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

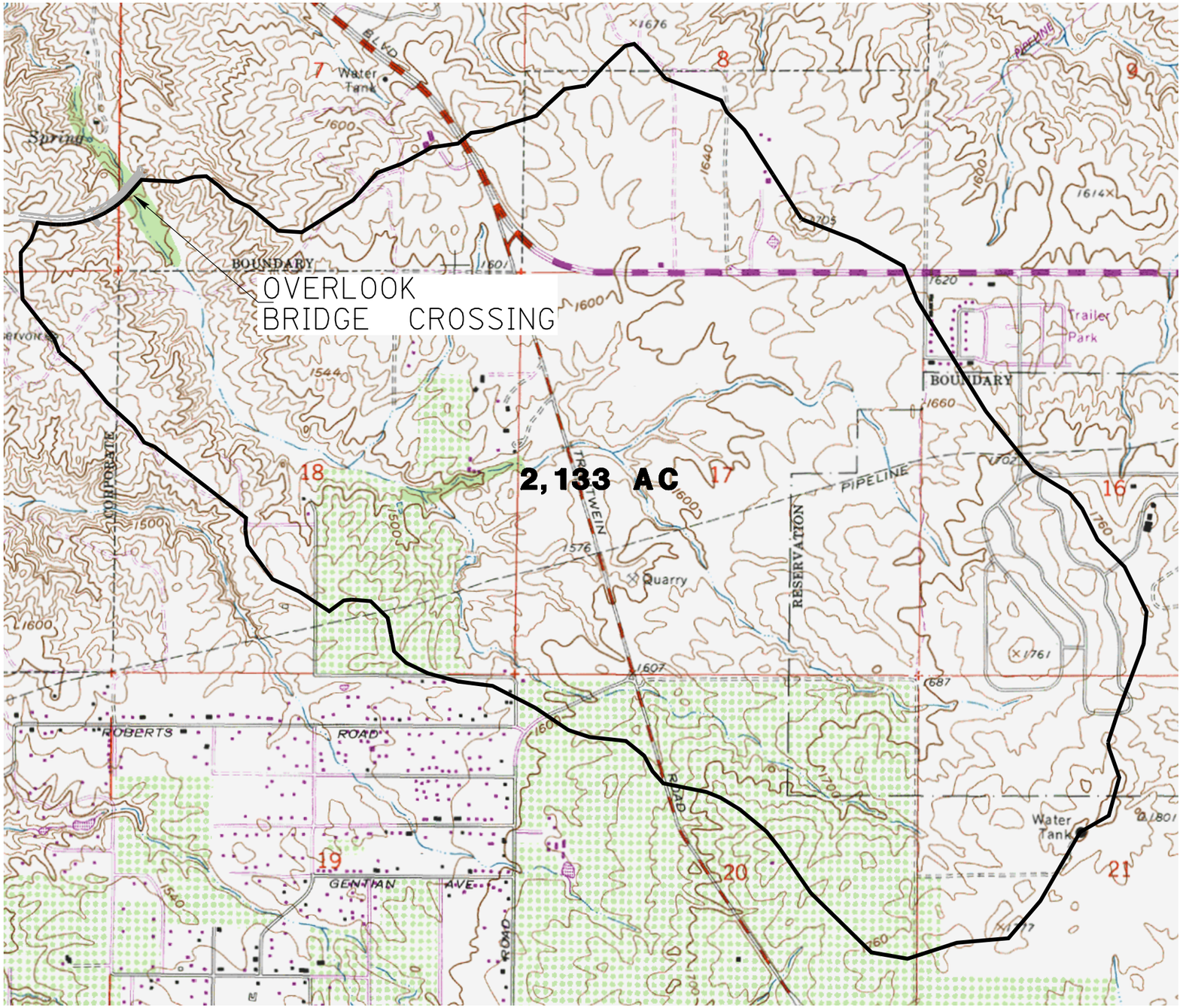
Appendix B:

- 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

RICK ENGINEERING COMPANY
Riverside
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

