

SHOOKS RUN

DRAINAGE BASIN PLANNING STUDY

TECHNICAL APPENDIX VOLUME II - HYDRAULICS

prepared for

City of Colorado Springs, Colorado
Department of Planning & Development
City Engineering Division

455 East Pikes Peak Avenue, Suite 200
Colorado Springs, Colorado 80903-3675
Project No. 90-809

WILSON
& COMPANY

SCANNED

**SHOOKS RUN
DRAINAGE BASIN PLANNING STUDY
TECHNICAL APPENDIX**

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**A. EQUIVALENT CULVERT CALCULATIONS FOR
HEC-2 ANALYSIS**

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LOC.

FILE 70-809

CK.

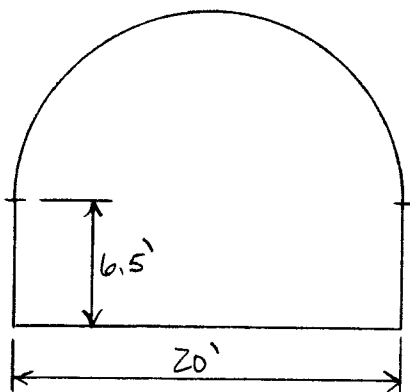
PROJ. Shooks Run

SHEET

1

DATE

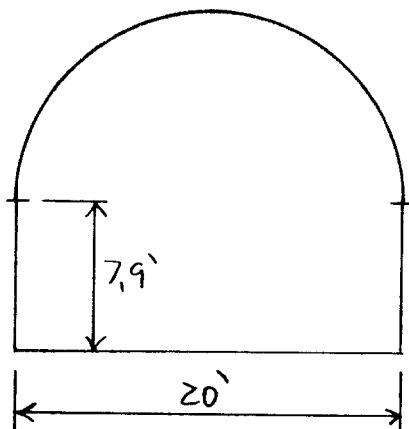
May 21, 1992

SUBJ. Equivalent Culvert
for HEC 2A.T.S.F. & D.R.G. W. Railroad Crossing

Exist Double Concrete
Arch w/ Concrete Floor $\Rightarrow n = 0.013$

$$A = (0.5)\pi(10)^2 + (6.5)(20) = 287 \text{ sf}$$

Equivalent Double RCB $\Rightarrow 18.7' \times 15.4' \Rightarrow A = 288 \text{ sf}$

Abandoned Railroad Crossing

Exist. Double Stone
Masonry Arch w/
Concrete Floor $\Rightarrow n = 0.020$

$$A = (0.5)\pi(10)^2 + (7.9)(20) = 315 \text{ sf}$$

Equivalent Double RCB $\Rightarrow 18.8' \times 16.8' \Rightarrow A = 316 \text{ sf}$

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PROJ

Shocks Run

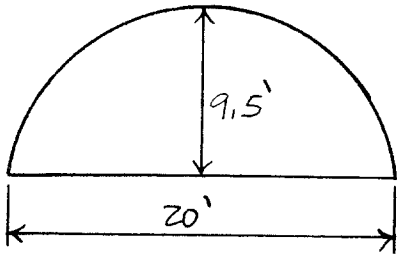
SHEET

2

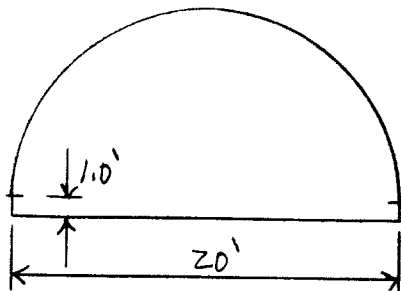
DATE

May 21, 1992

SUBJ

Equivalent Culverts
for HEC 2Fountain Boulevard Crossing

Exist. Concrete Arch
w/ Concrete Floor
 $n = 0.013$

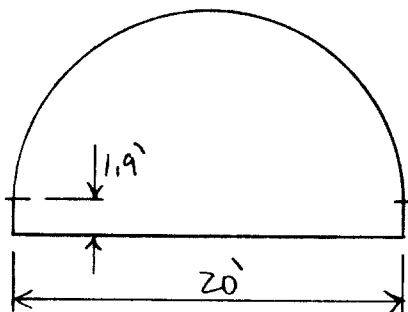


Exist. CMP Arch
w/ Concrete Floor
 $n = 0.028$

$$A = [(0.5)\pi(10)^2 - (0.5)(20)] + [(0.5)\pi(10)^2 + (1.0)(20)] = 324 \text{ sf}$$

Equivalent Double RCB $\Rightarrow 18' \times 9' \Rightarrow A = 162(2) = 324 \text{ sf}$

$$n_{\text{AVE}} = \frac{0.013 + 0.028}{2} = 0.020$$

Costilla Street Crossing

Exist. Concrete Arch
w/ Dirt Floor $\Rightarrow n = 0.020$

$$A = (0.5)\pi(10)^2 + (1.9)(20) = 195 \text{ sf}$$

Equivalent RCB $\Rightarrow 18.1' \times 10.8' \Rightarrow A = 195 \text{ sf}$

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FILE

90-809

CK.

PROJ

Shooks Run

SHEET

3

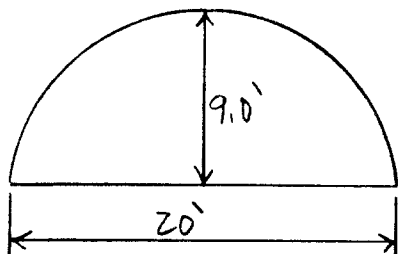
DATE

May 22, 1992

SUBJ

Equivalent Culverts
for HEC 2

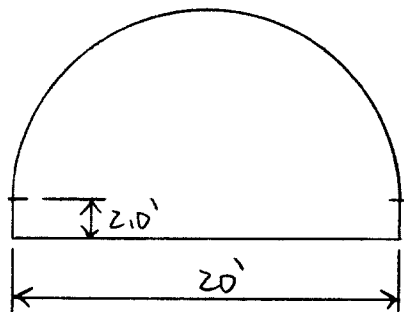
OF

El Paso Street Crossing

Exist. Concrete Arch
w/ Dirt Floor $\Rightarrow n = 0.020$

$$A = (0.5) \pi (10)^2 - (1.0)(20) = 137 \text{ sf}$$

$$\text{Equivalent RCB} \Rightarrow 17.5' \times 7.8' \Rightarrow A = 138 \text{ sf}$$

Pikes Peak Avenue / El Paso Street CrossingDownstream Section

Exist. Concrete Arch
w/ Dirt Floor $\Rightarrow n = 0.020$

$$A = (0.5) \pi (10)^2 + (2.0)(20) = 197 \text{ sf}$$

$$\text{Equivalent RCB} \Rightarrow 18.2' \times 10.9' \Rightarrow 198 \text{ sf}$$

Middle Section

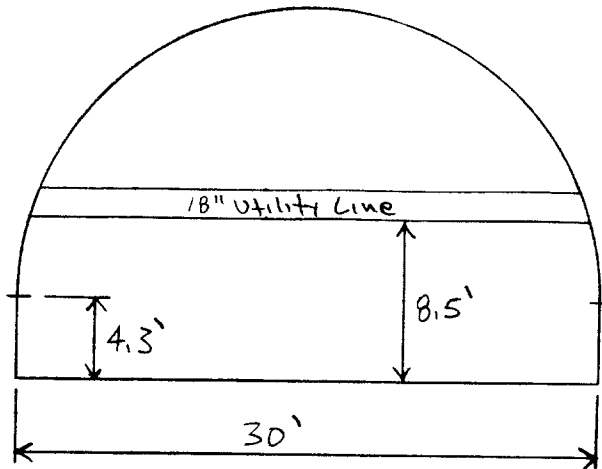
Exist. Double 11' x 10' RCB $\Rightarrow n = 0.013$

COMP. WMA
CK.
DATE May 22, 1992

WILSON
& COMPANY

LOC.
FILE 90-809
PROJ Shooks Run SHEET 4
SUBJ Equivalent Culverts OF
for HEC 2

Upstream Section

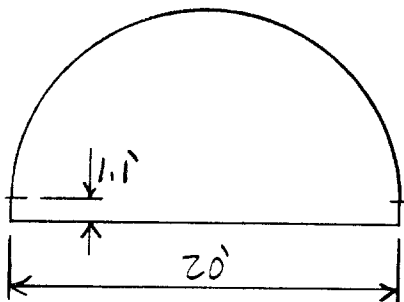


Exist. Concrete Arch
w/Dirt Floor $\Rightarrow n = 0.020$

$$A = (0.5) \pi (15)^2 + (4.3)(30) - (1.5)(28.0) = 440 \text{ sf}$$

Equivalent RCB $\Rightarrow 27.5' \times 16.2' =$
442 sf

Kiowa Street Crossing



Exist. Concrete Arch
w/Dirt Floor $\Rightarrow n = 0.020$

$$A = (0.5) \pi (10)^2 + (1.1)(20) = 179 \text{ sf}$$

Equivalent RCB $\Rightarrow 18.0' \times 10.0' = 180 \text{ sf}$

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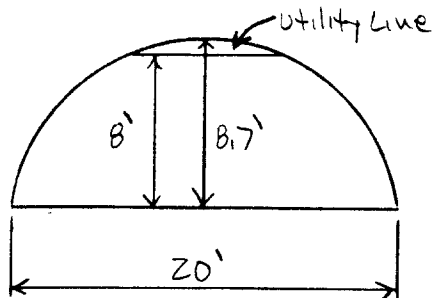
CK.

PROJ. Shooks Run

SHEET 5

DATE

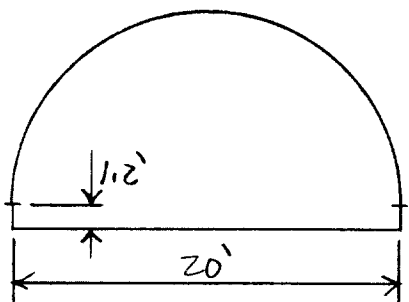
May 22, 1992

SUBJ. Equivalent Culverts of
for HEC 2Byou Street Crossing

Exist. Concrete Arch
w/ Dirt Floor $\Rightarrow n=0.020$

$$A = (0.5)\pi(10)^2 - (1.3)(20) - (0.7)(6) = 127 \text{ sf}$$

$$\text{Equivalent RCB} \Rightarrow 17.8' \times 7.1' \Rightarrow A = 126 \text{ sf}$$

Platte Street / Boulder Street CrossingDownstream Section

Exist. Concrete Arch
w/ Dirt Floor $\Rightarrow n=0.020$

$$A = (0.5)\pi(10)^2 + (1.2)(20) = 181 \text{ sf}$$

$$\text{Equivalent RCB} \Rightarrow 18.0' \times 10.0' = 180 \text{ sf}$$

COMP

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CK

DATE

May 22, 1992

WILSON
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LOC

FILE 90-809

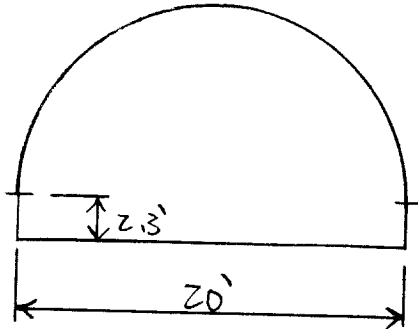
PROJ

Shooks Run

SHEET

6

SUBJ

Equivalent Culverts
for HEC 2Middle Section

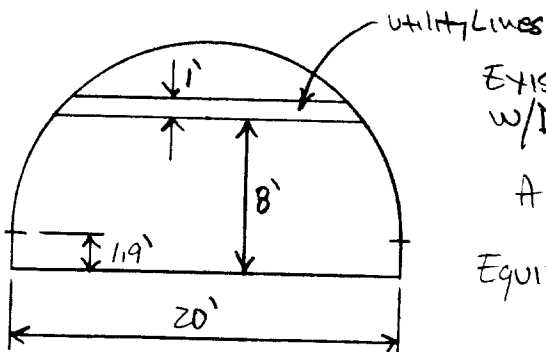
Exist. CMP Arch
w/ Rippap Floor $\Rightarrow n = 0.032$

$$A = (0.5)\pi(10)^2 + (2.3)(20) = 203 \text{ sf}$$

$$\text{Equivalent RCB} \Rightarrow 18.2' \times 11.2' = 204 \text{ sf}$$

Upstream Section

Exist. 40' x 11.5' Bridge w/ Dirt Floor $\Rightarrow n = 0.020$

Stream Street Crossing

Exist. Concrete Arch
w/ Dirt Floor $\Rightarrow n = 0.020$

$$A = (0.5)\pi(10)^2 + (1.9)(20) - (1)(15) = 180 \text{ sf}$$

$$\text{Equivalent RCB} \Rightarrow 18.2' \times 9.9' = 180 \text{ sf}$$

COMP

WJF

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LOC.

FILE 70-809

CK.

PROJ. Shooks Run

SHEET 7

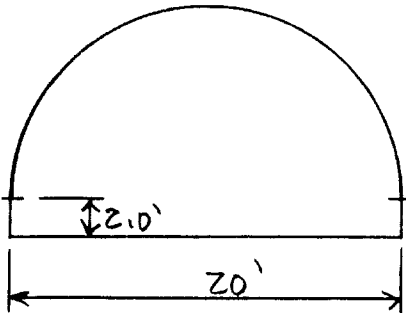
DATE

May 27, 1992

SUBJ.

Equivalent Culverts
for HEC 2

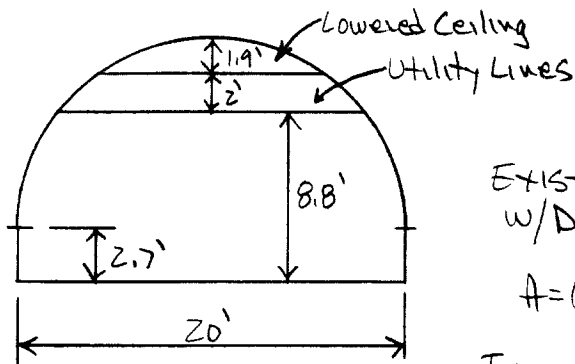
OF

Willamette Street Crossing

Exist Concrete Arch
w/ Dirt Bottom $\Rightarrow n = 0.020$

$$A = (0.5)\pi(10)^2 + (2.0)(20) = 197 \text{ sf}$$

$$\text{Equivalent RCB} \Rightarrow 18.2' \times 10.9' = 198 \text{ sf}$$

Cache La Poudre Street Crossing

Exist Concrete Arch
w/ Dirt Bottom $\Rightarrow n = 0.020$

$$A = (0.5)\pi(10)^2 + (2.7)(20) - (3.9)(12) = 164 \text{ sf}$$

$$\text{Equivalent RCB} \Rightarrow 19.3' \times 8.5' = 164 \text{ sf}$$

COMP

WLD

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FILE 90-809

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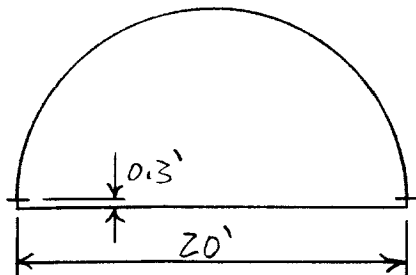
PROJ Shooks Run

SHEET 8

DATE

May 28, 1992

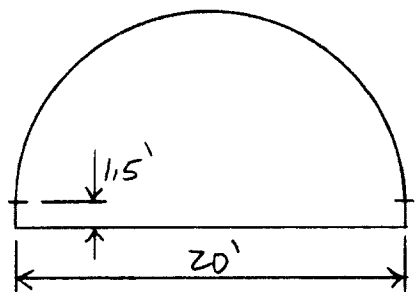
SUBJ

Equivalent Culverts
for HEC 2Uintah Street Crossing

Exist Concrete Arch
w/ Dirt Floor $\Rightarrow n = 0.020$

$$A = (0.5)\pi(10)^2 + (0.3)(20) = 163 \text{ sf}$$

$$\text{Equivalent RCB} \Rightarrow 17.8' \times 9.2' \Rightarrow A = 164 \text{ sf}$$

San Miguel Street Crossing

Exist Concrete Arch
w/ Dirt Floor $\Rightarrow n = 0.020$

$$A = (0.5)\pi(10)^2 + (1.5)(20) = 187 \text{ sf}$$

$$\text{Equivalent RCB} \Rightarrow 18.1' \times 10.4' = 188 \text{ sf}$$

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PROJ.

Shooks Run

SHEET

9

DATE

July 9, 1992

SUBJ.

Equivalent Culverts
for HEC 2Cant Path Crossing at Sta. 200+10Exist. 65" X 44" CMPA (54" Dia Equiv) $\Rightarrow n = 0.027$

$$A = \pi (2.25)^2 = 15.9 \text{ sf}$$

$$\text{Equiv RCB} \Rightarrow 4.9' \times 3.3' = 16.2 \text{ sf}$$

Jefferson Street CrossingExist. Tule - 72" X 44" CMPA (60" Dia Equiv) $\Rightarrow n = 0.027$

$$A = \pi (2.5)^2 = 19.6 \text{ sf}$$

$$\text{Equiv RCB} \Rightarrow 5.7' \times 3.5' = 20.0 \text{ sf}$$

Madison Street CrossingExist Tule - 72" X 44" CMPA (60" Dia Equiv) $\Rightarrow n = 0.027$

$$A = \pi (2.5)^2 = 19.6 \text{ sf}$$

$$\text{Equiv RCB} \Rightarrow 5.7' \times 3.5' = 20.0 \text{ sf}$$

COMP

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FILE 90-809

CK

PROJ

Shooks Run

SHEET

10

DATE

July 10, 1992

SUBJ

Equivalent Culverts of
for HEC 2Monroe Street CrossingExist TUPLE - 72" x 44" CMPA (60" Dia Equiv) $\Rightarrow n = 0.027$

$$A = \pi (2.5)^2 = 19.6 \text{ sf}$$

$$\text{Equiv PCB} \Rightarrow 5.7' \times 3.5' = 20.0 \text{ sf}$$

Jackson Street / LaSalle Street CrossingExist TUPLE - 72" x 44" CMPA (60" Dia Equiv) $\Rightarrow n = 0.027$

$$A = \pi (2.5)^2 = 19.6 \text{ sf}$$

$$\text{Equiv PCB} \Rightarrow 5.7' \times 3.5' = 20.0 \text{ sf}$$

C.R.I.P. Railroad CrossingExist TUPLE - 72" CMP w/ 4.1' Weir Plate $\Rightarrow$ Approx 5.6' x 1.9' Arch Opening

$$A = 7.5 \text{ sf} \quad \Rightarrow n = 0.027$$

$$\text{Equiv PCB} \Rightarrow 4.7' \times 1.6' = 7.5 \text{ sf}$$

**B. EXISTING PIKES PEAK AVENUE/EL PASO STREET/
KIOWA STREET CULVERT SYSTEM CALCULATIONS
FOR HEC-2 ANALYSIS**

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PROJ Shooks Run

SHEET

1

DATE

June 15, 1992

SUBJ Ext. Hydraulics

OF

EXISTING PIKES PEAK AVENUE / EL PASO STREET / KIOWA STREET
CULVERT SYSTEM10-YEAR

$$\text{Sta. 76+80} \Rightarrow Q_{10} = 3040 \text{ cfs} \quad \text{Inv. Out} = 54.7$$

$$H_{G_0} = 67.4 \quad \text{and} \quad V_0 = 7.7 \text{ fps (from HEC 2)}$$

$$\Rightarrow 175' - 20' \times 12.0' \text{ Conc Arch (Equiv } 18.2' \times 10.9' \text{ RCB) @ } 0.9790$$

$$\text{Inv. In} = 56.4 \quad A = (18.2)(10.9) = 198 \text{ sf} \quad \text{WP} = (18.2)(2) + (10.9)(2) = 58'$$

$$Q = 3040 \text{ cfs} \quad V = \frac{3040}{198} = 15.4 \text{ fps}$$

$$\text{Expansion Loss} = 0.5 \left(\frac{15.4^2}{64.4} - \frac{7.7^2}{64.4} \right) = 1.4'$$

$$H_f = \left[\frac{(29)(0.020)^2(175)}{(198/58)^{4/3}} \right] \frac{15.4^2}{64.4} = 1.5'$$

$$72^\circ \text{ Curved Bend Loss w/ } 80' \text{ Radius} \Rightarrow R/D = \frac{80}{10.9} = 7.3$$

$$K_b = 0.16 \text{ (Fig B-13)} \quad H_b = (0.16) \left(\frac{15.4^2}{64.4} \right) = 0.6'$$

$$H_G = 67.4 + 1.4' + 1.5' + 0.6' = 70.9$$

$$\Rightarrow 285' - \text{Double } 11' \times 10' \text{ RCB @ } 1.5890$$

$$\text{Inv. In} = 60.9 \quad A = (11)(10) = 110 \text{ sf (each barrel)} \quad \text{WP} = (11)(2) + (10)(2) = 42' \text{ (each barrel)}$$

$$Q/\text{Barrel} = \frac{3040}{2} = 1520 \text{ cfs} \quad V = \frac{1520}{110} = 13.8 \text{ fps}$$

$$\text{Contraction Loss} = 0.3 \left(\frac{15.4^2}{64.4} - \frac{13.8^2}{64.4} \right) = 0.2'$$

$$H_f = \left[\frac{(129)(0.013)^2(285)}{(110/42)^{4/3}} \right] \frac{13.8^2}{64.4} = 1.1'$$

$$H_G = 70.9 + 0.2' + 1.1' = 72.2$$

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FILE 90-809

PROJ. Shooks Run

SHEET 2

DATE June 15, 1992SUBJ Exist. Hydraulics

OF

$\Rightarrow 190' - 30' \times 19.3' \text{ Conc Arch (Equiv } 27.2' \times 16.1' \text{ RCB) @ } 0.14\%$

$$\text{Inv. In} = 61.2 \quad A = (27.2)(16.1) = 438 \text{ sf} \quad \text{WP} = (27.2)(2) + (16.1)(2) = 87'$$

$$Q = 3040 \text{ cfs} \quad V = \frac{3040}{438} = 7.1 \text{ fps}$$

$$\text{Contraction Loss} = 0.3 \left(\frac{13.8^2}{64.4} - \frac{7.1^2}{64.4} \right) = 0.7'$$

$$H_f = \left[\frac{(2.4)(0.020)(190)}{(438/87)^{4/3}} \right] \frac{7.1^2}{64.4} = 0.2'$$

$$22^\circ \text{ Bend Loss} \Rightarrow K_b = 0.13 (\text{Fig 8-13}) \quad H_b = (0.13) \frac{7.1^2}{64.4} = 0.1'$$

$$20^\circ \text{ Bend Loss} \Rightarrow K_b = 0.12 (\text{Fig 8-13}) \quad H_b = (0.12) \frac{7.1^2}{64.4} = 0.1'$$

$$\text{Entrance Loss} = 0.4 \left(\frac{7.1^2}{64.4} \right) = 0.3'$$

$$H_{G_{\text{OUTLET CONTROL}}} = 72.2 + 0.7' + 0.2' + 0.1' + 0.1' + 0.3' = 73.6$$

$$\text{Inlet Control} \Rightarrow Q/b = \frac{3040}{27.2} = 113 \quad H_w/D = 0.7 (\text{Fig 9-28})$$

$$H_w = (0.7)(16.1) = 11.3' \quad H_{G_{\text{INLET CONTROL}}} = 61.2 + 11.3' = 72.5$$

Sta. 85+60 $\Rightarrow 150' - 20' \times 11.1' \text{ Conc Arch (Equiv } 18.0' \times 10.0' \text{ RCB) @ } 0.27\%$

$$\text{Inv. In} = 62.4 \quad A = (18.0)(10.0) = 180 \text{ sf} \quad \text{WP} = (18.0)(2) + (10.0)(2) = 56'$$

$$Q = 1550 \text{ cfs} \quad V = \frac{1550}{180} = 8.6 \text{ fps}$$

$$\text{Expansion Loss} = 0.5 \left(\frac{8.6^2}{64.4} - \frac{7.1^2}{64.4} \right) = 0.2'$$

$$H_f = \left[\frac{(2.4)(0.020)(150)}{(180/56)^{4/3}} \right] \frac{8.6^2}{64.4} = 0.4'$$

$$\text{Entrance Loss} = 0.4 \left(\frac{8.6^2}{64.4} \right) = 0.5'$$

$$H_{G_{\text{OUTLET CONTROL}}} = 73.6 + 0.2' + 0.4' + 0.5' = 74.7$$

$$\text{Inlet Control} \Rightarrow Q/b = \frac{1550}{18.0} = 86 \quad H_w/D = 1.0 (\text{Fig 9-28})$$

$$H_w = (1.0)(10.0) = 10.0' \quad H_{G_{\text{INLET CONTROL}}} = 62.4 + 10.0' = 72.4$$

100-YEAR

Sta. 76+80 $\Rightarrow Q = 6650 \text{ cfs} \Rightarrow Q_c = 3760 \text{ cfs}$ $Q_w = 2890 \text{ cfs}$
 $I_{w \text{ out}} = 54.7$ $H_{G_0} = 70.8$ and $V_0 = 12.7 \text{ fps}$ (from HEC 2)

$\Rightarrow 175' - 20' \times 12.0' \text{ Conc Arch (Equiv } 18.2' \times 10.9' \text{ RCB) @ } 0.97\%$

$I_{w \text{ in}} = 56.4$ $A = (18.2)(10.9) = 198 \text{ sf}$ $WP = (18.2)(2) + (10.9)(2) = 58'$

$Q_c = 3760 \text{ cfs}$ $V = \frac{3760}{198} = 19.0 \text{ fps}$

Expansion Loss $= 0.5 \left(\frac{19.0^2}{64.4} - \frac{12.7^2}{64.4} \right) = 1.6'$

$H_f = \left[\frac{(29)(0.020)^2(175)}{(198/58)^{4/3}} \right] \frac{19.0^2}{64.4} = 2.2'$

72° Curved Bend Loss w/ 80' Radius $\Rightarrow R/D = \frac{80}{10.9} = 7.3$

$K_b = 0.16$ (Fig B-13) $H_b = 0.16 \left(\frac{19.0^2}{64.4} \right) = 0.9'$

$H_G = 70.8 + 1.6' + 2.2' + 0.9' = 75.5$

$\Rightarrow 285' - \text{Double } 11' \times 10' \text{ RCB @ } 1.58\%$

$I_{w \text{ in}} = 60.9$ $A = (11)(10) = 110 \text{ sf (each barrel)}$ $WP = (11)(2) + (10)(2) = 42'$
 (Each barrel)

$Q/\text{barrel} = \frac{3760}{2} = 1880 \text{ cfs}$ $V = \frac{1880}{110} = 17.1 \text{ fps}$

Contraction Loss $= 0.3 \left(\frac{19.0^2}{64.4} - \frac{17.1^2}{64.4} \right) = 0.3'$

$H_f = \left[\frac{(29)(0.013)^2(285)}{(110/42)^{4/3}} \right] \frac{17.1^2}{64.4} = 1.8'$

$H_G = 75.5 + 0.3' + 1.8' = 77.6$

COMP

WHA

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LOC.

