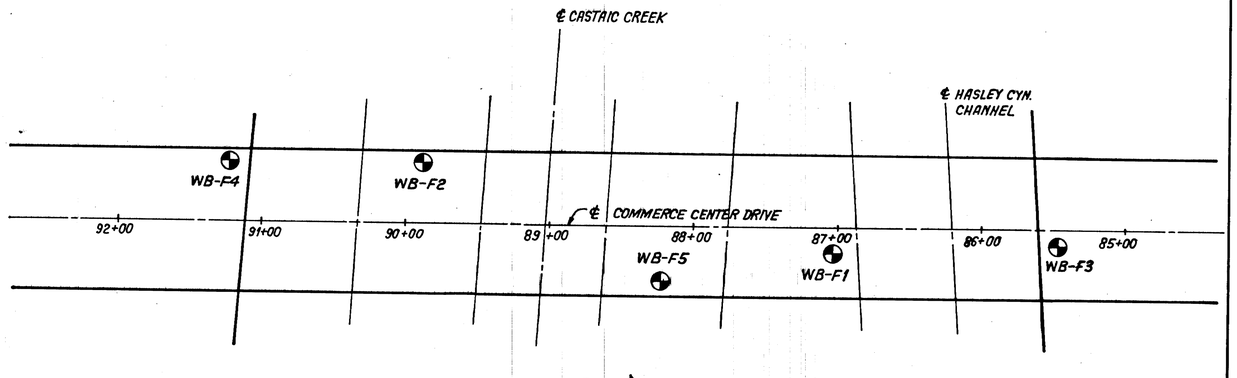
LOG OF BORING 89-025-F6 BORING NO. WB-F5

SAMPLE DEPTH	BLOWS PER FOOT	MOISTURE CONTENT *	DRY UNIT WT **	WASH DEPTH	IN FEET	DESCRIPTION
					40	Grades to gravelly
					45	
					ML	SILT: Medium brown
					SP	SAND: Tan, gravelly, fine to very coarse, weakly graded layers to 4 feet
					50	
					55	
60	64+				60	End of boring at 60 feet Water at 12 feet - no caving

LOG OF BORING 89-025-F6 BORING NO. WB-F5 (Cont'd)

SAMPLE DEPTH	BLOWS PER FOOT	MOISTURE CONTENT *	DRY UNIT WT **	WASH DEPTH	IN FEET	DESCRIPTION
20	30	12	115		20	
					ML 25	SILT: Reddish brown, clayey silt
					SP	SAND: Tan, gravelly to very gravelly, fine to very coarse in graded 1 to 5 foot layers
30	56+				30	
					35	
					GP/SP	GRAVEL/SAND: Change to cobbley, fine to medium
40	53+				SP 40	SAND: Change to minor gravel

* Percent
** Pounds per cubic foot
\+ SPT



APPROXIMATE LOCATION OF BORINGS

SCALE: 1"=50'

GEOTECHNICAL INVESTIGATION CONDUCTED BY

R.T. FRANKIAN AND ASSOCIATES
234 SOUTH BUENA VISTA STREET
P.O. BOX 7762
BURBANK, CALIFORNIA 91510-7762

AS BUILT

Date: 1-26-01 Corrections by: G. Pereda
Resident Engineer: Zaven Abrahamian
No Changes

PB614598

REVISIONS | CHECKED | DRAWN

SIKAND ENGINEERING ASSOCIATES
CONSULTING ENGINEERS
15230 BURBANK BLVD., VAN NUYS, CALIFORNIA
(818)787-8550 91411

DESIGNED BY: JORA SARKISSIAN
DRAWN BY: ALBERT GEVORKIAN
PROJECT ENGINEER: JORA SARKISSIAN

REGISTERED PROFESSIONAL ENGINEER — JORA SARKISSIAN — No. 42890 Exp. 3-31-00 — CIVIL — STATE OF CALIFORNIA

LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS
DESIGN DIVISION
STRUCTURES SECTION

COMMERCE CENTER DRIVE OVER CASTAIC CREEK

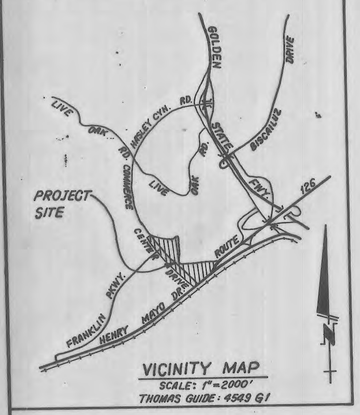
LOG OF TEST BORINGS SHT. 3

REVIEWED
Steve M. Hennessee 1/24/97
STRUCTURAL SECTION DATE

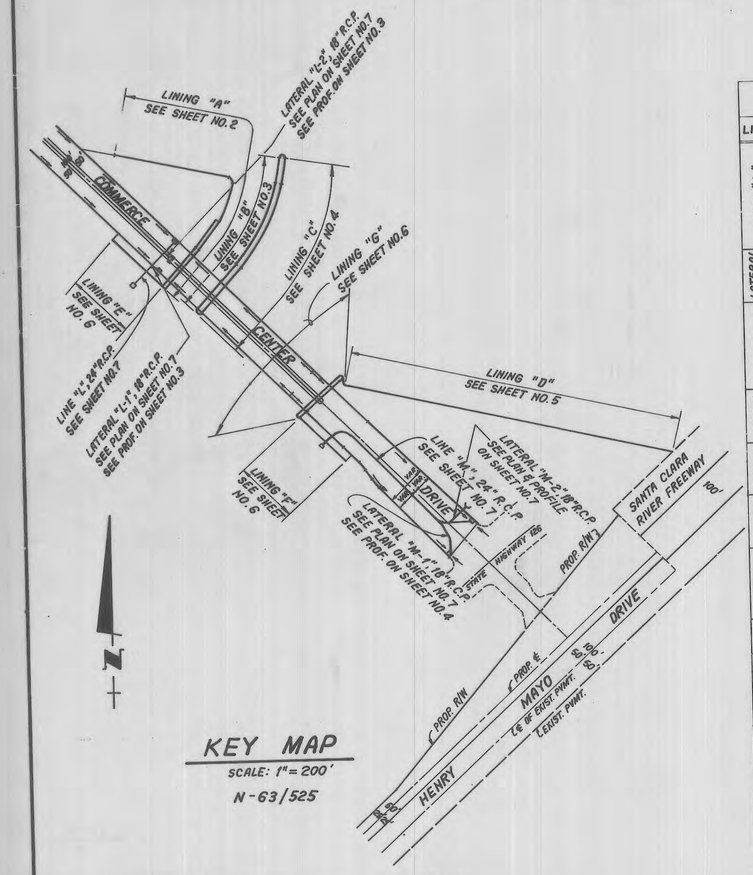
BRIDGE NO.: 3794
PROJECT NO.:
SHT.: 15 OF: 15
DWG. NO.: 614598

Flow Diversion Berm

STORM DRAIN PLANS IN
D.S. No.485 P.D. No.2298 (UNIT III)



VICINITY MAP
SCALE: 1"=2000'
THOMAS GUIDE: 4549 G1



KEY MAP
SCALE: 1"=200'
N-63/525

NPDES NOTES

ATTACHMENT A

BEST MANAGEMENT PRACTICES FOR CONSTRUCTION ACTIVITIES*

The following is intended as an attachment for construction and grading plans and represent the minimum standards of good housekeeping which must be implemented on all construction sites regardless of size.

☐ Eroded sediments and other pollutants must be retained on site and may not be transported from the site via sheetflow, swales, area drains, natural drainage courses or wind.

☐ Stockpiles of earth and other construction related materials must be protected from being transported from the site by the forces of wind or water.

☐ Fuels, oils, solvents and other toxic materials must be stored in accordance with their listing and are not to contaminate the soil and surface waters. All approved storage containers are to be protected from the weather. Spills must be cleaned up immediately and disposed of in a proper manner. Spills may not be washed into the drainage system.

☐ Excess or waste concrete may not be washed into the public way or any other drainage system. Provisions shall be made to retain concrete wastes on site until they can be disposed of as solid waste.

☐ Trash and construction related solid wastes must be deposited into a covered receptacle to prevent contamination of rainwater and dispersal by wind.

☐ Sediments and other materials may not be tracked from the site by vehicle traffic. The construction entrance roadways must be stabilized so as to inhibit sediments from being deposited into the public way. Accidental depositions must be swept up immediately and may not be washed down by rain or other means.

☐ Any slopes with disturbed soils or denuded of vegetation must be stabilized so as to inhibit erosion by wind and water.

☐ Other_____

B. The following BMPs as outlined in, but not limited to, the Best Management Practice Handbook, California Stormwater Quality Task Force, Sacramento, California, 1993, or the latest revised edition, may apply during construction (additional measures may be required if deemed appropriate by County):

CA001 - DEWATERING OPERATIONS
CA002 - PAVING OPERATIONS
CA003 - STRUCTURE CONSTRUCTION AND PAINTING
CA010 - MATERIAL DELIVERY AND STORAGE
CA012 - SPILL PREVENTION AND CONTROL
CA020 - SOLID WASTE MANAGEMENT
CA021 - HAZARDOUS WASTE MANAGEMENT
CA023 - CONCRETE WASTE MANAGEMENT
CA030 - VEHICLE AND EQUIPMENT CLEANING
CA031 - VEHICLE AND EQUIPMENT FUELING
CA032 - VEHICLE AND EQUIPMENT MAINTENANCE
CA040 - EMPLOYEE/SUBCONTRACTOR TRAINING
ESC01 - SCHEDULING
ESC02 - PRESERVATION OF EXISTING VEGETATION
ESC10 - SEEDING AND PLANTING
ESC11 - MULCHING
ESC20 - GEOTEXTILES AND MATS
ESC21 - DUST CONTROLS
ESC22 - TEMPORARY STREAM CROSSING
ESC23 - CONSTRUCTION ROAD STABILIZATION
ESC24 - STABILIZED CONSTRUCTION ENTRANCE
ESC30 - EARTH DIKE
ESC31 - TEMPORARY DRAINS AND SWALES
ESC32 - SLOPE DRAIN
ESC40 - OUTLET PROTECTION
ESC41 - CHECK DAMS
ESC50 - SILT FENCE
ESC51 - STRAW BALE BARRIERS
ESC52 - SAND BAG BARRIER
ESC53 - BRUSH OR ROCK FILTER
ESC54 - STORM DRAIN INLET PROTECTION

HYDRAULIC ELEMENTS

LINE	STATION	Q_{50} IN C.F.S	SECTION	S.F.	VELOCITY IN FT./SEC.	DEPTH IN FEET
LINE "L"	5+14.00 TO 5+35.00	12.0	24"R.C.P	0.3225	12.7	0.61
	5+35.00 TO 5+50.00	6.0	24"R.C.P	0.3225	16.8	0.70
	5+50.00 TO 6+37.00	6.0	24"R.C.P	0.0100	5.9	0.89
LATERAL "L-1"	1+02.00 TO 1+35.60	6.0	18"R.C.P	0.1601	15.5	0.95
LINE "M"	4+98.50 TO 5+37.08	10.0	24"R.C.P	0.0020	3.18	9.00'
	5+37.08 TO 9+33.42	10.0	24"R.C.P	0.0020	3.18	7.17'
	9+33.42 TO 10+44.18	5.0	24"R.C.P	0.0004	1.75	4.76'
LATERAL "M-1"	1+02.00 TO 2+01.91	5.0	18"R.C.P	0.0023	2.83	4.51
LATERAL "M-2"	1+01.41 TO 1+34.59	NGL.	18"R.C.P	—	—	—
LATERAL "L-2"	1+01.00 TO 1+22.75	NGL.	18"R.C.P	—	—	—
CASTAIC CREEK	BEGINNING TO END OF LININGS C,D,F & G	50.700	NATURAL CHANNEL WITH 1½:1 SIDE SLOPES	0.0188	10.81	14.9
HASLEY CYN. CREEK	BEGINNING TO END OF LINING E		NATURAL CHANNEL WITH 1½:1 SIDE SLOPES			
	BEGINNING TO STA 10+50.00	50.700		0.0188	10.81	14.9
	LININGS A & B	9.700	NATURAL CHANNEL WITH 1½:1 SIDE SLOPES	0.0272	6.89	4.4
	STA. 10+50.00 TO END OF LININGS A & B					

NGL.- NEGLIGIBLE

BENCH MARK CL 3976
LACRD BM
ROBM TAG IN C.B. 4 FT. N. B.C.R. TO FT. N.
AND 32 FT. E. CL INT. OLD ROAD AND
HASLEY CYN. ROAD OFF-RAMP

NEWHALL QUAD (1983) ELEV. 1065.685

GENERAL NOTES(Cont'd)

21. ALL BACKFILL AND FILLS OUTSIDE OF STREET RIGHT OF WAY SHALL BE COMPACTED TO 90% OF MAXIMUM DENSITY AS DETERMINED BY A.S.T.M. SOIL COMPACTION TEST D1557-78 METHOD "D" UNLESS OTHERWISE SPECIFIED. THIS SHALL BE CERTIFIED BY A GEOTECHNICAL ENGINEER. THE CERTIFICATION SHALL BE SUBMITTED TO THE DIRECTOR OF PUBLIC WORKS PRIOR TO ACCEPTANCE OF WORK BY THE COUNTY.

22. ALL BACKFILL AND FILLS WITHIN STREET RIGHT OF WAY SHALL BE COMPACTED IN ACCORDANCE WITH SECTION 306-1.3.4 OF THE STANDARD SPECIFICATIONS UNLESS OTHERWISE NOTED AND INSPECTED BY THE DEPARTMENT. CONTRACTOR SHALL NOTIFY THE INSPECTOR AT LEAST 24 HOURS IN ADVANCE FOR SOIL TESTING AS REQUIRED BY THE INSPECTOR.

23. PIPE BEDDING SHALL BE:
IN ACCORDANCE WITH LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS STANDARD DRAWING NO 3092 UNLESS OTHERWISE NOTED. THE BEDDING MATERIAL PLACED FROM THE BOTTOM OF THE PIPE TO 1 FOOT OVER THE TOP OF THE PIPE SHALL BE SAND, CRUSHED AGGREGATE, OR NATIVE FREE-DRAINING GRANULAR MATERIAL AND SHALL HAVE A SAND EQUIVALENT OF 20 OR GREATER.

24. PIPE SHALL BE EMBEDDED 5 INCHES INTO ALL STRUCTURES INCLUDING INLET AND OUTLET HEADWALLS, UNLESS OTHERWISE SPECIFIED.

25. UNLESS OTHERWISE SPECIFIED IN THE PROFILE ON THESE PLANS, THE PIPE SHALL BE MANUFACTURED WITH A MINIMUM CONCRETE COVER OVER THE STEEL IN THE INVERT OF 0.75 INCHES FOR R.C.P. UP TO 96 INCHES IN DIAMETER AND 1.25 INCHES FOR PIPE GREATER THAN 96 INCHES IN DIAMETER.

26. ALL CATCH BASINS WITHIN THE DEDICATED STREET RIGHTS-OF-WAY SHALL BE CONSTRUCTED PER THE STREET PLANS.

27. THE CONTRACTOR SHALL PROVIDE TO THE SATISFACTION OF THE DIRECTOR OF PUBLIC WORKS A SYSTEM FOR CONTRIBUTORY DRAINAGE TO BE OPERABLE AT ALL TIMES UNTIL THIS STORM DRAIN SYSTEM IS ACCEPTED FOR MAINTENANCE. THIS MAY HAVE TO BE DESIGNED BY A CIVIL ENGINEER.

28. ALL REFERENCES ON THIS PLAN TO THE COUNTY ENGINEER, ROAD DEPARTMENT, OR FLOOD CONTROL DISTRICT SHALL APPLY TO THE APPROPRIATE ELEMENTS OF THE DEPARTMENT OF PUBLIC WORKS.

29. EXISTING UTILITIES SHALL BE MAINTAINED IN PLACE BY THE CONTRACTOR, UNLESS OTHERWISE NOTED.

30. WHERE THE UTILITIES ARE INDICATED ON THE DRAWINGS TO BE SUPPORTED, SAID SUPPORTS SHALL BE IN ACCORDANCE WITH STANDARD PLANS FOR CONSTRUCTION NO. 224, UNLESS OTHERWISE INDICATED.

31. ALL OPENINGS RESULTING FROM THE CUTTING OR PARTIAL REMOVAL OF EXISTING CULVERTS, PIPES OR SIMILAR STRUCTURES SHALL BE SEALED WITH 8 INCHES OF BRICK AND MORTAR OR 6 INCHES OF CONCRETE, UNLESS OTHERWISE SHOWN.

32. MANHOLES NO.1,2,3, AND 4, SHALL USE THE STANDARD PLANS FOR PUBLIC WORKS CONSTRUCTION NO. 630 FOR THE "FRAME AND COVER" AND NO 635 FOR THE "STANDARD DROP STEP".

33. THIS STORM DRAIN WILL NOT BE ACCEPTED FOR MAINTENANCE UNTIL THE STREETS HAVE BEEN PAVED. MANHOLES BROUGHT TO GRADE AND THE SYSTEM CLEANED TO SATISFACTION OF THE DIRECTOR OF PUBLIC WORKS.

34. THE LATEST REVISED STANDARD PLAN OR DRAWING SHALL BE USED UNLES OTHERWISE SPECIFICALLY NOTED.

35. A NPDES PERMIT FROM THE REGIONAL WATER QUALITY CONTROL BOARD IS REQUIRED BEFORE ANY DISCHARGE OF NON-STORM WATER INTO THE STORM DRAIN IS ALLOWED.

GENERAL NOTES:

1. A PERMIT SHALL BE OBTAINED AND A DEPOSIT PAID TO THE DEPARTMENT OF PUBLIC WORKS AT THE PERMIT COUNTER, 900 SOUTH FREMONT AVENUE 8-TH FLOOR, ALHAMBRA AT LEAST 72 HOURS PRIOR TO STARTING WORK UNDER THIS CONTRACT. COPIES OF ALL OTHER REQUIRED PERMITS, SUCH AS FLOOD CONTROL DISTRICT AND ROAD EXCAVATION, MUST BE FILED WITH THE PERMIT APPLICATION.
2. WHEN WORK IS WITHIN A CONTRACT CITY, THE CONTRACTOR MUST CONTACT THE DIRECTOR OF PUBLIC WORKS OF THAT CITY TO DETERMINE THE LOCATION TO PAY THE INSPECTION DEPOSIT.
3. THE CONTRACTOR SHALL CONTACT THE DISTRICT OFFICE LISTED AT THE "APPLICATION FOR STORM DRAIN CONSTRUCTION INSPECTION FORM 1" TO ARRANGE FOR AN ACCEPTABLE CONSTRUCTION START DATE.
4. APPROVAL OF THIS PLAN BY THE COUNTY OF LOS ANGELES DOES NOT CONSTITUTE A REPRESENTATION TO THE ACCURACY OF THE LOCATION, OR THE EXISTENCE OR NON-EXISTENCE OF ANY UNDERGROUND UTILITY, PIPE OR STRUCTURE WITHIN THE LIMITS OF THIS PROJECT. THIS NOTE APPLIES TO ALL SHEETS.
5. ALL WORK SHALL BE IN ACCORDANCE WITH THE LATEST ADOPTED EDITION OF THE "STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION". INCLUDING SUPPLEMENTS AND SHALL BE PROSECUTED ONLY IN THE PRESENCE OF THE DIRECTOR OF PUBLIC WORKS.
6. THE CONTRACTOR'S ATTENTION IS DIRECTED TO SECTION 7-10.4.1 OF THE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION IN REGARD TO SAFETY ORDERS AND SHALL CONFORM TO THE "MINIMUM PUBLIC SAFETY REQUIREMENTS" AS SHOWN IN LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS STD. 6008-0.
7. ELEVATIONS ARE IN FEET ABOVE U.S.C. & G.S. MEAN SEA LEVEL DATUM OF 1929, UNLESS OTHERWISE INDICATED.
8. NO CONCRETE SHALL BE PLACED UNTIL THE FORMS AND REINFORCING STEEL HAVE BEEN PLACED, INSPECTED AND APPROVED.
9. ALL STRUCTURAL CONCRETE SHALL BE PORTLAND CEMENT CONCRETE WITH AN ULTIMATE 28 DAY COMPRESSIVE STRENGTH OF 4000 p.s.i. UNLESS OTHERWISE NOTED.
10. TRANSVERSE REINFORCEMENT AND TRANSVERSE JOINTS SHALL BE PLACED AT RIGHT ANGLES (OR RADIAL) TO THE CONDUIT CENTER LINE EXCEPT AS OTHERWISE SHOWN ON THE DRAWINGS.
11. ALL STEEL ADJACENT TO FACE OF CONCRETE SHALL HAVE 2" CLEARANCE UNLESS OTHERWISE SPECIFIED.
12. REINFORCEMENT SHALL BE DEFORMED BARS OF INTERMEDIATE GRADE STEEL, PER A.S.T.M. A-615-GRADE 60.
13. ALL BAR BENDS AND HOOKS SHALL CONFORM TO THE AMERICAN CONCRETE INSTITUTE "MANUAL OF STANDARD PRACTICE".
14. DIMENSIONS FROM FACE OF CONCRETE TO STEEL ARE TO CENTER LINE OF STEEL UNLESS OTHERWISE NOTED.
15. ALL STEEL THAT IS TO BE CONTINUOUS SHALL HAVE A MINIMUN LAP OF 30 BAR DIAMETERS OR 18" WHICHEVER IS GREATER.
16. ALL CONSTRUCTION JOINTS IN THE FOOTING OF SLABS AND WALLS SHALL BE IN THE SAME PLANE. NO STAGGERING OF JOINTS WILL BE PERMITTED.
17. ALL EXPOSED EDGES SHALL BE FINISHED WITH A 3/4" CHAMFER.
18. UNLESS OTHERWISE SHOWN, CONCRETE DIMENSIONS SHALL BE MEASURED VERTICALLY OR HORIZONTALLY AND AND PARALLEL OR AT RIGHT ANGLES (OR RADIAL) TO THE CENTER LINE OF CONSTRUCTION.
19. CONCRETE BACKFILL IS REQUIRED WHEN THE THE PIPE HAS LESS THAN ONE FOOT OF COVER. THE CONCRETE BACKFILL SHALL CONSIST OF 1:3:5 MIX, PORTLAND CEMENT CONCRETE POURED FROM WALL TO WALL OF TRENCH AND FROM BOTTOM OF TRENCH TO A MINIMUM OF 4 INCHES OVER THE TOP OF THE PIPE.
20. ALL PIPES SHALL BE PLACED IN TRENCH IN NATURAL GROUND AND/OR COMPACTED FILL. THE GROUND LEVEL BEFORE THE TRENCHING SHALL BE AT LEAST 3 FEET ABOVE THE TOP OF THE PIPE ELEVATION, OR AT FINISH SURFACE ELEVATION, WHICHEVER IS LESS. ALL BACKFILLS IN EASEMENTS SHALL BE COMPACTED TO THE DENSITY REQUIRED BY THE GRADING PLAN.

RIPRAP NOTES

1. ROCKS FOR GROUTED RIPRAP SHALL BE GOOD QUALITY RIVER RUN ROCK. THE SMALLEST DIMENSIONS SHALL EXCEED 6 INCHES AND THE LARGEST DIMENSION SHALL NOT EXCEED 24 INCHES. THE LARGEST DIMENSION SHALL NOT EXCEED 4 TIMES THE SMALLEST DIMENSION.
2. THERE SHALL BE A GROUT BED OF AT LEAST 2 INCHES BENEATH THE FIRST LAYER OF ROCK. ALL THE VOIDS BETWEEN THE ROCKS SHALL BE FILLED WITH GROUT. MAXIMUM SPACING BETWEEN ROCKS SHALL BE 2 INCHES.
3. SURFACE ROCKS SHALL BE IMBEDDED FROM 1/2 TO 2/3 OF THEIR MAXIMUM DIMENSION.

NOTE: CONCRETE MAY BE SUBSTITUTED FOR THE GROUT.

PRIVATE ENGINEERS NOTICE TO CONTRACTORS

THE EXISTENCE AND LOCATION OF ANY UNDERGROUND UTILITY PIPES OR STRUCTURES SHOWN ON THESE PLANS ARE OBTAINED BY A SEARCH OF THE AVAILABLE RECORDS. TO THE BEST OF OUR KNOWLEDGE THERE ARE NO EXISTING UTILITIES EXCEPT AS SHOWN ON THIS MAP.

THE CONTRACTOR IS REQUIRED TO TAKE DUE PRECAUTIONARY MEASURES TO PROTECT THE UTILITY LINES SHOWN AND ANY OTHER LINES NOT OF RECORD OR NOT SHOWN ON THIS DRAWING.

REGISTERED CIVIL ENGINEER No. 42690 _____ DATE _____

LIST OF STANDARDS

	L.A.C.D.P.W.	A.P.W.A.
1. M.H. NO.1	PER	(321-0)
2. CURB OPENING CATCH BASIN	PER	300-0
3. STANDARD M.H. SHAFT	PER	(324-0)
4. M.H. FRAME AND COVER	PER	630-0
5. STEEL STEP	PER	635-0
6. C.B. MANHOLE FRAME AND COVER	PER	312-0
7. C.B. REINFORCEMENT	PER	309-0
8. MONOLITHIC C.B. CONNECTION	PER	308-0
9. C.B. FACE PLATE ASSEMBLY		
10. AND PROTECTION BAR	PER	310-0
11. FRAME AND GRATING FOR C.B.	PER	311-0
12. LOCAL DEPRESSION AT C.B.	PER	313-0
13. J.S. NO.2	PER	(331-0)
14. CHAIN LINK FENCE AND GATES	PER	600-0
15. PIPE BEDDING	PER	3092-0
16. SAFETY REQUIREMENTS	PER	6008-0
17. CONCRETE COLLAR	PER	380-1

NO.	REVISION	REVISED BY	APPROVED BY	DATE

REGISTERED PROFESSIONAL ENGINEER JOHN SAARKISSIAN No. 42690 Exp. 3-31-99 CIVIL STATE OF CALIFORNIA

Exp. 12-31-98 CIVIL STATE OF CALIFORNIA

PREPARED BY:
SIKAND ENGINEERING ASSOCIATES
15230 BURBANK BLVD.
VAN NUYS, CA. 91411
(818) 787-8550
SIGNATURE: _____ R.C.E. NO 42690

COUNTY OF LOS ANGELES, CALIFORNIA
HARRY W. STONE DIRECTOR OF PUBLIC WORKS

LAND DEVELOPMENT DIVISION
APPROVED BY: Ronald D. Anderson for ASSISTANT DEPUTY DIRECTOR DATE: 4-13-98
CHECKED BY: _____ R.C.E. NO 45691 DATE: 4-13-98
OFFICE OF THE DIRECTOR OF PUBLIC WORKS

SHT 1 OF 9 SHTS

W.O. 1020-252-A

STORM DRAIN PLANS IN
D.S. NO. 485 P.D. NO. 2298 (UNIT III)

PROFILE OF LINING "A"
SCALE: HORIZ. 1"=40'
VERT. 1"=8'

TOP OF LINING CURVE DATA				
NO	Δ	R	L	T
C1	92°33'08"	16.00'	25.85'	16.73'

PLAN OF LINING "A"
SCALE: 1"=40'

SEE SHEET NO. 9 FOR GRADING & EASEMENT DATA

NO.	REVISION	REVISED BY	APPROVED BY	DATE

SIKAND ENGINEERING ASSOCIATES
15230 BURBANK BLVD.
VAN NUYS, CA. 91411
(818) 787-8550
JORA SARKISSIAN
SIGNATURE: _____ R.C.E. NO. 42890

COUNTY OF LOS ANGELES, CALIFORNIA
HARRY W. STONE DIRECTOR OF PUBLIC WORKS
CHECKED BY: _____ LAND DEVELOPMENT DIVISION R.C.E. NO. 23391 DATE: 4-18-98
OFFICE OF THE DIRECTOR OF PUBLIC WORKS

SHT 2 OF 9 SHTS

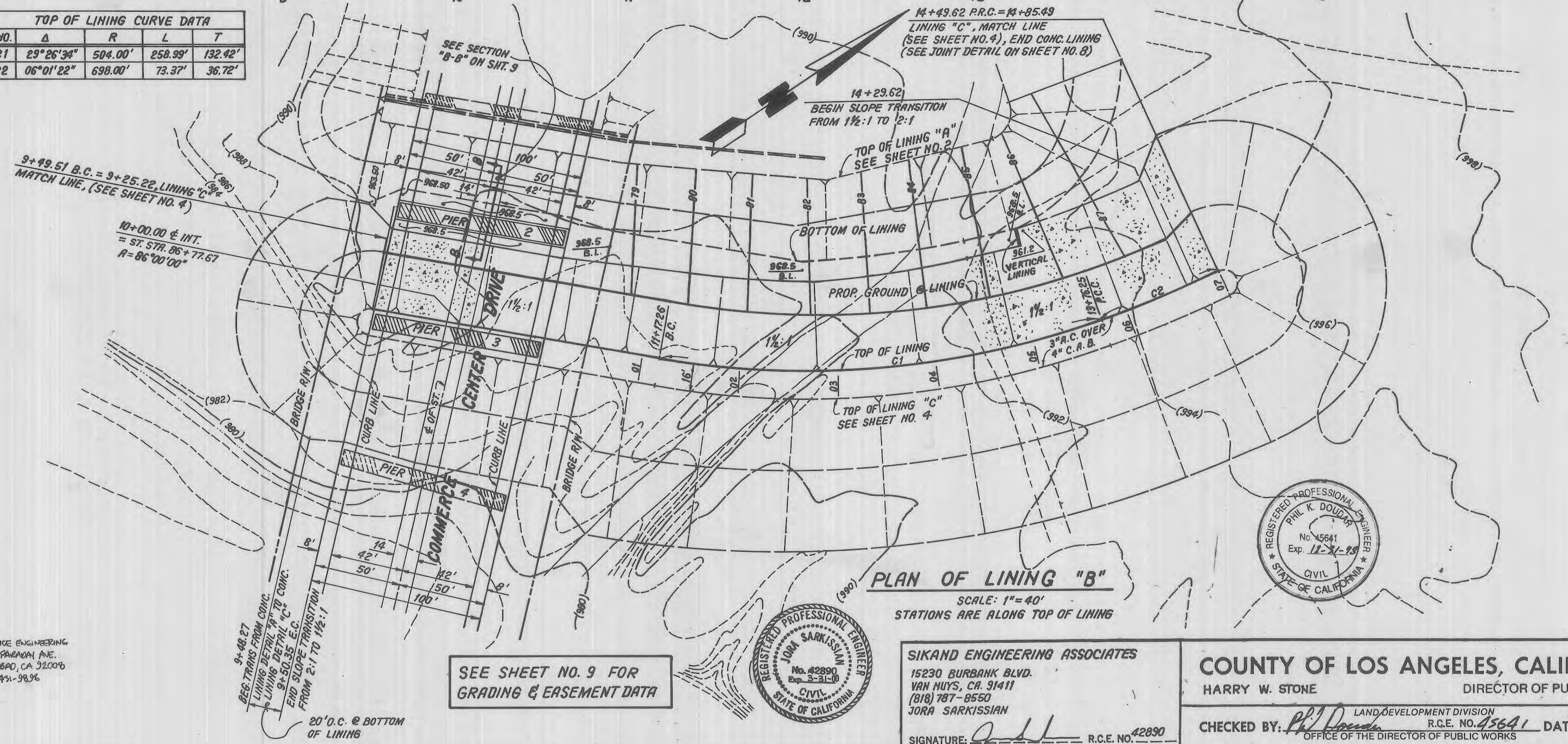
W.O. 1020-252-A

GM Jr (213) 699-8440 P.D. SHEET NO. 2 DATE 6-85

STORM DRAIN PLANS IN
D.S. NO. 485 P.D. NO. 2298 (UNIT III)

NO.	Δ	R	L	T
C1	29°26'34"	504.00'	258.99'	132.42'
C2	06°01'22"	698.00'	73.37'	36.72'

TOP OF LINING CURVE DATA



PLAN OF LINING "B"

SCALE: 1"=40'
STATIONS ARE ALONG TOP OF LINING

SEE SHEET NO. 9 FOR GRADING & EASEMENT DATA

NO.	REVISION	REVISED BY	APPROVED BY	DATE
△	REVISED LATERAL "L-2" PROFILE	RCE 51929		11/1/07

REGISTERED PROFESSIONAL ENGINEER CRAIG M. WHITTEKER No. 51929 Exp. 6-30-08 CIVIL STATE OF CALIFORNIA

ALLIANCE ENGINEERING
2248 FARADAY AVE.
CARLSBAD, CA 92008
760-431-9896

FOR △ ONLY

REGISTERED PROFESSIONAL ENGINEER JORA SARKISSIAN No. 42890 CIVIL STATE OF CALIFORNIA

SIKAND ENGINEERING ASSOCIATES
15230 BURBANK BLVD.
VAN NUYS, CA. 91411
(818) 787-8550
JORA SARKISSIAN

SIGNATURE: ______ R.C.E. NO. 42890

REGISTERED PROFESSIONAL ENGINEER PHIL K. DOUDAR No. 45641 Exp. 12-31-99 CIVIL STATE OF CALIFORNIA

COUNTY OF LOS ANGELES, CALIFORNIA

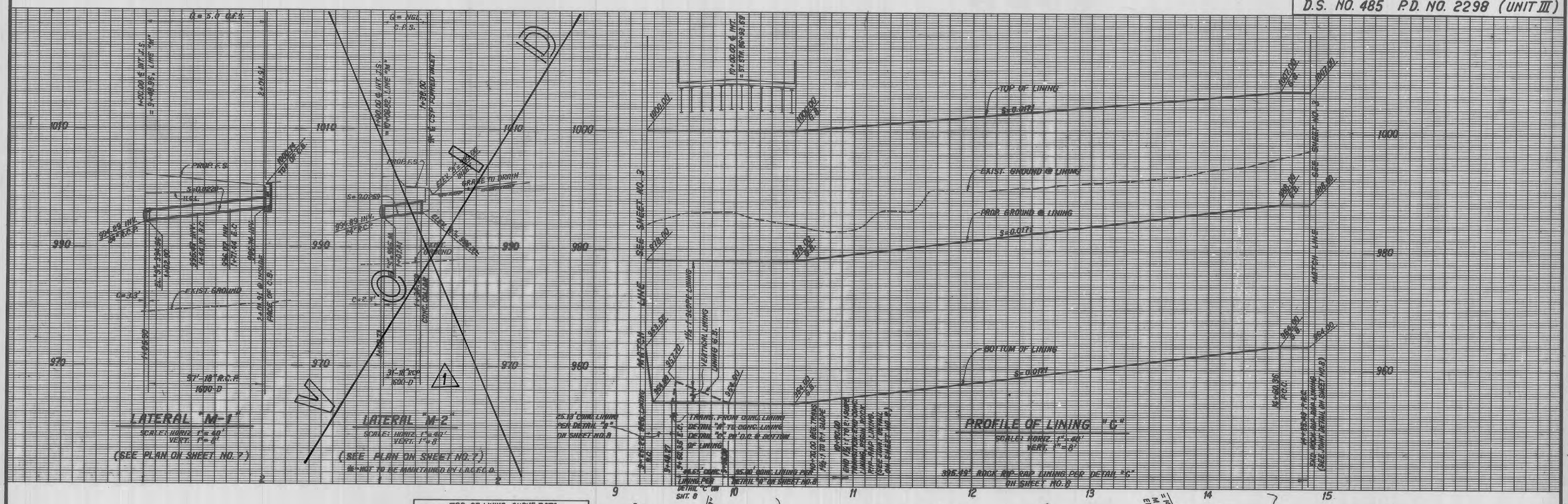
HARRY W. STONE — DIRECTOR OF PUBLIC WORKS

LAND DEVELOPMENT DIVISION
CHECKED BY: ______ R.C.E. NO. 45641 DATE: 4-13-98
OFFICE OF THE DIRECTOR OF PUBLIC WORKS

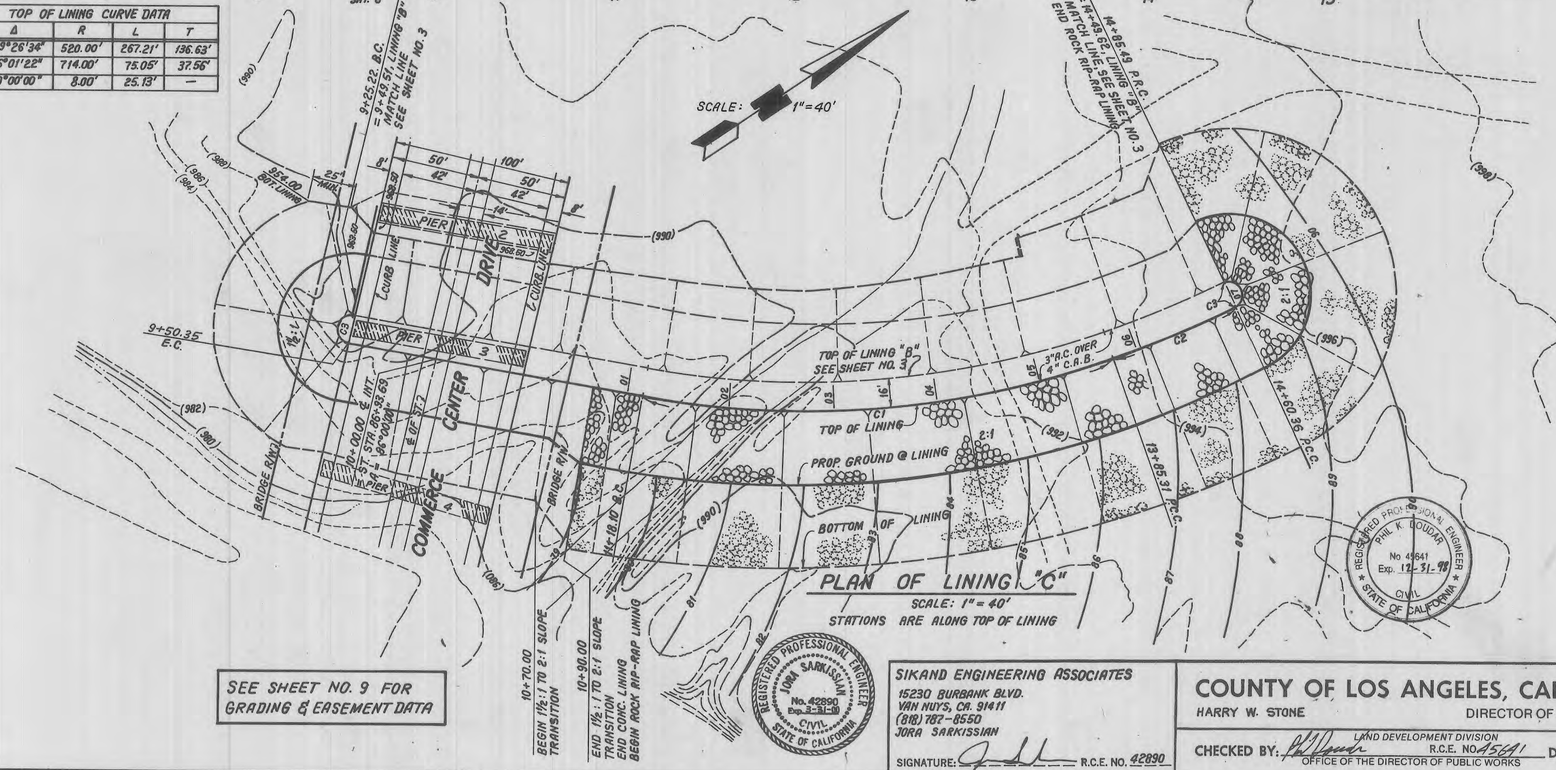
W.O. 1020-252-A

G M Jr (213) 699-8440 P.D. SHEET NO. 2 DATE 6-85

STORM DRAIN PLANS IN
D.S. NO. 485 P.D. NO. 2298 (UNIT III)



TOP OF LINING CURVE DATA				
NO.	Δ	R	L	T
C1	29°26'34"	520.00'	267.21'	136.63'
C2	06°01'22"	714.00'	75.05'	37.56'
C3	180°00'00"	8.00'	25.13'	—



SEE SHEET NO. 9 FOR GRADING & EASEMENT DATA

NO.	REVISION	REVISED BY	APPROVED BY	DATE
1	VOIDED LAT. "M-2" PROFILE.	42890		7/1/99

REGISTERED PROFESSIONAL ENGINEER
PHIL K. DOUDAR
No. 45641
Exp. 12-31-98
CIVIL
STATE OF CALIFORNIA

REGISTERED PROFESSIONAL ENGINEER
LINA SARKISSIAN
No. 42890
Exp. 3-31-00
CIVIL
STATE OF CALIFORNIA

SIKAND ENGINEERING ASSOCIATES
15230 BURBANK BLVD.
VAN NUYS, CA. 91411
(818) 782-8550
JORA SARKISSIAN
SIGNATURE: _____ R.C.E. NO. 42890

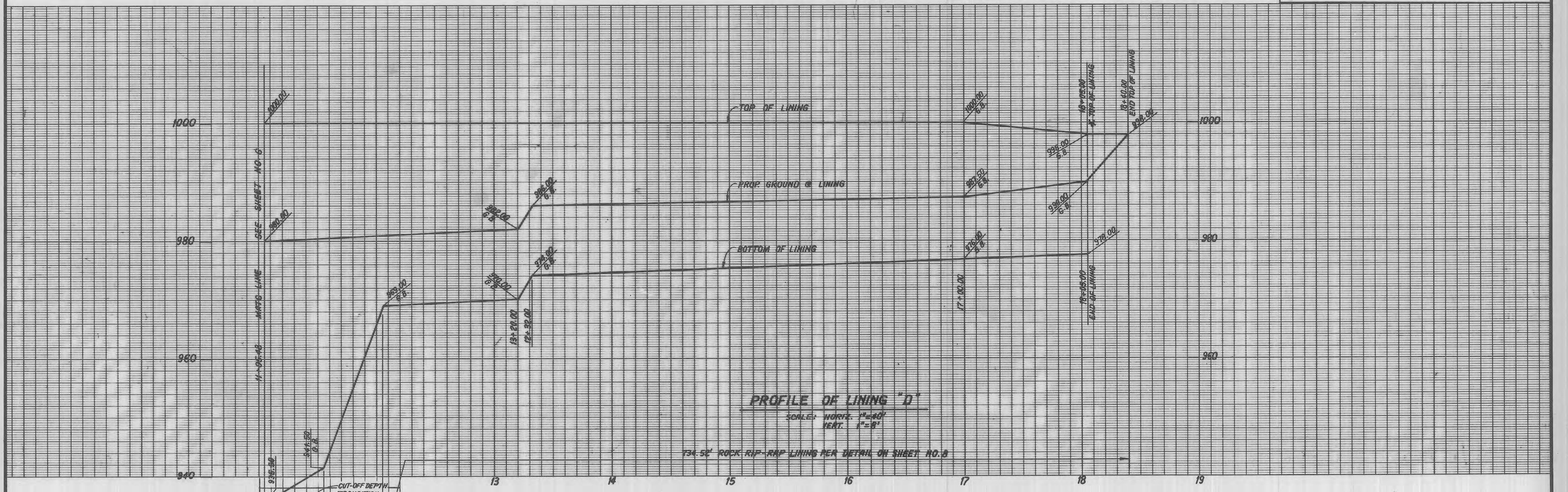
COUNTY OF LOS ANGELES, CALIFORNIA
HARRY W. STONE
DIRECTOR OF PUBLIC WORKS
CHECKED BY: _____ LAND DEVELOPMENT DIVISION R.C.E. NO. 45641 DATE: 4-13-98
OFFICE OF THE DIRECTOR OF PUBLIC WORKS

SHT 4 OF 9 SHTS

G.M. Jr. (213) 699-8440 P.D. SHEET NO. 2 DATE 6-85

W.O. 1020-252-A

STORM DRAIN PLANS IN
D.S. NO. 485 P.D. NO. 2298 (UNIT III)



PLAN OF LINING "D"
SCALE: 1"= 40'

NO.	REVISION	REVISED BY	APPROVED BY	DATE

REGISTERED PROFESSIONAL ENGINEER
JORA SARKISSIAN
No. 42890
Exp. 3-31-00
CIVIL
STATE OF CALIFORNIA

REGISTERED PROFESSIONAL ENGINEER
PHIL K. DOLGAR
No. 45641
Exp. 12-31-98
CIVIL
STATE OF CALIFORNIA

SIKAND ENGINEERING ASSOCIATES
15230 BURBANK BLVD.
VAN NUYS, CA. 91411
(818) 787-8550
JORA SARKISSIAN
SIGNATURE: _____ R.C.E. NO. 42890

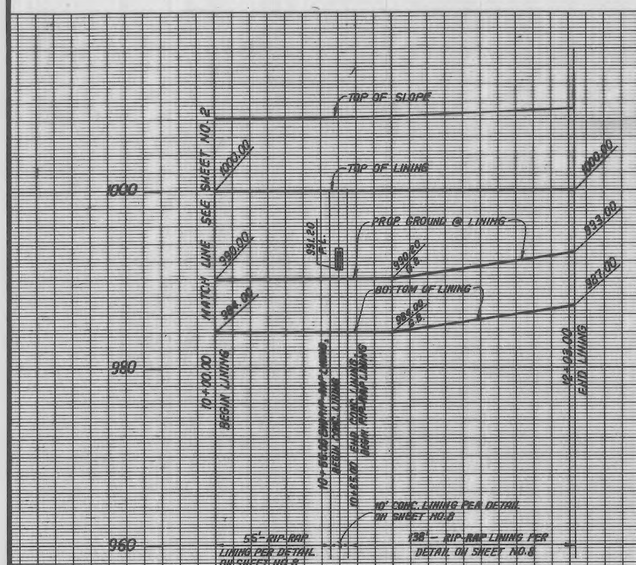
COUNTY OF LOS ANGELES, CALIFORNIA
HARRY W. STONE — DIRECTOR OF PUBLIC WORKS
CHECKED BY: _____ LAND DEVELOPMENT DIVISION
R.C.E. NO. 45641 DATE: 4-13-98
OFFICE OF THE DIRECTOR OF PUBLIC WORKS

SHT 5 OF 9 SHTS

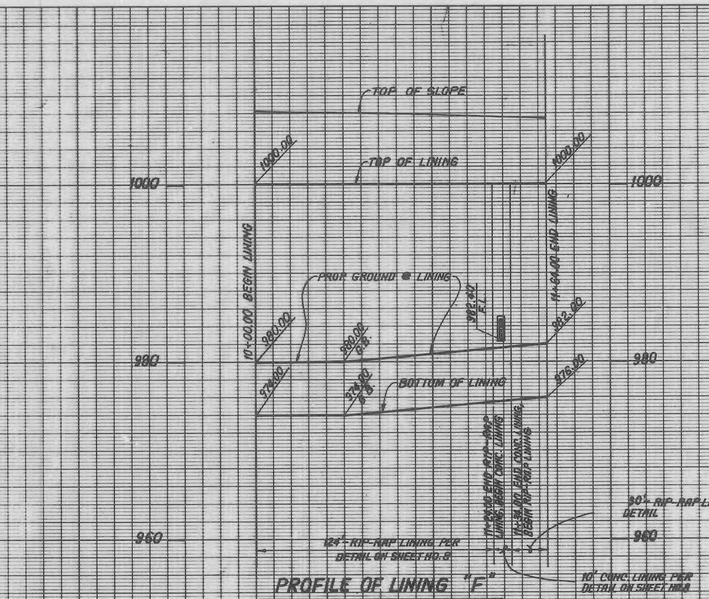
W.O. 1020-252-A

G M Jr (213) 699-8440 P.D. SHEET NO. 2 DATE 6-85

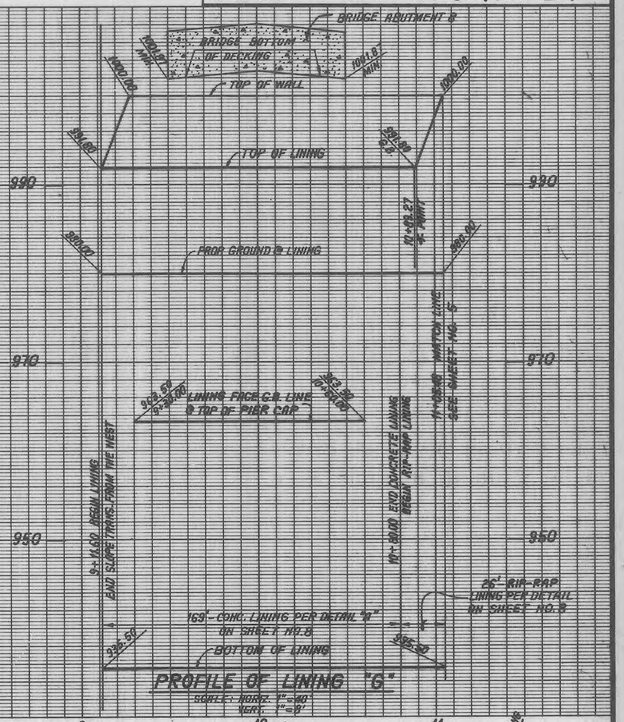
STORM DRAIN PLANS IN
D.S. NO. 485 P.D. NO. 2298 (UNIT III)



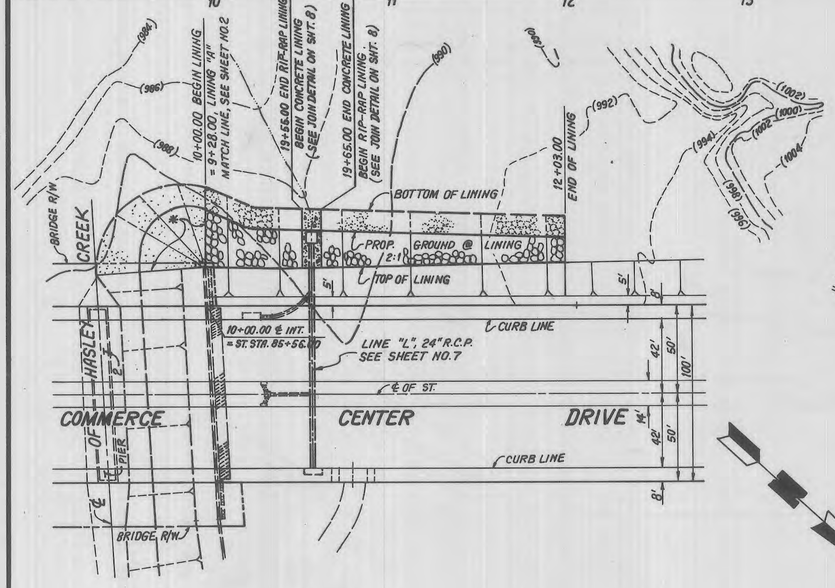
PROFILE OF LINING "E"
SCALE: HORIZ. 1"=40'
VERT. 1"=8'



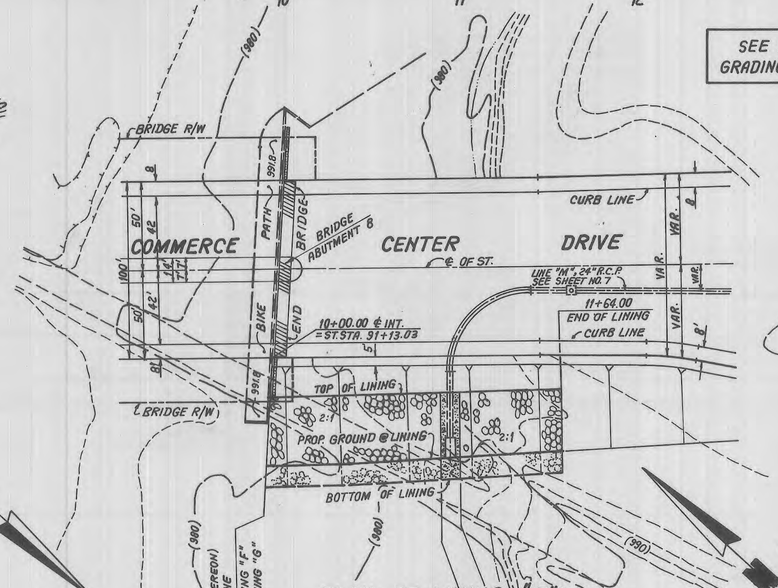
PROFILE OF LINING "F"
SCALE: HORIZ. 1"=40'
VERT. 1"=8'



PROFILE OF LINING "G"
SCALE: HORIZ. 1"=40'
VERT. 1"=8'



PLAN OF LINING "E"
SCALE: 1"=40'

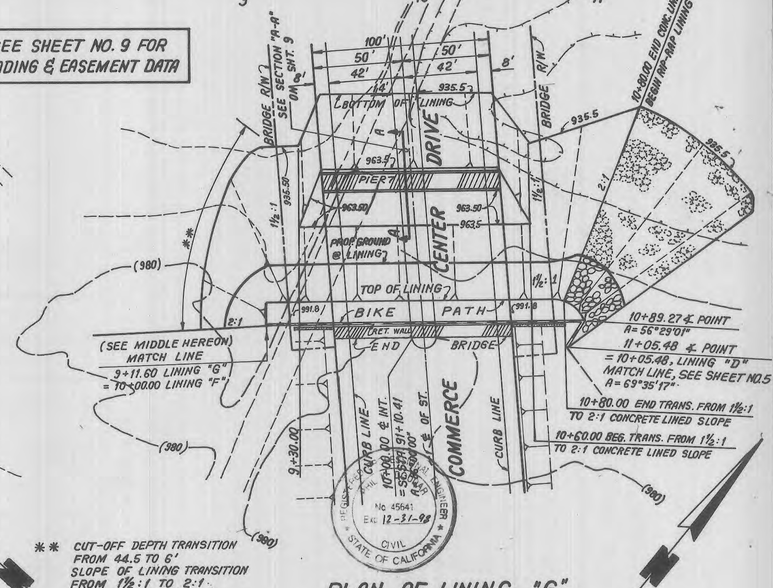


PLAN OF LINING "F"
SCALE: 1"=40'

10+96.00 END RIP-RAP LINING
BEGIN CONCRETE LINING
(SEE JOIN DETAIL ON SHT. 8)

11+06.00 END CONCRETE LINING
BEGIN RIP-RAP LINING
(SEE JOIN DETAL ON SHT. 8)

SEE SHEET NO. 9 FOR GRADING & EASEMENT DATA



** CUT-OFF DEPTH TRANSITION FROM 44.5 TO 6'
SLOPE OF LINING TRANSITION FROM 1½:1 TO 2:1

PLAN OF LINING "G"
SCALE: 1"=40'

NO.	REVISION	REVISED BY	APPROVED BY	DATE

* CUT-OFF DEPTH TRANSITION FROM 18' TO 6'
SLOPE OF LINING TRANSITION FROM 1½:1 TO 2:1
CONCRETE LINING.