©2012 Rick Engineering Company

G:\16451\Civil\16451exb08_TRIB_DRAINAGE.dgn

PLOT DATE: 28-AUG-2012

JN 16451

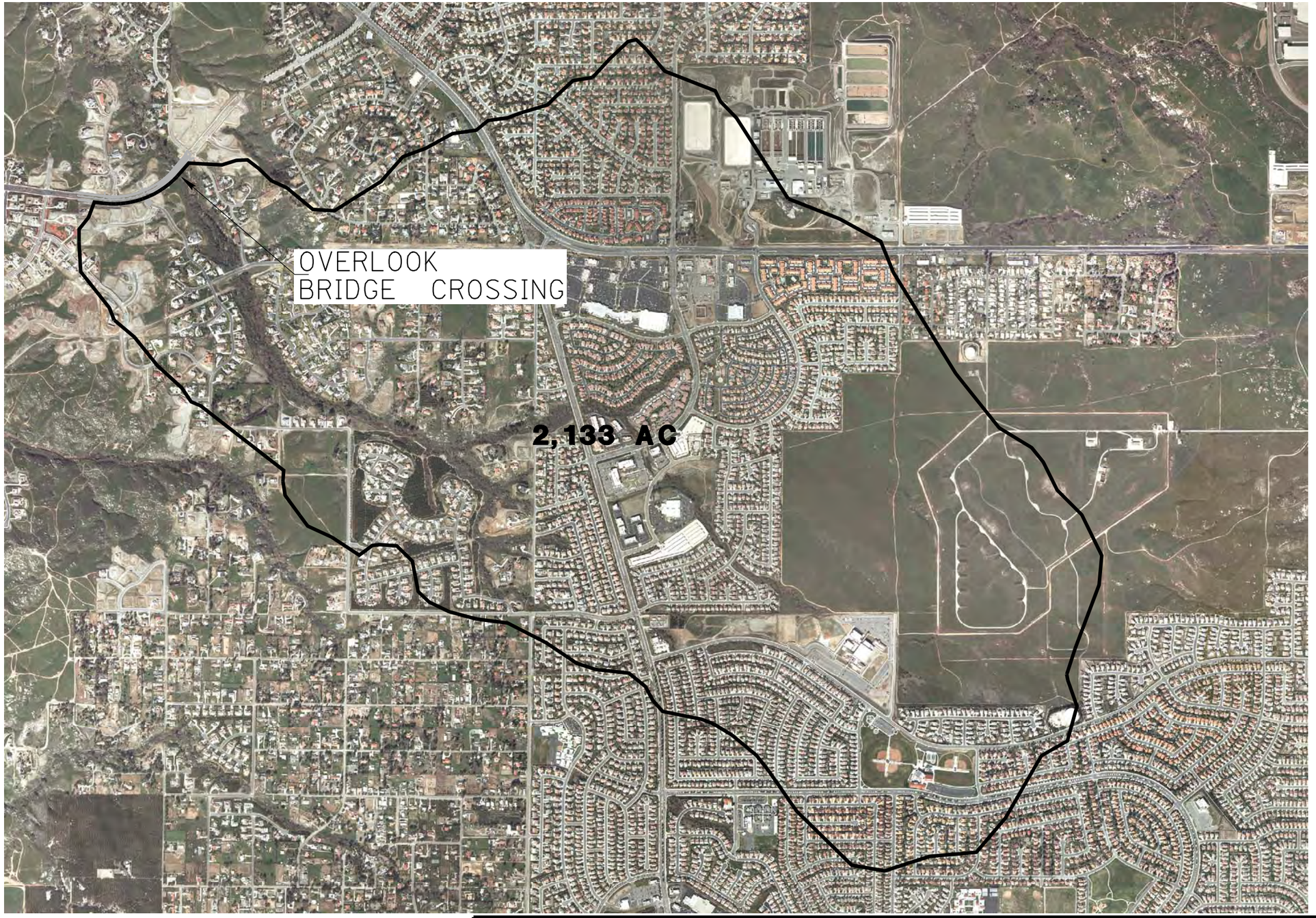


PHOTO SOURCE: WEST RIVERSIDE 2007

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

TRIBUTARY DRAINAGE AREA AERIAL

SCALE: 1"=1,500'

DATE: 8-28-12

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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 LOSSS 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
```

```
1****************************************
****************************************
 *                                      *                                                    *
*
 *   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *                                                    *    U.S.
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            *
 *                                      *                                                    *
*
 ****************************************
****************************************
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X     X  XXXXXXX   XXXXX           X
X     X  X        X     X         XX
X     X  X        X                X
XXXXXXX  XXXX     X        XXXXX   X
X     X  X        X                X
X     X  X        X     X          X
X     X  XXXXXXX   XXXXX          XXX
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THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1KW.

THE DEFINITIONS OF VARIABLES -RTIMP- AND -RTIOR- HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPUT STRUCTURE.

THE DEFINITION OF -AMSKK- ON RM-CARD WAS CHANGED WITH REVISIONS DATED 28 SEP 81. THIS IS THE FORTRAN77 VERSION

NEW OPTIONS: DAMBREAK OUTFLOW SUBMERGENCE , SINGLE EVENT DAMAGE CALCULATION, DSS:WRITE STAGE FREQUENCY,

DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL LOSS RATE:GREEN AND AMPT INFILTRATION

KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM

```
1                                                    HEC-1 INPUT
PAGE  1

          LINE
ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

             1          ID        J-16451 OVERLOOK PARKWAY BRIDGE CROSSING
             2          ID        100 YEAR 1-HOUR STORM EVENT
             3          ID        FILENAME: 0001PD.DAT   DATE: 2-23-11
             4          IT      05 01APR92    0000     288

             5          KK   BRIDGE
             6          KM   HYDROGRAPH OF TRIBUTARY WATER SHEED TO BRIDGE CROSSING
             7          KO       0       0       0       0      21
             8          BA   3.333
             9          PB    1.20
            10          PI   0.042   0.043   0.050   0.050   0.058   0.065   0.074   0.086   0.123
0.291
            11          PI   0.068   0.050
            12          LU           0.398      20
            13          KM   UHG FROM VALLEY S-GRAPH
            14          UI   1129.   2048.   3521.   4182.   3641.   2152.   1499.   1112.    866.
721.
            15          UI    589.    494.    422.    377.    339.    294.    268.    229.    213.
201.
            16          UI    169.    169.    156.    112.    112.    112.    112.     77.     55.
55.
            17          UI    55.1    55.1    55.1    55.1    55.1    55.1    41.2
            18          ZZ
1****************************************
****************************************
 *                                      *                                                    *
*
 *   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *                                                    *    U.S.
ARMY CORPS OF ENGINEERS     *
 *               JUN   1998             *                                                    *
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HYDROLOGIC ENGINEERING CENTER    *
 *           VERSION 4.1               *                                                  *
609 SECOND STREET          *
 *                                     *                                                  *
DAVIS, CALIFORNIA 95616       *
 *  RUN DATE   23FEB11  TIME  09:11:30   *                                                *
(916) 756-1104            *
 *                                     *                                                  *
*
 ****************************************
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                              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


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


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

****

DA MON HRMN	ORD	RAIN	LOSS	EXCESS	COMP Q	*	DA MON HRMN	ORD	RAIN	LOSS	EXCESS	COMP Q
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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.
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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.
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1 APR 0100	13	.06	.03	.03	2411.	*	1 APR 1300	157	.00	.00	.00	0.
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1 APR 0145	22	.00	.00	.00	368.	*	1 APR 1345	166	.00	.00	.00	0.
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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			

.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 .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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1 APR 0605	74	.00	.00	.00	0.	*	1 APR 1805	218	.00	.00	.00	0.
1 APR 0610	75	.00	.00	.00	0.	*	1 APR 1810	219	.00	.00	.00	0.
1 APR 0615	76	.00	.00	.00	0.	*	1 APR 1815	220	.00	.00	.00	0.
1 APR 0620	77	.00	.00	.00	0.	*	1 APR 1820	221	.00	.00	.00	0.
1 APR 0625	78	.00	.00	.00	0.	*	1 APR 1825	222	.00	.00	.00	0.
1 APR 0630	79	.00	.00	.00	0.	*	1 APR 1830	223	.00	.00	.00	0.
1 APR 0635	80	.00	.00	.00	0.	*	1 APR 1835	224	.00	.00	.00	0.
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1 APR 0645	82	.00	.00	.00	0.	*	1 APR 1845	226	.00	.00	.00	0.
1 APR 0650	83	.00	.00	.00	0.	*	1 APR 1850	227	.00	.00	.00	0.
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1 APR 0705	86	.00	.00	.00	0.	*	1 APR 1905	230	.00	.00	.00	0.
1 APR 0710	87	.00	.00	.00	0.	*	1 APR 1910	231	.00	.00	.00	0.
1 APR 0715	88	.00	.00	.00	0.	*	1 APR 1915	232	.00	.00	.00	0.
1 APR 0720	89	.00	.00	.00	0.	*	1 APR 1920	233	.00	.00	.00	0.
1 APR 0725	90	.00	.00	.00	0.	*	1 APR 1925	234	.00	.00	.00	0.
1 APR 0730	91	.00	.00	.00	0.	*	1 APR 1930	235	.00	.00	.00	0.
1 APR 0735	92	.00	.00	.00	0.	*	1 APR 1935	236	.00	.00	.00	0.
1 APR 0740	93	.00	.00	.00	0.	*	1 APR 1940	237	.00	.00	.00	0.
1 APR 0745	94	.00	.00	.00	0.	*	1 APR 1945	238	.00	.00	.00	0.
1 APR 0750	95	.00	.00	.00	0.	*	1 APR 1950	239	.00	.00	.00	0.
1 APR 0755	96	.00	.00	.00	0.	*	1 APR 1955	240	.00	.00	.00	0.
1 APR 0800	97	.00	.00	.00	0.	*	1 APR 2000	241	.00	.00	.00	0.
1 APR 0805	98	.00	.00	.00	0.	*	1 APR 2005	242	.00	.00	.00	0.
1 APR 0810	99	.00	.00	.00	0.	*	1 APR 2010	243	.00	.00	.00	0.
1 APR 0815	100	.00	.00	.00	0.	*	1 APR 2015	244	.00	.00	.00	0.
1 APR 0820	101	.00	.00	.00	0.	*	1 APR 2020	245	.00	.00	.00	0.
1 APR 0825	102	.00	.00	.00	0.	*	1 APR 2025	246	.00	.00	.00	0.
1 APR 0830	103	.00	.00	.00	0.	*	1 APR 2030	247	.00	.00	.00	0.
1 APR 0835	104	.00	.00	.00	0.	*	1 APR 2035	248	.00	.00	.00	0.
1 APR 0840	105	.00	.00	.00	0.	*	1 APR 2040	249	.00	.00	.00	0.
1 APR 0845	106	.00	.00	.00	0.	*	1 APR 2045	250	.00	.00	.00	0.
1 APR 0850	107	.00	.00	.00	0.	*	1 APR 2050	251	.00	.00	.00	0.
1 APR 0855	108	.00	.00	.00	0.	*	1 APR 2055	252	.00	.00	.00	0.
1 APR 0900	109	.00	.00	.00	0.	*	1 APR 2100	253	.00	.00	.00	0.
1 APR 0905	110	.00	.00	.00	0.	*	1 APR 2105	254	.00	.00	.00	0.
1 APR 0910	111	.00	.00	.00	0.	*	1 APR 2110	255	.00	.00	.00	0.
1 APR 0915	112	.00	.00	.00	0.	*	1 APR 2115	256	.00	.00	.00	0.

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.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.
                                                                  *

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

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

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

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

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BRIDG    50000  1APR92 0 1 1 288     3.333
      .000       26.945       77.179      173.155      294.394      426.725      546.729      678.870      833.385     1055.707
  1548.944     1970.241     2410.816     2471.772     2099.095     1466.159     1063.790      791.493      625.358      516.638
   431.249      367.600      318.799      282.986      252.180      223.394      201.005      178.601      163.115      148.707
   131.726      122.710      109.876       92.217       86.051       80.530       74.611       60.329       49.979       46.110
    43.562       41.590       39.104       36.118       32.487       27.645       18.172        4.113        1.379         .000
      .000         .000         .000         .000         .000         .000         .000         .000         .000         .000
      .000         .000         .000         .000         .000         .000         .000         .000         .000         .000
      .000         .000         .000         .000         .000         .000         .000         .000         .000         .000
      .000         .000         .000         .000         .000         .000         .000         .000         .000         .000
      .000         .000         .000         .000         .000         .000         .000         .000         .000         .000
      .000         .000         .000         .000         .000         .000         .000         .000         .000         .000
      .000         .000         .000         .000         .000         .000         .000         .000         .000         .000
      .000         .000         .000         .000         .000         .000         .000         .000         .000         .000
      .000         .000         .000         .000         .000         .000         .000         .000         .000         .000
      .000         .000         .000         .000         .000         .000         .000         .000         .000         .000
      .000         .000         .000         .000         .000         .000         .000         .000         .000         .000
      .000         .000         .000         .000         .000         .000         .000         .000         .000         .000
      .000         .000         .000         .000         .000         .000         .000         .000         .000         .000
      .000         .000         .000         .000         .000         .000         .000         .000         .000         .000
      .000         .000         .000         .000         .000         .000         .000         .000         .000         .000
      .000         .000         .000         .000         .000         .000         .000         .000         .000         .000
      .000         .000         .000         .000         .000         .000         .000         .000         .000         .000
      .000         .000         .000         .000         .000         .000         .000         .000         .000         .000
      .000         .000         .000         .000         .000         .000         .000         .000         .000         .000
      .000         .000         .000         .000         .000         .000         .000         .000         .000         .000
      .000         .000         .000         .000         .000         .000         .000         .000
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APPENDIX C

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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  7.020117.700  5.000137.100  1.000
PTS      157.600   .900194.600  7.170203.000 11.630
PTS   2 6 10.000 38.020 65.540  1.000 92.000   .900143.900  6.180254.300  9.340
PTS      290.000 27.100
PTS   3 9 10.000 23.200 68.300  8.600 94.400  8.500124.500  6.900142.400  1.000
PTS      157.400   .900184.500  5.900232.000  7.900322.000 20.900
PTS   5 7 24.400 20.100 77.400  9.800198.700  7.800239.000  1.000260.000  5.900
PTS      302.000  7.600390.000 20.100
Q           2472.000   .0
```