FILE 90-809

CK.

PROJ. Shooks Run

SHEET 4

DATE

June 16, 1992

SUBJ. Exist. Hydraulics OF

$\Rightarrow 190'-30' \times 19.3'$ Conc Arch (Equiv $27.2' \times 16.1'$ RCB) @ 0.14%

$$Inu In = 61.2 \quad A = (27.2)(16.1) = 438 \text{ sf} \quad WP = (27.2)(2) + (16.1) = 87'$$

$$Q_c = 3760 \text{ cfs} \quad U = \frac{3760}{438} = 8.6 \text{ fps}$$

$$\text{Contraction Loss} = 0.3 \left(\frac{17.1^2}{64.4} - \frac{8.6^2}{64.4} \right) = 1.0'$$

$$H_f = \left[\frac{(2.9)(0.020)^2(190)}{(438/87)^{4/3}} \right] \frac{8.6^2}{64.4} = 0.3'$$

$$22^\circ \text{ Bend Loss} \Rightarrow K_b = 0.13 (\text{Fig 8-13}) \quad H_b = 0.13 \left(\frac{8.6^2}{64.4} \right) = 0.11'$$

$$20^\circ \text{ Bend Loss} \Rightarrow K_b = 0.12 (\text{Fig 8-13}) \quad H_b = 0.12 \left(\frac{8.6^2}{64.4} \right) = 0.11'$$

$$\text{Entrance Loss} = 0.4 \left(\frac{8.6^2}{64.4} \right) = 0.5'$$

$$H_{\text{OUTLET CONTROL}} = 77.6 + 1.0 + 0.3 + 0.11 + 0.11 + 0.5 = 79.6$$

$$\text{Inlet Control} \Rightarrow Q/b = \frac{3760}{27.2} = 138 \quad H_w/D = 0.8 (\text{Fig 9-28})$$

$$H_w = (0.8)(16.1) = 12.9' \quad H_{\text{INLET CONTROL}} = 61.2 + 12.9 = 74.1$$

Sta. 85+60 $\Rightarrow 150'-20' \times 11.1'$ Conc Arch (Equiv $18.0' \times 10.0'$ RCB) @ 0.27%

$$Inu In = 62.4 \quad A = (18.0)(10.0) = 180 \text{ sf} \quad WP = (18.0)(2) + (10.0)(2) = 56'$$

$$Q_c = 2095 \text{ cfs} \quad U = \frac{2095}{180} = 11.6 \text{ fps}$$

$$\text{Expansion Loss} = 0.5 \left(\frac{11.6^2}{64.4} - \frac{8.6^2}{64.4} \right) = 0.5'$$

$$H_f = \left[\frac{(2.9)(0.020)^2(150)}{(180/56)^{4/3}} \right] \frac{11.6^2}{64.4} = 0.8'$$

$$\text{Entrance Loss} = 0.4 \left(\frac{11.6^2}{64.4} \right) = 0.8'$$

$$H_{\text{OUTLET CONTROL}} = 79.6 + 0.5 + 0.8 + 0.8 = 81.7$$

$$\text{Inlet Control} \Rightarrow Q/b = \frac{2095}{18.0} = 116 \quad H_w/D = 1.2 (\text{Fig 9-28})$$

$$H_w = (1.2)(10.0) = 12.0' \quad H_{\text{INLET CONTROL}} = 62.4 + 12.0 = 74.4$$

COMP.

WMA

WILSON
& COMPANY

LOC.

FILE 90-809

CK.

PROJ. Shocks Run

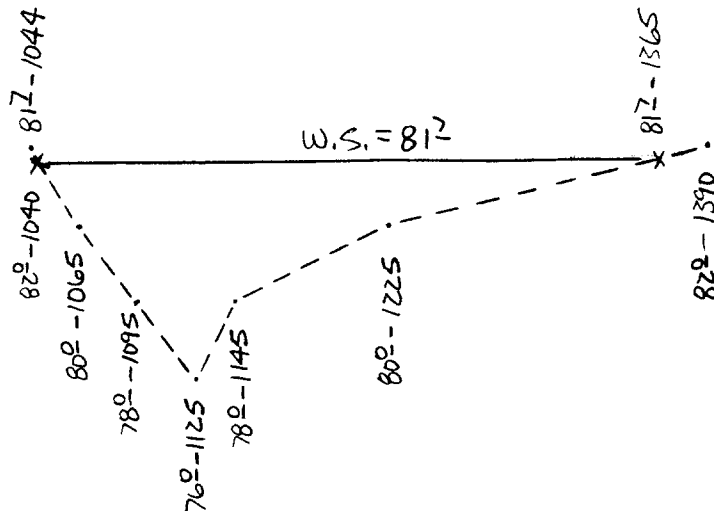
SHEET 5

DATE

June 16, 1992

SUBJ. Exist Hydraulics OF

$$\text{Weir Overflow} \Rightarrow Q_w = 6650 - 3760 = 2890 \text{ cfs}$$



$$L = 1365 - 1044 = 321'$$

$$H_{AVE} = \left[\frac{(0.85)(21) + (2.7)(30) + (4.7)(30) + (4.7)(20) + (2.7)(80) + (0.85)(140)}{321} \right] = 2.08'$$

$$Q = (3.0)(321)(2.08)^{3/2} = 2890 \text{ cfs}$$

**C. EXISTING PLATTE AVENUE/BOULDER STREET
CULVERT SYSTEM CALCULATIONS
FOR HEC-2 ANALYSIS**

EXISTING PLATTE AVENUE / BOULDER STREET CULVERT SYSTEM

10-YEAR

Sta. 98+10 $\Rightarrow Q_{10} = 1520 \text{ cfs}$ INV OUT = 73.1

$H_0 = 82.0$ and $V_0 = 6.9 \text{ fps}$ (from HEC 2)

$\Rightarrow 190' - 20' \times 11.2'$ Conc Arch (Equiv 18.0' $\times$ 10.0' RCB) @ 0.47%

Inv. In = 74.0 $\Rightarrow$ Partial Full $\Rightarrow d = 6.7'$

$A = (18.0)(6.7) = 121 \text{ sf}$ WP = $18.0 + (6.7)(2) = 31'$

$V = \left(\frac{1.49}{0.020} \right) \left(\frac{121}{31} \right)^{2/3} (0.0047)^{1/2} = 12.7 \text{ fps} \Rightarrow Q = (12.7)(121) = 1535 \text{ cfs}$

Expansion Loss = $0.5 \left(\frac{12.7^2}{64.4} - \frac{6.9^2}{64.4} \right) = 0.9'$

16° Bend loss $\Rightarrow K_b = 0.09$ (Fig 8-13) $H_b = 0.09 \left(\frac{12.7^2}{64.4} \right) = 0.2'$

$H_0 = 74.0 + 6.7' + 0.9' + 0.2' = 81.8 \Rightarrow$ Hydraulic Jump in Culvert

$\Rightarrow 405' - 20' \times 12.3'$ CMP Arch (Equiv 18.2' $\times$ 11.2' RCB) @ 0.47%

Inv In = 75.9 $A = (18.2)(11.2) = 204 \text{ sf}$ WP = $(18.2)(2) + (11.2)(2) = 59'$

$Q = 1520 \text{ cfs}$ $V = \frac{1520}{204} = 7.5 \text{ fps}$

Contraction Loss = $0.3 \left(\frac{12.7^2}{64.4} - \frac{7.5^2}{64.4} \right) = 0.5'$

$H_0 = 74.0 + 11.2' + 0.5' = 85.7$

$H_f = \left[\frac{(129)(0.032)^2(405)}{(204/59)^{4/3}} \right] \frac{7.5^2}{64.4} = 2.0'$

Entrance Loss = $0.5 \left(\frac{7.5^2}{64.4} \right) = 0.4'$

WWT

June 19, 1992

$$90^\circ \text{ Bend Loss} \Rightarrow K_b = 0.04 (\text{Fig 8-13}) \quad H_b = 0.04 \left(\frac{7.5^2}{64.4} \right) = 0.11'$$

$$H_{b \text{ OUTLET CONTROL}} = 85.7 + 2.0' + 0.4' + 0.11' = 88.2$$

$$\text{Inlet Control} \Rightarrow Q/b = \frac{1520}{18.2} = 84 \quad H_w/D = 0.9 (\text{Fig 9-28})$$

$$H_w = (0.9)(11.2) = 10.1' \quad H_{b \text{ INLET CONTROL}} = 75.4 + 10.1 = 85.5$$

$$\text{Sta. 106+30} \Rightarrow 85' - 40' \times 11.5' \text{ Budge @ } 0.42\%$$

$$I_{w, In} = 76.5 \quad A = (40)(11.5) = 460 \text{ sf} \quad WP = (40)(2) + (11.5)(2) = 103'$$

$$Q = 1520 \text{ cfs} \quad V = \frac{1520}{460} = 3.3 \text{ fps}$$

$$H_f = \left[\frac{(2.9)(0.020)^2(85)}{(460/103)^{4/3}} \right] \frac{3.3^2}{64.4} = 0.11'$$

$$\text{Entrance Loss} = 0.5 \left(\frac{3.3^2}{64.4} \right) = 0.11'$$

$$H_{b \text{ OUTLET CONTROL}} = 88.2 + 0.11' + 0.11' = 88.4$$

$$\text{Inlet Control} \Rightarrow Q/b = \frac{1520}{40} = 38 \quad H_w/D = 0.5 (\text{Fig 9-28})$$

$$H_w = (0.5)(11.5) = 5.8' \quad H_{b \text{ INLET CONTROL}} = 76.5 + 5.8' = 82.3$$

COMP

**WILSON
& COMPANY**

LOC

FILE 90-809

CK

PROJ Shooks Run

SHEET 3

DATE

June 19, 1992

SUBJ Existing Hydraulics

100-YEAR

$$\text{Sta. } 98+10 \Rightarrow Q_{100} = 4915 \text{ cfs} \quad \text{Inv Out} = 73.1$$

$$H_{G_0} = 87.3 \quad \text{and} \quad V_0 = 10.9 \text{ fps (from HEC 2)}$$

$$\Rightarrow 190' - 20' \times 11.2' \text{ Conc Arch (Equiv } 18.0' \times 10.0' \text{ RCB)} @ 0.47\%$$

$$\text{Inv. In} = 74.0 \quad A = (18.0)(10.0) = 180 \text{ sf} \quad \text{WP} = (18.0)(2) + (10.0)(2) = 56$$

$$Q_c = 2790 \text{ cfs} \quad V = \frac{2790}{180} = 15.5 \text{ fps}$$

$$\text{Expansion Loss} = 0.5 \left(\frac{15.5^2}{64.4} - \frac{10.9^2}{64.4} \right) = 0.9'$$

$$H_f = \left[\frac{(29)(0.020)^2(190)}{(180/56)^{4/3}} \right] \frac{15.5^2}{64.4} = 1.7'$$

$$16^\circ \text{ Bend Loss} \Rightarrow K_b = 0.09 \text{ (Fig 8-13)} \quad H_b = 0.09 \left(\frac{15.5^2}{64.4} \right) = 0.3'$$

$$H_G = 87.3 + 0.9' + 1.7' + 0.3' = 90.2$$

$$\Rightarrow 405' - 20' \times 12.3' \text{ CMP Arch (Equiv } 18.2' \times 11.2' \text{ RCB)} @ 0.47\%$$

$$\text{Inv In} = 75.9 \quad A = (18.2)(11.2) = 204 \text{ sf} \quad \text{WP} = (18.2)(2) + (11.2)(2) = 59'$$

$$Q_c = 2790 \text{ cfs} \quad V = \frac{2790}{204} = 13.7 \text{ fps}$$

$$\text{Contraction Loss} = 0.3 \left(\frac{15.5^2}{64.4} - \frac{13.7^2}{64.4} \right) = 0.2'$$

$$H_f = \left[\frac{(29)(0.032)^2(405)}{(204/59)^{4/3}} \right] \frac{13.7^2}{64.4} = 6.7'$$

$$\text{Entrance Loss} = 0.5 \left(\frac{13.7^2}{64.4} \right) = 1.5'$$

$$9^\circ \text{ Bend Loss} \Rightarrow K_b = 0.04 \text{ (Fig 8-13)} \quad H_b = 0.04 \left(\frac{13.7^2}{64.4} \right) = 0.1'$$

$$H_{G_{\text{OUTLET CONTROL}}} = 90.2 + 0.2' + 6.7' + 1.5' + 0.1' = 98.7$$

COMP

WHD

WILSON
& COMPANY

LOC.

FILE 90-809

CK.

PROJ. Shooks Run

SHEET 4

DATE

June 19, 1992

SUBJ. Existing Hydraulics

$$\text{Inlet Control} \Rightarrow Q/b = \frac{2790}{18.2} = 153 \quad H_w/D = 1.3 \text{ (Fig 9-28)}$$

$$H_w = (1.3)(11.2) = 14.6' \quad H_{G \text{ INLET CONTROL}} = 75.9 + 14.6 = 90.5$$

Sta. 106+30 $\Rightarrow$ 85' - 40' x 11.5' Bridge @ 0.42%

$$I_w, I_u = 76.5 \quad A = (40)(11.5) = 460 \text{ sf} \quad WP = (40)(2) + (11.5)(2) = 103'$$

$$Q_c = 2790 \text{ cfs} \quad v = \frac{2790}{460} = 6.1 \text{ fps}$$

$$H_f = \left[\frac{(2.48)(0.020)^2(85)}{(460/103)^{4/3}} \right] \frac{6.1^2}{64.4} = 0.11'$$

$$\text{Entrance Loss} = 0.5 \left(\frac{6.1^2}{64.4} \right) = 0.3'$$

$$H_{G \text{ OUTLET CONTROL}} = 98.7 + 0.11' + 0.3' = 99.1$$

$$\text{Inlet Control} \Rightarrow Q/b = \frac{2790}{40} = 70 \quad H_w/D = 0.7 \text{ (Fig 9-28)}$$

$$H_w = (0.7)(11.5) = 8.1' \quad H_{G \text{ INLET CONTROL}} = 76.5 + 8.1 = 84.6$$

$$Q_w = 2125 \text{ cfs (from HEC 2)}$$

D. HEC-2 ANALYSIS — EXISTING CONDITION

THIS RUN EXECUTED 12SEP92 22:58:46

 HEC-2 WATER SURFACE PROFILES

Version 4.6.0: February 1991

T1 SHOOKS RUN DRAINAGE BASIN PLANNING STUDY WILSON & COMPANY 90-909
 T2 FOUNTAIN CREEK TO KIOWA STREET
 T3 EXISTING CONDITION 10-YEAR SREA.DAT

J1	ICHECK	ING	NINV	IDIR	STRT	METRIC	HVINS	D	WSEL	FD
	0	2	0	0	-1	0	0	0	0	0
J2	NPROF	IPLT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	1	0	-1	0	0	0	0	0	0	0
J3	VARIABLE CODES FOR SUMMARY PRINTOUT									
	100	101	105	150						
NC	0.100	0.100	0.035	0.1	0.3					
QT	2	3050	6840							
CONFLUENCE WITH FOUNTAIN CREEK										
X1	50	22	1365	1395	0	0	0			
GR	5900	1000	5892	1020	5890.7	1025	5892	1035	5894	1190
GR	5896	1260	5896.3	1305	5896	1345	5894	1360	5890	1365
GR	5887.1	1370	5887.1	1390	5890	1395	5892	1410	5894	1425
GR	5896	1520	5898	1540	5898	1585	5896	1645	5896	1715
GR	5898	1835	5900	2075						
X1	100	19	1380	1400	50	40	50			
GR	5900	1000	5892	1020	5891.4	1025	5892	1030	5894	1180
GR	5896	1260	5896.3	1310	5896	1365	5890	1380	5887.3	1385
GR	5887.3	1395	5890	1400	5894	1405	5896	1490	5897.8	1525
GR	5896	1550	5896	1695	5898	2000	5900	2325		
GILLETTE STREET EXTENDED										
X1	150	16	1380	1400	50	40	50			
GR	5900	1000	5894	1020	5892.1	1025	5894	1195	5895.5	1300
GR	5894	1375	5890	1380	5887.5	1385	5887.5	1395	5890	1400
GR	5894	1410	5896	1510	5896	1520	5896	1735	5898	2300
GR	5900	2395								
HUGO STREET EXTENDED										
X1	500	10	1030	1070	350	340	350			
GR	5904	1000	5892	1030	5889	1035	5889	1045	5892	1070
GR	5896	1080	5898	1815	5900	2070	5902	2115	5904	2125

X1	850	12	1060	1090	350	375	350			
GR	5908	1000	5906	1035	5904	1045	5894	1060	5890.5	1065
GR	5890.5	1085	5894	1090	5898	1100	5900	1125	5902	1155
GR	5902.1	1220	5910.1	1220						

END LAS VEGAS STREET BRIDGE DISSIPATOR

X1	975	10	1041	1085	130	120	125			
X3	10	0	0	0	0	0	0	5897	5897	
GR	5911	1000	5910	1015	5908	1025	5890.9	1041	5890.9	1085
GR	5902	1100	5904	1110	5904	1130	5903.4	1220	5911.4	1220

NC	0.040	0.040	0.013	0.3	0.5					
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OUTFALL LAS VEGAS STREET BRIDGE

X1	1010	6	1010	1054	35	35	35			
X3	10	0	0	0	0	0	0	5910	5910	
GR	5911	1000	5910.9	1010	5897.2	1010	5897.2	1054	5910.9	1054
GR	5911	1070								

SC	1.013	0.4	3.0	0	10.0	44.0	70	8.3	5897.7	5897.2
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ENTRANCE LAS VEGAS STREET BRIDGE

X1	1080	9	1120	1164	70	70	70			
X2	0	0	2	5907.7	5911.6					
X3	10	0	0	0	0	0	0	5911.6	5911.6	
BT	7	1000	5914	1030	5912			1100	5912	
BT	1120	5911.6		1164	5911.6		1200	5912		1215
BT	5912.3									
GR	5914	1000	5912	1030	5912	1100	5910.7	1120	5897.7	1120
GR	5897.7	1164	5910.7	1164	5912	1200	5912.3	1215		

OUTFALL A.T.S.F. & D.R.G.W. RAILROAD CULVERT

X1	1120	6	1010	1054	40	40	40			
X3	10	0	0	0	0	0	0	5918	5918	
GR	5918	1000	5908.4	1010	5898.4	1010	5898.4	1054	5908.4	1054
GR	5918	1070								

SC	2.013	0.40	2.6	0	15.4	18.7	45	8.1	5898.7	5898.1
NC	0.100	0.100	0.035	0	0					

ENTRANCE A.T.S.F. & D.R.G.W. RAILROAD CULVERT

X1	1165	6	1010	1054	45	45	45			
X2	0	0	2	5914.1	5923.2					
X3	10	0	0	0	0	0	0	5923.2	5923.2	
BT	4	1000	5923.2		1010	5923.2		1054	5923.2	
BT	1070	5923.2								
GR	5920	1000	5908.7	1010	5898.7	1010	5898.7	1054	5908.7	1054
GR	5920	1070								

X1	1225	12	1200	1240	80	35	60			
GR	5922	1000	5920	1080	5918	1115	5916	1150	5914	1180
GR	5902	1200	5899	1205	5899	1235	5902	1240	5904	1255
GR	5920	1280	5922	1285						

NC	0	0	0	0.1	0.3					
X1	1425	6	1025	1045	210	200	200			
GR	5920	1000	5902	1025	5900.2	1030	5900.2	1040	5902	1045
GR	5928	1075								

NC	0	0	0	0.3	0.5					
OUTFALL ABANDONED RAILROAD CULVERT										
X1	1560	4	1010	1054	125	175	135			
X3	10	0	0	0	0	0	0	5940	5940	
GR	5926	1000	5903.4	1010	5903.4	1054	5927	1054		

SC	2.020	0.50	3.0	0	16.8	18.8	60	8.3	5903.8	5903.4
ENTRANCE ABANDONED RAILROAD CULVERT										
X1	1620	4	1010	1054	60	60	60			
X2	0	0	2	5920.6	5943.8					
X3	10	0	0	0	0	0	0	5943.8	5943.8	
BT	4	1000	5943.8		1010	5943.8		1054	5943.8	
BT	1070	5943.8								
GR	5940	1000	5903.8	1010	5903.8	1054	5940	1070		

X1	1675	16	1125	1165	55	55	55			
GR	5928	1000	5926	1080	5912	1125	5906	1135	5904.3	1140
GR	5904.3	1160	5906	1165	5908	1170	5910	1195	5918	1230
GR	5920	1240	5920	1310	5922	1355	5924	1370	5926	1410
GR	5928	1430								

NC	0	0	0	0.1	0.3					
GT	2	3075	6860							
X1	1900	15	1055	1090	275	200	225			
GR	5930	1000	5928	1005	5926	1015	5910	1050	5908	1055
GR	5906.5	1060	5906.5	1085	5908	1090	5910	1095	5912	1100
GR	5914	1155	5922	1190	5924	1255	5926	1330	5928	1335