REGISTERED PROFESSIONAL ENGINEER JORA SARKISSIAN No. 42890 Exp. 3-31-00 CIVIL STATE OF CALIFORNIA

SIKAND ENGINEERING ASSOCIATES
15230 BURBANK BLVD
VAN NUYS, CA. 91411
(818) 787-8550
JORA SARKISSIAN
SIGNATURE: _____ R.C.E. NO. 42890

COUNTY OF LOS ANGELES, CALIFORNIA
HARRY W. STONE
DIRECTOR OF PUBLIC WORKS

CHECKED BY: _____ LAND DEVELOPMENT DIVISION
R.C.E. NO. 45641 DATE: 4-13-98
OFFICE OF THE DIRECTOR OF PUBLIC WORKS

REGISTERED CIVIL ENGINEER No. 45641 Exp. 12-31-98 CIVIL STATE OF CALIFORNIA

SHT 6 OF 9 SHTS

W.O. 1020-252-A

G M Jr (213) 699-8440 P.D. SHEET NO. 2 DATE 6-85

STORM DRAIN PLANS IN D.S. 485 P.D. NO. 2298 (UNIT III)

⬡	△	R	L	T
1	23°34'49"	45.00'	18.52'	9.39'
2	67°18'32"	45.00'	52.86'	29.96'
3	19°46'50"	45.00'	15.54'	7.85'
4	~~26°55'36"~~	~~45.00'~~	~~21.15'~~	~~10.77'~~
5	34°48'32"	45.00'	27.34'	14.11'
6	60°00'00"	22.50'	23.56'	12.99'
7	11°54'13"	45.00'	9.34'	4.69'
8	~~61°47'52"~~ 51°02'11"	22.50'	~~24.27'~~ 20.04'	~~13.47'~~ 10.74'

℄ STORM DRAIN CURVE DATA

PLAN OF LINE "M"
SCALE: 1"=40'

NO	REVISION	REVISED BY	APPROVED BY	DATE
1	REVISED LINE "L" & "M" PLAN & PROFILE, ELIMINATED LATERAL "M-2".	42890		7/7/99
2	REVISED LINE "M" PLAN & PROFILE.		S. KHALIL	12/1/99
3	REVISED LINE "L" PROFILE AND ADDED PROPOSED (2)-18" SEWER CROSSING.	RCE 51919		11/1/07

PLANS PREPARED BY:
SIKAND ENGINEERING ASSOCIATES
15230 BURBANK BLVD., VAN NUYS, CALIF. 91411, TEL.(818) 787-8550
JORA SARKISSIAN
SIGNATURE: R.C.E. NO. 42890

COUNTY OF LOS ANGELES, CALIFORNIA
THOMAS A. TIDEMANSON DIRECTOR OF PUBLIC WORKS
CHECKED BY: R.C.E. NO. 45641 DATE: 4-13-98
OFFICE OF THE DIRECTOR OF PUBLIC WORKS

SHT 7 OF 9 SHTS

STORM DRAIN PLANS IN D.S. NO. 485 P.D. NO. 2298 (UNIT III)

STRUCTURAL NOTES

GENERAL:

1. DIMENSIONS FROM FACE OF CONCRETE TO STEEL ARE TO CENTER OF BAR AND SHALL BE TWO INCHES UNLESS OTHERWISE SHOWN.
2. CONCRETE DIMENSIONS SHALL BE MEASURED HORIZONTALLY OR VERTICALLY ON THE PROFILE, AND PARALLEL TO OR AT RIGHT ANGLES (OR RADIALLY) TO CENTERLINE OF CONDUIT ON THE PLAN EXCEPT AS OTHERWISE SHOWN.
3. ALL BAR BENDS AND HOOKS SHALL CONFORM TO THE AMERICAN CONCRETE INSTITUTE'S "BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE", 1971 EDITION, SECTION 7.1.
4. PLACING OF REINFORCEMENT SHALL CONFORM TO THE AMERICAN CONCRETE INSTITUTE'S "BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE", 1971 EDITION, SECTION 7.3
5. TRANSVERSE CONSTRUCTION JOINTS SHALL NOT BE PLACED WITHIN 30 INCHES OF MANHOLE OR JUNCTION STRUCTURE OPENING.
6. TRANSVERSE CONSTRUCTION JOINTS IN WALLS AND SLABS SHALL BE IN THE SAME PLANE. NO STAGGERING OF JOINTS WILL BE PERMITTED. TRANSVERSE CONSTRUCTION JOINTS SHALL BE NORMAL OR RADIAL TO THE CENTERLINE OF CONSTRUCTION.
7. THE TRANSVERSE REINFORCING STEEL SHALL TERMINATE ONE AND ONE-HALF INCHES FROM THE CONCRETE SURFACES UNLESS OTHERWISE SHOWN ON THE STRUCTURAL DETAILS.
8. EXPOSED EDGES OF CONCRETE MEMBERS SHALL BE ROUNDED OR BEVELLED.
9. NO SPLICES IN TRANSVERSE STEEL REINFORCEMENT WILL BE PERMITTED OTHER THAN SHOWN ON THE DRAWING WITHOUT APPROVAL OF THE ENGINEER. NO MORE THAN TWO SPLICES WILL BE PERMITTED IN ANY LONGITUDINAL BAR BETWEEN TRANSVERSE JOINTS. SPLICES SHALL BE STAGGERED.
10. LONGITUDINAL STEEL SHALL BE LAPPED 20 BAR DIAMETERS AT SPLICES. TRANSVERSE STEEL SHALL BE LAPPED 30 BAR DIAMAETERS AT SPLICES.
11. LONGITUDINAL STEEL SHALL BE CONTINOUS AND EXTEND THROUGH ALL CONSTRUCTION JOINTS.
12. UNLESS OTHERWISE SHOWN ON THE DRAWINGS, TRANSVERSE JOINT KEYWAYS (IN SLABS AND WALLS), AS DETAILED FOR LONGITUDINAL KEYWAYS AT THE BASE OF THE WALLS, SHALL BE PLACED AT THE END OF EACH POUR, BUT THE SPACING THEREOF SHALL NOT EXCEED 50 FEET OR BE LESS THAN 10 FEET. ALL CONSTRUCTION JOINTS IN BOTTOM SLAB, TOP SLAB, AND SIDE WALLS SHALL BE IN THE SAME PLANE. NO STAGGERING OF JOINTS WILL BE PERMITTED.
13. UNLESS OTHERWISE SHOWN ON THE DETAILS, IN CURVED SECTIONS, TRANSVERSE BARS SHALL BE PLACED RADIALLY. STRAIGHT TRANSVERSE BARS IN TOP AND BOTTOM SLABS SHALL BE SPACED AS SHOWN ON THE TYPICAL SECTIONS.; SPACING SHALL BE AT THE CENTERLINE OF THE BARREL ON THE OUTSIDE OF THE CURVE FOR DOUBLE BARREL BOXES. STRAIGHT BARS AND L-BARS IN WALLS SHALL BE SPACED AS SHOWN FOR THE TYPICAL SECTIONS. WITH THE SPACING MEASURED BETWEEN THE VERTICAL LEGS OF BARS.
14. AT THE BEGINNING AND ENDING OF ALL POURS, A CURTAIN OF REINFORCEMENT COMPOSED OF B. C. C2. D. CW, F, G. AND H BARS SHALL BE PLACED THREE INCHES FROM THE TRANSVERSE CONSTRUCTION JOINT.
15. THE VERTICAL WALL STEEL IN INTERIOR WALLS AND IN THE INTERIOR FACE OF EXTERIOR WALLS MAY BE SPLICED AT THE CONSTRUCTION JOINT AT THE BASE OF THE WALL. THE SPLICES SHALL BE 20 BAR DIAMETERS IN LENGTH.
16. IN ALL SECTIONS LAP C AND C2 BARS. THE VERTICAL LENGTH OF C AND C2 BARS HAS BEEN CALCULATED FOR A FOUR INCH STARTER WALL. IF THE HEIGHT OF THE STARTER WALL IS VARIED, THE VERTICAL LENGTH OF THE C AND C2 BARS SHALL BE VARIED CORRESPONDINGLY SO AS TO MAINTAIN A 30 DIAMETER LAP BETWEEN THE TWO BARS. THE LAPS SHALL BE BASED ON THE SMALLER BARS.
17. CONCRETE QUANTITITES ARE BASED ON A SIX-BY-SIX INCH FILLET AND THE STEEL QUANTITIES DO NOT INCLUDE ANY OPTIONAL SPLICES.
18. IF WALL THICKNESS IS SIX INCHES PLACE REINFORCEMENT AT THE CENTERLINE OF THE WALL.
19. THE DESIGN OF BOX SECTIONS IDENTIFIED BY A NUMERICAL VALUE IS BASED ON A WIDTH OF TRENCH EQUAL TO THE OUTSIDE WIDTH OF THE CONDUIT PLUS THREE FEET. WHEN THE COVER IS EQUAL TO 10 FEET OR LESS THE TRENCH WIDTH IS UNRESTRICTED. WHEN THE COVER IS GREATER THAN 10 FEET AND THE TRENCH WIDTH IS GREATER THAN THE OUTSIDE WIDTH OF THE CONDUIT PLUS 3 FEET FOR A DISTANCE IN EXCESS OF 10 FEET AN ALTERNATE SECTION SHALL BE USED AS INDICATED BELOW
   - A. WHEN THE DEPTH OF COVER IS LESS THAN 18 FEET, SECTIONS WITH THE SUFFIX "B" SHALL BE USED.
   - B. WHEN THE DEPTH OF COVER IS GREATER THAN 18 FEET AND:
     1. THE TRENCH WIDTH IS LESS THAN THE OUTSIDE WIDTH OF THE CONDUIT PLUS 6 FEET, SECTIONS WITH SUFFIX "A" SHALL BE USED.
     2. THE TRENCH WIDTH IS GREATER THAN THE OUTSIDE WIDTH OF CONDUIT PLUS 6 FEET, SECTIONS WITH THE SUFFIX "A" SHALL BE USED

R. C. RECTANGULAR CHANNEL

1. TRANSVERSE CONSTRUCTION JOINTS SHALL NOT BE PLACED WITHIN 30 INCHES OF INLETS.
2. TRANSVERSE JOINTS SHALL BE PLACED AT THE JUNCTION OF RECTANGULAR OPEN CHANNEL SECTIONS WITH CLOSED CONDUIT SECTIONS. THE JOINT SHALL NOT BE KEYED AND SHALL HAVE A THREE-EIGHTS-INCH LAYER OF EXPANSION JOINT MATERIAL IN WALLS AND INVERT
3. ALL RECTANGULAR OPEN CHANNEL WALLS SHALL BE FENCED IN ACCORDANCE WITH APWA STANDARD DRAWING 600-O EXCEPT AS OTHERWISE SHOWN ON THE DRAWINGS.
4. UNLESS OTHERWISE SHOWN ON THE DRAWINGS, IN CURVED SECTIONS, THE MAXIMUM SPACING OF BARS SHALL NOT EXCEED THAT SHOWN ON THE TYPICAL SECTIONS. STEEL SHALL BE PLACED RADIALLY FROM THE MAXIMUM SPACING.
5. AT THE BEGINNING AND ENDING OF ALL POURS, A COMPLETE CURTAIN OF REINFORCEMENT COMPOSED OF B1, B4, AND B7 BARS SHALL BE PLACED THREE INCHES FROM THE TRANSVERSE CONSTRUCTION JOINT.
6. LONGITUDINAL STEEL SHALL TERMINATE TWO INCHES FROM TRANSVERSE CONSTRUCTION JOINTS.

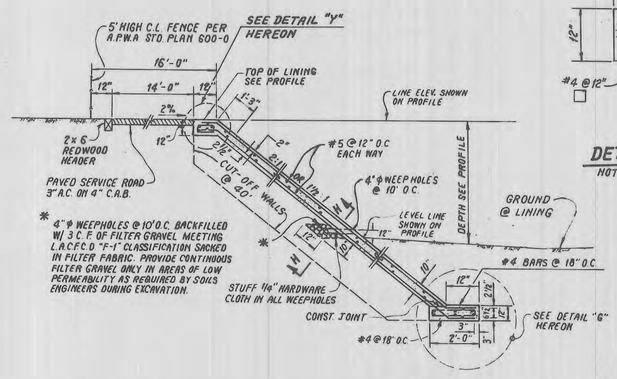
STRUCTURAL DESIGN CRITERIA

LIVE LOAD
H_{20} - S16-44 unless otherwise noted

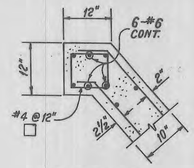
DEAD LOAD
Earth load per Marston's formula: w = 110 p.c.f
Ku = Ku' = 0.150
Bd = Outside width of box plus 3 feet
Side earth 37 p.s.f. per foot of depth
Internal water pressure: 62.4 p.s.f. per foot of depth
Weight of concrete: 150 p.c.f.

ALLOWABLE STRESSES
fc' = 4000 p.s.i. at 28 days
fc = 1800 p.s.i.
fs = 24000
n = 8
shear and bond stresses per A.C.I. 318-63

NO	REVISION	REVISED BY	APPROVED BY	DATE



CONCRETE LINING DETAIL "A"
NOT TO SCALE



DETAIL "Y"
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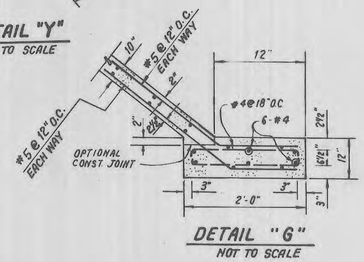

DETAIL "G"
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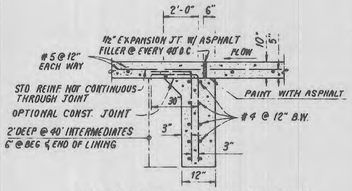
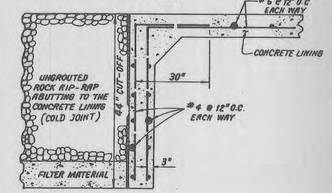


SECTION "H-H" EXPANSION JOINT
CUT-OFF WALL

NOTE EXPANSION JOINT SHALL BE SPACED @ 40' INTERVALS

⚠ CONCRETE LINING-UNGROUTED ROCK RIP-RAP JOIN DETAIL
NOT TO SCALE



⚠ SECTION "A-A"
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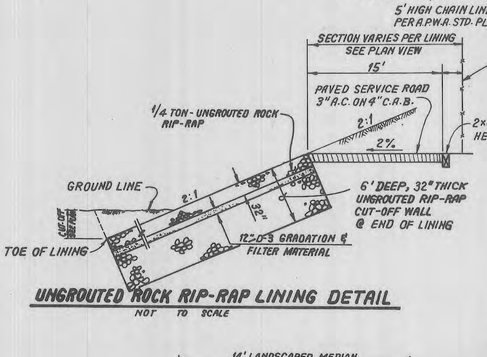
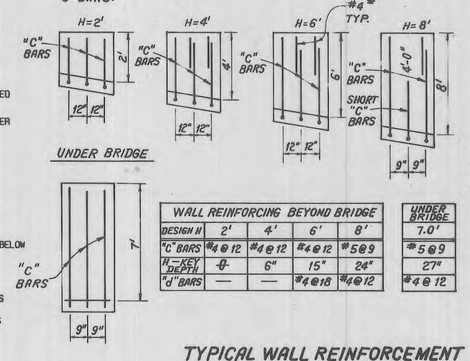


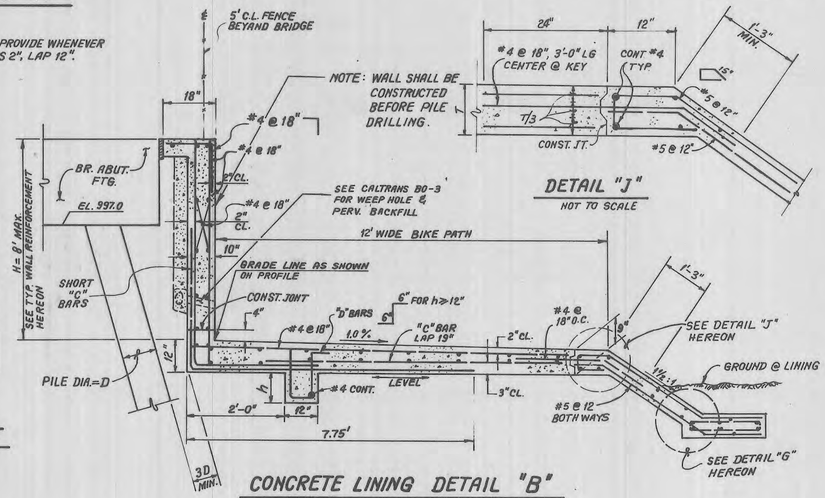
UNGROUTED ROCK RIP-RAP LINING DETAIL
NOT TO SCALE



WALL REINFORCING BEYOND BRIDGE				
DESIGN H	2'	4'	6'	8'
"C" BARS	#4@12	#4@12	#4@12	#5@9
H-SEE DEPTH	-0-	6"	15"	24"
"J" BARS	—	—	#4@18	#4@12

UNDER BRIDGE
7.0'
#5@9
27"
#4@12

TYPICAL WALL REINFORCEMENT
NOT TO SCALE



CONCRETE LINING DETAIL "B"
NOT TO SCALE

DETAIL "J"
NOT TO SCALE

CONST. MOD. C.B. PER A.P.W.A. STD. PLAN 304-1 OR EQUAL, V=VAR. SEE PLAN

CONST. MOD. C.B. PER A.P.W.A. STD. PLAN 300-1 (TYP.), W= 12'¢ V= 18", B= 12". MAX. SPACING= 1000' W/6" STD. COVER PER ALHAMBRA FDRY. CO. STD. A-2025 OR EQUAL.

NOTE: ALL DIMENSIONS ARE TYPICAL

SECTION A-A
NOT TO SCALE

* NOTE: ALL PIPES SHOWN TO BE PVC SCHEDULE 80 OR EQUAL

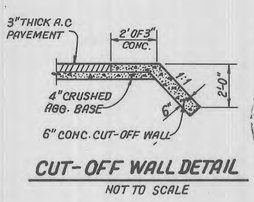
NOT TO BE MAINTAINED BY L.A.C.F.C.D.

MEDIAN CATCH BASIN DETAIL
NOT TO SCALE

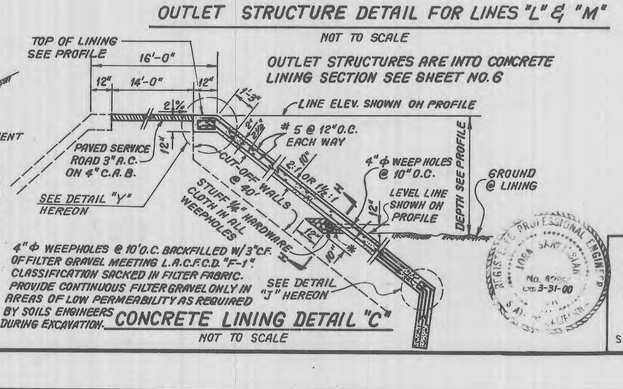
SECTION Q-Q
NOT TO SCALE

OUTLET STRUCTURE DETAIL FOR LINES "L" & "M"
NOT TO SCALE

ACCESS ROAD SECTION
NOT TO SCALE

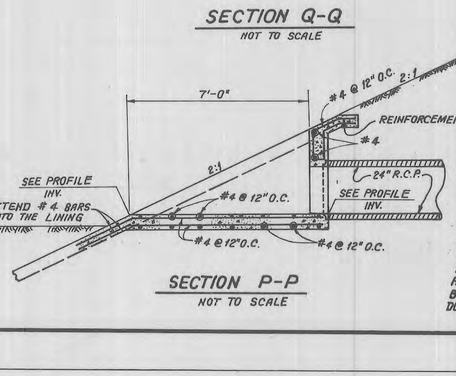


CUT-OFF WALL DETAIL
NOT TO SCALE



CONCRETE LINING DETAIL "C"
NOT TO SCALE

OUTLET STRUCTURES ARE INTO CONCRETE LINING SECTION SEE SHEET NO.6



SECTION P-P
NOT TO SCALE

SIKAND ENGINEERING ASSOCIATES
15230 BURBANK BLVD.
VAN NUYS, CA. 91411
(818) 787-8550
JORA SARKISSIAN

SIGNATURE: _____ R.C.E. NO. 42890

COUNTY OF LOS ANGELES, CALIFORNIA
HARRY W. STONE — DIRECTOR OF PUBLIC WORKS

CHECKED BY: _____ LAND DEVELOPMENT DIVISION R.C.E. NO. 45641 DATE 4-13-98
OFFICE OF THE DIRECTOR OF PUBLIC WORKS

SHT 8 OF 9 SHTS

W.O. 1020-252-A

STORM DRAIN PLANS IN D.S. NO. 485 P.D. No. 2298 (UNIT III)

* EASEMENT TO L.A.C.F.C.D. FOR FLOOD CONTROL PURPOSES.

SCALE: 1"=60'

EASEMENT DATA

T NO.	DIRECTION	DISTANCE
1.	S. 40°42'51" W	85.81'
2.	N. 73°57'46" W	40.24'
3.	N. 16°02'12" E	40.00'
4.	N. 45°25'14" E	8.43'
5.	N. 45°25'14" E	20.00'
6.	N. 79°06'38" E	54.08'
7.	N. 74°00'15" E	52.83'
8.	N. 48°25'14" E	10.30'
9.	S. 23°27'24" E	23.43'
10.	S. 16°20'56" W	40.00'
11.	S. 49°51'40" W	11.28'
12.	N. 72°53'09" W	19.00'
13.	S. 45°25'14" W	19.65'
14.	S. 41°34'46" E	14.01'
15.	S. 16°20'56" W	26.00'
16.	S. 73°39'04" E	44.00'
17.	S. 16°20'56" W	26.00'
18.	S. 73°39'04" E	70.00'
19.	S. 35°49'21" E	33.35'
20.	S. 60°44'13" W	56.74'
21.	S. 40°39'43" E	7.79'
22.	N. 16°20'56" E	34.56'
23.	N. 16°20'56" E	34.56'
~~24.~~	~~S. 48°25'14" W~~	~~163.32'~~
~~25.~~	~~S. 48°25'14" W~~	~~113.32'~~
~~26.~~	~~S. 48°25'31" E~~	~~76.00'~~
27.	S. 48°25'14" W	109.31'
28.	S. 48°25'14" W	108.59'
29.	S. 44°10'19" E	16.02'

EASEMENT CURVE DATA

C NO.	DELTA	RADIUS	LENGTH	TANGENT
1.	100°14'12"	111.00'	194.19'	132.84'
2.	005°37'02"	847.00'	83.04'	41.55'
3.	026°27'15"	273.91'	126.47'	64.38'
4.	048°07'38"	250.00'	209.99'	111.64'
5.	044°29'23"	87.00'	67.55'	35.58'
6.	003°44'54"	564.00'	36.90'	18.46'
7.	069°39'23"	90.00'	109.42'	62.62'
8.	044°09'28"	73.00'	56.26'	29.61'
9.	034°50'53"	104.00'	63.25'	32.64'
10.	000°55'03"	992.00'	15.89'	7.94'

EASEMENT CURVE DATA (CON'T.)

C. NO.	DELTA	RADIUS	LENGTH	TANGENT
11	59°15'34"	42.00'	43.44'	23.89'
12.	59°15'34"	58.00'	59.99'	32.99'
13	27°11'16"	58.00'	27.52'	14.05'
14	27°11'16"	42.00'	19.93'	10.16'

⊙ - 13 L.F. - 12" P.V.C. AND C.S.P. INLET PER A.P.W.A. STD. PLAN NO. 351-1, CASE 1, INLET ELEV. = 999.00 (NOT TO BE MAINTAINED BY THE LACFCD)

SECTION "A-A"

SCALE: 1/4"=1'-0"

SECTION "B-B"

SCALE: 1/4"=1'-0"

NO.	REVISION	REVISED BY	APPROVED BY	DATE
1	REVISED EASEMENT DATA. REVISED N'LY CURB LOC. @ C.C.D. & HWY. 126 & GRADING.	42890	B. Hamat	3/5/99

REGISTERED PROFESSIONAL ENGINEER — JORA SARKISSIAN — No. 42890 Exp. 9-31-00 — CIVIL — STATE OF CALIFORNIA

SIKAND ENGINEERING ASSOCIATES
15230 BURBANK BLVD.
VAN NUYS, CA 91411
(818) 787-8550
JORA SARKISSIAN
SIGNATURE: _____ R.C.E. NO. 42890

COUNTY OF LOS ANGELES, CALIFORNIA
HARRY W. STONE — DIRECTOR OF PUBLIC WORKS
CHECKED BY: _____ LAND DEVELOPMENT DIVISION R.C.E. NO. 45641 DATE: 4-13-98
OFFICE OF THE DIRECTOR OF PUBLIC WORKS

SHT 9 OF 9 SHTS

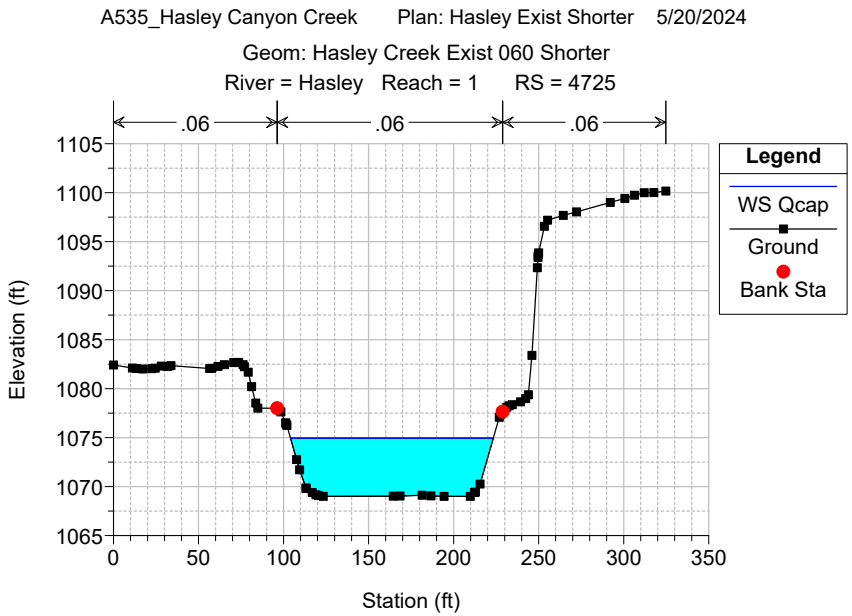
W.O. 1020-252-A

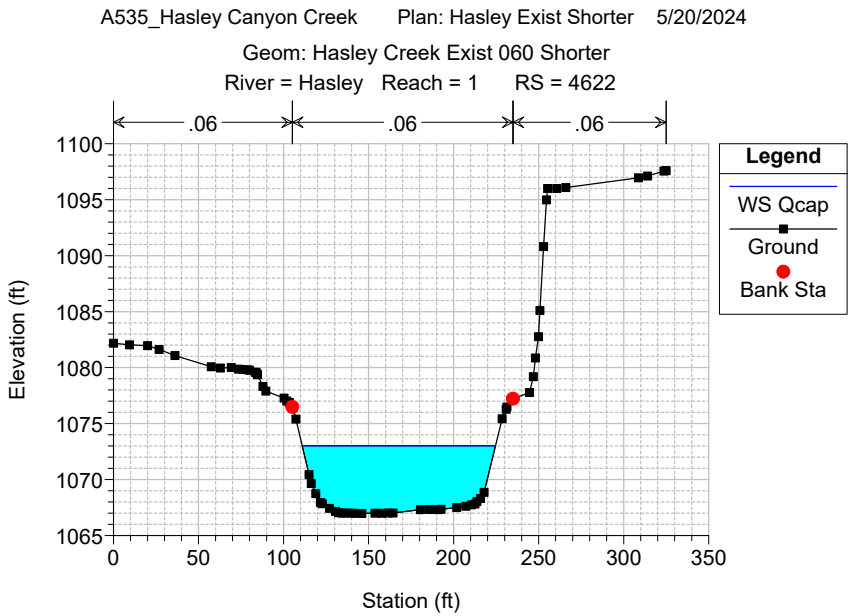
GM JP (213) 699-8440 F.D. SHEET NO. 3 DATE 6-15-

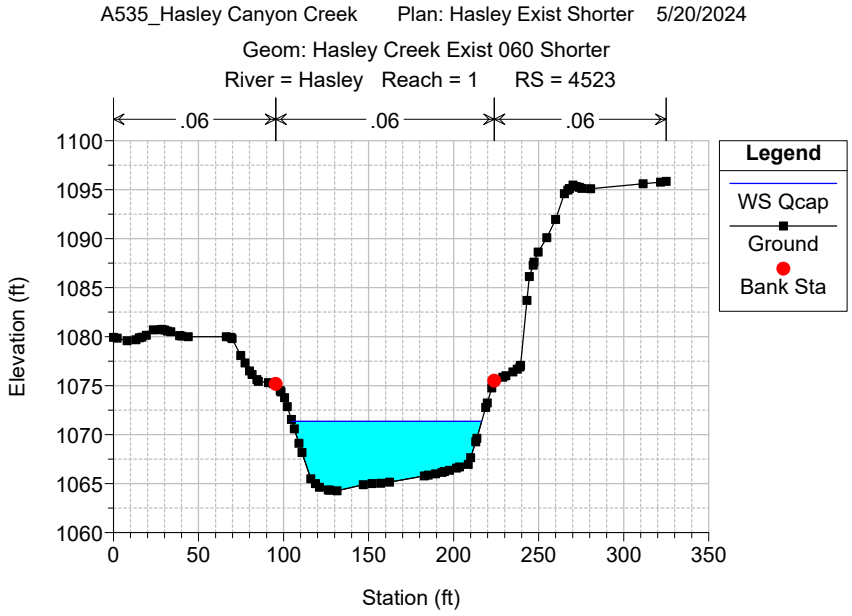
Appendix E – HEC-RAS Existing Condition Output

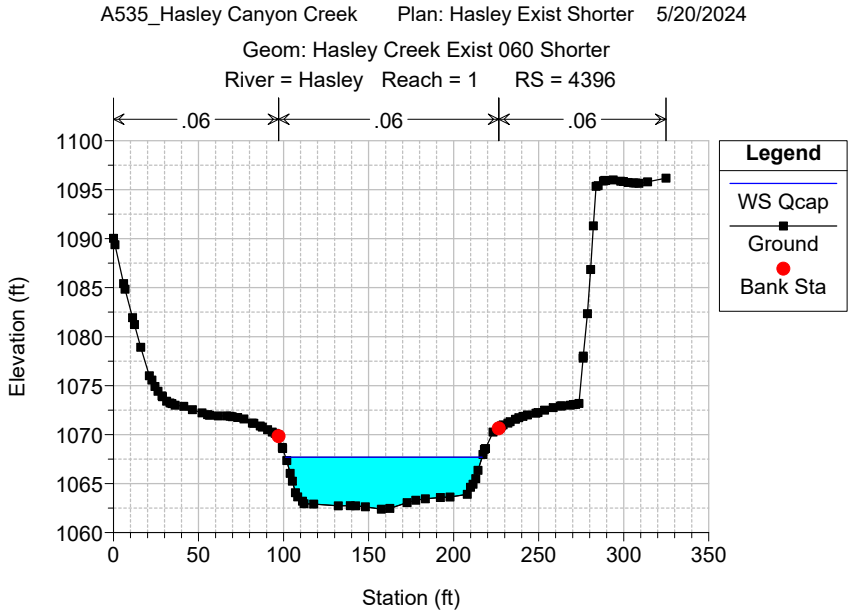
HEC-RAS Plan: Hasley Exist Short River: Hasley Reach: 1 Profile: Qcap

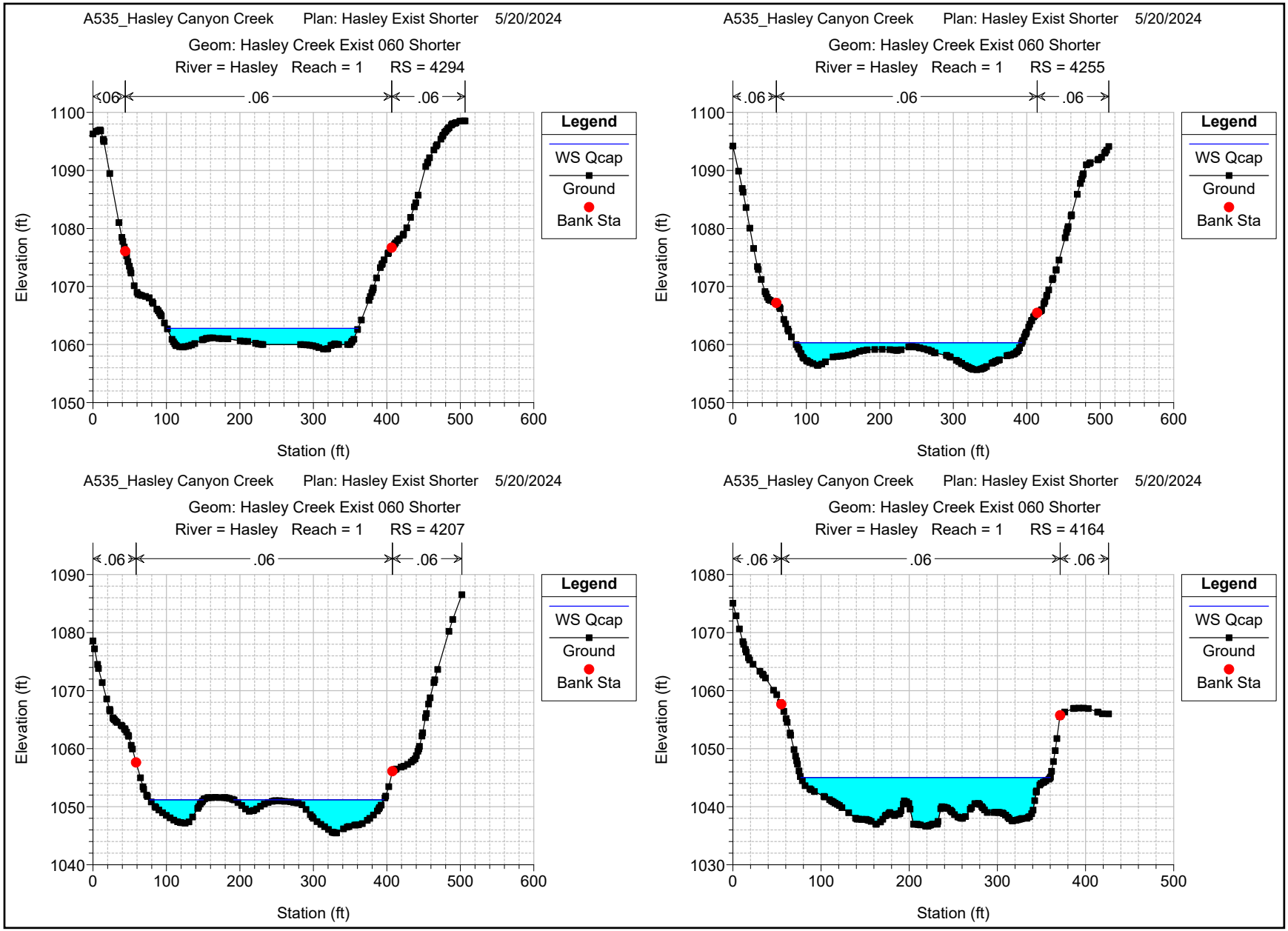
Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
1	4725	Qcap	5900.00	1069.00	1074.95	1073.71	1076.25	0.014977	9.17	643.10	119.28	0.70
1	4622	Qcap	5900.00	1066.97	1073.02	1072.08	1074.54	0.018031	9.89	596.41	113.66	0.76
1	4523	Qcap	5900.00	1064.26	1071.35	1070.24	1072.81	0.016555	9.71	607.71	111.53	0.73
1	4396	Qcap	5900.00	1062.38	1067.69	1067.69	1069.86	0.033031	11.81	499.72	115.54	1.00
1	4294	Qcap	5900.00	1059.23	1062.79	1062.79	1064.06	0.039446	9.06	651.42	259.84	1.01
1	4255	Qcap	5900.00	1055.66	1060.30	1060.30	1061.43	0.040298	8.51	693.16	308.55	1.00
1	4207	Qcap	5900.00	1045.48	1051.19	1051.19	1052.40	0.039345	8.81	669.77	277.49	1.00
1	4164	Qcap	5900.00	1036.63	1045.02	1041.32	1045.23	0.002319	3.72	1586.76	282.88	0.28
1	4133	Qcap	5900.00	1034.00	1045.04	1038.18	1045.16	0.000685	2.79	2114.31	229.91	0.16
1	4100.5	Qcap	5900.00	1033.00	1044.32	1040.89	1045.04	0.005702	6.83	864.31	118.66	0.45
1	4078	Qcap	5900.00	1033.00	1044.05	1041.20	1044.88	0.008032	7.32	806.09	129.31	0.52
1	4055.5	Qcap	5900.00	1033.00	1043.89	1040.82	1044.69	0.007666	7.15	825.52	131.62	0.50
1	3940.5	Qcap	5900.00	1031.00	1041.86	1040.21	1043.19	0.024108	9.23	639.39	166.37	0.83
1	3844	Qcap	5900.00	1030.07	1039.23	1038.46	1040.94	0.021704	10.51	561.31	111.83	0.83
1	3747	Qcap	5900.00	1029.14	1037.74	1036.86	1038.82	0.018326	8.33	708.24	177.82	0.74
1	3650	Qcap	5900.00	1028.00	1035.86	1035.17	1036.91	0.019720	8.23	716.65	193.14	0.75
1	3564	Qcap	5900.00	1027.00	1035.38	1032.70	1035.91	0.005479	5.86	1007.68	170.31	0.42
1	3465	Qcap	5900.00	1026.00	1033.78	1031.97	1035.03	0.011771	9.00	655.57	102.52	0.63
1	3369	Qcap	5900.00	1025.00	1032.27	1031.52	1033.42	0.018768	8.59	686.95	167.83	0.75
1	3304	Qcap	5900.00	1023.52	1031.21	1030.34	1032.05	0.015990	7.38	799.00	217.62	0.68
1	3190.5	Qcap	5900.00	1022.00	1029.94	1028.34	1030.64	0.009311	6.69	882.47	203.91	0.54
1	3105	Qcap	5900.00	1021.00	1028.57	1026.85	1029.68	0.011505	8.48	696.04	117.90	0.62
1	3020	Qcap	5900.00	1019.58	1027.86	1025.49	1028.77	0.008338	7.68	768.65	117.56	0.53
1	2934	Qcap	5900.00	1018.21	1024.97	1024.90	1027.42	0.030566	12.54	470.62	91.59	0.98
1	2820.5	Qcap	5900.00	1016.37	1022.13	1021.79	1023.97	0.026073	10.86	543.41	118.32	0.89
1	2748	Qcap	5900.00	1015.00	1020.97	1020.08	1022.21	0.017961	8.94	660.23	147.34	0.74
1	2675.5	Qcap	5900.00	1014.00	1019.87	1019.04	1020.86	0.017003	7.97	740.32	188.21	0.71
1	2560.5	Qcap	5900.00	1012.00	1017.73	1017.21	1018.60	0.021725	7.49	788.08	266.35	0.77
1	2476	Qcap	5900.00	1010.49	1016.34	1015.42	1017.03	0.014574	6.69	881.49	261.92	0.64
1	2391	Qcap	5900.00	1009.71	1014.77	1014.10	1015.58	0.018500	7.24	815.09	257.31	0.72
1	2305	Qcap	5900.00	1007.29	1013.61	1012.41	1014.24	0.012186	6.33	932.80	354.09	0.59
1	2190	Qcap	5900.00	1004.74	1012.63	1010.17	1013.25	0.006352	6.27	940.47	195.42	0.46
1	2122	Qcap	5900.00	1004.00	1010.97	1009.92	1012.49	0.017021	9.87	597.64	132.74	0.74
1	2054	Qcap	5900.00	1003.18	1008.90	1008.82	1010.86	0.031240	11.23	525.28	145.15	0.97
1	1940	Qcap	5900.00	1001.61	1007.20	1006.63	1008.22	0.016244	8.33	760.47	239.10	0.71
1	1872	Qcap	5900.00	1000.95	1006.26	1005.55	1006.97	0.013555	7.29	916.52	385.44	0.64
1	1804	Qcap	5900.00	999.71	1004.39	1004.39	1005.58	0.031418	9.39	699.56	362.83	0.93
1	1689	Qcap	5900.00	997.53	1003.81	1001.40	1004.12	0.004022	4.52	1336.24	472.03	0.36
1	1584	Qcap	5900.00	995.01	1003.61	1000.05	1003.85	0.002138	3.94	1518.17	616.78	0.27
1	1518	Qcap	5900.00	995.00	1002.99	999.80	1003.52	0.004442	5.83	1011.93	337.65	0.40
1	1500		Lat Struct									
1	1448	Qcap	5900.00	993.26	1001.55	999.95	1002.92	0.013127	9.39	628.59	101.05	0.66
1	1294	Qcap	5900.00	991.00	999.93	997.92	1001.11	0.010713	8.70	678.39	105.03	0.60
1	1189	Qcap	5900.00	990.00	999.54	995.80	1000.23	0.004926	6.64	888.32	111.60	0.42
1	1132		Bridge									
1	1080	Qcap	5900.00	980.01	992.97	992.97	995.27	0.031906	12.16	485.07	510.70	1.00
1	1061	Qcap	5900.00	980.00	993.72	984.07	993.74	0.000117	1.20	4914.76	512.90	0.07

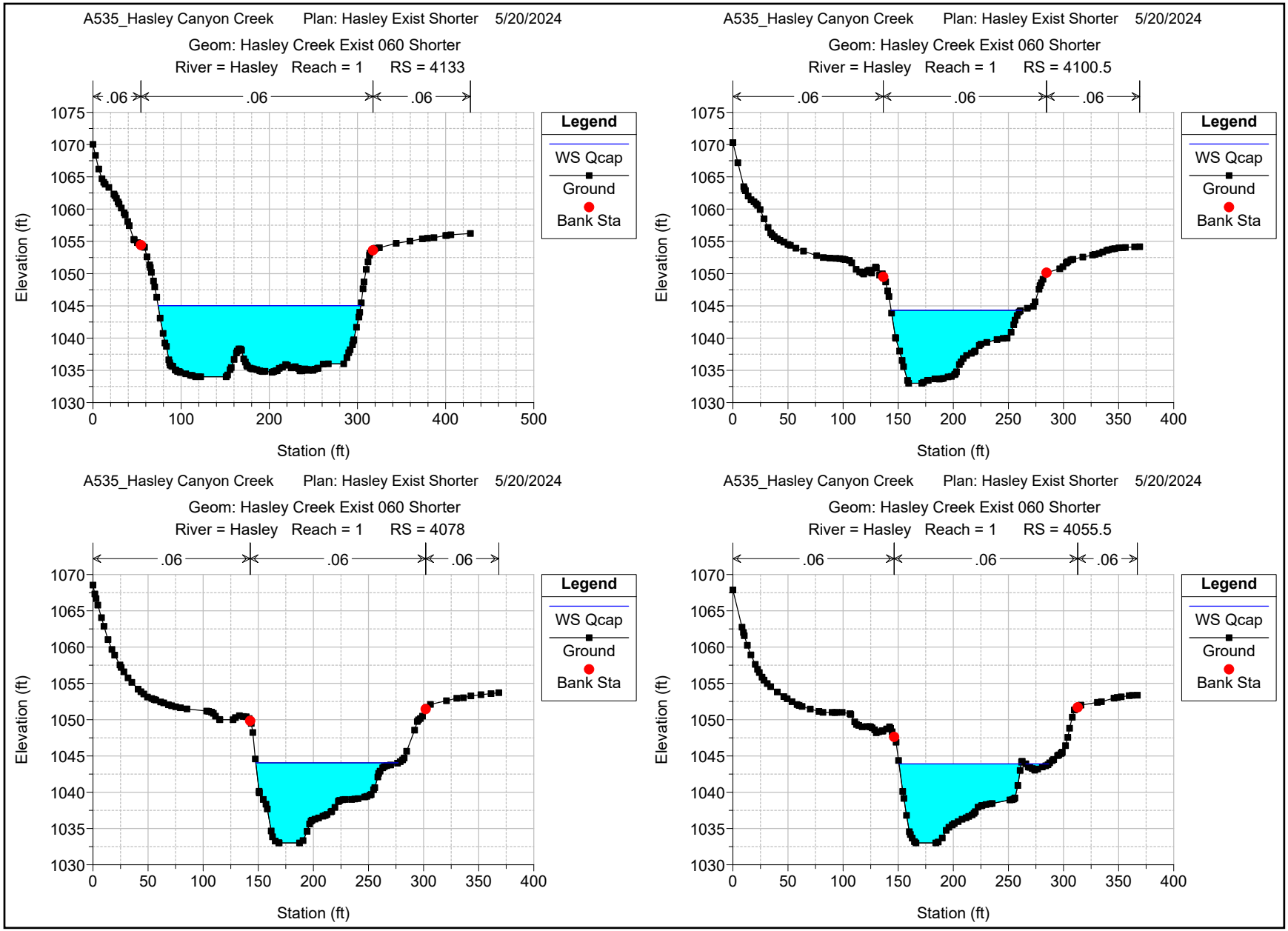

A535_Hasley Canyon Creek Plan: Hasley Exist Shorter 5/20/2024
Geom: Hasley Creek Exist 060 Shorter
River = Hasley Reach = 1 RS = 4725
.06
.06
.06
Legend
WS Qcap
Ground
Bank Sta
Elevation (ft)
Station (ft)

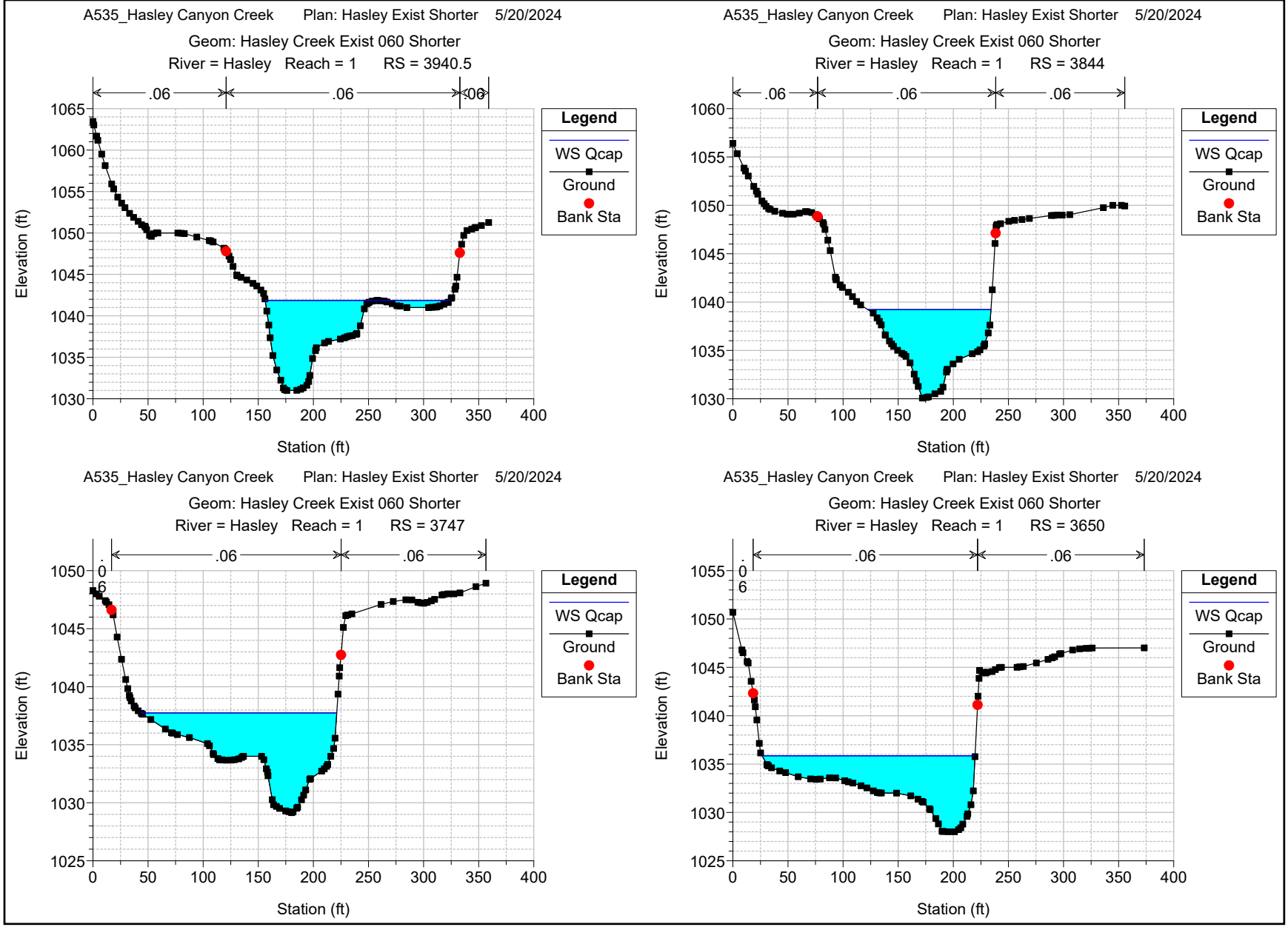

A535_Hasley Canyon Creek Plan: Hasley Exist Shorter 5/20/2024
Geom: Hasley Creek Exist 060 Shorter
River = Hasley Reach = 1 RS = 4622
.06
.06
.06
Legend
WS Qcap
Ground
Bank Sta
Elevation (ft)
Station (ft)

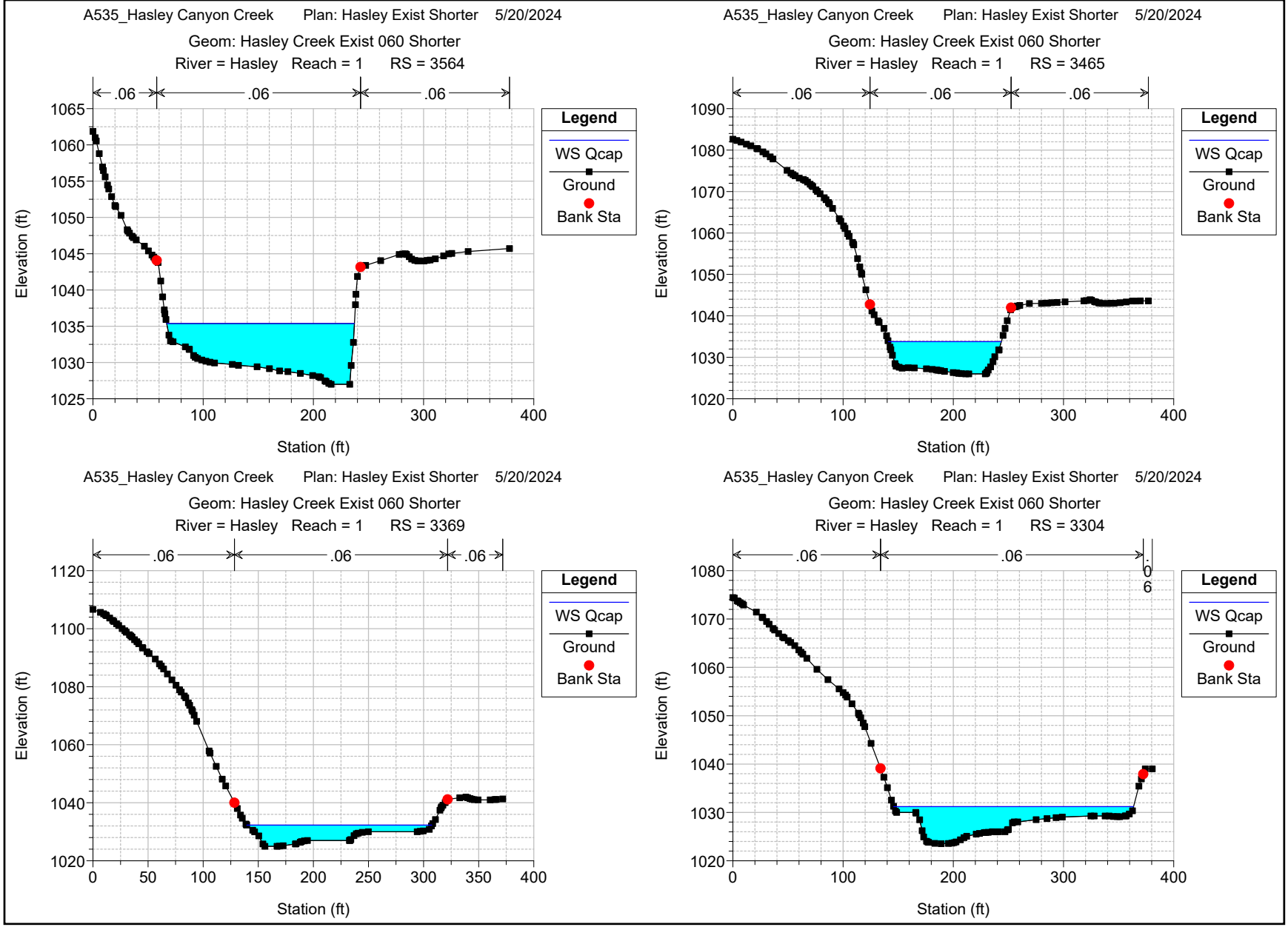

A535_Hasley Canyon Creek Plan: Hasley Exist Shorter 5/20/2024
Geom: Hasley Creek Exist 060 Shorter
River = Hasley Reach = 1 RS = 4523
.06
.06
.06
Legend
WS Qcap
Ground
Bank Sta
Elevation (ft)
Station (ft)

