FLOOD CONTROL
DISTRICT
of
MARICOPA
COUNTY
1959

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GILA BEND AREA FLOODPLAIN DELINEATION STUDY

FCD 90-67

TECHNICAL DATA NOTEBOOK HYDRAULICS

BOOK 2 OF 2

Prepared For:

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY
2801 West Durango Street
Phoenix, Arizona 85009
(602) 506-1501

Prepared By:

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Project No. 11358

March, 1992

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3. Hydrologic Analysis	Book 2
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6. Reference Materials	Book 2
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Registered Professional Engineer (Civil)
CERTIFICATE NO. 19705
JAMES E. MICHLER
Date Signed 3-12-92
ARIZONA, U.S.A.

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SECTION 3: Hydrologic Analysis

Refer to the separate Hydrology Technical Data Notebook for a more detailed discussion of hydrology.

SECTION 4: Hydraulic Analysis

4.1 Method Description

Water surface elevations for Sand Tank Wash, Scott Avenue Wash, and Unnamed Washes No. 1 and No. 2 are computed through the use of the Department of the Army, Corps of Engineers HEC-2 Water Surface Profiles computer program as implemented by Dodson and Associates, Inc. in their May 1991 version of ProHEC2. Starting elevations were obtained using normal depth. Elevations used are referenced to the National Geodetic Vertical Datum of 1929.

The Sand Tank Wash model starts with normal depth about 1,350 feet downstream of the study limit so that results at the first section within the detailed study limit (0.926) include the effects of backwater. Similarly, the Scott Avenue Wash model starts about 2,000 feet downstream of the study limit (River Mile 2.261).

Starting slopes were computed as the average of the channel invert slope for each stream near the point of beginning.

Natural profile models for Bender Wash and the unnamed washes start with normal depth at a section downstream of the confluence so that results at the first section within the study stream include backwater effects.

Regulatory flood profiles plotted in the report have been adjusted to reflect backwater from the 100-year flood peak on Sand Tank Wash.

Following completion of reproducible topographic mapping, stream thalwegs were sketched on work prints. Cross section locations spaced at about 1,000 feet were selected. Criteria for selection included:

* Represent the local stream reach
* Orient perpendicular to the predicted 100-year floodplain
* Avoid inclusion of non-effective areas such as tributary washes
* Include the entire predicted 100-year floodplain
* Check the accuracy of topographic mapping and digitized cross sections at the five locations surveyed in the field.

At confluences and other areas where it was anticipated that flow may not be fully two dimensional, "broken back" cross sections where selected to reflect the predicted flow pattern.

Cross section labeling represents each section's distance upstream of the mouth, measured in miles along the thalweg. USGS 7-1/2 minute topographic mapping was used to measure Sand Tank and Scott Avenue Washes thalweg distance from their mouths at the Gila River to the centerline of North Indian Road and Watermelon Road, respectively.

The basis of river mile stationing for Sand Tank Wash is river mile 0.931 where the thalweg crosses the North Indian Road centerline.

The basis of river mile stationing for Scott Avenue Wash is river mile 1.861 where the thalweg crosses the Watermelon Road centerline.

Digitized cross sections at the locations selected as described above were provided by Aerial Mapping Co., Inc. Sections were processed by Burgess & Niple to develop section plots. For each cross section, station 10,000 represents the intersection with the thalweg as delineated by Burgess & Niple on the topographic mapping.

Cross section plots were reviewed in conjunction with aerial photographs and topographic mapping to determine if the sections were representative of the reach. Adjustments were made to remove non-effective areas, bank stations were selected, and Manning's "n" values were assigned.

Predicted overbank flow lines were sketched on the work maps, and flow lengths were scaled along these lines and the thalweg.

Results of the initial HEC-2 run were reviewed to determine if sections were representative of the reach. Further adjustments were made to remove non-effective flow areas. For Sand Tank Wash, sections were re-digitized to include a wider section of the valley, including Bender Wash.

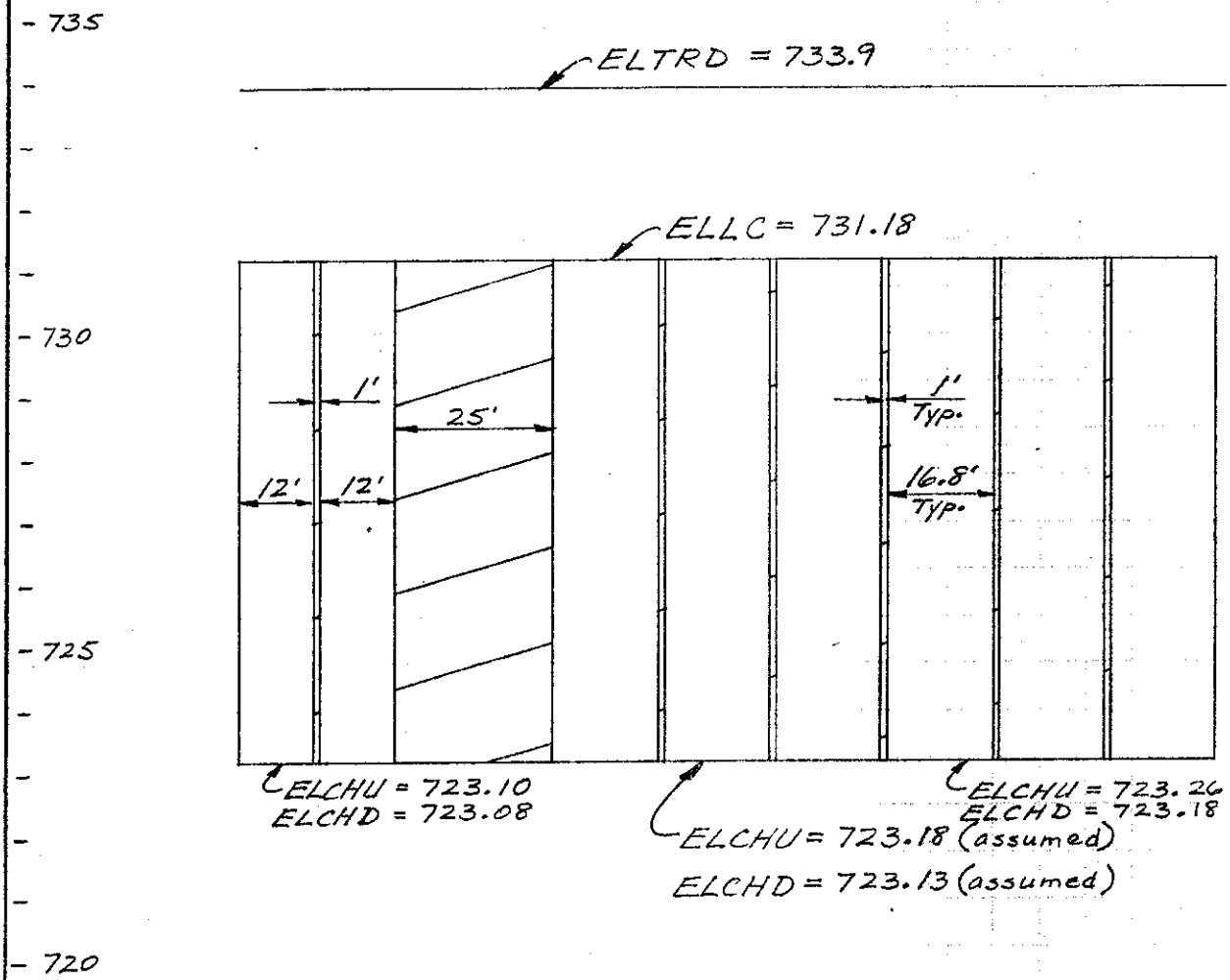
Following are copies of cross sections showing bank stations, 100 year water surface elevation, and Manning's "n" values.

BURGESS & NIPLE, INC. - COMPUTATION SHEET

JOB NO. 11358 JOB NAME Gila Bend Floodplain SHEET ___ OF ___ SHEETS

SUBJECT Conc. Box Culvert PREPARED BY CEH DATE 11-6-91

Sand Tank Wash & Hwy. 80 CHECKED BY JEM DATE 1/19/92



1	CUNO. CUNV	8.014			
2	ENTLC	0.4	8	CHRT. SCL	8.1
3	COFQ	3	9	ELCHU	723.18
4	RDLEN	0	10	ELCHD	723.13
5	RISE	8			
6	SPAN	15.60 (average)			
7	CULVLN	80.00			

BURGESS & NIPLE, INC. - COMPUTATION SHEET

JOB NO. 11358 JOB NAME GILA BEND FLOODPLAIN SHEET ___ OF ___ SHEETS

SUBJECT CONC BOX CULVERT PREPARED BY WCD DATE 2-7-92

COMBINED SAND TANK & BENDER CHECKED BY ___ DATE ___

AT HWY 80

CONVERT BENDER WASH CULVERT INTO EQUIVALENT SAND TANK WASH CULVERT AND COMBINE THE TWO.

SAND TANK - 8 BARRELS, 8' x 15.60'

BENDER - 6 BARRELS, 6' x 10'

COMBINE - 8 x (8 x 15.6) + 6 (6 x 10) = 1358.4

1358.4 / 14 = 97.02

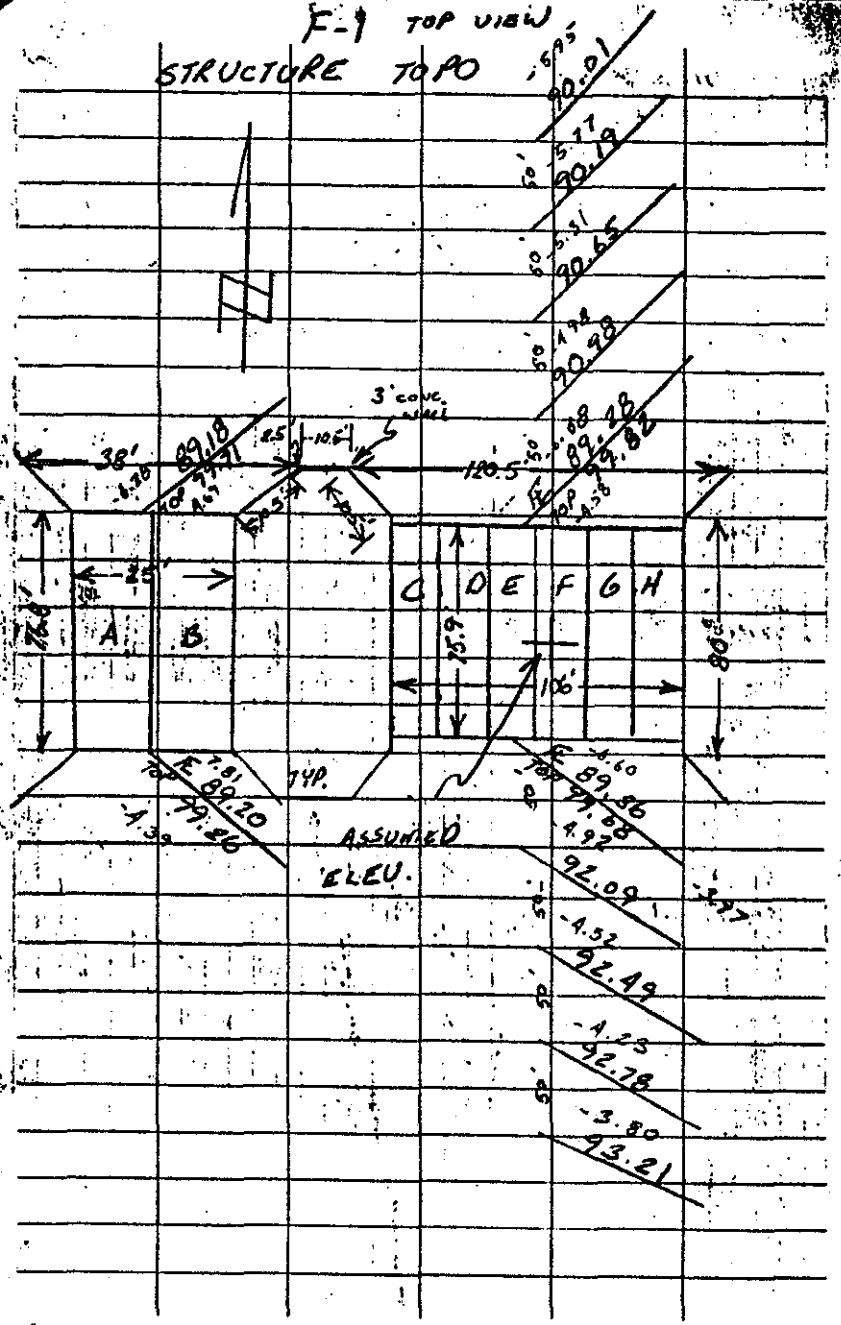
14 BARRELS @ NEW SPAN = 97.02/8 = 12.13'

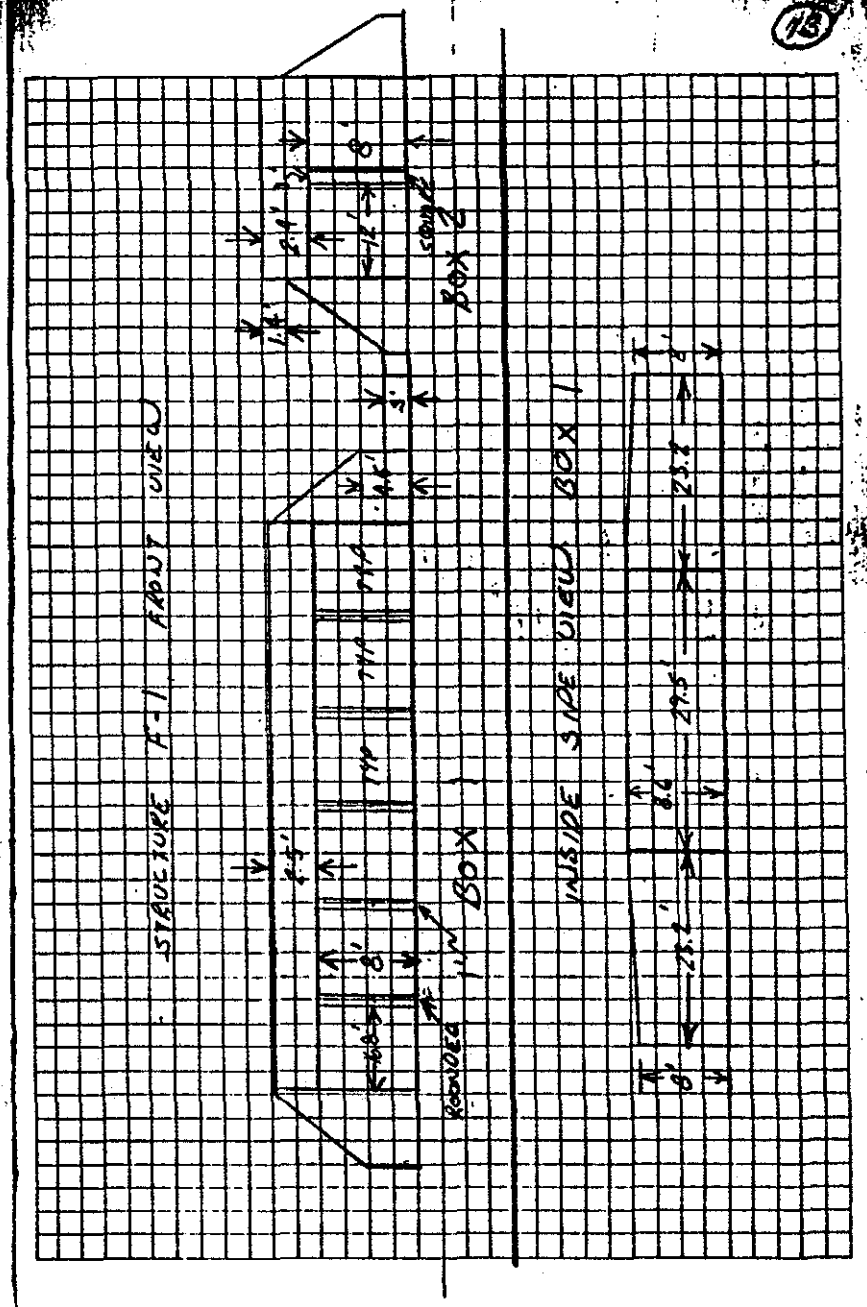
1	CUNO.CUNV	14.014	6	SPAN	12.13'
2	ENTLC	0.4	7	CULVLN	80.00
3	COFQ	3	8	CHRT.SCL	8.1
4	RDLEN	0	9	ELCHU	723.18
5	RISE	8	10	ELCHD	723.13

NOT USED

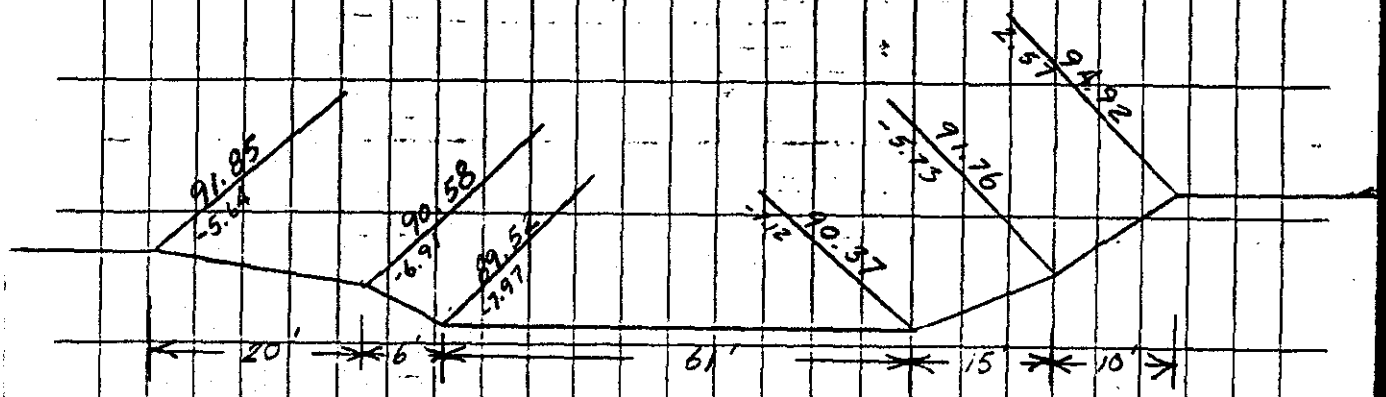
F-1 TOP VIEW

STRUCTURE TOPO





WASH CROSSECTION 200' NORTH OF STRUCTURE F-1



NORTH VIEW

STA.	B.S. +	H.I.	F.S. −	ELEV.	
BM.				100.00	
	4.40	104.40			
TP. 1			10.985	93.415	
	2.545	95.96			
A NORTH END			4.19	91.77	
B "			4.55	91.41	
C "			4.76	91.20	
D "			4.34	91.62	
E "			4.69	91.27	
F "			5.18	90.78	
G "			4.11	91.85	
H			2.55	93.41	
E			6.60	89.36	
TP. 2			5.95	90.01	
	7.475	97.485			
TP. 2			7.48	90.005	
	7.00	97.005			
A SOUTH END			4.91	92.10	
B "			5.42	91.59	
C "			5.73	91.28	
D "			4.91	92.10	
E "			5.21	91.80	
F			5.88	91.13	
G			4.87	92.14	
H			3.09	93.92	

LEVELS FOR F-1

DESCRIPTION

ASSUMED ELEV @ ℄ POINT. OVER STRUCTURE BOX 1 STRUCTURE F-1

TOP CONC.

TOP SLAT N. END BOX A
" " " " BOX B
" " " " BOX C
" " " " BOX D
" " " " " E
" " " " " F
" " " " " G
" " " " " H

TOP SLAT S. END BOX A
" " " " BOX B
" " " " BOX C
" " " " BOX D
" " " " BOX E
" " " " BOX F
" " " " BOX G
"

STA.	B.S. (+)	H.I.	F.S. (−)	ELEV.	
		97.005			
TP. 3			3.62	93.385	
	10.26	103.645			
BM.			3.65	99.995	✓
				.005	

LEVEL FOR F-1

DESCRIPTION

(16)

ASSUMED ELEV. @ ℄ ROMT OVER STRUCTURE BOX 1 STRUCTURE F-1

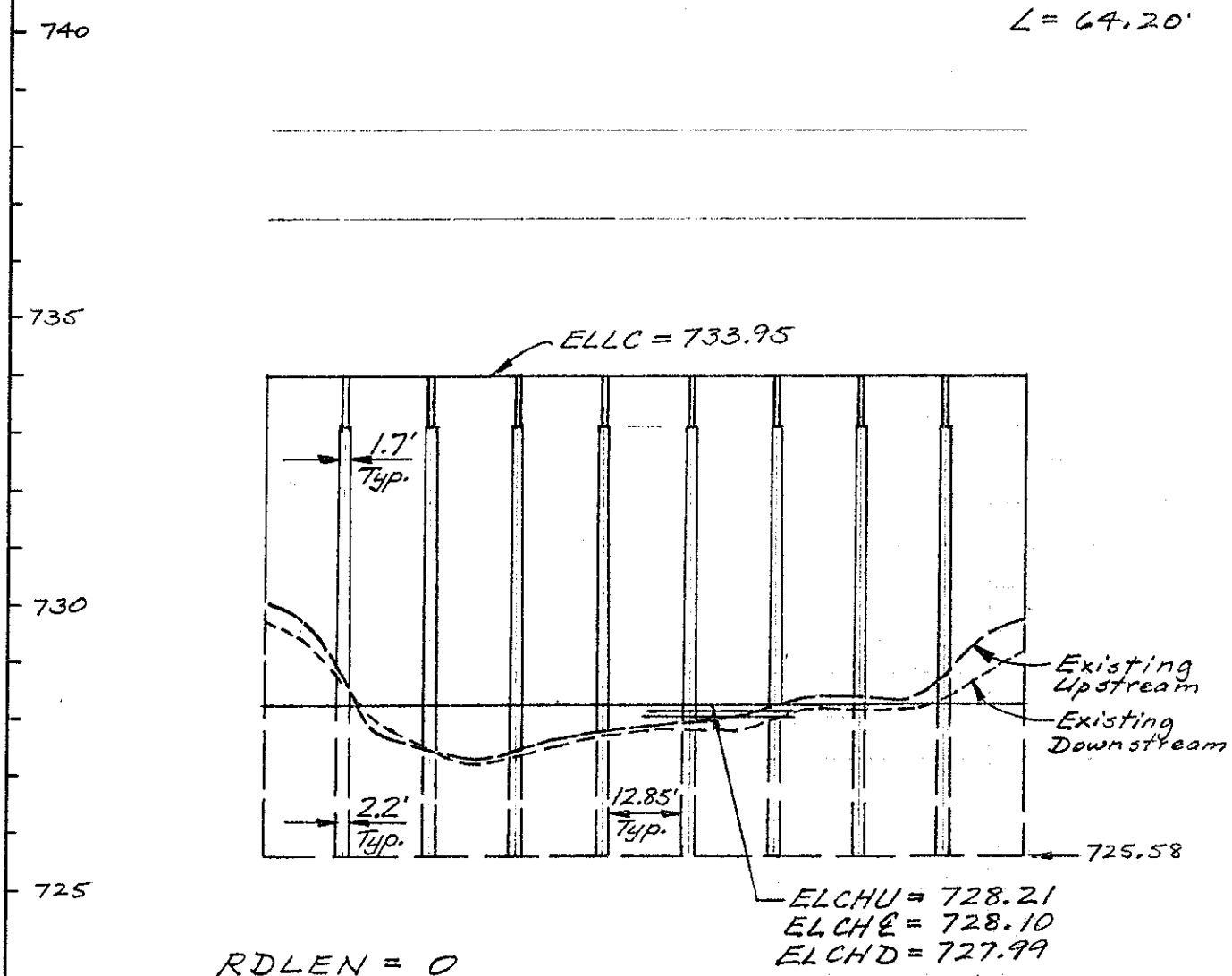
BURGESS & NIPLE, INC. - COMPUTATION SHEET

JOB NO. 11358 JOB NAME Gila Bend Floodplain SHEET ___ OF ___ SHEETS

SUBJECT Sand Tank Wash Bridge PREPARED BY CEU DATE 11-6-91

Cross Section Railroad CHECKED BY JEM DATE 1/19/92

L = 64.20'



RDLEN = 0

SS = 0

BWC = 133.0'

BWP = 8(2') = 16'

BAREA = (733.95 - 728.21)(133.0) - (5.74)(16) =

763.42 - 91.84 = 671.58 s.f.

XK = 1.25

XKOR = ~~1.6~~ 1.56

COFQ = 3

BURGESS & NIPLE, INC. - COMPUTATION SHEET

JOB NO. 11358 JOB NAME GILA BEND FLOODPLAIN SHEET ____ OF ____ SHEETS

SUBJECT COMBINED BRIDGE @ SAND TANK & BENDER WASH PREPARED BY WCD DATE 2-7-92

CHECKED BY ____ DATE ____

AT RAILROAD

SAND TANK - BAREA = 671.58' f^2, 8 PIERS, HEIGHT = 5.74'

BENDER - BAREA = 226.73' f^2, 2 PIERS

COMBINE - 671.58 + 226.73 = 898.31 f^2

CONVERT BENDER INTO EQUIV. SAND TANK AND COMBINE

BWC = 898.31 / 5.74 = 156.5

BWP = (8+2) x 2.0' = 20

RDLEN = 0
SS = 0
BWC = 156.5
BWP 20

BAREA = 898.31

XK = 1.25
XKOR = 1.56
COFQ = 3

Book 144
Job # 1358

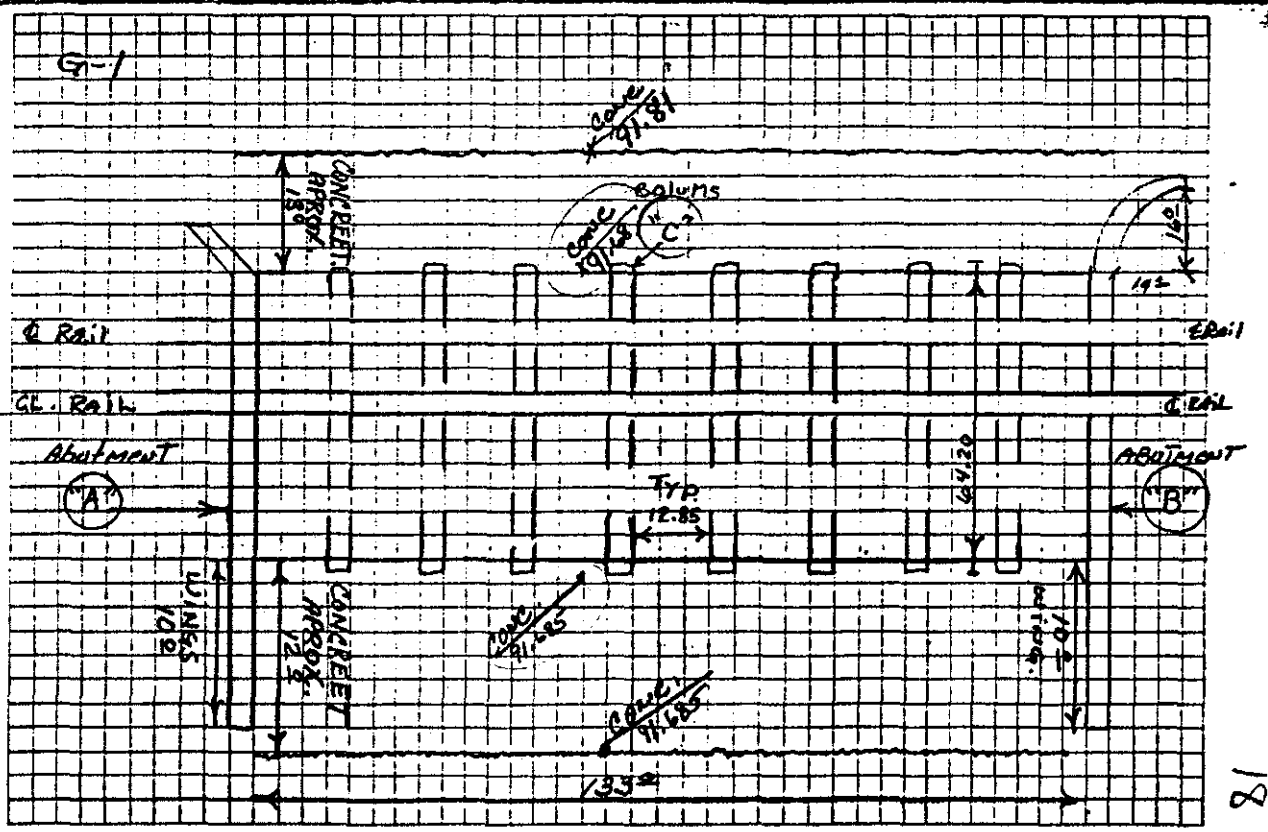
Topography of Structure
Gila Bend M.C.F.C.D.

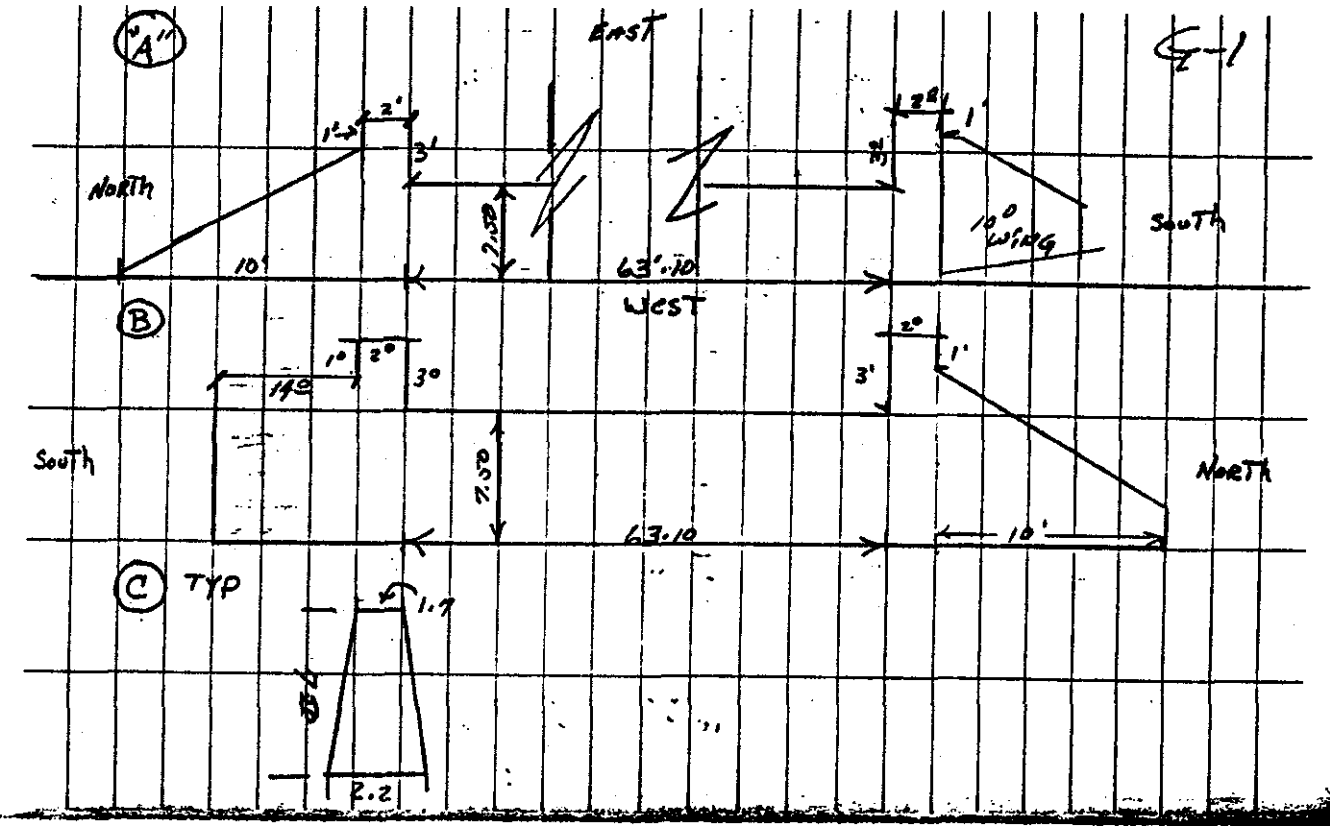
Date 10-11-91

⋈ B. Davis
⊼ S. Perham
Rd. W. Ingram.

Structure G-1

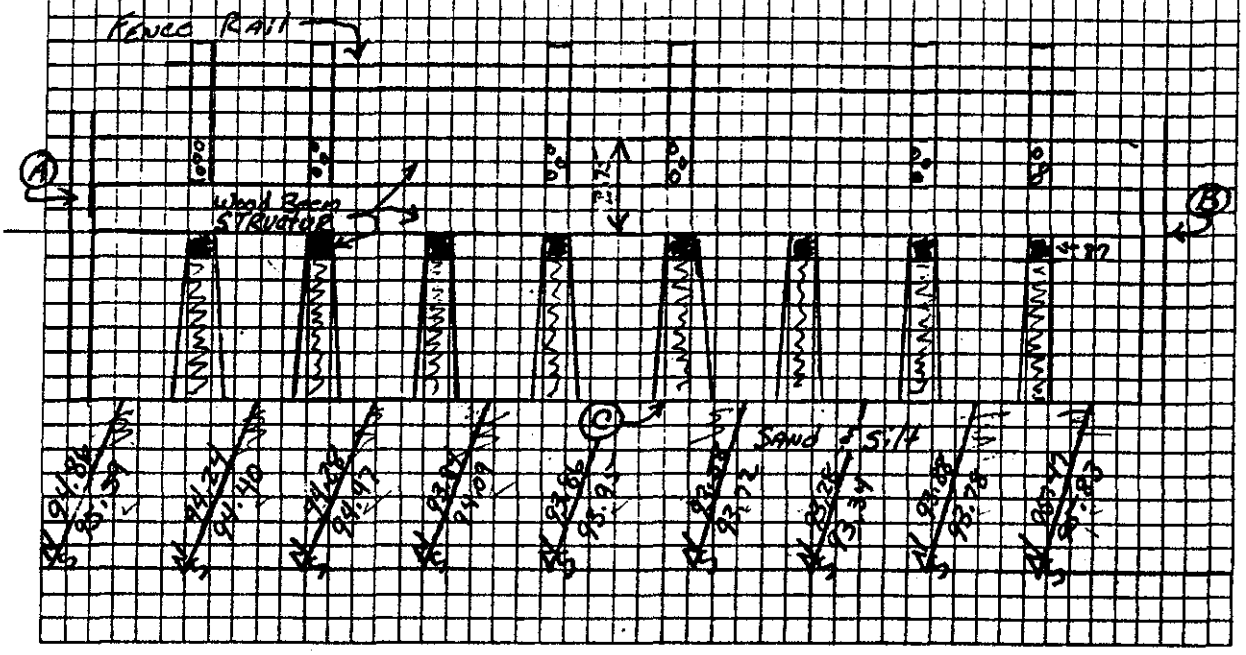
G-1


Conc. 91.81
Columns
Conc. 91.28
C2
CONCRETE APPROX. 13.0
16.0
19.2
℄ Rail
℄ Rail
℄ Rail
℄ Rail
Abutment
"A"
Abutment
"B"
Typ. 12.85
64.20
UNESS 10.0
CONCRETE APPROX. 12.3
Conc. 91.25
Conc. 91.685
10.0
133.2



North View Looking South G-1

N = North End of STRUCTURE.
S = South End of STRUCTURE.



Sta	B.S.	H.I	F.S	Elev	
	4.60	97.985		93.385	
2+00 N			4.78	93.205	
1+50 N			4.58	93.405	
1+00 N			4.47	93.515	
0+50 N			4.36	93.625	
0+00 N.			4.12	93.86	
T.P. 1			3.89	94.095	
	4.98	99.075			
0+50 S			4.60	94.47	
1+00 S.			4.40	94.67	
1+50 S.			4.32	94.75	
2+00 S.			4.27	94.80	
T.P. #2			2.27	96.805	
	10.44	107.245			
S.S. 1				2.90	104.345
S.S 2				3.70	103.545
CK-IN			7.28	99.985	.015 Low

Description G-1

T.B.M = T.P #3 for Structure F-1

200 No of structure

T.P. Rock -

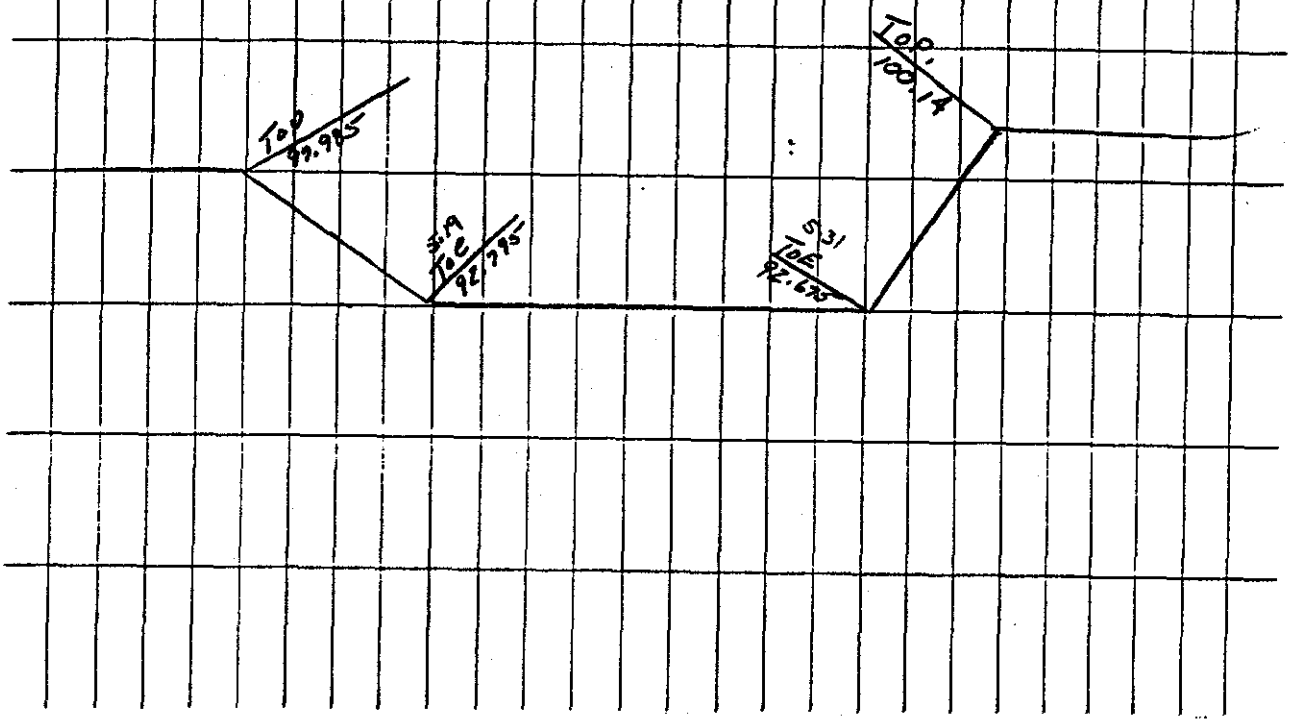
T.P. #2 Rock.

SS.1 Top of South Rails Nor. Rail

SS 2 Nor. Rail of The Nor. Rails

CK-IN B.M. ℄ Hand ∫ Box F-1 Ass. 100.00

2ND LOOKING SO.
G-1



BURGESS & NIPLE, INC. - COMPUTATION SHEET

JOB NO. 11358 JOB NAME Gila Bend Floodplain SHEET 3 OF 4 SHEETS

SUBJECT Sand Tank Wash Bridge PREPARED BY LEU DATE 10-02-91

West Bound I-8 CHECKED BY _____ DATE _____

SPAN CALCULATIONS

skew = 45° skew length = 5(30) + 2(24.5) = 199.00'

Perpendicular projection to channel;

$L_\perp$ = 199'(cos 45°) = 140.71'

Midspan $L_\perp$ = 30'(cos 45°) = 21.21'

End span $L_\perp$ = 24.5'(cos 45°) = 17.32'

SPECIAL BRIDGE CALCULATIONS

Existing X-Sectional Area = 1,272.00 s.f.

ELLC = (771.05 + 771.51) ÷ 2 = 771.28

ELTRD = (772.59 + 773.05) ÷ 2 = 772.82

* RECTANGULAR CHANNEL *

(771.28 - ELCH℄) 140.71' = 1272.00 s.f.

ELCH℄ = 762.24

EB ELCH℄ 763.76 - W.B. ELCH℄ 762.24 = 1.52' ÷ 152.74' = 0.009952

ELCHU = 762.24 + (17.29 × 0.009952) = 762.41

ELCHD = 762.24 - (32.94 × 0.009952) = 761.91

SS = 0

BWC = 140.71'

BWP = 6(1.17') = 7.00'
(14")

BAREA = (771.28 - 762.41)(140.71') - (8.87)(7.00) =
1,248.10 - 62.09 = 1,186.01 s.f.

XK = 1.05

XKOR = 1.56

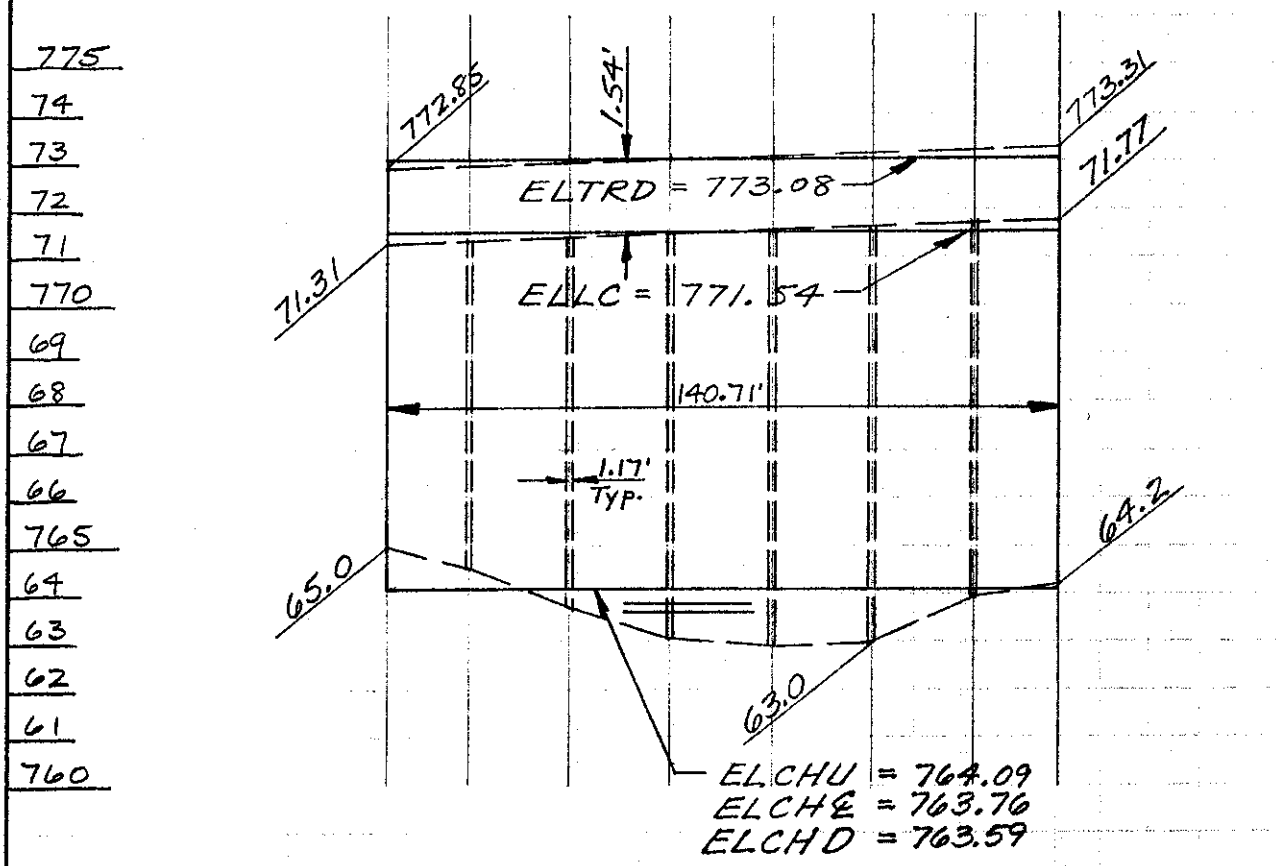
COFQ = 3

BURGESS & NIPLE, INC. - COMPUTATION SHEET

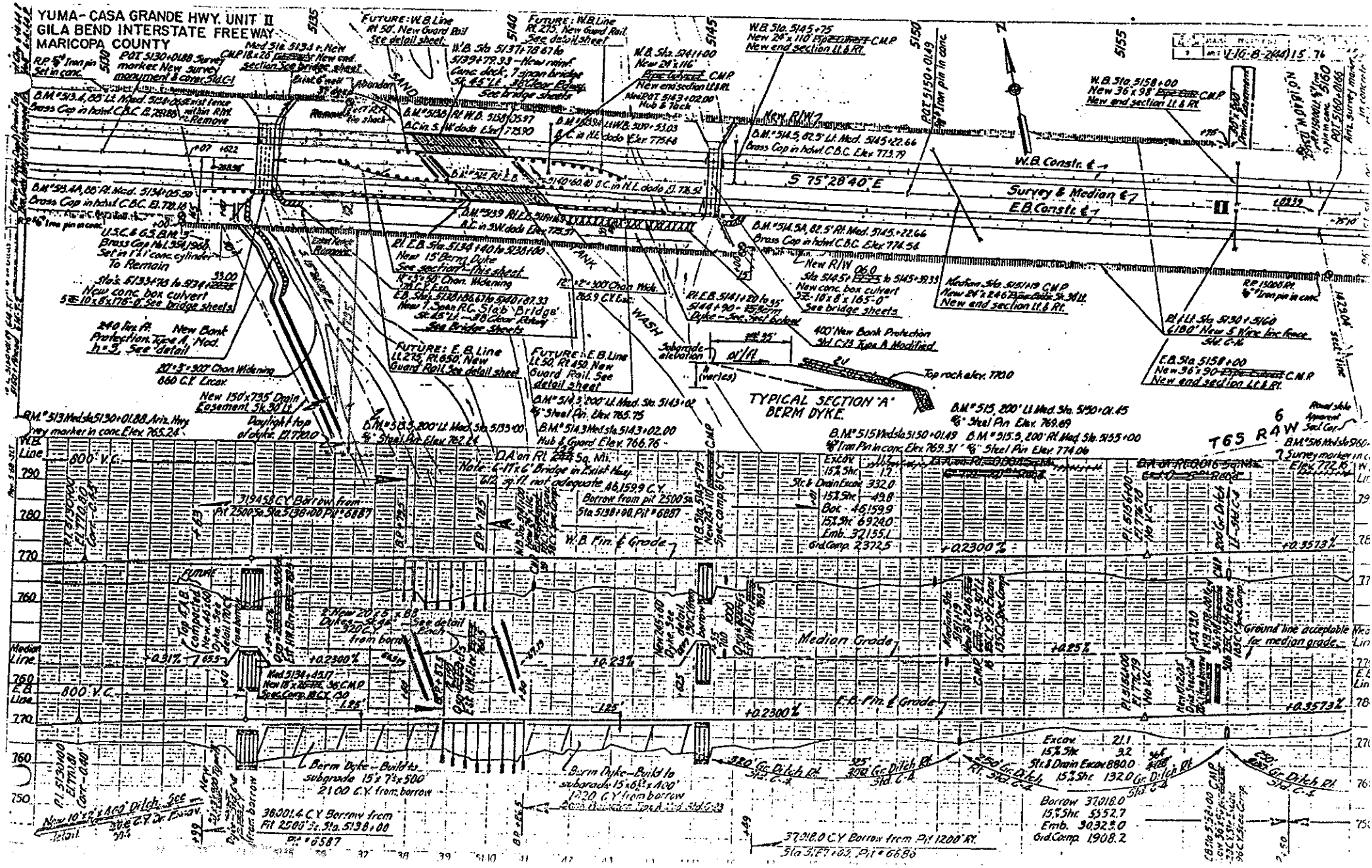
JOB NO. 11358 JOB NAME Gila Bend Floodplain SHEET 2 OF 4 SHEETS

SUBJECT Sand Tank Wash Bridge PREPARED BY EEU DATE 10-02-91

Cross Section E.B. I-8 CHECKED BY _____ DATE _____

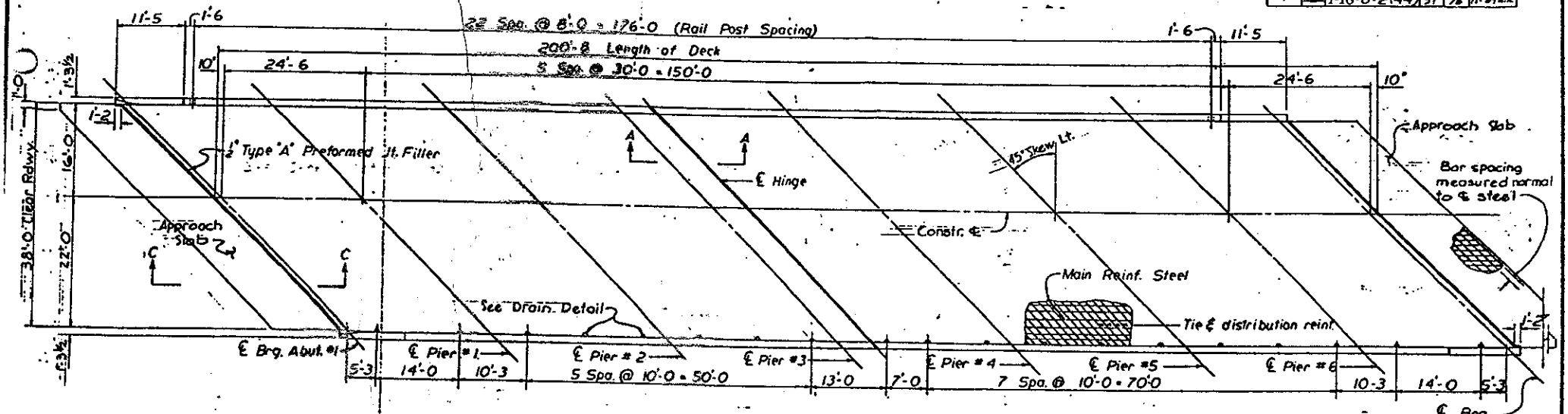


YUMA-CASA GRANDE HWY. UNIT II
GILA BEND INTERSTATE FREEWAY
MARICOPA COUNTY

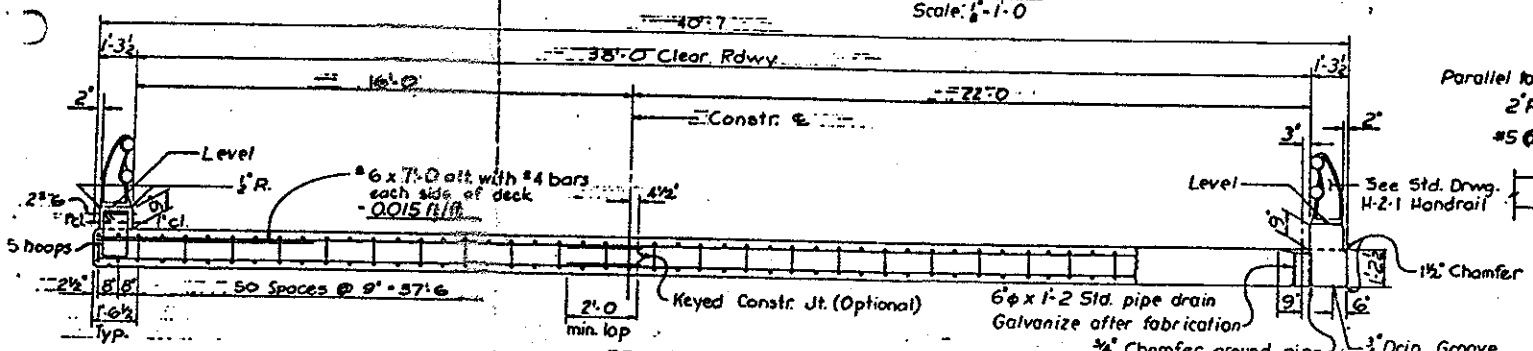


MARICOPA COUNTY

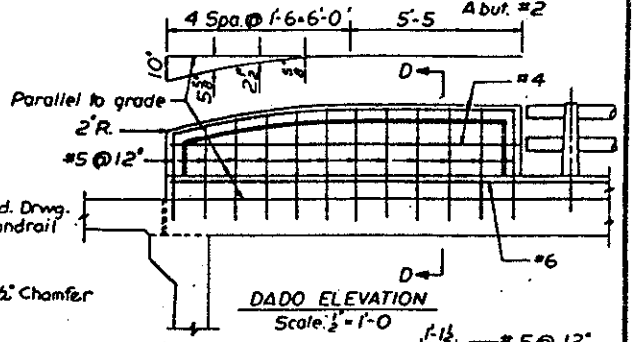
		I-16-8-2(44)	57	76	11-59 A.A.



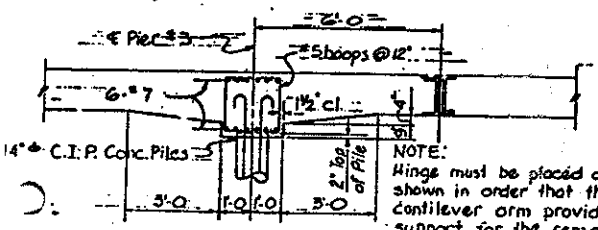
DECK PLAN
Scale: ⅛" = 1'-0



TRANSVERSE SECTION
Scale: ½" = 1'-0

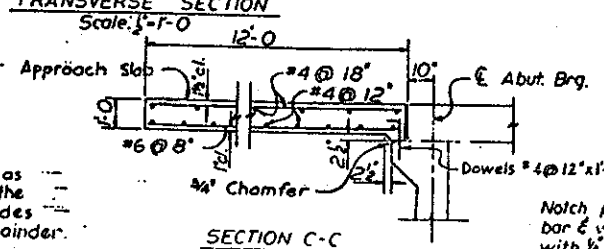


DADO ELEVATION
Scale: ½" = 1'-0

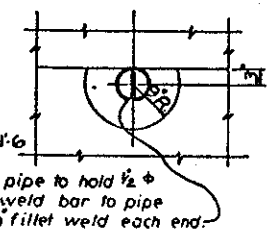


NOTE:
Hinge must be placed as shown in order that the cantilever arm provides support for the remainder of the span.

SECTION A-A
Scale: ½" = 1'-0



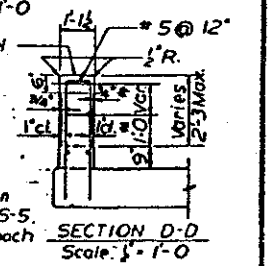
SECTION C-C
Scale: ½" = 1'-0



Notch pipe to hold ½" φ bar & weld bar to pipe with ¼" fillet weld each end.

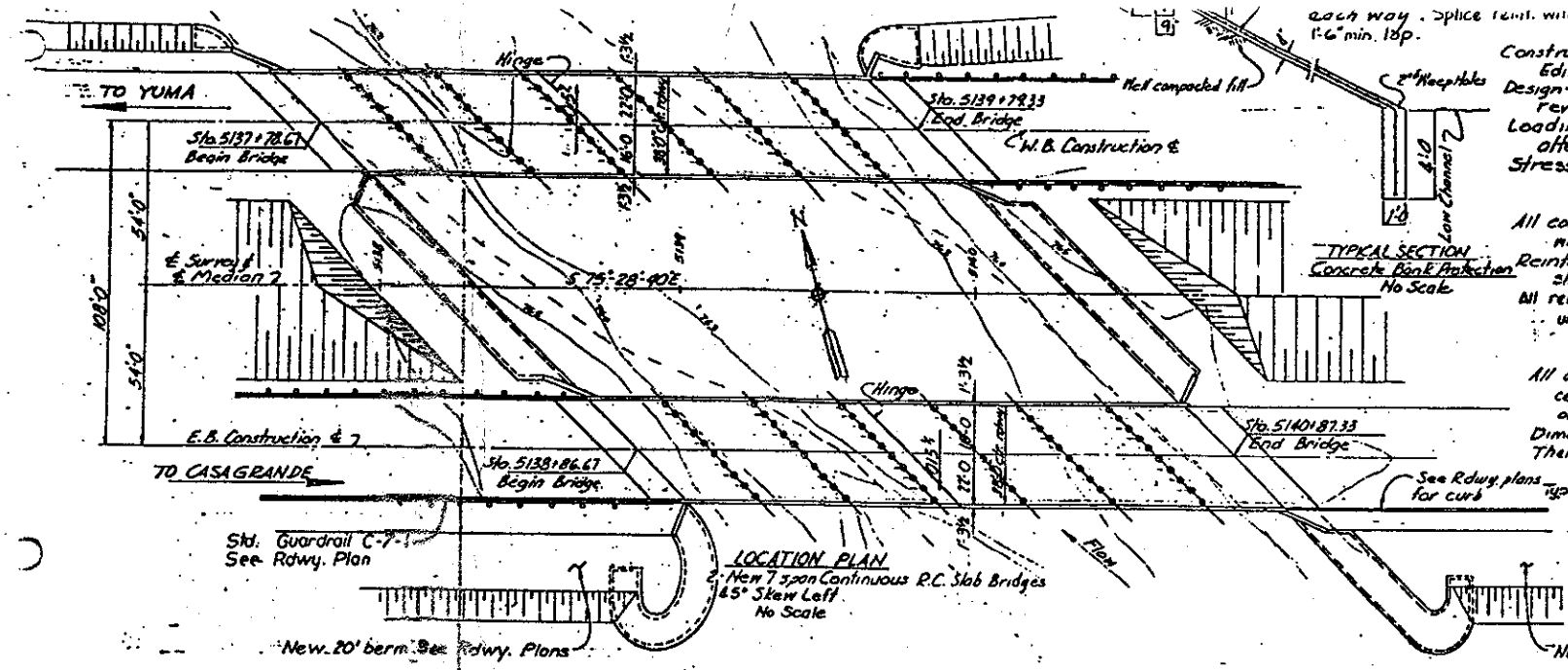
DRAIN DETAIL
Scale: 1" = 1'-0

NOTE:
For all other deck details see Std. CS-5-201 & CHS 201.
For slab hinge and hinge span reinforcing details see Std. CHS-5.
* Inside of dado is flush at approach dados. See sheet 9 of 11.



SECTION D-D
Scale: ½" = 1'-0

DESIGNED	STD.	6-64	ARIZONA HIGHWAY DEPARTMENT BRIDGE, DIVISION
CHECKED	APJ	6-64	F.B. STA. 5139 + SAND TANKS WASH BRIDGES DECK DETAILS
DRAWN	LBW	11-64	
SHEET 11 OF 11			



each way. Splice reinf. with 1'-6" min. lap.

GENERAL NOTES

Construction - Standard Spec's Arizona Highway Dept Edition of 1960, revised to date

Design - AASHO Std Spec's for Highway Bridges 1965, revised to date.

Loading Class - HS 20-44 and/or Interstate alternate loading.

Stresses - Class "A" Concrete - fc = 1000 p.s.i.; n = 12
Class "D" Concrete - fc = 1200 p.s.i.; n = 10
Reinforcing steel fs = 20,000 p.s.i.

All concrete shall be Class "A" except deck slab which shall be Class "D".

Reinforcing Steel shall be intermediate grade and shall conform to ASTM Spec's A15 and A305.

All reinforcing steel shall have 2" clear cover unless noted otherwise.

All dimensions for reinforcing steel shall be to center of bars except when noted otherwise on plans.

Dimensions shall not be scaled from the plans.

There shall be a minimum of 12" special compaction under approach slabs.

Type A Joint Filler is chemically or bituminous treated preformed expansion joint filler for concrete AASHO M163 Type III

PILE NOTES

All piles shall be 14" ϕ C.I.P. Concrete piles as per Std CP-6 or as detailed on Sheet 4 of 11.

Minimum bearing shall be 32 tons.

Estimated tip elevation shall be to Elev. 743.0'

Estimated length 30'.

Any pile which is driven to a bearing of 1¾ times the bearing given on the plans and which reaches a tip elev. within 3 feet of the estimated tip elevation shall be considered acceptable.

APPROXIMATE QUANTITIES

ITEM	STRUCT EXCAV. C.Y.	SPEC COMP. C.Y.	CONCRETE (Class "A")	CONCRETE (Class "D")	REINF. STEEL LBS.	Metal Hdr. H-2-1 Lin. Ft.	16" ϕ C.I.P. Conc. Piles No.	16" ϕ C.I.P. Conc. Piles Lin. Ft.
Pier #1	2430	350	132.81		12810			
Pier #2	2430	330	132.81		12810			
Pier #3							60	1800
Pier #4			16.57	451.12	[illegible]	35767		
Pier #5			34.20		3585			
Pier #6								
TOTAL LBS.	[illegible]	680	316.43	401.12	[illegible]	337.67	60	1800
TOTAL C.Y.	19.[illegible]	13.70	632.96	[illegible]	[illegible]	115.34	120	3600

TYP. SECTION THRU CONSTR. ℄ -
Scale: 1" = 10'-0

462 Total Lin. Ft. Concrete Bank Protection (Measured @ toe)

DESIGNED	R.G.R.	4-72	ARIZONA HIGHWAY DEPARTMENT BRIDGE DIVISION
DRAWN	K.G.H.	4-72	EB SWB STA 5138+ SAND TANKS WASH BRIDGES LOCATION PLAN
CHECKED			
SHEET NO. 1 OF 11 SHEETS			

BURGESS & NIPLE, INC. – COMPUTATION SHEET

JOB NO. 11358 JOB NAME Gila Bend Floodplain SHEET 1 OF 4 SHEETS

SUBJECT Sand Tank Wash Bridge PREPARED BY CEH DATE 10-02-91

East Bound I-8 CHECKED BY _____ DATE _____

SPAN CALCULATIONS

skew = 45° skew length = 5(30) + 2(24.5) = 199.00'

Perpendicular projection to channel;

$L_\perp$ = 199 (cos 45°) = 140.71'

Midspan $L_\perp$ = 30' (cos 45°) = 21.21'

Endspan $L_\perp$ = 24.5' (cos 45°) = 17.32'

SPECIAL BRIDGE CALCULATIONS

Existing X - Sectional Area = 1,094.40 s.f.

ELLC = (771.31 + 771.77) ÷ 2 = 771.54

ELTRD = (772.85 + 773.31) ÷ 2 = 773.08

* RECTANGULAR CHANNEL *

(771.54 - ELCH℄) 140.71' = 1094.40 sf

ELCH℄ = 763.76

E.B. ELCH℄ 763.76 - W.B. ELCH℄ 762.24 = 1.52' ÷ 152.74' = 0.009952

ELCHU = 763.76 + (32.94' × 0.009952) = 764.09

ELCHD = 763.76 - (17.29' × 0.009952) = 763.59

SS = 0

BWC = 140.71'

BWP = 6(1.17') = 7.00'
(14")

BAREA = (771.54 - 764.09)(140.71') - (7.45)(7.00) =
1,048.29 - 52.15 = 996.14 s.f.

XK = 1.05

XKOR = 1.56

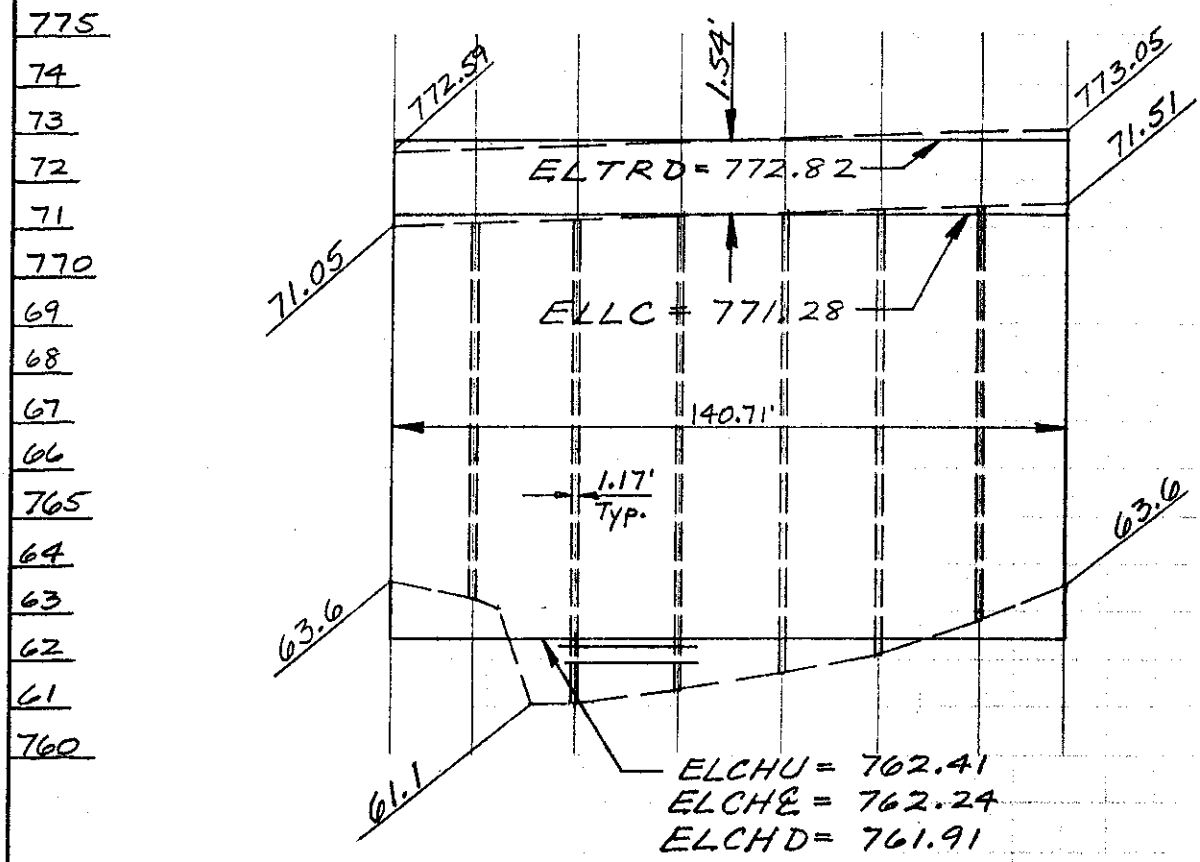
COFQ = 3

BURGESS & NIPLE, INC. - COMPUTATION SHEET

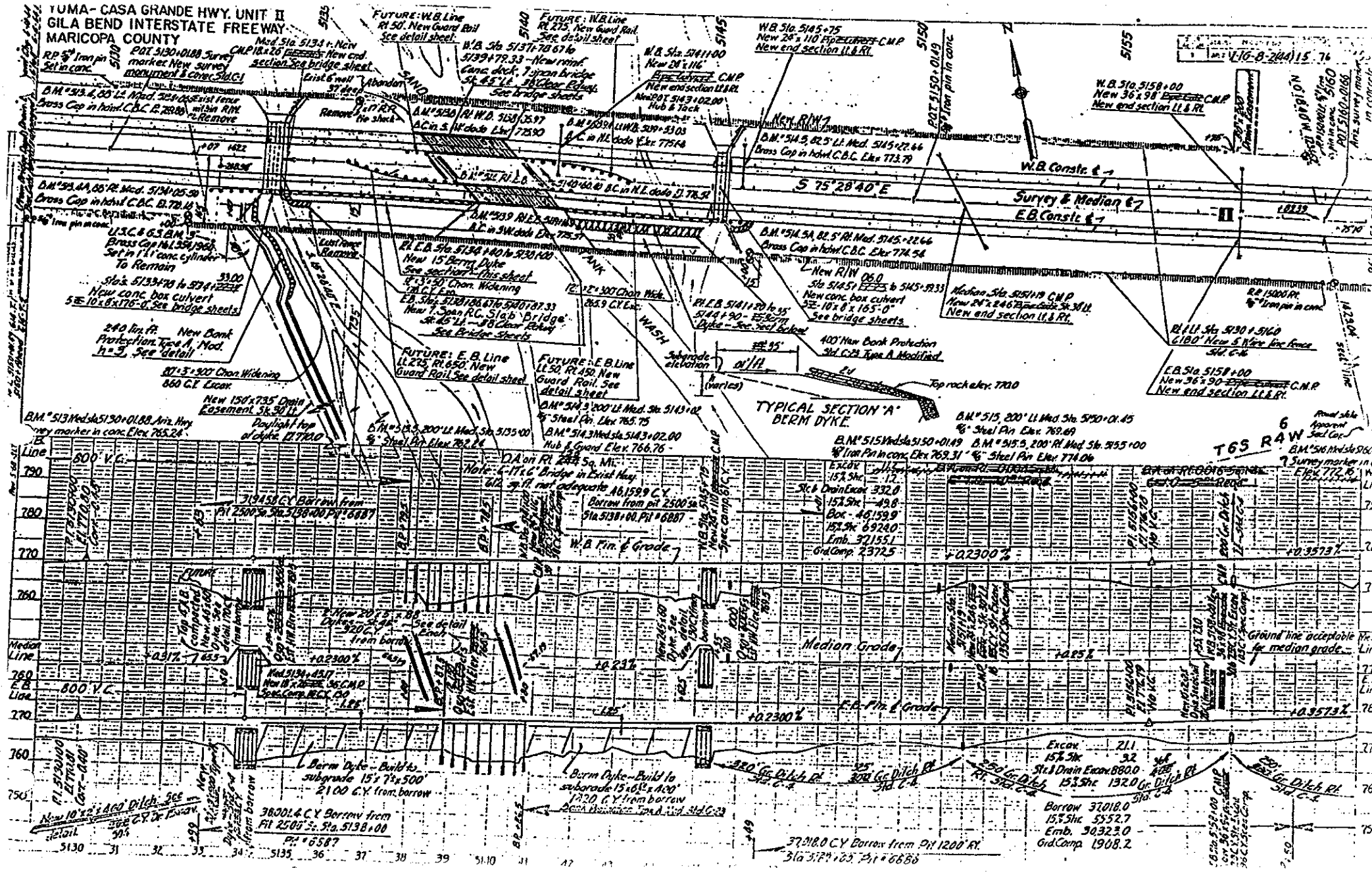
JOB NO. 11358 JOB NAME Gila Bend Floodplain SHEET 4 OF 4 SHEETS

SUBJECT Sand Tank Wash Bridge PREPARED BY EEU DATE 10-02-91

Cross Section W.B. I-8 CHECKED BY _____ DATE _____

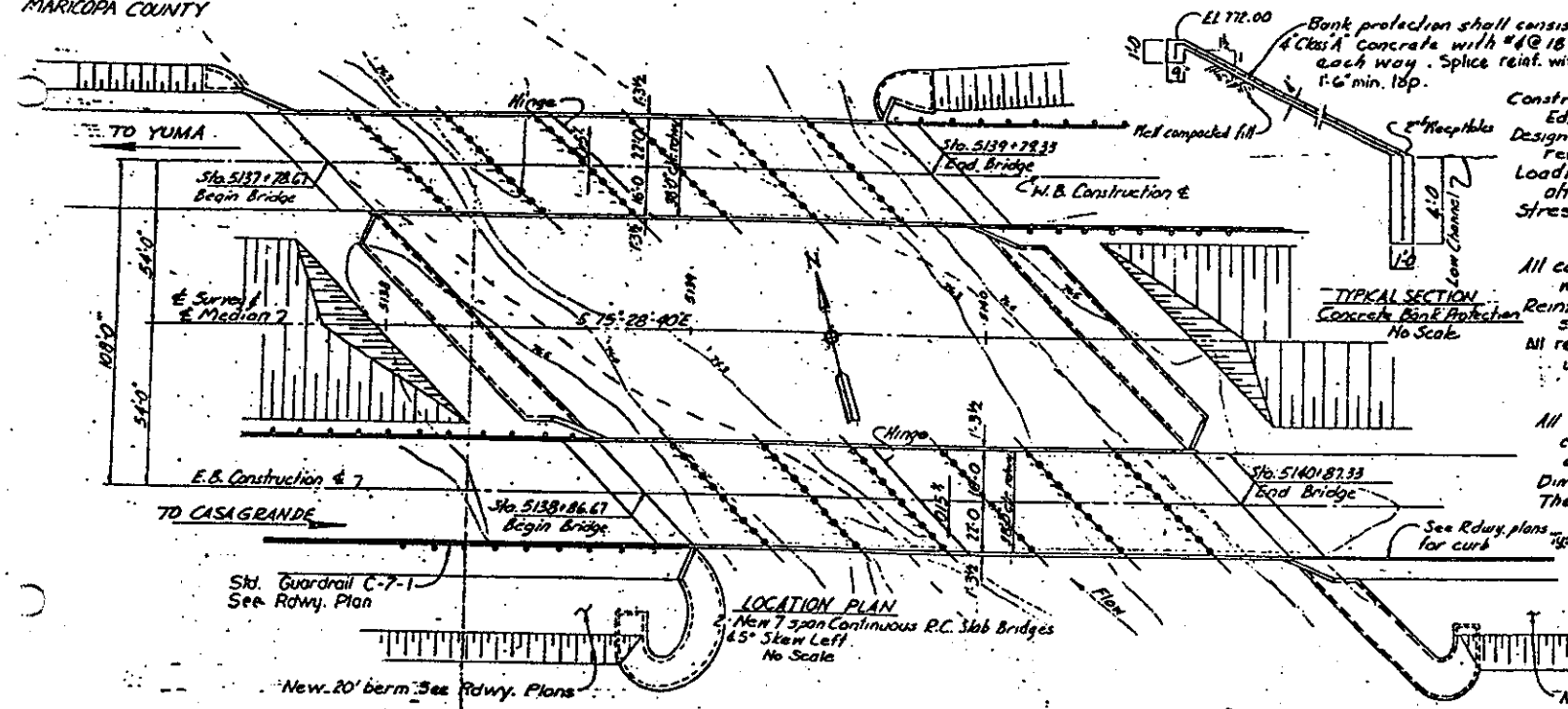


YUMA-CASA GRANDE HWY. UNIT II
GILA BEND INTERSTATE FREEWAY
MARICOPA COUNTY



YUMA - CASA GRANDE HWY.
MARICOPA COUNTY

3		I-16 B-2(44)	47	76	11-6.2 &

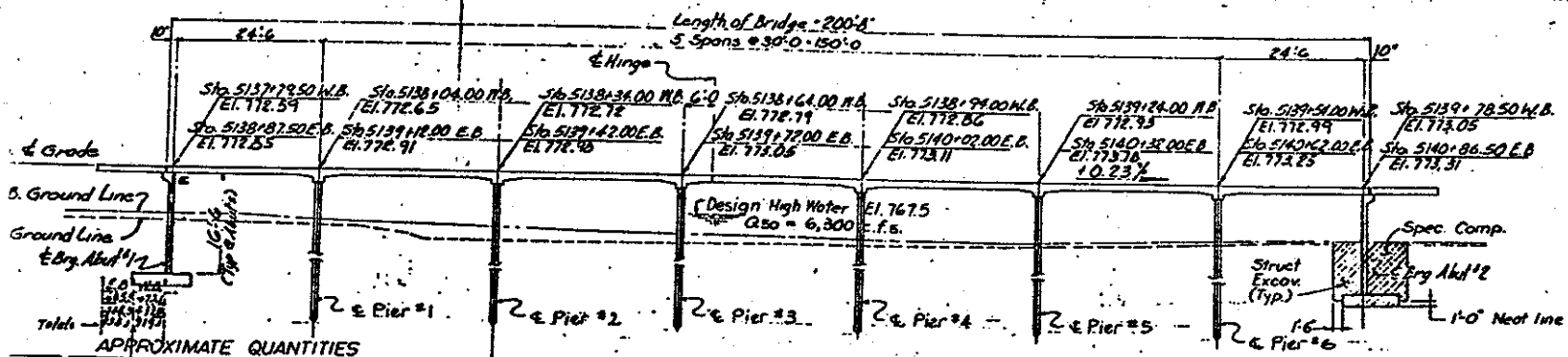


LOCATION PLAN
2 New 7 span Continuous P.C. Slab Bridges
45° Skew Left
No Scale

GENERAL NOTES

Construction - Standard Spec's Arizona Highway Dept Edition of 1960, revised to date.
Design - AASHO Std Spec's for Highway Bridges 1965, revised to date.
Loading Class - HS 20-44 and/or Interstate alternate loading.
Stresses - Class A Concrete - fc = 1000 psi; n = 12
Class D Concrete - fc = 1800 psi; n = 10
Reinforcing steel fs = 20,000 p.s.i.
All concrete shall be Class A except deck slab which shall be Class D.
Reinforcing Steel shall be intermediate grade and shall conform to ASTM Spec's A15 and A305.
All reinforcing steel shall have 2" clear cover unless noted otherwise.

All dimensions for reinforcing steel shall be to center of bars except when noted otherwise on plans.
Dimensions shall not be scaled from the plans.
There shall be a minimum of 12" special compaction under approach slabs.
Type A Joint Filler is chemically or bituminous treated preformed expansion joint.
Filler for concrete AASHO M153 Type III



TYP. SECTION THRU CONSTR. ℄ -
Scale: 1" = 10'-0

PILE NOTES

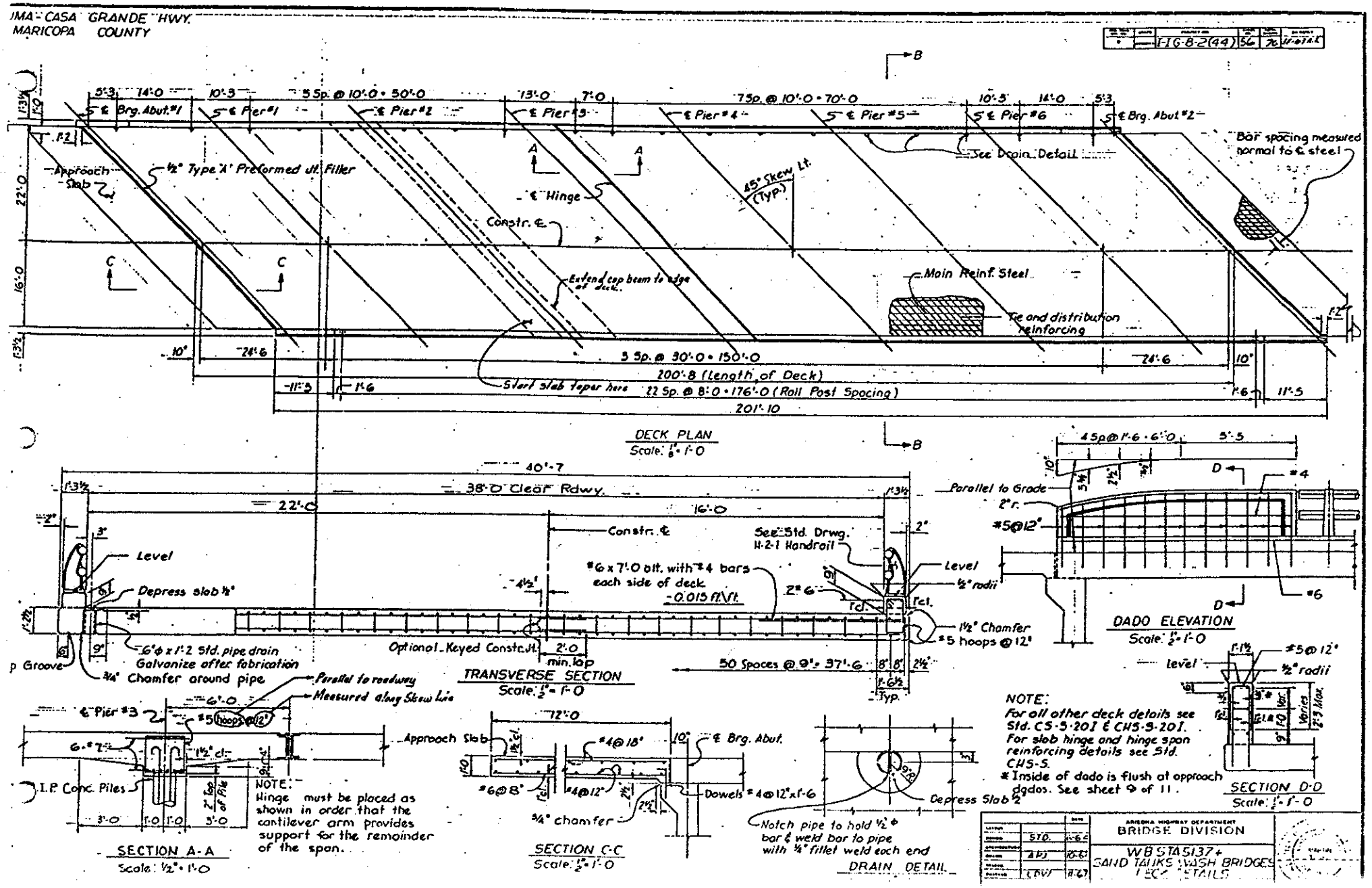
All piles shall be 14" C.I.P. Concrete piles as per Std. CP-6 or as detailed on Sheet 4 of 11.
Minimum bearing shall be 32 tons.
Estimated tip elevation shall be to Elev. 743.0'
Estimated length 30'.
Any pile which is driven to a bearing of 1½ times the bearing given on the plans and which reaches a tip elev. within 3 feet of the estimated tip elevation shall be considered acceptable.

APPROXIMATE QUANTITIES

ITEM	STRUCT. EXCAV. C.Y.	SPEC. COMP. C.Y.	CONCRETE (C) Class A	CONCRETE (C) Class D	REINF. STEEL LBS.	Metal Hdr. H-2-1 Lin. Ft.	14" C.I.P. Conc. Piles No.	14" C.I.P. Conc. Piles Lin. Ft.
Pier #1	230	350	132.81		12,410			
Pier #2	230	330	132.81		12,410			
Pier #3							60	1800
Pier #4			16.57	401.12	[illegible]	357.67		
Pier #5			34.25		3,585			
Pier #6	[illegible]							
TOTAL I-BR	[illegible]	660	316.45	401.12	[illegible]	357.67	60	1800
TOTAL ALL	[illegible]	1320	632.90	802.24	[illegible]	715.34	120	3600

462 Total Lin. Ft. Concrete Bank Protection (Measured @ toe)

DESIGN	RGR	7-66	ARIZONA HIGHWAY DEPARTMENT BRIDGE DIVISION
DRAWN	KGH	3-67	EB & WB STA 5138+ SAND TANKS WASH BRIDGES LOCATION PLAN
CHECKED			

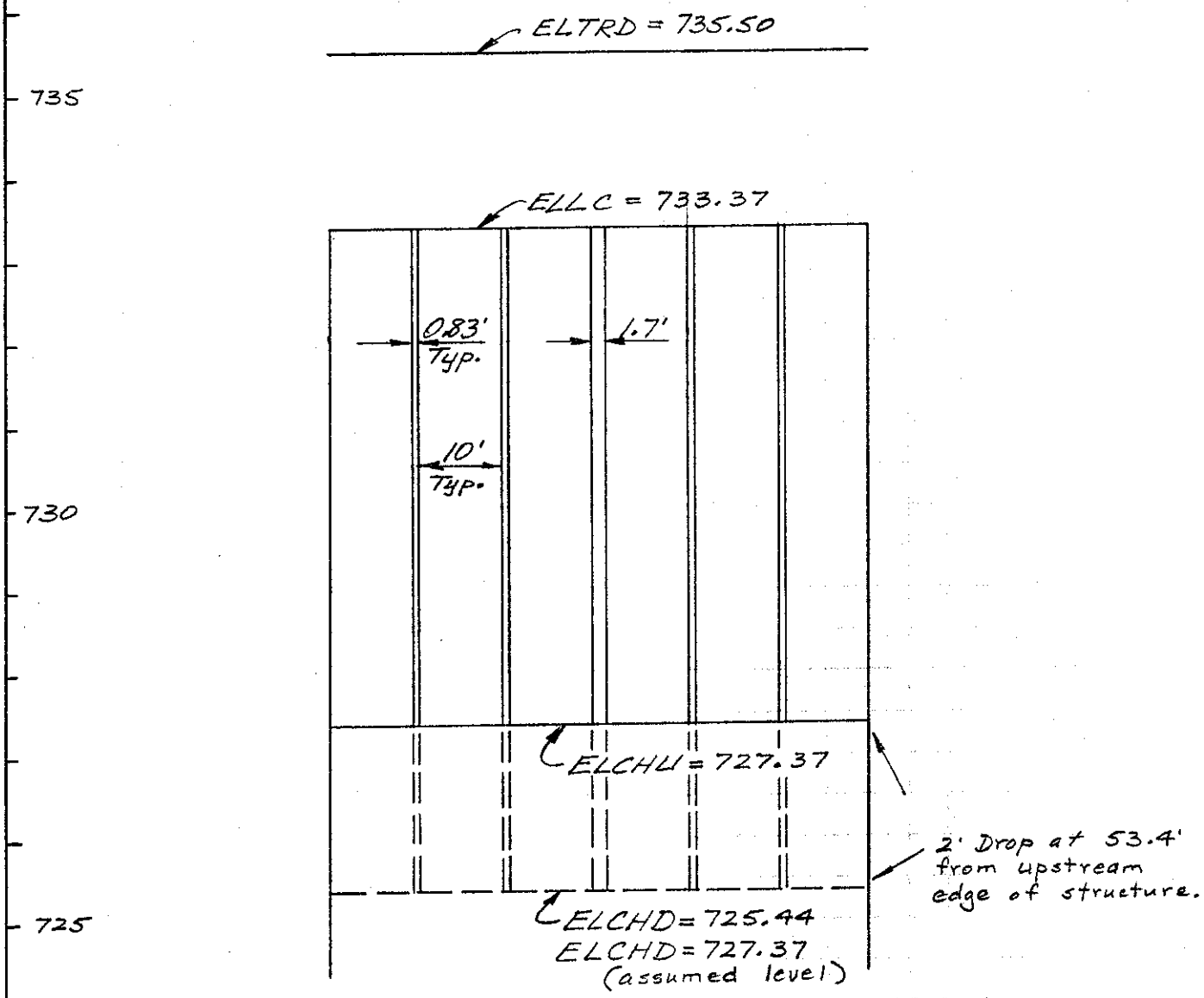

IMA - CASA GRANDE HWY.
MARICOPA COUNTY
F-16-8-2(44)
DECK PLAN
Scale: 1/8" = 1'-0
5 Sp. @ 10'-0 = 50'-0
7 Sp. @ 10'-0 = 70'-0
5 Sp. @ 30'-0 = 150'-0
200'-8 (Length of Deck)
22 Sp. @ 8'-0 = 176'-0 (Roll Post Spacing)
201'-10
℄ Brg. Abut. #1
℄ Pier #1
℄ Pier #2
℄ Pier #3
℄ Pier #4
℄ Pier #5
℄ Pier #6
℄ Brg. Abut. #2
See Drain Detail
Bar spacing measured normal to ℄ steel
Approach Slab
½" Type 'A' Preformed Jt. Filler
℄ Hinge
Constr. ℄
45° Skew Lt. (Typ.)
Extend cap beam to edge of deck.
Main Reinf. Steel
Tie and distribution reinforcing
Start slab taper here
40'-7
38'-0 Clear Rdwy.
22'-0
16'-0
Level
Depress slab ½"
6"Φ x 1'-2 Std. pipe drain
Galvanize after fabrication
¾" Chamfer around pipe
Optional Keyed Constr. Jt.
2'-0 min. lap
Constr. ℄
See Std. Drwg. H-2-1 Handrail
#6 x 7'-0 blt. with #4 bars each side of deck
0.015 ft./ft.
½" radii
1½" Chamfer
#5 hoops @ 12"
50 Spaces @ 9" = 37'-6
TRANSVERSE SECTION
Scale: 1/2" = 1'-0
Parallel to Grade
2" r.
#5@12"
#4
#6
DADO ELEVATION
Scale: 1/2" = 1'-0
Parallel to roadway
Measured along Skew Line
℄ Pier #3
#5 hoops @ 12"
Approach Slab
I.P. Conc. Piles
NOTE: Hinge must be placed as shown in order that the cantilever arm provides support for the remainder of the span.
SECTION A-A
Scale: 1/2" = 1'-0
#4@18"
#6@8"
#4@12"
Dowels #4@12" x 1'-6
¾" chamfer
℄ Brg. Abut.
SECTION C-C
Scale: 1/2" = 1'-0
Depress Slab ½"
Notch pipe to hold ½" Φ bar & weld bar to pipe with ¼" fillet weld each end
DRAIN DETAIL
NOTE:
For all other deck details see Std. CS-5-201 & CHS-5-201.
For slab hinge and hinge span reinforcing details see Std. CHS-5.
* Inside of dado is flush at approach dados. See sheet 9 of 11.
SECTION D-D
Scale: 1/2" = 1'-0
ARIZONA HIGHWAY DEPARTMENT
BRIDGE DIVISION
WB STA 5137+
SAND TANKS WASH BRIDGES
DECK DETAILS
STD.
APJ
CDV

BURGESS & NIPLE, INC. - COMPUTATION SHEET

JOB NO. 11358 JOB NAME Gila Bend Floodplain SHEET ___ OF ___ SHEETS

SUBJECT Conc. Box Culvert PREPARED BY ESH DATE 11-7-91

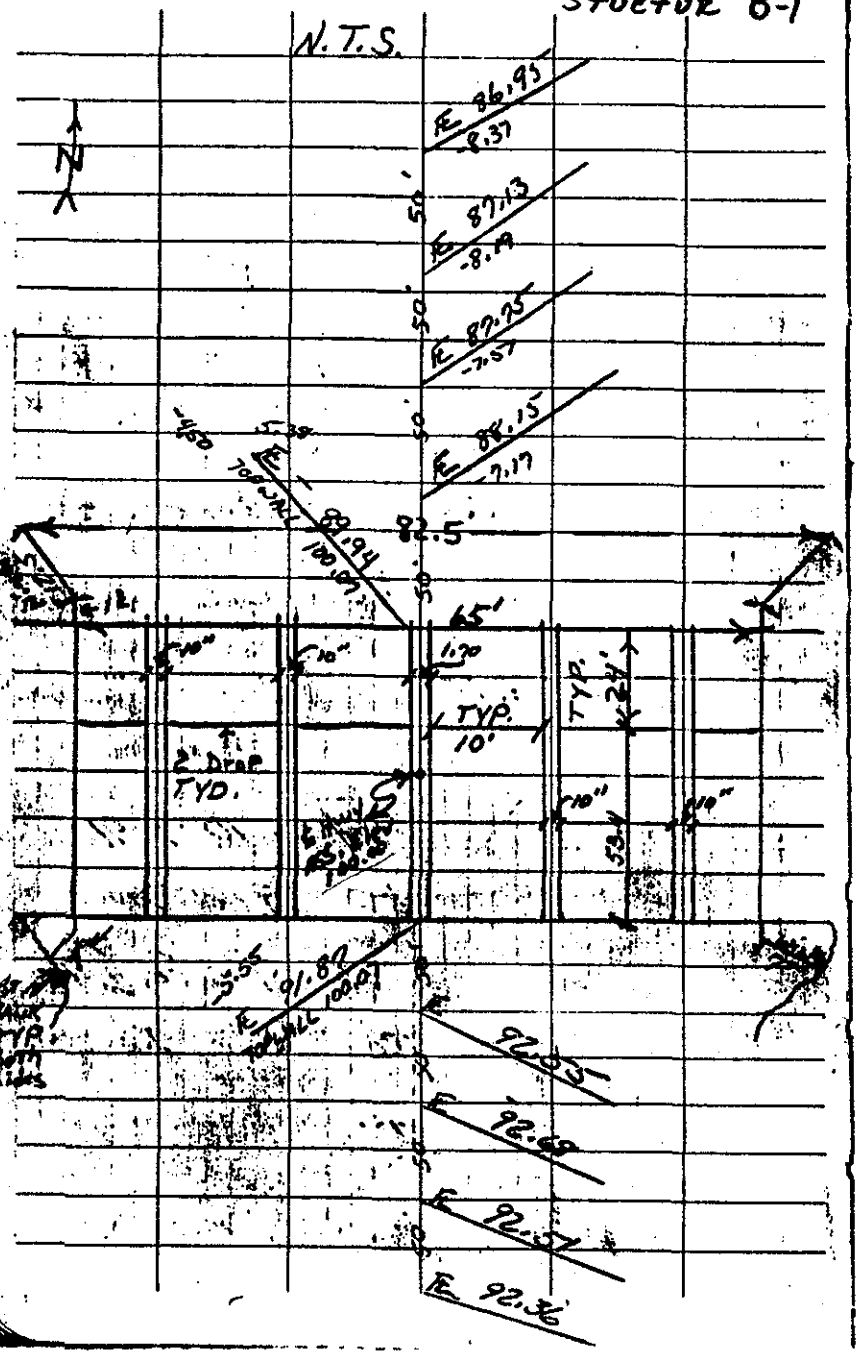
Bender Wash & Hwy. 80 CHECKED BY ___ DATE ___



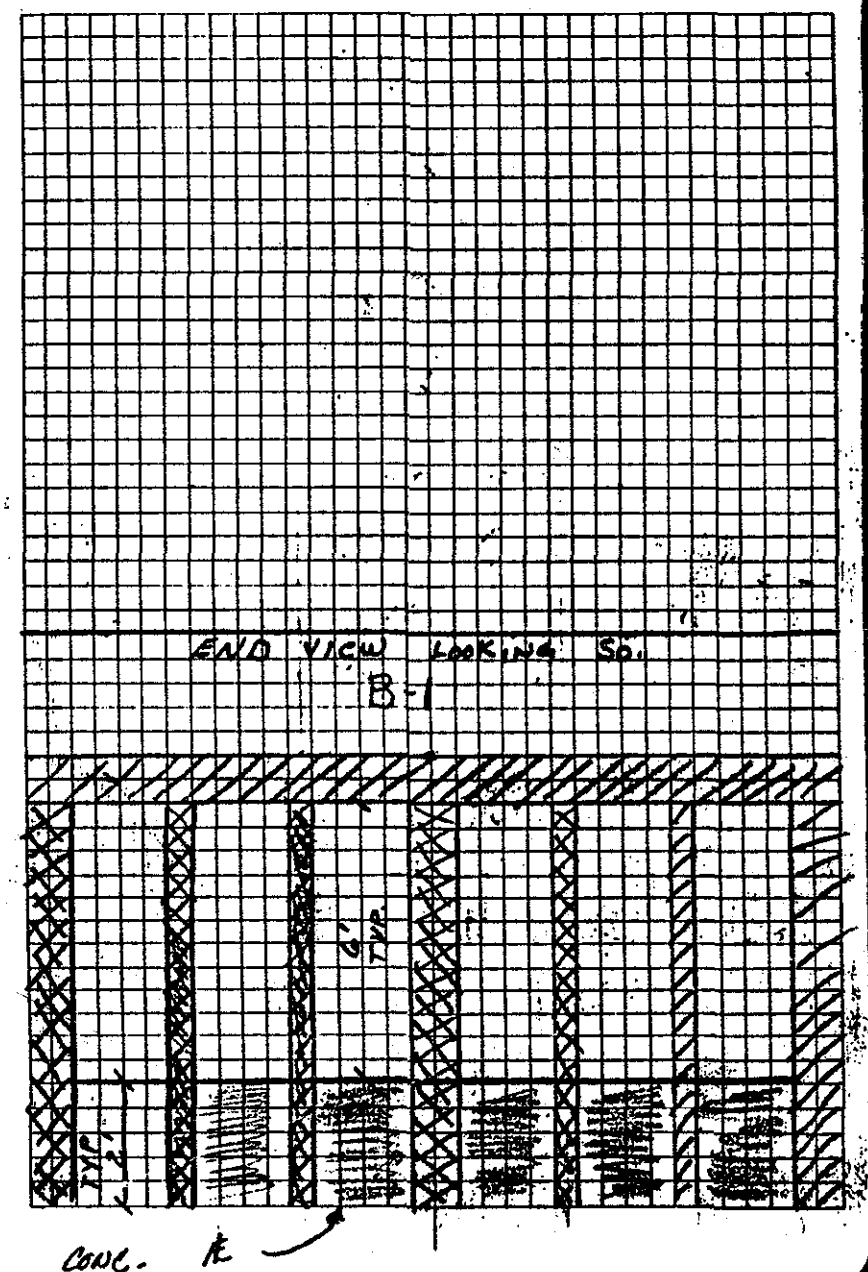
1	CUNO. CUNV	6.014	6	SPAN	10
2	ENTLC	0.4	7	CULVLN	77.40
3	COFQ	3	8	CHRT. SCL	8.1
4	RDLEN	0	9	ELCHU	727.37
5	RISE	6	10	ELCHD	727.37

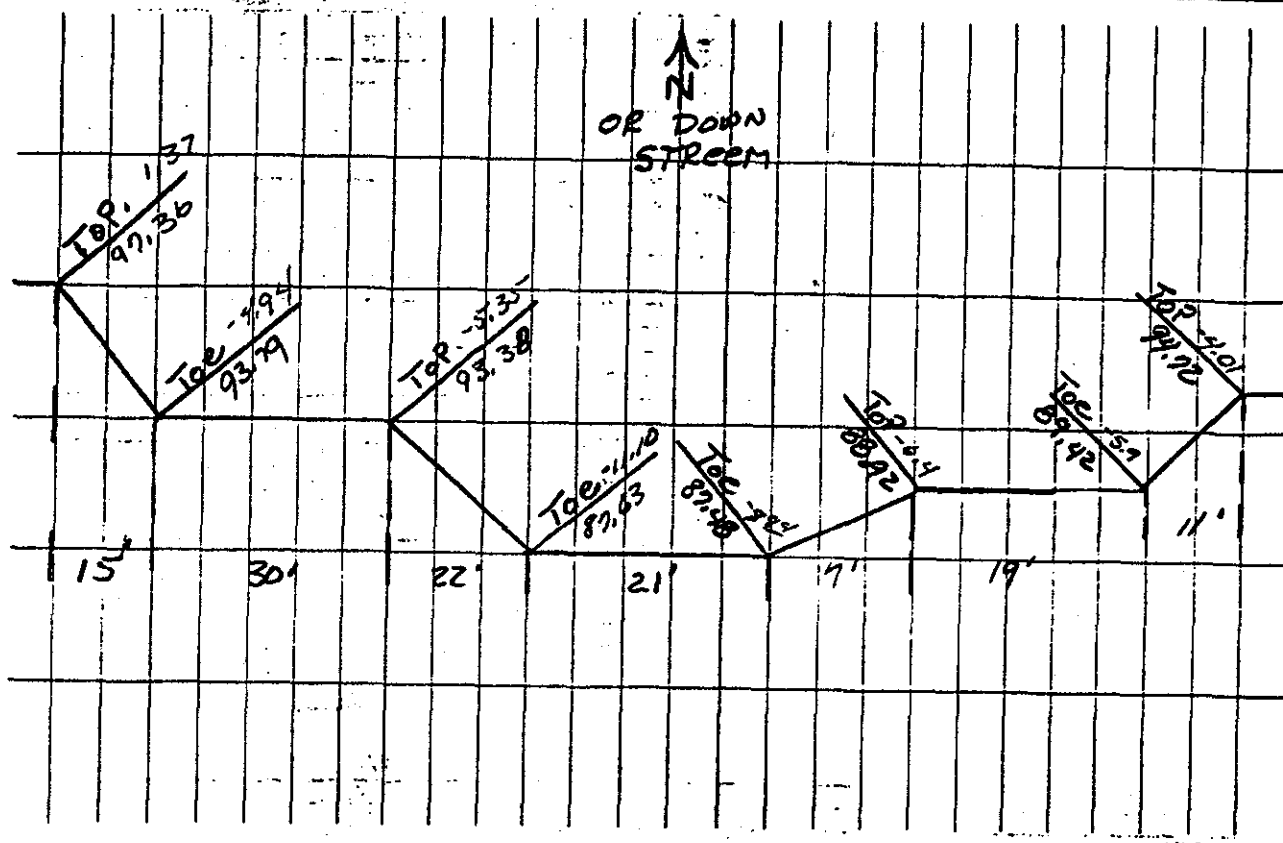
Stuctur B-1

N.T.S.



(3)




N
OR DOWN
STREEM
TOP. 1.37
97.36
TOE -1.94
93.79
TOP -5.33
93.38
TOE -11.10
87.63
TOE -3.24
87.48
TOP -6.4
88.92
TOE -5.9
89.42
TOP -4.01
94.72
15'
30'
22'
21'
17'
19'
11'

Sta	B.S.	H.I.	F.S.	Elev
	4.57	104.57		100.00
T.P.			10.40	94.17
	1.15	95.32		
T.P.			8.17	87.15
	11.58	98.73		
			11.58	87.15
	10.27	97.42		
			5.53	91.89
	10.47	102.36		
			2.35	100.01

Description

B.M. Assumed 100.00 @ ℄ Hwy @ ℄ of Structure

BURGESS & NIPLE, INC. - COMPUTATION SHEET

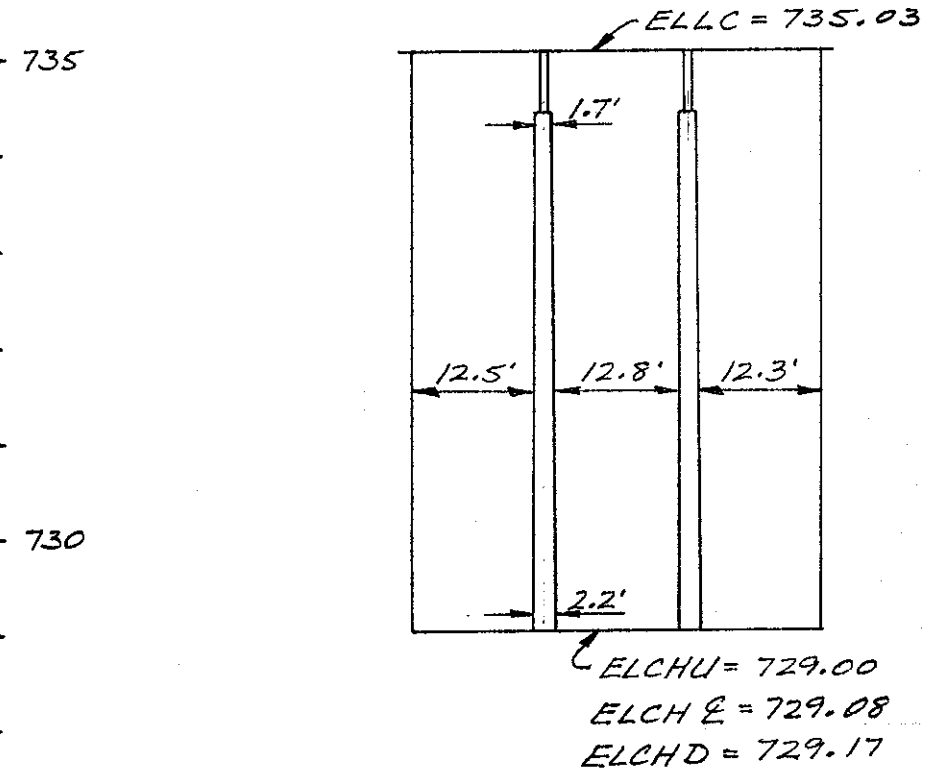
JOB NO. 11358 JOB NAME Gila Bend Floodplain SHEET ____ OF ____ SHEETS

SUBJECT Bender Wash Bridge PREPARED BY LEH DATE 11-7-91

Cross Section Railroad CHECKED BY ____ DATE ____

Use 2' Wide Piers as for Sand Tank RR Bridge

L = 61.3'



RDLEN = 500'

SS = 0

BWC = 41.60'

725

BWP = 2(2') = 4'

BAREA = (735.03 - 729.00)(41.60) - (6.03)(4) =

250.85 - 24.12 = 226.73 s.f.

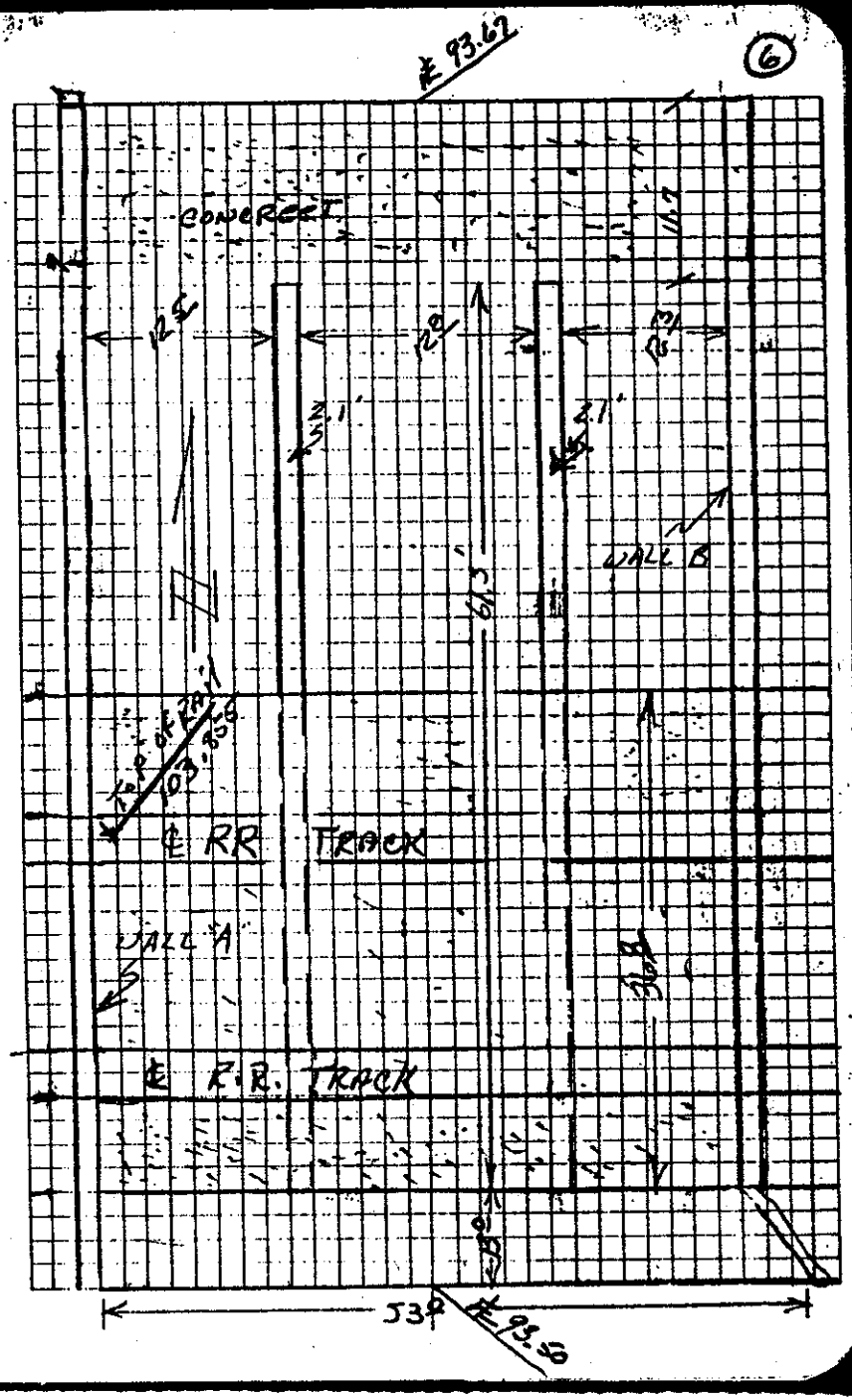
XK = 1.25

XKOR = ~~1.6~~ 1.56

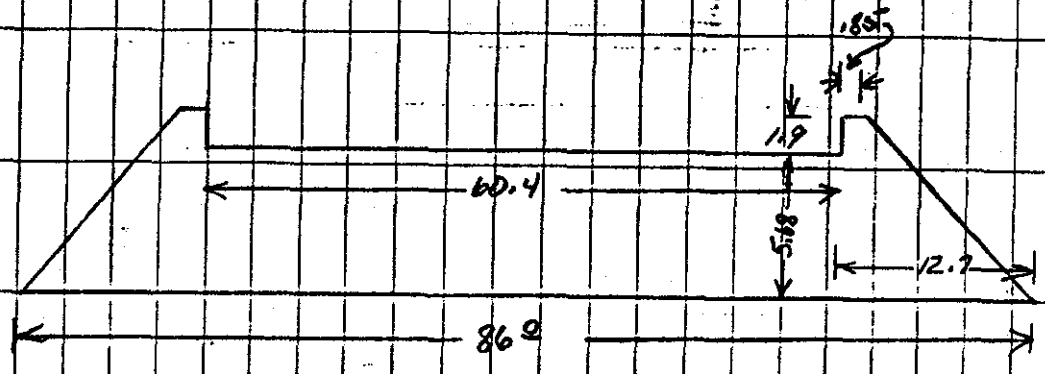
COFQ = 3

Structure Topo

for C-1



SIDE VIEW WALL "A" & "B"



Center Concrete Colums ARE .35 Lower Than WALL A & B.
" " " " 5.33 TALL

Sta	B.S.	H.I	F.S.	Elev.	
	5.84	97.71		91.87	
0+50			4.74	92.97	
1+00			5.17	92.54	
1+50			5.43	92.28	
2+00			5.36	92.35	
T.P. 1			3.95	93.67	
	5.51	99.27			
			5.68	93.59	
0+50			5.31	93.96	
1+00			4.55	94.72	
1+50			4.73	94.54	
2+00			4.55	94.72	
T.P.			5.51	93.76	
	3.87	97.63			
CK-IN			5.76	91.87	—
	11.31	104.98		93.67	
SS.			1.125	103.855	
CK-IN			11.495	93.485	.015 Low

Leaves for C-1

(8)

Description

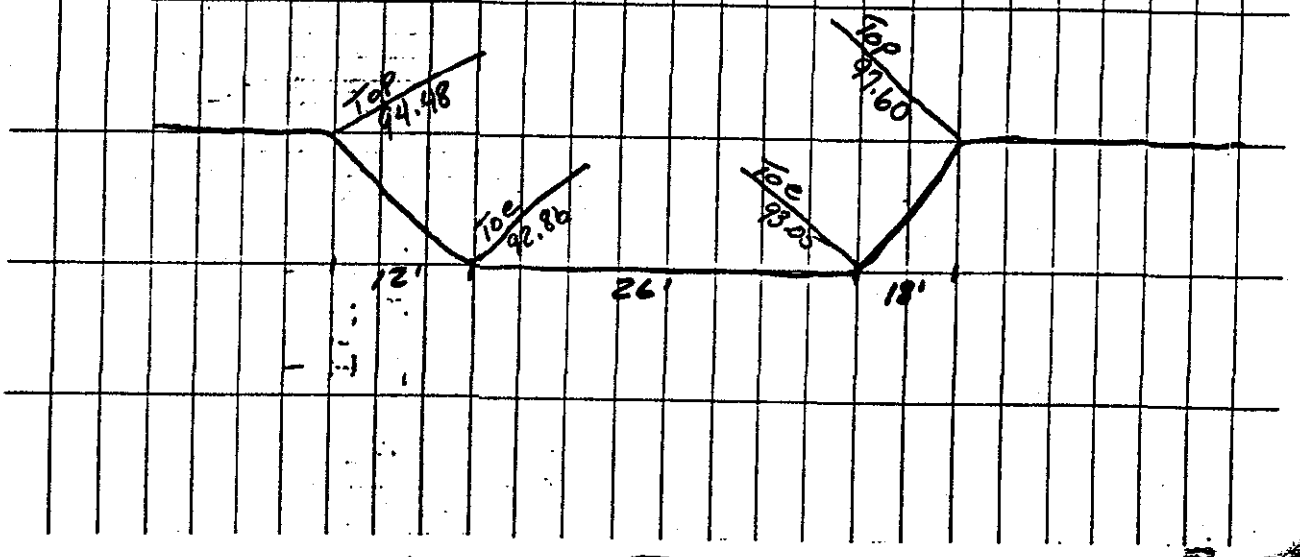
*C.N. ℄ Structure B-1 So End El = 91.87
50' North of Structure C-1 ℄ of wash
100' North of Structure C-1 ℄ of wash
150' " " " " ℄ of wash
200' " " " " ℄ of wash

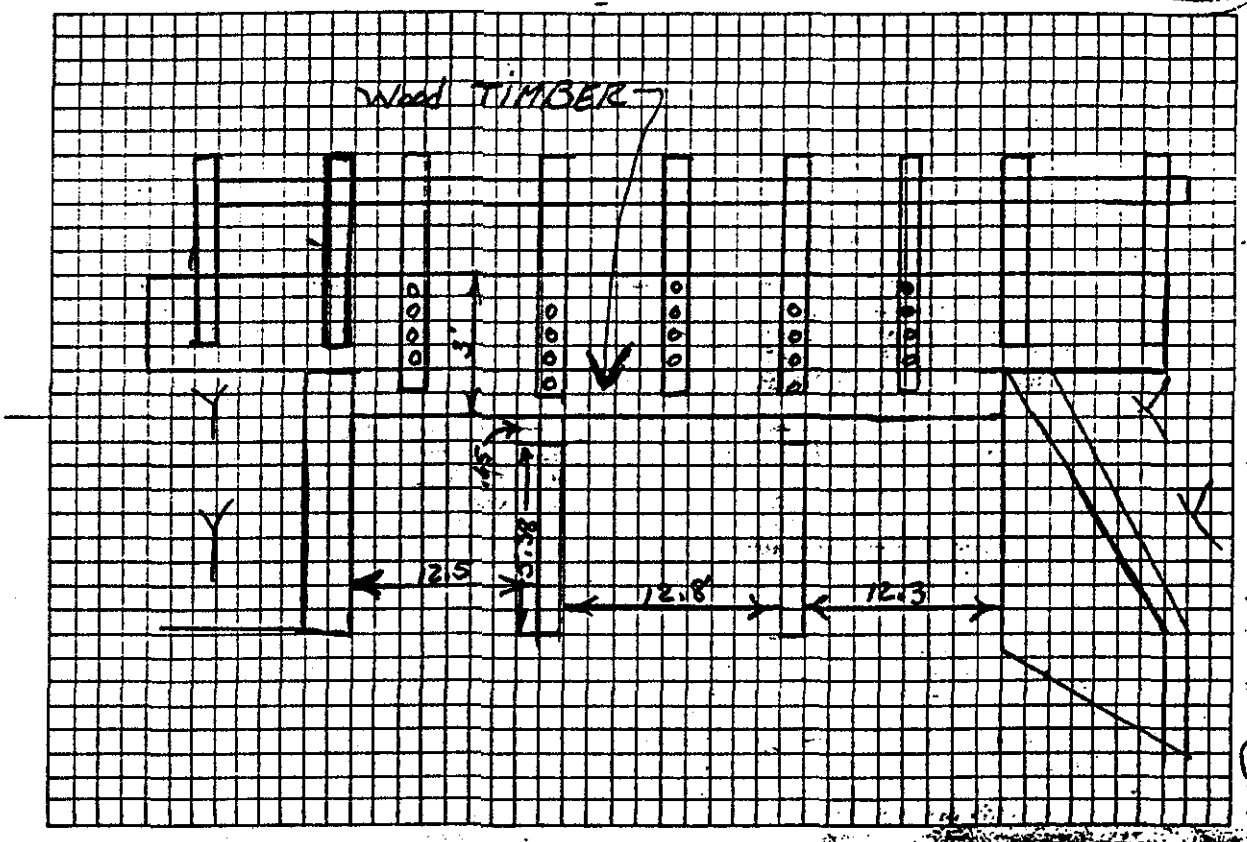
T.P. #1 No. ℄ ℄ of C-1

℄ ℄ of Box C-1
50' So of Structure C-1 ℄ of wash
100' So of " " " " "
150' So of " " " " "
200' So of " " " " "

B.M. ℄ North
Top of Rail
CK-IN ℄ South 93.50

CROSS SECTION 200' North of C-1
DOWN STREAM Side.
North View.



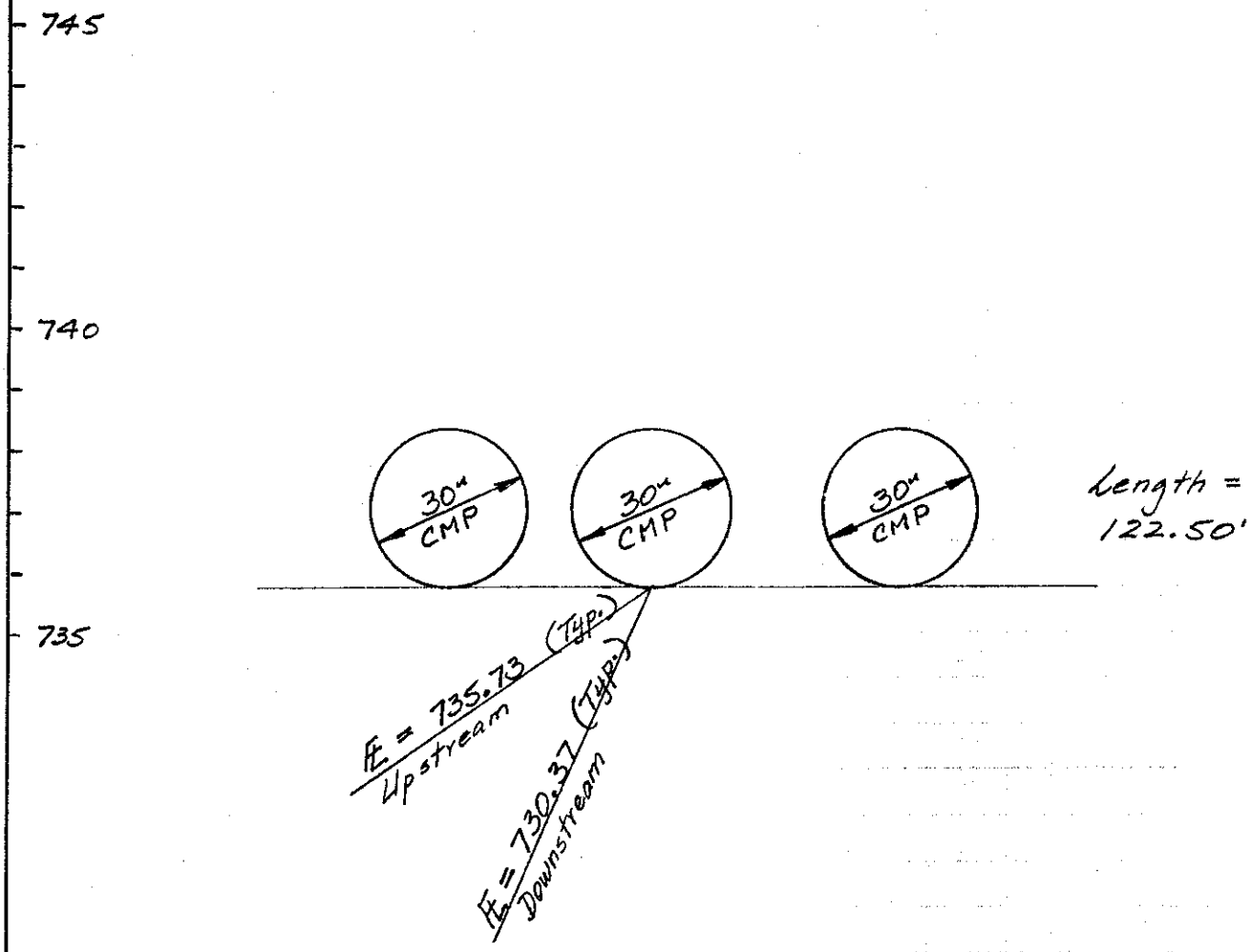


BURGESS & NIPLE, INC. - COMPUTATION SHEET

JOB NO. 11358 JOB NAME Gila Bend Floodplain SHEET ____ OF ____ SHEETS

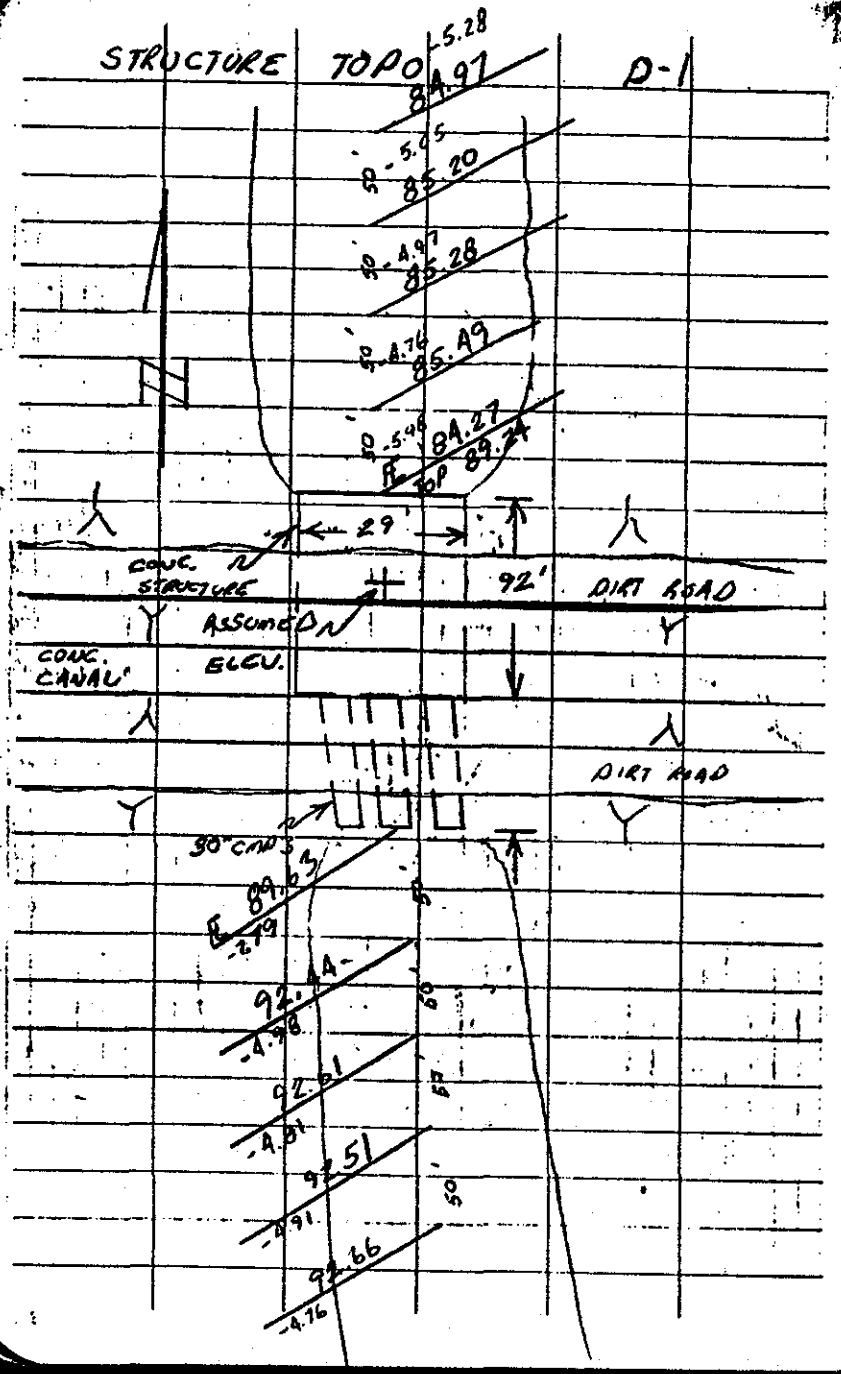
SUBJECT Pipe Culverts PREPARED BY ESU DATE 11-7-91

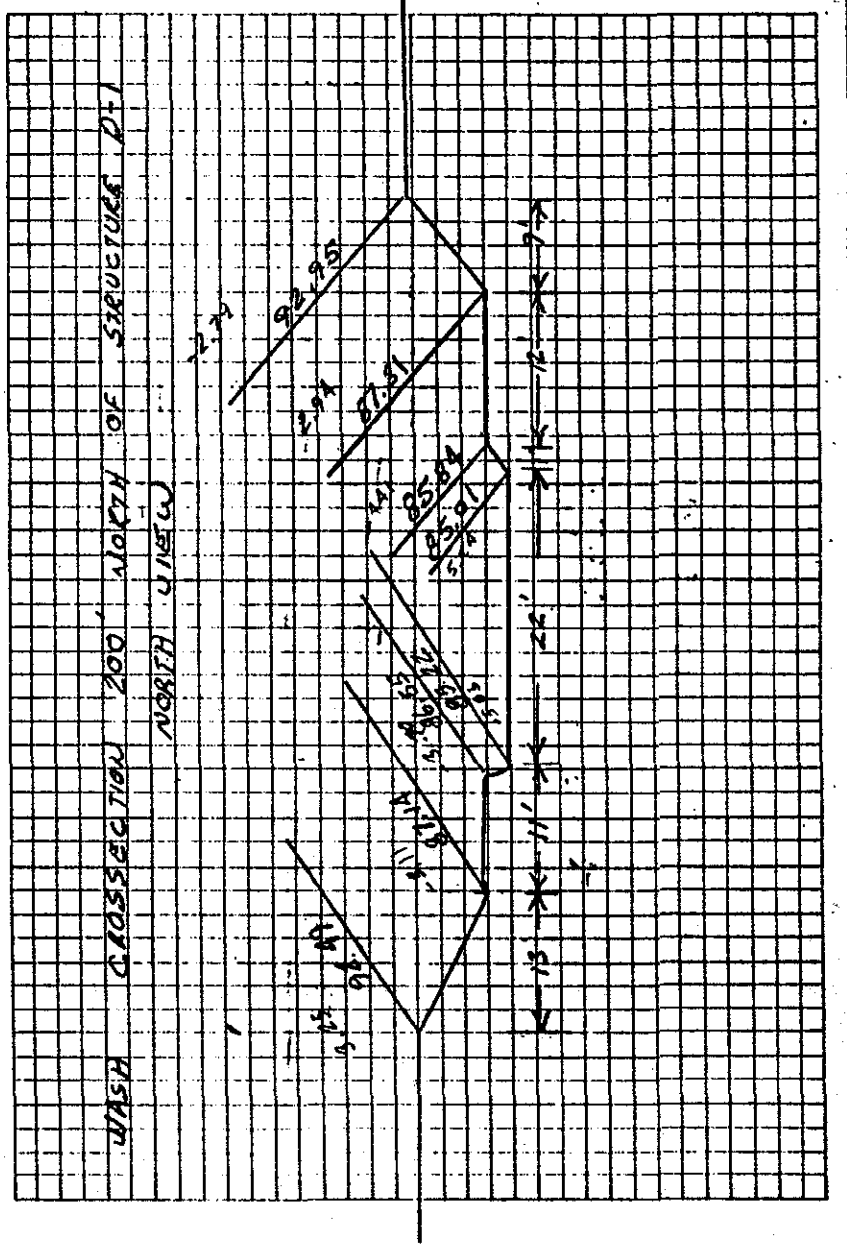
Bender Wash @ Gila Bend Canal CHECKED BY ____ DATE ____



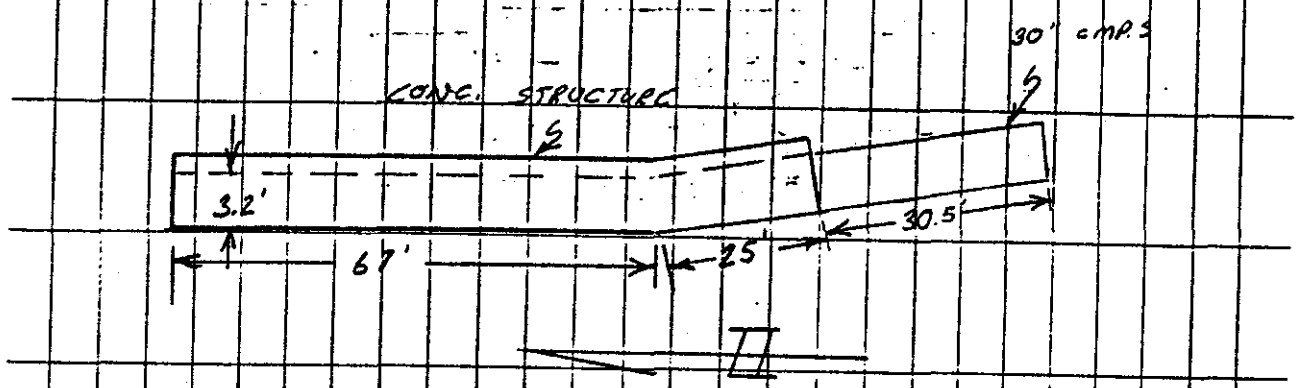
1	CUNO. CUNV	3.018	6	SPAN	0
2	ENTLC	0.8	7	CULVLN	122.50
3	COFQ	3	8	CHRT. SCL	2.3
4	RDLEN	0	9	ELCHU	735.73
5	RISE	2.5	10	ELCHD	730.37

STRUCTURE TOPO D-1

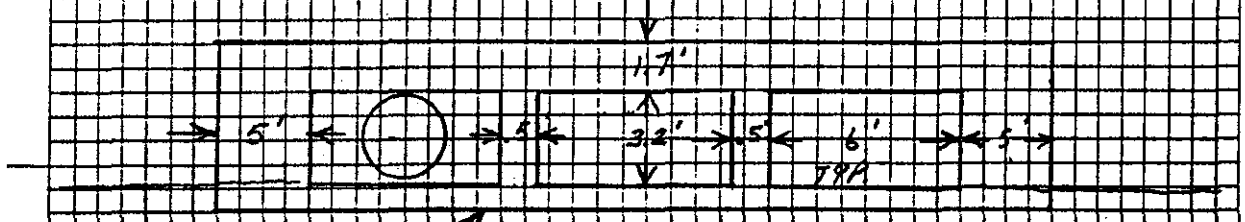




SIDE VIEW STRUCTURE D-1



NORTH END STRUCTURE D-1



STA.	B.S. (+)	H.I.	F.S. (−)	ELEV.	DESCRIPTION
BM.				100.00	ASSUMED ELEV. @ CENTER OF NORTH ROAD OVER STRUCTURE
	5.155	105.155			
TOP CMP			12.48	92.68	TOP CENTER 30" CMP @ SOUTH END OF STRUCTURE (SIDE SHOT)
TP.			9.10	96.055	NAIL
	4.215	100.27			
TOP STRUCTURE			11.135	89.135	TOP CONC. STRUCTURE @ U. END
	1.11	90.245			
TP.			3.72	86.525	ROCK
	9.215	95.74			
TP.			1.945	93.795	ROCK
	11.10	104.895			
BM.			4.895	100.00 ✓	(SAME AS ABOVE)
TOP CMP				92.68	(SAME AS ABOVE)
	4.74	97.42			
TOP CMP.			4.74	92.68	
	12.52	105.20			
BM.			5.225	99.975 ✓	(SAME AS ABOVE)
				−.025	

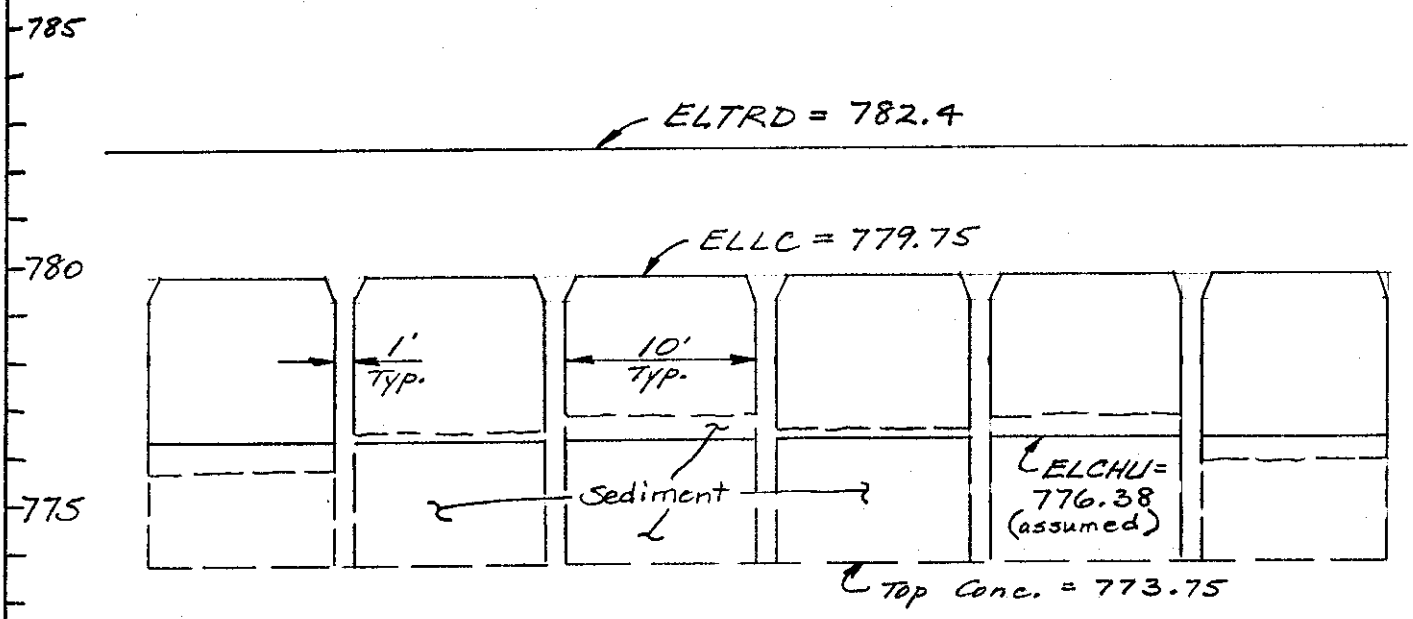
LEVELS FOR D-1

BURGESS & NIPLE, INC. - COMPUTATION SHEET

JOB NO. 11358 JOB NAME Gila Bend Floodplain SHEET 1 OF 2 SHEETS

SUBJECT Conc. Box Culvert PREPARED BY C.E.U. DATE 1-22-92

Interstate 8 & Bender Wash CHECKED BY _____ DATE _____



Distance from Top of Box to Top of Sediment

4.0' (measured, typ.)
3.3'
2.9'
3.2'
2.9'
3.9'

20.2' ÷ 6 = 3.37'

ELCHD = 775.13 (assumed)

ELLC = 779.75
− 3.37'
ELCHU = 776.38

BURGESS & NIPLE, INC. - COMPUTATION SHEET

JOB NO. 11358 JOB NAME Gila Bend Floodplain SHEET 2 OF 2 SHEETS

SUBJECT Conc. Box Culvert PREPARED BY EEU DATE 10-07-91

Interstate 8 - Bender CHECKED BY _____ DATE _____

5112 + 03.90 Conc. Box Culvert, Skew 45° Lt.,
2 - 10' x 8' x 293'-8¾"

Upstream - Level 73' @ El. = 750.00
Downstream - Level 68' @ El. = 749.00
152.73' @ S = 0.006548'/ft.

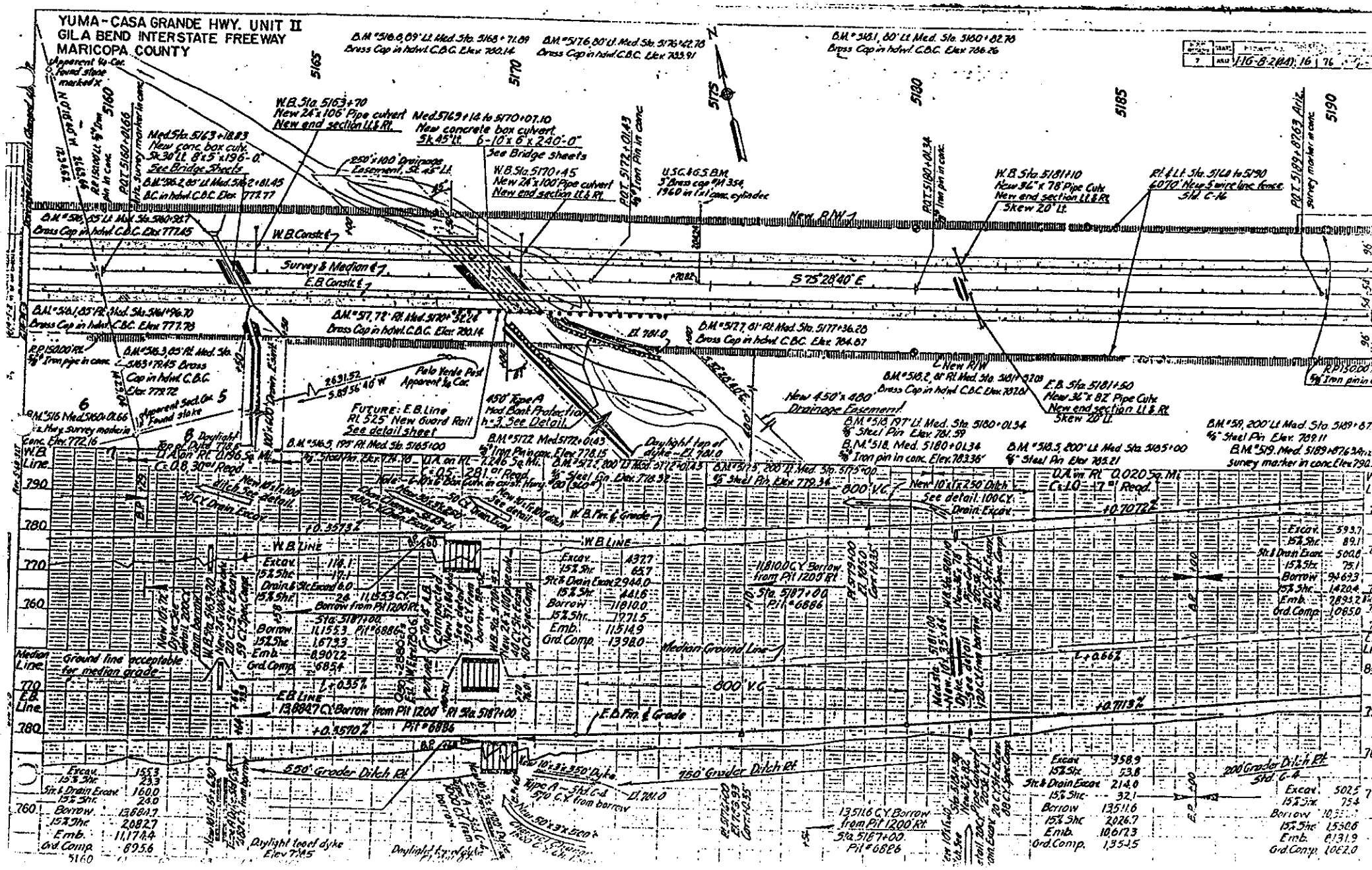
1	CUNO. CUNV	2.014			
2	ENTLC	0.4			
3	COFQ	3	8	CHRT. SCL	8.1
4	RDLEN	0	9	ELCHU	750.00
5	RISE	8	10	ELCHD	749.00
6	SPAN	10			
7	CULVLN	293.73			

5169 + 60.55 Conc. Box Culvert, Skew 45° Lt.
6 - 10' x ~~6'~~ 3.37' x 240'-0"

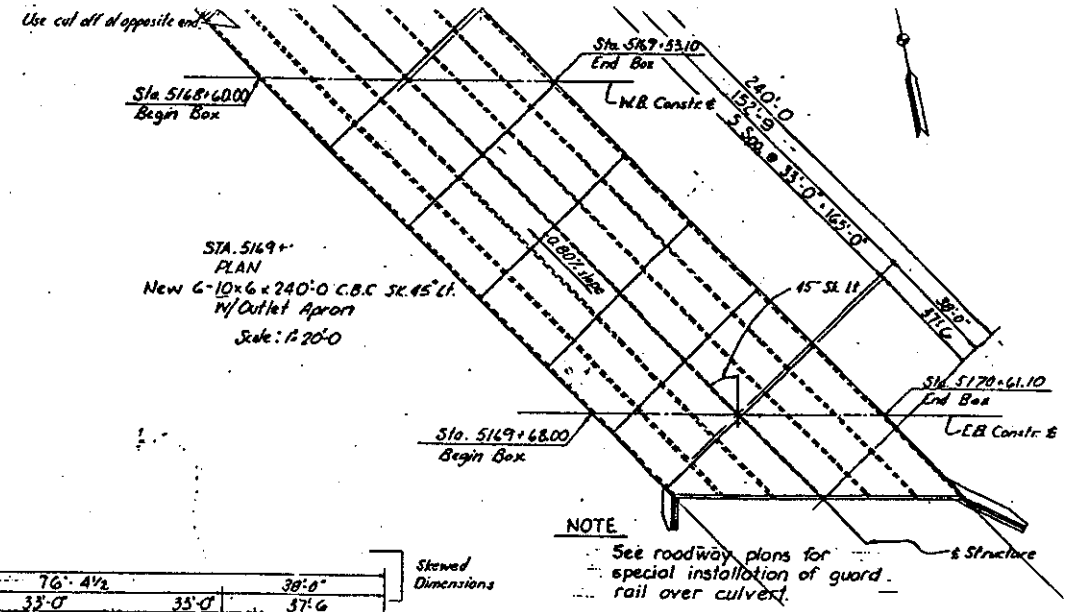
Upstream - Level 38' @ El. = 773.75
Downstream - Level 49.25' @ El. = 772.50
152.75' @ S = 0.008183'/ft.

1	CUNO. CUNV	6.014			
2	ENTLC	0.4			
3	COFQ	3	8	CHRT. SCL	8.1
4	RDLEN	500	9	ELCHU	776.38 ~~773.75~~
5	RISE	~~6~~ 3.37	10	ELCHD	775.13 ~~772.50~~
6	SPAN	10			
7	CULVLN	240.00			

YUMA - CASA GRANDE HWY. UNIT II
GILA BEND INTERSTATE FREEWAY
MARICOPA COUNTY

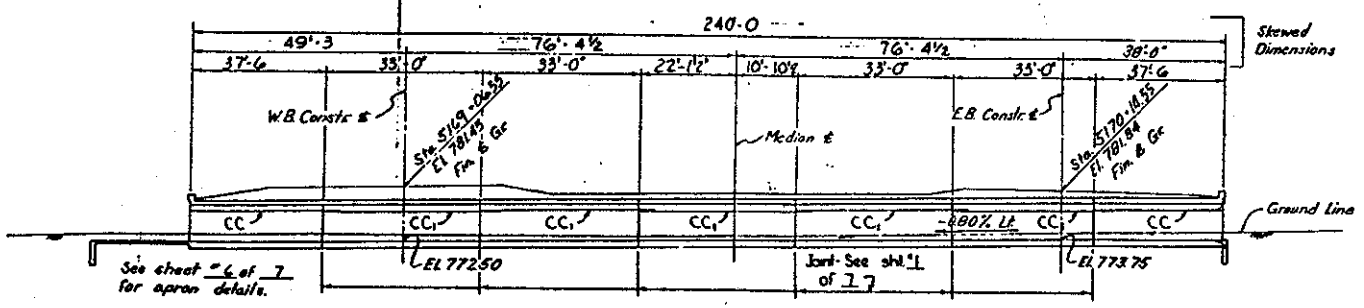


NOTE– Sta. 5169+
For all other bbl details, dimensions, bend diagrams & steel lists see Std. C1-10-6. For all other hdwl details, dimensions, bend diagrams & steel lists see Stds. CH-7 & CH-8.



STA. 5169+
PLAN
New 6-10x6x240'-0 C.B.C. Sk. 45° Lt.
W/Outlet Apron
Scale: 1"=20'-0

NOTE
See roadway plans for special installation of guard rail over culvert.



SECTION NORMAL TO CONSTR. ℄
Scale-1"=10'

Designed	A.P.J.		ARIZONA HIGHWAY DEPARTMENT BRIDGE DIVISION
Drawn	Rod	12-69	STA. 5169+ LOCATION & SPECIAL DETAILS
Checked	C.L.S.		
Approved		12-69	
Sheet No.	1 of 7		

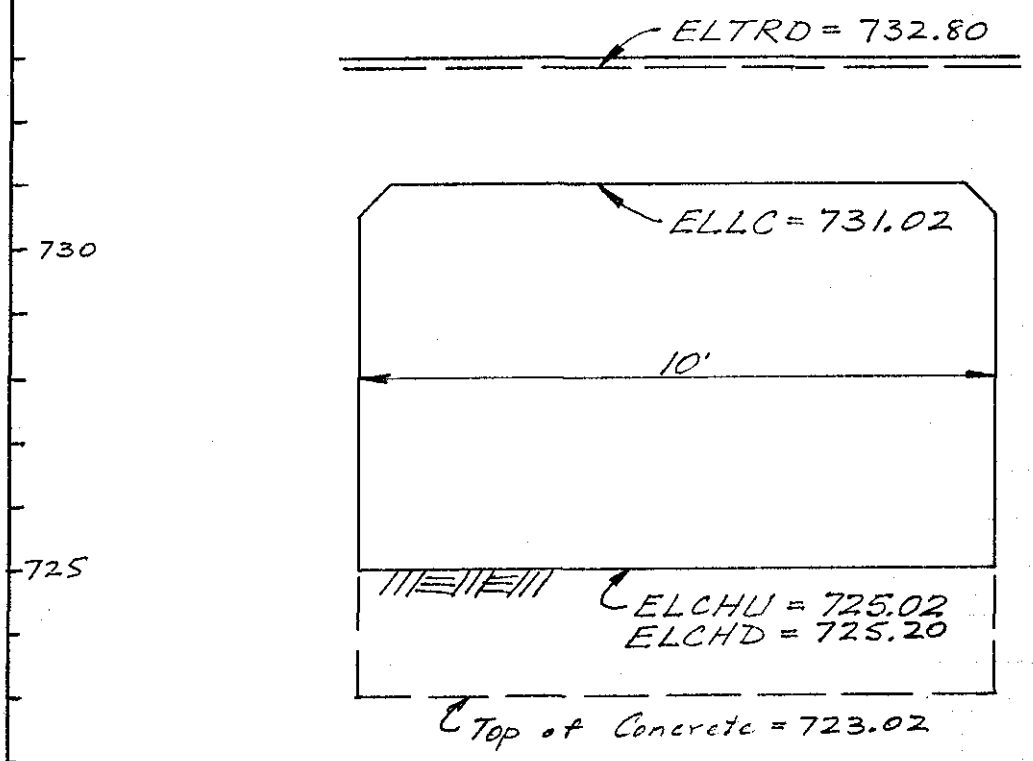
BURGESS & NIPLE, INC. - COMPUTATION SHEET

JOB NO. 11358 JOB NAME Gila Bend Floodplain SHEET ___ OF ___ SHEETS

SUBJECT Scott Ave. Wash Bridge PREPARED BY CEU DATE 11-14-91

Cross Section U.S. Hwy. 80 CHECKED BY JEM DATE 1/21/92

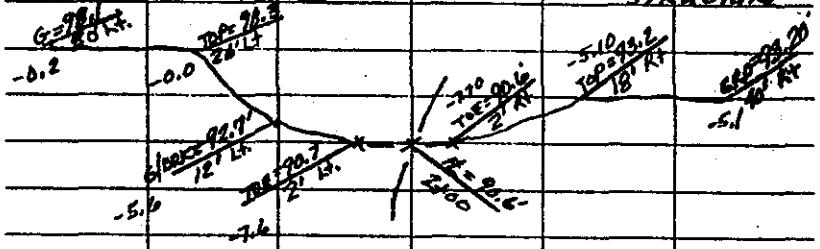
L = 164.50'



CUNO, CUNV	= 1.014	SPAN	= 10'
ENTLC	= 0.5	CULVLN	= 165
COFQ	= 3	CHRT. SCL	= 10.1
RDLEN	= 0	ELCHU	= 725.0
RISE	= 6'	ELCHD	= 725.0

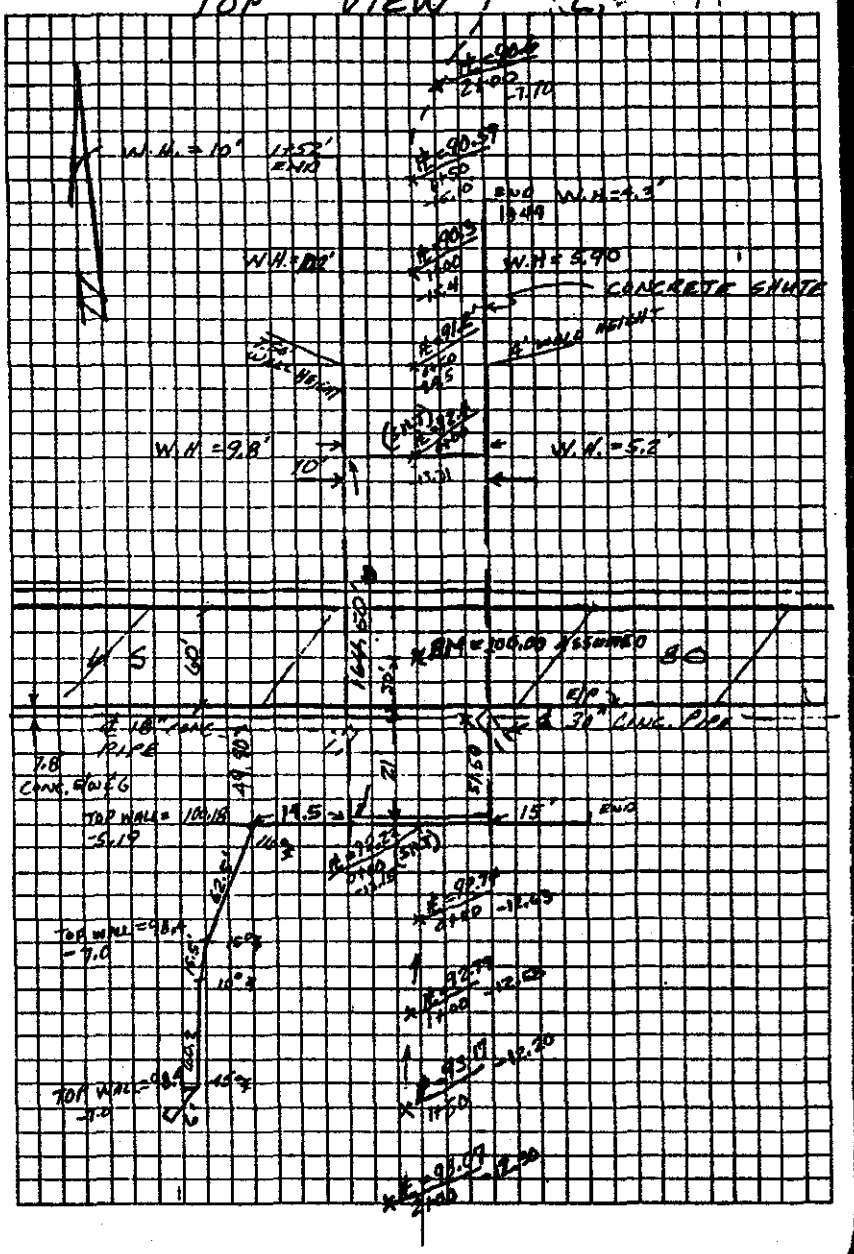
WASH No 1 & US 80 STRUCTURE

X-SECTION @ STA. 2+00 N. OF N. END STRUCTURE



		98.31	HI FOR STA 2+00 & X-SECT		
	7.45		15.30		
TP 1	7.26 ✓		14.64	91.05	ROCK
	7.07		13.98		
		105.69	HI FOR 0+00 TO 1+50		
	6.39				
TBM "L1"	5.69			100.00	℄ Pvmt ℄
	5.00				US 80
		HI = 105.37 = FOR SOUTH END ONLY			
	5.60				
TBM "L1"	5.37			100.00	℄ Pvmt ℄
	5.15				US-80
	BS	HI	FS	ELEV.	

TOP VIEW 1 "L"

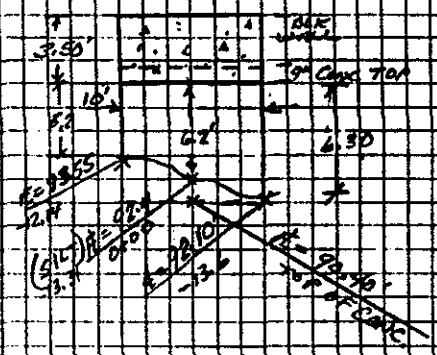


WASH No 1 ℄ USBD

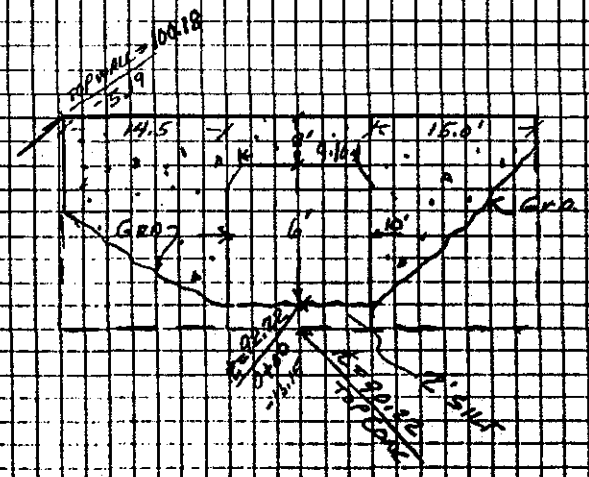
"L"

SIDE VIEW

NORTH END
(LOOKING SOUTH)



SOUTH END



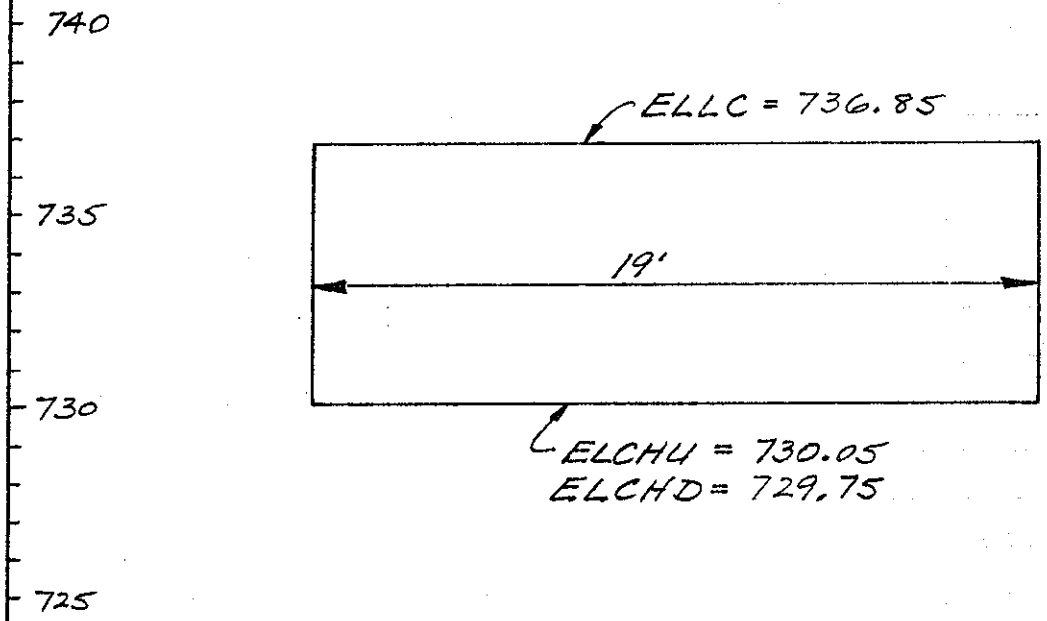
BURGESS & NIPLE, INC. - COMPUTATION SHEET

JOB NO. 11358 JOB NAME Gila Bend Floodplain SHEET ___ OF ___ SHEETS

SUBJECT Scott Ave. Wash Bridge PREPARED BY ESU DATE 11-14-91

Cross Section S.P. Railroad CHECKED BY JEM DATE 1/21/92

L = 76'



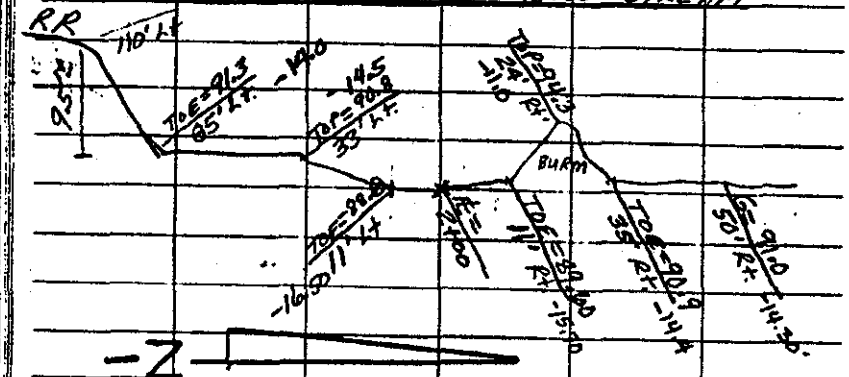
RDLEN = 0
SS = 0
BWC = 19'
BWP = 0

BAREA = (736.85 - 730.05)(19') = 129.20 s.f.

XK = 0
XKOR = 1.6
COFQ = 3

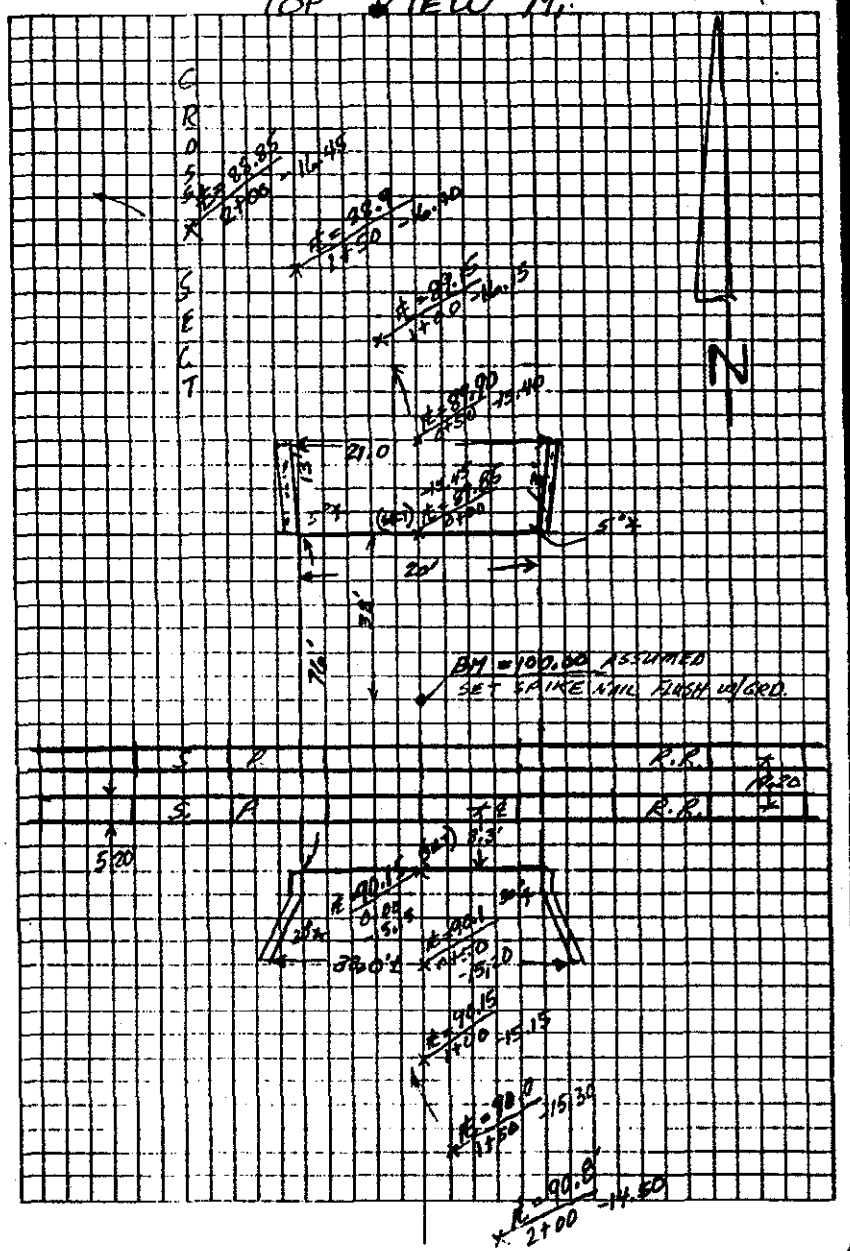
WASH No. 1 & SOUTHERN PACIFIC RAILROAD

X-SECTION @ STA: 2+00 DOWN STREAM



		105.30	HI FOR ALL SHOTS "M1"		
	5.43				
TBM "M1"	5.30			100.00	TOP OF SET SPIKE NAIL
	5.18				
	B.S.	HI	FS	ELEV.	

TOP VIEW "M1"

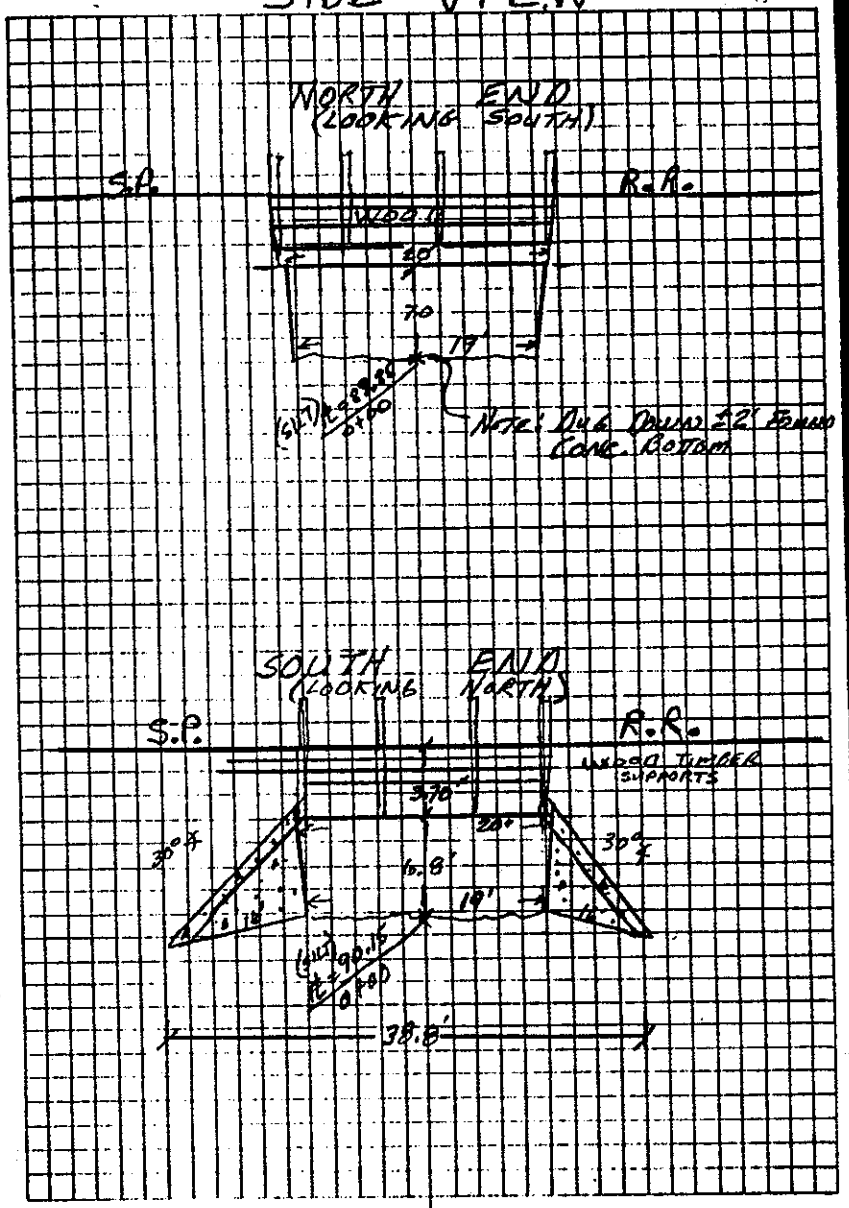


WASH No. 1 & SOUTHERN PACIFIC RAILROAD

"M,"

SIDE VIEW

6

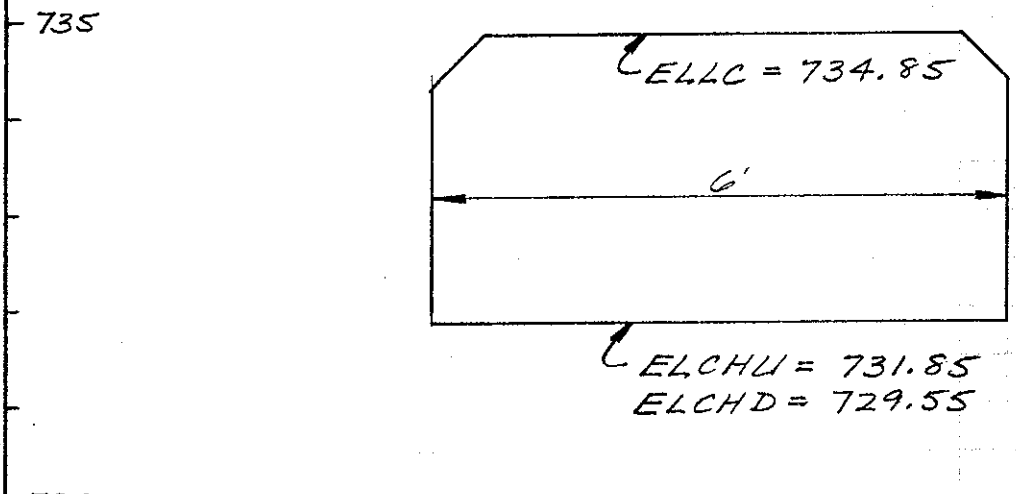


BURGESS & NIPLE, INC. - COMPUTATION SHEET

JOB NO. 11358 JOB NAME Gila Bend Floodplain SHEET ____ OF ____ SHEETS

SUBJECT Conc. Box Culvert PREPARED BY EEU DATE 11-15-91

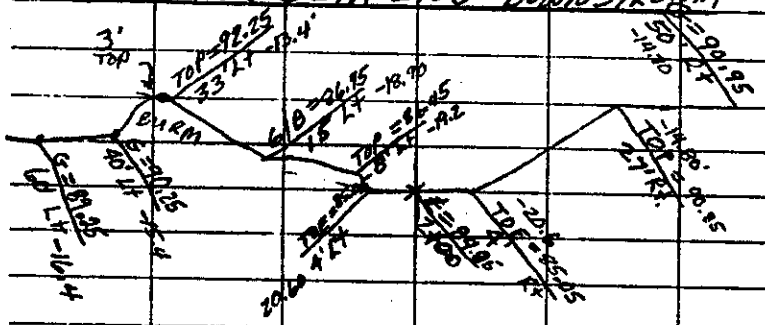
Scott Ave. Wash & Gila Bend Canal CHECKED BY JEM DATE 1/21/92



1	CUNO. CUNV	1.014	6	SPAN	6
2	ENTLC	0.5	7	CULVLN	95.30
3	COFQ	3	8	CHRT. SCL	10.1
4	RDLEN	100	9	ELCHU	731.85
5	RISE	3	10	ELCHD	729.55

WASH No. 1 & GILA BEND CANAL

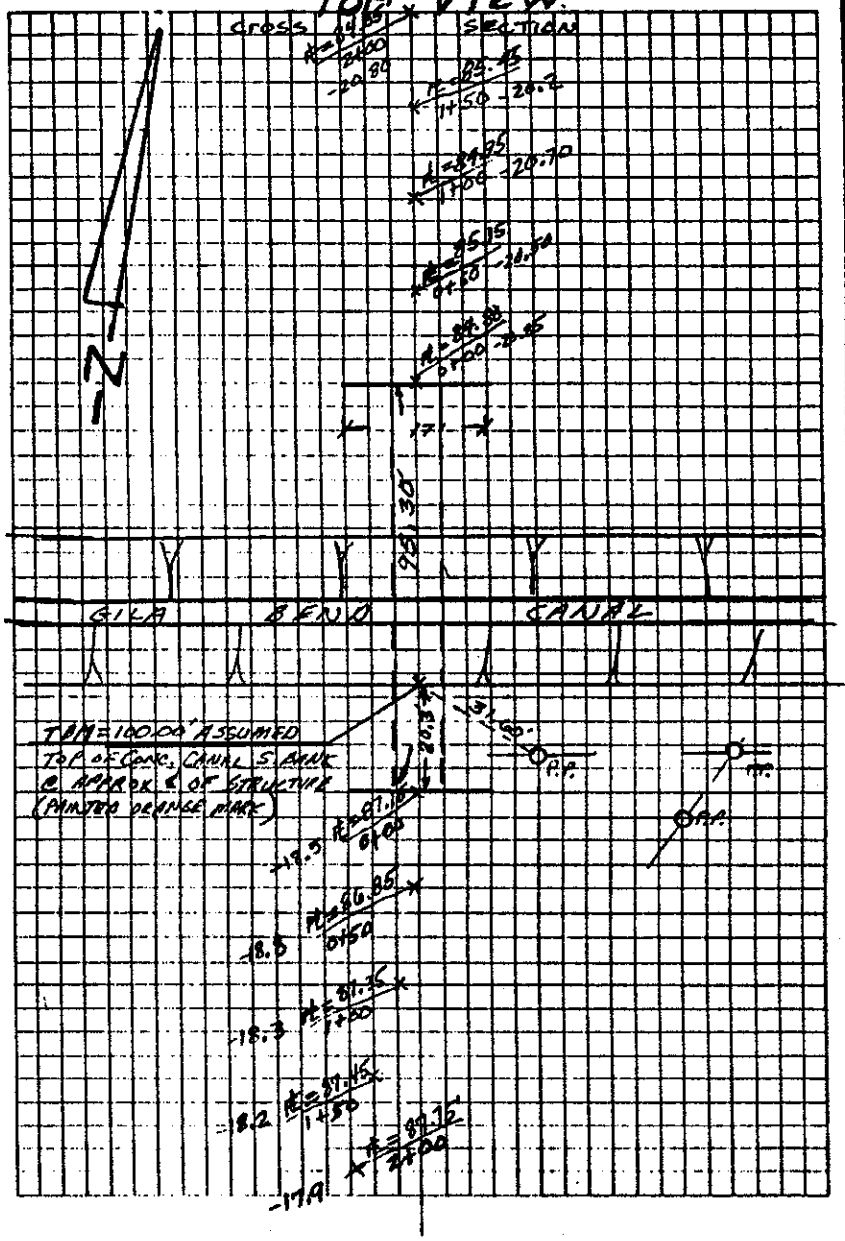
X-SECTION @ STA. 2+00 DOWNSTREAM



		105.65	HI FOR	ALL SHOTS
	6.10			
TBM	5.65			100.00
	5.20			
	BS	HI	FS	ELEV.

'N₁'

TOP VIEW



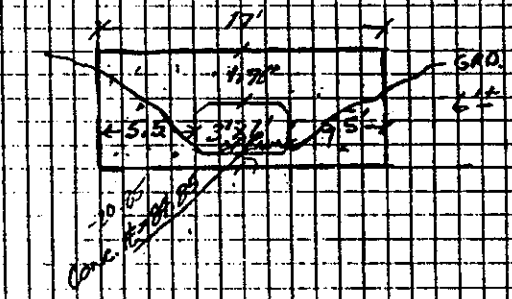
WASH No. 1 & GILA BEND CANAL

"N."

SIDE VIEW

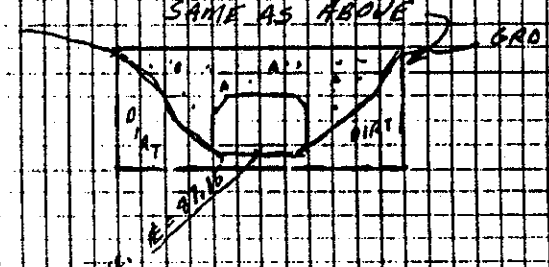
B

NORTH END
LOOKING SOUTH



SOUTH END
LOOKING NORTH

SAME AS ABOVE

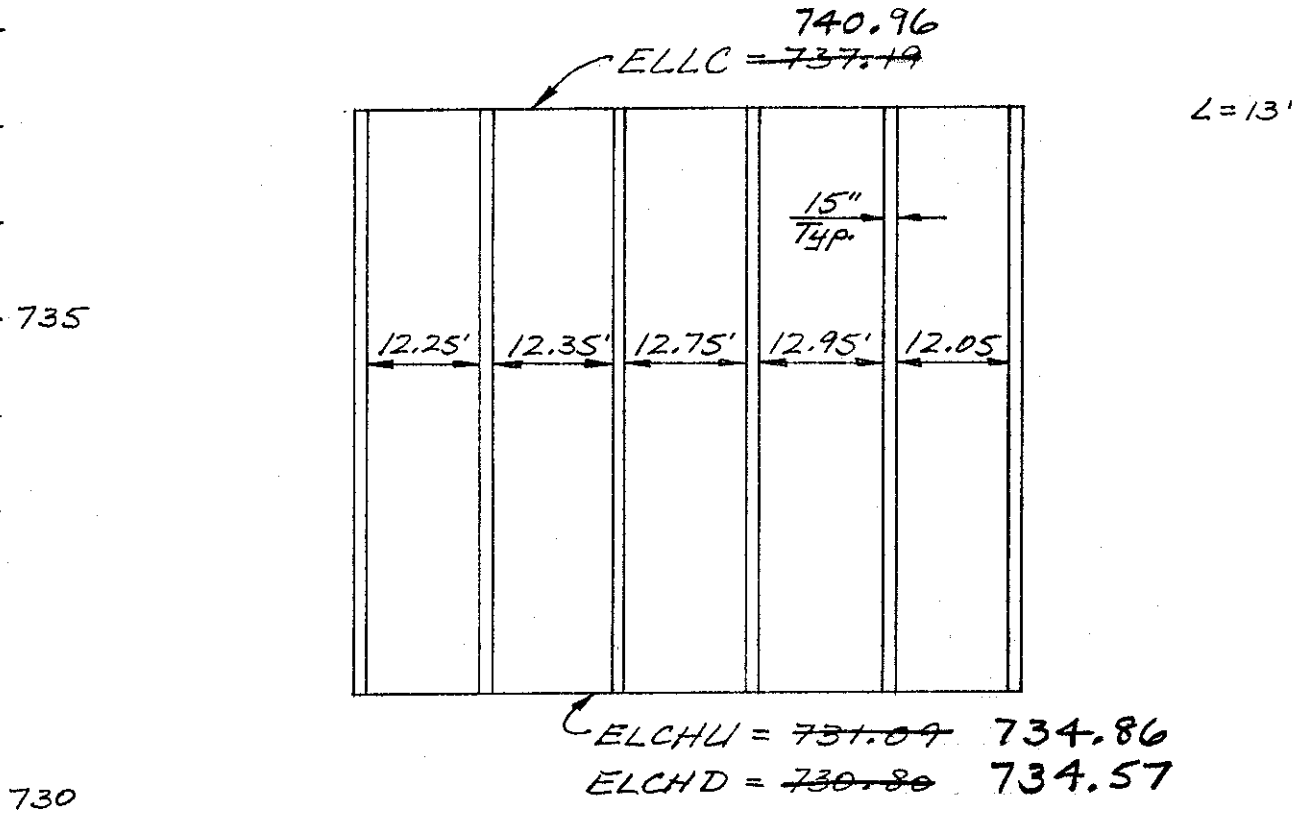


BURGESS & NIPLE, INC. - COMPUTATION SHEET

JOB NO. 11358 JOB NAME Gila Bend Floodplain SHEET ____ OF ____ SHEETS

SUBJECT Scott Ave. Wash Bridge PREPARED BY EEU DATE 11-15-91

Cross Section T.C. & G.B. Railroad CHECKED BY ____ DATE ____



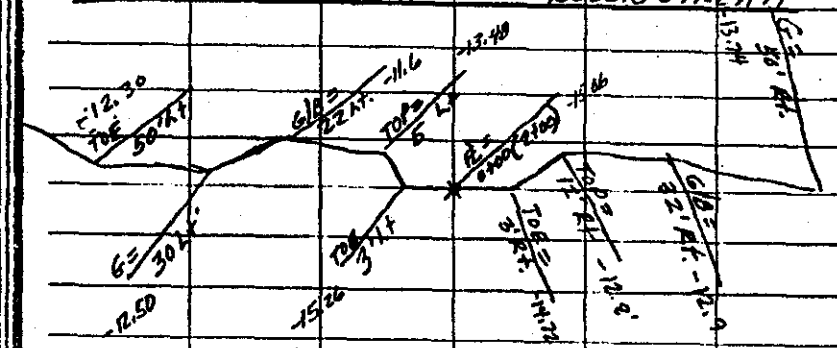
RDLEN = 700
SS = 0
BWC = 69.85'
BWP = 6(1.25') = 7.50'

BAREA = (737.19 − 731.09)(69.85) − (6.10)(7.50) =
426.09 − 45.75 = 380.34 s.f.

XK = 1.25
XKOR = 1.6
COFQ = 3

WASH No. 1 & CORNELIA AND GILA BEND RAILROAD

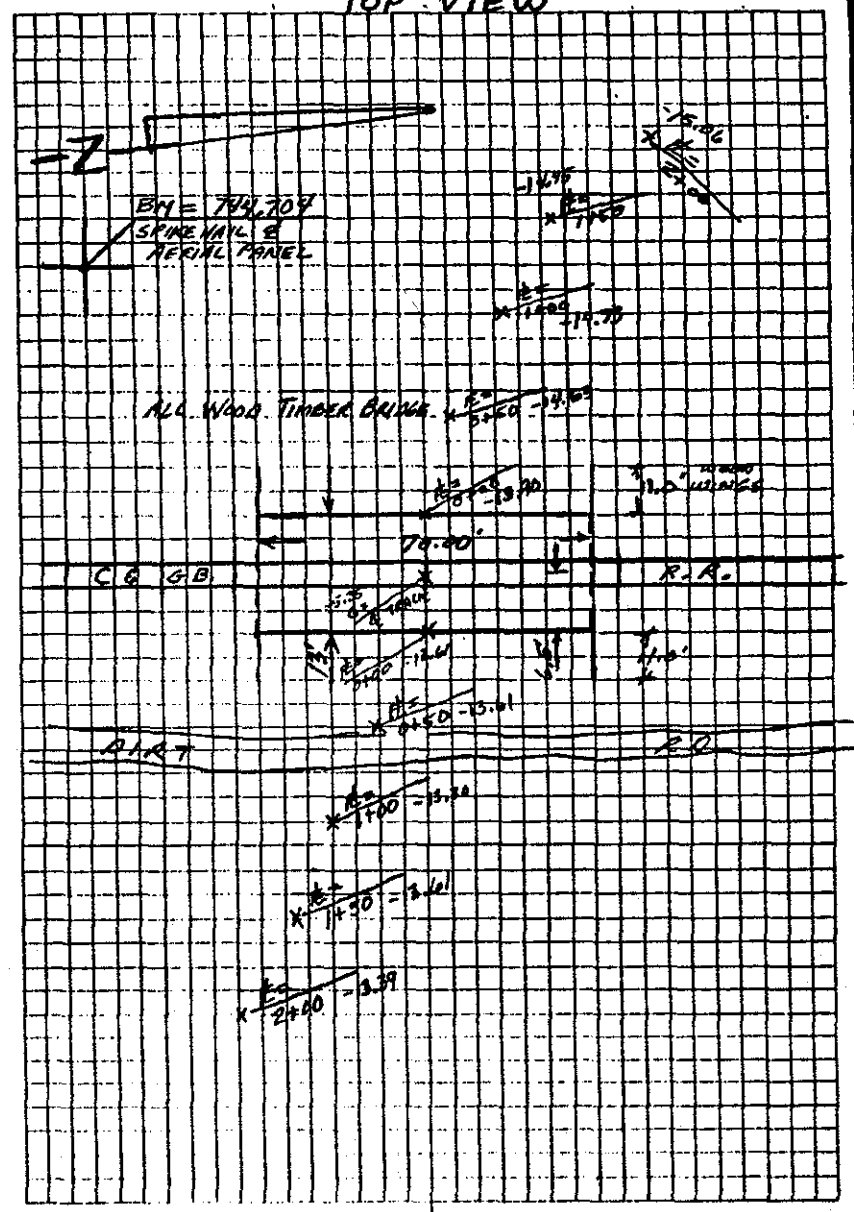
X-SECTION @ STA: 2+00 DOWNSTREAM



	9.87			
BM "G"	3.77		744.704	TOP SPIKE NAIL @ ℄ PANEL
PANEL	2.67			

"O"

TOP VIEW



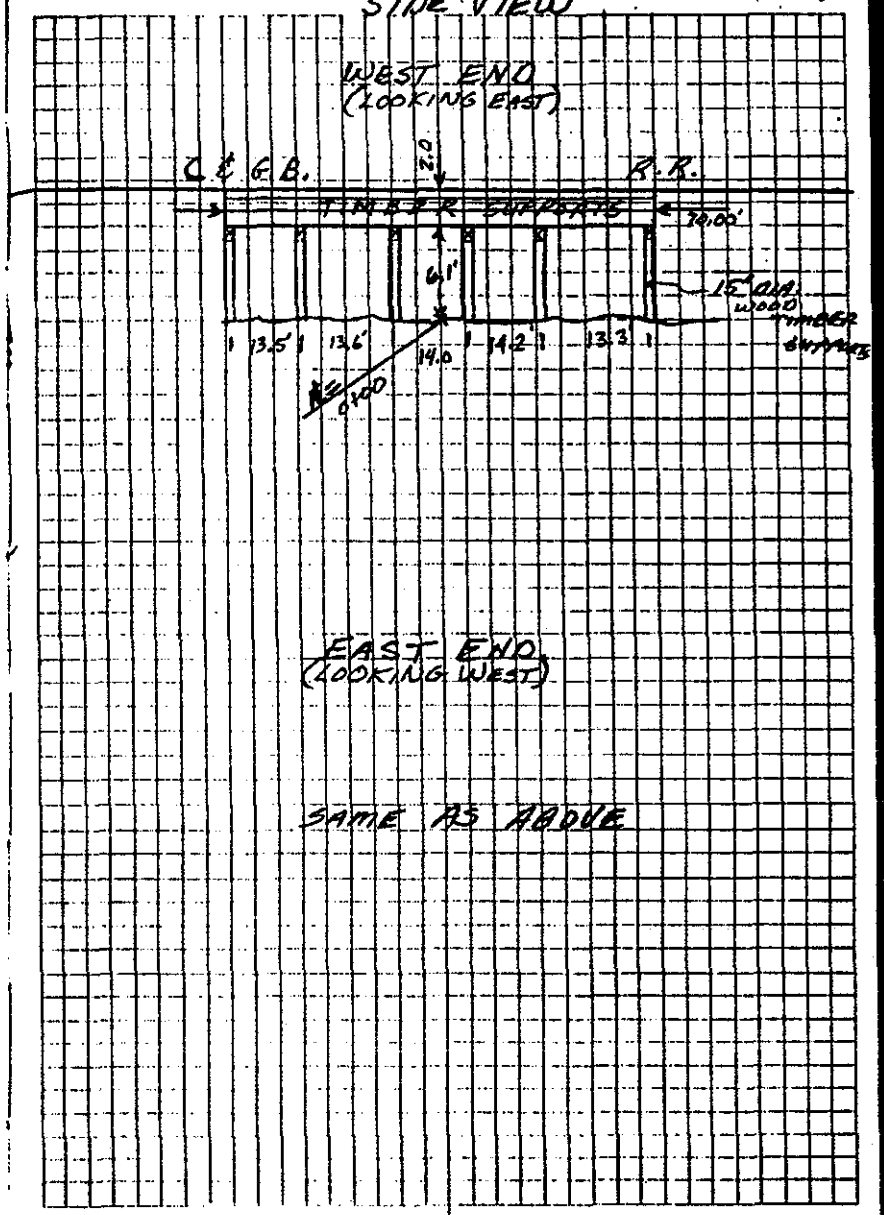
WASH No. 1 & CORNELIA AND GILA BEND RAILROAD

"O,"

10

SIDE VIEW

WEST END
(LOOKING EAST)



EAST END
(LOOKING WEST)

SAME AS ABOVE

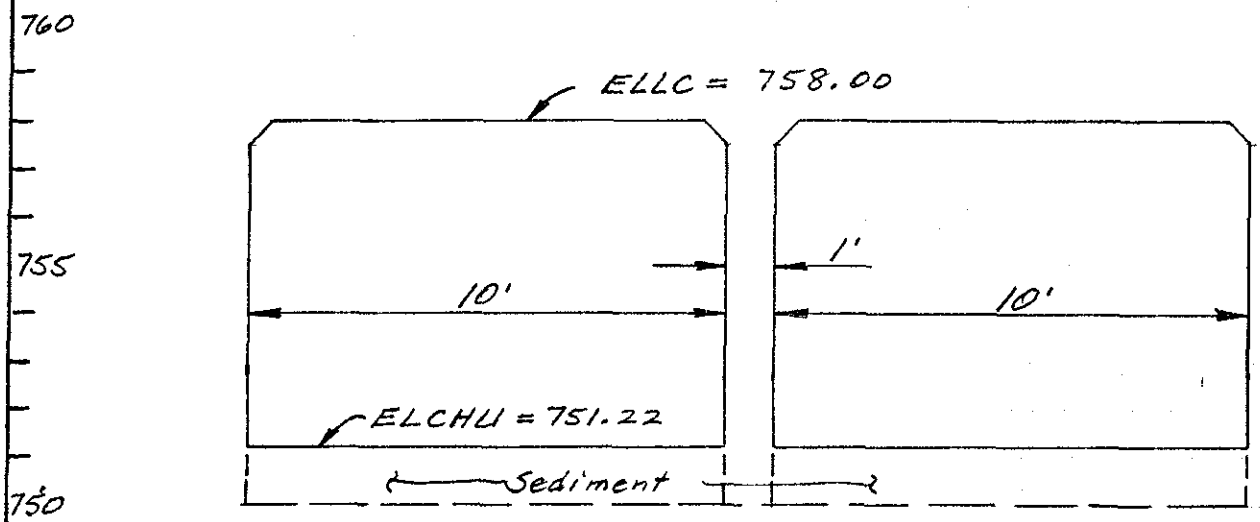
BURGESS & NIPLE, INC. - COMPUTATION SHEET

JOB NO. 11358 JOB NAME Gila Bend Floodplain SHEET 1 OF 2 SHEETS

SUBJECT Conc. Box Culvert PREPARED BY E.E.U. DATE 1-22-92

Interstate 8 & Scott Ave. Wash CHECKED BY _____ DATE _____

× 771.3 ELTRD



ELCHD = 750.46

Interpolated from Contour Map

52.0 (contour)
− 49.9 (spot elev.)

2.1' ÷ 750' (scaled) = 0.0028'/ft.

Upstream 280' × 0.0028 = 0.78'

52.0 (contour) − 0.78' = 51.22 ELCHU

Downstream 200' × 0.0028 = 0.56'

49.9 (spot elev.) + 0.56 = 50.46 ELCHD

BURGESS & NIPLE, INC. - COMPUTATION SHEET

JOB NO. 11358 JOB NAME Gila Bend Floodplain SHEET 2 OF 2 SHEETS

SUBJECT Conc. Box Culvert PREPARED BY EEU DATE 10-07-91

Interstate 8 - Scott CHECKED BY _____ DATE _____

5112 + 03.90

Conc. Box Culvert, Skew 45° Lt.,
2 - 10' x ~~8'~~ 6.8' x 293'-8¾"

Upstream - Level 73' @ El. = 750.00
Downstream - Level 68' @ El. = 749.00
152.73' @ S = 0.006548'/ft.

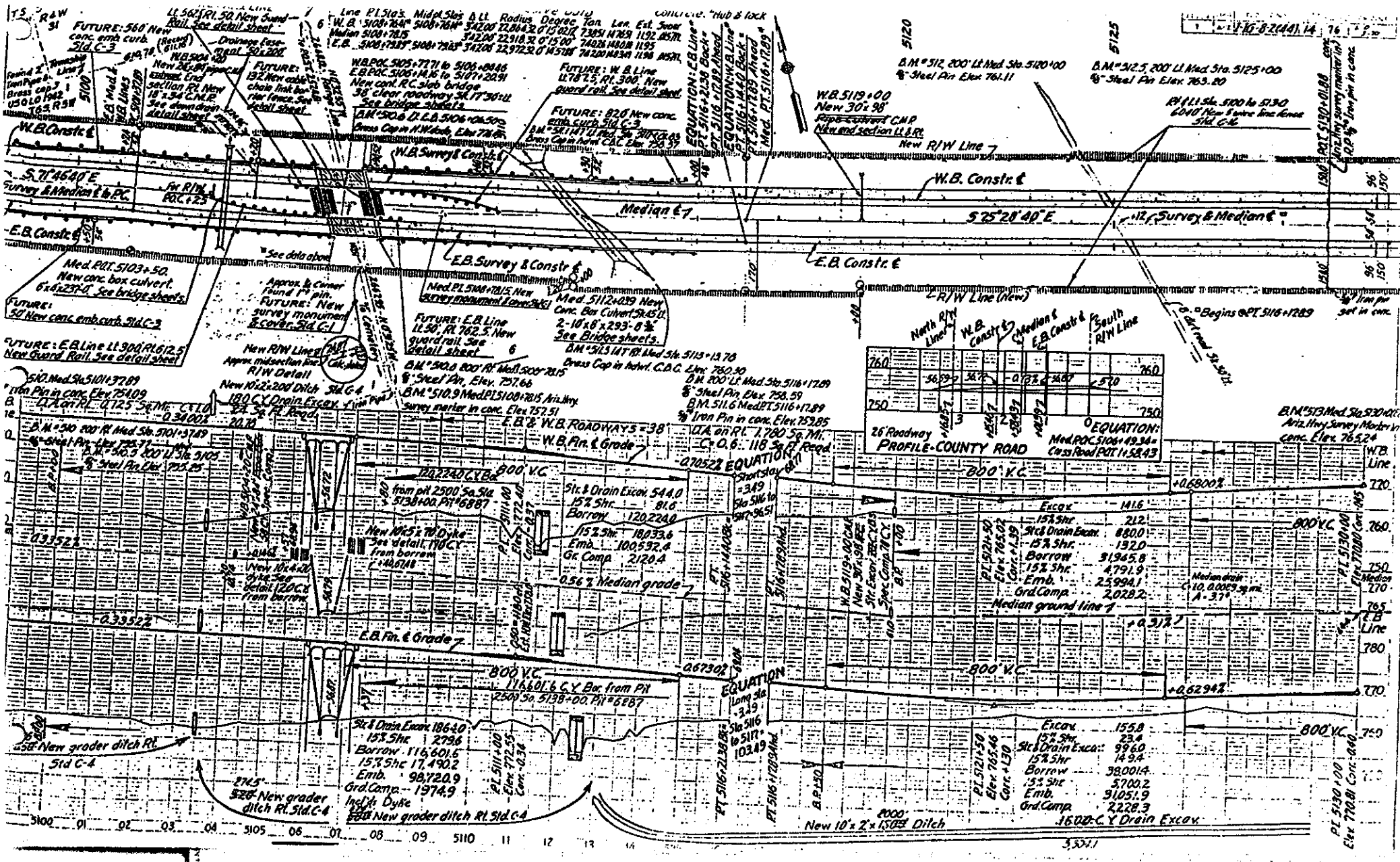
1	CUNO. CUNV	2.014			
2	ENTLC	0.4			
3	COFQ	3	8	CHRT. SCL	8.1
4	RDLEN	500	9	ELCHU	751.22 ~~750.00~~
5	RISE	~~8~~ 6.8	10	ELCHD	750.46 ~~749.00~~
6	SPAN	10			
7	CULVLN	293.73			

~~5169 + 60.55~~

~~Conc. Box Culvert, Skew 45° Lt.~~
~~6 - 10' x 6' x 240'-0"~~

~~Upstream - Level 38' @ El. = 773.75~~
~~Downstream - Level 49.25' @ El. = 772.50~~
~~152.75' @ S = 0.008183'/ft.~~

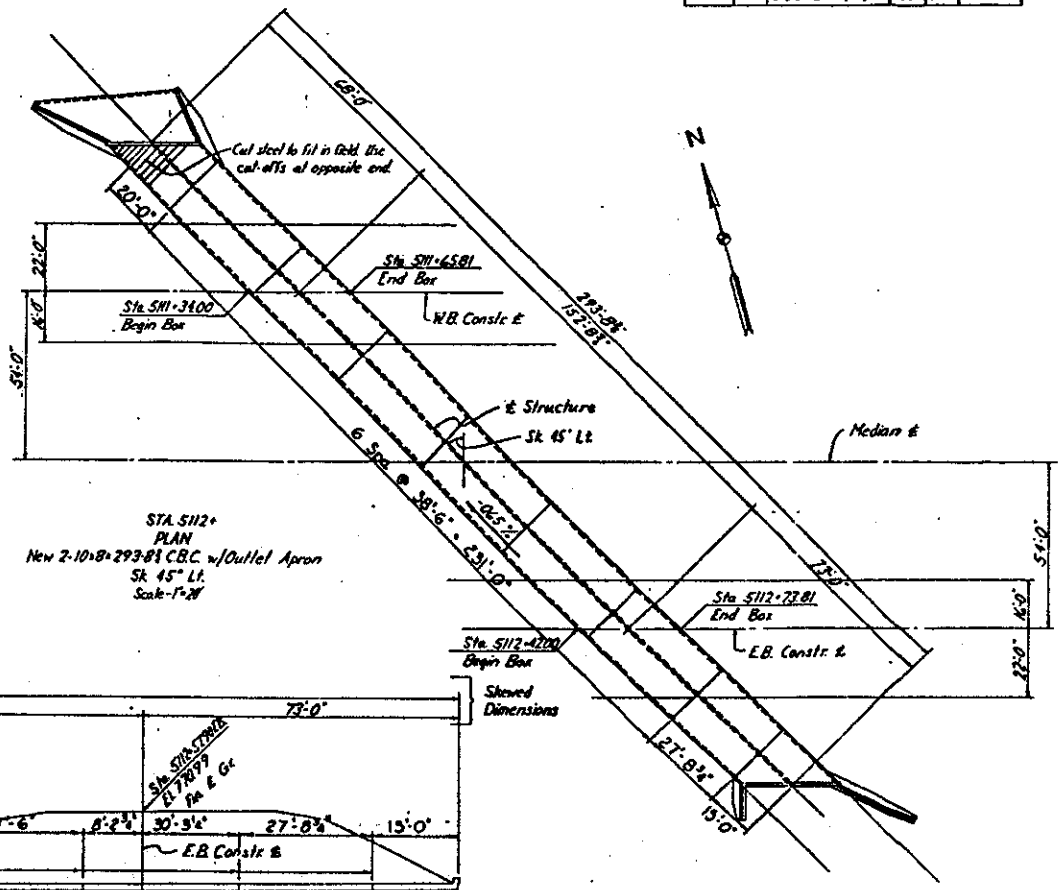
1	CUNO. CUNV	6.014			
2	ENTLC	0.4			
3	COFQ	3	8	CHRT. SCL	8.1
4	RDLEN	0	9	ELCHU	773.75
5	RISE	6	10	ELCHD	772.50
6	SPAN	10			
7	CULVLN	240.00			


W.B. Constr. ℄
Median ℄
E.B. Constr. ℄
S 71°46'40" E
S 25°28'40" E
Survey & Median ℄
R/W Line (New)
W.B. Survey & Constr. ℄
E.B. Survey & Constr. ℄
E.B. Fin. & Grade
W.B. Fin. & Grade
E.B. & W.B. ROADWAYS = 38'
26' Roadway
PROFILE-COUNTY ROAD
North R/W Line
W.B. Constr. ℄
Median ℄
E.B. Constr. ℄
South R/W Line
800' V.C.
0.70522%
0.33522%
0.56% Median grade
0.67302%
0.62942%
0.31%
0.68000%
EQUATION
Median ground line
New 10'x2'x150' Ditch
16,000 C.Y. Drain Excav.
New grader ditch Rt. Std C-4
Median drain
Excav. 141.6
15% Shr. 212
Str. & Drain Excav. 880.0
15% Shr. 132.0
Borrow 31,945.8
15% Shr. 4,791.9
Emb. 23,994.1
Grd. Comp. 2,028.2
Excav. 155.8
15% Shr. 23.4
Str. & Drain Excav. 99.6
15% Shr. 14.9
Borrow 38,001.4
15% Shr. 5,700.2
Emb. 31,051.9
Grd. Comp. 2,228.3

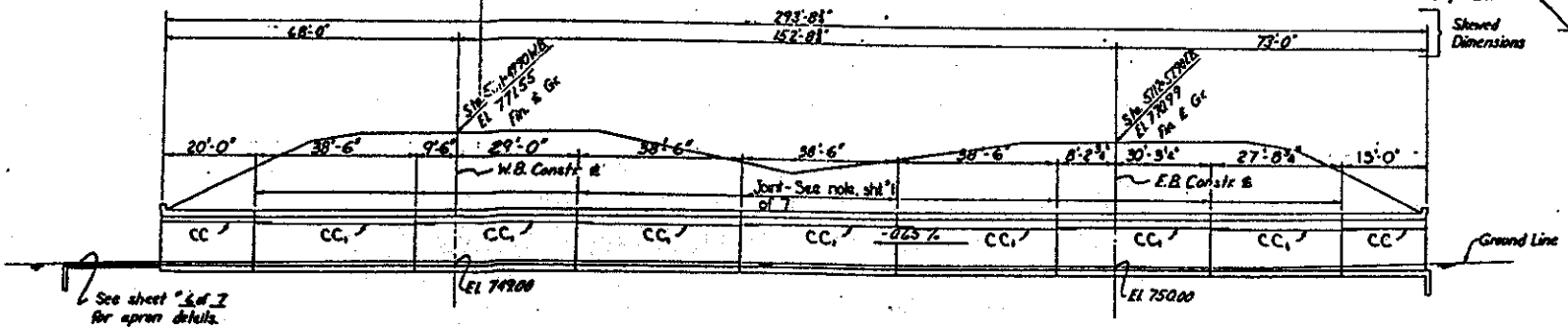
YUMA-CASA GRANDE HWY
MARICOPA COUNTY

9		I-16-B-2(44)	71	76	11.494 A.R.

NOTE-Sta. 5112+
For all other bbl. details, dimensions, bend diagrams & steel lists see Std. Dl-10.2
For all other inlet hdwl. details, dimensions, bend diagrams & steel lists see Std. CM-7.
For all other outlet hdwl. details, dimensions, bend diagrams & steel lists see Std. CM-8.



STA. 5112+
PLAN
New 2-10'x8'x293'-8¾ C.B.C. w/Outlet Apron
Sk. 45° Lt.
Scale-1"=20'



SECTION NORMAL TO ℄ ROWY
Scale-1"=10'

ARIZONA HIGHWAY DEPARTMENT
BRIDGE DIVISION

STA. 5112+
LOCATION & SPECIAL DETAILS

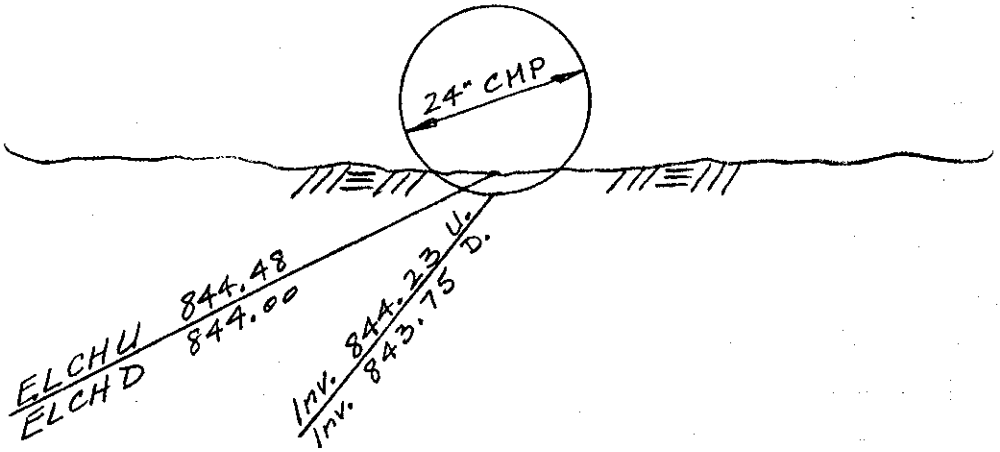
BURGESS & NIPLE, INC. - COMPUTATION SHEET

JOB NO. 11358 JOB NAME Gila Bend Floodplain SHEET 1 OF 5 SHEETS

SUBJECT Pipe Culvert PREPARED BY CEU DATE 1-23-92

Frontage Rd. & Unnamed #1 CHECKED BY _____ DATE _____

(Sediment 3" Deep)
(Negligible)



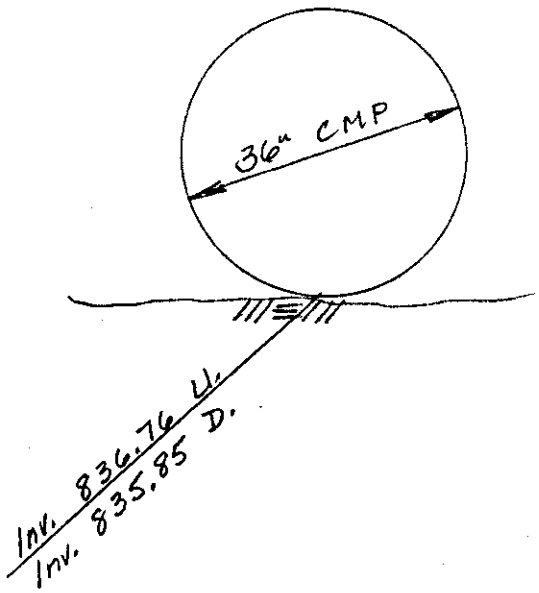
1	CUNO. CUNV	1.016	6	SPAN	0
2	ENTLC	0.5	7	CULVLN	82
3	COFQ	3	8	CHRT. SCL	2.2
4	RDLEN	0	9	ELCHU	844.~~8~~2
5	RISE	2	10	ELCHD	~~844.0~~ 843.8

BURGESS & NIPLE, INC. - COMPUTATION SHEET

JOB NO. 11358 JOB NAME Gila Bend Floodplain SHEET 2 OF 5 SHEETS

SUBJECT Pipe Culvert PREPARED BY CEH DATE 1-23-92

Ramp E & Unnamed #1 CHECKED BY _____ DATE _____



1	CUNO. CUNV	1.019	6	SPAN	0
2	ENTLC	0.5	7	CULVLN	137
3	COFQ	3	8	CHRT. SCL	2.2
4	RDLEN	0	9	ELCHU	836.8
5	RISE	3	10	ELCHD	835.9

BURGESS & NIPLE, INC. - COMPUTATION SHEET

JOB NO. 11358 JOB NAME Gila Bend Floodplain SHEET 3 OF 5 SHEETS

SUBJECT Pipe Culverts PREPARED BY LEU DATE 1-23-92

Median & Unnamed #1 CHECKED BY _____ DATE _____

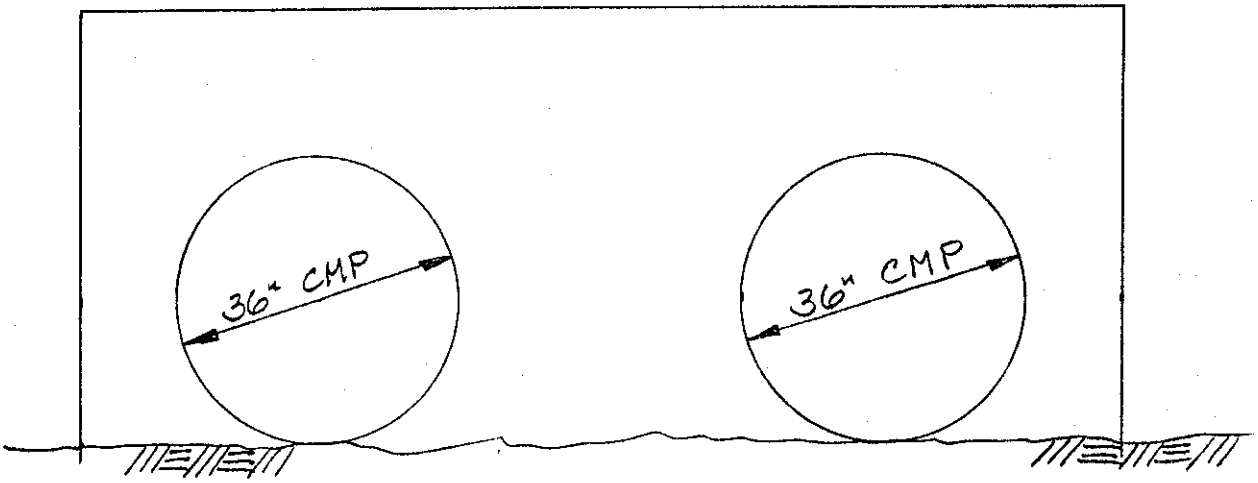
1	CUNO. CUNV	2.018	6	SPAN	0
2	ENTLC	0.5	7	CULVLN	285
3	COFQ	3	8	CHRT. SCL	2.2
4	RDLEN	0	9	ELCHU	832.6
5	RISE	2.5	10	ELCHD	829.5

BURGESS & NIPLE, INC. - COMPUTATION SHEET

JOB NO. 11358 JOB NAME Gila Bend Floodplain SHEET 4 OF 5 SHEETS

SUBJECT Pipe Culverts PREPARED BY LEU DATE 1-23-92

Ramp A & B and Unnamed #1 CHECKED BY _____ DATE _____



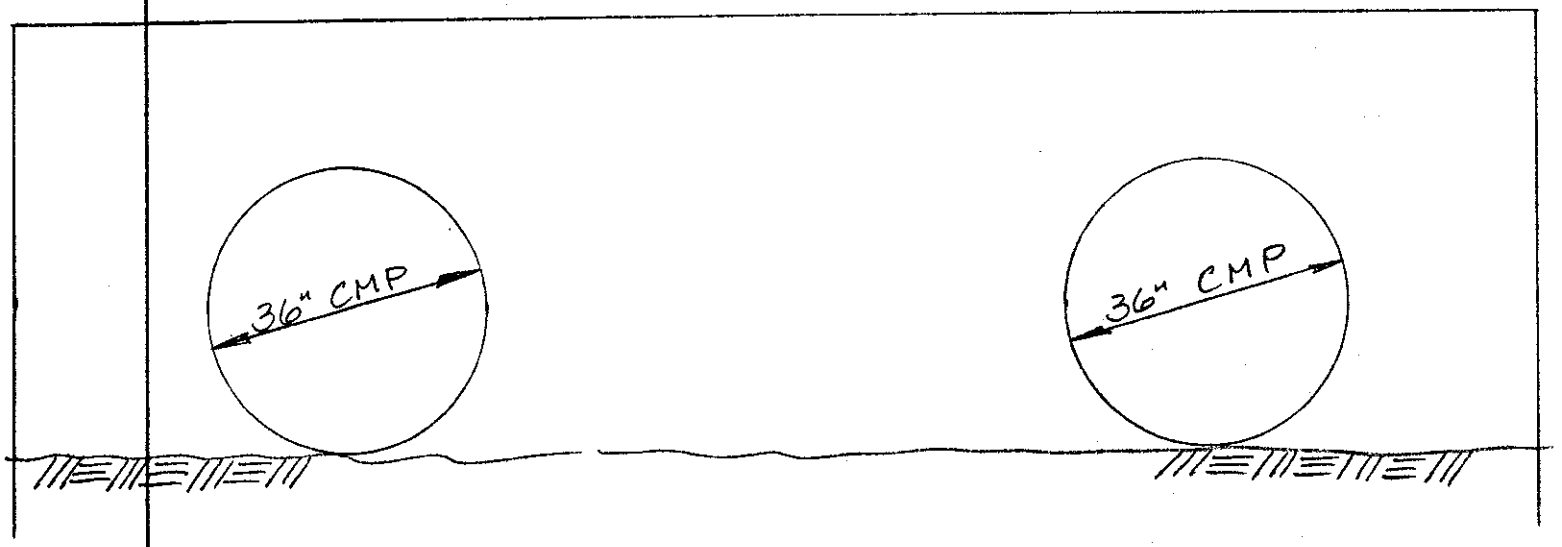
1	CUNO. CUNV	2.019	6	SPAN	0
2	ENTLC	0.5	7	CULVLN	248
3	COFQ	3	8	CHRT. SCL	2.1
4	RDLEN	0	9	ELCHU	827.0
5	RISE	3	10	ELCHD	825.1

BURGESS & NIPLE, INC. - COMPUTATION SHEET

JOB NO. 11358 JOB NAME Gila Bend Floodplain SHEET 5 OF 5 SHEETS

SUBJECT Pipe Culverts PREPARED BY CEH DATE 1-23-92

Ramp C & Unnamed #1 CHECKED BY _____ DATE _____



1	CUND. CUNV	2.019	6	SPAN	0
2	ENTLC	0.5	7	CULVLN	240
3	COFQ	3	8	CHRT. SCL	2.1
4	RDLEN	0	9	ELCHU	824.5
5	RISE	3	10	ELCHD	820.4

BURGESS & NIPLE, INC. – COMPUTATION SHEET

JOB NO. 11358 JOB NAME Gila Bend Floodplain SHEET 1 OF 2 SHEETS

SUBJECT Pipe Culverts PREPARED BY C.E.U. DATE 1-23-92

I-8, Ramps, Frontage Rd. CHECKED BY _____ DATE _____

Unnamed #1

①	Fr. Rd.	850.70 B.M. + 5.58 856.28 H.I. - 12.05 844.23 S. Inv.	(Sediment 3" Deep) (Negligible) 856.28 H.I. - 12.53 843.75 N. Inv.
②	Ramp E	844.30 B.M. + 2.20 846.50 H.I. - 9.74 836.76 S. Inv.	846.50 H.I. - 10.65 835.85 N. Inv.
③	Med.	838.30 B.M. + 2.90 841.20 H.I. - 8.61 832.59 S. Inv.	841.20 H.I. - 11.66 829.54 N. Inv.
④	Ramp A & B	848.90 B.M. + 2.78 851.68 H.I. - 12.22 839.46 T.P. + 0.32 839.78 H.I. - 12.80 826.98 S. Inv.	851.68 H.I. - 3.55 848.13 T.P. + 3.25 851.38 H.I. - 13.25 838.13 T.P. + 1.69 839.82 H.I. - 14.70 825.12 N. Inv.

BURGESS & NIPLE, INC. - COMPUTATION SHEET

JOB NO. 11358 JOB NAME Gila Bend Floodplain SHEET 2 OF 2 SHEETS

SUBJECT Pipe Culverts PREPARED BY E.E.U. DATE 1-23-92

I-8, Ramps, Frontage Rd. CHECKED BY _____ DATE _____

(5) Ramp C

839.82 H.I.
- 15.35
824.47 S. Inv.

839.82 H.I.
- 0.53
839.29 T.P.
+ 7.13
846.42 H.I.
- 12.77
833.65 T.P.
+ 0.97
834.62 H.I.
- 14.26
820.36 N. Inv.

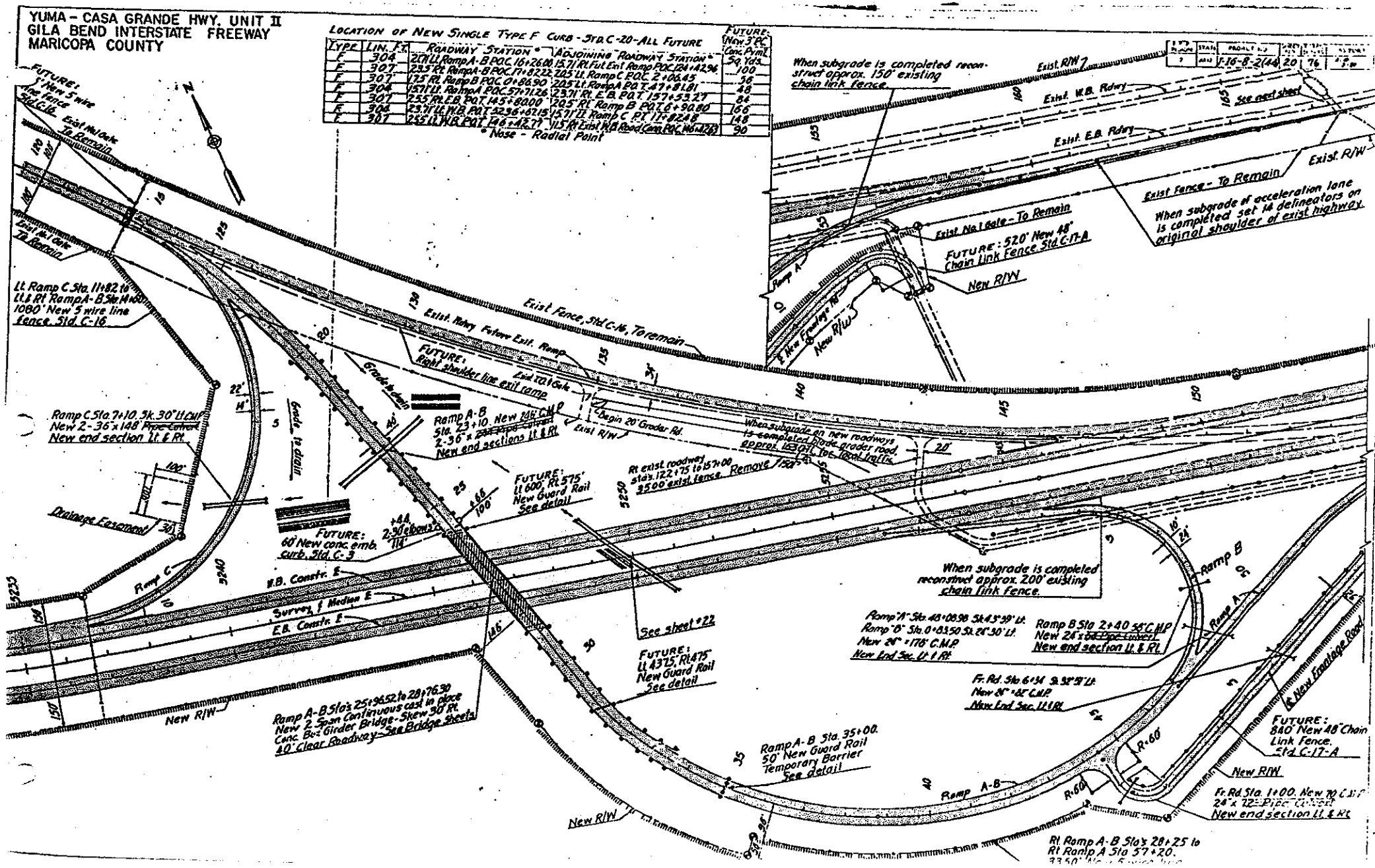
834.62 H.I.
- 0.88
833.74 T.P.
+ 11.87
845.61 H.I.
- 0.19
845.42 T.P.
+ 8.58
854.00 H.I.
- 5.12
848.88 B.M. = 848.90

YUMA – CASA GRANDE HWY. UNIT II
GILA BEND INTERSTATE FREEWAY
MARICOPA COUNTY

LOCATION OF NEW SINGLE TYPE F CURB - STD. C-20 - ALL FUTURE

TYPE	LIN. FT.	ROADWAY STATION *	ADJOINING ROADWAY STATION *	FUTURE: New 3" PC Conc. Pvmt. Sq. Yds.
F	304	27.71 Lt. Ramp A-B P.O.C. 16+26.00	15.71 Rt. Fut. Exit Ramp P.O.C. 124+42.96	100
F	307	23.5 Rt. Ramp A-B P.O.C. 7+82.22	20.5 Lt. Ramp C P.O.C. 2+06.45	56
F	307	17.5 Rt. Ramp B P.O.C. 0+86.90	20.5 Lt. Ramp A P.O.T. 4+7+81.81	48
F	304	15.71 Lt. Ramp A P.O.C. 57+71.26	23.71 Rt. E.B. P.O.T. 157+53.27	84
F	307	25.5 Rt. E.B. P.O.T. 145+80.00	20.5 Rt. Ramp B P.O.T. 6+90.80	166
F	304	23.71 Lt. W.B. P.O.T. 52.96+67.15	15.71 Lt. Ramp C P.O.T. 17+82.48	148
F	307	25.5 Lt. W.B. P.O.T. 146+42.77	11.5 Rt. Exist. W.B. Road Conn. P.O.C. 140+42.83	90

* Nose - Radial Point



YUMA-CASA GRANDE HWY. UNIT II
GILA BEND INTERSTATE FREEWAY
MARICOPA COUNTY

Exist. Rdwy. Future Exit Ramp
Exist. Eastbound Rdwy.
Exist. Westbound Rdwy.
W. B. Constr. ℄
Survey & Median ℄ Bearing EQUATION S 75° 28' 40" E Bk. = S 75° 18' 05" E Ahd.
E. B. Constr. ℄
Ramp B
Ramp A
℄ NEW FRONTAGE ROAD
N 66° 52' 20" E
S 0° 11' 00" W
S 80° 50' ± W
EQUATION: Front. Pd. 13+92.57 = Exist. dirt road 0+00
New 20' x 4' x 110' Type A Dyke Std. C-4
180' New Roadway Dip Approx. grades ± 5%
East Gila Bend T.I. X-Rds. B.M. = 524.6 Rt. X-Rds. 25+61.40 Brass Cap in N.W. dado Elev. 861.03 B.M. = 524.6A Lt. X-Rds. 25+08.30 Brass Cap in S.W. dado Elev. 861.90
Sta. 2+50 New channel change = Sta. 6+71.48 exist. rdwy. 900' normal of exist. East bound Roadway. Sta. 158+41.00
New 200' x 800' Drainage Easement
LOCATION PLAN
DRAINAGE EASEMENT
Field data on layout print East Gila Bend Traffic Interchange Scale 1:100 Nov. 13 62 G.W.S.
Profile - Channel Change Std. C-4 - 20' bottom
LEVEL EQUATION
Proj. I-IG-8-2(44) Elev. 841.77
Proj. I-8-2(8) Elev. 841.57 (As Built)
EQUA.
END PROJ. I-IG-8-2(44) Rt. Constr.
BEGIN PROJ. I-8-2(8) As Built
(Built under Proj. I-002-2(8))
EQUATION
LEVEL EQUATION
See note top center profile sheet
Median grade +1.15%
Exist. Rdwy. Grade
+0.81 50%
+0.66 83%
+0.22%
+0.6900%
+0.4214%
E. B. & W. B. ROADWAYS
N. B. LINE
Existing Roadway Grade
Exist. Ground
Proposed Grade
Grader Ditch Rt.
Ga. Ditch Rt.
Med. 5249+81 Sk. 45' Lt.
New 30' x 20' Culvert 28' C.M.P.
New #3A Catch Basin Std. C-27A
New and sections Lt. & Rt.
New 20' x 1' x 800' channel
B.M. #525.200' Lt. Med. Sta. 5250+00
B.M. #526 Ariz. Hwy. Monument set in concrete median at equa. Elev. 832.59
B.M. As Built Brass Cap Proj. Marker 150' Rt. Median Sta. 144+00 Ahd. From book 6417-1-1
Sta. 5215+00 = B.M. 885 W.B. Fin. Grade
Sta. 5255+00 = B.M. #525.3, 200' Rt. Med. Sta. 5255+00
Sta. 258.16 144+25.79
Sta. 5250
Sta. 5255
Sta. 144
Sta. 145
Sta. 146
Sta. 147
Sta. 148
Sta. 149
Exist. 50' x 200' Drain Easement for 135
W.B. Sta. 166+88.0 Exist. 10' x 8' x 72' 6" Box Culv. Sk. 30° Lt. Std. Cl. 10-1-30 To Remain
Proj. I-8-2(8) As Built
Exist. Eastbound Rdwy.
Exist. Westbound Rdwy.
E.B. Sta. 164+50 Exist. 10' x 8' x 62' 6" Box Culv. Sk. 30° Lt. Std. Cl. 10-1-30 Extend 12' Rt. Ramp A P.O.T. 14+42.26 E.B. P.O.T. 14+21.00
Rt. 8' — See Bridge Sheets
W.B. Sta. 140 to P.T. 151+02.24 E.B. Sta. 144 to P.T. 158+81.84 — New surfacing must be applied over subgrade and existing pavement, scarified, processed, rolled and rolled as per specifications for Interstate Highways.
FUTURE
Exist. Dirt road to move
Exist. Dirt road
Exist. Grader Ditch Rt.
Exist. Ground
Proposed Grade
Existing Roadway Grade
Exist. Rdwy. Grade
Excav. 3252
15% Shr. 488
Chan. Excav. 16708
15% Shr. 2506
Emb. 4320
Hand Built 14651
14651 C.Y. to Split
Front. Road Sta. 6+61
New 20' x 4' x 110' Type A Dyke - Std. C-4
260 C.Y. Emb.
Crossroad
Excav. 1339.21
Borrow 17995
15% Shr. 509
20% Shr. 2153.9
Emb. 8755.3
Sta. 8 Drain Excav. 9240
15% Shr. 1356.6
Grd. Comp. 9410
Sta. 5215+00
Est. 885 W.B. Fin. Grade
17995 C.Y. Borrow from pit 1200 Rt.
300 billet @ CB
325 Inlet @ CB
N.B. Fin. Grade
Sta. 5250
Sta. 5255
Sta. 144
Sta. 145
Sta. 146
Sta. 147
Sta. 148
Sta. 149
850
840
830
820
860

YUMA - CASA GRANDE HIGHWAY
GILA BEND INTERSTATE FREEWAY, UNIT III
MARICOPA COUNTY

STATE	PROJECT NO	SHEET NO.	TOTAL SHEETS	AS BUILT
ARIZ	I-10-8(145)	11	34	

EAST GILA BEND

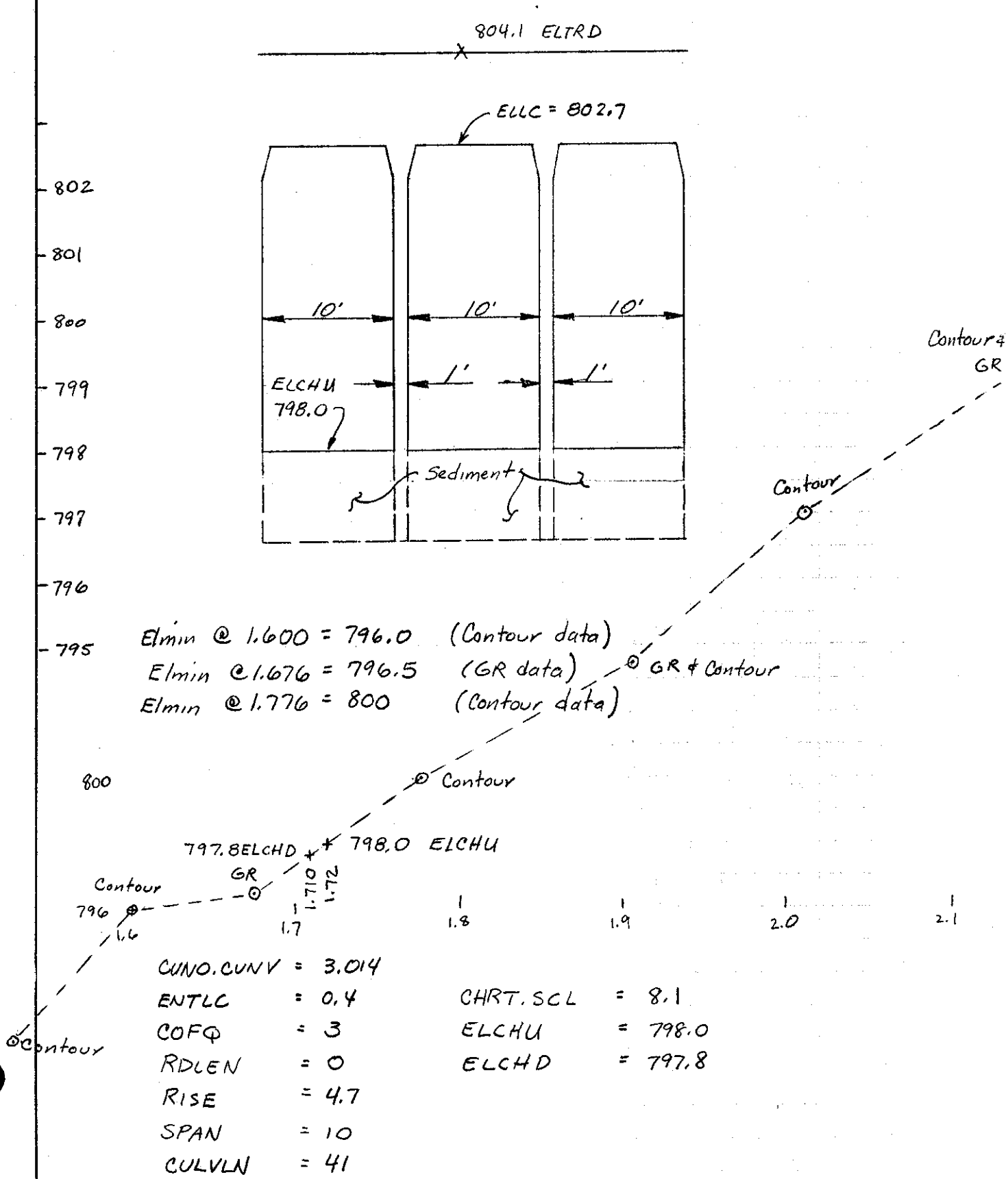
Ramp E	Ramp 2-5	Frontage Road	Frontage Road	Frontage Road
P.I. 15+27.04	P.I. 33+16.01	P.I. 33+08.44	P.I. 48+45.96	P.I. 59+52.48
Δ = 23°51'15"	Δ = 15°	Δ = 84°04'50"	Δ = 28°39'10"	Δ = 113°18'40"
D = 4°	D = 5°	D = 28.64789°	D = 4°	D = 28.64789°
L = 596.35'	L = 300.00'	L = 29.330'	L = 714.24'	L = 393.33'
T = 302.56'	T = 291.44'	T = 180.34'	T = 364.71'	T = 303.96'
R = 1432.39'	R = 1909.86'	R = 200.00'	R = 1432.39'	R = 200.00'
S = 0.0233/ft	S = 0.0159/ft	S = 0.10/ft	S = 0.0233/ft	S = 0.10/ft

BURGESS & NIPLE, INC. – COMPUTATION SHEET

JOB NO. 11358 JOB NAME Gila Bend Floodplain SHEET ___ OF ___ SHEETS

SUBJECT Conc. Box Culvert PREPARED BY ESU DATE 12-13-91

Un. Trib. #2 & Business Route 8 CHECKED BY JEM DATE 1/18/92



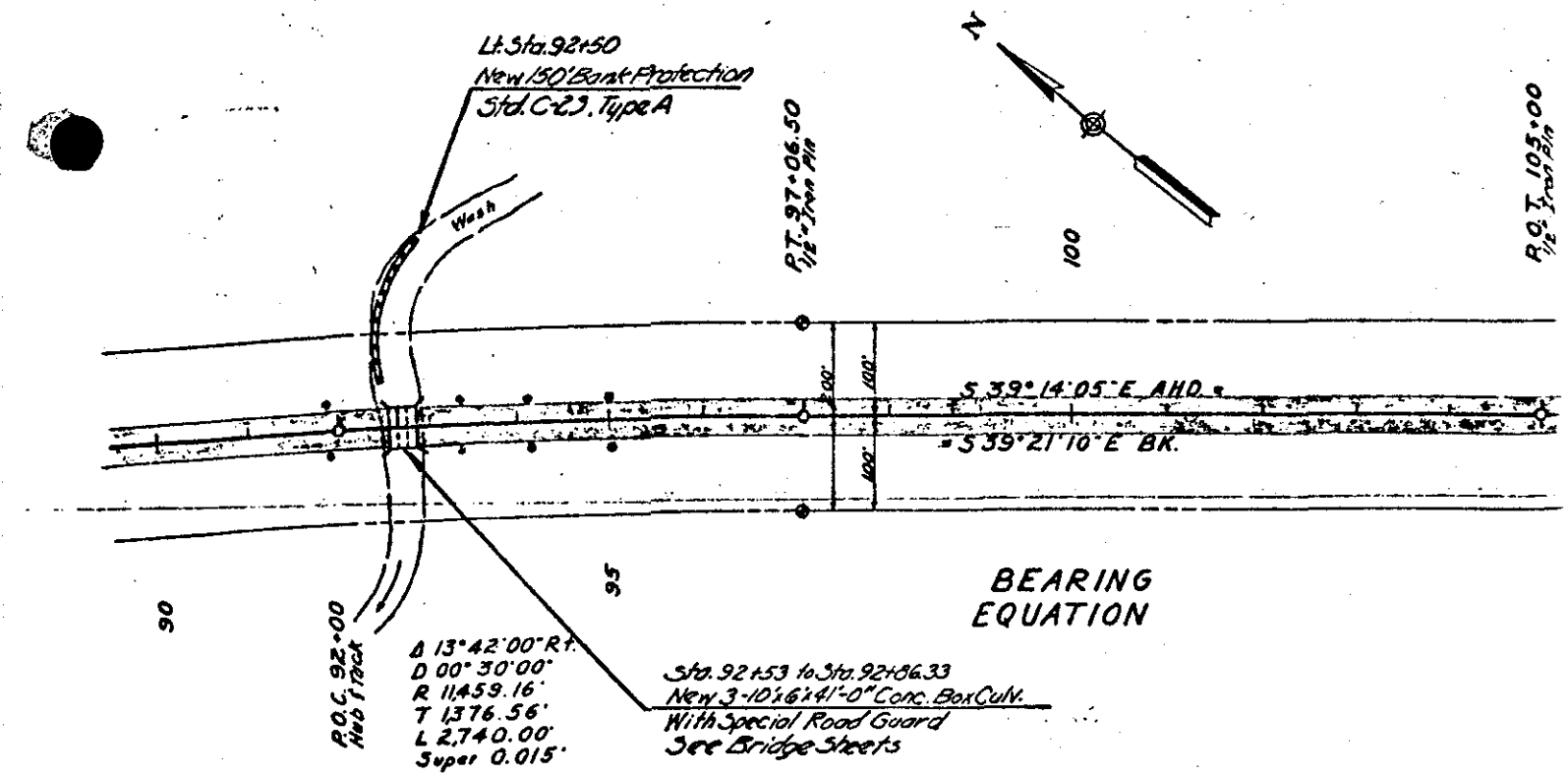
Elmin @ 1.600 = 796.0 (Contour data)

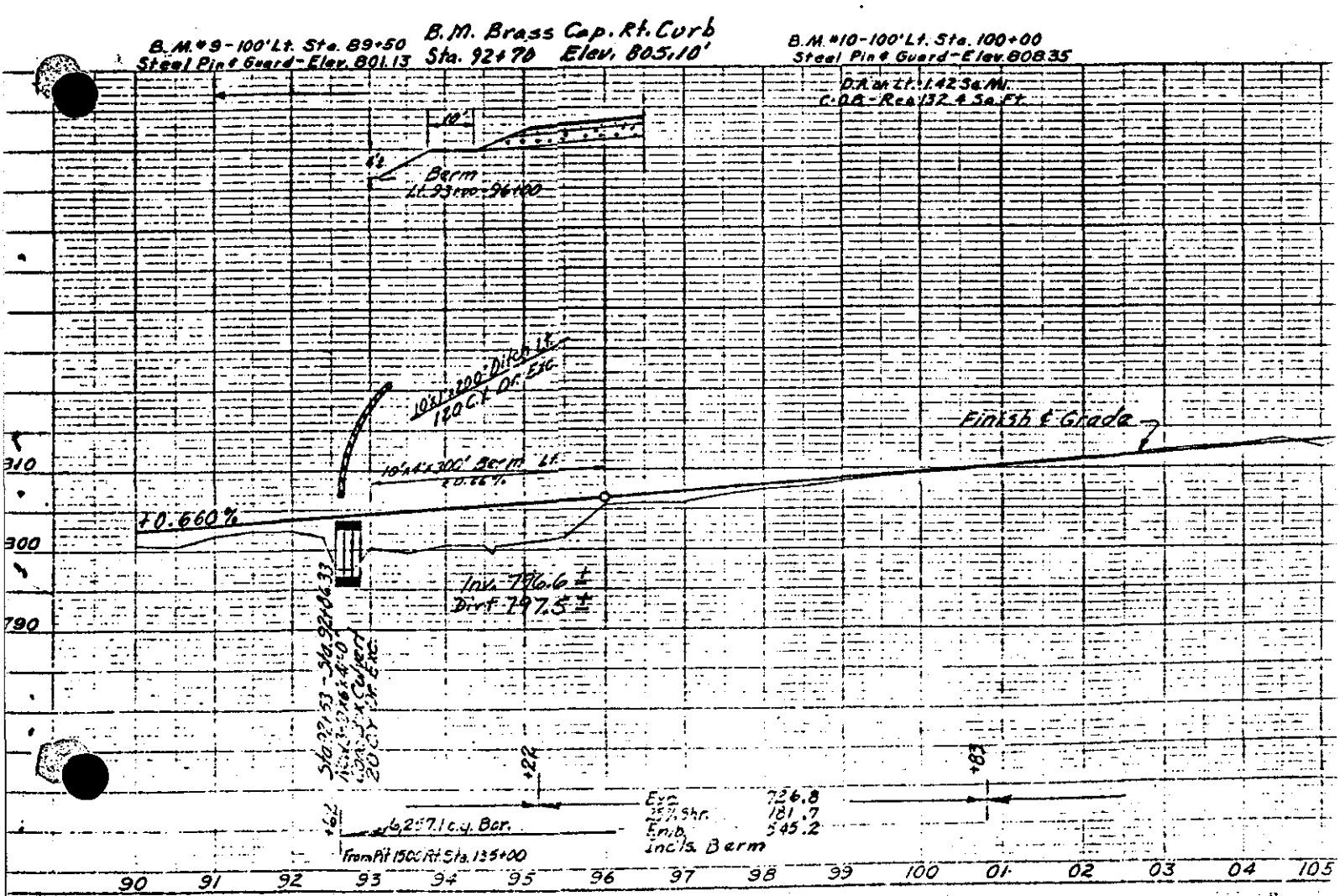
Elmin @ 1.676 = 796.5 (GR data)

Elmin @ 1.776 = 800 (Contour data)

CUNO.CUNV	= 3.014		
ENTLC	= 0.4	CHRT.SCL	= 8.1
COFQ	= 3	ELCHU	= 798.0
RDLEN	= 0	ELCHD	= 797.8
RISE	= 4.7		
SPAN	= 10		
CULVLN	= 41		

YUMA-CASA GRANDE HWY.
MARICOPA COUNTY





SECTION 4: Hydraulic Analysis

4.2 Parameter Estimation

Photo No. 1 (9101-25)
Looking upstream at
Interstate 8.
"n" = 0.030 for channel

Photo No. 2 (9101-27)
Looking downstream from
Interstate 8.
"n" = 0.030 for channel
"n" = 0.035 for left and
right overbanks

Photo No. 3 (9101-30)
Looking downstream from
Main Street.
"n" = 0.030 for channel
"n" = 0.035 for left and
right overbanks

Photo No. 4 (9101-31)
Looking upstream from
Gila Bend Canal.
"n" = 0.030 for channel
"n" = 0.035 for left and
right overbanks

Photo No. 5 (9102-17)
Looking upstream at
Southern Pacific Railroad.
"n" = 0.025 for channel
"n" = 0.060 for left and
right overbanks

Photo No. 6 (9102-18)
Looking downstream at
Highway 80.
"n" = 0.025 for channel

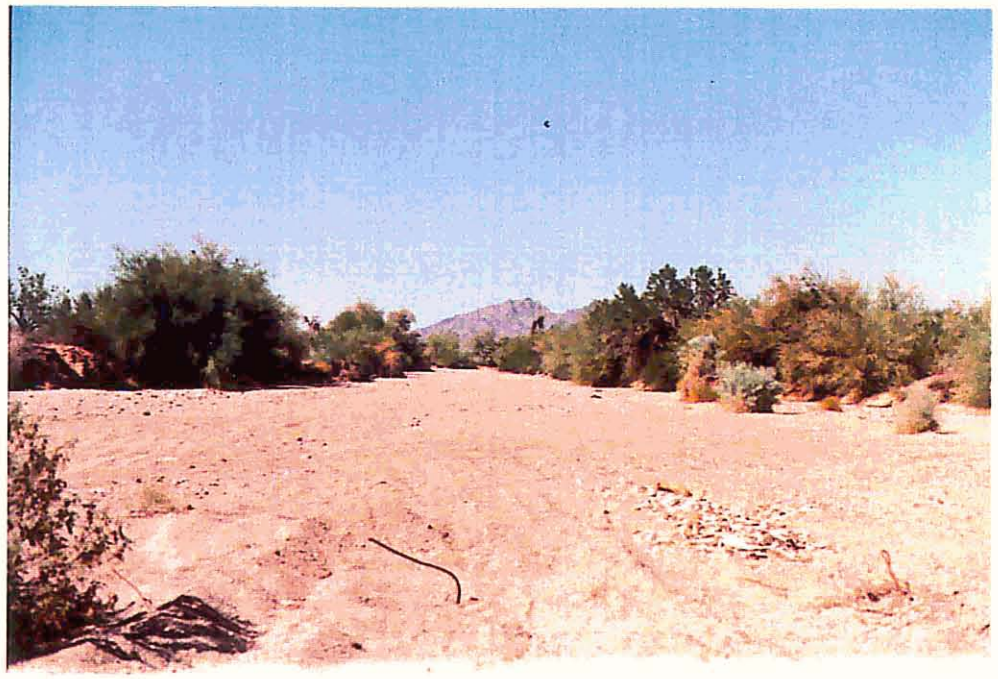


Photo No. 7 (9103-1)
Looking downstream from Papago Street.
"n" = 0.030 for channel
"n" = 0.060 for left and right banks
"n" = 0.040 for left and right overbanks

Photo No. 8 (9103-4)
Looking downstream from Indian Road. (South line Sec. 30, T.5S., R.4W.)
"n" = 0.030 for channel
"n" = 0.060 for left and right banks
"n" = 0.040 for left and right overbanks

Photo No. 9 (9103-5)
Looking upstream from Watermelon Road
"n" = 0.030 for channel
"n" = 0.060 for left and right banks
"n" = 0.040 for left and right overbanks

Photo No. 10 (9103-7)
Looking upstream from mid-section line of Sec. 24, T.5S., R.5W.
"n" = 0.030 for channel
"n" = 0.060 for left overbank
"n" = 0.040 for right overbank

Photo No. 11 (9103-8)
Looking upstream from Indian Road. (North line Sec. 24., T.5S., R.5W.)
"n" = 0.035 for channel
"n" = 0.060 for left and right overbanks

SCOTT AVENUE WASH

Photo No. 12 (9102-4)
Looking upstream at Interstate 8.
"n" = 0.035 for channel

Photo No. 13 (9102-3)
Looking downstream from East Line of Sec. 1 T.6S., R.5W.
"n" = 0.050 for channel
"n" = 0.035 for left and right overbanks

Photo No. 14 (9102-7)
Looking downstream from Martin Avenue.
"n" = 0.050 for channel
"n" = 0.035 for left and right overbanks

Photo No. 15 (9102-9)
Looking upstream at
Tucson, Cornelia and Gila
Bend Railroad.
"n" = 0.045 for channel

Photo No. 16 (9102-12)
Looking downstream at
Gila Bend Canal.
"n" = 0.045 for channel

Photo No. 17 (9102-15)
Looking downstream at
Southern Pacific Railroad.
"n" = 0.035 for channel

SCOTT AVENUE WASH

Photo No. 18 (9103-23)
Looking downstream at Highway 80.
"n" = 0.030 for channel

Photo No. 19 (9103-21)
Looking upstream behind service station on North side of Highway 80.
"n" = 0.080 for channel

Photo No. 20 (9103-18)
Looking downstream from Papago Street.
"n" = 0.040 for channel
"n" = 0.035 for left and right overbanks

SCOTT AVENUE WASH

Photo No. 21 (9103-16)
Looking upstream from
Richards Street.
"n" = 0.050 for channel
"n" = 0.035 for left and
right overbanks

Photo No. 22 (9103-13)
Looking upstream from
Indian Road (North line
of Sec. 36, T.5S., R.5W.)
"n" = 0.070 for channel
"n" = 0.035 for left and
right overbanks

Photo No. 23 (9103-10)
Looking upstream from
Watermelon Road.
"n" = 0.040 for channel
"n" = 0.040 for left and
right overbanks

Photo No. 24 (9102-13)
Looking upstream at
Interstate 8.
"n" = 0.030 for channel

Photo No. 25 (9102-14)
Looking downstream from
Interstate 8.
"n" = 0.030 for channel
"n" = 0.035 for left and
right overbanks

Photo No. 26 (9101-22)
Looking upstream from
mid-section line of Sec. 6,
T.6S., R.4W.
"n" = 0.030 for channel
"n" = 0.030 for left and
right overbanks

BENDER WASH

Photo No. 27 (9101-20)
Looking upstream from
Main Street.
"n" = 0.035 for channel
"n" = 0.030 for left and
right overbanks

Photo No. 28 (9101-33)
Looking downstream at
Gila Bend Canal.
"n" = 0.035 for channel

Photo No. 29 (9102-22)
Looking upstream at Gila
Bend Canal.
"n" = 0.030 for channel

BENDER WASH

Photo No. 30 (9102-20)
Looking upstream at
Southern Pacific Railroad.
"n" = 0.035 for channel

Photo No. 31 (9102-19)
Looking upstream at
Highway 80.
"n" = 0.035 for channel

Photo No. 32 (9102-23)
Looking upstream from
confluence of Sand Tank
Wash.
"n" = 0.030 for channel
"n" = 0.035 for left and
right overbanks

UNNAMED TRIBUTARY #1

Photo No. 33 (9101-7)
Looking downstream at
Frontage Road.
"n" = 0.045 for channel

Photo No. 34 (9101-8)
Looking downstream from
Frontage Road.
"n" = 0.045 for channel
"n" = 0.035 for left and
right overbanks

Photo No. 35 (9101-9)
Looking downstream at
Ramp E.
"n" = 0.045 for channel

UNNAMED TRIBUTARY #1

Photo No. 36 (9101-11)
Looking downstream at
Interstate 8.
"n" = 0.035 for channel

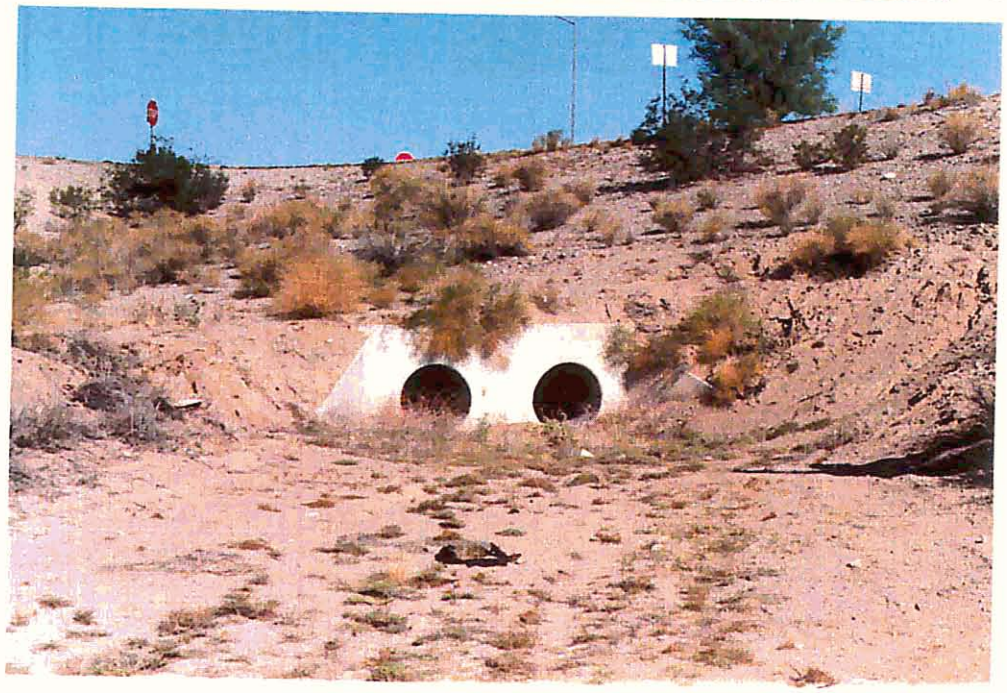


Photo No. 37 (9101-13)
Looking downstream at
Ramp A-B Crossroad.
"n" = 0.030 for channel

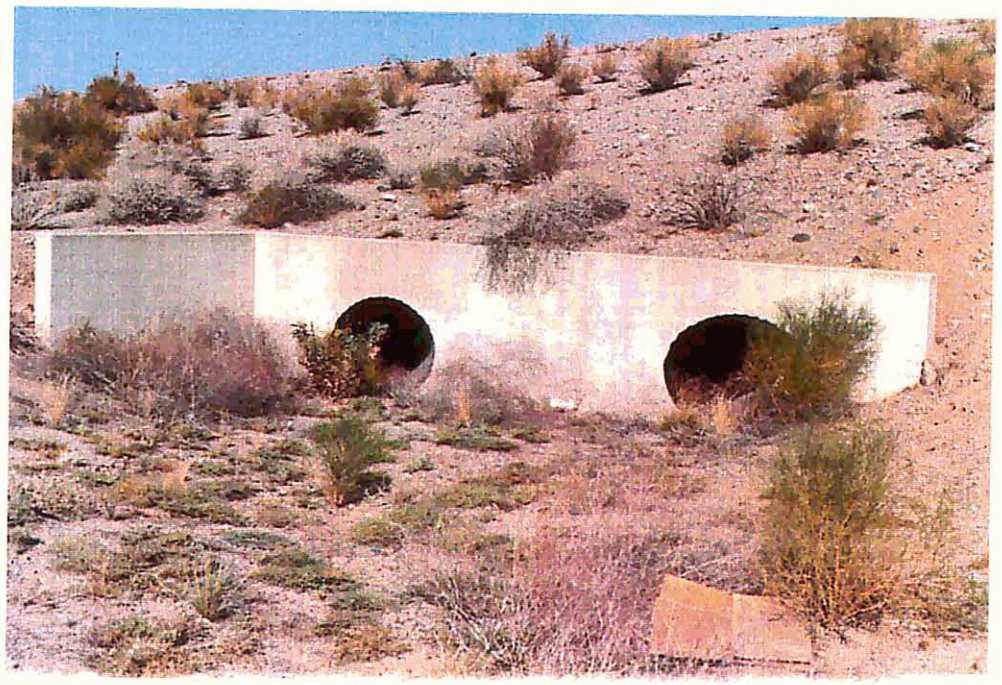


Photo No. 38 (9101-14)
Looking downstream at
Ramp C.
"n" = 0.035 for channel

UNNAMED TRIBUTARY #1

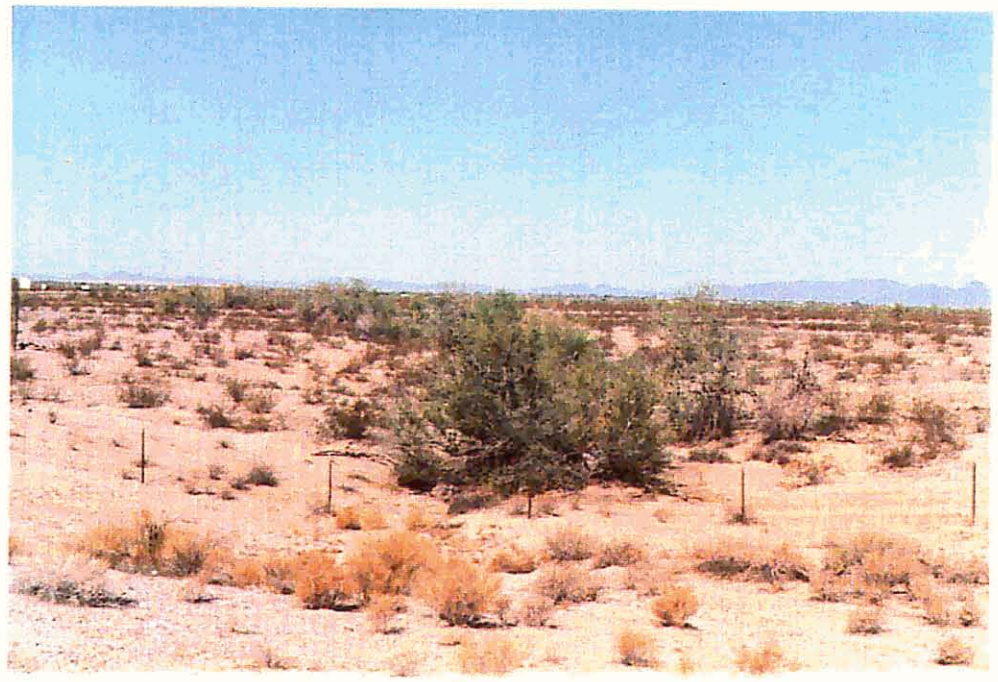


Photo No. 39 (9101-15)
Looking downstream from Ramp C.
"n" = 0.035 for channel
"n" = 0.030 for left and right overbanks

Photo No. 40 (9101-18)
Looking upstream from Main Street.
"n" = 0.035 for channel
"n" = 0.030 for left and right overbanks

Photo No. 41 (9101-36)
Looking upstream from Gila Bend Canal Drainage Channel.
"n" = 0.035 for channel
"n" = 0.035 for left and right overbanks

UNNAMED TRIBUTARY #2

Photo No. 42 (9101-4)
Looking downstream from East Line of Section 4, T.6S., R.4W.
"n" = 0.040 for channel
"n" = 0.035 for left and right overbanks

Photo No. 43 (9101-3)
Looking upstream from Business Route 8.
"n" = 0.035 for channel
"n" = 0.035 for left and right overbanks

Photo No. 44 (9101-2)
Looking downstream at Business Route 8.
"n" = 0.035 for channel

UNNAMED TRIBUTARY #2

Photo No. 45 (9101-17)
Looking upstream from Main Street.
"n" = 0.035 for channel
"n" = 0.030 for left and right overbanks

Photo No. 46 (9101-37)
Looking upstream from Gila Bend Canal Drainage Channel.
"n" = 0.040 for channel
"n" = 0.070 for left and right overbanks

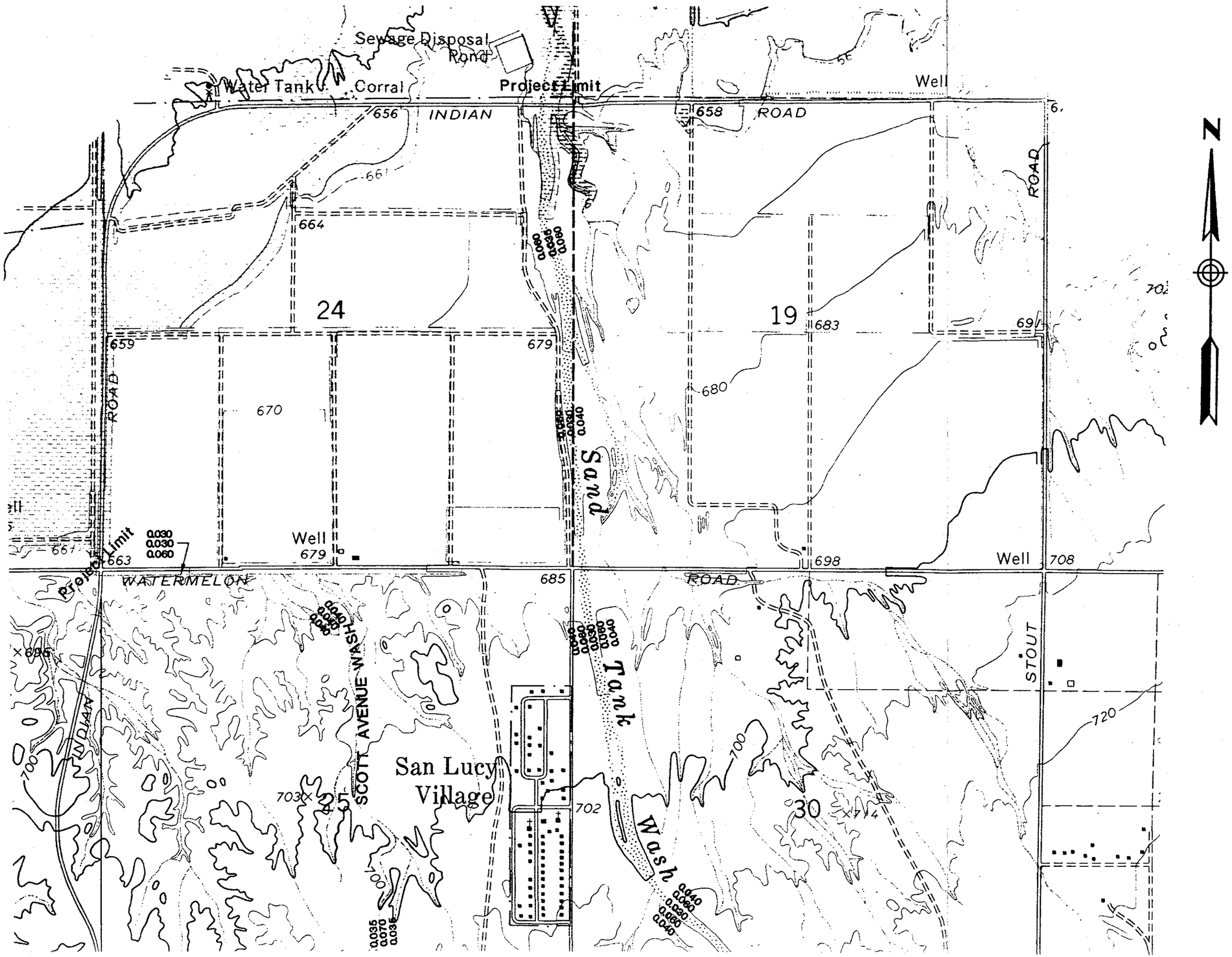
On October 4, 1991, engineers from Burgess & Niple, Inc. and the Flood Control District of Maricopa County made a reconnaissance field trip to select Manning's "n" values for use in backwater modeling of Sand Tank Wash from Indian Road (North Line of Section 24, T.5S., R.5W.) to Interstate 8; Scott Avenue Wash from Watermelon Road to Interstate 8; Bender Wash from its mouth at Sand Tank Wash to Interstate 8; an Unnamed Tributary of Bender Wash (No. 1) from the Gila Bend Canal Drainage Channel to the East Line of Section 9, T.6S., R.4W.; and an Unnamed Tributary of No. 1 from the Gila Bend Canal Drainage Channel to the East Line of Section 4, T.6S., R.4W.

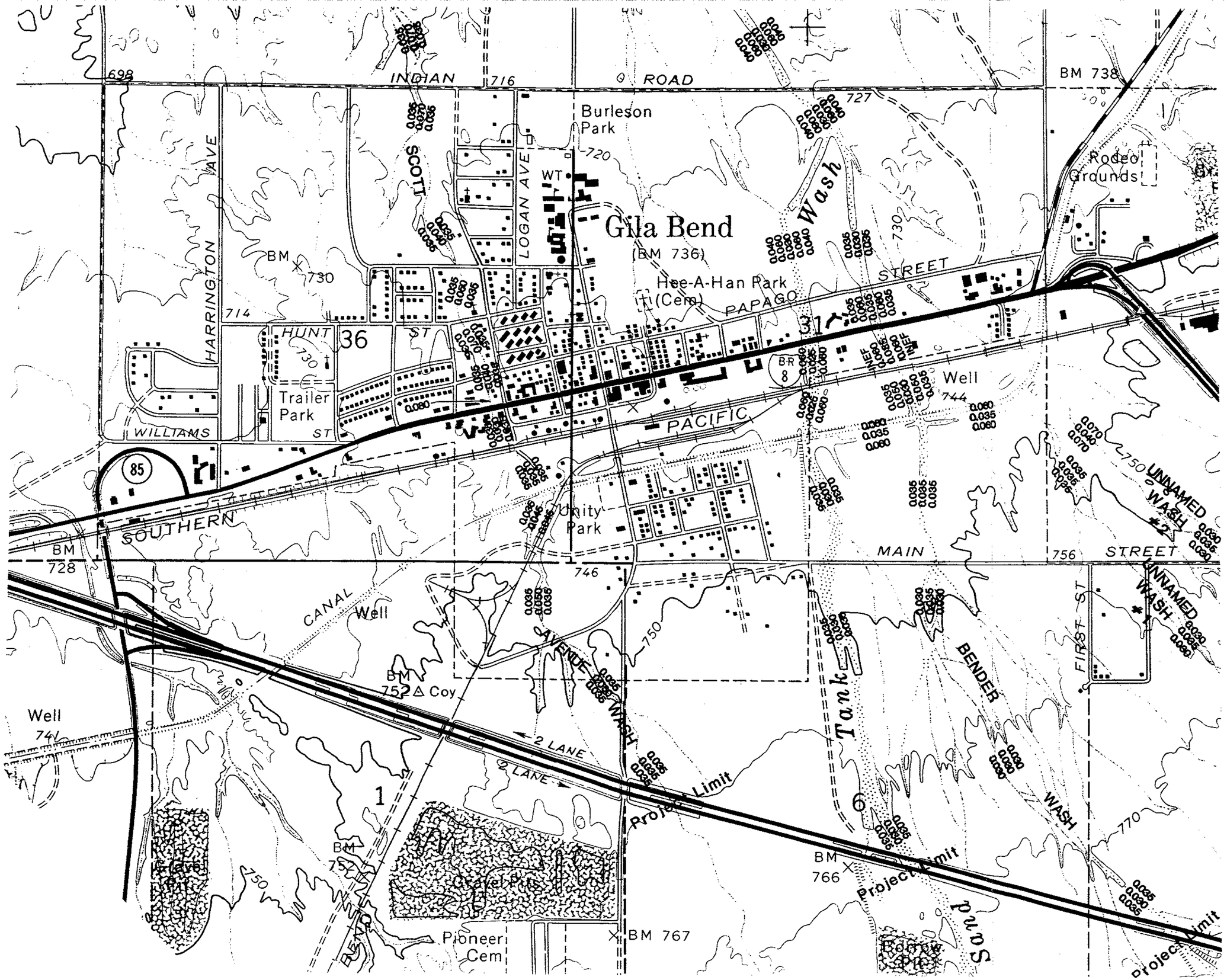
Manning's "n" values were selected based on visual observations for the channel and overbanks using, as a guide, the preliminary draft (7-3-90.2) of "Manning's Roughness Coefficients for Stream Channels and Floodplains in Maricopa County, Arizona", USGS. A copy of pertinent portions of the draft report is included in the Appendix of this report.

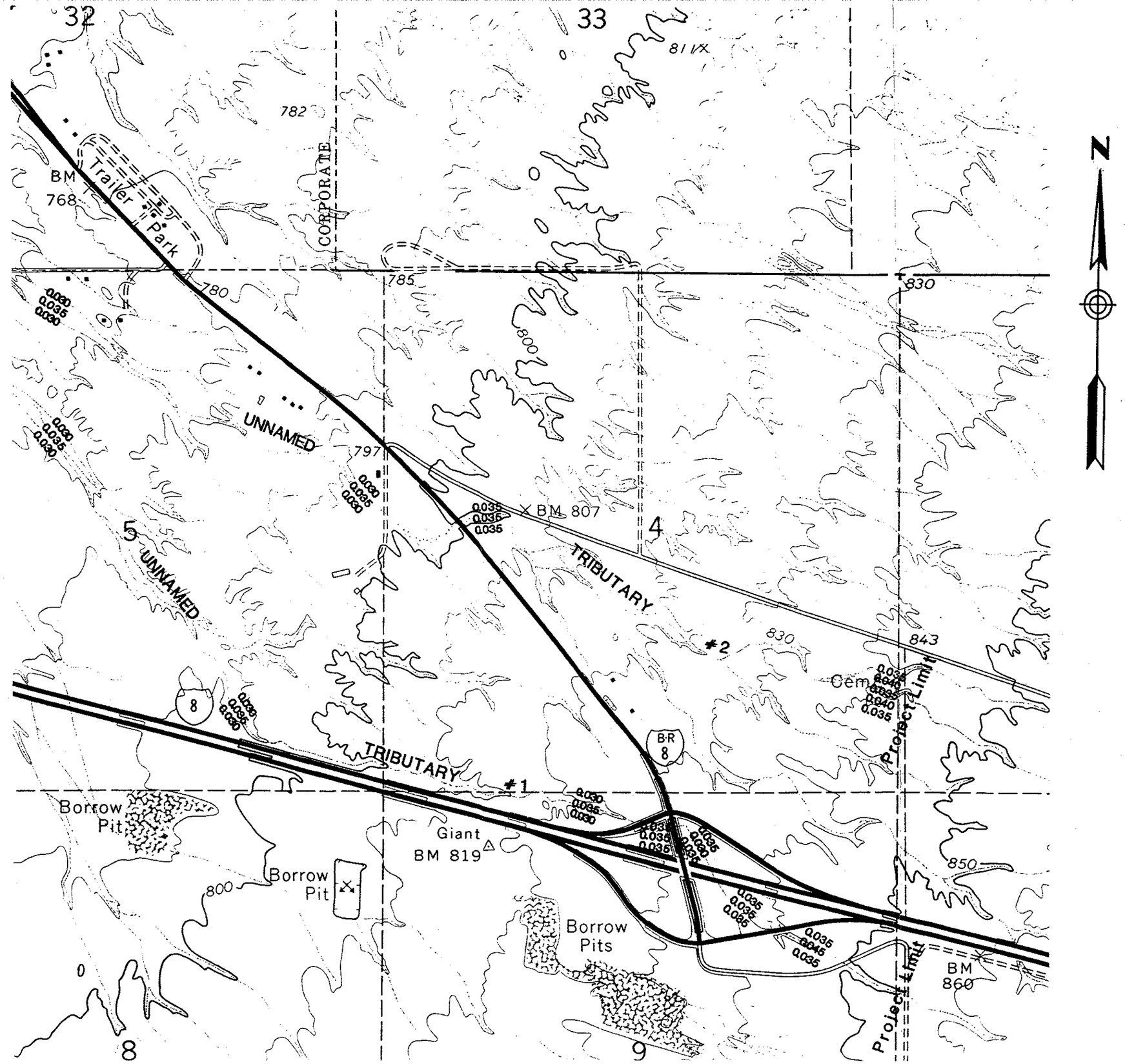
The following report will illustrate with photos the selected Manning's "n" values.

In general, channel bottoms are relatively clear of vegetation and were assigned coefficients of 0.03 to 0.035. Channel banks and bars are more heavily vegetated, with coefficients near 0.05 for the immediate side slopes and 0.03 to 0.04 in the overbank areas.

Roughness coefficients have been assigned to sub-elements of individual cross-sections based upon the field reconnaissance and comparison with aerial photographs. Roughness coefficients are included in the HEC-2 computer model by use of NC or NH cards.


Sewage Disposal Pond
Water Tank
Corral
Project Limit
Well
INDIAN
ROAD
656
658
664
661
24
19
659
679
683
680
670
ROAD
Sand
Well
679
Project Limit
663
WATERMELON
ROAD
685
698
Well
708
INDIAN
SCOTT AVENUE WASH
San Lucy Village
Tank
Wash
702
25
30
STOUT
720
700
N


INDIAN ROAD
698
716
727
BM 738
Burleson Park
720
WT
Gila Bend
(BM 736)
Wash
Rodeo Grounds
SCOTT
LOGAN AVE
HARRINGTON AVE
BM 730
714
Hee-A-Han Park (Cem)
PAPAGO STREET
730
HUNT ST
36
37
BR 8
Well
744
Trailer Park
WILLIAMS ST
PACIFIC
85
750
UNNAMED WASH #2
SOUTHERN
Unity Park
BM 728
MAIN STREET
756
746
CANAL
Well
AVENUE
WASH
750
FIRST ST
BENDER
BM 752 △ Coy
Well
741
2 LANE
2 LANE
Tank
1
6
Project Limit
770
BM 752
Gravel
750
Gravel Pits
BM 766
Project Limit
Pads
BLVD
Pioneer Cem
BM 767
Borrow Pit
Project Limit


32
33
5
4
8
9
782
BM
768
Trailer Park
CORPORATE
780
785
830
800
797
UNNAMED
UNNAMED
BM 807
TRIBUTARY
TRIBUTARY
#2
#1
830
843
Cem
Project Limit
Project Limit
B·R
8
8
Borrow
Pit
Borrow
Pit
Giant
BM 819
Borrow
Pits
800
850
BM
860
0.030
0.035
0.040
N

SECTION 4: Hydraulic Analysis

4.3 Cross Section Description

Following completion of reproducible topographic mapping, stream thalwegs were sketched on work prints. Cross section locations spaced at about 1,000 feet were selected. Criteria for selection included:

* Represent the local stream reach
* Orient perpendicular to the predicted 100-year floodplain
* Avoid inclusion of non-effective areas such as tributary washes
* Include the entire predicted 100-year floodplain
* Check the accuracy of topographic mapping and digitized cross sections at the five locations surveyed in the field.

At confluences and other areas where it was anticipated that flow may not be fully two dimensional, "broken back" cross sections where selected to reflect the predicted flow pattern.

Cross section labeling represents each section's distance upstream of the mouth, measured in miles along the thalweg. USGS 7-1/2 minute topographic mapping was used to measure Sand Tank and Scott Avenue Washes thalweg distance from their mouths at the Gila River to the centerline of North Indian Road and Watermelon Road, respectively.

The basis of river mile stationing for Sand Tank Wash is river mile 0.931 where the thalweg crosses the North Indian Road centerline.

The basis of river mile stationing for Scott Avenue Wash is river mile 1.861 where the thalweg crosses the Watermelon Road centerline.

Digitized cross sections at the locations selected as described above were provided by Aerial Mapping Co., Inc. Sections were processed by Burgess & Niple to develop section plots. For each cross section, station 10,000 represents the intersection with the thalweg as delineated by Burgess & Niple on the topographic mapping.

Cross section plots were reviewed in conjunction with aerial photographs and topographic mapping to determine if the sections were representative of the reach. Adjustments were made to remove non-effective areas, bank stations were selected, and Manning's "n" values were assigned.

Predicted overbank flow lines were sketched on the work maps, and flow lengths were scaled along these lines and the thalweg.

Results of the initial HEC-2 run were reviewed to determine if sections were representative of the reach. Further adjustments were made to remove non-effective flow areas. For Sand Tank Wash, sections were re-digitized to include a wider section of the valley, including Bender Wash.

Following are copies of cross sections showing bank stations, 100 year water surface elevation, and Manning's "n" values.

Water surface elevations for Sand Tank Wash, Scott Avenue Wash, and Unnamed Washes No. 1 and No. 2 are computed through the use of the Department of the Army, Corps of Engineers HEC-2 Water Surface Profiles computer program as implemented by Dodson and Associates, Inc. in their May 1991 version of ProHEC2. Starting elevations were obtained using normal depth. Elevations used are referenced to the National Geodetic Vertical Datum of 1929.

The Sand Tank Wash model starts with normal depth about 1,350 feet downstream of the study limit so that results at the first section within the detailed study limit (0.926) include the effects of backwater. Similarly, the Scott Avenue Wash model starts about 2,000 feet downstream of the study limit (River Mile 2.261).

Starting slopes were computed as the average of the channel invert slope for each stream near the point of beginning.

Natural profile models for Bender Wash and the unnamed washes start with normal depth at a section downstream of the confluence so that results at the first section within the study stream include backwater effects.

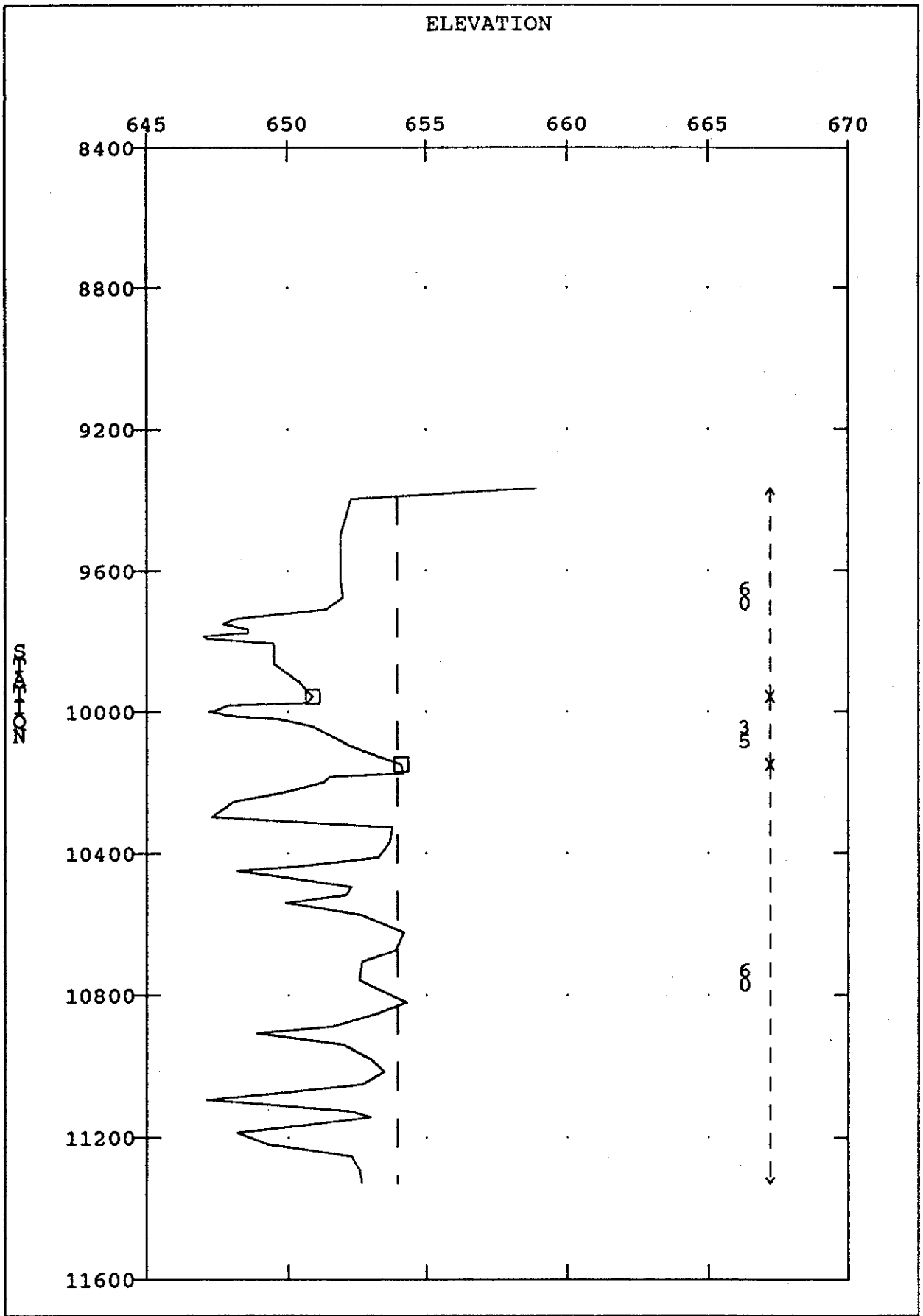
Regulatory flood profiles plotted in the report have been adjusted to reflect backwater from the 100-year flood peak on Sand Tank Wash.

Following completion of natural 100-year profile models for Sand Tank Wash, Bender Wash, Scott Avenue Wash, and Unnamed Washes No. 1 and No. 2, floodway models were developed.

The floodway model for each stream was begun at the first cross section within the detailed study area. Each run was started with a 1.0 foot surcharge (0.8 foot for Scott Avenue Wash), with the computer generating a floodway using Method 6 (equal conveyance loss, target compared to energy grade). An initial surcharge of 1.0 foot for Scott Avenue Wash resulted in unreasonable results at the next upstream cross section. The initial computed floodway was plotted on work maps and reviewed. Adjustments were made and encroachment stations set by Method 1 based on the following criteria:

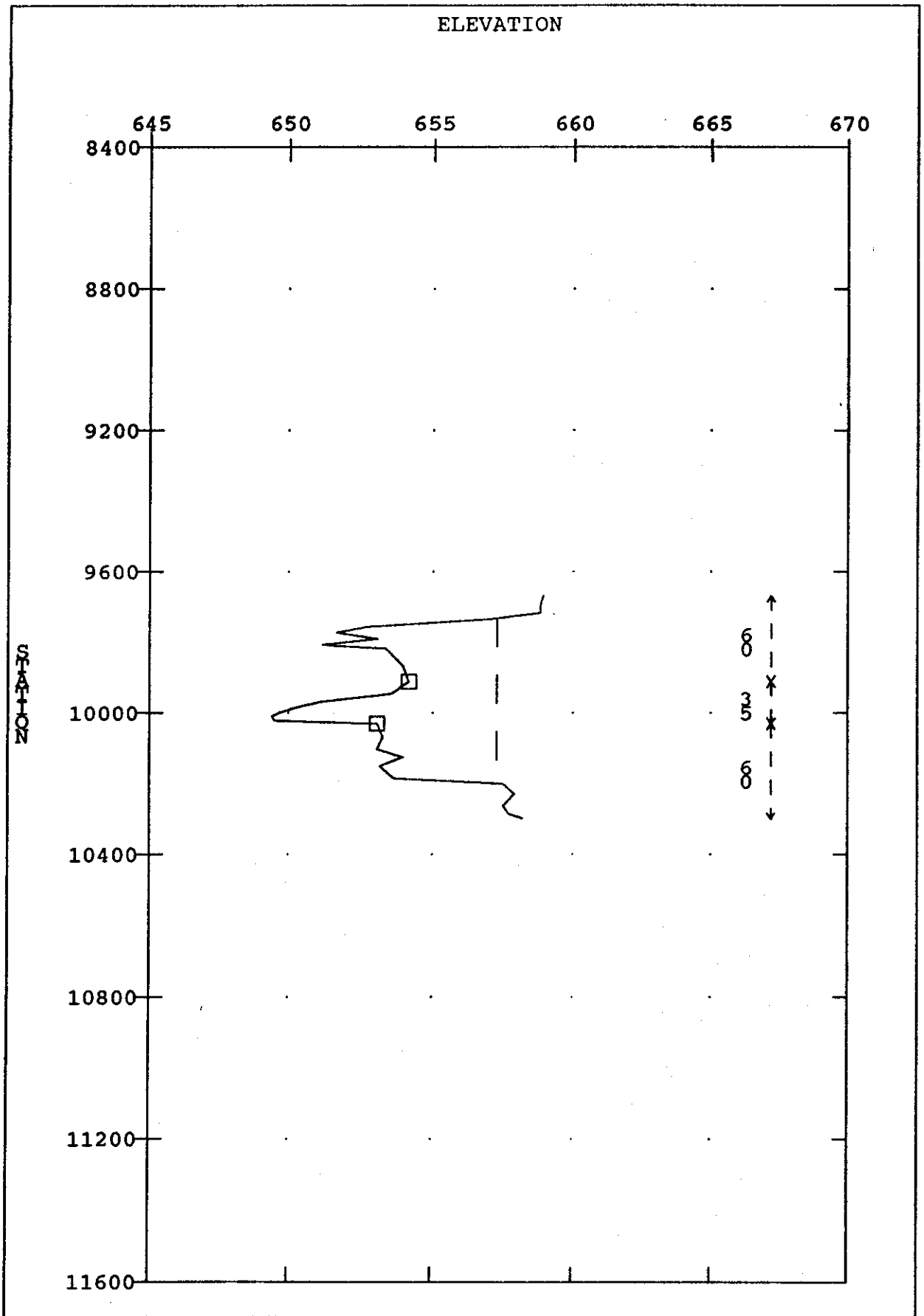
* Encroachment at the first section set equal to the computer generated value
* Top widths to be more uniform
* Achieve goal of 1.0 foot surcharge with no point exceeding 1.0 foot
* Avoid excessive velocities

Floodways at Interstate 8 for San Tank Wash and Bender Wash are plotted to include the full system of 3 (Sand Tank Wash) and 5 (Bender Wash) structures at each crossing. Because of elevation differences, it is not possible to include all structures in a single model. This situation is addressed in further detail in the Special Problems Section of the report.



