

Preliminary Hydrology and Hydraulics for Overlook Parkway Bridge

Preliminary hydrology calculations were performed to determine the existing flow-rate (cubic feet per second) to analyze the existing Alessandro Arroyo as it flows under the proposed Overlook Bridge. USGS topography was utilized to determine the tributary area to the crossing. A current aerial image, along with the city of Riverside land use plan was used to determine the cover type and land use. See Appendix A for the Drainage Area maps.

A Synthetic Unit Hydrograph was performed to determine a peak flow rate. Based on the analysis, the exiting flow-rate is 2,472 cfs. See Appendix B for the Synthetic Unit Hydrograph calculations and results.

Preliminary Hydraulics for the bridge crossing (**Option B**) was performed for the pre-project (natural arroyo) and post-project (arroyo with pier and bridge abutments) conditions. WSPG CIVILDESIGN software was used to analyze the arroyo and impacts from the bridge. For the pre-project condition the arroyo was analyzed in its current natural condition. For the post-project condition, the arroyo was analyzed with the bridge abutments on the south and north side with an 8-foot diameter pier assumed at the middle of the arroyo section. Preliminary cross sections of the creek were used based on the available existing topography of the area. The cross sections were input into the WSPG CIVILDESIGN software with the calculated flow rate to determine preliminary impacts to the arroyo. See Appendix C for the WSPGW calculations and exhibit.

The result from the preliminary hydrology/hydraulics study determined that no adverse effects occur downstream of the proposed bridge location. However, the water surface increases upstream by approximately 9.5 inches or 0.8 feet. The water surface elevation is disturbed for approximately 100 feet upstream from the bridge crossing. The upstream velocities are slightly reduced by an average of 0.25 feet per second.

During Construction the use of Best Management Practices (BMP's) will be used to minimize the water quality impacts during construction. The long term water quality mitigation will be achieved by providing water quality inlet filter at the low point catch basins. The catch basins will be designed to connect into the existing storm drain and headwall system located west of Via Vista Drive and Overlook Parkway.

The following attachments are included:

Appendix A:

- Drainage Area with USGS Map
- Drainage Area with Aerial photograph

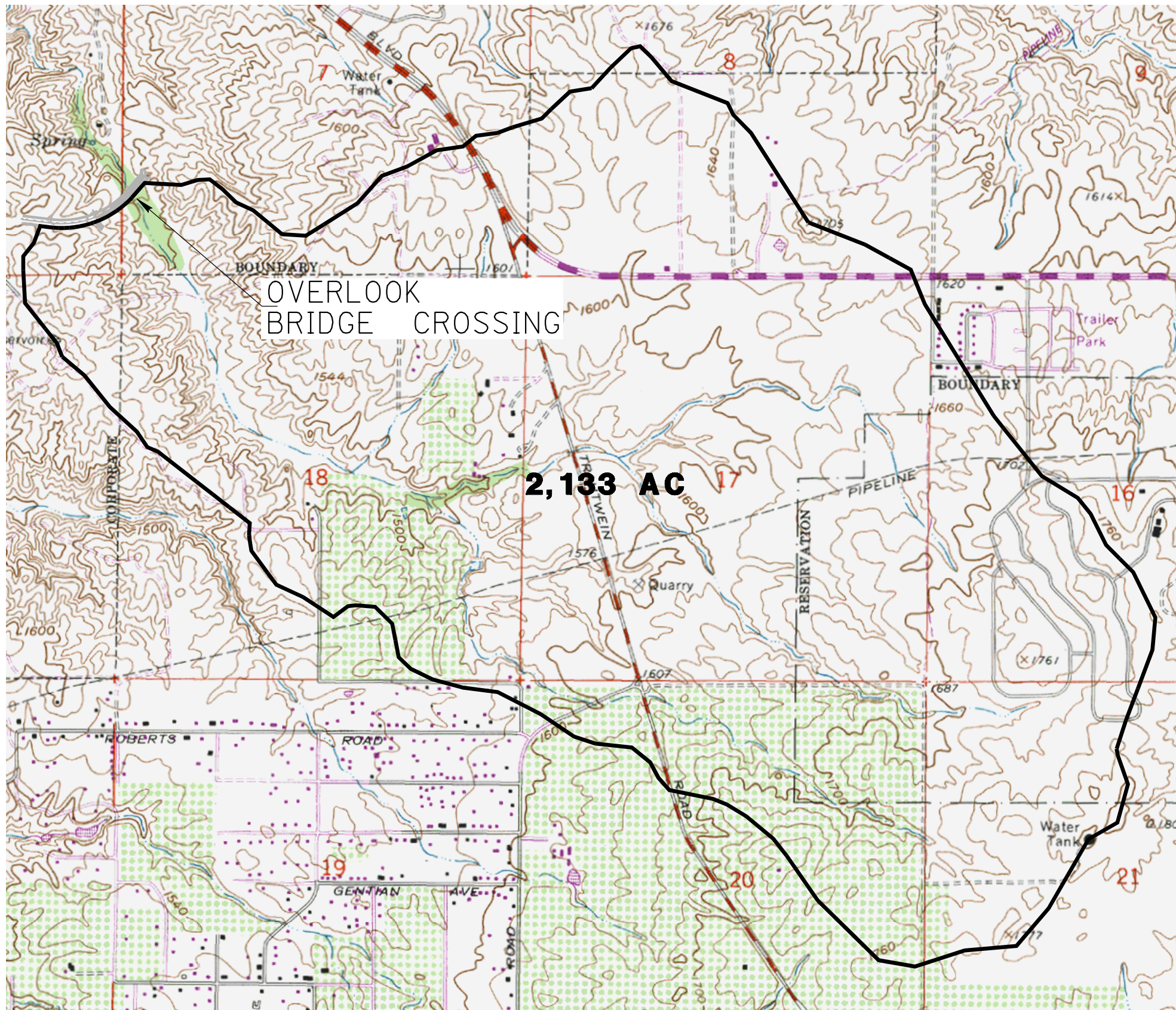
Appendix B:

- Synthetic Unit Hydrograph (SUH) backup.
- HEC-1 input
- HEC-1 output and T21 (results)

Appendix C:

- WSPGW Calculations
- WSPGW x-section exhibits

APPENDIX A



USGS QUADRANGLE: RIVERSIDE EAST



1770 IOWA AVENUE - SUITE 100
RIVERSIDE, CA 92507
951.782.0707
(FAX) 951.782.0723

rickengineering.com

San Diego - Orange - San Luis Obispo - Bakersfield - Sacramento - Phoenix - Tucson

TRIBUTARY DRAINAGE AREA

SCALE: 1"=1,500'

DATE: 8-28-12

PLOT DATE: 28-AUG-2012

JN 16451

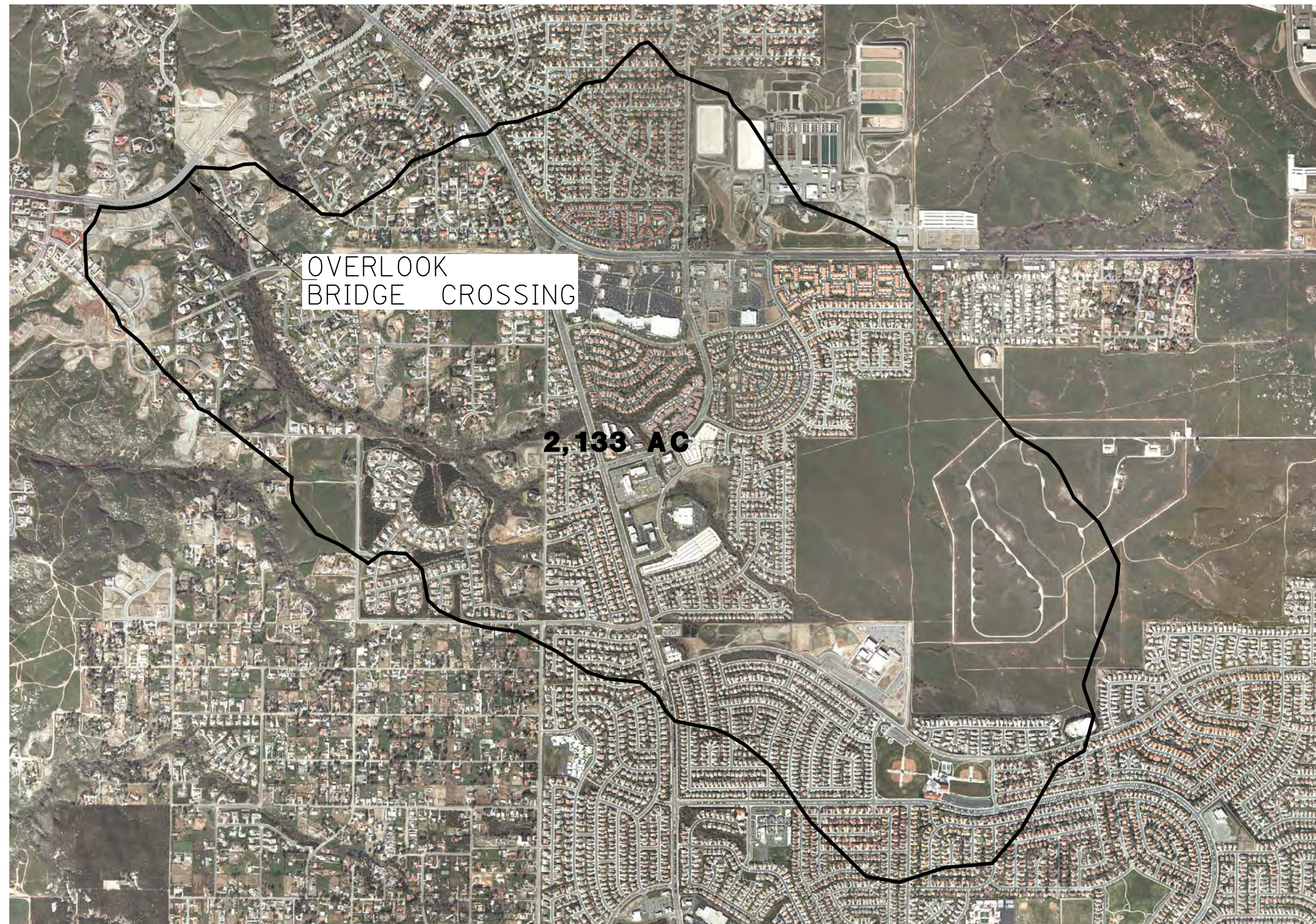


PHOTO SOURCE: WEST RIVERSIDE 2007



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(FAX) 951.782.0723

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TRIBUTARY DRAINAGE AREA
AERIAL

SCALE: 1"=1,500'

DATE: 8-28-12

PLOT DATE: 28-AUG-2012

JN 16451

APPENDIX B

BRIDGE CROSSING

Drainage to Bridge crossing

See Map for Synthetic Unit Hydrograph for Proposed Condition in the Map Pocket

Study	Hydrologic soil Group	Cover Type	Runoff Index (Plate E-6.1)	Pervious Area Infiltration Rate (in/hr) AMC I (Plate E-6.2)	Pervious Area Infiltration Rate (in/hr) AMC II (Plate E-6.2)	Land Use	Decimal Percent of Area impervious	Area in acres	Fraction of Area	Adjusted Infiltration Rate (in/hr) AMC I	Adjusted Infiltration Rate (in/hr) AMC II	Avg. Adjusted Infiltration Rate (in/hr) AMC I	Avg. Adjusted Infiltration Rate (in/hr) AMC II
Tributary	C	Open Brush	75	na	0.3	Open space	0	460	0.22	na	0.3	na	0.065
Tributary	C	Residential	69	na	0.38	Residential	0.25	1673	0.78	na	0.295	na	0.231
							P.R. =	0.743	2133.0	1.000	F =	0.000	0.296
							I.R. =	0.257			F/P.R. =	0.000	0.398

3.333 sq.mi.

% IMPERVIOUS 0.196

Notes:
P.R. = Pervious Rate = 0.9-(0.8*%Impervious)
F = Adjusted Infiltration Rate, in/hr
I.R. = Impervious Rate = 1- P.R. = Input for HEC1 LU Card 3rd Column
F/P.R. = Input for HEC1 LU Card second Column

JN 16451 Overlook Crossing
HEC Input Data

Basin 1

Event Year Storm	Hour	Precip- itation (in)	AMC Condition	Adjusted Loss Rate	% Impervious (decimal)	Low Loss Rate %	Adjusted Loss Rate for Input (LU card column 2)	LU card (column 3)	SUH File Name
100	1	1.20	II	0.296	0.20	0.74	0.398	20	0001PD

*INPUT FOR THE HEC-1 PB CARD FROM VARIABLE LOSS RATE SPREADSHEET

Precipitation Data

Point Precipitation in Inches for Various Storm Events (inches)				
Year	1-hour	3-hour	6-hour	24-hour
100	1.20	n/a	n/a	n/a

Inputs for HEC-1

Area of drainage area	A, ac	2133	
	sq.mi.	3.333	
Length of the longest watercourse	L, ft	17935	
	mi.	3.397	
Length from the centroid to the concentration point	LCA, ft	9047	
	mi.	1.713	
Elevation of highest point	H1, ft	1800	
Elevation of the concentration point	H2, ft	1369	
Difference in Elevation	H, ft	431	
Slope of the flow path	S, ft/mi	126.88	

ID J-16451 OVERLOOK PARKWAY BRIDGE CROSSING
ID 100 YEAR 1-HOUR STORM EVENT
ID FILENAME: 0001PD.DAT DATE: 2-23-11
IT 05 01APR92 0000 288
KK BRIDGE
KM HYDROGRAPH OF TRIBUTARY WATER SHEED TO BRIDGE CROSSING
KO 0 0 0 0 21
BA 3.333
PB 1.20
PI 0.042 0.043 0.050 0.050 0.058 0.065 0.074 0.086 0.123 0.291
PI 0.068 0.050
LU 0.398 20
\$U 3.397 1.713 126.88 .020 2
ZZ

X	X	XXXXXXX	XXXXX		X
X	X	X	X	X	XX
X	X	X	X		X
XXXXXXXX	XXXX	X		XXXXX	X
X	X	X	X		X
X	X	X	X	X	X
X	X	XXXXXXXX	XXXXX		XXX

DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL LOSS RATE:GREEN AND AMPT INFILTRATION
KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM

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1*****
*****
*
*
*   FLOOD HYDROGRAPH PACKAGE   (HEC-1)
ARMY CORPS OF ENGINEERS
*
*           JUN 1998
*
```