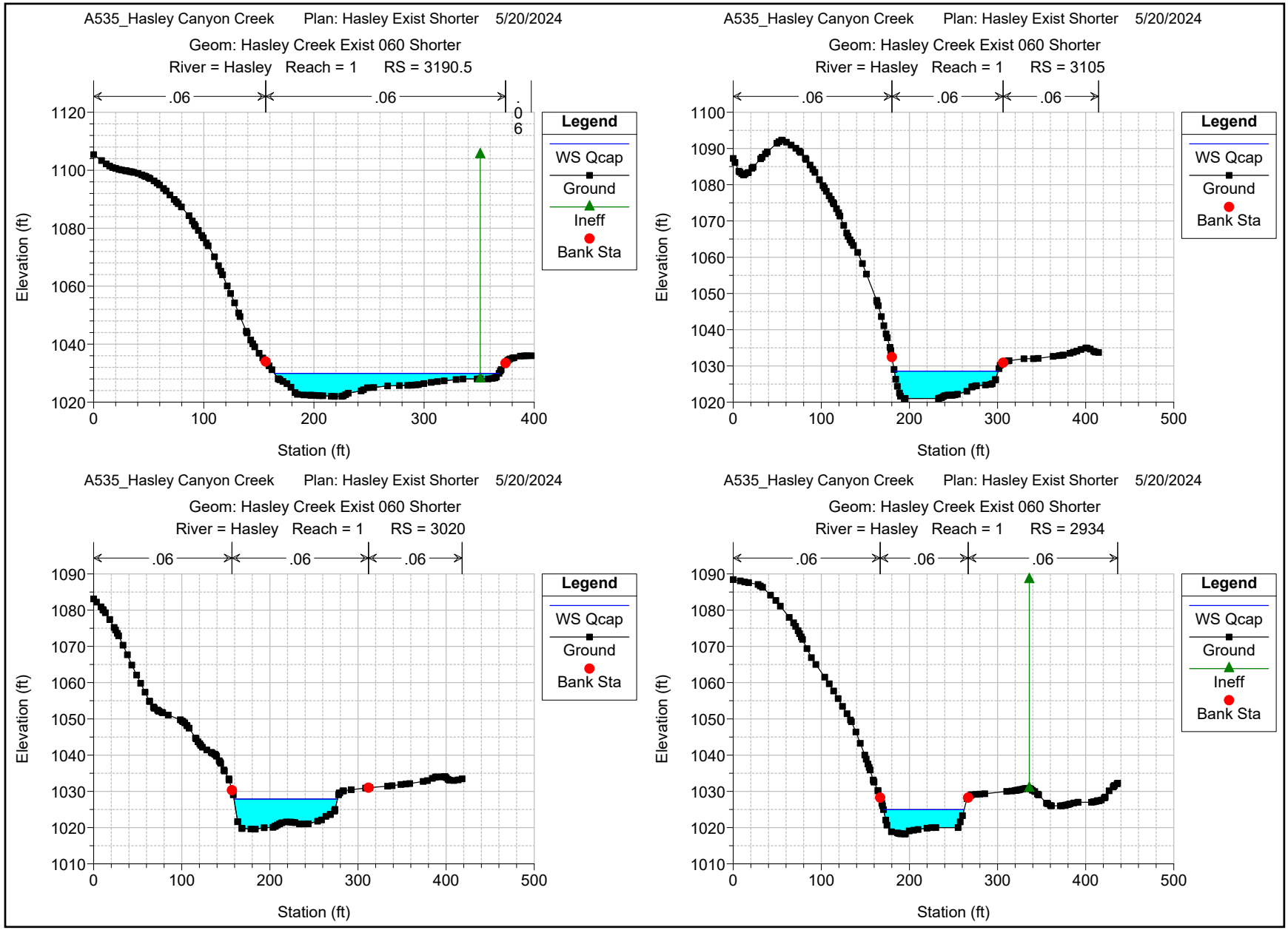

A535_Hasley Canyon Creek Plan: Hasley Exist Shorter 5/20/2024
Geom: Hasley Creek Exist 060 Shorter
River = Hasley Reach = 1 RS = 4396
.06
.06
.06
Legend
WS Qcap
Ground
Bank Sta
Elevation (ft)
Station (ft)

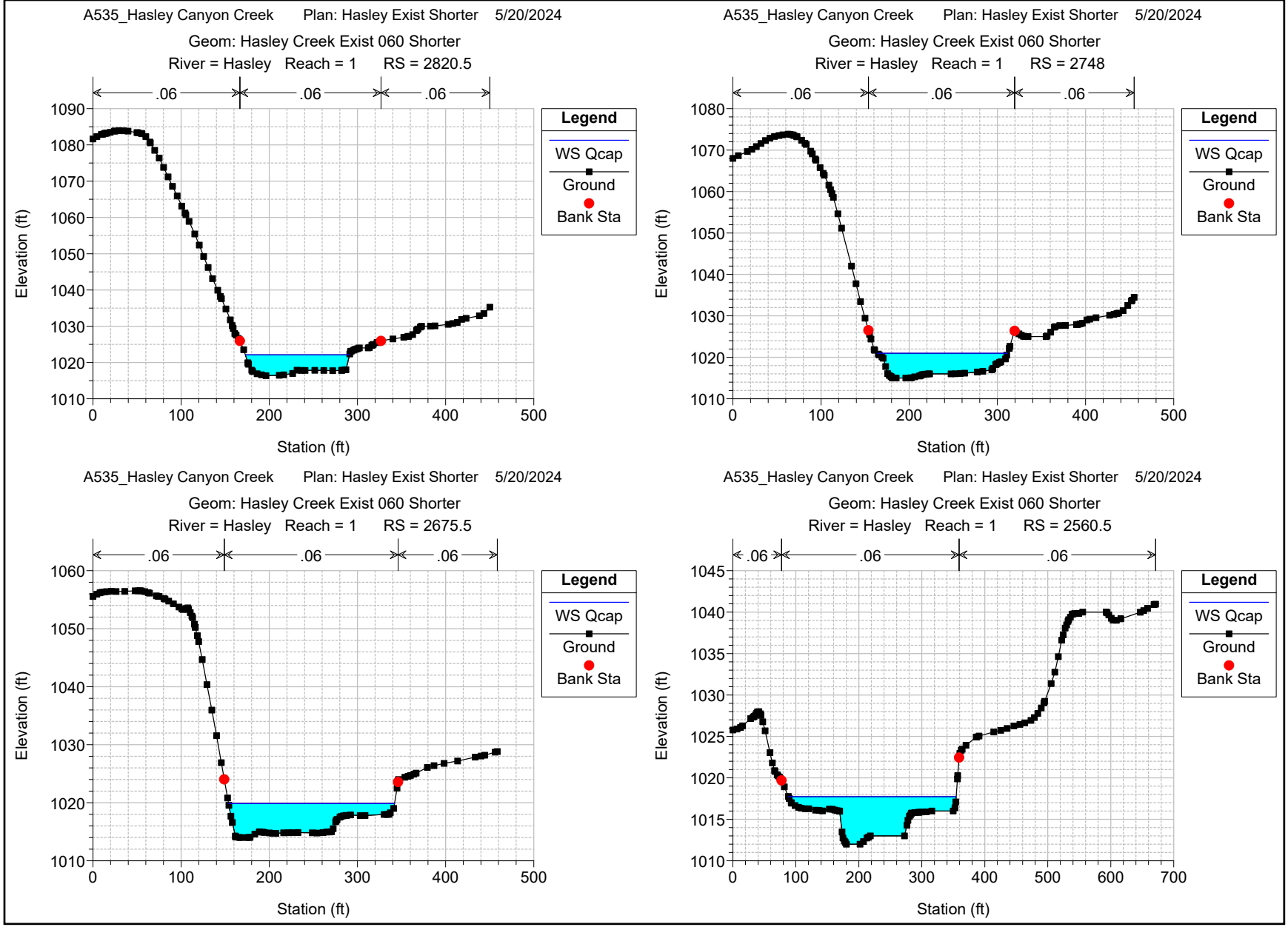

A535_Hasley Canyon Creek Plan: Hasley Exist Shorter 5/20/2024
Geom: Hasley Creek Exist 060 Shorter
River = Hasley Reach = 1 RS = 4294
.06
.06
.06
Legend
WS Qcap
Ground
Bank Sta
Elevation (ft)
Station (ft)
A535_Hasley Canyon Creek Plan: Hasley Exist Shorter 5/20/2024
Geom: Hasley Creek Exist 060 Shorter
River = Hasley Reach = 1 RS = 4255
.06
.06
.06
Legend
WS Qcap
Ground
Bank Sta
Elevation (ft)
Station (ft)
A535_Hasley Canyon Creek Plan: Hasley Exist Shorter 5/20/2024
Geom: Hasley Creek Exist 060 Shorter
River = Hasley Reach = 1 RS = 4207
.06
.06
.06
Legend
WS Qcap
Ground
Bank Sta
Elevation (ft)
Station (ft)
A535_Hasley Canyon Creek Plan: Hasley Exist Shorter 5/20/2024
Geom: Hasley Creek Exist 060 Shorter
River = Hasley Reach = 1 RS = 4164
.06
.06
.06
Legend
WS Qcap
Ground
Bank Sta
Elevation (ft)
Station (ft)

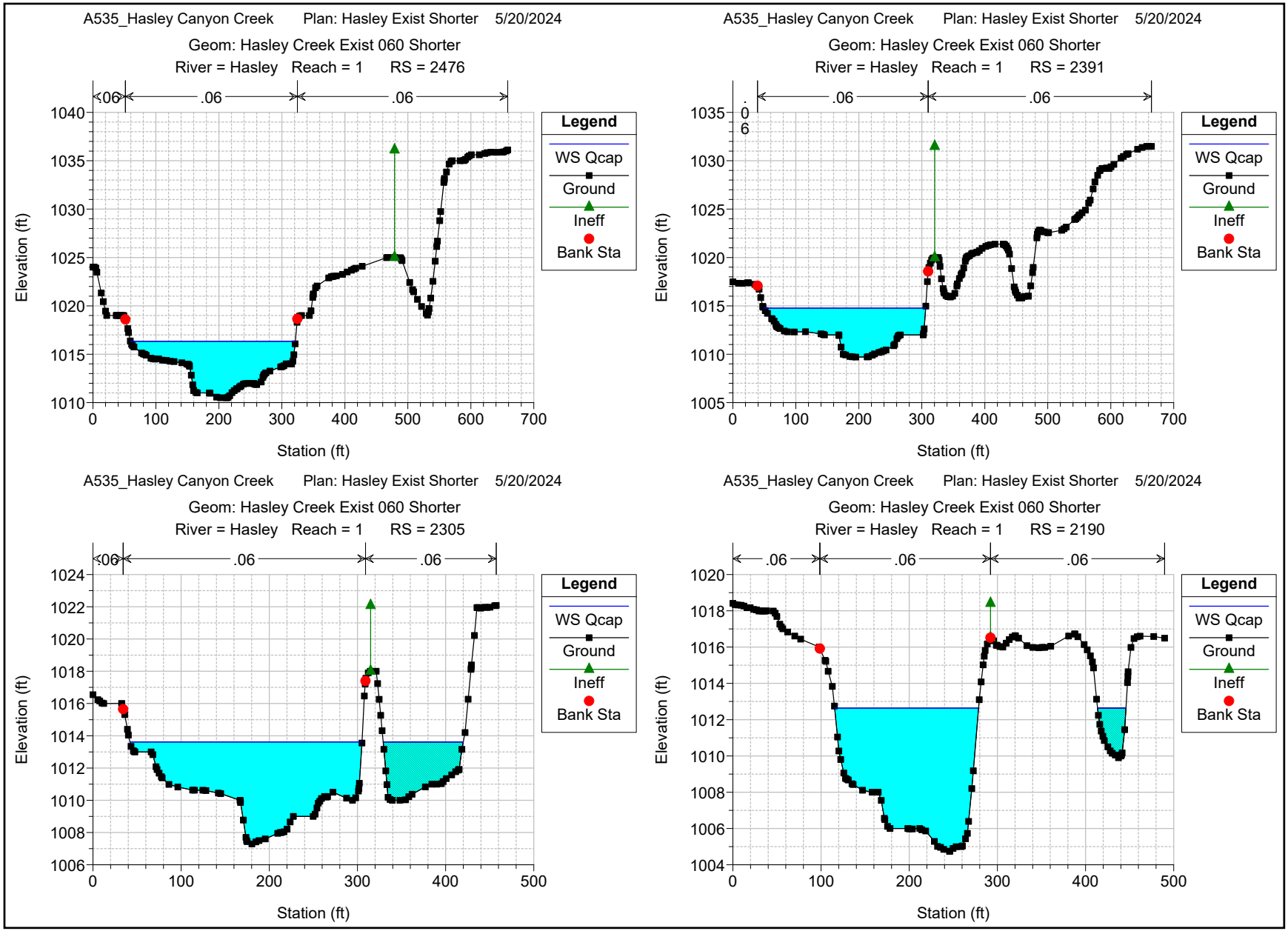

A535_Hasley Canyon Creek Plan: Hasley Exist Shorter 5/20/2024
Geom: Hasley Creek Exist 060 Shorter
River = Hasley Reach = 1 RS = 4133
.06
.06
.06
Legend
WS Qcap
Ground
Bank Sta
Elevation (ft)
Station (ft)
A535_Hasley Canyon Creek Plan: Hasley Exist Shorter 5/20/2024
Geom: Hasley Creek Exist 060 Shorter
River = Hasley Reach = 1 RS = 4100.5
.06
.06
.06
Legend
WS Qcap
Ground
Bank Sta
Elevation (ft)
Station (ft)
A535_Hasley Canyon Creek Plan: Hasley Exist Shorter 5/20/2024
Geom: Hasley Creek Exist 060 Shorter
River = Hasley Reach = 1 RS = 4078
.06
.06
.06
Legend
WS Qcap
Ground
Bank Sta
Elevation (ft)
Station (ft)
A535_Hasley Canyon Creek Plan: Hasley Exist Shorter 5/20/2024
Geom: Hasley Creek Exist 060 Shorter
River = Hasley Reach = 1 RS = 4055.5
.06
.06
.06
Legend
WS Qcap
Ground
Bank Sta
Elevation (ft)
Station (ft)

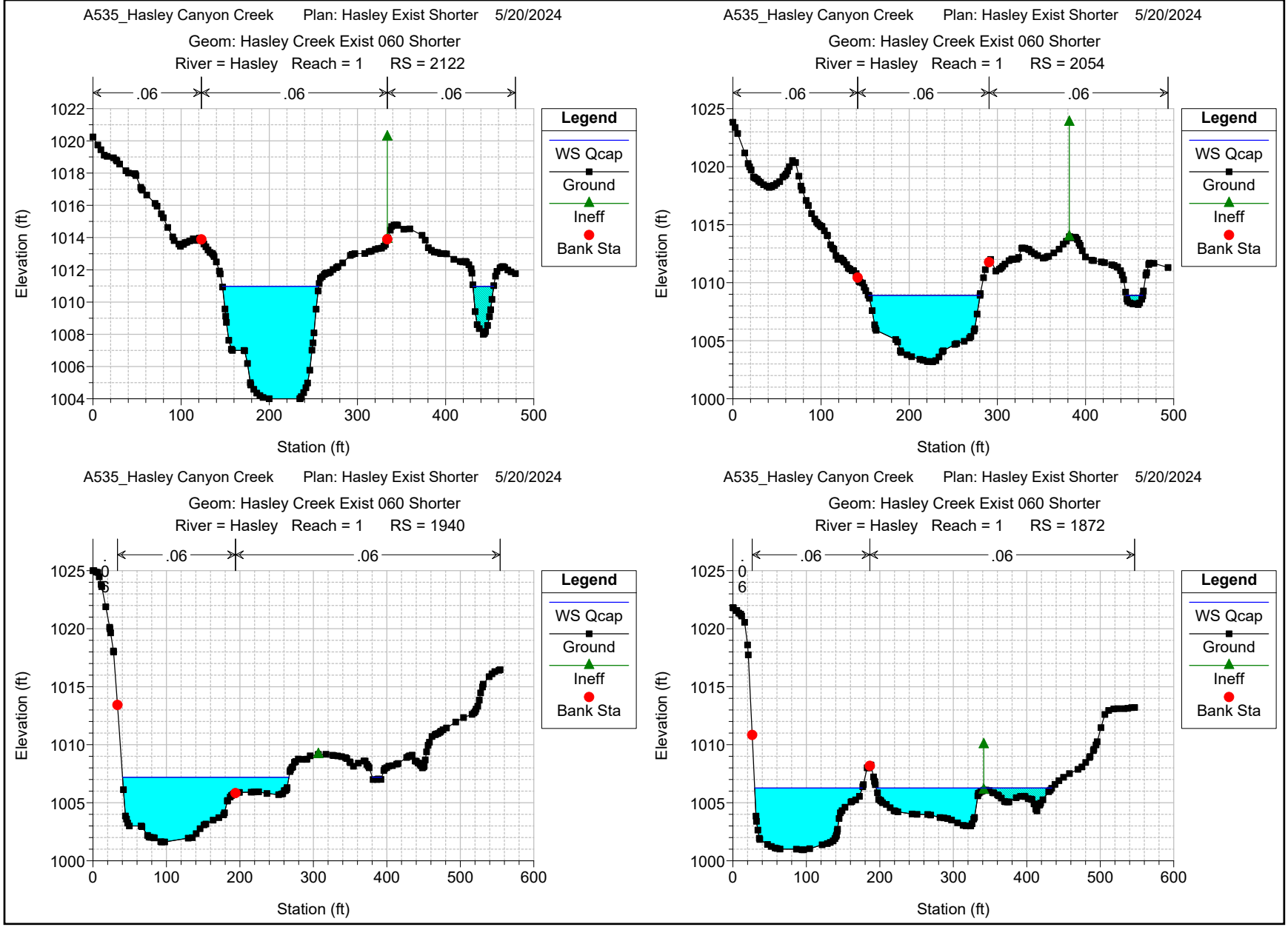

A535_Hasley Canyon Creek Plan: Hasley Exist Shorter 5/20/2024
Geom: Hasley Creek Exist 060 Shorter
River = Hasley Reach = 1 RS = 3940.5
.06
.06
.06
Legend
WS Qcap
Ground
Bank Sta
Elevation (ft)
Station (ft)
A535_Hasley Canyon Creek Plan: Hasley Exist Shorter 5/20/2024
Geom: Hasley Creek Exist 060 Shorter
River = Hasley Reach = 1 RS = 3844
.06
.06
.06
Legend
WS Qcap
Ground
Bank Sta
Elevation (ft)
Station (ft)
A535_Hasley Canyon Creek Plan: Hasley Exist Shorter 5/20/2024
Geom: Hasley Creek Exist 060 Shorter
River = Hasley Reach = 1 RS = 3747
.06
.06
Legend
WS Qcap
Ground
Bank Sta
Elevation (ft)
Station (ft)
A535_Hasley Canyon Creek Plan: Hasley Exist Shorter 5/20/2024
Geom: Hasley Creek Exist 060 Shorter
River = Hasley Reach = 1 RS = 3650
.06
.06
Legend
WS Qcap
Ground
Bank Sta
Elevation (ft)
Station (ft)

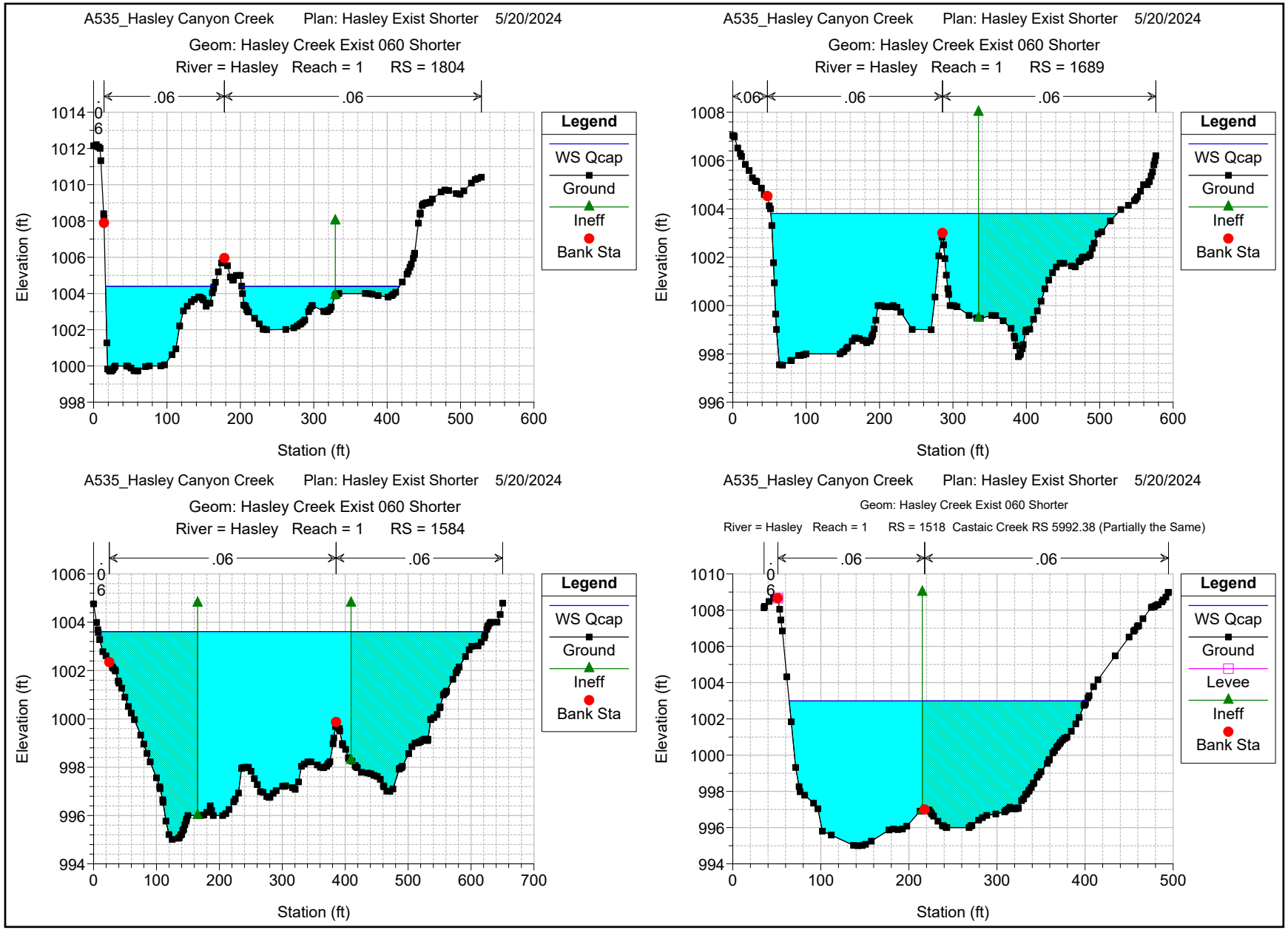

A535_Hasley Canyon Creek Plan: Hasley Exist Shorter 5/20/2024
Geom: Hasley Creek Exist 060 Shorter
River = Hasley Reach = 1 RS = 3564
.06
.06
.06
Legend
WS Qcap
Ground
Bank Sta
Elevation (ft)
Station (ft)
A535_Hasley Canyon Creek Plan: Hasley Exist Shorter 5/20/2024
Geom: Hasley Creek Exist 060 Shorter
River = Hasley Reach = 1 RS = 3465
.06
.06
.06
Legend
WS Qcap
Ground
Bank Sta
Elevation (ft)
Station (ft)
A535_Hasley Canyon Creek Plan: Hasley Exist Shorter 5/20/2024
Geom: Hasley Creek Exist 060 Shorter
River = Hasley Reach = 1 RS = 3369
.06
.06
.06
Legend
WS Qcap
Ground
Bank Sta
Elevation (ft)
Station (ft)
A535_Hasley Canyon Creek Plan: Hasley Exist Shorter 5/20/2024
Geom: Hasley Creek Exist 060 Shorter
River = Hasley Reach = 1 RS = 3304
.06
.06
.06
Legend
WS Qcap
Ground
Bank Sta
Elevation (ft)
Station (ft)

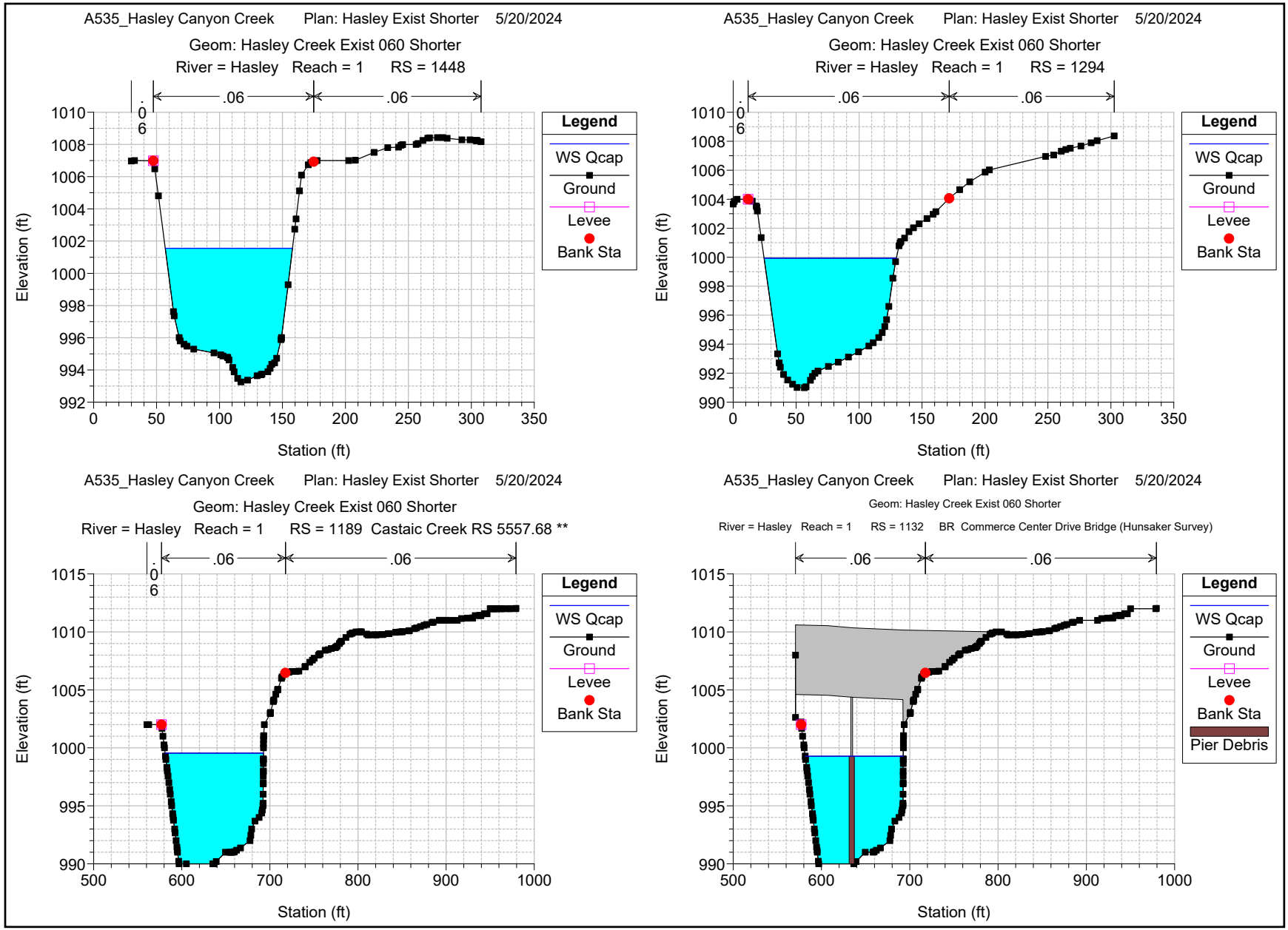

A535_Hasley Canyon Creek Plan: Hasley Exist Shorter 5/20/2024
Geom: Hasley Creek Exist 060 Shorter
River = Hasley Reach = 1 RS = 3190.5
.06
.06
.06
Legend
WS Qcap
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)
A535_Hasley Canyon Creek Plan: Hasley Exist Shorter 5/20/2024
Geom: Hasley Creek Exist 060 Shorter
River = Hasley Reach = 1 RS = 3105
.06
.06
.06
Legend
WS Qcap
Ground
Bank Sta
Elevation (ft)
Station (ft)
A535_Hasley Canyon Creek Plan: Hasley Exist Shorter 5/20/2024
Geom: Hasley Creek Exist 060 Shorter
River = Hasley Reach = 1 RS = 3020
.06
.06
.06
Legend
WS Qcap
Ground
Bank Sta
Elevation (ft)
Station (ft)
A535_Hasley Canyon Creek Plan: Hasley Exist Shorter 5/20/2024
Geom: Hasley Creek Exist 060 Shorter
River = Hasley Reach = 1 RS = 2934
.06
.06
.06
Legend
WS Qcap
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)

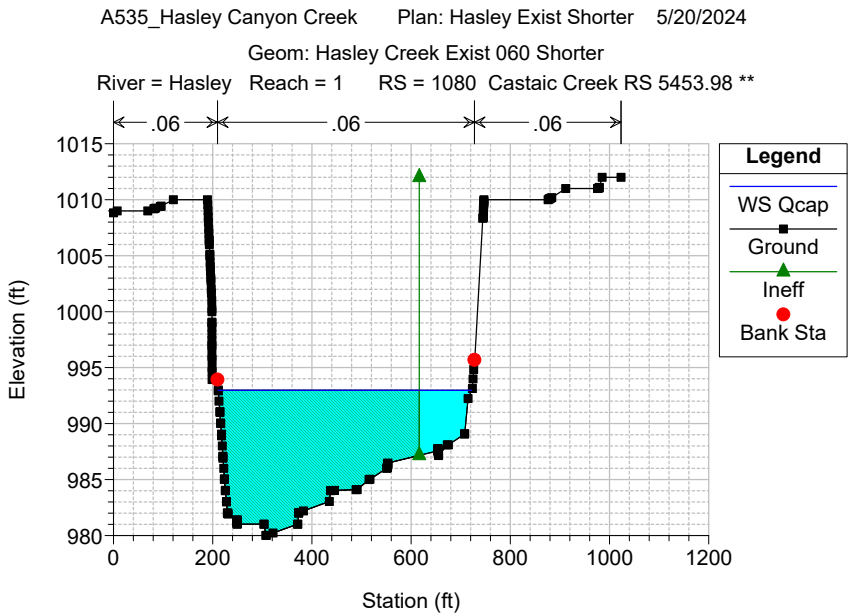

A535_Hasley Canyon Creek Plan: Hasley Exist Shorter 5/20/2024
Geom: Hasley Creek Exist 060 Shorter
River = Hasley Reach = 1 RS = 2820.5
.06
.06
.06
Legend
WS Qcap
Ground
Bank Sta
Elevation (ft)
Station (ft)
A535_Hasley Canyon Creek Plan: Hasley Exist Shorter 5/20/2024
Geom: Hasley Creek Exist 060 Shorter
River = Hasley Reach = 1 RS = 2748
.06
.06
.06
Legend
WS Qcap
Ground
Bank Sta
Elevation (ft)
Station (ft)
A535_Hasley Canyon Creek Plan: Hasley Exist Shorter 5/20/2024
Geom: Hasley Creek Exist 060 Shorter
River = Hasley Reach = 1 RS = 2675.5
.06
.06
.06
Legend
WS Qcap
Ground
Bank Sta
Elevation (ft)
Station (ft)
A535_Hasley Canyon Creek Plan: Hasley Exist Shorter 5/20/2024
Geom: Hasley Creek Exist 060 Shorter
River = Hasley Reach = 1 RS = 2560.5
.06
.06
.06
Legend
WS Qcap
Ground
Bank Sta
Elevation (ft)
Station (ft)

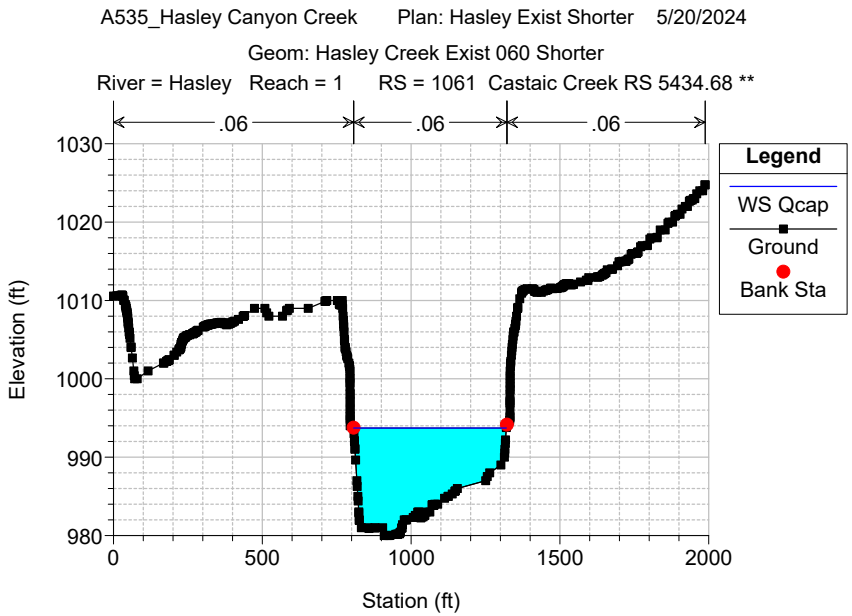

A535_Hasley Canyon Creek Plan: Hasley Exist Shorter 5/20/2024
Geom: Hasley Creek Exist 060 Shorter
River = Hasley Reach = 1 RS = 2476
.06
.06
.06
Legend
WS Qcap
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)
A535_Hasley Canyon Creek Plan: Hasley Exist Shorter 5/20/2024
Geom: Hasley Creek Exist 060 Shorter
River = Hasley Reach = 1 RS = 2391
.06
.06
.06
Legend
WS Qcap
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)
A535_Hasley Canyon Creek Plan: Hasley Exist Shorter 5/20/2024
Geom: Hasley Creek Exist 060 Shorter
River = Hasley Reach = 1 RS = 2305
.06
.06
.06
Legend
WS Qcap
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)
A535_Hasley Canyon Creek Plan: Hasley Exist Shorter 5/20/2024
Geom: Hasley Creek Exist 060 Shorter
River = Hasley Reach = 1 RS = 2190
.06
.06
.06
Legend
WS Qcap
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)

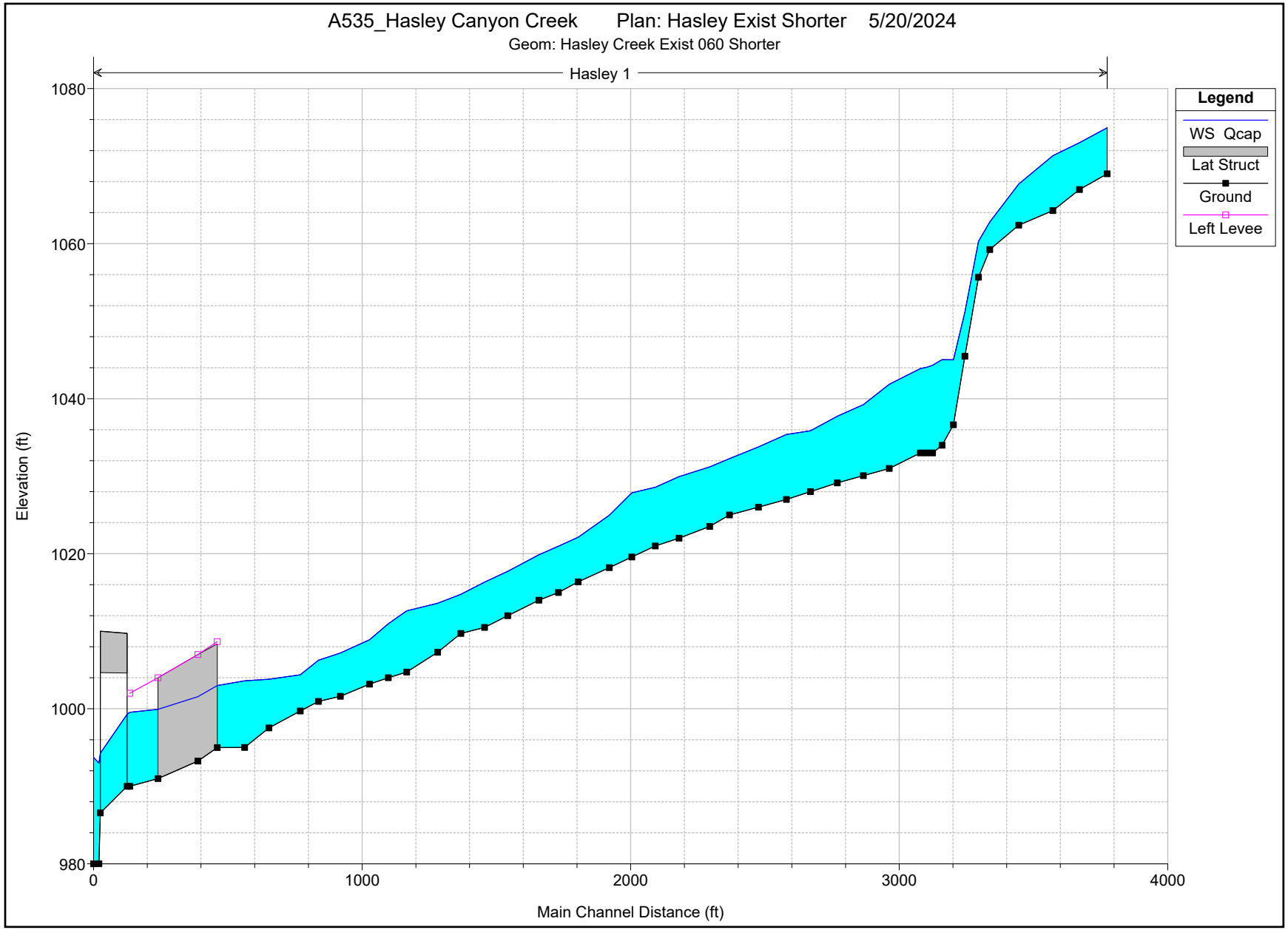

A535_Hasley Canyon Creek Plan: Hasley Exist Shorter 5/20/2024
Geom: Hasley Creek Exist 060 Shorter
River = Hasley Reach = 1 RS = 2122
.06
.06
.06
Legend
WS Qcap
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)
A535_Hasley Canyon Creek Plan: Hasley Exist Shorter 5/20/2024
Geom: Hasley Creek Exist 060 Shorter
River = Hasley Reach = 1 RS = 2054
.06
.06
.06
Legend
WS Qcap
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)
A535_Hasley Canyon Creek Plan: Hasley Exist Shorter 5/20/2024
Geom: Hasley Creek Exist 060 Shorter
River = Hasley Reach = 1 RS = 1940
.06
.06
Legend
WS Qcap
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)
A535_Hasley Canyon Creek Plan: Hasley Exist Shorter 5/20/2024
Geom: Hasley Creek Exist 060 Shorter
River = Hasley Reach = 1 RS = 1872
.06
.06
Legend
WS Qcap
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)


A535_Hasley Canyon Creek Plan: Hasley Exist Shorter 5/20/2024
Geom: Hasley Creek Exist 060 Shorter
River = Hasley Reach = 1 RS = 1804
.06
.06
.06
Legend
WS Qcap
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)
A535_Hasley Canyon Creek Plan: Hasley Exist Shorter 5/20/2024
Geom: Hasley Creek Exist 060 Shorter
River = Hasley Reach = 1 RS = 1689
.06
.06
.06
Legend
WS Qcap
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)
A535_Hasley Canyon Creek Plan: Hasley Exist Shorter 5/20/2024
Geom: Hasley Creek Exist 060 Shorter
River = Hasley Reach = 1 RS = 1584
.06
.06
.06
Legend
WS Qcap
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)
A535_Hasley Canyon Creek Plan: Hasley Exist Shorter 5/20/2024
Geom: Hasley Creek Exist 060 Shorter
River = Hasley Reach = 1 RS = 1518 Castaic Creek RS 5992.38 (Partially the Same)
.06
.06
.06
Legend
WS Qcap
Ground
Levee
Ineff
Bank Sta
Elevation (ft)
Station (ft)


A535_Hasley Canyon Creek Plan: Hasley Exist Shorter 5/20/2024
Geom: Hasley Creek Exist 060 Shorter
River = Hasley Reach = 1 RS = 1448
.06
.06
.06
Elevation (ft)
Station (ft)
Legend
WS Qcap
Ground
Levee
Bank Sta
A535_Hasley Canyon Creek Plan: Hasley Exist Shorter 5/20/2024
Geom: Hasley Creek Exist 060 Shorter
River = Hasley Reach = 1 RS = 1294
.06
.06
.06
Elevation (ft)
Station (ft)
Legend
WS Qcap
Ground
Levee
Bank Sta
A535_Hasley Canyon Creek Plan: Hasley Exist Shorter 5/20/2024
Geom: Hasley Creek Exist 060 Shorter
River = Hasley Reach = 1 RS = 1189 Castaic Creek RS 5557.68 **
.06
.06
.06
Elevation (ft)
Station (ft)
Legend
WS Qcap
Ground
Levee
Bank Sta
A535_Hasley Canyon Creek Plan: Hasley Exist Shorter 5/20/2024
Geom: Hasley Creek Exist 060 Shorter
River = Hasley Reach = 1 RS = 1132 BR Commerce Center Drive Bridge (Hunsaker Survey)
.06
.06
Elevation (ft)
Station (ft)
Legend
WS Qcap
Ground
Levee
Bank Sta
Pier Debris


A535_Hasley Canyon Creek Plan: Hasley Exist Shorter 5/20/2024
Geom: Hasley Creek Exist 060 Shorter
River = Hasley Reach = 1 RS = 1080 Castaic Creek RS 5453.98 **
.06
.06
.06
Legend
WS Qcap
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)
1015
1010
1005
1000
995
990
985
980
0
200
400
600
800
1000
1200


A535_Hasley Canyon Creek Plan: Hasley Exist Shorter 5/20/2024
Geom: Hasley Creek Exist 060 Shorter
River = Hasley Reach = 1 RS = 1061 Castaic Creek RS 5434.68 **
.06
.06
.06
Legend
WS Qcap
Ground
Bank Sta
Elevation (ft)
Station (ft)
1030
1020
1010
1000
990
980
0
500
1000
1500
2000

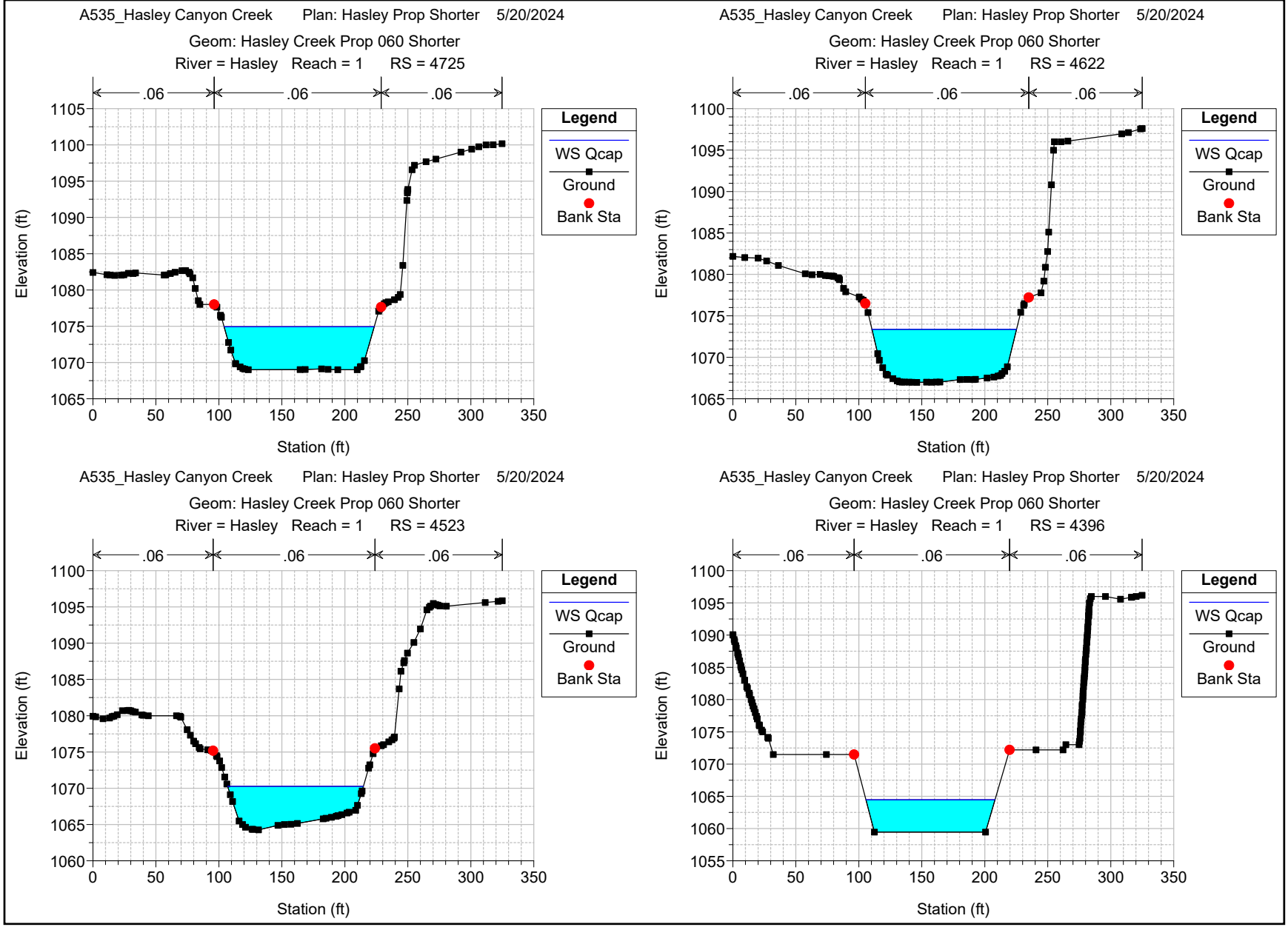

A535_Hasley Canyon Creek Plan: Hasley Exist Shorter 5/20/2024
Geom: Hasley Creek Exist 060 Shorter
Hasley 1
Legend
WS Qcap
Lat Struct
Ground
Left Levee
Elevation (ft)
1080
1060
1040
1020
1000
980
0
1000
2000
3000
4000
Main Channel Distance (ft)

PACE
Advanced Water Engineering

Appendix F – HEC-RAS Proposed Condition Output

HEC-RAS Plan: Hasley Prop Short River: Hasley Reach: 1 Profile: Qcap

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
1	4725	Qcap	5900.00	1069.00	1074.93		1076.25	0.015085	9.20	641.61	119.23	0.70
1	4622	Qcap	5900.00	1066.97	1073.38		1074.71	0.014708	9.26	636.90	114.79	0.69
1	4523	Qcap	5900.00	1064.26	1070.26	1070.26	1072.53	0.032618	12.09	488.21	107.77	1.00
1	4396	Qcap	5900.00	1059.45	1064.47	1064.47	1066.83	0.033041	12.32	478.74	102.49	1.01
1	4380.00*	Qcap	5900.00	1056.12	1061.39	1061.39	1063.83	0.032698	12.53	470.86	97.48	1.01
1	4364.00*	Qcap	5900.00	1052.78	1058.21	1058.21	1060.71	0.032534	12.67	465.55	94.25	1.01
1	4348.00*	Qcap	5900.00	1049.45	1055.05	1055.05	1057.61	0.032355	12.82	460.17	91.00	1.01
1	4332.00*	Qcap	5900.00	1046.12	1051.92	1051.92	1054.53	0.032166	12.97	454.72	87.75	1.00
1	4316.00*	Qcap	5900.00	1042.78	1048.78	1048.78	1051.46	0.032041	13.14	448.92	84.52	1.01
1	4300	Qcap	5900.00	1039.45	1045.68	1045.68	1048.44	0.031875	13.33	442.57	80.93	1.01
1	4291.00*	Qcap	5900.00	1036.45	1042.77	1042.77	1045.54	0.031735	13.36	441.66	80.28	1.00
1	4282	Qcap	5900.00	1033.45	1042.75		1043.93	0.008721	8.68	679.67	88.21	0.55
1	4280.50*	Qcap	5900.00	1033.45	1042.90		1043.77	0.006130	7.46	790.77	99.56	0.47
1	4279.00*	Qcap	5900.00	1033.45	1042.99		1043.66	0.004604	6.59	895.52	110.16	0.41
1	4277.50*	Qcap	5900.00	1033.45	1043.04		1043.58	0.003597	5.91	998.47	120.68	0.36
1	4276	Qcap	5900.00	1033.45	1043.08		1043.53	0.002906	5.38	1097.17	130.54	0.33
1	4274.50*	Qcap	5900.00	1033.45	1043.12		1043.47	0.002267	4.80	1227.89	144.22	0.29
1	4273.00*	Qcap	5900.00	1033.45	1043.14		1043.44	0.001827	4.36	1354.40	157.23	0.26
1	4271.50*	Qcap	5900.00	1033.45	1043.16		1043.40	0.001505	3.99	1480.41	170.24	0.24
1	4270	Qcap	5900.00	1033.45	1043.17		1043.38	0.001261	3.67	1606.15	183.26	0.22
1	4265	Qcap	5900.00	1037.00	1042.87		1043.33	0.005024	5.44	1083.58	195.36	0.41
1	4258	Qcap	5900.00	1037.00	1042.87		1043.27	0.004329	5.06	1164.93	209.69	0.38
1	4157	Qcap	5900.00	1035.56	1042.93		1043.07	0.001054	2.93	2013.77	285.24	0.19
1	4055.5	Qcap	5900.00	1033.00	1042.33		1042.78	0.008007	5.34	1104.31	291.96	0.48
1	3940.5	Qcap	5900.00	1031.00	1040.67	1040.16	1041.52	0.023000	7.39	798.43	282.70	0.78
1	3844	Qcap	5900.00	1030.00	1038.39		1039.14	0.018028	6.92	852.00	281.35	0.70
1	3747	Qcap	5900.00	1029.17	1037.38		1037.87	0.008942	5.61	1050.92	281.04	0.51
1	3650	Qcap	5900.00	1028.00	1035.44	1035.08	1036.39	0.027795	7.82	754.23	287.38	0.85
1	3554	Qcap	5900.00	1027.00	1033.20		1034.26	0.016585	8.25	714.80	168.82	0.71
1	3440.5	Qcap	5900.00	1025.32	1032.32		1032.74	0.008564	5.21	1133.12	329.61	0.50
1	3372	Qcap	5900.00	1025.00	1030.39	1030.34	1031.54	0.037776	8.63	683.47	283.00	0.98
1	3304	Qcap	5900.00	1023.52	1029.60		1030.17	0.011401	6.07	972.71	278.84	0.57
1	3190.5	Qcap	5900.00	1022.00	1028.89		1029.27	0.005153	4.97	1186.36	251.47	0.40
1	3105	Qcap	5900.00	1021.00	1027.90		1028.62	0.015331	6.78	870.78	261.90	0.66
1	3020	Qcap	5900.00	1019.68	1027.08		1027.56	0.008426	5.55	1062.48	274.61	0.50
1	2934	Qcap	5900.00	1018.19	1024.93	1024.86	1026.17	0.037110	8.96	658.43	253.27	0.98
1	2820.5	Qcap	5900.00	1016.37	1021.89		1023.14	0.020092	8.95	659.33	159.75	0.78
1	2748	Qcap	5900.00	1015.00	1021.00		1021.80	0.014273	7.15	825.64	217.55	0.65
1	2675.5	Qcap	5900.00	1014.00	1019.83		1020.62	0.013165	7.13	827.09	205.07	0.63
1	2560.5	Qcap	5900.00	1012.00	1017.59	1017.48	1018.71	0.034906	8.48	695.90	278.62	0.95
1	2476	Qcap	5900.00	1010.49	1016.24		1016.84	0.011364	6.21	949.96	262.14	0.58
1	2391	Qcap	5900.00	1009.71	1015.12		1015.80	0.012769	6.62	890.92	243.40	0.61
1	2305.5	Qcap	5900.00	1007.88	1014.80	1012.35	1015.18	0.004743	4.94	1194.60	240.85	0.39
1	2250		Bridge									
1	2190.5	Qcap	5900.00	1006.00	1011.35		1012.14	0.014527	7.16	824.10	220.77	0.65
1	2122	Qcap	5900.00	1004.00	1009.79		1010.73	0.018918	7.78	758.49	218.44	0.74
1	2054	Qcap	5900.00	1003.00	1008.30		1009.25	0.019280	7.82	754.87	219.27	0.74
1	1940.5	Qcap	5900.00	1001.76	1007.32		1007.95	0.009805	6.34	930.78	222.69	0.55
1	1872	Qcap	5900.00	1000.96	1005.58	1005.15	1006.66	0.023747	8.34	707.32	217.80	0.82
1	1804	Qcap	5900.00	999.71	1003.87		1005.01	0.024875	8.57	688.82	211.20	0.84
1	1688.62	Qcap	5900.00	997.50	1002.24		1002.93	0.012102	6.68	882.58	228.47	0.60
1	1584	Qcap	5900.00	995.00	1002.13		1002.33	0.002303	3.61	1635.96	307.82	0.28
1	1518	Qcap	5900.00	995.00	1000.76		1001.48	0.010268	7.10	886.71	224.63	0.57
1	1500		Lat Struct									
1	1448	Qcap	3455.69	993.63	998.93		999.55	0.011487	6.67	558.61	156.06	0.58
1	1294	Qcap	2405.79	991.00	996.73	995.54	997.41	0.012205	6.63	362.91	94.09	0.60
1	1189	Qcap	2405.79	990.00	996.44	993.52	996.73	0.003630	4.37	550.49	106.19	0.34
1	1132		Bridge									
1	1080	Qcap	2405.79	980.01	993.40		993.72	0.004037	4.53	530.52	513.28	0.36
1	1061	Qcap	2405.79	980.00	993.62	982.73	993.62	0.000020	0.49	4863.50	512.57	0.03