NC	0	0	0	0.3	0.5					
X1	1975	14	1090	1130	90	65	75			
X3	10	0	0	0	0	0	0	5913	5913	
GR	5930	1000	5926	1020	5912	1075	5910	1090	5907.3	1105
GR	5907.3	1120	5910	1130	5912	1140	5914	1170	5920	1190
GR	5922	1205	5924	1260	5926	1360	5928	1365		

OUTFALL PEDESTRIAN BRIDGE										
X1	1976	20	1090	1130	1	1	1			
BT	16	1000	5930	5930	1020	5926	5926	1075	5913.3	5912
BT	1090	5913.3	5912	1105	5913.3	5912	1106.3	5913.3	5912	1118.7
BT	5913.3	5912	1120	5913.3	5912	1130	5913.3	5912	1140	5913.3
BT	5912	1170	5914	5914	1190	5920	5920	1205	5922	5922
BT	1260	5924	5924	1360	5926	5926	1365	5928	5928	
GR	5930	1000	5926	1020	5912	1075	5910	1090	5907.3	1105
GR	5912	1105	5912	1106.3	5907.3	1106.3	5907.3	1118.7	5912	1118.7
GR	5912	1120	5907.3	1120	5910	1130	5912	1140	5914	1170
GR	5920	1190	5922	1205	5924	1260	5926	1360	5928	1365

ENTRANCE PEDESTRIAN BRIDGE

X1	1984	0	0	0	8	8	8	0	0.1	
X2	0	0	0	0	0	0	1			
X1	1985	14	1090	1130	1	1	1			
X3	10	0	0	0	0	0	0	5913.3	5913.3	
GR	5930.1	1000	5926.1	1020	5912.1	1075	5910.1	1090	5907.4	1105
GR	5907.4	1120	5910.1	1130	5912.1	1140	5914.1	1170	5920.1	1190
GR	5922.1	1205	5924.1	1260	5926.1	1360	5928.1	1365		

X1	2050	17	1175	1210	60	75	65			
GR	5930	1000	5928	1010	5926	1025	5924	1045	5922	1085
GR	5914	1110	5912	1155	5910	1175	5908	1185	5908	1205
GR	5910	1210	5918	1230	5920	1240	5922	1250	5924	1265
GR	5926	1340	5928	1415						

NC	0	0	0	0.1	0.3					
BT	2	3100	6880							
X1	2275	16	1295	1340	220	240	225			
GR	5936	1000	5934	1025	5932	1055	5930	1100	5928	1160
GR	5926	1175	5924	1195	5922	1245	5914	1275	5912	1295
GR	5908.8	1300	5908.8	1335	5912	1340	5922	1365	5930	1395
GR	5936	1420								

NC	0	0	0	0.3	0.5					
OUTFALL FOUNTAIN BOULEVARD CULVERT										
X1	2400	14	1305	1351	120	130	125			
X3	10	0	0	0	0	0	0	5928	5928	
GR	5936.4	1000	5934	1035	5932	1095	5930	1145	5928.5	1195
GR	5930	1235	5930.8	1250	5930	1255	5928	1270	5909.3	1305
GR	5909.3	1351	5920	1370	5930	1400	5936	1420		

SC	2.020	0.40	3.0	0	9.0	18.0	150	8.1	5910.3	5909.3
ENTRANCE FOUNTAIN BOULEVARD CULVERT										
X1	2550	11	1380	1426	150	150	150			
X2	0	0	2	5919.3	5930					
X3	10	0	0	0	0	0	0	5930	5930	
BT	11	1000	5940		1040	5938		1075	5936	
BT	1120	5934		1165	5932		1195	5930		1310
BT	5932		1360	5932.9		1380	5934		1426	5936.8
BT		1465	5940.4							
GR	5940	1000	5938	1040	5936	1075	5934	1120	5932	1165
GR	5930	1195	5930	1310	5928	1360	5910.3	1380	5910.3	1426
GR	5940	1465								

X1	2600	13	1285	1330	50	50	50			
GR	5936	1000	5934	1040	5932	1075	5930	1180	5928	1235
GR	5916	1270	5914	1285	5911	1290	5911	1325	5914	1330
GR	5920	1340	5930	1365	5936	1380				

NC	0	0	0	0.1	0.3					
X1	2975	12	1310	1335	360	390	375			
GR	5938	1000	5936	1060	5934	1175	5932	1215	5918	1270
GR	5916	1310	5913	1315	5913	1330	5916	1335	5920	1350
GR	5930	1380	5940	1400						
BT	2	3090	6835							
RIO GRANDE STREET EXTENDED										
X1	3550	9	1145	1185	575	585	575			
GR	5940	1000	5938	1055	5936	1105	5920	1145	5916.8	1150
GR	5916.8	1180	5920	1185	5930	1210	5940	1225		
X1	3925	10	1140	1160	385	375	375			
GR	5942	1000	5940	1030	5938	1100	5922	1140	5919.8	1145
GR	5919.8	1155	5922	1160	5930	1185	5940	1215	5950	1245
X1	4275	10	1320	1355	350	350	350			
GR	5950	1000	5948	1045	5946	1145	5944	1165	5942	1275
GR	5926	1320	5923.3	1325	5923.3	1350	5926	1355	5950	1400
BT	2	3065	6765							
X1	4725	8	1240	1265	450	450	450			
GR	5950	1000	5948	1065	5946	1205	5930	1240	5927.5	1245
GR	5927.5	1260	5930	1265	5950	1310				
NC	0.040	0.040	0.020	0.3	0.5					
OUTFALL COSTILLA STREET CULVERT										
X1	4865	14	1400	1460	130	140	140			
X3	10	0	0	0	0	0	0	5948	5948	
GR	5960	1000	5958	1050	5956	1090	5954	1130	5952	1190
GR	5950	1305	5948	1400	5928.7	1425	5928.7	1445	5948	1460
GR	5950	1505	5952	1550	5954	1560	5960	1595		
SC	1.020	0.40	3.0	0	10.8	18.1	200	8.1	5929.9	5928.7
NC	0	0	0.035	0	0					
ENTRANCE COSTILLA STREET CULVERT										
X1	5065	13	1280	1300	180	220	200			
X2	0	0	2	5940.7	5950.1					
X3	10	0	0	0	0	0	0	5950.1	5950.1	
BT	11	1000	5960		1040	5958.3		1085	5956.2	
BT	1115	5955.1		1210	5952.7		1265	5950.1		1350
BT	5950.1		1365	5952		1440	5954		1500	5956
BT		1530	5958							
GR	5960	1000	5958	1040	5956	1085	5954	1115	5952	1210
GR	5950.1	1265	5929.9	1280	5929.9	1300	5950.1	1350	5952	1365
GR	5954	1440	5956	1500	5958	1530				
X1	5100	15	1240	1275	35	35	35			
GR	5960	1000	5958	1060	5956	1100	5954	1185	5952	1210
GR	5950	1220	5934	1240	5931.3	1245	5931.3	1270	5934	1275
GR	5950	1315	5952	1330	5954	1395	5956	1465	5958	1505

NC	0.100	0.100	0	0.1	0.3					
QT	2	3025	6670							
X1	5550	9	1075	1100	455	440	450			
GR	5966.8	1000	5966	1035	5944	1075	5941	1080	5941	1095
GR	5944	1100	5954	1110	5956	1190	5958	1315		
X1	5805	14	1190	1245	285	245	255			
X3	10	0	0	0	0	0	0	5952	5952	
GR	5962	1000	5960	1025	5958	1045	5956	1075	5954	1180
GR	5950	1185	5948	1190	5944.5	1200	5944.5	1235	5948	1245
GR	5950	1250	5956	1255	5958	1330	5966	1330		
NC	0	0	0	0.3	0.5					
OUTFALL UTILITY CROSSING										
X1	5806	18	1190	1245	1	1	1			
BT	15	1000	5962	5962	1025	5960	5960	1045	5958	5958
BT	1075	5956	5956	1180	5954	5954	1185	5952.5	5950	1190
BT	5952.5	5950	1200	5952.5	5950	1216.5	5952.5	5950	1218.5	5952.5
BT	5950	1235	5952.5	5950	1245	5952.5	5950	1250	5952.5	5950
BT	1255	5956	5956	1330	5958	5958				
GR	5962	1000	5960	1025	5958	1045	5956	1075	5954	1180
GR	5950	1185	5948	1190	5944.5	1200	5944.5	1216.5	5950	1216.5
GR	5950	1218.5	5944.5	1218.5	5944.5	1235	5948	1245	5950	1250
GR	5956	1255	5958	1330	5966	1330				
ENTRANCE UTILITY CROSSING										
X1	5809	0	0	0	3	3	3			
X2	0	0	0	0	0	0	1			
X1	5810	14	1190	1245	1	1	1			
X3	10	0	0	0	0	0	0	5952.5	5952.5	
GR	5962	1000	5960	1025	5958	1045	5956	1075	5954	1180
GR	5950	1185	5948	1190	5944.5	1200	5944.5	1235	5948	1245
GR	5950	1250	5956	1255	5958	1330	5966	1330		
X1	6025	11	1240	1260	220	215	215			
GR	5969.3	1000	5961.3	1000	5961.3	1070	5960	1210	5958	1230
GR	5950	1240	5946.4	1245	5946.4	1255	5950	1260	5960	1280
GR	5970	1285								
NC	0	0	0	0.1	0.3					
CUCHARRUS STREET EXTENDED										
X1	6475	8	1225	1260	435	475	450			
GR	5966	1000	5964	1005	5964	1215	5952	1225	5949	1230
GR	5949	1255	5952	1260	5980	1280				
QT	2	3040	6650							
X1	7025	9	1240	1270	540	560	550			
GR	5970	1000	5968	1025	5966	1070	5966	1220	5954	1240
GR	5951.4	1250	5951.4	1265	5954	1270	5970	1290		

NC	0	0	0	0.3	0.5					
OUTFALL EL PASO STREET CULVERT										
X1	7155	13	1335	1355	115	145	130			
X3	10	0	0	0	0	0	0	5964	5964	
GR	5980	1000	5974	1050	5972	1090	5970	1115	5968	1135
GR	5966	1200	5964	1280	5964	1320	5952	1335	5952	1355
GR	5964	1375	5970	1385	5980	1400				
SC	1.020	0.50	3.0	0	7.8	17.5	125	8.3	5953.2	5952
ENTRANCE EL PASO STREET CULVERT										
X1	7280	16	1255	1275	120	130	125			
X2	0	0	2	5961.0	5965					
X3	10	0	0	0	0	0	0	5965	5965	
BT	15	1000	5977.2		1020	5976		1040	5974	
BT	1075	5972		1100	5970		1125	5968		1165
BT	5966		1240	5965		1275	5966		1295	5968
BT		1310	5970		1350	5972		1515	5974	
BT	1540	5976		1550	5980					
GR	5977.2	1000	5976	1020	5974	1040	5972	1075	5970	1100
GR	5968	1125	5966	1165	5964	1240	5953.2	1255	5953.2	1275
GR	5968	1295	5970	1310	5972	1350	5974	1515	5976	1540
GR	5980	1550								
X1	7325	15	1200	1230	40	50	45			
GR	5975.7	1000	5974	1025	5972	1070	5970	1095	5968	1115
GR	5966	1185	5956	1200	5953.4	1205	5953.4	1225	5956	1230
GR	5970	1250	5972	1285	5974	1440	5976	1480	5980	1490
NC	0	0	0	0.1	0.3					
X1	7475	10	1060	1095	160	140	150			
GR	5975	1000	5974	1020	5972	1050	5956	1060	5953.9	1065
GR	5953.9	1090	5956	1095	5968	1100	5970	1110	5972	1120
X1	7590	10	1100	1135	125	110	115			
GR	5980	1000	5978	1020	5976	1060	5974	1095	5958	1100
GR	5954.4	1105	5954.4	1130	5958	1135	5974	1140	5974.7	1195
NC	0	0	0	0.3	0.5					
OUTFALL PIKES PEAK AVENUE CULVERT										
X1	7680	14	1140	1185	90	90	90			
GR	5984	1000	5982	1045	5981.5	1050	5979	1050	5978	1090
GR	5976	1140	5954.7	1150	5954.7	1175	5976	1185	5976	1260
GR	5978	1300	5980	1355	5982	1415	5984	1475		
NC	0.100	0.100	0.100	0.1	0.3					
BT	2	0.001	2890							
PIKES PEAK AVENUE - DISCHARGES ARE OVERFLOW OF PIKES PEAK AVENUE / EL PASO STREET / KIOWA STREET CULVERT SYSTEM ONLY										
X1	7750	11	1160	1275	80	70	70			
GR	5982	1000	5980	1040	5978	1100	5977	1160	5976	1220
GR	5975.9	1225	5976	1230	5977	1275	5978	1315	5980	1365
GR	5982	1405								

NC	0.040	0.040	0.040	0	0					
X1	8000	11	1270	1370	260	240	250			
GR	5984	1000	5982	1070	5980	1135	5978	1190	5976	1270
GR	5974	1345	5976	1370	5978	1425	5980	1480	5982	1505
GR	5984	1520								

NC	0.040	0.040	0.040	0	0					
X1	8265	8	1080	1355	220	180	265			
GR	5984	1000	5982	1035	5980	1080	5978	1150	5978	1265
GR	5980	1355	5982	1375	5984	1445				

KIDWA STREET

X1	8450	10	1125	1580	60	350	185			
GR	5986	1000	5984	1030	5982	1100	5980	1125	5978	1230
GR	5977.5	1375	5978	1410	5980	1580	5982	1740	5984	1990

SECND	DEPTH	CWSEL	CRWS	WSELX	EG	HV	HL	OLDS	L-BANK ELEV
0	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CDRAR	TOPWID	ENDST

*PROF 1

CCHV= .100 CEHV= .300

#SECND 50.000

2096 WSEL NOT GIVEN. AVG OF MAX. MIN USED

3265 DIVIDED FLOW

3720 CRITICAL DEPTH ASSUMED

CONFLUENCE WITH FOUNTAIN CREEK

50.000	7.57	5894.67	5894.67	.00	5896.09	1.41	.00	.00	5890.00
3050.0	548.3	2318.9	182.8	341.5	212.7	91.1	.0	.0	5890.00
.00	1.61	10.90	2.01	.100	.035	.100	.000	5887.10	1013.31
.005176	0.	0.	0.	0	10	0	.00	302.42	1457.05

#SECND 100.000

3265 DIVIDED FLOW

3685 20 TRIALS ATTEMPTED WSEL.CWSEL

3693 PROBABLE MINIMUM SPECIFIC ENERGY

3720 CRITICAL DEPTH ASSUMED

100.000	8.37	5895.67	5895.67	.00	5896.99	1.32	.27	.01	5890.00
3050.0	1131.5	1819.2	99.4	553.1	153.9	77.6	.8	.4	5890.00
.00	2.05	11.82	1.28	.100	.035	.100	.000	5887.30	1010.82
.005571	50.	50.	40.	20	8	0	.00	346.16	1475.99

#SECND 150.000

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE. KRATIO = 1.97

GILLETTE STREET EXTENDED

150.000	9.41	5896.91	.00	.00	5897.22	.31	.13	.10	5890.00
3050.0	1418.2	1220.5	411.4	1104.4	175.8	564.2	2.2	1.0	5890.00
.01	1.28	6.94	.73	.100	.035	.100	.000	5887.50	1010.29
.001591	50.	50.	40.	5	0	0	.00	982.94	1993.22

SECNO	DEPTH	CWSEL	CRWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
0	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*SECNO 500.000

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE. KRATIO = .58

HUGO STREET EXTENDED

500.000	7.93	5896.93	5895.79	.00	5898.49	1.56	.89	.37	5892.00
3050.0	54.6	2835.0	160.3	30.5	272.6	192.0	11.5	6.5	5892.00
.02	1.79	10.40	.84	.100	.035	.100	.000	5889.00	1017.65
.004798	350.	350.	340.	6	19	0	.00	408.14	1425.79

*SECNO 850.000

3301 HV CHANGED MORE THAN HVINS

850.000	7.67	5898.17	5898.02	.00	5901.14	2.96	2.22	.42	5894.00
3050.0	26.3	2975.4	48.4	13.1	212.7	21.9	14.6	8.5	5894.00
.02	2.01	13.99	2.20	.100	.035	.100	.000	5890.50	1053.74
.008754	350.	350.	375.	4	8	0	.00	48.45	1102.19

*SECNO 975.000

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE. KRATIO = 2.85

END LAS VEGAS STREET BRIDGE DISSIPATOR

975.000	10.13	5901.03	.00	.00	5901.67	.63	.30	.23	5890.90
3050.0	53.6	2910.1	86.3	48.0	445.9	69.4	15.8	8.6	5890.90
.03	1.12	6.53	1.24	.100	.035	.100	.000	5890.90	1031.52
.001078	130.	125.	120.	3	0	0	.00	67.18	1098.69

CEHV= .300 CEHV= .500

*SECNO 1010.000

3301 HV CHANGED MORE THAN HVINS

SECNO	DEPTH	CWSEL	CRWS	WSELK	EG	HV	HL	QLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XLN	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

3685 20 TRIALS ATTEMPTED WSEL.CWSEL
 3693 PROBABLE MINIMUM SPECIFIC ENERGY
 3720 CRITICAL DEPTH ASSUMED

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE. ELLEA= 5910.00 ELREA= 5910.00

OUTFALL LAS VEGAS STREET BRIDGE

1010.000	5.28	5902.48	5902.48	.00	5905.16	2.67	.05	1.02	5910.90
3050.0	.0	3050.0	.0	.0	232.5	.0	16.1	8.7	5910.90
.03	.00	13.12	.00	.000	.013	.000	.000	5897.20	1010.00
.001908	35.	35.	35.	20	11	0	.00	44.00	1054.00

SPECIAL CULVERT

SC	CUND	CUNV	ENTLC	COFB	RDLEN	RISE	SPAN	CULVLN	CHRT	SCL	ELCHU	ELCHD
1		.013	.40	3.00	.00	10.00	44.00	70.00	8	3	5897.70	5897.20

CHART 8 - BOX CULVERT WITH FLARED WINGWALLS; NO INLET TOP EDGE BEVEL
 SCALE 3 - WINGWALLS FLARED 0 DEGREES (SIDES EXTENDED STRAIGHT)

*SECNO 1080.000

SPECIAL CULVERT INLET CONTROL

EGIC = 5906.720 EBOC = 5906.717 PCWSE= 5902.483 ELTRD= 5911.600

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE. KRATIO = 1.80

SPECIAL CULVERT

EGIC	EBOC	H4	QWEIR	QCVLV	VCH	ACVLV	ELTRD	WEIRLN
5906.72	5906.72	1.56	0.	3050.	8.894	440.0	5911.60	0.

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE. ELLEA= 5911.60 ELREA= 5911.60

ENTRANCE LAS VEGAS STREET BRIDGE

1080.000	7.79	5905.49	.00	.00	5906.72	1.23	1.56	.00	5910.70
3050.0	.0	3050.0	.0	.0	342.9	.0	16.5	8.7	5910.70
.03	.00	8.89	.00	.000	.013	.000	.000	5897.70	1120.00
.000587	70.	70.	70.	3	0	0	.00	44.00	1164.00

SECNO	DEPTH	CWSEL	CRWS	WSELK	EG	HV	HL	DLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	MTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

#SECNO 1120.000

3495 OVBANK AREA ASSUMED NON-EFFECTIVE. ELLEA= 5918.00 ELREA= 5918.00

OUTFALL A.T.S.F. & D.R.G.W. RAILROAD CULVERT

1120.000	6.96	5905.36	.00	.00	5906.90	1.54	.03	.15	5908.40
3050.0	.0	3050.0	.0	.0	306.5	.0	16.8	8.8	5908.40
.03	.00	9.95	.00	.000	.013	.000	.000	5898.40	1010.00
.000822	40.	40.	40.	2	0	0	.00	44.00	1054.00

SPECIAL CULVERT

SC	CUND	CUNV	ENTLC	COFO	RDLEN	RISE	SPAN	CULVLN	CHRT	SCL	ELCHU	ELCHD
2		.013	.40	2.60	.00	15.40	18.70	45.00	8	1	5898.70	5898.10

CHART 8 - BOX CULVERT WITH FLARED WINGWALLS; NO INLET TOP EDGE BEVEL
 SCALE 1 - WINGWALLS FLARED 30 TO 75 DEGREES

#SECNO 1165.000

SPECIAL CULVERT OUTLET CONTROL

EGIC = 5908.005 EGOC = 5908.620 PCWSE= 5905.365 ELTRD= 5923.200

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE. KRATIO = .54

SPECIAL CULVERT

EGIC	EGOC	H4	OWEIR	QCULV	VCH	ACULV	ELTRD	WEIRLN
5908.00	5908.62	1.72	0.	3050.	7.703	576.0	5923.20	0.

3495 OVBANK AREA ASSUMED NON-EFFECTIVE. ELLEA= 5923.20 ELREA= 5923.20

ENTRANCE A.T.S.F. & D.R.G.W. RAILROAD CULVERT

1165.000	9.00	5907.70	.00	.00	5908.62	.92	1.72	.00	5908.70
3050.0	.0	3050.0	.0	.0	395.9	.0	17.2	8.8	5908.70
.03	.00	7.70	.00	.000	.035	.000	.000	5898.70	1010.00
.002778	45.	45.	45.	3	0	0	.00	41.00	1054.00

SECNO	DEPTH	CWSEL	CRWS	WSELK	EG	HV	HL	LOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	YNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

#SECNO 1225.000

1225.000	9.79	5907.79	.00	.00	5908.84	1.04	.15	.06	5902.00
3050.0	37.8	2851.2	161.0	28.0	336.9	83.2	17.8	8.9	5902.00
.04	1.35	8.46	1.93	.100	.035	.100	.000	5899.00	1190.34
.002447	80.	60.	35.	1	0	0	.00	70.60	1260.93

CCHV= .100 CEHV= .300

#SECNO 1425.000

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL.CWSEL

3693 PROBABLE MINIMUM SPECIFIC ENERGY

3720 CRITICAL DEPTH ASSUMED

1425.000	9.19	5909.39	5909.39	.00	5913.28	3.89	.83	.85	5902.00
3050.0	108.5	2855.5	86.0	38.0	174.8	31.5	19.4	9.2	5902.00
.04	2.86	16.33	2.73	.100	.035	.100	.000	5900.20	1014.73
.008560	210.	200.	200.	20	8	0	.00	38.80	1053.53

CCHV= .300 CEHV= .500

#SECNO 1560.000

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE. KRATIO = 2.49

3495 OVBANK AREA ASSUMED NON-EFFECTIVE. ELLEA= 5940.00 ELREA= 5940.00

OUTFALL ABANDONED RAILROAD CULVERT

1560.000	10.55	5913.95	.00	.00	5914.62	.67	.38	.96	5903.40
3050.0	.0	3050.0	.0	.0	463.9	.0	20.5	9.3	5927.00
.05	.00	6.58	.00	.000	.035	.000	.000	5903.40	1010.00
.001381	125.	135.	175.	3	0	0	.00	44.00	1054.00

SECNO	DEPTH	CWSEL	CRWS	WSELK	EG	HV	HL	DLOSS	L-BANK ELEV
0	QLOB	QCH	QROB	ALOB	ACH	AROB	VDL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	YNL	XNCH	XNR	MTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

SPECIAL CULVERT

SC	CUND	CUNV	ENTLC	COFG	RLEN	RISE	SPAN	CULVLN	CHRT	SCL	ELCHU	ELCHD
2		.020	.50	3.00	.00	16.80	18.80	60.00	8	3	5903.80	5903.40

CHART 8 - BOX CULVERT WITH FLARED WINGWALLS; NO INLET TOP EDGE BEVEL

SCALE 3 - WINGWALLS FLARED 0 DEGREES (SIDES EXTENDED STRAIGHT)

*SECNO 1620.000

SPECIAL CULVERT OUTLET CONTROL

EGIC = 5913.738 EGOC = 5914.289 PCWSE= 5913.952 ELTRD= 5943.800

5150. EG OF 5914.29 LESS THAN XEG OF 5914.62

SPECIAL CULVERT

EGIC	EGOC	H4	QWEIR	QCULV	VCH	ACULV	ELTRD	WEIRLN
5913.74	5914.29	.00	0.	3050.	6.870	631.7	5943.80	0.