```
*
*
*   FLOOD HYDROGRAPH PACKAGE   (HEC-1)
ARMY CORPS OF ENGINEERS
*           JUN    1998
*
```

```

HYDROLOGIC ENGINEERING CENTER      *
*      VERSION 4.1                  *
609 SECOND STREET                  *
*                                  *
DAVIS, CALIFORNIA 95616            *
* RUN DATE 23FEB11 TIME 09:11:30   *
(916) 756-1104                     *
*                                  *
*                                  *
*****
*****

```

J-16451 OVERLOOK PARKWAY BRIDGE CROSSING
 100 YEAR 1-HOUR STORM EVENT
 FILENAME: 0001PD.DAT DATE: 2-23-11

```

IT      HYDROGRAPH TIME DATA
        NMIN      5  MINUTES IN COMPUTATION INTERVAL
        IDATE     1APR92  STARTING DATE
        ITIME     0000  STARTING TIME
        NQ        288  NUMBER OF HYDROGRAPH ORDINATES
        NDDATE    1APR92  ENDING DATE
        NDTIME    2355  ENDING TIME
        ICENT     19  CENTURY MARK

```

COMPUTATION INTERVAL .08 HOURS
 TOTAL TIME BASE 23.92 HOURS

```

ENGLISH UNITS
DRAINAGE AREA      SQUARE MILES
PRECIPITATION DEPTH INCHES
LENGTH, ELEVATION  FEET
FLOW               CUBIC FEET PER SECOND
STORAGE VOLUME     ACRE-FEET
SURFACE AREA       ACRES
TEMPERATURE        DEGREES FAHRENHEIT

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*****
*      *
5 KK  *  BRIDG  *  E
*      *
*****

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HYDROGRAPH OF TRIBUTARY WATER SHEED TO BRIDGE CROSSING

```

7 KO      OUTPUT CONTROL VARIABLES
        IPRNT      0  PRINT CONTROL
        IPLOT      0  PLOT CONTROL
        QSCAL      0.  HYDROGRAPH PLOT SCALE
        IPNCH      0  PUNCH COMPUTED HYDROGRAPH
        IOUT       21  SAVE HYDROGRAPH ON THIS UNIT
        ISAV1      1  FIRST ORDINATE PUNCHED OR SAVED
        ISAV2      288  LAST ORDINATE PUNCHED OR SAVED
        TIMINT     .083  TIME INTERVAL IN HOURS

```

UHG FROM VALLEY S-GRAPH

SUBBASIN RUNOFF DATA

```

8 BA      SUBBASIN CHARACTERISTICS
        TAREA      3.33  SUBBASIN AREA

```

PRECIPITATION DATA

```

9 PB      STORM      1.20  BASIN TOTAL PRECIPITATION

```

```

10 PI     INCREMENTAL PRECIPITATION PATTERN
        .04      .04      .05      .05      .06      .06      .07      .09
.12      .29
        .07      .05

```

```

12 LU     UNIFORM LOSS RATE
        STRTL      .00  INITIAL LOSS
        CNSTL      .40  UNIFORM LOSS RATE

```

		RTIMP	20.00 PERCENT IMPERVIOUS AREA						
12 UI		INPUT UNITGRAPH,	37	ORDINATES,	VOLUME = 1.00				
		1129.0	2048.0	3521.0	4182.0	3641.0	2152.0	1499.0	1112.0
866.0	721.0								
		589.0	494.0	422.0	377.0	339.0	294.0	268.0	229.0
213.0	201.0								
		169.0	169.0	156.0	112.0	112.0	112.0	112.0	77.0
55.0	55.0								
		55.1	55.1	55.1	55.1	55.1	55.1	41.2	

HYDROGRAPH AT STATION BRIDG

LOSS	DA MON HRMN EXCESS	ORD COMP Q	RAIN	LOSS	EXCESS	COMP Q	*	DA MON HRMN EXCESS	ORD	RAIN
	1 APR 0000	1	.00	.00	.00	0.	*	1 APR 1200	145	.00
.00	.00	0.								
	1 APR 0005	2	.05	.03	.02	27.	*	1 APR 1205	146	.00
.00	.00	0.								
	1 APR 0010	3	.05	.03	.03	77.	*	1 APR 1210	147	.00
.00	.00	0.								
	1 APR 0015	4	.06	.03	.03	173.	*	1 APR 1215	148	.00
.00	.00	0.								
	1 APR 0020	5	.06	.03	.03	294.	*	1 APR 1220	149	.00
.00	.00	0.								
	1 APR 0025	6	.07	.03	.04	427.	*	1 APR 1225	150	.00
.00	.00	0.								
	1 APR 0030	7	.08	.03	.05	547.	*	1 APR 1230	151	.00
.00	.00	0.								
	1 APR 0035	8	.09	.03	.06	679.	*	1 APR 1235	152	.00
.00	.00	0.								
	1 APR 0040	9	.10	.03	.08	833.	*	1 APR 1240	153	.00
.00	.00	0.								
	1 APR 0045	10	.15	.03	.12	1056.	*	1 APR 1245	154	.00
.00	.00	0.								
	1 APR 0050	11	.35	.03	.32	1549.	*	1 APR 1250	155	.00
.00	.00	0.								
	1 APR 0055	12	.08	.03	.06	1970.	*	1 APR 1255	156	.00
.00	.00	0.								
	1 APR 0100	13	.06	.03	.03	2411.	*	1 APR 1300	157	.00
.00	.00	0.								
	1 APR 0105	14	.00	.00	.00	2472.	*	1 APR 1305	158	.00
.00	.00	0.								
	1 APR 0110	15	.00	.00	.00	2099.	*	1 APR 1310	159	.00
.00	.00	0.								
	1 APR 0115	16	.00	.00	.00	1466.	*	1 APR 1315	160	.00
.00	.00	0.								
	1 APR 0120	17	.00	.00	.00	1064.	*	1 APR 1320	161	.00
.00	.00	0.								
	1 APR 0125	18	.00	.00	.00	791.	*	1 APR 1325	162	.00
.00	.00	0.								
	1 APR 0130	19	.00	.00	.00	625.	*	1 APR 1330	163	.00
.00	.00	0.								
	1 APR 0135	20	.00	.00	.00	517.	*	1 APR 1335	164	.00
.00	.00	0.								
	1 APR 0140	21	.00	.00	.00	431.	*	1 APR 1340	165	.00
.00	.00	0.								
	1 APR 0145	22	.00	.00	.00	368.	*	1 APR 1345	166	.00
.00	.00	0.								
	1 APR 0150	23	.00	.00	.00	319.	*	1 APR 1350	167	.00
.00	.00	0.								
	1 APR 0155	24	.00	.00	.00	283.	*	1 APR 1355	168	.00
.00	.00	0.								
	1 APR 0200	25	.00	.00	.00	252.	*	1 APR 1400	169	.00
.00	.00	0.								
	1 APR 0205	26	.00	.00	.00	223.	*	1 APR 1405	170	.00
.00	.00	0.								
	1 APR 0210	27	.00	.00	.00	201.	*	1 APR 1410	171	.00
.00	.00	0.								
	1 APR 0215	28	.00	.00	.00	179.	*	1 APR 1415	172	.00
.00	.00	0.								
	1 APR 0220	29	.00	.00	.00	163.	*	1 APR 1420	173	.00

0.00	0.00	1 APR 0225	30	0.00	0.00	0.00	149.	*	1 APR 1425	174	0.00
0.00	0.00	1 APR 0230	31	0.00	0.00	0.00	132.	*	1 APR 1430	175	0.00
0.00	0.00	1 APR 0235	32	0.00	0.00	0.00	123.	*	1 APR 1435	176	0.00
0.00	0.00	1 APR 0240	33	0.00	0.00	0.00	110.	*	1 APR 1440	177	0.00
0.00	0.00	1 APR 0245	34	0.00	0.00	0.00	92.	*	1 APR 1445	178	0.00
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0.00	0.00	1 APR 0255	36	0.00	0.00	0.00	81.	*	1 APR 1455	180	0.00
0.00	0.00	1 APR 0300	37	0.00	0.00	0.00	75.	*	1 APR 1500	181	0.00
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0.00	0.00	1 APR 0315	40	0.00	0.00	0.00	46.	*	1 APR 1515	184	0.00
0.00	0.00	1 APR 0320	41	0.00	0.00	0.00	44.	*	1 APR 1520	185	0.00
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0.00	0.00	1 APR 0340	45	0.00	0.00	0.00	32.	*	1 APR 1540	189	0.00
0.00	0.00	1 APR 0345	46	0.00	0.00	0.00	28.	*	1 APR 1545	190	0.00
0.00	0.00	1 APR 0350	47	0.00	0.00	0.00	18.	*	1 APR 1550	191	0.00
0.00	0.00	1 APR 0355	48	0.00	0.00	0.00	4.	*	1 APR 1555	192	0.00
0.00	0.00	1 APR 0400	49	0.00	0.00	0.00	1.	*	1 APR 1600	193	0.00
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0.00	0.00	1 APR 0430	55	0.00	0.00	0.00	0.	*	1 APR 1630	199	0.00
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0.00	0.00	1 APR 0440	57	0.00	0.00	0.00	0.	*	1 APR 1640	201	0.00
0.00	0.00	1 APR 0445	58	0.00	0.00	0.00	0.	*	1 APR 1645	202	0.00
0.00	0.00	1 APR 0450	59	0.00	0.00	0.00	0.	*	1 APR 1650	203	0.00
0.00	0.00	1 APR 0455	60	0.00	0.00	0.00	0.	*	1 APR 1655	204	0.00
0.00	0.00	1 APR 0500	61	0.00	0.00	0.00	0.	*	1 APR 1700	205	0.00
0.00	0.00	1 APR 0505	62	0.00	0.00	0.00	0.	*	1 APR 1705	206	0.00
0.00	0.00	1 APR 0510	63	0.00	0.00	0.00	0.	*	1 APR 1710	207	0.00
0.00	0.00	1 APR 0515	64	0.00	0.00	0.00	0.	*	1 APR 1715	208	0.00
0.00	0.00	1 APR 0520	65	0.00	0.00	0.00	0.	*	1 APR 1720	209	0.00
0.00	0.00	1 APR 0525	66	0.00	0.00	0.00	0.	*	1 APR 1725	210	0.00
0.00	0.00	1 APR 0530	67	0.00	0.00	0.00	0.	*	1 APR 1730	211	0.00
0.											

.00	1 APR 0550	71	.00	.00	.00	0.	*	1 APR 1750	215	.00
.00	.00	0.								
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.00	.00	0.								
.00	1 APR 0605	74	.00	.00	.00	0.	*	1 APR 1805	218	.00
.00	.00	0.								
.00	1 APR 0610	75	.00	.00	.00	0.	*	1 APR 1810	219	.00
.00	.00	0.								
.00	1 APR 0615	76	.00	.00	.00	0.	*	1 APR 1815	220	.00
.00	.00	0.								
.00	1 APR 0620	77	.00	.00	.00	0.	*	1 APR 1820	221	.00
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.00	.00	0.								
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.00	1 APR 0640	81	.00	.00	.00	0.	*	1 APR 1840	225	.00
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.00	.00	0.								
.00	1 APR 0650	83	.00	.00	.00	0.	*	1 APR 1850	227	.00
.00	.00	0.								
.00	1 APR 0655	84	.00	.00	.00	0.	*	1 APR 1855	228	.00
.00	.00	0.								
.00	1 APR 0700	85	.00	.00	.00	0.	*	1 APR 1900	229	.00
.00	.00	0.								
.00	1 APR 0705	86	.00	.00	.00	0.	*	1 APR 1905	230	.00
.00	.00	0.								
.00	1 APR 0710	87	.00	.00	.00	0.	*	1 APR 1910	231	.00
.00	.00	0.								
.00	1 APR 0715	88	.00	.00	.00	0.	*	1 APR 1915	232	.00
.00	.00	0.								
.00	1 APR 0720	89	.00	.00	.00	0.	*	1 APR 1920	233	.00
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.00	.00	0.								
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.00	.00	0.								
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.00	.00	0.								
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.00	.00	0.								
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.00	.00	0.								
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.00	.00	0.								
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.00	1 APR 0805	98	.00	.00	.00	0.	*	1 APR 2005	242	.00
.00	.00	0.								
.00	1 APR 0810	99	.00	.00	.00	0.	*	1 APR 2010	243	.00
.00	.00	0.								
.00	1 APR 0815	100	.00	.00	.00	0.	*	1 APR 2015	244	.00
.00	.00	0.								
.00	1 APR 0820	101	.00	.00	.00	0.	*	1 APR 2020	245	.00
.00	.00	0.								
.00	1 APR 0825	102	.00	.00	.00	0.	*	1 APR 2025	246	.00
.00	.00	0.								
.00	1 APR 0830	103	.00	.00	.00	0.	*	1 APR 2030	247	.00
.00	.00	0.								
.00	1 APR 0835	104	.00	.00	.00	0.	*	1 APR 2035	248	.00
.00	.00	0.								
.00	1 APR 0840	105	.00	.00	.00	0.	*	1 APR 2040	249	.00
.00	.00	0.								
.00	1 APR 0845	106	.00	.00	.00	0.	*	1 APR 2045	250	.00
.00	.00	0.								
.00	1 APR 0850	107	.00	.00	.00	0.	*	1 APR 2050	251	.00
.00	.00	0.								
.00	1 APR 0855	108	.00	.00	.00	0.	*	1 APR 2055	252	.00
.00	.00	0.								
.00	1 APR 0900	109	.00	.00	.00	0.	*	1 APR 2100	253	.00
.00	.00	0.								
.00	1 APR 0905	110	.00	.00	.00	0.	*	1 APR 2105	254	.00
.00	.00	0.								
.00	1 APR 0910	111	.00	.00	.00	0.	*	1 APR 2110	255	.00
.00	.00	0.								
.00	1 APR 0915	112	.00	.00	.00	0.	*	1 APR 2115	256	.00