A535_Hasley Canyon Creek Plan: Hasley Prop Shorter 5/20/2024
Geom: Hasley Creek Prop 060 Shorter
River = Hasley Reach = 1 RS = 4725
.06
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Legend
WS Qcap
Ground
Bank Sta
Elevation (ft)
Station (ft)
A535_Hasley Canyon Creek Plan: Hasley Prop Shorter 5/20/2024
Geom: Hasley Creek Prop 060 Shorter
River = Hasley Reach = 1 RS = 4622
.06
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Legend
WS Qcap
Ground
Bank Sta
Elevation (ft)
Station (ft)
A535_Hasley Canyon Creek Plan: Hasley Prop Shorter 5/20/2024
Geom: Hasley Creek Prop 060 Shorter
River = Hasley Reach = 1 RS = 4523
.06
.06
.06
Legend
WS Qcap
Ground
Bank Sta
Elevation (ft)
Station (ft)
A535_Hasley Canyon Creek Plan: Hasley Prop Shorter 5/20/2024
Geom: Hasley Creek Prop 060 Shorter
River = Hasley Reach = 1 RS = 4396
.06
.06
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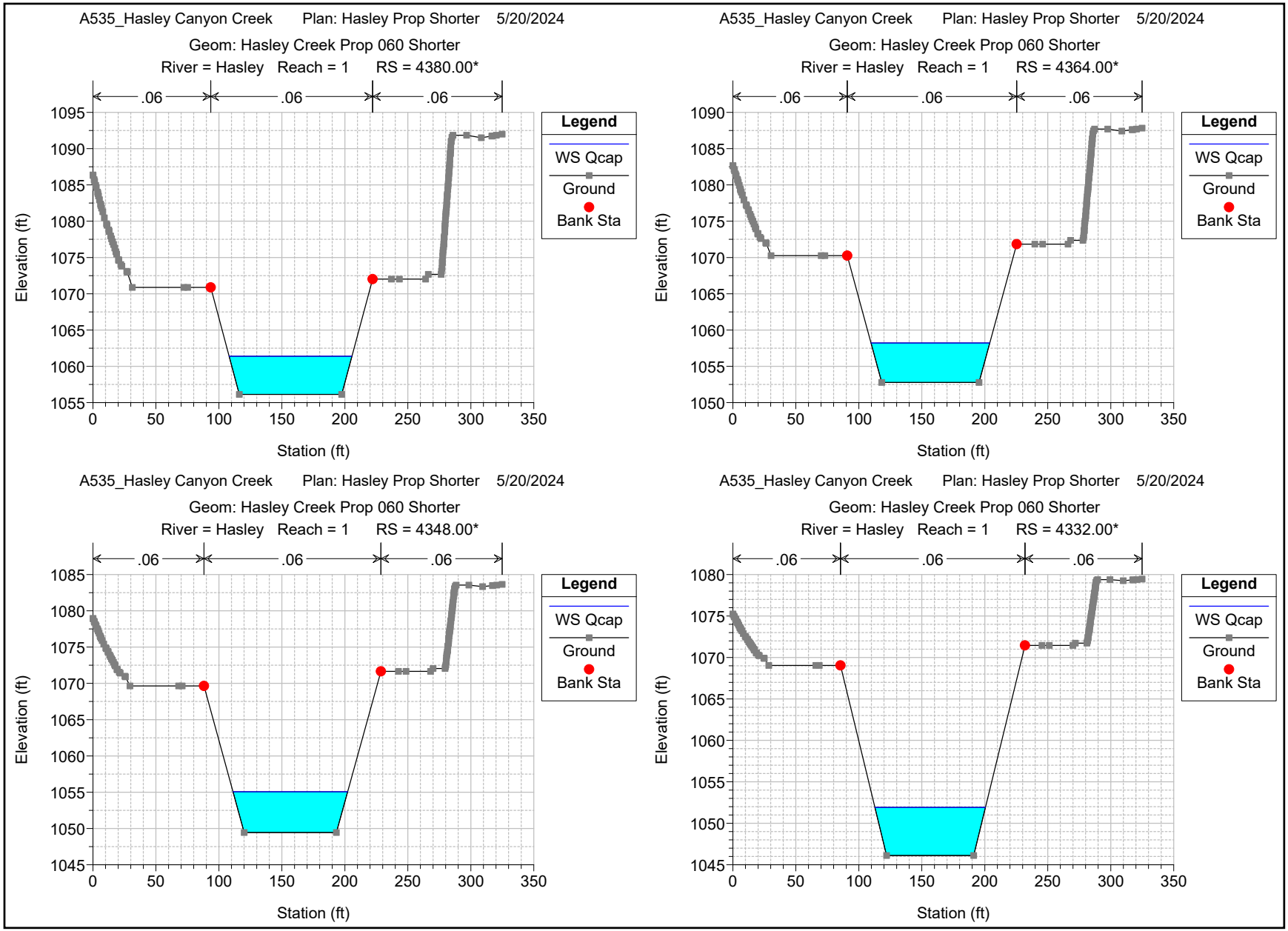
Legend
WS Qcap
Ground
Bank Sta
Elevation (ft)
Station (ft)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Geom: Hasley Creek Prop 060 Shorter
River = Hasley Reach = 1 RS = 4380.00*
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Legend
WS Qcap
Ground
Bank Sta
Elevation (ft)
Station (ft)
A535_Hasley Canyon Creek Plan: Hasley Prop Shorter 5/20/2024
Geom: Hasley Creek Prop 060 Shorter
River = Hasley Reach = 1 RS = 4364.00*
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.06
Legend
WS Qcap
Ground
Bank Sta
Elevation (ft)
Station (ft)
A535_Hasley Canyon Creek Plan: Hasley Prop Shorter 5/20/2024
Geom: Hasley Creek Prop 060 Shorter
River = Hasley Reach = 1 RS = 4348.00*
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.06
Legend
WS Qcap
Ground
Bank Sta
Elevation (ft)
Station (ft)
A535_Hasley Canyon Creek Plan: Hasley Prop Shorter 5/20/2024
Geom: Hasley Creek Prop 060 Shorter
River = Hasley Reach = 1 RS = 4332.00*
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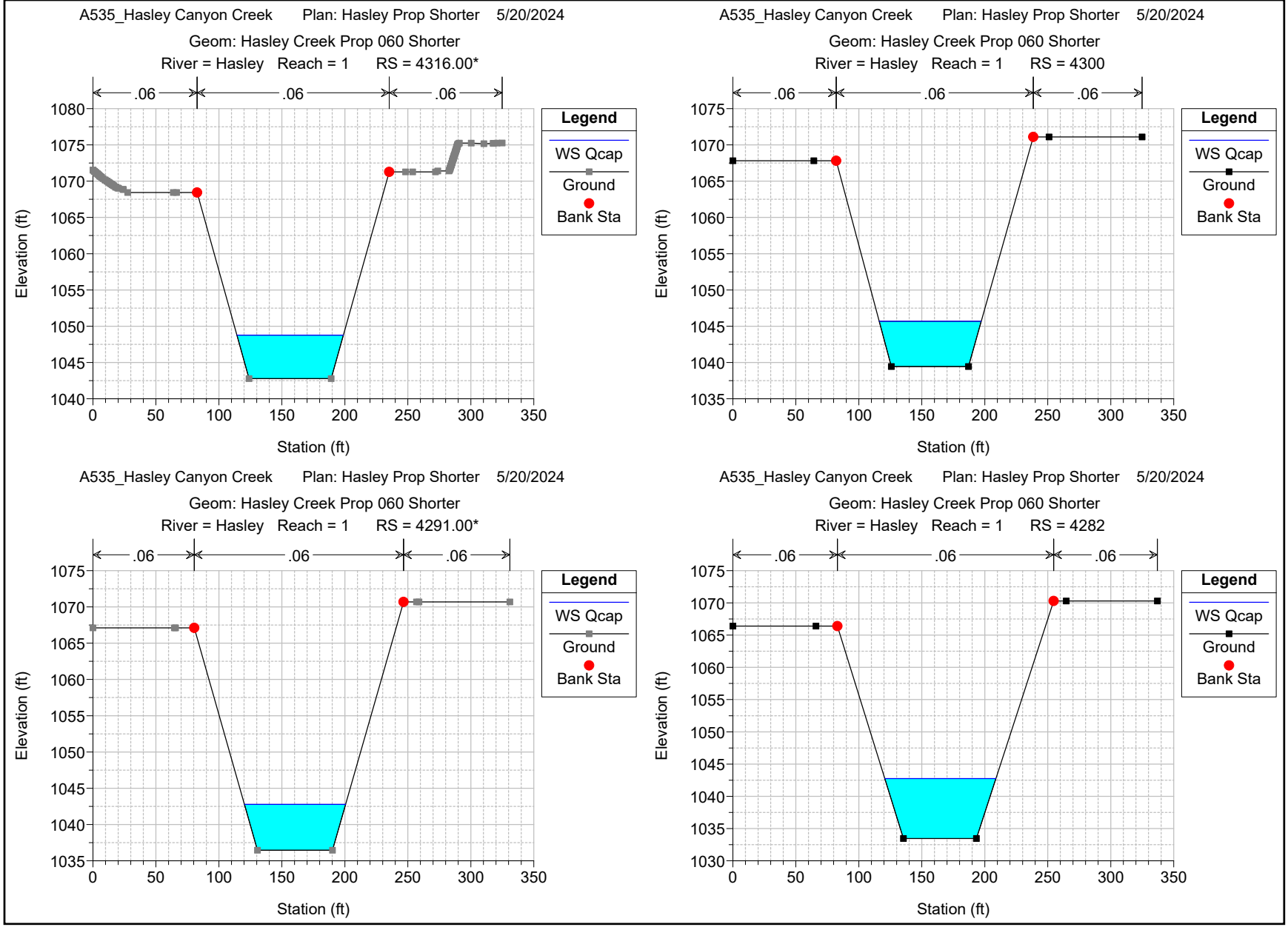
Legend
WS Qcap
Ground
Bank Sta
Elevation (ft)
Station (ft)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Geom: Hasley Creek Prop 060 Shorter
River = Hasley Reach = 1 RS = 4316.00*
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Legend
WS Qcap
Ground
Bank Sta
Elevation (ft)
Station (ft)
A535_Hasley Canyon Creek Plan: Hasley Prop Shorter 5/20/2024
Geom: Hasley Creek Prop 060 Shorter
River = Hasley Reach = 1 RS = 4300
.06
.06
.06
Legend
WS Qcap
Ground
Bank Sta
Elevation (ft)
Station (ft)
A535_Hasley Canyon Creek Plan: Hasley Prop Shorter 5/20/2024
Geom: Hasley Creek Prop 060 Shorter
River = Hasley Reach = 1 RS = 4291.00*
.06
.06
.06
Legend
WS Qcap
Ground
Bank Sta
Elevation (ft)
Station (ft)
A535_Hasley Canyon Creek Plan: Hasley Prop Shorter 5/20/2024
Geom: Hasley Creek Prop 060 Shorter
River = Hasley Reach = 1 RS = 4282
.06
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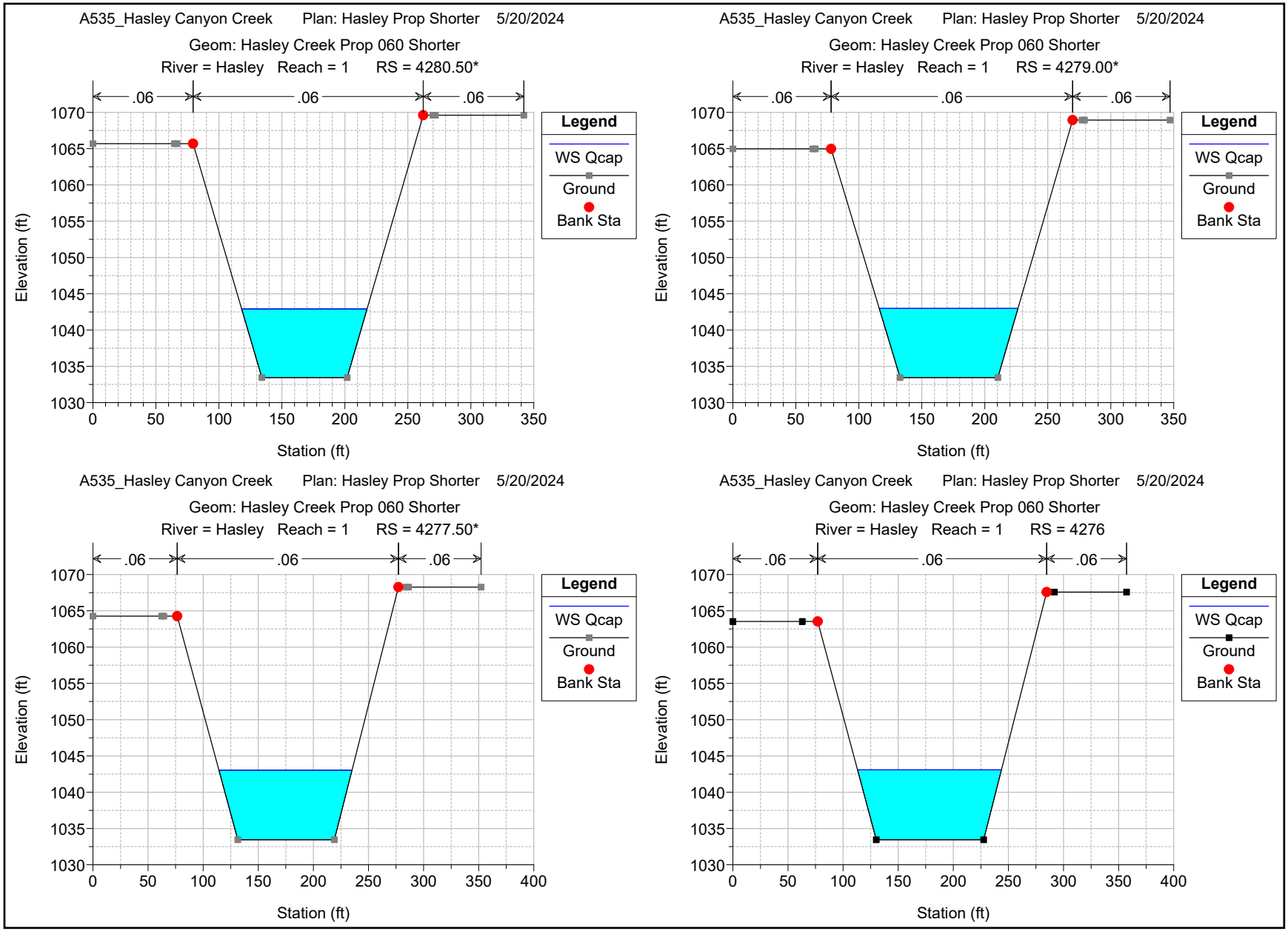
.06
Legend
WS Qcap
Ground
Bank Sta
Elevation (ft)
Station (ft)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Geom: Hasley Creek Prop 060 Shorter
River = Hasley Reach = 1 RS = 4280.50*
.06
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.06
Legend
WS Qcap
Ground
Bank Sta
Elevation (ft)
Station (ft)
A535_Hasley Canyon Creek Plan: Hasley Prop Shorter 5/20/2024
Geom: Hasley Creek Prop 060 Shorter
River = Hasley Reach = 1 RS = 4279.00*
.06
.06
.06
Legend
WS Qcap
Ground
Bank Sta
Elevation (ft)
Station (ft)
A535_Hasley Canyon Creek Plan: Hasley Prop Shorter 5/20/2024
Geom: Hasley Creek Prop 060 Shorter
River = Hasley Reach = 1 RS = 4277.50*
.06
.06
.06
Legend
WS Qcap
Ground
Bank Sta
Elevation (ft)
Station (ft)
A535_Hasley Canyon Creek Plan: Hasley Prop Shorter 5/20/2024
Geom: Hasley Creek Prop 060 Shorter
River = Hasley Reach = 1 RS = 4276
.06
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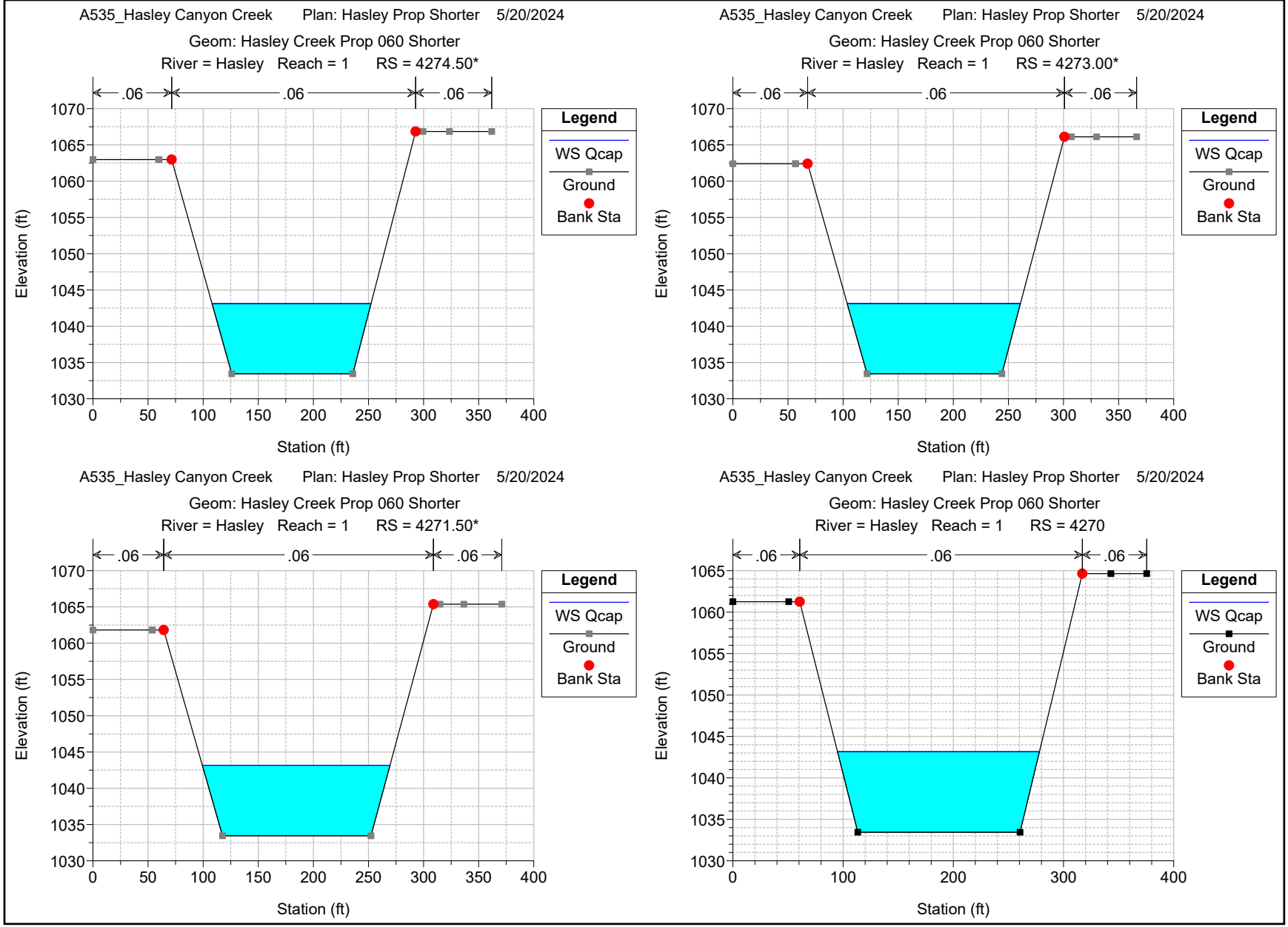
.06
Legend
WS Qcap
Ground
Bank Sta
Elevation (ft)
Station (ft)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Geom: Hasley Creek Prop 060 Shorter
River = Hasley Reach = 1 RS = 4274.50*
.06
.06
.06
Legend
WS Qcap
Ground
Bank Sta
Elevation (ft)
Station (ft)
A535_Hasley Canyon Creek Plan: Hasley Prop Shorter 5/20/2024
Geom: Hasley Creek Prop 060 Shorter
River = Hasley Reach = 1 RS = 4273.00*
.06
.06
.06
Legend
WS Qcap
Ground
Bank Sta
Elevation (ft)
Station (ft)
A535_Hasley Canyon Creek Plan: Hasley Prop Shorter 5/20/2024
Geom: Hasley Creek Prop 060 Shorter
River = Hasley Reach = 1 RS = 4271.50*
.06
.06
.06
Legend
WS Qcap
Ground
Bank Sta
Elevation (ft)
Station (ft)
A535_Hasley Canyon Creek Plan: Hasley Prop Shorter 5/20/2024
Geom: Hasley Creek Prop 060 Shorter
River = Hasley Reach = 1 RS = 4270
.06
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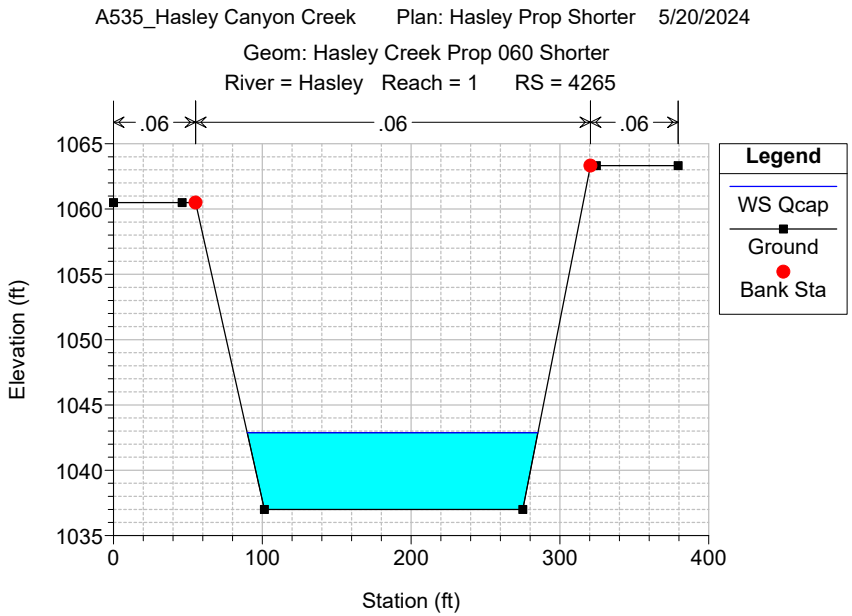
.06
Legend
WS Qcap
Ground
Bank Sta
Elevation (ft)
Station (ft)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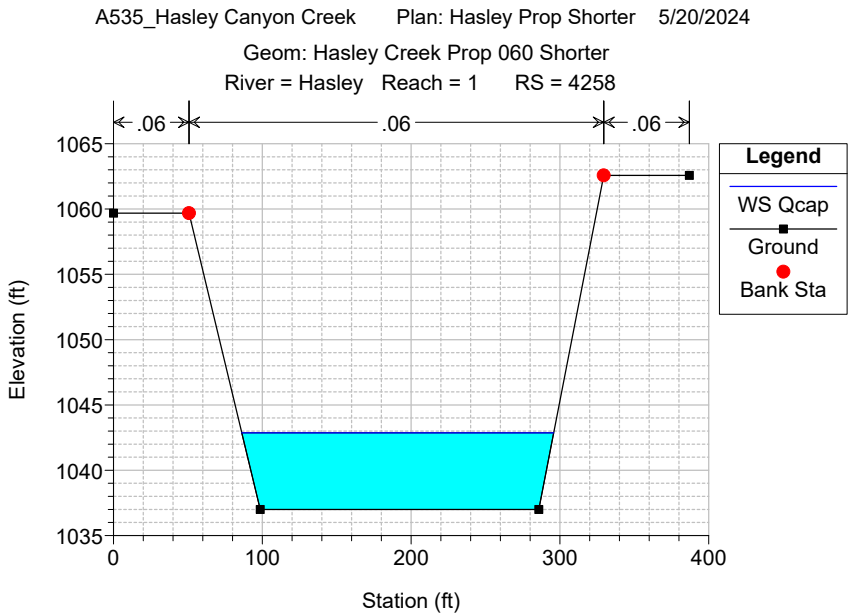
Geom: Hasley Creek Prop 060 Shorter
River = Hasley Reach = 1 RS = 4265
.06
.06
.06
Legend
WS Qcap
Ground
Bank Sta
Elevation (ft)
Station (ft)
1065
1060
1055
1050
1045
1040
1035
0
100
200
300
400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Geom: Hasley Creek Prop 060 Shorter
River = Hasley Reach = 1 RS = 4258
.06
.06
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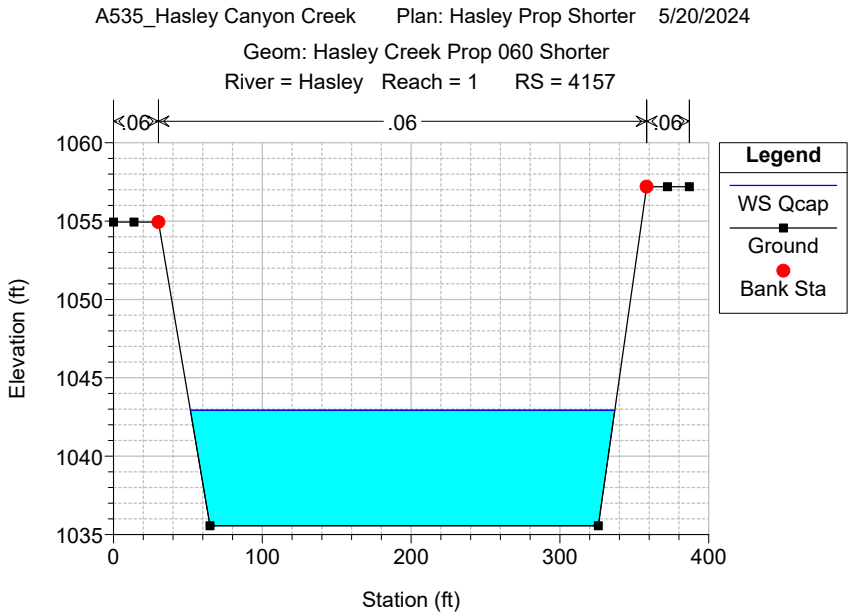
Legend
WS Qcap
Ground
Bank Sta
Elevation (ft)
Station (ft)
1065
1060
1055
1050
1045
1040
1035
0
100
200
300
400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Geom: Hasley Creek Prop 060 Shorter
River = Hasley Reach = 1 RS = 4157
.06
.06
.06
Legend
WS Qcap
Ground
Bank Sta
Elevation (ft)
Station (ft)
1060
1055
1050
1045
1040
1035
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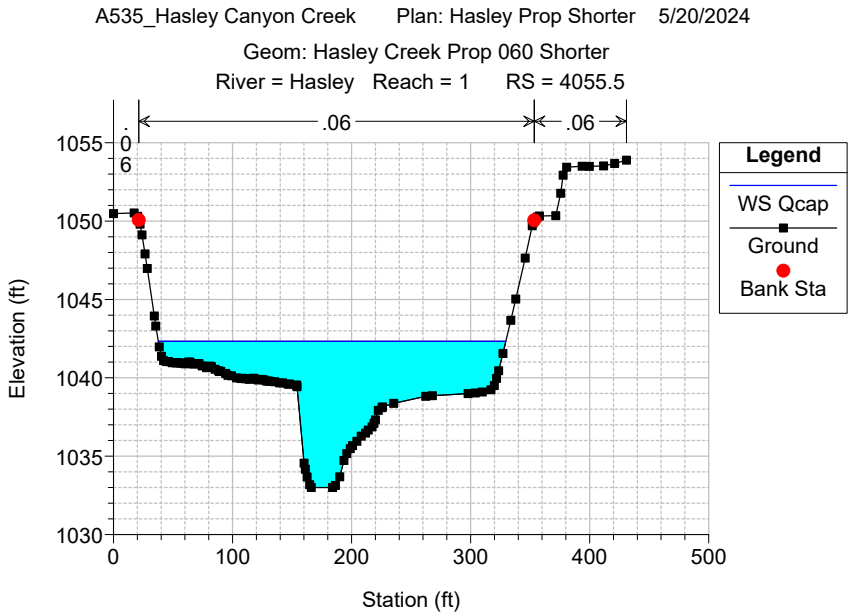
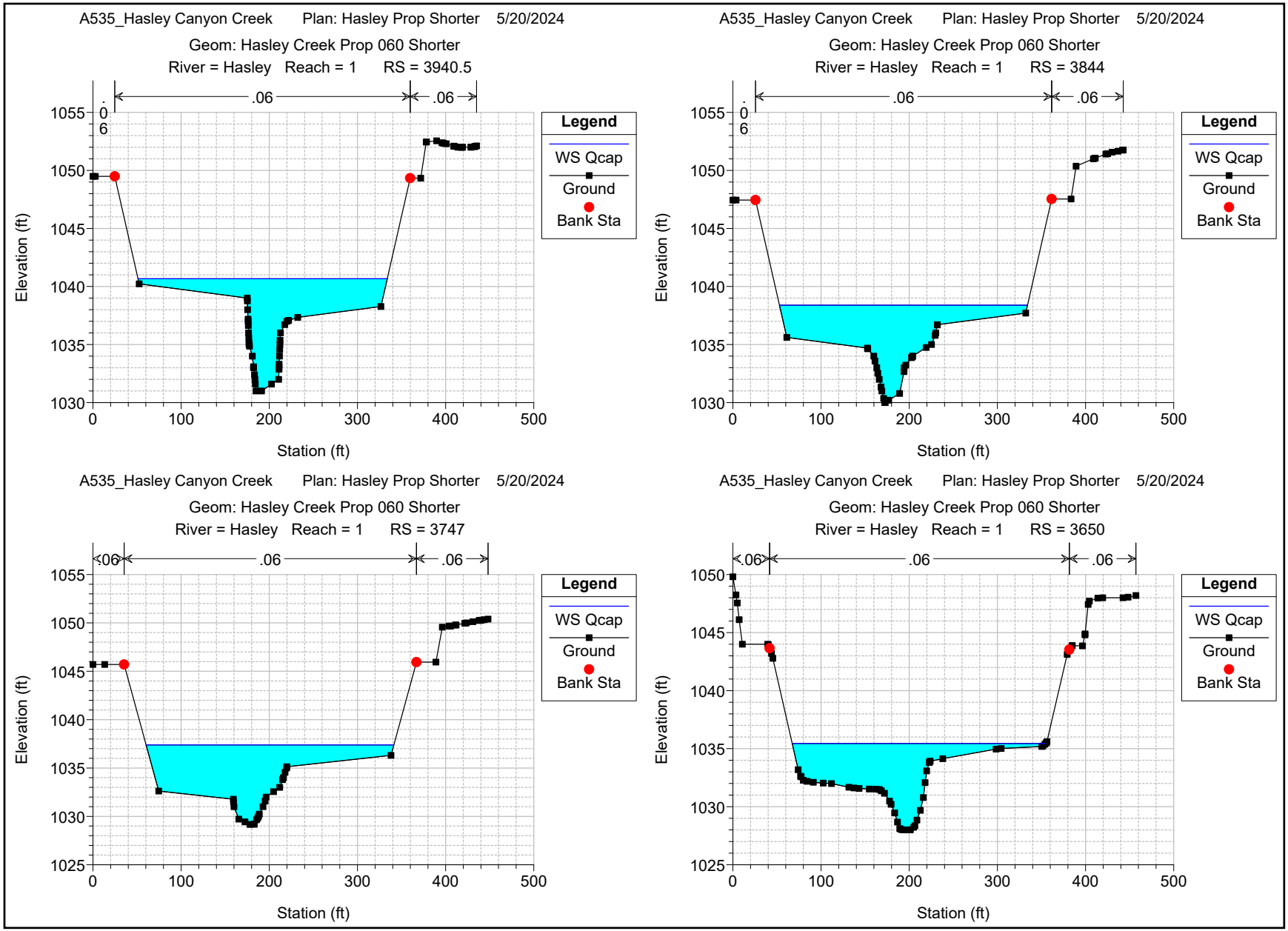
100
200
300
400


A535_Hasley Canyon Creek Plan: Hasley Prop Shorter 5/20/2024
Geom: Hasley Creek Prop 060 Shorter
River = Hasley Reach = 1 RS = 4055.5
.06
.06
Legend
WS Qcap
Ground
Bank Sta
Elevation (ft)
Station (ft)
1055
1050
1045
1040
1035
1030
0
100
200
300
400
500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Geom: Hasley Creek Prop 060 Shorter
River = Hasley Reach = 1 RS = 3940.5
.06
.06
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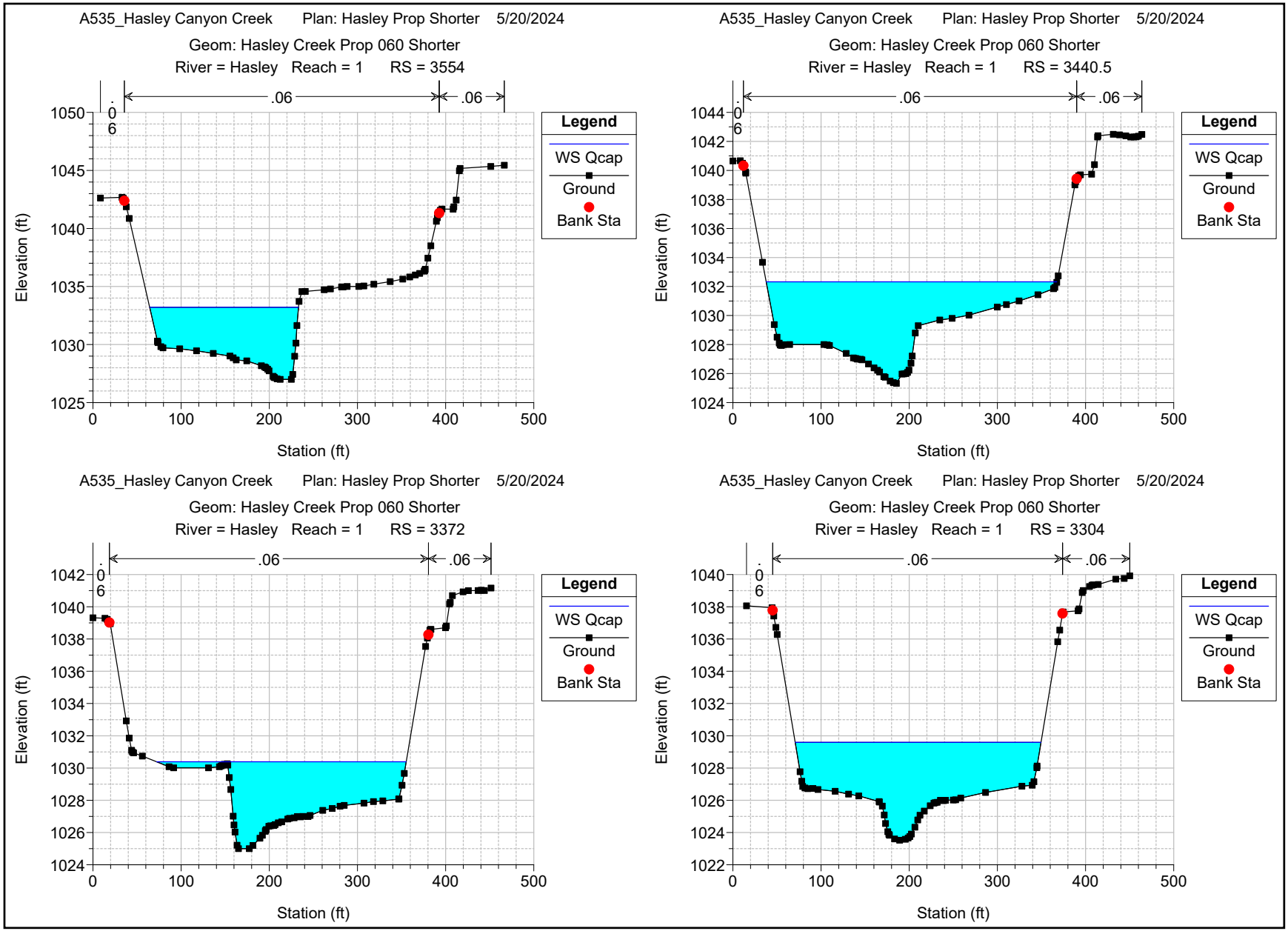
Legend
WS Qcap
Ground
Bank Sta
Elevation (ft)
Station (ft)
A535_Hasley Canyon Creek Plan: Hasley Prop Shorter 5/20/2024
Geom: Hasley Creek Prop 060 Shorter
River = Hasley Reach = 1 RS = 3844
.06
.06
.06
Legend
WS Qcap
Ground
Bank Sta
Elevation (ft)
Station (ft)
A535_Hasley Canyon Creek Plan: Hasley Prop Shorter 5/20/2024
Geom: Hasley Creek Prop 060 Shorter
River = Hasley Reach = 1 RS = 3747
.06
.06
.06
Legend
WS Qcap
Ground
Bank Sta
Elevation (ft)
Station (ft)
A535_Hasley Canyon Creek Plan: Hasley Prop Shorter 5/20/2024
Geom: Hasley Creek Prop 060 Shorter
River = Hasley Reach = 1 RS = 3650
.06
.06
.06
Legend
WS Qcap
Ground
Bank Sta
Elevation (ft)
Station (ft)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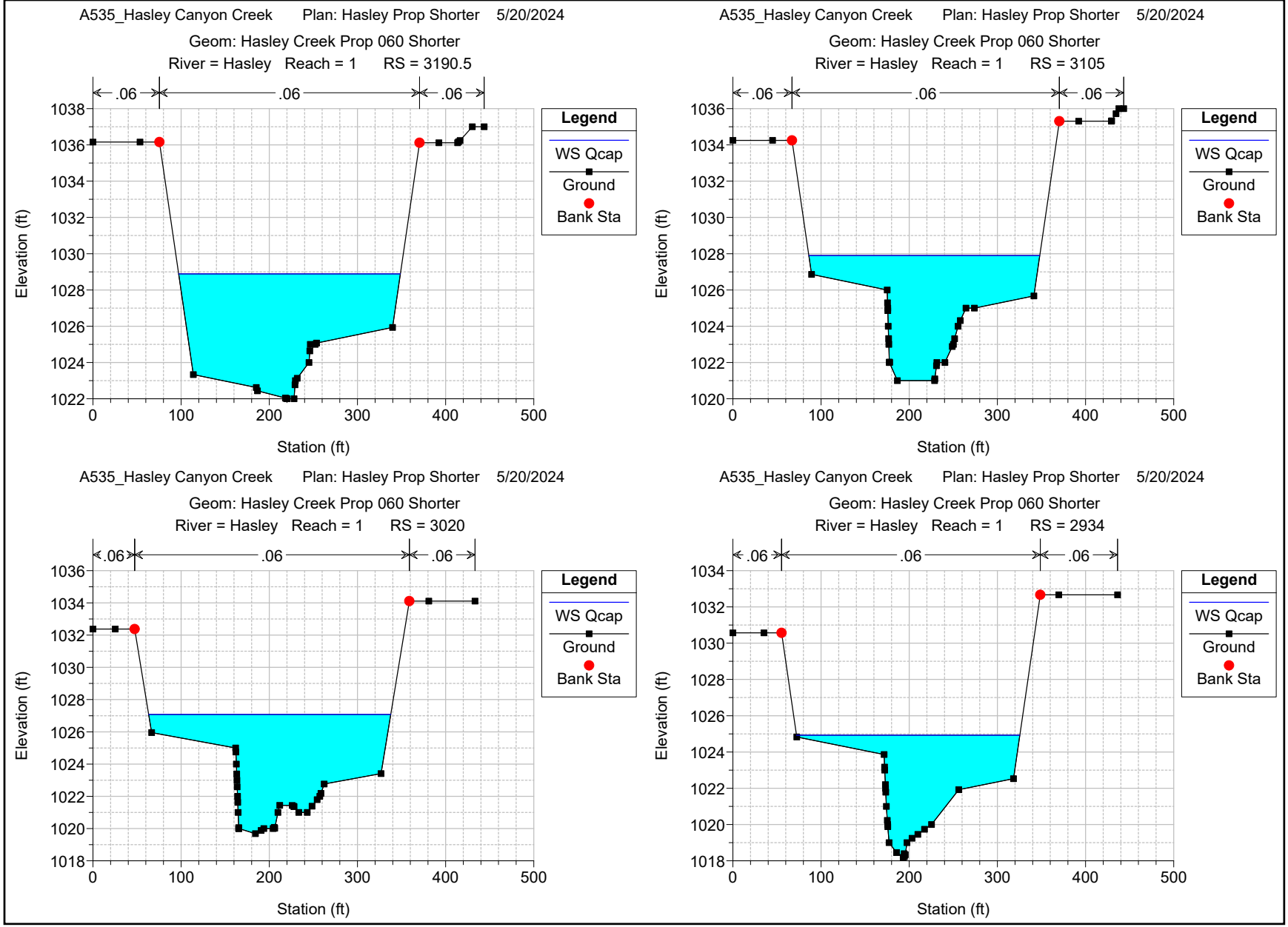
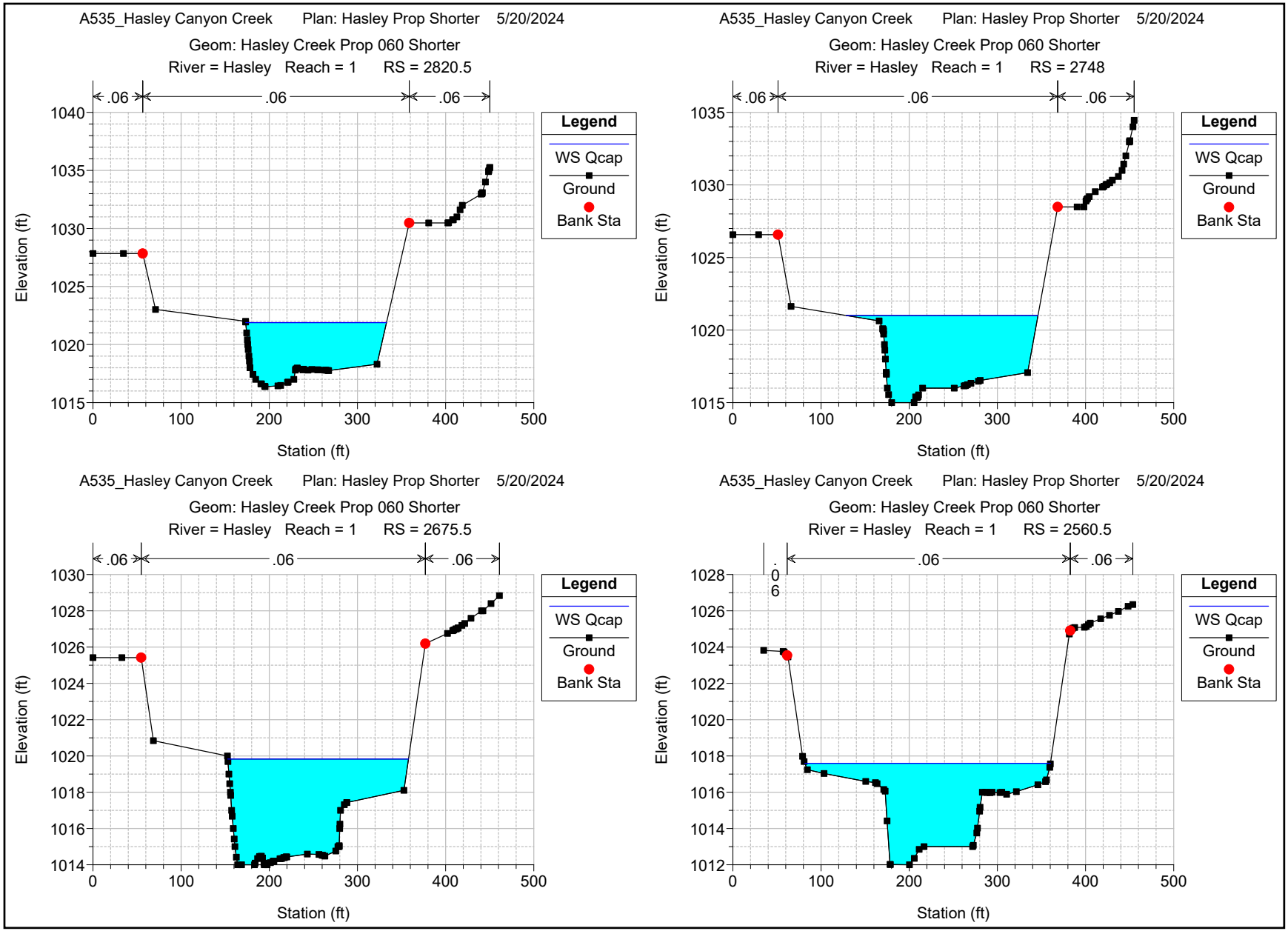
Geom: Hasley Creek Prop 060 Shorter
River = Hasley Reach = 1 RS = 3554
.06
.06
.06
Legend
WS Qcap
Ground
Bank Sta
Elevation (ft)
Station (ft)
A535_Hasley Canyon Creek Plan: Hasley Prop Shorter 5/20/2024
Geom: Hasley Creek Prop 060 Shorter
River = Hasley Reach = 1 RS = 3440.5
.06
.06
.06
Legend
WS Qcap
Ground
Bank Sta
Elevation (ft)
Station (ft)
A535_Hasley Canyon Creek Plan: Hasley Prop Shorter 5/20/2024
Geom: Hasley Creek Prop 060 Shorter
River = Hasley Reach = 1 RS = 3372
.06
.06
.06
Legend
WS Qcap
Ground
Bank Sta
Elevation (ft)
Station (ft)
A535_Hasley Canyon Creek Plan: Hasley Prop Shorter 5/20/2024
Geom: Hasley Creek Prop 060 Shorter
River = Hasley Reach = 1 RS = 3304
.06
.06
.06
Legend
WS Qcap
Ground
Bank Sta
Elevation (ft)
Station (ft)