Program Package Serial Number: 1462

WATER SURFACE PROFILE LISTING Date: 8-28-2012 Time: 5: 8:56

PRE PROJECT ARROYO
REC JN. 16451

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1000.000	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

Program Package Serial Number: 1462

WATER SURFACE PROFILE LISTING Date: 8-28-2012 Time: 5: 8:56

PRE PROJECT ARROYO
REC JN. 16451

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
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

Program Package Serial Number: 1462

WATER SURFACE PROFILE LISTING Date: 8-28-2012 Time: 5: 8:56

PRE PROJECT ARROYO
REC JN. 16451

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
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

Program Package Serial Number: 1462

WATER SURFACE PROFILE LISTING Date: 8-28-2012 Time: 5: 8:56

PRE PROJECT ARROYO
REC JN. 16451

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
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

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PRE PROJECT ARROYO
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Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
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

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PRE PROJECT ARROYO
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Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
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

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Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
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

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Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
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

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Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
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

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Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
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

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Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
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

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PRE PROJECT ARROYO
REC JN. 16451

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
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

Program Package Serial Number: 1462

WATER SURFACE PROFILE LISTING Date: 8-28-2012 Time: 5: 8:56

PRE PROJECT ARROYO
REC JN. 16451

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
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

Program Package Serial Number: 1462

WATER SURFACE PROFILE LISTING Date: 8-28-2012 Time: 5: 8:56

PRE PROJECT ARROYO
REC JN. 16451

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
3597.154	1404.890	1.373	1406.263	2472.00	8.03	1.00	1407.26	1.48	1.58	235.09	19.300	226.000	5.00	0 .0
1.756	.0387					.0232	.04	2.86	1.24	1.21	.035	-.90	2.00	TRAP
3598.911	1404.958	1.437	1406.395	2472.00	7.66	.91	1407.31	1.35	1.58	235.54	19.300	226.000	5.00	0 .0
.846	.0387					.0199	.02	2.79	1.15	1.21	.035	-.90	2.00	TRAP
3599.756	1404.991	1.504	1406.495	2472.00	7.30	.83	1407.32	1.23	1.58	236.00	19.300	226.000	5.00	0 .0
.244	.0387					.0170	.00	2.73	1.07	1.21	.035	-.90	2.00	TRAP
3600.000	1405.000	1.575	1406.575	2472.00	6.96	.75	1407.33	1.12	1.58	236.50	19.300	226.000	5.00	0 .0

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T1   ARROYO POST PROJECT
T2   OVERLOOK BRIDGE CROSSING
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                                -13.683
R    1853.0001365.620  3      .035                                -10.833
TS   1855.8701365.630 10      .035                                  -.810
R    1863.9001365.700 10      .035                                   .000
TS   1921.0001367.000 11      .035                                   .000
R    1929.0701367.400 11      .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                                -26.559
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
CD   9  5   1   8.000           11.30   .00   .00   .00   .00   .00   .00   .00   .00   .00
CD  10  5   1   8.000           11.30   .00   .00   .00   .00   .00   .00   .00   .00   .00
CD  11  5   1   8.000            9.50   .00   .00   .00   .00   .00   .00   .00   .00   .00
PTS  1 8 10.000 11.630 37.200  8.900 94.000  7.020117.700  5.000137.100  1.000
PTS     157.600   .900194.600  7.170203.000 11.630
PTS  2 6 10.000 38.020 65.540  1.000 92.000   .900143.900  6.180254.300  9.340
PTS     290.000 27.100
PTS  3 9 10.000 23.200 68.300  8.600 94.400  8.500124.500  6.900142.400  1.000
PTS     157.400   .900184.500  5.900232.000  7.900322.000 20.900
PTS  5 7 24.400 20.100 77.400  9.800198.700  7.800239.000  1.000260.000  5.900
PTS     302.000  7.600390.000 20.100
PTS  9 9 94.200 29.900122.400 19.500220.600 12.000354.400  8.900377.000  1.000
PTS     386.200   .900406.200  6.800441.900  8.600442.900 34.300
PTS 10 9 94.200 29.900122.400 19.500220.600 12.000354.400  8.900377.000  1.000
PTS     386.200   .900406.200  6.800441.900  8.600442.900 34.300
PTS 11 9115.200 29.900189.200 12.800248.300  9.600328.400  9.100371.400  6.800
PTS     399.500  1.000407.000   .900454.700  7.800455.700 32.300
Q          2472.000   .0
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Program Package Serial Number: 1462