.00	.00	0.										
	1 APR 0920	113	.00	.00	.00	0.	*	1 APR 2120	257	.00		
.00	.00	0.										
	1 APR 0925	114	.00	.00	.00	0.	*	1 APR 2125	258	.00		
.00	.00	0.										
	1 APR 0930	115	.00	.00	.00	0.	*	1 APR 2130	259	.00		
.00	.00	0.										
	1 APR 0935	116	.00	.00	.00	0.	*	1 APR 2135	260	.00		
.00	.00	0.										
	1 APR 0940	117	.00	.00	.00	0.	*	1 APR 2140	261	.00		
.00	.00	0.										
	1 APR 0945	118	.00	.00	.00	0.	*	1 APR 2145	262	.00		
.00	.00	0.										
	1 APR 0950	119	.00	.00	.00	0.	*	1 APR 2150	263	.00		
.00	.00	0.										
	1 APR 0955	120	.00	.00	.00	0.	*	1 APR 2155	264	.00		
.00	.00	0.										
	1 APR 1000	121	.00	.00	.00	0.	*	1 APR 2200	265	.00		
.00	.00	0.										
	1 APR 1005	122	.00	.00	.00	0.	*	1 APR 2205	266	.00		
.00	.00	0.										
	1 APR 1010	123	.00	.00	.00	0.	*	1 APR 2210	267	.00		
.00	.00	0.										
	1 APR 1015	124	.00	.00	.00	0.	*	1 APR 2215	268	.00		
.00	.00	0.										
	1 APR 1020	125	.00	.00	.00	0.	*	1 APR 2220	269	.00		
.00	.00	0.										
	1 APR 1025	126	.00	.00	.00	0.	*	1 APR 2225	270	.00		
.00	.00	0.										
	1 APR 1030	127	.00	.00	.00	0.	*	1 APR 2230	271	.00		
.00	.00	0.										
	1 APR 1035	128	.00	.00	.00	0.	*	1 APR 2235	272	.00		
.00	.00	0.										
	1 APR 1040	129	.00	.00	.00	0.	*	1 APR 2240	273	.00		
.00	.00	0.										
	1 APR 1045	130	.00	.00	.00	0.	*	1 APR 2245	274	.00		
.00	.00	0.										
	1 APR 1050	131	.00	.00	.00	0.	*	1 APR 2250	275	.00		
.00	.00	0.										
	1 APR 1055	132	.00	.00	.00	0.	*	1 APR 2255	276	.00		
.00	.00	0.										
	1 APR 1100	133	.00	.00	.00	0.	*	1 APR 2300	277	.00		
.00	.00	0.										
	1 APR 1105	134	.00	.00	.00	0.	*	1 APR 2305	278	.00		
.00	.00	0.										
	1 APR 1110	135	.00	.00	.00	0.	*	1 APR 2310	279	.00		
.00	.00	0.										
	1 APR 1115	136	.00	.00	.00	0.	*	1 APR 2315	280	.00		
.00	.00	0.										
	1 APR 1120	137	.00	.00	.00	0.	*	1 APR 2320	281	.00		
.00	.00	0.										
	1 APR 1125	138	.00	.00	.00	0.	*	1 APR 2325	282	.00		
.00	.00	0.										
	1 APR 1130	139	.00	.00	.00	0.	*	1 APR 2330	283	.00		
.00	.00	0.										
	1 APR 1135	140	.00	.00	.00	0.	*	1 APR 2335	284	.00		
.00	.00	0.										
	1 APR 1140	141	.00	.00	.00	0.	*	1 APR 2340	285	.00		
.00	.00	0.										
	1 APR 1145	142	.00	.00	.00	0.	*	1 APR 2345	286	.00		
.00	.00	0.										
	1 APR 1150	143	.00	.00	.00	0.	*	1 APR 2350	287	.00		
.00	.00	0.										
	1 APR 1155	144	.00	.00	.00	0.	*	1 APR 2355	288	.00		
.00	.00	0.										

TOTAL RAINFALL = 1.20, TOTAL LOSS = .32, TOTAL EXCESS = .88

PEAK FLOW	TIME		6-HR	24-HR	72-HR	23.92-HR
+	(CFS)					
	(HR)					
		(CFS)				
+	2472.	1.08	316.	79.	79.	79.
		(INCHES)	.881	.881	.881	.881
		(AC-FT)	157.	157.	157.	157.

CUMULATIVE AREA = 3.33 SQ MI

RUNOFF SUMMARY
 FLOW IN CUBIC FEET PER SECOND
 TIME IN HOURS, AREA IN SQUARE MILES

MAXIMUM STAGE +	TIME OF OPERATION MAX STAGE	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD			BASIN AREA
					6-HOUR	24-HOUR	72-HOUR	
	HYDROGRAPH AT							
+		BRIDG	2472.	1.08	316.	79.	79.	3.33

*** NORMAL END OF HEC-1 ***

[illegible]

APPENDIX C

T1	PRE PROJECT ARROYO														
T2	REC JN. 16451														
T3															
SO	1000.0001343.000	1													
R	1156.5501350.000	1	.035												
				-16.132											
R	1214.1501352.000	1	.035												
				-71.744											
R	1259.2601353.200	1	.035												
				92.308											
R	1334.0001354.500	1	.035												
				-37.896											
R	1405.2501355.600	1	.035												
				60.034											
R	1548.7501359.300	1	.035												
				.000											
TS	1614.6201361.400	2	.035												
				-29.485											
R	1704.8901364.278	2	.035												
				-40.407											
R	1766.1401365.000	2	.035												
				47.424											
TS	1814.6201365.300	3	.035												
				-13.684											
R	1853.0001365.620	3	.035												
				-10.830											
R	1857.4501365.600	3	.035												
				.000											
TS	1931.0001367.470	5	.035												
				.000											
R	1964.6201369.310	5	.035												
				.000											
R	2027.8001371.500	5	.035												
				.000											
R	2271.2501378.200	5	.035												
				-12.443											
TS	2271.2601378.210	6	.035												
				-.000											
R	2468.6001385.100	6	.035												
				-10.086											
R	2760.0501389.700	6	.035												
				-29.766											
TS	2914.6301392.200	7	.035												
				7.302											
R	3035.6501394.200	7	.035												
				5.716											
R	3308.8601397.500	7	.035												
				26.943											
R	3380.7101399.000	7	.035												
				36.431											
R	3457.4401400.300	7	.035												
				-38.905											
TS	3514.7601401.700	8	.035												
				-7.952											
R	3600.0001405.000	8	.035												
				-11.825											
SH	3600.0001405.000	8													
CD	4 1 0	.000	13.300	204.000	5.000	7.000	-.99								
CD	6 1 0	.000	12.500	176.000	4.000	4.000	-.90								
CD	7 1 0	.000	16.800	206.000	4.000	2.000	-.90								
CD	8 1 0	.000	19.300	226.000	5.000	2.000	-.90								
CD	1 5 0	.000		.00	.00	.00	.00	.00	.00	.00	.00	.00	.00		
CD	2 5 0	.000		.00	.00	.00	.00	.00	.00	.00	.00	.00	.00		
CD	3 5 0	.000		.00	.00	.00	.00	.00	.00	.00	.00	.00	.00		
CD	5 5 0	.000		.00	.00	.00	.00	.00	.00	.00	.00	.00	.00		
PTS	1 8 10.000	11.630	37.200	8.900	94.000	7.020	117.700	5.000	137.100	1.000					
PTS	157.600	.900	194.600	7.170	203.000	11.630									
PTS	2 6 10.000	38.020	65.540	1.000	92.000	.900	143.900	6.180	254.300	9.340					
PTS	290.000	27.100													
PTS	3 9 10.000	23.200	68.300	8.600	94.400	8.500	124.500	6.900	142.400	1.000					
PTS	157.400	.900	184.500	5.900	232.000	7.900	322.000	20.900							
PTS	5 7 24.400	20.100	77.400	9.800	198.700	7.800	239.000	1.000	260.000	5.900					
PTS	302.000	7.600	390.000	20.100											
Q	2472.000	.0													

PRE PROJECT ARROYO
 REC JN. 16451

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
1000.000	1343.000	3.771	1346.771	2472.00	16.38	4.17	1350.94	1.18	5.18	60.56		1		0 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5.479	.0447					.0447	.25	4.95	1.83	3.771	.035			IR-OPEN
1005.479	1343.245	3.771	1347.016	2472.00	16.38	4.17	1351.18	1.18	5.18	60.56		1		0 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
94.838	.0447					.0429	4.07	4.95	1.83	3.771	.035			IR-OPEN
1100.317	1347.486	3.849	1351.335	2472.00	15.88	3.92	1355.25	1.12	5.18	61.40		1		0 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
38.049	.0447					.0386	1.47	4.97	1.76	3.771	.035			IR-OPEN
1138.367	1349.187	3.971	1353.158	2472.00	15.14	3.56	1356.72	1.04	5.18	62.71		1		0 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
18.183	.0447					.0339	.62	5.01	1.65	3.771	.035			IR-OPEN
1156.550	1350.000	4.097	1354.097	2472.00	14.44	3.24	1357.33	11.72	5.18	64.06		1		0 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
18.543	.0347					.0309	.57	15.81	1.56	4.007	.035			IR-OPEN
1175.093	1350.644	4.148	1354.792	2472.00	14.16	3.11	1357.91	11.43	5.18	64.94		1		0 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
25.269	.0347					.0286	.72	15.58	1.52	4.007	.035			IR-OPEN
1200.362	1351.521	4.277	1355.798	2472.00	13.50	2.83	1358.63	10.76	5.18	67.22		1		0 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
13.788	.0347					.0256	.35	15.03	1.44	4.007	.035			IR-OPEN
1214.150	1352.000	4.408	1356.408	2472.00	12.87	2.57	1358.98	16.62	5.18	69.53		1		0 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
23.660	.0266					.0230	.54	21.03	1.37	4.295	.035			IR-OPEN
1237.810	1352.629	4.516	1357.146	2472.00	12.38	2.38	1359.53	15.79	5.18	71.43		1		0 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
14.057	.0266					.0207	.29	20.31	1.31	4.295	.035			IR-OPEN

PRE PROJECT ARROYO
 REC JN. 16451

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
1251.867	1353.003	4.650	1357.653	2472.00	11.81	2.16	1359.82	14.83	5.18	73.79		1		0 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7.393	.0266					.0185	.14	19.48	1.24	4.295	.035			IR-OPEN
1259.260	1353.200	4.787	1357.987	2472.00	11.26	1.97	1359.95	3.45	5.18	76.20		1		0 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
29.287	.0174					.0174	.51	8.24	1.17	4.787	.035			IR-OPEN
1288.547	1353.709	4.787	1358.496	2472.00	11.26	1.97	1360.46	3.45	5.18	76.20		1		0 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
45.453	.0174					.0168	.77	8.24	1.17	4.787	.035			IR-OPEN
1334.000	1354.500	4.865	1359.365	2472.00	10.96	1.86	1361.23	5.53	5.18	77.58		1		0 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
26.053	.0154					.0173	.45	10.40	1.13	4.928	.035			IR-OPEN
1360.053	1354.902	4.730	1359.632	2472.00	11.48	2.05	1361.68	5.88	5.18	75.21		1		0 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
17.708	.0154					.0194	.34	10.61	1.20	4.928	.035			IR-OPEN
1377.761	1355.176	4.595	1359.771	2472.00	12.04	2.25	1362.02	6.27	5.18	72.83		1		0 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
14.448	.0154					.0217	.31	10.86	1.26	4.928	.035			IR-OPEN
1392.208	1355.399	4.461	1359.860	2472.00	12.63	2.48	1362.34	6.67	5.18	70.46		1		0 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
13.042	.0154					.0244	.32	11.13	1.34	4.928	.035			IR-OPEN
1405.250	1355.600	4.330	1359.930	2472.00	13.24	2.72	1362.65	.00	5.18	68.15		1		0 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
58.799	.0258					.0258	1.52	4.33	1.41	4.330	.035			IR-OPEN
1464.049	1357.116	4.330	1361.446	2472.00	13.24	2.72	1364.17	.00	5.18	68.15		1		0 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
84.701	.0258					.0248	2.10	4.33	1.41	4.330	.035			IR-OPEN

PRE PROJECT ARROYO
 REC JN. 16451

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
1548.750	1359.300	4.426	1363.726	2472.00	12.79	2.54	1366.27	3.60	5.18	69.84		1		0 .0
- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
TRANS STR	.0319					.0273	1.80	8.03	1.36		.035			IR-OPEN
1614.620	1361.400	3.768	1365.168	2472.00	13.87	2.99	1368.15	4.19	4.70	69.00		2		0 .0
- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
47.641	.0319					.0292	1.39	7.95	1.52	3.738	.035			IR-OPEN
1662.261	1362.919	3.873	1366.792	2472.00	13.32	2.75	1369.55	3.93	4.70	70.19		2		0 .0
- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
20.440	.0319					.0259	.53	7.80	1.44	3.738	.035			IR-OPEN
1682.701	1363.571	4.001	1367.572	2472.00	12.70	2.50	1370.08	3.64	4.70	71.64		2		0 .0
- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
10.534	.0319					.0227	.24	7.64	1.36	3.738	.035			IR-OPEN
1693.235	1363.906	4.132	1368.038	2472.00	12.11	2.28	1370.31	3.38	4.70	73.13		2		0 .0
- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
6.012	.0319					.0199	.12	7.51	1.28	3.738	.035			IR-OPEN
1699.247	1364.098	4.267	1368.365	2472.00	11.54	2.07	1370.43	3.14	4.70	74.66		2		0 .0
- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
3.409	.0319					.0175	.06	7.40	1.20	3.738	.035			IR-OPEN
1702.656	1364.207	4.406	1368.613	2472.00	11.01	1.88	1370.49	2.91	4.70	76.23		2		0 .0
- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
1.753	.0319					.0153	.03	7.32	1.13	3.738	.035			IR-OPEN
1704.409	1364.263	4.548	1368.811	2472.00	10.49	1.71	1370.52	2.70	4.70	77.84		2		0 .0
- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
.481	.0319					.0135	.01	7.25	1.06	3.738	.035			IR-OPEN
1704.890	1364.278	4.696	1368.974	2472.00	10.00	1.55	1370.53	1.92	4.70	79.51		2		0 .0
- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
5.767	.0118					.0122	.07	6.62	1.00	4.769	.035			IR-OPEN

PRE PROJECT ARROYO
 REC JN. 16451

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
1710.657	1364.346	4.769	1369.115	2472.00	9.77	1.48	1370.60	1.85	4.70	80.34		2		0 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4.396	.0118					.0118	.05	6.62	.97	4.769	.035			IR-OPEN
1715.054	1364.398	4.769	1369.167	2472.00	9.77	1.48	1370.65	1.85	4.70	80.34		2		0 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HYDRAULIC JUMP														
1715.054	1364.398	4.620	1369.018	2472.00	10.25	1.63	1370.65	1.99	4.70	78.65		2		0 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
.064	.0118					.0134	.00	6.61	1.03	4.769	.035			IR-OPEN
1715.117	1364.399	4.620	1369.019	2472.00	10.25	1.63	1370.65	1.99	4.70	78.65		2		0 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7.393	.0118					.0144	.11	6.61	1.03	4.769	.035			IR-OPEN
1722.510	1364.486	4.476	1368.962	2472.00	10.75	1.79	1370.76	2.15	4.70	77.02		2		0 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8.586	.0118					.0164	.14	6.62	1.10	4.769	.035			IR-OPEN
1731.096	1364.587	4.336	1368.923	2472.00	11.27	1.97	1370.90	2.31	4.70	75.44		2		0 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8.774	.0118					.0187	.16	6.65	1.17	4.769	.035			IR-OPEN
1739.870	1364.690	4.199	1368.889	2472.00	11.82	2.17	1371.06	2.49	4.70	73.89		2		0 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8.860	.0118					.0213	.19	6.69	1.24	4.769	.035			IR-OPEN
1748.731	1364.795	4.066	1368.861	2472.00	12.40	2.39	1371.25	2.69	4.70	72.38		2		0 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8.802	.0118					.0243	.21	6.75	1.32	4.769	.035			IR-OPEN
1757.533	1364.899	3.937	1368.836	2472.00	13.01	2.63	1371.46	2.89	4.70	70.92		2		0 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8.607	.0118					.0277	.24	6.83	1.40	4.769	.035			IR-OPEN