A535_Hasley Canyon Creek Plan: Hasley Prop Shorter 5/20/2024
Geom: Hasley Creek Prop 060 Shorter
River = Hasley Reach = 1 RS = 3190.5
.06
.06
.06
Legend
WS Qcap
Ground
Bank Sta
Elevation (ft)
Station (ft)
A535_Hasley Canyon Creek Plan: Hasley Prop Shorter 5/20/2024
Geom: Hasley Creek Prop 060 Shorter
River = Hasley Reach = 1 RS = 3105
.06
.06
.06
Legend
WS Qcap
Ground
Bank Sta
Elevation (ft)
Station (ft)
A535_Hasley Canyon Creek Plan: Hasley Prop Shorter 5/20/2024
Geom: Hasley Creek Prop 060 Shorter
River = Hasley Reach = 1 RS = 3020
.06
.06
.06
Legend
WS Qcap
Ground
Bank Sta
Elevation (ft)
Station (ft)
A535_Hasley Canyon Creek Plan: Hasley Prop Shorter 5/20/2024
Geom: Hasley Creek Prop 060 Shorter
River = Hasley Reach = 1 RS = 2934
.06
.06
.06
Legend
WS Qcap
Ground
Bank Sta
Elevation (ft)
Station (ft)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Geom: Hasley Creek Prop 060 Shorter
River = Hasley Reach = 1 RS = 2820.5
.06
.06
.06
Legend
WS Qcap
Ground
Bank Sta
Elevation (ft)
Station (ft)
A535_Hasley Canyon Creek Plan: Hasley Prop Shorter 5/20/2024
Geom: Hasley Creek Prop 060 Shorter
River = Hasley Reach = 1 RS = 2748
.06
.06
.06
Legend
WS Qcap
Ground
Bank Sta
Elevation (ft)
Station (ft)
A535_Hasley Canyon Creek Plan: Hasley Prop Shorter 5/20/2024
Geom: Hasley Creek Prop 060 Shorter
River = Hasley Reach = 1 RS = 2675.5
.06
.06
.06
Legend
WS Qcap
Ground
Bank Sta
Elevation (ft)
Station (ft)
A535_Hasley Canyon Creek Plan: Hasley Prop Shorter 5/20/2024
Geom: Hasley Creek Prop 060 Shorter
River = Hasley Reach = 1 RS = 2560.5
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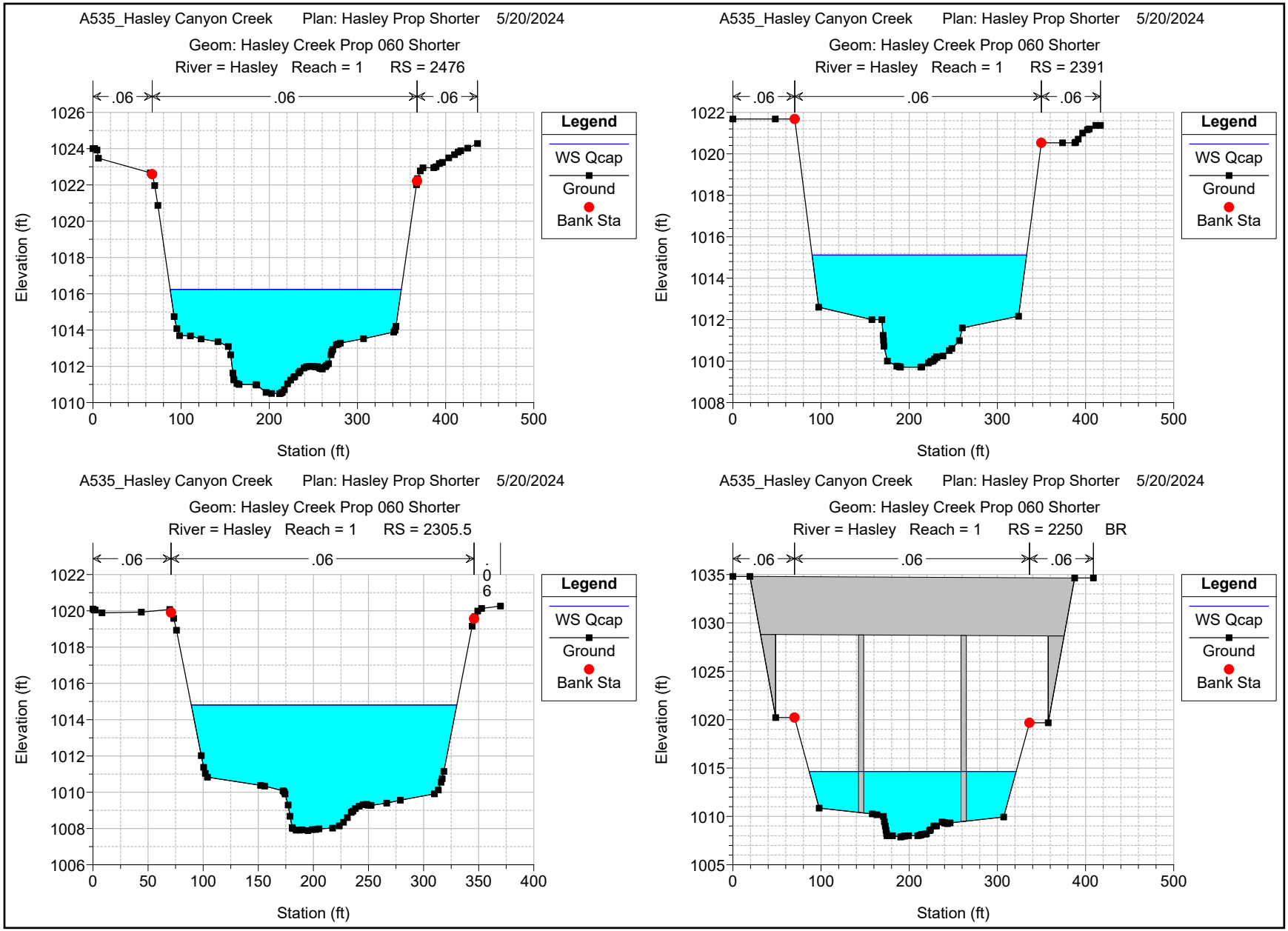
Legend
WS Qcap
Ground
Bank Sta
Elevation (ft)
Station (ft)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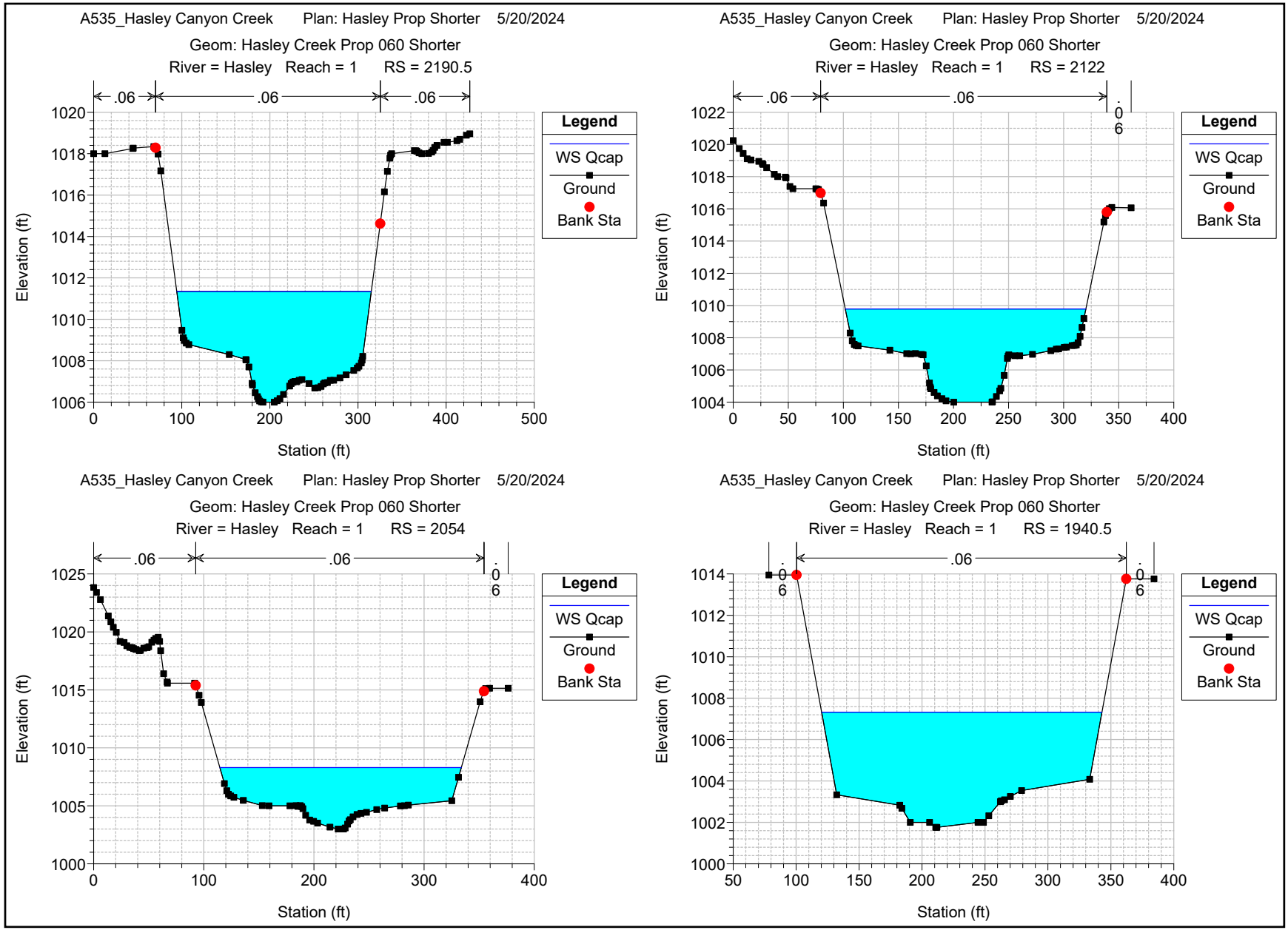
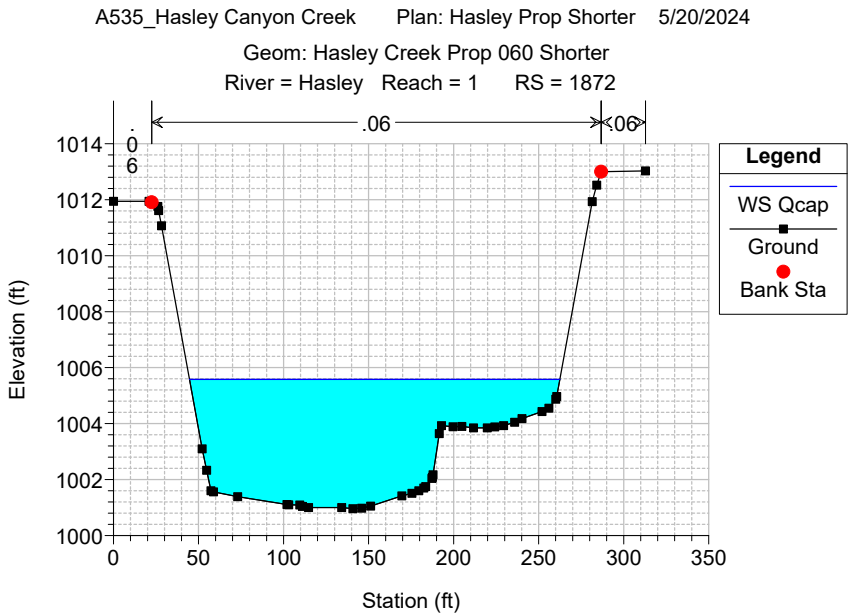
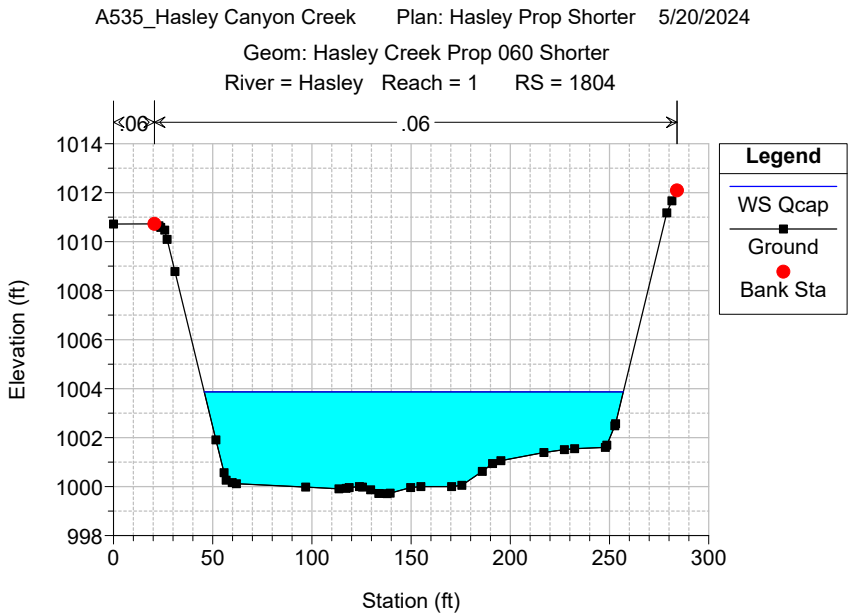
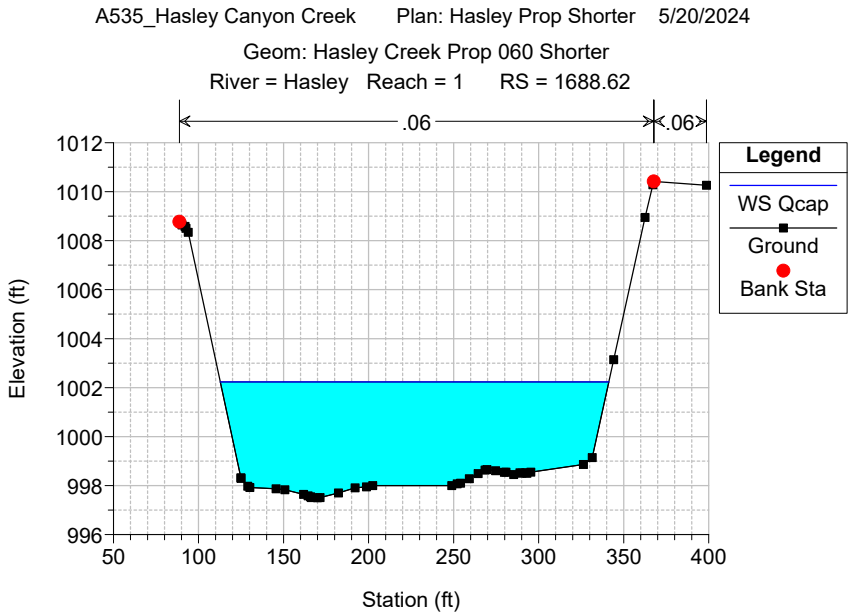
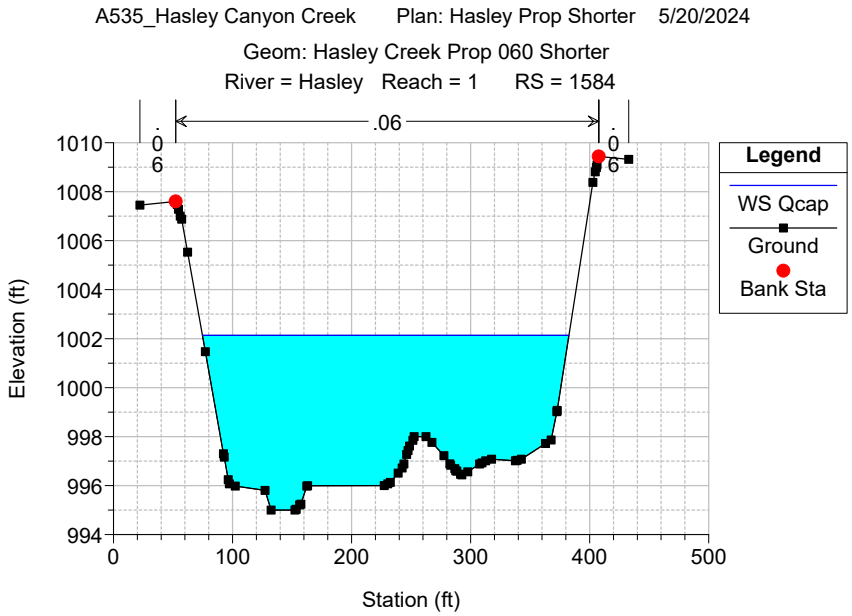
Geom: Hasley Creek Prop 060 Shorter
River = Hasley Reach = 1 RS = 2476
.06
.06
.06
Legend
WS Qcap
Ground
Bank Sta
Elevation (ft)
Station (ft)
A535_Hasley Canyon Creek Plan: Hasley Prop Shorter 5/20/2024
Geom: Hasley Creek Prop 060 Shorter
River = Hasley Reach = 1 RS = 2391
.06
.06
.06
Legend
WS Qcap
Ground
Bank Sta
Elevation (ft)
Station (ft)
A535_Hasley Canyon Creek Plan: Hasley Prop Shorter 5/20/2024
Geom: Hasley Creek Prop 060 Shorter
River = Hasley Reach = 1 RS = 2305.5
.06
.06
.06
Legend
WS Qcap
Ground
Bank Sta
Elevation (ft)
Station (ft)
A535_Hasley Canyon Creek Plan: Hasley Prop Shorter 5/20/2024
Geom: Hasley Creek Prop 060 Shorter
River = Hasley Reach = 1 RS = 2250 BR
.06
.06
.06
Legend
WS Qcap
Ground
Bank Sta
Elevation (ft)
Station (ft)

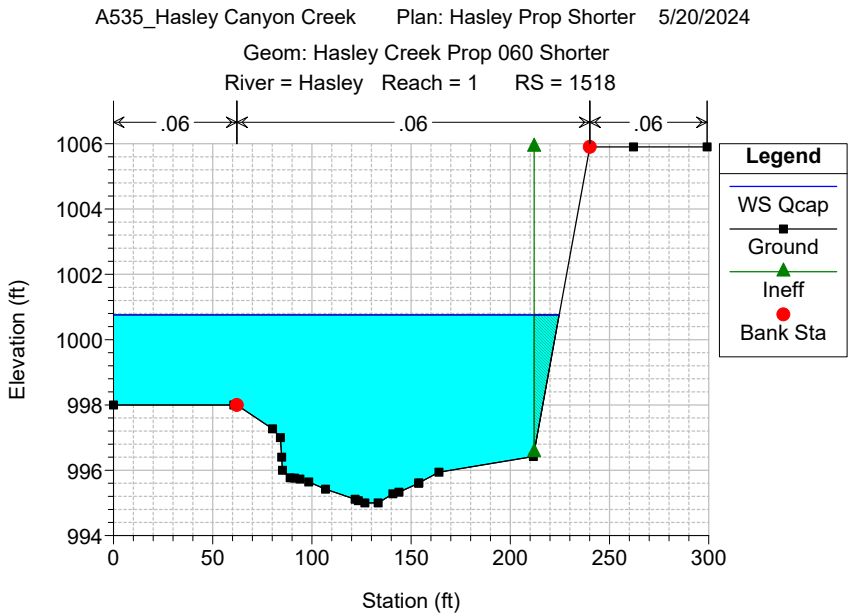

A535_Hasley Canyon Creek Plan: Hasley Prop Shorter 5/20/2024
Geom: Hasley Creek Prop 060 Shorter
River = Hasley Reach = 1 RS = 2190.5
.06
.06
.06
Legend
WS Qcap
Ground
Bank Sta
Elevation (ft)
Station (ft)
A535_Hasley Canyon Creek Plan: Hasley Prop Shorter 5/20/2024
Geom: Hasley Creek Prop 060 Shorter
River = Hasley Reach = 1 RS = 2122
.06
.06
.06
Legend
WS Qcap
Ground
Bank Sta
Elevation (ft)
Station (ft)
A535_Hasley Canyon Creek Plan: Hasley Prop Shorter 5/20/2024
Geom: Hasley Creek Prop 060 Shorter
River = Hasley Reach = 1 RS = 2054
.06
.06
.06
Legend
WS Qcap
Ground
Bank Sta
Elevation (ft)
Station (ft)
A535_Hasley Canyon Creek Plan: Hasley Prop Shorter 5/20/2024
Geom: Hasley Creek Prop 060 Shorter
River = Hasley Reach = 1 RS = 1940.5
.06
.06
.06
Legend
WS Qcap
Ground
Bank Sta
Elevation (ft)
Station (ft)

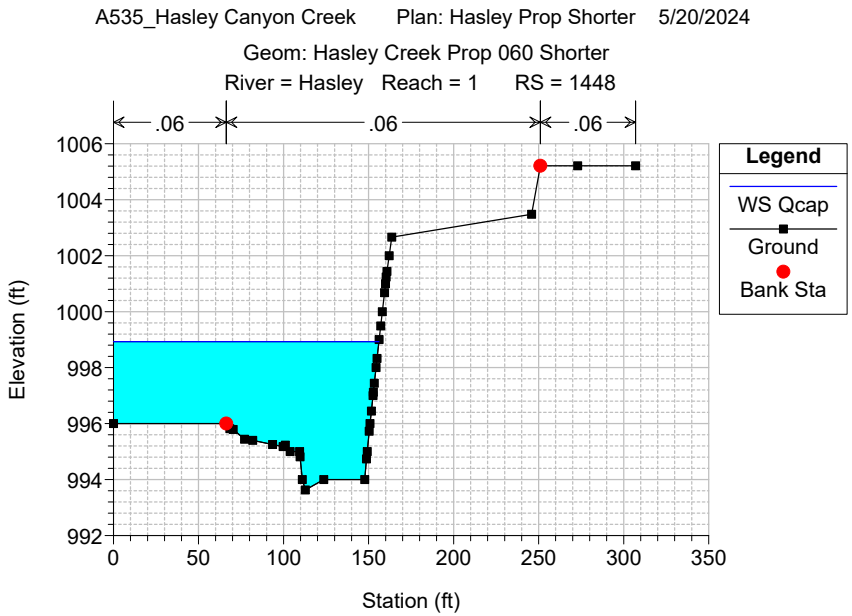

A535_Hasley Canyon Creek Plan: Hasley Prop Shorter 5/20/2024
Geom: Hasley Creek Prop 060 Shorter
River = Hasley Reach = 1 RS = 1872
.06
.06
.06
Legend
WS Qcap
Ground
Bank Sta
Elevation (ft)
Station (ft)

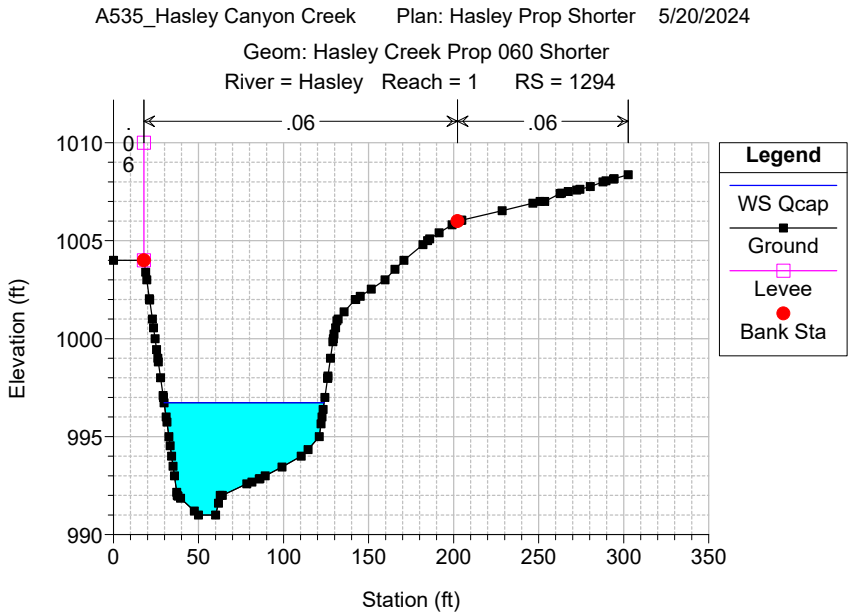

A535_Hasley Canyon Creek Plan: Hasley Prop Shorter 5/20/2024
Geom: Hasley Creek Prop 060 Shorter
River = Hasley Reach = 1 RS = 1804
.06
.06
.06
Legend
WS Qcap
Ground
Bank Sta
Elevation (ft)
Station (ft)

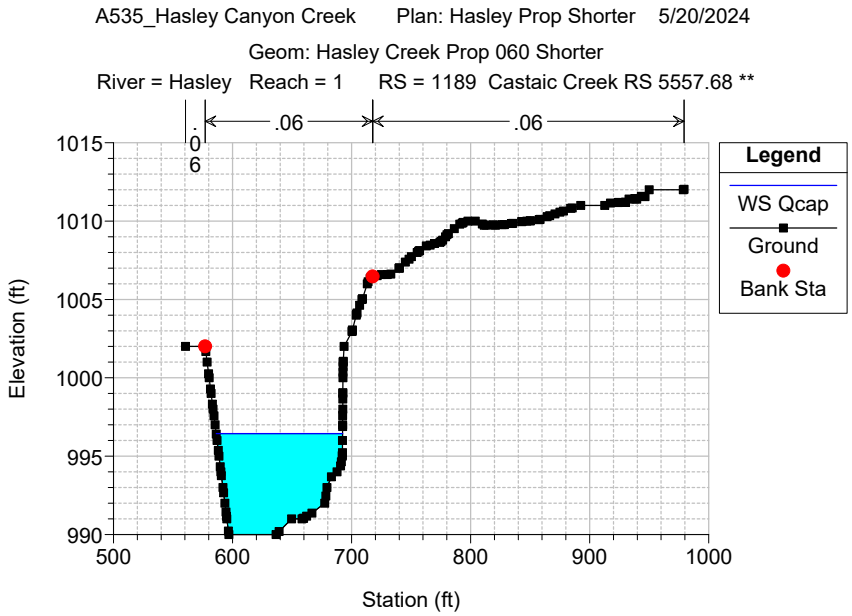

A535_Hasley Canyon Creek Plan: Hasley Prop Shorter 5/20/2024
Geom: Hasley Creek Prop 060 Shorter
River = Hasley Reach = 1 RS = 1688.62
.06
.06
Legend
WS Qcap
Ground
Bank Sta
Elevation (ft)
Station (ft)

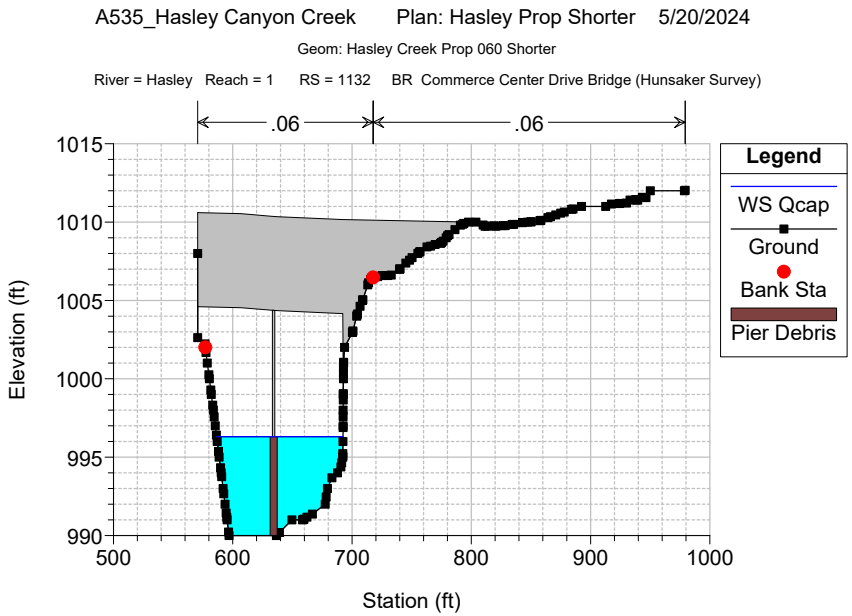

A535_Hasley Canyon Creek Plan: Hasley Prop Shorter 5/20/2024
Geom: Hasley Creek Prop 060 Shorter
River = Hasley Reach = 1 RS = 1584
.06
.06
.06
Legend
WS Qcap
Ground
Bank Sta
Elevation (ft)
Station (ft)

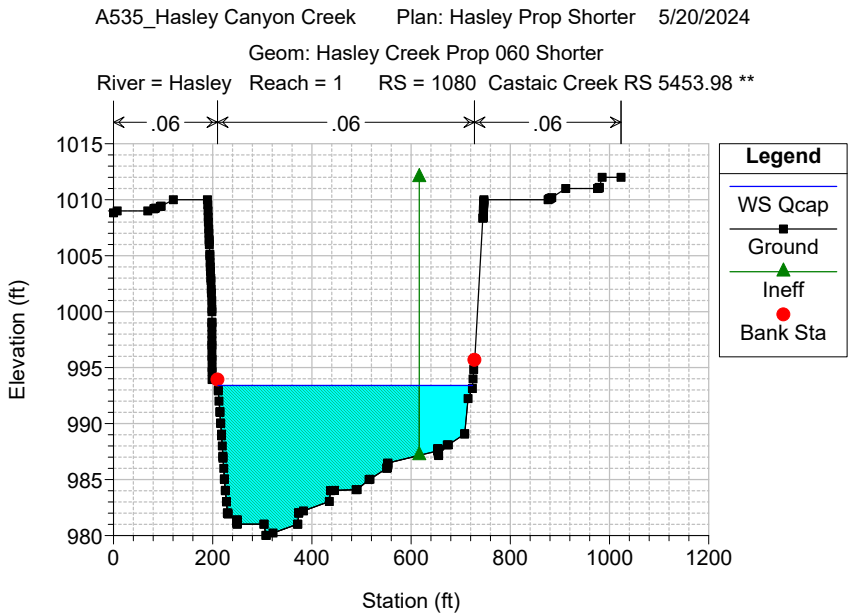

A535_Hasley Canyon Creek Plan: Hasley Prop Shorter 5/20/2024
Geom: Hasley Creek Prop 060 Shorter
River = Hasley Reach = 1 RS = 1518
.06
.06
.06
Legend
WS Qcap
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)

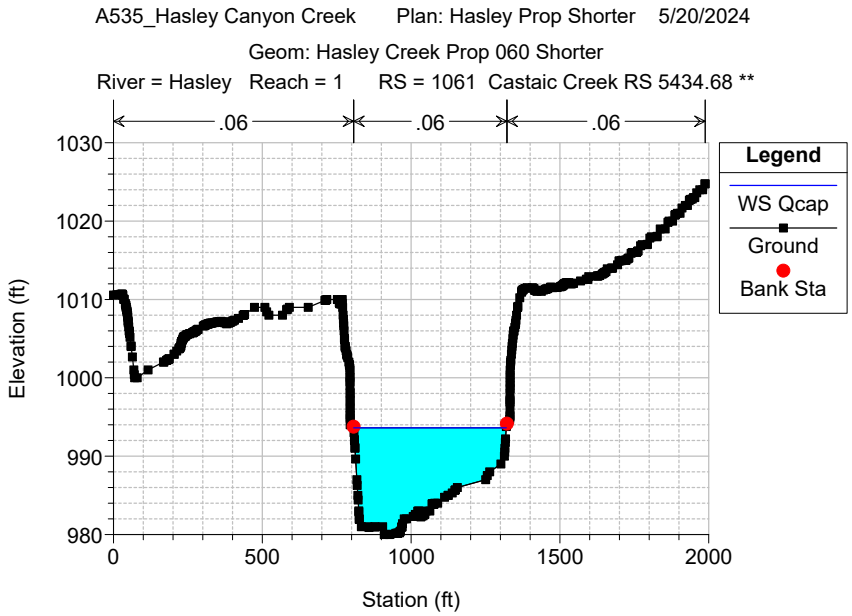

A535_Hasley Canyon Creek Plan: Hasley Prop Shorter 5/20/2024
Geom: Hasley Creek Prop 060 Shorter
River = Hasley Reach = 1 RS = 1448
.06
.06
.06
Legend
WS Qcap
Ground
Bank Sta
Elevation (ft)
Station (ft)

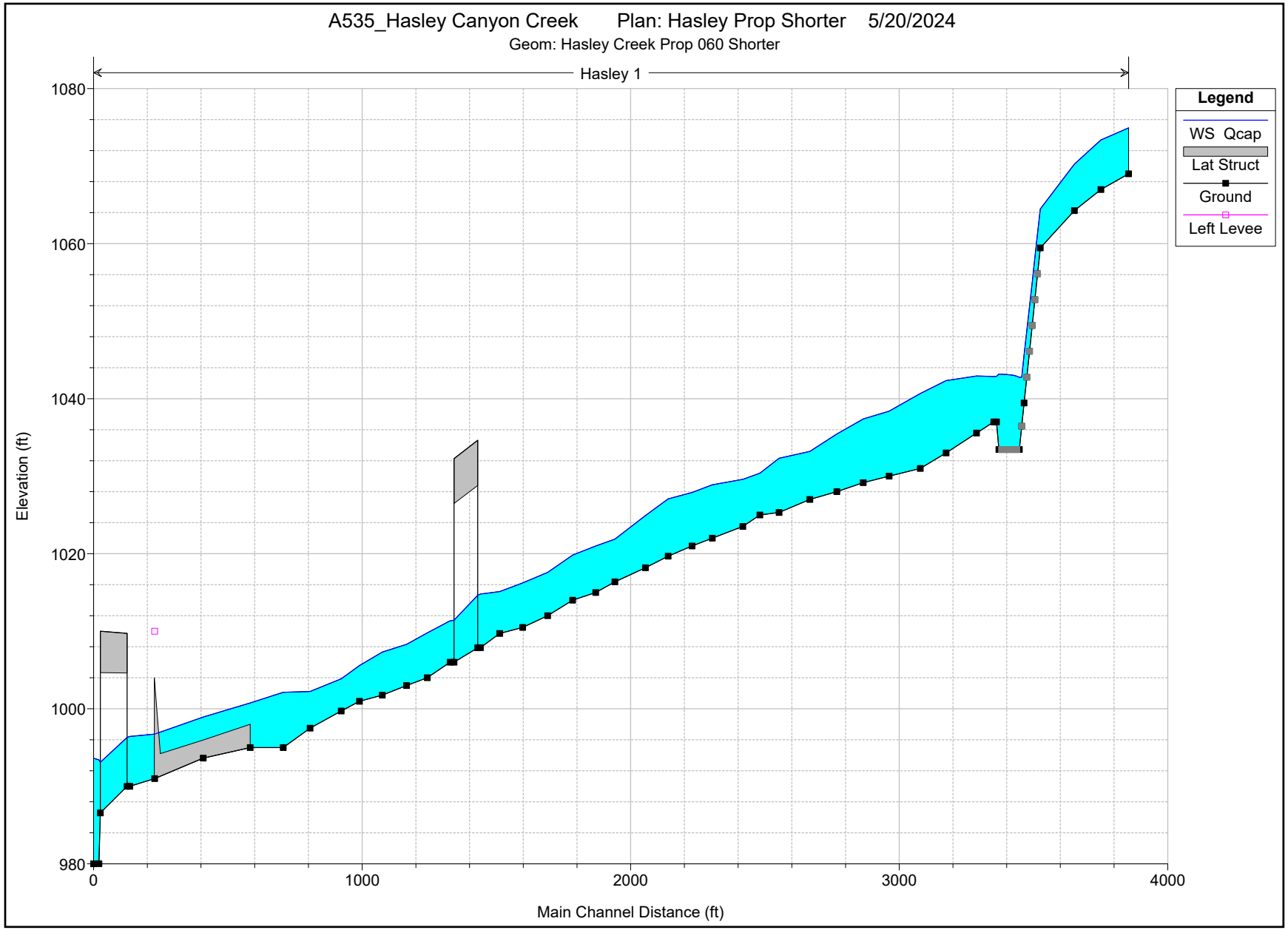

A535_Hasley Canyon Creek Plan: Hasley Prop Shorter 5/20/2024
Geom: Hasley Creek Prop 060 Shorter
River = Hasley Reach = 1 RS = 1294
.06
.06
.06
Legend
WS Qcap
Ground
Levee
Bank Sta
Elevation (ft)
Station (ft)


A535_Hasley Canyon Creek Plan: Hasley Prop Shorter 5/20/2024
Geom: Hasley Creek Prop 060 Shorter
River = Hasley Reach = 1 RS = 1189 Castaic Creek RS 5557.68 **
.06
.06
.06
Legend
WS Qcap
Ground
Bank Sta
Elevation (ft)
Station (ft)


A535_Hasley Canyon Creek Plan: Hasley Prop Shorter 5/20/2024
Geom: Hasley Creek Prop 060 Shorter
River = Hasley Reach = 1 RS = 1132 BR Commerce Center Drive Bridge (Hunsaker Survey)
.06
.06
Legend
WS Qcap
Ground
Bank Sta
Pier Debris
Elevation (ft)
Station (ft)

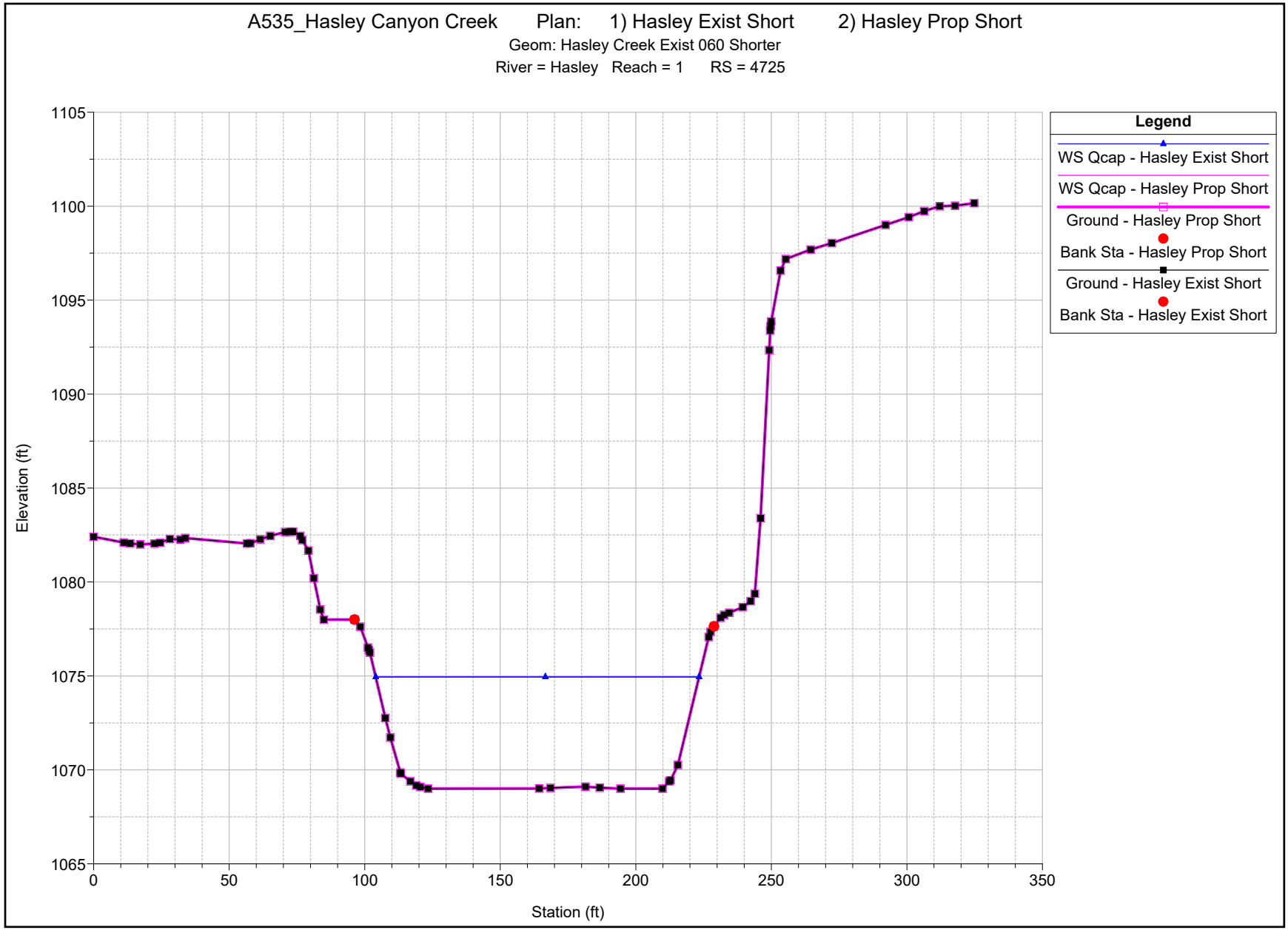

A535_Hasley Canyon Creek Plan: Hasley Prop Shorter 5/20/2024
Geom: Hasley Creek Prop 060 Shorter
River = Hasley Reach = 1 RS = 1080 Castaic Creek RS 5453.98 **
.06
.06
.06
Legend
WS Qcap
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)

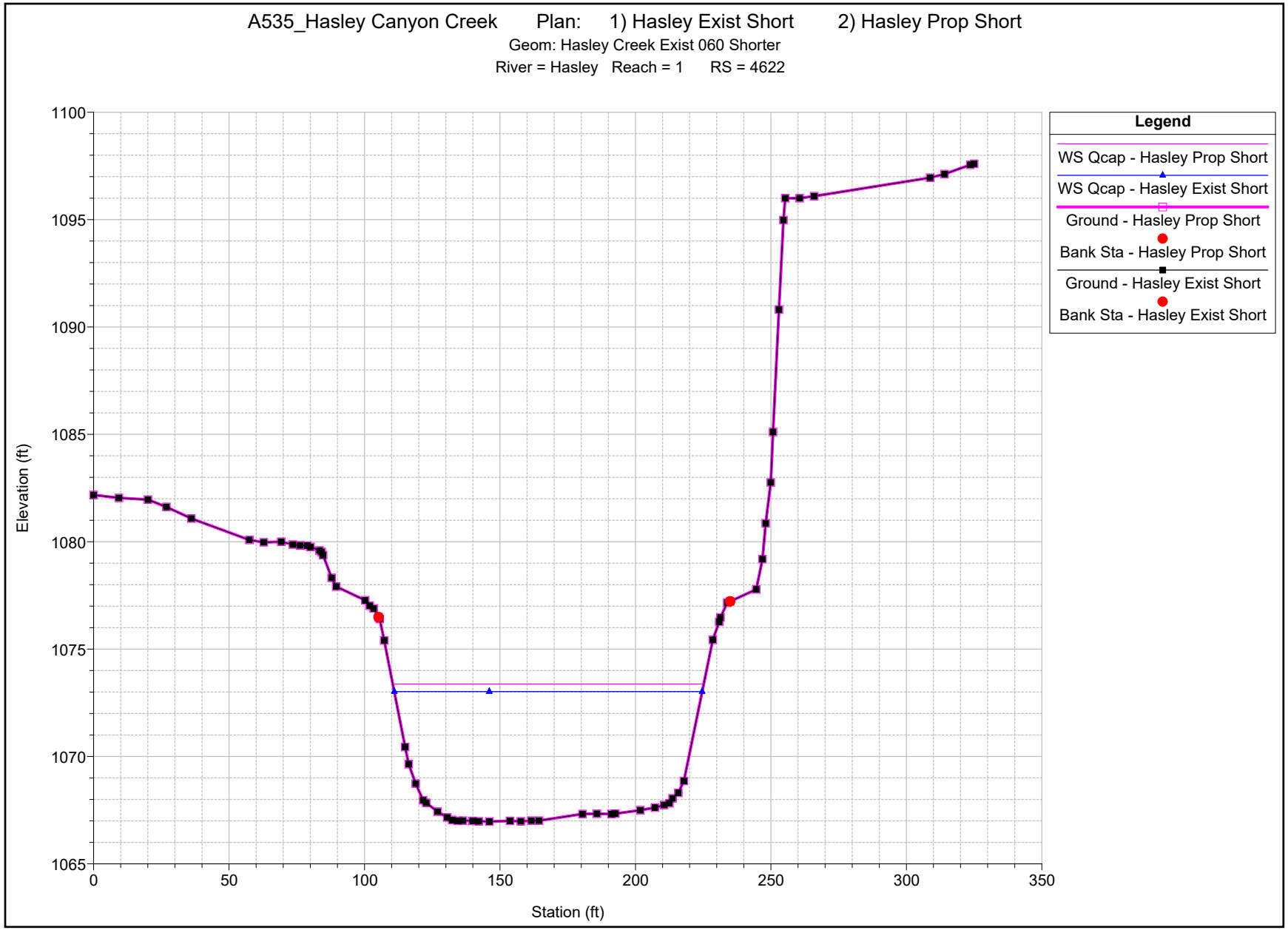

A535_Hasley Canyon Creek Plan: Hasley Prop Shorter 5/20/2024
Geom: Hasley Creek Prop 060 Shorter
River = Hasley Reach = 1 RS = 1061 Castaic Creek RS 5434.68 **
.06
.06
.06
Legend
WS Qcap
Ground
Bank Sta
Elevation (ft)
Station (ft)

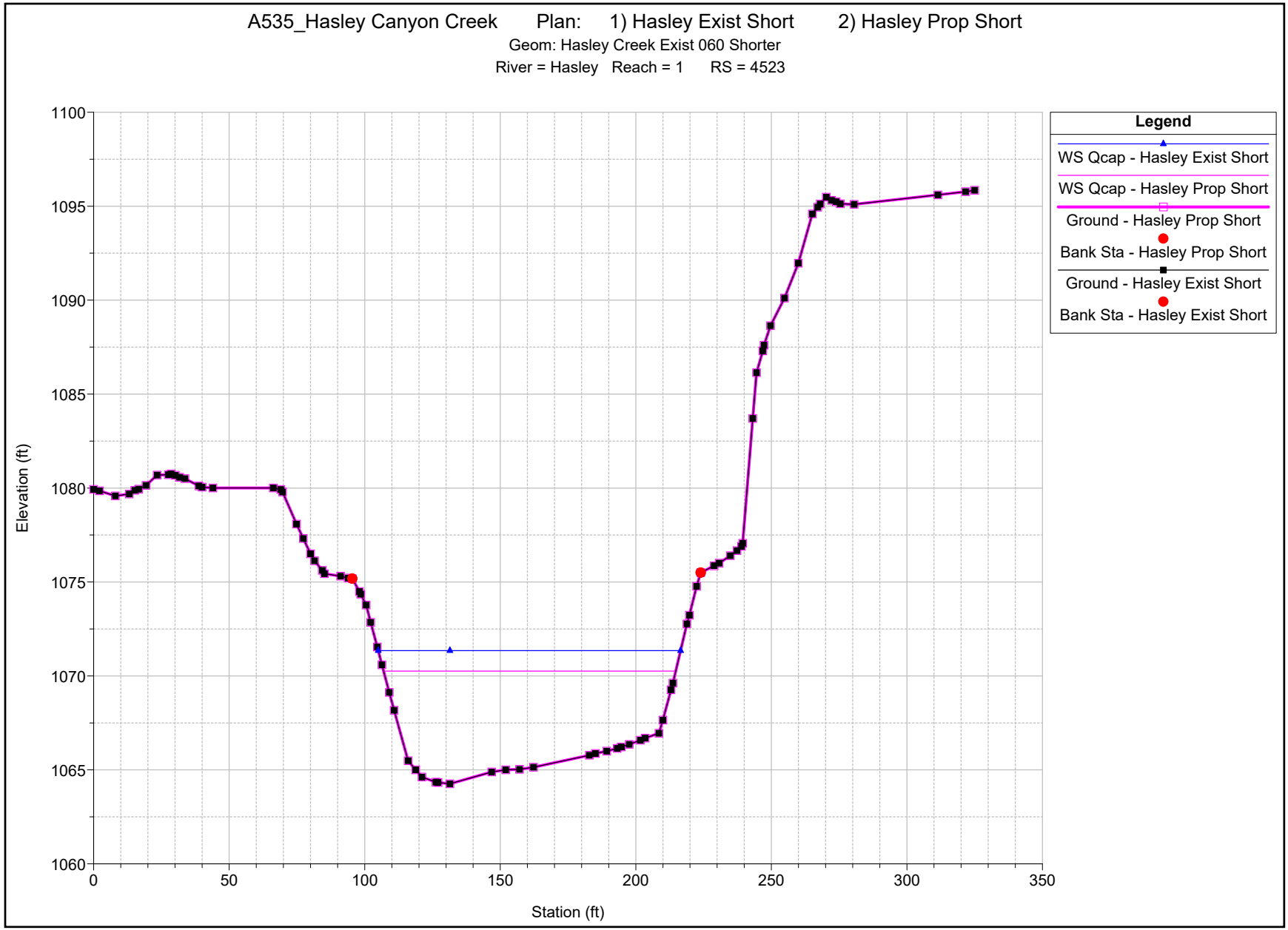

A535_Hasley Canyon Creek Plan: Hasley Prop Shorter 5/20/2024
Geom: Hasley Creek Prop 060 Shorter
Hasley 1
Legend
WS Qcap
Lat Struct
Ground
Left Levee
Elevation (ft)
1080
1060
1040
1020
1000
980
0
1000
2000
3000
4000
Main Channel Distance (ft)

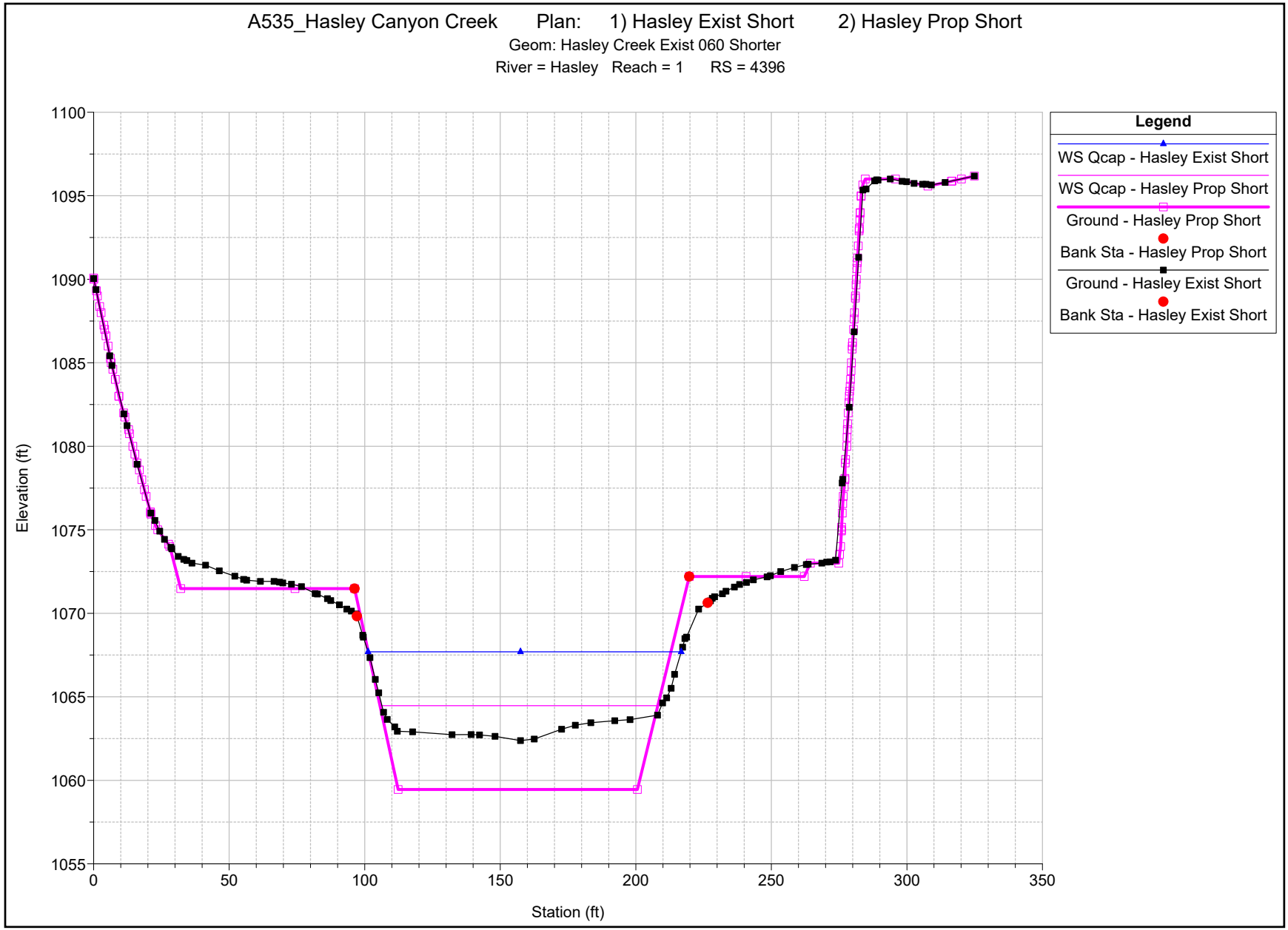
PACE
Advanced Water Engineering

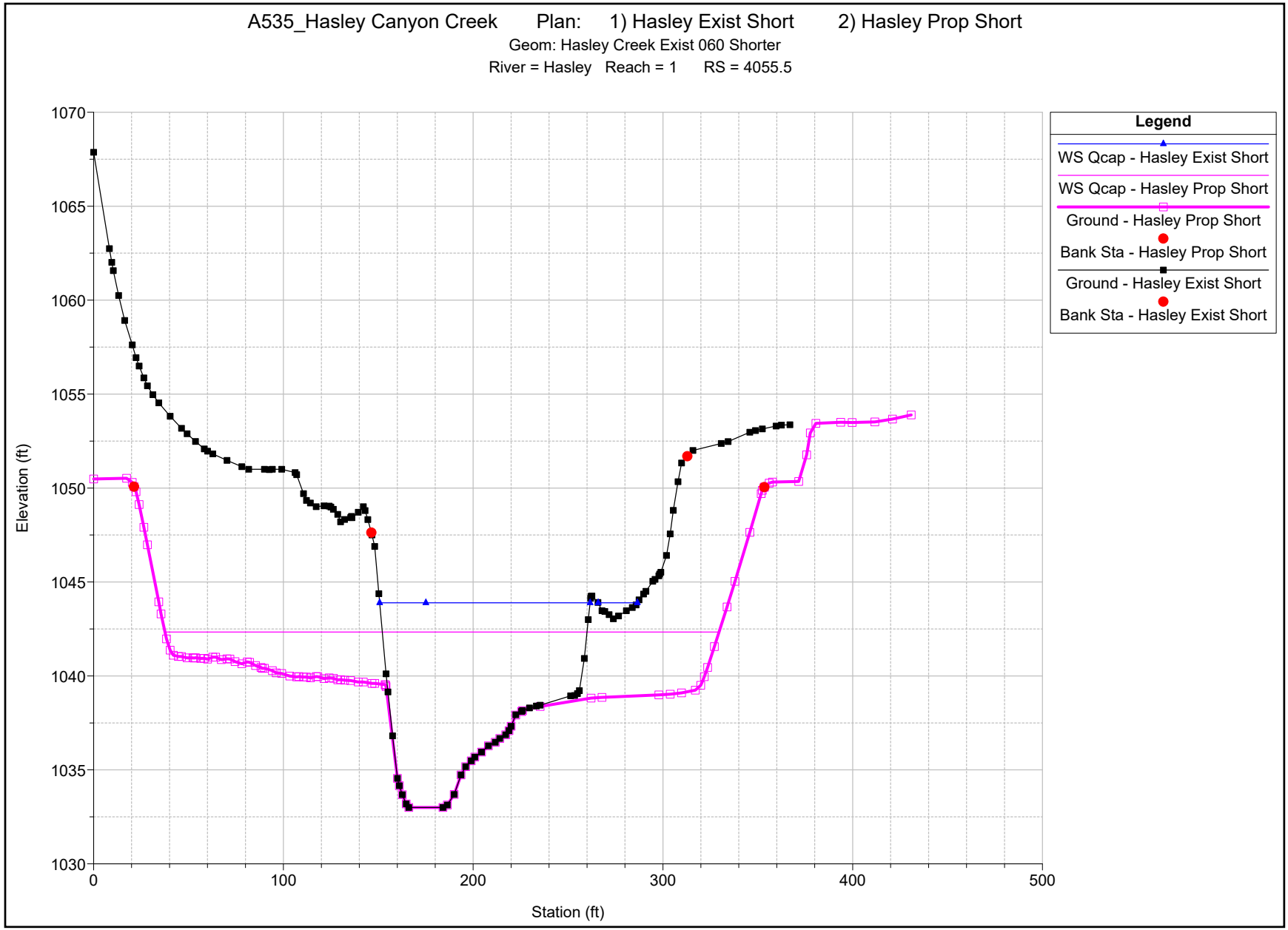
Appendix G – HEC-RAS Cross-Section Comparison, Existing vs. Proposed

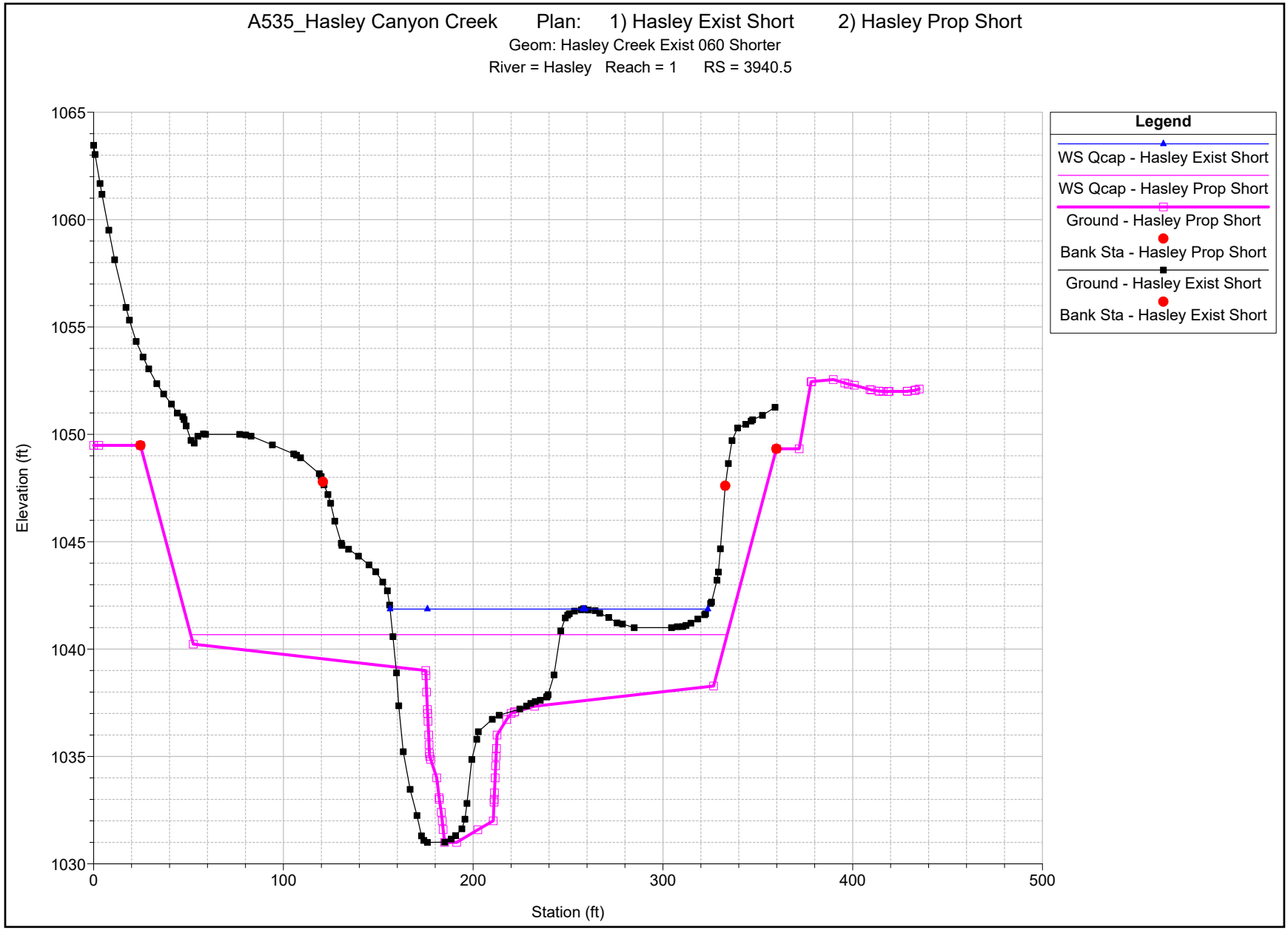

A535_Hasley Canyon Creek Plan: 1) Hasley Exist Short 2) Hasley Prop Short
Geom: Hasley Creek Exist 060 Shorter
River = Hasley Reach = 1 RS = 4725
Legend
WS Qcap - Hasley Exist Short
WS Qcap - Hasley Prop Short
Ground - Hasley Prop Short
Bank Sta - Hasley Prop Short
Ground - Hasley Exist Short
Bank Sta - Hasley Exist Short
Elevation (ft)
1105
1100
1095
1090
1085
1080
1075
1070
1065
0
50
100
150
200
250
300
350
Station (ft)