3495 OVBANK AREA ASSUMED NON-EFFECTIVE. ELLEA= 5943.80 ELREA= 5943.80

ENTRANCE ABANDONED RAILROAD CULVERT

1620.000	10.09	5913.89	.00	.00	5914.62	.73	.00	.00	5903.80
3050.0	.0	3050.0	.0	.0	444.0	.0	21.1	9.3	5903.80
.05	.00	6.87	.00	.000	.035	.000	.000	5903.80	1010.00
.001201	60.	60.	60.	3	0	0	.00	44.00	1054.00

*SECNO 1675.000

1675.000	9.59	5913.90	.00	.00	5914.80	.90	.09	.09	5912.00
3050.0	3.9	2667.9	378.2	5.8	328.3	190.1	21.7	9.4	5906.00
.05	.68	8.13	1.99	.100	.035	.100	.000	5904.30	1118.91
.002377	55.	55.	55.	2	0	0	.00	93.14	1212.05

CCHV= .100 CEHV= .300

*SECNO 1900.000

3301 HV CHANGED MORE THAN HVINS

1900.000	7.57	5914.07	5912.94	.00	5915.76	1.69	.73	.24	5908.00
3075.0	100.3	2807.6	167.0	43.5	257.6	99.9	24.0	10.0	5908.00
.06	2.30	10.90	1.67	.100	.035	.100	.000	5906.50	1041.09
.001678	275.	225.	200.	4	11	0	.00	114.24	1155.33

SECNO	DEPTH	CWSEL	CRWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
0	QLOB	QCH	QROB	ALOB	ACH	AROB	VDL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	MTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

CCHV= .300 CEHV= .500

*SECNO 1975.000

1975.000	7.16	5914.46	.00	.00	5916.15	1.69	.39	.00	5910.00
3075.0	149.3	2772.8	152.9	63.8	252.7	78.9	24.7	10.1	5910.00
.06	2.34	10.97	1.94	.100	.035	.100	.000	5907.30	1065.33
.005830	90.	75.	65.	2	0	0	.00	106.22	1171.54

*SECNO 1976.000

3370 NORMAL BRIDGE. NRD= 16 MIN ELTRD= 5913.30 MAX ELLC= 5912.00

7185 MINIMUM SPECIFIC ENERGY

3720 CRITICAL DEPTH ASSUMED

OUTFALL PEDESTRIAN BRIDGE

1976.000	8.11	5915.41	5915.41	.00	5917.16	1.75	.01	.03	5910.00
3075.0	162.8	2597.4	314.8	56.3	226.4	87.1	24.7	10.1	5910.00
.06	2.89	11.47	3.61	.100	.035	.100	.000	5907.30	1061.61
.036380	1.	1.	1.	7	9	0	-117.23	113.09	1174.70

*SECNO 1984.000

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE. KRATIO = 1.52

3370 NORMAL BRIDGE. NRD= 16 MIN ELTRD= 5913.30 MAX ELLC= 5912.10

ENTRANCE PEDESTRIAN BRIDGE

1984.000	9.27	5916.67	.00	.00	5917.60	.93	.18	.25	5910.10
3075.0	219.5	2385.7	469.8	89.8	276.7	143.7	24.8	10.2	5910.10
.06	2.44	8.62	3.27	.100	.035	.100	.000	5907.40	1057.06
.015717	8.	8.	8.	6	0	0	-112.63	121.50	1178.56

*SECNO 1985.000

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE. KRATIO = 3.06

1985.000	9.58	5916.98	.00	.00	5917.67	.69	.00	.07	5910.10
3075.0	224.2	2550.8	300.0	135.0	349.4	189.0	24.8	10.2	5910.10
.06	1.66	7.30	1.59	.100	.035	.100	.000	5907.40	1055.83
.001676	1.	1.	1.	2	0	0	.00	123.77	1179.60

SECNO	DEPTH	CWSEL	CRWS	WSELK	EG	HV	HL	DLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VDL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*SECNO 2050.000

2050.000	9.06	5917.06	.00	.00	5917.83	.77	.12	.04	5910.00
3075.0	589.5	2394.0	91.6	318.3	302.0	62.2	25.8	10.3	5910.00
.06	1.85	7.93	1.47	.100	.035	.100	.000	5908.00	1100.45
.002014	60.	65.	75.	3	0	0	.00	127.19	1227.64

CCHV= .100 CEHV= .300

*SECNO 2275.000

2275.000	8.66	5917.46	.00	.00	5918.31	.85	.46	.02	5912.00
3100.0	183.5	2869.9	46.6	111.6	373.6	37.2	28.9	10.9	5912.00
.07	1.64	7.68	1.25	.100	.035	.100	.000	5908.80	1262.03
.002056	220.	225.	240.	2	0	0	.00	91.61	1353.65

CCHV= .300 CEHV= .500

*SECNO 2400.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE. ELLEA= 5928.00 ELREA= 5928.00

OUTFALL FOUNTAIN BOULEVARD CULVERT

2400.000	8.34	5917.64	.00	.00	5918.65	1.01	.26	.08	5909.30
3100.0	.0	3100.0	.0	.0	383.6	.0	30.2	11.1	5909.30
.07	.00	8.08	.00	.000	.035	.000	.000	5909.30	1305.00
.002142	120.	125.	130.	2	0	0	.00	46.00	1351.00

SPECIAL CULVERT

SC	CUND	CUNV	ENTLC	COFQ	RDLEN	RISE	SPAN	CULVLN	CHRT	SCL	ELCHU	ELCHD
2		.020	.40	3.00	.00	9.00	18.00	150.00	8	1	5910.30	5909.30

CHART 8 - BOX CULVERT WITH FLARED WINGWALLS; NO INLET TOP EDGE BEVEL

SCALE 1 - WINGWALLS FLARED 30 TO 75 DEGREES

*SECNO 2550.000

SPECIAL CULVERT OUTLET CONTROL

EGIC = 5920.211 EGOC = 5920.615 PCWSE= 5917.639 ELTRD= 5930.000

SPECIAL CULVERT

EGIC	EGOC	H4	QWEIR	QCULV	VCH	ACULV	ELTRD	WEIRLN
5920.21	5920.61	1.96	0.	3100.	7.058	324.0	5930.00	0.

SECNO	DEPTH	CWSEL	CRIMS	WSELK	EG	HV	HL	QLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

3495 OVBANK AREA ASSUMED NON-EFFECTIVE. ELLEA= 5930.00 ELREA= 5930.00

ENTRANCE FOUNTAIN BOULEVARD CULVERT

2550.000	9.54	5919.84	.00	.00	5920.61	.77	1.96	.00	5910.30
3100.0	.0	3100.0	.0	.0	439.2	.0	31.7	11.3	5910.30
.08	.00	7.06	.00	.000	.035	.000	.000	5910.30	1380.00
.001364	150.	150.	150.	2	0	0	.00	46.00	1426.00

*SECNO 2600.000

2600.000	8.89	5919.89	.00	.00	5920.72	.83	.08	.03	5914.00
3100.0	157.5	2907.8	34.7	95.5	385.2	28.9	32.2	11.3	5914.00
.08	1.65	7.55	1.20	.100	.035	.100	.000	5911.00	1258.65
.001895	50.	50.	50.	2	0	0	.00	81.17	1339.82

CCHV= .100 CEHV= .300

*SECNO 2975.000

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL.CWSEL

3693 PROBABLE MINIMUM SPECIFIC ENERGY

3720 CRITICAL DEPTH ASSUMED

2975.000	7.78	5920.78	5920.78	.00	5923.15	2.37	1.30	.46	5916.00
3100.0	520.3	2470.2	109.5	166.4	179.5	42.6	36.0	12.1	5916.00
.09	3.13	13.76	2.57	.100	.035	.100	.000	5913.00	1259.08
.008260	360.	375.	390.	20	15	0	.00	93.27	1352.34

*SECNO 3550.000

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE. KRATIO = 1.49

RIO GRANDE STREET EXTENDED

3550.000	8.08	5924.88	.00	.00	5926.31	1.44	3.07	.09	5920.00
3090.0	46.3	2997.4	46.3	29.6	306.8	29.6	41.0	13.1	5920.00
.11	1.56	9.77	1.56	.100	.035	.100	.000	5916.80	1132.82
.003721	575.	575.	585.	2	0	0	.00	64.35	1197.18

SECNO	DEPTH	CWSEL	CRIMS	WSELK	EG	HV	HL	QLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VDL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	MTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*SECNO 3925.000

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL.CWSEL

3693 PROBABLE MINIMUM SPECIFIC ENERGY

3720 CRITICAL DEPTH ASSUMED

3925.000	9.17	5928.97	5928.97	.00	5932.27	3.30	1.98	.56	5922.00
3090.0	177.6	2686.7	225.8	60.7	172.4	75.9	43.9	13.7	5922.00
.12	2.93	15.59	2.98	.100	.035	.100	.000	5919.80	1122.58
.008102	385.	375.	375.	20	8	0	.00	59.20	1181.78

*SECNO 4275.000

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE. KRATIO = 1.75

4275.000	9.42	5932.72	.00	.00	5933.97	1.25	1.50	.20	5926.00
3090.0	104.7	2918.4	66.8	63.6	316.4	42.4	46.9	14.2	5926.00
.13	1.65	9.22	1.58	.100	.035	.100	.000	5923.30	1301.08
.002636	350.	350.	350.	2	0	0	.00	66.53	1367.61

*SECNO 4725.000

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL.CWSEL

3693 PROBABLE MINIMUM SPECIFIC ENERGY

3720 CRITICAL DEPTH ASSUMED

4725.000	8.18	5935.68	5935.68	.00	5938.96	3.29	1.97	.61	5930.00
3065.0	92.2	2877.7	95.1	35.2	191.9	36.2	50.4	14.8	5930.00
.13	2.62	15.00	2.63	.100	.035	.100	.000	5927.50	1227.59
.008763	450.	450.	450.	20	11	0	.00	50.18	1277.77

CCHV= .300 CEHV= .500

*SECNO 4865.000

SECNO	DEPTH	CWSEL	CRWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
0	QLOB	BCH	BRQB	ALOB	ACH	ARQB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VRQB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLQB	ITRIAL	IDC	ICNT	CORAR	TOPWID	ENDST

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE. KRATIO = 2.02

3495 OVERRANK AREA ASSUMED NON-EFFECTIVE. ELLEA= 5948.00 ELREA= 5948.00

OUTFALL COSTILLA STREET CULVERT

4865.000	9.27	5937.97	.00	.00	5939.90	1.94	.54	.41	5948.00
3065.0	.0	3065.0	.0	.0	274.5	.0	51.3	14.9	5948.00
.14	.00	11.16	.00	.000	.020	.000	.000	5928.70	1412.99
.002141	130.	140.	140.	5	0	0	.00	39.22	1452.21

SPECIAL CULVERT

SC	CUNG	CUNV	ENTLC	COFO	RDLEN	RISE	SPAN	CULVLN	CHRT	SCL	ELCHU	ELCHD
1		.020	.40	3.00	.00	10.80	18.10	200.00	8	1	5929.90	5929.70

CHART 8 - BOX CULVERT WITH FLARED WINGWALLS; NO INLET TOP EDGE BEVEL

SCALE 1 - WINGWALLS FLARED 30 TO 75 DEGREES

5130. EGIC= 5948.08..MAY BE TOO LARGE IF INLET CONTROLS.

*SECNO 5065.000

SPECIAL CULVERT INLET CONTROL

EGIC = 5948.081 EGOC = 5946.083 PCWSE= 5937.967 ELTRD= 5950.100

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE. KRATIO = 1.43

SPECIAL CULVERT

EGIC	EGOC	H4	QWEIR	QCULV	VCH	ACULV	ELTRD	WEIRLN
5948.08	5946.08	8.18	0.	3065.	9.059	195.5	5950.10	0.

3495 OVERRANK AREA ASSUMED NON-EFFECTIVE. ELLEA= 5950.10 ELREA= 5950.10

ENTRANCE COSTILLA STREET CULVERT

5065.000	16.91	5946.81	.00	.00	5948.08	1.27	8.18	.00	5929.90
3065.0	.0	3065.0	.0	.0	338.3	.0	52.7	15.0	5929.90
.14	.00	9.06	.00	.000	.035	.000	.000	5929.90	1280.00
.001048	180.	200.	220.	2	0	0	.00	20.00	1300.00

SECNO	DEPTH	CWSEL	CRWS	WSELK	EG	HV	HL	QLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CDRAR	TOPWID	ENDST

*SECNO 5100.000

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE. KRATIO = 2.14

5100.000	16.91	5948.21	.00	.00	5948.42	.21	.01	.32	5934.00
3065.0	221.9	2344.9	498.2	126.3	578.4	252.5	53.2	15.1	5934.00
.15	1.76	4.05	1.97	.040	.035	.040	.000	5931.30	1222.23
.000228	35.	35.	35.	2	0	0	.00	88.30	1310.53

CCHV= .100 CEHV= .300

*SECNO 5550.000

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL

3693 PROBABLE MINIMUM SPECIFIC ENERGY

3720 CRITICAL DEPTH ASSUMED

5550.000	8.28	5949.28	5949.28	.00	5952.79	3.51	.30	.99	5944.00
3025.0	63.6	2931.1	30.3	25.4	192.1	14.0	59.3	15.8	5944.00
.16	2.51	15.26	2.17	.100	.035	.100	.000	5941.00	1065.39
.009279	455.	450.	440.	20	11	0	.00	39.89	1105.28

*SECNO 5805.000

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE. KRATIO = 2.43

5805.000	8.70	5953.20	.00	.00	5953.88	.67	.80	.28	5948.00
3025.0	35.0	2956.8	33.2	27.4	443.7	25.3	61.5	16.1	5948.00
.17	1.28	6.66	1.31	.100	.035	.100	.000	5944.50	1181.00
.001566	285.	255.	245.	3	0	0	.00	71.67	1252.67

CCHV= .300 CEHV= .500

*SECNO 5806.000

SECNO	DEPTH	CWSEL	CRWS	WSELK	EG	HV	HL	DLOSS	L-BANK ELEV
0	DLOB	DCH	GROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

3301 HV CHANGED MORE THAN HVINE

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE. KRATIO = .24

3370 NORMAL BRIDGE. NRD= 15 MIN ELTRD= 5952.50 MAX ELLC= 5950.00

OUTFALL UTILITY CROSSING

5806.000	7.98	5952.48	5949.74	.00	5954.61	2.13	.00	.73	5948.00
3025.0	7.5	3009.9	7.5	5.0	256.5	5.0	61.5	16.1	5948.00
.17	1.51	11.73	1.51	.100	.035	.100	.000	5944.50	1181.91
.027186	1.	1.	1.	6	9	0	-166.99	70.15	1252.06

*SECNO 5809.000

3301 HV CHANGED MORE THAN HVINS

3370 NORMAL BRIDGE. NRD= 15 MIN ELTRD= 5952.50 MAX ELLC= 5950.00

ENTRANCE UTILITY CROSSING

5809.000	8.98	5953.48	.00	.00	5954.90	1.42	.08	.21	5948.00
3025.0	19.2	2988.0	17.8	11.6	311.0	10.7	61.5	16.1	5948.00
.17	1.66	9.61	1.67	.100	.035	.100	.000	5944.50	1180.64
.023456	3.	3.	3.	9	0	0	-172.86	72.27	1252.91

*SECNO 5810.000

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE. KRATIO = 5.20

5810.000	10.22	5954.72	.00	.00	5955.19	.47	.00	.29	5948.00
3025.0	50.9	2930.6	43.4	55.8	527.1	37.9	61.5	16.1	5948.00
.17	.91	5.56	1.15	.100	.035	.100	.000	5944.50	1142.19
.000867	1.	1.	1.	3	0	0	.00	111.74	1253.93

SECNO	DEPTH	CWSEL	CRWS	WSELK	EG	HV	HL	DLOSS	L-BANK ELEV
B	QLOB	QCH	QROB	ALOB	ACH	AROB	VDL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	YNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*SECNO 6025.000

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL

3693 PROBABLE MINIMUM SPECIFIC ENERGY

3720 CRITICAL DEPTH ASSUMED

6025.000	9.80	5956.20	5956.20	.00	5959.99	3.78	.43	1.66	5950.00
3025.0	61.0	2857.1	106.9	24.1	178.1	38.5	63.6	16.5	5950.00
.17	2.54	16.04	2.78	.100	.035	.100	.000	5946.40	1232.24
.008956	220.	215.	215.	20	8	0	.00	40.17	1272.41

CCHV= .100 CEHV= .300

*SECNO 6175.000

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE. KRATIO = 2.59

CUCHARRUS STREET EXTENDED

6475.000	11.66	5960.66	.00	.00	5961.53	.87	1.25	.29	5952.00
3025.0	33.5	2964.6	26.9	31.3	393.2	26.8	67.2	16.9	5952.00
.19	1.07	7.54	1.00	.100	.035	.100	.000	5949.00	1217.78
.001333	435.	450.	475.	2	0	0	.00	48.41	1266.19

*SECNO 7025.000

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE. KRATIO = .63

7025.000	9.81	5961.22	.00	.00	5962.87	1.66	1.11	.24	5954.00
3040.0	79.4	2904.6	56.0	43.4	275.0	32.6	72.3	17.6	5954.00
.20	1.83	10.56	1.72	.100	.035	.100	.000	5951.40	1227.97
.003365	540.	550.	560.	3	0	0	.00	51.05	1279.02

CCHV= .300 CEHV= .500

SECNO	DEPTH	CWSEL	CRWS	WSELK	EG	HV	HL	DLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

#SECNO 7155.000

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY

3720 CRITICAL DEPTH ASSUMED

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE. ELLEA= 5964.00 ELREA= 5964.00

OUTFALL EL PASO STREET CULVERT

7155.000	8.92	5960.92	5960.92	.00	5965.43	4.51	.66	1.42	5952.00
3040.0	.0	3040.0	.0	.0	178.4	.0	73.1	17.7	5952.00
.20	.00	17.04	.00	.000	.035	.000	.000	5952.00	1335.00
.008699	115.	130.	145.	4	11	0	.00	20.00	1355.00

SPECIAL CULVERT

SC	CUNO	CUNV	ENTLC	COFO	RDLN	RISE	SPAN	CULVLN	CHRT	SCL	ELCHU	ELCHD
1		.020	.50	3.00	.00	7.80	17.50	125.00	8	3	5953.20	5952.00

CHART 8 - BOX CULVERT WITH FLARED WINGWALLS; NO INLET TOP EDGE BEVEL

SCALE 3 - WINGWALLS FLARED 0 DEGREES (SIDES EXTENDED STRAIGHT)

5130. EGIC= 5980.54..MAY BE TOO LARGE IF INLET CONTROLS.

5135. EGOC= 5975.47 ..MAY BE TOO LARGE IF OUTLET CONTROLS.

#SECNO 7280.000

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE. KRATIO = 2.38

SPECIAL CULVERT

EGIC	EGOC	H4	QWEIR	QCULV	VCH	ACULV	ELTRD	WEIRLN
5980.54	5975.47	2.23	1162.	1889.	9.351	136.5	5965.00	160.

ENTRANCE EL PASO STREET CULVERT

7280.000	13.34	5966.54	.00	.00	5967.66	1.12	2.23	.00	5953.20
3040.0	330.5	2495.2	214.4	237.7	266.8	120.3	74.2	17.9	5953.20
.21	1.39	9.35	1.78	.100	.035	.100	.000	5953.20	1154.17
.001533	120.	125.	130.	3	0	0	.00	139.86	1293.03

SECNO	DEPTH	CWSEL	CRWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
0	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XML	XMCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*SECNO 7325.000

7325.000	13.73	5967.13	.00	.00	5967.84	.71	.05	.12	5956.00
3040.0	129.7	2800.8	109.6	114.6	399.0	88.6	74.8	18.0	5956.00
.21	1.13	7.02	1.24	.100	.035	.100	.000	5953.40	1145.27
.000916	40.	45.	50.	2	0	0	.00	100.64	1245.91

CCHV= .100 CEHV= .300

*SECNO 7475.000

7475.000	13.43	5967.33	.00	.00	5967.97	.65	.13	.01	5956.00
3040.0	34.6	2986.7	18.6	40.0	459.1	26.7	76.8	18.3	5956.00
.22	.87	6.51	.70	.100	.035	.100	.000	5953.90	1052.93
.000784	160.	150.	140.	0	0	0	.00	46.79	1099.72

*SECNO 7590.000

7590.000	12.96	5967.36	.00	.00	5968.10	.74	.10	.03	5958.00
3040.0	8.1	3023.9	8.1	13.7	435.6	13.7	78.1	18.4	5958.00
.22	.59	6.94	.59	.100	.035	.100	.000	5954.40	1097.07
.001010	125.	115.	110.	2	0	0	.00	40.85	1137.93

CCHV= .300 CEHV= .500

*SECNO 7680.000

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE. KRATID = .66

OUTFALL PIKES PEAK AVENUE CULVERT

7680.000	12.70	5967.40	.00	.00	5968.33	.93	.13	.09	5976.00
3040.0	.0	3040.0	.0	.0	393.2	.0	79.0	18.5	5976.00
.23	.00	7.73	.00	.000	.035	.000	.000	5954.70	1144.04
.002294	90.	90.	90.	2	0	0	.00	36.93	1180.96

CCHV= .100 CEHV= .300

*SECNO 7750.000

5976.80 TRIALS NOT ENOUGH FOR CRITICAL DEPTH9999999.009999999.00 6032.00 5975.90 9999999.00

3301 HV CHANGED MORE THAN HVINE

3685 20 TRIALS ATTEMPTED WSEL.CWSEL

3710 WSEL ASSUMED BASED ON MIN DIFF

PIKES PEAK AVENUE - DISCHARGES ARE OVERFLOW OF PIKES PEAK AVENUE /
EL PASO STREET / KIOWA STREET CULVERT SYSTEM ONLY

7750.000	.00	5975.90	.00	.00	5975.90	.00	.16	.09	5977.00
.0	.0	.0	.0	.0	.0	.0	79.3	19.5	5977.00
177.66	.00	.01	.00	.000	.000	.000	.000	5975.90	1224.90
.009944	80.	70.	70.	20	80	0	.00	.20	1225.10

*SECNO 8000.000

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE. KRATIO = *****

8000.000	1.90	5975.90	.00	.00	5975.90	.00	.00	.00	5976.00
.0	.0	.0	.0	.0	90.6	.0	79.6	18.8	5976.00
2238.67	.00	.00	.00	.000	.040	.000	.000	5974.00	1273.63
.000000	260.	250.	240.	2	0	0	.00	95.17	1368.79

*SECNO 8265.000

3685 20 TRIALS ATTEMPTED WSEL.CWSEL

3710 WSEL ASSUMED BASED ON MIN DIFF

3693 PROBABLE MINIMUM SPECIFIC ENERGY

3720 CRITICAL DEPTH ASSUMED

8265.000	.00	5978.00	5978.00	.00	5978.00	.00	.00	.00	5980.00
.0	.0	.0	.0	.0	.1	.0	79.8	19.4	5980.00
2251.67	.00	.01	.00	.000	.040	.000	.000	5978.00	1149.98
.001902	220.	265.	180.	20	41	0	.00	115.04	1265.02

*SECNO 8450.000

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE. KRATIO = *****

KIOWA STREET

8450.000	.50	5978.00	.00	.00	5978.00	.00	.00	.00	5980.00
.0	.0	.0	.0	.0	15.3	.0	79.9	20.0	5980.00
5583.68	.00	.00	.00	.000	.040	.000	.000	5977.50	1229.92
.000000	60.	185.	350.	2	0	0	.00	180.20	1410.12

