SALT-GILA "n" VALUE REPORT 51ST AVENUE TO GRANITE REEF DAM

Property of
Flood Control District of MC Library
Please Return to
2801 W. Durango
Phoenix, AZ 85009

CROSS-SECTION(S) : 207.43 ±

LOCATION : 51st Avenue Bridge

CROSS-SECTION DESCRIPTION : Bed material is river rock and silt. Channel shape is slightly irregular. Vegetation is light and medium density in the left overbank and light in the right overbank. Channel is primarily clear.

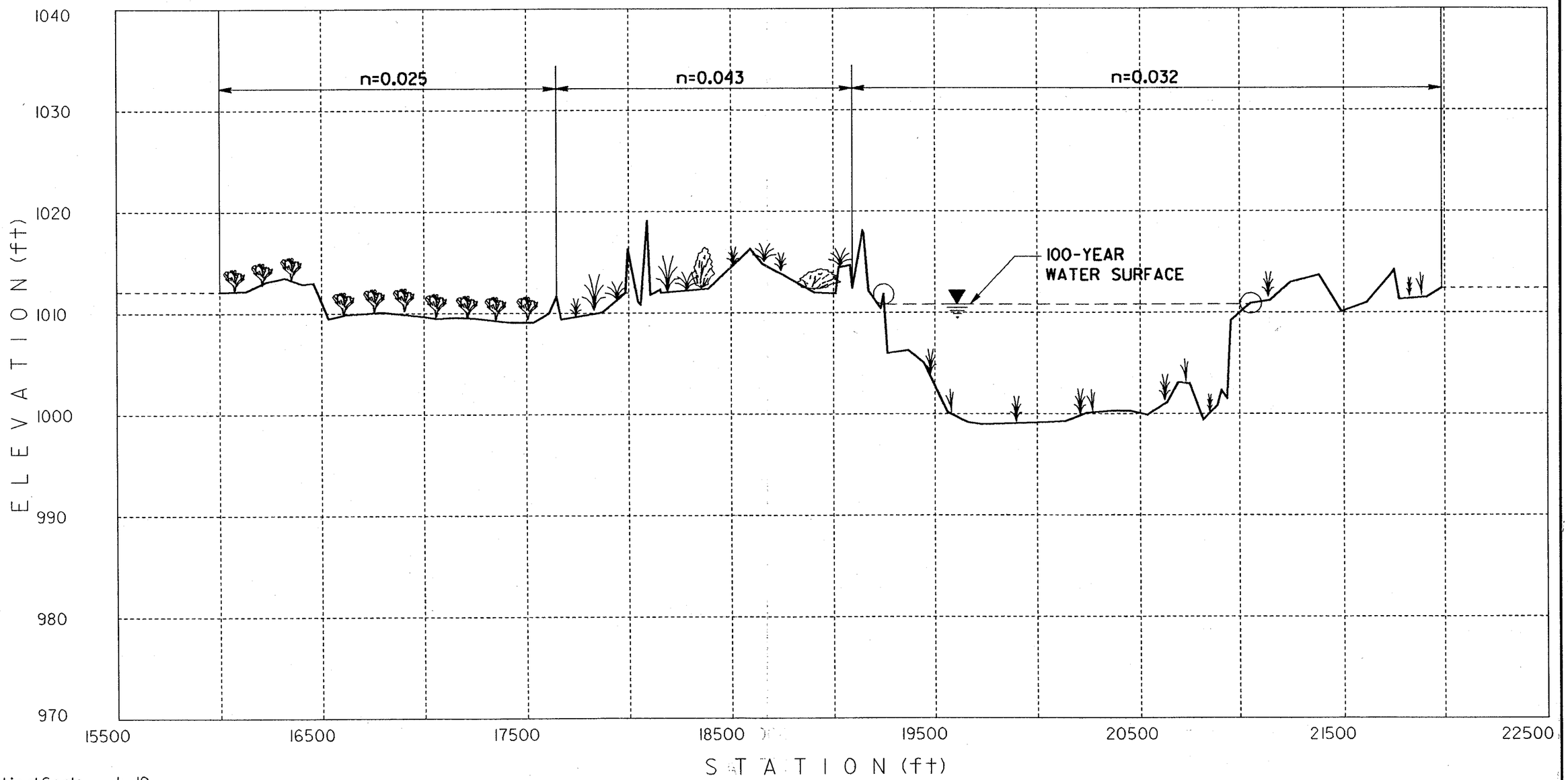
100-YEAR N-VALUE CALCULATIONS

Portion of Cross Section	Components	"n" Total
Medium - Trees, bushes Semi-open	$n_b = 0.025$ $n_1 = 0.004$ $n_2 = 0.000$ $n_3 = 0.014$	**n = 0.043**
Light - Sparse and/or small vegetation	$n_b = 0.025$ $n_1 = 0.003$ $n_2 = 0.000$ $n_3 = 0.004$	**n = 0.032**
Agricultural - Cotton Fields		**n = 0.025**

Cross Section 207.43

REACH 3

100–YEAR "n" VALUES



Vertical Scale 1: 10
Horizontal Scale 1: 500

FIGURE 22 – 51st AVENUE BRIDGE

Baker
Michael Baker Jr., Inc.

PHOTO 67 - Section 207.43 - 51st Ave Bridge - Looking W. downstream - Supported pipe crossing Light veg. in channel and overbanks
Q = 3500 - 4000 cfs

PHOTO 68 - Section 207.43 - 51st Ave - Looking W. downstream at pipeline
Q = 3500 - 4000 cfs

PHOTO 69 - Section 207.43 - 51st Ave - Looking downstream of bridge at river rock in channel
Q = 3500 - 4000 cfs

PHOTO 70 - Section 207.43 - 51st Ave Bridge - Looking E. upstream towards bridge Q = 3500 - 4000 cfs

PHOTO 71 - Section 207.43 - 51st Ave - Looking upstream of bridge at channel and right overbank Q = 3500 - 4000 cfs

PHOTO 72 - Section 207.43 - 51st Ave - Looking E. of bridge at gradation of river rock

CROSS-SECTION(S) : 209.79 ±

LOCATION : 35th Avenue Bridge

CROSS-SECTION DESCRIPTION : Bed material consists of river rock and silt. Channel shape is slightly irregular. Vegetation is light-medium density in left and right overbanks and consists primarily of grass and scrub. Channel is predominantly clear.

100-YEAR N-VALUE CALCULATIONS

Portion of Cross Section	Components	"n" Total
Light-medium - Sparse vegetation with some pockets of thicker vegetation	$n_b = 0.025$ $n_1 = 0.004$ $n_2 = 0.000$ $n_3 = 0.008$	**n = 0.037**
Light - Sparse and/or small vegetation	$n_b = 0.025$ $n_1 = 0.003$ $n_2 = 0.000$ $n_3 = 0.004$	**n = 0.032**
Agricultural - Cotton Fields		**n = 0.025**

Cross Section 209.54
REACH 3
100–YEAR "n" VALUES

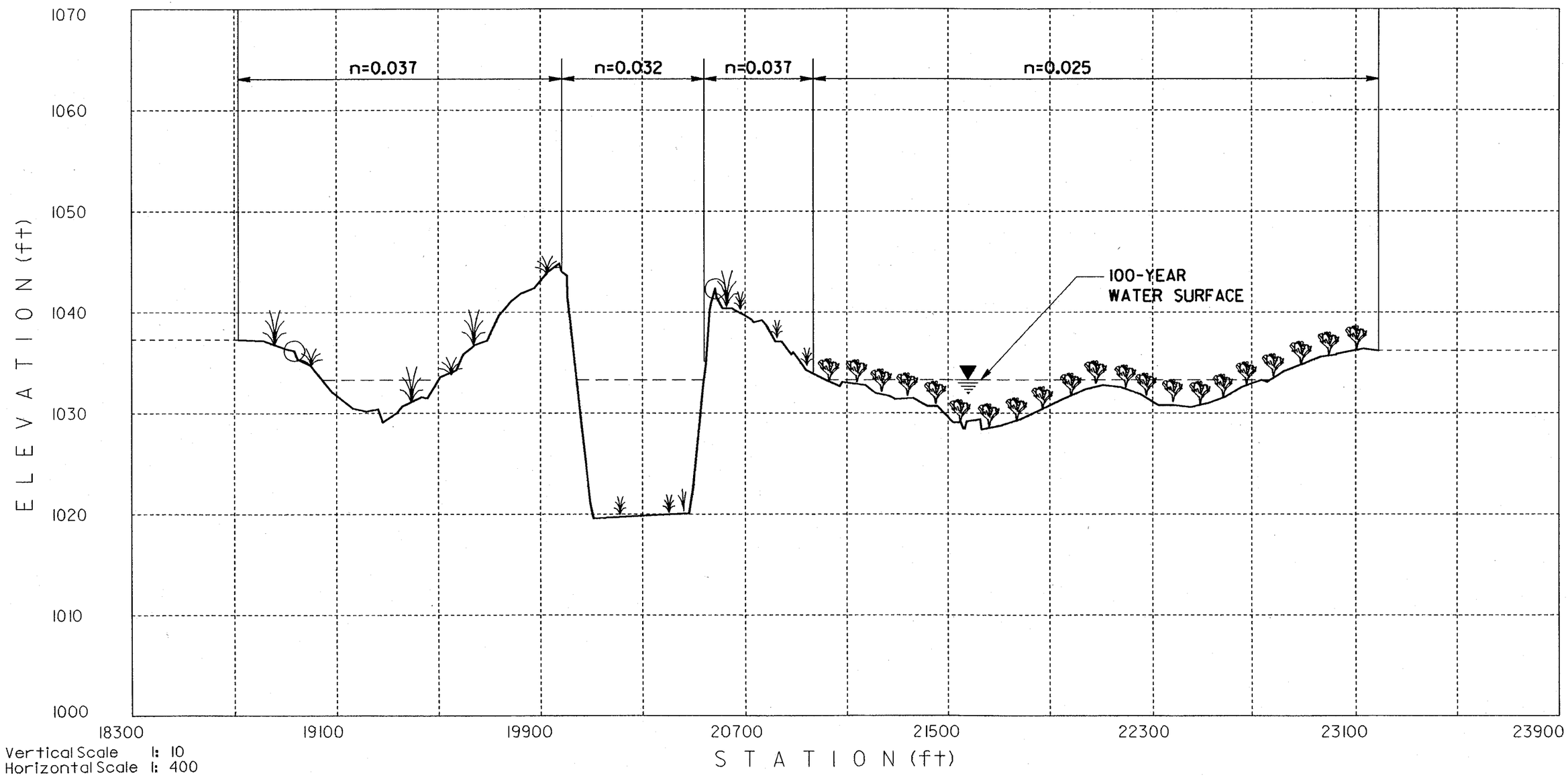


FIGURE 23 – 35th AVENUE BRIDGE

Baker
Michael Baker Jr., Inc.

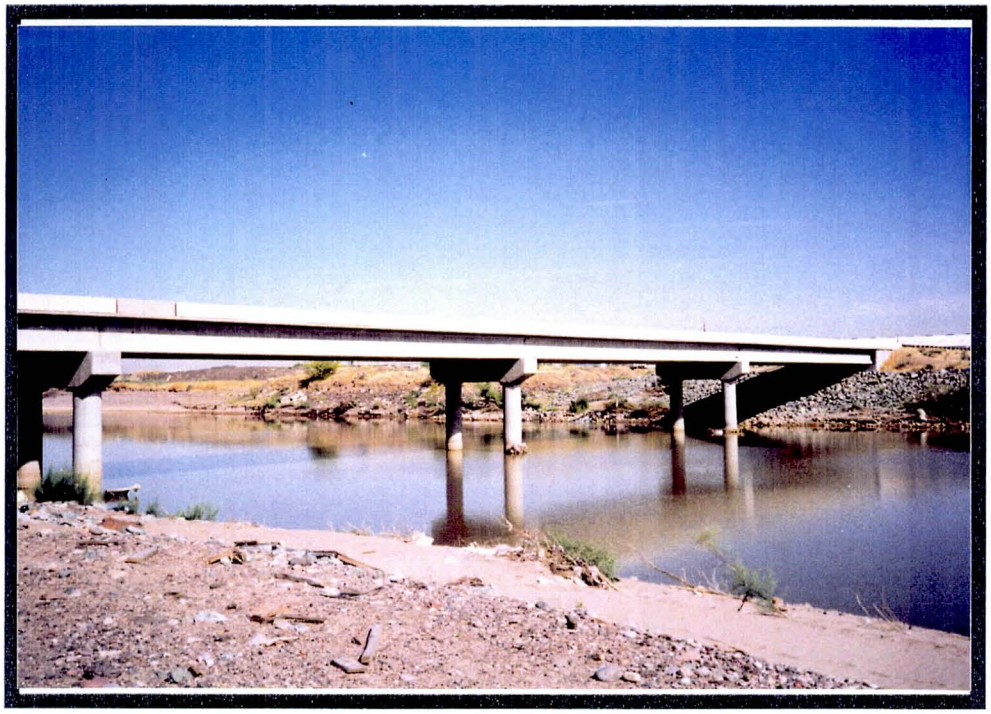


PHOTO 73 - Section 209.54 - 35th Ave Bridge - Looking W. downstream towards bridge - Bank protection under bridge Q = 3500 - 4000 cfs

PHOTO 74 - Section 209.54 - 35th Ave - Looking E. upstream - Bank protection along right bank (in background) Q = 3500 - 4000 cfs

CROSS-SECTION(S) : 211.54 ±

LOCATION : 19th Avenue Bridge

CROSS-SECTION DESCRIPTION : Bed material is river rock and silt. Channel shape is slightly irregular. Vegetation is light-medium density in the left and right overbanks and consists of grass and scrub. Main channel is primarily clear.