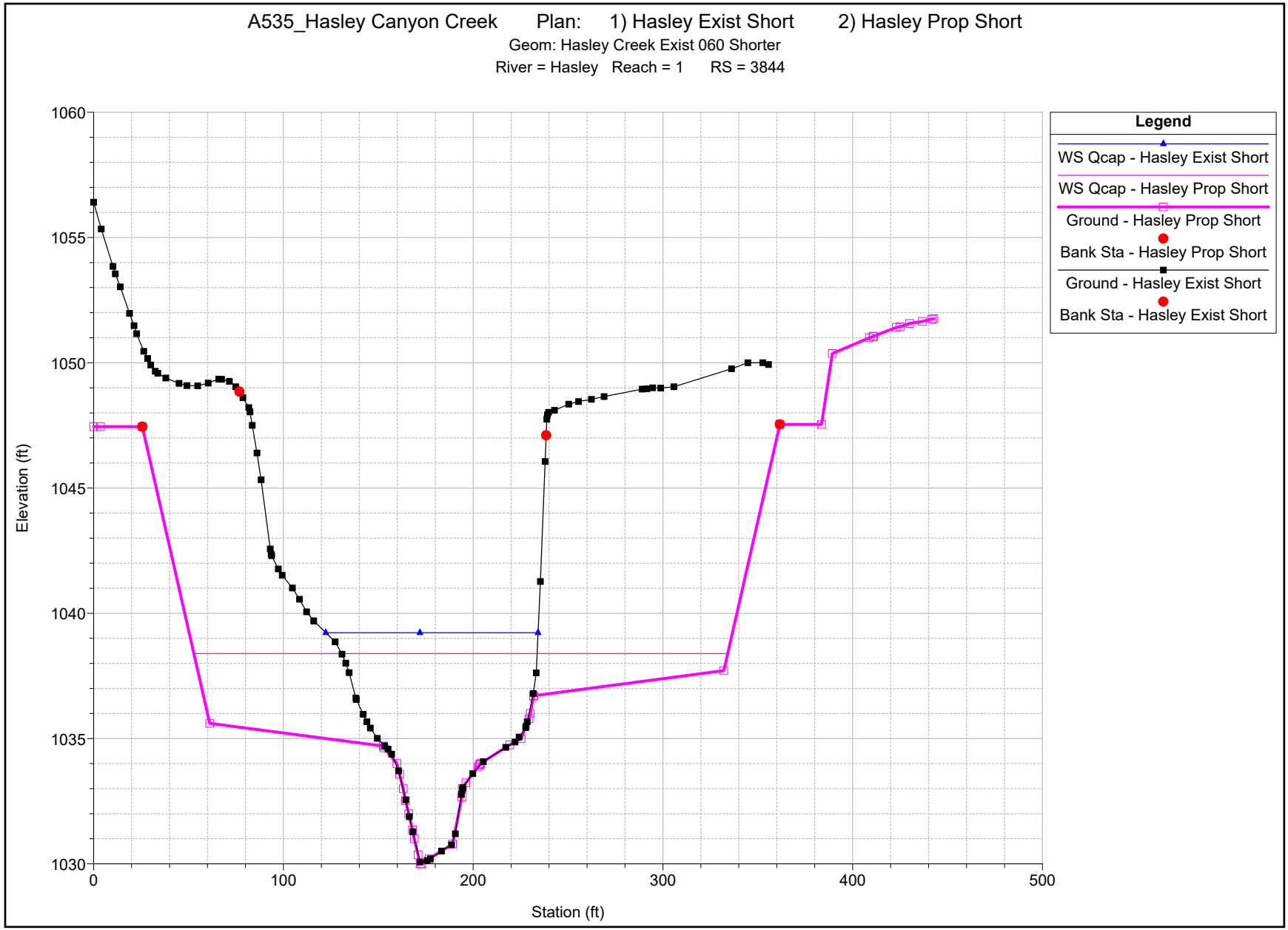

A535_Hasley Canyon Creek Plan: 1) Hasley Exist Short 2) Hasley Prop Short
Geom: Hasley Creek Exist 060 Shorter
River = Hasley Reach = 1 RS = 4622
Legend
WS Qcap - Hasley Prop Short
WS Qcap - Hasley Exist Short
Ground - Hasley Prop Short
Bank Sta - Hasley Prop Short
Ground - Hasley Exist Short
Bank Sta - Hasley Exist Short
Elevation (ft)
1100
1095
1090
1085
1080
1075
1070
1065
0
50
100
150
200
250
300
350
Station (ft)

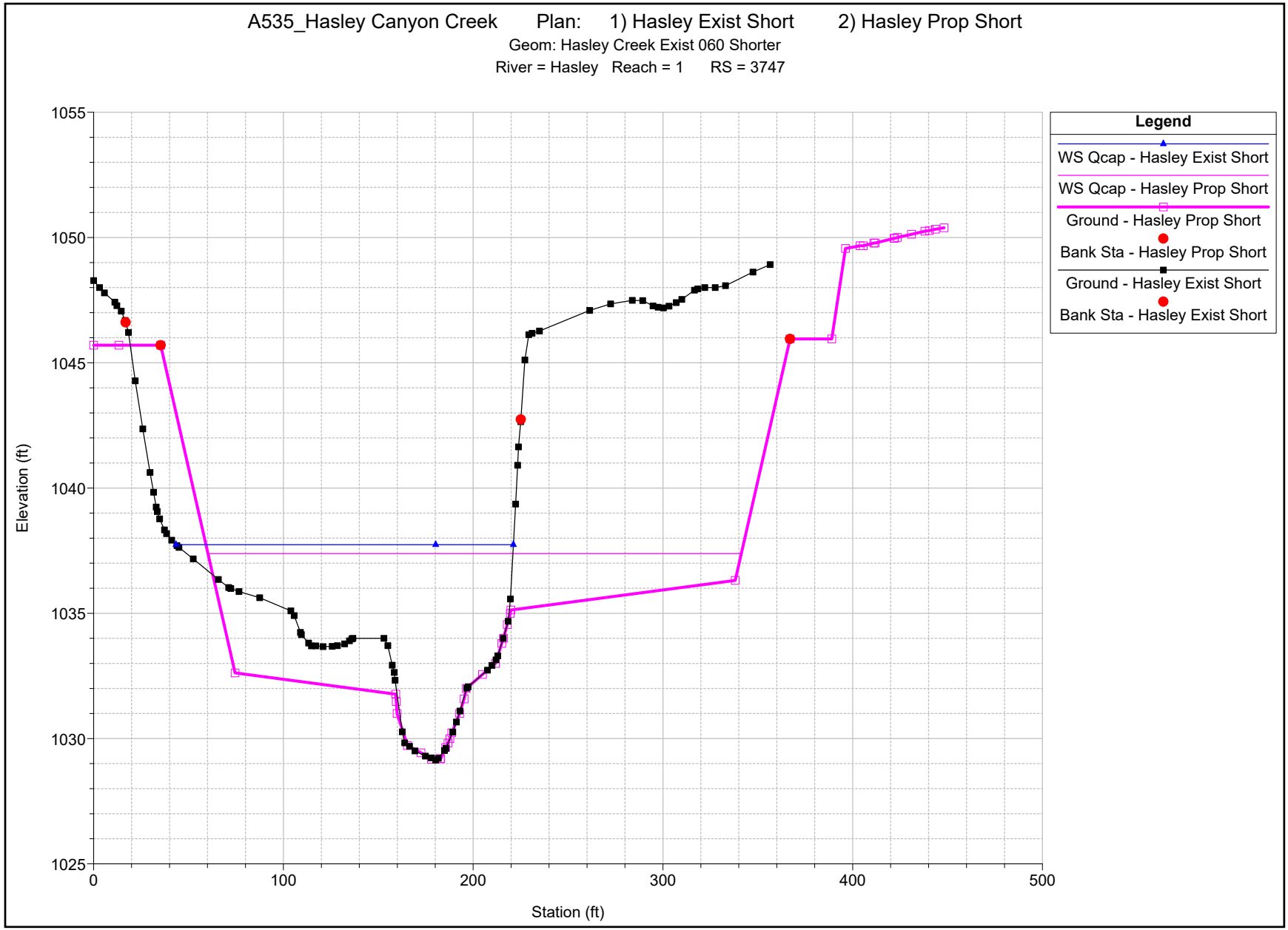

A535_Hasley Canyon Creek Plan: 1) Hasley Exist Short 2) Hasley Prop Short
Geom: Hasley Creek Exist 060 Shorter
River = Hasley Reach = 1 RS = 4523
Legend
WS Qcap - Hasley Exist Short
WS Qcap - Hasley Prop Short
Ground - Hasley Prop Short
Bank Sta - Hasley Prop Short
Ground - Hasley Exist Short
Bank Sta - Hasley Exist Short
Elevation (ft)
1100
1095
1090
1085
1080
1075
1070
1065
1060
0
50
100
150
200
250
300
350
Station (ft)

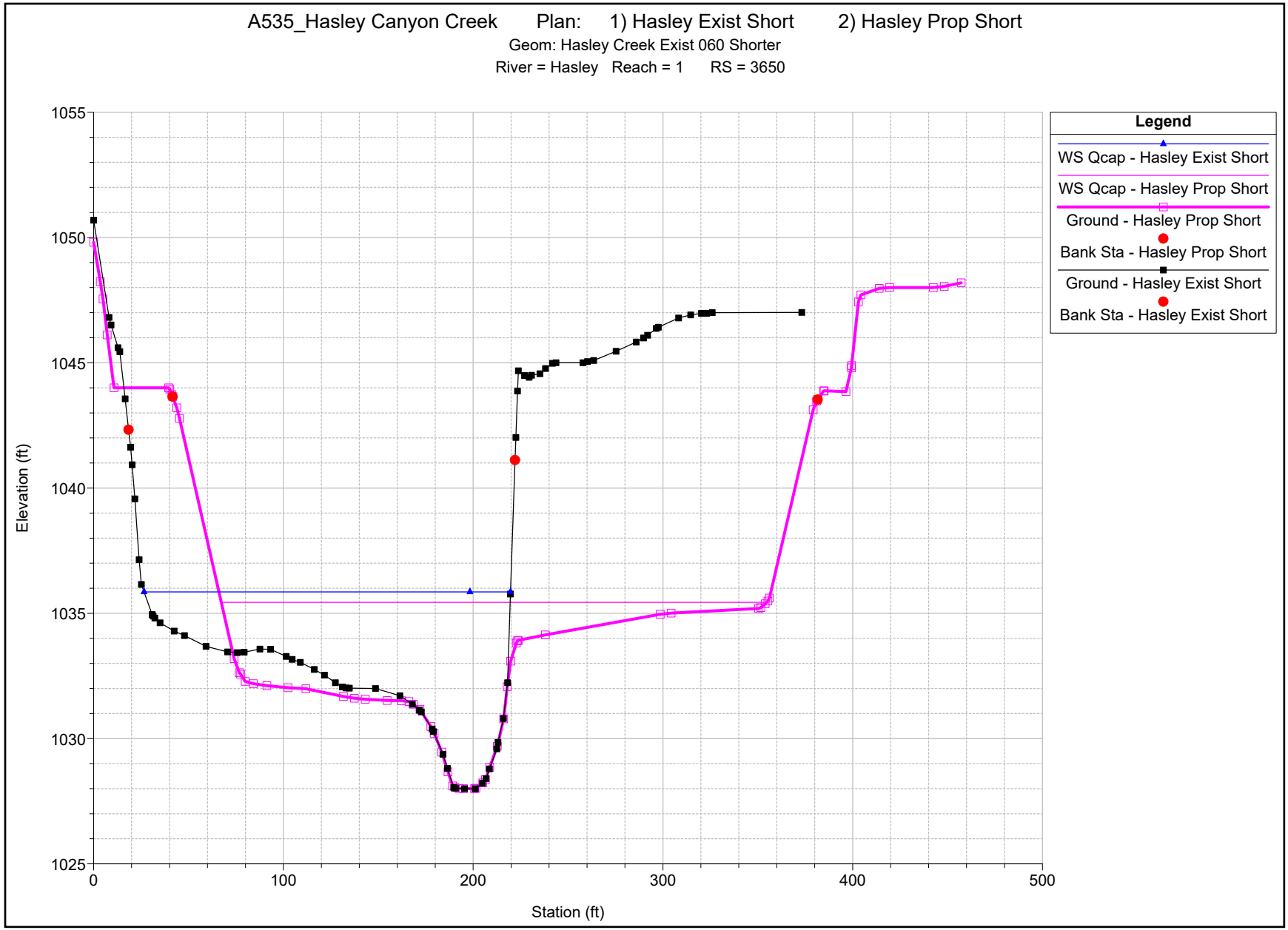

A535_Hasley Canyon Creek Plan: 1) Hasley Exist Short 2) Hasley Prop Short
Geom: Hasley Creek Exist 060 Shorter
River = Hasley Reach = 1 RS = 4396
Legend
WS Qcap - Hasley Exist Short
WS Qcap - Hasley Prop Short
Ground - Hasley Prop Short
Bank Sta - Hasley Prop Short
Ground - Hasley Exist Short
Bank Sta - Hasley Exist Short
Elevation (ft)
Station (ft)
1100
1095
1090
1085
1080
1075
1070
1065
1060
1055
0
50
100
150
200
250
300
350

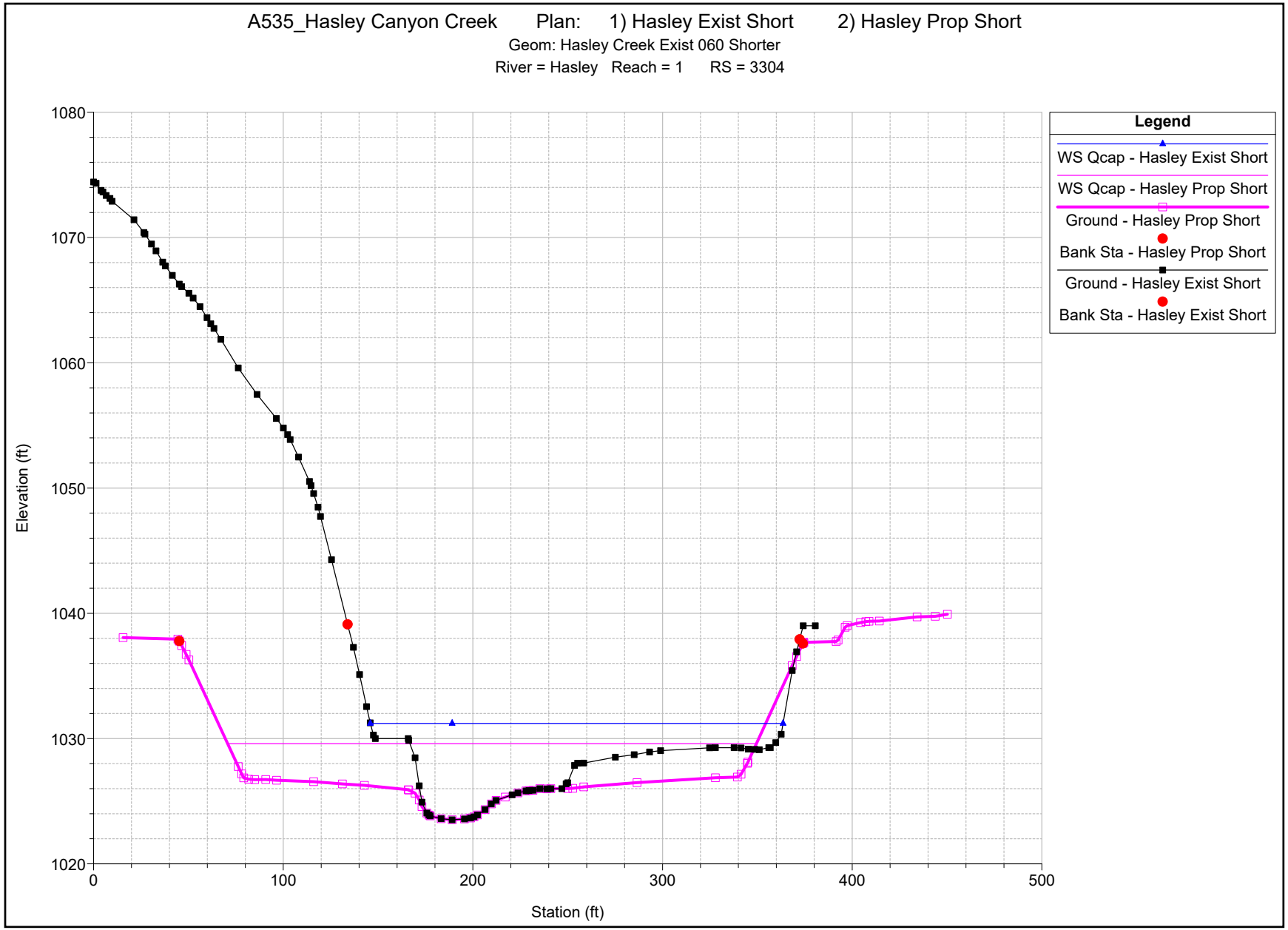

A535_Hasley Canyon Creek Plan: 1) Hasley Exist Short 2) Hasley Prop Short
Geom: Hasley Creek Exist 060 Shorter
River = Hasley Reach = 1 RS = 4055.5
Legend
WS Qcap - Hasley Exist Short
WS Qcap - Hasley Prop Short
Ground - Hasley Prop Short
Bank Sta - Hasley Prop Short
Ground - Hasley Exist Short
Bank Sta - Hasley Exist Short
Elevation (ft)
Station (ft)
1070
1065
1060
1055
1050
1045
1040
1035
1030
0
100
200
300
400
500

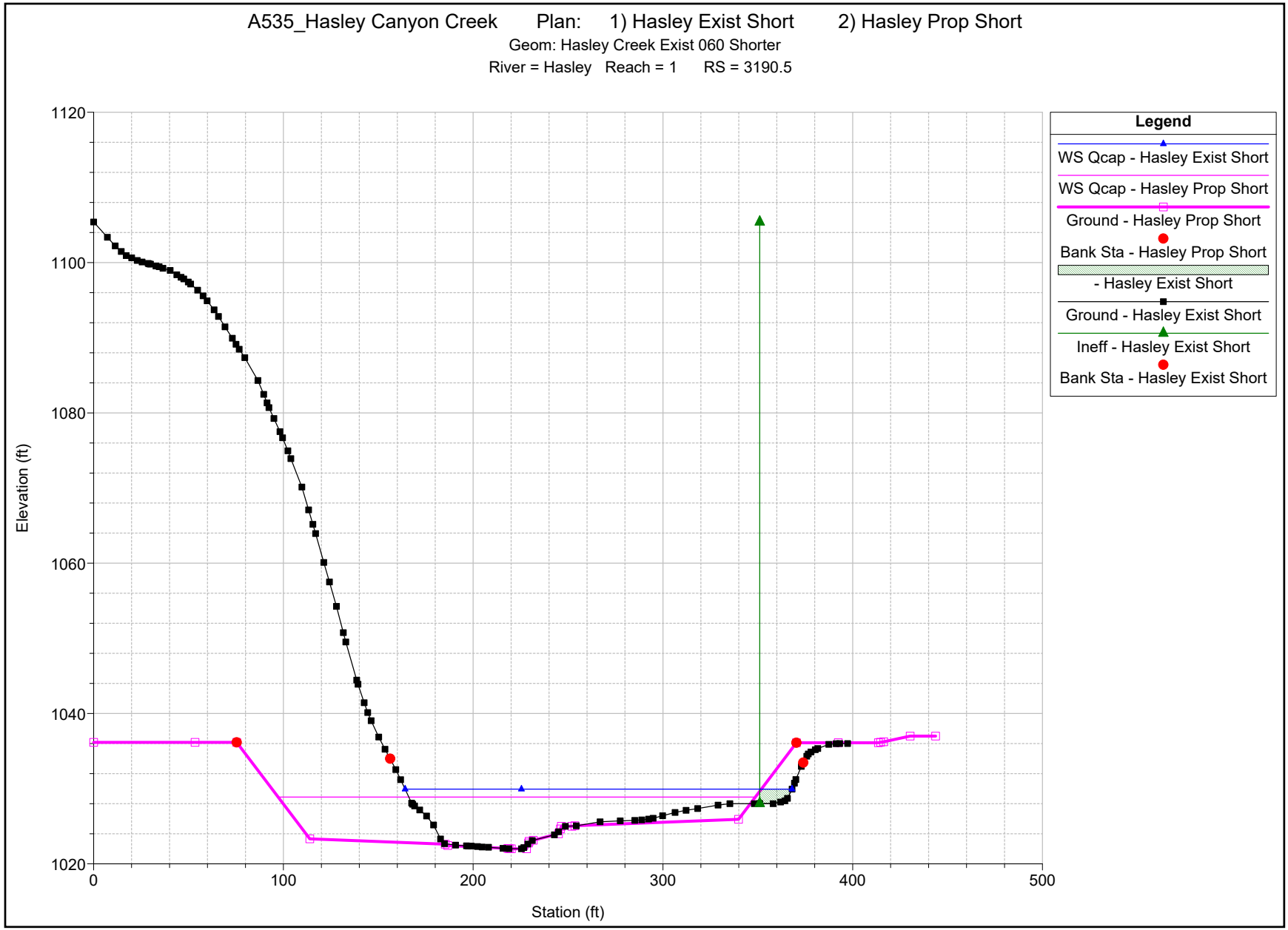

A535_Hasley Canyon Creek Plan: 1) Hasley Exist Short 2) Hasley Prop Short
Geom: Hasley Creek Exist 060 Shorter
River = Hasley Reach = 1 RS = 3940.5
Legend
WS Qcap - Hasley Exist Short
WS Qcap - Hasley Prop Short
Ground - Hasley Prop Short
Bank Sta - Hasley Prop Short
Ground - Hasley Exist Short
Bank Sta - Hasley Exist Short
Elevation (ft)
1065
1060
1055
1050
1045
1040
1035
1030
0
100
200
300
400
500
Station (ft)

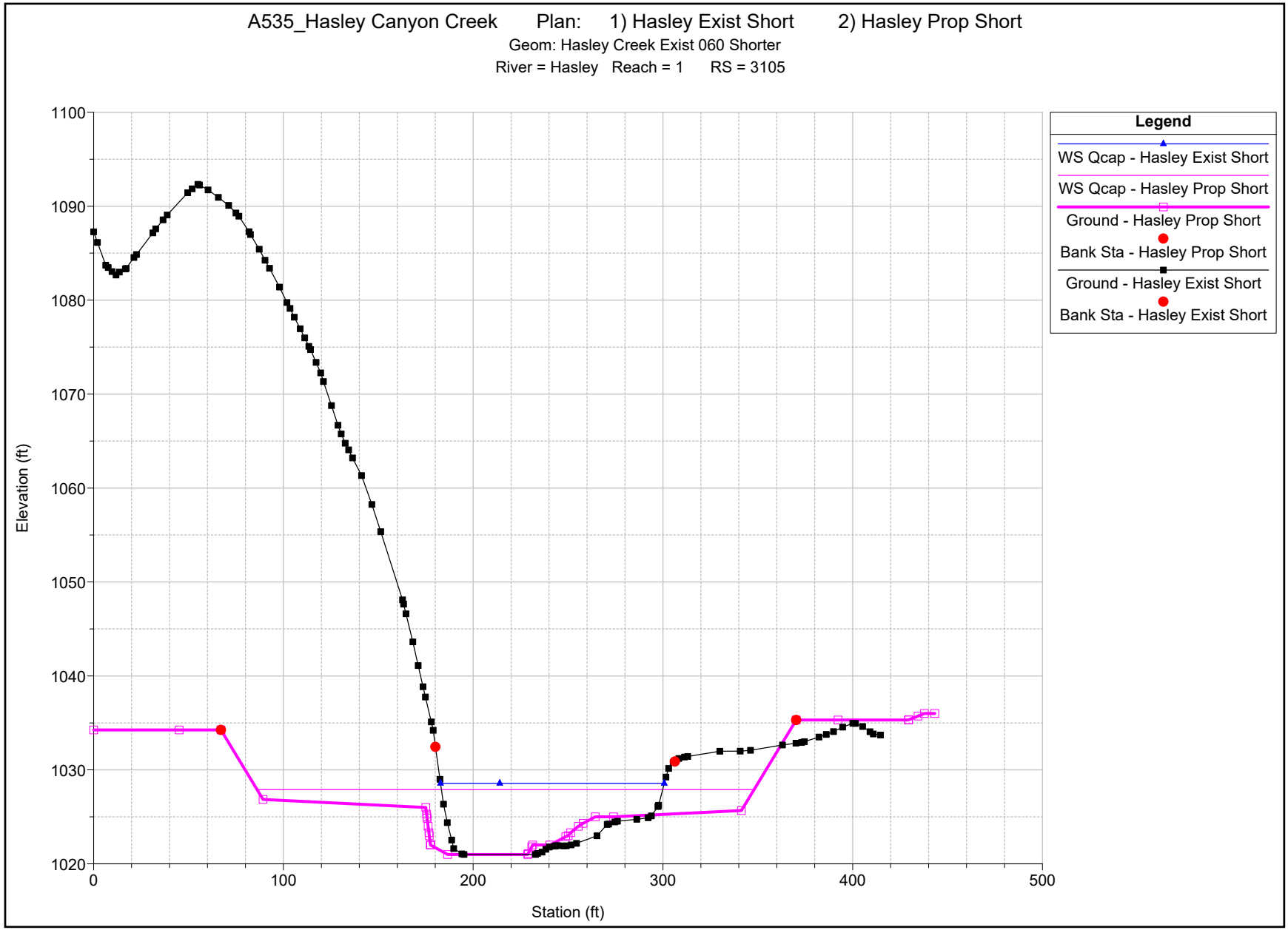

A535_Hasley Canyon Creek Plan: 1) Hasley Exist Short 2) Hasley Prop Short
Geom: Hasley Creek Exist 060 Shorter
River = Hasley Reach = 1 RS = 3844
Legend
WS Qcap - Hasley Exist Short
WS Qcap - Hasley Prop Short
Ground - Hasley Prop Short
Bank Sta - Hasley Prop Short
Ground - Hasley Exist Short
Bank Sta - Hasley Exist Short
Elevation (ft)
1060
1055
1050
1045
1040
1035
1030
0
100
200
300
400
500
Station (ft)

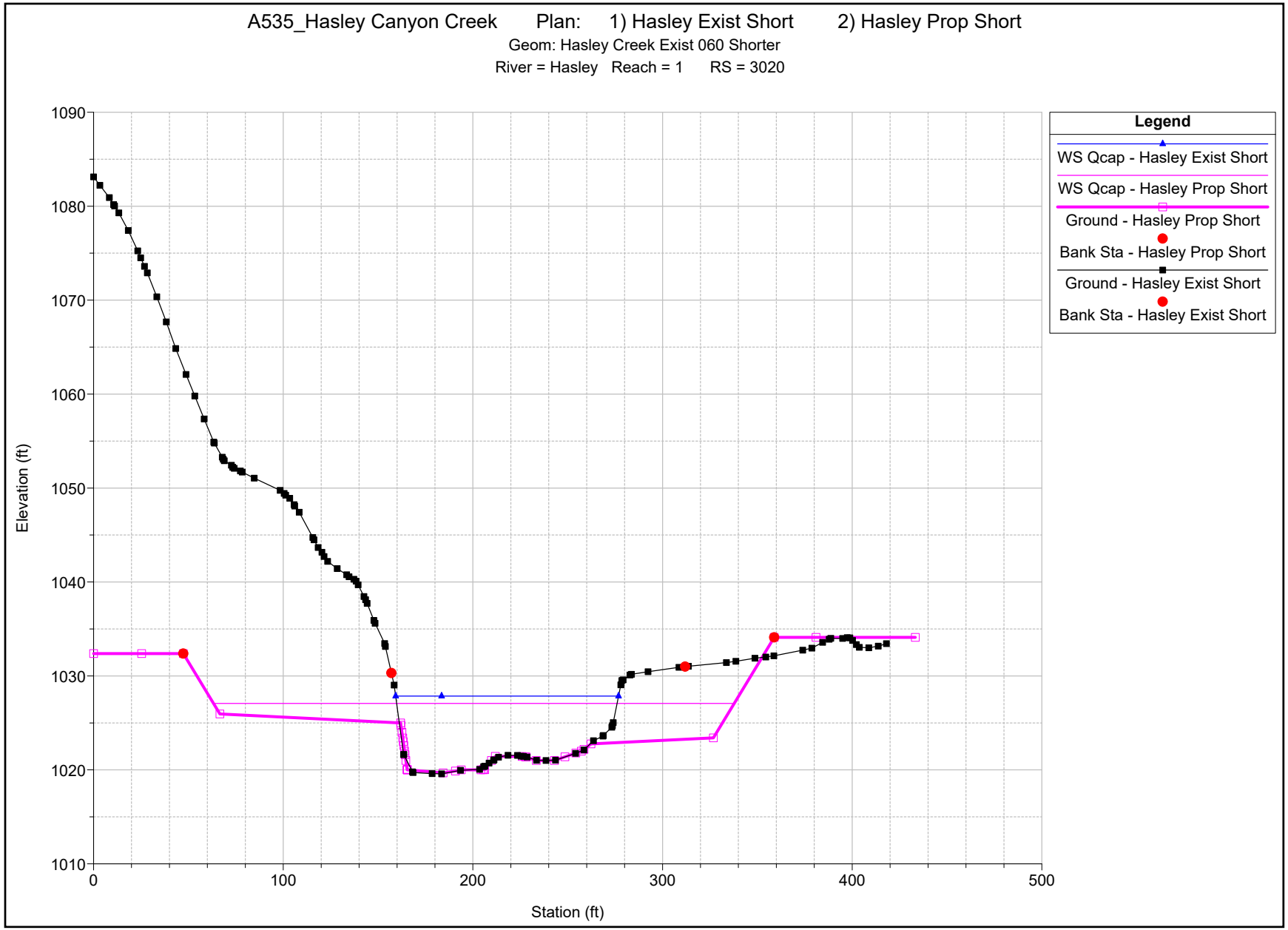

A535_Hasley Canyon Creek Plan: 1) Hasley Exist Short 2) Hasley Prop Short
Geom: Hasley Creek Exist 060 Shorter
River = Hasley Reach = 1 RS = 3747
Legend
WS Qcap - Hasley Exist Short
WS Qcap - Hasley Prop Short
Ground - Hasley Prop Short
Bank Sta - Hasley Prop Short
Ground - Hasley Exist Short
Bank Sta - Hasley Exist Short
Elevation (ft)
1055
1050
1045
1040
1035
1030
1025
0
100
200
300
400
500
Station (ft)

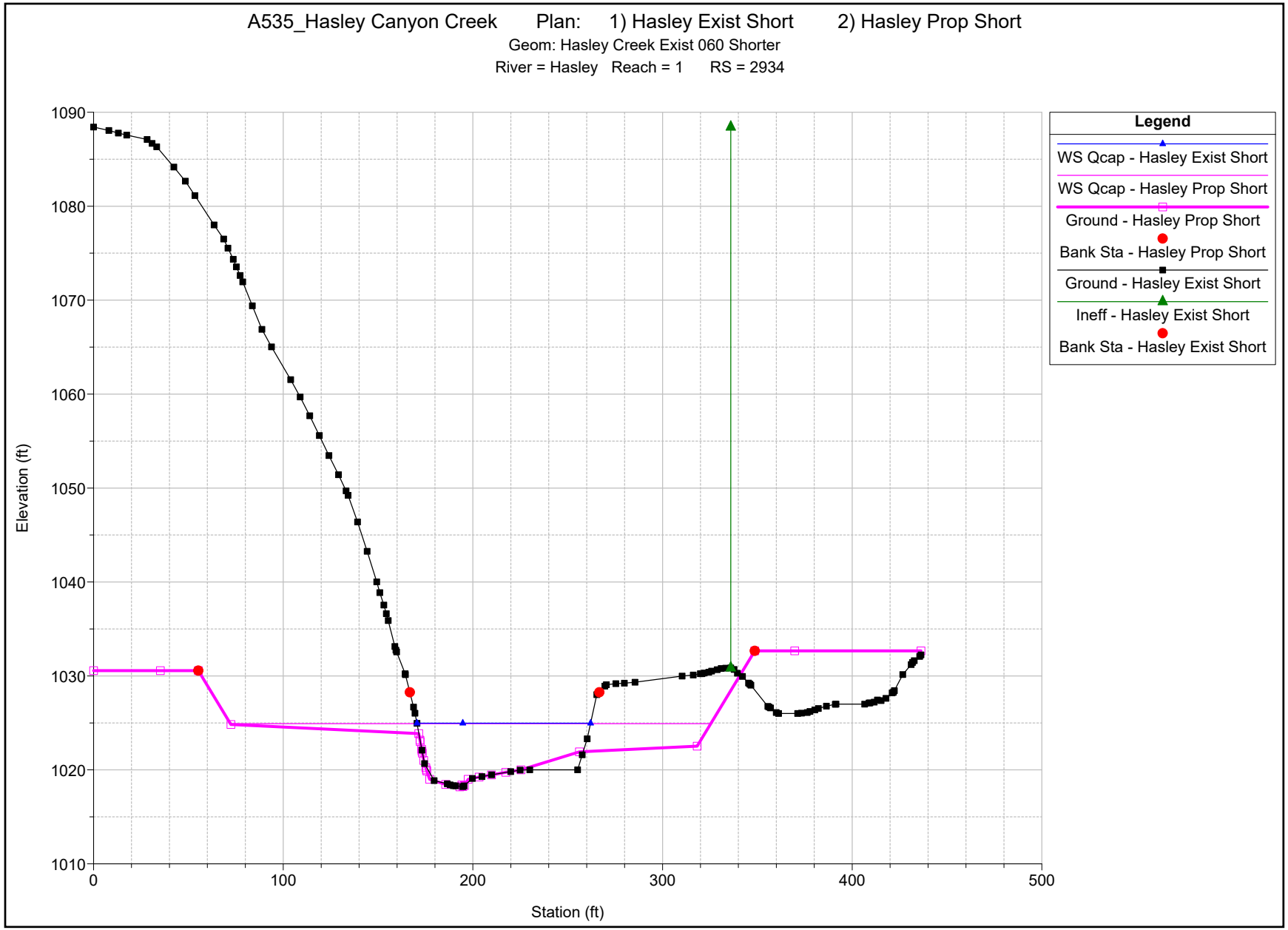

A535_Hasley Canyon Creek Plan: 1) Hasley Exist Short 2) Hasley Prop Short
Geom: Hasley Creek Exist 060 Shorter
River = Hasley Reach = 1 RS = 3650
Legend
WS Qcap - Hasley Exist Short
WS Qcap - Hasley Prop Short
Ground - Hasley Prop Short
Bank Sta - Hasley Prop Short
Ground - Hasley Exist Short
Bank Sta - Hasley Exist Short
Elevation (ft)
1055
1050
1045
1040
1035
1030
1025
0
100
200
300
400
500
Station (ft)

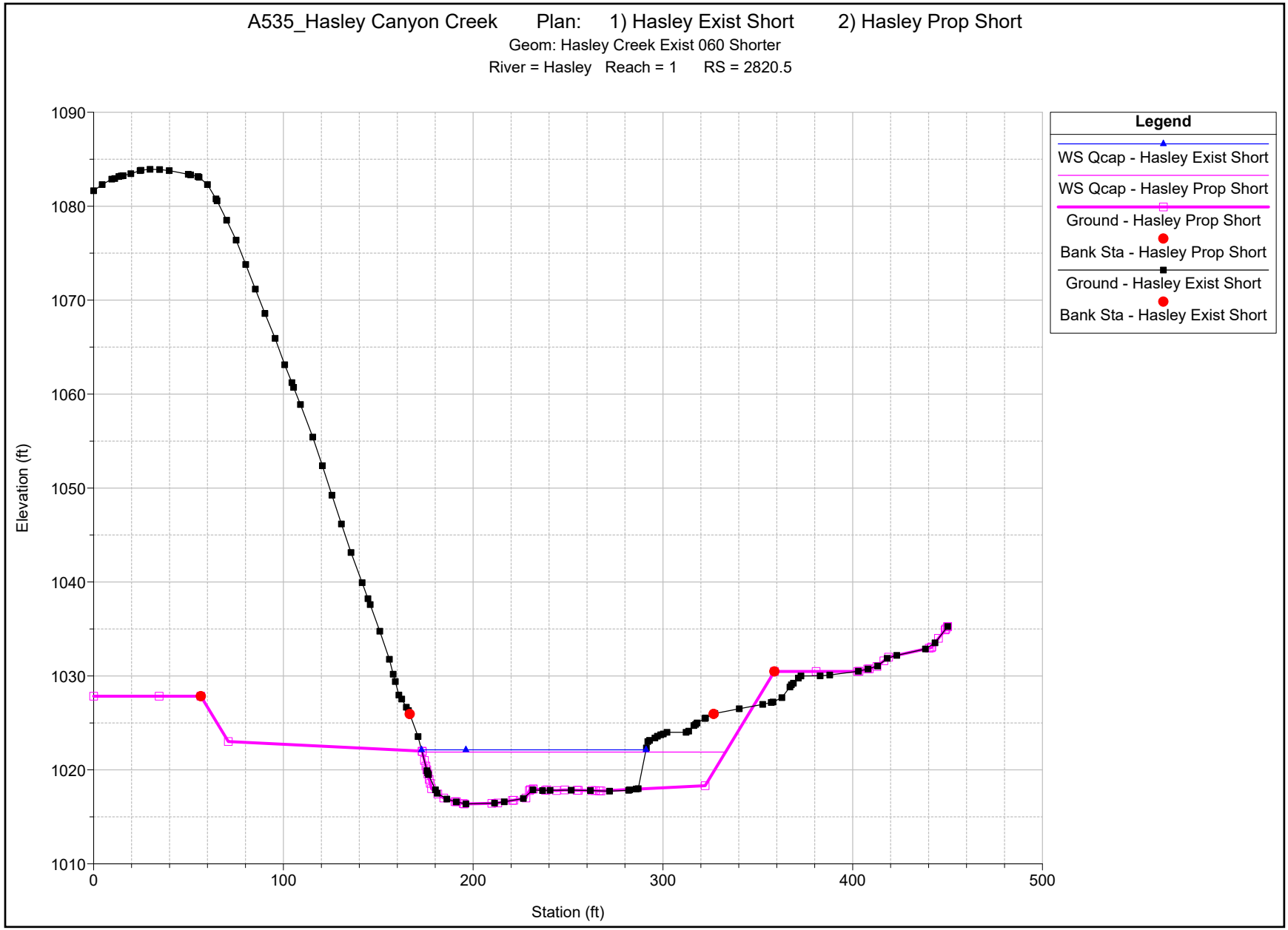

A535_Hasley Canyon Creek Plan: 1) Hasley Exist Short 2) Hasley Prop Short
Geom: Hasley Creek Exist 060 Shorter
River = Hasley Reach = 1 RS = 3304
Legend
WS Qcap - Hasley Exist Short
WS Qcap - Hasley Prop Short
Ground - Hasley Prop Short
Bank Sta - Hasley Prop Short
Ground - Hasley Exist Short
Bank Sta - Hasley Exist Short
Elevation (ft)
1080
1070
1060
1050
1040
1030
1020
0
100
200
300
400
500
Station (ft)

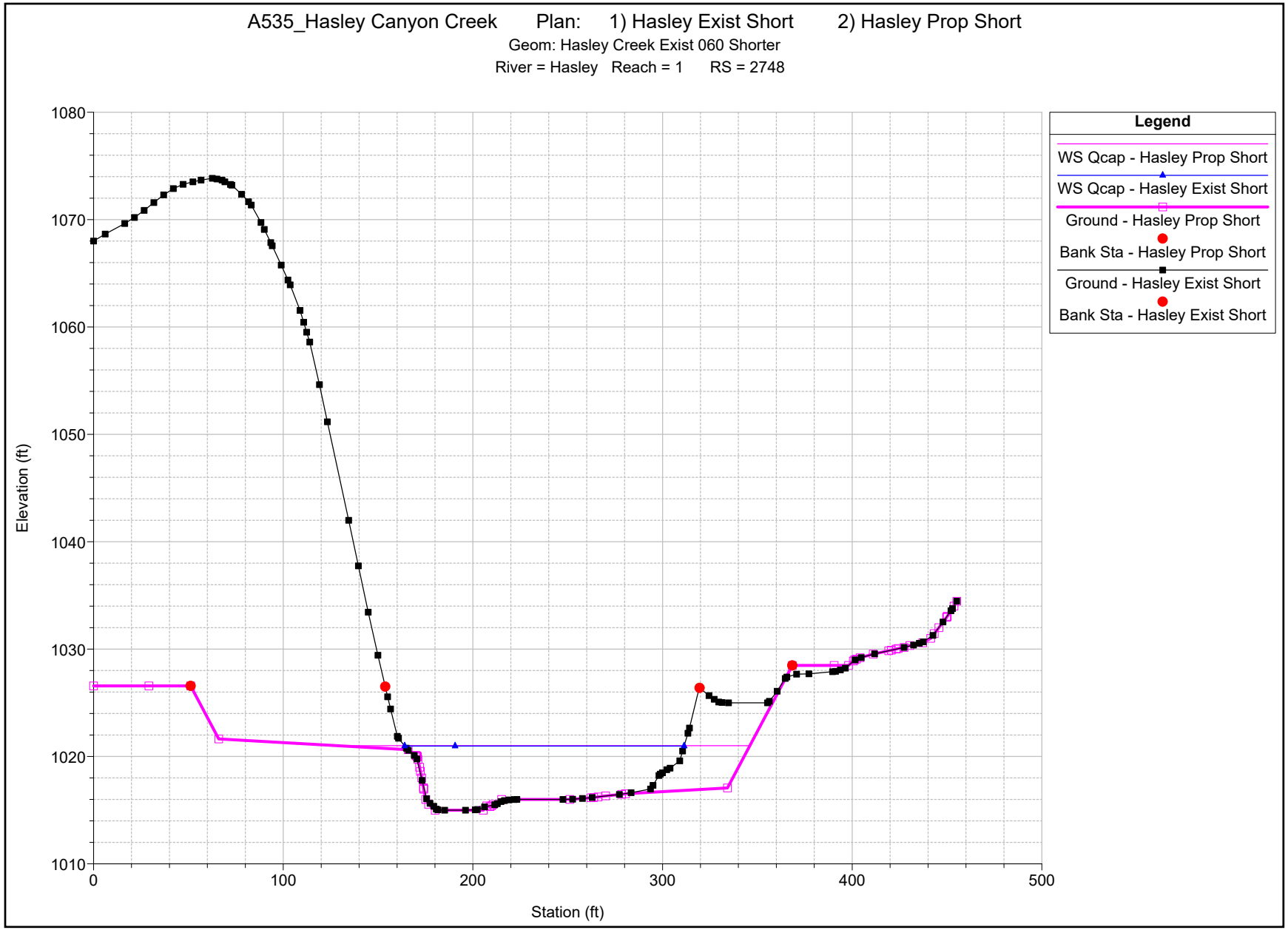

A535_Hasley Canyon Creek Plan: 1) Hasley Exist Short 2) Hasley Prop Short
Geom: Hasley Creek Exist 060 Shorter
River = Hasley Reach = 1 RS = 3190.5
Legend
WS Qcap - Hasley Exist Short
WS Qcap - Hasley Prop Short
Ground - Hasley Prop Short
Bank Sta - Hasley Prop Short
- Hasley Exist Short
Ground - Hasley Exist Short
Ineff - Hasley Exist Short
Bank Sta - Hasley Exist Short
Elevation (ft)
1120
1100
1080
1060
1040
1020
0
100
200
300
400
500
Station (ft)


A535_Hasley Canyon Creek Plan: 1) Hasley Exist Short 2) Hasley Prop Short
Geom: Hasley Creek Exist 060 Shorter
River = Hasley Reach = 1 RS = 3105
Legend
WS Qcap - Hasley Exist Short
WS Qcap - Hasley Prop Short
Ground - Hasley Prop Short
Bank Sta - Hasley Prop Short
Ground - Hasley Exist Short
Bank Sta - Hasley Exist Short
Elevation (ft)
1100
1090
1080
1070
1060
1050
1040
1030
1020
0
100
200
300
400
500
Station (ft)


A535_Hasley Canyon Creek Plan: 1) Hasley Exist Short 2) Hasley Prop Short
Geom: Hasley Creek Exist 060 Shorter
River = Hasley Reach = 1 RS = 3020
Legend
WS Qcap - Hasley Exist Short
WS Qcap - Hasley Prop Short
Ground - Hasley Prop Short
Bank Sta - Hasley Prop Short
Ground - Hasley Exist Short
Bank Sta - Hasley Exist Short
Elevation (ft)
1090
1080
1070
1060
1050
1040
1030
1020
1010
0
100
200
300
400
500
Station (ft)


A535_Hasley Canyon Creek Plan: 1) Hasley Exist Short 2) Hasley Prop Short
Geom: Hasley Creek Exist 060 Shorter
River = Hasley Reach = 1 RS = 2934
Legend
WS Qcap - Hasley Exist Short
WS Qcap - Hasley Prop Short
Ground - Hasley Prop Short
Bank Sta - Hasley Prop Short
Ground - Hasley Exist Short
Ineff - Hasley Exist Short
Bank Sta - Hasley Exist Short
Elevation (ft)
1090
1080
1070
1060
1050
1040
1030
1020
1010
0
100
200
300
400
500
Station (ft)


A535_Hasley Canyon Creek Plan: 1) Hasley Exist Short 2) Hasley Prop Short
Geom: Hasley Creek Exist 060 Shorter
River = Hasley Reach = 1 RS = 2820.5
Legend
WS Qcap - Hasley Exist Short
WS Qcap - Hasley Prop Short
Ground - Hasley Prop Short
Bank Sta - Hasley Prop Short
Ground - Hasley Exist Short
Bank Sta - Hasley Exist Short
Elevation (ft)
1090
1080
1070
1060
1050
1040
1030
1020
1010
0
100
200
300
400
500
Station (ft)