T1 SHOOKS RUN DRAINAGE BASIN PLANNING STUDY WILSON & COMPANY 90-807

T2 FOUNTAIN CREEK TO KIOWA STREET

T3 EXISTING CONDITION 100-YEAR SREA.DAT

J1	ICHECK	ING	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	0	3	0	0	-1	0	0	0	0	0
J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	15	0	-1	0	0	0	0	0	0	0

SECNO	DEPTH	CWSEL	CRWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	YNL	YNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CDRAR	TOPWID	ENDST

*PROF 2

CCHV= .100 CEHV= .300

*SECNO 50.000

209% WSEL NOT GIVEN. AVG OF MAX. MIN USED

3265 DIVIDED FLOW

3720 CRITICAL DEPTH ASSUMED

CONFLUENCE WITH FOUNTAIN CREEK

50.000	9.85	5896.95	5896.95	.00	5898.37	1.42	.00	.00	5890.00
6840.0	2341.5	3636.0	862.5	984.4	280.9	444.6	.0	.0	5890.00
.00	2.38	12.94	1.94	.100	.035	.100	.000	5887.10	1007.63
.005038	0.	0.	0.	0	10	0	.00	677.09	1771.84

*SECNO 100.000

3265 DIVIDED FLOW

3685 20 TRIALS ATTEMPTED WSEL.CWSEL

3693 PROBABLE MINIMUM SPECIFIC ENERGY

3720 CRITICAL DEPTH ASSUMED

100.000	10.20	5897.50	5897.50	.00	5898.70	1.20	.26	.02	5890.00
6840.0	3167.8	2632.8	1039.4	1181.3	190.6	668.2	2.0	.8	5890.00
.00	2.68	13.82	1.56	.100	.035	.100	.000	5887.30	1006.24
.005724	50.	50.	40.	20	8	0	.00	908.14	1924.27

*SECNO 150.000

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE. KRATIO = 1.87

GILLETTE STREET EXTENDED

150.000	11.16	5898.66	.00	.00	5898.93	.27	.13	.09	5890.00
6840.0	3015.3	1678.0	2146.8	1755.1	210.7	1979.5	5.2	1.9	5890.00
.01	1.72	7.96	1.08	.100	.035	.100	.000	5887.50	1004.47
.001644	50.	50.	40.	4	0	0	.00	1326.89	2331.36

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	GLSSS	L-BANK ELEV
D	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XLN	YNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*SECNO 500.000

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL.CWSEL

3693 PROBABLE MINIMUM SPECIFIC ENERGY

3720 CRITICAL DEPTH ASSUMED

HUGO STREET EXTENDED

500.000	10.24	5899.24	5899.24	.00	5900.34	1.10	.81	.25	5892.00
6840.0	131.3	3992.1	2716.6	65.5	364.6	1797.9	29.5	10.9	5892.00
.02	2.00	10.95	1.51	.100	.035	.100	.000	5889.00	1011.90
.003609	350.	350.	340.	20	10	0	.00	961.36	1973.25

*SECNO 850.000

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL.CWSEL

3693 PROBABLE MINIMUM SPECIFIC ENERGY

3720 CRITICAL DEPTH ASSUMED

850.000	12.83	5903.33	5903.33	.00	5906.66	3.33	1.56	.67	5894.00
6840.0	176.5	5820.3	843.2	65.3	367.5	335.1	42.2	15.8	5894.00
.03	2.70	15.84	2.52	.100	.035	.100	.000	5890.50	1046.00
.005415	350.	350.	375.	20	11	0	.00	174.00	1220.00

*SECNO 975.000

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 2.06

END LAS VEGAS STREET BRIDGE DISSIPATOR

975.000	15.07	5905.97	.00	.00	5907.17	1.19	.29	.21	5890.90
6840.0	168.0	6129.5	542.5	106.2	663.0	416.1	44.9	16.3	5890.90
.03	1.58	9.24	1.30	.100	.035	.100	.000	5890.90	1026.90
.001274	130.	125.	120.	3	0	0	.00	193.10	1220.00

CCHV= .300 CEHV= .500

SECNO	DEPTH	CWSEL	CRIME	WSELK	EG	HV	HL	QLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

#SECNO 1010.000

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL.CWSEL

3693 PROBABLE MINIMUM SPECIFIC ENERGY

3720 CRITICAL DEPTH ASSUMED

3495 OVBANK AREA ASSUMED NON-EFFECTIVE. ELLEA= 5910.00 ELREA= 5910.00

OUTFALL LAS VEGAS STREET BRIDGE

1010.000	9.06	5906.26	5906.26	.00	5910.83	4.58	.05	1.69	5910.90
6840.0	.0	6840.0	.0	.0	398.4	.0	45.6	16.4	5910.90
.03	.00	17.17	.00	.000	.013	.000	.000	5897.20	1010.00
.001892	35.	35.	35.	20	14	0	.00	44.00	1054.00

SPECIAL CULVERT

SC	CUND	CUNV	ENTLC	COFO	RDLEN	RISE	SPAN	CULVLN	CHRT	SCL	ELCHU	ELCHD
1		.013	.40	3.00	.00	10.00	44.00	70.00	8	3	5897.70	5897.20

CHART 8 - BOX CULVERT WITH FLARED WINGWALLS; NO INLET TOP EDGE BEVEL

SCALE 3 - WINGWALLS FLARED 0 DEGREES (SIDES EXTENDED STRAIGHT)

#SECNO 1080.000

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE. KRATIO = 1.81

SPECIAL CULVERT

EGIC	EGOC	H4	QWEIR	QCULV	VCH	ACULV	ELTRD	WEIRLN
5916.09	5913.15	2.46	985.	5829.	11.480	440.0	5911.60	204.

3495 OVBANK AREA ASSUMED NON-EFFECTIVE. ELLEA= 5911.60 ELREA= 5911.60

ENTRANCE LAS VEGAS STREET BRIDGE

1080.000	13.54	5911.24	.00	.00	5913.29	2.05	2.45	.00	5910.70
6840.0	.0	6840.0	.0	.0	595.8	.0	46.4	16.5	5910.70
.03	.00	11.48	.00	.000	.013	.000	.000	5897.70	1120.00
.000580	70.	70.	70.	3	0	0	.00	44.00	1164.00

SECNO	DEPTH	CWSEL	CRWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
0	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

#SECNO 1120.000

3495 OVBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 5918.00 ELREA= 5918.00

OUTFALL A.T.S.F. & D.R.G.W. RAILROAD CULVERT

1120.000	12.73	5911.13	.00	.00	5913.45	2.32	.02	.13	5908.40
6840.0	.0	6840.0	.0	.0	560.2	.0	46.9	16.5	5908.40
.03	.00	12.21	.00	.000	.013	.000	.000	5898.40	1010.00
.000633	40.	40.	40.	2	0	0	.00	44.00	1054.00

SPECIAL CULVERT

SC	CUND	CUNV	ENTLC	COFO	RDLEN	RISE	SPAN	CULVLN	CHRT	SCL	ELCHU	ELCHD
2	.013	.40	2.60	.00	15.40	18.70	15.00	8	1	5898.70	5898.10	

CHART 8 - BOX CULVERT WITH FLARED WINGWALLS; NO INLET TOP EDGE BEVEL

SCALE 1 - WINGWALLS FLARED 30 TO 75 DEGREES

#SECNO 1165.000

SPECIAL CULVERT OUTLET CONTROL

EGIC = 5915.001 EGDC = 5915.703 PCWSE= 5911.131 ELTRD= 5923.200

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE. KRATIO = .51

SPECIAL CULVERT

EGIC	EGDC	H4	QWEIR	QCULV	VCH	ACULV	ELTRD	WEIRLN
5915.00	5915.70	2.26	0.	6840.	10.077	576.0	5923.20	0.

3495 OVBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 5923.20 ELREA= 5923.20

ENTRANCE A.T.S.F. & D.R.G.W. RAILROAD CULVERT

1165.000	15.43	5914.13	.00	.00	5915.70	1.58	2.26	.00	5908.70
6840.0	.0	6840.0	.0	.0	678.8	.0	47.5	16.5	5908.70
.04	.00	10.08	.00	.000	.035	.000	.000	5898.70	1010.00
.002417	45.	45.	45.	3	0	0	.00	44.00	1054.00

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	DLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*SECNO 1225.000

1225.000	15.59	5914.59	.00	.00	5915.90	1.31	.11	.08	5902.00
6810.0	240.4	5956.0	643.5	134.5	608.7	261.6	48.7	16.6	5902.00
.04	1.79	9.78	2.46	.100	.035	.100	.000	5899.00	1171.11
.001187	80.	60.	35.	2	0	0	.00	100.44	1271.55

CCHV= .100 CEHV= .300

*SECNO 1425.000

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL.CWSEL

3693 PROBABLE MINIMUM SPECIFIC ENERGY

3720 CRITICAL DEPTH ASSUMED

1425.000	14.95	5915.15	5915.15	.00	5921.07	5.92	.56	1.38	5902.00
6840.0	457.3	6020.5	362.3	120.0	290.0	99.7	52.2	17.0	5902.00
.04	3.81	20.76	3.63	.100	.035	.100	.000	5900.20	1006.74
.007049	210.	200.	200.	20	8	0	.00	53.43	1060.17

CCHV= .300 CEHV= .500

*SECNO 1560.000

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE. KRATIO = 2.32

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE. ELLEA= 5940.00 ELREA= 5940.00

OUTFALL ABANDONED RAILROAD CULVERT

1560.000	18.34	5921.74	.00	.00	5922.85	1.12	.35	1.44	5903.40
6840.0	.0	6840.0	.0	.0	806.9	.0	54.2	17.2	5927.00
.04	.00	8.48	.00	.000	.035	.000	.000	5903.40	1010.00
.001311	125.	135.	175.	1	0	0	.00	44.00	1054.00

SECNO	DEPTH	CWSEL	CRWS	WSELK	EG	HV	HL	QLOSS	L-BANK ELEV
0	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XLN	XLNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

SPECIAL CULVERT

SC	CUND	CUNV	ENTLC	COFO	RDLEN	RISE	SPAN	CULVLN	CHRT	SCL	ELCHU	ELCHD
2		.020	.50	3.00	.00	16.80	18.80	60.00	8	3	5903.80	5903.40

CHART 8 - BOX CULVERT WITH FLARED WINGWALLS; NO INLET TOP EDGE BEVEL
 SCALE 3 - WINGWALLS FLARED 0 DEGREES (SIDES EXTENDED STRAIGHT)

*SECNO 1620.000

SPECIAL CULVERT OUTLET CONTROL

EGIC = 5921.005 EBOC = 5924.646 PCWSE= 5921.740 ELTRD= 5943.800

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE. KRATIO = 1.45

SPECIAL CULVERT

EGIC	EBOC	H4	QWEIR	QCULV	VCH	ACULV	ELTRD	WEIRLN
5921.01	5924.65	1.79	0.	6840.	7.811	631.7	5943.80	0.

3495 OVBANK AREA ASSUMED NON-EFFECTIVE. ELLEA= 5943.80 ELREA= 5943.80

ENTRANCE ABANDONED RAILROAD CULVERT

1620.000	19.90	5923.70	.00	.00	5924.65	.95	1.79	.00	5903.80
6840.0	.0	6840.0	.0	.0	875.7	.0	55.4	17.2	5903.80
.05	.00	7.81	.00	.000	.035	.000	.000	5903.80	1010.00
.000627	60.	60.	60.	2	0	0	.00	44.00	1054.00

*SECNO 1675.000

3301 HV CHANGED MORE THAN HVINS

1675.000	20.12	5924.42	.00	.00	5924.83	.42	.03	.16	5912.00
6840.0	259.6	4654.5	1925.9	248.0	749.4	1378.3	57.5	17.4	5906.00
.05	1.05	6.21	1.40	.100	.035	.100	.000	5904.30	1085.07
.000462	55.	55.	55.	2	0	0	.00	293.36	1378.44

CCHV= .100 CEHV= .300

*SECNO 1900.000

1900.000	17.94	5924.44	.00	.00	5925.00	.56	.12	.04	5908.00
6860.0	475.6	4528.5	1855.8	305.2	620.4	1096.0	68.4	18.8	5908.00
.06	1.56	7.30	1.69	.100	.035	.100	.000	5906.50	1018.41
.000650	275.	225.	200.	2	0	0	.00	253.05	1271.46

SECNO	DEPTH	CWSEL	CRIMS	WSELK	EG	HV	HL	DLOSS	L-BANK ELEV
0	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	YNL	YNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

CCHV= .300 CEHV= .500

*SECNO 1975.000

1975.000	17.19	5924.49	.00	.00	5925.05	.57	.05	.00	5910.00
6860.0	852.1	4707.7	1300.2	509.2	653.5	768.3	71.7	19.2	5910.00
.07	1.68	7.20	1.69	.100	.035	.100	.000	5907.30	1025.97
.000708	90.	75.	65.	0	0	0	.00	258.08	1284.05

*SECNO 1976.000

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE. KRATIO = .51

3370 NORMAL BRIDGE. NRD= 16 MIN ELTRD= 5913.30 MAX ELLC= 5912.00

OUTFALL PEDESTRIAN BRIDGE

1976.000	17.48	5924.78	.00	.00	5925.12	.34	.00	.07	5910.00
6860.0	1063.4	3590.4	2206.2	472.7	601.3	784.4	71.8	19.2	5910.00
.07	2.25	5.97	2.81	.100	.035	.100	.000	5907.30	1024.79
.002672	1.	1.	1.	2	0	0	-139.48	274.30	1299.09

*SECNO 1984.000

3370 NORMAL BRIDGE. NRD= 16 MIN ELTRD= 5913.30 MAX ELLC= 5912.10

ENTRANCE PEDESTRIAN BRIDGE

1984.000	17.40	5924.80	.00	.00	5925.15	.35	.02	.00	5910.10
6860.0	1064.7	3610.2	2185.1	471.2	601.8	772.2	72.1	19.2	5910.10
.07	2.25	6.00	2.83	.100	.035	.100	.000	5907.40	1025.13
.002700	8.	8.	8.	0	0	0	-128.72	269.56	1294.69

*SECNO 1985.000

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE. KRATIO = 1.98

1985.000	17.30	5924.70	.00	.00	5925.25	.55	.00	.10	5910.10
6860.0	955.7	4693.1	1311.2	515.7	658.1	786.5	72.2	19.2	5910.10
.07	1.66	7.13	1.67	.100	.035	.100	.000	5907.40	1025.51
.000687	1.	1.	1.	2	0	0	.00	264.35	1289.86

SECNO	DEPTH	CWSEL	CRWS	WSELK	EG	HV	HL	DLOSS	L-BANK ELEV
B	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	YNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*SECNO 2050.000

2050.000	16.74	5924.74	.00	.00	5925.30	.56	.05	.00	5910.00
6860.0	2050.8	4270.6	538.6	1044.1	570.9	346.1	75.1	19.7	5910.00
.07	1.96	7.48	1.56	.100	.035	.100	.000	5908.00	1037.59
.000767	60.	65.	75.	2	0	0	.00	255.21	1292.80

CCHV= .100 CEHV= .300

*SECNO 2275.000

2275.000	15.96	5924.76	.00	.00	5925.57	.81	.19	.08	5912.00
6880.0	941.4	5598.4	340.2	528.7	702.1	208.2	83.9	20.8	5912.00
.08	1.78	7.97	1.63	.100	.035	.100	.000	5908.80	1187.42
.000955	220.	225.	240.	2	0	0	.00	187.93	1375.34

CCHV= .300 CEHV= .500

*SECNO 2400.000

3301 HV CHANGED MORE THAN HVINS

3495 OVBANK AREA ASSUMED NON-EFFECTIVE. ELLEA= 5928.00 ELREA= 5928.00

OUTFALL FOUNTAIN BOULEVARD CULVERT

2400.000	15.26	5924.56	.00	.00	5926.05	1.49	.14	.34	5909.30
6880.0	.0	6880.0	.0	.0	702.0	.0	87.0	21.1	5909.30
.08	.00	9.80	.00	.000	.035	.000	.000	5909.30	1305.00
.001407	120.	125.	130.	2	0	0	.00	46.00	1351.00

SPECIAL CULVERT

SC	CUNO	CUNV	ENTLC	COFO	RDLEN	RISE	SPAN	CULVLN	CHRT	SCL	ELCHU	ELCHD
2	.020	.40	3.00	.00	9.00	18.00	150.00	8	1	5910.30	5909.30	

CHART 8 - BOX CULVERT WITH FLARED WINGWALLS; NO INLET TOP EDGE BEVEL

SCALE 1 - WINGWALLS FLARED 30 TO 75 DEGREES

5130. EGIC= 5934.92..MAY BE TOO LARGE IF INLET CONTROLS.

5135. EGOC= 5937.20 ..MAY BE TOO LARGE IF OUTLET CONTROLS.

*SECNO 2550.000

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE. KRATIO = 2.16

SECNO	DEPTH	QWSEL	CRWS	WSELK	EG	HV	HL	QLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

SPECIAL CULVERT

EGIC	EGOC	H4	QWEIR	QCULV	VCH	ACULV	ELTRD	WEIRLN
5934.92	5937.20	6.89	1245.	5602.	5.832	324.0	5930.00	217.

ENTRANCE FOUNTAIN BOULEVARD CULVERT

2550.000	22.18	5932.48	.00	.00	5932.94	.46	6.89	.00	5910.30
6880.0	573.2	5950.2	356.6	773.0	1020.3	323.0	91.8	21.7	5910.30
.09	.74	5.83	1.10	.100	.035	.100	.000	5910.30	1154.18
.000303	150.	150.	150.	2	0	0	.00	300.95	1455.13

*SECNO 2600.000

2600.000	21.59	5932.59	.00	.00	5932.98	.39	.02	.02	5914.00
6880.0	1097.9	5366.6	415.5	1001.9	956.5	354.0	94.4	22.1	5914.00
.09	1.10	5.61	1.17	.100	.035	.100	.000	5911.00	1064.68
.000311	50.	50.	50.	2	0	0	.00	306.80	1371.47

CCHV= .100 CEHV= .300

*SECNO 2975.000

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE. KRATID = .65

2975.000	19.64	5932.64	.00	.00	5933.20	.56	.17	.05	5916.00
6880.0	2235.5	3771.6	872.9	1049.5	475.9	455.6	112.6	24.1	5916.00
.11	2.13	7.93	1.92	.100	.035	.100	.000	5913.00	1202.28
.000747	360.	375.	390.	2	0	0	.00	183.00	1385.27

*SECNO 3550.000

3301 HV CHANGED MORE THAN HVINS

RIO GRANDE STREET EXTENDED

3550.000	15.89	5932.69	.00	.00	5934.01	1.32	.58	.23	5920.00
6835.0	372.6	6054.5	407.9	201.3	619.7	197.7	132.5	26.0	5920.00
.13	1.85	9.77	2.06	.100	.035	.100	.000	5916.80	1113.27
.001457	575.	575.	585.	2	0	0	.00	100.77	1214.04

SECNO	DEPTH	CWSEL	CRWS	WSELK	EG	HV	HL	QLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

#SECNO 3925.000

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL.CWSEL

3693 PROBABLE MINIMUM SPECIFIC ENERGY

3720 CRITICAL DEPTH ASSUMED

3925.000	13.98	5933.78	5933.78	.00	5938.31	4.53	1.03	.96	5922.00
6835.0	666.9	5213.2	951.8	173.4	268.5	215.8	139.8	26.8	5922.00
.14	3.85	19.41	4.42	.100	.035	.100	.000	5919.80	1110.56
.006959	385.	375.	375.	20	11	0	.00	85.77	1196.33

#SECNO 4275.000

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE. KRATIO = 1.65

4275.000	14.56	5937.86	.00	.00	5939.94	2.07	1.38	.25	5926.00
6835.0	467.1	6069.8	298.1	197.8	496.1	131.9	145.7	27.5	5926.00
.15	2.36	12.24	2.26	.100	.035	.100	.000	5923.30	1286.65
.002548	350.	350.	350.	3	0	0	.00	90.59	1377.24

#SECNO 4725.000

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL.CWSEL

3693 PROBABLE MINIMUM SPECIFIC ENERGY

3720 CRITICAL DEPTH ASSUMED

4725.000	12.94	5940.44	5940.44	.00	5945.32	4.89	1.81	.84	5930.00
6765.0	428.9	5893.6	442.5	119.2	310.9	122.6	152.9	28.4	5930.00
.15	3.60	18.95	3.61	.100	.035	.100	.000	5927.50	1217.17
.007353	450.	450.	450.	20	11	0	.00	71.32	1288.49

CCHV= .300 CEHV= .500

#SECNO 4865.000

SECNO	DEPTH	CWSEL	CRIMS	WSELK	EG	HV	HL	DLOSS	L-BANK ELEV
0	DLOB	BCH	DROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE. KRATIO = 2.23

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE. ELLEA= 5948.00 ELREA= 5948.00

OUTFALL COSTILLA STREET CULVERT

4865.000	15.56	5944.26	.00	.00	5946.51	2.25	.39	.79	5948.00
6765.0	.0	6765.0	.0	.0	562.1	.0	151.6	28.6	5948.00
.16	.00	12.04	.00	.000	.020	.000	.000	5928.70	1404.84
.001483	130.	140.	140.	6	0	0	.00	52.25	1457.09

SPECIAL CULVERT

SC	CUNO	CUNV	ENTLC	COFB	RDLEN	RISE	SPAN	CULVLN	CHRT	SCL	ELCHU	ELCHD
1		.020	.40	3.00	.00	10.80	18.10	200.00	8	1	5929.90	5928.70

CHART 8 - BOX CULVERT WITH FLARED WINGWALLS; NO INLET TOP EDGE BEVEL

SCALE 1 - WINGWALLS FLARED 30 TO 75 DEGREES

5130. EGIC= 5984.73..MAY BE TOO LARGE IF INLET CONTROLS.

5135. EGOC= 5978.84 ..MAY BE TOO LARGE IF OUTLET CONTROLS.

*SECNO 5065.000

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE. KRATIO = 1.93

SPECIAL CULVERT

EGIC	EGOC	H4	QWEIR	QCULV	VCH	ACULV	ELTRD	WEIRLN
5984.73	5978.84	7.32	2912.	3886.	6.937	195.5	5950.10	269.