WATER SURFACE PROFILE LISTING Date: 8-28-2012 Time: 5:14:55

ARROYO POST PROJECT
OVERLOOK BRIDGE CROSSING

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1000.000	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

Program Package Serial Number: 1462

WATER SURFACE PROFILE LISTING Date: 8-28-2012 Time: 5:14:55

ARROYO POST PROJECT
OVERLOOK BRIDGE CROSSING

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
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

Program Package Serial Number: 1462

WATER SURFACE PROFILE LISTING Date: 8-28-2012 Time: 5:14:55

ARROYO POST PROJECT
OVERLOOK BRIDGE CROSSING

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
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

Program Package Serial Number: 1462

WATER SURFACE PROFILE LISTING Date: 8-28-2012 Time: 5:14:55

ARROYO POST PROJECT
OVERLOOK BRIDGE CROSSING

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
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

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ARROYO POST PROJECT
OVERLOOK BRIDGE CROSSING

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
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

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ARROYO POST PROJECT
OVERLOOK BRIDGE CROSSING

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
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

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ARROYO POST PROJECT
OVERLOOK BRIDGE CROSSING

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
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 / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
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

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ARROYO POST PROJECT
OVERLOOK BRIDGE CROSSING

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
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

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ARROYO POST PROJECT
OVERLOOK BRIDGE CROSSING

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
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

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ARROYO POST PROJECT
OVERLOOK BRIDGE CROSSING

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
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

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ARROYO POST PROJECT
OVERLOOK BRIDGE CROSSING

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
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

Program Package Serial Number: 1462

WATER SURFACE PROFILE LISTING Date: 8-28-2012 Time: 5:14:55

ARROYO POST PROJECT
OVERLOOK BRIDGE CROSSING

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
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

Program Package Serial Number: 1462

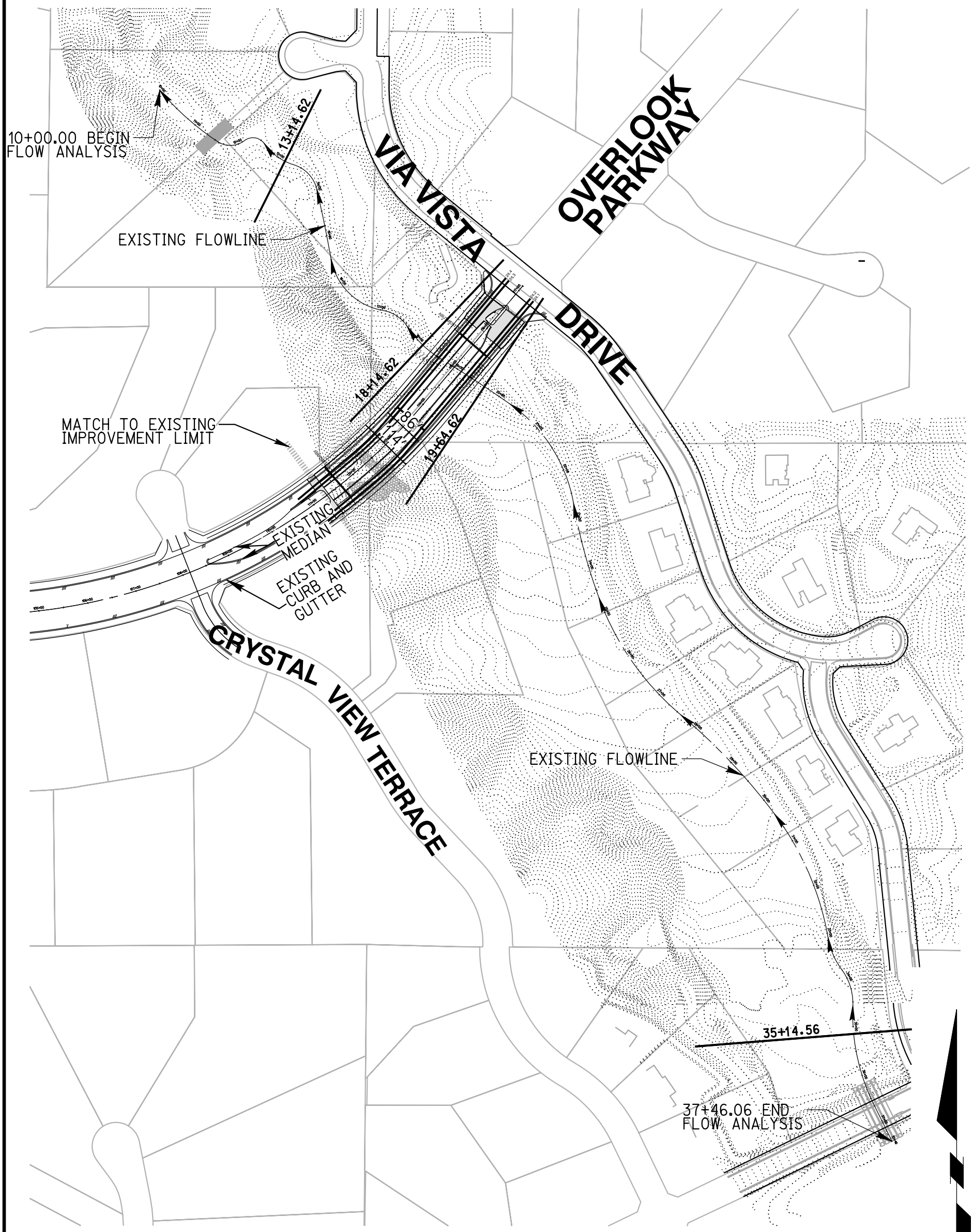
WATER SURFACE PROFILE LISTING Date: 8-28-2012 Time: 5:14:55