A535_Hasley Canyon Creek Plan: 1) Hasley Exist Short 2) Hasley Prop Short
Geom: Hasley Creek Exist 060 Shorter
River = Hasley Reach = 1 RS = 2748
Legend
WS Qcap - Hasley Prop Short
WS Qcap - Hasley Exist Short
Ground - Hasley Prop Short
Bank Sta - Hasley Prop Short
Ground - Hasley Exist Short
Bank Sta - Hasley Exist Short
Elevation (ft)
1080
1070
1060
1050
1040
1030
1020
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200
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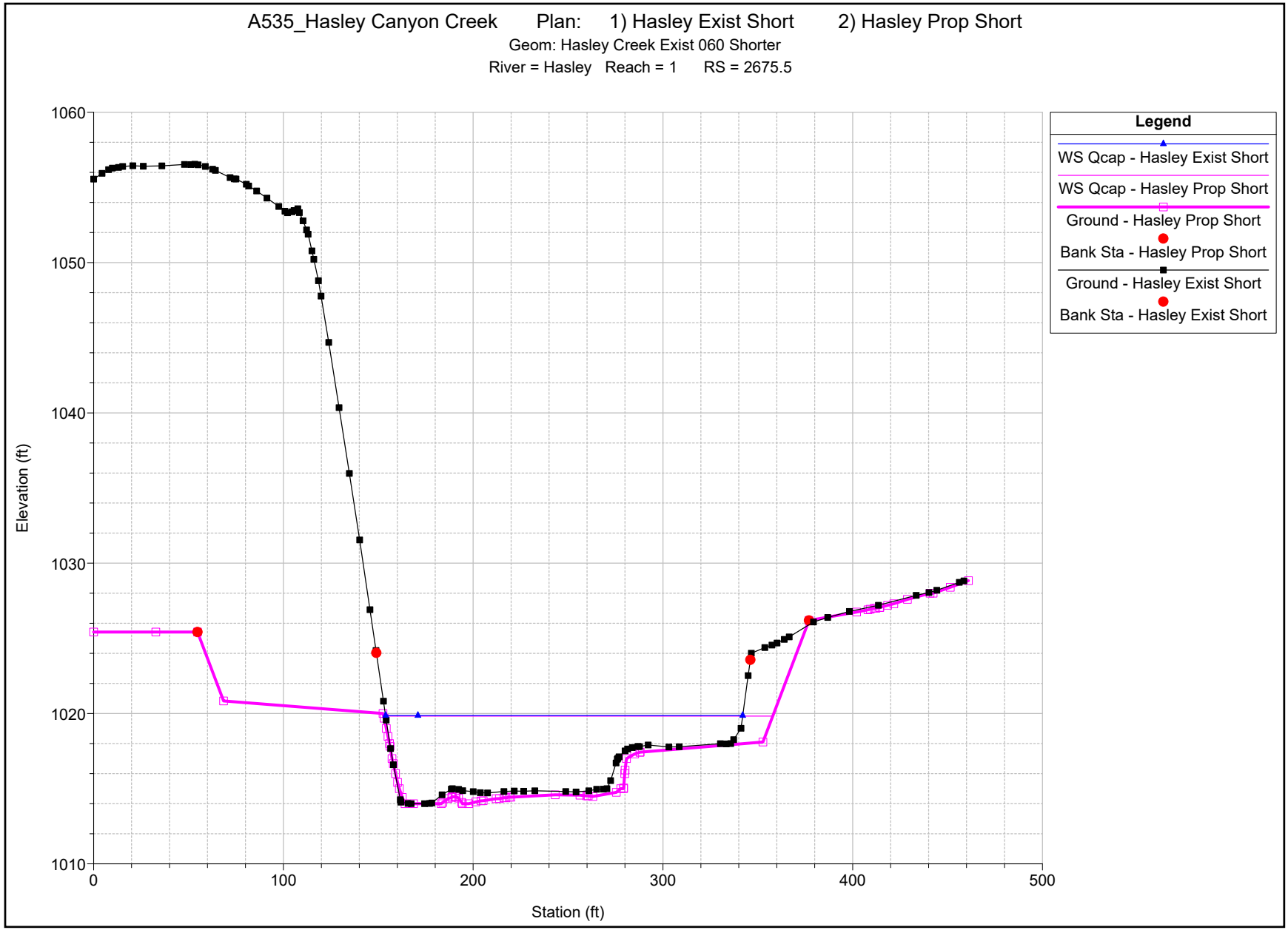
400
500
Station (ft)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Geom: Hasley Creek Exist 060 Shorter
River = Hasley Reach = 1 RS = 2675.5
Legend
WS Qcap - Hasley Exist Short
WS Qcap - Hasley Prop Short
Ground - Hasley Prop Short
Bank Sta - Hasley Prop Short
Ground - Hasley Exist Short
Bank Sta - Hasley Exist Short
Elevation (ft)
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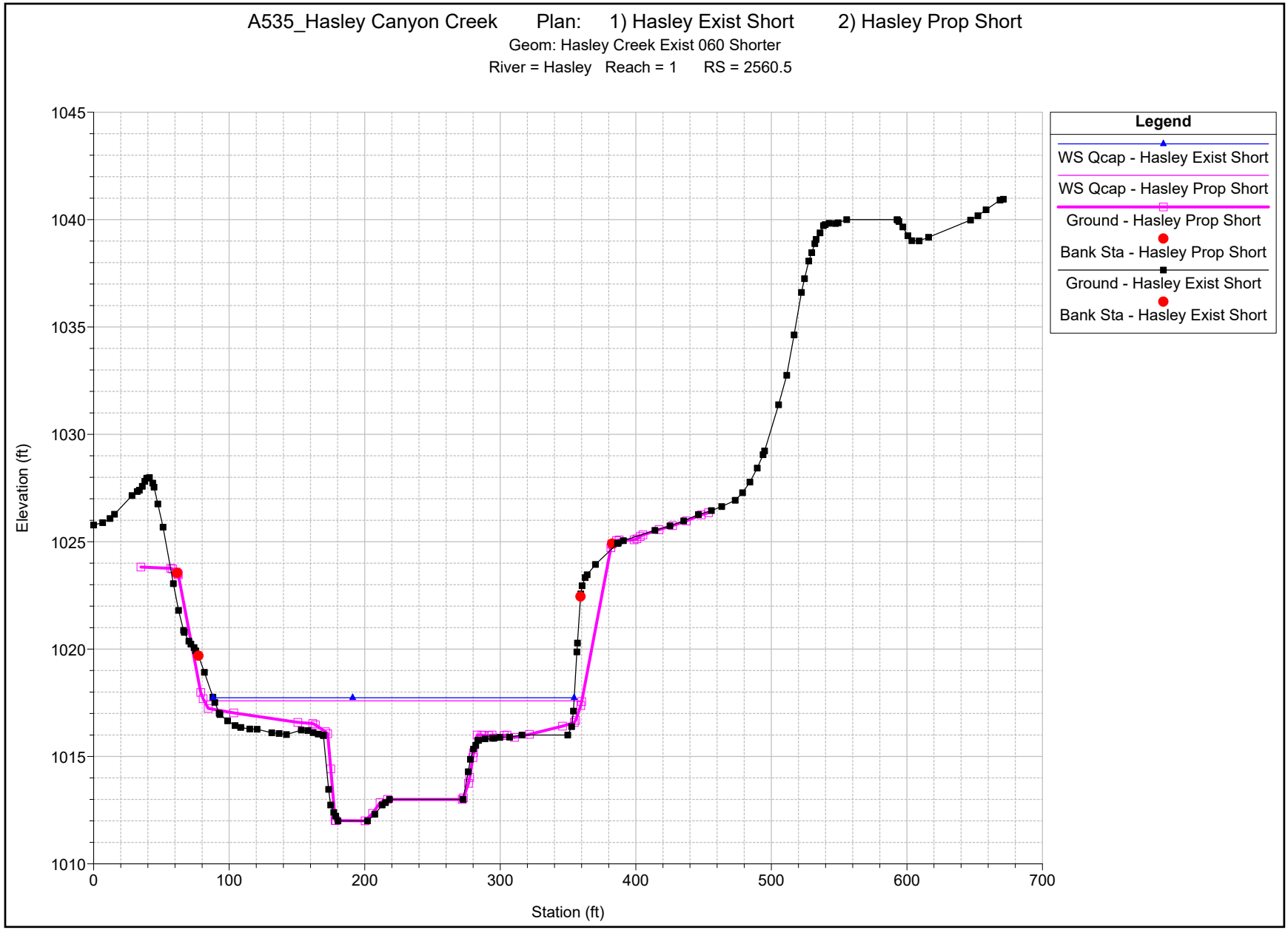
1050
1040
1030
1020
1010
0
100
200
300
400
500
Station (ft)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River = Hasley Reach = 1 RS = 2560.5
Legend
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WS Qcap - Hasley Prop Short
Ground - Hasley Prop Short
Bank Sta - Hasley Prop Short
Ground - Hasley Exist Short
Bank Sta - Hasley Exist Short
Elevation (ft)
Station (ft)
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1030
1025
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1010
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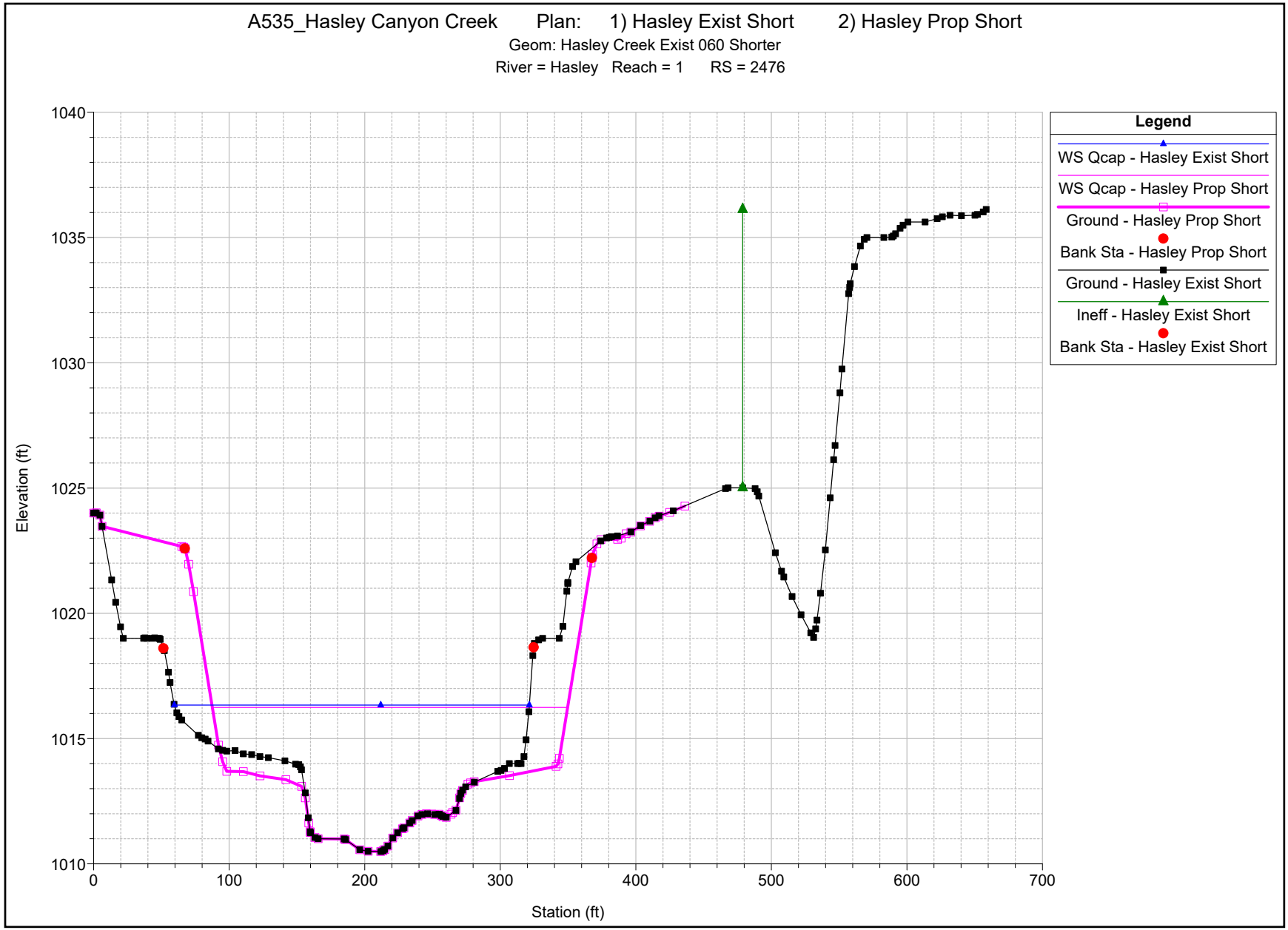
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Legend
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WS Qcap - Hasley Prop Short
Ground - Hasley Prop Short
Bank Sta - Hasley Prop Short
Ground - Hasley Exist Short
Ineff - Hasley Exist Short
Bank Sta - Hasley Exist Short
Elevation (ft)
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1030
1025
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1015
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0
100
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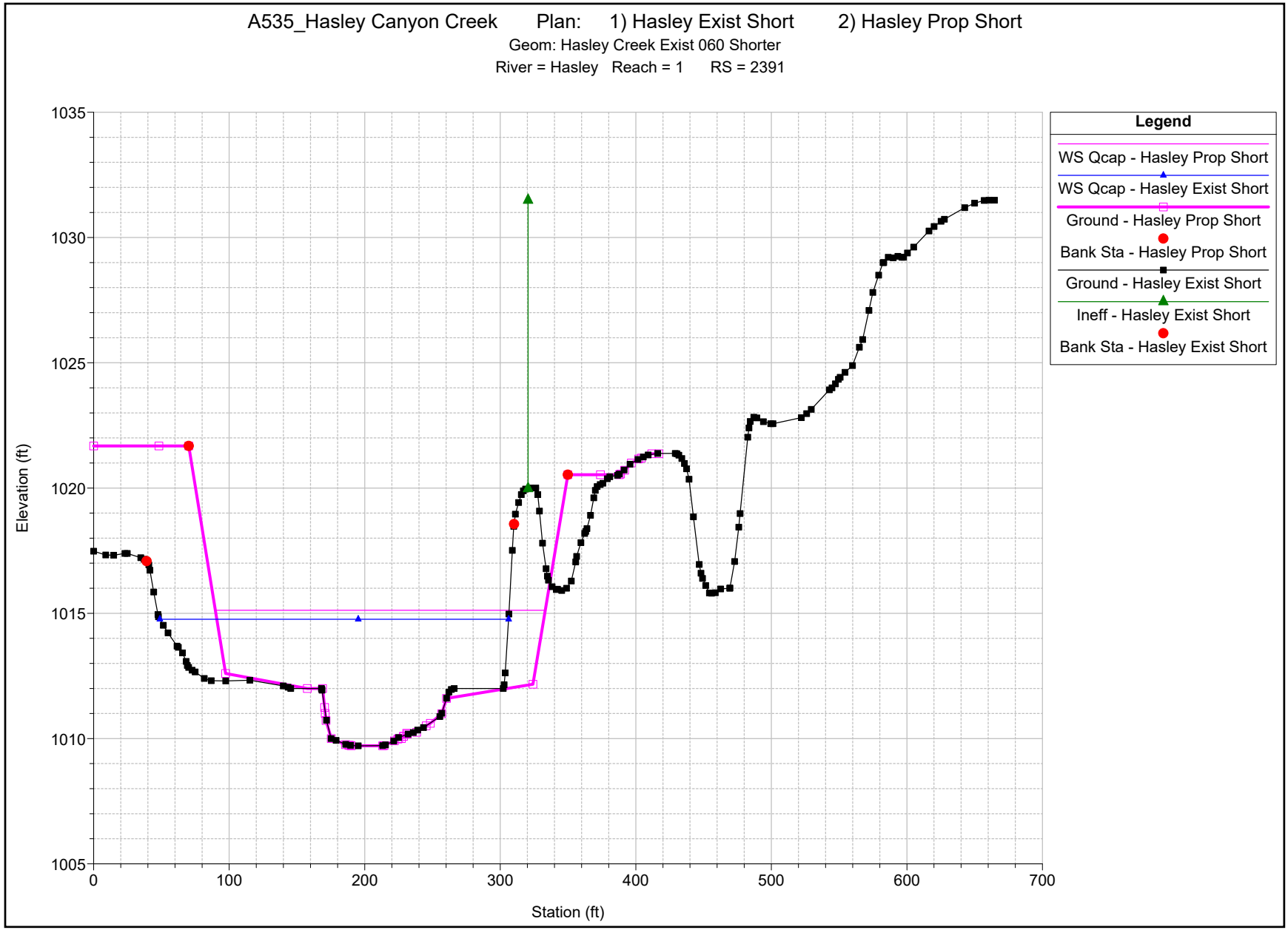
400
500
600
700
Station (ft)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River = Hasley Reach = 1 RS = 2391
Legend
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WS Qcap - Hasley Exist Short
Ground - Hasley Prop Short
Bank Sta - Hasley Prop Short
Ground - Hasley Exist Short
Ineff - Hasley Exist Short
Bank Sta - Hasley Exist Short
Elevation (ft)
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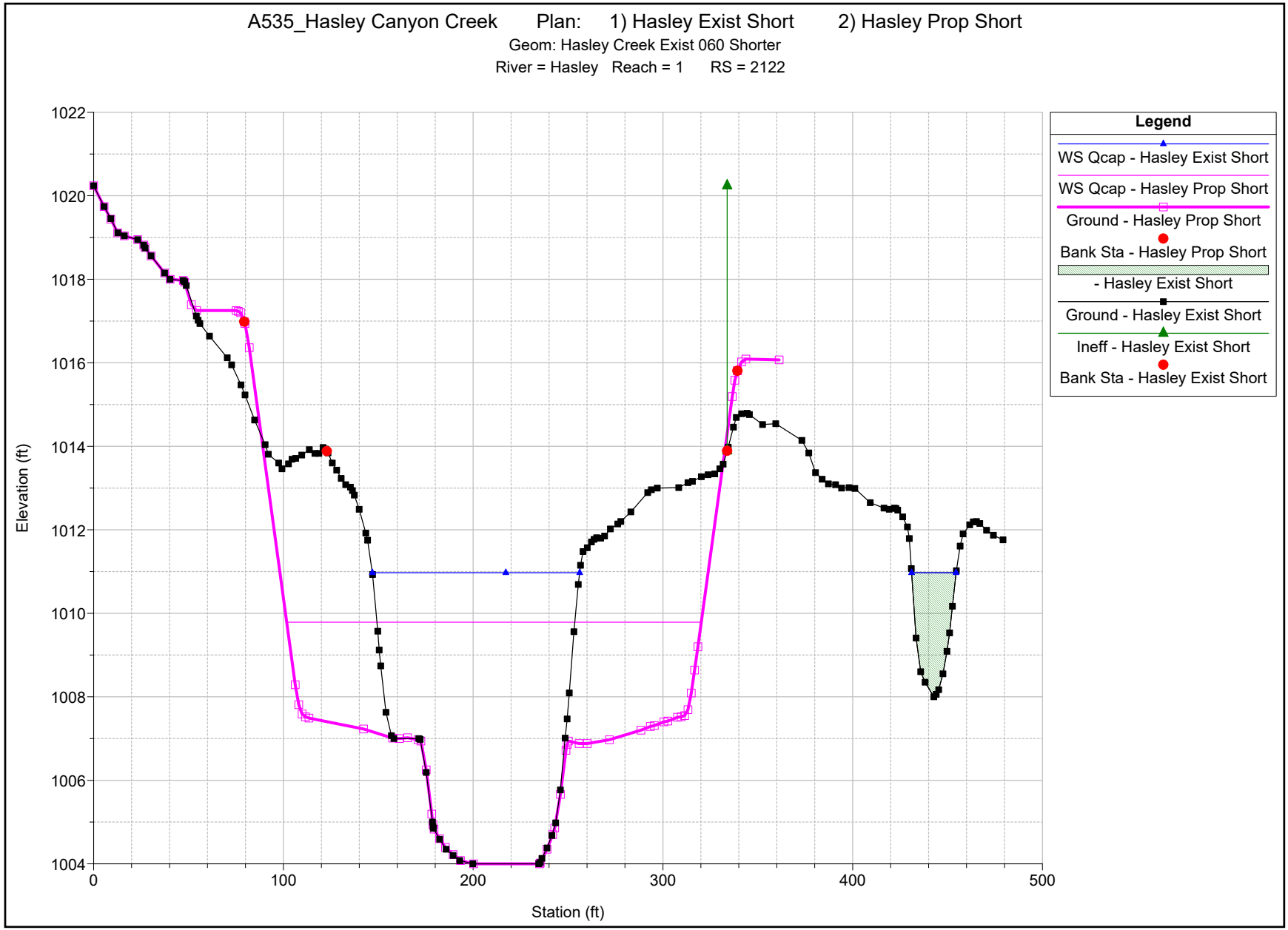
1025
1020
1015
1010
1005
0
100
200
300
400
500
600
700
Station (ft)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Legend
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WS Qcap - Hasley Prop Short
Ground - Hasley Prop Short
Bank Sta - Hasley Prop Short
- Hasley Exist Short
Ground - Hasley Exist Short
Ineff - Hasley Exist Short
Bank Sta - Hasley Exist Short
Elevation (ft)
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1016
1014
1012
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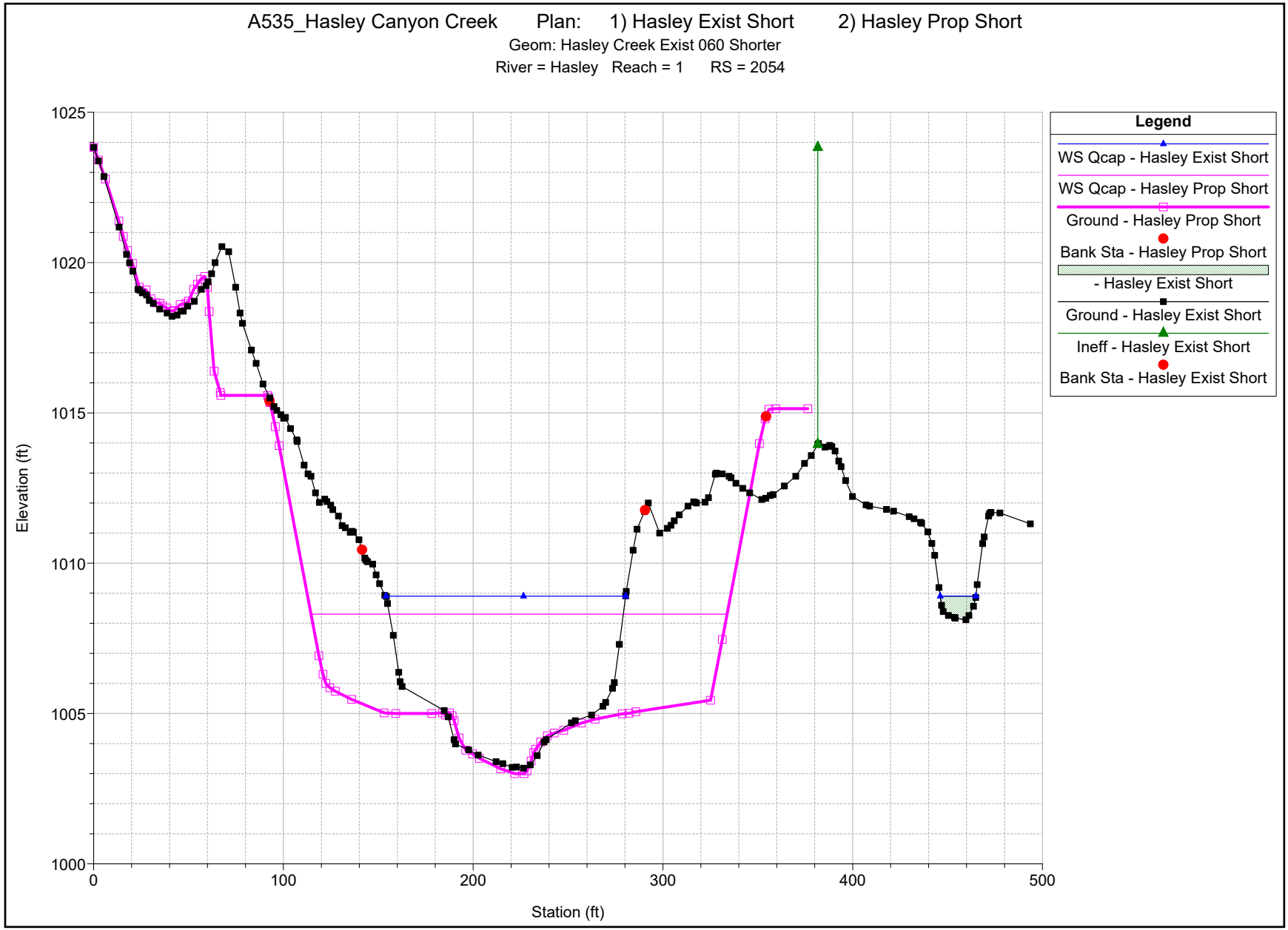
1008
1006
1004
0
100
200
300
400
500
Station (ft)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Geom: Hasley Creek Exist 060 Shorter
River = Hasley Reach = 1 RS = 2054
Legend
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WS Qcap - Hasley Prop Short
Ground - Hasley Prop Short
Bank Sta - Hasley Prop Short
- Hasley Exist Short
Ground - Hasley Exist Short
Ineff - Hasley Exist Short
Bank Sta - Hasley Exist Short
Elevation (ft)
1025
1020
1015
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1005
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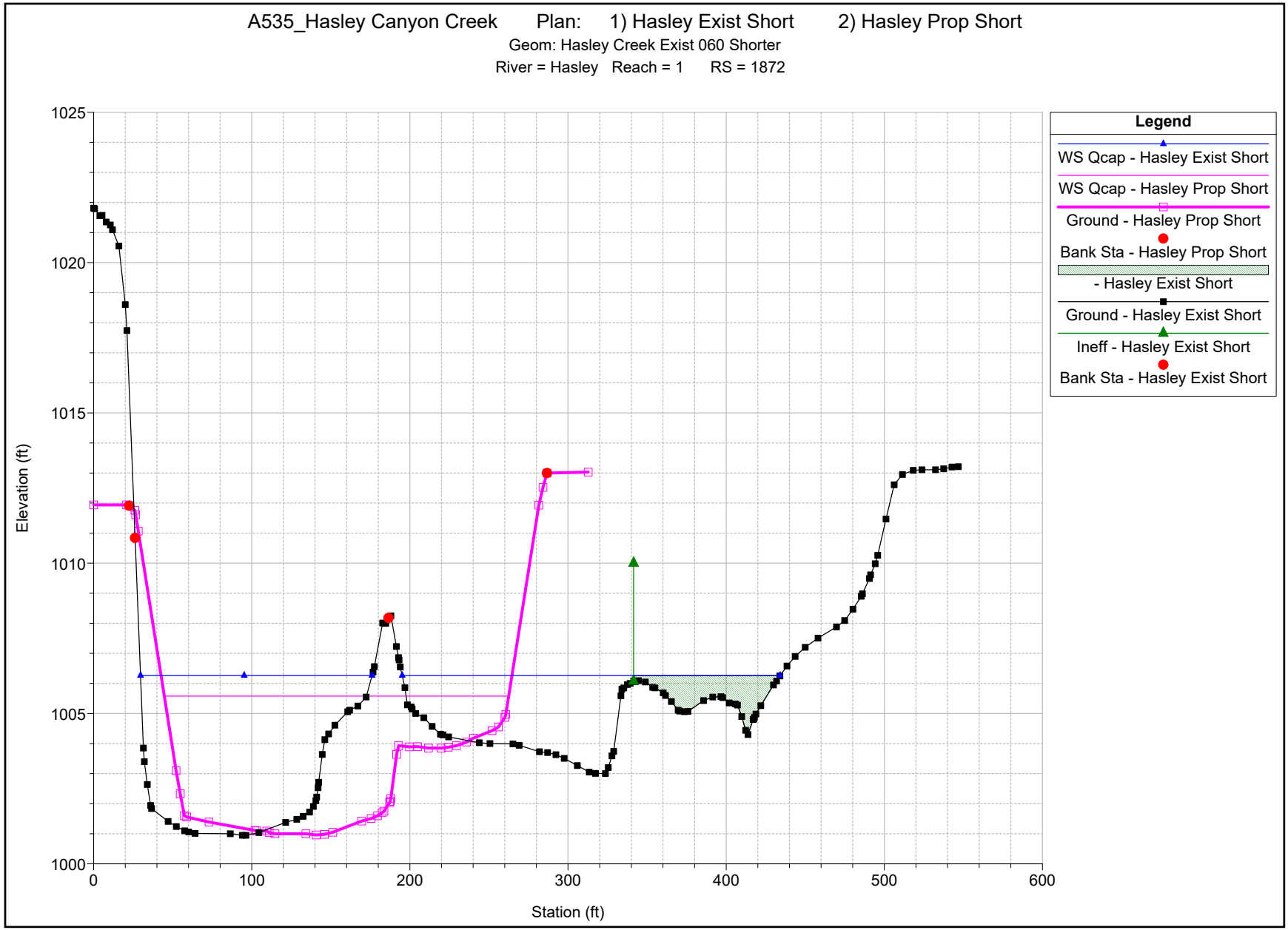
0
100
200
300
400
500
Station (ft)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River = Hasley Reach = 1 RS = 1872
Legend
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WS Qcap - Hasley Prop Short
Ground - Hasley Prop Short
Bank Sta - Hasley Prop Short
- Hasley Exist Short
Ground - Hasley Exist Short
Ineff - Hasley Exist Short
Bank Sta - Hasley Exist Short
Elevation (ft)
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1020
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0
100
200
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400
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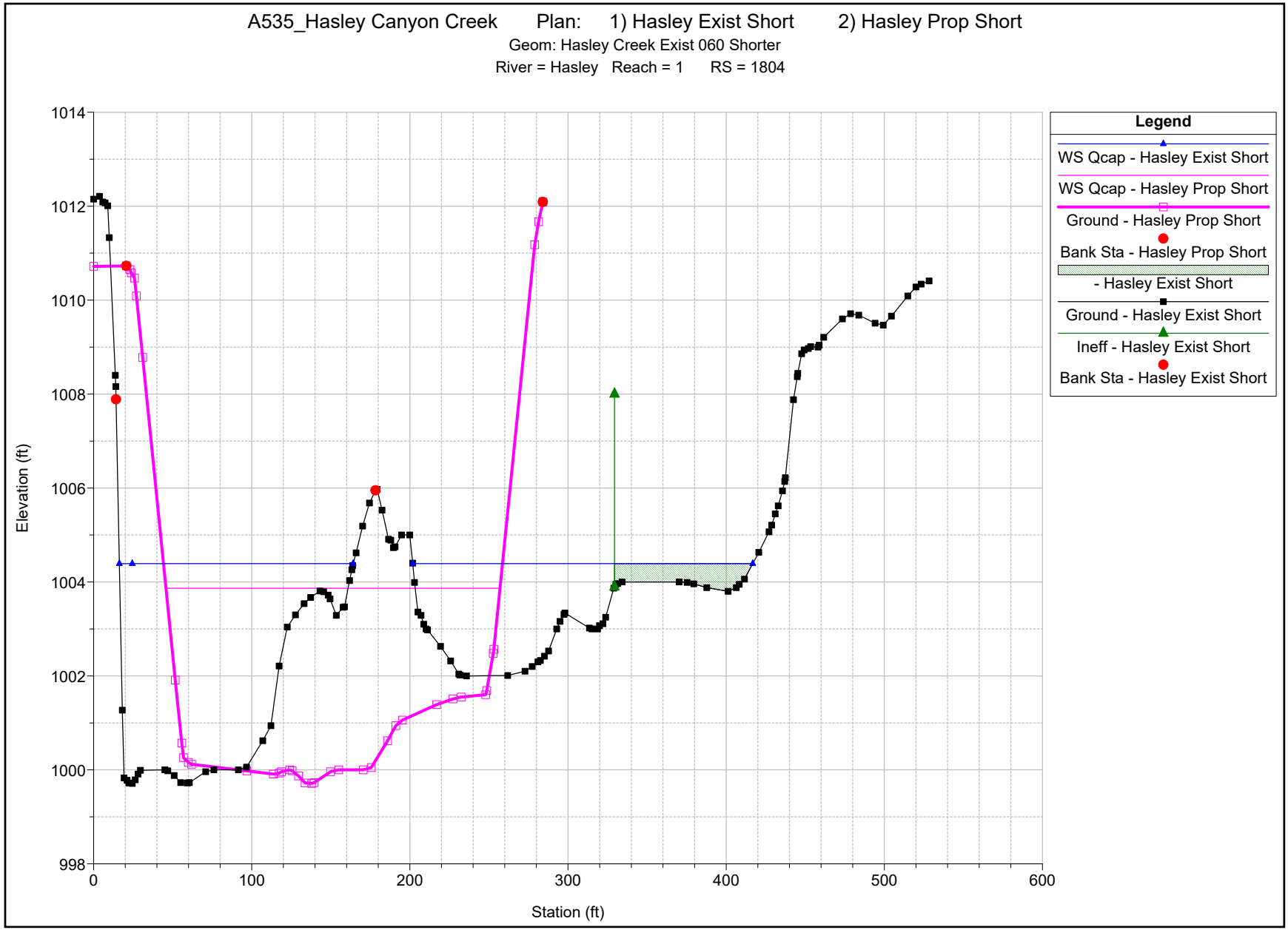
600
Station (ft)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Legend
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WS Qcap - Hasley Prop Short
Ground - Hasley Prop Short
Bank Sta - Hasley Prop Short
- Hasley Exist Short
Ground - Hasley Exist Short
Ineff - Hasley Exist Short
Bank Sta - Hasley Exist Short
Elevation (ft)
Station (ft)
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1012
1010
1008
1006
1004
1002
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998
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100
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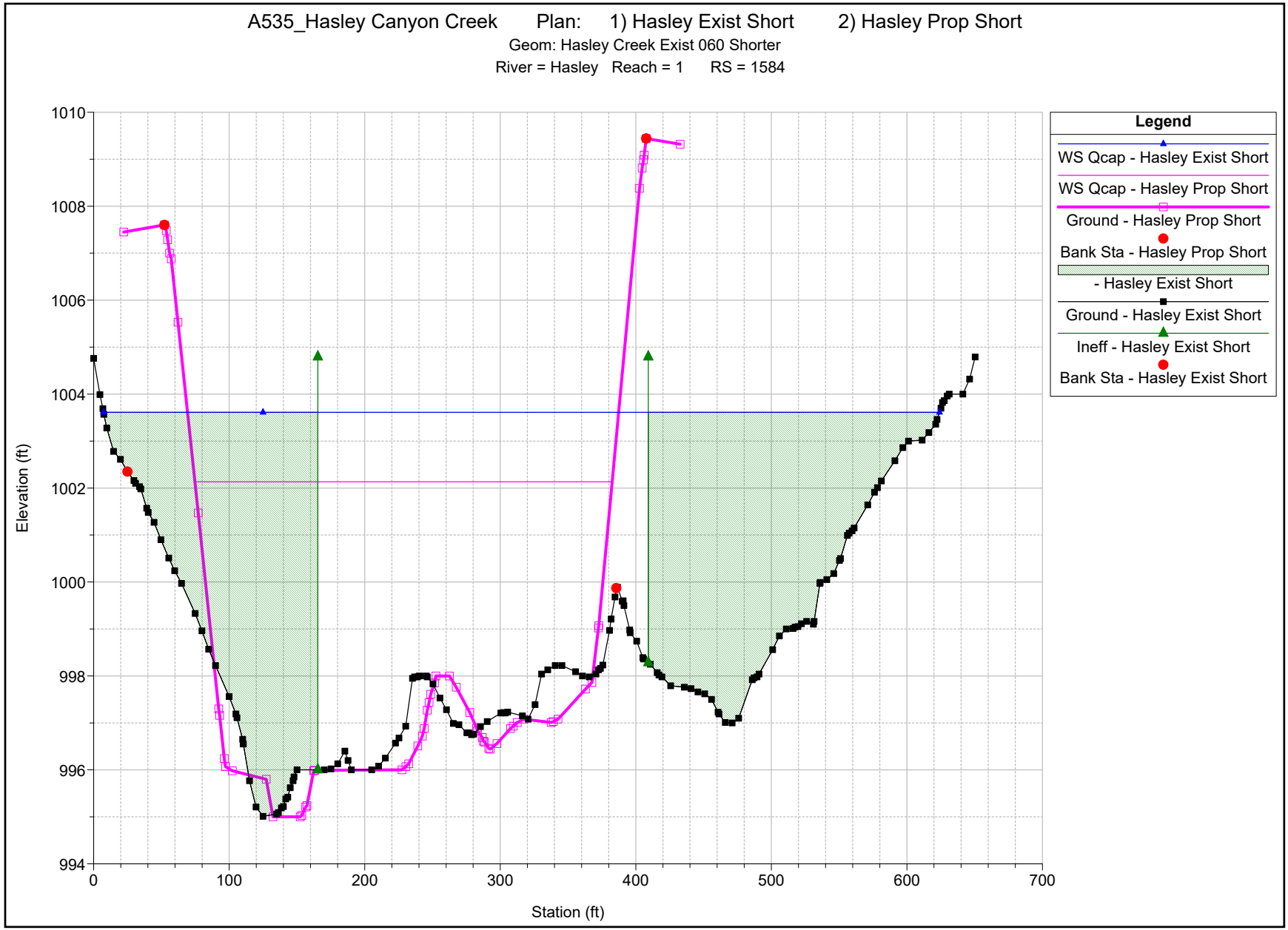
300
400
500
600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Geom: Hasley Creek Exist 060 Shorter
River = Hasley Reach = 1 RS = 1584
Legend
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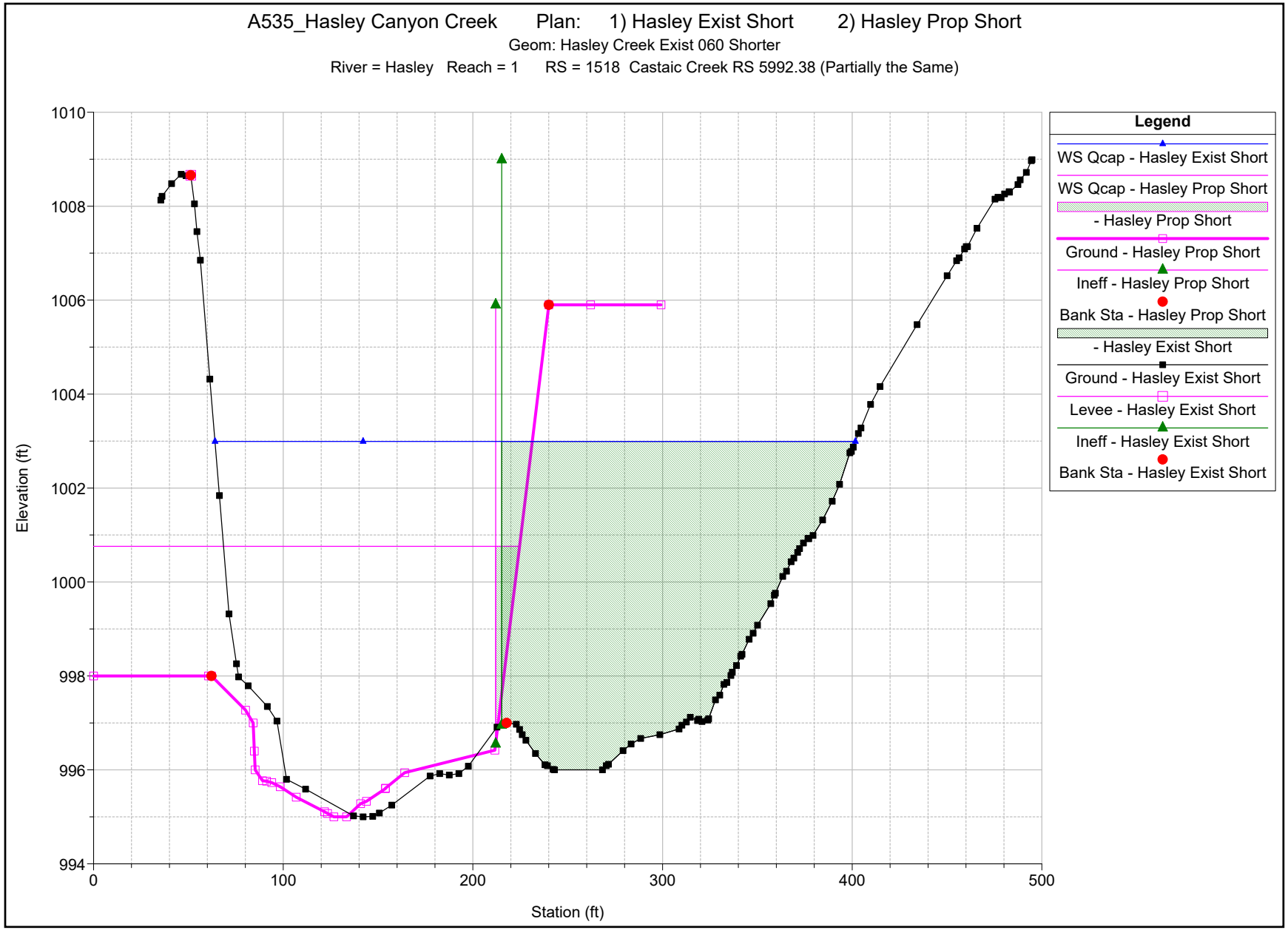
WS Qcap - Hasley Prop Short
Ground - Hasley Prop Short
Bank Sta - Hasley Prop Short
- Hasley Exist Short
Ground - Hasley Exist Short
Ineff - Hasley Exist Short
Bank Sta - Hasley Exist Short
Elevation (ft)
Station (ft)
1010
1008
1006
1004
1002
1000
998
996
994
0
100
200
300
400
500
600
700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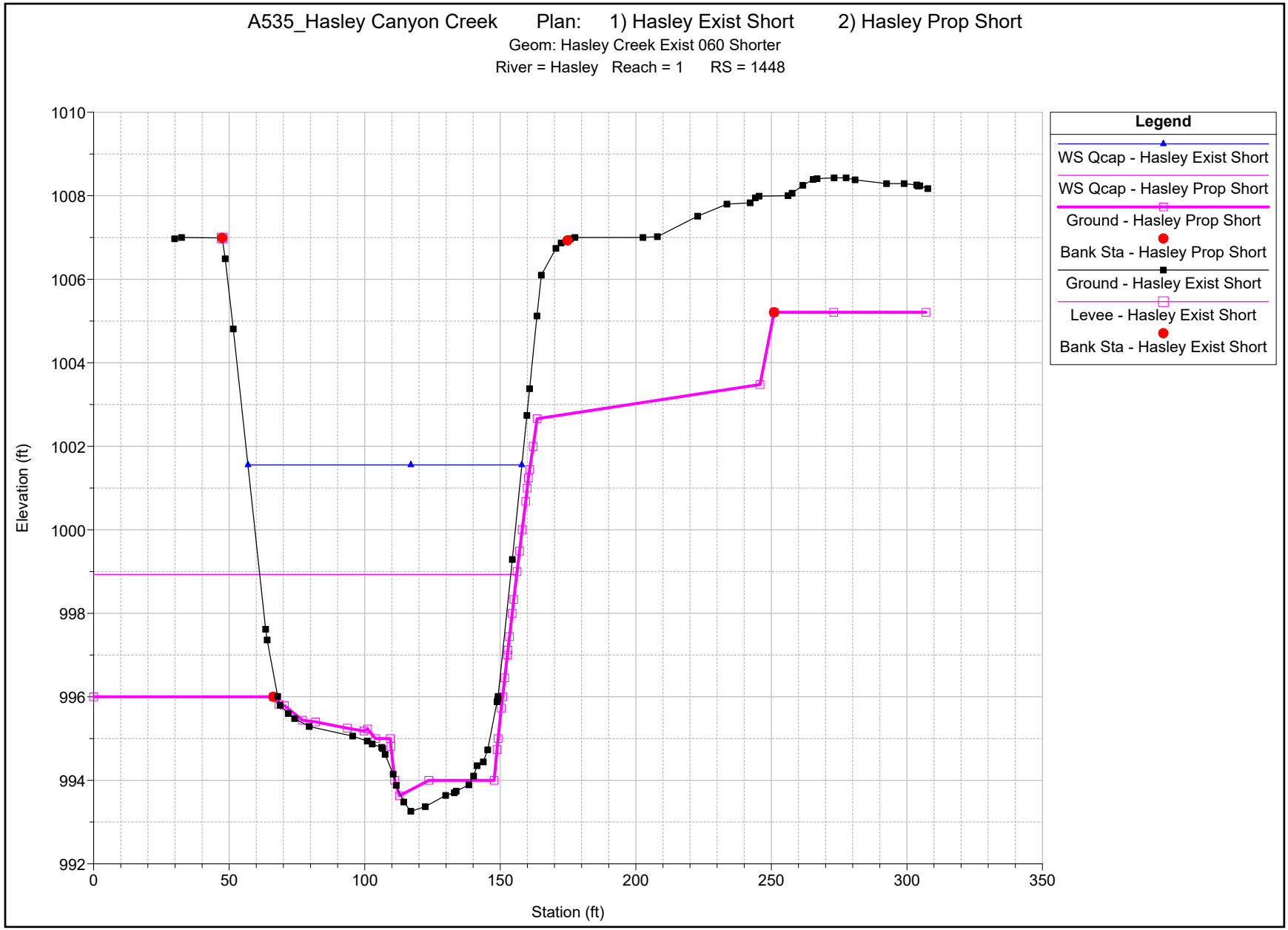
Geom: Hasley Creek Exist 060 Shorter
River = Hasley Reach = 1 RS = 1518 Castaic Creek RS 5992.38 (Partially the Same)
Elevation (ft)
Station (ft)
1010
1008
1006
1004
1002
1000
998
996
994
0
100
200
300
400
500
Legend
WS Qcap - Hasley Exist Short
WS Qcap - Hasley Prop Short
- Hasley Prop Short
Ground - Hasley Prop Short
Ineff - Hasley Prop Short
Bank Sta - Hasley Prop Short
- Hasley Exist Short
Ground - Hasley Exist Short
Levee - Hasley Exist Short
Ineff - Hasley Exist Short
Bank Sta - Hasley Exist Short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Geom: Hasley Creek Exist 060 Shorter
River = Hasley Reach = 1 RS = 1448
Legend
WS Qcap - Hasley Exist Short
WS Qcap - Hasley Prop Short
Ground - Hasley Prop Short
Bank Sta - Hasley Prop Short
Ground - Hasley Exist Short
Levee - Hasley Exist Short
Bank Sta - Hasley Exist Short
Elevation (ft)
Station (ft)
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1008
1006
1004
1002
1000
998
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994
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0
50
100
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200
250
300
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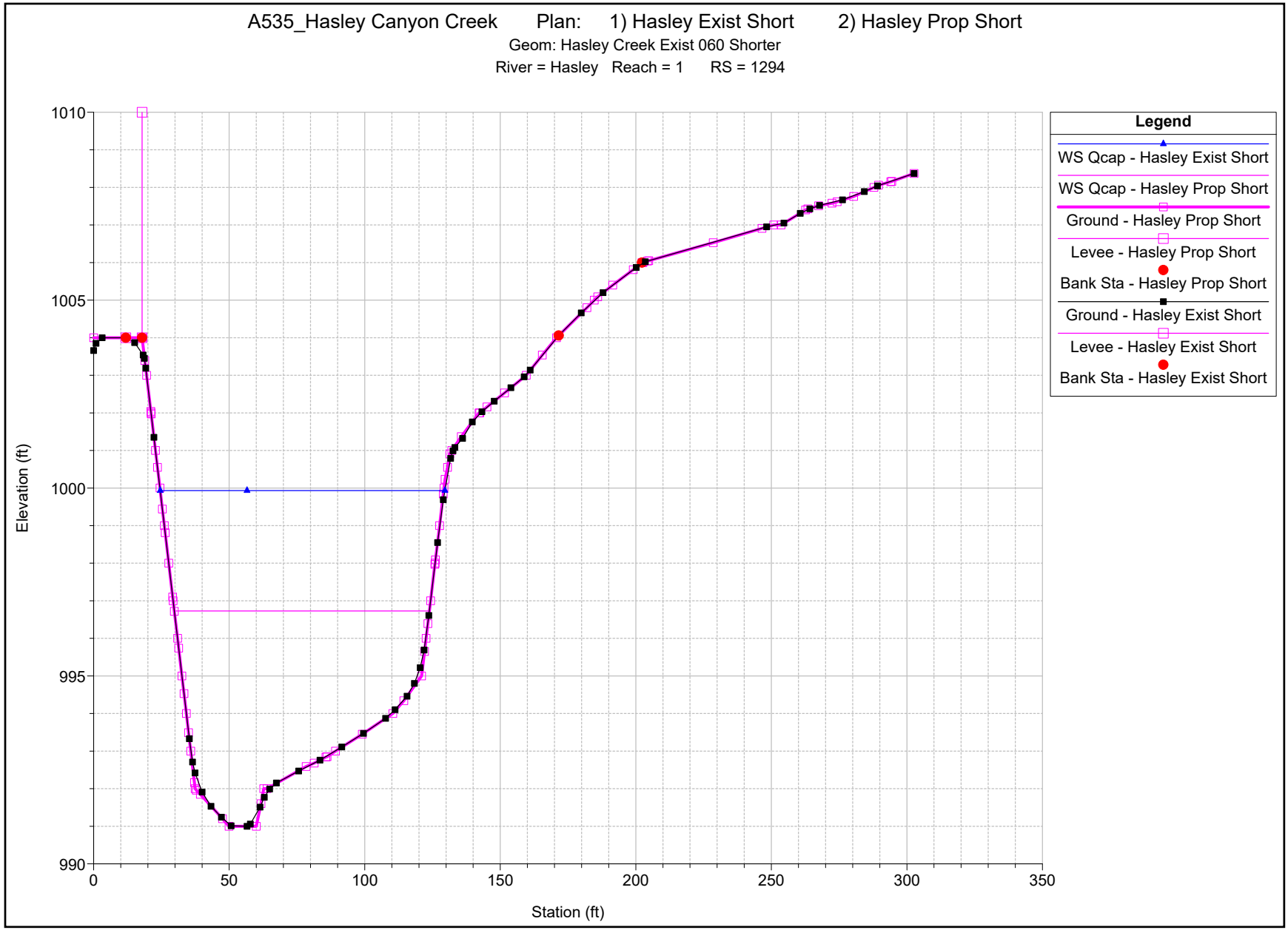
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Geom: Hasley Creek Exist 060 Shorter
River = Hasley Reach = 1 RS = 1294
Legend
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WS Qcap - Hasley Prop Short
Ground - Hasley Prop Short
Levee - Hasley Prop Short
Bank Sta - Hasley Prop Short
Ground - Hasley Exist Short
Levee - Hasley Exist Short
Bank Sta - Hasley Exist Short
Elevation (ft)
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1005
1000
995
990
0
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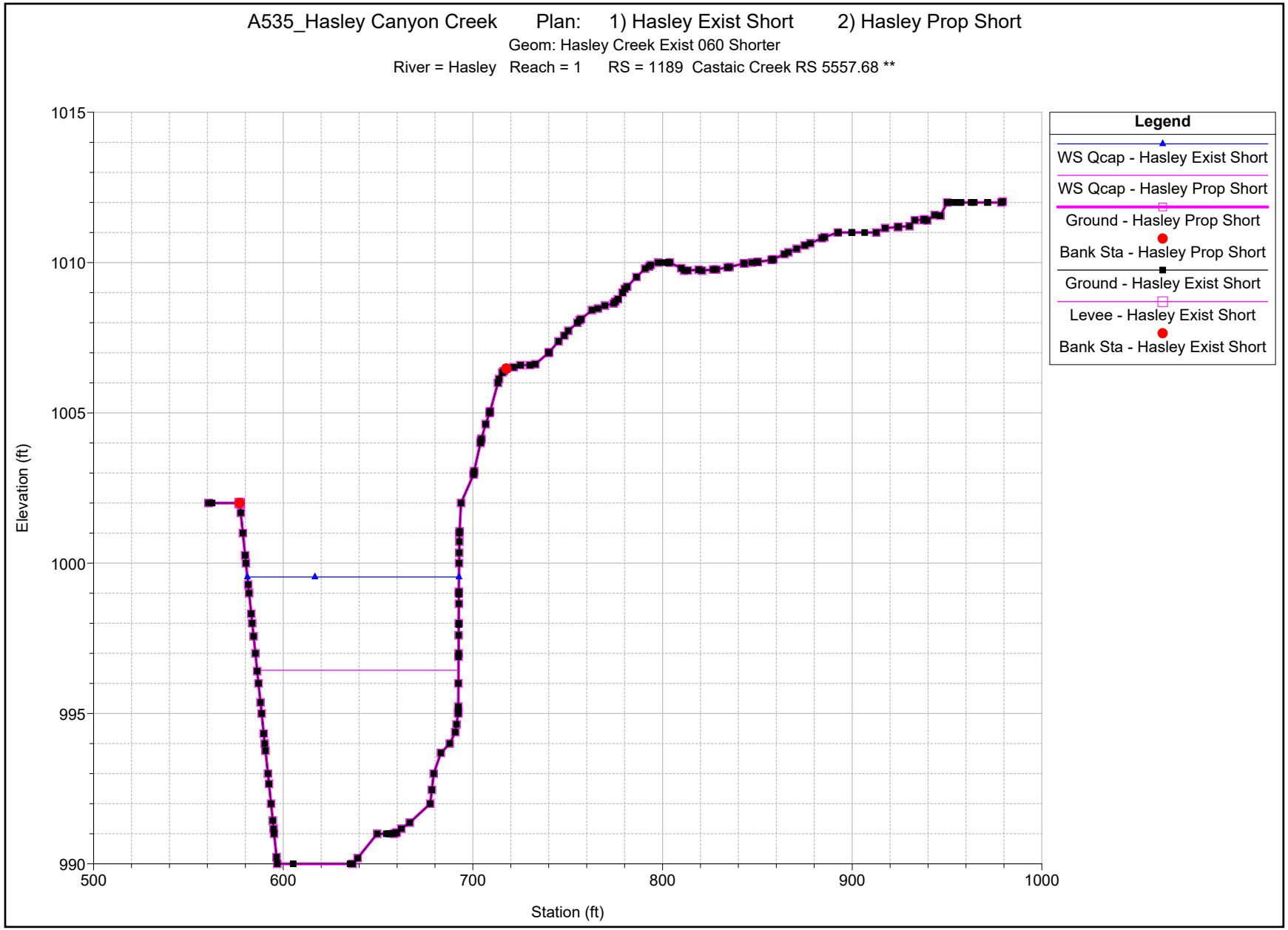
100
150
200
250
300
350
Station (ft)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River = Hasley Reach = 1 RS = 1189 Castaic Creek RS 5557.68 **
Legend
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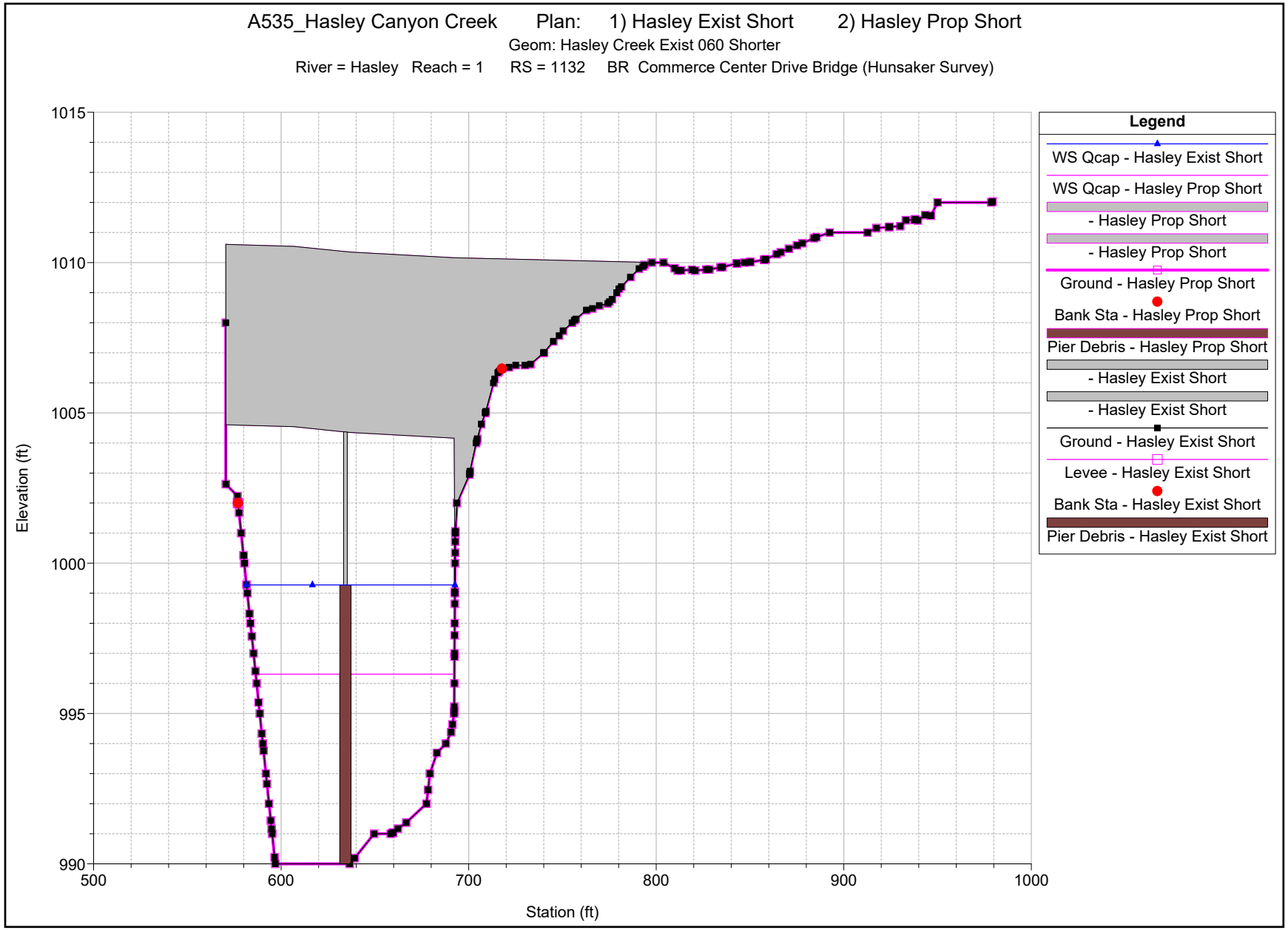
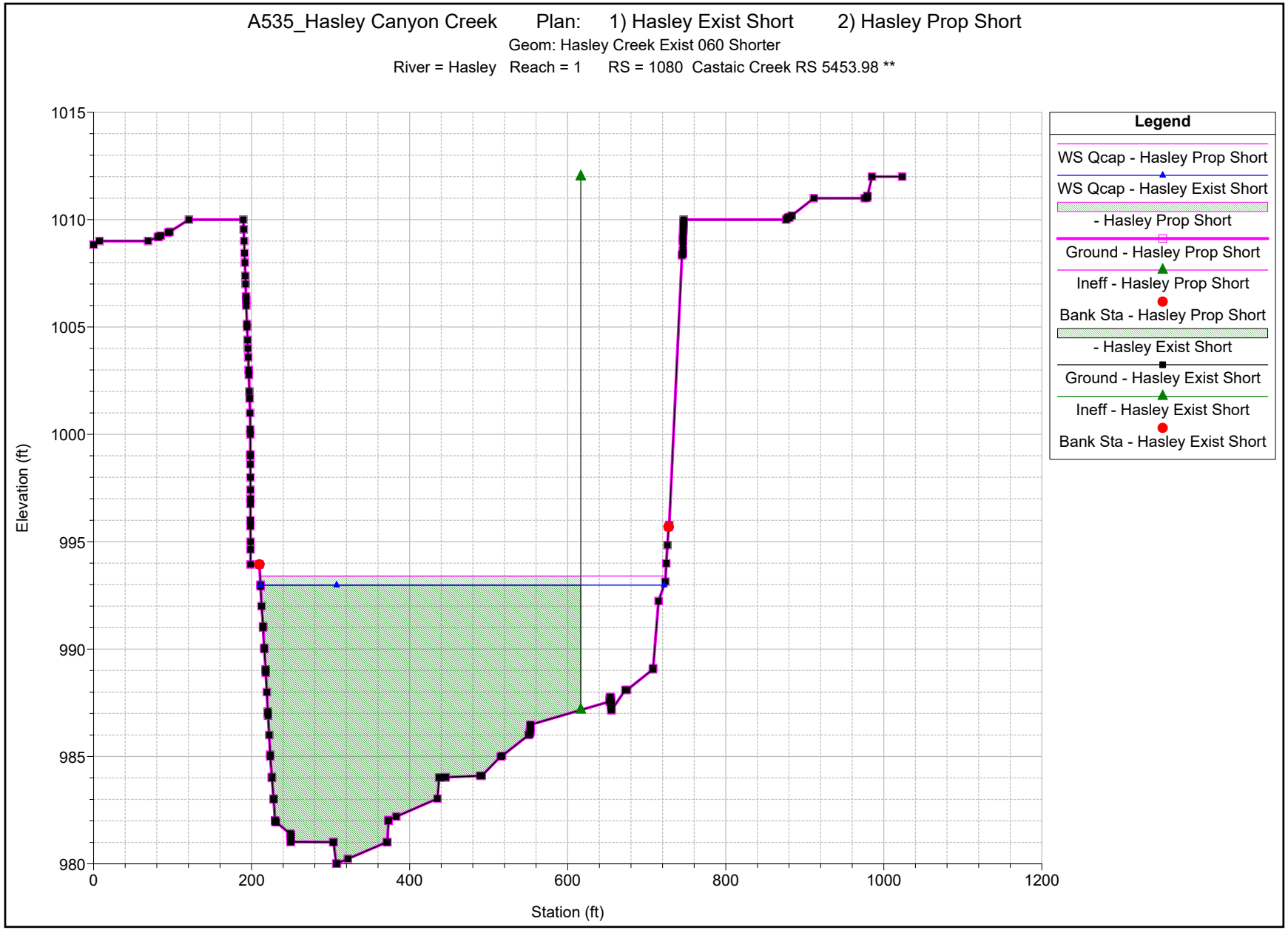
WS Qcap - Hasley Prop Short
Ground - Hasley Prop Short
Bank Sta - Hasley Prop Short
Ground - Hasley Exist Short
Levee - Hasley Exist Short
Bank Sta - Hasley Exist Short
Elevation (ft)
1015
1010
1005
1000
995
990
500
600
700
800
900
1000
Station (ft)