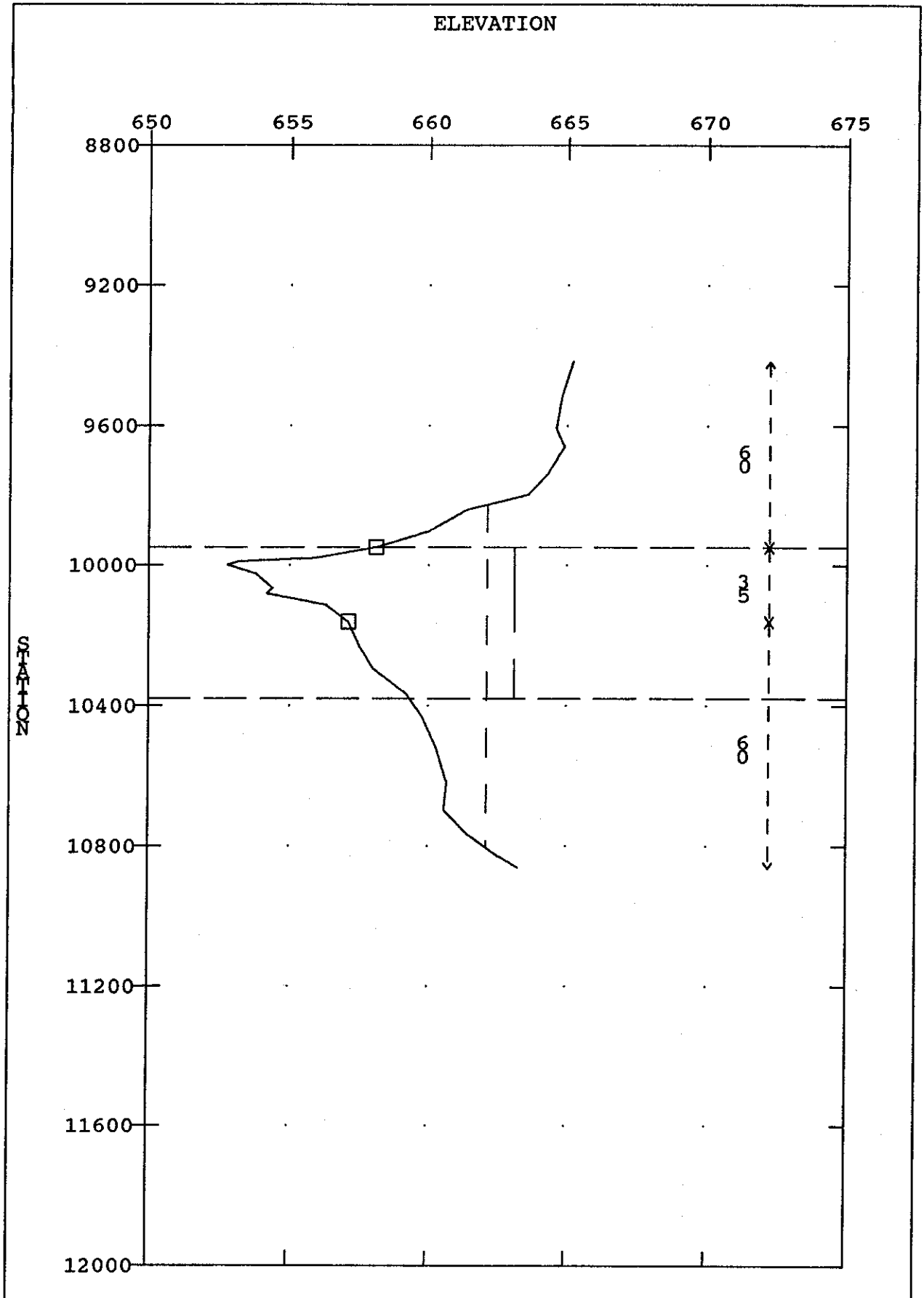
SECTION : 676

SAND TANK WASH 100-YEAR



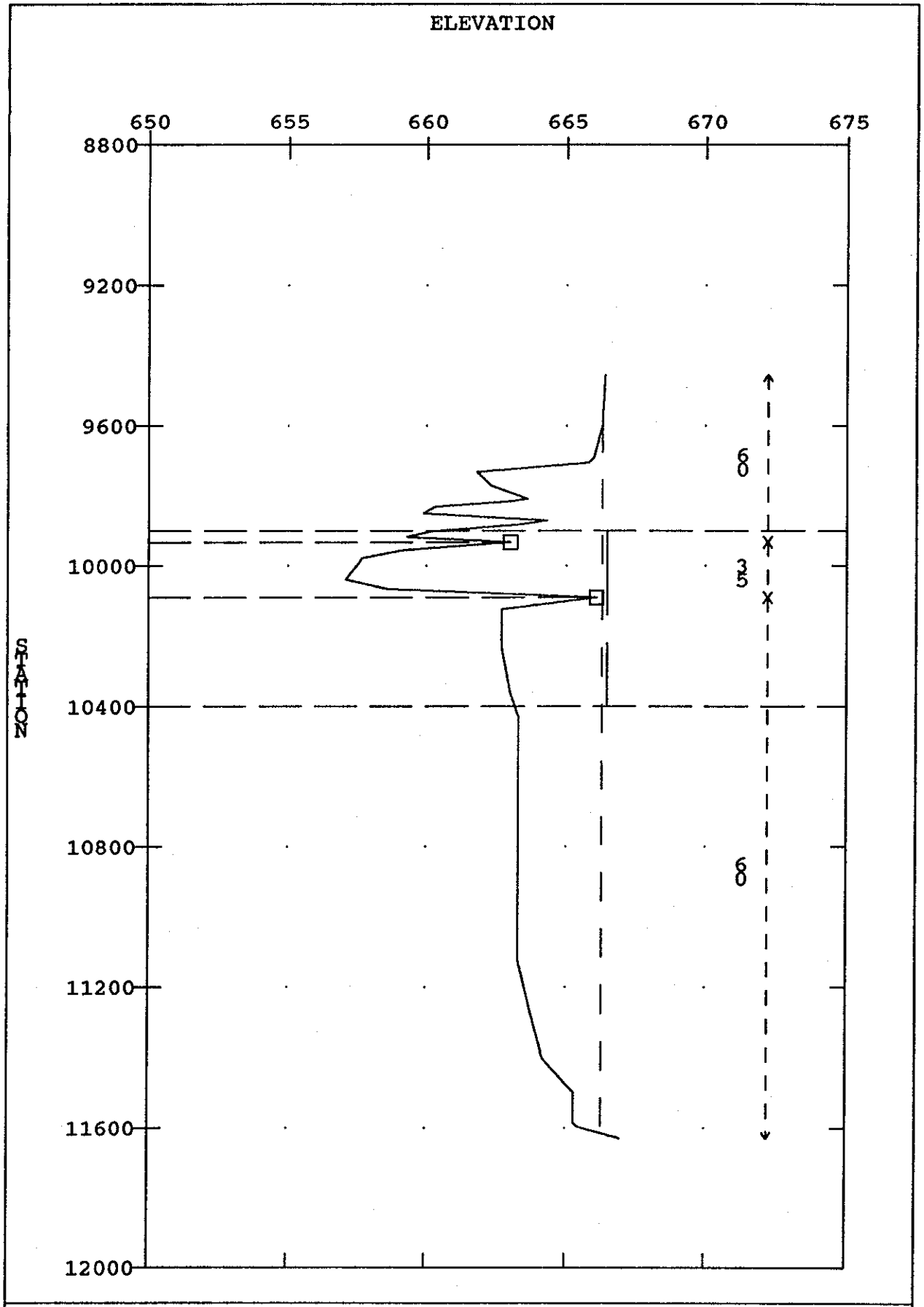
SECTION : 800

SAND TANK WASH 100-YEAR



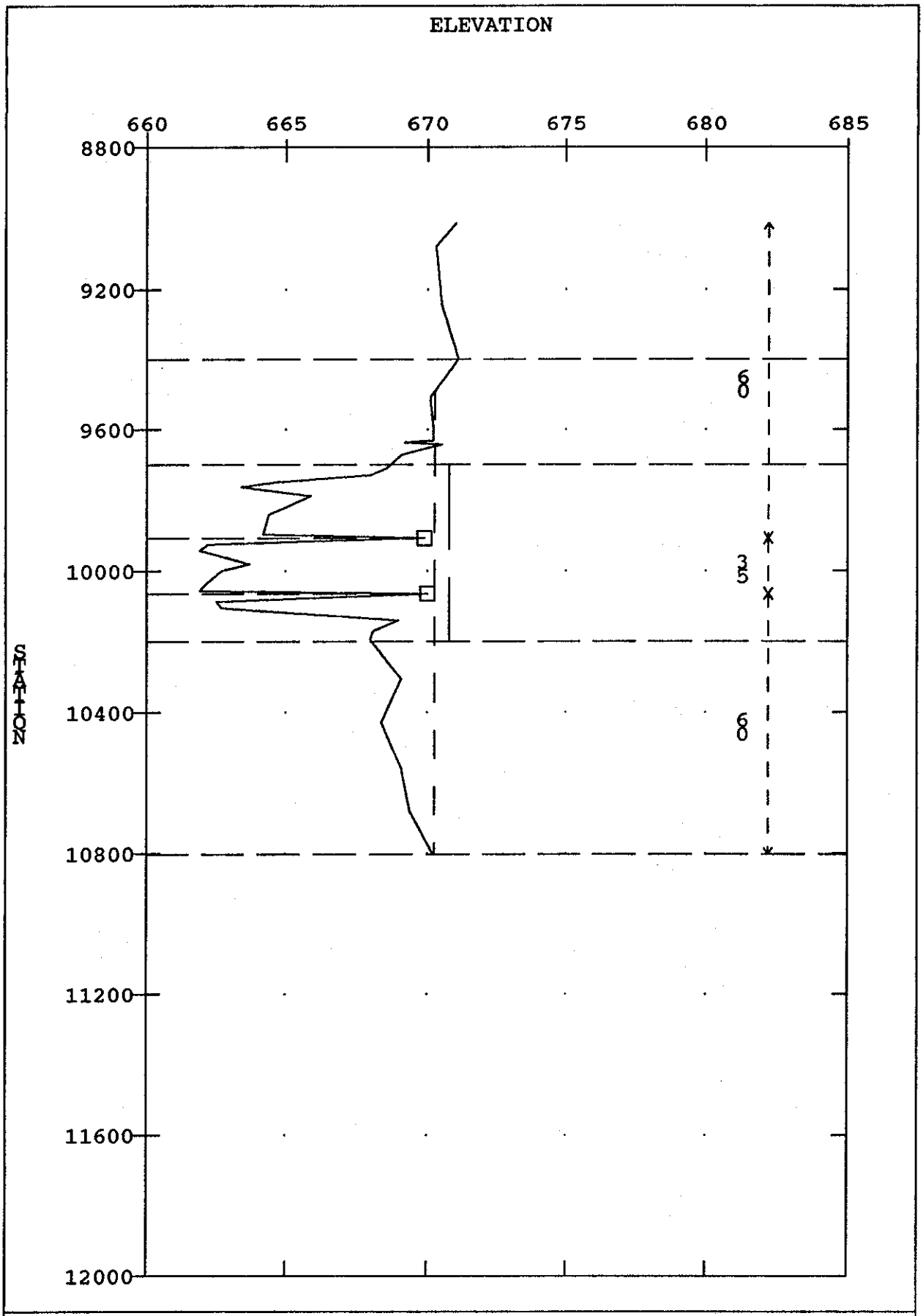
SECTION : 926

SAND TANK WASH 100 YEAR (NATURAL)



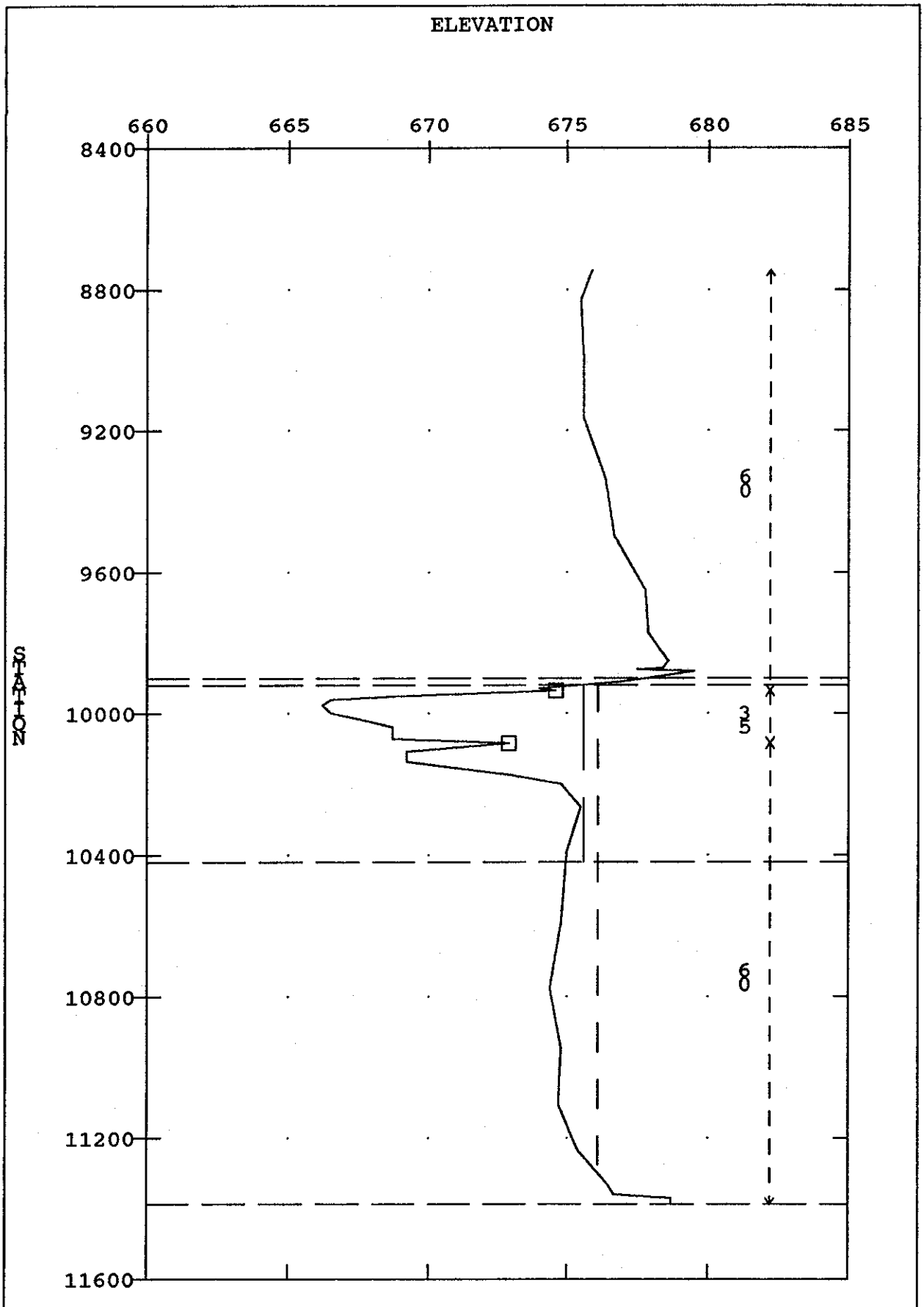
SECTION : 1053

SAND TANK WASH 100 YEAR (NATURAL)



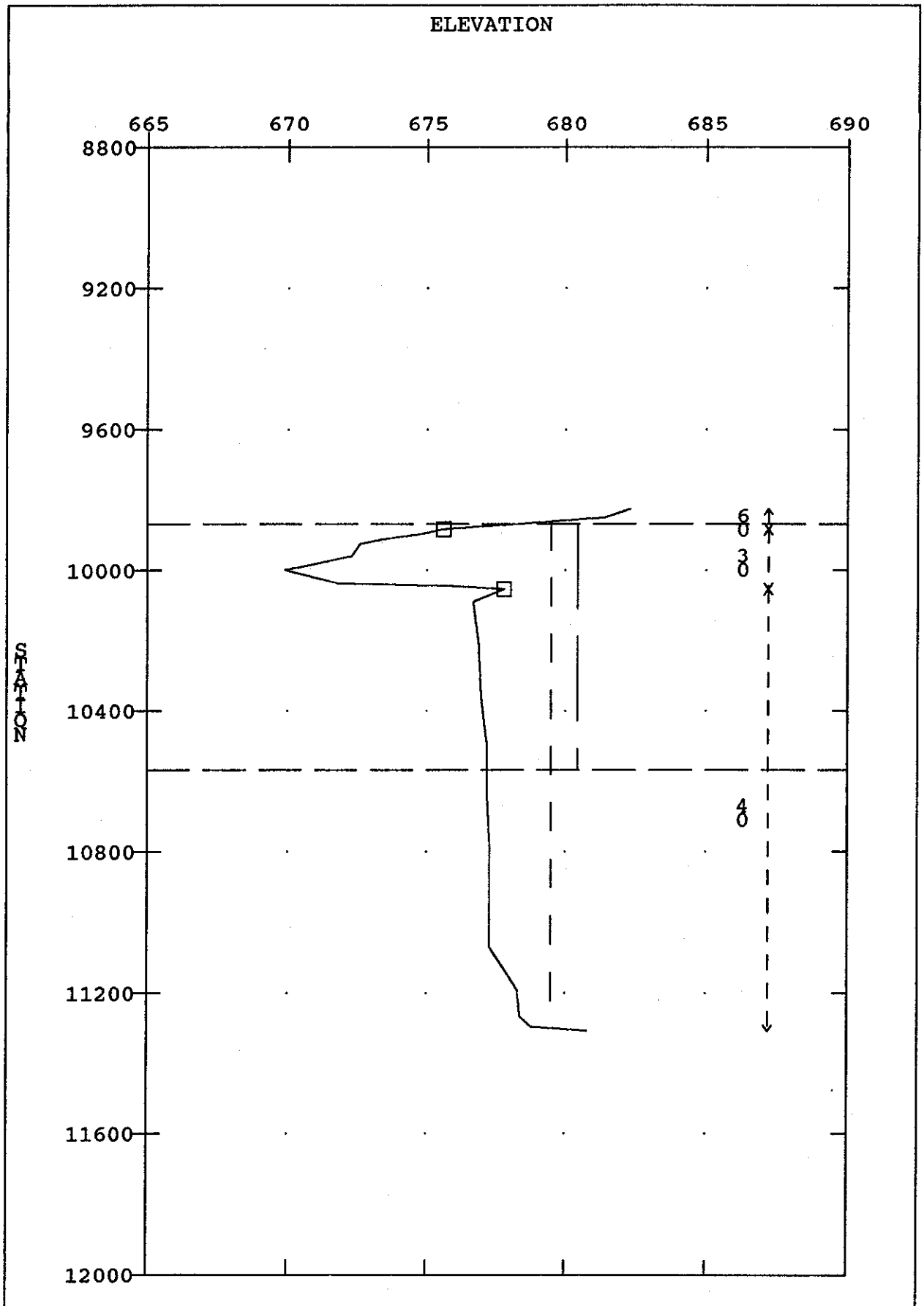
SECTION : 1241

SAND TANK WASH 100 YEAR (NATURAL)



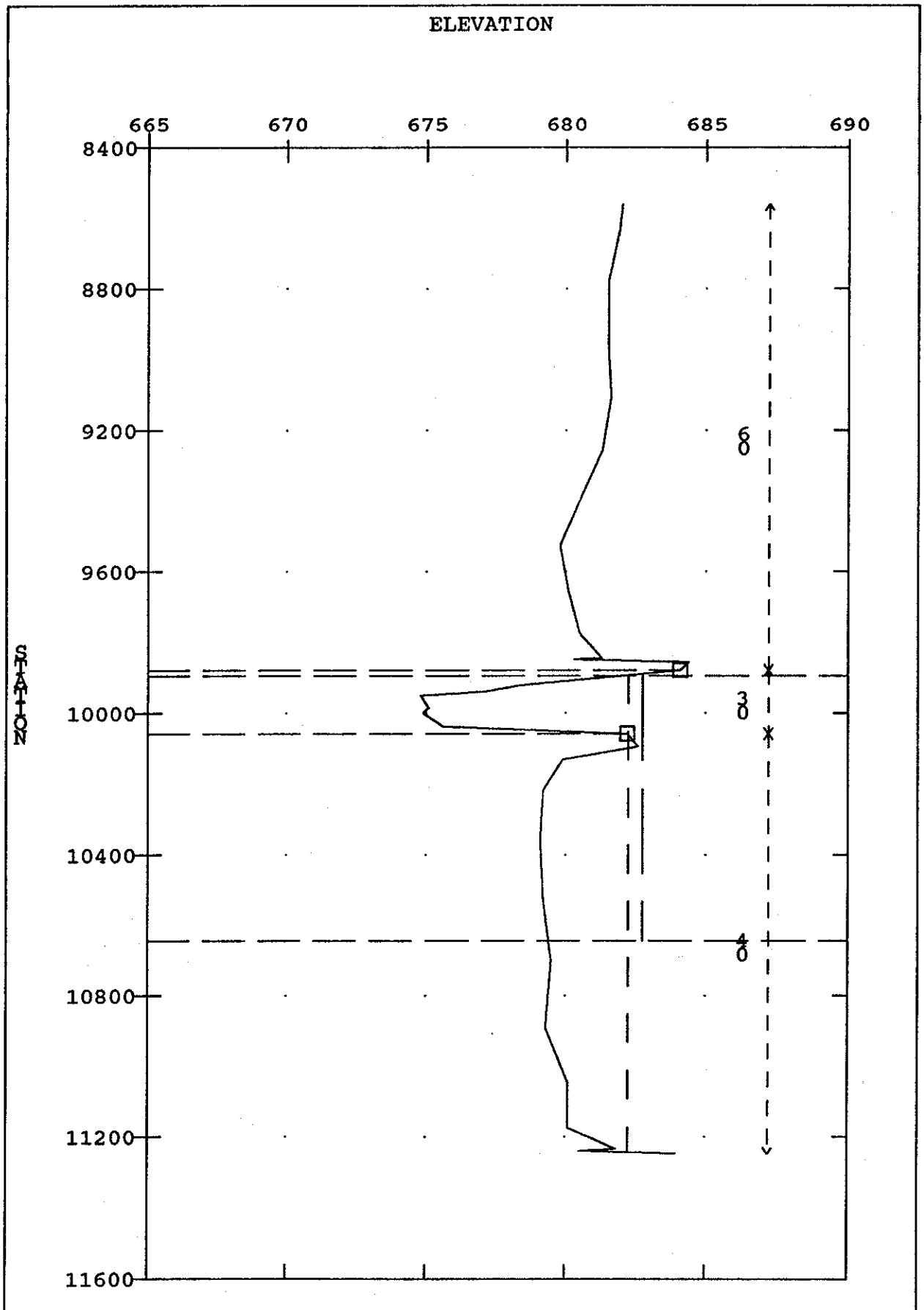
SECTION : 1435

SAND TANK WASH 100 YEAR (NATURAL)



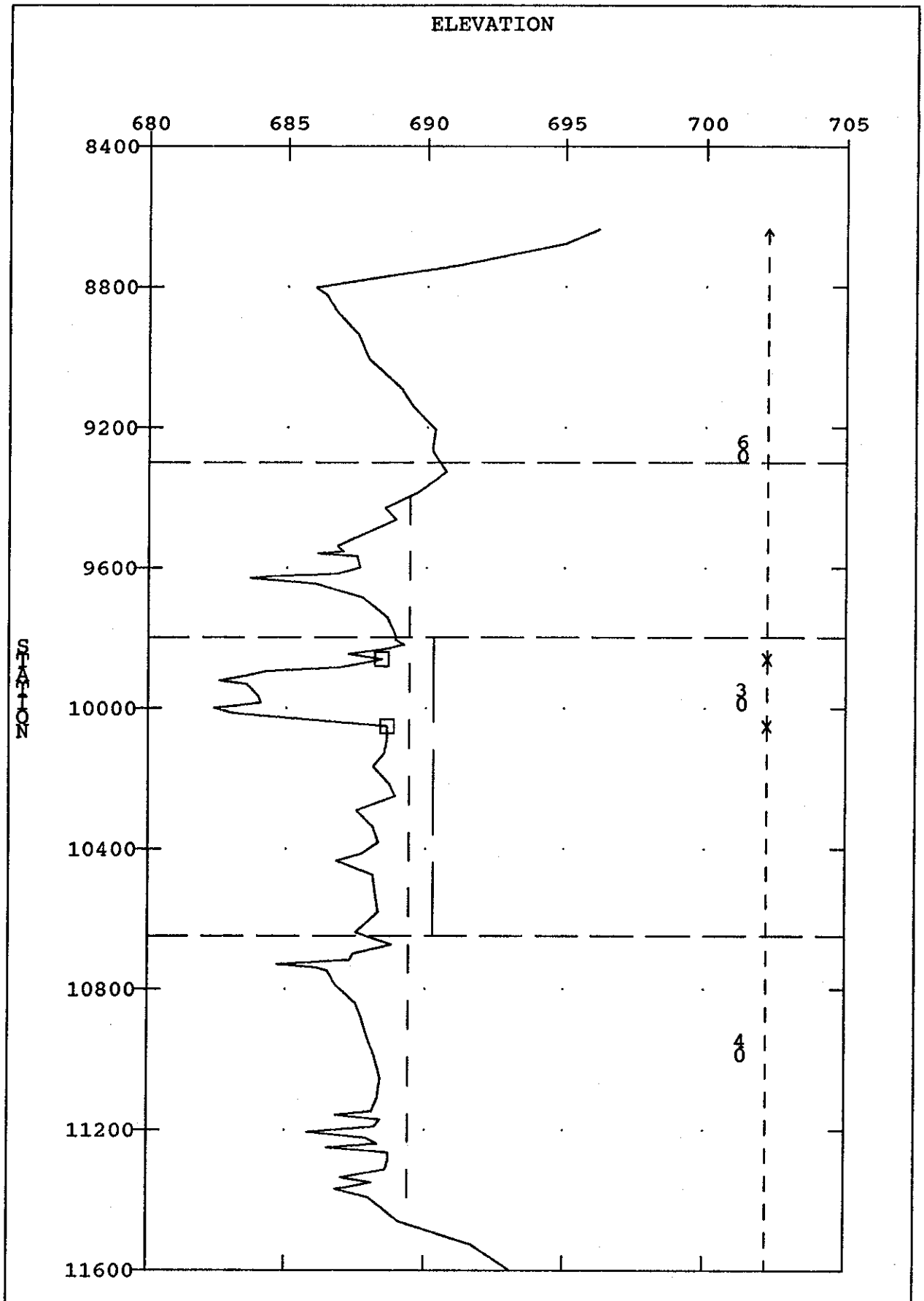
SECTION : 1608

SAND TANK WASH 100 YEAR (NATURAL)



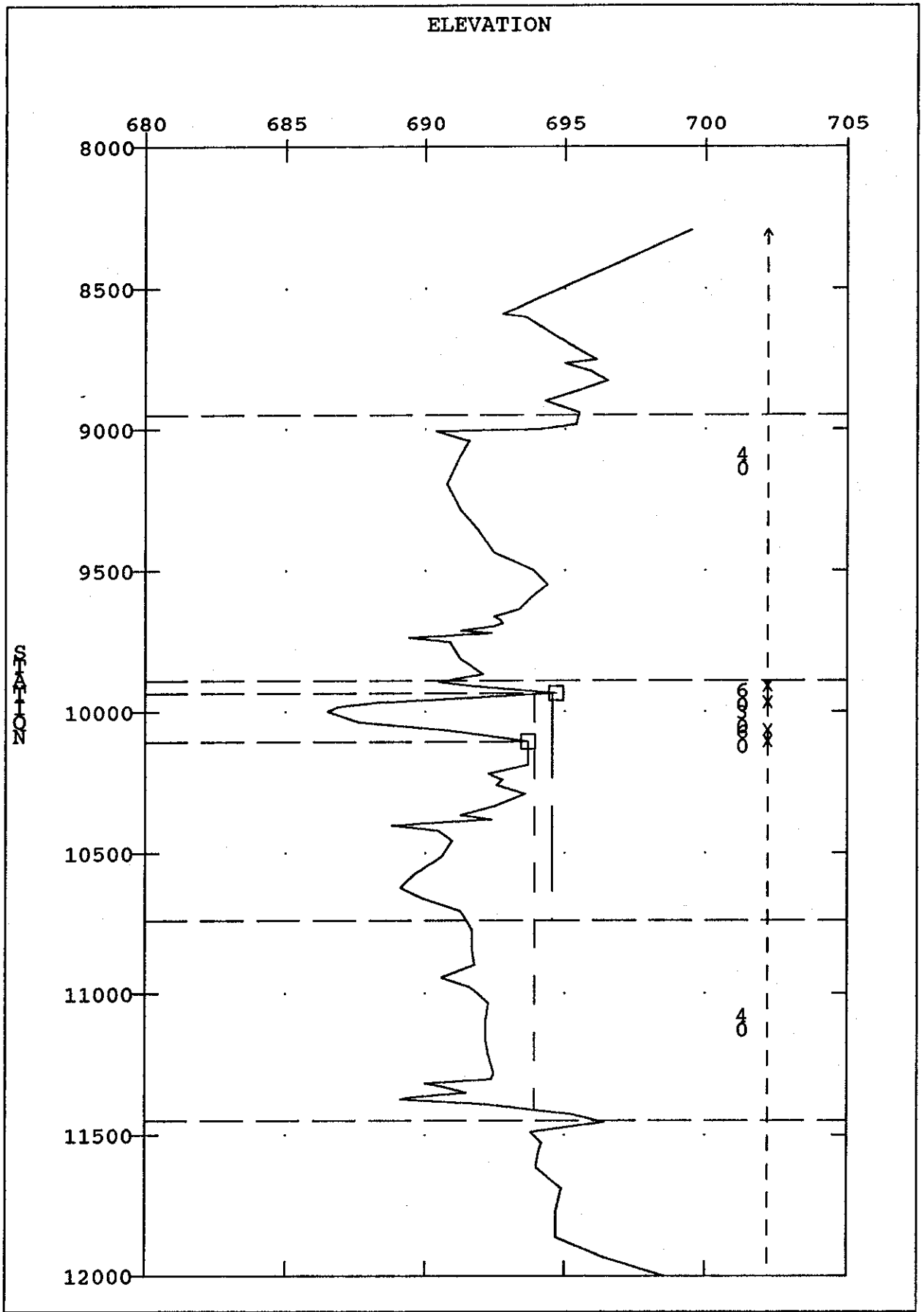
SECTION : 1791

SAND TANK WASH 100 YEAR (NATURAL)



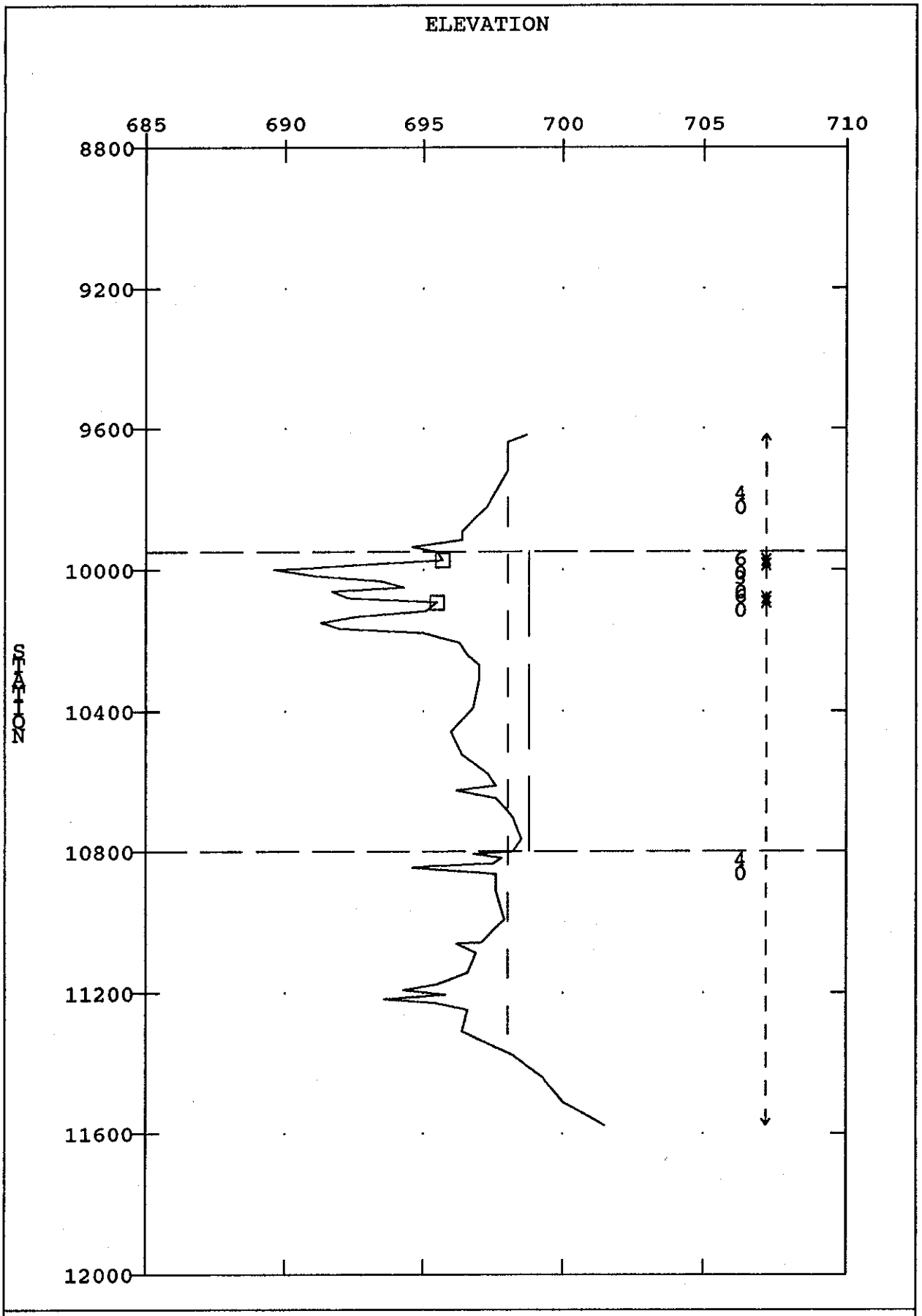
SECTION : 1980

SAND TANK WASH 100 YEAR (NATURAL)



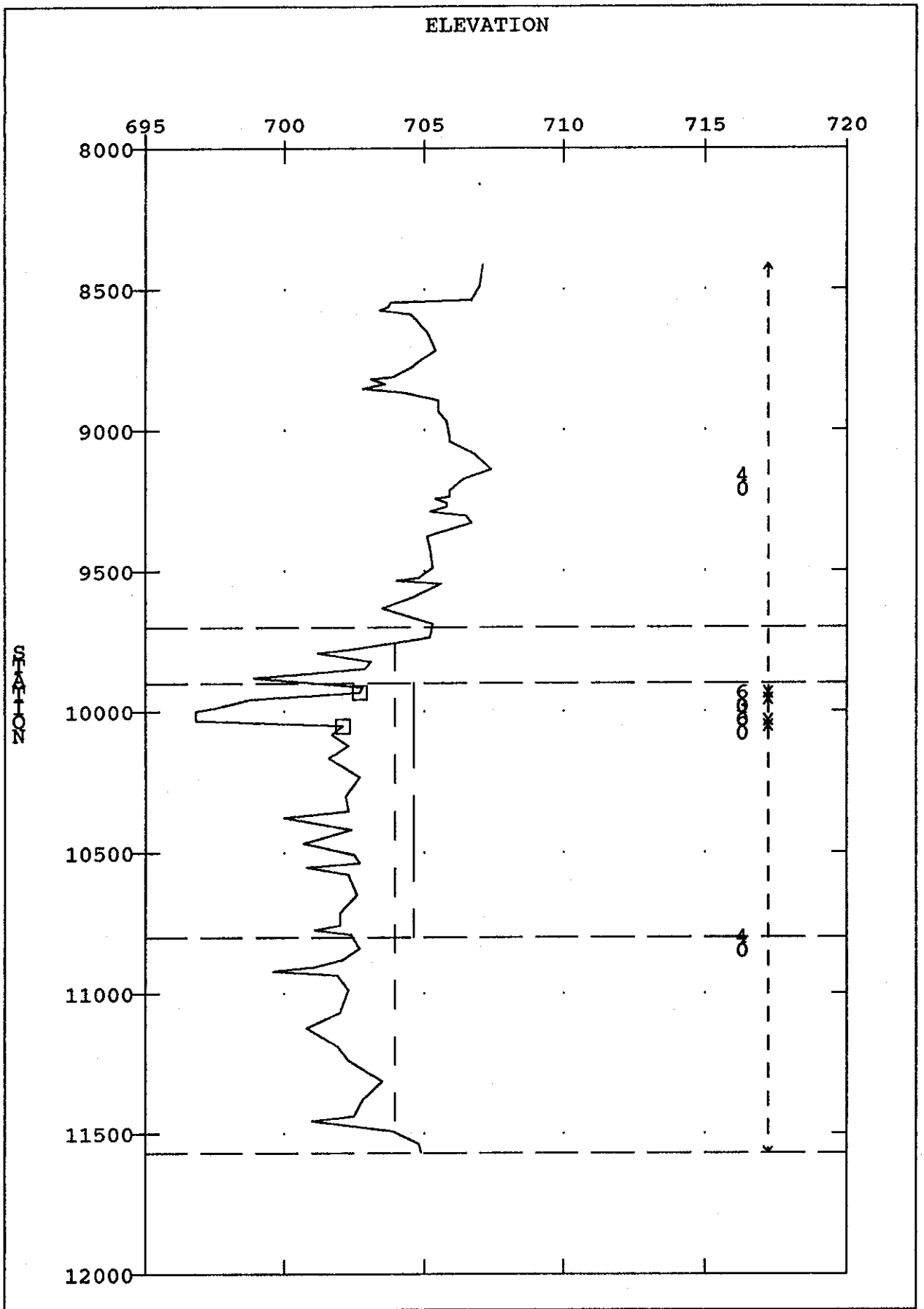
SECTION : 2147

SAND TANK WASH 100 YEAR (NATURAL)



SECTION : 2329

SAND TANK WASH 100 YEAR (NATURAL)



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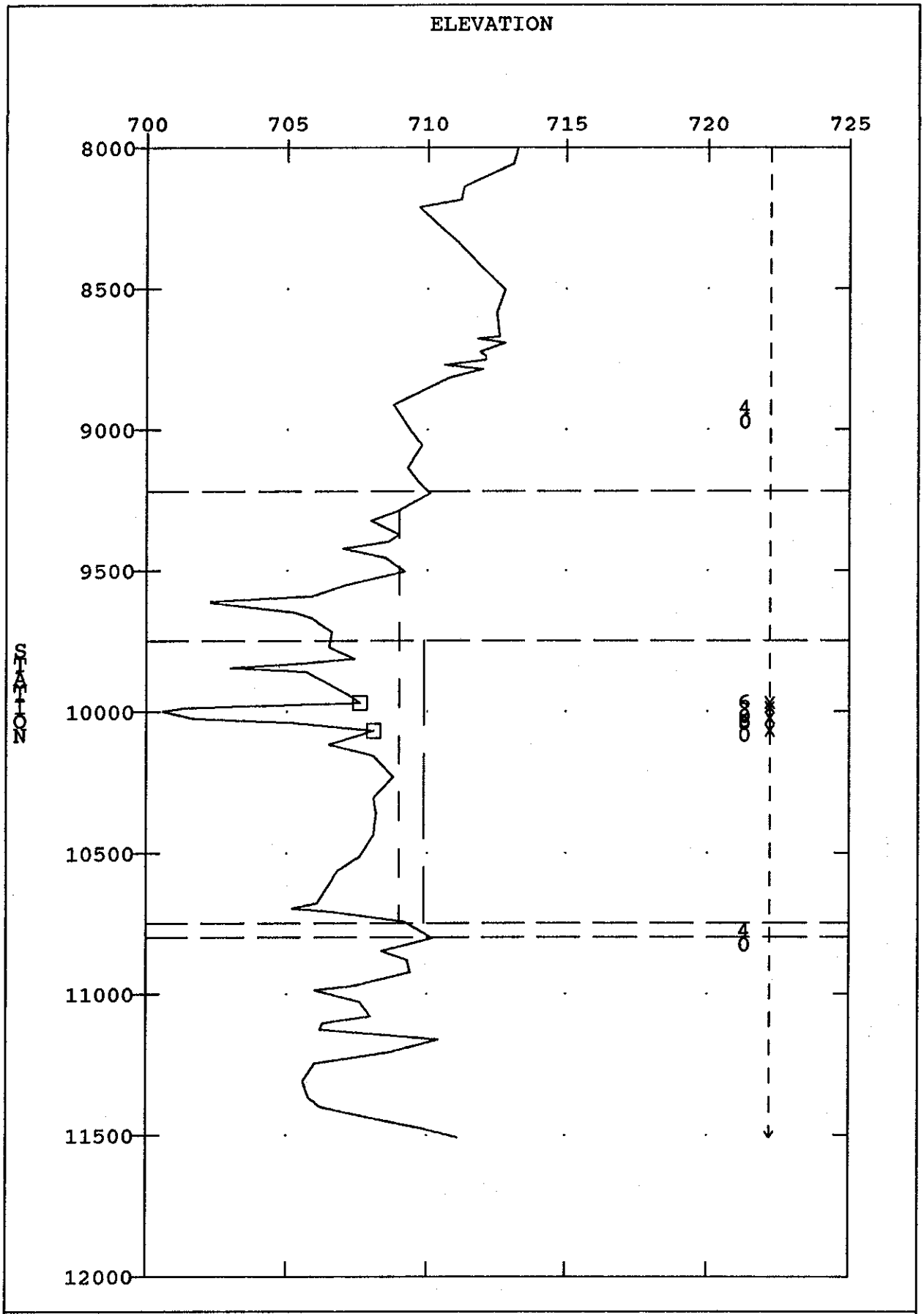
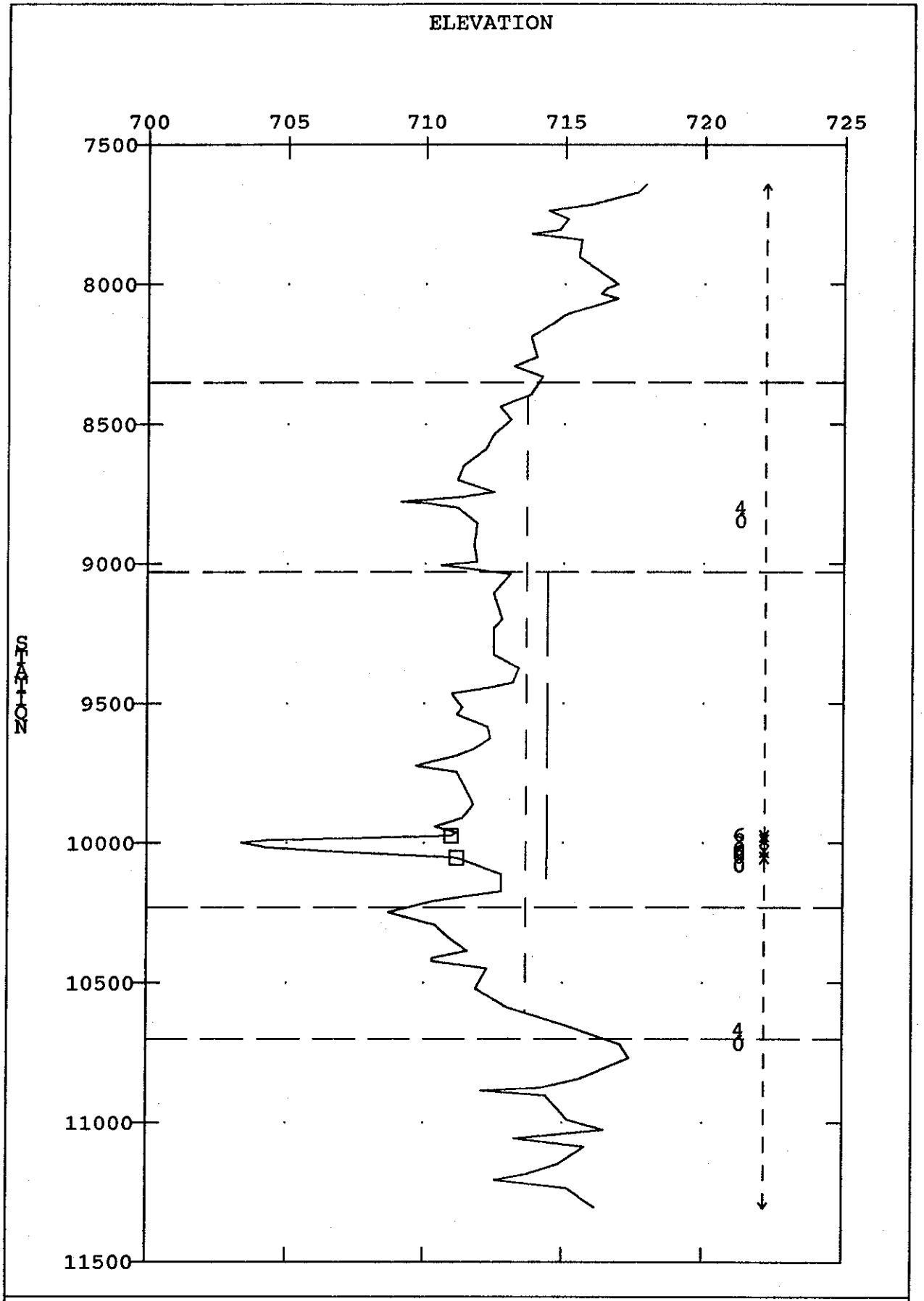
SAND TANK WASH 100 YEAR (NATURAL)



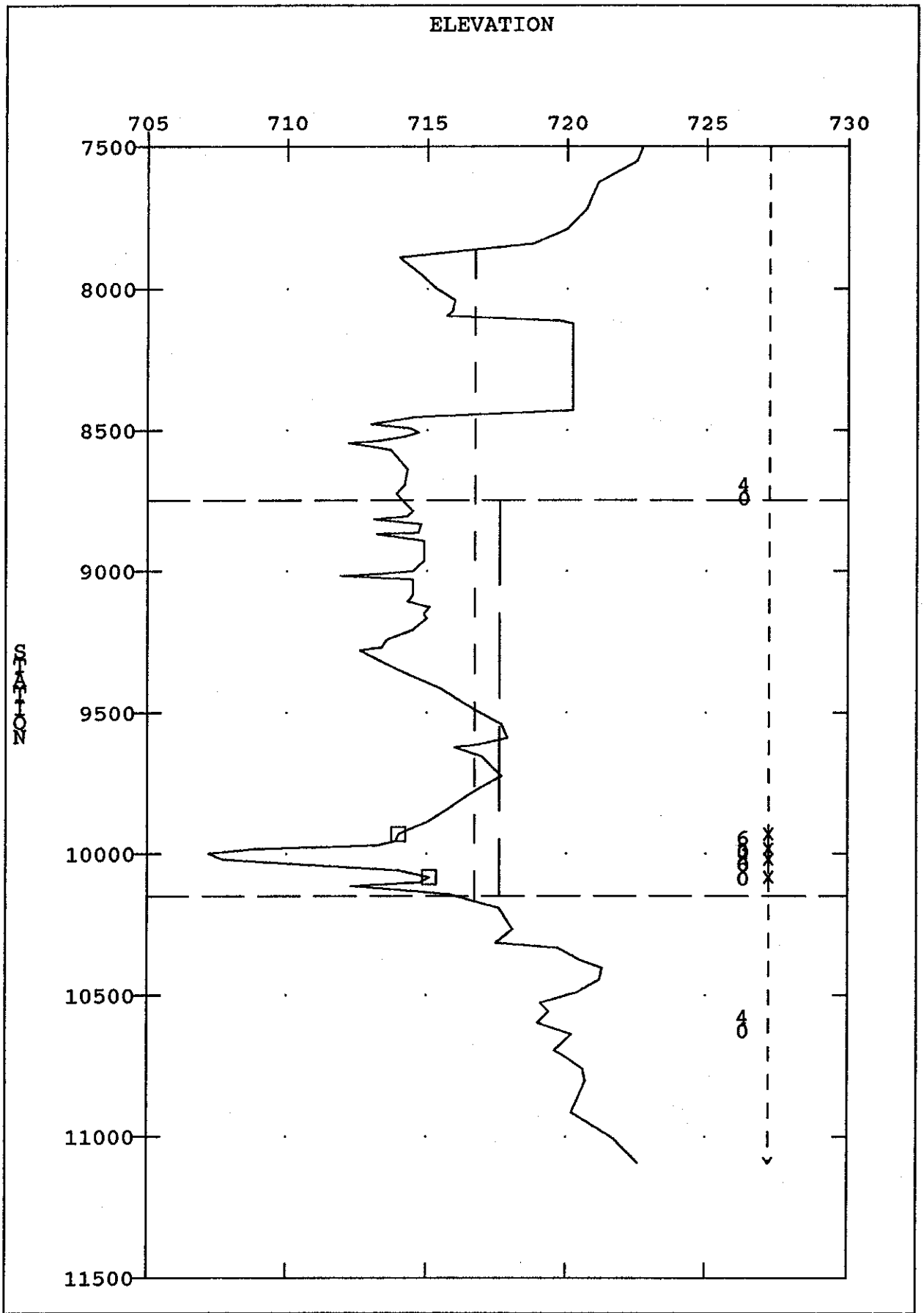
SECTION : 2686

SAND TANK WASH 100 YEAR (NATURAL)



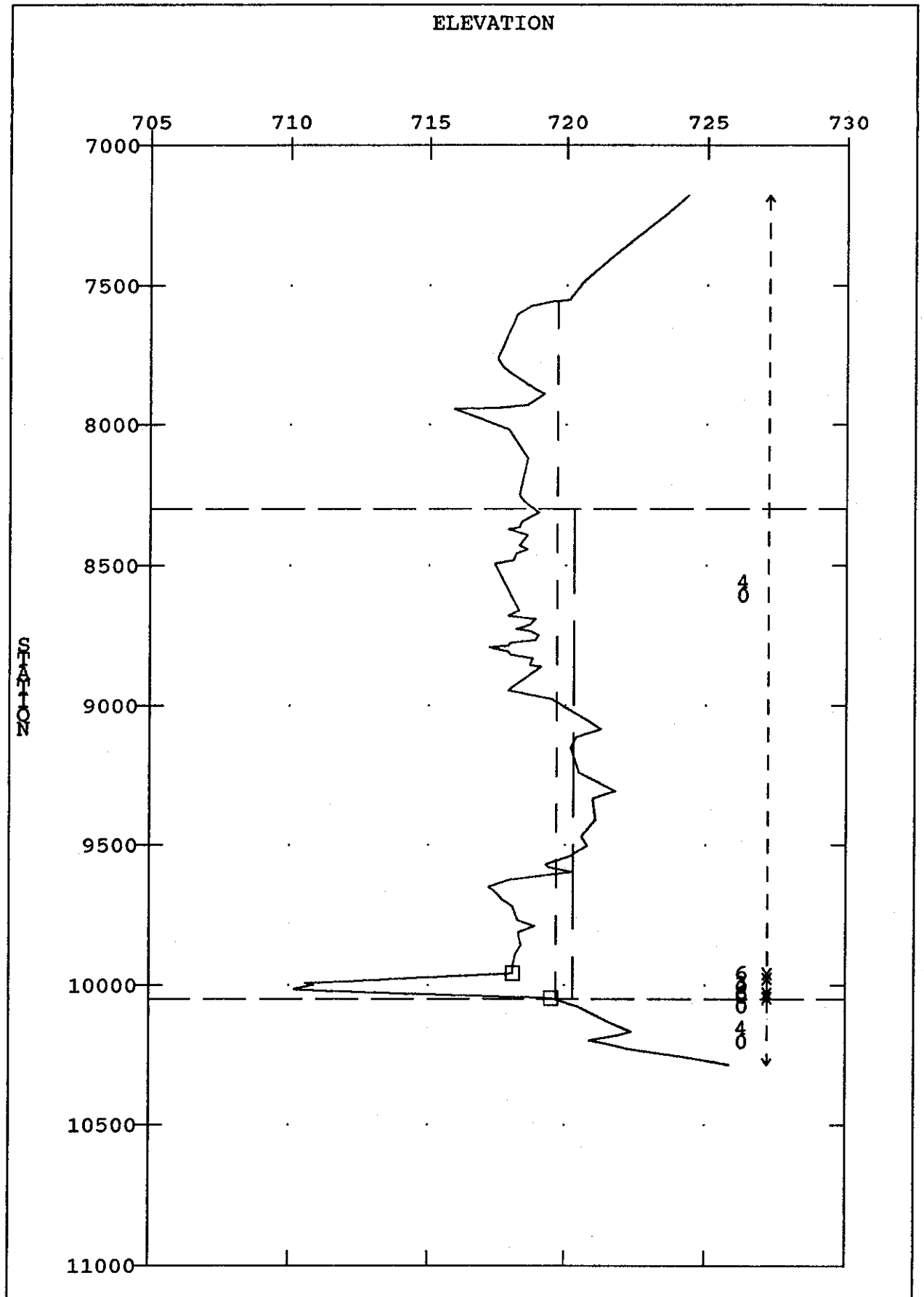
SECTION : 2864

SAND TANK WASH 100 YEAR (NATURAL)



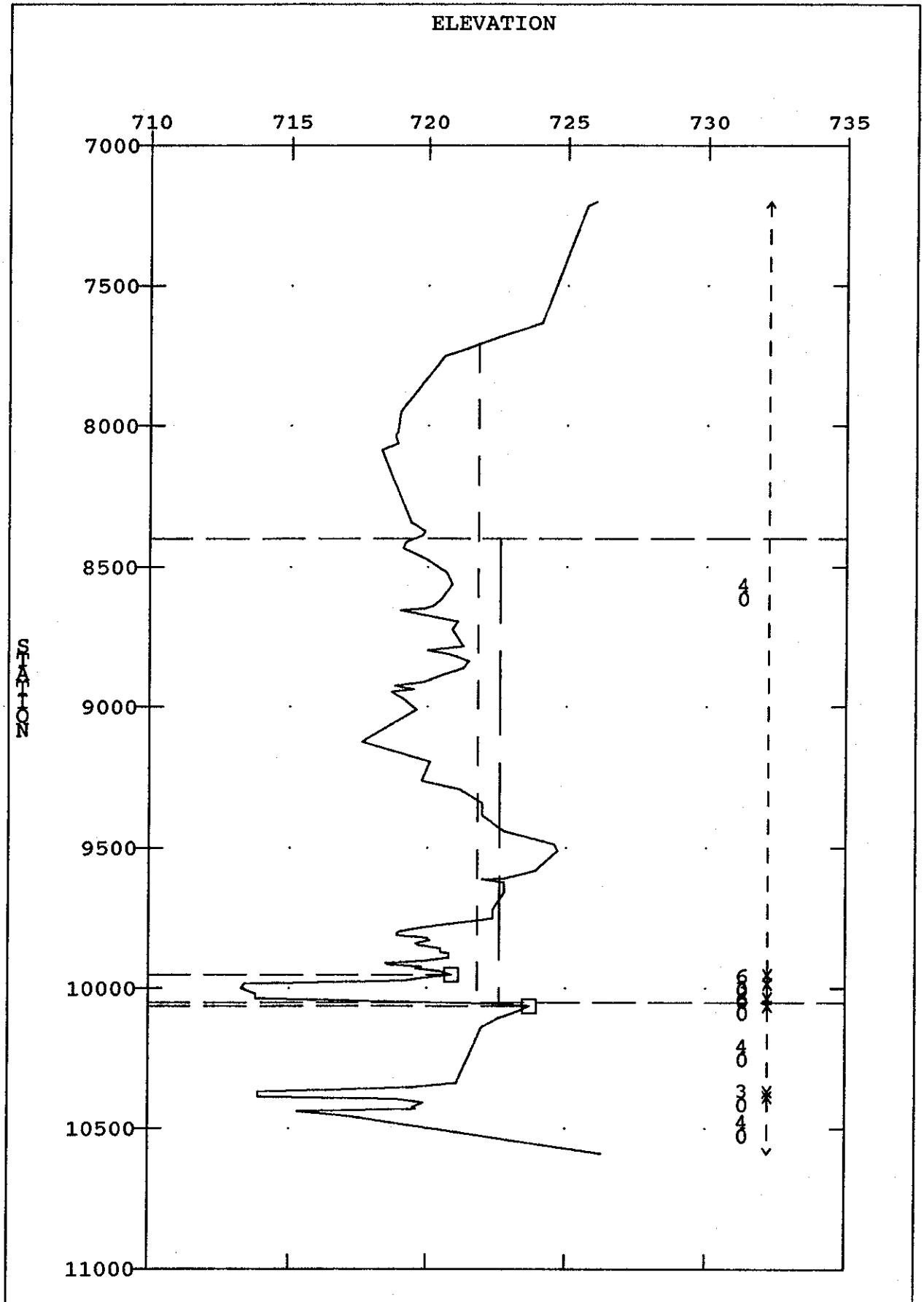
SECTION : 3039

SAND TANK WASH 100 YEAR (NATURAL)



SECTION : 3180

SAND TANK WASH 100 YEAR (NATURAL)



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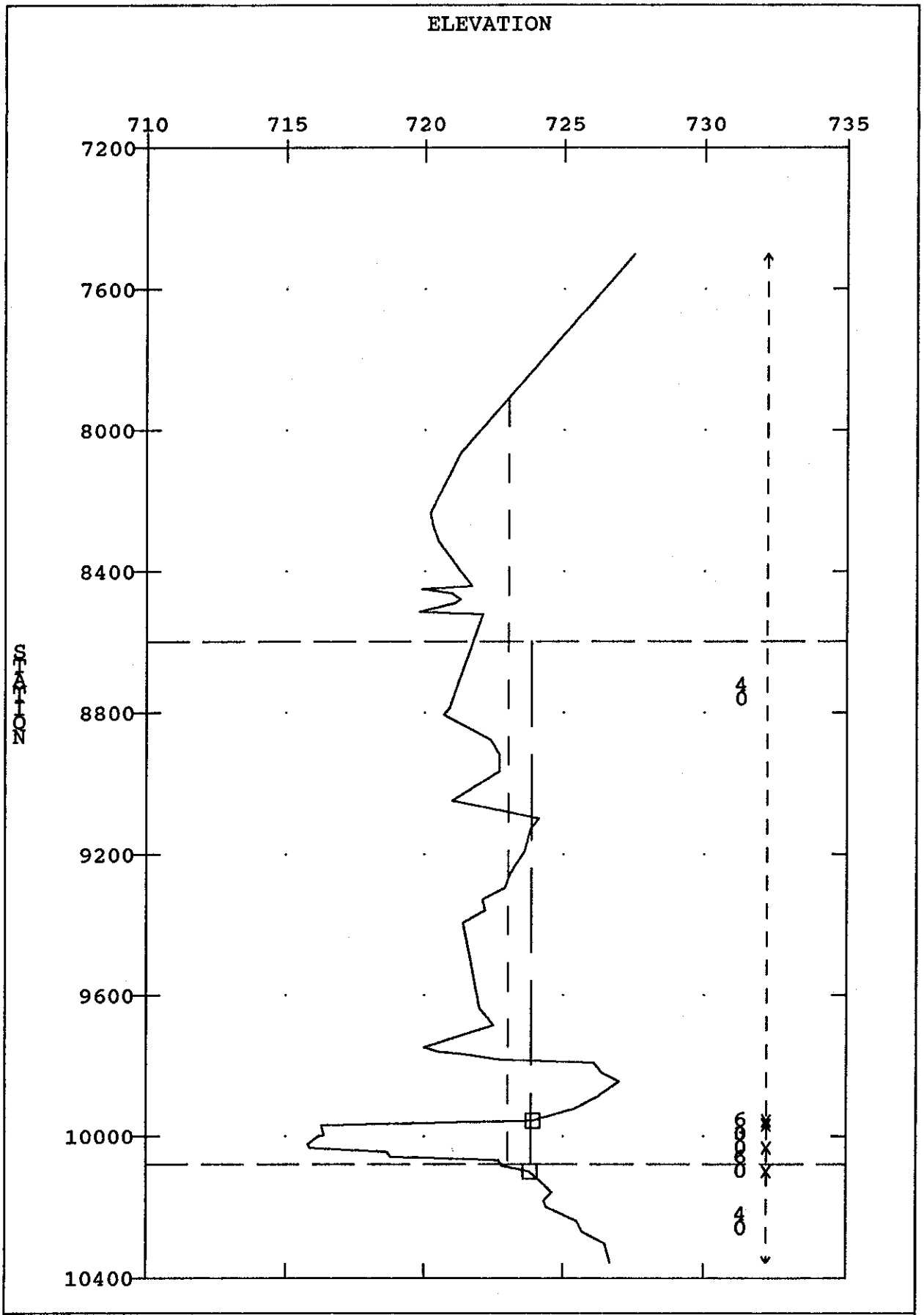
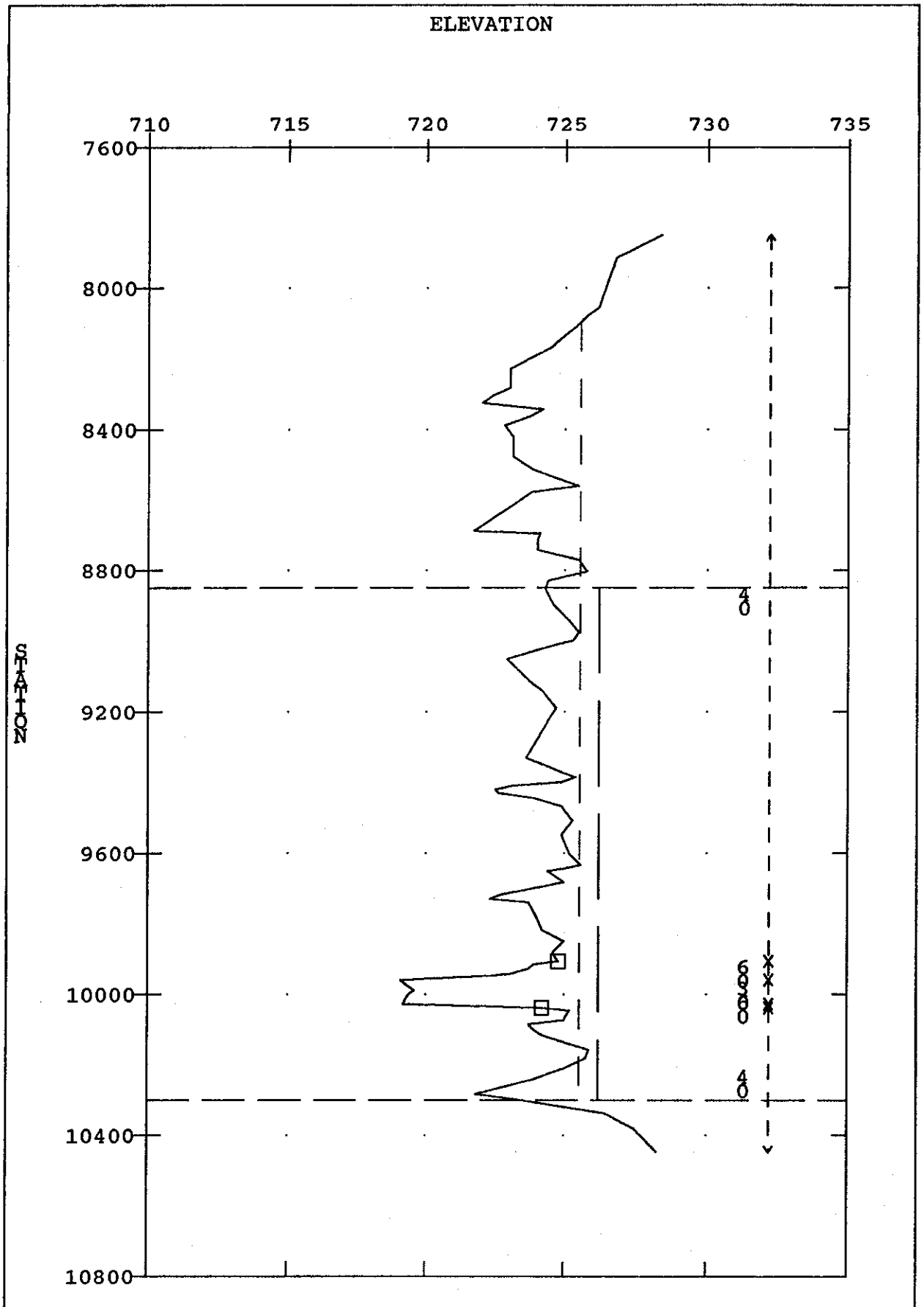
SAND TANK WASH 100 YEAR (NATURAL)



SECTION : 3372

SAND TANK WASH 100 YEAR (NATURAL)



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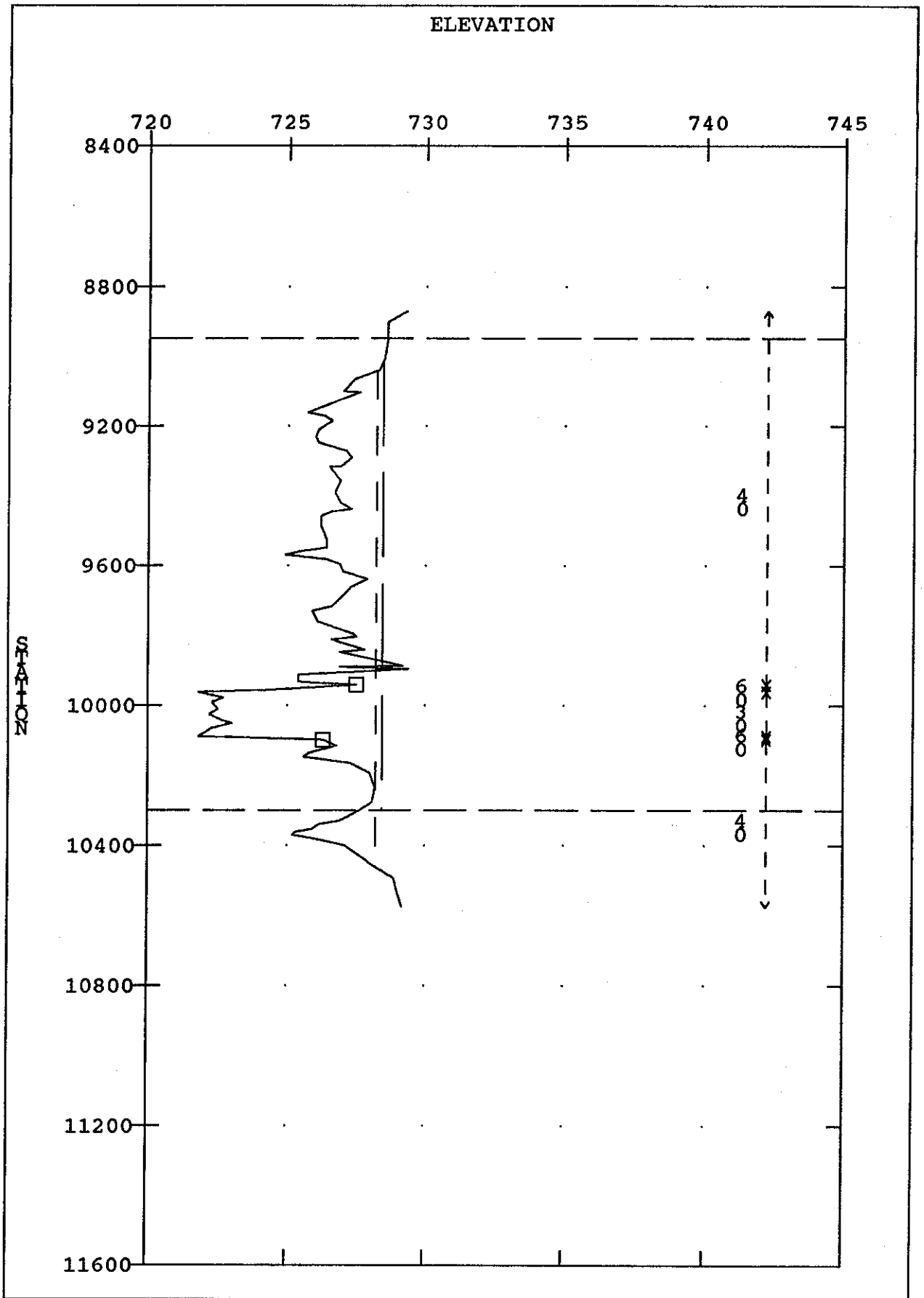

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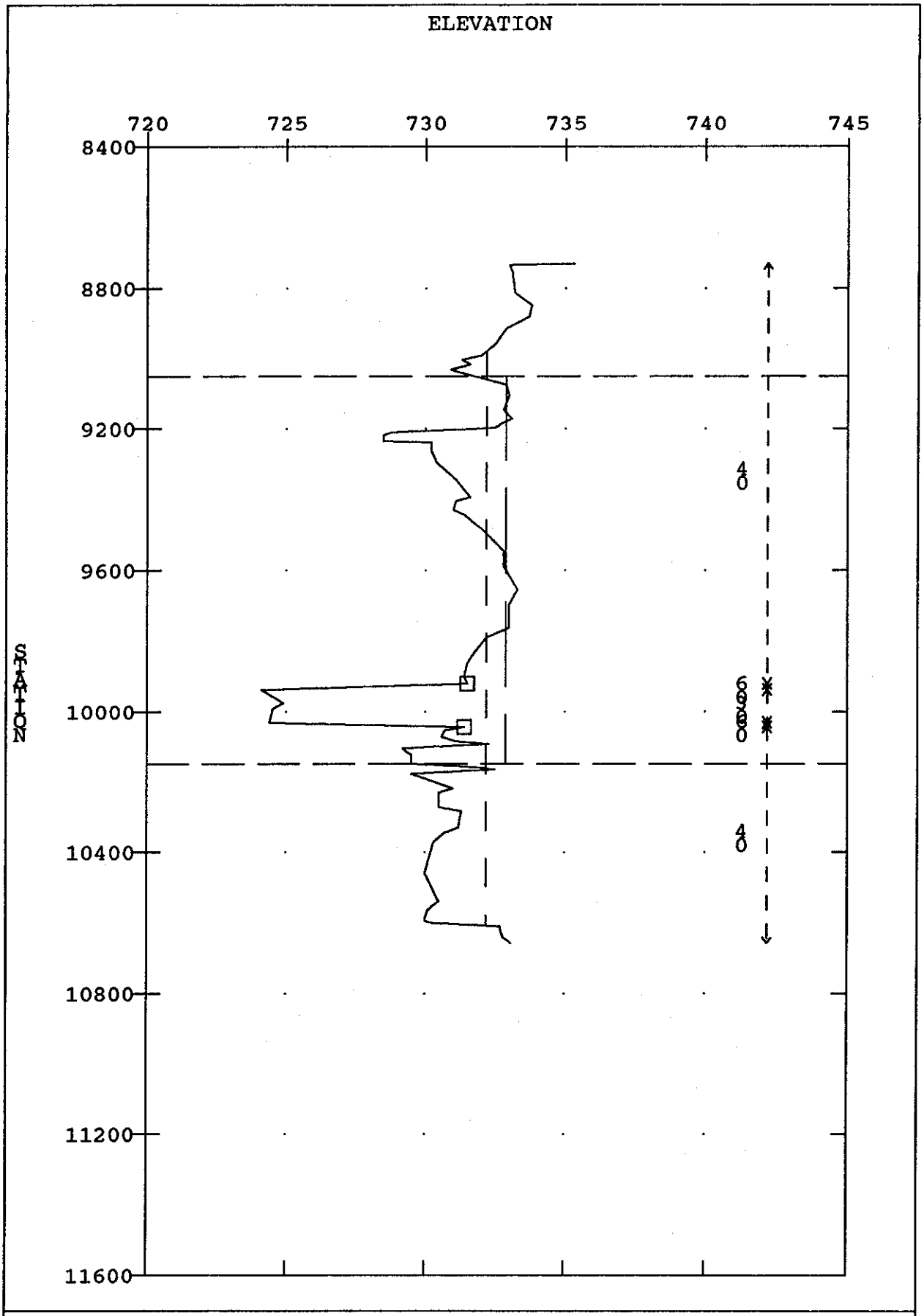
SAND TANK WASH 100 YEAR (NATURAL)



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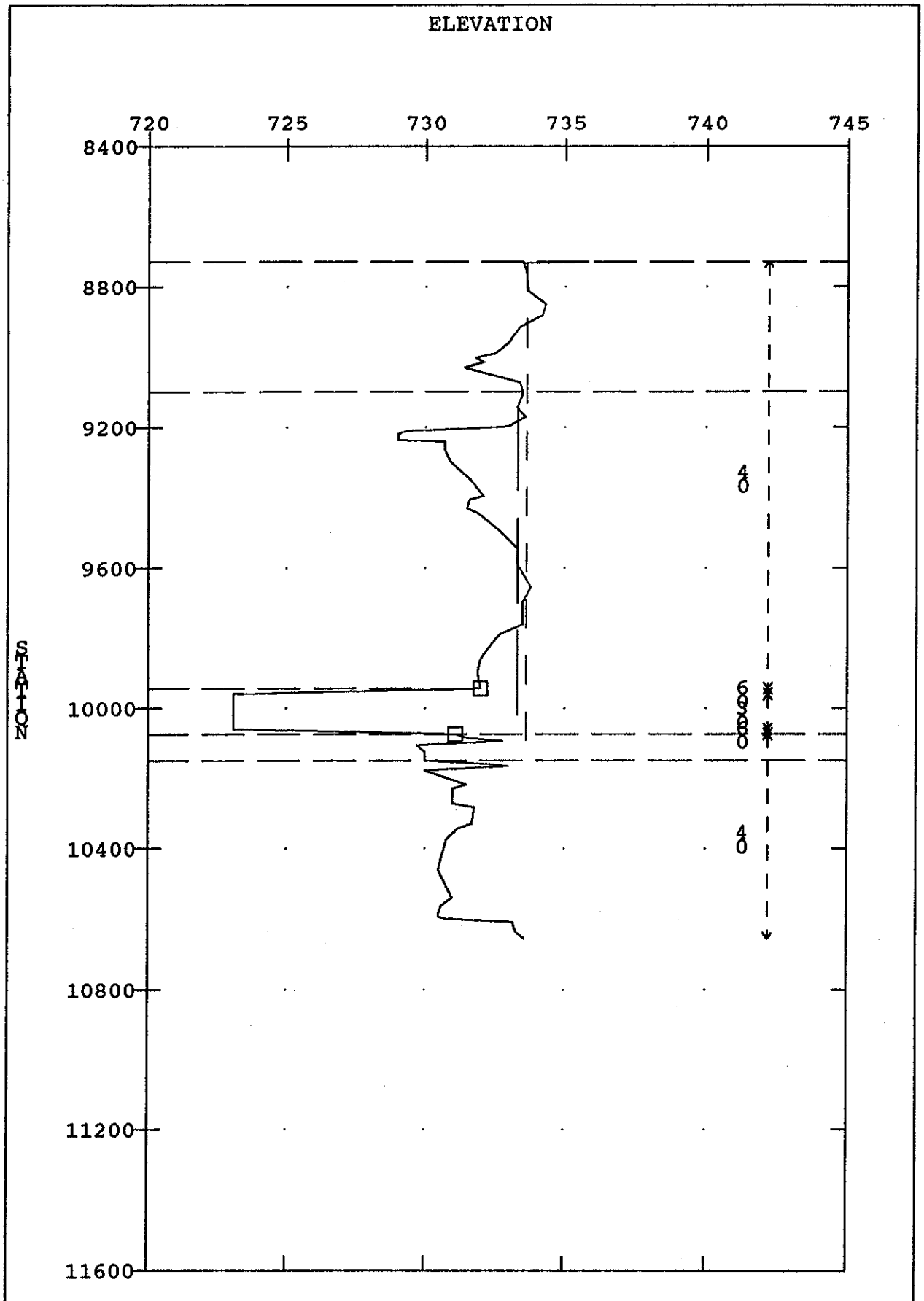
SAND TANK WASH 100 YEAR (NATURAL)



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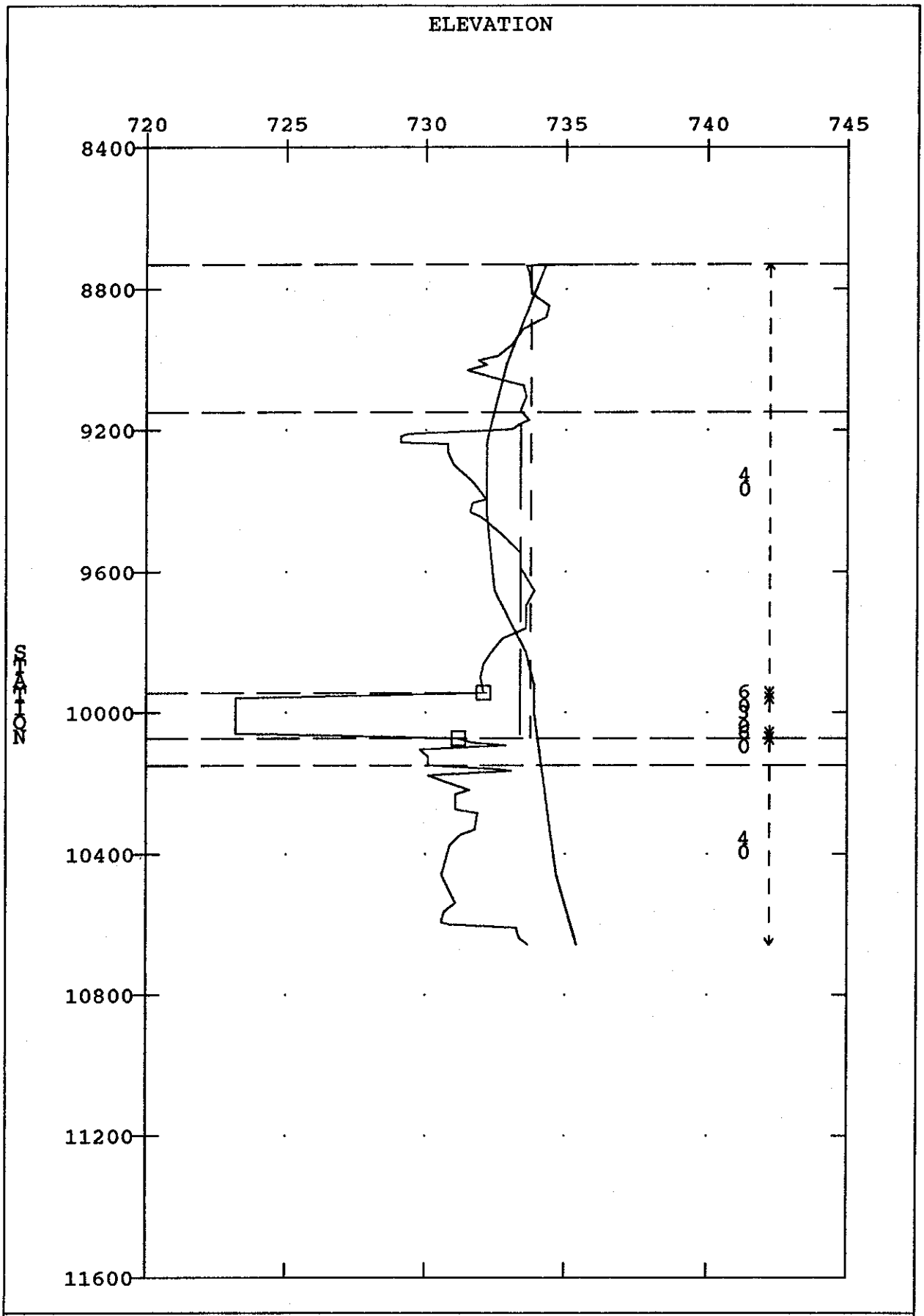
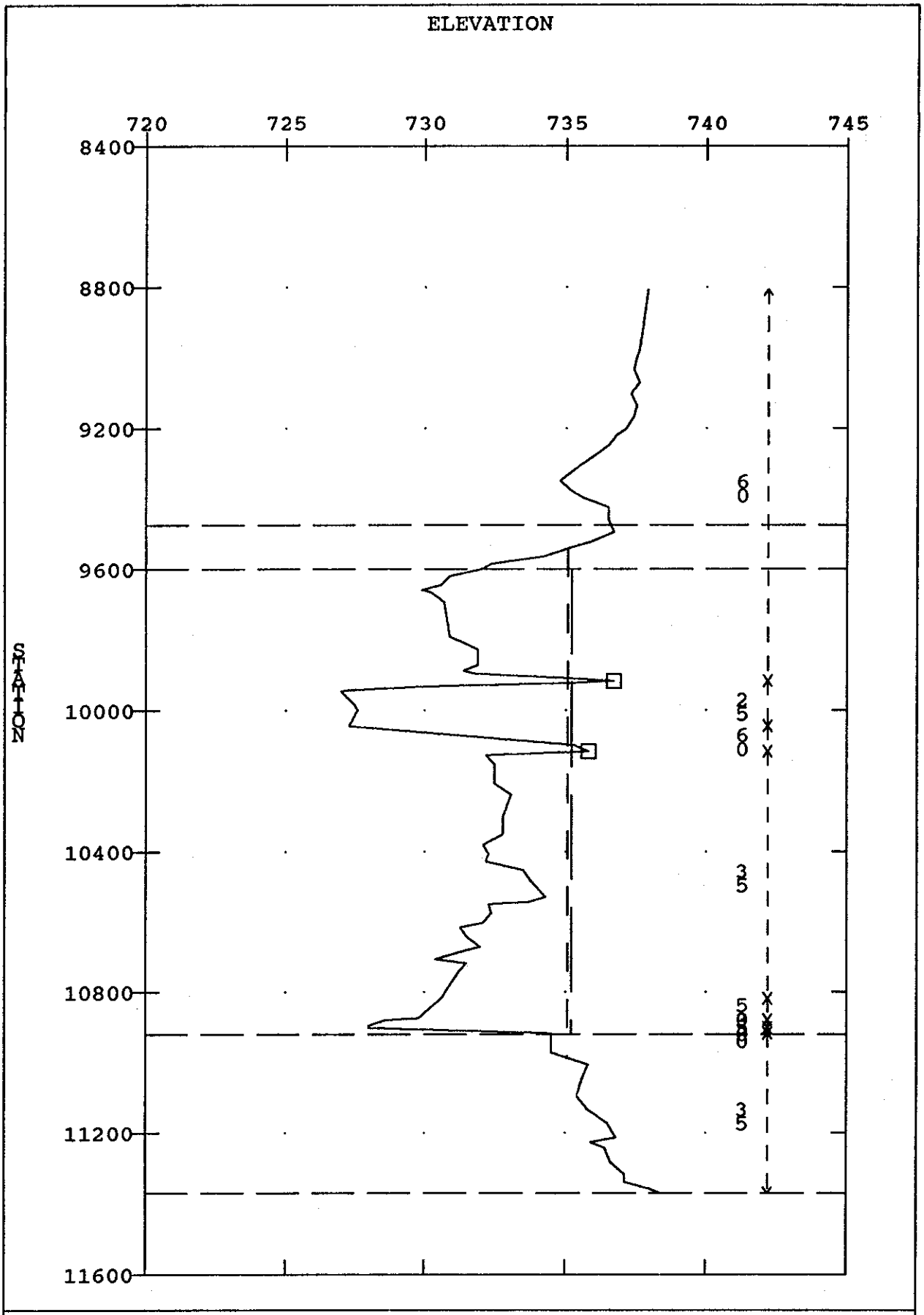


SECTION : 3693

SAND TANK WASH 100 YEAR (NATURAL)



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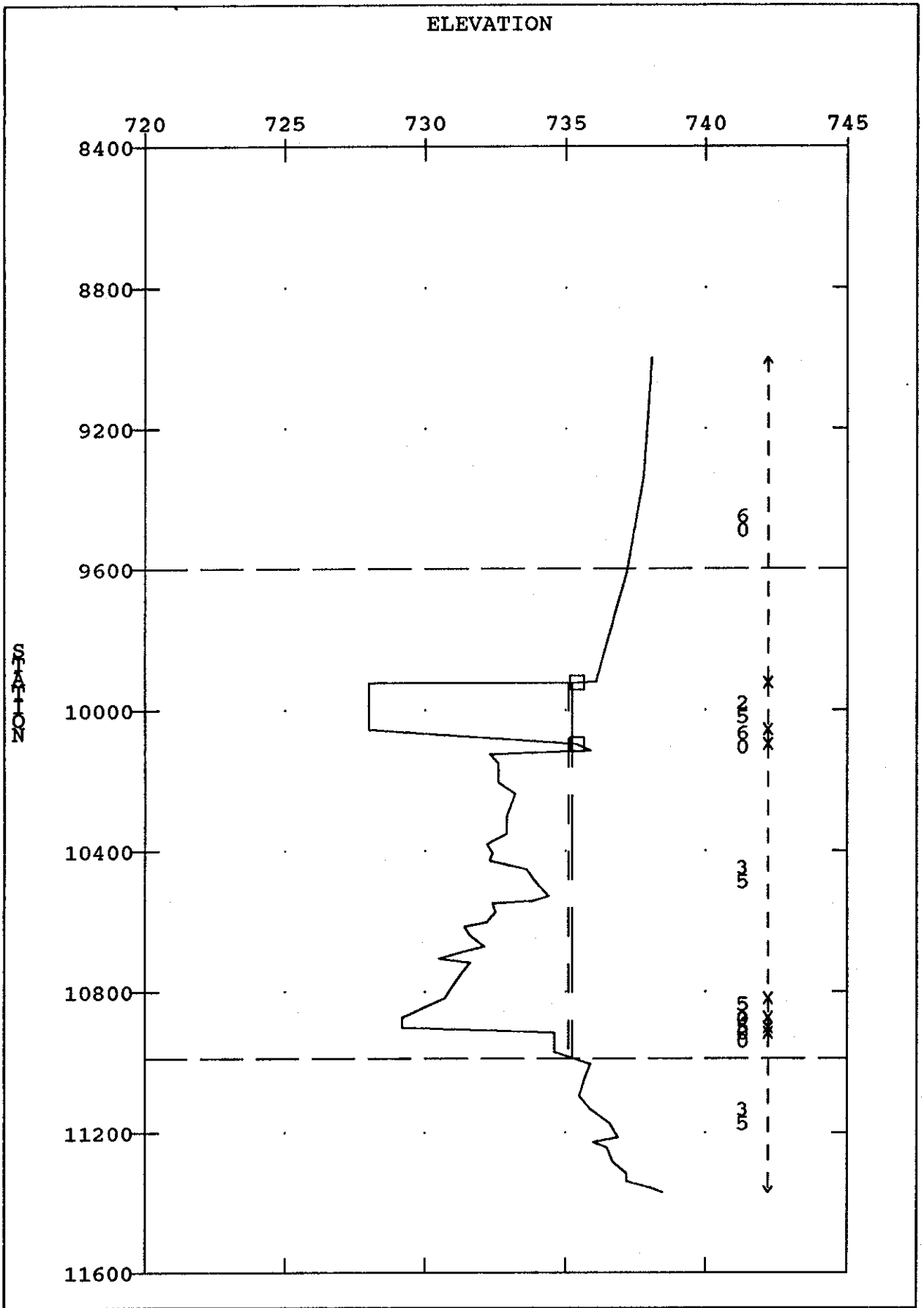
SAND TANK WASH 100 YEAR (NATURAL)



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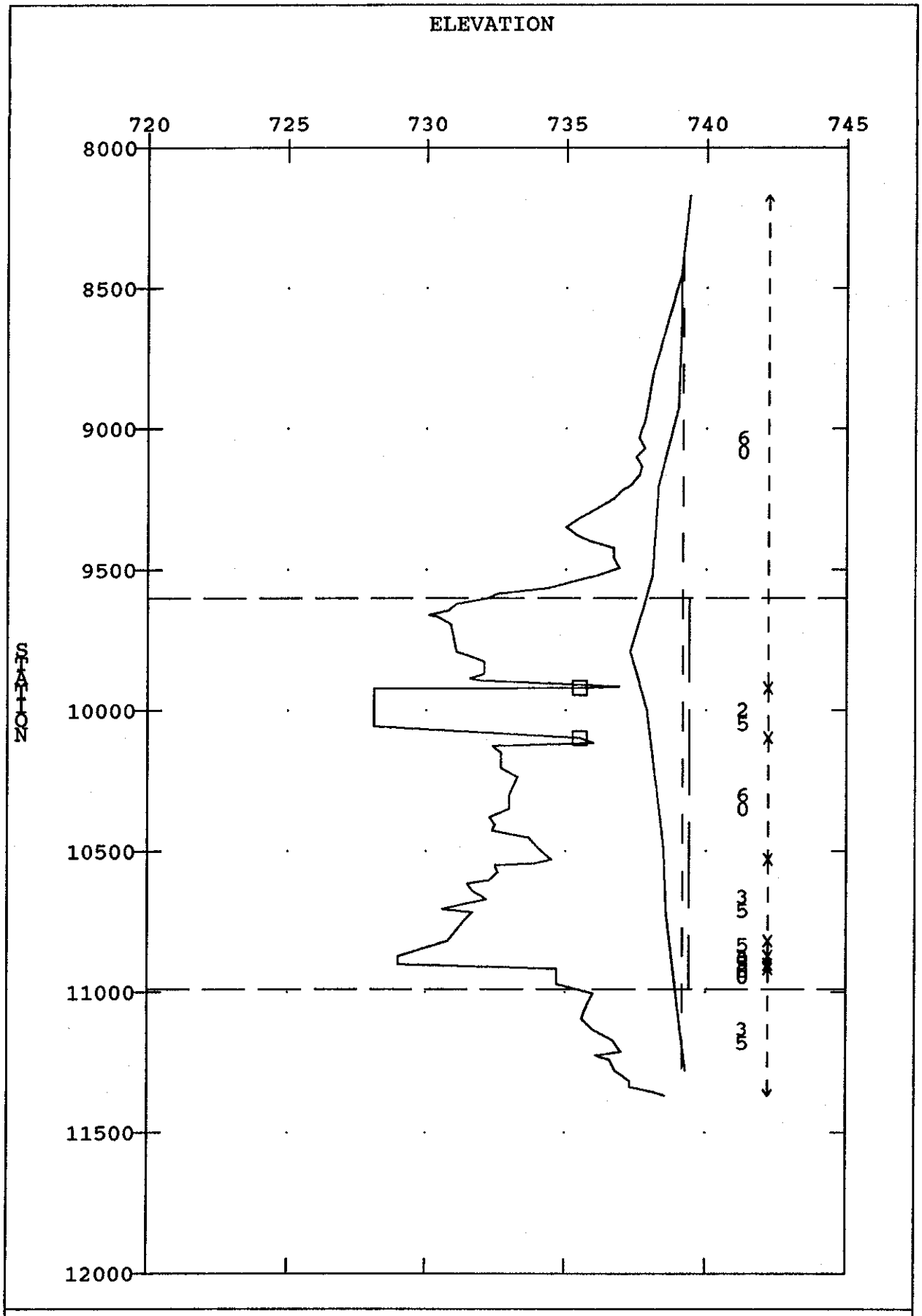
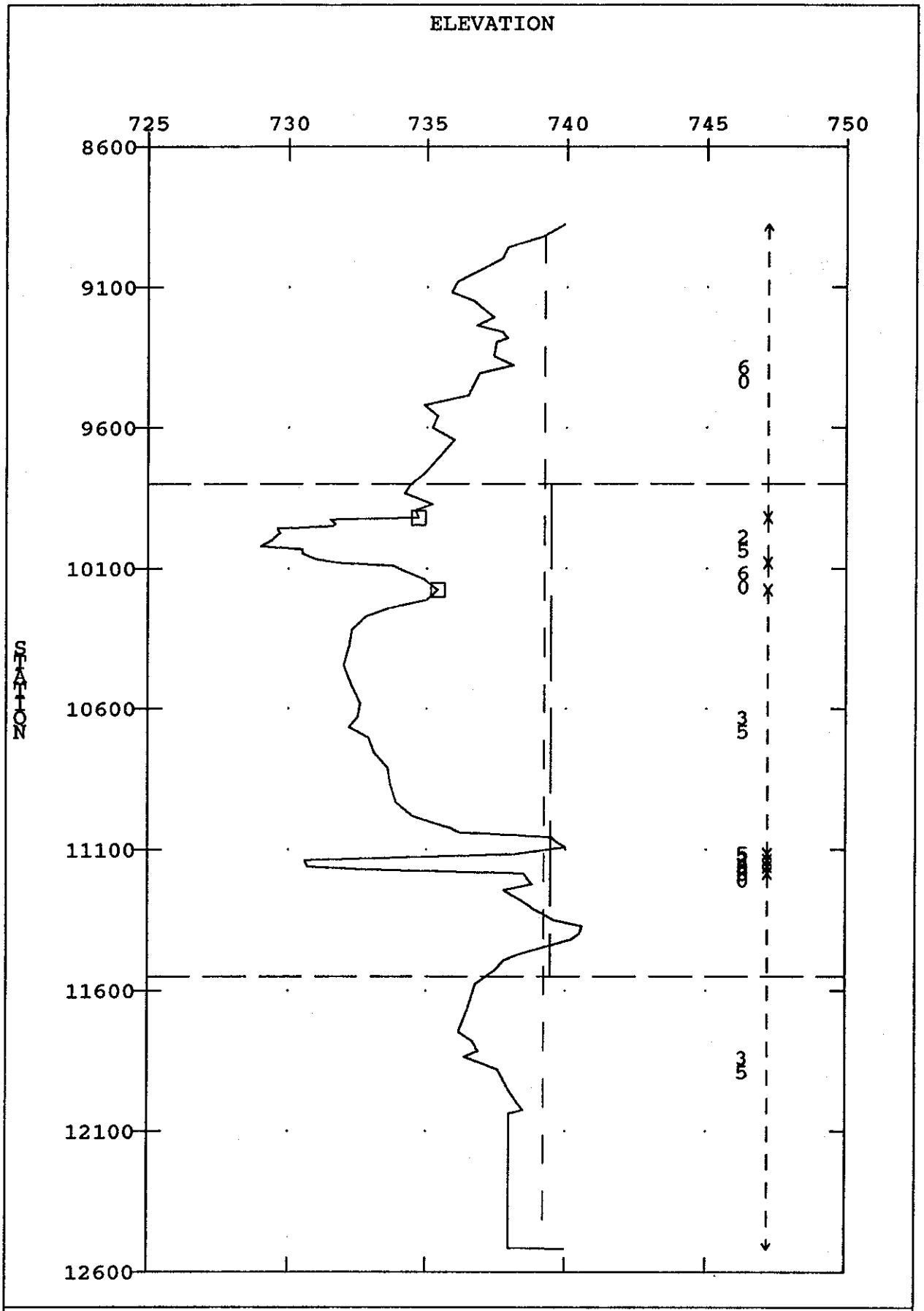
SAND TANK WASH 100 YEAR (NATURAL)



SECTION : 3782

SAND TANK WASH 100 YEAR (NATURAL)



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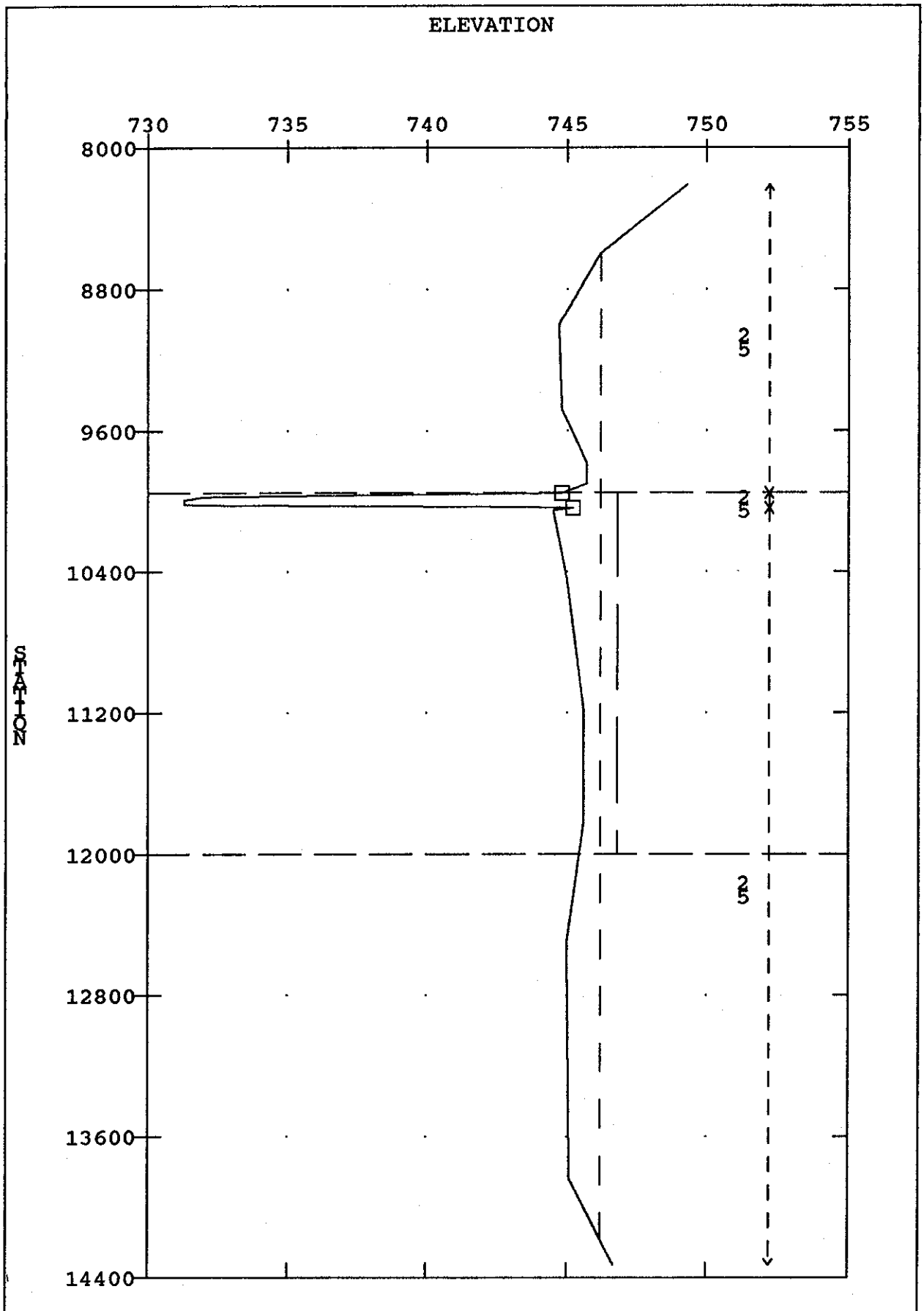
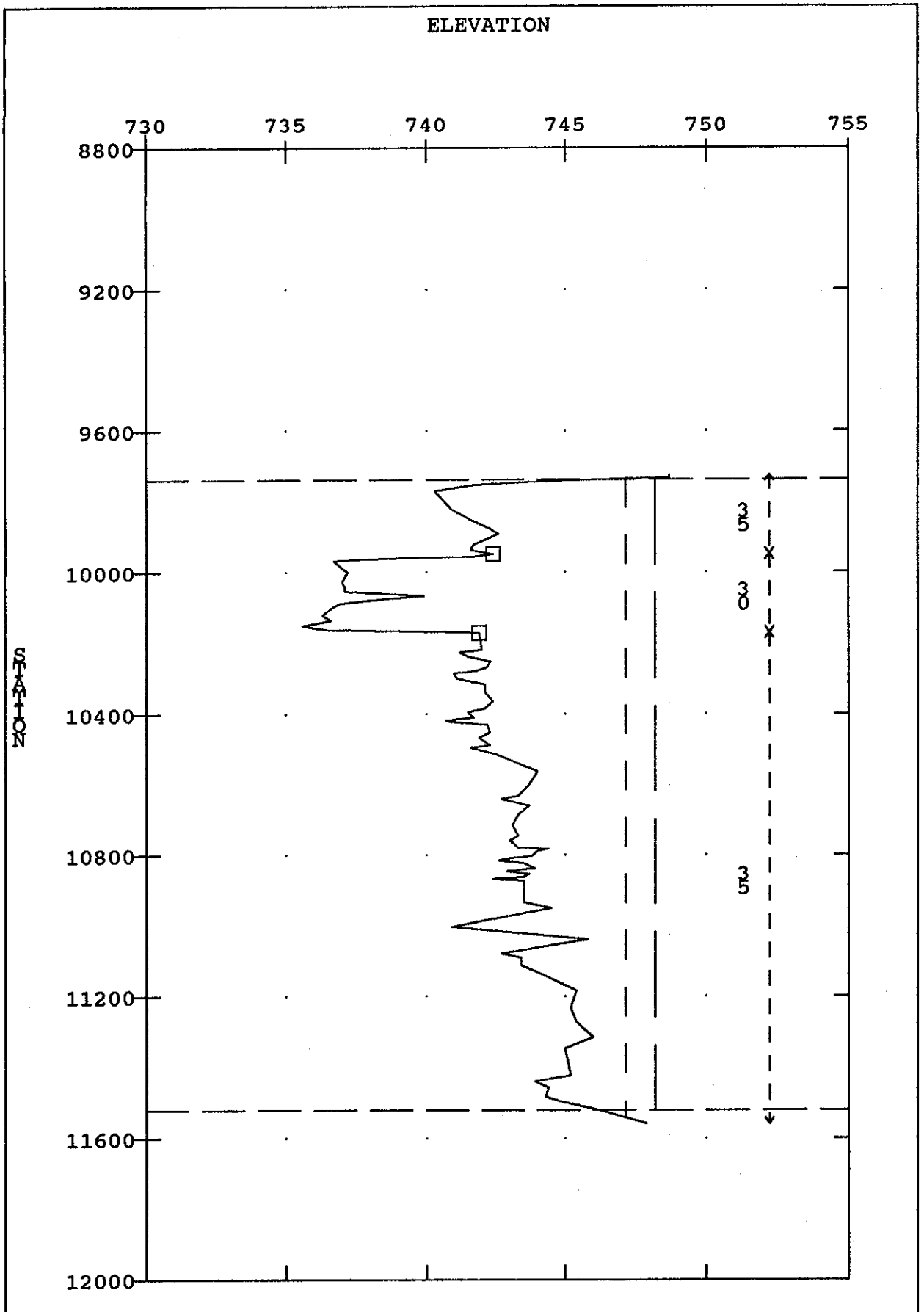
SAND TANK WASH 100 YEAR (NATURAL)



SECTION : 3888

SAND TANK WASH 100 YEAR (NATURAL)



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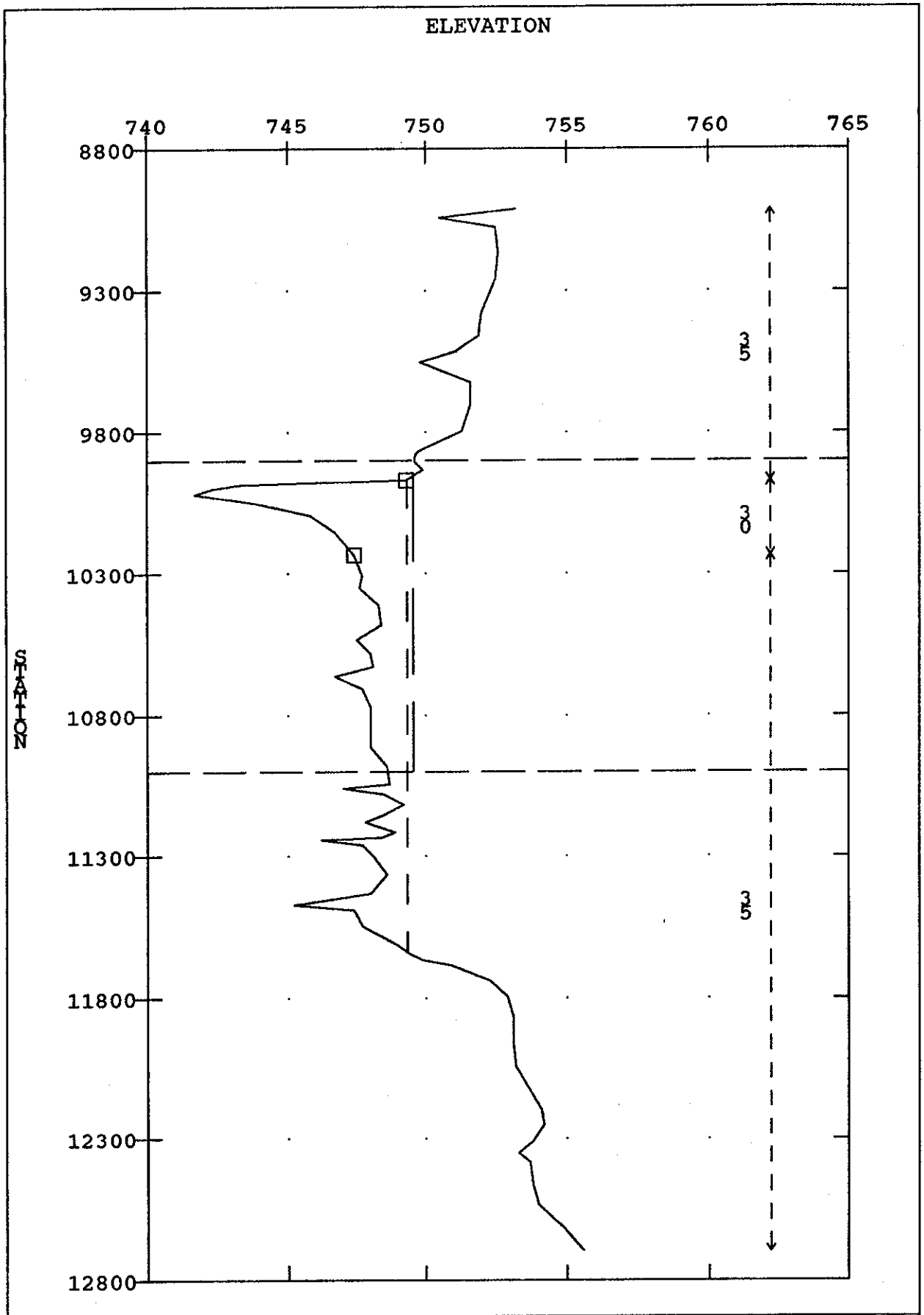
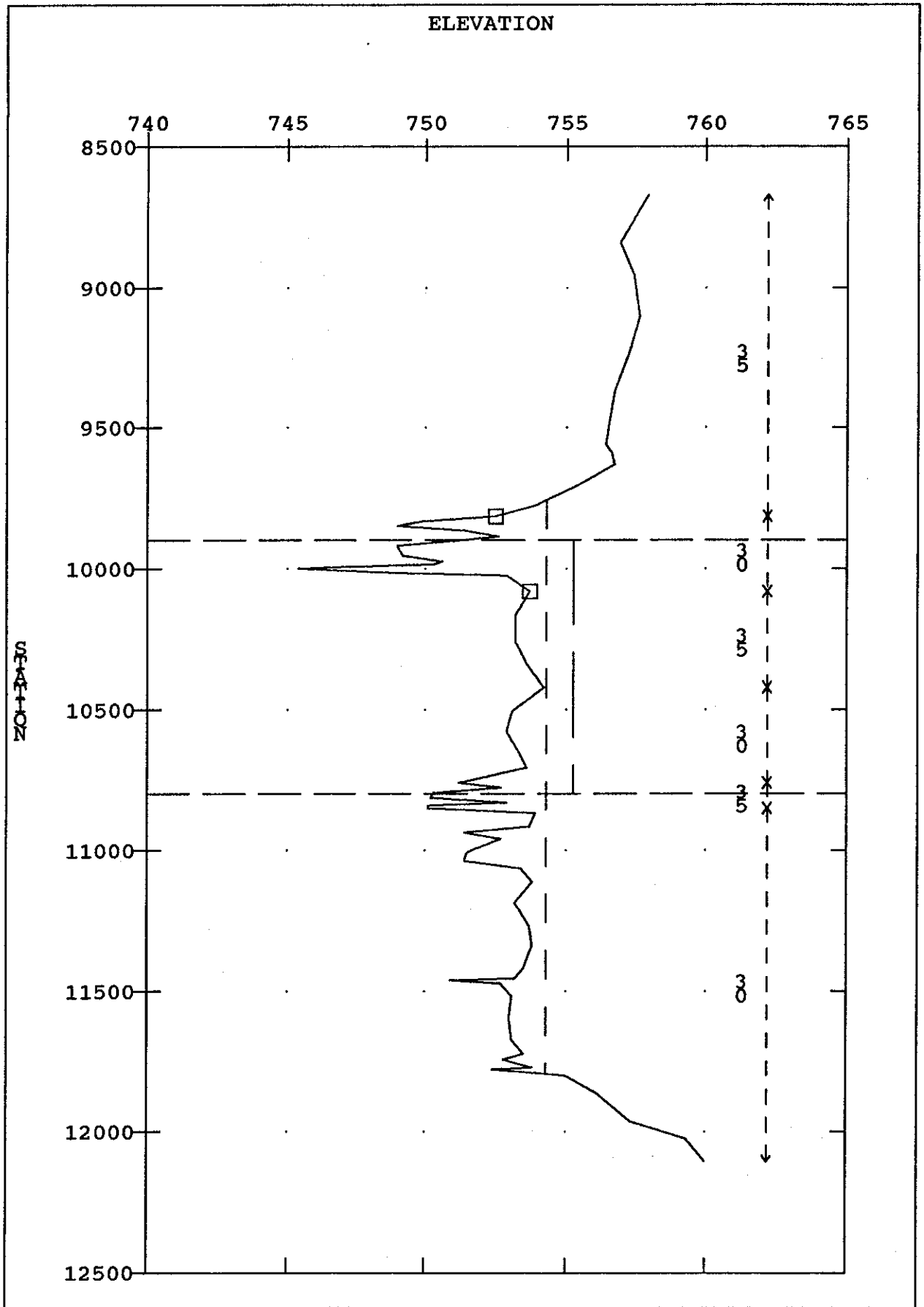


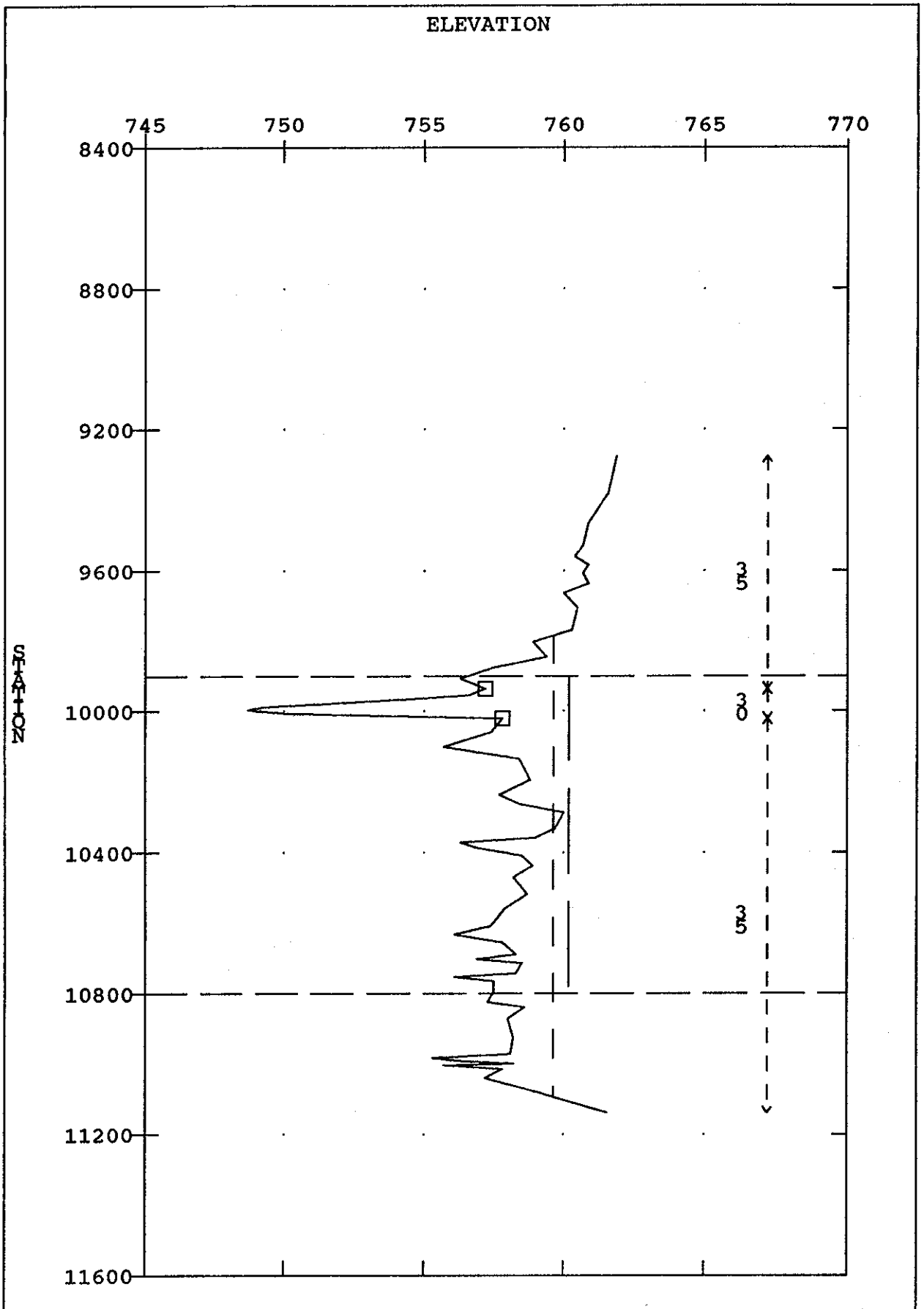
SECTION : 4277

SAND TANK WASH 100 YEAR (NATURAL)



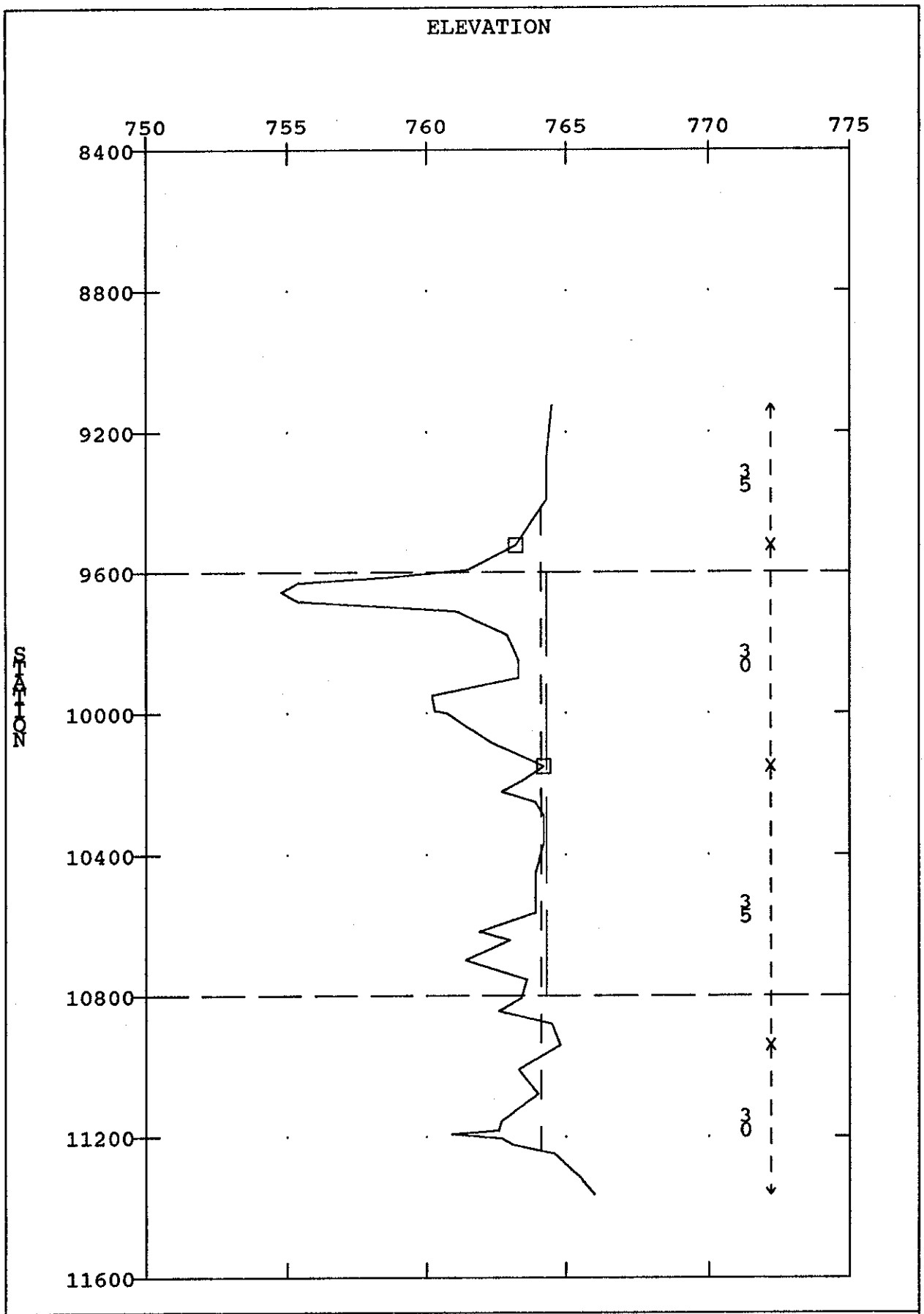
SECTION : 4461

SAND TANK WASH 100 YEAR (NATURAL)



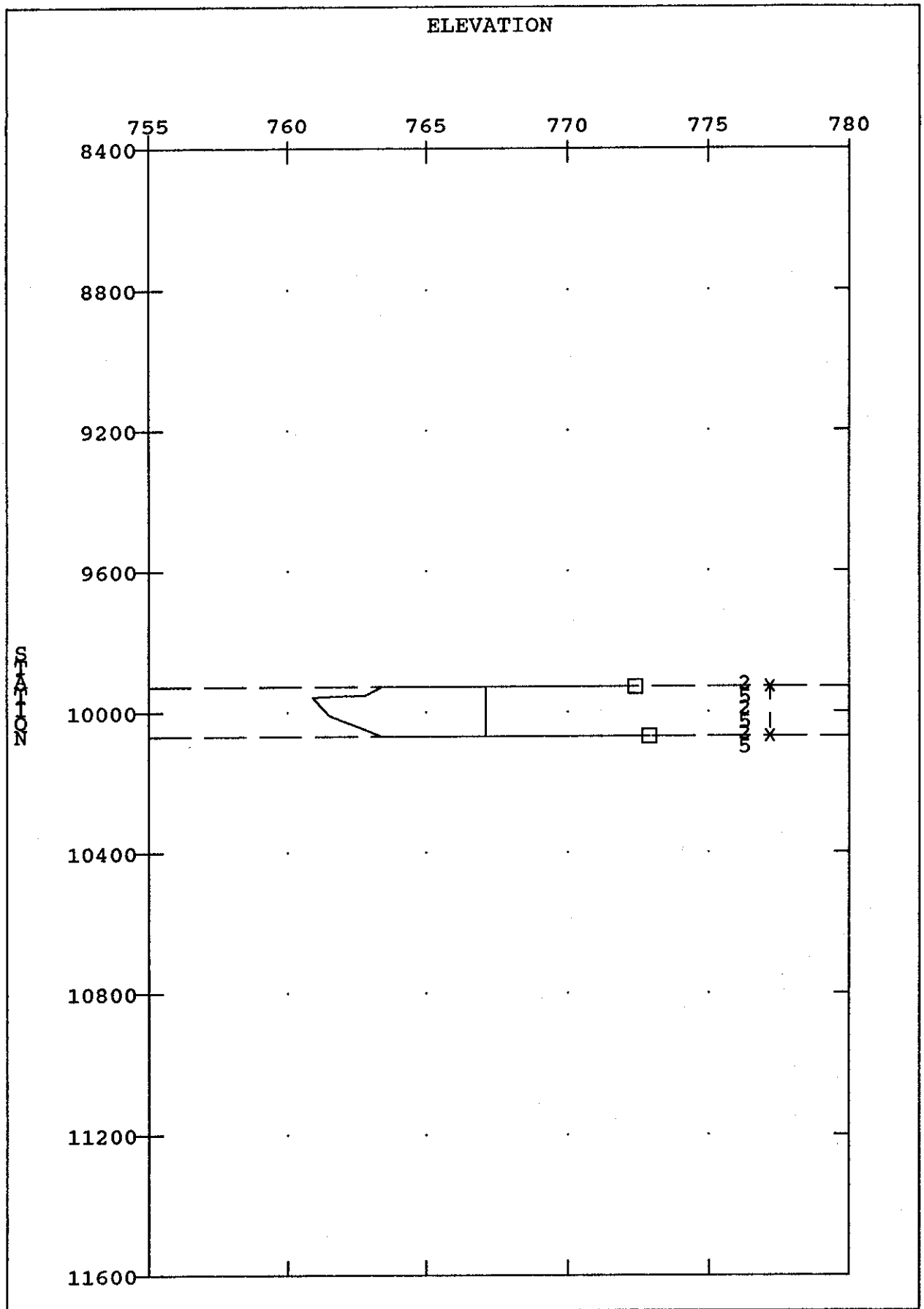
SECTION : 4638

SAND TANK WASH 100 YEAR (NATURAL)



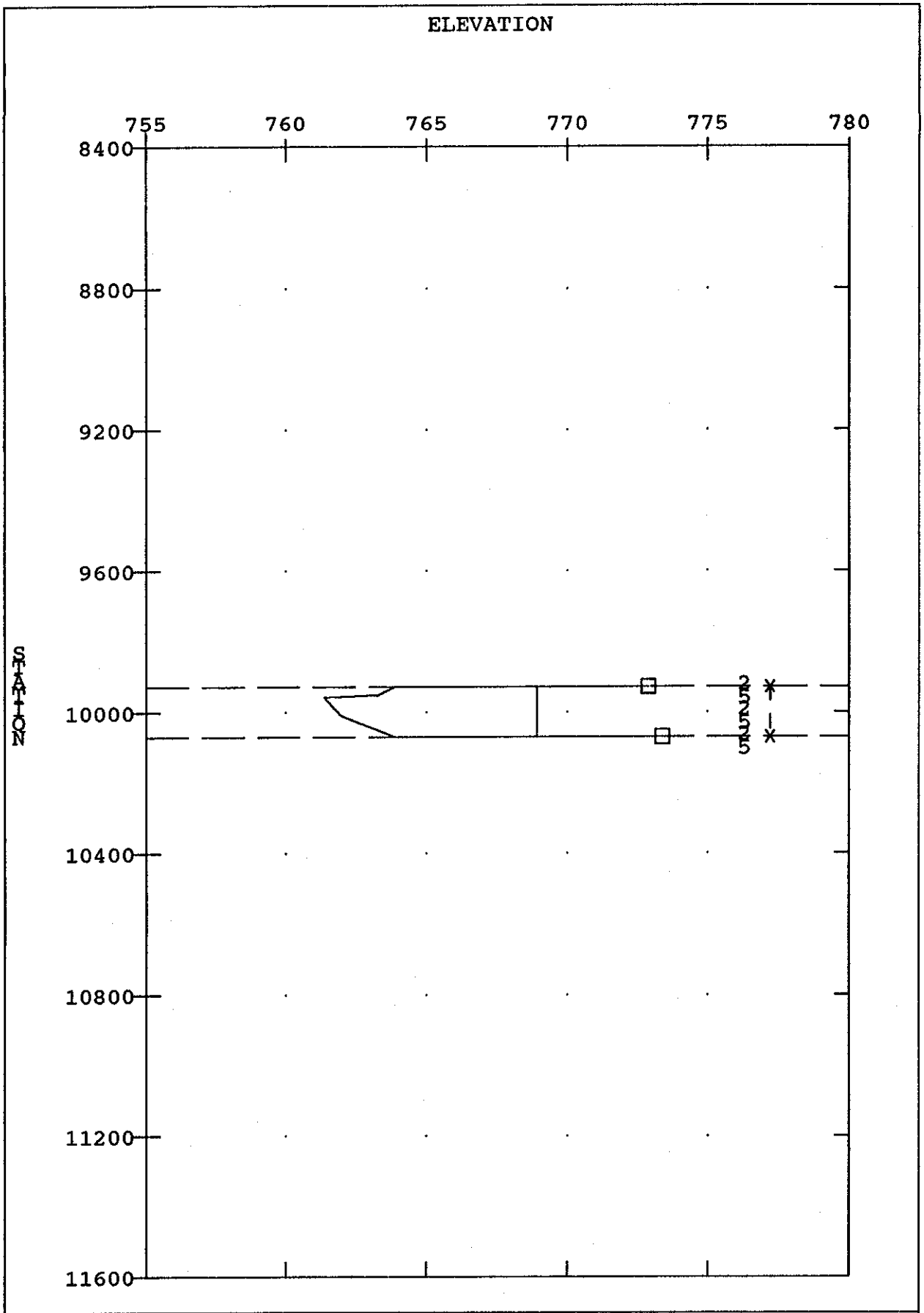
SECTION : 4822

SAND TANK WASH 100 YEAR (NATURAL)



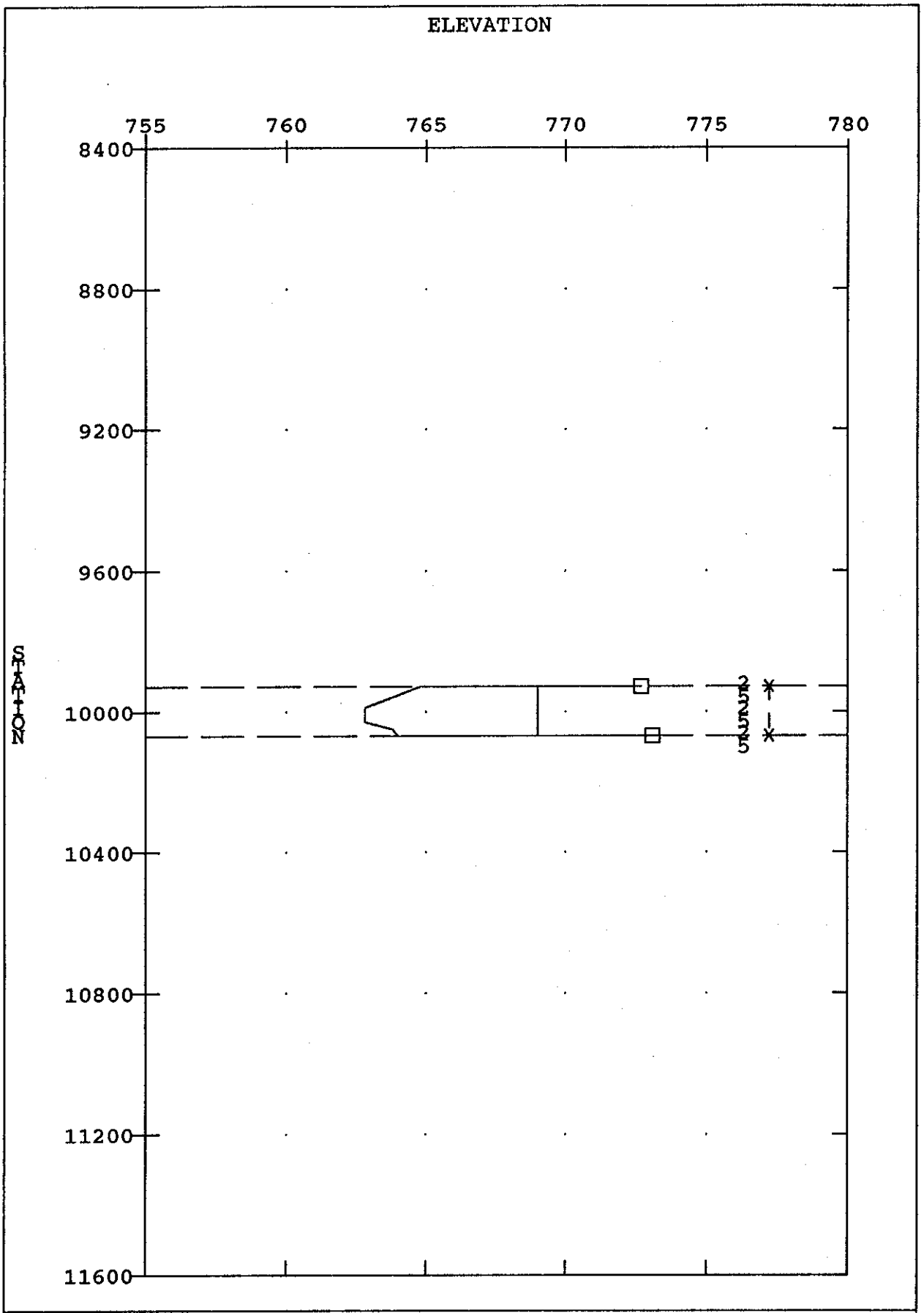
SECTION : 4857

SAND TANK WASH 100 YEAR (NATURAL)



SECTION : 4868

SAND TANK WASH 100 YEAR (NATURAL)



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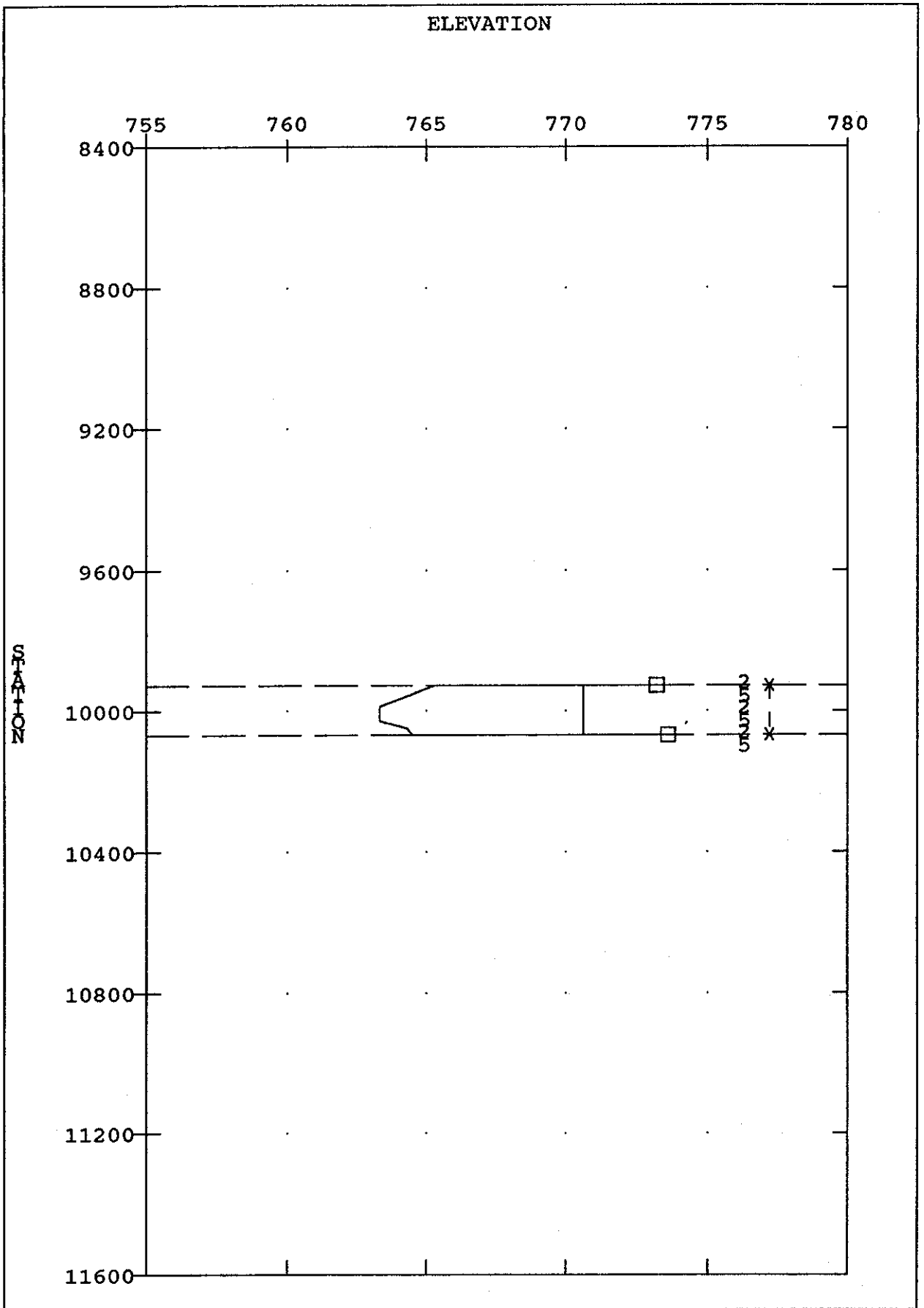
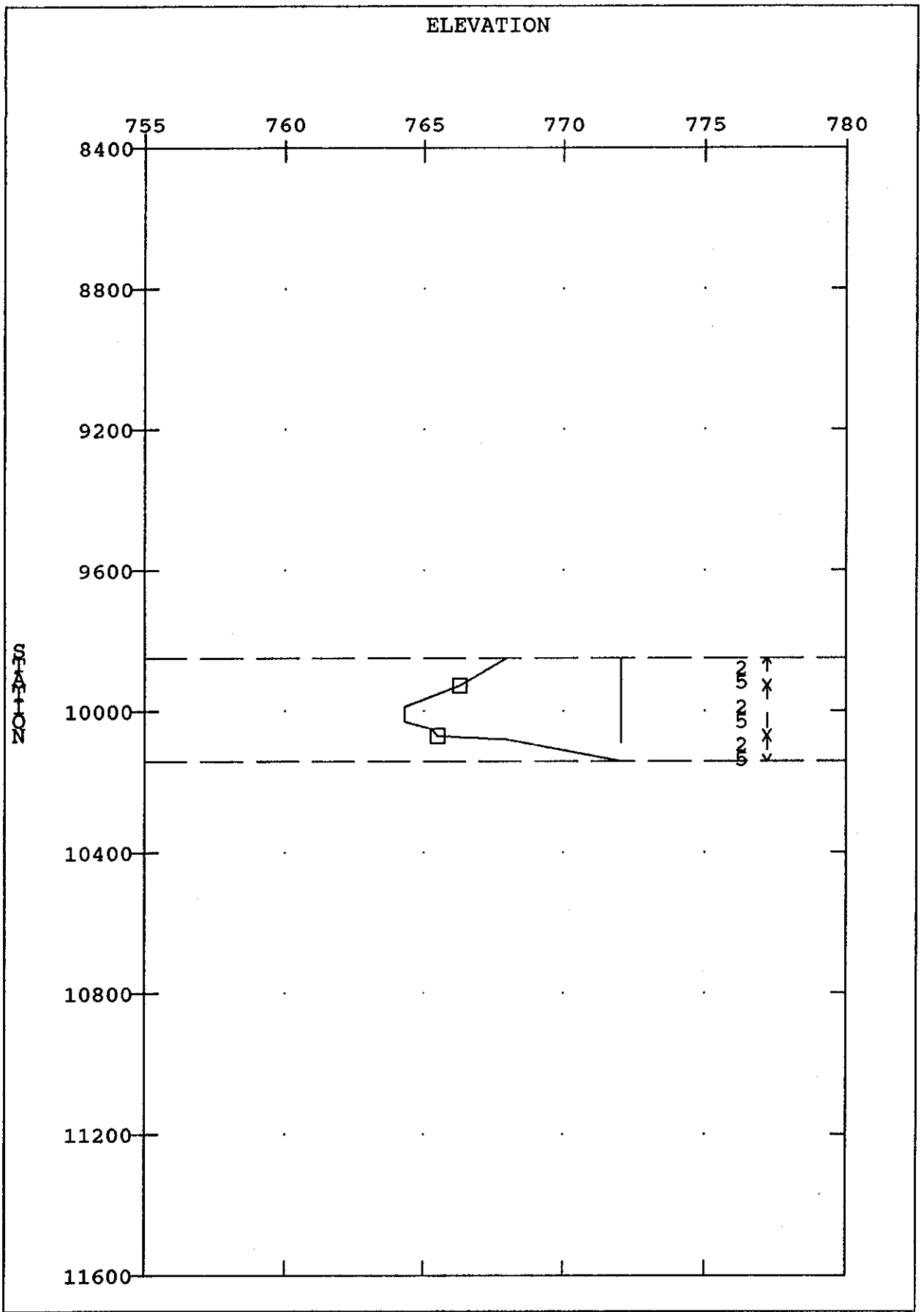


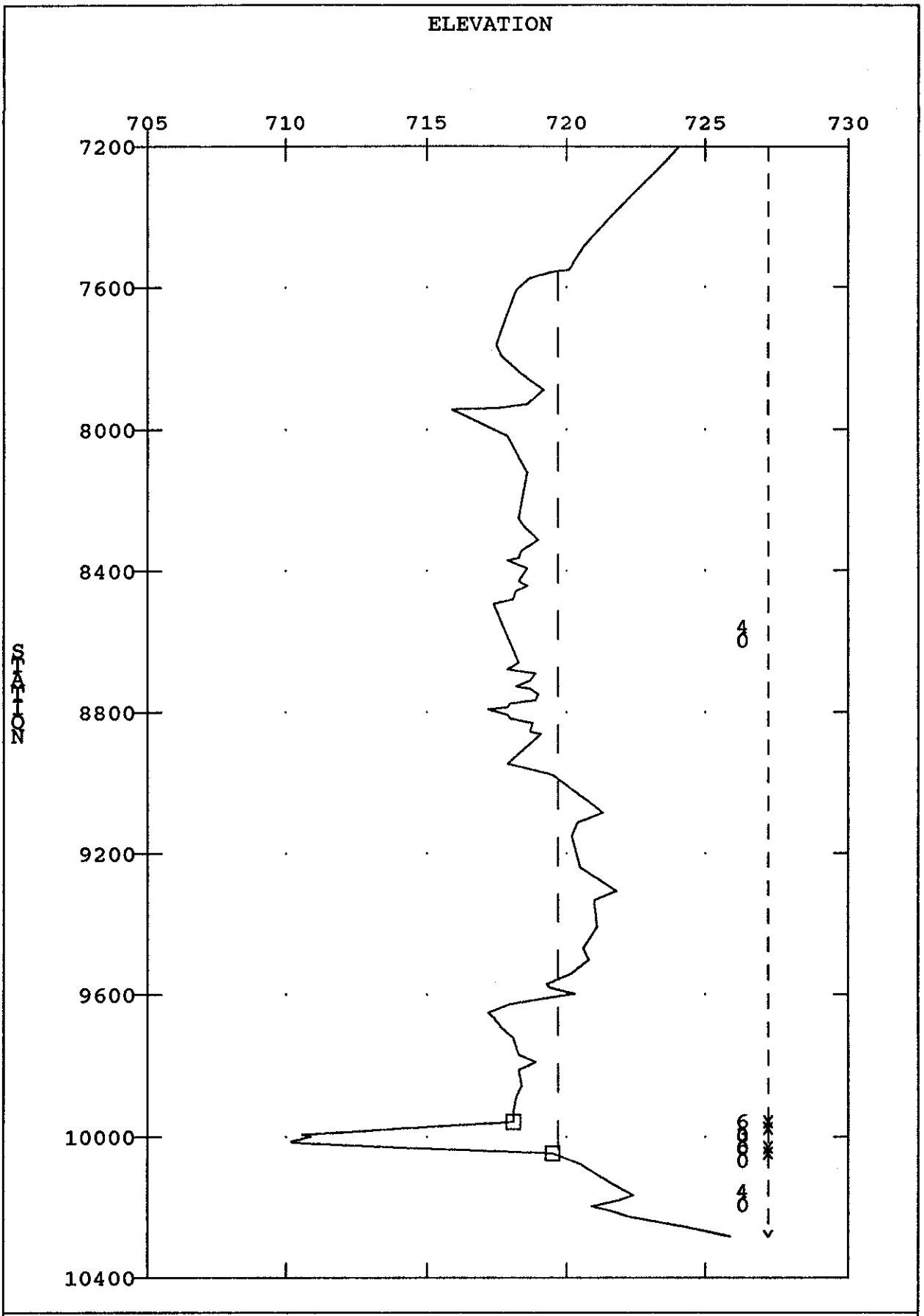
SECTION : 4898

SAND TANK WASH 100 YEAR (NATURAL)



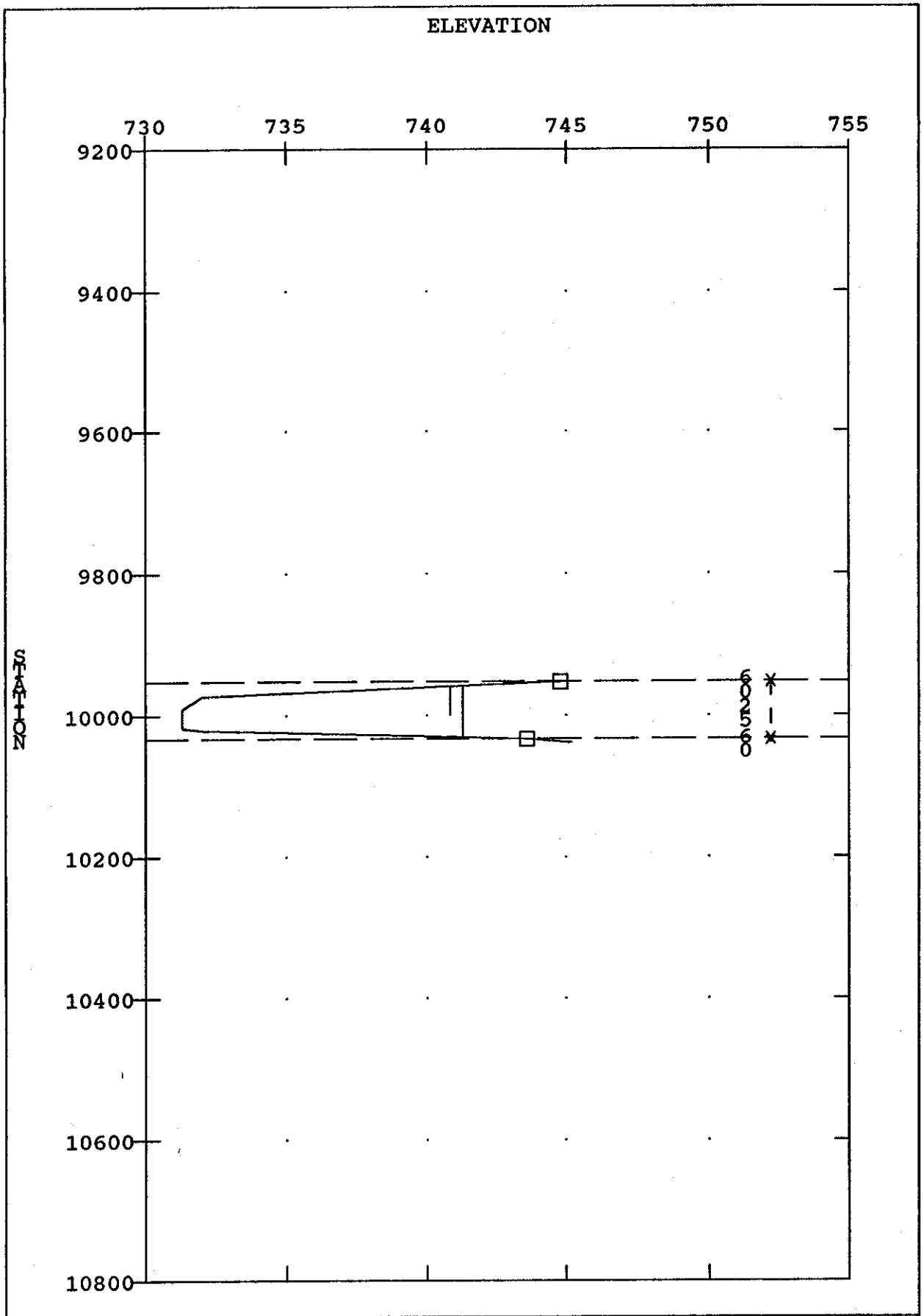
SECTION : 4936

SAND TANK WASH 100 YEAR (NATURAL)



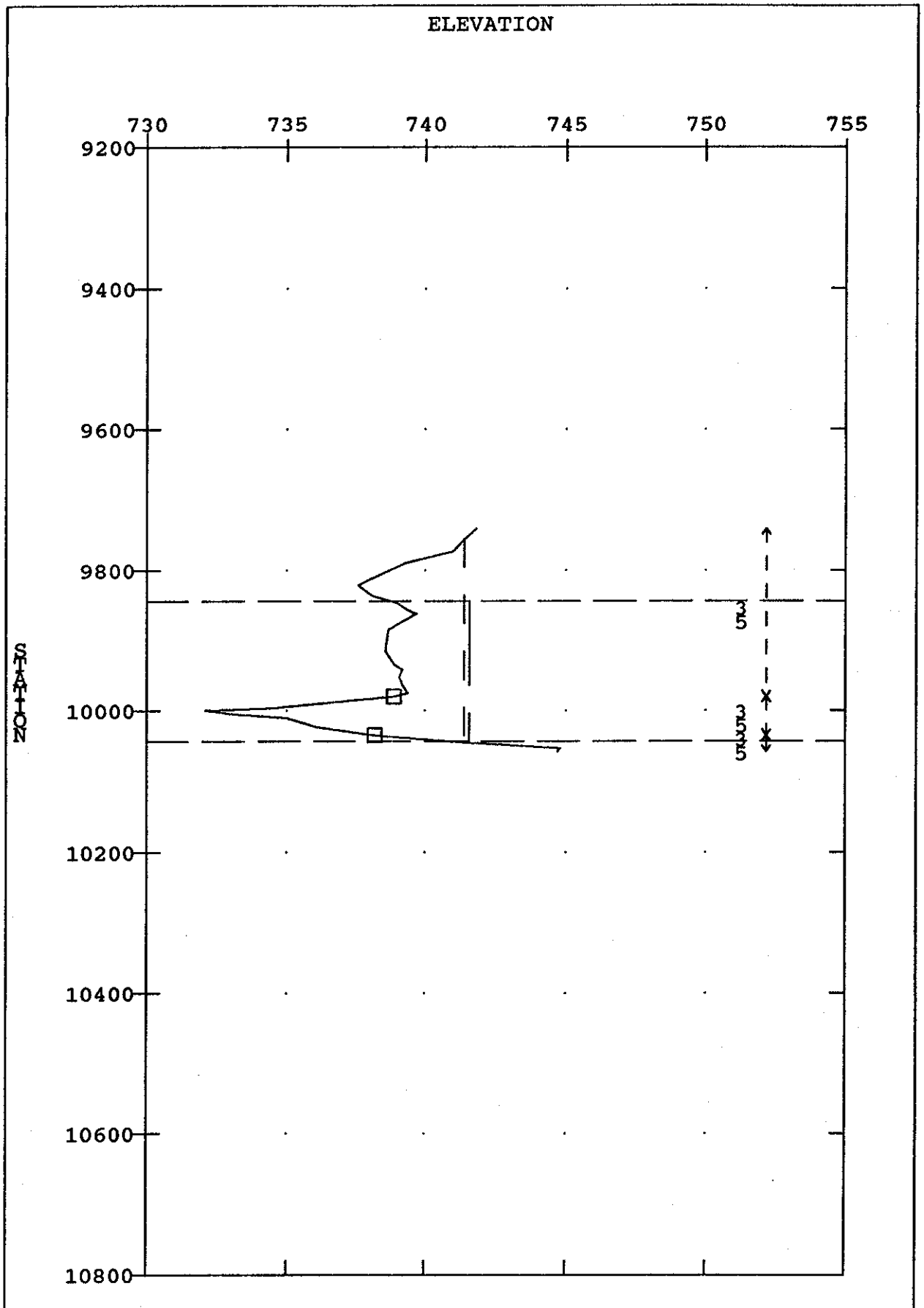
SECTION : 3180

BENDER WASH



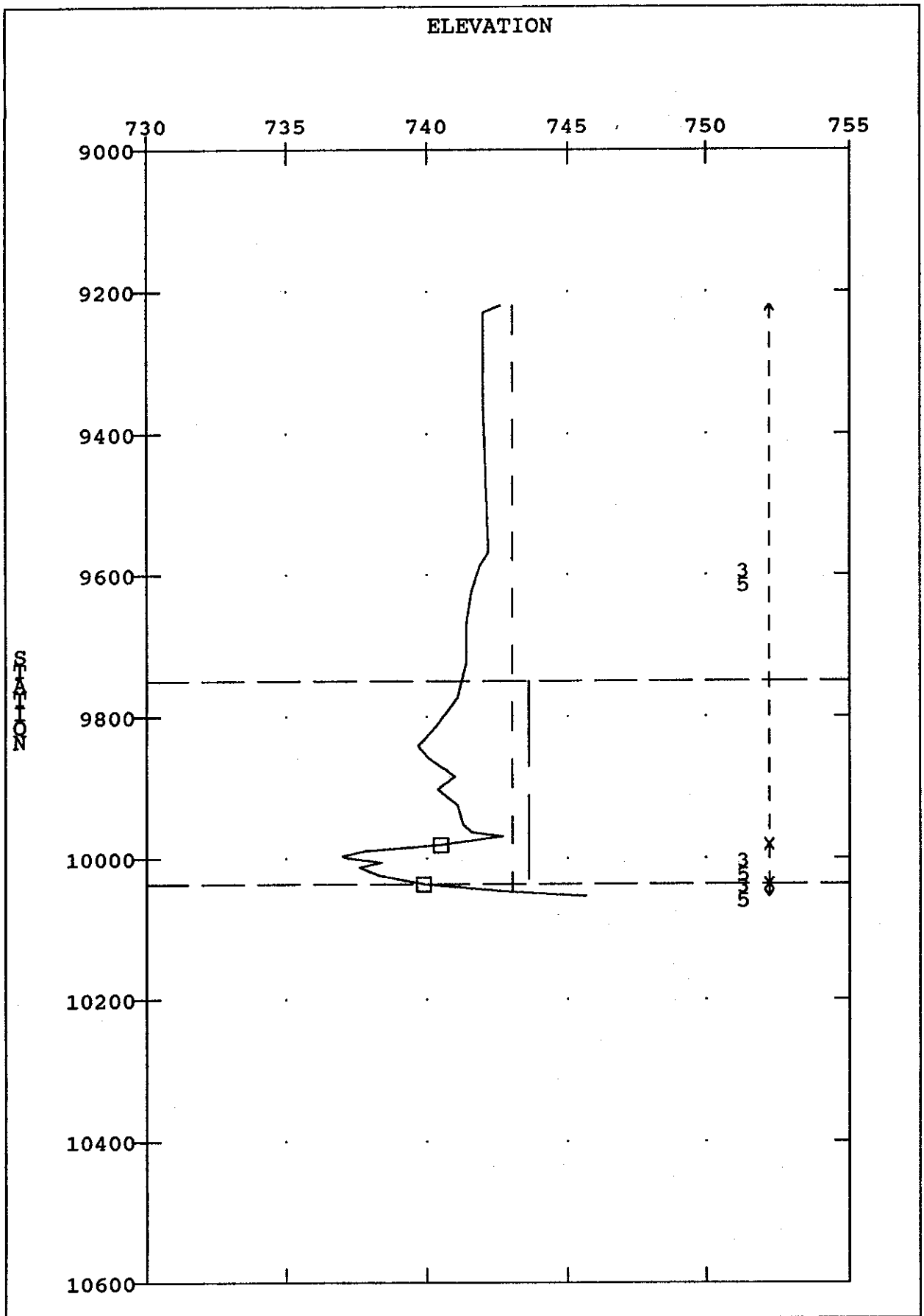
SECTION : 3888

BENDER WASH 100-YEAR (NATURAL)



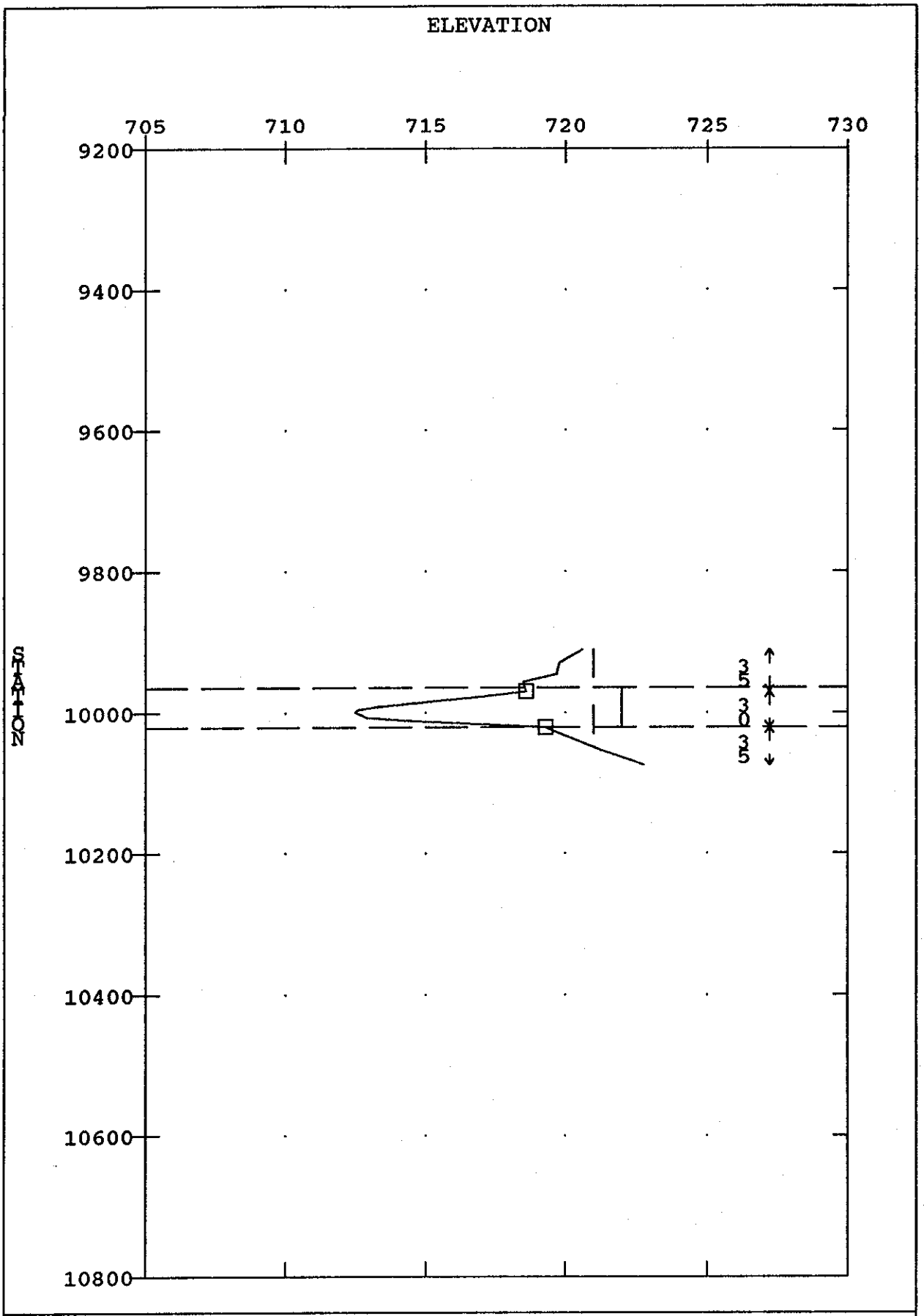
SECTION : 1

BENDER WASH 100-YEAR (NATURAL)



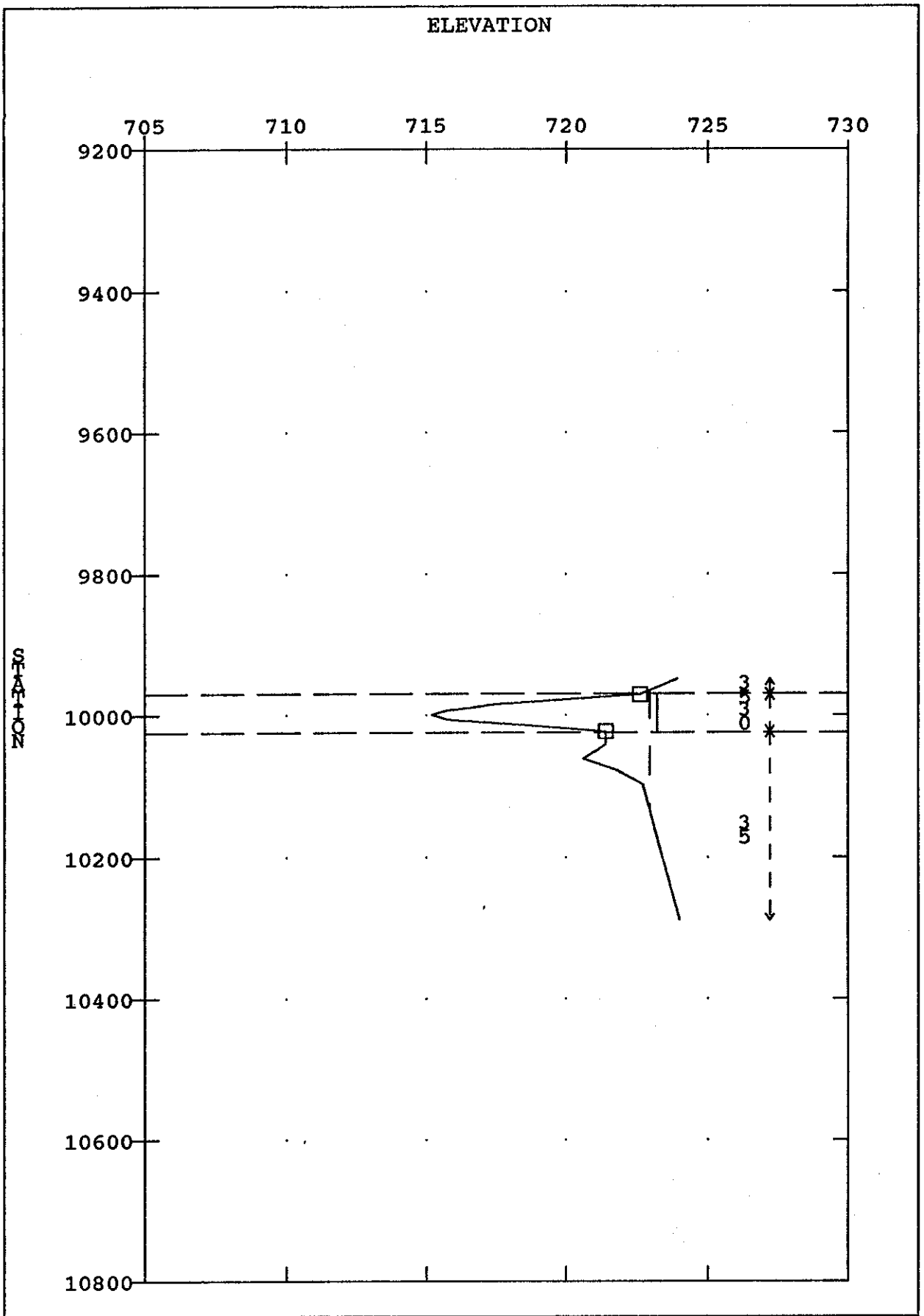
SECTION : 2

BENDER WASH 100-YEAR (NATURAL)



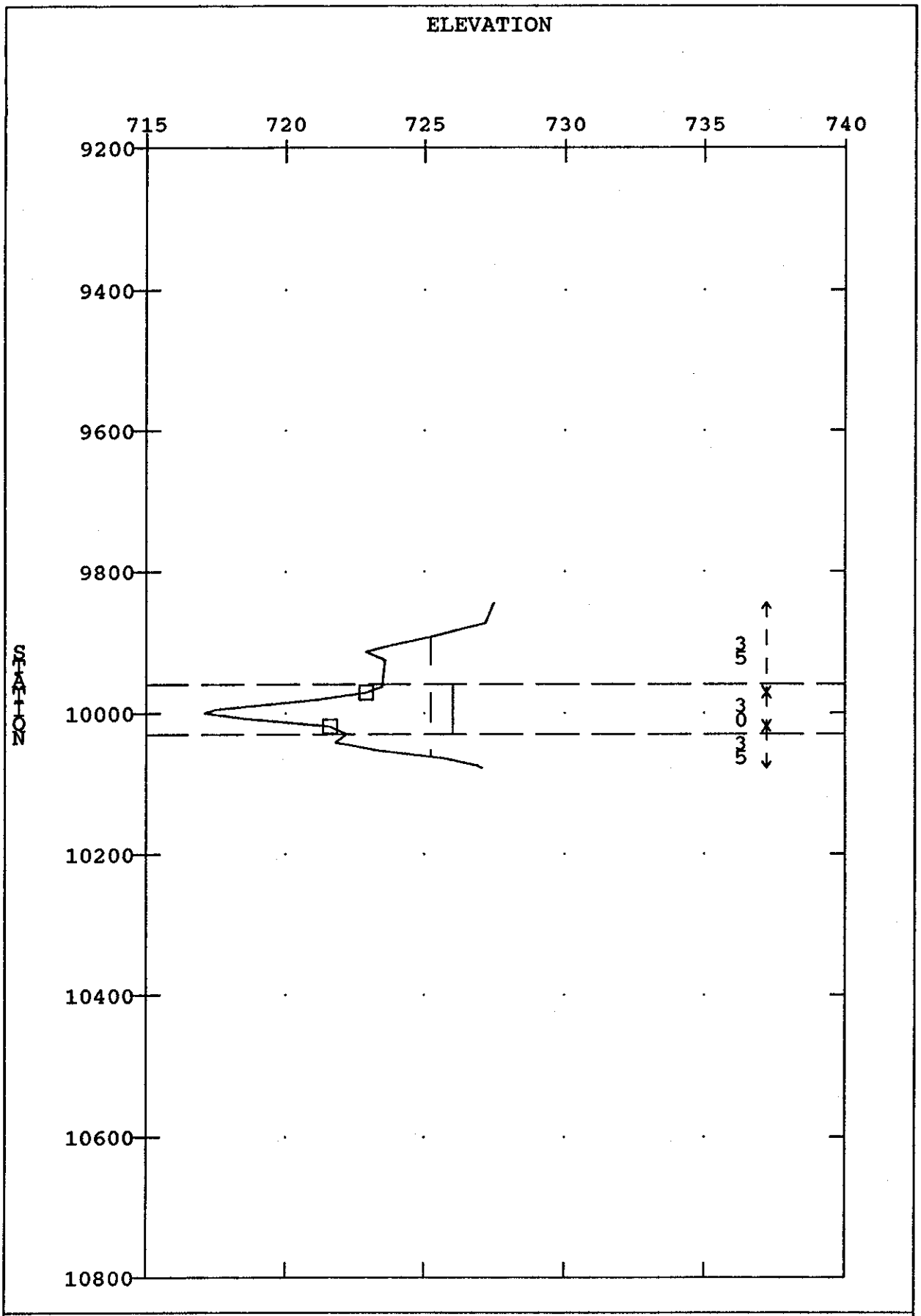
SECTION : 037

BENDER WASH 100-YEAR (NATURAL)



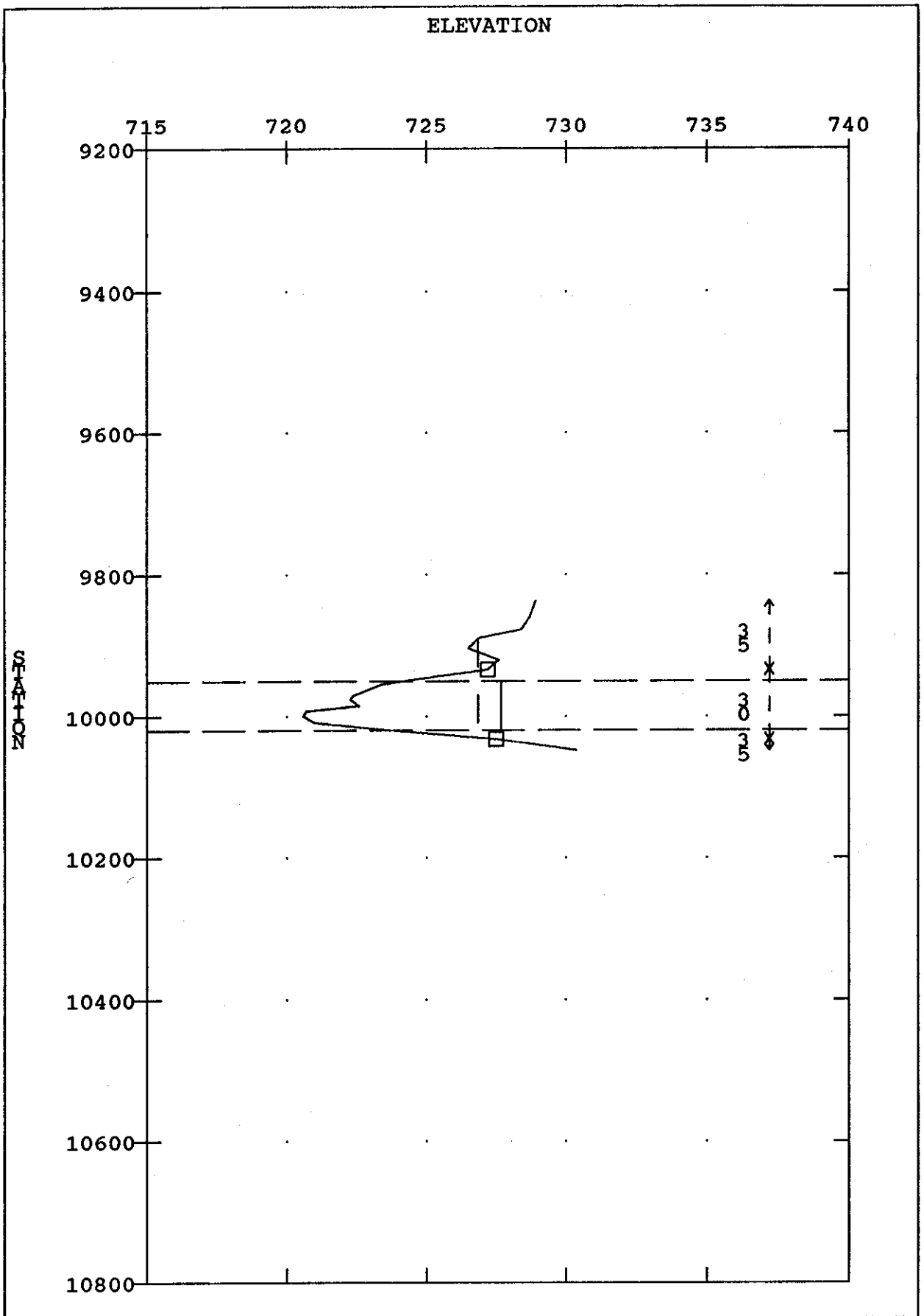
SECTION : 129

BENDER WASH 100-YEAR (NATURAL)



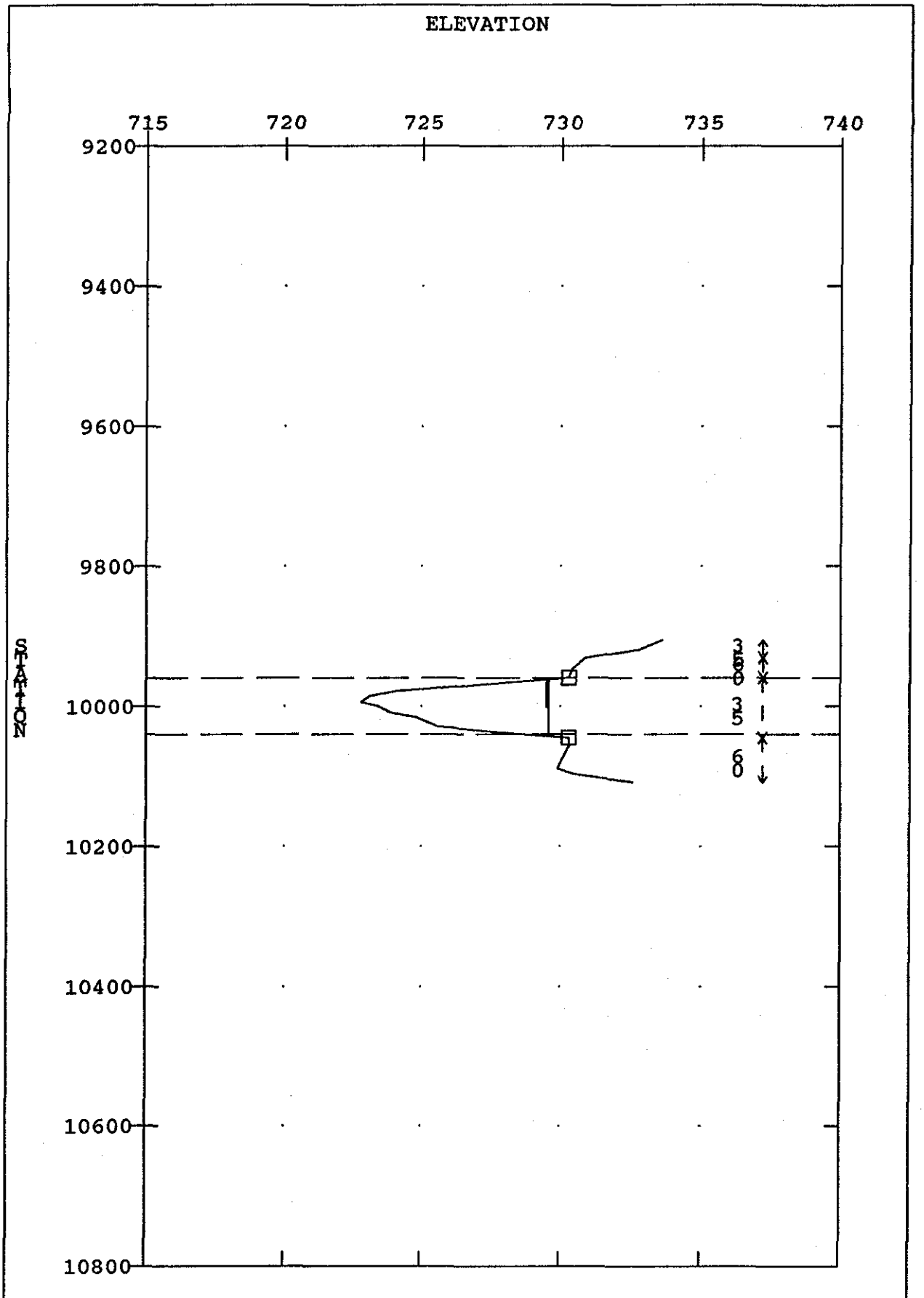
SECTION : 224

BENDER WASH 100-YEAR (NATURAL)



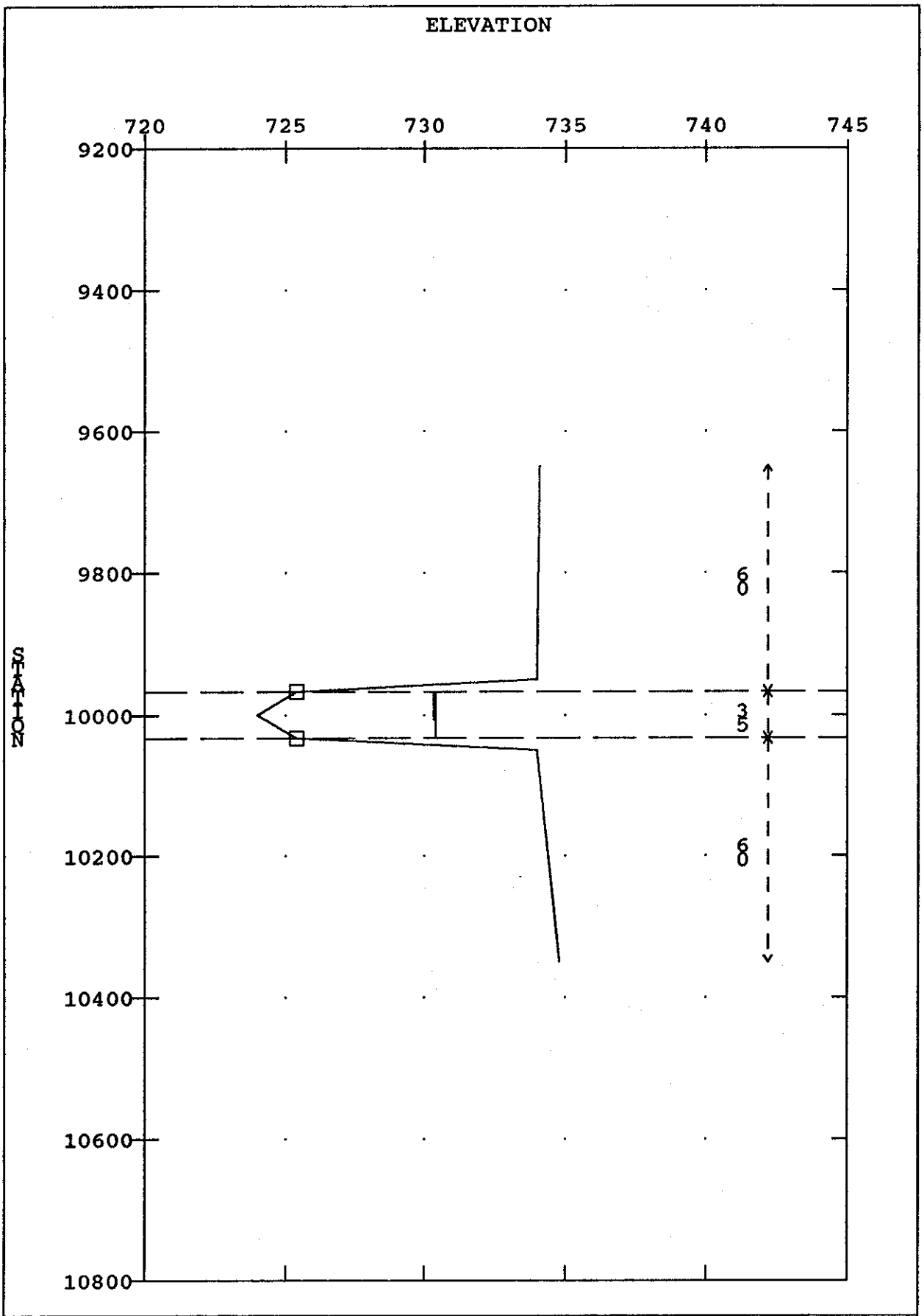
SECTION : 320

BENDER WASH 100-YEAR (NATURAL)



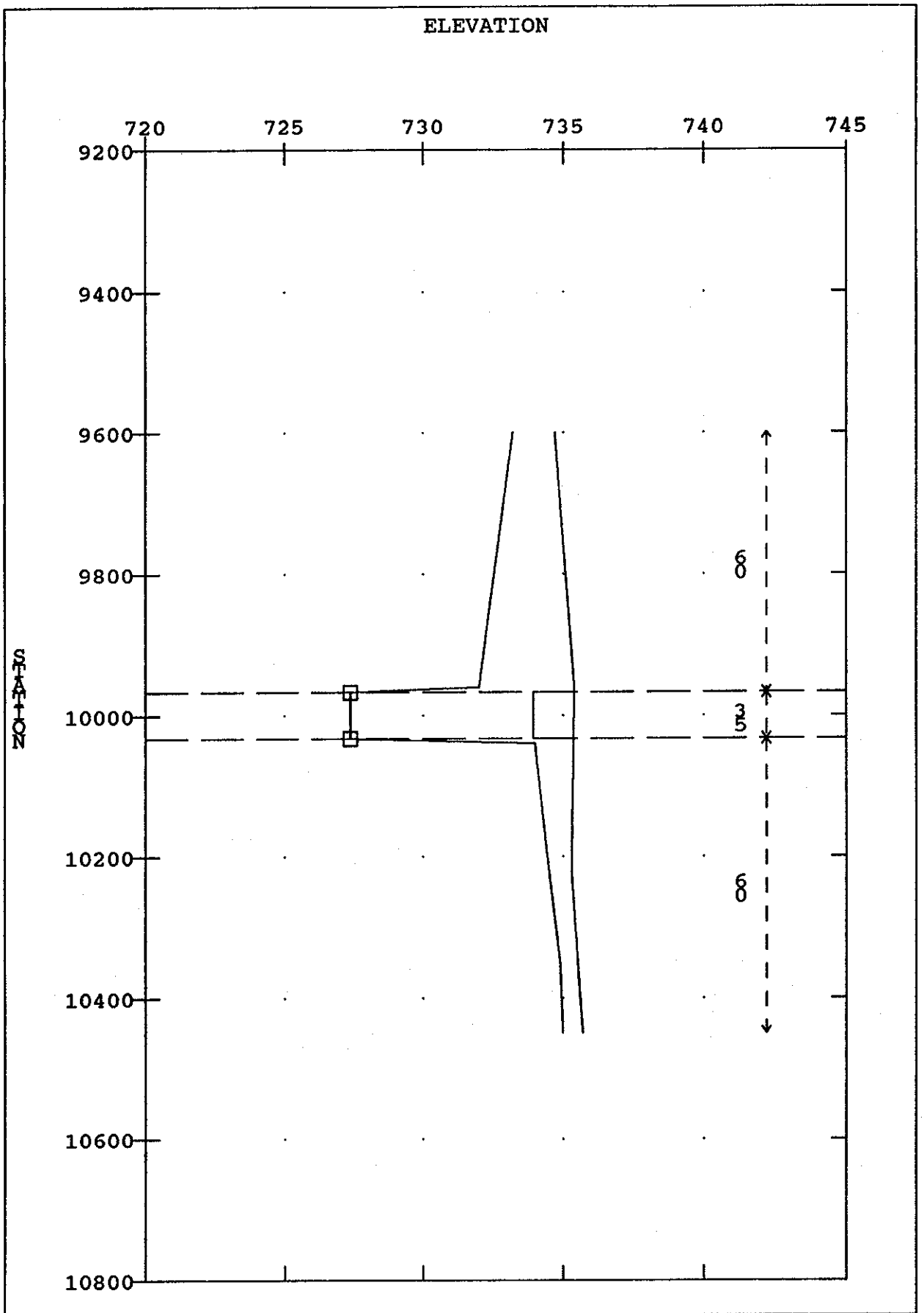
SECTION : 415

BENDER WASH 100-YEAR (NATURAL)



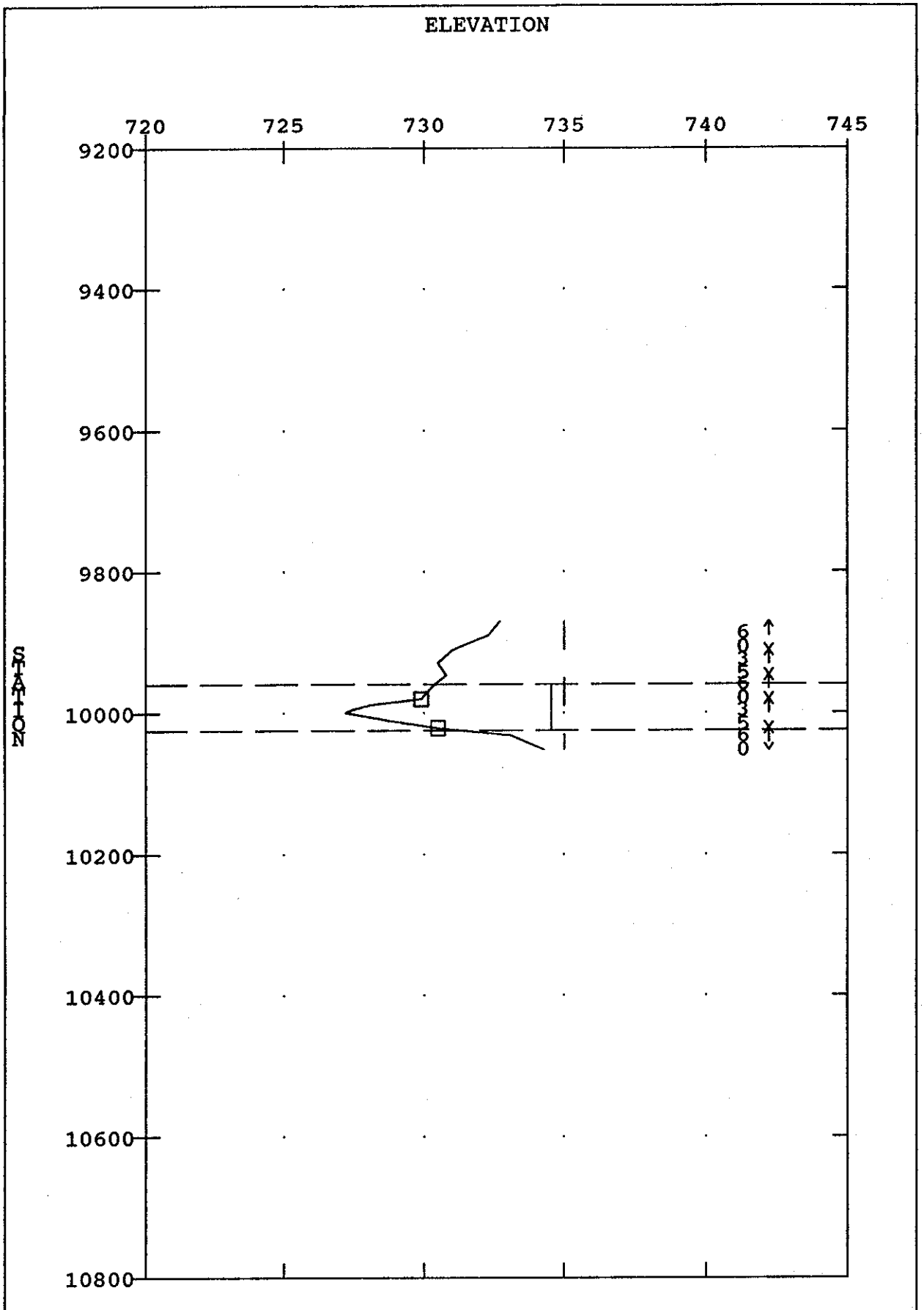
SECTION : 441

BENDER WASH 100-YEAR (NATURAL)



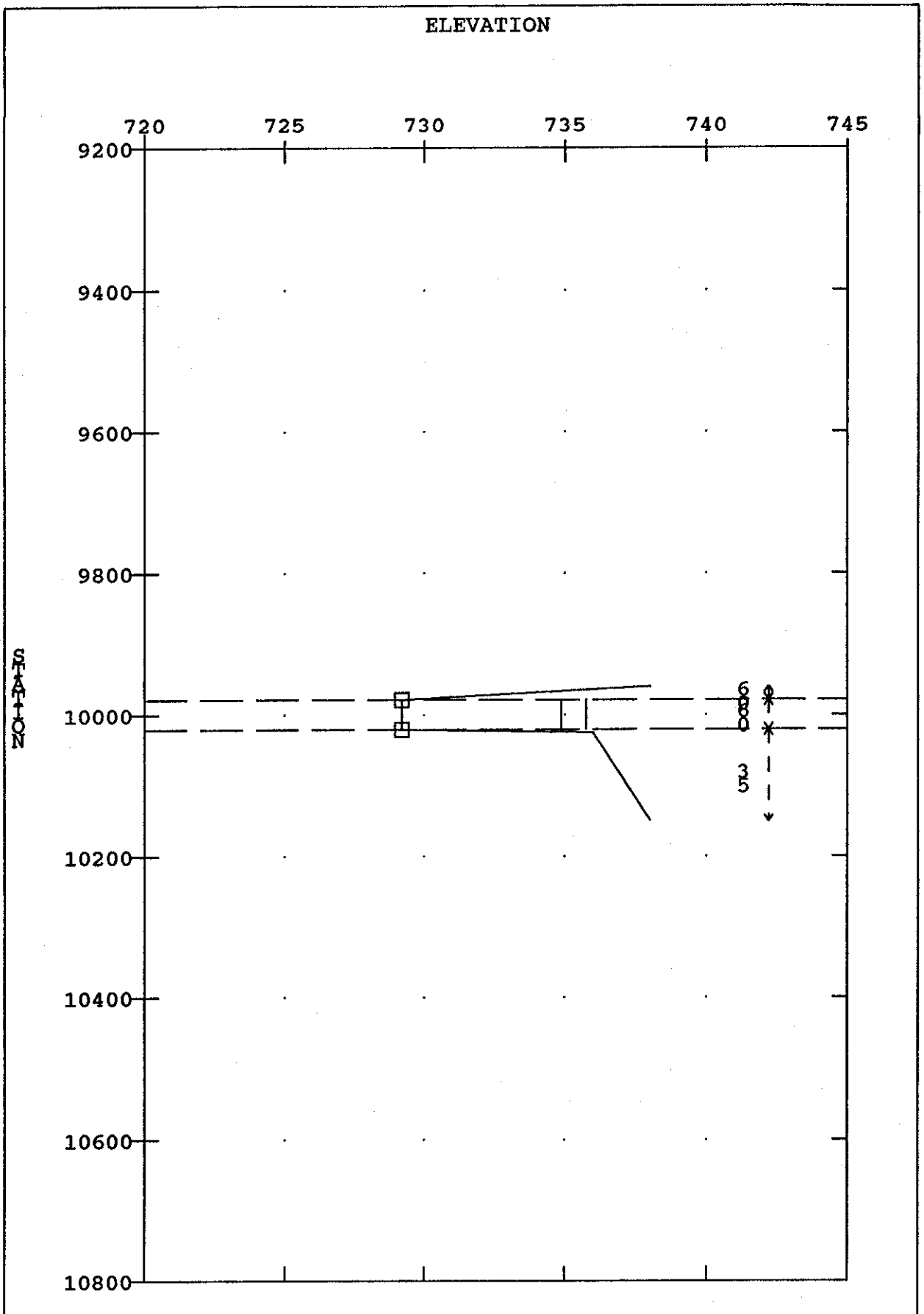
SECTION : 457

BENDER WASH 100-YEAR (NATURAL)



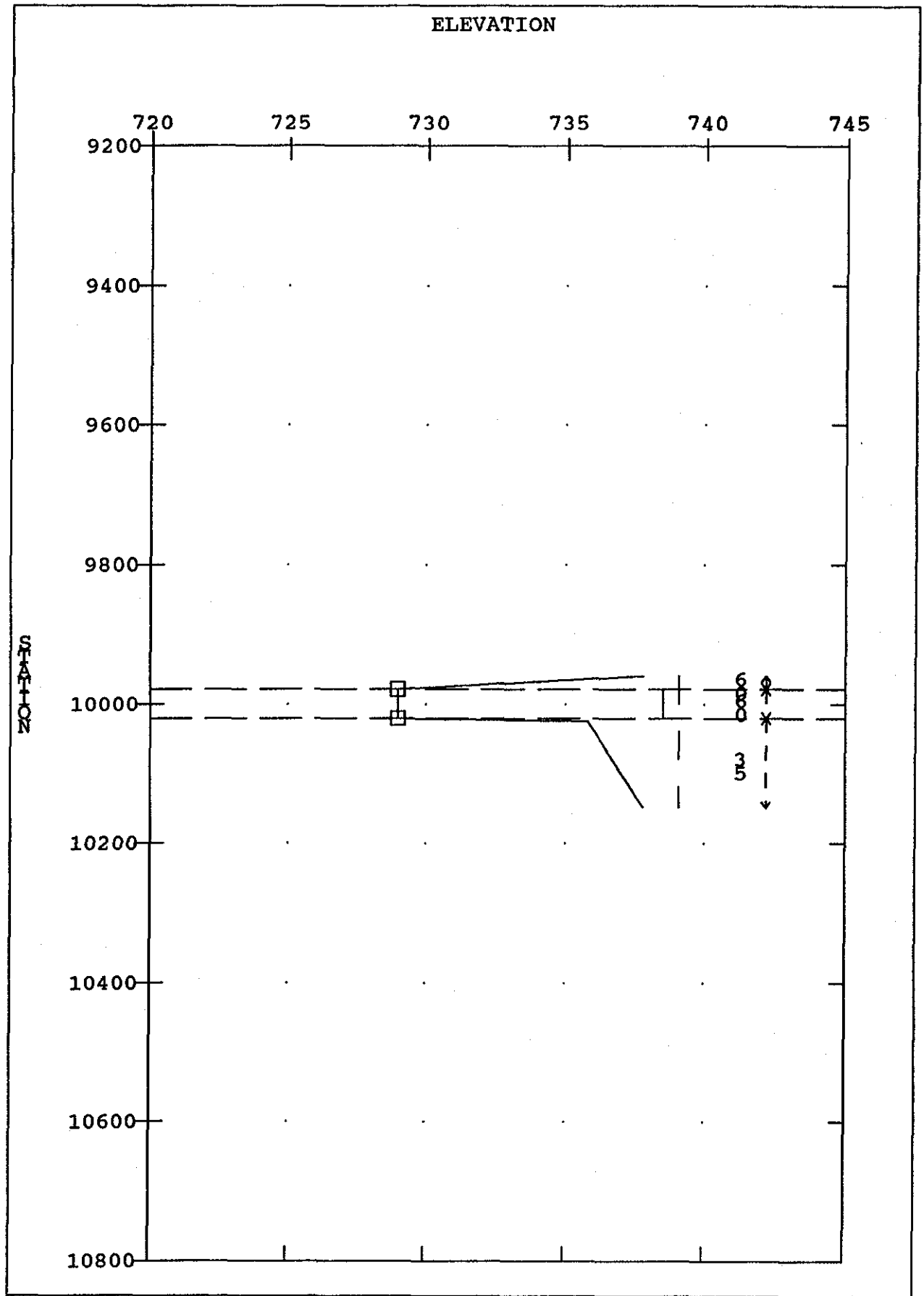
SECTION : 508

BENDER WASH 100-YEAR (NATURAL)



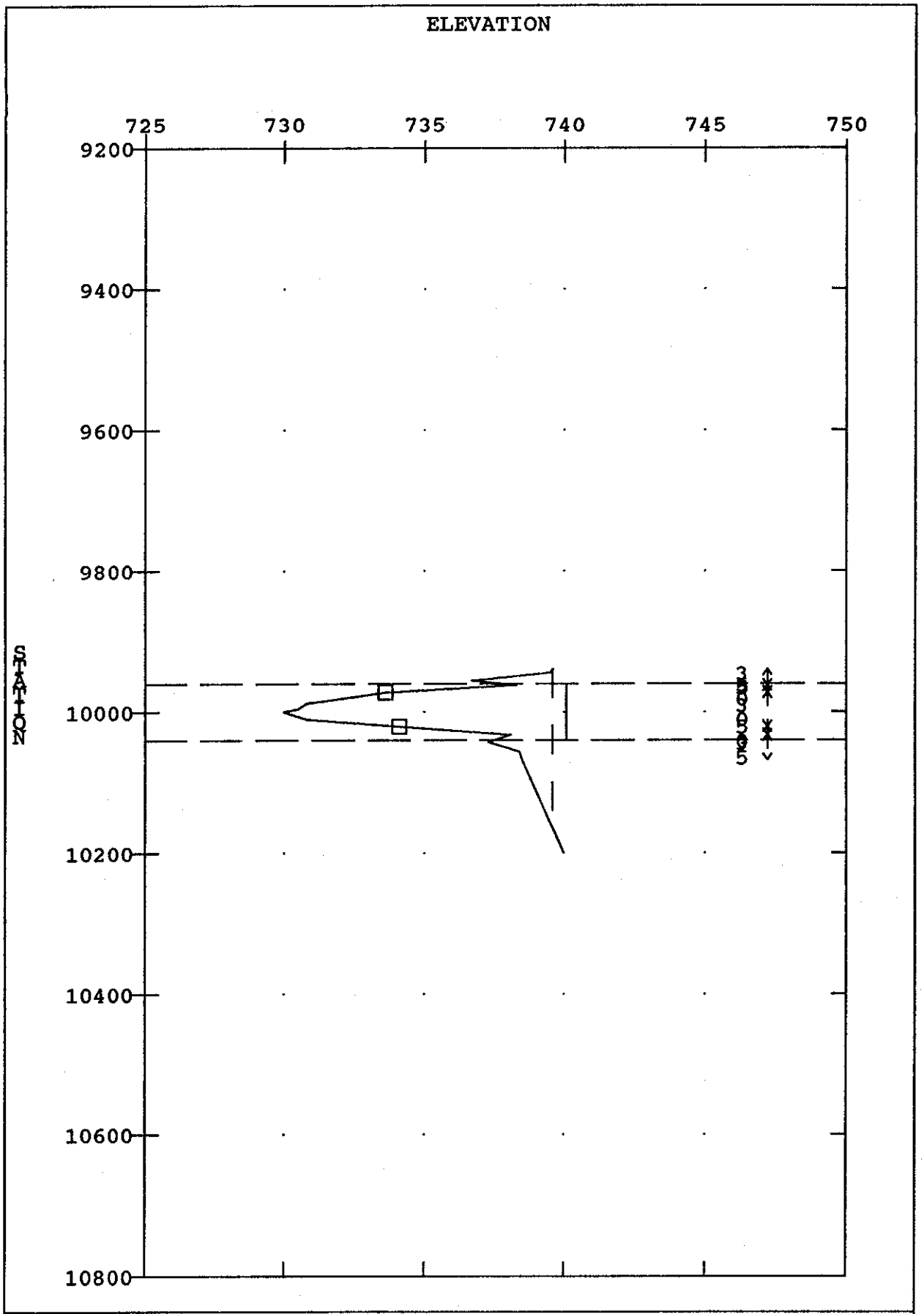
SECTION : 535

BENDER WASH 100-YEAR (NATURAL)



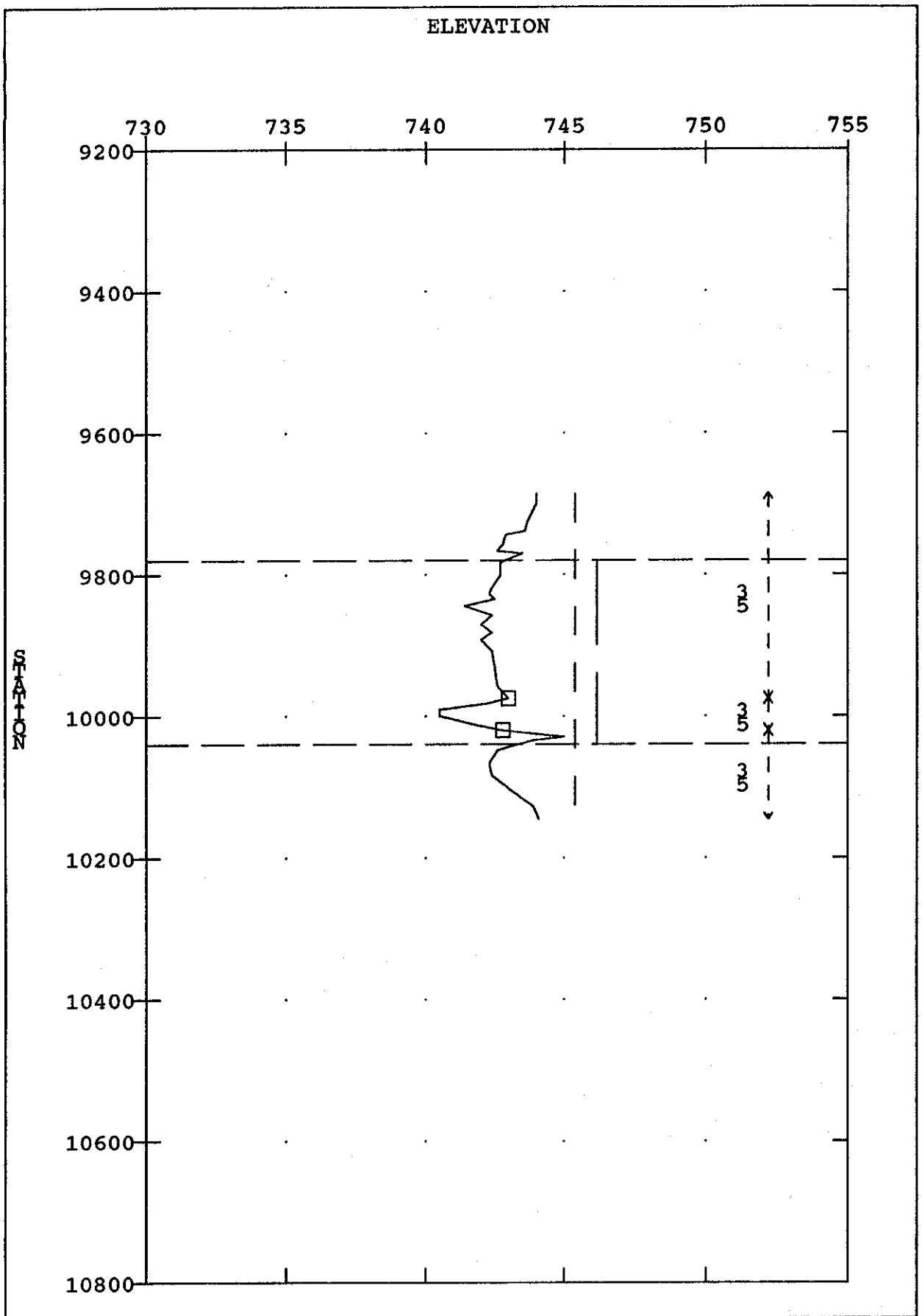
SECTION : 548

BENDER WASH 100-YEAR (NATURAL)



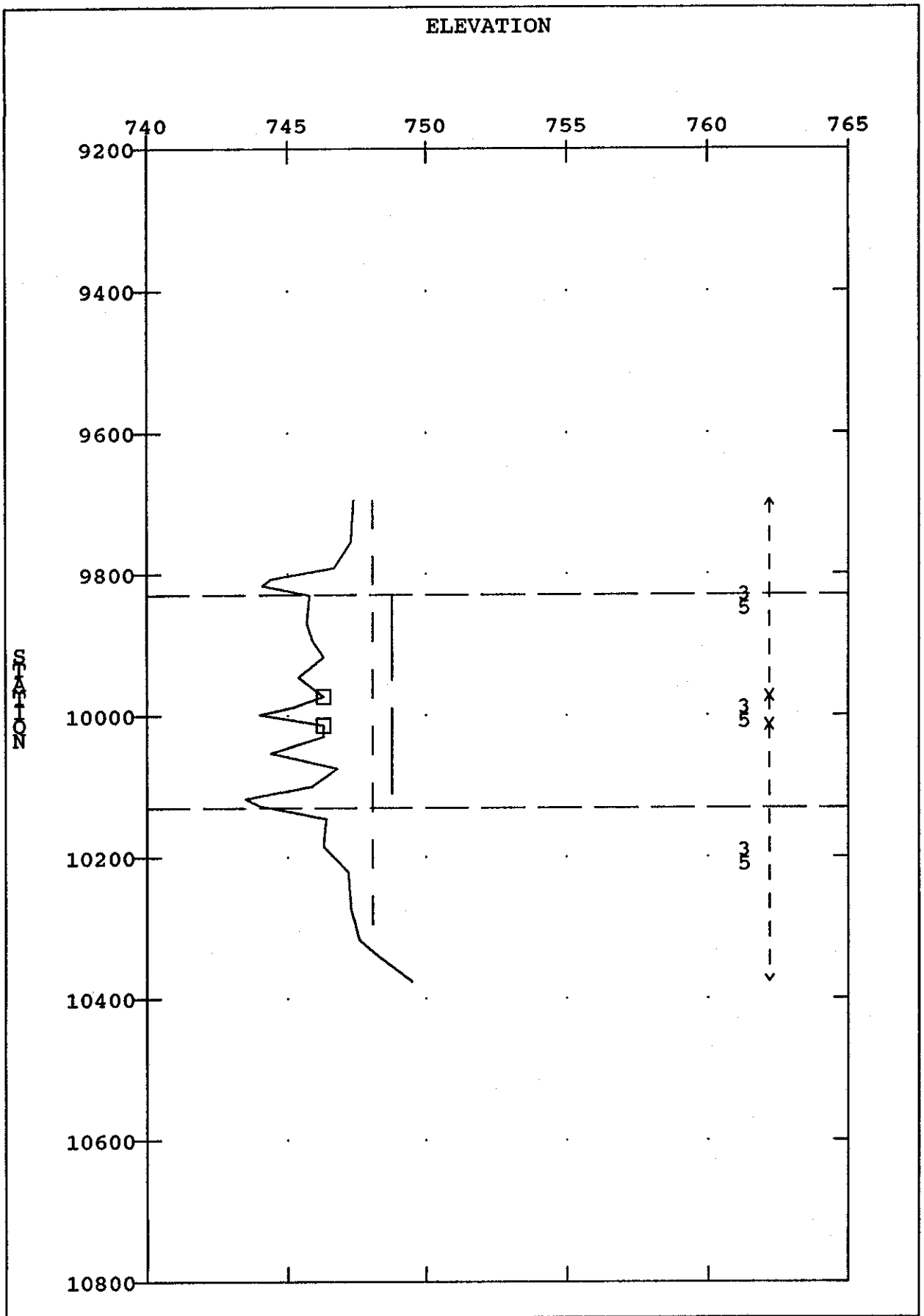
SECTION : 604

BENDER WASH 100-YEAR (NATURAL)



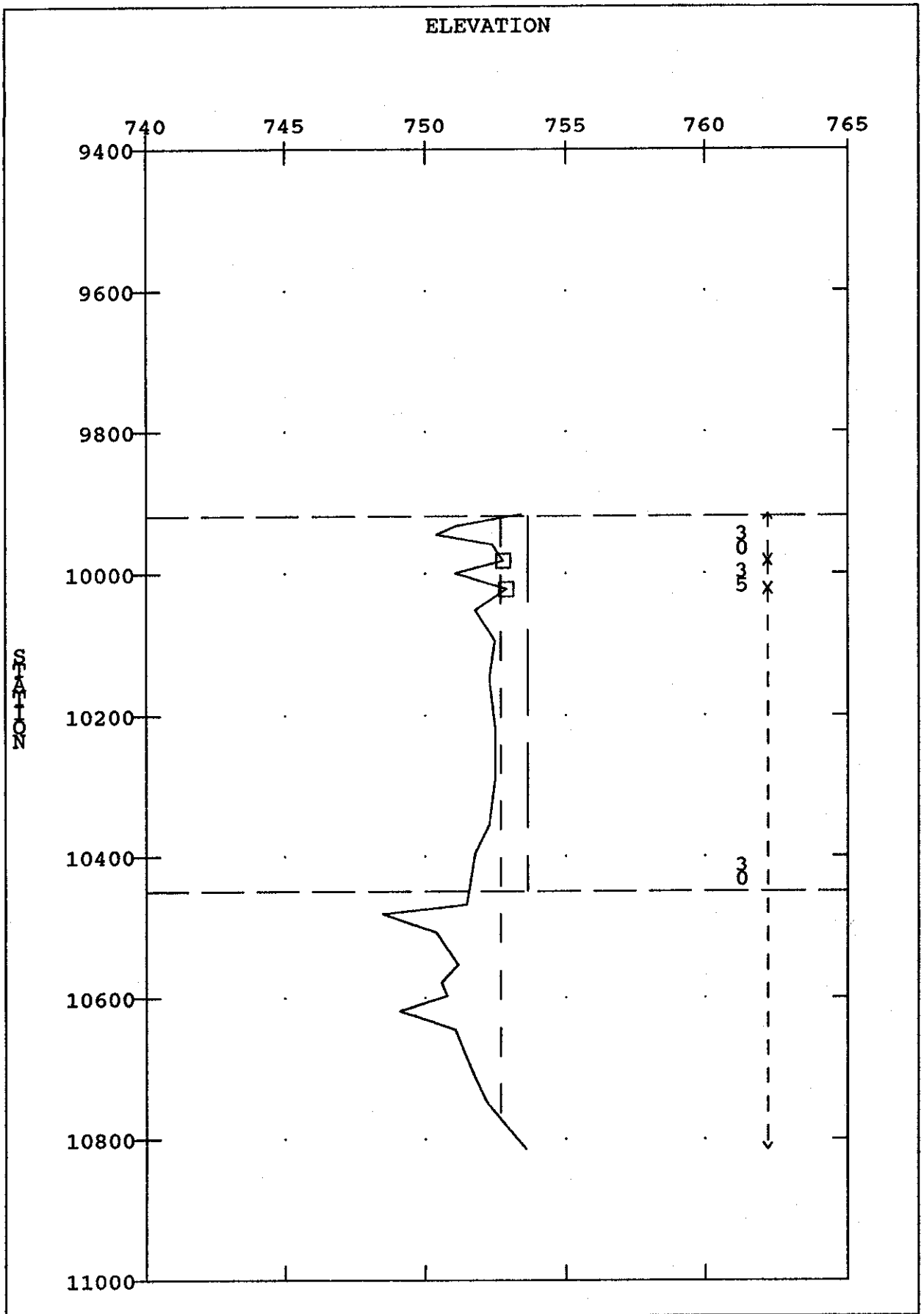
SECTION : 820

BENDER WASH 100-YEAR (NATURAL)



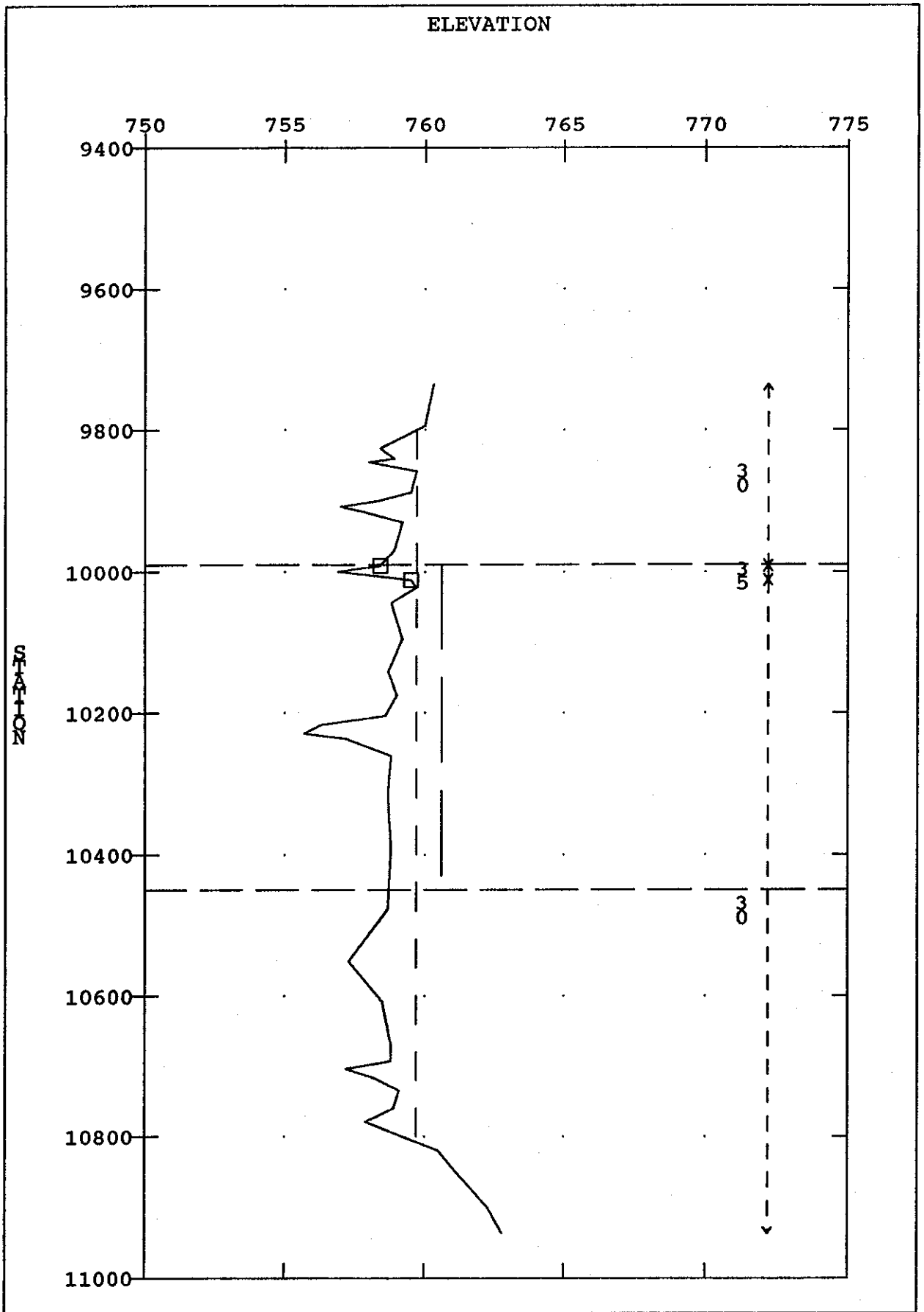
SECTION : 1011

BENDER WASH 100-YEAR (NATURAL)



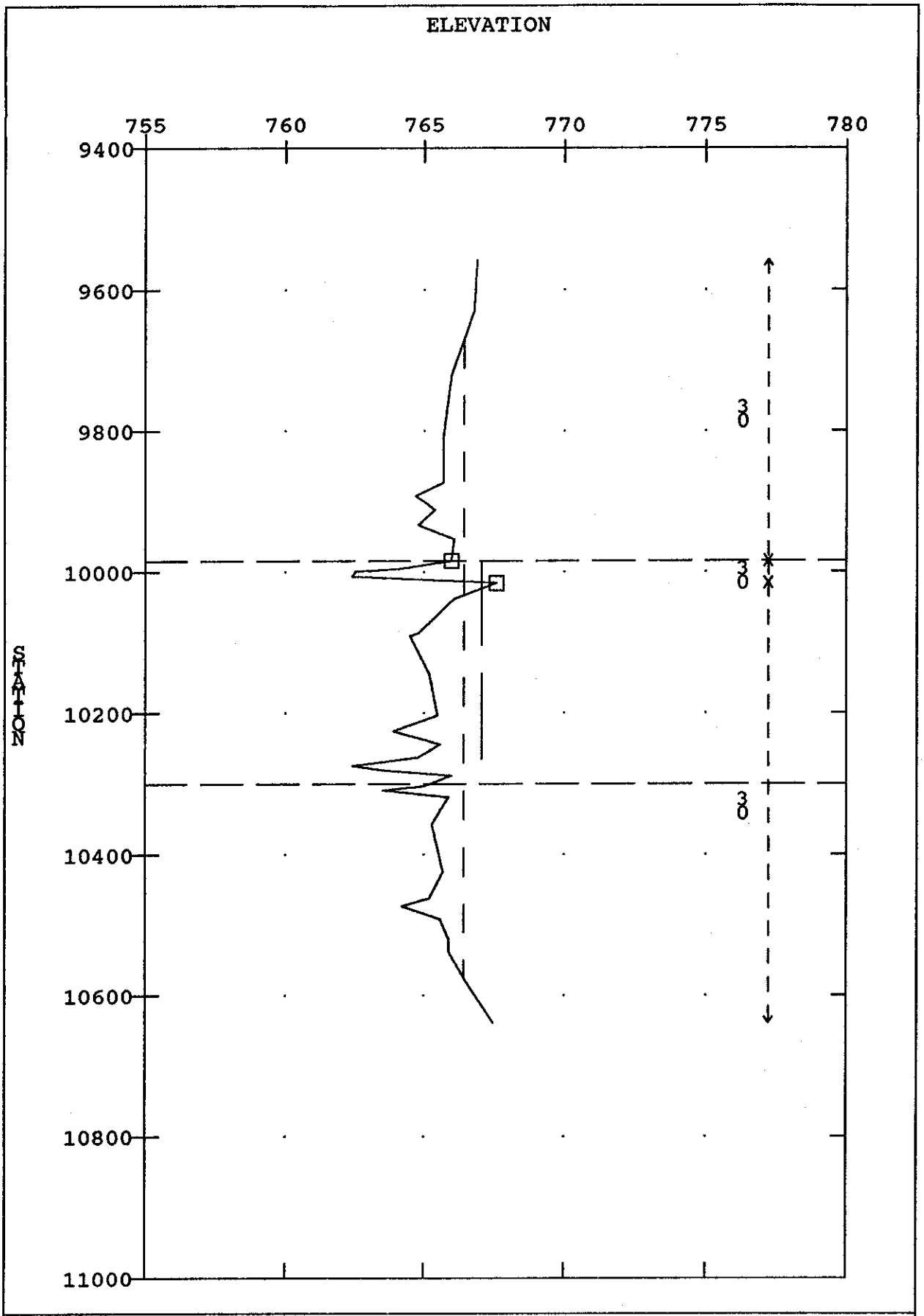
SECTION : 1172

BENDER WASH 100-YEAR (NATURAL)



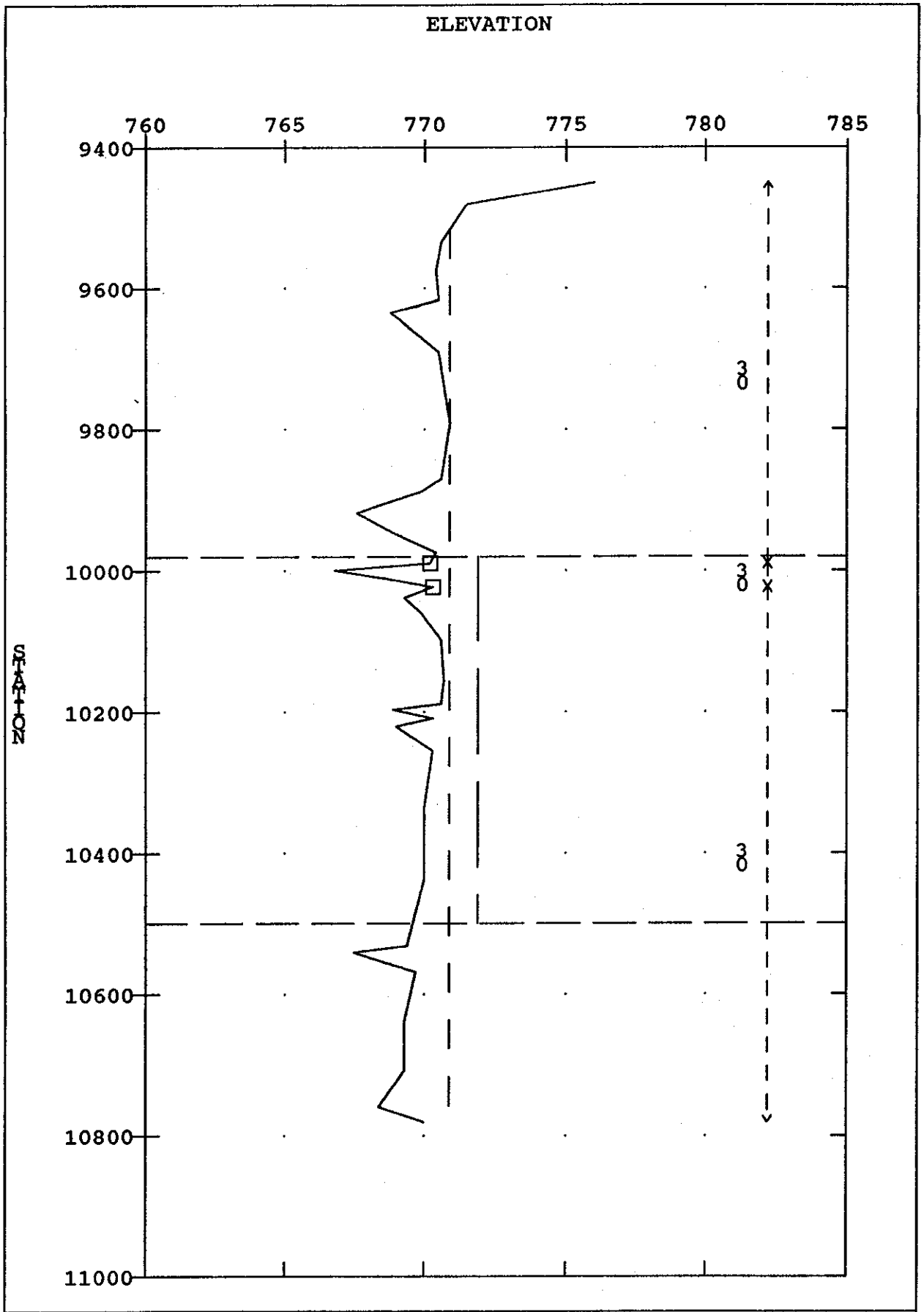
SECTION : 1380

BENDER WASH 100-YEAR (NATURAL)



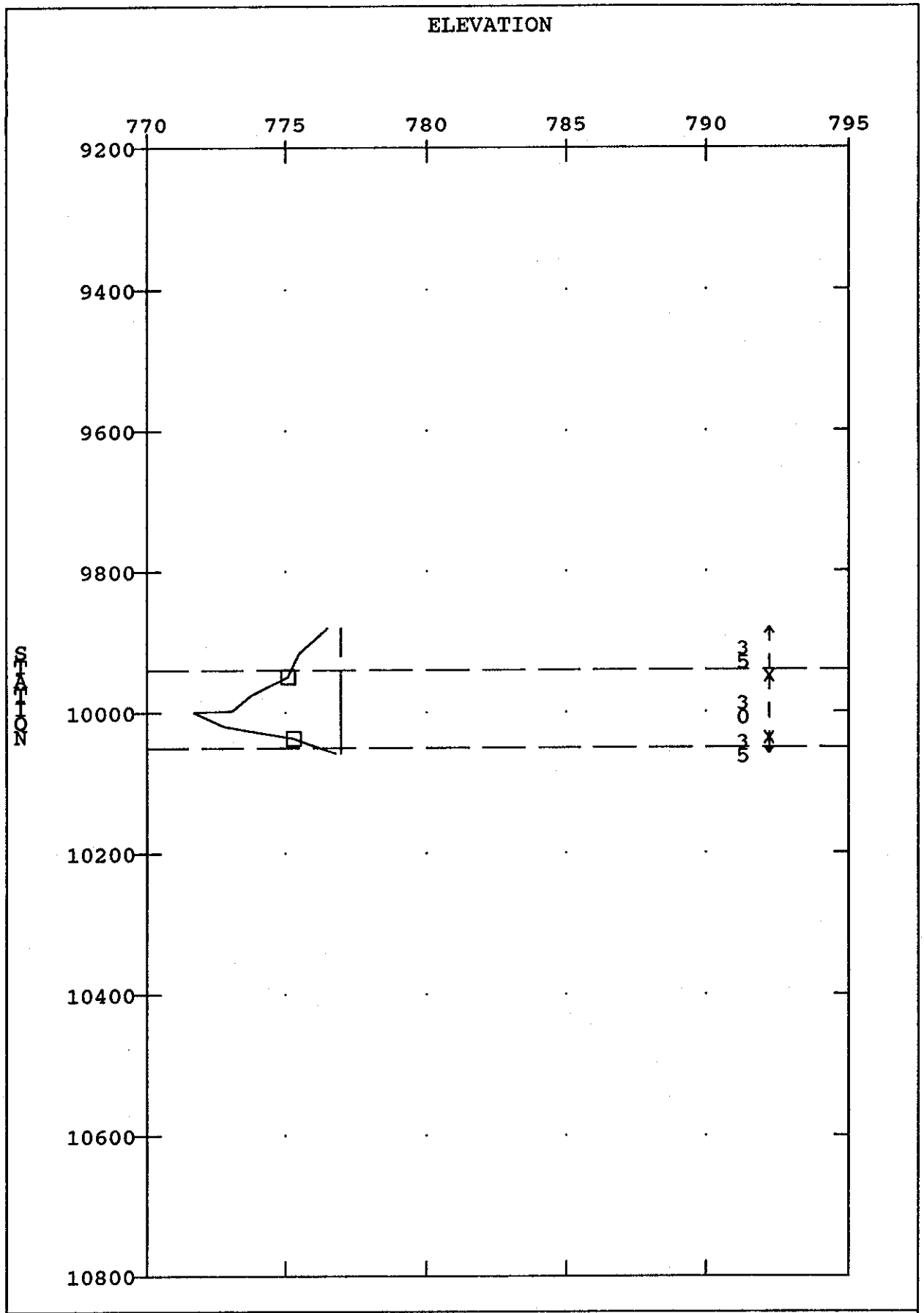
SECTION : 1576

BENDER WASH 100-YEAR (NATURAL)



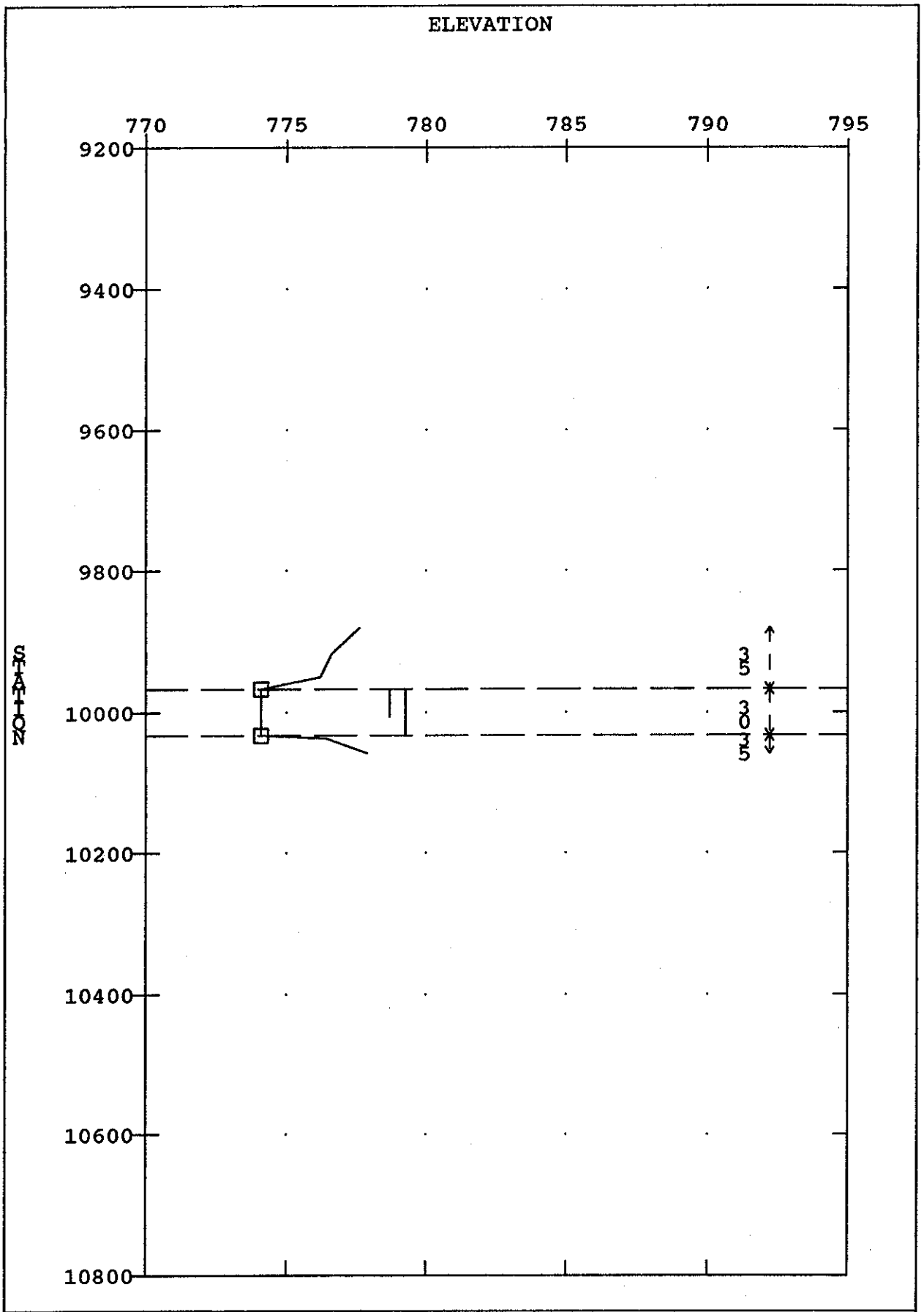
SECTION : 1738

BENDER WASH 100-YEAR (NATURAL)



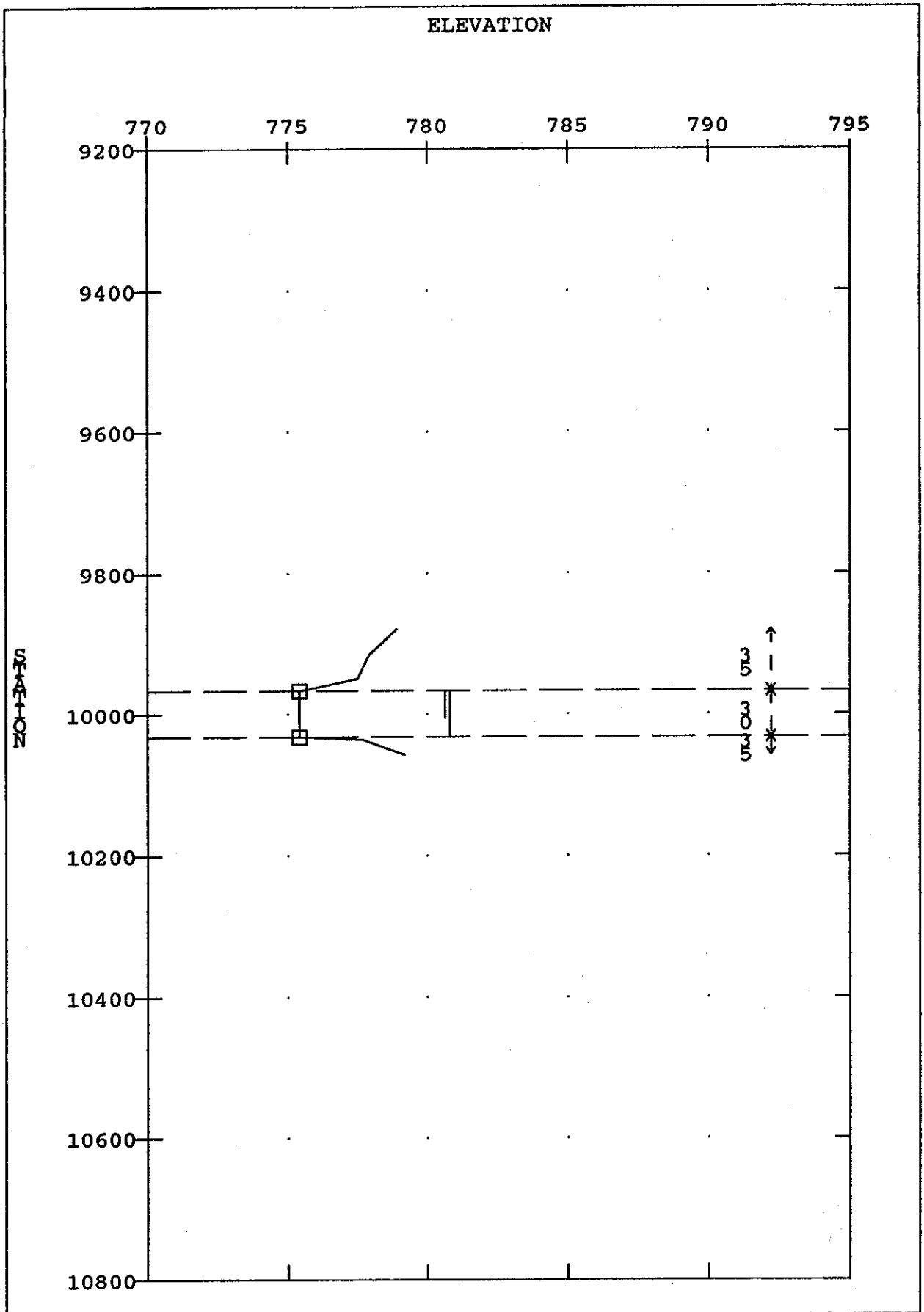
SECTION : 1903

BENDER WASH 100-YEAR (NATURAL)



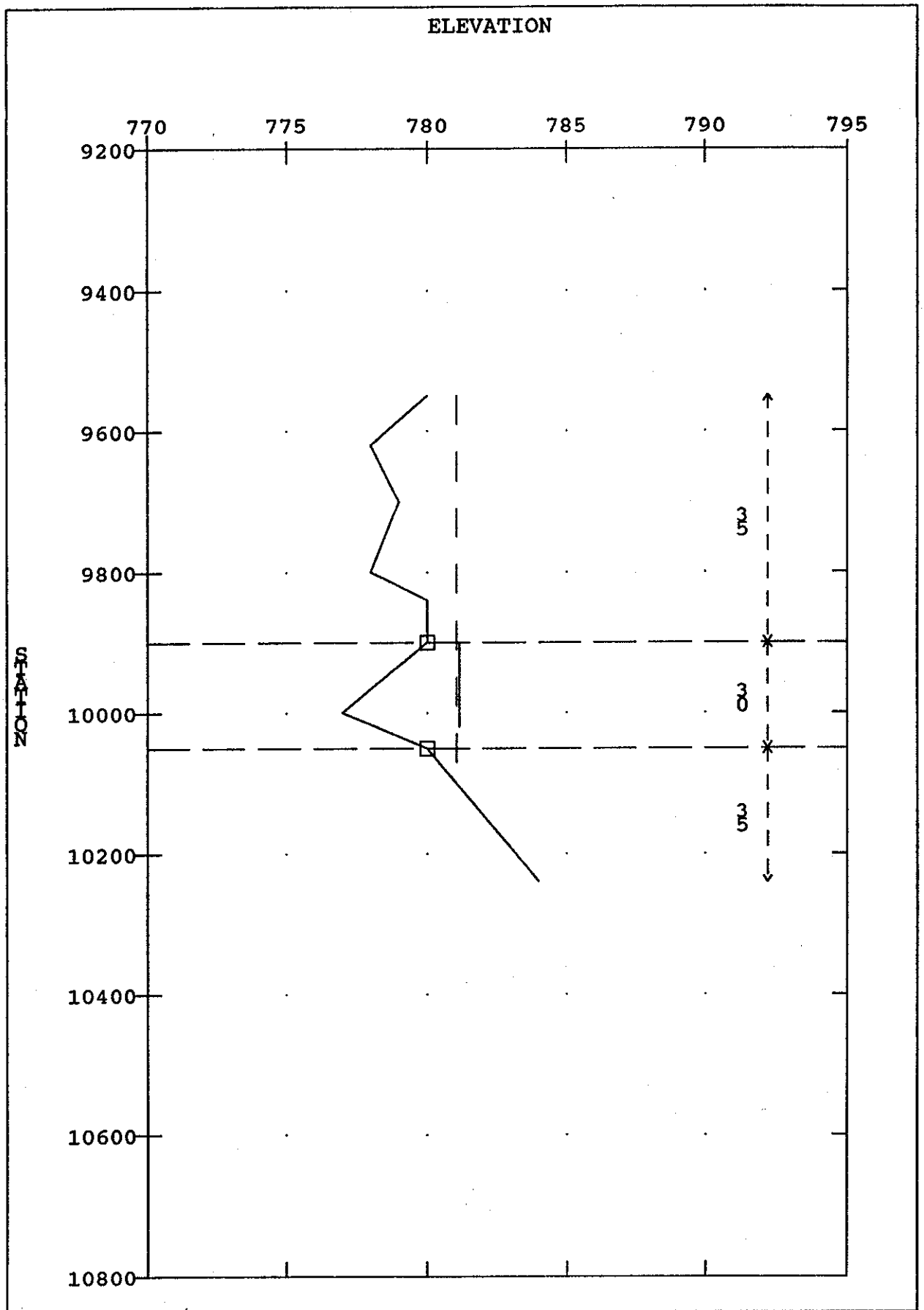
SECTION : 1940

BENDER WASH 100-YEAR (NATURAL)



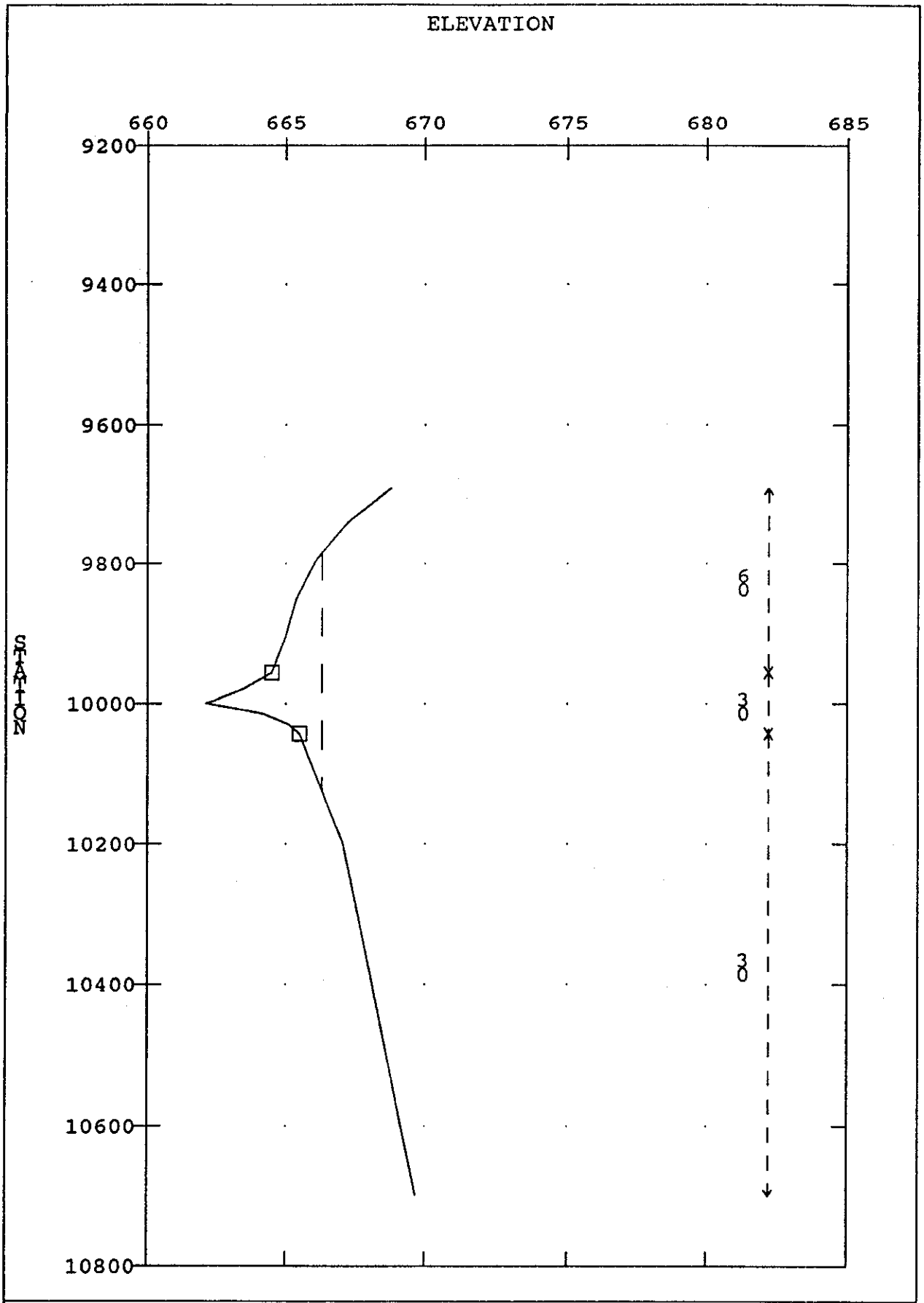
SECTION : 1987

BENDER WASH 100-YEAR (NATURAL)



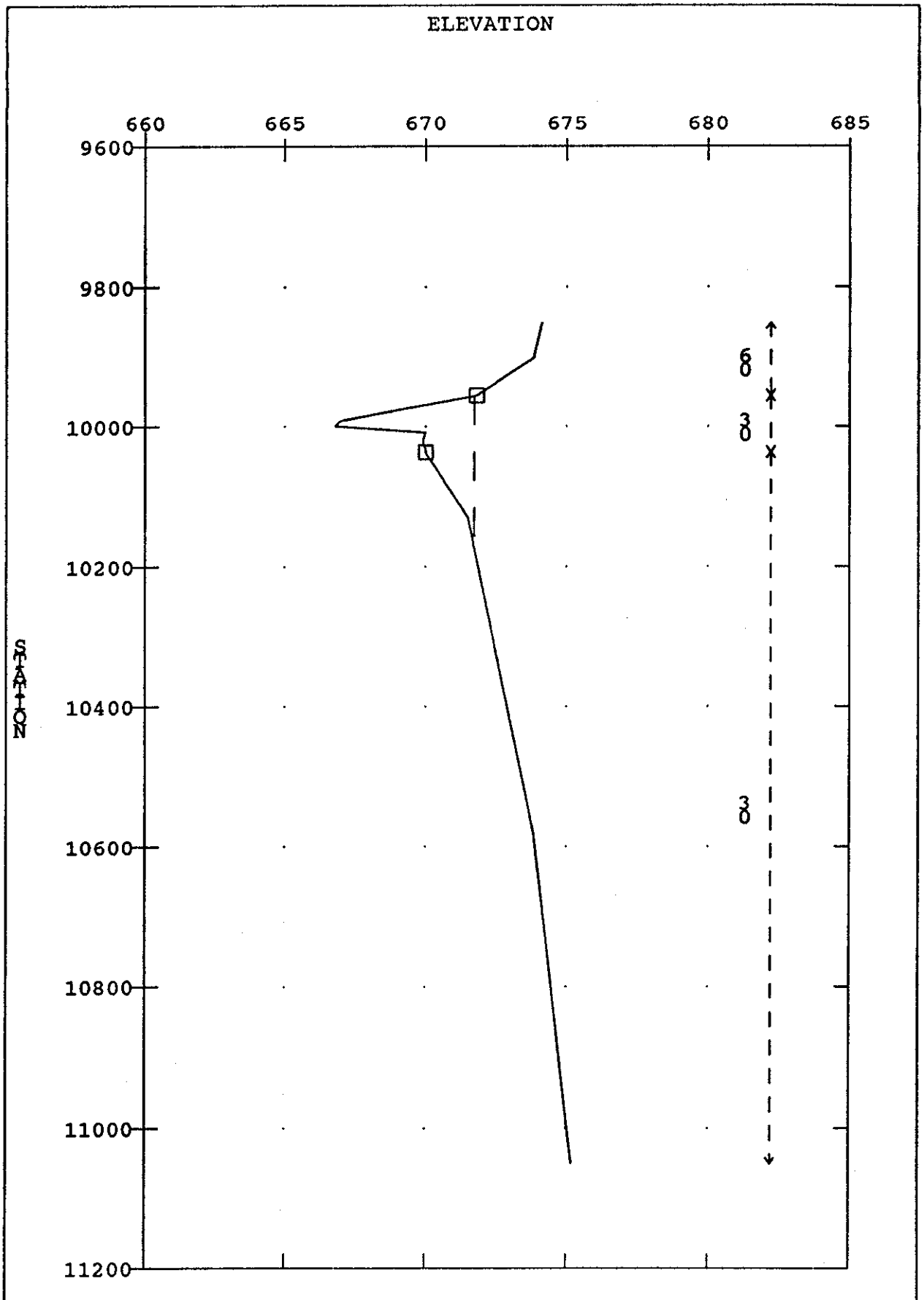
SECTION : 2041

BENDER WASH 100-YEAR (NATURAL)



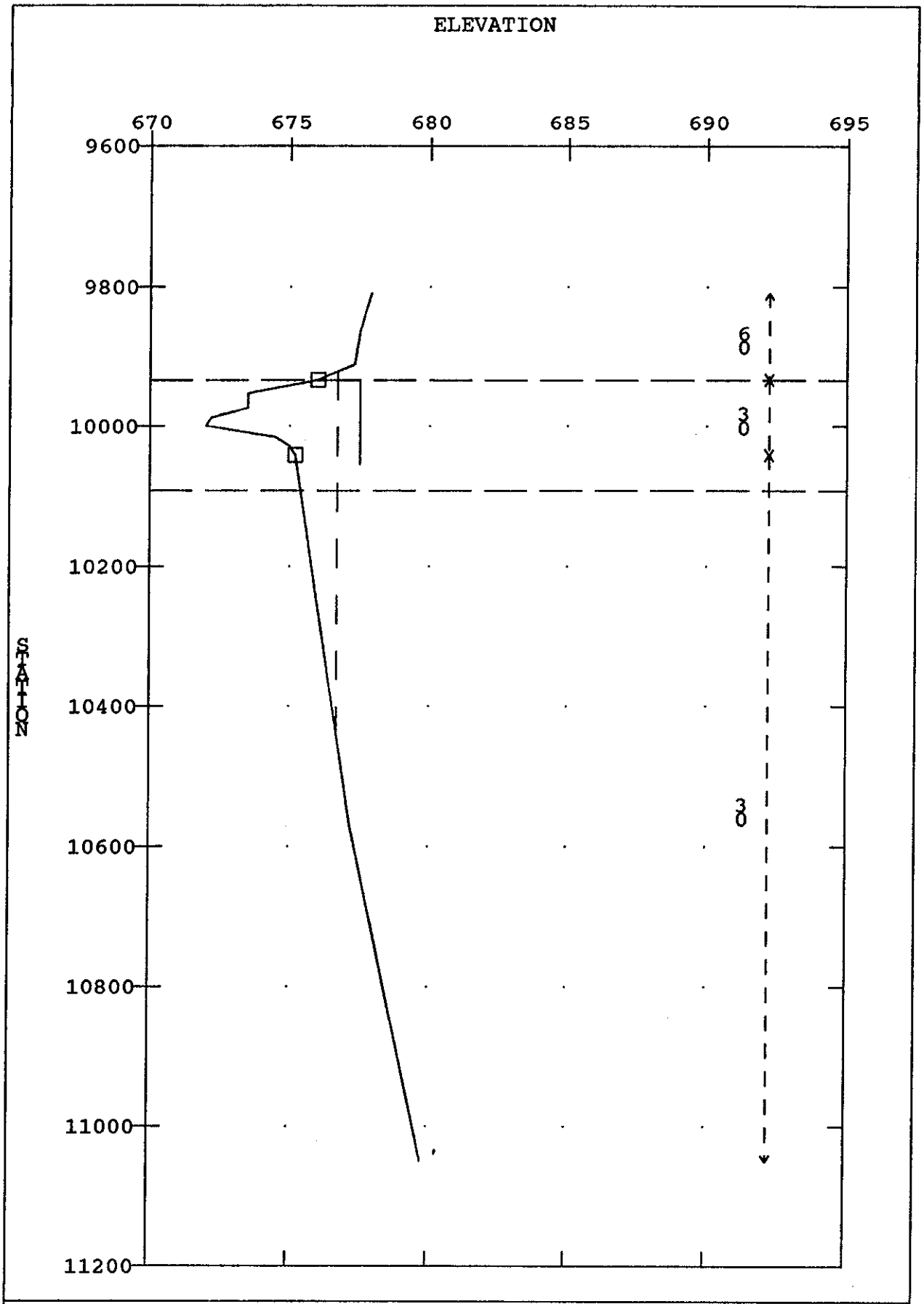
SECTION : 1884

SCOTT AVENUE WASH



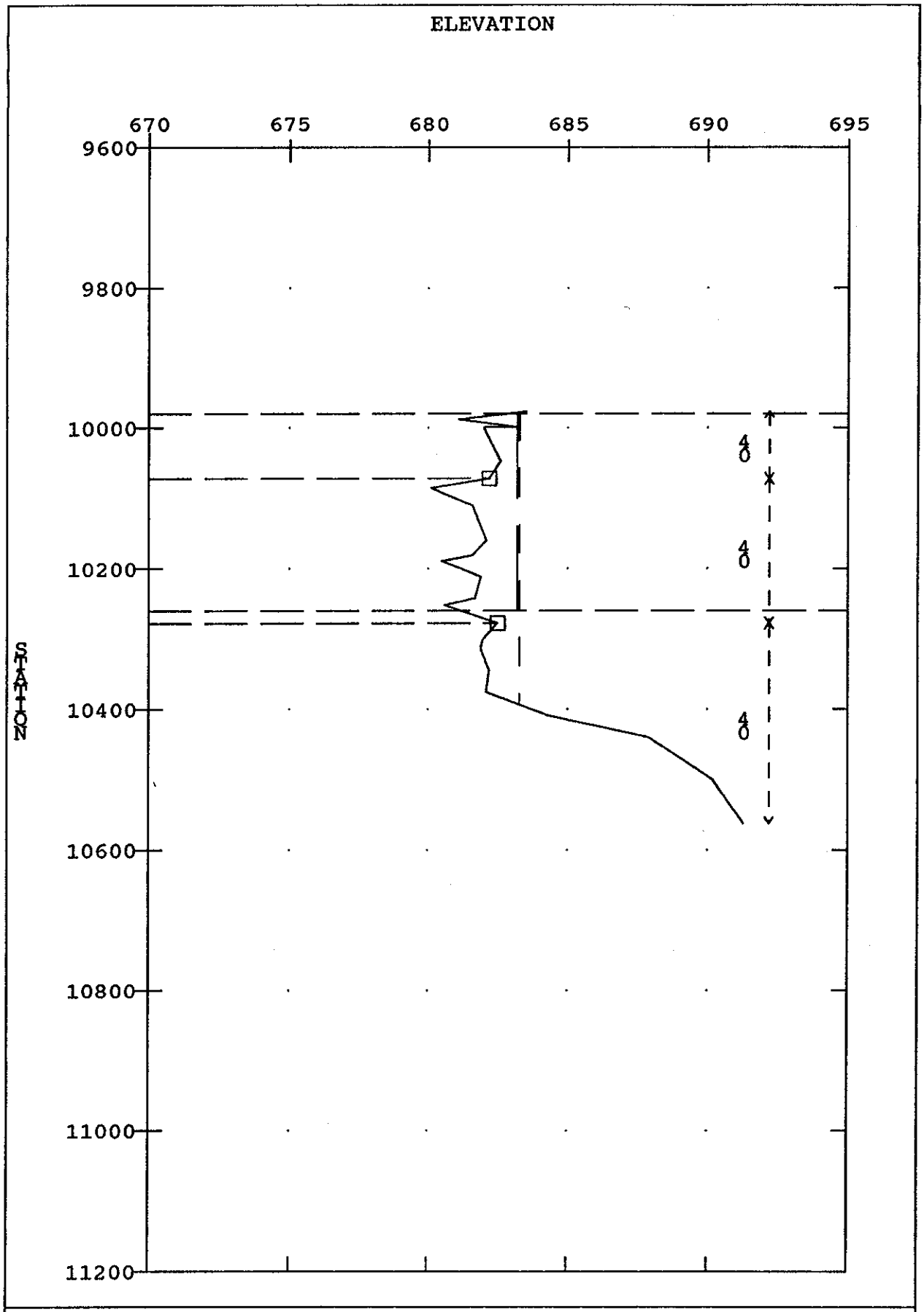
SECTION : 2070

SCOTT AVENUE WASH



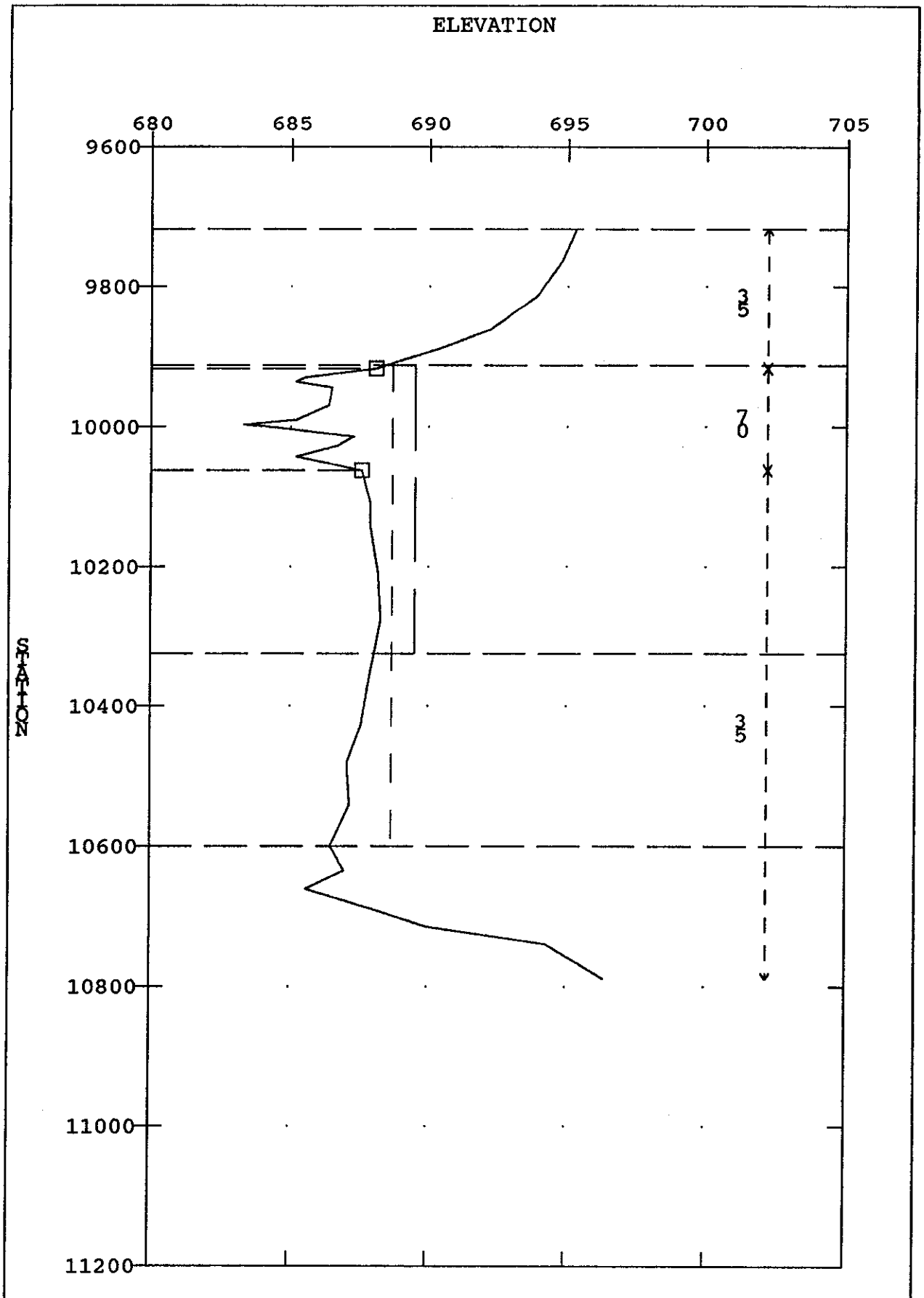
SECTION : 2261

SCOTT AVENUE 100 YEAR (NATURAL)



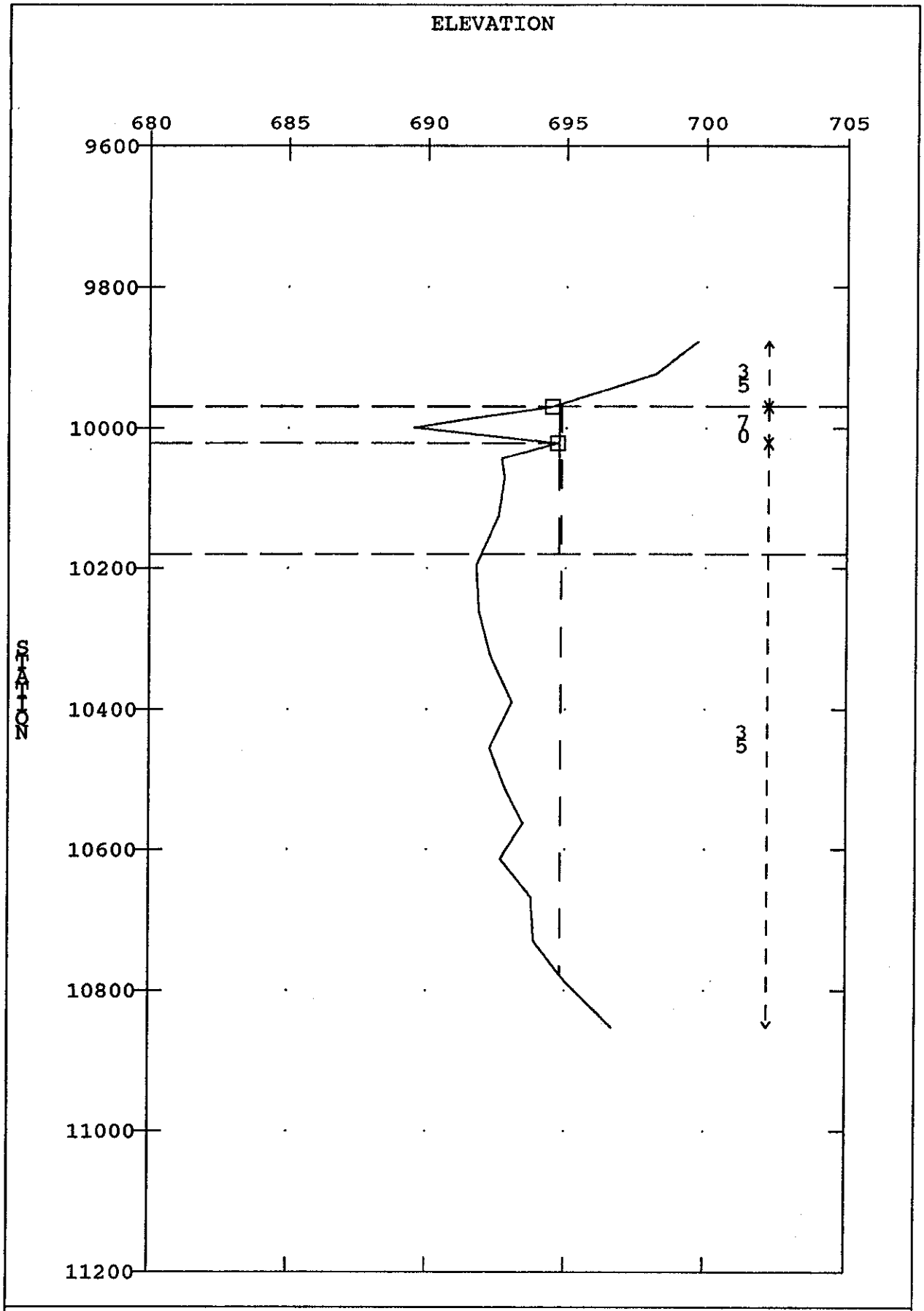
SECTION : 2505

SCOTT AVENUE 100 YEAR (NATURAL)



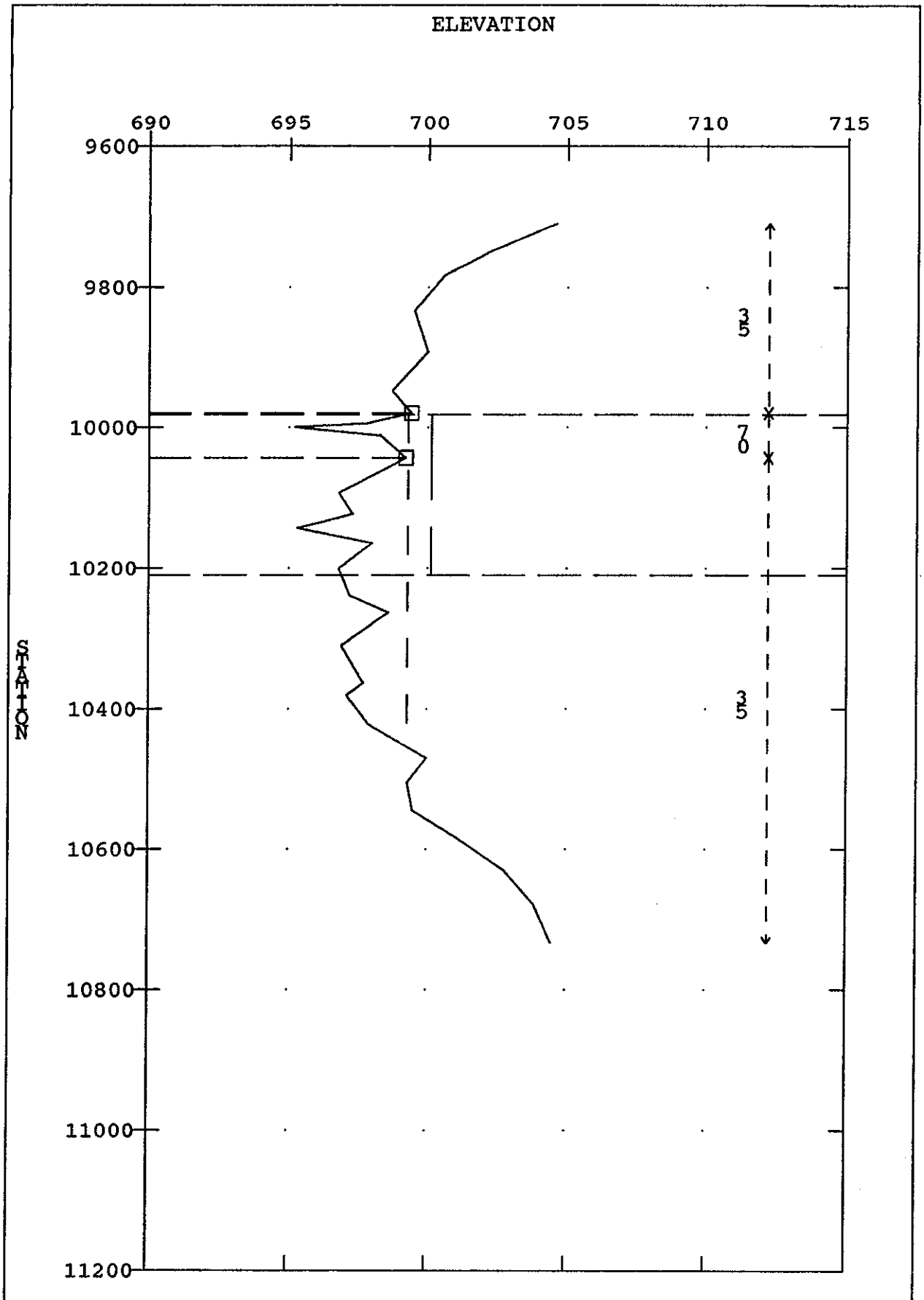
SECTION : 2677

SCOTT AVENUE 100 YEAR (NATURAL)



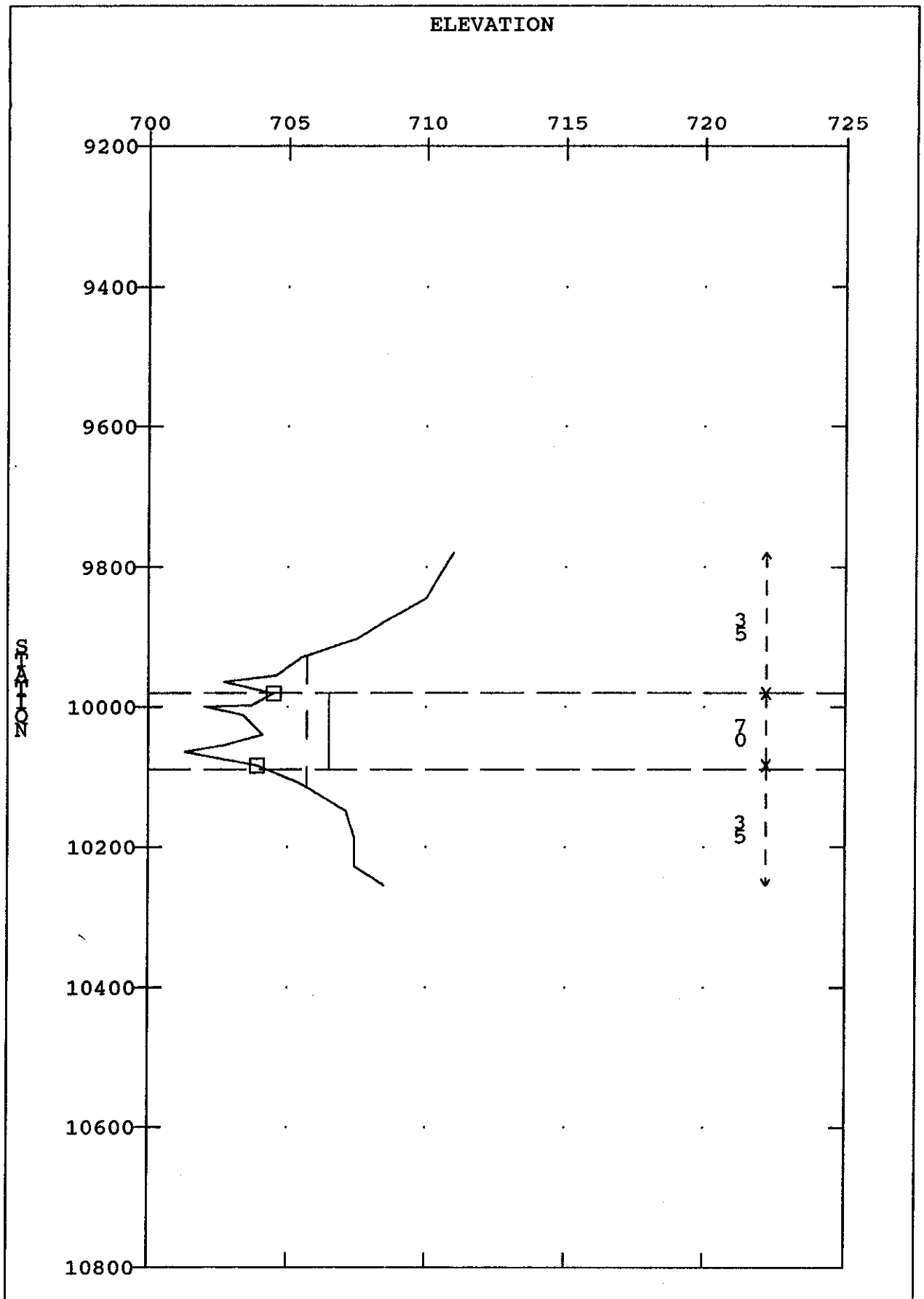
SECTION : 2867

SCOTT AVENUE 100 YEAR (NATURAL)



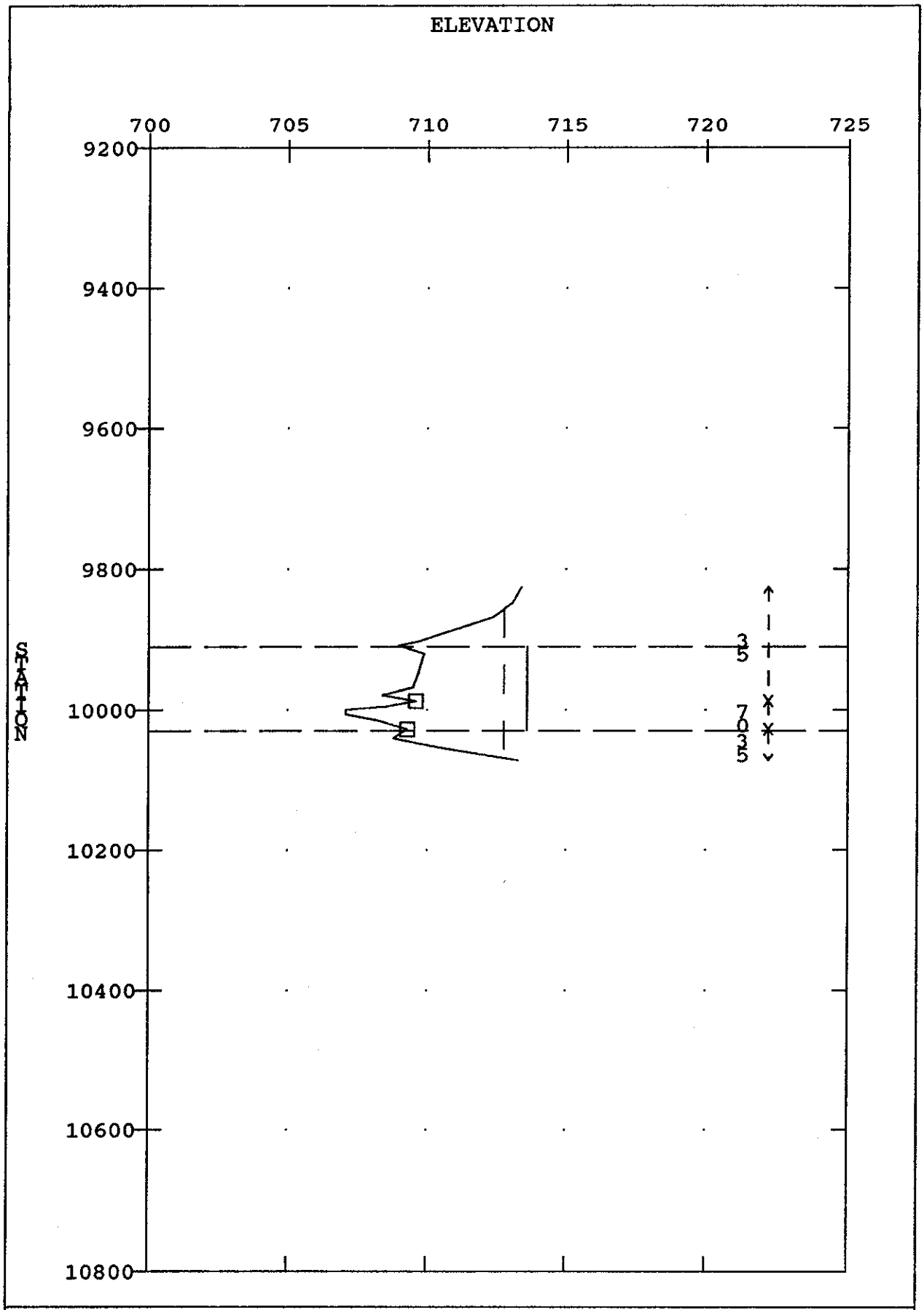
SECTION : 3105

SCOTT AVENUE 100 YEAR (NATURAL)



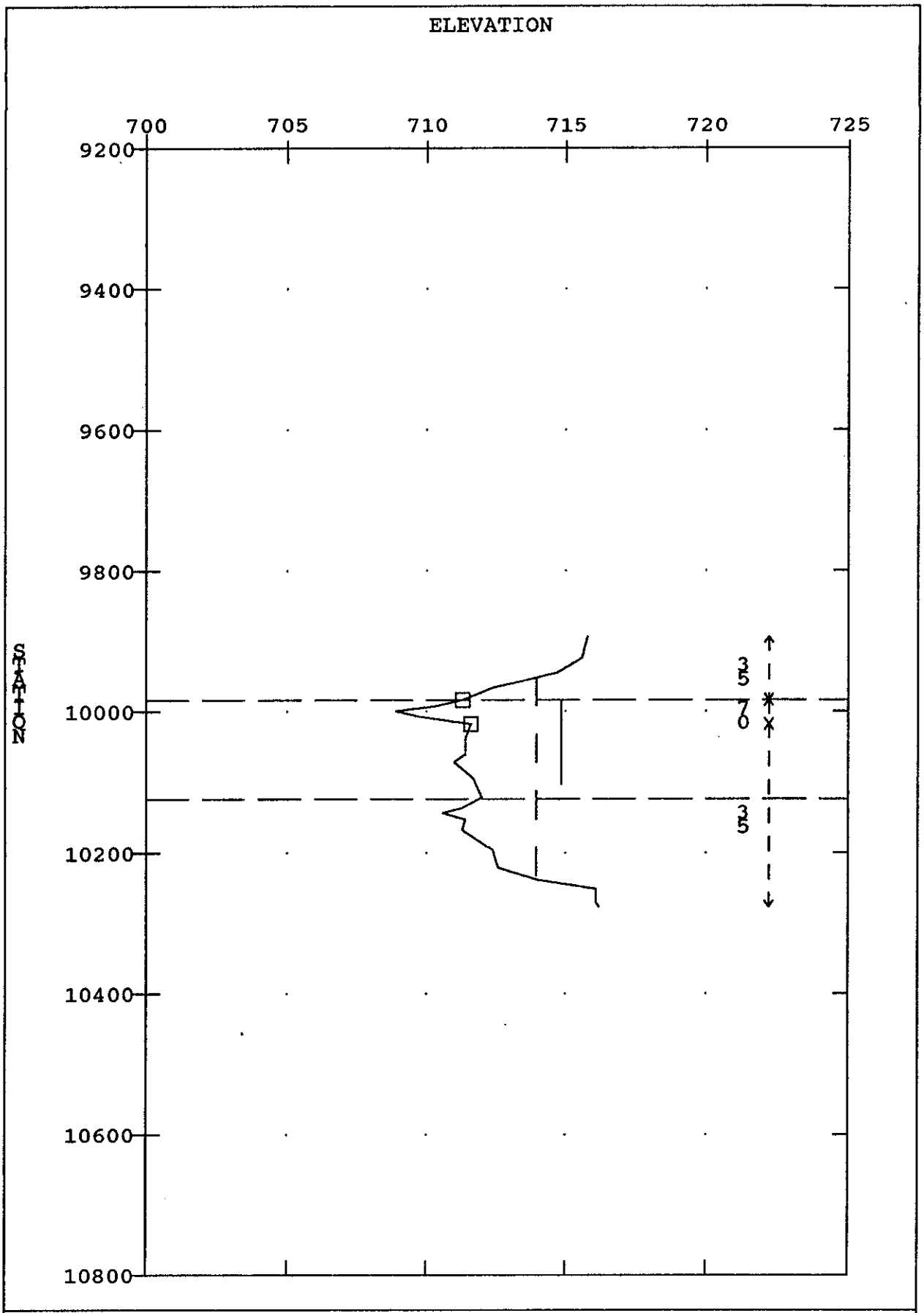
SECTION : 3292

SCOTT AVENUE 100 YEAR (NATURAL)



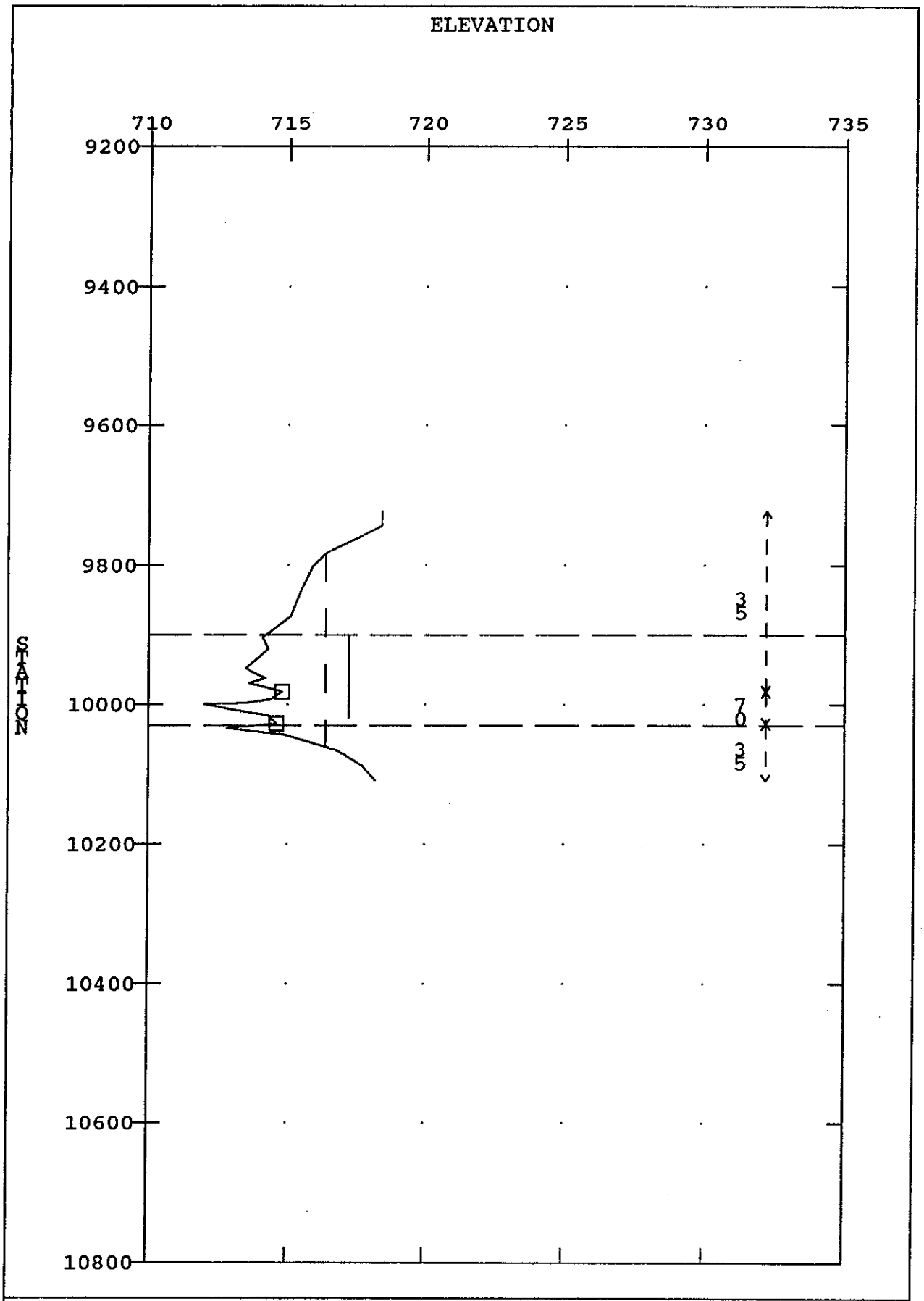
SECTION : 3492

SCOTT AVENUE 100 YEAR (NATURAL)



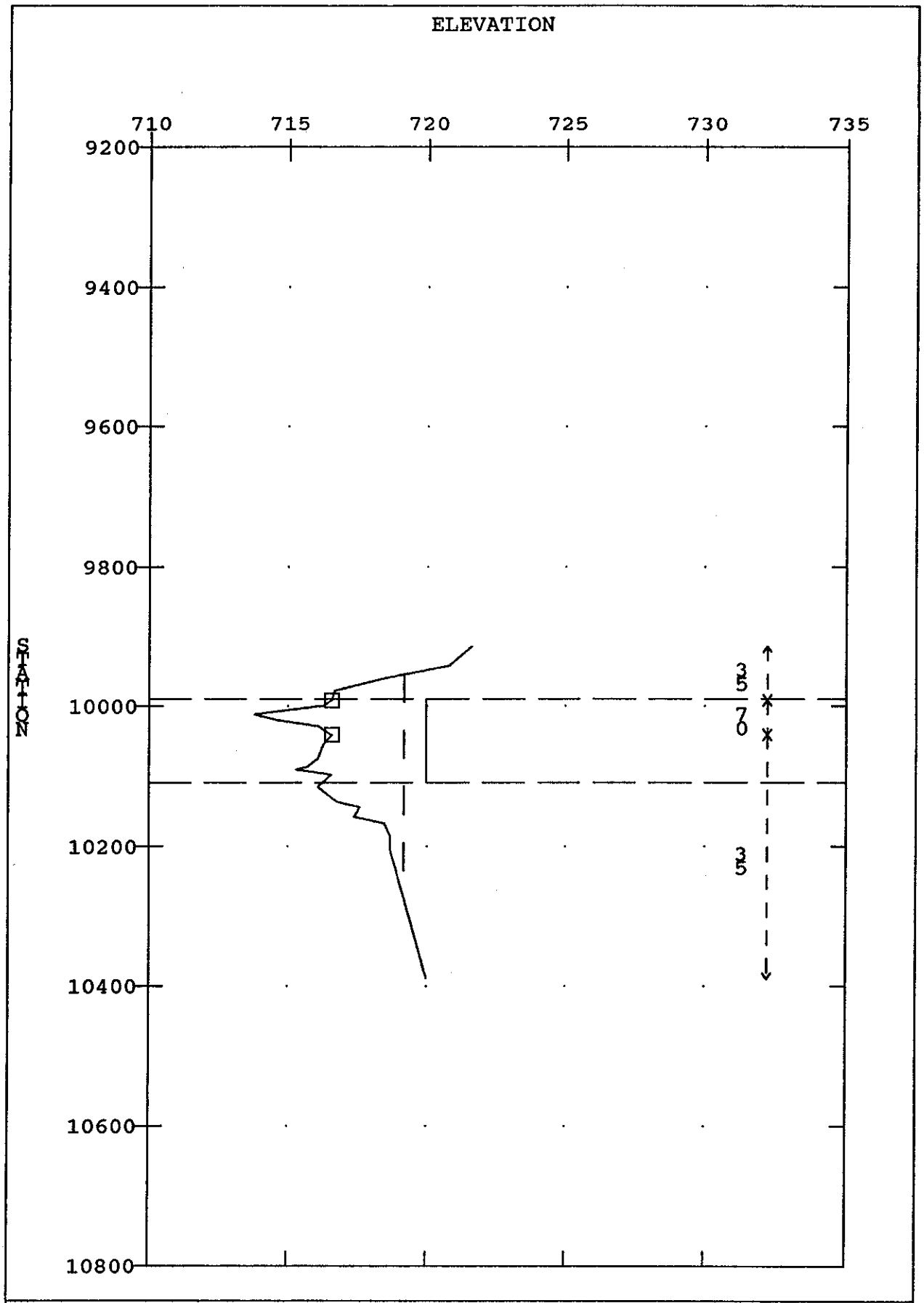
SECTION : 3570

SCOTT AVENUE 100 YEAR (NATURAL)



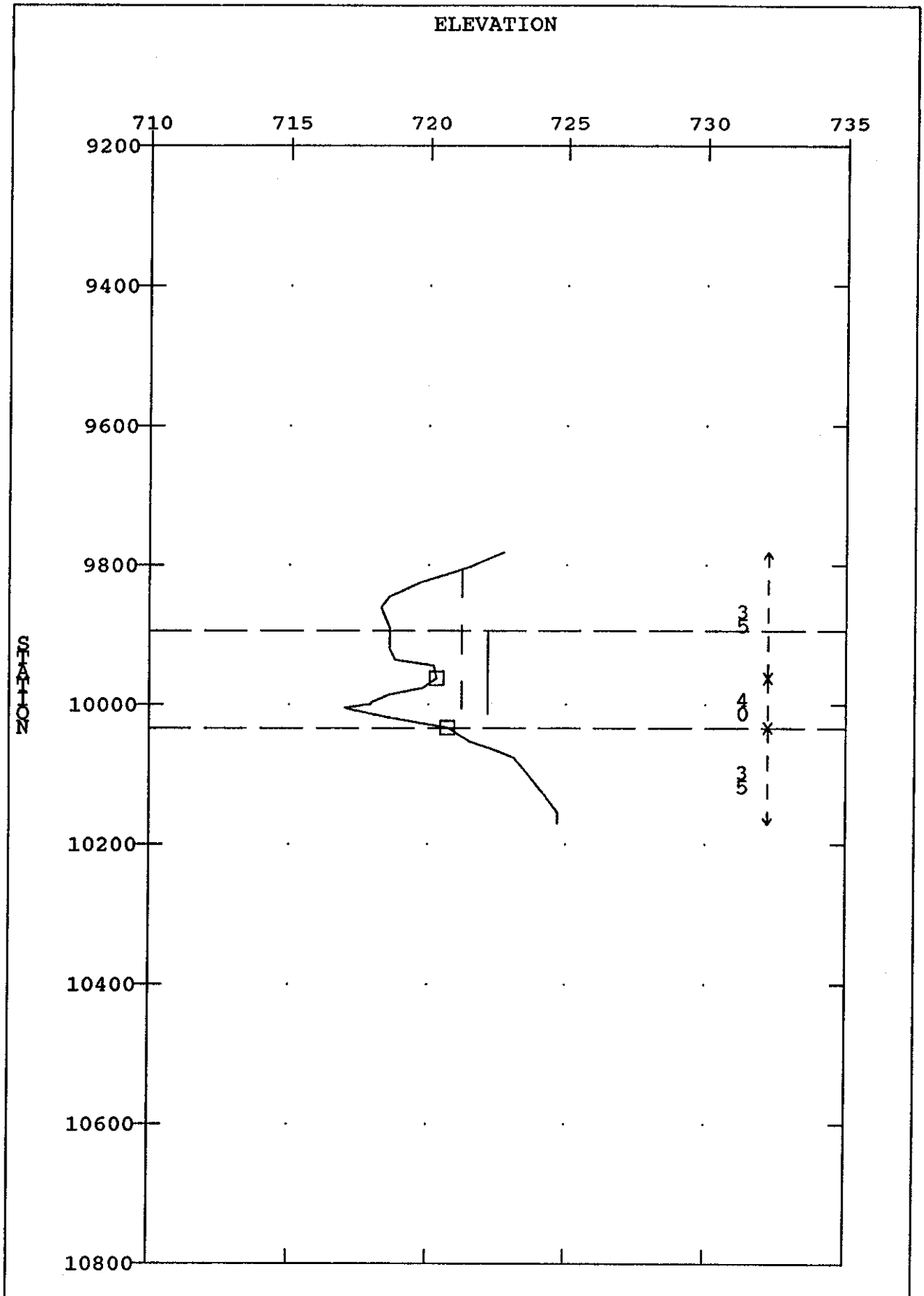
SECTION : 3677

SCOTT AVENUE 100 YEAR (NATURAL)



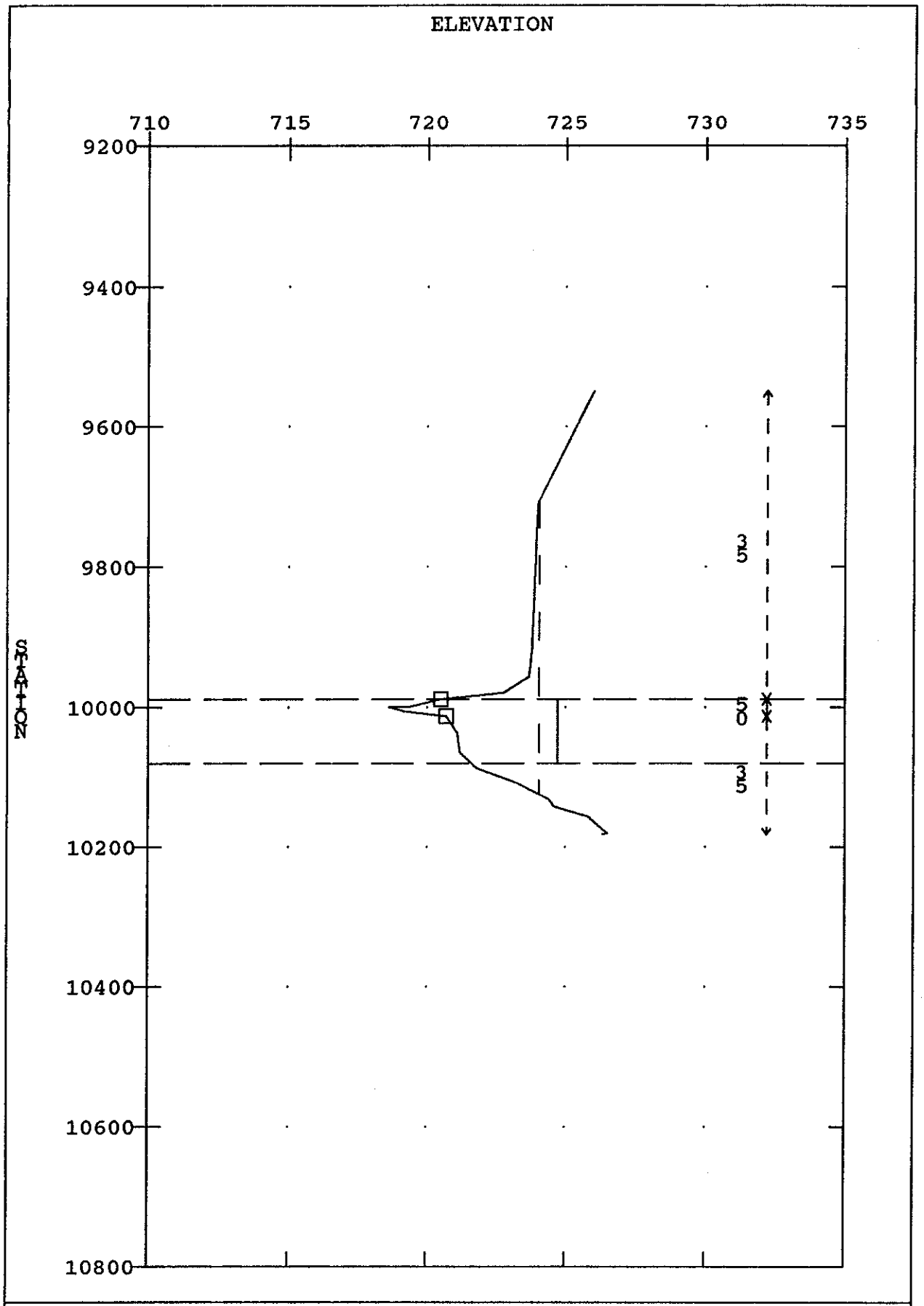
SECTION : 3772

SCOTT AVENUE 100 YEAR (NATURAL)



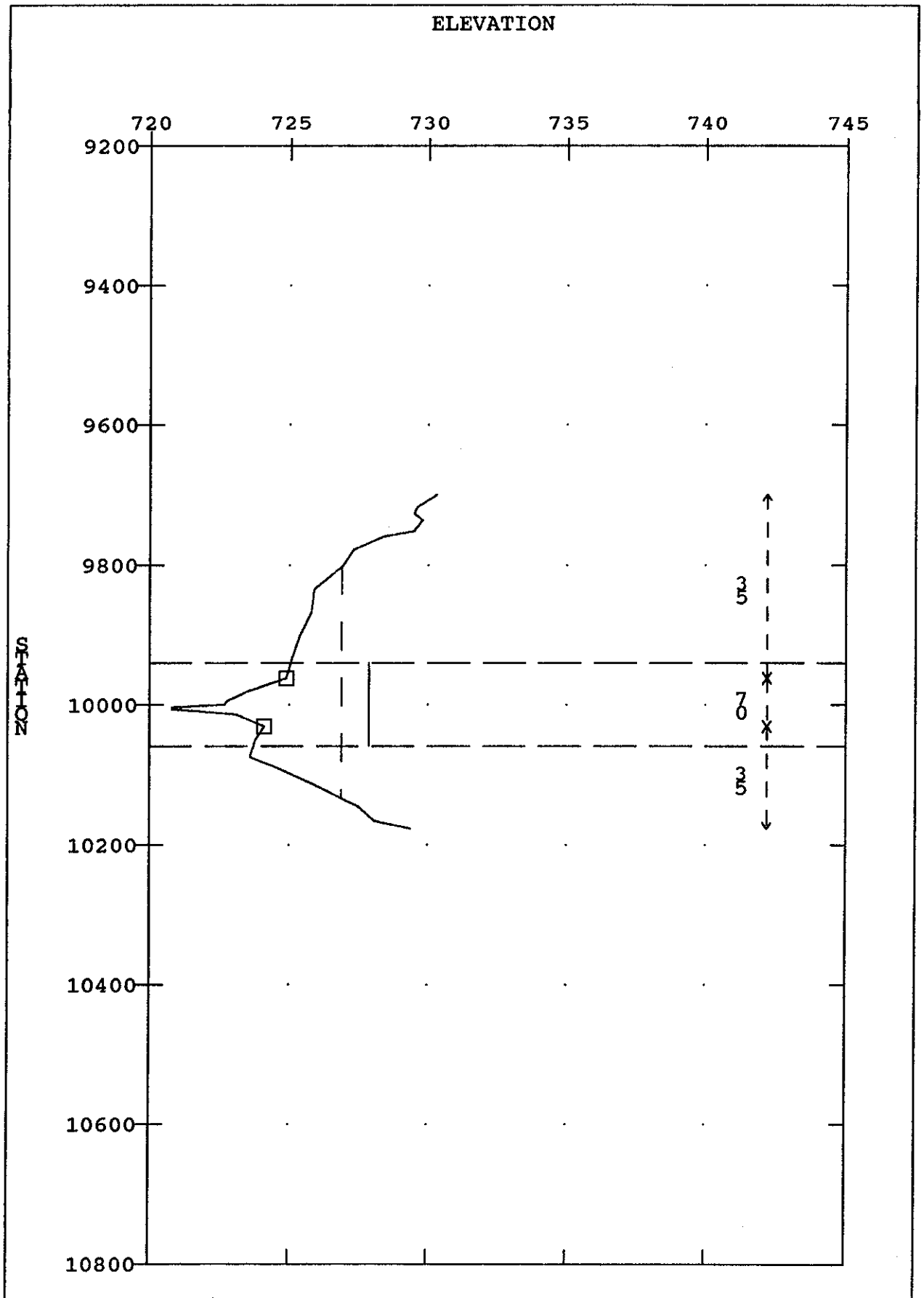
SECTION : 3863

SCOTT AVENUE 100 YEAR (NATURAL)



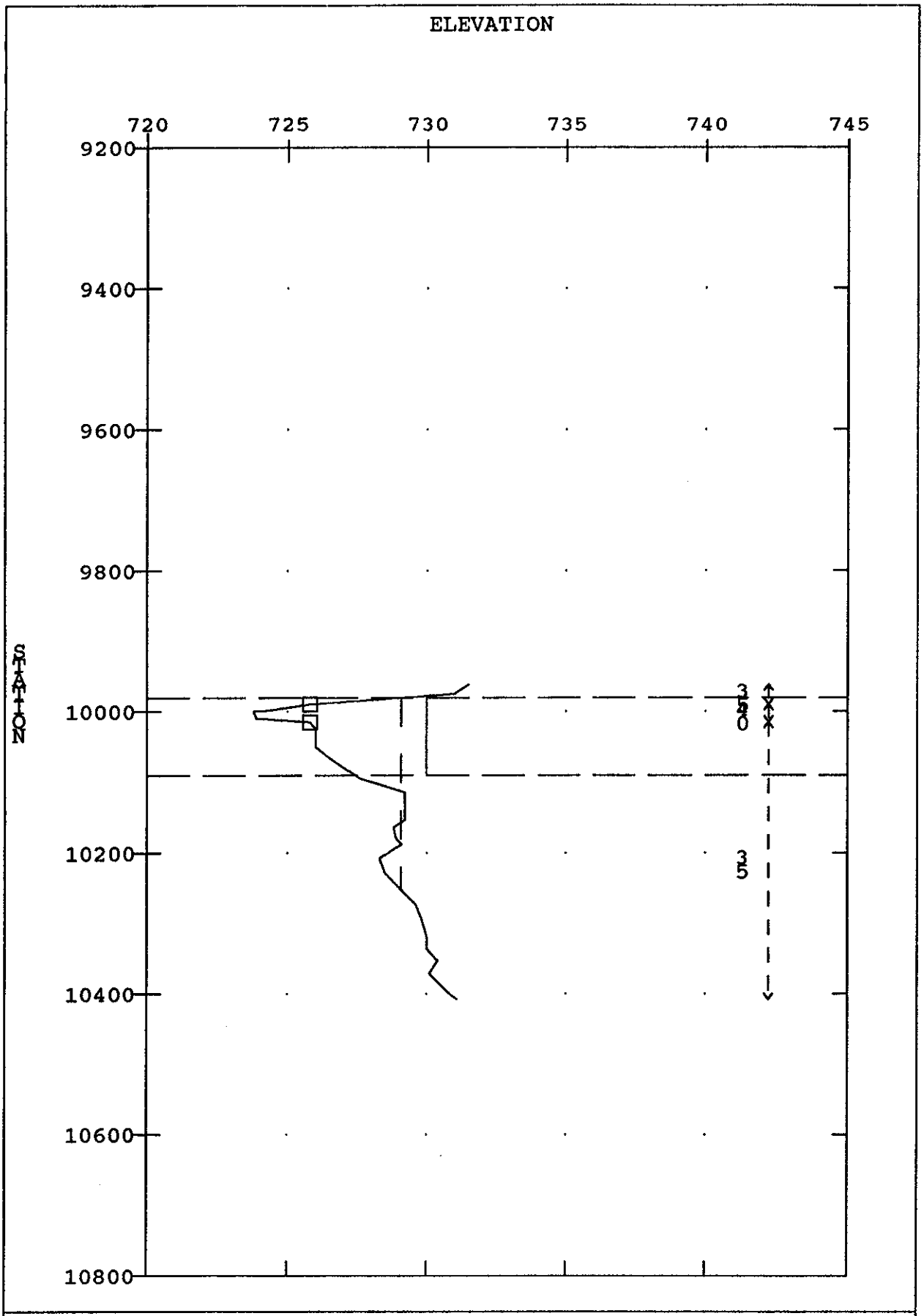
SECTION : 3957

SCOTT AVENUE 100 YEAR (NATURAL)



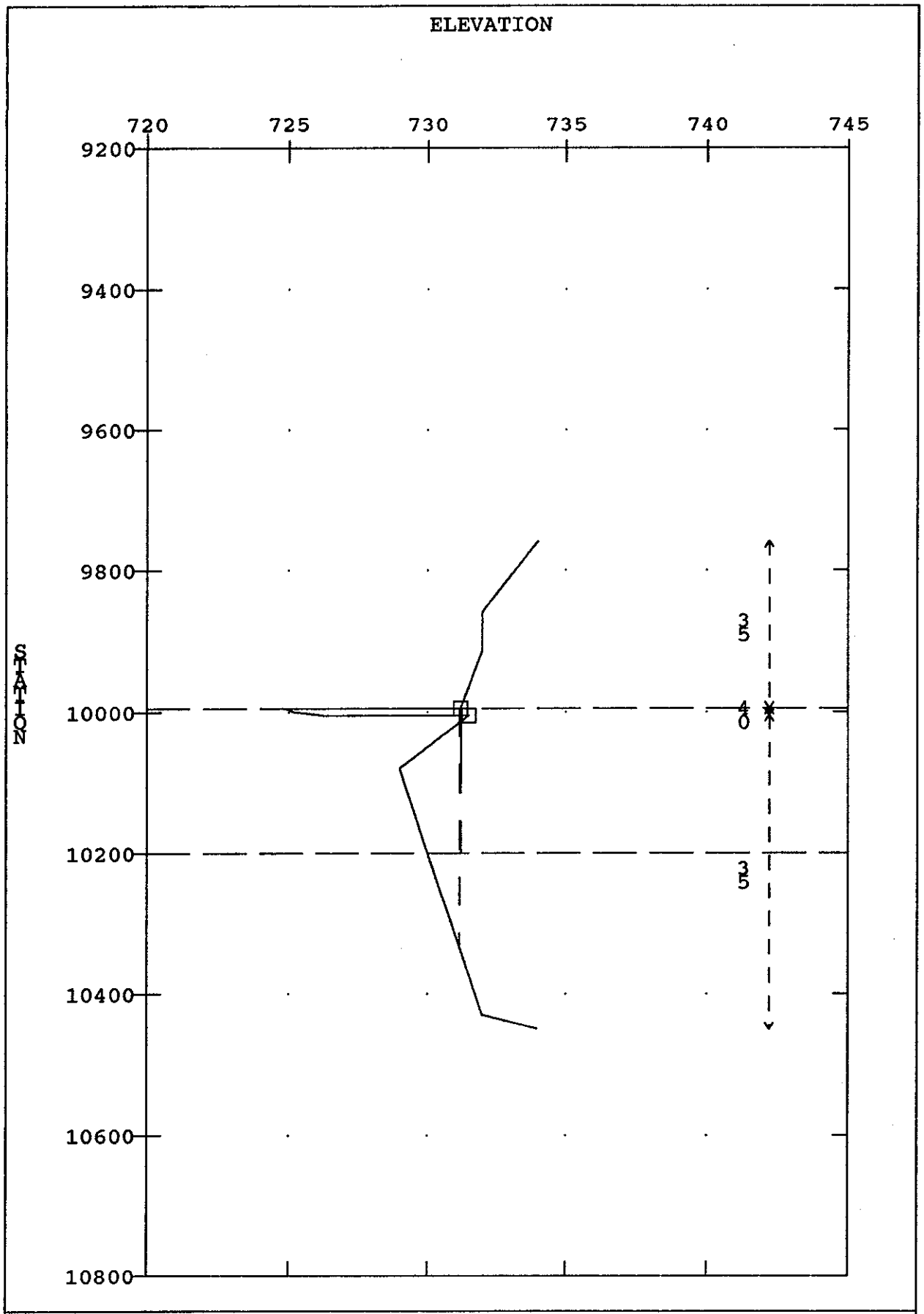
SECTION : 4053

SCOTT AVENUE 100 YEAR (NATURAL)



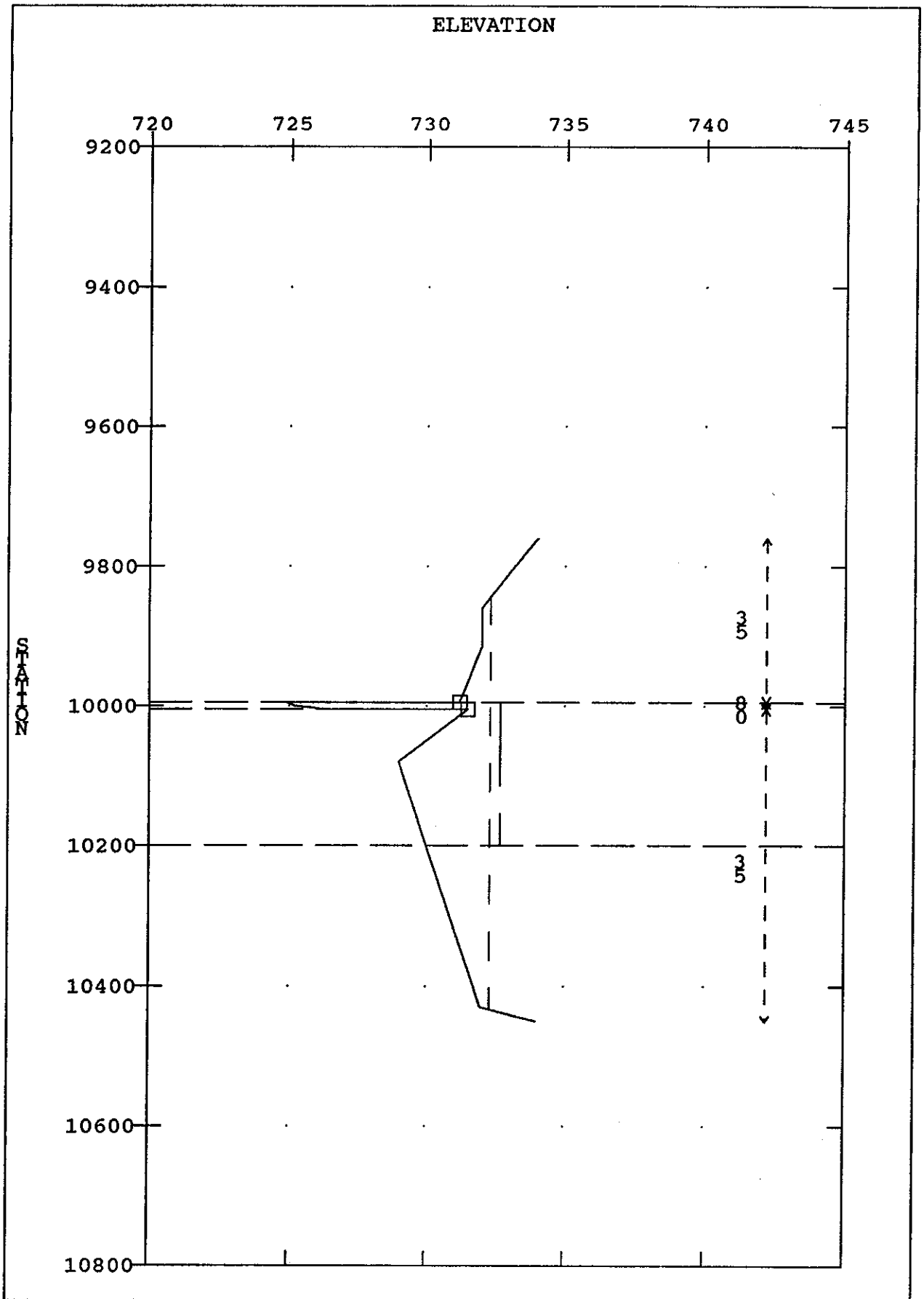
SECTION : 4147

SCOTT AVENUE 100 YEAR (NATURAL)



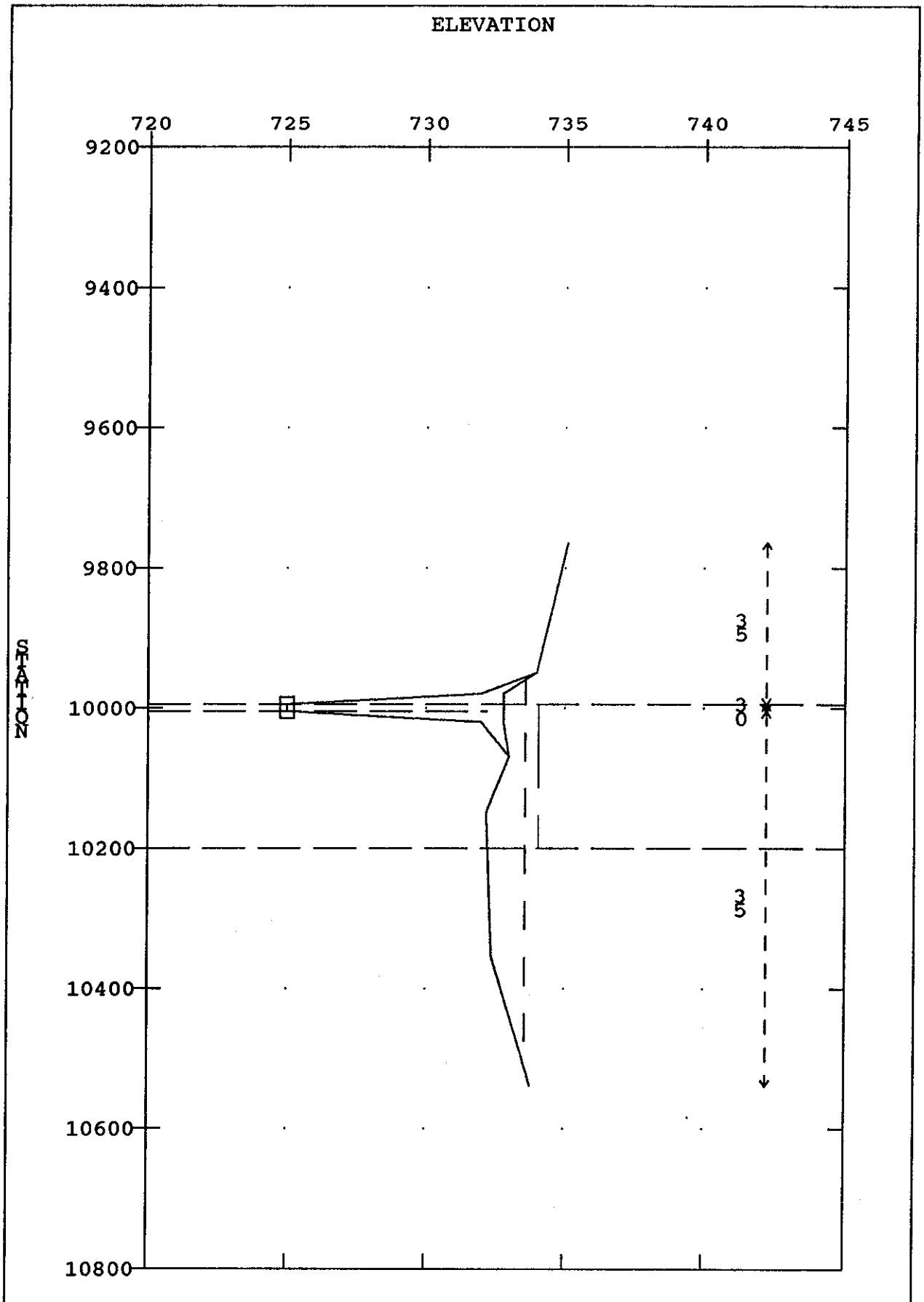
SECTION : 4156

SCOTT AVENUE 100 YEAR (NATURAL)



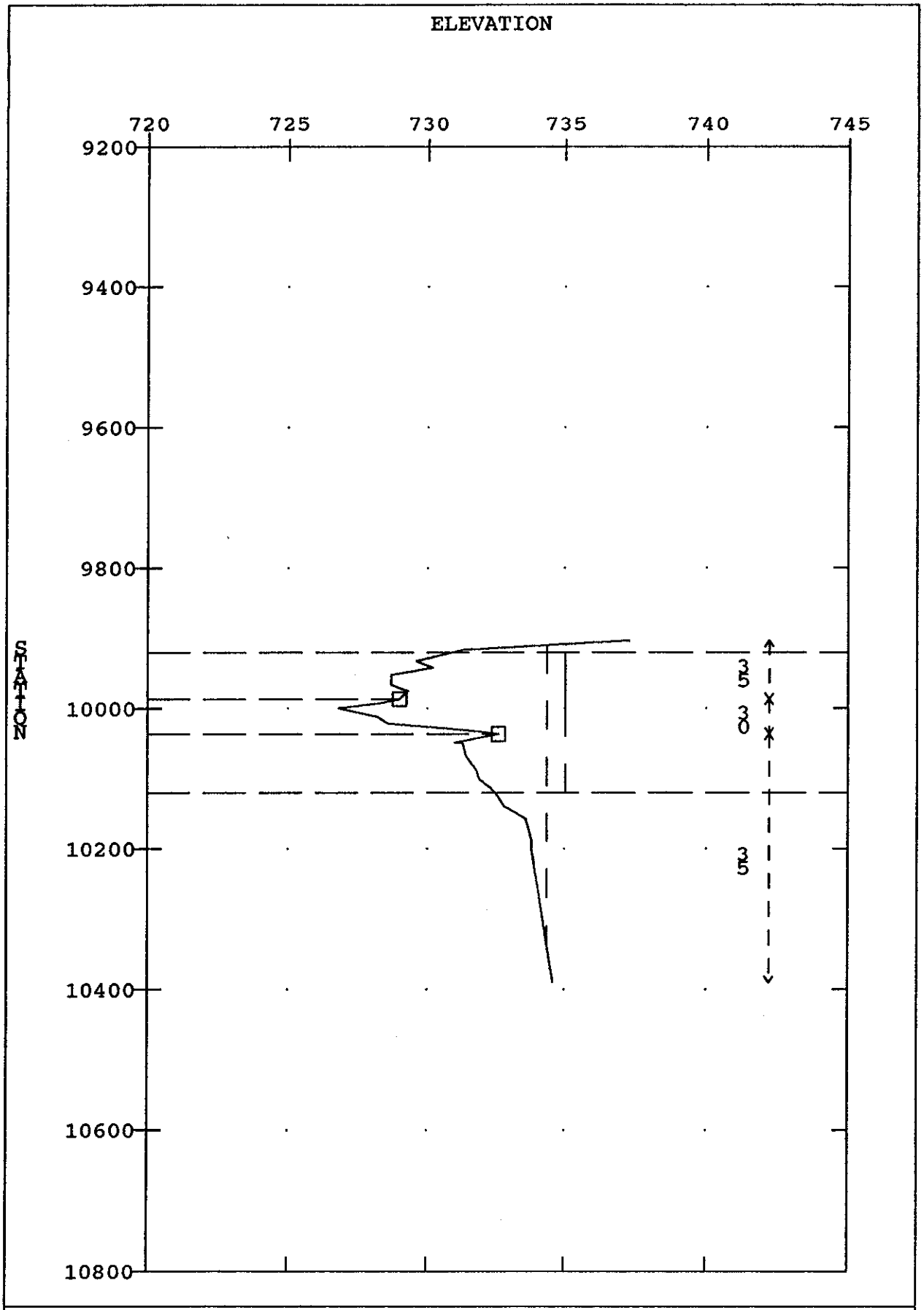
SECTION : 4183

SCOTT AVENUE 100 YEAR (NATURAL)



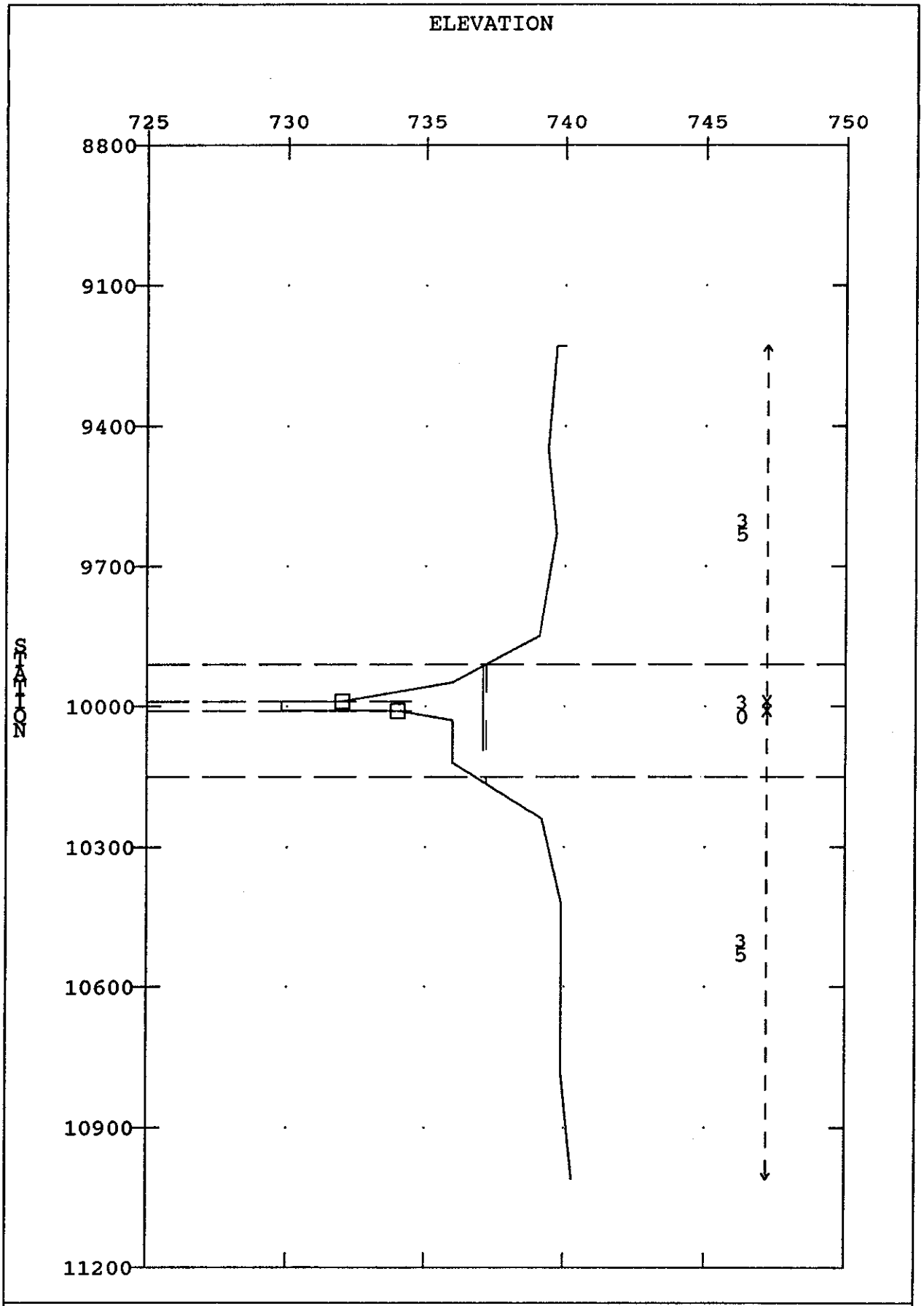
SECTION : 4216

SCOTT AVENUE 100 YEAR (NATURAL)



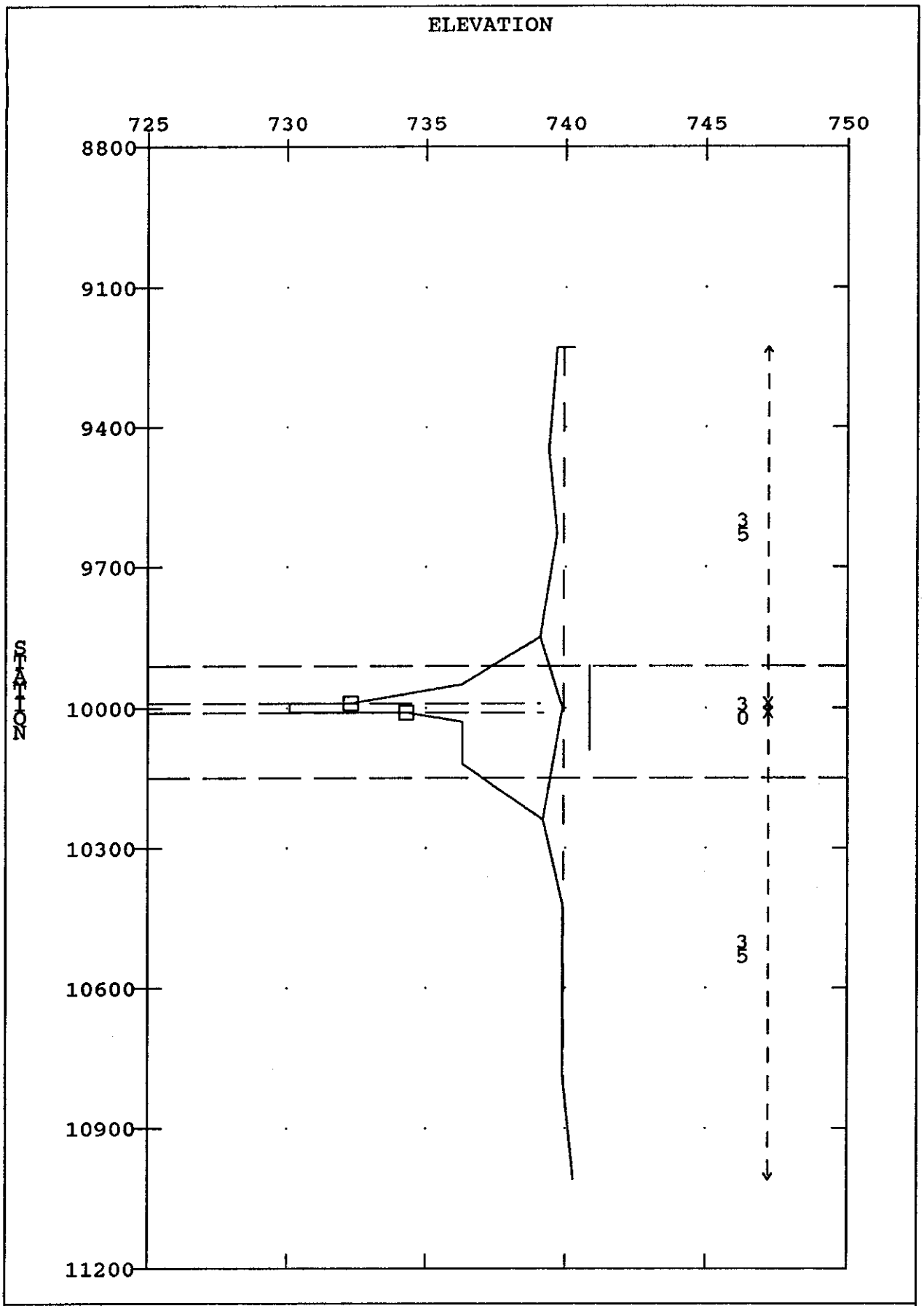
SECTION : 4287

SCOTT AVENUE 100 YEAR (NATURAL)



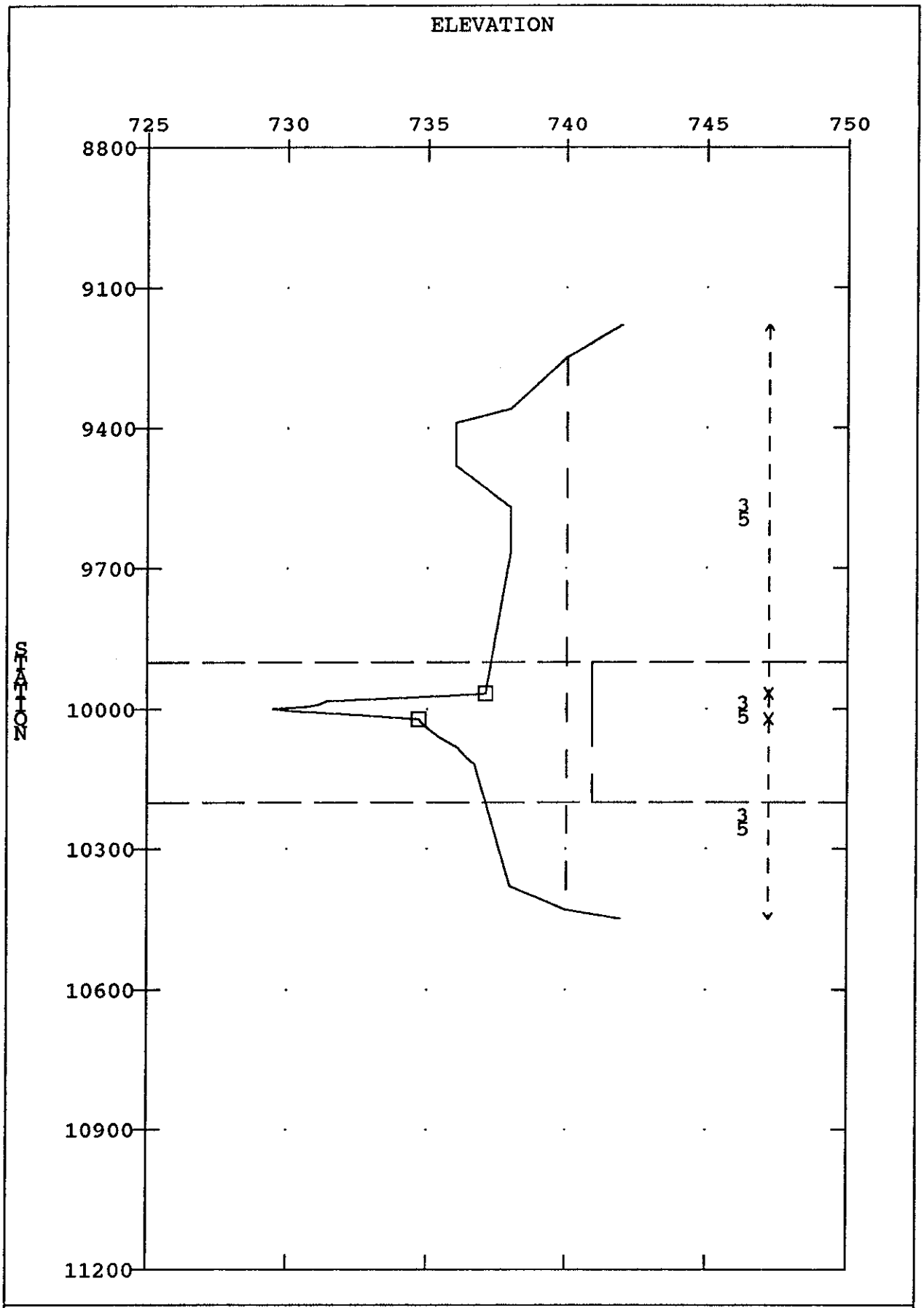
SECTION : 4315

SCOTT AVENUE 100 YEAR (NATURAL)



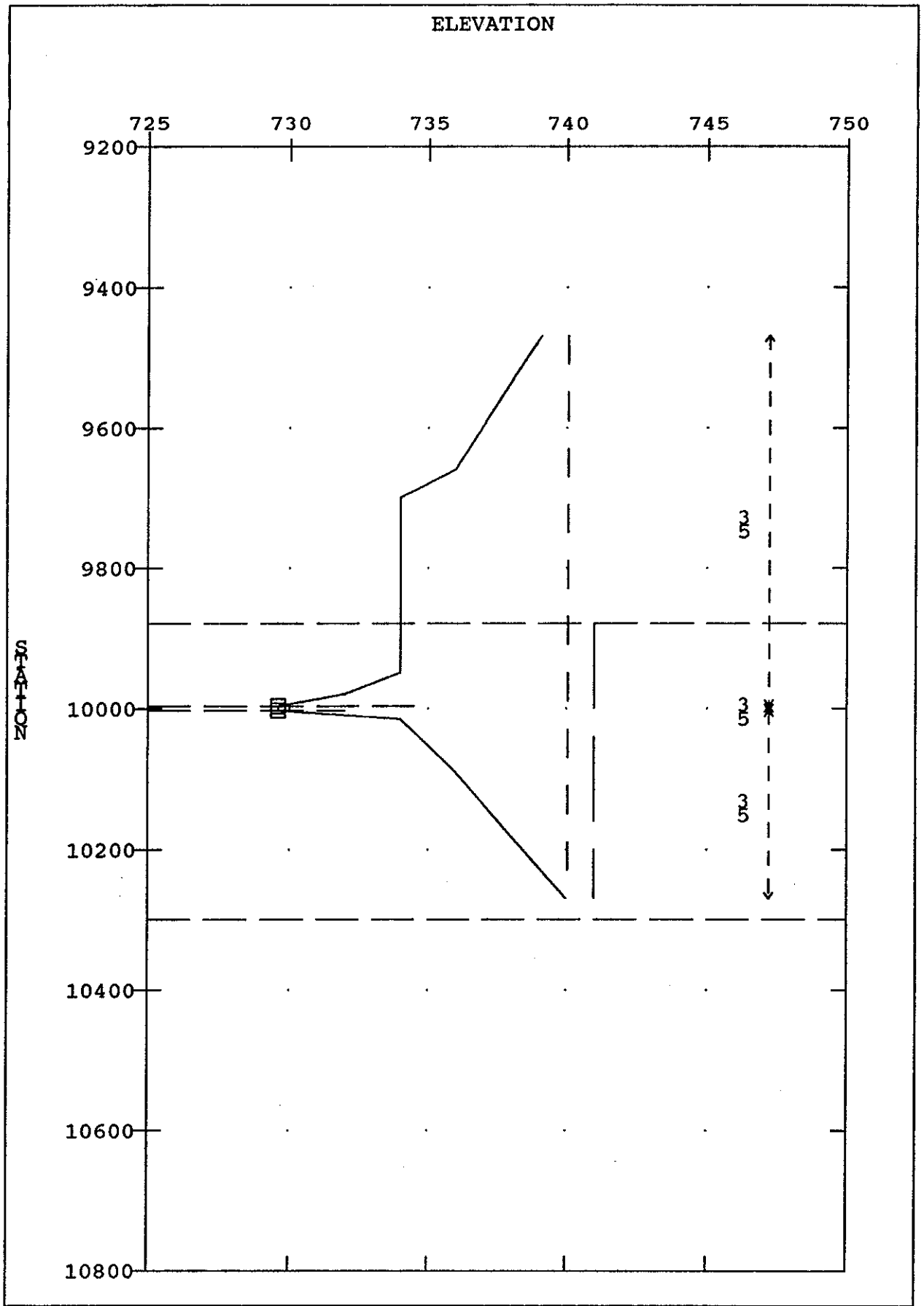
SECTION : 4331

SCOTT AVENUE 100 YEAR (NATURAL)



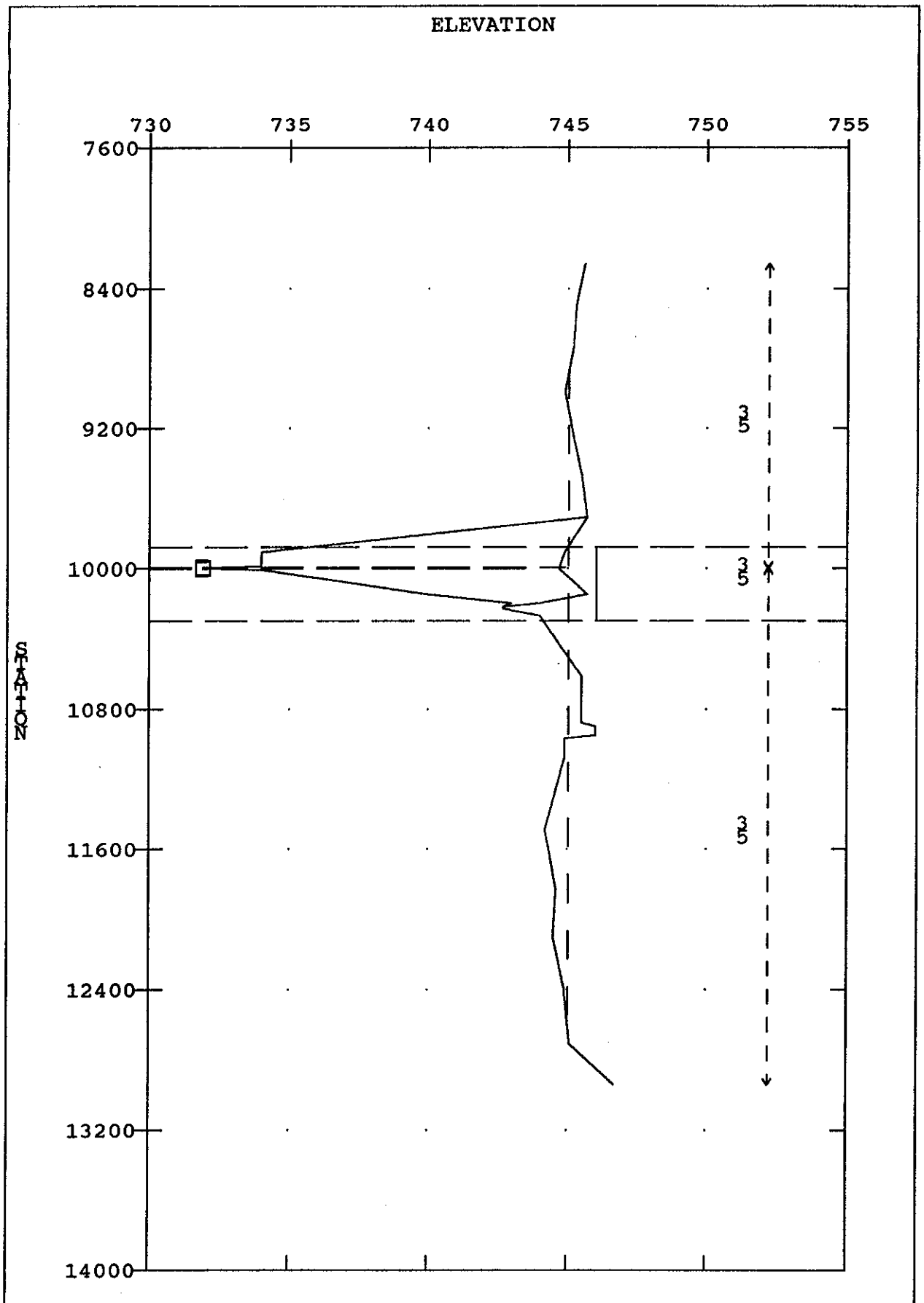
SECTION : 4395

SCOTT AVENUE 100 YEAR (NATURAL)