ARROYO POST PROJECT
OVERLOOK BRIDGE CROSSING

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
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
3597.154	1404.890	1.373	1406.263	2472.00	8.03	1.00	1407.26	1.48	1.58	235.09	19.300	226.000	5.00	0 .0
1.756	.0387					.0232	.04	2.86	1.24	1.21	.035	-.90	2.00	TRAP
3598.911	1404.958	1.437	1406.395	2472.00	7.66	.91	1407.31	1.35	1.58	235.54	19.300	226.000	5.00	0 .0
.846	.0387					.0199	.02	2.79	1.15	1.21	.035	-.90	2.00	TRAP
3599.756	1404.991	1.504	1406.495	2472.00	7.30	.83	1407.32	1.23	1.58	236.00	19.300	226.000	5.00	0 .0
.244	.0387					.0170	.00	2.73	1.07	1.21	.035	-.90	2.00	TRAP
3600.000	1405.000	1.575	1406.575	2472.00	6.96	.75	1407.33	1.12	1.58	236.50	19.300	226.000	5.00	0 .0

EXISTING OVERLOOK PARKWAY ARROYO CROSS-SECTION EXHIBIT

SHEET 1 OF 3



SCALE: 1" = 200'

200 0 200 400

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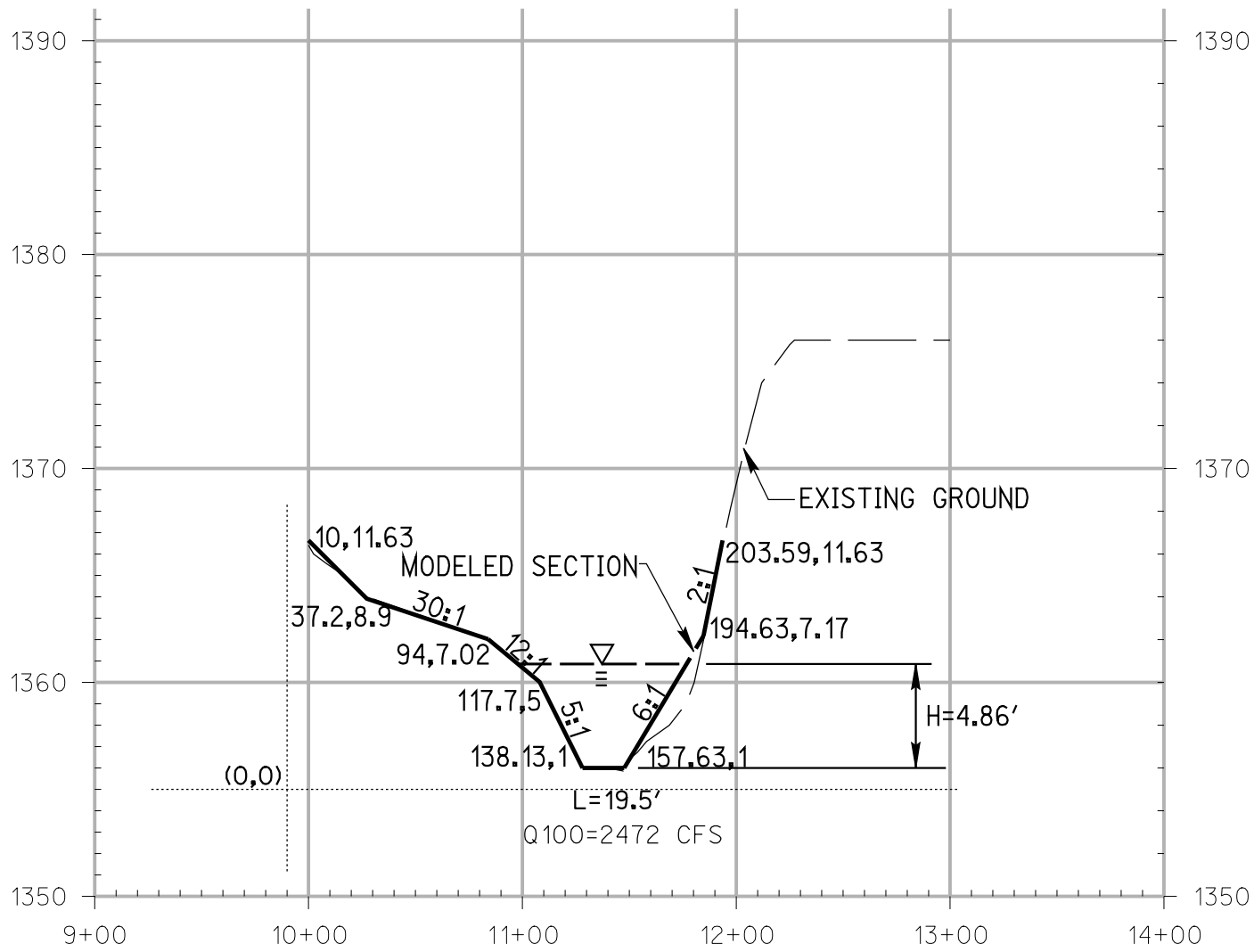
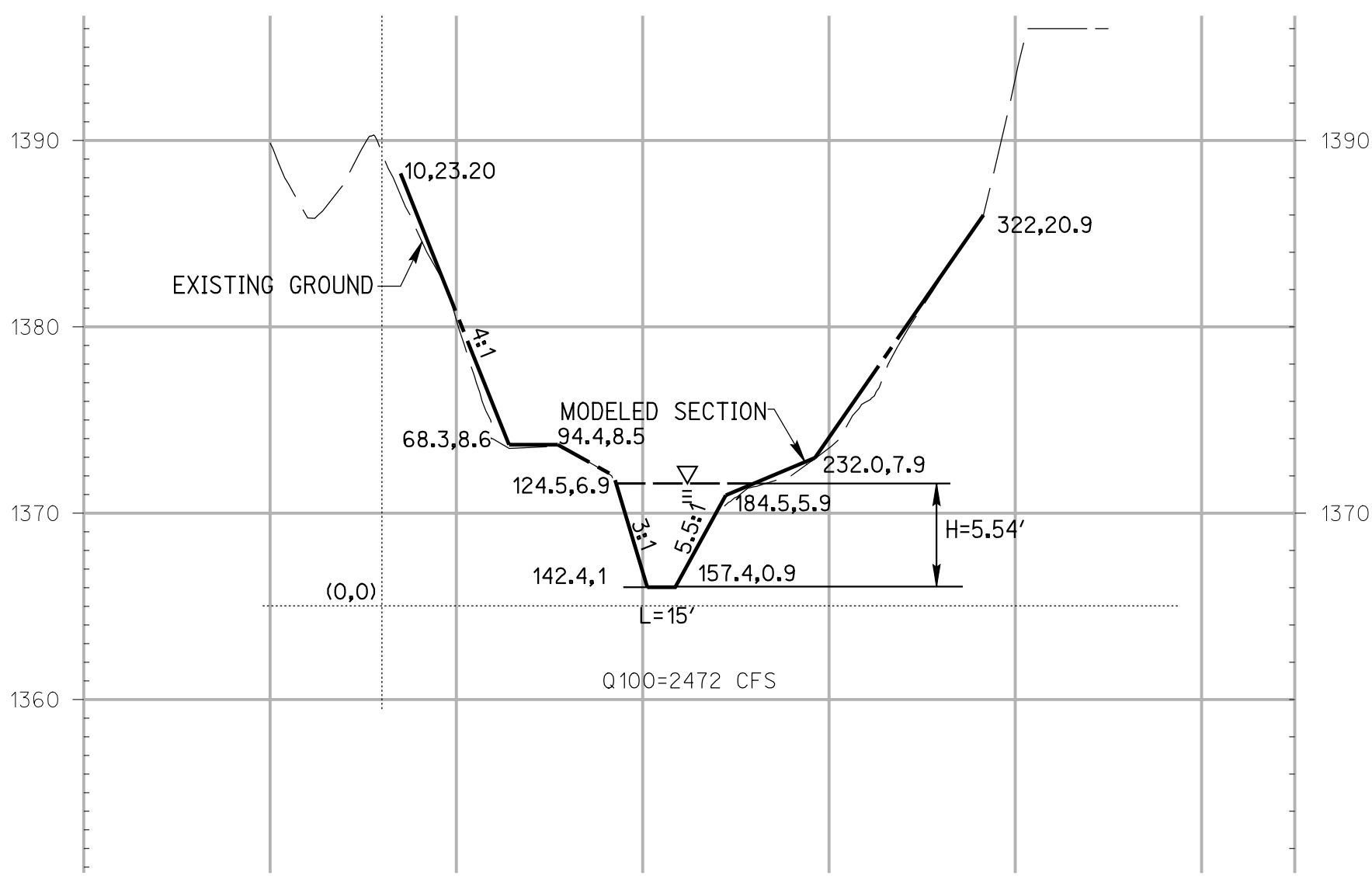
EXISTING OVERLOOK PARKWAY ARROYO CROSS-SECTION EXHIBIT