PRE PROJECT ARROYO
 REC JN. 16451

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
1766.140	1365.000	3.811	1368.811	2472.00	13.64	2.89	1371.70	2.57	4.70	69.49		2		0 .0
TRANS STR	.0062					.0236	1.14	6.38	1.49		.035			IR-OPEN
1814.620	1365.300	5.547	1370.847	2472.00	11.57	2.08	1372.93	.84	6.06	71.62		3		0 .0
6.167	.0083					.0185	.11	6.39	1.18	6.753	.035			IR-OPEN
1820.787	1365.351	5.409	1370.760	2472.00	12.12	2.28	1373.04	.88	6.06	67.92		3		0 .0
7.217	.0083					.0201	.15	6.29	1.23	6.753	.035			IR-OPEN
1828.004	1365.412	5.266	1370.678	2472.00	12.71	2.51	1373.19	.91	6.06	64.09		3		0 .0
7.802	.0083					.0218	.17	6.18	1.29	6.753	.035			IR-OPEN
1835.806	1365.477	5.120	1370.597	2472.00	13.33	2.76	1373.35	.94	6.06	60.18		3		0 .0
8.405	.0083					.0235	.20	6.06	1.34	6.753	.035			IR-OPEN
1844.211	1365.547	4.972	1370.519	2472.00	13.98	3.03	1373.55	.97	6.06	56.73		3		0 .0
8.789	.0083					.0262	.23	5.95	1.40	6.753	.035			IR-OPEN
1853.000	1365.620	4.826	1370.446	2472.00	14.66	3.34	1373.78	.00	6.06	55.49		3		0 .0
4.450	-.0045					.0294	.13	4.83	1.48	.000	.035			IR-OPEN
1857.450	1365.600	4.710	1370.310	2472.00	15.23	3.60	1373.91	.00	6.06	54.52		3		0 .0
TRANS STR	.0254					.0372	2.73	4.71	1.56		.035			IR-OPEN
1931.000	1367.470	5.548	1373.018	2472.00	15.31	3.64	1376.66	.00	6.78	69.90		5		0 .0
12.790	.0547					.0419	.54	5.55	1.78	5.267	.035			IR-OPEN

PRE PROJECT ARROYO
 REC JN. 16451

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
1943.790	1368.170	5.628	1373.798	2472.00	14.79	3.39	1377.19	.00	6.78	72.34		5		0 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12.286	.0547					.0386	.47	5.63	1.71	5.267	.035			IR-OPEN
1956.076	1368.842	5.738	1374.581	2472.00	14.10	3.09	1377.67	.00	6.78	75.71		5		0 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8.544	.0547					.0349	.30	5.74	1.63	5.267	.035			IR-OPEN
1964.620	1369.310	5.849	1375.159	2472.00	13.44	2.81	1377.97	.00	6.78	79.12		5		0 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
41.069	.0347					.0318	1.31	5.85	1.55	5.801	.035			IR-OPEN
2005.689	1370.734	5.936	1376.670	2472.00	12.95	2.60	1379.27	.00	6.78	81.78		5		0 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
22.111	.0347					.0290	.64	5.94	1.49	5.801	.035			IR-OPEN
2027.800	1371.500	6.048	1377.548	2472.00	12.34	2.37	1379.91	.47	6.78	85.22		5		0 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
92.777	.0275					.0275	2.55	6.52	1.42	6.048	.035			IR-OPEN
2120.576	1374.053	6.048	1380.102	2472.00	12.34	2.37	1382.47	.47	6.78	85.22		5		0 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
77.141	.0275					.0271	2.09	6.52	1.42	6.048	.035			IR-OPEN
2197.717	1376.176	6.083	1382.260	2472.00	12.16	2.30	1384.56	.46	6.78	86.28		5		0 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
42.521	.0275					.0253	1.07	6.54	1.40	6.048	.035			IR-OPEN
2240.238	1377.347	6.196	1383.543	2472.00	11.60	2.09	1385.63	.43	6.78	89.74		5		0 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
15.885	.0275					.0227	.36	6.63	1.33	6.048	.035			IR-OPEN
2256.123	1377.784	6.309	1384.093	2472.00	11.06	1.90	1385.99	.41	6.78	93.20		5		0 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8.010	.0275					.0203	.16	6.72	1.26	6.048	.035			IR-OPEN

WATER SURFACE PROFILE LISTING

Date: 8-28-2012 Time: 5: 8:56

PRE PROJECT ARROYO
REC JN. 16451

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
2264.133	1378.004	6.424	1384.428	2472.00	10.54	1.73	1386.15	.39	6.78	96.73		5		0 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4.388	.0275					.0182	.08	6.81	1.19	6.048	.035			IR-OPEN
2268.521	1378.125	6.540	1384.665	2472.00	10.05	1.57	1386.23	.36	6.78	100.28		5		0 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2.171	.0275					.0162	.04	6.90	1.13	6.048	.035			IR-OPEN
2270.692	1378.185	6.658	1384.843	2472.00	9.58	1.43	1386.27	.34	6.78	102.87		5		0 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
.558	.0275					.0142	.01	7.00	1.07	6.048	.035			IR-OPEN
2271.250	1378.200	6.781	1384.981	2472.00	9.13	1.30	1386.28	.00	6.78	104.47		5		0 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TRANS STR	1.0000					.0066	.00	6.78	1.00		.035			IR-OPEN
2271.260	1378.210	8.352	1386.562	2472.00	1.42	.03	1386.59	.02	1.84	242.22	12.500	176.000	4.00	0 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
9.548	.0349					.0001	.00	8.37	.09	1.44	.035	-.90	4.00	TRAP
2280.808	1378.543	8.016	1386.560	2472.00	1.49	.03	1386.59	.02	1.84	239.53	12.500	176.000	4.00	0 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
9.196	.0349					.0001	.00	8.04	.10	1.44	.035	-.90	4.00	TRAP
2290.004	1378.864	7.693	1386.557	2472.00	1.57	.04	1386.60	.02	1.84	236.94	12.500	176.000	4.00	0 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8.853	.0349					.0001	.00	7.71	.11	1.44	.035	-.90	4.00	TRAP
2298.857	1379.173	7.381	1386.554	2472.00	1.64	.04	1386.60	.02	1.84	234.45	12.500	176.000	4.00	0 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8.519	.0349					.0001	.00	7.40	.11	1.44	.035	-.90	4.00	TRAP
2307.376	1379.471	7.080	1386.551	2472.00	1.72	.05	1386.60	.02	1.84	232.04	12.500	176.000	4.00	0 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8.194	.0349					.0002	.00	7.11	.12	1.44	.035	-.90	4.00	TRAP

PRE PROJECT ARROYO
 REC JN. 16451

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
2315.571	1379.757	6.791	1386.548	2472.00	1.81	.05	1386.60	.03	1.84	229.73	12.500	176.000	4.00	0 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7.878	.0349					.0002	.00	6.82	.13	1.44	.035	-.90	4.00	TRAP
2323.449	1380.032	6.512	1386.544	2472.00	1.89	.06	1386.60	.03	1.84	227.50	12.500	176.000	4.00	0 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7.570	.0349					.0002	.00	6.54	.14	1.44	.035	-.90	4.00	TRAP
2331.019	1380.296	6.244	1386.540	2472.00	1.99	.06	1386.60	.03	1.84	225.35	12.500	176.000	4.00	0 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7.271	.0349					.0002	.00	6.28	.15	1.44	.035	-.90	4.00	TRAP
2338.290	1380.550	5.986	1386.536	2472.00	2.08	.07	1386.60	.03	1.84	223.29	12.500	176.000	4.00	0 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6.979	.0349					.0003	.00	6.02	.16	1.44	.035	-.90	4.00	TRAP
2345.269	1380.794	5.737	1386.531	2472.00	2.18	.07	1386.61	.04	1.84	221.30	12.500	176.000	4.00	0 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6.695	.0349					.0003	.00	5.78	.17	1.44	.035	-.90	4.00	TRAP
2351.963	1381.028	5.498	1386.526	2472.00	2.29	.08	1386.61	.04	1.84	219.39	12.500	176.000	4.00	0 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6.418	.0349					.0004	.00	5.54	.18	1.44	.035	-.90	4.00	TRAP
2358.381	1381.252	5.269	1386.521	2472.00	2.40	.09	1386.61	.05	1.84	217.55	12.500	176.000	4.00	0 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6.148	.0349					.0004	.00	5.31	.19	1.44	.035	-.90	4.00	TRAP
2364.530	1381.466	5.048	1386.514	2472.00	2.52	.10	1386.61	.05	1.84	215.78	12.500	176.000	4.00	0 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5.885	.0349					.0005	.00	5.10	.21	1.44	.035	-.90	4.00	TRAP
2370.415	1381.672	4.835	1386.507	2472.00	2.64	.11	1386.62	.05	1.84	214.08	12.500	176.000	4.00	0 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5.628	.0349					.0006	.00	4.89	.22	1.44	.035	-.90	4.00	TRAP

PRE PROJECT ARROYO
 REC JN. 16451

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
2376.043	1381.868	4.631	1386.500	2472.00	2.77	.12	1386.62	.06	1.84	212.45	12.500	176.000	4.00	0 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5.378	.0349					.0007	.00	4.69	.24	1.44	.035	-.90	4.00	TRAP
2381.421	1382.056	4.435	1386.491	2472.00	2.91	.13	1386.62	.06	1.84	210.88	12.500	176.000	4.00	0 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5.133	.0349					.0008	.00	4.50	.26	1.44	.035	-.90	4.00	TRAP
2386.554	1382.235	4.247	1386.482	2472.00	3.05	.14	1386.63	.07	1.84	209.38	12.500	176.000	4.00	0 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4.893	.0349					.0009	.00	4.32	.27	1.44	.035	-.90	4.00	TRAP
2391.448	1382.406	4.066	1386.473	2472.00	3.20	.16	1386.63	.08	1.84	207.93	12.500	176.000	4.00	0 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4.658	.0349					.0011	.00	4.14	.29	1.44	.035	-.90	4.00	TRAP
2396.106	1382.569	3.893	1386.462	2472.00	3.35	.17	1386.64	.08	1.84	206.54	12.500	176.000	4.00	0 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4.428	.0349					.0012	.01	3.98	.31	1.44	.035	-.90	4.00	TRAP
2400.534	1382.723	3.726	1386.450	2472.00	3.52	.19	1386.64	.09	1.84	205.21	12.500	176.000	4.00	0 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4.201	.0349					.0014	.01	3.82	.34	1.44	.035	-.90	4.00	TRAP
2404.735	1382.870	3.566	1386.437	2472.00	3.69	.21	1386.65	.10	1.84	203.93	12.500	176.000	4.00	0 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3.977	.0349					.0017	.01	3.67	.36	1.44	.035	-.90	4.00	TRAP
2408.712	1383.009	3.413	1386.422	2472.00	3.87	.23	1386.65	.11	1.84	202.70	12.500	176.000	4.00	0 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3.756	.0349					.0020	.01	3.52	.38	1.44	.035	-.90	4.00	TRAP
2412.468	1383.140	3.266	1386.406	2472.00	4.06	.26	1386.66	.12	1.84	201.53	12.500	176.000	4.00	0 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3.536	.0349					.0023	.01	3.39	.41	1.44	.035	-.90	4.00	TRAP

PRE PROJECT ARROYO
 REC JN. 16451

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
2416.004	1383.264	3.125	1386.389	2472.00	4.26	.28	1386.67	.13	1.84	200.40	12.500	176.000	4.00	0 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3.317	.0349					.0026	.01	3.26	.44	1.44	.035	-.90	4.00	TRAP
2419.322	1383.379	2.990	1386.369	2472.00	4.47	.31	1386.68	.14	1.84	199.32	12.500	176.000	4.00	0 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3.098	.0349					.0031	.01	3.13	.47	1.44	.035	-.90	4.00	TRAP
2422.420	1383.488	2.860	1386.348	2472.00	4.68	.34	1386.69	.16	1.84	198.28	12.500	176.000	4.00	0 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2.877	.0349					.0036	.01	3.02	.51	1.44	.035	-.90	4.00	TRAP
2425.297	1383.588	2.736	1386.324	2472.00	4.91	.37	1386.70	.17	1.84	197.29	12.500	176.000	4.00	0 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2.652	.0349					.0042	.01	2.91	.54	1.44	.035	-.90	4.00	TRAP
2427.949	1383.681	2.617	1386.298	2472.00	5.15	.41	1386.71	.19	1.84	196.34	12.500	176.000	4.00	0 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2.422	.0349					.0049	.01	2.80	.58	1.44	.035	-.90	4.00	TRAP
2430.371	1383.765	2.503	1386.268	2472.00	5.40	.45	1386.72	.21	1.84	195.42	12.500	176.000	4.00	0 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2.183	.0349					.0057	.01	2.71	.62	1.44	.035	-.90	4.00	TRAP
2432.554	1383.841	2.394	1386.235	2472.00	5.67	.50	1386.73	.23	1.84	194.55	12.500	176.000	4.00	0 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1.627	.0349					.0065	.01	2.62	.67	1.44	.035	-.90	4.00	TRAP
2434.181	1383.898	2.307	1386.205	2472.00	5.89	.54	1386.74	.24	1.84	193.86	12.500	176.000	4.00	0 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HYDRAULIC JUMP														
2434.181	1383.898	1.447	1385.345	2472.00	9.67	1.45	1386.80	.63	1.84	186.98	12.500	176.000	4.00	0 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2.209	.0349					.0342	.08	2.08	1.46	1.44	.035	-.90	4.00	TRAP