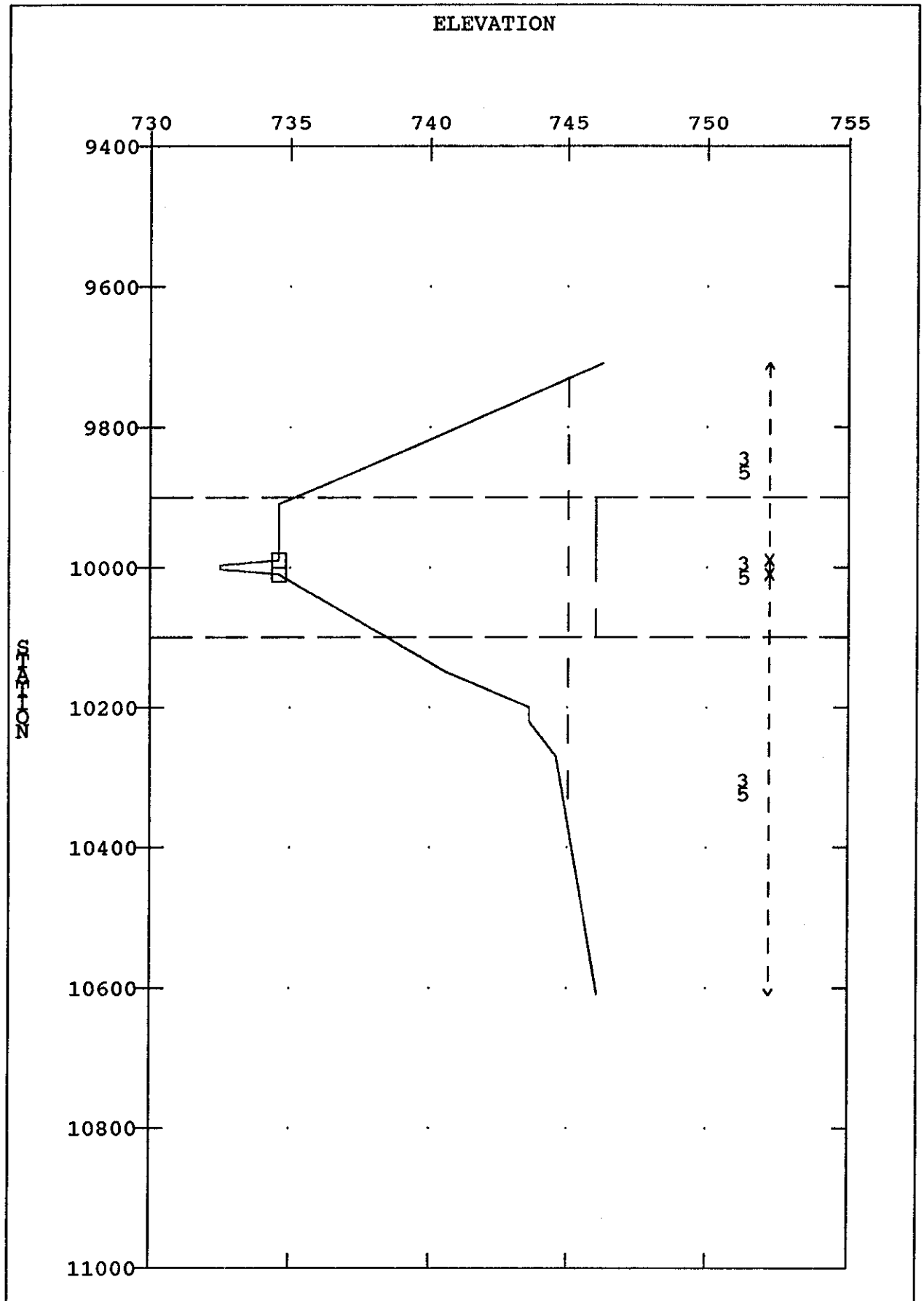
SECTION : 4429

SCOTT AVENUE 100 YEAR (NATURAL)



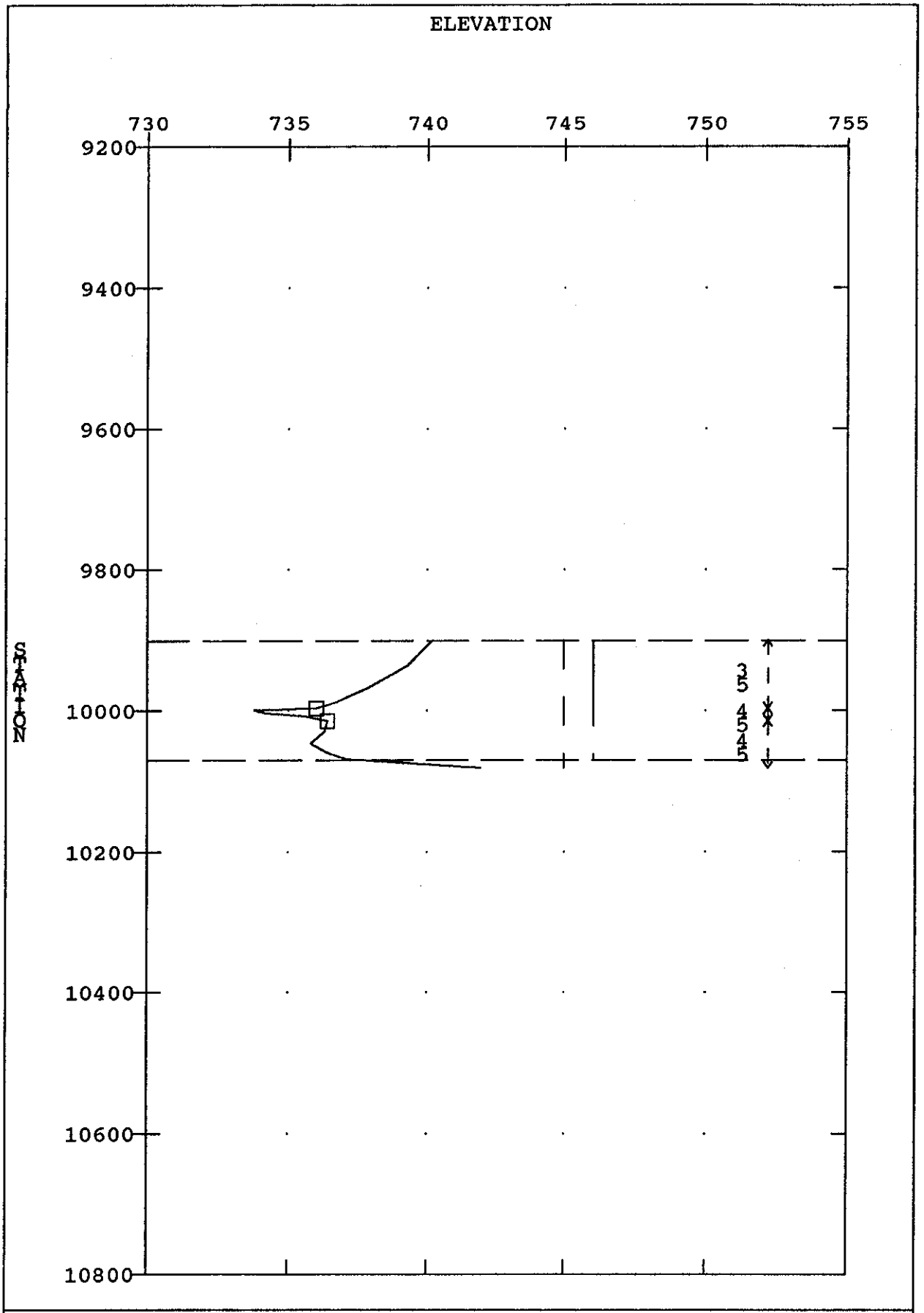
SECTION : 4449

SCOTT AVENUE 100 YEAR (NATURAL)



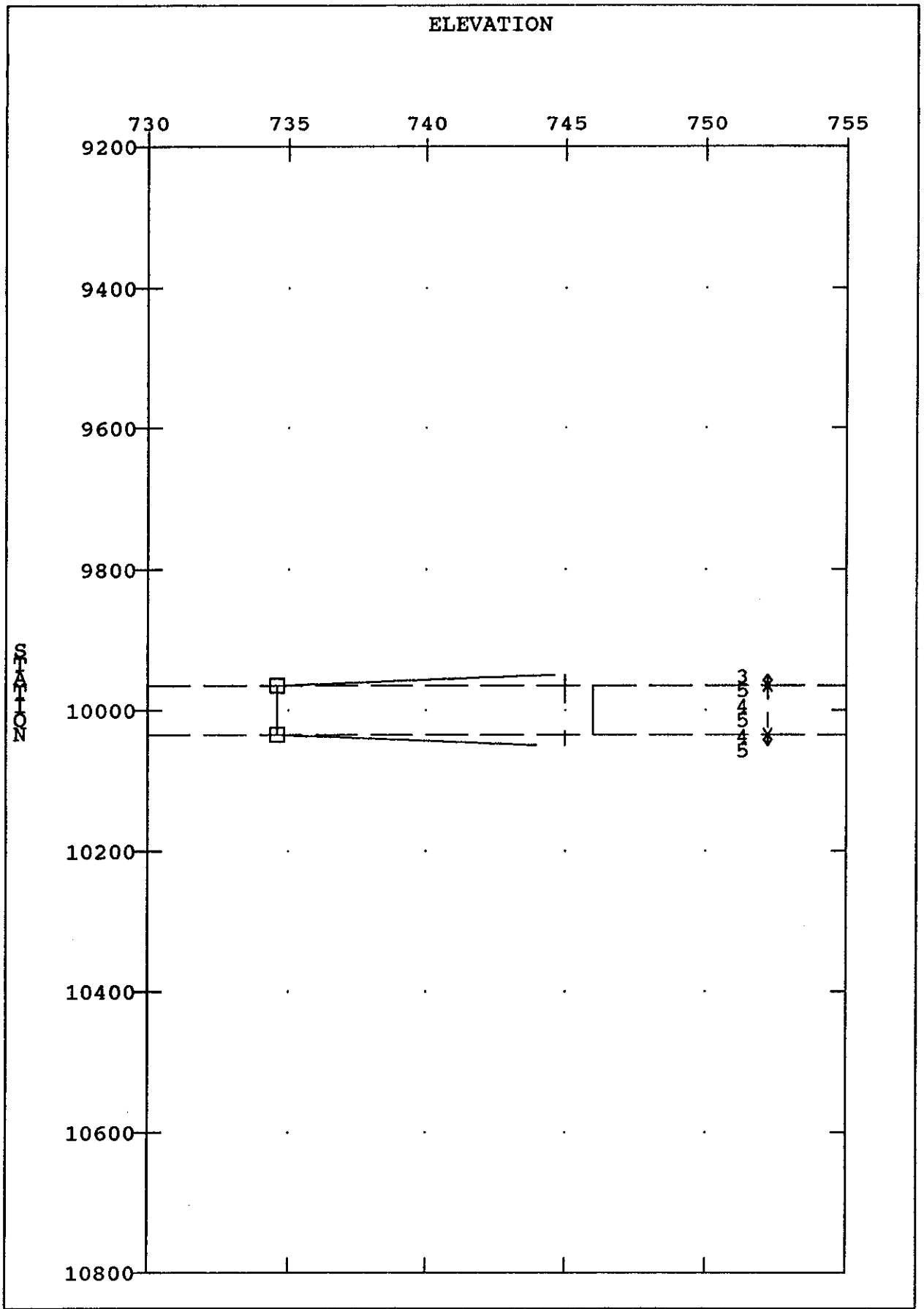
SECTION : 4477

SCOTT AVENUE 100 YEAR (NATURAL)



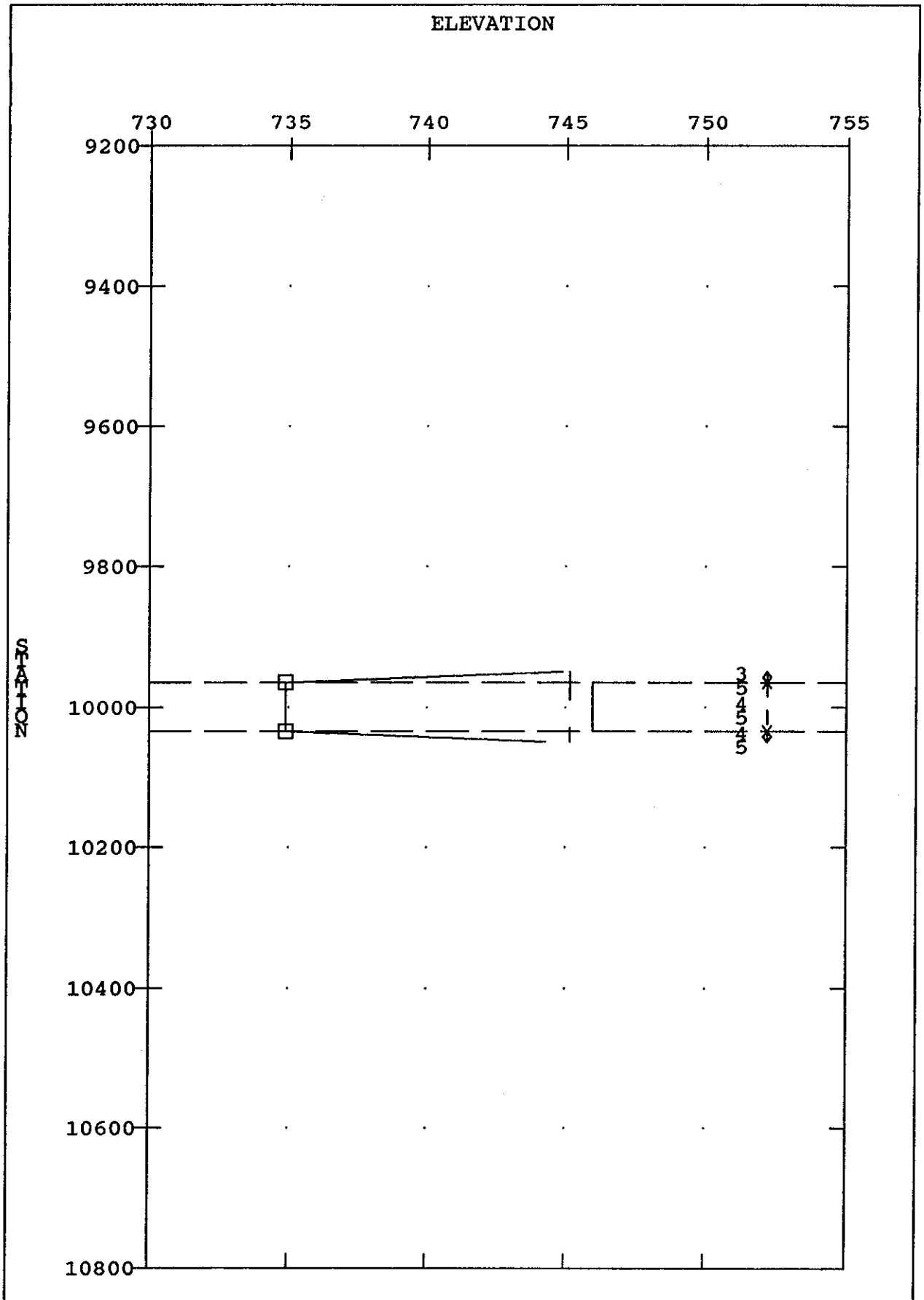
SECTION : 4537

SCOTT AVENUE 100 YEAR (NATURAL)



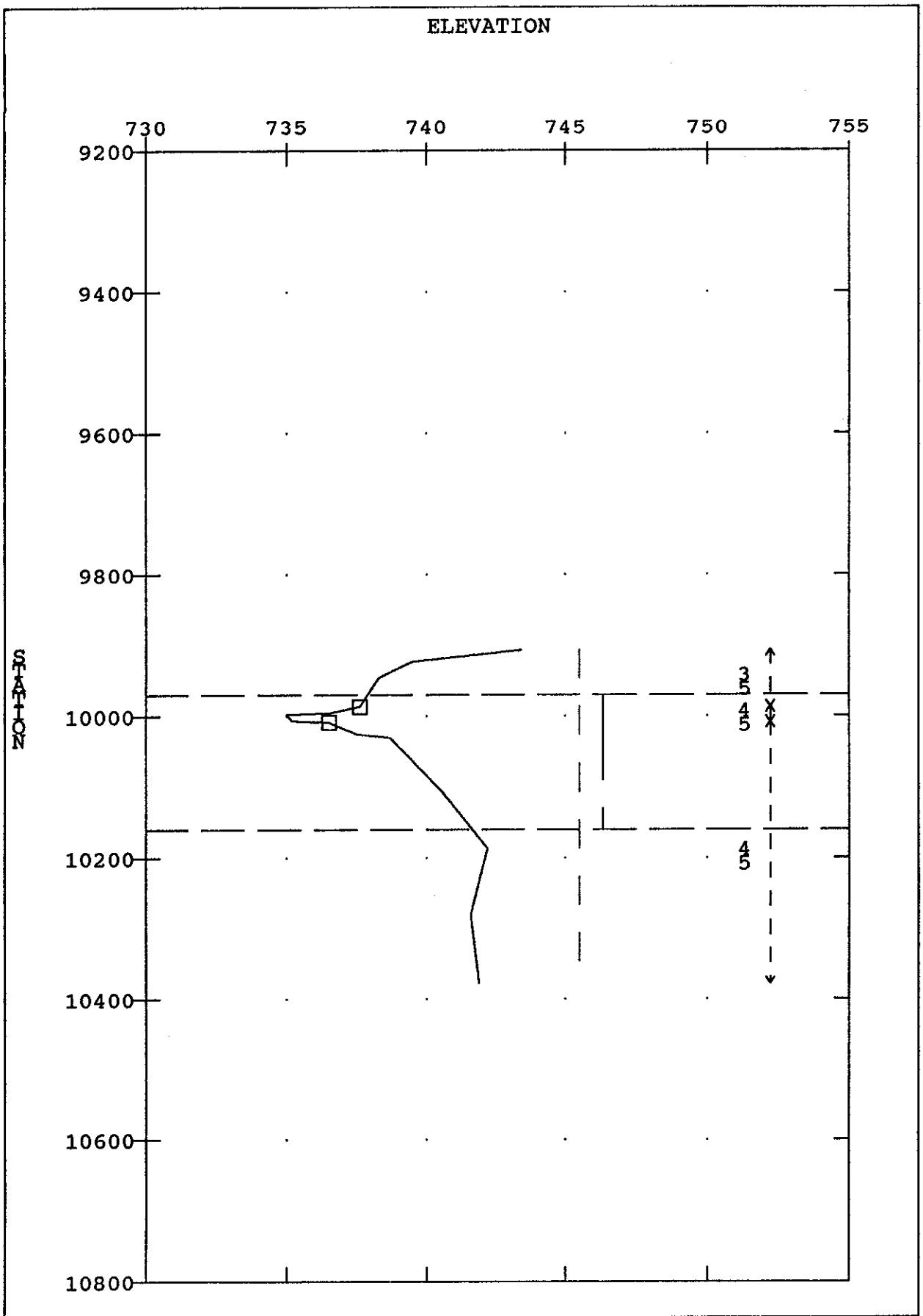
SECTION : 4563

SCOTT AVENUE 100 YEAR (NATURAL)



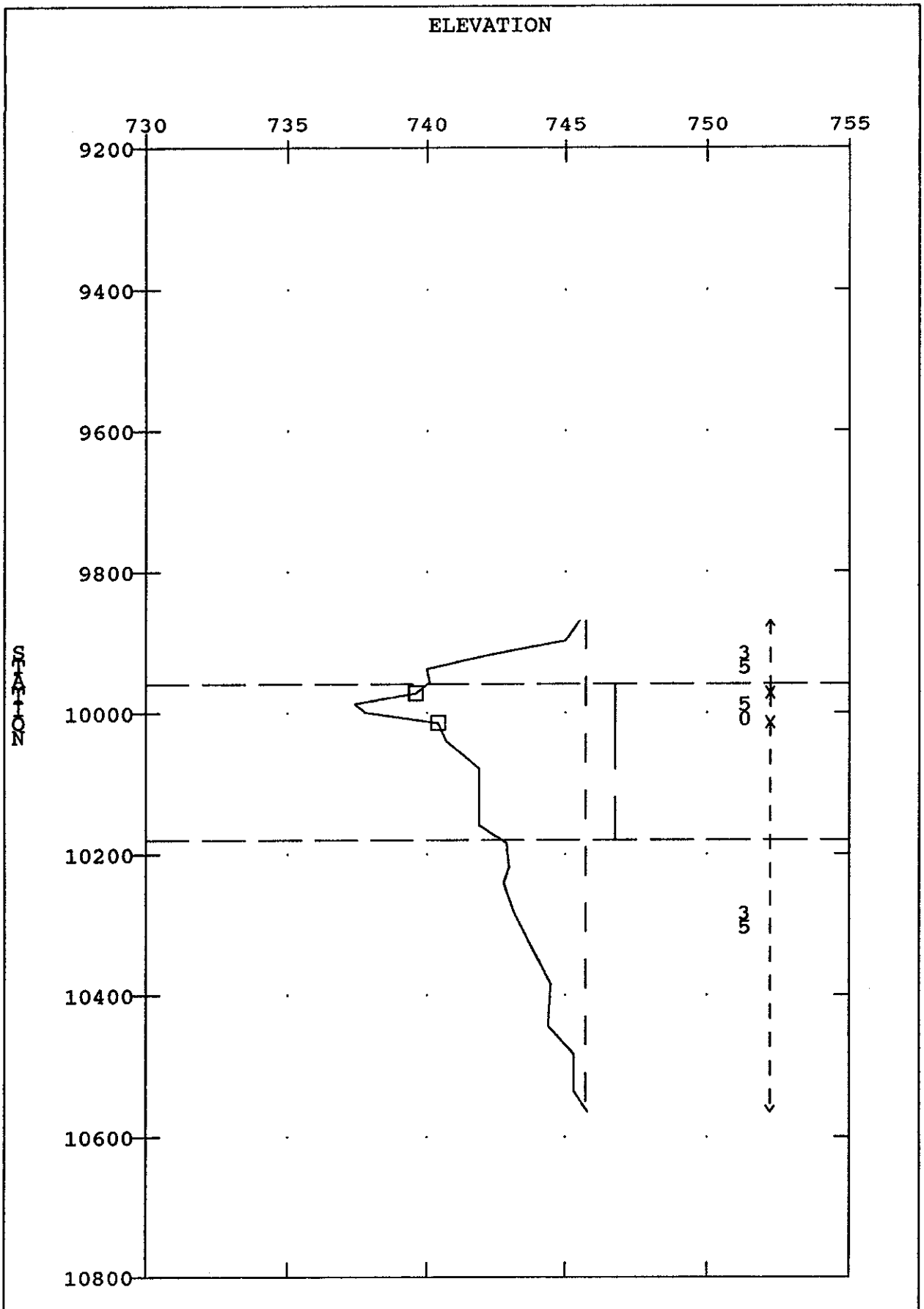
SECTION : 4568

SCOTT AVENUE 100 YEAR (NATURAL)



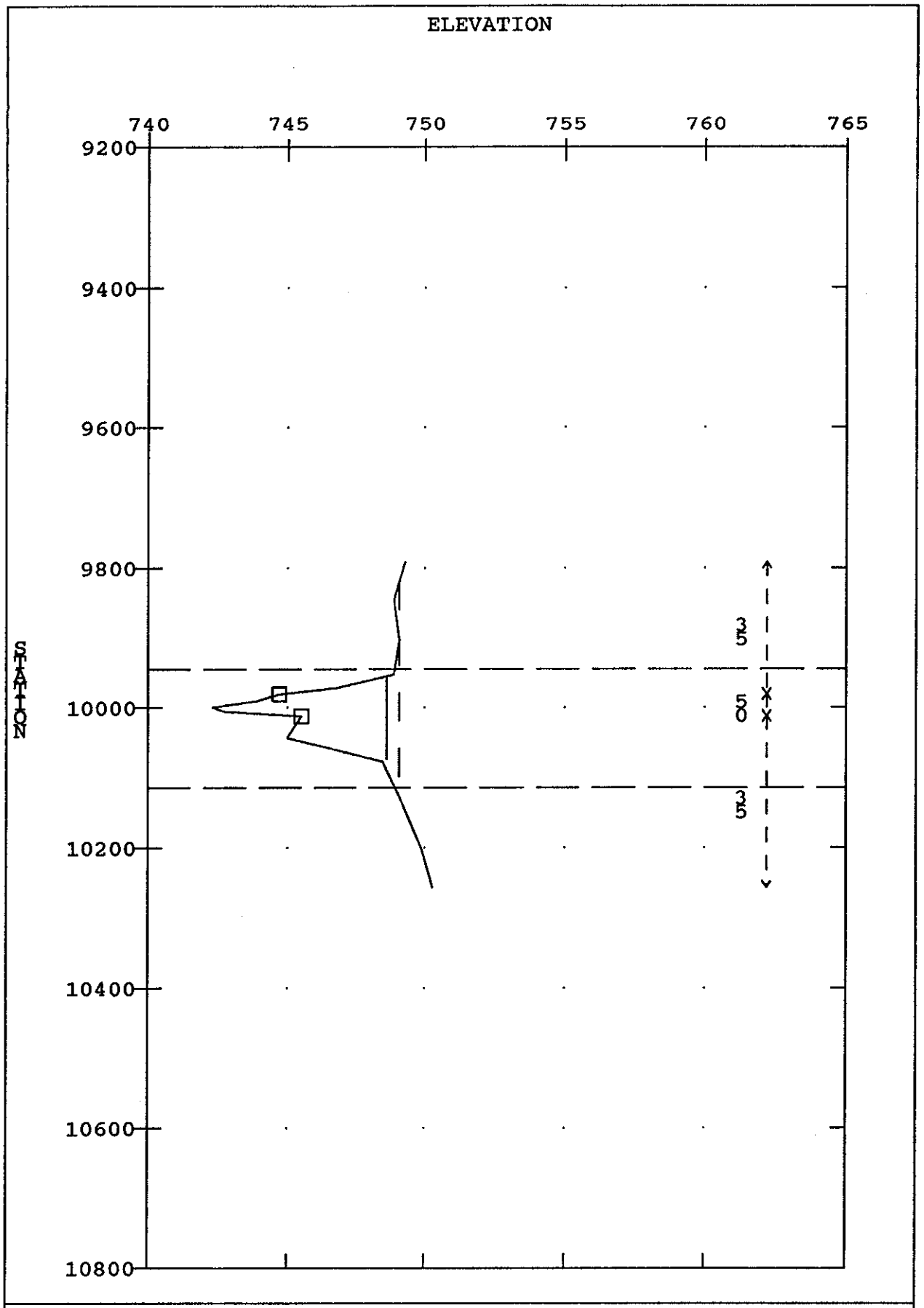
SECTION : 4591

SCOTT AVENUE 100 YEAR (NATURAL)



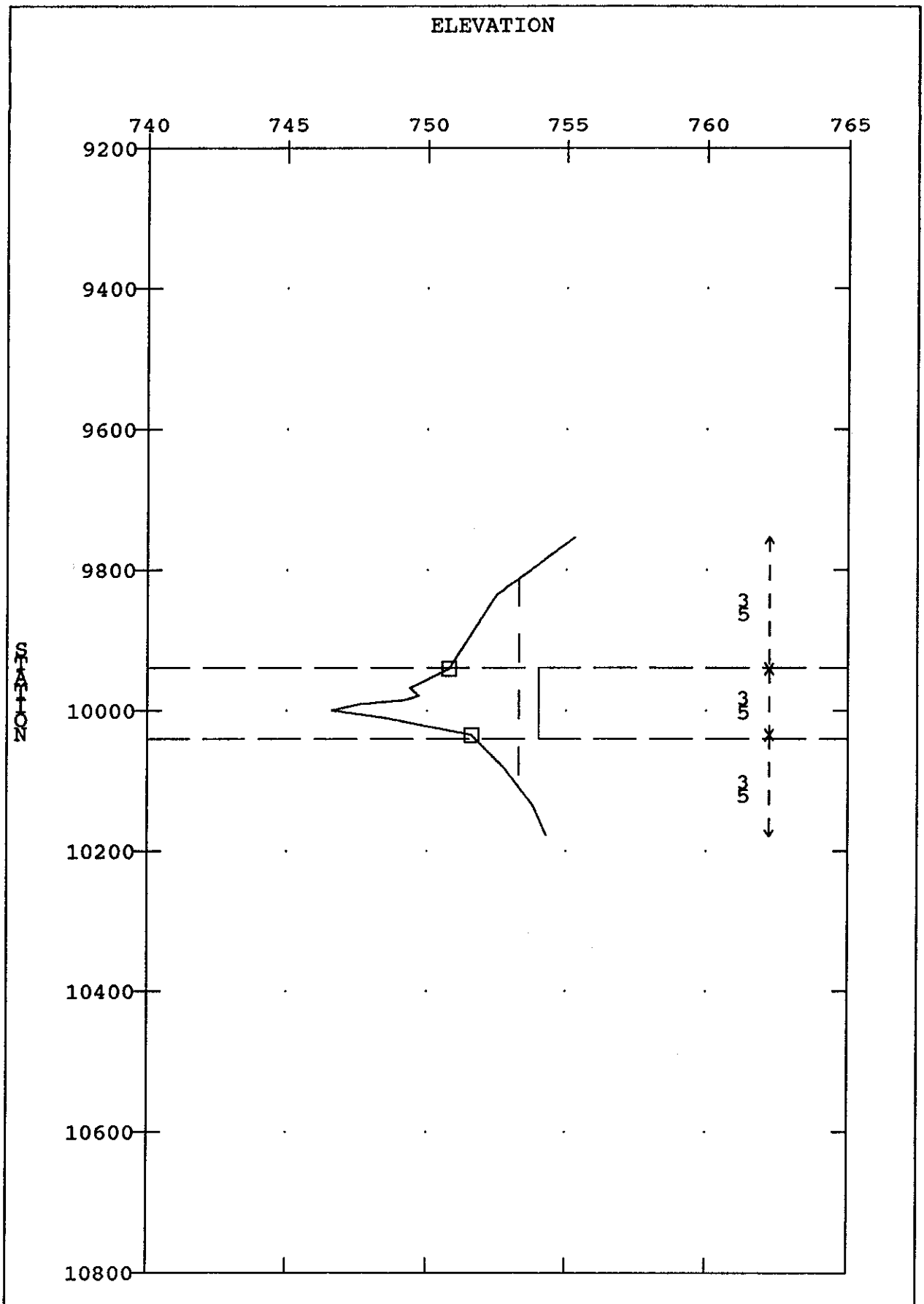
SECTION : 4727

SCOTT AVENUE 100 YEAR (NATURAL)



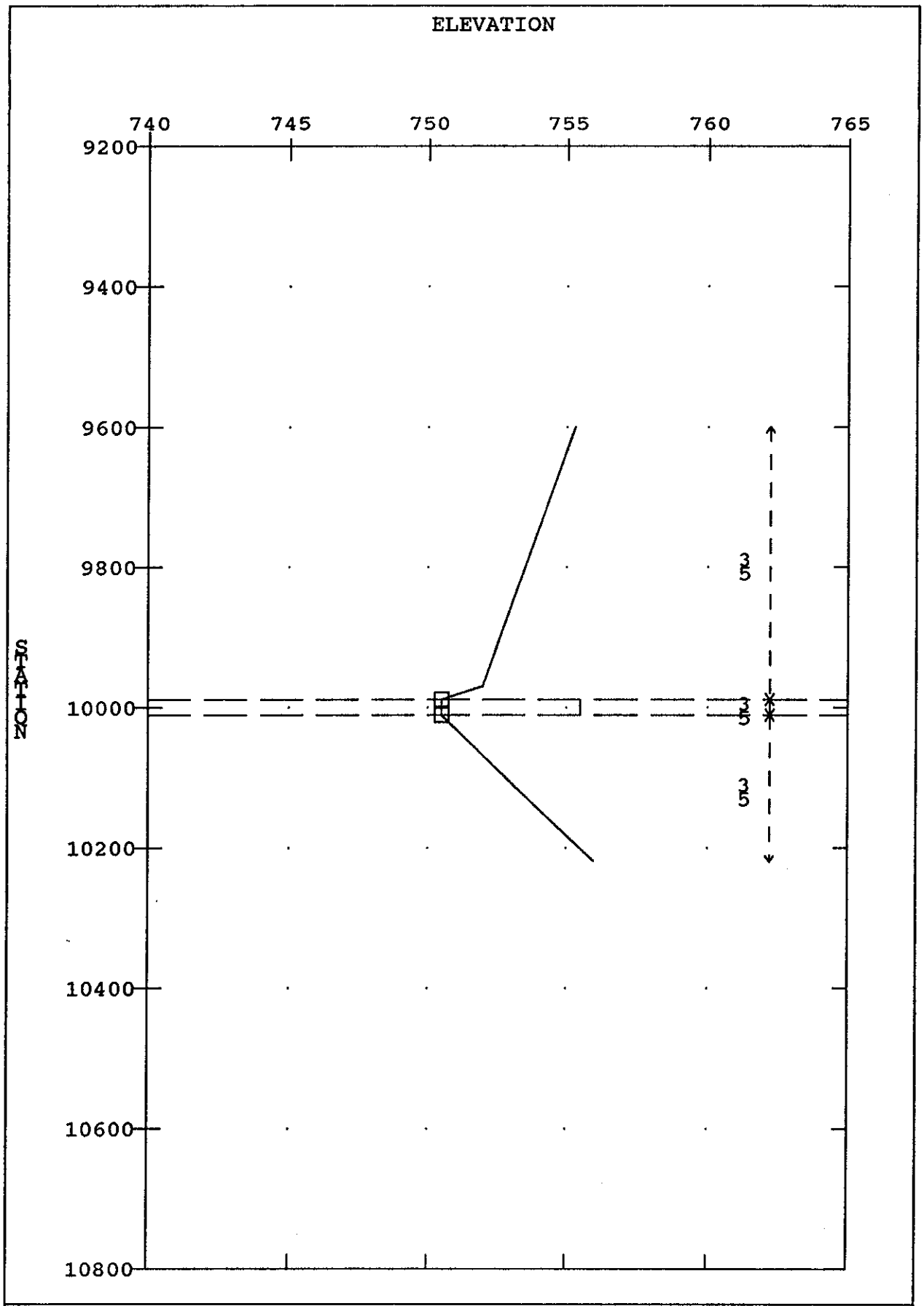
SECTION : 4911

SCOTT AVENUE 100 YEAR (NATURAL)



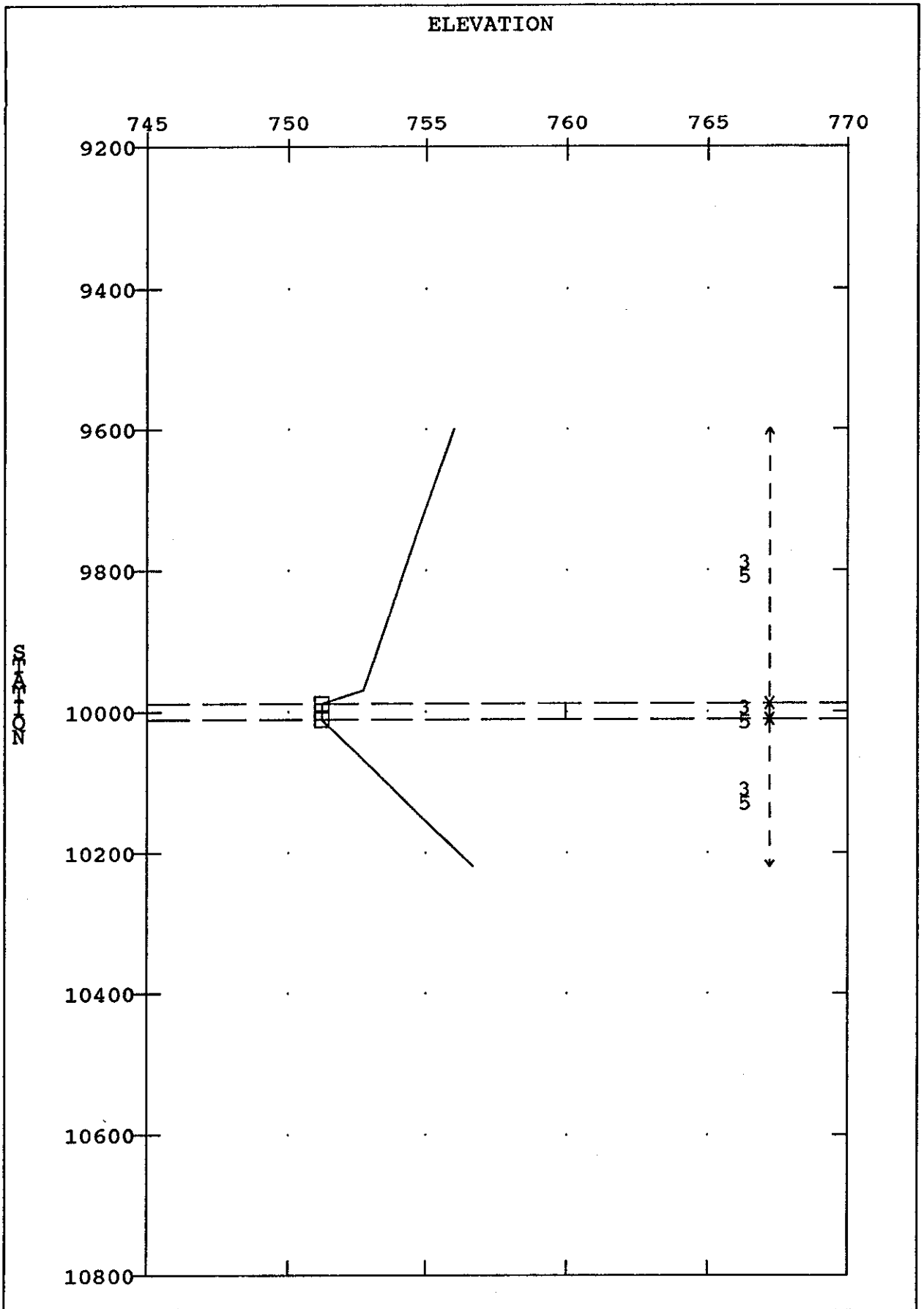
SECTION : 5137

SCOTT AVENUE 100 YEAR (NATURAL)



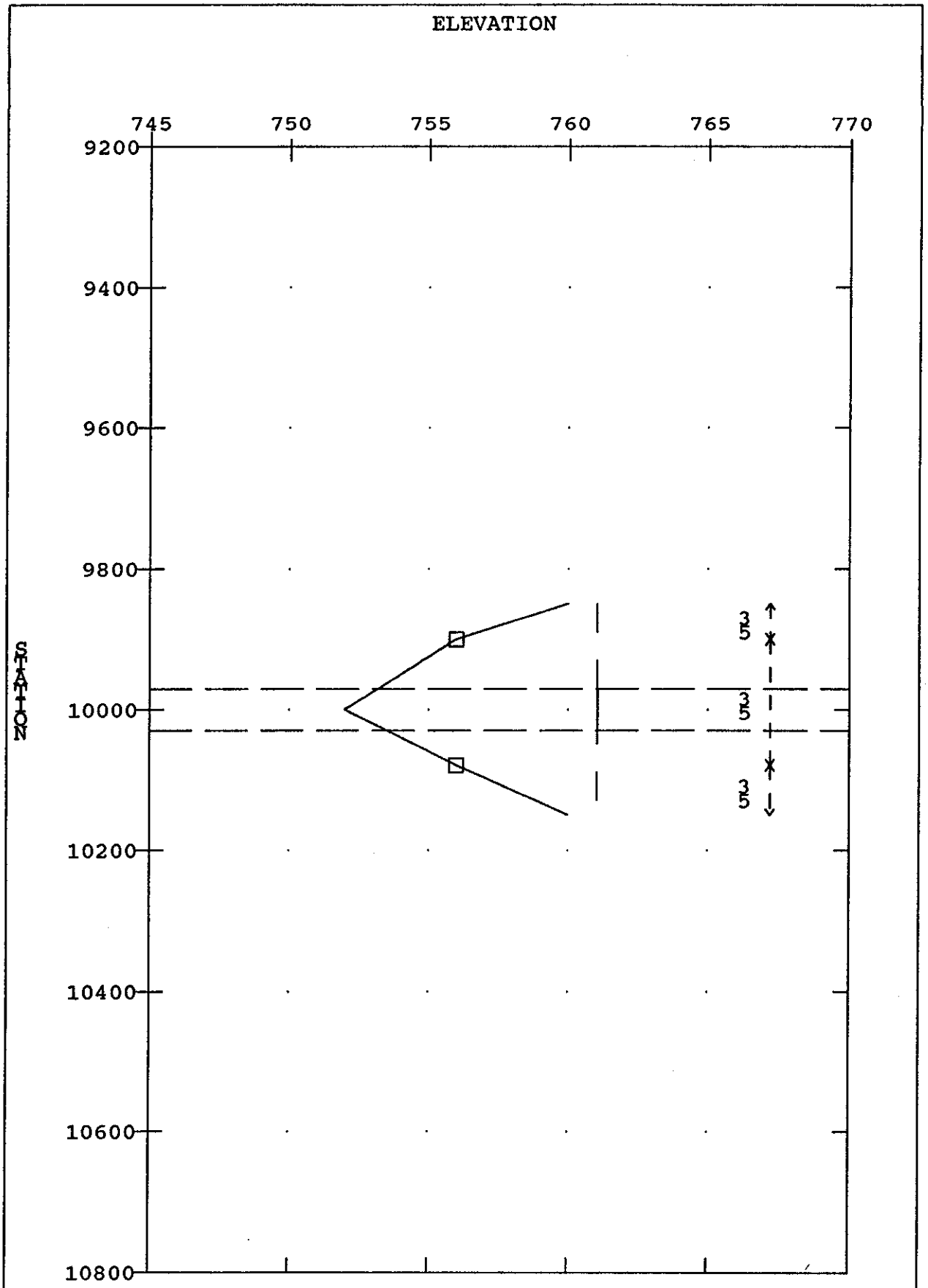
SECTION : 5200

SCOTT AVENUE 100 YEAR (NATURAL)



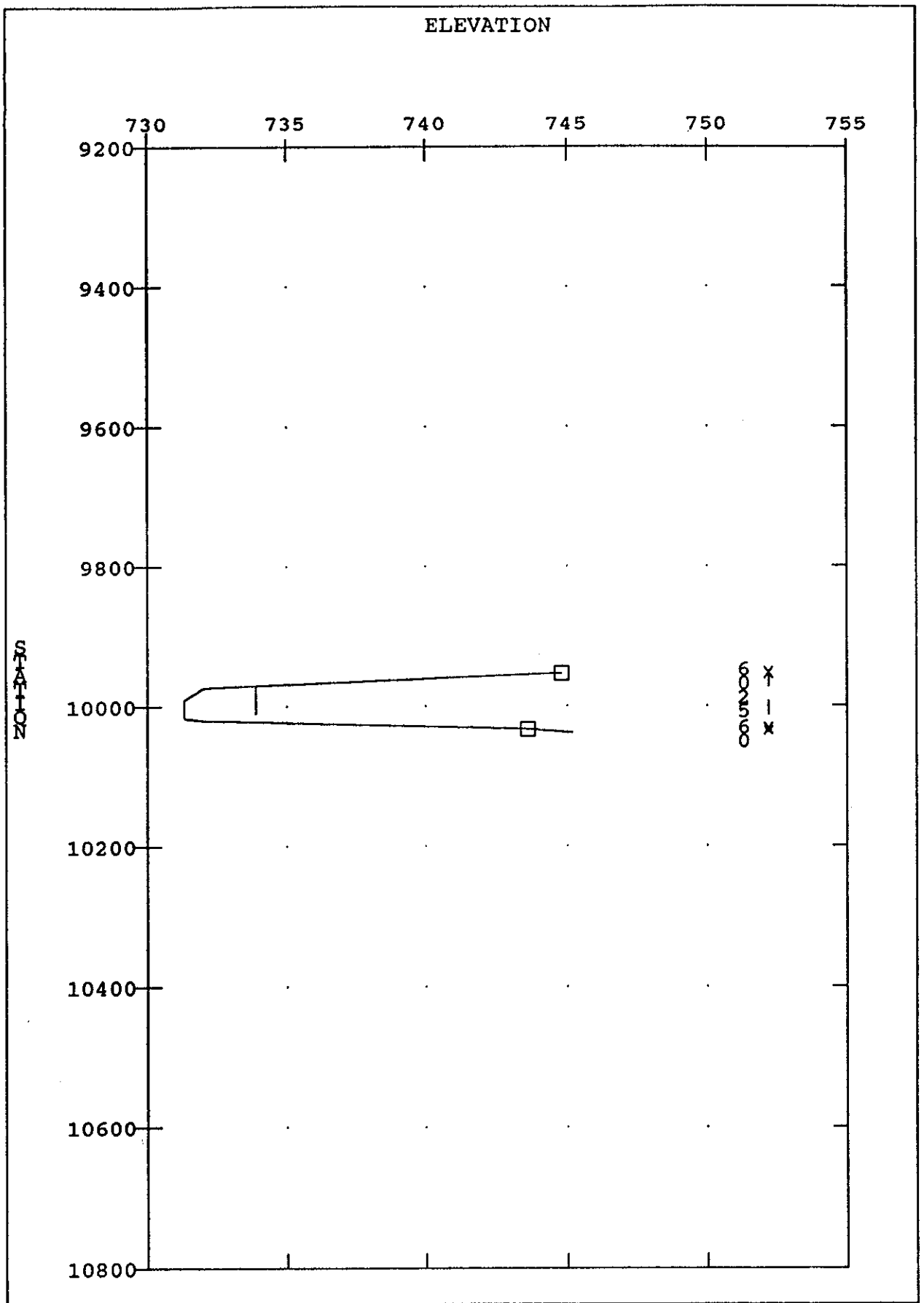
SECTION : 5258

SCOTT AVENUE 100 YEAR (NATURAL)



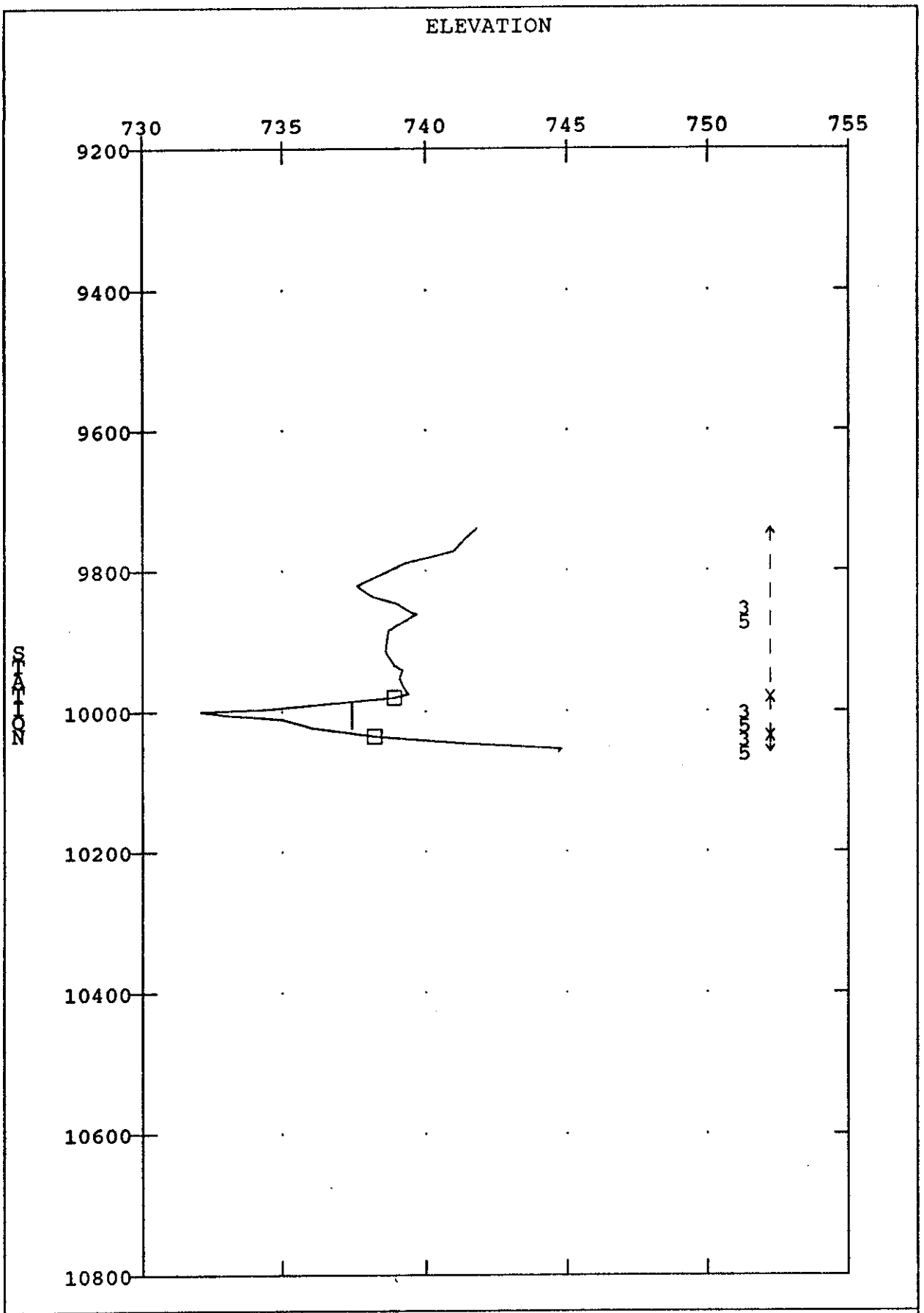
SECTION : 5308

SCOTT AVENUE 100 YEAR (NATURAL)



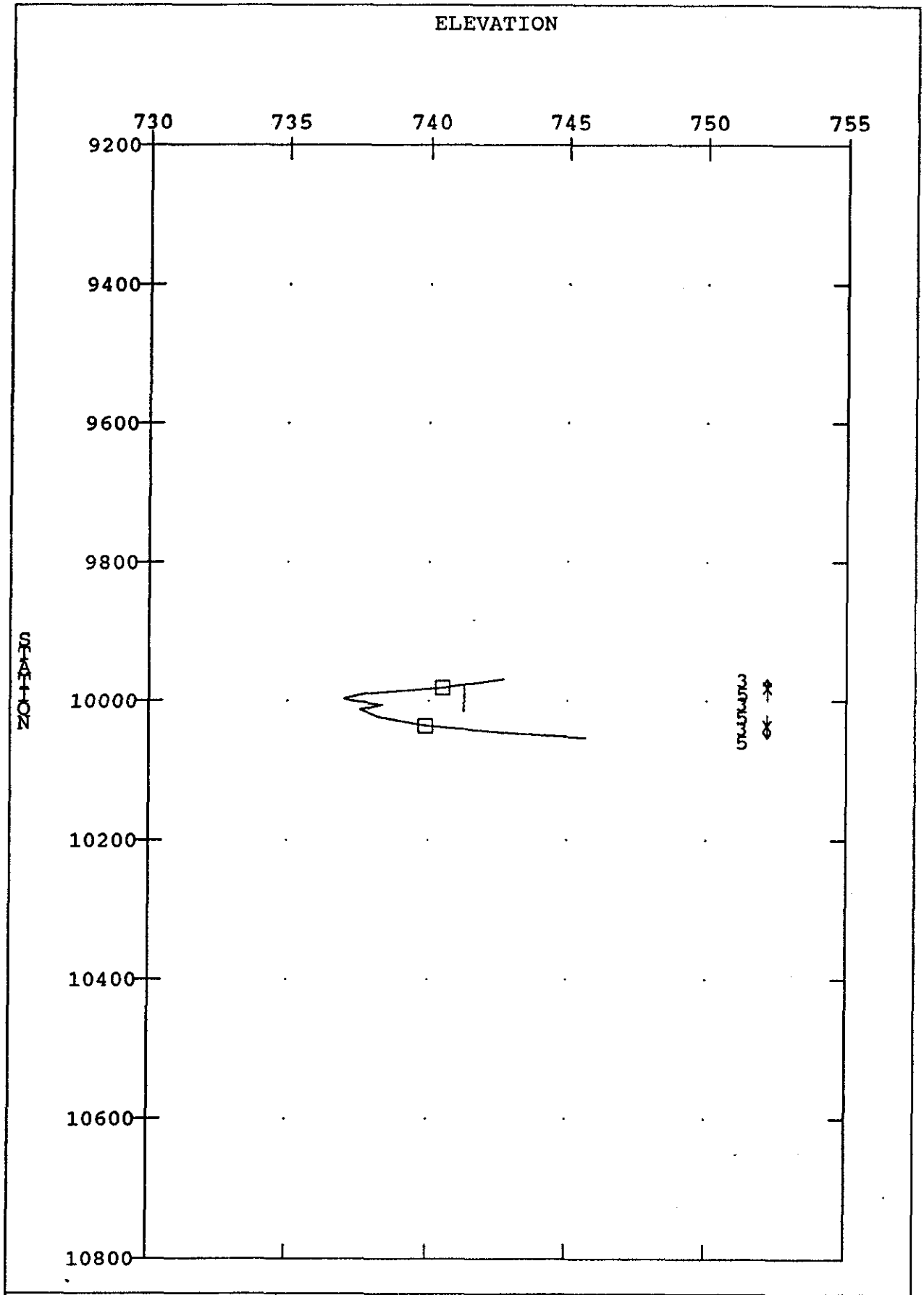
SECTION : 3888

UNNAMED WASH NO.1 100 YR



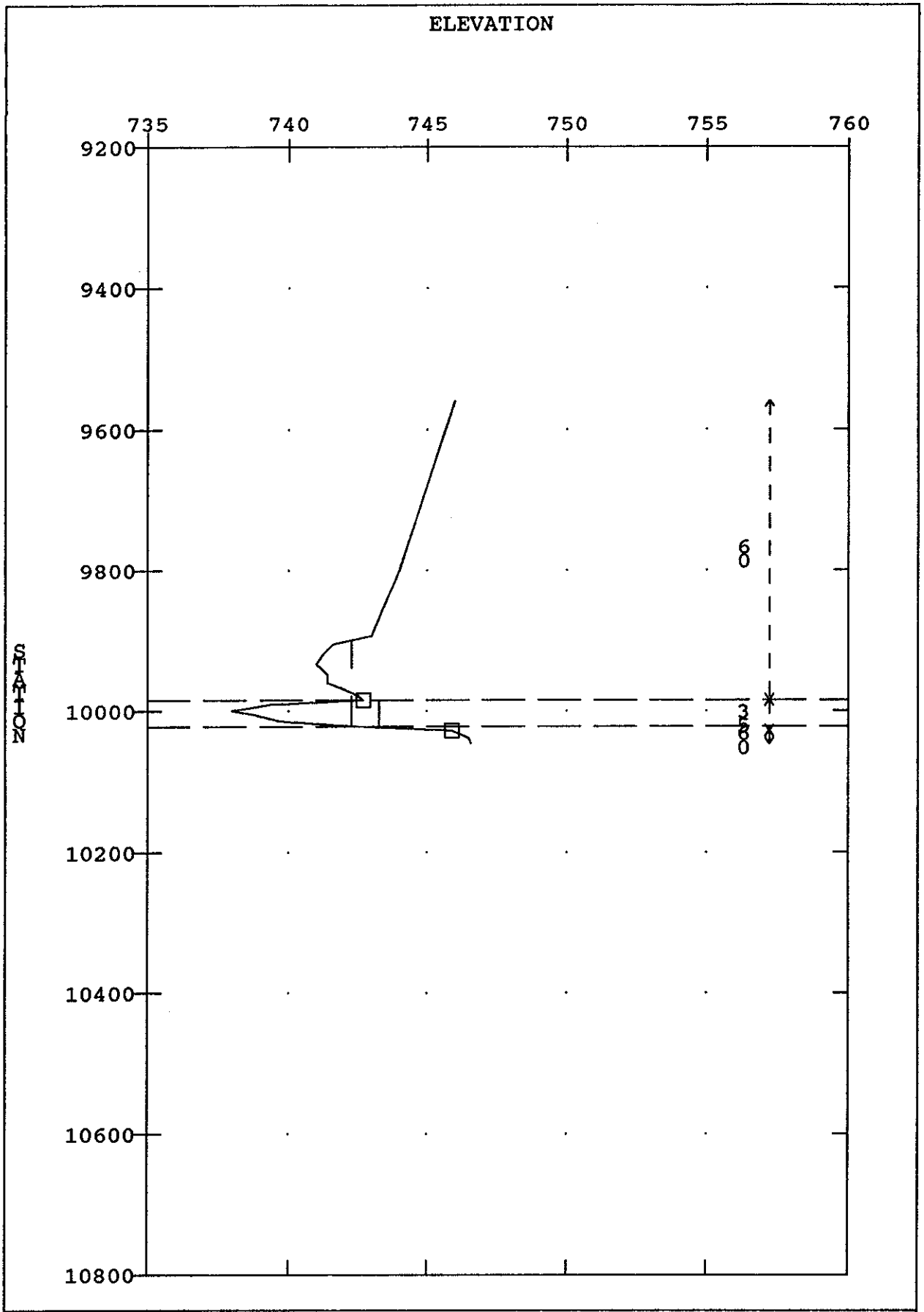
SECTION : 1

UNNAMED WASH NO.1 100 YR



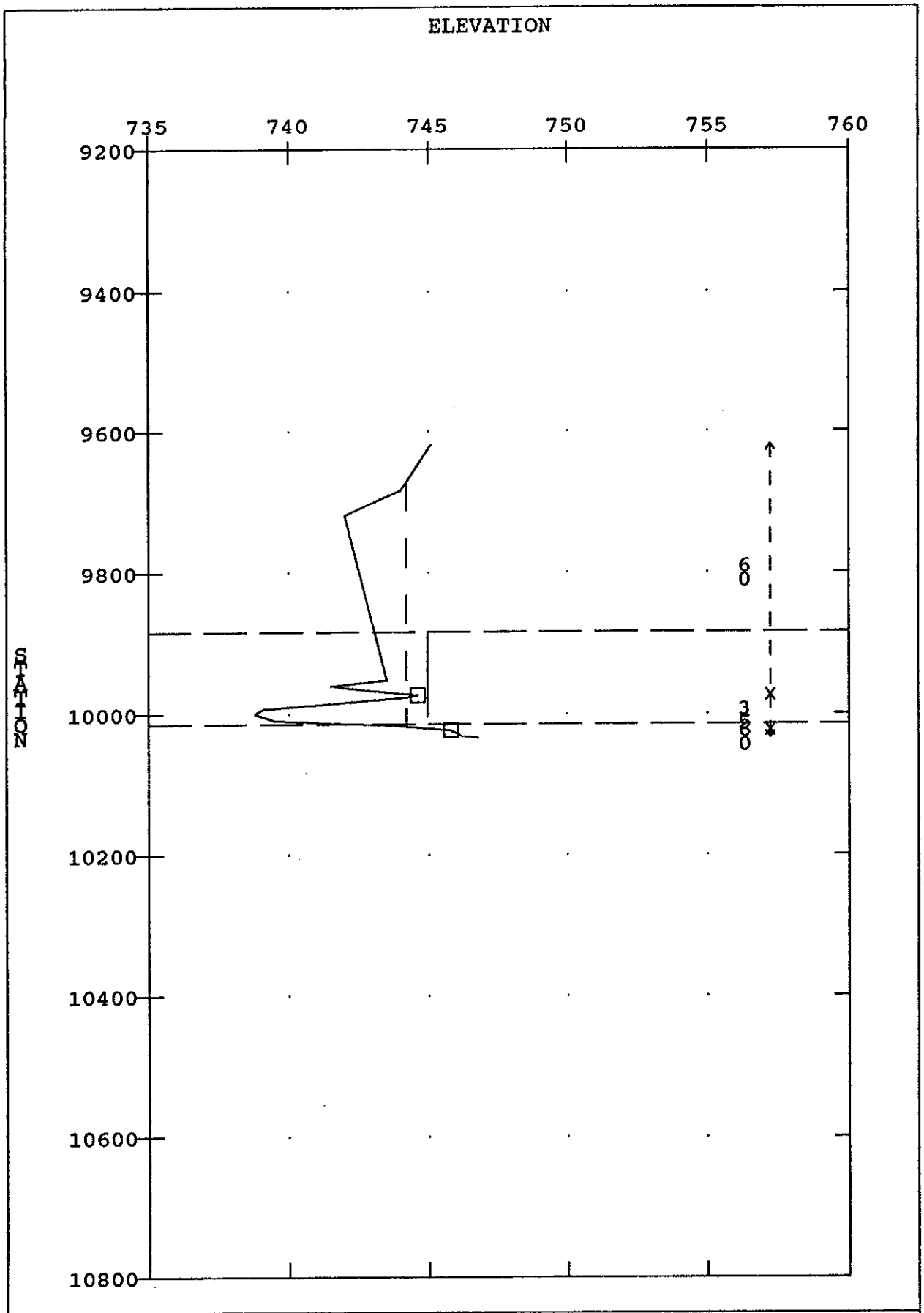
SECTION : 2

UNNAMED WASH NO.1 100 YR



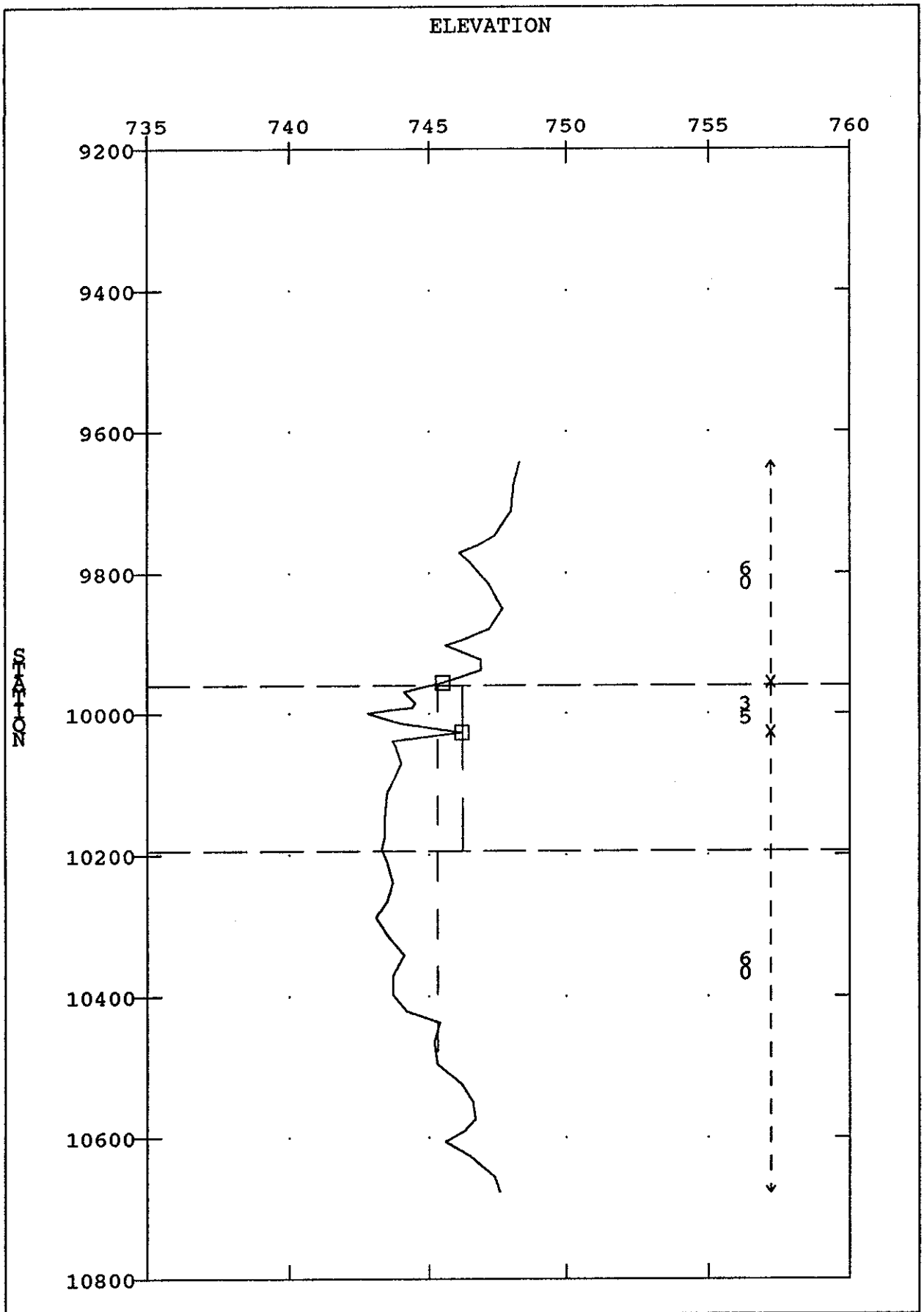
SECTION : 061

UNNAMED WASH NO. 1 (NATURAL)



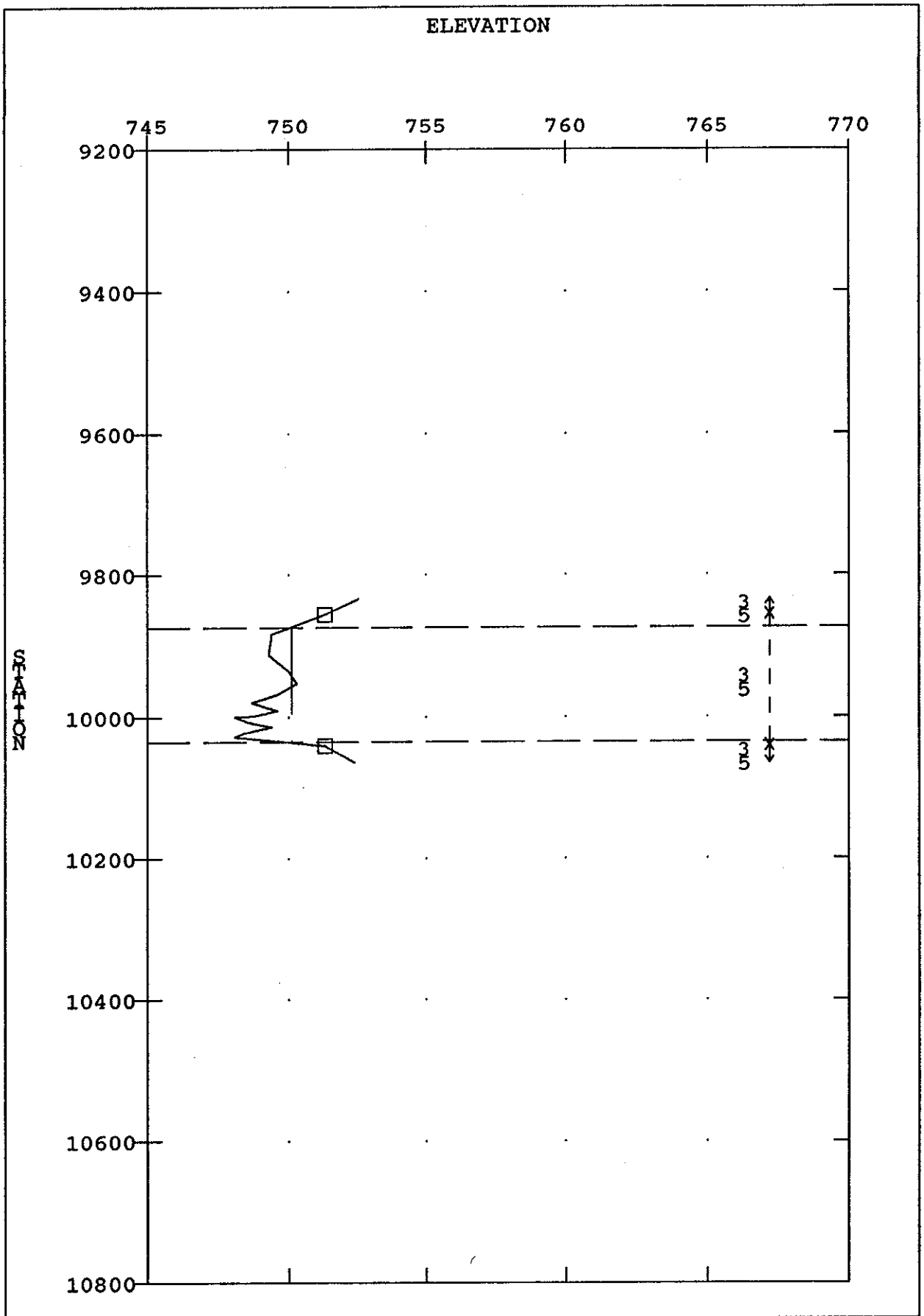
SECTION : 150

UNNAMED WASH NO. 1 (NATURAL)



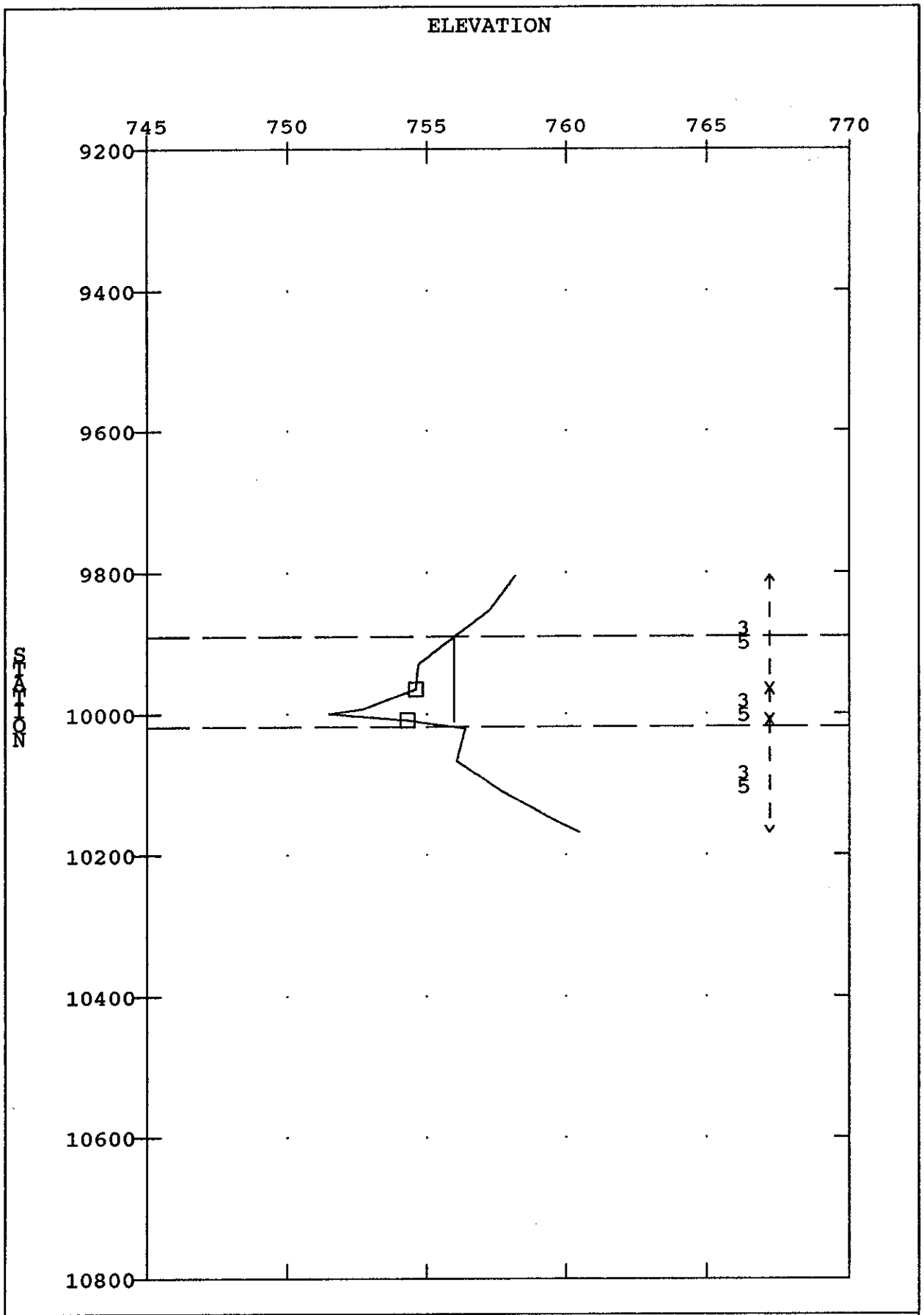
SECTION : 337

UNNAMED WASH NO. 1 (NATURAL)



SECTION : 555

UNNAMED WASH NO. 1 (NATURAL)



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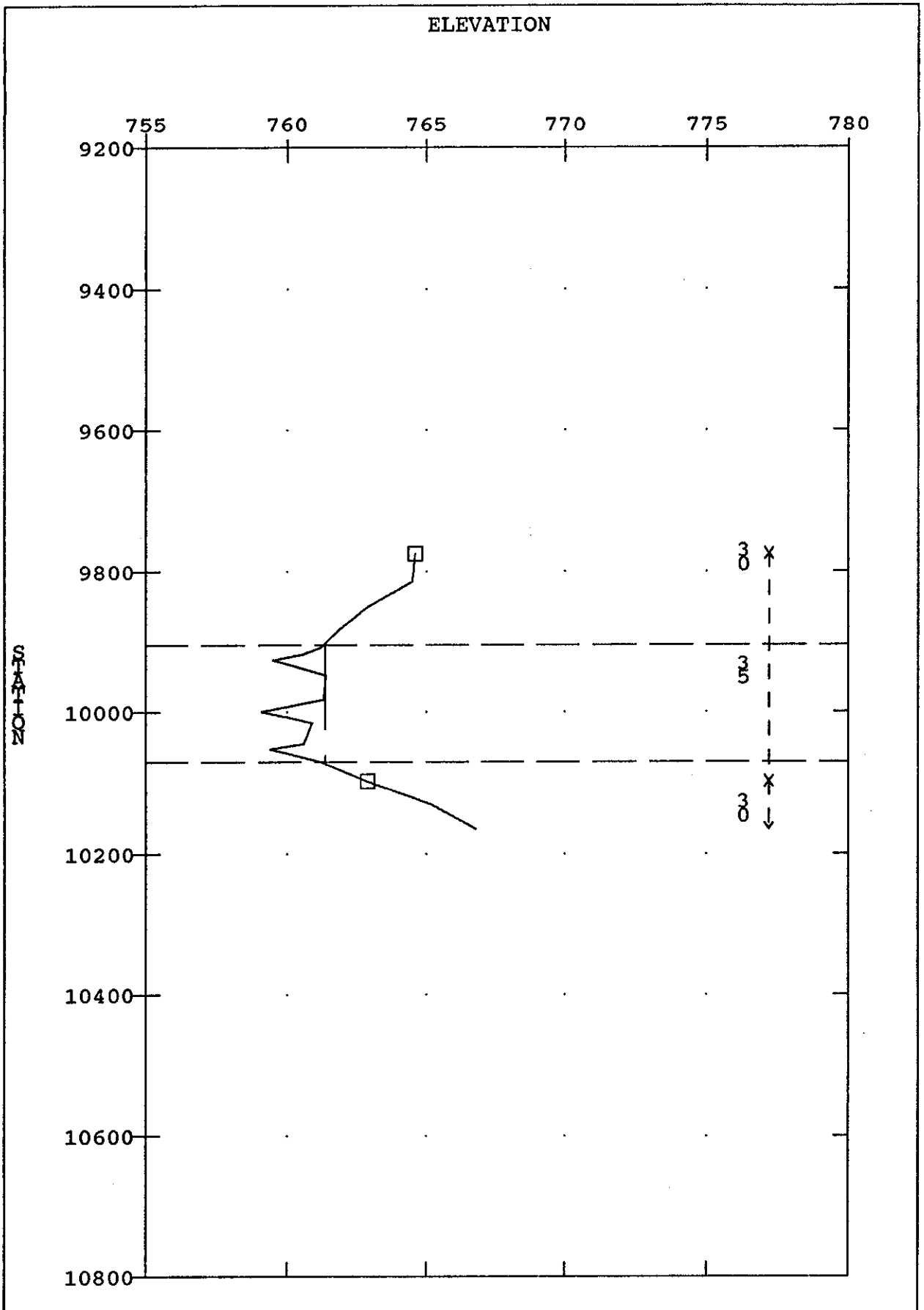

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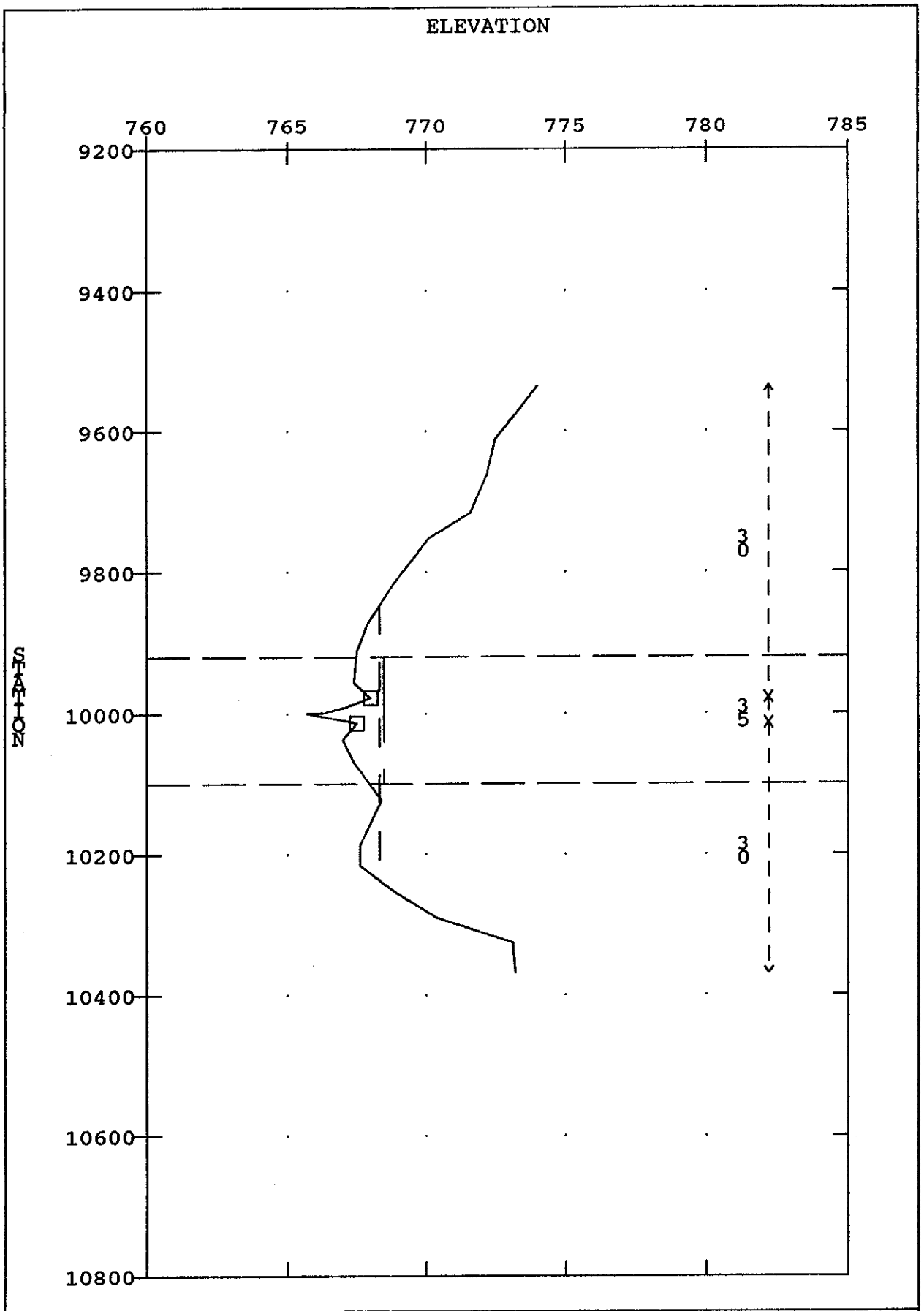

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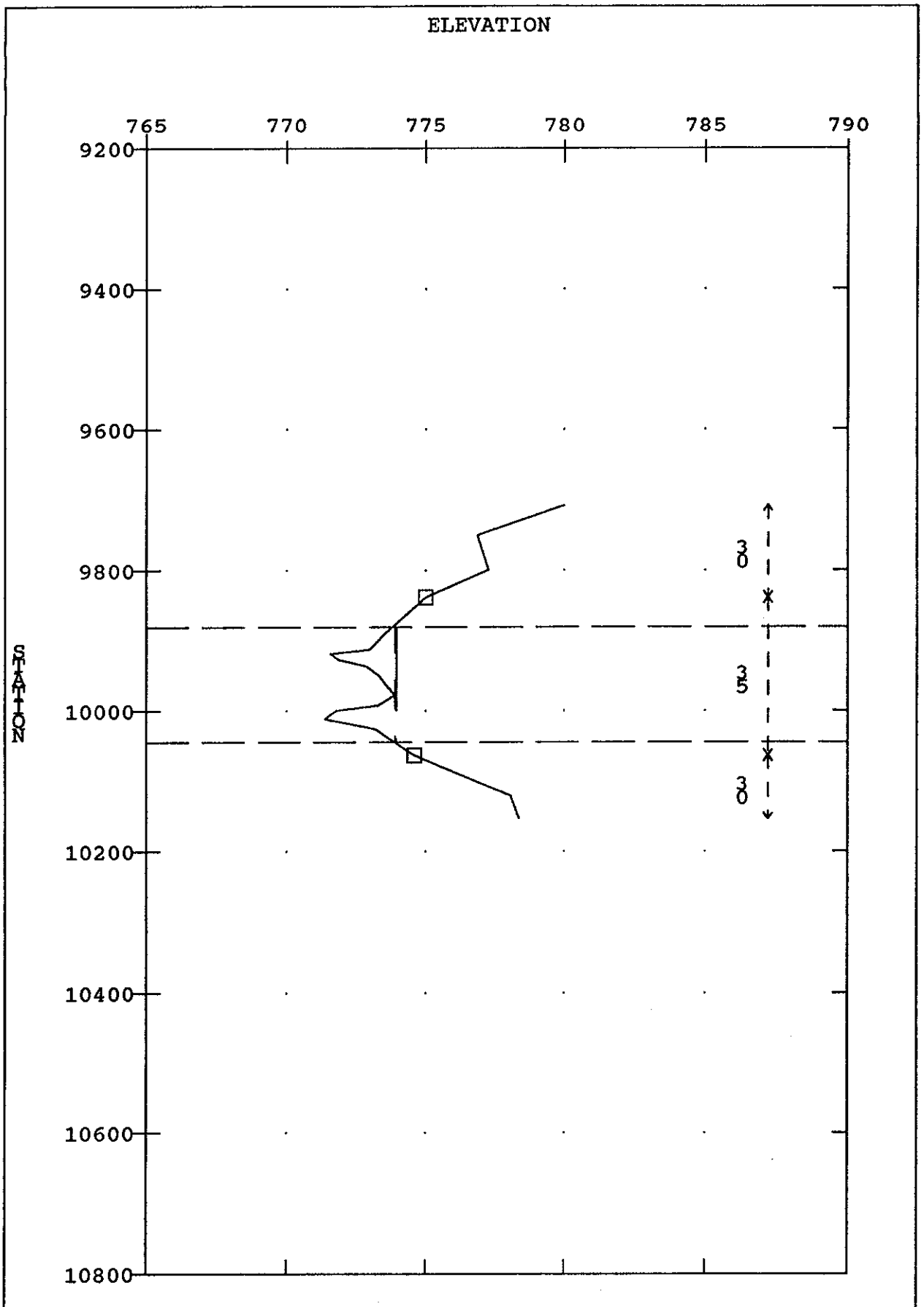

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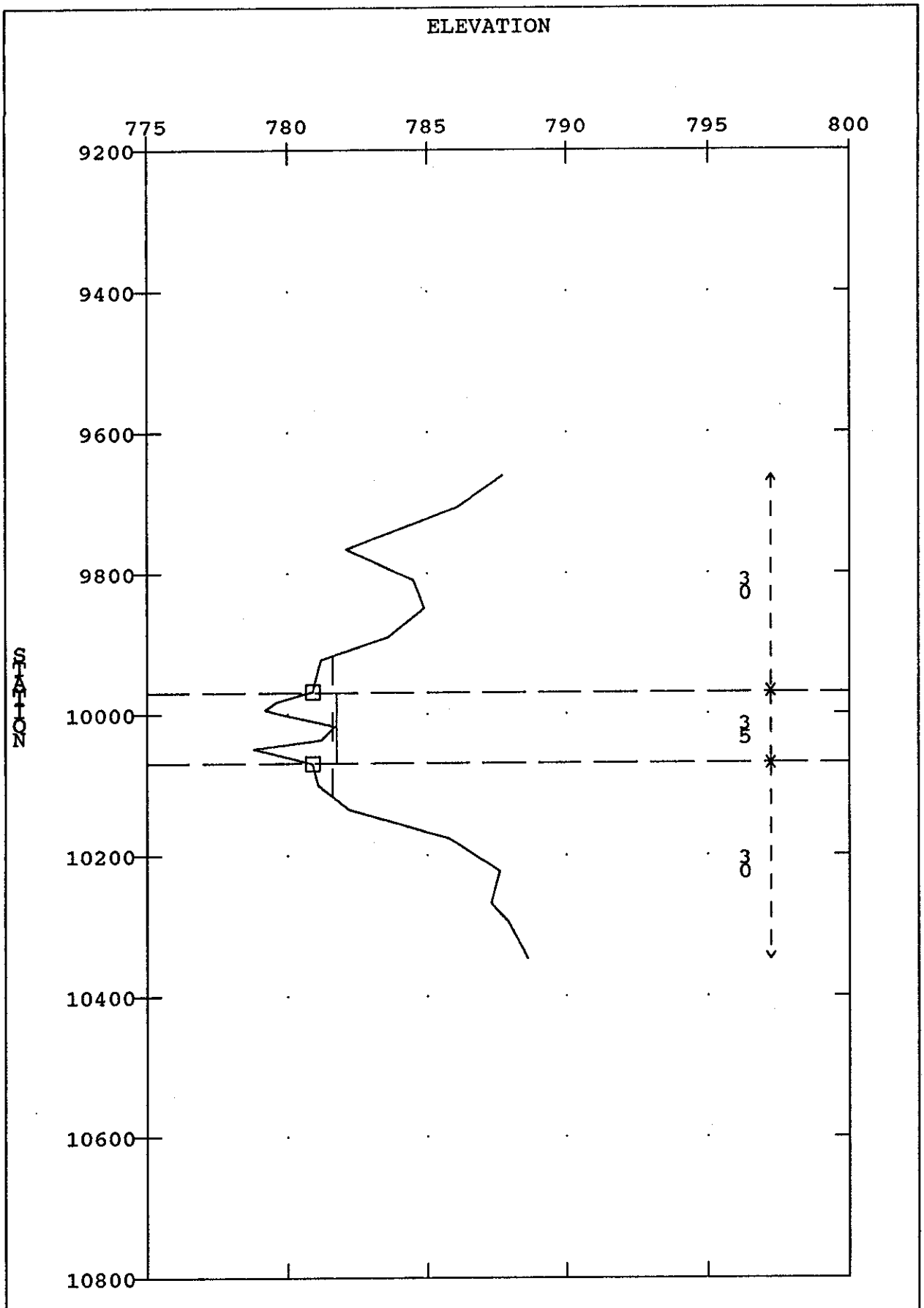

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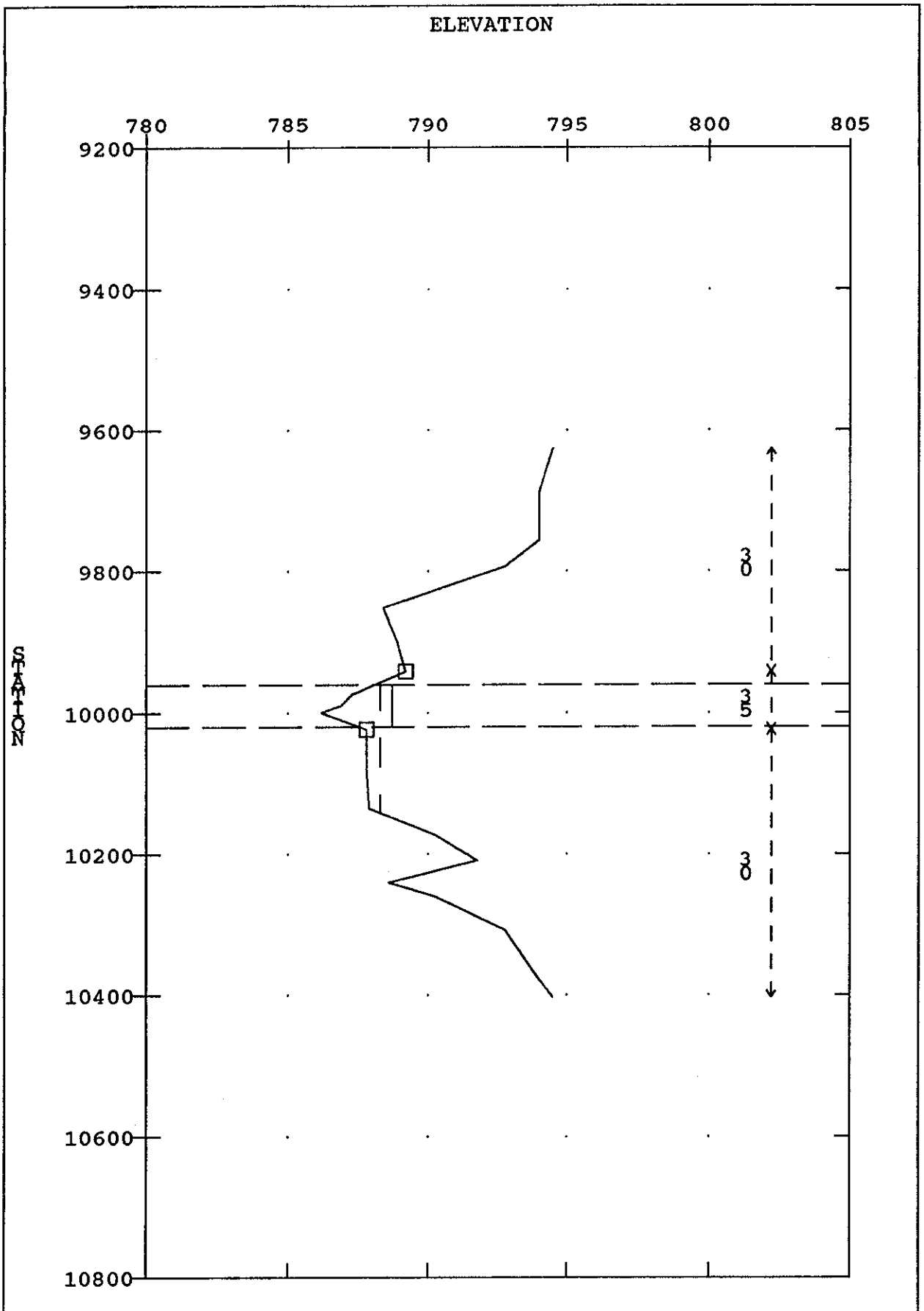

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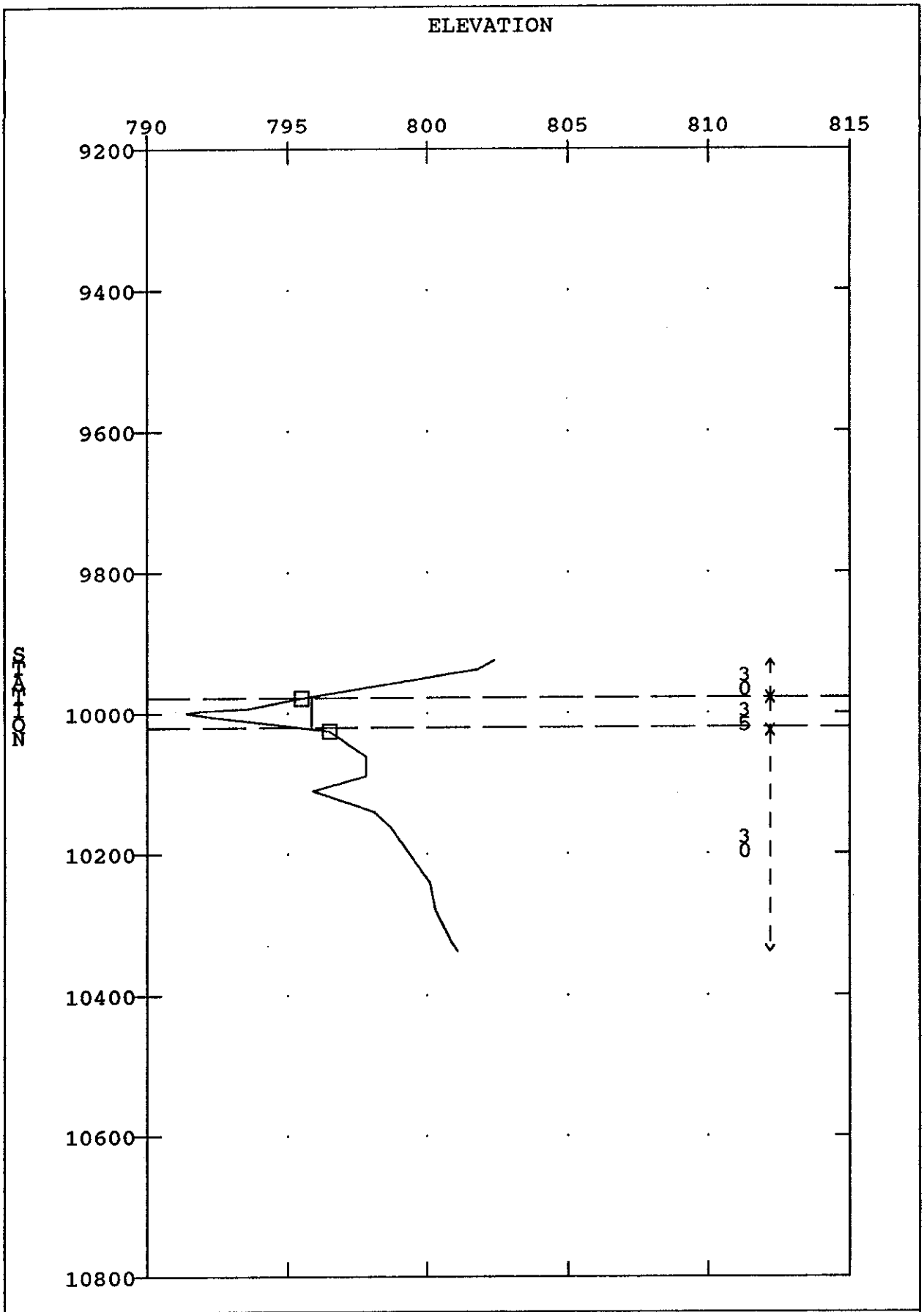

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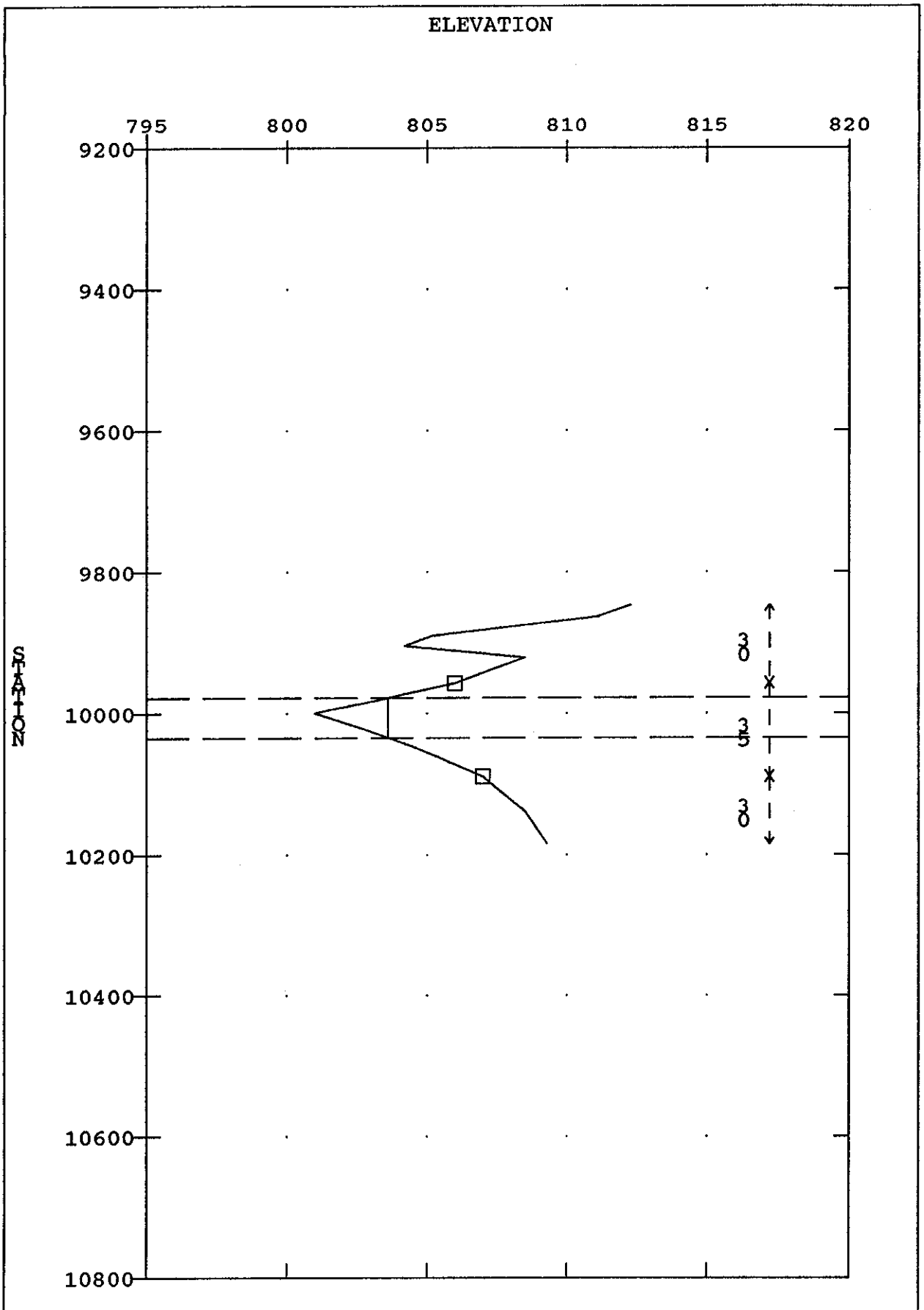

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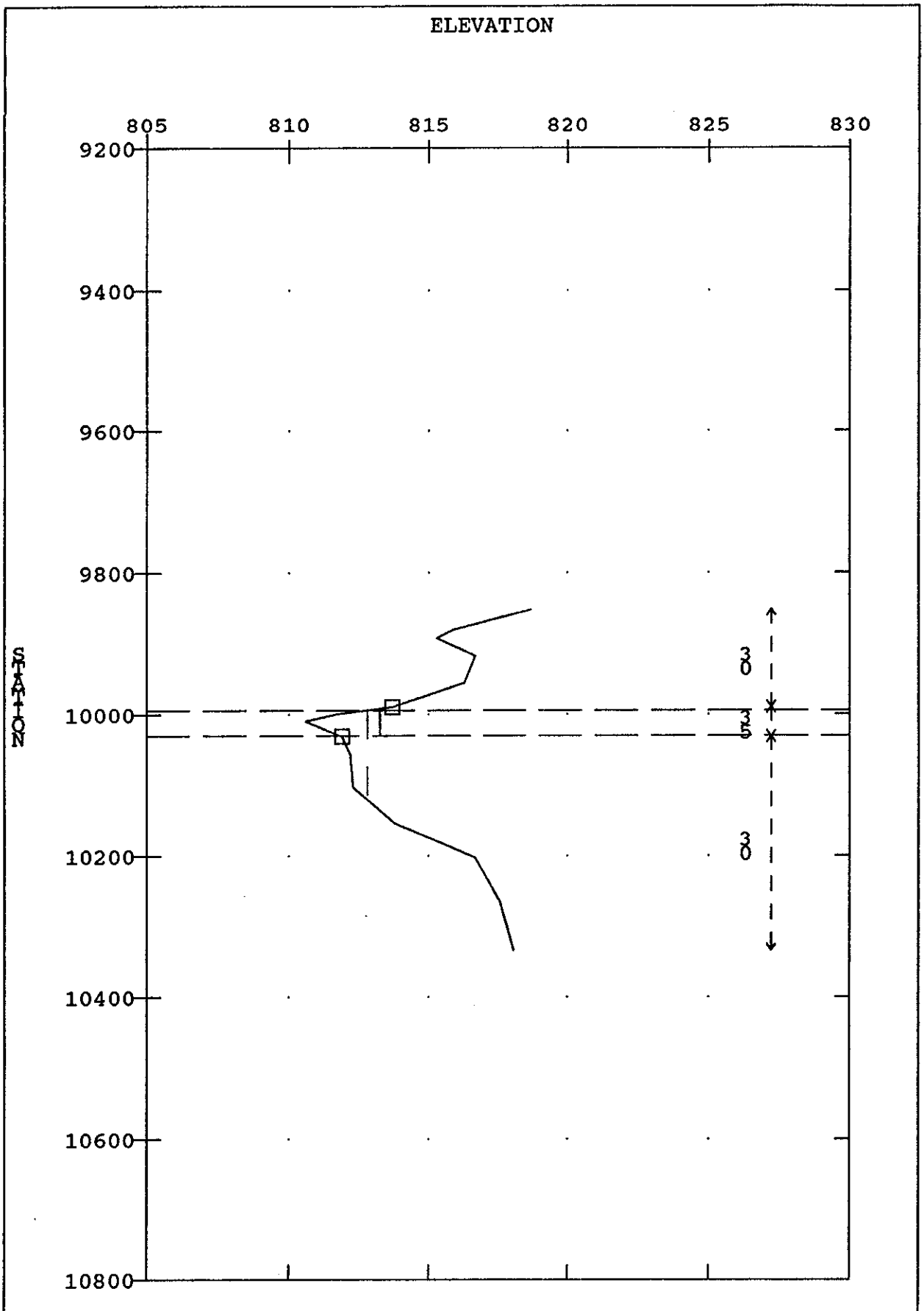

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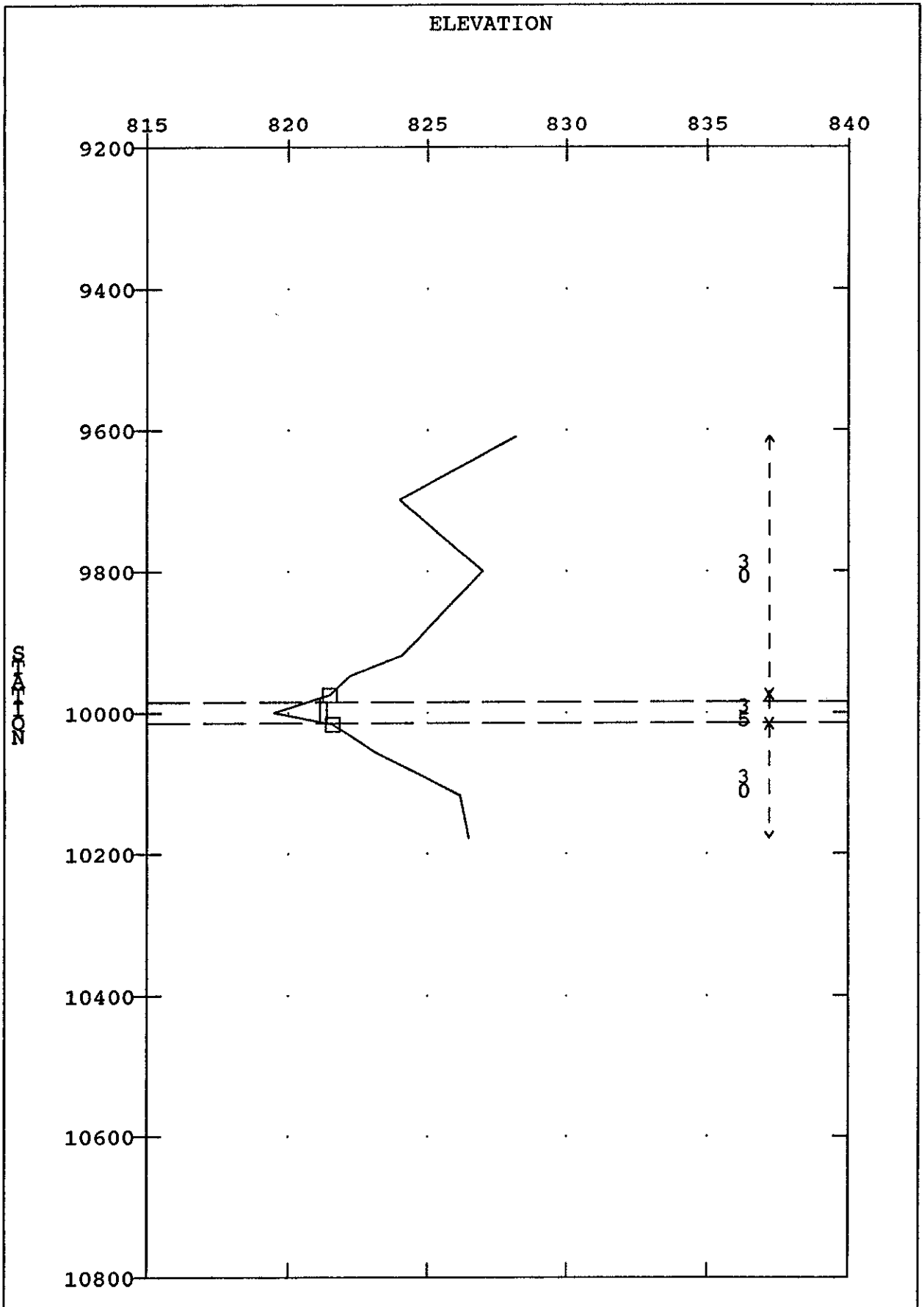

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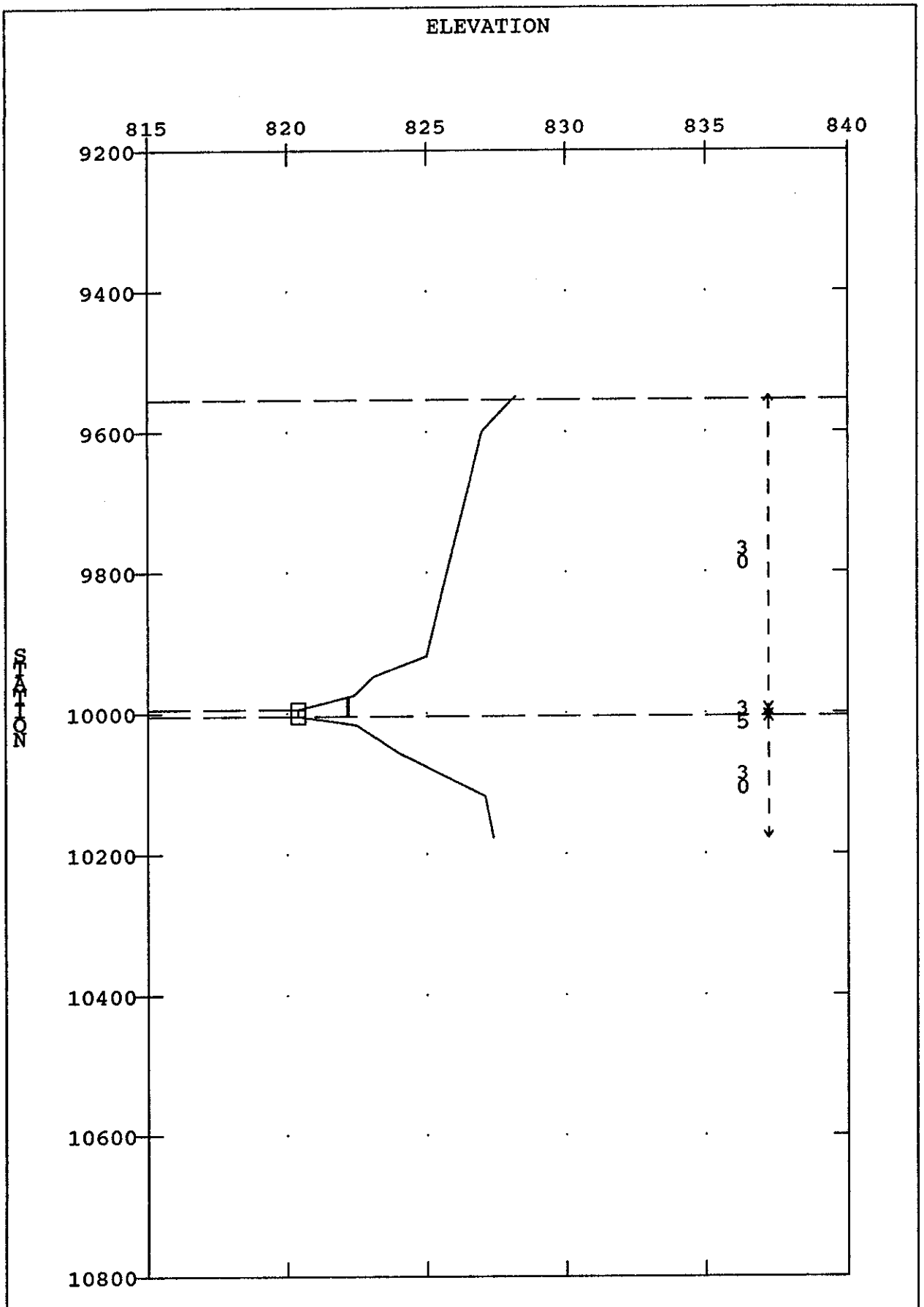

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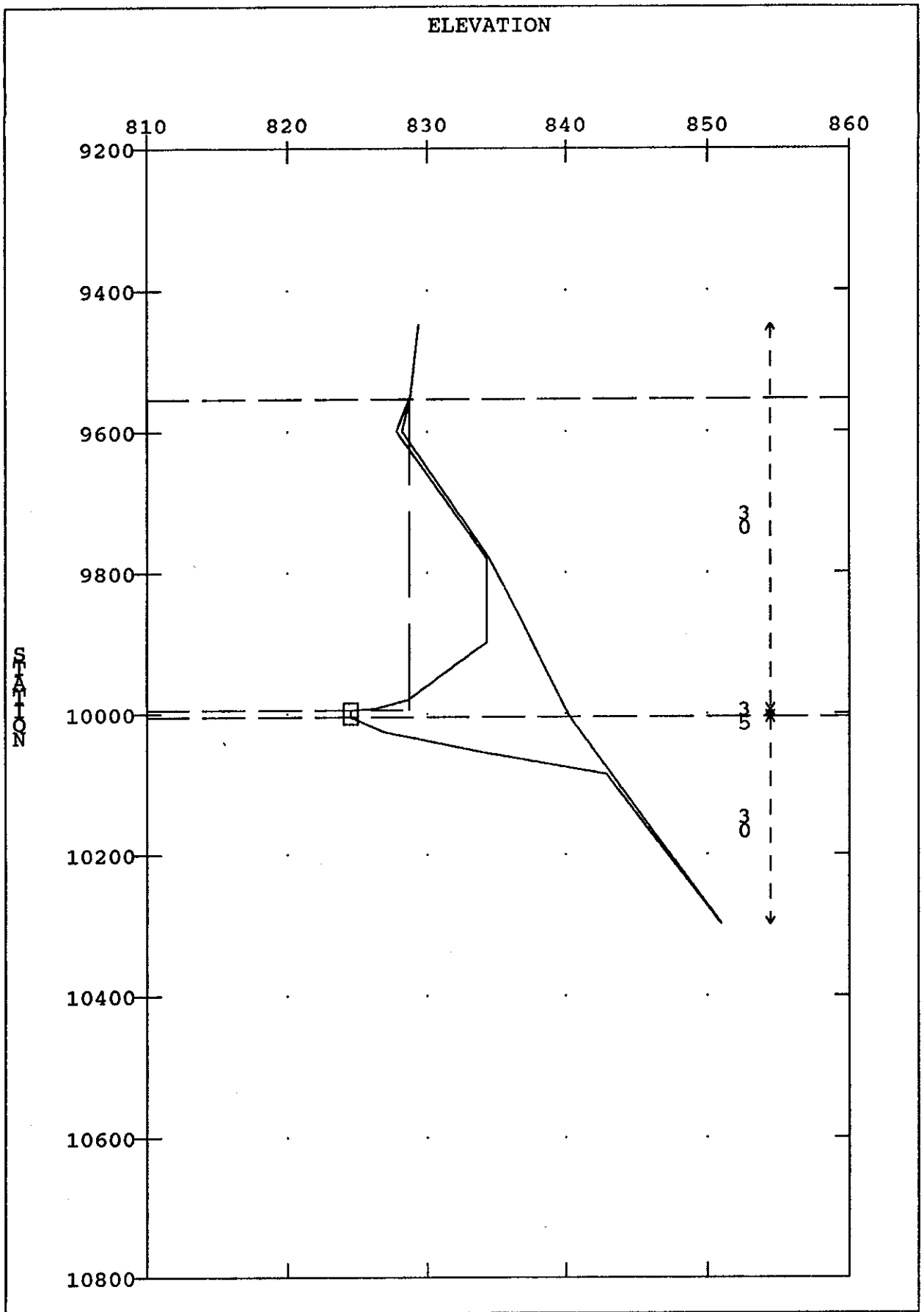

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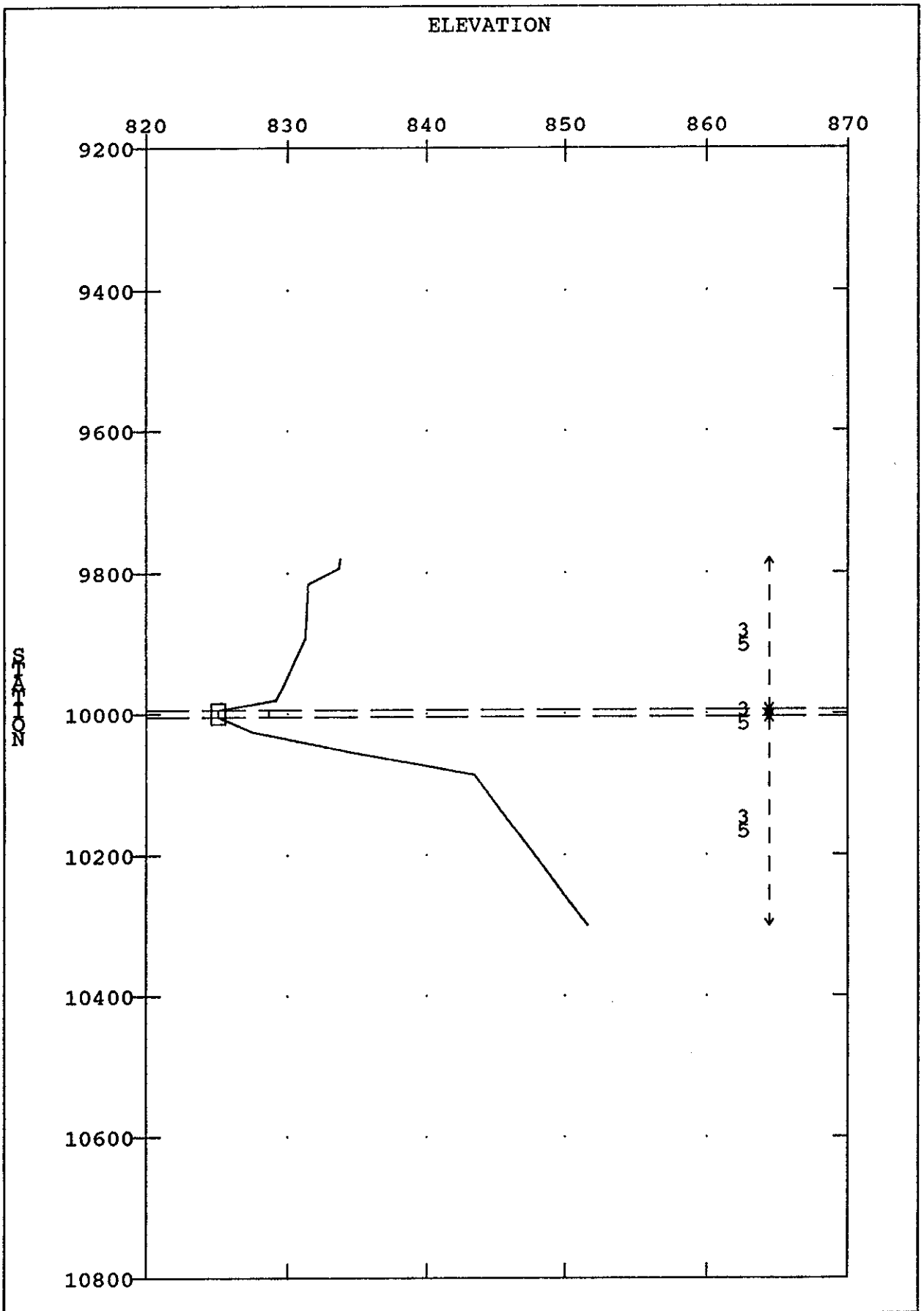

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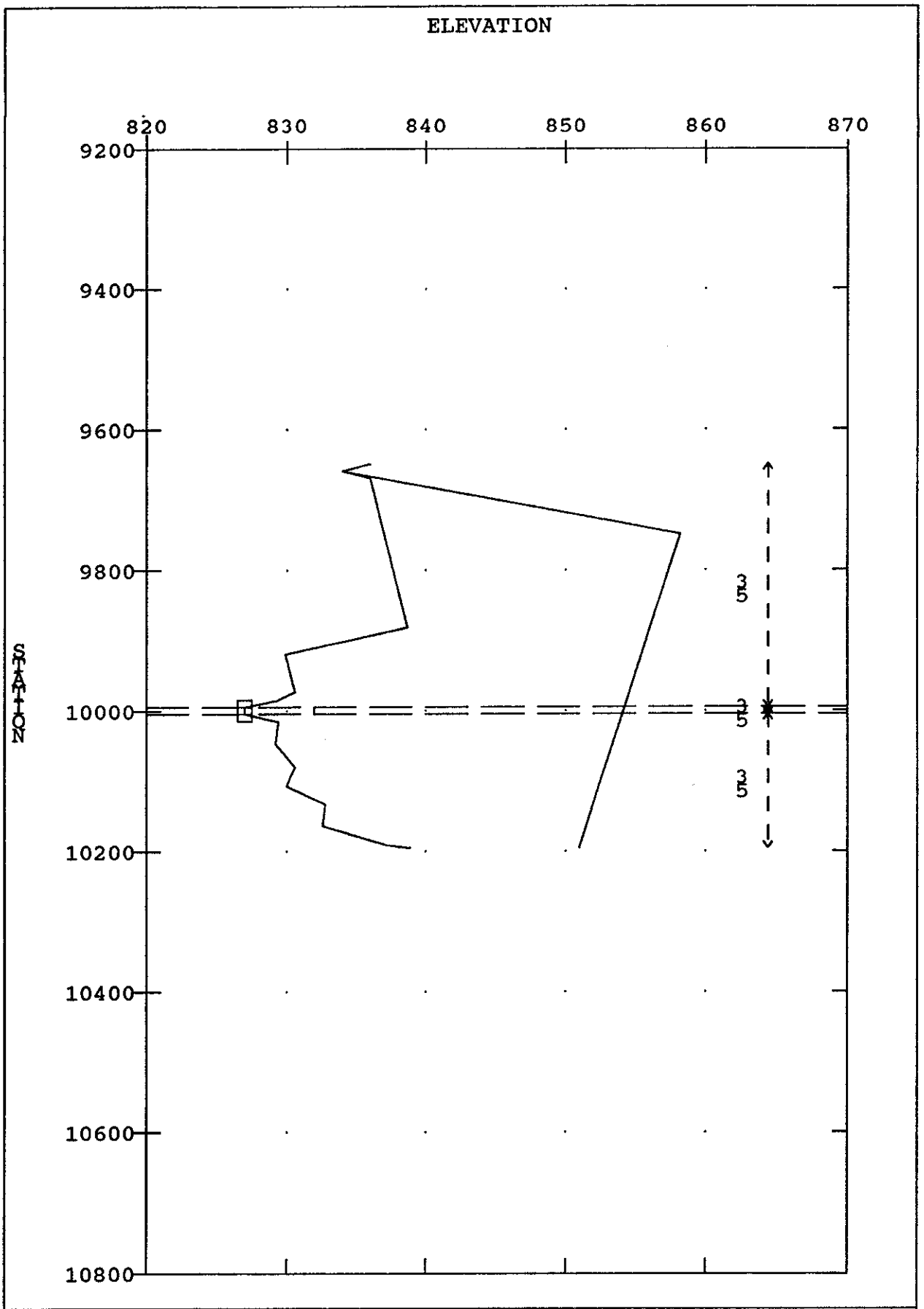

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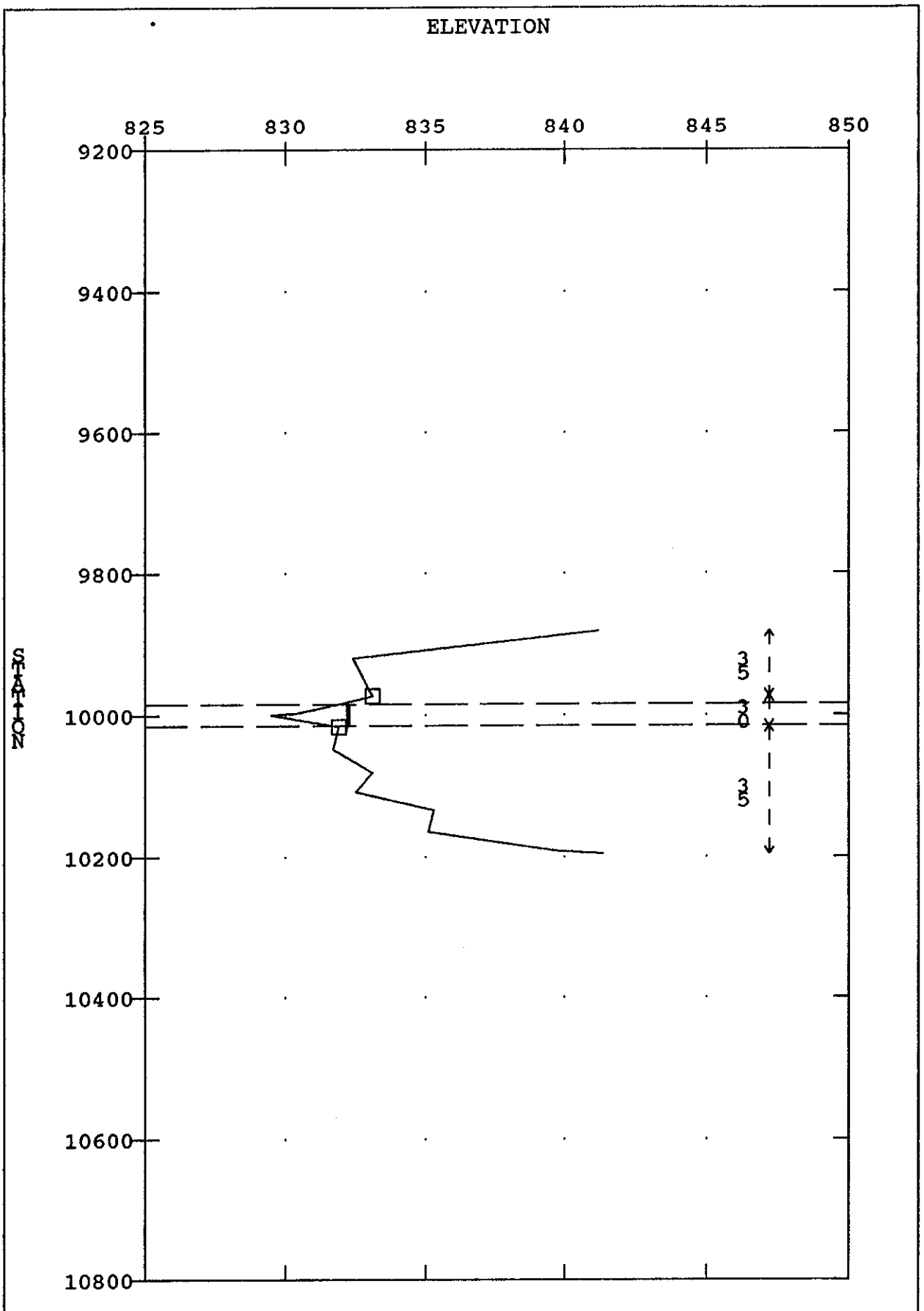

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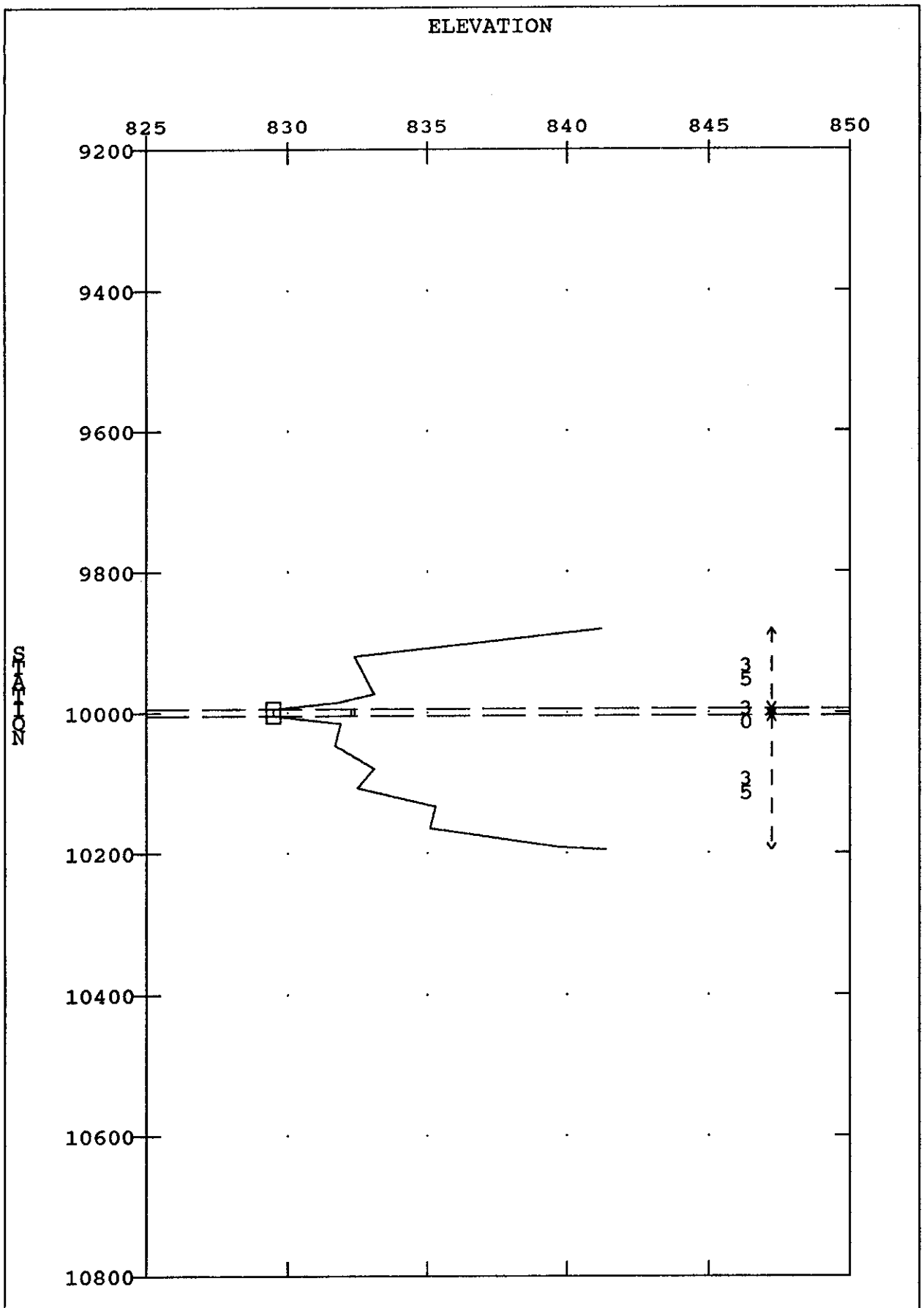

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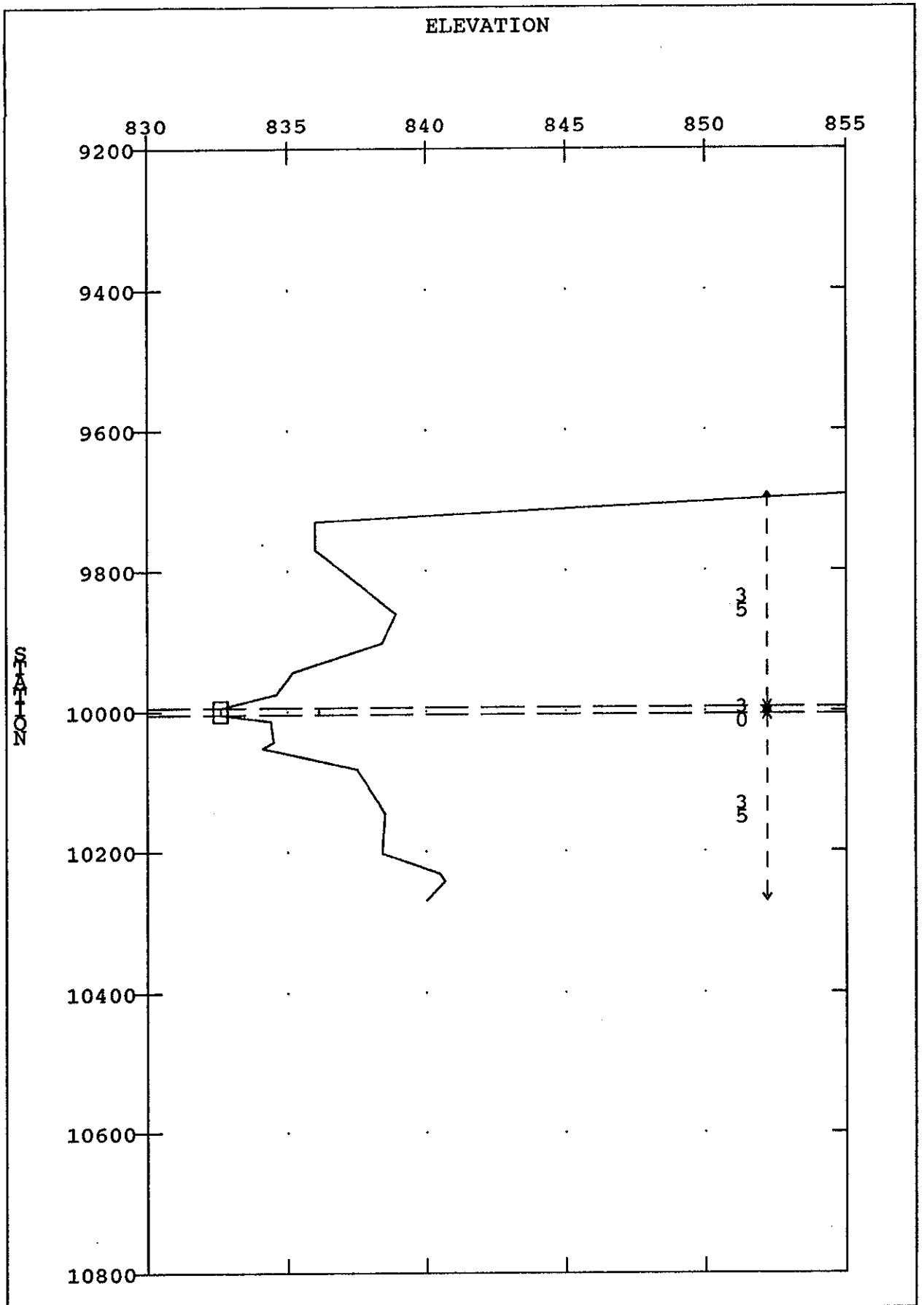

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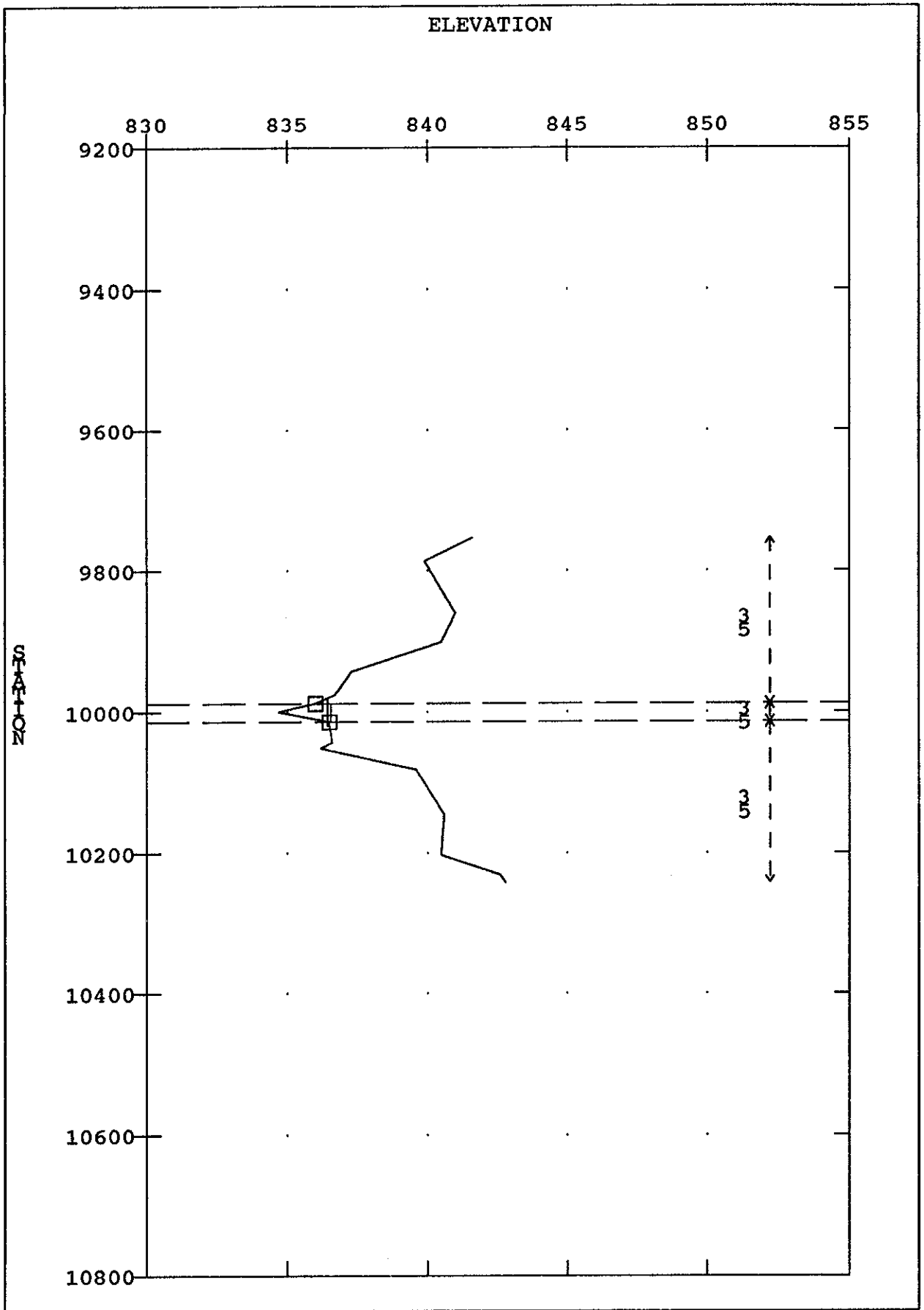

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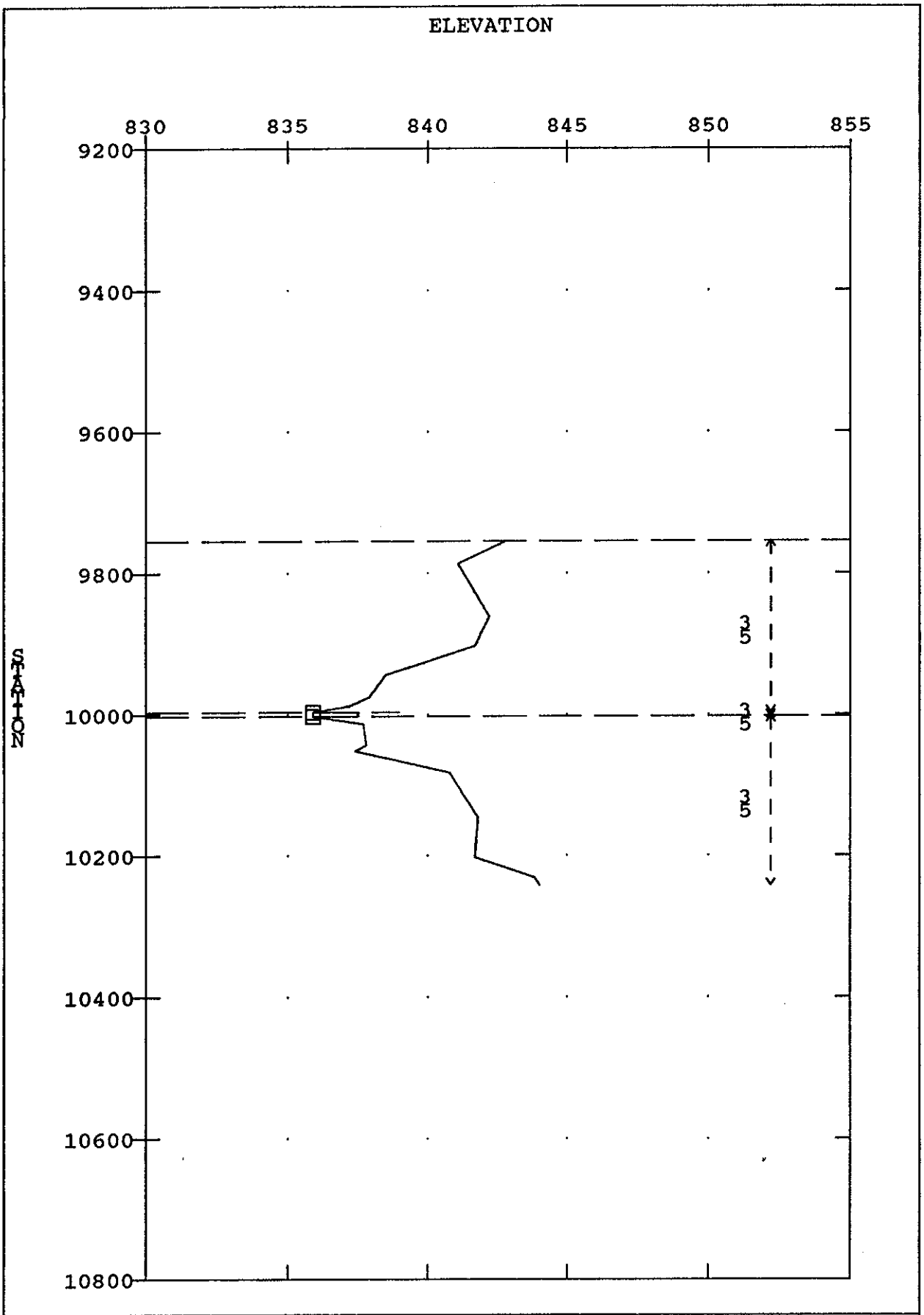

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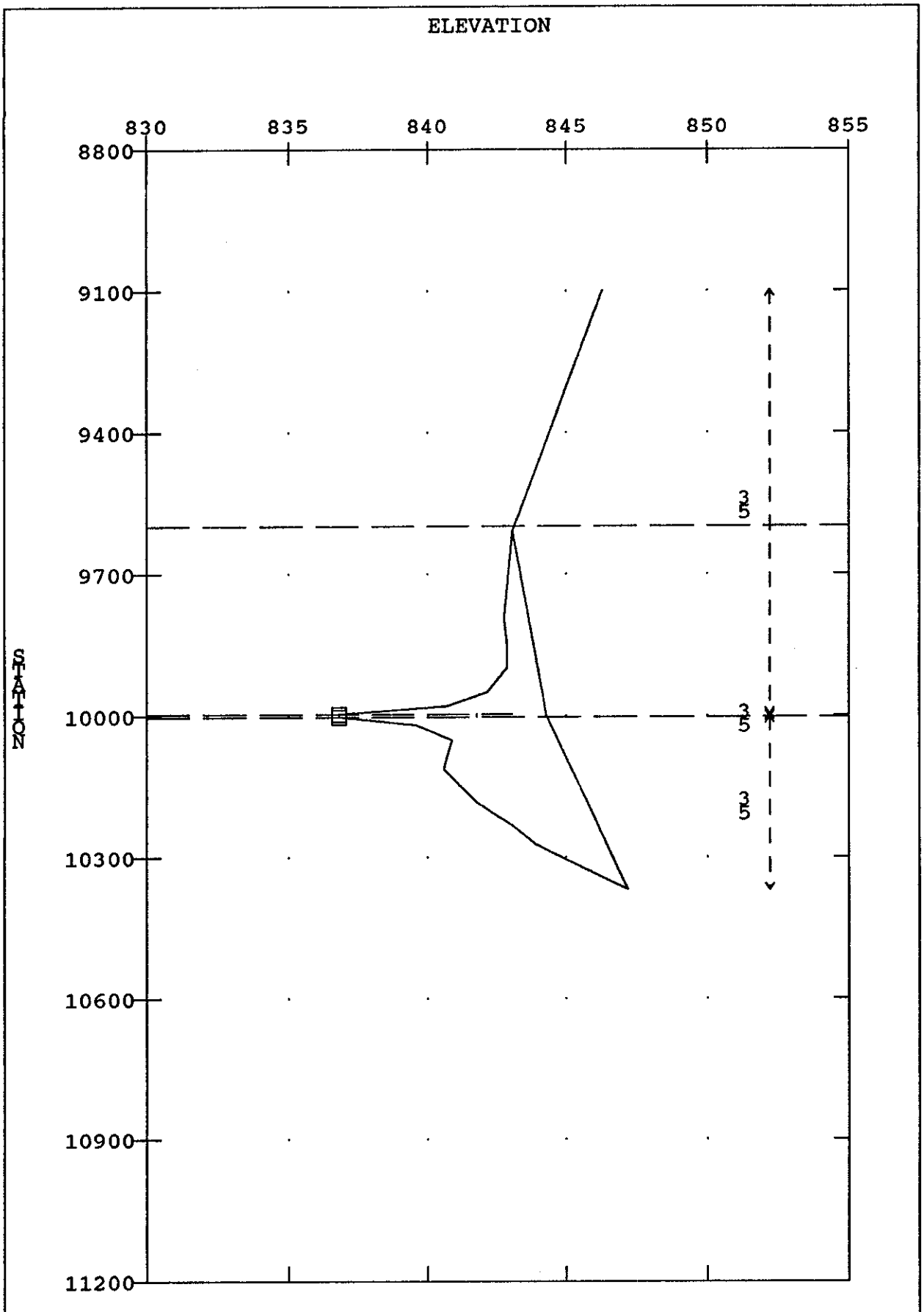

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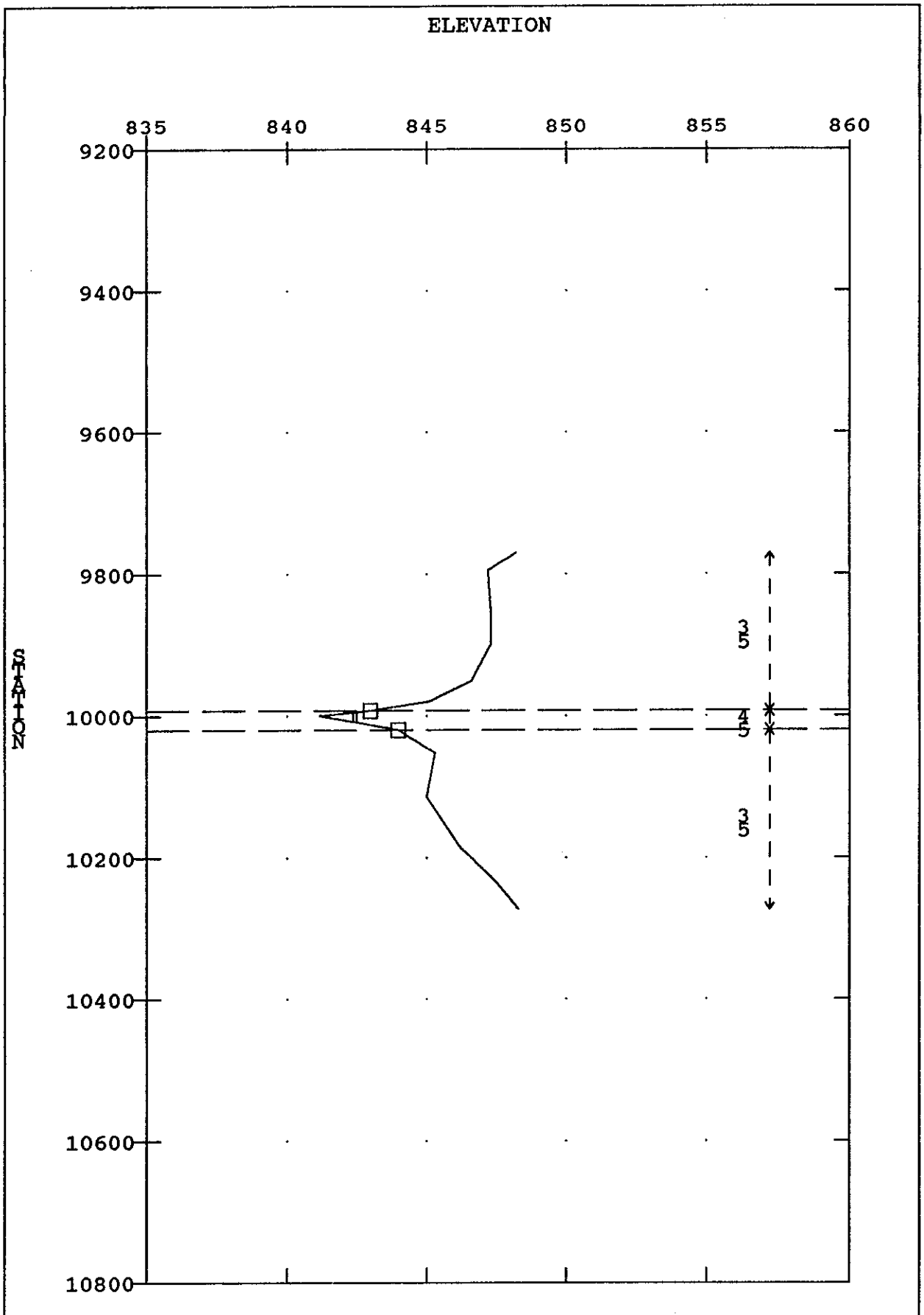

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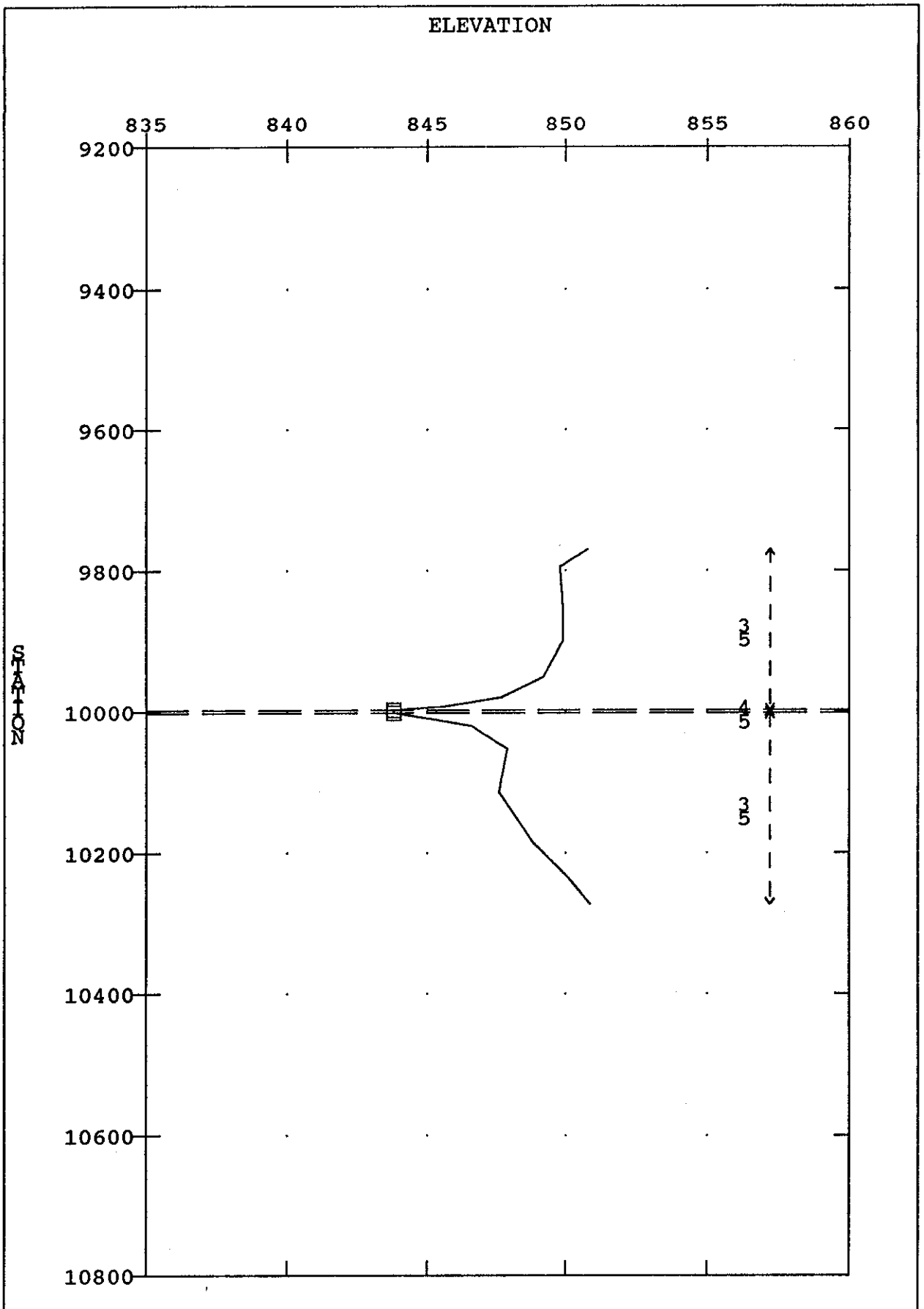

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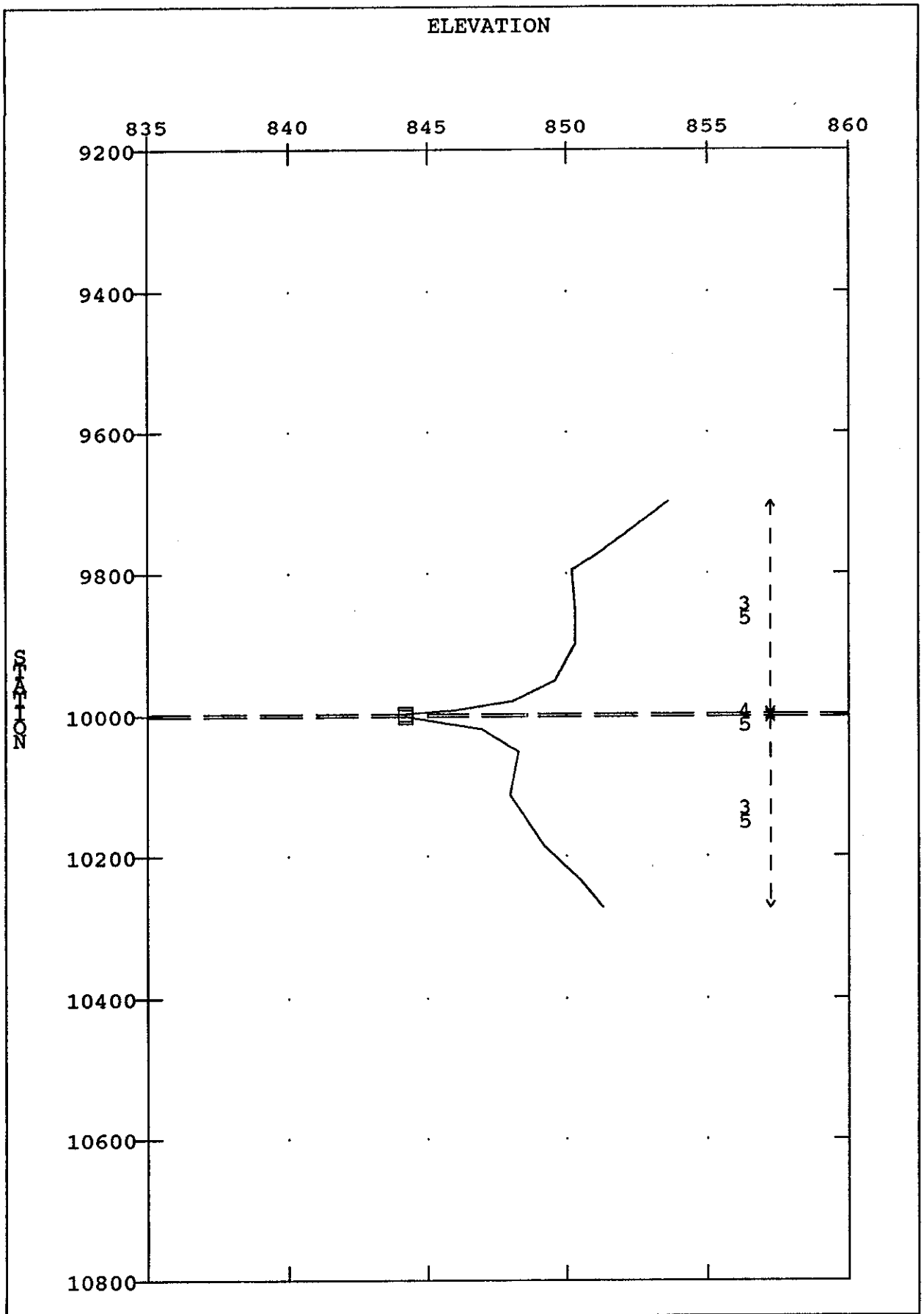

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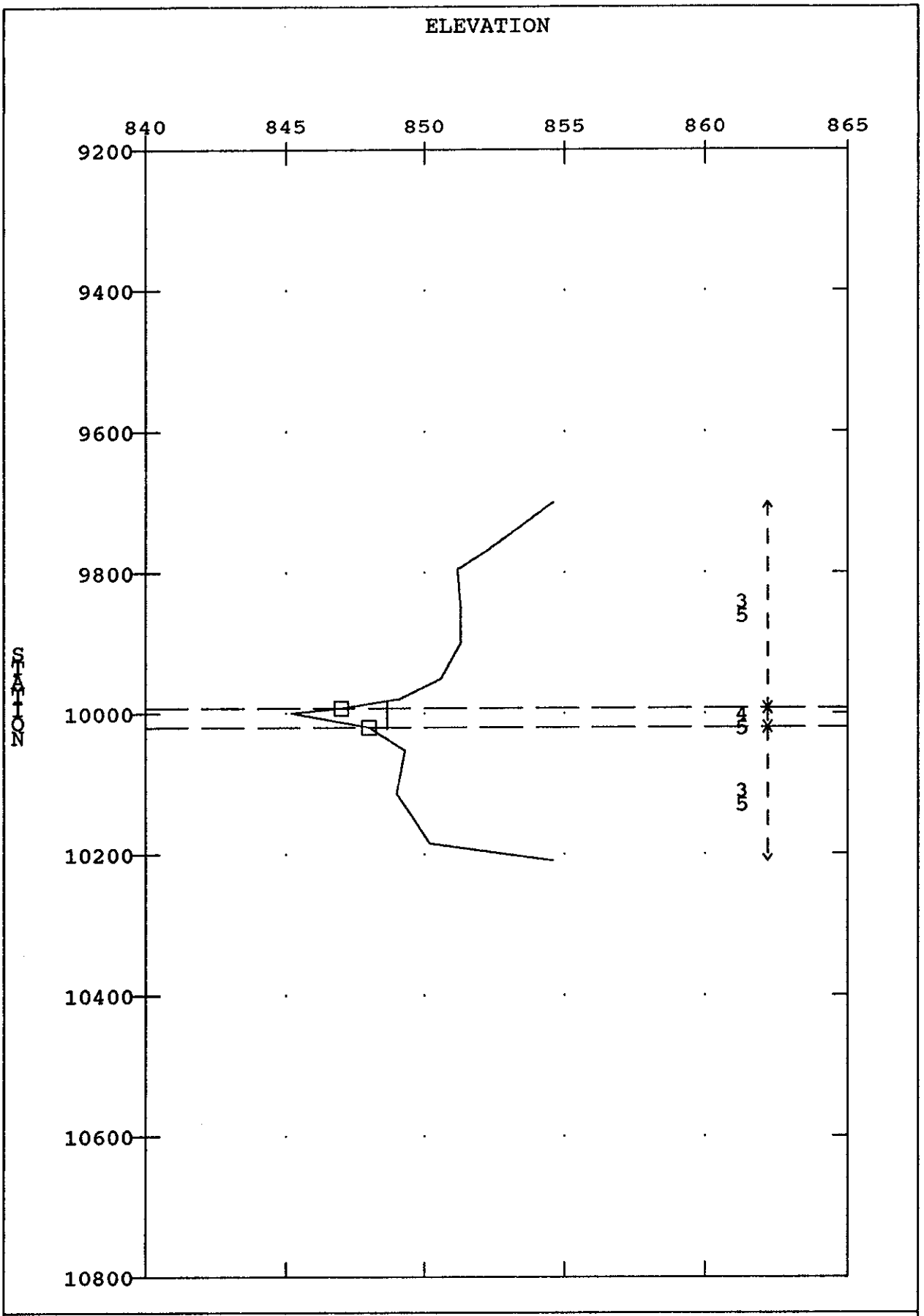

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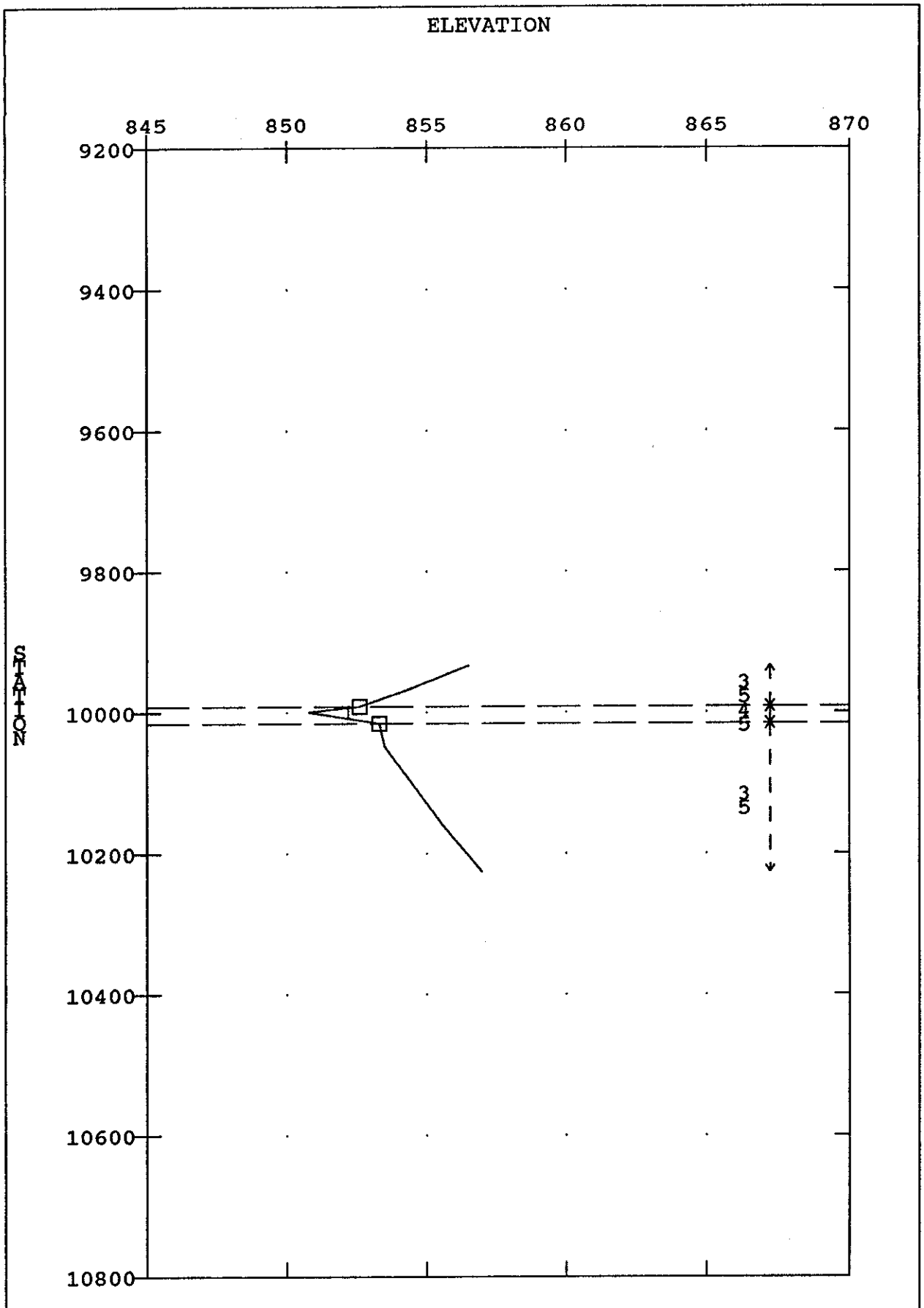

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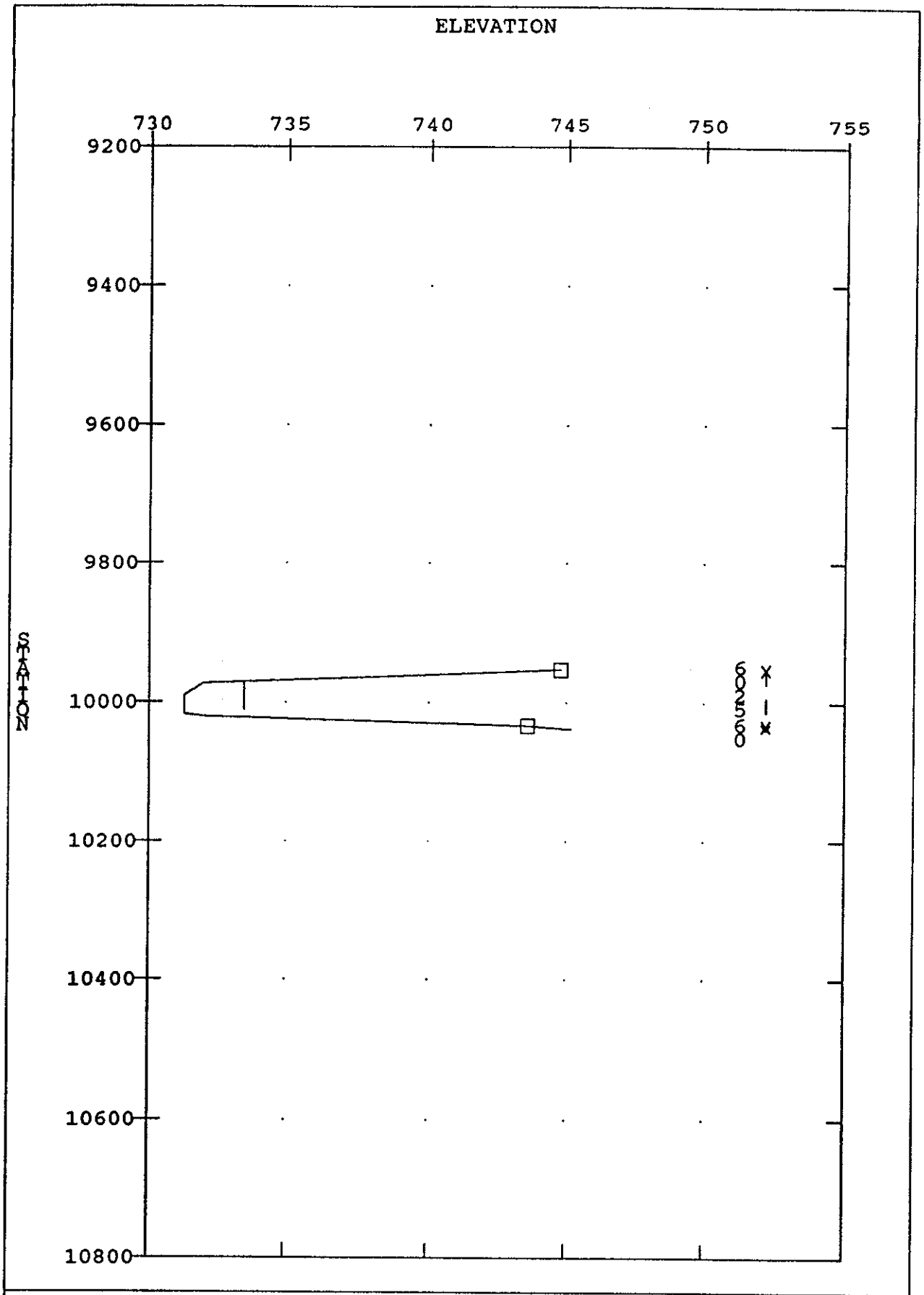
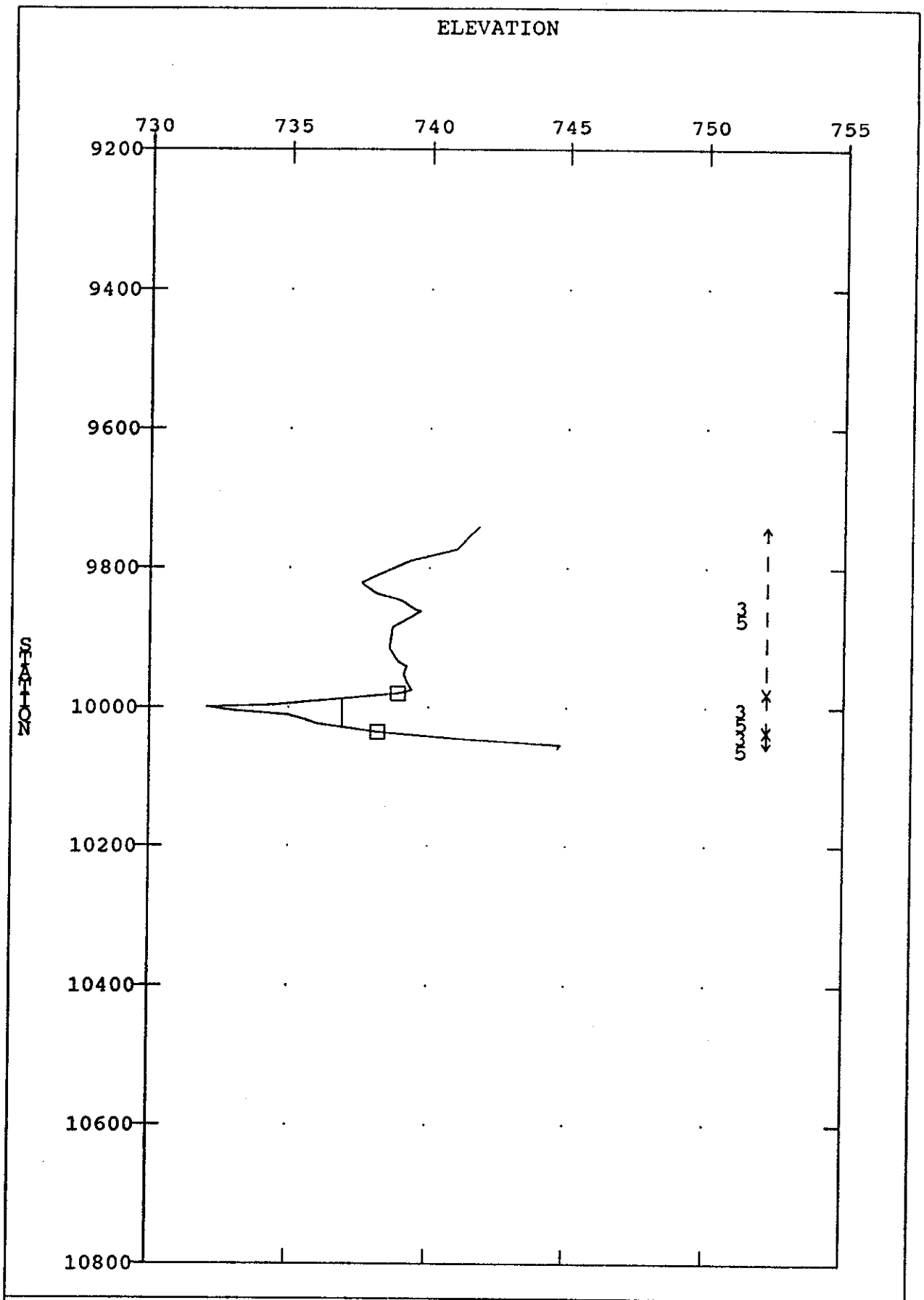


SECTION : 3888

UNNAMED WASH NO. 2



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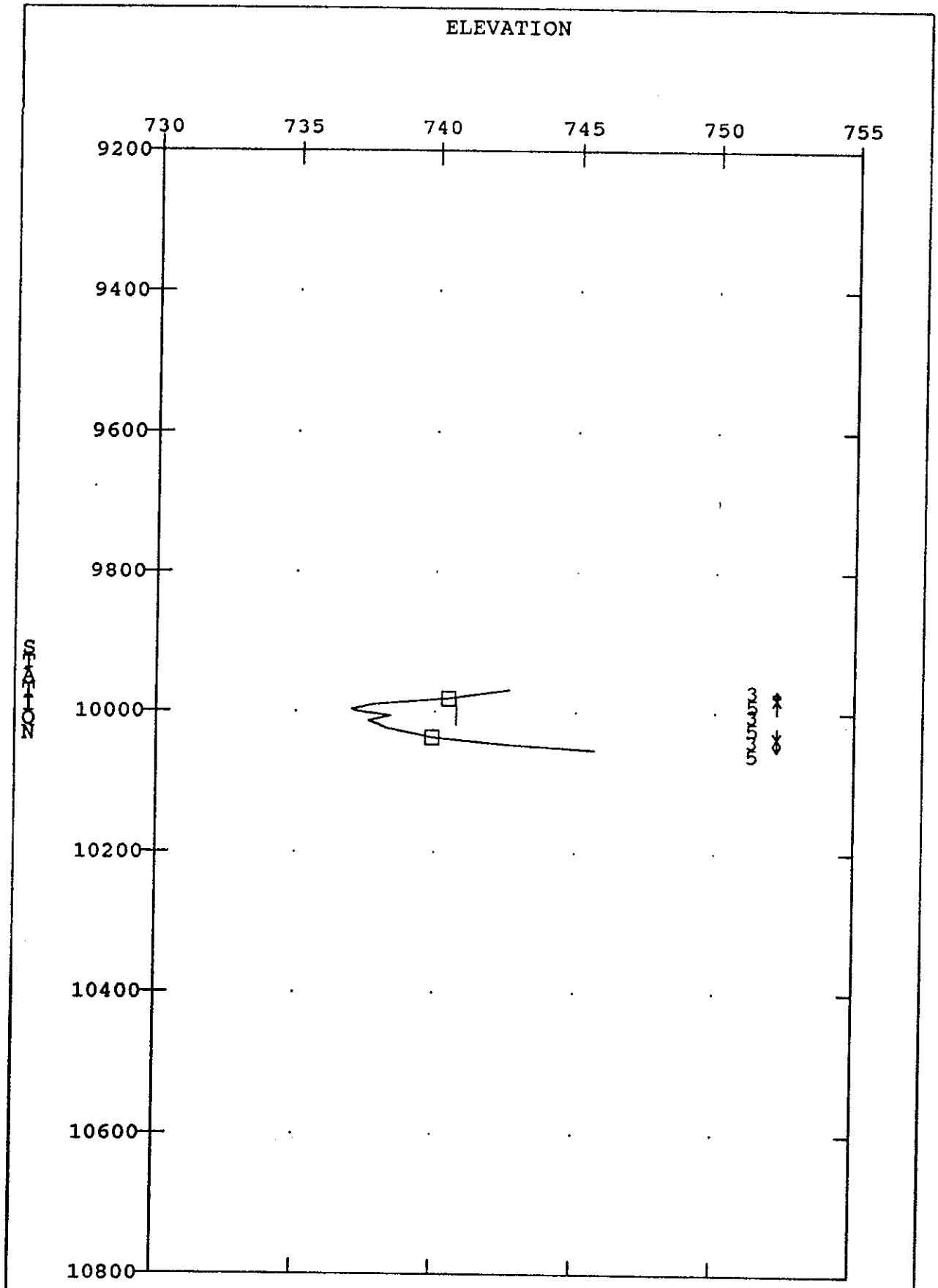
UNNAMED WASH NO. 2



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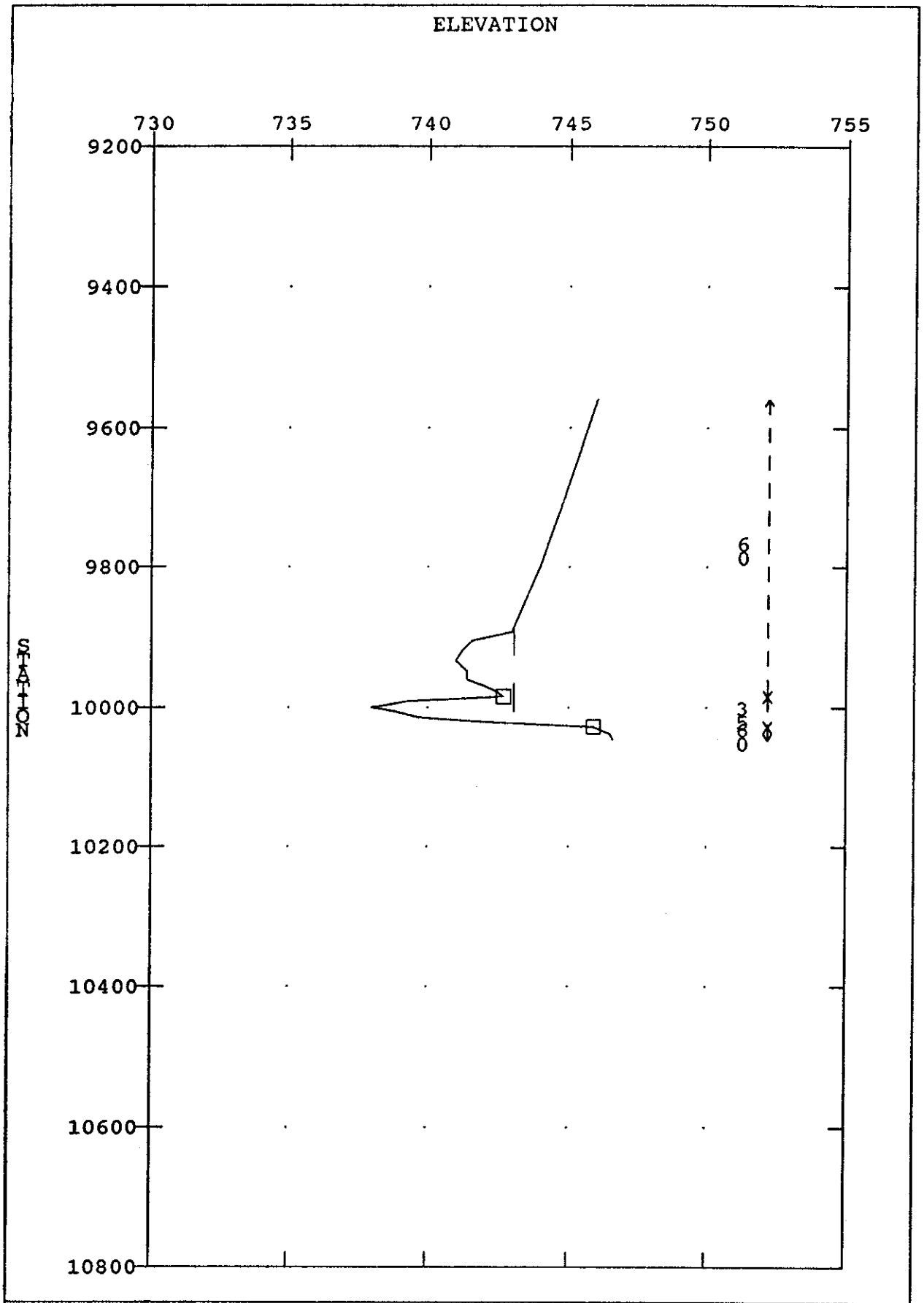
UNNAMED WASH NO. 2



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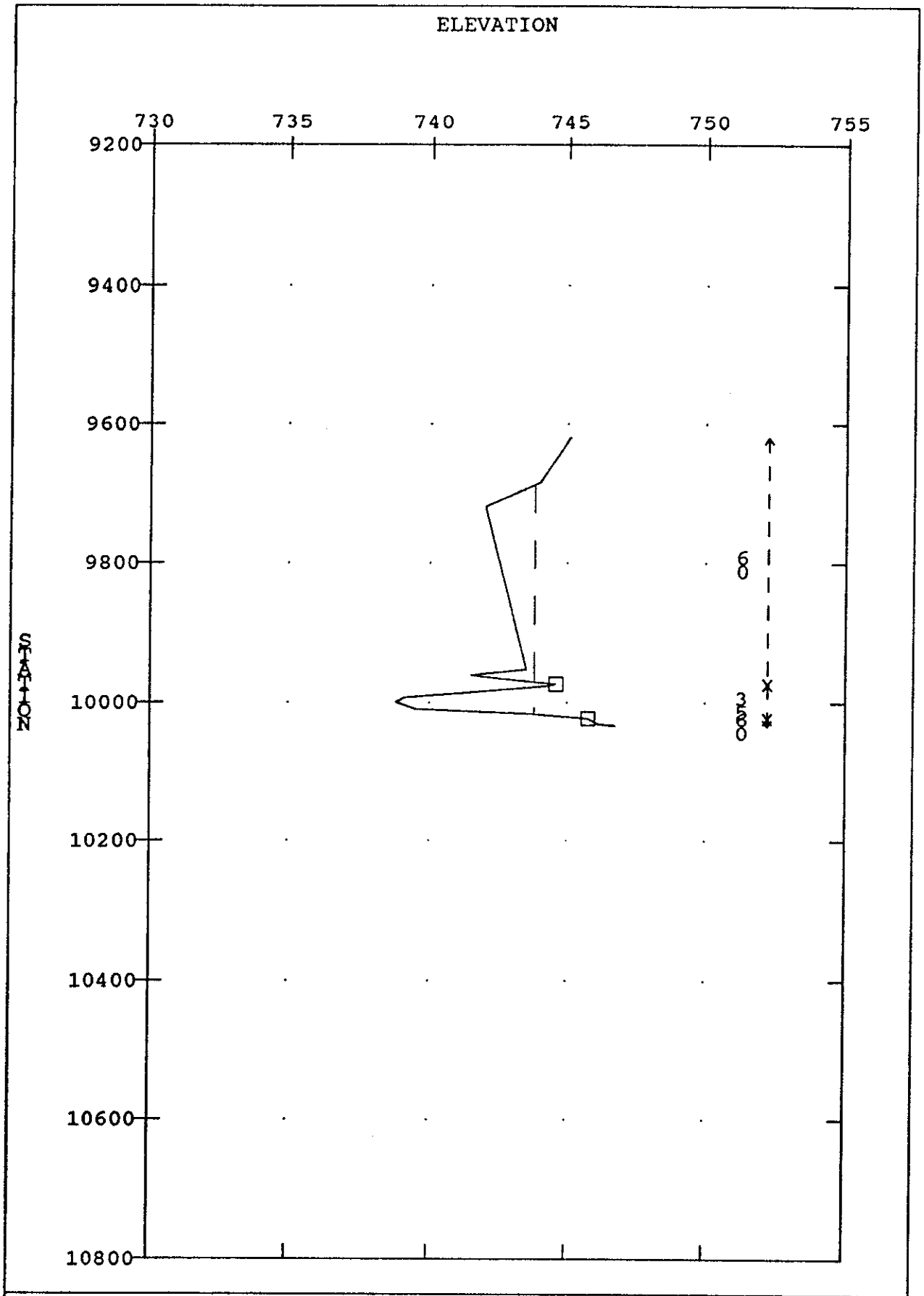

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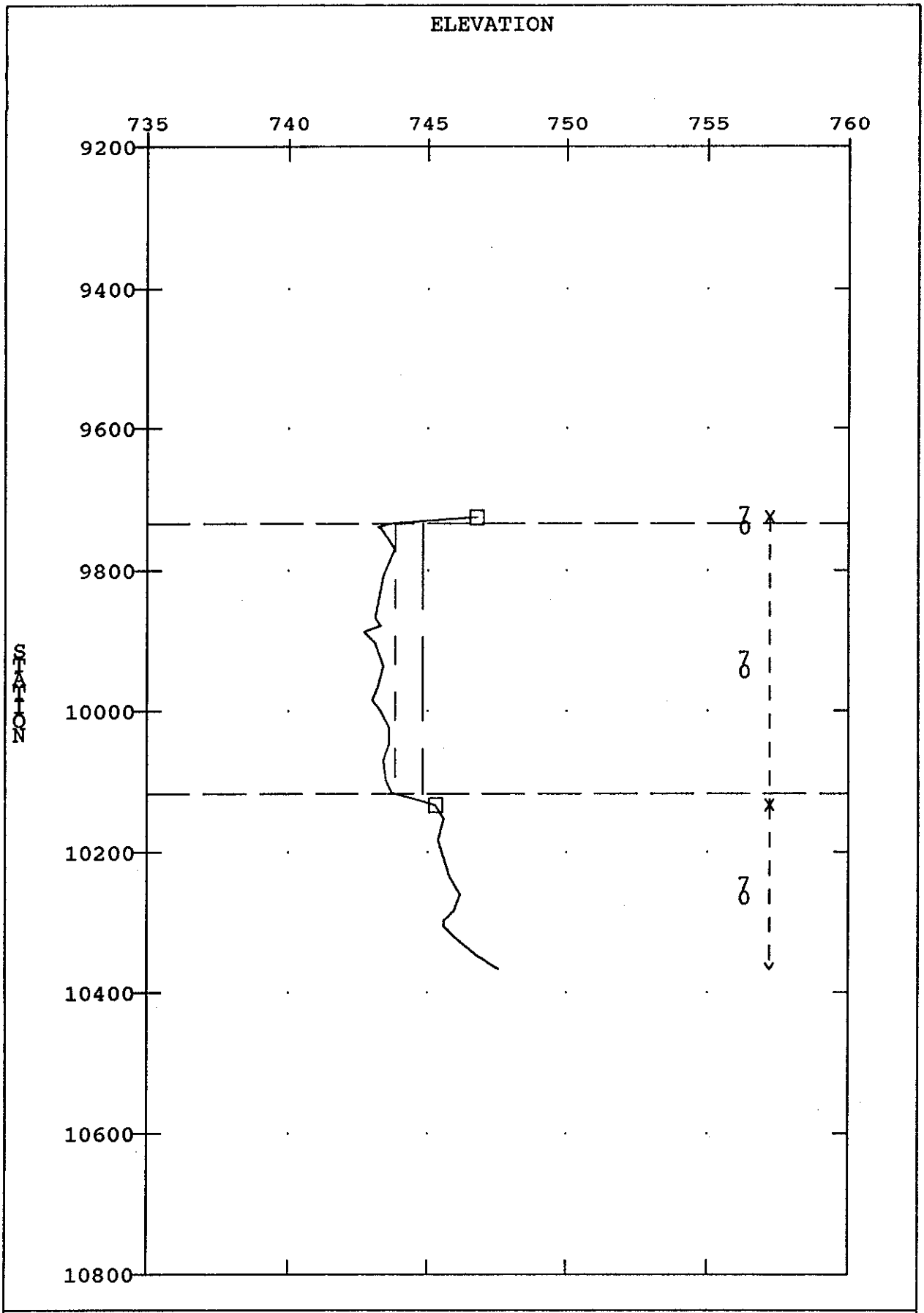

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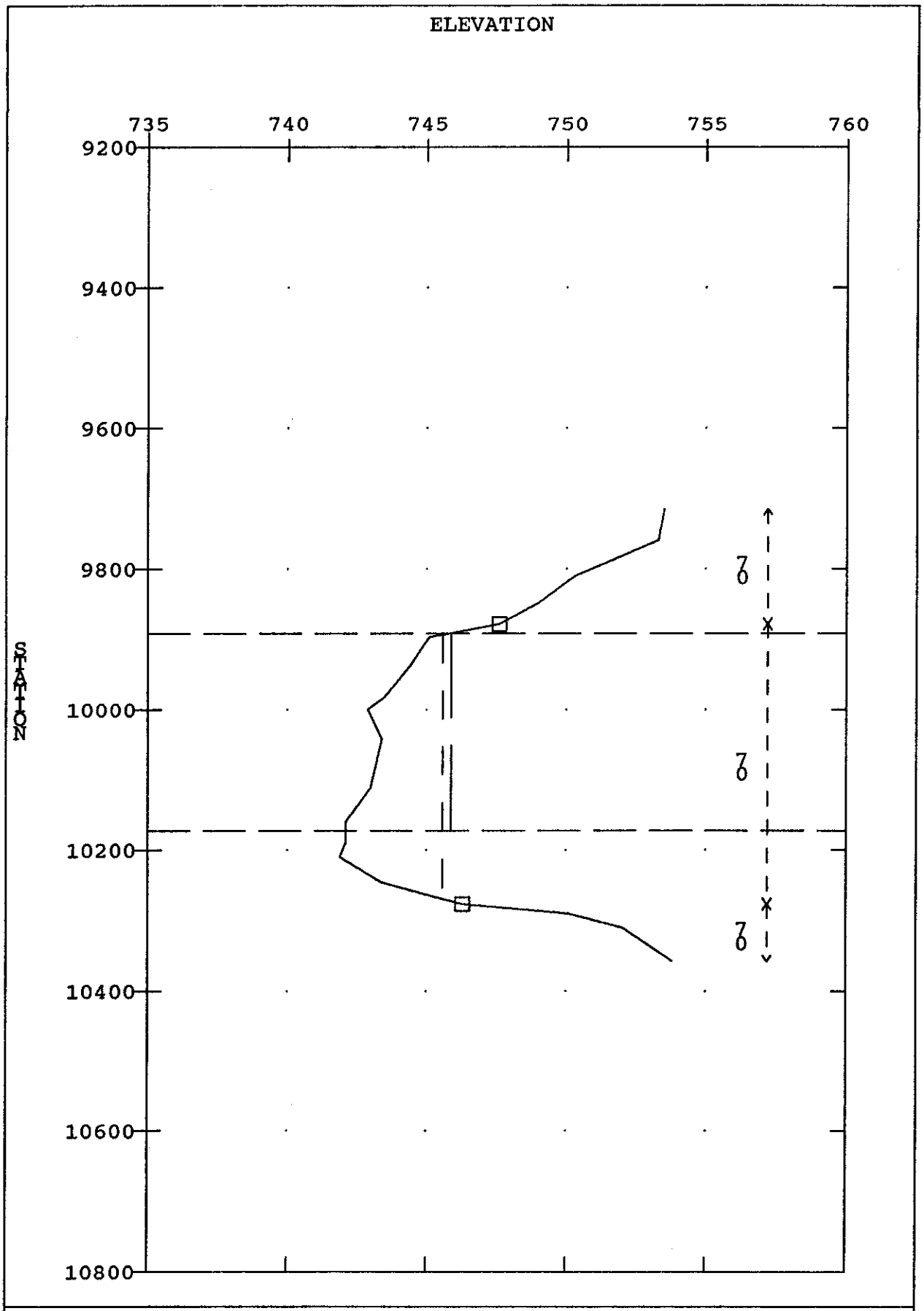

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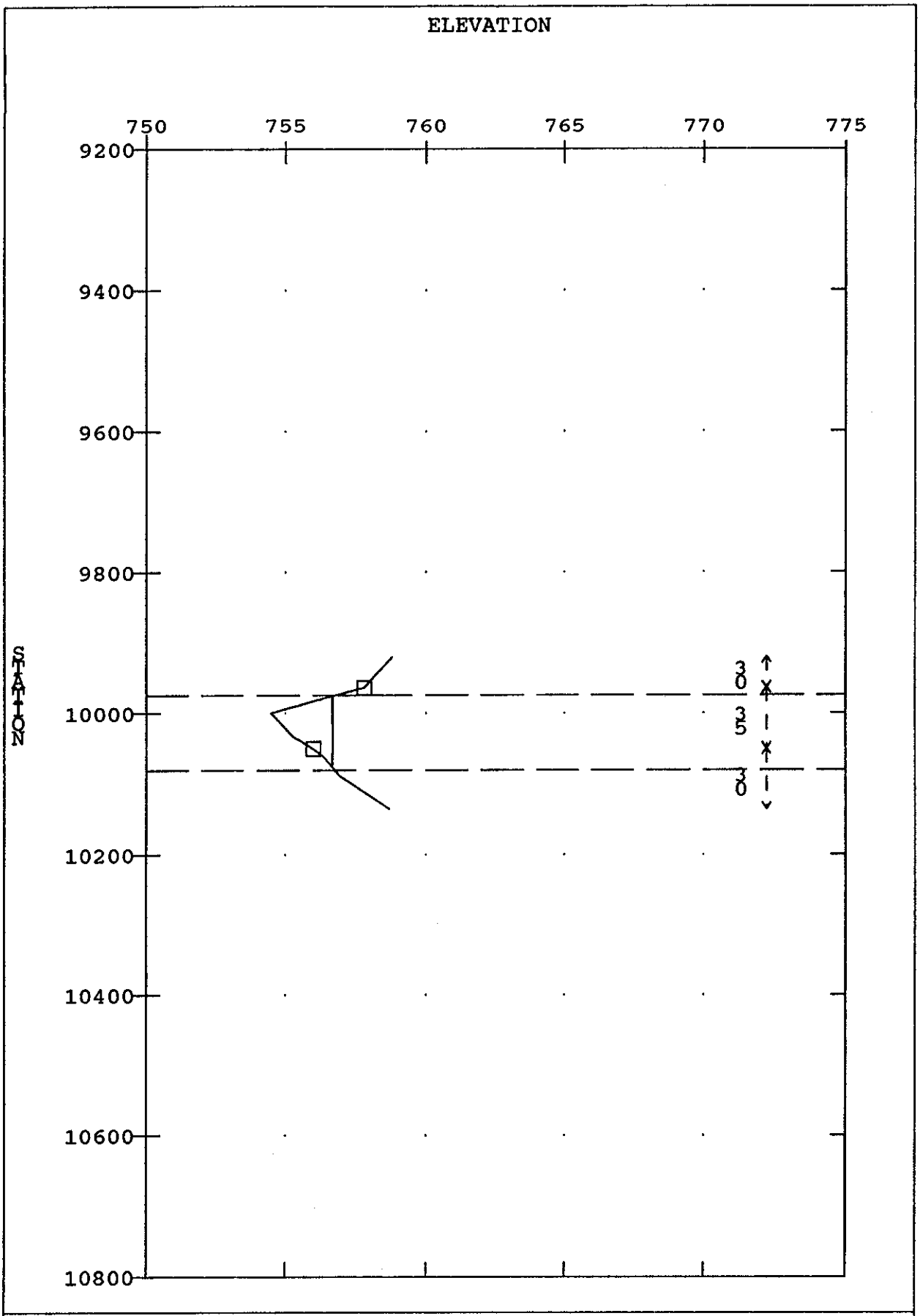

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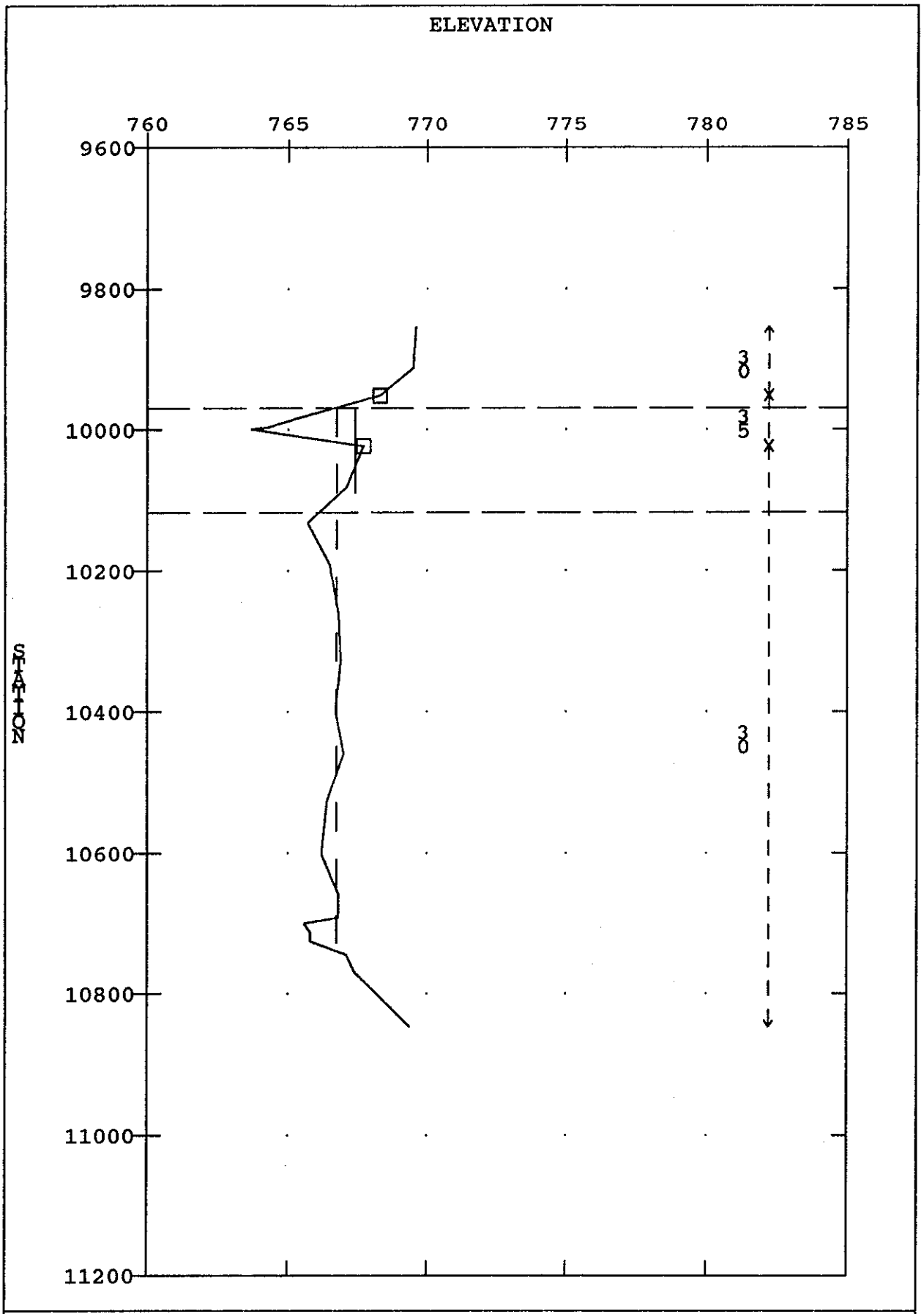

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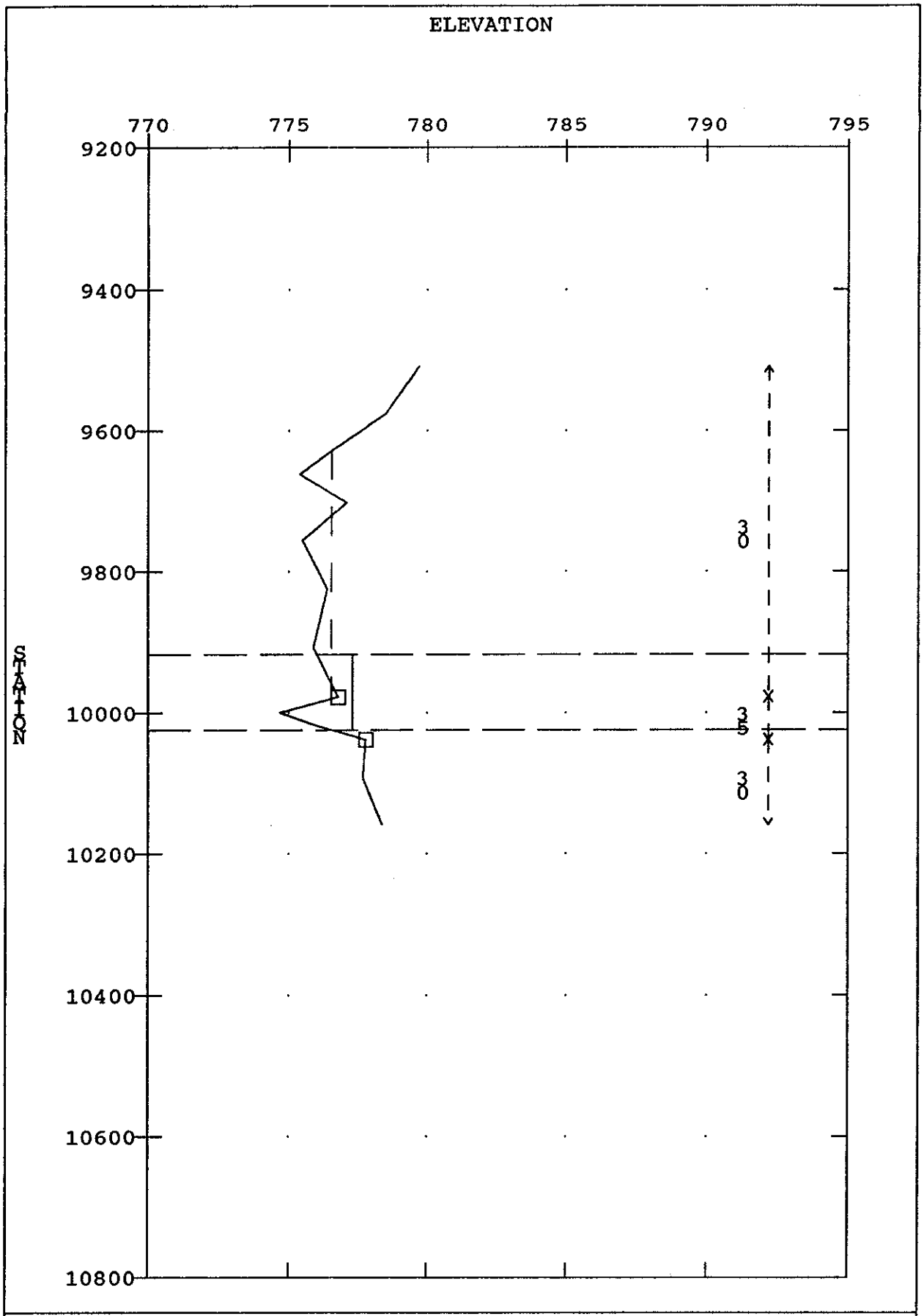

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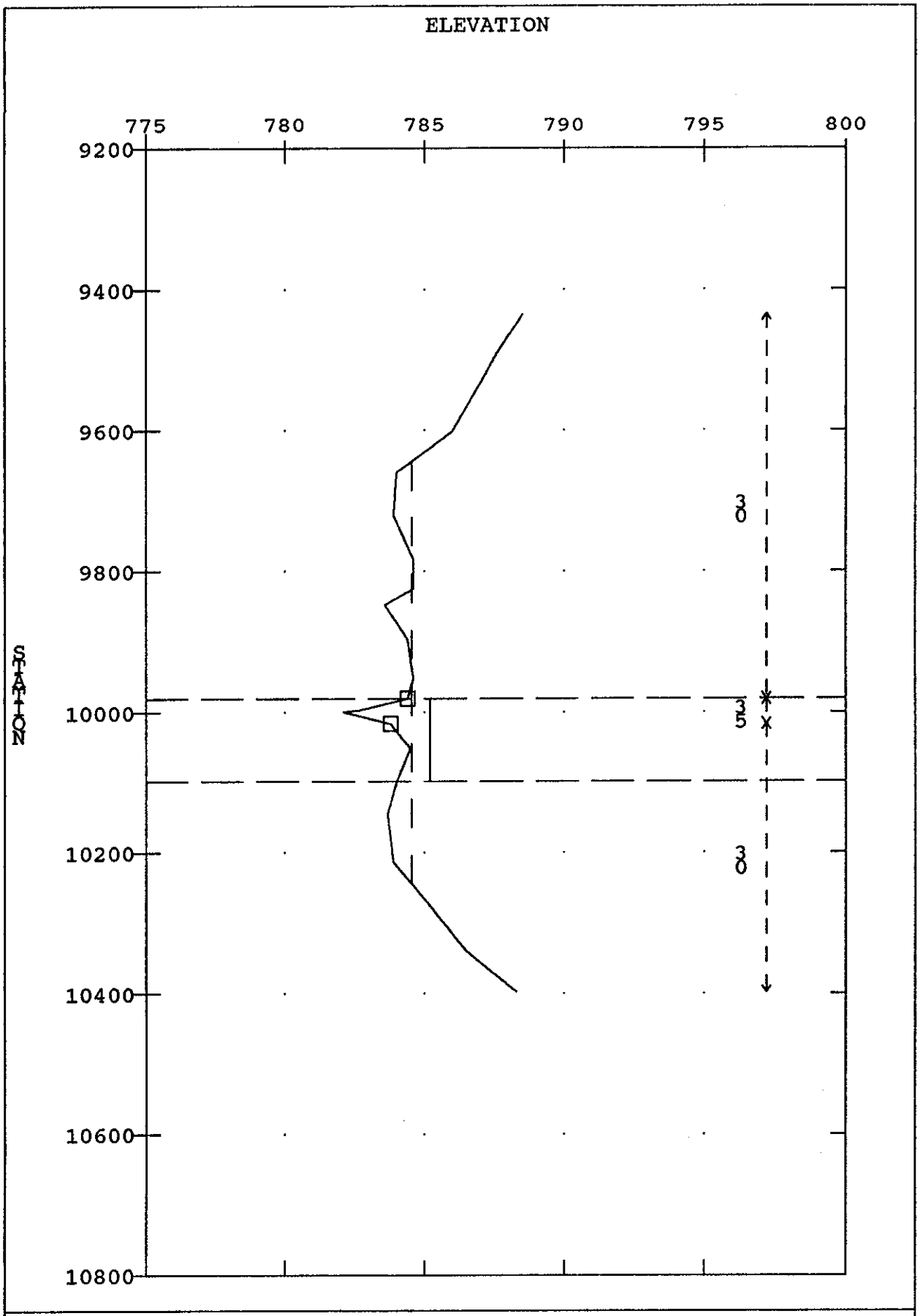

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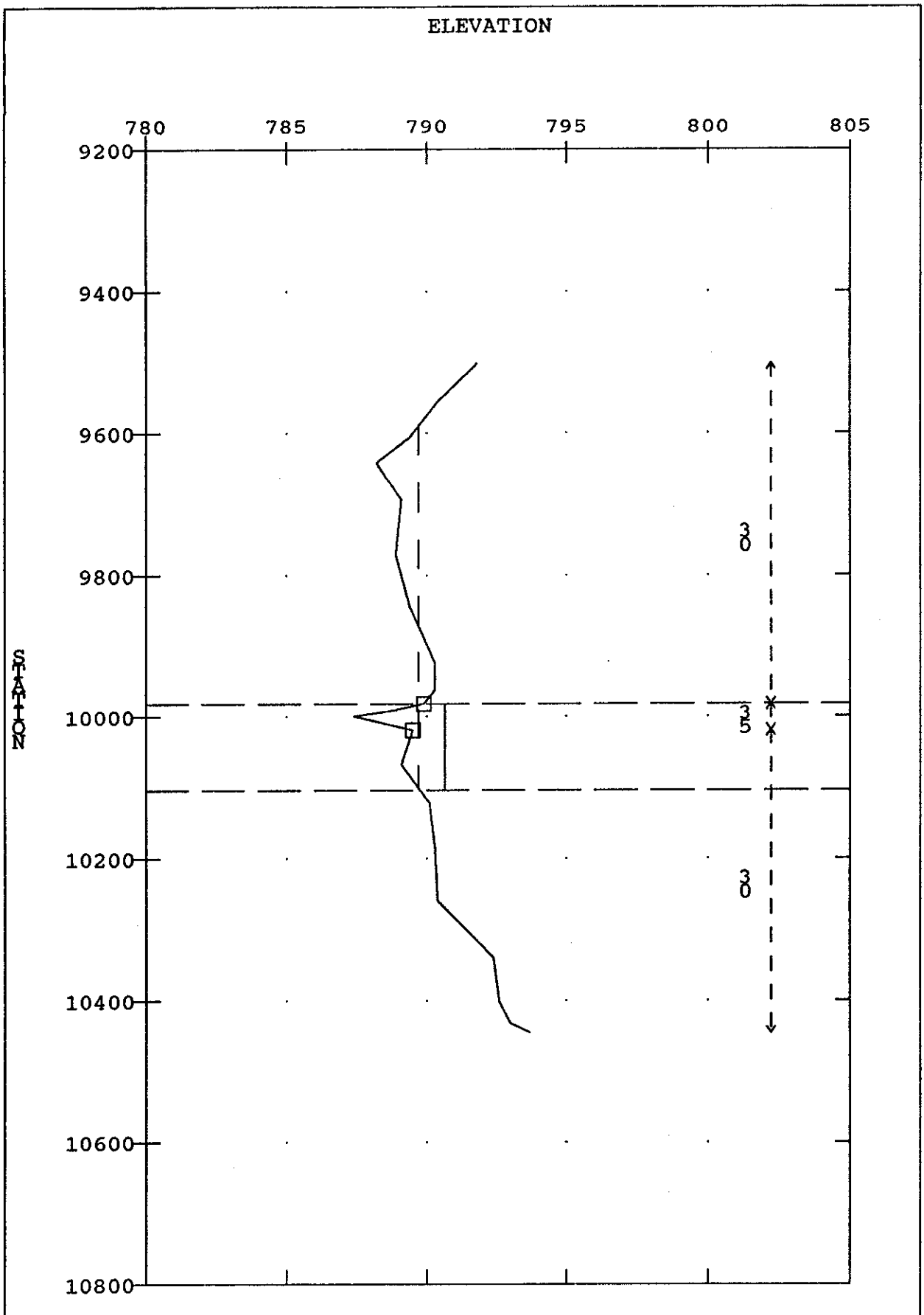

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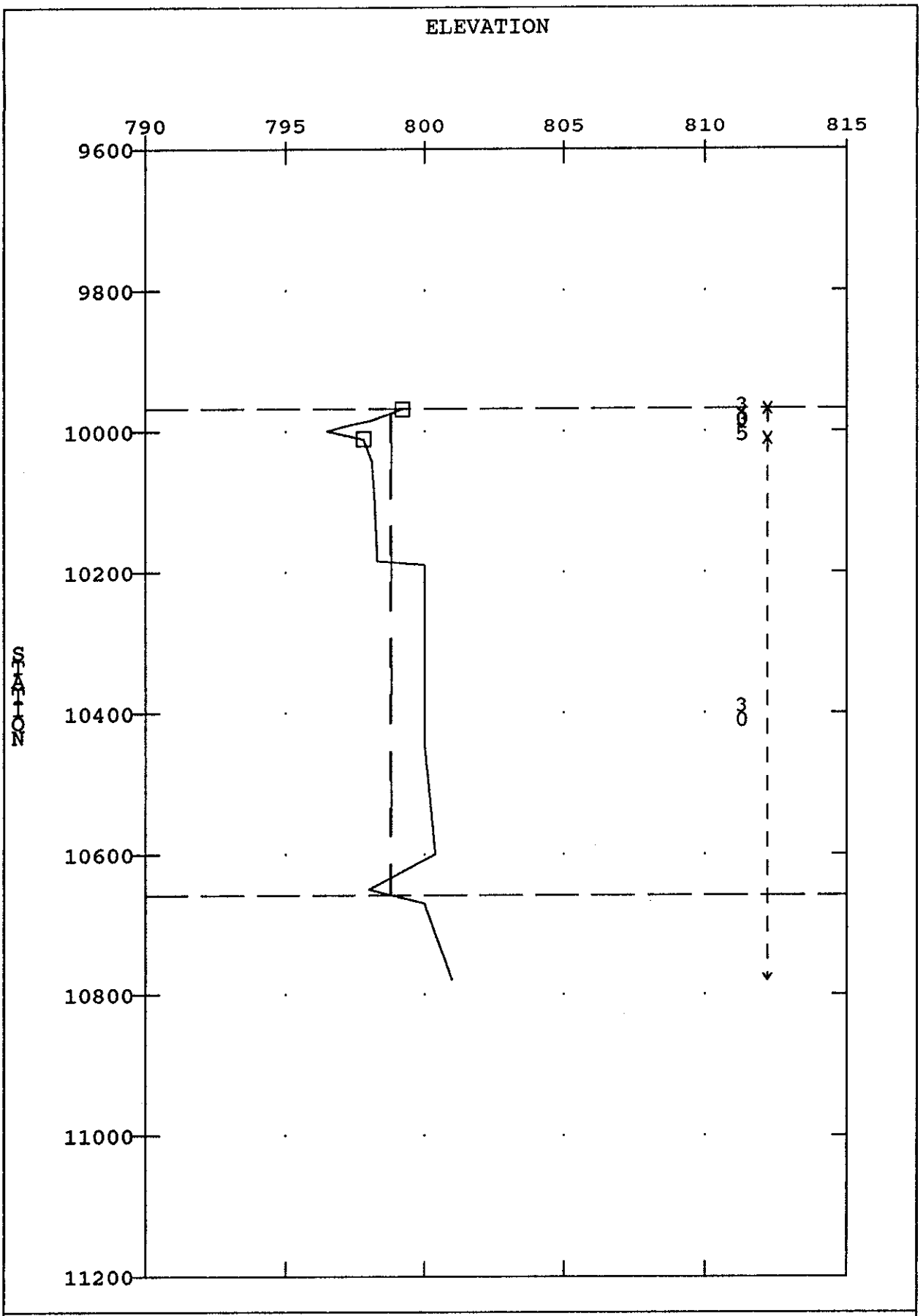

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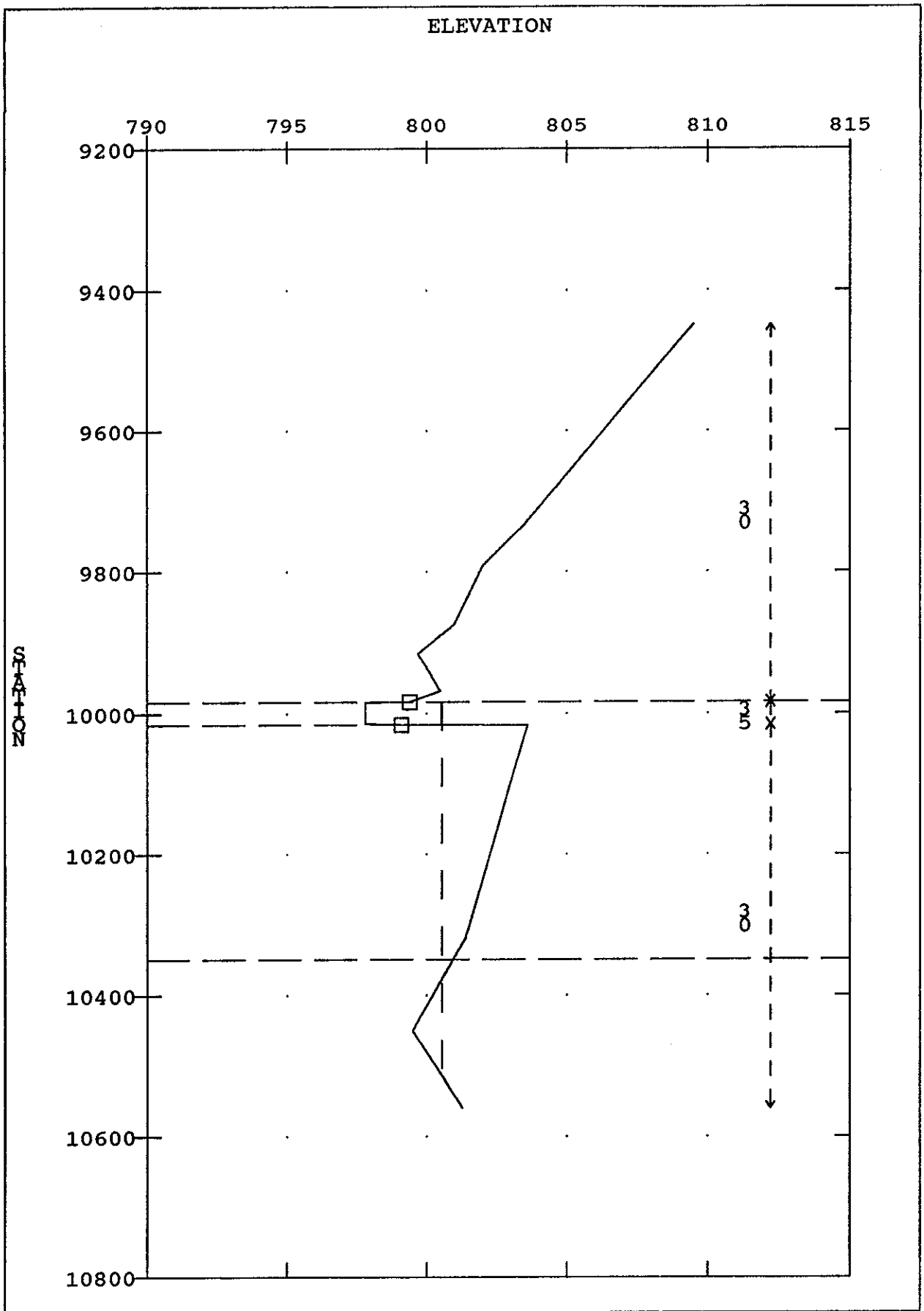

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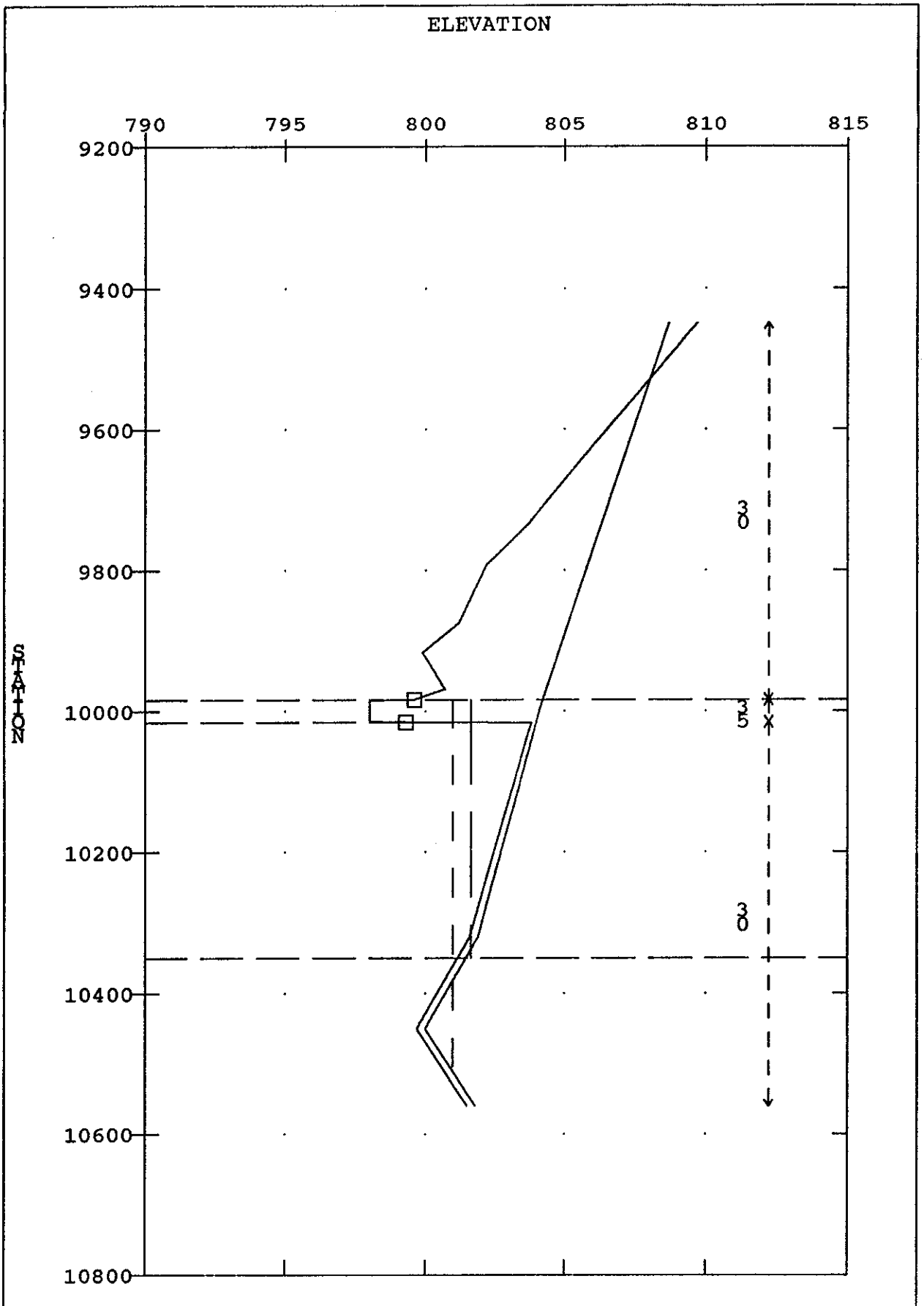

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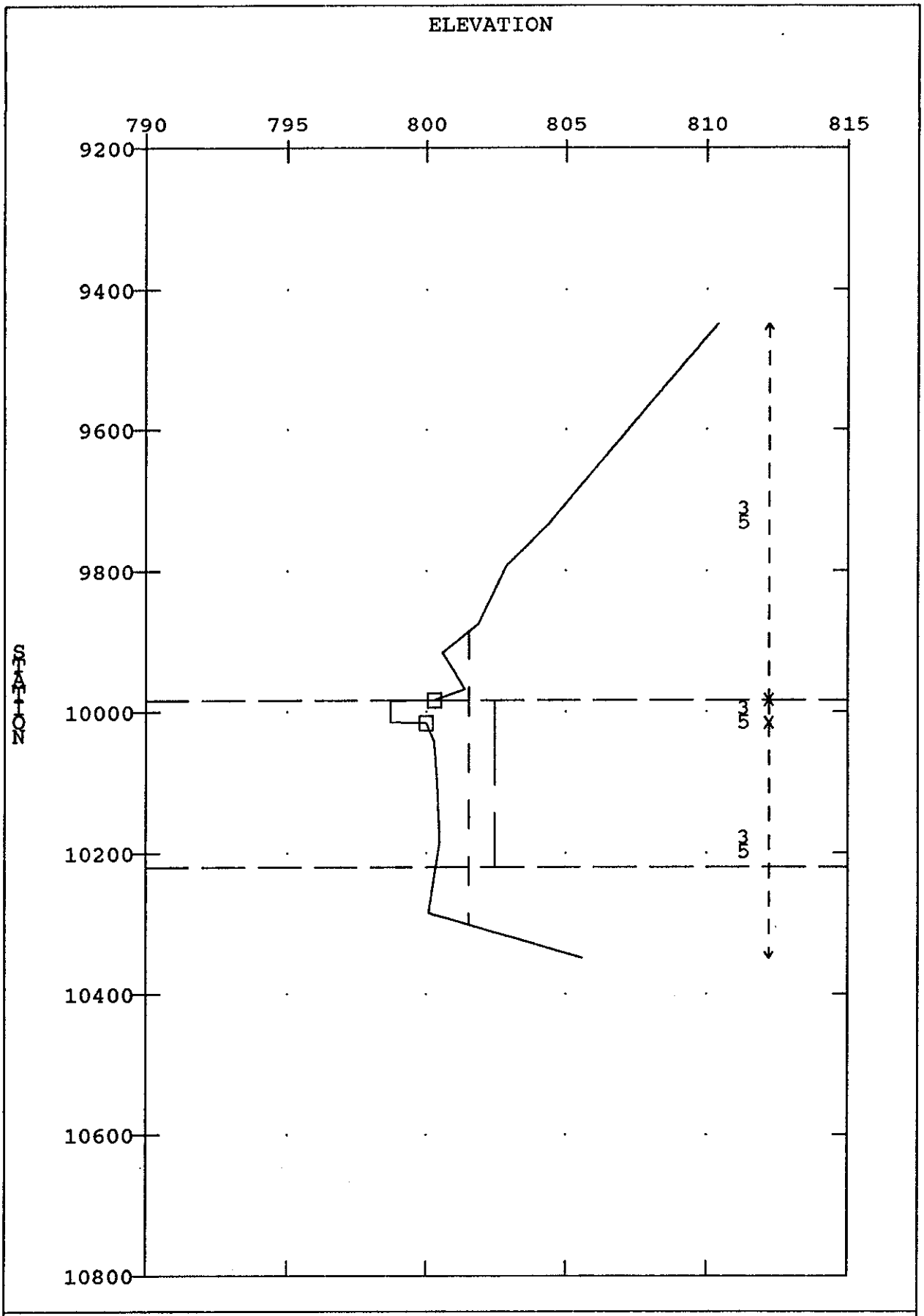
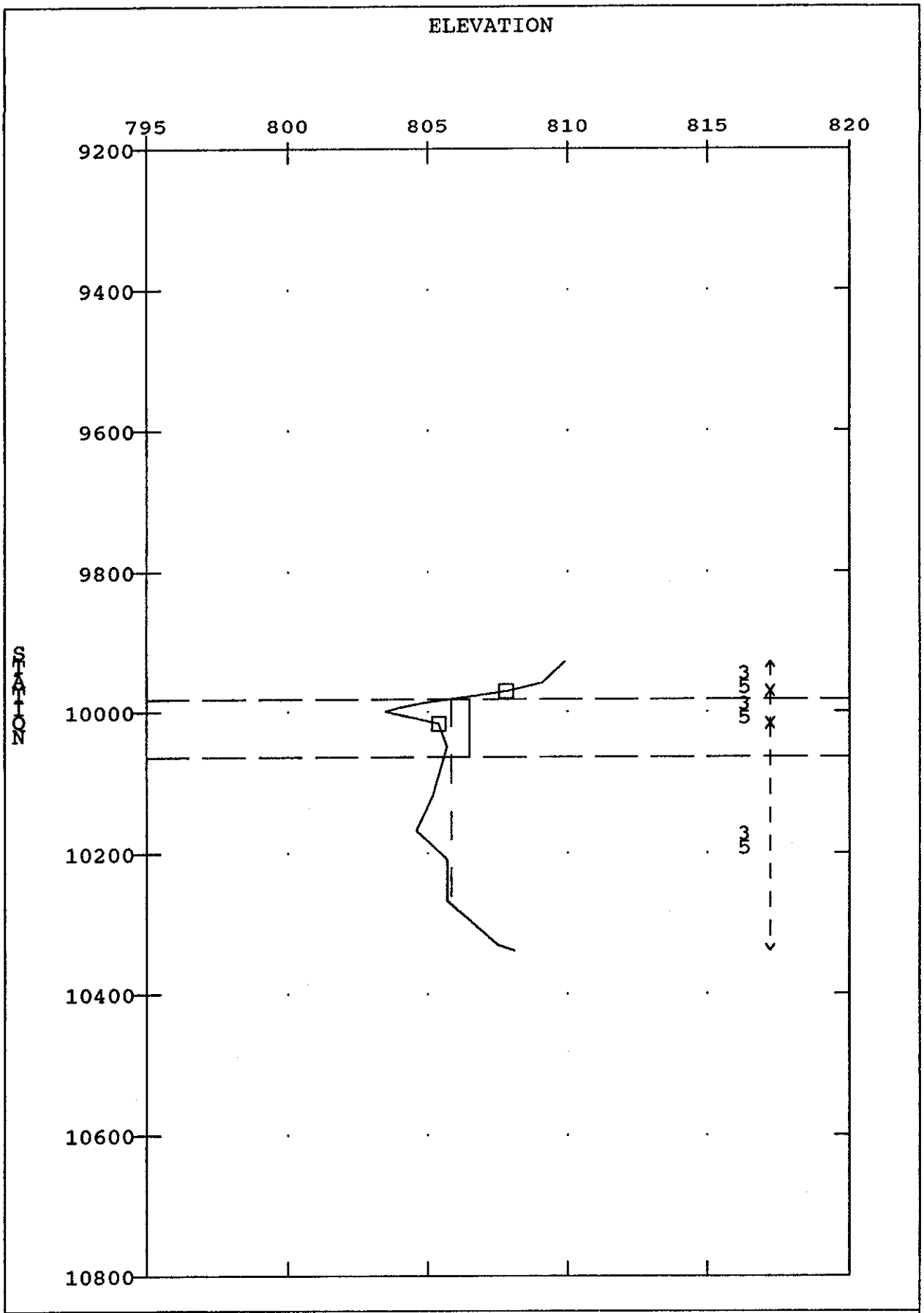


SECTION : 1739

UNNAMED WASH N0.2 100 YR (NATURAL)



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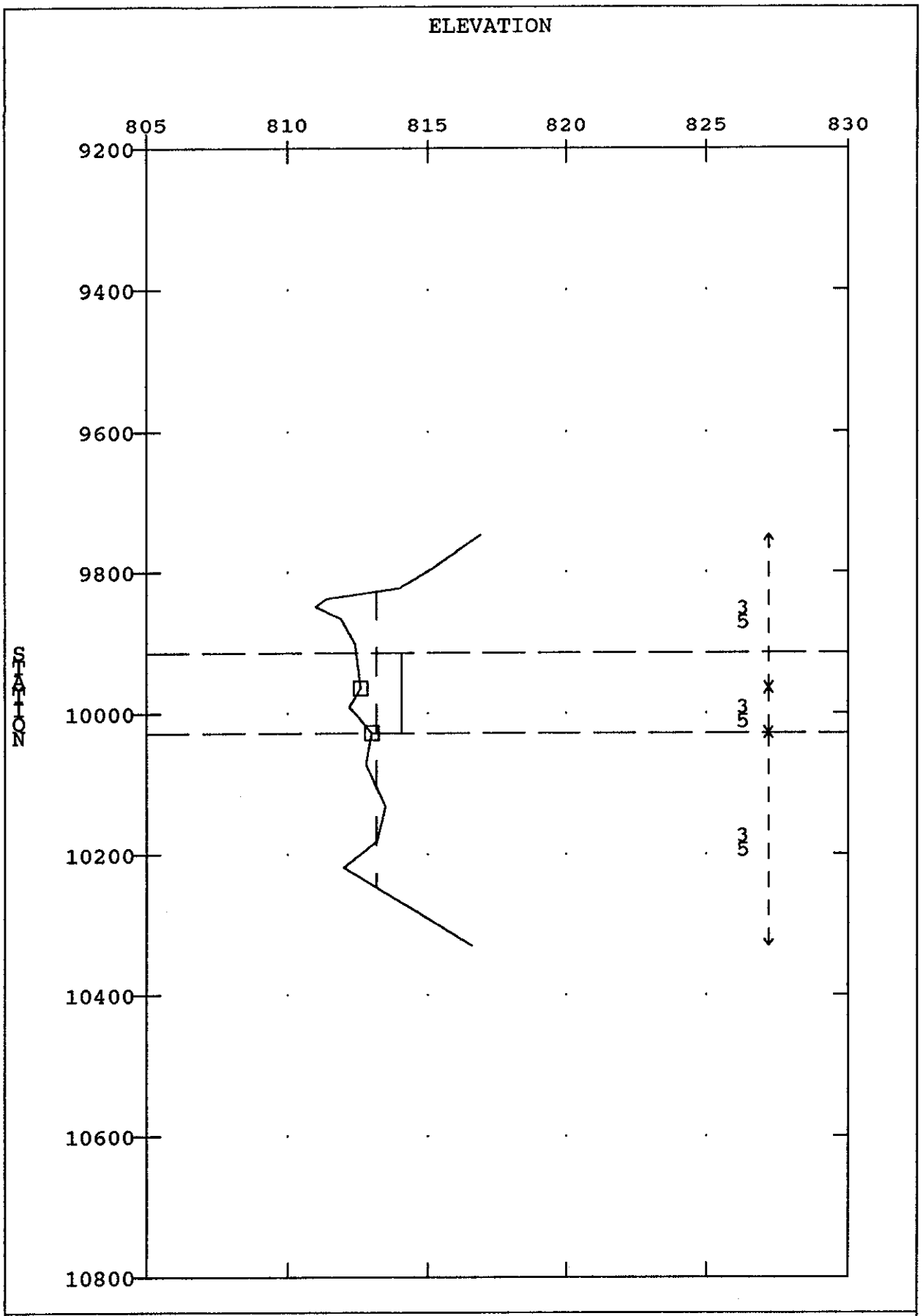

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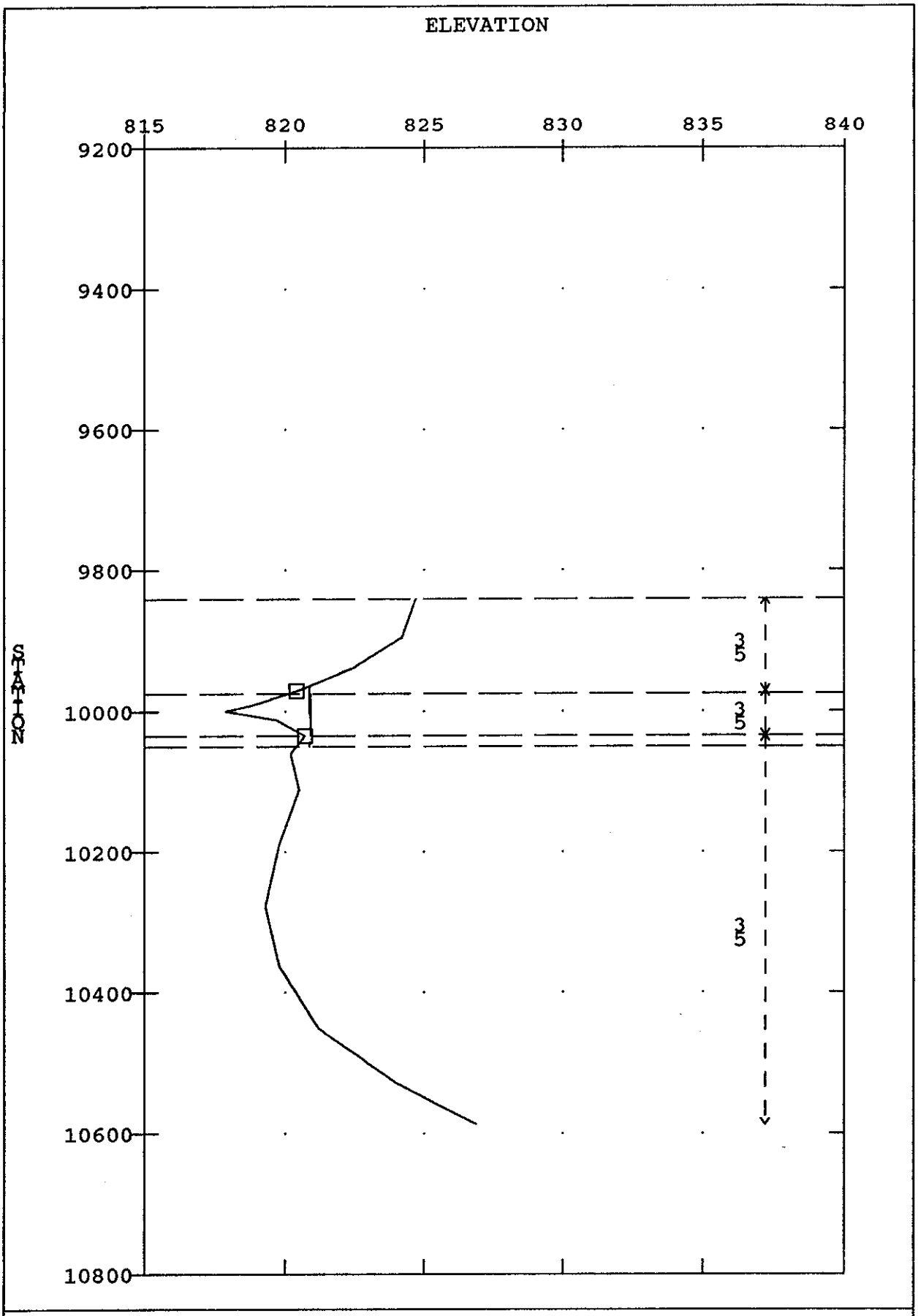

SECTION : 2335

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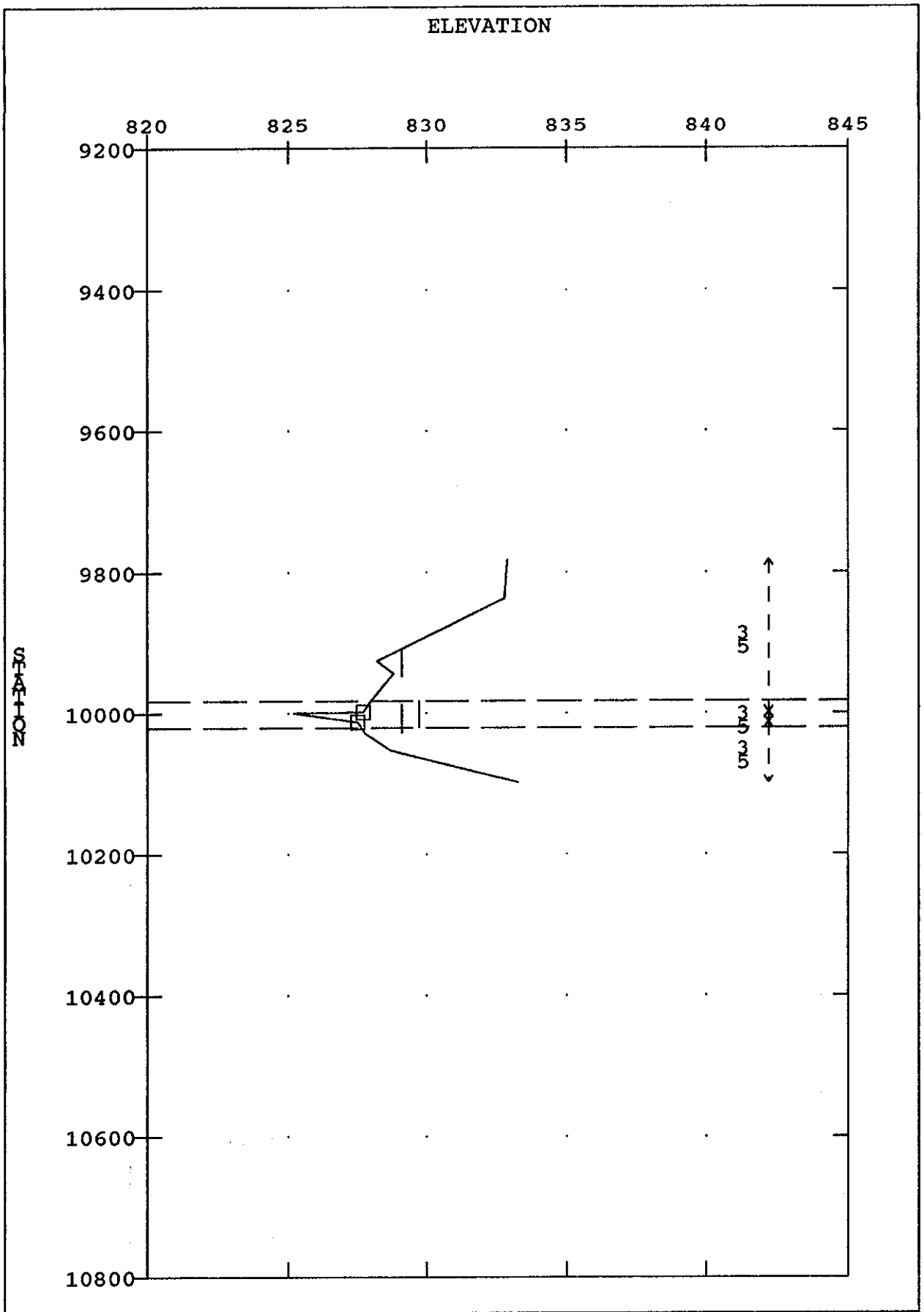

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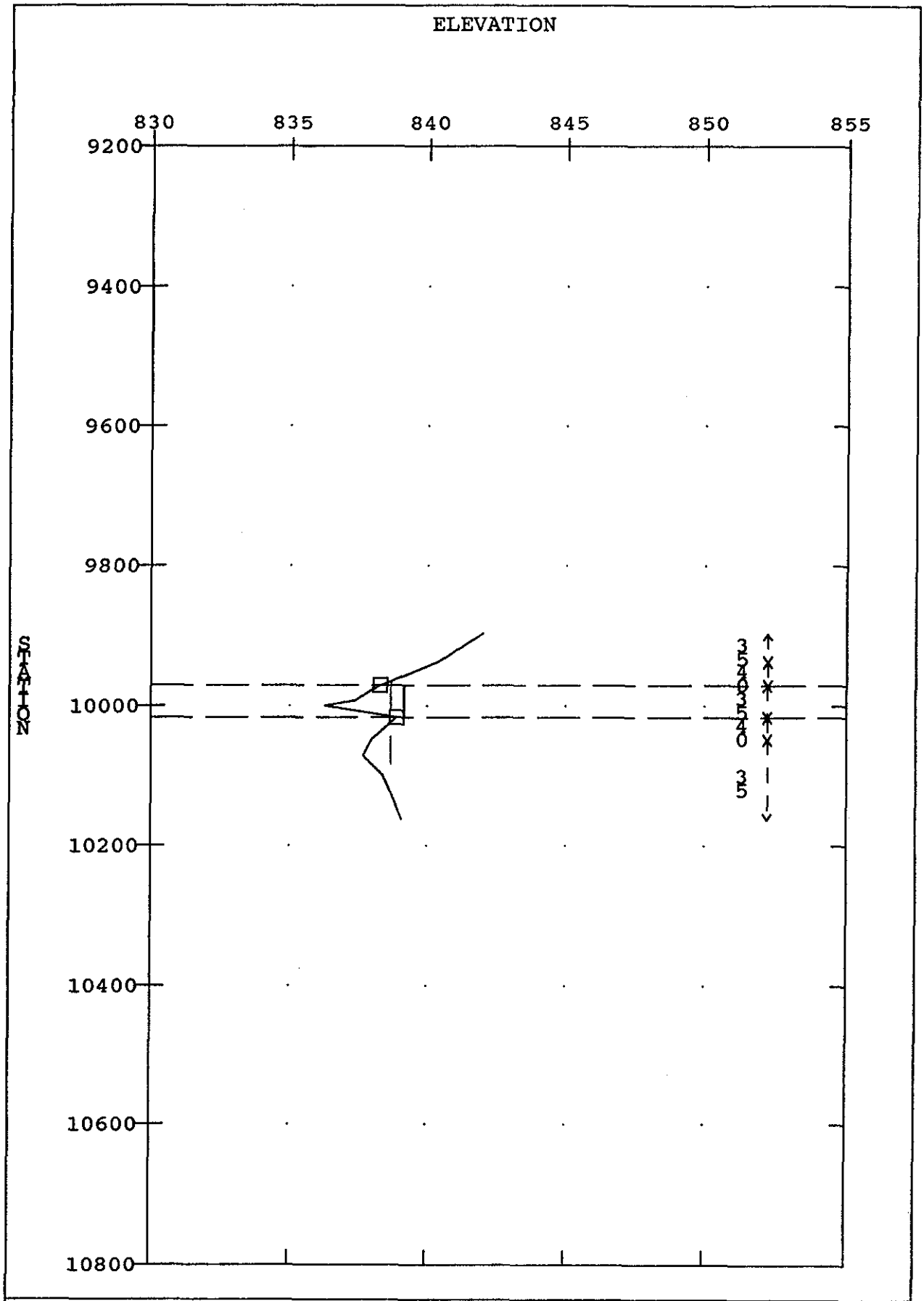


SECTION : 2776

UNNAMED WASH NO.2 100 YR (NATURAL)

SECTION 4: Hydraulic Analysis

4.5 Special Problems/Solutions

SPECIAL PROBLEMS

General

Problem No. 1

Zone AH designations are used in several areas even though depths will exceed 3 feet. Reasons for this are:

- Current FIRM maps for Gila Bend use a similar convention
- No other zone designation is as appropriate for these areas
- The actual ponded elevation is given to avoid confusion in the use of the maps.

Bender Wash

Problem No. 2

Bender Wash is conveyed beneath Interstate 8 by a system of five culverts. Each culvert has a different invert descending from east to west. Because of the braided nature of the channels, flow will arrive at all of the culverts simultaneously even though inverts are at different elevations. The profile of Interstate 8 also descends from east to west. Each culvert has a small levee on the west side to cause water to build up head on the culvert, forcing it beneath the Interstate. Before each culvert approaches a condition of overtopping at the Interstate, water will flow over the levee towards the next culvert to the west. Flow which passes over the westernmost culvert of the Bender Wash system is diverted to the Sand Tank Wash system. Rating curves developed for each of the five Bender Wash culverts show that of the 5,500 cfs arriving at Interstate 8 on Bender Wash, about 500 cfs is diverted to the Sand Tank Wash system. Of the 5,000 cfs conveyed through Interstate 8, only 1,400 cfs is conveyed through the main culvert.

Problem No. 3

Bender Wash was originally conveyed beneath the Gila Bend Canal by a triple box culvert. When the Gila Bend Canal was raised at some time in the past, culverts were extended by inserting 30-inch diameter corrugated metal pipes in the upstream ends. This significantly reduced capacity of the culvert beneath the Gila Bend Canal. At the time of the field reconnaissance in 1991, the 30-inch corrugated metal pipes were found to be nearly plugged with sediment. Flow in Bender Wash is

diverted to Sand Tank Wash by means of a ditch along the upstream of the Gila Bend Canal. Bender Wash downstream of the Gila Bend Canal therefore has insignificant contributing drainage area. The reach downstream of the Gila Bend Canal does, however, convey flow from Sand Tank Wash when the Sand Tank flood peak arrives and exceeds the capacity of the Sand Tank Wash channel.

Problem No. 4

From Pima Street at about RM 0.45 to RM 1.5 (about one half mile downstream of Interstate 8), regulatory flood elevations on Bender Wash are controlled by Sand Tank Wash. Even though the diversion to Sand Tank Wash occurs upstream of the Gila Bend Canal at about RM 0.7, flood elevations on Sand Tank Wash from its peak which occurs at a later point in time than the Bender Wash peak, will be higher. Similarly, the floodway required for Bender Wash between a point just upstream of Pima Street and Main Street (approximate RM 1.0), is surrounded by the floodway required for Sand Tank Wash. For this reach, only the floodway required for Sand Tank Wash has been shown. Upstream of Main Street, separate floodways are shown even though flood boundaries are combined until a point upstream of RM 1.5.

Problem No. 5

The flood profile for Bender Wash is started in Sand Tank Wash using the full Sand Tank Wash Q and the elevation computed by the Sand Tank Wash model at Section 3.180. Although flood profiles for tributary streams are normally started at normal depth, the Bender Wash Q at the confluence with Sand Tank Wash is due entirely to flow split from Sand Tank Wash at Pima Street. Therefore, starting conditions for Bender Wash assume the full 100 year Q in Sand Tank Wash as well.

Sand Tank Wash

Problem No. 6

Sand Tank Wash is conveyed beneath Interstate 8 by a system of one main bridge and two box culverts. This system operates much like Bender Wash in that small levees serve to create backwater against the bridge and culverts. Before a condition of overtopping of Interstate 8 in reached, water will pass over the levee at the west towards Scott Avenue Wash. Rating curves developed for the bridge and 2 culverts at Interstate 8 indicate that of the 23,700 cfs peak discharge upstream of

Interstate 8, only 14,900 cfs is conveyed through Interstate 8. The remainder is diverted towards Scott Avenue Wash. Of the 14,900 cfs conveyed through Interstate 8, only 9,100 cfs is conveyed by the main bridge.

Problem No. 7

Although the "low flow" confluence of Sand Tank and Bender Washes occurs upstream of the Gila Bend Canal, the Sand Tank Wash Q is not changed from the value "below" the confluence to the value "above" the confluence until Section 4.638. Sections downstream of this point include geometry of both Sand Tank and Bender Washes and therefore use the combined Q. This is because Sand Tank Wash overtops the ridge separating it from Bender Wash in this area. Sections upstream include only the Q from their respective washes.

Problem No. 8

The Gila Bend Canal is conveyed across Sand Tank Wash by an inverted siphon. The Gila Bend Canal embankment encroaches significantly on Sand Tank Wash. A levee has also been constructed along the west bank of Sand Tank Wash. This levee extends from Main Street at the southern end to the Gila Bend Canal embankment at the north. The channel opening through the Gila Bend Canal embankment is insufficient to convey the entire 100 year discharge of Sand Tank Wash. Overtopping of both the Gila Bend Canal and the levee on the west will occur. For this study, it was assumed that the Gila Bend Canal embankment and the levee do not fail. Overtopping of the levee causes a diversion of about 100 cfs to Scott Avenue Wash. Flow which overtops the Gila Bend Canal remains in the Sand Tank Wash or Bender Wash system.

In order to approximately model the open channel and weir sections, separate models for channel and weirs were developed. Results were plotted as rating curves and the individual curves were added to yield a single curve which shows a water surface elevation at 746.2 for Q=18,300 cfs. GR data for section 3.888 was modified slightly so that the model would compute the same elevation assuming the weir to be ground points.

Problem No. 9

Water in Sand Tank Wash overtops the Southern Pacific Railroad near RM 3.8. In the left downstream overbank, water which overtops the railroad will flow overland as sheet flow until it rejoins Sand Tank Wash. The area where this sheet flow is anticipated is labeled as "Zone A0, 1' depth".

Problem No. 10

Upstream of Pima Street, Sand Tank Wash ponds to an elevation higher than the low ridge which separates Sand Tank Wash from Bender Wash. Bender Wash will therefore convey a portion of the peak discharge from Sand Tank Wash. Rating were developed for each structure to determine the amount of flow through each culvert for a common pool elevation. Approximately 3,100 cfs is diverted from Sand Tank Wash to Bender Wash. The flow returns to Sand Tank Wash at the confluence with Bender Wash near RM 3.2. Weir flow over Pima Street is confined to Sand Tank Wash, so the Pima Street culvert model does not consider weir flow. Rating curves for the two models were plotted by hand and added to arrive at a common elevation for the full Q. Rating curve values were also used as input in the HEC-1 hydrology model which confirmed the value of 3,100 cfs in Bender Wash.

Problem No. 11

When comparing the interpolated Sand Tank Wash 100-year flood elevation near Watermelon Road (RM 1.93) to spot elevations and contours west of the wash, it appears that it is possible that an insignificant split flow may occur. Depth of water over the ridge will be between 0 and 0.5 feet. Water that leaves Sand Tank Wash (if any) would be conveyed as sheet flow into an irrigated agricultural field. Depth of water would be much less than 1 feet, therefore, Zone X was used.

Problem No. 12

Sand Tank Wash overtops the east end of Section 1.241 by 0.13 feet. Flow in Sand Tank Wash in this area is very close to, and at this location, slightly above the farm field access road. Flow which passes east over the road is insignificant and will fall into an irrigated agricultural field which

has been leveled for irrigation. This insignificant flow diverted from Sand Tank Wash is ignored for this study.

Problem No. 13

Sand Tank Wash Section 0.676 is overtopped by 1.27 feet. This is expected since the section was taken within the 100-year flood pool of Painted Rock Dam.

Scott Avenue Wash

Problem No. 14

Scott Avenue Wash is conveyed beneath state Interstate 8 by a concrete box culvert. This culvert is insufficient to convey the full peak discharge upstream of Interstate 8 which includes approximately 8,000 cfs diverted from Sand Tank Wash. Before Interstate 8 is overtopped, water will flow to the west of Scott Avenue Wash towards a gravel road which passes beneath Interstate 8 at a freeway grade separation. A flow split occurs where a portion of the flow diverted from Scott Avenue Wash will flow northward along the gravel road to reenter Scott Avenue Wash and a portion will flow to the southwest into a gravel pit. Rating curves were developed which determined that approximately 1,400 cfs is conveyed through the Scott Avenue culvert while an additional 2,100 cfs is conveyed northward along the gravel road. The remainder of flow from Scott Avenue Wash is diverted toward the gravel pit. The total flow of 3,500 cfs which is conveyed through Interstate 8 by both the Scott Avenue culvert and the gravel road is greater than the peak discharge generated by Scott Avenue Wash alone. Scott Avenue Wash therefore conveys a significant amount of flow that was diverted from Sand Tank Wash.

A normal depth computation for the area west of Scott Avenue Wash which conveys the 2100 cfs form the gravel road estimates a depth of about 1.1 foot in the overbanks. Zone AO, 2' depth has therefore, been designed to this area.

Problem No. 15

At Watermelon Road, Scott Avenue Wash is diverted along the south side of Watermelon Road toward the intersection with Gila Boulevard. The diversion channel is insufficient to convey the entire peak discharge of Scott Avenue Wash. Water will overtop Watermelon Road and flow into an irrigated field on the north side. Cross sections at RM 1.884, 2.070, and 2.261 were revised so that right overbanks modeled the centerline of Watermelon Road. Right overbank flow at section 2.261 was therefore deducted from the total flow at RM 2.070. Right overbank flow at 2.070 was likewise deducted from total flow at RM 1.884. Sections at RM 1.884 and 2.070 are downstream of the detailed study area and were used to develop backwater for section 2.261 which begins the detailed study.

Unnamed Wash No. 1

Problem No. 16

Unnamed Wash No. 1 passes through the Interstate 8 Interchange area with Business Route 8. The culvert beneath the frontage road south of the Interstate 8 interchange has very small capacity. Only 25 cfs is conveyed through the culvert while about 65 cfs is diverted towards the west. Water which is diverted west rejoins Unnamed Wash No. 1 downstream of the interchange. Similarly the culvert beneath the Interstate 8 mainline has limited capacity. Only 60 cfs is conveyed beneath the Interstate while 45 cfs is diverted west along the south side of the mainline. The 110 cfs total that is diverted west rejoins Unnamed Wash No. 1 downstream of the interchange, near RM 2.45.

Following is a table showing Q's before and after the splits:

Section	Q w/o split*	Q after split	Comment
3.260	50**	50	HEC-1 Computation Point
3.148	80	80	
3.129	90	25	65 cfs diverted
3.111	90	25	65 cfs diverted
3.080	100	35	65 cfs diverted
3.002	120	55	65 cfs diverted
2.974	130	65	65 cfs diverted
2.936	140	75	65 cfs diverted
2.835	170	60	110 cfs diverted
2.779	180	70	110 cfs diverted
2.746	190	80	110 cfs diverted
2.698	200	90	110 cfs diverted
2.649	220	110	110 cfs diverted
2.632	220**	110	110 cfs diverted
2.585	240	130	110 cfs diverted
2.565	250	140	110 cfs diverted
2.337	330	330	Flow re-enters near RM 2.45
2.127	620**		

* Interpolated between HEC-1 computation points, rounded to nearest 10 cfs.

** HEC-1 Computation point

Problem No. 17

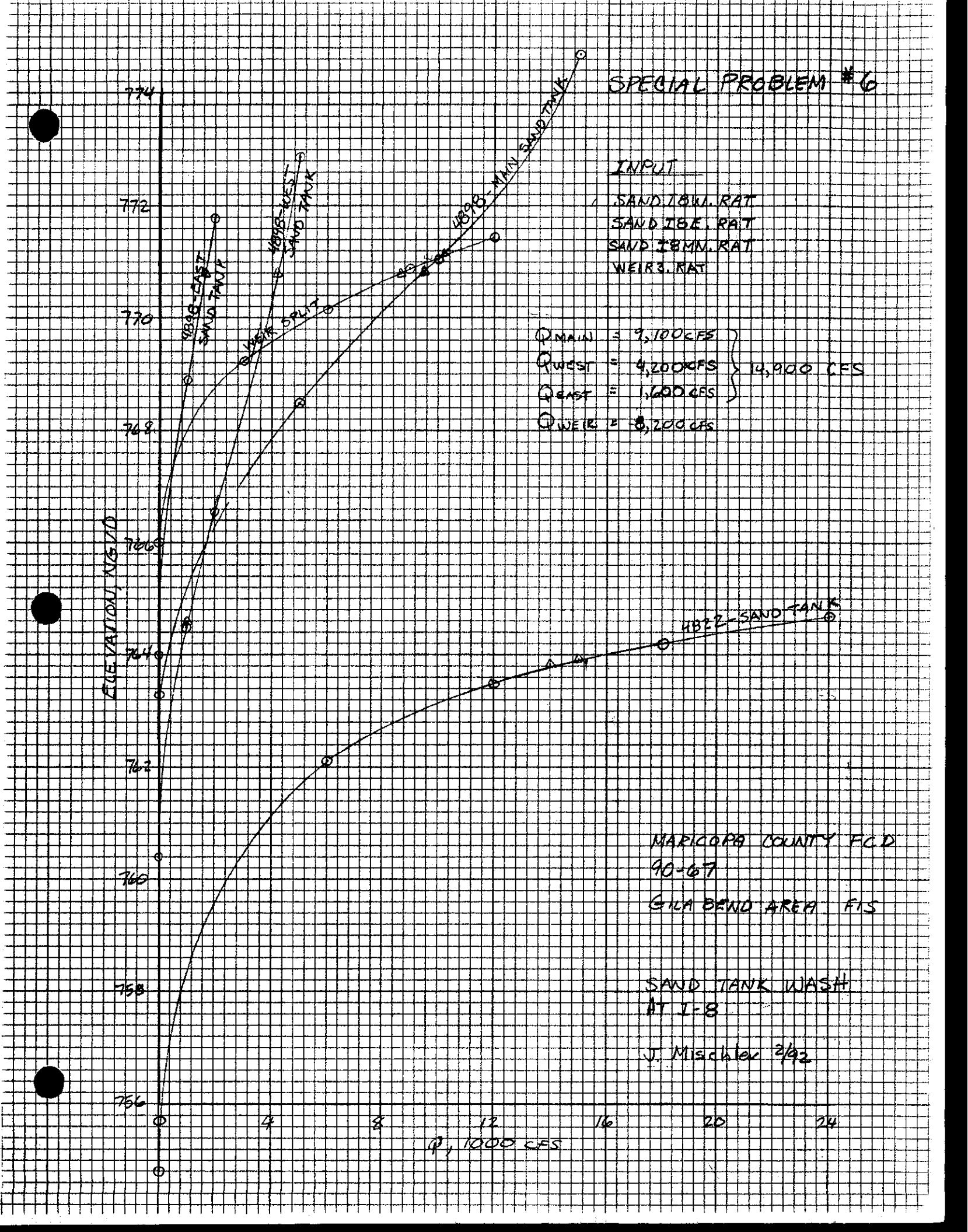
Although flow downstream of the westbound on ramp to Interstate 8 from Business Route 8 is within the channel, the culvert has insufficient capacity to convey the entire peak discharge beneath the on-ramp without overtopping the on-ramp west of the channel. At the downstream cross section of the culvert model, HEC-2 computes zero flow in the left overbank. At the upstream section, HEC-2 computes a small amount of flow in the left overbank as well as weir flow. The small amount of flow which passes over the on ramp will return to the main channel downstream as sheet flow.

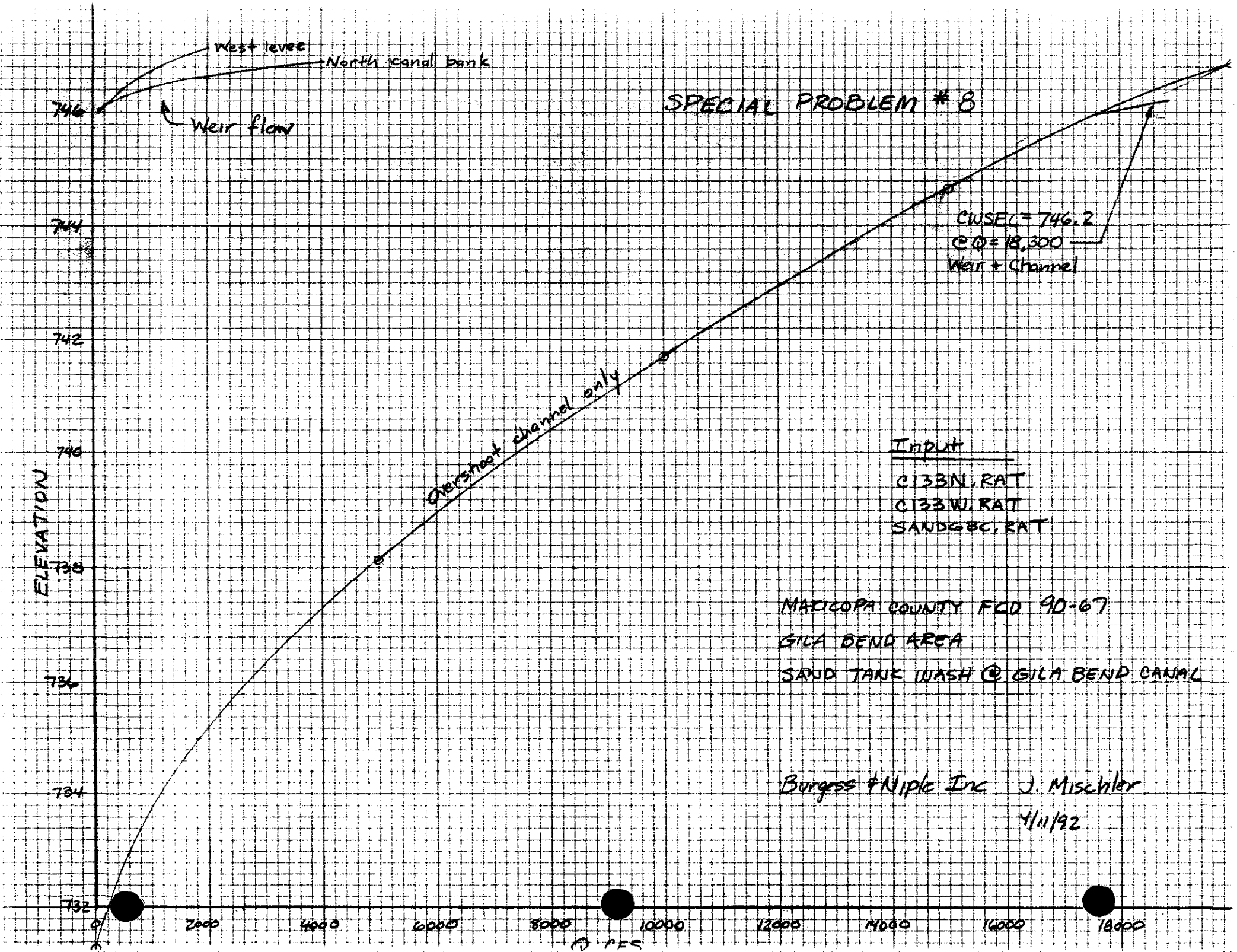
This area has therefore been delineated as Zone AO, one foot depth.

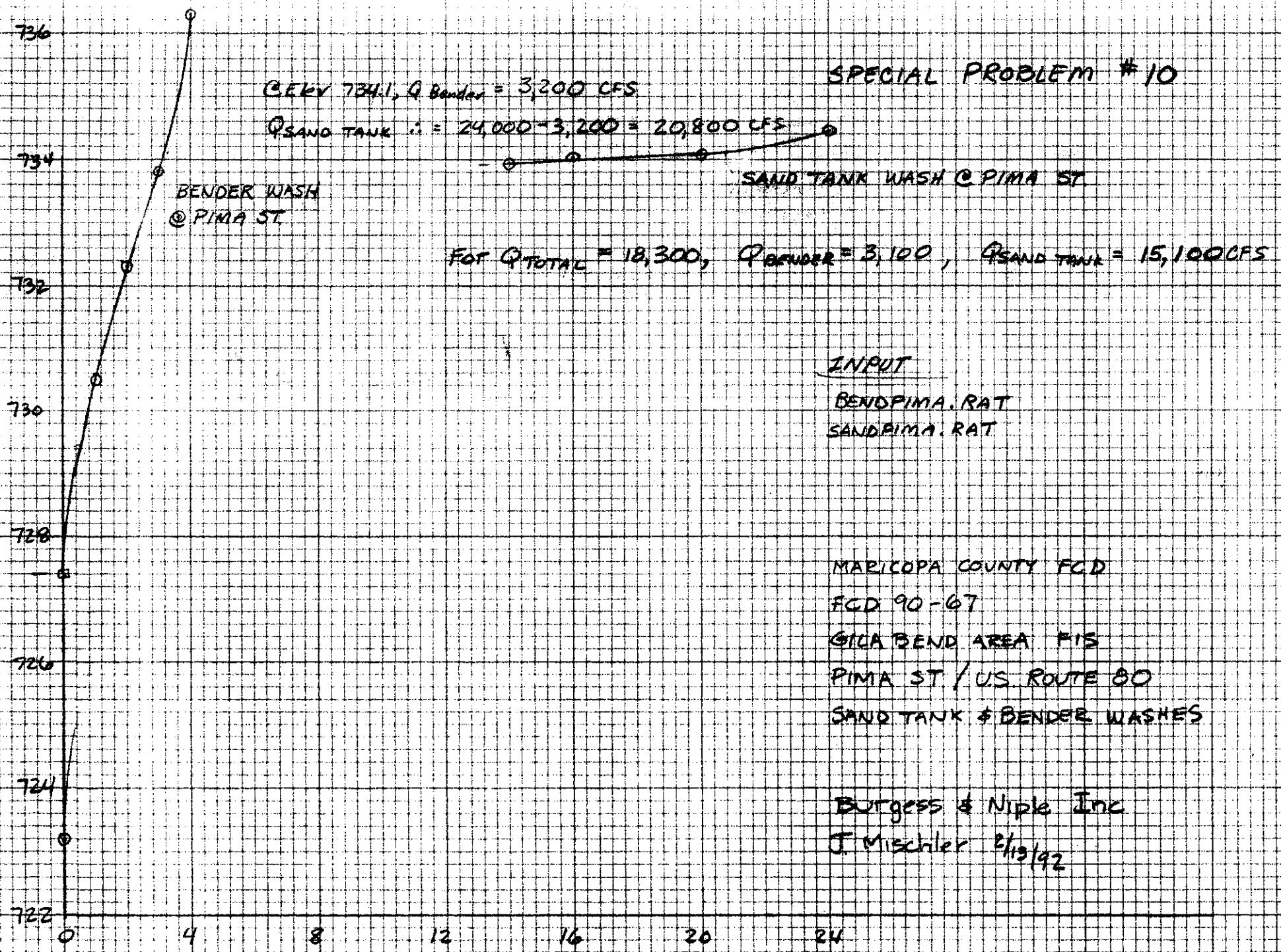
Unnamed Wash No. 2

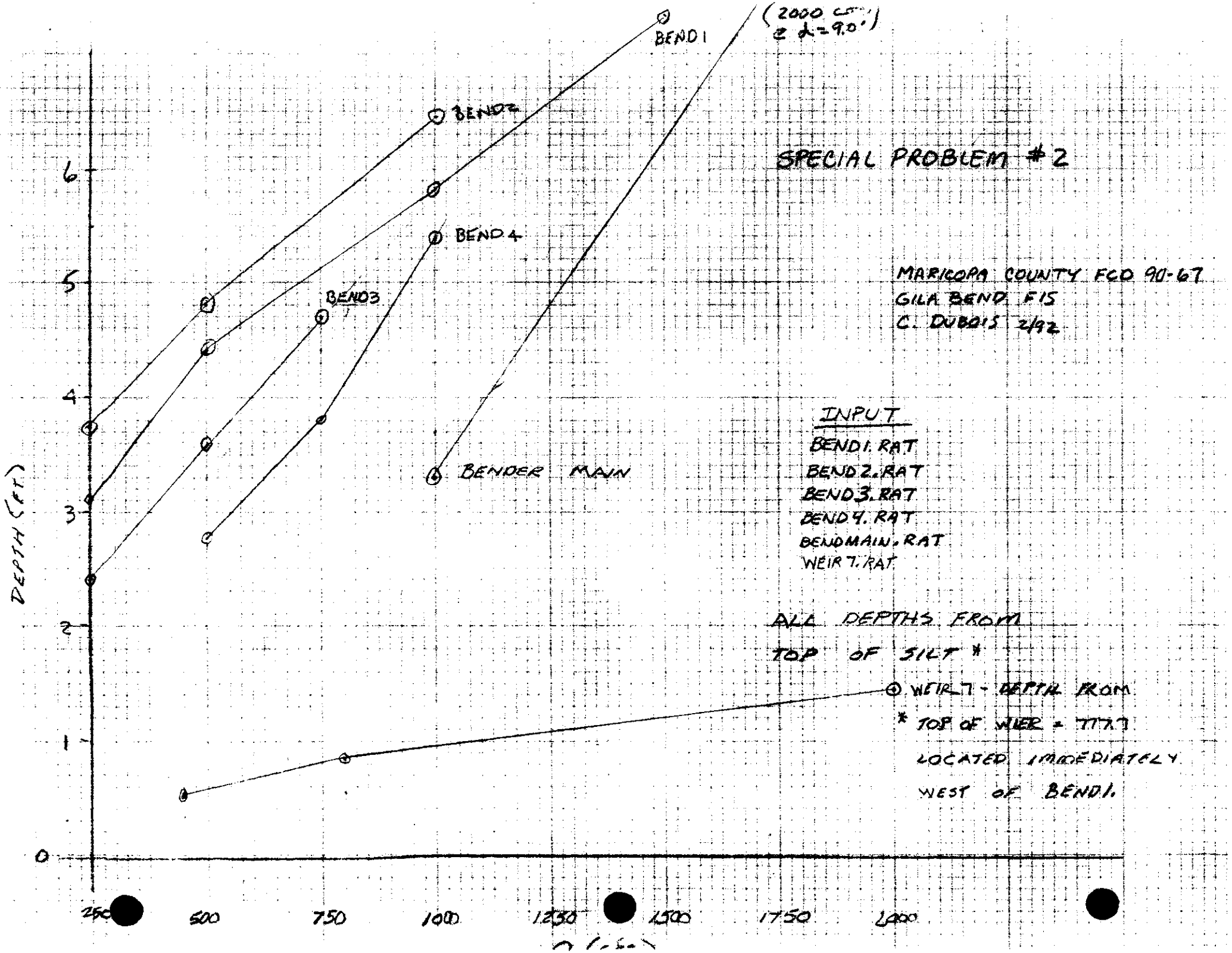
Problem No. 18

The HEC-2 model for Unnamed Wash No. 2 prints a message at Section 0.385 warning "3840 Section not high enough." It appears that an initial water surface elevation assumption is made very high, but the computer quickly converges on a computed water surface elevation that is reasonable. The model was carefully reviewed and no apparent defect was found that would cause the message.


SPECIAL PROBLEM #6
INPUT
SAND 1BW. RAT
SAND 1BE. RAT
SAND 1BMN. RAT
WEIR3. RAT
Q MAIN = 9,100 CFS
Q WEST = 4,200 CFS
Q EAST = 1,600 CFS
14,900 CFS
Q WEIR = 8,200 CFS
4B98-MAIN SAND TANK
4B98-WEST SAND TANK
4B98-EAST SAND TANK
WEIR SPLIT
4B22-SAND TANK
ELEVATION, NGVD
Q, 1000 CFS
774
772
770
768
766
764
762
760
758
756
4
8
12
16
20
24
MARICOPA COUNTY FCD
90-67
GILA BEND AREA FIS
SAND TANK WASH
AT I-8
J. Mischler 2/92


West levee
North canal bank
Weir flow
SPECIAL PROBLEM # 8
CWSEL = 746.2
CQ = 18,300
Weir + Channel
Overshoot channel only
Input
C133N.RAT
C133W.RAT
SANDGBC.RAT
MARICOPA COUNTY FCD 90-67
GILA BEND AREA
SAND TANK WASH @ GILA BEND CANAL
Burgess & Niple Inc J. Mischler
4/11/92
ELEVATION
746
744
742
740
738
736
734
732
0
2000
4000
6000
8000
10000
12000
14000
16000
18000
Q CFS

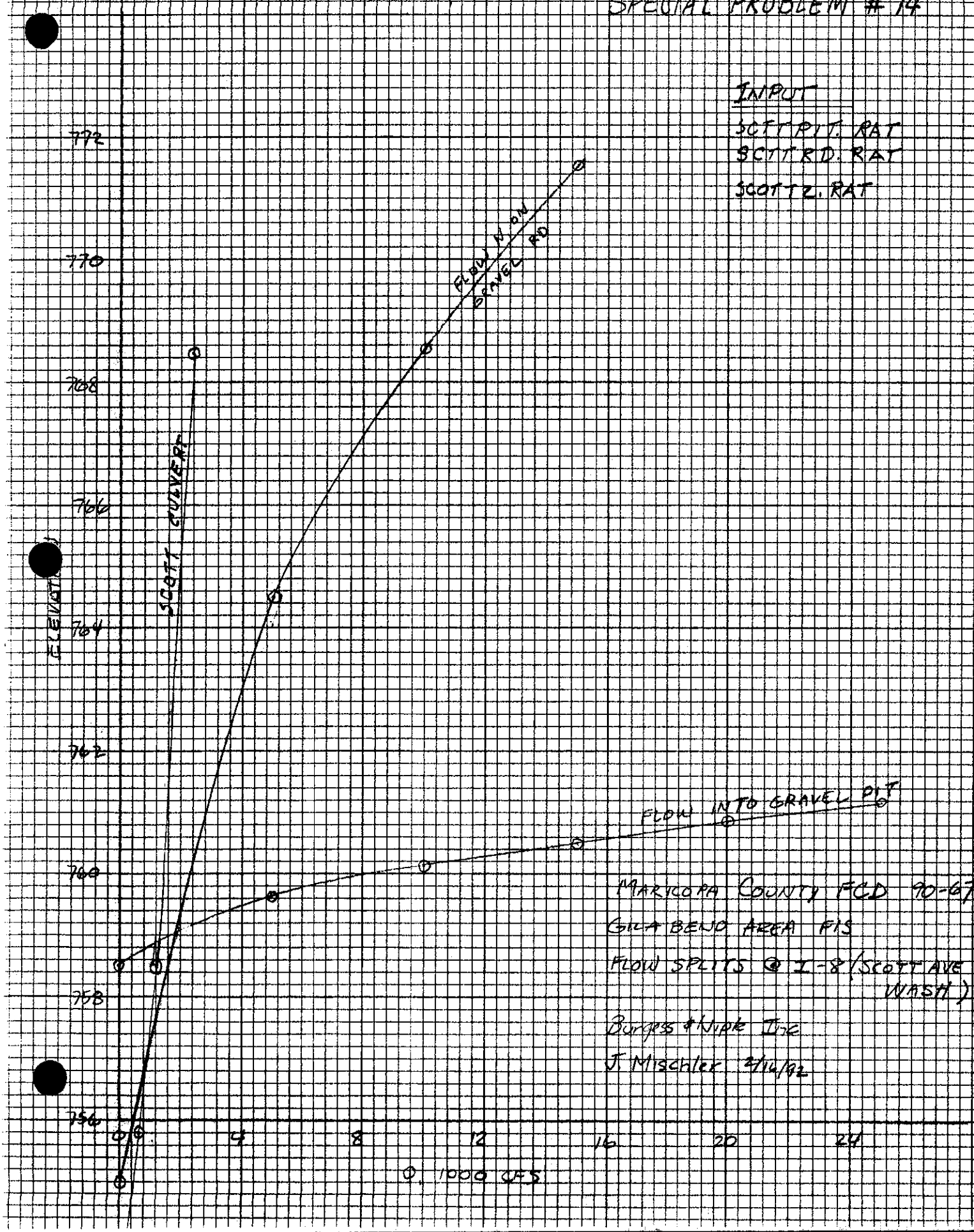

SPECIAL PROBLEM #10
ELEV 734.1, Q Bender = 3,200 CFS
Q SAND TANK ∴ = 24,000 - 3,200 = 20,800 CFS
SAND TANK WASH @ PIMA ST
BENDER WASH @ PIMA ST
FOR Q TOTAL = 18,300, Q BENDER = 3,100, Q SAND TANK = 15,100 CFS
INPUT
BENDPIMA.RAT
SANDPIMA.RAT
MARICOPA COUNTY FCD
FCD 90-67
GILA BEND AREA FIS
PIMA ST / US ROUTE 80
SAND TANK & BENDER WASHES
Burgess & Niple Inc
J. Mischler 2/13/92
736
734
732
730
728
726
724
722
0
4
8
12
16
20
24
Q, 1000 CFS


(2000 CFS @ d=9.0')
BEND 1
BEND 2
BEND 4
BEND 3
BENDER MAIN
SPECIAL PROBLEM #2
MARICOPA COUNTY FCD 90-67
GILA BEND F15
C. DUBOIS 2/92
INPUT
BEND1.RAT
BEND2.RAT
BEND3.RAT
BEND4.RAT
BENDMAIN.RAT
WEIR7.RAT
ALL DEPTHS FROM TOP OF SILT *
WEIR 7 - DEPTH FROM
* TOP OF WEIR = 777.7
LOCATED IMMEDIATELY WEST OF BEND1.
DEPTH (FT.)
0
1
2
3
4
5
6
250
500
750
1000
1250
1500
1750
2000

SPECIAL PROBLEM # 14

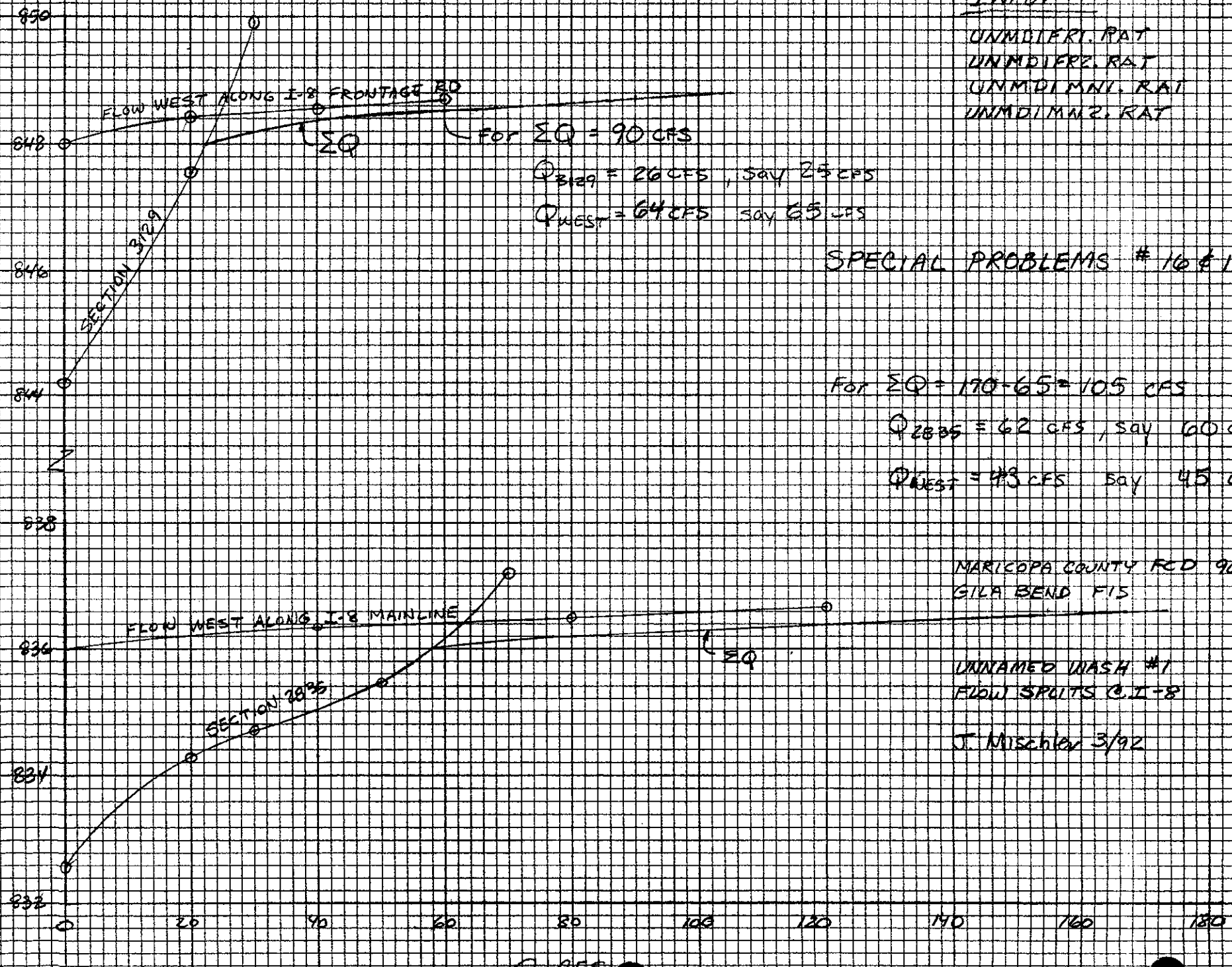
INPUT

SCTTPIT.RAT
SCTTRD.RAT
SCOTT2.RAT



MARICOPA COUNTY FCD 90-67
GILA BEND AREA FIS
FLOW SPLITS @ I-8 (SCOTT AVE WASH)

Burgess & Niple Inc
J. Mischler 2/14/92



INPUT

UNMDIFR1.RAT
UNMDIFR2.RAT
UNMDIMN1.RAT
UNMDIMN2.RAT

For $\Sigma Q = 90$ CFS

$Q_{3129} = 26$ CFS, say 25 CFS

$Q_{WEST} = 64$ CFS say 65 CFS

SPECIAL PROBLEMS # 16 & 17

For $\Sigma Q = 170 - 65 = 105$ CFS

$Q_{2835} = 62$ CFS, say 60 CFS

$Q_{WEST} = 43$ CFS say 45 CFS

MARICOPA COUNTY FCD 90-67
GILA BEND F15

UNNAMED WASH #1
FLOW SPLITS @ I-8

J. Mischler 3/92

4.5 - SPECIAL PROBLEMS
KEY TO COMPUTER OUTPUT

Letter	Input File	Description	Special Problem
K	SANDI8W.RAT	Sand Tank Wash, West culvert at I-8	6
L	SANDI8MN.RAT	Sand Tank Wash, Main bridge at I-8	6
M	SANDI8E.RAT	Sand Tank Wash, East culvert at I-8	6
N	SANDGBC.RAT	Sand Tank Wash, Channel section at Gila Bend Canal	8
O	SANDPIMA.RAT	Sand Tank Wash at Pima Street	10
P	C113N.RAT	Sand Tank Wash, Weir section at Gila Bend Canal	8
Q	WEIR3.RAT	Sand Tank Wash, Split flow to west at I-8	6
R	BEND1.RAT	Bender Wash, Westernmost culvert at I-8	2
S	BEND2.RAT	Bender Wash Culvert just west of main at I-8	2
T	BENDMAIN.RAT	Bender Wash Main culvert at I-8	2
U	BEND3.RAT	Bender Wash Culvert just east of main at I-8	2
V	BEND4.RAT	Bender Wash Easternmost culvert at I-8	2
W	BENDPIMA.RAT	Bender Wash at Pima Street	10
X	WEIR7.RAT	Bender Wash Split flow to west at I-8	2

4.5 - SPECIAL PROBLEMS
KEY TO COMPUTER OUTPUT (continued)

Letter	Input File	Description	Special Problem
Y	SCTTPIT.RAT	Scott Avenue Wash Split flow into gravel pit upstream of I-8	14
Z	SCTTRD.RAT	Scott Avenue Wash Split flow north along gravel road beneath I-8	14
AA	SCOTT2.RAT	Scott Avenue Wash at Gila Bend Canal	Hydrology Rating
BB	SCOTTAO.RAT	Scott Avenue Wash Zone AO flooding north of I-8	14
CC	C133W.RAT	Sand Tank Wash Weir section at levee southwest of Gila Bend Canal	8
DD	UNMDIFRI.RAT	Unnamed Wash No. 1 at I-8 Frontage Road	16
EE	UNMDIFR2.RAT	Unnamed Wash No. 1 Split flow west of frontage road culvert	16
FF	UNMDIMNI.RAT	Unnamed Wash No. 1 at I-8 mainline	17
GG	UNMDIMN2.RAT	Unnamed Wash No. 1 Split flow west of mainline culvert	17

```
1*****************************************
 *  HEC-2 WATER SURFACE PROFILES          *
 *                                        *
 *  Version   4.6.2;  May 1991            *
 *                                        *
 *  RUN DATE    11MAR92    TIME   10:26:38 *
 *****************************************
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*************************************
*  U.S. ARMY CORPS OF ENGINEERS     *
*  HYDROLOGIC ENGINEERING CENTER    *
*  609 SECOND STREET, SUITE D       *
*  DAVIS, CALIFORNIA 95616-4687     *
*        (916) 756-1104             *
*************************************
```

```
X     X  XXXXXXX   XXXXX              XXXXX
X     X  X         X     X           X     X
X     X  X         X                       X
XXXXXXX  XXXX      X          XXXXX   XXXXX
X     X  X         X                 X
X     X  X         X     X           X
X     X  XXXXXXX   XXXXX             XXXXXXX
```

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1
   11MAR92      10:26:39                                                                          PAGE    1


                                                                  THIS RUN EXECUTED 11MAR92    10:26:39
 *************************************
  HEC-2 WATER SURFACE PROFILES

  Version   4.6.2;  May 1991
 *************************************


 T1      FLOOD CONTROL DISTRICT OF MARICOPA COUNTY - CONTRACT FCD 90-67
 T2      GILA BEND AREA FLOODPLAIN DELINEATION STUDY BY BURGESS & NIPLE
 T3      WEST SAND TANK AT I-8                    J. MISCHLER - (602) 244-8100

 J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                 2                                                                   763.9

 J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

       1                 -1


 J3  VARIABLE CODES FOR SUMMARY PRINTOUT

      38        42         1        43        26        51         4         8        53        54
      13        15        40

         SECTION 4822 IS FROM THE SAND TANK MODEL


 NC    0.035     0.035     0.03      0.3       0.5
 QT        4      1000      2000      4200      5000
 X1     4822        13    9525.1    9780.4       600       900       972
 GR    764.5    9125.7     764.3    9279.6     764.3    9393.4     763.2    9525.1     761.5    9594.1
 GR    758.6    9615.1     755.4    9630.5     754.8    9656.7     755.4    9682.8     761.1    9712.5
 GR    762.9    9780.4     763.3    9851.5     763.3    9901.9

         INTERSTATE 8 CULVERT WEST OF SAND TANK WASH.  THIS MODEL IS USED TO
         GENERATE A RATING CURVE FOR USE IN COMPUTING AN ELEVATION UPSTREAM
         OF INTERSTATE 8.

         REPEAT GR DATA FROM 4822 SO THAT THE CHANNEL BOTTOM MAY BE ADJUSTED TO
         MATCH THE CULVERT.

         THESE RESULTS ARE COMBINED WITH OTHER MODELS TO DETERMINE
         THE PROPER FLOW SPLIT.

1
   11MAR92      10:26:39                                                                          PAGE    2


 NC                                      0.3       0.5
 X1     4857        13    9525.1    9780.4       130       120       110
 X3       10                                                                  790       790
 GR    764.5    9125.7     764.3    9279.6     764.3    9393.4     763.2    9525.1     761.5    9594.1
 GR    760.1    9615.1     760.1    9630.5     760.1    9656.7     760.1    9682.8     761.1    9712.5
 GR    762.9    9780.4     763.3    9851.5     763.3    9901.9

         WIER FLOW IS NOT ANTICIPATED, THEREFORE USE DUMMY RDLEN = 100 FT
         USE PSXECE=0.3 FT


 SC    5.014       0.4         3         0         8        10       176       8.1     760.4     760.1
 X1     4898                                     176       176       176                 0.3
 X2                           2                  790
 X3       10                                                                  790       790

         REPEAT SECTION 200 FT UPSTREAM FOR CONTRACTION LOSSES. USE PSXECE =
         0.7


 X1     4936                                     200       200       200                 0.7
1
   11MAR92      10:26:39                                                                          PAGE    3

     SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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


 *PROF 1
0

 CCHV=     .300 CEHV=     .500
 *SECNO 4822.000
```

```
3280 CROSS SECTION   4822.00 EXTENDED       .60 FEET

  4822.000      9.10    763.90       .00    763.90    763.91       .01       .00       .00    763.20
    1000.0       4.5     973.7      21.8      29.3    1051.1      87.1        .0        .0    762.90
       .00       .15       .93       .25      .035      .030      .035      .000    754.80   9441.29
   .000053      600.      972.      900.         0         0         0       .00    460.61   9901.90


CCHV=     .300 CEHV=     .500
*SECNO 4857.000
3280 CROSS SECTION   4857.00 EXTENDED       .61 FEET


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


3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       790.00 ELREA=       790.00

  4857.000      3.80    763.90       .00       .00    763.94       .04       .01       .01    763.20
    1000.0        .0    1000.0        .0        .0     658.0        .0       2.3        .9    762.90
       .02       .00      1.52       .00      .000      .030      .000      .000    760.10   9525.10
   .000267      130.      110.      120.         0         0         0       .00    255.30   9780.40


SPECIAL CULVERT

SC  CUNO      CUNV      ENTLC     COFQ      RDLEN     RISE      SPAN      CULVLN    CHRT      SCL       ELCHU     ELCHD
     5         .014      .40      3.00       .00      8.00     10.00     176.00     8         1       760.40    760.10

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

*SECNO 4898.000

SPECIAL CULVERT OUTLET CONTROL
EGIC =    764.051  EGOC =    764.685  PCWSE=    763.900  ELTRD=    790.000

3280 CROSS SECTION   4898.00 EXTENDED      1.06 FEET

1
   11MAR92      10:26:39                                                                                    PAGE    4

    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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
    764.05    764.69       .75        0.     1000.     1.293     400.0    790.00        0.


3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       790.00 ELREA=       790.00

  4898.000      4.26    764.66       .00       .00    764.69       .03       .75       .00    763.50
    1000.0        .0    1000.0        .0        .0     773.6        .0       5.2       2.0    763.20
       .06       .00      1.29       .00      .000      .030      .000      .000    760.40   9525.10
   .000155      176.      176.      176.         2         0         0       .00    255.30   9780.40


*SECNO 4936.000
3280 CROSS SECTION   4936.00 EXTENDED       .40 FEET


3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =   .69


  4936.000      3.60    764.70       .00       .00    764.73       .04       .04       .01    764.20
    1000.0       4.6     963.6      31.8      15.1     605.6      63.0       8.6       3.6    763.90
       .09       .30      1.59       .50      .035      .030      .035      .000    761.10   9465.07
   .000326      200.      200.      200.         0         0         0       .00    436.83   9901.90


1
   11MAR92      10:26:39                                                                                    PAGE    5

T1      FLOOD CONTROL DISTRICT OF MARICOPA COUNTY - CONTRACT FCD 90-67
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T3      WEST SAND TANK AT I-8                    J. MISCHLER - (602) 244-8100
T3      SAND TANK & BENDER WASH                  J. MISCHLER - (602) 244-8100

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                3                                                                   763.9

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

     2                  -1

1
   11MAR92      10:26:39                                                                                    PAGE    6

    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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

*PROF 2
0

CCHV=     .300 CEHV=     .500
*SECNO 4822.000
3280 CROSS SECTION   4822.00 EXTENDED       .60 FEET

  4822.000      9.10    763.90       .00    763.90    763.95       .05       .00       .00    763.20
    2000.0       9.0    1947.3      43.6      29.3    1051.1      87.1        .0        .0    762.90
       .00       .31      1.85       .50      .035      .030      .035      .000    754.80   9441.29
   .000213      600.      972.      900.         0         0         0       .00    460.61   9901.90
```

```
CCHV=     .300 CEHV=     .500
*SECNO 4857.000
3280 CROSS SECTION   4857.00 EXTENDED       .60 FEET

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

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       790.00 ELREA=       790.00

  4857.000      3.80    763.90       .00       .00    764.04       .14       .04       .05    763.20
    2000.0        .0    2000.0        .0        .0     656.1        .0       2.3        .9    762.90
       .01       .00      3.05       .00      .000      .030      .000      .000    760.10   9525.10
   .001077      130.      110.      120.         2         0         0       .00    255.30   9780.40


SPECIAL CULVERT

SC  CUNO      CUNV      ENTLC     COFQ      RDLEN     RISE      SPAN      CULVLN    CHRT      SCL       ELCHU     ELCHD
     5         .014      .40      3.00       .00      8.00     10.00     176.00     8         1       760.40    760.10

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

*SECNO 4898.000

SPECIAL CULVERT OUTLET CONTROL
EGIC =    766.276  EGOC =    766.600  PCWSE=    763.899  ELTRD=    790.000

3280 CROSS SECTION   4898.00 EXTENDED      2.96 FEET

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  2.96
```



```
    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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
   766.28    766.60     2.56        0.     2000.    1.589     400.0    790.00        0.


3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       790.00 ELREA=       790.00

  4898.000      6.16    766.56       .00       .00    766.60       .04      2.56       .00    763.50
    2000.0        .0    2000.0        .0        .0    1259.0        .0       6.2       2.0    763.20
       .04       .00      1.59       .00      .000      .030      .000      .000    760.40   9525.10
   .000123      176.      176.      176.         2         0         0       .00    255.30   9780.40

*SECNO 4936.000
3280 CROSS SECTION   4936.00 EXTENDED      2.31 FEET

  4936.000      5.51    766.61       .00       .00    766.63       .02       .02       .01    764.20
    2000.0     326.1    1447.2     226.7     578.7    1091.9     294.4      13.6       4.3    763.90
       .09       .56      1.33       .77      .035      .030      .035      .000    761.10   9125.70
   .000103      200.      200.      200.         2         0         0       .00    776.20   9901.90
```



```
T1      FLOOD CONTROL DISTRICT OF MARICOPA COUNTY - CONTRACT FCD 90-67
T2      GILA BEND AREA FLOODPLAIN DELINEATION STUDY BY BURGESS & NIPLE
T3      WEST SAND TANK AT I-8                    J. MISCHLER - (602) 244-8100
T3      SAND TANK & BENDER WASH                  J. MISCHLER - (602) 244-8100

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                4                                                                   763.9

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

     3                   -1
```



```
    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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

*PROF 3
0

CCHV=     .300 CEHV=     .500
*SECNO 4822.000
3280 CROSS SECTION   4822.00 EXTENDED       .60 FEET

  4822.000      9.10    763.90       .00    763.90    764.13       .23       .00       .00    763.20
    4200.0      19.0    4089.4     91.6      29.3    1051.1      87.1        .0        .0    762.90
       .00       .65      3.89      1.05      .035      .030      .035      .000    754.80   9441.29
   .000940      600.      972.      900.         0         0         0       .00    460.61   9901.90


CCHV=     .300 CEHV=     .500
*SECNO 4857.000
3280 CROSS SECTION   4857.00 EXTENDED       .60 FEET
```

```
3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =   .44

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       790.00 ELREA=       790.00

  4857.000      3.79    763.89       .00       .00    764.53       .64       .20       .20    763.20
    4200.0        .0    4200.0        .0        .0     655.1        .0       2.3        .9    762.90
       .00       .00      6.41       .00      .000      .030      .000      .000    760.10   9525.10
   .004771      130.      110.      120.         2         0         0       .00    255.30   9780.40


SPECIAL CULVERT

SC  CUNO      CUNV      ENTLC     COFQ      RDLEN     RISE      SPAN      CULVLN    CHRT      SCL       ELCHU     ELCHD
     5         .014       .40     3.00       .00      8.00     10.00     176.00     8         1       760.40    760.10

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

5140, NORMAL DEPTH EXCEEDS CULVERT HEIGHT
*SECNO 4898.000

SPECIAL CULVERT INLET CONTROL
EGIC =    770.859  EGOC =    770.561  PCWSE=    763.894  ELTRD=    790.000

3280 CROSS SECTION   4898.00 EXTENDED      7.21 FEET

1
   11MAR92      10:26:39                                                                                          PAGE   10

    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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


3301 HV CHANGED MORE THAN HVINS

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  8.37

SPECIAL CULVERT

     EGIC      EGOC        H4     QWEIR     QCULV       VCH     ACULV     ELTRD    WEIRLN
    770.86    770.56      6.33       0.     4200.     1.792     400.0    790.00        0.


3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       790.00 ELREA=       790.00

  4898.000     10.41    770.81       .00       .00    770.86       .05      6.33       .00    763.50
    4200.0        .0    4200.0        .0        .0    2343.8        .0       8.4       2.0    763.20
       .03       .00      1.79       .00      .000      .030      .000      .000    760.40   9525.10
   .000068      176.      176.      176.         2         0         0       .00    255.30   9780.40


*SECNO 4936.000
3280 CROSS SECTION   4936.00 EXTENDED      6.57 FEET

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.72

  4936.000      9.77    770.87       .00       .00    770.88       .01       .01       .01    764.20
    4200.0    1472.0    2160.2     567.7    2280.6    2179.8     812.1      25.9       4.3    763.90
       .10       .65       .99       .70      .035      .030      .035      .000    761.10   9125.70
   .000023      200.      200.      200.         2         0         0       .00    776.20   9901.90


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   11MAR92      10:26:39                                                                                          PAGE   11

T1      FLOOD CONTROL DISTRICT OF MARICOPA COUNTY - CONTRACT FCD 90-67
T2      GILA BEND AREA FLOODPLAIN DELINEATION STUDY BY BURGESS & NIPLE
T3      WEST SAND TANK AT I-8                    J. MISCHLER - (602) 244-8100
T3      SAND TANK & BENDER WASH                  J. MISCHLER - (602) 244-8100

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                 5                                                                   763.9

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

     15                  -1

1
   11MAR92      10:26:39                                                                                          PAGE   12

    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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


*PROF 4
0

CCHV=      .300 CEHV=      .500
*SECNO 4822.000
3280 CROSS SECTION   4822.00 EXTENDED      .60 FEET

  4822.000      9.10    763.90       .00    763.90    764.22       .32       .00       .00    763.20
    5000.0      22.6    4868.4     109.1      29.3    1051.1      87.1        .0        .0    762.90
       .00       .77      4.63      1.25      .035      .030      .035      .000    754.80   9441.29
   .001333      600.      972.      900.         0         0         0       .00    460.61   9901.90


CCHV=      .300 CEHV=      .500
*SECNO 4857.000
3280 CROSS SECTION   4857.00 EXTENDED      .59 FEET
```

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = .44

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 790.00 ELREA= 790.00

4857.000	3.79	763.89	.00	.00	764.80	.91	.28	.29	763.20
5000.0	.0	5000.0	.0	.0	654.9	.0	2.3	.9	762.90
.00	.00	7.64	.00	.000	.030	.000	.000	760.10	9525.10
.006770	130.	110.	120.	2	0	0	.00	255.30	9780.40

SPECIAL CULVERT

SC	CUNO	CUNV	ENTLC	COFQ	RDLEN	RISE	SPAN	CULVLN	CHRT	SCL	ELCHU	ELCHD
	5	.014	.40	3.00	.00	8.00	10.00	176.00	8	1	760.40	760.10

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

5140, NORMAL DEPTH EXCEEDS CULVERT HEIGHT
*SECNO 4898.000

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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	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 INLET CONTROL
EGIC = 772.889 EGOC = 769.479 PCWSE= 763.892 ELTRD= 790.000

3280 CROSS SECTION 4898.00 EXTENDED 9.24 FEET

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 11.69

SPECIAL CULVERT

EGIC	EGOC	H4	QWEIR	QCULV	VCH	ACULV	ELTRD	WEIRLN
772.89	769.48	8.09	0.	5000.	1.747	400.0	790.00	0.

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 790.00 ELREA= 790.00

4898.000	12.44	772.84	.00	.00	772.89	.05	8.09	.00	763.50
5000.0	.0	5000.0	.0	.0	2862.5	.0	9.4	2.0	763.20
.03	.00	1.75	.00	.000	.030	.000	.000	760.40	9525.10
.000050	176.	176.	176.	2	0	0	.00	255.30	9780.40

*SECNO 4936.000
3280 CROSS SECTION 4936.00 EXTENDED 8.60 FEET

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 1.88

4936.000	11.80	772.90	.00	.00	772.91	.01	.00	.01	764.20
5000.0	1904.3	2411.2	684.6	3090.9	2697.7	1058.6	31.7	4.3	763.90
.11	.62	.89	.65	.035	.030	.035	.000	761.10	9125.70
.000014	200.	200.	200.	2	0	0	.00	776.20	9901.90

1
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THIS RUN EXECUTED 11MAR92 10:26:42

****
HEC-2 WATER SURFACE PROFILES

Version 4.6.2; May 1991
****

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

WEST SAND TANK AT I-8

SUMMARY PRINTOUT

	SECNO	ELMIN	CWSEL	Q	VCH	DIFWSX	TOPWID	DEPTH	SSTA	ENDST	QLOB	QROB	ELTRD
	4822.000	754.80	763.90	1000.00	.93	.00	460.61	9.10	9441.29	9901.90	4.52	21.81	.00
	4822.000	754.80	763.90	2000.00	1.85	.00	460.61	9.10	9441.29	9901.90	9.03	43.62	.00
	4822.000	754.80	763.90	4200.00	3.89	.00	460.61	9.10	9441.29	9901.90	18.97	91.61	.00
	4822.000	754.80	763.90	5000.00	4.63	.00	460.61	9.10	9441.29	9901.90	22.58	109.06	.00
*	4857.000	760.10	763.90	1000.00	1.52	.00	255.30	3.80	9525.10	9780.40	.00	.00	.00
*	4857.000	760.10	763.90	2000.00	3.05	.00	255.30	3.80	9525.10	9780.40	.00	.00	.00
*	4857.000	760.10	763.89	4200.00	6.41	-.01	255.30	3.79	9525.10	9780.40	.00	.00	.00
*	4857.000	760.10	763.89	5000.00	7.64	-.01	255.30	3.79	9525.10	9780.40	.00	.00	.00
	4898.000	760.40	764.66	1000.00	1.29	.76	255.30	4.26	9525.10	9780.40	.00	.00	790.00
*	4898.000	760.40	766.56	2000.00	1.59	2.66	255.30	6.16	9525.10	9780.40	.00	.00	790.00
*	4898.000	760.40	770.81	4200.00	1.79	6.92	255.30	10.41	9525.10	9780.40	.00	.00	790.00
*	4898.000	760.40	772.84	5000.00	1.75	8.95	255.30	12.44	9525.10	9780.40	.00	.00	790.00
*	4936.000	761.10	764.70	1000.00	1.59	.04	436.83	3.60	9465.07	9901.90	4.59	31.76	.00
	4936.000	761.10	766.61	2000.00	1.33	.05	776.20	5.51	9125.70	9901.90	326.08	226.71	.00

*	4936.000	761.10	770.87	4200.00	.99	.06	776.20	9.77	9125.70	9901.90	1472.03	567.73	.00
*	4936.000	761.10	772.90	5000.00	.89	.05	776.20	11.80	9125.70	9901.90	1904.26	684.56	.00

1

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SUMMARY OF ERRORS AND SPECIAL NOTES

```
WARNING SECNO=   4857.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   4857.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   4857.000  PROFILE=  3  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   4857.000  PROFILE=  4  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=   4898.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   4898.000  PROFILE=  3  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   4898.000  PROFILE=  4  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=   4936.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   4936.000  PROFILE=  3  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   4936.000  PROFILE=  4  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
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1*****************************************
 *  HEC-2 WATER SURFACE PROFILES          *
 *                                        *
 *  Version   4.6.2;  May 1991            *
 *                                        *
 *  RUN DATE    11MAR92    TIME   10:27:17 *
 *****************************************
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*************************************
*  U.S. ARMY CORPS OF ENGINEERS     *
*  HYDROLOGIC ENGINEERING CENTER    *
*  609 SECOND STREET, SUITE D       *
*  DAVIS, CALIFORNIA 95616-4687     *
*        (916) 756-1104             *
*************************************
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X     X  XXXXXXX   XXXXX              XXXXX
X     X  X        X     X            X     X
X     X  X        X                  X     X
XXXXXXX  XXXX     X          XXXXX    XXXXX
X     X  X        X                  X
X     X  X        X     X            X
X     X  XXXXXXX   XXXXX              XXXXXXX
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1
   11MAR92      10:27:17                                                                                    PAGE    1


                                                                                  THIS RUN EXECUTED 11MAR92    10:27:17
*************************************
 HEC-2 WATER SURFACE PROFILES

 Version   4.6.2;  May 1991
*************************************


T1      FLOOD CONTROL DISTRICT OF MARICOPA COUNTY - CONTRACT FCD 90-67
T2      GILA BEND AREA FLOODPLAIN DELINEATION STUDY BY BURGESS & NIPLE
T3      MAIN SAND TANK AT I-8                    J. MISCHLER - (602) 244-8100

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                2                                                                  764.63

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

     1                  -1

J3  VARIABLE CODES FOR SUMMARY PRINTOUT

     38        42         1        43        26        51         4         8        53        54
     13        15        40

        SECTIONS ARE LABELED AS  RIVER MILES * 1000, i.e., SECTION 676 IS AT
        A POINT ON SAND TANK WASH 0.676 UPSTREAM OF THE CONFLUENCE WITH THE
        GILA RIVER.