100-YEAR N-VALUE CALCULATIONS

Portion of Cross Section	Components	"n" Total
Left and Right Overbanks	$n_b = 0.025$ $n_1 = 0.004$ $n_2 = 0.000$ $n_3 = 0.008$	**n = 0.037**
Channel	$n_b = 0.025$ $n_1 = 0.003$ $n_2 = 0.000$ $n_3 = 0.004$	**n = 0.032**

Cross Section 211.54
REACH 3
100-YEAR "n" VALUES

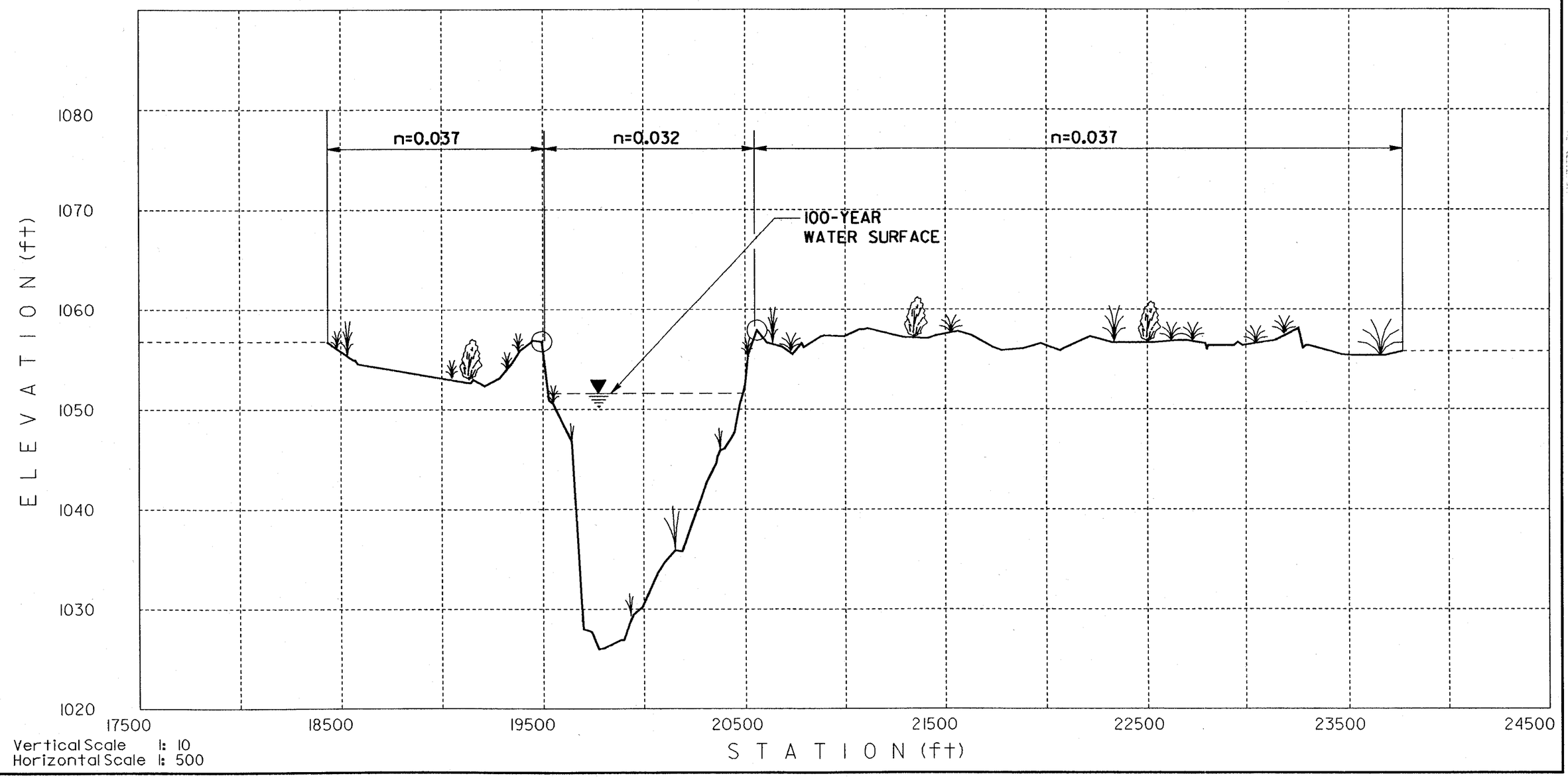


FIGURE 24 – 19th AVENUE BRIDGE

Baker
Michael Baker Jr., Inc.

PHOTO 75 - Section 211.54 - 19th Ave Bridge - Looking W. downstream at bridge - Bank protection on S. side of river (foreground) Q = 3500 - 4000 cfs

PHOTO 76 - Section 211.54 - 19th Ave - Looking N. across river, E. of bridge - Eroded bank on N. side Q = 3500 - 4000 cfs

PHOTO 77 - Section 211.54 - 19th Ave - Looking E. upstream of bridge Q = 3500 - 4000 cfs

CROSS-SECTION(S) : 212.69 ±

LOCATION : 7th Avenue Bridge

CROSS-SECTION DESCRIPTION : Bed material consists of river rock and silt. Channel shape is slightly irregular. Vegetation is light-medium density in left and right overbanks. Channel is primarily clear with some scattered vegetation.

100-YEAR N-VALUE CALCULATIONS

Portion of Cross Section	Components	"n" Total
Left and Right Overbanks	$n_b = 0.025$ $n_1 = 0.004$ $n_2 = 0.000$ $n_3 = 0.008$	**n = 0.037**
Channel	$n_b = 0.025$ $n_1 = 0.003$ $n_2 = 0.000$ $n_3 = 0.004$	**n = 0.032**

Cross Section 212.69

REACH 3

100–YEAR "n" VALUES

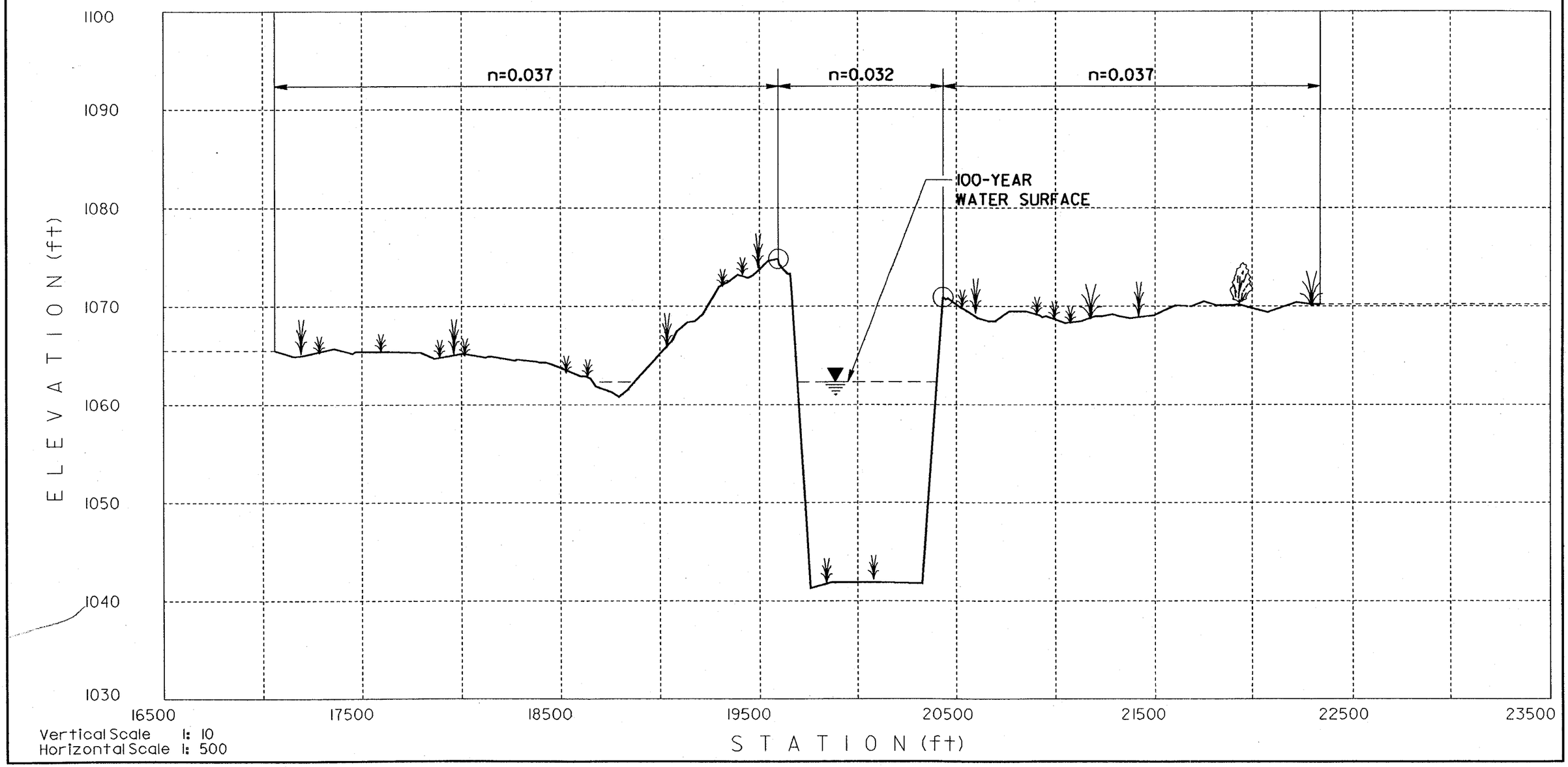


FIGURE 25 – 7th AVENUE BRIDGE

Baker
Michael Baker Jr., Inc.

PHOTO 78 - Section 212.69 - 7th Ave - Looking W. downstream of bridge - View of bank protection on N. bank downstream Q = 3500 - 4000 cfs

PHOTO 79 - Section 212.69 - 7th Ave - Looking N. across river - Bank protection under bridge Q = 3500 - 4000 cfs

PHOTO 80 - Section 212.69 - 7th Ave - Looking E. upstream - Light veg. in channel - Bank protection on S. bank Q = 3500 - 4000 cfs

PHOTO 81 - Section 212.69 - 7th Ave - Looking W. downstream of bridge at gradation of channe Q = 3500 - 4000 cfs

CROSS-SECTION(S) : 213.27 ±

LOCATION : Central Avenue Bridge

CROSS-SECTION DESCRIPTION : Bed material consists of river rock and silt. Channel shape is slightly irregular. Scattered vegetation is within channel. Vegetation in left and right overbanks is light-medium density - grass, scrub.

100-YEAR N-VALUE CALCULATIONS

Portion of Cross Section	Components	"n" Total
Left and Right Overbanks	$n_b = 0.025$ $n_1 = 0.004$ $n_2 = 0.000$ $n_3 = 0.008$	**n = 0.037**
Channel	$n_b = 0.025$ $n_1 = 0.003$ $n_2 = 0.000$ $n_3 = 0.004$	**n = 0.032**

Cross Section 213.27

REACH 3

100–YEAR "n" VALUES

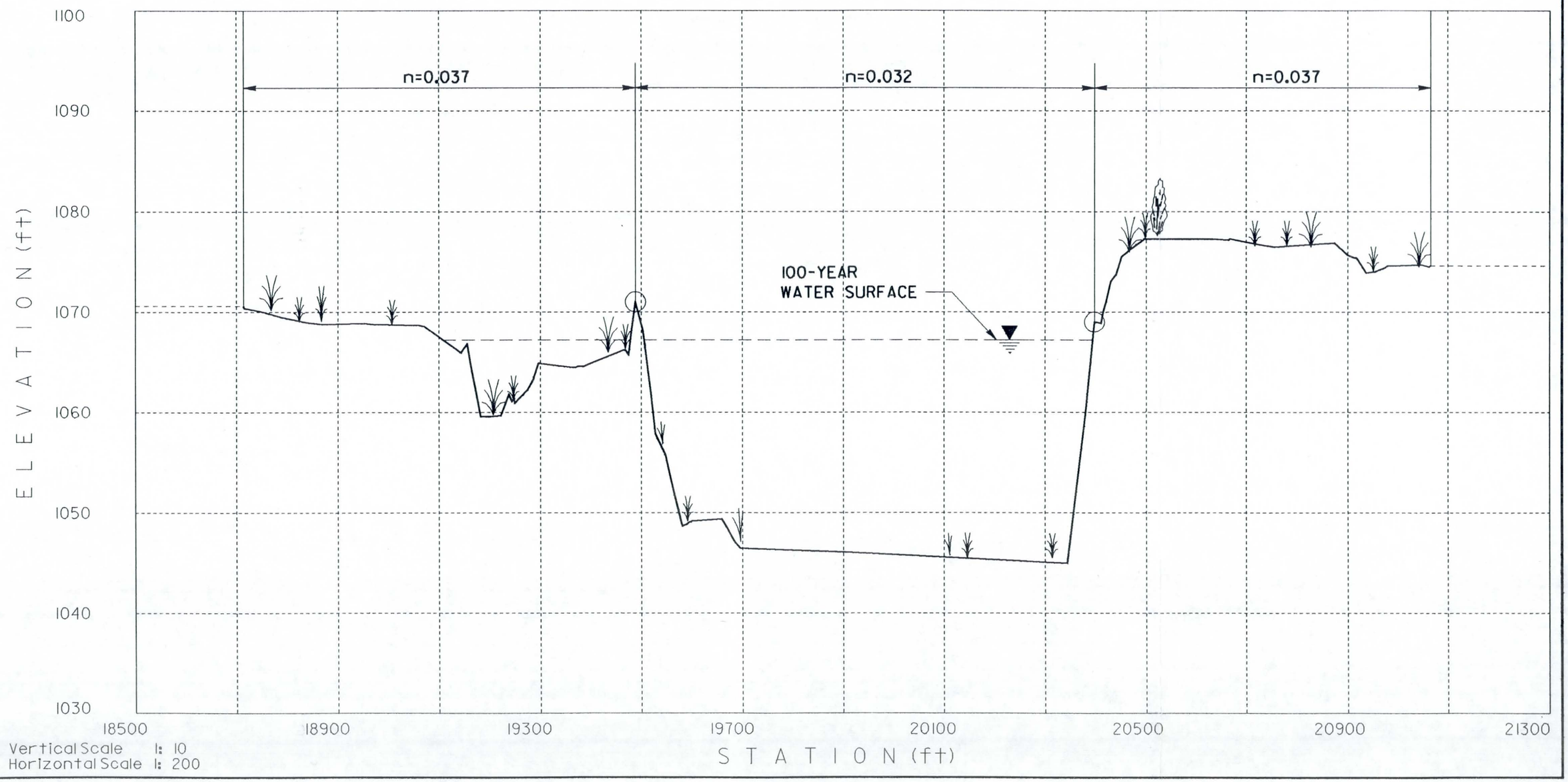


FIGURE 26 – CENTRAL AVENUE BRIDGE

Baker
Michael Baker Jr., Inc.

PHOTO 82 - Section 213.27 - Central Ave Bridge - Looking N.W. at bridge downstream towards bridge Q = 3500 - 4000 cfs

PHOTO 83 - Section 213.27 - Central Ave - Looking N. across river, E. of bridge Q = 3500 - 4000 cfs

PHOTO 84 - Section 213.27 - Central Ave - Looking E. upstream towards 7th St Bridge - Debris along S. bank Q = 3500 - 4000 cfs

PHOTO 82 - Section 213.27 - Central Ave Bridge - Looking N.W. at bridge downstream towards bridge Q = 3500 - 4000 cfs

PHOTO 83 - Section 213.27 - Central Ave - Looking N. across river, E. of bridge Q = 3500 - 4000 cfs

PHOTO 84 - Section 213.27 - Central Ave - Looking E. upstream towards 7th St Bridge - Debris along S. bank Q = 3500 - 4000 cfs

CROSS-SECTION(S) : 213.73 ±

LOCATION : 7th Street Bridge

CROSS-SECTION DESCRIPTION : Bed material is silt and river rock. Channel shape is slightly irregular. Clear to light-medium density vegetation in left and right overbanks. Channel is primarily clear with some scattered vegetation.