ENTRANCE COSTILLA STREET CULVERT

5065.000	23.48	5953.38	.00	.00	5953.83	.45	7.32	.00	5929.90
6765.0	786.4	3258.1	2720.5	374.4	469.6	739.9	159.6	29.3	5929.90
.17	2.10	6.94	3.68	.040	.035	.040	.000	5929.90	1144.34
.000397	180.	200.	220.	2	0	0	.00	272.50	1416.84

SECNO	DEPTH	CWSEL	CRWS	WSELK	EG	HV	HL	DLOSS	L-BANK ELEV
0	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TNA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XML	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*SECNO 5100.000

5100.000	22.16	5953.46	.00	.00	5953.86	.40	.01	.02	5934.00
6765.0	707.3	4189.4	1566.3	267.2	762.1	530.0	160.9	29.5	5934.00
.17	2.65	5.89	2.96	.040	.035	.040	.000	5931.30	1191.74
.000333	35.	35.	35.	2	0	0	.00	185.74	1377.48

CCHV= .100 CEHV= .300

*SECNO 5550.000

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL.CWSEL

3693 PROBABLE MINIMUM SPECIFIC ENERGY

3720 CRITICAL DEPTH ASSUMED

5550.000	13.49	5954.49	5954.49	.00	5959.71	5.22	.40	1.45	5944.00
6670.0	350.3	6145.6	174.1	100.0	322.2	59.6	171.4	30.8	5944.00
.18	3.50	19.08	2.92	.100	.035	.100	.000	5941.00	1055.93
.007279	455.	450.	410.	20	14	0	.00	73.54	1129.47

*SECNO 5805.000

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE. KRATIO = 3.21

5805.000	15.51	5960.01	.00	.00	5960.59	.58	.12	.46	5948.00
6670.0	845.4	5502.5	322.1	730.8	817.8	315.4	178.5	32.0	5948.00
.19	1.16	6.73	1.02	.100	.035	.100	.000	5944.50	1024.94
.000707	285.	255.	245.	3	0	0	.00	305.06	1330.00

CCHV= .300 CEHV= .500

*SECNO 5806.000

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE. KRATIO = .45

3370 NORMAL BRIDGE. NRD= 15 MIN ELTRD= 5952.50 MAX ELLC= 5950.00

OUTFALL UTILITY CROSSING

SECNO	DEPTH	CWSEL	CRIME	WSELK	EG	HV	HL	LOSS	L-BANK ELEV
0	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

5806.000	15.74	5960.24	.00	.00	5960.65	.41	.00	.05	5948.00
6670.0	1837.6	4227.1	605.3	751.5	682.3	316.8	178.5	32.0	5948.00
.19	2.45	6.20	1.91	.100	.035	.100	.000	5944.50	1021.98
.003422	1.	1.	1.	2	0	0	-175.00	308.02	1330.00

#SECNO 5807.000

3370 NORMAL BRIDGE. NRD= 15 MIN ELTRD= 5952.50 MAX ELLC= 5950.00

ENTRANCE UTILITY CROSSING

5809.000	15.75	5960.25	.00	.00	5960.66	.41	.01	.00	5948.00
6670.0	1838.5	4225.7	605.8	752.2	682.5	317.1	178.7	32.0	5948.00
.19	2.44	6.19	1.91	.100	.035	.100	.000	5944.50	1021.93
.003416	3.	3.	3.	0	0	0	-175.00	308.07	1330.00

#SECNO 5810.000

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE. KRATIO = 2.26

5810.000	15.68	5960.18	.00	.00	5960.73	.56	.00	.08	5948.00
6670.0	871.6	5463.5	334.9	759.4	827.2	330.1	178.7	32.0	5948.00
.19	1.15	6.60	1.01	.100	.035	.100	.000	5944.50	1022.78
.000670	1.	1.	1.	2	0	0	.00	307.22	1330.00

#SECNO 6025.000

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL.CWSEL

3693 PROBABLE MINIMUM SPECIFIC ENERGY

3720 CRITICAL DEPTH ASSUMED

6025.000	16.75	5963.15	5963.15	.00	5965.81	2.66	.29	1.05	5950.00
6670.0	1266.5	4843.0	560.5	653.8	317.0	165.5	186.3	33.5	5950.00
.19	1.94	15.28	3.39	.100	.035	.100	.000	5946.40	1000.00
.003765	220.	215.	215.	20	8	0	.00	281.57	1281.57

CCHV= .100 CEHV= .300

#SECNO 6475.000

SECNO	DEPTH	CWSEL	CRIMS	WSELK	EG	HV	HL	QLOSS	L-BANK ELEV
0	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

3301 HV CHANGED MORE THAN HVINS

CUCHARRUS STREET EXTENDED

6475.000	16.18	5965.18	5959.78	.00	5967.06	1.88	1.18	.08	5952.00
6670.0	312.1	6258.8	99.1	322.6	551.5	62.1	196.9	36.3	5952.00
.21	.97	11.35	1.60	.100	.035	.100	.000	5949.00	1002.04
.001924	435.	450.	475.	4	11	0	.00	267.38	1269.42

*SECNO 7025.000

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE. KRATIO = .70

7025.000	14.34	5965.74	.00	.00	5968.91	3.18	1.46	.39	5954.00
6650.0	313.7	6115.2	221.0	114.8	410.7	86.1	206.7	38.3	5954.00
.22	2.73	14.89	2.57	.100	.035	.100	.000	5951.40	1220.44
.003919	540.	550.	560.	3	0	0	.00	64.24	1284.67

CCHV= .300 CEHV= .500

*SECNO 7155.000

7185 MINIMUM SPECIFIC ENERGY

3720 CRITICAL DEPTH ASSUMED

OUTFALL EL PASO STREET CULVERT

7155.000	14.99	5966.99	5966.99	.00	5970.28	3.28	.52	.05	5952.00
6650.0	966.2	5001.3	682.5	430.3	299.9	187.4	208.9	38.7	5952.00
.22	2.25	16.68	3.64	.100	.035	.100	.000	5952.00	1167.67
.004172	115.	130.	145.	3	8	0	.00	212.32	1379.99

SPECIAL CULVERT

SC	CUND	CUNV	ENTLC	COFB	RDLEN	RISE	SPAN	CULVLN	CHRT	SCL	ELCHU	ELCHD
1		.020	.50	3.00	.00	7.80	17.50	125.00	8	3	5953.20	5952.00

CHART 8 - BOX CULVERT WITH FLARED WINGWALLS; NO INLET TOP EDGE BEVEL

SCALE 3 - WINGWALLS FLARED 0 DEGREES (SIDES EXTENDED STRAIGHT)

5130. EGIC= 6059.96..MAY BE TOO LARGE IF INLET CONTROLS.

5135. EGOC= 6036.59 ..MAY BE TOO LARGE IF OUTLET CONTROLS.

*SECNO 7280.000

3840 SECTION NOT HIGH ENOUGH 6059.956 6027.200 5953.200 6027.200 5965.375 6

SECNO	DEPTH	CWSEL	CRWS	WSELK	EG	HV	HL	QLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

SPECIAL CULVERT

EBIC	EGOC	H4	QWEIR	QCULV	VCH	ACULV	ELTRD	WEIRLN
6059.96	6036.59	-1.10	1508.	2162.	16.772	136.5	5965.00	216.

3685 20 TRIALS ATTEMPTED WSEL.CWSEL

3710 WSEL ASSUMED BASED ON MIN DIFF

3693 PROBABLE MINIMUM SPECIFIC ENERGY

ENTRANCE EL PASO STREET CULVERT

7280.000	15.03	5968.23	5968.12	.00	5971.57	3.34	.52	-.62	5953.20
6650.0	1114.1	5042.7	493.1	436.7	300.7	152.9	211.5	39.3	5953.20
.22	2.55	16.77	3.23	.100	.035	.100	.000	5953.20	1122.08
.001205	120.	125.	130.	20	5	0	.00	174.67	1296.75

1SECNO 7325.000

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE. KRATIO = 1.57

7325.000	17.16	5970.56	.00	.00	5972.20	1.64	.11	.51	5956.00
6650.0	733.2	5603.0	313.8	425.3	501.7	153.8	212.5	39.4	5956.00
.22	1.72	11.17	2.04	.100	.035	.100	.000	5953.40	1088.05
.001710	40.	45.	50.	4	0	0	.00	171.67	1259.72

CCHV= .100 CEHV= .300

1SECNO 7475.000

7475.000	16.72	5970.62	.00	.00	5972.54	1.92	.26	.08	5956.00
6650.0	102.2	6474.3	73.5	66.8	574.9	60.4	215.6	39.8	5956.00
.23	1.53	11.26	1.22	.100	.035	.100	.000	5953.90	1050.86
.001739	160.	150.	140.	2	0	0	.00	62.27	1113.13

1SECNO 7590.000

7590.000	16.24	5970.64	.00	.00	5972.85	2.21	.22	.09	5958.00
6650.0	26.6	6596.8	26.6	25.0	550.5	25.0	217.3	40.0	5958.00
.23	1.06	11.98	1.06	.100	.035	.100	.000	5954.40	1096.05
.002202	125.	115.	110.	2	0	0	.00	42.90	1138.95

SECNO	DEPTH	CWSEL	CRWS	WSELK	EG	HV	HL	QLOSS	L-BANK ELEV
0	QLOB	QCH	QROB	ALOB	ACH	AROB	VDL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XML	YNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

CCHV= .300 CEHV= .500
 *SECNO 7680.000

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE. KRATIO = .66

OUTFALL PIKES PEAK AVENUE CULVERT

7680.000	16.08	5970.78	.00	.00	5973.29	2.50	.29	.15	5976.00
6650.0	.0	6650.0	.0	.0	523.6	.0	218.4	40.1	5976.00
.23	.00	12.70	.00	.000	.035	.000	.000	5954.70	1142.45
.005040	90.	90.	90.	2	0	0	.00	40.10	1182.55

CCHV= .100 CEHV= .300
 *SECNO 7750.000

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL.CWSEL

3693 PROBABLE MINIMUM SPECIFIC ENERGY

3720 CRITICAL DEPTH ASSUMED

PIKES PEAK AVENUE - DISCHARGES ARE OVERFLOW OF PIKES PEAK AVENUE / EL PASO STREET / IOWA STREET CULVERT SYSTEM ONLY

7750.000	2.91	5978.81	5978.81	.00	5979.63	.82	.60	.17	5977.00
2890.0	415.1	2143.7	300.9	88.8	271.7	60.9	219.2	40.3	5977.00
.24	5.01	7.89	4.94	.100	.100	.100	.000	5975.90	1075.57
.089652	80.	70.	70.	20	25	0	.00	259.79	1335.36

*SECNO 8000.000

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE. KRATIO = 10.51

8000.000	6.26	5980.26	.00	.00	5980.38	.12	.68	.07	5976.00
2890.0	695.5	1687.8	505.7	332.4	526.9	250.0	223.6	42.1	5976.00
.26	2.10	3.20	2.02	.040	.040	.040	.000	5974.00	1126.27
.000812	250.	250.	240.	5	0	0	.00	357.08	1483.36

*SECNO 8265.000

SECNO	DEPTH	CWSEL	CRWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE. KRATIO = .30

8265.000	2.51	5980.51	.00	.00	5980.96	.46	.48	.10	5980.00
2890.0	1.2	2884.0	1.9	3.0	531.0	1.3	228.2	43.9	5980.00
.27	1.41	5.43	1.41	.040	.040	.040	.000	5978.00	1068.46
.008891	220.	265.	180.	4	0	0	.00	291.66	1360.13

*SECNO 8450.000

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE. KRATIO = 3.15

KIOWA STREET

8450.000	3.81	5981.31	.00	.00	5981.39	.07	.38	.04	5980.00
2890.0	9.0	2823.3	57.7	10.8	1277.0	68.8	232.3	45.9	5980.00
.30	.84	2.21	.84	.040	.040	.040	.000	5977.50	1108.60
.000895	60.	185.	350.	2	0	0	.00	576.36	1684.96

THIS RUN EXECUTED 12SEP92 23:02:05

HEC-2 WATER SURFACE PROFILES

Version 4.6.0: February 1991

NOTE- ASTERISK (*) AT LEFT OF CROSS-SECTION NUMBER INDICATES MESSAGE IN SUMMARY OF ERRORS LIST

TING CONDITION 10-YE

SUMMARY PRINTOUT TABLE 100

SECNO	EGLWC	ELLC	EGPRS	ELTRD	QPR	QWEIR	CLASS	H3	DEPTH	CWSEL	VCH	ES
-------	-------	------	-------	-------	-----	-------	-------	----	-------	-------	-----	----

TING CONDITION 10-YE

SUMMARY PRINTOUT TABLE 101

	SECNO	EGOC	ELLC	EGIC	ELTRD	QCULV	QWEIR	CLASS	H4	DEPTH	CWSEL	VCH	EG
*	1080.000	5906.72	5907.70	5906.72	5911.60	3050.00	.00	6.00	1.56	7.79	5905.49	8.89	5906.72
*	1080.000	5913.15	5907.70	5916.09	5911.60	5828.57	985.39	16.00	2.46	13.54	5911.24	11.48	5913.29
*	1165.000	5908.62	5914.10	5908.00	5923.20	3050.00	.00	7.00	1.72	9.00	5907.70	7.70	5908.62
*	1165.000	5915.70	5914.10	5915.00	5923.20	6840.00	.00	7.00	2.26	15.43	5914.13	10.08	5915.70
	1620.000	5914.29	5920.60	5913.74	5943.80	3050.00	.00	7.00	.00	10.09	5913.89	6.87	5914.62
*	1620.000	5924.65	5920.60	5921.01	5943.80	6840.00	.00	7.00	1.79	19.90	5923.70	7.81	5924.65
	2550.000	5920.61	5919.30	5920.21	5930.00	3100.00	.00	7.00	1.96	9.54	5919.84	7.06	5920.61
*	2550.000	5937.20	5919.30	5934.92	5930.00	5602.02	1245.01	17.00	6.89	22.18	5932.48	5.83	5932.94
*	5065.000	5946.08	5940.70	5948.08	5950.10	3065.00	.00	6.00	8.18	16.91	5946.81	9.06	5948.08
*	5065.000	5978.84	5940.70	5984.73	5950.10	3886.28	2912.32	16.00	7.32	23.48	5953.38	6.94	5953.83
*	7280.000	5975.47	5961.00	5980.54	5965.00	1889.17	1161.94	16.00	2.23	13.34	5966.54	9.35	5967.66
*	7280.000	6036.59	5961.00	6059.96	5965.00	2162.48	4507.82	16.00	-1.10	15.03	5968.23	16.77	5971.57

TING CONDITION 10-YE

SUMMARY PRINTOUT TABLE 105

	SECNO	CWSEL	HL	DLOSS	TOPWID	QLOB	QCH	GRDB
†	975.000	5901.03	.30	.23	67.18	53.62	2910.06	86.31
†	975.000	5905.97	.29	.21	193.10	167.96	6129.53	542.51
†	1010.000	5902.48	.05	1.02	44.00	.00	3050.00	.00
†	1010.000	5906.26	.05	1.69	44.00	.00	6840.00	.00
†	1080.000	5905.49	1.56	.00	44.00	.00	3050.00	.00
†	1080.000	5911.24	2.46	.00	44.00	.00	6840.00	.00
	1120.000	5905.36	.03	.15	44.00	.00	3050.00	.00
	1120.000	5911.13	.02	.13	44.00	.00	6840.00	.00
†	1165.000	5907.70	1.72	.00	44.00	.00	3050.00	.00
†	1165.000	5914.13	2.26	.00	44.00	.00	6840.00	.00
	1225.000	5907.79	.15	.06	70.60	37.79	2851.24	160.97
	1225.000	5914.59	.11	.08	100.44	240.43	5956.05	643.52
†	1425.000	5909.39	.83	.85	38.80	108.53	2855.49	85.98
†	1425.000	5915.15	.56	1.38	53.43	157.28	6020.45	362.26
†	1560.000	5913.95	.38	.96	44.00	.00	3050.00	.00
†	1560.000	5921.74	.35	1.44	44.00	.00	6840.00	.00
	1620.000	5913.89	.00	.00	44.00	.00	3050.00	.00
†	1620.000	5923.70	1.79	.00	44.00	.00	6840.00	.00
	1675.000	5913.90	.09	.09	93.14	3.92	2667.88	378.20
	1675.000	5924.42	.03	.16	293.36	259.60	4654.47	1925.93
	2275.000	5917.46	.16	.02	91.61	183.46	2869.91	46.63
	2275.000	5924.76	.19	.08	187.93	941.41	5598.42	340.18
	2400.000	5917.64	.26	.08	46.00	.00	3100.00	.00
	2400.000	5924.56	.14	.34	46.00	.00	6880.00	.00
	2550.000	5919.84	1.96	.00	46.00	.00	3100.00	.00
†	2550.000	5932.48	6.89	.00	300.95	573.22	5950.18	356.60
	2600.000	5919.89	.08	.03	81.17	157.50	2907.78	34.72
	2600.000	5932.59	.02	.02	306.80	1097.87	5366.60	415.53
†	4725.000	5935.68	1.97	.61	50.18	92.19	2877.68	95.13
†	4725.000	5940.44	1.81	.84	71.32	428.85	5893.64	442.51

	SECNO	CWSEL	HL	DLOSS	TOPWID	QLOB	QCH	QROB
*	4865.000	5937.97	.54	.41	39.22	.00	3065.00	.00
*	4865.000	5944.26	.39	.79	52.25	.00	6765.00	.00
*	5065.000	5946.81	8.18	.00	20.00	.00	3065.00	.00
*	5065.000	5953.38	7.32	.00	272.50	786.38	3258.09	2720.52
*	5100.000	5948.21	.01	.32	88.30	221.93	2344.92	498.16
	5100.000	5953.46	.01	.02	185.74	707.30	4489.42	1568.28

*	7025.000	5961.22	1.11	.24	51.05	79.44	2904.58	55.98
*	7025.000	5965.74	1.46	.39	64.24	313.71	6115.24	221.05
*	7155.000	5960.92	.66	1.42	20.00	.00	3040.00	.00
*	7155.000	5966.99	.52	.05	212.32	966.16	5001.29	682.54
*	7280.000	5966.54	2.23	.00	138.86	330.48	2495.17	214.36
*	7280.000	5968.23	.52	-.62	174.67	1114.12	5042.73	493.15
	7325.000	5967.13	.05	.12	100.64	129.68	2800.75	109.57
*	7325.000	5970.56	.11	.51	171.67	733.21	5603.01	313.78

TING CONDITION 10-YE

SUMMARY PRINTOUT TABLE 150

	SECND	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRWS	EG	10*KS	VCH	AREA	.01K
#	50.000	.00	.00	.00	5887.10	3050.00	5894.67	5894.67	5896.09	51.76	10.90	645.26	423.94
#	50.000	.00	.00	.00	5887.10	6840.00	5896.95	5896.95	5898.37	50.38	12.94	1709.86	963.71
#	100.000	50.00	.00	.00	5887.30	3050.00	5895.67	5895.67	5896.99	55.71	11.82	784.61	408.64
#	100.000	50.00	.00	.00	5887.30	6840.00	5897.50	5897.50	5898.70	57.24	13.82	2040.10	904.11
#	150.000	50.00	.00	.00	5887.50	3050.00	5896.91	.00	5897.22	15.91	6.94	1844.42	764.58
#	150.000	50.00	.00	.00	5887.50	6840.00	5898.66	.00	5898.93	16.44	7.96	3945.24	1686.89
#	500.000	350.00	.00	.00	5889.00	3050.00	5896.93	5895.79	5898.49	47.98	10.40	495.15	440.32
#	500.000	350.00	.00	.00	5889.00	6840.00	5899.24	5899.24	5900.34	36.09	10.95	2228.11	1138.60
	850.000	350.00	.00	.00	5890.50	3050.00	5898.17	5898.02	5901.14	87.54	13.99	247.75	325.99
#	850.000	350.00	.00	.00	5890.50	6840.00	5903.33	5903.33	5906.66	54.15	15.84	767.92	929.48
#	975.000	125.00	.00	.00	5890.90	3050.00	5901.03	.00	5901.67	10.78	6.53	563.28	929.15
#	975.000	125.00	.00	.00	5890.90	6840.00	5905.97	.00	5907.17	12.74	9.24	1185.34	1916.63
#	1010.000	35.00	.00	.00	5897.20	3050.00	5902.48	5902.48	5905.16	19.08	13.12	232.46	698.33
#	1010.000	35.00	.00	.00	5897.20	6840.00	5906.26	5906.26	5910.83	18.92	17.17	398.45	1572.57
#	1080.000	70.00	5911.60	5907.70	5897.70	3050.00	5905.49	.00	5906.72	5.87	8.89	342.93	1258.96
#	1080.000	70.00	5911.60	5907.70	5897.70	6840.00	5911.24	.00	5913.29	5.80	11.48	595.83	2839.49
	1120.000	40.00	.00	.00	5898.40	3050.00	5905.36	.00	5906.90	8.22	9.95	306.54	1064.03
	1120.000	40.00	.00	.00	5898.40	6840.00	5911.13	.00	5913.45	6.33	12.21	560.16	2719.63
#	1165.000	45.00	5923.20	5914.10	5898.70	3050.00	5907.70	.00	5908.62	27.78	7.70	395.94	578.68
#	1165.000	45.00	5923.20	5914.10	5898.70	6840.00	5914.13	.00	5915.70	24.17	10.08	578.78	1391.27
	1225.000	60.00	.00	.00	5899.00	3050.00	5907.79	.00	5908.84	24.47	8.46	448.19	616.59
	1225.000	60.00	.00	.00	5899.00	6840.00	5914.59	.00	5915.90	14.87	9.78	1004.76	1773.97
#	1425.000	200.00	.00	.00	5900.20	3050.00	5909.39	5909.39	5913.28	85.60	16.33	244.33	329.66
#	1425.000	200.00	.00	.00	5900.20	6840.00	5915.15	5915.15	5921.07	70.49	20.76	509.73	814.70
#	1560.000	135.00	.00	.00	5903.40	3050.00	5913.95	.00	5914.62	13.81	6.58	463.87	820.64
#	1560.000	135.00	.00	.00	5903.40	6840.00	5921.74	.00	5922.85	13.11	8.48	806.93	1888.89
	1620.000	60.00	5943.80	5920.60	5903.80	3050.00	5913.89	.00	5914.62	12.01	6.87	443.97	880.26
#	1620.000	60.00	5943.80	5920.60	5903.80	6840.00	5923.70	.00	5924.65	6.27	7.81	875.66	2730.56
	1675.000	55.00	.00	.00	5904.30	3050.00	5913.90	.00	5914.80	23.77	8.13	524.19	625.55
	1675.000	55.00	.00	.00	5904.30	6840.00	5924.42	.00	5924.83	4.62	6.21	2375.62	3181.48
	1900.000	225.00	.00	.00	5906.50	3075.00	5914.07	5912.94	5915.76	46.78	10.90	401.07	449.59
	1900.000	225.00	.00	.00	5906.50	6860.00	5924.44	.00	5925.00	6.50	7.30	2021.62	2690.11

SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIMS	EG	10*KS	VCH	AREA	.01K
1975.000	75.00	.00	.00	5907.30	3075.00	5914.46	.00	5916.15	58.30	10.97	395.43	402.71
1975.000	75.00	.00	.00	5907.30	6860.00	5924.49	.00	5925.05	7.08	7.20	1929.96	2577.55
* 1976.000	1.00	5913.30	5912.00	5907.30	3075.00	5915.41	5915.41	5917.16	363.80	11.47	369.74	161.22
* 1976.000	1.00	5913.30	5912.00	5907.30	6860.00	5924.78	.00	5925.12	26.78	5.97	1858.32	1325.68
* 1984.000	8.00	5913.30	5912.10	5907.40	3075.00	5916.67	.00	5917.60	157.17	8.62	510.18	245.28
1984.000	8.00	5913.30	5912.10	5907.40	6860.00	5924.80	.00	5925.15	27.00	6.00	1845.19	1320.20
* 1985.000	1.00	.00	.00	5907.40	3075.00	5916.98	.00	5917.67	16.76	7.30	673.36	751.11
* 1985.000	1.00	.00	.00	5907.40	6860.00	5924.70	.00	5925.25	6.87	7.13	1960.32	2516.32
2050.000	65.00	.00	.00	5908.00	3075.00	5917.06	.00	5917.83	20.14	7.93	682.51	685.25
2050.000	65.00	.00	.00	5908.00	6860.00	5924.74	.00	5925.30	7.67	7.48	1961.11	2477.33
2275.000	225.00	.00	.00	5908.80	3100.00	5917.46	.00	5918.31	20.56	7.68	522.41	683.70
2275.000	225.00	.00	.00	5908.80	6880.00	5924.76	.00	5925.57	9.55	7.97	1439.03	2226.26
2400.000	125.00	.00	.00	5909.30	3100.00	5917.64	.00	5918.65	21.42	8.08	383.59	669.76
2400.000	125.00	.00	.00	5909.30	6880.00	5924.56	.00	5926.05	14.07	9.80	702.04	1834.09
2550.000	150.00	5930.00	5919.30	5910.30	3100.00	5919.84	.00	5920.61	13.64	7.06	439.20	839.30
* 2550.000	150.00	5930.00	5919.30	5910.30	6880.00	5932.48	.00	5932.94	3.03	5.83	2116.33	3954.61
2600.000	50.00	.00	.00	5911.00	3100.00	5919.89	.00	5920.72	18.95	7.55	509.59	712.12
2600.000	50.00	.00	.00	5911.00	6880.00	5932.59	.00	5932.98	3.11	5.61	2312.48	3900.17
* 2975.000	375.00	.00	.00	5913.00	3100.00	5920.78	5920.78	5923.15	82.60	13.76	388.56	341.09
* 2975.000	375.00	.00	.00	5913.00	6880.00	5932.64	.00	5933.20	7.47	7.93	1980.97	2517.63
* 3550.000	575.00	.00	.00	5916.80	3090.00	5924.88	.00	5926.31	37.21	9.77	366.09	506.58
3550.000	575.00	.00	.00	5916.80	6835.00	5932.69	.00	5934.01	14.57	9.77	1018.74	1790.44
* 3925.000	375.00	.00	.00	5919.80	3090.00	5928.97	5928.97	5932.27	81.02	15.59	308.91	343.29
* 3925.000	375.00	.00	.00	5919.80	6835.00	5933.78	5933.78	5938.31	69.59	19.41	657.67	819.36
* 4275.000	350.00	.00	.00	5923.30	3090.00	5932.72	.00	5933.97	26.36	9.22	422.47	601.79
* 4275.000	350.00	.00	.00	5923.30	6835.00	5937.86	.00	5939.94	25.48	12.24	825.70	1354.15
* 4725.000	450.00	.00	.00	5927.50	3065.00	5935.68	5935.68	5938.96	87.63	15.00	263.34	327.42
* 4725.000	450.00	.00	.00	5927.50	6765.00	5940.44	5940.44	5945.32	73.53	18.95	552.67	788.93
* 4865.000	140.00	.00	.00	5928.70	3065.00	5937.97	.00	5939.90	21.41	11.16	274.55	662.45
* 4865.000	140.00	.00	.00	5928.70	6765.00	5944.26	.00	5946.51	14.83	12.04	562.09	1756.58
* 5065.000	200.00	5950.10	5940.70	5929.90	3065.00	5946.81	.00	5948.08	10.48	9.06	338.33	946.69
* 5065.000	200.00	5950.10	5940.70	5929.90	6765.00	5953.38	.00	5953.83	3.97	6.94	1583.88	3395.37
* 5100.000	35.00	.00	.00	5931.30	3065.00	5948.21	.00	5948.42	2.28	4.05	957.20	2030.51
5100.000	35.00	.00	.00	5931.30	6765.00	5953.46	.00	5953.86	3.33	5.89	1559.32	3706.75