PRE PROJECT ARROYO
 REC JN. 16451

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
2436.391	1383.975	1.448	1385.423	2472.00	9.66	1.45	1386.87	.63	1.84	186.98	12.500	176.000	4.00	0 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
20.520	.0349					.0317	.65	2.08	1.46	1.44	.035	-.90	4.00	TRAP
2456.910	1384.692	1.515	1386.207	2472.00	9.21	1.32	1387.52	.57	1.84	187.52	12.500	176.000	4.00	0 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6.484	.0349					.0272	.18	2.09	1.36	1.44	.035	-.90	4.00	TRAP
2463.394	1384.918	1.585	1386.503	2472.00	8.79	1.20	1387.70	.52	1.84	188.08	12.500	176.000	4.00	0 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3.100	.0349					.0233	.07	2.11	1.27	1.44	.035	-.90	4.00	TRAP
2466.494	1385.026	1.657	1386.684	2472.00	8.38	1.09	1387.77	.48	1.84	188.66	12.500	176.000	4.00	0 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1.525	.0349					.0200	.03	2.13	1.18	1.44	.035	-.90	4.00	TRAP
2468.019	1385.080	1.734	1386.813	2472.00	7.99	.99	1387.80	.43	1.84	189.27	12.500	176.000	4.00	0 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
.581	.0349					.0171	.01	2.17	1.10	1.44	.035	-.90	4.00	TRAP
2468.600	1385.100	1.813	1386.913	2472.00	7.61	.90	1387.81	.79	1.84	189.91	12.500	176.000	4.00	0 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
289.552	.0158					.0158	4.57	2.61	1.03	1.81	.035	-.90	4.00	TRAP
2758.152	1389.670	1.813	1391.483	2472.00	7.61	.90	1392.38	.79	1.84	189.91	12.500	176.000	4.00	0 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1.898	.0158					.0153	.03	2.61	1.03	1.81	.035	-.90	4.00	TRAP
2760.050	1389.700	1.844	1391.544	2472.00	7.48	.87	1392.41	.35	1.84	190.15	12.500	176.000	4.00	0 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TRANS STR	.0162					.0146	2.25	2.20	1.00		.035	-.90	4.00	TRAP
2914.630	1392.200	1.711	1393.911	2472.00	7.01	.76	1394.67	.35	1.67	215.82	16.800	206.000	4.00	0 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
.044	.0165					.0142	.00	2.06	.97	1.64	.035	-.90	2.00	TRAP

PRE PROJECT ARROYO
REC JN. 16451

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
2914.674	1392.201	1.711	1393.912	2472.00	7.01	.76	1394.67	.35	1.67	215.82	16.800	206.000	4.00	0 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HYDRAULIC JUMP														
2914.674	1392.201	1.637	1393.837	2472.00	7.34	.84	1394.67	.39	1.67	215.37	16.800	206.000	4.00	0 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
118.814	.0165					.0165	1.96	2.02	1.03	1.64	.035	-.90	2.00	TRAP
3033.488	1394.164	1.637	1395.801	2472.00	7.34	.84	1396.64	.39	1.67	215.37	16.800	206.000	4.00	0 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2.162	.0165					.0159	.03	2.02	1.03	1.64	.035	-.90	2.00	TRAP
3035.650	1394.200	1.673	1395.873	2472.00	7.17	.80	1396.67	.34	1.67	215.59	16.800	206.000	4.00	0 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2.456	.0121					.0142	.03	2.01	1.00	1.79	.035	-.90	2.00	TRAP
3038.106	1394.230	1.751	1395.981	2472.00	6.84	.73	1396.71	.31	1.67	216.06	16.800	206.000	4.00	0 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
13.492	.0121					.0126	.17	2.06	.93	1.79	.035	-.90	2.00	TRAP
3051.598	1394.393	1.794	1396.186	2472.00	6.67	.69	1396.88	.30	1.67	216.31	16.800	206.000	4.00	0 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
256.146	.0121					.0121	3.09	2.09	.90	1.79	.035	-.90	2.00	TRAP
3307.744	1397.487	1.794	1399.280	2472.00	6.67	.69	1399.97	.30	1.67	216.31	16.800	206.000	4.00	0 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HYDRAULIC JUMP														
3307.744	1397.487	1.558	1399.045	2472.00	7.73	.93	1399.97	.39	1.67	214.90	16.800	206.000	4.00	0 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1.116	.0121					.0202	.02	1.95	1.12	1.79	.035	-.90	2.00	TRAP
3308.860	1397.500	1.529	1399.029	2472.00	7.88	.97	1399.99	4.77	1.67	214.72	16.800	206.000	4.00	0 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
53.888	.0209					.0209	1.13	6.30	1.15	1.53	.035	-.90	2.00	TRAP

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
3362.748	1398.625	1.529	1400.154	2472.00	7.88	.97	1401.12	4.77	1.67	214.72	16.800	206.000	4.00	0 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12.915	.0209					.0203	.26	6.30	1.15	1.53	.035	-.90	2.00	TRAP
3375.663	1398.895	1.553	1400.447	2472.00	7.76	.93	1401.38	4.62	1.67	214.87	16.800	206.000	4.00	0 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5.047	.0209					.0184	.09	6.17	1.12	1.53	.035	-.90	2.00	TRAP
3380.710	1399.000	1.625	1400.625	2472.00	7.40	.85	1401.47	4.21	1.67	215.30	16.800	206.000	4.00	0 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
73.911	.0169					.0169	1.25	5.83	1.05	1.62	.035	-.90	2.00	TRAP
3454.621	1400.252	1.625	1401.877	2472.00	7.40	.85	1402.73	4.21	1.67	215.30	16.800	206.000	4.00	0 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2.819	.0169					.0161	.05	5.83	1.05	1.62	.035	-.90	2.00	TRAP
3457.440	1400.300	1.673	1401.973	2472.00	7.17	.80	1402.77	1.08	1.67	215.59	16.800	206.000	4.00	0 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TRANS STR	.0244							2.76	1.00		.035	-.90	2.00	TRAP
3514.760	1401.700	1.210	1402.910	2472.00	9.17	1.31	1404.22	1.92	1.58	233.95	19.300	226.000	5.00	0 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
49.010	.0387					.0387	1.90	3.13	1.51	1.21	.035	-.90	2.00	TRAP
3563.770	1403.597	1.210	1404.807	2472.00	9.17	1.31	1406.11	1.92	1.58	233.95	19.300	226.000	5.00	0 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
22.536	.0387					.0365	.82	3.13	1.51	1.21	.035	-.90	2.00	TRAP
3586.306	1404.470	1.254	1405.724	2472.00	8.83	1.21	1406.94	1.79	1.58	234.25	19.300	226.000	5.00	0 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7.459	.0387					.0318	.24	3.04	1.42	1.21	.035	-.90	2.00	TRAP
3593.766	1404.759	1.312	1406.071	2472.00	8.42	1.10	1407.17	1.63	1.58	234.66	19.300	226.000	5.00	0 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3.389	.0387					.0272	.09	2.94	1.33	1.21	.035	-.90	2.00	TRAP

Date: 8-28-2012 Time: 5: 8:56

PRE PROJECT ARROYO
REC JN. 16451

[illegible]

T1	ARROYO POST PROJECT														
T2	OVERLOOK BRIDGE CROSSING														
T3															
SO	1000.000	1343.000	1												
R	1156.550	1350.000	1	.035										-16.132	
R	1214.150	1352.000	1	.035										-71.744	
R	1259.260	1353.200	1	.035										92.308	
R	1334.000	1354.500	1	.035										-37.896	
R	1405.250	1355.600	1	.035										60.034	
R	1548.750	1359.300	1	.035										.000	
TS	1614.620	1361.400	2	.035										-29.485	
R	1704.890	1364.278	2	.035										-40.407	
R	1766.140	1365.000	2	.035										47.424	
TS	1814.620	1365.300	3	.035										-13.683	
R	1853.000	1365.620	3	.035										-10.833	
TS	1855.870	1365.630	10	.035										-.810	
R	1863.900	1365.700	10	.035										.000	
TS	1921.000	1367.000	11	.035										.000	
R	1929.070	1367.400	11	.035										.000	
TS	1931.000	1367.470	5	.035										.000	
R	1964.620	1369.310	5	.035										.000	
R	2027.800	1371.500	5	.035										.000	
R	2271.250	1378.200	5	.035										-12.443	
TS	2271.260	1378.210	6	.035										.000	
R	2468.600	1385.100	6	.035										-10.086	
R	2760.050	1389.700	6	.035										-29.766	
TS	2914.630	1392.200	7	.035										7.302	
R	3035.650	1394.200	7	.035										5.716	
R	3308.860	1397.500	7	.035										26.943	
R	3380.710	1399.000	7	.035										-26.559	
R	3457.440	1400.300	7	.035										-38.905	
TS	3514.760	1401.700	8	.035										-7.952	
R	3600.000	1405.000	8	.035										-11.825	
SH	3600.000	1405.000	8												
CD	4	1	0	.000	13.300	204.000	5.000	7.000	-.99						
CD	6	1	0	.000	12.500	176.000	4.000	4.000	-.90						
CD	7	1	0	.000	16.800	206.000	4.000	2.000	-.90						
CD	8	1	0	.000	19.300	226.000	5.000	2.000	-.90						
CD	1	5	0	.000		.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
CD	2	5	0	.000		.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
CD	3	5	0	.000		.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
CD	5	5	0	.000		.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
CD	9	5	1	8.000		11.30	.00	.00	.00	.00	.				

WATER SURFACE PROFILE LISTING

Date: 8-28-2012 Time: 5:14:55

ARROYO POST PROJECT
OVERLOOK BRIDGE CROSSING

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
1000.000	1343.000	3.771	1346.771	2472.00	16.38	4.17	1350.94	1.18	5.18	60.56		1		0 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5.479	.0447					.0447	.25	4.95	1.83	3.771	.035			IR-OPEN
1005.479	1343.245	3.771	1347.016	2472.00	16.38	4.17	1351.18	1.18	5.18	60.56		1		0 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
94.838	.0447					.0429	4.07	4.95	1.83	3.771	.035			IR-OPEN
1100.317	1347.486	3.849	1351.335	2472.00	15.88	3.92	1355.25	1.12	5.18	61.40		1		0 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
38.049	.0447					.0386	1.47	4.97	1.76	3.771	.035			IR-OPEN
1138.367	1349.187	3.971	1353.158	2472.00	15.14	3.56	1356.72	1.04	5.18	62.71		1		0 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
18.183	.0447					.0339	.62	5.01	1.65	3.771	.035			IR-OPEN
1156.550	1350.000	4.097	1354.097	2472.00	14.44	3.24	1357.33	11.72	5.18	64.06		1		0 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
18.543	.0347					.0309	.57	15.81	1.56	4.007	.035			IR-OPEN
1175.093	1350.644	4.148	1354.792	2472.00	14.16	3.11	1357.91	11.43	5.18	64.94		1		0 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
25.269	.0347					.0286	.72	15.58	1.52	4.007	.035			IR-OPEN
1200.362	1351.521	4.277	1355.798	2472.00	13.50	2.83	1358.63	10.76	5.18	67.22		1		0 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
13.788	.0347					.0256	.35	15.03	1.44	4.007	.035			IR-OPEN
1214.150	1352.000	4.408	1356.408	2472.00	12.87	2.57	1358.98	16.62	5.18	69.53		1		0 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
23.660	.0266					.0230	.54	21.03	1.37	4.295	.035			IR-OPEN
1237.810	1352.629	4.516	1357.146	2472.00	12.38	2.38	1359.53	15.79	5.18	71.43		1		0 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
14.057	.0266					.0207	.29	20.31	1.31	4.295	.035			IR-OPEN

ARROYO POST PROJECT
OVERLOOK BRIDGE CROSSING

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
1251.867	1353.003	4.650	1357.653	2472.00	11.81	2.16	1359.82	14.83	5.18	73.79		1		0 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7.393	.0266					.0185	.14	19.48	1.24	4.295	.035			IR-OPEN
1259.260	1353.200	4.787	1357.987	2472.00	11.26	1.97	1359.95	3.45	5.18	76.20		1		0 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
29.287	.0174					.0174	.51	8.24	1.17	4.787	.035			IR-OPEN
1288.547	1353.709	4.787	1358.496	2472.00	11.26	1.97	1360.46	3.45	5.18	76.20		1		0 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
45.453	.0174					.0168	.77	8.24	1.17	4.787	.035			IR-OPEN
1334.000	1354.500	4.865	1359.365	2472.00	10.96	1.86	1361.23	5.53	5.18	77.58		1		0 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
26.053	.0154					.0173	.45	10.40	1.13	4.928	.035			IR-OPEN
1360.053	1354.902	4.730	1359.632	2472.00	11.48	2.05	1361.68	5.88	5.18	75.21		1		0 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
17.708	.0154					.0194	.34	10.61	1.20	4.928	.035			IR-OPEN
1377.761	1355.176	4.595	1359.771	2472.00	12.04	2.25	1362.02	6.27	5.18	72.83		1		0 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
14.448	.0154					.0217	.31	10.86	1.26	4.928	.035			IR-OPEN
1392.208	1355.399	4.461	1359.860	2472.00	12.63	2.48	1362.34	6.67	5.18	70.46		1		0 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
13.042	.0154					.0244	.32	11.13	1.34	4.928	.035			IR-OPEN
1405.250	1355.600	4.330	1359.930	2472.00	13.24	2.72	1362.65	.00	5.18	68.15		1		0 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
58.799	.0258					.0258	1.52	4.33	1.41	4.330	.035			IR-OPEN
1464.049	1357.116	4.330	1361.446	2472.00	13.24	2.72	1364.17	.00	5.18	68.15		1		0 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
84.701	.0258					.0248	2.10	4.33	1.41	4.330	.035			IR-OPEN

WATER SURFACE PROFILE LISTING

Date: 8-28-2012 Time: 5:14:55

ARROYO POST PROJECT
OVERLOOK BRIDGE CROSSING

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
1548.750	1359.300	4.426	1363.726	2472.00	12.79	2.54	1366.27	3.60	5.18	69.84		1		0 .0
- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
TRANS STR	.0319					.0273	1.80	8.03	1.36		.035			IR-OPEN
1614.620	1361.400	3.768	1365.168	2472.00	13.87	2.99	1368.15	4.19	4.70	69.00		2		0 .0
- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
47.641	.0319					.0292	1.39	7.95	1.52	3.738		.035		IR-OPEN
1662.261	1362.919	3.873	1366.792	2472.00	13.32	2.75	1369.55	3.93	4.70	70.19		2		0 .0
- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
20.440	.0319					.0259	.53	7.80	1.44	3.738		.035		IR-OPEN
1682.701	1363.571	4.001	1367.572	2472.00	12.70	2.50	1370.08	3.64	4.70	71.64		2		0 .0
- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
10.534	.0319					.0227	.24	7.64	1.36	3.738		.035		IR-OPEN
1693.235	1363.906	4.132	1368.038	2472.00	12.11	2.28	1370.31	3.38	4.70	73.13		2		0 .0
- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
6.012	.0319					.0199	.12	7.51	1.28	3.738		.035		IR-OPEN
1699.247	1364.098	4.267	1368.365	2472.00	11.54	2.07	1370.43	3.14	4.70	74.66		2		0 .0
- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
3.409	.0319					.0175	.06	7.40	1.20	3.738		.035		IR-OPEN
1702.656	1364.207	4.406	1368.613	2472.00	11.01	1.88	1370.49	2.91	4.70	76.23		2		0 .0
- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
1.753	.0319					.0153	.03	7.32	1.13	3.738		.035		IR-OPEN
1704.409	1364.263	4.548	1368.811	2472.00	10.49	1.71	1370.52	2.70	4.70	77.84		2		0 .0
- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
.481	.0319					.0135	.01	7.25	1.06	3.738		.035		IR-OPEN
1704.890	1364.278	4.696	1368.974	2472.00	10.00	1.55	1370.53	1.92	4.70	79.51		2		0 .0
- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
4.906	.0118					.0122	.06	6.62	1.00	4.769		.035		IR-OPEN