NC                                  0.3       0.5
QT        4      5000      9000     10000     15000
NH        4     0.035    9525.1      0.03   10150.9     0.035   10941.7      0.03   11366.2
X1     4822        43    9525.1   10150.9       600       900       972
GR    764.5    9125.7     764.3    9279.6     764.3    9393.4     763.2    9525.1     761.5    9594.1
GR    758.6    9615.1     755.4    9630.5     754.8    9656.7     755.4    9682.8     761.1    9712.5
GR    762.9    9780.4     763.3    9851.5     763.3    9901.9     760.2    9951.6     760.3    9994.9
GR    760.7   10000.0     762.3   10082.1     764.2   10150.9     763.4   10193.6     762.7   10223.3
GR    763.9   10252.4     764.2   10290.9     764.2   10369.2     763.9   10456.6     763.9   10565.9
GR    761.9   10619.4     763.0   10643.7     761.4   10700.5     763.6   10755.7     763.4   10807.6
GR    762.6   10844.4     764.5   10880.9     764.8   10941.7     763.3   11011.4     764.0   11081.0
GR    762.7   11157.0     762.6   11184.0     760.9   11193.5     762.7   11205.3     763.1   11223.2
GR    764.6   11249.0     765.5   11317.0     766.0   11366.2

        INTERSTATE 8 TWIN BRIDGES MODELED USING SEPARATE SPECIAL BRIDGE MODELS.
        INCREASE EXPANSION/CONTRACTION COEFFICIENTS FOR BRIDGES

        THE MODEL IS NOW JUST FOR SAND TANK WASH.

        WESTBOUND I-8   (SECTION IS TAKEN AT STRUCTURE CENTERLINE, USE
        PSXECE = -0.2)

1
   11MAR92      10:27:17                                                                                    PAGE    2


NC    0.035    0.035     0.03      0.3       0.5
X1     4857        7     9929    10070       100       270       185                  -0.2
X3       10                                                                  770       770
GR    772.6     9929    763.6   9929.1     763.0      9952     761.1     9958     761.7    10010
GR    763.6  10069.9    773.1    10070

        WIER FLOW IS NOT ANTICIPATED, THEREFORE USE DUMMY RDLEN = 100 FT
        ELTRD = 772.8 + 0.5 HV = 773.3


SB     1.05      1.6        3       100     140.7         7      1186         0     762.4    761.9
X1     4868                                   60        60        60                   0.5
X2                          1     771.3     773.3                                  772.8     772.8
X3       10                                                                  772.8     772.8

        EASTBOUND I-8   (SECTION IS TAKEN AT THE STRUCTURE CENTERLINE,
        PSXECE =-0.2)


X1     4887        7     9929    10070       100       100       100                  -0.2
X3       10                                                                  772       772
GR    772.9     9929    765.0   9929.1     763.0      9989     763.0    10030     764.0    10051
GR    764.2  10069.9    773.3    10070

        WIER FLOW IS NOT ANTICIPATED, THEREFORE USE DUMMY RDLEN = 100 FT
        ELTRD = 773.1 + 0.5 HV = 773.6


SB     1.05      1.6        3       100     140.7         7       996         0     764.1    763.6
X1     4898                                   60        60        60                   0.5
```

```
X2                          1      771.5      773.6
X3      10                                                                  773.1      773.1

        REPEAT SECTION 200 FT UPSTREAM FOR CONTRACTION LOSSES. USE PSXECE =
        1.3 FT.  ADJUST OVERBANKS PER TOPO MAPPING.

X1     4936        8      9929     10070       200       200       200                   1.3
GR    766.7     9850     765.0      9929     763.0      9989     763.0     10030     764.0     10051
GR    764.2    10070     766.7     10080     770.7     10140
1
   11MAR92      10:27:17                                                                          PAGE    3

    SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      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

 *PROF 1
0

 CCHV=     .300 CEHV=     .500
 1490 NM CARD USED
 *SECNO 4822.000

 3265 DIVIDED FLOW

 3280 CROSS SECTION   4822.00 EXTENDED       .13 FEET

   4822.000      9.83    764.63       .00    764.63    764.67       .04       .00       .00    763.20
     5000.0      93.0    3763.5    1143.4     188.9    2119.1    1240.4        .0        .0    764.20
        .00       .49      1.78       .92      .035      .030      .033      .000    754.80   9125.70
    .000253      600.      972.      900.         0         0         0       .00   2083.22  11251.27

 CCHV=     .300 CEHV=     .500
 *SECNO 4857.000

 3301 HV CHANGED MORE THAN HVINS

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

 3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      770.00 ELREA=      770.00

   4857.000      4.54    765.44    765.44       .00    767.16      1.72       .14       .84    772.40
     5000.0        .0    5000.0        .0        .0     474.9        .0       9.6       5.4    772.90
        .01       .00     10.53       .00      .000      .030      .000      .000    760.90   9929.08
    .009304      100.      185.      270.        20        14         0       .00    140.84  10069.92


 SPECIAL BRIDGE

 5227 DOWNSTREAM ELEV IS     764.75 , NOT     765.44 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

 SB  XK        XKOR       COFQ       RDLEN      BWC        BWP        BAREA      SS         ELCHU      ELCHD
      1.05      1.60       3.00     100.00     140.70       7.00    1186.00        .00     762.40     761.90

 *SECNO 4868.000
1
   11MAR92      10:27:17                                                                          PAGE    4

    SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      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


 3301 HV CHANGED MORE THAN HVINS

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

 CLASS B LOW FLOW

 3420 BRIDGE W.S.=     765.67 BRIDGE VELOCITY=      10.64     CALCULATED CHANNEL AREA=      437.

  EGPRS      EGLWC       H3       QWEIR      QLOW       BAREA    TRAPEZOID      ELLC      ELTRD      WEIRLN
                                                                    AREA
        .00    767.88      .00        0.     5000.      1186.      1190.     771.30     773.30          0.


 3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      772.80 ELREA=      772.80

   4868.000      5.37    766.77       .00       .00    767.88      1.11       .72       .00    772.90
     5000.0        .0    5000.0        .0        .0     592.3        .0      10.3       5.6    773.40
        .01       .00      8.44       .00      .000      .030      .000      .000    761.40   9929.07
    .004526        60.       60.       60.         0         0         0       .00    140.86  10069.93

 *SECNO 4887.000

 3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      772.00 ELREA=      772.00

   4887.000      4.37    767.17       .00       .00    768.58      1.41       .55       .15    772.70
     5000.0        .0    5000.0        .0        .0     524.7        .0      11.6       5.9    773.10
        .01       .00      9.53       .00      .000      .030      .000      .000    762.80   9929.07
    .006746      100.      100.      100.         2         0         0       .00    140.87  10069.94


 SPECIAL BRIDGE

 5227 DOWNSTREAM ELEV IS     766.45 , NOT     767.17 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

 SB  XK        XKOR       COFQ       RDLEN      BWC        BWP        BAREA      SS         ELCHU      ELCHD
      1.05      1.60       3.00     100.00     140.70       7.00     996.00        .00     764.10     763.60
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*SECNO 4898.000
1
   11MAR92      10:27:17                                                                                                PAGE    5

    SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      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

CLASS B LOW FLOW

3420 BRIDGE W.S.=     767.36 BRIDGE VELOCITY=      10.64     CALCULATED CHANNEL AREA=       436.

 EGPRS      EGLWC      H3         QWEIR      QLOW       BAREA      TRAPEZOID      ELLC       ELTRD      WEIRLN
                                                                      AREA
      .00    769.43       .00         0.     5000.       996.       989.      771.50     773.60         0.


3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       773.10 ELREA=       773.10

  4898.000       5.17     768.47        .00        .00     769.43        .96        .85        .00     773.20
    5000.0         .0     5000.0         .0         .0     637.5         .0       12.4        6.1     773.60
       .01        .00       7.84        .00       .000       .030       .000       .000     763.30    9929.06
   .003577        60.        60.        60.          0          0          0        .00     140.88   10069.94


*SECNO 4936.000
3280 CROSS SECTION    4936.00 EXTENDED       1.51 FEET

  4936.000       5.22     769.52        .00        .00     770.11        .58        .57        .11     766.30
    5000.0      664.5     4198.2      137.3      186.7      643.7       44.8       15.9        7.0     765.50
       .02       3.56       6.52       3.06       .035       .030       .035       .000     764.30    9850.00
   .002290       200.       200.       200.          1          0          0        .00     252.70   10102.70


1
   11MAR92      10:27:17                                                                                                PAGE    6

T1      FLOOD CONTROL DISTRICT OF MARICOPA COUNTY - CONTRACT FCD 90-67
T2      GILA BEND AREA FLOODPLAIN DELINEATION STUDY BY BURGESS & NIPLE
T3      MAIN SAND TANK AT I-8                    J. MISCHLER - (602) 244-8100

J1  ICHECK     INQ        NINV       IDIR       STRT       METRIC     HVINS      Q          WSEL       FQ

                 3                                                                           764.63

J2  NPROF      IPLOT      PRFVS      XSECV      XSECH      FN         ALLDC      IBW        CHNIM      ITRACE

     2                     -1

1
   11MAR92      10:27:17                                                                                                PAGE    7

    SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      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

*PROF 2
0

CCHV=      .300 CEHV=      .500
1490 NH CARD USED
*SECNO 4822.000

3265 DIVIDED FLOW

3280 CROSS SECTION    4822.00 EXTENDED       .13 FEET

  4822.000       9.83     764.63        .00     764.63     764.76        .13        .00        .00     763.20
    9000.0      167.5     6774.4     2058.2      188.9     2119.1     1240.4         .0         .0     764.20
       .00        .89       3.20       1.66       .035       .030       .033       .000     754.80    9125.70
   .000821       600.       972.       900.          0          0          0        .00    2083.22   11251.27


CCHV=      .300 CEHV=      .500
*SECNO 4857.000

3301 HV CHANGED MORE THAN HVINS

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

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       770.00 ELREA=       770.00

  4857.000       6.17     767.07     767.07        .00     769.61       2.54        .37       1.21     772.40
    9000.0         .0     9000.0         .0         .0     703.7         .0       10.1        5.4     772.90
       .00        .00      12.79        .00       .000       .030       .000       .000     760.90    9929.06
   .008372       100.       185.       270.         20         14          0        .00     140.88   10069.94


SPECIAL BRIDGE

5227 DOWNSTREAM ELEV IS     766.12 , NOT     767.07 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

SB  XK         XKOR       COFQ       RDLEN      BWC        BWP        BAREA      SS         ELCHU      ELCHD
     1.05       1.60       3.00      100.00     140.70       7.00    1186.00        .00     762.40     761.90

*SECNO 4868.000
1
   11MAR92      10:27:17                                                                                                PAGE    8

    SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      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
```

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 1.46

CLASS B LOW FLOW

3420 BRIDGE W.S.= 767.35 BRIDGE VELOCITY= 12.94 CALCULATED CHANNEL AREA= 662.

EGPRS	EGLWC	H3	QWEIR	QLOW	BAREA	TRAPEZOID AREA	ELLC	ELTRD	WEIRLN
.00	770.47	.00	0.	9000.	1186.	1190.	771.30	773.30	0.

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 772.80 ELREA= 772.80

4868.000	7.47	768.87	.00	.00	770.47	1.60	.86	.00	772.90
9000.0	.0	9000.0	.0	.0	887.9	.0	11.2	5.6	773.40
.01	.00	10.14	.00	.000	.030	.000	.000	761.40	9929.04
.003948	60.	60.	60.	0	0	0	.00	140.91	10069.95

*SECNO 4887.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 772.00 ELREA= 772.00

4887.000	6.36	769.16	.00	.00	771.10	1.94	.46	.17	772.70
9000.0	.0	9000.0	.0	.0	805.2	.0	13.1	5.9	773.10
.01	.00	11.18	.00	.000	.030	.000	.000	762.80	9929.04
.005435	100.	100.	100.	2	0	0	.00	140.91	10069.96

SPECIAL BRIDGE

5227 DOWNSTREAM ELEV IS 767.82 , NOT 769.16 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

SB	XK	XKOR	COFQ	RDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
	1.05	1.60	3.00	100.00	140.70	7.00	996.00	.00	764.10	763.60

*SECNO 4898.000

1

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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	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

CLASS B LOW FLOW

3420 BRIDGE W.S.= 769.05 BRIDGE VELOCITY= 12.94 CALCULATED CHANNEL AREA= 662.

EGPRS	EGLWC	H3	QWEIR	QLOW	BAREA	TRAPEZOID AREA	ELLC	ELTRD	WEIRLN
771.19	772.02	.00	0.	9000.	996.	989.	771.50	773.60	0.

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 773.10 ELREA= 773.10

4898.000	7.27	770.57	.00	.00	772.02	1.44	.92	.00	773.20
9000.0	.0	9000.0	.0	.0	933.2	.0	14.3	6.1	773.60
.01	.00	9.64	.00	.000	.030	.000	.000	763.30	9929.03
.003378	60.	60.	60.	0	0	0	.00	140.93	10069.97

*SECNO 4936.000
3280 CROSS SECTION 4936.00 EXTENDED 4.09 FEET

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 1.59

4936.000	7.79	772.09	.00	.00	772.68	.59	.40	.26	766.30
9000.0	1693.9	6742.2	563.9	390.2	1006.9	178.8	20.1	7.1	765.50
.02	4.34	6.70	3.15	.035	.030	.035	.000	764.30	9850.00
.001329	200.	200.	200.	3	0	0	.00	290.00	10140.00

1

11MAR92 10:27:17 PAGE 10

T1 FLOOD CONTROL DISTRICT OF MARICOPA COUNTY - CONTRACT FCD 90-67
T2 GILA BEND AREA FLOODPLAIN DELINEATION STUDY BY BURGESS & NIPLE
T3 MAIN SAND TANK AT I-8 J. MISCHLER - (602) 244-8100

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
		4							764.63	
J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	3		-1							

1

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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	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

*PROF 3
0

```
CCHV=     .300 CEHV=     .500
1490 NH CARD USED
*SECNO 4822.000

3265 DIVIDED FLOW

3280 CROSS SECTION   4822.00 EXTENDED       .13 FEET

  4822.000      9.83    764.63       .00    764.63    764.79       .16       .00       .00    763.20
   10000.0     186.1    7527.1    2286.8     188.9    2119.1    1240.4        .0        .0    764.20
       .00       .99      3.55      1.84      .035      .030      .033      .000    754.80   9125.70
   .001014      600.      972.      900.         0         0         0       .00   2083.22  11251.27


CCHV=     .300 CEHV=     .500
*SECNO 4857.000

3301 HV CHANGED MORE THAN HVINS

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

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       770.00 ELREA=       770.00

  4857.000      6.54    767.44    767.44       .00    770.15      2.72       .43      1.28    772.40
   10000.0        .0   10000.0       .0        .0     756.2        .0      10.2       5.4    772.90
       .00       .00     13.22       .00      .000      .030      .000      .000    760.90   9929.05
   .008186      100.      185.      270.        20        14         0       .00    140.89  10069.94


SPECIAL BRIDGE

5227 DOWNSTREAM ELEV IS     766.43 , NOT     767.44 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

SB  XK        XKOR      COFQ      RDLEN     BWC       BWP       BAREA     SS        ELCHU     ELCHD
     1.05      1.60      3.00    100.00    140.70      7.00   1186.00       .00    762.40    761.90

*SECNO 4868.000
1
   11MAR92      10:27:17                                                                                    PAGE   12

    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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


3301 HV CHANGED MORE THAN HVINS

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.46

CLASS B LOW FLOW

3420 BRIDGE W.S.=     767.73 BRIDGE VELOCITY=      13.40     CALCULATED CHANNEL AREA=       713.

 EGPRS      EGLWC       H3      QWEIR      QLOW     BAREA   TRAPEZOID      ELLC     ELTRD     WEIRLN
                                                            AREA
       .00    771.05      .00       0.    10000.     1186.     1190.     771.30    773.30        0.


3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       772.80 ELREA=       772.80

  4868.000      7.94    769.34       .00       .00    771.05      1.71       .90       .00    772.90
   10000.0        .0   10000.0       .0        .0     954.3        .0      11.3       5.6    773.40
       .01       .00     10.48       .00      .000      .030      .000      .000    761.40   9929.04
   .003865       60.       60.       60.         0         0         0       .00    140.92  10069.96

*SECNO 4887.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       772.00 ELREA=       772.00

  4887.000      6.82    769.62       .00       .00    771.67      2.05       .45       .17    772.70
   10000.0        .0   10000.0       .0        .0     869.4        .0      13.4       5.9    773.10
       .01       .00     11.50       .00      .000      .030      .000      .000    762.80   9929.04
   .005238      100.      100.      100.         2         0         0       .00    140.92  10069.96


SPECIAL BRIDGE

5227 DOWNSTREAM ELEV IS     768.13 , NOT     769.62 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

SB  XK        XKOR      COFQ      RDLEN     BWC       BWP       BAREA     SS        ELCHU     ELCHD
     1.05      1.60      3.00    100.00    140.70      7.00    996.00       .00    764.10    763.60

*SECNO 4898.000
1
   11MAR92      10:27:17                                                                                    PAGE   13

    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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


3301 HV CHANGED MORE THAN HVINS

CLASS B LOW FLOW

3420 BRIDGE W.S.=     769.43 BRIDGE VELOCITY=      13.41     CALCULATED CHANNEL AREA=       713.

 EGPRS      EGLWC       H3      QWEIR      QLOW     BAREA   TRAPEZOID      ELLC     ELTRD     WEIRLN
                                                            AREA
    772.12    772.60      .00       0.    10000.      996.      989.     771.50    773.60        0.
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3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       773.10 ELREA=       773.10

  4898.000      7.74    771.04       .00       .00    772.60      1.55       .93       .00    773.20
   10000.0        .0   10000.0        .0        .0    999.6        .0      14.7       6.1    773.60
       .01       .00     10.00       .00      .000      .030      .000      .000    763.30   9929.03
   .003344       60.       60.       60.         0         0         0       .00    140.94  10069.97


*SECNO 4936.000
3280 CROSS SECTION   4936.00 EXTENDED      4.68 FEET

3301 HV CHANGED MORE THAN HVINS

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.66

  4936.000      8.38    772.68       .00       .00    773.26       .59       .38       .29    766.30
   10000.0    1937.4    7329.1     733.4     436.7    1089.9     219.9      21.0       7.1    765.50
       .02      4.44      6.72      3.33      .035      .030      .035      .000    764.30   9850.00
   .001207      200.      200.      200.         3         0         0       .00    290.00  10140.00


1
   11MAR92      10:27:17                                                                                    PAGE   14

T1      FLOOD CONTROL DISTRICT OF MARICOPA COUNTY - CONTRACT FCD 90-67
T2      GILA BEND AREA FLOODPLAIN DELINEATION STUDY BY BURGESS & NIPLE
T3      MAIN SAND TANK AT I-8                    J. MISCHLER - (602) 244-8100

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                5                                                                   764.63

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

     15                  -1

1
   11MAR92      10:27:17                                                                                    PAGE   15

    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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


*PROF 4
0

CCHV=     .300 CEHV=     .500
1490 NH CARD USED
*SECNO 4822.000

3265 DIVIDED FLOW

3280 CROSS SECTION   4822.00 EXTENDED      .13 FEET

  4822.000      9.83    764.63       .00    764.63    764.99       .36       .00       .00    763.20
   15000.0     279.1   11290.6    3430.3     188.9    2119.1    1240.4        .0        .0    764.20
       .00      1.48      5.33      2.77      .035      .030      .033      .000    754.80   9125.70
   .002281      600.      972.      900.         0         0         0       .00   2083.22  11251.27


CCHV=     .300 CEHV=     .500
*SECNO 4857.000

3301 HV CHANGED MORE THAN HVINS

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

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       770.00 ELREA=       770.00

  4857.000      8.20    769.10    769.10       .00    772.66      3.57       .74      1.60    772.40
   15000.0        .0   15000.0        .0        .0    989.8        .0      10.7       5.4    772.90
       .00       .00     15.15       .00      .000      .030      .000      .000    760.90   9929.04
   .007731      100.      185.      270.        20        15         0       .00    140.92  10069.96


SPECIAL BRIDGE

6227 DOWNSTREAM ELEV IS     767.83 , NOT     769.10 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

SB  XK        XKOR      COFQ      RDLEN     BWC       BWP       BAREA     SS        ELCHU     ELCHD
     1.05      1.60      3.00    100.00    140.70      7.00   1186.00       .00    762.40    761.90

*SECNO 4868.000
6840, FLOW IS BY WEIR AND LOW FLOW
1
   11MAR92      10:27:17                                                                                    PAGE   16

    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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


3301 HV CHANGED MORE THAN HVINS

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.46

3420 BRIDGE W.S.=     771.45 BRIDGE VELOCITY=      11.99     CALCULATED CHANNEL AREA=      1210.

 EGPRS      EGLWC      H3        QWEIR     QLOW      BAREA     TRAPEZOID      ELLC      ELTRD     WEIRLN
                                                               AREA
```

773.07	773.68	2.35	71.	14913.	1186.	1190.	771.30	773.30	100.

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 772.80 ELREA= 772.80

4868.000	10.05	771.45	.00	.00	773.68	2.23	1.02	.00	772.90
15000.0	.0	15000.0	.0	.0	1251.7	.0	12.2	5.6	773.40
.00	.00	11.98	.00	.000	.030	.000	.000	761.40	9929.02
.003651	60.	60.	60.	4	0	2	.00	140.96	10069.98

*SECNO 4887.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 772.00 ELREA= 772.00

4887.000	8.88	771.68	.00	.00	774.28	2.59	.41	.18	772.70
15000.0	.0	15000.0	.0	.0	1160.5	.0	15.0	5.9	773.10
.01	.00	12.93	.00	.000	.030	.000	.000	762.80	9929.01
.004665	100.	100.	100.	2	0	0	.00	140.97	10069.98

SPECIAL BRIDGE

5227 DOWNSTREAM ELEV IS 769.53 , NOT 771.68 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

SB	XK	XKOR	COFQ	RDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
	1.05	1.60	3.00	100.00	140.70	7.00	996.00	.00	764.10	763.60

*SECNO 4898.000
3280 CROSS SECTION 4898.00 EXTENDED 1.67 FEET

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	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

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 1.56

PRESSURE AND WEIR FLOW, Weir Submergence Based on TRAPEZOIDAL Shape

EGPRS	EGLWC	H3	QWEIR	QPR	BAREA	TRAPEZOID AREA	ELLC	ELTRD	WEIRLN
777.32	775.26	.00	1362.	13640.	996.	989.	771.50	773.60	100.

4898.000	11.57	774.87	.00	.00	776.34	1.48	2.07	.00	773.20
15000.0	.0	15000.0	.0	.0	1538.6	.0	16.8	6.1	773.60
.01	.00	9.75	.00	.000	.030	.000	.000	763.30	9929.00
.001907	60.	60.	60.	3	0	2	.00	141.00	10070.00

*SECNO 4936.000
3280 CROSS SECTION 4936.00 EXTENDED 8.35 FEET

3301 HV CHANGED MORE THAN HVINS

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

4936.000	12.04	776.34	.00	.00	776.84	.50	.20	.29	766.30
15000.0	3162.5	10067.5	1770.0	726.7	1607.5	476.9	26.8	7.1	765.50
.02	4.35	6.26	3.71	.035	.030	.035	.000	764.30	9850.00
.000623	200.	200.	200.	2	0	0	.00	290.00	10140.00

THIS RUN EXECUTED 11MAR92 10:27:22

****
HEC-2 WATER SURFACE PROFILES

Version 4.6.2; May 1991
****

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

MAIN SAND TANK AT I-8

SUMMARY PRINTOUT

	SECNO	ELMIN	CWSEL	Q	VCH	DIFWSX	TOPWID	DEPTH	SSTA	ENDST	QLOB	QROB	ELTRD
	4822.000	754.80	764.63	5000.00	1.78	.00	2083.22	9.83	9125.70	11251.27	93.04	1143.42	.00
	4822.000	754.80	764.63	9000.00	3.20	.00	2083.22	9.83	9125.70	11251.27	167.48	2058.15	.00
	4822.000	754.80	764.63	10000.00	3.55	.00	2083.22	9.83	9125.70	11251.27	186.09	2286.84	.00
	4822.000	754.80	764.63	15000.00	5.33	.00	2083.22	9.83	9125.70	11251.27	279.13	3430.26	.00
*	4857.000	760.90	765.44	5000.00	10.53	.81	140.84	4.54	9929.08	10069.92	.00	.00	.00
*	4857.000	760.90	767.07	9000.00	12.79	2.44	140.88	6.17	9929.06	10069.94	.00	.00	.00
*	4857.000	760.90	767.44	10000.00	13.22	2.81	140.89	6.54	9929.05	10069.94	.00	.00	.00
*	4857.000	760.90	769.10	15000.00	15.15	4.47	140.92	8.20	9929.04	10069.96	.00	.00	.00
*	4868.000	761.40	766.77	5000.00	8.44	1.33	140.86	5.37	9929.07	10069.93	.00	.00	773.30
*	4868.000	761.40	768.87	9000.00	10.14	1.81	140.91	7.47	9929.04	10069.95	.00	.00	773.30
*	4868.000	761.40	769.34	10000.00	10.48	1.91	140.92	7.94	9929.04	10069.96	.00	.00	773.30

*	4868.000	761.40	771.45	15000.00	11.98	2.36	140.96	10.05	9929.02	10069.98	.00	.00	773.30
	4887.000	762.80	767.17	5000.00	9.53	.40	140.87	4.37	9929.07	10069.94	.00	.00	.00
	4887.000	762.80	769.16	9000.00	11.18	.29	140.91	6.36	9929.04	10069.96	.00	.00	.00
	4887.000	762.80	769.62	10000.00	11.50	.27	140.92	6.82	9929.04	10069.96	.00	.00	.00
	4887.000	762.80	771.68	15000.00	12.93	.23	140.97	8.88	9929.01	10069.98	.00	.00	.00
*	4898.000	763.30	768.47	5000.00	7.84	1.30	140.88	5.17	9929.06	10069.94	.00	.00	773.60
*	4898.000	763.30	770.57	9000.00	9.64	1.41	140.93	7.27	9929.03	10069.97	.00	.00	773.60
*	4898.000	763.30	771.04	10000.00	10.00	1.43	140.94	7.74	9929.03	10069.97	.00	.00	773.60
*	4898.000	763.30	774.87	15000.00	9.76	3.18	141.00	11.57	9929.00	10070.00	.00	.00	773.60
	4936.000	764.30	769.52	5000.00	6.52	1.05	252.70	5.22	9850.00	10102.70	664.54	137.29	.00
*	4936.000	764.30	772.09	9000.00	6.70	1.52	290.00	7.79	9850.00	10140.00	1693.87	563.88	.00
*	4936.000	764.30	772.68	10000.00	6.72	1.63	290.00	8.38	9850.00	10140.00	1937.45	733.45	.00
*	4936.000	764.30	776.34	15000.00	6.26	1.48	290.00	12.04	9850.00	10140.00	3162.49	1770.01	.00

1

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SUMMARY OF ERRORS AND SPECIAL NOTES

```
CAUTION SECNO=   4857.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=   4857.000  PROFILE=  1  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=   4857.000  PROFILE=  1  20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO=   4857.000  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=   4857.000  PROFILE=  2  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=   4857.000  PROFILE=  2  20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO=   4857.000  PROFILE=  3  CRITICAL DEPTH ASSUMED
CAUTION SECNO=   4857.000  PROFILE=  3  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=   4857.000  PROFILE=  3  20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO=   4857.000  PROFILE=  4  CRITICAL DEPTH ASSUMED
CAUTION SECNO=   4857.000  PROFILE=  4  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=   4857.000  PROFILE=  4  20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO=   4868.000  PROFILE=  1  HYDRAULIC JUMP D.S.
WARNING SECNO=   4868.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
CAUTION SECNO=   4868.000  PROFILE=  2  HYDRAULIC JUMP D.S.
WARNING SECNO=   4868.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
CAUTION SECNO=   4868.000  PROFILE=  3  HYDRAULIC JUMP D.S.
WARNING SECNO=   4868.000  PROFILE=  3  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
CAUTION SECNO=   4868.000  PROFILE=  4  HYDRAULIC JUMP D.S.
WARNING SECNO=   4868.000  PROFILE=  4  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO=   4898.000  PROFILE=  1  HYDRAULIC JUMP D.S.
CAUTION SECNO=   4898.000  PROFILE=  2  HYDRAULIC JUMP D.S.
CAUTION SECNO=   4898.000  PROFILE=  3  HYDRAULIC JUMP D.S.
CAUTION SECNO=   4898.000  PROFILE=  4  HYDRAULIC JUMP D.S.
WARNING SECNO=   4898.000  PROFILE=  4  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=   4936.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   4936.000  PROFILE=  3  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   4936.000  PROFILE=  4  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
```

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1*****************************************
 *  HEC-2 WATER SURFACE PROFILES          *
 *                                        *
 *  Version   4.6.2;  May 1991            *
 *                                        *
 *  RUN DATE    11MAR92    TIME   10:28:05 *
 *****************************************
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*************************************
*  U.S. ARMY CORPS OF ENGINEERS     *
*  HYDROLOGIC ENGINEERING CENTER    *
*  609 SECOND STREET, SUITE D       *
*  DAVIS, CALIFORNIA 95616-4687     *
*          (916) 756-1104           *
*************************************
```

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X     X  XXXXXXX   XXXXX              XXXXX
X     X  X        X     X            X     X
X     X  X        X                  X     X
XXXXXXX  XXXX     X          XXXXX    XXXXX
X     X  X        X                  X
X     X  X        X     X            X
X     X  XXXXXXX   XXXXX              XXXXXXX
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1
   11MAR92      10:28:05                                                                                    PAGE    1


                                                                                THIS RUN EXECUTED 11MAR92    10:28:05
 ************************************
  HEC-2 WATER SURFACE PROFILES

  Version   4.6.2;  May 1991
 ************************************


T1       FLOOD CONTROL DISTRICT OF MARICOPA COUNTY - CONTRACT FCD 90-67
T2       GILA BEND AREA FLOODPLAIN DELINEATION STUDY BY BURGESS & NIPLE
T3       EAST SAND TANK AT I-8                    J. MISCHLER - (602) 244-8100

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                2                           -1

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

     1                  -1

J3  VARIABLE CODES FOR SUMMARY PRINTOUT

    38        42         1        43        26        51         4         8        53        54
    13        15        40


NC    0.035     0.035     0.03      0.3       0.5
QT        2      1000      2000
X1     4822         5     430.0     480.0
GR    765.5     200.0     764.0     430.0     763.5     460.0     764.0     480.0     768.0     730.0
        INTERSTATE 8 CULVERT EAST OF SAND TANK WASH.  THIS MODEL IS USED TO
        GENERATE A RATING CURVE FOR USE IN COMPUTING AN ELEVATION UPSTREAM
        OF INTERSTATE 8.


NC    0.035     0.035     0.03      0.3       0.5
X1     4857         6     445.0     480.0       130       120       110
X3       10                                                           790       790
GR    772.0     400.0     768.0     445.0     764.0     450.0     764.0     470.0     768.0     480.0
GR    772.0     650.0
        WIER FLOW IS NOT ANTICIPATED, THEREFORE USE DUMMY RDLEN = 100 FT
        REPEAT SECTION 4857 AT UPSTREAM FACE OF CULVERT.

1
   11MAR92      10:28:05                                                                                    PAGE    2


SC    3.014       0.4         3     100.0         8        10       176       8.1       764       764
X1     4898                                     176       176       176
X2                            2                 790
X3       10                                                           790       790
        REPEAT SECTION 200 FT UPSTREAM FOR CONTRACTION LOSSES. USE PSXECE =
             0.1

X1     4936                                     200       200       200                 0.1
1
   11MAR92      10:28:05                                                                                    PAGE    3

    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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

 *PROF 1
0

 CCHV=      .300 CEHV=      .500
 *SECNO 4822.000
 2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED
 3720 CRITICAL DEPTH ASSUMED
   4822.000      1.75    765.25    765.25       .00    765.63       .39       .00       .00    764.00
     1000.0     367.8     482.3     149.9     119.5      74.9      48.7        .0        .0    764.00
        .00      3.08      6.44      3.08      .035      .030      .035      .000    763.50    238.56
   .009849        0.        0.        0.         0        16         0       .00    319.48    558.03
```

```
CCHV=     .300 CEHV=     .500
*SECNO 4857.000

3301 HV CHANGED MORE THAN HVINS

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

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       790.00 ELREA=       790.00

  4857.000      3.76    767.76    767.76       .00    769.26      1.51      1.13       .56    768.00
    1000.0        .0    1000.0       .0        .0     101.6        .0        .5        .5    768.00
       .00       .00      9.85       .00      .000      .030      .000      .000    764.00    445.31
   .009957      130.      110.      120.        20        17         0       .00     34.08    479.39


SPECIAL CULVERT

SC  CUNO      CUNV      ENTLC     COFQ      RDLEN     RISE      SPAN      CULVLN    CHRT      SCL       ELCHU     ELCHD
     3         .014       .40     3.00     100.00     8.00     10.00     176.00     8         1       764.00    764.00

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

*SECNO 4898.000

SPECIAL CULVERT OUTLET CONTROL
EGIC =    769.190  EGOC =    769.669  PCWSE=    767.756  ELTRD=    790.000

3301 HV CHANGED MORE THAN HVINS

1
   11MAR92      10:28:05                                                                                          PAGE    4

    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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


3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.70

SPECIAL CULVERT

     EGIC      EGOC        H4     QWEIR     QCULV       VCH     ACULV     ELTRD    WEIRLN
    769.19    769.67       .41        0.     1000.     7.079     240.0    790.00        0.


3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       790.00 ELREA=       790.00

  4898.000      4.89    768.89       .00       .00    769.67       .78       .41       .00    768.00
    1000.0        .0    1000.0       .0        .0     141.3        .0       1.0        .6    768.00
       .01       .00      7.08       .00      .000      .030      .000      .000    764.00    445.00
   .003444      176.      176.      176.         3         0         0       .00     35.00    480.00

*SECNO 4936.000

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

  4936.000      5.75    769.85       .00       .00    770.21       .36       .42       .12    768.10
    1000.0      25.1     880.0      94.9      17.3     171.3      65.2       1.9       1.0    768.10
       .02      1.45      5.14      1.46      .035      .030      .035      .000    764.10    425.29
   .001402      200.      200.      200.         2         0         0       .00    129.18    554.47

1
   11MAR92      10:28:05                                                                                          PAGE    5

T1      FLOOD CONTROL DISTRICT OF MARICOPA COUNTY - CONTRACT FCD 90-67
T2      GILA BEND AREA FLOODPLAIN DELINEATION STUDY BY BURGESS & NIPLE
T3      EAST SAND TANK AT I-8                    J. MISCHLER - (602) 244-8100

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                 3                           -1

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

     15                  -1

1
   11MAR92      10:28:05                                                                                          PAGE    6

    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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


 *PROF 2
0

CCHV=     .300 CEHV=     .500
*SECNO 4822.000
2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED
3280 CROSS SECTION   4822.00 EXTENDED       .21 FEET

3720 CRITICAL DEPTH ASSUMED
  4822.000      2.21    765.71    765.71       .00    766.21       .50       .00       .00    764.00
    2000.0     903.2     750.8     346.0     221.6      98.2      91.7        .0        .0    764.00
       .00      4.08      7.65      3.77      .035      .030      .035      .000    763.50    200.00
   .009698        0.        0.        0.         0        19         0       .00    387.09    587.09


CCHV=     .300 CEHV=     .500
*SECNO 4857.000
```

3301 HV CHANGED MORE THAN HVINS

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

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 790.00 ELREA= 790.00

4857.000	5.51	769.51	769.51	.00	771.85	2.34	1.05	.92	768.00
2000.0	.0	2000.0	.0	.0	162.8	.0	.8	.6	768.00
.00	.00	12.28	.00	.000	.030	.000	.000	764.00	445.00
.008576	130.	110.	120.	20	17	0	.00	35.00	480.00

SPECIAL CULVERT

SC	CUNO	CUNV	ENTLC	COFQ	RDLEN	RISE	SPAN	CULVLN	CHRT	SCL	ELCHU	ELCHD
	3	.014	.40	3.00	100.00	8.00	10.00	176.00	8	1	764.00	764.00

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

*SECNO 4898.000

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	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 OUTLET CONTROL
EGIC = 772.365 EGOC = 772.867 PCWSE= 769.510 ELTRD= 790.000

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 1.95

SPECIAL CULVERT

EGIC	EGOC	H4	QWEIR	QCULV	VCH	ACULV	ELTRD	WEIRLN
772.36	772.86	1.00	0.	2000.	8.220	240.0	790.00	0.

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 790.00 ELREA= 790.00

4898.000	7.81	771.81	.00	.00	772.86	1.05	1.00	.00	768.00
2000.0	.0	2000.0	.0	.0	243.3	.0	1.6	.7	768.00
.01	.00	8.22	.00	.000	.030	.000	.000	764.00	445.00
.002249	176.	176.	176.	3	0	0	.00	35.00	480.00

*SECNO 4936.000
3280 CROSS SECTION 4936.00 EXTENDED 1.07 FEET

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 2.71

4936.000	9.06	773.16	.00	.00	773.27	.11	.13	.28	768.10
2000.0	212.4	973.8	813.7	137.9	287.3	521.1	4.3	1.4	768.10
.03	1.54	3.39	1.56	.035	.030	.035	.000	764.10	400.00
.000306	200.	200.	200.	2	0	0	.00	250.00	650.00

THIS RUN EXECUTED 11MAR92 10:28:07

****
HEC-2 WATER SURFACE PROFILES

Version 4.6.2: May 1991
****

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

EAST SAND TANK AT I-8

SUMMARY PRINTOUT

	SECNO	ELMIN	CWSEL	Q	VCH	DIFWSX	TOPWID	DEPTH	SSTA	ENDST	QLOB	QROB	ELTRD
*	4822.000	763.50	765.25	1000.00	6.44	.00	319.48	1.75	238.56	558.03	367.81	149.91	.00
*	4822.000	763.50	765.71	2000.00	7.65	.00	387.09	2.21	200.00	587.09	903.21	345.99	.00
*	4857.000	764.00	767.76	1000.00	9.85	2.51	34.08	3.76	445.31	479.39	.00	.00	.00
*	4857.000	764.00	769.51	2000.00	12.28	3.80	35.00	5.51	445.00	480.00	.00	.00	.00
*	4898.000	764.00	768.89	1000.00	7.08	1.13	35.00	4.89	445.00	480.00	.00	.00	790.00
*	4898.000	764.00	771.81	2000.00	8.22	2.30	35.00	7.81	445.00	480.00	.00	.00	790.00
*	4936.000	764.10	769.85	1000.00	5.14	.96	129.18	5.75	425.29	554.47	25.07	94.94	.00
*	4936.000	764.10	773.16	2000.00	3.39	1.36	250.00	9.06	400.00	650.00	212.45	813.74	.00

SUMMARY OF ERRORS AND SPECIAL NOTES

```
CAUTION SECNO=   4822.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=   4822.000  PROFILE=  2  CRITICAL DEPTH ASSUMED

CAUTION SECNO=   4857.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=   4857.000  PROFILE=  1  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=   4857.000  PROFILE=  1  20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO=   4857.000  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=   4857.000  PROFILE=  2  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=   4857.000  PROFILE=  2  20 TRIALS ATTEMPTED TO BALANCE WSEL

WARNING SECNO=   4898.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   4898.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=   4936.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   4936.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
```

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1*****************************************
 *  HEC-2 WATER SURFACE PROFILES          *
 *                                        *
 *  Version   4.6.2;  May 1991            *
 *                                        *
 *  RUN DATE    11MAR92    TIME   10:29:43 *
 *****************************************
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*************************************
*  U.S. ARMY CORPS OF ENGINEERS     *
*  HYDROLOGIC ENGINEERING CENTER    *
*  609 SECOND STREET, SUITE D       *
*  DAVIS, CALIFORNIA 95616-4687     *
*        (916) 756-1104             *
*************************************
```

```
X     X  XXXXXXX   XXXXX              XXXXX
X     X  X        X     X            X     X
X     X  X        X                  X     X
XXXXXXX  XXXX     X          XXXXX    XXXXX
X     X  X        X                  X
X     X  X        X     X            X
X     X  XXXXXXX   XXXXX              XXXXXXX
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1
   11MAR92      10:29:43                                                                    PAGE    1


                                                                  THIS RUN EXECUTED 11MAR92    10:29:43
 *************************************
 HEC-2 WATER SURFACE PROFILES

 Version   4.6.2;  May 1991
 *************************************


T1      FLOOD CONTROL DISTRICT OF MARICOPA COUNTY - CONTRACT FCD 90-67
T2      GILA BEND AREA FLOODPLAIN DELINEATION STUDY BY BURGESS & NIPLE
T3      SAND TANK AT GB CANAL                    J. MISCHLER - (602) 244-8100

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                2                         0.0011

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

     1                  -1


J3  VARIABLE CODES FOR SUMMARY PRINTOUT

     38        42         1        43        26        51         4         8        53        54
     13        15        40

        SECTIONS ARE LABELED AS  RIVER MILES * 1000, i.e., SECTION 676 IS AT
        A POINT ON SAND TANK WASH 0.676 UPSTREAM OF THE CONFLUENCE WITH THE
        GILA RIVER.

        J1.5 STRT = 0.0011 WAS OBTAINED BY (727.7 SPOT EL-727.5 SPOT EL)/180'

        FLOW UPSTREAM OF PIMA OCCURS ACROSS BOTH SAND TANK AND BENDER WASHES.
        SECTIONS INCLUDE BOTH CHANNELS.  BANK STATIONS ARE CHOSEN FOR SAND
        TANK WASH, BUT N VALUES FOR BENDER ARE HANDLED BY USE OF NH CARDS.

        RETURN THE FULL SAND TANK WASH Q SINCE THE MODEL IS NOW AT A POINT
        UPSTREAM OF THE SPLIT.


NC     0.06      0.06     0.035       0.1       0.3
QT        4      5000     10000     15000     20000
NH        8      0.06    9917.9     0.025   10045.2      0.06   10116.8     0.035   10819.5      0.05
NH    10880      0.03   10902.6      0.05   10917.6     0.035   11371.5
X1     3747        94    9917.9   10116.8       285       285       285
GR    737.9    8808.5     737.7    8928.3     737.6    8978.8     737.5    9001.6     737.4    9033.4
GR    737.6    9070.4     737.3    9100.9     737.5    9135.6     737.4    9166.7     737.1    9202.9
GR    736.8    9219.5     736.5    9250.3     735.8    9290.0     735.2    9323.6     734.8    9350.1
GR    735.2    9379.6     735.6    9398.3     736.5    9424.5     736.5    9458.3     736.7    9495.3
GR    735.9    9522.0     735.2    9538.5     734.2    9565.2     732.4    9585.3     732.0    9601.8
GR    730.9    9621.1     730.6    9645.5     729.9    9661.1     730.2    9665.9     730.7    9694.2
GR    730.8    9743.3     730.9    9792.3     731.4    9808.9     731.9    9828.0     731.9    9849.1
GR    731.9    9872.3     731.4    9888.4     731.8    9896.3     735.0    9909.6     736.7    9917.9
1
   11MAR92      10:29:43                                                                    PAGE    2

GR    735.3    9923.0     730.2    9932.6     727.3    9943.4     727.0    9946.4     727.5    9985.5
GR    727.6   10000.0     727.3   10045.2     735.3   10098.9     735.8   10116.8     732.2   10127.2
GR    732.5   10151.6     732.5   10188.2     732.5   10205.4     733.1   10237.8     732.8   10303.2
GR    732.8   10351.8     732.1   10381.3     732.3   10407.4     732.2   10428.8     733.5   10453.1
GR    733.8   10486.4     734.3   10530.1     733.7   10544.0     732.3   10550.0     732.4   10575.4
GR    732.1   10603.1     731.3   10615.3     731.5   10641.0     732.0   10671.4     731.2   10687.4
GR    730.4   10706.3     731.5   10717.8     731.4   10727.8     731.2   10746.5     730.6   10819.5
GR    729.8   10874.5     728.6   10880.0     728.0   10897.2     728.0   10902.6     734.5   10917.6
GR    734.5   10972.1     735.8   11005.5     735.6   11043.3     735.4   11095.5     735.8   11134.5
GR    736.5   11172.3     736.8   11214.4     735.9   11227.4     736.4   11242.8     736.6   11282.5
GR    737.1   11317.7     737.1   11339.8     738.0   11359.2     738.4   11371.5

        SOUTHERN PACIFIC RAILROAD BRIDGES - SPECIAL BRIDGE METHOD
        THE 9-SPAN SAND TANK BRIDGE HAS TIMBER PIERS AND CONCRETE ABUTMENTS.
        THE 3-SPAN BENDER WASH BRIDGE IS SIMILAR.

        SINCE THE SAND TANK STRUCTURE WILL PASS THE VAST MAJORITY OF THE FLOW,
        AND SINCE HEC-2 REQUIRES A COMMON CHANNEL INVERT AND RISE, THOSE VALUES
        ARE SET TO MATCH THE SAND TANK STRUCTURE.  THE BENDER WASH BRIDGE IS
        MODELED AS IF IT WERE A PART OF THE SAND TANK BRIDGE:

                          SAND        BENDER        MODEL
                        --------      --------      --------
                  ELCHU   728.1         729.0         728.1
                  ELCHD   728.0         729.2         728.0
                LOW CHD   734.0         735.0         734.0
                    BWC       133            42           175
                    BWP        16             4            20
                  BAREA       672           227           899

        REPEAT SECTION 3747 AT THE DOWNSTREAM FACE OF THE BRIDGES.  USE
```

PSXECE = 110 FT * 0.001 FT/FT

REPEAT GR CARDS SO THAT THE CHANNEL BOTTOMS CAN BE MADE TO CONFORM TO INVERTS OF THE CULVERT OPENINGS.

```
NH        8      0.06    9923.0     0.025   10057.0      0.06   10098.9     0.035   10819.5      0.05
NH    10874      0.03   10902.6      0.05   10917.6     0.035   11371.5
X1     3768        89    9923.0   10098.9       110       110       110                     0.1
GR    737.9    8808.5     737.7    8928.3     737.6    8978.8     737.5    9001.6     737.4    9033.4
GR    737.6    9070.4     737.3    9100.9     737.5    9135.6     737.4    9166.7     737.1    9202.9
GR    736.8    9219.5     736.5    9250.3     735.8    9290.0     735.2    9323.6     734.8    9350.1
GR    735.2    9379.6     735.6    9398.3     736.5    9424.5     736.5    9458.3     736.7    9495.3
GR    735.9    9522.0     736.2    9538.5     734.2    9565.2     732.4    9585.3     732.0    9601.8
GR    730.9    9621.1     730.6    9645.5     729.9    9661.1     730.2    9665.9     730.7    9694.2
GR    730.8    9743.3     730.9    9792.3     731.4    9808.9     731.9    9828.0     731.9    9849.1
GR    731.9    9872.3     731.4    9888.4     731.8    9896.3     735.0    9909.6     736.7    9917.9
GR    735.3    9923.0     727.9    9924.0     727.9   10000.0     727.9   10057.0     735.3   10098.9
GR    735.8   10116.8     732.2   10127.2     732.5   10151.6     732.5   10188.2     732.5   10205.4
GR    733.1   10237.8     732.8   10303.2     732.8   10351.8     732.1   10381.3     732.3   10407.4
GR    732.2   10428.8     733.5   10453.1     733.8   10486.4     734.3   10530.1     733.7   10544.0
GR    732.3   10550.0     732.4   10575.4     732.1   10603.1     731.3   10615.3     731.5   10641.0
GR    732.0   10671.4     731.2   10687.4     730.4   10706.3     731.5   10717.8     731.4   10727.8
```



```
GR    731.2   10746.5     730.6   10819.5     729.1   10874.0     729.1   10902.6     734.5   10917.6
GR    734.5   10972.1     736.8   11005.5     735.6   11043.3     735.4   11095.5     735.8   11134.5
GR    736.5   11172.3     736.8   11214.4     735.9   11227.4     736.4   11242.8     736.6   11282.5
GR    737.1   11317.7     737.1   11339.8     738.0   11359.2     738.4   11371.5
```

ELTRD = 737.3 + 0.1 HV = 737.4
ADD TWO POINTS AT THE BEGINNING TO MATCH BT. BT STATIONS ARE ADJUSTED SLIGHTLY TO MATCH GR'S.

```
NH        8      0.06    9923.0     0.025   10098.9      0.06   10530.1     0.035   10819.5      0.05
NH    10874      0.03   10902.6      0.05   10917.6     0.035   11371.5
SB     1.25      1.56         3         0       175        20       899         0     728.1     728.0
X1     3782        91    9923.0   10098.9        74        74        74                     0.2
X2                            1     734.0     737.4
BT      -13      8170     739.4                8450     739.1                8636.6     739.1
BT            8928.3     739.0               9202.9     738.3               9522.0     738.1
BT            9792.3     737.3              10000.0     737.9              10237.8     738.2
BT           10486.4     738.5              10717.8     738.6              11134.5     739.1
BT           11282.5     739.3
GR    739.2      8170     738.9       8450    737.9    8808.5     737.7    8928.3     737.6    8978.8
GR    737.5    9001.6     737.4    9033.4     737.6    9070.4     737.3    9100.9     737.5    9135.6
GR    737.4    9166.7     737.1    9202.9     736.8    9219.5     736.5    9250.3     735.8    9290.0
GR    735.2    9323.6     734.8    9350.1     735.2    9379.6     735.6    9398.3     736.5    9424.5
GR    736.5    9458.3     736.7    9495.3     735.9    9522.0     735.2    9538.5     734.2    9565.2
GR    732.4    9585.3     732.0    9601.8     730.9    9621.1     730.6    9645.5     729.9    9661.1
GR    730.2    9665.9     730.7    9694.2     730.8    9743.3     730.9    9792.3     731.4    9808.9
GR    731.9    9828.0     731.9    9849.1     731.9    9872.3     731.4    9888.4     731.8    9896.3
GR    735.0    9909.6     736.7    9917.9     735.3    9923.0     727.9    9924.0     727.9   10000.0
GR    727.9   10057.0     735.3   10098.9     735.8   10116.8     732.2   10127.2     732.5   10151.6
GR    732.5   10188.2     732.5   10205.4     733.1   10237.8     732.8   10303.2     732.8   10351.8
GR    732.1   10381.3     732.3   10407.4     732.2   10428.8     733.5   10453.1     733.8   10486.4
GR    734.3   10530.1     733.7   10544.0     732.3   10550.0     732.4   10575.4     732.1   10603.1
GR    731.3   10615.3     731.5   10641.0     732.0   10671.4     731.2   10687.4     730.4   10706.3
GR    731.5   10717.8     731.4   10727.8     731.2   10746.5     730.6   10819.5     728.8   10874.0
GR    728.8   10902.6     734.5   10917.6     734.5   10972.1     735.8   11005.5     735.6   11043.3
GR    735.4   11095.5     735.8   11134.5     736.5   11172.3     736.8   11214.4     735.9   11227.4
GR    736.4   11242.8     736.6   11282.5     737.1   11317.7     737.1   11339.8     738.0   11359.2
GR    738.4   11371.5

NH        8      0.06    9920.0     0.025   10081.0      0.06   10177.8     0.035   11117.0      0.05
NH    11139      0.03   11161.9      0.05   11185.8     0.035   11371.9
X1     3836        91       9920   10177.8       295       255       285
GR    739.9    8879.7     739.1    8922.7     737.9    8959.4     737.7    8998.9     736.9    9040.4
GR    736.1    9081.8     735.9    9119.0     736.7    9150.8     737.0    9176.3     737.4    9211.1
GR    736.8    9239.2     737.7    9261.4     737.9    9285.5     737.5    9297.9     737.4    9347.8
GR    738.1    9380.6     736.9    9407.2     736.7    9446.4     736.5    9485.5     734.9    9520.8
GR    735.4    9559.2     735.2    9601.0     736.0    9644.5     735.3    9714.6     734.9    9766.0
GR    734.4    9803.9     734.2    9834.5     735.2    9872.5     734.6    9893.6     734.7    9915.2
GR    734.7    9920.0     731.5    9927.1     730.7    9934.8     731.7    9941.7     731.6    9949.0
GR    730.6    9954.0     729.6    9958.3     729.7    9973.5     729.4   10000.0     729.0   10021.1
GR    730.5   10032.2     730.5   10047.0     729.8   10060.0     731.0   10067.5     731.8   10081.0
GR    733.8   10091.7     734.1   10106.1     734.9   10139.3     735.4   10177.8     735.0   10213.8
GR    733.6   10244.3     732.8   10272.6     732.3   10319.9     732.2   10380.3     732.0   10445.9
```



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GR    732.3   10519.6     732.6   10583.2     732.5   10633.2     732.2   10667.3     732.9   10705.1
GR    733.1   10758.1     733.6   10812.5     733.7   10873.0     733.9   10933.4     734.5   10981.0
GR    735.2   11004.5     735.9   11024.6     736.2   11039.7     738.2   11049.2     739.5   11057.4
GR    738.7   11066.4     739.7   11075.9     736.9   11081.7     739.9   11089.0     740.0   11092.6
GR    736.8   11102.6     737.2   11109.9     738.2   11117.0     730.6   11139.0     730.5   11161.0
GR    730.7   11161.9     732.9   11172.1     738.5   11185.8     736.3   11191.1     738.7   11201.5
GR    738.8   11224.6     737.8   11246.0     738.4   11279.6     738.9   11313.7     739.6   11351.7
GR    740.6   11371.9
```

THIS SECTION IS IN THE "THROAT" OF THE GILA BEND CANAL WHICH CROSSES BENEATH SAND TANK WASH IN AN INVERTED SIPHON.

POINTS LEFT OF 9950 ACTUALLY FOLLOW THE LEVEE UPSTREAM WHICH WAS BUILT TO PROTECT A RESIDENTIAL AREA. THE LEVEE IS HIGHER THAN THE GILA BEND CANAL. POINTS TO THE RIGHT FOLLOW THE GILA BEND CANAL BANK.

THE INVERTED SIPHON ACTS AS AN OPEN CHANNEL. BANKS OF THE GILA BEND CANAL ACT AS WEIRS. SEVERAL MODELING METHODS WERE EMPLOYED:

1. MODEL AS TYPICAL OPEN CHANNEL WITH GR CARDS
2. MODEL AS A SPECIAL BRIDGE WITH A TRAPEZIODAL OPENING
3. MODEL SEPARATELY AS AN OPEN CHANNEL BETWEEN BANK STATIONS AND A WEIR OUTSIDE OF THE BANK STATIONS

THE METHOD THAT MOST CLOSELY APPROXIMATES TRUE CONDITIONS IS NUMBER 3, TO MODEL THE CHANNEL AND WEIR SEPARATELY.

THE CHANNEL GEOMETRY USED TO DEVELOP THE CHANNEL RATING IS SHOWN ON THE GR CARDS. THE MODEL WHICH COMPUTES THE WEIR RATING IS INCLUDED AS A SEPARATE MODEL TITLED WEIR1.IN

```
NC    0.025      0.025      0.025
X1     3888          9     9953.4    10038.6       295.0       250.0       275.0
GR    744.8     9953.4      739.0     9962.8       732.0      9973.7       731.3      9991.4       731.3     10000.0
GR    731.3    10017.3      732.0    10020.6       743.6     10033.4       745.2     10038.6
1
   11MAR92      10:29:43                                                                                                PAGE    5

    SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      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

*PROF 1

CCHV=      .100 CEHV=      .300
1490 NH CARD USED
*SECNO 3747.000
2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED

3265 DIVIDED FLOW

  3747.000      5.48     732.48       .00       .00     732.77       .29       .00       .00     736.70
    5000.0     470.5     3335.1    1194.4     421.2      655.0     563.5        .0        .0     735.80
       .00      1.12       5.09      2.12      .060       .026      .037      .000    727.00    9584.38
   .001121      285.       285.      285.         0          0         3       .00    922.88   10912.94

1490 NH CARD USED
*SECNO 3768.000

3265 DIVIDED FLOW

  3768.000      4.61     732.61       .00       .00     732.89       .28       .12       .00     735.40
    5000.0     478.4     3368.4    1153.1     428.5      674.1     567.7       4.2       2.4     735.40
       .01      1.12       5.00      2.03      .060       .025      .037      .000    728.00    9584.12
   .001102      110.       110.      110.         0          0         0       .00    987.49   10912.06

1490 NH CARD USED

SPECIAL BRIDGE

SB  XK        XKOR       COFQ       RDLEN      BWC        BWP        BAREA      SS         ELCHU      ELCHD
     1.25      1.56       3.00        .00    175.00      20.00     899.00       .00     728.10     728.00

*SECNO 3782.000

3265 DIVIDED FLOW

CLASS A LOW FLOW

3420 BRIDGE W.S.=      732.39 BRIDGE VELOCITY=       7.44     CALCULATED CHANNEL AREA=       664.
1
   11MAR92      10:29:43                                                                                                PAGE    6

    SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      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

 EGPRS      EGLWC      H3         QWEIR      QLOW       BAREA      TRAPEZOID      ELLC       ELTRD      WEIRLN
                                                                      AREA
       .00     732.98       .10        0.      5000.       899.       915.      734.00     737.40         0.

  3782.000      4.62     732.72       .00       .00     732.98       .27       .09       .00     735.50
    5000.0     469.6     3322.8    1207.6     431.9      675.8     591.9       7.0       4.1     735.50
       .01      1.09       4.92      2.04      .060       .025      .037      .000    728.10    9584.00
   .001037       74.        74.       74.         0          0         0       .00    989.34   10912.38

1490 NH CARD USED
*SECNO 3836.000

3265 DIVIDED FLOW

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
  3836.000      4.27     733.27    733.27       .00     733.91       .64       .49       .11     734.70
    5000.0        .0     3573.9    1426.1        .0      482.8     506.5      15.5       9.4     735.40
       .03       .00       7.40      2.82      .000       .025      .034      .000    729.00    9923.18
   .003650      295.       285.      255.        20         10         0       .00    727.42   11173.00

*SECNO 3888.000

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
  3888.000      6.86     738.16    738.16       .00     741.08      2.92      1.22       .68     744.80
    5000.0        .0     5000.0        .0        .0      364.6        .0      19.6      11.7     745.20
       .03       .00      13.71       .00      .000       .025      .000      .000    731.30    9964.11
   .005619      295.       275.      250.        20         14         0       .00     63.28   10027.39

1
   11MAR92      10:29:43                                                                                                PAGE    7

T1      FLOOD CONTROL DISTRICT OF MARICOPA COUNTY - CONTRACT FCD 90-67
T2      GILA BEND AREA FLOODPLAIN DELINEATION STUDY BY BURGESS & NIPLE
T3      SAND TANK AT GB CANAL                    J. MISCHLER - (602) 244-8100

J1  ICHECK     INQ        NINV       IDIR       STRT       METRIC     HVINS      Q          WSEL       FQ
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                3                        0.0011
J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

     2                  -1

1
   11MAR92      10:29:43                                                                                PAGE    8

    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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

*PROF 2

CCHV=      .100 CEHV=      .300
1490 NH CARD USED
*SECNO 3747.000
2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED

3265 DIVIDED FLOW

  3747.000      6.83    733.83       .00       .00    734.13       .30       .00       .00    736.70
   10000.0    1394.8    5001.3    3603.9     859.9     867.5    1441.2        .0        .0    735.80
       .00      1.62      5.77      2.50      .060      .026      .037      .000    727.00   9569.31
   .001113      285.      285.      285.         0         0         4       .00   1240.58  10916.06

1490 NH CARD USED
*SECNO 3768.000

3265 DIVIDED FLOW

  3768.000      5.96    733.96       .00       .00    734.25       .29       .12       .00    735.40
   10000.0    1382.0    5088.1    3530.0     867.5     894.8    1450.3       8.1       3.1    735.40
       .01      1.59      5.69      2.43      .060      .025      .037      .000    728.00   9569.06
   .001063      110.      110.      110.         0         0         0       .00   1247.45  10915.81

1490 NH CARD USED

SPECIAL BRIDGE

5227 DOWNSTREAM ELEV IS     731.59 , NOT     733.96 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

SB  XK        XKOR      COFQ      RDLEN     BWC       BWP       BAREA     SS        ELCHU     ELCHD
     1.25      1.56      3.00       .00    175.00     20.00    899.00       .00    728.10    728.00

*SECNO 3782.000

3265 DIVIDED FLOW

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  2.83

1
   11MAR92      10:29:43                                                                                PAGE    9

    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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

PRESSURE FLOW

 EGPRS      EGLWC      H3        QWEIR     QPR       BAREA     TRAPEZOID     ELLC      ELTRD     WEIRLN
                                                               AREA
   736.96    735.12       .00        0.    10000.      899.      915.    734.00    737.40        0.

  3782.000      8.80    736.90       .00       .00    736.96       .05      2.70       .00    735.50
   10000.0    1740.8    3682.5    4576.8    2152.0    1390.0    4116.7      17.3       5.9    735.50
       .02       .81      2.65      1.11      .060      .025      .042      .000    728.10   9229.30
   .000133       74.       74.       74.         2         0         0       .00   2045.78  11289.86

1490 NH CARD USED
*SECNO 3836.000

3265 DIVIDED FLOW

  3836.000      7.94    736.94       .00       .00    737.01       .07       .05       .01    734.70
   10000.0     481.9    3602.9    5915.1     875.2    1303.3    3530.1      58.7      18.1    735.40
       .06       .55      2.76      1.68      .060      .024      .035      .000    729.00   9038.37
   .000239      295.      285.      255.         2         0         0       .00   1848.36  11193.87

*SECNO 3888.000

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
  3888.000     10.42    741.72    741.72       .00    745.93      4.21       .17      1.24    744.80
   10000.0        .0   10000.0        .0        .0     607.1        .0      77.9      24.1    745.20
       .06       .00     16.47       .00      .000      .025      .000      .000    731.30   9958.40
   .005113      295.      275.      250.        20        11         0       .00     72.93  10031.32

1
   11MAR92      10:29:43                                                                                PAGE   10

T1      FLOOD CONTROL DISTRICT OF MARICOPA COUNTY - CONTRACT FCD 90-67
T2      GILA BEND AREA FLOODPLAIN DELINEATION STUDY BY BURGESS & NIPLE
T3      SAND TANK AT GB CANAL                          J. MISCHLER - (602) 244-8100

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ
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                4                        0.0011
J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

     3                  -1

1                                                                                                  PAGE   11
   11MAR92      10:29:43

    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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

*PROF 3

CCHV=     .100 CEHV=     .300
1490 NH CARD USED
*SECNO 3747.000
2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED

3265 DIVIDED FLOW

  3747.000      7.77    734.77       .00       .00    735.08       .31       .00       .00    736.70
   15000.0    2286.0    6316.6    6397.4    1183.6    1024.3    2190.8        .0        .0    735.80
       .00      1.93      6.17      2.92      .060      .026      .036      .000    727.00   9549.99
   .001105      285.      285.      285.         0         0         4       .00   1389.24  10979.02

1490 NH CARD USED
*SECNO 3768.000

3265 DIVIDED FLOW

  3768.000      6.89    734.89       .00       .00    735.20       .31       .12       .00    735.40
   15000.0    2253.8    6467.2    6279.1    1191.3    1054.2    2201.5      11.2       3.5    735.40
       .01      1.89      6.13      2.85      .060      .026      .036      .000    728.00   9549.42
   .001053      110.      110.      110.         0         0         0       .00   1392.13  10979.58

1490 NH CARD USED

SPECIAL BRIDGE

5227 DOWNSTREAM ELEV IS     732.70 , NOT     734.89 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

SB  XK        XKOR      COFQ      RDLEN     BWC       BWP       BAREA     SS        ELCHU     ELCHD
     1.25      1.56      3.00       .00    175.00     20.00    899.00       .00    728.10    728.00

*SECNO 3782.000
3280 CROSS SECTION   3782.00 EXTENDED       .23 FEET

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  3.26

PRESSURE AND WEIR FLOW,  Weir Submergence Based on TRAPEZOIDAL Shape

1                                                                                                  PAGE   12
   11MAR92      10:29:43

    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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

  EGPRS     EGLWC     H3        QWEIR     QPR       BAREA     TRAPEZOID AREA    ELLC      ELTRD     WEIRLN
   741.63    737.20       .00     3559.    11535.      899.      915.    734.00    737.40     1972.

  3782.000     10.73    738.83       .00       .00    738.88       .04      3.67       .00    735.50
   15000.0    2970.9    4568.4    7460.7    4050.5    1729.0    6519.9      25.4       7.1    735.50
       .02       .73      2.64      1.14      .060      .025      .042      .000    728.10   8546.08
   .000099       74.       74.       74.         2         0         4       .00   2825.42  11371.50

1490 NH CARD USED
*SECNO 3836.000

3265 DIVIDED FLOW

  3836.000      9.86    738.86       .00       .00    738.91       .05       .03       .00    734.70
   15000.0    1607.5    4455.1    8937.4    2564.8    1798.0    5431.0      94.3      23.5    735.40
       .06       .63      2.48      1.65      .060      .026      .035      .000    729.00   8930.11
   .000147      295.      285.      255.         2         0         0       .00   2349.99  11310.82

*SECNO 3888.000

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
  3888.000     13.35    744.65    744.65       .00    749.67      5.02       .11      1.49    744.80
   15000.0        .0   15000.0        .0        .0     834.0        .0     126.9      31.1    745.20
       .07       .00     17.99       .00      .000      .025      .000      .000    731.30   9953.64
   .004812      295.      275.      250.        20        11         0       .00     83.18  10036.82

1                                                                                                  PAGE   13
   11MAR92      10:29:43

T1      FLOOD CONTROL DISTRICT OF MARICOPA COUNTY - CONTRACT FCD 90-67
T2      GILA BEND AREA FLOODPLAIN DELINEATION STUDY BY BURGESS & NIPLE
T3      SAND TANK AT GB CANAL                    J. MISCHLER - (602) 244-8100

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ
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                 5                        0.0011

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

     15                  -1

1
   11MAR92      10:29:43                                                                                    PAGE   14

    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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

*PROF 4

CCHV=     .100 CEHV=     .300
1490 NH CARD USED
*SECNO 3747.000
2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED

3265 DIVIDED FLOW

  3747.000      8.53    735.53       .00       .00    735.86       .33       .00       .00    736.70
   20000.0    3184.6    7453.8    9361.7    1499.8    1157.7    2854.2        .0        .0    735.80
       .00      2.12      6.44      3.28      .060      .026      .036      .000    727.00   9305.20
   .001105      285.      285.      285.         0         0         5       .00   1583.14  11108.03

1490 NH CARD USED
*SECNO 3768.000

3265 DIVIDED FLOW

  3768.000      7.64    735.64       .00       .00    735.98       .33       .12       .00    735.40
   20000.0    3127.3    7701.0    9171.8    1510.1    1186.9    2867.6      14.0       4.0    735.40
       .01      2.07      6.49      3.20      .060      .026      .036      .000    728.00   9303.99
   .001047      110.      110.      110.         0         0         0       .00   1595.15  11110.13

1490 NH CARD USED

SPECIAL BRIDGE

5227 DOWNSTREAM ELEV IS     733.70 , NOT     735.64 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

SB  XK        XKOR      COFQ      RDLEN     BWC       BWP       BAREA     SS        ELCHU     ELCHD
     1.25      1.56      3.00       .00    175.00     20.00    899.00       .00    728.10    728.00

*SECNO 3782.000
3280 CROSS SECTION   3782.00 EXTENDED       .77 FEET

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  2.80

PRESSURE AND WEIR FLOW,  Weir Submergence Based on TRAPEZOIDAL Shape

1
   11MAR92      10:29:43                                                                                    PAGE   15

    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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

 EGPRS     EGLWC     H3        QWEIR     QPR       BAREA     TRAPEZOID     ELLC      ELTRD     WEIRLN
                                                              AREA
   747.63    739.34       .00      8807.    11241.      899.      915.    734.00    737.40      3113.

  3782.000     11.27    739.37       .00       .00    739.43       .06      3.45       .00    735.50
   20000.0    4159.4    5792.8   10047.8    4859.4    1823.2    7201.0      30.5       8.1    735.50
       .02       .86      3.18      1.40      .060      .025      .042      .000    728.10   8200.59
   .000133       74.       74.       74.         2         0         5       .00   3170.91  11371.50

1490 NH CARD USED
*SECNO 3836.000

3265 DIVIDED FLOW

  3836.000     10.40    739.40       .00       .00    739.48       .07       .04       .00    734.70
   20000.0    2440.6    5672.2   11887.2    3109.0    1938.2    6044.2     108.6      25.8    735.40
       .05       .79      2.93      1.97      .060      .027      .035      .000    729.00   8906.47
   .000191      295.      285.      255.         2         0         0       .00   2422.62  11340.95

*SECNO 3888.000
3280 CROSS SECTION   3888.00 EXTENDED      2.03 FEET

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
  3888.000     15.53    746.83    746.83       .00    752.81      5.98       .14      1.77    744.80
   20000.0        .0   20000.0        .0        .0    1018.9        .0     145.8      33.7    745.20
       .06       .00     19.63       .00      .000      .025      .000      .000    731.30   9953.40
   .004763      295.      275.      250.        20        11         0       .00     85.20  10038.60

1
   11MAR92      10:29:43                                                                                    PAGE   16

                                                                  THIS RUN EXECUTED 11MAR92     10:29:55
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HEC-2 WATER SURFACE PROFILES

Version 4.6.2; May 1991
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NOTE- ASTERISK (*) AT LEFT OF CROSS-SECTION NUMBER INDICATES MESSAGE IN SUMMARY OF ERRORS LIST

SAND TANK AT GB CANAL

SUMMARY PRINTOUT

	SECNO	ELMIN	CWSEL	Q	VCH	DIFWSX	TOPWID	DEPTH	SSTA	ENDST	QLOB	QROB	ELTRD
	3747.000	727.00	732.48	5000.00	5.09	.00	922.88	5.48	9584.38	10912.94	470.51	1194.36	.00
	3747.000	727.00	733.83	10000.00	5.77	.00	1240.58	6.83	9569.31	10916.06	1394.85	3603.87	.00
	3747.000	727.00	734.77	15000.00	6.17	.00	1389.24	7.77	9549.99	10979.02	2286.04	6397.40	.00
	3747.000	727.00	735.53	20000.00	6.44	.00	1583.14	8.53	9305.20	11108.03	3184.56	9361.69	.00
	3768.000	728.00	732.61	5000.00	5.00	.13	987.49	4.61	9584.12	10912.06	478.44	1153.12	.00
	3768.000	728.00	733.96	10000.00	5.69	.13	1247.45	5.96	9569.06	10915.81	1381.97	3629.98	.00
	3768.000	728.00	734.89	15000.00	6.13	.12	1392.13	6.89	9549.42	10979.58	2253.75	6279.08	.00
	3768.000	728.00	735.64	20000.00	6.49	.11	1595.15	7.64	9303.99	11110.13	3127.27	9171.76	.00
	3782.000	728.10	732.72	5000.00	4.92	.10	989.34	4.62	9584.00	10912.38	469.59	1207.63	737.40
*	3782.000	728.10	736.90	10000.00	2.65	2.95	2045.78	8.80	9229.30	11289.86	1740.77	4576.76	737.40
*	3782.000	728.10	738.83	15000.00	2.64	3.94	2825.42	10.73	8546.08	11371.50	2970.88	7460.74	737.40
*	3782.000	728.10	739.37	20000.00	3.18	3.72	3170.91	11.27	8200.59	11371.50	4159.40	10047.83	737.40
*	3836.000	729.00	733.27	5000.00	7.40	.55	727.42	4.27	9923.18	11173.00	.00	1426.08	.00
	3836.000	729.00	736.94	10000.00	2.76	.03	1848.36	7.94	9038.37	11193.87	481.92	5915.13	.00
	3836.000	729.00	738.86	15000.00	2.48	.03	2349.99	9.86	8930.11	11310.82	1607.53	8937.35	.00
	3836.000	729.00	739.40	20000.00	2.93	.03	2422.62	10.40	8906.47	11340.95	2440.62	11887.21	.00
*	3888.000	731.30	738.16	5000.00	13.71	4.89	63.28	6.86	9964.11	10027.39	.00	.00	.00
*	3888.000	731.30	741.72	10000.00	16.47	4.78	72.93	10.42	9958.40	10031.32	.00	.00	.00
*	3888.000	731.30	744.65	15000.00	17.99	5.79	83.18	13.35	9953.64	10036.82	.00	.00	.00
*	3888.000	731.30	746.83	20000.00	19.63	7.43	85.20	15.53	9953.40	10038.60	.00	.00	.00

1
11MAR92 10:29:43 PAGE 17

SUMMARY OF ERRORS AND SPECIAL NOTES

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CAUTION SECNO=   3782.000  PROFILE=  2  HYDRAULIC JUMP D.S.
WARNING SECNO=   3782.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
CAUTION SECNO=   3782.000  PROFILE=  3  HYDRAULIC JUMP D.S.
WARNING SECNO=   3782.000  PROFILE=  3  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
CAUTION SECNO=   3782.000  PROFILE=  4  HYDRAULIC JUMP D.S.
WARNING SECNO=   3782.000  PROFILE=  4  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO=   3836.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=   3836.000  PROFILE=  1  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=   3836.000  PROFILE=  1  20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO=   3888.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=   3888.000  PROFILE=  1  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=   3888.000  PROFILE=  1  20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO=   3888.000  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=   3888.000  PROFILE=  2  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=   3888.000  PROFILE=  2  20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO=   3888.000  PROFILE=  3  CRITICAL DEPTH ASSUMED
CAUTION SECNO=   3888.000  PROFILE=  3  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=   3888.000  PROFILE=  3  20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO=   3888.000  PROFILE=  4  CRITICAL DEPTH ASSUMED
CAUTION SECNO=   3888.000  PROFILE=  4  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=   3888.000  PROFILE=  4  20 TRIALS ATTEMPTED TO BALANCE WSEL
```

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1*****************************************
 *  HEC-2 WATER SURFACE PROFILES          *
 *                                        *
 *  Version   4.6.2;  May 1991            *
 *                                        *
 *  RUN DATE    11APR92    TIME   11:40:44 *
 *****************************************
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*************************************
*  U.S. ARMY CORPS OF ENGINEERS     *
*  HYDROLOGIC ENGINEERING CENTER    *
*  609 SECOND STREET, SUITE D       *
*  DAVIS, CALIFORNIA 95616-4687     *
*          (916) 756-1104           *
*************************************
```

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X     X  XXXXXXX   XXXXX              XXXXX
X     X  X        X     X            X     X
X     X  X        X                  X
XXXXXXX  XXXX     X          XXXXX    XXXXX
X     X  X        X                  X
X     X  X        X     X            X
X     X  XXXXXXX   XXXXX              XXXXXXX
```

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1
   11APR92      11:40:44                                                                                    PAGE    1


                                                                                  THIS RUN EXECUTED 11APR92    11:40:44
 *************************************
  HEC-2 WATER SURFACE PROFILES

  Version   4.6.2;  May 1991
 *************************************


T1       FLOOD CONTROL DISTRICT OF MARICOPA COUNTY - CONTRACT FCD 90-67
T2       GILA BEND AREA FLOODPLAIN DELINEATION STUDY BY BURGESS & NIPLE
T3       SAND TANK WASH @ PIMA ST                  J. MISCHLER - (602) 244-8100

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                2                         0.0031

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

     1                  -1


J3  VARIABLE CODES FOR SUMMARY PRINTOUT

     38        42         1        43        26        51         4         8        53        54
     13        15        40

        SECTIONS ARE LABELED AS  RIVER MILES * 1000, i.e., SECTION 676 IS AT
        A POINT ON SAND TANK WASH 0.676 UPSTREAM OF THE CONFLUENCE WITH THE
        GILA RIVER.


NC     0.06      0.06     0.035       0.1       0.3
QT        4     14000     16000     20000     24000

        BENDER WASH ENTERS SAND TANK WASH AT RM 3.184.  THE 100-YEAR PEAK
        DISCHARGE EXCEEDS THE CAPACITY OF SAND TANK WASH ALONE.  FLOW OCCURS
        ACROSS BOTH SAND TANK AND BENDER WASHES.  THE OVERBANK AREA BETWEEN
        THE WASHES IN SOME AREAS IS LOW ENOUGH TO ALLOW FLOW TO PASS BETWEEN
        - A SPLIT FLOW SITUATION.  CROSS SECTIONS WERE INITIALLY TAKEN AS IF
        EACH WASH WERE SEPARATE, BUT WHEN INITIAL HEC-2 RUNS SHOWED THAT SAND
        TANK AND BENDER WASHES OPERATED AS A SINGLE STREAM FOR THE 100-YEAR
        FLOOD, CROSS SECTIONS WERE RETAKEN BY THE AERIAL MAPPING FIRM TO COVER
        BOTH WASHES AS ONE.  BANK STATIONS ARE SELECTED FOR SAND TANK WASH.

        SUBSEQUENT RUNS WITH THE NEW SECTIONS SHOWED THAT THE WASHES ARE SPLIT
        BELOW PIMA STREET AND THIS MODEL WAS CREATED TO ESTIMATE THE Q IN EACH
        WASH.

NH       5      0.04    9959.3      0.06    9977.3      0.03   10030.9      0.06   10047.2      0.04
NH   10284
1
   11APR92      11:40:44                                                                                    PAGE    2


X1    3180        99    9959.3   10047.2       570       680       744
GR   724.3    7181.6     723.6    7242.4     723.2    7274.0     721.7    7393.1     720.6    7488.7
GR   720.1    7552.7     719.5    7558.1     718.7    7574.9     718.2    7609.8     717.5    7764.1
GR   717.7    7796.4     718.4    7844.6     718.9    7874.2     719.2    7889.7     718.6    7930.2
GR   717.6    7940.1     715.9    7944.4     717.9    8018.8     717.6    8024.9     718.6    8122.4
GR   718.3    8253.7     718.5    8276.2     719.0    8313.7     718.4    8344.9     718.3    8365.6
GR   717.9    8372.0     718.6    8393.6     718.3    8430.4     718.6    8443.9     718.2    8458.3
GR   718.1    8482.3     717.4    8494.7     718.3    8662.6     717.9    8681.3     718.9    8692.3
GR   718.7    8713.6     718.2    8729.6     718.7    8735.6     719.0    8750.5     718.9    8768.1
GR   718.0    8777.2     717.9    8787.7     717.2    8792.9     717.9    8808.2     718.0    8819.2
GR   718.8    8831.9     718.7    8855.7     719.1    8862.2     717.9    8946.9     719.5    8977.8
GR   720.1    9013.6     720.8    9054.2     721.3    9086.4     720.4    9114.1     720.2    9152.3
GR   720.5    9241.3     721.2    9276.4     721.8    9308.0     721.0    9334.1     721.1    9410.3
GR   720.6    9470.3     720.8    9503.9     720.2    9541.6     719.3    9572.1     719.4    9581.6
GR   720.3    9598.9     719.3    9610.8     718.0    9626.9     716.5    9635.9     717.9    9645.4
GR   717.2    9652.4     717.4    9665.9     717.7    9695.8     718.1    9723.5     718.2    9750.1
GR   718.3    9771.1     718.9    9791.4     718.3    9813.3     718.4    9858.0     718.2    9891.4
GR   718.1    9935.1     718.1    9959.3     714.1    9977.3     712.3    9987.0     710.6    9994.2
GR   710.9   10000.0     710.2   10015.0     710.3   10017.7     713.9   10030.9     719.5   10047.2
GR   720.5   10078.1     721.6   10132.6     722.4   10166.8     721.9   10181.1     720.9   10198.6
GR   721.5   10209.8     722.3   10228.7     724.2   10255.6     725.9   10284.0

NH       7      0.04    9952.5      0.06    9985.0      0.03   10035.8      0.06   10063.6      0.04
NH   10369      0.03   10388.0      0.04   10589.8
X1    3277        94    9952.5   10063.6       310       520       512
X3      10
GR   726.0    7201.5     725.7    7215.4     724.1    7632.1     720.6    7752.8     719.0    7951.6
GR   718.9    8021.4     718.8    8036.2     718.9    8063.5     718.3    8086.9     719.4    8343.6
GR   719.9    8374.0     719.8    8389.8     719.2    8412.7     719.1    8434.2     720.0    8475.7
GR   720.7    8521.1     720.9    8562.8     720.5    8615.0     720.2    8639.4     719.9    8648.3
GR   719.0    8654.0     721.1    8695.1     720.9    8721.7     721.2    8770.1     721.3    8784.2
GR   720.0    8798.8     720.8    8812.3     721.5    8837.7     721.3    8863.5     720.4    8892.6
GR   719.9    8912.7     718.8    8926.7     719.5    8939.0     718.7    8947.8     719.2    8977.9
GR   719.6    9012.3     717.6    9123.8     720.1    9195.0     719.8    9263.0     721.2    9293.9
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GR	722.0	9342.8	722.0	9385.9	722.8	9441.7	724.6	9488.9	724.7	9512.4
GR	723.9	9581.3	722.8	9608.7	722.0	9611.4	722.8	9621.9	722.8	9657.8
GR	722.4	9720.1	722.4	9750.7	720.0	9780.8	719.0	9797.4	718.9	9804.7
GR	718.9	9810.9	720.0	9819.5	720.1	9829.1	719.6	9839.7	719.7	9846.5
GR	720.5	9858.0	720.5	9871.4	720.8	9876.2	720.8	9892.0	719.9	9903.4
GR	718.5	9911.5	718.6	9916.2	719.8	9923.8	719.6	9930.3	720.5	9940.2
GR	720.9	9952.5	719.7	9966.0	719.2	9973.9	713.4	9985.0	713.3	10000.0
GR	713.8	10019.0	713.8	10035.8	722.4	10055.0	723.7	10063.6	723.3	10082.6
GR	722.6	10106.5	722.0	10138.8	721.1	10338.2	719.5	10353.5	716.3	10363.5
GR	713.9	10369.0	713.9	10388.0	718.9	10396.0	719.9	10408.6	719.5	10424.5
GR	719.6	10431.4	715.3	10439.9	717.2	10457.9	726.3	10589.8		
NH	5	0.04	9957.0	0.06	9969.3	0.03	10034.0	0.06	10100.9	0.04
NH	10357									
X1	3372	56	9957	10100.9	330	520	502			
GR	727.5	7503.3	721.3	8065.5	720.2	8237.6	720.3	8274.8	720.5	8316.9
GR	721.7	8443.4	719.9	8452.0	721.0	8464.1	721.3	8480.7	721.1	8491.7
GR	719.8	8516.6	722.1	8523.7	720.9	8788.5	720.7	8806.7	722.4	8878.5
GR	722.7	8919.7	722.7	8968.3	721.0	9049.9	724.1	9099.5	723.8	9131.1
GR	723.6	9191.0	723.1	9254.4	722.9	9296.8	722.1	9329.1	722.2	9360.9

1

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GR	721.4	9395.0	722.0	9637.6	722.5	9686.9	720.0	9750.5	720.5	9762.2
GR	721.5	9770.5	722.7	9785.3	726.1	9794.3	726.4	9822.7	727.0	9847.0
GR	726.2	9891.5	725.4	9923.4	723.9	9957.0	719.3	9964.4	716.3	9969.3
GR	716.4	9998.3	716.2	10000.0	715.8	10024.7	715.9	10034.0	718.7	10045.5
GR	718.8	10058.8	722.7	10068.4	722.8	10084.4	723.8	10100.9	724.6	10159.0
GR	724.3	10184.1	724.4	10200.8	725.5	10239.9	725.7	10270.7	726.5	10303.1
GR	726.7	10357.0								
NH	5	0.04	9906.9	0.06	9960.5	0.03	10028.1	0.06	10039.0	0.04
NH	10448									
X1	3470	83	9906.9	10039	420	240	517			
GR	728.4	7849.4	726.8	7914.7	726.2	8054.6	724.5	8167.5	723.0	8228.5
GR	723.0	8282.5	722.4	8303.7	722.0	8325.9	723.0	8334.2	724.2	8343.6
GR	723.7	8364.1	722.8	8389.5	723.1	8419.5	723.1	8476.7	723.8	8512.6
GR	725.5	8560.0	723.8	8577.3	721.7	8688.8	724.1	8695.9	724.0	8714.7
GR	724.0	8742.6	725.5	8771.3	725.8	8803.8	724.4	8830.7	724.3	8853.4
GR	724.6	8898.3	725.2	8945.7	725.5	8974.2	725.3	8998.6	724.8	9007.5
GR	722.9	9050.7	723.8	9119.2	724.2	9141.4	724.7	9189.2	723.6	9331.0
GR	724.4	9354.2	725.4	9385.3	724.9	9398.9	723.1	9409.2	722.5	9419.9
GR	722.6	9429.6	723.9	9444.0	724.9	9467.2	725.3	9508.6	724.9	9548.9
GR	725.2	9603.7	725.6	9634.8	725.0	9644.7	724.4	9652.0	725.0	9683.2
GR	724.0	9699.1	722.7	9717.9	722.3	9729.8	723.7	9739.6	724.0	9781.8
GR	724.2	9818.4	725.0	9850.0	724.6	9882.5	724.8	9906.9	723.9	9915.8
GR	723.7	9928.3	723.1	9942.3	722.4	9948.0	719.1	9960.5	719.6	9990.5
GR	719.4	10000.0	719.2	10028.1	724.2	10039.0	725.2	10046.5	725.0	10073.9
GR	723.7	10085.1	723.9	10100.4	724.2	10115.7	725.0	10134.6	725.9	10156.3
GR	725.8	10180.0	725.0	10210.1	723.9	10240.4	721.8	10282.8	723.3	10298.7
GR	726.5	10337.7	727.5	10381.3	728.3	10448.0				
NH	5	0.04	9942.6	0.06	9963.2	0.03	10089.4	0.06	10098.8	0.04
NH	10578									
X1	3563	80	9942.6	10098.8	480	500	491			
GR	729.3	8872.8	728.6	8903.5	728.6	8956.6	728.5	9007.3	728.3	9041.1
GR	727.4	9067.3	727.0	9102.3	727.6	9104.3	725.7	9162.3	726.3	9171.9
GR	726.6	9185.4	726.1	9211.6	726.0	9230.9	726.1	9247.2	727.1	9271.7
GR	727.3	9291.5	726.9	9316.8	726.5	9317.1	726.9	9357.6	726.7	9391.4
GR	726.9	9420.5	727.3	9439.8	726.6	9446.7	726.2	9459.2	726.2	9488.0
GR	726.4	9525.3	726.4	9549.6	725.5	9559.5	724.9	9570.4	726.4	9582.8
GR	726.9	9596.6	727.0	9617.4	727.9	9639.4	727.3	9661.9	727.0	9687.0
GR	726.6	9717.9	725.9	9730.0	726.1	9762.0	727.4	9797.1	727.5	9804.6
GR	726.6	9813.1	727.8	9842.1	726.9	9848.7	729.2	9888.0	726.9	9891.3
GR	729.4	9897.3	725.4	9913.6	725.4	9934.2	727.5	9942.6	724.4	9956.9
GR	721.8	9963.2	722.7	9979.5	722.3	9991.6	722.5	10011.1	722.2	10026.0
GR	722.6	10041.6	723.0	10051.3	722.3	10065.3	721.8	10089.4	726.3	10098.8
GR	726.8	10115.7	725.8	10136.2	725.6	10147.8	727.3	10166.3	728.0	10194.1
GR	728.2	10234.4	728.1	10278.5	727.5	10306.4	727.1	10323.7	726.9	10331.1
GR	726.2	10339.8	725.9	10354.4	725.3	10363.1	725.2	10370.8	726.0	10381.5
GR	727.1	10400.5	728.2	10460.8	728.9	10494.2	729.0	10528.7	729.2	10578.0

PAPAGO STREET IS AT RM 3.598 (LOW CROSSING, NO STRUCTURE)

1

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NH	5	0.04	9920.5	0.06	9937.9	0.03	10032.2	0.06	10045.2	0.04
NH	10657									
X1	3657	78	9920.6	10045.2	490	530	496			
GR	735.3	8729.9	733.0	8733.5	733.1	8753.1	733.2	8814.3	733.8	8848.2
GR	733.7	8883.6	732.9	8914.4	732.5	8959.7	732.0	8991.6	731.3	9004.3
GR	731.6	9016.5	730.9	9031.7	732.0	9055.8	732.9	9074.5	733.0	9104.8
GR	732.8	9145.9	733.1	9172.2	732.7	9187.0	732.6	9193.6	732.5	9197.6
GR	731.9	9201.1	728.8	9211.3	728.5	9219.3	728.5	9236.4	730.2	9240.9
GR	730.2	9262.9	730.4	9297.5	731.1	9346.8	731.6	9396.1	731.1	9405.9
GR	731.0	9430.5	731.4	9445.2	732.1	9489.6	732.8	9545.4	732.8	9587.2
GR	733.3	9655.0	733.0	9698.8	733.0	9762.9	732.2	9789.7	731.8	9828.3
GR	731.5	9861.8	731.4	9899.2	731.5	9920.6	724.1	9937.9	724.6	9961.3
GR	724.9	9976.2	724.5	9993.8	724.5	10000.0	724.4	10032.2	731.4	10045.2
GR	730.7	10054.8	730.6	10074.1	731.1	10085.7	732.3	10093.6	729.2	10105.6
GR	729.5	10125.3	729.5	10149.6	731.9	10160.2	732.5	10165.9	729.5	10178.0
GR	731.0	10219.0	730.5	10230.8	730.5	10273.3	731.3	10284.2	731.2	10330.9
GR	730.7	10345.3	730.3	10374.0	730.0	10460.6	730.5	10539.9	730.1	10564.4
GR	730.0	10588.9	730.0	10594.5	730.3	10600.3	731.8	10606.2	732.7	10609.9
GR	732.7	10615.4	732.8	10638.6	733.1	10657.0				

PIMA STREET (US ROUTE 80) SPECIAL CULVERT MODEL (CENTERLINE STRUCTURE IS AT RM 3.684)

THE SAND TANK WASH CULVERT WAS FIRST BUILT AS A 6-BARREL BOX (8'H*16.8W) AT A LATER DATE, TWIN 8'H*12'W BARRELS WERE ADDED WITH 25' OF EMBANKMENT BETWEEN THE NEW AND OLD STRUCTURES.

	SAND L	SAND R	MODEL
ELCHU	723.1	723.2	723.2
ELCHD	723.1	723.1	723.1
RISE	8	8	8
NO. BOXES	2	6	8
WIDTH	12	16.8	15.6

INCREASE EXPANSION/CONTRACTION COEFFICIENTS, KEEP HIGH UNTIL
A POINT UPSTREAM OF THE GILA BEND CANAL.

REPEAT SECTION 3657 AT THE DOWNSTREAM FACE OF THE CULVERTS. USE
PSXECE = 100 FT * 0.0048 FT/FT

REPEAT GR CARDS SO THAT THE CHANNEL BOTTOMS CAN BE MADE TO
CONFORM TO INVERTS OF THE CULVERT OPENINGS.

```
NC                                  0.3       0.5
NH        5      0.04     9920.6     0.06    9937.9      0.03   10032.2      0.06   10045.2      0.04
NH    10657
1
   11APR92      11:40:44                                                                          PAGE    5

X1     3676        75     9920.6   10045.2       100       100       100                  0.5
X3       10
GR    735.3    8729.9      733.0    8733.5     733.1    8753.1     733.2    8814.3     733.8    8848.2
GR    733.7    8883.6      732.9    8914.4     732.5    8959.7     732.0    8991.6     731.3    9004.3
GR    731.6    9016.5      730.9    9031.7     732.0    9055.8     732.9    9074.5     733.0    9104.8
GR    732.8    9145.9      733.1    9172.2     732.7    9187.0     732.6    9193.6     732.5    9197.6
GR    731.9    9201.1      728.8    9211.3     728.5    9219.3     728.5    9236.4     730.2    9240.9
GR    730.2    9262.9      730.4    9297.5     731.1    9346.8     731.6    9396.1     731.1    9405.9
GR    731.0    9430.5      731.4    9445.2     732.1    9489.6     732.8    9545.4     732.8    9587.2
GR    733.3    9655.0      733.0    9698.8     733.0    9762.9     732.2    9789.7     731.8    9828.3
GR    731.5    9861.8      731.4    9899.2     731.5    9920.6     722.6    9937.9     722.6   10000.0
GR    722.6   10032.2      731.4   10045.2     730.7   10054.8     730.6   10074.1     731.1   10085.7
GR    732.3   10093.6      729.2   10105.6     729.5   10125.3     729.5   10149.6     731.9   10160.2
GR    732.5   10165.9      729.5   10178.0     731.0   10219.0     730.5   10230.8     730.5   10273.3
GR    731.3   10284.2      731.2   10330.9     730.7   10345.3     730.3   10374.0     730.0   10460.6
GR    730.5   10539.9      730.1   10564.4     730.0   10588.9     730.0   10594.5     730.3   10600.3
GR    731.8   10606.2      732.7   10609.9     732.7   10615.4     732.8   10638.6     733.1   10657.0
```

USE PSXECE = 723.2 - 723.1 + 0.5 = 0.6 FT

```
NH        9      0.04     9920.6     0.06    9937.9      0.03   10032.2      0.06   10045.2      0.04
NH    10701      0.06    10716.2    0.035   10770.6      0.06   10785.4      0.04   11234.0
SC    8.014       0.4          3        0         8      15.6        80       8.1     723.2     723.1
X1     3693        75     9920.6   10045.2        90        90        90                  0.6
```

ELTRD = 732.2 + 0.6 HV = 732.8

```
X2                            2     732.8
X3       10
BT      -10    8729.9      734.3    9016.5     732.9    9236.4     732.2
BT            9430.5      732.2    9655.0     732.5    9828.3     733.6
BT            9920.6      733.9   10000.0     733.9   10460.6     734.7
BT           10657.1      735.4
```

REPEAT GR CARDS SO THAT THE CHANNEL BOTTOMS CAN BE MADE TO
CONFORM TO INVERTS OF THE CULVERT OPENINGS.

```
GR    735.3    8729.9      733.0    8733.5     733.1    8753.1     733.2    8814.3     733.8    8848.2
GR    733.7    8883.6      732.9    8914.4     732.5    8959.7     732.0    8991.6     731.3    9004.3
GR    731.6    9016.5      730.9    9031.7     732.0    9055.8     732.9    9074.5     733.0    9104.8
GR    732.8    9145.9      733.1    9172.2     732.7    9187.0     732.6    9193.6     732.5    9197.6
GR    731.9    9201.1      728.8    9211.3     728.5    9219.3     728.5    9236.4     730.2    9240.9
GR    730.2    9262.9      730.4    9297.5     731.1    9346.8     731.6    9396.1     731.1    9405.9
GR    731.0    9430.5      731.4    9445.2     732.1    9489.6     732.8    9545.4     732.8    9587.2
GR    733.3    9655.0      733.0    9698.8     733.0    9762.9     732.2    9789.7     731.8    9828.3
GR    731.5    9861.8      731.4    9899.2     731.5    9920.6     722.6    9937.9     722.6   10000.0
GR    722.6   10032.2      731.4   10045.2     730.7   10054.8     730.6   10074.1     731.1   10085.7
GR    732.3   10093.6      729.2   10105.6     729.6   10125.3     729.5   10149.6     731.9   10160.2
GR    732.5   10165.9      729.5   10178.0     731.0   10219.0     730.5   10230.8     730.5   10273.3
GR    731.3   10284.2      731.2   10330.9     730.7   10345.3     730.3   10374.0     730.0   10460.6
GR    730.5   10539.9      730.1   10564.4     730.0   10588.9     730.0   10594.5     730.3   10600.3
GR    731.8   10606.2      732.7   10609.9     732.7   10615.4     732.8   10638.6     733.1   10657.1
1
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NH        8      0.06     9917.9    0.025   10045.2      0.06   10116.8     0.035   10819.5      0.05
NH    10880      0.03    10902.6     0.05   10917.6     0.035   11371.5
X1     3747        94     9917.9   10116.8       285       285       285
X3       10
GR    737.9    8808.5      737.7    8928.3     737.6    8978.8     737.5    9001.6     737.4    9033.4
GR    737.6    9070.4      737.3    9100.9     737.5    9135.6     737.4    9166.7     737.1    9202.9
GR    736.8    9219.5      736.5    9250.3     735.8    9290.0     735.2    9323.6     734.8    9350.1
GR    735.2    9379.6      735.6    9398.3     736.5    9424.5     736.5    9458.3     736.7    9495.3
GR    735.9    9522.0      738.2    9538.5     734.2    9565.2     732.4    9585.3     732.0    9601.8
GR    730.9    9621.1      730.6    9645.5     729.9    9661.1     730.2    9665.9     730.7    9694.2
GR    730.8    9743.3      730.9    9792.3     731.4    9808.9     731.9    9828.0     731.9    9849.1
GR    731.9    9872.3      731.4    9888.4     731.8    9896.3     735.0    9909.6     736.7    9917.9
GR    735.3    9923.0      730.2    9932.6     727.3    9943.4     727.0    9946.4     727.5    9985.5
GR    727.6   10000.0      727.3   10045.2     735.3   10098.9     735.8   10116.8     732.2   10127.2
GR    732.5   10151.6      732.5   10188.2     732.5   10205.4     733.1   10237.8     732.8   10303.2
GR    732.8   10351.8      732.1   10381.3     732.3   10407.4     732.2   10428.8     733.5   10453.1
GR    733.8   10486.4      734.3   10530.1     733.7   10544.0     732.3   10550.0     732.4   10575.4
GR    732.1   10603.1      731.3   10615.3     731.5   10641.0     732.0   10671.4     731.2   10687.4
GR    730.4   10706.3      731.5   10717.8     731.4   10727.8     731.2   10746.5     730.6   10819.5
GR    729.8   10874.5      728.6   10880.0     728.0   10897.2     728.0   10902.6     734.5   10917.6
GR    734.5   10972.1      735.8   11005.5     735.6   11043.3     735.4   11095.5     735.8   11134.5
GR    736.5   11172.3      736.8   11214.4     735.9   11227.4     736.4   11242.8     736.6   11282.5
GR    737.1   11317.7      737.1   11339.8     738.0   11359.2     738.4   11371.5
1
   11APR92      11:40:44                                                                          PAGE    7

   SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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

*PROF 1

CCHV=     .100 CEHV=     .300
1490 NH CARD USED
*SECNO 3180.000
2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED
```

1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

3265 DIVIDED FLOW

3180.000	9.79	719.99	.00	.00	720.28	.30	.00	.00	718.10
14000.0	10193.5	3803.5	2.9	3225.3	576.3	3.7	.0	.0	719.50
.00	3.16	6.60	.80	.040	.043	.040	.000	710.20	7553.72
.003091	570.	744.	680.	0	0	6	.00	1956.72	10062.23

1490 NH CARD USED
*SECNO 3277.000
1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

3265 DIVIDED FLOW

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 720.90 ELREA= 723.70

3277.000	7.98	721.28	.00	.00	721.60	.32	1.31	.01	720.90
14000.0	10621.1	3378.9	.0	2787.5	536.7	.0	28.0	13.9	723.70
.02	3.81	6.30	.00	.040	.046	.000	.000	713.30	7729.40
.004293	310.	512.	520.	2	0	0	.00	1819.18	10052.50

1490 NH CARD USED
*SECNO 3372.000
1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

3265 DIVIDED FLOW

3372.000	7.24	723.04	.00	.00	723.41	.37	1.79	.01	723.90
14000.0	9833.8	4166.2	.0	2527.1	633.3	.0	54.8	28.2	723.80
.05	3.89	6.58	.00	.040	.047	.000	.000	715.80	7907.74
.005323	330.	502.	520.	1	0	0	.00	1823.79	10088.36

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	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

1490 NH CARD USED
*SECNO 3470.000
1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

3265 DIVIDED FLOW

3470.000	6.30	725.40	.00	.00	725.73	.33	2.32	.00	724.80
14000.0	9215.2	3599.8	1185.0	2327.3	579.5	298.9	86.3	46.8	724.20
.07	3.96	6.21	3.97	.040	.046	.040	.000	719.10	8107.92
.005253	420.	517.	240.	3	0	0	.00	2077.64	10324.26

1490 NH CARD USED
*SECNO 3563.000
1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

3265 DIVIDED FLOW

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3563.000	6.35	728.15	728.15	.00	728.99	.84	2.69	.15	727.50
14000.0	4902.3	7696.4	1401.3	1255.4	830.1	350.8	117.7	65.8	726.30
.09	3.91	9.27	4.00	.040	.037	.040	.000	721.80	9045.54
.005834	480.	491.	500.	1	5	0	.00	1351.16	10457.93

1490 NH CARD USED
*SECNO 3657.000
1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

3265 DIVIDED FLOW

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3657.000	8.01	732.11	732.11	.00	733.12	1.01	2.82	.05	731.50
14000.0	1803.8	8374.9	3821.4	495.5	845.1	939.6	144.9	80.4	731.40
.11	3.64	9.91	4.07	.040	.039	.040	.000	724.10	8984.41
.005443	490.	496.	530.	0	8	0	.00	1166.66	10607.49

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	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

CCHV= .300 CEHV= .500
1490 NH CARD USED
*SECNO 3676.000
1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

3265 DIVIDED FLOW

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 1.41

3676.000	9.78	732.88	.00	.00	733.59	.71	.38	.09	732.00
14000.0	1717.5	8873.7	3408.8	630.9	1083.7	1085.5	150.7	83.2	731.90
.11	2.72	8.19	3.14	.040	.039	.040	.000	723.10	8967.74
.002752	100.	100.	100.	4	0	0	.00	1231.91	10608.56

1490 NH CARD USED

SPECIAL CULVERT

SC	CUNO	CUNV	ENTLC	COFQ	RDLEN	RISE	SPAN	CULVLN	CHRT	SCL	ELCHU	ELCHD
	8	.014	.40	3.00	.00	8.00	15.60	80.00	8	1	723.20	723.10

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

*SECNO 3693.000
1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

SPECIAL CULVERT OUTLET CONTROL + WEIR FLOW EG = 734.26

3265 DIVIDED FLOW

3280 CROSS SECTION 3693.00 EXTENDED .28 FEET

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 1.56

SPECIAL CULVERT

EGIC	EGOC	H4	QWEIR	QCULV	VCH	ACULV	ELTRD	WEIRLN
737.25	737.53	.68	6356.	7643.	5.635	998.4	732.80	1472.

3693.000	10.78	733.98	.00	.00	734.26	.28	.68	.00	732.10
14000.0	2861.1	6816.2	4322.7	1439.9	1209.6	1682.4	158.1	86.4	732.00
.12	1.99	5.64	2.57	.040	.039	.040	.000	723.20	8732.90
.001126	90.	90.	90.	2	0	0	.00	1853.17	10657.10

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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	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

1490 NH CARD USED
*SECNO 3747.000

3265 DIVIDED FLOW

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

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 736.70 ELREA= 735.80

3747.000	9.04	736.04	736.04	.00	736.23	.19	.22	.03	736.70
14000.0	.0	5784.7	8215.3	.0	1256.1	3363.3	187.4	96.5	735.80
.14	.00	4.61	2.44	.000	.026	.036	.000	727.00	9920.31
.000543	285.	285.	285.	20	12	0	.00	1233.34	11231.67

1
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T1 FLOOD CONTROL DISTRICT OF MARICOPA COUNTY - CONTRACT FCD 90-67
T2 GILA BEND AREA FLOODPLAIN DELINEATION STUDY BY BURGESS & NIPLE
T3 SAND TANK WASH @ PIMA ST J. MISCHLER - (602) 244-8100

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
		3			0.0031					

J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	2		-1							

1
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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	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

*PROF 2

CCHV= .100 CEHV= .300
1490 NH CARD USED
*SECNO 3180.000
2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED
1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

3265 DIVIDED FLOW

3180.000	9.98	720.18	.00	.00	720.49	.30	.00	.00	718.10
16000.0	12008.1	3984.6	7.2	3590.2	593.5	7.2	.0	.0	719.50
.00	3.34	6.71	1.00	.040	.043	.040	.000	710.20	7542.25
.003077	570.	744.	680.	0	0	6	.00	1998.43	10068.26

1490 NH CARD USED
*SECNO 3277.000
1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

3265 DIVIDED FLOW

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 720.90 ELREA= 723.70

3277.000	8.16	721.46	.00	.00	721.80	.34	1.30	.01	720.90
16000.0	12423.4	3576.6	.0	3098.4	554.6	.0	30.6	14.3	723.70
.02	4.01	6.46	.00	.040	.047	.000	.000	713.30	7723.26

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   .004348      310.      512.      520.         2         0         0       .00   1869.52  10052.89

1490 NH CARD USED
*SECNO 3372.000
1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

3265 DIVIDED FLOW

  3372.000      7.42    723.22       .00       .00    723.60       .38      1.79       .01    723.90
   16000.0   11662.8    4337.2        .0    2834.6     656.8        .0      60.0      28.9    723.80
       .04      4.11      6.60       .00      .040      .047      .000      .000    715.80   7891.52
   .005356      330.      502.      520.         1         0         0       .00   1874.40  10091.31
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    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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

1490 NH CARD USED
*SECNO 3470.000
1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

3265 DIVIDED FLOW

  3470.000      6.47    725.57       .00       .00    725.92       .35      2.31       .00    724.80
   16000.0   10784.6    3829.3    1386.1    2623.0     601.8     339.5      94.8      48.1    724.20
       .07      4.11      6.36      4.08      .040      .046      .040      .000    719.10   8096.68
   .005240      420.      517.      240.         3         0         0       .00   2156.13  10326.32

1490 NH CARD USED
*SECNO 3563.000
1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

3265 DIVIDED FLOW

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
   3563.000      6.54    728.34    728.34       .00    729.21       .87      2.72       .16    727.50
   16000.0    5999.3    8269.3    1731.4    1421.7     859.8     419.1     129.6      67.9    726.30
       .09      4.22      9.62      4.13      .040      .037      .040      .000    721.80   9034.73
   .005990      480.      491.      500.         1         5         0       .00   1409.79  10467.37

1490 NH CARD USED
*SECNO 3657.000
1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

3265 DIVIDED FLOW

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
   3657.000      8.29    732.39    732.39       .00    733.37       .97      2.81       .03    731.50
   16000.0    2420.9    8797.4    4781.8     641.4     880.1    1096.4     160.4      83.3    731.40
       .11      3.77     10.00      4.36      .040      .039      .040      .000    724.10   8966.51
   .005247      490.      496.      530.         3        12         0       .00   1236.18  10608.64
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    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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

CCHV=     .300 CEHV=     .500
1490 NH CARD USED
*SECNO 3676.000
1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

3265 DIVIDED FLOW

  3676.000      9.82    732.92       .00       .00    733.81       .89       .42       .02    732.00
   16000.0    2016.1   10026.0    3957.9    655.1    1089.1    1110.3     166.6      86.1    731.90
       .11      3.08      9.21      3.56      .040      .039      .040      .000    723.10   8964.93
   .003454      100.      100.      100.         0         0         0       .00   1241.65  10608.74

1490 NH CARD USED

SPECIAL CULVERT

SC  CUNO      CUNV      ENTLC     COFQ      RDLEN     RISE      SPAN      CULVLN    CHRT      SCL       ELCHU     ELCHD
     8         .014       .40     3.00       .00      8.00     15.60     80.00      8         1       723.20    723.10

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

*SECNO 3693.000
1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

SPECIAL CULVERT INLET CONTROL + WEIR FLOW, EG =    734.07

3265 DIVIDED FLOW

3280 CROSS SECTION   3693.00 EXTENDED       .31 FEET

SPECIAL CULVERT

     EGIC      EGOC        H4     QWEIR     QCULV       VCH     ACULV     ELTRD    WEIRLN
   739.56    739.00       .26     5172.    10782.     6.378     998.4    732.80     1320.
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3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3710 WSEL ASSUMED BASED ON MIN DIFF
  3693.000     10.81    734.01       .00       .00    734.37       .36       .00       .00    732.10
   16000.0    3308.2    7735.4    4956.4    1469.0    1212.8    1698.3     174.1      89.3    732.00
       .12      2.26      6.38      2.92      .040      .039      .040      .000    723.20   8732.86
   .001437       90.       90.       90.        20         0         0       .00   1855.69  10657.10

1490 NH CARD USED
*SECNO 3747.000
1
   11APR92      11:40:44                                                                          PAGE   15

    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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

3265 DIVIDED FLOW

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

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       736.70 ELREA=       735.80

  3747.000      9.06    736.06    736.06       .00    736.31       .24       .28       .04    736.70
   16000.0        .0    6588.8    9411.2        .0    1261.2    3390.7     203.7      99.4    735.80
       .14       .00      5.22      2.78      .000      .026      .036      .000    727.00   9920.21
   .000696      285.      285.      285.        20        12         0       .00   1236.05  11232.48

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   11APR92      11:40:44                                                                          PAGE   16

T1      FLOOD CONTROL DISTRICT OF MARICOPA COUNTY - CONTRACT FCD 90-67
T2      GILA BEND AREA FLOODPLAIN DELINEATION STUDY BY BURGESS & NIPLE
T3      SAND TANK WASH @ PIMA ST                    J. MISCHLER - (602) 244-8100

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                4                           0.0031

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

     3                  -1

1
   11APR92      11:40:44                                                                          PAGE   17

    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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

*PROF 3

CCHV=      .100 CEHV=      .300
1490 NH CARD USED
*SECNO 3180.000
2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED
1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

3265 DIVIDED FLOW

  3180.000     10.32    720.52       .00       .00    720.85       .33       .00       .00    718.10
   20000.0   15635.2    4343.3      21.6    4271.0     623.3      16.1        .0        .0    719.50
       .00      3.66      6.97      1.34      .040      .043      .040      .000    710.20   7498.79
   .003104      570.      744.      680.         0         0         7       .00   2228.96  10079.15

1490 NH CARD USED
*SECNO 3277.000
1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

3265 DIVIDED FLOW

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       720.90 ELREA=       723.70

  3277.000      8.48    721.78       .00       .00    722.16       .38      1.29       .01    720.90
   20000.0   16062.6    3937.4        .0    3678.8     587.2        .0      35.5      15.3    723.70
       .02      4.37      6.71       .00      .040      .047      .000      .000    713.30   7712.10
   .004421      310.      512.      520.         2         0         0       .00   1912.42  10053.62

1490 NH CARD USED
*SECNO 3372.000
1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

3265 DIVIDED FLOW

  3372.000      7.76    723.55       .00       .00    723.95       .40      1.79       .01    723.90
   20000.0   15344.2    4655.8        .0    3407.8     700.7        .0      69.8      30.4    723.80
       .04      4.50      6.64       .00      .040      .048      .000      .000    715.80   7862.31
   .005397      330.      502.      520.         1         0         0       .00   1956.30  10096.62

1
   11APR92      11:40:44                                                                          PAGE   18

    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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
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1490 NH CARD USED
*SECNO 3470.000
1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

3265 DIVIDED FLOW

  3470.000      6.77    725.87       .00       .00    726.25       .38      2.30       .00    724.80
   20000.0    13955.6    4247.2    1797.2    3171.9     641.9     418.3     110.6      50.4    724.20
       .07       4.40      6.62      4.30      .040      .046      .040      .000    719.10   8076.53
   .005199      420.      517.      240.         3         0         0       .00   2245.60  10330.02


1490 NH CARD USED
*SECNO 3563.000
1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

3265 DIVIDED FLOW


3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
  3563.000      6.88    728.68    728.68       .00    729.61       .93      2.75       .17    727.50
   20000.0    8238.0    9303.1    2458.9    1743.0     913.1     547.5     152.0      71.6    726.30
       .08       4.73     10.19      4.49      .040      .037      .040      .000    721.80   8900.04
   .006205      480.      491.      500.         1         5         0       .00   1569.27  10483.64


1490 NH CARD USED
*SECNO 3657.000
1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

3265 DIVIDED FLOW

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
  3657.000      8.63    732.73    732.73       .00    733.81      1.08      3.00       .04    731.50
   20000.0    3561.6    9965.6    6472.9     842.0     922.3    1287.9     188.1      88.4    731.40
       .10       4.23     10.80      5.03      .040      .039      .040      .000    724.10   8933.39
   .005759      490.      496.      530.         3        11         0       .00   1342.84  10622.89


1
   11APR92      11:40:44                                                                          PAGE   19

    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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


CCHV=     .300 CEHV=     .500
1490 NH CARD USED
*SECNO 3676.000
1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

3265 DIVIDED FLOW

  3676.000     10.33    733.43       .00       .00    734.31       .88       .44       .06    732.00
   20000.0    3290.6   11004.4    5705.0     976.8    1152.0    1400.7     195.7      91.7    731.90
       .11       3.37      9.55      4.07      .040      .039      .040      .000    723.10   8913.53
   .003452      100.      100.      100.         3         0         0       .00   1509.40  10646.12


1490 NH CARD USED

SPECIAL CULVERT

SC  CUNO      CUNV      ENTLC     COFQ      RDLEN     RISE      SPAN      CULVLN    CHRT      SCL       ELCHU     ELCHD
     8         .014       .40      3.00       .00      8.00     15.60     80.00      8         1       723.20    723.10

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

5130, EGIC=  745.12..MAY BE TOO LARGE IF INLET CONTROLS.
*SECNO 3693.000
1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

SPECIAL CULVERT INLET CONTROL + WEIR FLOW, EG =    734.58

3265 DIVIDED FLOW

3280 CROSS SECTION   3693.00 EXTENDED       .33 FEET

SPECIAL CULVERT

     EGIC      EGOC       H4     QWEIR     QCULV      VCH     ACULV     ELTRD    WEIRLN
   745.12    742.93      .27     8720.    11274.    7.903     998.4    732.80     1664.


  3693.000     10.83    734.03       .00       .00    734.58       .55       .27       .00    732.10
   20000.0    4178.6    9608.2    6213.2    1495.4    1215.7    1712.7     203.9      95.2    732.00
       .11       2.79      7.90      3.63      .040      .039      .040      .000    723.20   8732.82
   .002199       90.       90.       90.         3         0         0       .00   1857.97  10657.10


1490 NH CARD USED
*SECNO 3747.000

3265 DIVIDED FLOW

1
   11APR92      11:40:44                                                                          PAGE   20

    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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


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

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       736.70 ELREA=       735.80

  3747.000      9.08    736.08    736.08       .00    736.46       .38       .42       .05    736.70
   20000.0        .0    8219.1   11780.9        .0    1264.4    3407.6     233.7     105.3    735.80
       .13       .00      6.50      3.46      .000      .026      .036      .000    727.00   9920.15
   .001076      285.      285.      285.        20        12         0       .00   1237.72  11232.98

1
   11APR92      11:40:44                                                                          PAGE   21

T1      FLOOD CONTROL DISTRICT OF MARICOPA COUNTY - CONTRACT FCD 90-67
T2      GILA BEND AREA FLOODPLAIN DELINEATION STUDY BY BURGESS & NIPLE
T3      SAND TANK WASH @ PIMA ST                    J. MISCHLER - (602) 244-8100

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                5                           0.0031

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

    15                  -1

1
   11APR92      11:40:44                                                                          PAGE   22

    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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

*PROF 4

CCHV=     .100 CEHV=     .300
1490 NH CARD USED
*SECNO 3180.000
2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED
1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

3265 DIVIDED FLOW

  3180.000     10.62    720.82       .00       .00    721.17       .35       .00       .00    718.10
   24000.0   19287.8    4664.1      48.1    4932.9     650.0      28.1        .0        .0    719.50
       .00      3.91      7.18      1.71      .040      .043      .040      .000    710.20   7469.15
   .003112      570.      744.      680.         0         0         7       .00   2394.10  10094.20

1490 NH CARD USED
*SECNO 3277.000
1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

3265 DIVIDED FLOW

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       720.90 ELREA=       723.70

  3277.000      8.77    722.07       .00       .00    722.48       .41      1.29       .02    720.90
   24000.0   19725.5    4274.5        .0    4206.0     616.3        .0      40.1      16.1    723.70
       .02      4.69      6.94       .00      .040      .047      .000      .000    713.30   7702.20
   .004493      310.      512.      520.         2         0         0       .00   1988.88  10054.26

1490 NH CARD USED
*SECNO 3372.000
1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

3265 DIVIDED FLOW

  3372.000      8.04    723.84       .00       .00    724.27       .43      1.78       .00    723.90
   24000.0   19039.5    4960.5        .0    3948.4     741.7        .0      78.8      32.0    723.80
       .04      4.82      6.69       .03      .040      .048      .040      .000    715.80   7836.06
   .005396      330.      502.      520.         1         0         0       .00   2065.51  10103.10

1
   11APR92      11:40:44                                                                          PAGE   23

    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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

1490 NH CARD USED
*SECNO 3470.000
1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED
  3470.000      7.04    726.14       .00       .00    726.55       .41      2.28       .00    724.80
   24000.0   17135.3    4634.5    2230.2    3664.8     677.3     496.6     125.3      52.6    724.20
       .06      4.68      6.84      4.49      .040      .046      .040      .000    719.10   8058.73
   .005177      420.      517.      240.         3         0         0       .00   2274.56  10333.29

1490 NH CARD USED
*SECNO 3563.000
1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

3265 DIVIDED FLOW

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
  3563.000      7.16    728.96    728.96       .00    729.96      1.00      2.81       .18    727.50
   24000.0   10500.6   10285.9    3213.5    2034.8     957.0     658.2     172.6      74.3    726.30
       .08      5.16     10.75      4.88      .040      .037      .040      .000    721.80   8887.71
   .006485      480.      491.      500.         1         5         0       .00   1619.88  10514.88
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1490 NH CARD USED
*SECNO 3657.000
1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

3265 DIVIDED FLOW

3280 CROSS SECTION   3657.00 EXTENDED       .02 FEET

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
  3657.000      9.02    733.12    733.12       .00    734.18      1.07      3.03       .02    731.50
   24000.0    5023.0   10725.0    8252.0    1151.1     970.2    1518.6     214.7      93.6    731.40
       .10      4.36     11.05      5.43      .040      .039      .040      .000    724.10   8733.32
   .005634      490.      496.      530.         3        11         0       .00   1729.45  10657.00


1
   11APR92      11:40:44                                                                                PAGE   24

    SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      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


CCHV=     .300 CEHV=     .500
1490 NH CARD USED
*SECNO 3676.000
1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

3265 DIVIDED FLOW

  3676.000     10.50    733.60    733.50       .00    734.68      1.09       .49       .01    732.00
   24000.0    4290.6   12618.9    7090.5    1131.4    1173.7    1506.3     223.3      97.5    731.90
       .10      3.79     10.75      4.71      .040      .039      .040      .000    723.10   8733.35
   .004265      100.      100.      100.        14        11         0       .00   1711.50  10656.81


1490 NH CARD USED

SPECIAL CULVERT

SC  CUNO      CUNV      ENTLC      COFQ      RDLEN      RISE      SPAN      CULVLN      CHRT      SCL       ELCHU      ELCHD
     8         .014       .40      3.00        .00      8.00     15.60      80.00       8         1       723.20     723.10

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

5130, EGIC=  751.92..MAY BE TOO LARGE IF INLET CONTROLS.
5135, EGOC=  747.28 ..MAY BE TOO LARGE IF OUTLET CONTROLS.
*SECNO 3693.000
1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

SPECIAL CULVERT INLET CONTROL + WEIR FLOW, EG =    734.99
3280 CROSS SECTION   3693.00 EXTENDED       .73 FEET


3301 HV CHANGED MORE THAN HVINS

SPECIAL CULVERT

     EGIC      EGOC       H4     QWEIR     QCULV       VCH     ACULV     ELTRD    WEIRLN
   751.92    747.28      .31    12424.    11735.     8.197     998.4    732.80     1813.


  3693.000     11.23    734.43       .00       .00    734.99       .56       .31       .00    732.10
   24000.0    5881.8   10373.5    7744.7    1953.5    1265.5    1957.1     232.5     101.3    732.00
       .11      3.01      8.20      3.96      .040      .039      .040      .000    723.20   8732.20
   .002242       90.       90.       90.         3         0         0       .00   1924.90  10657.10


1490 NH CARD USED
*SECNO 3747.000
1
   11APR92      11:40:44                                                                                PAGE   25

    SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      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


3265 DIVIDED FLOW

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

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       736.70 ELREA=       735.80

  3747.000      9.00    736.00    736.00       .00    736.58       .57       .54       .00    736.70
   24000.0        .0    9959.7   14040.3        .0    1249.4    3328.3     264.5     111.6    735.80
       .12       .00      7.97      4.22      .000      .026      .036      .000    727.00   9920.43
   .001631      285.      285.      285.        20        15         0       .00   1229.85  11230.62


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   11APR92      11:40:44                                                                                PAGE   26


                                                                    THIS RUN EXECUTED 11APR92     11:41:30
************************************
 HEC-2 WATER SURFACE PROFILES

 Version   4.6.2;  May 1991
************************************


NOTE- ASTERISK (*) AT LEFT OF CROSS-SECTION NUMBER INDICATES MESSAGE IN SUMMARY OF ERRORS LIST
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SAND TANK WASH @ PIMA ST

SUMMARY PRINTOUT

	SECNO	ELMIN	CWSEL	Q	VCH	DIFWSX	TOPWID	DEPTH	SSTA	ENDST	QLOB	QROB	ELTRD
	3180.000	710.20	719.99	14000.00	6.60	.00	1956.72	9.79	7553.72	10062.23	10193.53	2.94	.00
	3180.000	710.20	720.18	16000.00	6.71	.00	1998.43	9.98	7542.25	10068.26	12008.14	7.21	.00
	3180.000	710.20	720.52	20000.00	6.97	.00	2228.96	10.32	7498.79	10079.15	15635.15	21.58	.00
	3180.000	710.20	720.82	24000.00	7.18	.00	2394.10	10.62	7469.15	10094.20	19287.80	48.06	.00
	3277.000	713.30	721.28	14000.00	6.30	1.29	1819.18	7.98	7729.40	10052.50	10621.07	.00	.00
	3277.000	713.30	721.46	16000.00	6.45	1.28	1869.52	8.16	7723.26	10052.89	12423.41	.00	.00
	3277.000	713.30	721.78	20000.00	6.71	1.26	1912.42	8.48	7712.10	10053.62	16062.58	.00	.00
	3277.000	713.30	722.07	24000.00	6.94	1.24	1988.88	8.77	7702.20	10054.26	19725.46	.00	.00
	3372.000	715.80	723.04	14000.00	6.58	1.76	1823.79	7.24	7907.74	10088.36	9833.78	.00	.00
	3372.000	715.80	723.22	16000.00	6.60	1.77	1874.40	7.42	7891.52	10091.31	11662.77	.00	.00
	3372.000	715.80	723.55	20000.00	6.64	1.77	1956.30	7.75	7862.31	10096.62	15344.20	.00	.00
	3372.000	715.80	723.84	24000.00	6.69	1.77	2065.51	8.04	7836.06	10103.10	19039.50	.00	.00
	3470.000	719.10	725.40	14000.00	6.21	2.36	2077.64	6.30	8107.92	10324.26	9215.20	1185.00	.00
	3470.000	719.10	725.57	16000.00	6.36	2.34	2156.13	6.47	8096.68	10326.32	10784.59	1386.10	.00
	3470.000	719.10	725.87	20000.00	6.62	2.32	2245.60	6.77	8076.53	10330.02	13955.62	1797.17	.00
	3470.000	719.10	726.14	24000.00	6.84	2.30	2274.56	7.04	8058.73	10333.29	17135.32	2230.15	.00
*	3563.000	721.80	728.15	14000.00	9.27	2.75	1351.16	6.35	9045.54	10457.93	4902.28	1401.30	.00
*	3563.000	721.80	728.34	16000.00	9.62	2.77	1409.79	6.54	9034.73	10467.37	5999.31	1731.39	.00
*	3563.000	721.80	728.68	20000.00	10.19	2.81	1569.27	6.88	8900.04	10483.64	8238.02	2458.91	.00
*	3563.000	721.80	728.96	24000.00	10.75	2.82	1619.88	7.16	8887.71	10514.88	10500.60	3213.53	.00
*	3657.000	724.10	732.11	14000.00	9.91	3.97	1166.66	8.01	8984.41	10607.49	1803.76	3821.37	.00
*	3657.000	724.10	732.39	16000.00	10.00	4.06	1236.18	8.29	8966.51	10608.64	2420.88	4781.75	.00
*	3657.000	724.10	732.73	20000.00	10.80	4.05	1342.84	8.63	8933.39	10622.89	3561.58	6472.85	.00
*	3657.000	724.10	733.12	24000.00	11.05	4.16	1729.45	9.02	8733.32	10657.00	5022.98	8252.01	.00
*	3676.000	723.10	732.88	14000.00	8.19	.76	1231.91	9.78	8967.74	10608.56	1717.53	3408.81	.00
	3676.000	723.10	732.92	16000.00	9.21	.53	1241.65	9.82	8964.93	10608.74	2016.12	3957.86	.00
	3676.000	723.10	733.43	20000.00	9.55	.70	1509.40	10.33	8913.53	10646.12	3290.60	5704.96	.00
	3676.000	723.10	733.60	24000.00	10.75	.48	1711.50	10.50	8733.35	10656.81	4290.58	7090.53	.00

1

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	SECNO	ELMIN	CWSEL	Q	VCH	DIFWSX	TOPWID	DEPTH	SSTA	ENDST	QLOB	QROB	ELTRD
*	3693.000	723.20	733.98	14000.00	5.64	1.10	1853.17	10.78	8732.90	10657.10	2861.15	4322.70	732.80
*	3693.000	723.20	734.01	16000.00	6.38	1.09	1855.69	10.81	8732.86	10657.10	3308.22	4956.37	732.80
	3693.000	723.20	734.03	20000.00	7.90	.60	1857.97	10.83	8732.82	10657.10	4178.61	6213.22	732.80
	3693.000	723.20	734.43	24000.00	8.20	.83	1924.90	11.23	8732.20	10657.10	5881.78	7744.73	732.80
*	3747.000	727.00	736.04	14000.00	4.61	2.06	1233.34	9.04	9920.31	11231.67	.00	8215.34	.00
*	3747.000	727.00	736.06	16000.00	5.22	2.05	1236.05	9.06	9920.21	11232.48	.00	9411.15	.00
*	3747.000	727.00	736.08	20000.00	6.50	2.05	1237.72	9.08	9920.15	11232.98	.00	11780.94	.00
*	3747.000	727.00	736.00	24000.00	7.97	1.58	1229.85	9.00	9920.43	11230.62	.00	14040.30	.00

1

11APR92 11:40:44 PAGE 28

SUMMARY OF ERRORS AND SPECIAL NOTES

```
CAUTION SECNO=   3563.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=   3563.000  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=   3563.000  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=   3563.000  PROFILE=  2  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=   3563.000  PROFILE=  3  CRITICAL DEPTH ASSUMED
CAUTION SECNO=   3563.000  PROFILE=  3  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=   3563.000  PROFILE=  4  CRITICAL DEPTH ASSUMED
CAUTION SECNO=   3563.000  PROFILE=  4  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=   3657.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=   3657.000  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=   3657.000  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=   3657.000  PROFILE=  2  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=   3657.000  PROFILE=  3  CRITICAL DEPTH ASSUMED
CAUTION SECNO=   3657.000  PROFILE=  3  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=   3657.000  PROFILE=  4  CRITICAL DEPTH ASSUMED
CAUTION SECNO=   3657.000  PROFILE=  4  MINIMUM SPECIFIC ENERGY

WARNING SECNO=   3676.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=   3693.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
CAUTION SECNO=   3693.000  PROFILE=  2  WSEL ASSUMED BASED ON MIN DIFF
CAUTION SECNO=   3693.000  PROFILE=  2  20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO=   3747.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=   3747.000  PROFILE=  1  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=   3747.000  PROFILE=  1  20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO=   3747.000  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=   3747.000  PROFILE=  2  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=   3747.000  PROFILE=  2  20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO=   3747.000  PROFILE=  3  CRITICAL DEPTH ASSUMED
CAUTION SECNO=   3747.000  PROFILE=  3  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=   3747.000  PROFILE=  3  20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO=   3747.000  PROFILE=  4  CRITICAL DEPTH ASSUMED
CAUTION SECNO=   3747.000  PROFILE=  4  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=   3747.000  PROFILE=  4  20 TRIALS ATTEMPTED TO BALANCE WSEL
```

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1*****************************************
 * HEC-2 WATER SURFACE PROFILES           *
 *                                        *
 * Version   4.6.2;  May 1991             *
 *                                        *
 * RUN DATE    11APR92    TIME   08:22:14 *
 *****************************************
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*************************************
* U.S. ARMY CORPS OF ENGINEERS      *
* HYDROLOGIC ENGINEERING CENTER     *
* 609 SECOND STREET, SUITE D        *
* DAVIS, CALIFORNIA 95616-4687      *
*          (916) 756-1104           *
*************************************
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X     X  XXXXXXX   XXXXX              XXXXX
X     X  X        X     X            X     X
X     X  X        X                  X     X
XXXXXXX  XXXX     X          XXXXX    XXXXX
X     X  X        X                  X
X     X  X        X     X            X
X     X  XXXXXXX   XXXXX              XXXXXXX
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1
   11APR92      08:22:14                                                                    PAGE    1


                                                                  THIS RUN EXECUTED 11APR92    08:22:14
 *************************************
  HEC-2 WATER SURFACE PROFILES

  Version   4.6.2;  May 1991
 *************************************


T1       FLOOD CONTROL DISTRICT OF MARICOPA COUNTY - CONTRACT FCD 90-67
T2       GILA BEND AREA FLOODPLAIN DELINEATION STUDY BY BURGESS & NIPLE
T3       C133 Weir Flow To North over GBC        J. MISCHLER - (602) 244-8100

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                2                           0.0036

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

     1                  -1


J3  VARIABLE CODES FOR SUMMARY PRINTOUT

     38        42         1        43        26        51         4         8        53        54
     13        15        40

NC    0.035     0.035     0.035       0.1       0.3
QT        3       100       500      1000      2000      4000
X1     3886        21    9991.4   10017.3
X3       10                                                                   740       740
GR    749.0    8674.0       747      8675       744      9130     743.9      9325     743.8      9525
GR    743.7      9765     743.6      9915     743.6      9975     746.6      9985     731.3    9991.4
GR    731.3   10017.3       740     10030     740.1     10050     740.1     10051     740.2     10251
GR    740.3     10616     740.4     10941     740.5     11276     740.6     11946       741     12190
GR    749.0     12191

SB      0.9      1.25         3         0       0.1         0      0.01         0     731.3     731.3
X1     3888        21    9991.4   10017.3        10        10        10
X2                            1     731.4     745.5                                  745.5     745.5
X3       10
BT      -15      9130     749.3                9325     749.0                       9525     749.0
BT               9765     749.0                9915     749.0                       9978     749.0
BT               9985     746.7               10051     745.5                      10251     746.0
BT              10616     746.6               10941     746.6                      11276     746.0
BT              11946     746.1               12190     746.7                      12191     749.0
GR    749.0    8674.0     747.0      8675       744      9130     743.9      9325     743.8      9525
GR    743.7      9765     743.6      9915     743.6      9975     746.6      9985     731.3    9991.4
GR    731.3   10017.3       740     10030     740.1     10050     740.1     10051     740.2     10251
GR    740.3     10616     740.4     10941     740.5     11276     740.6     11946       741     12190
GR    749.0     12191
1
   11APR92      08:22:14                                                                    PAGE    2

     SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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


 *PROF 1

 CCHV=     .100 CEHV=     .300
 *SECNO 3886.000
 2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED

 3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       740.00 ELREA=       740.00

   3886.000      1.29    732.59       .00       .00    732.73       .14       .00       .00    731.30
      100.0        .0     100.0        .0        .0      33.4        .0        .0        .0    731.30
        .00       .00      2.99       .00      .000      .035      .000      .000    731.30   9991.40
   .003536        0.        0.        0.         0         0         7       .00     25.90  10017.30


 SPECIAL BRIDGE

 SB  XK        XKOR      COFQ      RDLEN     BWC       BWP       BAREA     SS        ELCHU     ELCHD
       .90      1.25      3.00       .00       .10       .00       .01       .00    731.30    731.30

 *SECNO 3888.000

 3265 DIVIDED FLOW


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

 PRESSURE AND WEIR FLOW,  Weir Submergence Based on TRAPEZOIDAL Shape
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 EGPRS       EGLWC       H3        QWEIR       QPR        BAREA    TRAPEZOID       ELLC      ELTRD      WEIRLN
                                                                      AREA
1941726.00    732.73      .00       100.        0.         0.        0.        731.40     745.50      441.

  3888.000     14.73    746.03       .00       .00     746.03       .00       13.30       .00     731.30
     100.0       8.2       5.1      86.7     2256.8      381.4   12201.1         1.7        .4     731.30
       .39       .00       .01       .01       .035       .035      .035       .000    731.30    8822.58
   .000000       10.       10.       10.          0          0        15        .00   3365.90   12190.63
```

1

11APR92 08:22:14 PAGE 3

```
T1      FLOOD CONTROL DISTRICT OF MARICOPA COUNTY - CONTRACT FCD 90-67
T2      GILA BEND AREA FLOODPLAIN DELINEATION STUDY BY BURGESS & NIPLE
T3      GILA BEND CANAL AS WEIR                J. MISCHLER - (602) 244-8100

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                3                           0.0036

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

     2                  -1
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1

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    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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

*PROF 2

CCHV=     .100 CEHV=     .300
*SECNO 3886.000
2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       740.00 ELREA=       740.00

  3886.000      3.37    734.67       .00       .00     735.18       .51       .00       .00     731.30
     500.0        .0     500.0        .0        .0       87.3        .0        .0        .0     731.30
       .00       .00      5.72       .00      .000       .035      .000      .000    731.30    9991.40
   .003594        0.        0.        0.         0          0         6       .00     25.90   10017.30


SPECIAL BRIDGE

SB  XK        XKOR      COFQ      RDLEN     BWC       BWP       BAREA     SS        ELCHU     ELCHD
     .90       1.25      3.00       .00       .10       .00       .01       .00    731.30    731.30

*SECNO 3888.000

3265 DIVIDED FLOW


3301 HV CHANGED MORE THAN HVINS


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

PRESSURE AND WEIR FLOW,  Weir Submergence Based on TRAPEZOIDAL Shape

 EGPRS       EGLWC       H3        QWEIR       QPR        BAREA    TRAPEZOID       ELLC      ELTRD      WEIRLN
                                                                      AREA
**********    735.18      .00       500.        0.         0.        0.        731.40     745.50     1287.

  3888.000     14.96    746.26       .00       .00     746.26       .00       11.08       .00     731.30
     500.0      45.4      24.5     430.1    2537.3      387.6   12717.2         1.8        .4     731.30
       .08       .02       .06       .03       .035       .035      .035       .000    731.30    8786.56
   .000000       10.       10.       10.          0          0        13        .00   3402.84   12190.66
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1

11APR92 08:22:14 PAGE 5

```
T1      FLOOD CONTROL DISTRICT OF MARICOPA COUNTY - CONTRACT FCD 90-67
T2      GILA BEND AREA FLOODPLAIN DELINEATION STUDY BY BURGESS & NIPLE
T3      GILA BEND CANAL AS WEIR                J. MISCHLER - (602) 244-8100

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                4                           0.0036

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

     3                  -1
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1

11APR92 08:22:14 PAGE 6

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    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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

*PROF 3

CCHV=     .100 CEHV=     .300
*SECNO 3886.000
2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       740.00 ELREA=       740.00
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```
 3886.000      5.11    736.41       .00       .00    737.30       .89       .00       .00    731.30
   1000.0        .0    1000.0        .0        .0     132.4        .0        .0        .0    731.30
      .00       .00      7.56       .00      .000      .035      .000      .000    731.30   9991.40
  .003592        0.        0.        0.         0         0         5       .00     25.90  10017.30


SPECIAL BRIDGE

SB  XK        XKOR      COFQ      RDLEN     BWC       BWP       BAREA     SS        ELCHU     ELCHD
     .90      1.25      3.00       .00      .10       .00       .01       .00     731.30    731.30

*SECNO 3888.000

3265 DIVIDED FLOW

3301 HV CHANGED MORE THAN HVINS

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

PRESSURE AND WEIR FLOW,  Weir Submergence Based on TRAPEZOIDAL Shape

 EGPRS      EGLWC      H3       QWEIR      QPR       BAREA    TRAPEZOID      ELLC      ELTRD     WEIRLN
                                                              AREA
**********  737.30      .00     1002.        0.        0.        0.       731.40    745.50      1544.


 3888.000     15.12    746.42       .00       .00    746.42       .00      9.12       .00    731.30
   1000.0      96.3      47.5     856.2    2728.4     391.6   13059.0       1.9        .4    731.30
      .04       .04       .12       .07      .035      .035      .035      .000    731.30   8762.71
 .000000       10.       10.       10.         0         0        12       .00   3427.30  12190.68


1
  11APR92      08:22:14                                                                          PAGE    7

T1      FLOOD CONTROL DISTRICT OF MARICOPA COUNTY - CONTRACT FCD 90-67
T2      GILA BEND AREA FLOODPLAIN DELINEATION STUDY BY BURGESS & NIPLE
T3      GILA BEND CANAL AS WEIR                 J. MISCHLER - (602) 244-8100

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                 5                         0.0036

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

     4                  -1

1
  11APR92      08:22:14                                                                          PAGE    8

    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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

*PROF 4

CCHV=     .100 CEHV=     .300
*SECNO 3886.000
2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      740.00 ELREA=      740.00

 3886.000      7.76    739.06       .00       .00    740.60      1.54       .00       .00    731.30
   2000.0        .0    2000.0        .0        .0     200.9        .0        .0        .0    731.30
      .00       .00      9.96       .00      .000      .035      .000      .000    731.30   9991.40
  .003580        0.        0.        0.         0         0         4       .00     25.90  10017.30


SPECIAL BRIDGE

SB  XK        XKOR      COFQ      RDLEN     BWC       BWP       BAREA     SS        ELCHU     ELCHD
     .90      1.25      3.00       .00      .10       .00       .01       .00     731.30    731.30

*SECNO 3888.000

3301 HV CHANGED MORE THAN HVINS

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO = 68.42

PRESSURE AND WEIR FLOW,  Weir Submergence Based on TRAPEZOIDAL Shape

 EGPRS      EGLWC      H3       QWEIR      QPR       BAREA    TRAPEZOID      ELLC      ELTRD     WEIRLN
                                                              AREA
**********  740.60      .00     2006.        0.        0.        0.       731.40    745.50      2177.


 3888.000     15.34    746.64       .00       .00    746.64       .00      6.04       .00    731.30
   2000.0     207.8      91.1    1701.2    2998.8     397.3   13531.1       2.0        .4    731.30
      .02       .07       .23       .13      .035      .035      .035      .000    731.30   8729.76
 .000001       10.       10.       10.         0         0        11       .00   3460.94  12190.71


1
  11APR92      08:22:14                                                                          PAGE    9

T1      FLOOD CONTROL DISTRICT OF MARICOPA COUNTY - CONTRACT FCD 90-67
T2      GILA BEND AREA FLOODPLAIN DELINEATION STUDY BY BURGESS & NIPLE
T3      GILA BEND CANAL AS WEIR                 J. MISCHLER - (602) 244-8100

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                 6                         0.0036
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J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

     15                  -1

1
   11APR92      08:22:14                                                                                PAGE   10

    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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

*PROF 5

CCHV=      .100 CEHV=      .300
*SECNO 3886.000
2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED
3720 CRITICAL DEPTH ASSUMED
  3886.000      9.85    741.15    741.15       .00    741.49       .34       .00       .00    731.30
    4000.0      46.6    1753.3    2200.1      20.3     255.2    1612.8        .0        .0    731.30
       .00      2.29      6.87      1.36      .035      .035      .035      .000    731.30   9987.28
   .001239        0.        0.        0.         0        16         0       .00   2202.74  12190.02


SPECIAL BRIDGE

SB  XK        XKOR      COFQ      RDLEN     BWC       BWP       BAREA     SS        ELCHU     ELCHD
      .90      1.25      3.00       .00       .10       .00       .01       .00    731.30    731.30

*SECNO 3888.000

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO = 21.85

PRESSURE AND WEIR FLOW,  Weir Submergence Based on TRAPEZOIDAL Shape

 EGPRS      EGLWC       H3       QWEIR      QPR       BAREA   TRAPEZOID      ELLC      ELTRD     WEIRLN
                                                              AREA
**********   744.97      .00      4023.       0.         0.        0.      731.40    745.50      2206.


  3888.000     15.62    746.92       .00       .00    746.92       .00      5.43       .00    731.30
    4000.0     453.5     172.9    3373.6    3360.9     404.6   14144.5       2.3        .7    731.30
       .01       .13       .43       .24      .035      .035      .035      .000    731.30   8686.96
   .000003       10.       10.       10.         0         0        10       .00   3503.78  12190.74

1
   11APR92      08:22:14                                                                                PAGE   11


                                                                                THIS RUN EXECUTED 11APR92    08:22:19
*************************************
 HEC-2 WATER SURFACE PROFILES

 Version   4.6.2;  May 1991
*************************************

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

C133 Weir Flow To North

SUMMARY PRINTOUT

      SECNO     ELMIN     CWSEL       Q        VCH     DIFWSX    TOPWID     DEPTH     SSTA      ENDST     QLOB      QROB      ELTRD

    3886.000    731.30    732.59    100.00     2.99       .00     25.90      1.29   9991.40  10017.30       .00       .00       .00
    3886.000    731.30    734.67    500.00     5.72       .00     25.90      3.37   9991.40  10017.30       .00       .00       .00
    3886.000    731.30    736.41   1000.00     7.55       .00     25.90      5.11   9991.40  10017.30       .00       .00       .00
    3886.000    731.30    739.06   2000.00     9.96       .00     25.90      7.76   9991.40  10017.30       .00       .00       .00
*   3886.000    731.30    741.15   4000.00     6.87       .00   2202.74      9.85   9987.28  12190.02     46.59   2200.12       .00

*   3888.000    731.30    746.03    100.00      .01     13.44   3365.90     14.73   8822.58  12190.63      8.20     86.65    745.50
*   3888.000    731.30    746.26    500.00      .06     11.59   3402.84     14.96   8786.56  12190.66     45.36    430.14    745.50
*   3888.000    731.30    746.42   1000.00      .12     10.01   3427.30     15.12   8762.71  12190.68     96.32    856.19    745.50
*   3888.000    731.30    746.64   2000.00      .23      7.58   3460.94     15.34   8729.76  12190.71    207.76   1701.17    745.50
*   3888.000    731.30    746.92   4000.00      .43      5.77   3503.78     15.62   8686.96  12190.74    453.49   3373.57    745.50

1
   11APR92      08:22:14                                                                                PAGE   12


 SUMMARY OF ERRORS AND SPECIAL NOTES

CAUTION SECNO=   3886.000  PROFILE=  5  CRITICAL DEPTH ASSUMED

WARNING SECNO=   3888.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   3888.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   3888.000  PROFILE=  3  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   3888.000  PROFILE=  4  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   3888.000  PROFILE=  5  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
```

```
1*****************************************
 *  HEC-2 WATER SURFACE PROFILES          *
 *                                        *
 *  Version   4.6.2;  May 1991            *
 *                                        *
 *  RUN DATE    11MAR92    TIME   10:30:45 *
 *****************************************
```

```
*************************************
*  U.S. ARMY CORPS OF ENGINEERS     *
*  HYDROLOGIC ENGINEERING CENTER    *
*  609 SECOND STREET, SUITE D       *
*  DAVIS, CALIFORNIA 95616-4687     *
*          (916) 756-1104           *
*************************************
```

```
X     X  XXXXXXX   XXXXX              XXXXX
X     X  X        X     X            X     X
X     X  X        X                        X
XXXXXXX  XXXX     X          XXXXX    XXXXX
X     X  X        X                  X
X     X  X        X     X            X
X     X  XXXXXXX   XXXXX             XXXXXXX
```

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1
   11MAR92      10:30:45                                                                                    PAGE    1


                                                                                THIS RUN EXECUTED 11MAR92    10:30:45
 *************************************
  HEC-2 WATER SURFACE PROFILES

  Version   4.6.2;  May 1991
 *************************************


T1      FLOOD CONTROL DISTRICT OF MARICOPA COUNTY - CONTRACT FCD 90-67
T2      GILA BEND AREA FLOODPLAIN DELINEATION STUDY BY BURGESS & NIPLE
T3      FLOW SPLIT AT I-8                          J. MISCHLER - (602) 244-8100

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                2                         0.0037

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

     1                  -1


J3  VARIABLE CODES FOR SUMMARY PRINTOUT

     38        42         1        43        26        51         4         8        53        54
     13        15        40

        THIS RUN MODELS THE SPLIT BETWEEN SAND TANK WASH AND SCOTT
        AVENUE WASH UPSTREAM OF INTERSTATE 8.  THE MODEL REPRESENTS
        A BROAD CRESTED WEIR ON THE RIDGE BETWEEN THE WASHES.  BT DATA
        IS ACCURATE FROM THE TOPO MAPPING, BUT GR DATA IS PHONY TO
        ALLOW SPECIAL BRIDGE COMPUTE WEIR FLOW.

        J1.5 STRT = (764-760)/1070 FT = 0.0037 FT/FT

        THESE RESULTS ARE COMBINED WITH OTHER RUNS TO DETERMINE THE SPLIT
        AT INTERSTATE 8.


NC    0.035     0.035     0.035       0.1       0.3
QT        4      3000      6000      8700     12000
X1        1         4      1000      2130
X3       10                                                                  766       766
GR      772      1000       764      1800       762      2100     771.2      2130

SB      0.9      1.25       2.6         0       0.1         0      0.01         0       764       764
X1        2         4      1000      2130       100       100       100
X2                                     1       765       766
X3       10                                                                  766       766
BT       -4      1000       772                 1800       768                2100       766
BT              2130     771.2
GR      772      1000       764      1800       762      2100     771.2      2130
1
   11MAR92      10:30:45                                                                                    PAGE    2

    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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


*PROF 1

CCHV=     .100 CEHV=     .300
*SECNO 1.000
2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       766.00 ELREA=       766.00

     1.000      3.29    765.29       .00       .00    765.51       .23       .00       .00    772.00
    3000.0        .0    3000.0        .0        .0     787.5        .0        .0        .0    771.20
       .00       .00      3.81       .00      .000      .035      .000      .000    762.00   1671.09
   .003707        0.        0.        0.         0         0         5       .00    439.64   2110.73


SPECIAL BRIDGE

S8  XK        XKOR      COFQ      RDLEN     BWC       BWP       BAREA     SS        ELCHU     ELCHD
      .90      1.25      2.60       .00       .10       .00       .01       .00    764.00    764.00

*SECNO 2.000

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  7.10

PRESSURE AND WEIR FLOW,  Weir Submergence Based on TRAPEZOIDAL Shape
```

```
 EGPRS      EGLWC      H3       QWEIR      QPR       BAREA   TRAPEZOID      ELLC      ELTRD     WEIRLN
                                                              AREA
**********  767.51     .00      3008.       0.         0.       0.        765.00    766.00      565.

    2.000     7.22    769.22      .00       .00     769.23      .01       3.72       .00     772.00
   3000.0      .0    3000.0       .0        .0     3317.4       .0        4.7       1.5     771.20
      .03     .00       .90      .00      .000       .035     .000       .000    762.00    1277.53
  .000073    100.      100.     100.         1          0       10        .00    846.03    2123.56
```

```
1
  11MAR92      10:30:45                                                                          PAGE    3

T1      FLOOD CONTROL DISTRICT OF MARICOPA COUNTY - CONTRACT FCD 90-67
T2      GILA BEND AREA FLOODPLAIN DELINEATION STUDY BY BURGESS & NIPLE
T3      FLOW SPLIT AT I-8                          J. MISCHLER - (602) 244-8100

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                3                           0.0037

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

     2                  -1

1
  11MAR92      10:30:45                                                                          PAGE    4

    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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

*PROF 2

CCHV=      .100 CEHV=      .300
*SECNO 1.000
2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED
    1.000     4.33    766.33      .00       .00     766.66      .33       .00       .00     772.00
   6000.0      .0    6000.0       .0        .0     1303.7       .0        .0        .0     771.20
      .00     .00      4.60      .00      .000       .035     .000       .000    762.00    1566.51
  .003702      0.        0.       0.         0          0        5        .00    547.63    2114.14


SPECIAL BRIDGE

SB  XK        XKOR      COFQ      RDLEN     BWC       BWP       BAREA     SS        ELCHU     ELCHD
     .90      1.25      2.60       .00       .10       .00       .01       .00    764.00    764.00

*SECNO 2.000

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  4.84

PRESSURE AND WEIR FLOW,  Weir Submergence Based on TRAPEZOIDAL Shape

 EGPRS      EGLWC      H3       QWEIR      QPR       BAREA   TRAPEZOID      ELLC      ELTRD     WEIRLN
                                                              AREA
**********  768.66     .00      6032.       0.         0.       0.        765.00    766.00      767.

    2.000     8.18    770.18      .00       .00     770.21      .03       3.55       .00     772.00
   6000.0      .0    6000.0       .0        .0     4175.3       .0        6.3       1.7     771.20
      .02     .00      1.44      .00      .000       .035     .000       .000    762.00    1181.73
  .000158    100.      100.     100.         2          0        9        .00    944.96    2126.68
```

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1
  11MAR92      10:30:45                                                                          PAGE    5

T1      FLOOD CONTROL DISTRICT OF MARICOPA COUNTY - CONTRACT FCD 90-67
T2      GILA BEND AREA FLOODPLAIN DELINEATION STUDY BY BURGESS & NIPLE
T3      FLOW SPLIT AT I-8                          J. MISCHLER - (602) 244-8100

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                4                           0.0037

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

     3                  -1

1
  11MAR92      10:30:45                                                                          PAGE    6

    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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

*PROF 3

CCHV=      .100 CEHV=      .300
*SECNO 1.000
2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED
    1.000     5.02    767.02      .00       .00     767.42      .41       .00       .00     772.00
   8700.0      .0    8700.0       .0        .0     1701.9       .0        .0        .0     771.20
      .00     .00      5.11      .00      .000       .035     .000       .000    762.00    1498.19
  .003763      0.        0.       0.         0          0        4        .00    618.17    2116.36


SPECIAL BRIDGE

SB  XK        XKOR      COFQ      RDLEN     BWC       BWP       BAREA     SS        ELCHU     ELCHD
     .90      1.25      2.60       .00       .10       .00       .01       .00    764.00    764.00
```

*SECNO 2.000

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 4.04

PRESSURE AND WEIR FLOW, Weir Submergence Based on TRAPEZOIDAL Shape

EGPRS	EGLWC	H3	QWEIR	QPR	BAREA	TRAPEZOID AREA	ELLC	ELTRD	WEIRLN
**********	769.42	.00	8710.	0.	0.	0.	765.00	766.00	899.
2.000	8.80	770.80	.00	.00	770.85	.05	3.43	.00	772.00
8700.0	.0	8700.0	.0	.0	4781.6	.0	7.4	1.9	771.20
.02	.00	1.82	.00	.000	.035	.000	.000	762.00	1119.67
.000231	100.	100.	100.	2	0	9	.00	1009.04	2128.71

1

11MAR92 10:30:45 PAGE 7

T1 FLOOD CONTROL DISTRICT OF MARICOPA COUNTY - CONTRACT FCD 90-67
T2 GILA BEND AREA FLOODPLAIN DELINEATION STUDY BY BURGESS & NIPLE
T3 FLOW SPLIT AT I-8 J. MISCHLER - (602) 244-8100

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
		5			0.0037					
J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	15		-1							

1

11MAR92 10:30:45 PAGE 8

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	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

*PROF 4

CCHV= .100 CEHV= .300
*SECNO 1.000
2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED

1.000	5.72	767.72	.00	.00	768.20	.48	.00	.00	772.00
12000.0	.0	12000.0	.0	.0	2161.1	.0	.0	.0	771.20
.00	.00	5.55	.00	.000	.035	.000	.000	762.00	1428.03
.003743	0.	0.	0.	0	0	4	.00	690.62	2118.65

SPECIAL BRIDGE

SB	XK	XKOR	COFQ	RDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
	.90	1.26	2.60	.00	.10	.00	.01	.00	764.00	764.00

*SECNO 2.000
3280 CROSS SECTION 2.00 EXTENDED .22 FEET

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 3.45

PRESSURE AND WEIR FLOW, Weir Submergence Based on TRAPEZOIDAL Shape

EGPRS	EGLWC	H3	QWEIR	QPR	BAREA	TRAPEZOID AREA	ELLC	ELTRD	WEIRLN
**********	770.20	.00	12003.	0.	0.	0.	765.00	766.00	1029.
2.000	9.42	771.42	.00	.00	771.49	.08	3.29	.00	772.00
12000.0	.0	12000.0	.0	.0	5419.7	.0	8.7	2.0	771.20
.01	.00	2.21	.00	.000	.035	.000	.000	762.00	1058.34
.000314	100.	100.	100.	2	0	9	.00	1071.66	2130.00

1

11MAR92 10:30:45 PAGE 9

THIS RUN EXECUTED 11MAR92 10:30:47

****
HEC-2 WATER SURFACE PROFILES

Version 4.6.2; May 1991
****

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

FLOW SPLIT AT I-8

SUMMARY PRINTOUT

	SECNO	ELMIN	CWSEL	Q	VCH	DIFWSX	TOPWID	DEPTH	SSTA	ENDST	QLOB	QROB	ELTRD
	1.000	762.00	765.29	3000.00	3.81	.00	439.64	3.29	1671.09	2110.73	.00	.00	.00
	1.000	762.00	766.33	6000.00	4.60	.00	547.63	4.33	1566.51	2114.14	.00	.00	.00
	1.000	762.00	767.02	8700.00	5.11	.00	618.17	5.02	1498.19	2116.36	.00	.00	.00
	1.000	762.00	767.72	12000.00	5.55	.00	690.62	5.72	1428.03	2118.65	.00	.00	.00
*	2.000	762.00	769.22	3000.00	.90	3.93	846.03	7.22	1277.53	2123.56	.00	.00	766.00
*	2.000	762.00	770.18	6000.00	1.44	3.85	944.96	8.18	1181.73	2126.68	.00	.00	766.00
*	2.000	762.00	770.80	8700.00	1.82	3.79	1009.04	8.80	1119.67	2128.71	.00	.00	766.00
*	2.000	762.00	771.42	12000.00	2.21	3.70	1071.66	9.42	1058.34	2130.00	.00	.00	766.00

SUMMARY OF ERRORS AND SPECIAL NOTES

```
WARNING SECNO=      2.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=      2.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=      2.000  PROFILE=  3  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=      2.000  PROFILE=  4  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
```

```
1*****************************************
 *  HEC-2 WATER SURFACE PROFILES          *
 *                                        *
 *  Version   4.6.2;  May 1991            *
 *                                        *
 *  RUN DATE    11MAR92    TIME   10:31:07 *
 *****************************************
```

```
*************************************
*  U.S. ARMY CORPS OF ENGINEERS     *
*  HYDROLOGIC ENGINEERING CENTER    *
*  609 SECOND STREET, SUITE D       *
*  DAVIS, CALIFORNIA 95616-4687     *
*        (916) 756-1104             *
*************************************
```

```
X     X  XXXXXXX   XXXXX              XXXXX
X     X  X        X     X            X     X
X     X  X        X                        X
XXXXXXX  XXXX     X          XXXXX    XXXXX
X     X  X        X                  X
X     X  X        X     X            X
X     X  XXXXXXX   XXXXX              XXXXXXX
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1
   11MAR92      10:31:07                                                                    PAGE    1


                                                                  THIS RUN EXECUTED 11MAR92    10:31:07
 *************************************
  HEC-2 WATER SURFACE PROFILES

  Version   4.6.2;  May 1991
 *************************************

T1      FLOOD CONTROL DISTRICT OF MARICOPA COUNTY - CONTRACT FCD 90-67
T2      GILA BEND AREA FLOODPLAIN DELINEATION STUDY BY BURGESS & NIPLE
T3      BENDER WASH - BEND1.RAT                  J. MISCHLER - (602) 244-8100

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                2                           -1

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

     1                 -1

J3  VARIABLE CODES FOR SUMMARY PRINTOUT

     38        42         1        43        26        51         4         8        53        54
     13        15        40

        INTERSTATE 8 CULVERT WEST OF BENDER WASH. THIS MODEL IS USED TO
        GENERATE A RATING CURVE FOR USE IN COMPUTING AN ELEVATION UPSTREAM
        OF INTERSTATE 8.


NC    0.035     0.035     0.03      0.3       0.5
QT        4       250       500      1000      1500
X1     1738         5     800.0    1300.0
GR    770.0     300.0     771.0     800.0     768.0    1000.0     768.0    1200.0     772.0    1300.0

NC    0.035     0.035     0.03      0.3       0.5
X1                 5     950.0    1100.0     450.0     450.0     450.0
X3       10                                                        790       790
GR    774.0     400.0     774.0     950.0    771.75     970.0    771.75    1020.0     774.0    1100.0

        WIER FLOW IS NOT ANTICIPATED, THEREFORE USE DUMMY RDLEN = 100 FT


SC    5.014       0.4         3     100.0       3.7        10     200.0       8.1     774.0     772.0
X1                  6     950.0    1020.0     200.0     200.0     200.0
X2                            2                790
X3       10                                                        790       790
GR    776.0     900.0     778.0     930.0     776.0     950.0     772.0     970.0     772.0    1020.0
GR    776.0    1030.0
```

```
1
   11MAR92      10:31:07                                                                    PAGE    2

        REPEAT SECTION 200 FT UPSTREAM FOR CONTRACTION LOSSES. USE PSXECE =
             0.5

X1                                                 200       200       200                 0.5
1
   11MAR92      10:31:07                                                                    PAGE    3

    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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


 *PROF 1
0

 CCHV=     .300 CEHV=     .500
 *SECNO 1738.000
 2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED
 3720 CRITICAL DEPTH ASSUMED
   1738.000      .35    768.35    768.35       .00    768.52       .17       .00       .00    771.00
     250.0        .0     250.0        .0        .0      76.7        .0        .0        .0    772.00
       .00       .00      3.26       .00      .000      .030      .000      .000    768.00    976.37
   .019032        0.        0.        0.         0        17         0       .00    232.50   1208.86


 CCHV=     .300 CEHV=     .500
 *SECNO  .000
```

```
3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.78

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       790.00 ELREA=       790.00

      .000      1.04    772.79       .00       .00    772.96       .17      4.44       .00    774.00
    250.0        .0     250.0        .0        .0      76.1        .0        .8       1.7    774.00
      .04       .00      3.28       .00      .000      .030      .000      .000    771.75    960.75
   .006018      450.      450.      450.         7         0         0       .00     96.26   1057.01


SPECIAL CULVERT

SC  CUNO      CUNV      ENTLC     COFQ      RDLEN     RISE      SPAN      CULVLN    CHRT      SCL       ELCHU     ELCHD
     5         .014       .40     3.00     100.00     3.70     10.00     200.00     8         1        774.00    772.00

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

*SECNO  .000

SPECIAL CULVERT OUTLET CONTROL
EGIC =    775.428  EGOC =    775.562  PCWSE=    772.791  ELTRD=    790.000

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  6.75

1
   11MAR92      10:31:07                                                                                          PAGE    4

    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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
    775.43    775.56     2.60       0.      250.     1.200     185.0    790.00       0.


3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       790.00 ELREA=       790.00

      .000      3.54    775.54       .00       .00    775.56       .02      2.60       .00    776.00
    250.0        .0     250.0        .0        .0     208.3        .0       1.4       2.1    772.00
      .08       .00      1.20       .00      .000      .030      .000      .000    772.00    952.30
   .000132      200.      200.      200.         2         0         0       .00     67.70   1020.00


*SECNO  .000
      .000      3.07    775.57       .00       .00    775.60       .03       .03       .00    776.50
    250.0        .0     241.0       9.0        .0     176.8      11.8       2.4       2.4    772.50
      .13       .00      1.36       .76      .000      .030      .035      .000    772.50    954.67
   .000202      200.      200.      200.         2         0         0       .00     73.00   1027.67

1
   11MAR92      10:31:07                                                                                          PAGE    5

T1      FLOOD CONTROL DISTRICT OF MARICOPA COUNTY - CONTRACT FCD 90-67
T2      GILA BEND AREA FLOODPLAIN DELINEATION STUDY BY BURGESS & NIPLE
T3      BENDER WASH - BEND1.RAT                    J. MISCHLER - (602) 244-8100

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                3                             -1

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

     2                  -1

1
   11MAR92      10:31:07                                                                                          PAGE    6

    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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

 *PROF 2
0
 CCHV=     .300 CEHV=     .500
 *SECNO 1738.000
 2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED
 3720 CRITICAL DEPTH ASSUMED
   1738.000      .55    768.55    768.55       .00    768.80       .25       .00       .00    771.00
     500.0        .0     500.0        .0        .0     124.6        .0        .0        .0    772.00
       .00       .00      4.01       .00      .000      .030      .000      .000    768.00    963.14
   .016673        0.        0.        0.         0        10         0       .00    250.68   1213.82


 CCHV=     .300 CEHV=     .500
 *SECNO  .000

 3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.54

 3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       790.00 ELREA=       790.00

      .000      1.44    773.19       .00       .00    773.46       .28      4.65       .01    774.00
    500.0        .0     500.0        .0        .0     117.9        .0       1.3       1.9    774.00
      .03       .00      4.24       .00      .000      .030      .000      .000    771.75    957.22
   .007018      450.      450.      450.         6         0         0       .00    113.91   1071.13


 SPECIAL CULVERT
```

```
SC  CUNO      CUNV      ENTLC     COFQ      RDLEN     RISE      SPAN      CULVLN    CHRT      SCL       ELCHU     ELCHD
     5         .014      .40       3.00     100.00     3.70     10.00     200.00     8         1        774.00    772.00

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

*SECNO  .000

SPECIAL CULVERT OUTLET CONTROL
EGIC =    776.305  EGOC =    776.480  PCWSE=    773.185  ELTRD=    790.000

3280 CROSS SECTION        .00 EXTENDED       .43 FEET


3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  5.49

1
   11MAR92      10:31:07                                                                                          PAGE    7

    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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
   776.31    776.48     3.02       0.      500.     1.853     185.0    790.00       0.


3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       790.00 ELREA=       790.00

      .000      4.43    776.43       .00       .00    776.48       .05      3.02       .00    776.00
     500.0        .0     500.0        .0        .0     269.9        .0       2.1       2.3    772.00
       .06       .00      1.85       .00      .000      .030      .000      .000    772.00    950.00
   .000233      200.      200.      200.         2         0         0       .00     70.00   1020.00


*SECNO  .000
      .000      3.98    776.48       .00       .00    776.54       .06       .05       .00    776.50
     500.0        .0     477.4      22.6        .0     238.2      19.7       3.4       2.6    772.50
       .09       .00      2.00      1.15      .000      .030      .035      .000    772.50    950.13
   .000321      200.      200.      200.         2         0         0       .00     79.81   1029.94


1
   11MAR92      10:31:07                                                                                          PAGE    8

T1       FLOOD CONTROL DISTRICT OF MARICOPA COUNTY - CONTRACT FCD 90-67
T2       GILA BEND AREA FLOODPLAIN DELINEATION STUDY BY BURGESS & NIPLE
T3       BENDER WASH - BEND1.RAT                    J. MISCHLER - (602) 244-8100

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                4                           -1

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

     3                  -1

1
   11MAR92      10:31:07                                                                                          PAGE    9

    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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

 *PROF 3
0

CCHV=      .300 CEHV=      .500
*SECNO 1738.000
2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED
3720 CRITICAL DEPTH ASSUMED
  1738.000       .86    768.86    768.86       .00    769.23       .37       .00       .00    771.00
    1000.0        .0    1000.0        .0        .0     204.9        .0        .0        .0    772.00
       .00       .00      4.88       .00      .000      .030      .000      .000    768.00    942.91
   .014624        0.        0.        0.         0        10         0       .00    278.50   1221.41


CCHV=      .300 CEHV=      .500
*SECNO  .000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       790.00 ELREA=       790.00

      .000      1.95    773.70       .00       .00    774.17       .47      4.89       .05    774.00
    1000.0        .0    1000.0        .0        .0     182.0        .0       2.0       2.1    774.00
       .02       .00      5.49       .00      .000      .030      .000      .000    771.75    952.66
   .008406      450.      450.      450.         4         0         0       .00    136.68   1089.34


SPECIAL CULVERT

SC  CUNO      CUNV      ENTLC     COFQ      RDLEN     RISE      SPAN      CULVLN    CHRT      SCL       ELCHU     ELCHD
     5         .014      .40       3.00     100.00     3.70     10.00     200.00     8         1        774.00    772.00

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

*SECNO  .000

SPECIAL CULVERT OUTLET CONTROL
EGIC =    777.726  EGOC =    777.937  PCWSE=    773.702  ELTRD=    790.000

3280 CROSS SECTION        .00 EXTENDED      1.82 FEET
```

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3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  5.02

1
   11MAR92      10:31:07                                                                                                PAGE   10

    SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      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
   777.73     777.94      3.77         0.      1000.     2.721     185.0    790.00        0.


3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       790.00 ELREA=       790.00

      .000       5.82     777.82        .00        .00     777.94        .11       3.77        .00     776.00
    1000.0         .0     1000.0         .0         .0      367.6         .0        3.3       2.6     772.00
       .04        .00       2.72        .00       .000       .030       .000       .000     772.00     950.00
   .000333       200.       200.       200.          2          0          0        .00      70.00    1020.00


*SECNO  .000

3265 DIVIDED FLOW

3280 CROSS SECTION        .00 EXTENDED       1.40 FEET

      .000       5.40     777.90        .00        .00     778.01        .11        .07        .00     776.50
    1000.0       15.6      928.6       55.8       24.6      338.1       34.0        5.0        3.0     772.50
       .06        .63       2.75       1.64       .035       .030       .035       .000     772.50     900.00
   .000379       200.       200.       200.          2          0          0        .00     115.04    1030.00


1
   11MAR92      10:31:07                                                                                                PAGE   11

T1      FLOOD CONTROL DISTRICT OF MARICOPA COUNTY - CONTRACT FCD 90-67
T2      GILA BEND AREA FLOODPLAIN DELINEATION STUDY BY BURGESS & NIPLE
T3      BENDER WASH - BEND1.RAT                    J. MISCHLER - (602) 244-8100

J1  ICHECK     INQ        NINV       IDIR       STRT       METRIC     HVINS      Q          WSEL       FQ

                5                                 -1

J2  NPROF      IPLOT      PRFVS      XSECV      XSECH      FN         ALLDC      IBW        CHNIM      ITRACE

     15                    -1

1
   11MAR92      10:31:07                                                                                                PAGE   12

    SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      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

 *PROF 4
0
 CCHV=     .300 CEHV=     .500
 *SECNO 1738.000
 2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED
 3720 CRITICAL DEPTH ASSUMED
   1738.000      1.10     769.10     769.10        .00     769.56        .46        .00        .00     771.00
    1500.0         .0     1500.0         .0         .0      275.3         .0         .0         .0     772.00
       .00        .00       5.45        .00       .000       .030       .000       .000     768.00     926.70
   .013620         0.         0.         0.          0          7          0        .00     300.78    1227.49


 CCHV=     .300 CEHV=     .500
 *SECNO  .000
 3280 CROSS SECTION        .00 EXTENDED       .05 FEET

 3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       790.00 ELREA=       790.00

      .000       2.30     774.05        .00        .00     774.70        .64       5.05        .09     774.00
    1500.0         .0     1500.0         .0         .0      233.1         .0        2.6       2.3     774.00
       .02        .00       6.43        .00       .000       .030       .000       .000     771.75     950.00
   .009390       450.       450.       450.          5          0          0        .00     150.00    1100.00


 SPECIAL CULVERT

 SC  CUNO       CUNV       ENTLC      COFQ       RDLEN      RISE       SPAN       CULVLN     CHRT       SCL        ELCHU      ELCHD
      5          .014        .40       3.00     100.00       3.70      10.00     200.00      8          1         774.00     772.00

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

 *SECNO  .000

 SPECIAL CULVERT INLET CONTROL
 EGIC =     779.510  EGOC =     779.159  PCWSE=     774.054  ELTRD=     790.000

 3280 CROSS SECTION        .00 EXTENDED       3.35 FEET

 3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  5.42

1
   11MAR92      10:31:07                                                                                                PAGE   13

    SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      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
779.51	779.16	4.81	0.	1500.	3.159	185.0	790.00	0.

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE. ELLEA= 790.00 ELREA= 790.00

.000	7.35	779.35	.00	.00	779.51	.15	4.81	.00	776.00
1500.0	.0	1500.0	.0	.0	474.8	.0	4.3	2.8	772.00
.04	.00	3.16	.00	.000	.030	.000	.000	772.00	950.00
.000319	200.	200.	200.	2	0	0	.00	70.00	1020.00

*SECNO .000
3280 CROSS SECTION .00 EXTENDED 2.97 FEET

.000	6.96	779.46	.00	.00	779.58	.12	.06	.01	776.50
1500.0	108.2	1306.6	85.3	98.4	447.7	49.7	6.7	3.3	772.50
.06	1.10	2.92	1.72	.035	.030	.035	.000	772.50	900.00
.000295	200.	200.	200.	2	0	0	.00	130.00	1030.00

THIS RUN EXECUTED 11MAR92 10:31:10

****
HEC-2 WATER SURFACE PROFILES

Version 4.6.2; May 1991
****

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

BENDER WASH - BEND1.RAT

SUMMARY PRINTOUT

	SECNO	ELMIN	CWSEL	Q	VCH	DIFWSX	TOPWID	DEPTH	SSTA	ENDST	QLOB	QROB	ELTRD
*	1738.000	768.00	768.35	250.00	3.26	.00	232.50	.35	976.37	1208.86	.00	.00	.00
*	1738.000	768.00	768.55	500.00	4.01	.00	250.68	.55	963.14	1213.82	.00	.00	.00
*	1738.000	768.00	768.86	1000.00	4.88	.00	278.50	.86	942.91	1221.41	.00	.00	.00
*	1738.000	768.00	769.10	1500.00	5.45	.00	300.78	1.10	926.70	1227.49	.00	.00	.00
*	.000	771.75	772.79	250.00	3.28	4.44	96.26	1.04	960.75	1057.01	.00	.00	.00
*	.000	771.75	773.19	500.00	4.24	4.63	113.91	1.44	957.22	1071.13	.00	.00	.00
	.000	771.75	773.70	1000.00	5.49	4.85	136.68	1.95	952.66	1089.34	.00	.00	.00
	.000	771.75	774.05	1500.00	6.43	4.95	150.00	2.30	950.00	1100.00	.00	.00	.00
*	.000	772.00	775.54	250.00	1.20	2.75	67.70	3.54	952.30	1020.00	.00	.00	790.00
*	.000	772.00	776.43	500.00	1.85	3.24	70.00	4.43	950.00	1020.00	.00	.00	790.00
*	.000	772.00	777.82	1000.00	2.72	4.12	70.00	5.82	950.00	1020.00	.00	.00	790.00
*	.000	772.00	779.35	1500.00	3.16	5.30	70.00	7.35	950.00	1020.00	.00	.00	790.00
	.000	772.50	775.57	250.00	1.36	.03	73.00	3.07	954.67	1027.67	.00	8.97	.00
	.000	772.50	776.48	500.00	2.00	.05	79.81	3.98	950.13	1029.94	.00	22.61	.00
	.000	772.50	777.90	1000.00	2.75	.08	115.04	5.40	900.00	1030.00	15.59	55.81	.00
	.000	772.50	779.46	1500.00	2.92	.11	130.00	6.96	900.00	1030.00	108.17	85.27	.00

SUMMARY OF ERRORS AND SPECIAL NOTES

CAUTION SECNO= 1738.000 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 1738.000 PROFILE= 2 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 1738.000 PROFILE= 3 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 1738.000 PROFILE= 4 CRITICAL DEPTH ASSUMED

WARNING SECNO= .000 PROFILE= 1 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO= .000 PROFILE= 2 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO= .000 PROFILE= 1 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO= .000 PROFILE= 2 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO= .000 PROFILE= 3 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO= .000 PROFILE= 4 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

```
1*****************************************
 *  HEC-2 WATER SURFACE PROFILES          *
 *                                        *
 *  Version   4.6.2;  May 1991            *
 *                                        *
 *  RUN DATE    11MAR92    TIME   10:31:28 *
 *****************************************
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*************************************
*  U.S. ARMY CORPS OF ENGINEERS     *
*  HYDROLOGIC ENGINEERING CENTER    *
*  609 SECOND STREET, SUITE D       *
*  DAVIS, CALIFORNIA 95616-4687     *
*          (916) 756-1104           *
*************************************
```

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X     X  XXXXXXX   XXXXX              XXXXX
X     X  X        X     X            X     X
X     X  X        X                  X     X
XXXXXXX  XXXX     X          XXXXX    XXXXX
X     X  X        X                  X
X     X  X        X     X            X
X     X  XXXXXXX   XXXXX              XXXXXXX
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1
   11MAR92      10:31:28                                                                                    PAGE    1


                                                                                THIS RUN EXECUTED 11MAR92    10:31:28
*************************************
 HEC-2 WATER SURFACE PROFILES

 Version   4.6.2;  May 1991
*************************************


T1      FLOOD CONTROL DISTRICT OF MARICOPA COUNTY - CONTRACT FCD 90-67
T2      GILA BEND AREA FLOODPLAIN DELINEATION STUDY BY BURGESS & NIPLE
T3      BENDER WASH - BEND2.RAT                    J. MISCHLER - (602) 244-8100

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                2                           -1

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

     1                 -1


J3  VARIABLE CODES FOR SUMMARY PRINTOUT

     38        42         1        43        26        51         4         8        53        54
     13        15        40

        INTERSTATE 8 CULVERT WEST OF BENDER WASH. THIS MODEL IS USED TO
        GENERATE A RATING CURVE FOR USE IN COMPUTING AN ELEVATION UPSTREAM
        OF INTERSTATE 8.


NC    0.035     0.035     0.03       0.3       0.5
QT        3       250      500      1000
X1     1738         5    600.0    1100.0
GR    770.0     100.0    771.0     600.0     768.0     800.0     768.0    1000.0     772.0    1100.0

NC    0.035     0.035     0.03       0.3       0.5
X1                 4    930.0    1300.0     450.0     450.0     450.0
X3       10                                                       790       790
GR    774.0     930.0    772.2     980.0     772.2    1020.0     776.0    1300.0

        WIER FLOW IS NOT ANTICIPATED, THEREFORE USE DUMMY RDLEN = 100 FT


SC    4.014       0.4         3     100.0       3.7        10     200.0       8.1     774.5     772.0
X1                 6    970.0    1030.0     200.0     200.0     200.0
X2                            2                 790
X3       10                                                       790       790
GR    778.0     930.0    776.0     970.0     772.5     980.0     772.5    1020.0     776.0    1030.0
GR    778.0    1300.0

1
   11MAR92      10:31:28                                                                                    PAGE    2

        REPEAT SECTION 200 FT UPSTREAM FOR CONTRACTION LOSSES. USE PSXECE =
             0.5

X1                                                 200       200       200                         0.5
1
   11MAR92      10:31:28                                                                                    PAGE    3

     SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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


 *PROF 1
0

 CCHV=     .300 CEHV=     .500
 *SECNO 1738.000
 2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED
 3720 CRITICAL DEPTH ASSUMED
   1738.000      .35    768.35    768.35       .00    768.52       .17       .00       .00    771.00
     250.0       .0     250.0        .0        .0      76.7        .0        .0        .0    772.00
       .00       .00      3.26       .00      .000      .030      .000      .000    768.00    776.37
   .019032       0.        0.        0.         0        17         0       .00    232.50   1008.86


 CCHV=     .300 CEHV=     .500
 *SECNO  .000
```

```
3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.68

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       790.00 ELREA=       790.00

      .000       .96    773.16       .00       .00    773.29       .14      4.76       .01    774.00
    250.0        .0     250.0        .0        .0      84.8        .0        .8       1.9    776.00
      .04       .00      2.95       .00      .000      .030      .000      .000    772.20    953.41
   .006732      450.      450.      450.         7         0         0       .00    137.12   1090.53


SPECIAL CULVERT

SC  CUNO      CUNV      ENTLC     COFQ      RDLEN     RISE      SPAN      CULVLN    CHRT      SCL       ELCHU     ELCHD
     4         .014       .40      3.00    100.00      3.70     10.00    200.00     8         1        774.50    772.00

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

*SECNO  .000

SPECIAL CULVERT OUTLET CONTROL
EGIC =    776.161  EGOC =    776.299  PCWSE=    773.159  ELTRD=    790.000

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  6.65

1
   11MAR92      10:31:28                                                                                          PAGE    4

    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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
   776.16    776.30      3.01        0.      250.     1.307     148.0    790.00        0.


3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       790.00 ELREA=       790.00

      .000      3.77    776.27       .00       .00    776.30       .03      3.01       .00    776.00
    250.0        .0     250.0        .0        .0     191.3        .0       1.5       2.4    776.00
      .08       .00      1.31       .00      .000      .030      .000      .000    772.50    970.00
   .000152      200.      200.      200.         2         0         0       .00     60.00   1030.00

*SECNO  .000
      .000      3.31    776.31       .00       .00    776.34       .04       .04       .00    776.50
    250.0        .0     250.0        .0        .0     163.3        .0       2.3       2.6    776.50
      .12       .00      1.53       .00      .000      .030      .000      .000    773.00    970.56
   .000251      200.      200.      200.         2         0         0       .00     58.87   1029.44

1
   11MAR92      10:31:28                                                                                          PAGE    5

T1       FLOOD CONTROL DISTRICT OF MARICOPA COUNTY - CONTRACT FCD 90-67
T2       GILA BEND AREA FLOODPLAIN DELINEATION STUDY BY BURGESS & NIPLE
T3       BENDER WASH - BEND2.RAT                    J. MISCHLER - (602) 244-8100

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                3                             -1

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

     2                  -1

1
   11MAR92      10:31:28                                                                                          PAGE    6

    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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

 *PROF 2
0
 CCHV=      .300 CEHV=      .500
 *SECNO 1738.000
 2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED
 3720 CRITICAL DEPTH ASSUMED
   1738.000      .55    768.55    768.55       .00    768.80       .25       .00       .00    771.00
     500.0        .0     500.0        .0        .0     124.6        .0        .0        .0    772.00
       .00       .00      4.01       .00      .000      .030      .000      .000    768.00    763.14
   .016673        0.        0.        0.         0        10         0       .00    250.68   1013.82

 CCHV=      .300 CEHV=      .500
 *SECNO  .000

 3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.48

 3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       790.00 ELREA=       790.00

       .000      1.28    773.48       .00       .00    773.69       .21      4.88       .01    774.00
     500.0        .0     500.0        .0        .0     135.0        .0       1.3       2.2    776.00
       .03       .00      3.70       .00      .000      .030      .000      .000    772.20    944.32
   .007614      450.      450.      450.         6         0         0       .00    170.31   1114.63


 SPECIAL CULVERT
```

```
SC  CUNO      CUNV      ENTLC     COFQ      RDLEN     RISE      SPAN      CULVLN    CHRT      SCL       ELCHU     ELCHD
     4         .014      .40       3.00    100.00      3.70     10.00    200.00      8         1       774.50    772.00

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

*SECNO  .000

SPECIAL CULVERT OUTLET CONTROL
EGIC =    777.185  EGOC =    777.378  PCWSE=    773.482  ELTRD=    790.000

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  5.67

1
   11MAR92      10:31:28                                                                                          PAGE    7

    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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
   777.19    777.38     3.68       0.      500.     1.968     148.0    790.00       0.

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      790.00 ELREA=      790.00

     .000      4.82    777.32      .00       .00    777.38       .06      3.68       .00    776.00
    500.0        .0     500.0       .0        .0     254.1        .0       2.2       2.7    776.00
      .06       .00      1.97      .00      .000      .030      .000      .000    772.50    970.00
  .000236      200.      200.     200.         2         0         0       .00     60.00   1030.00

*SECNO  .000
     .000      4.37    777.37      .00       .00    777.43       .06       .05       .00    776.50
    500.0       3.3     474.7     22.0       7.6     227.3      51.3       3.5       3.3    776.50
      .09       .43      2.09      .43      .035      .030      .035      .000    773.00    952.57
  .000309      200.      200.     200.         2         0         0       .00    195.11   1147.68

1
   11MAR92      10:31:28                                                                                          PAGE    8

T1      FLOOD CONTROL DISTRICT OF MARICOPA COUNTY - CONTRACT FCD 90-67
T2      GILA BEND AREA FLOODPLAIN DELINEATION STUDY BY BURGESS & NIPLE
T3      BENDER WASH - BEND2.RAT                    J. MISCHLER - (602) 244-8100

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                4                           -1

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

    15                  -1

1
   11MAR92      10:31:28                                                                                          PAGE    9

    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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

*PROF 3
0
CCHV=      .300 CEHV=      .500
*SECNO 1738.000
2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED
3720 CRITICAL DEPTH ASSUMED
  1738.000      .86    768.86    768.86       .00    769.23       .37       .00       .00    771.00
   1000.0        .0    1000.0       .0        .0     204.9        .0       .0        .0     772.00
      .00       .00      4.88      .00      .000      .030      .000      .000    768.00    742.91
  .014624        0.        0.       0.         0        10         0       .00    278.50   1021.41

CCHV=      .300 CEHV=      .500
*SECNO  .000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      790.00 ELREA=      790.00

     .000      1.70    773.90      .00       .00    774.24       .34      5.00       .01    774.00
   1000.0        .0    1000.0       .0        .0     214.6        .0       2.2       2.5    776.00
      .03       .00      4.66      .00      .000      .030      .000      .000    772.20    932.78
  .008738      450.      450.     450.         4         0         0       .00    212.47   1145.25

SPECIAL CULVERT

SC  CUNO      CUNV      ENTLC     COFQ      RDLEN     RISE      SPAN      CULVLN    CHRT      SCL       ELCHU     ELCHD
     4         .014      .40       3.00    100.00      3.70     10.00    200.00      8         1       774.50    772.00

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

*SECNO  .000

SPECIAL CULVERT OUTLET CONTROL
EGIC =    778.868  EGOC =    779.069  PCWSE=    773.902  ELTRD=    790.000

3280 CROSS SECTION       .00 EXTENDED       .94 FEET

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  5.22
```

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	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
778.87	779.07	4.83	0.	1000.	2.844	148.0	790.00	0.

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 790.00 ELREA= 790.00

.000	6.44	778.94	.00	.00	779.07	.13	4.83	.00	776.00
1000.0	.0	1000.0	.0	.0	351.6	.0	3.5	3.2	776.00
.05	.00	2.84	.00	.000	.030	.000	.000	772.50	970.00
.000320	200.	200.	200.	2	0	0	.00	60.00	1030.00

*SECNO .000
3280 CROSS SECTION .00 EXTENDED .60 FEET

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 1.42

.000	6.10	779.10	.00	.00	779.14	.04	.04	.03	776.50
1000.0	46.5	637.1	316.5	64.1	331.1	432.7	6.2	4.1	776.50
.08	.72	1.92	.73	.035	.030	.035	.000	773.00	930.00
.000159	200.	200.	200.	2	0	0	.00	370.00	1300.00

THIS RUN EXECUTED 11MAR92 10:31:31

****
HEC-2 WATER SURFACE PROFILES

Version 4.6.2; May 1991
****

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

BENDER WASH - BEND2.RAT

SUMMARY PRINTOUT

	SECNO	ELMIN	CWSEL	Q	VCH	DIFWSX	TOPWID	DEPTH	SSTA	ENDST	QLOB	QROB	ELTRD
*	1738.000	768.00	768.35	250.00	3.26	.00	232.50	.35	776.37	1008.86	.00	.00	.00
*	1738.000	768.00	768.55	500.00	4.01	.00	250.68	.55	763.14	1013.82	.00	.00	.00
*	1738.000	768.00	768.88	1000.00	4.88	.00	278.50	.86	742.91	1021.41	.00	.00	.00
*	.000	772.20	773.16	250.00	2.95	4.80	137.12	.96	953.41	1090.53	.00	.00	.00
*	.000	772.20	773.48	500.00	3.70	4.93	170.31	1.28	944.32	1114.63	.00	.00	.00
	.000	772.20	773.90	1000.00	4.66	5.05	212.47	1.70	932.78	1145.25	.00	.00	.00
*	.000	772.50	776.27	250.00	1.31	3.11	60.00	3.77	970.00	1030.00	.00	.00	790.00
*	.000	772.50	777.32	500.00	1.97	3.84	60.00	4.82	970.00	1030.00	.00	.00	790.00
*	.000	772.50	778.94	1000.00	2.84	5.04	60.00	6.44	970.00	1030.00	.00	.00	790.00
	.000	773.00	776.31	250.00	1.53	.03	58.87	3.31	970.56	1029.44	.00	.00	.00
	.000	773.00	777.37	500.00	2.09	.05	195.11	4.37	952.57	1147.68	3.26	22.00	.00
*	.000	773.00	779.10	1000.00	1.92	.16	370.00	6.10	930.00	1300.00	46.45	316.46	.00

SUMMARY OF ERRORS AND SPECIAL NOTES

CAUTION SECNO= 1738.000 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 1738.000 PROFILE= 2 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 1738.000 PROFILE= 3 CRITICAL DEPTH ASSUMED

WARNING SECNO= .000 PROFILE= 1 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO= .000 PROFILE= 2 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO= .000 PROFILE= 1 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO= .000 PROFILE= 2 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO= .000 PROFILE= 3 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO= .000 PROFILE= 3 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

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1*****************************************
 *  HEC-2 WATER SURFACE PROFILES          *
 *                                        *
 *  Version   4.6.2;  May 1991            *
 *                                        *
 *  RUN DATE    11MAR92    TIME   10:31:57 *
 *****************************************
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*************************************
*  U.S. ARMY CORPS OF ENGINEERS     *
*  HYDROLOGIC ENGINEERING CENTER    *
*  609 SECOND STREET, SUITE D       *
*  DAVIS, CALIFORNIA 95616-4687     *
*        (916) 756-1104             *
*************************************
```

```
X     X  XXXXXXX   XXXXX              XXXXX
X     X  X        X     X            X     X
X     X  X        X                        X
XXXXXXX  XXXX     X          XXXXX    XXXXX
X     X  X        X                  X
X     X  X        X     X            X
X     X  XXXXXXX   XXXXX              XXXXXXX
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THIS RUN EXECUTED 11MAR92 10:31:58

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*************************************
 HEC-2 WATER SURFACE PROFILES

 Version   4.6.2;  May 1991
*************************************
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T1      FLOOD CONTROL DISTRICT OF MARICOPA COUNTY - CONTRACT FCD 90-67
T2      GILA BEND AREA FLOODPLAIN DELINEATION STUDY BY BURGESS & NIPLE
T3      BENDER WASH-BENDMAIN.RAT                J. MISCHLER - (602) 244-8100

J1  ICHECK    INQ      NINV     IDIR     STRT     METRIC   HVINS    Q        WSEL     FQ

                2                       0.0047

J2  NPROF     IPLOT    PRFVS    XSECV    XSECH    FN       ALLDC    IBW      CHNIM    ITRACE

     1                 -1

J3  VARIABLE CODES FOR SUMMARY PRINTOUT

    38       42        1        43       26       51        4        8        53       54
    13       15       40

        SECTIONS ARE LABELED AS  RIVER MILES * 1000, i.e., SECTION 037 IS AT
        A POINT 0.037 MILES UPSTREAM OF THE CONFLUENCE WITH SAND TANKS WASH.

QT       2     1000     2000
NC    0.03     0.03     0.03      0.1      0.3
X1    1738       35   9989.9  10023.9    860.0    720.0    855.0
GR   776.0   9451.2    771.5   9481.6    770.6   9534.7    770.4   9575.2    770.5   9617.0
GR   768.8   9635.2    770.5   9691.8    770.9   9791.1    770.6   9870.8    769.9   9888.6
GR   767.6   9919.0    768.9   9946.7    770.4   9974.5    770.2   9989.9    766.8  10000.0
GR   768.6  10011.3    770.3  10023.9    769.3  10038.9    769.9  10061.3    770.6  10099.5
GR   770.7  10156.4    770.6  10189.2    768.9  10197.3    770.3  10209.7    769.0  10220.9
GR   770.3  10255.7    770.0  10337.4    770.0  10438.8    769.4  10532.4    767.5  10541.5
GR   769.7  10569.0    769.3  10641.2    769.3  10709.3    768.4  10759.5    770.0  10780.9

NC   0.035    0.035     0.03
X1    1903        9   9949.8  10037.1    900.0    880.0    871.0
GR   776.5   9880.5    775.5   9916.6    775.1   9949.8    773.8   9975.3    773.1   9997.9
GR   771.7  10000.0    772.8  10019.7    775.3  10037.1    776.8  10058.3

        BENDER WASH IS CONVEYED BENEATH INTERSTATE 8 BY A TWIN BARREL
        CONCRETE BOX CULVERT.  SIGNIFICANT SEDIMENT WAS NOTED AT THE TIME OF
        THE FIELD RECONNAISSANCE, RESULTING IN A REDUCED EFFECTIVE RISE
        OF 3.4 FEET INSTEAD OF 8 FEET AS CONSTRUCTED.

        THE CHANNEL DOWNSTREAM OF THE CULVERT HAS BEEN GRADED TO REMOVE
        SOME OF THE SEDIMENT, BUT THE CULVERT HAS NOT BEEN CLEARED BECAUSE
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        THE EQUIPMENT COULD NOT ENTER THE BOXES.

        REPEAT SECTION 1903 AT THE DOWNSTREAM FACE OF THE CULVERT.
        USE PSXECE = (772CONTOUR-768CONTOUR)*(180FT/640FT) = 1.1 FT
        REVISE CHANNEL BOTTOM TO REFLECT GRADING TO ELEV 774.1  (1.0 FT BELOW
        THE CULVERT SEDIMENT ELEVATION AS ESTIMATED DURING THE FIELD RECON.

        INCREASE EXPANSION/CONTRACTION COEFFICIENTS FOR THE CULVERT.

NC                                0.3      0.5
X1    1940        7    9967   10033      100      240      195                1.1
X3      10                                                        781.4    781.4
GR   776.5   9880.5    775.5   9916.6    775.1   9949.8      773     9967      773    10033
GR   775.3  10037.1    776.8  10058.3

        WIER FLOW IS NOT ANTICIPATED.  USE SC.5 RDLEN = 500 FT.
        ELTRD = 782.4 + 0.5 HV = 782.9

SC   6.014      0.4        3      500     3.37       10      240      8.1    776.4    775.1
X1    1987                            250      250      250                1.3
X2                         2    782.9
X3      10                                                        782.4    782.4

        DEVELOP A SECTION UPSTREAM OF I-8 USING TOPO MAP DATA IN ORDER
        TO COMPUTE CONTRACTION LOSSES.

X1    2041        9    9900   10050      310      240      285
GR     780     9550     778    9620      779     9700      778     9800      780     9840
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GR      780       9900        777      10000        780       10050        784       10240
1
   11MAR92      10:31:57                                                                                    PAGE    3

    SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      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

*PROF 1

CCHV=      .100 CEHV=      .300
*SECNO 1738.000
2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED

3265 DIVIDED FLOW

  1738.000      2.96     769.76       .00       .00     769.92       .17       .00       .00     770.20
    1000.0     349.8      174.9     475.3      99.4       41.2     181.5        .0        .0     770.30
       .00      3.52       4.25      2.62      .030       .030      .030      .000    766.80    9624.96
   .004686      860.       855.      720.         0          0         8       .00    505.90   10777.64

*SECNO 1903.000

3301 HV CHANGED MORE THAN HVINS

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =   .68

  1903.000      3.50     775.20    775.13       .00     775.96       .76      5.86       .18     775.10
    1000.0        .3      999.7        .0        .5      143.3        .0       4.7       6.1     775.30
       .03       .61       6.97       .00      .035       .030      .000      .000    771.70    9940.90
   .010238      900.       871.      880.         6         11         0       .00     95.55   10036.45

CCHV=      .300 CEHV=      .500
*SECNO 1940.000

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.59

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       781.40 ELREA=       781.40

  1940.000      2.57     776.67       .00       .00     777.21       .54      1.19       .06     774.10
    1000.0        .0     1000.0        .0        .0      169.4        .0       5.4       6.4     774.10
       .04       .00       5.90       .00      .000       .030      .000      .000    774.10    9967.00
   .004039      100.       195.      240.         2          0         0       .00     66.00   10033.00

1
   11MAR92      10:31:57                                                                                    PAGE    4

    SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      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

SC  CUNO      CUNV      ENTLC      COFQ      RDLEN      RISE      SPAN      CULVLN     CHRT      SCL       ELCHU     ELCHD
     6         .014       .40      3.00     500.00      3.37     10.00     240.00      8         1       776.40    775.10

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

*SECNO 1987.000

SPECIAL CULVERT OUTLET CONTROL
EGIC =    779.703  EGOC =    779.887  PCWSE=    776.668  ELTRD=    782.900

3280 CROSS SECTION   1987.00 EXTENDED       .79 FEET

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  2.36

SPECIAL CULVERT

     EGIC       EGOC        H4      QWEIR      QCULV       VCH      ACULV      ELTRD     WEIRLN
    779.70     779.89      2.68         0.      1000.     3.529      202.2     782.90         0.

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       782.40 ELREA=       782.40

  1987.000      4.29     779.69       .00       .00     779.89       .19      2.68       .00     775.40
    1000.0        .0     1000.0        .0        .0      283.4        .0       6.7       6.8     775.40
       .06       .00       3.53       .00      .000       .030      .000      .000    775.40    9967.00
   .000727      250.       250.      250.         2          0         0       .00     66.00   10033.00

*SECNO 2041.000
3280 CROSS SECTION   2041.00 EXTENDED       .10 FEET

  2041.000      3.10     780.10       .00       .00     780.14       .04       .20       .05     780.00
    1000.0     577.8      422.2        .0     414.5      239.8        .2       9.9       8.8     780.00
       .12      1.39       1.76       .15      .035       .030      .035      .000    777.00    9550.00
   .000677      310.       285.      240.         2          0         0       .00    504.69   10054.69

1
   11MAR92      10:31:57                                                                                    PAGE    5

T1      FLOOD CONTROL DISTRICT OF MARICOPA COUNTY - CONTRACT FCD 90-67
T2      GILA BEND AREA FLOODPLAIN DELINEATION STUDY BY BURGESS & NIPLE
T3      BENDER WASH                                  J. MISCHLER - (602) 244-8100

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ
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                3                        0.0047
J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

    15                  -1

1
   11MAR92      10:31:57                                                                                PAGE    6

    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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

*PROF 2

CCHV=     .100 CEHV=     .300
*SECNO 1738.000
2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED

3265 DIVIDED FLOW

3280 CROSS SECTION   1738.00 EXTENDED       .16 FEET

  1738.000      3.36    770.16       .00       .00    770.36       .20       .00       .00    770.20
    2000.0     606.1     249.0    1144.8     152.5      53.7     370.0        .0        .0    770.30
       .00      3.98      4.64      3.09      .030      .030      .030      .000    766.80   9620.61
   .004711      860.      855.      720.         0         0         6       .00    776.94  10780.90

*SECNO 1903.000

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
  1903.000      4.50    776.20    776.20       .00    777.17       .97      5.16       .23    775.10
    2000.0     117.7    1870.1      12.2      38.5     229.6       5.7       8.6       9.5    775.30
       .03      3.06      8.14      2.16      .035      .030      .035      .000    771.70   9891.48
   .007523      900.      871.      880.         8        11         0       .00    158.28  10049.76

CCHV=     .300 CEHV=     .500
*SECNO 1940.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      781.40 ELREA=      781.40

  1940.000      3.32    777.42       .00       .00    778.71      1.30      1.38       .16    774.10
    2000.0        .0    2000.0        .0        .0     218.9        .0       9.7       9.9    774.10
       .04       .00      9.14       .00      .000      .030      .000      .000    774.10   9967.00
   .006879      100.      195.      240.         2         0         0       .00     66.00  10033.00

1
   11MAR92      10:31:57                                                                                PAGE    7

    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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

SC  CUNO      CUNV      ENTLC     COFQ      RDLEN     RISE      SPAN      CULVLN    CHRT      SCL       ELCHU     ELCHD
     6         .014       .40      3.00     500.00     3.37     10.00     240.00     8         1       776.40    775.10

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

*SECNO 1987.000

SPECIAL CULVERT INLET CONTROL
EGIC =    782.887  EGOC =    781.935  PCWSE=    777.417  ELTRD=    782.900

3280 CROSS SECTION   1987.00 EXTENDED       3.92 FEET

3301 HV CHANGED MORE THAN HVINS

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  6.62

SPECIAL CULVERT

     EGIC      EGOC       H4     QWEIR     QCULV       VCH     ACULV     ELTRD    WEIRLN
   782.89    781.93      4.17        0.     2000.     2.362     202.2    782.90        0.

  1987.000      7.42    782.82       .00       .00    782.89       .07      4.17       .00    775.40
    2000.0     681.9    1157.1     161.0     439.3     489.9     118.4      13.3      10.6    775.40
       .07      1.55      2.36      1.36      .035      .030      .035      .000    775.40   9880.50
   .000157      250.      250.      250.         2         0         0       .00    177.80  10058.30

*SECNO 2041.000
3280 CROSS SECTION   2041.00 EXTENDED       2.92 FEET

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

  2041.000      5.92    782.92       .00       .00    782.93       .01       .03       .02    780.00
    2000.0    1205.5     706.3      88.3    1401.1     662.6     202.1      24.5      13.3    780.00
       .16       .86      1.07       .44      .035      .030      .035      .000    777.00   9550.00
   .000064      310.      285.      240.         2         0         0       .00    638.57  10188.57

1
   11MAR92      10:31:57                                                                                PAGE    8
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************************************
 HEC-2 WATER SURFACE PROFILES

 Version   4.6.2;  May 1991
************************************
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NOTE- ASTERISK (*) AT LEFT OF CROSS-SECTION NUMBER INDICATES MESSAGE IN SUMMARY OF ERRORS LIST

BENDER WASH-BENDMAIN.RAT

SUMMARY PRINTOUT

	SECNO	ELMIN	CWSEL	Q	VCH	DIFWSX	TOPWID	DEPTH	SSTA	ENDST	QLOB	QROB	ELTRD
	1738.000	766.80	769.76	1000.00	4.25	.00	505.90	2.96	9624.96	10777.64	349.83	475.26	.00
	1738.000	766.80	770.16	2000.00	4.64	.00	776.94	3.36	9620.61	10780.90	606.11	1144.84	.00
*	1903.000	771.70	775.20	1000.00	6.97	5.44	95.55	3.50	9940.90	10036.45	.29	.00	.00
*	1903.000	771.70	776.20	2000.00	8.14	6.03	158.28	4.50	9891.48	10049.76	117.69	12.21	.00
*	1940.000	774.10	776.67	1000.00	5.90	1.47	66.00	2.57	9967.00	10033.00	.00	.00	.00
	1940.000	774.10	777.42	2000.00	9.14	1.22	66.00	3.32	9967.00	10033.00	.00	.00	.00
*	1987.000	775.40	779.69	1000.00	3.53	3.03	66.00	4.29	9967.00	10033.00	.00	.00	782.90
*	1987.000	775.40	782.82	2000.00	2.36	5.41	177.80	7.42	9880.50	10058.30	681.90	161.01	782.90
	2041.000	777.00	780.10	1000.00	1.76	.41	504.69	3.10	9550.00	10054.69	577.81	.03	.00
*	2041.000	777.00	782.92	2000.00	1.07	.10	638.57	5.92	9550.00	10188.57	1205.45	88.26	.00

1 11MAR92 10:31:57 PAGE 9

SUMMARY OF ERRORS AND SPECIAL NOTES

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WARNING SECNO=   1903.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
CAUTION SECNO=   1903.000  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=   1903.000  PROFILE=  2  MINIMUM SPECIFIC ENERGY

WARNING SECNO=   1940.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=   1987.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   1987.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=   2041.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
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1*****************************************                    ***************************************
  *  HEC-2 WATER SURFACE PROFILES          *                    *  U.S. ARMY CORPS OF ENGINEERS       *
  *                                        *                    *  HYDROLOGIC ENGINEERING CENTER      *
  *  Version   4.6.2;  May 1991            *                    *  609 SECOND STREET, SUITE D         *
  *                                        *                    *  DAVIS, CALIFORNIA 95616-4687       *
  *  RUN DATE    11MAR92    TIME   12:14:17 *                    *       (916) 756-1104             *
  *****************************************                    ***************************************

                                  X     X  XXXXXXX   XXXXX              XXXXX
                                  X     X  X        X     X            X     X
                                  X     X  X        X                        X
                                  XXXXXXX  XXXX     X          XXXXX    XXXXX
                                  X     X  X        X                  X
                                  X     X  X        X     X            X
                                  X     X  XXXXXXX  XXXXX              XXXXXXX
1
   11MAR92      12:14:18                                                                          PAGE    1


                                                                   THIS RUN EXECUTED 11MAR92    12:14:18
 *************************************
  HEC-2 WATER SURFACE PROFILES

  Version   4.6.2;  May 1991
 *************************************

 T1      FLOOD CONTROL DISTRICT OF MARICOPA COUNTY - CONTRACT FCD 90-67
 T2      GILA BEND AREA FLOODPLAIN DELINEATION STUDY BY BURGESS & NIPLE
 T3      BENDER WASH - BEND3.RAT                  J. MISCHLER - (602) 244-8100

 J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                 2                           -1

 J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

       1                 -1

 J3  VARIABLE CODES FOR SUMMARY PRINTOUT

      38        42         1        43        26        51         4         8        53        54
      13        15        40

         INTERSTATE 8 CULVERT EAST OF BENDER WASH. THIS MODEL IS USED TO
         GENERATE A RATING CURVE FOR USE IN COMPUTING AN ELEVATION UPSTREAM
         OF INTERSTATE 8.


 NC    0.035     0.035      0.03       0.3       0.5
 QT        3       250       500       750
 X1        1         5     965.0    1025.0
 GR    784.0     880.0     780.0     965.0     778.0    1000.0     780.0    1025.0     780.0    1230.0

 NC    0.035     0.035      0.03       0.3       0.5
 X1        2         4     650.0    1300.0     450.0     450.0     450.0
 X3       10                                                        790       790
 GR    782.0     650.0     779.3     980.0     779.3    1010.0     784.0    1300.0

         WIER FLOW IS NOT ANTICIPATED, THEREFORE USE DUMMY RDLEN = 100 FT


 SC    3.014       0.4         3     100.0       3.7        10     200.0       8.1     780.3     780.0
 X1        3         5     970.0    1030.0     200.0     200.0     200.0
 X2                              2                 790
 X3       10                                                        790       790
 GR    784.0     950.0     784.0     970.0     780.0     980.0     780.0    1010.0     784.0    1030.0
1
   11MAR92      12:14:18                                                                          PAGE    2


 X1        4         2     800.0    1250.0       200       200       200
 GR    780.0     800.0     784.0    1250.0
1
   11MAR92      12:14:18                                                                          PAGE    3

     SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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

 *PROF 1
0

 CCHV=     .300 CEHV=     .500
 *SECNO 1.000
 2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED
 3720 CRITICAL DEPTH ASSUMED
      1.000      1.76    779.76    779.76       .00    780.21       .45       .00       .00    780.00
      250.0        .0     250.0        .0        .0      46.4        .0        .0        .0    780.00
        .00       .00      5.39       .00      .000      .030      .000      .000    778.00    969.23
    .014099        0.        0.        0.         0        16         0       .00     52.75   1021.98

 CCHV=     .300 CEHV=     .500
 *SECNO 2.000

 3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  5.82

 3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       790.00 ELREA=       790.00
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     2.000      1.57    780.87       .00       .00    780.89       .01       .55       .13    782.00
     250.0        .0     250.0        .0        .0     273.8        .0       1.7       1.9    784.00
       .14       .00       .91       .00      .000      .030      .000      .000    779.30    788.11
   .000416      450.      450.      450.         6         0         0       .00    318.76   1106.87


SPECIAL CULVERT

SC  CUNO      CUNV      ENTLC     COFQ      RDLEN     RISE      SPAN      CULVLN    CHRT      SCL       ELCHU     ELCHD
     3         .014      .40      3.00     100.00     3.70     10.00     200.00     8         1        780.30    780.00

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

*SECNO 3.000

SPECIAL CULVERT OUTLET CONTROL
EGIC =    782.348  EGOC =    782.503  PCWSE=    780.874  ELTRD=    790.000


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

1
   11MAR92      12:14:18                                                                                    PAGE    4

    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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
    782.35    782.50      1.62       0.      250.     2.692     111.0    790.00        0.


3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       790.00 ELREA=       790.00

     3.000      2.39    782.39       .00       .00    782.50       .11      1.62       .00    784.00
     250.0        .0     250.0        .0        .0     93.2        .0       2.5       2.8    784.00
       .16       .00      2.68       .00      .000      .030      .000      .000    780.00    974.02
   .001231      200.      200.      200.         2         0         0       .00     47.94   1021.96


*SECNO 4.000
3280 CROSS SECTION       4.00 EXTENDED       2.59 FEET


3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  3.09

     4.000      2.59    782.59       .00       .00    782.59       .01       .06       .03    780.00
     250.0        .0     250.0        .0        .0     376.3        .0       3.6       3.5    784.00
       .24       .00       .66       .00      .000      .030      .000      .000    780.00    800.00
   .000129      200.      200.      200.         2         0         0       .00    290.99   1090.99


1
   11MAR92      12:14:18                                                                                    PAGE    5

T1       FLOOD CONTROL DISTRICT OF MARICOPA COUNTY - CONTRACT FCD 90-67
T2       GILA BEND AREA FLOODPLAIN DELINEATION STUDY BY BURGESS & NIPLE
T3       BENDER WASH - BEND3.RAT                    J. MISCHLER - (602) 244-8100

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                3                             -1                                    775.0

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

     2                   -1

1
   11MAR92      12:14:18                                                                                    PAGE    6

    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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


 *PROF 2
0

CCHV=      .300 CEHV=      .500
*SECNO 1.000
3280 CROSS SECTION       1.00 EXTENDED       .37 FEET

3720 CRITICAL DEPTH ASSUMED
     1.000      2.37    780.37    780.37    775.00    780.62       .25       .00       .00    780.00
     500.0       1.5     375.0     123.5       1.4      82.1      75.6        .0        .0    780.00
       .00      1.03      4.56      1.63      .035      .030      .035      .000    778.00    957.16
   .005604        0.        0.        0.         0        31         0       .00    272.84   1230.00


CCHV=      .300 CEHV=      .500
*SECNO 2.000

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  3.14

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       790.00 ELREA=       790.00

     2.000      1.95    781.25       .00       .00    781.28       .02       .59       .07    782.00
     500.0        .0     500.0        .0        .0     409.9        .0       2.9       3.4    784.00
       .10       .00      1.22       .00      .000      .030      .000      .000    779.30    741.14
   .000567      450.      450.      450.         5         0         0       .00    389.45   1130.59
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SPECIAL CULVERT

SC  CUNO      CUNV      ENTLC     COFQ      RDLEN     RISE      SPAN      CULVLN    CHRT      SCL       ELCHU     ELCHD
     3         .014      .40       3.00     100.00     3.70     10.00     200.00     8         1        780.30    780.00

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

*SECNO 3.000

SPECIAL CULVERT OUTLET CONTROL
EGIC =    783.599  EGOC =    783.781  PCWSE=    781.255  ELTRD=    790.000

SPECIAL CULVERT

     EGIC      EGOC       H4     QWEIR     QCULV      VCH     ACULV     ELTRD    WEIRLN
    783.60    783.78     2.50       0.      500.     3.163     111.0    790.00        0.


1
   11MAR92      12:14:18                                                                                          PAGE    7

     SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       790.00 ELREA=       790.00

     3.000      3.63    783.63       .00       .00    783.78       .16      2.50       .00    784.00
     500.0        .0     500.0        .0        .0    158.1        .0       4.2       4.4    784.00
       .12       .00      3.16       .00      .000      .030      .000      .000    780.00    970.93
   .001077      200.      200.      200.         2         0         0       .00     57.20   1028.13


*SECNO 4.000
3280 CROSS SECTION       4.00 EXTENDED       3.85 FEET

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  4.18

     4.000      3.85    783.85       .00       .00    783.86       .01       .03       .04    780.00
     500.0        .0     500.0        .0        .0    834.8        .0       6.5       5.6    784.00
       .21       .00       .60       .00      .000      .030      .000      .000    780.00    800.00
   .000062      200.      200.      200.         2         0         0       .00    433.40   1233.40


1
   11MAR92      12:14:18                                                                                          PAGE    8

T1       FLOOD CONTROL DISTRICT OF MARICOPA COUNTY - CONTRACT FCD 90-67
T2       GILA BEND AREA FLOODPLAIN DELINEATION STUDY BY BURGESS & NIPLE
T3       BENDER WASH - BEND3.RAT                    J. MISCHLER - (602) 244-8100

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                 4                           -1                                    775.0

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

     15                  -1

1
   11MAR92      12:14:18                                                                                          PAGE    9

     SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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


 *PROF 3
0

CCHV=      .300 CEHV=      .500
*SECNO 1.000
3280 CROSS SECTION       1.00 EXTENDED        .50 FEET

3720 CRITICAL DEPTH ASSUMED
     1.000      2.50    780.50    780.50    775.00    780.86       .36       .00       .00    780.00
     750.0       3.9     508.2     237.9       2.6      89.9     102.3        .0        .0    780.00
       .00      1.47      5.65      2.33      .035      .030      .035      .000    778.00    954.40
   .007609        0.        0.        0.         0        23         0       .00    275.60   1230.00


CCHV=      .300 CEHV=      .500
*SECNO 2.000

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  3.59

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       790.00 ELREA=       790.00

     2.000      2.28    781.58       .00       .00    781.61       .03       .65       .10    782.00
     750.0        .0     750.0        .0        .0    546.5        .0       3.8       3.7    784.00
       .09       .00      1.37       .00      .000      .030      .000      .000    779.30    701.32
   .000591      450.      450.      450.         5         0         0       .00    449.36   1150.69


SPECIAL CULVERT

SC  CUNO      CUNV      ENTLC     COFQ      RDLEN     RISE      SPAN      CULVLN    CHRT      SCL       ELCHU     ELCHD
     3         .014      .40       3.00     100.00     3.70     10.00     200.00     8         1        780.30    780.00

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

*SECNO 3.000
```

SPECIAL CULVERT OUTLET CONTROL
EGIC = 784.688 EGOC = 784.853 PCWSE= 781.583 ELTRD= 790.000

3280 CROSS SECTION 3.00 EXTENDED .67 FEET

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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	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
784.69	784.85	3.24	0.	750.	3.402	111.0	790.00	0.

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 790.00 ELREA= 790.00

3.000	4.67	784.67	.00	.00	784.85	.18	3.24	.00	784.00
750.0	.0	750.0	.0	.0	220.5	.0	5.6	4.9	784.00
.11	.00	3.40	.00	.000	.030	.000	.000	780.00	970.00
.000866	200.	200.	200.	2	0	0	.00	60.00	1030.00

*SECNO 4.000
3280 CROSS SECTION 4.00 EXTENDED 4.92 FEET

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 5.17

4.000	4.92	784.92	.00	.00	784.92	.01	.02	.05	780.00
750.0	.0	750.0	.0	.0	1313.5	.0	9.1	6.1	784.00
.20	.00	.57	.00	.000	.030	.000	.000	780.00	800.00
.000032	200.	200.	200.	2	0	0	.00	450.00	1250.00

1
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THIS RUN EXECUTED 11MAR92 12:14:20

****
HEC-2 WATER SURFACE PROFILES

Version 4.6.2; May 1991
****

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

BENDER WASH - BEND3.RAT

SUMMARY PRINTOUT

	SECNO	ELMIN	CWSEL	Q	VCH	DIFWSX	TOPWID	DEPTH	SSTA	ENDST	QLOB	QROB	ELTRD
*	1.000	778.00	779.76	250.00	5.39	.00	52.75	1.76	969.23	1021.98	.00	.00	.00
*	1.000	778.00	780.37	500.00	4.56	.00	272.84	2.37	957.16	1230.00	1.49	123.55	.00
*	1.000	778.00	780.50	750.00	5.65	.00	275.60	2.50	954.40	1230.00	3.88	237.92	.00
*	2.000	779.30	780.87	250.00	.91	1.12	318.76	1.57	788.11	1106.87	.00	.00	.00
*	2.000	779.30	781.25	500.00	1.22	.89	389.45	1.95	741.14	1130.59	.00	.00	.00
*	2.000	779.30	781.58	750.00	1.37	1.08	449.36	2.28	701.32	1150.69	.00	.00	.00
*	3.000	780.00	782.39	250.00	2.68	1.52	47.94	2.39	974.02	1021.96	.00	.00	790.00
	3.000	780.00	783.63	500.00	3.16	2.37	57.20	3.63	970.93	1028.13	.00	.00	790.00
	3.000	780.00	784.67	750.00	3.40	3.09	60.00	4.67	970.00	1030.00	.00	.00	790.00
*	4.000	780.00	782.59	250.00	.66	.20	290.99	2.59	800.00	1090.99	.00	.00	.00
*	4.000	780.00	783.85	500.00	.60	.23	433.40	3.85	800.00	1233.40	.00	.00	.00
*	4.000	780.00	784.92	750.00	.57	.25	450.00	4.92	800.00	1250.00	.00	.00	.00

1
11MAR92 12:14:18 PAGE 12

SUMMARY OF ERRORS AND SPECIAL NOTES

CAUTION SECNO= 1.000 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 1.000 PROFILE= 2 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 1.000 PROFILE= 3 CRITICAL DEPTH ASSUMED

WARNING SECNO= 2.000 PROFILE= 1 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO= 2.000 PROFILE= 2 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO= 2.000 PROFILE= 3 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO= 3.000 PROFILE= 1 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO= 4.000 PROFILE= 1 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO= 4.000 PROFILE= 2 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO= 4.000 PROFILE= 3 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

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1*****************************************
 *  HEC-2 WATER SURFACE PROFILES          *
 *                                        *
 *  Version   4.6.2;  May 1991            *
 *                                        *
 *  RUN DATE    11MAR92    TIME   10:32:48 *
 *****************************************

                                                                                  ***************************************
                                                                                  *  U.S. ARMY CORPS OF ENGINEERS       *
                                                                                  *  HYDROLOGIC ENGINEERING CENTER      *
                                                                                  *  609 SECOND STREET, SUITE D         *
                                                                                  *  DAVIS, CALIFORNIA 95616-4687       *
                                                                                  *        (916) 756-1104               *
                                                                                  ***************************************

                                        X     X  XXXXXXX   XXXXX              XXXXX
                                        X     X  X        X     X            X     X
                                        X     X  X        X                        X
                                        XXXXXXX  XXXX     X          XXXXX    XXXXX
                                        X     X  X        X                  X
                                        X     X  X        X     X            X
                                        X     X  XXXXXXX   XXXXX             XXXXXXX
1
   11MAR92       10:32:48                                                                                          PAGE    1


                                                                                  THIS RUN EXECUTED 11MAR92     10:32:48
 *************************************
  HEC-2 WATER SURFACE PROFILES

  Version   4.6.2;  May 1991
 *************************************


 T1       FLOOD CONTROL DISTRICT OF MARICOPA COUNTY - CONTRACT FCD 90-67
 T2       GILA BEND AREA FLOODPLAIN DELINEATION STUDY BY BURGESS & NIPLE
 T3       BENDER WASH - BEND4.RAT                    J. MISCHLER - (602) 244-8100

 J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                 2                           -1

 J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

       1                 -1

 J3  VARIABLE CODES FOR SUMMARY PRINTOUT

      38        42         1        43        26        51         4         8        53        54
      13        15        40

         INTERSTATE 8 CULVERT EAST OF BENDER WASH. THIS MODEL IS USED TO
         GENERATE A RATING CURVE FOR USE IN COMPUTING AN ELEVATION UPSTREAM
         OF INTERSTATE 8.


 NC    0.035     0.035     0.03      0.3       0.5
 QT        3       500       750      1000
 X1        1         5     965.0    1025.0
 GR    784.0     880.0     780.0     965.0     778.0    1000.0     780.0    1025.0     780.0    1230.0

 NC    0.035     0.035     0.03      0.3       0.5
 X1        2         6     970.0    1020.0     150.0     150.0     150.0
 X3       10                                                          790       790
 GR    784.0     800.0     784.0     970.0    781.75     980.0    781.75    1010.0     784.0    1020.0
 GR    786.0    1500.0

         WIER FLOW IS NOT ANTICIPATED, THEREFORE USE DUMMY RDLEN = 100 FT


 SC    3.014       0.4         3     100.0       3.7        10     200.0       8.1     783.2     782.0
 X1        3         6     970.0    1020.0     200.0     200.0     200.0
 X2                            2                 790
 X3       10                                                          790       790
 GR    784.0     650.0     784.0     970.0    782.75     980.0    782.75    1010.0     784.0    1020.0
 GR    788.0    1100.0
1
   11MAR92       10:32:48                                                                                          PAGE    2


 X1        4         2     650.0    1300.0       200       200       200
 GR    784.0     650.0     788.0    1300.0
1
   11MAR92       10:32:48                                                                                          PAGE    3

     SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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


 *PROF 1
0

 CCHV=     .300 CEHV=     .500
 *SECNO 1.000
 2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED
 3280 CROSS SECTION      1.00 EXTENDED       .36 FEET

 3720 CRITICAL DEPTH ASSUMED
      1.000      2.36    780.36    780.36       .00    780.62       .27       .00       .00    780.00
      500.0       1.4     379.2     119.4       1.3      81.3      72.9        .0        .0    780.00
        .00      1.03      4.66      1.64      .035      .030      .035      .000    778.00    957.44
    .005923        0.        0.        0.         0        25         0       .00    272.56   1230.00


 CCHV=     .300 CEHV=     .500
 *SECNO 2.000
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```
3301 HV CHANGED MORE THAN HVINS

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

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      790.00 ELREA=      790.00

     2.000      1.85    783.60    783.60       .00    784.38       .77      1.21       .25    784.00
     500.0        .0     500.0        .0        .0      70.9        .0        .4        .5    784.00
       .01       .00      7.05       .00      .000      .030      .000      .000    781.75    971.76
   .011671      150.      150.      150.        20        15         0       .00     46.48   1018.24


SPECIAL CULVERT

SC  CUNO      CUNV      ENTLC     COFQ     RDLEN     RISE     SPAN     CULVLN    CHRT      SCL      ELCHU    ELCHD
     3         .014       .40     3.00    100.00     3.70    10.00     200.00     8        1       783.20   782.00

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

*SECNO 3.000
1
   11MAR92      10:32:48                                                                                    PAGE    4

    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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 OUTLET CONTROL
EGIC =    786.491  EGOC =    786.687  PCWSE=    783.604  ELTRD=    790.000

3280 CROSS SECTION      3.00 EXTENDED      2.56 FEET

3301 HV CHANGED MORE THAN HVINS

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  4.44

SPECIAL CULVERT

     EGIC      EGOC        H4      QWEIR     QCULV       VCH     ACULV     ELTRD    WEIRLN
    786.49    786.69      2.31        0.      500.     2.805     111.0    790.00        0.


3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      790.00 ELREA=      790.00

     3.000      3.81    786.56       .00       .00    786.69       .12      2.31       .00    784.00
     500.0        .0     500.0        .0        .0     178.2        .0       1.0        .8    784.00
       .03       .00      2.81       .00      .000      .030      .000      .000    782.75    970.00
   .000591      200.      200.      200.         2         0         0       .00     50.00   1020.00


*SECNO 4.000
3280 CROSS SECTION      4.00 EXTENDED      2.76 FEET

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.84

     4.000      2.77    786.77       .00       .00    786.78       .01       .06       .03    784.00
     500.0        .0     500.0        .0        .0     618.5        .0      2.8       1.9    788.00
       .09       .00       .81       .00      .000      .030      .000      .000    784.00    650.00
   .000175      200.      200.      200.         2         0         0       .00    448.34   1098.34


1
   11MAR92      10:32:48                                                                                    PAGE    5

T1      FLOOD CONTROL DISTRICT OF MARICOPA COUNTY - CONTRACT FCD 90-67
T2      GILA BEND AREA FLOODPLAIN DELINEATION STUDY BY BURGESS & NIPLE
T3      BENDER WASH - BEND4.RAT                    J. MISCHLER - (602) 244-8100

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                3                             -1                                    775.0

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

     2                   -1

1
   11MAR92      10:32:48                                                                                    PAGE    6

    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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


*PROF 2
0
CCHV=     .300 CEHV=     .500
*SECNO 1.000
3280 CROSS SECTION      1.00 EXTENDED      .50 FEET

3720 CRITICAL DEPTH ASSUMED
     1.000      2.50    780.50    780.50    775.00    780.86       .36       .00       .00    780.00
     750.0       3.9     508.2     237.9       2.6      89.9     102.3        .0        .0    780.00
       .00      1.47      5.65      2.33      .035      .030      .035      .000    778.00    954.40
   .007609        0.        0.        0.         0        23         0       .00    275.60   1230.00


CCHV=     .300 CEHV=     .500
*SECNO 2.000
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3280 CROSS SECTION      2.00 EXTENDED       .10 FEET

3301 HV CHANGED MORE THAN HVINS

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

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       790.00 ELREA=       790.00

     2.000      2.35    784.10    784.10       .00    785.07       .97      1.36       .30    784.00
     750.0        .0     750.0       .0        .0      95.0        .0        .5        .6    784.00
       .01       .00      7.89       .00      .000      .030      .000      .000    781.75    970.00
   .010925      150.      150.      150.        20        11         0       .00     50.00   1020.00


SPECIAL CULVERT

SC  CUNO      CUNV      ENTLC     COFQ      RDLEN     RISE      SPAN      CULVLN    CHRT      SCL       ELCHU     ELCHD
     3         .014      .40      3.00     100.00     3.70     10.00     200.00     8         1        783.20    782.00

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

*SECNO 3.000
1
   11MAR92      10:32:48                                                                                          PAGE    7

    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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 OUTLET CONTROL
EGIC =    787.580  EGOC =    787.769  PCWSE=    784.101  ELTRD=    790.000

3280 CROSS SECTION      3.00 EXTENDED      3.60 FEET

3301 HV CHANGED MORE THAN HVINS

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  4.39

SPECIAL CULVERT

    EGIC      EGOC       H4      QWEIR     QCULV      VCH     ACULV     ELTRD    WEIRLN
   787.58    787.77     2.70       0.      750.     3.258     111.0    790.00       0.


3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       790.00 ELREA=       790.00

     3.000      4.85    787.60       .00       .00    787.77       .16      2.70       .00    784.00
     750.0        .0     750.0       .0        .0     230.2        .0       1.2        .8    784.00
       .02       .00      3.26       .00      .000      .030      .000      .000    782.75    970.00
   .000567      200.      200.      200.         2         0         0       .00     50.00   1020.00

*SECNO 4.000
3280 CROSS SECTION      4.00 EXTENDED      3.84 FEET

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  2.89

     4.000      3.84    787.84       .00       .00    787.85       .01       .03       .05    784.00
     750.0        .0     750.0       .0        .0    1195.7        .0       4.5       2.3    788.00
       .11       .00       .63       .00      .000      .030      .000      .000    784.00    650.00
   .000068      200.      200.      200.         2         0         0       .00    623.38   1273.38


1
   11MAR92      10:32:48                                                                                          PAGE    8

T1      FLOOD CONTROL DISTRICT OF MARICOPA COUNTY - CONTRACT FCD 90-67
T2      GILA BEND AREA FLOODPLAIN DELINEATION STUDY BY BURGESS & NIPLE
T3      BENDER WASH - BEND4.RAT                    J. MISCHLER - (602) 244-8100

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                4                            -1                                    775.0

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

     15                  -1

1
   11MAR92      10:32:48                                                                                          PAGE    9

    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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


*PROF 3
0

CCHV=      .300 CEHV=      .500
*SECNO 1.000
3280 CROSS SECTION      1.00 EXTENDED       .69 FEET

3720 CRITICAL DEPTH ASSUMED
     1.000      2.69    780.69    780.69    775.00    781.06       .37       .00       .00    780.00
    1000.0       8.8     599.1     392.1       5.0     101.2     140.8        .0        .0    780.00
       .00      1.76      5.92      2.79      .035      .030      .035      .000    778.00    950.40
   .007133        0.        0.        0.         0        21         0       .00    279.60   1230.00
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CCHV=     .300 CEHV=     .500
*SECNO 2.000
3280 CROSS SECTION      2.00 EXTENDED       .50 FEET

3301 HV CHANGED MORE THAN HVINS

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

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       790.00 ELREA=       790.00

     2.000      2.75    784.50    784.50       .00    785.67      1.17      1.27       .40    784.00
    1000.0        .0    1000.0       .0        .0     115.2        .0        .6        .6    784.00
       .00       .00      8.68       .00      .000      .030      .000      .000    781.75    970.00
   .010223      150.      150.      150.        20         8         0       .00     50.00   1020.00


SPECIAL CULVERT

SC  CUNO      CUNV      ENTLC     COFQ      RDLEN     RISE      SPAN      CULVLN    CHRT      SCL       ELCHU     ELCHD
     3         .014      .40      3.00     100.00     3.70     10.00     200.00     8         1        783.20    782.00

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

*SECNO 3.000
1
   11MAR92      10:32:48                                                                                          PAGE   10

    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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 INLET CONTROL
EGIC =    789.311  EGOC =    788.735  PCWSE=    784.504  ELTRD=    790.000

3280 CROSS SECTION      3.00 EXTENDED       5.15 FEET

3301 HV CHANGED MORE THAN HVINS

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  5.15

SPECIAL CULVERT

     EGIC      EGOC       H4      QWEIR     QCULV      VCH     ACULV     ELTRD    WEIRLN
    789.31    788.73     3.64       0.      1000.     3.254     111.0    790.00       0.


3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       790.00 ELREA=       790.00

     3.000      6.40    789.15       .00       .00    789.31       .16      3.64       .00    784.00
    1000.0        .0    1000.0       .0        .0     307.3        .0      1.6        .8    784.00
       .02       .00      3.25       .00      .000      .030      .000      .000    782.75    970.00
   .000385      200.      200.      200.         2         0         0       .00     50.00   1020.00

*SECNO 4.000
3280 CROSS SECTION      4.00 EXTENDED       5.36 FEET

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  4.74

     4.000      5.37    789.37       .00       .00    789.37       .00       .01       .05    784.00
    1000.0        .0    1000.0       .0        .0    2187.0        .0      7.3       2.4    788.00
       .14       .00       .46       .00      .000      .030      .000      .000    784.00    650.00
   .000017      200.      200.      200.         2         0         0       .00    650.00   1300.00

1
   11MAR92      10:32:48                                                                                          PAGE   11


                                                                                THIS RUN EXECUTED 11MAR92    10:32:51
*************************************
 HEC-2 WATER SURFACE PROFILES

 Version   4.6.2;  May 1991
*************************************

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

BENDER WASH - BEND4.RAT

SUMMARY PRINTOUT

      SECNO     ELMIN     CWSEL       Q        VCH     DIFWSX    TOPWID    DEPTH     SSTA      ENDST     QLOB      QROB      ELTRD

*     1.000    778.00    780.36    500.00      4.66       .00    272.56     2.36    957.44   1230.00     1.39    119.41       .00
*     1.000    778.00    780.50    750.00      5.65       .00    275.60     2.50    954.40   1230.00     3.88    237.92       .00
*     1.000    778.00    780.69   1000.00      5.92       .00    279.60     2.69    950.40   1230.00     8.81    392.13       .00

*     2.000    781.75    783.60    500.00      7.05      3.25     46.48     1.85    971.76   1018.24      .00       .00       .00
*     2.000    781.75    784.10    750.00      7.89      3.60     50.00     2.35    970.00   1020.00      .00       .00       .00
*     2.000    781.75    784.50   1000.00      8.68      3.82     50.00     2.75    970.00   1020.00      .00       .00       .00

*     3.000    782.75    786.56    500.00      2.81      2.96     50.00     3.81    970.00   1020.00      .00       .00    790.00
*     3.000    782.75    787.60    750.00      3.26      3.50     50.00     4.85    970.00   1020.00      .00       .00    790.00
*     3.000    782.75    789.15   1000.00      3.25      4.64     50.00     6.40    970.00   1020.00      .00       .00    790.00

*     4.000    784.00    786.77    500.00       .81       .20    448.34     2.77    650.00   1098.34      .00       .00       .00
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*	4.000	784.00	787.84	750.00	.63	.24	623.38	3.84	650.00	1273.38	.00	.00	.00
*	4.000	784.00	789.37	1000.00	.46	.22	650.00	5.37	650.00	1300.00	.00	.00	.00

SUMMARY OF ERRORS AND SPECIAL NOTES

```
CAUTION SECNO=      1.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      1.000  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      1.000  PROFILE=  3  CRITICAL DEPTH ASSUMED

CAUTION SECNO=      2.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      2.000  PROFILE=  1  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      2.000  PROFILE=  1  20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO=      2.000  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      2.000  PROFILE=  2  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      2.000  PROFILE=  2  20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO=      2.000  PROFILE=  3  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      2.000  PROFILE=  3  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      2.000  PROFILE=  3  20 TRIALS ATTEMPTED TO BALANCE WSEL

WARNING SECNO=      3.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=      3.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=      3.000  PROFILE=  3  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=      4.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=      4.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=      4.000  PROFILE=  3  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
```

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1*****************************************
 *  HEC-2 WATER SURFACE PROFILES          *
 *                                        *
 *  Version   4.6.2;  May 1991            *
 *                                        *
 *  RUN DATE    11MAR92    TIME   10:34:13 *
 *****************************************
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*************************************
*  U.S. ARMY CORPS OF ENGINEERS     *
*  HYDROLOGIC ENGINEERING CENTER    *
*  609 SECOND STREET, SUITE D       *
*  DAVIS, CALIFORNIA 95616-4687     *
*        (916) 756-1104             *
*************************************
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X     X  XXXXXXX   XXXXX              XXXXX
X     X  X        X     X            X     X
X     X  X        X                  X     X
XXXXXXX  XXXX     X          XXXXX    XXXXX
X     X  X        X                  X
X     X  X        X     X            X
X     X  XXXXXXX   XXXXX              XXXXXXX
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1

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THIS RUN EXECUTED 11MAR92 10:34:13

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*************************************
 HEC-2 WATER SURFACE PROFILES

 Version   4.6.2;  May 1991
*************************************
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T1 FLOOD CONTROL DISTRICT OF MARICOPA COUNTY - CONTRACT FCD 90-67
T2 GILA BEND AREA FLOODPLAIN DELINEATION STUDY BY BURGESS & NIPLE
T3 BENDER WASH PIMA CULVERT J. MISCHLER - (602) 244-8100

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
		2			0.0031				747	

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

J3 VARIABLE CODES FOR SUMMARY PRINTOUT

38	42	1	43	26	51	4	8	53	54
13	15	40							

SECTIONS ARE LABELED AS RIVER MILES * 1000, i.e., SECTION 037 IS AT A POINT 0.037 MILES UPSTREAM OF THE CONFLUENCE WITH SAND TANK WASH.

J1.5 STRT = (710CONTOUR - 708.5SPOT EL)/490 FT = 0.0031 FT/FT

THE MODEL STARTS WITH SAND TANK WASH SECTIONS 3087 AND 3180 IN ORDER TO OBTAIN A STARTING BACKWATER BY THE TIME THE MODEL ENTERS BENDER WASH. THE CONFLUENCE OCCURS AT SAND TANK WASH RM 3.184 (BENDER WASH RM 0.000).

SAND TANK WASH:

QT	4	1000	2000	3000	4000					
NC				0.1	0.3					
NH	5	0.04	9956.5	0.06	9956.0	0.03	10041.3	0.06	10051.8	0.04
NH	10158									
X1	3087	29	9966.0	10041.3	255.0	225.0	253.0			
GR	719.6	9709.9	719.2	9748.7	718.6	9789.5	718.1	9808.6	718.3	9825.9
GR	717.5	9853.8	716.1	9883.6	715.8	9889.2	714.4	9897.4	715.2	9910.4
GR	715.6	9920.5	714.3	9927.8	715.3	9940.5	716.0	9956.5	716.0	9966.0
GR	711.7	9975.5	709.6	9984.3	709.0	10000.0	709.9	10015.7	710.3	10028.3
GR	713.6	10041.3	713.8	10051.8	712.8	10063.3	714.1	10083.7	715.5	10105.1
GR	715.6	10112.2	718.3	10126.1	718.8	10140.8	719.1	10158		

1

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NH	4	0.04	9907.2	0.06	9956.8	0.03	10030.0	0.06	10064.3	
X1	3180	25	9956.8	10030.0	435.0	505.0	491.0			
GR	720.4	9593.6	719.3	9612.2	717.4	9629.2	717.4	9641.2	717.4	9651.1
GR	717.6	9674.7	717.9	9695.8	718.1	9718.9	718.7	9747.1	718.2	9765.6
GR	718.8	9795.2	718.6	9806.3	718.7	9841.0	718.2	9875.6	718.8	9907.2
GR	718.6	9938.3	717.8	9956.8	713.4	9973.5	712.2	9987.4	711.2	10000.0
GR	711.0	10010.7	712.6	10019.1	716.8	10030.0	719.7	10043.5	720.5	10064.3

BENDER WASH ENTERS SAND TANK WASH AT RM 3.184

NC	0.035	0.035	0.03	0.1	0.3					
X1	037	16	9970.4	10021.1	228.0	220.0	220.0			
GR	720.6	9911.0	719.8	9929.8	719.7	9945.9	718.5	9956.9	718.6	9970.4
GR	716.9	9978.3	713.3	9992.0	712.6	9996.2	712.5	10000.0	712.9	10007.3
GR	714.4	10011.8	719.3	10021.1	720.3	10037.9	721.3	10053.7	722.3	10067.1
GR	722.8	10074.8								
X1	129	13	9971.4	10023.9	445.0	510.0	486.0			
GR	723.9	9950.3	722.6	9971.4	717.4	9985.4	716.7	9989.6	715.7	9994.2
GR	715.2	10000.0	715.8	10007.0	718.6	10014.7	721.4	10023.9	721.4	10042.6
GR	720.6	10062.3	721.8	10078.5	722.7	10098.1				
X1	224	20	9971.9	10018.9	500.0	490.0	502.0			
GR	727.5	9845.5	727.2	9873.9	725.2	9893.6	723.8	9905.7	722.9	9914.4
GR	723.6	9926.2	723.5	9963.6	722.9	9971.9	721.1	9981.8	718.8	9990.5
GR	717.5	9995.2	717.1	10000.0	718.6	10007.9	721.6	10018.9	722.2	10029.9
GR	721.8	10041.8	723.4	10053.6	725.7	10064.4	726.9	10074.8	727.1	10078.2
X1	320	19	9933.4	10032.9	530.0	503.0	507.0			
GR	728.9	9837.5	728.7	9860.0	728.4	9877.0	726.9	9889.1	726.5	9903.5
GR	727.6	9920.2	727.2	9933.4	725.5	9942.8	723.4	9954.7	722.4	9970.6
GR	722.3	9976.2	722.6	9985.4	720.7	9992.6	720.6	10000.0	721.0	10009.5

```
GR    723.4    10019.1      727.5    10032.9       730.2     10047.7       730.4     10048.8

        BENDER WASH CROSSES PAPAGO ST AT RM 0.360 (LOW CROSSING - NO STRUCTURE)

NH        4      0.035     9931.7       0.06      9960.1       0.035     10045.6       0.06     10109.2
X1      415         20     9960.1    10045.6       505.0       500.0       502.0
GR    733.6     9906.5      732.8     9919.9       730.9      9931.7       730.4     9948.4       730.3      9960.1
GR    727.7     9968.3      724.1     9979.0       723.1      9986.3       722.8     9994.6       723.4     10000.0
GR    723.9    10009.7      724.8    10016.8       725.6     10029.1       727.8    10037.6       730.3     10045.6
GR    730.3    10058.1      730.1    10073.5       729.9     10089.5       730.5    10097.6       732.6     10109.2

        BENDER WASH IS CONVEYED BENEATH PIMA STREET (U.S. ROUTE 80) THROUGH A
        BOX CULVERT THAT HAS BEEN WIDENED IN THE PAST.  THE NEWER PORTION
        TO THE NORTH (DOWNSTREAM) WAS CONSTRUCTED WITH A MATCHING CROWN BUT A
        LOWER INVERT, APPARENTLY IN RESPONSE TO SCOUR EXPERIENCED DOWNSTREAM OF
        THE ORIGINAL CULVERT.  A MINOR SCOUR HOLE IS NOTED DOWNSTREAM OF THE
        NEWER, LOWER INVERT.

        SPECIAL CULVERT IS USED TO MODEL THE CULVERT.  THE DOWNSTREAM CHANNEL
1
   11MAR92      10:34:13                                                                          PAGE    3

        SECTION IS BASED ON ACTUAL ELEVATIONS AT THE OUTLET, BUT ELCHD ON SC.10
        IS BASED ON THE HIGHER INVERT INSIDE THE CULVERT SO AS TO NOT CAUSE
        THE MODEL TO USE A CULVERT SLOPE THAT IS TOO HIGH.  THIS RESULTS IN WHAT
        APPEARS TO BE A STEP AT THE DOWNSTREAM END, ALTHOUGH THE STEP ACTUALLY
        OCCURS WITHIN THE CULVERT.

        INCREASE EXPANSION/CONTRACTION COEFFICIENTS FOR THE STRUCTURE.

        SECTION 441 IS BASED ON SURVEY DATA (CHANNEL) AND TOPO
        MAP DATA (OVERBANKS).

NC     0.06       0.06      0.035       0.3       0.5
X1      441          7       9967     10033       135       145       137
X3       10                                                                   750       750
GR    734.1       9650        734      9950     725.4      9967       724    10000     725.4     10033
GR      734      10050      734.8     10350

        FOR RATING CURVE AT CULVERT, SET WEIR VERY HIGH.

SC    6.014        0.4         3       100         6        10      77.4       8.1     727.4     727.4
X1      457          8       9967     10033        87        87        87
X2                                       2       750
X3       10                                                                   750       750
GR    733.2       9600       732      9960     727.4      9967     727.4     10033       734     10040
GR    734.5      10220     734.9     10350       735     10450

        KEEP EXPANSION/CONTRACTION COEFFICIENTS HIGH THROUGH AREA OF FREQUENT
        STRUCTURES.

NH        5       0.06    9911.8     0.035    9947.0      0.06    9981.0     0.035   10021.7      0.06
NH    10052
X1      508         14    9981.0   10021.7       285       238       269
GR    732.7     9871.0     732.3     9890.2     731.0    9911.8     730.5    9930.1     730.8    9947.0
GR    730.3     9963.6     729.9     9981.0     728.1    9989.2     727.4    9996.4     727.2   10000.0
GR    728.8    10011.7     730.5    10021.7     733.1   10032.0     734.3     10052
1
   11MAR92      10:34:13                                                                          PAGE    4

     SECNO      DEPTH      CWSEL      CRIWS      WSELK       EG        HV        HL      OLOSS   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

*PROF 1

CCHV=      .100 CEHV=      .300
1490 NH CARD USED
*SECNO 3087.000

3265 DIVIDED FLOW

  3087.000      3.96    712.96       .00    747.00    713.41       .46       .00       .00    716.00
    1000.0        .0     999.9        .1        .0     184.6        .3        .0        .0    713.60
       .00       .00      5.42       .38      .000      .030      .040      .000    709.00   9972.72
   .003094      255.      253.      225.         0         0        11       .00     70.39  10065.80

1490 NH CARD USED
*SECNO 3180.000
  3180.000      3.81    714.81       .00       .00    715.57       .77      2.07       .09    717.80
    1000.0        .0    1000.0        .0        .0     142.0        .0       1.8        .7    716.80
       .02       .00      7.04       .00      .000      .030      .000      .000    711.00   9968.16
   .006050      435.      491.      505.         2         0         0       .00     56.67  10024.83

CCHV=      .100 CEHV=      .300
*SECNO 37.000

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
    37.000      4.30    716.80    716.80       .00    718.20      1.41      1.67       .19    718.60
    1000.0        .0    1000.0        .0        .0     105.1        .0       2.5       1.0    719.30
       .03       .00      9.52       .00      .000      .030      .000      .000    712.50   9978.69
   .009851      228.      220.      220.        20         8         0       .00     37.66  10016.35

*SECNO 129.000

3301 HV CHANGED MORE THAN HVINS

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.52
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```
 SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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

129.000     5.33    720.53      .00       .00    721.28       .75      3.01       .07    722.60
 1000.0      .0    1000.0      .0        .0      144.0        .0       3.9       1.4    721.40
    .05      .00     6.94      .00      .000      .030      .000      .000    715.20   9976.98
.004242    445.     486.      510.        3         0         0       .00     44.05  10021.03

*SECNO 224.000
224.000     5.59    722.69      .00       .00    723.35       .66      2.07       .01    722.90
 1000.0      .0     958.5     41.5        .0      144.6      19.8       5.6       2.1    721.60
    .07      .00     6.63     2.10      .000      .030      .035      .000    717.10   9973.07
.004002    500.     502.      490.        2         0         0       .00     75.28  10048.35

*SECNO 320.000
320.000     4.21    724.81      .00       .00    725.23       .42      1.85       .02    727.20
 1000.0      .0    1000.0      .0        .0      191.5        .0       7.7       3.0    727.50
    .09      .00     5.22      .00      .000      .030      .000      .000    720.60   9946.71
.003356    530.     507.      503.        0         0         0       .00     77.14  10023.85

1490 NH CARD USED
*SECNO 415.000
415.000     4.11    726.91      .00       .00    727.50       .59      2.22       .05    730.30
 1000.0      .0    1000.0      .0        .0      162.7        .0       9.7       3.8    730.30
    .12      .00     6.15      .00      .000      .035      .000      .000    722.80   9970.65
.006089    505.     502.      500.        2         0         0       .00     63.52  10034.16

CCHV=     .300 CEHV=     .500
*SECNO 441.000

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.41

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       750.00 ELREA=       750.00

441.000     3.75    727.75      .00       .00    728.14       .38       .58       .06    725.40
 1000.0      .0    1000.0      .0        .0      201.6        .0      10.3       4.0    725.40
    .12      .00     4.96      .00      .000      .035      .000      .000    724.00   9967.00
.003083    135.     137.      145.        2         0         0       .00     66.00  10033.00
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 SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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

SC  CUNO      CUNV      ENTLC     COFQ      RDLEN     RISE      SPAN      CULVLN    CHRT      SCL       ELCHU     ELCHD
     6         .014      .40      3.00     100.00     6.00     10.00     77.40      8         1       727.40    727.40

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

*SECNO 457.000

SPECIAL CULVERT OUTLET CONTROL
EGIC =    730.653  EGOC =    730.898  PCWSE=    727.754  ELTRD=    750.000

SPECIAL CULVERT

    EGIC      EGOC       H4     QWEIR     QCULV      VCH     ACULV     ELTRD    WEIRLN
  730.65    730.90     2.76       0.      1000.     4.819     360.0    750.00        0.


3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       750.00 ELREA=       750.00

457.000     3.14    730.64      .00       .00    730.90       .36      2.76       .00    727.40
 1000.0      .0    1000.0      .0        .0      207.5        .0      10.7       4.1    727.40
    .13      .00     4.82      .00      .000      .035      .000      .000    727.40   9967.00
.002797     87.      87.       87.        2         0         0       .00     66.00  10033.00

1490 NH CARD USED
*SECNO 508.000

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =   .68

508.000     4.29    731.49      .00       .00    732.10       .62      1.08       .13    729.90
 1000.0    167.1    830.6      2.3      69.4      121.6       1.9      12.0       4.7    730.50
    .14     2.41     6.83     1.19      .048      .035      .060      .000    727.20   9903.69
.006115    285.     269.      235.        2         0         0       .00    121.92  10025.61
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T1      FLOOD CONTROL DISTRICT OF MARICOPA COUNTY - CONTRACT FCD 90-67
T2      GILA BEND AREA FLOODPLAIN DELINEATION STUDY BY BURGESS & NIPLE
T3      BENDER WASH                          J. MISCHLER - (602) 244-8100

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

              3                             0.0031                                  747

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE
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     2                    -1

1
   11MAR92       10:34:13                                                                                                                PAGE    8

     SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      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

 *PROF 2

 CCHV=      .100 CEHV=      .300
 1490 NH CARD USED
 *SECNO 3087.000

 3265 DIVIDED FLOW

   3087.000      5.38     714.38       .00     747.00     715.07       .69       .00       .00     716.00
     2000.0        .0     1927.8      72.2         .1      283.4      39.1        .0        .0     713.60
       .00        .02       6.80      1.84       .040       .030      .042      .000    709.00    9927.35
   .003089       255.       253.      225.          0          0        10       .00    119.87   10087.98

 1490 NH CARD USED
 *SECNO 3180.000

 3301 HV CHANGED MORE THAN HVINS

 3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =   .69

   3180.000      5.12     716.12       .00        .00     717.38      1.26      2.14       .17     717.80
     2000.0        .0     2000.0        .0         .0      222.4        .0       3.1       1.0     716.80
       .02        .00       8.99       .00       .000       .030      .000      .000    711.00    9963.15
   .006569       435.       491.      505.          2          0         0       .00     65.10   10028.25

 CCHV=      .100 CEHV=      .300
 *SECNO 37.000

 3301 HV CHANGED MORE THAN HVINS

 3685 20 TRIALS ATTEMPTED WSEL,CWSEL
 3693 PROBABLE MINIMUM SPECIFIC ENERGY
 3720 CRITICAL DEPTH ASSUMED
     37.000      6.16     718.66     718.66       .00     720.44      1.78      1.63       .16     718.60
     2000.0       1.5     1998.5        .0        1.7      186.7        .0       4.1       1.4     719.30
       .02        .90      10.71       .00       .035       .030      .000      .000    712.50    9955.39
   .008393       228.       220.      220.         20         11         0       .00     64.50   10019.89

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   11MAR92       10:34:13                                                                                                                PAGE    9

     SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      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 129.000

 3301 HV CHANGED MORE THAN HVINS

 3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.48

    129.000      7.05     722.25       .00        .00     723.19       .94      2.66       .08     722.60
     2000.0        .0     1837.7     162.3         .0      227.9      60.0       6.8       2.4     721.40
       .04        .00       8.07      2.70       .000       .030      .035      .000    715.20    9972.33
   .003846       445.       486.      510.          2          0         0       .00    116.07   10088.40

 *SECNO 224.000
    224.000      7.10     724.20       .00        .00     724.94       .74      1.73       .02     722.90
     2000.0     105.6     1621.4     273.0       52.2      215.7      72.0      10.4       3.9     721.60
       .06      2.02       7.52      3.79       .035       .030      .035      .000    717.10    9902.21
   .003120       500.       502.      490.          2          0         0       .00    155.16   10057.37

 *SECNO 320.000
    320.000      5.39     725.99       .00        .00     726.74       .74      1.80       .00     727.20
     2000.0        .0     2000.0        .0         .0      288.8        .0      14.1       5.4     727.50
       .08        .00       6.92       .00       .000       .030      .000      .000    720.60    9940.09
   .004062       530.       507.      503.          1          0         0       .00     87.73   10027.82

 1490 NH CARD USED
 *SECNO 415.000
    415.000      5.55     728.35       .00        .00     729.26       .91      2.47       .05     730.30
     2000.0        .0     2000.0        .0         .0      261.2        .0      17.2       6.3     730.30
       .10        .00       7.66       .00       .000       .035      .000      .000    722.80    9966.25
   .006095       505.       502.      500.          2          0         0       .00     73.11   10039.36

 CCHV=      .300 CEHV=      .500
 *SECNO 441.000

 3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       750.00 ELREA=       750.00

    441.000      5.23     729.23       .00        .00     729.93       .69       .60       .07     725.40
     2000.0        .0     2000.0        .0         .0      299.3        .0      18.1       6.5     725.40
       .10        .00       6.68       .00       .000       .035      .000      .000    724.00    9967.00
   .003304       135.       137.      145.          2          0         0       .00     66.00   10033.00

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   11MAR92       10:34:13                                                                                                                PAGE   10

     SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      L-BANK ELEV
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     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

SC  CUNO       CUNV       ENTLC      COFQ       RDLEN      RISE       SPAN       CULVLN     CHRT       SCL        ELCHU      ELCHD
     6          .014       .40       3.00      100.00      6.00      10.00      77.40      8          1         727.40     727.40

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

*SECNO 457.000

SPECIAL CULVERT OUTLET CONTROL
EGIC =    732.637  EGOC =    732.911  PCWSE=    729.233  ELTRD=    750.000

SPECIAL CULVERT

     EGIC       EGOC        H4       QWEIR      QCULV       VCH       ACULV      ELTRD     WEIRLN
    732.64     732.91      2.98        0.       2000.      6.156      360.0     750.00       0.


3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       750.00 ELREA=       750.00

   457.000       4.92     732.32        .00        .00     732.91        .59       2.98        .00     727.40
    2000.0         .0     2000.0         .0         .0      324.9         .0       18.7       6.7     727.40
       .11        .00       6.16        .00       .000       .035       .000       .000     727.40    9967.00
   .002510        87.        87.        87.          3          0          0        .00      66.00   10033.00


1490 NH CARD USED
*SECNO 508.000
3280 CROSS SECTION    508.00 EXTENDED       .53 FEET

   508.000       6.03     733.23        .00        .00     733.69        .46        .74        .04     729.90
    2000.0      732.6     1242.6       24.8      236.6      192.7       14.9       21.1        7.4     730.50
       .12       3.10       6.45       1.66       .047       .035       .060       .000     727.20    9871.00
   .002950       285.       269.       235.          2          0          0        .00     163.24   10034.24


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   11MAR92      10:34:13                                                                                    PAGE   11

T1      FLOOD CONTROL DISTRICT OF MARICOPA COUNTY - CONTRACT FCD 90-67
T2      GILA BEND AREA FLOODPLAIN DELINEATION STUDY BY BURGESS & NIPLE
T3      BENDER WASH                                J. MISCHLER - (602) 244-8100

J1  ICHECK     INQ        NINV       IDIR       STRT       METRIC     HVINS      Q          WSEL       FQ

                4                                0.0031                                      747

J2  NPROF      IPLOT      PRFVS      XSECV      XSECH      FN         ALLDC      IBW        CHNIM      ITRACE

     3                     -1

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   11MAR92      10:34:13                                                                                    PAGE   12

     SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      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


*PROF 3

CCHV=     .100 CEHV=     .300
1490 NH CARD USED
*SECNO 3087.000

3265 DIVIDED FLOW

  3087.000       6.36     715.36        .00     747.00     716.20        .84        .00        .00     716.00
    3000.0       27.4     2720.4      252.1       20.5      354.6       92.0         .0         .0     713.60
       .00       1.34       7.67       2.74       .040       .030       .043       .000     709.00    9891.79
   .003043       255.       253.       225.          0          0          9        .00     178.02   10102.92


1490 NH CARD USED
*SECNO 3180.000

3301 HV CHANGED MORE THAN HVINS


3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =    .62

  3180.000       5.94     716.94        .00        .00     718.75       1.81       2.27        .29     717.80
    3000.0         .0     3000.0         .0         .0      277.5         .0        4.2        1.4     716.80
       .01        .00      10.81        .02       .000       .030       .060       .000     711.00    9960.06
   .007796       435.       491.       505.          2          0          0        .00      70.60   10030.66


CCHV=     .100 CEHV=     .300
*SECNO 37.000
3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
    37.000       7.68     720.18     720.18        .00     721.90       1.72       1.44        .01     718.60
    3000.0      150.2     2837.9       11.9       42.4      263.0        6.5        5.7        1.9     719.30
       .02       3.54      10.79       1.83       .035       .030       .035       .000     712.50    9920.90
   .005586       228.       220.       220.         20         11          0        .00     114.96   10035.86


*SECNO 129.000
3280 CROSS SECTION    129.00 EXTENDED       .41 FEET

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   11MAR92      10:34:13                                                                                    PAGE   13
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   SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      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


3301 HV CHANGED MORE THAN HVINS

  129.000       7.91     723.11        .00        .00     724.26       1.15       2.30        .06     722.60
   3000.0        2.4     2517.7      479.9        2.2      272.9      121.7        9.7        3.2     721.40
      .03       1.09       9.23       3.94       .035       .030       .035       .000     715.20    9963.04
 .004057       445.       486.       510.          2          0          0        .00     135.06   10098.10


*SECNO 224.000
  224.000       8.08     725.18        .00        .00     725.96        .78       1.66        .04     722.90
   3000.0      392.2     2105.3      502.5      124.3      261.6      111.8       14.8        5.0     721.60
      .06       3.16       8.05       4.50       .035       .030       .035       .000     717.10    9893.78
 .002767       500.       502.       490.          2          0          0        .00     168.18   10061.96


*SECNO 320.000

3265 DIVIDED FLOW

  320.000       6.19     726.79        .00        .00     727.86       1.07       1.81        .09     727.20
   3000.0        1.8     2998.2         .0        2.2      361.9         .0       19.8        6.6     727.50
      .07        .81       8.28        .00       .035       .030       .000       .000     720.60    9893.03
 .004782       530.       507.       503.          2          0          0        .00     109.73   10030.51


1490 NH CARD USED
*SECNO 415.000
  415.000       6.63     729.43        .00        .00     730.61       1.18       2.72        .03     730.30
   3000.0         .0     3000.0         .0         .0      344.0         .0       23.9        7.7     730.30
      .09        .00       8.72        .00       .000       .035       .000       .000     722.80    9962.83
 .006192       505.       502.       500.          2          0          0        .00      79.99   10042.83


CCHV=      .300 CEHV=      .500
*SECNO 441.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       750.00 ELREA=       750.00

  441.000       6.27     730.27        .00        .00     731.30       1.03        .65        .04     725.40
   3000.0         .0     3000.0         .0         .0      367.7         .0       25.0        7.9     725.40
      .09        .00       8.16        .00       .000       .035       .000       .000     724.00    9967.00
 .003744       135.       137.       145.          2          0          0        .00      66.00   10033.00
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   SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      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

SC  CUNO      CUNV       ENTLC      COFQ       RDLEN      RISE       SPAN       CULVLN     CHRT       SCL        ELCHU      ELCHD
     6         .014        .40       3.00      100.00       6.00      10.00      77.40      8          1         727.40     727.40

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

*SECNO 457.000

SPECIAL CULVERT OUTLET CONTROL
EGIC =    734.330  EGOC =    734.601  PCWSE=    730.270  ELTRD=    750.000

3280 CROSS SECTION    457.00 EXTENDED       .62 FEET

SPECIAL CULVERT

     EGIC       EGOC        H4       QWEIR      QCULV       VCH       ACULV      ELTRD     WEIRLN
   734.33     734.60      3.30         0.       3000.      7.075      360.0     750.00        0.


3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       750.00 ELREA=       750.00

  457.000       6.42     733.82        .00        .00     734.60        .78       3.30        .00     727.40
   3000.0         .0     3000.0         .0         .0      424.0         .0       25.8        8.1     727.40
      .10        .00       7.08        .00       .000       .035       .000       .000     727.40    9967.00
 .002325        87.        87.        87.          3          0          0        .00      66.00   10033.00


1490 NH CARD USED
*SECNO 508.000
3280 CROSS SECTION    508.00 EXTENDED      2.20 FEET

  508.000       7.70     734.90        .00        .00     735.26        .36        .54        .12     729.90
   3000.0     1347.4     1557.5       95.1      420.3      260.6       56.1       29.5        8.8     730.50
      .11       3.21       5.98       1.70       .048       .035       .060       .000     727.20    9871.00
 .001693       285.       269.       235.          2          0          0        .00     181.00   10052.00
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T1      FLOOD CONTROL DISTRICT OF MARICOPA COUNTY - CONTRACT FCD 90-67
T2      GILA BEND AREA FLOODPLAIN DELINEATION STUDY BY BURGESS & NIPLE
T3      BENDER WASH                                J. MISCHLER - (602) 244-8100

J1  ICHECK     INQ        NINV       IDIR       STRT       METRIC     HVINS      Q          WSEL       FQ

                5                                0.0031                                      747

J2  NPROF      IPLOT      PRFVS      XSECV      XSECH      FN         ALLDC      IBW        CHNIM      ITRACE
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SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      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

*PROF 4

CCHV=      .100 CEHV=      .300
1490 NH CARD USED
*SECNO 3087.000
 3087.000      7.06     716.06       .00     747.00     717.01       .95       .00       .00     716.00
   4000.0     129.7     3402.9     467.4      62.8      407.1     140.9        .0        .0     713.60
      .00      2.07       8.36      3.32      .040       .030      .043      .000    709.00    9884.34
 .003088      255.       253.      225.         0          0         9       .00    230.23   10114.57

1490 NH CARD USED
*SECNO 3180.000

3265 DIVIDED FLOW

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
 3180.000      7.20     718.20     718.20       .00     719.89      1.69      1.97       .22     717.80
   4000.0     101.8     3891.7       6.5      53.0      368.2       4.6       5.8       2.3     716.80
      .01      1.92      10.57      1.42      .040       .030      .060      .000    711.00    9622.05
 .005437      435.       491.      505.         2          5         0       .00    190.45   10036.51

CCHV=      .100 CEHV=      .300
*SECNO 37.000
3280 CROSS SECTION     37.00 EXTENDED       .54 FEET

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
   37.000      8.64     721.14     721.14       .00     722.86      1.72      1.12       .01     718.60
   4000.0     429.2     3481.5      89.3      97.4      311.8      28.1       8.0       3.1     719.30
      .02      4.40      11.17      3.18      .035       .030      .035      .000    712.50    9911.00
 .004771      228.       220.      220.        20          8         0       .00    140.17   10051.17

*SECNO 129.000
3280 CROSS SECTION    129.00 EXTENDED      1.03 FEET
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SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      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

  129.000      8.53     723.73       .00       .00     725.12      1.39      2.22       .03     722.60
   4000.0      19.9     3153.3     826.7      10.4      305.2     167.5      13.1       4.7     721.40
      .03      1.92      10.33      4.94      .035       .030      .035      .000    715.20    9953.04
 .004380      445.       486.      510.         3          0         0       .00    145.06   10098.10

*SECNO 224.000

3301 HV CHANGED MORE THAN HVINS

  224.000      8.90     726.00       .00       .00     726.80       .81      1.63       .06     722.90
   4000.0     736.9     2526.9     736.2     191.7      300.2     148.9      19.5       6.6     721.60
      .05      3.84       8.42      4.94      .035       .030      .035      .000    717.10    9885.71
 .002519      500.       502.      490.         1          0         0       .00    181.29   10067.01

*SECNO 320.000

3265 DIVIDED FLOW

3301 HV CHANGED MORE THAN HVINS

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =   .69

  320.000      6.81     727.41       .00       .00     728.76      1.35      1.79       .16     727.20
   4000.0      38.9     3961.1        .0      18.5      422.7        .0      25.9       8.4     727.50
      .07      2.10       9.37       .00      .035       .030      .000      .000    720.60    9884.94
 .005285      530.       507.      503.         2          0         0       .00    138.77   10032.62

1490 NH CARD USED
*SECNO 415.000

3265 DIVIDED FLOW

  415.000      7.47     730.27       .00       .00     731.71      1.44      2.93       .03     730.30
   4000.0        .0     3995.0       5.0        .0      414.2       6.8      30.9       9.9     730.30
      .08       .00       9.64       .74      .000       .035      .060      .000    722.80    9960.16
 .006466      505.       502.      500.         2          0         0       .00    120.55   10094.66
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SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      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
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    SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID    ENDST

CCHV=     .300 CEHV=     .500
*SECNO 441.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       750.00 ELREA=       750.00

   441.000      7.01    731.01       .00       .00    732.44      1.43       .72       .00    725.40
    4000.0        .0    4000.0        .0        .0     416.4        .0      32.2      10.2    725.40
       .09       .00      9.61       .00      .000      .035      .000      .000    724.00   9967.00
   .004397      135.      137.      145.         2         0         0       .00     66.00  10033.00


SPECIAL CULVERT

SC  CUNO      CUNV      ENTLC     COFQ      RDLEN     RISE      SPAN      CULVLN    CHRT      SCL       ELCHU     ELCHD
     6          .014       .40     3.00     100.00     6.00     10.00     77.40     8         1         727.40    727.40

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

*SECNO 457.000

SPECIAL CULVERT INLET CONTROL
EGIC =    737.013  EGOC =    734.304  PCWSE=    731.008  ELTRD=    750.000

3280 CROSS SECTION    457.00 EXTENDED      3.10 FEET


3301 HV CHANGED MORE THAN HVINS


3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.78

SPECIAL CULVERT

     EGIC      EGOC       H4      QWEIR     QCULV      VCH      ACULV     ELTRD     WEIRLN
    737.01    734.30     4.57       0.      4000.     6.810     360.0    750.00       0.


3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       750.00 ELREA=       750.00

   457.000      8.89    736.29       .00       .00    737.01       .72      4.57       .00    727.40
    4000.0        .0    4000.0        .0        .0     587.4        .0      33.2      10.4    727.40
       .09       .00      6.81       .00      .000      .035      .000      .000    727.40   9967.00
   .001395       87.       87.       87.         2         0         0       .00     66.00  10033.00


1
   11MAR92      10:34:13                                                                                    PAGE   19

    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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


1490 NH CARD USED
*SECNO 508.000
3280 CROSS SECTION    508.00 EXTENDED      4.49 FEET

   508.000      9.99    737.19       .00       .00    737.44       .25       .28       .14    729.90
    4000.0    1980.1    1798.0     221.9     671.6     353.6     125.3      38.6      11.1    730.50
       .11      2.95      5.08      1.77      .048      .035      .060      .000    727.20   9871.00
   .000816      285.      269.      235.         2         0         0       .00    181.00  10052.00


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   11MAR92      10:34:13                                                                                    PAGE   20


                                                                                THIS RUN EXECUTED 11MAR92    10:34:22
*************************************
 HEC-2 WATER SURFACE PROFILES

 Version   4.6.2;  May 1991
*************************************


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


BENDER WASH PIMA CULVERT

SUMMARY PRINTOUT

      SECNO     ELMIN     CWSEL     Q         VCH       DIFWSX    TOPWID    DEPTH     SSTA      ENDST     QLOB      QROB      ELTRD

    3087.000    709.00    712.96    1000.00    5.42       .00      70.39     3.96    9972.72   10065.80     .00       .13       .00
    3087.000    709.00    714.38    2000.00    6.80       .00     119.87     5.38    9927.35   10087.98     .00     72.15       .00
    3087.000    709.00    715.36    3000.00    7.67       .00     178.02     6.36    9891.79   10102.92   27.45    252.13       .00
    3087.000    709.00    716.06    4000.00    8.36       .00     230.23     7.06    9884.34   10114.57  129.73    467.39       .00

    3180.000    711.00    714.81    1000.00    7.04      1.85      56.67     3.81    9968.16   10024.83     .00       .00       .00
*   3180.000    711.00    716.12    2000.00    8.99      1.74      65.10     5.12    9963.15   10028.25     .00       .00       .00
*   3180.000    711.00    716.94    3000.00   10.81      1.58      70.60     5.94    9960.06   10030.66     .00       .00       .00
*   3180.000    711.00    718.20    4000.00   10.57      2.14     190.45     7.20    9622.05   10036.51  101.84      6.46       .00

*     37.000    712.50    716.80    1000.00    9.52      1.99      37.66     4.30    9978.69   10016.35     .00       .00       .00
*     37.000    712.50    718.66    2000.00   10.71      2.54      64.50     6.16    9955.39   10019.89    1.51       .00       .00
*     37.000    712.50    720.18    3000.00   10.79      3.24     114.96     7.68    9920.90   10035.86  150.20     11.87       .00
*     37.000    712.50    721.14    4000.00   11.17      2.94     140.17     8.64    9911.00   10051.17  429.19     89.26       .00

*    129.000    715.20    720.53    1000.00    6.94      3.73      44.05     5.33    9976.98   10021.03     .00       .00       .00
*    129.000    715.20    722.25    2000.00    8.07      3.59     116.07     7.05    9972.33   10088.40     .00    162.31       .00
     129.000    715.20    723.11    3000.00    9.23      2.93     135.06     7.91    9963.04   10098.10    2.35    479.94       .00
     129.000    715.20    723.73    4000.00   10.33      2.59     145.06     8.53    9953.04   10098.10   19.94    826.73       .00
```

	224.000	717.10	722.69	1000.00	6.63	2.17	75.28	5.59	9973.07	10048.35	.00	41.45	.00
	224.000	717.10	724.20	2000.00	7.52	1.94	155.16	7.10	9902.21	10057.37	105.60	273.01	.00
	224.000	717.10	725.18	3000.00	8.06	2.07	168.18	8.08	9893.78	10061.96	392.18	602.50	.00
	224.000	717.10	726.00	4000.00	8.42	2.26	181.29	8.90	9885.71	10067.01	736.91	736.23	.00
	320.000	720.60	724.81	1000.00	5.22	2.11	77.14	4.21	9946.71	10023.85	.00	.00	.00
	320.000	720.60	725.99	2000.00	6.92	1.80	87.73	5.39	9940.09	10027.82	.00	.00	.00
	320.000	720.60	726.79	3000.00	8.28	1.61	109.73	6.19	9893.03	10030.51	1.76	.00	.00
*	320.000	720.60	727.41	4000.00	9.37	1.41	138.77	6.81	9884.94	10032.62	38.91	.00	.00
	415.000	722.80	726.91	1000.00	6.15	2.11	63.52	4.11	9970.65	10034.16	.00	.00	.00
	415.000	722.80	728.35	2000.00	7.66	2.36	73.11	5.55	9966.25	10039.36	.00	.00	.00
	415.000	722.80	729.43	3000.00	8.72	2.64	79.99	6.63	9962.83	10042.83	.00	.00	.00
	415.000	722.80	730.27	4000.00	9.64	2.86	120.55	7.47	9960.16	10094.66	.00	5.02	.00

	SECNO	ELMIN	CWSEL	Q	VCH	DIFWSX	TOPWID	DEPTH	SSTA	ENDST	QLOB	QROB	ELTRD
*	441.000	724.00	727.75	1000.00	4.96	.84	66.00	3.75	9967.00	10033.00	.00	.00	.00
	441.000	724.00	729.23	2000.00	6.68	.88	66.00	5.23	9967.00	10033.00	.00	.00	.00
	441.000	724.00	730.27	3000.00	8.16	.84	66.00	6.27	9967.00	10033.00	.00	.00	.00
	441.000	724.00	731.01	4000.00	9.61	.74	66.00	7.01	9967.00	10033.00	.00	.00	.00
	457.000	727.40	730.54	1000.00	4.82	2.78	66.00	3.14	9967.00	10033.00	.00	.00	750.00
	457.000	727.40	732.32	2000.00	6.16	3.09	66.00	4.92	9967.00	10033.00	.00	.00	750.00
	457.000	727.40	733.82	3000.00	7.08	3.55	66.00	6.42	9967.00	10033.00	.00	.00	750.00
*	457.000	727.40	736.29	4000.00	6.81	5.28	66.00	8.89	9967.00	10033.00	.00	.00	750.00
*	508.000	727.20	731.49	1000.00	6.83	.95	121.92	4.29	9903.69	10025.61	167.09	2.29	.00
	508.000	727.20	733.23	2000.00	6.45	.91	163.24	6.03	9871.00	10034.24	732.59	24.79	.00
	508.000	727.20	734.90	3000.00	5.98	1.08	181.00	7.70	9871.00	10052.00	1347.39	95.11	.00
	508.000	727.20	737.19	4000.00	5.08	.90	181.00	9.99	9871.00	10052.00	1980.14	221.91	.00

SUMMARY OF ERRORS AND SPECIAL NOTES

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WARNING SECNO=   3180.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   3180.000  PROFILE=  3  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
CAUTION SECNO=   3180.000  PROFILE=  4  CRITICAL DEPTH ASSUMED
CAUTION SECNO=   3180.000  PROFILE=  4  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=     37.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=     37.000  PROFILE=  1  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=     37.000  PROFILE=  1  20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO=     37.000  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=     37.000  PROFILE=  2  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=     37.000  PROFILE=  2  20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO=     37.000  PROFILE=  3  CRITICAL DEPTH ASSUMED
CAUTION SECNO=     37.000  PROFILE=  3  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=     37.000  PROFILE=  3  20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO=     37.000  PROFILE=  4  CRITICAL DEPTH ASSUMED
CAUTION SECNO=     37.000  PROFILE=  4  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=     37.000  PROFILE=  4  20 TRIALS ATTEMPTED TO BALANCE WSEL

WARNING SECNO=    129.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=    129.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=    320.000  PROFILE=  4  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=    441.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=    457.000  PROFILE=  4  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=    508.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
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1*****************************************
 *  HEC-2 WATER SURFACE PROFILES          *
 *                                        *
 *  Version   4.6.2;  May 1991            *
 *                                        *
 *  RUN DATE    11MAR92    TIME   10:33:20 *
 *****************************************

                                                                  *************************************
                                                                  *  U.S. ARMY CORPS OF ENGINEERS     *
                                                                  *  HYDROLOGIC ENGINEERING CENTER    *
                                                                  *  609 SECOND STREET, SUITE D       *
                                                                  *  DAVIS, CALIFORNIA 95616-4687     *
                                                                  *        (916) 756-1104             *
                                                                  *************************************

                                    X     X  XXXXXXX   XXXXX              XXXXX
                                    X     X  X        X     X            X     X
                                    X     X  X        X                        X
                                    XXXXXXX  XXXX     X          XXXXX    XXXXX
                                    X     X  X        X
                                    X     X  X        X     X            X
                                    X     X  XXXXXXX   XXXXX             XXXXXXX
1
   11MAR92      10:33:20                                                                                PAGE    1


                                                                                THIS RUN EXECUTED 11MAR92    10:33:20
*************************************
 HEC-2 WATER SURFACE PROFILES

 Version   4.6.2;  May 1991
*************************************


T1      FLOOD CONTROL DISTRICT OF MARICOPA COUNTY - CONTRACT FCD 90-67
T2      GILA BEND AREA FLOODPLAIN DELINEATION STUDY BY BURGESS & NIPLE
T3      FLOW SPLIT WEST OF BENDMAIN            J. MISCHLER - (602) 244-8100

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                2                         0.0052

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

     1                  -1


J3  VARIABLE CODES FOR SUMMARY PRINTOUT

     38        42         1        43        26        51         4         8        53        54
     13        15        40

NC    0.035     0.035     0.035       0.1       0.3
QT        5         0       200       400       800      2000
X1        1         4      1600      1750
X3       10                                                                   777       777
GR      780      1000       776      1600       776      1750       779      1760

SB      0.9      1.56         3         0       0.1         0      0.01         0       776       776
X1        3         4      1600      1750        10        10        10
X2                            1     776.1     777.7
X3       10                                                                 777.7     777.7
BT       -4      1000       780                1600     777.7                1750     777.7
BT               1760       779
GR      780      1000       776      1600       776      1750       779      1760
1
   11MAR92      10:33:20                                                                                PAGE    2

    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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


*PROF 1

CCHV=     .100 CEHV=     .300
*SECNO 1.000
2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       777.00 ELREA=       777.00

     1.000       .00    776.00       .00       .00    776.00       .00       .00       .00    776.00
        .0        .0        .0        .0        .0        .0        .0        .0        .0    776.00
       .00       .00       .01       .00      .000      .035      .000      .000    776.00   1600.00
   .005282        0.        0.        0.         0         0        17       .00    150.00   1750.00


SPECIAL BRIDGE

SB  XK        XKOR      COFQ      RDLEN     BWC       BWP       BAREA     SS        ELCHU     ELCHD
      .90      1.56      3.00       .00       .10       .00       .01       .00    776.00    776.00

*SECNO 3.000

6070,LOW FLOW BY NORMAL BRIDGE

EGPRS=       .000  EGLWC=    776.000  ELLC=    776.100  PCWSE=    776.000  ELTRD=    777.700

3370 NORMAL BRIDGE, NRD=   4 MIN ELTRD=   777.70 MAX ELLC=   776.10

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
     3.000      1.87    777.87    777.87       .00    777.87       .00       .00       .00    776.00
        .0        .0        .0        .0       3.6      25.0        .1        .0        .1    776.00
       .00       .00       .00       .00      .000      .035      .000      .000    776.00   1319.99
   .000000       10.       10.       10.        20        17         0   -518.44    436.24   1756.22

1
   11MAR92      10:33:20                                                                                PAGE    3
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T1      FLOOD CONTROL DISTRICT OF MARICOPA COUNTY - CONTRACT FCD 90-67
T2      GILA BEND AREA FLOODPLAIN DELINEATION STUDY BY BURGESS & NIPLE
T3      GILA BEND CANAL AS WIER                 J. MISCHLER - (602) 244-8100

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                3                         0.0036                                      747

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

     2                  -1

1
   11MAR92      10:33:20                                                                                    PAGE    4

    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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

*PROF 2

CCHV=     .100 CEHV=     .300
*SECNO 1.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       777.00 ELREA=       777.00

     1.000       .68    776.68       .00    747.00    776.74       .06       .00       .00    776.00
     200.0        .0     200.0        .0        .0     101.8        .0        .0        .0    776.00
       .00       .00      1.96       .00      .000      .035      .000      .000    776.00   1600.00
   .003588        0.        0.        0.         0         0         6       .00    150.00   1750.00


SPECIAL BRIDGE

SB  XK        XKOR      COFQ      RDLEN     BWC       BWP       BAREA     SS        ELCHU     ELCHD
      .90      1.56      3.00       .00       .10       .00       .01       .00    776.00    776.00

*SECNO 3.000

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO = 11.99

PRESSURE AND WEIR FLOW,  Weir Submergence Based on TRAPEZOIDAL Shape

 EGPRS       EGLWC       H3        QWEIR     QPR       BAREA     TRAPEZOID      ELLC      ELTRD     WEIRLN
                                                                   AREA
9690218.00    776.74      .00       201.        0.        0.        0.       776.10    777.70      281.

     3.000      2.19    778.19       .00       .00    778.19       .00      1.45       .00    776.00
     200.0      80.9     117.4       1.7     359.2     328.3       8.0        .1        .1    776.00
       .01       .23       .36       .22      .035      .035      .035      .000    776.00   1271.78
   .000025       10.       10.       10.         0         0        12       .00    485.55   1757.29

1
   11MAR92      10:33:20                                                                                    PAGE    5

T1      FLOOD CONTROL DISTRICT OF MARICOPA COUNTY - CONTRACT FCD 90-67
T2      GILA BEND AREA FLOODPLAIN DELINEATION STUDY BY BURGESS & NIPLE
T3      GILA BEND CANAL AS WIER                 J. MISCHLER - (602) 244-8100

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                4                         0.0036                                      747

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

     3                  -1

1
   11MAR92      10:33:20                                                                                    PAGE    6

    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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

*PROF 3

CCHV=     .100 CEHV=     .300
*SECNO 1.000
7230 SLOPE-AREA TRIALS EXCEED 100

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       777.00 ELREA=       777.00

     1.000       .98    776.98       .00    747.00    777.10       .11       .00       .00    776.00
     400.0        .0     400.0        .0        .0     147.2        .0        .0        .0    776.00
       .00       .00      2.72       .00      .000      .035      .000      .000    776.00   1600.00
   .004203        0.        0.        0.         0         0       101       .00    150.00   1750.00


SPECIAL BRIDGE

SB  XK        XKOR      COFQ      RDLEN     BWC       BWP       BAREA     SS        ELCHU     ELCHD
      .90      1.56      3.00       .00       .10       .00       .01       .00    776.00    776.00

*SECNO 3.000

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  8.01

PRESSURE AND WEIR FLOW,  Weir Submergence Based on TRAPEZOIDAL Shape

 EGPRS       EGLWC       H3        QWEIR     QPR       BAREA     TRAPEZOID      ELLC      ELTRD     WEIRLN
                                                                   AREA
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```
**********    777.10      .00     400.       0.       0.       0.    776.10    777.70      343.

     3.000     2.42   778.42      .00      .00   778.42      .00      1.32       .00    776.00
     400.0    171.4    224.9      3.7    439.2    363.0      9.8        .1        .1    776.00
       .01      .39      .62      .38     .035     .035     .035      .000    776.00   1237.02
   .000066      10.      10.      10.        0        0       12       .00    521.05   1758.07
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1
   11MAR92      10:33:20                                                                          PAGE    7

T1      FLOOD CONTROL DISTRICT OF MARICOPA COUNTY - CONTRACT FCD 90-67
T2      GILA BEND AREA FLOODPLAIN DELINEATION STUDY BY BURGESS & NIPLE
T3      GILA BEND CANAL AS WIER                    J. MISCHLER - (602) 244-8100

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                5                         0.0036                                    747

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

     4                   -1
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1
   11MAR92      10:33:20                                                                          PAGE    8

    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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

*PROF 4

CCHV=     .100 CEHV=     .300
*SECNO 1.000
     1.000      1.27   777.27      .00    747.00   777.38      .11       .00       .00    776.00
     800.0     227.1    568.0      4.9     120.9    190.5      2.7        .0        .0    776.00
       .00      1.88     2.98     1.83      .035     .035     .035      .000    776.00   1409.54
   .003588        0.       0.       0.         0        0        5       .00    344.69   1754.23

SPECIAL BRIDGE

SB  XK        XKOR      COFQ      RDLEN     BWC       BWP       BAREA     SS        ELCHU     ELCHD
      .90      1.56      3.00       .00       .10       .00       .01       .00    776.00    776.00

*SECNO 3.000

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  4.82

PRESSURE AND WEIR FLOW,  Weir Submergence Based on TRAPEZOIDAL Shape

 EGPRS      EGLWC      H3       QWEIR     QPR       BAREA     TRAPEZOID      ELLC      ELTRD     WEIRLN
                                                                AREA
**********   777.54      .00      801.       0.       0.        0.      776.10    777.70      431.

     3.000     2.73   778.73      .00      .00   778.75      .01      1.36       .00    776.00
     800.0    367.0    425.1      7.9    563.3    411.1     12.5        .1        .1    776.00
       .00      .65     1.03      .63     .035     .035     .035      .000    776.00   1188.91
   .000155      10.      10.      10.        1        0       11       .00    570.23   1759.14
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1
   11MAR92      10:33:20                                                                          PAGE    9

T1      FLOOD CONTROL DISTRICT OF MARICOPA COUNTY - CONTRACT FCD 90-67
T2      GILA BEND AREA FLOODPLAIN DELINEATION STUDY BY BURGESS & NIPLE
T3      GILA BEND CANAL AS WIER                    J. MISCHLER - (602) 244-8100

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                6                         0.0036                                    747

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

    15                   -1
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1
   11MAR92      10:33:20                                                                          PAGE   10

    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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

*PROF 5

CCHV=     .100 CEHV=     .300
*SECNO 1.000
     1.000      2.01   778.01      .00    747.00   778.20      .19       .00       .00    776.00
     2000.0    768.4   1215.0     16.6     302.4    301.2      6.7        .0        .0    776.00
       .00      2.54     4.03     2.47      .035     .035     .035      .000    776.00   1298.81
   .003564        0.       0.       0.         0        0        5       .00    457.88   1756.69

SPECIAL BRIDGE

SB  XK        XKOR      COFQ      RDLEN     BWC       BWP       BAREA     SS        ELCHU     ELCHD
      .90      1.56      3.00       .00       .10       .00       .01       .00    776.00    776.00

*SECNO 3.000
3280 CROSS SECTION       3.00 EXTENDED       .33 FEET
```

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 2.93

PRESSURE AND WEIR FLOW, Weir Submergence Based on TRAPEZOIDAL Shape

EGPRS	EGLWC	H3	QWEIR	QPR	BAREA	TRAPEZOID AREA	ELLC	ELTRD	WEIRLN
**********	778.20	.00	2002.	0.	0.	0.	776.10	777.70	596.
3.000	3.33	779.33	.00	.00	779.37	.04	1.17	.00	776.00
2000.0	1012.5	964.9	22.6	832.4	499.7	16.3	.2	.1	776.00
.00	1.22	1.93	1.23	.035	.035	.035	.000	776.00	1100.28
.000416	10.	10.	10.	2	0	10	.00	659.72	1760.00

1

11MAR92 10:33:20 PAGE 11

THIS RUN EXECUTED 11MAR92 10:33:23

****
HEC-2 WATER SURFACE PROFILES

Version 4.6.2; May 1991
****

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

FLOW SPLIT WEST OF BENDM

SUMMARY PRINTOUT

	SECNO	ELMIN	CWSEL	Q	VCH	DIFWSX	TOPWID	DEPTH	SSTA	ENDST	QLOB	QROB	ELTRD
	1.000	776.00	776.00	.00	.01	.00	150.00	.00	1600.00	1750.00	.00	.00	.00
	1.000	776.00	776.68	200.00	1.96	.00	150.00	.68	1600.00	1750.00	.00	.00	.00
	1.000	776.00	776.98	400.00	2.72	.00	150.00	.98	1600.00	1750.00	.00	.00	.00
	1.000	776.00	777.27	800.00	2.98	.00	344.69	1.27	1409.54	1754.23	227.14	4.90	.00
	1.000	776.00	778.01	2000.00	4.03	.00	457.88	2.01	1298.81	1756.69	768.41	16.59	.00
*	3.000	776.00	777.87	.00	.00	1.87	436.24	1.87	1319.99	1756.22	.00	.00	777.70
*	3.000	776.00	778.19	200.00	.36	1.51	485.55	2.19	1271.75	1757.29	80.89	1.75	777.70
*	3.000	776.00	778.42	400.00	.62	1.43	521.05	2.42	1237.02	1758.07	171.41	3.70	777.70
*	3.000	776.00	778.73	800.00	1.03	1.46	570.23	2.73	1188.91	1759.14	366.96	7.92	777.70
*	3.000	776.00	779.33	2000.00	1.93	1.32	659.72	3.33	1100.28	1760.00	1012.50	22.58	777.70

1

11MAR92 10:33:20 PAGE 12

SUMMARY OF ERRORS AND SPECIAL NOTES

CAUTION SECNO=	3.000	PROFILE=	1	CRITICAL DEPTH ASSUMED
CAUTION SECNO=	3.000	PROFILE=	1	PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=	3.000	PROFILE=	1	20 TRIALS ATTEMPTED TO BALANCE WSEL
WARNING SECNO=	3.000	PROFILE=	2	CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=	3.000	PROFILE=	3	CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=	3.000	PROFILE=	4	CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=	3.000	PROFILE=	5	CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

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1*****************************************
 *  HEC-2 WATER SURFACE PROFILES          *
 *                                        *
 *  Version   4.6.2;  May 1991            *
 *                                        *
 *  RUN DATE    11MAR92    TIME   10:35:27 *
 *****************************************

                                                                                  ***************************************
                                                                                  *  U.S. ARMY CORPS OF ENGINEERS       *
                                                                                  *  HYDROLOGIC ENGINEERING CENTER      *
                                                                                  *  609 SECOND STREET, SUITE D         *
                                                                                  *  DAVIS, CALIFORNIA 95616-4687       *
                                                                                  *          (916) 756-1104             *
                                                                                  ***************************************

                                        X     X  XXXXXXX   XXXXX              XXXXX
                                        X     X  X        X     X            X     X
                                        X     X  X        X                  X
                                        XXXXXXX  XXXX     X          XXXXX    XXXXX
                                        X     X  X        X                  X
                                        X     X  X        X     X            X
                                        X     X  XXXXXXX   XXXXX             XXXXXXX
1
   11MAR92      10:35:27                                                                                          PAGE    1


                                                                                THIS RUN EXECUTED 11MAR92    10:35:27
 ***************************************
  HEC-2 WATER SURFACE PROFILES

  Version   4.6.2;  May 1991
 ***************************************


 T1      FLOOD CONTROL DISTRICT OF MARICOPA COUNTY - CONTRACT FCD 90-67
 T2      GILA BEND AREA FLOODPLAIN DELINEATION STUDY BY BURGESS & NIPLE
 T3      FLOW SPLIT AT GRAVEL PIT                J. MISCHLER - (602) 244-8100

 J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                 2                         0.0133

 J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

       1                 -1


 J3  VARIABLE CODES FOR SUMMARY PRINTOUT

      38        42         1        43        26        51         4         8        53        54
      13        15        40

         THE PURPOSE OF THIS FILE IS TO DEVELOP RATING CURVES TO
         ASSIST IN THE HYDROLOGY EFFORT.

         THIS RUN MODELS THE SPLIT OF SCOTT AVE WASH UPSTREAM OF I-8 TO TO THE
         GRAVEL PIT UPSTREAM OF I-8.  THE MODEL REPRESENTS
         A BROAD CRESTED WEIR ON  THE RIDGE. BT DATA
         IS ACCURATE FROM THE TOPO MAPPING, BUT GR DATA IS PHONY TO
         ALLOW SPECIAL BRIDGE COMPUTE WEIR FLOW.

         J1.5 STRT = (756-752)/300 FT = 0.0133 FT/FT

         THESE RESULTS ARE COMBINED WITH OTHER RUNS TO DETERMINE THE SPLIT
         AT INTERSTATE 8.


 NC    0.035     0.035     0.035       0.1       0.3
 QT        5      5000     10000     15000     20000     25000
 X1        1         7      1000      4170
 X3       10                                                          780       780
 GR      764      1000       758      1510     756.2      1780       757      2750     756.5      3480
 GR      758      4110     778.5      4170
1
   11MAR92      10:35:27                                                                                          PAGE    2


 SB      0.9      1.25       2.6         0       0.1         0      0.01         0     756.2     756.2
 X1        2         7      1000      4170       100       100       100
 X2                                    1     756.5       780
 X3       10                                                          780       780
 BT       -7      1000       764                1510       760                 1780     758.2
 BT               2750       759                3480     758.5                 4110       760
 BT               4170     778.5
 GR      764      1000       758      1510     756.2      1780       757      2750     756.5      3480
 GR      758      4110     778.5      4170
1
   11MAR92      10:35:27                                                                                          PAGE    3

     SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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


 *PROF 1

 CCHV=     .100 CEHV=     .300
 *SECNO 1.000
 2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED

 3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      780.00 ELREA=      780.00

      1.000      1.14    757.34       .00       .00    757.54       .20       .00       .00    764.00
     5000.0        .0    5000.0        .0        .0    1396.0        .0        .0        .0    778.50
        .00       .00      3.58       .00      .000      .035      .000      .000    756.20   1608.88
    .013245        0.        0.        0.         0         0         6       .00   2224.27   3833.14
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SPECIAL BRIDGE

SB  XK        XKOR      COFQ      RDLEN     BWC       BWP       BAREA     SS        ELCHU     ELCHD
     .90      1.25      2.60       .00       .10       .00       .01       .00    756.20    756.20

*SECNO 2.000

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO = 13.78

PRESSURE AND WEIR FLOW,  Weir Submergence Based on TRAPEZOIDAL Shape

 EGPRS      EGLWC       H3      QWEIR      QPR      BAREA   TRAPEZOID      ELLC     ELTRD     WEIRLN
                                                             AREA
**********  757.54      .00     5014.       0.        0.        0.      756.50    780.00      2386.


3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       780.00 ELREA=       780.00

     2.000      3.42    759.62       .00       .00    759.62       .01      2.08       .00    764.00
    5000.0        .0    5000.0        .0        .0    7324.1        .0      10.0       5.7    778.50
       .04       .00       .68       .00      .000      .035      .000      .000    756.20   1371.97
   .000070      100.      100.      100.         0         0        10       .00   2742.78   4114.75

1
   11MAR92      10:35:27                                                                          PAGE    4

T1      FLOOD CONTROL DISTRICT OF MARICOPA COUNTY - CONTRACT FCD 90-67
T2      GILA BEND AREA FLOODPLAIN DELINEATION STUDY BY BURGESS & NIPLE
T3      FLOW SPLIT AT GRAVEL PIT                J. MISCHLER - (602) 244-8100

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                3                           0.0133

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

     2                  -1

1
   11MAR92      10:35:27                                                                          PAGE    5

    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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

*PROF 2

CCHV=     .100 CEHV=     .300
*SECNO 1.000
2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       780.00 ELREA=       780.00

    1.000      1.48    757.68       .00       .00    758.01       .32       .00       .00    764.00
   10000.0        .0   10000.0        .0        .0    2189.8        .0        .0        .0    778.50
       .00       .00      4.57       .00      .000      .035      .000      .000    756.20   1557.59
   .013212        0.        0.        0.         0         0         5       .00   2419.16   3976.75


SPECIAL BRIDGE

SB  XK        XKOR      COFQ      RDLEN     BWC       BWP       BAREA     SS        ELCHU     ELCHD
     .90      1.25      2.60       .00       .10       .00       .01       .00    756.20    756.20

*SECNO 2.000

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  9.07

PRESSURE AND WEIR FLOW,  Weir Submergence Based on TRAPEZOIDAL Shape

 EGPRS      EGLWC       H3      QWEIR      QPR      BAREA   TRAPEZOID      ELLC     ELTRD     WEIRLN
                                                             AREA
**********  758.01      .00    10067.       0.        0.        0.      756.50    780.00      2618.


3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       780.00 ELREA=       780.00

     2.000      3.92    760.12       .00       .00    760.14       .02      2.13       .00    764.00
   10000.0        .0   10000.0        .0        .0    8698.0        .0      12.5       6.0    778.50
       .02       .00      1.15       .00      .000      .035      .000      .000    756.20   1329.73
   .000161      100.      100.      100.         2         0         9       .00   2786.48   4116.21

1
   11MAR92      10:35:27                                                                          PAGE    6

T1      FLOOD CONTROL DISTRICT OF MARICOPA COUNTY - CONTRACT FCD 90-67
T2      GILA BEND AREA FLOODPLAIN DELINEATION STUDY BY BURGESS & NIPLE
T3      FLOW SPLIT AT GRAVEL PIT                J. MISCHLER - (602) 244-8100

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                4                           0.0133

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

     3                  -1

1
   11MAR92      10:35:27                                                                          PAGE    7

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

*PROF 3

CCHV=     .100 CEHV=     .300
*SECNO 1.000
2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      780.00 ELREA=      780.00

     1.000      1.76    757.96       .00       .00    758.38       .42       .00       .00    764.00
   15000.0        .0   15000.0       .0        .0    2873.1        .0        .0        .0    778.50
       .00       .00      5.22      .00      .000      .035      .000      .000    756.20   1516.55
   .013067       0.        0.        0.         0         0         4       .00   2575.13   4091.67


SPECIAL BRIDGE

SB  XK        XKOR      COFQ      RDLEN     BWC       BWP       BAREA     SS        ELCHU     ELCHD
      .90      1.25      2.60       .00       .10       .00       .01       .00    756.20    756.20

*SECNO 2.000

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  7.25

PRESSURE AND WEIR FLOW,  Weir Submergence Based on TRAPEZOIDAL Shape

 EGPRS      EGLWC      H3        QWEIR     QPR       BAREA     TRAPEZOID      ELLC      ELTRD     WEIRLN
                                                                  AREA
**********   758.38      .00    15028.       0.        0.        0.       756.50    780.00     2671.


3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      780.00 ELREA=      780.00

     2.000      4.31    760.51       .00       .00    760.54       .04      2.16       .00    764.00
   15000.0        .0   15000.0       .0        .0    9776.8        .0      14.5       6.2    778.50
       .02       .00      1.53      .00      .000      .035      .000      .000    756.20   1297.02
   .000249      100.      100.      100.         2         0         9       .00   2820.32   4117.33

1
   11MAR92      10:35:27                                                                          PAGE    8

T1      FLOOD CONTROL DISTRICT OF MARICOPA COUNTY - CONTRACT FCD 90-67
T2      GILA BEND AREA FLOODPLAIN DELINEATION STUDY BY BURGESS & NIPLE
T3      FLOW SPLIT AT GRAVEL PIT                J. MISCHLER - (602) 244-8100

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                 5                         0.0133

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

     4                  -1

1
   11MAR92      10:35:27                                                                          PAGE    9

    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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

*PROF 4

CCHV=     .100 CEHV=     .300
*SECNO 1.000
2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      780.00 ELREA=      780.00

     1.000      1.97    758.17       .00       .00    758.70       .53       .00       .00    764.00
   20000.0        .0   20000.0       .0        .0    3417.9        .0        .0        .0    778.50
       .00       .00      5.85      .00      .000      .035      .000      .000    756.20   1495.92
   .013289       0.        0.        0.         0         0         4       .00   2614.56   4110.48


SPECIAL BRIDGE

SB  XK        XKOR      COFQ      RDLEN     BWC       BWP       BAREA     SS        ELCHU     ELCHD
      .90      1.25      2.60       .00       .10       .00       .01       .00    756.20    756.20

*SECNO 2.000

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  6.36

PRESSURE AND WEIR FLOW,  Weir Submergence Based on TRAPEZOIDAL Shape

 EGPRS      EGLWC      H3        QWEIR     QPR       BAREA     TRAPEZOID      ELLC      ELTRD     WEIRLN
                                                                  AREA
**********   758.70      .00    20013.       0.        0.        0.       756.50    780.00     2717.


3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      780.00 ELREA=      780.00

     2.000      4.64    760.84       .00       .00    760.90       .05      2.20       .00    764.00
   20000.0        .0   20000.0       .0        .0    10736.7        .0      16.2       6.3    778.50
       .01       .00      1.86      .00      .000      .035      .000      .000    756.20   1268.24
   .000328      100.      100.      100.         2         0         9       .00   2850.08   4118.32

1
   11MAR92      10:35:27                                                                          PAGE   10
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T1      FLOOD CONTROL DISTRICT OF MARICOPA COUNTY - CONTRACT FCD 90-67
T2      GILA BEND AREA FLOODPLAIN DELINEATION STUDY BY BURGESS & NIPLE
T3      FLOW SPLIT AT GRAVEL PIT                J. MISCHLER - (602) 244-8100

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                 6                         0.0133

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

     15                  -1

1
   11MAR92      10:35:27                                                                                PAGE   11

    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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

*PROF 5

CCHV=     .100 CEHV=     .300
*SECNO 1.000
2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      780.00 ELREA=      780.00

     1.000      2.16    758.36       .00       .00    758.99       .63       .00       .00    764.00
   25000.0        .0   25000.0        .0        .0    3928.5        .0        .0        .0    778.50
       .00       .00      6.36       .00      .000      .035      .000      .000    756.20   1479.38
   .013169        0.        0.        0.         0         0         4       .00   2631.68   4111.05


SPECIAL BRIDGE

SB  XK        XKOR      COFQ      RDLEN     BWC       BWP       BAREA     SS        ELCHU     ELCHD
      .90      1.25      2.60       .00       .10       .00       .01       .00    756.20    756.20

*SECNO 2.000

3301 HV CHANGED MORE THAN HVINS

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  5.74

PRESSURE AND WEIR FLOW,  Weir Submergence Based on TRAPEZOIDAL Shape

 EGPRS      EGLWC      H3       QWEIR      QPR       BAREA   TRAPEZOID      ELLC      ELTRD     WEIRLN
                                                              AREA
**********   758.99      .00    25006.        0.        0.        0.     756.50    780.00      2760.