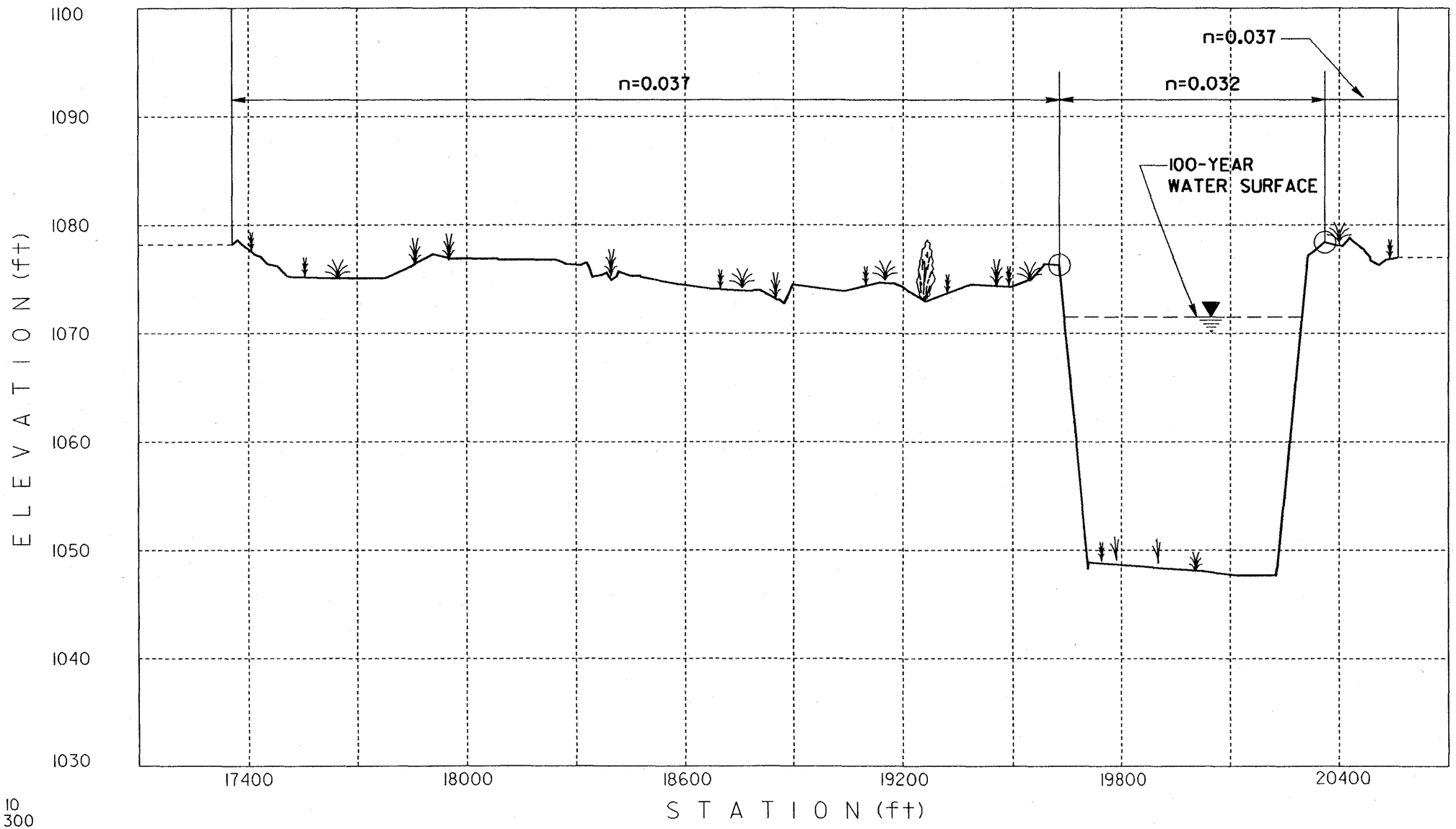
100-YEAR N-VALUE CALCULATIONS

Portion of Cross Section	Components	"n" Total
Left and Right Overbanks	$n_b = 0.025$ $n_1 = 0.004$ $n_2 = 0.000$ $n_3 = 0.008$	**n = 0.037**
Channel	$n_b = 0.025$ $n_1 = 0.003$ $n_2 = 0.000$ $n_3 = 0.004$	**n = 0.032**

Cross Section 213.73

REACH 3

100–YEAR "n" VALUES



Vertical Scale 1: 10
Horizontal Scale 1: 300

FIGURE 27 – 7th STREET BRIDGE

Baker
Michael Baker Jr., Inc.

PHOTO 85 - Section 213.73 - 7th St - Looking W. downstream towards Central Ave Q = 3500 - 4000 cfs

PHOTO 86 - Section 213.73 - 7th St - Looking S. from bridge across river - Light veg. or bare in left overbank Q = 3500 - 4000 cfs

PHOTO 87 - Section 213.73 - 7th St - Looking E. upstream - Bank protection along N. and S. banks Q = 3500 - 4000 cfs

PHOTO 88 - Section 213.73 - 7th St - Looking S. from bridge across river - Light veg. in overbank Q = 3500 - 4000 cfs

CROSS-SECTION(S) : 214.71 ±

LOCATION : 16th Street Bridge

CROSS-SECTION DESCRIPTION : Bed material consists of silt and river rock. Channel shape is slightly irregular. Channel banks are gabion - lined. Light-medium vegetation exists in left and right overbanks. Channel is generally clear.

100-YEAR N-VALUE CALCULATIONS

Portion of Cross Section	Components	"n" Total
Left and Right Overbanks	$n_b = 0.025$ $n_1 = 0.006$ $n_2 = 0.000$ $n_3 = 0.009$	**n = 0.040**
Channel	$n_b = 0.025$ $n_1 = 0.006$ $n_2 = 0.000$ $n_3 = 0.004$	**n = 0.035**

Salt–Gila FIS

Cross Section 214.71

REACH 4

100–YEAR "n" VALUES

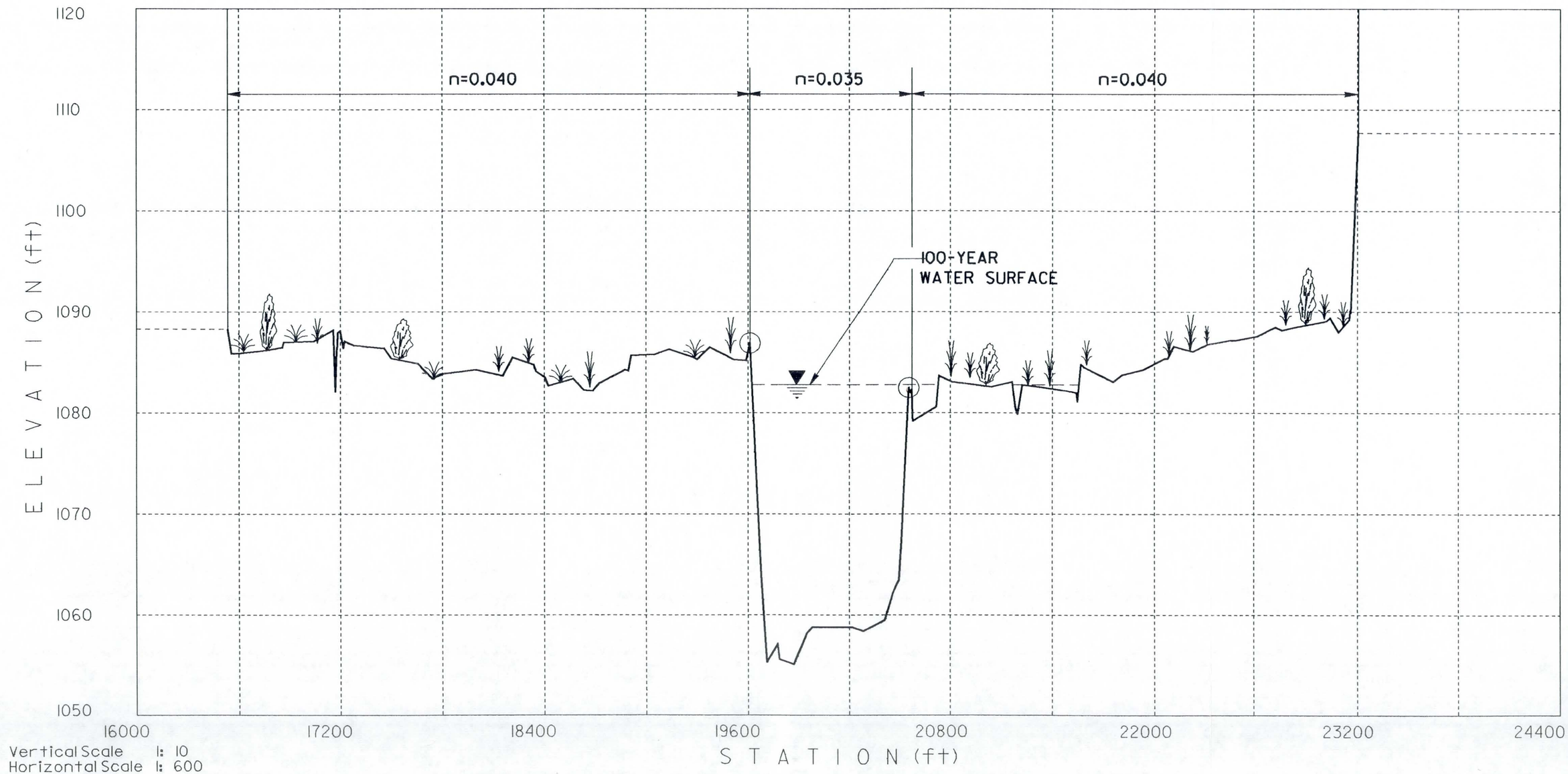


FIGURE 28 – 16th STREET BRIDGE

Baker
Michael Baker Jr., Inc.

PHOTO 89 - Section 214.71 - 16th St - Looking W. downstream from bridge - Bank protection along N. bank Q = 3500 - 4000 cfs

PHOTO 90 - Section 214.71 - 16th St - Looking S. across river, W. of bridge - Culvert opening in bank Q = 3500 - 4000 cfs

PHOTO 91 - Section 214.71 - 16th St Bridge - Looking E. upstream at bridge - Channel along S. bank Q = 3500 - 4000 cfs

PHOTO 92 - Section 214.71 - 16th St - View of gabion bank protection along N. bank

CROSS-SECTION(S) : 215.82 ±

LOCATION : 24th Street Bridge

CROSS-SECTION DESCRIPTION : Bed material consists of silt and river rock. Channel shape is slightly irregular. Channel is primarily clear of vegetation. Light-medium density vegetation in left and right overbanks - generally grass.

100-YEAR N-VALUE CALCULATIONS

Portion of Cross Section	**Components**	**"n" Total**
Left and Right Overbanks	$n_b = 0.025$ $n_1 = 0.006$ $n_2 = 0.000$ $n_3 = 0.009$	**n = 0.040**
Channel	$n_b = 0.025$ $n_1 = 0.006$ $n_2 = 0.000$ $n_3 = 0.004$	**n = 0.035**

Cross Section 215.80

REACH 4

100–YEAR "n" VALUES

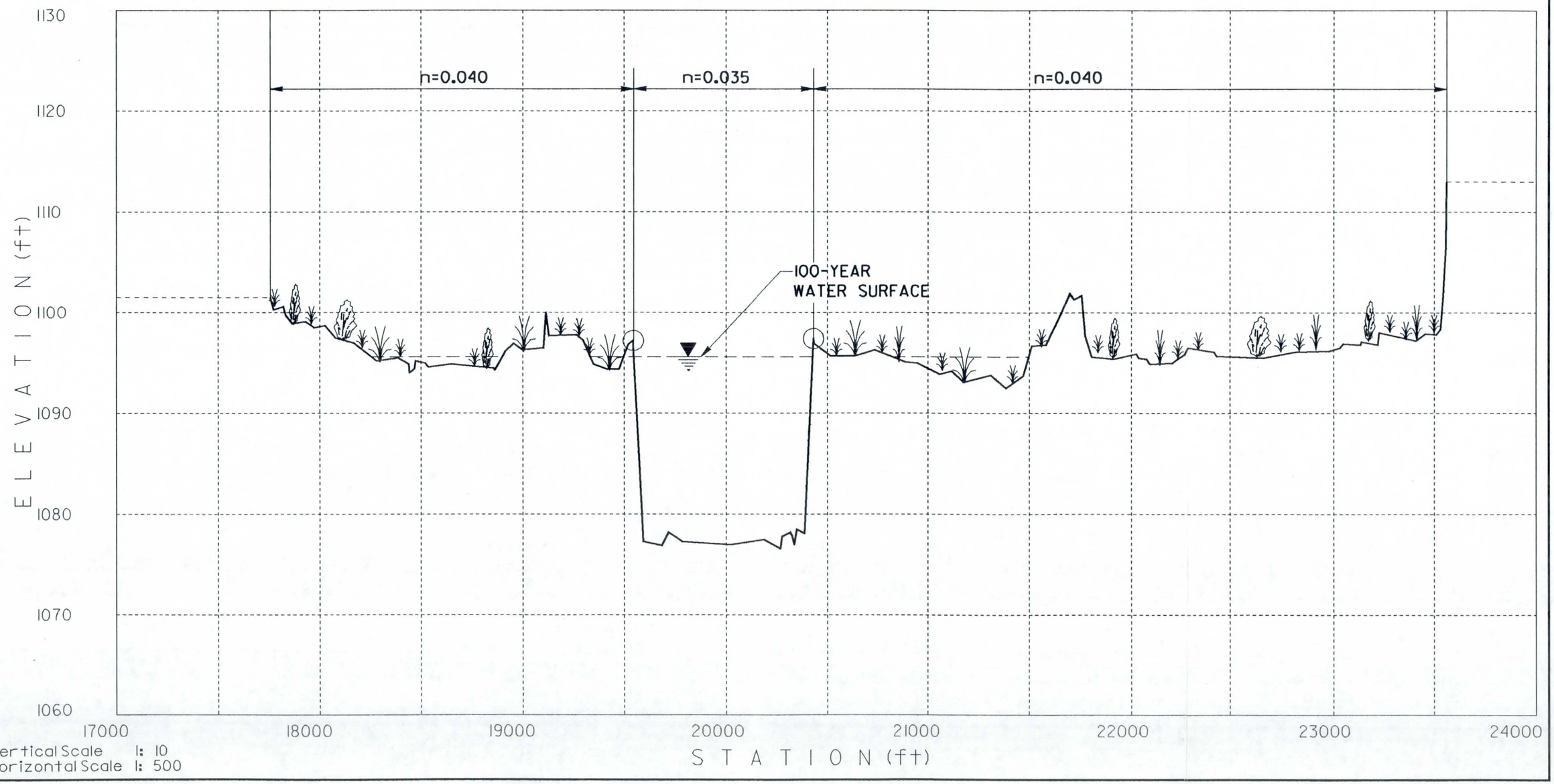


FIGURE 29 – 24th STREET BRIDGE

Baker
Michael Baker Jr., Inc.

PHOTO 93 - Section 215.82 - 24th St - Looking W. downstream from bridge - River rock in channel Q = 3500 - 4000 cfs

PHOTO 94 - Section 215.82 - 24th St Bridge - Looking N. at bridge Q = 3500 - 4000 cfs

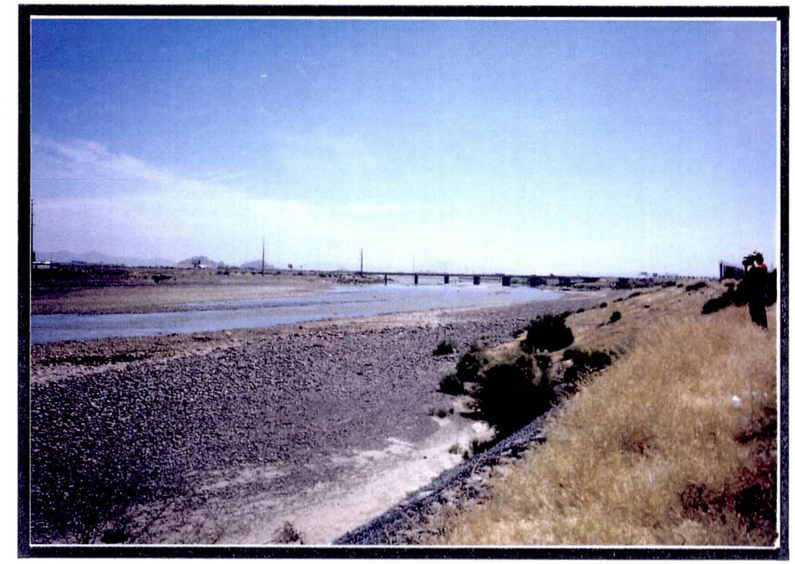


PHOTO 95 - Section 215.82 - 24th St - Looking E. upstream of 24th St Q = 3500 - 4000 cfs

PHOTO 96 - Section 215.82 - 24th St - Bank protection along S.

CROSS-SECTION(S) : 217.17 ±

LOCATION : East of I-10 Bridge

CROSS-SECTION DESCRIPTION : Bed material consists of silt and river rock. Channel shape is slightly irregular. Channel is primarily clear. Channel banks are gabion - lined. Overbanks are light-medium density vegetation.