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRINS	EG	10*KS	VCH	AREA	.01K
#	5550.000	450.00	.00	.00	5941.00	3025.00	5949.28	5949.28	5952.79	92.79	15.26	231.45	314.03
#	5550.000	450.00	.00	.00	5941.00	6670.00	5954.49	5954.49	5959.71	72.79	19.08	481.74	781.80
#	5805.000	255.00	.00	.00	5944.50	3025.00	5953.20	.00	5953.88	15.66	6.66	196.42	764.30
#	5805.000	255.00	.00	.00	5944.50	6670.00	5960.01	.00	5960.59	7.07	6.73	1863.99	2509.01
#	5806.000	1.00	5952.50	5950.00	5944.50	3025.00	5952.48	5949.74	5954.61	271.86	11.73	266.50	183.47
#	5806.000	1.00	5952.50	5950.00	5944.50	6670.00	5960.24	.00	5960.65	34.22	6.20	1750.58	1140.22
	5809.000	3.00	5952.50	5950.00	5944.50	3025.00	5953.48	.00	5954.90	234.56	9.61	333.27	197.52
	5809.000	3.00	5952.50	5950.00	5944.50	6670.00	5960.25	.00	5960.66	34.16	6.19	1751.79	1141.19
#	5810.000	1.00	.00	.00	5944.50	3025.00	5954.72	.00	5955.19	8.67	5.56	620.80	1027.58
#	5810.000	1.00	.00	.00	5944.50	6670.00	5960.18	.00	5960.73	6.70	6.60	1916.76	2575.93
#	6025.000	215.00	.00	.00	5946.40	3025.00	5956.20	5956.20	5959.99	89.56	16.04	240.64	319.65
#	6025.000	215.00	.00	.00	5946.40	6670.00	5963.15	5963.15	5965.81	37.65	15.28	1136.23	1087.02
#	6475.000	450.00	.00	.00	5949.00	3025.00	5960.66	.00	5961.53	13.33	7.54	451.23	828.40
	6475.000	450.00	.00	.00	5949.00	6670.00	5965.18	5959.78	5967.06	19.24	11.35	936.16	1520.72
#	7025.000	550.00	.00	.00	5951.40	3040.00	5961.22	.00	5962.87	33.65	10.56	350.97	524.10
#	7025.000	550.00	.00	.00	5951.40	6650.00	5965.74	.00	5968.91	39.19	14.89	611.60	1062.31
#	7155.000	130.00	.00	.00	5952.00	3040.00	5960.92	5960.92	5965.43	86.99	17.04	178.45	325.95
#	7155.000	130.00	.00	.00	5952.00	6650.00	5966.99	5966.99	5970.28	41.72	16.68	917.60	1029.56
#	7280.000	125.00	5965.00	5961.00	5953.20	3040.00	5966.54	.00	5967.66	15.33	9.35	624.75	776.47
#	7280.000	125.00	5965.00	5961.00	5953.20	6650.00	5968.23	5968.12	5971.57	42.05	16.77	890.22	1025.48
	7325.000	45.00	.00	.00	5953.40	3040.00	5967.13	.00	5967.84	9.16	7.02	602.18	1004.31
#	7325.000	45.00	.00	.00	5953.40	6650.00	5970.56	.00	5972.20	17.10	11.17	1080.75	1608.10
	7475.000	150.00	.00	.00	5953.90	3040.00	5967.33	.00	5967.97	7.84	6.51	525.78	1086.05
	7475.000	150.00	.00	.00	5953.90	6650.00	5970.62	.00	5972.54	17.39	11.26	702.08	1594.49
	7590.000	115.00	.00	.00	5954.40	3040.00	5967.36	.00	5968.10	10.10	6.94	462.98	956.76
	7590.000	115.00	.00	.00	5954.40	6650.00	5970.64	.00	5972.85	22.02	11.98	600.45	1417.17
#	7680.000	90.00	.00	.00	5954.70	3040.00	5967.40	.00	5968.33	22.94	7.73	393.23	634.67
#	7680.000	90.00	.00	.00	5954.70	6650.00	5970.78	.00	5973.29	50.40	12.70	523.59	936.73
#	7750.000	70.00	.00	.00	5975.90	.00	5975.90	.00	5975.90	99.44	.01	.00	.00
#	7750.000	70.00	.00	.00	5975.90	2890.00	5978.81	5978.81	5979.63	896.52	7.89	421.35	96.52
#	8000.000	250.00	.00	.00	5974.00	.00	5975.90	.00	5975.90	.00	.00	90.57	32.53
#	8000.000	250.00	.00	.00	5974.00	2890.00	5980.26	.00	5980.38	8.12	3.20	1109.27	1014.06
#	8265.000	265.00	.00	.00	5978.00	.00	5978.00	5978.00	5978.00	19.02	.01	.06	.00
#	8265.000	265.00	.00	.00	5978.00	2890.00	5980.51	.00	5980.96	88.91	5.43	535.26	306.49

	SECNO	XLCH	ELTRD	ELLC	ELMIN	B	CHSEL	CRWS	EG	10*KS	VCH	AREA	.01K
*	8450.000	185.00	.00	.00	5977.50	.00	5978.00	.00	5978.00	.00	.00	45.26	6.69
*	8450.000	185.00	.00	.00	5977.50	2890.00	5981.31	.00	5981.39	8.95	2.21	1356.55	966.17

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SUMMARY PRINTOUT TABLE 150

	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
#	50.000	3050.00	5894.67	.00	.00	.00	302.42	.00
#	50.000	6840.00	5896.95	2.27	.00	.00	577.09	.00
#	100.000	3050.00	5895.67	.00	1.00	.00	346.16	50.00
#	100.000	6840.00	5897.50	1.83	.56	.00	908.14	50.00
#	150.000	3050.00	5896.91	.00	1.24	.00	982.91	50.00
#	150.000	6840.00	5898.66	1.75	1.16	.00	1326.89	50.00
#	500.000	3050.00	5896.93	.00	.02	.00	408.14	350.00
#	500.000	6840.00	5899.24	2.31	.58	.00	961.36	350.00
	850.000	3050.00	5898.17	.00	1.24	.00	48.45	350.00
#	850.000	6840.00	5903.33	5.16	4.09	.00	174.00	350.00
#	975.000	3050.00	5901.03	.00	2.86	.00	67.18	125.00
#	975.000	6840.00	5905.97	4.94	2.64	.00	193.10	125.00
#	1010.000	3050.00	5902.48	.00	1.45	.00	44.00	35.00
#	1010.000	6840.00	5906.26	3.77	.28	.00	44.00	35.00
#	1080.000	3050.00	5905.49	.00	3.01	.00	44.00	70.00
#	1080.000	6840.00	5911.24	5.75	4.99	.00	44.00	70.00
	1120.000	3050.00	5905.36	.00	-.13	.00	44.00	40.00
	1120.000	6840.00	5911.13	5.77	-.11	.00	44.00	40.00
#	1165.000	3050.00	5907.70	.00	2.33	.00	44.00	45.00
#	1165.000	6840.00	5914.13	6.43	2.99	.00	44.00	45.00
	1225.000	3050.00	5907.79	.00	.09	.00	70.60	60.00
	1225.000	6840.00	5914.59	6.80	.46	.00	100.44	60.00
#	1425.000	3050.00	5909.39	.00	1.60	.00	38.80	200.00
#	1425.000	6840.00	5915.15	5.76	.56	.00	53.43	200.00
#	1560.000	3050.00	5913.95	.00	4.56	.00	44.00	135.00
#	1560.000	6840.00	5921.74	7.79	6.59	.00	44.00	135.00
	1620.000	3050.00	5913.89	.00	-.06	.00	44.00	60.00
#	1620.000	6840.00	5923.70	9.81	1.96	.00	44.00	60.00
	1675.000	3050.00	5913.90	.00	.00	.00	93.14	55.00
	1675.000	6840.00	5924.42	10.52	.72	.00	293.36	55.00
	1900.000	3075.00	5914.07	.00	.18	.00	114.24	225.00
	1900.000	6860.00	5924.44	10.37	.02	.00	253.05	225.00

SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
1975.000	3075.00	5914.46	.00	.39	.00	106.22	75.00
1975.000	6860.00	5924.49	10.02	.05	.00	258.08	75.00
* 1976.000	3075.00	5915.41	.00	.95	.00	113.09	1.00
* 1976.000	6860.00	5924.78	9.37	.29	.00	274.30	1.00
* 1984.000	3075.00	5916.67	.00	1.26	.00	121.50	8.00
1984.000	6860.00	5924.80	8.13	.02	.00	269.56	8.00
* 1985.000	3075.00	5916.98	.00	.31	.00	123.77	1.00
* 1985.000	6860.00	5924.70	7.72	-.10	.00	264.35	1.00
2050.000	3075.00	5917.06	.00	.08	.00	127.19	65.00
2050.000	6860.00	5924.74	7.68	.04	.00	255.21	65.00
2275.000	3100.00	5917.46	.00	.40	.00	91.61	225.00
2275.000	6880.00	5924.76	7.30	.02	.00	187.93	225.00
2400.000	3100.00	5917.64	.00	.18	.00	46.00	125.00
2400.000	6880.00	5924.56	6.92	-.20	.00	46.00	125.00
2550.000	3100.00	5919.84	.00	2.20	.00	46.00	150.00
* 2550.000	6880.00	5932.48	12.64	7.92	.00	300.95	150.00
2600.000	3100.00	5919.89	.00	.05	.00	81.17	50.00
2600.000	6880.00	5932.59	12.70	.11	.00	306.80	50.00
* 2975.000	3100.00	5920.78	.00	.89	.00	93.27	375.00
* 2975.000	6880.00	5932.64	11.86	.05	.00	183.00	375.00
* 3550.000	3090.00	5924.88	.00	4.09	.00	64.35	575.00
3550.000	6835.00	5932.69	7.82	.06	.00	100.77	575.00
* 3925.000	3090.00	5928.97	.00	4.09	.00	59.20	375.00
* 3925.000	6835.00	5933.78	4.81	1.08	.00	85.77	375.00
* 4275.000	3090.00	5932.72	.00	3.75	.00	66.53	350.00
* 4275.000	6835.00	5937.86	5.14	4.09	.00	90.59	350.00
* 4725.000	3065.00	5935.68	.00	2.96	.00	50.18	450.00
* 4725.000	6765.00	5940.44	4.76	2.58	.00	71.32	450.00
* 4865.000	3065.00	5937.97	.00	2.29	.00	39.22	140.00
* 4865.000	6765.00	5944.26	6.29	3.82	.00	52.25	140.00
* 5065.000	3065.00	5946.81	.00	8.84	.00	20.00	200.00
* 5065.000	6765.00	5953.38	6.57	9.12	.00	272.50	200.00
* 5100.000	3065.00	5948.21	.00	1.40	.00	88.30	35.00
5100.000	6765.00	5953.46	5.25	.08	.00	185.74	35.00

	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
#	5550.000	3025.00	5949.28	.00	1.08	.00	39.89	450.00
#	5550.000	6670.00	5954.49	5.20	1.03	.00	73.54	450.00
#	5805.000	3025.00	5953.20	.00	3.92	.00	71.67	255.00
#	5805.000	6670.00	5960.01	6.81	5.52	.00	305.06	255.00
#	5806.000	3025.00	5952.48	.00	- .72	.00	70.15	1.00
#	5806.000	6670.00	5960.24	7.76	.23	.00	308.02	1.00
	5809.000	3025.00	5953.48	.00	1.00	.00	72.27	3.00
	5809.000	6670.00	5960.25	6.77	.01	.00	308.07	3.00
#	5810.000	3025.00	5954.72	.00	1.24	.00	111.74	1.00
#	5810.000	6670.00	5960.18	5.46	- .07	.00	307.22	1.00
#	6025.000	3025.00	5956.20	.00	1.48	.00	40.17	215.00
#	6025.000	6670.00	5963.15	6.94	2.97	.00	281.57	215.00
#	6475.000	3025.00	5960.66	.00	1.46	.00	48.41	450.00
	6475.000	6670.00	5965.18	4.52	2.04	.00	267.38	450.00
#	7025.000	3040.00	5961.22	.00	.55	.00	51.05	550.00
#	7025.000	6650.00	5965.74	4.52	.55	.00	64.24	550.00
#	7155.000	3040.00	5960.92	.00	- .29	.00	20.00	130.00
#	7155.000	6650.00	5966.99	6.07	1.26	.00	212.32	130.00
#	7280.000	3040.00	5966.54	.00	5.62	.00	138.86	125.00
#	7280.000	6650.00	5968.23	1.69	1.24	.00	174.67	125.00
	7325.000	3040.00	5967.13	.00	.59	.00	100.64	45.00
#	7325.000	6650.00	5970.56	3.43	2.33	.00	171.67	45.00
	7475.000	3040.00	5967.33	.00	.19	.00	46.79	150.00
	7475.000	6650.00	5970.62	3.30	.06	.00	62.27	150.00
	7590.000	3040.00	5967.36	.00	.03	.00	40.85	115.00
	7590.000	6650.00	5970.64	3.28	.02	.00	42.90	115.00
#	7680.000	3040.00	5967.40	.00	.04	.00	36.93	90.00
#	7680.000	6650.00	5970.78	3.38	.14	.00	40.10	90.00
#	7750.000	.00	5975.90	.00	8.50	.00	.20	70.00
#	7750.000	2890.00	5978.81	2.91	8.03	.00	259.79	70.00
#	8000.000	.00	5975.90	.00	.00	.00	95.17	250.00
#	8000.000	2890.00	5980.26	4.36	1.45	.00	357.08	250.00
#	8265.000	.00	5978.00	.00	2.10	.00	115.04	265.00
#	8265.000	2890.00	5980.51	2.51	.25	.00	291.66	265.00

	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
†	8150.000	.00	5978.00	.00	.00	.00	180.20	185.00
†	8450.000	2890.00	5981.31	3.31	.81	.00	576.36	185.00

SUMMARY OF ERRORS AND SPECIAL NOTES

CAUTION SECNO=	50.000	PROFILE=	1	CRITICAL DEPTH ASSUMED
CAUTION SECNO=	50.000	PROFILE=	2	CRITICAL DEPTH ASSUMED
CAUTION SECNO=	100.000	PROFILE=	1	CRITICAL DEPTH ASSUMED
CAUTION SECNO=	100.000	PROFILE=	1	PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=	100.000	PROFILE=	1	20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO=	100.000	PROFILE=	2	CRITICAL DEPTH ASSUMED
CAUTION SECNO=	100.000	PROFILE=	2	PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=	100.000	PROFILE=	2	20 TRIALS ATTEMPTED TO BALANCE WSEL
WARNING SECNO=	150.000	PROFILE=	1	CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=	150.000	PROFILE=	2	CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=	500.000	PROFILE=	1	CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
CAUTION SECNO=	500.000	PROFILE=	2	CRITICAL DEPTH ASSUMED
CAUTION SECNO=	500.000	PROFILE=	2	PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=	500.000	PROFILE=	2	20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO=	850.000	PROFILE=	2	CRITICAL DEPTH ASSUMED
CAUTION SECNO=	850.000	PROFILE=	2	PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=	850.000	PROFILE=	2	20 TRIALS ATTEMPTED TO BALANCE WSEL
WARNING SECNO=	975.000	PROFILE=	1	CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=	975.000	PROFILE=	2	CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
CAUTION SECNO=	1010.000	PROFILE=	1	CRITICAL DEPTH ASSUMED
CAUTION SECNO=	1010.000	PROFILE=	1	PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=	1010.000	PROFILE=	1	20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO=	1010.000	PROFILE=	2	CRITICAL DEPTH ASSUMED
CAUTION SECNO=	1010.000	PROFILE=	2	PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=	1010.000	PROFILE=	2	20 TRIALS ATTEMPTED TO BALANCE WSEL
WARNING SECNO=	1080.000	PROFILE=	1	CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=	1080.000	PROFILE=	2	CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=	1165.000	PROFILE=	1	CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=	1165.000	PROFILE=	2	CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
CAUTION SECNO=	1425.000	PROFILE=	1	CRITICAL DEPTH ASSUMED
CAUTION SECNO=	1425.000	PROFILE=	1	PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=	1425.000	PROFILE=	1	20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO=	1425.000	PROFILE=	2	CRITICAL DEPTH ASSUMED
CAUTION SECNO=	1425.000	PROFILE=	2	PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=	1425.000	PROFILE=	2	20 TRIALS ATTEMPTED TO BALANCE WSEL
WARNING SECNO=	1560.000	PROFILE=	1	CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=	1560.000	PROFILE=	2	CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=	1620.000	PROFILE=	2	CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
CAUTION SECNO=	1976.000	PROFILE=	1	CRITICAL DEPTH ASSUMED

CAUTION SECNO= 1976.000 PROFILE= 1 MINIMUM SPECIFIC ENERGY
WARNING SECNO= 1976.000 PROFILE= 2 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO= 1984.000 PROFILE= 1 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO= 1985.000 PROFILE= 1 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO= 1985.000 PROFILE= 2 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO= 2550.000 PROFILE= 2 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO= 2975.000 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 2975.000 PROFILE= 1 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 2975.000 PROFILE= 1 20 TRIALS ATTEMPTED TO BALANCE WSEL
WARNING SECNO= 2975.000 PROFILE= 2 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO= 3550.000 PROFILE= 1 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO= 3925.000 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 3925.000 PROFILE= 1 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 3925.000 PROFILE= 1 20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO= 3925.000 PROFILE= 2 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 3925.000 PROFILE= 2 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 3925.000 PROFILE= 2 20 TRIALS ATTEMPTED TO BALANCE WSEL

WARNING SECNO= 4275.000 PROFILE= 1 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO= 4275.000 PROFILE= 2 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO= 4725.000 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 4725.000 PROFILE= 1 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 4725.000 PROFILE= 1 20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO= 4725.000 PROFILE= 2 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 4725.000 PROFILE= 2 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 4725.000 PROFILE= 2 20 TRIALS ATTEMPTED TO BALANCE WSEL

WARNING SECNO= 4865.000 PROFILE= 1 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO= 4865.000 PROFILE= 2 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO= 5065.000 PROFILE= 1 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO= 5065.000 PROFILE= 2 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO= 5100.000 PROFILE= 1 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO= 5550.000 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 5550.000 PROFILE= 1 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 5550.000 PROFILE= 1 20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO= 5550.000 PROFILE= 2 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 5550.000 PROFILE= 2 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 5550.000 PROFILE= 2 20 TRIALS ATTEMPTED TO BALANCE WSEL

WARNING SECNO= 5805.000 PROFILE= 1 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO= 5805.000 PROFILE= 2 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO= 5806.000 PROFILE= 1 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO= 5806.000 PROFILE= 2 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO= 5810.000 PROFILE= 1 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO= 5810.000 PROFILE= 2 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO= 6025.000 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 6025.000 PROFILE= 1 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 6025.000 PROFILE= 1 20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO= 6025.000 PROFILE= 2 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 6025.000 PROFILE= 2 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 6025.000 PROFILE= 2 20 TRIALS ATTEMPTED TO BALANCE WSEL

WARNING SECNO= 6475.000 PROFILE= 1 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO= 7025.000 PROFILE= 1 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO= 7025.000 PROFILE= 2 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO= 7155.000 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 7155.000 PROFILE= 1 MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 7155.000 PROFILE= 2 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 7155.000 PROFILE= 2 MINIMUM SPECIFIC ENERGY

WARNING SECNO= 7280.000 PROFILE= 1 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
CAUTION SECNO= 7280.000 PROFILE= 2 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 7280.000 PROFILE= 2 WSEL ASSUMED BASED ON MIN DIFF
CAUTION SECNO= 7280.000 PROFILE= 2 20 TRIALS ATTEMPTED TO BALANCE WSEL

WARNING SECNO= 7325.000 PROFILE= 2 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO= 7680.000 PROFILE= 1 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO= 7680.000 PROFILE= 2 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO= 7750.000 PROFILE= 1 WSEL ASSUMED BASED ON MIN DIFF
CAUTION SECNO= 7750.000 PROFILE= 1 20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO= 7750.000 PROFILE= 2 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 7750.000 PROFILE= 2 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 7750.000 PROFILE= 2 20 TRIALS ATTEMPTED TO BALANCE WSEL

WARNING SECNO= 8000.000 PROFILE= 1 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO= 8000.000 PROFILE= 2 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO= 8265.000 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 8265.000 PROFILE= 1 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 8265.000 PROFILE= 1 WSEL ASSUMED BASED ON MIN DIFF
CAUTION SECNO= 8265.000 PROFILE= 1 20 TRIALS ATTEMPTED TO BALANCE WSEL
WARNING SECNO= 8265.000 PROFILE= 2 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO= 8450.000 PROFILE= 1 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO= 8450.000 PROFILE= 2 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

THIS RUN EXECUTED 22JUN92 18:06:26

 HEC-2 WATER SURFACE PROFILES

Version 4.6.0: February 1991

T1 SHOOKS RUN DRAINAGE BASIN PLANNING STUDY WILSON & COMPANY 90-809
 T2 KIOWA STREET TO BOULDER STREET
 T3 EXISTING CONDITION 10-YEAR SREB.DAT

J1	ICHECK	ING	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FD
	0	2	0	0	0	0	0	0	5974.7	0

J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	1	0	-1	0	0	0	0	0	0	0

J3 VARIABLE CODES FOR SUMMARY PRINTOUT

	100	101	105	150						
NC	0.100	0.100	0.035	0.1	0.3					
QT	2	1550	4955							
ENTRANCE KIOWA STREET CULVERT										
X1	8560	12	1095	1125	0	0	0			
GR	5998	1000	5982	1040	5980	1065	5978	1095	5962.4	1100
GR	5962.4	1120	5976	1125	5978	1145	5980	1225	5982	1290
GR	5984	1400	5986	1515						
X1	8865	14	1085	1110	315	305	305			
GR	5988	1000	5986	1030	5984	1040	5982	1065	5980	1085
GR	5966.1	1085	5966.1	1105	5968	1110	5976	1125	5978	1145
GR	5980	1200	5982	1265	5984	1360	5986	1430		
NC	0	0	0	0.3	0.5					
OUTFALL BIJOU STREET CULVERT										
X1	8995	12	1240	1270	135	125	130			
X3	10	0	0	0	0	0	0	5980	5980	
GR	5988	1000	5986	1050	5984	1135	5982	1160	5980	1220
GR	5970	1240	5967.2	1245	5967.2	1265	5970	1270	5982	1290
GR	5984	1375	5986	1510						
SC	1.020	0.40	3.0	0	7.1	17.8	455	8.1	5969.8	5967.2
NC	0.040	0.040	0	0	0					
ENTRANCE BIJOU STREET CULVERT										
X1	9450	12	1480	1510	440	470	455			
X2	0	0	2	5976.9	5982					
X3	10	0	0	0	0	0	0	5982	5982	
BT	10	1000	5990		1015	5988		1025	5986	
BT	1090	5984		1480	5982		1510	5982		1540
BT	5984		1605	5986		1730	5988		1790	5990