3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      780.00 ELREA=      780.00

     2.000      4.95    761.15       .00       .00    761.22       .07      2.23       .00    764.00
   25000.0        .0   25000.0        .0        .0   11615.8        .0     17.8       6.3    778.50
       .01       .00      2.15       .00      .000      .035      .000      .000    756.20   1242.14
   .000400      100.      100.      100.         2         0         9       .00   2877.08   4119.22

1
   11MAR92      10:35:27                                                                                PAGE   12


                                                                                THIS RUN EXECUTED 11MAR92    10:35:30
*************************************
 HEC-2 WATER SURFACE PROFILES

 Version   4.6.2;  May 1991
*************************************

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

FLOW SPLIT AT GRAVEL PIT

SUMMARY PRINTOUT

      SECNO     ELMIN     CWSEL       Q        VCH     DIFWSX    TOPWID     DEPTH     SSTA      ENDST     QLOB      QROB      ELTRD

       1.000    756.20    757.34    5000.00     3.58       .00   2224.27      1.14   1608.88   3833.14       .00       .00       .00
       1.000    756.20    757.68   10000.00     4.57       .00   2419.16      1.48   1557.59   3976.75       .00       .00       .00
       1.000    756.20    757.96   15000.00     5.22       .00   2575.13      1.76   1516.55   4091.67       .00       .00       .00
       1.000    756.20    758.17   20000.00     5.85       .00   2614.56      1.97   1495.92   4110.48       .00       .00       .00
       1.000    756.20    758.36   25000.00     6.36       .00   2631.68      2.16   1479.38   4111.05       .00       .00       .00

*      2.000    756.20    759.62    5000.00      .68      2.28   2742.78      3.42   1371.97   4114.75       .00       .00    780.00
*      2.000    756.20    760.12   10000.00     1.15      2.44   2786.48      3.92   1329.73   4116.21       .00       .00    780.00
*      2.000    756.20    760.51   15000.00     1.53      2.55   2820.32      4.31   1297.02   4117.33       .00       .00    780.00
*      2.000    756.20    760.84   20000.00     1.86      2.68   2850.08      4.64   1268.24   4118.32       .00       .00    780.00
*      2.000    756.20    761.15   25000.00     2.15      2.79   2877.08      4.95   1242.14   4119.22       .00       .00    780.00

1
   11MAR92      10:35:27                                                                                PAGE   13


 SUMMARY OF ERRORS AND SPECIAL NOTES

WARNING SECNO=      2.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=      2.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=      2.000  PROFILE=  3  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=      2.000  PROFILE=  4  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
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WARNING SECNO= 2.000 PROFILE= 5 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

```
1*****************************************                    ****************************************
 *  HEC-2 WATER SURFACE PROFILES           *                    *  U.S. ARMY CORPS OF ENGINEERS          *
 *                                         *                    *  HYDROLOGIC ENGINEERING CENTER         *
 *  Version   4.6.2;  May 1991             *                    *  609 SECOND STREET, SUITE D            *
 *                                         *                    *  DAVIS, CALIFORNIA 95616-4687          *
 *  RUN DATE    11MAR92    TIME   10:35:48 *                    *          (916) 756-1104               *
 *****************************************                    ****************************************

                                        X     X  XXXXXXX   XXXXX              XXXXX
                                        X     X  X        X     X           X     X
                                        X     X  X        X                       X
                                        XXXXXXX  XXXX     X          XXXXX    XXXXX
                                        X     X  X        X                 X
                                        X     X  X        X     X           X
                                        X     X  XXXXXXX   XXXXX            XXXXXXX
1
   11MAR92      10:35:48                                                                                    PAGE    1


                                                                                THIS RUN EXECUTED 11MAR92    10:35:48
 ************************************
  HEC-2 WATER SURFACE PROFILES

  Version   4.6.2;  May 1991
 ************************************


 T1      FLOOD CONTROL DISTRICT OF MARICOPA COUNTY - CONTRACT FCD 90-67
 T2      GILA BEND AREA FLOODPLAIN DELINEATION STUDY BY BURGESS & NIPLE
 T3      SCOTT-SPLIT UP GRAVEL RD                  J. MISCHLER - (602) 244-8100

 J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                 2                         0.0044

 J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

       1                 -1


 J3  VARIABLE CODES FOR SUMMARY PRINTOUT

      30        42         1        43        26        51         4         8        53        54
      13        15        40

         THE PURPOSE OF THIS FILE IS TO DEVELOP RATING CURVES TO
         ASSIST IN THE HYDROLOGY EFFORT, SPECIFICALLY, TO BE USED
         BY THE HEC-1 MODEL TO ESTIMATE ATTENUATION OF PEAK DISCHARGES
         THROUGH THE STRUCTURES.

         THIS RUN MODELS FLOW TO THE NORTH ALONG A GRAVEL ROAD
         WEST OF SCOTT AVENUE WASH BENEATH I-8.

         J1.5 STRT = (757.4 - 754.8)/590 = 0.0044 FT/FT


 NC    0.035     0.035     0.035       0.1       0.3
 QT        5      5000     10000     15000     20000     25000
 X1        1         6      1000      1100
 GR      772      1000       755      1030       756      1040       756      1060       755      1070
 GR      772      1100
1
   11MAR92      10:35:48                                                                                    PAGE    2

     SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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


 *PROF 1

 CCHV=     .100 CEHV=     .300
 *SECNO 1.000
 2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED
      1.000      9.51    764.51       .00       .00    766.00      1.49       .00       .00    772.00
    5000.0        .0    5000.0        .0        .0     510.3        .0        .0        .0    772.00
       .00       .00      9.80       .00      .000      .035      .000      .000    755.00   1013.21
   .004404        0.        0.        0.         0         0         4       .00     73.58   1086.79


1
   11MAR92      10:35:48                                                                                    PAGE    3

 T1      FLOOD CONTROL DISTRICT OF MARICOPA COUNTY - CONTRACT FCD 90-67
 T2      GILA BEND AREA FLOODPLAIN DELINEATION STUDY BY BURGESS & NIPLE
 T3      SCOTT-SPLIT UP GRAVEL RD                  J. MISCHLER - (602) 244-8100

 J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                 3                         0.0044

 J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

       2                 -1

1
   11MAR92      10:35:48                                                                                    PAGE    4

     SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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
```

```
*PROF 2

CCHV=     .100 CEHV=     .300
*SECNO 1.000
2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED
    1.000     13.53    768.53       .00       .00    770.76      2.23       .00       .00    772.00
  10000.0        .0   10000.0        .0        .0    833.9        .0        .0        .0    772.00
      .00       .00     11.99       .00      .000      .035      .000      .000    755.00   1006.13
  .004404        0.        0.        0.         0         0         5       .00     87.74   1093.87


1
   11MAR92      10:35:48                                                                                PAGE    5

T1      FLOOD CONTROL DISTRICT OF MARICOPA COUNTY - CONTRACT FCD 90-67
T2      GILA BEND AREA FLOODPLAIN DELINEATION STUDY BY BURGESS & NIPLE
T3      SCOTT-SPLIT UP GRAVEL RD                    J. MISCHLER - (602) 244-8100

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                4                         0.0044

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

     3                  -1


1
   11MAR92      10:35:48                                                                                PAGE    6

    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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

*PROF 3

CCHV=     .100 CEHV=     .300
*SECNO 1.000
2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED
    1.000     16.57    771.57       .00       .00    774.37      2.80       .00       .00    772.00
  15000.0        .0   15000.0        .0        .0   1117.3        .0        .0        .0    772.00
      .00       .00     13.43       .00      .000      .035      .000      .000    755.00   1000.76
  .004398        0.        0.        0.         0         0         6       .00     98.48   1099.24


1
   11MAR92      10:35:48                                                                                PAGE    7

T1      FLOOD CONTROL DISTRICT OF MARICOPA COUNTY - CONTRACT FCD 90-67
T2      GILA BEND AREA FLOODPLAIN DELINEATION STUDY BY BURGESS & NIPLE
T3      SCOTT-SPLIT UP GRAVEL RD                    J. MISCHLER - (602) 244-8100

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                5                         0.0044

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

     4                  -1


1
   11MAR92      10:35:48                                                                                PAGE    8

    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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

*PROF 4

CCHV=     .100 CEHV=     .300
*SECNO 1.000
2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED
3280 CROSS SECTION      1.00 EXTENDED      1.96 FEET

    1.000     18.96    773.96       .00       .00    777.34      3.38       .00       .00    772.00
  20000.0        .0   20000.0        .0        .0   1355.7        .0        .0        .0    772.00
      .00       .00     14.75       .00      .000      .035      .000      .000    755.00   1000.00
  .004394        0.        0.        0.         0         0         6       .00    100.00   1100.00


1
   11MAR92      10:35:48                                                                                PAGE    9

T1      FLOOD CONTROL DISTRICT OF MARICOPA COUNTY - CONTRACT FCD 90-67
T2      GILA BEND AREA FLOODPLAIN DELINEATION STUDY BY BURGESS & NIPLE
T3      SCOTT-SPLIT UP GRAVEL RD                    J. MISCHLER - (602) 244-8100

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                6                         0.0044

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

    15                  -1


1
   11MAR92      10:35:48                                                                                PAGE   10

    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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

*PROF 5
```

```
CCHV=     .100 CEHV=     .300
*SECNO 1.000
2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED
3280 CROSS SECTION      1.00 EXTENDED      3.89 FEET

     1.000     20.89    775.89       .00       .00    779.93      4.04       .00       .00    772.00
   25000.0        .0   25000.0        .0        .0    1549.0        .0        .0        .0    772.00
       .00       .00     16.14       .00      .000      .036      .000      .000    755.00   1000.00
   .004401        0.        0.        0.         0         0         6       .00    100.00   1100.00
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1

THIS RUN EXECUTED 11MAR92 10:35:50

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************************************
 HEC-2 WATER SURFACE PROFILES

 Version   4.6.2;  May 1991
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NOTE- ASTERISK (*) AT LEFT OF CROSS-SECTION NUMBER INDICATES MESSAGE IN SUMMARY OF ERRORS LIST

SCOTT-SPLIT UP GRAVEL RD

SUMMARY PRINTOUT

SECNO	ELMIN	CWSEL	Q	VCH	DIFWSX	TOPWID	DEPTH	SSTA	ENDST	QLOB	QROB	ELTRD
1.000	755.00	764.51	5000.00	9.80	.00	73.58	9.51	1013.21	1086.79	.00	.00	.00
1.000	755.00	768.53	10000.00	11.99	.00	87.74	13.53	1006.13	1093.87	.00	.00	.00
1.000	755.00	771.57	15000.00	13.43	.00	98.48	16.57	1000.76	1099.24	.00	.00	.00
1.000	755.00	773.95	20000.00	14.75	.00	100.00	18.96	1000.00	1100.00	.00	.00	.00
1.000	755.00	775.89	25000.00	16.14	.00	100.00	20.89	1000.00	1100.00	.00	.00	.00

1

SUMMARY OF ERRORS AND SPECIAL NOTES

```
1*****************************************
 *  HEC-2 WATER SURFACE PROFILES          *
 *                                        *
 *  Version   4.6.2;  May 1991            *
 *                                        *
 *  RUN DATE    11MAR92    TIME   10:36:18 *
 *****************************************
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```
*************************************
*  U.S. ARMY CORPS OF ENGINEERS     *
*  HYDROLOGIC ENGINEERING CENTER    *
*  609 SECOND STREET, SUITE D       *
*  DAVIS, CALIFORNIA 95616-4687     *
*        (916) 756-1104             *
*************************************
```

```
X     X  XXXXXXX   XXXXX              XXXXX
X     X  X        X     X            X     X
X     X  X        X                        X
XXXXXXX  XXXX     X          XXXXX   XXXXX
X     X  X        X                  X
X     X  X        X     X            X
X     X  XXXXXXX   XXXXX             XXXXXXX
```

1
11MAR92 10:36:18 PAGE 1

THIS RUN EXECUTED 11MAR92 10:36:18

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*************************************
 HEC-2 WATER SURFACE PROFILES

 Version   4.6.2;  May 1991
*************************************
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T1      FLOOD CONTROL DISTRICT OF MARICOPA COUNTY - CONTRACT FCD 90-67
T2      GILA BEND AREA FLOODPLAIN DELINEATION STUDY BY BURGESS & NIPLE
T3      SCOTT AVENUE WASH                    J. MISCHLER - (602) 244-8100

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                2                         0.0037                                    747

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

     1                  -1

J3  VARIABLE CODES FOR SUMMARY PRINTOUT

    38        42         1        43        26        51         4         8        53        54
    13        16        40
       THE PURPOSE OF THIS FILE IS TO DEVELOP RATING CURVES TO
       ASSIST IN THE HYDROLOGY EFFORT, SPECIFICALLY, TO BE USED
       BY THE HEC-1 MODEL TO ESTIMATE ATTENUATION OF PEAK DISCHARGES
       THROUGH THE STRUCTURES.

       DUE TO THE ATTENUATING EFFECT OF THE GILA BEND CANAL EMBANKMENT AND
       RELATIVELY SMALL CULVERT, 100-YEAR Q'S DOWNSTREAM OF THE CANAL ARE
       REDUCED FROM THE UPSTREAM Q'S.
       DISCHARGES WERE FIRST COMPUTED USING HEC-1 WITHOUT CONSIDERATION
       OF FLOWS DIVERTED FROM SAND TANK WASH.  THESE FLOWS, ALONG WITH
       FLOWS EQUAL TO 1/2 AND 2 TIMES THESE VALUES, ARE USED IN THIS MODEL.

       RATING CURVES FROM THIS MODEL WERE THEN USED TO FURTHER REFINE THE
       HYDROLOGY MODEL AND DEVELOP FINAL Q'S FOR FLOODPLAIN DELINEATION.
       FLOW DIVERTED FORM SAND TANK WASH UPSTREAM OF I-8 ARE REFLECTED
       IN THE FINAL Q'S.

       SECTIONS ARE LABELED AS  RIVER MILES * 1000, i.e., SECTION 1884 IS AT
       RIVER MILE 1.884 UPSTREAM OF THE CONFLUENCE WITH THE GILA RIVER.

       J1.5 STRT WAS OBTAINED BY (665.5SPOT ELEV-664CONTOUR)/410 FT = 0.0037

       THIS MODEL BEGINS AT RM 1.884.  THE DETAILED STUDY BEGINS AT RM 2.261.
```

1
11MAR92 10:36:18 PAGE 2

```
NC     0.06      0.03      0.03       0.1       0.3
QT        5       740       740       740       740       740
X1     1884        12    9956.2   10014.7         0         0         0
GR    668.8    9691.0     667.3    9738.7     666.1    9795.6     665.4    9850.7     665.0    9905.1
GR    664.5    9956.2     663.5    9978.7     662.4    9996.5     662.1   10000.0     664.2   10014.7
GR    665.1   10029.4     665.5   10042.5

X1     2070        10    9956.3   10008.9     985.0     985.0     982.0
GR    674.1    9852.5     673.8    9902.5     671.8    9956.3     668.8    9978.5     667.0    9992.0
GR    666.8   10000.0     670.0   10008.9     669.9   10021.9     670.0   10032.6     670.0   10037.0

       BEGIN DETAILED STUDY

QT        5       680       680       680       680       680
X1     2261        11    9934.6   10016.1    1020.0    1010.0    1008.0
GR    677.9    9809.7     677.5    9863.9     677.3    9911.9     676.0    9934.6     673.5    9954.0
GR    673.5    9974.8     672.2    9988.5     672.0   10000.0     674.5   10016.1     675.0   10029.0
GR    675.2   10041.7

NC     0.04      0.04      0.04
X1     2505        23   10073.2   10278.0     890.0    1200.0    1288.0
X3       10
GR    683.5    9977.4     681.1    9988.5     683.2    9999.7     682.0   10000.0     682.6   10048.2
GR    682.2   10073.2     680.1   10086.6     681.6   10110.9     682.1   10160.0     681.6   10181.7
GR    680.5   10189.7     681.9   10212.1     681.7   10242.4     680.6   10252.4     682.5   10278.0
GR    682.0   10299.8     681.9   10313.2     682.2   10344.6     682.1   10375.9     684.3   10409.4
GR    687.9   10440.9     690.2   10500.5     691.3   10562.2

NC    0.035     0.035      0.07
QT        5       620       620       620       620       620
X1     2677        32    9917.8   10061.9     850.0     970.0     908.0
X3       10
```

```
GR    695.3    9718.4    694.8    9764.3    693.9    9813.6    692.2    9861.7    690.4    9888.6
GR    688.1    9917.8    685.5    9930.4    685.2    9936.7    686.5    9944.5    686.4    9969.4
GR    685.2    9990.7    683.3    9997.6    684.1    10000.0   687.3    10014.1   686.7    10026.8
GR    685.2    10042.3   687.6    10061.9   687.9    10107.3   687.9    10138.6   688.2    10209.1
GR    688.3    10276.5   687.9    10359.6   687.6    10427.5   687.1    10481.5   687.2    10541.7
GR    686.5    10599.9   687.0    10634.4   685.6    10660.6   688.0    10688.9   690.0    10714.7
GR    694.3    10739.7   696.4    10789.5

X1    2867     23        9969.7   10021.7   995.0    860.0     1003.0
X3    10
GR    699.7    9878.2    698.2    9923.8    694.5    9969.7    691.4    9987.9    689.5    9999.8
GR    689.6    10000.0   693.3    10016.1   694.7    10021.7   692.7    10043.5   692.8    10071.2
GR    692.6    10125.1   691.8    10196.6   691.9    10262.7   692.3    10322.6   693.1    10390.0
GR    692.3    10455.6   692.9    10515.9   693.5    10562.6   692.7    10613.8   693.8    10668.8
GR    693.9    10730.4   695.0    10786.5   696.7    10852.9
```



```
QT    5        560       560      560       560      560
X1    3105     29        9980.2   10043.1   930.0    1030.0    1257.0
X3    10
GR    704.6    9710.5    702.3    9748.4    700.6    9783.0    699.5    9833.9    700.0    9892.8
GR    698.7    9948.3    699.4    9980.2    697.8    9994.8    695.2    10000.0   698.3    10011.9
GR    699.2    10043.1   696.8    10092.7   697.3    10123.0   695.3    10143.5   698.0    10164.5
GR    696.8    10200.6   697.2    10239.1   698.6    10262.8   696.9    10310.4   697.7    10363.8
GR    697.1    10381.2   697.9    10422.1   700.0    10469.9   699.3    10504.8   699.5    10544.9
GR    701.1    10584.1   702.8    10629.6   703.9    10679.6   704.5    10734.6

X1    3292     20        9981.1   10084.8   960.0    950.0     987.0
GR    711.0    9780.0    710.0    9845.2    708.6    9876.1    707.5    9902.7    705.5    9929.2
GR    704.6    9955.0    702.7    9964.4    704.5    9981.1    703.7    9998.1    702.0    10000.0
GR    703.4    10012.1   704.1    10040.5   702.7    10055.8   701.3    10065.5   703.9    10084.8
GR    705.4    10108.9   707.1    10148.6   707.4    10186.0   707.4    10228.1   708.5    10255.2
```

SOUTH INDIAN ROAD IS AT RM 3.466 (LOW CROSSING - NO STRUCTURE)

```
QT    5        500       500      500       500      500
X1    3492     19        9987.7   10028.1   970.0    1045.0    1056.0
GR    713.4    9825.5    713.1    9847.5    712.4    9867.9    710.7    9889.3    709.7    9902.5
GR    709.0    9908.6    709.9    9920.1    709.7    9947.4    709.5    9968.2    708.4    9979.4
GR    709.6    9987.7    708.5    9995.7    707.1    10000.0   707.1    10006.6   708.2    10014.8
GR    709.3    10028.1   708.8    10040.8   710.7    10055.9   713.3    10072.2

X1    3570     26        9984.3   10018.5   335.0    425.0     412.0
GR    715.8    9895.9    715.6    9925.3    714.7    9946.3    712.4    9967.0    711.3    9984.3
GR    710.3    9993.4    708.9    10000.0   709.7    10007.4   711.6    10018.5   711.4    10039.8
GR    711.4    10062.0   711.0    10072.0   711.7    10095.8   712.0    10122.0   711.3    10136.6
GR    710.6    10144.0   711.4    10152.8   711.3    10167.4   712.0    10186.6   712.4    10195.9
GR    712.5    10209.4   712.6    10221.3   714.0    10238.8   716.1    10251.8   716.1    10270.1
GR    716.2    10277.5

QT    5        480       480      480       480      480
X1    3677     26        9982.3   10027.8   535.0    495.0     565.0
GR    718.4    9723.0    718.4    9743.7    717.5    9761.6    716.4    9782.2    715.9    9802.2
GR    715.5    9834.7    716.1    9873.6    714.1    9903.9    714.3    9920.1    714.0    9931.2
GR    713.5    9948.3    713.7    9953.4    714.2    9962.8    713.6    9969.9    714.8    9982.3
GR    714.4    9993.2    713.5    9998.3    712.0    10000.0   712.9    10007.1   714.3    10016.5
GR    714.6    10027.8   712.8    10034.2   714.9    10043.4   716.8    10065.7   717.7    10087.2
GR    718.2    10109.0

X1    3772     24        9992.2   10041.8   500.0    420.0     502.0
GR    721.6    9915.5    720.8    9942.9    718.6    9960.0    716.7    9978.4    716.6    9992.2
GR    716.3    10000.0   714.4    10009.0   713.8    10012.3   714.6    10020.6   716.1    10029.3
GR    716.6    10041.8   716.3    10055.5   716.1    10076.4   715.7    10087.8   715.3    10091.7
GR    716.6    10098.8   716.1    10116.2   716.8    10137.5   717.6    10144.8   717.5    10152.9
GR    717.4    10158.2   718.5    10167.9   718.7    10185.0   718.7    10204.0
```



```
NC    0.035    0.035     0.04
QT    5        450       450      450       450      450
X1    3863     36        9962.1   10033.4   450.0    480.0     480.0
GR    725.3    9579.0    724.1    9593.1    724.1    9604.7    723.1    9632.8    721.9    9663.9
GR    721.2    9677.5    722.7    9691.4    722.7    9709.4    722.1    9727.9    721.9    9741.1
GR    722.6    9761.5    722.7    9782.0    721.5    9802.9    719.7    9825.6    718.6    9845.6
GR    718.3    9861.0    718.6    9889.9    718.6    9918.7    718.8    9935.6    720.2    9944.1
GR    720.3    9962.1    719.8    9976.6    718.6    9986.0    718.0    9996.3    717.9    10000.0
GR    717.0    10004.9   717.3    10008.2   718.5    10018.4   720.7    10033.4   721.5    10053.3
GR    722.4    10065.0   723.1    10076.4   723.6    10099.6   724.2    10128.0   724.7    10154.3
GR    724.7    10170.8
```

RICHARDS STREET IS AT RM 3.889 (LOW CROSSING - NO STRUCTURE)

```
NC    0.035    0.035     0.05
X1    3957     18        9989.0   10013.2   477.0    520.0     496.0
GR    723.8    9917.1    723.7    9956.8    722.8    9979.8    720.5    9989.0    719.4    9999.3
GR    718.6    10000.0   719.2    10006.3   720.7    10013.2   721.1    10036.5   721.2    10064.6
GR    721.8    10086.9   723.3    10109.0   723.9    10121.8   724.4    10131.5   724.6    10142.0
GR    725.8    10156.9   726.5    10180.7   726.3    10182.2
```

HUNT STREET IS AT RM 4.005 (LOW CROSSING - NO STRUCTURE)

```
NC    0.035    0.035     0.07
X1    4053     28        9962.0   10031.7   535.0    466.0     507.0
GR    730.3    9700.1    729.6    9718.6    729.5    9726.6    729.8    9736.0    729.6    9746.0
GR    729.5    9751.7    728.4    9759.5    727.3    9778.4    726.9    9802.4    725.9    9834.7
GR    725.8    9867.8    725.4    9900.1    725.1    9933.5    724.9    9962.0    723.5    9981.3
GR    722.8    9994.6    722.7    10000.0   720.8    10004.2   720.8    10006.8   723.1    10014.2
GR    724.1    10031.7   723.8    10050.2   723.6    10075.3   724.7    10093.2   725.9    10114.6
GR    727.5    10145.4   728.1    10166.1   729.4    10176.9
```

PAPAGO STREET IS AT RM 4.133 (LOW CROSSING - NO STRUCTURE)

```
NC    0.035    0.035     0.04
QT    5        410       410      410       410      410
X1    4147     29        9990.4   10015.5   455.0    530.0     496.0
GR    731.5    9962.6    731.0    9975.5    725.8    9990.4    724.3    9999.2    723.8    10000.0
```

```
GR    723.9    10010.2     725.8    10015.5     726.0    10025.1     726.0    10050.2     726.6    10069.0
GR    727.6    10094.9     729.2    10114.2     729.2    10135.4     729.2    10142.3     729.2    10153.6
GR    728.8    10164.6     728.9    10180.1     729.1    10188.3     728.3    10207.8     728.5    10228.7
GR    729.1    10253.1     729.6    10272.2     729.8    10290.7     730.0    10318.1     730.0    10336.0
GR    730.4    10353.1     730.1    10371.1     730.8    10399.2     731.1    10408.1
```

A CONCRETE BOX CULVERT CONVEYS SCOTT AVENUE WASH BENEATH PIMA STREET (U.S. ROUTE 80) AND A PROPERTY ON THE NORTH SIDE OF PIMA STREET.

AT THE DOWNSTREAM END, THE CULVERT OUTLETS INTO A U-SHAPED CONCRETE CHANNEL WHICH EXTENDS ANOTHER 140' DOWNSTREAM OF THE CULVERT.

SPECIAL CULVERT IS USED TO MODEL THE CULVERT.

INCREASE EXPANSION/CONTRACTION COEFFICIENTS

SECTION 4156 IS AT THE DOWNSTREAM END OF THE U-SHAPED CONCRETE CHANNEL SEDIMENT IN THE BOTTOM HAS COVERED THE CONCRETE INVERT.

```
NC                                     0.3       0.5
X1     4156       11     9995    10005.1        60        60        50
GR      734     9760      732       9860       732      9915     731.2      9995     724.9    9995.1
GR    725.2    10000    726.3      10005     731.5   10005.1       729     10080       730     10200
GR      732    10430
```

REPEAT SECTION 4157 AT THE DOWNSTREAM OUTLET OF THE CULVERT.
BECAUSE OF HEAVY BRUSH IN THE CHANNEL, USE N = 0.080

```
NC    0.035    0.035    0.080
X1     4183                          140       110       140
X3       10                                                        731.8     731.0
```

RETURN TO NORMAL N VALUE IN THE CHANNEL
SECTION GEOMETRY IS FROM FIELD SURVEY (CHANNEL) AND TOPO MAP (OVERBANK)

```
NC    0.035    0.035     0.03
SC    1.014      0.5        3        0         6        10       165     10.1     725.0     725.0
X1     4216       11     9995    10005       175       175       175
```

ELTRD = 732.2 + 0.2' HV = 732.4

```
X2                          2     732.4
X3       10                                                        732.8     732.2
BT       -9     9765    735.1                9950       734                9980     732.8
BT              10000    732.8               10020     732.8               10070       733
BT              10150    732.2               10355     732.4               10540     733.8
GR    735.1      9765      734      9950       732      9980       725      9995       725    10000
GR      725     10005      732     10020       733     10070     732.2     10150     732.4    10355
GR    733.8     10540
```

KEEP EXPANSION/CONTRACTION COEFFICIENTS HIGH THROUGH AREA OF FREQUENT STRUCTURES

```
X1     4287        26    9987.2   10037.0       420       195       375
X3       10
GR    737.3    9904.0     731.3    9916.6     729.6    9932.7     730.2    9941.9     728.7    9952.1
GR    728.7    9966.3     729.3    9975.2     729.0    9987.2     728.3    9993.0     727.1    9998.7
GR    726.8   10000.0     728.2   10011.9     728.6   10021.9     731.8   10033.0     732.6   10037.0
GR    731.0   10049.2     731.3   10050.0     731.4   10067.1     731.8   10088.8     731.9   10101.1
GR    732.3   10112.6     732.6   10126.0     732.8   10139.0     733.6   10157.3     733.8   10186.9
GR    733.8   10200.3
```


SCOTT AVE WASH IS CONVEYED UNDER THE SOUTHERN PACIFIC RAILROAD THROUGH A TIMBER BRIDGE. THE STREAM BED ALSO SERVES AS A MEANS OF PEDESTRIAN AND VEHICULAR ACCESS TO HOMES SOUTH OF THE TRACKS.

SPECIAL BRIDGE IS USED TO MODEL THE STRUCTURE.
THE SECTION AT THE DOWNSTREAM FACE OF THE BRIDGE IS FROM FIELD SURVEY (CHANNEL) AND TOPO MAP DATA (OVERBANKS).

WIER FLOW IS NOT ANTICIPATED. IF IT OCCURS, THE EFFECTIVE LENGTH WILL BE ABOUT 1000 FT, THEREFORE USE SB.4 = 1000.

```
QT        5      380      380      380      380      380
X1     4315        9     9990    10010       90      190       148
X3       10                                                        738.7     738.9
GR      740     9370      736     9950      732     9990     729.8    9990.5     729.8   10009.5
GR      734    10010      736    10030      736    10120       740    10160
```

ELTRD = 739.7 + 0.5 HV = 740.2

```
SB        0      1.6        3     1000       19        0       129        0     730.1     729.8
X1     4331                                  86       86        86
X2                          1    736.9    740.2
X3       10                                                        739.7     739.9
```

KEEP EXPANSION/CONTRACTION COEFFICIENTS HIGH THROUGH AREA OF FREQUENT STRUCTURES

```
NC    0.035    0.035    0.035
X1     4395       14    9967.8   10022.4       325       325       338
GR    737.1    9967.8     736.1    9971.3     731.4    9983.7     731.1    9991.5     730.7    9995.6
GR    729.5   10000.0     730.2   10005.0     732.2   10011.9     734.7   10022.4     734.9   10035.9
GR    735.4   10059.5     736.1   10083.3     736.5   10108.9     736.7   10117.7
```

SCOTT AVENUE WASH IS CONVEYED BENEATH THE GILA BEND CANAL THROUGH A CONCRETE BOX CULVERT.

SPECIAL CULVERT IS USED TO MODEL THE CULVERT.
THE SECTION AT THE DOWNSTREAM FACE OF THE BRIDGE IS FROM FIELD SURVEY

(CHANNEL) AND TOPO MAP DATA (OVERBANKS).

```
X1     4429        10      9997     10003       170       175       180
X3       10                                                     735       732
GR    739.1      9470       736      9660       734      9700       734      9950       732      9980
GR    729.6      9997     729.6     10003       734     10015       736     10090       740     10270
```

ELTRD = 743.5 + 0.1 HV = 743.6

DEVELOP SECTION GEOMETRY FROM TOPO MAPPING AT THE UPSTREAM FACE.


```
SC    1.014       0.5         3         0         3         6      95.3      10.1     731.9     729.6
X1     4449        11      9997     10003       105       105       105
X2                            2                743.6
X3       10                                                   744.9     743.5
BT       -8      9710     745.7                9910     744.9                10003     744.7
BT            10150     745.7               10200       744                10220     743.5
BT            10270       744                10610     745.5
GR    745.7      9710       734      9910       734      9990     731.9      9997     731.9     10003
GR      734     10010       740     10150       743     10200       743     10220       744     10270
GR    745.5     10610
```

REPEAT SECTION 150 FT UPSTREAM FOR CONTRACTION LOSSES
USE PSXECE = 0.6 FOR CHANNEL SLOPE (INTERPOLATED BETWEEN RM 4.449 AND RM 4.537)

DUE TO THE ATTENUATING EFFECT OF THE GILA BEND CANAL EMBANKMENT AND RELATIVELY SMALL CULVERT, 100-YEAR Q'S DOWNSTREAM ARE REDUCED FROM UPSTREAM Q'S.

```
QT       5       400       830      1660      3320      8300
X1    4477        11      9990     10010        95       160       150       0.6
GR    745.7      9710       734      9910       734      9990     731.9      9997     731.9     10003
GR      734     10010       740     10150       743     10200       743     10220       744     10270
GR    745.5     10610
```

RETURN EXPANSION/CONTRACTION COEFFICIENTS TO NORMAL VALUES.

```
NC    0.035     0.045     0.045       0.1       0.3
X1     4537        14    9997.0   10014.8       410       475       465
GR    740.2    9901.7     739.3    9936.9     737.8    9969.2     736.7    9988.6     736.0    9997.0
GR    733.8   10000.0     734.2   10004.0     735.6   10008.4     736.4   10014.8     736.3   10029.8
GR    735.8   10046.6     736.4   10059.9     737.1   10068.9     742.0   10081.2
```

SCOTT AVENUE WASH IS CONVEYED BENEATH THE CORNELIA & GILA BEND RR BY A TIMBER BRIDGE.

SPECIAL BRIDGE IS USED TO MODEL THE STRUCTURE.
THE SECTION AT THE DOWNSTREAM FACE OF THE BRIDGE IS FROM FIELD SURVEY (CHANNEL) AND TOPO MAP DATA (OVERBANKS).

WIER FLOW IS NOT ANTICIPATED. IF IT OCCURS, THE EFFECTIVE LENGTH WILL BE ABOUT 700 FT, THEREFORE USE SB.4 = 700 FT.

INCREASE EXPANSION/CONTRACTION COEFFICIENTS FOR THE BRIDGE.


```
NC                                      0.3       0.5
X1     4563         4      9965     10035       200        80       140
X3       10                                                   743       743
GR    744.6      9950     730.8      9965     730.8     10035     744.0     10050
```

ELTRD = 744.0 + 0.5 HV = 744.5
PSXECE = 0.3 FT

```
SB    1.25       1.6         3       700        70       7.5       380         0     731.1     730.8
X1    4568                                     23        23        23               0.3
X2                            1     737.2     744.5
X3       10                                                   744       744
```

SECTION 4591 IS FROM FIELD SURVEYS MADE TO CHECK MAP ACCURACY.
THE ACTUAL SURVEY WAS SKEWED ABOUT 20 DEGREES LEFT FORWARD FROM THE POSITION SHOWN ON THE MAP. SINCE THE SKEW CORRECTION WOULD ONLY REDUCE STATIONS BY 6 PERCENT, IT HAS BEEN IGNORED.

THE SECTION IS ADDED TO COMPUTE CONTRACTION LOSSES.

```
QT       5       400       790      1580      3160      7900
X1    4591        14      9987     10009        70       160       124
GR    743.4      9907     739.5      9923     738.3      9946     737.6      9987     736.5      9996
GR    735.0      9998     738.2     10007     736.5     10009     737.5     10026     738.7     10031
GR    740.6     10108     742.2     10187     741.6     10281     741.9     10378
```

RETURN EXPANSION/CONTRACTION LOSSES TO NORMAL VALUES.

```
NC    0.035     0.035      0.05       0.1       0.3
QT       5       375       750      1500      3000      7500
X1     4727        24    9973.3   10014.4     980.0     925.0    1003.0
GR    745.5    9870.9     745.0    9899.1     742.2    9919.8     740.0    9939.0     740.1    9957.9
GR    739.6    9973.3     738.5    9980.6     737.4    9987.9     737.8   10000.0     740.4   10014.4
GR    740.7   10040.1     741.9   10078.7     741.9   10121.9     741.9   10159.4     742.9   10184.5
GR    743.0   10219.0     742.8   10241.2     743.2   10286.0     743.8   10332.8     744.5   10384.9
GR    744.4   10443.6     745.3   10483.7     745.3   10536.2     745.8   10565.5
```

SCOTT AVENUE WASH CROSSES THE EXTENSION OF MAIN STREET AT RM 4.792 (LOW CROSSING - NO STRUCTURE)

```
QT       5       350       690      1380      2760      6900
X1     4911        15    9981.1   10013.1     955.0     895.0     972.0
```

```
GR    749.3     9792.5      748.9     9845.5       749.1      9903.4       748.9      9952.7       746.8      9972.1
GR    744.7     9981.1      743.9     9990.9       742.3     10000.0       742.7     10005.9       745.5     10013.1
GR    745.0    10044.4      748.5    10078.2       749.1     10127.8       749.9     10201.9       750.3     10256.4

        SCOTT AVENUE WASH CROSSES THE EXTENSION OF MARTIN AVENUE WHICH ROUGHLY
        FOLLOWS THE SECTION LINE BETWEEN SECTION 1 T6S, R5W AND SECTION 6 T6S,
        R4W.    (LOW CROSSING - NO STRUCTURE)
1
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NC    0.035     0.035       0.035
QT        5       300         610       1220         2440        6100
X1     5137        14      9941.7    10034.8       1110.0      1140.0      1193.0
GR    755.3     9755.1      752.5     9835.8        751.6      9891.8       750.8      9941.7       749.4      9968.5
GR    749.7     9979.6      749.2     9985.7        747.6      9991.3       746.6     10000.0       748.5     10010.5
GR    751.6    10034.8      752.8    10082.9        753.8     10135.8       754.3     10179.4

        SCOTT AVENUE WASH IS CONVEYED BENEATH INTERSTATE 8 BY A BOX CULVERT.
        SPECIAL CULVERT IS USED TO MODEL THE STRUCTURE.

        SECTION 5200 IS BASED ON FIELD SURVEY DATA (CHANNEL) AND TOPO
        MAP DATA (OVERBANKS).

        INCREASE EXPANSION/CONTRACTION COEFFICIENTS FOR THE BRIDGE.

NC                                          0.3         0.5
X1     5200         5       9989     10011         200         400         333
X3       10                                                                          770.3       770.3
GR    755.3      9600        752      9970        750.5        9989       750.5      10011         756      10220

        WIER FLOW IS NOT ANTICIPATED.   USE ELTRD = 771.3 + 0.5 HV = 771.8
        AND SC.5 RDLEN = 500 FT.
        USE PSXECE = 0.7 WHEN THE SECTION IS REPEATED AT THE UPSTREAM FACE.

SC    2.014       0.4         3       500         6.8          10         294         8.1       751.2      750.5
X1     5258                                      304         304         304                     0.7
X2                            2                 771.8
X3       10                                                                          771.3       771.3

        DEVELOP A SECTION UPSTREAM OF THE CULVERT TO COMPUTE CONTRACTION LOSSES.
        USE TOPO MAP DATA TO GENERATE GR POINTS.

X1     5308         5       9900     10080         320         180         264
GR      760      9850        756      9900         752       10000         756      10080         760      10150
1
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    SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      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

*PROF 1

CCHV=      .100 CEHV=      .300
*SECNO 1884.000
3840 SECTION NOT HIGH ENOUGH   747.000   715.500   662.100   718.800      .000         0
  1884.000      3.43     665.53     665.17     747.00     665.87       .34       .00       .00     664.50
     740.0      63.6      637.4       39.0       58.3      126.7      15.9        .0        .0     664.20
       .00      1.09       5.03       2.45       .060       .030      .030      .000    662.10    9840.60
   .003697        0.         0.         0.          0         26        12       .00    201.90   10042.50

*SECNO 2070.000
3280 CROSS SECTION   2070.00 EXTENDED       .53 FEET

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
  2070.000      3.73     670.53     670.53       .00     671.32       .79      5.12       .13     671.80
     740.0        .0      692.2       47.8        .0       94.4      16.0       3.5       3.1     670.00
       .04       .00       7.33       2.99       .000       .030      .030      .000    666.80    9965.73
   .007908      985.       982.       985.          3          8         0       .00     71.27   10037.00

*SECNO 2261.000
3280 CROSS SECTION   2261.00 EXTENDED       .20 FEET

3301 HV CHANGED MORE THAN HVINS

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.62

  2261.000      3.41     675.41       .00        .00     675.66       .25      4.29       .05     676.00
     680.0        .0      659.8      20.2         .0      161.3      12.3       6.8       5.1     674.50
       .11       .00       4.09       1.64       .000       .030      .030      .000    672.00    9939.23
   .002558     1020.      1008.      1010.          4          0         0       .00    102.47   10041.70

*SECNO 2505.000

3265 DIVIDED FLOW

1
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    SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      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

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =   .38
```

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 682.20 ELREA= 682.50

2505.000	2.17	682.27	682.22	.00	682.53	.26	6.87	.00	682.20
680.0	26.9	653.1	.0	9.8	156.6	.0	11.8	9.9	682.50
.19	2.74	4.17	.00	.040	.040	.000	.000	680.10	9983.10
.017712	890.	1288.	1200.	7	21	0	.00	238.98	10274.86

*SECNO 2677.000

3265 DIVIDED FLOW

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3710 WSEL ASSUMED BASED ON MIN DIFF

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 688.10 ELREA= 687.60

2677.000	4.34	687.64	686.75	.00	687.68	.04	4.58	23.96	688.10
620.0	.0	304.4	315.6	.0	227.0	181.5	17.9	16.9	687.60
.36	.00	1.34	1.74	.000	.070	.035	.000	683.30	9920.03
.002159	850.	908.	970.	20	14	0	.00	413.69	10684.64

*SECNO 2867.000

3301 HV CHANGED MORE THAN HVINS

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

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 694.50 ELREA= 694.70

2867.000	3.86	693.36	693.36	.00	694.36	1.00	5.91	.29	694.50
620.0	.0	620.0	.0	.0	77.4	.0	23.2	21.7	694.70
.39	.00	8.02	.00	.000	.070	.000	.000	689.50	9976.40
.060542	995.	1003.	860.	20	15	0	.00	39.93	10016.33

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	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 3105.000
3840 SECTION NOT HIGH ENOUGH 758.273 754.500 695.200 754.600 691.244 2

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 699.40 ELREA= 699.20

3105.000	4.07	699.27	699.27	.00	699.27	.01	.58	.10	699.40
560.0	.0	18.0	542.0	.0	70.2	735.9	34.0	28.0	699.20
.84	.00	.26	.74	.000	.070	.035	.000	695.20	9981.42
.000125	930.	1257.	1030.	0	11	0	.00	471.78	10453.20

*SECNO 3292.000

3265 DIVIDED FLOW

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

3292.000	2.82	704.12	704.12	.00	704.60	.48	.44	.14	704.50
560.0	112.1	447.0	.9	14.4	93.0	.4	44.0	34.5	703.90
.89	7.80	4.81	2.27	.035	.070	.035	.000	701.30	9957.37
.053995	960.	987.	950.	20	19	0	.00	119.43	10088.36

*SECNO 3492.000

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 4.68

3492.000	3.62	710.72	.00	.00	710.78	.07	6.14	.04	709.60
500.0	243.4	173.9	82.7	112.0	101.1	35.8	48.2	37.9	709.30
1.03	2.17	1.72	2.31	.035	.070	.035	.000	707.10	9889.09
.001963	970.	1056.	1045.	11	0	0	.00	166.92	10056.01

*SECNO 3570.000

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = .49

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	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

3570.000	3.17	712.07	.00	.00	712.21	.13	1.40	.02	711.30
500.0	9.6	185.9	304.5	4.7	64.3	101.8	50.1	39.6	711.60
1.06	2.03	2.89	2.99	.035	.070	.035	.000	708.90	9972.12
.008138	335.	412.	425.	5	0	0	.00	216.20	10188.33

*SECNO 3677.000

3677.000	3.16	715.16	.00	.00	715.28	.12	3.07	.00	714.60
480.0	314.1	93.9	71.9	107.5	58.0	21.7	52.3	42.0	714.60
1.12	2.92	1.62	3.32	.035	.070	.035	.000	712.00	9868.33
.004304	535.	565.	495.	6	0	0	.00	178.05	10046.38

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*SECNO 3772.000
  3772.000      3.44    717.24       .00       .00    717.35       .11      2.07       .00    716.60
     480.0      18.1     177.2     284.7       9.6      86.4      97.1      54.4      43.9    716.60
      1.17      1.89      2.05      2.93      .035      .070      .035      .000    713.80   9973.16
   .004505      500.      502.      420.         4         0         0       .00    168.37  10141.53


*SECNO 3863.000

3265 DIVIDED FLOW

  3863.000      2.50    719.50       .00       .00    719.64       .14      2.28       .01    720.30
     450.0     267.7     182.3        .0      93.6      58.3        .0      56.3      45.6    720.70
      1.21      2.86      3.13       .00      .035      .040      .000      .000    717.00   9829.44
   .005233      450.      480.      480.         3         0         0       .00    156.46  10025.14


*SECNO 3957.000
  3957.000      3.50    722.10       .00       .00    722.28       .19      2.63       .02    720.50
     450.0      13.3     230.3     206.4       5.1      59.1      68.1      57.9      47.1    720.70
      1.25      2.63      3.90      3.03      .035      .050      .035      .000    718.60   9982.63
   .005398      477.      496.      520.         3         0         0       .00    108.57  10091.21


*SECNO 4053.000
  4053.000      4.08    724.88       .00       .00    724.99       .11      2.70       .01    724.90
     450.0        .0     267.3     192.7        .0     115.7      60.4      59.6      48.5    724.10
      1.30       .00      2.22      3.19      .000      .070      .035      .000    720.80   9962.24
   .005654      535.      507.      466.         3         0         0       .00    134.22  10096.46
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    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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 4147.000
  4147.000      3.28    727.08       .00       .00    727.28       .20      2.26       .03    725.80
     410.0       4.3     266.8     139.0       2.4      65.2      56.4      61.4      49.8    725.80
      1.34      1.80      4.09      2.46      .035      .040      .035      .000    723.80   9986.72
   .003508      455.      496.      530.         3         0         0       .00     94.85  10081.57


CCHV=     .300 CEHV=     .500
*SECNO 4156.000

3265 DIVIDED FLOW

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
  4156.000      5.05    729.95    729.95       .00    730.30       .35       .26       .08    731.20
     410.0        .0     260.4     149.6        .0      45.3      67.5      61.5      50.0    731.50
      1.35       .00      5.74      2.22      .000      .040      .035      .000    724.90   9995.02
   .007357       60.       50.       60.        20        15         0       .00    152.36  10193.88


*SECNO 4183.000

3265 DIVIDED FLOW

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3710 WSEL ASSUMED BASED ON MIN DIFF

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      731.80 ELREA=      731.00

  4183.000      6.20    731.10    729.14       .00    731.12       .02       .16      3.17    731.20
     410.0        .0      46.6     363.4        .0      56.9     327.1      62.2      50.6    731.50
      1.38       .00       .82      1.11      .000      .080      .035      .000    724.90   9995.00
   .000516      140.      140.      110.        20        15         0       .00    319.25  10326.29


SPECIAL CULVERT

SC  CUNO      CUNV      ENTLC     COFQ      RDLEN     RISE      SPAN      CULVLN    CHRT      SCL       ELCHU     ELCHD
     1         .014       .50      3.00       .00      6.00     10.00     165.00     10        1       725.00    725.00

CHART 10 - BOX CULVERT; 90-DEGREE HEADWALL; CHAMFERED OR BEVELED INLET EDGES
SCALE  1 - INLET EDGES CHAMFERED 3/4-INCH

*SECNO 4216.000
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    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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


5155, 20 TRIALS OF QWEIR NOT ENOUGH; POSSIBLY INVALID
FINAL QWEIR + QCULV =       428. DOES NOT EQUAL ACTUAL Q =       410.


SPECIAL CULVERT OUTLET CONTROL + WEIR FLOW EG =     732.42

3265 DIVIDED FLOW

SPECIAL CULVERT

     EGIC      EGOC       H4     QWEIR     QCULV       VCH     ACULV     ELTRD    WEIRLN
   731.13    732.48     1.30       27.      400.     4.065      60.0    732.40      229.


3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      732.80 ELREA=      732.20

  4216.000      7.22    732.22       .00       .00    732.42       .20      1.30       .00    725.00
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     410.0        .0      293.1      116.9        .0       72.1       56.8       63.2       81.3     725.00
      1.39       .00       4.07       2.06      .000       .030       .035       .000     725.00    9995.00
   .000484      175.       175.       175.         2          0          0        .00      47.33   10160.76

*SECNO 4287.000

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

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       729.00 ELREA=       732.60

  4287.000      5.72     732.52        .00        .00     732.54        .02        .07        .06     729.00
     410.0     193.9      216.1         .0      216.6      185.3         .0       65.5       52.0     732.60
      1.49       .90       1.17        .00       .035       .030       .000       .000     726.80    9914.03
   .000097      420.       375.       195.         2          0          0        .00     122.59   10036.62

*SECNO 4315.000

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       738.70 ELREA=       738.90

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    SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      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

  4315.000      2.29     732.09     732.09        .00     733.23       1.14        .04        .56     732.00
     380.0        .0      380.0         .0         .0       44.4         .0       66.1       52.2     734.00
      1.49       .00       8.55        .00       .000       .030       .000       .000     729.80    9990.00
   .012798       90.       148.       190.         4         18          0        .00      19.77   10009.77

SPECIAL BRIDGE

SB  XK        XKOR       COFQ       RDLEN      BWC        BWP        BAREA      SS         ELCHU      ELCHD
      .00      1.60       3.00    1000.00     19.00        .00     129.00        .00     730.10     729.80

*SECNO 4331.000

6070,LOW FLOW BY NORMAL BRIDGE

EGPRS=        .000  EGLWC=    733.274  ELLC=    736.900  PCWSE=    732.091  ELTRD=    740.200

3301 HV CHANGED MORE THAN HVINS

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  2.12

3370 NORMAL BRIDGE, NRD=   0 MIN ELTRD=   740.20 MAX ELLC=   736.90

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       739.70 ELREA=       739.90

  4331.000      3.65     733.45        .00        .00     733.89        .44        .45        .21     732.00
     380.0        .0      380.0         .0         .0       71.3         .0       66.2       52.2     734.00
      1.50       .00       5.33        .00       .000       .030       .000       .000     729.80    9990.00
   .002851       86.        86.        86.         3          0          0        .00      19.93   10009.93

*SECNO 4395.000

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.48

  4395.000      4.97     734.47        .00        .00     734.60        .14        .63        .09     737.10
     380.0        .0      380.0         .0         .0      127.8         .0       67.0       52.5     734.70
      1.53       .00       2.97        .00       .000       .035       .000       .000     729.50    9975.61
   .001298      325.       338.       325.         3          0          0        .00      45.82   10021.42

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    SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      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 4429.000

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

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       735.00 ELREA=       732.00

  4429.000      5.01     734.61        .00        .00     735.17        .56        .35        .21     729.60
     380.0        .0      215.0      165.0         .0       30.1       40.7       67.4       52.7     729.60
      1.64       .00       7.15       4.06       .000       .035       .035       .000     729.60    9997.00
   .003312      170.       180.       175.         2          0          0        .00      40.86   10037.86

SPECIAL CULVERT

SC  CUNO      CUNV       ENTLC      COFQ       RDLEN      RISE       SPAN       CULVLN     CHRT       SCL        ELCHU      ELCHD
      1        .014        .50       3.00        .00       3.00       6.00      95.30      10          1        731.90     729.60

CHART 10 - BOX CULVERT; 90-DEGREE HEADWALL; CHAMFERED OR BEVELED INLET EDGES
SCALE  1 - INLET EDGES CHAMFERED 3/4-INCH

5130, EGIC=  750.95..MAY BE TOO LARGE IF INLET CONTROLS.
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5135, EGOC= 748.76 ..MAY BE TOO LARGE IF OUTLET CONTROLS.
*SECNO 4449.000

SPECIAL CULVERT INLET CONTROL + WEIR FLOW, EG = 744.26

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 31.67

SPECIAL CULVERT

EGIC	EGOC	H4	QWEIR	QCULV	VCH	ACULV	ELTRD	WEIRLN
750.95	748.76	9.09	86.	294.	.412	18.0	743.60	136.

3498 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 744.90 ELREA= 743.50

4449.000	12.36	744.26	.00	.00	744.26	.00	9.09	.00	731.90
380.0	.0	30.6	349.4	.0	74.2	1304.2	69.1	53.1	731.90
1.64	.00	.41	.27	.000	.035	.035	.000	731.90	9997.00
.000003	105.	105.	105.	0	0	0	.00	331.77	10328.77

*SECNO 4477.000

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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	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

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 2.10

4477.000	11.76	744.26	.00	.00	744.26	.00	.00	.00	734.60
400.0	223.5	41.4	135.1	1570.2	220.5	1064.4	75.7	54.5	734.60
1.92	.14	.19	.13	.035	.035	.035	.000	732.50	9744.88
.000001	95.	150.	160.	2	0	0	.00	508.09	10252.97

CCHV= .100 CEHV= .300
*SECNO 4537.000
3280 CROSS SECTION 4537.00 EXTENDED 4.06 FEET

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = .36

4537.000	10.46	744.26	.00	.00	744.26	.00	.00	.00	736.00
400.0	187.3	57.3	155.4	545.7	163.2	490.7	96.2	58.0	736.40
2.28	.34	.35	.32	.035	.045	.045	.000	733.80	9901.70
.000006	410.	465.	475.	0	0	0	.00	179.50	10081.20

CCHV= .300 CEHV= .500
*SECNO 4563.000
3280 CROSS SECTION 4563.00 EXTENDED .26 FEET

4563.000	13.46	744.26	.00	.00	744.26	.00	.00	.00	730.80
400.0	24.5	355.2	20.3	98.5	942.2	102.9	100.0	58.4	730.80
2.39	.25	.38	.20	.035	.045	.045	.000	730.80	9950.37
.000004	200.	140.	80.	0	0	0	.00	99.63	10050.00

SPECIAL BRIDGE

SB	XK	XKOR	COFQ	RDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
	1.25	1.60	3.00	700.00	70.00	7.50	380.00	.00	731.10	730.80

*SECNO 4568.000
PRESSURE FLOW

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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	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

EGPRS	EGLWC	H3	QWEIR	QPR	BAREA	TRAPEZOID AREA	ELLC	ELTRD	WEIRLN
744.29	744.26	.00	0.	400.	380.	381.	737.20	744.50	0.

4568.000	13.19	744.29	.00	.00	744.29	.00	.03	.00	731.10
400.0	24.1	356.1	19.8	94.5	923.1	98.8	100.6	58.5	731.10
2.41	.25	.39	.20	.035	.045	.045	.000	731.10	9950.67
.000004	23.	23.	23.	0	0	0	.00	99.32	10049.99

*SECNO 4591.000
3280 CROSS SECTION 4591.00 EXTENDED 2.39 FEET

4591.000	9.29	744.29	.00	.00	744.29	.00	.00	.00	737.60
400.0	130.6	54.1	215.2	429.0	181.7	1209.9	105.0	59.4	736.50
2.56	.30	.30	.18	.035	.045	.045	.000	735.00	9907.00
.000005	70.	124.	160.	0	0	0	.00	471.00	10378.00

CCHV= .100 CEHV= .300
*SECNO 4727.000

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = .52

4727.000	6.89	744.29	.00	.00	744.30	.00	.01	.00	739.60
375.0	93.8	93.5	187.7	226.0	240.3	633.3	136.8	69.5	740.40

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     3.32       .41       .39       .30      .035      .050      .035      .000    737.40   9904.33
  .000017      980.     1003.      926.         0         0         0       .00    465.08  10369.42

*SECNO 4911.000

3265 DIVIDED FLOW

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
  4911.000      2.92    745.22    745.22       .00    745.89       .67       .06       .20    744.70
     350.0       1.6     345.8       2.7        .6      52.5       1.7     149.1      74.9    745.50
      3.36      2.70      6.59      1.54      .035      .050      .035      .000    742.30   9978.88
  .025356      955.      972.      895.        20        14         0       .00     49.28  10046.51
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   SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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 5137.000

3301 HV CHANGED MORE THAN HVINS

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  3.62

  5137.000      4.15    750.75       .00       .00    750.83       .07      4.88       .06    750.80
     300.0        .0     300.0        .0        .0     137.4        .0     151.7      76.7    751.60
      3.51       .00      2.18       .00      .000      .035      .000      .000    746.60   9942.57
  .001420      1110.     1193.     1140.         9         0         0       .00     85.60  10028.17

CCHV=     .300 CEHV=     .500
*SECNO 5200.000

3301 HV CHANGED MORE THAN HVINS

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

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       770.30 ELREA=       770.30

  5200.000      1.79    752.29    752.29       .00    753.19       .90      1.10       .41    750.50
     300.0        .0     300.0        .0        .0      39.4        .0     152.4      77.1    750.50
      3.52       .00      7.62       .00      .000      .035      .000      .000    750.50   9989.00
  .014813       200.      333.      400.        20        14         0       .00     22.00  10011.00


SPECIAL CULVERT

SC  CUNO      CUNV      ENTLC     COFQ      RDLEN     RISE      SPAN      CULVLN    CHRT      SCL       ELCHU     ELCHD
     2          .014      .40      3.00     500.00     6.80     10.00     294.00     8         1        751.20    750.50

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

*SECNO 5258.000

SPECIAL CULVERT OUTLET CONTROL
EGIC =    754.209  EGOC =    754.410  PCWSE=    752.290  ELTRD=    771.800

3301 HV CHANGED MORE THAN HVINS
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   SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  2.19

SPECIAL CULVERT

     EGIC      EGOC        H4     QWEIR     QCULV       VCH     ACULV     ELTRD    WEIRLN
   754.21    754.41      1.22        0.      300.     4.760     136.0    771.80        0.


3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       771.30 ELREA=       771.30

  5258.000      2.86    754.06       .00       .00    754.41       .35      1.22       .00    751.20
     300.0        .0     300.0        .0        .0      63.0        .0     152.7      77.3    751.20
      3.54       .00      4.76       .00      .000      .035      .000      .000    751.20   9989.00
  .003088       304.      304.      304.         2         0         0       .00     22.00  10011.00

*SECNO 5308.000

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.84

  5308.000      2.86    754.86       .00       .00    754.91       .04       .40       .09    756.00
     300.0        .0     300.0        .0        .0     184.7        .0     153.5      77.7    756.00
      3.59       .00      1.62       .00      .000      .035      .000      .000    752.00   9928.37
  .000907       320.      264.      180.         4         0         0       .00    128.93  10057.30
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T1      FLOOD CONTROL DISTRICT OF MARICOPA COUNTY - CONTRACT FCD 90-67
T2      GILA BEND AREA FLOODPLAIN DELINEATION STUDY BY BURGESS & NIPLE
T3      SCOTT AVENUE WASH                          J. MISCHLER - (602) 244-8100

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                3                           0.0037                                    747

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

      2                  -1
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    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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

*PROF 2

CCHV=     .100 CEHV=     .300
*SECNO 1884.000
3840 SECTION NOT HIGH ENOUGH   747.000   715.500   662.100   718.800      .000         0
  1884.000      3.43    665.53    665.17    747.00    665.87       .34       .00       .00    664.50
     740.0      63.6     637.4      39.0      58.3     126.7      15.9        .0        .0    664.20
       .00      1.09      5.03      2.45      .060      .030      .030      .000    662.10   9840.60
   .003697        0.        0.        0         0        26        12       .00    201.90  10042.50

*SECNO 2070.000
3280 CROSS SECTION   2070.00 EXTENDED       .53 FEET

7186 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
  2070.000      3.73    670.53    670.53       .00    671.32       .79      5.12       .13    671.80
     740.0        .0     692.2      47.8        .0      94.4      16.0       3.5       3.1    670.00
       .04       .00      7.33      2.99      .000      .030      .030      .000    666.80   9965.73
   .007908      985.      982.      985.         3         8         0       .00     71.27  10037.00

*SECNO 2261.000
3280 CROSS SECTION   2261.00 EXTENDED       .20 FEET

3301 HV CHANGED MORE THAN HVINS

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.62

  2261.000      3.41    675.41       .00       .00    675.66       .25      4.29       .05    676.00
     680.0        .0     659.8      20.2        .0     161.3      12.3       6.8       5.1    674.50
       .11       .00      4.09      1.64      .000      .030      .030      .000    672.00   9939.23
   .002558      1020.     1008.     1010.         4         0         0       .00    102.47  10041.70

*SECNO 2505.000

3265 DIVIDED FLOW
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    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =   .38

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      682.20 ELREA=      682.50

  2505.000      2.17    682.27    682.22       .00    682.53       .26      6.87       .00    682.20
     680.0      26.9     653.1        .0       9.8     156.6        .0      11.8       9.9    682.50
       .19      2.74      4.17       .00      .040      .040      .000      .000    680.10   9983.10
   .017712      890.     1288.     1200.         7        21         0       .00    238.98  10274.86

*SECNO 2677.000

3265 DIVIDED FLOW

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3710 WSEL ASSUMED BASED ON MIN DIFF

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      688.10 ELREA=      687.60

  2677.000      4.34    687.64    686.75       .00    687.68       .04      4.58     23.96    688.10
     620.0        .0     304.4     315.6        .0     227.0     181.5      17.9      16.9    687.60
       .36       .00      1.34      1.74      .000      .070      .035      .000    683.30   9920.03
   .002159      850.      908.      970.        20        14         0       .00    413.69  10684.64

*SECNO 2867.000

3301 HV CHANGED MORE THAN HVINS

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

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      694.50 ELREA=      694.70

  2867.000      3.86    693.36    693.36       .00    694.36      1.00      5.91       .29    694.50
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     620.0        .0     620.0        .0        .0      77.4        .0      23.2      21.7    694.70
       .39       .00      8.02       .00      .000      .070      .000      .000    689.50   9976.40
   .060542      995.     1003.      860.        20        15         0       .00     39.93  10016.33
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   SECNO      DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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 3105.000
3840 SECTION NOT HIGH ENOUGH   758.273   754.500   695.200   754.600   691.244        2

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       699.40 ELREA=       699.20

  3105.000      4.07    699.27    699.27       .00    699.27       .01       .58       .10    699.40
     560.0        .0      18.0     542.0        .0      70.2     735.9      34.0      28.0    699.20
       .84       .00       .26       .74      .000      .070      .035      .000    695.20   9981.42
   .000125      930.     1257.     1030.         0        11         0       .00    471.78  10453.20

*SECNO 3292.000

3265 DIVIDED FLOW

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
  3292.000      2.82    704.12    704.12       .00    704.60       .48       .44       .14    704.50
     560.0     112.1     447.0        .9      14.4      93.0        .4      44.0      34.5    703.90
       .89      7.80      4.81      2.27      .035      .070      .035      .000    701.30   9957.37
   .053995      960.      987.      950.        20        19         0       .00    119.43  10088.36

*SECNO 3492.000

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  4.68

  3492.000      3.62    710.72       .00       .00    710.78       .07      6.14       .04    709.60
     500.0     243.4     173.9      82.7     112.0     101.1      35.8      48.2      37.9    709.30
      1.03      2.17      1.72      2.31      .035      .070      .035      .000    707.10   9889.09
   .001963      970.     1056.     1048.        11         0         0       .00    166.92  10056.01

*SECNO 3570.000

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =   .49
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   SECNO      DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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

  3570.000      3.17    712.07       .00       .00    712.21       .13      1.40       .02    711.30
     500.0       9.6     185.9     304.5       4.7      64.3     101.8      50.1      39.6    711.60
      1.06      2.03      2.89      2.99      .035      .070      .035      .000    708.90   9972.12
   .008138      335.      412.      425.         5         0         0       .00    216.20  10188.33

*SECNO 3677.000
  3677.000      3.16    715.16       .00       .00    715.28       .12      3.07       .00    714.80
     480.0     314.1      93.9      71.9     107.5      58.0      21.7      52.3      42.0    714.60
      1.12      2.92      1.62      3.32      .035      .070      .035      .000    712.00   9868.33
   .004304      535.      565.      495.         6         0         0       .00    178.05  10046.38

*SECNO 3772.000
  3772.000      3.44    717.24       .00       .00    717.35       .11      2.07       .00    716.60
     480.0      18.1     177.2     284.7       9.6      86.4      97.1      54.4      43.9    716.60
      1.17      1.89      2.05      2.93      .035      .070      .035      .000    713.80   9973.16
   .004505      500.      502.      420.         4         0         0       .00    168.37  10141.53

*SECNO 3863.000

3265 DIVIDED FLOW

  3863.000      2.50    719.50       .00       .00    719.64       .14      2.28       .01    720.30
     450.0     267.7     182.3        .0      93.6      58.3        .0      56.3      45.6    720.70
      1.21      2.86      3.13       .00      .035      .040      .000      .000    717.00   9829.44
   .005233      450.      480.      480.         3         0         0       .00    156.46  10025.14

*SECNO 3957.000
  3957.000      3.50    722.10       .00       .00    722.28       .19      2.63       .02    720.50
     450.0      13.3     230.3     206.4       5.1      59.1      68.1      57.9      47.1    720.70
      1.25      2.63      3.90      3.03      .035      .050      .035      .000    718.60   9982.63
   .005398      477.      496.      520.         3         0         0       .00    108.57  10091.21

*SECNO 4053.000
  4053.000      4.08    724.88       .00       .00    724.99       .11      2.70       .01    724.90
     450.0        .0     257.3     192.7        .0     115.7      60.4      59.6      48.5    724.10
      1.30       .00      2.22      3.19      .000      .070      .035      .000    720.80   9962.24
   .005654      535.      507.      466.         3         0         0       .00    134.22  10096.46
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    SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      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 4147.000
  4147.000      3.28     727.08        .00        .00     727.28        .20       2.26        .03     725.80
     410.0       4.3      266.8      139.0        2.4       65.2       56.4       61.4       49.8     725.80
      1.34      1.80       4.09       2.46       .035       .040       .035       .000     723.80    9986.72
   .003508      455.       496.       530.          3          0          0        .00      94.85   10081.57

CCHV=     .300 CEHV=     .500
*SECNO 4156.000

3265 DIVIDED FLOW

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
  4156.000      5.05     729.95     729.95        .00     730.30        .35        .26        .08     731.20
     410.0        .0      260.4      149.6         .0       45.3       67.5       61.5       50.0     731.50
      1.35       .00       5.74       2.22       .000       .040       .035       .000     724.90    9995.02
   .007357       60.        50.        60.         20         15          0        .00     152.36   10193.88

*SECNO 4183.000

3265 DIVIDED FLOW

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3710 WSEL ASSUMED BASED ON MIN DIFF

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       731.80 ELREA=       731.00

  4183.000      6.20     731.10     729.14        .00     731.12        .02        .16       3.17     731.20
     410.0        .0       46.6      363.4         .0       56.9      327.1       62.2       50.6     731.50
      1.38       .00        .82       1.11       .000       .080       .035       .000     724.90    9995.00
   .000516      140.       140.       110.         20         15          0        .00     319.25   10326.29


SPECIAL CULVERT

SC  CUNO      CUNV      ENTLC      COFQ      RDLEN      RISE      SPAN      CULVLN      CHRT      SCL      ELCHU      ELCHD
     1          .014       .50      3.00        .00      6.00     10.00      165.00        10        1     725.00     725.00

CHART 10 - BOX CULVERT; 90-DEGREE HEADWALL; CHAMFERED OR BEVELED INLET EDGES
SCALE  1 - INLET EDGES CHAMFERED 3/4-INCH

*SECNO 4216.000
1
   11MAR92      10:36:18                                                                                          PAGE   28

    SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      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

5155, 20 TRIALS OF QWEIR NOT ENOUGH; POSSIBLY INVALID
FINAL QWEIR + QCULV =       428. DOES NOT EQUAL ACTUAL Q =       410.

SPECIAL CULVERT OUTLET CONTROL + WEIR FLOW EG =    732.42

3265 DIVIDED FLOW

SPECIAL CULVERT

     EGIC       EGOC        H4      QWEIR      QCULV       VCH      ACULV      ELTRD     WEIRLN
   731.13     732.48      1.30        27.       400.     4.065       60.0     732.40       229.


3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       732.80 ELREA=       732.20

  4216.000      7.22     732.22        .00        .00     732.42        .20       1.30        .00     725.00
     410.0        .0      293.1      116.9         .0       72.1       56.8       63.2       51.3     725.00
      1.39       .00       4.07       2.06       .000       .030       .035       .000     725.00    9995.00
   .000484      175.       175.       175.          2          0          0        .00      47.33   10160.76

*SECNO 4287.000

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

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       729.00 ELREA=       732.60

  4287.000      5.72     732.52        .00        .00     732.54        .02        .07        .06     729.00
     410.0     193.9      216.1         .0      216.6      185.3         .0       65.5       52.0     732.60
      1.49       .90       1.17        .00       .035       .030       .000       .000     726.80    9914.03
   .000097      420.       375.       195.          2          0          0        .00     122.59   10036.62

*SECNO 4315.000

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       738.70 ELREA=       738.90

1
   11MAR92      10:36:18                                                                                          PAGE   29

    SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      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
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 4315.000      2.29    732.09    732.09       .00    733.23      1.14       .04       .56    732.00
    380.0       .0     380.0       .0        .0      44.4        .0      66.1      52.2    734.00
     1.49       .00      8.55      .00      .000      .030      .000      .000    729.80   9990.00
  .012798      90.      148.      190.         4        18         0       .00     19.77  10009.77


SPECIAL BRIDGE

SB  XK        XKOR      COFQ     RDLEN     BWC       BWP      BAREA      SS        ELCHU     ELCHD
     .00       1.60      3.00   1000.00    19.00      .00     129.00      .00     730.10    729.80

*SECNO 4331.000

6070,LOW FLOW BY NORMAL BRIDGE

EGPRS=       .000  EGLWC=    733.274  ELLC=    736.900  PCWSE=    732.091  ELTRD=    740.200

3301 HV CHANGED MORE THAN HVINS

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  2.12

3370 NORMAL BRIDGE, NRD=   0 MIN ELTRD=   740.20 MAX ELLC=   736.90

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       739.70 ELREA=       739.90

 4331.000      3.65    733.45       .00       .00    733.89       .44       .45       .21    732.00
    380.0       .0     380.0       .0        .0      71.3        .0      66.2      52.2    734.00
     1.50       .00      5.33      .00      .000      .030      .000      .000    729.80   9990.00
  .002851      86.       86.       86.         3         0         0       .00     19.93  10009.93


*SECNO 4395.000

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.48

 4395.000      4.97    734.47       .00       .00    734.60       .14       .63       .09    737.10
    380.0       .0     380.0       .0        .0     127.8        .0      67.0      52.5    734.70
     1.63       .00      2.97      .00      .000      .035      .000      .000    729.50   9975.61
  .001298     325.      338.      325.         3         0         0       .00     45.82  10021.42
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   SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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 4429.000

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

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       735.00 ELREA=       732.00

 4429.000      5.01    734.61       .00       .00    735.17       .56       .35       .21    729.60
    380.0       .0     215.0     165.0        .0      30.1      40.7      67.4      52.7    729.60
     1.54       .00      7.15      4.06      .000      .035      .035      .000    729.60   9997.00
  .003312     170.      180.      175.         2         0         0       .00     40.86  10037.86


SPECIAL CULVERT

SC  CUNO      CUNV      ENTLC     COFQ      RDLEN     RISE      SPAN      CULVLN    CHRT      SCL       ELCHU     ELCHD
     1         .014      .50      3.00       .00      3.00      6.00      95.30     10        1        731.90    729.60

CHART 10 - BOX CULVERT; 90-DEGREE HEADWALL; CHAMFERED OR BEVELED INLET EDGES
SCALE  1 - INLET EDGES CHAMFERED 3/4-INCH

5130, EGIC=  750.95..MAY BE TOO LARGE IF INLET CONTROLS.
5135, EGOC=  748.76 ..MAY BE TOO LARGE IF OUTLET CONTROLS.
*SECNO 4449.000

SPECIAL CULVERT INLET CONTROL + WEIR FLOW, EG =    744.26

3301 HV CHANGED MORE THAN HVINS

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO = 31.67

SPECIAL CULVERT

    EGIC      EGOC       H4      QWEIR     QCULV      VCH      ACULV     ELTRD     WEIRLN
  750.95    748.76     9.09       86.      294.      .412      18.0     743.60      136.


3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       744.90 ELREA=       743.50

 4449.000     12.36    744.26       .00       .00    744.26       .00      9.09       .00    731.90
    380.0       .0      30.6     349.4        .0      74.2    1304.2      69.1      53.1    731.90
     1.64       .00       .41       .27      .000      .035      .035      .000    731.90   9997.00
  .000003     105.      105.      105.         0         0         0       .00    331.77  10328.77


*SECNO 4477.000
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   SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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
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3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  2.10

  4477.000     11.76    744.26       .00       .00    744.26       .00       .00       .00    734.60
     830.0     463.8      85.9     280.3    1570.0     220.5    1064.1      75.7      54.5    734.60
      1.77       .30       .39       .26      .035      .035      .035      .000    732.50   9744.90
   .000004       95.      150.      160.         2         0         0       .00    508.03  10252.93


CCHV=     .100 CEHV=     .300
*SECNO 4537.000
3280 CROSS SECTION   4537.00 EXTENDED      4.06 FEET


3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =   .36

  4537.000     10.46    744.26       .00       .00    744.27       .01       .00       .00    736.00
     830.0     388.6     118.8     322.5     545.6     163.2     490.6      96.2      58.0    736.40
      1.95       .71       .73       .66      .035      .045      .045      .000    733.80   9901.70
   .000027      410.      465.      475.         0         0         0       .00    179.50  10081.20


CCHV=     .300 CEHV=     .600
*SECNO 4563.000
3280 CROSS SECTION   4563.00 EXTENDED       .26 FEET

  4563.000     13.46    744.26       .00       .00    744.27       .01       .00       .00    730.80
     830.0      50.9     737.1      42.1      98.5     942.2     102.9     100.0      58.4    730.80
      2.00       .52       .78       .41      .035      .045      .045      .000    730.80   9950.37
   .000018      200.      140.       80.         0         0         0       .00     99.63  10050.00


SPECIAL BRIDGE

SB  XK        XKOR      COFQ      RDLEN     BWC       BWP       BAREA     SS        ELCHU     ELCHD
     1.25      1.60      3.00    700.00    70.00      7.50    380.00      .00    731.10    730.80

*SECNO 4568.000
3280 CROSS SECTION   4568.00 EXTENDED       .08 FEET

PRESSURE FLOW
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   SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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


 EGPRS     EGLWC     H3      QWEIR     QPR       BAREA   TRAPEZOID      ELLC      ELTRD     WEIRLN
                                                          AREA
   744.38    744.27     .00        0.      830.      380.      381.    737.20    744.50        0.


  4568.000     13.27    744.37       .00       .00    744.38       .01       .11       .00    731.10
     830.0      50.3     738.3      41.5      95.8     929.5     100.2     100.6      58.5    731.10
      2.01       .52       .79       .41      .035      .045      .045      .000    731.10   9950.57
   .000018       23.       23.       23.         0         0         0       .00     99.43  10050.00


*SECNO 4591.000
3280 CROSS SECTION   4591.00 EXTENDED      2.47 FEET

  4591.000      9.38    744.38       .00       .00    744.38       .00       .00       .00    737.60
     790.0     256.3     105.3     428.4     435.9     183.6    1241.6     105.1      59.4    736.50
      2.09       .59       .57       .35      .035      .045      .045      .000    735.00   9907.00
   .000019       70.      124.      160.         0         0         0       .00    471.00  10378.00


CCHV=     .100 CEHV=     .300
*SECNO 4727.000

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

  4727.000      7.01    744.41       .00       .00    744.41       .01       .03       .00    739.60
     750.0     185.2     181.7     383.0     233.3     244.6     671.1     137.8      69.6    740.40
      2.49       .79       .74       .57      .035      .050      .035      .000    737.40   9903.56
   .000059      980.     1003.      925.         0         0         0       .00    473.69  10377.25


*SECNO 4911.000

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
  4911.000      3.69    745.99    745.99       .00    746.68       .69       .18       .21    744.70
     690.0      15.0     549.1     125.9       3.6      77.1      27.9     151.2      75.4    745.50
      2.53      4.22      7.13      4.51      .035      .050      .035      .000    742.30   9975.57
   .018340      955.      972.      895.        20        11         0       .00     78.39  10053.96
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   SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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 5137.000

3301 HV CHANGED MORE THAN HVINS

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  2.97

  5137.000      4.92    751.52       .00       .00    751.65       .13      4.91       .06    750.80
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     610.0      13.7     596.3        .0      15.9     205.4        .0     155.7      78.3    751.60
      2.64       .86      2.90       .00      .035      .035      .000      .000    746.60   9897.14
   .001629     1110.     1193.     1140.         6         0         0       .00    136.99  10034.13

CCHV=     .300 CEHV=     .500
*SECNO 5200.000

3301 HV CHANGED MORE THAN HVINS

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

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       770.30 ELREA=       770.30

  5200.000      2.88    753.38    753.38       .00    754.82      1.44      1.17       .66    750.50
     610.0        .0     610.0        .0        .0      63.3        .0     156.7      78.8    750.50
      2.65       .00      9.63       .00      .000      .035      .000      .000    750.50   9989.00
   .012562      200.      333.      400.        20        11         0       .00     22.00  10011.00


SPECIAL CULVERT

SC  CUNO      CUNV      ENTLC     COFQ      RDLEN     RISE      SPAN      CULVLN    CHRT      SCL       ELCHU     ELCHD
     2         .014       .40     3.00     500.00     6.80     10.00     294.00     8         1        751.20    750.50

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

*SECNO 5258.000

SPECIAL CULVERT OUTLET CONTROL
EGIC =    756.099  EGOC =    756.354  PCWSE=    753.379  ELTRD=    771.800

3301 HV CHANGED MORE THAN HVINS

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    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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


3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  2.17

SPECIAL CULVERT

     EGIC      EGOC        H4     QWEIR     QCULV       VCH     ACULV     ELTRD    WEIRLN
    756.10    756.35      1.54        0.      610.     6.044     136.0    771.80        0.


3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       771.30 ELREA=       771.30

  5258.000      4.59    755.79       .00       .00    756.35       .57      1.54       .00    751.20
     610.0        .0     610.0        .0        .0     100.9        .0     157.3      78.9    751.20
      2.66       .00      6.04       .00      .000      .035      .000      .000    751.20   9989.00
   .002658      304.      304.      304.         3         0         0       .00     22.00  10011.00

*SECNO 5308.000

3301 HV CHANGED MORE THAN HVINS

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  3.28

  5308.000      4.65    756.65       .00       .00    756.67       .03       .15       .16    756.00
     610.0        .8     608.0      1.1       2.6     476.2       3.6     159.1      79.6    756.00
      2.72       .31      1.28       .31      .035      .035      .035      .000    752.00   9891.93
   .000247      320.      264.      180.         3         0         0       .00    199.37  10091.30

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T1      FLOOD CONTROL DISTRICT OF MARICOPA COUNTY - CONTRACT FCD 90-67
T2      GILA BEND AREA FLOODPLAIN DELINEATION STUDY BY BURGESS & NIPLE
T3      SCOTT AVENUE WASH                          J. MISCHLER - (602) 244-8100

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                 4                         0.0037                                    747

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

     3                  -1

1
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    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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

*PROF 3

CCHV=     .100 CEHV=     .300
*SECNO 1884.000
3840 SECTION NOT HIGH ENOUGH   747.000   715.500   662.100   718.800      .000         0
  1884.000      3.43    665.53    665.17    747.00    665.87       .34       .00       .00    664.50
     740.0      63.6     637.4      39.0      58.3     126.7      15.9        .0        .0    664.20
       .00      1.09      5.03      2.45      .060      .030      .030      .000    662.10   9840.60
   .003697        0.        0.        0.         0        26        12       .00    201.90  10042.50
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*SECNO 2070.000
3280 CROSS SECTION   2070.00 EXTENDED       .53 FEET

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
  2070.000      3.73    670.53    670.53       .00    671.32       .79      5.12       .13    671.80
     740.0        .0     692.2      47.8        .0      94.4      16.0       3.5       3.1    670.00
       .04       .00      7.33      2.99      .000      .030      .030      .000    666.80   9965.73
   .007908      985.      982.      985.         3         8         0       .00     71.27  10037.00

*SECNO 2261.000
3280 CROSS SECTION   2261.00 EXTENDED       .20 FEET

3301 HV CHANGED MORE THAN HVINS

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.62

  2261.000      3.41    675.41       .00       .00    675.66       .25      4.29       .05    676.00
     680.0        .0     659.8      20.2        .0     161.3      12.3       6.8       5.1    674.50
       .11       .00      4.09      1.64      .000      .030      .030      .000    672.00   9939.23
   .002558     1020.     1008.     1010.         4         0         0       .00    102.47  10041.70

*SECNO 2505.000

3265 DIVIDED FLOW
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    SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      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

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =   .38

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       682.20 ELREA=       682.50

  2505.000      2.17    682.27    682.22       .00    682.53       .26      6.87       .00    682.20
     680.0      26.9     653.1        .0      9.8     156.6        .0      11.8       9.9    682.50
       .19      2.74      4.17       .00      .040      .040      .000      .000    680.10   9983.10
   .017712      890.     1288.     1200.         7        21         0       .00    238.98  10274.86

*SECNO 2677.000

3265 DIVIDED FLOW

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3710 WSEL ASSUMED BASED ON MIN DIFF

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       688.10 ELREA=       687.60

  2677.000      4.34    687.64    686.75       .00    687.68       .04      4.58     23.96    688.10
     620.0        .0     304.4     315.6        .0     227.0     181.5      17.9      16.9    687.60
       .36       .00      1.34      1.74      .000      .070      .035      .000    683.30   9920.03
   .002159      850.      908.      970.        20        14         0       .00    413.69  10684.64

*SECNO 2867.000

3301 HV CHANGED MORE THAN HVINS

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

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       694.50 ELREA=       694.70

  2867.000      3.86    693.36    693.36       .00    694.36      1.00      5.91       .29    694.50
     620.0        .0     620.0        .0        .0      77.4        .0      23.2      21.7    694.70
       .39       .00      8.02       .00      .000      .070      .000      .000    689.50   9976.40
   .060842      995.     1003.      860.        20        15         0       .00     39.93  10016.33
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    SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      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 3105.000
3840 SECTION NOT HIGH ENOUGH   758.273   754.500   695.200   754.600   691.244        2

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       699.40 ELREA=       699.20

  3105.000      4.07    699.27    699.27       .00    699.27       .01       .58       .10    699.40
     560.0        .0      18.0     542.0        .0      70.2     735.9      34.0      28.0    699.20
       .84       .00       .26       .74      .000      .070      .035      .000    695.20   9981.42
   .000125      930.     1257.     1030.         0        11         0       .00    471.78  10453.20

*SECNO 3292.000

3265 DIVIDED FLOW

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
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3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
  3292.000      2.82    704.12    704.12       .00    704.60       .48       .44       .14    704.50
     560.0     112.1     447.0       .9      14.4      93.0        .4      44.0      34.5    703.90
       .89      7.80      4.81      2.27      .035      .070      .035      .000    701.30   9957.37
   .053995      960.      987.      950.        20        19         0       .00    119.43  10088.36

*SECNO 3492.000

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  4.68

  3492.000      3.62    710.72       .00       .00    710.78       .07      6.14       .04    709.60
     500.0     243.4     173.9      82.7     112.0     101.1      35.8      48.2      37.9    709.30
      1.03      2.17      1.72      2.31      .035      .070      .035      .000    707.10   9889.09
   .001963      970.     1056.     1045.        11         0         0       .00    166.92  10056.01

*SECNO 3570.000

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =   .49
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    SECNO      DEPTH     CWSEL     CRIWS     WSELK      EG        HV        HL     OLOSS   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

  3570.000      3.17    712.07       .00       .00    712.21       .13      1.40       .02    711.30
     500.0       9.6     185.9     304.5       4.7      64.3     101.8      50.1      39.6    711.60
      1.06      2.03      2.89      2.99      .035      .070      .035      .000    708.90   9972.12
   .008138      335.      412.      425.         5         0         0       .00    216.20  10188.33

*SECNO 3677.000
  3677.000      3.16    715.16       .00       .00    715.28       .12      3.07       .00    714.80
     480.0     314.1      93.9      71.9     107.5      58.0      21.7      52.3      42.0    714.60
      1.12      2.92      1.62      3.32      .035      .070      .035      .000    712.00   9868.33
   .004304      535.      565.      495.         6         0         0       .00    178.05  10046.38

*SECNO 3772.000
  3772.000      3.44    717.24       .00       .00    717.35       .11      2.07       .00    716.60
     480.0      18.1     177.2     284.7       9.6      86.4      97.1      54.4      43.9    716.60
      1.17      1.89      2.05      2.93      .035      .070      .035      .000    713.80   9973.16
   .004505      500.      502.      420.         4         0         0       .00    168.37  10141.53

*SECNO 3863.000

3265 DIVIDED FLOW

  3863.000      2.50    719.50       .00       .00    719.64       .14      2.28       .01    720.30
     450.0     267.7     182.3        .0      93.6      58.3        .0      56.3      45.6    720.70
      1.21      2.86      3.13       .00      .035      .040      .000      .000    717.00   9829.44
   .005233      450.      480.      480.         3         0         0       .00    156.46  10025.14

*SECNO 3957.000
  3957.000      3.50    722.10       .00       .00    722.28       .19      2.63       .02    720.50
     480.0      13.3     230.3     206.4       5.1      59.1      68.1      57.9      47.1    720.70
      1.25      2.63      3.90      3.03      .035      .050      .035      .000    718.60   9982.63
   .005398      477.      496.      520.         3         0         0       .00    108.57  10091.21

*SECNO 4053.000
  4053.000      4.08    724.88       .00       .00    724.99       .11      2.70       .01    724.90
     450.0        .0     257.3     192.7        .0     115.7      60.4      59.6      48.5    724.10
      1.30       .00      2.22      3.19      .000      .070      .035      .000    720.80   9962.24
   .005654      535.      507.      466.         3         0         0       .00    134.22  10096.46
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    SECNO      DEPTH     CWSEL     CRIWS     WSELK      EG        HV        HL     OLOSS   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 4147.000
  4147.000      3.28    727.08       .00       .00    727.28       .20      2.26       .03    725.80
     410.0       4.3     266.8     139.0       2.4      65.2      56.4      61.4      49.8    725.80
      1.34      1.80      4.09      2.46      .035      .040      .035      .000    723.80   9986.72
   .003608      455.      496.      530.         3         0         0       .00     94.85  10081.57

CCHV=     .300 CEHV=     .500
*SECNO 4156.000

3265 DIVIDED FLOW

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
  4156.000      5.05    729.95    729.95       .00    730.30       .35       .26       .08    731.20
     410.0        .0     260.4     149.6        .0      45.3      67.5      61.5      50.0    731.50
      1.35       .00      5.74      2.22      .000      .040      .035      .000    724.90   9995.02
   .007357       60.       50.       60.        20        15         0       .00    152.36  10193.88

*SECNO 4183.000

3265 DIVIDED FLOW

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3710 WSEL ASSUMED BASED ON MIN DIFF

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      731.80 ELREA=      731.00
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 4183.000      6.20    731.10    729.14       .00    731.12       .02       .16      3.17    731.20
    410.0        .0      46.6     363.4        .0      56.9     327.1      62.2      50.6    731.50
     1.38       .00       .82      1.11      .000      .080      .035      .000    724.90   9995.00
 .000816      140.      140.      110.        20        15         0       .00    319.25  10326.29


SPECIAL CULVERT

SC  CUNO      CUNV      ENTLC     COFQ      RDLEN     RISE      SPAN      CULVLN    CHRT      SCL       ELCHU     ELCHD
     1         .014      .50      3.00       .00      6.00     10.00     165.00     10        1        725.00    725.00

CHART 10 - BOX CULVERT; 90-DEGREE HEADWALL; CHAMFERED OR BEVELED INLET EDGES
SCALE  1 - INLET EDGES CHAMFERED 3/4-INCH

*SECNO 4216.000
1
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    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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

5155, 20 TRIALS OF QWEIR NOT ENOUGH; POSSIBLY INVALID
FINAL QWEIR + QCULV =       428. DOES NOT EQUAL ACTUAL Q =       410.

SPECIAL CULVERT OUTLET CONTROL + WEIR FLOW EG =    732.42

3265 DIVIDED FLOW

SPECIAL CULVERT

    EGIC      EGOC       H4      QWEIR     QCULV      VCH      ACULV     ELTRD    WEIRLN
   731.13    732.48     1.30       27.      400.     4.065      60.0    732.40      229.


3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       732.80 ELREA=       732.20

 4216.000      7.22    732.22       .00       .00    732.42       .20      1.30       .00    725.00
    410.0        .0     293.1     116.9        .0      72.1      56.8      63.2      51.3    725.00
     1.39       .00      4.07      2.06      .000      .030      .035      .000    725.00   9995.00
 .000484      175.      175.      175.         2         0         0       .00     47.33  10160.76


*SECNO 4287.000

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

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       729.00 ELREA=       732.60

 4287.000      5.72    732.52       .00       .00    732.54       .02       .07       .06    729.00
    410.0     193.9     216.1        .0     216.6     185.3        .0      65.5      52.0    732.60
     1.49       .90      1.17       .00      .035      .030      .000      .000    726.80   9914.03
 .000097      420.      375.      195.         2         0         0       .00    122.59  10036.62


*SECNO 4315.000

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       738.70 ELREA=       738.90

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    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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


 4315.000      2.29    732.09    732.09       .00    733.23      1.14       .04       .56    732.00
    380.0        .0     380.0       .0        .0      44.4        .0      66.1      52.2    734.00
     1.49       .00      8.55       .00      .000      .030      .000      .000    729.80   9990.00
 .012798       90.      148.      190.         4        18         0       .00     19.77  10009.77


SPECIAL BRIDGE

SB  XK        XKOR      COFQ      RDLEN     BWC       BWP       BAREA     SS        ELCHU     ELCHD
     .00      1.60      3.00    1000.00     19.00      .00     129.00      .00     730.10    729.80

*SECNO 4331.000

6070,LOW FLOW BY NORMAL BRIDGE

EGPRS=       .000  EGLWC=    733.274  ELLC=    736.900  PCWSE=    732.091  ELTRD=    740.200

3301 HV CHANGED MORE THAN HVINS

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  2.12

3370 NORMAL BRIDGE, NRD=   0 MIN ELTRD=   740.20 MAX ELLC=   736.90

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       739.70 ELREA=       739.90

 4331.000      3.65    733.45       .00       .00    733.89       .44       .45       .21    732.00
    380.0        .0     380.0        .0        .0      71.3        .0      66.2      52.2    734.00
     1.50       .00      5.33       .00      .000      .030      .000      .000    729.80   9990.00
 .002851       86.       86.       86.         3         0         0       .00     19.93  10009.93
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*SECNO 4395.000

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.48

  4395.000      4.97    734.47       .00       .00    734.60       .14       .63       .09    737.10
     380.0        .0     380.0        .0        .0     127.8        .0      67.0      52.5    734.70
      1.53       .00      2.97       .00      .000      .035      .000      .000    729.50   9975.61
   .001298      325.      338.      325.         3         0         0       .00     45.82  10021.42
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    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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 4429.000

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

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       735.00 ELREA=       732.00

  4429.000      5.01    734.61       .00       .00    735.17       .56       .36       .21    729.60
     380.0        .0     216.0     165.0        .0      30.1      40.7      67.4      52.7    729.60
      1.54       .00      7.16      4.06      .000      .035      .035      .000    729.60   9997.00
   .003312      170.      180.      175.         2         0         0       .00     40.86  10037.86


SPECIAL CULVERT

SC  CUNO      CUNV      ENTLC     COFQ      RDLEN     RISE      SPAN      CULVLN    CHRT      SCL       ELCHU     ELCHD
     1          .014       .50      3.00       .00      3.00      6.00     95.30     10         1       731.90    729.60

CHART 10 - BOX CULVERT; 90-DEGREE HEADWALL; CHAMFERED OR BEVELED INLET EDGES
SCALE  1 - INLET EDGES CHAMFERED 3/4-INCH

5130, EGIC=  750.95..MAY BE TOO LARGE IF INLET CONTROLS.
5135, EGOC=  748.76 ..MAY BE TOO LARGE IF OUTLET CONTROLS.
*SECNO 4449.000

SPECIAL CULVERT INLET CONTROL + WEIR FLOW, EG =    744.26

3301 HV CHANGED MORE THAN HVINS

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO = 31.67

SPECIAL CULVERT

     EGIC      EGOC        H4      QWEIR     QCULV       VCH     ACULV     ELTRD    WEIRLN
   750.95    748.76      9.09        86.      294.      .412      18.0    743.60      136.


3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       744.90 ELREA=       743.50

  4449.000     12.36    744.26       .00       .00    744.26       .00      9.09       .00    731.90
     380.0        .0      30.6     349.4        .0      74.2    1304.2      69.1      53.1    731.90
      1.64       .00       .41       .27      .000      .035      .035      .000    731.90   9997.00
   .000003      105.      105.      105.         0         0         0       .00    331.77  10328.77

*SECNO 4477.000
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    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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


3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  2.10

  4477.000     11.76    744.26       .00       .00    744.26       .01       .00       .00    734.60
    1660.0     927.7     171.8     560.5    1569.7     220.4    1063.8      75.7      54.5    734.60
      1.71       .59       .78       .53      .035      .035      .035      .000    732.50   9744.92
   .000014       95.      150.      160.         2         0         0       .00    507.95  10252.87

CCHV=     .100 CEHV=     .300
*SECNO 4537.000
3280 CROSS SECTION   4537.00 EXTENDED      4.06 FEET

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =   .36

  4537.000     10.45    744.25       .00       .00    744.28       .03       .01       .01    736.00
    1660.0     777.3     237.6     645.1     546.7     163.2     490.7      96.2      58.0    736.40
      1.80      1.42      1.46      1.31      .035      .045      .045      .000    733.80   9901.70
   .000109      410.      465.      475.         0         0         0       .00    179.50  10081.20

CCHV=     .300 CEHV=     .500
*SECNO 4563.000
3280 CROSS SECTION   4563.00 EXTENDED       .26 FEET

  4563.000     13.46    744.26       .00       .00    744.30       .04       .01       .00    730.80
    1660.0     101.7    1474.1      84.1      98.5     942.4     102.9     100.0      58.4    730.80
      1.82      1.03      1.56       .82      .035      .045      .045      .000    730.80   9950.37
   .000070      200.      140.       80.         0         0         0       .00     99.63  10050.00


SPECIAL BRIDGE

SB  XK        XKOR      COFQ      RDLEN     BWC       BWP       BAREA     SS        ELCHU     ELCHD
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    1.28      1.60      3.00    700.00     70.00      7.50    380.00       .00    731.10    730.80

*SECNO 4568.000
3280 CROSS SECTION   4568.00 EXTENDED       .33 FEET

PRESSURE AND WEIR FLOW,  Weir Submergence Based on TRAPEZOIDAL Shape

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    SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      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

 EGPRS      EGLWC      H3       QWEIR      QPR        BAREA    TRAPEZOID      ELLC      ELTRD      WEIRLN
                                                                  AREA
   744.74     744.31      .01      136.      1520.      380.      381.      737.20     744.50      700.

  4568.000     13.53    744.63      .00       .00     744.66      .03       .36       .00     731.10
    1660.0     102.1    1473.3     84.5      99.4      946.8    103.9     100.6      58.5     731.10
      1.83      1.03      1.56      .81      .035       .045     .045      .000    731.10    9950.30
   .000069       23.       23.      23.         2          0        3       .00     99.70   10050.00

*SECNO 4591.000
3280 CROSS SECTION   4591.00 EXTENDED      2.76 FEET

  4591.000      9.66    744.66      .00       .00     744.68      .01       .01       .01     737.60
    1580.0     501.7     201.0    877.3     459.3      190.1   1349.7     105.3      59.4     736.50
      1.87      1.09      1.06      .65      .035       .045     .045      .000    735.00    9907.00
   .000061       70.      124.     160.         2          0        0       .00    471.00   10378.00

CCHV=     .100 CEHV=     .300
*SECNO 4727.000

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

  4727.000      7.35    744.75      .00       .00     744.77      .02       .09       .00     739.60
    1500.0     355.2     331.4    813.4     257.5      258.6    816.0     141.6      70.5     740.40
      2.10      1.38      1.28     1.00      .035       .050     .035      .000    737.40    9901.04
   .000162      980.     1003.     925.         1          0        0       .00    557.58   10458.62

*SECNO 4911.000

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
  4911.000      4.50    746.80    746.80       .00     747.78      .98       .47       .29     744.70
    1380.0      54.4     875.4    450.3       9.5      103.1     64.3     157.6      77.2     745.50
      2.13      8.74      8.49     7.00      .035       .050     .035      .000    742.30    9972.07
   .017676      955.      972.     895.        20         14        0       .00     89.74   10061.81

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    SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      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 5137.000

3301 HV CHANGED MORE THAN HVINS

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  2.93

  5137.000      5.85    752.45      .00       .00     752.63      .18      4.77       .08     750.80
    1220.0     144.7    1061.4    13.9      84.9      292.5     14.5     165.2      81.5     751.60
      2.23      1.70      3.63     .96      .035       .035     .035      .000    746.60    9838.90
   .001604     1110.     1193.    1140.         7          0        0       .00    229.97   10068.88

CCHV=     .300 CEHV=     .500
*SECNO 5200.000

3301 HV CHANGED MORE THAN HVINS

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

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      770.30 ELREA=      770.30

  5200.000      4.56    755.06    755.06       .00     757.36     2.30      1.09      1.06     750.50
    1220.0        .0    1220.0       .0        .0      100.2       .0     167.0      82.3     750.50
      2.24       .00     12.17       .00      .000       .035     .000      .000    750.50    9989.00
   .010888      200.      333.     400.        20         15        0       .00     22.00   10011.00

SPECIAL CULVERT

SC  CUNO      CUNV      ENTLC      COFQ      RDLEN      RISE      SPAN      CULVLN     CHRT      SCL       ELCHU     ELCHD
     2         .014       .40      3.00     500.00      6.80     10.00     294.00      8         1        751.20    750.50

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

*SECNO 5258.000

SPECIAL CULVERT OUTLET CONTROL
EGIC =    759.106  EGOC =    759.395  PCWSE=    755.055  ELTRD=    771.800
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3280 CROSS SECTION   5258.00 EXTENDED      2.50 FEET

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    SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      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


3301 HV CHANGED MORE THAN HVINS

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  2.19

SPECIAL CULVERT

    EGIC       EGOC       H4         QWEIR      QCULV      VCH        ACULV      ELTRD      WEIRLN
   759.11     759.40      2.04        0.         1220.      7.597      136.0      771.80      0.


3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       771.30 ELREA=       771.30

  5258.000      7.30     758.50       .00        .00     759.40        .90       2.04        .00     751.20
    1220.0        .0     1220.0        .0        .0      160.6         .0      167.9       82.5     751.20
      2.25       .00       7.60       .00       .000       .035       .000       .000     751.20    9989.00
   .002261      304.       304.      304.         3          0          0        .00      22.00   10011.00

*SECNO 5308.000

3301 HV CHANGED MORE THAN HVINS

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  5.91

  5308.000      7.69     759.69       .00        .00     759.71        .02        .05        .26     756.00
    1220.0      43.7     1115.1      61.2       85.1     1024.4      119.2      172.0       83.4     756.00
      2.32       .51       1.09       .51       .035       .035       .035       .000     752.00    9853.86
   .000065      320.       264.      180.         2          0          0        .00     290.73   10144.59

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T1      FLOOD CONTROL DISTRICT OF MARICOPA COUNTY - CONTRACT FCD 90-67
T2      GILA BEND AREA FLOODPLAIN DELINEATION STUDY BY BURGESS & NIPLE
T3      SCOTT AVENUE WASH                          J. MISCHLER - (602) 244-8100

J1  ICHECK     INQ        NINV       IDIR       STRT       METRIC     HVINS      Q          WSEL       FQ

                 5                             0.0037                                        747

J2  NPROF      IPLOT      PRFVS      XSECV      XSECH      FN         ALLDC      IBW        CHNIM      ITRACE

     4                     -1

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    SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      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

*PROF 4

CCHV=     .100 CEHV=     .300
*SECNO 1884.000
3840 SECTION NOT HIGH ENOUGH   747.000   715.500   662.100   718.800      .000         0
  1884.000      3.43     665.53     665.17     747.00     665.87        .34        .00        .00     664.50
     740.0      63.6      637.4       39.0       58.3      126.7       15.9         .0         .0     664.20
       .00      1.09       5.03       2.45       .060       .030       .030       .000     662.10    9840.60
   .003697        0.         0.         0.          0         26         12        .00     201.90   10042.50

*SECNO 2070.000
3280 CROSS SECTION   2070.00 EXTENDED      .53 FEET

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
  2070.000      3.73     670.83     670.53        .00     671.32        .79       5.12        .13     671.80
     740.0        .0      692.2      47.8         .0       94.4       16.0        3.5        3.1     670.00
       .04       .00       7.33       2.99       .000       .030       .030       .000     666.80    9965.73
   .007906      985.       982.      985.         3          8          0        .00      71.27   10037.00

*SECNO 2261.000
3280 CROSS SECTION   2261.00 EXTENDED      .20 FEET

3301 HV CHANGED MORE THAN HVINS

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.62

  2261.000      3.41     675.41        .00        .00     675.66        .25       4.29        .05     676.00
     680.0        .0      659.8      20.2         .0      161.3       12.3        6.8        5.1     674.50
       .11       .00       4.09       1.64       .000       .030       .030       .000     672.00    9939.23
   .002558     1020.      1008.     1010.         4          0          0        .00     102.47   10041.70

*SECNO 2505.000

3265 DIVIDED FLOW

1
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   SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      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


3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =   .38

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       682.20 ELREA=       682.50

 2505.000      2.17     682.27     682.22       .00     682.53       .26       6.87       .00     682.20
    680.0      26.9      653.1         .0       9.8      156.6        .0       11.8       9.9     682.50
      .19      2.74       4.17        .00       .040       .040      .000       .000    680.10    9983.10
  .017712      890.      1288.      1200.         7         21         0        .00    238.98   10274.86

*SECNO 2677.000

3265 DIVIDED FLOW

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3710 WSEL ASSUMED BASED ON MIN DIFF

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       688.10 ELREA=       687.60

 2677.000      4.34     687.64     686.75       .00     687.68       .04       4.58      23.96     688.10
    620.0        .0      304.4      315.6        .0      227.0     181.5       17.9       16.9     687.60
      .36       .00       1.34       1.74      .000       .070      .035       .000    683.30    9920.03
  .002159      850.       908.       970.        20         14         0        .00    413.69   10684.64

*SECNO 2867.000

3301 HV CHANGED MORE THAN HVINS

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

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       694.50 ELREA=       694.70

 2867.000      3.86     693.36     693.36       .00     694.36      1.00       5.91       .29     694.50
    620.0        .0      620.0         .0        .0       77.4        .0       23.2      21.7     694.70
      .39       .00       8.02        .00       .000       .070      .000       .000    689.50    9976.40
  .060542      995.      1003.       860.        20         15         0        .00     39.93   10016.33
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   SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      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 3105.000
3840 SECTION NOT HIGH ENOUGH   758.273   754.500   695.200   754.600   691.244        2

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       699.40 ELREA=       699.20

 3105.000      4.07     699.27     699.27       .00     699.27       .01        .58       .10     699.40
    560.0        .0        18.0      542.0        .0       70.2     735.9       34.0      28.0     699.20
      .84       .00        .26        .74      .000       .070      .035       .000    695.20    9981.42
  .000125      930.      1257.      1030.         0         11         0        .00    471.78   10453.20

*SECNO 3292.000

3265 DIVIDED FLOW

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
 3292.000      2.82     704.12     704.12       .00     704.60       .48        .44       .14     704.50
    560.0      112.1      447.0         .9      14.4       93.0        .4       44.0      34.5     703.90
      .89       7.80       4.81       2.27      .035       .070      .035       .000    701.30    9957.37
  .053995      960.       987.       950.        20         19         0        .00    119.43   10088.36

*SECNO 3492.000

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  4.68

 3492.000      3.62     710.72        .00        .00     710.78       .07       6.14       .04     709.60
    500.0      243.4      173.9       82.7     112.0      101.1      35.8       48.2      37.9     709.30
     1.03       2.17       1.72       2.31      .035       .070      .035       .000    707.10    9889.09
  .001963      970.       1056.      1045.        11          0         0        .00    166.92   10056.01

*SECNO 3570.000

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =   .49
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   SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      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


 3570.000      3.17     712.07        .00        .00     712.21       .13       1.40       .02     711.30
    500.0        9.6      185.9      304.5        4.7       64.3     101.8       50.1      39.6     711.60
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      1.06      2.03      2.89      2.99      .035      .070      .035      .000    708.90   9972.12
   .008138      336.      412.      425.         5         0         0       .00    216.20  10188.33

*SECNO 3677.000
  3677.000      3.16    715.16       .00       .00    715.28       .12      3.07       .00    714.80
     480.0     314.1      93.9      71.9     107.5      58.0      21.7      52.3      42.0    714.60
      1.12      2.92      1.62      3.32      .035      .070      .035      .000    712.00   9868.33
   .004304      535.      565.      495.         6         0         0       .00    178.05  10046.38

*SECNO 3772.000
  3772.000      3.44    717.24       .00       .00    717.35       .11      2.07       .00    716.60
     480.0      18.1     177.2     284.7       9.6      86.4      97.1      54.4      43.9    716.60
      1.17      1.89      2.05      2.93      .035      .070      .035      .000    713.80   9973.16
   .004505      500.      502.      420.         4         0         0       .00    168.37  10141.53

*SECNO 3863.000

3265 DIVIDED FLOW

  3863.000      2.50    719.50       .00       .00    719.64       .14      2.28       .01    720.30
     450.0     267.7     182.3        .0      93.6      58.3        .0      56.3      45.6    720.70
      1.21      2.86      3.13       .00      .035      .040      .000      .000    717.00   9829.44
   .005233      450.      480.      480.         3         0         0       .00    156.46  10025.14

*SECNO 3957.000
  3957.000      3.50    722.10       .00       .00    722.28       .19      2.63       .02    720.50
     450.0      13.3     230.3     206.4       5.1      59.1      68.1      57.9      47.1    720.70
      1.25      2.63      3.90      3.03      .035      .050      .035      .000    718.60   9982.63
   .005398      477.      496.      520.         3         0         0       .00    108.57  10091.21

*SECNO 4053.000
  4053.000      4.08    724.88       .00       .00    724.99       .11      2.70       .01    724.90
     450.0        .0     257.3     192.7        .0     115.7      60.4      59.6      48.5    724.10
      1.30       .00      2.22      3.19      .000      .070      .035      .000    720.80   9962.24
   .005654      535.      507.      466.         3         0         0       .00    134.22  10096.46
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    SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      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 4147.000
  4147.000      3.28    727.08       .00       .00    727.28       .20      2.26       .03    725.80
     410.0       4.3     266.8     139.0      2.4      65.2      56.4      61.4      49.8    725.80
      1.34      1.80      4.09      2.46      .035      .040      .035      .000    723.80   9986.72
   .003508      455.      496.      530.         3         0         0       .00     94.85  10081.57

CCHV=     .300 CEHV=     .500
*SECNO 4156.000

3265 DIVIDED FLOW

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
  4156.000      5.05    729.95    729.95       .00    730.30       .35       .26       .08    731.20
     410.0        .0     260.4     149.6        .0      45.3      67.5      61.5      50.0    731.50
      1.35       .00      5.74      2.22      .000      .040      .035      .000    724.90   9995.02
   .007357       60.       60.       60.        20        15         0       .00    152.36  10193.88

*SECNO 4183.000

3265 DIVIDED FLOW

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3710 WSEL ASSUMED BASED ON MIN DIFF

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      731.80 ELREA=      731.00

  4183.000      6.20    731.10    729.14       .00    731.12       .02       .16      3.17    731.20
     410.0        .0      46.6     363.4        .0      56.9     327.1      62.2      50.6    731.50
      1.38       .00       .82      1.11      .000      .080      .035      .000    724.90   9995.00
   .000516      140.      140.      110.        20        15         0       .00    319.25  10326.29


SPECIAL CULVERT

SC  CUNO      CUNV      ENTLC     COFQ      RDLEN     RISE      SPAN      CULVLN    CHRT      SCL       ELCHU     ELCHD
     1         .014      .50      3.00       .00      6.00     10.00     165.00     10        1        725.00    725.00

CHART 10 - BOX CULVERT; 90-DEGREE HEADWALL; CHAMFERED OR BEVELED INLET EDGES
SCALE  1 - INLET EDGES CHAMFERED 3/4-INCH

*SECNO 4216.000
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    SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      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


5155, 20 TRIALS OF QWEIR NOT ENOUGH; POSSIBLY INVALID
FINAL QWEIR + QCULV =       428. DOES NOT EQUAL ACTUAL Q =       410.


SPECIAL CULVERT OUTLET CONTROL + WEIR FLOW EG =     732.42

3265 DIVIDED FLOW
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SPECIAL CULVERT

EGIC	EGOC	H4	QWEIR	QCULV	VCH	ACULV	ELTRD	WEIRLN
731.13	732.48	1.30	27.	400.	4.065	60.0	732.40	229.

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 732.80 ELREA= 732.20

4216.000	7.22	732.22	.00	.00	732.42	.20	1.30	.00	725.00
410.0	.0	293.1	116.9	.0	72.1	56.8	63.2	51.3	725.00
1.39	.00	4.07	2.06	.000	.030	.035	.000	725.00	9995.00
.000484	175.	175.	175.	2	0	0	.00	47.33	10160.76

*SECNO 4287.000

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

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 729.00 ELREA= 732.60

4287.000	5.72	732.52	.00	.00	732.54	.02	.07	.06	729.00
410.0	193.9	216.1	.0	216.6	185.3	.0	65.5	52.0	732.60
1.49	.90	1.17	.00	.035	.030	.000	.000	726.80	9914.03
.000097	420.	375.	195.	2	0	0	.00	122.59	10036.62

*SECNO 4315.000

3301 HV CHANGED MORE THAN HVINS

7186 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 738.70 ELREA= 738.90

SECNO Q TIME SLOPE	DEPTH QLOB VLOB XLOBL	CWSEL QCH VCH XLCH	CRIWS QROB VROB XLOBR	WSELK ALOB XNL ITRIAL	EG ACH XNCH IDC	HV AROB XNR ICONT	HL VOL WTN CORAR	OLOSS TWA ELMIN TOPWID	L-BANK ELEV R-BANK ELEV SSTA ENDST
4315.000	2.29	732.09	732.09	.00	733.23	1.14	.04	.56	732.00
380.0	.0	380.0	.0	.0	44.4	.0	66.1	52.2	734.00
1.49	.00	8.55	.00	.000	.030	.000	.000	729.80	9990.00
.012798	90.	148.	190.	4	18	0	.00	19.77	10009.77

SPECIAL BRIDGE

SB	XK	XKOR	COFQ	RDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
	.00	1.60	3.00	1000.00	19.00	.00	129.00	.00	730.10	729.80

*SECNO 4331.000

6070,LOW FLOW BY NORMAL BRIDGE

EGPRS= .000 EGLWC= 733.274 ELLC= 736.900 PCWSE= 732.091 ELTRD= 740.200

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 2.12

3370 NORMAL BRIDGE, NRD= 0 MIN ELTRD= 740.20 MAX ELLC= 736.90

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 739.70 ELREA= 739.90

4331.000	3.65	733.45	.00	.00	733.89	.44	.45	.21	732.00
380.0	.0	380.0	.0	.0	71.3	.0	66.2	52.2	734.00
1.50	.00	5.33	.00	.000	.030	.000	.000	729.80	9990.00
.002851	86.	86.	86.	3	0	0	.00	19.93	10009.93

*SECNO 4395.000

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 1.48

4395.000	4.97	734.47	.00	.00	734.60	.14	.63	.09	737.10
380.0	.0	380.0	.0	.0	127.8	.0	67.0	52.5	734.70
1.53	.00	2.97	.00	.000	.035	.000	.000	729.50	9975.61
.001298	325.	338.	325.	3	0	0	.00	45.82	10021.42

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

*SECNO 4429.000

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

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 735.00 ELREA= 732.00

4429.000	5.01	734.61	.00	.00	735.17	.56	.35	.21	729.60
380.0	.0	215.0	165.0	.0	30.1	40.7	67.4	52.7	729.60
1.64	.00	7.15	4.06	.000	.035	.035	.000	729.60	9997.00
.003312	170.	180.	175.	2	0	0	.00	40.86	10037.86

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SPECIAL CULVERT

SC  CUNO      CUNV      ENTLC     COFQ      RDLEN     RISE      SPAN      CULVLN    CHRT      SCL       ELCHU     ELCHD
     1         .014      .50      3.00       .00      3.00      6.00      95.30     10        1        731.90    729.60

CHART 10 - BOX CULVERT; 90-DEGREE HEADWALL; CHAMFERED OR BEVELED INLET EDGES
SCALE  1 - INLET EDGES CHAMFERED 3/4-INCH

5130, EGIC=  750.95..MAY BE TOO LARGE IF INLET CONTROLS.
5135, EGOC=  748.76 ..MAY BE TOO LARGE IF OUTLET CONTROLS.
*SECNO 4449.000

SPECIAL CULVERT INLET CONTROL + WEIR FLOW, EG =    744.26

3301 HV CHANGED MORE THAN HVINS

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO = 31.67

SPECIAL CULVERT

     EGIC      EGOC       H4     QWEIR     QCULV       VCH     ACULV     ELTRD    WEIRLN
   750.95    748.76     9.09       86.      294.      .412      18.0    743.60      136.


3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       744.90 ELREA=       743.50

  4449.000     12.36    744.26       .00       .00    744.26       .00      9.09       .00    731.90
     380.0        .0      30.6     349.4        .0      74.2    1304.2      69.1      53.1    731.90
      1.64       .00       .41       .27      .000      .035      .035      .000    731.90   9997.00
   .000003       105.      105.      105.         0         0         0       .00    331.77  10328.77

*SECNO 4477.000
1
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    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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


3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  2.10

  4477.000     11.75    744.25       .00       .00    744.27       .02       .00       .01    734.60
    3320.0    1855.6     343.7    1120.7    1568.5     220.3    1062.7      75.7      54.5    734.60
      1.67      1.18      1.56      1.05      .035      .035      .035      .000    732.50   9745.00
   .000057       95.      150.      160.         2         0         0       .00    507.62  10252.62

CCHV=     .100 CEHV=     .300
*SECNO 4537.000
3280 CROSS SECTION   4537.00 EXTENDED      4.04 FEET

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =   .36

  4537.000     10.44    744.24       .00       .00    744.36       .12       .05       .03    736.00
    3320.0    1553.2     475.9    1290.9     543.5     162.8     489.2      96.2      58.0    736.40
      1.72      2.86      2.92      2.64      .035      .045      .045      .000    733.80   9901.70
   .000441      410.      465.      475.         2         0         0       .00    179.50  10081.20

CCHV=     .300 CEHV=     .500
*SECNO 4563.000
3280 CROSS SECTION   4563.00 EXTENDED       .27 FEET

  4563.000     13.48    744.28       .00       .00    744.42       .14       .05       .01    730.80
    3320.0    203.6     2948.0     168.4      98.7     943.1     103.1      99.9      58.4    730.80
      1.73      2.06      3.13      1.63      .035      .045      .045      .000    730.80   9950.36
   .000279      200.      140.       80.         0         0         0       .00     99.64  10050.00


SPECIAL BRIDGE

SB  XK        XKOR      COFQ      RDLEN     BWC       BWP       BAREA     SS        ELCHU     ELCHD
     1.25      1.60      3.00     700.00    70.00      7.50    380.00      .00    731.10    730.80

*SECNO 4568.000
3280 CROSS SECTION   4568.00 EXTENDED       .71 FEET

PRESSURE AND WEIR FLOW,  Weir Submergence Based on TRAPEZOIDAL Shape

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    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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


  EGPRS     EGLWC       H3     QWEIR       QPR     BAREA  TRAPEZOID     ELLC     ELTRD    WEIRLN
                                                            AREA
   746.17    744.45      .03     1089.     2247.      380.      381.   737.20    744.50      700.


  4568.000     13.91    745.01       .00       .00    745.15       .13       .73       .00    731.10
    3320.0    209.8     2936.4     173.8     105.2     974.0     109.7     100.6      58.5    731.10
      1.73      1.99      3.01      1.58      .035      .045      .045      .000    731.10   9950.00
   .000249       23.       23.       23.         2         0         3       .00    100.00  10050.00


*SECNO 4591.000
3280 CROSS SECTION   4591.00 EXTENDED      3.26 FEET

  4591.000     10.16    745.16       .00       .00    745.20       .04       .03       .03    737.60
    3160.0    970.9     374.3    1814.8     499.2     201.0    1533.7     105.7      59.4    736.50
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     1.76      1.94      1.86      1.18      .035      .045      .045      .000    735.00   9907.00
  .000176       70.      124.      160.         2         0         0       .00    471.00  10378.00

CCHV=     .100 CEHV=     .300
*SECNO 4727.000

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =    .68

  4727.000      7.98    745.38       .00       .00    745.43       .05       .23       .00    739.60
    3000.0     660.7     564.9    1774.4     307.9     284.6    1109.3     148.5      71.6    740.40
      1.90      2.15      1.99      1.60      .035      .050      .035      .000    737.40   9878.29
  .000342      980.      1003.      925.         0         0         0       .00    661.95  10540.24

*SECNO 4911.000

3301 HV CHANGED MORE THAN HVINS

3686 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
  4911.000      5.67    747.97    747.97       .00    749.35      1.38       .91       .40    744.70
    2760.0     201.2    1381.9    1176.8      26.3     140.4     127.7     169.6      79.7    745.50
      1.93      7.65      9.84      9.22      .035      .050      .035      .000    742.30   9961.29
  .015721      955.      972.      895.        20        16         0       .00    111.78  10073.08

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    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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 5137.000

3301 HV CHANGED MORE THAN HVINS

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  2.86

  5137.000      7.00    753.60       .00       .00    753.83       .23      4.36       .12    750.80
    2440.0     562.4    1724.3     153.3     223.8     399.4      84.2     182.9      85.4    751.60
      2.02      2.51      4.32      1.82      .035      .035      .035      .000    746.60   9804.13
  .001498     1110.      1193.     1140.         8         0         0       .00    321.03  10125.16

CCHV=     .300 CEHV=     .500
*SECNO 5200.000
3280 CROSS SECTION   5200.00 EXTENDED      2.43 FEET

3301 HV CHANGED MORE THAN HVINS

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

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       770.30 ELREA=       770.30

  5200.000      7.23    757.73    757.73       .00    761.38      3.65       .98      1.71    750.50
    2440.0        .0    2440.0        .0        .0     159.1        .0     186.0      86.5    750.50
      2.02       .00     15.34       .00      .000      .035      .000      .000    750.50   9989.00
  .009337      200.      333.      400.        20         8         0       .00     22.00  10011.00

SPECIAL CULVERT

SC  CUNO      CUNV      ENTLC     COFQ      RDLEN     RISE      SPAN      CULVLN    CHRT      SCL       ELCHU     ELCHD
     2         .014       .40      3.00     500.00     6.80     10.00     294.00     8         1        751.20    750.50

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

5130, EGIC=  769.09..MAY BE TOO LARGE IF INLET CONTROLS.
5135, EGOC=  768.01 ..MAY BE TOO LARGE IF OUTLET CONTROLS.
*SECNO 5258.000
1
   11MAR92      10:36:18                                                                          PAGE   60

    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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 INLET CONTROL
EGIC =    769.093  EGOC =    768.009  PCWSE=    757.730  ELTRD=    771.800

3280 CROSS SECTION   5258.00 EXTENDED     12.45 FEET

3301 HV CHANGED MORE THAN HVINS

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  4.26

SPECIAL CULVERT

     EGIC      EGOC       H4     QWEIR     QCULV       VCH     ACULV     ELTRD    WEIRLN
   769.09    768.01      7.71        0.     2440.     6.429     136.0    771.80        0.

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       771.30 ELREA=       771.30

  5258.000     17.25    768.45       .00       .00    769.09       .64      7.71       .00    751.20
    2440.0        .0    2440.0        .0        .0     379.5        .0     187.9      86.7    751.20
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     2.04       .00       6.43       .00       .000       .035       .000       .000     751.20   9989.00
  .000514      304.       304.      304.          2          0          0        .00      22.00  10011.00

*SECNO 5308.000
3280 CROSS SECTION   5308.00 EXTENDED      9.28 FEET

3301 HV CHANGED MORE THAN HVINS

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  9.12

  5308.000     17.28     769.28       .00        .00     769.29        .01        .01        .19    756.00
    2440.0     267.0     1787.4     385.7      564.1     2750.9      789.8      201.0       87.6    756.00
      2.16       .47        .65       .49       .035       .035       .035       .000     752.00   9850.00
  .000006      320.       264.      180.          2          0          0        .00     300.00  10150.00

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T1      FLOOD CONTROL DISTRICT OF MARICOPA COUNTY - CONTRACT FCD 90-67
T2      GILA BEND AREA FLOODPLAIN DELINEATION STUDY BY BURGESS & NIPLE
T3      SCOTT AVENUE WASH                    J. MISCHLER - (602) 244-8100

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                6                          0.0037                                   747

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

    15                  -1

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    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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

*PROF 5

CCHV=     .100 CEHV=     .300
*SECNO 1884.000
3840 SECTION NOT HIGH ENOUGH   747.000   715.500   662.100   718.800      .000         0
  1884.000      3.43     665.53     665.17    747.00     665.87       .34        .00       .00    664.50
     740.0      63.6      637.4       39.0      58.3      126.7      15.9         .0        .0    664.20
       .00      1.09       5.03       2.45      .060       .030      .030       .000    662.10   9840.60
  .003697        0.         0.         0.         0         26        12        .00    201.90  10042.50

*SECNO 2070.000
3280 CROSS SECTION   2070.00 EXTENDED      .53 FEET

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
  2070.000      3.73     670.53     670.53       .00     671.32       .79       5.12       .13    671.80
     740.0        .0      692.2       47.8        .0      94.4      16.0        3.5       3.1    670.00
       .04       .00       7.33       2.99      .000       .030      .030       .000    666.80   9965.73
  .007908      985.       982.      985.          3          8         0        .00     71.27  10037.00

*SECNO 2261.000
3280 CROSS SECTION   2261.00 EXTENDED      .20 FEET

3301 HV CHANGED MORE THAN HVINS

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.62

  2261.000      3.41     675.41       .00        .00     675.66       .25       4.29       .05    676.00
     680.0        .0      659.8      20.2         .0     161.3      12.3        6.8       5.1    674.50
       .11       .00       4.09       1.64      .000       .030      .030       .000    672.00   9939.23
  .002558     1020.      1008.     1010.          4          0         0        .00    102.47  10041.70

*SECNO 2505.000

3265 DIVIDED FLOW

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    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =   .38

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      682.20 ELREA=      682.50

  2505.000      2.17     682.27     682.22       .00     682.53       .26       6.87       .00    682.20
     680.0      26.9      653.1        .0       9.8     156.6         .0       11.8       9.9    682.50
       .19      2.74       4.17        .00      .040       .040      .000       .000    680.10   9983.10
  .017712      890.      1288.     1200.          7         21         0        .00    238.98  10274.86

*SECNO 2677.000

3265 DIVIDED FLOW

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3710 WSEL ASSUMED BASED ON MIN DIFF
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3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 688.10 ELREA= 687.60

2677.000	4.34	687.64	686.75	.00	687.68	.04	4.58	23.96	688.10
620.0	.0	304.4	315.6	.0	227.0	181.5	17.9	16.9	687.60
.36	.00	1.34	1.74	.000	.070	.035	.000	683.30	9920.03
.002159	850.	908.	970.	20	14	0	.00	413.69	10684.64

*SECNO 2867.000

3301 HV CHANGED MORE THAN HVINS

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

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 694.50 ELREA= 694.70

2867.000	3.86	693.36	693.36	.00	694.36	1.00	5.91	.29	694.50
620.0	.0	620.0	.0	.0	77.4	.0	23.2	21.7	694.70
.39	.00	8.02	.00	.000	.070	.000	.000	689.50	9976.40
.060542	995.	1003.	860.	20	15	0	.00	39.93	10016.33

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	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 3105.000
3840 SECTION NOT HIGH ENOUGH 758.273 754.500 695.200 754.600 691.244 2

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 699.40 ELREA= 699.20

3105.000	4.07	699.27	699.27	.00	699.27	.01	.58	.10	699.40
560.0	.0	18.0	542.0	.0	70.2	735.9	34.0	28.0	699.20
.84	.00	.26	.74	.000	.070	.035	.000	695.20	9981.42
.000125	930.	1257.	1030.	0	11	0	.00	471.78	10453.20

*SECNO 3292.000

3265 DIVIDED FLOW

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

3292.000	2.82	704.12	704.12	.00	704.60	.48	.44	.14	704.50
560.0	112.1	447.0	.9	14.4	93.0	.4	44.0	34.5	703.90
.89	7.80	4.81	2.27	.035	.070	.035	.000	701.30	9957.37
.053995	960.	987.	950.	20	19	0	.00	119.43	10088.36

*SECNO 3492.000

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 4.68

3492.000	3.62	710.72	.00	.00	710.78	.07	6.14	.04	709.60
500.0	243.4	173.9	82.7	112.0	101.1	35.8	48.2	37.9	709.30
1.03	2.17	1.72	2.31	.035	.070	.035	.000	707.10	9889.09
.001963	970.	1056.	1045.	11	0	0	.00	166.92	10056.01

*SECNO 3570.000

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = .49

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	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

3570.000	3.17	712.07	.00	.00	712.21	.13	1.40	.02	711.30
500.0	9.6	185.9	304.5	4.7	64.3	101.8	50.1	39.6	711.60
1.06	2.03	2.89	2.99	.035	.070	.035	.000	708.90	9972.12
.008138	335.	412.	425.	5	0	0	.00	216.20	10188.33

*SECNO 3677.000

3677.000	3.16	715.16	.00	.00	715.28	.12	3.07	.00	714.80
480.0	314.1	93.9	71.9	107.5	58.0	21.7	52.3	42.0	714.60
1.12	2.92	1.62	3.32	.035	.070	.035	.000	712.00	9868.33
.004304	535.	565.	495.	6	0	0	.00	178.05	10046.38

*SECNO 3772.000

3772.000	3.44	717.24	.00	.00	717.35	.11	2.07	.00	716.60
480.0	18.1	177.2	284.7	9.6	86.4	97.1	54.4	43.9	716.60
1.17	1.89	2.05	2.93	.035	.070	.035	.000	713.80	9973.16
.004505	500.	502.	420.	4	0	0	.00	168.37	10141.53

*SECNO 3863.000

3265 DIVIDED FLOW

3863.000	2.50	719.50	.00	.00	719.64	.14	2.28	.01	720.30
450.0	267.7	182.3	.0	93.6	58.3	.0	56.3	45.6	720.70
1.21	2.86	3.13	.00	.035	.040	.000	.000	717.00	9829.44
.005233	450.	480.	480.	3	0	0	.00	156.46	10025.14

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*SECNO 3957.000
  3957.000      3.50     722.10       .00       .00    722.28       .19      2.63       .02    720.50
     450.0      13.3      230.3     206.4       5.1      59.1      68.1      57.9      47.1    720.70
      1.25      2.63       3.90      3.03      .035      .050      .035      .000    718.60   9982.63
   .005398      477.       496.      520.         3         0         0       .00    108.57  10091.21


*SECNO 4053.000
  4053.000      4.08     724.88       .00       .00    724.99       .11      2.70       .01    724.90
     450.0        .0      257.3     192.7        .0     115.7      60.4      59.6      48.5    724.10
      1.30       .00       2.22      3.19      .000      .070      .035      .000    720.80   9962.24
   .005654      535.       507.      466.         3         0         0       .00    134.22  10096.46


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    SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      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 4147.000
  4147.000      3.28     727.08       .00       .00    727.28       .20      2.26       .03    725.80
     410.0       4.3      266.8     139.0       2.4      65.2      56.4      61.4      49.8    725.80
      1.34      1.80       4.09      2.46      .035      .040      .035      .000    723.80   9986.72
   .003508      455.       496.      530.         3         0         0       .00     94.85  10081.57


CCHV=     .300 CEHV=     .500
*SECNO 4156.000

3265 DIVIDED FLOW

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
  4156.000      5.05     729.95     729.95       .00    730.30       .35       .26       .08    731.20
     410.0        .0      260.4     149.6        .0      45.3      67.5      61.5      50.0    731.50
      1.35       .00       5.74      2.22      .000      .040      .035      .000    724.90   9995.02
   .007357       60.        50.       60.        20        15         0       .00    152.36  10193.88


*SECNO 4183.000

3265 DIVIDED FLOW

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3710 WSEL ASSUMED BASED ON MIN DIFF

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       731.80 ELREA=       731.00

  4183.000      6.20     731.10     729.14       .00    731.12       .02       .16      3.17    731.20
     410.0        .0       46.6     363.4        .0      56.9     327.1      62.2      50.6    731.50
      1.38       .00        .82      1.11      .000      .080      .035      .000    724.90   9995.00
   .000516      140.       140.      110.        20        15         0       .00    319.25  10326.29


SPECIAL CULVERT

SC  CUNO      CUNV      ENTLC      COFQ      RDLEN      RISE      SPAN      CULVLN      CHRT      SCL      ELCHU      ELCHD
     1          .014       .50      3.00        .00      6.00     10.00      165.00        10        1     725.00     725.00

CHART 10 - BOX CULVERT; 90-DEGREE HEADWALL; CHAMFERED OR BEVELED INLET EDGES
SCALE  1 - INLET EDGES CHAMFERED 3/4-INCH

*SECNO 4216.000
1
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    SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      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


5155, 20 TRIALS OF QWEIR NOT ENOUGH; POSSIBLY INVALID
FINAL QWEIR + QCULV =       428. DOES NOT EQUAL ACTUAL Q =       410.

SPECIAL CULVERT OUTLET CONTROL + WEIR FLOW EG =     732.42

3265 DIVIDED FLOW

SPECIAL CULVERT

     EGIC       EGOC        H4      QWEIR      QCULV       VCH      ACULV      ELTRD     WEIRLN
    731.13     732.48      1.30       27.       400.     4.065       60.0     732.40       229.


3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       732.80 ELREA=       732.20

  4216.000      7.22     732.22       .00       .00    732.42       .20      1.30       .00    725.00
     410.0        .0      293.1     116.9        .0      72.1      56.8      63.2      51.3    725.00
      1.39       .00       4.07      2.06      .000      .030      .035      .000    725.00   9995.00
   .000484      175.       175.      175.         2         0         0       .00     47.33  10160.76


*SECNO 4287.000

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

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       729.00 ELREA=       732.60

  4287.000      5.72     732.52       .00       .00    732.54       .02       .07       .06    729.00
     410.0     193.9      216.1        .0     216.6     185.3        .0      65.5      52.0    732.60
      1.49       .90       1.17       .00      .035      .030      .000      .000    726.80   9914.03
   .000097      420.       375.      195.         2         0         0       .00    122.59  10036.62
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*SECNO 4315.000

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 738.70 ELREA= 738.90

1

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	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
4315.000	2.29	732.09	732.09	.00	733.23	1.14	.04	.56	732.00
380.0	.0	380.0	.0	.0	44.4	.0	66.1	52.2	734.00
1.49	.00	8.55	.00	.000	.030	.000	.000	729.80	9990.00
.012798	90.	148.	190.	4	18	0	.00	19.77	10009.77

SPECIAL BRIDGE

SB XK	XKOR	COFQ	RDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
.00	1.60	3.00	1000.00	19.00	.00	129.00	.00	730.10	729.80

*SECNO 4331.000

6070,LOW FLOW BY NORMAL BRIDGE

EGPRS= .000 EGLWC= 733.274 ELLC= 736.900 PCWSE= 732.091 ELTRD= 740.200

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 2.12

3370 NORMAL BRIDGE, NRD= 0 MIN ELTRD= 740.20 MAX ELLC= 736.90

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 739.70 ELREA= 739.90

4331.000	3.65	733.45	.00	.00	733.89	.44	.45	.21	732.00
380.0	.0	380.0	.0	.0	71.3	.0	66.2	52.2	734.00
1.50	.00	5.33	.00	.000	.030	.000	.000	729.80	9990.00
.002851	86.	86.	86.	3	0	0	.00	19.93	10009.93

*SECNO 4395.000

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 1.48

4395.000	4.97	734.47	.00	.00	734.60	.14	.63	.09	737.10
380.0	.0	380.0	.0	.0	127.8	.0	67.0	52.5	734.70
1.53	.00	2.97	.00	.000	.035	.000	.000	729.50	9975.61
.001298	325.	338.	325.	3	0	0	.00	45.82	10021.42

1

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	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 4429.000

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

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 735.00 ELREA= 732.00

4429.000	5.01	734.61	.00	.00	735.17	.56	.35	.21	729.60
380.0	.0	215.0	165.0	.0	30.1	40.7	67.4	52.7	729.60
1.54	.00	7.15	4.06	.000	.035	.035	.000	729.60	9997.00
.003312	170.	180.	175.	2	0	0	.00	40.86	10037.86

SPECIAL CULVERT

SC CUNO	CUNV	ENTLC	COFQ	RDLEN	RISE	SPAN	CULVLN	CHRT	SCL	ELCHU	ELCHD
1	.014	.50	3.00	.00	3.00	6.00	95.30	10	1	731.90	729.60

CHART 10 - BOX CULVERT; 90-DEGREE HEADWALL; CHAMFERED OR BEVELED INLET EDGES
SCALE 1 - INLET EDGES CHAMFERED 3/4-INCH

5130, EGIC= 750.95..MAY BE TOO LARGE IF INLET CONTROLS.
5135, EGOC= 748.76 ..MAY BE TOO LARGE IF OUTLET CONTROLS.
*SECNO 4449.000

SPECIAL CULVERT INLET CONTROL + WEIR FLOW, EG = 744.26

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 31.67

SPECIAL CULVERT

EGIC	EGOC	H4	QWEIR	QCULV	VCH	ACULV	ELTRD	WEIRLN
750.95	748.76	9.09	86.	294.	.412	18.0	743.60	136.

```
3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      744.90 ELREA=      743.50

  4449.000     12.36    744.26       .00       .00    744.26       .00      9.09       .00    731.90
     380.0        .0      30.6     349.4        .0      74.2    1304.2      69.1      53.1    731.90
      1.64       .00       .41       .27      .000      .035      .035      .000    731.90   9997.00
  .000003      105.      105.      105.         0         0         0       .00    331.77  10328.77

*SECNO 4477.000
1
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    SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      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

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  2.08

  4477.000     11.71    744.21       .00       .00    744.35       .14       .03       .07    734.60
     8300.0    4642.3     861.9    2795.9    1559.4     219.6    1053.6      75.7      54.5    734.60
      1.65      2.98      3.92      2.65      .035      .035      .035      .000    732.50   9745.64
  .000365       95.      150.      160.         2         0         0       .00    505.12  10250.76

CCHV=     .100 CEHV=     .300
*SECNO 4537.000
3280 CROSS SECTION   4537.00 EXTENDED      3.92 FEET

3301 HV CHANGED MORE THAN HVINS

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =   .35

  4537.000     10.32    744.12       .00       .00    744.90       .78       .35       .19    736.00
     8300.0    3864.6    1198.4    3236.9     532.0     160.6     481.2      95.9      58.0    736.40
      1.67      7.26      7.46      6.73      .035      .045      .045      .000    733.80   9901.70
  .002924       410.      465.      475.         2         0         0       .00    179.50  10081.20

CCHV=     .300 CEHV=     .500
*SECNO 4563.000
3280 CROSS SECTION   4563.00 EXTENDED      .39 FEET

  4563.000     13.59    744.39       .00       .00    745.25       .86       .31       .04    730.80
     8300.0     512.7    7362.6     424.7     100.3     951.1     104.8      99.7      58.4    730.80
      1.68      5.11      7.74      4.05      .035      .045      .045      .000    730.80   9950.23
  .001695       200.      140.       80.         2         0         0       .00     99.77  10050.00

SPECIAL BRIDGE

SB  XK        XKOR       COFQ       RDLEN      BWC        BWP        BAREA      SS         ELCHU      ELCHD
     1.25      1.60       3.00     700.00     70.00       7.50     380.00       .00     731.10     730.80

*SECNO 4568.000
3280 CROSS SECTION   4568.00 EXTENDED      1.25 FEET
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    SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      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

PRESSURE AND WEIR FLOW,  Weir Submergence Based on TRAPEZOIDAL Shape

 EGPRS      EGLWC      H3         QWEIR      QPR        BAREA      TRAPEZOID AREA      ELLC       ELTRD      WEIRLN
   756.24     745.55       .30      5044.      3329.      380.       381.               737.20     744.50      700.

  4568.000     14.44    745.54       .00       .00    746.29       .75      1.04       .00    731.10
     8300.0     544.6    7306.3     449.1     113.2    1011.4     117.7     100.3      58.5    731.10
      1.68      4.81      7.22      3.82      .035      .045      .045      .000    731.10   9950.00
  .001360        23.       23.       23.         2         0         4       .00    100.00  10050.00

*SECNO 4591.000
3280 CROSS SECTION   4591.00 EXTENDED      4.55 FEET

3301 HV CHANGED MORE THAN HVINS

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.53

  4591.000     11.44    746.44       .00       .00    746.58       .14       .10       .18    737.60
     7900.0    2268.8     808.0    4823.2     601.8     229.3    2007.2     106.6      59.4    736.50
      1.69      3.77      3.82      2.40      .035      .045      .045      .000    735.00   9907.00
  .000530        70.      124.      160.         2         0         0       .00    471.00  10378.00

CCHV=     .100 CEHV=     .300
*SECNO 4727.000
3280 CROSS SECTION   4727.00 EXTENDED      1.48 FEET

  4727.000      9.58    746.98       .00       .00    747.09       .11       .51       .00    739.60
     7500.0    1457.5    1008.2    5034.3     472.1     350.7    1989.9     167.8      71.9    740.40
      1.79      3.09      2.88      2.53      .035      .050      .035      .000    737.40   9870.90
  .000544       980.     1003.      925.         2         0         0       .00    694.60  10565.50

*SECNO 4911.000
3280 CROSS SECTION   4911.00 EXTENDED      1.02 FEET
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   SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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


3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
  4911.000      8.02    750.32    750.32       .00    751.24       .93      1.19       .24    744.70
    6900.0    1620.1    1951.1    3328.9     294.6     215.5     426.7     207.3      84.1    745.50
      1.82      5.50      9.05      7.60      .035      .050      .035      .000    742.30   9792.50
   .007512      955.      972.      895.        20        10         0       .00    463.90  10256.40


*SECNO 5137.000
3280 CROSS SECTION   5137.00 EXTENDED       .81 FEET

3301 HV CHANGED MORE THAN HVINS

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.69

  5137.000      8.51    755.11       .00       .00    755.53       .42      4.24       .05    750.80
    6100.0    1851.2    3334.9     913.8     465.1     540.3     282.3     236.6      95.6    751.60
      1.89      3.98      6.17      3.24      .035      .035      .035      .000    746.60   9760.51
   .002047     1110.     1193.     1140.         4         0         0       .00    418.89  10179.40


CCHV=     .300 CEHV=     .500
*SECNO 5200.000
3280 CROSS SECTION   5200.00 EXTENDED      8.52 FEET

3301 HV CHANGED MORE THAN HVINS

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

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       770.30 ELREA=       770.30

  5200.000     13.32    763.82    763.82       .00    770.55      6.73      1.13      3.15    750.50
    6100.0        .0    6100.0        .0        .0     293.0        .0     242.2      97.1    750.50
      1.89       .00     20.82       .00      .000      .035      .000      .000    750.50   9989.00
   .007617      200.      333.      400.        20        14         0       .00     22.00  10011.00
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   SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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

SC  CUNO      CUNV      ENTLC     COFQ      RDLEN     RISE      SPAN      CULVLN    CHRT      SCL       ELCHU     ELCHD
     2         .014       .40      3.00     500.00     6.80     10.00    294.00      8         1       751.20    750.50

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

5130, EGIC=  834.15..MAY BE TOO LARGE IF INLET CONTROLS.
5135, EGOC=  828.06 ..MAY BE TOO LARGE IF OUTLET CONTROLS.
*SECNO 5258.000

SPECIAL CULVERT INLET CONTROL + WEIR FLOW, EG =     773.47
3280 CROSS SECTION   5258.00 EXTENDED     17.47 FEET

3301 HV CHANGED MORE THAN HVINS

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO = 51.14

SPECIAL CULVERT

     EGIC      EGOC        H4     QWEIR     QCULV       VCH     ACULV     ELTRD    WEIRLN
   834.15    828.06      2.92     3237.     2838.      .574     136.0    771.80      500.


  5258.000     22.27    773.47       .00       .00    773.47       .00      2.92       .00    751.20
    6100.0    3783.5     281.0    2035.5    7483.3     489.9    4079.7     285.2      99.4    751.20
      2.06       .51       .57       .50      .035      .035      .035      .000    751.20   9600.00
   .000003      304.      304.      304.         0         0         0       .00    620.00  10220.00


*SECNO 5308.000
3280 CROSS SECTION   5308.00 EXTENDED     13.46 FEET

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =   .42

  5308.000     21.46    773.46       .00       .00    773.48       .02       .00       .01    756.00
    6100.0    704.4    4366.7    1028.9     773.0    3502.6    1082.1     338.3     102.2    756.00
      2.12       .91      1.25       .95      .035      .035      .035      .000    752.00   9850.00
   .000016      320.      264.      180.         2         0         0       .00    300.00  10150.00
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HEC-2 WATER SURFACE PROFILES

Version 4.6.2; May 1991
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NOTE- ASTERISK (*) AT LEFT OF CROSS-SECTION NUMBER INDICATES MESSAGE IN SUMMARY OF ERRORS LIST

SCOTT AVENUE WASH

SUMMARY PRINTOUT

	SECNO	ELMIN	CWSEL	Q	VCH	DIFWSX	TOPWID	DEPTH	SSTA	ENDST	QLOB	QROB	ELTRD
	1884.000	662.10	665.53	740.00	5.03	.00	201.90	3.43	9840.60	10042.50	63.63	38.98	.00
	1884.000	662.10	665.53	740.00	5.03	.00	201.90	3.43	9840.60	10042.50	63.63	38.98	.00
	1884.000	662.10	665.53	740.00	5.03	.00	201.90	3.43	9840.60	10042.50	63.63	38.98	.00
	1884.000	662.10	665.53	740.00	5.03	.00	201.90	3.43	9840.60	10042.50	63.63	38.98	.00
	1884.000	662.10	665.53	740.00	5.03	.00	201.90	3.43	9840.60	10042.50	63.63	38.98	.00
*	2070.000	666.80	670.53	740.00	7.33	5.00	71.27	3.73	9965.73	10037.00	.00	47.82	.00
*	2070.000	666.80	670.53	740.00	7.33	5.00	71.27	3.73	9965.73	10037.00	.00	47.82	.00
*	2070.000	666.80	670.53	740.00	7.33	5.00	71.27	3.73	9965.73	10037.00	.00	47.82	.00
*	2070.000	666.80	670.53	740.00	7.33	5.00	71.27	3.73	9965.73	10037.00	.00	47.82	.00
*	2070.000	666.80	670.53	740.00	7.33	5.00	71.27	3.73	9965.73	10037.00	.00	47.82	.00
*	2261.000	672.00	675.41	680.00	4.09	4.88	102.47	3.41	9939.23	10041.70	.00	20.17	.00
*	2261.000	672.00	675.41	680.00	4.09	4.88	102.47	3.41	9939.23	10041.70	.00	20.17	.00
*	2261.000	672.00	675.41	680.00	4.09	4.88	102.47	3.41	9939.23	10041.70	.00	20.17	.00
*	2261.000	672.00	675.41	680.00	4.09	4.88	102.47	3.41	9939.23	10041.70	.00	20.17	.00
*	2261.000	672.00	675.41	680.00	4.09	4.88	102.47	3.41	9939.23	10041.70	.00	20.17	.00
*	2505.000	680.10	682.27	680.00	4.17	6.86	238.98	2.17	9983.10	10274.86	26.87	.00	.00
*	2505.000	680.10	682.27	680.00	4.17	6.86	238.98	2.17	9983.10	10274.86	26.87	.00	.00
*	2505.000	680.10	682.27	680.00	4.17	6.86	238.98	2.17	9983.10	10274.86	26.87	.00	.00
*	2505.000	680.10	682.27	680.00	4.17	6.86	238.98	2.17	9983.10	10274.86	26.87	.00	.00
*	2505.000	680.10	682.27	680.00	4.17	6.86	238.98	2.17	9983.10	10274.86	26.87	.00	.00
*	2677.000	683.30	687.64	620.00	1.34	5.37	413.69	4.34	9920.03	10684.64	.00	315.63	.00
*	2677.000	683.30	687.64	620.00	1.34	5.37	413.69	4.34	9920.03	10684.64	.00	315.63	.00
*	2677.000	683.30	687.64	620.00	1.34	5.37	413.69	4.34	9920.03	10684.64	.00	315.63	.00
*	2677.000	683.30	687.64	620.00	1.34	5.37	413.69	4.34	9920.03	10684.64	.00	315.63	.00
*	2677.000	683.30	687.64	620.00	1.34	5.37	413.69	4.34	9920.03	10684.64	.00	315.63	.00

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	SECNO	ELMIN	CWSEL	Q	VCH	DIFWSX	TOPWID	DEPTH	SSTA	ENDST	QLOB	QROB	ELTRD
*	2867.000	689.50	693.36	620.00	8.02	5.72	39.93	3.86	9976.40	10016.33	.00	.00	.00
*	2867.000	689.50	693.36	620.00	8.02	5.72	39.93	3.86	9976.40	10016.33	.00	.00	.00
*	2867.000	689.50	693.36	620.00	8.02	5.72	39.93	3.86	9976.40	10016.33	.00	.00	.00
*	2867.000	689.50	693.36	620.00	8.02	5.72	39.93	3.86	9976.40	10016.33	.00	.00	.00
*	2867.000	689.50	693.36	620.00	8.02	5.72	39.93	3.86	9976.40	10016.33	.00	.00	.00
*	3105.000	695.20	699.27	560.00	.26	5.91	471.78	4.07	9981.42	10453.20	.00	542.00	.00
*	3105.000	695.20	699.27	560.00	.26	5.91	471.78	4.07	9981.42	10453.20	.00	542.00	.00
*	3105.000	695.20	699.27	560.00	.26	5.91	471.78	4.07	9981.42	10453.20	.00	542.00	.00
*	3105.000	695.20	699.27	560.00	.26	5.91	471.78	4.07	9981.42	10453.20	.00	542.00	.00
*	3105.000	695.20	699.27	560.00	.26	5.91	471.78	4.07	9981.42	10453.20	.00	542.00	.00
*	3292.000	701.30	704.12	560.00	4.81	4.86	119.43	2.82	9957.37	10088.36	112.09	.89	.00
*	3292.000	701.30	704.12	560.00	4.81	4.86	119.43	2.82	9957.37	10088.36	112.09	.89	.00
*	3292.000	701.30	704.12	560.00	4.81	4.86	119.43	2.82	9957.37	10088.36	112.09	.89	.00
*	3292.000	701.30	704.12	560.00	4.81	4.86	119.43	2.82	9957.37	10088.36	112.09	.89	.00
*	3292.000	701.30	704.12	560.00	4.81	4.86	119.43	2.82	9957.37	10088.36	112.09	.89	.00
*	3492.000	707.10	710.72	500.00	1.72	6.59	166.92	3.62	9889.09	10056.01	243.38	82.67	.00
*	3492.000	707.10	710.72	500.00	1.72	6.59	166.92	3.62	9889.09	10056.01	243.38	82.67	.00
*	3492.000	707.10	710.72	500.00	1.72	6.59	166.92	3.62	9889.09	10056.01	243.38	82.67	.00
*	3492.000	707.10	710.72	500.00	1.72	6.59	166.92	3.62	9889.09	10056.01	243.38	82.67	.00
*	3492.000	707.10	710.72	500.00	1.72	6.59	166.92	3.62	9889.09	10056.01	243.38	82.67	.00
*	3570.000	708.90	712.07	500.00	2.89	1.36	216.20	3.17	9972.12	10188.33	9.58	304.48	.00
*	3570.000	708.90	712.07	500.00	2.89	1.36	216.20	3.17	9972.12	10188.33	9.58	304.48	.00
*	3570.000	708.90	712.07	500.00	2.89	1.36	216.20	3.17	9972.12	10188.33	9.58	304.48	.00
*	3570.000	708.90	712.07	500.00	2.89	1.36	216.20	3.17	9972.12	10188.33	9.58	304.48	.00
*	3570.000	708.90	712.07	500.00	2.89	1.36	216.20	3.17	9972.12	10188.33	9.58	304.48	.00
	3677.000	712.00	715.16	480.00	1.62	3.08	178.05	3.16	9868.33	10046.38	314.14	71.93	.00
	3677.000	712.00	715.16	480.00	1.62	3.08	178.05	3.16	9868.33	10046.38	314.14	71.93	.00
	3677.000	712.00	715.16	480.00	1.62	3.08	178.05	3.16	9868.33	10046.38	314.14	71.93	.00
	3677.000	712.00	715.16	480.00	1.62	3.08	178.05	3.16	9868.33	10046.38	314.14	71.93	.00
	3677.000	712.00	715.16	480.00	1.62	3.08	178.05	3.16	9868.33	10046.38	314.14	71.93	.00
	3772.000	713.80	717.24	480.00	2.05	2.09	168.37	3.44	9973.16	10141.53	18.08	284.69	.00
	3772.000	713.80	717.24	480.00	2.05	2.09	168.37	3.44	9973.16	10141.53	18.08	284.69	.00
	3772.000	713.80	717.24	480.00	2.05	2.09	168.37	3.44	9973.16	10141.53	18.08	284.69	.00
	3772.000	713.80	717.24	480.00	2.05	2.09	168.37	3.44	9973.16	10141.53	18.08	284.69	.00
	3772.000	713.80	717.24	480.00	2.05	2.09	168.37	3.44	9973.16	10141.53	18.08	284.69	.00
	3863.000	717.00	719.50	450.00	3.13	2.25	156.46	2.50	9829.44	10025.14	267.68	.00	.00
	3863.000	717.00	719.50	450.00	3.13	2.25	156.46	2.50	9829.44	10025.14	267.68	.00	.00
	3863.000	717.00	719.50	450.00	3.13	2.25	156.46	2.50	9829.44	10025.14	267.68	.00	.00
	3863.000	717.00	719.50	450.00	3.13	2.25	156.46	2.50	9829.44	10025.14	267.68	.00	.00
	3863.000	717.00	719.50	450.00	3.13	2.25	156.46	2.50	9829.44	10025.14	267.68	.00	.00

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SECNO	ELMIN	CWSEL	Q	VCH	DIFWSX	TOPWID	DEPTH	SSTA	ENDST	QLOB	QROB	ELTRD
3957.000	718.60	722.10	450.00	3.90	2.60	108.57	3.50	9982.63	10091.21	13.31	206.37	.00
3957.000	718.60	722.10	450.00	3.90	2.60	108.57	3.50	9982.63	10091.21	13.31	206.37	.00
3957.000	718.60	722.10	450.00	3.90	2.60	108.57	3.50	9982.63	10091.21	13.31	206.37	.00
3957.000	718.60	722.10	450.00	3.90	2.60	108.57	3.50	9982.63	10091.21	13.31	206.37	.00
3957.000	718.60	722.10	450.00	3.90	2.60	108.57	3.50	9982.63	10091.21	13.31	206.37	.00

	4053.000	720.80	724.88	450.00	2.22	2.79	134.22	4.08	9962.24	10096.46	.00	192.74	.00
	4053.000	720.80	724.88	450.00	2.22	2.79	134.22	4.08	9962.24	10096.46	.00	192.74	.00
	4053.000	720.80	724.88	450.00	2.22	2.79	134.22	4.08	9962.24	10096.46	.00	192.74	.00
	4053.000	720.80	724.88	450.00	2.22	2.79	134.22	4.08	9962.24	10096.46	.00	192.74	.00
	4053.000	720.80	724.88	450.00	2.22	2.79	134.22	4.08	9962.24	10096.46	.00	192.74	.00
	4147.000	723.80	727.08	410.00	4.09	2.20	94.85	3.28	9986.72	10081.57	4.27	138.96	.00
	4147.000	723.80	727.08	410.00	4.09	2.20	94.85	3.28	9986.72	10081.57	4.27	138.96	.00
	4147.000	723.80	727.08	410.00	4.09	2.20	94.85	3.28	9986.72	10081.57	4.27	138.96	.00
	4147.000	723.80	727.08	410.00	4.09	2.20	94.85	3.28	9986.72	10081.57	4.27	138.96	.00
	4147.000	723.80	727.08	410.00	4.09	2.20	94.85	3.28	9986.72	10081.57	4.27	138.96	.00
*	4156.000	724.90	729.95	410.00	5.74	2.87	152.36	5.05	9995.02	10193.88	.00	149.58	.00
*	4156.000	724.90	729.95	410.00	5.74	2.87	152.36	5.05	9995.02	10193.88	.00	149.58	.00
*	4156.000	724.90	729.95	410.00	5.74	2.87	152.36	5.05	9995.02	10193.88	.00	149.58	.00
*	4156.000	724.90	729.95	410.00	5.74	2.87	152.36	5.05	9995.02	10193.88	.00	149.58	.00
*	4156.000	724.90	729.95	410.00	5.74	2.87	152.36	5.05	9995.02	10193.88	.00	149.58	.00
*	4183.000	724.90	731.10	410.00	.82	1.15	319.25	6.20	9995.00	10326.29	.00	363.37	.00
*	4183.000	724.90	731.10	410.00	.82	1.15	319.25	6.20	9995.00	10326.29	.00	363.37	.00
*	4183.000	724.90	731.10	410.00	.82	1.15	319.25	6.20	9995.00	10326.29	.00	363.37	.00
*	4183.000	724.90	731.10	410.00	.82	1.15	319.25	6.20	9995.00	10326.29	.00	363.37	.00
*	4183.000	724.90	731.10	410.00	.82	1.15	319.25	6.20	9995.00	10326.29	.00	363.37	.00
	4216.000	725.00	732.22	410.00	4.07	1.12	47.33	7.22	9995.00	10160.76	.00	116.86	732.40
	4216.000	725.00	732.22	410.00	4.07	1.12	47.33	7.22	9995.00	10160.76	.00	116.86	732.40
	4216.000	725.00	732.22	410.00	4.07	1.12	47.33	7.22	9995.00	10160.76	.00	116.86	732.40
	4216.000	725.00	732.22	410.00	4.07	1.12	47.33	7.22	9995.00	10160.76	.00	116.86	732.40
	4216.000	725.00	732.22	410.00	4.07	1.12	47.33	7.22	9995.00	10160.76	.00	116.86	732.40
*	4287.000	726.80	732.52	410.00	1.17	.31	122.59	5.72	9914.03	10036.62	193.88	.00	.00
*	4287.000	726.80	732.52	410.00	1.17	.31	122.59	5.72	9914.03	10036.62	193.88	.00	.00
*	4287.000	726.80	732.52	410.00	1.17	.31	122.59	5.72	9914.03	10036.62	193.88	.00	.00
*	4287.000	726.80	732.52	410.00	1.17	.31	122.59	5.72	9914.03	10036.62	193.88	.00	.00
*	4287.000	726.80	732.52	410.00	1.17	.31	122.59	5.72	9914.03	10036.62	193.88	.00	.00
*	4315.000	729.80	732.09	380.00	8.55	-.43	19.77	2.29	9990.00	10009.77	.00	.00	.00
*	4315.000	729.80	732.09	380.00	8.55	-.43	19.77	2.29	9990.00	10009.77	.00	.00	.00
*	4315.000	729.80	732.09	380.00	8.55	-.43	19.77	2.29	9990.00	10009.77	.00	.00	.00
*	4315.000	729.80	732.09	380.00	8.55	-.43	19.77	2.29	9990.00	10009.77	.00	.00	.00
*	4315.000	729.80	732.09	380.00	8.55	-.43	19.77	2.29	9990.00	10009.77	.00	.00	.00

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	SECNO	ELMIN	CWSEL	Q	VCH	DIFWSX	TOPWID	DEPTH	SSTA	ENDST	QLOB	QROB	ELTRD
*	4331.000	729.80	733.45	380.00	5.33	1.36	19.93	3.65	9990.00	10009.93	.00	.00	740.20
*	4331.000	729.80	733.45	380.00	5.33	1.36	19.93	3.65	9990.00	10009.93	.00	.00	740.20
*	4331.000	729.80	733.45	380.00	5.33	1.36	19.93	3.65	9990.00	10009.93	.00	.00	740.20
*	4331.000	729.80	733.45	380.00	5.33	1.36	19.93	3.65	9990.00	10009.93	.00	.00	740.20
*	4331.000	729.80	733.45	380.00	5.33	1.36	19.93	3.65	9990.00	10009.93	.00	.00	740.20
*	4395.000	729.50	734.47	380.00	2.97	1.02	45.82	4.97	9975.61	10021.42	.00	.00	.00
*	4395.000	729.50	734.47	380.00	2.97	1.02	45.82	4.97	9975.61	10021.42	.00	.00	.00
*	4395.000	729.50	734.47	380.00	2.97	1.02	45.82	4.97	9975.61	10021.42	.00	.00	.00
*	4395.000	729.50	734.47	380.00	2.97	1.02	45.82	4.97	9975.61	10021.42	.00	.00	.00
*	4395.000	729.50	734.47	380.00	2.97	1.02	45.82	4.97	9975.61	10021.42	.00	.00	.00
*	4429.000	729.60	734.61	380.00	7.15	.14	40.86	5.01	9997.00	10037.86	.00	164.98	.00
*	4429.000	729.60	734.61	380.00	7.15	.14	40.86	5.01	9997.00	10037.86	.00	164.98	.00
*	4429.000	729.60	734.61	380.00	7.15	.14	40.86	5.01	9997.00	10037.86	.00	164.98	.00
*	4429.000	729.60	734.61	380.00	7.15	.14	40.86	5.01	9997.00	10037.86	.00	164.98	.00
*	4429.000	729.60	734.61	380.00	7.15	.14	40.86	5.01	9997.00	10037.86	.00	164.98	.00
*	4449.000	731.90	744.26	380.00	.41	9.65	331.77	12.36	9997.00	10328.77	.00	349.42	743.60
*	4449.000	731.90	744.26	380.00	.41	9.65	331.77	12.36	9997.00	10328.77	.00	349.42	743.60
*	4449.000	731.90	744.26	380.00	.41	9.65	331.77	12.36	9997.00	10328.77	.00	349.42	743.60
*	4449.000	731.90	744.26	380.00	.41	9.65	331.77	12.36	9997.00	10328.77	.00	349.42	743.60
*	4449.000	731.90	744.26	380.00	.41	9.65	331.77	12.36	9997.00	10328.77	.00	349.42	743.60
*	4477.000	732.50	744.26	400.00	.19	.00	508.09	11.76	9744.88	10252.97	223.53	135.08	.00
*	4477.000	732.50	744.26	830.00	.39	.00	508.03	11.76	9744.90	10252.93	463.84	280.28	.00
*	4477.000	732.50	744.26	1660.00	.78	.00	507.95	11.76	9744.92	10252.87	927.70	560.52	.00
*	4477.000	732.50	744.25	3320.00	1.56	-.01	507.62	11.75	9745.00	10252.62	1855.57	1120.73	.00
*	4477.000	732.50	744.21	8300.00	3.92	-.04	505.12	11.71	9745.64	10250.76	4642.27	2795.87	.00
*	4537.000	733.80	744.26	400.00	.35	.00	179.50	10.46	9901.70	10081.20	187.29	155.44	.00
*	4537.000	733.80	744.26	830.00	.73	.00	179.50	10.46	9901.70	10081.20	388.62	322.55	.00
*	4537.000	733.80	744.25	1660.00	1.46	.00	179.50	10.45	9901.70	10081.20	777.28	645.08	.00
*	4537.000	733.80	744.24	3320.00	2.92	-.01	179.50	10.44	9901.70	10081.20	1553.17	1290.89	.00
*	4537.000	733.80	744.12	8300.00	7.46	-.10	179.50	10.32	9901.70	10081.20	3864.64	3236.91	.00
	4563.000	730.80	744.26	400.00	.38	.00	99.63	13.46	9950.37	10050.00	24.51	20.27	.00
	4563.000	730.80	744.26	830.00	.78	.00	99.63	13.46	9950.37	10050.00	50.85	42.06	.00
	4563.000	730.80	744.26	1660.00	1.56	.01	99.63	13.46	9950.37	10050.00	101.72	84.14	.00
	4563.000	730.80	744.28	3320.00	3.13	.04	99.64	13.48	9950.36	10050.00	203.58	168.41	.00
	4563.000	730.80	744.39	8300.00	7.74	.27	99.77	13.59	9950.23	10050.00	512.72	424.65	.00
	4568.000	731.10	744.29	400.00	.39	.03	99.32	13.19	9950.67	10049.99	24.07	19.83	744.50
	4568.000	731.10	744.37	830.00	.79	.11	99.43	13.27	9950.57	10050.00	50.25	41.46	744.50
	4568.000	731.10	744.63	1660.00	1.56	.36	99.70	13.53	9950.30	10050.00	102.14	84.55	744.50
	4568.000	731.10	745.01	3320.00	3.01	.74	100.00	13.91	9950.00	10050.00	209.78	173.84	744.50
	4568.000	731.10	745.54	8300.00	7.22	1.16	100.00	14.44	9950.00	10050.00	544.55	449.14	744.50

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	SECNO	ELMIN	CWSEL	Q	VCH	DIFWSX	TOPWID	DEPTH	SSTA	ENDST	QLOB	QROB	ELTRD
	4591.000	735.00	744.29	400.00	.30	.00	471.00	9.29	9907.00	10378.00	130.64	215.25	.00
	4591.000	735.00	744.38	790.00	.57	.01	471.00	9.38	9907.00	10378.00	256.31	428.36	.00
	4591.000	735.00	744.66	1580.00	1.06	.04	471.00	9.66	9907.00	10378.00	501.70	877.28	.00
	4591.000	735.00	745.16	3160.00	1.86	.15	471.00	10.16	9907.00	10378.00	970.91	1814.82	.00
*	4591.000	735.00	746.44	7900.00	3.52	.90	471.00	11.44	9907.00	10378.00	2268.77	4823.19	.00
*	4727.000	737.40	744.29	375.00	.39	.01	465.08	6.89	9904.33	10369.42	93.78	187.67	.00
*	4727.000	737.40	744.41	750.00	.74	.03	473.69	7.01	9903.56	10377.25	185.23	383.03	.00
*	4727.000	737.40	744.75	1500.00	1.28	.08	557.58	7.35	9901.04	10458.62	355.19	813.40	.00
*	4727.000	737.40	745.38	3000.00	1.99	.22	661.95	7.98	9878.29	10540.24	660.74	1774.36	.00
	4727.000	737.40	746.98	7500.00	2.88	.54	694.60	9.58	9870.90	10565.50	1457.53	5034.30	.00

*	4911.000	742.30	745.22	350.00	6.59	.92	49.28	2.92	9978.88	10046.51	1.56	2.66	.00
*	4911.000	742.30	745.99	690.00	7.13	1.58	78.39	3.69	9975.57	10053.96	15.03	125.88	.00
*	4911.000	742.30	746.80	1380.00	8.49	2.06	89.74	4.50	9972.07	10061.81	54.39	450.26	.00
*	4911.000	742.30	747.97	2760.00	9.84	2.59	111.78	5.67	9961.29	10073.08	201.21	1176.84	.00
*	4911.000	742.30	750.32	6900.00	9.05	3.34	463.90	8.02	9792.50	10256.40	1620.05	3328.87	.00
*	5137.000	746.60	750.75	300.00	2.18	5.54	85.60	4.15	9942.57	10028.17	.00	.00	.00
*	5137.000	746.60	751.52	610.00	2.90	5.53	136.99	4.92	9897.14	10034.13	13.73	.00	.00
*	5137.000	746.60	752.45	1220.00	3.63	5.65	229.97	5.85	9838.90	10068.88	144.70	13.92	.00
*	5137.000	746.60	753.60	2440.00	4.32	5.63	321.03	7.00	9804.13	10125.16	562.43	153.31	.00
*	5137.000	746.60	755.11	6100.00	6.17	4.79	418.89	8.51	9760.51	10179.40	1851.22	913.84	.00
*	5200.000	750.50	752.29	300.00	7.62	1.54	22.00	1.79	9989.00	10011.00	.00	.00	.00
*	5200.000	750.50	753.39	610.00	9.63	1.86	22.00	2.88	9989.00	10011.00	.00	.00	.00
*	5200.000	750.50	755.06	1220.00	12.17	2.61	22.00	4.56	9989.00	10011.00	.00	.00	.00
*	5200.000	750.50	757.73	2440.00	15.34	4.13	22.00	7.23	9989.00	10011.00	.00	.00	.00
*	5200.000	750.50	763.82	6100.00	20.82	8.71	22.00	13.32	9989.00	10011.00	.00	.00	.00
*	5258.000	751.20	754.06	300.00	4.76	1.77	22.00	2.86	9989.00	10011.00	.00	.00	771.80
*	5258.000	751.20	755.79	610.00	6.04	2.41	22.00	4.59	9989.00	10011.00	.00	.00	771.80
*	5258.000	751.20	758.50	1220.00	7.60	3.44	22.00	7.30	9989.00	10011.00	.00	.00	771.80
*	5258.000	751.20	768.45	2440.00	6.43	10.72	22.00	17.25	9989.00	10011.00	.00	.00	771.80
*	5258.000	751.20	773.47	6100.00	.57	9.65	620.00	22.27	9600.00	10220.00	3783.49	2035.46	771.80
*	5308.000	752.00	754.86	300.00	1.62	.81	128.93	2.86	9928.37	10057.30	.00	.00	.00
*	5308.000	752.00	756.65	610.00	1.28	.86	199.37	4.65	9891.93	10091.30	.82	1.15	.00
*	5308.000	752.00	759.69	1220.00	1.09	1.19	290.73	7.69	9853.86	10144.59	43.68	61.22	.00
*	5308.000	752.00	769.28	2440.00	.65	.83	300.00	17.28	9850.00	10150.00	266.97	385.66	.00
*	5308.000	752.00	773.48	6100.00	1.25	-.01	300.00	21.46	9850.00	10150.00	704.40	1028.92	.00

SUMMARY OF ERRORS AND SPECIAL NOTES

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CAUTION SECNO=  2070.000  PROFILE= 1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=  2070.000  PROFILE= 1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=  2070.000  PROFILE= 2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=  2070.000  PROFILE= 2  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=  2070.000  PROFILE= 3  CRITICAL DEPTH ASSUMED
CAUTION SECNO=  2070.000  PROFILE= 3  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=  2070.000  PROFILE= 4  CRITICAL DEPTH ASSUMED
CAUTION SECNO=  2070.000  PROFILE= 4  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=  2070.000  PROFILE= 5  CRITICAL DEPTH ASSUMED
CAUTION SECNO=  2070.000  PROFILE= 5  MINIMUM SPECIFIC ENERGY

WARNING SECNO=  2261.000  PROFILE= 1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=  2261.000  PROFILE= 2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=  2261.000  PROFILE= 3  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=  2261.000  PROFILE= 4  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=  2261.000  PROFILE= 5  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=  2505.000  PROFILE= 1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=  2505.000  PROFILE= 2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=  2505.000  PROFILE= 3  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=  2505.000  PROFILE= 4  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=  2505.000  PROFILE= 5  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO=  2677.000  PROFILE= 1  WSEL ASSUMED BASED ON MIN DIFF
CAUTION SECNO=  2677.000  PROFILE= 1  20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO=  2677.000  PROFILE= 2  WSEL ASSUMED BASED ON MIN DIFF
CAUTION SECNO=  2677.000  PROFILE= 2  20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO=  2677.000  PROFILE= 3  WSEL ASSUMED BASED ON MIN DIFF
CAUTION SECNO=  2677.000  PROFILE= 3  20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO=  2677.000  PROFILE= 4  WSEL ASSUMED BASED ON MIN DIFF
CAUTION SECNO=  2677.000  PROFILE= 4  20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO=  2677.000  PROFILE= 5  WSEL ASSUMED BASED ON MIN DIFF
CAUTION SECNO=  2677.000  PROFILE= 5  20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO=  2867.000  PROFILE= 1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=  2867.000  PROFILE= 1  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=  2867.000  PROFILE= 1  20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO=  2867.000  PROFILE= 2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=  2867.000  PROFILE= 2  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=  2867.000  PROFILE= 2  20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO=  2867.000  PROFILE= 3  CRITICAL DEPTH ASSUMED
CAUTION SECNO=  2867.000  PROFILE= 3  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=  2867.000  PROFILE= 3  20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO=  2867.000  PROFILE= 4  CRITICAL DEPTH ASSUMED
CAUTION SECNO=  2867.000  PROFILE= 4  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=  2867.000  PROFILE= 4  20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO=  2867.000  PROFILE= 5  CRITICAL DEPTH ASSUMED
CAUTION SECNO=  2867.000  PROFILE= 5  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=  2867.000  PROFILE= 5  20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO=  3105.000  PROFILE= 1  CRITICAL DEPTH ASSUMED
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CAUTION SECNO=  3105.000  PROFILE= 1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=  3105.000  PROFILE= 2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=  3105.000  PROFILE= 2  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=  3105.000  PROFILE= 3  CRITICAL DEPTH ASSUMED
CAUTION SECNO=  3105.000  PROFILE= 3  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=  3105.000  PROFILE= 4  CRITICAL DEPTH ASSUMED
CAUTION SECNO=  3105.000  PROFILE= 4  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=  3105.000  PROFILE= 5  CRITICAL DEPTH ASSUMED
CAUTION SECNO=  3105.000  PROFILE= 5  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=  3292.000  PROFILE= 1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=  3292.000  PROFILE= 1  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=  3292.000  PROFILE= 1  20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO=  3292.000  PROFILE= 2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=  3292.000  PROFILE= 2  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=  3292.000  PROFILE= 2  20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO=  3292.000  PROFILE= 3  CRITICAL DEPTH ASSUMED
CAUTION SECNO=  3292.000  PROFILE= 3  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=  3292.000  PROFILE= 3  20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO=  3292.000  PROFILE= 4  CRITICAL DEPTH ASSUMED
CAUTION SECNO=  3292.000  PROFILE= 4  PROBABLE MINIMUM SPECIFIC ENERGY
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CAUTION SECNO=   3292.000  PROFILE=  4  20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO=   3292.000  PROFILE=  5  CRITICAL DEPTH ASSUMED
CAUTION SECNO=   3292.000  PROFILE=  5  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=   3292.000  PROFILE=  5  20 TRIALS ATTEMPTED TO BALANCE WSEL

WARNING SECNO=   3492.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   3492.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   3492.000  PROFILE=  3  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   3492.000  PROFILE=  4  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   3492.000  PROFILE=  5  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=   3570.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   3570.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   3570.000  PROFILE=  3  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   3570.000  PROFILE=  4  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   3570.000  PROFILE=  5  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO=   4156.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=   4156.000  PROFILE=  1  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=   4156.000  PROFILE=  1  20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO=   4156.000  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=   4156.000  PROFILE=  2  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=   4156.000  PROFILE=  2  20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO=   4156.000  PROFILE=  3  CRITICAL DEPTH ASSUMED
CAUTION SECNO=   4156.000  PROFILE=  3  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=   4156.000  PROFILE=  3  20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO=   4156.000  PROFILE=  4  CRITICAL DEPTH ASSUMED
CAUTION SECNO=   4156.000  PROFILE=  4  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=   4156.000  PROFILE=  4  20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO=   4156.000  PROFILE=  5  CRITICAL DEPTH ASSUMED
CAUTION SECNO=   4156.000  PROFILE=  5  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=   4156.000  PROFILE=  5  20 TRIALS ATTEMPTED TO BALANCE WSEL
1
   11MAR92        10:36:18                                                    PAGE   81

CAUTION SECNO=   4183.000  PROFILE=  1  WSEL ASSUMED BASED ON MIN DIFF
CAUTION SECNO=   4183.000  PROFILE=  1  20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO=   4183.000  PROFILE=  2  WSEL ASSUMED BASED ON MIN DIFF
CAUTION SECNO=   4183.000  PROFILE=  2  20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO=   4183.000  PROFILE=  3  WSEL ASSUMED BASED ON MIN DIFF
CAUTION SECNO=   4183.000  PROFILE=  3  20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO=   4183.000  PROFILE=  4  WSEL ASSUMED BASED ON MIN DIFF
CAUTION SECNO=   4183.000  PROFILE=  4  20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO=   4183.000  PROFILE=  5  WSEL ASSUMED BASED ON MIN DIFF
CAUTION SECNO=   4183.000  PROFILE=  5  20 TRIALS ATTEMPTED TO BALANCE WSEL

WARNING SECNO=   4287.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   4287.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   4287.000  PROFILE=  3  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   4287.000  PROFILE=  4  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   4287.000  PROFILE=  5  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO=   4315.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=   4315.000  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=   4315.000  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=   4315.000  PROFILE=  2  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=   4315.000  PROFILE=  3  CRITICAL DEPTH ASSUMED
CAUTION SECNO=   4315.000  PROFILE=  3  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=   4315.000  PROFILE=  4  CRITICAL DEPTH ASSUMED
CAUTION SECNO=   4315.000  PROFILE=  4  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=   4315.000  PROFILE=  5  CRITICAL DEPTH ASSUMED
CAUTION SECNO=   4315.000  PROFILE=  5  MINIMUM SPECIFIC ENERGY

WARNING SECNO=   4331.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   4331.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   4331.000  PROFILE=  3  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   4331.000  PROFILE=  4  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   4331.000  PROFILE=  5  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=   4395.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   4395.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   4395.000  PROFILE=  3  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   4395.000  PROFILE=  4  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   4395.000  PROFILE=  5  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=   4429.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   4429.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   4429.000  PROFILE=  3  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   4429.000  PROFILE=  4  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   4429.000  PROFILE=  5  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=   4449.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   4449.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   4449.000  PROFILE=  3  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   4449.000  PROFILE=  4  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   4449.000  PROFILE=  5  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=   4477.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   4477.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
1
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WARNING SECNO=   4477.000  PROFILE=  3  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   4477.000  PROFILE=  4  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   4477.000  PROFILE=  5  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=   4537.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   4537.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   4537.000  PROFILE=  3  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   4537.000  PROFILE=  4  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   4537.000  PROFILE=  5  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=   4591.000  PROFILE=  5  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=   4727.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   4727.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   4727.000  PROFILE=  3  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   4727.000  PROFILE=  4  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO=   4911.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=   4911.000  PROFILE=  1  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=   4911.000  PROFILE=  1  20 TRIALS ATTEMPTED TO BALANCE WSEL
```

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CAUTION SECNO=   4911.000  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=   4911.000  PROFILE=  2  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=   4911.000  PROFILE=  2  20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO=   4911.000  PROFILE=  3  CRITICAL DEPTH ASSUMED
CAUTION SECNO=   4911.000  PROFILE=  3  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=   4911.000  PROFILE=  3  20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO=   4911.000  PROFILE=  4  CRITICAL DEPTH ASSUMED
CAUTION SECNO=   4911.000  PROFILE=  4  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=   4911.000  PROFILE=  4  20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO=   4911.000  PROFILE=  5  CRITICAL DEPTH ASSUMED
CAUTION SECNO=   4911.000  PROFILE=  5  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=   4911.000  PROFILE=  5  20 TRIALS ATTEMPTED TO BALANCE WSEL

WARNING SECNO=   5137.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   5137.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   5137.000  PROFILE=  3  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   5137.000  PROFILE=  4  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   5137.000  PROFILE=  5  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO=   5200.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=   5200.000  PROFILE=  1  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=   5200.000  PROFILE=  1  20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO=   5200.000  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=   5200.000  PROFILE=  2  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=   5200.000  PROFILE=  2  20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO=   5200.000  PROFILE=  3  CRITICAL DEPTH ASSUMED
CAUTION SECNO=   5200.000  PROFILE=  3  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=   5200.000  PROFILE=  3  20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO=   5200.000  PROFILE=  4  CRITICAL DEPTH ASSUMED
CAUTION SECNO=   5200.000  PROFILE=  4  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=   5200.000  PROFILE=  4  20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO=   5200.000  PROFILE=  5  CRITICAL DEPTH ASSUMED
CAUTION SECNO=   5200.000  PROFILE=  5  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=   5200.000  PROFILE=  5  20 TRIALS ATTEMPTED TO BALANCE WSEL
1                                                                          PAGE   83
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WARNING SECNO=   5258.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   5258.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   5258.000  PROFILE=  3  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   5258.000  PROFILE=  4  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   5258.000  PROFILE=  5  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=   5308.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   5308.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   5308.000  PROFILE=  3  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   5308.000  PROFILE=  4  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   5308.000  PROFILE=  5  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
```

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1*****************************************
 *  HEC-2 WATER SURFACE PROFILES          *
 *                                        *
 *  Version   4.6.2;  May 1991            *
 *                                        *
 *  RUN DATE    11APR92    TIME   12:23:51 *
 *****************************************

                                                                                  ***************************************
                                                                                  *  U.S. ARMY CORPS OF ENGINEERS       *
                                                                                  *  HYDROLOGIC ENGINEERING CENTER      *
                                                                                  *  609 SECOND STREET, SUITE D         *
                                                                                  *  DAVIS, CALIFORNIA 95616-4687       *
                                                                                  *          (916) 756-1104             *
                                                                                  ***************************************

                                        X     X  XXXXXXX   XXXXX              XXXXX
                                        X     X  X        X     X            X     X
                                        X     X  X        X                  X
                                        XXXXXXX  XXXX     X          XXXXX    XXXXX
                                        X     X  X        X                  X
                                        X     X  X        X     X            X
                                        X     X  XXXXXXX   XXXXX              XXXXXXX
1
   11APR92      12:23:51                                                                                          PAGE    1


                                                                                THIS RUN EXECUTED 11APR92    12:23:51
 *************************************
  HEC-2 WATER SURFACE PROFILES

  Version   4.6.2;  May 1991
 *************************************


 T1      FLOOD CONTROL DISTRICT OF MARICOPA COUNTY - CONTRACT FCD 90-67
 T2      GILA BEND AREA FLOODPLAIN DELINEATION STUDY BY BURGESS & NIPLE
 T3      SCOTT ZONE AO-GRAVEL RD                 J. MISCHLER - (602) 244-8100

 J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                 2                           0.0056

 J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

      -1                  -1

 J3  VARIABLE CODES FOR SUMMARY PRINTOUT

      38        42         1         43        26        51         4         8        53        54
      13        15        40

         THE PURPOSE OF THIS FILE IS TO COMPUTE A NORMAL DEPTH DOWNSTREAM OF I-8
         IN ORDER TO DETERMINE THE APPROPRIATE ZONE AO DEPTH DUE TO THE 2,100 CFS
         THAT IS CONVEYED BENEATH I-8 ALONG THE GRAVEL ROAD WEST OF SCOTT
         AVENUE WASH.

         THE CHOSEN SECTION TRAVERSES ACROSS A SIDE CHANNEL WEST OF
         SCOTT AVENUE WASH.  SINCE WATER CANNOT GET TO THIS CHANNEL UNTIL
         IT CROSSES A "RIDGE" AT ELEV 752, IT IS MADE NON-EFFECTIVE BELOW
         ELEV 752.

         J1.5 STRT = (754.8-752.8)/360 FT = 0.0056 FT/FT

 NC    0.035     0.035     0.035      0.1       0.3
 QT        1      2100
 X1        1         7      1120      1530
 GR      756      1000       752      1120       752      1370       752      1530     752.5      1570
 GR      752      1630     752.8      1830
1
   11APR92      12:23:51                                                                                          PAGE    2

     SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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

 *PROF 1

 CCHV=     .100 CEHV=     .300
 *SECNO 1.000
 2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED
 3280 CROSS SECTION      1.00 EXTENDED       .28 FEET

      1.000     1.08    753.08       .00       .00    753.24       .15       .00       .00    752.00
     2100.0     37.2    1490.7     572.0      17.6     444.4     220.1        .0        .0    752.00
        .00     2.11      3.36      2.60      .035      .035      .035      .000    752.00   1087.49
    .005608       0.        0.        0.         0         0         6       .00    742.51   1830.00


1
   11APR92      12:23:51                                                                                          PAGE    3


                                                                                THIS RUN EXECUTED 11APR92    12:23:52
 *************************************
  HEC-2 WATER SURFACE PROFILES

  Version   4.6.2;  May 1991
 *************************************


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


 SCOTT ZONE AO-GRAVEL RD

 SUMMARY PRINTOUT
```

SECNO	ELMIN	CWSEL	Q	VCH	DIFWSX	TOPWID	DEPTH	SSTA	ENDST	QLOB	QROB	ELTRD
1.000	752.00	753.08	2100.00	3.35	.00	742.51	1.08	1087.49	1830.00	37.22	572.03	.00

1

11APR92 12:23:51 PAGE 4

SUMMARY OF ERRORS AND SPECIAL NOTES

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1*****************************************
 *  HEC-2 WATER SURFACE PROFILES          *
 *                                        *
 *  Version   4.6.2;  May 1991            *
 *                                        *
 *  RUN DATE    11APR92    TIME   08:23:24 *
 *****************************************
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*************************************
*  U.S. ARMY CORPS OF ENGINEERS     *
*  HYDROLOGIC ENGINEERING CENTER    *
*  609 SECOND STREET, SUITE D       *
*  DAVIS, CALIFORNIA 95616-4687     *
*        (916) 756-1104             *
*************************************
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X     X  XXXXXXX   XXXXX              XXXXX
X     X  X        X     X            X     X
X     X  X        X                        X
XXXXXXX  XXXX     X          XXXXX    XXXXX
X     X  X        X                  X
X     X  X        X     X            X
X     X  XXXXXXX   XXXXX             XXXXXXX
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1
   11APR92      08:23:24                                                                                PAGE    1


                                                                                THIS RUN EXECUTED 11APR92    08:23:24
*************************************
 HEC-2 WATER SURFACE PROFILES

 Version   4.6.2;  May 1991
*************************************


T1      FLOOD CONTROL DISTRICT OF MARICOPA COUNTY - CONTRACT FCD 90-67
T2      GILA BEND AREA FLOODPLAIN DELINEATION STUDY BY BURGESS & NIPLE
T3      C133 Weir Flow To West over Levee      J. MISCHLER - (602) 244-8100

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                2                         0.0036

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

     1                  -1


J3  VARIABLE CODES FOR SUMMARY PRINTOUT

     38        42         1        43        26        51         4         8        53        54
     13        15        40

NC    0.035     0.035     0.035       0.1       0.3
QT        3       100       500      1000      2000      4000
X1     3886        21    9991.4   10017.3                                                 740       740
X3       10                                                                                                
GR    749.0    8674.0       747      8675       744      9130     743.9      9325     743.8      9525
GR    743.7      9765     743.6      9915     743.6      9975     746.6      9985     731.3    9991.4
GR    731.3   10017.3       740     10030     740.1     10050     740.1     10051     740.2     10251
GR    740.3     10616     740.4     10941     740.5     11276     740.6     11946       741     12190
GR    749.0     12191

SB      0.9      1.25         3         0       0.1         0      0.01         0     731.3     731.3
X1     3888        21    9991.4   10017.3        10        10        10
X2                            1     731.4     745.5
X3       10                                                                  745.5     745.5
BT      -14      9130     749.3                9325     747.2                 9525     745.7
BT                9765     745.8                9915     746.7                 9975     746.7
BT                9985     749.0               10051     749.0                10251     749.0
BT               10616     749.0               10941     749.0                11276     749.0
BT               11946     749.0               12191     749.0
GR    749.0      8674       747      8675       744      9130     743.9      9325     743.8      9525
GR    743.7      9765     743.6      9915     743.6      9975     746.6      9985     731.3    9991.4
GR    731.3   10017.3       740     10030     740.1     10050     740.1     10051     740.2     10251
GR    740.3     10616     740.4     10941     740.5     11276     740.6     11946       741     12190
GR    749.0     12191
1
   11APR92      08:23:24                                                                                PAGE    2

    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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


*PROF 1

CCHV=     .100 CEHV=     .300
*SECNO 3886.000
2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       740.00 ELREA=       740.00

  3886.000      1.29    732.59       .00       .00    732.73       .14       .00       .00    731.30
     100.0        .0     100.0        .0        .0      33.4        .0       .0        .0    731.30
       .00       .00      2.99       .00      .000      .035      .000      .000    731.30   9991.40
   .003536        0.        0.        0.         0         0         7       .00     25.90  10017.30


SPECIAL BRIDGE

SB  XK        XKOR      COFQ      RDLEN     BWC       BWP       BAREA     SS        ELCHU     ELCHD
      .90      1.25      3.00       .00       .10       .00       .01       .00    731.30    731.30

*SECNO 3888.000

3265 DIVIDED FLOW


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

PRESSURE AND WEIR FLOW,  Weir Submergence Based on TRAPEZOIDAL Shape
```

```
 EGPRS      EGLWC      H3       QWEIR      QPR       BAREA   TRAPEZOID      ELLC      ELTRD     WEIRLN
                                                              AREA
1941726.00   732.73     .00      100.       0.        0.        0.       731.40    745.50      313.

  3888.000    14.70   746.00      .00       .00    746.00       .00     13.27       .00    731.30
     100.0      8.1      6.2     86.7    2223.7     380.7   12141.3       1.7        .4    731.30
       .39      .00      .01      .01      .035      .035      .035      .000    731.30   8826.75
   .000000      10.      10.      10.         0         0        15       .00   3361.62  12190.63
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1

11APR92 08:23:24 PAGE 3

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T1      FLOOD CONTROL DISTRICT OF MARICOPA COUNTY - CONTRACT FCD 90-67
T2      GILA BEND AREA FLOODPLAIN DELINEATION STUDY BY BURGESS & NIPLE
T3      GILA BEND CANAL AS WEIR                J. MISCHLER - (602) 244-8100

J1  ICHECK    INQ      NINV     IDIR     STRT     METRIC    HVINS     Q        WSEL     FQ

              3                         0.0036

J2  NPROF     IPLOT    PRFVS    XSECV    XSECH    FN        ALLDC     IBW      CHNIM    ITRACE

    2                  -1
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1

11APR92 08:23:24 PAGE 4

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    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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

*PROF 2

CCHV=     .100 CEHV=     .300
*SECNO 3886.000
2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      740.00 ELREA=      740.00

  3886.000      3.37    734.67       .00       .00    735.18       .51       .00       .00    731.30
     500.0        .0     500.0        .0        .0      87.3        .0        .0        .0    731.30
       .00       .00      5.72       .00      .000      .035      .000      .000    731.30   9991.40
   .003594        0.        0.        0         0         0         6       .00     25.90  10017.30


SPECIAL BRIDGE

SB  XK        XKOR      COFQ      RDLEN     BWC       BWP       BAREA     SS        ELCHU     ELCHD
      .90      1.25      3.00       .00       .10       .00       .01       .00    731.30    731.30

*SECNO 3888.000

3265 DIVIDED FLOW


3301 HV CHANGED MORE THAN HVINS


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

PRESSURE AND WEIR FLOW,  Weir Submergence Based on TRAPEZOIDAL Shape

 EGPRS      EGLWC      H3       QWEIR      QPR       BAREA   TRAPEZOID      ELLC      ELTRD     WEIRLN
                                                              AREA
**********   735.18     .00      501.       0.        0.        0.       731.40    745.50      437.

  3888.000    15.11   746.41      .00       .00    746.41       .00     11.23       .00    731.30
     500.0      48.0     23.8    428.2    2717.7     391.4   13040.0       1.9        .4    731.30
       .08      .02      .06      .03      .035      .035      .035      .000    731.30   8764.03
   .000000      10.      10.      10.         0         0        13       .00   3425.94  12190.68
```

1

11APR92 08:23:24 PAGE 5

```
T1      FLOOD CONTROL DISTRICT OF MARICOPA COUNTY - CONTRACT FCD 90-67
T2      GILA BEND AREA FLOODPLAIN DELINEATION STUDY BY BURGESS & NIPLE
T3      GILA BEND CANAL AS WEIR                J. MISCHLER - (602) 244-8100

J1  ICHECK    INQ      NINV     IDIR     STRT     METRIC    HVINS     Q        WSEL     FQ

              4                         0.0036

J2  NPROF     IPLOT    PRFVS    XSECV    XSECH    FN        ALLDC     IBW      CHNIM    ITRACE

    3                  -1
```

1

11APR92 08:23:24 PAGE 6

```
    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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

*PROF 3

CCHV=     .100 CEHV=     .300
*SECNO 3886.000
2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      740.00 ELREA=      740.00
```

```
  3886.000      5.11    736.41       .00       .00    737.30       .89       .00       .00    731.30
    1000.0        .0    1000.0        .0        .0     132.4        .0        .0        .0    731.30
       .00       .00      7.68       .00      .000      .035      .000      .000    731.30   9991.40
   .003592        0.        0.        0.         0         0         5       .00     25.90  10017.30


SPECIAL BRIDGE

SB  XK        XKOR      COFQ      RDLEN     BWC       BWP       BAREA     SS        ELCHU     ELCHD
      .90      1.25      3.00       .00       .10       .00       .01       .00     731.30    731.30

*SECNO 3888.000

3301 HV CHANGED MORE THAN HVINS

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

PRESSURE AND WEIR FLOW,  Weir Submergence Based on TRAPEZOIDAL Shape

 EGPRS      EGLWC      H3        QWEIR     QPR       BAREA     TRAPEZOID      ELLC      ELTRD     WEIRLN
                                                                  AREA
**********   737.30      .00      1006.       0.        0.         0.       731.40    745.50      588.


  3888.000     15.43    746.73       .00       .00    746.73       .00      9.43       .00    731.30
    1000.0     107.1     44.7     848.2    3117.5     399.7   13734.3       2.0        .4    731.30
       .05       .03       .11       .06      .035      .035      .035      .000    731.30   8715.58
   .000000       10.       10.       10.         0         0        12       .00   3475.13  12190.72


1
   11APR92      08:23:24                                                                          PAGE    7

T1      FLOOD CONTROL DISTRICT OF MARICOPA COUNTY - CONTRACT FCD 90-67
T2      GILA BEND AREA FLOODPLAIN DELINEATION STUDY BY BURGESS & NIPLE
T3      GILA BEND CANAL AS WEIR                  J. MISCHLER - (602) 244-8100

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                 5                          0.0036

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

      4                  -1

1
   11APR92      08:23:24                                                                          PAGE    8

    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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

*PROF 4

CCHV=      .100 CEHV=      .300
*SECNO 3886.000
2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       740.00 ELREA=       740.00

  3886.000      7.76    739.06       .00       .00    740.60      1.54       .00       .00    731.30
    2000.0        .0    2000.0        .0        .0     200.9        .0        .0        .0    731.30
       .00       .00      9.96       .00      .000      .035      .000      .000    731.30   9991.40
   .003580        0.        0.        0.         0         0         4       .00     25.90  10017.30


SPECIAL BRIDGE

SB  XK        XKOR      COFQ      RDLEN     BWC       BWP       BAREA     SS        ELCHU     ELCHD
      .90      1.25      3.00       .00       .10       .00       .01       .00     731.30    731.30

*SECNO 3888.000

3301 HV CHANGED MORE THAN HVINS

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO = 79.34

PRESSURE AND WEIR FLOW,  Weir Submergence Based on TRAPEZOIDAL Shape

 EGPRS      EGLWC      H3        QWEIR     QPR       BAREA     TRAPEZOID      ELLC      ELTRD     WEIRLN
                                                                  AREA
**********   740.60      .00      2001.       0.        0.         0.       731.40    745.50      646.


  3888.000     15.85    747.15       .00       .00    747.15       .00      6.56       .00    731.30
    2000.0     242.7     83.0    1674.3    3667.2     410.6   14650.9       2.2        .4    731.30
       .02       .07       .20       .11      .035      .035      .035      .000    731.30   8674.92
   .000001       10.       10.       10.         0         0        12       .00   3515.85  12190.77


1
   11APR92      08:23:24                                                                          PAGE    9

T1      FLOOD CONTROL DISTRICT OF MARICOPA COUNTY - CONTRACT FCD 90-67
T2      GILA BEND AREA FLOODPLAIN DELINEATION STUDY BY BURGESS & NIPLE
T3      GILA BEND CANAL AS WEIR                  J. MISCHLER - (602) 244-8100

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                 6                          0.0036

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

     15                  -1
```

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	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

*PROF 5

CCHV= .100 CEHV= .300
*SECNO 3886.000
2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED
3720 CRITICAL DEPTH ASSUMED

3886.000	9.85	741.15	741.15	.00	741.49	.34	.00	.00	731.30
4000.0	46.6	1753.3	2200.1	20.3	255.2	1612.8	.0	.0	731.30
.00	2.29	6.87	1.36	.035	.035	.035	.000	731.30	9987.28
.001239	0.	0.	0.	0	16	0	.00	2202.74	12190.02

SPECIAL BRIDGE

SB XK	XKOR	COFQ	RDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
.90	1.25	3.00	.00	.10	.00	.01	.00	731.30	731.30

*SECNO 3888.000

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 27.44

PRESSURE AND WEIR FLOW, Weir Submergence Based on TRAPEZOIDAL Shape

EGPRS	EGLWC	H3	QWEIR	QPR	BAREA	TRAPEZOID AREA	ELLC	ELTRD	WEIRLN
**********	744.97	.00	4008.	0.	0.	0.	731.40	745.50	707.

3888.000	16.46	747.76	.00	.00	747.76	.00	6.27	.00	731.30
4000.0	563.9	150.2	3285.9	4463.9	426.3	15966.1	2.6	.7	731.30
.01	.13	.35	.21	.035	.035	.035	.000	731.30	8674.62
.000002	10.	10.	10.	0	0	11	.00	3516.22	12190.84

THIS RUN EXECUTED 11APR92 08:23:29

****
HEC-2 WATER SURFACE PROFILES

Version 4.6.2; May 1991
****

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

C133 Weir Flow To West o

SUMMARY PRINTOUT

	SECNO	ELMIN	CWSEL	Q	VCH	DIFWSX	TOPWID	DEPTH	SSTA	ENDST	QLOB	QROB	ELTRD
	3886.000	731.30	732.59	100.00	2.99	.00	25.90	1.29	9991.40	10017.30	.00	.00	.00
	3886.000	731.30	734.67	500.00	5.72	.00	25.90	3.37	9991.40	10017.30	.00	.00	.00
	3886.000	731.30	736.41	1000.00	7.55	.00	25.90	5.11	9991.40	10017.30	.00	.00	.00
	3886.000	731.30	739.06	2000.00	9.96	.00	25.90	7.76	9991.40	10017.30	.00	.00	.00
*	3886.000	731.30	741.15	4000.00	6.87	.00	2202.74	9.85	9987.28	12190.02	46.59	2200.12	.00
*	3888.000	731.30	746.00	100.00	.01	13.41	3361.62	14.70	8826.78	12190.63	8.10	86.72	745.50
*	3888.000	731.30	746.41	500.00	.06	11.74	3425.94	15.11	8764.03	12190.68	48.01	428.21	745.50
*	3888.000	731.30	746.73	1000.00	.11	10.32	3475.13	15.43	8715.58	12190.72	107.07	848.19	745.50
*	3888.000	731.30	747.15	2000.00	.20	8.10	3515.85	15.85	8674.92	12190.77	242.70	1674.32	745.50
*	3888.000	731.30	747.76	4000.00	.35	6.60	3516.22	16.46	8674.62	12190.84	563.90	3285.88	745.50

SUMMARY OF ERRORS AND SPECIAL NOTES

CAUTION SECNO= 3886.000 PROFILE= 5 CRITICAL DEPTH ASSUMED

WARNING SECNO= 3888.000 PROFILE= 1 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO= 3888.000 PROFILE= 2 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO= 3888.000 PROFILE= 3 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO= 3888.000 PROFILE= 4 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO= 3888.000 PROFILE= 5 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

```
1*****************************************
 *  HEC-2 WATER SURFACE PROFILES          *
 *                                        *
 *  Version   4.6.2;  May 1991            *
 *                                        *
 *  RUN DATE    11MAR92    TIME   10:38:49 *
 *****************************************
```

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*************************************
 *  U.S. ARMY CORPS OF ENGINEERS     *
 *  HYDROLOGIC ENGINEERING CENTER    *
 *  609 SECOND STREET, SUITE D       *
 *  DAVIS, CALIFORNIA 95616-4687     *
 *        (916) 756-1104             *
*************************************
```

```
X     X  XXXXXXX   XXXXX              XXXXX
X     X  X        X     X            X     X
X     X  X        X                  X     X
XXXXXXX  XXXX     X          XXXXX    XXXXX
X     X  X        X
X     X  X        X     X            X
X     X  XXXXXXX   XXXXX              XXXXXXX
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1
   11MAR92      10:38:49                                                                                    PAGE    1


                                                                                THIS RUN EXECUTED 11MAR92    10:38:50
*************************************
 HEC-2 WATER SURFACE PROFILES

 Version   4.6.2;  May 1991
*************************************


T1      FLOOD CONTROL DISTRICT OF MARICOPA COUNTY - CONTRACT FCD 90-67
T2      GILA BEND AREA FLOODPLAIN DELINEATION STUDY BY BURGESS & NIPLE
T3      UNNAMED WASH NO. 1 RATING                J. MISCHLER - (602) 244-8100

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                2                           0.013

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

     1                  -1


J3  VARIABLE CODES FOR SUMMARY PRINTOUT

     38        42         1        43        26        51         4         8        53        54
     13        15        40

        SECTIONS ARE LABELED AS  RIVER MILES * 1000, i.e., SECTION 061 IS AT
        A POINT 0.061 MILES UPSTREAM OF THE CONFLUENCE WITH BENDER WASH.

        THIS FILE MODELS THE UNNAMED WASH NO.1 CROSSING OF I-8.
        THE PURPOSE OF THIS FILE IS TO DEVELOP RATING CURVES TO
        ASSIST IN THE HYDROLOGY EFFORT, SPECIFICALLY, TO BE USED
        BY THE HEC-1 MODEL TO ESTIMATE ATTENUATION OF PEAK DISCHARGES
        THROUGH THE STRUCTURES.

        J1.5 STRT = 0.013 FT/FT

QT        3        20        40        60
NC    0.035     0.035     0.045       0.3       0.5
X1     3080        14    9980.1   10020.0     770.0     740.0     760.0
GR    848.2    9770.5     847.2    9795.4     847.3    9847.6     847.3    9900.4     846.6    9951.2
GR    845.1    9980.1     843.0    9993.3     841.2   10000.0     844.0   10020.0     845.3   10052.5
GR    845.0   10114.1     846.2   10185.2     847.5   10234.7     848.3   10273.2

        ***INTERSTATE 8 FRONTAGE ROAD***

        REPEAT GR DATA FROM SECTION 3080 AT THE DOWNSTREAM FACE OF THE SINGLE
        24" CULVERT WHICH CONVEYS UNNAMED WASH NO 1 BENEATH THE FRONTAGE ROAD
        SOUTH OF THE EASTBOUND I-8 ON-RAMP.

        USE PSXECE = 843.8 - 841.2 = 2.6 FT.

1
   11MAR92      10:38:49                                                                                    PAGE    2


X1     3111        14    9993.3    10020       164       164       164                 2.6
X3       10                                                                   847       850
GR    848.2    9770.5     847.2    9795.4     847.3    9847.6     847.3    9900.4     846.6    9951.2
GR    845.1    9980.1     843.0    9993.3     841.2   10000.0     844.0   10020.0     845.3   10052.5
GR    845.0   10114.1     846.2   10185.2     847.5   10234.7     848.3   10273.2

        REPEAT GR DATA FROM SECT 3080 AGAIN AT THE UPSTREAM FACE OF THE SINGLE
        24" CULVERT WHICH CONVEYS UNNAMED WASH NO 1 BENEATH THE FRONTAGE ROAD
        SOUTH OF THE EASTBOUND I-8 ON-RAMP.

        USE PSXECE = 844.2 - 843.8 +2.6 = 3.0

        ELTRD = 850.0 + 0.1 HV = 850.1

SC    1.016       0.5         3         0         2         0        82       2.2     844.2     843.8
X1     3129        15    9993.3     10020        92        92        92                 3.0
X2                            2                850.1
X3       10                                                                   850     850.7
BT       -4      9700       851               9847.6       850                10000     850.7
BT            10234.7       852
GR    850.6      9700     848.2    9770.5     847.2    9795.4     847.3    9847.6     847.3    9900.4
GR    846.6    9951.2     845.1    9980.1     843.0    9993.3     841.2   10000.0     844.0   10020.0
GR    845.3   10052.5     845.0   10114.1     846.2   10185.2     847.5   10234.7     848.3   10273.2

        REPEAT THE SECTION AGAIN 100 FT UPSTREAM FOR CONTRACTION LOSSES.
        PSXECE = (850.8 - 844.2)*(100/692) + 3.0 = 4.0 FT.
        USE THE ACTUAL GR POINTS SO THAT THE BT CARDS ARE NOT REPEATED.
        REVISE THE RIGHT OVERBANK PER THE TOPO MAP.
```

```
X1     3148        14     9993.3     10020        100        100        100                   4.0
GR    850.6      9700      848.2    9770.5      847.2     9795.4      847.3     9847.6      847.3     9900.4
GR    846.6    9951.2      845.1    9980.1      843.0     9993.3      841.2    10000.0      844.0    10020.0
GR    845.3   10052.5      845.0   10114.1      846.2    10185.2      850.6      10210
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1
11MAR92 10:38:49 PAGE 3

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   SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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

*PROF 1

CCHV=     .300 CEHV=     .500
*SECNO 3080.000
2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED
  3080.000     1.18    842.38       .00       .00    842.49       .11       .00       .00    845.10
      20.0       .0      20.0        .0        .0       7.6        .0        .0        .0    844.00
       .00      .00      2.62       .00      .000      .045      .000      .000    841.20   9995.59
   .012991     770.      760.      740.         0         0         6       .00     12.87  10008.46

*SECNO 3111.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      847.00 ELREA=      850.00

  3111.000     1.11    844.91       .00       .00    845.05       .14      2.54       .02    845.60
      20.0       .0      20.0        .0        .0       6.6        .0        .0        .0    846.60
       .02      .00      3.01       .00      .000      .045      .000      .000    843.80   9995.88
   .018756     164.      164.      164.         3         0         0       .00     12.02  10007.90


SPECIAL CULVERT

SC  CUNO      CUNV      ENTLC     COFQ      RDLEN     RISE      SPAN      CULVLN    CHRT      SCL       ELCHU     ELCHD
     1         .016       .50     3.00       .00      2.00       .00     82.00     2         2        844.20    843.80

CHART  2 - CORRUGATED METAL PIPE CULVERT
SCALE  2 - MITERED TO CONFORM TO SLOPE

5140, NORMAL DEPTH EXCEEDS CULVERT HEIGHT
*SECNO 3129.000

SPECIAL CULVERT INLET CONTROL
EGIC =    847.583  EGOC =    846.878  PCWSE=    844.906  ELTRD=    850.100


3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO = 20.71

SPECIAL CULVERT

    EGIC      EGOC       H4     QWEIR     QCULV      VCH     ACULV     ELTRD    WEIRLN
   847.58    846.88     2.54        0.       20.      .355       3.1    850.10        0.


3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      850.00 ELREA=      850.70
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1
11MAR92 10:38:49 PAGE 4

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   SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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

  3129.000     3.38    847.58       .00       .00    847.58       .00      2.54       .00    846.00
      20.0       .0      20.0        .0        .0      56.3        .0        .1        .1    847.00
       .09      .00       .36       .00      .000      .045      .000      .000    844.20   9993.30
   .000044      92.       92.       92.         0         0         0       .00     26.70  10020.00

*SECNO 3148.000

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =   .39

  3148.000     2.39    847.59       .00       .00    847.59       .01       .01       .00    847.00
      20.0       .3      19.7        .0       1.1      30.3        .0        .2        .1    848.00
       .13      .31       .65       .00      .035      .045      .000      .000    845.20   9989.60
   .000284     100.      100.      100.         2         0         0       .00     27.46  10017.06
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1
11MAR92 10:38:49 PAGE 5

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T2      GILA BEND AREA FLOODPLAIN DELINEATION STUDY BY BURGESS & NIPLE
T3      UNNAMED WASH NO. 1 RATING              J. MISCHLER - (602) 244-8100

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

              3                             0.013

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

     2                  -1
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1
11MAR92 10:38:49 PAGE 6

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   SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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
```

```
*PROF 2

CCHV=     .300 CEHV=     .500
*SECNO 3080.000
2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED
  3080.000      1.54    842.74       .00       .00    842.89       .15       .00       .00    845.10
      40.0        .0      40.0        .0        .0      12.8        .0        .0        .0    844.00
       .00       .00      3.12       .00      .000      .045      .000      .000    841.20   9994.28
   .012980      770.      760.      740.         0         0         4       .00     16.70  10010.98


*SECNO 3111.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      847.00 ELREA=      850.00

  3111.000      1.44    845.24       .00       .00    845.43       .20      2.52       .02    845.60
      40.0        .0      40.0        .0        .0      11.2        .0        .0        .1    846.60
       .01       .00      3.56       .00      .000      .045      .000      .000    843.80   9994.65
   .018533      164.      164.      164.         4         0         0       .00     15.62  10010.27


SPECIAL CULVERT

SC  CUNO      CUNV      ENTLC     COFQ      RDLEN     RISE      SPAN      CULVLN    CHRT      SCL       ELCHU     ELCHD
     1         .016       .50     3.00       .00      2.00       .00     82.00      2         2       844.20    843.80

CHART  2 - CORRUGATED METAL PIPE CULVERT
SCALE  2 - MITERED TO CONFORM TO SLOPE

5140, NORMAL DEPTH EXCEEDS CULVERT HEIGHT
*SECNO 3129.000

SPECIAL CULVERT INLET CONTROL + WEIR FLOW, EG =    850.22

3265 DIVIDED FLOW


3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO = 60.78

SPECIAL CULVERT

     EGIC      EGOC       H4     QWEIR     QCULV       VCH     ACULV     ELTRD    WEIRLN
   853.21    850.93     4.79        9.       31.      .207       3.1    850.10       81.


3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      850.00 ELREA=      850.70

  3129.000      6.02    850.22       .00       .00    850.22       .00      4.79       .00    846.00
      40.0      13.8      26.2        .0      95.7     126.8        .0        .3        .2    847.00
       .15       .14       .21       .00      .035      .045      .000      .000    844.20   9794.85
   .000005       92.       92.       92.         0         0         0       .00    126.11  10020.00


1
   11MAR92      10:38:49                                                                                    PAGE    7

    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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 3148.000
  3148.000      5.02    850.22       .00       .00    850.22       .00       .00       .00    847.00
      40.0       5.4      18.0      16.5      40.8     100.1     161.4        .9        .6    848.00
       .35       .13       .18       .10      .035      .045      .035      .000    845.20   9958.47
   .000005      100.      100.      100.         2         0         0       .00    226.85  10185.33


1
   11MAR92      10:38:49                                                                                    PAGE    8

T1      FLOOD CONTROL DISTRICT OF MARICOPA COUNTY - CONTRACT FCD 90-67
T2      GILA BEND AREA FLOODPLAIN DELINEATION STUDY BY BURGESS & NIPLE
T3      UNNAMED WASH NO. 1 RATING                J. MISCHLER - (602) 244-8100

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                 4                           0.013

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

     15                  -1

1
   11MAR92      10:38:49                                                                                    PAGE    9

    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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

*PROF 3

CCHV=     .300 CEHV=     .500
*SECNO 3080.000
2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED
  3080.000      1.79    842.99       .00       .00    843.17       .19       .00       .00    845.10
      60.0        .0      60.0        .0        .0      17.4        .0        .0        .0    844.00
       .00       .00      3.46       .00      .000      .045      .000      .000    841.20   9993.35
   .013050      770.      760.      740.         0         0         5       .00     19.42  10012.77


*SECNO 3111.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      847.00 ELREA=      850.00

  3111.000      1.68    845.48       .00       .00    845.72       .24      2.52       .03    845.60
      60.0        .0      60.0        .0        .0      15.3        .0        .1        .1    846.60
```

.01	.00	3.92	.00	.000	.045	.000	.000	843.80	9993.76
.016301	164.	164.	164.	4	0	0	.00	18.23	10011.98

SPECIAL CULVERT

SC	CUNO	CUNV	ENTLC	COFQ	RDLEN	RISE	SPAN	CULVLN	CHRT	SCL	ELCHU	ELCHD
	1	.016	.50	3.00	.00	2.00	.00	82.00	2	2	844.20	843.80

CHART 2 - CORRUGATED METAL PIPE CULVERT
SCALE 2 - MITERED TO CONFORM TO SLOPE

5140, NORMAL DEPTH EXCEEDS CULVERT HEIGHT
5130, EGIC= 862.60..MAY BE TOO LARGE IF INLET CONTROLS.
5135, EGOC= 857.37 ..MAY BE TOO LARGE IF OUTLET CONTROLS.
*SECNO 3129.000

SPECIAL CULVERT INLET CONTROL + WEIR FLOW, EG = 850.35

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 43.51

SPECIAL CULVERT

EGIC	EGOC	H4	QWEIR	QCULV	VCH	ACULV	ELTRD	WEIRLN
862.60	857.37	4.64	29.	31.	.292	3.1	850.10	130.

3496 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 850.00 ELREA= 850.70

3129.000	6.15	850.35	.00	.00	850.35	.00	4.64	.00	846.00
60.0	21.9	38.1	.0	116.4	130.3	.0	.3	.3	847.00
.11	.19	.29	.00	.035	.045	.000	.000	844.20	9791.54
.000010	92.	92.	92.	0	0	0	.00	228.46	10020.00

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	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 3148.000

3148.000	5.16	850.36	.00	.00	850.36	.00	.00	.00	847.00
60.0	8.2	25.2	26.6	45.6	103.6	183.5	1.0	.9	848.00
.26	.18	.24	.15	.035	.045	.035	.000	845.20	9955.91
.000009	100.	100.	100.	2	0	0	.00	230.17	10186.08

THIS RUN EXECUTED 11MAR92 10:38:53

****
HEC-2 WATER SURFACE PROFILES

Version 4.6.2; May 1991
****

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

UNNAMED WASH NO. 1 RATIN

SUMMARY PRINTOUT

	SECNO	ELMIN	CWSEL	Q	VCH	DIFWSX	TOPWID	DEPTH	SSTA	ENDST	QLOB	QROB	ELTRD
	3080.000	841.20	842.38	20.00	2.62	.00	12.87	1.18	9995.59	10008.46	.00	.00	.00
	3080.000	841.20	842.74	40.00	3.12	.00	16.70	1.54	9994.28	10010.98	.00	.00	.00
	3080.000	841.20	842.99	60.00	3.46	.00	19.42	1.79	9993.35	10012.77	.00	.00	.00
	3111.000	843.80	844.91	20.00	3.01	2.52	12.02	1.11	9995.88	10007.90	.00	.00	.00
	3111.000	843.80	845.24	40.00	3.56	2.50	15.62	1.44	9994.65	10010.27	.00	.00	.00
	3111.000	843.80	845.48	60.00	3.92	2.49	18.23	1.68	9993.76	10011.98	.00	.00	.00
*	3129.000	844.20	847.58	20.00	.36	2.67	26.70	3.38	9993.30	10020.00	.00	.00	850.10
*	3129.000	844.20	850.22	40.00	.21	4.98	126.11	6.02	9794.85	10020.00	13.79	.00	850.10
*	3129.000	844.20	850.35	60.00	.29	4.88	228.46	6.15	9791.54	10020.00	21.92	.00	850.10
*	3148.000	845.20	847.59	20.00	.65	.01	27.46	2.39	9989.60	10017.06	.34	.00	.00
	3148.000	845.20	850.22	40.00	.18	.00	226.85	5.02	9958.47	10185.33	5.43	16.55	.00
	3148.000	845.20	850.36	60.00	.24	.00	230.17	5.16	9955.91	10186.08	8.17	26.61	.00

SUMMARY OF ERRORS AND SPECIAL NOTES

WARNING SECNO= 3129.000 PROFILE= 1 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO= 3129.000 PROFILE= 2 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO= 3129.000 PROFILE= 3 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO= 3148.000 PROFILE= 1 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

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1*****************************************
*  HEC-2 WATER SURFACE PROFILES           *
*                                         *
*  Version   4.6.2;  May 1991             *
*                                         *
*  RUN DATE    11MAR92    TIME   10:39:13 *
*****************************************
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*************************************
*  U.S. ARMY CORPS OF ENGINEERS     *
*  HYDROLOGIC ENGINEERING CENTER    *
*  609 SECOND STREET, SUITE D       *
*  DAVIS, CALIFORNIA 95616-4687     *
*        (916) 756-1104             *
*************************************
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X     X  XXXXXXX   XXXXX              XXXXX
X     X  X        X     X            X     X
X     X  X        X                  X
XXXXXXX  XXXX     X           XXXXX   XXXXX
X     X  X        X                  X
X     X  X        X     X            X
X     X  XXXXXXX   XXXXX              XXXXXXX
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1
   11MAR92      10:39:13                                                                                    PAGE    1


                                                                                THIS RUN EXECUTED 11MAR92    10:39:13
*************************************
 HEC-2 WATER SURFACE PROFILES

 Version   4.6.2;  May 1991
*************************************


T1      FLOOD CONTROL DISTRICT OF MARICOPA COUNTY - CONTRACT FCD 90-67
T2      GILA BEND AREA FLOODPLAIN DELINEATION STUDY BY BURGESS & NIPLE
T3      RATING @ UNNAMED 1 & I-8                  J. MISCHLER - (602) 244-8100

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                2                           0.01

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

     1                  -1


J3  VARIABLE CODES FOR SUMMARY PRINTOUT

    38        42         1        43        26        51         4         8        53        54
    13        15        40

       THIS RUN MODELS THE SPLIT OF FLOW UPSTREAM OF I-8 FROM UNNAMED WASH
       NO. 1.  FLOW THAT IS LOST WILL PASS THROUGH I-8 JUST WEST OF THE
       BUSINESS ROUTE INTERCHANGE AND REENTER UNNAMED WASH NO. 1.

       NORMAL DEPTH IS USED FOR THIS RATING.

       J1.5 STRT = 4 FT/400 FT = 0.01 FT/FT.

       THESE RESULTS ARE COMBINED WITH OTHER RUNS TO DETERMINE THE SPLIT
       AT INTERSTATE 8.


NC    0.035     0.035     0.035       0.1       0.3
QT        3        20        40        60
X1        1         4      9995     10005
GR      852      9720       848      9995       848     10005       850     10020
1
   11MAR92      10:39:13                                                                                    PAGE    2

    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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


*PROF 1

CCHV=     .100 CEHV=     .300
*SECNO 1.000
2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED
     1.000       .42    848.42       .00       .00    848.48       .06       .00       .00    848.00
      20.0       9.1      10.0       1.0       6.1       4.2        .7        .0        .0    848.00
       .00      1.50      2.37      1.49      .035      .035      .035      .000    848.00   9966.14
   .009945        0.        0.        0.         0         0         8       .00     42.01  10008.15


1
   11MAR92      10:39:13                                                                                    PAGE    3


T1      FLOOD CONTROL DISTRICT OF MARICOPA COUNTY - CONTRACT FCD 90-67
T2      GILA BEND AREA FLOODPLAIN DELINEATION STUDY BY BURGESS & NIPLE
T3      RATING @ UNNAMED 1 & I-8                  J. MISCHLER - (602) 244-8100

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                3                           0.01

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

     2                  -1

1
   11MAR92      10:39:13                                                                                    PAGE    4

    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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
```

```
*PROF 2

CCHV=     .100 CEHV=     .300
*SECNO 1.000
2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED
    1.000       .57    848.57       .00       .00    848.66       .09       .00       .00    848.00
     40.0      20.9      16.8       2.3      11.4       5.7       1.2        .0        .0    848.00
      .00      1.84      2.92      1.83      .035      .035      .035      .000    848.00   9955.48
  .009920        0.        0.        0.         0         0         7       .00     53.83  10009.31


1
   11MAR92      10:39:13                                                                          PAGE    5

T1      FLOOD CONTROL DISTRICT OF MARICOPA COUNTY - CONTRACT FCD 90-67
T2      GILA BEND AREA FLOODPLAIN DELINEATION STUDY BY BURGESS & NIPLE
T3      RATING @ UNNAMED 1 & I-8                    J. MISCHLER - (602) 244-8100

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                4                           0.01

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

     15                  -1

1
   11MAR92      10:39:13                                                                          PAGE    6

    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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

*PROF 3

CCHV=     .100 CEHV=     .300
*SECNO 1.000
2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED
    1.000       .69    848.69       .00       .00    848.79       .11       .00       .00    848.00
     60.0      33.7      22.7       3.7      16.2       6.9       1.8        .0        .0    848.00
      .00      2.08      3.30      2.07      .035      .035      .035      .000    848.00   9947.81
  .009992        0.        0.        0.         0         0         7       .00     62.33  10010.15


1
   11MAR92      10:39:13                                                                          PAGE    7


                                                                    THIS RUN EXECUTED 11MAR92    10:39:14
************************************
 HEC-2 WATER SURFACE PROFILES

 Version   4.6.2;  May 1991
************************************

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

RATING @ UNNAMED 1 & I-8

SUMMARY PRINTOUT

      SECNO     ELMIN     CWSEL     Q         VCH       DIFWSX    TOPWID    DEPTH     SSTA      ENDST     QLOB      QROB      ELTRD

      1.000    848.00    848.42    20.00      2.37       .00      42.01       .42   9966.14  10008.15      9.05       .98       .00
      1.000    848.00    848.57    40.00      2.92       .00      53.83       .57   9955.48  10009.31     20.92      2.27       .00
      1.000    848.00    848.69    60.00      3.30       .00      62.33       .69   9947.81  10010.15     33.68      3.65       .00

1
   11MAR92      10:39:13                                                                          PAGE    8


 SUMMARY OF ERRORS AND SPECIAL NOTES
```

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1*****************************************
 *  HEC-2 WATER SURFACE PROFILES          *
 *                                        *
 *  Version   4.6.2;  May 1991            *
 *                                        *
 *  RUN DATE    11MAR92    TIME   10:40:08 *
 *****************************************

*************************************
*  U.S. ARMY CORPS OF ENGINEERS     *
*  HYDROLOGIC ENGINEERING CENTER    *
*  609 SECOND STREET, SUITE D       *
*  DAVIS, CALIFORNIA 95616-4687     *
*        (916) 756-1104             *
*************************************

X     X  XXXXXXX   XXXXX              XXXXX
X     X  X        X     X            X     X
X     X  X        X                  X     X
XXXXXXX  XXXX     X          XXXXX    XXXXX
X     X  X        X
X     X  X        X     X            X
X     X  XXXXXXX   XXXXX              XXXXXXX

1
   11MAR92      10:40:08                                                                    PAGE    1


                                                                  THIS RUN EXECUTED 11MAR92    10:40:08
 *************************************
  HEC-2 WATER SURFACE PROFILES

  Version   4.6.2;  May 1991
 *************************************


T1      FLOOD CONTROL DISTRICT OF MARICOPA COUNTY - CONTRACT FCD 90-67
T2      GILA BEND AREA FLOODPLAIN DELINEATION STUDY BY BURGESS & NIPLE
T3      UNNAMED WASH NO. 1                          J. MISCHLER - (602) 244-8100

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                2                         0.0085

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

     1                  -1

J3  VARIABLE CODES FOR SUMMARY PRINTOUT

     38        42         1        43        26        51         4         8        53        54
     13        15        40

        KEEP EXPANSION/CONTRACTION COEFFICIENTS HIGH THROUGH THIS AREA
        OF FREQUENT STRUCTURES.


QT        4        20        30        50        70
NC    0.035     0.035      0.03       0.3       0.5
X1     2746        14    9973.7   10016.3     535.0     590.0     554.0
GR    841.2    9882.3     832.4    9920.3     833.1    9973.7     831.8    9985.8     830.4    9997.7
GR    829.5   10000.0     831.9   10016.3     831.7   10047.7     833.1   10080.7     832.5   10108.2
GR    835.3   10134.2     835.1   10164.8     839.7   10191.9     841.4   10195.9

        ***MAINLINE INTERSTATE 8***

        REPEAT GR DATA FROM SECTION 2746 AT THE DOWNSTREAM FACE OF THE TWIN
        30" CULVERTS WHICH CONVEY UNNAMED WASH NO 1 BENEATH MAINLINE I-8
        EASTBOUND AND WESTBOUND.

        USE PSXECE = 829.5 - 829.5 = 0.0

X1     2779        14    9997.7   10016.3       174       174       174                   0.0
X3       10                                                                   837     837.3
GR    841.2    9882.3     832.4    9920.3     833.1    9973.7     831.8    9985.8     830.4    9997.7
GR    829.5   10000.0     831.9   10016.3     831.7   10047.7     833.1   10080.7     832.5   10108.2
GR    835.3   10134.2     835.1   10164.8     839.7   10191.9     841.4   10195.9

        USE GR DATA FROM AERIAL SURVEY SECTION AT RM 2.936 AT THE UPSTREAM END
1
   11MAR92      10:40:08                                                                    PAGE    2

        OF THE CULVERT.  USE PSXECE = -2.1 TO MATCH CHANNEL THALWEG TO CULVERT
        INVERT.  THEN USE THE GR DATA AGAIN AT RM 2.936 FOR CONTRACTION LOSSES.

        ELTRD IS ARTIFICIALLY HIGH SO AS TO RATE THE CULVERT ONLY.


SC    2.018       0.5         3         0       2.5         0       285       2.2     832.6     829.5
X1     2835        18      9988   10013.6       295       295       295                  -2.1
X2                            2                 838
X3       10                                                                   838     838.3
BT       -5      9690       856                9730       836                 9770       836
BT            10000     838.3                10270       840
GR    858.1      9690     838.1      9730     838.1      9770     841.0    9861.3     840.5    9902.5
GR    837.3    9943.7     836.7    9975.5     836.0    9988.0     834.7   10000.0     836.5   10013.6
GR    836.6   10043.6     836.2   10052.2     839.6   10082.6     840.6   10146.0     840.5   10203.1
GR    842.6   10231.5     842.8   10242.2     842.1     10270

        KEEP EXPANSION/CONTRACTION COEFFICIENTS HIGH THROUGH THIS AREA
        OF FREQUENT STRUCTURES.


NC    0.035     0.035     0.035
X1     2936        16    9975.5   10013.6       530       500       533
GR    841.6    9754.7     839.9    9786.9     841.0    9861.3     840.5    9902.5     837.3    9943.7
GR    836.7    9975.5     836.0    9988.0     834.7   10000.0     836.5   10013.6     836.6   10043.6
GR    836.2   10052.2     839.6   10082.6     840.6   10146.0     840.5   10203.1     842.6   10231.5
GR    842.8   10242.2

        ***ON-RAMP TO EASTBOUND INTERSTATE 8***

        REPEAT GR DATA FROM SECTION 2936 AT THE DOWNSTREAM FACE OF THE SINGLE
```

36" CULVERT WHICH CONVEYS UNNAMED WASH NO 1 BENEATH THE EASTBOUND I-8 ON-RAMP.

USE PSXECE = 835.9 - 834.7 = 1.2

```
X1     2974        16      9988   10013.6       190       180       201                 1.2
X3       10                                                          837             843.3
GR    841.6    9754.7     839.9    9786.9     841.0    9861.3     840.5    9902.5     837.3    9943.7
GR    836.7    9975.5     836.0    9988.0     834.7   10000.0     836.5   10013.6     836.6   10043.6
GR    836.2   10052.2     839.6   10082.6     840.6   10146.0     840.5   10203.1     842.6   10231.5
GR    842.8   10242.2
```

USE GR DATA FROM AERIAL SURVEY SECTION AT RM 3.080 AT THE UPSTREAM END OF THE CULVERT. USE PSXECE = -4.4 TO MATCH CHANNEL THALWEG TO CULVERT INVERT. THEN USE THE GR DATA AGAIN AT RM 3.080 FOR CONTRACTION LOSSES.

ELTRD = 843.1 + 0.5 HV = 843.6


```
SC    1.019      0.5         3         0         3         0       137       2.2     836.8     835.9
X1     3002       16    9993.3     10020       147       147       147                -4.4
X2                            2                843.6
X3       10                                                     843.1     844.3
BT       -4     9100     846.3                 9610     843.1                10000     844.3
BT            10370     847.2
GR    850.7     9100     847.5      9610     847.2    9795.4     847.3    9847.6     847.3    9900.4
GR    846.6   9951.2     845.1    9980.1     843.0    9993.3     841.2   10000.0     844.0   10020.0
GR    845.3  10052.5     845.0   10114.1     846.2   10185.2     847.5   10234.7     848.3   10273.2
GR    851.6    10370
```

SECTIONS ARE LABELED AS RIVER MILES * 1000, i.e., SECTION 061 IS AT A POINT 0.061 MILES UPSTREAM OF THE CONFLUENCE WITH BENDER WASH.

```
NC    0.035    0.035     0.045
X1     3080       14    9980.1   10020.0     770.0     740.0     760.0
GR    848.2   9770.5     847.2    9795.4     847.3    9847.6     847.3    9900.4     846.6    9951.2
GR    845.1   9980.1     843.0    9993.3     841.2   10000.0     844.0   10020.0     845.3   10052.5
GR    845.0  10114.1     846.2   10185.2     847.5   10234.7     848.3   10273.2
```

INTERSTATE 8 FRONTAGE ROAD

REPEAT GR DATA FROM SECTION 3080 AT THE DOWNSTREAM FACE OF THE SINGLE 24" CULVERT WHICH CONVEYS UNNAMED WASH NO 1 BENEATH THE FRONTAGE ROAD SOUTH OF THE EASTBOUND I-8 ON-RAMP.

USE PSXECE = 843.8 - 841.2 = 2.6 FT.

```
X1     3111       14    9993.3     10020       164       164       164                 2.6
X3       10                                                     855               855
GR    848.2   9770.5     847.2    9795.4     847.3    9847.6     847.3    9900.4     846.6    9951.2
GR    845.1   9980.1     843.0    9993.3     841.2   10000.0     844.0   10020.0     845.3   10052.5
GR    845.0  10114.1     846.2   10185.2     847.5   10234.7     848.3   10273.2
```

REPEAT GR DATA FROM SECT 3080 AGAIN AT THE UPSTREAM FACE OF THE SINGLE 24" CULVERT WHICH CONVEYS UNNAMED WASH NO 1 BENEATH THE FRONTAGE ROAD SOUTH OF THE EASTBOUND I-8 ON-RAMP.

USE PSXECE = 844.2 - 843.8 +2.6 = 3.0

ELTRD IS ARTIFICIALLY HIGH SO AS TO RATE THE CULVERT ONLY.

```
SC    1.016      0.5         3         0         2         0        82       2.2     844.2     843.8
X1     3129       15    9993.3     10020        92        92        92                  3.0
X2                            2                855
X3       10                                                     855               855
BT       -4     9700       851                9847.6       850                10000     850.7
BT            10234.7       852
GR    850.6     9700     848.2    9770.5     847.2    9795.4     847.3    9847.6     847.3    9900.4
GR    846.6   9951.2     845.1    9980.1     843.0    9993.3     841.2   10000.0     844.0   10020.0
```



```
GR    845.3  10052.5     845.0   10114.1     846.2   10185.2     847.5   10234.7     848.3   10273.2
```

REPEAT THE SECTION AGAIN 100 FT UPSTREAM FOR CONTRACTION LOSSES.
PSXECE = (850.8 - 844.2)*(100/692) + 3.0 = 4.0 FT.
USE THE ACTUAL GR POINTS SO THAT THE BT CARDS ARE NOT REPEATED.
REVISE THE RIGHT OVERBANK PER THE TOPO MAP.

```
X1     3148       14    9993.3     10020       100       100       100                 4.0
GR    850.6     9700     848.2    9770.5     847.2    9795.4     847.3    9847.6     847.3    9900.4
GR    846.6   9951.2     845.1    9980.1     843.0    9993.3     841.2   10000.0     844.0   10020.0
GR    845.3  10052.5     845.0   10114.1     846.2   10185.2     850.6     10210
```

SECTION 3260 IS AT THE UPSTREAM LIMIT OF THE DETAILED STUDY - WHERE THE STREAM CROSSES THE FRONTAGE ROAD AGAIN NEAR THE SECTION LINE.

```
ET                          4.1      9994     10009
X1     3260        9    9992.3   10016.1       600       550       591
GR    856.5   9934.9     854.3    9968.6     852.6    9992.3     850.8   10000.0     853.3   10016.1
GR    853.5  10049.2     854.4   10097.5     855.6   10160.4     857.0   10226.3
```



```
SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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

*PROF 1

CCHV=     .300 CEHV=     .500
```

```
*SECNO 2746.000
2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED
  2746.000      1.19    830.69       .00       .00    830.82       .13       .00       .00    833.10
      20.0        .0      20.0        .0        .0       6.8        .0        .0        .0    831.90
       .00       .00      2.94       .00      .000      .030      .000      .000    829.50   9995.27
   .008363      535.      554.      590.         0         0        10       .00     12.78  10008.05


*SECNO 2779.000

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  2.77

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      837.00 ELREA=       837.30

  2779.000      1.72    831.22       .00       .00    831.26       .04       .41       .03    830.40
      20.0        .0      20.0        .0        .0      13.0        .0        .0        .1    831.90
       .03       .00      1.54       .00      .000      .030      .000      .000    829.50   9997.70
   .001092      174.      174.      174.         4         0         0       .00     14.00  10011.70


SPECIAL CULVERT

SC  CUNO      CUNV      ENTLC     COFQ      RDLEN     RISE      SPAN      CULVLN    CHRT      SCL       ELCHU     ELCHD
     2         .018      .50      3.00       .00      2.50       .00     285.00     2         2        832.60    829.50

CHART  2 - CORRUGATED METAL PIPE CULVERT
SCALE  2 - MITERED TO CONFORM TO SLOPE

*SECNO 2835.000

SPECIAL CULVERT OUTLET CONTROL
EGIC =    834.148  EGOC =    834.286  PCWSE=    831.222  ELTRD=    838.000

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.79

SPECIAL CULVERT

     EGIC      EGOC       H4     QWEIR     QCULV       VCH     ACULV     ELTRD    WEIRLN
    834.15    834.29     3.03        0.       20.      .869       9.8    838.00        0.


1
   11MAR92      10:40:08                                                                                    PAGE    6

    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      838.00 ELREA=       838.30

  2835.000      1.67    834.27       .00       .00    834.29       .01      3.03       .00    833.90
      20.0        .0      20.0        .0        .0      23.0        .0        .2        .2    834.40
       .13       .00       .87       .00      .000      .030      .000      .000    832.60   9988.00
   .000341      295.      295.      295.         1         0         0       .00     24.69  10012.69


*SECNO 2936.000
3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
  2936.000       .81    835.61    835.61       .00    835.71       .20       .58       .10    836.70
      20.0        .0      20.0        .0        .0       5.5        .0        .3        .4    836.50
       .17       .00      3.61       .00      .000      .035      .000      .000    834.70   9992.51
   .024349      530.      533.      500.        20        11         0       .00     13.63  10006.13

*SECNO 2974.000

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  2.78

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      837.00 ELREA=       843.30

  2974.000      1.19    837.09       .00       .00    837.13       .04      1.37       .05    837.20
      20.0        .0      20.0        .0        .0      11.9        .0        .4        .5    837.70
       .20       .00      1.68       .00      .000      .035      .000      .000    835.90   9989.01
   .003154      190.      201.      180.         6         0         0       .00     19.99  10009.00


SPECIAL CULVERT

SC  CUNO      CUNV      ENTLC     COFQ      RDLEN     RISE      SPAN      CULVLN    CHRT      SCL       ELCHU     ELCHD
     1         .019      .50      3.00       .00      3.00       .00     137.00     2         2        836.80    835.90

CHART  2 - CORRUGATED METAL PIPE CULVERT
SCALE  2 - MITERED TO CONFORM TO SLOPE

*SECNO 3002.000
1
   11MAR92      10:40:08                                                                                    PAGE    7

    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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 OUTLET CONTROL
EGIC =    838.927  EGOC =    839.034  PCWSE=    837.090  ELTRD=    843.600

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  3.53

SPECIAL CULVERT
```

```
     EGIC      EGOC       H4     QWEIR     QCULV       VCH     ACULV     ELTRD    WEIRLN
   838.93    839.03     1.90        0.       20.      .747       7.1    843.60        0.


3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       843.10 ELREA=       844.30

  3002.000      2.23    839.03       .00       .00    839.03       .01      1.90       .00    838.60
      20.0        .0      20.0        .0        .0      26.8        .0        .4        .6    839.60
       .25       .00       .75       .00      .000      .035      .000      .000    836.80   9993.30
   .000254      147.      147.      147.         0         0         0       .00     22.66  10015.96


*SECNO 3080.000
3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
  3080.000       .96    842.16    842.16       .00    842.41       .25       .66       .12    845.10
      20.0        .0      20.0        .0        .0       5.0        .0        .7        .9    844.00
       .31       .00      3.99       .00      .000      .045      .000      .000    841.20   9996.43
   .039894      770.      760.      740.        20        18         0       .00     10.43  10006.86


*SECNO 3111.000

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  2.11


3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       855.00 ELREA=       855.00

  3111.000      1.27    845.07       .00       .00    845.16       .08      2.70       .05    845.60
      20.0        .0      20.0        .0        .0       8.8        .0        .7        .9    846.60
       .33       .00      2.28       .00      .000      .045      .000      .000    843.80   9995.27
   .008921      164.      164.      164.         5         0         0       .00     13.81  10009.08
```



```
    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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

SC  CUNO      CUNV      ENTLC     COFQ      RDLEN     RISE      SPAN      CULVLN    CHRT      SCL       ELCHU     ELCHD
     1         .016       .50     3.00       .00      2.00       .00     82.00     2         2        844.20    843.80

CHART  2 - CORRUGATED METAL PIPE CULVERT
SCALE  2 - MITERED TO CONFORM TO SLOPE

5140, NORMAL DEPTH EXCEEDS CULVERT HEIGHT
*SECNO 3129.000

SPECIAL CULVERT INLET CONTROL
EGIC =    847.583  EGOC =    846.878  PCWSE=    845.075  ELTRD=    855.000


3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO = 14.29

SPECIAL CULVERT

     EGIC      EGOC       H4     QWEIR     QCULV       VCH     ACULV     ELTRD    WEIRLN
   847.58    846.88     2.43        0.       20.      .355       3.1    855.00        0.


3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       855.00 ELREA=       855.00

  3129.000      3.38    847.58       .00       .00    847.58       .00      2.43       .00    846.00
      20.0        .0      20.0        .0        .0      56.3        .0        .8        .9    847.00
       .40       .00       .36       .00      .000      .045      .000      .000    844.20   9993.30
   .000044       92.       92.       92.         0         0         0       .00     26.70  10020.00


*SECNO 3148.000

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =   .39


  3148.000      2.39    847.59       .00       .00    847.59       .01       .01       .00    847.00
      20.0        .3      19.7        .0       1.1      30.3        .0        .9       1.0    848.00
       .44       .31       .65       .00      .035      .045      .000      .000    845.20   9989.60
   .000284      100.      100.      100.         2         0         0       .00     27.46  10017.06


*SECNO 3260.000
3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
  3260.000       .97    851.77    851.77       .00    852.01       .25       .57       .12    852.60
      20.0        .0      20.0        .0        .0       5.0        .0       1.2       1.3    853.30
       .48       .00      4.00       .00      .000      .045      .000      .000    850.80   9995.87
   .039645      600.      591.      550.        20        18         0       .00     10.35  10006.22
```



```
T1      FLOOD CONTROL DISTRICT OF MARICOPA COUNTY - CONTRACT FCD 90-67
T2      GILA BEND AREA FLOODPLAIN DELINEATION STUDY BY BURGESS & NIPLE
T3      UNNAMED WASH NO. 1                    J. MISCHLER - (602) 244-8100

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                3                           0.0085

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

     2                  -1
```

```
SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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

*PROF 2

CCHV=     .300 CEHV=     .500
*SECNO 2746.000
2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED
 2746.000     1.36    830.86       .00       .00    831.02       .16       .00       .00    833.10
     30.0       .0      30.0        .0        .0       9.3        .0        .0        .0    831.90
      .00       .00      3.21       .00      .000      .030      .000      .000    829.50   9993.75
  .008477      535.      554.      590.         0         0        10       .00     15.51  10009.27

*SECNO 2779.000

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

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      837.00 ELREA=      837.30

 2779.000     1.96    831.46       .00       .00    831.52       .05       .46       .03    830.40
     30.0       .0      30.0        .0        .0      16.6        .0        .1        .1    831.90
      .03       .00      1.81       .00      .000      .030      .000      .000    829.50   9997.70
  .001264      174.      174.      174.         4         0         0       .00     15.64  10013.34


SPECIAL CULVERT

SC  CUNO      CUNV      ENTLC     COFQ      RDLEN     RISE      SPAN      CULVLN    CHRT      SCL       ELCHU     ELCHD
    2         .018      .50       3.00      .00       2.50      .00       285.00    2         2         832.60    829.50

CHART  2 - CORRUGATED METAL PIPE CULVERT
SCALE  2 - MITERED TO CONFORM TO SLOPE

*SECNO 2835.000

SPECIAL CULVERT OUTLET CONTROL
EGIC =    834.570  EGOC =    834.688  PCWSE=    831.465  ELTRD=    838.000


3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  2.31

SPECIAL CULVERT

     EGIC      EGOC       H4     QWEIR     QCULV       VCH     ACULV     ELTRD    WEIRLN
   834.57    834.69     3.17        0.       30.      .902       9.8    838.00        0.
```



```
SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      838.00 ELREA=      838.30

 2835.000     2.08    834.68       .00       .00    834.69       .01      3.17       .00    833.90
     30.0       .0      30.0        .0        .0      33.3        .0        .2        .2    834.40
      .12       .00      .90       .00      .000      .030      .000      .000    832.60   9988.00
  .000236      295.      295.      295.         1         0         0       .00     25.60  10013.60

*SECNO 2936.000
3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
 2936.000      .95    835.65    835.65       .00    835.89       .24       .42       .12    836.70
     30.0       .0      30.0        .0        .0       7.6        .0        .5        .5    836.50
      .15       .00      3.97       .00      .000      .035      .000      .000    834.70   9991.24
  .023787      530.      533.      500.        20        14         0       .00     15.94  10007.17

*SECNO 2974.000

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  2.72

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      837.00 ELREA=      843.30

 2974.000     1.37    837.27       .00       .00    837.33       .06      1.38       .06    837.20
     30.0       .0      30.0        .0        .0      15.8        .0        .5        .5    837.70
      .18       .02      1.90       .00      .035      .035      .000      .000    835.90   9986.69
  .003205      190.      201.      180.         7         0         0       .00     23.69  10010.38


SPECIAL CULVERT

SC  CUNO      CUNV      ENTLC     COFQ      RDLEN     RISE      SPAN      CULVLN    CHRT      SCL       ELCHU     ELCHD
    1         .019      .50       3.00      .00       3.00      .00       137.00    2         2         836.80    835.90

CHART  2 - CORRUGATED METAL PIPE CULVERT
SCALE  2 - MITERED TO CONFORM TO SLOPE

*SECNO 3002.000
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```
SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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 OUTLET CONTROL
EGIC =    839.533  EGOC =    839.642  PCWSE=    837.273  ELTRD=    843.600

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  4.47

SPECIAL CULVERT

     EGIC      EGOC       H4      QWEIR     QCULV       VCH     ACULV     ELTRD    WEIRLN
   839.53    839.64     2.31        0.       30.      .717       7.1    843.60        0.


3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       843.10 ELREA=       844.30

  3002.000      2.83    839.63       .00       .00    839.64       .01      2.31       .00    838.60
     30.0        .0      30.0        .0        .0      41.8        .0        .6        .6    839.60
       .24       .00       .72       .00      .000      .035      .000      .000    836.80   9993.30
   .000160      147.      147.      147.         0         0         0       .00     26.70  10020.00


*SECNO 3080.000
3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
  3080.000      1.13    842.33    842.33       .00    842.62       .29       .43       .14    845.10
     30.0        .0      30.0        .0        .0       6.9        .0       1.0       1.0    844.00
       .29       .00      4.33       .00      .000      .045      .000      .000    841.20   9995.80
   .037759      770.      760.      740.        20        18         0       .00     12.27  10008.07


*SECNO 3111.000

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  2.03

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       855.00 ELREA=       855.00

  3111.000      1.47    845.27       .00       .00    845.37       .10      2.70       .06    845.60
     30.0        .0      30.0        .0        .0      11.8        .0       1.1       1.0    846.60
       .31       .00      2.54       .00      .000      .045      .000      .000    843.80   9994.52
   .009149      164.      164.      164.         7         0         0       .00     16.01  10010.52
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    SECNO     DEPTH     CWSEL     CRIWS     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

SC  CUNO      CUNV      ENTLC     COFQ      RDLEN     RISE      SPAN      CULVLN    CHRT      SCL       ELCHU     ELCHD
     1         .016       .50     3.00       .00      2.00       .00     82.00     2         2        844.20    843.80

CHART  2 - CORRUGATED METAL PIPE CULVERT
SCALE  2 - MITERED TO CONFORM TO SLOPE

5140, NORMAL DEPTH EXCEEDS CULVERT HEIGHT
*SECNO 3129.000

SPECIAL CULVERT INLET CONTROL
EGIC =    849.929  EGOC =    848.644  PCWSE=    845.272  ELTRD=    855.000

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO = 33.54

SPECIAL CULVERT

     EGIC      EGOC       H4      QWEIR     QCULV       VCH     ACULV     ELTRD    WEIRLN
   849.93    848.64     4.56        0.       30.      .252       3.1    855.00        0.


3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       855.00 ELREA=       855.00

  3129.000      5.73    849.93       .00       .00    849.93       .00      4.56       .00    846.00
     30.0        .0      30.0        .0        .0     118.9        .0       1.2       1.1    847.00
       .41       .00       .25       .00      .000      .045      .000      .000    844.20   9993.30
   .000008       92.       92.       92.         0         0         0       .00     26.70  10020.00


*SECNO 3148.000
  3148.000      4.73    849.93       .00       .00    849.93       .00       .00       .00    847.00
     30.0       4.0      15.8      10.2      31.4      92.2     115.2       1.6       1.3    848.00
       .61       .13       .17       .09      .035      .045      .035      .000    845.20   9964.12
   .000005      100.      100.      100.         2         0         0       .00    205.05  10169.17


*SECNO 3260.000
3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=     9994.0   10009.0  TYPE=       1  TARGET=       15.000
  3260.000      1.14    851.94    851.94    851.77    852.23       .29       .01       .14 100000.00
     30.0        .0      30.0        .0        .0       7.0        .0       3.2       2.7 100000.00
       .65       .00      4.28       .00      .000      .045      .000      .000    850.80   9995.11
   .036355      600.      591.      550.        20        14         0       .00     12.25  10007.36
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T1      FLOOD CONTROL DISTRICT OF MARICOPA COUNTY - CONTRACT FCD 90-67
T2      GILA BEND AREA FLOODPLAIN DELINEATION STUDY BY BURGESS & NIPLE
T3      UNNAMED WASH NO. 1                    J. MISCHLER - (602) 244-8100

J1  ICHECK    INQ      NINV     IDIR     STRT     METRIC   HVINS    Q        WSEL     FQ

                4                        0.0085

J2  NPROF     IPLOT    PRFVS    XSECV    XSECH    FN       ALLDC    IBW      CHNIM    ITRACE

     3                -1

1
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    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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

*PROF 3

CCHV=     .300 CEHV=     .500
*SECNO 2746.000
2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED
  2746.000      1.63    831.13       .00       .00    831.33       .20       .00       .00    833.10
      50.0        .0      50.0        .0        .0      13.9        .0        .0        .0    831.90
       .00       .00      3.59       .00      .000      .030      .000      .000    829.50   9991.52
   .008416      535.      554.      590.         0         0         9       .00     19.52  10011.05

*SECNO 2779.000

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  2.34

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       837.00 ELREA=       837.30

  2779.000      2.31    831.81       .00       .00    831.89       .08       .53       .04    830.40
      50.0        .0      50.0        .0        .0      22.5        .0        .1        .1    831.90
       .02       .00      2.22       .00      .000      .030      .000      .000    829.50   9997.70
   .001539      174.      174.      174.         3         0         0       .00     18.02  10015.72

SPECIAL CULVERT

SC  CUNO      CUNV      ENTLC     COFQ      RDLEN     RISE      SPAN      CULVLN    CHRT      SCL       ELCHU     ELCHD
     2         .018       .50     3.00       .00      2.50       .00    285.00      2         2       832.60    829.50

CHART  2 - CORRUGATED METAL PIPE CULVERT
SCALE  2 - MITERED TO CONFORM TO SLOPE

*SECNO 2835.000

SPECIAL CULVERT OUTLET CONTROL
EGIC =    835.336  EGOC =    835.449  PCWSE=    831.812  ELTRD=    838.000

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  3.30

SPECIAL CULVERT

    EGIC      EGOC       H4     QWEIR     QCULV       VCH     ACULV     ELTRD    WEIRLN
  835.34    835.45     3.56        0.       50.      .948       9.8    838.00        0.

1
   11MAR92      10:40:08                                                                          PAGE   16

    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       838.00 ELREA=       838.30

  2835.000      2.84    835.44       .00       .00    835.45       .01      3.56       .00    833.90
      50.0        .0      50.0        .0        .0      52.7        .0        .3        .2    834.40
       .11       .00       .95       .00      .000      .030      .000      .000    832.60   9988.00
   .000141      295.      295.      295.         1         0         0       .00     25.60  10013.60

*SECNO 2936.000
3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
  2936.000      1.16    835.86    835.86       .00    836.16       .30       .26       .14    836.70
      50.0        .0      50.0        .0        .0      11.4        .0        .7        .5    836.50
       .14       .00      4.39       .00      .000      .035      .000      .000    834.70   9989.25
   .022250      530.      533.      500.        20        18         0       .00     19.54  10008.80

*SECNO 2974.000

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  2.60

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       837.00 ELREA=       843.30

  2974.000      1.63    837.53       .00       .00    837.61       .08      1.38       .07    837.20
      50.0        .7      49.3        .0       1.0      21.8        .0        .8        .6    837.70
       .17       .73      2.26       .00      .035      .035      .000      .000    835.90   9982.07
   .003289      190.      201.      180.         6         0         0       .00     30.26  10012.33

SPECIAL CULVERT

SC  CUNO      CUNV      ENTLC     COFQ      RDLEN     RISE      SPAN      CULVLN    CHRT      SCL       ELCHU     ELCHD
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     1          .019       .50       3.00       .00       3.00       .00     137.00      2          2        836.80    835.90

CHART  2 - CORRUGATED METAL PIPE CULVERT
SCALE  2 - MITERED TO CONFORM TO SLOPE

5140, NORMAL DEPTH EXCEEDS CULVERT HEIGHT
*SECNO 3002.000
1
   11MAR92      10:40:08                                                                                                PAGE   17

    SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      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 INLET CONTROL
EGIC =    841.380  EGOC =    840.513  PCWSE=    837.532  ELTRD=    843.600

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  9.44

SPECIAL CULVERT

     EGIC       EGOC        H4       QWEIR      QCULV       VCH      ACULV      ELTRD     WEIRLN
   841.38     840.51      3.77         0.        50.       .566        7.1     843.60         0.


3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       843.10 ELREA=       844.30

  3002.000      4.58    841.38        .00        .00    841.38        .00       3.77        .00    838.60
     50.0        .0      50.0         .0         .0      88.3         .0        1.0         .7    839.60
       .24       .00       .57        .00       .000      .035       .000       .000     836.80   9993.30
  .000037      147.      147.       147.          0         0          0        .00      26.70  10020.00


*SECNO 3080.000
3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
  3080.000      1.39    842.59     842.59        .00    842.94        .36        .11        .18    845.10
     50.0        .0      50.0         .0         .0      10.4         .0        1.8        1.1    844.00
       .28       .00      4.80        .00       .000      .045       .000       .000     841.20   9994.84
  .035278      770.      760.       740.         20        17          0        .00      15.05  10009.89


*SECNO 3111.000

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

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       855.00 ELREA=       855.00

  3111.000      1.78    845.58        .00        .00    845.71        .13       2.70        .07    845.60
     50.0        .0      50.0         .0         .0      17.0         .0        1.9        1.1    846.60
       .30       .00      2.93        .00       .000      .045       .000       .000     843.80   9993.41
  .009506      164.      164.       164.          5         0          0        .00      19.25  10012.65


1
   11MAR92      10:40:08                                                                                                PAGE   18

    SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      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

SC  CUNO       CUNV       ENTLC      COFQ       RDLEN      RISE       SPAN       CULVLN     CHRT       SCL        ELCHU      ELCHD
     1          .016        .50       3.00        .00       2.00        .00      82.00      2          2        844.20    843.80

CHART  2 - CORRUGATED METAL PIPE CULVERT
SCALE  2 - MITERED TO CONFORM TO SLOPE

5140, NORMAL DEPTH EXCEEDS CULVERT HEIGHT
5130, EGIC=  857.43..MAY BE TOO LARGE IF INLET CONTROLS.
*SECNO 3129.000
5155, 20 TRIALS OF QWEIR NOT ENOUGH; POSSIBLY INVALID
FINAL QWEIR + QCULV =      13857. DOES NOT EQUAL ACTUAL Q =        50.


SPECIAL CULVERT INLET CONTROL + WEIR FLOW, EG =    855.02
3280 CROSS SECTION   3129.00 EXTENDED      3.72 FEET

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

SPECIAL CULVERT

     EGIC       EGOC        H4       QWEIR      QCULV       VCH      ACULV      ELTRD     WEIRLN
   857.43     853.83      9.31     13813.        45.       .018        3.1     855.00       535.


  3129.000     10.82    855.02        .00        .00    855.02        .00       9.31        .00    846.00
     50.0       19.3       4.5       26.2     1331.1     254.8     1533.3        5.2        1.8    847.00
      1.88       .01       .02        .02       .035      .045       .035       .000     844.20   9700.00
  .000000       92.       92.        92.          0         0          0        .00     573.20  10273.20


*SECNO 3148.000
3280 CROSS SECTION   3148.00 EXTENDED       .42 FEET

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

  3148.000      9.82    855.02        .00        .00    855.02        .00        .00        .00    847.00
     50.0       19.9       5.6       24.5     1037.8     228.1     1018.7       11.4        3.0    848.00
      3.14       .02       .02        .02       .035      .045       .035       .000     845.20   9700.00
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   .000000      100.      100.      100.         2         0         0       .00    510.00  10210.00

*SECNO 3260.000

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =   .05

1
   11MAR92      10:40:08                                                                                PAGE   19

    SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      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

  3260.000      4.22     855.02       .00        .00     855.02       .00        .00        .00     852.60
     50.0       8.6       19.7      21.8       41.1       73.3     115.2      28.0        7.5     853.30
      3.85      .21        .27       .19       .035       .045      .035      .000     850.80    9957.59
   .000015     600.      591.      550.         0          0         0       .00     172.33   10129.92

1
   11MAR92      10:40:08                                                                                PAGE   20

T1      FLOOD CONTROL DISTRICT OF MARICOPA COUNTY - CONTRACT FCD 90-67
T2      GILA BEND AREA FLOODPLAIN DELINEATION STUDY BY BURGESS & NIPLE
T3      UNNAMED WASH NO. 1                          J. MISCHLER - (602) 244-8100

J1  ICHECK     INQ        NINV       IDIR       STRT       METRIC     HVINS      Q          WSEL       FQ

                5                                0.0085

J2  NPROF      IPLOT      PRFVS      XSECV      XSECH      FN         ALLDC      IBW        CHNIM      ITRACE

     15                    -1

1
   11MAR92      10:40:08                                                                                PAGE   21

    SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      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

*PROF 4

CCHV=      .300 CEHV=      .500
*SECNO 2746.000
2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED
  2746.000      1.82     831.32       .00        .00     831.55       .24        .00        .00     833.10
     70.0        .0       70.0        .0         .0       18.0        .0         .0         .0     831.90
      .00       .00       3.89       .00       .000       .030      .000      .000     829.50    9989.88
   .008476     535.      554.      590.         0          0         9       .00      22.48   10012.36

*SECNO 2779.000

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

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       837.00 ELREA=       837.30

  2779.000      2.55     832.05       .00        .00     832.16       .10        .56        .04     830.40
     70.0        .0       70.0        .0         .0       27.0        .0         .1         .1     831.90
      .02       .00       2.59       .00       .000       .030      .000      .000     829.50    9997.70
   .001700     174.      174.      174.         3          0         0       .00      18.60   10016.30

SPECIAL CULVERT

SC  CUNO       CUNV       ENTLC      COFQ       RDLEN      RISE       SPAN       CULVLN     CHRT       SCL        ELCHU      ELCHD
     2          .018       .50       3.00        .00       2.50       .00      285.00      2          2         832.60     829.50

CHART  2 - CORRUGATED METAL PIPE CULVERT
SCALE  2 - MITERED TO CONFORM TO SLOPE

*SECNO 2835.000

SPECIAL CULVERT OUTLET CONTROL
EGIC =    836.848  EGOC =    837.217  PCWSE=    832.055  ELTRD=    838.000

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  6.98

SPECIAL CULVERT

     EGIC       EGOC        H4       QWEIR      QCULV      VCH        ACULV      ELTRD      WEIRLN
    836.85     837.22      5.06        0.         70.       .713        9.8      838.00       0.

1
   11MAR92      10:40:08                                                                                PAGE   22

    SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      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 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       838.00 ELREA=       838.30

  2835.000      4.61     837.21       .00        .00     837.22       .01       5.06        .00     833.90
     70.0        .0       70.0        .0         .0       98.2        .0         .5         .2     834.40
      .13       .00        .71       .00       .000       .030      .000      .000     832.60    9988.00
   .000035     295.      295.      295.         0          0         0       .00      25.60   10013.60
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*SECNO 2936.000

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =   .37

  2936.000      2.55    837.25       .00       .00    837.26       .01       .04       .00    836.70
      70.0       2.3      49.8      17.9       7.9      56.4      33.1       1.7       1.1    836.50
       .32       .29       .88       .54      .035      .035      .035      .000    834.70   9946.49
   .000259      530.      533.      500.         2         0         0       .00    115.08  10061.57

*SECNO 2974.000

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =   .12

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       837.00 ELREA=       843.30

  2974.000      1.36    837.26       .00       .00    837.57       .31       .16       .15    837.20
      70.0        .0      70.0        .0        .0      15.7        .0       1.9       1.4    837.70
       .34       .06      4.45       .00      .035      .035      .000      .000    835.90   9986.75
   .017734      190.      201.      180.         1         0         0       .00     23.59  10010.35


SPECIAL CULVERT

SC  CUNO      CUNV      ENTLC     COFQ      RDLEN     RISE      SPAN      CULVLN    CHRT      SCL       ELCHU     ELCHD
     1          .019       .50     3.00       .00      3.00       .00    137.00      2         2       836.80    835.90

CHART  2 - CORRUGATED METAL PIPE CULVERT
SCALE  2 - MITERED TO CONFORM TO SLOPE

5140, NORMAL DEPTH EXCEEDS CULVERT HEIGHT
*SECNO 3002.000
1
   11MAR92      10:40:08                                                                                    PAGE   23

    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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 INLET CONTROL
EGIC =    843.604  EGOC =    842.734  PCWSE=    837.262  ELTRD=    843.600

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO = 73.27

SPECIAL CULVERT

     EGIC      EGOC        H4     QWEIR     QCULV       VCH     ACULV     ELTRD    WEIRLN
   843.60    842.73      6.03        0.       70.      .239       7.1    843.60        0.


3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       843.10 ELREA=       844.30

  3002.000      6.80    843.60       .00       .00    843.60       .00      6.03       .00    838.60
      70.0      34.7      35.3        .0     386.2     147.6        .0       2.9       2.2    839.60
       .58       .09       .24       .00      .035      .035      .000      .000    836.80   9529.61
   .000003      147.      147.      147.         0         0         0       .00    490.39  10020.00

*SECNO 3080.000

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =   .03

  3080.000      2.37    843.57       .00       .00    843.65       .08       .01       .04    845.10
      70.0        .0      70.0        .0        .0      31.1        .0       7.8       6.8    844.00
       .68       .00      2.25       .00      .000      .045      .000      .000    841.20   9989.69
   .004003      770.      760.      740.         4         0         0       .00     27.27  10016.96

*SECNO 3111.000
3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       855.00 ELREA=       855.00

  3111.000      1.59    845.39    845.39       .00    845.79       .41      1.45       .16    845.60
      70.0        .0      70.0        .0        .0      13.7        .0       7.9       6.9    846.60
       .69       .00      5.12       .00      .000      .045      .000      .000    843.80   9994.10
   .033616      164.      164.      164.        20        19         0       .00     17.23  10011.33

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   11MAR92      10:40:08                                                                                    PAGE   24

    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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

SC  CUNO      CUNV      ENTLC     COFQ      RDLEN     RISE      SPAN      CULVLN    CHRT      SCL       ELCHU     ELCHD
     1          .016       .50     3.00       .00      2.00       .00     82.00      2         2       844.20    843.80

CHART  2 - CORRUGATED METAL PIPE CULVERT
SCALE  2 - MITERED TO CONFORM TO SLOPE

5140, NORMAL DEPTH EXCEEDS CULVERT HEIGHT
5130, EGIC=  868.69..MAY BE TOO LARGE IF INLET CONTROLS.
5135, EGOC=  861.55 ..MAY BE TOO LARGE IF OUTLET CONTROLS.
*SECNO 3129.000
5155, 20 TRIALS OF QWEIR NOT ENOUGH; POSSIBLY INVALID
FINAL QWEIR + QCULV =      13603. DOES NOT EQUAL ACTUAL Q =        70.
```

SPECIAL CULVERT INLET CONTROL + WEIR FLOW, EG = 854.97
3280 CROSS SECTION 3129.00 EXTENDED 3.67 FEET

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 97.23

SPECIAL CULVERT

EGIC	EGOC	H4	QWEIR	QCULV	VCH	ACULV	ELTRD	WEIRLN
868.69	861.55	9.17	13559.	44.	.276	3.1	855.00	535.

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 855.00 ELREA= 855.00

3129.000	10.77	854.97	.00	.00	854.97	.00	9.17	.00	846.00
70.0	.0	70.0	.0	.0	253.4	.0	8.2	6.9	847.00
.78	.00	.28	.00	.000	.045	.000	.000	844.20	9993.30
.000004	92.	92.	92.	0	0	0	.00	26.70	10020.00

*SECNO 3148.000
3280 CROSS SECTION 3148.00 EXTENDED .37 FEET

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 7.33

3148.000	9.77	854.97	.00	.00	854.97	.00	.00	.00	847.00
70.0	27.7	7.9	34.4	1022.7	226.8	1008.9	11.1	7.6	848.00
1.66	.03	.03	.03	.035	.045	.035	.000	845.20	9700.00
.000000	100.	100.	100.	2	0	0	.00	510.00	10210.00

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	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 3260.000

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = .05

3260.000	4.17	854.97	.00	.00	854.97	.00	.00	.00	852.60
70.0	11.9	28.2	29.9	39.4	72.1	109.5	27.5	12.1	853.30
2.15	.30	.39	.27	.035	.045	.035	.000	850.80	9958.37
.000033	600.	591.	550.	0	0	0	.00	168.92	10127.28

THIS RUN EXECUTED 11MAR92 10:40:18

****
HEC-2 WATER SURFACE PROFILES

Version 4.6.2: May 1991
****

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

UNNAMED WASH NO. 1

SUMMARY PRINTOUT

	SECNO	ELMIN	CWSEL	Q	VCH	DIFWSX	TOPWID	DEPTH	SSTA	ENDST	QLOB	QROB	ELTRD
	2746.000	829.50	830.69	20.00	2.94	.00	12.78	1.19	9995.27	10008.05	.00	.00	.00
	2746.000	829.50	830.86	30.00	3.21	.00	15.51	1.36	9993.75	10009.27	.00	.00	.00
	2746.000	829.50	831.13	50.00	3.59	.00	19.52	1.63	9991.52	10011.05	.00	.00	.00
	2746.000	829.50	831.32	70.00	3.89	.00	22.48	1.82	9989.88	10012.36	.00	.00	.00
*	2779.000	829.50	831.22	20.00	1.54	.54	14.00	1.72	9997.70	10011.70	.00	.00	.00
*	2779.000	829.50	831.46	30.00	1.81	.60	15.64	1.96	9997.70	10013.34	.00	.00	.00
*	2779.000	829.50	831.81	50.00	2.22	.69	18.02	2.31	9997.70	10015.72	.00	.00	.00
*	2779.000	829.50	832.05	70.00	2.59	.73	18.60	2.55	9997.70	10016.30	.00	.00	.00
*	2835.000	832.60	834.27	20.00	.87	3.05	24.69	1.67	9988.00	10012.69	.00	.00	838.00
*	2835.000	832.60	834.68	30.00	.90	3.21	25.60	2.08	9988.00	10013.60	.00	.00	838.00
*	2835.000	832.60	835.44	50.00	.95	3.62	25.60	2.84	9988.00	10013.60	.00	.00	838.00
*	2835.000	832.60	837.21	70.00	.71	5.15	25.60	4.61	9988.00	10013.60	.00	.00	838.00
*	2936.000	834.70	835.61	20.00	3.61	1.24	13.63	.81	9992.51	10006.13	.00	.00	.00
*	2936.000	834.70	835.65	30.00	3.97	.97	15.94	.95	9991.24	10007.17	.00	.00	.00
*	2936.000	834.70	835.86	50.00	4.39	.43	19.54	1.16	9989.25	10008.80	.00	.00	.00
*	2936.000	834.70	837.25	70.00	.88	.04	115.08	2.55	9946.49	10061.57	2.29	17.86	.00
*	2974.000	835.90	837.09	20.00	1.68	1.58	19.99	1.19	9989.01	10009.00	.00	.00	.00
*	2974.000	835.90	837.27	30.00	1.90	1.62	23.69	1.37	9986.69	10010.38	.00	.00	.00
*	2974.000	835.90	837.53	50.00	2.26	1.67	30.26	1.63	9982.07	10012.33	.72	.00	.00
*	2974.000	835.90	837.26	70.00	4.45	.01	23.59	1.36	9986.75	10010.35	.00	.00	.00
*	3002.000	836.80	839.03	20.00	.75	1.94	22.66	2.23	9993.30	10015.96	.00	.00	843.60
*	3002.000	836.80	839.63	30.00	.72	2.36	26.70	2.83	9993.30	10020.00	.00	.00	843.60
*	3002.000	836.80	841.38	50.00	.57	3.84	26.70	4.58	9993.30	10020.00	.00	.00	843.60
*	3002.000	836.80	843.60	70.00	.24	6.34	490.39	6.80	9529.61	10020.00	34.75	.00	843.60
*	3080.000	841.20	842.16	20.00	3.99	3.13	10.43	.96	9996.43	10006.86	.00	.00	.00
*	3080.000	841.20	842.33	30.00	4.33	2.70	12.27	1.13	9995.80	10008.07	.00	.00	.00
*	3080.000	841.20	842.59	50.00	4.80	1.21	15.05	1.39	9994.84	10009.89	.00	.00	.00
*	3080.000	841.20	843.57	70.00	2.25	-.03	27.27	2.37	9989.69	10016.96	.00	.00	.00

	SECNO	ELMIN	CWSEL	Q	VCH	DIFWSX	TOPWID	DEPTH	SSTA	ENDST	QLOB	QROB	ELTRD
*	3111.000	843.80	845.07	20.00	2.28	2.91	13.81	1.27	9995.27	10009.08	.00	.00	.00
*	3111.000	843.80	845.27	30.00	2.54	2.94	16.01	1.47	9994.52	10010.52	.00	.00	.00
*	3111.000	843.80	845.58	50.00	2.93	2.99	19.25	1.78	9993.41	10012.65	.00	.00	.00
*	3111.000	843.80	845.39	70.00	5.12	1.81	17.23	1.59	9994.10	10011.33	.00	.00	.00
*	3129.000	844.20	847.58	20.00	.36	2.51	26.70	3.38	9993.30	10020.00	.00	.00	855.00
*	3129.000	844.20	849.93	30.00	.25	4.66	26.70	5.73	9993.30	10020.00	.00	.00	855.00
*	3129.000	844.20	855.02	50.00	.02	9.44	573.20	10.82	9700.00	10273.20	19.34	26.18	855.00
*	3129.000	844.20	854.97	70.00	.28	9.58	26.70	10.77	9993.30	10020.00	.00	.00	855.00
*	3148.000	845.20	847.59	20.00	.65	.01	27.46	2.39	9989.60	10017.06	.34	.00	.00
	3148.000	845.20	849.93	30.00	.17	.00	205.05	4.73	9964.12	10169.17	4.00	10.21	.00
*	3148.000	845.20	855.02	50.00	.02	.00	510.00	9.82	9700.00	10210.00	19.88	24.50	.00
*	3148.000	845.20	854.97	70.00	.03	.00	510.00	9.77	9700.00	10210.00	27.70	34.37	.00
*	3260.000	850.80	851.77	20.00	4.00	4.18	10.35	.97	9995.87	10006.22	.00	.00	.00
*	3260.000	850.80	851.94	30.00	4.28	2.01	12.25	1.14	9995.11	10007.36	.00	.00	.00
*	3260.000	850.80	855.02	50.00	.27	.00	172.33	4.22	9957.59	10129.92	8.57	21.78	.00
*	3260.000	850.80	854.97	70.00	.39	.00	168.92	4.17	9958.37	10127.28	11.90	29.93	.00

SUMMARY OF ERRORS AND SPECIAL NOTES

```
WARNING SECNO=   2779.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   2779.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   2779.000  PROFILE=  3  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   2779.000  PROFILE=  4  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=   2835.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   2835.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   2835.000  PROFILE=  3  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   2835.000  PROFILE=  4  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO=   2936.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=   2936.000  PROFILE=  1  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=   2936.000  PROFILE=  1  20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO=   2936.000  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=   2936.000  PROFILE=  2  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=   2936.000  PROFILE=  2  20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO=   2936.000  PROFILE=  3  CRITICAL DEPTH ASSUMED
CAUTION SECNO=   2936.000  PROFILE=  3  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=   2936.000  PROFILE=  3  20 TRIALS ATTEMPTED TO BALANCE WSEL
WARNING SECNO=   2936.000  PROFILE=  4  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=   2974.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   2974.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   2974.000  PROFILE=  3  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   2974.000  PROFILE=  4  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=   3002.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   3002.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   3002.000  PROFILE=  3  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   3002.000  PROFILE=  4  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO=   3080.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=   3080.000  PROFILE=  1  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=   3080.000  PROFILE=  1  20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO=   3080.000  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=   3080.000  PROFILE=  2  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=   3080.000  PROFILE=  2  20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO=   3080.000  PROFILE=  3  CRITICAL DEPTH ASSUMED
CAUTION SECNO=   3080.000  PROFILE=  3  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=   3080.000  PROFILE=  3  20 TRIALS ATTEMPTED TO BALANCE WSEL
WARNING SECNO=   3080.000  PROFILE=  4  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=   3111.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   3111.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   3111.000  PROFILE=  3  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
CAUTION SECNO=   3111.000  PROFILE=  4  CRITICAL DEPTH ASSUMED
CAUTION SECNO=   3111.000  PROFILE=  4  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=   3111.000  PROFILE=  4  20 TRIALS ATTEMPTED TO BALANCE WSEL

WARNING SECNO=   3129.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   3129.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
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WARNING SECNO=   3129.000  PROFILE=  3  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   3129.000  PROFILE=  4  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=   3148.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   3148.000  PROFILE=  3  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   3148.000  PROFILE=  4  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO=   3260.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=   3260.000  PROFILE=  1  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=   3260.000  PROFILE=  1  20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO=   3260.000  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=   3260.000  PROFILE=  2  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=   3260.000  PROFILE=  2  20 TRIALS ATTEMPTED TO BALANCE WSEL
WARNING SECNO=   3260.000  PROFILE=  3  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   3260.000  PROFILE=  4  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
```

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1*****************************************
 *  HEC-2 WATER SURFACE PROFILES          *
 *                                        *
 *  Version   4.6.2;  May 1991            *
 *                                        *
 *  RUN DATE    11MAR92    TIME   10:40:39 *
 *****************************************
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*************************************
*  U.S. ARMY CORPS OF ENGINEERS     *
*  HYDROLOGIC ENGINEERING CENTER    *
*  609 SECOND STREET, SUITE D       *
*  DAVIS, CALIFORNIA 95616-4687     *
*        (916) 756-1104             *
*************************************
```

```
X     X  XXXXXXX   XXXXX              XXXXX
X     X  X        X     X            X     X
X     X  X        X                        X
XXXXXXX  XXXX     X          XXXXX    XXXXX
X     X  X        X                  X
X     X  X        X     X            X
X     X  XXXXXXX   XXXXX              XXXXXXX
```

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1
  11MAR92      10:40:39                                                                                    PAGE    1


                                                                                THIS RUN EXECUTED 11MAR92     10:40:39
 *************************************
 HEC-2 WATER SURFACE PROFILES

 Version   4.6.2;  May 1991
 *************************************


T1      FLOOD CONTROL DISTRICT OF MARICOPA COUNTY - CONTRACT FCD 90-67
T2      GILA BEND AREA FLOODPLAIN DELINEATION STUDY BY BURGESS & NIPLE
T3      RATING @ UNNAMED 1 & I-8                  J. MISCHLER - (602) 244-8100

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                2                           0.008

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

     1                  -1


J3  VARIABLE CODES FOR SUMMARY PRINTOUT

     38        42         1         43        26        51         4         8        53        54
     13        15        40

        THIS RUN MODELS THE SPLIT OF FLOW BETWEEN THE MAINLINE AND THE
        EASTBOUND ON-RAMP.  FLOW WILL BE CONVEYED TO A CULVERT BENEATH
        THE MAINLINE AND WILL REENTER UNNAMED WASH NO. 1 DOWNSTREAM OF SECTION
        2565.

        NORMAL DEPTH IS USED FOR THIS RATING.

        J1.5 STRT = 4 FT/500 FT = 0.008 FT/FT.

        THESE RESULTS ARE COMBINED WITH OTHER RUNS TO DETERMINE THE SPLIT
        AT INTERSTATE 8.


NC    0.035     0.035     0.035       0.1       0.3
QT        3        40        80       120
X1        1         4      9975     10025
GR      840      9600       836      9975       836     10025     838.3     10030
1
  11MAR92      10:40:39                                                                                    PAGE    2

     SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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


 *PROF 1

 CCHV=     .100 CEHV=     .300
 *SECNO 1.000
 2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED
      1.000      .35    836.35       .00       .00    836.40       .05       .00       .00    836.00
       40.0      6.8      33.0        .1       5.7      17.5        .1        .0        .0    836.00
        .00     1.19      1.89      1.11      .035      .035      .035      .000    836.00   9942.17
    .007992       0.        0.        0.         0         0         7       .00     83.59  10025.76


1
  11MAR92      10:40:39                                                                                    PAGE    3

T1      FLOOD CONTROL DISTRICT OF MARICOPA COUNTY - CONTRACT FCD 90-67
T2      GILA BEND AREA FLOODPLAIN DELINEATION STUDY BY BURGESS & NIPLE
T3      RATING @ UNNAMED 1 & I-8                  J. MISCHLER - (602) 244-8100

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                3                           0.008

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

     2                  -1

1
  11MAR92      10:40:39                                                                                    PAGE    4

     SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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
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```
*PROF 2

CCHV=     .100 CEHV=     .300
*SECNO 1.000
2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED
     1.000       .51    836.51       .00       .00    836.59       .08       .00       .00    836.00
      80.0      18.4      61.2        .4      12.1      25.4        .3        .0        .0    836.00
       .00      1.52      2.41      1.43      .035      .035      .035      .000    836.00   9927.42
   .007979        0.        0.        0.         0         0         6       .00     98.69  10026.10
```

1 PAGE 5

11MAR92 10:40:39

```
T1      FLOOD CONTROL DISTRICT OF MARICOPA COUNTY - CONTRACT FCD 90-67
T2      GILA BEND AREA FLOODPLAIN DELINEATION STUDY BY BURGESS & NIPLE
T3      RATING @ UNNAMED 1 & I-8                J. MISCHLER - (602) 244-8100

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                 4                         0.008

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

     15                  -1
```

1 PAGE 6

11MAR92 10:40:39

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    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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

*PROF 3

CCHV=     .100 CEHV=     .300
*SECNO 1.000
2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED
     1.000       .63    836.63       .00       .00    836.73       .10       .00       .00    836.00
     120.0      32.3      87.0        .7      18.5      31.4        .4        .0        .0    836.00
       .00      1.74      2.77      1.64      .035      .035      .035      .000    836.00   9916.10
   .007909        0.        0.        0.         0         0         5       .00    110.27  10026.37
```

1 PAGE 7

11MAR92 10:40:39

THIS RUN EXECUTED 11MAR92 10:40:40

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************************************
 HEC-2 WATER SURFACE PROFILES

 Version   4.6.2;  May 1991
************************************

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

RATING @ UNNAMED 1 & I-8

SUMMARY PRINTOUT

      SECNO     ELMIN     CWSEL       Q       VCH    DIFWSX    TOPWID     DEPTH     SSTA     ENDST     QLOB     QROB     ELTRD

      1.000    836.00    836.35     40.00     1.89       .00     83.59       .35   9942.17  10025.76     6.83      .15       .00
      1.000    836.00    836.51     80.00     2.41       .00     98.69       .51   9927.42  10026.10    18.36      .40       .00
      1.000    836.00    836.63    120.00     2.77       .00    110.27       .63   9916.10  10026.37    32.28      .70       .00
```

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SUMMARY OF ERRORS AND SPECIAL NOTES

SECTION 4: Hydraulic Analysis

4.6 Floodway Modeling

Following completion of natural 100-year profile models for Sand Tank Wash, Bender Wash, Scott Avenue Wash, and Unnamed Washes No. 1 and No. 2, floodway models were developed.

The floodway model for each stream was begun at the first cross section within the detailed study area. Each run was started with a 1.0 foot surcharge (0.8 foot for Scott Avenue Wash), with the computer generating a floodway using Method 6 (equal conveyance loss, target compared to energy grade). An initial surcharge of 1.0 foot for Scott Avenue Wash resulted in unreasonable results at the next upstream cross section. The initial computed floodway was plotted on work maps and reviewed. Adjustments were made and encroachment stations set by Method 1 based on the following criteria:

- Encroachment at the first section set equal to the computer generated value
- Top widths to be more uniform
- Achieve goal of 1.0 foot surcharge with no point exceeding 1.0 foot
- Avoid excessive velocities

Floodways at Interstate 8 for San Tank Wash and Bender Wash are plotted to include the full system of 3 (Sand Tank Wash) and 5 (Bender Wash) structures at each crossing. Because of elevation differences, it is not possible to include all structures in a single model. This situation is addressed in further detail in the Special Problems Section of the report.

SECTION 4: Hydraulic Analysis

4.7 Final Results

Sand Tank Wash Natural Profile	**A**
Sand Tank Wash Floodway	**B**
Bender Wash Natural Profile	**C**
Bender Wash Floodway	**D**
Scott Avenue Wash Natural Profile	**E**
Scott Avenue Wash Floodway	**F**
Unnamed Wash No. 1 Natural Profile	**G**
Unnamed Wash No. 1 Floodway	**H**
Unnamed Wash No. 2 Natural Profile	**I**
Unnamed Wash No. 2 Floodway	**J**

```
1*****************************************
*  HEC-2 WATER SURFACE PROFILES           *
*                                         *
*  Version   4.6.2;  May 1991             *
*                                         *
*  RUN DATE    16DEC92    TIME   08:28:16 *
*****************************************
```

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*************************************
*  U.S. ARMY CORPS OF ENGINEERS     *
*  HYDROLOGIC ENGINEERING CENTER    *
*  609 SECOND STREET, SUITE D       *
*  DAVIS, CALIFORNIA 95616-4687     *
*          (916) 756-1104           *
*************************************
```

```
X     X  XXXXXXX   XXXXX              XXXXX
X     X  X        X     X            X     X
X     X  X        X                  X     X
XXXXXXX  XXXX     X          XXXXX    XXXXX
X     X  X        X                  X
X     X  X        X     X            X
X     X  XXXXXXX   XXXXX              XXXXXXX
```

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16DEC92 08:28:16 PAGE 1

THIS RUN EXECUTED 16DEC92 08:28:16

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************************************
HEC-2 WATER SURFACE PROFILES

Version   4.6.2;  May 1991
************************************
```

```
T1      FLOOD CONTROL DISTRICT OF MARICOPA COUNTY - CONTRACT FCD 90-67
T2      GILA BEND AREA FLOODPLAIN DELINEATION STUDY BY BURGESS & NIPLE
T3      SAND TANK WASH 100-YEAR                  J. MISCHLER - (602) 244-8100

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ
                2                           0.0037                                  653.97

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE
    -1                  -1                                                                      15

J3  VARIABLE CODES FOR SUMMARY PRINTOUT
    38        42        1         43        26        51        4         8         53        54
    13        15        40
```

SECTIONS ARE LABELED AS RIVER MILES * 1000, i.e., SECTION 676 IS AT A POINT ON SAND TANK WASH 0.676 UPSTREAM OF THE CONFLUENCE WITH THE GILA RIVER.

J1.5 STRT = 0.0037 WAS OBTAINED BY (648.0CONTOUR-644.2SPOT ELEV)/1025' = 0.0037 FT/FT.

```
NC      0.06      0.06      0.035     0.1       0.3
QT         1     18200
X1       676        66     9958.6    10150.6         0         0         0
GR     658.9    9367.5      652.3     9395.6     651.9    9502.3     651.9    9612.5     651.9    9624.2
GR     652.0    9676.6      651.4     9709.8     648.1    9736.9     647.7    9752.1     648.6    9767.4
GR     648.6    9777.3      647.0     9786.0     647.1    9793.1     649.5    9807.5     649.5    9864.7
GR     650.4    9916.6      650.9     9958.6     650.7    9975.6     647.9    9982.3     647.4    9998.8
GR     647.2   10000.0      648.0    10012.8     649.7   10021.4     650.9   10042.5     652.3   10098.7
GR     654.1   10150.6      654.2    10175.4     651.5   10184.4     651.3   10199.4     649.9   10227.9
GR     648.1   10254.2      647.3    10297.7     653.8   10327.7     653.7   10369.2     653.3   10412.3
GR     650.4   10437.3      648.2    10450.2     649.9   10468.1     652.3   10496.2     652.1   10518.7
GR     649.9   10541.1      652.7    10575.1     654.2   10624.8     653.9   10675.5     652.7   10705.7
GR     652.6   10757.6      653.2    10780.5     654.3   10821.0     653.2   10853.2     651.6   10888.1
GR     648.9   10907.6      652.0    10939.8     653.0   10979.2     653.5   11015.1     652.7   11050.9
GR     649.8   11074.2      647.1    11094.9     648.2   11101.3     652.3   11127.1     653.0   11143.1
GR     650.4   11167.9      648.2    11187.3     649.3   11220.6     652.3   11254.1     652.6   11291.2
GR     652.7   11330.7
```

1

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```
X1       800        29      9912    10031.5       680       600       655
GR     658.9    9670.0      658.8     9694.9     658.8    9718.2     657.0    9736.0     652.8    9756.6
GR     651.7    9773.7      653.1     9791.5     651.2    9807.7     651.8    9811.4     653.4    9818.7
GR     654.0    9867.2      654.2     9912.0     653.6    9947.4     651.2    9969.1     650.4    9982.9
GR     649.7   10000.0      649.4    10010.8     649.5   10022.6     653.1   10031.5     653.3   10070.0
GR     653.1   10102.9      654.0    10125.7     653.2   10150.9     653.7   10186.4     657.5   10201.6
GR     657.9   10230.5      657.5    10265.0     657.7   10286.6     658.2   10300.0
```

BEGIN DETAILED STUDY AT NORTH INDIAN ROAD (RM 0.931)
(LOW CROSSING, NO STRUCTURE)

```
X1       926        27      9950.3    10162.4       680       630       665
GR     665.2    9417.6      664.8     9518.6     664.6    9609.5     664.9    9660.0     664.3    9738.3
GR     663.6    9797.7      661.4     9840.4     660.0    9904.2     658.1    9950.3     655.9    9980.9
GR     653.2    9990.5      652.8    10000.0     653.8   10025.2     654.4   10065.9     654.2   10082.4
GR     656.3   10114.5      657.1    10162.4     657.5   10230.1     658.0   10295.4     659.2   10366.5
GR     659.8   10433.8      660.3    10519.5     660.7   10618.4     660.6   10697.2     661.4   10763.9
GR     662.4   10821.1      663.3    10863.0
```

```
X1      1053        38     9933.4    10091.5       670       620       671
X3        10
GR     666.4    9456.8      666.3     9601.8     666.0    9690.3     665.8    9705.8     661.8    9731.7
GR     662.3    9769.7      663.6     9808.4     663.0    9815.3     660.3    9831.1     659.9    9850.7
GR     662.1    9860.9      664.3     9871.1     663.3    9882.3     660.2    9902.1     659.3    9918.5
GR     663.0    9933.4      659.2     9955.6     657.7    9979.3     657.5   10000.0     657.1   10040.6
GR     658.6   10066.7      664.1    10084.5     666.1   10091.5     662.7   10124.2     662.7   10228.3
GR     663.0   10357.4      663.3    10428.7     663.3   10481.3     663.3   10621.6     663.3   10779.7
GR     663.3   10965.2      663.3    11121.1     663.7   11254.4     664.2   11401.5     665.3   11498.3
GR     665.3   11586.5      665.5    11598.0     667.0     11630

ET                9.1                                                                     9400   10802.8
X1      1241        36     9909.9    10064.7      1150       820       993
X3        10
GR     671.0    9016.4      670.3     9080.6     670.5    9244.7     671.1    9400.3     670.1    9509.6
GR     670.2    9589.5      670.2     9632.1     669.2    9637.4     670.5    9643.1     669.1    9672.8
GR     668.6    9710.6      668.0     9731.3     664.6    9751.4     663.4    9764.4     665.9    9790.6
GR     664.4    9843.3      664.2     9899.2     669.9    9909.9     662.2    9927.2     661.9    9943.6
GR     663.7    9981.8      662.7    10000.0     662.1   10039.2     661.9   10056.1     670.0   10064.7
GR     662.5   10087.3      662.7    10105.8     667.2   10130.3     669.0   10140.7     668.1   10171.2
GR     668.0   10195.8      669.1    10307.0     668.4   10430.0     669.1   10559.0     669.4   10681.0
GR     670.2   10802.8

ET                9.1                                                                     9900   11387
X1      1435        38     9936.4    10085.7       850      1180      1024
GR     675.9    8746.5      675.5     8830.7     675.6    8984.7     675.6    9164.0     676.4    9340.0
GR     676.7    9497.9      677.8     9651.5     677.9    9772.0     678.6    9851.6     678.4    9872.5
GR     677.5    9875.8      679.5     9881.1     677.9    9900.0     676.8    9912.1     674.0    9930.2
GR     674.6    9936.4      668.9     9951.6     666.5    9961.6     666.2    9977.5     666.5   10000.0
GR     668.7   10040.0      668.7    10073.6     672.9   10085.7     669.2   10109.1     669.2   10137.9
GR     672.9   10173.7      674.8    10200.3     675.5   10265.6     675.0   10392.2     674.8   10589.0
GR     674.4   10777.6      674.8    10945.7     674.7   11105.0     675.4   11234.7     676.5   11332.9
GR     676.7   11359.8      678.7    11370.2     678.7   11387.1
1
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NC      0.06       0.04      0.03
X1      1608         24     9884.5    10053.8       970       880       913
GR     682.3    9826.9      681.4     9852.2     675.6    9884.5     674.7    9899.5     673.4    9913.6
GR     672.6    9926.6      672.3     9960.9     670.5    9991.2     669.9   10000.0     671.8   10037.6
GR     675.8   10044.7      677.8    10053.8     676.7   10090.1     676.9   10210.8     677.0   10369.8
GR     677.2   10498.3      677.2    10632.1     677.3   10770.8     677.3   10915.3     677.3   11068.6
GR     678.3   11191.5      678.4    11266.8     678.8   11296.4     680.8   11308.3

X1      1791         33     9879.7    10059.4       960       950       966
X3        10
GR     682.0    8563.2      681.9     8635.2     681.5    8781.8     681.5    8952.8     681.6    9107.5
GR     681.3    9256.7      680.5     9396.6     679.8    9526.0     680.1    9656.6     680.5    9776.8
GR     681.3    9845.4      680.3     9848.7     684.4    9856.6     684.1    9879.7     678.3    9923.0
GR     677.1    9939.6      674.8     9951.2     675.1    9985.7     674.9   10000.0     675.6   10038.9
GR     682.2   10059.4      682.6    10095.5     679.9   10132.2     679.2   10218.7     679.1   10357.6
GR     679.2   10523.7      679.5    10702.1     679.3   10892.5     680.1   11046.1     680.1   11174.5
GR     681.8   11234.3      680.5    11240.3     684.0   11247.9

      WATERMELON ROAD IS AT RM 1.931  (LOW CROSSING, NO STRUCTURE)

ET                9.1                                                                     9300   11858
X1      1980         97     9862.2    10052.2      1070      1080       998
GR     696.2    8638.6      695.0     8678.7     691.1    8740.0     687.3    8786.1     686.0    8802.5
GR     686.4    8826.3      686.8     8878.6     687.5    8936.3     687.9    9007.9     688.4    9042.1
GR     689.1    9091.9      689.5     9140.9     690.3    9206.9     690.2    9265.3     690.7    9327.4
GR     689.7    9385.0      688.5     9429.6     688.9    9462.1     686.8    9537.2     687.0    9554.0
GR     686.1    9559.6      687.5     9567.7     687.6    9599.5     686.8    9617.7     684.5    9625.0
GR     683.7    9630.6      686.0     9645.8     687.7    9686.0     688.6    9743.5     688.8    9776.6
GR     688.9    9796.2      688.9     9808.1     689.2    9821.4     688.6    9832.6     687.2    9847.6
GR     688.4    9862.2      686.9     9884.9     684.3    9895.9     683.5    9909.7     682.6    9922.3
GR     683.6    9932.6      684.0     9965.6     684.1    9984.8     683.2    9993.8     682.4   10000.0
GR     683.1   10014.5      684.6    10025.4     688.6   10052.2     688.6   10092.2     688.5   10129.7
GR     688.1   10167.2      688.7    10216.2     688.9   10250.6     687.5   10290.3     688.1   10337.7
GR     688.3   10382.3      687.7    10414.2     686.8   10435.2     688.1   10475.7     688.2   10533.9
GR     688.3   10582.4      687.5    10640.3     688.8   10674.6     687.4   10700.4     687.3   10717.3
GR     684.7   10730.1      686.1    10739.6     686.5   10749.1     686.8   10790.0     687.5   10840.4
GR     687.7   10880.3      687.9    10931.5     688.2   10994.5     688.4   11053.7     688.3   11109.3
GR     688.1   11146.9      686.8    11157.4     688.4   11171.0     688.2   11191.2     685.8   11206.9
GR     687.9   11223.6      688.3    11240.5     686.5   11251.0     688.7   11265.7     688.7   11289.9
GR     688.6   11314.5      687.0    11337.8     688.1   11351.4     687.3   11364.6     686.8   11370.0
GR     688.0   11394.6      689.1    11462.2     691.7   11526.1     693.2   11603.8     695.0   11710.6
GR     695.9   11807.9      696.3    11858.5

NH        5       0.04     9910.4      0.06    9968.6      0.03   10065.9      0.06   10105.2      0.04
NH    12077
ET                9.1                                                                     8950   11450
X1      2147         96     9935.5    10105.2       880       810       882
X3        10
GR     699.5    8295.2      692.8     8590.4     693.6    8601.9     694.3    8642.4     695.1    8694.3
GR     695.8    8733.5      696.1     8752.4     695.0    8765.8     695.9    8791.7     696.5    8827.8
GR     695.6    8858.3      694.3     8899.9     695.5    8941.7     695.4    8983.9     694.1    9000.8
GR     690.4    9008.3      691.6     9042.0     691.2    9110.2     690.8    9194.0     691.3    9287.2
1
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GR     691.9    9354.7      692.5     9437.9     693.9    9499.9     694.4    9550.2     693.8    9596.3
GR     693.4    9635.8      692.5     9662.0     692.7    9672.9     692.8    9686.5     692.5    9697.3
GR     691.3    9712.2      692.4     9721.0     690.7    9730.4     689.4    9736.6     690.9    9752.3
GR     691.3    9812.6      692.1     9868.1     690.5    9895.5     691.7    9910.4     694.7    9935.5
GR     691.5    9952.9      688.2     9968.6     686.9    9982.5     686.5   10000.0     687.6   10037.6
GR     690.8   10065.9      693.7    10105.2     693.7   10187.3     692.3   10219.7     692.8   10241.0
GR     692.6   10259.3      693.6    10291.6     692.5   10335.0     691.3   10367.0     692.4   10382.0
GR     690.0   10395.4      688.8    10403.5     690.5   10422.0     691.0   10457.6     690.6   10514.9
```

GR	689.6	10576.0	689.1	10622.9	689.9	10660.7	691.3	10707.1	691.7	10771.6
GR	691.7	10837.9	691.8	10899.9	690.6	10944.8	691.6	10977.6	691.9	10999.1
GR	692.3	11034.8	692.2	11101.2	692.2	11159.8	692.3	11217.5	692.5	11285.2
GR	692.4	11304.0	690.0	11318.3	690.7	11331.2	691.5	11352.0	689.5	11368.1
GR	689.1	11374.9	692.1	11392.2	695.2	11427.1	696.4	11456.2	693.8	11490.3
GR	694.2	11529.2	694.1	11556.6	694.0	11613.6	694.9	11689.7	694.7	11775.9
GR	694.7	11864.2	696.3	11931.8	697.7	11977.1	698.9	12010.1	702.4	12041.0
GR	702.5	12077.0								
NH	5	0.04	9974.2	0.06	9987.1	0.03	10081	0.06	10093.4	0.04
NH	11576									
X1	2329	60	9974.2	10093.4	910	950	961			
GR	698.7	9620.4	698.0	9640.2	698.0	9722.9	697.3	9823.5	696.4	9892.9
GR	696.4	9917.7	694.6	9936.7	695.5	9950.3	695.7	9974.2	692.6	9987.1
GR	690.5	9997.4	689.6	10000.0	691.1	10018.5	693.5	10033.4	694.3	10050.9
GR	691.7	10062.2	692.3	10081.0	695.5	10093.4	695.1	10118.0	692.6	10133.8
GR	691.3	10150.8	692.0	10168.0	695.0	10179.6	696.3	10207.6	696.6	10242.6
GR	697.0	10268.9	697.0	10313.9	696.8	10391.3	696.0	10459.2	696.4	10525.7
GR	697.3	10579.7	697.6	10614.9	696.2	10628.0	697.6	10650.1	698.2	10703.3
GR	698.5	10765.1	698.2	10801.1	696.8	10807.8	697.8	10819.2	697.5	10835.1
GR	695.3	10842.2	694.6	10846.9	697.6	10864.7	697.6	10912.4	697.9	10993.2
GR	697.1	11058.4	696.2	11061.5	696.9	11088.2	696.6	11143.6	695.5	11176.2
GR	694.3	11192.8	695.8	11205.6	693.6	11217.6	695.4	11228.0	696.6	11249.0
GR	696.4	11310.1	698.2	11378.4	699.3	11443.3	700.0	11510.3	701.5	11576
NH	5	0.04	9934.5	0.06	9958.5	0.03	10034	0.06	10053.6	0.04
NH	11571									
ET		9.1							9700	11571
X1	2522	89	9934.5	10053.6	1160	750	1019			
GR	707.1	8412.5	707.0	8487.4	706.7	8538.8	703.8	8546.6	703.7	8562.3
GR	703.4	8574.7	704.5	8590.6	705.1	8651.9	705.4	8717.2	704.5	8779.2
GR	703.9	8811.1	703.1	8819.6	703.6	8836.9	702.8	8853.4	704.2	8866.7
GR	705.5	8895.6	705.5	8934.7	705.8	8969.7	705.9	9019.3	705.9	9040.6
GR	706.8	9085.5	707.4	9139.1	706.4	9173.1	705.9	9214.7	705.9	9235.5
GR	705.4	9243.5	705.8	9258.0	705.8	9271.5	705.2	9288.9	706.5	9303.7
GR	706.7	9329.2	705.1	9377.5	705.2	9418.7	705.3	9490.3	704.8	9525.9
GR	704.0	9535.2	705.6	9547.2	704.6	9594.0	703.5	9633.6	705.3	9688.9
GR	705.2	9737.2	702.3	9780.9	701.2	9793.0	703.1	9824.0	702.9	9848.2
GR	700.4	9870.2	698.9	9881.2	702.8	9915.3	702.7	9934.5	698.8	9958.5
GR	697.5	9988.7	696.8	10000.0	696.8	10034.0	702.1	10053.6	701.7	10083.9
GR	702.3	10123.3	701.6	10166.9	702.7	10233.3	702.2	10301.9	702.3	10354.0
GR	700.0	10377.2	702.4	10419.9	700.7	10468.8	702.5	10508.4	702.7	10538.2
GR	700.8	10552.7	702.3	10578.4	702.6	10649.4	702.0	10713.4	702.0	10757.4
GR	701.1	10774.9	702.4	10791.6	702.7	10841.6	702.1	10880.2	701.1	10906.4
GR	699.6	10922.1	701.9	10936.3	702.3	10988.9	702.0	11069.5	700.8	11123.8
GR	701.9	11187.2	702.3	11239.6	703.5	11313.9	702.8	11381.9	702.5	11439.4

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GR	701.0	11456.5	703.9	11493.5	704.8	11537.7	704.9	11571.0		
NH	5	0.04	9971	0.06	9987.8	0.03	10024.8	0.06	10069.5	0.04
NH	11509									
ET		9.1							9220	10800
X1	2686	88	9971	10069.5	880	820	866			
GR	714.0	7901.2	713.9	7960.9	713.3	7990.7	713.1	8058.8	711.3	8140.3
GR	711.2	8187.2	709.7	8212.6	710.2	8260.1	711.1	8339.6	711.9	8420.0
GR	712.8	8505.1	712.5	8586.7	712.6	8673.3	711.8	8680.7	712.8	8695.5
GR	711.9	8726.4	712.1	8741.7	712.1	8756.5	710.6	8773.9	712.0	8788.6
GR	710.8	8817.7	708.8	8913.6	709.3	8991.0	709.8	9056.4	709.3	9136.9
GR	709.7	9189.7	710.1	9227.8	708.9	9293.4	708.0	9325.8	709.0	9373.6
GR	708.6	9400.1	707.0	9423.6	708.5	9456.3	709.2	9504.6	707.1	9552.9
GR	705.9	9591.8	702.3	9610.8	702.3	9615.0	703.4	9628.4	705.3	9650.8
GR	705.9	9671.2	706.6	9720.9	706.5	9774.3	707.4	9815.1	705.5	9832.1
GR	703.0	9847.1	705.7	9861.9	706.3	9893.4	707.3	9948.1	707.6	9971.0
GR	701.4	9987.8	700.6	10000.0	701.7	10024.8	705.2	10041.0	708.1	10069.5
GR	706.5	10117.9	708.1	10158.4	708.8	10233.4	708.1	10306.9	708.2	10360.4
GR	708.1	10436.5	707.6	10513.6	706.8	10564.3	706.6	10598.7	706.3	10645.8
GR	706.1	10679.1	705.2	10697.8	706.4	10707.5	709.2	10745.5	710.2	10803.8
GR	708.4	10849.4	709.3	10881.5	709.4	10924.0	707.4	10972.6	706.0	10987.1
GR	707.6	11029.2	708.0	11081.2	706.3	11105.6	706.2	11128.7	710.4	11164.1
GR	708.7	11209.1	706.0	11249.6	705.6	11312.7	705.8	11369.9	706.2	11400.7
GR	707.8	11436.9	709.9	11478.1	711.1	11509.0				
NH	5	0.04	9975.6	0.06	9991.4	0.03	10031.2	0.06	10053.8	0.04
NH	11306									
ET		9.1							8350	10700
X1	2864	94	9975.6	10053.8	850	870	940			
GR	717.9	7643.5	717.6	7674.4	715.9	7716.9	714.4	7737.7	715.1	7769.1
GR	714.8	7805.3	713.8	7819.8	715.6	7842.0	715.5	7902.4	716.1	7944.6
GR	716.7	7986.5	716.9	8001.2	716.5	8015.8	716.3	8035.4	716.9	8052.5
GR	715.1	8108.5	713.8	8189.6	714.0	8261.0	713.2	8292.6	714.2	8329.9
GR	713.8	8393.5	712.7	8437.4	713.1	8484.5	712.5	8535.5	712.2	8590.6
GR	711.4	8649.9	711.2	8700.8	712.5	8744.4	711.3	8761.0	709.1	8777.0
GR	710.0	8782.0	711.2	8799.1	711.9	8855.1	711.8	8932.4	711.9	8993.8
GR	710.6	9006.3	713.1	9038.5	712.5	9107.2	712.7	9167.5	712.8	9200.9
GR	712.5	9232.7	712.5	9325.7	713.4	9374.7	713.2	9426.3	712.3	9445.5
GR	711.0	9465.8	711.4	9515.6	711.2	9541.3	712.3	9585.1	712.4	9625.5
GR	711.8	9665.2	711.2	9688.4	710.3	9708.9	709.7	9724.5	711.2	9746.4
GR	711.5	9802.3	711.8	9862.6	711.4	9912.3	710.4	9941.9	711.2	9963.2
GR	711.0	9975.6	704.3	9991.4	703.4	10000.0	704.3	10016.8	706.6	10031.2
GR	711.2	10053.8	712.8	10113.3	712.8	10173.8	710.3	10209.4	708.7	10248.4
GR	710.4	10292.3	711.0	10343.9	711.6	10386.2	710.3	10412.2	710.3	10422.9
GR	712.3	10449.1	711.9	10521.8	713.0	10587.6	715.1	10652.9	717.1	10720.6
GR	717.4	10768.8	715.6	10843.9	714.2	10876.0	712.1	10886.1	714.4	10903.6
GR	715.2	10990.4	716.5	11027.2	713.3	11057.9	715.8	11087.3	714.9	11148.5
GR	713.7	11186.0	712.6	11206.5	715.2	11235.6	716.2	11306.0		

SOUTH INDIAN ROAD IS AT RM 3.071 (LOW CROSSING, NO STRUCTURE)

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        5      0.04    9932.2      0.06    9984.3      0.03   10020.6      0.06   10083.9      0.04
    11095
     3039        90    9932.2   10083.9       890       960       924
GR   722.8    7481.3     722.5    7552.8     721.1    7627.3     720.7    7720.1     720.0    7792.4
GR   718.8    7843.3     714.0    7891.0     714.8    7952.8     715.3    7997.2     716.0    8040.3
GR   715.9    8080.8     715.7    8098.0     719.8    8115.1     720.2    8124.4     720.2    8431.0
GR   714.6    8454.4     713.0    8479.8     714.4    8494.1     714.7    8508.7     714.2    8523.4
GR   713.2    8538.8     712.2    8546.2     713.7    8569.7     714.3    8640.0     714.2    8695.9
GR   713.9    8728.0     714.5    8789.4     714.3    8808.2     713.1    8818.9     714.8    8836.5
GR   714.7    8866.1     713.2    8870.8     714.9    8895.6     714.9    8966.4     714.5    9001.5
GR   713.1    9012.6     711.9    9018.0     714.5    9030.5     714.5    9067.2     714.5    9082.7
GR   714.4    9101.1     714.3    9108.6     715.1    9129.7     714.9    9151.3     715.0    9168.5
GR   714.5    9210.2     713.6    9242.8     713.4    9271.9     712.6    9282.1     714.0    9351.8
GR   715.5    9416.3     716.7    9488.2     717.7    9541.6     717.9    9589.5     716.8    9614.3
GR   716.0    9622.7     717.0    9655.7     717.7    9725.4     716.8    9775.2     715.1    9885.5
GR   714.0    9932.2     713.9    9957.4     713.2    9972.4     708.9    9984.3     707.2   10000.0
GR   707.7   10020.6     710.6   10038.9     714.0   10059.6     715.1   10083.9     714.8   10102.1
GR   712.3   10115.2     715.8   10144.0     717.6   10192.8     718.1   10267.8     717.5   10316.7
GR   719.7   10334.5     720.5   10377.6     721.3   10405.1     721.2   10445.7     720.4   10490.9
GR   719.1   10527.2     719.4   10558.3     719.0   10598.3     720.2   10638.4     719.6   10695.1
GR   720.6   10760.4     720.7   10804.6     720.2   10915.5     721.7   11005.9     722.6   11095.0

NH       5      0.04    9959.3      0.06    9977.3      0.03   10030.9      0.06   10047.2      0.04
NH   10284
X1    3180        96    9959.3   10047.2       570       680       744
GR   724.3    7181.6     723.6    7242.4     723.2    7274.0     721.7    7393.1     720.6    7488.7
GR   720.1    7552.7     719.5    7558.1     718.7    7574.9     718.2    7609.8     717.5    7764.1
GR   717.7    7796.4     718.4    7844.6     718.9    7874.2     719.2    7889.7     718.6    7930.2
GR   717.6    7940.1     715.9    7944.4     717.9    8018.6     718.6    8122.4     718.3    8253.7
GR   718.5    8276.2     719.0    8313.7     718.4    8344.9     718.3    8365.6     717.9    8372.0
GR   718.6    8393.6     718.3    8430.4     718.6    8443.9     718.2    8458.3     718.1    8482.3
GR   717.4    8494.7     718.3    8662.6     717.9    8681.3     718.9    8692.3     718.7    8713.6
GR   718.2    8729.6     718.7    8735.6     719.0    8750.5     718.9    8768.1     718.0    8777.2
GR   717.9    8787.7     717.2    8792.9     717.9    8808.2     718.0    8819.2     718.8    8831.9
GR   718.7    8855.7     719.1    8862.2     717.9    8946.9     719.5    8977.8     720.1    9013.6
GR   720.8    9054.2     721.3    9086.4     720.4    9114.1     720.2    9152.3     720.5    9241.3
GR   721.2    9276.4     721.8    9308.0     721.0    9334.1     721.1    9410.3     720.6    9470.3
GR   720.8    9503.9     720.2    9541.6     719.3    9572.1     719.4    9581.6     720.3    9598.9
GR   719.3    9610.8     718.0    9626.9     717.2    9652.4     717.4    9665.9     717.7    9695.8
GR   718.1    9723.5     718.2    9750.1     718.3    9771.1     718.9    9791.4     718.3    9813.3
GR   718.4    9858.0     718.2    9891.4     718.1    9935.1     718.1    9959.3     714.1    9977.3
GR   712.3    9987.0     710.6    9994.2     710.9   10000.0     710.2   10015.0     710.3   10017.7
GR   713.9   10030.9     719.5   10047.2     720.5   10078.1     721.6   10132.6     722.4   10166.8
GR   721.9   10181.1     720.9   10198.6     721.5   10209.8     722.3   10228.7     724.2   10255.6
GR   725.9   10284.0
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BENDER WASH ENTERS SAND TANK WASH AT RM 3.184. THE 100-YEAR PEAK DISCHARGE EXCEEDS THE CAPACITY OF SAND TANK WASH ALONE UPSTREAM OF PIMA STREET. A RATING CURVE WAS DEVELOPED FOR THE BENDER WASH CULVERT AT PIMA STREET WHICH SHOWED THAT THE FLOW SPLIT FROM SAND TANK WASH WILL BE 3200 CFS. THIS AMOUNT IS THEREFORE DEDUCTED FROM THE Q IN THE REACH BETWEEN THE CONFLUENCE AND A POINT UPSTREAM OF PIMA STREET.


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QT       2    15100    15100
NH       7     0.04    9952.5      0.06    9985.0      0.03   10035.8      0.06   10063.6      0.04
NH   10369     0.03   10388.0      0.04   10589.8
X1    3277        94    9952.5   10063.6       310       520       512
X3      10
GR   726.0    7201.5     725.7    7215.4     724.1    7632.1     720.6    7752.8     719.0    7951.6
GR   718.9    8021.4     718.8    8036.2     718.9    8063.5     718.3    8086.9     719.4    8343.6
GR   719.9    8374.0     719.8    8389.8     719.2    8412.7     719.1    8434.2     720.0    8475.7
GR   720.7    8521.1     720.9    8562.8     720.5    8615.0     720.2    8639.4     719.9    8648.3
GR   719.0    8654.0     721.1    8695.1     720.9    8721.7     721.2    8770.1     721.3    8784.2
GR   720.0    8798.8     720.8    8812.3     721.5    8837.7     721.3    8863.5     720.4    8892.6
GR   719.9    8912.7     718.8    8926.7     719.5    8939.0     718.7    8947.8     719.2    8977.9
GR   719.6    9012.3     717.6    9123.8     720.1    9195.0     719.8    9263.0     721.2    9293.9
GR   722.0    9342.8     722.0    9385.9     722.8    9441.7     724.6    9488.9     724.7    9512.4
GR   723.9    9581.3     722.8    9608.7     722.0    9611.4     722.8    9621.9     722.8    9657.8
GR   722.4    9720.1     722.4    9750.7     720.0    9780.8     719.0    9797.4     718.9    9804.7
GR   718.9    9810.9     720.0    9819.5     720.1    9829.1     719.6    9839.7     719.7    9846.5
GR   720.5    9858.0     720.5    9871.4     720.8    9876.2     720.8    9892.0     719.9    9903.4
GR   718.5    9911.5     718.6    9916.2     719.8    9923.8     719.6    9930.3     720.5    9940.2
GR   720.9    9952.5     719.7    9966.0     719.2    9973.9     713.4    9985.0     713.3   10000.0
GR   713.8   10019.0     713.8   10035.8     722.4   10055.0     723.7   10063.6     723.3   10082.6
GR   722.6   10106.5     722.0   10138.8     721.1   10338.2     719.5   10353.5     716.3   10363.5
GR   713.9   10369.0     713.9   10388.0     718.9   10396.0     719.9   10408.6     719.5   10424.5
GR   719.6   10431.4     715.3   10439.9     717.2   10457.9     726.3   10589.8

NH       5      0.04    9957.0      0.06    9969.3      0.03   10034.0      0.06   10100.9      0.04
NH   10357
X1    3372        56    9957     10100.9       330       520       502
GR   727.5    7503.3     721.3    8065.5     720.2    8237.6     720.3    8274.8     720.5    8316.9
GR   721.7    8443.4     719.9    8452.0     721.0    8464.1     721.3    8480.7     721.1    8491.7
GR   719.8    8516.6     722.1    8523.7     720.9    8788.5     720.7    8806.7     722.4    8878.5
GR   722.7    8919.7     722.7    8968.3     721.0    9049.9     724.1    9099.5     723.8    9131.1
GR   723.6    9191.0     723.1    9254.4     722.9    9296.8     722.1    9329.1     722.2    9360.9
GR   721.4    9395.0     722.0    9637.6     722.5    9686.9     720.0    9750.5     720.5    9762.2
GR   721.5    9770.5     722.7    9785.3     726.1    9794.3     726.4    9822.7     727.0    9847.0
GR   726.2    9891.5     725.4    9923.4     723.9    9957.0     719.3    9964.4     716.3    9969.3
GR   716.4    9998.3     716.2   10000.0     715.8   10024.7     715.9   10034.0     718.7   10045.5
GR   718.8   10058.8     722.7   10068.4     722.8   10084.4     723.8   10100.9     724.6   10159.0
GR   724.3   10184.1     724.4   10200.8     725.5   10239.9     725.7   10270.7     726.5   10303.1
GR   726.7   10357.0

NH       5      0.04    9906.9      0.06    9960.5      0.03   10028.1      0.06   10039.0      0.04
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NH     10448
X1      3470        83    9906.9     10039       420       240       517
GR     728.4    7849.4     726.8    7914.7     726.2    8054.6     724.5    8167.5     723.0    8228.5
GR     723.0    8282.5     722.4    8303.7     722.0    8325.9     723.0    8334.2     724.2    8343.6
GR     723.7    8364.1     722.8    8389.5     723.1    8419.5     723.1    8476.7     723.8    8512.6
GR     725.5    8560.0     723.8    8577.3     721.7    8688.8     724.1    8695.9     724.0    8714.7
GR     724.0    8742.6     725.5    8771.3     725.8    8803.8     724.4    8830.7     724.3    8853.4
GR     724.6    8898.3     725.2    8945.7     725.5    8974.2     725.3    8998.6     724.8    9007.5
GR     722.9    9050.7     723.8    9119.2     724.2    9141.4     724.7    9189.2     723.6    9331.0
GR     724.4    9354.2     725.4    9385.3     724.9    9398.9     723.1    9409.2     722.5    9419.9
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GR     722.6    9429.6     723.9    9444.0     724.9    9467.2     725.3    9508.6     724.9    9548.9
GR     725.2    9603.7     725.6    9634.8     725.0    9644.7     724.4    9652.0     725.0    9683.2
GR     724.0    9699.1     722.7    9717.9     722.3    9729.8     723.7    9739.6     724.0    9781.8
GR     724.2    9818.4     725.0    9850.0     724.5    9882.5     724.8    9906.9     723.9    9915.8
GR     723.7    9928.3     723.1    9942.3     722.4    9948.0     719.1    9960.5     719.6    9990.5
GR     719.4   10000.0     719.2   10028.1     724.2   10039.0     725.2   10046.5     725.0   10073.9
GR     723.7   10085.1     723.9   10100.4     724.2   10115.7     725.0   10134.6     725.9   10156.3
GR     725.8   10180.0     725.0   10210.1     723.9   10240.4     721.8   10282.8     723.3   10298.7
GR     726.5   10337.7     727.5   10381.3     728.3   10448.0

NH        5      0.04    9942.6      0.06    9963.2      0.03   10089.4      0.06   10098.8      0.04
NH     10578
X1      3563        80    9942.6    10098.8       480       500       491
GR     729.3    8872.8     728.6    8903.5     728.6    8956.6     728.5    9007.3     728.3    9041.1
GR     727.4    9067.3     727.0    9102.3     727.6    9104.3     725.7    9162.3     726.3    9171.9
GR     726.6    9185.4     726.1    9211.6     726.0    9230.9     726.1    9247.2     727.1    9271.7
GR     727.3    9291.5     726.9    9316.8     726.5    9317.1     726.9    9357.6     726.7    9391.4
GR     726.9    9420.5     727.3    9439.8     726.6    9446.7     726.2    9459.2     726.2    9488.0
GR     726.4    9525.3     726.4    9549.6     725.5    9559.5     724.9    9570.4     726.4    9582.8
GR     726.9    9596.6     727.0    9617.4     727.9    9639.4     727.3    9661.9     727.0    9687.0
GR     726.6    9717.9     725.9    9730.0     726.1    9762.0     727.4    9797.1     727.5    9804.6
GR     726.6    9813.1     727.8    9842.1     726.9    9848.7     729.2    9888.0     726.9    9891.3
GR     729.4    9897.3     725.4    9913.6     725.4    9934.2     727.5    9942.6     724.4    9956.9
GR     721.8    9963.2     722.7    9979.5     722.3    9991.6     722.5   10011.1     722.2   10026.0
GR     722.6   10041.6     723.0   10051.3     722.3   10065.3     721.8   10089.4     726.3   10098.8
GR     726.8   10115.7     725.8   10136.2     725.6   10147.8     727.3   10166.3     728.0   10194.1
GR     728.2   10234.4     728.1   10278.5     727.5   10306.4     727.1   10323.7     726.9   10331.1
GR     726.2   10339.8     725.9   10354.4     725.3   10363.1     725.2   10370.8     726.0   10381.5
GR     727.1   10400.5     728.2   10460.8     728.9   10494.2     729.0   10528.7     729.2   10578.0
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PAPAGO STREET IS AT RM 3.598 (LOW CROSSING, NO STRUCTURE)

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NH        5      0.04    9920.6      0.06    9937.9      0.03   10032.2      0.06   10045.2      0.04
NH     10657
X1      3657        78    9920.6    10045.2       490       530       496
GR     735.3    8729.9     733.0    8733.5     733.1    8753.1     733.2    8814.3     733.8    8848.2
GR     733.7    8883.6     732.9    8914.4     732.5    8959.7     732.0    8991.6     731.3    9004.3
GR     731.6    9016.5     730.9    9031.7     732.0    9055.8     732.9    9074.5     733.0    9104.8
GR     732.8    9145.9     733.1    9172.2     732.7    9187.0     732.6    9193.6     732.5    9197.6
GR     731.9    9201.1     728.8    9211.3     728.5    9219.3     728.5    9236.4     730.2    9240.9
GR     730.2    9262.9     730.4    9297.5     731.1    9346.8     731.6    9396.1     731.1    9405.9
GR     731.0    9430.5     731.4    9445.2     732.1    9489.6     732.8    9545.4     732.8    9587.2
GR     733.3    9655.0     733.0    9698.8     733.0    9762.9     732.2    9789.7     731.8    9828.3
GR     731.5    9861.8     731.4    9899.2     731.5    9920.6     724.1    9937.9     724.6    9961.3
GR     724.9    9976.2     724.5    9993.8     724.5   10000.0     724.4   10032.2     731.4   10045.2
GR     730.7   10054.8     730.6   10074.1     731.1   10085.7     732.3   10093.6     729.2   10105.6
GR     729.5   10125.3     729.5   10149.6     731.9   10160.2     732.5   10165.9     729.5   10178.0
GR     731.0   10219.0     730.5   10230.8     730.5   10273.3     731.3   10284.2     731.2   10330.9
GR     730.7   10345.3     730.3   10374.0     730.0   10460.6     730.5   10539.9     730.1   10564.4
GR     730.0   10588.9     730.0   10594.5     730.3   10600.3     731.8   10606.2     732.7   10609.9
GR     732.7   10615.4     732.8   10638.6     733.1   10657.0
```

PIMA STREET (US ROUTE 80) SPECIAL CULVERT MODEL (CENTERLINE STRUCTURE

IS AT RM 3.684)

THE SAND TANK WASH CULVERT WAS FIRST BUILT AS A 6-BARREL BOX (8'H*16.8W) AT A LATER DATE, TWIN 8'H*12'W BARRELS WERE ADDED WITH 25' OF EMBANKMENT BETWEEN THE NEW AND OLD STRUCTURES.