100-YEAR N-VALUE CALCULATIONS

Portion of Cross Section	Components	"n" Total
Left and Right Overbanks	$n_b = 0.025$ $n_1 = 0.006$ $n_2 = 0.000$ $n_3 = 0.009$	**n = 0.040**
Channel	$n_b = 0.025$ $n_1 = 0.006$ $n_2 = 0.000$ $n_3 = 0.004$	**n = 0.035**

Cross Section 216.53

REACH 4

100–YEAR "n" VALUES

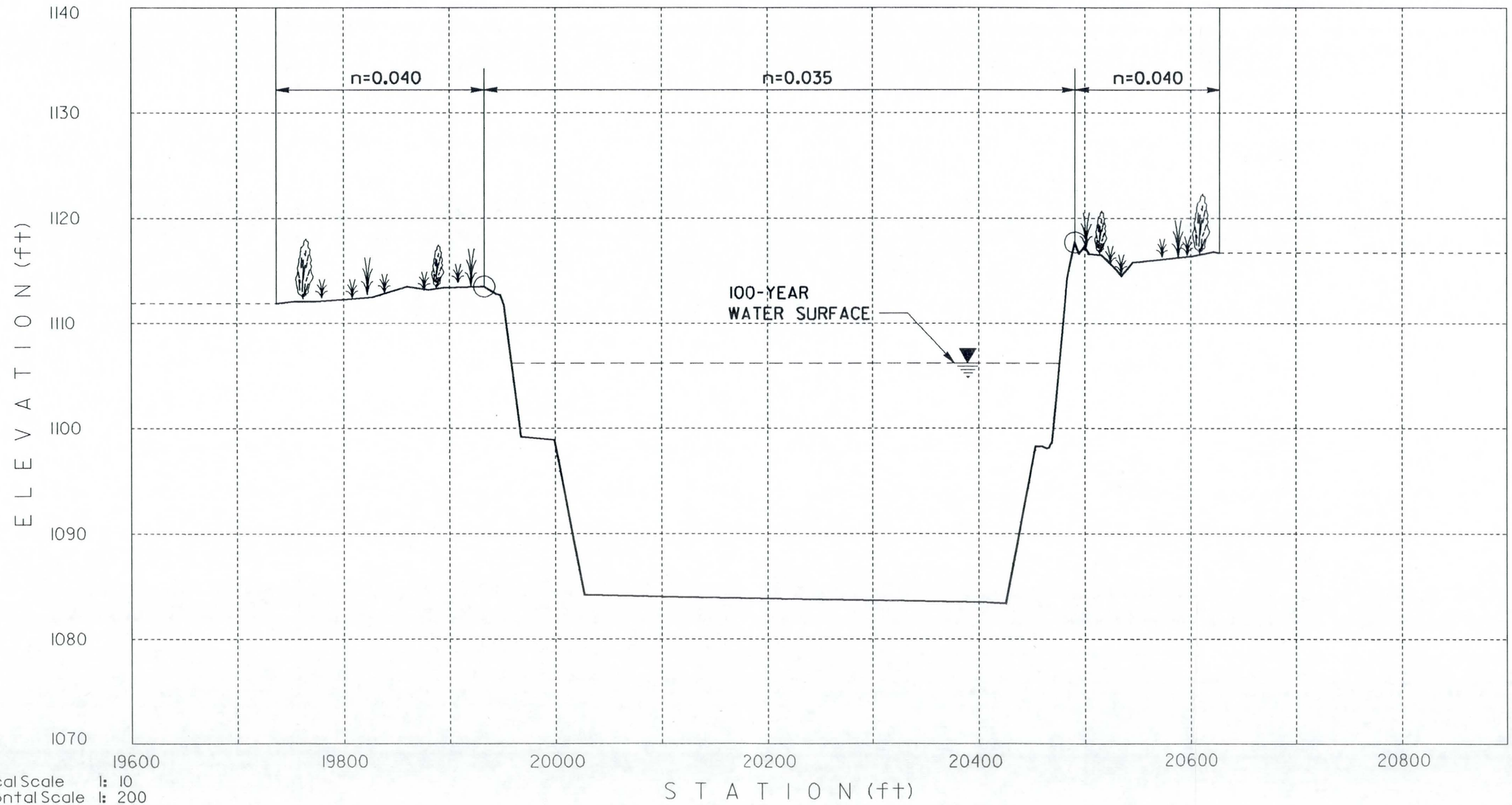


FIGURE 30 – I–10 BRIDGE

Baker
Michael Baker Jr., Inc.

PHOTO 97 - Section 216.53 - I-10 Bridge - Looking W. at bridge - Veg. in channel Q = 3500 - 4000 cfs

PHOTO 98 - Section 216.53 - I-10 Bridge - Looking N. at right bank across river - Airport in background - Bank protection along N. bank Q = 3500 - 4000 cfs

PHOTO 99 - Section 216.53 - I-10 Bridge - Looking E. upstream from bridge - Airport on N. bank Q = 3500 - 4000 cfs

CROSS-SECTION(S) : 217.57 ±

LOCATION : 32nd Street alignment

CROSS-SECTION DESCRIPTION : Bed material is silt/sand and river rock. Channel shape is slightly irregular. Channel is primarily clear with some scattered vegetation. Left and right overbanks contains light-medium density vegetation.

100-YEAR N-VALUE CALCULATIONS

Portion of Cross Section	Components	"n" Total
Left and Right Overbanks	$n_b = 0.025$ $n_1 = 0.006$ $n_2 = 0.000$ $n_3 = 0.004$	**n = 0.035**
Channel	$n_b = 0.025$ $n_1 = 0.006$ $n_2 = 0.000$ $n_3 = 0.004$	**n = 0.035**

Salt–Gila FIS

Cross Section 217.57

REACH 4

100–YEAR "n" VALUES

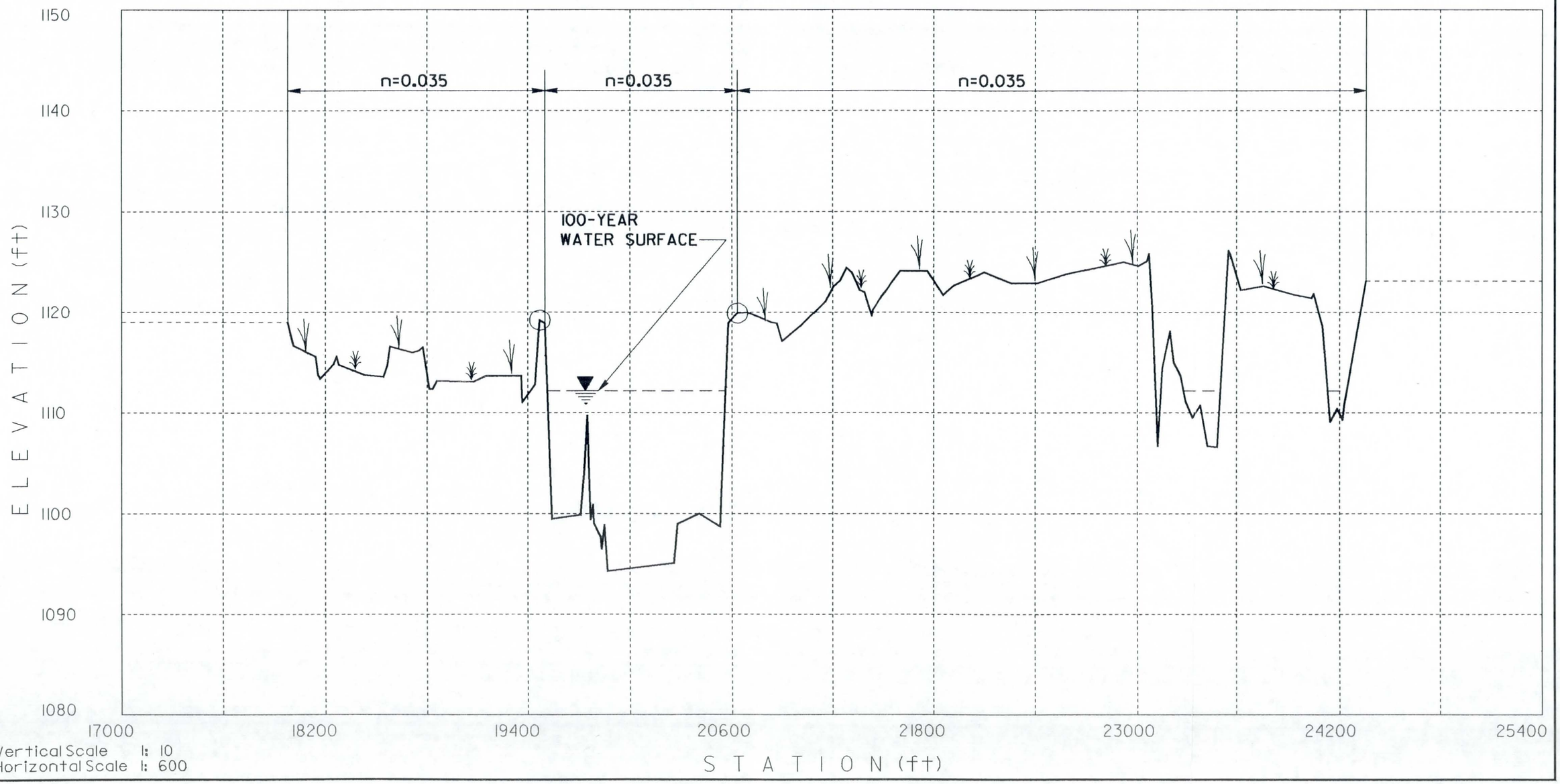


FIGURE 31 – 32nd STREET ALIGNMENT

Baker
Michael Baker Jr., Inc.

PHOTO 100 - Section 217.57 - Approx. 32nd St Alignment - Looking W. downstream Q = 3500 - 4000 cfs

PHOTO 101 - Section 217.57 - Approx. 32nd St Alignment - Looking N., flood control structure across river - Airport on N. bank Q = 3500 - 4000 cfs

PHOTO 102 - Section 217.57 - Approx. 32nd St Alignment - Looking E. upstream towards Hohokam Bridge - Light veg. in channelQ = 3500 - 4000 cfs

CROSS-SECTION(S) : 219.04 ±

LOCATION : Hohokam Expressway Bridge

CROSS-SECTION DESCRIPTION : Bed material is silt and river rock. Channel shape is slightly irregular. Channel is primarily clear with scattered vegetation. Left and right overbanks contain medium vegetation.

100-YEAR N-VALUE CALCULATIONS

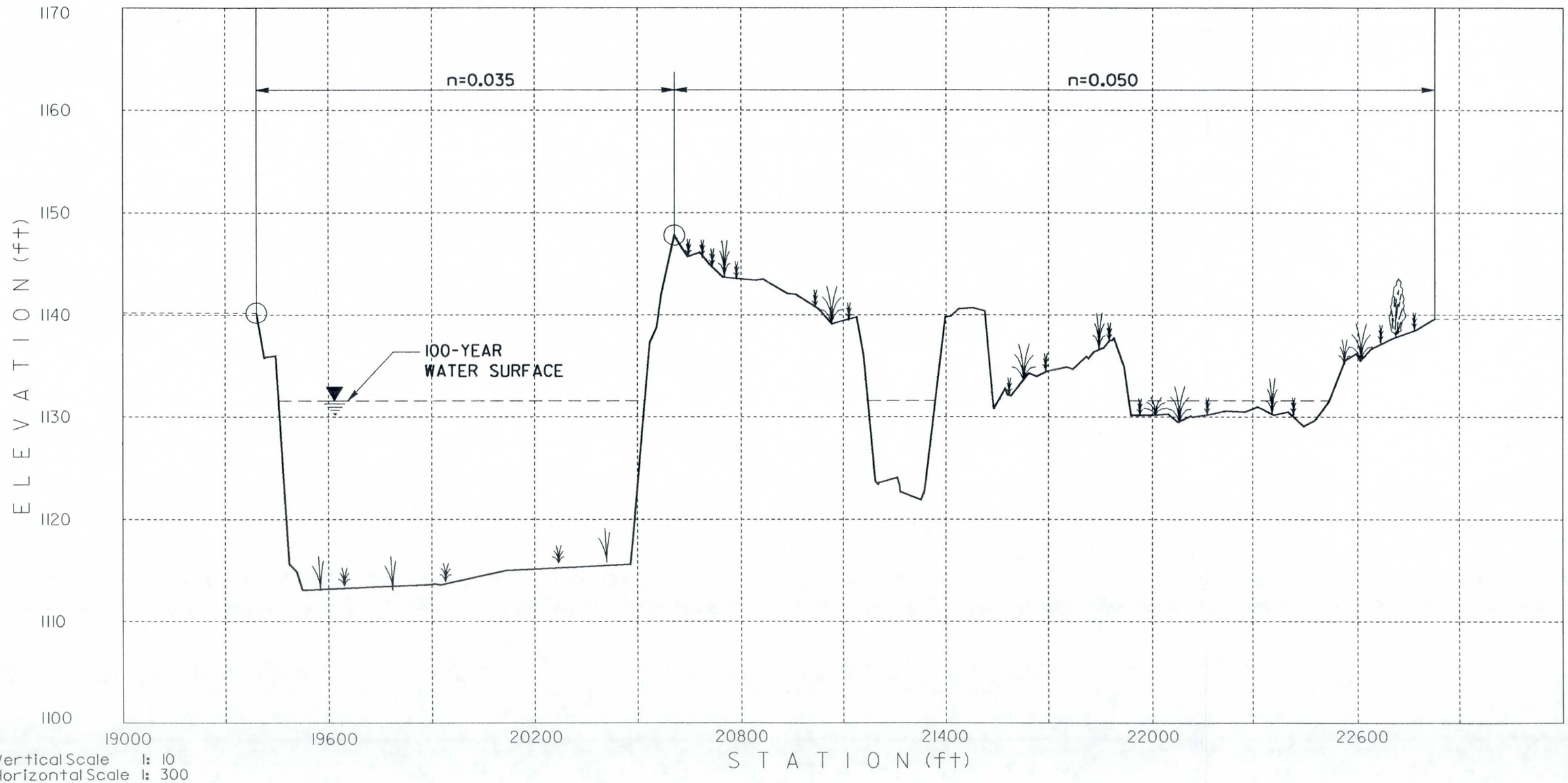
Portion of Cross Section	Components	"n" Total
Left and Right Overbanks	$n_b = 0.025$ $n_1 = 0.015$ $n_2 = 0.000$ $n_3 = 0.010$	**n = 0.050**
Channel	$n_b = 0.025$ $n_1 = 0.006$ $n_2 = 0.000$ $n_3 = 0.004$	**n = 0.035**

Salt–Gila FIS

Cross Section 219.04

REACH 4

100–YEAR "n" VALUES



Vertical Scale 1: 10
Horizontal Scale 1: 300

FIGURE 32 – HOHOKAM EXPRESSWAY BRIDGE

Baker
Michael Baker Jr., Inc.