SHEET 2 OF 3



STA. 13+14.62



STA. 18+14.62

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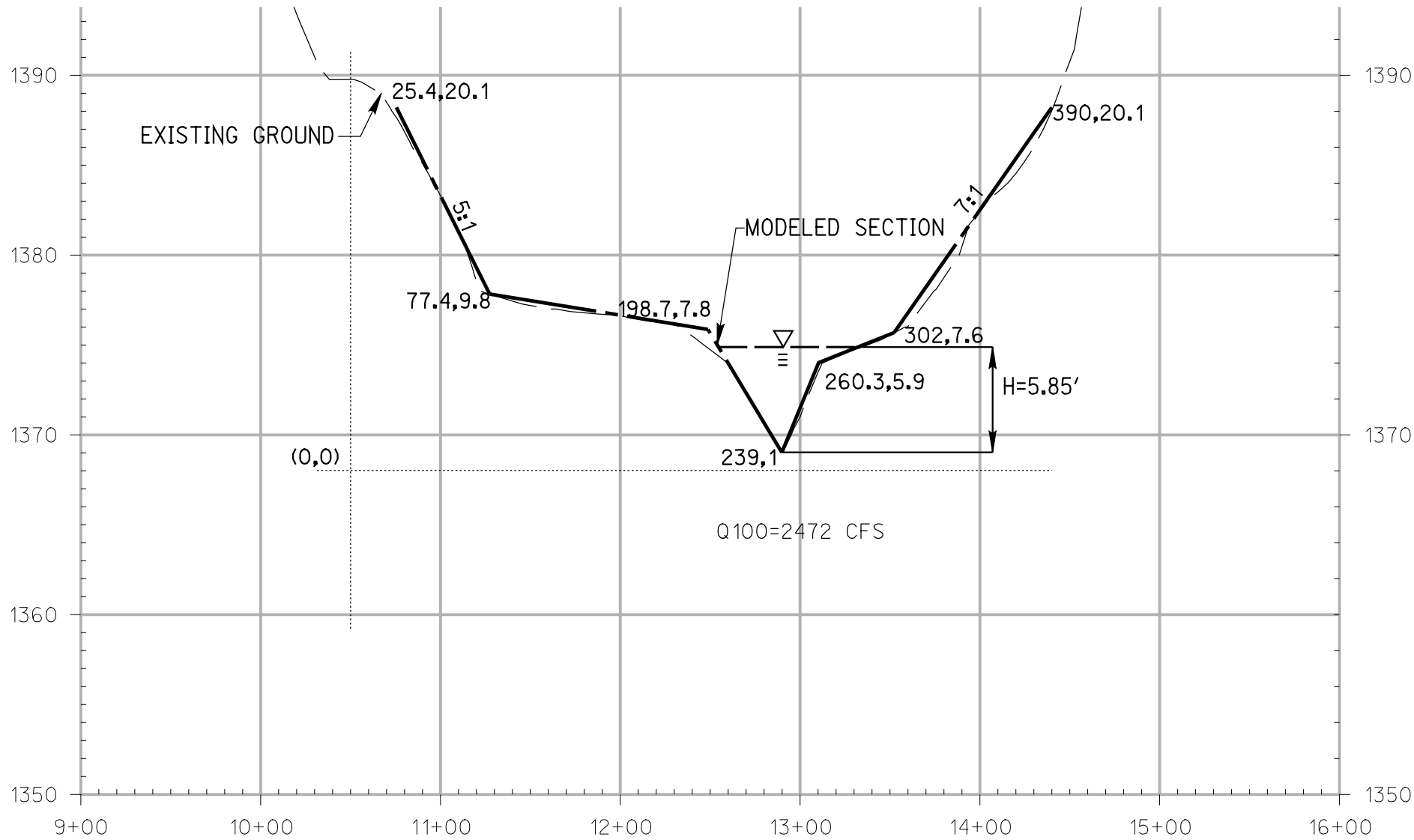
EXISTING OVERLOOK PARKWAY ARROYO CROSS-SECTION EXHIBIT