A535_Hasley Canyon Creek Plan: 1) Hasley Exist Short 2) Hasley Prop Short
Geom: Hasley Creek Exist 060 Shorter
River = Hasley Reach = 1 RS = 1132 BR Commerce Center Drive Bridge (Hunsaker Survey)
Elevation (ft)
1015
1010
1005
1000
995
990
500
600
700
800
900
1000
Station (ft)
Legend
WS Qcap - Hasley Exist Short
WS Qcap - Hasley Prop Short
- Hasley Prop Short
- Hasley Prop Short
Ground - Hasley Prop Short
Bank Sta - Hasley Prop Short
Pier Debris - Hasley Prop Short
- Hasley Exist Short
- Hasley Exist Short
Ground - Hasley Exist Short
Levee - Hasley Exist Short
Bank Sta - Hasley Exist Short
Pier Debris - Hasley Exist Short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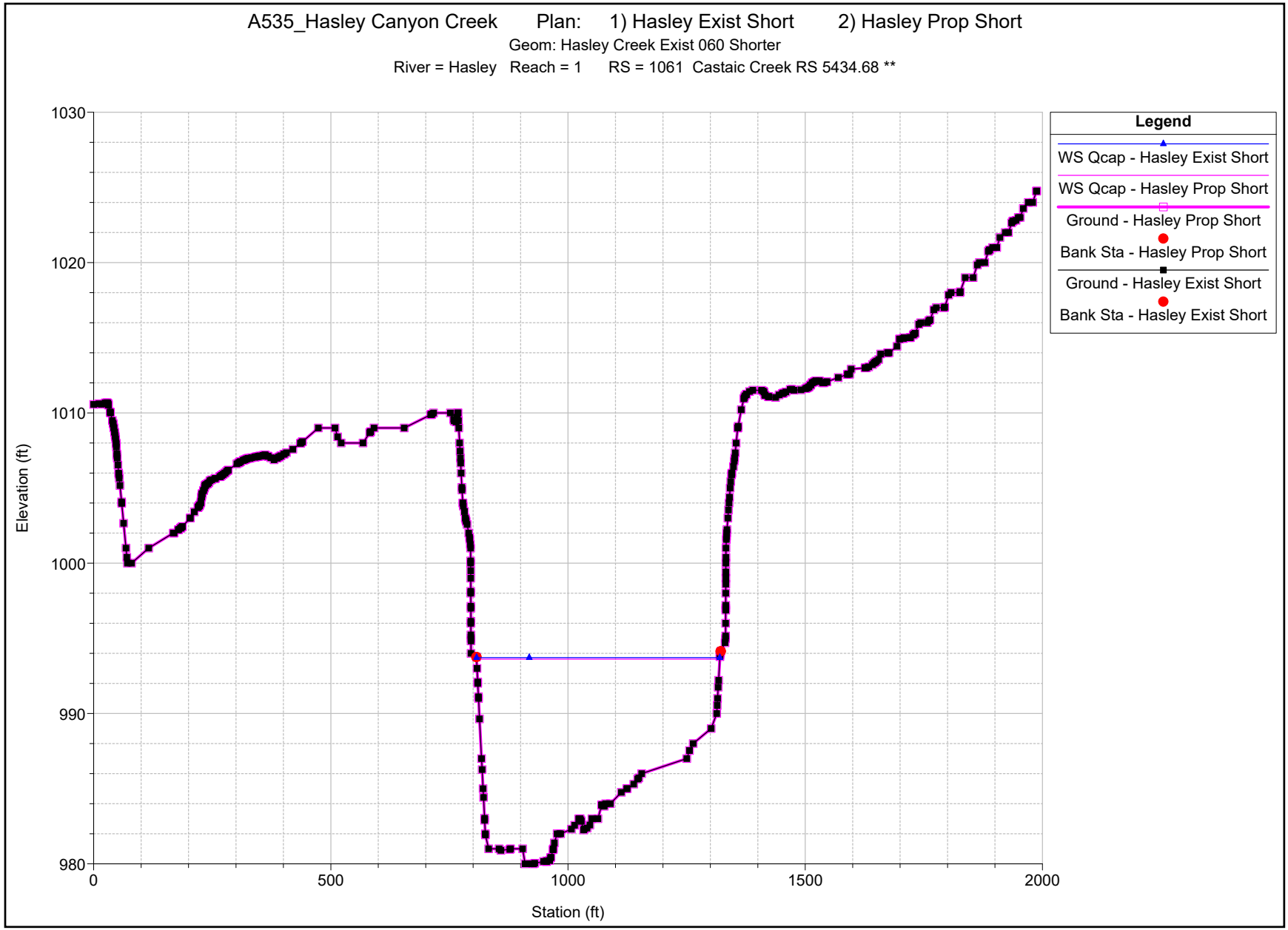
Elevation (ft)
Station (ft)
1015
1010
1005
1000
995
990
985
980
0
200
400
600
800
1000
1200
Legend
WS Qcap - Hasley Prop Short
WS Qcap - Hasley Exist Short
- Hasley Prop Short
Ground - Hasley Prop Short
Ineff - Hasley Prop Short
Bank Sta - Hasley Prop Short
- Hasley Exist Short
Ground - Hasley Exist Short
Ineff - Hasley Exist Short
Bank Sta - Hasley Exist Short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River = Hasley Reach = 1 RS = 1061 Castaic Creek RS 5434.68 **
Legend
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WS Qcap - Hasley Prop Short
Ground - Hasley Prop Short
Bank Sta - Hasley Prop Short
Ground - Hasley Exist Short
Bank Sta - Hasley Exist Short
Elevation (ft)
1030
1020
1010
1000
990
980
0
500
1000
1500
2000
Station (ft)

Appendix 5.5g

Castaic Creek County Floodplain Report

Capital Floodway Revision Analysis

Los Angeles County Floodway Revision ML Map No.'s 335-ML-1 and 2 for Castaic Creek
ESTU No. 2023000109

November 2024

Prepared For:

FivePoint Communities, LLC
25124 Springfield Court
Valencia, CA 91335

Submitted To:

Los Angeles County Department of Public Works
900 South Fremont Avenue
Alhambra, CA 91803

Prepared By:

Pacific Advanced Civil Engineering, Inc.
17520 Newhope Street, Suite 200
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714-481-7300

Contact Person:
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Emily Randig, MS, EIT

PACE JN A535

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B. HEC-RAS Revised Existing Conditions Capital Floodplain and Floodway
C. HEC-RAS Proposed Condition Capital Floodplain and Floodway
D. HEC-RAS Cross Section Comparison – Existing Vs. Proposed Conditions

Enclosure

1. HEC-RAS version 6.2 hydraulic models of existing and proposed floodplain and floodway

1 Introduction

Pacific Advanced Civil Engineering, Inc. (PACE) has been retained by FivePoint Communities to prepare a report for LA County Floodplain and Floodway Map Layer Revision along lower Castaic Creek. This report proposes a revision to the existing LA County Adopted Floodway Map for Castaic Creek between Commerce Center Drive and the Old Road/ Interstate 5 (I-5) Bridges. Furthermore, this report presents the proposed condition floodway and floodplain based on channel improvements for the Valencia Commerce Center (VCC) Industrial Park Development in Tentative Parcel Map (TPM) No. 18108. The project site is located within the unincorporated area of Los Angeles County, three miles west of the City of Santa Clarita.

The Valencia Commerce Center (VCC) Industrial Park Development in Tentative Parcel Map (TPM) No. 18108 requires bank protection along Castaic Creek. The proposed improvements along Castaic Creek consist of approximately 8,400 lineal feet (LF) of soil cement bank protection broken up into three segments.

(1) Proposed **"West"** Soil Cement Bank Protection - an approximately 4,000-LF section of soil cement bank protection on the west bank beginning near the confluence of Castaic Creek and Hasley Creek and extending to the existing concrete slope lining (PD No. 1982) adjacent to Live Oak Road

(2) Proposed **"Southeast"** Soil Cement Bank Protection – an approximately 3,000-LF section of soil cement bank protection on the east bank that will extend from Commerce Center Drive (CCD) Bridge to the existing rip-rap slope protection (PD No. 2441)

(3) Proposed **"Northeast"** Soil Cement Bank Protection – an approximately 1,400-LF section of soil cement bank protection on the east bank, that begins at the northern end of the existing rip-rap slope protection (PD No. 2441) to the Old Road Bridge

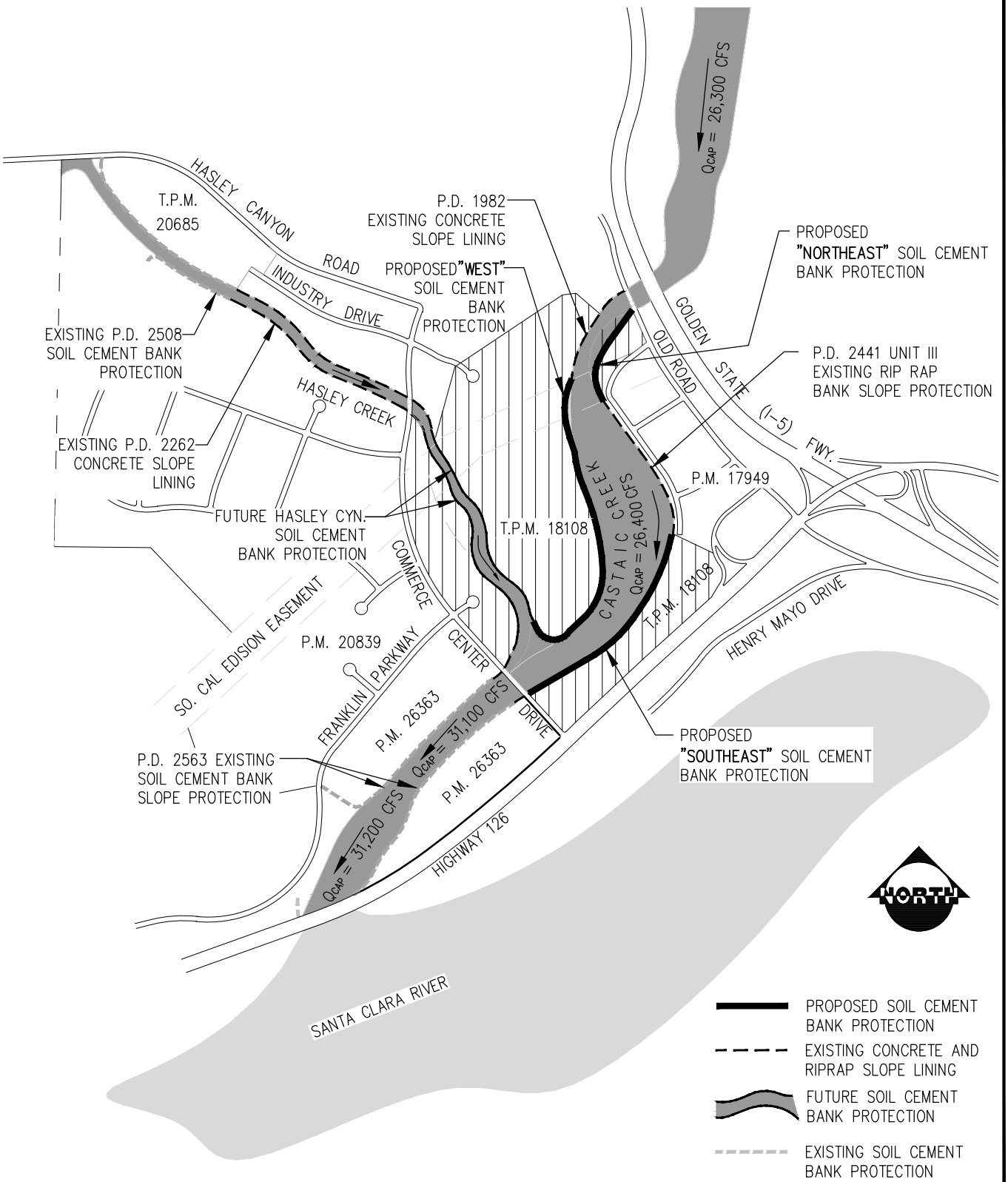
The Drainage Concept Report for the proposed soil cement bank protection titled, **Drainage Concept Report Volume II of V, Castaic Creek Bank Protection, ESTU No. 2001000012**, was approved by LACPW in September 2019. Refer to Figure 1-1 for project location map.

The existing Los Angeles County Capital Floodway maps (335-ML-1 & 2) were adopted by the Board of Supervisors on August 28, 1984 by Ordinance No. 84-0136. PACE prepared revisions to the existing Los Angeles County Capital Floodway maps, herein referred to as ML Maps, as part of a report titled, **Los Angeles County Capital Floodway Revision ML Map No's 335-ML-1&2 Castaic Creek Bank Protection (P.D. No. 2563) for P.M. No. 26363**, in December 2006. The revisions were submitted to LA County Department of Public Works for review and approved on October 2, 2007. The 2007 revisions changed the ML mapped floodway and floodplain between Commerce Center Drive and Hwy 126.

PACE obtained current hydrology data for the capital flood (Q_{cap}) within Castaic Creek watershed, from Los Angeles County Department of Public Works (LACPW). The hydraulic analysis performed for Castaic Creek was based on the current hydrology provided.

Some of the major items discussed or included in this report include:

- A summary of the hydrology and hydraulic study utilized to determine the existing and proposed capital floodway and floodplain.
- LA County adopted floodway ML Maps No.'s 335-ML-1 & 2.
- Updated existing conditions capital floodplain and floodway hydraulic analysis from Commerce Center Drive to upstream of the Interstate-5 (I-5) Bridge.
- Proposed conditions floodplain and floodway hydraulic analysis from Commerce Center Drive to upstream of the Interstate-5 (I-5) Bridge, RS 12350 (approx. 7,200 ft in length).
- Updated existing and proposed conditions capital floodplain and floodway mapping.



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DESIGNED	E.M.R.
DRAWN	B.D.P.
CHECKED	J.C.
DATE	Nov, 2022
JOB NO.	A535

CASTAIC CREEK
SOIL CEMENT BANK PROTECTION
TPM # 18108

INDEX MAP

FIGURE 1-1

2 Hydrology

2.1 Regional Hydrology

Castaic Creek is located within Castaic Creek basin watershed, which has a contributing drainage area of approximately 202 square-miles. PACE obtained current hydrology data for the Capital Flood (Q_{cap}) for Castaic Creek from LACPW. The Q_{cap} discharge rates for Castaic Creek are summarized in Table 2-1.

The Los Angeles County Flood Control District (LACFCD) analyzes hydraulics based on the Capital Flood, Q_{cap}. The Q_{cap} assumes a burned watershed and bulked peak flows. The design storm established by LACFCD is the Q_{cap} capital flood, which is defined as follows:

1. The design storm is assumed to occur on already saturated soils over a period of four days, with the maximum rainfall falling on the fourth day. During the 24-hour period of maximum rainfall, the rainfall intensity typically increases during the first 70-90% of the period and decreases in the remaining time. Furthermore, approximately 80% of the amount of the 24-hour rainfall falls within the same 70-90% of the period.
2. When converting rainfall to runoff, rainfall that is not lost due to hydrologic processes of interception, evaporation, transpiration, depression storage, infiltration or percolation is assumed to be surface runoff.
3. The natural portions of the watershed are assumed to have been burned by fire, which decreases soil infiltration.
4. In the area where a watershed is burned, the runoff would carry with it a large layer of eroded topsoil, burned trees and brush. To account for the quantity of debris, the design flow rate is artificially increased by a percentage increase in flow rate, or bulking factor.

Table 2-1 presents the capital flood discharge rates for Castaic Creek between the Old Road and the Hwy 126 Bridges.

Table 2-1: Design Hydrology

Storm Event	Design Flow (cfs)	Location
CAP (1)	26,300	Upstream of the Old Road Bridge and I-5 Bridge
CAP (1)	26,400	Old Road Bridge and I-5 Bridge to Hasley Creek Confluence
CAP (1)	31,100	Hasley Creek Confluence to unnamed canyon approximately 1,200 ft upstream of Highway 126
CAP (1)	31,200	unnamed canyon approximately 1,200 ft upstream of Highway 126 to State highway 126 Bridge

Notes:
(1) Source LACPW (Water Resources Division, See Appendix A)

3 Existing Hydraulic Analysis and Floodplain/ Floodway Mapping

Included in this report are three floodplain/ floodway map limits: (1) LA County Adopted Capital Floodplain and Floodway, (2) the Updated Existing Condition Capital Floodplain and Floodway, and the (3) Proposed Condition Capital Floodplain and Floodway. HEC-RAS hydraulic models were created for the updated existing condition and proposed conditions floodplain and floodways using 2013 topography, updated flowrates, and the proposed soil cement bank protection channel geometry.

3.1 HEC-RAS Models

A hydraulic model was developed for Castaic Creek using recent topography and hydrology data to determine the limits of the capital floodplain and floodway for the updated existing condition and proposed condition. A manning's roughness value of 0.06 was used in the revised modeling, which is consistent with LACPW floodplain mapping requirements. The hydraulic model was prepared using HEC-RAS software version 6.2.0, as developed by the U.S. Army Corps of Engineers. Table 3-1 below shows the different HEC-RAS hydraulic models generated for Castaic Creek and utilized for the updated existing and proposed conditions floodplain and floodway hydraulic analysis.

Table 3-1: HEC-RAS Models for Castaic Creek

HEC-RAS File Name	Description	Use
Updated Existing Conditions	Q_{cap}, n=0.060	To determine existing capital floodplain and floodway within Castaic Creek from Interstate-5/ Old Rd. to upstream of Hwy. 126 (RS 13371 to RS 1981.79)
Proposed Conditions	Q_{cap}, n=0.060	To determine proposed capital floodplain and floodway within Castaic Creek from Interstate-5/ Old Rd. to upstream of Hwy. 126 (RS 13371 to RS 1981.79)
Note: See Appendices B and C for copies of the detailed HEC-RAS hydraulic output for the existing and proposed conditions.		

3.1.1 Cross Section Geometry

The HEC-RAS model cross section lay-out was based on the Drainage Concept Report titled, **Drainage Concept Report Volume II of V, Castaic Creek Bank Protection, ESTU No. 2001000012**, approved in September 2019, with updates to facilitate floodplain mapping. Additional cross sections were added to capture locations of abrupt change in cross section geometry – specifically in areas around a berm at the Hasley Creek confluence.

3.1.2 Hydraulic Structures

The hydraulic models include three existing bridges over Castaic Creek within the study area: the Commerce Center Drive Bridge, the Old Road Bridge, and the I-5. Debris loading is applied at each bridge in accordance with the USACE (US Army Corps of Engineers) Memorandum of Record, "Hydrology and Hydraulics Policy Memorandum No 4., Debris Loading on Bridges and Culverts." The piers for the Old Road Bridge and the I-5 Bridge do not have sloping extensions, so they fall under debris loading Case 1. This case assumes 2 feet of debris loading on each side of each pier for the full depth of flow. At the Commerce Center Drive bridge, Case 1 debris loading is applied to piers 1,2,3,4, and 6. Pier 5 is wider than 6', so additional debris loading does not need to be added.

3.1.3 Ineffective Flow Areas and Expansion and Contraction Coefficients

Ineffective flow markers were used to define area with ineffective flow, including at abrupt contractions and expansions in the available flow area. In the existing condition a contraction ratio of 1:1 was used to define ineffective flow downstream of cross section 11811.16, where flow expands downstream of the Old Road Bridge, and also downstream of cross section 7688.71 where flow expands as it breaks out over the left bank. These areas of ineffective flow are detailed on Figure 3.3.

In both the existing and proposed conditions, ineffective flow markers are used to make flows on the north side of the flow diversion berm at Commerce Center Drive ineffective. The flows on this side of the berm will generally come from Hasley Canyon Creek, so they are modeled as ineffective for Castaic Creek. More detailed discussion on the modeling of the confluence can be found in Section 3.6.

The expansion and contraction coefficients specified at each cross section follow the guidance in the HEC-RAS Manual. Generally, cross sections expansion and contraction coefficients are set to 0.3 and 0.1, respectively. This represents areas of gradual transition and are also the default values within HEC-RAS. At bridge sections, the expansion and contraction coefficients are set to 0.5 and 0.3 respectively, as required in the HEC-RAS Manual.

3.2 LA County Adopted Capital Floodplain and Floodway

The current existing Los Angeles County Capital Floodway Maps (335-ML-1 & 2) were adopted by the Board of Supervisors on August 28, 1984 by Ordinance No. 84-0136. Refer to Figures 3-1 and 3-2 for LA County Capital Floodway (ML) maps (reference only).

Soil cement bank protection was built in 2007 per P.D. 2563 downstream of the Commerce Center Drive bridge. At construction completion, PACE submitted a revision for the Los Angeles County Capital Floodway Maps and the revisions were adopted by the Board of Supervisors on October 2, 2007. However, the current ML maps have not been updated to reflect these improvements. Upon discussion with LACPW it was determined that the downstream portion of the present study should tie-in to the adopted 2007 floodway and floodplain limits, while the upstream limits will still tie-in to the adopted ML maps from 1984.

3.3 Updated Existing Condition Capital Floodplain

The existing condition hydraulic analysis was generated in order to establish the current existing LA County floodplain from Commerce Center Drive to the Old Rd. / Interstate-5 Bridges. The updated existing conditions hydraulic analysis utilized more current topography (dated 2013), updated Q_{cap} discharge rates, and Manning's value (n) of 0.06. Table 3-2 provides a summary of the updated existing conditions hydraulic analysis. See Figure 3-3 for mapping of the updated existing condition floodplain.

3.4 Updated Existing Condition Capital Floodway

Floodways are defined as the channel of a river that is reserved in order to discharge the base flood without cumulatively increasing the water surface elevation by more than a designated height, usually set at 1.0 ft. Cross section floodways were defined in accordance with LACDPW requirements where, *"Floodway limits are established at the point where the velocity of flow equals 10 ft/sec or the water surface elevation rises 1ft above the flood plain water surface elevation. The first of either criteria reached controls the floodway width. If the velocity of flow in the flood plain for a particular section exceeds 10 ft/sec, the flood plain lines and floodway lines are one and the same."*

The updated existing condition floodway hydraulic model was generated using the following steps. First, the updated existing condition floodplain was analyzed and all sections with velocity greater than 10 ft/sec were set to have no encroachment. Next, HEC-RAS encroachment methods 4 and 1 were used to generate a floodway. HEC-RAS encroachment method 4 computes encroachment stations to achieve a maximum of a 1.0-foot rise with an equal loss of conveyance on the left and right banks. Then, Method 1 is then used to refine the encroachment stations, where the user specifies the locations of the encroachment stations at each individual cross section. Floodway encroachment results for change in water surface elevation and velocity were checked to ensure they meet the LACDPW criteria.

3.5 Updated Existing Condition Capital Floodplain and Floodway Results

The existing condition floodway hydraulic analysis was generated in order to establish the updated existing condition floodplain and floodway limits from Commerce Center Drive to the Old Rd./ Interstate-5 Bridges. The updated existing conditions hydraulic analysis utilized more current topography, updated Q_{cap} discharge rates, and Manning's value (n) of 0.06.

Table 3-2 provides a summary of the updated existing conditions hydraulic analysis for the floodplain and floodway. The table compares several hydraulic elements. The most important elements to analyze are the water surface elevations and top widths. The maximum rise allowable in water surface elevations is 1.0 ft. The water surface elevations increase as a result of encroaching into the floodplain to determine an acceptable floodway boundary. Table 3-2 shows the differences between the floodplain and floodway are all within the 1.0 ft maximum allowable rise in water.

The limits of the floodplain and floodway for the updated existing conditions extend from the Commerce Center Drive to the Old Rd./ Interstate-5 Bridges. The updated existing hydraulic analysis establishes the current existing capital floodway for LA County ML maps (335 ML-1&2). See Figure 3-3 for mapping of the updated existing floodplain and floodway.

Table 3-2: Updated Existing Conditions Floodplain and Floodway Comparison, Q_{cap}= 26,400 cfs/ 31,200 cfs (n=0.06)

HEC-RAS River Station	Profile	W.S.E (ft)	FP - FW Delta W.S.E. (ft)	Top Width (ft)	Sta W.S.E. Left (ft)	Sta W.S.E. Right (ft)	Enc. Sta. Left (ft)	Enc. Sta. Right (ft)
12350	FP	1041.6		1200.6	25.2	1225.9		
12350	FW	1041.5	**0.0**	320.0	775.0	1095.0	775.0	1095.0
12146	FP	1040.5		877.9	132.7	1083.4		
12146	FW	1040.5	**0.0**	263.7	662.8	926.5	662.7	928.1
12059.65 BR U	FP	1040.2		201.2	664.1	925.3		
12059.65 BR U	FW	1040.2	**0.0**	248.74	662.8	926.5	662.7	928.1
12059.65 BR D	FP	1038.3		229.7	686.3	926.8		
12059.65 BR D	FW	1038.4	**0.0**	235.61	686.4	926.0	686.0	926.0
11957.32	FP	1038.4		240.3	686.4	926.7		
11957.32	FW	1038.4	**0.0**	239.6	686.4	926.0	686.0	926.0
11923	FP	1038.3		243.1	687.4	930.4		
11923	FW	1038.3	**0.0**	240.2	687.3	927.5	687.0	927.5
11917.82 BR U	FP	1035.9		201.2	688.5	929.4		
11917.82 BR U	FW	1036.0	**0.1**	199.73	687.3	927.5	687.0	927.5
11917.82 BR D	FP	1035.4		229.7	674.8	919.7		
11917.82 BR D	FW	1035.6	**0.1**	229.7	17.8	926.6	0.0	0.0
11878.32	*FP*	*1035.5*		*631.7*	*18.0*	*926.4*		
11878.32	*FW*	*1035.6*	***0.1***	*635.7*	*17.8*	*926.6*	*0.0*	*0.0*
11845.64	FP	1035.4		304.1	666.5	970.6		
11845.64	FW	1035.5	**0.1**	308.5	664.8	973.3	656.3	982.7
11811.76	*FP*	*1033.3*		*289.6*	*633.2*	*987.9*		
11811.76	*FW*	*1034.2*	***0.9***	*301.7*	*631.1*	*990.9*	*0.0*	*0.0*
11551.18	FP	1031.5		999.9	91.8	1091.7		
11551.18	FW	1032.1	**0.6**	419.0	580.0	999.0	580.0	999.0
11242.98	FP	1029.4		999.0	419.5	1418.4		
11242.98	FW	1030.2	**0.8**	541.0	820.0	1361.0	820.0	1361.0
10982.86	FP	1027.8		1115.5	515.7	1631.2		
10982.86	FW	1028.8	**1.0**	601.0	975.0	1576.0	975.0	1576.0
10738.26	FP	1026.2		1286.8	71.0	1357.8		
10738.26	FW	1026.9	**0.6**	582.0	640.0	1222.0	640.0	1222.0

HEC-RAS River Station	Profile	W.S.E (ft)	FP - FW Delta W.S.E. (ft)	Top Width (ft)	Sta W.S.E. Left (ft)	Sta W.S.E. Right (ft)	Enc. Sta. Left (ft)	Enc. Sta. Right (ft)
10490.82	FP	1023.8		1441.7	24.2	1476.3		
10490.82	FW	1024.3	**0.5**	645.0	735.0	1380.0	735.0	1380.0
10351.28	FP	1021.6		1339.5	171.2	1552.1		
10351.28	FW	1022.3	**0.7**	585.0	905.0	1490.0	905.0	1490.0
10141.82	FP	1019.1		1090.0	296.6	1616.3		
10141.82	FW	1019.9	**0.8**	555.0	930.0	1485.0	930.0	1485.0
9931.16	FP	1017.2		915.0	812.2	1727.2		
9931.16	FW	1017.9	**0.7**	630.0	920.0	1550.0	920.0	1550.0
9670.57	FP	1015.1		1042.0	802.0	1844.0		
9670.57	FW	1016.1	**0.9**	776.0	865.0	1641.0	865.0	1641.0
9501.81	FP	1013.8		754.8	745.0	1499.8		
9501.81	FW	1014.8	**1.0**	618.0	790.0	1408.0	790.0	1408.0
9298.99	FP	1011.8		674.7	704.4	1379.1		
9298.99	FW	1012.7	**0.8**	549.0	753.0	1302.0	753.0	1302.0
9042.81	FP	1009.3		909.4	654.0	1563.4		
9042.81	FW	1010.2	**0.8**	677.0	748.0	1425.0	748.0	1425.0
8724.84	FP	1006.3		1290.3	663.9	1954.1		
8724.84	FW	1007.3	**1.0**	919.0	768.0	1687.0	768.0	1687.0
8396.13	FP	1003.3		1376.5	540.7	1917.2		
8396.13	FW	1004.0	**0.7**	931.0	754.0	1685.0	754.0	1685.0
8049.79	FP	1002.0		1280.0	424.7	1704.6		
8049.79	FW	1002.4	**0.4**	925.0	650.0	1575.0	650.0	1575.0
7688.71	FP	1001.4		1215.3	572.2	1787.5		
7688.71	FW	1001.7	**0.3**	800.0	640.0	1440.0	640.0	1440.0
7326.46	FP	1000.2		1365.1	76.8	1453.6		
7326.46	FW	1000.7	**0.5**	515.0	580.0	1095.0	580.0	1095.0
6966.68	FP	999.2		1209.2	75.6	1284.8		
6966.68	FW	999.7	**0.6**	525.0	525.0	1050.0	525.0	1050.0
6623.5	FP	998.0		846.9	192.6	1041.9		
6623.5	FW	998.6	**0.6**	425.0	545.0	970.0	545.0	970.0
6304.52	FP	997.0		937.6	217.8	1155.4		
6304.52	FW	997.9	**0.8**	400.0	510.0	910.0	510.0	910.0
6087.88	FP	996.6		839.2	382.0	1221.2		
6087.88	FW	997.4	**0.8**	390.0	535.0	925.0	535.0	925.0
5781.35	FP	996.0		721.5	492.0	1213.5		
5781.35	FW	996.7	**0.6**	430.0	560.0	990.0	560.0	990.0
5629.45	FP	995.3		607.8	600.0	1263.1		
5629.45	FW	996.2	**0.9**	430.0	635.0	1065.0	635.0	1065.0
5557.68	FP	994.6		510.0	140.2	691.2		
5557.68	FW	995.2	**0.6**	315.0	200.0	515.0	200.0	515.0
5500 BR U	FP	994.3		383.6	140.2	690.3		

HEC-RAS River Station	Profile	W.S.E (ft)	FP - FW Delta W.S.E. (ft)	Top Width (ft)	Sta W.S.E. Left (ft)	Sta W.S.E. Right (ft)	Enc. Sta. Left (ft)	Enc. Sta. Right (ft)
5500 BR U	FW	994.7	**0.4**	291	200.0	515.0	200.0	515.0
5500 BR D	FP	993.7		465.0	140.2	723.0		
5500 BR D	FW	994.3	**0.5**	380.79	207.0	635.0	207.0	635.0
5453.98	FP	993.8		516.0	207.1	723.1		
5453.98	FW	994.3	**0.5**	428.0	207.0	635.0	207.0	635.0
5434.68	FP	993.7		521.8	800.3	1322.2		
5434.68	FW	994.3	**0.6**	452.2	820.0	1272.2	820.0	1272.2
5340.04	FP	992.5		473.8	790.6	1264.4		
5340.04	FW	993.4	**0.9**	440.4	800.0	1240.4	800.0	1240.4

Note:
Bridge Locations: I-5 Bridge at RS 12059.65, Old Rd. Bridge at RS 11917.82, Commerce Ctr. Dr. Bridge at RS 5500
Italicized sections indicate Velocity is greater than 10 ft/s, so there is no encroachment.

3.6 Castaic Creek and Hasley Canyon Creek Confluence Modeling Approach

The confluence of Castaic Creek with Hasley Canyon Creek was extensively studied as part of the proposed bank protection design detailed in the project Drainage Concept Report (DCR) for the subject project under EIMP No. 2019000489. There are two possible flow paths that can form at the confluence.

Case 1 - Flow will travel from Hasley Canyon Creek into Castaic Creek upstream of the flow diversion berm, with little or no flow traveling through the north side of the flow diversion berm.

Case 2 - All flow from Hasley will travel through the north side of the flow diversion berm and enter Castaic Creek downstream of Commerce Center Drive.

In the Drainage Concept Report (DCR) both conditions are important to model since they capture different elements associated with the design of the soil cement top and toe. When flow enters Castaic Creek upstream of Commerce Center Drive Bridge (Case 1), no flow is mapped north of the berm because the invert of Castaic Creek is much lower than the invert of Halsey Canyon Creek. However, this modeling approach best captures the water surface and velocities to design the Hasley Canyon Creek East bank connection to the Castaic Creek “West” Soil cement Bank Protection. When the Hasley Canyon Creek flow is modeled going through the north side of the flow diversion berm before entering Castaic Creek downstream of Commerce Center Drive (Case 2), it captures the highest water surface elevation and velocities for the design of the Halsey Canyon Creek West Bank.

For the Hasley Canyon Creek floodplain and floodway analysis, the existing and proposed conditions are modeled in a way that will produce the widest floodplain. In the existing condition, the flow diversion berm either funnels flows from Hasley Canyon Creek through the north side of the flow diversion berm or flows will circumvent the berm and flow into Castaic Creek upstream of Commerce Center Drive. The flows then confluence with Castaic Creek downstream of Commerce Center Drive Bridge (Case 2). This modeling approach was selected as it produces the widest floodplain along the north side of the berm. If the Case 1 flow condition was used, the area to the north of the berm would be mapped with no floodplain, as the Hasley flow would be contained within the Castaic Creek main channel, which has a much lower invert than the invert within the north side of the diversion berm.

In the proposed condition, Hasley Canyon Creek flows will either enter Castaic Creek upstream of Commerce Center Drive Bridge or flow along the north side of the berm and confluence with Castaic Creek downstream of Commerce Center Drive Bridge. For the purposes of floodplain mapping, the proposed

condition Hasley Canyon Creek model analyzes the condition where all flow from Hasley Canyon Creek flows on the north side of the berm (Case 2). More detailed discussion can be found in the Hasley Canyon Creek Capital Floodway Revision Analysis, (per ESTU No. 2023000298, approval pending).

The Castaic Creek HEC-RAS model captures the widest floodplain within the confluence through the use of a flow change upstream of the confluence of Castaic and Hasley Canyon Creek. This flow change captures a condition where all of the Hasley Canyon Creek flow enters Castaic Creek upstream of Commerce Center Drive, with no flows from Hasley Canyon Creek going through the north side of the flow diversion berm (Case 1). Both the existing condition and proposed condition models use the flow change upstream of the confluence. This modeling approach will produce the highest water surface elevations in Castaic Creek in the vicinity of the confluence. The final mapped floodplain and floodway are discussed further in Section 6


SEE MAP NO. 43-MLI
SANTA CLARA RIVER
HENRY MAYO DRIVE
SOUTHERN PACIFIC
CASTAIC CREEK
LACFC CASTAIC CREEK
LEGEND
CAPITAL FLOOD PLAIN BOUNDARY
FLOODWAY BOUNDARY
WATER SURFACE ELEVATIONS
ADOPTED BY BOARD OF SUPERVISORS
AUGUST 28, 1984
ORDINANCE NO. 84-0136
REVISED
REFERENCES
335 T 7
335 T 8
(10/80)
DRAWN
J.DOMENICHELLI
CHECKED
LOS ANGELES COUNTY FLOOD CONTROL DISTRICT
CASTAIC CREEK
FLOODWAY MAP
FROM 700' D/S OF HENRY MAYO DR.
TO 7700' U/S OF HENRY MAYO DR.
7/6/84
1" = 100'
no. 335-MLI

LEGEND

CAPITAL FLOOD PLAIN BOUNDARY

FLOODWAY BOUNDARY

WATER SURFACE ELEVATIONS

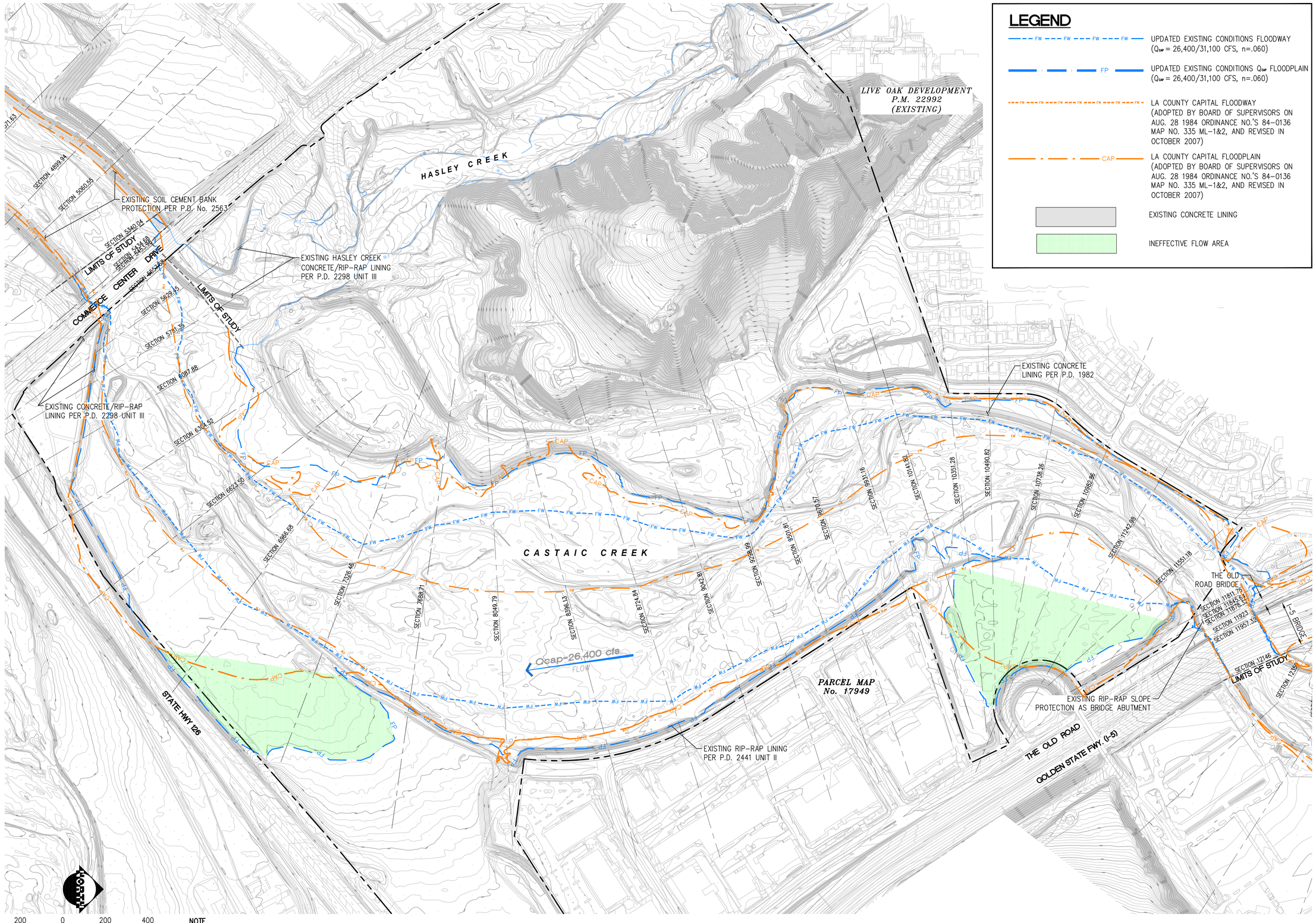
ADOPTED BY BOARD OF SUPERVISORS
AUGUST 28, 1984
ORDINANCE NO. 84-0136

REVISED	REFERENCES
	335 T9
	335 T10

LOS ANGELES COUNTY FLOOD CONTROL DISTRICT

CASTAIC CREEK
FLOODWAY MAP
FROM 7700' U/S OF HENRY MAYO DR.
TO 4700' U/S OF GOLDEN STATE FWY

DESIGNED J. DOMENICHELLI
7/6/84
1"= 100'
NO. 335-ML2



NOTE
1. CONTOURS SHOWN ON THIS MAP IS BASED ON AERIAL TOPOGRAPHY DATED OCT. 2013

PLAN

NO	BY	DATE	REVISIONS	DATE	APP.

PRELIMINARY NOT FOR CONSTRUCTION
PROJECT ENGINEER — DATE

PREPARED BY
JOSE CRUZ
R.C.E. NO. # 72249
EXP. 6/30/24

DRAWN M.M.T. | SCALE 1"=200'
DESIGNED E.M.R.
CHECKED J.C. | DATE 2/22/23

TITLE
UPDATED EXISTING CONDITIONS CAPITAL FLOODWAY & FLOODPLAIN MAPPING

JOB
VALENCIA COMMERCE CENTER
CASTAIC CREEK FLOODPLAIN & FLOODWAY MAPPING FROM COMMERCE CENTER DRIVE TO I-5 FWY
LOS ANGELES COUNTY CA

PACE
Advanced Water Engineering
17520 Newhope Street, Suite 200 | Fountain Valley, CA 92708
P: (714) 481-7300 | www.pacewater.com

FIGURE
3-3

JOB NO. A535

Dimscale = 1; LTscale = 1; PSltscale = 1; ACAD Ver. = 24.0s (LMS Tech); ViewScale = 1
P:\A535\Engineering\A535-72_Castaic Creek ML\exhibits\A535-72-Figure-3-3.dwg - Tab: 24x36 - by ereindg on 10/23/24 at 10:12:04 AM

4 Proposed Channel Improvements

The proposed channel improvements at Valencia Commerce Center (VCC) Industrial Park Development in Tentative Parcel Map (TPM) No. 18108 consist of soil cement bank protection combined with launch stone rip-rap along both banks of Castaic Creek. Refer to Section 7.0 of the "Drainage Concept Report Volume II of V, Castaic Creek Bank Protection ESTU No. 2001000012," prepared by PACE approved September 2019 for detailed description of the proposed soil cement bank protection. Below is a summary of the soil cement bank protection design.

4.1 Bank Protection Description

The proposed soil cement bank protection will be constructed in three segments, "West," "Northeast," and "Southeast." The bank protection proposed for the west bank will be constructed as a continuous section beginning near the confluence of Castaic Creek and Hasley Creek and extending roughly 4,000 LF upstream, where it will join the existing concrete slope lining (PD No. 1982) adjacent to Live Oak Road. The bank protection proposed for the east bank will be constructed in two separate sections due to an existing rip-rap slope protection (PD No. 2441-Unit II) located adjacent to Hancock Parkway. The southeast section of the proposed bank protection will be approximately 3,000 LF and will extend from the Commerce Center Drive (CCD) Bridge to the existing rip-rap slope protection (PD No. 2441). The northeast section of the proposed soil cement bank protection will be around 1,400 LF and extends from the existing rip-rap slope protection (PD No. 2441) to the Old Road Bridge.

In addition to the proposed bank protection, there will be modifications to the existing flow diversion berm at the Castaic Creek confluence with Hasley Canyon Creek. The existing flow diversion berm (P.D. 2298 Unit III) was designed to divert flows from Hasley Canyon Creek into Castaic Creek downstream of the Commerce Center Drive Bridge. However, a large storm in January 2005 caused flows to bifurcate the berm. This change caused the berm to become an obstruction to flows and increased chances of blockages to either flow path, into Castaic Creek or under Commerce Center Drive. In the proposed condition, the upstream portion of the flow diversion berm will be removed and lowered to the scour depth. This will remove the obstruction to the flow path and allow water into Castaic Creek Upstream of Commerce Center Drive Bridge. The proposed modifications to the flow diversion berm are detailed in Figure 4-2.

4.2 Bank Protection Design Summary

The proposed bank protection will consist of a standard soil cement section to provide scour and freeboard flood control protection for all storm events up to the Capital Flood. The critical factors in determining the design of the bank protection were based on the following criteria:

1. Flood control stability and durability of bank protection.
2. Safety concerns regarding access to and from the channel in dry and wet conditions.
3. Bank protection maintenance considerations.
4. Environmental compatibility with the native area and resource enhancement concepts, and aesthetic considerations.
5. Constructability and cost of construction.

Soil cement bank protection is constructed as a monolithic and homogenous structure consisting of approximately 90% native soils and 10% cement. The typical section consists of 8-foot wide and 6- to 12-inch thick layers of soil cement. Each layer of soil cement is set back from the edge of the previous layer, at a 1.5 (H) : 1 (V) slope. The entire section varies in total height based on varying freeboard, flow depth and toe-down requirements. A typical cross section is shown in Figure 4-1.

The proposed soil cement bank protection addresses the above design criteria as follows:

1. Soil cement provides a stable riverbank protection material, in terms of both surface erosion and structural stability. Preliminary geotechnical analyses indicate that locally available native soils are considered acceptable for use in soil cement.
2. The soil cement bank protection will be completely buried with a 3:1 slope soil backfill. Due to transitions from proposed soil cement bank protection (buried condition) to existing concrete and rip-rap bank protection (exposed conditions), some soil cement areas will be exposed.

The proposed channel improvements are used to revise channel geometry in the proposed condition HEC-RAS model.

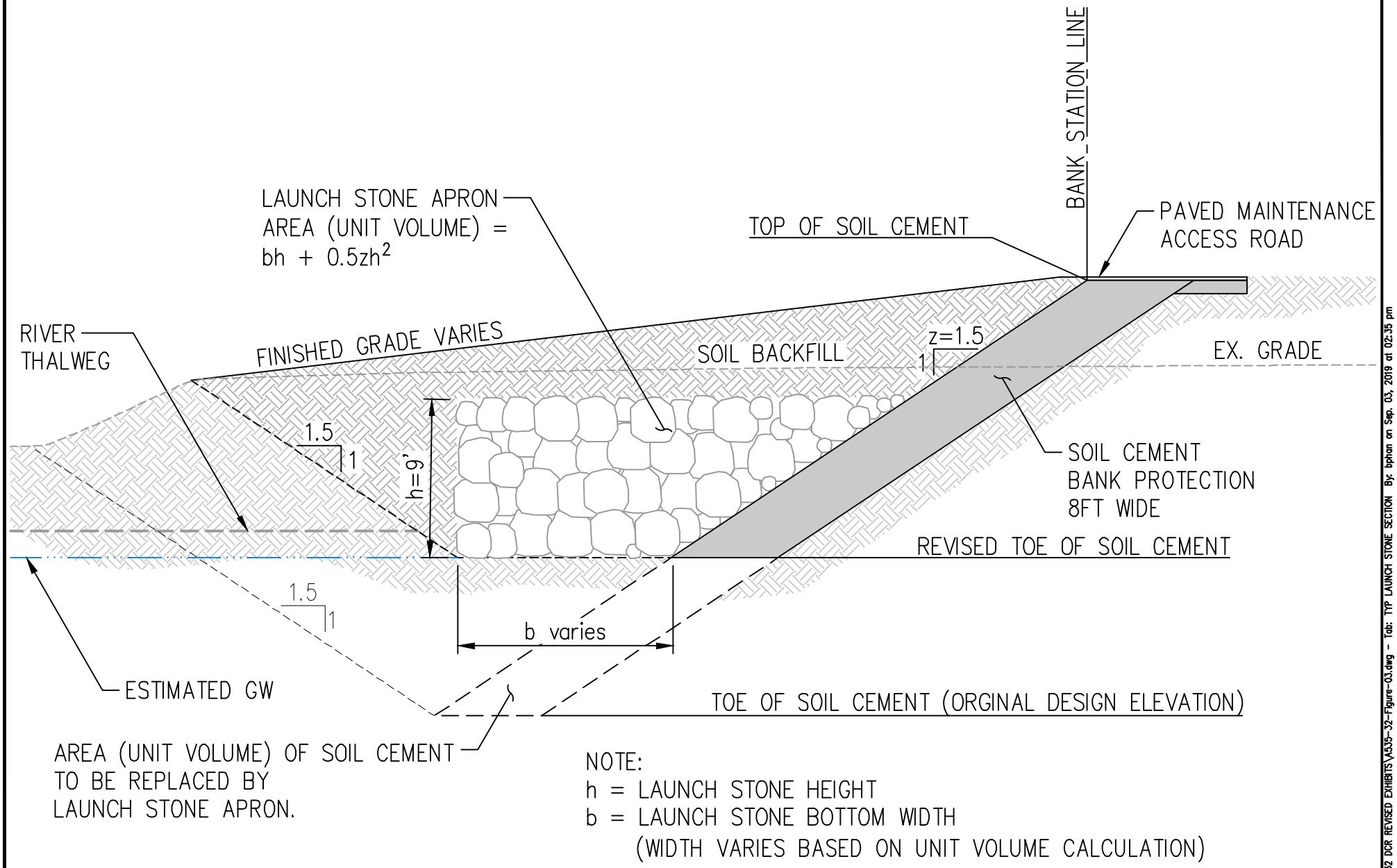


FIGURE 4-1

SOIL CEMENT / LAUNCH STONE BANK PROTECTION TYPICAL SECTION

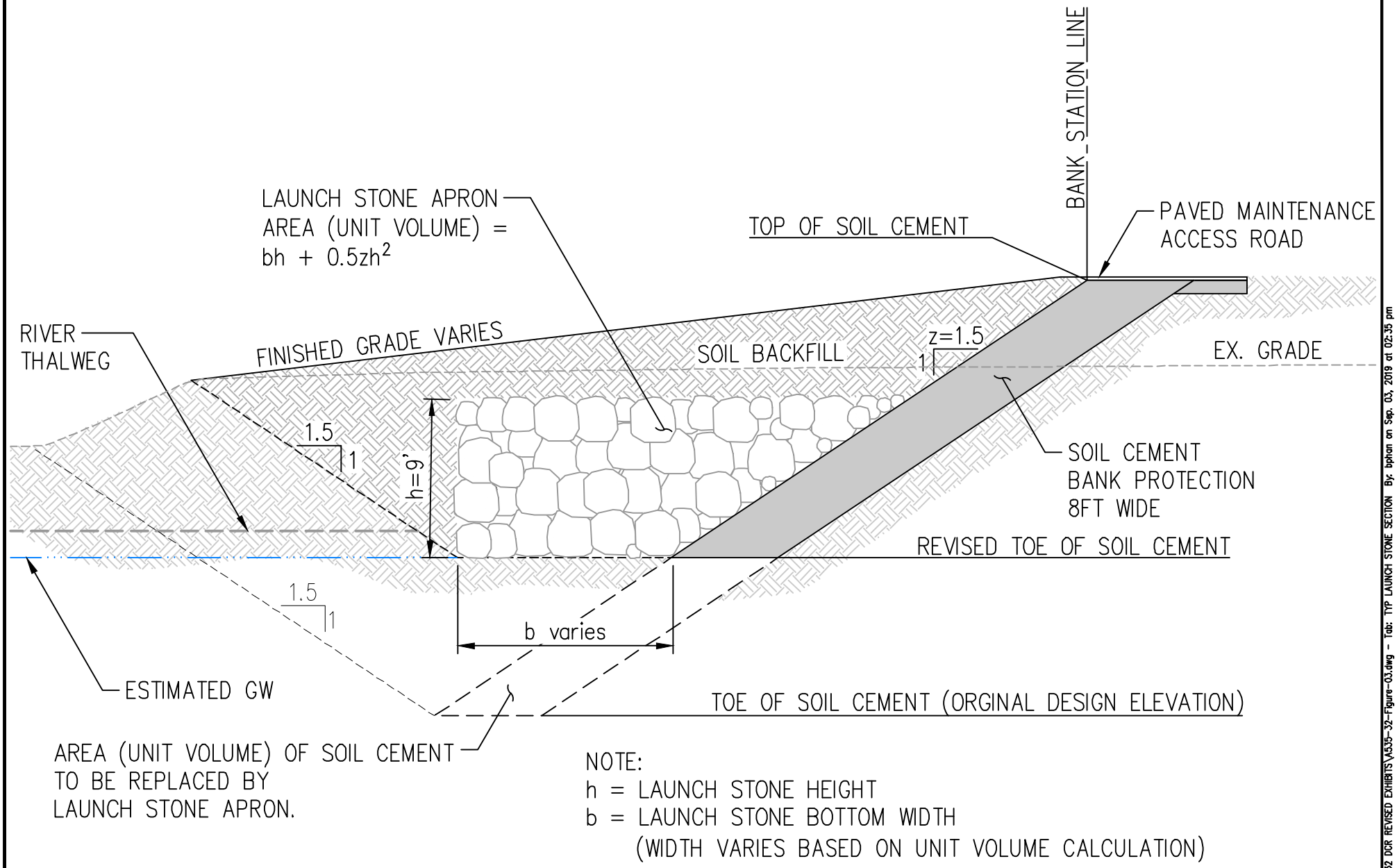


FIGURE 4-1

SOIL CEMENT / LAUNCH STONE BANK PROTECTION TYPICAL SECTION