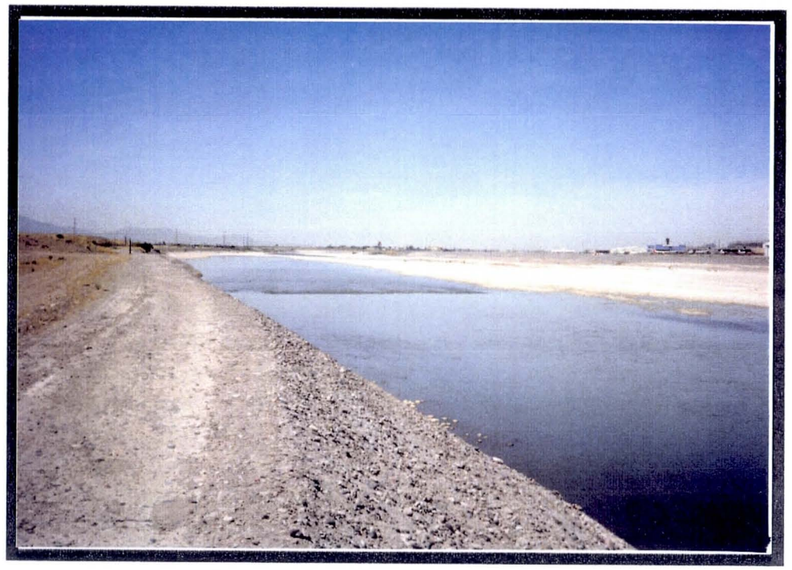


PHOTO 103 - Section 219.04 - Hohokam Bridge - Looking W. downstream from bridge, upstream of drop structure
Q = 3500 - 4000 cfs

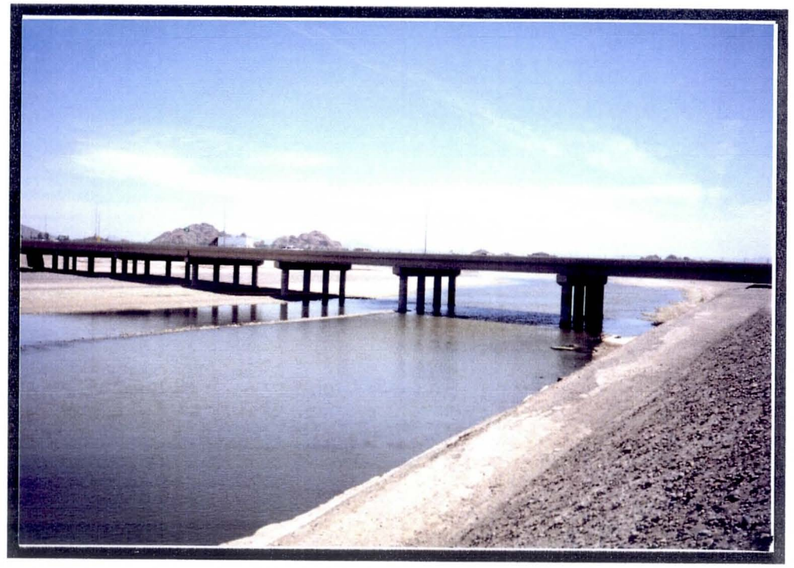


PHOTO 104 - Section 219.04 - Hohokam Bridge - Looking E. at bridge
Q = 3500 - 4000 cfs

PHOTO 105 - Section 219.04 - Hohokam Bridge - Looking W. at bridge from N. bank - Bank protection along N. bank
Q = 3500 - 4000 cfs

CROSS-SECTION(S) : 219.24 - 219.51

LOCATION : East of Hohokam Expressway Bridge; approx. alignment of Priest Drive

CROSS-SECTION DESCRIPTION : Bed material is silt and river rock. Channel shape is slightly irregular. The channel banks are tiered. The upper tier is gabion - lined. Left and right overbanks contain light vegetation.

100-YEAR N-VALUE CALCULATIONS

Portion of Cross Section	Components	"n" Total
Left and Right Overbanks	$n_b = 0.025$ $n_1 = 0.006$ $n_2 = 0.000$ $n_3 = 0.004$	**n = 0.035**
Channel	$n_b = 0.025$ $n_1 = 0.006$ $n_2 = 0.000$ $n_3 = 0.004$	**n = 0.035**

Salt–Gila FIS

Cross Section 219.51

REACH 4

100–YEAR "n" VALUES

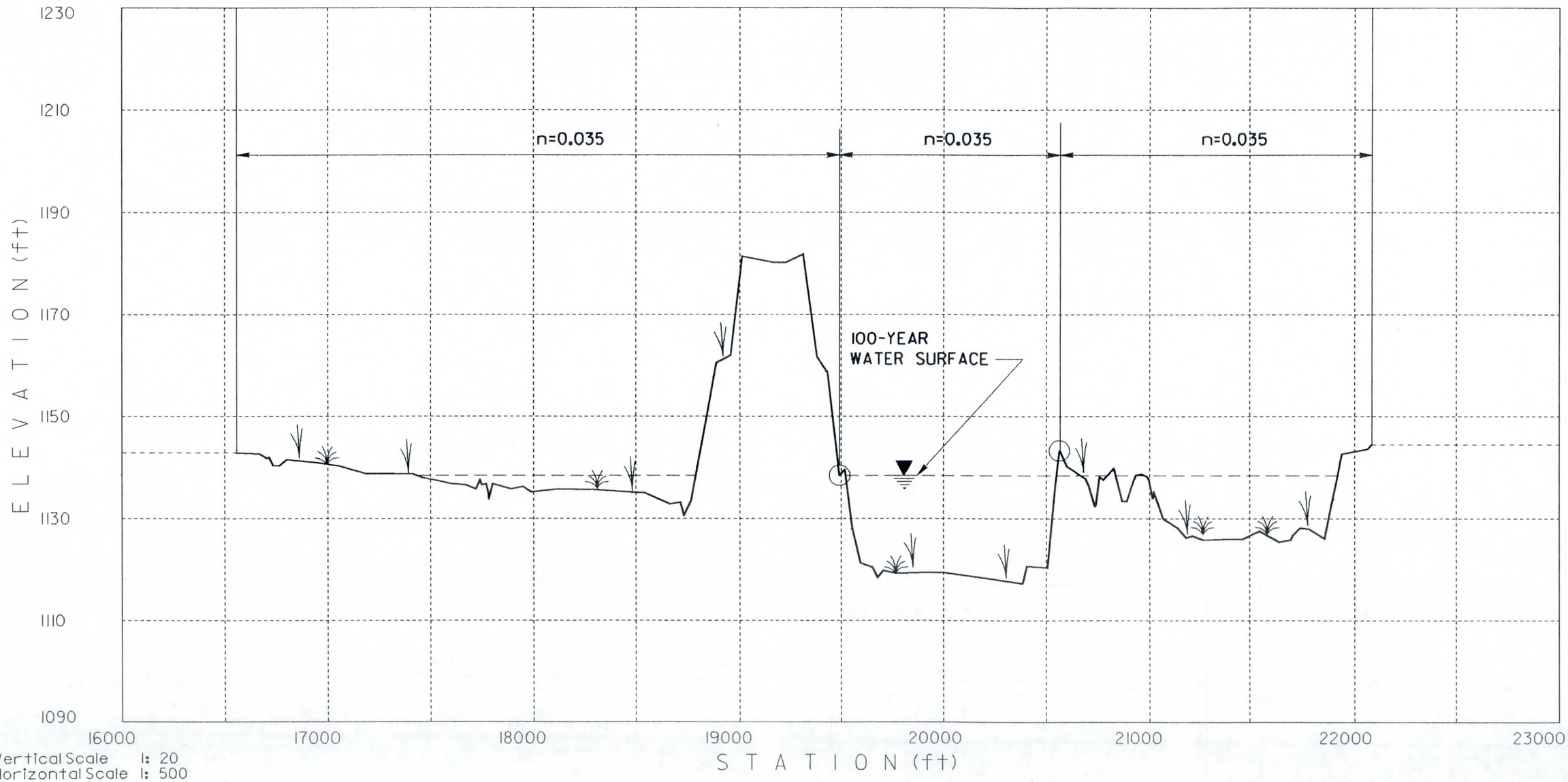


FIGURE 33 – EAST OF HOHOKAM EXPRESSWAY BRIDGE

Baker
Michael Baker Jr., Inc.

PHOTO 106 - Section 219.24 - Hohokam Bridge - Looking E. upstream from N. bank towards R.R. bridge in Tempe - Bank protection Q = 3500 - 4000 cfs

PHOTO 107 - Section 219.24 - Hohokam Bridge - Tiered bank protection along N. bank - Looking E. towards Tempe upstream Q = 3500 - 4000 cfs

PHOTO 108 - Section 219.24 - Hohokam Bridge - Looking S. across river, upstream (E.) of bridge Q = 3500 - 4000 cfs

PHOTO 109 - Section 219.51 - Between Tempe R.R. bridge and Hohokam Bridge - Looking S. across river at drop structure Q = 3500 - 4000 cfs

CROSS-SECTION(S) : 222.10 - 222.74

LOCATION : East of Rural Road Bridge

CROSS-SECTION DESCRIPTION : Bed material is silt and river rock. Channel shape is slightly irregular. Channel is primarily clear and channel banks are lightly vegetated. Left and right overbanks contain light-medium vegetation.

100-YEAR N-VALUE CALCULATIONS

Portion of Cross Section	Components	"n" Total
Left and Right Overbanks	$n_b = 0.025$	
	$n_1 = 0.007$	
	$n_2 = 0.000$	
	$n_3 = 0.008$	**n = 0.040**
Channel	$n_b = 0.028$	
	$n_1 = 0.002$	
	$n_2 = 0.000$	
	$n_3 = 0.000$	**n = 0.030**

Cross Section 222.10

REACH 4

100–YEAR "n" VALUES

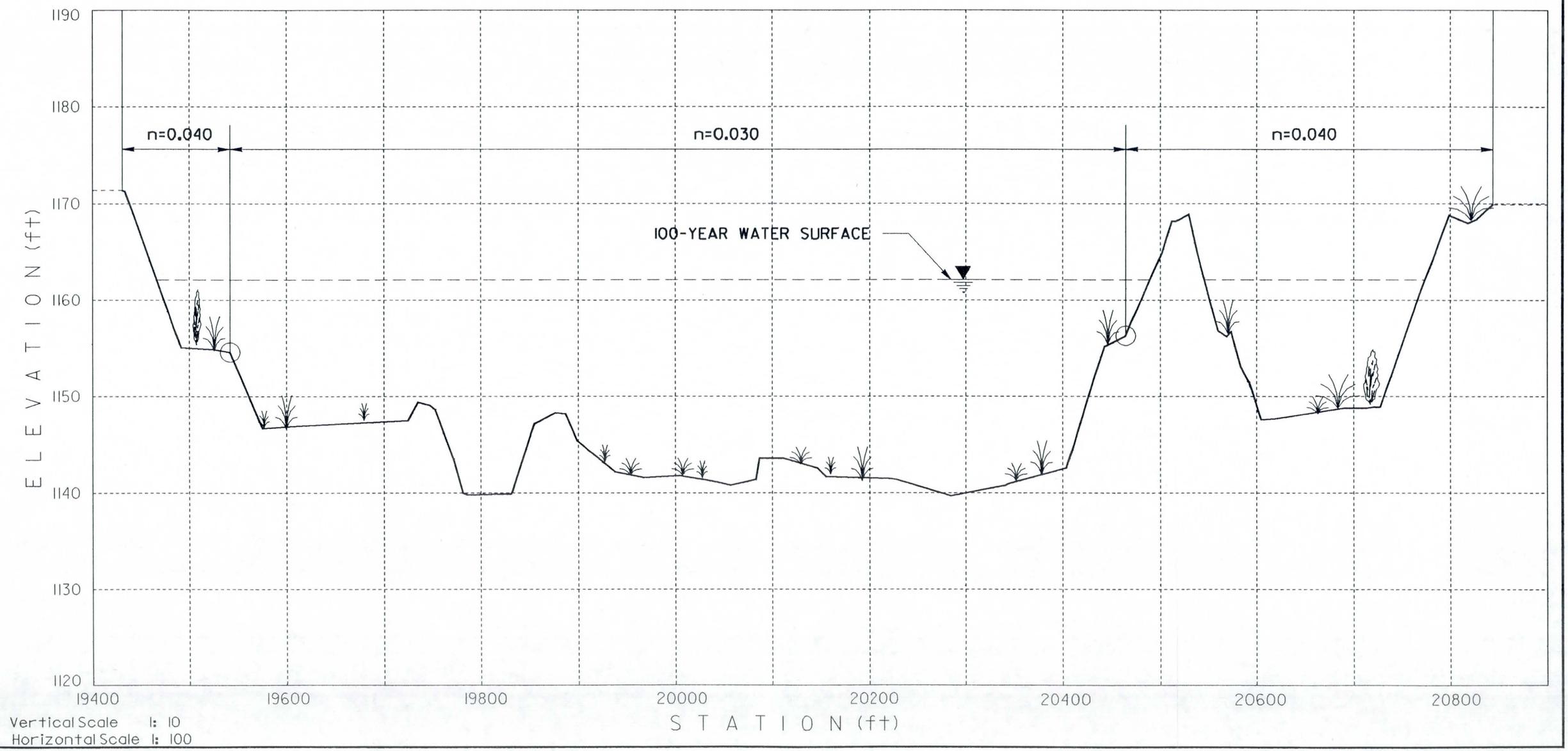


FIGURE 34 – RURAL ROAD BRIDGE

Baker
Michael Baker Jr., Inc.

PHOTO 110 - Section 222.10 - Rural Rd Bridge - Looking W. downstream towards bridge Q = 3500 - 4000 cfs

PHOTO 111 - Section 222.10 - Rural Rd - Looking N. across river, upstream from bridge Q = 3500 - 4000 cfs

PHOTO 112 - Section 222.10 - Rural Rd - Looking N.E. across river at new Indian Bend Wash Bridge Q = 3500 - 4000 cfs

PHOTO 113 - Section 222.10 - Rural Rd - Looking E., upstream towards McClintock Rd Bridge Q = 3500 - 4000 cfs

CROSS-SECTION(S) : 224.90 ±

LOCATION : Approx. Dobson Road alignment

CROSS-SECTION DESCRIPTION : Bed material primarily consists of river rock. Channel shape is irregular. Left and right overbanks are lightly vegetated. The channel is braided within this reach. Channel is primarily clear.

100-YEAR N-VALUE CALCULATIONS

Portion of Cross Section	**Components**	**"n" Total**
Left Overbank - Agricultural		**n = 0.025**
Channel	$n_b = 0.028$ $n_1 = 0.002$ $n_2 = 0.000$ $n_3 = 0.000$	**n = 0.030**
Right Overbank	$n_b = 0.025$ $n_1 = 0.003$ $n_2 = 0.000$ $n_3 = 0.003$	**n = 0.031**

Salt-Gila FIS

Cross Section 224.90

REACH 4

100-YEAR "n" VALUES

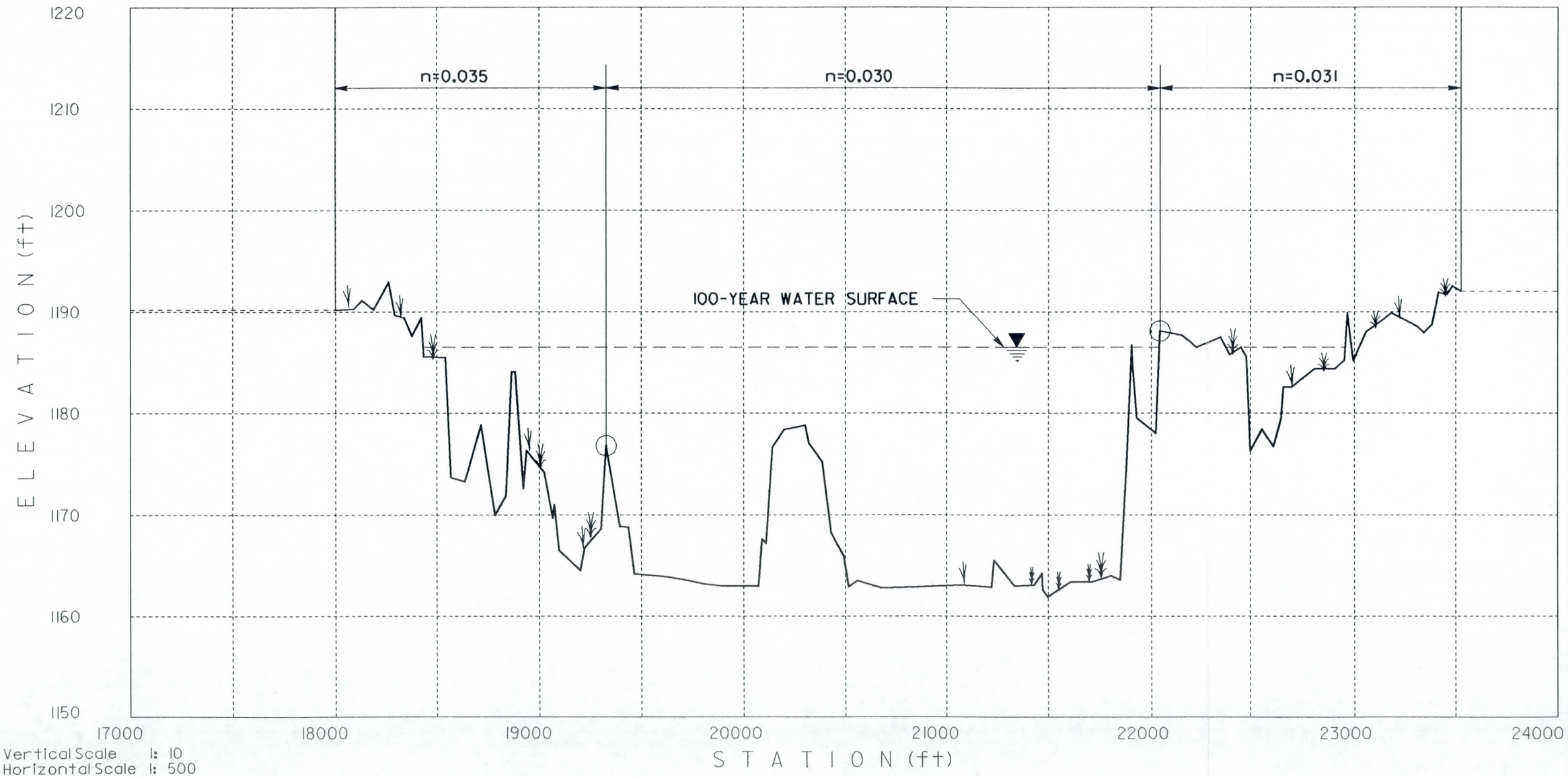


FIGURE 35 – DOBSON ROAD ALIGNMENT

Baker
Michael Baker Jr., Inc.