SHEET 3 OF 3



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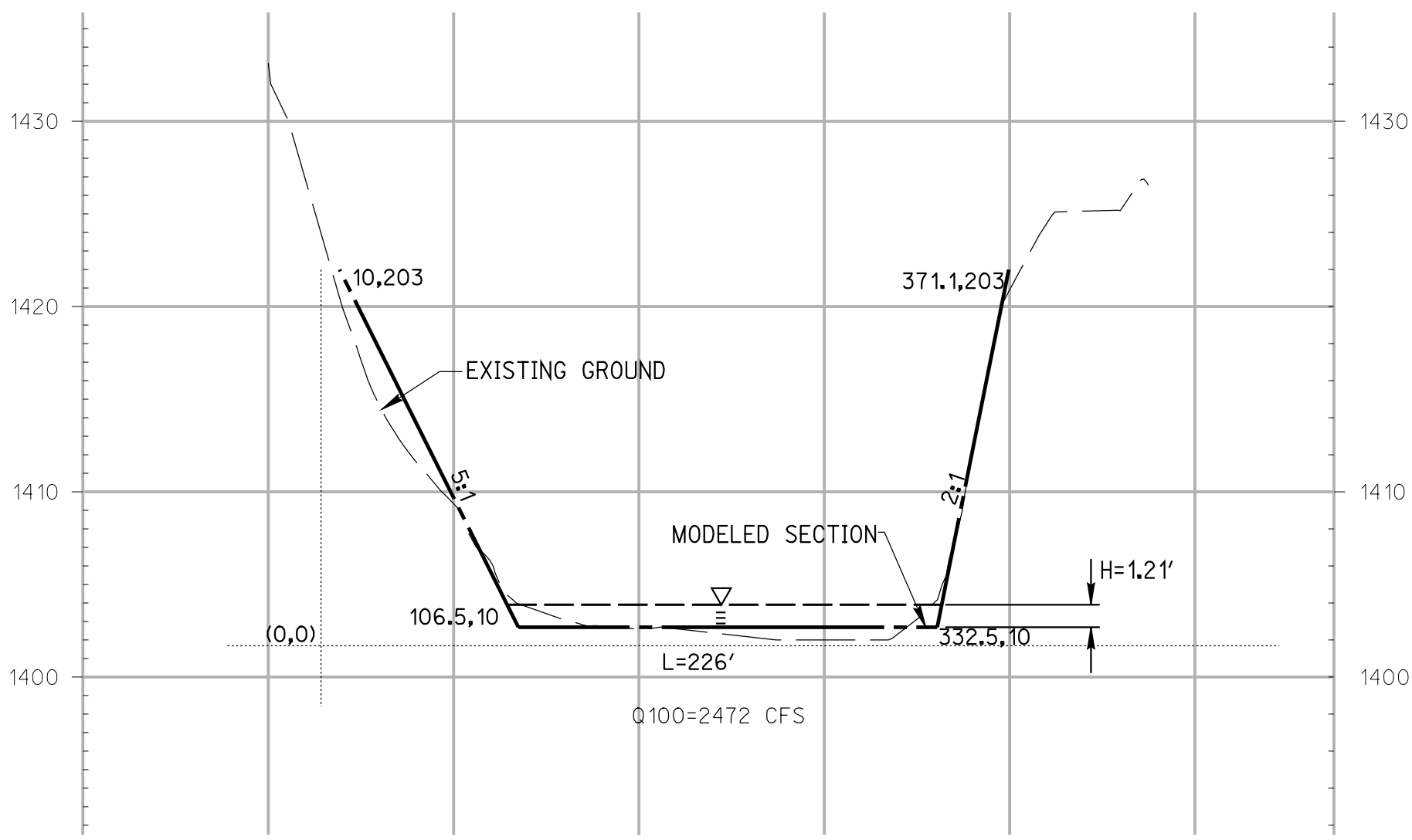

STA. 35+14.56

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