BT										
GR	5990	1000	5988	1015	5986	1025	5984	1090	5982	1480
GR	5969.8	1485	5969.8	1505	5982	1510	5984	1540	5986	1605
GR	5988	1730	5990	1790						
X1	9500	15	1495	1520	50	55	50			
GR	5990	1000	5988	1010	5986	1020	5984	1080	5982	1465
GR	5980	1485	5972	1495	5970.2	1500	5970.2	1515	5972	1520
GR	5978	1535	5984	1565	5986	1595	5988	1715	5990	1765
NC	0	0	0	0.1	0.3					
X1	9720	14	1500	1530	215	225	220			
GR	5990	1000	5988	1035	5986	1100	5984	1250	5982	1490
GR	5974	1500	5972.2	1505	5972.2	1525	5974	1530	5980	1540
GR	5986	1565	5988	1580	5988	1625	5990	1660		
NC	0	0	0	0.3	0.5					
BT	2	1520	4915							
OUTFALL PLATTE AVENUE CULVERT										
X1	9810	11	1475	1510	90	90	90			
GR	5992	1000	5990	1025	5988	1235	5986	1365	5986	1475
GR	5973.1	1480	5973.1	1500	5986	1510	5988	1570	5990	1630
GR	5992	1695								
NC	0.100	0	0.040	0.1	0.3					
BT	2	0.001	2125							
PLATTE AVENUE										
X1	9990	8	1330	1530	250	115	180			
GR	5994	1000	5992	1035	5990	1080	5990	1330	5989.4	1430
GR	5990	1530	5992	1950	5994	2010				
NC	0	0	0.100	0	0					
X1	10325	8	1085	1205	340	470	335			
GR	6000	1000	5998	1040	5996	1085	5994	1130	5992	1195
GR	5996	1205	5997.5	1210	5998	1360				
X1	10375	11	1125	1185	60	50	50			
GR	6004	1000	6002	1005	6000	1055	5998	1125	5996	1165
GR	5996	1185	5997.5	1185	5997.5	1220	5998	1435	5998	1690
GR	6008	1690								
BOULDER STREET										
X1	10585	9	1135	1375	190	200	210			
GR	6000	1000	5998	1040	5996	1085	5994	1135	5992.5	1260
GR	5994	1375	5996	1480	5998	1580	6000	1870		
NC	0	0.100	0.035	0	0					
BT	2	1520	4915							
ENTRANCE BOULDER STREET CULVERT										
X1	10630	14	1235	1295	45	45	45			
GR	6000	1000	5998	1045	5996	1075	5994	1170	5992	1205
GR	5990	1235	5976.5	1245	5976.5	1285	5992	1295	5992	1315
GR	5994	1390	5996	1540	5998	1690	6000	1865		

SECNO	DEPTH	CWSEL	CRWS	WSELK	EG	HV	HL	DLOSS	L-BANK ELEV
0	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	YNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

#PROF 1

CCHV= .100 CEHV= .300

#SECNO 8560.000

ENTRANCE KIOWA STREET CULVERT

8560.000	12.30	5974.70	.00	5974.70	5975.12	.42	.00	.00	5978.00
1550.0	.0	1550.0	.0	.0	298.1	.0	.0	.0	5976.00
.00	.00	5.20	.00	.000	.035	.000	.000	5962.40	1096.06
.001243	0.	0.	0.	0	0	0	.00	28.46	1124.52

#SECNO 8865.000

8865.000	8.90	5975.00	.00	.00	5975.69	.69	.49	.08	5980.00
1550.0	.0	1482.3	67.7	.0	217.9	46.0	2.0	.2	5968.00
.01	.00	6.80	1.47	.000	.035	.100	.000	5966.10	1085.00
.002178	315.	305.	305.	2	0	0	.00	38.14	1123.14

CCHV= .300 CEHV= .500

#SECNO 8995.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE. ELLEA= 5980.00 ELREA= 5980.00

OUTFALL BIJOU STREET CULVERT

8995.000	8.05	5975.25	.00	.00	5975.97	.72	.26	.02	5970.00
1550.0	.0	1550.0	.0	.0	227.5	.0	2.7	.3	5970.00
.02	.00	6.81	.00	.000	.035	.000	.000	5967.20	1240.00
.001842	135.	130.	125.	2	0	0	.00	30.00	1270.00

SPECIAL CULVERT

SC	CUND	CUNV	ENTLC	COFB	RDLEN	RISE	SPAN	CULVLN	CHRT	SCL	ELCHU	ELCHD
1		.020	.40	3.00	.00	7.10	17.80	455.00	8	1	5969.80	5967.20

CHART 8 - BOX CULVERT WITH FLARED WINGWALLS; NO INLET TOP EDGE BEVEL

SCALE 1 - WINGWALLS FLARED 30 TO 75 DEGREES

#SECNO 9450.000

SPECIAL CULVERT

EBIC	EGOC	H4	QWEIR	QCULV	VCH	ACULV	ELTRD	WEIRLN
5981.32	5982.10	6.09	1.	1545.	5.274	126.4	5982.00	42.

SECNO	DEPTH	CWSEL	CRWS	WSELK	EG	HV	HL	DLOSS	L-BANK ELEV
0	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XML	XNCH	XNR	MTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

3495 OVBANK AREA ASSUMED NON-EFFECTIVE. ELLEA= 5982.00 ELREA= 5982.00

ENTRANCE BIJOU STREET CULVERT

9450.000	11.83	5981.63	.00	.00	5982.06	.43	6.09	.00	5982.00
1550.0	.0	1550.0	.0	.0	293.9	.0	5.4	.6	5982.00
.04	.00	5.27	.00	.000	.035	.000	.000	5969.80	1480.15
.001285	440.	455.	470.	2	0	0	.00	29.69	1509.85

*SECNO 9500.000

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE. KRATIO = 1.92

9500.000	11.77	5981.97	.00	.00	5982.16	.19	.03	.07	5972.00
1550.0	128.8	1126.9	294.3	79.1	285.2	143.9	5.9	.7	5972.00
.05	1.63	3.95	2.04	.040	.035	.040	.000	5970.20	1465.30
.000348	50.	50.	55.	2	0	0	.00	89.55	1554.85

CCHV= .100 CEHV= .300

*SECNO 9720.000

9720.000	9.79	5981.99	.00	.00	5982.30	.31	.10	.03	5974.00
1550.0	79.4	1340.5	130.1	39.9	284.7	58.2	8.1	1.1	5974.00
.06	1.99	4.71	2.24	.040	.035	.040	.000	5972.20	1490.01
.000629	215.	220.	225.	2	0	0	.00	58.28	1548.29

CCHV= .300 CEHV= .500

*SECNO 9810.000

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE. KRATIO = .47

OUTFALL PLATTE AVENUE CULVERT

9810.000	8.78	5981.88	.00	.00	5982.62	.74	.10	.22	5986.00
1520.0	.0	1520.0	.0	.0	220.4	.0	8.8	1.2	5986.00
.06	.00	6.90	.00	.000	.035	.000	.000	5973.10	1476.60
.002760	90.	90.	90.	2	0	0	.00	30.21	1506.80

CCHV= .100 CEHV= .300

*SECNO 9990.000

SECNO	DEPTH	CWSEL	CRWS	WSELK	EG	HV	HL	OLSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TNA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	MTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

5989.80 TRIALS NOT ENOUGH FOR CRITICAL DEPTH9999999.009999999.00 6044.00 5989.40 999999.00

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL.CWSEL

3710 WSEL ASSUMED BASED ON MIN DIFF

PLATTE AVENUE

9990.000	.00	5989.40	.00	.00	5989.40	.00	.50	-.03	5990.00
.0	.0	.0	.0	.0	.0	.0	9.2	1.2	5990.00
597.01	.00	.02	.00	.000	.000	.000	.000	5989.40	1429.84
.009927	250.	180.	115.	20	80	0	.00	.33	1430.16

*SECNO 10325.000

5992.80 TRIALS NOT ENOUGH FOR CRITICAL DEPTH9999999.009999999.00 6048.00 5992.00 999999.00

3685 20 TRIALS ATTEMPTED WSEL.CWSEL

3710 WSEL ASSUMED BASED ON MIN DIFF

10325.000	.00	5992.00	.00	.00	5992.00	.00	.00	.00	5996.00
.0	.0	.0	.0	.0	.0	.0	9.2	1.2	5996.00
951.58	.00	.02	.00	.000	.000	.000	.000	5992.00	1194.87
.009878	340.	335.	470.	20	30	0	.00	.14	1195.01

*SECNO 10375.000

3685 20 TRIALS ATTEMPTED WSEL.CWSEL

3710 WSEL ASSUMED BASED ON MIN DIFF

3693 PROBABLE MINIMUM SPECIFIC ENERGY

3720 CRITICAL DEPTH ASSUMED

10375.000	.00	5996.00	5996.00	.00	5996.00	.00	.00	.00	5998.00
.0	.0	.0	.0	.0	.0	.0	9.2	1.3	5997.50
1023.30	.00	.01	.00	.000	.000	.000	.000	5996.00	1164.99
.008418	60.	50.	50.	20	14	0	.00	20.01	1185.00

*SECNO 10585.000

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE. KRATIO = *****

BOULDER STREET

10585.000	3.50	5996.00	.00	.00	5996.00	.00	.00	.00	5994.00
.0	.0	.0	.0	50.1	660.4	105.2	11.2	2.2	5994.00
40939.12	.00	.00	.00	.000	.100	.040	.000	5992.50	1084.97
.000000	190.	210.	200.	2	0	0	.00	395.11	1480.07

SECNO	DEPTH	CWSEL	CRWS	WSELX	EB	HV	HL	OLOSS	L-BANK ELEV
B	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XML	XMCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

#SECNO 10630.000

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE. KRATIO = 11.33

ENTRANCE BOULDER STREET CULVERT

10630.000	19.48	5995.98	.00	.00	5996.01	.03	.00	.01	5990.00
1520.0	62.1	1390.3	67.6	347.6	1024.1	451.3	12.5	2.7	5992.00
40839.13	.18	1.36	.15	.100	.035	.100	.000	5976.50	1075.72
.000031	15.	15.	15.	2	0	0	.00	463.15	1538.86

T1 SHOOKS RUN DRAINAGE BASIN PLANNING STUDY WILSON & COMPANY 90-809

T2 KIDWA STREET TO BOULDER STREET

T3 EXISTING CONDITION 100-YEAR SREB.DAT

J1	ICHECK	INO	NINV	IDIR	STRT	METRIC	HVINS	0	WSEL	FG
	0	3	0	0	0	0	0	0	5981.7	0
J2	NPROF	IPLOT	PREVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	15	0	-1	0	0	0	0	0	0	0

SECNO	DEPTH	CWSEL	CRWS	WSELK	EE	HV	HL	GLOSE	L-BANK ELEV
B	QLOB	BCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICDNT	CDRAR	TOPWID	ENDST

#PROF 2

CCHV= .100 CEHV= .300

#SECNO 8560.000

ENTRANCE KIDWA STREET CULVERT

8560.000	19.30	5981.70	.00	5981.70	5982.72	1.02	.00	.00	5978.00
4955.0	113.1	4369.0	472.9	99.1	506.0	357.0	.0	.0	5976.00
.00	1.14	8.63	1.32	.100	.035	.100	.000	5962.40	1043.75
.001933	0.	0.	0.	0	0	0	.00	236.51	1280.26

#SECNO 8865.000

8865.000	16.16	5982.26	.00	.00	5983.41	1.15	.65	.04	5980.00
4955.0	21.3	3867.7	1066.0	25.7	399.3	522.1	6.7	1.6	5968.00
.01	.83	9.69	2.04	.100	.035	.100	.000	5966.10	1061.73
.002361	315.	305.	305.	2	0	0	.00	215.67	1277.41

CCHV= .300 CEHV= .500

#SECNO 8995.000

OUTFALL BIJOU STREET CULVERT

8995.000	15.23	5982.43	.00	.00	5983.74	1.32	.25	.08	5970.00
4955.0	373.4	4344.6	237.1	235.3	412.8	132.4	9.3	2.1	5970.00
.01	1.59	9.81	1.79	.100	.035	.100	.000	5967.20	1154.66
.001571	135.	130.	125.	2	0	0	.00	153.50	1308.16

SPECIAL CULVERT

SC	CUNO	CUNV	ENTLC	COFO	RDLEN	RISE	SPAN	CULVLN	CHRT	SCL	ELCHU	ELCHD
1		.020	.40	3.00	.00	7.10	17.80	455.00	8	1	5969.80	5967.20

CHART 8 - BOX CULVERT WITH FLARED WINGWALLS; NO INLET TOP EDGE BEVEL

SCALE 1 - WINGWALLS FLARED 30 TO 75 DEGREES

5130. EGIC= 6034.71..MAY BE TOO LARGE IF INLET CONTROLS.

5135. EGOC= 6052.45 ..MAY BE TOO LARGE IF OUTLET CONTROLS.

#SECNO 9450.000

3840 SECTION NOT HIGH ENOUGH 6052.446 6040.000 5969.800 6040.000 5982.490

8

3301 HV CHANGED MORE THAN HVINS

SECNO	DEPTH	CWSEL	CRWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
0	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

SPECIAL CULVERT

EBIC	EGOC	HA	QWEIR	QCVLV	VCH	ACVLV	ELTRD	WEIRLN
6034.71	6052.45	1.24	4042.	946.	8.144	126.4	5982.00	514.

3685 20 TRIALS ATTEMPTED WSEL,CWSEL

3710 WSEL ASSUMED BASED ON MIN DIFF

3693 PROBABLE MINIMUM SPECIFIC ENERGY

ENTRANCE BIJOU STREET CULVERT

9450.000	14.92	5984.72	5984.28	.00	5985.41	.69	.83	.41	5982.00
4955.0	1672.0	3147.8	135.2	678.1	386.5	59.9	19.3	5.5	5982.00
.04	2.47	8.14	2.26	.040	.035	.040	.000	5969.80	1066.69
.002177	440.	155.	170.	20	9	0	.00	496.62	1563.31

*SECNO 9500.000

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE. KRATIO = 1.98

9500.000	15.09	5985.29	.00	.00	5985.58	.28	.05	.12	5972.00
4955.0	1864.1	2179.6	911.4	1086.7	368.3	295.7	21.0	6.1	5972.00
.04	1.72	5.92	3.08	.040	.035	.040	.000	5970.20	1041.21
.000556	50.	50.	55.	3	0	0	.00	543.18	1584.39

CCHV= .100 CEHV= .300

*SECNO 9720.000

9720.000	13.05	5985.25	.00	.00	5985.84	.59	.17	.09	5974.00
4955.0	1502.9	2938.2	513.9	672.8	382.6	140.1	28.3	8.4	5974.00
.05	2.23	7.68	3.67	.040	.035	.040	.000	5972.20	1155.88
.001128	215.	220.	225.	2	0	0	.00	406.01	1561.90

CCHV= .300 CEHV= .500

*SECNO 9810.000

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY

3720 CRITICAL DEPTH ASSUMED

OUTFALL PLATTE AVENUE CULVERT

9810.000	14.18	5987.28	5987.28	.00	5988.95	1.67	.18	.54	5986.00
4915.0	196.6	4374.3	44.2	191.9	399.7	24.7	30.2	9.1	5986.00
.05	2.55	10.94	1.79	.040	.035	.040	.000	5973.10	1281.50
.004173	90.	90.	90.	5	13	0	.00	267.04	1548.54

SECNO	DEPTH	CWSEL	CRINS	WSELK	EG	HV	HL	LOSS	L-BANK ELEV
B	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XLN	LNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

CCHV= .100 CEHV= .300
 *SECNO 9990.000

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
 3693 PROBABLE MINIMUM SPECIFIC ENERGY
 3720 CRITICAL DEPTH ASSUMED

PLATTE AVENUE

9990.000	1.47	5990.87	5990.87	.00	5991.29	.12	1.13	.12	5990.00
2125.0	446.9	1426.3	251.8	227.0	234.7	80.1	32.8	11.2	5990.00
.06	1.97	6.08	3.14	.100	.040	.040	.000	5989.10	1060.35
.021630	250.	180.	115.	20	21	0	.00	653.10	1713.44

*SECNO 10325.000

10325.000	5.55	5997.55	.00	.00	5997.88	.33	6.58	.01	5996.00
2125.0	44.1	2064.5	16.4	27.0	445.9	4.4	36.9	14.7	5996.00
.08	1.63	4.63	3.75	.100	.100	.040	.000	5992.00	1050.14
.017023	340.	335.	470.	4	0	0	.00	174.65	1224.79

*SECNO 10375.000

10375.000	2.57	5998.57	.00	.00	5998.89	.32	1.02	.00	5998.00
2125.0	5.8	102.1	1717.1	5.7	114.4	360.5	37.5	15.2	5997.50
.09	1.01	3.52	4.76	.100	.100	.040	.000	5996.00	1104.95
.024509	60.	50.	50.	1	0	0	.00	585.05	1690.00

*SECNO 10585.000

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE. KRATIO = 9.81

BOULDER STREET

10585.000	6.58	5999.08	.00	.00	5999.10	.01	.17	.03	5994.00
2125.0	162.0	1077.0	886.0	310.0	1400.7	723.3	44.3	18.2	5994.00
.15	.52	.77	1.23	.100	.100	.040	.000	5992.50	1018.27
.000255	190.	210.	200.	3	0	0	.00	719.26	1737.53

*SECNO 10630.000

SECNO	DEPTH	CWSEL	CRWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
B	GLOB	GCH	GROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XLN	XLCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE. KRATIO = 3.20

ENTRANCE BOULDER STREET CULVERT

10630.000	22.52	5999.02	.00	.00	5999.13	.12	.01	.03	5990.00
4915.0	467.4	3754.6	693.0	905.2	1206.1	1542.7	47.4	19.0	5992.00
.15	.52	3.11	.45	.100	.035	.100	.000	5976.50	1022.08
.000133	45.	45.	45.	2	0	0	.00	757.04	1779.12

THIS RUN EXECUTED 22JUN92 18:07:11

HEC-2 WATER SURFACE PROFILES

Version 4.6.0: February 1991

NOTE- ASTERISK (*) AT LEFT OF CROSS-SECTION NUMBER INDICATES MESSAGE IN SUMMARY OF ERRORS LIST

TING CONDITION 10-YE

SUMMARY PRINTOUT TABLE 100

SECNO	EGLWC	ELLC	EGPRS	ELTRD	QPR	QWEIR	CLASS	H3	DEPTH	CWSEL	VCH	EG
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TIME CONDITION 10-YE

SUMMARY PRINTOUT TABLE 101

SECNO	EGOC	ELLC	EGIC	ELTRD	QCULV	QWEIR	CLASS	H4	DEPTH	CNSEL	VCH	EG
9450.000	5982.10	5976.90	5981.32	5982.00	1545.23	1.46	17.00	6.09	11.83	5981.63	5.27	5982.06
* 9450.000	6052.45	5976.90	6034.71	5982.00	946.34	4041.88	17.00	1.24	14.92	5984.72	8.14	5985.41

TING CONDITION 10-YE

SUMMARY PRINTOUT TABLE 105

SECNO	CWSEL	HL	DLOSS	TOPWID	QLOB	QCH	QRDB
9865.000	5975.00	.19	.08	38.14	.00	1482.29	67.71
9865.000	5982.26	.65	.01	215.67	21.27	3867.71	1066.02
8995.000	5975.25	.26	.02	30.00	.00	1550.00	.00
8995.000	5982.13	.25	.08	153.50	373.37	4344.56	237.07
9450.000	5981.63	6.09	.00	29.69	.00	1550.00	.00
* 9450.000	5984.72	.83	.41	496.62	1672.03	3147.79	135.17
* 9500.000	5981.97	.03	.07	89.55	128.79	1126.88	294.34
* 9500.000	5985.29	.05	.12	543.18	1864.06	2179.58	911.35

TING CONDITION 10-YE

SUMMARY PRINTOUT TABLE 150

SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRWS	EG	10*KS	VCH	AREA	.01K
8560.000	.00	.00	.00	5962.40	1550.00	5974.70	.00	5975.12	12.43	5.20	298.05	439.70
8560.000	.00	.00	.00	5962.40	4955.00	5981.70	.00	5982.72	19.33	8.63	962.06	1126.96
8865.000	305.00	.00	.00	5966.10	1550.00	5975.00	.00	5975.69	21.78	6.80	263.91	332.13
8865.000	305.00	.00	.00	5966.10	4955.00	5982.26	.00	5983.41	23.61	9.69	947.04	1019.72
8995.000	130.00	.00	.00	5967.20	1550.00	5975.25	.00	5975.97	18.42	6.81	227.47	361.13
8995.000	130.00	.00	.00	5967.20	4955.00	5982.43	.00	5983.74	15.71	9.81	810.55	1250.08
9450.000	455.00	5982.00	5976.90	5969.80	1550.00	5981.63	.00	5982.06	12.85	5.27	293.88	432.37
* 9450.000	455.00	5982.00	5976.90	5969.80	4955.00	5984.72	5984.28	5985.41	21.77	8.14	1124.48	1062.02
* 9500.000	50.00	.00	.00	5970.20	1550.00	5981.97	.00	5982.16	3.48	3.95	508.28	830.45
* 9500.000	50.00	.00	.00	5970.20	4955.00	5985.29	.00	5985.58	5.56	5.92	1750.70	2101.64
9720.000	220.00	.00	.00	5972.20	1550.00	5981.99	.00	5982.30	6.29	4.71	382.76	617.94
9720.000	220.00	.00	.00	5972.20	4955.00	5985.25	.00	5985.84	11.28	7.68	1195.49	1475.22
* 9810.000	90.00	.00	.00	5973.10	1520.00	5981.88	.00	5982.62	27.60	6.90	220.35	289.32
* 9810.000	90.00	.00	.00	5973.10	4915.00	5987.28	5987.28	5988.95	41.73	10.94	619.38	760.82
* 9990.000	180.00	.00	.00	5989.40	.00	5989.40	.00	5989.40	99.27	.02	.00	.00
* 9990.000	180.00	.00	.00	5989.40	2125.00	5990.87	5990.87	5991.29	216.30	6.08	541.71	144.49
* 10325.000	335.00	.00	.00	5992.00	.00	5992.00	.00	5992.00	98.78	.02	.00	.00
10325.000	335.00	.00	.00	5992.00	2125.00	5997.55	.00	5997.88	170.23	4.63	477.27	162.87
* 10375.000	50.00	.00	.00	5996.00	.00	5996.00	5996.00	5996.00	84.18	.01	.01	.00
10375.000	50.00	.00	.00	5996.00	2125.00	5998.57	.00	5998.89	245.09	3.52	480.59	135.74
* 10585.000	210.00	.00	.00	5992.50	.00	5996.00	.00	5996.00	.00	.00	815.58	239.22
* 10585.000	210.00	.00	.00	5992.50	2125.00	5999.08	.00	5999.10	2.55	.77	2434.00	1331.35
* 10630.000	45.00	.00	.00	5976.50	1520.00	5995.98	.00	5996.01	.31	1.36	1822.92	2710.02
* 10630.000	45.00	.00	.00	5976.50	4915.00	5999.02	.00	5999.13	1.33	3.11	3654.03	4261.97