THE BENDER WASH CULVERT IS A 6-BARREL BOX (6'H*10'W). IT HAS BEEN MODELED BY A SEPARATE HEC-2 RUN TO DETERMINE THE AMOUNT OF FLOW THAT IS SPLIT FROM SAND TANK WASH. UPSTREAM OF PIMA STREET, SAND TANK WASH AND BENDER WASH FLOW AS ONE WASH.

THE BENDER WASH MODEL INDICATED THAT 3200 CFS IS SPLIT FROM SAND TANK WASH.

	SAND L	SAND R	BENDER	MODEL
ELCHU	723.1	723.2	727.4	723.2
ELCHD	723.1	723.1	725.4	723.1
RISE	8	8	6	8
NO. BOXES	2	6	6	8
WIDTH	12	16.8	10	15.6

INCREASE EXPANSION/CONTRACTION COEFFICIENTS, KEEP HIGH UNTIL A POINT UPSTREAM OF THE GILA BEND CANAL.

REPEAT SECTION 3657 AT THE DOWNSTREAM FACE OF THE CULVERTS. USE PSXECE = 100 FT * 0.0048 FT/FT = 0.5 FT

REPEAT GR CARDS SO THAT THE CHANNEL BOTTOM CAN BE MADE TO CONFORM TO INVERT OF THE CULVERT OPENING.

BECAUSE THE MODEL WAS COMPUTING MUCH HIGHER Q'S IN THE RIGHT OVERBANK THAN IS POSSIBLE WITH THE WEIR CONFIGURATION, AND SIMPLY RAISING THE RIGHT OVERBANK ELEVATION DID NOT YIELD REASONABLE RESULTS, AN ET CARD IS USED TO MAKE OVERBANK AREAS BEYOND THE WEIR FLOW NON-EFFECTIVE.

```
NC                                  0.3       0.5
NH       5      0.04      9945      0.06      9960      0.03     10060      0.06     10074      0.04
NH   10657
ET                9.1                                                                8729.9     10150
X1    3676       73       9945     10074       100       100       100                  0.5
X3      10                                                                  730     733.5
GR   735.3    8729.9     733.0    8733.5     733.1    8753.1     733.2    8814.3     733.8    8848.2
GR   733.7    8883.6     732.9    8914.4     732.5    8959.7     732.0    8991.6     731.3    9004.3
GR   731.6    9016.5     730.9    9031.7     732.0    9055.8     732.9    9074.5     733.0    9104.8
GR   732.8    9145.9     733.1    9172.2     732.7    9187.0     732.6    9193.6     732.5    9197.6
GR   731.9    9201.1     728.8    9211.3     728.5    9219.3     728.5    9236.4     730.2    9240.9
GR   730.2    9262.9     730.4    9297.5     731.1    9346.8     731.6    9396.1     731.1    9405.9
GR   731.0    9430.5     731.4    9445.2     732.1    9489.6     732.8    9545.4     732.8    9587.2
GR   733.3    9655.0     733.0    9698.8     733.0    9762.9     732.2    9789.7     731.8    9828.3
GR   731.5    9861.8     731.4    9899.2     731.5    9945.0     722.6    9960.0     722.6   10000.0
GR   722.6   10060.0     730.6   10074.0     731.1   10085.7     732.3   10093.6     729.2   10105.6
GR   729.5   10125.3     729.5   10149.6     731.9   10160.2     732.5   10165.9     729.5   10178.0
```

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GR   731.0   10219.0     730.5   10230.8     730.5   10273.3     731.3   10284.2     731.2   10330.9
GR   730.7   10345.3     730.3   10374.0     730.0   10460.6     730.5   10539.9     730.1   10564.4
GR   730.0   10588.9     730.0   10594.5     730.3   10600.3     731.8   10606.2     732.7   10609.9
GR   732.7   10615.4     732.8   10638.6     733.1   10657.0
```

USE PSXECE = 723.2 - 723.1 + 0.5 = 0.6 FT

IT IS INTENTIONAL THAT THE BT CARDS AND GR CARDS DO NOT INTERSECT. ALTHOUGH SOME GR POINTS ARE ABOVE THE BT, THE WEIR IS FULLY EFFECTIVE.

BECAUSE THE MODEL WAS COMPUTING MUCH HIGHER Q'S IN THE RIGHT OVERBANK THAN IS POSSIBLE WITH THE WEIR CONFIGURATION, AND SIMPLY RAISING THE RIGHT OVERBANK ELEVATION DID NOT YIELD REASONABLE RESULTS, AN ET CARD IS USED TO MAKE OVERBANK AREAS BEYOND THE WEIR FLOW NON-EFFECTIVE.

ELTRD = 732.2 + 0.6 HV = 732.8

```
NH       5      0.04      9945      0.06      9960      0.03     10060      0.06     10074      0.04
NH   10657
ET                9.1                                                                8729.9     10150
SC   8.014       0.4         3         0         8      15.6        80       8.1     723.2     723.1
X1    3693        73      9945     10074        90        90        90                  0.6
X2                             2                732.8
X3      10                                                                 732.2     733.9
BT     -10    8729.9     734.3                9016.5     732.9                 9236.4     732.2
       -      9430.5     732.2                9655.0     732.5                 9828.3     733.6
       -      9920.6     733.9               10000.0     733.9                10460.6     734.7
       -     10657.0     735.4
```

REPEAT GR CARDS SO THAT THE CHANNEL BOTTOMS CAN BE MADE TO CONFORM TO INVERTS OF THE CULVERT OPENINGS.

```
GR   735.3    8729.9     733.0    8733.5     733.1    8753.1     733.2    8814.3     733.8    8848.2
GR   733.7    8883.6     732.9    8914.4     732.5    8959.7     732.0    8991.6     731.3    9004.3
GR   731.6    9016.5     730.9    9031.7     732.0    9055.8     732.9    9074.5     733.0    9104.8
GR   732.8    9145.9     733.1    9172.2     732.7    9187.0     732.6    9193.6     732.5    9197.6
GR   731.9    9201.1     728.8    9211.3     728.5    9219.3     728.5    9236.4     730.2    9240.9
GR   730.2    9262.9     730.4    9297.5     731.1    9346.8     731.6    9396.1     731.1    9405.9
GR   731.0    9430.5     731.4    9445.2     732.1    9489.6     732.8    9545.4     732.8    9587.2
GR   733.3    9655.0     733.0    9698.8     733.0    9762.9     732.2    9789.7     731.8    9828.3
GR   731.5    9861.8     731.4    9899.2     731.5    9945.0     722.6    9960.0     722.6   10000.0
GR   722.6   10060.0     730.6   10074.0     731.1   10085.7     732.3   10093.6     729.2   10105.6
GR   729.5   10125.3     729.5   10149.6     731.9   10160.2     732.5   10165.9     729.5   10178.0
GR   731.0   10219.0     730.5   10230.8     730.5   10273.3     731.3   10284.2     731.2   10330.9
GR   730.7   10345.3     730.3   10374.0     730.0   10460.6     730.5   10539.9     730.1   10564.4
GR   730.0   10588.9     730.0   10594.5     730.3   10600.3     731.8   10606.2     732.7   10609.9
GR   732.7   10615.4     732.8   10638.6     733.1   10657.0
```

FLOW UPSTREAM OF PIMA OCCURS ACROSS BOTH SAND TANK AND BENDER WASHES. SECTIONS INCLUDE BOTH CHANNELS. BANK STATIONS ARE CHOSEN FOR SAND TANK WASH, BUT N VALUES FOR BENDER ARE HANDLED BY USE OF NH CARDS.

RETURN THE FULL SAND TANK WASH Q SINCE THE MODEL IS NOW AT A POINT

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UPSTREAM OF THE SPLIT.

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QT       2    18300     18300
NH       8     0.06    9917.9     0.025   10045.2      0.06   10116.8     0.035   10819.5      0.05
NH   10880     0.03   10902.6      0.05   10917.6     0.035   11371.5
ET                9.1                                                                 9475   11371.5
X1    3747       94    9917.9   10116.8       285       285       285
GR   737.9    8808.5     737.7    8928.3     737.6    8978.8     737.5    9001.6     737.4    9033.4
GR   737.6    9070.4     737.3    9100.9     737.5    9135.6     737.4    9166.7     737.1    9202.9
GR   736.8    9219.5     736.5    9250.3     735.8    9290.0     735.2    9323.6     734.8    9350.1
GR   735.2    9379.6     735.6    9398.3     736.5    9424.5     736.5    9458.3     736.7    9495.3
GR   735.9    9522.0     735.2    9538.5     734.2    9565.2     732.4    9585.3     732.0    9601.8
GR   730.9    9621.1     730.6    9646.5     729.9    9661.1     730.2    9665.9     730.7    9694.2
GR   730.8    9743.3     730.9    9792.3     731.4    9808.9     731.9    9828.0     731.9    9849.1
GR   731.9    9872.3     731.4    9888.4     731.8    9896.3     735.0    9909.6     736.7    9917.9
GR   735.3    9923.0     730.2    9932.6     727.3    9943.4     727.0    9946.4     727.5    9985.5
GR   727.6   10000.0     727.3   10045.2     735.3   10098.9     735.8   10116.8     732.2   10127.2
```

GR	732.5	10151.6	732.5	10188.2	732.5	10205.4	733.1	10237.8	732.8	10303.2
GR	732.8	10351.8	732.1	10381.3	732.3	10407.4	732.2	10428.8	733.5	10453.1
GR	733.8	10486.4	734.3	10530.1	733.7	10544.0	732.3	10550.0	732.4	10575.4
GR	732.1	10603.1	731.3	10615.3	731.5	10641.0	732.0	10671.4	731.2	10687.4
GR	730.4	10706.3	731.5	10717.8	731.4	10727.8	731.2	10746.5	730.6	10819.5
GR	729.8	10874.5	728.6	10880.0	728.0	10897.2	728.0	10902.6	734.5	10917.6
GR	734.5	10972.1	735.8	11005.5	735.6	11043.3	735.4	11095.5	735.8	11134.5
GR	736.5	11172.3	736.8	11214.4	735.9	11227.4	736.4	11242.8	736.6	11282.5
GR	737.1	11317.7	737.1	11339.8	738.0	11359.2	738.4	11371.5		

SOUTHERN PACIFIC RAILROAD BRIDGES - SPECIAL BRIDGE METHOD
THE 9-SPAN SAND TANK BRIDGE HAS TIMBER PIERS AND CONCRETE ABUTMENTS.
THE 3-SPAN BENDER WASH BRIDGE IS SIMILAR.

SINCE THE SAND TANK STRUCTURE WILL PASS THE VAST MAJORITY OF THE FLOW, AND SINCE HEC-2 REQUIRES A COMMON CHANNEL INVERT AND RISE, THOSE VALUES ARE SET TO MATCH THE SAND TANK STRUCTURE. THE BENDER WASH BRIDGE IS MODELED AS IF IT WERE A PART OF THE SAND TANK BRIDGE:

	SAND	BENDER	MODEL
ELCHU	728.1	729.0	728.1
ELCHD	728.0	729.2	728.0
LOW CHD	734.0	735.0	734.0
BWC	133	42	175
BWP	16	4	20
BAREA	672	227	899

REPEAT SECTION 3747 AT THE DOWNSTREAM FACE OF THE BRIDGES. USE PSXECE = 110 FT * 0.001 FT/FT

REPEAT GR CARDS SO THAT THE CHANNEL BOTTOMS CAN BE MADE TO CONFORM TO INVERTS OF THE CULVERT OPENINGS.

REVISE THE LEFT OVERBANK PER TOPO INFORMATION

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NH	8	0.06	9923.0	0.025	10057.0	0.06	10098.9	0.035	10819.5	0.05
NH	10874	0.03	10902.6	0.05	10917.6	0.035	11371.5			
X1	3768	53	9923.0	10098.9	110	110	110		0.1	
GR	738	9000	737.7	9340	737.1	9610	736	9920	735.3	9923.0
GR	727.9	9924.0	727.9	10000.0	727.9	10057.0	735.3	10098.9	735.8	10116.8
GR	732.2	10127.2	732.5	10151.6	732.5	10188.2	732.5	10205.4	733.1	10237.8
GR	732.8	10303.2	732.8	10351.8	732.1	10381.3	732.3	10407.4	732.2	10428.8
GR	733.5	10453.1	733.8	10486.4	734.3	10530.1	733.7	10544.0	732.3	10550.0
GR	732.4	10575.4	732.1	10603.1	731.3	10615.3	731.5	10641.0	732.0	10671.4
GR	731.2	10687.4	730.4	10706.3	731.5	10717.8	731.4	10727.8	731.2	10746.5
GR	730.6	10819.5	729.1	10874.0	729.1	10902.6	734.5	10917.6	734.5	10972.1
GR	735.8	11005.5	735.6	11043.3	735.4	11095.5	735.8	11134.5	736.5	11172.3
GR	736.8	11214.4	735.9	11227.4	736.4	11242.8	736.6	11282.5	737.1	11317.7
GR	737.1	11339.8	738.0	11359.2	738.4	11371.5				

ELTRD = 737.3 + 0.1 HV = 737.4
ADD TWO POINTS AT THE BEGINNING TO MATCH BT. BT STATIONS ARE ADJUSTED SLIGHTLY TO MATCH GR'S.

NH	8	0.06	9923.0	0.025	10098.9	0.06	10530.1	0.035	10819.5	0.05
NH	10874	0.03	10902.6	0.05	10917.6	0.035	11371.5			
SB	1.25	1.56	3	0	175	20	899	0	728.1	728.0
X1	3782	91	9923.0	10098.9	74	74	74		0.2	
X2			1	734.0	737.4					
BT	-13	8170	739.4		8450	739.1		8636.6	739.1	
BT		8928.3	739.0		9202.9	738.3		9522.0	738.1	
BT		9792.3	737.3		10000.0	737.9		10237.8	738.2	
BT		10486.4	738.5		10717.8	738.6		11134.5	739.1	
BT		11282.5	739.3							
GR	739.2	8170	738.9	8450	737.9	8808.5	737.7	8928.3	737.6	8978.8
GR	737.5	9001.6	737.4	9033.4	737.6	9070.4	737.3	9100.9	737.5	9135.6
GR	737.4	9166.7	737.1	9202.9	736.8	9219.5	736.5	9250.3	735.8	9290.0
GR	735.2	9323.6	734.8	9350.1	735.2	9379.6	735.6	9398.3	736.5	9424.5
GR	736.5	9458.3	736.7	9495.3	735.9	9522.0	735.2	9538.5	734.2	9565.2
GR	732.4	9585.3	732.0	9601.8	730.9	9621.1	730.6	9645.5	729.9	9661.1
GR	730.2	9665.9	730.7	9694.2	730.8	9743.3	730.9	9792.3	731.4	9808.9
GR	731.9	9828.0	731.9	9849.1	731.9	9872.3	731.4	9888.4	731.8	9896.3
GR	735.0	9909.6	736.7	9917.9	735.3	9923.0	727.9	9924.0	727.9	10000.0
GR	727.9	10057.0	735.3	10098.9	735.8	10116.8	732.2	10127.2	732.5	10151.6
GR	732.5	10188.2	732.5	10205.4	733.1	10237.8	732.8	10303.2	732.8	10351.8
GR	732.1	10381.3	732.3	10407.4	732.2	10428.8	733.5	10453.1	733.8	10486.4
GR	734.3	10530.1	733.7	10544.0	732.3	10550.0	732.4	10575.4	732.1	10603.1
GR	731.3	10615.3	731.5	10641.0	732.0	10671.4	731.2	10687.4	730.4	10706.3
GR	731.5	10717.8	731.4	10727.8	731.2	10746.5	730.6	10819.5	728.8	10874.0
GR	728.8	10902.6	734.5	10917.6	734.5	10972.1	735.8	11005.5	735.6	11043.3
GR	735.4	11095.5	735.8	11134.5	736.5	11172.3	736.8	11214.4	735.9	11227.4
GR	736.4	11242.8	736.6	11282.5	737.1	11317.7	737.1	11339.8	738.0	11359.2
GR	738.4	11371.5								

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NH	8	0.06	9920.0	0.025	10081.0	0.06	10177.8	0.035	11117.0	0.05
NH	11139	0.03	11161.9	0.05	11185.8	0.035	12520.0			
X1	3836	97	9920	10177.8	295	255	285			
GR	739.9	8879.7	739.1	8922.7	737.9	8959.4	737.7	8998.9	736.9	9040.4
GR	736.1	9081.8	735.9	9119.0	736.7	9150.8	737.0	9176.3	737.4	9211.1
GR	736.8	9239.2	737.7	9261.4	737.9	9285.5	737.5	9297.9	737.4	9347.8
GR	738.1	9380.6	736.9	9407.2	736.7	9446.4	736.5	9485.5	734.9	9520.8

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GR     735.4     9559.2     735.2     9601.0     736.0     9644.5     734.9     9766.0     734.4     9803.9
GR     734.2     9834.5     735.2     9872.5     734.6     9893.6     734.7     9920.0     731.5     9927.1
GR     731.7     9941.7     731.6     9949.0     730.6     9954.0     729.6     9958.3     729.7     9973.5
GR     729.4    10000.0     729.0    10021.1     730.5    10032.2     730.5    10047.0     731.0    10067.5
GR     731.8    10081.0     733.8    10091.7     734.1    10106.1     734.9    10139.3     735.4    10177.8
GR     735.0    10213.8     733.6    10244.3     732.8    10272.6     732.3    10319.9     732.2    10380.3
GR     732.0    10445.9     732.3    10519.6     732.6    10583.2     732.5    10633.2     732.2    10667.3
GR     732.9    10705.1     733.1    10758.1     733.6    10812.5     733.7    10873.0     733.9    10933.4
GR     734.5    10981.0     735.2    11004.5     735.9    11024.6     736.2    11039.7     738.2    11049.2
GR     739.5    11057.4     739.7    11075.9     740.0    11092.6     738.2    11117.0     730.6    11139.0
GR     730.7    11161.9     732.9    11172.1     738.5    11185.8     738.8    11224.6     737.8    11246.0
GR     738.4    11279.6     738.9    11313.7     739.6    11351.7     740.6    11371.9     740.5    11399.2
GR     740.2    11419.3     739.2    11445.9     738.4    11469.4     737.8    11492.8     737.5    11527.1
GR     736.8    11578.0     736.5    11672.1     736.2    11747.6     736.7    11780.7     736.9    11816.7
GR     736.4    11836.1     737.6    11880.8     738.0    11955.5     738.5    12025.1     738.0    12038.3
GR     738.0    12515.0     740.0    12520.0
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THIS SECTION IS IN THE "THROAT" OF THE GILA BEND CANAL WHICH CROSSES BENEATH SAND TANK WASH IN AN INVERTED SIPHON.

POINTS LEFT OF 9950 ACTUALLY FOLLOW THE LEVEE UPSTREAM WHICH WAS BUILT TO PROTECT A RESIDENTIAL AREA. THE LEVEE IS HIGHER THAN THE GILA BEND CANAL. POINTS TO THE RIGHT FOLLOW THE GILA BEND CANAL BANK.

THE INVERTED SIPHON ACTS AS AN OPEN CHANNEL. BANKS OF THE GILA BEND CANAL ACT AS WEIRS. SEVERAL MODELING METHODS WERE EMPLOYED:

1. MODEL AS TYPICAL OPEN CHANNEL WITH GR CARDS
2. MODEL AS A SPECIAL BRIDGE WITH A TRAPEZIODAL OPENING
3. MODEL SEPARATELY AS AN OPEN CHANNEL BETWEEN BANK STATIONS AND A WEIR OUTSIDE OF THE BANK STATIONS

THE METHOD THAT MOST CLOSELY APPROXIMATES TRUE CONDITIONS IS NUMBER 3, TO MODEL THE CHANNEL AND WEIR SEPARATELY. RATING CURVES FOR EACH MODEL WERE PLOTTED AND NUMERICALLY ADDED TO ARRIVE AT AN ELEVATION OF 746.2 FOR Q = 18,700 CFS.

THE CHANNEL GEOMETRY USED TO DEVELOP THE CHANNEL RATING IS SHOWN ON THE GR CARDS. THE MODEL WHICH COMPUTES THE WEIR RATING IS INCLUDED AS A SEPARATE MODEL TITLED WEIR1.IN

HEC-2 WOULD NOT COMPUTE THE ELEVATION OBTAINED FROM THE RATING CURVE AT SECTION 3888. IT ASSUMED A CRITICAL DEPTH SLIGHTLY HIGHER BECAUSE IT DID NOT COMPUTE WEIR FLOW. OVERBANK GR POINTS HAVE BEEN ADJUSTED TO SUBTRACT 1.0 FT FROM EACH ELEVATION EXCEPT THE END POINTS IN ORDER THAT THE MODEL COMPUTE THE CORRECT ELEVATION FOR THE NATURAL

PROFILE AND ALSO THE FLOODWAY.

```
NC     0.025     0.025     0.025
       3888        22    9953.4    10038.6     295.0     250.0     275.0
GR     749.3    8210.0     746.2     8600.0     744.7    9000.0     744.8    9480.0     745.7    9780.0
GR     745.7    9900.0     744.8     9953.4     739.0    9962.8     732.0    9973.7     731.3    9991.4
GR     731.3   10000.0     731.3    10017.3     732.0   10020.6     743.6   10033.4     745.2   10038.6
GR     744.5   10051.0     745.0    10450.0     745.6   11180.0     745.6   11830.0     745.0   12500.0
GR     745.1   13840.0     746.7    14330.0

NH       3       0.035    9949.5       0.03   10172.5       0.035    11559
X1    4076          96    9949.5    10172.5     890        1000      993
GR     748.7    9728.1     748.7     9734.9     744.2    9745.7     741.7    9755.9     740.3    9772.8
GR     740.9    9823.2     741.7     9857.3     742.3    9878.0     742.6    9892.7     741.7    9923.1
GR     741.6    9938.7     742.4     9949.5     741.7    9956.7     738.4    9962.2     737.2    9966.8
GR     736.7    9968.4     737.0     9990.1     737.2   10000.0     737.0   10028.6     737.1   10043.9
GR     737.1   10055.4     739.9    10068.0     738.1   10079.5     736.9   10089.7     736.6   10104.2
GR     736.3   10123.0     736.6    10137.7     735.6   10152.5     736.4   10163.8     741.9   10172.5
GR     742.0   10220.0     741.2    10227.1     741.5   10239.0     742.3   10252.4     742.2   10268.3
GR     741.8   10278.8     741.0    10285.0     741.1   10300.3     742.1   10316.6     742.1   10337.0
GR     742.4   10364.4     742.1    10386.1     741.5   10395.3     741.7   10411.1     740.7   10419.2
GR     740.9   10423.1     742.2    10431.4     742.3   10453.4     741.9   10468.7     742.3   10489.8
GR     741.6   10497.7     742.5    10516.0     744.0   10564.8     743.7   10602.0     743.3   10634.0
GR     742.7   10642.4     743.7    10661.3     743.3   10687.6     743.1   10715.7     743.3   10745.9
GR     743.0   10760.7     743.1    10766.1     743.3   10780.0     744.4   10783.5     744.0   10789.4
GR     743.8   10803.9     742.9    10811.5     742.6   10817.1     743.5   10824.1     743.9   10838.7
GR     742.9   10847.0     743.7    10855.5     743.5   10864.1     742.4   10869.6     743.5   10874.0
GR     743.5   10935.5     744.5    10952.2     740.9   11005.3     745.8   11041.0     742.7   11079.9
GR     743.4   11091.9     743.4    11113.3     744.2   11139.6     745.4   11185.3     745.2   11232.5
GR     745.4   11273.8     746.0    11317.0     745.0   11348.2     745.1   11385.9     745.2   11424.2
GR     743.9   11440.6     744.4    11458.2     744.3   11484.0     744.9   11497.5     746.4   11524.2
GR     747.9   11559.0
```

MAIN STREET CROSSES SAND TANK WASH AT RM 4.180 (LOW CROSSING, NO STRUCTURE)

```
NC                                   0.1       0.3
NH       3       0.035    9970.1       0.03   10235.8       0.035    12697.4
NH
X1    4277          73    9970.1    10235.8    1100        1000      1061
GR     753.2    9012.7     750.5     9042.7     752.5    9077.3     752.6    9166.4     752.5    9261.6
GR     752.0    9379.3     751.9     9459.0     751.1    9513.6     749.8    9552.5     751.6    9623.5
GR     751.6    9704.9     751.3     9797.7     749.7    9870.8     749.6    9891.3     749.6    9904.7
GR     749.9    9933.9     749.3     9970.1     743.3    9985.0     742.3   10000.0     741.7   10018.9
GR     743.8   10050.1     745.8    10094.2     746.7   10153.0     747.4   10235.8     747.7   10310.3
GR     747.6   10352.5     748.3    10411.8     748.4   10480.4     747.5   10533.0     748.0   10582.7
GR     748.1   10628.1     746.7    10663.0     747.7   10706.9     748.0   10771.9     748.0   10852.8
GR     748.0   10913.0     748.6    10982.1     748.7   11045.2     747.0   11060.4     748.5   11080.8
GR     749.2   11117.7     748.5    11153.4     747.8   11180.4     748.9   11216.6     748.4   11235.8
GR     746.2   11244.8     747.7    11262.5     748.1   11302.1     748.6   11366.6     748.0   11432.8
GR     746.2   11458.1     745.2    11471.8     747.4   11490.2     747.7   11546.9     748.9   11609.5
```

```
GR    749.5    11648.5     749.9    11667.2     750.9    11685.2     752.3    11739.8     752.9    11795.0
1
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GR    753.1    11861.5     753.1    11947.1     753.2    12042.7     753.7    12128.0     754.1    12197.1
GR    754.2    12250.6     753.8    12311.7     753.3    12351.6     753.7    12384.7     753.8    12460.5
GR    754.0    12533.3     754.9    12617.0     755.6    12697.4

NH        6     0.035    9816.7       0.03   10082.1     0.035   10423.1       0.03   10761.9     0.035
NH    10852      0.03   12107.9
X1     4461        72    9816.7    10082.1       940       660       972
GR    757.9     8671.9     756.9     8842.0     757.4    8957.5     757.6    9107.4     757.2    9241.8
GR    756.7     9374.2     756.5     9492.7     756.4    9564.4     756.6    9590.6     756.7    9633.8
GR    755.4     9707.0     753.9     9778.1     752.5    9816.7     749.9    9834.7     749.0    9850.2
GR    751.4     9866.4     752.6     9888.4     751.0    9903.6     749.0    9920.1     749.2    9954.9
GR    750.6     9976.6     750.3     9985.4     746.3    9996.8     745.4   10000.0     748.5   10014.5
GR    752.9    10025.6     753.7    10082.1     753.2   10168.6     753.2   10260.5     753.6   10341.2
GR    754.2    10423.1     753.1    10505.8     752.9   10579.0     753.3   10648.0     753.6   10708.5
GR    752.2    10740.0     751.2    10761.9     752.7   10778.8     750.3   10798.1     750.2   10815.2
GR    752.9    10831.8     750.1    10842.1     750.1   10852.0     753.9   10869.6     753.7   10916.8
GR    751.4    10937.7     752.7    10961.0     751.8   10994.9     751.5   11008.8     751.4   11039.4
GR    753.4    11065.8     753.8    11114.2     753.2   11189.3     753.7   11272.4     753.8   11341.1
GR    753.5    11420.0     753.2    11456.7     750.9   11462.6     752.7   11473.5     753.1   11519.4
GR    753.0    11595.4     753.1    11673.6     753.5   11724.3     752.8   11745.0     753.8   11773.3
GR    752.4    11780.0     755.0    11802.1     756.1   11864.0     756.9   11930.4     757.3   11964.3
GR    759.3    12025.2     760.0    12107.9
```

REDUCE Q TO ACCOUNT FOR SEPARATION FROM BENDER WASH.

```
NH        3     0.035    9936.5       0.03   10022.6     0.035   11139.8
QT        2     14900     14900
X1     4638        63    9936.5    10022.6       920       960       935
GR    761.9     9278.9     761.6     9383.0     760.9    9464.6     760.7    9529.6     760.4    9560.6
GR    760.9     9585.3     760.7     9607.7     760.9    9637.8     760.0    9664.3     760.5    9706.4
GR    760.3     9768.7     758.9     9802.7     759.4    9845.2     757.5    9876.1     756.3    9907.8
GR    757.2     9936.5     756.6     9955.3     754.6    9965.7     751.3    9980.4     749.3    9988.8
GR    748.7     9997.1     749.0    10000.0     750.1   10007.4     757.8   10022.6     757.4   10061.7
GR    755.7    10102.7     758.4    10136.1     758.8   10195.1     757.7   10236.5     758.4   10262.7
GR    760.0    10287.7     759.7    10332.3     759.0   10358.8     756.3   10372.1     756.9   10387.2
GR    758.5    10409.5     758.9    10437.9     758.2   10470.7     758.7   10518.0     757.9   10558.6
GR    757.4    10608.3     756.1    10631.6     757.8   10654.6     758.3   10688.4     756.9   10702.1
GR    758.5    10713.3     758.3    10742.6     756.1   10753.4     757.5   10765.6     757.5   10796.8
GR    757.3    10825.1     758.6    10840.0     758.0   10872.2     758.2   10925.1     758.1   10972.8
GR    755.3    10983.7     756.2    10991.4     758.2   10999.3     755.7   11003.5     757.8   11015.0
GR    757.2    11040.4     759.3    11086.0     761.6   11139.8

NH        4     0.035    9525.1       0.03   10150.9     0.035   10941.7       0.03   11366.2
X1     4822        43    9525.1    10150.9       600       900       972
GR    764.5     9125.7     764.3     9279.6     764.3    9393.4     763.2    9525.1     761.5    9594.1
GR    758.6     9615.1     755.4     9630.5     754.8    9656.7     755.4    9682.8     761.1    9712.5
GR    762.9     9780.4     763.3     9851.5     763.3    9901.9     760.2    9951.6     760.3    9994.9
GR    760.7    10000.0     762.3    10082.1     764.2   10150.9     763.4   10193.6     762.7   10223.3
GR    763.9    10252.4     764.2    10290.9     764.2   10369.2     763.9   10456.6     763.9   10565.9
GR    761.9    10619.4     763.0    10643.7     761.4   10700.5     763.6   10755.7     763.4   10807.6
GR    762.6    10844.4     764.5    10880.9     764.8   10941.7     763.3   11011.4     764.0   11081.0
GR    762.7    11157.0     762.6    11184.0     760.9   11193.5     762.7   11205.3     763.1   11223.2
GR    764.6    11249.0     765.5    11317.0     766.0   11366.2
1
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```

INTERSTATE 8 TWIN BRIDGES MODELED USING SEPARATE SPECIAL BRIDGE MODELS.
INCREASE EXPANSION/CONTRACTION COEFFICIENTS FOR BRIDGES

THE MODEL IS NOW JUST FOR THE MAIN SECTION OF SAND TANK WASH.
THEREFORE, THE Q IS REDUCED TO ACCOUNT FOR FLOW PASSING THROUGH
INTERSTATE STRUCTURES TO THE EAST AND WEST OF THE MAIN BRIDGE AS
WELL AS FLOW DIVERTED WEST TOWARD SCOTT AVENUE WASH.

THE FLOW SPLITS WERE DETERMINED USING RATING CURVES GENERATED
BY HEC-2 MODELS WHICH WERE THEN USED BY THE HEC-1 HYDROLOGY MODEL.

THE FLOW SPLITS ARE AS FOLLOWS:

DIVERSION TOWARDS SCOTT AVE. WASH	8,100 CFS
FLOW THROUGH MAIN SAND TANK BRIDGE	9,100 CFS
FLOW THROUGH WEST SAND TANK CULVERT	4,200 CFS
FLOW THROUGH EAST SAND TANK CULVERT	1,600 CFS

WESTBOUND I-8 (SECTION IS TAKEN AT STRUCTURE CENTERLINE, USE
PSXECE = -0.2)

```
NC                                   0.3       0.5
QT        2      9100      9100
X1     4857         7      9929     10070       100       270       185                  -0.2
X3       10                                                                   770       770
GR    772.6      9929     763.6    9929.1     763.0      9952     761.1      9958     761.7     10010
GR    763.6   10069.9     773.1     10070
```

WIER FLOW IS NOT ANTICIPATED, THEREFORE USE DUMMY RDLEN = 100 FT
ELTRD = 772.8 + 0.5 HV = 773.3

```
SB     1.05       1.6         3       100     140.7         7      1186         0     762.4     761.9
X1     4868                                     60        60        60                 0.5
X2                                1     771.3    773.3
X3       10                                                                   772.8     772.8
```

EASTBOUND I-8 (SECTION IS TAKEN AT THE STRUCTURE CENTERLINE,

```
        PSXECE =-0.2)

      4887          7       9929      10070        100        100        100                    -0.2
        10                                                                     772                 772
GR    772.9       9929      765.0     9929.1      763.0       9989      763.0      10030      764.0       10051
GR    764.2    10069.9      773.3      10070

        WIER FLOW IS NOT ANTICIPATED, THEREFORE USE DUMMY RDLEN = 100 FT
        ELTRD = 773.1 + 0.5 HV = 773.6

1
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SB     1.05        1.6          3        100      140.7          7        996          0      764.1      763.6
X1     4898                                          60         60         60                    0.5
X2                                 1      771.6     773.6
X3       10                                                                      773.1      773.1

        REPEAT SECTION 200 FT UPSTREAM FOR CONTRACTION LOSSES. USE PSXECE =
        1.3 FT.  ADJUST OVERBANKS PER TOPO MAPPING.

X1     4936          8       9929      10070        200        200        200                    1.3
GR    766.7       9850      765.0      9929      763.0       9989      763.0      10030      764.0       10051
GR    764.2      10070      766.7     10080      770.7      10140
1
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    SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      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


*PROF 1

CCHV=      .100 CEHV=      .300
*SECNO 676.000

3265 DIVIDED FLOW

3280 CROSS SECTION    676.00 EXTENDED      1.27 FEET

   676.000      6.97    653.97       .00    653.97    654.21       .24       .00       .00    650.90
   18200.0    6363.9    3111.2    8724.9    1776.0     573.9    2545.5        .0        .0    654.10
       .00      3.58      5.42      3.43      .060      .035      .060      .000    647.00   9388.49
   .003711       0.        0.        0.         0         0         0       .00   1844.58  11330.70


FLOW DISTRIBUTION FOR SECNO=    676.00          CWSEL=    653.97

STA=    9388.    9613.    9737.    9767.    9793.    9865.    9917.    9959.   10151.   10254.   10298.   10450.   10496.
  PER Q=      5.6      5.3      4.9      4.3      7.9      4.4      2.6     17.1      5.6      7.7      4.1      3.5
   AREA=    433.6    319.8    181.3    156.0    337.3    208.6    139.4    573.9    275.5    272.7    245.2    168.7
    VEL=      2.4      3.0      4.9      5.0      4.3      3.8      3.4      5.4      3.7      5.1      3.1      3.7
  DEPTH=      1.9      2.6      5.9      6.1      4.7      4.0      3.3      3.0      2.7      6.3      1.6      3.7

STA=   10496.   10575.   10908.   11051.   11095.   11127.   11187.   11221.   11331.
  PER Q=      3.1      3.3      3.2      4.0      3.0      3.1      4.3      3.0
   AREA=    197.1    287.3    228.3    177.6    136.4    168.0    173.8    214.7
    VEL=      2.8      2.1      2.5      4.1      4.0      3.4      4.5      2.6
  DEPTH=      2.5       .9      1.6      4.0      4.2      2.8      5.2      2.0

*SECNO 800.000

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
   800.000      7.87    657.27    657.27       .00    659.27      2.00      3.90       .53    654.20
   18200.0    4551.6    9554.2    4094.2     675.3     666.5     629.0      50.3      16.8    653.10
       .02      6.74     14.33      6.51      .060      .035      .060      .000    649.40   9733.33
   .011636      680.      655.      600.         3         8         0       .00    467.35  10200.68


1
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    SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      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


FLOW DISTRIBUTION FOR SECNO=    800.00          CWSEL=    657.27

STA=    9733.    9774.    9792.    9808.    9867.    9912.   10032.   10070.   10103.   10151.   10186.   10201.
  PER Q=      4.9      3.6      3.6      8.3      4.6     52.5      5.9      5.0      6.2      4.9       .5
   AREA=    135.0     86.7     82.9    228.6    142.0    656.5    156.7    133.9    177.3    135.6     25.5
    VEL=      6.7      7.7      7.9      6.6      5.8     14.3      6.8      6.8      6.4      6.5      3.9
  DEPTH=      3.3      4.9      5.1      3.8      3.2      5.6      4.1      4.1      3.7      3.8      1.8

*SECNO 926.000

3301 HV CHANGED MORE THAN HVINS

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.91
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```
  926.000      9.33    662.13       .00       .00    663.01       .88      3.63       .11    658.10
  18200.0     586.3   12890.7    4723.0     238.3    1475.8    1587.3      89.8      27.6    657.10
      .04      2.46      8.73      2.98      .060      .035      .060      .000    652.80   9826.24
 .003197      680.      665.      630.         4         0         0       .00    979.38  10805.62

FLOW DISTRIBUTION FOR SECNO=    926.00          CWSEL=    662.13

STA=    9826.    9950.   10162.   10230.   10295.   10367.   10520.   10764.   10806.
  PER Q=      3.2     70.8      7.2      5.9      4.5      4.8      3.5       .1
   AREA=    238.3   1475.8    327.0    286.0    250.9    355.2    353.1     15.2
    VEL=      2.5      8.7      4.0      3.7      3.2      2.5      1.8       .7
  DEPTH=      1.9      7.0      4.8      4.4      3.5      2.3      1.4       .4

*SECNO 1053.000

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
  1053.000      9.20    666.30    666.30       .00    666.60       .29      1.41       .06    663.00
   18200.0    2567.0    7348.1    8284.9     980.1    1164.6    4163.6     160.5      49.4    666.10
      .09      2.62      6.31      1.99      .060      .035      .060      .000    657.10   9596.85
 .001561      670.      671.      620.        20         8         0       .00   2018.29  11615.14
```



```
   SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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

FLOW DISTRIBUTION FOR SECNO=   1053.00          CWSEL=    666.30

STA=    9597.    9808.    9851.    9919.    9933.   10092.   10228.   10357.   10481.   10622.   10780.   10965.   11121.
  PER Q=      4.5      3.5      4.8      1.2     40.4      5.3      5.5      4.4      4.7      5.3      6.2      5.2
   AREA=    376.1    215.8    311.4     76.8   1164.6    437.4    445.8    382.8    421.4    474.8    557.1    468.2
    VEL=      2.2      3.0      2.8      2.9      6.3      2.2      2.2      2.1      2.0      2.0      2.0      2.0
  DEPTH=      1.8      5.1      4.6      5.2      7.4      3.2      3.5      3.1      3.0      3.0      3.0      3.0

STA=   11121.   11254.   11402.   11615.
  PER Q=      4.0      3.3      1.6
   AREA=    373.7    346.2    256.1
    VEL=      1.9      1.7      1.2
  DEPTH=      2.8      2.4      1.2

*SECNO 1241.000

65 DIVIDED FLOW

280 CROSS SECTION   1241.00 EXTENDED       .06 FEET

3301 HV CHANGED MORE THAN HVINS

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

3470 ENCROACHMENT STATIONS=     9400.0   10802.8  TYPE=      1  TARGET=     1402.800
  1241.000      8.36    670.26    670.26       .00    671.10       .84      2.20       .17    669.90
   18200.0    4532.3   10253.9    3413.8    1069.2    1105.0    1238.0     264.2      84.1    670.00
      .13      4.24      9.28      2.76      .060      .035      .060      .000    661.90   9492.61
 .003623      1150.      993.      820.        20        17         0       .00   1303.93  10802.80

FLOW DISTRIBUTION FOR SECNO=   1241.00          CWSEL=    670.26

STA=    9493.    9764.    9791.    9843.    9899.    9910.   10065.   10106.   10130.   10307.   10559.   10803.
  PER Q=      5.1      3.8      6.5      9.0       .6     56.3      6.3      3.2      3.9      4.1      1.3
   AREA=    286.1    146.9    269.1    332.9     34.3   1105.0    232.1    130.0    318.3    379.4    178.1
    VEL=      3.2      4.7      4.4      4.9      3.0      9.3      4.9      4.5      2.2      2.0      1.3
  DEPTH=      1.1      5.6      5.1      6.0      3.2      7.1      5.6      5.3      1.8      1.5       .7
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   SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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 1435.000

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=     9900.0   11387.0  TYPE=      1  TARGET=     1487.000
  1435.000      9.84    676.04    676.04       .00    677.45      1.41      4.19       .17    674.60
   18200.0     48.4   13017.7    5133.9      24.2    1168.3    1799.1     342.8     118.2    672.90
       .16      2.00     11.14      2.85      .060      .035      .060      .000    666.20   9917.01
 .004515      850.      1024.     1180.         3        12         0       .00   1374.83  11291.84
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FLOW DISTRIBUTION FOR SECNO=   1435.00          CWSEL=    676.04

STA=    9917.    9936.   10086.   10109.   10138.   10174.   10589.   10778.   11105.   11292.
 PER Q=      .3     71.5      3.1      6.5      4.8      4.4      3.2      5.0      1.2
  AREA=    24.2   1168.3    116.8    197.0    178.6    440.8    271.6    447.6    146.7
   VEL=     2.0     11.1      4.8      6.0      4.8      1.8      2.1      2.1      1.5
 DEPTH=     1.3      7.8      5.0      6.8      5.0      1.1      1.4      1.4       .8

*SECNO 1608.000

3301 HV CHANGED MORE THAN HVINS

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.47

  1608.000      9.66    679.56       .00       .00    680.20       .64      2.66       .08    675.60
   18200.0      76.6    9880.4    8243.0     43.5    1194.7    2784.2     414.6     146.8    677.80
       .21      1.76      8.27      2.96      .060      .030      .040      .000    669.90   9862.49
   .002084      970.      913.      880.         2         0         0       .00   1438.38  11300.87

FLOW DISTRIBUTION FOR SECNO=   1608.00          CWSEL=    679.56

STA=    9862.    9885.   10054.   10211.   10370.   10498.   10632.   10771.   10915.   11069.   11267.   11301.
 PER Q=      .4     54.3      7.4      7.3      5.3      5.2      5.2      5.2      5.5      3.9       .3
  AREA=    43.5   1194.7    415.7    413.6    315.0    314.6    319.2    325.3    345.2    305.7     29.8
   VEL=     1.8      8.3      3.3      3.2      3.1      3.0      3.0      2.9      2.9      2.3      1.6
 DEPTH=     2.0      7.1      2.6      2.6      2.5      2.4      2.3      2.3      2.3      1.5       .9

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   SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      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     IOC        ICONT      CORAR      TOPWID     ENDST

*SECNO 1791.000

3265 DIVIDED FLOW

3280 CROSS SECTION   1791.00 EXTENDED       .22 FEET

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

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       684.10 ELREA=       682.20

  1791.000      7.42    682.22    682.22       .00    682.72       .50      2.24       .01    684.10
   18200.0        .0    7030.2   11169.8        .0     898.8    3000.5     501.3     176.8    682.20
       .26       .00      7.82      3.72      .000      .030      .040      .000    674.80   9893.72
   .002649      960.      966.      950.        20        22         0       .00   1311.11  11244.04

FLOW DISTRIBUTION FOR SECNO=   1791.00          CWSEL=    682.22

STA=    9894.   10059.   10219.   10358.   10524.   10702.   10893.   11046.   11175.   11244.
 PER Q=     38.6      5.1      9.5     11.3     10.9     11.3      7.5      4.7      1.0
  AREA=    898.8    267.8    426.8    510.3    512.4    537.4    387.4    272.5     85.7
   VEL=     7.8      3.5      4.0      4.0      3.9      3.8      3.5      3.2      2.2
 DEPTH=     5.4      1.7      3.1      3.1      2.9      2.8      2.5      2.1      1.2

*SECNO 1980.000
3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=     9300.0   11858.0  TYPE=      1  TARGET=     2558.000
  1980.000      7.02    689.42    689.42       .00    690.20       .79      3.59       .09    688.40
   18200.0    2052.2    8812.1    7335.6     736.4     917.6    2072.1     594.1     218.4    688.60
       .30      2.79      9.60      3.54      .060      .030      .040      .000    682.40   9395.54
   .004636     1070.      998.     1080.        20        10         0       .00   2074.44  11469.98

FLOW DISTRIBUTION FOR SECNO=   1980.00          CWSEL=    689.42

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   SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      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     IOC        ICONT      CORAR      TOPWID     ENDST

STA=    9396.    9568.    9646.    9848.    9862.   10052.   10290.   10414.   10534.   10675.   10740.   10790.   10880.
 PER Q=      3.1      4.7      3.2       .3     48.4      3.1      3.1      4.0      3.2      4.0      4.0      4.2
  AREA=    236.0    226.4    250.3     23.6    917.6    226.3    176.1    198.8    187.8    150.8    142.8    186.7
   VEL=     2.4      3.7      2.3      2.3      9.6      2.5      3.2      3.7      3.1      4.9      5.1      4.1
 DEPTH=     1.4      2.9      1.2      1.6      4.8      1.0      1.4      1.7      1.3      2.3      2.8      2.1

STA=   10880.   10995.   11157.   11241.   11365.   11470.
 PER Q=      3.1      3.0      3.3      3.1      2.2
  AREA=    168.8    191.8    150.3    169.8    122.2
   VEL=     3.3      2.9      4.0      3.4      3.2
 DEPTH=     1.5      1.2      1.8      1.4      1.2

1490 NH CARD USED
*SECNO 2147.000
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3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=     8950.0   11450.0  TYPE=      1  TARGET=     2500.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       694.70 ELREA=       693.70

  2147.000      7.43    693.93    693.93       .00    694.43       .50      3.15       .03    694.70
   18200.0        .0    5994.5   12205.5        .0     754.5    2998.4     665.6     252.1    693.70
       .34       .00      7.95      4.07      .000      .028      .040      .000    686.50   9939.67
   .003069      880.      882.      810.        20        11         0       .00   1473.18  11412.84


FLOW DISTRIBUTION FOR SECNO=   2147.00          CWSEL=    693.93

STA=    9940.    9969.   10066.   10105.   10382.   10422.   10515.   10576.   10623.   10661.   10707.   10772.   10900.
  PER Q=      1.2     31.1       .7      3.5      4.3      7.1      6.5      6.7      5.1      3.9      3.2      5.4
   AREA=     80.2    608.1     66.2    263.1    152.6    292.9    234.2    215.0    167.6    154.7    157.0    283.5
    VEL=      2.7      9.3      1.9      2.4      5.1      4.4      5.0      5.7      5.6      4.6      3.7      3.5
  DEPTH=      2.8      6.2      1.7      1.0      3.8      3.2      3.8      4.6      4.4      3.3      2.4      2.2

STA=   10900.   10978.   11101.   11218.   11331.   11375.   11413.
  PER Q=      4.8      3.8      3.2      4.1      3.7      1.6
   AREA=    215.7    224.2    198.7    217.0    145.7     76.6
    VEL=      4.1      3.1      2.9      3.4      4.7      3.9
  DEPTH=      2.8      1.8      1.7      1.9      3.3      2.0
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   SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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


1490 NH CARD USED
*SECNO 2329.000
1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

3265 DIVIDED FLOW

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
  2329.000      8.43    698.03    698.03       .00    699.00       .98      4.38       .14    695.70
   18200.0    1439.8    7061.3    9698.8     308.5     658.3    1735.8     736.0     285.7    695.50
       .38      4.67     10.73      5.59      .040      .037      .040      .000    689.60   9639.46
   .007627      910.      961.      950.         4        11         0       .00   1618.32  11371.81


FLOW DISTRIBUTION FOR SECNO=   2329.00          CWSEL=    698.03

STA=    9639.    9937.    9974.   10093.   10134.   10151.   10168.   10208.   10391.   10526.   10847.   11144.   11193.
  PER Q=      4.6      3.4     38.8      5.4      6.1      6.7      4.6      4.5      6.0      3.4      4.2      3.8
   AREA=    210.0     98.5    658.3    133.1    103.3    109.7    119.0    220.8    231.9    175.4    225.7    116.3
    VEL=      3.9      6.2     10.7      7.3     10.8     11.2      7.1      3.7      4.7      3.5      3.4      5.9
  DEPTH=       .7      2.6      5.5      3.3      6.1      6.4      3.0      1.2      1.7       .5       .8      2.4

STA=   11193.   11228.   11310.   11372.
  PER Q=      4.5      3.4       .8
   AREA=    114.7    135.8     50.2
    VEL=      7.1      4.6      2.8
  DEPTH=      3.3      1.7       .8

1490 NH CARD USED
*SECNO 2522.000
1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

3301 HV CHANGED MORE THAN HVINS


3470 ENCROACHMENT STATIONS=     9700.0   11571.0  TYPE=      1  TARGET=     1871.000
  2522.000      7.17    703.97       .00       .00    704.44       .47      5.38       .05    702.70
   18200.0    1683.8    5154.9   11361.3     355.4     662.0    2700.0     798.4     317.7    702.10
       .43      4.74      7.79      4.21      .040      .042      .040      .000    696.80   9755.79
   .005067     1150.     1019.      750.         5         0         0       .00   1740.95  11496.75
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   SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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


FLOW DISTRIBUTION FOR SECNO=   2522.00          CWSEL=    703.97

STA=    9756.    9870.    9915.    9935.   10054.   10123.   10233.   10354.   10420.   10469.   10538.   10649.   10757.
  PER Q=      3.8      5.1       .4     28.3      3.2      4.6      3.9      5.3      3.1      3.1      4.5      4.2
   AREA=    178.4    153.7     23.3    662.0    140.1    208.5    193.4    183.4    118.1    134.4    201.9    193.1
    VEL=      3.8      6.0      3.0      7.8      4.2      4.1      3.6      5.2      4.8      4.3      4.0      3.9
  DEPTH=      1.6      3.4      1.2      5.6      2.0      1.9      1.6      2.8      2.4      1.9      1.8      1.8

STA=   10757.   10842.   10922.   10989.   11070.   11124.   11187.   11314.   11494.   11497.
  PER Q=      3.3      4.7      3.6      3.2      3.8      4.6      3.4      4.0       .0
   AREA=    150.1    179.2    143.8    146.4    139.3    165.9    177.0    225.2       .1
    VEL=      4.0      4.8      4.5      3.9      5.0      5.0      3.4      3.3       .3
  DEPTH=      1.8      2.2      2.2      1.8      2.6      2.6      1.4      1.3       .0
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1490 NH CARD USED
*SECNO 2686.000
1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

3265 DIVIDED FLOW

3470 ENCROACHMENT STATIONS=     9220.0   10800.0  TYPE=       1  TARGET=     1580.000
  2686.000      8.41    709.01       .00       .00    709.67       .66      5.17       .06    707.60
   18200.0    9581.2    4067.8    4551.0    1430.4     525.4     959.5     862.7     348.3    708.10
       .46      6.70      7.74      4.74      .040      .050      .040      .000    700.60   9287.56
   .007447      880.      866.      820.         3         0         0       .00   1437.54  10742.88

FLOW DISTRIBUTION FOR SECNO=   2686.00          CWSEL=    709.01

STA=    9288.    9592.    9611.    9628.    9651.    9721.    9774.    9832.    9847.    9862.    9893.    9948.    9971.
  PER Q=     5.9      4.7      6.6      5.1      7.5      4.2      3.8      3.5      3.3      3.5      3.6       .8
   AREA=   265.7     93.2    110.7    104.3    206.5    131.2    127.4     71.4     68.9     94.7    120.7     35.7
    VEL=     4.0      9.1     10.9      8.9      6.6      5.8      5.5      9.0      8.8      6.7      5.4      4.3
  DEPTH=      .9      4.9      6.3      4.7      2.9      2.5      2.2      4.8      4.7      3.0      2.2      1.6

STA=    9971.   10070.   10158.   10514.   10599.   10646.   10679.   10708.   10743.
  PER Q=    22.4      3.8      4.5      4.8      4.0      3.3      3.7      1.0
   AREA=   525.4    151.7    282.9    171.0    120.4     93.5     93.9     46.1
    VEL=     7.7      4.6      2.9      5.1      6.0      6.4      7.1      3.8
  DEPTH=     5.3      1.7       .8      2.0      2.6      2.8      3.3      1.3

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    SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      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

1490 NH CARD USED
*SECNO 2864.000
1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.46

3470 ENCROACHMENT STATIONS=     8350.0   10700.0  TYPE=       1  TARGET=     2350.000
  2864.000     10.27    713.67       .00       .00    714.01       .34      4.31       .03    711.00
   18200.0    9200.9    4006.7    4992.4    2664.0     570.8    1195.7     936.0     384.3    711.20
       .52      3.45      7.02      4.18      .040      .046      .040      .000    703.40   8398.62
   .003494      850.      940.      870.         4         0         0       .00   2209.87  10608.49

FLOW DISTRIBUTION FOR SECNO=   2864.00          CWSEL=    713.67

STA=    8399.    8650.    8744.    8799.    8932.    9039.    9326.    9516.    9626.    9709.    9746.    9863.    9942.
  PER Q=     4.1      4.0      4.0      4.9      3.7      3.7      4.2      3.7      3.5      3.5      5.1      4.0
   AREA=   283.5    200.1    158.1    259.6    200.8    296.8    236.4    198.5    172.7    127.8    251.7    185.0
    VEL=     2.6      3.7      4.6      3.4      3.4      2.3      3.2      3.3      3.7      5.0      3.7      3.9
  DEPTH=     1.1      2.1      2.9      1.9      1.9      1.0      1.2      1.8      2.1      3.4      2.2      2.3

STA=    9942.    9976.   10054.   10209.   10248.   10292.   10344.   10412.   10522.   10608.
  PER Q=     2.2     22.0      3.8      5.1      5.6      3.8      3.8      4.2      1.1
   AREA=    93.1    570.8    227.7    162.7    180.9    153.3    171.1    212.5     87.4
    VEL=     4.3      7.0      3.0      5.7      5.6      4.5      4.1      3.6      2.4
  DEPTH=     2.8      7.3      1.6      4.2      4.1      3.0      2.5      1.9      1.0

1490 NH CARD USED
*SECNO 3039.000

3265 DIVIDED FLOW

  3039.000      9.53    716.73       .00       .00    717.15       .42      3.12       .02    714.00
   18200.0   11779.9    5789.2    630.9    3053.9     797.0     163.4    1023.9     424.9    715.10
       .57      3.86      7.26      3.86      .040      .036      .040      .000    707.20   7863.82
   .003362      890.      924.      960.         3         0         0       .00   1705.06  10169.36

FLOW DISTRIBUTION FOR SECNO=   3039.00          CWSEL=    716.73

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    SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      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

STA=    7864.    7953.    8480.    8539.    8570.    8640.    8696.    8789.    8866.    8966.    9031.    9101.    9210.
  PER Q=     3.5      4.3      3.6      3.4      4.5      3.0      5.4      4.0      4.1      4.0      3.2      3.9
   AREA=   181.5    255.8    155.6    118.8    192.3    138.9    241.9    184.2    209.6    171.1    158.7    211.8
    VEL=     3.6      3.0      4.2      5.3      4.2      4.0      4.1      3.9      3.6      4.3      3.7      3.4
  DEPTH=     2.0       .5      2.6      3.8      2.7      2.5      2.6      2.4      2.1      2.7      2.2      1.9

STA=    9210.    9272.    9352.    9886.    9932.    9984.   10021.   10084.   10144.   10169.
  PER Q=     4.4      7.5      3.8      2.0      3.4     22.4      6.1      3.4       .1
   AREA=   181.7    277.5    272.3    102.1    185.6    327.6    283.7    151.6     11.9
    VEL=     4.4      4.9      2.5      3.6      3.3     12.4      3.9      4.1      1.3
  DEPTH=     2.9      3.5       .5      2.2      3.6      9.0      4.5      2.5       .5

1490 NH CARD USED
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*SECNO 3180.000
1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

3265 DIVIDED FLOW

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
  3180.000      9.50    719.70    719.70       .00    720.47       .77      3.14       .10    718.10
   18200.0   12436.3    5763.3        .4    2673.9     551.1        .6    1074.2     449.2    719.50
       .60      4.65     10.46       .72      .040      .043      .040      .000    710.20   7556.31
   .008239      570.      744.      680.         4         6         0       .00   1909.50  10053.36

FLOW DISTRIBUTION FOR SECNO=   3180.00          CWSEL=    719.70

STA=    7556.    7764.    7845.    8019.    8122.    8254.    8394.    8495.    8663.    8788.    8947.    9666.    9724.
  PER Q=      9.0      4.1      9.8      3.6      3.5      3.5      3.4      8.7      3.1      4.9      3.7      3.3
   AREA=    339.2    147.3    310.3    150.2    164.0    165.5    142.9    310.5    146.4    209.2    142.7    114.1
    VEL=      4.8      5.1      5.7      4.3      3.9      3.8      4.3      5.1      3.9      4.2      4.7      5.3
  DEPTH=      1.6      1.8      1.8      1.4      1.2      1.2      1.4      1.8      1.2      1.3       .2      2.0

STA=    9724.    9858.    9959.   10047.   10053.
  PER Q=      4.0      3.7     31.7       .0
   AREA=    178.4    153.2    551.1       .6
    VEL=      4.1      4.4     10.5       .7
  DEPTH=      1.3      1.5      6.3       .1
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    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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

1490 NH CARD USED
*SECNO 3277.000
1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

3265 DIVIDED FLOW

3301 HV CHANGED MORE THAN HVINS

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

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       720.90 ELREA=       723.70

  3277.000      8.54    721.84       .00       .00    722.04       .20      1.51       .06    720.90
   15100.0   12199.5    2900.5        .0    3801.6     594.1        .0    1103.9     463.3    723.70
       .62      3.21      4.88       .00      .040      .047      .000      .000    713.30   7709.76
   .002315      310.      512.      520.         3         0         0       .00   1919.88  10053.77

FLOW DISTRIBUTION FOR SECNO=   3277.00          CWSEL=    721.84

STA=    7710.    7952.    8021.    8064.    8344.    8413.    8476.    8648.    8864.    8978.    9124.    9195.    9334.
  PER Q=      8.0      4.9      3.1     20.9      3.1      3.3      3.2      3.1      5.1     11.2      5.3      3.0
   AREA=    434.0    202.3    126.2    845.6    152.2    153.4    224.2    223.5    242.7    446.4    213.5    183.5
    VEL=      2.8      3.6      3.7      3.7      3.0      3.2      2.2      2.1      3.2      3.8      3.7      2.5
  DEPTH=      1.8      2.9      3.0      3.0      2.2      2.4      1.3      1.0      2.1      3.1      3.0      1.3

STA=    9334.    9840.    9930.    9953.   10055.
  PER Q=      3.1      3.1       .5     19.2
   AREA=    158.9    163.5     31.9    594.1
    VEL=      3.0      2.8      2.3      4.9
  DEPTH=       .3      1.8      1.4      5.9

1490 NH CARD USED
*SECNO 3372.000
1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

3265 DIVIDED FLOW
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    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =   .60

  3372.000      7.22    723.02       .00       .00    723.46       .44      1.35       .07    723.90
   15100.0   10548.9    4551.1        .0    2487.4     630.2        .0    1134.8     477.9    723.80
       .64      4.24      7.22       .00      .040      .047      .000      .000    715.80   7909.88
   .006415      330.      502.      520.         3         0         0       .00   1815.81  10087.97

FLOW DISTRIBUTION FOR SECNO=   3372.00          CWSEL=    723.02

STA=    7910.    8238.    8275.    8317.    8443.    8492.    8789.    8879.    9082.    9638.    9751.    9786.   10101.
  PER Q=     15.6      4.0      4.1      7.4      3.3     13.3      4.0      3.1      9.2      3.9      2.0     30.1
   AREA=    523.6    102.9    110.1    242.4    101.1    480.1    145.6    162.3    406.4    150.1     62.8    630.2
    VEL=      4.5      5.9      5.6      4.6      4.9      4.2      4.2      2.9      3.4      3.9      4.9      7.2
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```
DEPTH=      1.6      2.8      2.6      1.9      2.1      1.6      1.6       .8       .7      1.3      1.8      4.9

90 NH CARD USED
CNO 3470.000
30 MANNINGS N VALUES FOR CHANNEL COMPOSITED

3265 DIVIDED FLOW

 3470.000      6.46    725.56       .00       .00    725.87       .32      2.40       .01    724.80
  15100.0   10165.1    3628.3    1306.5    2606.0     600.6     337.2    1167.6     496.8    724.20
      .67      3.90      6.04      3.87      .040      .046      .040      .000    719.10   8097.32
  .004738      420.      517.      240.         4         0         0       .00   2152.66  10326.20

FLOW DISTRIBUTION FOR SECNO=   3470.00          CWSEL=    725.56

STA=    8097.    8229.    8283.    8326.    8390.    8477.    8577.    8689.    8853.    9051.    9119.    9331.    9430.
  PER Q=      3.2      4.4      4.9      3.9      6.8      3.0     10.5      3.2      3.2      4.3      6.0      3.5
   AREA=    147.3    138.1    135.1    135.3    218.7    134.3    313.0    154.2    168.8    151.2    286.9    136.8
    VEL=      3.3      4.8      5.5      4.3      4.7      3.4      5.1      3.2      2.8      4.3      3.1      3.9
  DEPTH=      1.1      2.6      3.1      2.1      2.5      1.3      2.8       .9       .9      2.2      1.4      1.4

STA=    9430.    9718.    9782.    9907.   10039.   10283.   10326.
  PER Q=      4.2      3.8      2.3     24.0      6.4      2.3
   AREA=    223.9    133.5    129.1    600.6    258.3     78.8
    VEL=      2.8      4.3      2.7      6.0      3.7      4.3
  DEPTH=       .8      2.1      1.0      4.5      1.1      1.8

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   SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      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

1490 NH CARD USED
*SECNO 3563.000
1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

3265 DIVIDED FLOW

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
 3563.000      6.42    728.22    728.22       .00    729.12       .90      2.62       .17    727.50
  15100.0    5437.4    8106.9    1555.7    1318.5     841.5     376.1    1201.4     516.5    726.30
      .69      4.12      9.63      4.14      .040      .037      .040      .000    721.80   9043.42
  .006187      480.      491.      500.         2         5         0       .00   1392.55  10461.76

OW DISTRIBUTION FOR SECNO=   3563.00          CWSEL=    728.22

STA=    9043.    9162.    9231.    9317.    9421.    9488.    9550.    9583.    9718.    9762.    9934.    9943.   10099.
  PER Q=      3.2      4.2      3.2      3.8      3.1      3.4      3.2      3.3      3.1      5.2       .4     53.7
   AREA=    138.4    136.1    123.6    151.3    111.3    115.8     87.3    149.7     94.9    195.2     14.9    841.5
    VEL=      3.5      4.6      3.9      3.8      4.2      4.5      5.6      3.3      4.9      4.0      4.2      9.6
  DEPTH=      1.2      2.0      1.4      1.5      1.6      1.9      2.6      1.1      2.2      1.1      1.8      5.4

STA=   10099.   10166.   10363.   10461.
  PER Q=      3.9      3.1      3.3
   AREA=    129.6    129.5    117.0
    VEL=      4.6      3.6      4.2
  DEPTH=      1.9       .7      1.2

1490 NH CARD USED
*SECNO 3657.000
1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

3265 DIVIDED FLOW

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
 3657.000      8.10    732.20    732.20       .00    733.27      1.07      2.99       .05    731.50
  15100.0    2048.5    8801.8    4249.7    538.2     855.8     987.2    1229.8     531.5    731.40
      .71      3.81     10.28      4.30      .040      .039      .040      .000    724.10   8978.94
  .005766      490.      496.      530.         3        11         0       .00   1191.89  10607.84

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   SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      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

FLOW DISTRIBUTION FOR SECNO=   3657.00          CWSEL=    732.20

STA=    8979.    9236.    9298.    9431.    9921.   10045.   10125.   10178.   10273.   10461.   10540.   10595.   10608.
  PER Q=      5.3      3.6      3.1      1.4     58.3      3.9      3.1      4.7      8.1      4.5      3.4       .5
   AREA=    161.0    122.5    149.8    105.0    855.8    134.0     96.6    169.2    302.5    154.5    111.5     19.0
    VEL=      5.0      4.5      3.2      2.1     10.3      4.4      4.8      4.2      4.1      4.4      4.5      3.9
  DEPTH=       .6      2.0      1.1       .2      6.9      1.7      1.8      1.8      1.6      1.9      2.0      1.4

CCHV=      .300 CEHV=      .500
1490 NH CARD USED
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*SECNO 3676.000
1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

3265 DIVIDED FLOW

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=     8729.9   10150.0  TYPE=      1  TARGET=     1420.100
  3676.000     10.55    733.65    733.65       .00    734.49       .84       .37       .07    732.00
   15100.0    3573.8   10582.8     943.4    1223.4    1237.9     232.0    1235.7     534.3    731.10
       .71      2.92      8.55      4.07      .040      .039      .040      .000    723.10   8733.27
   .002533      100.      100.      100.         3         8         0       .00   1251.11  10150.00


FLOW DISTRIBUTION FOR SECNO=   3676.00          CWSEL=    733.65

STA=    8733.    9211.    9236.    9298.    9396.    9545.    9945.   10074.   10125.   10150.
  PER Q=      3.4      4.0      4.6      4.2      3.3      4.2     70.1      3.6      2.6
   AREA=    237.8    115.5    180.5    206.8    198.8    284.1   1237.9    141.9     90.1
    VEL=      2.2      5.2      3.8      3.1      2.5      2.2      8.5      3.9      4.4
  DEPTH=       .5      4.6      3.0      2.1      1.3       .7      9.6      2.8      3.6

1490 NH CARD USED

SPECIAL CULVERT

SC  CUNO      CUNV      ENTLC     COFQ      RDLEN     RISE      SPAN      CULVLN    CHRT      SCL       ELCHU     ELCHD
     8         .014      .40      3.00       .00      8.00     15.60     80.00      8         1       723.20    723.10

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

*SECNO 3693.000
1
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    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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

1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

SPECIAL CULVERT OUTLET CONTROL + WEIR FLOW EG =    734.60

3265 DIVIDED FLOW

SPECIAL CULVERT

    EGIC      EGOC       H4      QWEIR     QCULV      VCH      ACULV     ELTRD    WEIRLN
   738.48    739.06      .11      8809.     6317.    9.037      998.4    732.80     1671.

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

3470 ENCROACHMENT STATIONS=     8729.9   10150.0  TYPE=      1  TARGET=     1420.100

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       732.20 ELREA=       733.90

  3693.000     10.58    733.78    733.78       .00    734.76       .98       .24      -.24    732.10
   15100.0    3877.1   11222.9        .0    1255.9    1241.8        .0    1241.0     536.8    731.20
       .72      3.09      9.04       .00      .040      .039      .000      .000    723.20   8733.22
   .002818       90.       90.       90.        20         6         0       .00   1203.71  10074.00


FLOW DISTRIBUTION FOR SECNO=   3693.00          CWSEL=    733.78

STA=    8733.    9198.    9236.    9298.    9396.    9490.    9899.    9945.   10074.
  PER Q=      3.0      5.0      4.9      4.6      3.1      3.5      1.5     74.3
   AREA=    216.7    148.5    182.3    209.8    162.8    256.7     79.1   1241.8
    VEL=      2.1      5.1      4.1      3.3      2.9      2.1      2.8      9.0
  DEPTH=       .5      3.8      3.0      2.1      1.7       .6      1.7      9.6

1490 NH CARD USED
*SECNO 3747.000

3265 DIVIDED FLOW


3301 HV CHANGED MORE THAN HVINS

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   16DEC92      08:28:16                                                                                          PAGE   33

    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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


3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.79


3470 ENCROACHMENT STATIONS=     9475.0   11371.5  TYPE=      1  TARGET=     1896.500
  3747.000      8.07    735.07       .00       .00    735.45       .38       .51       .18    736.70
   18300.0    2835.3    7340.7    8124.0    1292.1    1075.9    2448.6    1265.0     545.4    735.80
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      .73       2.19       6.82       3.32       .060       .026       .036       .000    727.00   9542.02
   .001299      285.       285.       285.          3          0          0        .00   1409.60  10986.70

OW DISTRIBUTION FOR SECNO=   3747.00          CWSEL=    735.07

STA=    9542.    9661.    9743.    9809.    9896.    9910.   10045.   10099.   10205.   10352.   10429.   10575.   10641.
  PER Q=     4.0      4.9      3.4      3.1       .1     37.7      2.4      3.4      4.6      3.5      3.1      3.9
   AREA=   343.3    366.8    271.7    288.1     22.2    873.3    202.5    216.4    322.2    212.4    241.9    213.4
    VEL=     2.1      2.4      2.3      2.0      1.2      7.9      2.2      2.8      2.6      3.0      2.3      3.4
  DEPTH=     2.9      4.5      4.1      3.3      1.6      7.2      3.9      2.0      2.2      2.8      1.7      3.3

STA=   10641.   10706.   10747.   10820.   10875.   10897.   10987.
  PER Q=     4.7      3.2      6.6      4.5      4.7      2.3
   AREA=   237.0    154.0    304.3    267.7    148.7    130.5
    VEL=     3.6      3.7      4.0      3.1      5.7      3.3
  DEPTH=     3.6      3.8      4.2      4.9      6.6      1.5

1490 NH CARD USED
*SECNO 3768.000

3265 DIVIDED FLOW

  3768.000      7.11    735.11       .00       .00    735.74       .64       .17       .13    735.40
   18300.0        .0    8989.1    9310.9        .0    1092.0    2389.6    1275.4     548.5    735.40
       .74       .00      8.23      3.90      .000      .026      .036      .000    728.00   9923.04
   .001832      110.      110.      110.         2         0         0       .00   1040.31  10985.18

FLOW DISTRIBUTION FOR SECNO=   3768.00          CWSEL=    735.11

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   16DEC92      08:28:16                                                                                    PAGE   34

    SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      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

STA=    9923.   10057.   10099.   10188.   10303.   10381.   10453.   10603.   10641.   10687.   10718.   10820.   10874.
  PER Q=    47.2      1.9      3.1      4.2      3.2      3.5      4.1      3.1      3.4      3.2     10.1      5.8
   AREA=   948.9    143.1    168.1    249.4    182.9    184.8    257.2    133.1    153.6    126.2    404.9    281.2
    VEL=     9.1      2.4      3.3      3.1      3.2      3.4      2.9      4.2      4.0      4.7      4.6      3.8
  DEPTH=     7.1      3.6      1.9      2.2      2.3      2.6      1.7      3.5      3.3      4.2      4.0      5.2

STA=   10874.   10903.   10985.
  PER Q=     6.4       .9
   AREA=   169.0     79.2
    VEL=     6.9      2.1
  DEPTH=     5.9      1.0

90 NH CARD USED

ECIAL BRIDGE

5227 DOWNSTREAM ELEV IS     733.37 , NOT     735.11 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

SB  XK        XKOR       COFQ       RDLEN      BWC        BWP        BAREA      SS         ELCHU      ELCHD
     1.25      1.56       3.00        .00    175.00      20.00     899.00       .00    728.10     728.00

*SECNO 3782.000
3280 CROSS SECTION   3782.00 EXTENDED       .58 FEET

3301 HV CHANGED MORE THAN HVINS

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  3.86

PRESSURE AND WEIR FLOW,  Weir Submergence Based on TRAPEZOIDAL Shape

 EGPRS      EGLWC      H3         QWEIR      QPR        BAREA   TRAPEZOID      ELLC       ELTRD      WEIRLN
                                                                   AREA
   745.14    739.01       .00      6593.     11739.      899.      915.      734.00     737.40      2915.

  3782.000     11.08    739.18       .00       .00    739.24       .06      3.49       .00    735.50
   18300.0    3738.5    5393.8    9167.8    4553.9    1790.3    6963.3    1289.7     551.9    735.50
       .75       .82      3.01      1.32      .060      .025      .042      .000    728.10   8374.92
   .000123       74.       74.       74.         2         0         5       .00   2996.58  11371.50

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   16DEC92      08:28:16                                                                                    PAGE   35

    SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      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

FLOW DISTRIBUTION FOR SECNO=   3782.00          CWSEL=    739.18

STA=    8376.    9380.    9621.    9694.    9792.    9872.    9923.   10099.   10205.   10352.   10453.   10575.   10641.
  PER Q=     3.1      3.8      3.9      4.9      3.3      1.5     29.5      3.1      4.5      3.5      4.1      4.5
   AREA=  1325.2    929.5    621.3    802.5    583.7    291.7   1790.3    623.6    895.0    662.6    666.5    470.1
    VEL=      .4       .7      1.1      1.1      1.0       .9      3.0       .9       .9      1.0      1.1      1.8
  DEPTH=     1.3      3.8      8.5      8.2      7.3      5.8     10.2      5.9      6.1      6.5      5.4      7.2
```

```
STA=   10641.   10687.   10728.   10820.   10874.   10903.   11006.   11172.   11372.
  PER Q=      3.3      3.3      7.5      4.0      4.1      3.2      3.1      1.9
   AREA=    337.9    322.3    733.5    505.8    291.2    482.1    544.5    428.3
    VEL=      1.8      1.9      1.9      1.5      2.6      1.2      1.0       .8
  DEPTH=      7.3      8.0      8.0      9.3     10.2      4.7      3.3      2.1

1490 NH CARD USED
*SECNO 3836.000

3265 DIVIDED FLOW

  3836.000     10.23    739.23       .00       .00    739.28       .05       .04       .00    734.70
   18300.0    1996.0    4820.5   11483.5    2928.3    1876.0    7539.9    1369.5     572.1    735.40
       .79       .68      2.57      1.52      .060      .027      .035      .000    729.00   8915.90
   .000153      295.      285.      255.         2         0         0       .00   3440.99  12518.07

FLOW DISTRIBUTION FOR SECNO=   3836.00          CWSEL=    739.23

STA=    8916.    9486.    9766.    9920.   10081.   10178.   10273.   10320.   10380.   10446.   10520.   10583.   10633.
  PER Q=      3.3      4.3      3.3     24.2      2.2      3.9      3.2      4.4      5.0      5.5      4.4      3.4
   AREA=   1158.2   1061.7    708.3   1417.3    458.6    465.8    315.8    421.4    467.5    521.5    431.0    333.8
    VEL=       .5       .7       .8      3.1       .9      1.5      1.9      1.9      1.9      1.9      1.9      1.9
  DEPTH=      2.0      3.8      4.6      8.8      4.7      4.9      6.7      7.0      7.1      7.1      6.8      6.7

STA=   10633.   10705.   10758.   10873.   10981.   11162.   11672.   11956.   12518.
  PER Q=      5.0      3.2      6.0      4.9      5.0      3.2      3.4      2.2
   AREA=    486.9    330.0    657.1    567.0    557.0    665.3    652.5    667.4
    VEL=      1.9      1.8      1.7      1.6      1.7       .9       .9       .6
  DEPTH=      6.8      6.2      5.7      5.3      3.1      1.3      2.3      1.2

*SECNO 3888.000
3685 20 TRIALS ATTEMPTED WSEL,CWSEL
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   16DEC92      08:28:16                                                                                          PAGE   36

    SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      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

3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
  3888.000     14.92    746.22    746.22       .00    746.74       .52       .08       .23    744.80
   18300.0    2755.3    8130.3    7414.4    1423.1     967.4    4067.5    1426.5     599.3    745.20
       .81      1.94      8.40      1.82      .025      .025      .025      .000    731.30   8597.09
   .000889      295.      275.      250.        20        27         0       .00   5586.87  14183.96

FLOW DISTRIBUTION FOR SECNO=   3888.00          CWSEL=    746.22

STA=    8597.    9480.    9900.    9953.   10039.   10450.   11180.   12500.   13840.   14184.
  PER Q=     11.4      3.2       .5     44.4      7.6      6.2      8.5     16.9      1.3
   AREA=   1016.4    354.7     52.0    967.4    604.8    673.9   1023.6   1572.0    193.2
    VEL=      2.1      1.6      1.7      8.4      2.3      1.7      1.5      2.0      1.2
  DEPTH=      1.2       .8      1.0     11.4      1.5       .9       .8      1.2       .6

1490 NH CARD USED
*SECNO 4076.000

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

  4076.000     11.67    747.17       .00       .00    747.27       .11       .41       .12    742.40
   18300.0    2428.9    7651.1    8219.9    1159.1    2188.6    4939.6    1592.2     682.1    741.90
       .92      2.10      3.50      1.66      .035      .030      .035      .000    735.60   9738.58
   .000242      890.      993.     1000.         2         0         0       .00   1803.37  11541.95

FLOW DISTRIBUTION FOR SECNO=   4076.00          CWSEL=    747.17

STA=    9739.    9823.    9878.    9939.    9950.   10173.   10227.   10285.   10337.   10395.   10453.   10516.   10634.
  PER Q=      5.9      3.5      3.3       .6     41.8      3.1      3.4      3.3      3.1      3.5      3.4      3.7
   AREA=    488.6    306.9    307.8     55.8   2188.6    287.2    307.9    287.6    290.7    315.8    319.2    431.7
    VEL=      2.2      2.1      2.0      2.0      3.5      2.0      2.0      2.1      1.9      2.0      2.0      1.6
  DEPTH=      5.8      5.6      5.1      5.2      9.8      5.3      5.3      5.5      5.0      5.4      5.1      3.7

STA=   10634.   10746.   10839.   10936.   11041.   11185.   11458.   11542.
  PER Q=      3.9      3.0      3.1      3.9      3.4      3.1      1.0
   AREA=    437.5    346.3    361.9    426.2    439.9    533.2    154.5
    VEL=      1.6      1.6      1.6      1.7      1.4      1.1      1.1
  DEPTH=      3.9      3.7      3.7      4.0      3.0      2.0      1.8

1
   16DEC92      08:28:16                                                                                          PAGE   37

    SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      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

CCHV=      .100 CEHV=      .300
1490 NH CARD USED
1490 NH CARD USED
*SECNO 4277.000

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
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3720 CRITICAL DEPTH ASSUMED
  4277.000      7.64    749.34    749.34       .00    750.14       .80       .63       .21    749.30
  18300.0        .0    9434.9    8865.1        .0    1058.3    1881.4    1724.7     722.6    747.40
      .96       .04      8.92      4.71      .025      .025      .025      .000    741.70   9967.90
   .003586     1100.     1061.     1000.        20        17         0       .00   1669.97  11637.87

FLOW DISTRIBUTION FOR SECNO=   4277.00          CWSEL=    749.34

STA=    9968.   10236.   10310.   10412.   10533.   10628.   10707.   10853.   10982.   11180.   11302.   11458.   11490.
  PER Q=      51.6      3.8      3.9      3.1      3.4      5.1      5.0      3.3      3.2      4.3      4.5      4.6
   AREA=    1058.3    133.1    153.4    140.6    137.3    161.4    204.7    152.1    165.6    166.3    188.8    105.7
    VEL=       8.9      5.2      4.7      4.0      4.6      5.7      4.5      4.0      3.5      4.8      4.3      7.9
  DEPTH=       4.0      1.8      1.5      1.2      1.4      2.0      1.4      1.2       .8      1.4      1.2      3.3

STA=   11490.   11610.   11638.
  PER Q=       4.2       .0
   AREA=     166.2      6.2
    VEL=       4.6      1.3
  DEPTH=       1.4       .2

1490 NH CARD USED
*SECNO 4461.000
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
  4461.000      8.88    754.28    754.28       .00    755.04       .75      3.66       .01    752.50
  18300.0      146.7    8502.6    9650.7      45.4     961.7    2026.5    1777.3     752.7    753.70
     1.00       3.23      8.84      4.76      .035      .030      .031      .000    745.40   9759.85
   .005799      940.      972.      660.         6        12         0       .00   2036.17  11796.02

FLOW DISTRIBUTION FOR SECNO=   4461.00          CWSEL=    754.28
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   SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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

STA=    9760.    9817.   10082.   10341.   10579.   10740.   10779.   10815.   10852.   10961.   11009.   11039.   11189.
  PER Q=       .8      46.5      4.2      3.4      3.9      3.4      5.0      4.4      4.6      3.7      3.6      3.1
   AREA=     45.4     961.7    243.4    178.1    175.9     96.1    122.7    115.5    151.4    105.6     86.8    141.9
    VEL=      3.2       8.8      3.1      3.5      4.1      6.5      7.4      7.0      5.6      6.5      7.6      4.0
  DEPTH=       .8       3.6       .9       .7      1.1      2.5      3.4      3.1      1.4      2.2      2.8       .9

STA=   11189.   11457.   11519.   11674.   11796.
  PER Q=      3.2      3.1      4.5      2.6
   AREA=    190.6    103.8    190.4    124.3
    VEL=      3.1      5.4      4.3      3.8
  DEPTH=       .7      1.7      1.2      1.0

1490 NH CARD USED
*SECNO 4638.000

3265 DIVIDED FLOW

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
  4638.000     10.94    759.64    759.64       .00    760.56       .93      4.76       .05    757.20
  14900.0     1094.2    6010.9    7794.9     233.5     550.8    1783.3    1838.5     788.8    757.80
     1.03       4.69     10.91      4.37      .035      .030      .035      .000    748.70   9784.81
   .004263      920.      935.      960.         2        12         0       .00   1256.37  11093.87

FLOW DISTRIBUTION FOR SECNO=   4638.00          CWSEL=    759.64

STA=    9785.    9908.    9937.   10023.   10103.   10136.   10263.   10410.   10559.   10632.   10688.   10753.   10797.
  PER Q=       4.2      3.1     40.3      7.4      3.0      3.5      4.0      3.6      5.4      3.6      3.1      3.3
   AREA=     150.7     82.8    550.8    206.2     86.4    160.1    135.1    172.6    166.0    115.4    112.1    101.3
    VEL=       4.2      5.6     10.9      5.3      5.2      3.3      4.4      3.1      4.9      4.6      4.1      4.9
  DEPTH=       1.2      2.9      6.4      2.6      2.6      1.3       .9      1.2      2.3      2.0      1.7      2.3

STA=   10797.   10872.   10973.   10999.   11040.   11094.
  PER Q=      3.6      3.7      3.2      3.3      1.5
   AREA=    131.5    152.2     81.2     98.7     64.5
    VEL=      4.1      3.7      5.9      4.9      3.4
  DEPTH=      1.7      1.5      3.1      2.4      1.2

1490 NH CARD USED
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   SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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 4822.000

3265 DIVIDED FLOW

  4822.000      9.31    764.11       .00       .00    764.75       .63      4.16       .03    763.20
  14900.0      86.4    12308.1    2505.5      50.2    1797.2     726.9    1892.6     818.0    764.20
     1.07      1.72      6.85      3.45      .035      .030      .033      .000    754.80   9415.49
   .004665     600.      972.      900.         3         0         0       .00   1603.83  11240.67
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FLOW DISTRIBUTION FOR SECNO=   4822.00          CWSEL=    764.11

STA=    9415.    9525.   10151.   10644.   10701.   10844.   11184.   11241.
 PER Q=      .6     82.6      3.9      3.3      3.7      3.3      2.7
  AREA=    50.2   1797.2    207.8    108.8    162.2    167.7     80.4
   VEL=     1.7      6.8      2.8      4.5      3.4      2.9      4.9
 DEPTH=      .5      2.9       .4      1.9      1.1       .5      1.4

CCHV=     .300 CEHV=     .500
*SECNO 4857.000

3301 HV CHANGED MORE THAN HVINS

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

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       770.00 ELREA=       770.00

  4857.000      6.21    767.11    767.11       .00    769.66      2.55       .97       .96    772.40
    9100.0        .0    9100.0       .0        .0     710.1        .0    1900.2     822.5    772.90
      1.08       .00     12.81       .00      .000      .025      .000      .000    760.90   9929.06
   .005771      100.      186.      270.        20        14         0       .00    140.88  10069.94

FLOW DISTRIBUTION FOR SECNO=   4857.00          CWSEL=    767.11

STA=    9929.   10070.
  PER Q=    100.0
   AREA=    710.1
    VEL=     12.8
  DEPTH=      5.0
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```
   SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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 BRIDGE

5227 DOWNSTREAM ELEV IS     766.15 , NOT     767.11 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

SB  XK        XKOR      COFQ      RDLEN     BWC       BWP       BAREA     SS        ELCHU     ELCHD
     1.05      1.60      3.00    100.00    140.70      7.00   1186.00       .00    762.40    761.90

*SECNO 4868.000

3301 HV CHANGED MORE THAN HVINS

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

CLASS B LOW FLOW

3420 BRIDGE W.S.=     767.39 BRIDGE VELOCITY=      12.99     CALCULATED CHANNEL AREA=       667.

 EGPRS      EGLWC       H3      QWEIR      QLOW      BAREA   TRAPEZOID      ELLC      ELTRD     WEIRLN
                                                             AREA
       .00    770.53      .00        0.     9100.     1186.     1190.    771.30    773.30        0.


3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       772.80 ELREA=       772.80

  4868.000      7.52    768.92       .00       .00    770.53      1.61       .87       .00    772.90
    9100.0        .0    9100.0       .0        .0     894.7        .0    1901.3     822.7    773.40
      1.08       .00     10.17       .00      .000      .025      .000      .000    761.40   9929.04
   .002735       60.       60.       60.         0         0         0       .00    140.91  10069.95

FLOW DISTRIBUTION FOR SECNO=   4868.00          CWSEL=    768.92

STA=    9929.   10070.
  PER Q=    100.0
   AREA=    894.7
    VEL=     10.2
  DEPTH=      6.3

*SECNO 4887.000
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   SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       772.00 ELREA=       772.00

  4887.000      6.21    769.01       .00       .00    771.10      2.09       .33       .24    772.70
    9100.0        .0    9100.0       .0        .0     784.8        .0    1903.2     823.0    773.10
      1.08       .00     11.59       .00      .000      .025      .000      .000    762.80   9929.05
   .004192      100.      100.      100.         2         0         0       .00    140.91  10069.96
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```
FLOW DISTRIBUTION FOR SECNO=   4887.00          CWSEL=    769.01

STA=    9929.   10070.
  PER Q=    100.0
  AREA=    784.8
   VEL=     11.6
 DEPTH=      5.6

SPECIAL BRIDGE

5227 DOWNSTREAM ELEV IS     767.85 , NOT     769.01 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

SB  XK        XKOR      COFQ      RDLEN     BWC       BWP       BAREA     SS        ELCHU     ELCHD
     1.05      1.60      3.00    100.00    140.70      7.00    996.00       .00    764.10    763.60

*SECNO 4898.000

3301 HV CHANGED MORE THAN HVINS

CLASS B LOW FLOW

3420 BRIDGE W.S.=     769.09 BRIDGE VELOCITY=      12.99     CALCULATED CHANNEL AREA=       667.

 EGPRS      EGLWC       H3       QWEIR      QLOW      BAREA   TRAPEZOID      ELLC      ELTRD     WEIRLN
                                                               AREA
   771.09    772.08      .00        0.     9100.      996.      989.     771.50    773.60        0.


3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       773.10 ELREA=       773.10

  4898.000      7.32    770.62       .00       .00    772.08      1.46       .97       .00    773.20
    9100.0        .0    9100.0        .0        .0     939.9        .0    1904.4     823.2    773.60
      1.08       .00      9.68       .00      .000      .025      .000      .000    763.30   9929.03
   .002343       60.       60.       60.         0         0         0       .00    140.94  10069.97


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    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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

FLOW DISTRIBUTION FOR SECNO=   4898.00          CWSEL=    770.62

STA=    9929.   10070.
  PER Q=    100.0
  AREA=    939.9
   VEL=      9.7
 DEPTH=      6.7

*SECNO 4936.000
3280 CROSS SECTION   4936.00 EXTENDED      4.04 FEET

3301 HV CHANGED MORE THAN HVINS

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.62

  4936.000      7.74    772.04       .00       .00    772.61       .58       .27       .26    766.30
    9100.0    1912.7    6559.1     628.3     386.0     999.5     175.1    1910.2     824.2    765.50
      1.09      4.95      6.56      3.69      .025      .025      .025      .000    764.30   9850.00
   .000896      200.      200.      200.         3         0         0       .00    290.00  10140.00

FLOW DISTRIBUTION FOR SECNO=   4936.00          CWSEL=    772.04

STA=    9850.    9929.   10070.   10080.   10140.
  PER Q=     21.0     72.1      3.1      3.8
  AREA=    386.0    999.5     52.9    122.2
   VEL=      5.0      6.6      5.3      2.9
 DEPTH=      4.9      7.1      5.3      2.0

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                                                                                THIS RUN EXECUTED 16DEC92    08:29:12
************************************
 HEC-2 WATER SURFACE PROFILES

 Version   4.6.2;  May 1991
************************************

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

SAND TANK WASH 100-YEAR

SUMMARY PRINTOUT

      SECNO     ELMIN     CWSEL       Q        VCH      DIFWSX    TOPWID     DEPTH     SSTA      ENDST     QLOB      QROB      ELTRD
```

	676.000	647.00	653.97	18200.00	5.42	.00	1844.58	6.97	9388.49	11330.70	6363.93	8724.91	.00
	800.000	649.40	657.27	18200.00	14.33	3.30	467.35	7.87	9733.33	10200.68	4551.63	4094.20	.00
	926.000	652.80	662.13	18200.00	8.73	4.86	979.38	9.33	9826.24	10805.62	586.26	4723.04	.00
*	1053.000	657.10	666.30	18200.00	6.31	4.17	2018.29	9.20	9596.85	11615.14	2567.01	8284.86	.00
*	1241.000	661.90	670.26	18200.00	9.28	3.95	1303.93	8.36	9492.61	10802.80	4532.33	3413.77	.00
*	1435.000	666.20	676.04	18200.00	11.14	5.78	1374.83	9.84	9917.01	11291.84	48.40	5133.88	.00
*	1608.000	669.90	679.56	18200.00	8.27	3.52	1438.38	9.66	9862.49	11300.87	76.58	8243.03	.00
*	1791.000	674.80	682.22	18200.00	7.82	2.67	1311.11	7.42	9893.72	11244.04	.00	11169.80	.00
*	1980.000	682.40	689.42	18200.00	9.60	7.19	2074.44	7.02	9395.54	11469.98	2052.24	7335.62	.00
*	2147.000	686.50	693.93	18200.00	7.95	4.52	1473.18	7.43	9939.67	11412.84	.00	12205.48	.00
*	2329.000	689.60	698.03	18200.00	10.73	4.09	1618.32	8.43	9639.46	11371.81	1439.82	9698.84	.00
	2522.000	696.80	703.97	18200.00	7.79	5.94	1740.95	7.17	9755.79	11496.75	1683.83	11361.26	.00
	2686.000	700.60	709.01	18200.00	7.74	5.04	1437.54	8.41	9287.56	10742.88	9581.24	4550.97	.00
*	2864.000	703.40	713.67	18200.00	7.02	4.67	2209.87	10.27	8398.62	10608.49	9200.95	4992.36	.00
	3039.000	707.20	716.73	18200.00	7.26	3.06	1705.06	9.53	7863.82	10169.36	11779.86	630.93	.00
*	3180.000	710.20	719.70	18200.00	10.46	2.96	1909.50	9.50	7556.31	10053.36	12436.30	.45	.00
*	3277.000	713.30	721.84	15100.00	4.88	2.14	1919.88	8.54	7709.76	10053.77	12199.47	.00	.00

	SECNO	ELMIN	CWSEL	Q	VCH	DIFWSX	TOPWID	DEPTH	SSTA	ENDST	QLOB	QROB	ELTRD
*	3372.000	715.80	723.02	15100.00	7.22	1.18	1815.81	7.22	7909.88	10087.97	10548.86	.00	.00
	3470.000	719.10	725.56	15100.00	6.04	2.54	2152.66	6.46	8097.32	10326.20	10165.13	1306.52	.00
*	3563.000	721.80	728.22	15100.00	9.63	2.66	1392.55	6.42	9043.42	10461.76	5437.35	1555.74	.00
*	3657.000	724.10	732.20	15100.00	10.28	3.98	1191.89	8.10	8978.94	10607.84	2048.51	4249.72	.00
*	3676.000	723.10	733.65	15100.00	8.55	1.45	1251.11	10.55	8733.27	10150.00	3573.82	943.41	.00
*	3693.000	723.20	733.78	15100.00	9.04	.13	1203.71	10.58	8733.22	10074.00	3877.05	.00	732.80
*	3747.000	727.00	735.07	18300.00	6.82	1.29	1409.60	8.07	9542.02	10986.70	2835.26	8124.04	.00
	3768.000	728.00	735.11	18300.00	8.23	.04	1040.31	7.11	9923.04	10985.18	.00	9310.92	.00
*	3782.000	728.10	739.18	18300.00	3.01	4.07	2996.58	11.08	8374.92	11371.50	3738.47	9167.77	737.40
	3836.000	729.00	739.23	18300.00	2.57	.05	3440.99	10.23	8915.90	12518.07	1996.01	11483.52	.00
*	3888.000	731.30	746.22	18300.00	8.40	7.00	5586.87	14.92	8597.09	14183.96	2765.31	7414.37	.00
*	4076.000	735.60	747.17	18300.00	3.50	.94	1803.37	11.57	9738.58	11541.95	2428.93	8219.92	.00
*	4277.000	741.70	749.34	18300.00	8.92	2.17	1669.97	7.64	9967.90	11637.87	.00	8865.11	.00
*	4461.000	745.40	754.28	18300.00	8.84	4.95	2036.17	8.88	9759.85	11796.02	146.69	9650.68	.00
*	4638.000	748.70	759.64	14900.00	10.91	5.35	1256.37	10.94	9784.81	11093.87	1094.22	7794.91	.00
	4822.000	754.80	764.11	14900.00	6.85	4.48	1603.83	9.31	9415.49	11240.67	86.41	2505.48	.00
*	4857.000	760.90	767.11	9100.00	12.81	3.00	140.88	6.21	9929.06	10069.94	.00	.00	.00
*	4868.000	761.40	768.92	9100.00	10.17	1.81	140.91	7.52	9929.04	10069.95	.00	.00	773.30
	4887.000	762.80	769.01	9100.00	11.59	.09	140.91	6.21	9929.05	10069.96	.00	.00	.00
*	4898.000	763.30	770.62	9100.00	9.68	1.61	140.94	7.32	9929.03	10069.97	.00	.00	773.60
*	4936.000	764.30	772.04	9100.00	6.56	1.42	290.00	7.74	9850.00	10140.00	1912.66	628.29	.00

SUMMARY OF ERRORS AND SPECIAL NOTES

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CAUTION SECNO=    800.000  PROFILE= 1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=    800.000  PROFILE= 1  MINIMUM SPECIFIC ENERGY

WARNING SECNO=    926.000  PROFILE= 1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO=   1053.000  PROFILE= 1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=   1053.000  PROFILE= 1  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=   1053.000  PROFILE= 1  20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO=   1241.000  PROFILE= 1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=   1241.000  PROFILE= 1  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=   1241.000  PROFILE= 1  20 TRIALS ATTEMPTED TO BALANCE WSEL
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CAUTION SECNO=   1435.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=   1435.000  PROFILE=  1  MINIMUM SPECIFIC ENERGY

WARNING SECNO=   1608.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO=   1791.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=   1791.000  PROFILE=  1  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=   1791.000  PROFILE=  1  20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO=   1980.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=   1980.000  PROFILE=  1  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=   1980.000  PROFILE=  1  20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO=   2147.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=   2147.000  PROFILE=  1  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=   2147.000  PROFILE=  1  20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO=   2329.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=   2329.000  PROFILE=  1  MINIMUM SPECIFIC ENERGY

WARNING SECNO=   2864.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO=   3180.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=   3180.000  PROFILE=  1  MINIMUM SPECIFIC ENERGY

WARNING SECNO=   3277.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=   3372.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO=   3563.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=   3563.000  PROFILE=  1  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=   3657.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=   3657.000  PROFILE=  1  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=   3676.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=   3676.000  PROFILE=  1  MINIMUM SPECIFIC ENERGY
1
  16DEC92      08:28:16                                                    PAGE   46

CAUTION SECNO=   3693.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=   3693.000  PROFILE=  1  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=   3693.000  PROFILE=  1  20 TRIALS ATTEMPTED TO BALANCE WSEL

WARNING SECNO=   3747.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO=   3782.000  PROFILE=  1  HYDRAULIC JUMP D.S.
WARNING SECNO=   3782.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO=   3888.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=   3888.000  PROFILE=  1  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=   3888.000  PROFILE=  1  20 TRIALS ATTEMPTED TO BALANCE WSEL

WARNING SECNO=   4076.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO=   4277.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=   4277.000  PROFILE=  1  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=   4277.000  PROFILE=  1  20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO=   4461.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=   4461.000  PROFILE=  1  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=   4638.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=   4638.000  PROFILE=  1  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=   4857.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=   4857.000  PROFILE=  1  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=   4857.000  PROFILE=  1  20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO=   4868.000  PROFILE=  1  HYDRAULIC JUMP D.S.
WARNING SECNO=   4868.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO=   4898.000  PROFILE=  1  HYDRAULIC JUMP D.S.

WARNING SECNO=   4936.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
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1*****************************************
* HEC-2 WATER SURFACE PROFILES            *
*                                         *
* Version   4.6.2;  May 1991              *
*                                         *
* RUN DATE    11DEC92    TIME   10:47:21  *
*****************************************
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*************************************
*  U.S. ARMY CORPS OF ENGINEERS     *
*  HYDROLOGIC ENGINEERING CENTER    *
*  609 SECOND STREET, SUITE D       *
*  DAVIS, CALIFORNIA 95616-4687     *
*          (916) 756-1104           *
*************************************
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X     X  XXXXXXX   XXXXX              XXXXX
X     X  X        X     X            X     X
X     X  X        X                        X
XXXXXXX  XXXX     X          XXXXX   XXXXX
X     X  X        X                  X
X     X  X        X     X            X
X     X  XXXXXXX  XXXXX              XXXXXXX
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1
   11DEC92       10:47:22                                                                    PAGE     1

                                                                  THIS RUN EXECUTED 11DEC92     10:47:22

*************************************
 HEC-2 WATER SURFACE PROFILES

 Version   4.6.2;  May 1991
*************************************

T1      FLOOD CONTROL DISTRICT OF MARICOPA COUNTY - CONTRACT FCD 90-67
T2      GILA BEND AREA FLOODPLAIN DELINEATION STUDY BY BURGESS & NIPLE
T3      SAND TANK WASH 100 YEAR (NATURAL)          J. MISCHLER - (602) 244-8100

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ
                                                                                   662.13
                2
J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE
     1                  -1                                                                      15

J3  VARIABLE CODES FOR SUMMARY PRINTOUT
     38        42         1         53        54         8        43        26        10        51
     46        40        41          0       110         0       200

        SECTIONS ARE LABELED AS  RIVER MILES * 1000, i.e., SECTION 676 IS AT
        A POINT ON SAND TANK WASH 0.676 UPSTREAM OF THE CONFLUENCE WITH THE
        GILA RIVER.

        J1.5 STRT = 0.0037 WAS OBTAINED BY (648.0CONTOUR-644.2SPOT ELEV)/1025'
        = 0.0037  FT/FT.

NC    0.06      0.06      0.035     0.1       0.3
QT       2     18200     18200

        BEGIN DETAILED STUDY AT NORTH INDIAN ROAD (RM 0.931)
        (LOW CROSSING, NO STRUCTURE)

ET                        4.1       9950     10381
X1     926        27     9950.3    10162.4
GR   665.2    9417.6     664.8     9518.6     664.6     9609.5     664.9     9660.0     664.3     9738.3
GR   663.6    9797.7     661.4     9840.4     660.0     9904.2     658.1     9950.3     655.9     9980.9
GR   653.2    9990.5     652.8    10000.0     653.8    10025.2     654.4    10065.9     654.2    10082.4
GR   656.3   10114.5     657.1    10162.4     657.5    10230.1     658.0    10295.4     659.2    10366.5
GR   659.8   10433.8     660.3    10519.5     660.7    10618.4     660.6    10697.2     661.4    10763.9
GR   662.4   10821.1     663.3    10863.0
1
   11DEC92       10:47:22                                                                    PAGE     2

ET                        4.1       9900     10400
X1    1053        38     9933.4    10091.5      670       620       671
X3      10
GR   666.4    9456.8     666.3     9601.8     666.0     9690.3     665.8     9705.8     661.8     9731.7
GR   662.3    9769.7     663.6     9808.4     663.0     9815.3     660.3     9831.1     659.9     9850.7
GR   662.1    9860.9     664.3     9871.1     663.3     9882.3     660.2     9902.1     659.3     9918.5
GR   663.0    9933.4     659.2     9955.6     657.7     9979.3     657.5    10000.0     657.1    10040.6
GR   668.6   10066.7     664.1    10084.5     666.1    10091.5     662.7    10124.2     662.7    10228.3
GR   663.0   10357.4     663.3    10428.7     663.3    10481.3     663.3    10621.6     663.3    10779.7
GR   663.3   10965.2     663.3    11121.1     663.7    11254.4     664.2    11401.5     665.3    11498.3
GR   665.3   11586.5     665.5    11598.0     667.0     11630

ET                9.1       4.1       9700     10200                                      9400    10802.8
X1    1241        36     9909.9    10064.7      1150       820       993
X3      10
GR   671.0    9016.4     670.3     9080.6     670.5     9244.7     671.1     9400.3     670.1     9509.6
GR   670.2    9589.5     670.2     9632.1     669.2     9637.4     670.5     9643.1     669.1     9672.8
GR   668.6    9710.6     668.0     9731.3     664.6     9751.4     663.4     9764.4     665.9     9790.6
GR   664.4    9843.3     664.2     9899.2     669.9     9909.9     662.2     9927.2     661.9     9943.6
GR   663.7    9981.8     662.7    10000.0     662.1    10039.2     661.9    10056.1     670.0    10064.7
GR   662.5   10087.3     662.7    10105.8     667.2    10130.3     669.0    10140.7     668.1    10171.2
GR   668.0   10195.8     669.1    10307.0     668.4    10430.0     669.1    10559.0     669.4    10681.0
GR   670.2   10802.8
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ET                 9.1       4.1      9920     10420                                          9900     11387
X1      1435        38    9936.4   10085.7       850      1180      1024
GR     675.9    8746.5     675.5    8830.7     675.6    8984.7     675.6    9164.0     676.4    9340.0
GR     676.7    9497.9     677.8    9651.5     677.9    9772.0     678.6    9851.6     678.4    9872.5
GR     677.5    9875.8     679.5    9881.1     677.9    9900.0     676.8    9912.1     674.0    9930.2
GR     674.6    9936.4     668.9    9951.6     666.5    9961.6     666.2    9977.5     666.5   10000.0
GR     668.7   10040.0     668.7   10073.6     672.9   10085.7     669.2   10109.1     669.2   10137.9
GR     672.9   10173.7     674.8   10200.3     675.5   10265.6     675.0   10392.2     674.8   10589.0
GR     674.4   10777.6     674.8   10945.7     674.7   11105.0     675.4   11234.7     676.5   11332.9
GR     676.7   11359.8     678.7   11370.2     678.7   11387.1

NC      0.06      0.04      0.03
ET                          4.1      9870     10570
X1      1608        24    9884.5   10053.8       970       880       913
GR     682.3    9826.9     681.4    9852.2     675.6    9884.5     674.7    9899.5     673.4    9913.6
GR     672.6    9926.6     672.3    9960.9     670.5    9991.2     669.9   10000.0     671.8   10037.6
GR     675.8   10044.7     677.8   10053.8     676.7   10090.1     676.9   10210.8     677.0   10369.8
GR     677.2   10498.3     677.2   10632.1     677.3   10770.8     677.3   10915.3     677.3   11068.6
GR     678.3   11191.5     678.4   11266.8     678.8   11296.4     680.8   11308.3

ET                          4.1      9895     10645
X1      1791        33    9879.7   10059.4       960       950       966
X3        10
GR     682.0    8563.2     681.9    8635.2     681.5    8781.8     681.5    8952.8     681.6    9107.5
GR     681.3    9256.7     680.5    9396.6     679.8    9526.0     680.1    9656.6     680.5    9776.8
GR     681.3    9845.4     680.3    9848.7     684.4    9856.6     684.1    9879.7     678.3    9923.0
GR     677.1    9939.6     674.8    9951.2     675.1    9985.7     674.9   10000.0     675.6   10038.9
GR     682.2   10059.4     682.6   10095.5     679.9   10132.2     679.2   10218.7     679.1   10357.6
GR     679.2   10523.7     679.5   10702.1     679.3   10892.5     680.1   11046.1     680.1   11174.5
1
   11DEC92      10:47:22                                                                          PAGE     3

GR     681.8   11234.3     680.5   11240.3     684.0   11247.9
        WATERMELON ROAD IS AT RM 1.931  (LOW CROSSING, NO STRUCTURE)

ET                 9.1       4.1      9800     10650                                          9300     11858
X1      1980        97    9862.2   10052.2      1070      1080       998
GR     696.2    8638.6     695.0    8678.7     691.1    8740.0     687.3    8786.1     686.0    8802.5
GR     686.4    8826.3     686.8    8878.6     687.5    8936.3     687.9    9007.9     688.4    9042.1
GR     689.1    9091.9     689.5    9140.9     690.3    9206.9     690.2    9265.3     690.7    9327.4
GR     689.7    9385.0     688.5    9429.6     688.9    9462.1     686.8    9537.2     687.0    9554.0
GR     686.1    9559.6     687.5    9567.7     687.6    9599.5     686.8    9617.7     684.5    9625.0
GR     683.7    9630.6     686.0    9645.8     687.7    9686.0     688.6    9743.5     688.8    9776.6
GR     688.9    9796.2     688.9    9808.1     689.2    9821.4     688.6    9832.6     687.2    9847.6
GR     688.4    9862.2     686.9    9884.9     684.3    9895.9     683.5    9909.7     682.6    9922.3
GR     683.6    9932.6     684.0    9965.6     684.1    9984.8     683.2    9993.8     682.4   10000.0
GR     683.1   10014.5     684.6   10025.4     688.6   10052.2     688.6   10092.2     688.5   10129.7
GR     688.1   10167.2     688.7   10216.2     688.9   10250.6     687.5   10290.3     688.1   10337.7
GR     688.3   10382.3     687.7   10414.2     686.8   10435.2     688.1   10475.7     688.2   10533.9
GR     688.3   10582.4     687.5   10640.3     688.8   10674.6     687.4   10700.4     687.3   10717.3
GR     684.7   10730.1     686.1   10739.6     686.5   10749.1     686.8   10790.0     687.5   10840.4
GR     687.7   10880.3     687.9   10931.5     688.2   10994.5     688.4   11053.7     688.3   11109.3
GR     688.1   11146.9     686.8   11157.4     688.4   11171.0     688.2   11191.2     685.8   11206.9
GR     687.9   11223.6     688.3   11240.5     686.5   11251.0     688.7   11265.7     688.7   11289.9
GR     688.6   11314.5     687.0   11337.8     688.1   11351.4     687.3   11364.6     686.8   11370.0
GR     688.0   11394.6     689.1   11462.2     691.7   11526.1     693.2   11603.8     695.0   11710.6
GR     695.9   11807.9     696.3   11858.5

NH        5      0.04    9910.4      0.06    9968.6      0.03   10065.9      0.06   10105.2      0.04
NH    12077
ET                 9.1       4.1      9890     10740                                          8950     11450
X1      2147        96    9935.5   10105.2       880       810       882
X3        10
GR     699.5    8295.2     692.8    8590.4     693.6    8601.9     694.3    8642.4     695.1    8694.3
GR     695.8    8733.5     696.1    8752.4     695.0    8765.8     695.9    8791.7     696.5    8827.8
GR     695.6    8858.3     694.3    8899.9     695.5    8941.7     695.4    8983.9     694.1    9000.8
GR     690.4    9008.3     691.6    9042.0     691.2    9110.2     690.8    9194.0     691.3    9287.2
GR     691.9    9354.7     692.5    9437.9     693.9    9499.9     694.4    9550.2     693.8    9596.3
GR     693.4    9635.8     692.5    9662.0     692.7    9672.9     692.8    9686.5     692.5    9697.3
GR     691.3    9712.2     692.4    9721.0     690.7    9730.4     689.4    9736.6     690.9    9752.3
GR     691.3    9812.6     692.1    9868.1     690.5    9895.5     691.7    9910.4     694.7    9935.5
GR     691.5    9952.9     688.2    9968.6     686.9    9982.5     686.5   10000.0     687.6   10037.6
GR     690.8   10065.9     693.7   10105.2     693.7   10187.3     692.3   10219.7     692.8   10241.0
GR     692.6   10259.3     693.6   10291.6     692.5   10335.0     691.3   10367.0     692.4   10382.0
GR     690.0   10395.4     688.8   10403.5     690.5   10422.0     691.0   10457.6     690.6   10514.9
GR     689.6   10576.0     689.1   10622.9     689.9   10660.7     691.3   10707.1     691.7   10771.6
GR     691.7   10837.9     691.8   10899.9     690.6   10944.8     691.6   10977.6     691.9   10999.1
GR     692.3   11034.8     692.2   11101.2     692.2   11159.8     692.3   11217.5     692.5   11285.2
GR     692.4   11304.0     690.0   11318.3     690.7   11331.2     691.5   11352.0     689.5   11368.1
GR     689.1   11374.9     692.1   11392.2     695.2   11427.1     696.4   11456.2     693.8   11490.3
GR     694.2   11529.2     694.1   11556.6     694.0   11613.6     694.9   11689.7     694.7   11775.9
GR     694.7   11864.2     696.3   11931.8     697.7   11977.1     698.9   12010.1     702.4   12041.0
GR     702.5   12077.0
1
   11DEC92      10:47:22                                                                          PAGE     4

NH        5      0.04    9974.2      0.06    9987.1      0.03    10081      0.06   10093.4      0.04
NH    11576
ET                          4.1      9950     10800
X1      2329        60    9974.2   10093.4       910       950       961
GR     698.7    9620.4     698.0    9640.2     698.0    9722.9     697.3    9823.5     696.4    9892.9
GR     696.4    9917.7     694.6    9936.7     695.5    9950.3     695.7    9974.2     692.6    9987.1
GR     690.5    9997.4     689.6   10000.0     691.1   10018.5     693.5   10033.4     694.3   10050.9
GR     691.7   10062.2     692.3   10081.0     695.5   10093.4     695.1   10118.0     692.6   10133.8
GR     691.3   10150.8     692.0   10168.0     696.0   10179.6     696.3   10207.6     696.6   10242.6
GR     697.0   10268.9     697.0   10313.9     696.8   10391.3     696.0   10459.2     696.4   10525.7
GR     697.3   10579.7     697.6   10614.9     696.2   10628.0     697.6   10650.1     698.2   10703.3
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GR     698.5    10765.1     698.2    10801.1     696.8    10807.8     697.8    10819.2     697.5    10835.1
GR     695.3    10842.2     694.6    10846.9     697.6    10864.7     697.6    10912.4     697.9    10993.2
GR     697.1    11058.4     696.2    11061.5     696.9    11088.2     696.6    11143.6     695.5    11176.2
GR     694.3    11192.8     695.8    11205.6     693.6    11217.6     695.4    11228.0     696.6    11249.0
GR     696.4    11310.1     698.2    11378.4     699.3    11443.3     700.0    11510.3     701.5      11576

NH         5       0.04    9934.5       0.06    9958.5       0.03      10034       0.06   10053.6       0.04
NH     11571
ET                   9.1       4.1       9900     10800                                     9700      11571
X1      2522        89     9934.5    10053.6      1150       750       1019
GR     707.1     8412.5      707.0     8487.4     706.7    8538.8      703.8     8546.6     703.7     8562.3
GR     703.4     8574.7      704.5     8590.6     705.1    8651.9      705.4     8717.2     704.5     8779.2
GR     703.9     8811.1      703.1     8819.6     703.6    8836.9      702.8     8853.4     704.2     8866.7
GR     705.5     8895.6      705.5     8934.7     705.8    8969.7      705.9     9019.3     705.9     9040.6
GR     706.8     9085.5      707.4     9139.1     706.4    9173.1      705.9     9214.7     705.9     9235.5
GR     705.4     9243.5      705.8     9258.0     705.8    9271.5      705.2     9288.9     706.5     9303.7
GR     706.7     9329.2      705.1     9377.5     705.2    9418.7      705.3     9490.3     704.8     9525.9
GR     704.0     9535.2      705.6     9547.2     704.6    9594.0      703.5     9633.6     705.3     9688.9
GR     705.2     9737.2      702.3     9780.9     701.2    9793.0      703.1     9824.0     702.9     9848.2
GR     700.4     9870.2      698.9     9881.2     702.8    9915.3      702.7     9934.5     698.8     9958.5
GR     697.5     9988.7      696.8    10000.0     696.8   10034.0      702.1    10053.6     701.7    10083.9
GR     702.3    10123.3      701.6    10166.9     702.7   10233.3      702.2    10301.9     702.3    10354.0
GR     700.0    10377.2      702.4    10419.9     700.7   10468.8      702.5    10508.4     702.7    10538.2
GR     700.8    10552.7      702.3    10578.4     702.6   10649.4      702.0    10713.4     702.0    10757.4
GR     701.1    10774.9      702.4    10791.6     702.7   10841.6      702.1    10880.2     701.1    10906.4
GR     699.6    10922.1      701.9    10936.3     702.3   10988.9      702.0    11069.5     700.8    11123.8
GR     701.9    11187.2      702.3    11239.6     703.5   11313.9      702.8    11381.9     702.5    11439.4
GR     701.0    11456.5      703.9    11493.5     704.8   11537.7      704.9    11571.0

NH         5       0.04       9971       0.06    9987.8       0.03    10024.8       0.06   10069.5       0.04
NH     11509
ET                   9.1       4.1       9750     10750                                     9220      10800
X1      2686        88       9971    10069.5       880       820        866
GR     714.0     7901.2      713.9     7960.9     713.3    7990.7      713.1     8058.8     711.3     8140.3
GR     711.2     8187.2      709.7     8212.6     710.2    8260.1      711.1     8339.6     711.9     8420.0
GR     712.8     8505.1      712.5     8586.7     712.6    8673.3      711.8     8680.7     712.8     8695.5
GR     711.9     8726.4      712.1     8741.7     712.1    8756.5      710.6     8773.9     712.0     8788.6
GR     710.8     8817.7      708.8     8913.6     709.3    8991.0      709.8     9056.4     709.3     9136.9
GR     709.7     9189.7      710.1     9227.8     708.9    9293.4      708.0     9325.8     709.0     9373.6
GR     708.6     9400.1      707.0     9423.6     708.5    9456.3      709.2     9504.6     707.1     9552.9
GR     705.9     9591.8      702.3     9610.8     702.3    9615.0      703.4     9628.4     705.3     9650.8
GR     705.9     9671.2      706.6     9720.9     706.5    9774.3      707.4     9815.1     705.5     9832.1
1
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GR     703.0     9847.1      705.7     9861.9     706.3    9893.4      707.3     9948.1     707.6     9971.0
GR     701.4     9987.8      700.6    10000.0     701.7   10024.8      705.2    10041.0     708.1    10069.5
GR     706.5    10117.9      708.1    10158.4     708.8   10233.4      708.1    10306.9     708.2    10360.4
GR     708.1    10436.5      707.6    10513.6     706.8   10564.3      706.6    10598.7     706.3    10645.8
GR     706.1    10679.1      705.2    10697.8     706.4   10707.5      709.2    10745.5     710.2    10803.8
GR     708.4    10849.4      709.3    10881.5     709.4   10924.0      707.4    10972.6     706.0    10987.1
GR     707.6    11029.2      708.0    11081.2     706.3   11105.6      706.2    11128.7     710.4    11164.1
GR     708.7    11209.1      706.0    11249.6     705.6   11312.7      705.8    11369.9     706.2    11400.7
GR     707.8    11436.9      709.9    11478.1     711.1   11509.0

NH         5       0.04    9975.6       0.06    9991.4       0.03    10031.2       0.06   10053.8       0.04
NH     11306
ET                   9.1       4.1       9030     10230                                     8350      10700
X1      2864        94     9975.6    10053.8       850       870        940
GR     717.9     7643.5      717.6     7674.4     715.9    7716.9      714.4     7737.7     715.1     7769.1
GR     714.8     7805.3      713.8     7819.8     716.6    7842.0      715.5     7902.4     716.1     7944.6
GR     716.7     7986.5      716.9     8001.2     716.5    8015.8      716.3     8035.4     716.9     8052.5
GR     715.1     8108.5      713.8     8189.6     714.0    8261.0      713.2     8292.6     714.2     8329.9
GR     713.8     8393.5      712.7     8437.4     713.1    8484.5      712.5     8535.5     712.2     8590.6
GR     711.4     8649.9      711.2     8700.8     712.5    8744.4      711.3     8761.0     709.1     8777.0
GR     710.0     8782.0      711.2     8799.1     711.9    8855.1      711.8     8932.4     711.9     8993.8
GR     710.6     9006.3      713.1     9038.5     712.5    9107.2      712.7     9167.5     712.8     9200.9
GR     712.5     9232.7      712.5     9325.7     713.4    9374.7      713.2     9426.3     712.3     9445.5
GR     711.0     9465.8      711.4     9515.6     711.2    9541.3      712.3     9585.1     712.4     9625.5
GR     711.8     9665.2      711.2     9688.4     710.3    9708.9      709.7     9724.5     711.2     9746.4
GR     711.5     9802.3      711.8     9862.6     711.4    9912.3      710.4     9941.9     711.2     9963.2
GR     711.0     9975.6      704.3     9991.4     703.4   10000.0      704.3    10016.8     706.6    10031.2
GR     711.2    10053.8      712.8    10113.3     712.8   10173.8      710.3    10209.4     708.7    10248.4
GR     710.4    10292.3      711.0    10343.9     711.6   10386.2      710.3    10412.2     710.3    10422.9
GR     712.3    10449.1      711.9    10521.8     713.0   10587.6      715.1    10652.9     717.1    10720.6
GR     717.4    10768.8      715.6    10843.9     714.2   10876.0      712.1    10886.1     714.4    10903.6
GR     715.2    10990.4      716.5    11027.2     713.3   11057.9      715.8    11087.3     714.9    11148.5
GR     713.7    11186.0      712.6    11206.5     715.2   11235.6      716.2    11306.0

        SOUTH INDIAN ROAD IS AT RM 3.071 (LOW CROSSING, NO STRUCTURE)

NH         5       0.04    9932.2       0.06    9984.3       0.03    10020.6       0.06   10083.9       0.04
NH     11095
ET                                     4.1       8750     10150
X1      3039        90     9932.2    10083.9       890       960        924
GR     722.8     7481.3      722.5     7552.8     721.1    7627.3      720.7     7720.1     720.0     7792.4
GR     718.8     7843.3      714.0     7891.0     714.8    7952.8      715.3     7997.2     716.0     8040.3
GR     715.9     8080.8      715.7     8098.0     719.8    8115.1      720.2     8124.4     720.2     8431.0
GR     714.6     8454.4      713.0     8479.8     714.4    8494.1      714.7     8508.7     714.2     8523.4
GR     713.2     8538.8      712.2     8546.2     713.7    8569.7      714.3     8640.0     714.2     8695.9
GR     713.9     8728.0      714.5     8789.4     714.3    8808.2      713.1     8818.9     714.8     8836.5
GR     714.7     8866.1      713.2     8870.8     714.9    8895.6      714.9     8966.4     714.5     9001.5
GR     713.1     9012.6      711.9     9018.0     714.5    9030.5      714.5     9067.2     714.5     9082.7
GR     714.4     9101.1      714.3     9108.6     715.1    9129.7      714.9     9151.3     715.0     9168.5
GR     714.5     9210.2      713.6     9242.8     713.4    9271.9      712.6     9282.1     714.0     9351.8
GR     715.5     9416.3      716.7     9488.2     717.7    9541.6      717.9     9589.5     716.8     9614.3
GR     716.0     9622.7      717.0     9655.7     717.7    9725.4      716.8     9775.2     715.1     9885.5
GR     714.0     9932.2      713.9     9957.4     713.2    9972.4      708.9     9984.3     707.2    10000.0
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GR     707.7    10020.6     710.6    10038.9     714.0    10059.6     715.1    10083.9     714.8    10102.1
GR     712.3    10115.2     715.8    10144.0     717.6    10192.8     718.1    10267.8     717.5    10316.7
GR     719.7    10334.5     720.5    10377.6     721.3    10405.1     721.2    10445.7     720.4    10490.9
GR     719.1    10527.2     719.4    10558.3     719.0    10598.3     720.2    10638.4     719.6    10695.1
GR     720.6    10760.4     720.7    10804.6     720.2    10915.5     721.7    11005.9     722.6    11095.0

NH         5       0.04    9959.3       0.06    9977.3       0.03    10030.9       0.06    10047.2       0.04
NH     10284
ET                            4.1       8300     10050
X1      3180         96    9959.3     10047.2       570        680        744
GR     724.3     7181.6     723.6     7242.4     723.2     7274.0     721.7     7393.1     720.6     7488.7
GR     720.1     7552.7     719.5     7558.1     718.7     7574.9     718.2     7609.8     717.5     7764.1
GR     717.7     7796.4     718.4     7844.6     718.9     7874.2     719.2     7889.7     718.6     7930.2
GR     717.6     7940.1     715.9     7944.4     717.9     8018.8     718.6     8122.4     718.3     8253.7
GR     718.5     8276.2     719.0     8313.7     718.4     8344.9     718.3     8365.6     717.9     8372.0
GR     718.6     8393.6     718.3     8430.4     718.6     8443.9     718.2     8458.3     718.1     8482.3
GR     717.4     8494.7     718.3     8662.6     717.9     8681.3     718.9     8692.3     718.7     8713.6
GR     718.2     8729.6     718.7     8735.6     719.0     8750.5     718.9     8768.1     718.0     8777.2
GR     717.9     8787.7     717.2     8792.9     717.9     8808.2     718.0     8819.2     718.8     8831.9
GR     718.7     8855.7     719.1     8862.2     717.9     8946.9     719.5     8977.8     720.1     9013.6
GR     720.8     9054.2     721.3     9086.4     720.4     9114.1     720.2     9152.3     720.5     9241.3
GR     721.2     9276.4     721.8     9308.0     721.0     9334.1     721.1     9410.3     720.6     9470.3
GR     720.8     9503.9     720.2     9541.6     719.3     9572.1     719.4     9581.6     720.3     9598.9
GR     719.3     9610.8     718.0     9626.9     717.2     9652.4     717.4     9665.9     717.7     9695.8
GR     718.1     9723.5     718.2     9750.1     718.3     9771.1     718.9     9791.4     718.3     9813.3
GR     718.4     9858.0     718.2     9891.4     718.1     9935.1     718.1     9959.3     714.1     9977.3
GR     712.3     9987.0     710.6     9994.2     710.9    10000.0     710.2    10015.0     710.3    10017.7
GR     713.9    10030.9     719.5    10047.2     720.5    10078.1     721.6    10132.6     722.4    10166.8
GR     721.9    10181.1     720.9    10198.6     721.5    10209.8     722.3    10228.7     724.2    10255.6
GR     725.9    10284.0
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BENDER WASH ENTERS SAND TANK WASH AT RM 3.184. THE 100-YEAR PEAK DISCHARGE EXCEEDS THE CAPACITY OF SAND TANK WASH ALONE UPSTREAM OF PIMA STREET. A RATING CURVE WAS DEVELOPED FOR THE BENDER WASH CULVERT AT PIMA STREET WHICH SHOWED THAT THE FLOW SPLIT FROM SAND TANK WASH WILL BE 3200 CFS. THIS AMOUNT IS THEREFORE DEDUCTED FROM THE Q IN THE REACH BETWEEN THE CONFLUENCE AND A POINT UPSTREAM OF PIMA STREET.

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QT         2      15100      15100
NH         7       0.04    9952.5       0.06    9985.0       0.03    10035.8       0.06    10063.6       0.04
NH     10369       0.03   10388.0       0.04   10589.8
ET                            4.1       8400     10050
X1      3277         94    9952.5    10063.6       310        520        512
X3        10
GR     726.0     7201.5     725.7     7215.4     724.1     7632.1     720.6     7752.8     719.0     7951.6
GR     718.9     8021.4     718.8     8036.2     718.9     8063.5     718.3     8086.9     719.4     8343.6
GR     719.9     8374.0     719.8     8389.8     719.2     8412.7     719.1     8434.2     720.0     8475.7
GR     720.7     8521.1     720.9     8562.8     720.5     8615.0     720.2     8639.4     719.9     8648.3
GR     719.0     8654.0     721.1     8695.1     720.9     8721.7     721.2     8770.1     721.3     8784.2
GR     720.0     8798.8     720.8     8812.3     721.5     8837.7     721.3     8863.5     720.4     8892.6
GR     719.9     8912.7     718.8     8926.7     719.5     8939.0     718.7     8947.8     719.2     8977.9
GR     719.6     9012.3     717.6     9123.8     720.1     9195.0     719.8     9263.0     721.2     9293.9
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GR     722.0     9342.8     722.0     9385.9     722.8     9441.7     724.6     9488.9     724.7     9512.4
GR     723.9     9581.3     722.8     9608.7     722.0     9611.4     722.8     9621.9     722.8     9657.8
GR     722.4     9720.1     722.4     9750.7     720.0     9780.8     719.0     9797.4     718.9     9804.7
GR     718.9     9810.9     720.0     9819.5     720.1     9829.1     719.6     9839.7     719.7     9846.5
GR     720.5     9858.0     720.5     9871.4     720.8     9876.2     720.8     9892.0     719.9     9903.4
GR     718.5     9911.5     718.6     9916.2     719.8     9923.8     719.6     9930.3     720.5     9940.2
GR     720.9     9952.5     719.7     9966.0     719.2     9973.9     713.4     9985.0     713.3    10000.0
GR     713.8    10019.0     713.8    10035.8     722.4    10055.0     723.7    10063.6     723.3    10082.6
GR     722.6    10106.5     722.0    10138.8     721.1    10338.2     719.5    10353.5     716.3    10363.5
GR     713.9    10369.0     713.9    10388.0     718.9    10396.0     719.9    10408.6     719.5    10424.5
GR     719.6    10431.4     715.3    10439.9     717.2    10457.9     726.3    10589.8

NH         5       0.04    9957.0       0.06    9969.3       0.03    10034.0       0.06    10100.9       0.04
NH     10357
ET                            4.1       8600     10080
X1      3372         56      9957    10100.9       330        520        502
GR     727.5     7503.3     721.3     8065.5     720.2     8237.6     720.3     8274.8     720.5     8316.9
GR     721.7     8443.4     719.9     8452.0     721.0     8464.1     721.3     8480.7     721.1     8491.7
GR     719.8     8516.6     722.1     8523.7     720.9     8788.5     720.7     8806.7     722.4     8878.5
GR     722.7     8919.7     722.7     8968.3     721.0     9049.9     724.1     9099.5     723.8     9131.1
GR     723.6     9191.0     723.1     9254.4     722.9     9296.8     722.1     9329.1     722.2     9360.9
GR     721.4     9395.0     722.0     9637.6     722.5     9686.9     720.0     9750.5     720.5     9762.2
GR     721.5     9770.5     722.7     9785.3     726.1     9794.3     726.4     9822.7     727.0     9847.0
GR     726.2     9891.5     725.4     9923.4     723.9     9957.0     719.3     9964.4     716.3     9969.3
GR     716.4     9998.3     716.2    10000.0     715.8    10024.7     715.9    10034.0     718.7    10045.5
GR     718.8    10058.8     722.7    10068.4     722.8    10084.4     723.8    10100.9     724.6    10159.0
GR     724.3    10184.1     724.4    10200.8     725.5    10239.9     725.7    10270.7     726.5    10303.1
GR     726.7    10357.0

NH         5       0.04    9906.9       0.06    9960.5       0.03    10028.1       0.06    10039.0       0.04
NH     10448
ET                            4.1       8850     10300
X1      3470         83    9906.9     10039       420        240        517
GR     728.4     7849.4     726.8     7914.7     726.2     8054.6     724.5     8167.5     723.0     8228.5
GR     723.0     8282.5     722.4     8303.7     722.0     8325.9     723.0     8334.2     724.2     8343.6
GR     723.7     8364.1     722.8     8389.5     723.1     8419.5     723.1     8476.7     723.8     8512.6
GR     725.5     8560.0     723.8     8577.3     721.7     8688.8     724.1     8695.9     724.0     8714.7
GR     724.0     8742.6     725.5     8771.3     725.8     8803.8     724.4     8830.7     724.3     8853.4
GR     724.6     8898.3     725.2     8945.7     725.5     8974.2     725.3     8998.6     724.8     9007.5
GR     722.9     9050.7     723.8     9119.2     724.2     9141.4     724.7     9169.2     723.6     9331.0
GR     724.4     9354.2     725.4     9385.3     724.9     9398.9     723.1     9409.2     722.5     9419.9
GR     722.6     9429.6     723.9     9444.0     724.9     9467.2     725.3     9508.6     724.9     9548.9
GR     725.2     9603.7     725.6     9634.8     725.0     9644.7     724.4     9652.0     725.0     9683.2
GR     724.0     9699.1     722.7     9717.9     722.3     9729.8     723.7     9739.6     724.0     9781.8
GR     724.2     9818.4     725.0     9850.0     724.6     9882.5     724.8     9906.9     723.9     9915.8
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GR    723.7     9928.3     723.1     9942.3     722.4     9948.0     719.1     9960.5     719.6     9990.5
GR    719.4    10000.0     719.2    10028.1     724.2    10039.0     725.2    10046.5     725.0    10073.9
      723.7    10085.1     723.9    10100.4     724.2    10115.7     725.0    10134.6     725.9    10156.3
      725.8    10180.0     725.0    10210.1     723.9    10240.4     721.8    10282.8     723.3    10298.7
      726.5    10337.7     727.5    10381.3     728.3    10448.0
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NH        5      0.04    9942.6      0.06    9963.2      0.03   10089.4      0.06   10098.8      0.04
NH    10578
ET                          4.1      9050     10300
X1     3563        80    9942.6   10098.8       480       500       491
GR    729.3    8872.8     728.6    8903.5     728.6    8956.6     728.5    9007.3     728.3    9041.1
GR    727.4    9067.3     727.0    9102.3     727.6    9104.3     725.7    9162.3     726.3    9171.9
GR    726.6    9185.4     726.1    9211.6     726.0    9230.9     726.1    9247.2     727.1    9271.7
GR    727.3    9291.5     726.9    9316.8     726.5    9317.1     726.9    9357.6     726.7    9391.4
GR    726.9    9420.5     727.3    9439.8     726.6    9446.7     726.2    9459.2     726.2    9488.0
GR    726.4    9525.3     726.4    9549.6     725.5    9559.5     724.9    9570.4     726.4    9582.8
GR    726.9    9596.6     727.0    9617.4     727.9    9639.4     727.3    9661.9     727.0    9687.0
GR    726.6    9717.9     725.9    9730.0     726.1    9762.0     727.4    9797.1     727.5    9804.6
GR    726.6    9813.1     727.8    9842.1     726.9    9848.7     729.2    9888.0     726.9    9891.3
GR    729.4    9897.3     725.4    9913.6     725.4    9934.2     727.5    9942.6     724.4    9956.9
GR    721.8    9963.2     722.7    9979.5     722.3    9991.6     722.5   10011.1     722.2   10026.0
GR    722.6   10041.6     723.0   10051.3     722.3   10065.3     721.8   10089.4     726.3   10098.8
GR    726.8   10115.7     725.8   10136.2     725.6   10147.8     727.3   10166.3     728.0   10194.1
GR    728.2   10234.4     728.1   10278.5     727.5   10306.4     727.1   10323.7     726.9   10331.1
GR    726.2   10339.8     725.9   10354.4     725.3   10363.1     725.2   10370.8     726.0   10381.5
GR    727.1   10400.5     728.2   10460.8     728.9   10494.2     729.0   10528.7     729.2   10578.0
```

PAPAGO STREET IS AT RM 3.598 (LOW CROSSING, NO STRUCTURE)

```
NH        5      0.04    9920.6      0.06    9937.9      0.03   10032.2      0.06   10045.2      0.04
NH    10657
ET                          4.1      9050     10150
X1     3657        78    9920.6   10045.2       490       530       496
GR    735.3    8729.9     733.0    8733.5     733.1    8753.1     733.2    8814.3     733.8    8848.2
GR    733.7    8883.6     732.9    8914.4     732.5    8959.7     732.0    8991.6     731.3    9004.3
GR    731.6    9016.5     730.9    9031.7     732.0    9055.8     732.9    9074.5     733.0    9104.8
GR    732.8    9145.9     733.1    9172.2     732.7    9187.0     732.6    9193.6     732.5    9197.6
GR    731.9    9201.1     728.8    9211.3     728.5    9219.3     728.5    9236.4     730.2    9240.9
GR    730.2    9262.9     730.4    9297.5     731.1    9346.8     731.6    9396.1     731.1    9405.9
GR    731.0    9430.5     731.4    9445.2     732.1    9489.6     732.8    9545.4     732.8    9587.2
GR    733.3    9655.0     733.0    9698.8     733.0    9762.9     732.2    9789.7     731.8    9828.3
GR    731.5    9861.8     731.4    9899.2     731.5    9920.6     724.1    9937.9     724.6    9961.3
GR    724.9    9976.2     724.5    9993.8     724.5   10000.0     724.4   10032.2     731.4   10045.2
GR    730.7   10054.8     730.6   10074.1     731.1   10085.7     732.3   10093.6     729.2   10105.6
GR    729.5   10125.3     729.5   10149.6     731.9   10160.2     732.5   10165.9     729.5   10178.0
GR    731.0   10219.0     730.5   10230.8     730.5   10273.3     731.3   10284.2     731.2   10330.9
GR    730.7   10345.3     730.3   10374.0     730.0   10460.6     730.5   10539.9     730.1   10564.4
GR    730.0   10588.9     730.0   10594.5     730.3   10600.3     731.8   10606.2     732.7   10609.9
      732.7   10615.4     732.8   10638.6     733.1   10657.0
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PIMA STREET (US ROUTE 80) SPECIAL CULVERT MODEL (CENTERLINE STRUCTURE IS AT RM 3.684)

THE SAND TANK WASH CULVERT WAS FIRST BUILT AS A 6-BARREL BOX (8'H*16.8W) AT A LATER DATE, TWIN 8'H*12'W BARRELS WERE ADDED WITH 25' OF EMBANKMENT BETWEEN THE NEW AND OLD STRUCTURES.

THE BENDER WASH CULVERT IS A 6-BARREL BOX (6'H*10'W). IT HAS BEEN

MODELED BY A SEPARATE HEC-2 RUN TO DETERMINE THE AMOUNT OF FLOW THAT IS SPLIT FROM SAND TANK WASH. UPSTREAM OF PIMA STREET, SAND TANK WASH AND BENDER WASH FLOW AS ONE WASH.

THE BENDER WASH MODEL INDICATED THAT 3200 CFS IS SPLIT FROM SAND TANK WASH.

	SAND L	SAND R	BENDER	MODEL
ELCHU	723.1	723.2	727.4	723.2
ELCHD	723.1	723.1	725.4	723.1
RISE	8	8	6	8
NO. BOXES	2	6	6	8
WIDTH	12	16.8	10	15.6

INCREASE EXPANSION/CONTRACTION COEFFICIENTS, KEEP HIGH UNTIL A POINT UPSTREAM OF THE GILA BEND CANAL.

REPEAT SECTION 3657 AT THE DOWNSTREAM FACE OF THE CULVERTS. USE PSXECE = 100 FT * 0.0048 FT/FT = 0.5 FT

REPEAT GR CARDS SO THAT THE CHANNEL BOTTOM CAN BE MADE TO CONFORM TO INVERT OF THE CULVERT OPENING.

BECAUSE THE MODEL WAS COMPUTING MUCH HIGHER Q'S IN THE RIGHT OVERBANK THAN IS POSSIBLE WITH THE WEIR CONFIGURATION, AND SIMPLY RAISING THE RIGHT OVERBANK ELEVATION DID NOT YIELD REASONABLE RESULTS, AN ET CARD IS USED TO MAKE OVERBANK AREAS BEYOND THE WEIR FLOW NON-EFFECTIVE.

```
NC                                      0.3       0.5
NH        5      0.04      9945      0.06      9960      0.03     10060      0.06     10074      0.04
NH    10657
ET                9.1       4.1      9100     10074                                    8729.9     10150
X1     3676        73      9945     10074       100       100       100                  0.5
X3       10                                                                   730     733.5
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GR	735.3	8729.9	733.0	8733.5	733.1	8753.1	733.2	8814.3	733.8	8848.2
GR	733.7	8883.6	732.9	8914.4	732.5	8959.7	732.0	8991.6	731.3	9004.3
GR	731.6	9016.5	730.9	9031.7	732.0	9055.8	732.9	9074.5	733.0	9104.8
GR	732.8	9145.9	733.1	9172.2	732.7	9187.0	732.6	9193.6	732.5	9197.6
GR	731.9	9201.1	728.8	9211.3	728.5	9219.3	728.5	9236.4	730.2	9240.9
GR	730.2	9262.9	730.4	9297.5	731.1	9346.8	731.6	9396.1	731.1	9405.9
GR	731.0	9430.5	731.4	9445.2	732.1	9489.6	732.8	9545.4	732.8	9587.2
GR	733.3	9655.0	733.0	9698.8	733.0	9762.9	732.2	9789.7	731.8	9828.3
GR	731.5	9861.8	731.4	9899.2	731.5	9945.0	722.6	9960.0	722.6	10000.0
GR	722.6	10060.0	730.6	10074.0	731.1	10085.7	732.3	10093.6	729.2	10105.6
GR	729.5	10125.3	729.5	10149.6	731.9	10160.2	732.5	10165.9	729.5	10178.0
GR	731.0	10219.0	730.5	10230.8	730.5	10273.3	731.3	10284.2	731.2	10330.9
GR	730.7	10345.3	730.3	10374.0	730.0	10460.6	730.5	10539.9	730.1	10564.4
GR	730.0	10588.9	730.0	10594.5	730.3	10600.3	731.8	10606.2	732.7	10609.9
GR	732.7	10615.4	732.8	10638.6	733.1	10657.0				

USE PSXECE = 723.2 - 723.1 + 0.5 = 0.6 FT

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IT IS INTENTIONAL THAT THE BT CARDS AND GR CARDS DO NOT INTERSECT.
ALTHOUGH SOME GR POINTS ARE ABOVE THE BT, THE WEIR IS FULLY EFFECTIVE.

BECAUSE THE MODEL WAS COMPUTING MUCH HIGHER Q'S IN THE RIGHT OVERBANK THAN IS POSSIBLE WITH THE WEIR CONFIGURATION, AND SIMPLY RAISING THE RIGHT OVERBANK ELEVATION DID NOT YIELD REASONABLE RESULTS, AN ET CARD IS USED TO MAKE OVERBANK AREAS BEYOND THE WEIR FLOW NON-EFFECTIVE.

ELTRD = 732.2 + 0.6 HV = 732.8

NH	5	0.04	9945	0.06	9960	0.03	10060	0.06	10074	0.04
NH	10657									
ET		9.1	4.11	9150	10074				8729.9	10150
SC	8.014	0.4	3	0	8	15.6	80	8.1	723.2	723.1
X1	3693	73	9945	10074	90	90	90		0.6	
X2			2		732.8					
X3	10							732.2	733.9	
BT	-10	8729.9	734.3		9016.5	732.9		9236.4	732.2	
BT		9430.5	732.2		9655.0	732.5		9828.3	733.6	
BT		9920.6	733.9		10000.0	733.9		10460.6	734.7	
BT		10657.0	735.4							

REPEAT GR CARDS SO THAT THE CHANNEL BOTTOMS CAN BE MADE TO CONFORM TO INVERTS OF THE CULVERT OPENINGS.

GR	735.3	8729.9	733.0	8733.5	733.1	8753.1	733.2	8814.3	733.8	8848.2
GR	733.7	8883.6	732.9	8914.4	732.5	8959.7	732.0	8991.6	731.3	9004.3
GR	731.6	9016.5	730.9	9031.7	732.0	9055.8	732.9	9074.5	733.0	9104.8
GR	732.8	9145.9	733.1	9172.2	732.7	9187.0	732.6	9193.6	732.5	9197.6
GR	731.9	9201.1	728.8	9211.3	728.5	9219.3	728.5	9236.4	730.2	9240.9
GR	730.2	9262.9	730.4	9297.5	731.1	9346.8	731.6	9396.1	731.1	9405.9
GR	731.0	9430.5	731.4	9445.2	732.1	9489.6	732.8	9545.4	732.8	9587.2
GR	733.3	9655.0	733.0	9698.8	733.0	9762.9	732.2	9789.7	731.8	9828.3
GR	731.5	9861.8	731.4	9899.2	731.5	9945.0	722.6	9960.0	722.6	10000.0
GR	722.6	10060.0	730.6	10074.0	731.1	10085.7	732.3	10093.6	729.2	10105.6
GR	729.5	10125.3	729.5	10149.6	731.9	10160.2	732.5	10165.9	729.5	10178.0
GR	731.0	10219.0	730.5	10230.8	730.5	10273.3	731.3	10284.2	731.2	10330.9
GR	730.7	10345.3	730.3	10374.0	730.0	10460.6	730.5	10539.9	730.1	10564.4
GR	730.0	10588.9	730.0	10594.5	730.3	10600.3	731.8	10606.2	732.7	10609.9
GR	732.7	10615.4	732.8	10638.6	733.1	10657.0				

FLOW UPSTREAM OF PIMA OCCURS ACROSS BOTH SAND TANK AND BENDER WASHES. SECTIONS INCLUDE BOTH CHANNELS. BANK STATIONS ARE CHOSEN FOR SAND TANK WASH, BUT N VALUES FOR BENDER ARE HANDLED BY USE OF NH CARDS.

RETURN THE FULL SAND TANK WASH Q SINCE THE MODEL IS NOW AT A POINT UPSTREAM OF THE SPLIT.

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QT	2	18300	18300							
NH	8	0.06	9917.9	0.025	10045.2	0.06	10116.8	0.035	10819.5	0.05
NH	10880	0.03	10902.6	0.05	10917.6	0.035	11371.5			
ET		9.1	4.1	9600	10920				9475	11371.5
X1	3747	94	9917.9	10116.8	285	285	285			
GR	737.9	8808.5	737.7	8928.3	737.6	8978.8	737.5	9001.6	737.4	9033.4
GR	737.6	9070.4	737.3	9100.9	737.5	9135.6	737.4	9166.7	737.1	9202.9
GR	736.8	9219.5	736.5	9250.3	735.8	9290.0	735.2	9323.6	734.8	9350.1
GR	735.2	9379.6	735.6	9398.3	736.5	9424.5	736.5	9458.3	736.7	9495.3
GR	735.9	9522.0	735.2	9538.5	734.2	9565.2	732.4	9585.3	732.0	9601.8
GR	730.9	9621.1	730.6	9645.5	729.9	9661.1	730.2	9665.9	730.7	9694.2
GR	730.8	9743.3	730.9	9792.3	731.4	9808.9	731.9	9828.0	731.9	9849.1
GR	731.9	9872.3	731.4	9888.4	731.8	9896.3	735.0	9909.6	736.7	9917.9
GR	735.3	9923.0	730.2	9932.6	727.3	9943.4	727.0	9946.4	727.5	9985.5
GR	727.6	10000.0	727.3	10045.2	735.3	10098.9	735.8	10116.8	732.2	10127.2
GR	732.5	10151.6	732.5	10188.2	732.5	10205.4	733.1	10237.8	732.8	10303.2
GR	732.8	10351.8	732.1	10381.3	732.3	10407.4	732.2	10428.8	733.5	10453.1
GR	733.8	10486.4	734.3	10530.1	733.7	10544.0	732.3	10550.0	732.4	10575.4
GR	732.1	10603.1	731.3	10615.3	731.5	10641.0	732.0	10671.4	731.2	10687.4
GR	730.4	10706.3	731.5	10717.8	731.4	10727.8	731.2	10746.5	730.6	10819.5
GR	729.8	10874.5	728.6	10880.0	728.0	10897.2	728.0	10902.6	734.5	10917.6
GR	734.5	10972.1	735.8	11005.5	735.6	11043.3	735.4	11095.5	735.8	11134.5
GR	736.5	11172.3	736.8	11214.4	735.9	11227.4	736.4	11242.8	736.6	11282.5
GR	737.1	11317.7	737.1	11339.8	738.0	11359.2	738.4	11371.5		

SOUTHERN PACIFIC RAILROAD BRIDGES - SPECIAL BRIDGE METHOD
THE 9-SPAN SAND TANK BRIDGE HAS TIMBER PIERS AND CONCRETE ABUTMENTS.

THE 3-SPAN BENDER WASH BRIDGE IS SIMILAR.

SINCE THE SAND TANK STRUCTURE WILL PASS THE VAST MAJORITY OF THE FLOW, AND SINCE HEC-2 REQUIRES A COMMON CHANNEL INVERT AND RISE, THOSE VALUES ARE SET TO MATCH THE SAND TANK STRUCTURE. THE BENDER WASH BRIDGE IS MODELED AS IF IT WERE A PART OF THE SAND TANK BRIDGE:

	SAND	BENDER	MODEL
ELCHU	728.1	729.0	728.1
ELCHD	728.0	729.2	728.0
LOW CHD	734.0	735.0	734.0
BWC	133	42	175
BWP	16	4	20
BAREA	672	227	899

REPEAT SECTION 3747 AT THE DOWNSTREAM FACE OF THE BRIDGES. USE PSXECE = 110 FT * 0.001 FT/FT

REPEAT GR CARDS SO THAT THE CHANNEL BOTTOMS CAN BE MADE TO CONFORM TO INVERTS OF THE CULVERT OPENINGS.

REVISE THE LEFT OVERBANK PER TOPO INFORMATION

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NH	8	0.06	9923.0	0.025	10057.0	0.06	10098.9	0.035	10819.5	0.05
NH	10874	0.03	10902.6	0.05	10917.6	0.035	11371.5			
ET			4.1	9600	10990					
X1	3768	53	9923.0	10098.9	110	110	110		0.1	
GR	738	9000	737.7	9340	737.1	9610	736	9920	735.3	9923.0
GR	727.9	9924.0	727.9	10000.0	727.9	10057.0	735.3	10098.9	735.8	10116.8
GR	732.2	10127.2	732.5	10151.6	732.5	10188.2	732.5	10205.4	733.1	10237.8
GR	732.8	10303.2	732.8	10351.8	732.1	10381.3	732.3	10407.4	732.2	10428.8
GR	733.5	10453.1	733.8	10486.4	734.3	10530.1	733.7	10544.0	732.3	10550.0
GR	732.4	10575.4	732.1	10603.1	731.3	10615.3	731.5	10641.0	732.0	10671.4
GR	731.2	10687.4	730.4	10706.3	731.5	10717.8	731.4	10727.8	731.2	10746.5
GR	730.6	10819.5	729.1	10874.0	729.1	10902.6	734.5	10917.6	734.5	10972.1
GR	735.8	11005.5	735.6	11043.3	735.4	11095.5	735.8	11134.5	736.5	11172.3
GR	736.8	11214.4	735.9	11227.4	736.4	11242.8	736.6	11282.5	737.1	11317.7
GR	737.1	11339.8	738.0	11359.2	738.4	11371.5				

ELTRD = 737.3 + 0.1 HV = 737.4
ADD TWO POINTS AT THE BEGINNING TO MATCH BT. BT STATIONS ARE ADJUSTED SLIGHTLY TO MATCH GR'S.

NH	8	0.06	9923.0	0.025	10098.9	0.06	10530.1	0.035	10819.5	0.05
NH	10874	0.03	10902.6	0.05	10917.6	0.035	11371.5			
ET			4.11	9600	10990					
[illegible]	1.25	1.56	3	0	175	20	899	0	728.1	728.0
[illegible]	3782	91	9923.0	10098.9	74	74	74		0.2	
X2			1	734.0	737.4					
BT	-13	8170	739.4		8450	739.1		8636.6	739.1	
BT		8928.3	739.0		9202.9	738.3		9522.0	738.1	
BT		9792.3	737.3		10000.0	737.9		10237.8	738.2	
BT		10486.4	738.5		10717.8	738.6		11134.5	739.1	
BT		11282.5	739.3							
GR	739.2	8170	738.9	8450	737.9	8808.5	737.7	8928.3	737.6	8978.8
GR	737.5	9001.6	737.4	9033.4	737.6	9070.4	737.3	9100.9	737.5	9135.6
GR	737.4	9166.7	737.1	9202.9	736.8	9219.5	736.5	9250.3	735.8	9290.0
GR	735.2	9323.6	734.8	9350.1	735.2	9379.6	735.6	9398.3	736.5	9424.5
GR	736.5	9458.3	736.7	9495.3	735.9	9522.0	735.2	9538.5	734.2	9565.2
GR	732.4	9585.3	732.0	9601.8	730.9	9621.1	730.6	9645.5	729.9	9661.1
GR	730.2	9665.9	730.7	9694.2	730.8	9743.3	730.9	9792.3	731.4	9808.9
GR	731.9	9828.0	731.9	9849.1	731.9	9872.3	731.4	9888.4	731.8	9896.3
GR	735.0	9909.6	736.7	9917.9	735.3	9923.0	727.9	9924.0	727.9	10000.0
GR	727.9	10057.0	735.3	10098.9	735.8	10116.8	732.2	10127.2	732.5	10151.6
GR	732.5	10188.2	732.5	10205.4	733.1	10237.8	732.8	10303.2	732.8	10351.8
GR	732.1	10381.3	732.3	10407.4	732.2	10428.8	733.5	10453.1	733.8	10486.4
GR	734.3	10530.1	733.7	10544.0	732.3	10550.0	732.4	10575.4	732.1	10603.1
GR	731.3	10615.3	731.5	10641.0	732.0	10671.4	731.2	10687.4	730.4	10706.3
GR	731.5	10717.8	731.4	10727.8	731.2	10746.5	730.6	10819.5	728.8	10874.0
GR	728.8	10902.6	734.5	10917.6	734.5	10972.1	735.8	11005.5	735.6	11043.3
GR	735.4	11095.5	735.8	11134.5	736.5	11172.3	736.8	11214.4	735.9	11227.4
GR	736.4	11242.8	736.6	11282.5	737.1	11317.7	737.1	11339.8	738.0	11359.2
GR	738.4	11371.5								

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NH	8	0.06	9920.0	0.025	10081.0	0.06	10177.8	0.035	11117.0	0.05
NH	11139	0.03	11161.9	0.05	11185.8	0.035	12520.0			
ET			4.1	9800	11550					
X1	3836	97	9920	10177.8	295	255	285			
GR	739.9	8879.7	739.1	8922.7	737.9	8959.4	737.7	8998.9	736.9	9040.4
GR	736.1	9081.8	735.9	9119.0	736.7	9150.8	737.0	9176.3	737.4	9211.1
GR	736.8	9239.2	737.7	9261.4	737.9	9285.5	737.5	9297.9	737.4	9347.8
GR	738.1	9380.6	736.9	9407.2	736.7	9446.4	736.5	9485.5	734.9	9520.8
GR	735.4	9559.2	735.2	9601.0	736.0	9644.5	734.9	9766.0	734.4	9803.9
GR	734.2	9834.5	735.2	9872.5	734.6	9893.6	734.7	9920.0	731.5	9927.1
GR	731.7	9941.7	731.6	9949.0	730.6	9954.0	729.6	9958.3	729.7	9973.5
GR	729.4	10000.0	729.0	10021.1	730.5	10032.2	730.5	10047.0	731.0	10067.5
GR	731.8	10081.0	733.8	10091.7	734.1	10106.1	734.9	10139.3	735.4	10177.8
GR	735.0	10213.8	733.6	10244.3	732.8	10272.6	732.3	10319.9	732.2	10380.3
GR	732.0	10445.9	732.3	10519.6	732.6	10583.2	732.5	10633.2	732.2	10667.3
GR	732.9	10705.1	733.1	10758.1	733.6	10812.5	733.7	10873.0	733.9	10933.4
GR	734.5	10981.0	735.2	11004.5	735.9	11024.6	736.2	11039.7	738.2	11049.2

```
GR    739.5    11057.4    739.7    11075.9    740.0    11092.6    738.2    11117.0    730.6    11139.0
GR    730.7    11161.9    732.9    11172.1    738.5    11185.8    738.8    11224.6    737.8    11246.0
GR    738.4    11279.6    738.9    11313.7    739.6    11351.7    740.6    11371.9    740.5    11399.2
GR    740.2    11419.3    739.2    11445.9    738.4    11469.4    737.8    11492.8    737.5    11527.1
GR    736.8    11578.0    736.5    11672.1    736.2    11747.6    736.7    11780.7    736.9    11816.7
GR    736.4    11836.1    737.6    11880.8    738.0    11955.5    738.5    12025.1    738.0    12038.3
GR    738.0    12515.0    740.0    12520.0
```

THIS SECTION IS IN THE "THROAT" OF THE GILA BEND CANAL WHICH CROSSES BENEATH SAND TANK WASH IN AN INVERTED SIPHON.

POINTS LEFT OF 9950 ACTUALLY FOLLOW THE LEVEE UPSTREAM WHICH WAS BUILT TO PROTECT A RESIDENTIAL AREA. THE LEVEE IS HIGHER THAN THE GILA BEND CANAL. POINTS TO THE RIGHT FOLLOW THE GILA BEND CANAL BANK.

THE INVERTED SIPHON ACTS AS AN OPEN CHANNEL. BANKS OF THE GILA BEND CANAL ACT AS WEIRS. SEVERAL MODELING METHODS WERE EMPLOYED:

1. MODEL AS TYPICAL OPEN CHANNEL WITH GR CARDS
2. MODEL AS A SPECIAL BRIDGE WITH A TRAPEZIODAL OPENING
3. MODEL SEPARATELY AS AN OPEN CHANNEL BETWEEN BANK STATIONS AND A WEIR OUTSIDE OF THE BANK STATIONS

THE METHOD THAT MOST CLOSELY APPROXIMATES TRUE CONDITIONS IS NUMBER 3, TO MODEL THE CHANNEL AND WEIR SEPARATELY. RATING CURVES FOR EACH MODEL WERE PLOTTED AND NUMERICALLY ADDED TO ARRIVE AT AN ELEVATION OF 746.2 FOR Q = 18,700 CFS.

THE CHANNEL GEOMETRY USED TO DEVELOP THE CHANNEL RATING IS SHOWN ON THE GR CARDS. THE MODEL WHICH COMPUTES THE WEIR RATING IS INCLUDED AS A SEPARATE MODEL TITLED WEIR1.IN

HEC-2 WOULD NOT COMPUTE THE ELEVATION OBTAINED FROM THE RATING CURVE AT SECTION 3888. IT ASSUMED A CRITICAL DEPTH SLIGHTLY HIGHER BECAUSE IT DID NOT COMPUTE WEIR FLOW. OVERBANK GR POINTS HAVE BEEN ADJUSTED TO SUBTRACT 1.0 FT FROM EACH ELEVATION EXCEPT THE END POINTS

IN ORDER THAT THE MODEL COMPUTE THE CORRECT ELEVATION FOR THE NATURAL PROFILE AND ALSO THE FLOODWAY.

```
NC    0.025     0.025     0.025
ET                        4.1       9950      12000
X1     3888        22     9953.4    10038.6   295.0     250.0     275.0
GR    749.3     8210.0    746.2     8600.0    744.7     9000.0    744.8     9480.0    745.7     9780.0
GR    745.7     9900.0    744.8     9953.4    739.0     9962.8    732.0     9973.7    731.3     9991.4
GR    731.3    10000.0    731.3    10017.3    732.0    10020.6    743.6    10033.4    745.2    10038.6
GR    744.5    10051.0    745.0    10450.0    745.6    11180.0    745.6    11830.0    745.0    12500.0
GR    745.1    13840.0    746.7    14330.0

NH       3     0.035     9949.5    0.03      10172.5   0.035     11559
ET                        4.1       9740      11520
X1     4076        96     9949.5    10172.5   890       1000      993
GR    748.7     9728.1    748.7     9734.9    744.2     9745.7    741.7     9755.9    740.3     9772.8
GR    740.9     9823.2    741.7     9857.3    742.3     9878.0    742.6     9892.7    741.7     9923.1
GR    741.6     9938.7    742.4     9949.5    741.7     9956.7    738.4     9962.2    737.2     9966.8
GR    736.7     9968.4    737.0     9990.1    737.2    10000.0    737.0    10028.6    737.1    10043.9
GR    737.1    10055.4    739.9    10068.0    738.1    10079.5    736.9    10089.7    736.6    10104.2
GR    736.3    10123.0    736.6    10137.7    735.6    10152.5    736.4    10163.8    741.9    10172.5
GR    742.0    10220.0    741.2    10227.1    741.5    10239.0    742.3    10252.4    742.2    10268.3
GR    741.8    10278.8    741.0    10285.0    741.1    10300.3    742.1    10316.6    742.1    10337.0
GR    742.4    10364.4    742.1    10386.1    741.5    10395.3    741.7    10411.1    740.7    10419.2
GR    740.9    10423.1    742.2    10431.4    742.3    10453.4    741.9    10468.7    742.3    10489.8
GR    741.6    10497.7    742.5    10516.0    744.0    10564.8    743.7    10602.0    743.3    10634.0
GR    742.7    10642.4    743.7    10661.3    743.3    10687.6    743.1    10715.7    743.3    10745.9
GR    743.0    10760.7    743.1    10766.1    743.3    10780.0    744.4    10783.5    744.0    10789.4
GR    743.8    10803.9    742.9    10811.5    742.6    10817.1    743.5    10824.1    743.9    10838.7
GR    742.9    10847.0    743.7    10855.5    743.5    10864.1    742.4    10869.6    743.5    10874.0
GR    743.5    10935.5    744.5    10952.2    740.9    11005.3    745.8    11041.0    742.7    11079.9
GR    743.4    11091.9    743.4    11113.3    744.2    11139.6    745.4    11185.3    745.2    11232.5
GR    745.4    11273.8    746.0    11317.0    745.0    11348.2    745.1    11385.9    745.2    11424.2
GR    743.9    11440.6    744.4    11458.2    744.3    11484.0    744.9    11497.5    746.4    11524.2
GR    747.9    11559.0
```

MAIN STREET CROSSES SAND TANK WASH AT RM 4.180 (LOW CROSSING, NO STRUCTURE)

```
NC                                  0.1       0.3
NH       3     0.035     9970.1    0.03      10235.8   0.035     12697.4
NH
ET                        4.1       9900      11000
X1     4277        73     9970.1    10235.8   1100      1000      1061
GR    753.2     9012.7    750.5     9042.7    752.5     9077.3    752.6     9166.4    752.5     9261.6
GR    752.0     9379.3    751.9     9459.0    751.1     9513.6    749.8     9552.5    751.6     9623.5
GR    751.6     9704.9    751.3     9797.7    749.7     9870.8    749.6     9891.3    749.6     9904.7
GR    749.9     9933.9    749.3     9970.1    743.3     9985.0    742.3    10000.0    741.7    10018.9
GR    743.8    10050.1    745.8    10094.2    746.7    10153.0    747.4    10235.8    747.7    10310.3
GR    747.6    10352.5    748.3    10411.8    748.4    10480.4    747.5    10533.0    748.0    10582.7
GR    748.1    10628.1    746.7    10663.0    747.7    10706.9    748.0    10771.9    748.0    10852.8
GR    748.0    10913.0    748.6    10982.1    748.7    11045.2    747.0    11060.4    748.5    11080.8
```



```
GR    749.2    11117.7    748.5    11153.4    747.8    11180.4    748.9    11216.6    748.4    11235.8
GR    746.2    11244.8    747.7    11262.5    748.1    11302.1    748.6    11366.6    748.0    11432.8
GR    746.2    11458.1    745.2    11471.8    747.4    11490.2    747.7    11546.9    748.9    11609.5
GR    749.5    11648.5    749.9    11667.2    750.9    11685.2    752.3    11739.8    752.9    11795.0
GR    753.1    11861.5    753.1    11947.1    753.2    12042.7    753.7    12128.0    754.1    12197.1
```

```
GR     754.2     12250.6      753.8     12311.7      753.3     12351.6      753.7     12384.7      753.8     12460.5
GR     754.0     12533.3      754.9     12617.0      755.6     12697.4
NH         6       0.035     9816.7        0.03    10082.1       0.035    10423.1        0.03    10761.9       0.035
NH     10852        0.03    12107.9
ET                              4.1        9900      10800
X1      4461          72     9816.7     10082.1        940         660        972
GR     757.9      8671.9      756.9      8842.0      757.4      8957.5      757.6      9107.4      757.2      9241.8
GR     756.7      9374.2      756.5      9492.7      756.4      9564.4      756.6      9590.6      756.7      9633.8
GR     755.4      9707.0      753.9      9778.1      752.5      9816.7      749.9      9834.7      749.0      9850.2
GR     751.4      9866.4      752.6      9888.4      751.0      9903.6      749.0      9920.1      749.2      9954.9
GR     750.6      9976.6      750.3      9985.4      746.3      9996.8      745.4     10000.0      748.5     10014.5
GR     752.9     10025.6      753.7     10082.1      753.2     10168.6      753.2     10260.5      753.6     10341.2
GR     754.2     10423.1      753.1     10505.8      752.9     10579.0      753.3     10648.0      753.6     10708.5
GR     752.2     10740.0      751.2     10761.9      752.7     10778.8      750.3     10798.1      750.2     10815.2
GR     752.9     10831.8      750.1     10842.1      750.1     10852.0      753.9     10869.6      753.7     10916.8
GR     751.4     10937.7      752.7     10961.0      751.8     10994.9      751.5     11008.8      751.4     11039.4
GR     753.4     11065.8      753.8     11114.2      753.2     11189.3      753.7     11272.4      753.8     11341.1
GR     753.5     11420.0      753.2     11456.7      750.9     11462.6      752.7     11473.5      753.1     11519.4
GR     753.0     11595.4      753.1     11673.6      753.5     11724.3      752.8     11745.0      753.8     11773.3
GR     752.4     11780.0      755.0     11802.1      756.1     11864.0      756.9     11930.4      757.3     11964.3
GR     759.3     12025.2      760.0     12107.9
```

REDUCE Q TO ACCOUNT FOR SEPARATION FROM BENDER WASH.

```
NH         3       0.035     9936.5        0.03    10022.6       0.035    11139.8
QT         2       14900     14900
ET                              4.1        9900      10800
X1      4638          63     9936.5     10022.6        920         960        935
GR     761.9      9278.9      761.6      9383.0      760.9      9464.6      760.7      9529.6      760.4      9560.6
GR     760.9      9585.3      760.7      9607.7      760.9      9637.8      760.0      9664.3      760.5      9706.4
GR     760.3      9768.7      758.9      9802.7      759.4      9845.2      757.5      9876.1      756.3      9907.8
GR     757.2      9936.5      756.6      9955.3      754.6      9965.7      751.3      9980.4      749.3      9988.8
GR     748.7      9997.1      749.0     10000.0      750.1     10007.4      757.8     10022.6      757.4     10061.7
GR     756.7     10102.7      758.4     10136.1      758.8     10195.1      757.7     10236.5      758.4     10262.7
GR     760.0     10287.7      759.7     10332.3      759.0     10358.8      756.3     10372.1      756.9     10387.2
GR     758.5     10409.5      758.9     10437.9      758.2     10470.7      758.7     10518.0      757.9     10558.6
GR     757.4     10608.3      756.1     10631.6      757.8     10654.6      758.3     10688.4      756.9     10702.1
GR     758.5     10713.3      758.3     10742.6      756.1     10753.4      757.5     10765.6      757.5     10796.8
GR     757.3     10825.1      758.6     10840.0      758.0     10872.2      758.2     10925.1      758.1     10972.8
GR     755.3     10983.7      756.2     10991.4      758.2     10999.3      755.7     11003.5      757.8     11015.0
GR     757.2     11040.4      759.3     11086.0      761.6     11139.8
```



```
NH         4       0.035     9525.1        0.03    10150.9       0.035    10941.7        0.03    11366.2
ET                              4.1        9600      10800
X1      4822          43     9525.1     10150.9        600         900        972
GR     764.5      9125.7      764.3      9279.6      764.3      9393.4      763.2      9525.1      761.5      9594.1
GR     758.6      9615.1      755.4      9630.5      754.8      9656.7      755.4      9682.8      761.1      9712.5
GR     762.9      9780.4      763.3      9851.5      763.3      9901.9      760.2      9951.6      760.3      9994.9
GR     760.7     10000.0      762.3     10082.1      764.2     10150.9      763.4     10193.6      762.7     10223.3
GR     763.9     10252.4      764.2     10290.9      764.2     10369.2      763.9     10456.6      763.9     10565.9
GR     761.9     10619.4      763.0     10643.7      761.4     10700.5      763.6     10755.7      763.4     10807.6
GR     762.6     10844.4      764.5     10880.9      764.8     10941.7      763.3     11011.4      764.0     11081.0
GR     762.7     11157.0      762.6     11184.0      760.9     11193.5      762.7     11205.3      763.1     11223.2
GR     764.6     11249.0      765.5     11317.0      766.0     11366.2
```

INTERSTATE 8 TWIN BRIDGES MODELED USING SEPARATE SPECIAL BRIDGE MODELS.
INCREASE EXPANSION/CONTRACTION COEFFICIENTS FOR BRIDGES

THE MODEL IS NOW JUST FOR THE MAIN SECTION OF SAND TANK WASH.
THEREFORE, THE Q IS REDUCED TO ACCOUNT FOR FLOW PASSING THROUGH
INTERSTATE STRUCTURES TO THE EAST AND WEST OF THE MAIN BRIDGE AS
WELL AS FLOW DIVERTED WEST TOWARD SCOTT AVENUE WASH.

THE FLOW SPLITS WERE DETERMINED USING RATING CURVES GENERATED
BY HEC-2 MODELS WHICH WERE THEN USED BY THE HEC-1 HYDROLOGY MODEL.

THE FLOW SPLITS ARE AS FOLLOWS:

DIVERSION TOWARDS SCOTT AVE. WASH	8,100 CFS
FLOW THROUGH MAIN SAND TANK BRIDGE	9,100 CFS
FLOW THROUGH WEST SAND TANK CULVERT	4,200 CFS
FLOW THROUGH EAST SAND TANK CULVERT	1,600 CFS

WESTBOUND I-8 (SECTION IS TAKEN AT STRUCTURE CENTERLINE, USE
PSXECE = -0.2)

```
NC                                      0.3       0.5
QT         2        9100      9100
ET                              4.11       9929      10070
X1      4857           7      9929      10070        100         270        185                  -0.2
X3        10                                                                 770                  770
GR     772.6        9929     763.6     9929.1      763.0        9952      761.1       9958     761.7      10010
GR     763.6     10069.9     773.1      10070
```

WIER FLOW IS NOT ANTICIPATED, THEREFORE USE DUMMY RDLEN = 100 FT
ELTRD = 772.8 + 0.5 HV = 773.3

```
SB      1.05         1.6         3        100      140.7           7       1186         0     762.4      761.9
ET                              4.11       9929      10070
```



```
X1      4868                                 60         60         60                  0.5
X2                              1      771.3      773.3
```

```
X3       10                                                                                  772.8       772.8

         EASTBOUND I-8   (SECTION IS TAKEN AT THE STRUCTURE CENTERLINE,
         PSXECE =-0.2)

ET                                  4.11       9929       10070
X1     4887          7              9929      10070         100         100         100                    -0.2
X3       10                                                                          772                    772
GR    772.9       9929             765.0     9929.1       763.0        9989       763.0       10030       764.0       10051
GR    764.2    10069.9             773.3      10070

         WIER FLOW IS NOT ANTICIPATED, THEREFORE USE DUMMY RDLEN = 100 FT
         ELTRD = 773.1 + 0.5 HV = 773.6

SB     1.05        1.6                3        100       140.7           7         996           0       764.1       763.6
ET                                  4.11       9929       10070
X1     4898                                                  60          60          60                     0.5
X2                                     1      771.5       773.6
X3       10                                                                        773.1       773.1

         REPEAT SECTION 200 FT UPSTREAM FOR CONTRACTION LOSSES. USE PSXECE =
         1.3 FT.  ADJUST OVERBANKS PER TOPO MAPPING.

ET                                   4.1       9850       10140
X1     4936          8              9929      10070         200         200         200                     1.3
GR    766.7       9850             765.0      9929       763.0        9989       763.0       10030       764.0       10051
GR    764.2      10070             766.7     10080       770.7       10140
1
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    SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      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

 *PROF 1
0

 CCHV=      .100 CEHV=      .300
 *SECNO 926.000
    926.000       9.33     662.13        .00     662.13     663.01        .88        .00        .00     658.10
    18200.0      586.4    12890.0     4723.6      238.4     1476.0     1587.7         .0         .0     657.10
        .00       2.46       8.73       2.98       .060       .035       .060       .000     652.80    9826.23
   .003196         0.         0.         0.          0          0          0        .00     979.42   10805.65

 FLOW DISTRIBUTION FOR SECNO=    926.00          CWSEL=    662.13

 STA=     9826.     9950.    10162.    10230.    10295.    10367.    10520.    10764.    10806.
   PER Q=      3.2      70.8       7.2       5.9       4.5       4.8       3.5        .1
    AREA=    238.4    1476.0     327.0     286.0     251.0     355.3     353.2      15.2
     VEL=      2.5       8.7       4.0       3.7       3.2       2.5       1.8        .7
   DEPTH=      1.9       7.0       4.8       4.4       3.5       2.3       1.4        .4

 *SECNO 1053.000

 3301 HV CHANGED MORE THAN HVINS

 3685 20 TRIALS ATTEMPTED WSEL,CWSEL
 3693 PROBABLE MINIMUM SPECIFIC ENERGY
 3720 CRITICAL DEPTH ASSUMED
   1053.000       9.20     666.30     666.30        .00     666.60        .29       1.41        .06     663.00
    18200.0     2567.0     7347.3     8285.7      980.3     1164.7     4164.5       70.6       21.8     666.10
        .05       2.62       6.31       1.99       .060       .035       .060       .000    657.10    9595.96
   .001560       670.       671.       620.         20          8          0        .00   2019.19   11615.15

 FLOW DISTRIBUTION FOR SECNO=   1053.00          CWSEL=    666.30

 STA=     9596.     9808.     9851.     9919.     9933.    10092.    10228.    10357.    10481.    10622.    10780.    10965.    11121.
   PER Q=      4.5       3.5       4.8       1.2      40.4       5.3       5.5       4.4       4.7       5.3       6.2       5.2
    AREA=    376.2     215.9     311.5      76.8    1164.7     437.4     445.9     382.9     421.5     474.9     557.2     468.3
     VEL=      2.2       3.0       2.8       2.9       6.3       2.2       2.2       2.1       2.0       2.0       2.0       2.0
   DEPTH=      1.8       5.1       4.6       5.2       7.4       3.2       3.5       3.1       3.0       3.0       3.0       3.0

 STA=    11121.    11254.    11402.    11615.
   PER Q=      4.0       3.3       1.6
    AREA=    373.8     346.3     256.3
     VEL=      1.9       1.7       1.2
   DEPTH=      2.8       2.4       1.2

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   11DEC92       10:47:22                                                                                                PAGE   19

    SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      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 1241.000

 3265 DIVIDED FLOW

 3280 CROSS SECTION   1241.00 EXTENDED       .06 FEET
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3301 HV CHANGED MORE THAN HVINS

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

3470 ENCROACHMENT STATIONS=      9400.0   10802.8  TYPE=       1  TARGET=      1402.800
  1241.000      8.36     670.26     670.26       .00     671.10       .84      2.20       .17     669.90
   18200.0    4532.4   10252.6     3415.0    1069.6     1105.2    1238.7     174.4      56.6     670.00
       .09      4.24      9.28       2.76      .060       .035      .060      .000    661.90    9492.50
   .003621     1150.      993.       820.        20         17         0       .00   1304.07   10802.80


FLOW DISTRIBUTION FOR SECNO=   1241.00          CWSEL=    670.26

STA=    9492.    9764.    9791.    9843.    9899.    9910.   10065.   10106.   10130.   10307.   10559.   10803.
  PER Q=      5.1      3.8      6.5      9.0       .6     56.3      6.3      3.2      3.9      4.1      1.3
   AREA=    286.4    146.9    269.1    333.0     34.3   1105.2    232.2    130.0    318.5    379.6    178.4
    VEL=      3.2      4.7      4.4      4.9      3.0      9.3      4.9      4.5      2.2      2.0      1.3
  DEPTH=      1.1      5.6      5.1      6.0      3.2      7.1      5.6      5.3      1.8      1.5       .7

*SECNO 1435.000

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=      9900.0   11387.0  TYPE=       1  TARGET=      1487.000
  1435.000      9.84     676.04     676.04       .00     677.45      1.41      4.19       .17     674.60
   18200.0      48.4    13018.1     5133.5      24.2     1168.3    1798.9     253.0      90.7     672.90
       .12      2.00      11.14       2.85      .060       .035      .060      .000    666.20    9917.01
   .004516      850.      1024.      1180.         3         12         0       .00   1374.81   11291.83


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   11DEC92      10:47:22                                                                                                PAGE   20

    SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      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


FLOW DISTRIBUTION FOR SECNO=   1435.00          CWSEL=    676.04

STA=    9917.    9936.   10086.   10109.   10138.   10174.   10589.   10778.   11105.   11292.
  PER Q=       .3     71.5      3.1      6.5      4.8      4.4      3.2      5.0      1.2
   AREA=     24.2   1168.3    116.8    197.0    178.6    440.7    271.6    447.5    146.7
    VEL=      2.0     11.1      4.8      6.0      4.8      1.8      2.1      2.1      1.5
  DEPTH=      1.3      7.8      5.0      6.8      5.0      1.1      1.4      1.4       .8

*SECNO 1608.000

3301 HV CHANGED MORE THAN HVINS


3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.47

  1608.000      9.66     679.56       .00       .00     680.20       .64      2.66       .08     675.60
   18200.0      76.6     9880.1     8243.3      43.5     1194.7    2784.4     324.8     119.2     677.80
       .16      1.76      8.27       2.96      .060       .030      .040      .000    669.90    9862.49
   .002084      970.      913.       880.         2          0         0       .00   1438.38   11300.87


FLOW DISTRIBUTION FOR SECNO=   1608.00          CWSEL=    679.56

STA=    9862.    9885.   10054.   10211.   10370.   10498.   10632.   10771.   10915.   11069.   11267.   11301.
  PER Q=       .4     54.3      7.4      7.3      5.3      5.2      5.2      5.2      5.5      3.9       .3
   AREA=     43.5   1194.7    415.7    413.7    315.0    314.6    319.2    325.4    345.2    305.8     29.8
    VEL=      1.8      8.3      3.3      3.2      3.1      3.0      3.0      2.9      2.9      2.3      1.6
  DEPTH=      2.0      7.1      2.6      2.6      2.5      2.4      2.3      2.3      2.3      1.5       .9

*SECNO 1791.000

3265 DIVIDED FLOW

3280 CROSS SECTION   1791.00 EXTENDED       .22 FEET

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

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       684.10 ELREA=       682.20

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   11DEC92      10:47:22                                                                                                PAGE   21

    SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      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


  1791.000      7.42     682.22     682.22       .00     682.72       .50      2.24       .01     684.10
   18200.0        .0     7030.4    11169.6        .0      898.8    3000.3     411.6     149.3     682.20
       .21       .00      7.82       3.72      .000       .030      .040      .000    674.80    9893.72
   .002649      960.      966.       950.        20         22         0       .00   1311.10   11244.04


FLOW DISTRIBUTION FOR SECNO=   1791.00          CWSEL=    682.22
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STA=    9894.   10059.   10219.   10358.   10524.   10702.   10893.   11046.   11175.   11244.
 PER Q=     38.6      5.1      9.5     11.3     10.9     11.3      7.5      4.7      1.0
  AREA=    898.8    267.8    426.7    510.3    512.4    537.4    387.4    272.5     85.7
   VEL=      7.8      3.5      4.0      4.0      3.9      3.8      3.5      3.2      2.2
 DEPTH=      5.4      1.7      3.1      3.1      2.9      2.8      2.5      2.1      1.2

*SECNO 1980.000
3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=     9300.0   11858.0  TYPE=      1  TARGET=     2558.000
  1980.000      7.02    689.42    689.42       .00    690.20       .79      3.59       .09    688.40
   18200.0    2052.3    8812.0    7335.8     736.4     917.6    2072.1     504.3     190.9    688.60
       .26      2.79      9.60      3.54      .060      .030      .040      .000    682.40   9395.54
   .004635     1070.      998.     1080.        20        10         0       .00   2074.44  11469.98

FLOW DISTRIBUTION FOR SECNO=   1980.00          CWSEL=    689.42

STA=    9396.    9568.    9646.    9848.    9862.   10052.   10290.   10414.   10534.   10675.   10740.   10790.   10880.
 PER Q=      3.1      4.7      3.2       .3     48.4      3.1      3.1      4.0      3.2      4.0      4.0      4.2
  AREA=    236.1    226.4    250.4     23.6    917.6    226.3    176.1    198.8    187.8    150.8    142.8    186.7
   VEL=      2.4      3.7      2.3      2.3      9.6      2.5      3.2      3.7      3.1      4.9      5.1      4.1
 DEPTH=      1.4      2.9      1.2      1.6      4.8      1.0      1.4      1.7      1.3      2.3      2.8      2.1

STA=   10880.   10995.   11157.   11241.   11365.   11470.
 PER Q=      3.1      3.0      3.3      3.1      2.2
  AREA=    168.8    191.8    150.3    169.8    122.2
   VEL=      3.3      2.9      4.0      3.4      3.2
 DEPTH=      1.5      1.2      1.8      1.4      1.2

1
  11DEC92      10:47:22                                                                                                PAGE   22

   SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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

1490 NH CARD USED
*SECNO 2147.000
3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=     8950.0   11450.0  TYPE=      1  TARGET=     2500.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       694.70 ELREA=       693.70

  2147.000      7.43    693.93    693.93       .00    694.43       .50      3.15       .03    694.70
   18200.0        .0    5994.4   12205.6        .0     754.5    2998.5     575.8     224.5    693.70
       .30       .00      7.94      4.07      .000      .028      .040      .000    686.50   9939.67
   .003069      880.      882.      810.        20        11         0       .00   1473.18  11412.84

FLOW DISTRIBUTION FOR SECNO=   2147.00          CWSEL=    693.93

STA=    9940.    9969.   10066.   10105.   10382.   10422.   10515.   10576.   10623.   10661.   10707.   10772.   10900.
 PER Q=      1.2     31.1       .7      3.5      4.3      7.1      6.5      6.7      5.1      3.9      3.2      5.4
  AREA=     80.2    608.1     66.2    263.1    152.6    292.9    234.2    215.0    167.6    154.7    157.0    283.5
   VEL=      2.7      9.3      1.9      2.4      5.1      4.4      5.0      5.7      5.6      4.6      3.7      3.5
 DEPTH=      2.8      6.2      1.7      1.0      3.8      3.2      3.8      4.6      4.4      3.3      2.4      2.2

STA=   10900.   10978.   11101.   11218.   11331.   11375.   11413.
 PER Q=      4.8      3.8      3.2      4.1      3.7      1.6
  AREA=    215.7    224.2    198.7    217.0    145.7     76.6
   VEL=      4.1      3.1      2.9      3.4      4.7      3.9
 DEPTH=      2.8      1.8      1.7      1.9      3.3      2.0

1490 NH CARD USED
*SECNO 2329.000
1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

3265 DIVIDED FLOW

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
  2329.000      8.43    698.03    698.03       .00    699.00       .98      4.38       .14    695.70
   18200.0    1440.1    7060.4    9699.5     308.6     658.3    1736.3     646.2     258.1    695.50
       .34      4.67     10.73      5.59      .040      .037      .040      .000    689.60   9639.44
   .007623      910.      961.      950.         4        11         0       .00   1618.39  11371.83

1
  11DEC92      10:47:22                                                                                                PAGE   23

   SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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

FLOW DISTRIBUTION FOR SECNO=   2329.00          CWSEL=    698.03

STA=    9639.    9937.    9974.   10093.   10134.   10151.   10168.   10208.   10391.   10526.   10847.   11144.   11193.
 PER Q=      4.6      3.4     38.8      5.4      6.1      6.7      4.6      4.5      6.0      3.4      4.2      3.8
  AREA=    210.1     98.5    658.3    133.1    103.3    109.7    119.1    220.9    231.9    175.5    225.8    116.3
   VEL=      3.9      6.2     10.7      7.3     10.8     11.1      7.1      3.7      4.7      3.5      3.4      5.9
 DEPTH=       .7      2.6      5.5      3.3      6.1      6.4      3.0      1.2      1.7       .5       .8      2.4
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STA=   11193.   11228.   11310.   11372.
 PER Q=      4.5      3.4       .8
  AREA=    114.7    135.8     50.2
   VEL=      7.1      4.6      2.8
 DEPTH=      3.3      1.7       .8

1490 NH CARD USED
*SECNO 2522.000
1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

3301 HV CHANGED MORE THAN HVINS

3470 ENCROACHMENT STATIONS=     9700.0   11571.0  TYPE=      1  TARGET=     1871.000
  2522.000      7.17    703.97       .00       .00    704.44       .47      5.38       .05    702.70
   18200.0    1683.8    5155.5   11360.7     355.4     662.0    2699.6     708.6     290.1    702.10
       .38      4.74      7.79      4.21      .040      .042      .040      .000    696.80   9755.80
  .005069     1150.     1019.      750.         5         0         0       .00   1740.93  11496.73

FLOW DISTRIBUTION FOR SECNO=   2522.00          CWSEL=    703.97

STA=    9756.    9870.    9915.    9935.   10054.   10123.   10233.   10354.   10420.   10469.   10538.   10649.   10757.
 PER Q=      3.8      5.1       .4     28.3      3.2      4.6      3.9      5.3      3.1      3.1      4.5      4.1
  AREA=    178.3    153.7     23.3    662.0    140.0    208.5    193.4    183.4    118.1    134.4    201.8    193.1
   VEL=      3.8      6.0      3.0      7.8      4.2      4.1      3.6      5.2      4.8      4.3      4.0      3.9
 DEPTH=      1.6      3.4      1.2      5.6      2.0      1.9      1.6      2.8      2.4      1.9      1.8      1.8

STA=   10757.   10842.   10922.   10989.   11070.   11124.   11187.   11314.   11494.   11497.
 PER Q=      3.3      4.7      3.6      3.2      3.8      4.6      3.4      4.0       .0
  AREA=    150.1    179.2    143.8    146.4    139.3    165.8    177.0    225.1       .1
   VEL=      4.0      4.8      4.6      3.9      5.0      5.0      3.4      3.3       .3
 DEPTH=      1.8      2.2      2.2      1.8      2.6      2.6      1.4      1.3       .0
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   SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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

1490 NH CARD USED
*SECNO 2686.000
1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

3265 DIVIDED FLOW

3470 ENCROACHMENT STATIONS=     9220.0   10800.0  TYPE=      1  TARGET=     1580.000
  2686.000      8.41    709.01       .00       .00    709.67       .66      5.18       .06    707.60
   18200.0    9581.2    4067.5    4551.4    1430.5     525.5     959.7     772.9     320.7    708.10
       .42      6.70      7.74      4.74      .040      .050      .040      .000    700.60   9287.55
  .007445       880.      866.      820.         3         0         0       .00   1437.58  10742.88

FLOW DISTRIBUTION FOR SECNO=   2686.00          CWSEL=    709.01

STA=    9288.    9592.    9611.    9628.    9651.    9721.    9774.    9832.    9847.    9862.    9893.    9948.    9971.
 PER Q=      5.9      4.7      6.6      5.1      7.5      4.2      3.8      3.5      3.3      3.5      3.6       .8
  AREA=    265.8     93.2    110.7    104.3    206.5    131.2    127.4     71.4     68.9     94.7    120.7     35.7
   VEL=      4.0      9.1     10.9      8.9      6.6      5.8      5.5      9.0      8.8      6.7      5.4      4.3
 DEPTH=       .9      4.9      6.3      4.7      2.9      2.5      2.2      4.8      4.7      3.0      2.2      1.6

STA=    9971.   10070.   10158.   10514.   10599.   10646.   10679.   10708.   10743.
 PER Q=     22.3      3.8      4.5      4.8      4.0      3.3      3.7      1.0
  AREA=    525.5    151.8    283.0    171.0    120.4     93.5     93.9     46.1
   VEL=      7.7      4.6      2.9      5.1      6.0      6.4      7.1      3.8
 DEPTH=      5.3      1.7       .8      2.0      2.6      2.8      3.3      1.3

1490 NH CARD USED
*SECNO 2864.000
1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.46

3470 ENCROACHMENT STATIONS=     8350.0   10700.0  TYPE=      1  TARGET=     2350.000
  2864.000     10.27    713.67       .00       .00    714.01       .34      4.31       .03    711.00
   18200.0    9200.7    4006.9    4992.4    2663.8     570.8    1195.6     846.2     356.8    711.20
       .47      3.45      7.02      4.18      .040      .046      .040      .000    703.40   8398.63
  .003495       850.      940.      870.         4         0         0       .00   2209.86  10608.48
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   SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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

FLOW DISTRIBUTION FOR SECNO=   2864.00          CWSEL=    713.67

STA=    8399.    8650.    8744.    8799.    8932.    9039.    9326.    9516.    9626.    9709.    9746.    9863.    9942.
 PER Q=      4.1      4.0      4.0      4.9      3.7      3.7      4.2      3.7      3.5      3.5      5.1      4.0
  AREA=    283.4    200.1    158.1    259.6    200.8    296.7    236.3    198.5    172.7    127.8    251.7    185.0
   VEL=      2.6      3.7      4.6      3.4      3.4      2.3      3.2      3.3      3.7      5.0      3.7      3.9
```

```
  DEPTH=      1.1      2.1      2.9      1.9      1.9      1.0      1.2      1.8      2.1      3.4      2.2      2.3

STA=    9942.    9976.   10054.   10209.   10248.   10292.   10344.   10412.   10522.   10608.
  PER Q=      2.2     22.0      3.8      5.1      5.6      3.8      3.8      4.2      1.1
  AREA=      93.0    570.8    227.7    162.7    180.9    153.3    171.1    212.5     87.4
   VEL=       4.3      7.0      3.0      5.7      5.6      4.5      4.1      3.6      2.4
  DEPTH=      2.8      7.3      1.5      4.2      4.1      3.0      2.5      1.9      1.0

1490 NH CARD USED
*SECNO 3039.000

3265 DIVIDED FLOW

  3039.000      9.53    716.73       .00       .00    717.15       .42      3.12       .02    714.00
   18200.0   11780.1    5789.0     630.9    3054.1     797.0     163.4     934.1     397.4    715.10
       .53      3.86      7.26      3.86      .040      .036      .040      .000    707.20   7863.82
  .003361      890.      924.      960.         3         0         0       .00   1705.09  10169.36

FLOW DISTRIBUTION FOR SECNO=   3039.00          CWSEL=    716.73

STA=    7864.    7953.    8480.    8539.    8570.    8640.    8696.    8789.    8866.    8966.    9031.    9101.    9210.
  PER Q=      3.5      4.3      3.6      3.4      4.5      3.0      5.4      4.0      4.1      4.0      3.2      3.9
   AREA=    181.5    255.8    155.7    118.8    192.3    138.9    241.9    184.2    209.6    171.1    158.7    211.8
    VEL=      3.6      3.0      4.2      5.3      4.2      4.0      4.1      3.9      3.6      4.3      3.7      3.4
  DEPTH=      2.0       .5      2.6      3.8      2.7      2.5      2.6      2.4      2.1      2.7      2.2      1.9

STA=    9210.    9272.    9352.    9886.    9932.    9984.   10021.   10084.   10144.   10169.
  PER Q=      4.4      7.5      3.8      2.0      3.4     22.4      6.1      3.4       .1
   AREA=    181.7    277.6    272.3    102.1    185.6    327.6    283.7    151.6     11.9
    VEL=      4.4      4.9      2.5      3.6      3.3     12.4      3.9      4.1      1.3
  DEPTH=      2.9      3.5       .5      2.2      3.6      9.0      4.5      2.5       .5

1490 NH CARD USED
1
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    SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      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 3180.000
1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

3265 DIVIDED FLOW

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
  3180.000      9.50    719.70    719.70       .00    720.47       .77      3.14       .10    718.10
   18200.0   12436.3    5763.3        .4    2673.9     551.1        .6     984.4     421.6    719.50
       .55      4.65     10.46       .72      .040      .043      .040      .000    710.20   7556.31
  .008239      570.      744.      680.         4         6         0       .00   1909.50  10053.36

FLOW DISTRIBUTION FOR SECNO=   3180.00          CWSEL=    719.70

STA=    7556.    7764.    7845.    8019.    8122.    8254.    8394.    8495.    8663.    8788.    8947.    9666.    9724.
  PER Q=      9.0      4.1      9.8      3.6      3.6      3.6      3.4      8.7      3.1      4.9      3.7      3.3
   AREA=    339.2    147.3    310.3    150.2    164.0    165.5    142.9    310.5    146.4    209.2    142.7    114.1
    VEL=      4.8      5.1      5.7      4.3      3.9      3.8      4.3      5.1      3.9      4.2      4.7      5.3
  DEPTH=      1.6      1.8      1.8      1.4      1.2      1.2      1.4      1.8      1.2      1.3       .2      2.0

STA=    9724.    9858.    9959.   10047.   10053.
  PER Q=      4.0      3.7     31.7       .0
   AREA=    178.4    153.2    551.1       .6
    VEL=      4.1      4.4     10.5       .7
  DEPTH=      1.3      1.5      6.3       .1

1490 NH CARD USED
*SECNO 3277.000
1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

3265 DIVIDED FLOW

3301 HV CHANGED MORE THAN HVINS

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

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       720.90 ELREA=       723.70

1
   11DEC92      10:47:22                                                                                    PAGE   27

    SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      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

  3277.000      8.54    721.84       .00       .00    722.04       .20      1.51       .06    720.90
   15100.0   12199.5    2900.5        .0    3801.6     594.1        .0    1014.2     435.7    723.70
       .58      3.21      4.88       .00      .040      .047      .000      .000    713.30   7709.76
  .002315      310.      512.      520.         3         0         0       .00   1919.88  10053.77

FLOW DISTRIBUTION FOR SECNO=   3277.00          CWSEL=    721.84
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STA=    7710.    7952.    8021.    8064.    8344.    8413.    8476.    8648.    8864.    8978.    9124.    9195.    9334.
 PER Q=     8.0      4.9      3.1     20.9      3.1      3.3      3.2      3.1      5.1     11.2      5.3      3.0
  AREA=   434.0    202.3    126.2    845.6    152.2    153.4    224.2    223.5    242.7    446.4    213.5    183.5
   VEL=     2.8      3.6      3.7      3.7      3.0      3.2      2.2      2.1      3.2      3.8      3.7      2.5
 DEPTH=     1.8      2.9      3.0      3.0      2.2      2.4      1.3      1.0      2.1      3.1      3.0      1.3

STA=    9334.    9840.    9930.    9953.   10055.
 PER Q=     3.1      3.1       .5     19.2
  AREA=   158.9    163.5     31.9    594.1
   VEL=     3.0      2.8      2.3      4.9
 DEPTH=      .3      1.8      1.4      5.9

1490 NH CARD USED
*SECNO 3372.000
1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

3265 DIVIDED FLOW

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =   .60

 3372.000     7.22   723.02      .00      .00   723.46      .44     1.35      .07   723.90
  15100.0  10548.9   4551.1       .0   2487.4    630.2       .0   1045.0    450.3   723.80
      .60     4.24     7.22      .00     .040     .047     .000     .000   715.80  7909.88
  .006415     330.     502.     520.        3        0        0      .00  1815.81 10087.97

FLOW DISTRIBUTION FOR SECNO=   3372.00          CWSEL=    723.02

STA=    7910.    8238.    8275.    8317.    8443.    8492.    8789.    8879.    9082.    9638.    9751.    9786.   10101.
 PER Q=    15.6      4.0      4.1      7.4      3.3     13.3      4.0      3.1      9.2      3.9      2.0     30.1
  AREA=   523.6    102.9    110.1    242.4    101.1    480.1    145.6    162.3    406.4    150.1     62.8    630.2
   VEL=     4.5      5.9      5.6      4.6      4.9      4.2      4.2      2.9      3.4      3.9      4.9      7.2
 DEPTH=     1.6      2.8      2.6      1.9      2.1      1.6      1.6       .8       .7      1.3      1.8      4.9
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   SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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

1490 NH CARD USED
*SECNO 3470.000
1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

3265 DIVIDED FLOW

 3470.000     6.46   725.56      .00      .00   725.87      .32     2.40      .01   724.80
  15100.0  10165.1   3628.3   1306.5   2606.0    600.6    337.2   1077.8    469.2   724.20
      .63     3.90     6.04     3.87     .040     .046     .040     .000   719.10  8097.32
  .004738     420.     517.     240.        4        0        0      .00  2152.66 10326.20

FLOW DISTRIBUTION FOR SECNO=   3470.00          CWSEL=    725.56

STA=    8097.    8229.    8283.    8326.    8390.    8477.    8577.    8689.    8853.    9051.    9119.    9331.    9430.
 PER Q=     3.2      4.4      4.9      3.9      6.8      3.0     10.5      3.2      3.2      4.3      6.0      3.5
  AREA=   147.3    138.1    135.1    135.3    218.7    134.3    313.0    154.2    168.8    151.2    286.9    136.8
   VEL=     3.3      4.8      5.5      4.3      4.7      3.4      5.1      3.2      2.8      4.3      3.1      3.9
 DEPTH=     1.1      2.6      3.1      2.1      2.5      1.3      2.8       .9       .9      2.2      1.4      1.4

STA=    9430.    9718.    9782.    9907.   10039.   10283.   10326.
 PER Q=     4.2      3.8      2.3     24.0      6.4      2.3
  AREA=   223.9    133.5    129.1    600.6    258.3     78.8
   VEL=     2.8      4.3      2.7      6.0      3.7      4.3
 DEPTH=      .8      2.1      1.0      4.5      1.1      1.8

1490 NH CARD USED
*SECNO 3563.000
1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

3265 DIVIDED FLOW

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
 3563.000     6.42   728.22   728.22      .00   729.12      .90     2.62      .17   727.50
  15100.0   5437.4   8106.9   1555.7   1318.5    841.5    376.1   1111.7    488.9   726.30
      .65     4.12     9.63     4.14     .040     .037     .040     .000   721.80  9043.42
  .006187     480.     491.     500.        2        5        0      .00  1392.55 10461.76
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   SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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

FLOW DISTRIBUTION FOR SECNO=   3563.00          CWSEL=    728.22

STA=    9043.    9162.    9231.    9317.    9421.    9488.    9550.    9583.    9718.    9762.    9934.    9943.   10099.
 PER Q=     3.2      4.2      3.2      3.8      3.1      3.4      3.2      3.3      3.1      5.2       .4     53.7
  AREA=   138.4    136.1    123.6    151.3    111.3    115.8     87.3    149.7     94.9    195.2     14.9    841.5
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   VEL=      3.5      4.6      3.9      3.8      4.2      4.5      5.6      3.3      4.9      4.0      4.2      9.6
 DEPTH=      1.2      2.0      1.4      1.5      1.6      1.9      2.6      1.1      2.2      1.1      1.8      5.4

A=   10099.   10166.   10363.   10461.
PER Q=     3.9      3.1      3.3
 AREA=   129.6    129.5    117.0
   VEL=    4.6      3.6      4.2
 DEPTH=    1.9       .7      1.2

1490 NH CARD USED
*SECNO 3657.000
1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

3265 DIVIDED FLOW

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
  3657.000      8.10    732.20    732.20       .00    733.27      1.07      2.99       .05    731.50
   15100.0    2048.5    8801.8    4249.7     538.2     855.8     987.2    1140.1     503.9    731.40
       .67      3.81     10.28      4.30      .040      .039      .040      .000    724.10   8978.94
   .005766      490.      496.      530.         3        11         0       .00   1191.89  10607.84


FLOW DISTRIBUTION FOR SECNO=   3657.00          CWSEL=    732.20

STA=    8979.    9236.    9298.    9431.    9921.   10045.   10125.   10178.   10273.   10461.   10540.   10595.   10608.
  PER Q=     5.3      3.6      3.1      1.4     58.3      3.9      3.1      4.7      8.1      4.5      3.4       .5
   AREA=   161.0    122.5    149.8    105.0    855.8    134.0     96.6    169.2    302.5    154.5    111.5     19.0
    VEL=     5.0      4.5      3.2      2.1     10.3      4.4      4.8      4.2      4.1      4.4      4.5      3.9
  DEPTH=      .6      2.0      1.1       .2      6.9      1.7      1.8      1.8      1.6      1.9      2.0      1.4

CCHV=     .300 CEHV=     .500
1490 NH CARD USED
*SECNO 3676.000
1
   11DEC92      10:47:22                                                                                          PAGE   30

    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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


1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

3265 DIVIDED FLOW

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=     8729.9   10150.0  TYPE=      1  TARGET=     1420.100
  3676.000     10.55    733.65    733.65       .00    734.49       .84       .37       .07    732.00
   15100.0    3573.8   10582.8     943.4    1223.4    1237.9     232.0    1145.9     506.7    731.10
       .67      2.92      8.55      4.07      .040      .039      .040      .000    723.10   8733.27
   .002533      100.      100.      100.         3         8         0       .00   1251.11  10150.00


FLOW DISTRIBUTION FOR SECNO=   3676.00          CWSEL=    733.65

STA=    8733.    9211.    9236.    9298.    9396.    9545.    9945.   10074.   10125.   10150.
  PER Q=     3.4      4.0      4.6      4.2      3.3      4.2     70.1      3.6      2.6
   AREA=   237.8    115.5    180.5    206.8    198.8    284.1   1237.9    141.9     90.1
    VEL=     2.2      5.2      3.8      3.1      2.5      2.2      8.5      3.9      4.4
  DEPTH=      .5      4.6      3.0      2.1      1.3       .7      9.6      2.8      3.6

1490 NH CARD USED

SPECIAL CULVERT

SC  CUNO      CUNV      ENTLC     COFQ      RDLEN     RISE      SPAN      CULVLN    CHRT      SCL       ELCHU     ELCHD
     8         .014       .40     3.00       .00      8.00     15.60     80.00      8         1       723.20    723.10

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

*SECNO 3693.000
1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

SPECIAL CULVERT OUTLET CONTROL + WEIR FLOW EG =    734.60

3265 DIVIDED FLOW

SPECIAL CULVERT

     EGIC      EGOC        H4     QWEIR     QCULV       VCH     ACULV     ELTRD    WEIRLN
   738.48    739.06       .11      8809.     6317.     9.037     998.4    732.80     1671.


3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
1
   11DEC92      10:47:22                                                                                          PAGE   31

    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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
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3470 ENCROACHMENT STATIONS=     8729.9   10150.0  TYPE=      1  TARGET=     1420.100

1495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       732.20 ELREA=       733.90

 3693.000     10.58    733.78    733.78       .00    734.76       .98       .24      -.24    732.10
  15100.0    3877.1   11222.9        .0    1255.9    1241.8        .0    1151.3     509.3    731.20
      .67      3.09      9.04       .00      .040      .039      .000      .000    723.20   8733.22
 .002818       90.       90.       90.        20         6         0       .00   1203.71  10074.00

FLOW DISTRIBUTION FOR SECNO=   3693.00          CWSEL=    733.78

STA=    8733.    9198.    9236.    9298.    9396.    9490.    9899.    9945.   10074.
  PER Q=      3.0      5.0      4.9      4.6      3.1      3.5      1.5     74.3
   AREA=    216.7    148.5    182.3    209.8    162.8    256.7     79.1   1241.8
    VEL=      2.1      5.1      4.1      3.3      2.9      2.1      2.8      9.0
  DEPTH=       .5      3.8      3.0      2.1      1.7       .6      1.7      9.6

1490 NH CARD USED
*SECNO 3747.000

3265 DIVIDED FLOW

3301 HV CHANGED MORE THAN HVINS

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.79

3470 ENCROACHMENT STATIONS=     9475.0   11371.5  TYPE=      1  TARGET=     1896.500
  3747.000      8.07    735.07       .00       .00    735.45       .38       .51       .18    736.70
   18300.0    2835.3    7340.7    8124.0    1292.1    1075.9    2448.6    1175.2     517.8    735.80
       .69      2.19      6.82      3.32      .060      .026      .036      .000    727.00   9542.02
  .001299      285.      285.      285.         3         0         0       .00   1409.60  10986.70

FLOW DISTRIBUTION FOR SECNO=   3747.00          CWSEL=    735.07

1
   11DEC92      10:47:22                                                                                    PAGE    32

    SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      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

STA=    9542.    9661.    9743.    9809.    9896.    9910.   10045.   10099.   10205.   10352.   10429.   10575.   10641.
  PER Q=      4.0      4.9      3.4      3.1       .1     37.7      2.4      3.4      4.6      3.5      3.1      3.9
   AREA=    343.3    366.8    271.7    288.1     22.2    873.3    202.5    216.4    322.2    212.4    241.9    213.4
    VEL=      2.1      2.4      2.3      2.0      1.2      7.9      2.2      2.8      2.6      3.0      2.3      3.4
  DEPTH=      2.9      4.5      4.1      3.3      1.6      7.2      3.9      2.0      2.2      2.8      1.7      3.3

STA=   10641.   10706.   10747.   10820.   10875.   10897.   10987.
  PER Q=      4.7      3.2      6.6      4.5      4.7      2.3
   AREA=    237.0    154.0    304.3    267.7    148.7    130.5
    VEL=      3.6      3.7      4.0      3.1      5.7      3.3
  DEPTH=      3.6      3.8      4.2      4.9      6.6      1.5

1490 NH CARD USED
*SECNO 3768.000

3265 DIVIDED FLOW

  3768.000      7.11    735.11       .00       .00    735.74       .64       .17       .13    735.40
   18300.0        .0    8989.1    9310.9        .0    1092.0    2389.6    1185.7     520.9    735.40
       .70       .00      8.23      3.90      .000      .026      .036      .000    728.00   9923.04
  .001832      110.      110.      110.         2         0         0       .00   1040.31  10985.18

FLOW DISTRIBUTION FOR SECNO=   3768.00          CWSEL=    735.11

STA=    9923.   10057.   10099.   10188.   10303.   10381.   10453.   10603.   10641.   10687.   10718.   10820.   10874.
  PER Q=     47.2      1.9      3.1      4.2      3.2      3.5      4.1      3.1      3.4      3.2     10.1      5.8
   AREA=    948.9    143.1    168.1    249.4    182.9    184.8    257.2    133.1    153.6    126.2    404.9    281.2
    VEL=      9.1      2.4      3.3      3.1      3.2      3.4      2.9      4.2      4.0      4.7      4.6      3.8
  DEPTH=      7.1      3.6      1.9      2.2      2.3      2.6      1.7      3.5      3.3      4.2      4.0      5.2

STA=   10874.   10903.   10985.
  PER Q=      6.4       .9
   AREA=    169.0     79.2
    VEL=      6.9      2.1
  DEPTH=      5.9      1.0

1490 NH CARD USED
1
   11DEC92      10:47:22                                                                                    PAGE    33

    SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      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 BRIDGE

5227 DOWNSTREAM ELEV IS     733.37 , NOT     735.11 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

SB  XK         XKOR       COFQ       RDLEN      BWC        BWP        BAREA      SS         ELCHU      ELCHD
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    1.25      1.56      3.00       .00    175.00     20.00    899.00       .00    728.10    728.00

ECNO 3782.000
0 CROSS SECTION   3782.00 EXTENDED       .58 FEET

3301 HV CHANGED MORE THAN HVINS

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  3.86

PRESSURE AND WEIR FLOW,  Weir Submergence Based on TRAPEZOIDAL Shape

 EGPRS      EGLWC       H3       QWEIR      QPR       BAREA   TRAPEZOID      ELLC      ELTRD     WEIRLN
                                                              AREA
   745.14    739.01      .00      6593.    11739.      899.      915.      734.00    737.40      2915.

  3782.000     11.08    739.18       .00       .00    739.24       .06      3.49       .00     735.50
   18300.0    3738.5    5393.8    9167.8    4553.9    1790.3    6963.3    1199.9     524.3     735.50
       .71       .82      3.01      1.32      .060      .025      .042      .000    728.10    8374.92
   .000123       74.       74.       74.         2         0         5       .00   2996.58   11371.50

FLOW DISTRIBUTION FOR SECNO=   3782.00          CWSEL=    739.18

STA=    8375.    9380.    9621.    9694.    9792.    9872.    9923.   10099.   10205.   10352.   10453.   10575.   10641.
  PER Q=     3.1      3.8      3.9      4.9      3.3      1.5     29.5      3.1      4.5      3.5      4.1      4.5
   AREA=  1325.2    929.5    621.3    802.5    583.7    291.7   1790.3    623.6    895.0    662.6    666.5    470.1
    VEL=      .4       .7      1.1      1.1      1.0       .9      3.0       .9       .9      1.0      1.1      1.8
  DEPTH=     1.3      3.8      8.5      8.2      7.3      5.8     10.2      5.9      6.1      6.5      5.4      7.2

STA=   10641.   10687.   10728.   10820.   10874.   10903.   11006.   11172.   11372.
  PER Q=     3.3      3.3      7.5      4.0      4.1      3.2      3.1      1.9
   AREA=   337.9    322.3    733.5    505.8    291.2    482.1    544.5    428.3
    VEL=     1.8      1.9      1.9      1.5      2.6      1.2      1.0       .8
  DEPTH=     7.3      8.0      8.0      9.3     10.2      4.7      3.3      2.1

1
   11DEC92      10:47:22                                                                                    PAGE   34

    SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      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

1490 NH CARD USED
*SECNO 3836.000

3265 DIVIDED FLOW

  3836.000     10.23    739.23       .00       .00    739.28       .05       .04       .00     734.70
   18300.0    1996.0    4820.5   11483.5    2928.3    1876.0    7539.9    1279.7     544.5     735.40
       .75       .68      2.57      1.52      .060      .027      .035      .000    729.00    8915.90
   .000153      295.      285.      255.         2         0         0       .00   3440.99   12518.07

FLOW DISTRIBUTION FOR SECNO=   3836.00          CWSEL=    739.23

STA=    8916.    9486.    9766.    9920.   10081.   10178.   10273.   10320.   10380.   10446.   10520.   10583.   10633.
  PER Q=     3.3      4.3      3.3     24.2      2.2      3.9      3.2      4.4      5.0      5.5      4.4      3.4
   AREA=  1158.2   1061.7    708.3   1417.3    458.6    465.8    315.8    421.4    467.5    521.5    431.0    333.8
    VEL=      .5       .7       .8      3.1       .9      1.5      1.9      1.9      1.9      1.9      1.9      1.9
  DEPTH=     2.0      3.8      4.6      8.8      4.7      4.9      6.7      7.0      7.1      7.1      6.8      6.7

STA=   10633.   10705.   10758.   10873.   10981.   11162.   11672.   11956.   12518.
  PER Q=     5.0      3.2      6.0      4.9      5.0      3.2      3.4      2.2
   AREA=   486.9    330.0    657.1    567.0    557.0    665.3    652.5    667.4
    VEL=     1.9      1.8      1.7      1.6      1.7       .9       .9       .6
  DEPTH=     6.8      6.2      5.7      5.3      3.1      1.3      2.3      1.2

*SECNO 3888.000
3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
  3888.000     14.92    746.22    746.22       .00    746.74       .52       .08       .23     744.80
   18300.0    2755.3    8130.3    7414.4    1423.1     967.4    4067.5    1336.7     571.7     745.20
       .77      1.94      8.40      1.82      .025      .025      .025      .000    731.30    8597.09
   .000889      295.      275.      250.        20        27         0       .00   5586.87   14183.96

FLOW DISTRIBUTION FOR SECNO=   3888.00          CWSEL=    746.22

STA=    8597.    9480.    9900.    9953.   10039.   10450.   11180.   12500.   13840.   14184.
  PER Q=    11.4      3.2       .5     44.4      7.6      6.2      8.5     16.9      1.3
   AREA=  1016.4    354.7     52.0    967.4    604.8    673.9   1023.6   1572.0    193.2
    VEL=     2.1      1.6      1.7      8.4      2.3      1.7      1.5      2.0      1.2
  DEPTH=     1.2       .8      1.0     11.4      1.5       .9       .8      1.2       .6

1
   11DEC92      10:47:22                                                                                    PAGE   35

    SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      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

1490 NH CARD USED
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*SECNO 4076.000

302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.92

 4076.000     11.57    747.17       .00       .00    747.27       .11       .41       .12    742.40
  18300.0    2428.9    7651.1    8219.9    1159.1    2188.6    4939.6    1502.5     654.6    741.90
      .88      2.10      3.50      1.66      .035      .030      .035      .000    735.60   9738.58
  .000242      890.      993.     1000.         2         0         0       .00   1803.37  11541.95


FLOW DISTRIBUTION FOR SECNO=   4076.00          CWSEL=    747.17

STA=    9739.    9823.    9878.    9939.    9950.   10173.   10227.   10285.   10337.   10395.   10453.   10516.   10634.
  PER Q=      5.9      3.5      3.3       .6     41.8      3.1      3.4      3.3      3.1      3.5      3.4      3.7
   AREA=    488.6    306.9    307.8     55.8   2188.6    287.2    307.9    287.6    290.7    315.8    319.2    431.7
    VEL=      2.2      2.1      2.0      2.0      3.5      2.0      2.0      2.1      1.9      2.0      2.0      1.6
  DEPTH=      5.8      5.6      5.1      5.2      9.8      5.3      5.3      5.5      5.0      5.4      5.1      3.7

STA=   10634.   10746.   10839.   10936.   11041.   11185.   11458.   11542.
  PER Q=      3.9      3.0      3.1      3.9      3.4      3.1      1.0
   AREA=    437.5    346.3    361.9    426.2    439.9    533.2    154.5
    VEL=      1.6      1.6      1.6      1.7      1.4      1.1      1.1
  DEPTH=      3.9      3.7      3.7      4.0      3.0      2.0      1.8

CCHV=     .100 CEHV=     .300
1490 NH CARD USED
1490 NH CARD USED
*SECNO 4277.000

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
 4277.000      7.64    749.34    749.34       .00    750.14       .80       .63       .21    749.30
  18300.0        .0    9434.9    8865.1        .0    1058.3    1881.4    1634.9     695.0    747.40
      .92       .04      8.92      4.71      .025      .025      .025      .000    741.70   9967.90
  .003586     1100.     1061.     1000.        20        17         0       .00   1669.97  11637.87


1
  11DEC92      10:47:22                                                                                    PAGE   36

   SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      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


FLOW DISTRIBUTION FOR SECNO=   4277.00          CWSEL=    749.34

STA=    9968.   10236.   10310.   10412.   10533.   10628.   10707.   10853.   10982.   11180.   11302.   11458.   11490.
  PER Q=     51.6      3.8      3.9      3.1      3.4      5.1      5.0      3.3      3.2      4.3      4.5      4.6
   AREA=   1058.3    133.1    153.4    140.6    137.3    161.4    204.7    152.1    165.6    166.3    188.8    105.7
    VEL=      8.9      5.2      4.7      4.0      4.6      5.7      4.5      4.0      3.5      4.8      4.3      7.9
  DEPTH=      4.0      1.8      1.5      1.2      1.4      2.0      1.4      1.2       .8      1.4      1.2      3.3

STA=   11490.   11610.   11638.
  PER Q=      4.2       .0
   AREA=    166.2      6.2
    VEL=      4.6      1.3
  DEPTH=      1.4       .2

1490 NH CARD USED
*SECNO 4461.000
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
 4461.000      8.88    754.28    754.28       .00    755.04       .75      3.66       .01    752.50
  18300.0     146.7    8502.6    9650.7      45.4     961.7    2026.5    1687.6     725.2    753.70
      .95      3.23      8.84      4.76      .035      .030      .031      .000    745.40   9759.85
  .005799      940.      972.      660.         6        12         0       .00   2036.17  11796.02


FLOW DISTRIBUTION FOR SECNO=   4461.00          CWSEL=    754.28

STA=     9760.    9817.   10082.   10341.   10579.   10740.   10779.   10815.   10852.   10961.   11009.   11039.   11189.
  PER Q=       .8     46.5      4.2      3.4      3.9      3.4      5.0      4.4      4.6      3.7      3.6      3.1
   AREA=      45.4    961.7    243.4    178.1    175.9     96.1    122.7    115.5    151.4    105.6     86.8    141.9
    VEL=       3.2      8.8      3.1      3.5      4.1      6.5      7.4      7.0      5.6      6.5      7.6      4.0
  DEPTH=        .8      3.6       .9       .7      1.1      2.5      3.4      3.1      1.4      2.2      2.8       .9

STA=   11189.   11457.   11519.   11674.   11796.
  PER Q=      3.2      3.1      4.5      2.6
   AREA=    190.6    103.8    190.4    124.3
    VEL=      3.1      5.4      4.3      3.8
  DEPTH=       .7      1.7      1.2      1.0

1490 NH CARD USED
*SECNO 4638.000
1
  11DEC92      10:47:22                                                                                    PAGE   37

   SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      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


3265 DIVIDED FLOW
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7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
 4638.000     10.94    759.64    759.64       .00    760.56       .93      4.76       .05    757.20
  14900.0    1094.2    6010.9    7794.9     233.5     550.8    1783.3    1748.7     761.3    757.80
      .99      4.69     10.91      4.37      .035      .030      .035      .000    748.70   9784.81
  .004263      920.      935.      960.         2        12         0       .00   1256.37  11093.87


FLOW DISTRIBUTION FOR SECNO=   4638.00          CWSEL=    759.64

STA=    9785.    9908.    9937.   10023.   10103.   10136.   10263.   10410.   10559.   10632.   10688.   10753.   10797.
  PER Q=      4.2      3.1     40.3      7.4      3.0      3.5      4.0      3.6      5.4      3.6      3.1      3.3
   AREA=    150.7     82.8    550.8    206.2     86.4    160.1    135.1    172.6    166.0    115.4    112.1    101.3
    VEL=      4.2      5.6     10.9      5.3      5.2      3.3      4.4      3.1      4.9      4.6      4.1      4.9
  DEPTH=      1.2      2.9      6.4      2.6      2.6      1.3       .9      1.2      2.3      2.0      1.7      2.3

STA=   10797.   10872.   10973.   10999.   11040.   11094.
  PER Q=      3.6      3.7      3.2      3.3      1.5
   AREA=    131.5    152.2     81.2     98.7     64.5
    VEL=      4.1      3.7      5.9      4.9      3.4
  DEPTH=      1.7      1.5      3.1      2.4      1.2

1490 NH CARD USED
*SECNO 4822.000

3265 DIVIDED FLOW

  4822.000      9.31   764.11       .00       .00   764.75       .63      4.16       .03    763.20
   14900.0      86.4  12308.1    2508.5      50.2   1797.2     726.9    1802.8     790.5    764.20
      1.03      1.72     6.85      3.45      .035      .030      .033      .000    754.80   9415.49
  .004665      600.      972.      900.         3         0         0       .00   1603.83  11240.67


FLOW DISTRIBUTION FOR SECNO=   4822.00          CWSEL=    764.11

STA=    9415.    9525.   10151.   10644.   10701.   10844.   11184.   11241.
  PER Q=       .6     82.6      3.9      3.3      3.7      3.3      2.7
   AREA=     50.2   1797.2    207.8    108.8    162.2    167.7     80.4
    VEL=      1.7      6.8      2.8      4.5      3.4      2.9      4.9
  DEPTH=       .5      2.9       .4      1.9      1.1       .5      1.4

1
   11DEC92      10:47:22                                                                                          PAGE   38

    SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      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


CCHV=     .300 CEHV=     .500
*SECNO 4857.000

3301 HV CHANGED MORE THAN HVINS

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

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       770.00 ELREA=       770.00

  4857.000      6.21   767.11    767.11       .00    769.66      2.55       .97       .96    772.40
    9100.0        .0   9100.0        .0        .0     710.1        .0    1810.4     794.9    772.90
      1.04       .00    12.81       .00      .000      .025      .000      .000    760.90   9929.06
  .005771      100.      185.      270.        20        14         0       .00    140.88  10069.94


FLOW DISTRIBUTION FOR SECNO=   4857.00          CWSEL=    767.11

STA=    9929.   10070.
  PER Q=    100.0
   AREA=    710.1
    VEL=     12.8
  DEPTH=      5.0


SPECIAL BRIDGE

5227 DOWNSTREAM ELEV IS     766.15 , NOT     767.11 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

SB  XK        XKOR      COFQ      RDLEN     BWC       BWP       BAREA     SS        ELCHU     ELCHD
     1.05      1.60      3.00    100.00    140.70      7.00   1186.00       .00    762.40    761.90

*SECNO 4868.000

3301 HV CHANGED MORE THAN HVINS


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

CLASS B LOW FLOW

1
   11DEC92      10:47:22                                                                                          PAGE   39

    SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      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
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3420 BRIDGE W.S.=     767.39 BRIDGE VELOCITY=      12.99     CALCULATED CHANNEL AREA=       667.

 EGPRS       EGLWC       H3       QWEIR       QLOW       BAREA   TRAPEZOID      ELLC      ELTRD     WEIRLN
                                                                    AREA
     .00     770.53      .00         0.      9100.      1186.      1190.     771.30     773.30         0.


3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       772.80 ELREA=       772.80

  4868.000      7.52    768.92       .00        .00    770.53      1.61       .87       .00    772.90
    9100.0        .0    9100.0        .0         .0     894.7        .0    1811.5     795.1    773.40
      1.04       .00     10.17       .00       .000      .025      .000      .000    761.40   9929.04
   .002735       60.       60.       60.          0         0         0       .00    140.91  10069.95

FLOW DISTRIBUTION FOR SECNO=   4868.00          CWSEL=    768.92

STA=    9929.   10070.
  PER Q=    100.0
   AREA=    894.7
    VEL=     10.2
  DEPTH=      6.3

*SECNO 4887.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       772.00 ELREA=       772.00

  4887.000      6.21    769.01       .00        .00    771.10      2.09       .33       .24    772.70
    9100.0        .0    9100.0        .0         .0     784.8        .0    1813.5     795.5    773.10
      1.04       .00     11.59       .00       .000      .025      .000      .000    762.80   9929.05
   .004192      100.      100.      100.          2         0         0       .00    140.91  10069.96

FLOW DISTRIBUTION FOR SECNO=   4887.00          CWSEL=    769.01

STA=    9929.   10070.
  PER Q=    100.0
   AREA=    784.8
    VEL=     11.6
  DEPTH=      5.6

1
   11DEC92      10:47:22                                                                                    PAGE   40

    SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      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 BRIDGE

3227 DOWNSTREAM ELEV IS     767.85 , NOT     769.01 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

SB  XK        XKOR       COFQ       RDLEN      BWC        BWP        BAREA      SS         ELCHU      ELCHD
     1.05       1.60       3.00     100.00     140.70       7.00     996.00        .00     764.10     763.60

*SECNO 4898.000

3301 HV CHANGED MORE THAN HVINS

CLASS B LOW FLOW

3420 BRIDGE W.S.=     769.09 BRIDGE VELOCITY=      12.99     CALCULATED CHANNEL AREA=       667.

 EGPRS       EGLWC       H3       QWEIR       QLOW       BAREA   TRAPEZOID      ELLC      ELTRD     WEIRLN
                                                                    AREA
    771.09     772.08      .00         0.      9100.       996.       989.     771.50     773.60         0.


3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       773.10 ELREA=       773.10

  4898.000      7.32    770.62       .00        .00    772.08      1.46       .97       .00    773.20
    9100.0        .0    9100.0        .0         .0     939.9        .0    1814.7     795.7    773.60
      1.04       .00      9.68       .00       .000      .025      .000      .000    763.30   9929.03
   .002343       60.       60.       60.          0         0         0       .00    140.94  10069.97

FLOW DISTRIBUTION FOR SECNO=   4898.00          CWSEL=    770.62

STA=    9929.   10070.
  PER Q=    100.0
   AREA=    939.9
    VEL=      9.7
  DEPTH=      6.7

*SECNO 4936.000
3280 CROSS SECTION   4936.00 EXTENDED      4.04 FEET


3301 HV CHANGED MORE THAN HVINS

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    SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      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
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   SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID    ENDST

2 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.62

 4936.000      7.74    772.04       .00       .00    772.61       .58       .27       .26    766.30
   9100.0    1912.7    6559.1     628.3     386.0     999.5     175.1    1820.4     796.6    765.50
     1.05      4.95      6.56      3.59      .025      .025      .025      .000    764.30   9850.00
  .000896      200.      200.      200.         3         0         0       .00    290.00  10140.00

FLOW DISTRIBUTION FOR SECNO=   4936.00          CWSEL=    772.04

STA=    9850.    9929.   10070.   10080.   10140.
  PER Q=     21.0     72.1      3.1      3.8
   AREA=    386.0    999.5     52.9    122.2
    VEL=      5.0      6.6      5.3      2.9
  DEPTH=      4.9      7.1      5.3      2.0

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T1      FLOOD CONTROL DISTRICT OF MARICOPA COUNTY - CONTRACT FCD 90-67
T2      GILA BEND AREA FLOODPLAIN DELINEATION STUDY BY BURGESS & NIPLE
T3      SAND TANK WASH 100-YEAR (FLOODWAY)        J. MISCHLER - (602) 244-8100

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                3                                                                   663.13

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

     15                  -1                                                                      15

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    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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

*PROF 2
0

CCHV=     .100 CEHV=     .300
*SECNO 926.000

3470 ENCROACHMENT STATIONS=     9950.0   10381.0  TYPE=      1  TARGET=      431.000
 926.000     10.33    663.13       .00    662.13    664.01       .88       .00       .00    658.10
 18200.0        .8   14091.2    4108.0       1.5    1688.1    1124.1        .0        .0    657.10
     .00       .53      8.35      3.65      .060      .035      .060      .000    652.80   9950.00
  .002441       0.        0.        0.         0         0         0       .00    431.00  10381.00

FLOW DISTRIBUTION FOR SECNO=    926.00          CWSEL=    663.13

STA=    9950.    9950.   10162.   10230.   10295.   10367.   10381.
  PER Q=       .0     77.4      8.6      7.3      5.9       .8
   AREA=      1.5   1688.1    394.7    351.3    322.1     56.0
    VEL=       .5      8.3      4.0      3.8      3.3      2.6
  DEPTH=      5.0      8.0      5.8      5.4      4.5      3.9

*SECNO 1053.000

3301 HV CHANGED MORE THAN HVINS

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

3470 ENCROACHMENT STATIONS=     9900.0   10400.0  TYPE=      1  TARGET=      500.000
 1053.000      9.39    666.49    666.49    666.30    667.88      1.39      2.13       .15    663.00
 18200.0    1077.8   12984.9    4137.3     203.0    1194.3    1078.0      39.4       6.9    666.10
     .02      5.31     10.87      3.84      .060      .035      .060      .000    657.10   9900.00
  .004481      670.      671.      620.        20        17         0       .00    500.00  10400.00

FLOW DISTRIBUTION FOR SECNO=   1053.00          CWSEL=    666.49

STA=    9900.    9902.    9919.    9933.   10092.   10124.   10228.   10357.   10400.
  PER Q=       .2      3.6      2.2     71.3      1.0      8.7     10.1      2.8
   AREA=     12.9    110.6     79.6   1194.3     68.4    394.7    470.1    144.9
    VEL=      2.3      5.9      5.0     10.9      2.7      4.0      3.9      3.6
  DEPTH=      6.1      6.7      5.3      7.6      2.1      3.8      3.6      3.4

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    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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 1241.000
3280 CROSS SECTION   1241.00 EXTENDED       .57 FEET
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3470 ENCROACHMENT STATIONS=      9700.0   10200.0  TYPE=      1  TARGET=      500.000
  1241.000      8.87    670.77       .00    670.26    671.68       .91      3.75       .05    669.90
   18200.0    4942.5   10919.5    2338.0    1109.2    1184.6     569.8      99.4      17.8    670.00
       .06      4.46      9.22      4.10      .060      .035      .060      .000    661.90   9700.00
   .003258     1150.      993.      820.         2         0         0       .00    500.00  10200.00

FLOW DISTRIBUTION FOR SECNO=   1241.00          CWSEL=    670.77

STA=    9700.    9764.    9791.    9843.    9899.    9910.   10065.   10106.   10130.   10200.
  PER Q=      5.3      4.2      7.3      9.8       .7     60.0      6.9      3.5      2.4
   AREA=    251.2    160.3    296.2    361.7     39.8   1184.6    253.3    142.6    173.9
    VEL=      3.8      4.7      4.5      4.9      3.1      9.2      4.9      4.5      2.6
  DEPTH=      3.9      6.1      5.6      6.5      3.7      7.7      6.2      5.8      2.5

*SECNO 1435.000

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=      9920.0   10420.0  TYPE=      1  TARGET=      500.000
  1435.000      9.40    675.60    675.60    676.04    678.05      2.45      4.79       .46    674.60
   18200.0      35.4   15014.2    3150.5      16.4    1102.8     591.4     153.0      30.0    672.90
       .08      2.16     13.61      5.33      .060      .035      .060      .000    666.20   9920.00
   .007281      850.      1024.     1180.         1         8         0       .00    500.00  10420.00

FLOW DISTRIBUTION FOR SECNO=   1435.00          CWSEL=    675.60

STA=    9920.    9930.    9936.   10086.   10109.   10138.   10174.   10200.   10266.   10392.   10420.
  PER Q=       .1       .1     82.5      3.4      7.4      5.2       .8       .2       .3       .1
   AREA=      8.3      8.1   1102.8    106.5    184.4    162.9     46.6     29.5     44.5     17.1
    VEL=      1.8      2.5     13.6      5.8      7.3      5.8      3.1      1.2      1.1      1.5
  DEPTH=       .8      1.3      7.4      4.6      6.4      4.6      1.8       .5       .4       .6
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   SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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 1608.000

3301 HV CHANGED MORE THAN HVINS

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.95

3470 ENCROACHMENT STATIONS=      9870.0   10570.0  TYPE=      1  TARGET=      700.000
  1608.000     10.54    680.44       .00    679.56    681.24       .80      3.02       .16    675.60
   18200.0     116.4   11542.0    6541.7      51.4    1345.7    1773.2     203.3      42.2    677.80
       .12      2.27      8.58      3.69      .060      .030      .040      .000    669.90   9870.00
   .001912      970.      913.      880.         3         0         0       .00    700.00  10570.00

FLOW DISTRIBUTION FOR SECNO=   1608.00          CWSEL=    680.44

STA=    9870.    9885.   10054.   10090.   10211.   10370.   10498.   10570.
  PER Q=       .6     63.4      2.2      9.3     11.4      8.6      4.4
   AREA=      51.4   1345.7    115.9    439.7    555.4    429.6    232.5
    VEL=      2.3      8.6      3.5      3.8      3.7      3.6      3.5
  DEPTH=      3.5      7.9      3.2      3.6      3.5      3.3      3.2

*SECNO 1791.000

3470 ENCROACHMENT STATIONS=      9895.0   10645.0  TYPE=      1  TARGET=      750.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=    100000.00 ELREA=       682.20

  1791.000      7.96    682.76       .00    682.22    683.62       .86      2.36       .02 100000.00
   18200.0        .0    9192.5    9007.5        .0     987.9    1869.6     269.4      58.1    682.20
       .16       .00      9.31      4.82      .000      .030      .040      .000    674.80   9895.00
   .003290      960.      966.      950.         3         0         0       .00    750.00  10645.00

FLOW DISTRIBUTION FOR SECNO=   1791.00          CWSEL=    682.76

STA=    9895.   10059.   10096.   10132.   10219.   10358.   10524.   10645.
  PER Q=      50.5       .1       .9      7.1     13.8     16.6     11.1
   AREA=     987.9     13.2     55.6    278.1    502.1    600.5    420.1
    VEL=      9.3      1.1      2.8      4.6      5.0      5.0      4.8
  DEPTH=      6.0       .4      1.5      3.2      3.6      3.6      3.5
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   SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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 1980.000

3301 HV CHANGED MORE THAN HVINS
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3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=     9800.0   10650.0  TYPE=      1  TARGET=      850.000
  1980.000      7.88    690.28    690.28    689.42    691.69      1.41      4.18       .17    688.40
  18200.0     318.7   12168.9    5712.3     114.9    1081.7    1278.8     333.6      77.6    688.60
      .19      2.77     11.25      4.47      .060      .030      .040      .000    682.40   9800.00
  .005108     1070.      998.     1080.        20         5         0       .00    850.00  10650.00

FLOW DISTRIBUTION FOR SECNO=   1980.00          CWSEL=    690.28

STA=    9800.    9862.   10052.   10167.   10251.   10338.   10414.   10476.   10582.   10640.   10650.
  PER Q=      1.8     66.9      4.6      3.0      5.1      4.0      5.3      5.3      3.6       .6
   AREA=    114.9   1081.7    206.4    143.0    200.1    165.5    178.3    222.4    137.8     25.2
    VEL=      2.8     11.2      3.9      3.8      4.6      4.4      5.4      4.3      4.7      4.3
  DEPTH=      1.8      5.7      1.8      1.7      2.3      2.2      2.9      2.1      2.4      2.6

1490 NH CARD USED
*SECNO 2147.000

3301 HV CHANGED MORE THAN HVINS

3470 ENCROACHMENT STATIONS=     9890.0   10740.0  TYPE=      1  TARGET=      850.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       694.70 ELREA=       693.70

  2147.000      8.07    694.57       .00    693.93    695.35       .78      3.60       .06    694.70
  18200.0        .0   7720.6   10479.4        .0     862.3    1972.6     384.7      93.3    693.70
      .22       .00     8.95      5.31      .000      .029      .040      .000    686.50   9936.16
  .003564      880.      882.      810.         1         0         0       .00    803.84  10740.00

FLOW DISTRIBUTION FOR SECNO=   2147.00          CWSEL=    694.57

1
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    SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      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

STA=    9936.    9969.   10066.   10105.   10259.   10367.   10404.   10422.   10458.   10515.   10576.   10623.   10661.
  PER Q=      1.7     39.4      1.3      3.1      3.8      3.7      3.2      4.1      6.4      9.1      9.0      6.9
   AREA=    100.0    670.8     91.5    200.8    199.8    128.1     91.2    136.3    216.5    273.6    245.2    192.0
    VEL=      3.1     10.7      2.6      2.8      3.5      5.3      6.4      5.4      5.4      6.0      6.7      6.6
  DEPTH=      3.1      6.9      2.3      1.3      1.9      3.5      4.9      3.8      3.8      4.5      5.2      5.1

STA=   10661.   10707.   10740.
  PER Q=      5.6      2.6
   AREA=    184.6    104.5
    VEL=      5.6      4.5
  DEPTH=      4.0      3.2

1490 NH CARD USED
*SECNO 2329.000
1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

3470 ENCROACHMENT STATIONS=     9950.0   10800.0  TYPE=      1  TARGET=      850.000
  2329.000      9.20    698.80       .00    698.03    699.92      1.12      4.46       .10    695.70
  18200.0     493.9    8040.3    9665.9      77.4     750.0    1560.4     441.8     111.4    695.50
      .26      6.38     10.72      6.19      .040      .037      .040      .000    689.60   9950.00
  .006400      910.      961.      950.         2         0         0       .00    850.00  10800.00

FLOW DISTRIBUTION FOR SECNO=   2329.00          CWSEL=    698.80

STA=    9950.    9974.   10093.   10118.   10134.   10151.   10168.   10208.   10269.   10391.   10459.   10526.   10615.
  PER Q=      2.7     44.2      3.2      3.7      6.8      7.4      6.1      3.7      5.6      4.8      5.3      3.6
   AREA=     77.4    750.0     86.0     78.1    116.4    122.9    149.5    134.6    227.6    162.7    172.6    152.5
    VEL=      6.4     10.7      6.8      8.6     10.7     11.0      7.4      5.0      4.5      5.3      5.6      4.3
  DEPTH=      3.2      6.3      3.5      4.9      6.8      7.1      3.8      2.2      1.9      2.4      2.6      1.7

STA=   10615.   10800.
  PER Q=      2.8
   AREA=    157.4
    VEL=      3.2
  DEPTH=       .9

1490 NH CARD USED
*SECNO 2522.000
1
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    SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      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

1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

3470 ENCROACHMENT STATIONS=     9900.0   10800.0  TYPE=      1  TARGET=      900.000
  2522.000      7.82    704.62       .00    703.97    705.43       .81      5.48       .03    702.70
  18200.0     361.8    6862.8   10975.4      77.2     739.9    1953.6     491.5     127.5    702.10
      .29      4.69      9.27      5.62      .040      .042      .040      .000    696.80   9900.00
  .006198     1150.     1019.      750.         4         0         0       .00    900.00  10800.00
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FLOW DISTRIBUTION FOR SECNO=   2522.00          CWSEL=    704.62

STA=   9900.   9935.  10054.  10123.  10167.  10233.  10302.  10354.  10420.  10469.  10508.  10578.  10649.
  PER Q=     2.0    37.7     5.7     3.6     4.8     4.0     3.5     8.3     5.1     4.0     5.6     4.2
   AREA=    77.2   739.9   185.7   116.4   164.0   148.9   123.5   226.6   150.1   119.6   180.7   154.1
    VEL=     4.7     9.3     5.6     5.6     5.3     4.9     5.2     6.7     6.2     6.1     5.6     4.9
  DEPTH=     2.2     6.2     2.7     2.7     2.5     2.2     2.4     3.4     3.1     3.0     2.6     2.2

STA=  10649.  10713.  10757.  10792.  10800.
  PER Q=     4.2     3.5     3.4      .4
   AREA=   148.5   115.3   101.7    18.4
    VEL=     5.1     5.6     6.0     4.2
  DEPTH=     2.3     2.6     3.0     2.2

1490 NH CARD USED
*SECNO 2686.000
1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

3470 ENCROACHMENT STATIONS=     9750.0   10750.0  TYPE=      1  TARGET=     1000.000
  2686.000      9.30    709.90       .00    709.01    710.53       .63      5.09       .02    707.60
   18200.0    5235.1    4675.8    8289.1     776.8     613.5    1567.0     546.7     145.6    708.10
       .33      6.74      7.62      5.29      .040      .050      .040      .000    700.60   9750.00
  .005869      880.      866.      820.         2         0         0       .00   1000.00  10750.00

FLOW DISTRIBUTION FOR SECNO=   2686.00          CWSEL=    709.90
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    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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

STA=   9750.   9815.   9847.   9862.   9893.   9948.   9971.  10070.  10118.  10158.  10307.  10437.  10514.
  PER Q=     6.5     6.3     4.0     4.8     5.6     1.6    25.7     3.7     3.1     4.3     5.2     4.0
   AREA=   202.5   143.4    82.2   122.9   169.6    56.1   613.5   125.9   105.4   215.5   227.0   158.2
    VEL=     5.9     7.9     8.8     7.1     6.1     5.2     7.6     5.4     5.4     3.6     4.1     4.6
  DEPTH=     3.1     4.5     5.6     3.9     3.1     2.5     6.2     2.6     2.6     1.5     1.8     2.1

STA=  10514.  10564.  10599.  10646.  10679.  10698.  10746.  10750.
  PER Q=     4.2     3.7     5.8     4.6     3.3     3.6      .0
   AREA=   137.0   110.1   162.6   123.3    79.5   119.6     3.0
    VEL=     5.5     6.2     6.5     6.8     7.5     5.5     2.0
  DEPTH=     2.7     3.2     3.5     3.7     4.3     2.5      .7

1490 NH CARD USED
*SECNO 2864.000
1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

70 ENCROACHMENT STATIONS=     9030.0   10230.0  TYPE=      1  TARGET=     1200.000
  2864.000     11.03    714.43       .00    713.67    715.00       .57      4.46       .01    711.00
   18200.0   10823.7   5321.1    2055.2    2294.6     630.8     441.0     610.2     167.5    711.20
       .37      4.72      8.44      4.66      .040      .046      .040      .000    703.40   9030.00
  .004418      850.      940.      870.         3         0         0       .00   1200.00  10230.00

FLOW DISTRIBUTION FOR SECNO=   2864.00          CWSEL=    714.43

STA=   9030.   9168.   9326.   9466.   9516.   9585.   9665.   9709.   9746.   9802.   9863.   9912.   9942.
  PER Q=     4.6     6.0     4.3     4.8     5.4     4.1     4.3     5.5     5.0     4.5     3.8     3.3
   AREA=   237.6   293.5   220.7   161.3   198.4   177.2   143.8   156.6   172.6   168.1   141.1   104.7
    VEL=     3.5     3.7     3.5     5.4     5.0     4.2     5.5     6.4     5.2     4.9     5.0     5.7
  DEPTH=     1.7     1.9     1.6     3.2     2.9     2.2     3.3     4.2     3.1     2.8     2.8     3.5

STA=   9942.   9976.  10054.  10113.  10209.  10230.
  PER Q=     3.7    29.2     3.6     4.7     3.0
   AREA=   118.9   630.8   145.1   202.0    93.9
    VEL=     5.7     8.4     4.5     4.2     5.9
  DEPTH=     3.5     8.1     2.4     2.1     4.6

1490 NH CARD USED
*SECNO 3039.000
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    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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

3265 DIVIDED FLOW

3470 ENCROACHMENT STATIONS=     8750.0   10150.0  TYPE=      1  TARGET=     1400.000
  3039.000     10.43    717.63       .00    716.73    718.04       .41      3.02       .02    714.00
   18200.0   10990.8   6295.9     913.3    2771.1     932.7     215.7     685.7     193.6    715.10
       .42      3.97      6.75      4.24      .040      .037      .040      .000    707.20   8750.00
  .002604      890.      924.      960.         3         0         0       .00   1331.46  10150.00

FLOW DISTRIBUTION FOR SECNO=   3039.00          CWSEL=    717.63

STA=   8750.   8808.   8866.   8966.   9013.   9067.   9130.   9210.   9272.   9352.   9416.   9886.   9932.
  PER Q=     4.3     4.5     6.5     3.3     4.9     4.3     4.6     6.1     9.7     3.9     5.2     3.2
   AREA=   191.6   192.1   299.4   145.4   198.0   193.5   223.0   236.9   349.0   185.8   412.7   143.8
```

```
   VEL=      4.0      4.3      4.0      4.1      4.5      4.0      3.7      4.7      5.1      3.8      2.3      4.0
 DEPTH=      3.3      3.3      3.0      3.1      3.6      3.1      2.8      3.8      4.4      2.9       .9      3.1

STA=    9932.    9984.   10021.   10084.   10144.   10150.
 PER Q=      4.3     23.1      7.2      4.9       .1
  AREA=    232.2    360.1    340.4    205.3     10.3
   VEL=      3.4     11.7      3.9      4.3      2.3
 DEPTH=      4.5      9.9      5.4      3.4      1.7

1490 NH CARD USED
*SECNO 3180.000
1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

3265 DIVIDED FLOW


3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=     8300.0   10050.0  TYPE=      1  TARGET=     1750.000
  3180.000     10.10    720.30    720.30    719.70    721.24       .94      2.66       .16    718.10
   18200.0   11647.1    6547.9       5.0    2182.9     604.3       2.1     733.0     211.3    719.50
       .44      5.34     10.84      2.35      .040      .043      .040      .000    710.20   8300.00
   .007823      570.      744.      680.         2        10         0       .00   1291.35  10050.00


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    SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      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

FLOW DISTRIBUTION FOR SECNO=   3180.00          CWSEL=    720.30

STA=    8300.    8372.    8430.    8495.    8663.    8730.    8793.    8856.    8947.    9652.    9696.    9750.    9813.
 PER Q=      3.2      3.2      4.1     13.5      3.4      3.1      3.9      4.3      5.0      4.4      3.9      3.1
  AREA=    123.7    112.6    135.8    412.1    123.9    112.6    129.2    162.0    207.3    122.9    123.9    115.1
   VEL=      4.7      5.1      5.4      6.0      5.0      5.0      5.5      4.8      4.4      6.6      5.7      4.9
 DEPTH=      1.7      1.9      2.1      2.5      1.8      1.8      2.1      1.8       .3      2.8      2.3      1.8

STA=    9813.    9891.    9959.   10047.   10050.
 PER Q=      4.4      4.5     36.0       .0
  AREA=    154.3    147.5    604.3      2.1
   VEL=      5.2      5.5     10.8      2.3
 DEPTH=      2.0      2.2      6.9       .8

1490 NH CARD USED
*SECNO 3277.000
1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

3265 DIVIDED FLOW


3301 HV CHANGED MORE THAN HVINS

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

3470 ENCROACHMENT STATIONS=     8400.0   10050.0  TYPE=      1  TARGET=     1650.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       720.90 ELREA=    100000.00

  3277.000      9.34    722.64       .00    721.84    722.93       .29      1.62       .07    720.90
   15100.0   11333.8    3766.2        .0    3038.7     668.4        .0     759.0     221.4 100000.00
       .47      3.73      5.63       .00      .040      .046      .000      .000    713.30   8400.00
   .002554      310.      512.      520.         3         0         0       .00   1409.24  10050.00


FLOW DISTRIBUTION FOR SECNO=   3277.00          CWSEL=    722.64

1
   11DEC92      10:47:22                                                                                    PAGE   52

    SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      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


STA=    8400.    8434.    8476.    8563.    8639.    8695.    8812.    8913.    8948.    8978.    9012.    9124.    9195.
 PER Q=      3.1      3.4      3.7      3.2      3.5      3.6      3.2      3.4      3.3      3.0     14.2      8.2
  AREA=    116.7    128.4    181.0    157.4    147.9    199.9    172.3    120.3    111.2    111.6    450.9    270.1
   VEL=      4.1      4.0      3.1      3.0      3.6      2.7      2.8      4.3      4.5      4.1      4.8      4.6
 DEPTH=      3.4      3.1      2.1      2.1      2.7      1.7      1.7      3.4      3.7      3.2      4.0      3.8

STA=    9195.    9263.    9781.    9820.    9871.    9924.    9953.   10050.
 PER Q=      4.4      3.1      3.6      3.1      3.4      1.6     24.9
  AREA=    183.2    218.4    129.8    132.8    138.1     68.7    668.4
   VEL=      3.6      2.2      4.2      3.5      3.7      3.4      5.6
 DEPTH=      2.7       .4      3.4      2.6      2.6      2.4      6.9

1490 NH CARD USED
*SECNO 3372.000
1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED
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3265 DIVIDED FLOW

02 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =   .69

3470 ENCROACHMENT STATIONS=     8600.0   10080.0  TYPE=      1  TARGET=     1480.000
  3372.000      8.05    723.85       .00    723.02    724.37       .53      1.37       .07    723.90
   15100.0    9550.9    5549.1        .0    2131.3     730.1        .0     786.7     232.0 100000.00
       .49      4.48      7.60       .00      .040      .046      .000      .000    715.80   8600.00
   .005387      330.      502.      520.         3         0         0       .00   1280.26  10080.00

FLOW DISTRIBUTION FOR SECNO=   3372.00          CWSEL=    723.85

STA=    8600.    8789.    8879.    9050.    9329.    9395.    9638.    9751.    9785.    9788.   10080.
  PER Q=     15.7      7.3      6.9      3.4      3.4     15.6      7.6      3.3       .0     36.7
   AREA=    474.6    220.2    271.7    184.1    123.6    520.3    243.6     91.5      1.7    730.1
    VEL=      5.0      5.0      3.8      2.8      4.2      4.5      4.7      5.5      1.8      7.6
  DEPTH=      2.5      2.4      1.6       .7      1.9      2.1      2.2      2.6       .6      5.9

1490 NH CARD USED
*SECNO 3470.000
1
   11DEC92      10:47:22                                                                          PAGE   53

    SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      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

1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

3470 ENCROACHMENT STATIONS=     8850.0   10300.0  TYPE=      1  TARGET=     1450.000
  3470.000      7.14    726.24       .00    725.56    726.66       .42      2.27       .01    724.80
   15100.0    8234.5    4680.5    2185.0    1951.4     690.2     476.6     816.1     244.9    724.20
       .51      4.22      6.78      4.58      .040      .046      .040      .000    719.10   8850.00
   .004959      420.      517.      240.         3         0         0       .00   1450.00  10300.00

FLOW DISTRIBUTION FOR SECNO=   3470.00          CWSEL=    726.24

STA=    8850.    8946.    9051.    9119.    9189.    9331.    9409.    9444.    9604.    9718.    9740.    9782.    9850.
  PER Q=      3.5      4.1      6.9      3.6      8.4      3.4      4.5      4.1      4.5      3.0      3.1      3.5
   AREA=    150.0    159.2    197.6    136.0    295.7    131.2    115.5    200.3    176.2     76.2    100.7    129.8
    VEL=      3.5      3.9      5.3      4.1      4.3      3.9      5.8      3.1      3.9      6.0      4.7      4.1
  DEPTH=      1.6      1.5      2.9      1.9      2.1      1.7      3.3      1.3      1.5      3.5      2.4      1.9

STA=    9850.    9907.   10039.   10116.   10283.   10300.
  PER Q=      1.9     31.0      3.5      8.4      2.5
   AREA=     84.1    690.2    134.4    279.8     62.3
    VEL=      3.4      6.8      4.0      4.6      6.0
  DEPTH=      1.5      5.2      1.8      1.7      3.6

1490 NH CARD USED
*SECNO 3563.000
1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

3265 DIVIDED FLOW

3470 ENCROACHMENT STATIONS=     9050.0   10300.0  TYPE=      1  TARGET=     1250.000
  3563.000      6.65    728.45       .00    728.22    729.27       .82      2.50       .12    727.50
   15100.0    6272.1    8056.4     771.5    1519.4     877.7     207.6     848.0     259.8    726.30
       .53      4.13      9.18      3.72      .040      .037      .040      .000    721.80   9050.00
   .005309      480.      491.      500.         2         0         0       .00   1230.00  10300.00

FLOW DISTRIBUTION FOR SECNO=   3563.00          CWSEL=    728.45

1
   11DEC92      10:47:22                                                                          PAGE   54

    SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      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

STA=    9050.    9162.    9212.    9272.    9358.    9440.    9525.    9570.    9639.    9730.    9797.    9934.    9943.
  PER Q=      3.9      3.2      4.0      3.1      3.2      5.4      3.7      3.0      3.1      4.1      4.5       .5
   AREA=    163.7    105.6    130.9    130.5    130.0    181.1    110.1    112.9    129.5    138.2    170.1     16.8
    VEL=      3.6      4.5      4.6      3.6      3.7      4.5      5.0      4.0      3.6      4.5      4.0      4.2
  DEPTH=      1.5      2.1      2.2      1.5      1.6      2.1      2.4      1.6      1.4      2.1      1.2      2.0

STA=    9943.   10099.   10148.   10300.
  PER Q=     53.4      3.3      1.8
   AREA=    877.7    108.2     99.4
    VEL=      9.2      4.6      2.7
  DEPTH=      5.6      2.2       .7

1490 NH CARD USED
*SECNO 3657.000
1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

3265 DIVIDED FLOW

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
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3470 ENCROACHMENT STATIONS=     9050.0   10150.0  TYPE=      1  TARGET=     1100.000
  3657.000      8.80    732.90    732.90    732.20    734.16      1.27      2.65       .13    731.50
   15100.0    3642.6    9983.7    1473.7     839.1     942.7     273.7     874.6     271.7    731.40
       .55      4.34     10.59      5.39      .040      .039      .040      .000    724.10   9050.00
   .005375      490.      496.      530.        20         8         0       .00    856.39  10150.00

FLOW DISTRIBUTION FOR SECNO=   3657.00          CWSEL=    732.90

STA=    9050.    9236.    9298.    9347.    9431.    9862.    9921.   10045.   10106.   10150.   10150.
  PER Q=      6.3      5.8      3.2      3.4      3.4      2.0     66.1      3.5      6.3       .0
   AREA=    156.9    165.1    105.8    136.7    189.6     85.0    942.7    120.0    152.4      1.3
    VEL=      6.1      5.3      4.5      3.8      2.7      3.5     10.6      4.4      6.2      1.4
  DEPTH=       .8      2.7      2.1      1.6       .4      1.4      7.6      2.0      3.5      3.4

CCHV=     .300 CEHV=     .500
1490 NH CARD USED
*SECNO 3676.000
1
   11DEC92      10:47:22                                                                          PAGE   55

    SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      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

1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

3265 DIVIDED FLOW

3470 ENCROACHMENT STATIONS=     9100.0   10074.0  TYPE=      1  TARGET=      974.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       730.00 ELREA=       733.50

  3676.000     10.22    733.32    732.86    733.65    734.64      1.32       .45       .02    732.00
   15100.0    2991.4   12108.6        .0     819.1    1196.7        .0     879.2     273.5 100000.00
       .55      3.65     10.12       .00      .040      .039      .000      .000    723.10   9140.07
   .003872      100.      100.      100.         6        11         0       .00    722.47  10074.00

FLOW DISTRIBUTION FOR SECNO=   3676.00          CWSEL=    733.32

STA=    9140.    9236.    9298.    9396.    9828.    9945.   10074.
  PER Q=      5.1      4.7      4.0      3.2      2.8     80.2
   AREA=    137.5    161.0    175.3    191.0    154.2   1196.7
    VEL=      5.6      4.4      3.4      2.5      2.8     10.1
  DEPTH=      1.4      2.6      1.8       .4      1.3      9.3

1490 NH CARD USED

SPECIAL CULVERT

C  CUNO      CUNV      ENTLC     COFQ      RDLEN     RISE      SPAN      CULVLN    CHRT      SCL       ELCHU     ELCHD
    8         .014      .40      3.00       .00      8.00     15.60     80.00     8         1        723.20    723.10

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

*SECNO 3693.000
BTCARD, BRIDGE STENCL=    9150.00   STENCR=   10074.00
1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

SPECIAL CULVERT OUTLET CONTROL + WEIR FLOW EG =    734.73

3265 DIVIDED FLOW

SPECIAL CULVERT

     EGIC      EGOC       H4      QWEIR     QCULV      VCH      ACULV     ELTRD    WEIRLN
   738.48    738.74      .09      7527.     7704.    10.147     998.4    732.80      924.


3470 ENCROACHMENT STATIONS=     9150.0   10074.0  TYPE=      1  TARGET=      924.000
1
   11DEC92      10:47:22                                                                          PAGE   56

    SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      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 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       732.20 ELREA=       733.90

  3693.000     10.21    733.41       .00    733.78    734.73      1.32       .09       .00    732.10
   15100.0    2972.2   12127.8        .0     812.4    1195.2        .0     883.4     275.0 100000.00
       .55      3.66     10.15       .00      .040      .039      .000      .000    723.20   9182.67
   .003900       90.       90.       90.         4         0         0       .00    711.82  10074.00

FLOW DISTRIBUTION FOR SECNO=   3693.00          CWSEL=    733.41

STA=    9183.    9236.    9298.    9396.    9828.    9945.   10074.
  PER Q=      5.1      4.7      4.0      3.2      2.8     80.3
   AREA=    136.9    160.3    174.2    188.1    152.8   1195.2
    VEL=      5.6      4.4      3.4      2.5      2.8     10.1
  DEPTH=      2.5      2.6      1.8       .4      1.3      9.3
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1490 NH CARD USED
*SECNO 3747.000

3265 DIVIDED FLOW

3301 HV CHANGED MORE THAN HVINS

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  2.19

3470 ENCROACHMENT STATIONS=      9600.0   10920.0  TYPE=      1  TARGET=      1320.000
  3747.000      8.20    735.20       .00    735.07    735.56       .36       .54       .29    736.70
   18300.0    2742.6    7263.3    8294.1    1246.2    1099.3    2522.4     905.9     281.6    735.80
       .57      2.20      6.61      3.29      .060      .026      .036      .000    727.00   9600.00
   .001197      285.      285.      285.         3         0         0       .00   1287.12  10920.00

FLOW DISTRIBUTION FOR SECNO=   3747.00          CWSEL=    735.20

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   11DEC92      10:47:22                                                                          PAGE   57

    SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      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

STA=    9600.    9661.    9743.    9809.    9896.    9911.   10045.   10099.   10205.   10303.   10407.   10544.   10615.
  PER Q=      3.3      4.9      3.5      3.2       .2     37.3      2.4      3.5      3.2      4.3      3.0      3.5
   AREA=    264.0    377.8    280.5    299.8     24.1    889.7    209.6    228.0    225.1    276.3    239.1    210.2
    VEL=      2.3      2.4      2.3      1.9      1.2      7.7      2.1      2.8      2.6      2.8      2.3      3.0
  DEPTH=      4.3      4.6      4.3      3.4      1.7      7.3      4.0      2.1      2.3      2.7      1.8      2.9

STA=   10615.   10671.   10718.   10820.   10875.   10897.   10920.
  PER Q=      3.8      3.9      8.8      4.5      4.6      2.2
   AREA=    202.7    189.7    424.6    275.1    151.7     99.9
    VEL=      3.5      3.8      3.8      3.0      5.6      3.9
  DEPTH=      3.6      4.1      4.2      5.0      6.7      4.4

1490 NH CARD USED
*SECNO 3768.000

3265 DIVIDED FLOW

3470 ENCROACHMENT STATIONS=      9600.0   10990.0  TYPE=      1  TARGET=      1390.000
  3768.000      7.24    735.24       .00    735.11    735.83       .58       .15       .11    735.40
   18300.0        .0    8813.5    9486.5        .0    1116.0    2509.0     916.6     284.5    735.40
       .58       .00      7.90      3.78      .000      .026      .036      .000    728.00   9923.02
   .001651      110.      110.      110.         2         0         0       .00   1045.03  10988.71

FLOW DISTRIBUTION FOR SECNO=   3768.00          CWSEL=    735.24

STA=    9923.   10057.   10099.   10188.   10303.   10381.   10453.   10603.   10641.   10687.   10718.   10820.   10874.
  PER Q=     46.3      1.9      3.2      4.4      3.4      3.6      4.3      3.1      3.4      3.2     10.2      5.8
   AREA=    967.3    148.7    177.6    265.2    193.6    194.7    277.8    138.3    160.0    130.4    418.9    288.7
    VEL=      8.7      2.4      3.3      3.0      3.2      3.4      2.8      4.1      3.9      4.5      4.4      3.7
  DEPTH=      7.2      3.6      2.0      2.3      2.5      2.7      1.9      3.6      3.4      4.3      4.1      5.3

STA=   10874.   10903.   10989.
  PER Q=      6.3      1.0
   AREA=    172.9     90.8
    VEL=      6.7      2.0
  DEPTH=      6.0      1.1

1490 NH CARD USED
1
   11DEC92      10:47:22                                                                          PAGE   58

    SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      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 BRIDGE

5227 DOWNSTREAM ELEV IS     733.37 , NOT     735.24 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

SB  XK        XKOR      COFQ      RDLEN     BWC       BWP       BAREA     SS        ELCHU     ELCHD
     1.25      1.56      3.00       .00    175.00     20.00    899.00       .00    728.10    728.00

*SECNO 3782.000
BTCARD, BRIDGE STENCL=    9600.00   STENCR=   10990.00
3280 CROSS SECTION   3782.00 EXTENDED       .62 FEET

3301 HV CHANGED MORE THAN HVINS

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  3.41

PRESSURE AND WEIR FLOW,  Weir Submergence Based on TRAPEZOIDAL Shape
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 EGPRS      EGLWC      H3       QWEIR      QPR       BAREA   TRAPEZOID      ELLC     ELTRD     WEIRLN
                                                              AREA
  745.28    738.96      .00      6433.    11905.      899.      915.      734.00    737.40     1390.


3470 ENCROACHMENT STATIONS=      9600.0   10990.0  TYPE=      1  TARGET=      1390.000
  3782.000     11.32    739.42      .00    739.18    739.49      .08      3.67       .00    735.50
   18300.0    2976.8    6024.5    9298.7    2533.0    1831.7    6146.0     928.6     286.6    735.50
       .59      1.18      3.29      1.51      .060      .025      .043      .000    728.10   9600.00
   .000142       74.       74.       74.         2         0         4       .00   1390.00  10990.00


FLOW DISTRIBUTION FOR SECNO=   3782.00          CWSEL=    739.42

STA=    9600.    9661.    9743.    9809.    9888.    9923.   10099.   10205.   10303.   10407.   10530.   10603.   10641.
  PER Q=      3.3      4.8      3.6      3.6       .9     32.9      3.6      3.4      4.0      3.8      4.6      3.2
   AREA=    509.2    707.7    543.8    590.4    181.8   1831.7    648.7    617.6    694.5    714.8    477.1    292.6
    VEL=      1.2      1.2      1.2      1.1       .9      3.3      1.0      1.0      1.0      1.0      1.8      2.0
  DEPTH=      8.3      8.6      8.3      7.4      5.3     10.4      6.1      6.3      6.7      5.8      6.5      7.7

STA=   10641.   10687.   10728.   10820.   10874.   10903.   10990.
  PER Q=      3.7      3.7      8.5      4.5      4.6      3.3
   AREA=    348.8    331.8    755.1    518.6    297.9    448.7
    VEL=      1.9      2.1      2.1      1.6      2.8      1.4
  DEPTH=      7.5      8.2      8.2      9.5     10.4      5.1

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   11DEC92      10:47:22                                                                                          PAGE   59

    SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      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


1490 NH CARD USED
*SECNO 3836.000

3265 DIVIDED FLOW


3470 ENCROACHMENT STATIONS=      9800.0   11550.0  TYPE=      1  TARGET=      1750.000
  3836.000     10.46    739.46      .00    739.23    739.54      .08       .04       .00    734.70
   18300.0     560.8    5631.3   12107.9     581.1    1935.0    6195.2     987.6     295.7    735.40
       .62       .97      2.91      1.95      .060      .027      .035      .000    729.00   9800.00
   .000191      295.      285.      255.         2         0         0       .00   1611.91  11550.00


FLOW DISTRIBUTION FOR SECNO=   3836.00          CWSEL=    739.46

STA=    9800.    9920.   10081.   10178.   10273.   10320.   10380.   10446.   10520.   10583.   10633.   10705.   10758.
  PER Q=      3.1     28.2      2.6      4.7      3.8      5.2      5.8      6.5      5.2      4.0      5.9      3.8
   AREA=    581.1   1454.2    480.8    487.5    326.6    435.2    482.5    538.4    445.6    345.3    503.3    342.2
    VEL=      1.0      3.5      1.0      1.8      2.1      2.2      2.2      2.2      2.1      2.1      2.1      2.0
  DEPTH=      4.8      9.0      5.0      5.1      6.9      7.2      7.4      7.3      7.0      6.9      7.0      6.5

STA=   10758.   10813.   10873.   10933.   11005.   11162.   11550.
  PER Q=      3.6      3.6      3.5      3.4      5.1      2.1
   AREA=    332.2    351.2    341.6    358.4    479.9    425.3
    VEL=      2.0      1.9      1.9      1.7      1.9       .9
  DEPTH=      6.1      5.8      5.7      5.0      3.0      1.1

*SECNO 3888.000
3280 CROSS SECTION   3888.00 EXTENDED       .13 FEET


3301 HV CHANGED MORE THAN HVINS

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

3470 ENCROACHMENT STATIONS=      9950.0   12000.0  TYPE=      1  TARGET=      2050.000
  3888.000     15.53    746.83    746.83    746.22    747.72       .89       .10       .40    744.80
   18300.0     16.1    10086.8    8198.1       6.8    1019.3    2998.5    1025.3     306.4    745.20
       .63     2.36      9.89      2.73      .025      .025      .025      .000    731.30   9950.00
   .001149      295.      275.      250.        20        24         0       .00   2050.00  12000.00


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   11DEC92      10:47:22                                                                                          PAGE   60

    SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      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


FLOW DISTRIBUTION FOR SECNO=   3888.00          CWSEL=    746.83

STA=    9950.    9953.   10039.   10051.   10450.   11180.   11830.   12000.
  PER Q=       .1     55.1       .4     14.9     16.4     10.1      2.9
   AREA=      6.8   1019.3     24.6    831.0   1119.0    801.4    222.5
    VEL=      2.4      9.9      3.2      3.3      2.7      2.3      2.4
  DEPTH=      2.0     12.0      2.0      2.1      1.5      1.2      1.3

1490 NH CARD USED
*SECNO 4076.000
3280 CROSS SECTION   4076.00 EXTENDED       .30 FEET
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3301 HV CHANGED MORE THAN HVINS

02 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  2.91

3470 ENCROACHMENT STATIONS=     9740.0   11520.0  TYPE=      1  TARGET=     1780.000
  4076.000     12.60    748.20       .00    747.17    748.27       .07       .30       .25    742.40
   18300.0    2410.9    6782.4    9106.7    1375.4    2419.2    6322.9    1185.6     350.0    741.90
       .77      1.75      2.80      1.44      .035      .030      .035      .000    735.60   9740.00
   .000136      890.      993.     1000.         2         0         0       .00   1780.00  11520.00


FLOW DISTRIBUTION FOR SECNO=   4076.00          CWSEL=    748.20

STA=    9740.    9823.    9878.    9939.    9950.   10173.   10227.   10279.   10337.   10395.   10453.   10516.   10602.
  PER Q=      5.7      3.5      3.4       .6     37.1      3.2      3.0      3.7      3.1      3.5      3.5      3.1
   AREA=    574.3    363.6    370.6     67.0   2419.2    343.7    325.6    383.5    351.0    375.9    383.9    403.3
    VEL=      1.8      1.8      1.7      1.7      2.8      1.7      1.7      1.7      1.6      1.7      1.7      1.4
  DEPTH=      6.9      6.6      6.1      6.2     10.8      6.3      6.3      6.6      6.0      6.5      6.1      4.7

STA=   10602.   10688.   10766.   10856.   10952.   11041.   11140.   11348.   11498.   11520.
  PER Q=      3.2      3.1      3.2      3.4      3.8      3.2      3.3      3.2       .3
   AREA=    412.1    394.0    421.3    450.7    465.2    433.8    604.2    514.6     60.0
    VEL=      1.4      1.5      1.4      1.4      1.5      1.3      1.0      1.1       .9
  DEPTH=      4.8      5.0      4.7      4.7      5.2      4.4      2.9      3.4      2.7

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   11DEC92      10:47:22                                                                                          PAGE   61

    SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      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


CCHV=      .100 CEHV=      .300
1490 NH CARD USED
1490 NH CARD USED
*SECNO 4277.000

3301 HV CHANGED MORE THAN HVINS

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

3470 ENCROACHMENT STATIONS=     9900.0   11000.0  TYPE=      1  TARGET=     1100.000
  4277.000      7.85    749.55    749.55    749.34    750.72      1.17       .41       .33    749.30
   18300.0       1.8   11296.6    7001.6       1.9    1115.0    1258.5    1333.1     383.1    747.40
       .80       .98     10.13      5.56      .025      .025      .025      .000    741.70   9955.02
   .004320     1100.     1061.     1000.        20        20         0       .00   1044.97  11000.00

FLOW DISTRIBUTION FOR SECNO=   4277.00          CWSEL=    749.55

STA=    9955.    9970.   10236.   10310.   10412.   10533.   10628.   10707.   10772.   10853.   10982.   11000.
  PER Q=       .0     61.7      5.0      5.4      4.4      4.7      6.6      3.4      3.6      4.8       .3
   AREA=      1.9   1115.0    149.0    175.0    166.5    157.5    178.2    110.5    125.4    179.7     16.7
    VEL=      1.0     10.1      6.2      5.6      4.9      5.5      6.7      5.6      5.2      4.9      3.6
  DEPTH=       .1      4.2      2.0      1.7      1.4      1.7      2.3      1.7      1.5      1.4       .9

1490 NH CARD USED
*SECNO 4461.000
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=     9900.0   10800.0  TYPE=      1  TARGET=      900.000
  4461.000      9.86    755.26    755.26    754.28    756.50      1.24      4.35       .02 100000.00
   18300.0        .0    9473.3    8826.7        .0     865.6    1454.2    1375.7     399.5    753.70
       .83       .00     10.94      6.07      .000      .030      .032      .000    745.40   9900.00
   .006379      940.      972.      660.         5        11         0       .00    900.00  10800.00


FLOW DISTRIBUTION FOR SECNO=   4461.00          CWSEL=    755.26

STA=    9900.   10082.   10169.   10261.   10341.   10506.   10579.   10648.   10709.   10762.   10798.   10800.
  PER Q=     51.8      4.3      5.7      4.2      6.5      6.2      5.4      3.5      6.8      5.5       .2
   AREA=    865.6    156.5    189.2    150.0    244.4    165.4    149.0    109.5    152.3    128.5      9.4
    VEL=     10.9      5.0      5.5      5.1      4.9      6.8      6.6      5.9      8.1      7.9      4.2
  DEPTH=      4.8      1.8      2.1      1.9      1.5      2.3      2.2      1.8      2.9      3.5      5.0

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   11DEC92      10:47:22                                                                                          PAGE   62

    SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      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


1490 NH CARD USED
*SECNO 4638.000

3470 ENCROACHMENT STATIONS=     9900.0   10800.0  TYPE=      1  TARGET=      900.000
  4638.000     11.48    760.18       .00    759.64    761.14       .96      4.62       .03    757.20
   14900.0     715.7    6382.7    7801.6     127.7     598.0    1677.5    1427.3     419.2    757.80
       .87      5.60     10.67      4.65      .035      .030      .035      .000    748.70   9900.00
   .003654      920.      935.      960.         3         0         0       .00    900.00  10800.00
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FLOW DISTRIBUTION FOR SECNO=   4638.00          CWSEL=    760.18

STA=    9900.    9937.   10023.   10062.   10103.   10136.   10237.   10372.   10410.   10518.   10608.   10632.   10688.
 PER Q=      4.8     42.8      3.3      6.1      3.9      4.3      3.5      3.9      4.3      6.0      3.1      4.9
  AREA=    127.7    598.0    101.1    149.0    104.7    173.6    151.3    109.5    177.8    202.5     80.0    146.5
   VEL=      5.6     10.7      4.8      6.1      5.5      3.7      3.5      5.3      3.6      4.4      5.8      4.9
 DEPTH=      3.5      6.9      2.6      3.6      3.1      1.7      1.1      2.9      1.6      2.2      3.4      2.6

STA=   10688.   10743.   10797.   10800.
 PER Q=      3.3      5.5       .2
  AREA=    115.5    157.3      8.6
   VEL=      4.3      5.2      3.3
 DEPTH=      2.1      2.9      2.7

1490 NH CARD USED
*SECNO 4822.000

3470 ENCROACHMENT STATIONS=     9600.0   10800.0  TYPE=      1  TARGET=     1200.000
  4822.000      9.50    764.30       .00    764.11    765.06       .76      3.90       .02 100000.00
   14900.0        .0   12971.1    1928.9        .0    1760.4     545.5    1477.5     441.3    764.20
       .91       .00      7.37      3.54      .000      .030      .035      .000    754.80   9600.00
   .004756      600.      972.      900.         2         0         0       .00   1200.00  10800.00

FLOW DISTRIBUTION FOR SECNO=   4822.00          CWSEL=    764.30

STA=    9600.   10151.   10619.   10701.   10800.
 PER Q=     87.1      4.3      5.2      3.5
  AREA=   1760.4    246.6    164.4    134.4
   VEL=      7.4      2.6      4.7      3.8
 DEPTH=      3.2       .5      2.0      1.4
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   SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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

CCHV=     .300 CEHV=     .500
*SECNO 4857.000

3301 HV CHANGED MORE THAN HVINS

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

3470 ENCROACHMENT STATIONS=     9929.0   10070.0  TYPE=      1  TARGET=      141.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       770.00 ELREA=       770.00

  4857.000      6.21    767.11    767.11    767.11    769.66      2.55       .97       .90    822.40
   9100.0        .0    9100.0        .0        .0     709.6        .0    1484.4     444.8 100000.00
       .91       .00     12.82       .00      .000      .025      .000      .000    760.90   9929.06
   .005785      100.      185.      270.        20        14         0       .00    140.88  10069.94

FLOW DISTRIBUTION FOR SECNO=   4857.00          CWSEL=    767.11

STA=    9929.   10070.
 PER Q=    100.0
  AREA=    709.6
   VEL=     12.8
 DEPTH=      5.0

SPECIAL BRIDGE

5227 DOWNSTREAM ELEV IS     766.15 , NOT     767.11 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

SB  XK        XKOR      COFQ      RDLEN     BWC       BWP       BAREA     SS        ELCHU     ELCHD
     1.05      1.60      3.00    100.00    140.70      7.00   1186.00       .00    762.40    761.90

*SECNO 4868.000

3301 HV CHANGED MORE THAN HVINS

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.45
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   SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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

CLASS B LOW FLOW

3420 BRIDGE W.S.=     767.39 BRIDGE VELOCITY=      12.99     CALCULATED CHANNEL AREA=       667.

 EGPRS     EGLWC     H3        QWEIR     QLOW      BAREA     TRAPEZOID     ELLC      ELTRD     WEIRLN
                                                              AREA
      .00    770.53       .00        0.     9100.     1186.      1190.    771.30    773.30        0.
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3470 ENCROACHMENT STATIONS=     9929.0   10070.0  TYPE=      1  TARGET=      141.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       772.80 ELREA=       772.80

 4868.000      7.52    768.92       .00    768.92    770.53      1.61       .87       .00    822.90
   9100.0        .0    9100.0        .0        .0     894.7        .0    1485.5     445.0 100000.00
      .91       .00     10.17       .00      .000      .025      .000      .000    761.40    9929.04
  .002735       60.       60.       60.         0         0         0       .00    140.91   10069.95

FLOW DISTRIBUTION FOR SECNO=   4868.00          CWSEL=    768.92

STA=    9929.   10070.
  PER Q=     100.0
   AREA=     894.7
    VEL=      10.2
  DEPTH=       6.3

*SECNO 4887.000

3470 ENCROACHMENT STATIONS=     9929.0   10070.0  TYPE=      1  TARGET=      141.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       772.00 ELREA=       772.00

 4887.000      6.21    769.01       .00    769.01    771.10      2.09       .33       .24    822.70
   9100.0        .0    9100.0        .0        .0     784.9        .0    1487.4     445.3 100000.00
      .91       .00     11.59       .00      .000      .025      .000      .000    762.80    9929.05
  .004192      100.      100.      100.         2         0         0       .00    140.91   10069.96

FLOW DISTRIBUTION FOR SECNO=   4887.00          CWSEL=    769.01
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   SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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

STA=    9929.   10070.
  PER Q=     100.0
   AREA=     784.9
    VEL=      11.6
  DEPTH=       5.6

SPECIAL BRIDGE

5227 DOWNSTREAM ELEV IS     767.85 , NOT     769.01 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

   XK        XKOR      COFQ      RDLEN     BWC       BWP       BAREA     SS        ELCHU     ELCHD
  1.05       1.60      3.00    100.00    140.70      7.00    996.00       .00    764.10    763.60

*SECNO 4898.000

3301 HV CHANGED MORE THAN HVINS

CLASS B LOW FLOW

3420 BRIDGE W.S.=     769.09 BRIDGE VELOCITY=      12.99     CALCULATED CHANNEL AREA=       667.

 EGPRS     EGLWC     H3        QWEIR     QLOW      BAREA     TRAPEZOID AREA    ELLC      ELTRD     WEIRLN
  771.09    772.08      .00        0.     9100.      996.      989.      771.50    773.60        0.

3470 ENCROACHMENT STATIONS=     9929.0   10070.0  TYPE=      1  TARGET=      141.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       773.10 ELREA=       773.10

 4898.000      7.32    770.62       .00    770.62    772.08      1.46       .97       .00    823.20
   9100.0        .0    9100.0        .0        .0     939.9        .0    1488.6     445.5 100000.00
      .91       .00      9.68       .00      .000      .025      .000      .000    763.30    9929.03
  .002343       60.       60.       60.         0         0         0       .00    140.93   10069.97

FLOW DISTRIBUTION FOR SECNO=   4898.00          CWSEL=    770.62

STA=    9929.   10070.
  PER Q=     100.0
   AREA=     939.9
    VEL=       9.7
  DEPTH=       6.7
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   SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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 4936.000

3301 HV CHANGED MORE THAN HVINS
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3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 1.62

0 ENCROACHMENT STATIONS=			9850.0	10140.0	TYPE=	1	TARGET=	290.000			
4936.000	7.74	772.04	.00	772.04	772.61		.58	.27	.26	766.30	
9100.0	1912.7	6559.0	628.3	386.0	999.5		175.1	1494.3	446.5	765.50	
.92	4.95	6.56	3.59	.025	.025		.025	.000	764.30	9850.00	
.000896	200.	200.	200.	3	0		0	.00	290.00	10140.00	

FLOW DISTRIBUTION FOR SECNO= 4936.00 CWSEL= 772.04

STA=	9850.	9929.	10070.	10080.	10140.
PER Q=	21.0	72.1	3.1	3.8	
AREA=	386.0	999.5	52.9	122.2	
VEL=	5.0	6.6	5.3	2.9	
DEPTH=	4.9	7.1	5.3	2.0	

THIS RUN EXECUTED 11DEC92 10:48:38

****
HEC-2 WATER SURFACE PROFILES

Version 4.6.2; May 1991
****

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

SAND TANK WASH 100 YEAR

SUMMARY PRINTOUT

	SECNO	ELMIN	CWSEL	SSTA	ENDST	DEPTH	Q	VCH	HV	DIFWSX	QWEIR	ELTRD	ELLC
	926.000	652.80	662.13	9826.23	10805.65	9.33	18200.00	8.73	.88	.00	.00	.00	.00
	926.000	652.80	663.13	9950.00	10381.00	10.33	18200.00	8.35	.88	.00	.00	.00	.00
*	1053.000	657.10	666.30	9595.96	11615.15	9.20	18200.00	6.31	.29	4.17	.00	.00	.00
*	1053.000	657.10	666.49	9900.00	10400.00	9.39	18200.00	10.87	1.39	3.36	.00	.00	.00
*	1241.000	661.90	670.26	9492.50	10802.80	8.36	18200.00	9.28	.84	3.95	.00	.00	.00
	1241.000	661.90	670.77	9700.00	10200.00	8.87	18200.00	9.22	.91	4.28	.00	.00	.00
*	1435.000	666.20	676.04	9917.01	11291.83	9.84	18200.00	11.14	1.41	5.78	.00	.00	.00
*	1435.000	666.20	675.60	9920.00	10420.00	9.40	18200.00	13.61	2.45	4.83	.00	.00	.00
	1608.000	669.90	679.56	9862.49	11300.87	9.66	18200.00	8.27	.64	3.52	.00	.00	.00
	1608.000	669.90	680.44	9870.00	10570.00	10.54	18200.00	8.58	.80	4.84	.00	.00	.00
*	1791.000	674.80	682.22	9893.72	11244.04	7.42	18200.00	7.82	.50	2.67	.00	.00	.00
	1791.000	674.80	682.76	9895.00	10645.00	7.96	18200.00	9.31	.86	2.32	.00	.00	.00
*	1980.000	682.40	689.42	9395.54	11469.98	7.02	18200.00	9.60	.79	7.19	.00	.00	.00
*	1980.000	682.40	690.28	9800.00	10650.00	7.88	18200.00	11.25	1.41	7.52	.00	.00	.00
*	2147.000	686.50	693.93	9939.67	11412.84	7.43	18200.00	7.94	.50	4.52	.00	.00	.00
	2147.000	686.50	694.57	9936.16	10740.00	8.07	18200.00	8.95	.78	4.29	.00	.00	.00
*	2329.000	689.60	698.03	9639.44	11371.83	8.43	18200.00	10.73	.98	4.09	.00	.00	.00
	2329.000	689.60	698.80	9950.00	10800.00	9.20	18200.00	10.72	1.12	4.22	.00	.00	.00
	2522.000	696.80	703.97	9755.80	11496.73	7.17	18200.00	7.79	.47	5.94	.00	.00	.00
	2522.000	696.80	704.62	9900.00	10800.00	7.82	18200.00	9.27	.81	5.82	.00	.00	.00
	2686.000	700.60	709.01	9287.55	10742.88	8.41	18200.00	7.74	.66	5.04	.00	.00	.00
	2686.000	700.60	709.90	9750.00	10750.00	9.30	18200.00	7.62	.63	5.28	.00	.00	.00

	SECNO	ELMIN	CWSEL	SSTA	ENDST	DEPTH	Q	VCH	HV	DIFWSX	QWEIR	ELTRD	ELLC
*	2864.000	703.40	713.67	8398.63	10608.48	10.27	18200.00	7.02	.34	4.67	.00	.00	.00
	2864.000	703.40	714.43	9030.00	10230.00	11.03	18200.00	8.44	.57	4.53	.00	.00	.00
	3039.000	707.20	716.73	7863.82	10169.36	9.53	18200.00	7.26	.42	3.06	.00	.00	.00
	3039.000	707.20	717.63	8750.00	10150.00	10.43	18200.00	6.75	.41	3.20	.00	.00	.00
*	3180.000	710.20	719.70	7556.31	10053.36	9.50	18200.00	10.46	.77	2.96	.00	.00	.00
*	3180.000	710.20	720.30	8300.00	10050.00	10.10	18200.00	10.84	.94	2.67	.00	.00	.00
*	3277.000	713.30	721.84	7709.76	10053.77	8.54	15100.00	4.88	.20	2.14	.00	.00	.00
*	3277.000	713.30	722.64	8400.00	10050.00	9.34	15100.00	5.63	.29	2.34	.00	.00	.00
*	3372.000	715.80	723.02	7909.88	10087.97	7.22	15100.00	7.22	.44	1.18	.00	.00	.00
*	3372.000	715.80	723.85	8600.00	10080.00	8.05	15100.00	7.60	.53	1.20	.00	.00	.00
	3470.000	719.10	725.56	8097.32	10326.20	6.46	15100.00	6.04	.32	2.54	.00	.00	.00
	3470.000	719.10	726.24	8850.00	10300.00	7.14	15100.00	6.78	.42	2.39	.00	.00	.00
*	3563.000	721.80	728.22	9043.42	10461.76	6.42	15100.00	9.63	.90	2.66	.00	.00	.00
	3563.000	721.80	728.45	9050.00	10300.00	6.65	15100.00	9.18	.82	2.22	.00	.00	.00
*	3657.000	724.10	732.20	8978.94	10607.84	8.10	15100.00	10.28	1.07	3.98	.00	.00	.00

*	3657.000	724.10	732.90	9050.00	10150.00	8.80	15100.00	10.59	1.27	4.44	.00	.00	.00
	3676.000	723.10	733.65	8733.27	10150.00	10.55	15100.00	8.55	.84	1.45	.00	.00	.00
	3676.000	723.10	733.32	9140.07	10074.00	10.22	15100.00	10.12	1.32	.43	.00	.00	.00
	3693.000	723.20	733.78	8733.22	10074.00	10.58	15100.00	9.04	.98	.13	8808.95	732.80	.00
	3693.000	723.20	733.41	9182.67	10074.00	10.21	15100.00	10.15	1.32	.09	7526.72	732.80	.00
*	3747.000	727.00	735.07	9542.02	10986.70	8.07	18300.00	6.82	.38	1.29	.00	.00	.00
*	3747.000	727.00	735.20	9600.00	10920.00	8.20	18300.00	6.61	.36	1.79	.00	.00	.00
	3768.000	728.00	735.11	9923.04	10985.18	7.11	18300.00	8.23	.64	.04	.00	.00	.00
	3768.000	728.00	735.24	9923.02	10988.71	7.24	18300.00	7.90	.58	.04	.00	.00	.00
*	3782.000	728.10	739.18	8374.92	11371.50	11.08	18300.00	3.01	.06	4.07	6592.84	737.40	734.00
*	3782.000	728.10	739.42	9600.00	10990.00	11.32	18300.00	3.29	.08	4.17	6432.92	737.40	734.00
	3836.000	729.00	739.23	8915.90	12518.07	10.23	18300.00	2.57	.05	.05	.00	.00	.00
	3836.000	729.00	739.46	9800.00	11550.00	10.46	18300.00	2.91	.08	.04	.00	.00	.00
*	3888.000	731.30	746.22	8597.09	14183.96	14.92	18300.00	8.40	.52	7.00	.00	.00	.00
*	3888.000	731.30	746.83	9950.00	12000.00	15.53	18300.00	9.89	.89	7.37	.00	.00	.00
*	4076.000	735.60	747.17	9738.58	11541.95	11.57	18300.00	3.50	.11	.94	.00	.00	.00
*	4076.000	735.60	748.20	9740.00	11520.00	12.60	18300.00	2.80	.07	1.37	.00	.00	.00
*	4277.000	741.70	749.34	9967.90	11637.87	7.64	18300.00	8.92	.80	2.17	.00	.00	.00
*	4277.000	741.70	749.55	9955.02	11000.00	7.85	18300.00	10.13	1.17	1.35	.00	.00	.00

	SECNO	ELMIN	CWSEL	SSTA	ENDST	DEPTH	Q	VCH	HV	DIFWSX	QWEIR	ELTRO	ELLC
*	4461.000	745.40	754.28	9759.85	11796.02	8.88	18300.00	8.84	.75	4.95	.00	.00	.00
*	4461.000	745.40	755.26	9900.00	10800.00	9.86	18300.00	10.94	1.24	5.71	.00	.00	.00
*	4638.000	748.70	759.64	9784.81	11093.87	10.94	14900.00	10.91	.93	5.35	.00	.00	.00
	4638.000	748.70	760.18	9900.00	10800.00	11.48	14900.00	10.67	.96	4.93	.00	.00	.00
	4822.000	754.80	764.11	9415.49	11240.67	9.31	14900.00	6.85	.63	4.48	.00	.00	.00
	4822.000	754.80	764.30	9600.00	10800.00	9.50	14900.00	7.37	.76	4.12	.00	.00	.00
*	4857.000	760.90	767.11	9929.06	10069.94	6.21	9100.00	12.81	2.55	3.00	.00	.00	.00
*	4857.000	760.90	767.11	9929.06	10069.94	6.21	9100.00	12.82	2.55	2.80	.00	.00	.00
*	4868.000	761.40	768.92	9929.04	10069.95	7.52	9100.00	10.17	1.61	1.81	.00	773.30	771.30
*	4868.000	761.40	768.92	9929.04	10069.95	7.52	9100.00	10.17	1.61	1.81	.00	773.30	771.30
	4887.000	762.80	769.01	9929.05	10069.96	6.21	9100.00	11.59	2.09	.09	.00	.00	.00
	4887.000	762.80	769.01	9929.05	10069.96	6.21	9100.00	11.59	2.09	.09	.00	.00	.00
	4898.000	763.30	770.62	9929.03	10069.97	7.32	9100.00	9.68	1.46	1.61	.00	773.60	771.50
	4898.000	763.30	770.62	9929.03	10069.97	7.32	9100.00	9.68	1.46	1.61	.00	773.60	771.50
*	4936.000	764.30	772.04	9850.00	10140.00	7.74	9100.00	6.56	.58	1.42	.00	.00	.00
*	4936.000	764.30	772.04	9850.00	10140.00	7.74	9100.00	6.56	.58	1.42	.00	.00	.00

SAND TANK WASH 100 YEAR

SUMMARY PRINTOUT TABLE 110

	SECNO	CWSEL	DIFKWS	EG	TOPWID	QLOB	QCH	QROB	PERENC	STENCL	STCHL	STCHR	STENCR
	926.000	662.13	.00	663.01	979.42	586.39	12890.00	4723.61	.00	.00	9950.30	10162.40	.00
	926.000	663.13	1.00	664.01	431.00	.79	14091.25	4107.96	431.00	9950.00	9950.30	10162.40	10381.00
*	1053.000	666.30	.00	666.60	2019.19	2566.98	7347.31	8285.71	.00	.00	9933.40	10091.50	.00
*	1053.000	666.49	.19	667.88	500.00	1077.79	12984.91	4137.30	500.00	9900.00	9933.40	10091.50	10400.00
*	1241.000	670.26	.00	671.10	1304.07	4532.37	10252.59	3415.05	1402.80	9400.00	9909.90	10064.70	10802.80
	1241.000	670.77	.51	671.68	500.00	4942.50	10919.46	2338.04	500.00	9700.00	9909.90	10064.70	10200.00
*	1435.000	676.04	.00	677.45	1374.81	48.40	13018.12	5133.48	1487.00	9900.00	9936.40	10085.70	11387.00
*	1435.000	675.60	-.44	678.05	500.00	35.36	15014.17	3150.47	500.00	9920.00	9936.40	10085.70	10420.00
*	1608.000	679.56	.00	680.20	1438.38	76.58	9880.12	8243.30	.00	.00	9884.50	10053.80	.00
*	1608.000	680.44	.88	681.24	700.00	116.35	11541.95	6541.70	700.00	9870.00	9884.50	10053.80	10570.00
*	1791.000	682.22	.00	682.72	1311.10	.00	7030.38	11169.62	.00	.00	9879.70	10059.40	.00
	1791.000	682.76	.54	683.62	750.00	.00	9192.53	9007.47	750.00	9895.00	9879.70	10059.40	10645.00
*	1980.000	689.42	.00	690.20	2074.44	2052.25	8811.97	7335.78	2558.00	9300.00	9862.20	10052.20	11858.00
*	1980.000	690.28	.86	691.69	850.00	318.74	12168.91	5712.35	850.00	9800.00	9862.20	10052.20	10650.00
*	2147.000	693.93	.00	694.43	1473.18	.00	5994.44	12205.56	2500.00	8950.00	9935.50	10105.20	11450.00
	2147.000	694.57	.64	695.35	803.84	.00	7720.62	10479.38	850.00	9890.00	9935.50	10105.20	10740.00
*	2329.000	698.03	.00	699.00	1618.39	1440.08	7060.38	9699.54	.00	.00	9974.20	10093.40	.00
	2329.000	698.80	.77	699.92	850.00	493.87	8040.27	9665.86	850.00	9950.00	9974.20	10093.40	10800.00
	2522.000	703.97	.00	704.44	1740.93	1683.82	5155.49	11360.69	1871.00	9700.00	9934.50	10053.60	11571.00
	2522.000	704.62	.65	705.43	900.00	361.84	6862.79	10975.37	900.00	9900.00	9934.50	10053.60	10800.00
	2686.000	709.01	.00	709.67	1437.58	9581.15	4067.49	4551.36	1580.00	9220.00	9971.00	10069.50	10800.00
	2686.000	709.90	.89	710.53	1000.00	5235.14	4675.78	8289.08	1000.00	9750.00	9971.00	10069.50	10750.00

*	2864.000	713.67	.00	714.01	2209.86	9200.72	4006.91	4992.37	2350.00	8350.00	9975.60	10053.80	10700.00
	2864.000	714.43	.76	715.00	1200.00	10823.72	5321.11	2055.18	1200.00	9030.00	9975.60	10053.80	10230.00
	3039.000	716.73	.00	717.15	1705.09	11780.06	5788.99	630.94	.00	.00	9932.20	10083.90	.00
	3039.000	717.63	.90	718.04	1331.46	10990.80	6295.91	913.29	1400.00	8750.00	9932.20	10083.90	10150.00
*	3180.000	719.70	.00	720.47	1909.50	12436.30	5763.26	.45	.00	.00	9959.30	10047.20	.00
*	3180.000	720.30	.61	721.24	1291.35	11647.10	6547.91	4.99	1750.00	8300.00	9959.30	10047.20	10050.00
*	3277.000	721.84	.00	722.04	1919.88	12199.47	2900.53	.00	.00	.00	9952.50	10063.60	.00
*	3277.000	722.64	.80	722.93	1409.24	11333.83	3766.17	.00	1650.00	8400.00	9952.50	10063.60	10050.00
*	3372.000	723.02	.00	723.46	1815.81	10548.86	4551.14	.00	.00	.00	9957.00	10100.90	.00
*	3372.000	723.85	.83	724.37	1280.26	9550.92	5549.08	.00	1480.00	8600.00	9957.00	10100.90	10080.00

SECNO	CWSEL	DIFKWS	EG	TOPWID	QLOB	QCH	QROB	PERENC	STENCL	STCHL	STCHR	STENCR
3470.000	725.56	.00	725.87	2152.66	10165.13	3628.35	1306.52	.00	.00	9906.90	10039.00	.00
3470.000	726.24	.68	726.66	1450.00	8234.47	4680.54	2184.99	1450.00	8850.00	9906.90	10039.00	10300.00
* 3563.000	728.22	.00	729.12	1392.55	5437.35	8106.91	1555.74	.00	.00	9942.60	10098.80	.00
3563.000	728.45	.23	729.27	1230.00	6272.14	8056.39	771.47	1250.00	9050.00	9942.60	10098.80	10300.00
* 3657.000	732.20	.00	733.27	1191.89	2048.51	8801.77	4249.72	.00	.00	9920.60	10045.20	.00
* 3657.000	732.90	.70	734.16	856.39	3642.55	9983.70	1473.75	1100.00	9050.00	9920.60	10045.20	10150.00
* 3676.000	733.65	.00	734.49	1251.11	3573.82	10582.78	943.41	1420.10	8729.90	9945.00	10074.00	10150.00
3676.000	733.32	-.32	734.64	722.47	2991.43	12108.57	.00	974.00	9100.00	9945.00	10074.00	10074.00
* 3693.000	733.78	.00	734.76	1203.71	3877.05	11222.95	.00	1420.10	8729.90	9945.00	10074.00	10150.00
3693.000	733.41	-.37	734.73	711.82	2972.24	12127.76	.00	924.00	9150.00	9945.00	10074.00	10074.00
* 3747.000	735.07	.00	735.45	1409.60	2835.26	7340.70	8124.04	1896.50	9475.00	9917.90	10116.80	11371.50
* 3747.000	735.20	.13	735.56	1287.12	2742.63	7263.26	8294.11	1320.00	9600.00	9917.90	10116.80	10920.00
3768.000	735.11	.00	735.74	1040.31	.00	8989.08	9310.92	.00	.00	9923.00	10098.90	.00
3768.000	735.24	.14	735.83	1045.03	.00	8813.48	9486.52	1390.00	9600.00	9923.00	10098.90	10990.00
* 3782.000	739.18	.00	739.24	2996.58	3738.47	5393.76	9167.77	.00	.00	9923.00	10098.90	.00
* 3782.000	739.42	.24	739.49	1390.00	2976.83	6024.47	9298.70	1390.00	9600.00	9923.00	10098.90	10990.00
3836.000	739.23	.00	739.28	3440.99	1996.01	4820.47	11483.52	.00	.00	9920.00	10177.80	.00
3836.000	739.46	.23	739.54	1611.91	560.83	5631.28	12107.89	1750.00	9800.00	9920.00	10177.80	11550.00
* 3888.000	746.22	.00	746.74	5586.87	2755.31	8130.32	7414.37	.00	.00	9953.40	10038.60	.00
* 3888.000	746.83	.61	747.72	2050.00	16.09	10085.83	8198.08	2050.00	9950.00	9953.40	10038.60	12000.00
* 4076.000	747.17	.00	747.27	1803.37	2428.93	7651.15	8219.92	.00	.00	9949.50	10172.50	.00
* 4076.000	748.20	1.03	748.27	1780.00	2410.91	6782.36	9106.73	1780.00	9740.00	9949.50	10172.50	11520.00
4277.000	749.34	.00	750.14	1669.97	.00	9434.89	8865.11	.00	.00	9970.10	10235.80	.00
4277.000	749.55	.21	750.72	1044.97	1.84	11296.61	7001.55	1100.00	9900.00	9970.10	10235.80	11000.00
* 4461.000	754.28	.00	755.04	2036.17	146.69	8502.62	9650.68	.00	.00	9816.70	10082.10	.00
* 4461.000	755.26	.97	756.50	900.00	.00	9473.31	8826.69	900.00	9900.00	9816.70	10082.10	10800.00
* 4638.000	759.64	.00	760.56	1256.37	1094.22	6010.87	7794.91	.00	.00	9936.50	10022.60	.00
4638.000	760.18	.55	761.14	900.00	715.70	6382.70	7801.60	900.00	9900.00	9936.50	10022.60	10800.00
4822.000	764.11	.00	764.75	1603.83	86.41	12308.11	2505.48	.00	.00	9525.10	10150.90	.00
4822.000	764.30	.19	765.06	1200.00	.00	12971.11	1928.90	1200.00	9600.00	9525.10	10150.90	10800.00
* 4857.000	767.11	.00	769.66	140.88	.00	9100.00	.00	.00	.00	9929.00	10070.00	.00
* 4857.000	767.11	.00	769.66	140.88	.00	9100.00	.00	141.00	9929.00	9929.00	10070.00	10070.00
* 4868.000	768.92	.00	770.53	140.91	.00	9100.00	.00	.00	.00	9929.00	10070.00	.00
* 4868.000	768.92	.00	770.53	140.91	.00	9100.00	.00	141.00	9929.00	9929.00	10070.00	10070.00

SECNO	CWSEL	DIFKWS	EG	TOPWID	QLOB	QCH	QROB	PERENC	STENCL	STCHL	STCHR	STENCR
4887.000	769.01	.00	771.10	140.91	.00	9100.00	.00	.00	.00	9929.00	10070.00	.00
4887.000	769.01	.00	771.10	140.91	.00	9100.00	.00	141.00	9929.00	9929.00	10070.00	10070.00
* 4898.000	770.62	.00	772.08	140.94	.00	9100.00	.00	.00	.00	9929.00	10070.00	.00
* 4898.000	770.62	.00	772.08	140.93	.00	9100.00	.00	141.00	9929.00	9929.00	10070.00	10070.00
* 4936.000	772.04	.00	772.61	290.00	1912.66	6559.05	628.29	.00	.00	9929.00	10070.00	.00
* 4936.000	772.04	.00	772.61	290.00	1912.67	6559.04	628.29	290.00	9850.00	9929.00	10070.00	10140.00

SUMMARY OF ERRORS AND SPECIAL NOTES

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CAUTION SECNO=   1053.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=   1053.000  PROFILE=  1  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=   1053.000  PROFILE=  1  20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO=   1053.000  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=   1053.000  PROFILE=  2  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=   1053.000  PROFILE=  2  20 TRIALS ATTEMPTED TO BALANCE WSEL
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CAUTION SECNO=   1241.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=   1241.000  PROFILE=  1  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=   1241.000  PROFILE=  1  20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO=   1435.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=   1435.000  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=   1435.000  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=   1435.000  PROFILE=  2  MINIMUM SPECIFIC ENERGY

WARNING SECNO=   1608.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   1608.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO=   1791.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=   1791.000  PROFILE=  1  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=   1791.000  PROFILE=  1  20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO=   1980.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=   1980.000  PROFILE=  1  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=   1980.000  PROFILE=  1  20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO=   1980.000  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=   1980.000  PROFILE=  2  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=   1980.000  PROFILE=  2  20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO=   2147.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=   2147.000  PROFILE=  1  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=   2147.000  PROFILE=  1  20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO=   2329.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=   2329.000  PROFILE=  1  MINIMUM SPECIFIC ENERGY

WARNING SECNO=   2864.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO=   3180.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=   3180.000  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=   3180.000  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=   3180.000  PROFILE=  2  MINIMUM SPECIFIC ENERGY

WARNING SECNO=   3277.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   3277.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=   3372.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   3372.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO=   3563.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
1                                                                          PAGE   74
   11DEC92       10:47:22

CAUTION SECNO=   3563.000  PROFILE=  1  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=   3657.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=   3657.000  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=   3657.000  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=   3657.000  PROFILE=  2  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=   3657.000  PROFILE=  2  20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO=   3676.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=   3676.000  PROFILE=  1  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=   3693.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=   3693.000  PROFILE=  1  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=   3693.000  PROFILE=  1  20 TRIALS ATTEMPTED TO BALANCE WSEL

WARNING SECNO=   3747.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   3747.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO=   3782.000  PROFILE=  1  HYDRAULIC JUMP D.S.
WARNING SECNO=   3782.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
CAUTION SECNO=   3782.000  PROFILE=  2  HYDRAULIC JUMP D.S.
WARNING SECNO=   3782.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO=   3888.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=   3888.000  PROFILE=  1  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=   3888.000  PROFILE=  1  20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO=   3888.000  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=   3888.000  PROFILE=  2  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=   3888.000  PROFILE=  2  20 TRIALS ATTEMPTED TO BALANCE WSEL

WARNING SECNO=   4076.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   4076.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO=   4277.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=   4277.000  PROFILE=  1  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=   4277.000  PROFILE=  1  20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO=   4277.000  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=   4277.000  PROFILE=  2  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=   4277.000  PROFILE=  2  20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO=   4461.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=   4461.000  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=   4461.000  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=   4461.000  PROFILE=  2  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=   4638.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=   4638.000  PROFILE=  1  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=   4857.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=   4857.000  PROFILE=  1  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=   4857.000  PROFILE=  1  20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO=   4857.000  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=   4857.000  PROFILE=  2  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=   4857.000  PROFILE=  2  20 TRIALS ATTEMPTED TO BALANCE WSEL
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CAUTION SECNO=   4868.000  PROFILE=  1  HYDRAULIC JUMP D.S.
WARNING SECNO=   4868.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
CAUTION SECNO=   4868.000  PROFILE=  2  HYDRAULIC JUMP D.S.
WARNING SECNO=   4868.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO=   4898.000  PROFILE=  1  HYDRAULIC JUMP D.S.
CAUTION SECNO=   4898.000  PROFILE=  2  HYDRAULIC JUMP D.S.

WARNING SECNO=   4936.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   4936.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
```

1

FLOODWAY DATA, SAND TANK WASH 100 YEAR
PROFILE NO. 2

STATION	FLOODWAY WIDTH	FLOODWAY SECTION AREA	FLOODWAY MEAN VELOCITY	WATER SURFACE ELEVATION WITH FLOODWAY	WITHOUT FLOODWAY	DIFFERENCE
926.000	431.	2814.	6.5	663.1	662.1	1.0
1053.000	500.	2475.	7.4	666.5	666.3	.2
1241.000	500.	2864.	6.4	670.8	670.3	.5
1435.000	500.	1711.	10.6	675.6	676.0	-.4
1608.000	700.	3170.	5.7	680.5	679.6	.9
1791.000	750.	2857.	6.4	682.7	682.2	.5
1980.000	850.	2475.	7.4	690.3	689.4	.9
2147.000	804.	2835.	6.4	694.5	693.9	.6
2329.000	850.	2388.	7.6	698.8	698.0	.8
2522.000	900.	2771.	6.6	704.7	704.0	.7
2686.000	1000.	2957.	6.2	709.9	709.0	.9
2864.000	1200.	3366.	5.4	714.5	713.7	.8
3039.000	1400.	3919.	4.6	717.6	716.7	.9
3180.000	1750.	2789.	6.5	720.3	719.7	.6
3277.000	1650.	3707.	4.1	722.6	721.8	.8
3372.000	1480.	2861.	5.3	723.8	723.0	.8
3470.000	1450.	3118.	4.8	726.3	725.6	.7
3563.000	1250.	2605.	5.8	728.4	728.2	.2
3657.000	1100.	2055.	7.3	732.9	732.2	.7
3676.000	934.	2016.	7.5	733.3	733.6	-.3
3693.000	891.	2008.	7.5	733.4	733.8	-.4
3747.000	1320.	4868.	3.8	735.2	735.1	.1
3768.000	1066.	3625.	5.0	735.2	735.1	.1
3782.000	1390.	10511.	1.7	739.4	739.2	.2
3836.000	1750.	8711.	2.1	739.4	739.2	.2
4188.000	2050.	4025.	4.5	746.8	746.2	.6
4276.000	1780.	10118.	1.8	748.2	747.2	1.0
4277.000	1045.	2375.	7.7	749.5	749.3	.2
4461.000	900.	2320.	7.9	755.3	754.3	1.0
4638.000	900.	2403.	6.2	760.1	759.6	.5
4822.000	1200.	2306.	6.5	764.3	764.1	.2
4857.000	141.	710.	12.8	767.1	767.1	.0
4868.000	141.	895.	10.2	768.9	768.9	.0
4887.000	141.	785.	11.6	769.0	769.0	.0
4898.000	141.	940.	9.7	770.6	770.6	.0
4936.000	290.	1561.	5.8	772.0	772.0	.0

```
1*****************************************
  HEC-2 WATER SURFACE PROFILES            *
                                          *
  Version   4.6.2;  May 1991              *
                                          *
*  RUN DATE    14DEC92    TIME   13:48:07 *
*****************************************
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*************************************
*  U.S. ARMY CORPS OF ENGINEERS     *
*  HYDROLOGIC ENGINEERING CENTER    *
*  609 SECOND STREET, SUITE D       *
*  DAVIS, CALIFORNIA 95616-4687     *
*        (916) 756-1104             *
*************************************
```

```
X     X  XXXXXXX   XXXXX              XXXXX
X     X  X        X     X            X     X
X     X  X        X                        X
XXXXXXX  XXXX     X          XXXXX    XXXXX
X     X  X        X                  X
X     X  X        X     X            X
X     X  XXXXXXX   XXXXX              XXXXXXX
```

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1
  14DEC92      13:48:08                                                                    PAGE    1
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THIS RUN EXECUTED 14DEC92 13:48:08

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************************************
 HEC-2 WATER SURFACE PROFILES

 Version   4.6.2;  May 1991
************************************
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```
T1      FLOOD CONTROL DISTRICT OF MARICOPA COUNTY - CONTRACT FCD 90-67
T2      GILA BEND AREA FLOODPLAIN DELINEATION STUDY BY BURGESS & NIPLE
T3      BENDER WASH                                J. MISCHLER - (602) 244-8100

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                2                                                                   719.7

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

    -1                  -1

J3  VARIABLE CODES FOR SUMMARY PRINTOUT

    38        42        1         43        26        51        4         8         53        54
    13        15        40
```

SECTIONS ARE LABELED AS RIVER MILES * 1000, i.e., SECTION 037 IS AT A POINT 0.037 MILES UPSTREAM OF THE CONFLUENCE WITH SAND TANK WASH.

THIS MODEL STARTS WITH SECTION 3180 FROM THE SAND TANK WASH MODEL. BECAUSE THE ENTIRE Q IN BENDER WASH IN THIS REACH IS FROM THE FLOW SPLIT AT PIMA STREET, STARTING CONDITIONS ARE OBTAINED FROM THE SAND TANK MODEL. NORMAL DEPTH USING ONLY THE BENDER WASH PEAK DISCHARGE IS NOT USED.

THE CONFLUENCE OCCURS AT SAND TANK WASH RM 3.184 (BENDER WASH RM 0.000).

SAND TANK WASH:

```
QT        1      18200
NC                            0.1       0.3
NH        5       0.04     9959.3      0.06    9977.3      0.03   10030.9      0.06   10047.2      0.04
NH    10284
X1     3180         96     9959.3   10047.2
GR    724.3     7181.6      723.6     7242.4     723.2     7274.0     721.7     7393.1     720.6     7488.7
GR    720.1     7552.7      719.5     7558.1     718.7     7574.9     718.2     7609.8     717.5     7764.1
GR    717.7     7796.4      718.4     7844.6     718.9     7874.2     719.2     7889.7     718.6     7930.2
GR    717.6     7940.1      715.9     7944.4     717.9     8018.8     718.6     8122.4     718.3     8253.7
GR    718.5     8276.2      719.0     8313.7     718.4     8344.9     718.3     8365.6     717.9     8372.0
GR    718.6     8393.6      718.3     8430.4     718.6     8443.9     718.2     8458.3     718.1     8482.3
GR    717.4     8494.7      718.3     8662.6     717.9     8681.3     718.9     8692.3     718.7     8713.6
```

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1
  14DEC92      13:48:08                                                                    PAGE    2
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GR    718.2     8729.6      718.7     8735.6     719.0     8750.5     718.9     8768.1     718.0     8777.2
GR    717.9     8787.7      717.2     8792.9     717.9     8808.2     718.0     8819.2     718.8     8831.9
GR    718.7     8855.7      719.1     8862.2     717.9     8946.9     719.5     8977.8     720.1     9013.6
GR    720.8     9054.2      721.3     9086.4     720.4     9114.1     720.2     9152.3     720.5     9241.3
GR    721.2     9276.4      721.8     9308.0     721.0     9334.1     721.1     9410.3     720.6     9470.3
GR    720.8     9503.9      720.2     9541.6     719.3     9572.1     719.4     9581.6     720.3     9598.9
GR    719.3     9610.8      718.0     9626.9     717.2     9652.4     717.4     9665.9     717.7     9695.8
GR    718.1     9723.5      718.2     9750.1     718.3     9771.1     718.9     9791.4     718.3     9813.3
GR    718.4     9858.0      718.2     9891.4     718.1     9935.1     718.1     9959.3     714.1     9977.3
GR    712.3     9987.0      710.6     9994.2     710.9    10000.0     710.2    10015.0     710.3    10017.7
GR    713.9    10030.9      719.5    10047.2     720.5    10078.1     721.6    10132.6     722.4    10166.8
GR    721.9    10181.1      720.9    10198.6     721.5    10209.8     722.3    10228.7     724.2    10255.6
GR    725.9    10284.0
```

BENDER WASH ENTERS SAND TANK WASH AT RM 3.184

```
QT        1       3100
NC    0.035      0.035       0.03       0.1       0.3
```

```
X1      037        16    9970.4   10021.1       230       210     220.0
GR    720.6    9911.0     719.8    9929.8     719.7    9945.9     718.5    9956.9     718.6    9970.4
      716.9    9978.3     713.3    9992.0     712.6    9996.2     712.5   10000.0     712.9   10007.3
      714.4   10011.8     719.3   10021.1     720.3   10037.9     721.3   10053.7     722.3   10067.1
      722.8   10074.8

X1      129        14    9971.4   10023.9     445.0     510.0     486.0
GR    723.9    9950.3     722.6    9971.4     717.4    9985.4     716.7    9989.6     715.7    9994.2
GR    715.2   10000.0     715.8   10007.0     718.6   10014.7     721.4   10023.9     721.4   10042.6
GR    720.6   10062.3     721.8   10078.5     722.7   10098.1       724     10290

X1      224        20    9971.9   10018.9     500.0     490.0     502.0
GR    727.5    9845.5     727.2    9873.9     726.2    9893.6     723.8    9905.7     722.9    9914.4
GR    723.6    9926.2     723.5    9963.6     722.9    9971.9     721.1    9981.8     718.8    9990.5
GR    717.5    9995.2     717.1   10000.0     718.6   10007.9     721.6   10018.9     722.2   10029.9
GR    721.8   10041.8     723.4   10053.6     725.7   10064.4     726.9   10074.8     727.1   10078.2

X1      320        19    9933.4   10032.9     530.0     503.0     507.0
GR    728.9    9837.5     728.7    9860.0     728.4    9877.0     726.9    9889.1     726.5    9903.5
GR    727.6    9920.2     727.2    9933.4     725.5    9942.8     723.4    9954.7     722.4    9970.6
GR    722.3    9976.2     722.6    9985.4     720.7    9992.6     720.6   10000.0     721.0   10009.5
GR    723.4   10019.1     727.5   10032.9     730.2   10047.7     730.4   10048.8

      BENDER WASH CROSSES PAPAGO ST AT RM 0.360 (LOW CROSSING - NO STRUCTURE)

NH        4     0.035    9931.7       0.06    9960.1     0.035   10045.6      0.06   10109.2
X1      415        20    9960.1    10045.6     505.0     500.0     502.0
GR    733.6    9906.5     732.8    9919.9     730.9    9931.7     730.4    9948.4     730.3    9960.1
GR    727.7    9968.3     724.1    9979.0     723.1    9986.3     722.8    9994.6     723.4   10000.0
GR    723.9   10009.7     724.8   10015.8     725.6   10029.1     727.8   10037.6     730.3   10045.6
GR    730.3   10058.1     730.1   10073.5     729.9   10089.5     730.5   10097.6     732.6   10109.2

      UPSTREAM OF PIMA STREET, BENDER AND SAND TANK WASHES COMBINE IN
      COMMON POOLS - ONE UPSTREAM OF PIMA STREET, AND THE OTHER
```


UPSTREAM OF THE RAILROAD TRACKS.