ARROYO POST PROJECT
 OVERLOOK BRIDGE CROSSING

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
1709.796	1364.336	4.763	1369.098	2472.00	9.79	1.49	1370.59	1.86	4.70	80.27		2		0 .0
- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
HYDRAULIC JUMP														
1709.796	1364.336	4.627	1368.963	2472.00	10.23	1.62	1370.59	1.99	4.70	78.73		2		0 .0
- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
4.579	.0118					.0139	.06	6.61	1.03	4.769	.035			IR-OPEN
1714.375	1364.390	4.545	1368.935	2472.00	10.50	1.71	1370.65	2.07	4.70	77.81		2		0 .0
- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
8.176	.0118					.0154	.13	6.62	1.06	4.769	.035			IR-OPEN
1722.551	1364.486	4.403	1368.889	2472.00	11.02	1.88	1370.77	2.23	4.70	76.20		2		0 .0
- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
8.627	.0118					.0175	.15	6.63	1.13	4.769	.035			IR-OPEN
1731.178	1364.588	4.264	1368.852	2472.00	11.55	2.07	1370.93	2.40	4.70	74.62		2		0 .0
- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
8.956	.0118					.0200	.18	6.67	1.20	4.769	.035			IR-OPEN
1740.134	1364.693	4.130	1368.823	2472.00	12.12	2.28	1371.10	2.59	4.70	73.10		2		0 .0
- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
8.745	.0118					.0228	.20	6.72	1.28	4.769	.035			IR-OPEN
1748.880	1364.797	3.998	1368.795	2472.00	12.71	2.51	1371.30	2.79	4.70	71.61		2		0 .0
- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
8.737	.0118					.0260	.23	6.79	1.36	4.769	.035			IR-OPEN
1757.616	1364.900	3.871	1368.771	2472.00	13.33	2.76	1371.53	3.01	4.70	70.17		2		0 .0
- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
8.524	.0118					.0296	.25	6.88	1.45	4.769	.035			IR-OPEN
1766.140	1365.000	3.747	1368.747	2472.00	13.98	3.04	1371.78	2.67	4.70	68.76		2		0 .0
- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
TRANS STR	.0062					.0266	1.29	6.42	1.54		.035			IR-OPEN

ARROYO POST PROJECT
OVERLOOK BRIDGE CROSSING

*****															*****	
Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip		
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch		
*****															*****	
1814.620	1365.300	5.203	1370.503	2472.00	12.97	2.61	1373.12	.92	6.06	62.40		3		0 .0		
- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -		
3.463	.0083					.0220	.08	6.13	1.31	6.753	.035			IR-OPEN		
1818.083	1365.329	5.138	1370.467	2472.00	13.25	2.73	1373.19	.94	6.06	60.66		3		0 .0		
- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -		
8.356	.0083					.0233	.19	6.08	1.33	6.753	.035			IR-OPEN		
1826.439	1365.399	4.990	1370.389	2472.00	13.90	3.00	1373.39	.97	6.06	56.88		3		0 .0		
- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -		
8.767	.0083					.0258	.23	5.96	1.38	6.753	.035			IR-OPEN		
1835.206	1365.472	4.843	1370.315	2472.00	14.58	3.30	1373.61	1.04	6.06	55.64		3		0 .0		
- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -		
8.854	.0083					.0293	.26	5.88	1.47	6.753	.035			IR-OPEN		
1844.060	1365.546	4.699	1370.245	2472.00	15.29	3.63	1373.87	1.12	6.06	54.42		3		0 .0		
- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -		
8.940	.0083					.0334	.30	5.82	1.56	6.753	.035			IR-OPEN		
1853.000	1365.620	4.560	1370.180	2472.00	16.03	3.99	1374.17	2.72	6.06	53.25		3		0 .0		
- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -		
TRANS STR	.0035					.0241	.07	7.28	1.66		.035			IR-OPEN		
1855.870	1365.630	7.258	1372.888	2472.00	10.13	1.59	1374.48	.00	7.26	76.62		10		1 8.0		
- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -		
2.164	.0087					.0120	.03	7.26	1.00	7.773	.035			IR-OPEN		
1858.034	1365.649	7.410	1373.059	2472.00	9.66	1.45	1374.51	.00	7.26	80.06		10		1 8.0		
- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -		
5.866	.0087					.0110	.06	7.41	.95	7.773	.035			IR-OPEN		
1863.900	1365.700	7.517	1373.217	2472.00	9.34	1.35	1374.57	.00	7.26	82.49		10		1 8.0		
- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -		
TRANS STR	.0228							7.517	.919		.035			IR-OPEN		

ARROYO POST PROJECT
 OVERLOOK BRIDGE CROSSING

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
1921.000	1367.000	4.370	1371.370	2472.00	17.34	4.67	1376.04	.00	5.87	58.39		11		1 8.0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8.070	.0496					.0518	.42	4.37	1.96	4.407	.035			IR-OPEN
1929.070	1367.400	4.363	1371.763	2472.00	17.39	4.69	1376.46	.00	5.87	58.32		11		1 8.0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TRANS STR	.0362					.0477	.09	4.36	1.96		.035			IR-OPEN
1931.000	1367.470	5.548	1373.018	2472.00	15.31	3.64	1376.66	.00	6.78	69.90		5		0 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12.790	.0547					.0419	.54	5.55	1.78	5.267	.035			IR-OPEN
1943.790	1368.170	5.628	1373.798	2472.00	14.79	3.39	1377.19	.00	6.78	72.34		5		0 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12.286	.0547					.0386	.47	5.63	1.71	5.267	.035			IR-OPEN
1956.076	1368.842	5.738	1374.581	2472.00	14.10	3.09	1377.67	.00	6.78	75.71		5		0 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8.544	.0547					.0349	.30	5.74	1.63	5.267	.035			IR-OPEN
1964.620	1369.310	5.849	1375.159	2472.00	13.44	2.81	1377.97	.00	6.78	79.12		5		0 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
41.069	.0347					.0318	1.31	5.85	1.55	5.801	.035			IR-OPEN
2005.689	1370.734	5.936	1376.670	2472.00	12.95	2.60	1379.27	.00	6.78	81.78		5		0 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
22.111	.0347					.0290	.64	5.94	1.49	5.801	.035			IR-OPEN
2027.800	1371.500	6.048	1377.548	2472.00	12.34	2.37	1379.91	.47	6.78	85.22		5		0 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
92.777	.0275					.0275	2.55	6.52	1.42	6.048	.035			IR-OPEN
2120.576	1374.053	6.048	1380.102	2472.00	12.34	2.37	1382.47	.47	6.78	85.22		5		0 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
77.141	.0275					.0271	2.09	6.52	1.42	6.048	.035			IR-OPEN

ARROYO POST PROJECT
 OVERLOOK BRIDGE CROSSING

*****															*****	
Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip		
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch		
*****															*****	
2197.717	1376.176	6.083	1382.260	2472.00	12.16	2.30	1384.56	.46	6.78	86.28		5		0 .0		
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
42.521	.0275					.0253	1.07	6.54	1.40	6.048	.035			IR-OPEN		
2240.238	1377.347	6.196	1383.543	2472.00	11.60	2.09	1385.63	.43	6.78	89.74		5		0 .0		
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
15.885	.0275					.0227	.36	6.63	1.33	6.048	.035			IR-OPEN		
2256.123	1377.784	6.309	1384.093	2472.00	11.06	1.90	1385.99	.41	6.78	93.20		5		0 .0		
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
8.010	.0275					.0203	.16	6.72	1.26	6.048	.035			IR-OPEN		
2264.133	1378.004	6.424	1384.428	2472.00	10.54	1.73	1386.15	.39	6.78	96.73		5		0 .0		
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
4.388	.0275					.0182	.08	6.81	1.19	6.048	.035			IR-OPEN		
2268.521	1378.125	6.540	1384.665	2472.00	10.05	1.57	1386.23	.36	6.78	100.28		5		0 .0		
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
2.171	.0275					.0162	.04	6.90	1.13	6.048	.035			IR-OPEN		
2270.692	1378.185	6.658	1384.843	2472.00	9.58	1.43	1386.27	.34	6.78	102.87		5		0 .0		
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
.558	.0275					.0142	.01	7.00	1.07	6.048	.035			IR-OPEN		
2271.250	1378.200	6.781	1384.981	2472.00	9.13	1.30	1386.28	.00	6.78	104.47		5		0 .0		
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
TRANS STR	1.0000					.0066	.00	6.78	1.00		.035			IR-OPEN		
2271.260	1378.210	8.352	1386.562	2472.00	1.42	.03	1386.59	.02	1.84	242.22	12.500	176.000	4.00	0 .0		
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
9.548	.0349					.0001	.00	8.37	.09	1.44	.035	-.90	4.00	TRAP		
2280.808	1378.543	8.016	1386.560	2472.00	1.49	.03	1386.59	.02	1.84	239.53	12.500	176.000	4.00	0 .0		
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
9.196	.0349					.0001	.00	8.04	.10	1.44	.035	-.90	4.00	TRAP		

ARROYO POST PROJECT
OVERLOOK BRIDGE CROSSING

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
2290.004	1378.864	7.693	1386.557	2472.00	1.57	.04	1386.60	.02	1.84	236.94	12.500	176.000	4.00	0 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8.853	.0349					.0001	.00	7.71	.11	1.44	.035	-.90	4.00	TRAP
2298.857	1379.173	7.381	1386.554	2472.00	1.64	.04	1386.60	.02	1.84	234.45	12.500	176.000	4.00	0 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8.519	.0349					.0001	.00	7.40	.11	1.44	.035	-.90	4.00	TRAP
2307.376	1379.471	7.080	1386.551	2472.00	1.72	.05	1386.60	.02	1.84	232.04	12.500	176.000	4.00	0 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8.194	.0349					.0002	.00	7.11	.12	1.44	.035	-.90	4.00	TRAP
2315.571	1379.757	6.791	1386.548	2472.00	1.81	.05	1386.60	.03	1.84	229.73	12.500	176.000	4.00	0 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7.878	.0349					.0002	.00	6.82	.13	1.44	.035	-.90	4.00	TRAP
2323.449	1380.032	6.512	1386.544	2472.00	1.89	.06	1386.60	.03	1.84	227.50	12.500	176.000	4.00	0 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7.570	.0349					.0002	.00	6.54	.14	1.44	.035	-.90	4.00	TRAP
2331.019	1380.296	6.244	1386.540	2472.00	1.99	.06	1386.60	.03	1.84	225.35	12.500	176.000	4.00	0 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7.271	.0349					.0002	.00	6.28	.15	1.44	.035	-.90	4.00	TRAP
2338.290	1380.550	5.986	1386.536	2472.00	2.08	.07	1386.60	.03	1.84	223.29	12.500	176.000	4.00	0 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6.979	.0349					.0003	.00	6.02	.16	1.44	.035	-.90	4.00	TRAP
2345.269	1380.794	5.737	1386.531	2472.00	2.18	.07	1386.61	.04	1.84	221.30	12.500	176.000	4.00	0 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6.695	.0349					.0003	.00	5.78	.17	1.44	.035	-.90	4.00	TRAP
2351.963	1381.028	5.498	1386.526	2472.00	2.29	.08	1386.61	.04	1.84	219.39	12.500	176.000	4.00	0 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6.418	.0349					.0004	.00	5.54	.18	1.44	.035	-.90	4.00	TRAP

ARROYO POST PROJECT
OVERLOOK BRIDGE CROSSING

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
2358.381	1381.252	5.269	1386.521	2472.00	2.40	.09	1386.61	.05	1.84	217.55	12.500	176.000	4.00	0 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6.148	.0349					.0004	.00	5.31	.19	1.44	.035	-.90	4.00	TRAP
2364.530	1381.466	5.048	1386.514	2472.00	2.52	.10	1386.61	.05	1.84	215.78	12.500	176.000	4.00	0 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5.885	.0349					.0005	.00	5.10	.21	1.44	.035	-.90	4.00	TRAP
2370.415	1381.672	4.835	1386.507	2472.00	2.64	.11	1386.62	.05	1.84	214.08	12.500	176.000	4.00	0 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5.628	.0349					.0006	.00	4.89	.22	1.44	.035	-.90	4.00	TRAP
2376.043	1381.868	4.631	1386.500	2472.00	2.77	.12	1386.62	.06	1.84	212.45	12.500	176.000	4.00	0 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5.378	.0349					.0007	.00	4.69	.24	1.44	.035	-.90	4.00	TRAP
2381.421	1382.056	4.435	1386.491	2472.00	2.91	.13	1386.62	.06	1.84	210.88	12.500	176.000	4.00	0 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5.133	.0349					.0008	.00	4.50	.26	1.44	.035	-.90	4.00	TRAP
2386.554	1382.235	4.247	1386.482	2472.00	3.05	.14	1386.63	.07	1.84	209.38	12.500	176.000	4.00	0 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4.893	.0349					.0009	.00	4.32	.27	1.44	.035	-.90	4.00	TRAP
2391.448	1382.406	4.066	1386.473	2472.00	3.20	.16	1386.63	.08	1.84	207.93	12.500	176.000	4.00	0 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4.658	.0349					.0011	.00	4.14	.29	1.44	.035	-.90	4.00	TRAP
2396.106	1382.569	3.893	1386.462	2472.00	3.35	.17	1386.64	.08	1.84	206.54	12.500	176.000	4.00	0 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4.428	.0349					.0012	.01	3.98	.31	1.44	.035	-.90	4.00	TRAP
2400.534	1382.723	3.726	1386.450	2472.00	3.52	.19	1386.64	.09	1.84	205.21	12.500	176.000	4.00	0 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4.201	.0349					.0014	.01	3.82	.34	1.44	.035	-.90	4.00	TRAP