PHOTO 114 - Section 224.90 - Dobson Rd Alignment - Looking W.
downstream Q = 3500 - 4000 cfs

PHOTO 115 - Section 224.90 - Dobson Rd Alignment - Looking N.
across river Q = 3500 - 4000 cfs

PHOTO 116 - Section 224.90 - Dobson Rd Alignment - Looking E.
upstream towards Alma School Rd Bridge
Q = 3500 - 4000 cfs

CROSS-SECTION(S) : 226.52 ±

LOCATION : Alma School Road Bridge

CROSS-SECTION DESCRIPTION : Bed material consists primarily of river rock. Channel shape is slightly irregular. There is little or no vegetation within channel. Left and right overbanks contain light density vegetation - grass and shrubs.

100-YEAR N-VALUE CALCULATIONS

Portion of Cross Section	Components	"n" Total
Clear w/ irreg. - Little to no vegetation w/ inc. irregularity	$n_b = 0.025$ $n_1 = 0.003$ $n_2 = 0.000$ $n_3 = 0.001$	**n = 0.029**
Clear - Varies with adjustment factors for irregularity and vegetation (See Appendices B & C for Reach 5)	$n_b = 0.028$ $n_1 = 0.000$ $n_2 = 0.000$ $n_3 = 0.000$	**n = 0.028**
Light - Sparse and/or small vegetation	$n_b = 0.025$ $n_1 = 0.003$ $n_2 = 0.000$ $n_3 = 0.004$	**n = 0.032**

Salt–Gila FIS

Cross Section 226.52

REACH 5

100–YEAR "n" VALUES

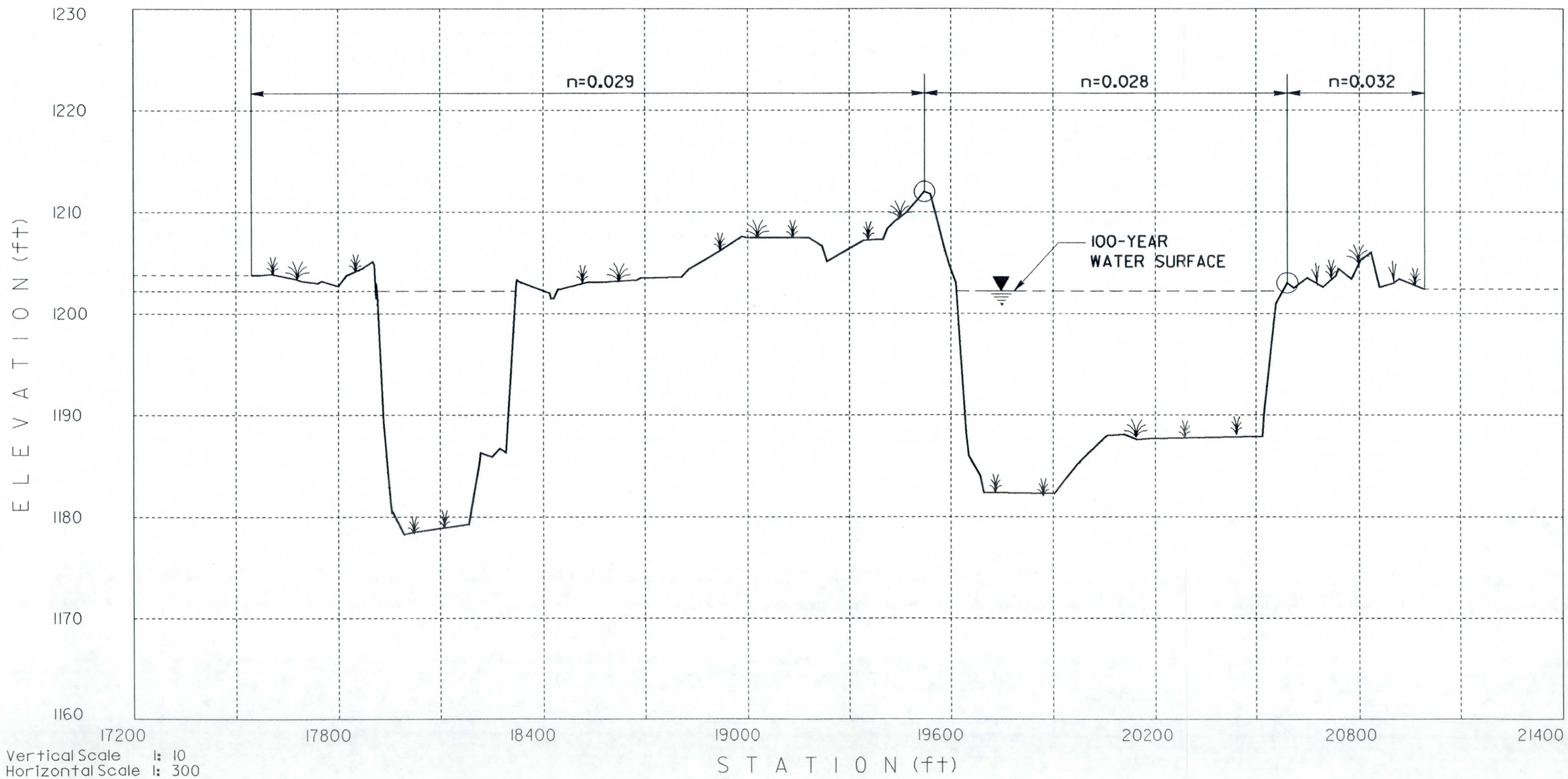


FIGURE 36 – ALMA SCHOOL ROAD BRIDGE

Baker
Michael Baker Jr., Inc.

PHOTO 117 - Section 226.52 - Alma School Rd - Looking W., downstream - Eroded S. bank Q = 3500 - 4000 cfs

PHOTO 118 - Section 226.52 - Alma School Rd - Looking N.E. upstream at right overbank Q = 3500 - 4000 cfs

PHOTO 119 - Section 226.52 - Alma School Rd - Looking E. upstream along channel Q = 3500 - 4000 cfs

CROSS-SECTION(S) : 227.56 - 227.79

LOCATION : Country Club Road Bridge

CROSS-SECTION DESCRIPTION : Bed material consists primarily of river rock. Channel shape is irregular. There is little or no vegetation within channel. Left and right overbanks contain light vegetation. Channel is braided east of Country Club Bridge.

100-YEAR N-VALUE CALCULATIONS

Portion of Cross Section	**Components**	**"n" Total**
Left and Right Overbanks	$n_b = 0.025$ $n_1 = 0.003$ $n_2 = 0.000$ $n_3 = 0.004$	**n = 0.032**
Channel	$n_b = 0.028$ $n_1 = 0.000$ $n_2 = 0.000$ $n_3 = 0.000$	**n = 0.028**

Cross Section 227.79

REACH 5

100–YEAR "n" VALUES

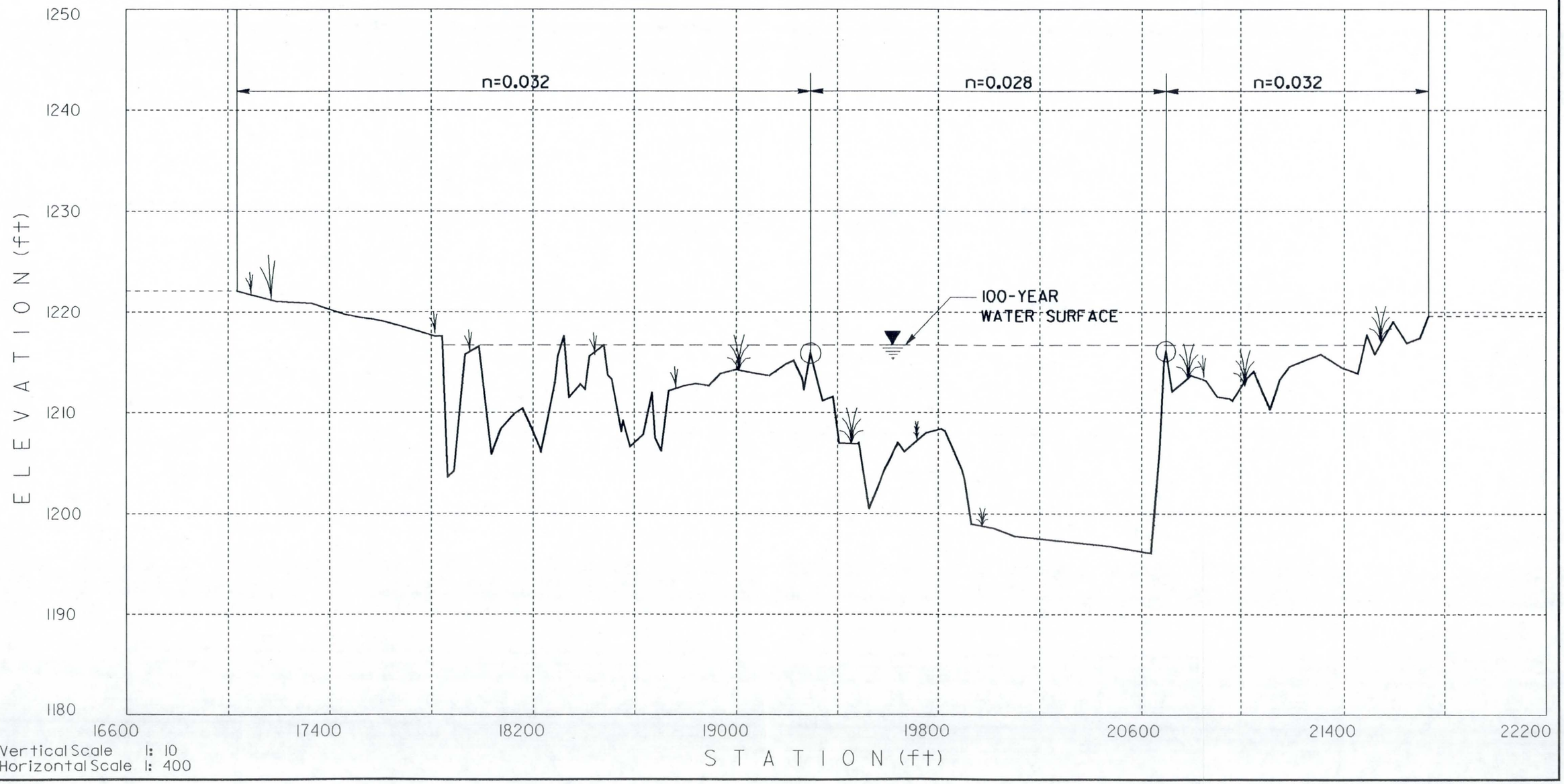


FIGURE 37 – COUNTRY CLUB ROAD BRIDGE

Baker
Michael Baker Jr., Inc.

PHOTO 120 - Section 227.79 - Country Club Rd - Looking W. downstream of bridge Q = 3500 - 4000 cfs

PHOTO 121 - Section 227.79 - Country Club Rd - Looking E. upstream of bridge along channel Q = 3500 - 4000 cfs

PHOTO 122 - Section 227.79 - Country Club Rd - Looking S.E. towards left overbank Q = 3500 - 4000 cfs

CROSS-SECTION(S) : 233.85 ±

LOCATION : Approx. Lehi Road alignment

CROSS-SECTION DESCRIPTION : Bed material primarily consists of river rock. Channel shape is slightly irregular. Vegetation is light-medium in right overbank - grass, shrubs. Left overbank contains medium vegetation - orange groves. Channel is primarily clear of vegetation.

100-YEAR N-VALUE CALCULATIONS

Portion of Cross Section	Components	"n" Total
Channel	$n_b = 0.028$ $n_1 = 0.000$ $n_2 = 0.000$ $n_3 = 0.000$	**n = 0.028**
Right Overbank	$n_b = 0.025$ $n_1 = 0.003$ $n_2 = 0.000$ $n_3 = 0.009$	**n = 0.037**

Salt–Gila FIS

Cross Section 233.85

REACH 5

100–YEAR "n" VALUES

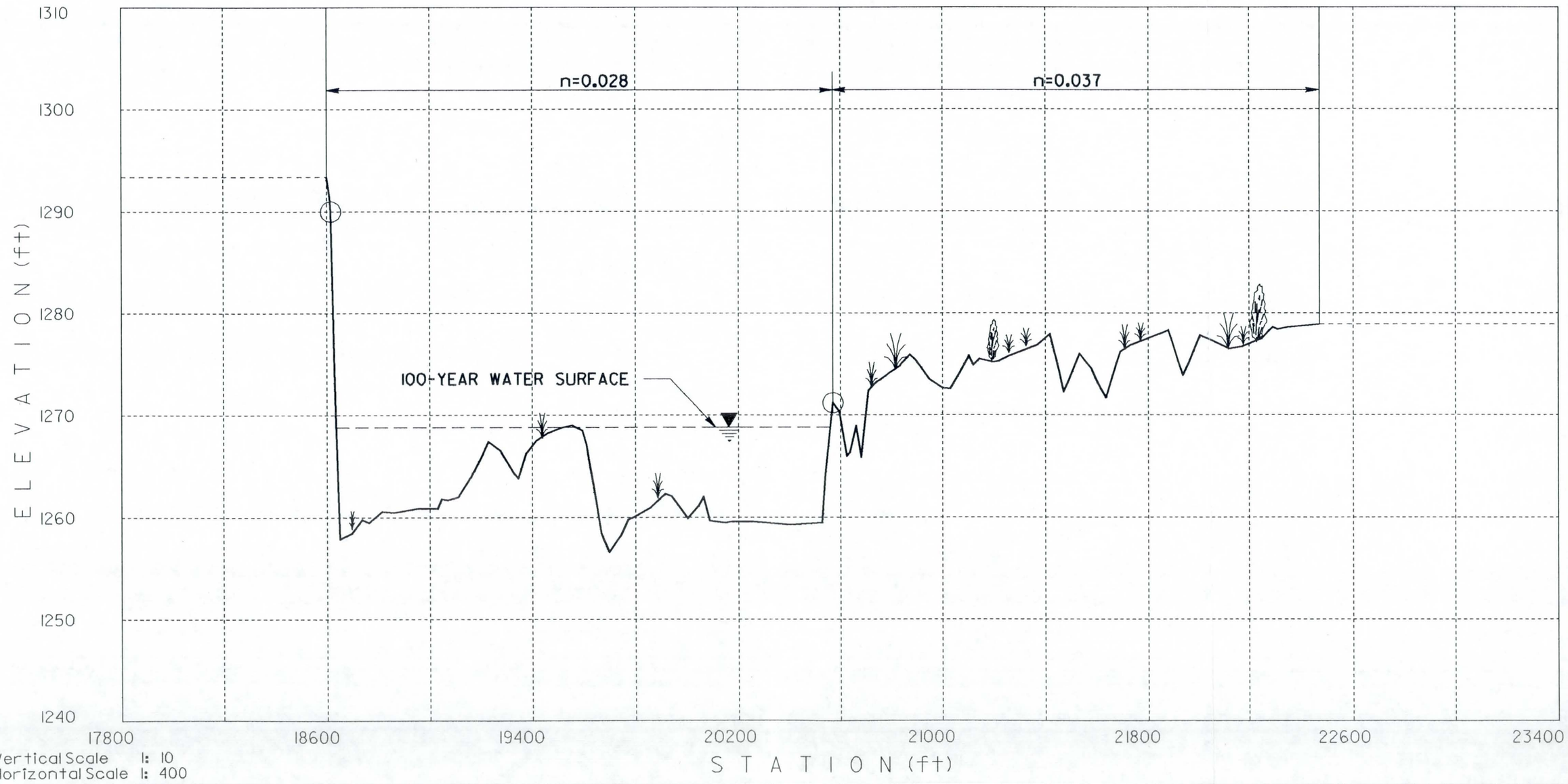


FIGURE 38 – LEHI ROAD ALIGNMENT

Baker
Michael Baker Jr., Inc.