RATING CURVES WERE DEVELOPED TO DETERMINE THE AMOUNT OF FLOW IN EACH STREAM BELOW PIMA STREET. ABOVE PIMA STREET, SAND TANK WASH ELEVATIONS WILL CONTROL SINCE THEY WERE MODELED WITH THE COMBINED Q - EVEN THOUGH ELEVATIONS COMPUTED BY THIS MODEL MAY BE SLIGHTLY HIGHER OR LOWER THAN SAND TANK WASH. THE REASON FOR THIS IS THAT THE Q IN BENDER IS NOT ALWAYS 3100 CFS BETWEEN PIMA STREET AND THE GILA BEND CANAL. MIXING OCCURS AMONG THE CHANNELS WHICH IS WHY ELEVATIONS ARE OBTAINED FROM THE COMMON MODEL. THIS MODEL IS, HOWEVER, USED FOR FLOODWAY COMPUTATIONS.

BENDER WASH IS CONVEYED BENEATH PIMA STREET (U.S. ROUTE 80) THROUGH A BOX CULVERT THAT HAS BEEN WIDENED IN THE PAST. THE NEWER PORTION TO THE NORTH (DOWNSTREAM) WAS CONSTRUCTED WITH A MATCHING CROWN BUT A LOWER INVERT, APPARENTLY IN RESPONSE TO SCOUR EXPERIENCED DOWNSTREAM OF THE ORIGINAL CULVERT. A MINOR SCOUR HOLE IS NOTED DOWNSTREAM OF THE NEWER, LOWER INVERT.

SPECIAL CULVERT IS USED TO MODEL THE CULVERT. THE DOWNSTREAM CHANNEL SECTION IS BASED ON ACTUAL ELEVATIONS AT THE OUTLET, BUT ELCHD ON SC.10 IS BASED ON THE HIGHER INVERT INSIDE THE CULVERT SO AS TO NOT CAUSE THE MODEL TO USE A CULVERT SLOPE THAT IS TOO HIGH. THIS RESULTS IN WHAT APPEARS TO BE A STEP AT THE DOWNSTREAM END, ALTHOUGH THE STEP ACTUALLY OCCURS WITHIN THE CULVERT.

INCREASE EXPANSION/CONTRACTION COEFFICIENTS FOR THE STRUCTURE.

SECTION 441 IS BASED ON SURVEY DATA (CHANNEL) AND TOPO MAP DATA (OVERBANKS).

```
NC     0.06     0.06    0.035       0.3       0.5
X1      441        7     9967     10033       135       145       137
X3       10                                                   733.7     734.3
GR    734.1     9650      734      9950     725.4      9967       724     10000     725.4     10033
GR      734    10050    734.8     10350

      ELTRD = 734.3 + 0.5 HV = 734.8

QT        1     3080
SC    6.014      0.4         3         0         6        10      77.4       8.1     727.4     727.4
X1      457        8      9967     10033        87        87        87
X2                             2                734.8
X3       10                                                   734.7     734.3
BT       -4     9600     734.7                 9960     735.4                10220     735.3
BT              10450     735.7
GR    733.2     9600       732      9960     727.4      9967     727.4     10033       734     10040
GR    734.5    10220     734.9     10350       735     10450

      KEEP EXPANSION/CONTRACTION COEFFICIENTS HIGH THROUGH AREA OF FREQUENT
      STRUCTURES.
```



```
QT        1     3150
NH        5     0.06    9911.8     0.035    9947.0      0.06    9981.0     0.035   10021.7      0.06
NH    10052
X1      508       14    9981.0   10021.7       285       235       269
GR    732.7   9871.0     732.3    9890.2     731.0    9911.8     730.5    9930.1     730.8    9947.0
```

```
GR     730.3     9963.5      729.9     9981.0      728.1     9989.2      727.4     9996.4      727.2    10000.0
GR     728.8    10011.7      730.5    10021.7      733.1    10032.0      734.3     10052
```

BENDER WASH IS CONVEYED BENEATH THE SOUTHERN PACIFIC RAILROAD BY A TIMBER BRIDGE.

SPECIAL BRIDGE IS USED TO MODEL THE STRUCTURE.

SECTION 535 AT THE DOWNSTREAM FACE OF THE BRIDGE IS BASED ON FIELD SURVEY (CHANNEL) AND TOPO MAP DATA (OVERBANKS).

```
QT       1      3250
NC    0.06     0.035      0.06       0.3       0.5
X1     535         5      9979     10021       120       170       143
X3      10                                                          737.6     737.6
GR     738      9960     729.2      9979     729.2     10021       736     10025       738     10150
```

WIER FLOW IS NOT ANTICIPATED. USE SB.5 RDLEN = 738.6 + 0.5 HV = 739.1
ASSUME EFFECTIVE WIER LENGTH = 500 FT.
THE DOWNSTREAM CHANNEL INVERT IS 0.2 FT HIGHER THAN UPSTREAM.

```
QT       1      3200
SB    1.25       1.6         3       500      41.6         4       227         0     729.0     729.2
X1     548                                      71        71        71                -0.2
X2                            1     735.0     739.1
X3      10                                                          738.6     738.6
```

KEEP EXPANSION/CONTRACTION COEFFICIENTS HIGH THROUGH AREA OF FREQUENT STRUCTURES.

```
QT       1      3100
NH       5     0.035    9962.3      0.05    9972.6      0.03   10021.2      0.05   10033.1     0.035
NH   10200
X1     604        15    9972.6   10021.2       304       271       293
GR   739.6    9939.8     739.5    9944.4     736.7    9955.8     738.3    9962.3     733.6    9972.6
GR   730.8    9988.0     730.5    9996.4     730.0   10000.0     730.8   10010.8     734.1   10021.2
GR   738.1   10033.1     737.3   10043.0     738.4   10056.7     738.5   10068.0     740.0   10200.0
```

THIS IS WHERE THINGS GET STRANGE.....

WHEN THE GILA BEND CANAL WAS CONSTRUCTED, A 3-BARREL CONCRETE BOX CULVERT WAS CONSTRUCTED TO CONVEY BENDER WASH BENEATH THE IRRIGATION CANAL. WHEN THE CANAL BANKS WERE RAISED AND THE CANAL EMBANKMENT WAS THEREFORE WIDENED AT SOME TIME IN THE PAST, THE CULVERT WAS EXTENDED BY INSERTING SINGLE 30-INCH CORRUGATED METAL PIPES IN EACH BARREL.

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THE CULVERT WAS EXTENDED IN THE UPSTREAM DIRECTION.

FLOW THROUGH THE CULVERT IS CONTROLLED BY INLET CONDITIONS, AND IN FACT, THE THREE PIPES HAD SIGNIFICANT SEDIMENT CLOGGING THE INLETS AT THE TIME OF THE FIELD RECONNAISSANCE OF 10/4/91.

A DITCH HAS BEEN CONSTRUCTED UPSTREAM OF THE GILA BEND CANAL TO DIVERT WATER FROM BENDER WASH, AS WELL AS FROM UNNAMED TRIBUTARIES 1 & 2, TO SAND TANK WASH JUST UPSTREAM OF THE INVERTED SIPHON WHICH CARRIES THE GILA BEND CANAL BENEATH SAND TANK WASH.

ELEVATIONS UPSTREAM OF THE GILA BEND CANAL WILL THEREFORE BE CONTROLLED BY SAND TANK WASH.

IN ORDER TO PROPERLY MODEL THE HYDRAULICS, THE MODEL IS "BROKEN" AT THIS POINT TO RESTART WITH A SECTION IN SAND TANK WASH, CONTINUING UPSTREAM ALONG THE DIVERSION DITCH UNTIL THE MODEL RE-ENTERS BENDER WASH.

THIS SECTION IS IN THE "THROAT" OF THE GILA BEND CANAL WHICH CROSSES BENEATH SAND TANK WASH IN AN INVERTED SIPHON.

```
QT       1      3100
NC    0.06      0.06     0.025       0.1       0.3
X1    3888         9    9953.4   10033.4      1300      1300
GR   744.8    9953.4     739.0    9962.8     732.0    9973.7     731.3    9991.4     731.3   10000.0
GR   731.3   10017.3     732.0   10020.6     743.6   10033.4     745.2   10038.6

NC   0.035     0.035     0.035
QT       1      4900
X1       1        27    9980.5   10035.8       460       300       380
GR   741.8    9741.2     741.4    9755.7     741.0    9773.2     739.3    9790.0     738.1    9812.1
GR   737.6    9821.9     738.1    9836.3     739.0    9847.1     739.5    9859.7     739.7    9862.2
GR   738.7    9885.5     738.6    9915.3     738.9    9934.7     739.2    9941.5     739.1    9952.9
GR   739.2    9962.9     739.4    9975.5     738.9    9980.5     734.4    9997.1     732.1   10000.0
GR   733.1   10005.4     735.0   10011.2     736.1   10024.1     738.2   10035.8     741.3   10045.9
GR   744.8   10054.2     744.7   10058.7

X1       2        30    9981.5   10036.7       440       460       460
GR   742.6     9220       742     9230       742    9350     742.2    9568.6     741.9    9586.8
GR   741.6    9623.1     741.4    9671.1     741.4    9725.0     741.1    9773.7     740.4    9811.1
GR   739.9    9833.5     739.7    9841.3     740.1    9859.7     740.7    9875.1     741.0    9884.2
GR   740.4    9902.2     741.1    9924.9     741.3    9952.9     741.6    9963.1     742.7    9969.1
GR   740.5    9981.5     737.8    9990.0     737.0    9997.2     737.2   10000.0     738.4   10006.3
GR   737.6   10013.4     738.3   10024.3     739.9   10036.7     742.8   10047.1     745.7   10054.0
```

REENTERING BENDER WASH

1

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      820        35    9975.6   10020.5       840      1380      1350
GR  744.0    9686.0     744.0    9701.0     743.7    9724.6     743.6    9738.8     742.9    9744.1
GR  742.8    9757.8     742.6    9767.1     743.5    9770.6     742.7    9783.3     742.7    9801.9
GR  742.4    9818.4     742.3    9827.5     742.5    9834.9     741.4    9844.6     742.4    9858.1
GR  742.0    9870.8     742.4    9882.6     742.0    9892.9     742.4    9909.0     742.5    9931.4
GR  742.6    9958.3     743.0    9975.6     742.2    9983.0     740.5    9991.2     740.5   10000.0
GR  741.8   10012.7     742.8   10020.5     745.0   10029.6     743.9   10034.6     742.6   10048.6
GR  742.3   10067.6     742.4   10084.1     743.1   10105.0     743.9   10127.9     744.1   10146.0

      MAIN STREET CROSSES AT RM 0.975 (LOW CROSSING - NO STRUCTURE)

QT        1     5000
X1     1011       28    9973.5   10014.2     967.0     992.0    1008.0
GR  747.4    9695.6     747.3    9754.6     746.7    9791.8     744.4    9807.9     744.1    9817.2
GR  745.8    9830.9     745.7    9869.7     745.9    9894.0     746.3    9917.9     745.4    9946.2
GR  746.3    9973.6     745.2    9989.0     744.0    9999.0     744.1   10000.0     746.3   10014.2
GR  746.3   10030.3     744.4   10053.4     746.8   10074.7     745.9   10099.5     743.5   10117.2
GR  744.0   10127.2     746.4   10145.8     746.3   10184.6     747.2   10221.5     747.3   10273.2
GR  747.6   10317.2     748.2   10337.1     749.5   10376.2

NC   0.03      0.03     0.035
X1     1172       25    9982.9   10022.0     870.0     760.0     850.0
GR  753.4    9917.8     751.1    9934.5     750.4    9946.2     752.4    9960.2     752.8    9982.9
GR  751.1   10000.0     752.9   10022.0     751.8   10051.9     752.5   10095.4     752.3   10148.3
GR  752.5   10215.7     752.5   10293.2     752.3   10356.0     751.8   10396.5     751.5   10469.3
GR  748.5   10482.6     750.4   10508.7     751.2   10554.1     750.6   10579.2     750.8   10597.8
GR  749.1   10618.8     751.1   10645.3     751.6   10695.3     752.2   10747.9     753.6   10814.4

X1     1380       41    9991.7   10012.3    1000.0    1025.0    1098.0
GR  760.3    9736.2     760.0    9794.7     758.4    9826.4     758.9    9841.2     758.0    9845.8
GR  759.7    9858.8     759.5    9888.2     758.3    9900.4     757.0    9908.1     757.9    9916.0
GR  759.2    9930.2     758.9    9970.3     758.4    9991.7     756.9   10000.0     759.5   10012.3
GR  759.7   10023.0     758.8   10044.9     759.2   10096.0     758.7   10141.8     759.0   10175.6
GR  758.6   10204.7     756.3   10217.5     755.7   10230.1     757.2   10237.3     758.8   10261.4
GR  758.7   10315.1     758.8   10392.4     758.7   10477.2     757.3   10550.6     758.5   10608.6
GR  758.8   10667.7     758.8   10693.3     757.2   10703.8     758.2   10716.8     759.1   10734.4
GR  758.9   10760.1     757.9   10779.2     760.5   10820.5     761.1   10849.4     762.3   10901.7
GR  762.8   10936.7

NC   0.03      0.03      0.03
X1     1576       37    9985.0   10016.1    1100.0    1025.0    1035.0
GR  766.9    9558.7     766.8    9629.7     766.0    9720.7     765.7    9812.3     765.7    9873.8
GR  764.7    9892.0     765.4    9912.1     764.8    9933.9     766.1    9954.0     766.0    9985.0
GR  764.1    9996.3     762.5   10000.0     762.4   10006.7     767.6   10016.1     766.1   10038.2
GR  764.8   10087.4     764.5   10091.4     765.2   10145.7     765.5   10203.8     763.9   10225.8
GR  765.6   10244.1     764.8   10262.7     762.4   10274.8     763.6   10281.4     766.0   10288.8
GR  765.0   10303.6     763.5   10309.5     765.9   10319.2     765.3   10357.7     765.7   10424.5
GR  765.2   10461.7     764.2   10472.9     765.6   10491.9     765.9   10519.9     765.9   10537.5
GR  766.6   10586.3     767.5   10638.8
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X1     1738       35    9989.9   10023.9     860.0     720.0     855.0
GR  776.0    9451.2     771.5    9481.6     770.6    9534.7     770.4    9575.2     770.5    9617.0
GR  768.8    9635.2     770.5    9691.8     770.9    9791.1     770.6    9870.8     769.9    9888.6
GR  767.6    9919.0     768.9    9946.7     770.4    9974.5     770.2    9989.9     766.8   10000.0
GR  768.6   10011.3     770.3   10023.9     769.3   10038.9     769.9   10061.3     770.6   10099.5
GR  770.7   10156.4     770.6   10189.2     768.9   10197.3     770.3   10209.7     769.0   10220.9
GR  770.3   10255.7     770.0   10337.4     770.0   10438.8     769.4   10532.4     767.5   10541.5
GR  769.7   10569.0     769.3   10641.2     769.3   10709.3     768.4   10759.5     770.0   10780.9

QT        1     3200
NC    0.035     0.035     0.03
X1     1903        9    9949.8   10037.1     900.0     880.0     871.0
GR  776.5    9880.5     775.5    9916.6     775.1    9949.8     773.8    9975.3     773.1    9997.9
GR  771.7   10000.0     772.8   10019.7     775.3   10037.1     776.8   10058.3

      BENDER WASH IS CONVEYED BENEATH INTERSTATE 8 BY A TWIN BARREL
      CONCRETE BOX CULVERT.  SIGNIFICANT SEDIMENT WAS NOTED AT THE TIME OF
      THE FIELD RECONNAISSANCE, RESULTING IN A REDUCED EFFECTIVE RISE
      OF 3.4 FEET INSTEAD OF 8 FEET AS CONSTRUCTED.

      THE CHANNEL DOWNSTREAM OF THE CULVERT HAS BEEN GRADED TO REMOVE
      SOME OF THE SEDIMENT, BUT THE CULVERT HAS NOT BEEN CLEARED BECAUSE
      THE EQUIPMENT COULD NOT ENTER THE BOXES.

      REPEAT SECTION 1903 AT THE DOWNSTREAM FACE OF THE CULVERT.
      USE PSXECE = (772CONTOUR-768CONTOUR)*(180FT/640FT) = 1.1 FT
      REVISE CHANNEL BOTTOM TO REFLECT GRADING TO ELEV 774.1  (1.0 FT BELOW
      THE CULVERT SEDIMENT ELEVATION AS ESTIMATED DURING THE FIELD RECON.

      INCREASE EXPANSION/CONTRACTION COEFFICIENTS FOR THE CULVERT.

QT        1     1400
NC                          0.3       0.5                                                   1.1
X1     1940        7     9967    10033       100       240       195                   781.4
X3       10                                                                            781.4
GR  776.5    9880.5     775.5    9916.6     775.1    9949.8       773     9967       773    10033
GR  775.3   10037.1     776.8   10058.3

      WIER FLOW IS NOT ANTICIPATED.  USE SC.5 RDLEN = 500 FT.
      ELTRD = 782.4 + 0.5 HV = 782.9

SC    6.014      0.4         3       500      3.37        10       240       8.1     776.4     775.1
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X1      1987                                        250        250        250                    1.3
GR                          2                     782.9
                                                                          782.4       782.4
        10

        DEVELOP A SECTION UPSTREAM OF I-8 USING TOPO MAP DATA IN ORDER
        TO COMPUTE CONTRACTION LOSSES.
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```
X1      2041         9       9900      10050        310        240        285
GR       780      9550        778       9620        779       9700        778       9800        780       9840
GR       780      9900        777      10000        780      10050        784      10240
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     SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      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

 *PROF 1
0

CCHV=      .100 CEHV=      .300
1490 NH CARD USED
*SECNO 3180.000
1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

3265 DIVIDED FLOW

  3180.000       9.50     719.70        .00     719.70     720.47        .77        .00        .00     718.10
   18200.0    12438.2     5761.4         .4     2675.0      551.2         .6         .0         .0     719.50
       .00       4.65      10.45        .73       .040       .043       .040       .000     710.20    7556.30
   .008231         0.         0.         0.          0          0          0        .00    1909.60   10053.38

CCHV=      .100 CEHV=      .300
*SECNO 37.000
3280 CROSS SECTION      37.00 EXTENDED        .41 FEET

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =   .27

     37.000       8.51     721.01        .00        .00     722.12       1.12       1.55        .11     718.60
     3100.0      308.1     2732.4       59.5       89.6      305.0       24.2        9.5        5.4     719.30
        .01       3.44       8.96       2.46       .035       .030       .035       .000     712.50    9911.00
   .003160        230.       220.       210.          3          0          0        .00     138.07   10049.07

*SECNO 129.000
3185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
    129.000       7.74     722.94     722.94        .00     724.31       1.37       1.91        .08     722.60
     3100.0         .9     2646.1      453.0        1.0      263.9      113.4       14.0        7.1     721.40
        .02        .93      10.03       4.00       .035       .030       .035       .000     715.20    9965.82
   .005011        445.       486.       510.          3          8          0        .00     168.25   10134.08

*SECNO 224.000

3301 HV CHANGED MORE THAN HVINS
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     SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      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

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.41

    224.000       8.27     725.37        .00        .00     726.10        .73       1.72        .06     722.90
     3100.0      447.3     2120.1      532.5      139.3      270.6      120.1       19.2        9.0     721.60
        .04       3.21       7.84       4.44       .035       .030       .035       .000     717.10    9891.93
   .002508        500.       502.       490.          2          0          0        .00     170.92   10062.85

*SECNO 320.000

3265 DIVIDED FLOW

    320.000       6.24     726.84        .00        .00     727.94       1.10       1.73        .11     727.20
     3100.0        2.8     3097.2         .0        3.1      367.2         .0       24.4       10.7     727.50
        .06        .92       8.43        .00       .035       .030       .000       .000     720.60    9891.02
   .004896        530.       507.       503.          2          0          0        .00     113.08   10030.70

1490 NH CARD USED
*SECNO 415.000
    415.000       6.72     729.52        .00        .00     730.73       1.21       2.76        .03     730.30
     3100.0         .0     3100.0         .0         .0      351.7         .0       28.6       11.8     730.30
        .08        .00       8.81        .00       .000       .035       .000       .000     722.80    9962.53
   .006206        505.       502.       500.          2          0          0        .00      80.60   10043.13
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CCHV=     .300 CEHV=     .500
*SECNO 441.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      733.70 ELREA=      734.30

  441.000      6.36    730.36       .00       .00    731.43      1.07       .66       .04    725.40
   3100.0        .0    3100.0        .0        .0     373.3        .0      29.7      12.1    725.40
      .08       .00      8.30       .00      .000      .035      .000      .000    724.00   9967.00
  .003800      135.      137.      145.         2         0         0       .00     66.00  10033.00
```



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14DEC92      13:48:08

   SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      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

SC  CUNO      CUNV       ENTLC      COFQ       RDLEN      RISE       SPAN       CULVLN     CHRT       SCL        ELCHU      ELCHD
     6         .014        .40       3.00        .00       6.00      10.00      77.40      8          1         727.40     727.40

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

*SECNO 457.000

SPECIAL CULVERT OUTLET CONTROL
EGIC =    734.457  EGOC =    734.728  PCWSE=    730.356  ELTRD=    734.800

3280 CROSS SECTION    457.00 EXTENDED       .74 FEET

SPECIAL CULVERT

     EGIC       EGOC        H4      QWEIR      QCULV       VCH      ACULV      ELTRD     WEIRLN
   734.46     734.73      3.30         0.      3080.     7.141      360.0     734.80         0.

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      734.70 ELREA=      734.30

  457.000      6.54    733.94       .00       .00    734.73       .79      3.30       .00    727.40
   3080.0        .0    3080.0        .0        .0     431.3        .0      30.5      12.2    727.40
      .08       .00      7.14       .00      .000      .035      .000      .000    727.40   9967.00
  .002315       87.       87.       87.        10         0         0       .00     66.00  10033.00

3490 NH CARD USED
*SECNO 508.000
3280 CROSS SECTION    508.00 EXTENDED      2.32 FEET

  508.000      7.82    735.02       .00       .00    735.39       .38       .54       .12    729.90
   3150.0    1425.7    1619.6     104.7     433.0     265.3      59.6      34.3      13.0    730.50
      .10      3.29      6.10      1.76      .048      .035      .060      .000    727.20   9871.00
  .001724       285.      269.      235.         2         0         0       .00    181.00  10052.00

CCHV=     .300 CEHV=     .500
*SECNO 535.000

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
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14DEC92      13:48:08

   SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      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

3720 CRITICAL DEPTH ASSUMED

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      737.60 ELREA=      737.60

  535.000      5.70    734.90    734.90       .00    737.76      2.87       .63      1.24    729.20
   3250.0        .0    3250.0        .0        .0     239.3        .0      35.8      13.3    729.20
      .10       .00     13.58       .00      .000      .060      .000      .000    729.20   9979.00
  .029565       120.      143.      170.        20        15         0       .00     42.00  10021.00

SPECIAL BRIDGE

5227 DOWNSTREAM ELEV IS     733.67 , NOT     734.90 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

SB  XK        XKOR       COFQ       RDLEN      BWC        BWP        BAREA      SS         ELCHU      ELCHD
     1.25      1.60       3.00     500.00      41.60       4.00     227.00       .00     729.00     729.20

*SECNO 548.000
3280 CROSS SECTION    548.00 EXTENDED      1.30 FEET

3301 HV CHANGED MORE THAN HVINS
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3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 4.25

SSURE AND WEIR FLOW, Weir Submergence Based on TRAPEZOIDAL Shape

EGPRS	EGLWC	H3	QWEIR	QPR	BAREA	TRAPEZOID AREA	ELLC	ELTRD	WEIRLN
739.83	738.47	.00	186.	3039.	227.	226.	735.00	739.10	500.
548.000	10.09	739.09	.00	.00	739.35	.25	1.59	.00	729.00
3200.0	306.6	1952.9	940.6	108.2	424.0	313.8	36.7	13.5	729.00
.11	2.83	4.61	3.00	.060	.060	.035	.000	729.00	9960.00
.001585	71.	71.	71.	2	0	3	.00	190.00	10150.00

1490 NH CARD USED
*SECNO 604.000

604.000	9.29	739.29	.00	.00	740.02	.74	.43	.24	733.60
3100.0	132.3	2768.9	198.7	59.6	381.2	109.8	41.3	14.7	734.10
.12	2.22	7.26	1.81	.044	.030	.042	.000	730.00	9945.27
.001411	304.	293.	271.	3	0	0	.00	191.83	10137.11

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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	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

CCHV= .100 CEHV= .300
*SECNO 3888.000

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

3888.000	9.48	740.78	.00	.00	741.29	.51	1.24	.02	744.80
3100.0	.0	3100.0	.0	.0	539.6	.0	57.6	18.6	743.60
.18	.00	5.75	.00	.000	.025	.000	.000	731.30	9959.92
.000689	1300.	1300.	1300.	2	0	0	.00	70.36	10030.28

*SECNO 1.000

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = .69

1.000	9.21	741.31	.00	.00	741.98	.67	.64	.05	738.90
4900.0	2357.3	2489.8	52.9	499.4	313.0	15.8	64.0	20.4	738.20
.20	4.72	7.96	3.35	.035	.035	.035	.000	732.10	9759.54
.003652	460.	380.	300.	2	0	0	.00	286.39	10045.93

SECNO 2.000
3280 CROSS SECTION 2.00 EXTENDED .46 FEET

2.000	6.05	743.05	.00	.00	743.30	.25	1.28	.04	740.50
4900.0	3338.5	1511.3	50.2	1144.3	264.4	17.8	75.5	26.0	739.90
.23	2.92	5.72	2.82	.035	.035	.035	.000	737.00	9220.00
.002285	440.	460.	460.	2	0	0	.00	827.71	10047.71

*SECNO 820.000
3280 CROSS SECTION 820.00 EXTENDED 1.38 FEET

820.000	4.88	745.38	.00	.00	745.64	.26	2.34	.00	743.00
4900.0	3039.5	868.9	991.6	763.1	174.2	276.2	105.4	39.9	742.80
.30	3.98	4.99	3.59	.035	.035	.035	.000	740.50	9686.00
.002288	840.	1350.	1380.	3	0	0	.00	460.00	10146.00

*SECNO 1011.000
3280 CROSS SECTION 1011.00 EXTENDED .69 FEET

1011.000	4.59	748.09	.00	.00	748.37	.28	2.73	.01	746.30
5000.0	2180.4	578.6	2241.0	521.4	116.1	536.9	132.2	52.2	746.30
.37	4.18	4.98	4.17	.035	.035	.035	.000	743.50	9695.60
.003436	967.	1008.	992.	3	0	0	.00	637.74	10333.34

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14DEC92 13:48:08 PAGE 14

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	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 1172.000

3265 DIVIDED FLOW

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

1172.000	4.20	752.70	752.70	.00	753.29	.58	4.01	.09	752.80
5000.0	295.1	94.4	4610.5	53.0	28.6	741.9	150.5	65.6	752.90
.40	5.57	3.30	6.21	.030	.035	.030	.000	748.50	9922.86
.008146	870.	850.	760.	13	9	0	.00	834.67	10771.79

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*SECNO 1380.000
  1380.000      4.01    759.71       .00       .00    760.01       .31      6.70       .03    758.40
   5000.0     625.5     157.6    4216.9     161.7      35.6     932.3     173.5      87.2    759.50
      .47      3.87      4.42      4.52      .030      .035      .030      .000    755.70   9800.48
  .005362     1000.     1098.     1025.         4         0         0       .00   1007.44  10807.92

*SECNO 1576.000

3265 DIVIDED FLOW

  1576.000      4.04    766.44    766.41       .00    766.94       .50      6.87       .06    766.00
   5000.0     915.7     536.5    3547.8     222.4      68.8     631.5     198.0     109.9    767.60
      .52      4.12      7.80      5.62      .030      .030      .030      .000    762.40   9670.60
  .008381     1100.     1035.     1025.         7         5         0       .00    885.40  10575.18

*SECNO 1738.000

3265 DIVIDED FLOW

3280 CROSS SECTION   1738.00 EXTENDED       .89 FEET

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.48

  1738.000      4.09    770.89       .00       .00    771.12       .24      4.16       .03    770.20
   5000.0    1336.3     410.8    3252.9     351.3      78.2     865.9     217.5     129.0    770.30
      .57      3.80      5.25      3.76      .030      .030      .030      .000    766.80   9517.75
  .003818      860.      855.      720.         6         0         0       .00   1256.59  10780.90
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    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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 1903.000
3280 CROSS SECTION   1903.00 EXTENDED       .47 FEET

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
  1903.000      5.27    776.97    776.97       .00    778.14      1.17      4.13       .28    775.10
   3200.0     394.0    2741.5      64.5      90.6     297.4      19.5     234.7     143.6    775.30
      .60      4.35      9.22      3.30      .035      .030      .035      .000    771.70   9880.50
  .006829      900.      871.      880.        20        11         0       .00    177.80  10058.30

CCHV=     .300 CEHV=     .500
*SECNO 1940.000
3280 CROSS SECTION   1940.00 EXTENDED      1.09 FEET

3301 HV CHANGED MORE THAN HVINS

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       781.40 ELREA=       781.40

  1940.000      4.59    778.69       .00       .00    779.02       .33       .62       .25    774.10
   1400.0        .0    1400.0        .0        .0     302.9        .0     236.2     144.1    774.10
      .61       .00      4.62       .00      .000      .030      .000      .000    774.10   9967.00
  .001142      100.      195.      240.         2         0         0       .00     66.00  10033.00

SPECIAL CULVERT

SC  CUNO      CUNV      ENTLC     COFQ      RDLEN     RISE      SPAN      CULVLN    CHRT      SCL       ELCHU     ELCHD
     6         .014       .40     3.00     500.00     3.37     10.00     240.00      8         1       776.40    775.10

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

*SECNO 1987.000

SPECIAL CULVERT INLET CONTROL
EGIC =    780.900  EGOC =    780.479  PCWSE=    778.686  ELTRD=    782.900

3280 CROSS SECTION   1987.00 EXTENDED      1.75 FEET
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    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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
   780.90    780.48     1.88        0.     1400.     4.042     202.2    782.90        0.
```

05 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 782.40 ELREA= 782.40

1987.000	5.25	780.65	.00	.00	780.90	.25	1.88	.00	775.40
1400.0	.0	1400.0	.0	.0	346.3	.0	238.1	144.5	775.40
.63	.00	4.04	.00	.000	.030	.000	.000	775.40	9967.00
.000730	250.	250.	250.	2	0	0	.00	66.00	10033.00

*SECNO 2041.000
3280 CROSS SECTION 2041.00 EXTENDED 1.06 FEET

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 1.76

2041.000	4.06	781.06	.00	.00	781.08	.02	.11	.07	780.00
1400.0	842.5	546.2	11.3	750.0	383.6	26.5	243.2	146.5	780.00
.70	1.12	1.42	.43	.035	.030	.035	.000	777.00	9550.00
.000237	310.	285.	240.	2	0	0	.00	550.21	10100.21

THIS RUN EXECUTED 14DEC92 13:48:19

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HEC-2 WATER SURFACE PROFILES

Version 4.6.2; May 1991
****

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

BENDER WASH

SUMMARY PRINTOUT

	SECNO	ELMIN	CWSEL	Q	VCH	DIFWSX	TOPWID	DEPTH	SSTA	ENDST	QLOB	QROB	ELTRD
	3180.000	710.20	719.70	18200.00	10.45	.00	1909.60	9.50	7556.30	10053.38	12438.17	.45	.00
*	37.000	712.50	721.01	3100.00	8.96	1.31	138.07	8.51	9911.00	10049.07	308.06	59.52	.00
*	129.000	715.20	722.94	3100.00	10.03	1.94	168.25	7.74	9965.82	10134.08	.89	453.03	.00
*	224.000	717.10	725.37	3100.00	7.84	2.43	170.92	8.27	9891.93	10062.85	447.31	532.55	.00
	320.000	720.60	726.84	3100.00	8.43	1.47	113.08	6.24	9891.02	10030.70	2.84	.00	.00
	415.000	722.80	729.52	3100.00	8.81	2.69	80.60	6.72	9962.53	10043.13	.00	.00	.00
	441.000	724.00	730.36	3100.00	8.30	.83	66.00	6.36	9967.00	10033.00	.00	.00	.00
	457.000	727.40	733.94	3080.00	7.14	3.58	66.00	6.54	9967.00	10033.00	.00	.00	734.80
	508.000	727.20	735.02	3150.00	6.10	1.08	181.00	7.82	9871.00	10052.00	1425.72	104.71	.00
*	535.000	729.20	734.90	3250.00	13.58	-.12	42.00	5.70	9979.00	10021.00	.00	.00	.00
*	548.000	729.00	739.09	3200.00	4.61	4.20	190.00	10.09	9960.00	10150.00	306.45	940.62	739.10
	604.000	730.00	739.29	3100.00	7.26	.19	191.83	9.29	9945.27	10137.11	132.34	198.73	.00
*	3888.000	731.30	740.78	3100.00	5.75	1.49	70.36	9.48	9959.92	10030.28	.00	.00	.00
*	1.000	732.10	741.31	4900.00	7.96	.53	286.39	9.21	9759.54	10045.93	2357.25	52.90	.00
	2.000	737.00	743.05	4900.00	5.72	1.74	827.71	6.05	9220.00	10047.71	3338.53	50.22	.00
	820.000	740.50	745.38	4900.00	4.99	2.33	460.00	4.88	9686.00	10146.00	3039.53	991.57	.00
	1011.000	743.50	748.09	5000.00	4.98	2.71	637.74	4.59	9695.60	10333.34	2180.38	2241.03	.00

	SECNO	ELMIN	CWSEL	Q	VCH	DIFWSX	TOPWID	DEPTH	SSTA	ENDST	QLOB	QROB	ELTRD
*	1172.000	748.50	752.70	5000.00	3.30	4.61	834.67	4.20	9922.86	10771.79	295.09	4610.54	.00
	1380.000	755.70	759.71	5000.00	4.42	7.00	1007.44	4.01	9800.48	10807.92	625.53	4216.91	.00
	1576.000	762.40	766.44	5000.00	7.80	6.73	885.40	4.04	9670.60	10575.18	915.66	3547.84	.00
*	1738.000	766.80	770.89	5000.00	5.25	4.45	1256.59	4.09	9517.75	10780.90	1336.29	3252.88	.00
*	1903.000	771.70	776.97	3200.00	9.22	6.09	177.80	5.27	9880.50	10058.30	394.00	64.49	.00
	1940.000	774.10	778.69	1400.00	4.62	1.71	66.00	4.59	9967.00	10033.00	.00	.00	.00
	1987.000	775.40	780.65	1400.00	4.04	1.96	66.00	5.25	9967.00	10033.00	.00	.00	782.90
*	2041.000	777.00	781.06	1400.00	1.42	.41	550.21	4.06	9550.00	10100.21	842.49	11.33	.00

SUMMARY OF ERRORS AND SPECIAL NOTES

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WARNING SECNO=     37.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO=    129.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=    129.000  PROFILE=  1  MINIMUM SPECIFIC ENERGY

WARNING SECNO=    224.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO=    535.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=    535.000  PROFILE=  1  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=    535.000  PROFILE=  1  20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO=    548.000  PROFILE=  1  HYDRAULIC JUMP D.S.
WARNING SECNO=    548.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=   3888.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=      1.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO=   1172.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=   1172.000  PROFILE=  1  MINIMUM SPECIFIC ENERGY

WARNING SECNO=   1738.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO=   1903.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=   1903.000  PROFILE=  1  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=   1903.000  PROFILE=  1  20 TRIALS ATTEMPTED TO BALANCE WSEL

WARNING SECNO=   2041.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
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1*****************************************
*  HEC-2 WATER SURFACE PROFILES           *
*                                         *
*  Version   4.6.2;  May 1991             *
*                                         *
*  RUN DATE    14DEC92    TIME   11:50:52 *
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****************************************
*  U.S. ARMY CORPS OF ENGINEERS        *
*  HYDROLOGIC ENGINEERING CENTER       *
*  609 SECOND STREET, SUITE D          *
*  DAVIS, CALIFORNIA 95616-4687        *
*          (916) 756-1104              *
****************************************
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X     X  XXXXXXX   XXXXX              XXXXX
X     X  X        X     X            X     X
X     X  X        X                  X     X
XXXXXXX  XXXX     X          XXXXX    XXXXX
X     X  X        X                  X
X     X  X        X     X            X
X     X  XXXXXXX   XXXXX              XXXXXXX
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   14DEC92      11:50:53                                                                    PAGE    1


                                                                THIS RUN EXECUTED 14DEC92     11:50:53
*************************************
 HEC-2 WATER SURFACE PROFILES

 Version   4.6.2;  May 1991
*************************************


T1      FLOOD CONTROL DISTRICT OF MARICOPA COUNTY - CONTRACT FCD 90-67
T2      GILA BEND AREA FLOODPLAIN DELINEATION STUDY BY BURGESS & NIPLE
T3      BENDER WASH 100-YEAR    (NATURAL)       J. MISCHLER - (602) 244-8100

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

              2                                                           721.01

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

     1                  -1                                                                      15

J3  VARIABLE CODES FOR SUMMARY PRINTOUT

    38        42        1         53        54        8         43        26        10        51
    46        40        41        0         110       0         200

       SECTIONS ARE LABELED AS  RIVER MILES * 1000, i.e., SECTION 037 IS AT
       A POINT 0.037 MILES UPSTREAM OF THE CONFLUENCE WITH SAND TANK WASH.

       BENDER WASH ENTERS SAND TANK WASH AT RM 3.184

QT        2       3100      3100
NC    0.035       0.035     0.03      0.1       0.3
ET                          4.1       9965      10021
X1      037          16     9970.4    10021.1   228.0     220.0     220.0
GR    720.6       9911.0    719.8     9929.8    719.7     9945.9    718.5     9956.9    718.6     9970.4
GR    716.9       9978.3    713.3     9992.0    712.6     9996.2    712.5     10000.0   712.9     10007.3
GR    714.4      10011.8    719.3     10021.1   720.3     10037.9   721.3     10053.7   722.3     10067.1
GR    722.8      10074.8

ET                          4.1       9970      10025
X1      129          14     9971.4    10023.9   445.0     510.0     486.0
GR    723.9       9950.3    722.6     9971.4    717.4     9985.4    716.7     9989.6    715.7     9994.2
GR    715.2      10000.0    715.8     10007.0   718.6     10014.7   721.4     10023.9   721.4     10042.6
GR    720.6      10062.3    721.8     10078.5   722.7     10098.1     724      10290

ET                          4.1       9960      10030
X1      224          20     9971.9    10018.9   500.0     490.0     502.0
GR    727.5       9845.5    727.2     9873.9    725.2     9893.6    723.8     9905.7    722.9     9914.4
GR    723.6       9926.2    723.5     9963.6    722.9     9971.9    721.1     9981.8    718.8     9990.5
GR    717.5       9995.2    717.1     10000.0   718.6     10007.9   721.6     10018.9   722.2     10029.9
GR    721.8      10041.8    723.4     10053.6   725.7     10064.4   726.9     10074.8   727.1     10078.2
1
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ET                          4.1       9950      10020
X1      320          19     9933.4    10032.9   530.0     503.0     507.0
GR    728.9       9837.5    728.7     9860.0    728.4     9877.0    726.9     9889.1    726.5     9903.5
GR    727.6       9920.2    727.2     9933.4    725.5     9942.8    723.4     9954.7    722.4     9970.6
GR    722.3       9976.2    722.6     9985.4    720.7     9992.6    720.6     10000.0   721.0     10009.5
GR    723.4      10019.1    727.5     10032.9   730.2     10047.7   730.4     10048.8

       BENDER WASH CROSSES PAPAGO ST AT RM 0.360 (LOW CROSSING - NO STRUCTURE)

NH        4       0.035     9931.7    0.06      9960.1    0.035     10045.6   0.06      10109.2
ET                          4.1       9960      10040
X1      415          20     9960.1    10045.6   505.0     500.0     502.0
GR    733.6       9906.5    732.8     9919.9    730.9     9931.7    730.4     9948.4    730.3     9960.1
GR    727.7       9968.3    724.1     9979.0    723.1     9986.3    722.8     9994.6    723.4     10000.0
GR    723.9      10009.7    724.8     10015.8   725.6     10029.1   727.8     10037.6   730.3     10045.6
GR    730.3      10058.1    730.1     10073.5   729.9     10089.5   730.5     10097.6   732.6     10109.2
```

UPSTREAM OF PIMA STREET, BENDER AND SAND TANK WASHES COMBINE IN COMMON POOLS - ONE UPSTREAM OF PIMA STREET, AND THE OTHER UPSTREAM OF THE RAILROAD TRACKS.

RATING CURVES WERE DEVELOPED TO DETERMINE THE AMOUNT OF FLOW IN EACH STREAM BELOW PIMA STREET. ABOVE PIMA STREET, SAND TANK WASH ELEVATIONS WILL CONTROL SINCE THEY WERE MODELED WITH THE COMBINED Q - EVEN THOUGH ELEVATIONS COMPUTED BY THIS MODEL MAY BE SLIGHTLY HIGHER OR LOWER THAN SAND TANK WASH. THE REASON FOR THIS IS THAT THE Q IN BENDER IS NOT ALWAYS 3100 CFS BETWEEN PIMA STREET AND THE GILA BEND CANAL. MIXING OCCURS AMONG THE CHANNELS WHICH IS WHY ELEVATIONS ARE OBTAINED FROM THE COMMON MODEL. THIS MODEL WAS, HOWEVER, USED FOR FLOODWAY COMPUTATIONS IN BENDER WASH. BETWEEN PIMA STREET AND SECTION 820, IT WAS FOUND THAT THE COMBINED FLOODWAY SUPERCEDED THE FLOODWAY COMPUTED FOR BENDER WASH ALONE, THAT IS, THE FLOODWAY REQUIRED FOR SAND TANK WASH SURROUNDS THE FLOODWAY REQUIRED FOR BENDER WASH ONLY.

BENDER WASH IS CONVEYED BENEATH PIMA STREET (U.S. ROUTE 80) THROUGH A BOX CULVERT THAT HAS BEEN WIDENED IN THE PAST. THE NEWER PORTION TO THE NORTH (DOWNSTREAM) WAS CONSTRUCTED WITH A MATCHING CROWN BUT A LOWER INVERT, APPARENTLY IN RESPONSE TO SCOUR EXPERIENCED DOWNSTREAM OF THE ORIGINAL CULVERT. A MINOR SCOUR HOLE IS NOTED DOWNSTREAM OF THE NEWER, LOWER INVERT.

SPECIAL CULVERT IS USED TO MODEL THE CULVERT. THE DOWNSTREAM CHANNEL SECTION IS BASED ON ACTUAL ELEVATIONS AT THE OUTLET, BUT ELCHD ON SC.10 IS BASED ON THE HIGHER INVERT INSIDE THE CULVERT SO AS TO NOT CAUSE THE MODEL TO USE A CULVERT SLOPE THAT IS TOO HIGH. THIS RESULTS IN WHAT APPEARS TO BE A STEP AT THE DOWNSTREAM END, ALTHOUGH THE STEP ACTUALLY OCCURS WITHIN THE CULVERT.

INCREASE EXPANSION/CONTRACTION COEFFICIENTS FOR THE STRUCTURE.

SECTION 441 IS BASED ON SURVEY DATA (CHANNEL) AND TOPO MAP DATA (OVERBANKS).


```
NC     0.06      0.06     0.035       0.3       0.5
ET                         4.1      9967     10033
X1      441         7      9967     10033       135       145       137
X3       10                                                     733.7     734.3
GR    734.1      9650       734      9950     725.4      9967       724     10000     725.4     10033
GR      734     10050     734.8     10350
```

ELTRD = 734.3 + 0.5 HV = 734.8

```
QT        2      3080      3080
SC    6.014       0.4         3         0         6        10      77.4       8.1     727.4     727.4
ET                         4.11      9967     10033
X1      457         8      9967     10033        87        87        87
X2                            2                734.8
X3       10                                                     734.7     734.3
BT       -4      9600     734.7                9960     735.4                10220     735.3
BT            10450     735.7
GR    733.2      9600       732      9960     727.4      9967     727.4     10033       734     10040
GR    734.5     10220     734.9     10350       735     10450
```

KEEP EXPANSION/CONTRACTION COEFFICIENTS HIGH THROUGH AREA OF FREQUENT STRUCTURES.

```
NH        5      0.06    9911.8     0.035    9947.0      0.06    9981.0     0.035   10021.7      0.06
NH    10052
QT        2      3150      3150
ET                         4.1      9960     10025
X1      508        14    9981.0   10021.7       285       235       269
GR    732.7    9871.0     732.3    9890.2     731.0    9911.8     730.5    9930.1     730.8    9947.0
GR    730.3    9963.5     729.9    9981.0     728.1    9989.2     727.4    9996.4     727.2   10000.0
GR    728.8   10011.7     730.5   10021.7     733.1   10032.0     734.3     10052
```

BENDER WASH IS CONVEYED BENEATH THE SOUTHERN PACIFIC RAILROAD BY A TIMBER BRIDGE.

SPECIAL BRIDGE IS USED TO MODEL THE STRUCTURE.

SECTION 535 AT THE DOWNSTREAM FACE OF THE BRIDGE IS BASED ON FIELD SURVEY (CHANNEL) AND TOPO MAP DATA (OVERBANKS).

```
NC     0.06     0.035      0.06       0.3       0.5
QT        2      3250      3250
ET                         4.1      9979     10021
X1      535         5      9979     10021       120       170       143
X3       10                                                     737.6     737.6
GR      738      9960     729.2      9979     729.2     10021       736     10025       738     10150
```

WIER FLOW IS NOT ANTICIPATED. USE SB.5 RDLEN = 738.6 + 0.5 HV = 739.1
ASSUME EFFECTIVE WIER LENGTH = 500 FT.

THE DOWNSTREAM CHANNEL INVERT IS 0.2 FT HIGHER THAN UPSTREAM.

```
QT        2      3200      3200
SB     1.25       1.6         3       500      41.6         4       227         0     729.0     729.2
ET                         4.1      9979     10021
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```
X1      548                                     71          71          71                      -0.2
X2                          1       735.0       739.1                                   738.6       738.6
        10

        KEEP EXPANSION/CONTRACTION COEFFICIENTS HIGH THROUGH AREA OF FREQUENT
        STRUCTURES.

QT        2       3100       3100
NH        5      0.035     9962.3       0.05      9972.6       0.03    10021.2       0.05    10033.1      0.035
NH    10200
ET                            4.1       9960       10040
X1      604         15     9972.6    10021.2         304        271        293
GR    739.6     9939.8      739.5     9944.4       736.7     9955.8      738.3     9962.3      733.6     9972.6
GR    730.8     9988.0      730.5     9996.4       730.0    10000.0      730.8    10010.8      734.1    10021.2
GR    738.1    10033.1      737.3    10043.0       738.4    10056.7      738.5      10068      740.0    10200.0

        THIS IS WHERE THINGS GET STRANGE......

        WHEN THE GILA BEND CANAL WAS CONSTRUCTED, A 3-BARREL CONCRETE BOX
        CULVERT WAS CONSTRUCTED TO CONVEY BENDER WASH BENEATH THE IRRIGATION
        CANAL.  WHEN THE CANAL BANKS WERE RAISED AND THE CANAL EMBANKMENT
        WAS THEREFORE WIDENED AT SOME TIME IN THE PAST, THE CULVERT WAS EXTENDED
        BY INSERTING SINGLE 30-INCH CORRUGATED METAL PIPES IN EACH BARREL.

        THE CULVERT WAS EXTENDED IN THE UPSTREAM DIRECTION.

        FLOW THROUGH THE CULVERT IS CONTROLLED BY INLET CONDITIONS, AND IN
        FACT, THE THREE PIPES HAD SIGNIFICANT SEDIMENT CLOGGING THE INLETS
        AT THE TIME OF THE FIELD RECONNAISSANCE OF 10/4/91.

        A DITCH HAS BEEN CONSTRUCTED UPSTREAM OF THE GILA BEND CANAL TO DIVERT
        WATER FROM BENDER WASH, AS WELL AS FROM UNNAMED TRIBUTARIES 1 & 2, TO
        SAND TANK WASH JUST UPSTREAM OF THE INVERTED SIPHON WHICH CARRIES THE
        GILA BEND CANAL BENEATH SAND TANK WASH.

        ELEVATIONS UPSTREAM OF THE GILA BEND CANAL WILL THEREFORE BE CONTROLLED
        BY SAND TANK WASH.

        IN ORDER TO PROPERLY MODEL THE HYDRAULICS, THE MODEL IS "BROKEN" AT
        THIS POINT TO RESTART WITH A SECTION IN SAND TANK WASH, CONTINUING
        UPSTREAM ALONG THE DIVERSION DITCH UNTIL THE MODEL RE-ENTERS BENDER
        WASH.

        THIS SECTION IS IN THE "THROAT" OF THE GILA BEND CANAL WHICH
        CROSSES BENEATH SAND TANK WASH IN AN INVERTED SIPHON.

1
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QT        2       3100       3100
     0.06       0.06      0.025        0.1        0.3
                            4.1       9953      10033
2     3888          9     9953.4    10033.4       1300       1300       1300
GR    744.8     9953.4      739.0     9962.8       732.0     9973.7      731.3     9991.4      731.3    10000.0
GR    731.3    10017.3      732.0    10020.6       743.6    10033.4      745.2    10038.6

NC    0.035      0.035      0.035
QT        2       4900       4900
ET                            4.1       9844      10044
X1        1         27     9980.5    10035.8         460        300        380
GR    741.8     9741.2      741.4     9755.7       741.0     9773.2      739.3     9790.0      738.1     9812.1
GR    737.6     9821.9      738.1     9836.3       739.0     9847.1      739.5     9859.7      739.7     9862.2
GR    738.7     9885.5      738.6     9915.3       738.9     9934.7      739.2     9941.5      739.1     9952.9
GR    739.2     9962.9      739.4     9975.5       738.9     9980.5      734.4     9997.1      732.1    10000.0
GR    733.1    10005.4      735.0    10011.2       736.1    10024.1      738.2    10035.8      741.3    10045.9
GR    744.8    10054.2      744.7    10058.7

ET                            4.1       9750      10037
X1        2         30     9981.5    10036.7         440        460        460
GR    742.6      9220        742      9230         742      9350      742.2     9568.6      741.9     9586.8
GR    741.6     9623.1      741.4     9671.1       741.4     9725.0      741.1     9773.7      740.4     9811.1
GR    739.9     9833.5      739.7     9841.3       740.1     9859.7      740.7     9875.1      741.0     9884.2
GR    740.4     9902.2      741.1     9924.9       741.3     9952.9      741.6     9963.1      742.7     9969.1
GR    740.5     9981.5      737.8     9990.0       737.0     9997.2      737.2    10000.0      738.4    10006.3
GR    737.6    10013.4      738.3    10024.3       739.9    10036.7      742.8    10047.1      745.7    10054.0

        REENTERING BENDER WASH

ET                            4.1       9780      10040
X1      820         35     9975.6    10020.5         840       1380       1350
GR    744.0     9686.0      744.0     9701.0       743.7     9724.6      743.6     9738.8      742.9     9744.1
GR    742.8     9757.8      742.6     9767.1       743.5     9770.6      742.7     9783.3      742.7     9801.9
GR    742.4     9818.4      742.3     9827.5       742.5     9834.9      741.4     9844.6      742.4     9858.1
GR    742.0     9870.8      742.4     9882.6       742.0     9892.9      742.4     9909.0      742.5     9931.4
GR    742.6     9958.3      743.0     9975.6       742.2     9983.0      740.5     9991.2      740.5    10000.0
GR    741.8    10012.7      742.8    10020.5       745.0    10029.6      743.9    10034.6      742.6    10048.6
GR    742.3    10067.6      742.4    10084.1       743.1    10105.0      743.9    10127.9      744.1    10146.0

        MAIN STREET CROSSES AT RM 0.975 (LOW CROSSING - NO STRUCTURE)

        BEGINNING AT SECTION 1011, THE BENDER WASH FLOODWAY IS SEPARATE EVEN
        THOUGH THE SAND TANK WASH FLOOD BOUNDARY STILL SURROUNDS THE BENDER
        WASH FLOOD BOUNDARY AND THEREFORE CONTROLS BASE FLOOD ELEVATIONS.

QT        2       5000       5000
ET                            4.1       9830      10130
1
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X1     1011        28    9973.5   10014.2     967.0      992.0     1008.0
GR    747.4    9695.6     747.3    9754.6     746.7     9791.8      744.4    9807.9      744.1    9817.2
GR    745.8    9830.9     745.7    9869.7     745.9     9894.0      746.3    9917.9      745.4    9946.2
GR    746.3    9973.5     745.2    9989.0     744.0     9999.0      744.1   10000.0      746.3   10014.2
GR    746.3   10030.3     744.4   10053.4     746.8    10074.7      745.9   10099.5      743.5   10117.2
GR    744.0   10127.2     746.4   10145.8     746.3    10184.6      747.2   10221.5      747.3   10273.2
GR    747.6   10317.2     748.2   10337.1     749.5    10376.2

NC     0.03      0.03     0.035
ET                          4.1       9920     10450
X1     1172        25    9982.9   10022.0     870.0      760.0      850.0
GR    753.4    9917.8     751.1    9934.5     750.4     9946.2      752.4    9960.2      752.8    9982.9
GR    751.1   10000.0     752.9   10022.0     751.8    10051.9      752.5   10095.4      752.3   10148.3
GR    752.5   10215.7     752.5   10293.2     752.3    10356.0      751.8   10396.5      751.5   10469.3
GR    748.5   10482.5     750.4   10508.7     751.2    10554.1      750.6   10579.2      750.8   10597.8
GR    749.1   10618.8     751.1   10645.3     751.6    10695.3      752.2   10747.9      753.6   10814.4
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BEGINNING WITH SECTION 1380, SAND TANK AND BENDER WASH FLOODPLAINS ARE SEPARATED. UPSTREAM OF RIVER MILE 1.35 +/-, SAND TANK WASH IS CONTAINED WITHIN IT'S OWN FLOODPLAIN AND DOES NOT INUNDATE BENDER WASH.

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ET                          4.1       9990     10450
X1     1380        41    9991.7   10012.3    1000.0     1025.0     1098.0
GR    760.3    9736.2     760.0    9794.7     758.4     9826.4      758.9    9841.2      758.0    9845.8
GR    759.7    9858.8     759.5    9888.2     758.3     9900.4      757.0    9908.1      757.9    9916.0
GR    759.2    9930.2     758.9    9970.3     758.4     9991.7      756.9   10000.0      759.5   10012.3
GR    759.7   10023.0     758.8   10044.9     759.2    10096.0      758.7   10141.8      759.0   10175.6
GR    758.6   10204.7     756.3   10217.5     755.7    10230.1      757.2   10237.3      758.8   10261.4
GR    758.7   10315.1     758.8   10392.4     758.7    10477.2      757.3   10550.6      758.5   10608.6
GR    758.8   10667.7     758.8   10693.3     757.2    10703.8      758.2   10716.8      759.1   10734.4
GR    758.9   10760.1     757.9   10779.2     760.5    10820.5      761.1   10849.4      762.3   10901.7
GR    762.8   10936.7

NC     0.03      0.03      0.03
ET                          4.1       9850     10300
X1     1576        37    9985.0   10016.1    1100.0     1025.0     1035.0
GR    766.9    9558.7     766.8    9629.7     766.0     9720.7      765.7    9812.3      765.7    9873.8
GR    764.7    9892.0     765.4    9912.1     764.8     9933.9      766.1    9954.0      766.0    9985.0
GR    764.1    9996.3     762.5   10000.0     762.4    10006.7      767.6   10016.1      766.1   10038.2
GR    764.8   10087.4     764.5   10091.4     765.2    10145.7      765.5   10203.8      763.9   10225.8
GR    765.6   10244.1     764.8   10262.7     762.4    10274.8      763.6   10281.4      766.0   10288.8
GR    765.0   10303.6     763.5   10309.5     765.9    10319.2      765.3   10357.7      765.7   10424.5
GR    765.2   10461.7     764.2   10472.9     765.6    10491.9      765.9   10519.9      765.9   10537.5
GR    766.6   10586.3     767.5   10636.8

ET                          4.1       9750     10230
X1     1738        35    9989.9   10023.9     860.0      720.0      855.0
GR    776.0    9451.2     771.5    9481.6     770.6     9534.7      770.4    9575.2      770.5    9617.0
GR    768.8    9635.2     770.5    9691.8     770.9     9791.1      770.6    9870.8      769.9    9888.6
GR    767.6    9919.0     768.9    9946.7     770.4     9974.5      770.2    9989.9      766.8   10000.0
GR    768.6   10011.3     770.3   10023.9     769.3    10038.9      769.9   10061.3      770.6   10099.5
GR    770.7   10156.4     770.6   10189.2     768.9    10197.3      770.3   10209.7      769.0   10220.9
GR    770.3   10255.7     770.0   10337.4     770.0    10438.8      769.4   10532.4      767.5   10541.5
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GR    769.7   10569.0     769.3   10641.2     769.3    10709.3      768.4   10759.5      770.0   10780.9

NC    0.035     0.035      0.03
QT        2      3200      3200
ET                          4.1    9880.5     10050
X1     1903         9    9949.8   10037.1     900.0      880.0      871.0
GR    776.5    9880.5     775.5    9916.6     775.1     9949.8      773.8    9975.3      773.1    9997.9
GR    771.7   10000.0     772.8   10019.7     775.3    10037.1      776.8   10058.3
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BENDER WASH IS CONVEYED BENEATH INTERSTATE 8 BY A TWIN BARREL CONCRETE BOX CULVERT. SIGNIFICANT SEDIMENT WAS NOTED AT THE TIME OF THE FIELD RECONNAISSANCE, RESULTING IN A REDUCED EFFECTIVE RISE OF 3.4 FEET INSTEAD OF 8 FEET AS CONSTRUCTED.

THE CHANNEL DOWNSTREAM OF THE CULVERT HAS BEEN GRADED TO REMOVE SOME OF THE SEDIMENT, BUT THE CULVERT HAS NOT BEEN CLEARED BECAUSE THE EQUIPMENT COULD NOT ENTER THE BOXES.

REPEAT SECTION 1903 AT THE DOWNSTREAM FACE OF THE CULVERT.
USE PSXECE = (772CONTOUR-768CONTOUR)*(180FT/640FT) = 1.1 FT
REVISE CHANNEL BOTTOM TO REFLECT GRADING TO ELEV 774.1 (1.0 FT BELOW THE CULVERT SEDIMENT ELEVATION AS ESTIMATED DURING THE FIELD RECON.

INCREASE EXPANSION/CONTRACTION COEFFICIENTS FOR THE CULVERT.

```
QT        2      1400      1400
NC                          0.3       0.5
ET                          4.1      9967     10033
X1     1940         7      9967     10033       100       240       195                  1.1
X3       10                                                                   781.4     781.4
GR    776.5    9880.5     775.5    9916.6     775.1    9949.8       773      9967       773     10033
GR    775.3   10037.1     776.8   10058.3
```

WIER FLOW IS NOT ANTICIPATED. USE SC.5 RDLEN = 500 FT.
ELTRD = 782.4 + 0.5 HV = 782.9

```
SC    6.014       0.4         3      500      3.37        10       240       8.1     776.4     775.1
ET                          4.1      9967     10033
X1     1987                                     250       250       250                  1.3
X2                            2                782.9
X3       10                                                                   782.4     782.4
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DEVELOP A SECTION UPSTREAM OF I-8 USING TOPO MAP DATA IN ORDER
TO COMPUTE CONTRACTION LOSSES.

NT                          4.1       9900      10050
X1     2041         9       9900      10050        310        240        285
GR      780      9550        778       9620        779       9700        778       9800        780       9840
GR      780      9900        777      10000        780      10050        784      10240
1
   14DEC92      11:50:53                                                                                          PAGE    8

    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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

 *PROF 1
0

 CCHV=     .100 CEHV=     .300
 *SECNO 37.000
 3280 CROSS SECTION     37.00 EXTENDED       .41 FEET

    37.000      8.51    721.01       .00    721.01    722.13      1.12       .00       .00    718.60
    3100.0     308.6    2731.7      59.7      89.7     305.2      24.3        .0        .0    719.30
       .00      3.44      8.95      2.46      .035      .030      .035      .000    712.50   9911.00
   .003153      228.      220.      220.         0         0         0       .00    138.12  10049.12

 FLOW DISTRIBUTION FOR SECNO=     37.00          CWSEL=    721.01

 STA=    9911.    9930.    9946.    9957.    9970.   10021.   10038.   10049.
   PER Q=      1.0      1.8      2.5      4.7     88.1      1.8       .2
    AREA=     15.2     20.3     21.0     33.2    305.2     20.3      4.0
     VEL=      2.0      2.8      3.7      4.3      9.0      2.7      1.2
   DEPTH=       .8      1.3      1.9      2.5      6.0      1.2       .4

 *SECNO 129.000
 7185 MINIMUM SPECIFIC ENERGY
 3720 CRITICAL DEPTH ASSUMED
    129.000      7.74    722.94    722.94       .00    724.31      1.37      1.91       .08    722.60
     3100.0        .9    2646.2     452.9       1.0     263.8     113.4       4.4       1.7    721.40
        .01       .93     10.03      4.00      .035      .030      .035      .000    715.20   9965.83
   .005012      445.      486.      510.         3         8         0       .00    168.21  10134.03

 FLOW DISTRIBUTION FOR SECNO=    129.00          CWSEL=    722.94

 STA=    9966.    9971.   10024.   10043.   10062.   10079.   10098.   10134.
   PER Q=       .0     85.4      3.7      5.8      4.0      1.0       .1
    AREA=      1.0    263.8     28.9     38.3     28.2     13.6      4.4
     VEL=       .9     10.0      4.0      4.7      4.3      2.4       .7
   DEPTH=       .2      5.0      1.5      1.9      1.7       .7       .1

 *SECNO 224.000
1
   14DEC92      11:50:53                                                                                          PAGE    9

    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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


 3301 HV CHANGED MORE THAN HVINS

 3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.41

    224.000      8.27    725.37       .00       .00    726.10       .73      1.72       .06    722.90
     3100.0     447.3    2120.1     532.6     139.3     270.6     120.1       9.6       3.6    721.60
        .04      3.21      7.84      4.44      .035      .030      .035      .000    717.10   9891.93
   .002508      500.      502.      490.         2         0         0       .00    170.92  10062.85

 FLOW DISTRIBUTION FOR SECNO=    224.00          CWSEL=    725.37

 STA=    9892.    9906.    9914.    9926.    9964.    9972.   10019.   10030.   10042.   10054.   10063.
   PER Q=       .7      1.9      2.8      7.0      2.1     68.4      6.0      6.2      4.4       .6
    AREA=     10.7     17.6     25.0     68.1     18.0    270.6     38.2     40.1     32.7      9.1
     VEL=      1.9      3.4      3.5      3.2      3.6      7.8      4.9      4.8      4.2      2.1
   DEPTH=       .8      2.0      2.1      1.8      2.2      5.8      3.5      3.4      2.8      1.0

 *SECNO 320.000

 3265 DIVIDED FLOW

    320.000      6.24    726.84       .00       .00    727.94      1.10      1.73       .11    727.20
     3100.0       2.8    3097.2        .0       3.1     367.2        .0      14.9       5.3    727.50
        .05       .92      8.43       .00      .035      .030      .000      .000    720.60   9891.02
   .004896      530.      507.      503.         2         0         0       .00    113.08  10030.70

 FLOW DISTRIBUTION FOR SECNO=    320.00          CWSEL=    726.84

 STA=    9891.    9904.    9909.   10033.
   PER Q=       .1       .0     99.9
    AREA=      2.2       .9    367.2
     VEL=       .9       .9      8.4
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DEPTH=        .2        .2       3.9

1490 NH CARD USED
*SECNO 415.000
  415.000      6.72    729.52       .00       .00    730.73      1.21      2.76       .03    730.30
   3100.0        .0    3100.0        .0        .0     351.7        .0      19.1       6.4    730.30
      .07       .00      8.81       .00      .000      .035      .000    722.80    9962.53
 .006206      505.      502.      500.         2         0         0       .00     80.60  10043.13


1
  14DEC92      11:50:53                                                                                PAGE   10

   SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      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

FLOW DISTRIBUTION FOR SECNO=    415.00          CWSEL=    729.52

STA=    9963.   10046.
  PER Q=     100.0
   AREA=     351.7
    VEL=       8.8
  DEPTH=       4.4

CCHV=      .300 CEHV=      .500
*SECNO 441.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       733.70 ELREA=       734.30

  441.000      6.36    730.36       .00       .00    731.43      1.07       .66       .04    725.40
   3100.0        .0    3100.0        .0        .0     373.3        .0      20.2       6.7    725.40
      .07       .00      8.30       .00      .000      .035      .000      .000    724.00    9967.00
 .003800      135.      137.      145.         2         0         0       .00     66.00  10033.00

FLOW DISTRIBUTION FOR SECNO=    441.00          CWSEL=    730.36

STA=    9967.   10033.
  PER Q=     100.0
   AREA=     373.3
    VEL=       8.3
  DEPTH=       5.7

SPECIAL CULVERT

SC  CUNO      CUNV      ENTLC     COFQ      RDLEN     RISE      SPAN      CULVLN    CHRT      SCL       ELCHU     ELCHD
     6         .014      .40      3.00       .00      6.00     10.00     77.40      8         1       727.40    727.40

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

*SECNO 457.000

SPECIAL CULVERT OUTLET CONTROL
EGIC =    734.457  EGOC =    734.728  PCWSE=    730.356  ELTRD=    734.800

3280 CROSS SECTION    457.00 EXTENDED       .74 FEET

1
  14DEC92      11:50:53                                                                                PAGE   11

   SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      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
   734.46     734.73      3.30        0.     3080.     7.141     360.0    734.80        0.


3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       734.70 ELREA=       734.30

  457.000      6.54    733.94       .00       .00    734.73       .79      3.30       .00    727.40
   3080.0        .0    3080.0        .0        .0     431.3        .0      21.0       6.8    727.40
      .08       .00      7.14       .00      .000      .035      .000      .000    727.40    9967.00
 .002315       87.       87.       87.        10         0         0       .00     66.00  10033.00

FLOW DISTRIBUTION FOR SECNO=    457.00          CWSEL=    733.94

STA=    9967.   10033.
  PER Q=     100.0
   AREA=     431.3
    VEL=       7.1
  DEPTH=       6.5

1490 NH CARD USED
*SECNO 508.000
3280 CROSS SECTION    508.00 EXTENDED      2.32 FEET

  508.000      7.82    735.02       .00       .00    735.39       .38       .54       .12    729.90
   3150.0    1425.7    1619.6     104.7     433.0     265.3      59.6      24.7       7.6    730.50
      .09      3.29      6.10      1.76      .048      .035      .060      .000    727.20   9871.00
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   .001724      285.      269.      235.         2         0         0       .00    181.00  10052.00

 CW DISTRIBUTION FOR SECNO=    508.00          CWSEL=    735.02

STA=    9871.    9912.    9930.    9947.    9964.    9981.   10022.   10052.
  PER Q=      8.0      11.5     11.0      6.5      8.1     51.4      3.3
   AREA=    121.2     78.1     73.8     73.8     86.1    265.3     59.6
    VEL=      2.1      4.6      4.7      2.8      3.0      6.1      1.8
  DEPTH=      3.0      4.3      4.4      4.5      4.9      6.5      2.0

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   14DEC92      11:50:53                                                                                    PAGE   12

    SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      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

CCHV=     .300 CEHV=     .500
*SECNO 535.000

3301 HV CHANGED MORE THAN HVINS

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

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       737.60 ELREA=       737.60

   535.000      5.70    734.90    734.90       .00    737.76      2.87       .63      1.24    729.20
    3250.0        .0    3250.0        .0        .0     239.3        .0      26.3       7.9    729.20
       .10       .00     13.58       .00      .000      .060      .000      .000    729.20   9979.00
   .029565      120.      143.      170.        20        15         0       .00     42.00  10021.00

FLOW DISTRIBUTION FOR SECNO=    535.00          CWSEL=    734.90

STA=    9979.   10021.
  PER Q=    100.0
   AREA=    239.3
    VEL=     13.6
  DEPTH=      5.7

SPECIAL BRIDGE

5227 DOWNSTREAM ELEV IS     733.67 , NOT     734.90 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

SB  XK        XKOR      COFQ      RDLEN     BWC       BWP       BAREA     SS        ELCHU     ELCHD
     1.25      1.60      3.00    500.00     41.60      4.00    227.00       .00    729.00    729.20

 ECNO 548.000
280 CROSS SECTION    548.00 EXTENDED      1.30 FEET

3301 HV CHANGED MORE THAN HVINS

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  4.25

1
   14DEC92      11:50:53                                                                                    PAGE   13

    SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      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

PRESSURE AND WEIR FLOW,  Weir Submergence Based on TRAPEZOIDAL Shape

 EGPRS      EGLWC      H3       QWEIR      QPR       BAREA     TRAPEZOID      ELLC      ELTRD     WEIRLN
                                                               AREA
   739.83    738.47      .00      186.     3039.      227.      226.      735.00    739.10      500.

   548.000     10.09    739.09       .00       .00    739.35       .25      1.59       .00    729.00
    3200.0     306.5    1952.9     940.6     108.2     424.0     313.8      27.2       8.1    729.00
       .10      2.83      4.61      3.00      .060      .060      .035      .000    729.00   9960.00
   .001585       71.       71.       71.         2         0         3       .00    190.00  10150.00

FLOW DISTRIBUTION FOR SECNO=    548.00          CWSEL=    739.09

STA=    9960.    9979.   10021.   10025.   10150.
  PER Q=      9.6      61.0      3.2     26.2
   AREA=    108.2     424.0     26.8    287.0
    VEL=      2.8       4.6      3.8      2.9
  DEPTH=      5.7      10.1      6.7      2.3

1490 NH CARD USED
*SECNO 604.000
   604.000      9.29    739.29       .00       .00    740.02       .74       .43       .24    733.60
    3100.0     132.3    2768.9     198.7      59.6     381.2     109.8      31.8       9.3    734.10
       .11      2.22      7.26      1.81      .044      .030      .042      .000    730.00   9945.27
   .001411      304.      293.      271.         3         0         0       .00    191.83  10137.11
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FLOW DISTRIBUTION FOR SECNO=    604.00          CWSEL=    739.29

STA=    9945.    9973.   10021.   10043.   10137.
 PER Q=      4.3      89.3       3.9      2.5
  AREA=     59.6     381.2      53.6     56.2
   VEL=      2.2       7.3       2.3      1.4
 DEPTH=      2.2       7.8       2.5       .6

CCHV=     .100 CEHV=     .300
*SECNO 3888.000
1
  14DEC92      11:50:53                                                                                    PAGE   14

   SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      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


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

  3888.000      9.48    740.78       .00       .00    741.29       .51      1.24       .02    744.80
    3100.0        .0    3100.0        .0        .0     539.6        .0      48.0      13.2    743.60
       .18       .00      5.75       .00      .000      .025      .000      .000    731.30   9959.92
   .000689     1300.     1300.     1300.         2         0         0       .00     70.36  10030.28


FLOW DISTRIBUTION FOR SECNO=   3888.00          CWSEL=    740.78

STA=    9960.   10033.
 PER Q=    100.0
  AREA=    539.6
   VEL=      5.7
 DEPTH=      7.7

*SECNO 1.000

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =   .69

     1.000      9.21    741.31       .00       .00    741.98       .67       .64       .05    738.90
    4900.0    2357.3    2489.8      52.9     499.4     313.0      15.8      54.5      15.0    738.20
       .19      4.72      7.96      3.35      .035      .035      .035      .000    732.10   9759.54
   .003652      460.      380.      300.         2         0         0       .00    286.39  10045.93


FLOW DISTRIBUTION FOR SECNO=      1.00          CWSEL=    741.31

STA=    9760.    9812.    9822.    9836.    9847.    9886.    9915.    9935.    9953.    9976.    9981.   10036.   10046.
 PER Q=      6.9      4.1      6.0      3.1      6.8      8.0      4.9      3.5      4.0       .9     50.8      1.1
  AREA=     79.4     33.9     49.9     29.8     79.5     79.3     49.7     40.0     47.0     10.8    313.0     15.8
   VEL=      4.3      5.9      5.9      5.0      4.2      4.9      4.8      4.3      4.2      4.3      8.0      3.4
 DEPTH=      1.5      3.5      3.5      2.8      2.1      2.7      2.6      2.2      2.1      2.2      5.7      1.6

*SECNO 2.000
3280 CROSS SECTION      2.00 EXTENDED       .46 FEET

     2.000      6.05    743.05       .00       .00    743.30       .25      1.28       .04    740.50
    4900.0    3338.5    1511.3      50.2    1144.3     264.4      17.8      66.0      20.7    739.90
       .23      2.92      5.72      2.82      .035      .035      .035      .000    737.00   9220.00
   .002285      440.      460.      460.         2         0         0       .00    827.71  10047.71


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  14DEC92      11:50:53                                                                                    PAGE   15

   SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      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


FLOW DISTRIBUTION FOR SECNO=      2.00          CWSEL=    743.05

STA=    9220.    9350.    9569.    9623.    9671.    9725.    9774.    9811.    9834.    9860.    9875.    9902.    9925.
 PER Q=      5.7      8.4      3.1      4.2      5.2      5.4      6.2      5.5      7.5      3.3      4.5      3.8
  AREA=    134.5    209.3     65.8     74.8     89.3     88.0     86.3     65.1     83.5     40.9     62.5     52.4
   VEL=      2.1      2.0      2.3      2.7      2.8      3.0      3.5      4.1      4.4      3.9      3.5      3.5
 DEPTH=      1.0      1.0      1.2      1.6      1.7      1.8      2.3      2.9      3.2      2.7      2.3      2.3

STA=    9925.    9953.    9982.   10037.   10048.
 PER Q=      3.3      2.1     30.8      1.0
  AREA=     52.0     39.9    264.4     17.8
   VEL=      3.1      2.6      5.7      2.8
 DEPTH=      1.9      1.4      4.8      1.6

*SECNO 820.000
3280 CROSS SECTION    820.00 EXTENDED      1.38 FEET

   820.000      4.88    745.38       .00       .00    745.64       .26      2.34       .00    743.00
    4900.0    3039.5     868.9     991.6     763.1     174.2     276.2      95.8      34.5    742.80
       .30      3.98      4.99      3.59      .035      .035      .035      .000    740.50   9686.00
   .002288      840.     1350.     1380.         3         0         0       .00    460.00  10146.00


FLOW DISTRIBUTION FOR SECNO=    820.00          CWSEL=    745.38

STA=    9686.    9739.    9758.    9783.    9802.    9818.    9835.    9845.    9858.    9871.    9883.    9909.    9931.
 PER Q=      4.4      3.4      4.6      4.0      3.9      4.3      3.1      4.5      3.6      3.4      7.5      5.6
  AREA=     81.2     45.9     62.0     49.8     46.6     49.6     33.2     46.9     40.3     37.5     83.9     65.6
   VEL=      2.7      3.7      3.7      3.9      4.1      4.2      4.6      4.7      4.4      4.4      4.4      4.2
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  DEPTH=      1.5      2.4      2.4      2.7      2.8      3.0      3.4      3.5      3.2      3.2      3.2      2.9

  STA=    9931.    9958.    9976.   10021.   10068.   10084.   10105.   10146.
   PER Q=     6.3      3.5     17.7      7.6      4.3      4.3      3.9
    AREA=    76.0     44.6    174.2    103.5     49.9     54.9     67.9
     VEL=     4.1      3.8      5.0      3.6      4.3      3.9      2.8
   DEPTH=     2.8      2.6      3.9      2.2      3.0      2.6      1.7

*SECNO 1011.000
3280 CROSS SECTION   1011.00 EXTENDED       .69 FEET

  1011.000     4.59   748.09      .00      .00   748.37      .28     2.73      .01   746.30
    5000.0   2180.4    578.6   2241.0    521.4    116.1    536.9    122.7     46.9   746.30
       .36     4.18     4.98     4.17     .035     .035     .035     .000   743.50  9695.60
   .003436     967.     1008.     992.        3        0        0      .00   637.74 10333.34
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14DEC92 11:50:53 PAGE 16

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    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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

FLOW DISTRIBUTION FOR SECNO=   1011.00          CWSEL=    748.09

STA=    9696.    9792.    9808.    9817.    9831.    9870.    9894.    9918.    9946.    9974.   10014.   10053.   10075.
  PER Q=     3.9      3.8      4.4      4.6      7.9      4.8      3.7      5.4      5.2     11.6      8.3      4.8
   AREA=    83.9     40.8     35.7     43.0     90.7     55.6     47.5     63.3     61.1    116.1     92.0     53.0
    VEL=     2.3      4.6      6.1      5.3      4.4      4.3      3.9      4.3      4.3      5.0      4.5      4.5
  DEPTH=      .9      2.5      3.8      3.1      2.3      2.3      2.0      2.2      2.2      2.9      2.3      2.5

STA=   10075.   10100.   10117.   10127.   10146.   10185.   10273.   10333.
  PER Q=     3.1      6.7      5.7      5.4      4.8      4.9      1.1
   AREA=    43.1     59.9     43.4     53.7     67.4     92.6     31.9
    VEL=     3.6      5.6      6.6      5.0      3.6      2.6      1.7
  DEPTH=     1.7      3.4      4.3      2.9      1.7      1.0       .5

*SECNO 1172.000

3265 DIVIDED FLOW

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
  1172.000     4.20   752.70   752.70      .00   753.29      .58     4.01      .09   752.80
    5000.0    295.1     94.4   4610.5     53.0     28.6    741.9    141.0     60.2   752.90
       .39     5.57     3.30     6.21     .030     .035     .030     .000   748.50  9922.86
   .008146     870.     850.     760.       13        9        0      .00   834.67 10771.79

FLOW DISTRIBUTION FOR SECNO=   1172.00          CWSEL=    752.70

STA=    9923.    9946.    9977.   10022.   10216.   10397.   10469.   10483.   10509.   10554.   10579.   10598.   10619.
  PER Q=     3.9      2.0      1.9      3.5      3.0      7.1      6.1     16.7     11.9      6.0      5.3     10.1
   AREA=    32.2     20.8     28.6     71.6     61.2     76.6     35.7     85.2     86.4     45.3     37.3     57.8
    VEL=     6.1      4.8      3.3      2.4      2.5      4.6      8.5      9.8      6.9      6.6      7.1      8.8
  DEPTH=     1.4       .7       .8       .4       .3      1.1      2.7      3.3      1.9      1.8      2.0      2.8

STA=   10619.   10645.   10695.   10748.   10772.
  PER Q=    11.6      7.4      3.3       .2
   AREA=    69.0     67.6     42.2      6.0
    VEL=     8.4      5.5      3.9      1.8
  DEPTH=     2.6      1.4       .8       .3
```

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    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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 1380.000
  1380.000     4.01   759.71      .00      .00   760.01      .31     6.70      .03   758.40
    5000.0    625.5    157.6   4216.9    161.7     35.6    932.3    164.0     81.9   759.50
       .46     3.87     4.42     4.52     .030     .035     .030     .000   755.70  9800.48
   .005362     1000.    1098.    1025.        4        0        0      .00  1007.44 10807.92

FLOW DISTRIBUTION FOR SECNO=   1380.00          CWSEL=    759.71

STA=    9800.    9859.    9916.    9992.   10012.   10142.   10205.   10218.   10230.   10237.   10261.   10315.   10392.
  PER Q=     3.3      4.7      4.5      3.2      4.6      3.7      3.6      8.1      3.7      4.3      3.6      5.2
   AREA=    49.5     46.7     65.5     35.6     82.1     55.4     28.9     46.7     23.5     41.2     51.4     74.1
    VEL=     3.3      5.1      3.4      4.4      2.8      3.3      6.2      8.7      7.9      5.2      3.5      3.5
  DEPTH=      .8       .8       .9      1.7       .6       .9      2.3      3.7      3.3      1.7      1.0      1.0

STA=   10392.   10477.   10551.   10609.   10668.   10704.   10717.   10779.   10808.
  PER Q=     5.7     13.0     11.3      4.7      3.4      3.0      4.6      1.8
   AREA=    81.2    125.4    104.9     62.5     41.2     26.1     61.8     26.0
    VEL=     3.5      5.2      5.4      3.8      4.2      5.8      3.7      3.4
  DEPTH=     1.0      1.7      1.8      1.1      1.1      2.0      1.0       .9

*SECNO 1576.000

3265 DIVIDED FLOW

  1576.000     4.04   766.44   766.41      .00   766.94      .50     6.87      .06   766.00
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```
   5000.0     915.7     536.5    3547.8     222.4      68.8     631.5     188.5     104.6    767.60
     .51      4.12      7.80      5.62      .030      .030      .030      .000    762.40   9670.60
 .008381     1100.     1035.     1025.         7         5         0       .00    885.40  10575.18

FLOW DISTRIBUTION FOR SECNO=   1576.00          CWSEL=    766.44

STA=    9671.     9812.     9874.     9912.     9934.     9985.    10016.    10087.    10146.    10204.    10226.    10244.    10275.
  PER Q=     3.8       3.4       5.5       3.2       2.4      10.7       4.4      11.6       6.1       5.0       4.0       8.6
   AREA=    65.1      45.5      50.5      29.2      32.0      68.8      49.6      93.5      63.4      38.3      30.9      57.4
    VEL=     2.9       3.7       5.5       5.5       3.7       7.8       4.5       6.2       4.8       6.5       6.4       7.5
  DEPTH=      .5        .7       1.3       1.3        .6       2.4        .7       1.6       1.1       1.7       1.7       1.9

STA=   10275.    10281.    10310.    10358.    10425.    10462.    10492.    10575.
  PER Q=     4.6       4.6       4.8       5.5       3.3       6.1       2.3
   AREA=    22.7      39.0      49.2      62.8      36.8      48.8      39.0
    VEL=    10.2       5.9       4.9       4.4       4.5       6.2       3.0
  DEPTH=     3.4       1.4       1.0        .9       1.0       1.6        .5
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   SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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 1738.000

3265 DIVIDED FLOW

3280 CROSS SECTION   1738.00 EXTENDED       .89 FEET

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.48

 1738.000      4.09    770.89       .00       .00    771.12       .24      4.16       .03    770.20
   5000.0    1336.3     410.8    3252.9     351.3      78.2     865.9     208.0     123.6    770.30
      .57      3.80      5.25      3.76      .030      .030      .030      .000    766.80   9517.75
 .003818      860.      855.      720.         6         0         0       .00   1256.59  10780.90

FLOW DISTRIBUTION FOR SECNO=   1738.00          CWSEL=    770.89

STA=    9518.     9692.     9919.     9947.     9990.    10024.    10061.    10210.    10256.    10337.    10439.    10532.    10569.
  PER Q=     7.7       7.7       8.5       2.8       8.2       3.1       3.4       4.0       3.0       5.1       7.6       9.1
   AREA=   128.9     105.9      73.1      43.4      78.2      45.1      70.8      56.9      60.2      90.0     111.1      85.1
    VEL=     3.0       3.6       5.8       3.2       5.3       3.5       2.4       3.5       2.5       2.8       3.4       5.3
  DEPTH=      .7        .5       2.6       1.0       2.3       1.2        .5       1.2        .7        .9       1.2       2.3

STA=   10569.    10641.    10709.    10760.    10781.
  PER Q=     7.6       9.0      10.1       3.0
   AREA=   100.2     108.1     102.3      36.1
    VEL=     3.8       4.2       4.9       4.2
  DEPTH=     1.4       1.6       2.0       1.7

*SECNO 1903.000
3280 CROSS SECTION   1903.00 EXTENDED       .47 FEET

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
 1903.000      5.27    776.97    776.97       .00    778.14      1.17      4.13       .28    775.10
   3200.0     394.0    2741.5      64.5      90.6     297.4      19.5     225.2     138.2    775.30
      .59      4.35      9.22      3.30      .035      .030      .035      .000    771.70   9880.50
 .006829      900.      871.      880.        20        11         0       .00    177.80  10058.30
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   SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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

FLOW DISTRIBUTION FOR SECNO=   1903.00          CWSEL=    776.97

STA=    9881.     9917.     9950.    10037.    10058.
  PER Q=     3.7       8.6      85.7       2.0
   AREA=    35.1      55.5     297.4      19.5
    VEL=     3.4       4.9       9.2       3.3
  DEPTH=     1.0       1.7       3.4        .9

CCHV=     .300 CEHV=     .500
*SECNO 1940.000
3280 CROSS SECTION   1940.00 EXTENDED      1.09 FEET

3301 HV CHANGED MORE THAN HVINS

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       781.40 ELREA=       781.40

 1940.000      4.59    778.69       .00       .00    779.02       .33       .62       .25    774.10
   1400.0        .0    1400.0        .0        .0     302.9        .0     226.7     138.7    774.10
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      .61       .00      4.62       .00      .000      .030      .000      .000    774.10   9967.00
   .001142      100.      195.      240.         2         0         0       .00     66.00  10033.00

OW DISTRIBUTION FOR SECNO=   1940.00          CWSEL=    778.69

STA=    9967.   10033.
  PER Q=    100.0
   AREA=    302.9
    VEL=      4.6
  DEPTH=      4.6

SPECIAL CULVERT

SC  CUNO      CUNV      ENTLC     COFQ      RDLEN     RISE      SPAN      CULVLN    CHRT      SCL       ELCHU     ELCHD
     6         .014      .40      3.00     500.00     3.37     10.00     240.00     8         1        776.40    775.10

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

*SECNO 1987.000
1
   14DEC92      11:50:53                                                                                          PAGE   20

    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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 INLET CONTROL
EGIC =    780.900  EGOC =    780.479  PCWSE=    778.686  ELTRD=    782.900

3280 CROSS SECTION   1987.00 EXTENDED      1.75 FEET

SPECIAL CULVERT

    EGIC      EGOC       H4      QWEIR     QCULV      VCH      ACULV     ELTRD    WEIRLN
   780.90    780.48     1.88       0.      1400.     4.042     202.2    782.90       0.

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      782.40 ELREA=      782.40

  1987.000      5.25    780.65       .00       .00    780.90       .25      1.88       .00    775.40
    1400.0        .0    1400.0        .0        .0     346.3        .0     228.6     139.1    775.40
       .62       .00      4.04       .00      .000      .030      .000      .000    775.40   9967.00
   .000730      250.      250.      250.         2         0         0       .00     66.00  10033.00

OW DISTRIBUTION FOR SECNO=   1987.00          CWSEL=    780.65

TA=    9967.   10033.
  PER Q=    100.0
   AREA=    346.3
    VEL=      4.0
  DEPTH=      5.2

*SECNO 2041.000
3280 CROSS SECTION   2041.00 EXTENDED      1.06 FEET

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.76

  2041.000      4.06    781.06       .00       .00    781.08       .02       .11       .07    780.00
    1400.0     842.5     546.2      11.3     750.0     383.6      26.5     233.7     141.2    780.00
       .69      1.12      1.42       .43      .035      .030      .035      .000    777.00   9550.00
   .000237      310.      285.      240.         2         0         0       .00    550.21  10100.21

1
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    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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

FLOW DISTRIBUTION FOR SECNO=   2041.00          CWSEL=    781.06

STA=    9550.     9620.     9700.     9800.     9840.     9900.    10050.    10100.
  PER Q=     10.8      17.8      22.3       6.2       3.1      39.0        .8
   AREA=    144.0     204.6     255.7      82.3      63.4     383.6      26.5
    VEL=      1.0       1.2       1.2       1.1        .7       1.4        .4
  DEPTH=      2.1       2.6       2.6       2.1       1.1       2.6        .5

1
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T1      FLOOD CONTROL DISTRICT OF MARICOPA COUNTY - CONTRACT FCD 90-67
T2      GILA BEND AREA FLOODPLAIN DELINEATION STUDY BY BURGESS & NIPLE
T3      BENDER WASH 100-YEAR     (FLOODWAY)      J. MISCHLER - (602) 244-8100

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ
                3                                                                   722.01
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 J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE
      15                  -1                                                                      15

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     SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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

 *PROF 2
0

 CCHV=      .100 CEHV=      .300
 *SECNO 37.000

 3470 ENCROACHMENT STATIONS=      9965.0   10021.0  TYPE=      1  TARGET=       56.000
     37.000      9.51    722.01       .00    721.01    723.12      1.11       .00       .00    718.60
     3100.0      64.3    3035.7        .0      18.5     355.6        .0        .0        .0 100000.00
       .00      3.47      8.54       .00      .035      .030      .000      .000    712.50   9965.00
    .002497      228.      220.      220.         0         0         0       .00     56.00  10021.00

 FLOW DISTRIBUTION FOR SECNO=     37.00          CWSEL=    722.01

 STA=    9965.    9970.   10021.
   PER Q=      2.1      97.9
    AREA=     18.5     355.6
     VEL=      3.5       8.5
   DEPTH=      3.4       7.0

 *SECNO 129.000

 3301 HV CHANGED MORE THAN HVINS

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

 3470 ENCROACHMENT STATIONS=      9970.0   10025.0  TYPE=      1  TARGET=       55.000
    129.000      8.01    723.21       .00    722.94    725.13      1.92      1.76       .24    722.60
     3100.0       1.4    3093.6       5.0        .8     277.8       2.0       3.6        .6    721.40
        .01      1.78     11.14      2.50      .035      .030      .035      .000    715.20   9970.00
    .005769      445.      486.      510.         0         0         0       .00     55.00  10025.00

 FLOW DISTRIBUTION FOR SECNO=    129.00          CWSEL=    723.21

 STA=    9970.    9971.   10024.   10025.
   PER Q=       .0      99.8       .2
    AREA=       .8     277.8      2.0
     VEL=      1.8      11.1      2.5
   DEPTH=       .6       5.3      1.8

1
    14DEC92      11:50:53                                                                                          PAGE   24

     SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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 224.000

 3301 HV CHANGED MORE THAN HVINS

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

 3470 ENCROACHMENT STATIONS=      9960.0   10030.0  TYPE=      1  TARGET=       70.000
    224.000      8.93    726.03       .00    725.37    727.17      1.14      1.96       .08    722.90
     3100.0     133.2    2702.2     264.7      32.7     301.9      45.9       7.4       1.3    721.60
        .03      4.08      8.95      5.77      .035      .030      .035      .000    717.10   9960.00
    .002827      500.      502.      490.         2         0         0       .00     70.00  10030.00

 FLOW DISTRIBUTION FOR SECNO=    224.00          CWSEL=    726.03

 STA=    9960.    9964.    9972.   10019.   10030.   10030.
   PER Q=       .9       3.4     87.2      8.5       .0
    AREA=      9.1      23.5    301.9     45.5       .4
     VEL=      2.9       4.5      9.0      5.8       .5
   DEPTH=      2.5       2.8      6.4      4.1      3.8

 *SECNO 320.000

 3470 ENCROACHMENT STATIONS=      9950.0   10020.0  TYPE=      1  TARGET=       70.000
    320.000      7.09    727.69       .00    726.84    728.67       .98      1.48       .02 100000.00
     3100.0        .0    3100.0        .0        .0     390.0        .0      11.9       2.2 100000.00
        .05       .00      7.95       .00      .000      .030      .000      .000    720.60   9950.00
    .003021      530.      507.      503.         2         0         0       .00     70.00  10020.00

 FLOW DISTRIBUTION FOR SECNO=    320.00          CWSEL=    727.69

 STA=    9950.   10033.
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  PER Q=     100.0
   AREA=     390.0
    VEL=       7.9
  DEPTH=       5.6

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   14DEC92      11:50:53                                                                                                PAGE   25

    SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      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


1490 NH CARD USED
*SECNO 415.000

3470 ENCROACHMENT STATIONS=      9960.0   10040.0  TYPE=       1  TARGET=        80.000
   415.000       6.79     729.59       .00     729.52     730.77       1.18       2.05        .06     730.30
    3100.0         .0     3100.0        .0         .0      355.5         .0       16.2        3.0  100000.00
       .06        .00       8.72       .00       .000       .035       .000       .000     722.80    9962.32
   .005796       505.       502.      500.          2          0          0        .00      77.68   10040.00

FLOW DISTRIBUTION FOR SECNO=    415.00          CWSEL=    729.59

STA=    9962.   10040.
  PER Q=     100.0
   AREA=     355.5
    VEL=       8.7
  DEPTH=       4.6

CCHV=      .300 CEHV=      .500
*SECNO 441.000

3470 ENCROACHMENT STATIONS=      9967.0   10033.0  TYPE=       1  TARGET=        66.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       733.70 ELREA=       734.30

   441.000       6.43     730.43       .00     730.36     731.47       1.04        .66        .04     725.40
    3100.0         .0     3100.0        .0         .0      378.2         .0       17.4        3.2  100000.00
       .07        .00       8.20       .00       .000       .035       .000       .000     724.00    9967.00
   .004013       135.       137.      145.          2          0          0        .00      66.00   10033.00

FLOW DISTRIBUTION FOR SECNO=    441.00          CWSEL=    730.43

STA=    9967.   10033.
  PER Q=     100.0
   AREA=     378.2
    VEL=       8.2
  DEPTH=       5.7

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    SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      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

SC  CUNO       CUNV       ENTLC      COFQ       RDLEN      RISE       SPAN       CULVLN     CHRT       SCL        ELCHU      ELCHD
     6          .014        .40       3.00        .00       6.00      10.00      77.40      8          1         727.40     727.40

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

*SECNO 457.000
BTCARD, BRIDGE STENCL=    9967.00   STENCR=   10033.00

SPECIAL CULVERT OUTLET CONTROL
EGIC =    734.457  EGOC =    734.728  PCWSE=    730.427  ELTRD=    735.372

SPECIAL CULVERT

     EGIC       EGOC        H4      QWEIR      QCULV       VCH      ACULV      ELTRD     WEIRLN
   734.46     734.73      3.26         0.      3080.     7.139      360.0     735.37         0.


3470 ENCROACHMENT STATIONS=      9967.0   10033.0  TYPE=       1  TARGET=        66.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       734.70 ELREA=       734.30

   457.000       6.54     733.94       .00     733.94     734.73        .79       3.26        .00     727.40
    3080.0         .0     3080.0        .0         .0      431.4         .0       18.2        3.4  100000.00
       .07        .00       7.14       .00       .000       .035       .000       .000     727.40    9967.00
   .002623        87.        87.       87.          3          0          0        .00      66.00   10033.00

FLOW DISTRIBUTION FOR SECNO=    457.00          CWSEL=    733.94

STA=    9967.   10033.
  PER Q=     100.0
   AREA=     431.4
    VEL=       7.1
  DEPTH=       6.5
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1490 NH CARD USED
*SECNO 508.000
3280 CROSS SECTION    508.00 EXTENDED       .27 FEET

3301 HV CHANGED MORE THAN HVINS

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   14DEC92      11:50:53                                                                                                PAGE   27

    SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      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


3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =   .68

3470 ENCROACHMENT STATIONS=     9960.0   10025.0  TYPE=       1  TARGET=       65.000
   508.000      7.37     734.57       .00     735.02     736.15      1.59       1.03        .40     729.90
    3150.0     448.4     2667.4      34.2       92.9      246.9      12.0       20.6        3.8     730.50
       .08      4.83      10.80      2.84       .060       .035      .060       .000     727.20    9960.00
   .005945      285.       269.      235.          2          0         0        .00      65.00   10025.00

FLOW DISTRIBUTION FOR SECNO=    508.00          CWSEL=    734.57

STA=    9960.    9964.    9981.   10022.   10025.
  PER Q=      1.4     12.9     84.7      1.1
   AREA=     14.7     78.2    246.9     12.0
    VEL=      3.0      5.2     10.8      2.8
  DEPTH=      4.2      4.5      6.1      3.7

CCHV=     .300 CEHV=     .500
*SECNO 535.000

3301 HV CHANGED MORE THAN HVINS

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =   .53

3470 ENCROACHMENT STATIONS=     9979.0   10021.0  TYPE=       1  TARGET=       42.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       737.60 ELREA=       737.60

   535.000      6.56     735.76       .00     734.90     737.92      2.16       1.48        .29     729.20
    3250.0        .0     3250.0        .0         .0      275.5        .0       21.6        3.9  100000.00
       .08       .00      11.80       .00       .000       .060      .000       .000     729.20    9979.00
   .022417      120.       143.      170.          3          0         0        .00      42.00   10021.00

FLOW DISTRIBUTION FOR SECNO=    535.00          CWSEL=    735.76

STA=    9979.   10021.
  PER Q=    100.0
   AREA=    275.5
    VEL=     11.8
  DEPTH=      6.6

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   14DEC92      11:50:53                                                                                                PAGE   28

    SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      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 BRIDGE

5227 DOWNSTREAM ELEV IS     733.67 , NOT     735.76 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

SB  XK        XKOR       COFQ       RDLEN      BWC        BWP        BAREA      SS         ELCHU      ELCHD
     1.25       1.60       3.00     500.00      41.60       4.00     227.00        .00     729.00     729.20

*SECNO 548.000
3280 CROSS SECTION    548.00 EXTENDED       .73 FEET

3301 HV CHANGED MORE THAN HVINS

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.79

PRESSURE AND WEIR FLOW,  Weir Submergence Based on TRAPEZOIDAL Shape

 EGPRS      EGLWC      H3         QWEIR      QPR        BAREA      TRAPEZOID      ELLC       ELTRD      WEIRLN
                                                                      AREA
   740.70     738.47       .00       410.      2793.       227.       226.       735.00     739.10       500.


3470 ENCROACHMENT STATIONS=     9979.0   10021.0  TYPE=       1  TARGET=       42.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       738.60 ELREA=       738.60
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   548.000      9.53    738.53       .00    739.09    739.52       .99      1.60       .00    729.00
    3200.0        .0    3200.0        .0        .0     400.2        .0      22.2       4.0 100000.00
       .08       .00      8.00       .00      .000      .060      .000      .000    729.00   9979.00
   .006777       71.       71.       71.         3         0         4       .00     42.00  10021.00

FLOW DISTRIBUTION FOR SECNO=    548.00          CWSEL=    738.53

STA=    9979.   10021.
  PER Q=    100.0
   AREA=    400.2
    VEL=      8.0
  DEPTH=      9.5

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   14DEC92      11:50:53                                                                                PAGE   29

    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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

1490 NH CARD USED
*SECNO 604.000

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  2.17

3470 ENCROACHMENT STATIONS=     9960.0   10040.0  TYPE=       1  TARGET=       80.000
   604.000      9.58    739.58       .00    739.29    740.35       .77       .76       .07    733.60
    3100.0      95.7    2880.8     123.5      41.0     395.7      53.6      25.2       4.4    734.10
       .10      2.33      7.28      2.30      .049      .030      .047      .000    730.00   9960.00
   .001349      304.      293.      271.         3         0         0       .00     80.00  10040.00

FLOW DISTRIBUTION FOR SECNO=    604.00          CWSEL=    739.58

STA=    9960.    9962.    9973.   10021.   10033.   10040.
  PER Q=       .2       2.9     92.9      3.2       .7
   AREA=      3.6      37.4    395.7     41.4     12.2
    VEL=      1.4       2.4      7.3      2.4      1.9
  DEPTH=      1.6       3.6      8.1      3.5      1.8

CCHV=     .100 CEHV=     .300
*SECNO 3888.000

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.47

3470 ENCROACHMENT STATIONS=     9953.0   10033.0  TYPE=       1  TARGET=       80.000
  3888.000      9.75    741.05       .00    740.78    741.53       .48      1.15       .03    794.80
    3100.0        .0    3100.0        .0        .0     559.2        .0      40.8       6.7 100000.00
       .16       .00      5.54       .00      .000      .025      .000      .000    731.30   9959.47
   .000622     1300.     1300.     1300.         3         0         0       .00     71.11  10030.59

FLOW DISTRIBUTION FOR SECNO=   3888.00          CWSEL=    741.05

STA=    9959.   10033.
  PER Q=    100.0
   AREA=    559.2
    VEL=      5.5
  DEPTH=      7.9

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   14DEC92      11:50:53                                                                                PAGE   30

    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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 1.000

3301 HV CHANGED MORE THAN HVINS

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =   .52

3470 ENCROACHMENT STATIONS=     9844.0   10044.0  TYPE=       1  TARGET=      200.000
     1.000      9.19    741.29       .00    741.31    742.44      1.15       .71       .20    738.90
    4900.0    1730.2    3102.6      67.3     311.0     311.8      15.0      46.3       8.0    738.20
       .17      5.56      9.95      4.48      .035      .035      .035      .000    732.10   9844.00
   .005743      460.      380.      300.         2         0         0       .00    200.00  10044.00

FLOW DISTRIBUTION FOR SECNO=      1.00          CWSEL=    741.29

STA=    9844.    9860.    9886.    9915.    9935.    9953.    9976.    9981.   10036.   10044.
  PER Q=       3.3      5.6      9.9      6.0      4.4      4.9      1.2     63.3      1.4
   AREA=      33.2     52.9     78.7     49.3     39.6     46.5     10.7    311.8     15.0
    VEL=      4.9      5.2      6.1      6.0      5.4      5.2      5.3     10.0      4.5
  DEPTH=      2.1      2.1      2.6      2.5      2.2      2.1      2.1      5.6      1.8

*SECNO 2.000

3301 HV CHANGED MORE THAN HVINS
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3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.52

   0 ENCROACHMENT STATIONS=      9750.0   10037.0  TYPE=       1  TARGET=       287.000
     2.000      6.70     743.70       .00     743.05     744.14       .44      1.63       .07     740.50
    4900.0    2956.9    1942.1       1.0      675.5      299.7       1.1      54.6      10.5     739.90
       .20      4.38      6.48       .90       .035       .035      .035      .000    737.00    9750.00
   .002485      440.      460.      460.          3          0         0       .00    287.00   10037.00

FLOW DISTRIBUTION FOR SECNO=       2.00          CWSEL=     743.70

STA=    9750.    9774.    9811.    9834.    9841.    9860.    9875.    9902.    9925.    9953.    9982.   10037.   10037.
  PER Q=      4.5      9.8      8.0      3.3      7.3      4.9      7.1      5.9      5.6      4.1     39.6       .0
   AREA=     59.8    110.2     79.5     30.4     69.9     50.8     79.9     66.9     69.9     58.2    299.7      1.1
    VEL=      3.7      4.4      4.9      5.2      5.2      4.7      4.4      4.3      3.9      3.4      6.5       .9
  DEPTH=      2.5      2.9      3.5      3.9      3.8      3.3      2.9      2.9      2.5      2.0      5.4      3.8

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   14DEC92      11:50:53                                                                                          PAGE   31

    SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      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 820.000
3280 CROSS SECTION     820.00 EXTENDED       2.05 FEET

3470 ENCROACHMENT STATIONS=      9780.0   10040.0  TYPE=       1  TARGET=       260.000
   820.000      5.65     746.15       .00     745.38     746.55       .39      2.41       .00     743.00
    4900.0    3590.3    1176.9     132.8      734.1      209.0      42.5      76.8      16.4     742.80
       .25      4.89      5.63      3.12       .035       .035      .035      .000    740.50    9780.00
   .002288      840.     1350.     1380.          4          0         0       .00    260.00   10040.00

FLOW DISTRIBUTION FOR SECNO=     820.00          CWSEL=     746.15

STA=    9780.    9802.    9818.    9828.    9845.    9858.    9871.    9883.    9893.    9909.    9931.    9958.    9976.
  PER Q=      6.7      5.8      3.5      7.2      6.2      5.2      4.8      4.2      6.6      8.2      9.4      5.4
   AREA=     75.3     59.4     34.6     68.5     57.4     50.2     46.6     40.7     63.6     82.9     96.9     58.0
    VEL=      4.4      4.8      4.9      5.1      5.3      5.1      5.1      5.1      5.1      4.9      4.8      4.5
  DEPTH=      3.4      3.6      3.8      4.0      4.3      4.0      4.0      4.0      4.0      3.7      3.6      3.4

STA=    9976.   10021.   10040.
  PER Q=     24.0      2.7
   AREA=    209.0     42.5
    VEL=      5.6      3.1
  DEPTH=      4.7      2.2

SECNO 1011.000
70 ENCROACHMENT STATIONS=      9830.0   10130.0  TYPE=       1  TARGET=       300.000
  1011.000      5.29     748.79       .00     748.09     749.22       .43      2.67       .01     746.30
    5000.0    2090.6     815.7    2093.8      421.4      144.8     383.9      98.6      22.7     746.30
       .31      4.96      5.63      5.45       .035       .035      .035      .000    743.50    9830.00
   .003270      967.     1008.      992.          2          0         0       .00    300.00   10130.00

FLOW DISTRIBUTION FOR SECNO=    1011.00          CWSEL=     748.79

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   14DEC92      11:50:53                                                                                          PAGE   32

    SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      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

STA=    9830.    9870.    9894.    9918.    9946.    9974.   10014.   10030.   10053.   10075.   10100.   10117.   10127.
  PER Q=     12.1      7.3      6.0      8.3      8.0     16.3      3.6      8.8      7.1      5.3      8.9      7.2
   AREA=    120.8     72.7     64.3     83.3     80.3    144.8     40.1     79.5     68.0     60.6     72.4     50.4
    VEL=      5.0      5.0      4.7      5.0      5.0      5.6      4.5      5.5      5.2      4.4      6.2      7.1
  DEPTH=      3.0      3.0      2.7      2.9      2.9      3.6      2.5      3.4      3.2      2.4      4.1      5.0

STA=   10127.   10130.
  PER Q=       .9
   AREA=     12.9
    VEL=      3.6
  DEPTH=      4.6

*SECNO 1172.000
3280 CROSS SECTION    1172.00 EXTENDED        .02 FEET

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=      9920.0   10450.0  TYPE=       1  TARGET=       530.000
  1172.000      5.12     753.62     753.62     752.70     754.32       .70      4.38       .08     752.80
    5000.0     889.8     395.1    3715.1      110.0       64.3     579.8     114.3      30.3     752.90
       .34      8.09      6.15      6.41       .030       .035      .030      .000    748.50    9920.00
   .010861      870.      850.      760.         18         10         0       .00    530.00   10450.00

FLOW DISTRIBUTION FOR SECNO=    1172.00          CWSEL=     753.62

STA=    9920.    9946.    9960.    9983.   10022.   10052.   10095.   10148.   10216.   10293.   10356.   10397.   10450.
  PER Q=      9.9      5.4      2.4      7.9      4.6      8.6      7.6      9.7      9.7      9.1      8.9     16.1
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  AREA=     55.7     31.1     23.2     64.3     38.0     64.0     64.6     82.4     87.0     76.7     63.7    103.4
   VEL=      8.9      8.7      5.2      6.1      6.1      6.7      5.9      5.9      5.6      5.9      7.0      7.8
 DEPTH=      2.1      2.2      1.0      1.6      1.3      1.5      1.2      1.2      1.1      1.2      1.6      1.9

*SECNO 1380.000

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

3470 ENCROACHMENT STATIONS=     9990.0   10450.0  TYPE=       1  TARGET=      460.000
  1380.000      4.93    760.63       .00    759.71    761.09       .46      6.74       .02    758.40
    5000.0      12.1     292.0    4695.9       3.8      54.8     864.9     134.1      42.0    759.50
       .39      3.21      5.33      5.43      .030      .035      .030      .000    755.70   9990.00
   .004384     1000.     1098.     1025.         5         0         0       .00    460.00  10450.00

1                                                                                                          PAGE   33
  14DEC92       11:50:53

    SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      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

FLOW DISTRIBUTION FOR SECNO=   1380.00          CWSEL=    760.63

STA=    9990.    9992.   10012.   10045.   10096.   10142.   10176.   10205.   10218.   10230.   10237.   10261.   10315.
  PER Q=      .2      5.8      3.2      7.6      7.2      5.8      5.3      5.7     10.7      5.1      8.0     10.2
   AREA=     3.8     54.8     41.5     83.7     77.3     60.5     53.5     40.8     58.4     30.2     63.6    101.4
    VEL=     3.2      5.3      3.9      4.6      4.7      4.8      4.9      7.0      9.1      8.4      6.3      5.0
  DEPTH=     2.2      2.7      1.3      1.6      1.7      1.8      1.8      3.2      4.6      4.2      2.6      1.9

STA=   10315.   10392.   10450.
  PER Q=    14.6     10.5
   AREA=   146.0    107.9
    VEL=     5.0      4.9
  DEPTH=     1.9      1.9

*SECNO 1576.000

3265 DIVIDED FLOW

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=     9850.0   10300.0  TYPE=       1  TARGET=      450.000
  1576.000      4.39    766.79    766.79    766.44    767.55       .76      6.17       .09    766.00
    5000.0    1013.2     674.9    3311.9     176.6      79.1     471.4     153.7      52.7    767.60
       .43      5.74      8.53      7.03      .030      .030      .030      .000    762.40   9850.00
   .008610     1100.     1035.     1025.         4        10         0       .00    436.61  10300.00

FLOW DISTRIBUTION FOR SECNO=   1576.00          CWSEL=    766.79

STA=    9850.    9892.    9912.    9934.    9954.    9985.   10016.   10087.   10146.   10204.   10226.   10244.   10263.
  PER Q=      6.1      4.7      4.8      3.0      1.7     13.5      7.5     16.4      9.8      6.9      5.5      3.7
   AREA=    54.9     35.0     36.9     26.9     23.0     79.1     69.5    113.9     83.7     46.0     37.3     29.6
    VEL=     5.5      6.6      6.5      5.6      3.8      8.5      5.4      7.2      5.9      7.5      7.4      6.3
  DEPTH=     1.3      1.7      1.7      1.3       .7      2.7      1.0      2.0      1.4      2.1      2.0      1.6

STA=   10263.   10275.   10281.   10300.
  PER Q=      7.6      5.5      3.3
   AREA=    38.6     25.0     27.8
    VEL=     9.8     11.1      5.9
  DEPTH=     3.2      3.8      1.5

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  14DEC92       11:50:53

    SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      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 1738.000
3280 CROSS SECTION   1738.00 EXTENDED      1.87 FEET

3470 ENCROACHMENT STATIONS=     9750.0   10230.0  TYPE=       1  TARGET=      480.000
  1738.000      5.06    771.86       .00    770.89    772.37       .50      4.79       .03    770.20
    5000.0    2509.6     806.5    1683.9     442.0     111.6     347.6     168.5      60.9    770.30
       .47      5.68      7.23      4.84      .030      .030      .030      .000    766.80   9750.00
   .004504       860.      855.      720.         5         0         0       .00    480.00  10230.00

FLOW DISTRIBUTION FOR SECNO=   1738.00          CWSEL=    771.86

STA=    9750.    9871.    9919.    9947.    9975.    9990.   10024.   10039.   10061.   10100.   10156.   10189.   10210.
  PER Q=      9.3     16.1     15.7      7.0      2.2     16.1      3.3      5.8      5.7      5.3      3.0      5.1
   AREA=   132.3    123.6    100.2     61.7     24.2    111.6     31.0     50.8     61.8     69.3     40.0     45.3
    VEL=     3.5      6.5      7.8      5.6      4.6      7.2      5.4      5.7      4.6      3.8      3.8      5.6
  DEPTH=     1.1      2.6      3.6      2.2      1.6      3.3      2.1      2.3      1.6      1.2      1.2      2.2

STA=   10210.   10230.
  PER Q=      5.5
   AREA=    49.4
    VEL=     5.5
  DEPTH=     2.4
```

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*SECNO 1903.000
3280 CROSS SECTION   1903.00 EXTENDED       .14 FEET

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=     9880.5   10050.0  TYPE=      1  TARGET=      169.500
  1903.000      5.24    776.94    776.94    776.97    778.15      1.21      4.70       .21    775.10
    3200.0     385.6    2755.7      58.7      88.1     294.2      15.2     181.7      67.6    775.30
       .50      4.38      9.37      3.86      .035      .030      .035      .000    771.70   9880.50
   .007151      900.      871.      880.         3         8         0       .00    169.50  10050.00


1
   14DEC92      11:50:53                                                                                                PAGE   35

    SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      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

FLOW DISTRIBUTION FOR SECNO=   1903.00          CWSEL=    776.94

STA=    9881.    9917.    9950.   10037.   10050.
  PER Q=      3.6      8.5     86.1      1.8
   AREA=     33.8     54.3    294.2     15.2
    VEL=      3.4      5.0      9.4      3.9
  DEPTH=       .9      1.6      3.4      1.2

CCHV=      .300 CEHV=      .500
*SECNO 1940.000

3301 HV CHANGED MORE THAN HVINS

3470 ENCROACHMENT STATIONS=     9967.0   10033.0  TYPE=      1  TARGET=       66.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       781.40 ELREA=       781.40

  1940.000      4.65    778.75       .00    778.69    779.07       .32       .65       .27    774.10
    1400.0        .0    1400.0        .0        .0     306.9        .0     183.1      68.0 100000.00
       .51       .00      4.56       .00      .000      .030      .000      .000    774.10   9967.00
   .001196      100.      195.      240.         2         0         0       .00     66.00  10033.00

FLOW DISTRIBUTION FOR SECNO=   1940.00          CWSEL=    778.75

STA=    9967.   10033.
  PER Q=     100.0
   AREA=     306.9
    VEL=       4.6
  DEPTH=       4.7

SPECIAL CULVERT

SC  CUNO      CUNV      ENTLC     COFQ      RDLEN     RISE      SPAN      CULVLN    CHRT      SCL       ELCHU     ELCHD
     6         .014       .40     3.00     500.00     3.37     10.00     240.00     8         1        776.40    775.10

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

*SECNO 1987.000
1
   14DEC92      11:50:53                                                                                                PAGE   36

    SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      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 INLET CONTROL
EGIC =    780.900  EGOC =    780.540  PCWSE=    778.747  ELTRD=    782.900

3280 CROSS SECTION   1987.00 EXTENDED       .35 FEET

SPECIAL CULVERT

     EGIC      EGOC       H4      QWEIR     QCULV      VCH      ACULV     ELTRD    WEIRLN
   780.90    780.54     1.83         0.     1400.    4.043      202.2    782.90        0.


3470 ENCROACHMENT STATIONS=     9967.0   10033.0  TYPE=      1  TARGET=       66.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       782.40 ELREA=       782.40

  1987.000      5.25    780.65       .00    780.65    780.90       .25      1.83       .00    775.40
    1400.0        .0    1400.0        .0        .0     346.3        .0     185.0      68.4 100000.00
       .53       .00      4.04       .00      .000      .030      .000      .000    775.40   9967.00
   .000809      250.      250.      250.         2         0         0       .00     66.00  10033.00

FLOW DISTRIBUTION FOR SECNO=   1987.00          CWSEL=    780.65
```

```
STA=    9967.   10033.
  PER Q=    100.0
   AREA=    346.3
    VEL=      4.0
  DEPTH=      5.2

*SECNO 2041.000

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

3470 ENCROACHMENT STATIONS=     9900.0   10050.0  TYPE=      1  TARGET=      150.000
  2041.000      4.02    781.02       .00    781.06    781.23       .21       .32       .01    780.00
    1400.0        .0    1400.0        .0        .0     378.0        .0     187.4      69.1 100000.00
       .55       .00      3.70       .00      .000      .030      .000      .000    777.00   9900.00
   .001662      310.      285.      240.         2         0         0       .00    150.00  10050.00
```



```
    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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

FLOW DISTRIBUTION FOR SECNO=   2041.00          CWSEL=    781.02

STA=    9900.   10050.
  PER Q=    100.0
   AREA=    378.0
    VEL=      3.7
  DEPTH=      2.5
```



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                                                                                THIS RUN EXECUTED 14DEC92    11:51:14
*************************************
 HEC-2 WATER SURFACE PROFILES

 Version   4.6.2:  May 1991
*************************************

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

BENDER WASH 100-YEAR
SUMMARY PRINTOUT
```

	SECNO	ELMIN	CWSEL	SSTA	ENDST	DEPTH	Q	VCH	HV	DIFWSX	QWEIR	ELTRD	ELLC
	37.000	712.50	721.01	9911.00	10049.12	8.51	3100.00	8.95	1.12	.00	.00	.00	.00
	37.000	712.50	722.01	9965.00	10021.00	9.51	3100.00	8.54	1.11	.00	.00	.00	.00
*	129.000	715.20	722.94	9965.83	10134.03	7.74	3100.00	10.03	1.37	1.93	.00	.00	.00
*	129.000	715.20	723.21	9970.00	10025.00	8.01	3100.00	11.14	1.92	1.20	.00	.00	.00
*	224.000	717.10	725.37	9891.93	10062.85	8.27	3100.00	7.84	.73	2.43	.00	.00	.00
*	224.000	717.10	726.03	9960.00	10030.00	8.93	3100.00	8.95	1.14	2.82	.00	.00	.00
	320.000	720.60	726.84	9891.02	10030.70	6.24	3100.00	8.43	1.10	1.47	.00	.00	.00
	320.000	720.60	727.69	9950.00	10020.00	7.09	3100.00	7.95	.98	1.66	.00	.00	.00
	415.000	722.80	729.52	9962.53	10043.13	6.72	3100.00	8.81	1.21	2.69	.00	.00	.00
	415.000	722.80	729.59	9962.32	10040.00	6.79	3100.00	8.72	1.18	1.91	.00	.00	.00
	441.000	724.00	730.36	9967.00	10033.00	6.36	3100.00	8.30	1.07	.83	.00	.00	.00
	441.000	724.00	730.43	9967.00	10033.00	6.43	3100.00	8.20	1.04	.83	.00	.00	.00
	457.000	727.40	733.94	9967.00	10033.00	6.54	3080.00	7.14	.79	3.58	.00	734.80	.00
	457.000	727.40	733.94	9967.00	10033.00	6.54	3080.00	7.14	.79	3.51	.00	735.37	.00
	508.000	727.20	735.02	9871.00	10052.00	7.82	3150.00	6.10	.38	1.08	.00	.00	.00
*	508.000	727.20	734.57	9960.00	10025.00	7.37	3150.00	10.80	1.59	.63	.00	.00	.00
*	535.000	729.20	734.90	9979.00	10021.00	5.70	3250.00	13.58	2.87	-.12	.00	.00	.00
*	535.000	729.20	735.76	9979.00	10021.00	6.56	3250.00	11.80	2.16	1.19	.00	.00	.00
*	548.000	729.00	739.09	9960.00	10150.00	10.09	3200.00	4.61	.25	4.20	185.72	739.10	735.00
*	548.000	729.00	738.53	9979.00	10021.00	9.53	3200.00	8.00	.99	2.77	409.51	739.10	735.00
	604.000	730.00	739.29	9945.27	10137.11	9.29	3100.00	7.26	.74	.19	.00	.00	.00
*	604.000	730.00	739.58	9960.00	10040.00	9.58	3100.00	7.28	.77	1.05	.00	.00	.00

	SECNO	ELMIN	CWSEL	SSTA	ENDST	DEPTH	Q	VCH	HV	DIFWSX	QWEIR	ELTRD	ELLC
*	3888.000	731.30	740.78	9959.92	10030.28	9.48	3100.00	5.75	.51	1.49	.00	.00	.00
*	3888.000	731.30	741.05	9959.47	10030.59	9.75	3100.00	5.54	.48	1.47	.00	.00	.00
*	1.000	732.10	741.31	9759.54	10045.93	9.21	4900.00	7.96	.67	.53	.00	.00	.00

*	1.000	732.10	741.29	9844.00	10044.00	9.19	4900.00	9.95	1.15	.24	.00	.00	.00
	2.000	737.00	743.05	9220.00	10047.71	6.05	4900.00	5.72	.25	1.74	.00	.00	.00
	2.000	737.00	743.70	9750.00	10037.00	6.70	4900.00	6.48	.44	2.41	.00	.00	.00
	820.000	740.50	745.38	9686.00	10146.00	4.88	4900.00	4.99	.26	2.33	.00	.00	.00
	820.000	740.50	746.15	9780.00	10040.00	5.65	4900.00	5.63	.39	2.45	.00	.00	.00
	1011.000	743.50	748.09	9695.60	10333.34	4.59	5000.00	4.98	.28	2.71	.00	.00	.00
	1011.000	743.50	748.79	9830.00	10130.00	5.29	5000.00	5.63	.43	2.64	.00	.00	.00
*	1172.000	748.50	752.70	9922.86	10771.79	4.20	5000.00	3.30	.58	4.61	.00	.00	.00
*	1172.000	748.50	753.62	9920.00	10450.00	5.12	5000.00	6.15	.70	4.83	.00	.00	.00
	1380.000	755.70	759.71	9800.48	10807.92	4.01	5000.00	4.42	.31	7.00	.00	.00	.00
*	1380.000	755.70	760.63	9990.00	10450.00	4.93	5000.00	5.33	.46	7.01	.00	.00	.00
	1576.000	762.40	766.44	9670.60	10575.18	4.04	5000.00	7.80	.50	6.73	.00	.00	.00
*	1576.000	762.40	766.79	9850.00	10300.00	4.39	5000.00	8.53	.76	6.16	.00	.00	.00
*	1738.000	766.80	770.89	9517.75	10780.90	4.09	5000.00	5.25	.24	4.45	.00	.00	.00
	1738.000	766.80	771.86	9750.00	10230.00	5.06	5000.00	7.23	.50	5.07	.00	.00	.00
*	1903.000	771.70	776.97	9880.50	10058.30	5.27	3200.00	9.22	1.17	6.09	.00	.00	.00
*	1903.000	771.70	776.94	9880.50	10050.00	5.24	3200.00	9.37	1.21	5.07	.00	.00	.00
	1940.000	774.10	778.69	9967.00	10033.00	4.59	1400.00	4.62	.33	1.71	.00	.00	.00
	1940.000	774.10	778.75	9967.00	10033.00	4.65	1400.00	4.56	.32	1.81	.00	.00	.00
	1987.000	775.40	780.65	9967.00	10033.00	5.25	1400.00	4.04	.25	1.96	.00	782.90	.00
	1987.000	775.40	780.65	9967.00	10033.00	5.25	1400.00	4.04	.25	1.90	.00	782.90	.00
*	2041.000	777.00	781.06	9550.00	10100.21	4.06	1400.00	1.42	.02	.41	.00	.00	.00
*	2041.000	777.00	781.02	9900.00	10050.00	4.02	1400.00	3.70	.21	.37	.00	.00	.00

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BENDER WASH 100-YEAR

SUMMARY PRINTOUT TABLE 110

	SECNO	CWSEL	DIFKWS	EG	TOPWID	QLOB	QCH	QROB	PERENC	STENCL	STCHL	STCHR	STENCR
	37.000	721.01	.00	722.13	138.12	308.59	2731.68	59.72	.00	.00	9970.40	10021.10	.00
	37.000	722.01	1.00	723.12	56.00	64.30	3035.70	.00	56.00	9965.00	9970.40	10021.10	10021.00
*	129.000	722.94	.00	724.31	168.21	.89	2646.17	452.94	.00	.00	9971.40	10023.90	.00
*	129.000	723.21	.26	725.13	55.00	1.41	3093.61	4.97	55.00	9970.00	9971.40	10023.90	10025.00
*	224.000	725.37	.00	726.10	170.92	447.35	2120.09	532.56	.00	.00	9971.90	10018.90	.00
	224.000	726.03	.66	727.17	70.00	133.17	2702.17	264.66	70.00	9960.00	9971.90	10018.90	10030.00
	320.000	726.84	.00	727.94	113.08	2.84	3097.16	.00	.00	.00	9933.40	10032.90	.00
	320.000	727.69	.85	728.67	70.00	.00	3100.00	.00	70.00	9950.00	9933.40	10032.90	10020.00
	415.000	729.52	.00	730.73	80.60	.00	3100.00	.00	.00	.00	9960.10	10045.60	.00
	415.000	729.59	.07	730.77	77.68	.00	3100.00	.00	80.00	9960.00	9960.10	10045.60	10040.00
	441.000	730.36	.00	731.43	66.00	.00	3100.00	.00	.00	.00	9967.00	10033.00	.00
	441.000	730.43	.07	731.47	66.00	.00	3100.00	.00	66.00	9967.00	9967.00	10033.00	10033.00
	457.000	733.94	.00	734.73	66.00	.00	3080.00	.00	.00	.00	9967.00	10033.00	.00
	457.000	733.94	.00	734.73	66.00	.00	3080.00	.00	66.00	9967.00	9967.00	10033.00	10033.00
	508.000	735.02	.00	735.39	181.00	1425.72	1619.57	104.71	.00	.00	9981.00	10021.70	.00
*	508.000	734.57	-.45	736.15	65.00	448.44	2667.35	34.21	65.00	9960.00	9981.00	10021.70	10025.00
*	535.000	734.90	.00	737.76	42.00	.00	3250.00	.00	.00	.00	9979.00	10021.00	.00
*	535.000	735.76	.86	737.92	42.00	.00	3250.00	.00	42.00	9979.00	9979.00	10021.00	10021.00
*	548.000	739.09	.00	739.35	190.00	306.45	1952.93	940.62	.00	.00	9979.00	10021.00	.00
*	548.000	738.53	-.57	739.52	42.00	.00	3200.00	.00	42.00	9979.00	9979.00	10021.00	10021.00
	604.000	739.29	.00	740.02	191.83	132.34	2768.93	198.73	.00	.00	9972.60	10021.20	.00
*	604.000	739.58	.30	740.35	80.00	95.67	2880.82	123.51	80.00	9960.00	9972.60	10021.20	10040.00
*	3888.000	740.78	.00	741.29	70.36	.00	3100.00	.00	.00	.00	9953.40	10033.40	.00
*	3888.000	741.05	.28	741.53	71.11	.00	3100.00	.00	80.00	9953.00	9953.40	10033.40	10033.00
*	1.000	741.31	.00	741.98	286.39	2357.25	2489.84	52.90	.00	.00	9980.50	10035.80	.00
*	1.000	741.29	-.02	742.44	200.00	1730.16	3102.55	67.28	200.00	9844.00	9980.50	10035.80	10044.00
	2.000	743.05	.00	743.30	827.71	3338.53	1511.26	50.22	.00	.00	9981.50	10036.70	.00
*	2.000	743.70	.65	744.14	287.00	2956.90	1942.08	1.01	287.00	9750.00	9981.50	10036.70	10037.00
	820.000	745.38	.00	745.64	460.00	3039.63	868.91	991.57	.00	.00	9975.60	10020.50	.00
	820.000	746.15	.78	746.55	260.00	3590.31	1176.93	132.76	260.00	9780.00	9975.60	10020.50	10040.00
	1011.000	748.09	.00	748.37	637.74	2180.38	578.59	2241.03	.00	.00	9973.50	10014.20	.00
	1011.000	748.79	.70	749.22	300.00	2090.58	815.67	2093.76	300.00	9830.00	9973.50	10014.20	10130.00

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	SECNO	CWSEL	DIFKWS	EG	TOPWID	QLOB	QCH	QROB	PERENC	STENCL	STCHL	STCHR	STENCR
*	1172.000	752.70	.00	753.29	834.67	295.09	94.38	4610.54	.00	.00	9982.90	10022.00	.00
*	1172.000	753.62	.92	754.32	530.00	889.81	395.11	3715.08	530.00	9920.00	9982.90	10022.00	10450.00

	1380.000	759.71	.00	760.01	1007.44	625.53	157.55	4216.91	.00	.00	9991.70	10012.30	.00
*	1380.000	760.63	.92	761.09	460.00	12.10	292.00	4695.90	460.00	9990.00	9991.70	10012.30	10450.00
	1576.000	766.44	.00	766.94	885.40	915.66	536.49	3547.84	.00	.00	9985.00	10016.10	.00
	1576.000	766.79	.35	767.55	436.61	1013.24	674.90	3311.86	450.00	9850.00	9985.00	10016.10	10300.00
*	1738.000	770.89	.00	771.12	1256.59	1336.29	410.83	3252.88	.00	.00	9989.90	10023.90	.00
	1738.000	771.86	.98	772.37	480.00	2509.64	806.46	1683.89	480.00	9750.00	9989.90	10023.90	10230.00
*	1903.000	776.97	.00	778.14	177.80	394.00	2741.51	64.49	.00	.00	9949.80	10037.10	.00
*	1903.000	776.94	-.04	778.15	169.50	385.63	2755.68	58.68	169.50	9880.50	9949.80	10037.10	10050.00
	1940.000	778.69	.00	779.02	66.00	.00	1400.00	.00	.00	.00	9967.00	10033.00	.00
	1940.000	778.75	.06	779.07	66.00	.00	1400.00	.00	66.00	9967.00	9967.00	10033.00	10033.00
	1987.000	780.65	.00	780.90	66.00	.00	1400.00	.00	.00	.00	9967.00	10033.00	.00
	1987.000	780.65	.00	780.90	66.00	.00	1400.00	.00	66.00	9967.00	9967.00	10033.00	10033.00
*	2041.000	781.06	.00	781.08	550.21	842.49	546.18	11.33	.00	.00	9900.00	10050.00	.00
*	2041.000	781.02	-.04	781.23	150.00	.00	1400.00	.00	150.00	9900.00	9900.00	10050.00	10050.00

SUMMARY OF ERRORS AND SPECIAL NOTES

```
CAUTION SECNO=    129.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=    129.000  PROFILE=  1  MINIMUM SPECIFIC ENERGY
WARNING SECNO=    129.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=    224.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=    224.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=    508.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO=    535.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=    535.000  PROFILE=  1  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=    535.000  PROFILE=  1  20 TRIALS ATTEMPTED TO BALANCE WSEL
WARNING SECNO=    535.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO=    548.000  PROFILE=  1  HYDRAULIC JUMP D.S.
WARNING SECNO=    548.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
CAUTION SECNO=    548.000  PROFILE=  2  HYDRAULIC JUMP D.S.
WARNING SECNO=    548.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=    604.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=   3888.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   3888.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=      1.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=      1.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=      2.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO=   1172.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=   1172.000  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=   1172.000  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=   1172.000  PROFILE=  2  MINIMUM SPECIFIC ENERGY

WARNING SECNO=   1380.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO=   1576.000  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=   1576.000  PROFILE=  2  MINIMUM SPECIFIC ENERGY

WARNING SECNO=   1738.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO=   1903.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=   1903.000  PROFILE=  1  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=   1903.000  PROFILE=  1  20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO=   1903.000  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=   1903.000  PROFILE=  2  MINIMUM SPECIFIC ENERGY

WARNING SECNO=   2041.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   2041.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
```


FLOODWAY DATA, BENDER WASH 100-YEAR
PROFILE NO. 2

STATION	FLOODWAY WIDTH	FLOODWAY SECTION AREA	FLOODWAY MEAN VELOCITY	WATER SURFACE ELEVATION WITH FLOODWAY	WITHOUT FLOODWAY	DIFFERENCE
37.000	56.	374.	8.3	722.0	721.0	1.0
129.000	55.	281.	11.0	723.2	722.9	.3
224.000	70.	380.	8.1	726.1	725.4	.7
320.000	70.	390.	7.9	727.6	726.8	.8
415.000	78.	355.	8.7	729.6	729.5	.1
441.000	66.	378.	8.2	730.5	730.4	.1
457.000	66.	431.	7.1	733.9	733.9	.0
508.000	65.	352.	9.0	734.5	735.0	-.5
535.000	42.	276.	11.8	735.8	734.9	.9

548.000	42.	400.	8.0	738.5	739.1	-.6
604.000	80.	490.	6.3	739.6	739.3	.3
3688.000	71.	559.	5.5	741.1	740.8	.3
1.000	200.	638.	7.7	741.3	741.3	.0
2.000	287.	976.	5.0	743.7	743.1	.6
820.000	260.	986.	5.0	746.2	745.4	.8
1011.000	300.	950.	5.3	748.8	748.1	.7
1172.000	530.	754.	6.6	753.6	752.7	.9
1380.000	460.	924.	5.4	760.6	759.7	.9
1576.000	450.	727.	6.9	766.8	766.4	.4
1738.000	480.	901.	5.5	771.9	770.9	1.0
1903.000	169.	397.	8.1	777.0	777.0	.0
1940.000	66.	307.	4.6	778.8	778.7	.1
1987.000	66.	346.	4.0	780.6	780.6	.0
2041.000	150.	378.	3.7	781.1	781.1	.0

```
1*****************************************
*  HEC-2 WATER SURFACE PROFILES           *
*                                         *
*  Version   4.6.2;  May 1991             *
*                                         *
*  RUN DATE    15DEC92    TIME   12:25:10 *
*****************************************
```

```
*****************************************
*  U.S. ARMY CORPS OF ENGINEERS           *
*  HYDROLOGIC ENGINEERING CENTER          *
*  609 SECOND STREET, SUITE D             *
*  DAVIS, CALIFORNIA 95616-4687           *
*          (916) 756-1104                 *
*****************************************
```

```
X     X  XXXXXXX   XXXXX              XXXXX
X     X  X        X     X            X     X
X     X  X        X                        X
XXXXXXX  XXXX     X          XXXXX    XXXXX
X     X  X        X                  X
X     X  X        X     X            X
X     X  XXXXXXX   XXXXX              XXXXXXX
```

```
1
   15DEC92      12:25:10                                                                    PAGE    1


                                                                THIS RUN EXECUTED 15DEC92    12:25:10
*************************************
 HEC-2 WATER SURFACE PROFILES

 Version   4.6.2;  May 1991
*************************************


T1      FLOOD CONTROL DISTRICT OF MARICOPA COUNTY - CONTRACT FCD 90-67
T2      GILA BEND AREA FLOODPLAIN DELINEATION STUDY BY BURGESS & NIPLE
T3      SCOTT AVENUE WASH                          J. MISCHLER - (602) 244-8100

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                2                           0.0037                                  666.32

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

    -1                  -1

J3  VARIABLE CODES FOR SUMMARY PRINTOUT

    38        42        1         43        26        51        4         8         53        54
    13        15        40

       SECTIONS ARE LABELED AS  RIVER MILES * 1000, i.e., SECTION 1884 IS AT
       RIVER MILE 1.884 UPSTREAM OF THE CONFLUENCE WITH THE GILA RIVER.

       J1.5 STRT WAS OBTAINED BY (665.5SPOT ELEV-664CONTOUR)/410 FT = 0.0037

       THIS MODEL BEGINS AT RM 1.884.  THE DETAILED STUDY BEGINS AT RM 2.261.

       BECAUSE OF FLOW OVER WATERMELON ROAD, THE Q AT EACH CROSS SECTION
       BELOW 2261 IS INCREMENTALLY LESS.  SECTIONS WERE THEREFORE SET UP
       WITH THE ROAD AS THE RIGHT OVERBANK IN ORDER TO ESTIMATE THE AMOUNT
       OF FLOW LOST OVER THE ROAD AT EACH SECTION.  THIS WILL EFFECTIVELY
       MODEL WATERMELON ROAD AS A SLOPING SIDE DISCHARGE WEIR.


NC     0.06      0.03      0.03      0.1       0.3
QT        1      1500
X1     1884        14    9956.2   10042.5         0         0         0
GR    668.8    9691.0     667.3    9738.7     666.1    9795.6     665.4   9850.7     665.0    9905.1
GR    664.5    9956.2     663.5    9978.7     662.4    9996.5     662.1  10000.0     664.2   10014.7
GR    665.1   10029.4     665.5   10042.5     667.1     10200     669.7     10700
1
   15DEC92      12:25:10                                                                    PAGE    2


QT        1      1900
X1     2070        13    9956.3   10037.0     985.0     985.0     982.0
GR    674.1    9852.5     673.8    9902.5     671.8    9956.3     668.8   9978.5     667.0    9992.0
GR    666.8   10000.0     670.0   10008.9     669.9   10021.9     670.0  10032.6     670.0   10037.0
GR    671.5     10130     673.8     10580     675.2     11050

       BEGIN DETAILED STUDY

QT        1      2600
X1     2261        13    9934.6   10041.7    1020.0    1010.0    1008.0
GR    677.9    9809.7     677.5    9863.9     677.3    9911.9     676.0   9934.6     673.5    9954.0
GR    673.5    9974.8     672.2    9988.5     672.0   10000.0     674.5  10016.1     675.0   10029.0
GR    675.2   10041.7     677.2     10570     679.8     11050

NC     0.04      0.04      0.04
X1     2505        23   10073.2   10278.0     890.0    1200.0    1288.0
X3       10
GR    683.5    9977.4     681.1    9988.5     683.2    9999.7     682.0  10000.0     682.6   10048.2
GR    682.2   10073.2     680.1   10086.6     681.6   10110.9     682.1  10160.0     681.6   10181.7
GR    680.5   10189.7     681.9   10212.1     681.7   10242.4     680.6  10252.4     682.5   10278.0
GR    682.0   10299.8     681.9   10313.2     682.2   10344.6     682.1  10375.9     684.3   10409.4
GR    687.9   10440.9     690.2   10500.5     691.3   10562.2
```

```
NC    0.035     0.035     0.07                                                                  9718.4    10600.0
ET                 9.1
      2677        32     9917.8    10061.9     850.0     970.0     908.0
      10
      695.3    9718.4     694.8     9764.3     693.9    9813.6     692.2    9861.7     690.4     9888.6
GR    688.1    9917.8     685.5     9930.4     685.2    9936.7     686.5    9944.5     686.4     9969.4
GR    685.2    9990.7     683.3     9997.6     684.1   10000.0     687.3   10014.1     686.7    10026.8
GR    685.2   10042.3     687.6    10061.9     687.9   10107.3     687.9   10138.6     688.2    10209.1
GR    688.3   10276.5     687.9    10359.6     687.6   10427.5     687.1   10481.5     687.2    10541.7
GR    686.5   10599.9     687.0    10634.4     685.6   10660.6     688.0   10688.9     690.0    10714.7
GR    694.3   10739.7     696.4    10789.5

X1     2867        23     9969.7    10021.7     995.0     860.0    1003.0
X3       10
GR    699.7    9878.2     698.2     9923.8     694.5    9969.7     691.4    9987.9     689.5     9999.8
GR    689.6   10000.0     693.3    10016.1     694.7   10021.7     692.7   10043.5     692.8    10071.2
GR    692.6   10125.1     691.8    10196.6     691.9   10262.7     692.3   10322.6     693.1    10390.0
GR    692.3   10455.6     692.9    10515.9     693.5   10562.6     692.7   10613.8     693.8    10668.8
GR    693.9   10730.4     695.0    10786.5     696.7   10852.9

X1     3105        29     9980.2    10043.1     930.0    1030.0    1257.0
X3       10
GR    704.6    9710.5     702.3     9748.4     700.6    9783.0     699.5    9833.9     700.0     9892.8
GR    698.7    9948.3     699.4     9980.2     697.8    9994.8     695.2   10000.0     698.3    10011.9
GR    699.2   10043.1     696.8    10092.7     697.3   10123.0     695.3   10143.5     698.0    10164.5
GR    696.8   10200.6     697.2    10239.1     698.6   10262.8     696.9   10310.4     697.7    10363.8
GR    697.1   10381.2     697.9    10422.1     700.0   10469.9     699.3   10504.8     699.5    10544.9
GR    701.1   10584.1     702.8    10629.6     703.9   10679.6     704.5   10734.6
```



```
X1     3292        20     9981.1    10084.8     960.0     950.0     987.0
GR    711.0    9780.0     710.0     9845.2     708.6    9876.1     707.5    9902.7     705.5     9929.2
GR    704.6    9955.0     702.7     9964.4     704.5    9981.1     703.7    9998.1     702.0    10000.0
GR    703.4   10012.1     704.1    10040.5     702.7   10055.8     701.3   10065.5     703.9    10084.8
GR    705.4   10108.9     707.1    10148.6     707.4   10186.0     707.4   10228.1     708.5    10255.2
```

SOUTH INDIAN ROAD IS AT RM 3.466 (LOW CROSSING - NO STRUCTURE)

```
X1     3492        19     9987.7    10028.1     970.0    1045.0    1056.0
GR    713.4    9825.5     713.1     9847.5     712.4    9867.9     710.7    9889.3     709.7     9902.5
GR    709.0    9908.6     709.9     9920.1     709.7    9947.4     709.5    9968.2     708.4     9979.4
GR    709.6    9987.7     708.5     9995.7     707.1   10000.0     707.1   10006.6     708.2    10014.8
GR    709.3   10028.1     708.8    10040.8     710.7   10055.9     713.3   10072.2

X1     3570        26     9984.3    10018.5     335.0     425.0     412.0
GR    715.8    9895.9     715.6     9925.3     714.7    9946.3     712.4    9967.0     711.3     9984.3
GR    710.3    9993.4     708.9    10000.0     709.7   10007.4     711.6   10018.5     711.4    10039.8
GR    711.4   10062.0     711.0    10072.0     711.7   10095.8     712.0   10122.0     711.3    10136.6
GR    710.6   10144.0     711.4    10152.8     711.3   10167.4     712.0   10186.6     712.4    10195.9
GR    712.5   10209.4     712.6    10221.3     714.0   10238.8     716.1   10251.8     716.1    10270.1
GR    716.2   10277.5

X1     3677        26     9982.3    10027.8     535.0     495.0     565.0
GR    718.4    9723.0     718.4     9743.7     717.5    9761.6     716.4    9782.2     715.9     9802.2
GR    715.5    9834.7     715.1     9873.6     714.1    9903.9     714.3    9920.1     714.0     9931.2
GR    713.5    9948.3     713.7     9953.4     714.2    9962.8     713.6    9969.9     714.8     9982.3
GR    714.4    9993.2     713.5     9998.3     712.0   10000.0     712.9   10007.1     714.3    10016.5
GR    714.6   10027.8     712.8    10034.2     714.9   10043.4     716.8   10065.7     717.7    10087.2
GR    718.2   10109.0

X1     3772        25     9992.2    10041.8     500.0     420.0     502.0
GR    721.6    9915.5     720.8     9942.9     718.6    9960.0     716.7    9978.4     716.6     9992.2
GR    716.3   10000.0     714.4    10009.0     713.8   10012.3     714.6   10020.6     716.1    10029.3
GR    716.6   10041.8     716.3    10055.5     716.1   10076.4     715.7   10087.8     715.3    10091.7
GR    716.6   10098.8     716.1    10116.2     716.8   10137.5     717.6   10144.8     717.5    10152.9
GR    717.4   10158.2     718.5    10167.9     718.7   10185.0     718.7   10204.0     720.0      10390

NC    0.035     0.035     0.04
X1     3863        25     9962.1    10033.4     450.0     480.0     480.0
GR    722.7    9782.0     721.5     9802.9     719.7    9825.6     718.6    9845.6     718.3     9861.0
GR    718.6    9889.9     718.6     9918.7     718.8    9935.6     720.2    9944.1     720.3     9962.1
GR    719.8    9976.6     718.6     9986.0     718.0    9996.3     717.9   10000.0     717.0    10004.9
GR    717.3   10008.2     718.5    10018.4     720.7   10033.4     721.5   10053.3     722.4    10065.0
GR    723.1   10076.4     723.6    10099.6     724.2   10128.0     724.7   10154.3     724.7    10170.8
```

RICHARDS STREET IS AT RM 3.889 (LOW CROSSING - NO STRUCTURE)


```
NC    0.035     0.035     0.05
X1     3957        20     9989.0    10013.2     477.0     520.0     496.0
GR    726.0     9550     724.0      9710       723.8    9917.1     723.7    9956.8     722.8     9979.8
GR    720.5    9989.0     719.4     9999.3     718.6   10000.0     719.2   10006.3     720.7    10013.2
GR    721.1   10036.6     721.2    10064.6     721.8   10086.9     723.3   10109.0     723.9    10121.8
GR    724.4   10131.5     724.6    10142.0     725.8   10156.9     726.5   10180.7     726.3    10182.2
```

HUNT STREET IS AT RM 4.005 (LOW CROSSING - NO STRUCTURE)

```
NC    0.035     0.035     0.07
X1     4053        28     9962.0    10031.7     535.0     466.0     507.0
GR    730.3    9700.1     729.6     9718.6     729.5    9726.6     729.8    9736.0     729.6     9746.0
GR    729.5    9751.7     728.4     9759.5     727.3    9778.4     726.9    9802.4     725.9     9834.7
GR    726.8    9867.8     726.4     9900.1     725.1    9933.5     724.9    9962.0     723.5     9981.3
GR    722.8    9994.6     722.7    10000.0     720.8   10004.2     720.8   10006.8     723.1    10014.2
GR    724.1   10031.7     723.8    10050.2     723.6   10075.3     724.7   10093.2     725.9    10114.6
```

```
GR     727.5    10145.4      728.1    10166.1      729.4    10176.9
```

PAPAGO STREET IS AT RM 4.133 (LOW CROSSING - NO STRUCTURE)

```
NC     0.035      0.035       0.04
X1      4147         29     9990.4    10015.5      455.0      530.0      496.0
GR     731.5     9962.6      731.0     9975.5      725.8     9990.4      724.3     9999.2      723.8    10000.0
GR     723.9    10010.2      725.8    10015.5      726.0    10025.1      726.0    10050.2      726.6    10069.0
GR     727.6    10094.9      729.2    10114.2      729.2    10135.4      729.2    10142.3      729.2    10153.6
GR     728.8    10164.6      728.9    10180.1      729.1    10188.3      728.3    10207.8      728.5    10228.7
GR     729.1    10253.1      729.6    10272.2      729.8    10290.7      730.0    10318.1      730.0    10336.0
GR     730.4    10353.1      730.1    10371.1      730.8    10399.2      731.1    10408.1
```

A CONCRETE BOX CULVERT CONVEYS SCOTT AVENUE WASH BENEATH PIMA STREET (U.S. ROUTE 80) AND A PROPERTY ON THE NORTH SIDE OF PIMA STREET.

AT THE DOWNSTREAM END, THE CULVERT OUTLETS INTO A U-SHAPED CONCRETE CHANNEL WHICH EXTENDS ANOTHER 140' DOWNSTREAM OF THE CULVERT.

SPECIAL CULVERT IS USED TO MODEL THE CULVERT.

INCREASE EXPANSION/CONTRACTION COEFFICIENTS

SECTION 4156 IS AT THE DOWNSTREAM END OF THE U-SHAPED CONCRETE CHANNEL SEDIMENT IN THE BOTTOM HAS COVERED THE CONCRETE INVERT.

```
NC                                     0.3       0.5
X1      4156        12      9995   10005.1        60        60        50
GR       734      9760       732      9860       732      9915     731.2      9995      724.9    9995.1
GR     725.2     10000     726.3     10005     731.5   10005.1       729     10080        730     10200
GR       732     10430       734     10450
```

REPEAT SECTION 4157 AT THE DOWNSTREAM OUTLET OF THE CULVERT.
BECAUSE OF HEAVY BRUSH IN THE CHANNEL, USE N = 0.080


```
NC     0.035      0.035       0.080
X1      4183                                140       110       140
X3        10                                                     731.8     731.0
```

RETURN TO NORMAL N VALUE IN THE CHANNEL
SECTION GEOMETRY IS FROM FIELD SURVEY (CHANNEL) AND TOPO MAP (OVERBANK)

```
NC     0.035      0.035       0.03
SC     1.014        0.5          3         0         6        10       165      10.1      725.0     725.0
X1      4216         11       9995     10005       175       175       175
```

ELTRD = 732.2 + 0.2' HV = 732.4

```
X2                                2                732.4
X3        10                                                     732.8     732.2
BT        -9       9765      735.1                 9950       734                9980     732.8
BT               10000      732.8                10020     732.8               10070       733
BT               10150      732.2                10355     732.4               10540     733.8
GR     735.1       9765        734      9950       732      9980       725      9995       725     10000
GR       725      10005        732     10020       733     10070     732.2     10150     732.4     10355
GR     733.8      10540
```

KEEP EXPANSION/CONTRACTION COEFFICIENTS HIGH THROUGH AREA OF FREQUENT STRUCTURES

```
X1      4287         27     9987.2   10037.0       420       195       375
X3        10
GR     737.3     9904.0      731.3     9916.6     729.6     9932.7     730.2     9941.9      728.7    9952.1
GR     728.7     9966.3      729.3     9975.2     729.0     9987.2     728.3     9993.0      727.1    9998.7
GR     726.8    10000.0      728.2    10011.9     728.6    10021.9     731.8    10033.0      732.6   10037.0
GR     731.0    10049.2      731.3    10050.0     731.4    10067.1     731.8    10088.8      731.9   10101.1
GR     732.3    10112.6      732.6    10126.0     732.8    10139.0     733.6    10157.3      733.8   10186.9
GR     733.8    10200.3      734.6     10390
```

SCOTT AVE WASH IS CONVEYED UNDER THE SOUTHERN PACIFIC RAILROAD THROUGH A TIMBER BRIDGE. THE STREAM BED ALSO SERVES AS A MEANS OF PEDESTRIAN AND VEHICULAR ACCESS TO HOMES SOUTH OF THE TRACKS.

SPECIAL BRIDGE IS USED TO MODEL THE STRUCTURE.
THE SECTION AT THE DOWNSTREAM FACE OF THE BRIDGE IS FROM FIELD SURVEY (CHANNEL) AND TOPO MAP DATA (OVERBANKS).

```
X1      4315         16       9990     10010        90       190       148
X3        10                                                      735       735
GR       740       9229      739.7      9230     739.4      9450     739.7      9630      739.1     9850
GR       736       9950        732      9990     729.8    9990.5     729.8   10009.5        734    10010
GR       736      10030        736     10120     739.2     10240     739.9     10420      739.9    10780
GR     740.3      11010
```


ELTRD = 739.1 = MIN TOP OF ROAD SINCE WEIR FLOW WILL OCCUR

```
SB         0        1.6         3      1000        19         0       129         0      730.1    729.8
X1      4331         16       9990     10010        86        86        86                0.3
```

```
X2                          1      736.9     739.1                                739.1     739.2
X3      10
        -9      9230     739.7               9450     739.4                        9630     739.7
                9850     739.1              10000     739.9                       10240     739.2
                10420    739.9              10780     739.9                       11010     740.3
GR      740     9229     739.4     9230     739.1      9450     739.4              9630     738.8      9850
GR      736     9950       732     9990     729.8    9990.5     729.8           10009.5       734     10010
GR      736    10030       736    10120     738.9     10240     739.6             10420     739.6     10780
GR      740    11010
```

KEEP EXPANSION/CONTRACTION COEFFICIENTS HIGH THROUGH AREA OF FREQUENT STRUCTURES

```
NC    0.035    0.035    0.035
X1     4395       24   9967.8   10022.4       325       325       338
GR      742     9180      740      9250       738      9360       736      9390       736      9480
GR      738     9570      738      9670     737.1    9967.8     736.1    9971.3     731.4    9983.7
GR    731.1   9991.5    730.7    9995.6     729.5   10000.0     730.2   10005.0     732.2   10011.9
GR    734.7  10022.4    734.9   10035.9     735.4   10059.5     736.1   10083.3     736.5   10108.9
GR    736.7  10117.7      738    10380       740     10430       742     10450
```

SCOTT AVENUE WASH IS CONVEYED BENEATH THE GILA BEND CANAL THROUGH A CONCRETE BOX CULVERT.

SPECIAL CULVERT IS USED TO MODEL THE CULVERT.
THE SECTION AT THE DOWNSTREAM FACE OF THE BRIDGE IS FROM FIELD SURVEY (CHANNEL) AND TOPO MAP DATA (OVERBANKS).

```
X1     4429       10     9997    10003       170       175       180
X3       10                                                     735       732
GR    739.1     9470      736     9660       734      9700       734      9950       732      9980
GR    729.6     9997    729.6    10003       734     10015       736     10090       740     10270
```

ELTRD = 743.5 + 0.1 HV = 743.6

DEVELOP SECTION GEOMETRY FROM TOPO MAPPING AT THE UPSTREAM FACE.

```
SC    1.014      0.5        3        0         3         6      95.3      10.1     731.9     729.6
X1     4449       30     9997    10003       105       105       105
X2                           2                743.6
                                                              744.9     743.5
X3       10
BT      -27     8260    745.6                8490     745.3                8730     745.2
BT              8990    744.9                9250     745.2                9470     745.5
BT              9710    745.7                9910     744.9               10003     744.7
BT             10150    745.7               10200       744               10220     742.7
BT             10230    742.7               10270       744               10610     745.5
```



```
BT             10880    745.5               10900     746.0               10952     746.0
BT             10970    744.9               11080     744.9               11490     744.2
BT             11830    744.6               12100     744.5               12390     744.9
BT             12710    745.1               12840     746.0               12940     746.7
GR    745.6     8260    745.3     8490     745.2      8730     744.9      8990     745.2      9250
GR    745.5     9470    745.7     9710       734      9910       734      9990     731.9      9997
GR    731.9    10003      734    10010       740     10150       743     10200     742.7     10220
GR    742.7    10230      744    10270     745.5     10610     745.5     10880     746.0     10900
GR    746.0    10952    744.9    10970     744.9     11080     744.2     11490     744.6     11830
GR    744.5    12100    744.9    12390     745.1     12710     746.0     12840     746.7     12940
```

REPEAT SECTION 150 FT UPSTREAM FOR CONTRACTION LOSSES
USE PSXECE = 0.6 FOR CHANNEL SLOPE (INTERPOLATED BETWEEN RM 4.449 AND RM 4.537)

DUE TO THE ATTENUATING EFFECT OF THE GILA BEND CANAL EMBANKMENT AND RELATIVELY SMALL CULVERT, 100-YEAR Q'S DOWNSTREAM ARE REDUCED FROM UPSTREAM Q'S.

```
X1     4477       11     9990    10010        95       160       150                 0.6
GR    745.7     9710      734     9910       734      9990     731.9      9997     731.9     10003
GR      734    10010      740    10150       743     10200       743     10220       744     10270
GR    745.5    10610
```

RETURN EXPANSION/CONTRACTION COEFFICIENTS TO NORMAL VALUES.

```
NC    0.035    0.045    0.045      0.1       0.3
QT        1     3500
X1     4537       14   9997.0   10014.8       315       315       315
GR    740.2   9901.7    739.3    9936.9     737.8    9969.2     736.7    9988.6     736.0    9997.0
GR    733.8  10000.0    734.2   10004.0     735.6   10008.4     736.4   10014.8     736.3   10029.8
GR    735.8  10046.6    736.4   10059.9     737.1   10068.9     742.0   10081.2
```

SCOTT AVENUE WASH IS CONVEYED BENEATH THE CORNELIA & GILA BEND RR BY A TIMBER BRIDGE.

SPECIAL BRIDGE IS USED TO MODEL THE STRUCTURE.
THE SECTION AT THE DOWNSTREAM FACE OF THE BRIDGE IS FROM FIELD SURVEY (CHANNEL) AND TOPO MAP DATA (OVERBANKS).

WIER FLOW IS NOT ANTICIPATED. IF IT OCCURS, THE EFFECTIVE LENGTH WILL BE ABOUT 700 FT, THEREFORE USE SB.4 = 700 FT.

INCREASE EXPANSION/CONTRACTION COEFFICIENTS FOR THE BRIDGE.

```
NC                                0.3       0.5
X1     4563        4     9965    10035       200        80       140
```

```
                                                                                                  743       743
X3      10
GR   744.6       9950      734.6      9965      734.6     10035     744.0     10050
```

ELTRD = 744.0 + 0.5 HV = 744.5

PSXECE = 0.3 FT

```
SB    1.25        1.6         3       700        70       7.5       380         0     734.9     734.6
X1    4568                                     23        23        23                 0.3
X2                            1     741.0     744.5                                  744       744
X3      10
```

SECTION 4591 IS FROM FIELD SURVEYS MADE TO CHECK MAP ACCURACY.
THE ACTUAL SURVEY WAS SKEWED ABOUT 20 DEGREES LEFT FORWARD
FROM THE POSITION SHOWN ON THE MAP. SINCE THE SKEW CORRECTION WOULD
ONLY REDUCE STATIONS BY 6 PERCENT, IT HAS BEEN IGNORED.

THE SECTION IS ADDED TO COMPUTE CONTRACTION LOSSES.

```
                                                                  124
X1    4591         14      9987     10009        70       160     737.6      9987     736.5      9996
GR   743.4       9907     739.5      9923     738.3      9946     737.5     10026     738.7     10031
GR   736.0       9998     735.2     10007     736.5     10009     741.9     10378
GR   740.6      10108     742.2     10187     741.6     10281
```

RETURN EXPANSION/CONTRACTION LOSSES TO NORMAL VALUES.

```
NC   0.035      0.035      0.05       0.1       0.3
X1    4727         24    9973.3   10014.4     980.0     925.0    1003.0
GR   745.5     9870.9     745.0     9899.1     742.2    9919.8     740.0     9939.0     740.1    9957.9
GR   739.6     9973.3     738.5     9980.6     737.4    9987.9     737.8    10000.0     740.4   10014.4
GR   740.7    10040.1     741.9    10078.7     741.9   10121.9     741.9    10159.4     742.9   10184.5
GR   743.0    10219.0     742.8    10241.2     743.2   10286.0     743.8    10332.8     744.5   10384.9
GR   744.4    10443.6     745.3    10483.7     745.3   10536.2     745.8    10565.5
```

SCOTT AVENUE WASH CROSSES THE EXTENSION OF MAIN STREET
AT RM 4.792 (LOW CROSSING - NO STRUCTURE)

```
X1    4911         15    9981.1   10013.1     955.0     895.0     972.0
GR   749.3     9792.5     748.9     9845.5     749.1    9903.4     748.9     9952.7     746.8    9972.1
GR   744.7     9981.1     743.9     9990.9     742.3   10000.0     742.7    10005.9     745.5   10013.1
GR   745.0    10044.4     748.5    10078.2     749.1   10127.8     749.9    10201.9     750.3   10256.4
```

SCOTT AVENUE WASH CROSSES THE EXTENSION OF MARTIN AVENUE WHICH ROUGHLY
FOLLOWS THE SECTION LINE BETWEEN SECTION 1 T6S, R5W AND SECTION 6 T6S,
R4W. (LOW CROSSING - NO STRUCTURE)

REDUCE THE Q UPSTREAM BECAUSE 2100 CFS OF THE SCOTT AVENUE WASH
PEAK FLOW RESULTS FROM WATER PASSING BENEATH I-8 THROUGH THE GRADE
SEPARATION STRUCTURE OVER THIS ROAD. THE Q DOWNSTREAM IS 3500 CFS,
THE Q UPSTREAM IS 1400 CFS.

1


```
NC   0.035      0.035      0.035
QT       1       1400
X1    5137         14    9941.7   10034.8    1110.0    1140.0    1193.0
GR   755.3     9755.1     752.5     9835.8     751.6    9891.8     750.8     9941.7     749.4    9968.5
GR   749.7     9979.6     749.2     9985.7     747.6    9991.3     746.6    10000.0     748.5   10010.5
GR   751.6    10034.8     752.8    10082.9     753.8   10135.8     754.3    10179.4
```

SCOTT AVENUE WASH IS CONVEYED BENEATH INTERSTATE 8 BY A BOX CULVERT.
SPECIAL CULVERT IS USED TO MODEL THE STRUCTURE.

SECTION 5200 IS BASED ON FIELD SURVEY DATA (CHANNEL) AND TOPO
MAP DATA (OVERBANKS).

INCREASE EXPANSION/CONTRACTION COEFFICIENTS FOR THE BRIDGE.

```
NC                                   0.3       0.5
X1    5200          5      9989    10011       200       400       333
X3      10                                                                  770.3     770.3
GR   755.3       9600       752     9970     750.5      9989     750.5     10011       756    10220
```

WIER FLOW IS NOT ANTICIPATED. USE ELTRD = 771.3 + 0.5 HV = 771.8
AND SC.5 RDLEN = 500 FT.
USE PSXECE = 0.7 WHEN THE SECTION IS REPEATED AT THE UPSTREAM FACE.

```
SC   2.014       0.4         3       500       6.8        10       294       8.1     751.2     750.5
X1    5258                                     304       304       304                 0.7
X2                            2                771.8                                  771.3     771.3
X3      10
```

DEVELOP A SECTION UPSTREAM OF THE CULVERT TO COMPUTE CONTRACTION LOSSES.
USE TOPO MAP DATA TO GENERATE GR POINTS.

```
X1    5308          5      9900    10080       320       180       264
GR     760       9850       756     9900       752     10000       756     10080       760    10150
```

1

```
   SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      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

*PROF 1

CCHV=      .100 CEHV=      .300
*SECNO 1884.000
  1884.000      4.22     666.32        .00     666.32     666.68        .36        .00        .00     664.50
    1500.0     294.9     1150.1      55.0      173.7      210.9       33.1         .0         .0     665.50
       .00      1.70       5.45      1.66       .060       .030       .030       .000     662.10    9785.17
   .003694        0.         0.        0.          0          0          0        .00     338.05   10123.22


*SECNO 2070.000
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
  2070.000      4.93     671.73     671.73        .00     672.49        .76       5.03        .12     671.80
    1900.0        .0     1524.7     375.3         .0      201.5       96.2        8.1        6.3     670.00
       .04       .00       7.67      3.90       .000       .030       .030       .000     666.80    9956.82
   .006930      985.       982.      985.          5         11          0        .00     218.04   10174.87


*SECNO 2261.000

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

  2261.000      4.71     676.71        .00        .00     677.13        .43       4.61        .03     676.00
    2600.0       3.2     1866.2     730.6        4.4      311.8      299.8       18.7       14.8     675.20
       .10       .73       5.99      2.44       .060       .030       .030       .000     672.00    9922.26
   .003532     1020.      1008.     1010.          6          0          0        .00     517.40   10439.67


*SECNO 2505.000

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

  2505.000      3.18     683.28        .00        .00     683.61        .33       6.47        .01     682.20
    2600.0     315.5     1822.7     461.7       93.5      364.6      125.4       35.5       27.6     682.50
       .17      3.37       5.00      3.68       .040       .040       .040       .000     680.10    9978.40
   .008420      890.      1288.     1200.          4          0          0        .00     415.54   10393.93


*SECNO 2677.000

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



```
   SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      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


3470 ENCROACHMENT STATIONS=      9718.4   10600.0  TYPE=       1  TARGET=      881.600
  2677.000      5.42     688.72        .00        .00     688.84        .12       5.21        .02     688.10
    2600.0       3.0      975.0     1622.1        2.4      381.8      541.8       51.7       39.5     687.60
       .26      1.22       2.55      2.99       .035       .070       .035       .000     683.30    9909.97
   .003999      850.       908.      970.          2          0          0        .00     690.03   10600.00


*SECNO 2867.000
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
  2867.000      5.34     694.84     694.84        .00     694.88        .04       1.00        .01     694.50
    2600.0        .2      140.4     2459.3         .7      147.1     1507.4       78.0       54.7     694.70
       .42       .30        .95      1.63       .035       .070       .035       .000     689.50    9965.44
   .000518      995.      1003.      860.          8          8          0        .00     813.06   10778.51


*SECNO 3105.000
3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       699.40 ELREA=       699.20

  3105.000      4.09     699.29     699.29        .00     699.46        .17       1.03        .04     699.40
    2600.0        .0       84.3     2515.7         .0       71.5      744.0      107.8       70.2     699.20
       .51       .00       1.18      3.38       .000       .070       .035       .000     695.20    9981.24
   .002609      930.      1257.     1030.         20         22          0        .00     472.42   10453.65


*SECNO 3292.000

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
  3292.000      4.38     705.68     705.68        .00     706.65        .97       6.00        .24     704.50
    2600.0     728.7     1682.0     189.3       70.5      253.6       25.9      120.6       77.5     703.90
       .54     10.33       6.63      7.32       .035       .070       .035       .000     701.30    9926.75
   .030038      960.       987.      950.         20          8          0        .00     188.79   10115.55
```

```
SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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 3492.000

3301 HV CHANGED MORE THAN HVINS

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  3.39

 3492.000      5.69    712.79       .00       .00    713.07       .28      6.35       .07    709.60
   2600.0    1566.1     548.3     485.6     344.0     184.6     106.8     132.2      82.1    709.30
      .61      4.55      2.97      4.54      .035      .070      .035      .000    707.10   9856.72
  .002620      970.     1056.     1045.         7         0         0       .00    212.25  10068.96

*SECNO 3570.000
 3570.000      5.06    713.96       .00       .00    714.21       .25      1.14       .00    711.30
   2600.0     166.9     373.2    2060.0      47.4     128.7     483.3     138.0      84.4    711.60
      .63      3.52      2.90      4.26      .035      .070      .035      .000    708.90   9952.98
  .003239      335.      412.      425.         5         0         0       .00    285.29  10238.27

*SECNO 3677.000

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  .61

 3677.000      4.37    716.37       .00       .00    716.89       .52      2.60       .08    714.80
   2600.0    1860.8     405.8     333.4     307.3     113.3      52.9     144.8      87.7    714.60
      .66      6.06      3.58      6.30      .035      .070      .035      .000    712.00   9783.42
  .008628      535.      565.      495.         3         0         0       .00    277.22  10060.65

*SECNO 3772.000

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.50

 3772.000      5.38    719.18       .00       .00    719.49       .30      2.58       .02    716.60
   2600.0     271.1     569.5    1759.4      64.7     183.0     368.1     150.7      90.9    716.60
      .69      4.19      3.11      4.78      .035      .070      .035      .000    713.80   9955.42
  .003813      500.      502.      420.         1         0         0       .00    318.52  10273.94

*SECNO 3863.000
 3863.000      4.20    721.20       .00       .00    721.64       .44      2.11       .04    720.30
   2600.0    1794.4     801.7       3.9     326.0     166.9       3.1     156.7      93.9    720.70
      .71      5.50      4.80      1.24      .035      .040      .035      .000    717.00   9806.66
  .005421      450.      480.      480.         3         0         0       .00    239.23  10045.88
```

1


```
SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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 3957.000
 3957.000      5.46    724.06    723.47       .00    724.68       .62      2.99       .05    720.50
   2600.0     245.3     687.5    1667.2      86.1     106.7     251.9     162.0      97.6    720.70
      .74      2.85      6.44      6.62      .035      .050      .035      .000    718.60   9705.27
  .006716      477.      496.      520.         6        13         0       .00    419.62  10124.89

*SECNO 4053.000
 4053.000      6.09    726.89       .00       .00    727.15       .26      2.43       .04    724.90
   2600.0     667.4     792.5    1140.0     201.2     255.8     227.4     168.5     102.0    724.10
      .77      3.32      3.10      5.01      .035      .070      .035      .000    720.80   9802.60
  .003823      535.      507.      466.         2         0         0       .00    331.13  10133.73

*SECNO 4147.000

3265 DIVIDED FLOW

 4147.000      5.28    729.08       .00       .00    729.83       .75      2.54       .15    725.80
   2600.0      72.6     963.5    1563.9      15.5     115.4     259.3     174.7     105.2    725.80
      .79      4.70      8.35      6.03      .035      .040      .035      .000    723.80   9980.99
  .006822      455.      496.      530.         2         0         0       .00    226.56  10252.49

CCHV=     .300 CEHV=     .500
*SECNO 4156.000

3265 DIVIDED FLOW

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
 4156.000      6.28    731.18    731.18       .00    731.85       .67       .54       .03    731.20
   2600.0        .0     497.2    2102.8        .0      57.7     353.0     175.2     105.6    731.50
      .79       .00      8.61      5.96      .000      .040      .035      .000    724.90   9995.00
  .014118       60.       50.       60.        20        11         0       .00    331.18  10335.75
```

```
*SECNO 4183.000

3301 HV CHANGED MORE THAN HVINS

1
  15DEC92      12:25:10                                                                                                PAGE   14

    SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      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

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  2.78

  4183.000       7.43     732.33        .00        .00     732.46        .13        .45        .16     731.20
    2600.0      104.4      120.3     2375.3       79.9       69.4      803.6      177.0      106.8     731.50
       .80       1.31       1.73       2.96       .035       .080       .035       .000     724.90    9843.29
   .001830       140.       140.       110.          3          0          0        .00     590.05   10433.34

SPECIAL CULVERT

SC  CUNO       CUNV       ENTLC      COFQ       RDLEN      RISE       SPAN       CULVLN     CHRT       SCL        ELCHU      ELCHD
     1          .014        .50       3.00        .00       6.00      10.00     165.00     10         1         725.00     725.00

CHART 10 - BOX CULVERT; 90-DEGREE HEADWALL; CHAMFERED OR BEVELED INLET EDGES
SCALE  1 - INLET EDGES CHAMFERED 3/4-INCH

5130, EGIC=  800.16..MAY BE TOO LARGE IF INLET CONTROLS.
5135, EGOC=  787.96 ..MAY BE TOO LARGE IF OUTLET CONTROLS.
*SECNO 4216.000

SPECIAL CULVERT INLET CONTROL + WEIR FLOW, EG =    733.77
SPECIAL CULVERT

     EGIC       EGOC        H4       QWEIR      QCULV       VCH       ACULV      ELTRD     WEIRLN
   800.16     787.96      1.31       1972.       622.      9.278       60.0     732.40       580.

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3710 WSEL ASSUMED BASED ON MIN DIFF
  4216.000       8.59     733.59        .00        .00     734.10        .51        .00        .00     725.00
    2600.0      431.2      796.5     1372.3       95.1       85.9      565.7      180.4      109.1     725.00
       .81       4.53       9.28       2.43       .035       .030       .035       .000     725.00    9956.22
   .001995       175.       175.       175.         20          0          0        .00     555.41   10511.63

*SECNO 4287.000

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.86

  4287.000       7.58     734.38        .00        .00     734.52        .14        .31        .11     729.00
    2600.0     1036.8     1026.5      536.7      355.7      277.5      339.1      186.2      111.8     732.60
       .84       2.92       3.70       1.58       .035       .030       .035       .000     726.80    9910.14
   .000577       420.       375.       195.          2          0          0        .00     426.51   10336.65

*SECNO 4315.000
1
  15DEC92      12:25:10                                                                                                PAGE   15

    SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      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

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
  4315.000       7.41     737.21     737.21        .00     738.01        .80        .16        .33     732.00
    2600.0      722.7     1344.1      533.1      151.9      146.6      180.4      188.5      113.0     734.00
       .85       4.76       9.17       2.96       .035       .030       .035       .000     729.80    9911.00
   .003326        90.       148.       190.         20          6          0        .00     254.33   10165.33

SPECIAL BRIDGE

SB  XK         XKOR       COFQ       RDLEN      BWC        BWP        BAREA      SS         ELCHU      ELCHD
     .00        1.60       3.00     1000.00      19.00       .00      129.00       .00     730.10     729.80

*SECNO 4331.000

3301 HV CHANGED MORE THAN HVINS

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  3.45

PRESSURE AND WEIR FLOW,  Weir Submergence Based on TRAPEZOIDAL Shape

  EGPRS      EGLWC       H3       QWEIR      QPR        BAREA      TRAPEZOID AREA      ELLC       ELTRD      WEIRLN
  747.30     742.39      .00       1246.      1367.      129.       129.                736.90     739.10     1608.
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 4331.000      9.84    739.94       .00       .00    740.00       .06      1.99       .00    732.30
   2600.0     894.4     628.8    1076.8     725.1     195.2     769.0     190.7     114.8    734.30
      .86      1.23      3.22      1.40      .035      .030      .035      .000    730.10   9229.60
  .000280       86.       86.       86.         2         0         6       .00   1573.91  10803.51

*SECNO 4395.000

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  2.09

 4395.000     10.54    740.04       .00       .00    740.05       .01       .04       .01    737.10
   2600.0    1190.4     547.1     862.5    1789.5     421.0    1172.5     209.7     125.1    734.70
      .97       .67      1.30       .74      .035      .035      .035      .000    729.50   9248.54
  .000064      325.      338.      325.         2         0         0       .00   1181.87  10430.42
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   SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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 4429.000
3280 CROSS SECTION   4429.00 EXTENDED       .96 FEET

 4429.000     10.45    740.05       .00       .00    740.06       .01       .01       .00    729.60
   2600.0    1997.3      75.1     527.6    2564.9      62.8     850.1     223.3     129.0    729.60
     1.04       .78      1.20       .62      .035      .035      .035      .000    729.60   9470.00
  .000035      170.      180.      175.         1         0         0       .00    800.00  10270.00


SPECIAL CULVERT

SC  CUNO      CUNV      ENTLC     COFQ      RDLEN     RISE      SPAN      CULVLN    CHRT      SCL       ELCHU     ELCHD
     1         .014       .50      3.00       .00      3.00      6.00     95.30     10        1        731.90    729.60

CHART 10 - BOX CULVERT; 90-DEGREE HEADWALL; CHAMFERED OR BEVELED INLET EDGES
SCALE  1 - INLET EDGES CHAMFERED 3/4-INCH

5130, EGIC= 1516.64..MAY BE TOO LARGE IF INLET CONTROLS.
5135, EGOC= 1402.51 ..MAY BE TOO LARGE IF OUTLET CONTROLS.
*SECNO 4449.000

SPECIAL CULVERT INLET CONTROL + WEIR FLOW, EG =    745.04

3265 DIVIDED FLOW

02 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.40

SPECIAL CULVERT

    EGIC      EGOC       H4     QWEIR     QCULV      VCH     ACULV     ELTRD    WEIRLN
  1516.64   1402.51     4.98     2289.      306.      .993      18.0    743.60     2405.


 4449.000     13.13    745.03       .00       .00    745.04       .01      4.98       .00    731.90
   2600.0    1438.5      78.3    1083.2    2026.8      78.8    2326.4     232.8     133.2    731.90
     1.09       .71       .99       .47      .035      .035      .035      .000    731.90   8868.23
  .000018      105.      105.      105.         0         0         0       .00   2675.29  12614.86


*SECNO 4477.000
 4477.000     12.53    745.03       .00       .00    745.05       .01       .00       .00    734.60
   2600.0    1429.8     252.6     917.6    1766.2     236.1    1285.6     244.1     138.7    734.60
     1.13       .81      1.07       .71      .035      .035      .035      .000    732.50   9731.57
  .000025       95.      150.      160.         0         0         0       .00    637.69  10369.26

CCHV=     .100 CEHV=     .300
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   SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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 4537.000
3280 CROSS SECTION   4537.00 EXTENDED      4.79 FEET

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =   .36

 4537.000     11.19    744.99       .00       .00    745.10       .11       .02       .03    736.00
   3500.0    1679.9     481.9    1338.2     616.1     176.2     539.1     260.8     141.7    736.40
     1.16      2.73      2.74      2.48      .035      .045      .045      .000    733.80   9901.70
  .000348      315.      315.      315.         2         0         0       .00    179.50  10081.20

CCHV=     .300 CEHV=     .500
*SECNO 4563.000
3280 CROSS SECTION   4563.00 EXTENDED       .99 FEET
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3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = .70

4563.000	10.39	744.99	.00	.00	745.24	.25	.07	.07	734.60
3500.0	245.2	3048.1	206.7	80.8	727.0	85.3	264.4	142.2	734.60
1.17	3.03	4.19	2.42	.035	.045	.045	.000	734.60	9950.00
.000711	200.	140.	80.	2	0	0	.00	100.00	10050.00

SPECIAL BRIDGE

SB	XK	XKOR	COFQ	RDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
	1.25	1.60	3.00	700.00	70.00	7.50	380.00	.00	734.90	734.60

*SECNO 4568.000
3280 CROSS SECTION 4568.00 EXTENDED .88 FEET

PRESSURE AND WEIR FLOW, Weir Submergence Based on TRAPEZOIDAL Shape

EGPRS	EGLWC	H3	QWEIR	QPR	BAREA	TRAPEZOID AREA	ELLC	ELTRD	WEIRLN
747.09	745.30	.06	1905.	1619.	380.	381.	741.00	744.50	700.

4568.000	10.28	745.18	.00	.00	745.44	.26	.20	.00	734.90
3500.0	242.5	3052.7	204.8	79.2	719.5	83.7	264.9	142.2	734.90
1.17	3.06	4.24	2.45	.035	.045	.045	.000	734.90	9950.00
.000739	23.	23.	23.	2	0	3	.00	100.00	10050.00

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	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 4591.000
3280 CROSS SECTION 4591.00 EXTENDED 3.60 FEET

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 2.05

4591.000	10.50	745.50	.00	.00	745.54	.04	.04	.07	737.60
3500.0	1053.9	396.8	2049.3	526.5	208.5	1659.6	269.9	143.1	736.50
1.20	2.00	1.90	1.23	.035	.045	.045	.000	735.00	9907.00
.000175	70.	124.	160.	2	0	0	.00	471.00	10378.00

CCHV= .100 CEHV= .300
*SECNO 4727.000
3280 CROSS SECTION 4727.00 EXTENDED .22 FEET

4727.000	8.32	745.72	.00	.00	746.77	.05	.22	.00	739.60
3500.0	745.4	606.4	2148.2	343.3	298.9	1296.7	316.9	155.6	740.40
1.34	2.17	2.03	1.66	.035	.050	.035	.000	737.40	9870.90
.000335	980.	1003.	925.	2	0	0	.00	689.83	10560.73

*SECNO 4911.000

3265 DIVIDED FLOW

3301 HV CHANGED MORE THAN HVINS

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

4911.000	6.80	749.10	749.10	.00	750.04	.94	.86	.27	744.70
3500.0	369.3	1447.6	1683.1	67.4	176.5	214.5	342.2	166.1	745.50
1.37	5.48	8.20	7.84	.035	.050	.035	.000	742.30	9819.31
.008045	955.	972.	895.	20	12	0	.00	307.05	10127.61

*SECNO 5137.000

3301 HV CHANGED MORE THAN HVINS

5137.000	6.71	753.31	.00	.00	753.41	.10	3.29	.08	750.80
1400.0	290.7	1042.5	66.8	185.1	372.4	60.2	356.6	174.0	751.60
1.50	1.57	2.80	1.11	.035	.035	.035	.000	746.60	9812.50
.000692	1110.	1193.	1140.	5	0	0	.00	297.31	10109.81

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	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

CCHV= .300 CEHV= .500
*SECNO 5200.000
3280 CROSS SECTION 5200.00 EXTENDED .20 FEET

3301 HV CHANGED MORE THAN HVINS

5 20 TRIALS ATTEMPTED WSEL,CWSEL
3 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 770.30 ELREA= 770.30

5200.000	5.00	755.50	755.50	.00	758.02	2.52	.56	1.21	750.50
1400.0	.0	1400.0	.0	.0	109.9	.0	359.1	175.1	750.50
1.51	.00	12.74	.00	.000	.035	.000	.000	750.50	9989.00
.010544	200.	333.	400.	20	15	0	.00	22.00	10011.00

SPECIAL CULVERT

SC	CUNO	CUNV	ENTLC	COFQ	RDLEN	RISE	SPAN	CULVLN	CHRT	SCL	ELCHU	ELCHD
	2	.014	.40	3.00	500.00	6.80	10.00	294.00	8	1	751.20	750.50

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

*SECNO 5258.000

SPECIAL CULVERT INLET CONTROL
EGIC = 760.777 EGOC = 760.186 PCWSE= 755.495 ELTRD= 771.800

3280 CROSS SECTION 5258.00 EXTENDED 3.96 FEET

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 2.55

SPECIAL CULVERT

EGIC	EGOC	H4	QWEIR	QCULV	VCH	ACULV	ELTRD	WEIRLN
760.78	760.19	2.76	0.	1400.	7.267	136.0	771.80	0.

1

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	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

5 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 771.30 ELREA= 771.30

5258.000	8.76	759.96	.00	.00	760.78	.82	2.76	.00	751.20
1400.0	.0	1400.0	.0	.0	192.6	.0	360.2	175.2	751.20
1.52	.00	7.27	.00	.000	.035	.000	.000	751.20	9989.00
.001623	304.	304.	304.	3	0	0	.00	22.00	10011.00

*SECNO 5308.000
3280 CROSS SECTION 5308.00 EXTENDED 1.04 FEET

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 6.60

5308.000	9.04	761.04	.00	.00	761.05	.01	.03	.24	756.00
1400.0	81.2	1204.6	114.2	151.8	1266.4	212.5	365.6	176.2	756.00
1.60	.53	.95	.54	.035	.035	.035	.000	752.00	9850.00
.000037	320.	264.	180.	2	0	0	.00	300.00	10150.00

1

THIS RUN EXECUTED 15DEC92 12:25:27

****
HEC-2 WATER SURFACE PROFILES

Version 4.6.2; May 1991
****

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

SCOTT AVENUE WASH

SUMMARY PRINTOUT

SECNO	ELMIN	CWSEL	Q	VCH	DIFWSX	TOPWID	DEPTH	SSTA	ENDST	QLOB	QROB	ELTRD
1884.000	662.10	666.32	1500.00	5.45	.00	338.05	4.22	9785.17	10123.22	294.93	54.98	.00
2070.000	666.80	671.73	1900.00	7.57	5.41	218.04	4.93	9956.82	10174.87	.00	375.32	.00

	2261.000	672.00	676.71	2600.00	5.99	4.98	517.40	4.71	9922.26	10439.67	3.20	730.62	.00
	2505.000	680.10	683.28	2600.00	5.00	6.57	415.54	3.18	9978.40	10393.93	315.51	461.75	.00
*	2677.000	683.30	688.72	2600.00	2.55	5.44	690.03	5.42	9909.97	10600.00	2.95	1622.06	.00
*	2867.000	689.50	694.84	2600.00	.95	6.13	813.06	5.34	9965.44	10778.51	.22	2459.35	.00
*	3105.000	695.20	699.29	2600.00	1.18	4.44	472.42	4.09	9981.24	10453.65	.00	2515.65	.00
*	3292.000	701.30	705.68	2600.00	6.63	6.40	188.79	4.38	9926.75	10115.55	728.69	189.34	.00
*	3492.000	707.10	712.79	2600.00	2.97	7.10	212.25	5.69	9856.72	10068.96	1566.09	485.57	.00
	3570.000	708.90	713.96	2600.00	2.90	1.17	285.29	5.06	9952.98	10238.27	166.88	2059.97	.00
*	3677.000	712.00	716.37	2600.00	3.58	2.41	277.22	4.37	9783.42	10060.65	1860.78	333.43	.00
*	3772.000	713.80	719.18	2600.00	3.11	2.81	318.52	5.38	9955.42	10273.94	271.10	1759.45	.00
	3863.000	717.00	721.20	2600.00	4.80	2.02	239.23	4.20	9806.66	10045.88	1794.42	3.89	.00
	3957.000	718.60	724.06	2600.00	6.44	2.86	419.62	5.46	9705.27	10124.89	245.27	1667.22	.00
	4053.000	720.80	726.89	2600.00	3.10	2.83	331.13	6.09	9802.60	10133.73	667.42	1140.04	.00
	4147.000	723.80	729.08	2600.00	8.35	2.20	226.56	5.28	9980.99	10252.49	72.64	1563.90	.00
*	4156.000	724.90	731.18	2600.00	8.61	2.10	331.18	6.28	9995.00	10335.75	.00	2102.84	.00

	SECNO	ELMIN	CWSEL	Q	VCH	DIFWSX	TOPWID	DEPTH	SSTA	ENDST	QLOB	QROB	ELTRD
*	4183.000	724.90	732.33	2600.00	1.73	1.15	590.05	7.43	9843.29	10433.34	104.41	2375.29	.00
*	4216.000	725.00	733.59	2600.00	9.28	1.25	555.41	8.59	9956.22	10511.63	431.20	1372.28	732.40
*	4287.000	726.80	734.38	2600.00	3.70	.79	426.51	7.58	9910.14	10336.65	1036.83	536.70	.00
*	4315.000	729.80	737.21	2600.00	9.17	2.83	254.33	7.41	9911.00	10165.33	722.73	533.13	.00
*	4331.000	730.10	739.94	2600.00	3.22	2.73	1573.91	9.84	9229.60	10803.51	894.36	1076.85	739.10
*	4395.000	729.50	740.04	2600.00	1.30	.10	1181.87	10.54	9248.54	10430.42	1190.37	862.54	.00
	4429.000	729.60	740.05	2600.00	1.20	.01	800.00	10.45	9470.00	10270.00	1997.26	527.62	.00
*	4449.000	731.90	745.03	2600.00	.99	4.98	2675.29	13.13	8868.23	12614.86	1438.48	1083.21	743.60
	4477.000	732.50	745.03	2600.00	1.07	.00	637.69	12.53	9731.57	10369.26	1429.75	917.61	.00
	4537.000	733.80	744.99	3500.00	2.74	-.05	179.50	11.19	9901.70	10081.20	1679.89	1338.17	.00
*	4563.000	734.60	744.99	3500.00	4.19	.00	100.00	10.39	9950.00	10050.00	245.18	206.68	.00
	4568.000	734.90	745.18	3500.00	4.24	.19	100.00	10.28	9950.00	10050.00	242.53	204.80	744.50
*	4591.000	735.00	745.50	3500.00	1.90	.33	471.00	10.50	9907.00	10378.00	1053.94	2049.28	.00
	4727.000	737.40	745.72	3500.00	2.03	.21	689.83	8.32	9870.90	10560.73	745.36	2148.21	.00
*	4911.000	742.30	749.10	3500.00	8.20	3.38	307.05	6.80	9819.31	10127.61	369.31	1683.13	.00
	5137.000	746.60	753.31	1400.00	2.80	4.21	297.31	6.71	9812.50	10109.81	290.66	66.83	.00
*	5200.000	750.50	755.50	1400.00	12.74	2.18	22.00	5.00	9989.00	10011.00	.00	.00	.00
*	5258.000	751.20	759.96	1400.00	7.27	4.46	22.00	8.76	9989.00	10011.00	.00	.00	771.80
*	5308.000	752.00	761.04	1400.00	.95	1.08	300.00	9.04	9850.00	10150.00	81.19	114.22	.00

SUMMARY OF ERRORS AND SPECIAL NOTES

```
CAUTION SECNO=   2070.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=   2070.000  PROFILE=  1  MINIMUM SPECIFIC ENERGY

WARNING SECNO=   2261.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=   2505.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=   2677.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO=   2867.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=   2867.000  PROFILE=  1  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=   3105.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=   3105.000  PROFILE=  1  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=   3105.000  PROFILE=  1  20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO=   3292.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=   3292.000  PROFILE=  1  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=   3292.000  PROFILE=  1  20 TRIALS ATTEMPTED TO BALANCE WSEL
```

```
WARNING SECNO=   3492.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=   3677.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=   3772.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO=   4156.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=   4156.000  PROFILE=  1  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=   4156.000  PROFILE=  1  20 TRIALS ATTEMPTED TO BALANCE WSEL

WARNING SECNO=   4183.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO=   4216.000  PROFILE=  1  WSEL ASSUMED BASED ON MIN DIFF
CAUTION SECNO=   4216.000  PROFILE=  1  20 TRIALS ATTEMPTED TO BALANCE WSEL

WARNING SECNO=   4287.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO=   4315.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=   4315.000  PROFILE=  1  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=   4315.000  PROFILE=  1  20 TRIALS ATTEMPTED TO BALANCE WSEL

WARNING SECNO=   4331.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=   4395.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=   4449.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=   4537.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=   4563.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
1
   15DEC92       12:25:10                                                                    PAGE   24


WARNING SECNO=   4591.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO=   4911.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=   4911.000  PROFILE=  1  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=   4911.000  PROFILE=  1  20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO=   5200.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=   5200.000  PROFILE=  1  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=   5200.000  PROFILE=  1  20 TRIALS ATTEMPTED TO BALANCE WSEL

WARNING SECNO=   5258.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=   5308.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
```

```
*****************************************
*  HEC-2 WATER SURFACE PROFILES          *
*                                        *
*  Version   4.6.2;  May 1991            *
*                                        *
*  RUN DATE    15DEC92    TIME   12:41:20 *
*****************************************
```

```
****************************************
*  U.S. ARMY CORPS OF ENGINEERS        *
*  HYDROLOGIC ENGINEERING CENTER       *
*  609 SECOND STREET, SUITE D          *
*  DAVIS, CALIFORNIA 95616-4687        *
*          (916) 756-1104              *
****************************************
```

```
X     X  XXXXXXX   XXXXX              XXXXX
X     X  X        X     X            X     X
X     X  X        X                  X
XXXXXXX  XXXX     X           XXXXX   XXXXX
X     X  X        X                  X
X     X  X        X     X            X
X     X  XXXXXXX   XXXXX              XXXXXXX
```

1

15DEC92 12:41:20 PAGE 1

THIS RUN EXECUTED 15DEC92 12:41:20

```
************************************
HEC-2 WATER SURFACE PROFILES

Version   4.6.2;  May 1991
************************************
```

```
T1      FLOOD CONTROL DISTRICT OF MARICOPA COUNTY - CONTRACT FCD 90-67
T2      GILA BEND AREA FLOODPLAIN DELINEATION STUDY BY BURGESS & NIPLE
T3      SCOTT AVENUE 100 YEAR FLOODWAY          J. MISCHLER - (602) 244-8100

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ
                2                                                                   676.71

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE
     1                  -1                                                                      15

J3  VARIABLE CODES FOR SUMMARY PRINTOUT
     38        42         1        53        54         8        43        26        10        51
     46        40        41         0       110         0       200

       SECTIONS ARE LABELED AS  RIVER MILES * 1000, i.e., SECTION 1884 IS AT
       RIVER MILE 1.884 UPSTREAM OF THE CONFLUENCE WITH THE GILA RIVER.

       STARTING WATER SURFACE ELEVATION IS OBTAINED FROM THE NATURAL PROFILE
       RUN.

NC    0.06      0.03      0.03       0.1       0.3
QT       2      2600      2600

       BEGIN DETAILED STUDY

ET                          4.1      9935     10093
X1    2261        13    9934.6   10041.7
GR   677.9    9809.7     677.5    9863.9     677.3    9911.9     676.0    9934.6     673.5    9954.0
GR   673.5    9974.8     672.2    9988.5     672.0   10000.0     674.5   10016.1     675.0   10029.0
GR   675.2   10041.7     677.2     10570     679.8     11050

NC    0.04      0.04      0.04
ET                          4.1      9980     10260
X1    2505        23   10073.2   10278.0     890.0    1200.0    1288.0
X3      10
GR   683.5    9977.4     681.1    9988.5     683.2    9999.7     682.0   10000.0     682.6   10048.2
GR   682.2   10073.2     680.1   10086.6     681.6   10110.9     682.1   10160.0     681.6   10181.7
GR   680.5   10189.7     681.9   10212.1     681.7   10242.4     680.6   10252.4     682.5   10278.0
GR   682.0   10299.8     681.9   10313.2     682.2   10344.6     682.1   10375.9     684.3   10409.4
GR   687.9   10440.9     690.2   10500.5     691.3   10562.2
```

1

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```
NC   0.035     0.035      0.07
ET                         9.1       4.1      9913     10325                                 9718.4   10600.0
X1    2677        32    9917.8   10061.9     850.0     970.0     908.0
X3      10
GR   695.3    9718.4     694.8    9764.3     693.9    9813.6     692.2    9861.7     690.4    9888.6
GR   688.1    9917.8     685.5    9930.4     685.2    9936.7     686.5    9944.5     686.4    9969.4
GR   685.2    9990.7     683.3    9997.6     684.1   10000.0     687.3   10014.1     686.7   10026.8
GR   685.2   10042.3     687.6   10061.9     687.9   10107.3     687.9   10138.6     688.2   10209.1
GR   688.3   10276.5     687.9   10359.6     687.6   10427.5     687.1   10481.5     687.2   10541.7
GR   686.5   10599.9     687.0   10634.4     685.6   10660.6     688.0   10688.9     690.0   10714.7
GR   694.3   10739.7     696.4   10789.5

ET                          4.1      9969     10180
X1    2867        23    9969.7   10021.7     995.0     860.0    1003.0
X3      10
GR   699.7    9878.2     698.2    9923.8     694.5    9969.7     691.4    9987.9     689.5    9999.8
GR   689.6   10000.0     693.3   10016.1     694.7   10021.7     692.7   10043.5     692.8   10071.2
GR   692.6   10125.1     691.8   10196.6     691.9   10262.7     692.3   10322.6     693.1   10390.0
```

```
GR    692.3    10455.6     692.9    10515.9     693.5    10562.6     692.7    10613.8     693.8    10668.8
GR    693.9    10730.4     695.0    10786.5     696.7    10852.9
ET                          4.1       9982      10210
X1     3105         29    9980.2    10043.1     930.0     1030.0    1257.0
X3       10
GR    704.6     9710.5     702.3     9748.4     700.6     9783.0     699.5     9833.9     700.0     9892.8
GR    698.7     9948.3     699.4     9980.2     697.8     9994.8     695.2    10000.0     698.3    10011.9
GR    699.2    10043.1     696.8    10092.7     697.3    10123.0     695.3    10143.5     698.0    10164.5
GR    696.8    10200.6     697.2    10239.1     698.6    10262.8     696.9    10310.4     697.7    10363.8
GR    697.1    10381.2     697.9    10422.1     700.0    10469.9     699.3    10504.8     699.5    10544.9
GR    701.1    10584.1     702.8    10629.6     703.9    10679.6     704.5    10734.6

ET                          4.1       9980      10090
X1     3292         20    9981.1    10084.8     960.0      950.0     987.0
GR    711.0     9780.0     710.0     9845.2     708.6     9876.1     707.5     9902.7     705.5     9929.2
GR    704.6     9955.0     702.7     9964.4     704.5     9981.1     703.7     9998.1     702.0    10000.0
GR    703.4    10012.1     704.1    10040.5     702.7    10055.8     701.3    10065.5     703.9    10084.8
GR    705.4    10108.9     707.1    10148.6     707.4    10186.0     707.4    10228.1     708.5    10255.2
```

SOUTH INDIAN ROAD IS AT RM 3.466 (LOW CROSSING - NO STRUCTURE)

```
ET                          4.1       9910      10030
X1     3492         19    9987.7    10028.1     970.0     1045.0    1056.0
GR    713.4     9825.5     713.1     9847.5     712.4     9867.9     710.7     9889.3     709.7     9902.5
GR    709.0     9908.6     709.9     9920.1     709.7     9947.4     709.5     9968.2     708.4     9979.4
GR    709.6     9987.7     708.5     9995.7     707.1    10000.0     707.1    10006.6     708.2    10014.8
GR    709.3    10028.1     708.8    10040.8     710.7    10055.9     713.3    10072.2
```



```
ET                          4.1       9984      10124
X1     3570         26    9984.3    10018.5     335.0      425.0     412.0
GR    715.8     9895.9     715.6     9925.3     714.7     9946.3     712.4     9967.0     711.3     9984.3
GR    710.3     9993.4     708.9    10000.0     709.7    10007.4     711.6    10018.5     711.4    10039.8
GR    711.4    10062.0     711.0    10072.0     711.7    10095.8     712.0    10122.0     711.3    10136.6
GR    710.6    10144.0     711.4    10152.8     711.3    10167.4     712.0    10186.6     712.4    10195.9
GR    712.5    10209.4     712.6    10221.3     714.0    10238.8     716.1    10251.8     716.1    10270.1
GR    716.2    10277.5

ET                          4.1       9900      10030
X1     3677         26    9982.3    10027.8     535.0      495.0     565.0
GR    718.4     9723.0     718.4     9743.7     717.5     9761.6     716.4     9782.2     715.9     9802.2
GR    715.5     9834.7     715.1     9873.6     714.1     9903.9     714.3     9920.1     714.0     9931.2
GR    713.5     9948.3     713.7     9953.4     714.2     9962.8     713.6     9969.9     714.8     9982.3
GR    714.4     9993.2     713.5     9998.3     712.0    10000.0     712.9    10007.1     714.3    10016.5
GR    714.6    10027.8     712.8    10034.2     714.9    10043.4     716.8    10065.7     717.7    10087.2
GR    718.2    10109.0

ET                          4.1       9990      10110
X1     3772         25    9992.2    10041.8     500.0      420.0     502.0
GR    721.6     9915.5     720.8     9942.9     718.6     9960.0     716.7     9978.4     716.6     9992.2
GR    716.3    10000.0     714.4    10009.0     713.8    10012.3     714.6    10020.6     716.1    10029.3
GR    716.6    10041.8     716.3    10055.5     716.1    10076.4     715.7    10087.8     715.3    10091.7
GR    716.6    10098.8     716.1    10116.2     716.8    10137.5     717.6    10144.8     717.5    10152.9
GR    717.4    10158.2     718.5    10167.9     718.7    10185.0     718.7    10204.0     720.0      10390

NC    0.035     0.035      0.04
ET                          4.1       9894      10034
X1     3863         25    9962.1    10033.4     450.0      480.0     480.0
GR    722.7     9782.0     721.5     9802.9     719.7     9825.6     718.6     9845.6     718.3     9861.0
GR    718.6     9889.9     718.6     9918.7     718.8     9935.6     720.2     9944.1     720.3     9962.1
GR    719.8     9976.6     718.6     9986.0     718.0     9996.3     717.9    10000.0     717.0    10004.9
GR    717.3    10008.2     718.5    10018.4     720.7    10033.4     721.5    10053.3     722.4    10065.0
GR    723.1    10076.4     723.6    10099.6     724.2    10128.0     724.7    10154.3     724.7    10170.8
```

RICHARDS STREET IS AT RM 3.889 (LOW CROSSING - NO STRUCTURE)

```
NC    0.035     0.035      0.05
ET                          4.1       9989      10080
X1     3957         20    9989.0    10013.2     477.0      520.0     496.0
GR    726.0      9550     724.0      9710      723.8     9917.1     723.7     9956.8     722.8     9979.8
GR    720.5     9989.0    719.4     9999.3     718.6    10000.0     719.2    10006.3     720.7    10013.2
GR    721.1    10036.5     721.2    10064.6     721.8    10086.9     723.3    10109.0     723.9    10121.8
GR    724.4    10131.5     724.6    10142.0     725.8    10156.9     726.5    10180.7     726.3    10182.2
```

HUNT STREET IS AT RM 4.005 (LOW CROSSING - NO STRUCTURE)


```
NC    0.035     0.035      0.07
ET                          4.1       9940      10060
X1     4053         28    9962.0    10031.7     535.0      466.0     507.0
GR    730.3     9700.1     729.6     9718.6     729.5     9726.6     729.8     9736.0     729.6     9746.0
GR    729.5     9751.7     728.4     9759.5     727.3     9778.4     726.9     9802.4     725.9     9834.7
GR    725.8     9867.8     725.4     9900.1     725.1     9933.5     724.9     9962.0     723.5     9981.3
GR    722.8     9994.6     722.7    10000.0     720.8    10004.2     720.8    10006.8     723.1    10014.2
GR    724.1    10031.7     723.8    10050.2     723.6    10075.3     724.7    10093.2     725.9    10114.6
GR    727.5    10145.4     728.1    10166.1     729.4    10176.9
```

PAPAGO STREET IS AT RM 4.133 (LOW CROSSING - NO STRUCTURE)

```
NC    0.035     0.035      0.04
ET                          4.1       9981      10090
X1     4147         29    9990.4    10015.5     455.0      530.0     496.0
```

```
GR    731.5     9962.6     731.0     9975.5     728.8     9990.4     724.3     9999.2     723.8    10000.0
      723.9    10010.2     725.8    10015.5     726.0    10025.1     726.0    10050.2     726.6    10069.0
      727.6    10094.9     729.2    10114.2     729.2    10135.4     729.2    10142.3     729.2    10153.6
      728.8    10164.6     728.9    10180.1     729.1    10188.3     728.3    10207.8     728.5    10228.7
GR    729.1    10253.1     729.6    10272.2     729.8    10290.7     730.0    10318.1     730.0    10336.0
GR    730.4    10353.1     730.1    10371.1     730.8    10399.2     731.1    10408.1
```

A CONCRETE BOX CULVERT CONVEYS SCOTT AVENUE WASH BENEATH PIMA STREET (U.S. ROUTE 80) AND A PROPERTY ON THE NORTH SIDE OF PIMA STREET.

AT THE DOWNSTREAM END, THE CULVERT OUTLETS INTO A U-SHAPED CONCRETE CHANNEL WHICH EXTENDS ANOTHER 140' DOWNSTREAM OF THE CULVERT.

SPECIAL CULVERT IS USED TO MODEL THE CULVERT. THE ACTUAL ELCHD WOULD HAVE BEEN 725.2, WHICH IS AN AVERAGE OF THE SEDIMENT ACROSS THE INVERT. SINCE SPECIAL CULVERT REQUIRES ZERO OR POSITIVE SLOPE, ELCHD HAS BEEN SET AT 725.0. THE CROSS SECTION REPRESENTS ACTUAL ELEVATIONS.

INCREASE EXPANSION/CONTRACTION COEFFICIENTS

SECTION 4156 IS AT THE DOWNSTREAM END OF THE U-SHAPED CONCRETE CHANNEL SEDIMENT IN THE BOTTOM HAS COVERED THE CONCRETE INVERT.

```
NC                                    0.3       0.5
ET                          4.1      9995     10200
X1    4156        12       9995   10005.1        60        60        50
GR     734      9760        732      9860       732      9915     731.2      9995     724.9    9995.1
GR   725.2     10000      726.3     10005     731.5   10005.1       729     10080       730     10200
GR     732     10430        734     10450
```

REPEAT SECTION 4157 AT THE DOWNSTREAM OUTLET OF THE CULVERT.
BECAUSE OF HEAVY BRUSH IN THE CHANNEL, USE N = 0.080


```
NC   0.035     0.035     0.080
ET                        4.11      9995     10200
X1    4183                             140       110       140
X3      10                                                731.8     731.0
```

RETURN TO NORMAL N VALUE IN THE CHANNEL
SECTION GEOMETRY IS FROM FIELD SURVEY (CHANNEL) AND TOPO MAP (OVERBANK)

```
NC   0.035     0.035     0.03
SC   1.014       0.5        3         0         6        10       165      10.1     725.0     725.0
ET                        4.11      9995     10200
X1    4216        11      9995     10005       175       175       175
```

ELTRD = 732.2 + 0.2' HV = 732.4

```
X2                           2                732.4
X3      10                                                732.8     732.2
BT      -9      9765     735.1                 9950       734                9980     732.8
BT              10000     732.8                10020     732.8               10070       733
BT              10150     732.2                10355     732.4               10540     733.8
GR   735.1       9765       734      9950       732      9980       725      9995       725     10000
GR     725      10005       732     10020       733     10070     732.2     10150     732.4     10355
GR   733.8      10540
```

KEEP EXPANSION/CONTRACTION COEFFICIENTS HIGH THROUGH AREA OF FREQUENT STRUCTURES

```
ET                          4.1      9920     10120
X1    4287        27    9987.2   10037.0       420       195       375
X3      10
GR   737.3     9904.0     731.3    9916.6     729.6    9932.7     730.2    9941.9     728.7    9952.1
GR   728.7     9966.3     729.3    9975.2     729.0    9987.2     728.3    9993.0     727.1    9998.7
GR   726.8    10000.0     728.2   10011.9     728.6   10021.9     731.8   10033.0     732.6   10037.0
GR   731.0    10049.2     731.3   10050.0     731.4   10067.1     731.8   10088.8     731.9   10101.1
GR   732.3    10112.6     732.6   10126.0     732.8   10139.0     733.6   10157.3     733.8   10186.9
GR   733.8    10200.3     734.6     10390
```

SCOTT AVE WASH IS CONVEYED UNDER THE SOUTHERN PACIFIC RAILROAD THROUGH A TIMBER BRIDGE. THE STREAM BED ALSO SERVES AS A MEANS OF PEDESTRIAN AND VEHICULAR ACCESS TO HOMES SOUTH OF THE TRACKS.

SPECIAL BRIDGE IS USED TO MODEL THE STRUCTURE.
THE SECTION AT THE DOWNSTREAM FACE OF THE BRIDGE IS FROM FIELD SURVEY (CHANNEL) AND TOPO MAP DATA (OVERBANKS). ADD BT POINTS IN THE OVERBANKS.


```
ET                          4.11      9911     10150
X1    4315        16      9990     10010        90       190       148
X3      10                                                735       735
GR     740      9229     739.7      9230     739.4      9450     739.7     9630     739.1      9850
GR     736      9950       732      9990     729.8    9990.5     729.8   10009.5       734     10010
GR     736     10030       736     10120     739.2     10240     739.9     10420     739.9     10780
GR   740.3     11010
```

ELTRD = 739.1 = MIN TOP OF ROAD SINCE WEIR FLOW WILL OCCUR
PSXECE = 730.1 - 729.8 = 0.3 FT

```
         0       1.6         3      1000        19         0       129         0     730.1     729.8
                            4.11      9911     10150
      4331        16      9990     10010        86        86        86                0.3
X2                            1     736.9     739.1
X3        10                                                            739.1     739.2
BT        -9      9230     739.7                9450     739.4                9630     739.7
BT                9850     739.1               10000     739.9               10240     739.2
BT               10420     739.9               10780     739.9               11010     740.3
GR       740      9229     739.4      9230     739.1      9450     739.4      9630     738.8      9850
GR       736      9950       732      9990     729.8    9990.5     729.8   10009.5       734     10010
GR       736     10030       736     10120     738.9     10240     739.6     10420     739.6     10780
GR     740.0     11010
```

KEEP EXPANSION/CONTRACTION COEFFICIENTS HIGH THROUGH AREA OF FREQUENT STRUCTURES

```
NC     0.035     0.035     0.035
                           4.1      9900     10200
X1      4395        24    9967.8   10022.4       325       325       338
GR       742      9180       740      9250       738      9360       736      9390       736      9480
GR       738      9570       738      9670     737.1    9967.8     736.1    9971.3     731.4    9983.7
GR     731.1    9991.5     730.7    9995.6     729.5   10000.0     730.2   10005.0     732.2   10011.9
GR     734.7   10022.4     734.9   10035.9     735.4   10059.5     736.1   10083.3     736.5   10108.9
GR     736.7   10117.7       738     10380       740     10430       742     10450
```

SCOTT AVENUE WASH IS CONVEYED BENEATH THE GILA BEND CANAL THROUGH A CONCRETE BOX CULVERT.

SPECIAL CULVERT IS USED TO MODEL THE CULVERT.
THE SECTION AT THE DOWNSTREAM FACE OF THE BRIDGE IS FROM FIELD SURVEY (CHANNEL) AND TOPO MAP DATA (OVERBANKS).

```
ET                            4.11      9880     10300
X1      4429        10       9997     10003       170       175       180
X3        10                                                            735       732
GR     739.1      9470       736      9660       734      9700       734      9950       732      9980
GR     729.6      9997     729.6     10003       734     10015       736     10090       740     10270
```

ELTRD = 743.5 + 0.1 HV = 743.6

DEVELOP SECTION GEOMETRY FROM TOPO MAPPING AT THE UPSTREAM FACE.

```
SC     1.014       0.5         3         0         3         6      95.3      10.1     731.9     729.6
ET                            4.11      9880     10300
X1      4449        30       9997     10003       105       105       105
                               2                743.6
X3        10                                                            744.9     743.5
BT        -27      8260     745.6                8490     745.3                8730     745.2
BT                 8990     744.9                9250     745.2                9470     745.5
BT                 9710     745.7                9910     744.9               10003     744.7
BT                10150     745.7               10200       744               10220     742.7
BT                10230     742.7               10270       744               10610     745.5
BT                10880     745.5               10900     746.0               10952     746.0
BT                10970     744.9               11080     744.9               11490     744.2
BT                11830     744.6               12100     744.5               12390     744.9
BT                12710     745.1               12840     746.0               12940     746.7
GR     745.6      8260     745.3      8490     745.2      8730     744.9      8990     745.2      9250
GR     745.5      9470     745.7      9710       734      9910       734      9990     731.9      9997
GR     731.9     10003       734     10010       740     10150       743     10200     742.7     10220
GR     742.7     10230       744     10270     745.5     10610     745.5     10880     746.0     10900
GR     746.0     10952     744.9     10970     744.9     11080     744.2     11490     744.6     11830
GR     744.6     12100     744.9     12390     745.1     12710     746.0     12840     746.7     12940
```

REPEAT SECTION 150 FT UPSTREAM FOR CONTRACTION LOSSES
USE PSXECE = 0.6 FOR CHANNEL SLOPE (INTERPOLATED BETWEEN RM 4.449 AND RM 4.537)

DUE TO THE ATTENUATING EFFECT OF THE GILA BEND CANAL EMBANKMENT AND RELATIVELY SMALL CULVERT, 100-YEAR Q'S DOWNSTREAM ARE REDUCED FROM UPSTREAM Q'S.

```
ET                            4.1      9900     10100
X1      4477        11       9990     10010        95       160       150                0.6
GR     745.7      9710       734      9910       734      9990     731.9      9997     731.9     10003
GR       734     10010       740     10150       743     10200       743     10220       744     10270
GR     745.5     10610
```

RETURN EXPANSION/CONTRACTION COEFFICIENTS TO NORMAL VALUES.

```
NC     0.035     0.045     0.045       0.1       0.3
QT         2      3500      3500
ET                            4.1      9902     10070
X1      4537        14    9997.0   10014.8       315       315
GR     740.2    9901.7     739.3    9936.9     737.8    9969.2     736.7    9988.6     736.0    9997.0
GR     733.8   10000.0     734.2   10004.0     735.6   10008.4     736.4   10014.8     736.3   10029.8
GR     735.8   10046.6     736.4   10059.9     737.1   10068.9     742.0   10081.2
```

SCOTT AVENUE WASH IS CONVEYED BENEATH THE CORNELIA & GILA BEND RR BY A TIMBER BRIDGE.

SPECIAL BRIDGE IS USED TO MODEL THE STRUCTURE.
THE SECTION AT THE DOWNSTREAM FACE OF THE BRIDGE IS FROM FIELD SURVEY (CHANNEL) AND TOPO MAP DATA (OVERBANKS).

WIER FLOW IS NOT ANTICIPATED. IF IT OCCURS, THE EFFECTIVE LENGTH WILL BE ABOUT 700 FT, THEREFORE USE SB.4 = 700 FT.

INCREASE EXPANSION/CONTRACTION COEFFICIENTS FOR THE BRIDGE.

NC				0.3	0.5					
ET			4.11	9965	10035					
X1	4563	4	9965	10035	200	80	140			
X3	10							743	743	
GR	744.6	9950	734.6	9965	734.6	10035	744.0	10050		

ELTRD = 744.0 + 0.5 HV = 744.5
PSXECE = 0.3 FT

SB	1.25	1.6	3	700	70	7.5	380	0	734.9	734.6
ET			4.11	9965	10035					
X1	4568				23	23	23		0.3	
X2			1	741.0	744.5					
X3	10							744	744	

SECTION 4591 IS FROM FIELD SURVEYS MADE TO CHECK MAP ACCURACY.
THE ACTUAL SURVEY WAS SKEWED ABOUT 20 DEGREES LEFT FORWARD FROM THE POSITION SHOWN ON THE MAP. SINCE THE SKEW CORRECTION WOULD ONLY REDUCE STATIONS BY 6 PERCENT, IT HAS BEEN IGNORED.

THE SECTION IS ADDED TO COMPUTE CONTRACTION LOSSES.

ET			4.1	9970	10160					
X1	4591	14	9987	10009	70	160	124			
GR	743.4	9907	739.5	9923	738.3	9946	737.6	9987	736.5	9996
GR	735.0	9998	735.2	10007	736.5	10009	737.5	10026	738.7	10031
GR	740.6	10108	742.2	10187	741.6	10281	741.9	10378		

RETURN EXPANSION/CONTRACTION LOSSES TO NORMAL VALUES.

NC	0.035	0.035	0.05	0.1	0.3					
ET			4.1	9960	10180					
X1	4727	24	9973.3	10014.4	980.0	925.0	1003.0			
GR	745.5	9870.9	745.0	9899.1	742.2	9919.8	740.0	9939.0	740.1	9957.9
GR	739.6	9973.3	738.5	9980.6	737.4	9987.9	737.8	10000.0	740.4	10014.4
GR	740.7	10040.1	741.9	10078.7	741.9	10121.9	741.9	10159.4	742.9	10184.5
GR	743.0	10219.0	742.8	10241.2	743.2	10286.0	743.8	10332.8	744.5	10384.9
GR	744.4	10443.6	745.3	10483.7	745.3	10536.2	745.8	10565.5		

SCOTT AVENUE WASH CROSSES THE EXTENSION OF MAIN STREET AT RM 4.792 (LOW CROSSING - NO STRUCTURE)

ET			4.1	9945	10115					
X1	4911	15	9981.1	10013.1	955.0	895.0	972.0			
GR	749.3	9792.5	748.9	9845.5	749.1	9903.4	748.9	9952.7	746.8	9972.1
GR	744.7	9981.1	743.9	9990.9	742.3	10000.0	742.7	10005.9	745.5	10013.1
GR	745.0	10044.4	748.5	10078.2	749.1	10127.8	749.9	10201.9	750.3	10256.4

SCOTT AVENUE WASH CROSSES THE EXTENSION OF MARTIN AVENUE WHICH ROUGHLY FOLLOWS THE SECTION LINE BETWEEN SECTION 1 T6S, R5W AND SECTION 6 T6S, R4W. (LOW CROSSING - NO STRUCTURE)

REDUCE THE Q UPSTREAM BECAUSE 2100 CFS OF THE SCOTT AVENUE WASH PEAK FLOW RESULTS FROM WATER PASSING BENEATH I-8 THROUGH THE GRADE SEPARATION STRUCTURE OVER THIS ROAD. THE Q DOWNSTREAM IS 3500 CFS, THE Q UPSTREAM IS 1400 CFS.

NC	0.035	0.035	0.035							
QT	2	1400	1400							
ET			4.1	9940	10040					
X1	5137	14	9941.7	10034.8	1110.0	1140.0	1193.0			
GR	755.3	9756.1	752.5	9835.8	751.6	9891.8	750.8	9941.7	749.4	9968.5
GR	749.7	9979.6	749.2	9985.7	747.6	9991.3	746.6	10000.0	748.5	10010.5
GR	751.6	10034.8	752.8	10082.9	753.8	10135.8	754.3	10179.4		

SCOTT AVENUE WASH IS CONVEYED BENEATH INTERSTATE 8 BY A BOX CULVERT. SPECIAL CULVERT IS USED TO MODEL THE STRUCTURE.

SECTION 5200 IS BASED ON FIELD SURVEY DATA (CHANNEL) AND TOPO MAP DATA (OVERBANKS).

INCREASE EXPANSION/CONTRACTION COEFFICIENTS FOR THE BRIDGE.

NC				0.3	0.5					
ET			4.11	9989	10011					
X1	5200	5	9989	10011	200	400	333			
X3	10							770.3	770.3	
GR	755.3	9600	752	9970	750.5	9989	750.5	10011	756	10220

WIER FLOW IS NOT ANTICIPATED. USE ELTRD = 771.3 + 0.5 HV = 771.8
AND SC.5 ROLEN = 500 FT.
USE PSXECE = 0.7 WHEN THE SECTION IS REPEATED AT THE UPSTREAM FACE.

```
     2.014        0.4          3        500        6.8         10        294        8.1      751.2      750.5
                              4.11       9989      10011
     5258                                            304        304        304                   0.7
X2                                2                771.8
X3      10                                                                          771.3      771.3

        DEVELOP A SECTION UPSTREAM OF THE CULVERT TO COMPUTE CONTRACTION LOSSES.
        USE TOPO MAP DATA TO GENERATE GR POINTS.
1
   15DEC92       12:41:20                                                                                  PAGE   10


ET                                   4.1       9970      10030
X1     5308          5             9900      10080        320        180        264
GR      760       9850              756       9900        752      10000        756      10080        760      10150
1
   15DEC92       12:41:20                                                                                  PAGE   11

    SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      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


 *PROF 1
0

 CCHV=      .100 CEHV=      .300
 *SECNO 2261.000
   2261.000      4.71     676.71        .00     676.71     677.13        .42        .00        .00     676.00
     2600.0       3.2     1864.0      732.8        4.4      312.1      301.1         .0         .0     675.20
        .00       .73       5.97       2.43       .060       .030       .030       .000     672.00    9922.20
   .003510        0.         0.         0.          0          0          0        .00     518.37   10440.57


 FLOW DISTRIBUTION FOR SECNO=   2261.00          CWSEL=    676.71

 STA=    9922.     9935.    10042.    10441.
   PER Q=       .1      71.7      28.2
    AREA=      4.4     312.1     301.1
     VEL=       .7       6.0       2.4
   DEPTH=       .4       2.9        .8

 *SECNO 2505.000

 3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =   .64

 3685 20 TRIALS ATTEMPTED WSEL,CWSEL
   2505.000      3.18     683.28     682.98        .00     683.61        .33       6.47        .01     682.20
     2600.0     314.8     1824.0      461.1      93.1      363.8      124.9       16.9       12.8     682.50
        .08      3.38       5.01       3.69       .040       .040       .040       .000     680.10    9978.42
   .008495      890.      1288.      1200.         22         14          0        .00     415.46   10393.87


 FLOW DISTRIBUTION FOR SECNO=   2505.00          CWSEL=    683.28

 STA=    9978.     9989.    10000.    10048.    10073.    10278.    10300.    10313.    10345.    10376.    10394.
   PER Q=      1.5       1.8       6.1       2.7      70.2       3.0       2.8       5.8       5.1       1.0
    AREA=     11.0      12.7      47.5      22.0     363.8      22.5      17.8      38.6      35.4      10.6
     VEL=      3.6       3.7       3.4       3.1       5.0       3.5       4.1       3.9       3.7       2.4
   DEPTH=      1.1       1.1       1.0        .9       1.8       1.0       1.3       1.2       1.1        .6

 *SECNO 2677.000
1
   15DEC92       12:41:20                                                                                  PAGE   12

    SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      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


 3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.46

 3470 ENCROACHMENT STATIONS=     9718.4   10600.0  TYPE=      1  TARGET=      881.600
   2677.000      5.42     688.72        .00        .00     688.84        .12       5.21        .02     688.10
     2600.0       3.0     973.6     1623.5        2.4      382.2      543.3       33.0       24.7     687.60
        .17      1.22      2.85       2.99       .035       .070       .035       .000     683.30    9909.93
   .003973      850.       908.       970.          2          0          0        .00     690.06   10600.00


 FLOW DISTRIBUTION FOR SECNO=   2677.00          CWSEL=    688.72

 STA=    9910.     9918.    10062.    10107.    10139.    10209.    10277.    10360.    10428.    10482.    10542.    10600.    10600.
   PER Q=       .1      37.4       4.4       2.3       3.7       2.0       3.9       6.6       9.4      13.1      17.0        .0
    AREA=      2.4     382.2      44.0      25.6      47.2      31.6      51.5      65.8      74.0      94.5     108.8        .2
     VEL=      1.2       2.5       2.6       2.3       2.0       1.6       1.9       2.6       3.3       3.6       4.1        .6
   DEPTH=       .3       2.7       1.0        .8        .7        .5        .6       1.0       1.4       1.6       1.9       2.2

 *SECNO 2867.000
 7185 MINIMUM SPECIFIC ENERGY
 3720 CRITICAL DEPTH ASSUMED
   2867.000      5.34     694.84     694.84        .00     694.88        .04       1.00        .01     694.50
     2600.0        .2     140.5     2459.3         .7      147.1     1506.9       59.4       39.9     694.70
        .32       .30        .95       1.63       .035       .070       .035       .000     689.50    9965.45
   .000519      995.      1003.       860.          8          8          0        .00     813.02   10778.47
```

```
OW DISTRIBUTION FOR SECNO=   2867.00          CWSEL=    694.84

A=    9965.    9970.   10022.   10071.   10125.   10197.   10263.   10323.   10390.   10456.   10516.   10563.   10614.
  PER Q=      .0      5.4      4.5      7.1     13.4     15.3     12.0      8.9      8.7      8.6      4.0      4.8
   AREA=      .7    147.1     82.9    115.5    188.9    197.8    164.3    144.4    140.6    135.2     76.7     89.2
    VEL=      .3      1.0      1.4      1.6      1.8      2.0      1.9      1.6      1.6      1.7      1.3      1.4
  DEPTH=      .2      2.8      1.7      2.1      2.6      3.0      2.7      2.1      2.1      2.2      1.6      1.7

STA=   10614.   10669.   10778.
  PER Q=     4.4      2.8
   AREA=    87.6     83.8
    VEL=     1.3       .9
  DEPTH=     1.6       .8
```



```
   SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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 3105.000
3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       699.40 ELREA=       699.20

  3105.000      4.09    699.29    699.29       .00    699.46       .17      1.03       .04    699.40
    2600.0       .0      84.3    2515.7        .0      71.5     743.9      89.1      55.4    699.20
       .41       .00      1.18      3.38      .000      .070      .035      .000    695.20   9981.24
   .002611      930.     1257.     1030.        20        22         0       .00    472.40  10453.64

FLOW DISTRIBUTION FOR SECNO=   3105.00          CWSEL=    699.29

STA=    9981.   10043.   10093.   10123.   10144.   10165.   10201.   10239.   10263.   10310.   10364.   10381.   10422.
  PER Q=      3.2      6.3      9.7     10.6      8.8      8.7     12.7      3.4      8.1     14.0      4.2      9.0
   AREA=     71.5     63.8     67.7     61.2     55.4     68.1     88.0     32.8     73.1    106.0     32.8     73.0
    VEL=      1.2      2.6      3.7      4.5      4.1      3.3      3.8      2.7      2.9      3.4      3.3      3.2
  DEPTH=      1.2      1.3      2.2      3.0      2.6      1.9      2.3      1.4      1.5      2.0      1.9      1.8

STA=   10422.   10454.
  PER Q=     1.4
   AREA=    21.9
    VEL=     1.7
  DEPTH=      .7

ECNO 3292.000

01 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
  3292.000      4.39    705.69    705.69       .00    706.65       .97      6.00       .24    704.50
    2600.0     728.8    1681.8     189.4      70.6     253.7      25.9     102.0      62.7    703.90
       .44     10.33      6.63      7.31      .035      .070      .035      .000    701.30   9926.75
   .030006      960.      987.      950.        20         8         0       .00    188.82  10115.56

FLOW DISTRIBUTION FOR SECNO=   3292.00          CWSEL=    705.69
```



```
   SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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

STA=    9927.    9929.    9955.    9964.    9981.   10085.   10109.   10116.
  PER Q=      .0      3.4      8.6     16.0     64.7      7.2       .1
   AREA=      .2     16.4     19.1     34.8    253.7     24.9       .9
    VEL=     1.5      5.4     11.7     12.0      6.6      7.5      2.0
  DEPTH=      .1       .6      2.0      2.1      2.4      1.0       .1

*SECNO 3492.000

3301 HV CHANGED MORE THAN HVINS

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  3.38

  3492.000      5.69    712.79       .00       .00    713.07       .28      6.35       .07    709.60
    2600.0    1566.1     548.4     485.6     343.9     184.5     106.8     113.5      67.3    709.30
       .51      4.55      2.97      4.55      .035      .070      .035      .000    707.10   9856.73
   .002620      970.     1056.     1045.         7         0         0       .00    212.24  10068.96

FLOW DISTRIBUTION FOR SECNO=   3492.00          CWSEL=    712.79

STA=    9857.    9903.    9909.    9920.    9947.    9968.    9979.    9988.   10028.   10041.   10056.   10069.
  PER Q=      7.9      4.0      7.1     14.1     12.0      8.8      6.3     21.1      9.5      8.0      1.2
   AREA=     62.6     20.9     38.3     81.4     66.2     42.9     31.4    184.5     47.4     45.8     13.6
    VEL=      3.3      4.9      4.8      4.5      4.7      5.3      5.2      3.0      5.2      4.5      2.2
  DEPTH=      1.4      3.4      3.3      3.0      3.2      3.8      3.8      4.6      3.7      3.0      1.0
```

```
CNO 3570.000
570.000      5.06    713.96       .00       .00    714.21       .25      1.14       .00    711.30
 2600.0     166.9     373.1    2060.0      47.4     128.7     483.3     119.4      69.6    711.60
    .54      3.52      2.90      4.26      .035      .070      .035      .000    708.90   9952.98
.003239      335.      412.      425.         5         0         0       .00    285.29  10238.27

FLOW DISTRIBUTION FOR SECNO=   3570.00          CWSEL=    713.96
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SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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

STA=    9953.     9984.    10019.    10040.    10062.    10072.    10096.    10122.    10137.    10144.    10153.    10167.    10187.
 PER Q=     6.4      14.4       8.9       9.9       5.0      10.9       8.4       5.5       4.3       5.0       6.7       7.2
  AREA=    47.4     128.7      52.3      56.8      27.6      62.1      55.2      33.7      22.3      26.0      38.1      44.3
   VEL=     3.5       2.9       4.4       4.5       4.7       4.6       4.0       4.2       5.0       5.0       4.6       4.2
 DEPTH=     1.5       3.8       2.5       2.6       2.8       2.6       2.1       2.3       3.0       3.0       2.6       2.3

STA=   10187.    10209.    10238.
 PER Q=     4.7       2.8
  AREA=    36.7      28.3
   VEL=     3.3       2.6
 DEPTH=     1.6       1.0

*SECNO 3677.000

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =   .61

3677.000      4.37    716.37       .00       .00    716.89       .52      2.60       .08    714.80
 2600.0    1860.8     405.8     333.4     307.3     113.3      52.9     126.2      73.0    714.60
    .56      6.06      3.58      6.30      .035      .070      .035      .000    712.00   9783.42
.008628      535.      565.      495.         3         0         0       .00    277.22  10060.65

FLOW DISTRIBUTION FOR SECNO=   3677.00          CWSEL=    716.37

STA=    9783.     9874.     9904.     9920.     9931.     9948.     9953.     9963.     9970.     9982.    10028.    10034.    10043.
 PER Q=     9.4      11.9       8.9       6.4      12.9       4.2       6.2       4.8       6.8      15.6       4.9       6.4
  AREA=    67.8      53.6      35.1      24.6      44.8      14.1      22.7      17.5      26.9     113.3      17.1      23.2
   VEL=     3.6       5.8       6.6       6.7       7.5       7.8       7.1       7.2       6.6       3.6       7.4       7.2
 DEPTH=      .8       1.8       2.2       2.2       2.6       2.8       2.4       2.5       2.2       2.5       2.7       2.5

STA=   10043.    10061.
 PER Q=     1.6
  AREA=    12.7
   VEL=     3.2
 DEPTH=      .7

*SECNO 3772.000

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.50

3772.000      5.38    719.18       .00       .00    719.49       .30      2.58       .02    716.60
 2600.0     271.1     569.5    1759.4      64.7     183.0     368.1     132.0      76.1    716.60
    .59      4.19      3.11      4.78      .035      .070      .035      .000    713.80   9955.42
.003813      500.      502.      420.         1         0         0       .00    318.52  10273.94
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SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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

FLOW DISTRIBUTION FOR SECNO=   3772.00          CWSEL=    719.18

STA=    9955.     9978.     9992.    10042.    10056.    10076.    10088.    10092.    10099.    10116.    10138.    10153.    10185.
 PER Q=     3.9       6.6      21.9       7.4      13.1       8.4       3.5       5.0      10.0      11.5       4.2       3.4
  AREA=    29.7      35.0     183.0      37.5      62.5      37.5      14.4      23.0      49.4      58.3      27.8      31.3
   VEL=     3.4       4.9       3.1       5.1       5.4       5.8       6.2       5.7       5.3       5.1       3.9       2.9
 DEPTH=     1.3       2.5       3.7       2.7       3.0       3.3       3.7       3.2       2.8       2.7       1.8       1.0

STA=   10185.    10274.
 PER Q=     1.3
  AREA=    26.4
   VEL=     1.2
 DEPTH=      .3

*SECNO 3863.000
3863.000      4.20    721.20       .00       .00    721.64       .44      2.11       .04    720.30
 2600.0    1794.4     801.7       3.9     326.0     166.9       3.1     138.0      79.1    720.70
    .62      5.50      4.80      1.24      .035      .040      .035      .000    717.00   9806.66
.005421      450.      480.      480.         3         0         0       .00    239.23  10045.88

FLOW DISTRIBUTION FOR SECNO=   3863.00          CWSEL=    721.20

STA=    9807.     9826.     9846.     9861.     9890.     9919.     9936.     9944.     9962.    10033.    10046.
 PER Q=     1.4       8.0      10.0      18.8      17.0       9.4       2.5       2.0      30.8       .1
  AREA=    14.2      41.0      42.4      79.5      74.9      42.3      14.5      17.1     166.9       3.1
   VEL=     2.6       5.0       6.1       6.1       5.9       5.8       4.4       3.0       4.8       1.2
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 DEPTH=      .8      2.1      2.8      2.8      2.6      2.5      1.7      1.0      2.3      .3

SECNO 3957.000
3957.000      5.46    724.06    723.47      .00    724.68      .62     2.99      .05    720.50
  2600.0     245.3     687.5    1667.2     86.1     106.7    251.9    143.4     82.8    720.70
     .64      2.85      6.44      6.62     .035      .050     .035     .000   718.60   9705.27
 .006716      477.      496.      520.        6        13        0      .00   419.62  10124.89

FLOW DISTRIBUTION FOR SECNO=   3957.00          CWSEL=    724.06

STA=    9705.    9917.    9957.    9980.    9989.   10013.   10037.   10065.   10087.   10109.   10122.   10125.
  PER Q=     1.3       .8      2.2      5.2     26.4     21.2     22.3     14.3      5.9       .5       .0
   AREA=    33.1     12.3     18.6     22.2    106.7     73.6     81.7     57.1     33.4      5.9       .2
    VEL=     1.0      1.6      3.0      6.1      6.4      7.5      7.1      6.5      4.6      2.1       .6
  DEPTH=      .2       .3       .8      2.4      4.4      3.2      2.9      2.6      1.5       .5       .1

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    SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      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 4053.000
4053.000      6.09    726.89       .00       .00    727.15      .26     2.43      .04    724.90
  2600.0     667.4     792.5    1140.0     201.2     255.8    227.4    149.8     87.2    724.10
     .67      3.32      3.10      5.01     .035      .070     .035     .000   720.80   9802.60
 .003823      535.      507.      466.         2         0        0      .00   331.13  10133.73

FLOW DISTRIBUTION FOR SECNO=   4053.00          CWSEL=    726.89

STA=    9803.    9835.    9868.    9900.    9934.    9962.   10032.   10050.   10075.   10093.   10115.   10134.
  PER Q=     1.0      3.6      5.0      7.7      8.3     30.5     11.3     17.6      9.7      4.7       .6
   AREA=    15.9     34.5     41.8     54.9     54.0    255.8     54.5     80.2     49.1     34.1      9.5
    VEL=     1.6      2.7      3.1      3.7      4.0      3.1      5.4      5.7      5.1      3.6      1.6
  DEPTH=      .5      1.0      1.3      1.6      1.9      3.7      2.9      3.2      2.7      1.6       .5

*SECNO 4147.000

3265 DIVIDED FLOW

4147.000      5.28    729.08       .00       .00    729.83      .75     2.54      .15    725.80
  2600.0      72.6     963.5    1563.9      15.5     115.4    259.3    156.0     90.4    725.80
     .69      4.70      8.35      6.03     .035      .040     .035     .000   723.80   9980.99
 .006822      455.      496.      530.         2         0        0      .00   226.56  10252.49

W DISTRIBUTION FOR SECNO=   4147.00          CWSEL=    729.08

=    9981.    9990.   10016.   10025.   10050.   10069.   10095.   10229.   10252.
  PER Q=     2.8     37.1      8.9     22.1     14.0     10.9      3.8       .4
   AREA=    15.5    115.4     30.6     77.4     52.4     51.4     40.6      7.0
    VEL=     4.7      8.4      7.6      7.4      6.9      5.5      2.4      1.5
  DEPTH=     1.6      4.6      3.2      3.1      2.8      2.0       .3       .3

CCHV=      .300 CEHV=      .500
*SECNO 4156.000

3265 DIVIDED FLOW

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
1                                                                                                   PAGE   18
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    SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      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

4156.000      6.28    731.18    731.18       .00    731.85      .67      .54      .03    731.20
  2600.0        .0     497.2    2102.8        .0      57.7    353.0    156.6     90.8    731.50
     .70       .00      8.61      5.96     .000      .040     .035     .000   724.90   9995.00
 .014118       60.       50.       60.        20        11        0      .00   331.18  10335.75

FLOW DISTRIBUTION FOR SECNO=   4156.00          CWSEL=    731.18

STA=    9995.   10005.   10080.   10200.   10336.
  PER Q=    19.1     14.6     55.3     10.9
   AREA=    57.7     71.2    201.7     80.1
    VEL=     8.6      5.3      7.1      3.5
  DEPTH=     5.7      1.0      1.7       .6

*SECNO 4183.000

3301 HV CHANGED MORE THAN HVINS

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  2.78

4183.000      7.43    732.33       .00       .00    732.46      .13      .45      .16    731.20
  2600.0     104.4     120.3    2375.3      79.9      69.4    803.6    158.3     92.1    731.50
     .71      1.31      1.73      2.96     .035      .080     .035     .000   724.90   9843.29
 .001830      140.      140.      110.         3         0        0      .00   590.05  10433.34
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W DISTRIBUTION FOR SECNO=   4183.00          CWSEL=    732.33

A=    9843.    9860.    9915.    9995.   10005.   10080.   10200.   10430.   10433.
 PER Q=      .1       .6      3.3      4.6     17.8     47.6     26.0       .0
  AREA=     2.8     18.4     58.7     69.4    156.1    340.1    306.8       .6
   VEL=      .6       .9      1.5      1.7      3.0      3.6      2.2       .5
 DEPTH=      .2       .3       .7      6.9      2.1      2.8      1.3       .2


SPECIAL CULVERT

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    SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      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


SC  CUNO       CUNV       ENTLC      COFQ       RDLEN      RISE       SPAN       CULVLN     CHRT       SCL        ELCHU      ELCHD
     1          .014       .50       3.00        .00       6.00      10.00      165.00      10         1         725.00     725.00

CHART 10 - BOX CULVERT; 90-DEGREE HEADWALL; CHAMFERED OR BEVELED INLET EDGES
SCALE  1 - INLET EDGES CHAMFERED 3/4-INCH

5130, EGIC=  800.16..MAY BE TOO LARGE IF INLET CONTROLS.
5135, EGOC=  787.96 ..MAY BE TOO LARGE IF OUTLET CONTROLS.
*SECNO 4216.000

SPECIAL CULVERT INLET CONTROL + WEIR FLOW, EG =    733.77
SPECIAL CULVERT

     EGIC       EGOC        H4      QWEIR      QCULV       VCH      ACULV      ELTRD     WEIRLN
   800.16     787.96      1.31      1972.       622.     9.278       60.0     732.40       580.


3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3710 WSEL ASSUMED BASED ON MIN DIFF
  4216.000      8.59    733.59       .00       .00    734.10       .51       .00       .00    725.00
    2600.0     431.2     796.5    1372.3      95.1      85.9     565.7     161.8      94.4    725.00
       .72      4.53      9.28      2.43      .035      .030      .035      .000    725.00   9956.22
   .001995      175.      175.      175.        20         0         0       .00    555.41  10511.63


FLOW DISTRIBUTION FOR SECNO=   4216.00          CWSEL=    733.59

STA=    9956.    9980.    9995.   10005.   10020.   10070.   10150.   10355.   10512.
 PER Q=      1.2     15.4     30.6     15.4      4.2      5.7     22.7      4.8
  AREA=     18.8     76.3     85.9     76.3     54.3     78.8    263.5     92.8
   VEL=      1.6      5.3      9.3      5.3      2.0      1.9      2.2      1.3
 DEPTH=       .8      5.1      8.6      5.1      1.1      1.0      1.3       .6

*SECNO 4287.000

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.86

  4287.000      7.58    734.38       .00       .00    734.52       .14       .31       .11    729.00
    2600.0    1036.8    1026.5     536.7     355.7     277.5     339.1     167.5      97.0    732.60
       .75      2.92      3.70      1.58      .035      .030      .035      .000    726.80   9910.14
   .000577      420.      375.      195.         2         0         0       .00    426.51  10336.65


FLOW DISTRIBUTION FOR SECNO=   4287.00          CWSEL=    734.38

STA=    9910.    9933.    9942.    9952.    9966.    9975.    9987.   10037.   10067.   10089.   10113.   10157.   10337.
 PER Q=      6.6      4.4      5.7     10.1      5.7      7.4     39.5      6.8      4.7      4.0      3.7      1.5
  AREA=     73.1     41.2     50.2     80.6     47.8     62.7    277.5     85.7     60.2     57.2     69.1     66.9
   VEL=      2.4      2.8      2.9      3.2      3.1      3.1      3.7      2.0      2.0      1.8      1.4       .6
 DEPTH=      3.2      4.5      4.9      5.7      5.4      5.2      5.6      2.8      2.8      2.4      1.5       .4

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    SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      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 4315.000

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
  4315.000      7.41    737.21    737.21       .00    738.01       .80       .16       .33    732.00
    2600.0     722.7    1344.1     533.1     151.9     146.6     180.4     169.9      98.2    734.00
       .75      4.76      9.17      2.96      .035      .030      .035      .000    729.80   9911.00
   .003326       90.      148.      190.        20         6         0       .00    254.33  10165.33


FLOW DISTRIBUTION FOR SECNO=   4315.00          CWSEL=    737.21

STA=    9911.    9950.    9990.   10010.   10030.   10120.   10165.
 PER Q=      1.6     26.2     51.7      7.0     11.6      1.8
  AREA=     23.6    128.4    146.6     44.2    108.8     27.4
   VEL=      1.7      5.3      9.2      4.1      2.8      1.7
 DEPTH=       .6      3.2      7.3      2.2      1.2       .6
```

CIAL BRIDGE

SB	XK	XKOR	COFQ	RDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
	.00	1.60	3.00	1000.00	19.00	.00	129.00	.00	730.10	729.80

*SECNO 4331.000

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 3.45

PRESSURE AND WEIR FLOW, Weir Submergence Based on TRAPEZOIDAL Shape

EGPRS	EGLWC	H3	QWEIR	QPR	BAREA	TRAPEZOID AREA	ELLC	ELTRD	WEIRLN
747.30	742.39	.00	1246.	1367.	129.	129.	736.90	739.10	1608.

4331.000	9.84	739.94	.00	.00	740.00	.06	1.99	.00	732.30
2600.0	894.4	628.8	1076.8	725.1	195.2	769.0	172.0	100.0	734.30
.77	1.23	3.22	1.40	.035	.030	.035	.000	730.10	9229.60
.000280	86.	86.	86.	2	0	6	.00	1573.91	10803.51

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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	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

FLOW DISTRIBUTION FOR SECNO= 4331.00 CWSEL= 739.94

STA=	9230.	9850.	9950.	9990.	10010.	10030.	10120.	10240.	10804.
PER Q=	4.4	10.5	19.5	24.2	7.0	21.2	12.1	1.1	
AREA=	275.3	224.1	225.6	195.2	92.8	327.7	262.9	85.6	
VEL=	.4	1.2	2.2	3.2	2.0	1.7	1.2	.3	
DEPTH=	.4	2.2	5.6	9.8	4.6	3.6	2.2	.2	

*SECNO 4395.000

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 2.09

4395.000	10.54	740.04	.00	.00	740.05	.01	.04	.01	737.10
2600.0	1190.4	547.1	862.5	1789.5	421.0	1172.5	191.1	110.3	734.70
.88	.67	1.30	.74	.035	.035	.035	.000	729.50	9248.54
.000064	325.	338.	325.	2	0	0	.00	1181.87	10430.42

FLOW DISTRIBUTION FOR SECNO= 4395.00 CWSEL= 740.04

STA=	9249.	9390.	9480.	9570.	9670.	9968.	10022.	10060.	10083.	10109.	10380.	10430.
PER Q=	4.0	12.1	7.5	4.3	17.8	21.0	7.1	3.5	3.0	18.8	.7	
AREA=	205.8	363.7	273.7	204.2	742.0	421.0	186.2	102.1	95.8	736.3	52.1	
VEL=	.5	.9	.7	.5	.6	1.3	1.0	.9	.8	.7	.3	
DEPTH=	1.5	4.0	3.0	2.0	2.5	7.7	5.0	4.3	3.7	2.7	1.0	

*SECNO 4429.000
3280 CROSS SECTION 4429.00 EXTENDED .96 FEET

4429.000	10.45	740.05	.00	.00	740.06	.01	.01	.00	729.60
2600.0	1997.3	75.1	527.6	2564.9	62.8	850.1	204.6	114.3	729.60
.94	.78	1.20	.62	.035	.035	.035	.000	729.60	9470.00
.000035	170.	180.	175.	1	0	0	.00	800.00	10270.00

FLOW DISTRIBUTION FOR SECNO= 4429.00 CWSEL= 740.05

STA=	9470.	9660.	9700.	9950.	9980.	9997.	10003.	10015.	10090.	10270.
PER Q=	8.5	5.7	48.5	7.5	6.6	2.9	3.7	10.8	5.8	
AREA=	477.4	202.5	1515.7	211.9	157.5	62.8	99.2	379.7	371.3	
VEL=	.5	.7	.8	.9	1.1	1.2	1.0	.7	.4	
DEPTH=	2.5	5.1	6.1	7.1	9.3	10.5	8.3	5.1	2.1	

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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	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

SC	CUNO	CUNV	ENTLC	COFQ	RDLEN	RISE	SPAN	CULVLN	CHRT	SCL	ELCHU	ELCHD
	1	.014	.50	3.00	.00	3.00	6.00	95.30	10	1	731.90	729.60

CHART 10 - BOX CULVERT; 90-DEGREE HEADWALL; CHAMFERED OR BEVELED INLET EDGES
SCALE 1 - INLET EDGES CHAMFERED 3/4-INCH

5130, EGIC= 1516.64..MAY BE TOO LARGE IF INLET CONTROLS.
5135, EGOC= 1402.51 ..MAY BE TOO LARGE IF OUTLET CONTROLS.
*SECNO 4449.000

```
SPECIAL CULVERT INLET CONTROL + WEIR FLOW, EG =     745.04

 DIVIDED FLOW

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.40

SPECIAL CULVERT

    EGIC      EGOC        H4     QWEIR     QCULV       VCH     ACULV     ELTRD    WEIRLN
  1516.64   1402.51      4.98     2289.      306.      .993      18.0    743.60     2405.


 4449.000     13.13    745.03       .00       .00    745.04       .01      4.98       .00    731.90
   2600.0    1438.5      78.3    1083.2    2026.8      78.8    2326.4     214.1     118.4    731.90
      .99       .71       .99       .47      .035      .035      .035      .000    731.90   8868.23
  .000018      105.      105.      105.         0         0         0       .00   2675.29  12614.86

FLOW DISTRIBUTION FOR SECNO=   4449.00          CWSEL=    745.03

STA=    8868.    9910.    9990.    9997.   10003.   10150.   10220.   11830.   12615.
  PER Q=     22.3     30.0      3.0      3.0     33.9      3.3      3.5       .9
   AREA=   1058.9    883.2     84.6     78.8   1210.3    220.8    648.2    247.0
    VEL=       .5       .9       .9      1.0       .7       .4       .1       .1
  DEPTH=      1.0     11.0     12.1     13.1      8.2      3.2       .4       .3

*SECNO 4477.000
 4477.000     12.53    745.03       .00       .00    745.05       .01       .00       .00    734.60
   2600.0    1429.8    252.6     917.6    1766.2     236.1    1285.6     225.5     123.9    734.60
     1.03       .81      1.07       .71      .035      .035      .035      .000    732.50   9731.57
  .000025       95.      150.      160.         0         0         0       .00    637.69  10369.26

FLOW DISTRIBUTION FOR SECNO=   4477.00          CWSEL=    745.03
```



```
   SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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

STA=    9732.    9910.    9990.   10010.   10150.   10200.   10220.   10270.   10369.
  PER Q=     22.7     32.3      9.7     32.1      2.4       .3       .4       .1
   AREA=   931.2    835.0    236.1   1041.3    146.9     28.8     46.9     21.7
    VEL=       .6      1.0      1.1       .8       .4       .3       .2       .1
  DEPTH=      5.2     10.4     11.8      7.4      2.9      1.4       .9       .2

V=     .100 CEHV=     .300
CNO 4537.000
0 CROSS SECTION   4537.00 EXTENDED      4.79 FEET

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =   .36

 4537.000     11.19    744.99       .00       .00    745.10       .11       .02       .03    736.00
   3500.0    1679.9    481.9    1338.2     615.1     176.2     539.1     242.2     126.9    736.40
     1.07      2.73      2.74      2.48      .035      .045      .045      .000    733.80   9901.70
  .000348      315.      315.      315.         2         0         0       .00    179.50  10081.20

FLOW DISTRIBUTION FOR SECNO=   4537.00          CWSEL=    744.99

STA=    9902.    9937.    9969.    9989.    9997.   10015.   10030.   10047.   10060.   10069.   10081.
  PER Q=     11.6     16.3     13.3      6.9     13.8      9.6     11.4      8.9      5.3      3.0
   AREA=   184.4    208.0    150.1     72.6    176.2    129.6    150.2    118.2     74.2     66.9
    VEL=      2.2      2.7      3.1      3.3      2.7      2.6      2.7      2.6      2.5      1.6
  DEPTH=      5.2      6.4      7.7      8.6      9.9      8.6      8.9      8.9      8.2      5.4

CCHV=     .300 CEHV=     .500
*SECNO 4563.000
3280 CROSS SECTION   4563.00 EXTENDED       .99 FEET

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

 4563.000     10.39    744.99       .00       .00    745.24       .25       .07       .07    734.60
   3500.0    245.2    3048.1     206.7      80.8     727.0      85.3     245.8     127.4    734.60
     1.07      3.03      4.19      2.42      .035      .045      .045      .000    734.60   9950.00
  .000711      200.      140.       80.         2         0         0       .00    100.00  10050.00
```



```
   SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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

FLOW DISTRIBUTION FOR SECNO=   4563.00          CWSEL=    744.99

STA=    9950.    9965.   10035.   10050.
  PER Q=      7.0     87.1      5.9
   AREA=     80.8    727.0     85.3
    VEL=      3.0      4.2      2.4
  DEPTH=      5.4     10.4      5.7
```

ECIAL BRIDGE

SB	XK	XKOR	COFQ	RDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
	1.25	1.60	3.00	700.00	70.00	7.50	380.00	.00	734.90	734.60

*SECNO 4568.000
3280 CROSS SECTION 4568.00 EXTENDED .88 FEET

PRESSURE AND WEIR FLOW, Weir Submergence Based on TRAPEZOIDAL Shape

EGPRS	EGLWC	H3	QWEIR	QPR	BAREA	TRAPEZOID AREA	ELLC	ELTRD	WEIRLN
747.09	745.30	.06	1905.	1619.	380.	381.	741.00	744.50	700.

4568.000	10.28	745.18	.00	.00	745.44	.26	.20	.00	734.90
3500.0	242.5	3052.7	204.8	79.2	719.5	83.7	246.2	127.4	734.90
1.08	3.06	4.24	2.45	.035	.045	.045	.000	734.90	9950.00
.000739	23.	23.	23.	2	0	3	.00	100.00	10050.00

FLOW DISTRIBUTION FOR SECNO= 4568.00 CWSEL= 745.18

STA=	9950.	9965.	10035.	10050.
PER Q=	6.9	87.2	5.9	
AREA=	79.2	719.5	83.7	
VEL=	3.1	4.2	2.4	
DEPTH=	5.3	10.3	5.6	

*SECNO 4591.000
3280 CROSS SECTION 4591.00 EXTENDED 3.60 FEET

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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	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

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 2.05

4591.000	10.50	745.50	.00	.00	745.54	.04	.04	.07	737.60
3500.0	1053.9	396.8	2049.3	526.5	208.5	1659.6	251.3	128.3	736.50
1.10	2.00	1.90	1.23	.035	.045	.045	.000	735.00	9907.00
.000175	70.	124.	160.	2	0	0	.00	471.00	10378.00

LOW DISTRIBUTION FOR SECNO= 4591.00 CWSEL= 745.50

STA=	9907.	9923.	9946.	9987.	10009.	10026.	10031.	10108.	10187.	10281.	10378.
PER Q=	2.4	8.6	19.1	11.3	7.5	1.7	18.3	10.4	9.9	10.7	
AREA=	64.9	151.9	309.7	208.5	144.6	37.0	450.8	324.2	338.8	364.2	
VEL=	1.3	2.0	2.2	1.9	1.8	1.6	1.4	1.1	1.0	1.0	
DEPTH=	4.1	6.6	7.6	9.5	8.5	7.4	5.9	4.1	3.6	3.8	

CCHV= .100 CEHV= .300
*SECNO 4727.000
3280 CROSS SECTION 4727.00 EXTENDED .22 FEET

4727.000	8.32	745.72	.00	.00	745.77	.05	.22	.00	739.60
3500.0	745.4	606.4	2148.2	343.3	298.9	1296.7	298.3	140.8	740.40
1.24	2.17	2.03	1.66	.035	.050	.035	.000	737.40	9870.90
.000335	980.	1003.	925.	2	0	0	.00	689.83	10560.73

FLOW DISTRIBUTION FOR SECNO= 4727.00 CWSEL= 745.72

STA=	9871.	9939.	9958.	9973.	10014.	10040.	10079.	10122.	10159.	10185.	10219.	10286.	10333.
PER Q=	7.2	7.6	6.5	17.3	8.8	10.2	8.9	7.8	4.1	4.2	8.0	3.9	
AREA=	145.7	107.1	90.4	298.9	132.8	170.6	165.0	143.2	83.3	95.5	184.4	103.8	
VEL=	1.7	2.5	2.5	2.0	2.3	2.1	1.9	1.9	1.7	1.5	1.5	1.3	
DEPTH=	2.1	5.7	5.9	7.3	5.2	4.4	3.8	3.8	3.3	2.8	2.8	2.2	

STA=	10333.	10444.	10561.
PER Q=	4.4	1.0	
AREA=	156.2	61.9	
VEL=	1.0	.6	
DEPTH=	1.4	.5	

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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	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 4911.000

3265 DIVIDED FLOW

3301 HV CHANGED MORE THAN HVINS

```
3685 20 TRIALS ATTEMPTED WSEL,CWSEL
     3 PROBABLE MINIMUM SPECIFIC ENERGY
     0 CRITICAL DEPTH ASSUMED
4911.000      6.80    749.10    749.10       .00    750.04       .94       .86       .27    744.70
  3500.0      369.3    1447.6    1683.1      67.4     176.5     214.5     323.6     151.3    745.50
    1.28       5.48      8.20      7.84      .035      .050      .035      .000    742.30   9819.31
 .008045       955.      972.      895.        20        12         0       .00    307.05  10127.61

FLOW DISTRIBUTION FOR SECNO=   4911.00          CWSEL=    749.10

STA=    9819.    9846.    9903.    9953.    9972.    9981.   10013.   10044.   10078.   10128.
  PER Q=       .1       .1       .1      3.0      7.2     41.4     32.2     15.2       .7
   AREA=      2.6      5.7      4.8     24.2     30.1    176.5    120.4     79.4     14.8
    VEL=       .8       .8       .8      4.4      8.4      8.2      9.4      6.7      1.7
  DEPTH=       .1       .1       .1      1.2      3.3      5.5      3.8      2.3       .3

*SECNO 5137.000

3301 HV CHANGED MORE THAN HVINS

 5137.000      6.71    753.31       .00       .00    753.41       .10      3.29       .08    750.80
  1400.0      290.7    1042.5      66.8     185.1     372.4      60.2     337.9     159.2    751.60
    1.41       1.57      2.80      1.11      .035      .035      .035      .000    746.60   9812.50
 .000692      1110.     1193.     1140.         5         0         0       .00    297.31  10109.81

FLOW DISTRIBUTION FOR SECNO=   5137.00          CWSEL=    753.31

STA=    9812.    9836.    9892.    9942.   10035.   10083.   10110.
  PER Q=       .4      6.6     13.8     74.5      4.6       .2
   AREA=      9.4     70.5    105.2    372.4     53.3      6.8
    VEL=       .6      1.3      1.8      2.8      1.2       .4
  DEPTH=       .4      1.3      2.1      4.0      1.1       .3

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   SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      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

CCHV=     .300 CEHV=     .500
*SECNO 5200.000
3280 CROSS SECTION   5200.00 EXTENDED       .20 FEET

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
     3 PROBABLE MINIMUM SPECIFIC ENERGY
     0 CRITICAL DEPTH ASSUMED

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       770.30 ELREA=       770.30

 5200.000      5.00    755.50    755.50       .00    758.02      2.52       .56      1.21    750.50
  1400.0        .0    1400.0        .0        .0     109.9        .0     340.5     160.3    750.50
    1.42       .00     12.74       .00      .000      .035      .000      .000    750.50   9989.00
 .010544      200.      333.      400.        20        15         0       .00     22.00  10011.00

FLOW DISTRIBUTION FOR SECNO=   5200.00          CWSEL=    755.50

STA=    9989.   10011.
  PER Q=     100.0
   AREA=     109.9
    VEL=      12.7
  DEPTH=       5.0

SPECIAL CULVERT

SC  CUNO      CUNV      ENTLC     COFQ      RDLEN     RISE      SPAN      CULVLN    CHRT      SCL       ELCHU     ELCHD
     2         .014      .40      3.00     500.00     6.80     10.00     294.00     8         1        751.20    750.50

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

*SECNO 5258.000

SPECIAL CULVERT INLET CONTROL
EGIC =    760.777  EGOC =    760.186  PCWSE=    755.495  ELTRD=    771.800

3280 CROSS SECTION   5258.00 EXTENDED      3.96 FEET

3301 HV CHANGED MORE THAN HVINS

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   SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      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

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  2.55
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SPECIAL CULVERT
    EGIC      EGOC       H4     QWEIR     QCULV      VCH     ACULV     ELTRD    WEIRLN
  760.78    760.19     2.76        0.     1400.    7.267     136.0    771.80        0.

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       771.30 ELREA=       771.30

  5258.000      8.76    759.96       .00       .00    760.78       .82      2.76       .00    751.20
    1400.0        .0    1400.0        .0        .0     192.6        .0     341.5     160.4    751.20
      1.43       .00      7.27       .00      .000      .035      .000      .000    751.20   9989.00
   .001623      304.      304.      304.         3         0         0       .00     22.00  10011.00

FLOW DISTRIBUTION FOR SECNO=   5258.00          CWSEL=    759.96

STA=    9989.   10011.
  PER Q=    100.0
   AREA=    192.6
    VEL=      7.3
  DEPTH=      8.8

*SECNO 5308.000
3280 CROSS SECTION   5308.00 EXTENDED      1.04 FEET

3301 HV CHANGED MORE THAN HVINS

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  6.60

  5308.000      9.04    761.04       .00       .00    761.05       .01       .03       .24    756.00
    1400.0      81.2    1204.6     114.2     151.8    1266.4     212.5     346.9     161.4    756.00
      1.51       .53       .95       .54      .035      .035      .035      .000    752.00   9850.00
   .000037      320.      264.      180.         2         0         0       .00    300.00  10150.00

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    SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      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

FLOW DISTRIBUTION FOR SECNO=   5308.00          CWSEL=    761.04

STA=    9850.    9900.   10080.   10150.
  PER Q=      5.8     86.0      8.2
   AREA=    151.8   1266.4    212.5
    VEL=       .5      1.0       .5
  DEPTH=      3.0      7.0      3.0

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T1      FLOOD CONTROL DISTRICT OF MARICOPA COUNTY - CONTRACT FCD 90-67
T2      GILA BEND AREA FLOODPLAIN DELINEATION STUDY BY BURGESS & NIPLE
T3      SCOTT AVENUE 100-YEAR   (FLOODWAY)      J. MISCHLER - (602) 244-8100

J1  ICHECK     INQ        NINV       IDIR       STRT       METRIC     HVINS      Q          WSEL       FQ

                 3                                                                         677.51

J2  NPROF      IPLOT      PRFVS      XSECV      XSECH      FN         ALLDC      IBW        CHNIM      ITRACE

     15                     -1                                                                            15

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    SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      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

*PROF 2
0

CCHV=     .100 CEHV=     .300
*SECNO 2261.000

3470 ENCROACHMENT STATIONS=     9935.0   10093.0  TYPE=       1  TARGET=       158.000
  2261.000      5.51    677.51       .00    676.71    677.93       .42       .00       .00 100000.00
    2600.0        .0    2168.3     431.7        .0     397.2     113.5        .0        .0    675.20
       .00       .00      5.46      3.80      .000      .030      .030      .000    672.00   9935.00
   .002158        0.        0.        0.         0         0         0       .00    158.00  10093.00

FLOW DISTRIBUTION FOR SECNO=   2261.00          CWSEL=    677.51

STA=    9935.   10042.   10093.
  PER Q=     83.4      16.6
   AREA=    397.2     113.5
    VEL=      5.5       3.8
  DEPTH=      3.7       2.2
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*SECNO 2505.000
[illegible]5 DIVIDED FLOW

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =   .36

3470 ENCROACHMENT STATIONS=     9980.0   10260.0  TYPE=      1  TARGET=      280.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       682.20 ELREA=    100000.00

  2505.000      3.10    683.20    683.17    683.28    683.87       .67      5.86       .08    682.20
    2600.0     385.9    2214.1        .0      84.9     321.8        .0      13.1       6.0 100000.00
       .05      4.54      6.88       .00      .040      .040      .000      .000    680.10   9980.00
   .016896      890.     1288.     1200.        17        11         0       .00    279.97  10260.00

FLOW DISTRIBUTION FOR SECNO=   2505.00          CWSEL=    683.20

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    SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      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

STA=    9980.    9989.   10000.   10048.   10073.   10278.
  PER Q=      2.0      2.2      7.5      3.2     85.2
   AREA=     10.0     11.7     43.3     19.9    321.8
    VEL=      5.2      4.9      4.5      4.1      6.9
  DEPTH=      1.2      1.0       .9       .8      1.7

*SECNO 2677.000

3301 HV CHANGED MORE THAN HVINS

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  2.29

3470 ENCROACHMENT STATIONS=     9913.0   10325.0  TYPE=      1  TARGET=      412.000
  2677.000      6.23    689.53       .00    688.72    689.66       .13      5.74       .05    688.10
    2600.0      14.5    1368.5    1217.0       6.0     498.9     387.7      26.8      13.3    687.60
       .14      2.44      2.74      3.14      .035      .070      .035      .000    683.30   9913.00
   .003228      850.      908.      970.         8         0         0       .00    412.00  10325.00

FLOW DISTRIBUTION FOR SECNO=   2677.00          CWSEL=    689.53

[illegible]=    9913.    9918.   10062.   10107.   10139.   10209.   10277.   10325.
[illegible]PER Q=      .6     52.6     11.0      6.6     12.6      9.4      7.2
   AREA=      6.0    498.9     80.8     51.0    104.3     86.3     65.3
    VEL=      2.4      2.7      3.5      3.3      3.1      2.8      2.9
  DEPTH=      1.2      3.5      1.8      1.6      1.5      1.3      1.3

*SECNO 2867.000
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=     9969.0   10180.0  TYPE=      1  TARGET=      211.000
  2867.000      5.26    694.76    694.76    694.84    695.30       .54      4.49       .12    694.50
    2600.0        .2     536.7    2063.1        .2     142.7     324.8      41.3      19.8    694.70
       .18      1.23      3.76      6.35      .035      .070      .035      .000    689.50   9969.00
   .008394      995.     1003.      860.         9        12         0       .00    211.00  10180.00

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   15DEC92      12:41:20                                                                                    PAGE   33

    SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      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

FLOW DISTRIBUTION FOR SECNO=   2867.00          CWSEL=    694.76

STA=    9969.    9970.   10022.   10044.   10071.   10125.   10180.
  PER Q=       .0     20.6      3.6     13.2     26.8     35.7
   AREA=       .2    142.7     23.0     55.6    110.9    135.3
    VEL=      1.2      3.8      4.0      6.2      6.3      6.9
  DEPTH=       .2      2.7      1.1      2.0      2.1      2.5

*SECNO 3105.000

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.63

3470 ENCROACHMENT STATIONS=     9982.0   10210.0  TYPE=      1  TARGET=      228.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=    100000.00 ELREA=       699.20

  3105.000      4.95    700.15       .00    699.29    700.49       .34      5.17       .02 100000.00
    2600.0        .0     233.1    2366.9        .0     124.2     483.3      54.7      25.3    699.20
       .25       .00      1.88      4.90      .000      .070      .035      .000    695.20   9982.00
   .003171      930.     1257.     1030.         5         0         0       .00    228.00  10210.00
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FLOW DISTRIBUTION FOR SECNO=   3105.00          CWSEL=    700.15

STA=    9982.   10043.   10093.   10123.   10144.   10165.   10201.   10210.
 PER Q=      9.0     16.3     18.4     17.8     15.5     17.9      5.2
  AREA=    124.2    106.6     93.9     78.9     73.5     99.3     31.0
   VEL=      1.9      4.0      5.1      5.9      5.5      4.7      4.3
 DEPTH=      2.0      2.1      3.1      3.8      3.5      2.7      3.3

*SECNO 3292.000

3301 HV CHANGED MORE THAN HVINS

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =   .35

3470 ENCROACHMENT STATIONS=     9980.0   10090.0  TYPE=      1  TARGET=      110.000
  3292.000      5.19    706.49      .00    705.69    707.35       .86      6.70       .16    704.50
    2600.0      11.9    2467.9    120.2       2.2     336.3      12.6      65.4      29.1    703.90
       .28      5.32      7.34     9.85      .035      .070      .035      .000    701.30   9980.00
   .025250      960.      987.     950.         2         0         0       .00    110.00  10090.00
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   SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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

FLOW DISTRIBUTION FOR SECNO=   3292.00          CWSEL=    706.49

STA=    9980.    9981.   10085.   10090.
 PER Q=       .5     94.9      4.6
  AREA=      2.2    336.3     12.6
   VEL=      5.3      7.3      9.6
 DEPTH=      2.0      3.2      2.4

*SECNO 3492.000
3280 CROSS SECTION   3492.00 EXTENDED       .31 FEET

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  2.96

3470 ENCROACHMENT STATIONS=     9910.0   10030.0  TYPE=      1  TARGET=      120.000
  3492.000      6.51    713.61      .00    712.79    714.01       .41      6.62       .05    709.60
    2600.0    1818.3     759.1     22.6     319.1     217.8       8.3      75.9      31.8    709.30
       .34      5.70      3.49     2.74      .035      .070      .035      .000    707.10   9910.00
   .002891      970.     1056.    1045.         6         0         0       .00    120.00  10030.00

FLOW DISTRIBUTION FOR SECNO=   3492.00          CWSEL=    713.61

STA=    9910.    9920.    9947.    9968.    9979.    9988.   10028.   10030.
 PER Q=      7.3     22.2     16.5     12.7      9.2     29.2       .9
  AREA=     41.4    103.9     83.3     52.2     38.2    217.8      8.3
   VEL=      4.6      5.6      5.8      6.3      6.3      3.5      2.7
 DEPTH=      4.1      3.8      4.0      4.7      4.6      5.4      4.3

*SECNO 3570.000

3470 ENCROACHMENT STATIONS=     9984.0   10124.0  TYPE=      1  TARGET=      140.000
  3570.000      5.95    714.85      .00    713.96    715.30       .44      1.27       .01    711.30
    2600.0       1.2     570.1    2028.7       1.1     159.3     352.5      80.7      32.9    711.60
       .36      1.10      3.58     5.75      .035      .070      .035      .000    708.90   9984.00
   .003709      335.      412.     425.         4         0         0       .00    140.00  10124.00

FLOW DISTRIBUTION FOR SECNO=   3570.00          CWSEL=    714.85
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   SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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

STA=    9984.    9984.   10019.   10040.   10062.   10072.   10096.   10122.   10124.
 PER Q=       .0     21.9     15.9     17.4      8.6     19.1     16.3       .6
  AREA=      1.1    169.3     71.4     76.7     36.5     83.4     78.7      5.8
   VEL=      1.1      3.6      5.8      5.9      6.1      6.0      5.4      2.9
 DEPTH=      3.5      4.7      3.4      3.5      3.7      3.5      3.0      2.9

*SECNO 3677.000

3470 ENCROACHMENT STATIONS=     9900.0   10030.0  TYPE=      1  TARGET=      130.000
  3677.000      5.23    717.23      .00    716.37    717.95       .72      2.57       .08    714.80
    2600.0    1988.3     586.8     24.9     265.1     152.4       6.5      86.4      34.6    714.60
       .38      7.50      3.85     3.86      .035      .070      .035      .000    712.00   9900.00
   .006729      535.      565.     495.         2         0         0       .00    130.00  10030.00

FLOW DISTRIBUTION FOR SECNO=   3677.00          CWSEL=    717.23

STA=    9900.    9904.    9920.    9931.    9948.    9953.    9963.    9970.    9982.   10028.   10030.
 PER Q=      2.3     13.7      9.7     18.3      5.8      9.1      7.0     10.5     22.6      1.0
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  AREA=     11.9     49.0     34.2     59.5     18.5     30.8     23.6     37.5    152.4      6.5
   VEL=      5.0      7.3      7.4      8.0      8.2      7.7      7.7      7.3      3.9      3.9
 DEPTH=      3.1      3.0      3.1      3.5      3.6      3.3      3.3      3.0      3.3      2.9

*SECNO 3772.000

3470 ENCROACHMENT STATIONS=     9990.0   10110.0  TYPE=      1  TARGET=      120.000
  3772.000      6.18    719.98       .00    719.18    720.51       .54      2.54       .02    716.60
    2600.0      25.2     842.4    1732.4       7.4     222.0     259.3      91.4      35.9    716.60
       .41      3.40      3.79      6.68      .035      .070      .035      .000    713.80   9990.00
   .004382      500.      502.      420.         2         0         0       .00    120.00  10110.00


FLOW DISTRIBUTION FOR SECNO=   3772.00          CWSEL=    719.98

STA=    9990.    9992.   10042.   10056.   10076.   10088.   10092.   10099.   10110.
  PER Q=      1.0     32.4     12.1     20.7     12.8      5.1      7.7      8.2
   AREA=      7.4    222.0     48.3     78.9     46.5     17.5     28.6     39.6
    VEL=      3.4      3.8      6.5      6.8      7.2      7.6      7.0      5.4
  DEPTH=      3.4      4.5      3.5      3.8      4.1      4.5      4.0      3.5

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    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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 3863.000

3470 ENCROACHMENT STATIONS=     9894.0   10034.0  TYPE=      1  TARGET=      140.000
  3863.000      5.17    722.17       .00    721.20    722.71       .55      2.20       .00    720.30
    2600.0    1243.8    1354.7      1.5     203.2     235.1        .9      96.4      37.4    720.70
       .43      6.12      6.76      1.69      .035      .040      .035      .000    717.00   9894.00
   .004944      450.      480.      480.         2         0         0       .00    140.00  10034.00


FLOW DISTRIBUTION FOR SECNO=   3863.00          CWSEL=    722.17

STA=    9894.    9919.    9936.    9944.    9962.   10033.   10034.
  PER Q=     21.5     15.3      4.9      6.1     52.1       .1
   AREA=     87.9     58.4     22.6     34.3    235.1       .9
    VEL=      6.4      6.8      5.7      4.6      5.8      1.7
  DEPTH=      3.6      3.5      2.7      1.9      3.3      1.4

*SECNO 3957.000

3470 ENCROACHMENT STATIONS=     9989.0   10080.0  TYPE=      1  TARGET=       91.000
  3957.000      6.13    724.73       .00    724.06    725.55       .82      2.75       .08    720.50
    2600.0        .0     751.1    1848.9        .0     122.9     241.0     101.0      38.7    720.70
       .45       .00      6.11      7.67      .000      .050      .035      .000    718.60   9989.00
   .006170      477.      496.      520.         2         0         0       .00     91.00  10080.00


FLOW DISTRIBUTION FOR SECNO=   3957.00          CWSEL=    724.73

STA=    9989.   10013.   10037.   10065.   10080.
  PER Q=     28.9     28.0     30.2     12.9
   AREA=    122.9     89.2    100.6     51.2
    VEL=      6.1      8.2      7.8      6.6
  DEPTH=      5.1      3.8      3.6      3.3

*SECNO 4053.000

3470 ENCROACHMENT STATIONS=     9940.0   10060.0  TYPE=      1  TARGET=      120.000
  4053.000      7.09    727.89       .00    726.89    728.38       .49      2.80       .03    724.90
    2600.0     375.5    1402.4     822.1      64.2     325.5     113.4     105.9      39.9    724.10
       .47      5.85      4.31      7.25      .035      .070      .035      .000    720.80   9940.00
   .005364      535.      507.      466.         2         0         0       .00    120.00  10060.00


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    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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


FLOW DISTRIBUTION FOR SECNO=   4053.00          CWSEL=    727.89

STA=    9940.    9962.   10032.   10050.   10060.
  PER Q=     14.4     53.9     21.8      9.8
   AREA=     64.2    325.5     72.9     40.5
    VEL=      5.9      4.3      7.8      6.3
  DEPTH=      2.9      4.7      3.9      4.1

*SECNO 4147.000

3470 ENCROACHMENT STATIONS=     9981.0   10090.0  TYPE=      1  TARGET=      109.000
  4147.000      6.18    729.98       .00    729.08    730.56       .58      2.15       .03    725.80
    2600.0     100.5     918.9    1580.6      23.9     137.9     271.0     111.3      41.2    725.80
       .50      4.20      6.66      5.83      .035      .040      .035      .000    723.80   9981.00
   .003423      455.      496.      530.         3         0         0       .00    109.00  10090.00


FLOW DISTRIBUTION FOR SECNO=   4147.00          CWSEL=    729.98
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STA=    9981.    9990.   10016.   10025.   10050.   10069.   10090.
 PER Q=      3.9      35.3      9.6     24.0     15.8     11.4
  AREA=     23.9     137.9     39.2    100.0     69.2     62.5
   VEL=      4.2       6.7      6.3      6.2      5.9      4.8
 DEPTH=      2.5       5.5      4.1      4.0      3.7      3.0

CCHV=      .300 CEHV=      .500
*SECNO 4156.000

3265 DIVIDED FLOW

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

3470 ENCROACHMENT STATIONS=     9995.0   10200.0  TYPE=      1  TARGET=      205.000
  4156.000      6.32    731.22    731.22    731.18    732.17       .95       .37       .19    731.20
    2600.0        .0     547.9    2052.1        .0      58.1     279.6     111.9      41.4    731.50
       .50       .00      9.43      7.34      .000      .040      .035      .000    724.90   9995.00
   .016869       60.       50.       60.        20         8         0       .00    196.50  10200.00
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    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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

FLOW DISTRIBUTION FOR SECNO=   4156.00          CWSEL=    731.22

STA=    9995.   10005.   10080.   10200.
  PER Q=     21.1     16.7     62.2
   AREA=     58.1     73.6    206.0
    VEL=      9.4      5.9      7.9
  DEPTH=      5.8      1.0      1.7

*SECNO 4183.000

3301 HV CHANGED MORE THAN HVINS

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  2.58

3470 ENCROACHMENT STATIONS=     9995.0   10200.0  TYPE=      1  TARGET=      205.000
  4183.000      7.79    732.69       .00    732.33    732.97       .28       .60       .20    731.20
    2600.0        .0     147.1    2452.9        .0      73.0     565.6     113.1      41.9    731.50
       .51       .00      2.02      4.34      .000      .080      .035      .000    724.90   9995.00
   .002529      140.      140.      110.         3         0         0       .00    205.00  10200.00

FLOW DISTRIBUTION FOR SECNO=   4183.00          CWSEL=    732.69

STA=    9995.   10005.   10080.   10200.
  PER Q=      5.7     27.2     67.1
   AREA=     73.0    182.8    382.8
    VEL=      2.0      3.9      4.6
  DEPTH=      7.2      2.4      3.2

SPECIAL CULVERT

SC  CUNO      CUNV      ENTLC     COFQ      RDLEN     RISE      SPAN      CULVLN    CHRT      SCL       ELCHU     ELCHD
     1         .014       .50      3.00       .00      6.00     10.00    165.00     10         1       725.00    725.00

CHART 10 - BOX CULVERT; 90-DEGREE HEADWALL; CHAMFERED OR BEVELED INLET EDGES
SCALE  1 - INLET EDGES CHAMFERED 3/4-INCH

5130, EGIC=  800.16..MAY BE TOO LARGE IF INLET CONTROLS.
5135, EGOC=  788.32 ..MAY BE TOO LARGE IF OUTLET CONTROLS.
*SECNO 4216.000
BTCARD, BRIDGE STENCL=    9995.00   STENCR=   10200.00

SPECIAL CULVERT INLET CONTROL + WEIR FLOW, EG =    734.72
3280 CROSS SECTION   4216.00 EXTENDED       .28 FEET
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    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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
    800.16    788.32      1.76     1906.      692.     9.080      60.0    732.40      205.


3470 ENCROACHMENT STATIONS=     9995.0   10200.0  TYPE=      1  TARGET=      205.000
  4216.000      9.08    734.08       .00    733.59    734.72       .64      1.76       .00    725.00
    2600.0        .0     824.7    1775.3        .0      90.8     374.3     115.4      42.7    725.00
       .51       .00      9.08      4.74      .000      .030      .035      .000    725.00   9995.00
   .004197      175.      175.      175.         4         0         0       .00    205.00  10200.00
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FLOW DISTRIBUTION FOR SECNO=   4216.00          CWSEL=    734.08

STA=    9995.   10005.   10020.   10070.   10150.   10200.
 PER Q=     31.7     26.1     11.4     16.3     14.5
  AREA=     90.8     83.7     79.1    118.6     92.9
   VEL=      9.1      8.1      3.7      3.6      4.1
 DEPTH=      9.1      5.6      1.6      1.5      1.9

*SECNO 4287.000
3280 CROSS SECTION   4287.00 EXTENDED       .44 FEET

3301 HV CHANGED MORE THAN HVINS

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  3.17

3470 ENCROACHMENT STATIONS=     9920.0   10120.0  TYPE=      1  TARGET=      200.000
  4287.000      8.26    735.05      .00    734.38    735.17       .13       .29       .15    729.00
    2600.0    1023.4    1055.2    521.4     379.7     310.9     273.5     120.4      43.9    732.60
       .54      2.70      3.39     1.91      .035      .030      .035      .000    726.80   9920.00
   .000418      420.      375.     195.         2         0         0       .00    200.00  10120.00

FLOW DISTRIBUTION FOR SECNO=   4287.00          CWSEL=    735.05
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   SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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

STA=    9920.    9933.    9942.    9952.    9966.    9975.    9987.   10037.   10050.   10067.   10089.   10113.   10120.
 PER Q=      4.7      4.7      6.0     10.3      5.9      7.7     40.6      3.1      5.0      5.7      5.2      1.0
  AREA=     60.6     47.3     57.1     90.1     53.8     70.7    310.9     42.7     63.2     74.8     73.2     19.7
   VEL=      2.0      2.6      2.7      3.0      2.9      2.8      3.4      1.9      2.1      2.0      1.8      1.4
 DEPTH=      4.8      5.1      5.6      6.3      6.0      5.9      6.2      3.3      3.7      3.4      3.1      2.7

*SECNO 4315.000

3301 HV CHANGED MORE THAN HVINS

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

3470 ENCROACHMENT STATIONS=     9911.0   10150.0  TYPE=      1  TARGET=      239.000
  4315.000      7.30    737.10    737.10    737.21    738.00       .90       .13       .39    732.00
    2600.0     715.8    1389.9    494.2     143.5     144.4     161.9     122.6      44.7    734.00
       .55      4.99      9.63     3.05      .035      .030      .035      .000    729.80   9914.54
   .003740       90.      148.     190.        20         9         0       .00    235.46  10150.00

FLOW DISTRIBUTION FOR SECNO=   4315.00          CWSEL=    737.10

STA=    9915.    9950.    9990.   10010.   10030.   10120.   10150.
 PER Q=      1.3     26.2     53.6      6.9     10.5      1.6
  AREA=     19.5    124.0    144.4     42.0     98.9     21.0
   VEL=      1.7      5.5      9.6      4.2      2.8      2.0
 DEPTH=       .5      3.1      7.2      2.1      1.1       .7

SPECIAL BRIDGE

SB  XK        XKOR      COFQ      RDLEN     BWC       BWP       BAREA     SS        ELCHU     ELCHD
      .00      1.60      3.00   1000.00     19.00       .00    129.00       .00    730.10    729.80

*SECNO 4331.000
BTCARD, BRIDGE STENCL=    9911.00   STENCR=   10150.00
3280 CROSS SECTION   4331.00 EXTENDED       .25 FEET

3301 HV CHANGED MORE THAN HVINS
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   SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  4.08

PRESSURE AND WEIR FLOW,  Weir Submergence Based on TRAPEZOIDAL Shape

 EGPRS     EGLWC     H3        QWEIR     QPR       BAREA     TRAPEZOID AREA     ELLC      ELTRD     WEIRLN
   747.19    742.43       .00      1009.     1602.      129.      129.      736.90    739.10      239.

3470 ENCROACHMENT STATIONS=     9911.0   10150.0  TYPE=      1  TARGET=      239.000
  4331.000     10.75    740.85      .00    739.94    740.93       .08      2.93       .00    732.30
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   2600.0     818.6     653.0    1128.4     418.5     213.5     646.8     124.3      45.2    734.30
     .56      1.96      3.06      1.74      .035      .030      .035      .000    730.10   9911.00
 .000224       86.       86.       86.         2         0         4       .00    239.00  10150.00

FLOW DISTRIBUTION FOR SECNO=   4331.00          CWSEL=    740.85

STA=    9911.    9950.    9990.   10010.   10030.   10120.   10150.
  PER Q=      9.1     22.4     25.1      8.5     27.5      7.4
   AREA=    156.3    262.2    213.5    111.1    409.9    125.8
    VEL=      1.5      2.2      3.1      2.0      1.7      1.5
  DEPTH=      4.0      6.6     10.7      5.6      4.6      4.2

*SECNO 4395.000

3470 ENCROACHMENT STATIONS=     9900.0   10200.0  TYPE=      1  TARGET=      300.000
 4395.000     11.45    740.95       .00    740.04    741.00       .05       .06       .01    737.10
   2600.0     315.9    1032.8    1251.4     254.1     470.7     834.1     135.0      47.2    734.70
     .61      1.24      2.19      1.50      .035      .035      .035      .000    729.50   9900.00
 .000158      325.      338.      325.         2         0         0       .00    300.00  10200.00

FLOW DISTRIBUTION FOR SECNO=   4395.00          CWSEL=    740.95

STA=    9900.    9968.   10022.   10036.   10060.   10083.   10109.   10118.   10200.
  PER Q=     12.1     39.7      5.7      9.1      7.6      6.8      2.1     16.8
   AREA=    254.1    470.7     83.0    136.9    123.8    119.1     38.3    333.0
    VEL=      1.2      2.2      1.8      1.7      1.6      1.5      1.4      1.3
  DEPTH=      3.7      8.6      6.2      5.8      5.2      4.7      4.4      4.0

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   SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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 4429.000
3280 CROSS SECTION   4429.00 EXTENDED       .99 FEET

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.41

3470 ENCROACHMENT STATIONS=     9880.0   10300.0  TYPE=      1  TARGET=      420.000
 4429.000     11.40    741.00       .00    740.05    741.03       .03       .02       .01    729.60
   2600.0    1307.6     131.3    1161.1     902.3      68.3    1098.0     142.3      48.6    729.60
     .65      1.45      1.92      1.06      .035      .035      .035      .000    729.60   9880.00
 .000080      170.      180.      175.         1         0         0       .00    390.00  10270.00

FLOW DISTRIBUTION FOR SECNO=   4429.00          CWSEL=    741.00

STA=    9880.    9950.    9980.    9997.   10003.   10015.   10090.   10270.
  PER Q=     24.5     14.0     11.8      5.1      6.8     21.6     16.3
   AREA=    489.4    239.7    173.2     68.3    110.3    449.3    538.4
    VEL=      1.3      1.5      1.8      1.9      1.6      1.3       .8
  DEPTH=      7.0      8.0     10.2     11.4      9.2      6.0      3.0

SPECIAL CULVERT

SC  CUNO      CUNV      ENTLC     COFQ      RDLEN     RISE      SPAN      CULVLN    CHRT      SCL       ELCHU     ELCHD
     1         .014      .50      3.00       .00      3.00      6.00      95.30     10        1        731.90    729.60

CHART 10 - BOX CULVERT; 90-DEGREE HEADWALL; CHAMFERED OR BEVELED INLET EDGES
SCALE  1 - INLET EDGES CHAMFERED 3/4-INCH

5130, EGIC= 1516.64..MAY BE TOO LARGE IF INLET CONTROLS.
5135, EGOC= 1403.45 ..MAY BE TOO LARGE IF OUTLET CONTROLS.
*SECNO 4449.000
BTCARD, BRIDGE STENCL=    9880.00   STENCR=   10300.00

SPECIAL CULVERT INLET CONTROL + WEIR FLOW, EG =    746.06

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  2.13

SPECIAL CULVERT

    EGIC      EGOC       H4      QWEIR     QCULV      VCH      ACULV     ELTRD    WEIRLN
  1516.64   1403.45     5.03     2288.      320.    1.044      18.0    743.60      420.


3470 ENCROACHMENT STATIONS=     9880.0   10300.0  TYPE=      1  TARGET=      420.000
 4449.000     14.15    746.05       .00    745.03    746.06       .01      5.03       .00    731.90
   2600.0    1238.1      88.6    1273.2    1391.3      84.9    1852.2     148.8      49.5    731.90
     .69       .89      1.04       .69      .035      .035      .035      .000    731.90   9880.00
 .000018      105.      105.      105.         1         0         0       .00    420.00  10300.00

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   SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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
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FLOW DISTRIBUTION FOR SECNO=   4449.00          CWSEL=    746.05

STA=    9880.    9910.    9990.    9997.   10003.   10010.   10150.   10200.   10220.   10230.   10270.   10300.
  PER Q=     9.4     34.8      3.4      3.4      3.4     37.8      4.3      1.0       .5      1.4       .6
   AREA=   335.3    964.3     91.7     84.9     91.7   1267.5    227.7     64.1     33.5    108.1     59.6
    VEL=      .7       .9      1.0      1.0      1.0       .8       .5       .4       .4       .3       .3
  DEPTH=    11.2     12.1     13.1     14.2     13.1      9.1      4.6      3.2      3.4      2.7      2.0

*SECNO 4477.000

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =   .69


3470 ENCROACHMENT STATIONS=     9900.0   10100.0  TYPE=      1  TARGET=      200.000
  4477.000     13.54    746.04       .00    745.03    746.07       .02       .00       .01    734.60
    2600.0    1296.6     357.1     946.3    1027.6     256.3     856.9     157.0      50.5    734.60
       .72      1.26      1.39      1.10      .035      .035      .035      .000    732.50   9900.00
   .000037       95.      150.      160.         1         0         0       .00    200.00  10100.00


FLOW DISTRIBUTION FOR SECNO=   4477.00          CWSEL=    746.04

STA=    9900.    9910.    9990.   10010.   10100.
  PER Q=     3.4     46.5     13.7     36.4
   AREA=   111.6    916.0    256.3    856.9
    VEL=      .8      1.3      1.4      1.1
  DEPTH=    11.2     11.5     12.8      9.5

CCHV=     .100 CEHV=     .300
*SECNO 4537.000
3280 CROSS SECTION   4537.00 EXTENDED      4.02 FEET


3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =   .53


3470 ENCROACHMENT STATIONS=     9902.0   10070.0  TYPE=      1  TARGET=      168.000
  4537.000     12.23    746.03       .00    744.99    746.12       .09       .03       .02    736.00
    3500.0    1777.9     475.5    1246.5     712.1     194.6     537.8     169.9      51.8    736.40
       .75      2.50      2.44      2.32      .035      .045      .045      .000    733.80   9902.00
   .000243      315.      315.      315.         2         0         0       .00    168.00  10070.00


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    SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      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

FLOW DISTRIBUTION FOR SECNO=   4537.00          CWSEL=    746.03

STA=    9902.    9937.    9969.    9989.    9997.   10015.   10030.   10047.   10060.   10069.   10070.
  PER Q=    12.7     17.4     13.7      7.0     13.6      9.7     11.4      9.0      5.4       .1
   AREA=   219.1    241.4    170.2     81.3    194.6    145.1    167.6    132.0     83.5      9.6
    VEL=     2.0      2.5      2.8      3.0      2.4      2.3      2.4      2.4      2.3       .5
  DEPTH=     6.3      7.5      8.8      9.7     10.9      9.7     10.0      9.9      9.3      8.7

CCHV=     .300 CEHV=     .500
*SECNO 4563.000
3280 CROSS SECTION   4563.00 EXTENDED      1.98 FEET


3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =   .49


3470 ENCROACHMENT STATIONS=     9965.0   10035.0  TYPE=      1  TARGET=       70.000
  4563.000     11.38    745.98       .00    744.99    746.29       .30       .06       .10    734.60
    3500.0        .0    3500.0        .0        .0     796.9        .0     173.7      52.3 100000.00
       .76       .00      4.39       .00      .000      .045      .000      .000    734.60   9965.00
   .001005      200.      140.       80.         2         0         0       .00     70.00  10035.00


FLOW DISTRIBUTION FOR SECNO=   4563.00          CWSEL=    745.98

STA=    9965.   10035.
  PER Q=   100.0
   AREA=   796.9
    VEL=     4.4
  DEPTH=    11.4


SPECIAL BRIDGE

SB  XK        XKOR      COFQ      RDLEN     BWC       BWP       BAREA     SS        ELCHU     ELCHD
     1.25      1.60      3.00    700.00     70.00      7.50    380.00       .00    734.90    734.60

*SECNO 4568.000
6870 D.S. ENERGY OF   746.28 IS HIGHER THAN COMPUTED ENERGY OF   746.05
3280 CROSS SECTION   4568.00 EXTENDED      1.67 FEET

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    SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      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
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PRESSURE AND WEIR FLOW,  Weir Submergence Based on TRAPEZOIDAL Shape

   PRS      EGLWC       H3       QWEIR      QPR       BAREA   TRAPEZOID      ELLC     ELTRD     WEIRLN
                                                               AREA
  748.09    746.36      .07      2921.      604.      380.      381.       741.00    744.50      700.


3470 ENCROACHMENT STATIONS=     9965.0   10035.0  TYPE=      1  TARGET=       70.000
  4568.000     11.07    745.97      .00    745.18    746.28      .32        .00       .00    734.90
    3500.0        .0    3500.0       .0        .0     774.7       .0      174.1      52.3 100000.00
       .76       .00      4.52      .00      .000      .045     .000       .000    734.90   9965.00
   .001095       23.       23.      23.         2         0        9        .00     70.00  10035.00

FLOW DISTRIBUTION FOR SECNO=   4568.00          CWSEL=    745.97

STA=    9965.   10035.
  PER Q=     100.0
   AREA=     774.7
    VEL=       4.5
  DEPTH=      11.1

*SECNO 4591.000
3280 CROSS SECTION   4591.00 EXTENDED      4.43 FEET

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.59

3470 ENCROACHMENT STATIONS=     9970.0   10160.0  TYPE=      1  TARGET=      190.000
  4591.000     11.33    746.33      .00    745.50    746.43      .11        .09       .06    737.60
    3500.0     412.5     716.0    2371.5     145.9     226.6    984.1      177.4      52.7    736.50
       .78      2.83      3.16      2.41      .035      .045     .045       .000    735.00   9970.00
   .000432       70.      124.      160.         2         0        0        .00    190.00  10160.00

FLOW DISTRIBUTION FOR SECNO=   4591.00          CWSEL=    746.33

STA=    9970.    9987.   10009.   10026.   10031.   10108.   10160.
  PER Q=     11.8     20.5     13.8      3.2     35.7     15.0
   AREA=    145.9    226.6    158.5     41.1    514.1    270.4
    VEL=      2.8      3.2      3.0      2.7      2.4      1.9
  DEPTH=      8.6     10.3      9.3      8.2      6.7      5.2
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   SECNO      DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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

CCHV=     .100 CEHV=     .300
*SECNO 4727.000
3280 CROSS SECTION   4727.00 EXTENDED      .95 FEET

3470 ENCROACHMENT STATIONS=     9960.0   10180.0  TYPE=      1  TARGET=      220.000
  4727.000      9.35    746.75      .00    745.72    746.87      .12        .43       .00    739.60
    3500.0     237.7     906.5    2355.8      92.2     341.4    852.7      206.1      57.1    740.40
       .87      2.58      2.66      2.76      .035      .050     .035       .000    737.40   9960.00
   .000481      980.     1003.      925.         2         0        0        .00    220.00  10180.00

FLOW DISTRIBUTION FOR SECNO=   4727.00          CWSEL=    746.75

STA=    9960.    9973.   10014.   10040.   10079.   10122.   10159.   10180.
  PER Q=      6.8     25.9     14.3     17.3     16.0     13.9      5.8
   AREA=     92.2    341.4    159.4    210.4    209.5    181.9     91.5
    VEL=      2.6      2.7      3.1      2.9      2.7      2.7      2.2
  DEPTH=      6.9      8.3      6.2      5.5      4.9      4.9      4.4

*SECNO 4911.000

3301 HV CHANGED MORE THAN HVINS

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

3470 ENCROACHMENT STATIONS=     9945.0   10115.0  TYPE=      1  TARGET=      170.000
  4911.000      6.34    748.64    748.64    749.10    750.01     1.38      1.25       .38    744.70
    3500.0     318.1    1572.3    1609.6      41.6     161.8    170.7      223.7      60.9    745.50
       .90      7.64      9.72      9.43      .035      .050     .035       .000    742.30   9955.11
   .012676      955.      972.      895.        20        16        0        .00    134.59  10089.70

FLOW DISTRIBUTION FOR SECNO=   4911.00          CWSEL=    748.64

STA=    9955.    9972.    9981.   10013.   10044.   10078.   10090.
  PER Q=      2.0      7.1     44.9     32.7     13.3       .0
   AREA=     15.6     26.0    161.8    106.1     63.9       .8
    VEL=      4.5      9.5      9.7     10.8      7.3       .8
  DEPTH=       .9      2.9      5.1      3.4      1.9       .1
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   SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      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 5137.000

3301 HV CHANGED MORE THAN HVINS

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.70

3470 ENCROACHMENT STATIONS=     9940.0   10040.0  TYPE=      1  TARGET=      100.000
  5137.000      7.40    754.00       .00    753.31    754.15       .15      4.02       .12    750.80
    1400.0       6.6    1374.6      19.0       5.4     437.3      12.2     234.9      64.0    751.60
      1.00      1.21      3.14      1.56      .035      .035      .035      .000    746.60   9940.00
   .000704     1110.     1193.     1140.         6         0         0       .00    100.00  10040.00

FLOW DISTRIBUTION FOR SECNO=   5137.00          CWSEL=    754.00

STA=    9940.    9942.   10035.   10040.
  PER Q=        .5      98.2       1.4
   AREA=       5.4     437.3      12.2
    VEL=       1.2       3.1       1.6
  DEPTH=       3.2       4.7       2.3

CCHV=      .300 CEHV=      .500
*SECNO 5200.000

3301 HV CHANGED MORE THAN HVINS

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

3470 ENCROACHMENT STATIONS=     9989.0   10011.0  TYPE=      1  TARGET=       22.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       770.30 ELREA=       770.30

  5200.000      5.00    755.50    755.50    755.50    758.02      2.52       .62      1.18    750.50
    1400.0        .0    1400.0        .0        .0     109.9        .0     237.1      64.5 100000.00
      1.01       .00     12.74       .00      .000      .035      .000      .000    750.50   9989.00
   .013850      200.      333.      400.        20        14         0       .00     22.00  10011.00

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   SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      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

FLOW DISTRIBUTION FOR SECNO=   5200.00          CWSEL=    755.50

STA=    9989.   10011.
  PER Q=     100.0
   AREA=     109.9
    VEL=      12.7
  DEPTH=       5.0

SPECIAL CULVERT

SC  CUNO       CUNV       ENTLC      COFQ       RDLEN      RISE       SPAN       CULVLN     CHRT       SCL        ELCHU      ELCHD
     2          .014        .40       3.00     500.00      6.80      10.00     294.00      8          1         751.20     750.50

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

*SECNO 5258.000

SPECIAL CULVERT INLET CONTROL
EGIC =    760.777  EGOC =    760.186  PCWSE=    755.495  ELTRD=    771.800

3280 CROSS SECTION   5258.00 EXTENDED      3.27 FEET

3301 HV CHANGED MORE THAN HVINS

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  2.34

SPECIAL CULVERT

     EGIC       EGOC        H4      QWEIR      QCULV       VCH      ACULV      ELTRD     WEIRLN
   760.78     760.19      2.76         0.      1400.     7.258      136.0     771.80         0.

3470 ENCROACHMENT STATIONS=     9989.0   10011.0  TYPE=      1  TARGET=       22.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       771.30 ELREA=       771.30

  5258.000      8.76    759.96       .00    759.96    760.78       .82      2.76       .00    751.20
    1400.0        .0    1400.0        .0        .0     192.9        .0     238.2      64.6 100000.00
      1.02       .00      7.26       .00      .000      .035      .000      .000    751.20   9989.00
   .002527      304.      304.      304.         2         0         0       .00     22.00  10011.00
```

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	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

FLOW DISTRIBUTION FOR SECNO= 5258.00 CWSEL= 759.96

STA= 9989. 10011.
PER Q= 100.0
AREA= 192.9
VEL= 7.3
DEPTH= 8.8

*SECNO 5308.000
3280 CROSS SECTION 5308.00 EXTENDED 1.06 FEET

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 2.72

3470 ENCROACHMENT STATIONS= 9970.0 10030.0 TYPE= 1 TARGET= 60.000

5308.000	9.06	761.06	.00	761.04	761.18	.12	.19	.21	100000.00
1400.0	.0	1400.0	.0	.0	503.0	.0	240.3	64.9	100000.00
1.05	.00	2.78	.00	.000	.035	.000	.000	752.00	9970.00
.000343	320.	264.	180.	2	0	0	.00	60.00	10030.00

FLOW DISTRIBUTION FOR SECNO= 5308.00 CWSEL= 761.06

STA= 9970. 10080.
PER Q= 100.0
AREA= 503.0
VEL= 2.8
DEPTH= 8.4

THIS RUN EXECUTED 15DEC92 12:41:55

****
HEC-2 WATER SURFACE PROFILES
Version 4.6.2; May 1991
****

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

SCOTT AVENUE 100 YEAR FL

SUMMARY PRINTOUT

	SECNO	ELMIN	CWSEL	SSTA	ENDST	DEPTH	Q	VCH	HV	DIFWSX	QWEIR	ELTRD	ELLC
	2261.000	672.00	676.71	9922.20	10440.57	4.71	2600.00	5.97	.42	.00	.00	.00	.00
	2261.000	672.00	677.51	9935.00	10093.00	5.51	2600.00	5.46	.42	.00	.00	.00	.00
*	2505.000	680.10	683.28	9978.42	10393.87	3.18	2600.00	5.01	.33	6.57	.00	.00	.00
*	2505.000	680.10	683.20	9980.00	10260.00	3.10	2600.00	6.88	.67	5.69	.00	.00	.00
*	2677.000	683.30	688.72	9909.93	10600.00	5.42	2600.00	2.55	.12	5.44	.00	.00	.00
*	2677.000	683.30	689.53	9913.00	10325.00	6.23	2600.00	2.74	.13	6.33	.00	.00	.00
*	2867.000	689.50	694.84	9965.45	10778.47	5.34	2600.00	.95	.04	6.13	.00	.00	.00
*	2867.000	689.50	694.76	9969.00	10180.00	5.26	2600.00	3.76	.54	5.23	.00	.00	.00
*	3105.000	695.20	699.29	9981.24	10453.64	4.09	2600.00	1.18	.17	4.44	.00	.00	.00
*	3105.000	695.20	700.15	9982.00	10210.00	4.95	2600.00	1.88	.34	5.39	.00	.00	.00
*	3292.000	701.30	705.69	9926.75	10115.56	4.39	2600.00	6.63	.97	6.40	.00	.00	.00
*	3292.000	701.30	706.49	9980.00	10090.00	5.19	2600.00	7.34	.86	6.34	.00	.00	.00
*	3492.000	707.10	712.79	9856.73	10068.96	5.69	2600.00	2.97	.28	7.10	.00	.00	.00
*	3492.000	707.10	713.61	9910.00	10030.00	6.51	2600.00	3.49	.41	7.12	.00	.00	.00
	3570.000	708.90	713.96	9952.98	10238.27	5.06	2600.00	2.90	.25	1.17	.00	.00	.00
	3570.000	708.90	714.85	9984.00	10124.00	5.95	2600.00	3.58	.44	1.25	.00	.00	.00
*	3677.000	712.00	716.37	9783.42	10060.65	4.37	2600.00	3.58	.52	2.41	.00	.00	.00
	3677.000	712.00	717.23	9900.00	10030.00	5.23	2600.00	3.85	.72	2.38	.00	.00	.00
*	3772.000	713.80	719.18	9955.42	10273.94	5.38	2600.00	3.11	.30	2.81	.00	.00	.00
	3772.000	713.80	719.98	9990.00	10110.00	6.18	2600.00	3.79	.54	2.75	.00	.00	.00
	3863.000	717.00	721.20	9806.66	10045.88	4.20	2600.00	4.80	.44	2.02	.00	.00	.00
	3863.000	717.00	722.17	9894.00	10034.00	5.17	2600.00	5.76	.55	2.19	.00	.00	.00

	SECNO	ELMIN	CWSEL	SSTA	ENDST	DEPTH	Q	VCH	HV	DIFWSX	QWEIR	ELTRD	ELLC
	3957.000	718.60	724.06	9705.27	10124.89	5.46	2600.00	6.44	.62	2.86	.00	.00	.00
	3957.000	718.60	724.73	9989.00	10080.00	6.13	2600.00	6.11	.82	2.56	.00	.00	.00
	4053.000	720.80	726.89	9802.60	10133.73	6.09	2600.00	3.10	.26	2.83	.00	.00	.00
	4053.000	720.80	727.89	9940.00	10060.00	7.09	2600.00	4.31	.49	3.16	.00	.00	.00
	4147.000	723.80	729.08	9980.99	10252.49	5.28	2600.00	8.35	.75	2.20	.00	.00	.00
	4147.000	723.80	729.98	9981.00	10090.00	6.18	2600.00	6.66	.58	2.09	.00	.00	.00
*	4156.000	724.90	731.18	9995.00	10335.75	6.28	2600.00	8.61	.67	2.10	.00	.00	.00
*	4156.000	724.90	731.22	9995.00	10200.00	6.32	2600.00	9.43	.95	1.23	.00	.00	.00
*	4183.000	724.90	732.33	9843.29	10433.34	7.43	2600.00	1.73	.13	1.15	.00	.00	.00
*	4183.000	724.90	732.69	9995.00	10200.00	7.79	2600.00	2.02	.28	1.47	.00	.00	.00
*	4216.000	725.00	733.59	9956.22	10511.63	8.59	2600.00	9.28	.51	1.25	1971.91	732.40	.00
	4216.000	725.00	734.08	9995.00	10200.00	9.08	2600.00	9.08	.64	1.39	1906.37	732.40	.00
*	4287.000	726.80	734.38	9910.14	10336.65	7.58	2600.00	3.70	.14	.79	.00	.00	.00
*	4287.000	726.80	735.05	9920.00	10120.00	8.25	2600.00	3.39	.13	.96	.00	.00	.00
*	4315.000	729.80	737.21	9911.00	10165.33	7.41	2600.00	9.17	.80	2.83	.00	.00	.00
*	4315.000	729.80	737.10	9914.54	10150.00	7.30	2600.00	9.63	.90	2.05	.00	.00	.00
*	4331.000	730.10	739.94	9229.60	10803.51	9.84	2600.00	3.22	.06	2.73	1246.46	739.10	736.90
*	4331.000	730.10	740.85	9911.00	10150.00	10.75	2600.00	3.06	.08	3.76	1009.13	739.10	736.90
*	4395.000	729.50	740.04	9248.54	10430.42	10.54	2600.00	1.30	.01	.10	.00	.00	.00
	4395.000	729.50	740.95	9900.00	10200.00	11.45	2600.00	2.19	.05	.10	.00	.00	.00
	4429.000	729.60	740.05	9470.00	10270.00	10.45	2600.00	1.20	.01	.01	.00	.00	.00
*	4429.000	729.60	741.00	9880.00	10270.00	11.40	2600.00	1.92	.03	.05	.00	.00	.00
*	4449.000	731.90	745.03	8868.23	12614.86	13.13	2600.00	.99	.01	4.98	2288.66	743.60	.00
*	4449.000	731.90	746.05	9880.00	10300.00	14.15	2600.00	1.04	.01	5.05	2287.60	743.60	.00
	4477.000	732.50	745.03	9731.57	10369.26	12.53	2600.00	1.07	.01	.00	.00	.00	.00
*	4477.000	732.50	746.04	9900.00	10100.00	13.54	2600.00	1.39	.02	.00	.00	.00	.00
*	4537.000	733.80	744.99	9901.70	10081.20	11.19	3500.00	2.74	.11	-.05	.00	.00	.00
*	4537.000	733.80	746.03	9902.00	10070.00	12.23	3500.00	2.44	.09	-.02	.00	.00	.00
*	4563.000	734.60	744.99	9950.00	10050.00	10.39	3500.00	4.19	.25	.00	.00	.00	.00
*	4563.000	734.60	745.98	9965.00	10035.00	11.38	3500.00	4.39	.30	-.04	.00	.00	.00
	4568.000	734.90	745.18	9950.00	10050.00	10.28	3500.00	4.24	.26	.19	1905.30	744.50	741.00
	4568.000	734.90	745.97	9965.00	10035.00	11.07	3500.00	4.52	.32	-.02	2921.23	744.50	741.00
*	4591.000	735.00	745.50	9907.00	10378.00	10.50	3500.00	1.90	.04	.33	.00	.00	.00
	4591.000	735.00	746.33	9970.00	10160.00	11.33	3500.00	3.16	.11	.36	.00	.00	.00

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	SECNO	ELMIN	CWSEL	SSTA	ENDST	DEPTH	Q	VCH	HV	DIFWSX	QWEIR	ELTRD	ELLC
	4727.000	737.40	745.72	9870.90	10560.73	8.32	3500.00	2.03	.05	.21	.00	.00	.00
	4727.000	737.40	746.75	9960.00	10180.00	9.35	3500.00	2.66	.12	.43	.00	.00	.00
*	4911.000	742.30	749.10	9819.31	10127.61	6.80	3500.00	8.20	.94	3.38	.00	.00	.00
*	4911.000	742.30	748.64	9955.11	10089.70	6.34	3500.00	9.72	1.38	1.89	.00	.00	.00
	5137.000	746.60	753.31	9812.50	10109.81	6.71	1400.00	2.80	.10	4.21	.00	.00	.00
*	5137.000	746.60	754.00	9940.00	10040.00	7.40	1400.00	3.14	.15	5.36	.00	.00	.00
*	5200.000	750.50	755.50	9989.00	10011.00	5.00	1400.00	12.74	2.52	2.18	.00	.00	.00
*	5200.000	750.50	755.50	9989.00	10011.00	5.00	1400.00	12.74	2.52	1.49	.00	.00	.00
*	5258.000	751.20	759.96	9989.00	10011.00	8.76	1400.00	7.27	.82	4.46	.00	771.80	.00
*	5258.000	751.20	759.96	9989.00	10011.00	8.76	1400.00	7.26	.82	4.46	.00	771.80	.00
*	5308.000	752.00	761.04	9850.00	10150.00	9.04	1400.00	.95	.01	1.08	.00	.00	.00
*	5308.000	752.00	761.06	9970.00	10030.00	9.06	1400.00	2.78	.12	1.10	.00	.00	.00

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SCOTT AVENUE 100 YEAR FL

SUMMARY PRINTOUT TABLE 110

	SECNO	CWSEL	DIFKWS	EG	TOPWID	QLOB	QCH	QROB	PERENC	STENCL	STCHL	STCHR	STENCR
	2261.000	676.71	.00	677.13	518.37	3.23	1864.00	732.76	.00	.00	9934.60	10041.70	.00
	2261.000	677.51	.80	677.93	158.00	.00	2168.26	431.74	158.00	9935.00	9934.60	10041.70	10093.00
*	2505.000	683.28	.00	683.61	415.46	314.85	1824.04	461.11	.00	.00	10073.20	10278.00	.00
*	2505.000	683.20	-.08	683.87	279.97	385.88	2214.11	.00	280.00	9980.00	10073.20	10278.00	10260.00
*	2677.000	688.72	.00	688.84	690.06	2.98	973.56	1623.46	881.60	9718.40	9917.80	10061.90	10600.00
*	2677.000	689.53	.81	689.66	412.00	14.51	1368.52	1216.97	412.00	9913.00	9917.80	10061.90	10325.00
*	2867.000	694.84	.00	694.88	813.02	.22	140.45	2459.33	.00	.00	9969.70	10021.70	.00
*	2867.000	694.76	-.09	695.30	211.00	.20	536.68	2063.13	211.00	9969.00	9969.70	10021.70	10180.00
*	3105.000	699.29	.00	699.46	472.40	.00	84.33	2515.67	.00	.00	9980.20	10043.10	.00
*	3105.000	700.15	.86	700.49	228.00	.00	233.08	2366.92	228.00	9982.00	9980.20	10043.10	10210.00

	3292.000	705.69	.00	706.65	188.82	728.77	1681.79	189.44	.00	.00	9981.10	10084.80	.00
	3292.000	706.49	.80	707.35	110.00	11.94	2467.87	120.19	110.00	9980.00	9981.10	10084.80	10090.00
*	3492.000	712.79	.00	713.07	212.24	1566.07	548.37	485.56	.00	.00	9987.70	10028.10	.00
*	3492.000	713.61	.82	714.01	120.00	1818.33	759.08	22.59	120.00	9910.00	9987.70	10028.10	10030.00
	3570.000	713.96	.00	714.21	285.29	166.88	373.15	2059.97	.00	.00	9984.30	10018.50	.00
	3570.000	714.85	.90	715.30	140.00	1.17	570.14	2028.69	140.00	9984.00	9984.30	10018.50	10124.00
*	3677.000	716.37	.00	716.89	277.22	1860.78	405.79	333.43	.00	.00	9982.30	10027.80	.00
	3677.000	717.23	.86	717.95	130.00	1988.26	586.80	24.94	130.00	9900.00	9982.30	10027.80	10030.00
*	3772.000	719.18	.00	719.49	318.52	271.10	569.45	1759.45	.00	.00	9992.20	10041.80	.00
	3772.000	719.98	.79	720.51	120.00	25.22	842.39	1732.39	120.00	9990.00	9992.20	10041.80	10110.00
	3863.000	721.20	.00	721.64	239.23	1794.42	801.68	3.89	.00	.00	9962.10	10033.40	.00
	3863.000	722.17	.96	722.71	140.00	1243.81	1354.73	1.46	140.00	9894.00	9962.10	10033.40	10034.00
	3957.000	724.06	.00	724.68	419.62	245.27	687.51	1667.22	.00	.00	9989.00	10013.20	.00
	3957.000	724.73	.67	725.55	91.00	.00	751.06	1848.94	91.00	9989.00	9989.00	10013.20	10080.00
	4053.000	726.89	.00	727.15	331.13	667.42	792.53	1140.04	.00	.00	9962.00	10031.70	.00
	4053.000	727.89	1.01	728.38	120.00	375.50	1402.41	822.08	120.00	9940.00	9962.00	10031.70	10060.00
	4147.000	729.08	.00	729.83	226.56	72.64	963.46	1563.90	.00	.00	9990.40	10015.50	.00
	4147.000	729.98	.90	730.56	109.00	100.50	918.94	1580.56	109.00	9981.00	9990.40	10015.50	10090.00
*	4156.000	731.18	.00	731.85	331.18	.00	497.16	2102.84	.00	.00	9995.00	10005.10	.00
*	4156.000	731.22	.04	732.17	196.50	.00	547.88	2052.12	205.00	9995.00	9995.00	10005.10	10200.00
*	4183.000	732.33	.00	732.46	590.05	104.41	120.30	2375.29	.00	.00	9995.00	10005.10	.00
*	4183.000	732.69	.36	732.97	205.00	.00	147.14	2452.86	205.00	9995.00	9995.00	10005.10	10200.00

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	SECNO	CWSEL	DIFKWS	EG	TOPWID	QLOB	QCH	QROB	PERENC	STENCL	STCHL	STCHR	STENCR
*	4216.000	733.59	.00	734.10	555.41	431.20	796.52	1372.28	.00	.00	9995.00	10005.00	.00
	4216.000	734.08	.49	734.72	205.00	.00	824.70	1775.30	205.00	9995.00	9995.00	10005.00	10200.00
*	4287.000	734.38	.00	734.52	426.51	1036.83	1026.47	536.70	.00	.00	9987.20	10037.00	.00
*	4287.000	735.05	.67	735.17	200.00	1023.39	1055.24	521.38	200.00	9920.00	9987.20	10037.00	10120.00
*	4315.000	737.21	.00	738.01	254.33	722.73	1344.14	533.13	.00	.00	9990.00	10010.00	.00
*	4315.000	737.10	-.11	738.00	235.46	715.84	1389.92	494.24	239.00	9911.00	9990.00	10010.00	10150.00
*	4331.000	739.94	.00	740.00	1573.91	894.36	628.79	1076.85	.00	.00	9990.00	10010.00	.00
*	4331.000	740.85	.91	740.93	239.00	818.60	653.00	1128.40	239.00	9911.00	9990.00	10010.00	10150.00
	4395.000	740.04	.00	740.05	1181.87	1190.37	547.09	862.54	.00	.00	9967.80	10022.40	.00
	4395.000	740.95	.91	741.00	300.00	315.85	1032.76	1251.39	300.00	9900.00	9967.80	10022.40	10200.00
	4429.000	740.05	.00	740.06	800.00	1997.26	75.12	527.62	.00	.00	9997.00	10003.00	.00
*	4429.000	741.00	.95	741.03	390.00	1307.57	131.33	1161.09	420.00	9880.00	9997.00	10003.00	10300.00
*	4449.000	745.03	.00	745.04	2675.29	1438.48	78.30	1083.21	.00	.00	9997.00	10003.00	.00
*	4449.000	746.05	1.01	746.06	420.00	1238.11	88.64	1273.24	420.00	9880.00	9997.00	10003.00	10300.00
	4477.000	745.03	.00	745.05	637.69	1429.75	252.63	917.61	.00	.00	9990.00	10010.00	.00
*	4477.000	746.04	1.01	746.07	200.00	1296.60	357.08	946.32	200.00	9900.00	9990.00	10010.00	10100.00
*	4537.000	744.99	.00	745.10	179.50	1679.89	481.94	1338.17	.00	.00	9997.00	10014.80	.00
*	4537.000	746.03	1.04	746.12	168.00	1777.95	475.55	1246.50	168.00	9902.00	9997.00	10014.80	10070.00
*	4563.000	744.99	.00	745.24	100.00	245.18	3048.14	206.68	.00	.00	9965.00	10035.00	.00
*	4563.000	745.98	1.00	746.28	70.00	.00	3500.00	.00	70.00	9965.00	9965.00	10035.00	10035.00
	4568.000	745.18	.00	745.44	100.00	242.53	3052.68	204.80	.00	.00	9965.00	10035.00	.00
	4568.000	745.97	.79	746.28	70.00	.00	3500.00	.00	70.00	9965.00	9965.00	10035.00	10035.00
*	4591.000	745.50	.00	745.54	471.00	1053.94	396.79	2049.28	.00	.00	9987.00	10009.00	.00
*	4591.000	746.33	.82	746.43	190.00	412.51	715.99	2371.50	190.00	9970.00	9987.00	10009.00	10160.00
	4727.000	745.72	.00	745.77	589.83	745.36	606.42	2148.21	.00	.00	9973.30	10014.40	.00
	4727.000	746.75	1.03	746.87	220.00	237.71	906.51	2355.77	220.00	9960.00	9973.30	10014.40	10180.00
*	4911.000	749.10	.00	750.04	307.05	369.31	1447.56	1683.13	.00	.00	9981.10	10013.10	.00
*	4911.000	748.64	-.46	750.01	134.59	318.08	1572.35	1609.57	170.00	9945.00	9981.10	10013.10	10115.00
	5137.000	753.31	.00	753.41	297.31	290.66	1042.51	66.83	.00	.00	9941.70	10034.80	.00
*	5137.000	754.00	.69	754.15	100.00	6.56	1374.47	18.97	100.00	9940.00	9941.70	10034.80	10040.00
*	5200.000	755.50	.00	758.02	22.00	.00	1400.00	.00	.00	.00	9989.00	10011.00	.00
*	5200.000	755.50	.00	758.02	22.00	.00	1400.00	.00	22.00	9989.00	9989.00	10011.00	10011.00
*	5258.000	759.96	.00	760.78	22.00	.00	1400.00	.00	.00	.00	9989.00	10011.00	.00
*	5258.000	759.96	.00	760.78	22.00	.00	1400.00	.00	22.00	9989.00	9989.00	10011.00	10011.00

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	SECNO	CWSEL	DIFKWS	EG	TOPWID	QLOB	QCH	QROB	PERENC	STENCL	STCHL	STCHR	STENCR
*	5308.000	761.04	.00	761.05	300.00	81.19	1204.59	114.22	.00	.00	9900.00	10080.00	.00
*	5308.000	761.06	.02	761.18	60.00	.00	1400.00	.00	60.00	9970.00	9900.00	10080.00	10030.00

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MMARY OF ERRORS AND SPECIAL NOTES

```
CAUTION SECNO=   2505.000  PROFILE=  1  20 TRIALS ATTEMPTED TO BALANCE WSEL
WARNING SECNO=   2505.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   2505.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=   2677.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   2677.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO=   2867.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=   2867.000  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=   2867.000  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=   2867.000  PROFILE=  2  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=   3105.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=   3105.000  PROFILE=  1  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=   3105.000  PROFILE=  1  20 TRIALS ATTEMPTED TO BALANCE WSEL
WARNING SECNO=   3105.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO=   3292.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=   3292.000  PROFILE=  1  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=   3292.000  PROFILE=  1  20 TRIALS ATTEMPTED TO BALANCE WSEL
WARNING SECNO=   3292.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=   3492.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   3492.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=   3677.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=   3772.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO=   4156.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=   4156.000  PROFILE=  1  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=   4156.000  PROFILE=  1  20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO=   4156.000  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=   4156.000  PROFILE=  2  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=   4156.000  PROFILE=  2  20 TRIALS ATTEMPTED TO BALANCE WSEL

WARNING SECNO=   4183.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   4183.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO=   4216.000  PROFILE=  1  WSEL ASSUMED BASED ON MIN DIFF
CAUTION SECNO=   4216.000  PROFILE=  1  20 TRIALS ATTEMPTED TO BALANCE WSEL

WARNING SECNO=   4287.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   4287.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO=   4315.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=   4315.000  PROFILE=  1  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=   4315.000  PROFILE=  1  20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO=   4315.000  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=   4315.000  PROFILE=  2  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=   4315.000  PROFILE=  2  20 TRIALS ATTEMPTED TO BALANCE WSEL
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WARNING SECNO=   4331.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   4331.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=   4395.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=   4429.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=   4449.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   4449.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=   4477.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=   4537.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   4537.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=   4563.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   4563.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=   4591.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   4591.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO=   4911.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=   4911.000  PROFILE=  1  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=   4911.000  PROFILE=  1  20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO=   4911.000  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=   4911.000  PROFILE=  2  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=   4911.000  PROFILE=  2  20 TRIALS ATTEMPTED TO BALANCE WSEL

WARNING SECNO=   5137.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO=   5200.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=   5200.000  PROFILE=  1  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=   5200.000  PROFILE=  1  20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO=   5200.000  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=   5200.000  PROFILE=  2  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=   5200.000  PROFILE=  2  20 TRIALS ATTEMPTED TO BALANCE WSEL

WARNING SECNO=   5258.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   5258.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=   5308.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   5308.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
```

FLOODWAY DATA, SCOTT AVENUE 100 YEAR FL
PROFILE NO. 2

STATION	FLOODWAY WIDTH	FLOODWAY SECTION AREA	FLOODWAY MEAN VELOCITY	WATER SURFACE ELEVATION WITH FLOODWAY	WATER SURFACE ELEVATION WITHOUT FLOODWAY	DIFFERENCE
2261.000	158.	511.	5.1	677.5	676.7	.8
2505.000	280.	407.	6.4	683.2	683.3	-.1
2677.000	412.	893.	2.9	689.5	688.7	.8
2867.000	211.	468.	5.6	694.7	694.8	-.1
3105.000	228.	607.	4.3	700.2	699.3	.9
3292.000	110.	351.	7.4	706.5	705.7	.8
3492.000	120.	545.	4.8	713.6	712.8	.8
3570.000	140.	513.	5.1	714.9	714.0	.9
3677.000	130.	424.	6.1	717.3	716.4	.9
3772.000	120.	489.	5.3	720.0	719.2	.8
3863.000	140.	439.	5.9	722.2	721.2	1.0
3957.000	91.	364.	7.1	724.8	724.1	.7
4053.000	120.	503.	5.2	727.9	726.9	1.0
4147.000	109.	433.	6.0	730.0	729.1	.9
4156.000	205.	336.	7.7	731.2	731.2	.0
4183.000	205.	639.	4.1	732.7	732.3	.4
4216.000	205.	465.	5.6	734.1	733.6	.5
4287.000	200.	954.	2.7	735.1	734.4	.7
4315.000	235.	450.	5.8	737.1	737.2	-.1
4331.000	239.	1279.	2.0	740.8	739.9	.9
4395.000	300.	1559.	1.7	740.9	740.0	.9
4429.000	390.	2069.	1.3	741.0	740.1	.9
4449.000	420.	3328.	.8	746.0	745.0	1.0
4477.000	200.	2141.	1.2	746.0	745.0	1.0
4537.000	168.	1444.	2.4	746.0	745.0	1.0
4563.000	70.	797.	4.4	746.0	745.0	1.0
4568.000	70.	775.	4.5	746.0	745.2	.8
4591.000	190.	1357.	2.6	746.3	745.5	.8
4727.000	220.	1286.	2.7	746.7	745.7	1.0
4911.000	135.	374.	9.4	748.6	749.1	-.5
5137.000	100.	455.	3.1	754.0	753.3	.7
5200.000	22.	110.	12.7	755.5	755.5	.0
5258.000	22.	193.	7.3	760.0	760.0	.0
5308.000	60.	503.	2.8	761.0	761.0	.0

```
*****************************************
*  HEC-2 WATER SURFACE PROFILES          *
*                                        *
*  Version   4.6.2;  May 1991            *
*                                        *
*  RUN DATE    11DEC92    TIME   13:12:16 *
*****************************************
```

```
****************************************
*  U.S. ARMY CORPS OF ENGINEERS        *
*  HYDROLOGIC ENGINEERING CENTER       *
*  609 SECOND STREET, SUITE D          *
*  DAVIS, CALIFORNIA 95616-4687        *
*          (916) 756-1104              *
****************************************
```

```
X     X  XXXXXXX   XXXXX              XXXXX
X     X  X        X     X            X     X
X     X  X        X                        X
XXXXXXX  XXXX     X          XXXXX     XXXXX
X     X  X        X                  X
X     X  X        X     X            X
X     X  XXXXXXX   XXXXX              XXXXXXX
```

1

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THIS RUN EXECUTED 11DEC92 13:12:16

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************************************
 HEC-2 WATER SURFACE PROFILES

 Version   4.6.2;  May 1991
************************************
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```
T1      FLOOD CONTROL DISTRICT OF MARICOPA COUNTY - CONTRACT FCD 90-67
T2      GILA BEND AREA FLOODPLAIN DELINEATION STUDY BY BURGESS & NIPLE
T3      UNNAMED WASH NO.1 100 YR                J. MISCHLER - (602) 244-8100

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                2                           0.0056                                733.89

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

    -1                  -1                                                                      15

J3  VARIABLE CODES FOR SUMMARY PRINTOUT

    38        42        1         43        26        51        4         8         53        54
    13        15        40
```

SECTIONS ARE LABELED AS RIVER MILES * 1000, i.e., SECTION 061 IS AT A POINT 0.061 MILES UPSTREAM OF THE CONFLUENCE WITH BENDER WASH.

THE CONFLUENCE WITH BENDER WASH OCCURS AT A LOCATION WHERE BENDER WASH INTERSECTS THE GILA BEND CANAL AND, BECAUSE OF A SMALL DRAINAGE STRUCTURE THROUGH THE CANAL, MOST FLOW IS DIVERTED WEST TO SAND TANKS WASH.

THIS MODEL THEREFORE BEGINS IN SAND TANK WASH TO DEVELOP BACKWATER PRIOR TO ENTERING UNNAMED WASH NO 1. THIS STARTING SEQUENCE IS IDENTICAL TO DATA FOUND IN THE BENDER WASH MODEL DEVELOPED WITH THIS STUDY FOR THIS AREA.

WHEN THE GILA BEND CANAL WAS CONSTRUCTED, A 3-BARREL CONCRETE BOX CULVERT WAS CONSTRUCTED TO CONVEY BENDER WASH BENEATH THE IRRIGATION CANAL. WHEN THE CANAL BANKS WERE RAISED AND THE CANAL EMBANKMENT WAS THEREFORE WIDENED AT SOME TIME IN THE PAST, THE CULVERT WAS EXTENDED BY INSERTING SINGLE 30-INCH CORRUGATED METAL PIPES IN EACH BARREL.

THE CULVERT WAS EXTENDED IN THE UPSTREAM DIRECTION.

FLOW THROUGH THE CULVERT IS CONTROLLED BY INLET CONDITIONS, AND IN FACT, THE THREE PIPES HAD SIGNIFICANT SEDIMENT CLOGGING THE INLETS AT THE TIME OF THE FIELD RECONNAISSANCE OF 10/4/91.

A DITCH HAS BEEN CONSTRUCTED UPSTREAM OF THE GILA BEND CANAL TO DIVERT WATER FROM BENDER WASH, AS WELL AS FROM UNNAMED TRIBUTARIES 1 & 2, TO

1

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SAND TANKS WASH JUST UPSTREAM OF THE INVERTED SIPHON WHICH CARRIES THE GILA BEND CANAL BENEATH SAND TANKS WASH.

ELEVATIONS UPSTREAM OF THE GILA BEND CANAL WILL THEREFORE BE CONTROLLED BY THIS DIVERSION DITCH.

THE ELEVATION AT SECTION 3888 IN SAND TANKS WASH IS DETERMINED USING SLOPE AREA METHODS. J1.5 STRT = (730CONTOUR-738CONTOUR)/360'=0.0056'/'

THIS SECTION IS IN THE "THROAT" OF THE GILA BEND CANAL WHICH CROSSES BENEATH SAND TANK WASH IN AN INVERTED SIPHON.