ARROYO POST PROJECT
OVERLOOK BRIDGE CROSSING

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
2404.735	1382.870	3.566	1386.437	2472.00	3.69	.21	1386.65	.10	1.84	203.93	12.500	176.000	4.00	0 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3.977	.0349					.0017	.01	3.67	.36	1.44	.035	-.90	4.00	TRAP
2408.712	1383.009	3.413	1386.422	2472.00	3.87	.23	1386.65	.11	1.84	202.70	12.500	176.000	4.00	0 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3.756	.0349					.0020	.01	3.52	.38	1.44	.035	-.90	4.00	TRAP
2412.468	1383.140	3.266	1386.406	2472.00	4.06	.26	1386.66	.12	1.84	201.53	12.500	176.000	4.00	0 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3.536	.0349					.0023	.01	3.39	.41	1.44	.035	-.90	4.00	TRAP
2416.004	1383.264	3.125	1386.389	2472.00	4.26	.28	1386.67	.13	1.84	200.40	12.500	176.000	4.00	0 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3.317	.0349					.0026	.01	3.26	.44	1.44	.035	-.90	4.00	TRAP
2419.322	1383.379	2.990	1386.369	2472.00	4.47	.31	1386.68	.14	1.84	199.32	12.500	176.000	4.00	0 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3.098	.0349					.0031	.01	3.13	.47	1.44	.035	-.90	4.00	TRAP
2422.420	1383.488	2.860	1386.348	2472.00	4.68	.34	1386.69	.16	1.84	198.28	12.500	176.000	4.00	0 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2.877	.0349					.0036	.01	3.02	.51	1.44	.035	-.90	4.00	TRAP
2425.297	1383.588	2.736	1386.324	2472.00	4.91	.37	1386.70	.17	1.84	197.29	12.500	176.000	4.00	0 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2.652	.0349					.0042	.01	2.91	.54	1.44	.035	-.90	4.00	TRAP
2427.949	1383.681	2.617	1386.298	2472.00	5.15	.41	1386.71	.19	1.84	196.34	12.500	176.000	4.00	0 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2.422	.0349					.0049	.01	2.80	.58	1.44	.035	-.90	4.00	TRAP
2430.371	1383.765	2.503	1386.268	2472.00	5.40	.45	1386.72	.21	1.84	195.42	12.500	176.000	4.00	0 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2.183	.0349					.0057	.01	2.71	.62	1.44	.035	-.90	4.00	TRAP

ARROYO POST PROJECT
 OVERLOOK BRIDGE CROSSING

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
2432.554	1383.841	2.394	1386.235	2472.00	5.67	.50	1386.73	.23	1.84	194.55	12.500	176.000	4.00	0 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1.627	.0349					.0065	.01	2.62	.67	1.44	.035	-.90	4.00	TRAP
2434.181	1383.898	2.307	1386.205	2472.00	5.89	.54	1386.74	.24	1.84	193.86	12.500	176.000	4.00	0 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HYDRAULIC JUMP														
2434.181	1383.898	1.447	1385.345	2472.00	9.67	1.45	1386.80	.63	1.84	186.98	12.500	176.000	4.00	0 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2.209	.0349					.0342	.08	2.08	1.46	1.44	.035	-.90	4.00	TRAP
2436.391	1383.975	1.448	1385.423	2472.00	9.66	1.45	1386.87	.63	1.84	186.98	12.500	176.000	4.00	0 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
20.520	.0349					.0317	.65	2.08	1.46	1.44	.035	-.90	4.00	TRAP
2456.910	1384.692	1.515	1386.207	2472.00	9.21	1.32	1387.52	.57	1.84	187.52	12.500	176.000	4.00	0 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6.484	.0349					.0272	.18	2.09	1.36	1.44	.035	-.90	4.00	TRAP
2463.394	1384.918	1.585	1386.503	2472.00	8.79	1.20	1387.70	.52	1.84	188.08	12.500	176.000	4.00	0 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3.100	.0349					.0233	.07	2.11	1.27	1.44	.035	-.90	4.00	TRAP
2466.494	1385.026	1.657	1386.684	2472.00	8.38	1.09	1387.77	.48	1.84	188.66	12.500	176.000	4.00	0 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1.525	.0349					.0200	.03	2.13	1.18	1.44	.035	-.90	4.00	TRAP
2468.019	1385.080	1.734	1386.813	2472.00	7.99	.99	1387.80	.43	1.84	189.27	12.500	176.000	4.00	0 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
.581	.0349					.0171	.01	2.17	1.10	1.44	.035	-.90	4.00	TRAP
2468.600	1385.100	1.813	1386.913	2472.00	7.61	.90	1387.81	.79	1.84	189.91	12.500	176.000	4.00	0 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
289.552	.0158					.0158	4.57	2.61	1.03	1.81	.035	-.90	4.00	TRAP

ARROYO POST PROJECT
OVERLOOK BRIDGE CROSSING

*****															*****	
Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip		
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch		
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****		
2758.152	1389.670	1.813	1391.483	2472.00	7.61	.90	1392.38	.79	1.84	189.91	12.500	176.000	4.00	0 .0		
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
1.898	.0158					.0153	.03	2.61	1.03	1.81	.035	-.90	4.00	TRAP		
2760.050	1389.700	1.844	1391.544	2472.00	7.48	.87	1392.41	.35	1.84	190.15	12.500	176.000	4.00	0 .0		
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
TRANS STR	.0162					.0146	2.25	2.20	1.00		.035	-.90	4.00	TRAP		
2914.630	1392.200	1.711	1393.911	2472.00	7.01	.76	1394.67	.35	1.67	215.82	16.800	206.000	4.00	0 .0		
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
.044	.0165					.0142	.00	2.06	.97	1.64	.035	-.90	2.00	TRAP		
2914.674	1392.201	1.711	1393.912	2472.00	7.01	.76	1394.67	.35	1.67	215.82	16.800	206.000	4.00	0 .0		
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
HYDRAULIC JUMP																
2914.674	1392.201	1.637	1393.837	2472.00	7.34	.84	1394.67	.39	1.67	215.37	16.800	206.000	4.00	0 .0		
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
118.814	.0165					.0165	1.96	2.02	1.03	1.64	.035	-.90	2.00	TRAP		
3033.488	1394.164	1.637	1395.801	2472.00	7.34	.84	1396.64	.39	1.67	215.37	16.800	206.000	4.00	0 .0		
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
2.162	.0165					.0159	.03	2.02	1.03	1.64	.035	-.90	2.00	TRAP		
3035.650	1394.200	1.673	1395.873	2472.00	7.17	.80	1396.67	.34	1.67	215.59	16.800	206.000	4.00	0 .0		
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
2.456	.0121					.0142	.03	2.01	1.00	1.79	.035	-.90	2.00	TRAP		
3038.106	1394.230	1.751	1395.981	2472.00	6.84	.73	1396.71	.31	1.67	216.06	16.800	206.000	4.00	0 .0		
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
13.492	.0121					.0126	.17	2.06	.93	1.79	.035	-.90	2.00	TRAP		
3051.598	1394.393	1.794	1396.186	2472.00	6.67	.69	1396.88	.30	1.67	216.31	16.800	206.000	4.00	0 .0		
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
256.146	.0121					.0121	3.09	2.09	.90	1.79	.035	-.90	2.00	TRAP		

ARROYO POST PROJECT
OVERLOOK BRIDGE CROSSING

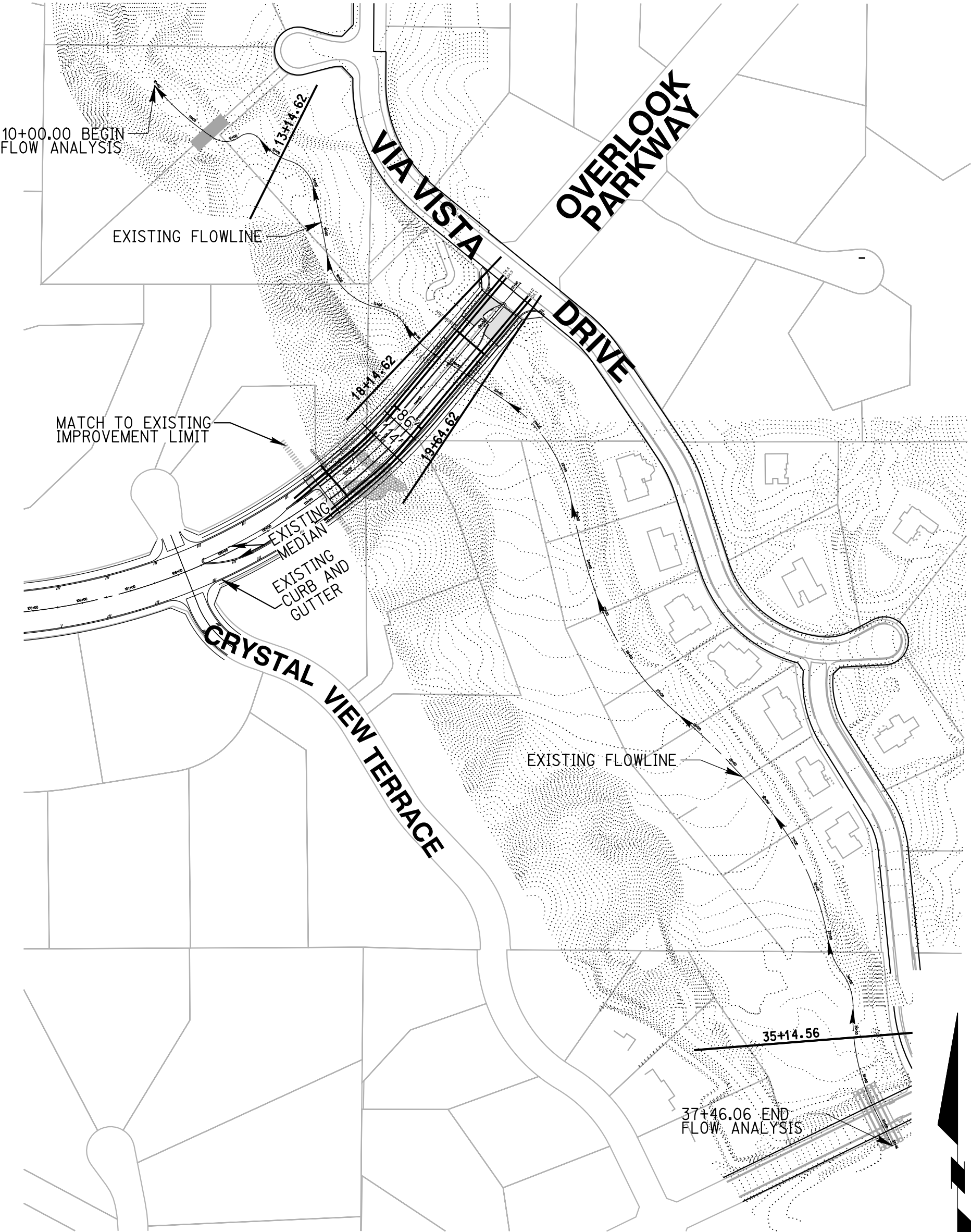
Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
3307.744	1397.487	1.794	1399.280	2472.00	6.67	.69	1399.97	.30	1.67	216.31	16.800	206.000	4.00	0 .0
- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
HYDRAULIC JUMP														
3307.744	1397.487	1.558	1399.045	2472.00	7.73	.93	1399.97	.39	1.67	214.90	16.800	206.000	4.00	0 .0
- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
1.116	.0121					.0202	.02	1.95	1.12	1.79	.035	-.90	2.00	TRAP
3308.860	1397.500	1.529	1399.029	2472.00	7.88	.97	1399.99	3.48	1.67	214.72	16.800	206.000	4.00	0 .0
- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
53.888	.0209					.0209	1.13	5.00	1.15	1.53	.035	-.90	2.00	TRAP
3362.748	1398.625	1.529	1400.154	2472.00	7.88	.97	1401.12	3.48	1.67	214.72	16.800	206.000	4.00	0 .0
- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
12.915	.0209					.0203	.26	5.00	1.15	1.53	.035	-.90	2.00	TRAP
3375.663	1398.895	1.553	1400.447	2472.00	7.76	.93	1401.38	3.37	1.67	214.87	16.800	206.000	4.00	0 .0
- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
5.047	.0209					.0184	.09	4.92	1.12	1.53	.035	-.90	2.00	TRAP
3380.710	1399.000	1.625	1400.625	2472.00	7.40	.85	1401.47	4.21	1.67	215.30	16.800	206.000	4.00	0 .0
- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
73.911	.0169					.0169	1.25	5.83	1.05	1.62	.035	-.90	2.00	TRAP
3454.621	1400.252	1.625	1401.877	2472.00	7.40	.85	1402.73	4.21	1.67	215.30	16.800	206.000	4.00	0 .0
- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
2.819	.0169					.0161	.05	5.83	1.05	1.62	.035	-.90	2.00	TRAP
3457.440	1400.300	1.673	1401.973	2472.00	7.17	.80	1402.77	1.08	1.67	215.59	16.800	206.000	4.00	0 .0
- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
TRANS STR	.0244							2.76	1.00		.035	-.90	2.00	TRAP
3514.760	1401.700	1.210	1402.910	2472.00	9.17	1.31	1404.22	1.92	1.58	233.95	19.300	226.000	5.00	0 .0
- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
49.010	.0387					.0387	1.90	3.13	1.51	1.21	.035	-.90	2.00	TRAP

ARROYO POST PROJECT
OVERLOOK BRIDGE CROSSING

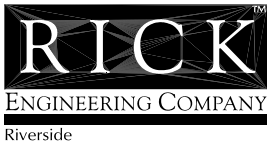
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EXISTING OVERLOOK PARKWAY ARROYO CROSS-SECTION EXHIBIT