PHOTO 123 - Section 233.85 - Approx. Lehi Rd Alignment - Looking W. downstream along channel Q = 3500 - 4000 cfs

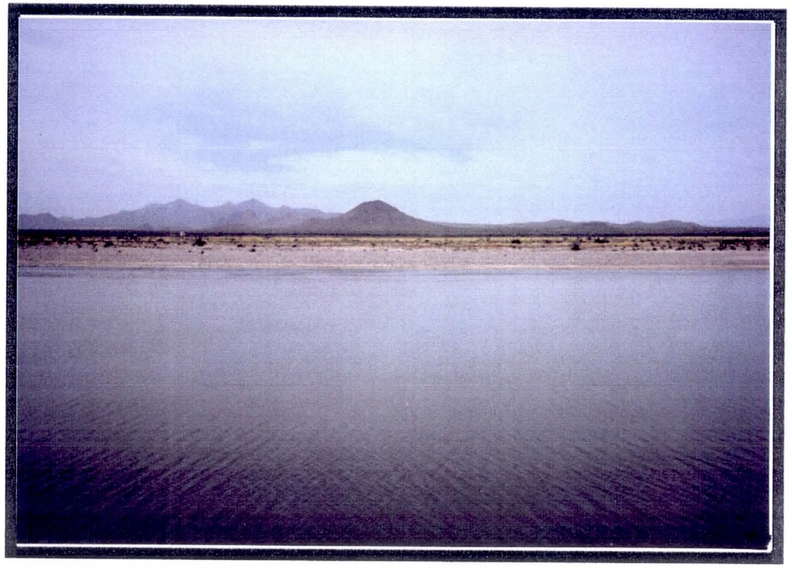


PHOTO 124 - Section 233.85 - Approx. Lehi Rd Alignment - Looking N. across river Q = 3500 - 4000 cfs

PHOTO 125 - Section 233.85 - Approx. Lehi Rd Alignment - Looking E. upstream along channel Q = 3500 - 4000 cfs

VI. SUMMARY

Results from the "n" value analysis were used to define "n" values for the cross sections incorporated in the detailed hydraulic model. The assignment of "n" values for subsections of each individual cross section were accomplished utilizing aerial photographs and the "n" values established in the detailed "n" value analysis. The location of each cross section and the factors that affect the overall "n" value were compared on the aerial photographs with the cross sections developed in the detailed "n" value analyses.

The contraction and expansion coefficients assigned to each cross section were typically 0.1 and 0.3, respectively (2).

The channel reach-lengths were measured along the channel thalweg developed from the digital terrain model. The channel thalweg is defined as the hydraulic baseline for the Salt and Gila River Flood Insurance Study. The overbank reach lengths were measured along the anticipated center of mass path of the overbank flow (2).

VII. REFERENCES

1 U.S. Geological Survey, Water Resources Division, " Estimated Manning's Roughness Coefficients for Stream Channels and Flood Plains in Maricopa County, Arizona," prepared for the Flood Control District of Maricopa County, April 1991.

2 U.S. Army Corps of Engineers, Hydrologic Engineering Center, " HEC-2 Water Surface Profiles User's Manual" September 1990.

3 Aldridge, B.N. and Garrett, J.M., " Roughness Coefficients for Stream Channels in Arizona, "U.S. Geological Survey Open-File Report 78-3, prepared for the Arizona Highway Department, February 1973.

4 Chow, V.T., Open Channel Hydraulics, New York: McGraw-Hill, 1959.

5 Barnes, Harry H., Roughness Characteristics of Natural Channels, U.S. Geological Survey Water-Supply Paper 1849, Washington: U.S. Government Printing Office, 1967.

6 "Hydrologic Design Manual for Maricopa County, Arizona", Flood Control District of Maricopa County, September, 1990.

7 Arcement, George J., Jr. and Schneider, Verne R., Guide for Selecting Manning's Roughness Coefficients for Natural Channels and Flood Plains, U.S. Geological Survey Water-Supply Paper 2339, Washington: U.S. Government Printing Office, 1989.

8 Fasken, Guy B., Guide for Selecting Roughness Coefficient "n" Values for Channels, Soil Conservation Service - U.S.D.A., December, 1963.

9. U.S. Department of the Interior, Journal of Research of the U.S. Geological Survey, A Method For Adjusting Values of Manning's Roughness Coefficient For Flooded Urban Areas, Volume 5, Number 5, September - October 1977.

Calibration Analysis -- Cross-Section Comparison

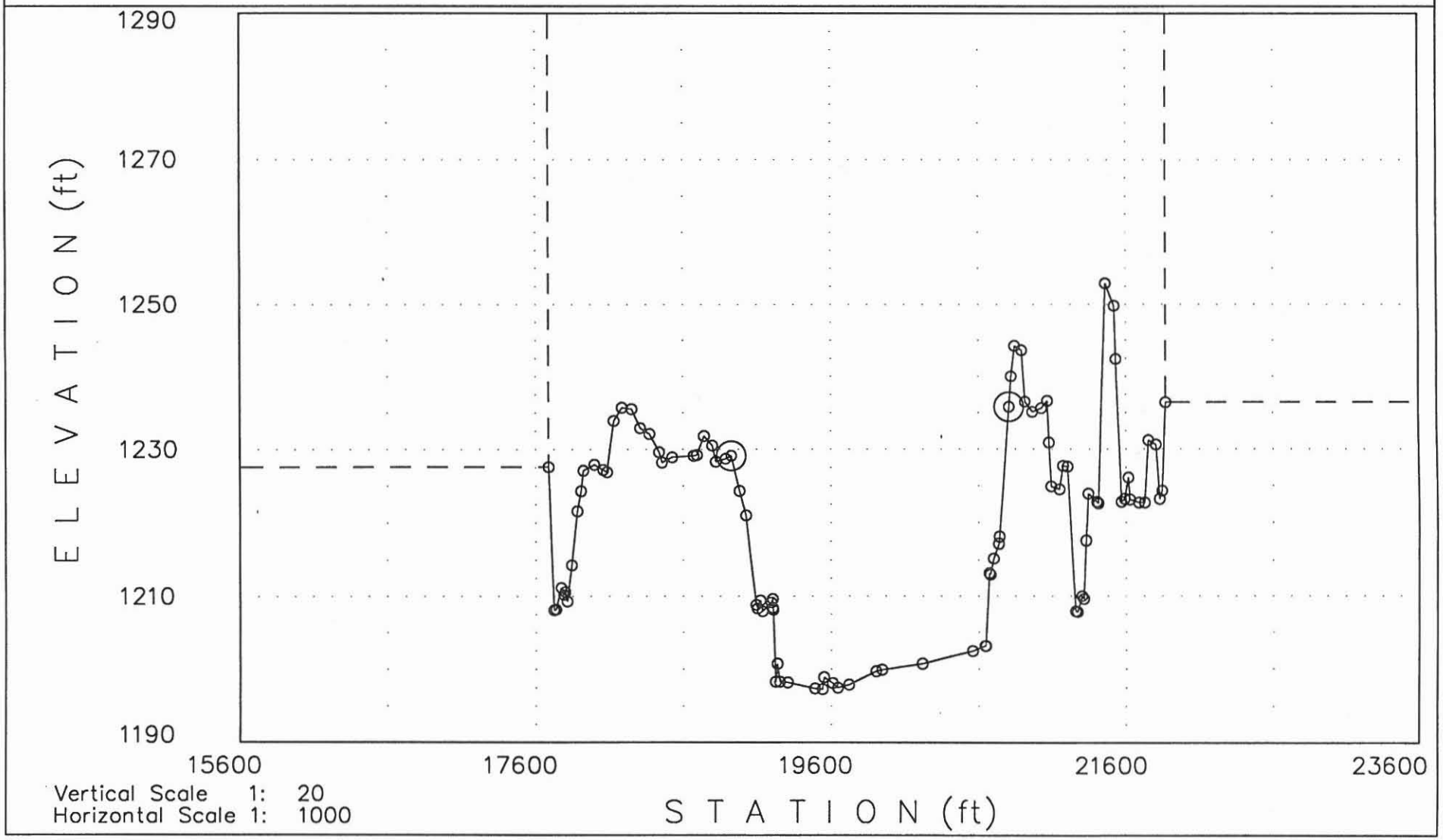
*Note: The first cross-section number listed represents the current river mile stationing. The second cross-section number listed represents the previous FIS stationing.

REACH 5

Cross - Section	Approx. Location	Previous Contractor	Date of Aerial Flight/Map Co.	X-Sect. Comparison
228.36/29.017	E. of Country Club Rd.	Burgess & Niple	1984 Kenney Aerial Mapping	Inc. in irregularity in channel and overbanks
229.87/30.815	Horne Rd.	Burgess & Niple	1984 Kenney Aerial Mapping	Minor changes in geometry of main channel
230.47/31.522	Stapely Dr.	Burgess & Niple	1984 Kenney Aerial Mapping	Very minor changes in channel geometry
231.54/32.655	Gilbert Rd.	Burgess & Niple	1984 Kenney Aerial Mapping	Very minor changes in channel geometry
232.74/33.892	E. Of Lindsay Rd.	Burgess & Niple	1984 Kenney Aerial Mapping	River alignment has shifted; some sedimentation
233.51/34.856	Val Vista Dr.	Burgess & Niple	1984 Kenney Aerial Mapping	Very little change in geometry; some sedimentation
235.48/36.775	Between Val Vista & Granite Reef Dam	Burgess & Niple	1984 Kenney Aerial Mapping	Virtually no change in channel geometry
237.59/39.098	Granite Reef Dam	Burgess & Niple	1984 Kenney Aerial Mapping	Dec. in irregularity; sedimentation in channel

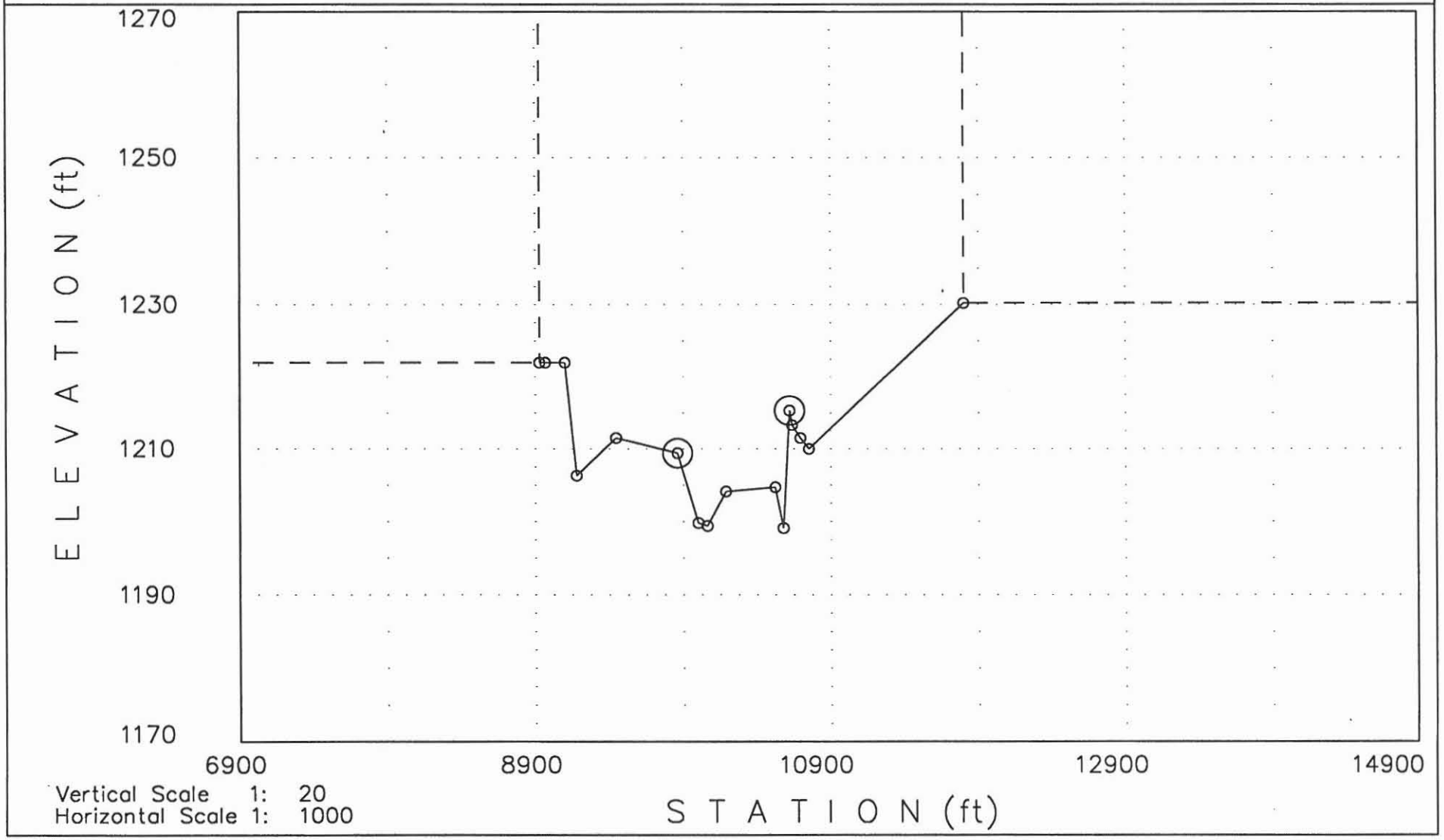
The lower portion of Reach 5 has experienced minor changes in cross-sectional geometry, mostly from increases in irregularity. The remainder of the Reach, from approximately Stapely Drive to Granite Reef Dam, has changed very little over the past 10 years. Small amounts of sedimentation and minor shifts in river alignment exist within this portion of the Reach.