```
QT        1       900
NC     0.06      0.06     0.025       0.1       0.3
X1     3888         9    9953.4   10033.4         1         1         1
GR    744.8    9953.4     739.0    9962.8     732.0    9973.7     731.3    9991.4     731.3   10000.0
GR    731.3   10017.3     732.0   10020.6     743.6   10033.4     745.2   10038.6
```

```
NC     0.035      0.035      0.035
       1          27         9980.5     10035.8    460        300        380
       741.8      9741.2     741.4      9755.7     741.0      9773.2     739.3      9790.0     738.1      9812.1
       737.6      9821.9     738.1      9836.3     739.0      9847.1     739.5      9859.7     739.7      9862.2
GR     738.7      9885.5     738.6      9915.3     738.9      9934.7     739.2      9941.5     739.1      9952.9
GR     739.2      9962.9     739.4      9975.5     738.9      9980.5     734.4      9997.1     732.1      10000.0
GR     733.1      10005.4    735.0      10011.2    736.1      10024.1    738.2      10035.8    741.3      10045.9
GR     744.8      10054.2    744.7      10058.7

X1     2          11         9981.5     10036.7    440        460        460
GR     742.7      9969.1     740.5      9981.5     737.8      9990.0     737.0      9997.2     737.2      10000.0
GR     738.4      10006.3    737.6      10013.4    738.3      10024.3    739.9      10036.7    742.8      10047.1
GR     745.7      10054.0

       BEGIN UNNAMED WASH NO. 1 AT RM 0.000.

NC     0.06       0.06       0.035      0.1        0.3
X1     061        21         9984.9     10028.4
GR     746.0      9560.0     744.0      9800.0     743.1      9883.3     743.0      9893.2     741.6      9905.6
GR     741.3      9917.1     741.0      9933.8     741.4      9948.3     741.4      9960.3     742.0      9969.4
GR     742.5      9978.5     742.7      9984.9     739.3      9991.4     738.5      9997.0     738.0      10000.0
GR     738.8      10005.6    739.7      10015.0    742.4      10022.0    745.9      10028.4    746.5      10038.5
GR     746.6      10046.9

X1     150        16         9973.9     10023.9    472.0      470.0      470.0
GR     745.1      9620.0     744.0      9685.0     742.0      9720.0     743.5      9952.7     741.5      9960.8
GR     742.6      9966.2     744.6      9973.9     744.3      9976.5     741.4      9986.0     739.1      9993.2
GR     738.8      10000.0    739.5      10010.0    743.7      10017.1    745.8      10023.9    746.2      10032.1
GR     746.8      10034.2

       SECTION 337 IS IN THE CONFLUENCE AREA WITH UNNAMED WASH NO 2.  THE
       CONFLUENCE OCCURS AT RM 0.209 (UNNAMED WASH NO 2 RM 0.000).

1
   11DEC92      13:12:16                                                                                    PAGE    3

X1     337        51         9956.1     10027.6    755.0      1010.0     987.0
GR     748.3      9644.3     748.1      9675.1     748.0      9712.7     747.4      9747.4     746.8      9760.9
GR     746.1      9771.4     746.5      9785.1     747.2      9816.3     747.7      9851.3     747.2      9879.7
GR     746.2      9895.1     745.6      9902.8     746.9      9922.8     746.9      9938.2     745.5      9956.1
GR     744.1      9969.3     744.5      9985.5     744.4      9992.0     743.6      9995.4     742.8      10000.0
GR     743.2      10005.3    744.0      10014.8    745.0      10020.9    746.2      10027.6    743.7      10039.4
GR     743.8      10048.1    744.0      10071.5    743.5      10112.7    743.4      10152.3    743.4      10176.8
GR     743.3      10192.1    743.5      10210.8    743.7      10239.8    743.5      10265.9    743.1      10287.5
GR     743.5      10312.4    744.1      10341.5    743.7      10370.4    743.7      10397.7    744.2      10421.7
GR     745.4      10437.8    745.2      10465.0    745.3      10495.3    746.2      10524.5    746.6      10549.9
GR     746.7      10574.3    746.3      10590.4    745.6      10606.4    746.5      10626.6    747.4      10655.8
GR     747.6      10678.2

       0.035      0.035      0.035
       1          640
       555        17         9856.4     10040.6    1200.0     1030.0     1151.0
GR     752.5      9834.5     751.3      9856.4     749.4      9884.6     749.3      9913.6     750.0      9935.9
GR     750.3      9953.5     749.6      9968.7     748.7      9980.1     749.6      9991.1     748.8      9998.1
GR     748.1      10000.0    748.6      10007.5    749.4      10013.9    748.4      10022.2    748.1      10027.7
GR     751.3      10040.6    752.4      10065.0

       MAIN STREET CROSSES AT RM 0.666  (LOW CROSSING - NO STRUCTURE)

X1     769        12         9965.0     10009.3    1050.0     1130.0     1130.0
GR     758.2      9805.1     757.3      9853.7     754.7      9929.6     754.6      9965.0     752.7      9993.2
GR     751.5      10000.0    754.3      10009.3    756.4      10020.8    756.1      10066.8    757.7      10109.1
GR     759.6      10150.7    760.5      10169.0

NC     0.03       0.03       0.035
X1     959        18         9775.3     10097.9    1030.0     1000.0     1003.0
GR     764.6      9775.3     764.5      9814.9     762.9      9850.6     761.9      9881.7     761.2      9908.7
GR     760.6      9917.8     759.5      9926.6     761.4      9948.6     761.3      9983.2     759.9      9993.9
GR     759.1      10000.0    760.9      10015.8    760.6      10045.0    759.4      10052.4    761.2      10070.3
GR     762.9      10097.9    765.2      10130.5    766.8      10165.1

X1     1151       23         9977.9     10013.8    1040.0     1000.0     1014.0
GR     774.0      9536.3     772.5      9612.0     772.2      9662.7     771.6      9717.7     770.1      9753.3
GR     768.8      9818.9     767.9      9873.1     767.5      9912.5     767.4      9956.6     768.0      9977.9
GR     767.1      9991.1     766.3      9999.2     765.7      10000.0    767.5      10013.8    767.0      10037.5
GR     767.4      10070.2    768.4      10123.4    767.6      10188.4    767.6      10215.4    768.9      10254.8
GR     770.4      10291.1    773.1      10325.9    773.2      10369.5

X1     1347       18         9838.6     10063.7    960.0      1050.0     1035.0
GR     780.0      9707.6     776.9      9750.3     777.3      9799.9     775.0      9838.6     773.5      9891.3
GR     773.0      9912.4     771.6      9918.5     771.9      9927.2     772.9      9936.8     773.3      9948.8
GR     773.9      9978.1     773.3      9992.7     771.8      10000.0    771.4      10011.9    773.2      10026.4
GR     774.6      10063.7    778.1      10121.0    778.4      10154.5
1
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QT     1          620
X1     1540       23         9968.7     10071.2    1010.0     985.0      1019.0
GR     787.7      9662.5     786.1      9707.0     783.7      9742.4     782.1      9766.1     784.5      9810.2
GR     784.9      9850.4     783.6      9892.1     781.2      9923.9     780.9      9968.7     779.6      9983.4
GR     779.2      9994.3     779.7      10000.0    781.7      10017.9    781.2      10037.5    778.8      10049.8
GR     780.9      10071.2    781.1      10101.6    782.2      10135.9    785.8      10176.8    787.6      10223.2
GR     787.3      10269.6    787.9      10295.9    788.6      10348.2

QT     1          550
       1723       20         9941.3     10023.9    960.0      850.0      966.0
```

```
GR    794.5     9627.3     794.0     9689.1     794.0     9757.0     792.8     9794.2     788.4     9851.6
      788.9     9899.2     789.2     9941.3     787.3     9973.7     786.9     9989.9     786.2    10000.0
      787.8    10023.9     787.8    10071.8     787.9    10135.1     790.3    10173.6     791.8    10209.4
      788.6    10240.4     790.3    10260.6     792.8    10307.2     793.9    10372.4     794.5    10403.3

QT        1        480
X1     1921         18    9978.8    10025.4    1040.0      840.0    1045.0
GR    802.4     9925.7     801.8     9938.7     795.5     9978.8     793.6     9993.3     791.8     9997.4
GR    791.4    10000.0     792.3    10005.4     796.5    10025.4     797.8    10061.9     797.8    10090.5
GR    795.9    10111.5     798.1    10141.3     798.7    10163.5     799.3    10196.9     800.1    10241.2
GR    800.3    10280.0     800.9    10327.4     801.1    10339.3

QT        1        400
X1     2127         14    9957.6    10089.0    1070.0     1020.0    1088.0
GR    812.3     9848.0     811.1     9864.5     805.2     9890.5     804.2     9905.0     808.5     9921.3
GR    806.0     9957.6     802.7     9986.1     801.3     9996.7     801.0    10000.0     802.6    10020.4
GR    804.6    10048.4     807.0    10089.0     808.5    10137.9     809.3    10184.8

QT        1        330
X1     2337         15    9990.2    10031.3    1070.0     1160.0    1109.0
GR    818.7     9852.3     815.9     9880.6     815.3     9892.4     816.7     9917.9     816.3     9956.3
GR    813.7     9990.2     811.7    10000.0     810.6    10010.0     811.9    10031.3     812.2    10056.9
GR    812.3    10103.6     813.8    10154.7     816.7    10203.0     817.6    10264.9     818.1    10334.4
```

A FLOW SPLIT OF 65 CFS OCCURS UPSTREAM OF THE I-8 FRONTAGE ROAD.
A FLOW SPLIT OF 45 CFS OCCURS UPSTREAM OF THE I-8 MAINLINE.
THIS FLOW RE-ENTERS UNNAMED WASH NO. 1 BETWEEN SECTIONS 2337 AND 2565.
FLOWS ARE THEREFORE REDUCED BY 110 CFS THROUGH THE INTERSTATE AREA.

Q BEFORE SPLIT 250 CFS
Q AFTER SPLIT 140 CFS

ADD THE 45 CFS BACK IN UPSTREAM OF THE I-8 MAINLINE AT SECTION 2936.
ADD THE 65 CFS BACK IN UPSTREAM OF THE FRONTAGE ROAD AT SECTION 3148.

LEFT OVERBANK GEOMETRY IS REVISED FROM AERIAL DATA TO REFLECT
FLOW OVER THE WESTBOUND ON-RAMP IN THE FAR LEFT OVERBANK.


```
QT        1        140
X1     2565         11    9974.7    10016.7    1140.0     1130.0    1204.0
GR    828.2       9610       824       9700       827       9800     824.1     9918.7     822.2     9947.9
GR    821.5     9974.7     819.5    10000.0     821.6    10016.7     823.1    10056.3     826.2    10118.0
GR    826.5    10178.2
```

THE FOLLOWING 5 BRIDGE MODELS ARE BASED ON AS BUILT PLANS OBTAINED
FROM THE ARIZONA DEPARTMENT OF TRANSPORTATION WITH INVERTS SURVEYED
USING FIELD METHODS AND LOCAL TBM'S ESTABLISHED USING SPOT ELEVATIONS
FROM AERIAL TOPO MAPPING.

ON RAMP TO WESTBOUND INTERSTATE 8

REPEAT CHANNEL POINTS AND RIGHT OVERBANK DATA OF SECTION 2565 AT THE
DOWNSTREAM FACE OF THE TWIN CMP'S THROUGH RAMP C (WESTBOUND ON-RAMP
TO INTERSTATE 8).

RAISE CHANNEL AND RIGHT OVERBANK ELEVATIONS BY = 820.4 - 819.5 = 0.9 FT.
ADD LEFT OVERBANK DATA FROM TOPO MAP.

AT THIS SECTION, HEC-2 COMPUTES A RELATIVELY LOW DEPTH AT THE
DOWNSTREAM FACE OF THE CULVERT, BUT BECAUSE OF THE HEAD LOSS THROUGH
THE CULVERT, A GREATER DEPTH IS COMPUTED AT THE UPSTREAM FACE.
BECAUSE OF THIS, QLOB AT THE DOWNSTREAM FACE DOES NOT REASONABLY
AGREE WITH QWEIR OR QLOB AT THE UPSTREAM FACE. NOR DOES THE START
STATION DOWNSTREAM AGREE WITH THE UPSTREAM VALUE. THE 26 CFS COMPUTED
AS WEIR FLOW IS CONVEYED AS SHEET FLOW ACROSS THE LEFT OVERBANK AT A
SLOPING, BUT HIGHER ELEVATION THAN IS COMPUTED WITHIN THE CHANNEL.
ALTHOUGH THE RESULTS OF THIS MODEL WOULD INDICATE A FLOOD BOUNDARY
AND FLOODWAY WITHIN THE CHANNEL AREA DOWNSTREAM, IT IS NECESSARY
TO PLOT THE FLOOD BOUNDARY AND FLOODWAY IN A MANNER CONSISTENT WITH
WEIR FLOW OVER THE ON-RAMP WELL TO THE WEST OF THE CULVERT WITH
CORRESPONDING SHEET FLOW BACK TO THE MAIN CHANNEL.

Q BEFORE SPLIT 240 CFS
Q AFTER SPLIT 130 CFS

```
QT        1        130
X1     2585         11       9995      10005       105       105       105
X3       10                                                              821       840
GR    828.2       9550      827.0       9600     825.0      9919     823.1      9948     822.4      9975
GR    820.4       9995      820.4      10005     822.5     10017     824.0     10056     827.1     10118
GR    827.4      10178
```

USE GR DATA FROM AERIAL SURVEY SECTION AT RM 2.641 AT THE UPSTREAM END
OF THE CULVERT. USE PSXECE = -0.2 TO MATCH CHANNEL THALWEG TO CHANNEL
INVERT. DO NOT THEN USE THE GR DATA AT RM 2.641, INSTEAD REPEAT IT
AGAIN AT THE DOWNSTREAM FACE OF THE CULVERT THROUGH BUSINESS ROUTE 8.

REVISE GR POINTS ON THE LEFT SIDE TO FOLLOW THE RAMP.

Q BEFORE SPLIT 220 CFS

Q AFTER SPLIT 110 CFS

```
QT        1       110
SC    2.019       0.5         3         0         3         0       240       2.1     824.5     820.4
X1     2632        13      9995     10005       260       240       250                -0.2
X2                            2                828.7
X3       10                                                        828.2     840.3
BT       -6      9450     829.4                9550     828.8                 9600     828.2
BT               9780     834.5               10005     840.3                10300     851.0
GR    829.6    9450.0     829.0    9550.0     828.0    9600.0     834.5    9780.0     834.5    9900.0
GR    828.8    9980.7     826.4    9993.0     824.7    9995.0     824.7   10005.0     827.1   10026.0
GR    834.3   10055.7     843.1   10086.8     851.2   10300.0

NC    0.035     0.035     0.035
```

BUSINESS ROUTE 8

REPEAT THE SECTION TAKEN BY AERIAL METHODS AT RM 2.641 AT THE DOWNSTREAM FACE OF THE CULVERT BENEATH BUSINESS ROUTE 8 (TWIN 36" CMP'S). USE PSXECE = 825.1 - 824.7 = 0.4 FT.

Q BEFORE SPLIT 220 CFS
Q AFTER SPLIT 110 CFS

```
QT        1       110
X1     2649        12      9995     10005       100        85        91                 0.4
X3       10                                                        830       850
GR    833.4     9780     833.3    9794.1     831.1    9815.9     830.9    9891.6     829.3    9961.4
GR    828.8    9980.7     824.7    9995.0     824.7   10005.0     827.1   10026.0     834.3   10055.7
GR    843.1   10086.8     851.2     10300
```

USE GR DATA FROM AERIAL SURVEY SECTION AT RM 2.746 AT THE UPSTREAM END OF THE CULVERT. USE PSXECE = -2.5 TO MATCH CHANNEL THALWEG TO CHANNEL INVERT. THEN USE THE GR DATA AGAIN AT RM 2.746 FOR CONTRACTION LOSSES.

USE TOPO DATA TO ADD THE DITCH ALONG I-8 FOR POSSIBLE WEIR FLOW. ADD 2.5 FT SO THAT IT WILL BE CORRECT WHEN 2.5 FT IS SUBTRACTED. ASSUME A DITCH 2.0 FT BELOW THE PAVEMENT.

ELTRD = 834.0 + 0.5 HV = 834.5

Q BEFORE SPLIT 200 CFS
Q AFTER SPLIT 90 CFS

```
QT        1        90
SC    2.019       0.5         3         0         3         0       248       2.1     827.0     825.1
X1     2698        17      9995     10005       258       258       258                -2.5
X2                            2                834.5
X3       10                                                        834     851.0
BT       -4      9650       836                9660       834                 9750     858.2
BT              10195.9     851.0
GR    838.5    9650.0     836.5    9660.0     838.5    9670.0     841.2    9882.3     832.4    9920.3
```



```
GR    833.1    9973.7     831.8    9985.8     829.5    9995.0     829.5   10005.0     831.9   10016.0
GR    831.7   10047.7     833.1   10080.7     832.5   10108.2     835.3   10134.2     835.1   10164.8
GR    839.7   10191.9     841.4   10195.9
```

KEEP EXPANSION/CONTRACTION COEFFICIENTS HIGH THROUGH THIS AREA OF FREQUENT STRUCTURES.

Q BEFORE SPLIT 190 CFS
Q AFTER SPLIT 80 CFS

```
QT        1        80
NC    0.035     0.035      0.03
X1     2746        14    9973.7    10016.3     535.0     590.0     554.0
GR    841.2    9882.3     832.4     9920.3     833.1    9973.7     831.8    9985.8     830.4    9997.7
GR    829.5   10000.0     831.9    10016.3     831.7   10047.7     833.1   10080.7     832.5   10108.2
GR    835.3   10134.2     835.1    10164.8     839.7   10191.9     841.4   10195.9
```

MAINLINE INTERSTATE 8

REPEAT GR DATA FROM SECTION 2746 AT THE DOWNSTREAM FACE OF THE TWIN 30" CULVERTS WHICH CONVEY UNNAMED WASH NO 1 BENEATH MAINLINE I-8 EASTBOUND AND WESTBOUND.

USE PSXECE = 829.5 - 829.5 = 0.0

Q BEFORE SPLIT 180 CFS
Q AFTER SPLIT 70 CFS

```
QT        1        70
X1     2779        14      9995     10005       174       174       174
X3       10                                                        837.3     837.3
GR    841.2    9882.3     832.4     9920.3     833.1    9973.7     831.8    9985.8     829.5      9995
GR    829.5     10005     831.9    10016.0     831.7   10047.7     833.1   10080.7     832.5   10108.2
GR    835.3   10134.2     835.1    10164.8     839.7   10191.9     841.4   10195.9
```

USE GR DATA FROM AERIAL SURVEY SECTION AT RM 2.936 AT THE UPSTREAM END OF THE CULVERT. USE PSXECE = -2.1 TO MATCH CHANNEL THALWEG TO CULVERT INVERT. THEN USE THE GR DATA AGAIN AT RM 2.936 FOR CONTRACTION LOSSES.

WEIR FLOW NOT ANTICIPATED. USE SC.4 = 100 FT.
ELTRD = 838.3

Q BEFORE SPLIT 170 CFS
Q AFTER SPLIT 60 CFS

```
QT        1        60
SC    2.018       0.5         3       100       2.5         0       285       2.2     832.6     829.5
```



```
X1     2835        18      9995     10005       295       295       295                -2.1
X2                          2                 838.3
X3       10                                                        838.3     838.3
GR    858.1      9690     838.1      9730     838.1      9770     841.0    9861.3     840.5    9902.5
GR    837.3    9943.7     836.7    9975.5     834.7    9995.0     834.7   10005.0     836.5   10014.0
GR    836.6   10043.6     836.2   10052.2     839.6   10082.6     840.6   10146.0     840.5   10203.1
GR    842.6   10231.5     842.8   10242.2     842.1     10270
```

KEEP EXPANSION/CONTRACTION COEFFICIENTS HIGH THROUGH THIS AREA OF FREQUENT STRUCTURES.

ADD 45 CFS DIVERTED ALONG MAINLINE BACK IN. NOW SUBTRACT ONLY 65 CFS:
Q BEFORE SPLIT 140 CFS
Q AFTER SPLIT 75 CFS

```
QT        1        75
NC    0.035     0.035     0.035
X1     2936        16      9988     10014       530       500       533
GR    841.6    9754.7     839.9    9786.9     841.0    9861.3     840.5    9902.5     837.3    9943.7
GR    836.7    9976.0     836.0    9988.0     834.7   10000.0     836.5   10014.0     836.6   10043.6
GR    836.2   10052.2     839.6   10082.6     840.6   10146.0     840.5   10203.1     842.6   10231.5
GR    842.8   10242.2
```

ON-RAMP TO EASTBOUND INTERSTATE 8

REPEAT GR DATA FROM SECTION 2936 AT THE DOWNSTREAM FACE OF THE SINGLE 36" CULVERT WHICH CONVEYS UNNAMED WASH NO 1 BENEATH THE EASTBOUND I-8 ON-RAMP.

USE PSXECE = 835.9 - 834.7 = 1.2

Q BEFORE SPLIT 130 CFS
Q AFTER SPLIT 65 CFS

```
QT        1        65
X1     2974        17      9997     10003       190       180       201                 1.2
X3       10                                                          839     843.3
GR    841.6    9754.7     839.9    9786.9     841.0    9861.3     840.5    9902.5     837.3    9943.7
GR    836.7    9975.5     836.0    9988.0     834.7     9997      834.7   10003.0     836.5   10014.0
GR    836.6   10043.6     836.2   10052.2     839.6   10082.6     840.6   10146.0     840.5   10203.1
GR    842.6   10231.5     842.8   10242.2
```

USE GR DATA FROM AERIAL SURVEY SECTION AT RM 3.080 AT THE UPSTREAM END OF THE CULVERT. USE PSXECE = -4.4 TO MATCH CHANNEL THALWEG TO CULVERT INVERT. THEN USE THE GR DATA AGAIN AT RM 3.080 FOR CONTRACTION LOSSES.

ELTRD = 843.1 + 0.5 HV = 843.6

Q BEFORE SPLIT 120 CFS
Q AFTER SPLIT 55 CFS

1


```
QT        1        55
SC    1.019       0.5         3         0         3         0       137       2.2     836.8     835.9
X1     3002        16      9997     10003       147       147       147                -4.4
X2                          2                 843.6
X3       10                                                        843.1     844.3
BT       -4      9100     846.3                9610     843.1                10000     844.3
BT            10370     847.2
GR    850.7      9100     847.5      9610     847.2    9795.4     847.3    9847.6     847.3    9900.4
GR    846.6    9951.2     845.1    9980.1     841.2    9997.0     841.2   10003.0     844.0   10020.0
GR    845.3   10052.5     845.0   10114.1     846.2   10185.2     847.5   10234.7     848.3   10273.2
GR    851.6     10370

NC    0.035     0.035     0.045
```

Q BEFORE SPLIT 100 CFS
Q AFTER SPLIT 35 CFS

```
QT        1        35
X1     3080        14      9993     10020       433       413       412
GR    848.2    9770.5     847.2    9795.4     847.3    9847.6     847.3    9900.4     846.6    9951.2
GR    845.1    9980.0     843.0    9993.0     841.2   10000.0     844.0   10020.0     845.3   10052.5
GR    845.0   10114.1     846.2   10185.2     847.5   10234.7     848.3   10273.2
```

INTERSTATE 8 FRONTAGE ROAD

REPEAT GR DATA FROM SECTION 3080 AT THE DOWNSTREAM FACE OF THE SINGLE 24" CULVERT WHICH CONVEYS UNNAMED WASH NO 1 BENEATH THE FRONTAGE ROAD SOUTH OF THE EASTBOUND I-8 ON-RAMP.

USE PSXECE = 843.8 - 841.2 = 2.6 FT.

Q BEFORE SPLIT 90 CFS
Q AFTER SPLIT 25 CFS

```
QT        1        25
X1     3111        15      9998     10002       164       164       164                 2.6
X3       10                                                          847     850
GR    848.2    9770.5     847.2    9795.4     847.3    9847.6     847.3    9900.4     846.6    9951.2
```

```
GR     845.1     9980.1      843.0     9993.0      841.2     9998.0      841.2    10002.0      844.0    10020.0
       845.3    10052.5      845.0    10114.1      846.2    10185.2      847.5    10234.7      848.3    10273.2
```

REPEAT GR DATA FROM SECT 3080 AGAIN AT THE UPSTREAM FACE OF THE SINGLE 24" CULVERT WHICH CONVEYS UNNAMED WASH NO 1 BENEATH THE FRONTAGE ROAD SOUTH OF THE EASTBOUND I-8 ON-RAMP.

USE PSXECE = 844.2 - 843.8 +2.6 = 3.0

WEIR FLOW NOT ANTICIPATED. USE SC.4 = 100 FT.
ELTRD = 850.7

Q BEFORE SPLIT 90 CFS
Q AFTER SPLIT 25 CFS

```
1
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```

```
QT         1        25
SC     1.016       0.5         3       100         2         0        82       2.2     844.2     843.8
X1      3129        16      9998     10002        92        92        92                 3.0
X2                           2                 850.7
X3        10                                                        850     850.7
GR     850.6      9700     848.2    9770.5     847.2    9795.4     847.3    9847.6     847.3    9900.4
GR     846.6    9951.2     845.1    9980.1     843.0    9993.0     841.2    9998.0     841.2   10002.0
GR     844.0   10020.0     845.3   10052.5     845.0   10114.1     846.2   10185.2     847.5   10234.7
GR     848.3   10273.2
```

RETURN THE Q TO ITS FULL VALUE OF 80 CFS.

REPEAT THE SECTION AGAIN 100 FT UPSTREAM FOR CONTRACTION LOSSES.
PSXECE = (850.8 - 844.2)*(100/692) + 3.0 = 4.0 FT.
USE THE ACTUAL GR POINTS SO THAT THE BT CARDS ARE NOT REPEATED.
REVISE THE RIGHT OVERBANK PER THE TOPO MAP.

```
QT         1        80
X1      3148        14      9993     10020       100       100       100                 4.0
GR     850.6      9700     848.2    9770.5     847.2    9795.4     847.3    9847.6     847.3    9900.4
GR     846.6    9951.2     845.1    9980.0     843.0    9993.0     841.2   10000.0     844.0   10020.0
GR     845.3   10052.5     845.0   10114.1     846.2   10185.2     850.6     10210
```

SECTION 3260 IS AT THE UPSTREAM LIMIT OF THE DETAILED STUDY - WHERE THE STREAM CROSSES THE FRONTAGE ROAD AGAIN NEAR THE SECTION LINE.

```
QT         1        50
X1      3260         9      9992     10016       600       550       591
GR     856.5    9934.9     854.3    9968.6     852.6    9992.0     850.8   10000.0     853.3   10016.0
GR     853.5   10049.2     854.4   10097.5     855.6   10160.4     857.0   10226.3
```

```
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```
    SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      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

*PROF 1

CCHV=     .100 CEHV=     .300
*SECNO 3888.000
  3888.000       2.59     733.89        .00     733.89     734.78        .89        .00        .00     744.80
     900.0         .0      900.0         .0         .0      118.9         .0         .0         .0     743.60
       .00        .00       7.57        .00       .000       .025       .000       .000     731.30    9970.76
   .005567         1.         1.         1.          0          0          0        .00      51.93   10022.69

FLOW DISTRIBUTION FOR SECNO=   3888.00          CWSEL=    733.89

STA=    9971.   10033.
  PER Q=    100.0
   AREA=    118.9
    VEL=      7.6
  DEPTH=      2.3

*SECNO 1.000
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
     1.000       5.32     737.42     737.42        .00     738.60       1.18       3.25        .09     738.90
     900.0         .0      900.0         .0         .0      103.3         .0        1.0         .4     738.20
       .01        .00       8.71        .00       .000       .035       .000       .000     732.10    9985.97
   .014834       460.       380.       300.          6         17          0        .00      45.46   10031.43

FLOW DISTRIBUTION FOR SECNO=      1.00          CWSEL=    737.42

STA=    9986.   10036.
  PER Q=    100.0
   AREA=    103.3
    VEL=      8.7
  DEPTH=      2.3

*SECNO 2.000

3301 HV CHANGED MORE THAN HVINS

1
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```

```
   SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      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


3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.99

     2.000       4.27     741.27        .00        .00     741.72        .44       3.05        .07     740.50
     900.0        2.3      890.9        6.7        1.7      166.2        3.4        2.4        1.0     739.90
       .04       1.37       5.36       1.97       .035       .035       .035       .000     737.00    9977.12
   .003736       440.       460.       460.          4          0          0        .00      64.52   10041.64

FLOW DISTRIBUTION FOR SECNO=      2.00          CWSEL=    741.27

STA=    9977.     9982.    10037.    10042.
  PER Q=        .3      99.0        .7
   AREA=       1.7     166.2       3.4
    VEL=       1.4       5.4       2.0
  DEPTH=        .4       3.0        .7

CCHV=      .100 CEHV=      .300
*SECNO 61.000

3265 DIVIDED FLOW

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
    61.000       4.28     742.28    742.28        .00     743.07        .80        .00        .11     742.70
     900.0      140.8      759.2        .0       62.3       98.2         .0        2.4        1.0     745.90
       .04       2.26       7.73       .00       .060       .035       .000       .000     738.00    9899.62
   .009155         0.         0.        0.         20          5          0        .00     110.75   10021.68

FLOW DISTRIBUTION FOR SECNO=     61.00          CWSEL=    742.28

STA=    9900.     9906.     9917.     9934.     9948.     9960.     9969.     9974.    10028.
  PER Q=        .3       2.2       5.4       4.3       2.5       1.0        .0      84.4
   AREA=       2.0       9.5      18.8      15.6      10.5       5.2        .7      98.2
    VEL=       1.1       2.1       2.6       2.5       2.2       1.6        .6       7.7
  DEPTH=        .3        .8       1.1       1.1        .9        .6        .1       2.7

*SECNO 150.000
1
   11DEC92      13:12:16                                                                                    PAGE   13

   SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      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


3265 DIVIDED FLOW

3301 HV CHANGED MORE THAN HVINS

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  2.86

   150.000       5.41     744.21        .00        .00     744.30        .09       1.15        .07     744.60
     900.0      435.7      464.3         .0      413.0      146.6         .0        6.3        3.5     745.80
       .10       1.05       3.17       .00       .060       .035       .000       .000     738.80    9672.76
   .001116       472.       470.      470.          5          0          0        .00     341.56   10018.74

FLOW DISTRIBUTION FOR SECNO=    150.00          CWSEL=    744.21

STA=    9673.     9685.     9720.     9953.     9961.     9966.     9972.    10024.
  PER Q=        .0       4.4      40.1       1.8       1.8        .4      51.6
   AREA=       1.3      42.2     339.1      13.8      11.6       5.0     146.6
    VEL=        .2        .9       1.1       1.2       1.4        .7       3.2
  DEPTH=        .1       1.2       1.6       1.7       2.2        .8       3.5

*SECNO 337.000

3265 DIVIDED FLOW

   337.000       2.52     745.32        .00        .00     745.35        .02       1.04        .01     745.50
     900.0         .0      122.2      777.8         .0       77.4      667.7       20.2       12.5     746.20
       .31        .00       1.58       1.16       .000       .035       .060       .000     742.80    9957.79
   .001103       755.       987.      1010.          5          0          0        .00     517.23   10495.96

FLOW DISTRIBUTION FOR SECNO=    337.00          CWSEL=    745.32

1
   11DEC92      13:12:16                                                                                    PAGE   14

   SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      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

STA=    9958.    10028.    10072.    10113.    10152.    10177.    10192.    10211.    10240.    10266.    10288.    10312.    10342.
```

```
 PER Q=     13.6      6.0      8.0     10.3      6.6      4.3      5.1      6.5      5.9      6.4      7.3      5.3
  AREA=     77.4     53.1     64.7     74.1     47.1     30.1     35.9     49.9     44.9     43.6     50.3     44.2
   VEL=      1.6      1.0      1.1      1.2      1.3      1.3      1.3      1.2      1.2      1.3      1.3      1.1
 DEPTH=      1.2      1.2      1.6      1.9      1.9      2.0      1.9      1.7      1.7      2.0      2.0      1.5

STA=   10342.   10370.   10398.   10422.   10496.
 PER Q=      4.7      5.6      3.7       .6
  AREA=     41.1     44.2     32.9     11.6
   VEL=      1.0      1.1      1.0       .4
 DEPTH=      1.4      1.6      1.4       .2

*SECNO 555.000

3265 DIVIDED FLOW

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
   555.000     2.03   750.13   750.13      .00   750.56      .43     2.60      .12   751.30
     640.0       .0    640.0       .0       .0    122.0       .0     30.7     20.7   751.30
       .37      .00     5.25      .00     .000     .035     .000     .000   748.10  9873.76
   .019967    1200.    1151.    1030.       20       15        0      .00   148.50 10035.89

FLOW DISTRIBUTION FOR SECNO=    555.00          CWSEL=    750.13

STA=    9874.   10041.
 PER Q=    100.0
  AREA=    122.0
   VEL=      5.2
 DEPTH=       .8

*SECNO 769.000

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  2.99

   769.000     4.50   756.00      .00      .00   756.20      .19     5.62      .02   754.60
     640.0    153.2    472.8     14.0     72.1    121.4      7.9     34.8     24.2   754.30
       .46     2.12     3.89     1.78     .035     .035     .035     .000   751.50  9891.77
   .002230    1050.    1130.    1130.        8        0        0      .00   126.81 10018.59
```



```
   SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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

OW DISTRIBUTION FOR SECNO=    769.00          CWSEL=    756.00

A=    9892.    9930.    9965.   10009.   10019.
 PER Q=      5.7     18.2     73.9      2.2
  AREA=     24.5     47.6    121.4      7.9
   VEL=      1.5      2.4      3.9      1.8
 DEPTH=       .6      1.3      2.7       .8

*SECNO 959.000

3265 DIVIDED FLOW

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
   959.000     2.28   761.38   761.38      .00   761.77      .39     5.01      .06   764.60
     640.0       .0    640.0       .0       .0    127.5       .0     38.6     27.5   762.90
       .52      .00     5.02      .00     .000     .035     .000     .000   759.10  9901.90
   .019467    1030.    1003.    1000.        4        8        0      .00   162.77 10073.16

FLOW DISTRIBUTION FOR SECNO=    959.00          CWSEL=    761.38

STA=    9902.   10098.
 PER Q=    100.0
  AREA=    127.5
   VEL=      5.0
 DEPTH=       .8

*SECNO 1151.000

3265 DIVIDED FLOW

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  2.45

  1151.000     2.63   768.33      .00      .00   768.42      .09     6.62      .03   768.00
     640.0    183.0    144.8    312.2     82.0     49.1    133.9     43.2     33.9   767.50
       .63     2.23     2.95     2.33     .030     .035     .030     .000   765.70  9847.51
   .003234    1040.    1014.    1000.        9        0        0      .00   379.77 10237.37
```



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   SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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
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```
FLOW DISTRIBUTION FOR SECNO=   1151.00          CWSEL=    768.33

STA=    9848.    9873.    9913.    9957.    9978.   10014.   10038.   10070.   10119.   10188.   10215.   10237.
 PER Q=      .9      7.9     15.5      4.3     22.6     11.8     17.5      6.0      4.8      7.0      1.8
  AREA=     5.4     24.6     38.6     13.3     49.1     25.5     36.8     22.8     21.4     19.6      8.0
   VEL=     1.0      2.1      2.6      2.1      3.0      3.0      3.0      1.7      1.4      2.3      1.4
 DEPTH=      .2       .6       .9       .6      1.4      1.1      1.1       .5       .3       .7       .4

*SECNO 1347.000

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =   .52

  1347.000      2.51    773.91       .00       .00    774.20       .28      5.72       .06    775.00
     640.0        .0     640.0        .0        .0     150.3        .0      48.1      40.3    774.60
       .70       .00      4.26       .00      .000      .035      .000      .000    771.40   9877.00
   .011741      960.     1035.     1050.         5         0         0       .00    168.24  10045.24

FLOW DISTRIBUTION FOR SECNO=   1347.00          CWSEL=    773.91

STA=    9877.   10064.
 PER Q=    100.0
  AREA=    150.3
   VEL=      4.3
 DEPTH=       .9

*SECNO 1540.000

3265 DIVIDED FLOW

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.47

  1540.000      2.82    781.62       .00       .00    781.81       .19      7.60       .01    780.90
     620.0      64.0     501.1      54.9      26.8     134.6      23.1      52.0      44.5    780.90
       .78      2.39      3.72      2.37      .030      .035      .030      .000    778.80   9918.31
   .005117     1010.     1019.      985.         5         0         0       .00    195.80  10117.87

FLOW DISTRIBUTION FOR SECNO=   1540.00          CWSEL=    781.62

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  11DEC92      13:12:16                                                                                          PAGE   17

   SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      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

STA=    9918.    9924.    9969.   10071.   10102.   10118.
 PER Q=      .2     10.1     80.8      7.9      1.0
  AREA=     1.2     25.6    134.6     18.9      4.2
   VEL=     1.3      2.4      3.7      2.6      1.4
 DEPTH=      .2       .6      1.4       .6       .3

*SECNO 1723.000

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =   .59

  1723.000      2.09    788.29       .00       .00    788.60       .31      6.76       .04    789.20
     550.0        .0     379.4     170.6        .0      76.7      53.7      55.4      48.5    787.80
       .84       .00      4.95      3.18      .000      .035      .030      .000    786.20   9956.65
   .011415      960.      966.      850.         3         0         0       .00    184.86  10141.51

FLOW DISTRIBUTION FOR SECNO=   1723.00          CWSEL=    788.29

STA=    9957.   10024.   10072.   10135.   10142.
 PER Q=     69.0     14.5     16.1       .4
  AREA=     76.7     23.9     28.5      1.3
   VEL=      4.9      3.3      3.1      1.8
 DEPTH=      1.1       .5       .4       .2

*SECNO 1921.000
  1921.000      4.47    795.87       .00       .00    796.27       .39      7.64       .02    795.50
     480.0        .5     479.5        .0        .4      95.2        .0      58.0      51.0    796.50
       .90      1.14      5.03       .00      .030      .035      .000      .000    791.40   9976.45
   .005109     1040.     1045.      840.         4         0         0       .00     45.94  10022.39

FLOW DISTRIBUTION FOR SECNO=   1921.00          CWSEL=    795.87

STA=    9976.    9979.   10025.
 PER Q=      .1     99.9
  AREA=      .4     95.2
   VEL=     1.1      5.0
 DEPTH=      .2      2.2

1
  11DEC92      13:12:16                                                                                          PAGE   18

   SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      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 2127.000

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =   .55
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 2127.000      2.62    803.62       .00       .00    804.08       .46      7.79       .02    806.00
    400.0        .0     400.0        .0        .0      73.2        .0      60.1      52.3    807.00
      .95       .00      5.47       .00      .000      .035      .000      .000    801.00   9978.19
  .011800     1070.     1088.     1020.         4         0         0       .00     56.44  10034.63

FLOW DISTRIBUTION FOR SECNO=   2127.00          CWSEL=    803.62

STA=    9978.   10089.
  PER Q=    100.0
   AREA=     73.2
    VEL=      5.5
  DEPTH=      1.3

*SECNO 2337.000
 2337.000      2.20    812.80       .00       .00    812.99       .19      8.88       .03    813.70
    330.0        .0     205.3     124.7        .0      52.3      48.8      62.3      54.7    811.90
     1.04       .00      3.92      2.56      .000      .035      .030      .000    810.60   9994.63
  .005351     1070.     1109.     1160.         5         0         0       .00    125.88  10120.51

FLOW DISTRIBUTION FOR SECNO=   2337.00          CWSEL=    812.80

STA=    9995.   10031.   10057.   10104.   10121.
  PER Q=     62.2     17.3     18.7      1.8
   AREA=     52.3     19.1     25.5      4.2
    VEL=      3.9      3.0      2.4      1.4
  DEPTH=      1.4       .7       .5       .2

*SECNO 2565.000

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =   .23

 2565.000      1.66    821.16       .00       .00    821.54       .38      8.49       .06    821.50
    140.0        .0     140.0        .0        .0      28.2        .0      64.1      56.8    821.60
     1.11       .00      4.96       .00      .000      .035      .000      .000    819.50   9979.06
  .017695     1140.     1204.     1130.         3         0         0       .00     34.10  10013.16
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   SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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

FLOW DISTRIBUTION FOR SECNO=   2565.00          CWSEL=    821.16

STA=    9979.   10017.
  PER Q=    100.0
   AREA=     28.2
    VEL=      5.0
  DEPTH=       .8

*SECNO 2585.000

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.79

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       821.00 ELREA=       840.00

 2585.000      1.80    822.20       .00       .00    822.44       .24       .89       .01    820.40
    130.0      51.7      78.3        .0      16.2      18.0        .0      64.2      56.9    820.40
     1.12      3.19      4.35       .00      .030      .035      .000      .000    820.40   9976.99
  .004787      105.      105.      105.         2         0         0       .00     28.01  10005.00

FLOW DISTRIBUTION FOR SECNO=   2585.00          CWSEL=    822.20

STA=    9977.    9995.   10005.
  PER Q=     39.7     60.3
   AREA=     16.2     18.0
    VEL=      3.2      4.3
  DEPTH=       .9      1.8

SPECIAL CULVERT

SC  CUNO      CUNV      ENTLC     COFQ      RDLEN     RISE      SPAN      CULVLN    CHRT      SCL       ELCHU     ELCHO
     2         .019       .50      3.00       .00      3.00       .00    240.00      2         1       824.50    820.40

CHART  2 - CORRUGATED METAL PIPE CULVERT
SCALE  1 - HEADWALL

*SECNO 2632.000
5155, 20 TRIALS OF QWEIR NOT ENOUGH; POSSIBLY INVALID
FINAL QWEIR + QCULV =       134. DOES NOT EQUAL ACTUAL Q =       110.

SPECIAL CULVERT INLET CONTROL + WEIR FLOW, EG =    828.74

3265 DIVIDED FLOW
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   SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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
```

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   SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID    ENDST

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  3.82

SPECIAL CULVERT

     EGIC      EGOC       H4      QWEIR     QCULV      VCH     ACULV     ELTRD    WEIRLN
   828.84    828.81     6.30        26.      108.    1.695      14.1    828.70       61.


3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       828.20 ELREA=       840.30

  2632.000      4.21    828.71       .00       .00    828.74       .03      6.30       .00    824.50
     110.0      38.6      71.4        .0      55.3      42.1        .0      64.5      57.2    824.50
      1.17       .70      1.70       .00      .030      .035      .000      .000    824.50   9554.36
   .000234      260.      250.      240.         2         0         0       .00     96.81  10005.00

FLOW DISTRIBUTION FOR SECNO=   2632.00          CWSEL=    828.71

STA=    9554.    9600.    9625.    9993.    9995.   10005.
  PER Q=      8.5      4.7     13.2      8.7     64.9
   AREA=     20.8     11.5     16.2      6.7     42.1
    VEL=       .4       .4       .9      1.4      1.7
  DEPTH=       .5       .5       .0      3.4      4.2

*SECNO 2649.000

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =   .49

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       830.00 ELREA=       850.00

  2649.000      3.57    828.67       .00       .00    828.82       .15       .04       .03    825.10
     110.0        .0     110.0        .0        .0      35.7        .0      64.7      57.4    825.10
      1.18       .00      3.08       .00      .000      .035      .000      .000    825.10   9995.00
   .000964      100.       91.       85.         2         0         0       .00     10.00  10005.00

FLOW DISTRIBUTION FOR SECNO=   2649.00          CWSEL=    828.67
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   SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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

=    9995.   10005.
  PER Q=    100.0
   AREA=     35.7
    VEL=      3.1
  DEPTH=      3.6

SPECIAL CULVERT

SC  CUNO      CUNV      ENTLC     COFQ      RDLEN     RISE      SPAN      CULVLN    CHRT      SCL       ELCHU     ELCHD
     2         .019      .50      3.00       .00      3.00       .00     248.00     2         1       827.00    825.10

CHART  2 - CORRUGATED METAL PIPE CULVERT
SCALE  1 - HEADWALL

*SECNO 2698.000

SPECIAL CULVERT OUTLET CONTROL
EGIC =    830.629  EGOC =    832.026  PCWSE=    828.671  ELTRD=    834.500

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.74

SPECIAL CULVERT

     EGIC      EGOC       H4      QWEIR     QCULV      VCH     ACULV     ELTRD    WEIRLN
   830.63    832.03     3.21         0.       90.    1.809      14.1    834.50        0.


3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       834.00 ELREA=       851.00

  2698.000      4.98    831.98       .00       .00    832.03       .05      3.21       .00    827.00
      90.0        .0      90.0        .0        .0      49.8        .0      64.9      57.4    827.00
      1.22       .00      1.81       .00      .000      .035      .000      .000    827.00   9995.00
   .000214      258.      258.      258.         2         0         0       .00     10.00  10005.00

FLOW DISTRIBUTION FOR SECNO=   2698.00          CWSEL=    831.98

STA=    9995.   10005.
  PER Q=    100.0
   AREA=     49.8
    VEL=      1.8
  DEPTH=      5.0
```

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   SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      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 2746.000

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =   .46

  2746.000      2.69     832.19       .00        .00     832.23       .04        .20        .00     833.10
      80.0        .0       70.7       9.3         .0       43.1      15.1       65.6       58.0     831.90
      1.32       .00       1.64       .62       .000       .030      .035       .000     829.50    9982.16
   .000815      535.       554.      590.          2          0         0        .00      77.10   10059.27

FLOW DISTRIBUTION FOR SECNO=   2746.00          CWSEL=    832.19

STA=    9982.   10016.   10048.   10059.
  PER Q=      88.4       9.9       1.7
   AREA=      43.1      12.3       2.8
    VEL=       1.6        .6        .5
  DEPTH=       1.3        .4        .2

*SECNO 2779.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       837.30 ELREA=       837.30

  2779.000      2.78     832.28       .00        .00     832.37       .10        .13        .02     829.50
      70.0        .0       70.0        .0         .0       27.8        .0       65.8       58.2     829.50
      1.34       .00       2.52       .00       .000       .030      .000       .000     829.50    9995.00
   .000661      174.       174.      174.          0          0         0        .00      10.00   10005.00

FLOW DISTRIBUTION FOR SECNO=   2779.00          CWSEL=    832.28

STA=    9995.   10005.
  PER Q=     100.0
   AREA=      27.8
    VEL=       2.5
  DEPTH=       2.8

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   11DEC92       13:12:16                                                                                    PAGE   23

   SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      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

CIAL CULVERT
SC  CUNO       CUNV       ENTLC      COFQ       RDLEN      RISE       SPAN       CULVLN     CHRT       SCL        ELCHU      ELCHD
     2          .018        .50       3.00      100.00      2.50        .00      285.00      2          2         832.60     829.50

CHART  2 - CORRUGATED METAL PIPE CULVERT
SCALE  2 - MITERED TO CONFORM TO SLOPE

*SECNO 2835.000

SPECIAL CULVERT INLET CONTROL
EGIC =    836.163  EGOC =    836.068  PCWSE=    832.276  ELTRD=    838.300

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.48

SPECIAL CULVERT

    EGIC       EGOC        H4      QWEIR      QCULV       VCH      ACULV      ELTRD     WEIRLN
  836.16     836.07      3.79         0.        60.     1.705        9.8     838.30         0.


3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       838.30 ELREA=       838.30

  2835.000      3.52     836.12       .00        .00     836.16       .05       3.79        .00     832.60
      60.0        .0       60.0        .0         .0       35.2        .0       66.0       58.2     832.60
      1.39       .00       1.71       .00       .000       .030      .000       .000     832.60    9995.00
   .000222      295.       295.      295.          2          0         0        .00      10.00   10005.00

FLOW DISTRIBUTION FOR SECNO=   2835.00          CWSEL=    836.12

STA=    9995.   10005.
  PER Q=     100.0
   AREA=      35.2
    VEL=       1.7
  DEPTH=       3.5

*SECNO 2936.000

3265 DIVIDED FLOW

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =   .26

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   11DEC92       13:12:16                                                                                    PAGE   24
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   SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      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

 2936.000      1.73     836.43        .00        .00     836.56        .13        .37        .03     836.00
     75.0       1.8       72.6         .6        1.6       24.7         .8       66.4       58.5     836.50
     1.44      1.09       2.94        .72       .035       .035       .035       .000     834.70    9980.54
 .005028      530.       533.       500.          2          0          0        .00      40.12   10054.30

FLOW DISTRIBUTION FOR SECNO=   2936.00          CWSEL=    836.43

STA=    9981.    9988.   10014.   10052.   10054.
  PER Q=      2.4      96.8       .6       .2
   AREA=      1.6      24.7       .6       .2
    VEL=      1.1       2.9       .7       .7
  DEPTH=       .2       1.0       .0       .1

*SECNO 2974.000

3301 HV CHANGED MORE THAN HVINS

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

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       839.00 ELREA=       843.30

 2974.000      1.62     837.52        .00        .00     838.22        .69       1.48        .17     835.90
     65.0        .0       66.0         .0         .0        9.7         .0       66.5       58.6     835.90
     1.44       .00       6.67        .00       .000       .035       .000       .000     835.90    9997.00
 .012945      190.       201.       180.          4          0          0        .00       6.00   10003.00

FLOW DISTRIBUTION FOR SECNO=   2974.00          CWSEL=    837.52

STA=    9997.   10003.
  PER Q=    100.0
   AREA=      9.7
    VEL=      6.7
  DEPTH=      1.6

1
   11DEC92      13:12:16                                                                                    PAGE   25

   SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      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

SC  CUNO      CUNV      ENTLC      COFQ      RDLEN      RISE      SPAN      CULVLN     CHRT      SCL       ELCHU     ELCHD
     1         .019       .50      3.00        .00      3.00       .00     137.00       2         2       836.80    835.90

CHART  2 - CORRUGATED METAL PIPE CULVERT
SCALE  2 - MITERED TO CONFORM TO SLOPE

5140, NORMAL DEPTH EXCEEDS CULVERT HEIGHT
*SECNO 3002.000

SPECIAL CULVERT INLET CONTROL
EGIC =    841.867  EGOC =    841.035  PCWSE=    837.524  ELTRD=    843.600

3301 HV CHANGED MORE THAN HVINS

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  6.55

SPECIAL CULVERT

    EGIC      EGOC       H4     QWEIR     QCULV       VCH     ACULV     ELTRD    WEIRLN
   841.87    841.04     3.65        0.       55.     1.828       7.1    843.60        0.

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       843.10 ELREA=       844.30

 3002.000      5.02     841.82        .00        .00     841.87        .05       3.65        .00     836.80
     55.0        .0       55.0         .0         .0       30.1         .0       66.5       58.7     836.80
     1.47       .00       1.83        .00       .000       .035       .000       .000     836.80    9997.00
 .000216      147.       147.       147.          2          0          0        .00       6.00   10003.00

FLOW DISTRIBUTION FOR SECNO=   3002.00          CWSEL=    841.82

STA=    9997.   10003.
  PER Q=    100.0
   AREA=     30.1
    VEL=      1.8
  DEPTH=      5.0

*SECNO 3080.000
3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
1
   11DEC92      13:12:16                                                                                    PAGE   26
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   SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      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

3720 CRITICAL DEPTH ASSUMED
  3080.000      1.19     842.39     842.39        .00     842.70        .31        .22        .08     843.00
      35.0        .0       35.0        .0        .0        7.9        .0       66.7       58.8     844.00
      1.49       .00       4.44       .00       .000       .045       .000       .000     841.20    9995.35
   .036868      433.       412.      413.        20         17          0        .00      13.18   10008.53

FLOW DISTRIBUTION FOR SECNO=   3080.00          CWSEL=    842.39

STA=    9995.    10020.
  PER Q=     100.0
   AREA=       7.9
    VEL=       4.4
  DEPTH=        .6

*SECNO 3111.000

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.48

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       847.00 ELREA=       850.00

  3111.000      1.54     845.34        .00        .00     845.59        .26       2.89        .00     843.80
      25.0        .0       25.0        .0        .0        6.1        .0       66.8       58.8     843.80
      1.50       .00       4.07       .00       .000       .045       .000       .000     843.80    9998.00
   .008572      164.       164.      164.         6          0          0        .00       4.00   10002.00

FLOW DISTRIBUTION FOR SECNO=   3111.00          CWSEL=    845.34

STA=    9998.    10002.
  PER Q=     100.0
   AREA=       6.1
    VEL=       4.1
  DEPTH=       1.5

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   11DEC92      13:12:16                                                                                    PAGE   27

   SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      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

ECIAL CULVERT

SC  CUNO      CUNV      ENTLC     COFQ      RDLEN     RISE      SPAN      CULVLN    CHRT      SCL       ELCHU     ELCHD
     1         .016      .50      3.00     100.00     2.00       .00     82.00      2         2       844.20    843.80

CHART  2 - CORRUGATED METAL PIPE CULVERT
SCALE  2 - MITERED TO CONFORM TO SLOPE

5140, NORMAL DEPTH EXCEEDS CULVERT HEIGHT
*SECNO 3129.000

SPECIAL CULVERT INLET CONTROL
EGIC =    848.639  EGOC =    847.709  PCWSE=    845.335  ELTRD=    850.700

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  5.80

SPECIAL CULVERT

    EGIC      EGOC       H4      QWEIR     QCULV      VCH      ACULV     ELTRD    WEIRLN
   848.64    847.71     3.05       0.       25.     1.418       3.1    850.70       0.


3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       850.00 ELREA=       850.70

  3129.000      4.41     848.61        .00        .00     848.64        .03       3.05        .00     844.20
      25.0        .0       25.0        .0        .0       17.6        .0       66.8       58.8     844.20
      1.52       .00       1.42       .00       .000       .045       .000       .000     844.20    9998.00
   .000255       92.        92.       92.         2          0          0        .00       4.00   10002.00

FLOW DISTRIBUTION FOR SECNO=   3129.00          CWSEL=    848.61

STA=    9998.    10002.
  PER Q=     100.0
   AREA=      17.6
    VEL=       1.4
  DEPTH=       4.4

*SECNO 3148.000

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  2.35

  3148.000      3.46     848.66        .00        .00     848.68        .02        .04        .00     847.00
      80.0       6.9       70.7       2.4        8.5       59.1       5.4       66.9       58.9     848.00
      1.55       .81       1.20       .44       .035       .045       .035       .000     845.20    9982.73
   .000473      100.       100.      100.         2          0          0        .00      53.73   10036.46
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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	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

FLOW DISTRIBUTION FOR SECNO= 3148.00 CWSEL= 848.66

STA=	9983.	9993.	10020.	10036.
PER Q=	8.6	88.4	3.0	
AREA=	8.5	59.1	5.4	
VEL=	.8	1.2	.4	
DEPTH=	.8	2.2	.3	

*SECNO 3260.000
3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3260.000	1.39	852.19	852.19	.00	852.54	.36	.64	.10	852.60
50.0	.0	50.0	.0	.0	10.4	.0	67.4	59.3	853.30
1.58	.00	4.79	.00	.000	.045	.000	.000	850.80	9993.84
.035141	600.	591.	550.	20	18	0	.00	15.04	10008.88

FLOW DISTRIBUTION FOR SECNO= 3260.00 CWSEL= 852.19

STA=	9994.	10016.
PER Q=	100.0	
AREA=	10.4	
VEL=	4.8	
DEPTH=	.7	

THIS RUN EXECUTED 11DEC92 13:12:31

****
HEC-2 WATER SURFACE PROFILES

Version 4.6.2: May 1991
****

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

AMED WASH NO.1 100 YR
UMMARY PRINTOUT

	SECNO	ELMIN	CWSEL	Q	VCH	DIFWSX	TOPWID	DEPTH	SSTA	ENDST	QLOB	QROB	ELTRD
	3888.000	731.30	733.89	900.00	7.57	.00	51.93	2.59	9970.76	10022.69	.00	.00	.00
*	1.000	732.10	737.42	900.00	8.71	3.53	45.46	5.32	9985.97	10031.43	.00	.00	.00
*	2.000	737.00	741.27	900.00	5.36	3.86	64.52	4.27	9977.12	10041.64	2.33	6.72	.00
*	61.000	738.00	742.28	900.00	7.73	1.00	110.75	4.28	9899.62	10021.68	140.77	.00	.00
*	150.000	738.80	744.21	900.00	3.17	1.93	341.56	5.41	9672.76	10018.74	435.73	.00	.00
	337.000	742.80	745.32	900.00	1.58	1.12	517.23	2.52	9957.79	10495.96	.00	777.78	.00
*	555.000	748.10	750.13	640.00	5.25	4.81	148.50	2.03	9873.76	10035.89	.00	.00	.00
*	769.000	751.50	756.00	640.00	3.89	5.87	126.81	4.50	9891.77	10018.59	153.22	13.99	.00
*	959.000	759.10	761.38	640.00	5.02	5.37	162.77	2.28	9901.90	10073.16	.00	.00	.00
*	1151.000	765.70	768.33	640.00	2.95	6.95	379.77	2.63	9847.51	10237.37	182.99	312.19	.00
*	1347.000	771.40	773.91	640.00	4.26	5.59	168.24	2.51	9877.00	10045.24	.00	.00	.00
*	1540.000	778.80	781.62	620.00	3.72	7.70	195.80	2.82	9918.31	10117.87	64.01	54.93	.00
*	1723.000	786.20	788.29	550.00	4.95	6.68	184.86	2.09	9956.65	10141.51	.00	170.60	.00
	1921.000	791.40	795.87	480.00	5.03	7.58	45.94	4.47	9976.45	10022.39	.49	.00	.00
*	2127.000	801.00	803.62	400.00	5.47	7.74	56.44	2.62	9978.19	10034.63	.00	.00	.00
	2337.000	810.60	812.80	330.00	3.92	9.18	125.88	2.20	9994.63	10120.51	.00	124.71	.00
*	2565.000	819.50	821.16	140.00	4.96	8.35	34.10	1.66	9979.06	10013.16	.00	.00	.00

	SECNO	ELMIN	CWSEL	Q	VCH	DIFWSX	TOPWID	DEPTH	SSTA	ENDST	QLOB	QROB	ELTRD
*	2585.000	820.40	822.20	130.00	4.35	1.05	28.01	1.80	9976.99	10005.00	51.67	.00	.00
*	2632.000	824.50	828.71	110.00	1.70	6.51	96.81	4.21	9554.36	10005.00	38.58	.00	828.70

	2649.000	825.10	828.67	110.00	3.08	-.04	10.00	3.57	9995.00	10005.00	.00	.00	.00
	2698.000	827.00	831.98	90.00	1.81	3.30	10.00	4.98	9995.00	10005.00	.00	.00	834.50
*	2746.000	829.50	832.19	80.00	1.64	.21	77.10	2.69	9982.16	10059.27	.00	9.29	.00
	2779.000	829.50	832.28	70.00	2.52	.09	10.00	2.78	9995.00	10005.00	.00	.00	.00
*	2835.000	832.60	836.12	60.00	1.71	3.84	10.00	3.52	9995.00	10005.00	.00	.00	838.30
*	2936.000	834.70	836.43	75.00	2.94	.32	40.12	1.73	9980.54	10054.30	1.77	.61	.00
*	2974.000	835.90	837.52	65.00	6.67	1.09	6.00	1.62	9997.00	10003.00	.00	.00	.00
*	3002.000	836.80	841.82	55.00	1.83	4.29	6.00	5.02	9997.00	10003.00	.00	.00	843.60
*	3080.000	841.20	842.39	35.00	4.44	.58	13.18	1.19	9995.35	10008.53	.00	.00	.00
*	3111.000	843.80	845.34	25.00	4.07	2.94	4.00	1.54	9998.00	10002.00	.00	.00	.00
*	3129.000	844.20	848.61	25.00	1.42	3.27	4.00	4.41	9998.00	10002.00	.00	.00	850.70
*	3148.000	845.20	848.66	80.00	1.20	.05	53.73	3.46	9982.73	10036.46	6.88	2.38	.00
*	3260.000	850.80	852.19	50.00	4.79	3.53	15.04	1.39	9993.84	10008.88	.00	.00	.00

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SUMMARY OF ERRORS AND SPECIAL NOTES

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CAUTION SECNO=      1.000  PROFILE= 1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      1.000  PROFILE= 1  MINIMUM SPECIFIC ENERGY

WARNING SECNO=      2.000  PROFILE= 1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO=     61.000  PROFILE= 1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=     61.000  PROFILE= 1  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=     61.000  PROFILE= 1  20 TRIALS ATTEMPTED TO BALANCE WSEL

WARNING SECNO=    150.000  PROFILE= 1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO=    555.000  PROFILE= 1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=    555.000  PROFILE= 1  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=    555.000  PROFILE= 1  20 TRIALS ATTEMPTED TO BALANCE WSEL

WARNING SECNO=    769.000  PROFILE= 1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO=    959.000  PROFILE= 1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=    959.000  PROFILE= 1  MINIMUM SPECIFIC ENERGY

WARNING SECNO=   1161.000  PROFILE= 1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=   1347.000  PROFILE= 1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=   1540.000  PROFILE= 1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=   1723.000  PROFILE= 1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=   2127.000  PROFILE= 1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=   2565.000  PROFILE= 1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=   2585.000  PROFILE= 1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=   2632.000  PROFILE= 1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=   2649.000  PROFILE= 1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=   2698.000  PROFILE= 1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=   2746.000  PROFILE= 1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=   2835.000  PROFILE= 1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=   2936.000  PROFILE= 1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=   2974.000  PROFILE= 1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=   3002.000  PROFILE= 1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO=   3080.000  PROFILE= 1  CRITICAL DEPTH ASSUMED
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CAUTION SECNO=   3080.000  PROFILE= 1  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=   3080.000  PROFILE= 1  20 TRIALS ATTEMPTED TO BALANCE WSEL

WARNING SECNO=   3111.000  PROFILE= 1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=   3129.000  PROFILE= 1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=   3148.000  PROFILE= 1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO=   3260.000  PROFILE= 1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=   3260.000  PROFILE= 1  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=   3260.000  PROFILE= 1  20 TRIALS ATTEMPTED TO BALANCE WSEL
```

```
1*****************************************
*  HEC-2 WATER SURFACE PROFILES           *
*                                         *
*  Version   4.6.2;  May 1991             *
*                                         *
*  RUN DATE    15DEC92    TIME   13:22:07 *
*****************************************
```

```
*****************************************
*  U.S. ARMY CORPS OF ENGINEERS           *
*  HYDROLOGIC ENGINEERING CENTER          *
*  609 SECOND STREET, SUITE D             *
*  DAVIS, CALIFORNIA 95616-4687           *
*          (916) 756-1104                 *
*****************************************
```

```
X     X  XXXXXXX   XXXXX              XXXXX
X     X  X        X     X            X     X
X     X  X        X                        X
XXXXXXX  XXXX     X          XXXXX    XXXXX
X     X  X        X                  X
X     X  X        X     X            X
X     X  XXXXXXX   XXXXX              XXXXXXX
```

1

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THIS RUN EXECUTED 15DEC92 13:22:07

```
************************************
HEC-2 WATER SURFACE PROFILES

Version   4.6.2;  May 1991
************************************
```

```
T1      FLOOD CONTROL DISTRICT OF MARICOPA COUNTY - CONTRACT FCD 90-67
T2      GILA BEND AREA FLOODPLAIN DELINEATION STUDY BY BURGESS & NIPLE
T3      UNNAMED WASH NO. 1  FLOODWAY            J. MISCHLER - (602) 244-8100

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ
                2                                                                   742.28

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE
     1                   -1                                                                      15

J3  VARIABLE CODES FOR SUMMARY PRINTOUT

     38        42         1        53        54         8        43        26        10        51
     46        40        41         0       110         0       200
```

SECTIONS ARE LABELED AS RIVER MILES * 1000, i.e., SECTION 061 IS AT A POINT 0.061 MILES UPSTREAM OF THE CONFLUENCE WITH BENDER WASH.

THE CONFLUENCE WITH BENDER WASH OCCURS AT A LOCATION WHERE BENDER WASH INTERSECTS THE GILA BEND CANAL AND, BECAUSE OF A SMALL DRAINAGE STRUCTURE THROUGH THE CANAL, MOST FLOW IS DIVERTED WEST TO SAND TANK WASH.

WHEN THE GILA BEND CANAL WAS CONSTRUCTED, A 3-BARREL CONCRETE BOX CULVERT WAS CONSTRUCTED TO CONVEY BENDER WASH BENEATH THE IRRIGATION CANAL. WHEN THE CANAL BANKS WERE RAISED AND THE CANAL EMBANKMENT WAS THEREFORE WIDENED AT SOME TIME IN THE PAST, THE CULVERT WAS EXTENDED BY INSERTING SINGLE 30-INCH CORRUGATED METAL PIPES IN EACH BARREL.

THE CULVERT WAS EXTENDED IN THE UPSTREAM DIRECTION.

FLOW THROUGH THE CULVERT IS CONTROLLED BY INLET CONDITIONS, AND IN FACT, THE THREE PIPES HAD SIGNIFICANT SEDIMENT CLOGGING THE INLETS AT THE TIME OF THE FIELD RECONNAISSANCE OF 10/4/91.

A DITCH HAS BEEN CONSTRUCTED UPSTREAM OF THE GILA BEND CANAL TO DIVERT WATER FROM BENDER WASH, AS WELL AS FROM UNNAMED TRIBUTARIES 1 & 2, TO SAND TANK WASH JUST UPSTREAM OF THE INVERTED SIPHON WHICH CARRIES THE GILA BEND CANAL BENEATH SAND TANK WASH.

ELEVATIONS UPSTREAM OF THE GILA BEND CANAL WILL THEREFORE BE CONTROLLED BY THIS DIVERSION DITCH. STARTING ELEVATIONS WERE DETERMINED BY THE

1

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NATURAL PROFILE RUN.

```
NC      0.06      0.06     0.035       0.1       0.3
QT         2       900       900
ET                           4.1      9985     10022
X1       061        21    9984.9   10028.4
GR     746.0    9560.0     744.0    9800.0     743.1    9883.3     743.0    9893.2     741.6    9905.6
GR     741.3    9917.1     741.0    9933.8     741.4    9948.3     741.4    9960.3     742.0    9969.4
GR     742.5    9978.5     742.7    9984.9     739.3    9991.4     738.5    9997.0     738.0   10000.0
GR     738.8   10005.6     739.7   10015.0     742.4   10022.0     745.9   10028.4     746.5   10038.5
GR     746.6   10046.9

ET                           4.1      9885     10015
X1       150        16    9973.9   10023.9     472.0     470.0     470.0
GR     745.1    9620.0     744.0    9685.0     742.0    9720.0     743.5    9952.7     741.5    9960.8
GR     742.6    9966.2     744.6    9973.9     744.3    9976.5     741.4    9986.0     739.1    9993.2
GR     738.8   10000.0     739.5   10010.0     743.7   10017.1     745.8   10023.9     746.2   10032.1
GR     746.8   10034.2
```

SECTION 337 IS IN THE CONFLUENCE AREA WITH UNNAMED WASH NO 2. THE CONFLUENCE OCCURS AT RM 0.209 (UNNAMED WASH NO 2 RM 0.000).

```
ET                          4.1      9960     10195
X1     337        51     9956.1   10027.6     755.0    1010.0     987.0
GR   748.3    9644.3      748.1    9675.1     748.0    9712.7     747.4    9747.4     746.8    9760.9
GR   746.1    9771.4      746.5    9785.1     747.2    9816.3     747.7    9851.3     747.2    9879.7
GR   746.2    9895.1      745.6    9902.8     746.9    9922.8     746.9    9938.2     745.5    9956.1
GR   744.1    9969.3      744.5    9985.5     744.4    9992.0     743.6    9995.4     742.8   10000.0
GR   743.2   10005.3      744.0   10014.8     745.0   10020.9     746.2   10027.6     743.7   10039.4
GR   743.8   10048.1      744.0   10071.5     743.5   10112.7     743.4   10152.3     743.4   10176.8
GR   743.3   10192.1      743.5   10210.8     743.7   10239.8     743.5   10265.9     743.1   10287.5
GR   743.5   10312.4      744.1   10341.5     743.7   10370.4     743.7   10397.7     744.2   10421.7
GR   745.4   10437.8      745.2   10465.0     745.3   10495.3     746.2   10524.5     746.6   10549.9
GR   746.7   10574.3      746.3   10590.4     745.6   10606.4     746.5   10626.6     747.4   10655.8
GR   747.6   10678.2

NC   0.035     0.035      0.035
QT       2       640        640
ET                          4.1      9875     10035
X1     555        17     9856.4   10040.6    1200.0    1030.0    1151.0
GR   752.5    9834.5      751.3    9856.4     749.4    9884.6     749.3    9913.6     750.0    9935.9
GR   750.3    9953.5      749.6    9968.7     748.7    9980.1     749.6    9991.1     748.8    9998.1
GR   748.1   10000.0      748.6   10007.5     749.4   10013.9     748.4   10022.2     748.1   10027.7
GR   751.3   10040.6      752.4   10065.0
```

MAIN STREET CROSSES AT RM 0.666 (LOW CROSSING - NO STRUCTURE)


```
ET                          4.1      9891     10018
X1     769        12     9965.0   10009.3    1050.0    1130.0    1130.0
GR   758.2    9805.1      757.3    9853.7     754.7    9929.6     754.6    9965.0     752.7    9993.2
GR   751.5   10000.0      754.3   10009.3     756.4   10020.8     756.1   10066.8     757.7   10109.1
GR   759.6   10150.7      760.5   10169.0

NC    0.03      0.03      0.035
ET                          4.1      9905     10070
X1     959        18     9775.3   10097.9    1030.0    1000.0    1003.0
GR   764.6    9775.3      764.5    9814.9     762.9    9850.6     761.9    9881.7     761.2    9908.7
GR   760.6    9917.8      759.5    9926.6     761.4    9948.6     761.3    9983.2     759.9    9993.9
GR   759.1   10000.0      760.9   10015.8     760.6   10045.0     759.4   10052.4     761.2   10070.3
GR   762.9   10097.9      765.2   10130.5     766.8   10165.1

ET                          4.1      9920     10100
X1    1151        23     9977.9   10013.8    1040.0    1000.0    1014.0
GR   774.0    9536.3      772.5    9612.0     772.2    9662.7     771.6    9717.7     770.1    9753.3
GR   768.8    9818.9      767.9    9873.1     767.5    9912.5     767.4    9956.6     768.0    9977.9
GR   767.1    9991.1      766.3    9999.2     765.7   10000.0     767.5   10013.8     767.0   10037.5
GR   767.4   10070.2      768.4   10123.4     767.6   10188.4     767.6   10215.4     768.9   10254.8
GR   770.4   10291.1      773.1   10325.9     773.2   10369.5

ET                          4.1      9880     10045
X1    1347        18     9838.6   10063.7     960.0    1050.0    1035.0
GR   780.0    9707.6      776.9    9750.3     777.3    9799.9     775.0    9838.6     773.5    9891.3
GR   773.0    9912.4      771.6    9918.5     771.9    9927.2     772.9    9936.8     773.3    9948.8
GR   773.9    9978.1      773.3    9992.7     771.8   10000.0     771.4   10011.9     773.2   10026.4
GR   774.6   10063.7      778.1   10121.0     778.4   10154.5

QT       2       620        620
ET                          4.1      9970     10070
X1    1540        23     9968.7   10071.2    1010.0     985.0    1019.0
GR   787.7    9662.5      786.1    9707.0     783.7    9742.4     782.1    9766.1     784.5    9810.2
GR   784.9    9850.4      783.6    9892.1     781.2    9923.9     780.9    9968.7     779.6    9983.4
GR   779.2    9994.3      779.7   10000.0     781.7   10017.9     781.2   10037.5     778.8   10049.8
GR   780.9   10071.2      781.1   10101.6     782.2   10135.9     785.8   10176.8     787.6   10223.2
GR   787.3   10269.6      787.9   10295.9     788.6   10348.2

QT       2       550        550
ET                          4.1      9960     10020
X1    1723        20     9941.3   10023.9     960.0     850.0     966.0
GR   794.5    9627.3      794.0    9689.1     794.0    9757.0     792.8    9794.2     788.4    9851.6
GR   788.9    9899.2      789.2    9941.3     787.3    9973.7     786.9    9989.9     786.2   10000.0
GR   787.8   10023.9      787.8   10071.8     787.9   10135.1     790.3   10173.6     791.8   10209.4
GR   788.6   10240.4      790.3   10260.6     792.8   10307.2     793.9   10372.4     794.5   10403.3

QT       2       480        480
ET                          4.1      9978     10020
X1    1921        18     9978.8   10025.4    1040.0     840.0    1045.0
GR   802.4    9925.7      801.8    9938.7     795.5    9978.8     793.6    9993.3     791.8    9997.4
GR   791.4   10000.0      792.3   10005.4     796.5   10025.4     797.8   10061.9     797.8   10090.5
GR   795.9   10111.5      796.1   10141.3     798.7   10163.5     799.3   10196.9     800.1   10241.2
GR   800.3   10280.0      800.9   10327.4     801.1   10339.3
```



```
QT       2       400        400
ET                          4.1      9978     10035
X1    2127        14     9957.6   10089.0    1070.0    1020.0    1088.0
GR   812.3    9848.0      811.1    9864.5     805.2    9890.5     804.2    9905.0     808.5    9921.3
GR   806.0    9957.6      802.7    9986.1     801.3    9996.7     801.0   10000.0     802.6   10020.4
GR   804.6   10048.4      807.0   10089.0     808.5   10137.9     809.3   10184.8

QT       2       330        330
ET                          4.1      9995     10030
```

```
X1     2337        15     9990.2    10031.3     1070.0     1160.0     1109.0
GR    818.7    9852.3      815.9     9880.6      815.3     9892.4      816.7    9917.9      816.3     9956.3
      813.7    9990.2      811.7    10000.0      810.6    10010.0      811.9   10031.3      812.2    10056.9
      812.3   10103.6      813.8    10154.7      816.7    10203.0      817.6   10264.9      818.1    10334.4
```

A FLOW SPLIT OF 65 CFS OCCURS UPSTREAM OF THE I-8 FRONTAGE ROAD.
A FLOW SPLIT OF 45 CFS OCCURS UPSTREAM OF THE I-8 MAINLINE.
THIS FLOW RE-ENTERS UNNAMED WASH NO. 1 BETWEEN SECTIONS 2337 AND 2565.
FLOWS ARE THEREFORE REDUCED BY 110 CFS THROUGH THE INTERSTATE AREA.

Q BEFORE SPLIT 250 CFS
Q AFTER SPLIT 140 CFS

ADD THE 45 CFS BACK IN UPSTREAM OF THE I-8 MAINLINE AT SECTION 2936.
ADD THE 65 CFS BACK IN UPSTREAM OF THE FRONTAGE ROAD AT SECTION 3148.

LEFT OVERBANK GEOMETRY IS REVISED FROM AERIAL DATA TO REFLECT
FLOW OVER THE WESTBOUND ON-RAMP IN THE FAR LEFT OVERBANK.

```
QT        2       140       140
ET                          4.1      9985     10015
X1     2565        11    9974.7   10016.7    1140.0     1130.0     1204.0
GR    828.2      9610       824      9700       827      9800      824.1    9918.7      822.2     9947.9
GR    821.5    9974.7     819.5   10000.0     821.6   10016.7      823.1   10056.3      826.2    10118.0
GR    826.5   10178.2
```

THE FOLLOWING 5 BRIDGE MODELS ARE BASED ON AS BUILT PLANS OBTAINED
FROM THE ARIZONA DEPARTMENT OF TRANSPORTATION WITH INVERTS SURVEYED
USING FIELD METHODS AND LOCAL TBM'S ESTABLISHED USING SPOT ELEVATIONS
FROM AERIAL TOPO MAPPING.

ON RAMP TO WESTBOUND INTERSTATE 8

REPEAT CHANNEL POINTS AND RIGHT OVERBANK DATA OF SECTION 2565 AT THE
DOWNSTREAM FACE OF THE TWIN CMP'S THROUGH RAMP C (WESTBOUND ON-RAMP
TO INTERSTATE 8).

RAISE CHANNEL AND RIGHT OVERBANK ELEVATIONS BY = 820.4 - 819.5 = 0.9 FT.
ADD LEFT OVERBANK DATA FROM TOPO MAP.

AT THIS SECTION, HEC-2 COMPUTES A RELATIVELY LOW DEPTH AT THE
DOWNSTREAM FACE OF THE CULVERT, BUT BECAUSE OF THE HEAD LOSS THROUGH
THE CULVERT, A GREATER DEPTH IS COMPUTED AT THE UPSTREAM FACE.

1
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BECAUSE OF THIS, QLOB AT THE DOWNSTREAM FACE DOES NOT REASONABLY
AGREE WITH QWEIR OR QLOB AT THE UPSTREAM FACE. NOR DOES THE START
STATION DOWNSTREAM AGREE WITH THE UPSTREAM VALUE. THE 26 CFS COMPUTED
AS WEIR FLOW IS CONVEYED AS SHEET FLOW ACROSS THE LEFT OVERBANK AT A
SLOPING, BUT HIGHER ELEVATION THAN IS COMPUTED WITHIN THE CHANNEL.
ALTHOUGH THE RESULTS OF THIS MODEL WOULD INDICATE A FLOOD BOUNDARY
AND FLOODWAY WITHIN THE CHANNEL AREA DOWNSTREAM, IT IS NECESSARY
TO PLOT THE FLOOD BOUNDARY AND FLOODWAY IN A MANNER CONSISTENT WITH
WEIR FLOW OVER THE ON-RAMP WELL TO THE WEST OF THE CULVERT WITH
CORRESPONDING SHEET FLOW BACK TO THE MAIN CHANNEL.

Q BEFORE SPLIT 240 CFS
Q AFTER SPLIT 130 CFS

```
QT        2       130       130
ET                          4.1      9555     10005
X1     2585        11      9995     10005       105       105       105
X3       10                                                          821       840
GR    828.2      9550     827.0      9600     825.0      9919     823.1      9948     822.4      9975
GR    820.4      9995     820.4     10005     822.5     10017     824.0     10056     827.1     10118
GR    827.4     10178
```

USE GR DATA FROM AERIAL SURVEY SECTION AT RM 2.641 AT THE UPSTREAM END
OF THE CULVERT. USE PSXECE = -0.2 TO MATCH CHANNEL THALWEG TO CHANNEL
INVERT. DO NOT THEN USE THE GR DATA AT RM 2.641, INSTEAD REPEAT IT
AGAIN AT THE DOWNSTREAM FACE OF THE CULVERT THROUGH BUSINESS ROUTE 8.

REVISE GR POINTS ON THE LEFT SIDE TO FOLLOW THE RAMP.

Q BEFORE SPLIT 220 CFS
Q AFTER SPLIT 110 CFS

```
QT        2       110       110
ET                         4.11      9555     10005
SC    2.019       0.5         3         0         3         0       240       2.1     824.5     820.4
X1     2632        13      9995     10005       260       240       250                -0.2
X2                            2                828.7
X3       10                                                        828.2     840.3
BT       -6      9450     829.4                9550     828.8                9600     828.2
BT               9780     834.5                10005     840.3                10300     851.0
GR    829.6    9450.0     829.0    9550.0     828.0    9600.0     834.5    9780.0     834.5    9900.0
GR    828.8    9980.7     826.4    9993.0     824.7    9995.0     824.7   10005.0     827.1   10026.0
GR    834.3   10055.7     843.1   10086.8     851.2   10300.0

NC    0.035     0.035     0.035
```

BUSINESS ROUTE 8

REPEAT THE SECTION TAKEN BY AERIAL METHODS AT RM 2.641 AT THE
DOWNSTREAM FACE OF THE CULVERT BENEATH BUSINESS ROUTE 8 (TWIN 36"
CMP'S). USE PSXECE = 825.1 - 824.7 = 0.4 FT.

1

```
                Q BEFORE SPLIT   220 CFS
                Q AFTER SPLIT    110 CFS

QT        2       110       110
ET                          4.1      9995     10005
X1     2649        12      9995     10005       100        85        91                  0.4
X3       10                                                                 830       850
GR    833.4      9780     833.3    9794.1     831.1    9815.9     830.9    9891.6     829.3    9961.4
GR    828.8    9980.7     824.7    9995.0     824.7   10005.0     827.1   10026.0     834.3   10055.7
GR    843.1   10086.8     851.2     10300
```

USE GR DATA FROM AERIAL SURVEY SECTION AT RM 2.746 AT THE UPSTREAM END OF THE CULVERT. USE PSXECE = -2.5 TO MATCH CHANNEL THALWEG TO CHANNEL INVERT. THEN USE THE GR DATA AGAIN AT RM 2.746 FOR CONTRACTION LOSSES.

USE TOPO DATA TO ADD THE DITCH ALONG I-8 FOR POSSIBLE WEIR FLOW. ADD 2.5 FT SO THAT IT WILL BE CORRECT WHEN 2.5 FT IS SUBTRACTED. ASSUME A DITCH 2.0 FT BELOW THE PAVEMENT.

ELTRD = 834.0 + 0.5 HV = 834.5

```
                Q BEFORE SPLIT   200 CFS
                Q AFTER SPLIT     90 CFS

QT        2        90        90
ET                          4.11      9995     10005
SC    2.019       0.5         3         0         3         0       248       2.1     827.0     825.1
X1     2698        17      9995     10005       258       258       258                  -2.5
X2                            2                834.5
X3       10                                                                 834     851.0
BT       -4      9650       836                 9660       834                 9750     858.2
BT              10195.9     851.0
GR    838.5      9650.0     836.5    9660.0     838.5    9670.0     841.2    9882.3     832.4    9920.3
GR    833.1      9973.7     831.8    9985.8     829.5    9995.0     829.5   10005.0     831.9   10016.0
GR    831.7     10047.7     833.1   10080.7     832.6   10108.2     835.3   10134.2     835.1   10164.8
GR    839.7     10191.9     841.4   10195.9
```

KEEP EXPANSION/CONTRACTION COEFFICIENTS HIGH THROUGH THIS AREA OF FREQUENT STRUCTURES.

```
                Q BEFORE SPLIT   190 CFS
                Q AFTER SPLIT     80 CFS

QT        2        80        80
NC    0.035     0.035      0.03
ET                          4.1      9985     10015
X1     2746        14    9973.7   10016.3     535.0     590.0     554.0
      841.2    9882.3     832.4    9920.3     833.1    9973.7     831.8    9985.8     830.4    9997.7
      829.5   10000.0     831.9   10016.3     831.7   10047.7     833.1   10080.7     832.5   10108.2
      835.3   10134.2     835.1   10164.8     839.7   10191.9     841.4   10195.9
```

MAINLINE INTERSTATE 8

1

REPEAT GR DATA FROM SECTION 2746 AT THE DOWNSTREAM FACE OF THE TWIN 30" CULVERTS WHICH CONVEY UNNAMED WASH NO 1 BENEATH MAINLINE I-8 EASTBOUND AND WESTBOUND.

USE PSXECE = 829.5 - 829.5 = 0.0

```
                Q BEFORE SPLIT   180 CFS
                Q AFTER SPLIT     70 CFS

QT        2        70        70
ET                          4.1      9995     10005
X1     2779        14      9995     10005       174       174       174
X3       10                                                                 837.3     837.3
GR    841.2      9882.3     832.4    9920.3     833.1    9973.7     831.8    9985.8     829.5      9995
GR    829.5       10005     831.9   10016.0     831.7   10047.7     833.1   10080.7     832.5   10108.2
GR    835.3     10134.2     835.1   10164.8     839.7   10191.9     841.4   10195.9
```

USE GR DATA FROM AERIAL SURVEY SECTION AT RM 2.936 AT THE UPSTREAM END OF THE CULVERT. USE PSXECE = -2.1 TO MATCH CHANNEL THALWEG TO CULVERT INVERT. THEN USE THE GR DATA AGAIN AT RM 2.936 FOR CONTRACTION LOSSES.

WEIR FLOW NOT ANTICIPATED. USE SC.4 = 100 FT.
ELTRD = 838.3

```
                Q BEFORE SPLIT   170 CFS
                Q AFTER SPLIT     60 CFS

QT        2        60        60
ET                          4.11      9995     10005
SC    2.018       0.5         3       100       2.5         0       285       2.2     832.6     829.5
X1     2835        18      9995     10005       295       295       295                  -2.1
X2                            2                838.3
X3       10                                                                 838.3     838.3
GR    858.1      9690     838.1      9730     838.1      9770     841.0    9861.3     840.5    9902.5
GR    837.3    9943.7     836.7    9975.5     834.7    9995.0     834.7   10005.0     836.5   10014.0
GR    836.6   10043.6     836.2   10052.2     839.6   10082.6     840.6   10146.0     840.5   10203.1
GR    842.6   10231.5     842.8   10242.2     842.1     10270
```

KEEP EXPANSION/CONTRACTION COEFFICIENTS HIGH THROUGH THIS AREA

OF FREQUENT STRUCTURES.

ADD 45 CFS DIVERTED ALONG MAINLINE BACK IN. NOW SUBTRACT ONLY 65 CFS:
Q BEFORE SPLIT 140 CFS
Q AFTER SPLIT 75 CFS


```
QT       2        75        75
NC   0.035     0.035     0.035
ET                        4.1      9988     10014
X1    2936        16      9988     10014       530       500       533
GR   841.6    9754.7     839.9    9786.9     841.0    9861.3     840.5    9902.5     837.3    9943.7
GR   836.7    9976.0     836.0    9988.0     834.7   10000.0     836.5   10014.0     836.6   10043.6
GR   836.2   10052.2     839.6   10082.6     840.6   10146.0     840.5   10203.1     842.6   10231.5
GR   842.8   10242.2
```

ON-RAMP TO EASTBOUND INTERSTATE 8

REPEAT GR DATA FROM SECTION 2936 AT THE DOWNSTREAM FACE OF THE SINGLE 36" CULVERT WHICH CONVEYS UNNAMED WASH NO 1 BENEATH THE EASTBOUND I-8 ON-RAMP.

USE PSXECE = 835.9 - 834.7 = 1.2

Q BEFORE SPLIT 130 CFS
Q AFTER SPLIT 65 CFS

```
QT       2        65        65
ET                        4.1      9755     10003
X1    2974        17      9997     10003       190       180       201                 1.2
X3      10                                                                 839     843.3
GR   841.6    9754.7     839.9    9786.9     841.0    9861.3     840.5    9902.5     837.3    9943.7
GR   836.7    9975.5     836.0    9988.0     834.7     9997      834.7   10003.0     836.5   10014.0
GR   836.6   10043.6     836.2   10052.2     839.6   10082.6     840.6   10146.0     840.5   10203.1
GR   842.6   10231.5     842.8   10242.2
```

USE GR DATA FROM AERIAL SURVEY SECTION AT RM 3.080 AT THE UPSTREAM END OF THE CULVERT. USE PSXECE = -4.4 TO MATCH CHANNEL THALWEG TO CULVERT INVERT. THEN USE THE GR DATA AGAIN AT RM 3.080 FOR CONTRACTION LOSSES.

ELTRD = 843.1 + 0.5 HV = 843.6

Q BEFORE SPLIT 120 CFS
Q AFTER SPLIT 55 CFS

```
QT       2        55        55
ET                       4.11      9600     10003
X1    1.019       0.5         3         0         3         0       137       2.2     836.8     835.9
X3     3002        16      9997     10003       147       147       147                -4.4
X2                            2                843.6
X3      10                                                          843.1     844.3
BT      -4      9100     846.3                 9610     843.1                10000     844.3
BT             10370     847.2
GR   850.7      9100     847.5      9610     847.2    9795.4     847.3    9847.6     847.3    9900.4
GR   846.6    9951.2     845.1    9980.1     841.2    9997.0     841.2   10003.0     844.0   10020.0
GR   845.3   10052.5     845.0   10114.1     846.2   10185.2     847.5   10234.7     848.3   10273.2
GR   851.6     10370
```



```
NC   0.035     0.035     0.045
```

Q BEFORE SPLIT 100 CFS
Q AFTER SPLIT 35 CFS

```
QT       2        35        35
ET                        4.1      9993     10020
X1    3080        14      9993     10020       433       413       412
GR   848.2    9770.5     847.2    9795.4     847.3    9847.6     847.3    9900.4     846.6    9951.2
GR   845.1    9980.0     843.0    9993.0     841.2   10000.0     844.0   10020.0     845.3   10052.5
GR   845.0   10114.1     846.2   10185.2     847.5   10234.7     848.3   10273.2
```

INTERSTATE 8 FRONTAGE ROAD

REPEAT GR DATA FROM SECTION 3080 AT THE DOWNSTREAM FACE OF THE SINGLE 24" CULVERT WHICH CONVEYS UNNAMED WASH NO 1 BENEATH THE FRONTAGE ROAD SOUTH OF THE EASTBOUND I-8 ON-RAMP.

USE PSXECE = 843.8 - 841.2 = 2.6 FT.

Q BEFORE SPLIT 90 CFS
Q AFTER SPLIT 25 CFS

```
QT       2        25        25
ET                        4.1      9998     10002
X1    3111        15      9998     10002       164       164       164                 2.6
X3      10                                                                 847     850
GR   848.2    9770.5     847.2    9795.4     847.3    9847.6     847.3    9900.4     846.6    9951.2
GR   845.1    9980.1     843.0    9993.0     841.2    9998.0     841.2   10002.0     844.0   10020.0
GR   845.3   10052.5     845.0   10114.1     846.2   10185.2     847.5   10234.7     848.3   10273.2
```

REPEAT GR DATA FROM SECT 3080 AGAIN AT THE UPSTREAM FACE OF THE SINGLE 24" CULVERT WHICH CONVEYS UNNAMED WASH NO 1 BENEATH THE FRONTAGE ROAD SOUTH OF THE EASTBOUND I-8 ON-RAMP.

USE PSXECE = 844.2 - 843.8 +2.6 = 3.0

WEIR FLOW NOT ANTICIPATED. USE SC.4 = 100 FT.
ELTRD = 850.7

Q BEFORE SPLIT 90 CFS
Q AFTER SPLIT 25 CFS

```
QT        2        25        25
ET                        4.11      9998     10002
SC    1.016       0.5         3       100         2         0        82       2.2     844.2     843.8
X1     3129        16      9998     10002        92        92        92                 3.0
X2                            2                850.7
X3       10                                                          850     850.7
GR    850.6      9700     848.2    9770.5     847.2    9795.4     847.3    9847.6     847.3    9900.4
GR    846.6    9951.2     845.1    9980.1     843.0    9993.0     841.2    9998.0     841.2   10002.0
1
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GR    844.0   10020.0     845.3   10052.5     845.0   10114.1     846.2   10185.2     847.5   10234.7
GR    848.3   10273.2
```

RETURN THE Q TO ITS FULL VALUE OF 80 CFS.

REPEAT THE SECTION AGAIN 100 FT UPSTREAM FOR CONTRACTION LOSSES.
PSXECE = (850.8 - 844.2)*(100/692) + 3.0 = 4.0 FT.
USE THE ACTUAL GR POINTS SO THAT THE BT CARDS ARE NOT REPEATED.
REVISE THE RIGHT OVERBANK PER THE TOPO MAP.

```
QT        2        80        80
ET                        4.1      9993     10020
X1     3148        14      9993     10020       100       100       100                 4.0
GR    850.6      9700     848.2    9770.5     847.2    9795.4     847.3    9847.6     847.3    9900.4
GR    846.6    9951.2     845.1    9980.0     843.0    9993.0     841.2   10000.0     844.0   10020.0
GR    845.3   10052.5     845.0   10114.1     846.2   10185.2     850.6     10210
```

SECTION 3260 IS AT THE UPSTREAM LIMIT OF THE DETAILED STUDY - WHERE
THE STREAM CROSSES THE FRONTAGE ROAD AGAIN NEAR THE SECTION LINE.

```
QT        2        50        50
ET                        4.1      9992     10016
X1     3260         9      9992     10016       600       550       591
GR    856.5    9934.9     854.3    9968.6     852.6    9992.0     850.8   10000.0     853.3   10016.0
GR    853.5   10049.2     854.4   10097.5     855.6   10160.4     857.0   10226.3
1
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```

```
SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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

*PROF 1
0

CCHV=     .100 CEHV=     .300
*SECNO 61.000

3265 DIVIDED FLOW

   61.000      4.28    742.28    742.27    742.28    743.07       .79       .00       .00    742.70
    900.0     141.5     758.5        .0      62.7      98.3        .0        .0        .0    745.90
      .00      2.26      7.71       .00      .060      .035      .000      .000    738.00   9899.58
  .009090        0.        0.        0.         0         4         0       .00    110.91  10021.69

FLOW DISTRIBUTION FOR SECNO=     61.00          CWSEL=    742.28

STA=    9900.     9906.     9917.     9934.     9948.     9960.     9969.     9974.    10028.
  PER Q=      .3       2.2       5.4       4.3       2.5       1.0        .1      84.3
   AREA=     2.0       9.5      18.9      15.7      10.6       5.3        .7      98.3
    VEL=     1.1       2.1       2.6       2.5       2.2       1.6        .6       7.7
  DEPTH=      .3        .8       1.1       1.1        .9        .6        .1       2.7

*SECNO 150.000

3265 DIVIDED FLOW

3301 HV CHANGED MORE THAN HVINS

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

  150.000      5.41    744.21       .00       .00    744.29       .09      1.15       .07    744.60
    900.0     435.5     464.5        .0     412.6     146.6        .0       3.9       2.4    745.80
      .06      1.06      3.17       .00      .060      .035      .000      .000    738.80   9672.84
  .001118      472.      470.      470.         5         0         0       .00    341.47  10018.74

FLOW DISTRIBUTION FOR SECNO=    150.00          CWSEL=    744.21

STA=    9673.     9685.     9720.     9953.     9961.     9966.     9972.    10024.
  PER Q=      .0       4.4      40.0       1.8       1.8        .4      51.6
   AREA=     1.3      42.2     338.8      13.8      11.6       5.0     146.6
    VEL=      .2        .9       1.1       1.2       1.4        .7       3.2
```

```
DEPTH=        .1       1.2       1.5       1.7       2.2        .8       3.5

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     SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      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 337.000

3265 DIVIDED FLOW

   337.000      2.52     745.32        .00        .00     745.35        .02       1.04        .01     745.50
     900.0        .0      122.2      777.8         .0       77.4      667.7       17.8       11.5     746.20
       .27       .00       1.58       1.16       .000       .035       .060       .000     742.80    9957.79
   .001103      755.       987.      1010.          5          0          0        .00     517.23   10495.96

FLOW DISTRIBUTION FOR SECNO=    337.00          CWSEL=    745.32

STA=    9958.   10028.   10072.   10113.   10152.   10177.   10192.   10211.   10240.   10266.   10288.   10312.   10342.
  PER Q=     13.6      6.0      8.0     10.3      6.6      4.3      5.1      6.5      5.9      6.4      7.3      5.3
   AREA=     77.4     53.1     64.7     74.1     47.1     30.1     35.9     49.9     44.9     43.6     50.3     44.2
    VEL=      1.6      1.0      1.1      1.2      1.3      1.3      1.3      1.2      1.2      1.3      1.3      1.1
  DEPTH=      1.2      1.2      1.6      1.9      1.9      2.0      1.9      1.7      1.7      2.0      2.0      1.5

STA=   10342.   10370.   10398.   10422.   10496.
  PER Q=      4.7      5.6      3.7       .6
   AREA=     41.1     44.2     32.9     11.6
    VEL=      1.0      1.1      1.0       .4
  DEPTH=      1.4      1.6      1.4       .2

*SECNO 555.000

3265 DIVIDED FLOW

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
   555.000      2.03     750.13     750.13        .00     750.56        .43       2.60        .12     751.30
     640.0        .0      640.0         .0         .0      122.0         .0       28.3       19.7     751.30
       .33       .00       5.24        .00       .000       .035       .000       .000     748.10    9873.75
   .019948     1200.      1151.      1030.         20         15          0        .00     148.53   10035.89

FLOW DISTRIBUTION FOR SECNO=    555.00          CWSEL=    750.13

STA=    9874.   10041.
  PER Q=    100.0
   AREA=    122.0
    VEL=      5.2
  DEPTH=       .8

1
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     SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      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 769.000

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  2.99

   769.000      4.50     756.00        .00        .00     756.20        .19       5.61        .02     754.60
     640.0     153.2      472.8       14.0       72.1      121.4        7.9       32.4       23.2     754.30
       .42      2.12       3.89       1.78       .035       .035       .035       .000     751.50    9891.77
   .002230     1050.      1130.      1130.          8          0          0        .00     126.81   10018.59

FLOW DISTRIBUTION FOR SECNO=    769.00          CWSEL=    756.00

STA=    9892.    9930.    9965.   10009.   10019.
  PER Q=      5.7     18.2     73.9      2.2
   AREA=     24.5     47.6    121.4      7.9
    VEL=      1.5      2.4      3.9      1.8
  DEPTH=       .6      1.3      2.7       .8

*SECNO 959.000

3265 DIVIDED FLOW

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
   959.000      2.28     761.38     761.38        .00     761.77        .39       5.01        .06     764.60
     640.0        .0      640.0         .0         .0      127.5         .0       36.2       26.5     762.90
       .48       .00       5.02        .00       .000       .035       .000       .000     759.10    9901.90
   .019468     1030.      1003.      1000.          4          8          0        .00     162.75   10073.16

FLOW DISTRIBUTION FOR SECNO=    959.00          CWSEL=    761.38

STA=    9902.   10098.
  PER Q=    100.0
   AREA=    127.5
    VEL=      5.0
```

```
DEPTH=        .8
CNO 1151.000
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   SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      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


3265 DIVIDED FLOW

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  2.45

  1151.000      2.63    768.33       .00        .00    768.42       .09       6.62       .03    768.00
     640.0     183.0     144.8     312.2       82.0      49.1     133.9      40.8      32.8    767.50
       .60      2.23      2.95      2.33       .030      .035      .030      .000    765.70   9847.51
   .003234     1040.     1014.     1000.          9         0         0       .00    379.77  10237.37

FLOW DISTRIBUTION FOR SECNO=   1151.00          CWSEL=    768.33

STA=    9848.    9873.    9913.    9957.    9978.   10014.   10038.   10070.   10119.   10188.   10215.   10237.
  PER Q=      .9      7.9     15.5      4.3     22.6     11.8     17.5      6.0      4.8      7.0      1.8
   AREA=     5.4     24.6     38.6     13.3     49.1     25.5     36.8     22.8     21.4     19.6      8.0
    VEL=     1.0      2.1      2.6      2.1      3.0      3.0      3.0      1.7      1.4      2.3      1.4
  DEPTH=      .2       .6       .9       .6      1.4      1.1      1.1       .5       .3       .7       .4

*SECNO 1347.000

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =   .52

  1347.000      2.51    773.91       .00        .00    774.20       .28       5.72       .06    775.00
     640.0        .0     640.0        .0         .0     150.3        .0      45.7      39.3    774.60
       .66       .00      4.26       .00       .000      .035      .000      .000    771.40   9877.00
   .011741      960.     1035.     1050.          5         0         0       .00    168.24  10045.24

FLOW DISTRIBUTION FOR SECNO=   1347.00          CWSEL=    773.91

STA=    9877.   10064.
  PER Q=    100.0
   AREA=    150.3
    VEL=      4.3
  DEPTH=       .9

*SECNO 1540.000
15DEC92       13:22:07                                                                                                PAGE   15

   SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      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


3265 DIVIDED FLOW

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.47

  1540.000      2.82    781.62       .00        .00    781.81       .19       7.60       .01    780.90
     620.0      64.0     501.1      54.9       26.8     134.6      23.1      49.6      43.5    780.90
       .74      2.39      3.72      2.37       .030      .035      .030      .000    778.80   9918.31
   .005117     1010.     1019.      985.          5         0         0       .00    195.80  10117.87

FLOW DISTRIBUTION FOR SECNO=   1540.00          CWSEL=    781.62

STA=    9918.    9924.    9969.   10071.   10102.   10118.
  PER Q=      .2     10.1     80.8      7.9      1.0
   AREA=     1.2     25.6    134.6     18.9      4.2
    VEL=     1.3      2.4      3.7      2.6      1.4
  DEPTH=      .2       .6      1.4       .6       .3

*SECNO 1723.000

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =   .59

  1723.000      2.09    788.29       .00        .00    788.60       .31       6.76       .04    789.20
     550.0        .0     379.4     170.6         .0      76.7      53.7      53.0      47.5    787.80
       .80       .00      4.95      3.18       .000      .035      .030      .000    786.20   9956.65
   .011415      960.      966.      850.          3         0         0       .00    184.86  10141.51

FLOW DISTRIBUTION FOR SECNO=   1723.00          CWSEL=    788.29

STA=    9957.   10024.   10072.   10135.   10142.
  PER Q=     69.0     14.5     16.1       .4
   AREA=     76.7     23.9     28.5      1.3
    VEL=      4.9      3.3      3.1      1.8
  DEPTH=      1.1       .5       .4       .2

*SECNO 1921.000
  1921.000      4.47    795.87       .00        .00    796.27       .39       7.64       .02    795.50
     480.0        .5     479.5        .0         .4      95.2        .0      55.6      50.0    796.50
```

```
      .86      1.14      5.03       .00      .030      .035      .000      .000    791.40   9976.46
   .005109    1040.     1045.      840.         4         0         0       .00     45.94  10022.39
```



```
    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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

FLOW DISTRIBUTION FOR SECNO=   1921.00          CWSEL=    795.87

STA=    9976.    9979.   10025.
  PER Q=       .1      99.9
   AREA=       .4      95.2
    VEL=      1.1       5.0
  DEPTH=       .2       2.2

*SECNO 2127.000

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =   .55

  2127.000      2.62    803.62       .00       .00    804.08       .46      7.79       .02    806.00
     400.0        .0     400.0        .0        .0      73.2        .0      57.7      51.3    807.00
       .91       .00      5.47       .00      .000      .035      .000      .000    801.00   9978.19
   .011800     1070.     1088.      1020.         4         0         0       .00     56.44  10034.63

FLOW DISTRIBUTION FOR SECNO=   2127.00          CWSEL=    803.62

STA=    9978.   10089.
  PER Q=     100.0
   AREA=      73.2
    VEL=       5.5
  DEPTH=       1.3

*SECNO 2337.000
  2337.000      2.20    812.80       .00       .00    812.99       .19      8.88       .03    813.70
     330.0        .0     205.3     124.7        .0      52.3      48.8      59.9      53.7    811.90
      1.01       .00      3.92      2.56      .000      .035      .030      .000    810.60   9994.63
   .005351     1070.     1109.      1160.         5         0         0       .00    125.88  10120.51

FLOW DISTRIBUTION FOR SECNO=   2337.00          CWSEL=    812.80

STA=    9995.   10031.   10057.   10104.   10121.
  PER Q=      62.2      17.3      18.7       1.8
   AREA=      52.3      19.1      25.5       4.2
    VEL=       3.9       3.0       2.4       1.4
  DEPTH=       1.4        .7        .5        .2
```



```
    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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 2565.000

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =   .23

  2565.000      1.66    821.16       .00       .00    821.54       .38      8.49       .06    821.50
     140.0        .0     140.0        .0        .0      28.2        .0      61.7      55.8    821.60
      1.07       .00      4.96       .00      .000      .035      .000      .000    819.50   9979.06
   .017695     1140.     1204.      1130.         3         0         0       .00     34.10  10013.16

FLOW DISTRIBUTION FOR SECNO=   2565.00          CWSEL=    821.16

STA=    9979.   10017.
  PER Q=     100.0
   AREA=      28.2
    VEL=       5.0
  DEPTH=        .8

*SECNO 2585.000

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.79

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       821.00 ELREA=       840.00

  2585.000      1.80    822.20       .00       .00    822.44       .24       .89       .01    820.40
     130.0      51.7      78.3        .0      16.2      18.0        .0      61.7      55.9    820.40
      1.08      3.19      4.36       .00      .030      .035      .000      .000    820.40   9976.99
   .004787      105.      105.      105.         2         0         0       .00     28.01  10005.00

FLOW DISTRIBUTION FOR SECNO=   2585.00          CWSEL=    822.20

STA=    9977.    9995.   10005.
  PER Q=      39.7      60.3
   AREA=      16.2      18.0
    VEL=       3.2       4.3
  DEPTH=        .9       1.8
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   SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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

SC  CUNO      CUNV      ENTLC     COFQ      RDLEN     RISE      SPAN      CULVLN    CHRT      SCL       ELCHU     ELCHD
     2         .019      .50      3.00       .00      3.00       .00    240.00     2         1       824.50    820.40

CHART  2 - CORRUGATED METAL PIPE CULVERT
SCALE  1 - HEADWALL

*SECNO 2632.000
5155, 20 TRIALS OF QWEIR NOT ENOUGH; POSSIBLY INVALID
FINAL QWEIR + QCULV =       134. DOES NOT EQUAL ACTUAL Q =       110.


SPECIAL CULVERT INLET CONTROL + WEIR FLOW, EG =    828.74

3265 DIVIDED FLOW


3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  3.82

SPECIAL CULVERT

    EGIC      EGOC       H4     QWEIR     QCULV       VCH     ACULV     ELTRD    WEIRLN
   828.84    828.81     6.30      26.      108.     1.695      14.1    828.70       61.


3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      828.20 ELREA=      840.30

  2632.000      4.21    828.71       .00       .00    828.74       .03      6.30       .00    824.50
     110.0      38.6      71.4        .0      55.3      42.1        .0      62.1      56.2    824.50
      1.13       .70      1.70       .00      .030      .035      .000      .000    824.50   9554.36
   .000234      260.      250.      240.         2         0         0       .00     96.81  10005.00

FLOW DISTRIBUTION FOR SECNO=   2632.00          CWSEL=    828.71

STA=     9554.    9600.    9625.    9993.    9995.   10005.
  PER Q=      8.5      4.7     13.2      8.7     64.9
   AREA=     20.8     11.5     16.2      6.7     42.1
    VEL=       .4       .4       .9      1.4      1.7
  DEPTH=       .5       .5       .0      3.4      4.2

*SECNO 2649.000

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =   .49
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   SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      830.00 ELREA=      850.00

  2649.000      3.57    828.67       .00       .00    828.82       .15       .04       .03    825.10
     110.0        .0     110.0        .0        .0      35.7        .0      62.3      56.4    825.10
      1.14       .00      3.08       .00      .000      .035      .000      .000    825.10   9995.00
   .000964      100.       91.       85.         2         0         0       .00     10.00  10005.00

FLOW DISTRIBUTION FOR SECNO=   2649.00          CWSEL=    828.67

STA=     9995.   10005.
  PER Q=    100.0
   AREA=     35.7
    VEL=      3.1
  DEPTH=      3.6


SPECIAL CULVERT

SC  CUNO      CUNV      ENTLC     COFQ      RDLEN     RISE      SPAN      CULVLN    CHRT      SCL       ELCHU     ELCHD
     2         .019      .50      3.00       .00      3.00       .00    248.00     2         1       827.00    825.10

CHART  2 - CORRUGATED METAL PIPE CULVERT
SCALE  1 - HEADWALL

*SECNO 2698.000

SPECIAL CULVERT OUTLET CONTROL
EGIC =    830.629  EGOC =    832.026  PCWSE=    828.671  ELTRD=    834.500


3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.74
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SPECIAL CULVERT
    EGIC      EGOC       H4     QWEIR     QCULV      VCH     ACULV    ELTRD    WEIRLN
  830.63    832.03     3.21        0.       90.    1.809      14.1   834.50        0.

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      834.00 ELREA=      851.00

 2698.000      4.98   831.98       .00       .00   832.03       .05     3.21       .00    827.00
     90.0        .0     90.0        .0        .0    49.8        .0     62.5      56.4    827.00
     1.18       .00     1.81       .00      .000     .035      .000     .000    827.00   9995.00
  .000214      258.     258.      258.         2        0         0      .00     10.00  10005.00

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    SECNO     DEPTH     CWSEL     CRIWS     WSELK      EG        HV        HL     OLOSS   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

FLOW DISTRIBUTION FOR SECNO=   2698.00          CWSEL=    831.98

STA=    9995.   10005.
  PER Q=    100.0
   AREA=     49.8
    VEL=      1.8
  DEPTH=      5.0

*SECNO 2746.000

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =   .46

 2746.000      2.69   832.19       .00       .00   832.23       .04      .20       .00    833.10
     80.0        .0     70.7       9.3        .0    43.1      15.1     63.2      57.0    831.90
     1.28       .00     1.64       .62      .000     .030      .035     .000    829.50   9982.16
  .000815      535.     554.      590.         2        0         0      .00     77.10  10059.27

FLOW DISTRIBUTION FOR SECNO=   2746.00          CWSEL=    832.19

STA=    9982.   10016.   10048.   10059.
  PER Q=     88.4      9.9      1.7
   AREA=     43.1     12.3      2.8
    VEL=      1.6       .6       .5
  DEPTH=      1.3       .4       .2

*SECNO 2779.000
95 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      837.30 ELREA=      837.30

 2779.000      2.78   832.28       .00       .00   832.37       .10      .13       .02    829.50
     70.0        .0     70.0        .0        .0    27.8        .0     63.4      57.2    829.50
     1.30       .00     2.52       .00      .000     .030      .000     .000    829.50   9995.00
  .000661      174.     174.      174.         0        0         0      .00     10.00  10005.00

FLOW DISTRIBUTION FOR SECNO=   2779.00          CWSEL=    832.28

STA=    9995.   10005.
  PER Q=    100.0
   AREA=     27.8
    VEL=      2.5
  DEPTH=      2.8

1
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    SECNO     DEPTH     CWSEL     CRIWS     WSELK      EG        HV        HL     OLOSS   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
SC  CUNO      CUNV      ENTLC     COFQ      RDLEN     RISE      SPAN     CULVLN    CHRT      SCL       ELCHU     ELCHD
     2         .018       .50     3.00     100.00     2.50       .00     285.00      2         2      832.60    829.50

CHART  2 - CORRUGATED METAL PIPE CULVERT
SCALE  2 - MITERED TO CONFORM TO SLOPE

*SECNO 2835.000

SPECIAL CULVERT INLET CONTROL
EGIC =    836.163  EGOC =    836.068  PCWSE=    832.276  ELTRD=    838.300

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.48

SPECIAL CULVERT
    EGIC      EGOC       H4     QWEIR     QCULV      VCH     ACULV    ELTRD    WEIRLN
  836.16    836.07     3.79        0.       60.    1.705       9.8   838.30        0.
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3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       838.30 ELREA=       838.30

  835.000      3.52    836.12       .00       .00    836.16       .05      3.79       .00    832.60
     60.0        .0      60.0        .0        .0      35.2        .0      63.6      57.2    832.60
     1.35       .00      1.71       .00      .000      .030      .000      .000    832.60   9995.00
  .000222      295.      295.      295.         2         0         0       .00     10.00  10005.00

FLOW DISTRIBUTION FOR SECNO=   2835.00          CWSEL=    836.12

STA=    9995.   10005.
  PER Q=     100.0
   AREA=      35.2
    VEL=       1.7
  DEPTH=       3.5

*SECNO 2936.000

3265 DIVIDED FLOW

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =   .26

1
   15DEC92      13:22:07                                                                                    PAGE   22

    SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      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

  2936.000      1.73    836.43       .00       .00    836.56       .13       .37       .03    836.00
     75.0       1.8      72.6        .6       1.6      24.7        .8      64.0      57.5    836.50
     1.40      1.09      2.94       .72      .035      .035      .035      .000    834.70   9980.54
  .005028      530.      533.      500.         2         0         0       .00     40.12  10054.30

FLOW DISTRIBUTION FOR SECNO=   2936.00          CWSEL=    836.43

STA=    9981.    9988.   10014.   10052.   10054.
  PER Q=       2.4     96.8       .6       .2
   AREA=       1.6     24.7       .6       .2
    VEL=       1.1      2.9       .7       .7
  DEPTH=        .2      1.0       .0       .1

*SECNO 2974.000

3301 HV CHANGED MORE THAN HVINS

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

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       839.00 ELREA=       843.30

  2974.000      1.62    837.52       .00       .00    838.22       .69      1.48       .17    835.90
     65.0        .0      65.0        .0        .0       9.7        .0      64.1      57.6    835.90
     1.41       .00      6.67       .00      .000      .035      .000      .000    835.90   9997.00
  .012945      190.      201.      180.         4         0         0       .00      6.00  10003.00

FLOW DISTRIBUTION FOR SECNO=   2974.00          CWSEL=    837.52

STA=    9997.   10003.
  PER Q=     100.0
   AREA=       9.7
    VEL=       6.7
  DEPTH=       1.6

1
   15DEC92      13:22:07                                                                                    PAGE   23

    SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      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

SC  CUNO      CUNV      ENTLC     COFQ      RDLEN     RISE      SPAN      CULVLN    CHRT      SCL       ELCHU     ELCHD
     1         .019      .50      3.00       .00      3.00       .00    137.00      2         2       836.80    835.90

CHART  2 - CORRUGATED METAL PIPE CULVERT
SCALE  2 - MITERED TO CONFORM TO SLOPE

5140, NORMAL DEPTH EXCEEDS CULVERT HEIGHT
*SECNO 3002.000

SPECIAL CULVERT INLET CONTROL
EGIC =    841.867  EGOC =    841.035  PCWSE=    837.524  ELTRD=    843.600

3301 HV CHANGED MORE THAN HVINS

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  6.55

SPECIAL CULVERT
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   EGIC      EGOC       H4     QWEIR     QCULV      VCH     ACULV     ELTRD    WEIRLN
 841.87    841.04     3.65        0.       55.    1.828       7.1    843.60        0.

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      843.10 ELREA=      844.30

  3002.000      5.02    841.82       .00       .00    841.87       .05      3.65       .00    836.80
     55.0        .0      55.0        .0        .0      30.1        .0      64.1      57.7    836.80
      1.43       .00      1.83       .00      .000      .035      .000      .000    836.80   9997.00
  .000216      147.      147.      147.         2         0         0       .00      6.00  10003.00

FLOW DISTRIBUTION FOR SECNO=   3002.00          CWSEL=    841.82

STA=    9997.   10003.
  PER Q=    100.0
   AREA=     30.1
    VEL=      1.8
  DEPTH=      5.0

*SECNO 3080.000
3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
1
   15DEC92       13:22:07                                                                                    PAGE   24

    SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      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

3720 CRITICAL DEPTH ASSUMED
  3080.000      1.19    842.39    842.39       .00    842.70       .31       .22       .08    843.00
     35.0        .0      35.0        .0        .0       7.9        .0      64.3      57.7    844.00
      1.46       .00      4.44       .00      .000      .045      .000      .000    841.20   9995.35
  .036868      433.      412.      413.        20        17         0       .00     13.18  10008.53

FLOW DISTRIBUTION FOR SECNO=   3080.00          CWSEL=    842.39

STA=    9995.   10020.
  PER Q=    100.0
   AREA=      7.9
    VEL=      4.4
  DEPTH=       .6

*SECNO 3111.000

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.48

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      847.00 ELREA=      850.00

  3111.000      1.54    845.34       .00       .00    845.59       .26      2.89       .00    843.80
     25.0        .0      25.0        .0        .0       6.1        .0      64.3      57.8    843.80
      1.47       .00      4.07       .00      .000      .045      .000      .000    843.80   9998.00
  .008572      164.      164.      164.         6         0         0       .00      4.00  10002.00

FLOW DISTRIBUTION FOR SECNO=   3111.00          CWSEL=    845.34

STA=    9998.   10002.
  PER Q=    100.0
   AREA=      6.1
    VEL=      4.1
  DEPTH=      1.5

1
   15DEC92       13:22:07                                                                                    PAGE   25

    SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      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

SC  CUNO      CUNV      ENTLC      COFQ      RDLEN      RISE      SPAN      CULVLN     CHRT      SCL       ELCHU     ELCHD
     1         .016       .50      3.00     100.00      2.00       .00      82.00      2         2        844.20    843.80

CHART  2 - CORRUGATED METAL PIPE CULVERT
SCALE  2 - MITERED TO CONFORM TO SLOPE

5140, NORMAL DEPTH EXCEEDS CULVERT HEIGHT
*SECNO 3129.000

SPECIAL CULVERT INLET CONTROL
EGIC =    848.639  EGOC =    847.709  PCWSE=    845.335  ELTRD=    850.700

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  5.80

SPECIAL CULVERT

   EGIC      EGOC       H4     QWEIR     QCULV      VCH     ACULV     ELTRD    WEIRLN
 848.64    847.71     3.05        0.       25.    1.418       3.1    850.70        0.
```

```
5 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      850.00 ELREA=      850.70

  3129.000      4.41    848.61       .00       .00    848.64       .03      3.05       .00    844.20
     25.0        .0      25.0        .0        .0      17.6        .0      64.4      57.8    844.20
     1.49       .00      1.42       .00      .000      .045      .000      .000    844.20   9998.00
  .000255       92.       92.       92.         2         0         0       .00      4.00  10002.00

FLOW DISTRIBUTION FOR SECNO=   3129.00          CWSEL=    848.61

STA=    9998.   10002.
  PER Q=     100.0
   AREA=      17.6
    VEL=       1.4
  DEPTH=       4.4

*SECNO 3148.000

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  2.35

  3148.000      3.46    848.66       .00       .00    848.68       .02       .04       .00    847.00
     80.0       6.9      70.7       2.4       8.5      59.1       5.4      64.5      57.9    848.00
     1.51       .81      1.20       .44      .035      .045      .035      .000    845.20   9982.73
  .000473      100.      100.      100.         2         0         0       .00     53.73  10036.46

1
   15DEC92      13:22:07                                                                          PAGE   26

    SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      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

FLOW DISTRIBUTION FOR SECNO=   3148.00          CWSEL=    848.66

STA=    9983.    9993.   10020.   10036.
  PER Q=       8.6      88.4       3.0
   AREA=       8.5      59.1       5.4
    VEL=        .8       1.2        .4
  DEPTH=        .8       2.2        .3

*SECNO 3260.000
3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
  3260.000      1.39    852.19    852.19       .00    852.54       .36       .64       .10    852.60
     50.0        .0      50.0        .0        .0      10.4        .0      65.0      58.3    853.30
     1.54       .00      4.79       .00      .000      .045      .000      .000    850.80   9993.84
  .035141      600.      591.      550.        20        18         0       .00     15.04  10008.88

FLOW DISTRIBUTION FOR SECNO=   3260.00          CWSEL=    852.19

STA=    9994.   10016.
  PER Q=     100.0
   AREA=      10.4
    VEL=       4.8
  DEPTH=        .7

1
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T1      FLOOD CONTROL DISTRICT OF MARICOPA COUNTY - CONTRACT FCD 90-67
T2      GILA BEND AREA FLOODPLAIN DELINEATION STUDY BY BURGESS & NIPLE
T3      UNNAMED WASH NO. 1 FLOODWAY              J. MISCHLER - (602) 244-8100

J1  ICHECK     INQ        NINV       IDIR       STRT       METRIC     HVINS      Q          WSEL       FQ

                 3                                                                          743.28

J2  NPROF      IPLOT      PRFVS      XSECV      XSECH      FN         ALLDC      IBW        CHNIM      ITRACE

     15                    -1                                                                            15

1
   15DEC92      13:22:07                                                                          PAGE   28

    SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      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

*PROF 2
0

CCHV=      .100 CEHV=      .300
*SECNO 61.000

3470 ENCROACHMENT STATIONS=      9985.0   10022.0  TYPE=       1  TARGET=       37.000
    61.000      5.28    743.28       .00    742.28    743.97       .69       .00       .00 100000.00
     900.0        .0     900.0        .0        .0     135.2        .0        .0        .0 100000.00
       .00       .00      6.66       .00      .000      .035      .000      .000    738.00   9985.00
  .004852        0.        0.        0.         0         0         0       .00     37.00  10022.00
```

```
FLOW DISTRIBUTION FOR SECNO=     61.00          CWSEL=    743.28

STA=    9985.   10028.
 PER Q=    100.0
  AREA=    135.2
   VEL=      6.7
 DEPTH=      3.7

*SECNO 150.000

3301 HV CHANGED MORE THAN HVINS

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.85

3470 ENCROACHMENT STATIONS=     9885.0   10015.0  TYPE=      1  TARGET=      130.000
   150.000      6.15    744.95       .00    744.21    745.14       .19      1.12       .05    744.60
     900.0     219.4     680.6        .0     159.1     173.8        .0       2.5        .9 100000.00
       .04      1.38      3.92       .00      .060      .035      .000      .000    738.80   9885.00
  .001413      472.      470.      470.         3         0         0       .00    130.00  10015.00

FLOW DISTRIBUTION FOR SECNO=    150.00          CWSEL=    744.95

STA=    9885.    9953.    9961.    9966.    9974.   10024.
 PER Q=     16.2      3.7      3.3      1.3     75.6
  AREA=    113.1     19.9     15.7     10.4    173.8
   VEL=      1.3      1.7      1.9      1.1      3.9
 DEPTH=      1.7      2.6      2.9      1.4      4.2
```



```
   SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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 337.000

3470 ENCROACHMENT STATIONS=     9960.0   10195.0  TYPE=      1  TARGET=      235.000
   337.000      3.43    746.23       .00    745.32    746.28       .04      1.12       .01 100000.00
     900.0        .0     284.4     615.6        .0     136.6     425.7      12.4       4.8    746.20
       .20       .00      2.08      1.45      .000      .035      .060      .000    742.80   9960.00
  .000971      755.      987.     1010.         4         0         0       .00    235.00  10195.00

FLOW DISTRIBUTION FOR SECNO=    337.00          CWSEL=    746.23

STA=    9960.   10028.   10039.   10048.   10072.   10113.   10152.   10177.   10192.   10195.
 PER Q=     31.6      1.5      3.4      8.2     16.1     18.7     11.9      7.7       .9
  AREA=    136.6     15.1     21.6     54.6    102.3    110.2     69.4     44.1      8.5
   VEL=      2.1       .9      1.4      1.4      1.4      1.5      1.5      1.6      1.0
 DEPTH=      2.0      1.3      2.5      2.3      2.5      2.8      2.8      2.9      2.9

*SECNO 555.000

3265 DIVIDED FLOW

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

3470 ENCROACHMENT STATIONS=     9875.0   10035.0  TYPE=      1  TARGET=      160.000
   555.000      2.03    750.13    750.13    750.13    750.56       .43      2.36       .12 100000.00
     640.0        .0     640.0        .0        .0     121.1        .0      20.8       9.6 100000.00
       .26       .00      5.29       .00      .000      .035      .000      .000    748.10   9875.00
  .020055     1200.     1151.     1030.        20        14         0       .00    145.96  10035.00

FLOW DISTRIBUTION FOR SECNO=    555.00          CWSEL=    750.13

STA=    9875.   10041.
 PER Q=    100.0
  AREA=    121.1
   VEL=      5.3
 DEPTH=       .8
```



```
   SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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 769.000

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  3.00

3470 ENCROACHMENT STATIONS=     9891.0   10018.0  TYPE=      1  TARGET=      127.000
   769.000      4.51    756.01       .00    756.00    756.20       .19      5.61       .02    754.60
     640.0    153.2     472.4      14.4      72.2     121.4       7.8      24.9      13.1    754.30
       .35      2.12      3.89      1.83      .035      .035      .035      .000    751.50   9891.76
  .002226     1050.     1130.     1130.         8         0         0       .00    126.24  10018.00
```

```
FLOW DISTRIBUTION FOR SECNO=    769.00          CWSEL=    756.01

STA=    9892.    9930.    9965.   10009.   10018.
 PER Q=      5.7      18.2      73.8       2.2
  AREA=     24.5      47.7     121.4       7.8
   VEL=      1.5       2.4       3.9       1.8
 DEPTH=       .6       1.3       2.7        .9

*SECNO 959.000

3265 DIVIDED FLOW

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=     9905.0   10070.0  TYPE=      1  TARGET=      165.000
   959.000      2.26    761.36    761.36    761.38    761.77       .41      4.97       .06 100000.00
     640.0       .0     640.0        .0        .0     125.1        .0      28.7      16.3 100000.00
       .41       .00      5.11       .00      .000      .035      .000      .000    759.10   9905.00
   .018965     1030.     1003.     1000.         4         8         0       .00    152.10  10070.00

FLOW DISTRIBUTION FOR SECNO=    959.00          CWSEL=    761.36

STA=    9905.   10098.
 PER Q=    100.0
  AREA=    125.1
   VEL=      5.1
 DEPTH=       .8
```



```
   SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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 1151.000

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  2.35

3470 ENCROACHMENT STATIONS=     9920.0   10100.0  TYPE=      1  TARGET=      180.000
  1151.000      2.79    768.49       .00    768.33    768.65       .15      6.85       .03    768.00
     640.0     155.0     180.7     304.3      55.3      55.0      95.8      32.6      20.2    767.50
       .50      2.80      3.28      3.17      .030      .035      .030      .000    765.70   9920.00
   .003432     1040.     1014.     1000.         6         0         0       .00    180.00  10100.00

FLOW DISTRIBUTION FOR SECNO=   1151.00          CWSEL=    768.49

STA=    9920.    9957.    9978.   10014.   10038.   10070.   10100.
 PER Q=     17.7      6.5     28.2     15.4     22.7      9.4
  AREA=     38.4     16.9     55.0     29.4     42.2     24.2
   VEL=      2.9      2.5      3.3      3.4      3.4      2.5
 DEPTH=      1.1       .8      1.5      1.2      1.3       .8

*SECNO 1347.000

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =   .60

3470 ENCROACHMENT STATIONS=     9880.0   10045.0  TYPE=      1  TARGET=      165.000
  1347.000      2.56    773.96       .00    773.91    774.21       .25      5.53       .03 100000.00
     640.0       .0     640.0        .0        .0     158.5        .0      36.9      24.3 100000.00
       .57       .00      4.04       .00      .000      .035      .000      .000    771.40   9880.00
   .009598      960.     1035.     1050.         6         0         0       .00    165.00  10045.00

FLOW DISTRIBUTION FOR SECNO=   1347.00          CWSEL=    773.96

STA=    9880.   10064.
 PER Q=    100.0
  AREA=    158.5
   VEL=      4.0
 DEPTH=      1.0
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   SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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 1540.000

3470 ENCROACHMENT STATIONS=     9970.0   10070.0  TYPE=      1  TARGET=      100.000
  1540.000      2.96    781.76       .00    781.62    782.04       .28      7.82       .01 100000.00
     620.0       .0     620.0        .0        .0     146.0        .0      40.4      27.4 100000.00
       .63       .00      4.25       .00      .000      .035      .000      .000    778.80   9970.00
   .006240     1010.     1019.      985.         4         0         0       .00    100.00  10070.00

FLOW DISTRIBUTION FOR SECNO=   1540.00          CWSEL=    781.76

STA=    9970.   10071.
 PER Q=    100.0
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   AREA=     146.0
    VEL=       4.2
  DEPTH=       1.5

*SECNO 1723.000

3470 ENCROACHMENT STATIONS=     9960.0   10020.0  TYPE=       1  TARGET=       60.000
  1723.000       2.53     788.73       .00     788.29     789.20       .47       7.10       .06 100000.00
     550.0         .0      550.0        .0         .0       99.5        .0       43.1      29.1 100000.00
       .68        .00       5.53       .00       .000       .035      .000       .000    786.20   9960.00
   .009007       960.       966.      850.          4          0         0        .00     60.00  10020.00


FLOW DISTRIBUTION FOR SECNO=   1723.00          CWSEL=    788.73

STA=    9960.   10024.
  PER Q=     100.0
   AREA=      99.5
    VEL=       5.5
  DEPTH=       1.7

*SECNO 1921.000

3470 ENCROACHMENT STATIONS=     9978.0   10020.0  TYPE=       1  TARGET=       42.000
  1921.000       4.45     795.85       .00     795.87     796.26       .41       7.05       .01    795.50
     480.0         .3      479.7        .0         .2       93.8        .0       45.5      30.4 100000.00
       .74       1.29       5.11       .00       .030       .035      .000       .000    791.40   9978.00
   .005059      1040.      1045.      840.          4          0         0        .00     42.00  10020.00


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   15DEC92       13:22:07                                                                                                PAGE   33

    SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      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


FLOW DISTRIBUTION FOR SECNO=   1921.00          CWSEL=    795.85

STA=    9978.    9979.   10025.
  PER Q=        .1      99.9
   AREA=        .2      93.8
    VEL=       1.3       5.1
  DEPTH=        .3       2.3

*SECNO 2127.000

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

70 ENCROACHMENT STATIONS=     9978.0   10035.0  TYPE=       1  TARGET=       57.000
  2127.000       2.61     803.61       .00     803.62     804.08       .47       7.80       .02 100000.00
     400.0         .0      400.0        .0         .0       72.6        .0       47.5      31.6 100000.00
       .79        .00       5.51       .00       .000       .035      .000       .000    801.00   9978.28
   .012065      1070.      1088.     1020.          3          0         0        .00     56.19  10034.47


FLOW DISTRIBUTION FOR SECNO=   2127.00          CWSEL=    803.61

STA=    9978.   10089.
  PER Q=     100.0
   AREA=      72.6
    VEL=       5.5
  DEPTH=       1.3

*SECNO 2337.000

3470 ENCROACHMENT STATIONS=     9995.0   10030.0  TYPE=       1  TARGET=       35.000
  2337.000       2.65     813.25       .00     812.80     813.63       .37       9.54       .01 100000.00
     330.0         .0      330.0        .0         .0       67.2        .0       49.3      32.8 100000.00
       .86        .00       4.91       .00       .000       .035      .000       .000    810.60   9995.00
   .006088      1070.      1109.     1160.          4          0         0        .00     35.00  10030.00


FLOW DISTRIBUTION FOR SECNO=   2337.00          CWSEL=    813.25

STA=    9995.   10031.
  PER Q=     100.0
   AREA=      67.2
    VEL=       4.9
  DEPTH=       1.9

1
   15DEC92       13:22:07                                                                                                PAGE   34

    SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      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 2565.000

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =   .36

3470 ENCROACHMENT STATIONS=     9985.0   10015.0  TYPE=       1  TARGET=       30.000
  2565.000       1.90     821.40       .00     821.16     821.66       .27       8.02       .01 100000.00
     140.0         .0      140.0        .0         .0       33.9        .0       50.7      33.7 100000.00
```

```
      .94       .00      4.13       .00      .000      .035      .000      .000    819.50   9985.00
   .008382     1140.     1204.     1130.         4         0         0       .00     30.00  10015.00

FLOW DISTRIBUTION FOR SECNO=   2565.00          CWSEL=    821.40

STA=    9985.   10017.
  PER Q=    100.0
   AREA=     33.9
    VEL=      4.1
  DEPTH=      1.1

*SECNO 2585.000

3470 ENCROACHMENT STATIONS=     9555.0   10005.0  TYPE=      1  TARGET=      450.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       821.00 ELREA=       840.00

  2585.000      1.76    822.16       .00    822.20    822.41       .25       .75       .00    820.40
     130.0      54.2      76.8        .0      15.4      17.5        .0      50.8      33.7 100000.00
       .95      3.52      4.32       .00      .030      .035      .000      .000    820.40   9977.45
   .006064      105.      105.      105.         0         0         0       .00     27.55  10005.00

FLOW DISTRIBUTION FOR SECNO=   2585.00          CWSEL=    822.16

STA=    9977.    9995.   10005.
  PER Q=     41.7     58.3
   AREA=     15.4     17.5
    VEL=      3.5      4.3
  DEPTH=       .9      1.8
```



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    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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

SC  CUNO      CUNV      ENTLC     COFQ      RDLEN     RISE      SPAN      CULVLN    CHRT      SCL       ELCHU     ELCHD
     2         .019      .50      3.00       .00      3.00       .00     240.00     2         1        824.50    820.40

CHART  2 - CORRUGATED METAL PIPE CULVERT
SCALE  1 - HEADWALL

*SECNO 2632.000
CARD, BRIDGE STENCL=    9555.00   STENCR=   10005.00
56, 20 TRIALS OF QWEIR NOT ENOUGH; POSSIBLY INVALID
INAL QWEIR + QCULV =       134. DOES NOT EQUAL ACTUAL Q =       110.

SPECIAL CULVERT INLET CONTROL + WEIR FLOW, EG =    828.75

3265 DIVIDED FLOW

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  3.76

SPECIAL CULVERT

     EGIC      EGOC        H4     QWEIR     QCULV       VCH     ACULV     ELTRD    WEIRLN
   828.84    828.81      6.34       26.      108.     1.538      14.1    828.70       61.

3470 ENCROACHMENT STATIONS=     9555.0   10005.0  TYPE=      1  TARGET=      450.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       828.20 ELREA=       840.30

  2632.000      4.22    828.72       .00    828.71    828.75       .03      6.34       .00    824.50
     110.0      45.1      64.9        .0      56.1      42.2        .0      51.2      34.1 100000.00
      1.00       .80      1.54       .00      .030      .035      .000      .000    824.50   9555.00
   .000308      260.      250.      240.         2         0         0       .00     96.55  10005.00

FLOW DISTRIBUTION FOR SECNO=   2632.00          CWSEL=    828.72

STA=    9555.    9600.    9626.    9981.    9993.    9995.   10005.
  PER Q=     10.2      5.5       .0     15.3     10.0     59.0
   AREA=     21.2     11.8       .1     16.3      6.7     42.2
    VEL=       .5       .5       .1      1.0      1.6      1.5
  DEPTH=       .5       .5       .0      1.3      3.4      4.2

*SECNO 2649.000
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    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =   .46
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3470 ENCROACHMENT STATIONS=     9995.0   10005.0  TYPE=      1  TARGET=       10.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       830.00 ELREA=       850.00

  2649.000      3.59    828.69       .00    828.67    828.84       .15       .05       .04    825.10
     110.0        .0     110.0        .0        .0      35.9        .0      51.3      34.2 100000.00
      1.01       .00      3.06       .00      .000      .035      .000      .000    825.10   9995.00
   .001424      100.       91.       85.         2         0         0       .00     10.00  10005.00

FLOW DISTRIBUTION FOR SECNO=   2649.00          CWSEL=    828.69

STA=    9995.   10005.
  PER Q=    100.0
   AREA=     35.9
    VEL=      3.1
  DEPTH=      3.6

SPECIAL CULVERT

SC  CUNO      CUNV      ENTLC     COFQ      RDLEN     RISE      SPAN      CULVLN    CHRT      SCL       ELCHU     ELCHD
     2         .019       .50     3.00       .00      3.00       .00    248.00      2         1       827.00    825.10

CHART  2 - CORRUGATED METAL PIPE CULVERT
SCALE  1 - HEADWALL

*SECNO 2698.000
BTCARD, BRIDGE STENCL=    9995.00   STENCR=   10005.00

SPECIAL CULVERT OUTLET CONTROL
EGIC =    830.629  EGOC =    832.047  PCWSE=    828.691  ELTRD=    854.082

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.62

SPECIAL CULVERT

     EGIC      EGOC        H4     QWEIR     QCULV       VCH     ACULV     ELTRD    WEIRLN
   830.63    832.05      3.21        0.       90.     1.802      14.1    854.08        0.
```



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     SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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

3470 ENCROACHMENT STATIONS=     9995.0   10005.0  TYPE=      1  TARGET=       10.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       834.00 ELREA=       851.00

  2698.000      5.00    832.00       .00    831.98    832.05       .05      3.21       .00    827.00
      90.0        .0      90.0        .0        .0      50.0        .0      51.6      34.3 100000.00
      1.05       .00      1.80       .00      .000      .035      .000      .000    827.00   9995.00
   .000362      258.      258.      258.         2         0         0       .00     10.00  10005.00

FLOW DISTRIBUTION FOR SECNO=   2698.00          CWSEL=    832.00

STA=    9995.   10005.
  PER Q=    100.0
   AREA=     50.0
    VEL=      1.8
  DEPTH=      5.0

*SECNO 2746.000

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =   .59

3470 ENCROACHMENT STATIONS=     9985.0   10015.0  TYPE=      1  TARGET=       30.000
  2746.000      2.78    832.28       .00    832.19    832.33       .05       .28       .00 100000.00
      80.0        .0      80.0        .0        .0      44.8        .0      52.2      34.5 100000.00
      1.14       .00      1.79       .00      .000      .030      .000      .000    829.50   9985.00
   .000808      535.      554.      590.         2         0         0       .00     30.00  10015.00

FLOW DISTRIBUTION FOR SECNO=   2746.00          CWSEL=    832.28

STA=    9985.   10016.
  PER Q=    100.0
   AREA=     44.8
    VEL=      1.8
  DEPTH=      1.5

*SECNO 2779.000
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     SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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
```

```
3470 ENCROACHMENT STATIONS=     9995.0   10005.0  TYPE=      1  TARGET=       10.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       837.30 ELREA=       837.30

  2779.000      2.89    832.39       .00    832.28    832.48       .09       .14       .01    829.50
      70.0        .0      70.0        .0        .0      28.8        .0      52.3      34.6 100000.00
      1.16       .00      2.43       .00      .000      .030      .000      .000    829.50   9995.00
   .000819      174.      174.      174.         1         0         0       .00     10.00  10005.00

FLOW DISTRIBUTION FOR SECNO=   2779.00          CWSEL=    832.39

STA=    9995.   10005.
  PER Q=    100.0
   AREA=     28.8
    VEL=      2.4
  DEPTH=      2.9

SPECIAL CULVERT

SC  CUNO      CUNV      ENTLC     COFQ     RDLEN     RISE      SPAN     CULVLN    CHRT      SCL       ELCHU     ELCHD
     2         .018       .50     3.00    100.00     2.50       .00    285.00     2         2        832.60    829.50

CHART  2 - CORRUGATED METAL PIPE CULVERT
SCALE  2 - MITERED TO CONFORM TO SLOPE

*SECNO 2835.000

SPECIAL CULVERT OUTLET CONTROL
EGIC =    836.163  EGOC =    836.183  PCWSE=    832.390  ELTRD=    838.300

SPECIAL CULVERT

     EGIC      EGOC       H4     QWEIR     QCULV       VCH     ACULV     ELTRD    WEIRLN
   836.16    836.18     3.70        0.       60.     1.696       9.8    838.30        0.


3470 ENCROACHMENT STATIONS=     9995.0   10005.0  TYPE=      1  TARGET=       10.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       838.30 ELREA=       838.30

  2835.000      3.54    836.14       .00    836.12    836.18       .04      3.70       .00    832.60
      60.0        .0      60.0        .0        .0      35.4        .0      52.5      34.7 100000.00
      1.21       .00      1.70       .00      .000      .030      .000      .000    832.60   9995.00
   .000326      295.      295.      295.         2         0         0       .00     10.00  10005.00

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    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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

FLOW DISTRIBUTION FOR SECNO=   2835.00          CWSEL=    836.14

STA=    9995.   10005.
  PER Q=    100.0
   AREA=     35.4
    VEL=      1.7
  DEPTH=      3.5

*SECNO 2936.000

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =    .37

3470 ENCROACHMENT STATIONS=     9988.0   10014.0  TYPE=      1  TARGET=       26.000
  2936.000      1.86    836.56       .00    836.43    836.67       .11       .47       .02    836.00
      75.0        .0      75.0        .0        .0      28.1        .0      52.9      34.9 100000.00
      1.26       .00      2.67       .00      .000      .035      .000      .000    834.70   9988.00
   .003734      530.      533.      500.         2         0         0       .00     26.00  10014.00

FLOW DISTRIBUTION FOR SECNO=   2936.00          CWSEL=    836.56

STA=    9988.   10014.
  PER Q=    100.0
   AREA=     28.1
    VEL=      2.7
  DEPTH=      1.1

*SECNO 2974.000

3301 HV CHANGED MORE THAN HVINS

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =    .39

3470 ENCROACHMENT STATIONS=     9755.0   10003.0  TYPE=      1  TARGET=      248.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       839.00 ELREA=       843.30

  2974.000      1.60    837.50       .00    837.52    838.21       .72      1.36       .18    835.90
      65.0        .0      65.0        .0        .0       9.6        .0      53.0      35.0 100000.00
      1.27       .00      6.79       .00      .000      .035      .000      .000    835.90   9997.00
   .018824      190.      201.      180.         4         0         0       .00      6.00  10003.00
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   SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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

FLOW DISTRIBUTION FOR SECNO=   2974.00          CWSEL=    837.50

STA=    9997.   10003.
  PER Q=    100.0
   AREA=     9.6
    VEL=     6.8
  DEPTH=     1.6

SPECIAL CULVERT

SC  CUNO      CUNV      ENTLC     COFQ      RDLEN     RISE      SPAN      CULVLN    CHRT      SCL       ELCHU     ELCHD
     1         .019      .50      3.00       .00      3.00       .00     137.00      2         2       836.80    835.90

CHART  2 - CORRUGATED METAL PIPE CULVERT
SCALE  2 - MITERED TO CONFORM TO SLOPE

5140, NORMAL DEPTH EXCEEDS CULVERT HEIGHT
*SECNO 3002.000
BTCARD, BRIDGE STENCL=    9600.00   STENCR=   10003.00

SPECIAL CULVERT INLET CONTROL
EGIC =    841.867  EGOC =    841.035  PCWSE=    837.498  ELTRD=    843.600

3301 HV CHANGED MORE THAN HVINS

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  5.27

SPECIAL CULVERT

     EGIC      EGOC       H4     QWEIR     QCULV       VCH     ACULV     ELTRD    WEIRLN
    841.87    841.04     3.65       0.       55.     1.828       7.1    843.60        0.


3470 ENCROACHMENT STATIONS=     9600.0   10003.0  TYPE=      1  TARGET=      403.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       843.10 ELREA=       844.30

 3002.000      5.02    841.82       .00    841.82    841.87       .05      3.65       .00    836.80
     55.0        .0      55.0        .0        .0      30.1        .0      53.1      35.0 100000.00
      1.29       .00      1.83       .00      .000      .035      .000      .000    836.80   9997.00
   .000486      147.      147.      147.         2         0         0       .00      6.00  10003.00
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   SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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

FLOW DISTRIBUTION FOR SECNO=   3002.00          CWSEL=    841.82

STA=    9997.   10003.
  PER Q=    100.0
   AREA=    30.1
    VEL=     1.8
  DEPTH=     5.0

*SECNO 3080.000
3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=     9993.0   10020.0  TYPE=      1  TARGET=       27.000
  3080.000      1.19    842.39    842.39    842.39    842.70       .31       .47       .08    843.00
      35.0        .0      35.0        .0        .0       7.9        .0      53.3      35.1 100000.00
      1.32       .00      4.45       .00      .000      .045      .000      .000    841.20   9995.36
   .036975      433.      412.      413.        20        17         0       .00     13.17  10008.53

FLOW DISTRIBUTION FOR SECNO=   3080.00          CWSEL=    842.39

STA=    9995.   10020.
  PER Q=    100.0
   AREA=     7.9
    VEL=     4.4
  DEPTH=      .6

*SECNO 3111.000

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

3470 ENCROACHMENT STATIONS=     9998.0   10002.0  TYPE=      1  TARGET=        4.000
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3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       847.00 ELREA=       850.00

 3111.000      1.73    845.53       .00    845.34    845.74       .20      3.02       .01    843.80
     25.0        .0      25.0        .0        .0       6.9        .0      53.3      35.1 100000.00
      1.33       .00      3.61       .00      .000      .045      .000      .000    843.80   9998.00
  .009254      164.      164.      164.         5         0         0       .00      4.00  10002.00


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    SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      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

FLOW DISTRIBUTION FOR SECNO=   3111.00          CWSEL=    845.53

STA=    9998.   10002.
  PER Q=    100.0
   AREA=      6.9
    VEL=      3.6
  DEPTH=      1.7


SPECIAL CULVERT

SC  CUNO      CUNV      ENTLC     COFQ      RDLEN     RISE      SPAN      CULVLN    CHRT      SCL       ELCHU     ELCHD
     1         .016      .50      3.00     100.00     2.00       .00     82.00      2         2        844.20    843.80

CHART  2 - CORRUGATED METAL PIPE CULVERT
SCALE  2 - MITERED TO CONFORM TO SLOPE

5140, NORMAL DEPTH EXCEEDS CULVERT HEIGHT
*SECNO 3129.000

SPECIAL CULVERT INLET CONTROL
EGIC =    848.639  EGOC =    847.709  PCWSE=    845.534  ELTRD=    850.700


3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  3.67

SPECIAL CULVERT

     EGIC      EGOC       H4     QWEIR     QCULV      VCH     ACULV     ELTRD    WEIRLN
   848.64    847.71     2.90        0.       25.    1.418       3.1    850.70        0.


3470 ENCROACHMENT STATIONS=     9998.0   10002.0  TYPE=      1  TARGET=        4.000

495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       850.00 ELREA=       850.70

 3129.000      4.41    848.61       .00    848.61    848.64       .03      2.90       .00    844.20
     25.0        .0      25.0        .0        .0      17.6        .0      53.3      35.1 100000.00
      1.35       .00      1.42       .00      .000      .045      .000      .000    844.20   9998.00
  .000687       92.       92.       92.         2         0         0       .00      4.00  10002.00


FLOW DISTRIBUTION FOR SECNO=   3129.00          CWSEL=    848.61

STA=    9998.   10002.
  PER Q=    100.0
   AREA=     17.6
    VEL=      1.4
  DEPTH=      4.4

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    SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      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 3148.000

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  3.27


3470 ENCROACHMENT STATIONS=     9993.0   10020.0  TYPE=      1  TARGET=       27.000
  3148.000      3.48    848.68       .00    848.66    848.71       .03       .07       .00    847.00
     80.0        .0      80.0        .0        .0      59.5        .0      53.4      35.2 100000.00
      1.37       .00      1.34       .00      .000      .045      .000      .000    845.20   9993.00
  .000657      100.      100.      100.         2         0         0       .00     27.00  10020.00


FLOW DISTRIBUTION FOR SECNO=   3148.00          CWSEL=    848.68

STA=    9993.   10020.
  PER Q=    100.0
   AREA=     59.5
    VEL=      1.3
  DEPTH=      2.2

*SECNO 3260.000
3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
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3470 ENCROACHMENT STATIONS=      9992.0   10016.0  TYPE=       1  TARGET=        24.000
  3260.000      1.39     852.19     852.19     852.19     852.54       .36       .87       .10     852.60
      50.0        .0       50.0        .0         .0       10.4        .0      53.9      35.4  100000.00
      1.40       .00       4.79       .00       .000       .045      .000      .000    850.80    9993.84
   .035131      600.       591.      550.         20         18         0       .00     15.04   10008.88

FLOW DISTRIBUTION FOR SECNO=   3260.00          CWSEL=    852.19

STA=    9994.   10016.
  PER Q=    100.0
   AREA=     10.4
    VEL=      4.8
  DEPTH=       .7
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THIS RUN EXECUTED 15DEC92 13:22:30

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************************************
 HEC-2 WATER SURFACE PROFILES

 Version   4.6.2;  May 1991
************************************
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NOTE- ASTERISK (*) AT LEFT OF CROSS-SECTION NUMBER INDICATES MESSAGE IN SUMMARY OF ERRORS LIST

UNNAMED WASH NO. 1 FLOO

SUMMARY PRINTOUT

	SECNO	ELMIN	CWSEL	SSTA	ENDST	DEPTH	Q	VCH	HV	DIFWSX	QWEIR	ELTRD	ELLC
	61.000	738.00	742.28	9899.58	10021.69	4.28	900.00	7.71	.79	.00	.00	.00	.00
	61.000	738.00	743.28	9985.00	10022.00	5.28	900.00	6.66	.69	.00	.00	.00	.00
*	150.000	738.80	744.21	9672.84	10018.74	5.41	900.00	3.17	.09	1.93	.00	.00	.00
*	150.000	738.80	744.95	9885.00	10015.00	6.15	900.00	3.92	.19	1.67	.00	.00	.00
	337.000	742.80	745.32	9957.79	10495.96	2.52	900.00	1.58	.02	1.12	.00	.00	.00
	337.000	742.80	746.23	9960.00	10195.00	3.43	900.00	2.08	.04	1.28	.00	.00	.00
*	555.000	748.10	750.13	9873.75	10035.89	2.03	640.00	5.24	.43	4.81	.00	.00	.00
*	555.000	748.10	750.13	9875.00	10035.00	2.03	640.00	5.29	.43	3.89	.00	.00	.00
*	769.000	751.50	756.00	9891.77	10018.59	4.50	640.00	3.89	.19	5.87	.00	.00	.00
	769.000	751.50	756.01	9891.76	10018.00	4.51	640.00	3.89	.19	5.88	.00	.00	.00
	959.000	759.10	761.38	9901.90	10073.16	2.28	640.00	5.02	.39	5.37	.00	.00	.00
*	959.000	759.10	761.36	9905.00	10070.00	2.26	640.00	5.11	.41	5.36	.00	.00	.00
*	1151.000	765.70	768.33	9847.51	10237.37	2.63	640.00	2.95	.09	6.95	.00	.00	.00
*	1151.000	765.70	768.49	9920.00	10100.00	2.79	640.00	3.28	.15	7.13	.00	.00	.00
*	1347.000	771.40	773.91	9877.00	10045.24	2.51	640.00	4.26	.28	5.59	.00	.00	.00
*	1347.000	771.40	773.96	9880.00	10045.00	2.56	640.00	4.04	.25	5.46	.00	.00	.00
*	1540.000	778.80	781.62	9918.31	10117.87	2.82	620.00	3.72	.19	7.70	.00	.00	.00
	1540.000	778.80	781.76	9970.00	10070.00	2.96	620.00	4.25	.28	7.80	.00	.00	.00
*	1723.000	786.20	788.29	9956.65	10141.51	2.09	550.00	4.95	.31	6.68	.00	.00	.00
	1723.000	786.20	788.73	9960.00	10020.00	2.53	550.00	5.53	.47	6.97	.00	.00	.00
	1921.000	791.40	795.87	9976.45	10022.39	4.47	480.00	5.03	.39	7.58	.00	.00	.00
	1921.000	791.40	795.85	9978.00	10020.00	4.45	480.00	5.11	.41	7.12	.00	.00	.00

	SECNO	ELMIN	CWSEL	SSTA	ENDST	DEPTH	Q	VCH	HV	DIFWSX	QWEIR	ELTRD	ELLC
*	2127.000	801.00	803.62	9978.19	10034.63	2.62	400.00	5.47	.46	7.74	.00	.00	.00
*	2127.000	801.00	803.61	9978.28	10034.47	2.61	400.00	5.51	.47	7.76	.00	.00	.00
	2337.000	810.60	812.80	9994.63	10120.51	2.20	330.00	3.92	.19	9.18	.00	.00	.00
	2337.000	810.60	813.25	9995.00	10030.00	2.65	330.00	4.91	.37	9.65	.00	.00	.00
*	2565.000	819.50	821.16	9979.06	10013.16	1.66	140.00	4.96	.38	8.35	.00	.00	.00
*	2565.000	819.50	821.40	9985.00	10015.00	1.90	140.00	4.13	.27	8.14	.00	.00	.00
*	2585.000	820.40	822.20	9976.99	10005.00	1.80	130.00	4.35	.24	1.05	.00	.00	.00
	2585.000	820.40	822.16	9977.45	10005.00	1.76	130.00	4.32	.25	.77	.00	.00	.00
*	2632.000	824.50	828.71	9554.36	10005.00	4.21	110.00	1.70	.03	6.51	25.94	828.70	.00
*	2632.000	824.50	828.72	9555.00	10005.00	4.22	110.00	1.54	.03	6.56	26.48	828.70	.00
*	2649.000	825.10	828.67	9995.00	10005.00	3.57	110.00	3.08	.15	-.04	.00	.00	.00
*	2649.000	825.10	828.69	9995.00	10005.00	3.59	110.00	3.06	.15	-.03	.00	.00	.00
*	2698.000	827.00	831.98	9995.00	10005.00	4.98	90.00	1.81	.05	3.30	.00	834.50	.00
*	2698.000	827.00	832.00	9995.00	10005.00	5.00	90.00	1.80	.05	3.30	.00	854.08	.00
*	2746.000	829.50	832.19	9982.16	10059.27	2.69	80.00	1.64	.04	.21	.00	.00	.00
*	2746.000	829.50	832.28	9985.00	10015.00	2.78	80.00	1.79	.05	.28	.00	.00	.00
	2779.000	829.50	832.28	9995.00	10005.00	2.78	70.00	2.52	.10	.09	.00	.00	.00

	2779.000	829.50	832.39	9995.00	10005.00	2.89	70.00	2.43	.09	.11	.00	.00	.00
	2835.000	832.60	836.12	9995.00	10005.00	3.52	60.00	1.71	.05	3.84	.00	838.30	.00
	2835.000	832.60	836.14	9995.00	10005.00	3.54	60.00	1.70	.04	3.75	.00	838.30	.00
*	2936.000	834.70	836.43	9980.54	10054.30	1.73	75.00	2.94	.13	.32	.00	.00	.00
*	2936.000	834.70	836.56	9988.00	10014.00	1.86	75.00	2.67	.11	.42	.00	.00	.00
*	2974.000	835.90	837.52	9997.00	10003.00	1.62	65.00	6.67	.69	1.09	.00	.00	.00
*	2974.000	835.90	837.50	9997.00	10003.00	1.60	65.00	6.79	.72	.94	.00	.00	.00
*	3002.000	836.80	841.82	9997.00	10003.00	5.02	55.00	1.83	.05	4.29	.00	843.60	.00
*	3002.000	836.80	841.82	9997.00	10003.00	5.02	55.00	1.83	.05	4.32	.00	843.60	.00
*	3080.000	841.20	842.39	9995.35	10008.53	1.19	35.00	4.44	.31	.58	.00	.00	.00
*	3080.000	841.20	842.39	9995.36	10008.53	1.19	35.00	4.45	.31	.58	.00	.00	.00
*	3111.000	843.80	845.34	9998.00	10002.00	1.54	25.00	4.07	.26	2.94	.00	.00	.00
*	3111.000	843.80	845.53	9998.00	10002.00	1.73	25.00	3.61	.20	3.14	.00	.00	.00
*	3129.000	844.20	848.61	9998.00	10002.00	4.41	25.00	1.42	.03	3.27	.00	850.70	.00
*	3129.000	844.20	848.61	9998.00	10002.00	4.41	25.00	1.42	.03	3.07	.00	850.70	.00
*	3148.000	845.20	848.66	9982.73	10036.46	3.46	80.00	1.20	.02	.05	.00	.00	.00
*	3148.000	845.20	848.68	9993.00	10020.00	3.48	80.00	1.34	.03	.07	.00	.00	.00

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	SECNO	ELMIN	CWSEL	SSTA	ENDST	DEPTH	Q	VCH	HV	DIFWSX	QWEIR	ELTRD	ELLC
*	3260.000	850.80	852.19	9993.84	10008.88	1.39	50.00	4.79	.36	3.53	.00	.00	.00
*	3260.000	850.80	852.19	9993.84	10008.88	1.39	50.00	4.79	.36	3.51	.00	.00	.00

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UNNAMED WASH NO. 1 FLOO

SUMMARY PRINTOUT TABLE 110

	SECNO	CWSEL	DIFKWS	EG	TOPWID	QLOB	QCH	QROB	PERENC	STENCL	STCHL	STCHR	STENCR
	61.000	742.28	.00	743.07	110.91	141.51	758.48	.00	.00	.00	9984.90	10028.40	.00
	61.000	743.28	1.00	743.97	37.00	.00	900.00	.00	37.00	9985.00	9984.90	10028.40	10022.00
*	150.000	744.21	.00	744.29	341.47	435.51	464.49	.00	.00	.00	9973.90	10023.90	.00
*	150.000	744.95	.75	745.14	130.00	219.41	680.59	.00	130.00	9885.00	9973.90	10023.90	10015.00
	337.000	745.32	.00	745.35	517.23	.00	122.22	777.78	.00	.00	9956.10	10027.60	.00
	337.000	746.23	.91	746.28	235.00	.00	284.41	615.59	235.00	9960.00	9956.10	10027.60	10195.00
*	555.000	750.13	.00	750.56	148.53	.00	640.00	.00	.00	.00	9856.40	10040.60	.00
*	555.000	750.13	-.01	750.56	145.96	.00	640.00	.00	160.00	9875.00	9856.40	10040.60	10035.00
*	769.000	756.00	.00	756.20	126.81	153.22	472.79	13.99	.00	.00	9965.00	10009.30	.00
*	769.000	756.01	.00	756.20	126.24	153.16	472.45	14.39	127.00	9891.00	9965.00	10009.30	10018.00
*	959.000	761.38	.00	761.77	162.75	.00	640.00	.00	.00	.00	9775.30	10097.90	.00
*	959.000	761.36	-.01	761.77	152.10	.00	640.00	.00	165.00	9905.00	9775.30	10097.90	10070.00
*	1151.000	768.33	.00	768.42	379.77	182.99	144.82	312.19	.00	.00	9977.90	10013.80	.00
*	1151.000	768.49	.17	768.65	180.00	155.00	180.71	304.29	180.00	9920.00	9977.90	10013.80	10100.00
*	1347.000	773.91	.00	774.20	168.24	.00	640.00	.00	.00	.00	9838.60	10063.70	.00
*	1347.000	773.96	.04	774.21	165.00	.00	640.00	.00	165.00	9880.00	9838.60	10063.70	10045.00
*	1540.000	781.62	.00	781.81	195.80	64.01	501.06	54.93	.00	.00	9968.70	10071.20	.00
	1540.000	781.76	.14	782.04	100.00	.00	620.00	.00	100.00	9970.00	9968.70	10071.20	10070.00
*	1723.000	788.29	.00	788.60	184.86	.00	379.40	170.60	.00	.00	9941.30	10023.90	.00
	1723.000	788.73	.43	789.20	60.00	.00	550.00	.00	60.00	9960.00	9941.30	10023.90	10020.00
	1921.000	795.87	.00	796.27	45.94	.49	479.51	.00	.00	.00	9978.80	10025.40	.00
	1921.000	795.85	-.02	796.26	42.00	.30	479.70	.00	42.00	9978.00	9978.80	10025.40	10020.00
*	2127.000	803.62	.00	804.08	56.44	.00	400.00	.00	.00	.00	9957.60	10089.00	.00
*	2127.000	803.61	-.01	804.08	56.19	.00	400.00	.00	57.00	9978.00	9957.60	10089.00	10035.00
	2337.000	812.80	.00	812.99	125.88	.00	205.29	124.71	.00	.00	9990.20	10031.30	.00
	2337.000	813.25	.45	813.63	35.00	.00	330.00	.00	35.00	9995.00	9990.20	10031.30	10030.00
*	2565.000	821.16	.00	821.54	34.10	.00	140.00	.00	.00	.00	9974.70	10016.70	.00
*	2565.000	821.40	.24	821.66	30.00	.00	140.00	.00	30.00	9985.00	9974.70	10016.70	10015.00
*	2585.000	822.20	.00	822.44	28.01	51.67	78.33	.00	.00	.00	9995.00	10005.00	.00
	2585.000	822.16	-.04	822.41	27.55	54.24	75.76	.00	450.00	9555.00	9995.00	10005.00	10005.00
*	2632.000	828.71	.00	828.74	96.81	38.58	71.42	.00	.00	.00	9995.00	10005.00	.00
*	2632.000	828.72	.01	828.75	96.55	45.08	64.92	.00	450.00	9555.00	9995.00	10005.00	10005.00

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	SECNO	CWSEL	DIFKWS	EG	TOPWID	QLOB	QCH	QROB	PERENC	STENCL	STCHL	STCHR	STENCR
*	2649.000	828.67	.00	828.82	10.00	.00	110.00	.00	.00	.00	9995.00	10005.00	.00
*	2649.000	828.69	.02	828.84	10.00	.00	110.00	.00	10.00	9995.00	9995.00	10005.00	10005.00

*	2698.000	831.98	.00	832.03	10.00	.00	90.00	.00	.00	.00	9995.00	10005.00	.00
	2698.000	832.00	.02	832.05	10.00	.00	90.00	.00	10.00	9995.00	9995.00	10005.00	10005.00
	2746.000	832.19	.00	832.23	77.10	.00	70.71	9.29	.00	.00	9973.70	10016.30	.00
*	2746.000	832.28	.09	832.33	30.00	.00	80.00	.00	30.00	9985.00	9973.70	10016.30	10015.00
	2779.000	832.28	.00	832.37	10.00	.00	70.00	.00	.00	.00	9995.00	10005.00	.00
	2779.000	832.39	.11	832.48	10.00	.00	70.00	.00	10.00	9995.00	9995.00	10005.00	10005.00
*	2835.000	836.12	.00	836.16	10.00	.00	60.00	.00	.00	.00	9995.00	10005.00	.00
	2835.000	836.14	.02	836.18	10.00	.00	60.00	.00	10.00	9995.00	9995.00	10005.00	10005.00
*	2936.000	836.43	.00	836.56	40.12	1.77	72.62	.61	.00	.00	9988.00	10014.00	.00
*	2936.000	836.56	.13	836.67	26.00	.00	75.00	.00	26.00	9988.00	9988.00	10014.00	10014.00
*	2974.000	837.52	.00	838.22	6.00	.00	65.00	.00	.00	.00	9997.00	10003.00	.00
*	2974.000	837.50	-.03	838.21	6.00	.00	65.00	.00	248.00	9755.00	9997.00	10003.00	10003.00
*	3002.000	841.82	.00	841.87	6.00	.00	55.00	.00	.00	.00	9997.00	10003.00	.00
*	3002.000	841.82	.00	841.87	6.00	.00	55.00	.00	403.00	9600.00	9997.00	10003.00	10003.00
*	3080.000	842.39	.00	842.70	13.18	.00	35.00	.00	.00	.00	9993.00	10020.00	.00
*	3080.000	842.39	.00	842.70	13.17	.00	35.00	.00	27.00	9993.00	9993.00	10020.00	10020.00
*	3111.000	845.34	.00	845.59	4.00	.00	25.00	.00	.00	.00	9998.00	10002.00	.00
*	3111.000	845.53	.20	845.74	4.00	.00	25.00	.00	4.00	9998.00	9998.00	10002.00	10002.00
*	3129.000	848.61	.00	848.64	4.00	.00	25.00	.00	.00	.00	9998.00	10002.00	.00
*	3129.000	848.61	.00	848.64	4.00	.00	25.00	.00	4.00	9998.00	9998.00	10002.00	10002.00
*	3148.000	848.66	.00	848.68	53.73	6.88	70.74	2.38	.00	.00	9993.00	10020.00	.00
*	3148.000	848.68	.02	848.71	27.00	.00	80.00	.00	27.00	9993.00	9993.00	10020.00	10020.00
*	3260.000	852.19	.00	852.54	15.04	.00	50.00	.00	.00	.00	9992.00	10016.00	.00
*	3260.000	852.19	.00	852.54	15.04	.00	50.00	.00	24.00	9992.00	9992.00	10016.00	10016.00

SUMMARY OF ERRORS AND SPECIAL NOTES

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WARNING SECNO=    150.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=    150.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO=    555.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=    555.000  PROFILE=  1  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=    555.000  PROFILE=  1  20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO=    555.000  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=    555.000  PROFILE=  2  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=    555.000  PROFILE=  2  20 TRIALS ATTEMPTED TO BALANCE WSEL

WARNING SECNO=    769.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=    769.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO=    959.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=    959.000  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=    959.000  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=    959.000  PROFILE=  2  MINIMUM SPECIFIC ENERGY

WARNING SECNO=   1151.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   1151.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=   1347.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   1347.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=   1540.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=   1723.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=   2127.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   2127.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=   2565.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   2565.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=   2585.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=   2632.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   2632.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=   2649.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   2649.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=   2698.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   2698.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=   2746.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   2746.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=   2835.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=   2936.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
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WARNING SECNO=   2936.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=   2974.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
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WARNING SECNO=   2974.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=   3002.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   3002.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO=   3080.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=   3080.000  PROFILE=  1  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=   3080.000  PROFILE=  1  20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO=   3080.000  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=   3080.000  PROFILE=  2  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=   3080.000  PROFILE=  2  20 TRIALS ATTEMPTED TO BALANCE WSEL

WARNING SECNO=   3111.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   3111.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=   3129.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   3129.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=   3148.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   3148.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO=   3260.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=   3260.000  PROFILE=  1  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=   3260.000  PROFILE=  1  20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO=   3260.000  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=   3260.000  PROFILE=  2  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=   3260.000  PROFILE=  2  20 TRIALS ATTEMPTED TO BALANCE WSEL

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FLOODWAY DATA, UNNAMED WASH NO. 1 FLOO
PROFILE NO. 2

STATION	FLOODWAY WIDTH	FLOODWAY SECTION AREA	FLOODWAY MEAN VELOCITY	WATER SURFACE ELEVATION WITH FLOODWAY	WITHOUT FLOODWAY	DIFFERENCE
61.000	37.	135.	6.7	743.3	742.3	1.0
150.000	130.	333.	2.7	744.9	744.2	.7
337.000	235.	562.	1.6	746.2	745.3	.9
555.000	160.	121.	6.3	750.1	750.1	.0
769.000	126.	201.	3.2	756.0	756.0	.0
959.000	165.	125.	5.1	761.4	761.4	.0
1151.000	180.	206.	3.1	768.5	768.3	.2
1347.000	165.	159.	4.0	773.9	773.9	.0
1540.000	100.	146.	4.2	781.7	781.6	.1
1723.000	60.	99.	5.5	788.7	788.3	.4
1921.000	42.	94.	5.1	795.9	795.9	.0
2127.000	56.	73.	5.5	803.6	803.6	.0
2337.000	35.	67.	4.9	813.3	812.8	.5
2565.000	30.	34.	4.1	821.4	821.2	.2
2585.000	28.	33.	3.9	822.2	822.2	.0
2632.000	450.	98.	1.1	828.7	828.7	.0
2649.000	10.	36.	3.1	828.7	828.7	.0
2698.000	10.	50.	1.8	832.0	832.0	.0
2746.000	30.	45.	1.8	832.3	832.2	.1
2779.000	10.	29.	2.4	832.4	832.3	.1
2835.000	10.	35.	1.7	836.1	836.1	.0
2936.000	26.	28.	2.7	836.5	836.4	.1
2974.000	6.	10.	6.8	837.5	837.5	.0
3002.000	6.	30.	1.8	841.8	841.8	.0
3080.000	13.	8.	4.4	842.4	842.4	.0
3111.000	4.	7.	3.6	845.5	845.3	.2
3129.000	4.	18.	1.4	848.6	848.6	.0
3148.000	27.	60.	1.3	848.7	848.7	.0
3260.000	15.	10.	4.8	852.2	852.2	.0

```
*****************************************
* HEC-2 WATER SURFACE PROFILES          *
*                                       *
* Version   4.6.2;  May 1991            *
*                                       *
* RUN DATE    16DEC92    TIME   08:30:17 *
*****************************************
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*************************************
* U.S. ARMY CORPS OF ENGINEERS      *
* HYDROLOGIC ENGINEERING CENTER     *
* 609 SECOND STREET, SUITE D        *
* DAVIS, CALIFORNIA 95616-4687      *
*          (916) 756-1104           *
*************************************
```

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X     X  XXXXXXX   XXXXX              XXXXX
X     X  X        X     X            X     X
X     X  X        X                  X     X
XXXXXXX  XXXX     X           XXXXX   XXXXX
X     X  X        X                  X
X     X  X        X     X            X
X     X  XXXXXXX   XXXXX              XXXXXXX
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THIS RUN EXECUTED 16DEC92 08:30:18

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************************************
HEC-2 WATER SURFACE PROFILES

Version   4.6.2;  May 1991
************************************
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T1      FLOOD CONTROL DISTRICT OF MARICOPA COUNTY - CONTRACT FCD 90-67
T2      GILA BEND AREA FLOODPLAIN DELINEATION STUDY BY BURGESS & NIPLE
T3      UNNAMED WASH NO. 2                    J. MISCHLER - (602) 244-8100

J1  ICHECK    INQ      NINV     IDIR     STRT     METRIC   HVINS    Q        WSEL     FQ

              2                         0.0056                             733.49

J2  NPROF     IPLOT    PRFVS    XSECV    XSECH    FN       ALLDC    IBW      CHNIM    ITRACE

    -1                 -1                                                              15

J3  VARIABLE CODES FOR SUMMARY PRINTOUT

    38       42        1        43       26       51       4        8        53       54
    13       15       40
```

SECTIONS ARE LABELED AS RIVER MILES * 1000, i.e., SECTION 192 IS AT RIVER MILE 0.192 UPSTREAM OF THE CONFLUENCE WITH UNNAMED WASH NO. 1 AT THE UPSTREAM FACE OF THE GILA BEND CANAL.

SECTION 192 IS WITHIN THE CONFLUENCE AREA WITH UNNAMED WASH NO. 1.

THE CONFLUENCE OF UNNAMED WASH #1 WITH BENDER WASH OCCURS AT A LOCATION WHERE IT INTERSECTS THE GILA BEND CANAL AND, BECAUSE OF A SMALL DRAINAGE STRUCTURE THROUGH THE CANAL, MOST FLOW IS DIVERTED WEST TO SAND TANKS WASH.

THIS MODEL THEREFORE BEGINS IN SAND TANK WASH TO DEVELOP BACKWATER PRIOR TO ENTERING UNNAMED WASH NO 2. THIS STARTING SEQUENCE IS IDENTICAL TO DATA FOUND IN THE BENDER WASH AND UNNAMED WASH #1 MODELS DEVELOPED WITH THIS STUDY FOR THE GILA BEND AREA.

WHEN THE GILA BEND CANAL WAS CONSTRUCTED, A 3-BARREL CONCRETE BOX CULVERT WAS CONSTRUCTED TO CONVEY BENDER WASH BENEATH THE IRRIGATION CANAL. WHEN THE CANAL BANKS WERE RAISED AND THE CANAL EMBANKMENT WAS THEREFORE WIDENED AT SOME TIME IN THE PAST, THE CULVERT WAS EXTENDED BY INSERTING SINGLE 30-INCH CORRUGATED METAL PIPES IN EACH BARREL.

THE CULVERT WAS EXTENDED IN THE UPSTREAM DIRECTION.

FLOW THROUGH THE CULVERT IS CONTROLLED BY INLET CONDITIONS, AND IN FACT, THE THREE PIPES HAD SIGNIFICANT SEDIMENT CLOGGING THE INLETS AT THE TIME OF THE FIELD RECONNAISSANCE OF 10/4/91.

1

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A DITCH HAS BEEN CONSTRUCTED UPSTREAM OF THE GILA BEND CANAL TO DIVERT WATER FROM BENDER WASH, AS WELL AS FROM UNNAMED TRIBUTARIES 1 & 2, TO SAND TANKS WASH JUST UPSTREAM OF THE INVERTED SIPHON WHICH CARRIES THE GILA BEND CANAL BENEATH SAND TANKS WASH.

ELEVATIONS UPSTREAM OF THE GILA BEND CANAL WILL THEREFORE BE CONTROLLED BY THIS DIVERSION DITCH.

THE ELEVATION AT SECTION 3888 IN SAND TANKS WASH IS DETERMINED USING SLOPE AREA METHODS. J1.5 STRT = (730CONTOUR-738CONTOUR)/360'=0.0056'/'

SECTION 3888 IS IN THE "THROAT" OF THE GILA BEND CANAL WHICH CROSSES BENEATH SAND TANK WASH IN AN INVERTED SIPHON.

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NT      1        670
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NC      0.06      0.06     0.025       0.1       0.3
X1      3888         9    9953.4   10033.4
GR      744.8    9953.4     739.0    9962.8     732.0    9973.7     731.3    9991.4     731.3   10000.0
GR      731.3   10017.3     732.0   10020.6     743.6   10033.4     745.2   10038.6

NC      0.035     0.035     0.035
X1          1        27    9980.5   10035.8       460       300       380
GR      741.8    9741.2     741.4    9755.7     741.0    9773.2     739.3    9790.0     738.1    9812.1
GR      737.6    9821.9     738.1    9836.3     739.0    9847.1     739.5    9859.7     739.7    9862.2
GR      738.7    9885.5     738.6    9915.3     738.9    9934.7     739.2    9941.5     739.1    9952.9
GR      739.2    9962.9     739.4    9975.5     738.9    9980.5     734.4    9997.1     732.1   10000.0
GR      733.1   10005.4     735.0   10011.2     736.1   10024.1     738.2   10035.8     741.3   10045.9
GR      744.8   10054.2     744.7   10058.7

X1          2        11    9981.5   10036.7       440       460       460
GR      742.7    9969.1     740.5    9981.5     737.8    9990.0     737.0    9997.2     737.2   10000.0
GR      738.4   10006.3     737.6   10013.4     738.3   10024.3     739.9   10036.7     742.8   10047.1
GR      745.7   10054.0
```

BEGIN UNNAMED WASH NO. 1 AT RM 0.000.

```
NC      0.06      0.06     0.035
X1       061        21    9984.9   10028.4       865       840       840
GR      746.0    9560.0     744.0    9800.0     743.1    9883.3     743.0    9893.2     741.6    9905.6
GR      741.3    9917.1     741.0    9933.8     741.4    9948.3     741.4    9960.3     742.0    9969.4
GR      742.5    9978.5     742.7    9984.9     739.3    9991.4     738.5    9997.0     738.0   10000.0
GR      738.8   10005.6     739.7   10015.0     742.4   10022.0     745.9   10028.4     746.5   10038.5
GR      746.6   10046.9
```



```
X1      150        16    9973.9   10023.9       470     470.0     470.0
GR      745.1    9620.0     744.0    9685.0     742.0    9720.0     743.5    9952.7     741.5    9960.8
GR      742.6    9966.2     744.6    9973.9     744.3    9976.5     741.4    9986.0     739.1    9993.2
GR      738.8   10000.0     739.5   10010.0     743.7   10017.1     745.8   10023.9     746.2   10032.1
GR      746.8   10034.2
```

BEGIN UNAMED WASH NO 2 AT RM 0.000.
THE CONFLUENCE OCCURS AT UNNAMED WASH NO 1 RM 0.209.

```
NC      0.07      0.07      0.07       0.1       0.3
X1       192        32    9725.4   10133.6
GR      746.8    9725.4     743.7    9734.1     743.2    9739.1     743.3    9741.1     743.8    9770.3
GR      743.4    9807.9     743.2    9848.1     743.1    9867.4     743.3    9878.5     742.7    9886.9
GR      743.1    9903.2     743.4    9935.6     743.2    9966.6     743.0    9985.0     743.3   10000.0
GR      743.6   10023.6     743.6   10047.6     743.4   10070.1     743.5   10098.7     743.7   10115.5
GR      745.3   10133.6     745.6   10153.1     745.4   10183.1     745.6   10208.1     745.8   10233.2
GR      746.2   10260.1     746.0   10282.4     745.6   10297.8     745.6   10305.7     746.2   10327.3
GR      746.8   10346.8     747.6   10366.9

X1       385        20    9879.0   10277.8    1000.0    1000.0    1019.0
GR      753.5    9716.1     753.3    9760.1     750.3    9810.7     749.0    9849.2     747.6    9879.0
GR      745.1    9897.7     744.4    9938.9     743.5    9982.6     742.9   10000.0     743.4   10042.9
GR      743.0   10113.1     742.1   10161.4     742.1   10190.7     741.9   10210.5     743.4   10246.6
GR      746.3   10277.6     750.1   10291.1     752.0   10310.7     752.5   10323.2     753.8   10358.1

NC      0.03      0.03     0.035
X1       618         9    9964.1   10050.2    1225.0    1150.0    1230.0
GR      758.8    9920.8     757.8    9964.1     755.7    9986.4     754.5   10000.0     755.3   10033.6
GR      756.0   10050.2     756.4   10062.4     756.9   10086.7     758.7   10135.0

QT        1       700
X1       821        25    9952.9   10023.7    1130.0    1040.0    1072.0
GR      769.6    9854.8     769.5    9913.8     768.3    9952.9     765.4    9983.9     764.3    9997.2
GR      763.7   10000.0     765.3   10009.5     767.7   10023.7     767.1   10081.8     765.7   10132.9
GR      766.5   10192.8     766.8   10259.7     766.9   10327.7     766.7   10399.0     767.0   10460.2
GR      766.4   10527.0     766.2   10601.6     766.8   10657.7     766.8   10692.6     765.6   10701.0
GR      765.8   10713.7     765.8   10726.7     767.1   10745.6     767.4   10770.5     769.4   10847.1

X1      1043        14    9977.4   10038.9    1100.0    1145.0    1172.0
GR      779.7    9509.2     778.5    9576.5     776.6    9627.9     775.4    9662.7     777.1    9702.7
GR      775.5    9756.0     776.4    9824.7     775.9    9907.2     776.8    9977.4     774.7   10000.0
GR      775.9   10017.0     777.8   10038.9     777.7   10092.9     778.4   10159.1

X1      1240        22    9981.2   10016.6    1020.0     920.0    1040.0
GR      788.5    9436.2     787.7    9484.6     787.0    9534.7     786.0    9602.3     784.0    9660.2
GR      783.9    9722.2     784.6    9784.2     784.6    9825.2     783.6    9848.0     784.4    9897.4
GR      784.6    9952.9     784.4    9981.2     782.7    9997.2     782.1   10000.0     783.8   10016.6
GR      784.5   10051.6     784.0   10101.1     783.7   10146.5     783.9   10213.9     785.1   10270.7
GR      786.5   10340.0     788.3   10398.1
```



```
X1      1453        21    9982.1   10019.6    1000.0    1210.0    1125.0
GR      791.8    9503.6     790.4    9556.2     789.4    9606.1     788.2    9642.3     789.1    9693.3
GR      788.9    9770.5     789.4    9845.7     790.3    9924.3     790.3    9963.0     789.9    9982.1
GR      788.8    9991.6     787.4   10000.0     789.5   10019.6     789.1   10068.6     790.1   10122.1
GR      790.3   10184.0     790.4   10260.4     792.4   10339.7     792.6   10402.1     793.0   10432.8
GR      793.7   10446.0
```

WIER FLOW OVER BUSINESS ROUTE 8 OCCURS IN THE FAR RIGHT OVERBANK.
BECAUSE FLOW IS EFFECTIVE THERE, BUT NOT BETWEEN APPROX STATION 10200
AND THE FAR RIGHT CHANNEL, THE GEOMETRY HAS BEEN REVISED TO MAKE THE
AREA NON-EFFECTIVE.

GR POINTS FROM STA 10190 AND UP ARE FROM TOPO MAPPING. THEY WERE ADDED
TO MODEL THE WIER FLOW IN THE FAR RIGHT OVERBANK.

```
        1       730
     1676        14     9968.9    10011.3     1280.0      480.0     1177.0
GR   799.2    9968.9      798.1     9984.6      797.2     9992.4      796.5   10000.0      797.8   10011.3
GR   798.1   10042.3      798.2    10096.8      798.3    10184.8        800     10190        800     10440
GR   800.4     10600        798      10650        800      10670        801     10780
```

SPECIAL CULVERT MODEL FOR THE THREE BARREL CULVERT AT BUSINESS ROUTE 8.

AT THE TIME OF MAPPING, APPROXIMATELY 1.3 FEET OF SEDIMENT WAS FOUND IN THE CULVERT.

SECTION 1710 GR POINTS ARE REPEATED FROM 1676 EXCEPT THAT CHANNEL GEOMETRY HAS BEEN REVISED TO REFLECT THE CHANNEL AT THE CULVERT & BT STATIONS HAVE BEEN ADDED. GEOMETRY AT THE ENDS MATCH THE BT CARDS.

WIER FLOW OVER BUSINESS ROUTE 8 OCCURS IN THE FAR RIGHT OVERBANK. BECAUSE FLOW IS EFFECTIVE THERE, BUT NOT BETWEEN THE RIGHT BANK STATION AND THE FAR RIGHT CHANNEL, THE GEOMETRY HAS BEEN REVISED TO MAKE THE AREA NON-EFFECTIVE.

RAISE ELEVATIONS USING PSXECE = 797.8 - 796.5 = 1.3 FT
INCREASE EXPANSION & CONTRACTION COEFFICIENTS FOR THE CULVERT

```
NC                                     0.3       0.5
X1     1710        16      9984     10016       250       200       180                     1.3
X3       10                                                                   803.1     799.0
GR    808.2      9450     802.2    9734.0     800.7    9792.8     799.7    9875.6     798.4    9916.7
GR    798.7    9935.3     799.2    9968.9     798.1      9984     796.5      9985     796.5   10000.0
GR    796.5     10015     797.8     10016     802.3     10017     800.1     10320     798.2     10450
GR    800.0     10560
```

REPEAT GR DATA FROM DOWNSTREAM FACE. PSXECE = 798.0 - 797.8 + 1.3 = 1.5
USE ELTRD = 800.0 + 0.1 HV = 800.1


```
SC    3.014       0.4         3         0       4.7        10        41       8.1     798.0     797.8
X1     1720        16      9984     10016        51        51        51                 1.5
X2                            2                800.1
X3       10                                                                   804.1     800.0
BT       -5      9450     808.7                10000     804.1                10320     801.9
BT            10450     800.0                 10560     801.8
GR    808.2      9450     802.2    9734.0     800.7    9792.8     799.7    9875.6     798.4    9916.7
GR    798.7    9935.3     799.2    9968.9     798.1      9984     796.5      9985     796.5   10000.0
GR    796.5     10015     797.8     10016     802.3     10017     800.1     10320     798.2     10450
GR    800.0     10560
      0.035     0.035     0.035
```

REPEAT SECTION 100 FEET UPSTREAM FOR CONTRACTION LOSSES
ADJUST GR POINTS AT RIGHT END FROM TOPO MAPPINS

USE PSXECE = 798.7 - 796.5 = 2.2 FT

```
QT       1       710
X1     1739        17      9984     10016        50       230       100                     2.2
GR    808.2      9450     802.2    9734.0     800.7    9792.8     799.7    9875.6     798.4    9916.7
GR    798.7    9935.3     799.2    9968.9     798.1      9984     796.5      9985     796.5   10000.0
GR    796.5     10015     797.8     10016     798.1   10042.3     798.2   10096.8     798.3   10184.8
GR    797.9   10285.3     803.4     10350
```

RETURN EXPANSION & CONTRACTION COEFFICIENTS TO TYPICAL VALUES

```
QT       1       670
NC                                     0.1       0.3
X1     1905        15      9970.8   10017.5       360       850       878
GR    809.9    9928.8     809.1    9958.6     807.8    9970.8     804.9    9987.2     804.0    9994.2
GR    803.5   10000.0     805.4   10017.5     805.7   10050.6     805.2   10117.9     804.6   10168.4
GR    805.7   10208.8     805.7   10267.5     807.0   10312.2     807.5   10329.8     808.1   10338.1

QT       1       620
X1     2138        17      9964.8   10027.9    1020.0    1130.0    1230.0
GR    816.9    9748.1     815.3    9792.4     814.0    9823.1     811.4    9837.8     811.0    9849.2
GR    811.9    9866.1     812.4    9902.3     812.6    9964.8     812.2    9991.8     812.4   10000.0
GR    813.0   10027.9     812.8   10072.4     813.5   10132.9     813.2   10181.7     812.0   10218.7
GR    814.1   10269.4     816.6   10330.5

QT       1       570
ET             9.1                                                                    9841.7   10050.0
X1     2335        16      9971.3   10034.9    1050.0       965    1040.0
GR    824.7    9841.7     824.2    9896.1     822.4    9939.3     820.4    9971.3     818.8    9991.7
GR    817.9   10000.0     819.7   10012.7     820.7   10034.9     820.2   10060.7     820.5   10111.7
GR    819.8   10189.3     819.3   10278.6     819.8   10362.4     821.2   10451.9     824.0   10528.6
GR    826.9   10587.4
```



```
QT       1       520
X1     2534        12      9999.1   10012.9     900.0     890.0    1051.0
GR    832.9    9783.0     832.8    9836.8     830.7    9877.6     828.2    9925.6     828.8    9943.8
GR    827.9    9987.0     827.7    9999.1     825.2   10000.0     827.5   10012.9     827.8   10029.4
GR    828.7   10052.8     833.3   10098.3
```

```
QT       1       460
```

```
CH        5      0.035      9937.6       0.04      9971.3      0.035     10016.8       0.04     10048.9      0.035
     10163
      2776         10      9971.3    10016.8      1170.0      930.0      1278.0
     842.0     9897.8       840.4     9937.6       838.3     9971.3       837.4     9992.7       836.3    10000.0
GR   838.9    10016.8       838.0    10048.9       837.7    10072.2       838.4    10100.7       839.1    10163.0
1
   16DEC92      08:30:17                                                                                          PAGE    7

    SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      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

*PROF 1

CCHV=     .100 CEHV=     .300
*SECNO 3888.000
  3888.000      2.19    733.49       .00    733.49    734.21       .72       .00       .00    744.80
     670.0        .0     670.0        .0        .0      98.3        .0        .0        .0    743.60
       .00       .00      6.81       .00      .000      .025      .000      .000    731.30   9971.38
   .005617        0.        0.        0.         0         0         0       .00     50.86  10022.24

FLOW DISTRIBUTION FOR SECNO=   3888.00          CWSEL=    733.49

STA=    9971.   10033.
  PER Q=     100.0
   AREA=      98.3
    VEL=       6.8
  DEPTH=       1.9

*SECNO 1.000
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
     1.000      4.83    736.93    736.93       .00    737.96      1.03      3.31       .09    738.90
     670.0        .0     670.0        .0        .0      82.3        .0        .8        .4    738.20
       .01       .00      8.14       .00      .000      .035      .000      .000    732.10   9987.77
   .015292      460.      380.      300.         7        17         0       .00     40.96  10028.72

FLOW DISTRIBUTION FOR SECNO=      1.00          CWSEL=    736.93

STA=    9988.   10036.
  PER Q=     100.0
   AREA=      82.3
    VEL=       8.1
  DEPTH=       2.0

*SECNO 2.000

01 HV CHANGED MORE THAN HVINS

   16DEC92      08:30:17                                                                                          PAGE    8

    SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      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

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  2.00

     2.000      3.79    740.79       .00       .00    741.14       .36      3.12       .07    740.50
     670.0        .2     667.7       2.1        .2     139.0       1.4       2.0        .9    739.90
       .04       .71      4.80      1.48      .035      .035      .035      .000    737.00   9979.89
   .003805      440.      460.      460.         5         0         0       .00     59.99  10039.88

FLOW DISTRIBUTION FOR SECNO=      2.00          CWSEL=    740.79

STA=    9980.    9982.   10037.   10040.
  PER Q=        .0      99.7       .3
   AREA=        .2     139.0      1.4
    VEL=        .7       4.8      1.5
  DEPTH=        .1       2.5       .4

*SECNO 61.000

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.48

    61.000      5.07    743.07       .00       .00    743.24       .17      2.08       .02    742.70
     670.0     181.0     489.0        .0     130.4     127.8        .0       5.8       2.9    745.90
       .11      1.39      3.83       .00      .060      .035      .000      .000    738.00   9886.49
   .001728      865.      840.      840.         6         0         0       .00    136.73  10023.22

FLOW DISTRIBUTION FOR SECNO=     61.00          CWSEL=    743.07

STA=    9886.    9906.    9917.    9934.    9948.    9960.    9969.    9979.    9985.   10028.
  PER Q=      1.2      3.9      7.6      6.3      4.3      2.4      1.0       .3     73.0
   AREA=      9.7     18.6     32.0     27.1     20.0     12.4      7.4      3.0    127.8
    VEL=       .8      1.4      1.6      1.6      1.4      1.3       .9       .6      3.8
  DEPTH=       .5      1.6      1.9      1.9      1.7      1.4       .8       .5      3.3

*SECNO 150.000

3265 DIVIDED FLOW
```

```
  150.000      5.01    743.81       .00       .00    743.91       .10       .66       .01    744.60
    670.0     263.2     406.8        .0     298.8     130.6        .0       9.6       5.3    745.80
      .17       .88      3.12       .00      .060      .035      .000      .000    738.80   9688.29
  .001159      470.      470.      470.         3         0         0       .00    321.93  10017.46
```



```
   SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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

FLOW DISTRIBUTION FOR SECNO=    150.00          CWSEL=    743.81

STA=    9688.    9720.    9953.    9961.    9966.    9971.   10024.
  PER Q=      3.4     32.4      1.6      1.7       .2     60.7
   AREA=     28.7    247.1     10.6      9.5      2.8    130.6
    VEL=       .8       .9      1.0      1.2       .6      3.1
  DEPTH=       .9      1.1      1.3      1.8       .6      3.3

CCHV=     .100 CEHV=     .300
*SECNO 192.000
3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
   192.000      1.13    743.83    743.83       .00    744.05       .22       .00       .04    746.80
    670.0        .0     670.0       .0         .0     179.2        .0       9.6       5.3    745.30
      .17       .00      3.74       .00      .000      .070      .000      .000    742.70   9733.73
  .085461        0.        0.        0.        20        16         0       .00    383.24  10116.98

FLOW DISTRIBUTION FOR SECNO=    192.00          CWSEL=    743.83

STA=    9734.   10134.
  PER Q=    100.0
   AREA=    179.2
    VEL=      3.7
  DEPTH=       .5

*SECNO 385.000
3840 SECTION NOT HIGH ENOUGH   829.824   803.500   741.900   803.500   743.742          2

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO = 14.12

   385.000      3.68    745.58    743.35       .00    745.59       .01      1.52       .02    747.60
    670.0        .0     670.0       .0         .0     870.8        .0      21.8      14.2    746.30
      .54       .00       .77       .00      .000      .070      .000      .000    741.90   9894.08
  .000429     1000.     1019.     1000.        10        11         0       .00    375.86  10269.94

FLOW DISTRIBUTION FOR SECNO=    385.00          CWSEL=    745.58
```



```
   SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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

STA=    9894.   10278.
  PER Q=    100.0
   AREA=    870.8
    VEL=       .8
  DEPTH=      2.3

*SECNO 618.000

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
   618.000      2.18    756.68    756.68       .00    757.27       .59      1.53       .17    757.80
    670.0        .0     646.1      23.9        .0     103.4       7.7      35.7      20.9    756.00
      .60       .00      6.25      3.09      .000      .035      .030      .000    754.50   9976.01
  .013947      1225.     1230.     1150.        20        14         0       .00     99.94  10075.94

FLOW DISTRIBUTION FOR SECNO=    618.00          CWSEL=    756.68

STA=    9976.   10050.   10062.   10076.
  PER Q=     96.4      3.1       .4
   AREA=    103.4      5.8      1.9
    VEL=      6.2      3.6      1.6
  DEPTH=      1.4       .5       .1

*SECNO 821.000

3265 DIVIDED FLOW

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.54

   821.000      3.04    766.74       .00       .00    766.92       .18      9.61       .04    768.30
    700.0        .0     300.5     399.5        .0      69.6     152.8      39.7      27.3    767.70
       .68       .00      4.31      2.62      .000      .035      .030      .000    763.70   9969.62
```

```
.006431     1130.     1072.     1040.        5        0        0      .00    428.43  10740.31

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   SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      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

FLOW DISTRIBUTION FOR SECNO=    821.00          CWSEL=    766.74

STA=    9970.   10024.   10133.   10193.   10245.   10406.   10527.   10602.   10652.   10701.   10714.   10727.   10740.
  PER Q=     42.9      7.2     16.0       .8       .0      1.1     10.6      3.2      1.7      7.6      6.6      2.2
   AREA=     69.6     19.6     38.1      6.2       .4      6.3     32.5     13.4      4.5     13.2     12.2      6.4
    VEL=      4.3      2.6      2.9      1.0       .3      1.2      2.3      1.7      2.7      4.1      3.8      2.4
  DEPTH=      1.4       .2       .6       .1       .0       .1       .4       .3       .1      1.0       .9       .5

*SECNO 1043.000

3265 DIVIDED FLOW

  1043.000      1.86    776.56       .00       .00    776.78       .23      9.85       .01    776.80
     700.0     507.8     192.2        .0     145.5      42.4        .0      45.1      37.3    777.80
       .77      3.49      4.54       .00      .030      .035      .000      .000    774.70   9629.18
   .012270     1100.     1172.     1145.         4         0         0       .00    342.75  10024.56

FLOW DISTRIBUTION FOR SECNO=   1043.00          CWSEL=    776.56

STA=    9629.    9663.    9690.    9756.    9825.    9907.    9958.   10039.
  PER Q=     10.5      8.5      9.5     23.3     14.4      6.2     27.5
   AREA=     19.4     15.7     18.6     41.6     33.5     16.8     42.4
    VEL=      3.8      3.8      3.6      3.9      3.0      2.6      4.5
  DEPTH=       .6       .6       .3       .6       .4       .3      1.0

*SECNO 1240.000

3265 DIVIDED FLOW

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.50

  1240.000      2.44    784.54       .00       .00    784.67       .13      7.87       .01    784.40
     700.0     216.7     183.5     299.8      98.3      48.0     117.6      50.3      47.2    783.80
       .87      2.20      3.82      2.55      .030      .035      .030      .000    782.10   9644.73
   .005441     1020.     1040.      920.         7         0         0       .00    523.39  10243.93

OW DISTRIBUTION FOR SECNO=   1240.00          CWSEL=    784.54

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   SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      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

STA=    9645.    9722.    9778.    9848.    9897.    9981.   10017.   10052.   10101.   10147.   10214.   10244.
  PER Q=     14.1      4.3      3.1      9.1       .3     26.2      3.7      3.2     12.6     21.0      2.3
   AREA=     40.4     17.8     10.0     26.4      3.8     48.0     13.5     14.1     31.1     49.5      9.5
    VEL=      2.4      1.7      2.2      2.4       .6      3.8      1.9      1.6      2.8      3.0      1.7
  DEPTH=       .5       .3       .1       .5       .0      1.4       .4       .3       .7       .7       .3

*SECNO 1453.000

3265 DIVIDED FLOW

  1453.000      2.31    789.71       .00       .00    789.83       .12      5.16       .00    789.90
     700.0     521.8     127.4      50.7     191.2      41.9     30.3      56.8      58.6    789.50
       .98      2.73      3.04      1.68      .030      .035      .030      .000    787.40   9590.50
   .004221     1000.     1125.     1210.         7         0         0       .00    400.15  10101.37

FLOW DISTRIBUTION FOR SECNO=   1453.00          CWSEL=    789.71

STA=    9591.    9606.    9642.    9693.    9771.    9846.    9873.   10020.   10069.   10101.
  PER Q=       .3     14.3     25.9     20.2     13.3       .6     18.2      5.2      2.1
   AREA=      2.4     33.0     54.2     55.0     42.3      4.3     41.9     20.2     10.0
    VEL=       .9      3.0      3.4      2.6      2.2       .9      3.0      1.8      1.5
  DEPTH=       .2       .9      1.1       .7       .6       .2      1.2       .4       .3

*SECNO 1676.000

3265 DIVIDED FLOW

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
  1676.000      2.27    798.77    798.77       .00    799.12       .36      6.88       .07    799.20
     730.0        .0     257.9     472.1        .0      44.7     113.5      61.6      65.3    797.80
      1.04       .00      5.77      4.16      .000      .035      .030      .000    796.50   9975.10
   .014067     1280.     1177.      480.        11         5         0       .00    234.72  10657.65

FLOW DISTRIBUTION FOR SECNO=   1676.00          CWSEL=    798.77

TA=    9975.   10011.   10042.   10097.   10185.   10186.   10650.   10658.
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 PER Q=     35.3     17.8     19.5     23.5       .1      2.6      1.2
  AREA=     44.7     25.3     33.5     45.4       .3      6.1      2.9
   VEL=      5.8      5.1      4.3      3.8      2.1      3.1      3.1
 DEPTH=      1.2       .8       .6       .5       .2       .0       .4
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   16DEC92      08:30:17                                                                                    PAGE   13

    SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      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

CCHV=      .300 CEHV=      .500
*SECNO 1710.000

3265 DIVIDED FLOW

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       803.10 ELREA=       799.00

  1710.000      2.75    800.55    800.55       .00    801.04       .49      1.70       .07    799.40
     730.0        .0     547.4     182.6        .0      86.6      71.7      62.3      66.2    799.10
      1.05       .00      6.32      2.55      .000      .035      .030      .000    797.80   9984.00
   .006263      250.      180.      200.         3         8         0       .00    168.39  10514.19

FLOW DISTRIBUTION FOR SECNO=   1710.00          CWSEL=    800.55

STA=    9984.    10016.    10016.    10450.    10514.
  PER Q=      75.0       .0     13.2     11.8
   AREA=      86.6       .2     37.7     33.7
    VEL=       6.3      1.1      2.6      2.6
  DEPTH=       2.7       .7       .1       .5

SPECIAL CULVERT

SC  CUNO       CUNV       ENTLC      COFQ       RDLEN      RISE       SPAN       CULVLN     CHRT       SCL        ELCHU      ELCHD
     3          .014       .40       3.00        .00       4.70      10.00      41.00       8          1        798.00     797.80

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

*SECNO 1720.000

SPECIAL CULVERT OUTLET CONTROL + WEIR FLOW EG =    801.29

265 DIVIDED FLOW

PECIAL CULVERT

     EGIC       EGOC        H4      QWEIR      QCULV       VCH      ACULV      ELTRD     WEIRLN
   802.24     802.47       .25       261.       464.     5.108      141.0     800.10       168.


3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       804.10 ELREA=       800.00

  1720.000      3.00    801.00       .00       .00    801.29       .29       .25       .00    799.60
     730.0        .0     483.4     246.6        .0      94.6     110.2      62.5      66.4    799.30
      1.05       .00      5.11      2.24      .000      .035      .030      .000    798.00   9984.00
   .003629       51.       51.       51.         3         0         0       .00    201.09  10529.59
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   16DEC92      08:30:17                                                                                    PAGE   14

    SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      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

FLOW DISTRIBUTION FOR SECNO=   1720.00          CWSEL=    801.00

STA=    9984.    10016.    10016.    10450.    10530.
  PER Q=      66.2       .0     17.8     15.9
   AREA=      94.6       .3     58.0     51.8
    VEL=       5.1      1.0      2.2      2.2
  DEPTH=       3.0       .9       .1       .7

*SECNO 1739.000

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  2.10

  1739.000      2.86    801.56       .00       .00    801.61       .04       .24       .08    800.30
     710.0      45.7     206.7     457.6      54.6      90.2     341.1      63.9      67.7    800.00
      1.08       .84      2.29      1.34      .035      .035      .035      .000    798.70   9886.21
   .000778       50.      100.      230.         2         0         0       .00    416.32  10302.53

FLOW DISTRIBUTION FOR SECNO=   1739.00          CWSEL=    801.56

STA=    9886.     9917.     9935.     9969.     9984.    10016.    10042.    10097.    10185.    10285.    10303.
  PER Q=       1.5       2.2       1.3       1.4      29.1       7.8      12.6      17.6      24.8       1.7
   AREA=      14.7      15.1      13.9      10.8      90.2      37.2      66.2      98.1     127.1      12.6
    VEL=        .7       1.0        .7        .9       2.3       1.5       1.3       1.3       1.4       1.0
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  DEPTH=      .5      .8      .4      .7     2.8     1.4     1.2     1.1     1.3      .7

  HV=     .100 CEHV=     .300
  SECNO 1905.000
3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
  1905.000      2.36    805.86    805.86       .00    806.14       .28      1.58       .07    807.80
     670.0        .0     266.6     403.4        .0      49.3     124.0      70.1      74.1    805.40
      1.13       .00      5.41      3.25      .000      .035      .035      .000    803.50   9981.79
   .010685      360.      878.      850.        20        14         0       .00    291.09  10272.88

FLOW DISTRIBUTION FOR SECNO=   1905.00          CWSEL=    805.86

STA=    9982.   10018.   10051.   10118.   10168.   10209.   10268.   10273.
  PER Q=     39.8      3.0      9.8     30.7     14.8      1.7       .1
   AREA=     49.3     10.1     27.4     48.3     28.5      9.2       .4
    VEL=      5.4      2.0      2.4      4.3      3.5      1.3       .8
  DEPTH=      1.4       .3       .4      1.0       .7       .2       .1

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   16DEC92      08:30:17                                                                                    PAGE   15

    SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      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 2138.000

3265 DIVIDED FLOW

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

  2138.000      2.18    813.18       .00       .00    813.30       .12      7.15       .02    812.60
     620.0     434.4      88.6      96.9     142.1      42.4      58.6      75.4      82.3    813.00
      1.25      3.06      2.09      1.65      .035      .035      .035      .000    811.00   9827.67
   .004122     1020.     1230.     1130.         7         0         0       .00    344.08  10247.47

FLOW DISTRIBUTION FOR SECNO=   2138.00          CWSEL=    813.18

STA=    9828.    9838.    9849.    9866.    9902.    9965.   10028.   10072.   10106.   10219.   10247.
  PER Q=      3.7     15.8     18.7     17.0     14.9     14.3      2.5      1.0      6.8      5.3
   AREA=      9.1     22.7     29.4     37.7     43.2     42.4     13.0      6.6     21.9     17.1
    VEL=      2.5      4.3      3.9      2.8      2.1      2.1      1.2       .9      1.9      1.9
  DEPTH=       .9      2.0      1.7      1.0       .7       .7       .3       .2       .2       .6

  SECNO 2335.000
  5 MINIMUM SPECIFIC ENERGY
  20 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=     9841.7   10050.0  TYPE=      1  TARGET=      208.300
  2335.000      2.98    820.88    820.88       .00    821.47       .60      7.02       .14    820.40
     570.0       3.6     555.0      11.5       1.8      88.5       4.9      79.4      87.3    820.70
      1.30      1.94      6.27      2.33      .035      .035      .035      .000    817.90   9963.64
   .014093     1050.     1040.      965.         2        11         0       .00     86.36  10050.00

FLOW DISTRIBUTION FOR SECNO=   2335.00          CWSEL=    820.88

STA=    9964.    9971.   10035.   10050.
  PER Q=       .6     97.4      2.0
   AREA=      1.8     88.5      4.9
    VEL=      1.9      6.3      2.3
  DEPTH=       .2      1.4       .3

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   16DEC92      08:30:17                                                                                    PAGE   16

    SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      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 2534.000

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.56

  2534.000      3.91    829.11       .00       .00    829.36       .25      7.85       .03    827.70
     520.0     173.6     200.9     145.5      67.8      38.0      45.1      82.2      89.9    827.50
      1.37      2.56      5.29      3.23      .035      .035      .035      .000    825.20   9908.12
   .004794       900.     1051.      890.         8         0         0       .00    148.74  10056.86

FLOW DISTRIBUTION FOR SECNO=   2534.00          CWSEL=    829.11

STA=    9908.    9926.    9944.    9987.    9999.   10013.   10029.   10053.   10057.
  PER Q=      2.7      4.5     15.5     10.7     38.6     17.5     10.3       .2
   AREA=      8.0     11.1     32.8     15.9     38.0     24.1     20.1       .8
    VEL=      1.7      2.1      2.4      3.5      5.3      3.8      2.7      1.0
  DEPTH=       .5       .6       .8      1.3      2.8      1.5       .9       .2

1490 NH CARD USED
*SECNO 2776.000

3265 DIVIDED FLOW
```

7185 MINIMUM SPECIFIC ENERGY
20 CRITICAL DEPTH ASSUMED

2776.000	2.40	838.70	838.70	.00	839.06	.36	8.44	.03	838.30
460.0	1.9	274.3	183.7	1.3	50.3	51.0	85.4	93.6	838.90
1.44	1.50	6.46	3.60	.040	.035	.036	.000	836.30	9964.89
.014031	1170.	1278.	930.	4	14	0	.00	154.00	10127.35

FLOW DISTRIBUTION FOR SECNO= 2776.00 CWSEL= 838.70

STA=	9965.	9971.	10017.	10049.	10072.	10101.	10127.
PER Q=	.4	59.6	4.1	19.4	15.2	1.2	
AREA=	1.3	50.3	8.7	19.8	18.5	4.0	
VEL=	1.5	5.5	2.2	4.5	3.8	1.4	
DEPTH=	.2	1.1	.3	.8	.6	.1	

THIS RUN EXECUTED 16DEC92 08:30:30

****
HEC-2 WATER SURFACE PROFILES

Version 4.6.2: May 1991
****

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

UNNAMED WASH NO. 2

SUMMARY PRINTOUT

	SECNO	ELMIN	CWSEL	Q	VCH	DIFWSX	TOPWID	DEPTH	SSTA	ENDST	QLOB	QROB	ELTRD
	3888.000	731.30	733.49	670.00	6.81	.00	50.86	2.19	9971.38	10022.24	.00	.00	.00
*	1.000	732.10	736.93	670.00	8.14	3.44	40.96	4.83	9987.77	10028.72	.00	.00	.00
*	2.000	737.00	740.79	670.00	4.80	3.86	59.99	3.79	9979.89	10039.88	.16	2.09	.00
*	61.000	738.00	743.07	670.00	3.83	2.28	136.73	5.07	9886.49	10023.22	181.04	.00	.00
	150.000	738.80	743.81	670.00	3.12	.74	321.93	5.01	9688.29	10017.46	263.24	.00	.00
*	192.000	742.70	743.83	670.00	3.74	.02	383.24	1.13	9733.73	10116.98	.00	.00	.00
	385.000	741.90	745.58	670.00	.77	1.75	375.86	3.68	9894.08	10269.94	.00	.00	.00
	618.000	754.50	756.68	670.00	6.25	11.10	99.94	2.18	9976.01	10075.94	.00	23.86	.00
*	821.000	763.70	766.74	700.00	4.31	10.06	428.43	3.04	9969.62	10740.31	.00	399.53	.00
	1043.000	774.70	776.56	700.00	4.54	9.82	342.75	1.86	9629.18	10024.56	507.79	.00	.00
*	1240.000	782.10	784.54	700.00	3.82	7.98	523.39	2.44	9644.73	10243.93	216.74	299.76	.00
	1453.000	787.40	789.71	700.00	3.04	5.17	400.15	2.31	9590.50	10101.37	521.82	50.73	.00
*	1676.000	796.50	798.77	730.00	5.77	9.06	234.72	2.27	9975.10	10657.65	.00	472.06	.00
*	1710.000	797.80	800.55	730.00	6.32	1.79	168.39	2.75	9984.00	10514.19	.00	182.60	.00
	1720.000	798.00	801.00	730.00	5.11	.45	201.09	3.00	9984.00	10529.59	.00	246.60	800.10
*	1739.000	798.70	801.56	710.00	2.29	.57	416.32	2.86	9886.21	10302.53	45.70	457.62	.00
*	1905.000	803.50	805.86	670.00	5.41	4.29	291.09	2.36	9981.79	10272.88	.00	403.37	.00

	SECNO	ELMIN	CWSEL	Q	VCH	DIFWSX	TOPWID	DEPTH	SSTA	ENDST	QLOB	QROB	ELTRD
*	2138.000	811.00	813.18	620.00	2.09	7.33	344.08	2.18	9827.67	10247.47	434.43	96.93	.00
*	2335.000	817.90	820.88	570.00	6.27	7.70	86.36	2.98	9963.64	10050.00	3.56	11.46	.00
*	2534.000	825.20	829.11	520.00	5.29	8.23	148.74	3.91	9908.12	10056.86	173.56	145.53	.00
*	2776.000	836.30	838.70	460.00	5.46	9.59	154.00	2.40	9964.89	10127.35	1.92	183.75	.00

SUMMARY OF ERRORS AND SPECIAL NOTES

CAUTION SECNO= 1.000 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 1.000 PROFILE= 1 MINIMUM SPECIFIC ENERGY

WARNING SECNO= 2.000 PROFILE= 1 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO= 61.000 PROFILE= 1 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

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CAUTION SECNO=    192.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=    192.000  PROFILE=  1  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=    192.000  PROFILE=  1  20 TRIALS ATTEMPTED TO BALANCE WSEL

WARNING SECNO=    385.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO=    618.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=    618.000  PROFILE=  1  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=    618.000  PROFILE=  1  20 TRIALS ATTEMPTED TO BALANCE WSEL

WARNING SECNO=    821.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=   1240.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO=   1676.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=   1676.000  PROFILE=  1  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=   1710.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=   1710.000  PROFILE=  1  MINIMUM SPECIFIC ENERGY

WARNING SECNO=   1739.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO=   1905.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=   1905.000  PROFILE=  1  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=   1905.000  PROFILE=  1  20 TRIALS ATTEMPTED TO BALANCE WSEL

WARNING SECNO=   2138.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO=   2335.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=   2335.000  PROFILE=  1  MINIMUM SPECIFIC ENERGY

WARNING SECNO=   2534.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO=   2776.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=   2776.000  PROFILE=  1  MINIMUM SPECIFIC ENERGY
```

```
1*****************************************
  HEC-2 WATER SURFACE PROFILES            *
                                          *
  Version   4.6.2;  May 1991              *
                                          *
*  RUN DATE    11DEC92    TIME   13:26:52 *
*****************************************
```

```
*************************************
*  U.S. ARMY CORPS OF ENGINEERS     *
*  HYDROLOGIC ENGINEERING CENTER    *
*  609 SECOND STREET, SUITE D       *
*  DAVIS, CALIFORNIA 95616-4687     *
*        (916) 756-1104             *
*************************************
```

```
X     X  XXXXXXX   XXXXX              XXXXX
X     X  X         X     X           X     X
X     X  X         X                       X
XXXXXXX  XXXX      X          XXXXX    XXXXX
X     X  X         X
X     X  X         X     X           X
X     X  XXXXXXX   XXXXX              XXXXXXX
```

1

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THIS RUN EXECUTED 11DEC92 13:26:52

```
************************************
 HEC-2 WATER SURFACE PROFILES

 Version   4.6.2;  May 1991
************************************
```

```
T1      FLOOD CONTROL DISTRICT OF MARICOPA COUNTY - CONTRACT FCD 90-67
T2      GILA BEND AREA FLOODPLAIN DELINEATION STUDY BY BURGESS & NIPLE
T3      UNNAMED WASH NO.2 100 YR (NATURAL)      J. MISCHLER - (602) 244-8100

J1  ICHECK    INQ      NINV     IDIR     STRT     METRIC   HVINS    Q        WSEL     FQ

              2                                                           743.83

J2  NPROF     IPLOT    PRFVS    XSECV    XSECH    FN       ALLDC    IBW      CHNIM    ITRACE

     1                 -1                                                            15

J3  VARIABLE CODES FOR SUMMARY PRINTOUT

    38       42        1        53       54        8       43       26       10       51
    46       40       41         0      110        0      200
```

SECTIONS ARE LABELED AS RIVER MILES * 1000, i.e., SECTION 192 IS AT RIVER MILE 0.192 UPSTREAM OF THE CONFLUENCE WITH UNNAMED WASH NO. 1 AT THE UPSTREAM FACE OF THE GILA BEND CANAL.

SECTION 192 IS WITHIN THE CONFLUENCE AREA WITH UNNAMED WASH NO. 1.

THE CONFLUENCE OF UNNAMED WASH #1 WITH BENDER WASH OCCURS AT A LOCATION WHERE IT INTERSECTS THE GILA BEND CANAL AND, BECAUSE OF A SMALL DRAINAGE STRUCTURE THROUGH THE CANAL, MOST FLOW IS DIVERTED WEST TO SAND TANK WASH.

WHEN THE GILA BEND CANAL WAS CONSTRUCTED, A 3-BARREL CONCRETE BOX CULVERT WAS CONSTRUCTED TO CONVEY BENDER WASH BENEATH THE IRRIGATION CANAL. WHEN THE CANAL BANKS WERE RAISED AND THE CANAL EMBANKMENT WAS THEREFORE WIDENED AT SOME TIME IN THE PAST, THE CULVERT WAS EXTENDED BY INSERTING SINGLE 30-INCH CORRUGATED METAL PIPES IN EACH BARREL.

THE CULVERT WAS EXTENDED IN THE UPSTREAM DIRECTION.

FLOW THROUGH THE CULVERT IS CONTROLLED BY INLET CONDITIONS, AND IN FACT, THE THREE PIPES HAD SIGNIFICANT SEDIMENT CLOGGING THE INLETS AT THE TIME OF THE FIELD RECONNAISSANCE OF 10/4/91.

A DITCH HAS BEEN CONSTRUCTED UPSTREAM OF THE GILA BEND CANAL TO DIVERT WATER FROM BENDER WASH, AS WELL AS FROM UNNAMED TRIBUTARIES 1 & 2, TO SAND TANK WASH JUST UPSTREAM OF THE INVERTED SIPHON WHICH CARRIES THE GILA BEND CANAL BENEATH SAND TANK WASH.

1

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ELEVATIONS UPSTREAM OF THE GILA BEND CANAL WILL THEREFORE BE CONTROLLED BY THIS DIVERSION DITCH.

STARTING ELEVATIONS ARE OBTAINED FROM THE NATURAL PROFILE RUN.

BEGIN UNNAMED WASH NO 2 AT RM 0.000.
THE CONFLUENCE OCCURS AT UNNAMED WASH NO 1 RM 0.209.

```
QT        2      670      670
NC     0.07     0.07     0.07      0.1      0.3
ET                         4.1     9734    10117
X1      192       32   9725.4  10133.6
GR    746.8   9725.4    743.7   9734.1    743.2   9739.1    743.3   9741.1    743.8   9770.3
GR    743.4   9807.9    743.2   9848.1    743.1   9867.4    743.3   9878.5    742.7   9886.9
GR    743.1   9903.2    743.4   9935.6    743.2   9966.6    743.0   9985.0    743.3  10000.0
GR    743.6  10023.6    743.6  10047.6    743.4  10070.1    743.5  10098.7    743.7  10115.5
GR    745.3  10133.6    745.6  10153.1    745.4  10183.1    745.6  10208.1    745.8  10233.2
```

```
GR     746.2    10260.1      746.0    10282.4      745.6    10297.8      745.6    10305.7      746.2    10327.3
       746.8    10346.8      747.6    10366.9
                              4.1       9892      10173
X1       385         20     9879.0    10277.6     1000.0    1000.0     1019.0
GR     753.5     9716.1     753.3     9760.1      750.3     9810.7      749.0     9849.2      747.6     9879.0
GR     745.1     9897.7     744.4     9938.9      743.5     9982.6      742.9    10000.0      743.4    10042.9
GR     743.0    10113.1     742.1    10161.4      742.1    10190.7      741.9    10210.5      743.4    10246.6
GR     746.3    10277.6     750.1    10291.1      752.0    10310.7      752.5    10323.2      753.8    10358.1

NC      0.03        0.03    0.036
ET                              4.1       9975      10080
X1       618           9     9964.1    10050.2     1225.0    1150.0     1230.0
GR     758.8     9920.8     757.8     9964.1      755.7     9986.4      754.5    10000.0      755.3    10033.6
GR     756.0    10050.2     756.4    10062.4      756.9    10086.7      758.7    10135.0

QT        2         700      700
ET                              4.1       9970      10118
X1       821          25     9952.9    10023.7     1130.0    1040.0     1072.0
GR     769.6     9854.8     769.5     9913.8      768.3     9952.9      765.4     9983.9      764.3     9997.2
GR     763.7    10000.0     765.3    10009.5      767.7    10023.7      767.1    10081.8      765.7    10132.9
GR     766.5    10192.8     766.8    10259.7      766.9    10327.7      766.7    10399.0      767.0    10460.2
GR     766.4    10527.0     766.2    10601.6      766.8    10657.7      766.8    10692.6      765.6    10701.0
GR     765.8    10713.7     765.8    10726.7      767.1    10745.6      767.4    10770.5      769.4    10847.1

ET                              4.1       9917      10025
X1      1043          14     9977.4    10038.9     1100.0    1145.0     1172.0
GR     779.7     9509.2     778.5     9576.5      776.6     9627.9      775.4     9662.7      777.1     9702.7
GR     775.5     9756.0     776.4     9824.7      775.9     9907.2      776.8     9977.4      774.7    10000.0
GR     775.9    10017.0     777.8    10038.9      777.7    10092.9      778.4    10159.1
```



```
ET                              4.1       9981      10099
X1      1240          22     9981.2    10016.6     1020.0     920.0     1040.0
GR     788.5     9436.2     787.7     9484.6      787.0     9534.7      786.0     9602.3      784.0     9660.2
GR     783.9     9722.2     784.6     9784.2      784.6     9825.2      783.6     9848.0      784.4     9897.4
GR     784.6     9952.9     784.4     9981.2      782.7     9997.2      782.1    10000.0      783.8    10016.6
GR     784.5    10051.6     784.0    10101.1      783.7    10146.5      783.9    10213.9      785.1    10270.7
GR     786.5    10340.0     788.3    10398.1

ET                              4.1       9982      10104
X1      1453          21     9982.1    10019.6     1000.0    1210.0     1125.0
GR     791.8     9503.6     790.4     9556.2      789.4     9606.1      788.2     9642.3      789.1     9693.3
GR     788.9     9770.5     789.4     9845.7      790.3     9924.3      790.3     9963.0      789.9     9982.1
GR     788.8     9991.6     787.4    10000.0      789.5    10019.6      789.1    10068.6      790.1    10122.1
GR     790.3    10184.0     790.4    10260.4      792.4    10339.7      792.6    10402.1      793.0    10432.8
GR     793.7    10446.0
```

WIER FLOW OVER BUSINESS ROUTE 8 OCCURS IN THE FAR RIGHT OVERBANK.
BECAUSE FLOW IS EFFECTIVE THERE, BUT NOT BETWEEN APPROX STATION 10200
AND THE FAR RIGHT CHANNEL, THE GEOMETRY HAS BEEN REVISED TO MAKE THE
AREA NON-EFFECTIVE.

GR POINTS FROM STA 10190 AND UP ARE FROM TOPO MAPPING. THEY WERE ADDED
TO MODEL THE WIER FLOW IN THE FAR RIGHT OVERBANK.

```
QT        2         730      730
ET                              4.1       9975      10658
X1      1676          14     9968.9    10011.3     1280.0    480.0     1177.0
GR     799.2     9968.9     798.1     9984.6      797.2     9992.4      796.5    10000.0      797.8    10011.3
GR     798.1    10042.3     798.2    10096.8      798.3    10184.8       800       10190        800      10440
GR     800.4      10600      798      10650        800      10670        801       10780
```

SPECIAL CULVERT MODEL FOR THE THREE BARREL CULVERT AT BUSINESS ROUTE 8.

AT THE TIME OF MAPPING, APPROXIMATELY 1.3 FEET OF SEDIMENT WAS FOUND IN
THE CULVERT.

SECTION 1710 GR POINTS ARE REPEATED FROM 1676 EXCEPT THAT CHANNEL
GEOMETRY HAS BEEN REVISED TO REFLECT THE CHANNEL AT THE CULVERT &
BT STATIONS HAVE BEEN ADDED. GEOMETRY AT THE ENDS MATCH THE BT CARDS.

WIER FLOW OVER BUSINESS ROUTE 8 OCCURS IN THE FAR RIGHT OVERBANK.
BECAUSE FLOW IS EFFECTIVE THERE, BUT NOT BETWEEN THE RIGHT BANK STATION
AND THE FAR RIGHT CHANNEL, THE GEOMETRY HAS BEEN REVISED TO MAKE THE
AREA NON-EFFECTIVE.

RAISE ELEVATIONS USING PSXECE = 797.8 - 796.5 = 1.3 FT
INCREASE EXPANSION & CONTRACTION COEFFICIENTS FOR THE CULVERT


```
NC                                0.3       0.5
ET                              4.1       9984      10350
X1      1710          16       9984      10016       250       200       180                   1.3
X3        10                                                                   803.1     799.0
GR     808.2     9450     802.2     9734.0      800.7     9792.8      799.7     9875.6      798.4     9916.7
GR     798.7     9935.3     799.2     9968.9      798.1      9984      796.5      9985       796.5    10000.0
GR     796.5      10015     797.8      10016      802.3      10017      800.1     10320      798.2      10450
GR     800.0      10560
```

REPEAT GR DATA FROM DOWNSTREAM FACE. PSXECE = 798.0 - 797.8 + 1.3 = 1.5
USE ELTRD = 800.0 + 0.1 HV = 800.1

```
SC     3.014       0.4        3         0         4.7        10        41       8.1      798.0      797.8
```

```
ET                          4.11      9984     10350
X1     1720        16       9984     10016        51        51        51                  1.5
                                2                800.1
       10                                                                 804.1     800.0
       -5       9450      808.7               10000     804.1                 10320     801.9
BT              10450      800.0               10560     801.8
GR     808.2     9450      802.2    9734.0     800.7    9792.8     799.7    9875.6     798.4    9916.7
GR     798.7   9935.3      799.2    9968.9     798.1      9984     796.5      9985     796.5   10000.0
GR     796.5    10015      797.8     10016     802.3     10017     800.1     10320     798.2     10450
GR     800.0    10560

NC     0.035    0.035      0.035
```

REPEAT SECTION 100 FEET UPSTREAM FOR CONTRACTION LOSSES
ADJUST GR POINTS AT RIGHT END FROM TOPO MAPPINS

USE PSXECE = 798.7 - 796.5 = 2.2 FT

```
QT        2      710        710
ET                          4.1      9984     10220
X1     1739       17       9984     10016        50       230       100                  2.2
GR     808.2     9450      802.2    9734.0     800.7    9792.8     799.7    9875.6     798.4    9916.7
GR     798.7   9935.3      799.2    9968.9     798.1      9984     796.5      9985     796.5   10000.0
GR     796.5    10015      797.8     10016     798.1   10042.3     798.2   10096.8     798.3   10184.8
GR     797.9  10285.3      803.4     10350
```

RETURN EXPANSION & CONTRACTION COEFFICIENTS TO TYPICAL VALUES

```
QT        2      670        670
NC                          0.1       0.3
ET                          4.1      9982     10065
X1     1905       15       9970.8   10017.5     360       850       878
GR     809.9   9928.8      809.1    9958.6     807.8    9970.8     804.9    9987.2     804.0    9994.2
GR     803.5  10000.0      805.4   10017.5     805.7   10050.6     805.2   10117.9     804.6   10168.4
GR     805.7  10208.8      805.7   10267.5     807.0   10312.2     807.5   10329.8     808.1   10338.1
1
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QT        2      620        620
ET                          4.1      9915     10028
X1     2138       17       9964.8   10027.9    1020.0    1130.0    1230.0
GR     816.9   9748.1      815.3    9792.4     814.0    9823.1     811.4    9837.8     811.0    9849.2
GR     811.9   9866.1      812.4    9902.3     812.6    9964.8     812.2    9991.8     812.4   10000.0
GR     813.0  10027.9      812.8   10072.4     813.5   10132.9     813.2   10181.7     812.0   10218.7
GR     814.1  10269.4      816.6   10330.5

QT        2      570        570
ET                          4.1      9975     10035                                     9841.7   10050.0
X1     2335       16       9971.3   10034.9    1050.0     965.0    1040.0
GR     824.7   9841.7      824.2    9896.1     822.4    9939.3     820.4    9971.3     818.8    9991.7
GR     817.9  10000.0      819.7   10012.7     820.7   10034.9     820.2   10060.7     820.5   10111.7
GR     819.8  10189.3      819.3   10278.6     819.8   10362.4     821.2   10451.9     824.0   10528.6
GR     826.9  10587.4

QT        2      520        520
ET                          4.1      9983     10021
X1     2534       12       9999.1   10012.9     900.0     890.0    1051.0
GR     832.9   9783.0      832.8    9836.8     830.7    9877.6     828.2    9925.6     828.8    9943.8
GR     827.9   9987.0      827.7    9999.1     825.2   10000.0     827.5   10012.9     827.8   10029.4
GR     828.7  10052.8      833.3   10098.3

QT        2      460        460
NH        5    0.035      9937.6     0.04     9971.3     0.035   10016.8      0.04   10048.9     0.035
NH    10163
ET                          4.1      9971     10017
X1     2776       10       9971.3   10016.8    1170.0     930.0    1278.0
GR     842.0   9897.8      840.4    9937.6     838.3    9971.3     837.4    9992.7     836.3   10000.0
GR     838.9  10016.8      838.0   10048.9     837.7   10072.2     838.4   10100.7     839.1   10163.0
1
   11DEC92      13:26:52                                                                          PAGE    6

     SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      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


 *PROF 1
0

 CCHV=     .100 CEHV=     .300
 *SECNO 192.000
    192.000      1.13    743.83       .00     743.83    744.05       .22       .00       .00    746.80
      670.0        .0     670.0        .0         .0     179.1        .0        .0        .0    745.30
        .00       .00      3.74       .00       .000      .070      .000      .000    742.70   9733.73
    .085720        0.        0.        0.          0         0         0       .00    383.24  10116.97

 FLOW DISTRIBUTION FOR SECNO=    192.00          CWSEL=    743.83

 STA=    9734.   10134.
   PER Q=    100.0
    AREA=    179.1
     VEL=      3.7
   DEPTH=       .5

 *SECNO 385.000
 3840 SECTION NOT HIGH ENOUGH   830.085   803.500   741.900   803.500      .000         2
```

```
3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO = 14.14

  385.000      3.68    745.58    743.35       .00    745.59       .01      1.52       .02    747.60
    670.0       .0     670.0       .0        .0     870.9        .0      12.3       8.9    746.30
      .37       .00       .77      .00      .000      .070      .000      .000    741.90   9894.08
  .000429     1000.     1019.    1000.        10        11         0       .00    375.87  10269.95

FLOW DISTRIBUTION FOR SECNO=    385.00          CWSEL=    745.58

STA=    9894.   10278.
  PER Q=    100.0
   AREA=    870.9
    VEL=       .8
  DEPTH=      2.3

*SECNO 618.000
1
  11DEC92      13:26:52                                                                                    PAGE    7

    SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      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


3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
  618.000      2.18    756.68    756.68       .00    757.27       .59      1.53       .17    757.80
    670.0       .0     646.1      23.9        .0     103.4       7.7      26.1      15.6    756.00
      .42       .00      6.25     3.09      .000      .035      .030      .000    754.50   9976.01
  .013947     1225.     1230.    1150.        20        14         0       .00     99.94  10075.94

FLOW DISTRIBUTION FOR SECNO=    618.00          CWSEL=    756.68

STA=    9976.   10050.   10062.   10076.
  PER Q=     96.4      3.1       .4
   AREA=    103.4      5.8      1.9
    VEL=      6.2      3.6      1.6
  DEPTH=      1.4       .5       .1

*SECNO 821.000

3265 DIVIDED FLOW

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.54

  821.000      3.04    766.74       .00       .00    766.92       .18      9.61       .04    768.30
    700.0       .0     300.5     399.5        .0      69.6     152.8      30.2      21.9    767.70
      .51       .00      4.31     2.62      .000      .035      .030      .000    763.70   9969.62
  .006431     1130.     1072.    1040.         5         0         0       .00    428.43  10740.31

FLOW DISTRIBUTION FOR SECNO=    821.00          CWSEL=    766.74

STA=    9970.   10024.   10133.   10193.   10245.   10406.   10527.   10602.   10652.   10701.   10714.   10727.   10740.
  PER Q=     42.9      7.2     16.0       .8       .0      1.1     10.6      3.2      1.7      7.6      6.6      2.2
   AREA=     69.6     19.6     38.1      6.2       .4      6.3     32.5     13.4      4.5     13.2     12.2      6.4
    VEL=      4.3      2.6      2.9      1.0       .3      1.2      2.3      1.7      2.7      4.1      3.8      2.4
  DEPTH=      1.4       .2       .6       .1       .0       .1       .4       .3       .1      1.0       .9       .5

1
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    SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      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 1043.000

3265 DIVIDED FLOW

 1043.000      1.86    776.56       .00       .00    776.78       .23      9.85       .01    776.80
    700.0     507.8     192.2        .0     145.5      42.4        .0      35.5      31.9    777.80
      .60      3.49      4.54       .00      .030      .035      .000      .000    774.70   9629.18
  .012270     1100.     1172.    1145.         4         0         0       .00    342.75  10024.56

FLOW DISTRIBUTION FOR SECNO=   1043.00          CWSEL=    776.56

STA=    9629.    9663.    9690.    9756.    9825.    9907.    9958.   10039.
  PER Q=     10.5      8.5      9.5     23.3     14.4      6.2     27.5
   AREA=     19.4     15.7     18.6     41.6     33.5     16.8     42.4
    VEL=      3.8      3.8      3.6      3.9      3.0      2.6      4.5
  DEPTH=       .6       .6       .3       .6       .4       .3      1.0

*SECNO 1240.000

3265 DIVIDED FLOW

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.50
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```
 1240.000      2.44    784.54       .00       .00    784.67       .13      7.87       .01    784.40
    700.0    216.7     183.5     299.8      98.3      48.0     117.6      40.7      41.8    783.80
      .70      2.20      3.82      2.55      .030      .035      .030      .000    782.10   9644.73
 .005441     1020.     1040.      920.         7         0         0       .00    523.39  10243.93

FLOW DISTRIBUTION FOR SECNO=   1240.00          CWSEL=    784.54

STA=    9645.    9722.    9778.    9848.    9897.    9981.   10017.   10052.   10101.   10147.   10214.   10244.
  PER Q=     14.1      4.3      3.1      9.1       .3     26.2      3.7      3.2     12.6     21.0      2.3
   AREA=     40.4     17.8     10.0     26.4      3.8     46.0     13.5     14.1     31.1     49.5      9.5
    VEL=      2.4      1.7      2.2      2.4       .6      3.8      1.9      1.6      2.8      3.0      1.7
  DEPTH=       .5       .3       .1       .5       .0      1.4       .4       .3       .7       .7       .3

*SECNO 1453.000
1
   11DEC92      13:26:52                                                                                          PAGE    9

    SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      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


3265 DIVIDED FLOW

 1453.000      2.31    789.71       .00       .00    789.83       .12      5.16       .00    789.90
    700.0    521.8     127.4      50.7     191.2      41.9      30.3      47.2      53.3    789.50
      .81      2.73      3.04      1.68      .030      .035      .030      .000    787.40   9590.50
 .004221     1000.     1125.     1210.         7         0         0       .00    400.15  10101.37

FLOW DISTRIBUTION FOR SECNO=   1453.00          CWSEL=    789.71

STA=    9591.    9606.    9642.    9693.    9771.    9846.    9873.   10020.   10069.   10101.
  PER Q=       .3     14.3     25.9     20.2     13.3       .6     18.2      5.2      2.1
   AREA=      2.4     33.0     54.2     55.0     42.3      4.3     41.9     20.2     10.0
    VEL=       .9      3.0      3.4      2.6      2.2       .9      3.0      1.8      1.5
  DEPTH=       .2       .9      1.1       .7       .6       .2      1.2       .4       .3

*SECNO 1676.000

3265 DIVIDED FLOW

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
 1676.000      2.27    798.77    798.77       .00    799.12       .36      6.88       .07    799.20
    730.0       .0     257.9     472.1        .0      44.7     113.5      52.0      60.0    797.80
      .86       .00      5.77      4.16      .000      .035      .030      .000    796.50   9975.10
 .014067     1280.     1177.      480.        11         5         0       .00    234.72  10657.65

FLOW DISTRIBUTION FOR SECNO=   1676.00          CWSEL=    798.77

STA=    9975.   10011.   10042.   10097.   10185.   10186.   10650.   10658.
  PER Q=     35.3     17.8     19.5     23.5       .1      2.6      1.2
   AREA=     44.7     25.3     33.5     45.4       .3      6.1      2.9
    VEL=      5.8      5.1      4.3      3.8      2.1      3.1      3.1
  DEPTH=      1.2       .8       .6       .5       .2       .0       .4

CCHV=     .300 CEHV=     .500
*SECNO 1710.000
1
   11DEC92      13:26:52                                                                                          PAGE   10

    SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      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


3265 DIVIDED FLOW

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      803.10 ELREA=      799.00

 1710.000      2.75    800.55    800.55       .00    801.04       .49      1.70       .07    799.40
    730.0       .0     547.4     182.6        .0      86.6      71.7      52.7      60.9    799.10
      .87       .00      6.32      2.55      .000      .035      .030      .000    797.80   9984.00
 .006263      250.      180.      200.         3         8         0       .00    168.39  10514.19

FLOW DISTRIBUTION FOR SECNO=   1710.00          CWSEL=    800.55

STA=    9984.   10016.   10016.   10450.   10514.
  PER Q=     75.0       .0     13.2     11.8
   AREA=     86.6       .2     37.7     33.7
    VEL=      6.3      1.1      2.6      2.6
  DEPTH=      2.7       .7       .1       .5

SPECIAL CULVERT

SC  CUNO      CUNV      ENTLC     COFQ      RDLEN     RISE      SPAN      CULVLN    CHRT      SCL       ELCHU     ELCHD
     3         .014      .40      3.00       .00      4.70     10.00     41.00     8         1         798.00    797.80

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

```
SCALE  1 - WINGWALLS FLARED 30 TO 75 DEGREES

*SECNO 1720.000

SPECIAL CULVERT OUTLET CONTROL + WEIR FLOW EG =     801.29

3265 DIVIDED FLOW

SPECIAL CULVERT

     EGIC      EGOC        H4     QWEIR     QCULV       VCH     ACULV     ELTRD    WEIRLN
   802.24    802.47       .25      261.      464.     5.108     141.0    800.10      168.


3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       804.10 ELREA=       800.00

  1720.000      3.00    801.00       .00       .00    801.29       .29       .25       .00    799.60
     730.0        .0     483.4     246.6        .0      94.6     110.2      52.9      61.1    799.30
       .88       .00      6.11      2.24      .000      .035      .030      .000    798.00   9984.00
   .003629       51.       51.       51.         3         0         0       .00    201.09  10529.59


1
   11DEC92      13:26:52                                                                                    PAGE    11

    SECNO     DEPTH     CWSEL     CRIWS     WSELK        EG        HV        HL     OLOSS    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

FLOW DISTRIBUTION FOR SECNO=   1720.00          CWSEL=    801.00

STA=    9984.   10016.   10016.   10450.   10530.
  PER Q=     66.2       .0     17.8     15.9
   AREA=     94.6       .3     58.0     51.8
    VEL=      5.1      1.0      2.2      2.2
  DEPTH=      3.0       .9       .1       .7

*SECNO 1739.000

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  2.10

  1739.000      2.86    801.56       .00       .00    801.61       .04       .24       .08    800.30
     710.0      45.7     206.7     457.6      54.6      90.2     341.1      54.4      62.4    800.00
       .90       .84      2.29      1.34      .035      .035      .035      .000    798.70   9886.21
   .000778       50.      100.      230.         2         0         0       .00    416.32  10302.53


FLOW DISTRIBUTION FOR SECNO=   1739.00          CWSEL=    801.56

STA=    9886.    9917.    9935.    9969.    9984.   10016.   10042.   10097.   10185.   10285.   10303.
  PER Q=       1.5      2.2      1.3      1.4     29.1      7.8     12.6     17.6     24.8      1.7
   AREA=      14.7     15.1     13.9     10.8     90.2     37.2     66.2     98.1    127.1     12.6
    VEL=        .7      1.0       .7       .9      2.3      1.5      1.3      1.3      1.4      1.0
  DEPTH=        .5       .8       .4       .7      2.8      1.4      1.2      1.1      1.3       .7

CCHV=      .100 CEHV=      .300
*SECNO 1905.000
3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
  1905.000      2.36    805.86    805.86       .00    806.14       .28      1.58       .07    807.80
     670.0        .0     266.6     403.4        .0      49.3     124.0      60.5      68.8    805.40
       .96       .00      5.41      3.25      .000      .035      .035      .000    803.50   9981.79
   .010685      360.      878.      850.        20        14         0       .00    291.09  10272.88


FLOW DISTRIBUTION FOR SECNO=   1905.00          CWSEL=    805.86

STA=    9982.   10018.   10051.   10118.   10168.   10209.   10268.   10273.
  PER Q=     39.8      3.0      9.8     30.7     14.8      1.7       .1
   AREA=     49.3     10.1     27.4     48.3     28.5      9.2       .4
    VEL=      5.4      2.0      2.4      4.3      3.5      1.3       .8
  DEPTH=      1.4       .3       .4      1.0       .7       .2       .1

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   11DEC92      13:26:52                                                                                    PAGE    12

    SECNO     DEPTH     CWSEL     CRIWS     WSELK        EG        HV        HL     OLOSS    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 2138.000

3265 DIVIDED FLOW

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

  2138.000      2.18    813.18       .00       .00    813.30       .12      7.15       .02    812.60
     620.0     434.4      88.6      96.9     142.1      42.4      58.6      65.9      77.0    813.00
      1.08      3.06      2.09      1.65      .035      .035      .035      .000    811.00   9827.67
   .004122      1020.     1230.     1130.         7         0         0       .00    344.08  10247.47


FLOW DISTRIBUTION FOR SECNO=   2138.00          CWSEL=    813.18
```

```
STA=    9828.    9838.    9849.    9866.    9902.    9965.   10028.   10072.   10106.   10219.   10247.
 PER Q=      3.7     15.8     18.7     17.0     14.9     14.3      2.5      1.0      6.8      5.3
  AREA=      9.1     22.7     29.4     37.7     43.2     42.4     13.0      6.6     21.9     17.1
   VEL=      2.5      4.3      3.9      2.8      2.1      2.1      1.2       .9      1.9      1.9
 DEPTH=       .9      2.0      1.7      1.0       .7       .7       .3       .2       .2       .6

*SECNO 2335.000
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=     9841.7   10050.0  TYPE=      1  TARGET=      208.300
  2335.000      2.98    820.88    820.88       .00    821.47       .60      7.02       .14    820.40
     570.0       3.6     555.0      11.5       1.8      88.5       4.9      69.9      82.0    820.70
      1.12      1.94      6.27      2.33      .035      .035      .035      .000    817.90   9963.64
   .014093     1050.     1040.      965.         2        11         0       .00     86.36  10050.00

FLOW DISTRIBUTION FOR SECNO=   2335.00          CWSEL=    820.88

STA=    9964.    9971.   10035.   10050.
  PER Q=       .6     97.4      2.0
   AREA=      1.8     88.5      4.9
    VEL=      1.9      6.3      2.3
  DEPTH=       .2      1.4       .3

1
   11DEC92      13:26:52                                                                                PAGE   13

    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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 2534.000

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.56

  2534.000      3.91    829.11       .00       .00    829.36       .25      7.85       .03    827.70
     520.0     173.6     200.9     145.5      67.8      38.0      45.1      72.6      84.5    827.50
      1.20      2.56      5.29      3.23      .035      .035      .035      .000    825.20   9908.12
   .004794      900.      1051.     890.         8         0         0       .00    148.74  10056.86

FLOW DISTRIBUTION FOR SECNO=   2534.00          CWSEL=    829.11

STA=    9908.    9926.    9944.    9987.    9999.   10013.   10029.   10053.   10057.
  PER Q=      2.7      4.5     15.5     10.7     38.6     17.5     10.3       .2
   AREA=      8.0     11.1     32.8     15.9     38.0     24.1     20.1       .8
    VEL=      1.7      2.1      2.4      3.5      5.3      3.8      2.7      1.0
  DEPTH=       .5       .6       .8      1.3      2.8      1.5       .9       .2

00 NH CARD USED
ECNO 2776.000

3265 DIVIDED FLOW

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
  2776.000      2.40    838.70    838.70       .00    839.06       .36      8.44       .03    838.30
     460.0       1.9     274.3     183.7       1.3      50.3      51.0      75.9      88.3    838.90
      1.26      1.50      5.46      3.60      .040      .035      .036      .000    836.30   9964.89
   .014031     1170.     1278.      930.         4        14         0       .00    154.00  10127.35

FLOW DISTRIBUTION FOR SECNO=   2776.00          CWSEL=    838.70

STA=    9965.    9971.   10017.   10049.   10072.   10101.   10127.
  PER Q=       .4     59.6      4.1     19.4     15.2      1.2
   AREA=      1.3     50.3      8.7     19.8     18.5      4.0
    VEL=      1.5      5.5      2.2      4.5      3.8      1.4
  DEPTH=       .2      1.1       .3       .8       .6       .1

1
   11DEC92      13:26:52                                                                                PAGE   14

T1      FLOOD CONTROL DISTRICT OF MARICOPA COUNTY - CONTRACT FCD 90-67
T2      GILA BEND AREA FLOODPLAIN DELINEATION STUDY BY BURGESS & NIPLE
T3      UNNAMED WASH NO.2 100 YR (FLOODWAY)     J. MISCHLER - (602) 244-8100

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                3                                                                   744.83

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

     15                   -1                                                                     15

1
   11DEC92      13:26:52                                                                                PAGE   15

    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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

*PROF 2
0
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```
CCHV=     .100 CEHV=     .300
*SECNO 192.000

3470 ENCROACHMENT STATIONS=     9734.0   10117.0  TYPE=      1  TARGET=      383.000
   192.000      2.13    744.83      .00    743.83    744.85       .02       .00       .00 100000.00
     670.0        .0     670.0       .0        .0     562.0        .0        .0        .0 100000.00
       .00       .00      1.19      .00      .000      .070      .000      .000    742.70   9734.00
   .001905        0.        0.       0.         0         0         0       .00    383.00  10117.00

FLOW DISTRIBUTION FOR SECNO=    192.00          CWSEL=    744.83

STA=    9734.   10134.
  PER Q=    100.0
   AREA=    562.0
    VEL=      1.2
  DEPTH=      1.5

*SECNO 385.000

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.73

3470 ENCROACHMENT STATIONS=     9892.0   10173.0  TYPE=      1  TARGET=      281.000
   385.000      3.98    745.88      .00    745.58    745.90       .01      1.04       .00 100000.00
     670.0        .0     670.0       .0        .0     691.2        .0      14.7       7.8 100000.00
       .29       .00       .97      .00      .000      .070      .000      .000    741.90   9892.00
   .000639     1000.     1019.    1000.         3         0         0       .00    281.00  10173.00

FLOW DISTRIBUTION FOR SECNO=    385.00          CWSEL=    745.88

STA=    9892.   10278.
  PER Q=    100.0
   AREA=    691.2
    VEL=      1.0
  DEPTH=      2.5
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   SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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 618.000

3301 HV CHANGED MORE THAN HVINS

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

3470 ENCROACHMENT STATIONS=     9975.0   10080.0  TYPE=      1  TARGET=      105.000
   618.000      2.19    756.69    756.69    756.68    757.27       .58      2.12       .17 100000.00
     670.0        .0     645.6      24.4        .0     104.0       7.9      26.0      13.1    756.00
       .35       .00      6.21      3.08      .000      .035      .030      .000    754.50   9975.92
   .013680     1225.     1230.    1150.        20        11         0       .00    100.41  10076.33

FLOW DISTRIBUTION FOR SECNO=    618.00          CWSEL=    756.69

STA=    9976.   10050.   10062.   10076.
  PER Q=     96.4      3.2       .5
   AREA=    104.0      5.9      2.0
    VEL=      6.2      3.6      1.6
  DEPTH=      1.4       .5       .1

*SECNO 821.000

3265 DIVIDED FLOW

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.40

3470 ENCROACHMENT STATIONS=     9970.0   10118.0  TYPE=      1  TARGET=      148.000
   821.000      3.70    767.40      .00    766.74    767.86       .46     10.58       .01 100000.00
     700.0        .0     590.3     109.7        .0     102.8      33.2      29.0      15.8    767.70
       .40       .00      5.74      3.30      .000      .035      .030      .000    763.70   9970.00
   .007575     1130.     1072.    1040.         5         0         0       .00    117.25  10118.00

FLOW DISTRIBUTION FOR SECNO=    821.00          CWSEL=    767.40

STA=    9970.   10024.   10082.   10118.
  PER Q=     84.3       .8     14.9
   AREA=    102.8      4.4     28.8
    VEL=      5.7      1.2      3.6
  DEPTH=      2.0       .1       .8
```



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   SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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
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```
*SECNO 1043.000

0 ENCROACHMENT STATIONS=      9917.0   10025.0  TYPE=       1  TARGET=      108.000
043.000       2.62     777.32       .00     776.56     777.76       .45      9.90       .00     776.80
  700.0      247.4      452.6        .0       54.8       78.4        .0      32.6      18.7 100000.00
    .46       4.52       5.77       .00       .030       .035      .000      .000    774.70    9917.00
 .009746     1100.      1172.     1145.          5          0         0       .00    108.00   10025.00

FLOW DISTRIBUTION FOR SECNO=   1043.00          CWSEL=    777.32

STA=    9917.     9977.    10039.
  PER Q=      35.3      64.7
   AREA=      54.8      78.4
    VEL=       4.5       5.8
  DEPTH=        .9       1.6

*SECNO 1240.000

3470 ENCROACHMENT STATIONS=      9981.0   10099.0  TYPE=       1  TARGET=      118.000
  1240.000       3.11     785.21       .00     784.54     785.55       .35      7.78       .01     784.40
    700.0         .2      384.1     315.8         .2       71.8      81.7      35.9      21.3     783.80
      .52       1.16       5.35      3.87       .030       .035      .030      .000    782.10    9981.00
 .006248      1020.      1040.      920.          5          0         0       .00    118.00   10099.00

FLOW DISTRIBUTION FOR SECNO=   1240.00          CWSEL=    785.21

STA=    9981.     9981.    10017.    10052.    10099.
  PER Q=         .0      54.9      21.4      23.7
   AREA=         .2      71.8      36.9      44.8
    VEL=        1.2       5.4       4.1       3.7
  DEPTH=         .8       2.0       1.1        .9

*SECNO 1453.000

3470 ENCROACHMENT STATIONS=      9982.0   10104.0  TYPE=       1  TARGET=      122.000
  1453.000       3.27     790.67       .00     789.71     790.88       .22      5.32       .01     789.90
    700.0         .0      313.5     386.5         .1       77.6     111.0      40.5      24.6     789.50
      .61        .03       4.04      3.48       .030       .035      .030      .000    787.40    9982.00
 .003464      1000.      1125.     1210.          4          0         0       .00    122.00   10104.00

1
  11DEC92      13:26:52                                                                                          PAGE   18

   SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      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

OW DISTRIBUTION FOR SECNO=   1453.00          CWSEL=    790.67

TA=    9982.     9982.    10020.    10069.    10104.
  PER Q=         .0      44.8      34.5      20.7
   AREA=         .1      77.6      67.1      43.9
    VEL=         .0       4.0       3.6       3.3
  DEPTH=         .8       2.1       1.4       1.2

*SECNO 1676.000

3265 DIVIDED FLOW

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

3470 ENCROACHMENT STATIONS=      9975.0   10658.0  TYPE=       1  TARGET=      683.000
  1676.000       2.31     798.81     798.81     798.77     799.12       .31      4.42       .03 100000.00
    730.0         .0      247.6      482.4         .0       46.3     122.4      43.5      27.1     797.80
      .66        .00       5.35      3.94       .000       .035      .030      .000    796.50    9975.00
 .011568      1280.      1177.      480.         20         14         0       .00    236.23   10658.00

FLOW DISTRIBUTION FOR SECNO=   1676.00          CWSEL=    798.81

STA=    9975.    10011.    10042.    10097.    10185.    10186.    10650.    10658.
  PER Q=      33.9      17.6      19.9      24.4        .1       2.7       1.3
   AREA=      46.3      26.7      36.0      49.3        .4       6.8       3.3
    VEL=       5.3       4.8       4.0       3.6       2.1       2.9       2.9
  DEPTH=       1.3        .9        .7        .6        .3        .0        .4

CCHV=      .300 CEHV=      .500
*SECNO 1710.000

3301 HV CHANGED MORE THAN HVINS

3470 ENCROACHMENT STATIONS=      9984.0   10350.0  TYPE=       1  TARGET=      366.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       803.10 ELREA=       799.00

1
  11DEC92      13:26:52                                                                                          PAGE   19

   SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      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
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 1710.000      2.74    800.54       .00    800.55    801.65      1.11      2.13       .40    799.40
    730.0        .0     729.6        .4        .0      86.2        .2      44.0      27.7    799.10
      .66       .00      8.46      1.53      .000      .035      .030      .000    797.80   9984.00
  .011269      250.      180.      200.         3         0         0       .00     32.32  10016.32

FLOW DISTRIBUTION FOR SECNO=   1710.00          CWSEL=    800.54

STA=    9984.   10016.   10016.
  PER Q=    100.0       .0
   AREA=     86.2       .2
    VEL=      8.5      1.5
  DEPTH=      2.7       .7

SPECIAL CULVERT

SC  CUNO      CUNV      ENTLC     COFQ      RDLEN     RISE      SPAN      CULVLN    CHRT      SCL       ELCHU     ELCHD
     3         .014       .40     3.00       .00      4.70     10.00     41.00      8         1       798.00    797.80

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

*SECNO 1720.000
BTCARD, BRIDGE STENCL=    9984.00   STENCR=   10350.00

SPECIAL CULVERT OUTLET CONTROL + WEIR FLOW EG =    802.23

3265 DIVIDED FLOW

3301 HV CHANGED MORE THAN HVINS

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.63

SPECIAL CULVERT

    EGIC      EGOC       H4     QWEIR     QCULV      VCH     ACULV     ELTRD    WEIRLN
  802.24    802.47      .58       47.      677.    6.272     141.0    801.46       78.


3470 ENCROACHMENT STATIONS=     9984.0   10350.0  TYPE=      1  TARGET=      366.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       804.10 ELREA=       800.00

 1720.000      3.63    801.63       .00    801.00    802.23       .60       .58       .00    799.60
    730.0        .0     719.7      10.3        .0     114.8       8.2      44.1      27.8    799.30
      .67       .00      6.27      1.26      .000      .035      .030      .000    798.00   9984.00
  .004230       51.       51.       51.         3         0         0       .00     66.84  10350.00
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   SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     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

FLOW DISTRIBUTION FOR SECNO=   1720.00          CWSEL=    801.63

STA=    9984.   10016.   10017.   10350.
  PER Q=     98.6       .1      1.3
   AREA=    114.8       .6      7.6
    VEL=      6.3      1.3      1.3
  DEPTH=      3.6      1.2       .0

*SECNO 1739.000

3301 HV CHANGED MORE THAN HVINS

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  3.68

3470 ENCROACHMENT STATIONS=     9984.0   10220.0  TYPE=      1  TARGET=      236.000
 1739.000      3.79    802.49       .00    801.56    802.52       .03       .11       .17    800.30
    710.0        .0     196.1     513.9        .0     119.8     430.1      45.6      28.5    800.00
      .70       .00      1.64      1.19      .000      .035      .035      .000    798.70   9984.00
  .000296       50.      100.      230.         2         0         0       .00    236.00  10220.00

FLOW DISTRIBUTION FOR SECNO=   1739.00          CWSEL=    802.49

STA=    9984.   10016.   10042.   10097.   10185.   10220.
  PER Q=     27.6     11.2     19.9     29.7     11.6
   AREA=    119.8     61.5    116.6    179.5     72.5
    VEL=      1.6      1.3      1.2      1.2      1.1
  DEPTH=      3.7      2.3      2.1      2.0      2.1

CCHV=      .100 CEHV=      .300
*SECNO 1905.000

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
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3470 ENCROACHMENT STATIONS=     9982.0   10065.0  TYPE=      1  TARGET=       83.000
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   SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      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

 1905.000      3.01     806.51     806.51     805.86     807.10       .59        .72        .17 100000.00
   670.0        .0      491.1      178.8         .0       72.4      44.2       52.1       31.6     805.40
     .74       .00       6.78       4.05       .000       .035      .035       .000     803.50    9982.00
  .010209     360.       878.       850.         20         14         0        .00      83.00   10065.00

FLOW DISTRIBUTION FOR SECNO=   1905.00          CWSEL=    806.51

STA=    9982.    10018.    10051.    10065.
  PER Q=      73.3      19.8       6.9
   AREA=      72.4      31.8      12.4
    VEL=       6.8       4.2       3.7
  DEPTH=       2.0       1.0        .9

*SECNO 2138.000

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

3470 ENCROACHMENT STATIONS=     9915.0   10028.0  TYPE=      1  TARGET=      113.000
 2138.000      3.08     814.08       .00     813.18     814.27       .19       7.13        .04     812.60
   620.0     270.1      349.9        .1       77.4       98.1        .1       56.0       34.2     813.00
     .83      3.49       3.57       .54       .035       .035      .035       .000     811.00    9915.00
  .003923    1020.      1230.     1130.          6          0         0        .00     113.00   10028.00

FLOW DISTRIBUTION FOR SECNO=   2138.00          CWSEL=    814.08

STA=    9915.     9965.    10028.    10028.
  PER Q=      43.6      56.4        .0
   AREA=      77.4      98.1        .1
    VEL=       3.5       3.6        .5
  DEPTH=       1.6       1.6       1.1

*SECNO 2335.000

3301 HV CHANGED MORE THAN HVINS

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =   .45
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   SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      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

3470 ENCROACHMENT STATIONS=     9975.0   10035.0  TYPE=      1  TARGET=       60.000
 2335.000      2.95     820.85     820.82     820.88     821.56       .70       7.13        .15 100000.00
   570.0        .0      570.0        .0         .0       84.7        .0       59.1       36.3     820.70
     .87       .00       6.73       .05       .000       .035      .035       .000     817.90    9975.00
  .016151    1050.      1040.      965.          7         11         0        .00      60.00   10035.00

FLOW DISTRIBUTION FOR SECNO=   2335.00          CWSEL=    820.85

STA=    9975.    10035.    10035.
  PER Q=     100.0        .0
   AREA=      84.7        .0
    VEL=       6.7        .1
  DEPTH=       1.4        .2

*SECNO 2534.000

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.63

3470 ENCROACHMENT STATIONS=     9983.0   10021.0  TYPE=      1  TARGET=       38.000
 2534.000      4.59     829.79       .00     829.11     830.28       .49       8.70        .02     827.70
   520.0     141.9      299.0      79.1       31.5       47.4      18.0       61.2       37.4     827.50
     .92      4.50       6.30      4.40       .035       .035      .035       .000     825.20    9983.00
  .005066     900.      1051.      890.          5          0         0        .00      38.00   10021.00

FLOW DISTRIBUTION FOR SECNO=   2534.00          CWSEL=    829.79

STA=    9983.     9987.     9999.    10013.    10021.
  PER Q=       5.1      22.2      57.5      15.2
   AREA=       7.4      24.1      47.4      18.0
    VEL=       3.6       4.8       6.3       4.4
  DEPTH=       1.9       2.0       3.4       2.2

1490 NH CARD USED
*SECNO 2776.000
3280 CROSS SECTION   2776.00 EXTENDED       .02 FEET
```

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	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

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = .53

3470 ENCROACHMENT STATIONS= 9971.0 10017.0 TYPE= 1 TARGET= 46.000

2776.000	2.82	839.12	.00	838.70	839.80	.68	9.47	.06	838.30
460.0	.4	459.6	.0	.2	69.5	.0	63.6	38.6	838.90
.98	1.60	6.62	.04	.040	.035	.040	.000	836.30	9971.00
.013942	1170.	1278.	930.	4	0	0	.00	46.00	10017.00

FLOW DISTRIBUTION FOR SECNO= 2776.00 CWSEL= 839.12

STA=	9971.	9971.	10017.	10017.
PER Q=	.1	99.9	.0	
AREA=	.2	69.5	.0	
VEL=	1.6	6.6	.0	
DEPTH=	.8	1.5	.2	

1

THIS RUN EXECUTED 11DEC92 13:27:06

****
HEC-2 WATER SURFACE PROFILES

Version 4.6.2; May 1991
****

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

UNNAMED WASH NO.2 100 YR

SUMMARY PRINTOUT

	SECNO	ELMIN	CWSEL	SSTA	ENDST	DEPTH	Q	VCH	HV	DIFWSX	QWEIR	ELTRD	ELLC
	192.000	742.70	743.83	9733.73	10116.97	1.13	670.00	3.74	.22	.00	.00	.00	.00
	192.000	742.70	744.83	9734.00	10117.00	2.13	670.00	1.19	.02	.00	.00	.00	.00
	385.000	741.90	745.58	9894.08	10269.95	3.68	670.00	.77	.01	1.75	.00	.00	.00
*	385.000	741.90	745.88	9892.00	10173.00	3.98	670.00	.97	.01	1.05	.00	.00	.00
*	618.000	754.50	756.68	9976.01	10075.94	2.18	670.00	6.25	.59	11.10	.00	.00	.00
*	618.000	754.50	756.69	9975.92	10076.33	2.19	670.00	6.21	.58	10.80	.00	.00	.00
*	821.000	763.70	766.74	9969.62	10740.31	3.04	700.00	4.31	.18	10.06	.00	.00	.00
*	821.000	763.70	767.40	9970.00	10118.00	3.70	700.00	5.74	.46	10.72	.00	.00	.00
	1043.000	774.70	776.56	9629.18	10024.56	1.86	700.00	4.54	.23	9.82	.00	.00	.00
	1043.000	774.70	777.32	9917.00	10025.00	2.62	700.00	5.77	.45	9.92	.00	.00	.00
*	1240.000	782.10	784.54	9644.73	10243.93	2.44	700.00	3.82	.13	7.98	.00	.00	.00
	1240.000	782.10	785.21	9981.00	10099.00	3.11	700.00	5.35	.35	7.89	.00	.00	.00
	1453.000	787.40	789.71	9590.50	10101.37	2.31	700.00	3.04	.12	5.17	.00	.00	.00
	1453.000	787.40	790.67	9982.00	10104.00	3.27	700.00	4.04	.22	5.46	.00	.00	.00
*	1676.000	796.50	798.77	9975.10	10657.65	2.27	730.00	5.77	.36	9.06	.00	.00	.00
*	1676.000	796.50	798.81	9975.00	10658.00	2.31	730.00	5.35	.31	8.14	.00	.00	.00
*	1710.000	797.80	800.55	9984.00	10514.19	2.75	730.00	6.32	.49	1.79	.00	.00	.00
	1710.000	797.80	800.54	9984.00	10016.32	2.74	730.00	8.46	1.11	1.73	.00	.00	.00
	1720.000	798.00	801.00	9984.00	10529.59	3.00	730.00	5.11	.29	.45	261.26	800.10	.00
*	1720.000	798.00	801.63	9984.00	10350.00	3.63	730.00	6.27	.60	1.09	46.86	801.46	.00
*	1739.000	798.70	801.56	9886.21	10302.53	2.86	710.00	2.29	.04	.57	.00	.00	.00
*	1739.000	798.70	802.49	9984.00	10220.00	3.79	710.00	1.64	.03	.86	.00	.00	.00

1

	SECNO	ELMIN	CWSEL	SSTA	ENDST	DEPTH	Q	VCH	HV	DIFWSX	QWEIR	ELTRD	ELLC
*	1905.000	803.50	805.86	9981.79	10272.88	2.36	670.00	5.41	.28	4.29	.00	.00	.00
*	1905.000	803.50	806.51	9982.00	10065.00	3.01	670.00	6.78	.59	4.02	.00	.00	.00
*	2138.000	811.00	813.18	9827.67	10247.47	2.18	620.00	2.09	.12	7.33	.00	.00	.00
*	2138.000	811.00	814.08	9915.00	10028.00	3.08	620.00	3.57	.19	7.57	.00	.00	.00
*	2335.000	817.90	820.88	9963.64	10050.00	2.98	570.00	6.27	.60	7.70	.00	.00	.00
*	2335.000	817.90	820.85	9976.00	10035.00	2.95	570.00	6.73	.70	6.78	.00	.00	.00
*	2534.000	825.20	829.11	9908.12	10056.86	3.91	520.00	5.29	.25	8.23	.00	.00	.00
*	2534.000	825.20	829.79	9983.00	10021.00	4.59	520.00	6.30	.49	8.94	.00	.00	.00

*	2776.000	836.30	838.70	9964.89	10127.35	2.40	460.00	5.46	.36	9.59	.00	.00	.00
*	2776.000	836.30	839.12	9971.00	10017.00	2.82	460.00	6.62	.68	9.33	.00	.00	.00

UNNAMED WASH NO.2 100 YR

SUMMARY PRINTOUT TABLE 110

	SECNO	CWSEL	DIFKWS	EG	TOPWID	QLOB	QCH	QROB	PERENC	STENCL	STCHL	STCHR	STENCR
	192.000	743.83	.00	744.05	383.24	.00	670.00	.00	.00	.00	9725.40	10133.60	.00
	192.000	744.83	1.00	744.85	383.00	.00	670.00	.00	383.00	9734.00	9725.40	10133.60	10117.00
*	385.000	745.58	.00	745.59	375.87	.00	670.00	.00	.00	.00	9879.00	10277.60	.00
*	385.000	745.88	.30	745.90	281.00	.00	670.00	.00	281.00	9892.00	9879.00	10277.60	10173.00
*	618.000	756.68	.00	757.27	99.94	.00	646.13	23.86	.00	.00	9964.10	10050.20	.00
*	618.000	756.69	.01	757.27	100.41	.00	645.55	24.44	105.00	9975.00	9964.10	10050.20	10080.00
*	821.000	766.74	.00	766.92	428.43	.00	300.47	399.53	.00	.00	9952.90	10023.70	.00
*	821.000	767.40	.67	767.86	117.25	.00	590.31	109.69	148.00	9970.00	9952.90	10023.70	10118.00
	1043.000	776.56	.00	776.78	342.75	507.79	192.20	.00	.00	.00	9977.40	10038.90	.00
	1043.000	777.32	.76	777.76	108.00	247.43	452.57	.00	108.00	9917.00	9977.40	10038.90	10025.00
*	1240.000	784.54	.00	784.67	523.39	216.74	183.50	299.76	.00	.00	9981.20	10016.60	.00
	1240.000	785.21	.66	785.55	118.00	.19	384.06	315.75	118.00	9981.00	9981.20	10016.60	10099.00
	1453.000	789.71	.00	789.83	400.15	521.82	127.44	50.73	.00	.00	9982.10	10019.60	.00
	1453.000	790.67	.96	790.88	122.00	.00	313.54	386.46	122.00	9982.00	9982.10	10019.60	10104.00
*	1676.000	798.77	.00	799.12	234.72	.00	257.94	472.06	.00	.00	9968.90	10011.30	.00
*	1676.000	798.81	.04	799.12	236.23	.00	247.57	482.42	683.00	9975.00	9968.90	10011.30	10658.00
*	1710.000	800.55	.00	801.04	168.39	.00	547.40	182.60	.00	.00	9984.00	10016.00	.00
	1710.000	800.54	-.01	801.65	32.32	.00	729.65	.35	366.00	9984.00	9984.00	10016.00	10350.00
	1720.000	801.00	.00	801.29	201.09	.00	483.40	246.60	.00	.00	9984.00	10016.00	.00
*	1720.000	801.63	.63	802.23	66.84	.00	719.69	10.31	366.00	9984.00	9984.00	10016.00	10350.00
*	1739.000	801.56	.00	801.61	416.32	45.70	206.68	457.62	.00	.00	9984.00	10016.00	.00
*	1739.000	802.49	.92	802.52	236.00	.00	196.13	513.87	236.00	9984.00	9984.00	10016.00	10220.00
*	1905.000	805.86	.00	806.14	291.09	.00	266.63	403.37	.00	.00	9970.80	10017.50	.00
*	1905.000	806.51	.65	807.10	83.00	.00	491.15	178.85	83.00	9982.00	9970.80	10017.50	10065.00
*	2138.000	813.18	.00	813.30	344.08	434.43	88.64	96.93	.00	.00	9964.80	10027.90	.00
*	2138.000	814.08	.90	814.27	113.00	270.08	349.86	.06	113.00	9915.00	9964.80	10027.90	10028.00
	2335.000	820.88	.00	821.47	86.36	3.56	554.98	11.46	208.30	9841.70	9971.30	10034.90	10050.00
	2335.000	820.85	-.03	821.56	60.00	.00	570.00	.00	60.00	9975.00	9971.30	10034.90	10035.00
*	2534.000	829.11	.00	829.36	148.74	173.56	200.91	145.53	.00	.00	9999.10	10012.90	.00
*	2534.000	829.79	.68	830.28	38.00	141.91	298.98	79.10	38.00	9983.00	9999.10	10012.90	10021.00
*	2776.000	838.70	.00	839.06	154.00	1.92	274.33	183.75	.00	.00	9971.30	10016.80	.00
*	2776.000	839.12	.42	839.80	46.00	.39	459.61	.00	46.00	9971.00	9971.30	10016.80	10017.00

1

SUMMARY OF ERRORS AND SPECIAL NOTES

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WARNING SECNO=    385.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=    385.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO=    618.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=    618.000  PROFILE=  1  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=    618.000  PROFILE=  1  20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO=    618.000  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=    618.000  PROFILE=  2  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=    618.000  PROFILE=  2  20 TRIALS ATTEMPTED TO BALANCE WSEL

WARNING SECNO=    821.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=    821.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=   1240.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO=   1676.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=   1676.000  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=   1676.000  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=   1676.000  PROFILE=  2  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=   1676.000  PROFILE=  2  20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO=   1710.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=   1710.000  PROFILE=  1  MINIMUM SPECIFIC ENERGY

WARNING SECNO=   1720.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=   1739.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   1739.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO=   1905.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=   1905.000  PROFILE=  1  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=   1905.000  PROFILE=  1  20 TRIALS ATTEMPTED TO BALANCE WSEL
```

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CAUTION SECNO=   1905.000  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=   1905.000  PROFILE=  2  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=   1905.000  PROFILE=  2  20 TRIALS ATTEMPTED TO BALANCE WSEL

WARNING SECNO=   2138.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   2138.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO=   2335.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=   2335.000  PROFILE=  1  MINIMUM SPECIFIC ENERGY
WARNING SECNO=   2335.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=   2534.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   2534.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO=   2776.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=   2776.000  PROFILE=  1  MINIMUM SPECIFIC ENERGY
WARNING SECNO=   2776.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

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   11DEC92      13:26:52                                                                    PAGE   28


FLOODWAY DATA,   UNNAMED WASH NO.2 100 YR
PROFILE NO.  2
```

STATION	FLOODWAY WIDTH	FLOODWAY SECTION AREA	FLOODWAY MEAN VELOCITY	WATER SURFACE ELEVATION WITH FLOODWAY	WITHOUT FLOODWAY	DIFFERENCE
192.000	383.	562.	1.2	744.8	743.8	1.0
385.000	281.	691.	1.0	745.9	745.6	.3
618.000	100.	112.	6.0	756.7	756.7	.0
821.000	148.	136.	5.1	767.4	766.7	.7
1043.000	108.	133.	5.3	777.4	776.6	.8
1240.000	118.	154.	4.6	785.2	784.5	.7
1453.000	122.	189.	3.7	790.7	789.7	1.0
1676.000	683.	169.	4.3	798.8	798.8	.0
1710.000	32.	86.	8.4	800.6	800.6	.0
1720.000	366.	123.	5.9	801.6	801.0	.6
1739.000	236.	550.	1.3	802.5	801.6	.9
1905.000	83.	117.	5.7	806.6	805.9	.7
2138.000	113.	176.	3.5	814.1	813.2	.9
2335.000	60.	85.	6.7	820.9	820.9	.0
2534.000	38.	97.	5.4	829.8	829.1	.7
2776.000	46.	70.	6.6	839.1	838.7	.4

SECTION 4: Hydraulic Analysis

4.8 Project Input Data File on Diskettes

SECTION 6: Reference Materials

SECTION 6: Reference Materials

6.5 Bibliography

6.5 Bibliography

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SECTION 7: Cross-Referencing & Labeling Information

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7.1 Other Studies Impacted

SECTION 7: Other Studies Impacted

Refer to the Flood Insurance Study text and to Hydrology TDN Section 3.5.2.2 for a discussion of the results of this study as compared with other studies of record. There are no detailed studies of record for this watershed.

SECTION 7: Cross-Referencing & Labeling Information

7.2 Key to Cross Section Labeling

KEY TO CROSS-SECTION (XS) LABELING

Prepared By:
SC: James Mischler
TEC:

Date Prepared:
SC: February, 1991
TEC:

Community Name: Maricopa County
State: Arizona

Stream Name: Sand Tank Wash
Run Date: March 3, 1992

Field Survey Section No.	XS Letter Draft FIS	Computer Stationing	XS Letter Final FIS
	A	0.926	
	B	1.053	
	C	1.241	
	D	1.435	
	E	1.608	
	F	1.791	
	G	1.980	
	H	2.147	
	I	2.329	
	J	2.522	
	K	2.686	
	L	2.864	
	M	3.039	
	N	3.180	
	O	3.277	
	P	3.372	
	Q	3.470	
	R	3.563	
	S	3.657	
	T	3.747	
	U	3.836	
	V	3.888	
	W	4.076	
	X	4.277	
	Y	4.461	
	Z	4.638	
	AA	4.822	

KEY TO CROSS-SECTION (XS) LABELING

SC: James Mischler
TEC:

Date Prepared:
SC:
TEC:

Community Name: Maricopa County
State: Arizona

Stream Name: Bender Wash
Run Date: February 16, 1991

Field Survey Section No.	XS Letter Draft FIS	Computer Stationing	XS Letter Final FIS
	A	0.037	
	B	0.129	
	C	0.224	
	D	0.320	
	E	0.415	
	F	1.011	
	G	1.172	
	H	1.380	
	I	1.576	
	J	1.738	
	K	1.903	

KEY TO CROSS-SECTION (XS) LABELING

SC: James Mischler
TEC:

Community Name: Maricopa County
State: Arizona

Date Prepared:
SC: February, 1992
TEC:

Stream Name: Scott Avenue Wash
Run Date:

Field Survey Section No.	XS Letter Draft FIS	Computer Stationing	XS Letter Final FIS
Pts 50-51	A	2.261	
	B	2.505	
	C	2.677	
	D	2.867	
Pts 52-53	E	3.105	
	F	3.292	
	G	3.492	
	H	3.570	
	I	3.677	
	J	3.772	
	K	3.863	
	L	3.957	
	M	4.053	
	N	4.147	
	O	4.216	
	P	4.287	
	Q	4.395	
	R	4.477	
	S	4.537	
	T	4.591	
	U	4.727	
	V	4.911	
	W	5.137	

KEY TO CROSS-SECTION (XS) LABELING

Prepared By:
SC: James Mischler
TEC:

Community Name: Maricopa County
State: Arizona

Date Prepared:
SC: February, 1992
TEC:

Stream Name: Unnamed Wash No. 2
Run Date:

Field Survey Section No.	XS Letter Draft FIS	Computer Stationing	XS Letter Final FIS
	A	0.192	
	B	0.385	
	C	0.618	
	D	0.821	
	E	1.043	
	F	1.240	
	G	1.453	
	H	1.676	
	I	1.739	
	J	1.905	
	K	2.138	
	L	2.335	
	M	2.534	
	N	2.776	