SHEET 1 OF 3



PRELIMINARY
NOT FOR CONSTRUCTION

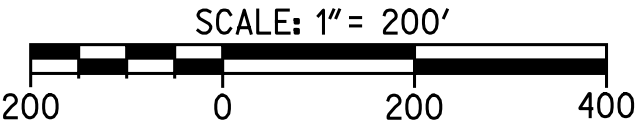


1770 IOWA AVENUE - SUITE 100
RIVERSIDE, CA 92507
951.782.0707
(FAX) 951.782.0723

rickengineering.com

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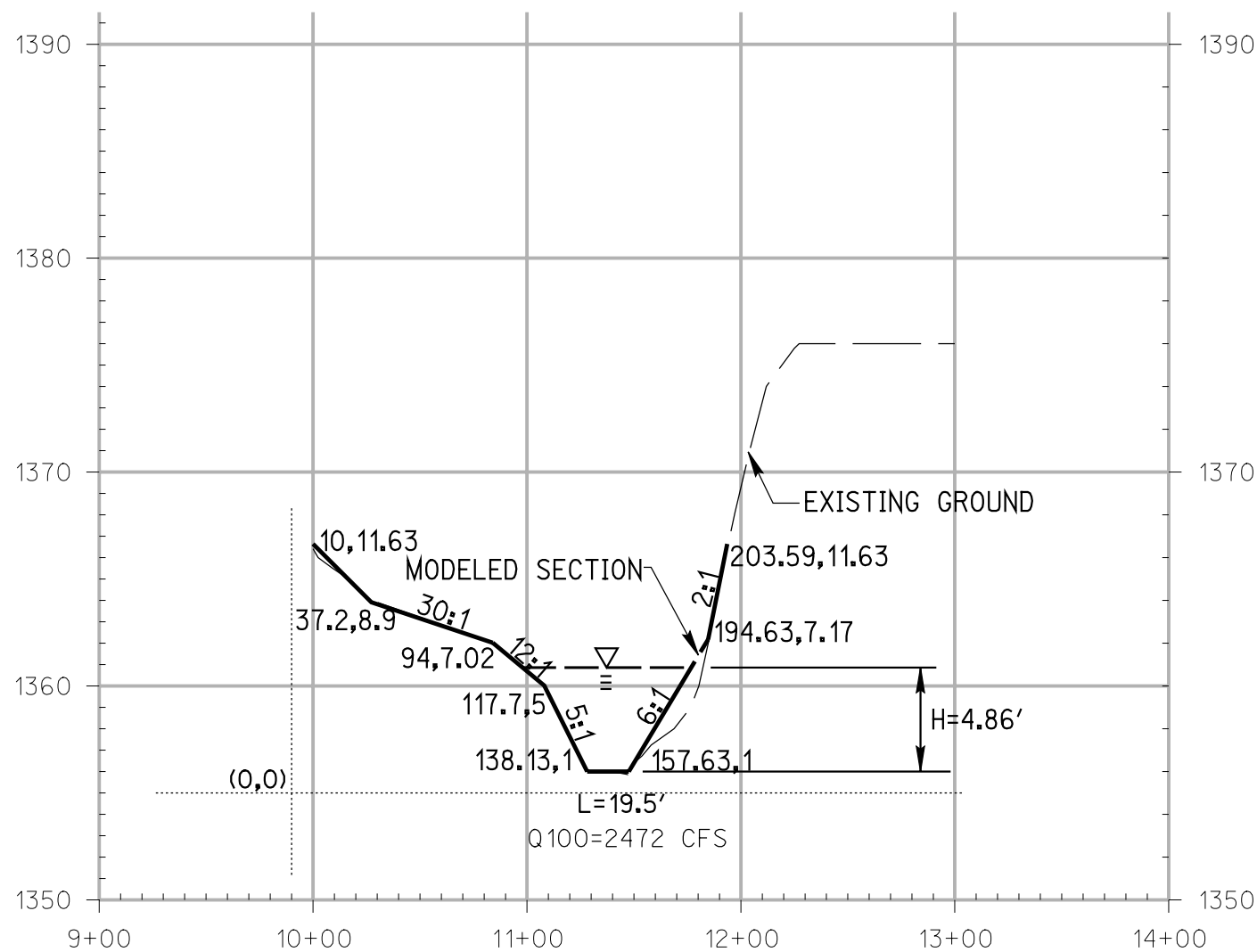
SCALE: 1"=200'

DATE: 8/30/2012

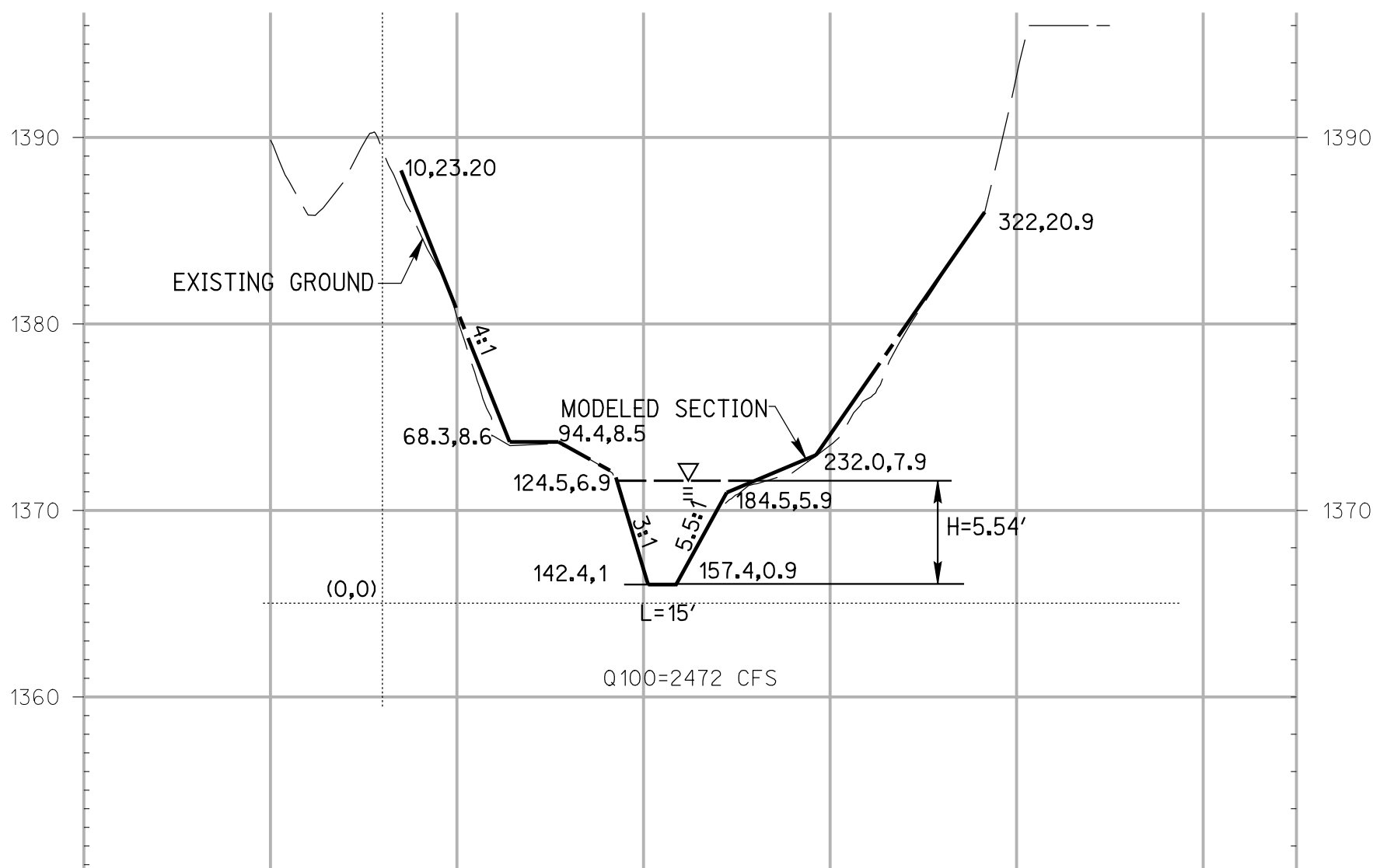
EXISTING OVERLOOK PARKWAY

ARROYO CROSS-SECTION EXHIBIT

SHEET 2 OF 3



STA. 13+14.62

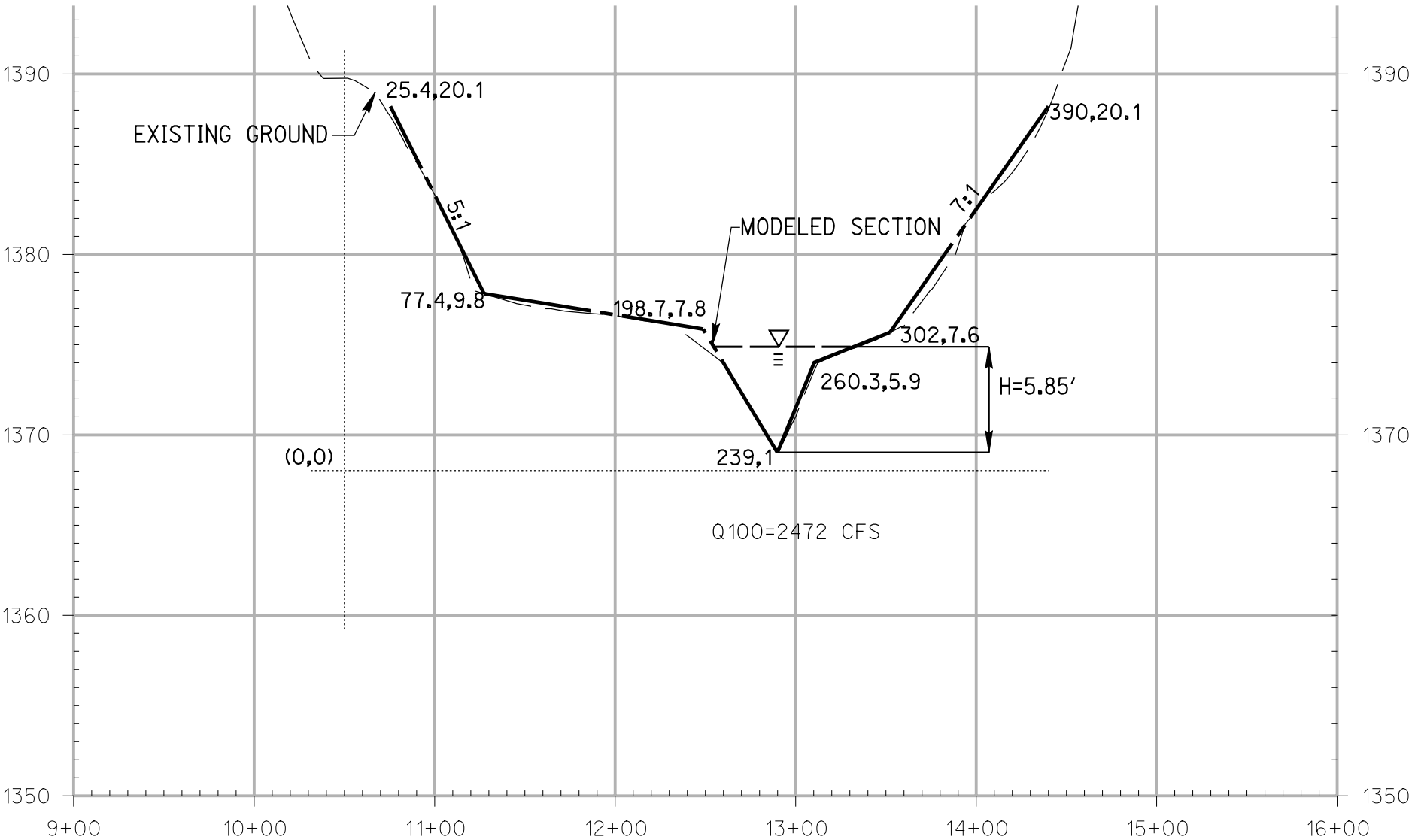


STA. 18+14.62

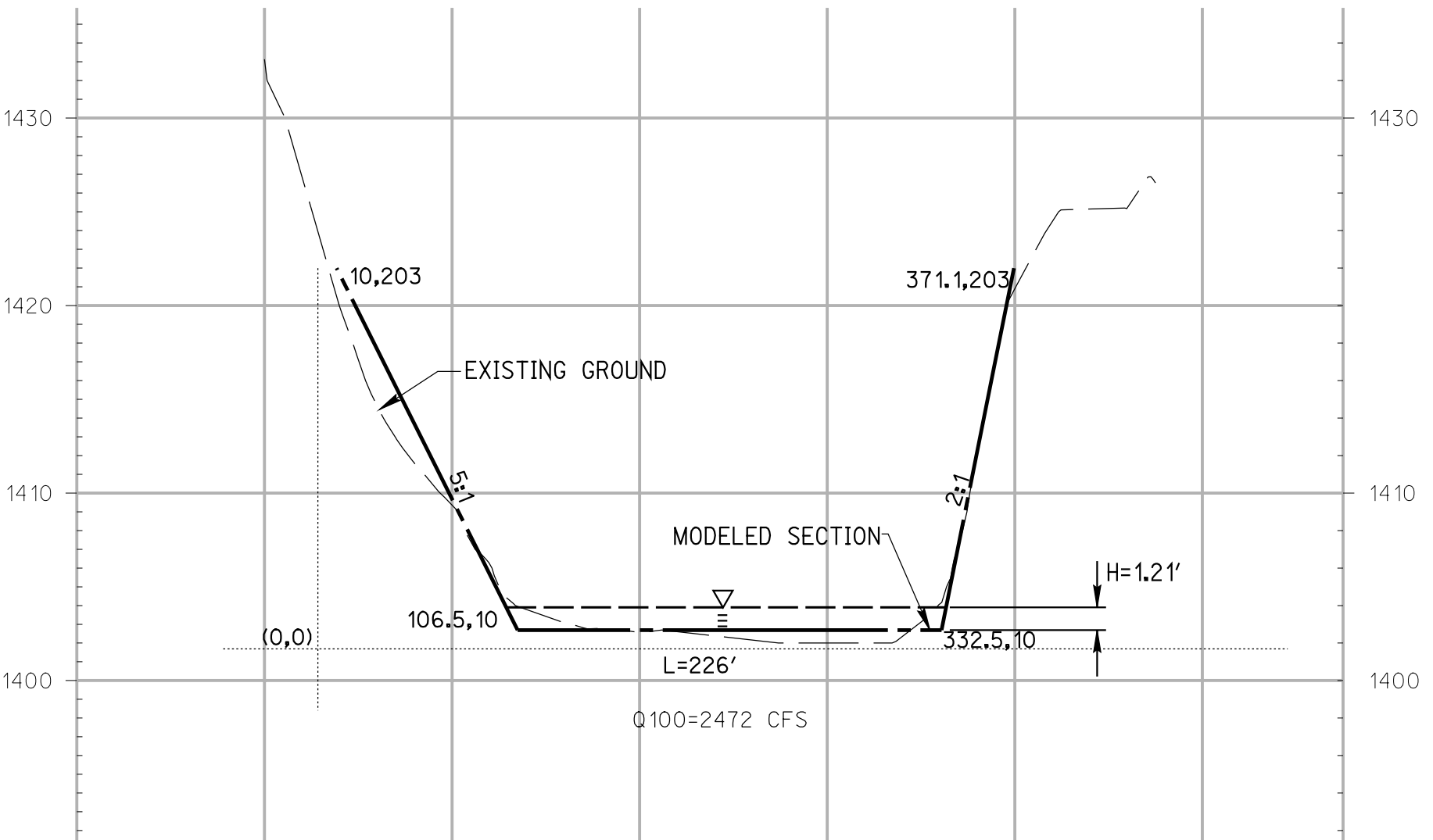
EXISTING OVERLOOK PARKWAY

ARROYO CROSS-SECTION EXHIBIT

SHEET 3 OF 3



STA. 19+64.62



STA. 35+14.56



1770 IOWA AVENUE - SUITE 100
RIVERSIDE, CA 92507
951.782.0707
(FAX) 951.782.0723

rickengineering.com

San Diego - Orange - San Luis Obispo - Bakersfield - Sacramento - Phoenix - Tucson

SCALE: 1"=80'

DATE: 8/30/2012