<<<<<< Cross Section: 229.03: (FN = R5PRQ.DAT) >>>>>>



04-12-1994

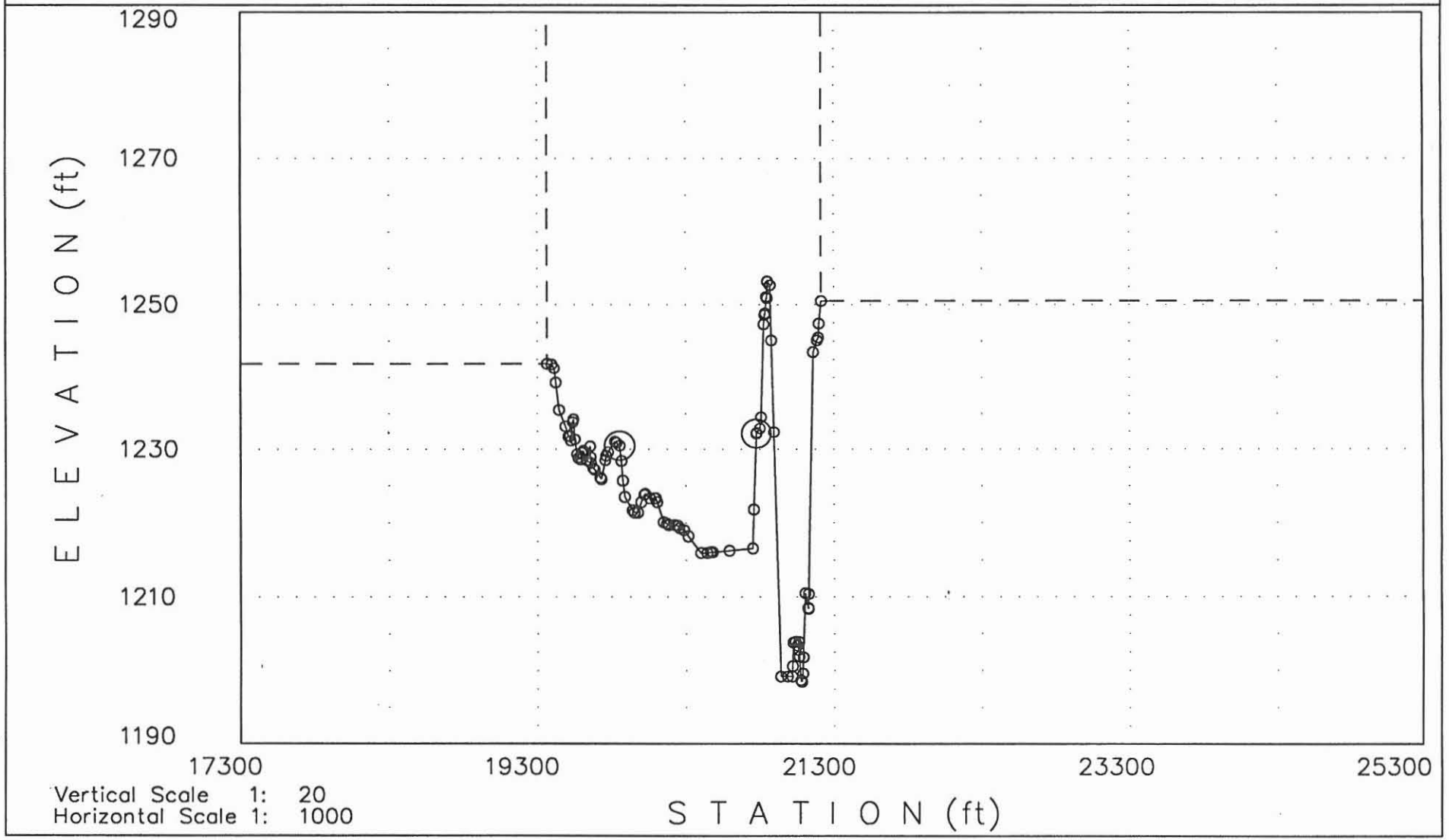
<<<<<< Cross Section: 29.017: (FN = SALT.I) >>>>>>



Vertical Scale 1: 20
Horizontal Scale 1: 1000

04-12-1994

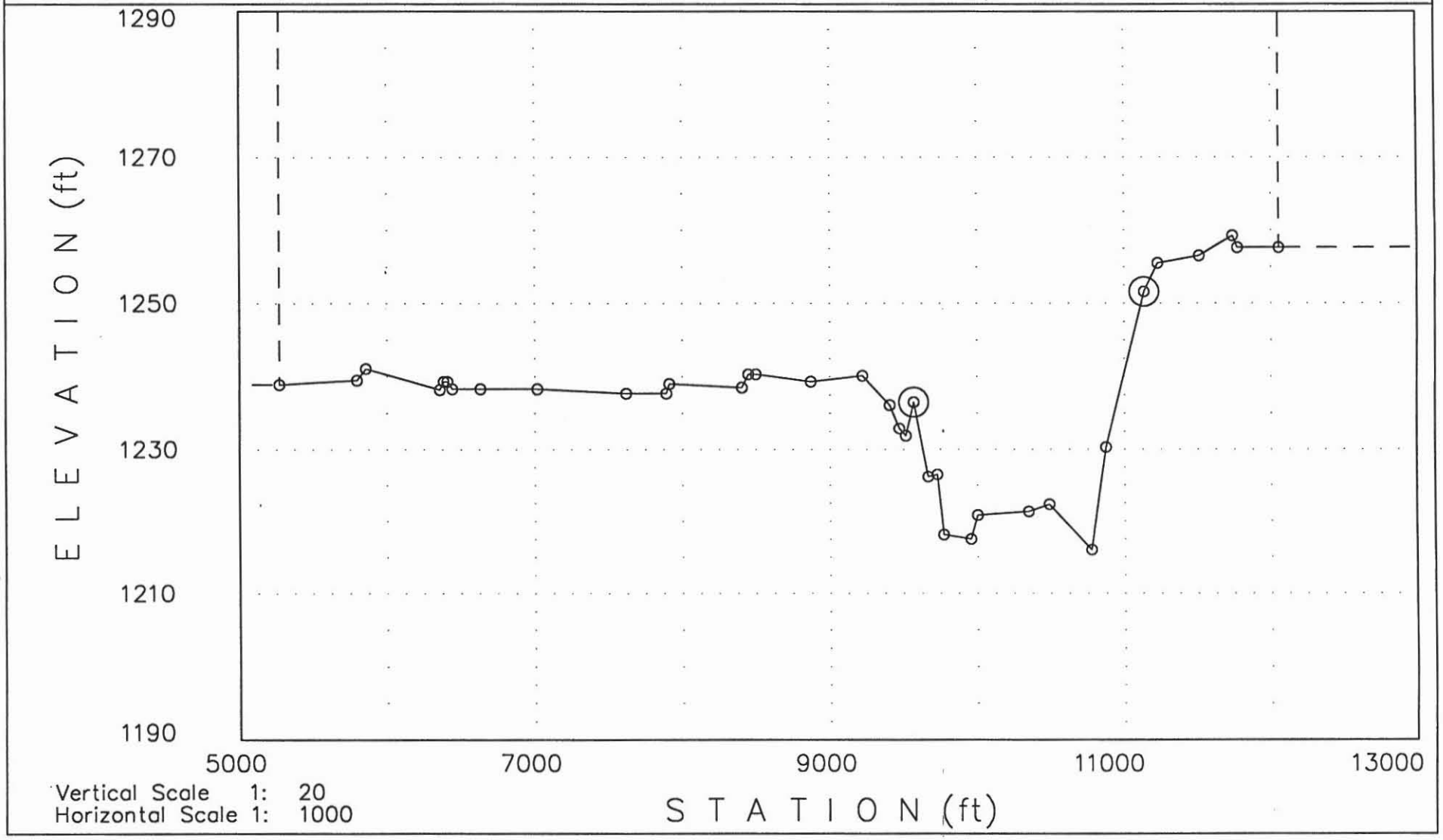
<<<<<< Cross Section: 230.55: (FN = R5PRQ.DAT) >>>>>>



Vertical Scale 1: 20
Horizontal Scale 1: 1000

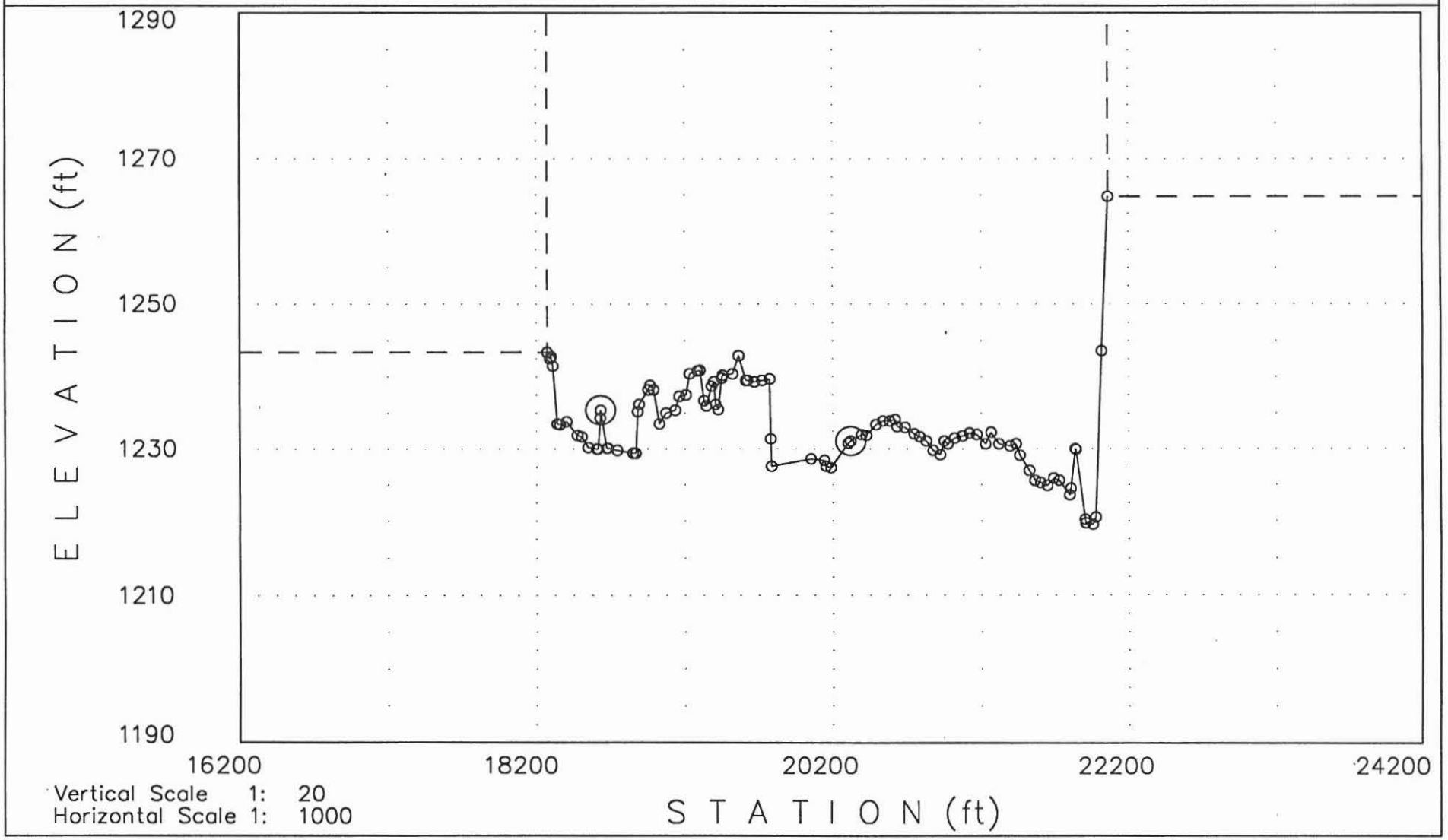
04-20-1994

<<<<<< Cross Section: 30.815: (FN = SALT.I) >>>>>>



04-12-1994

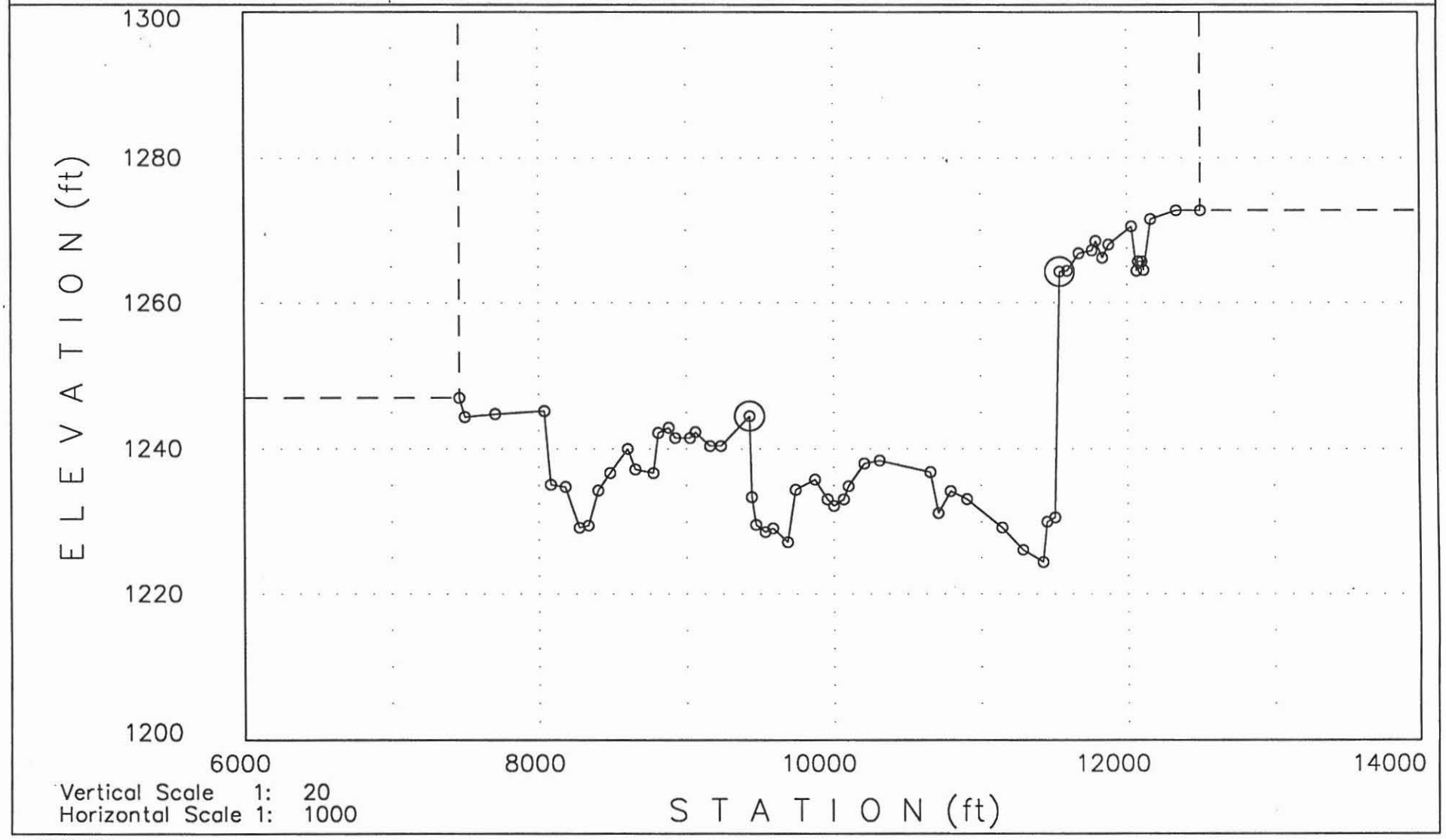
<<<<<< Cross Section: 231.14: (FN = R5PRQ.DAT) >>>>>>



Vertical Scale 1: 20
Horizontal Scale 1: 1000

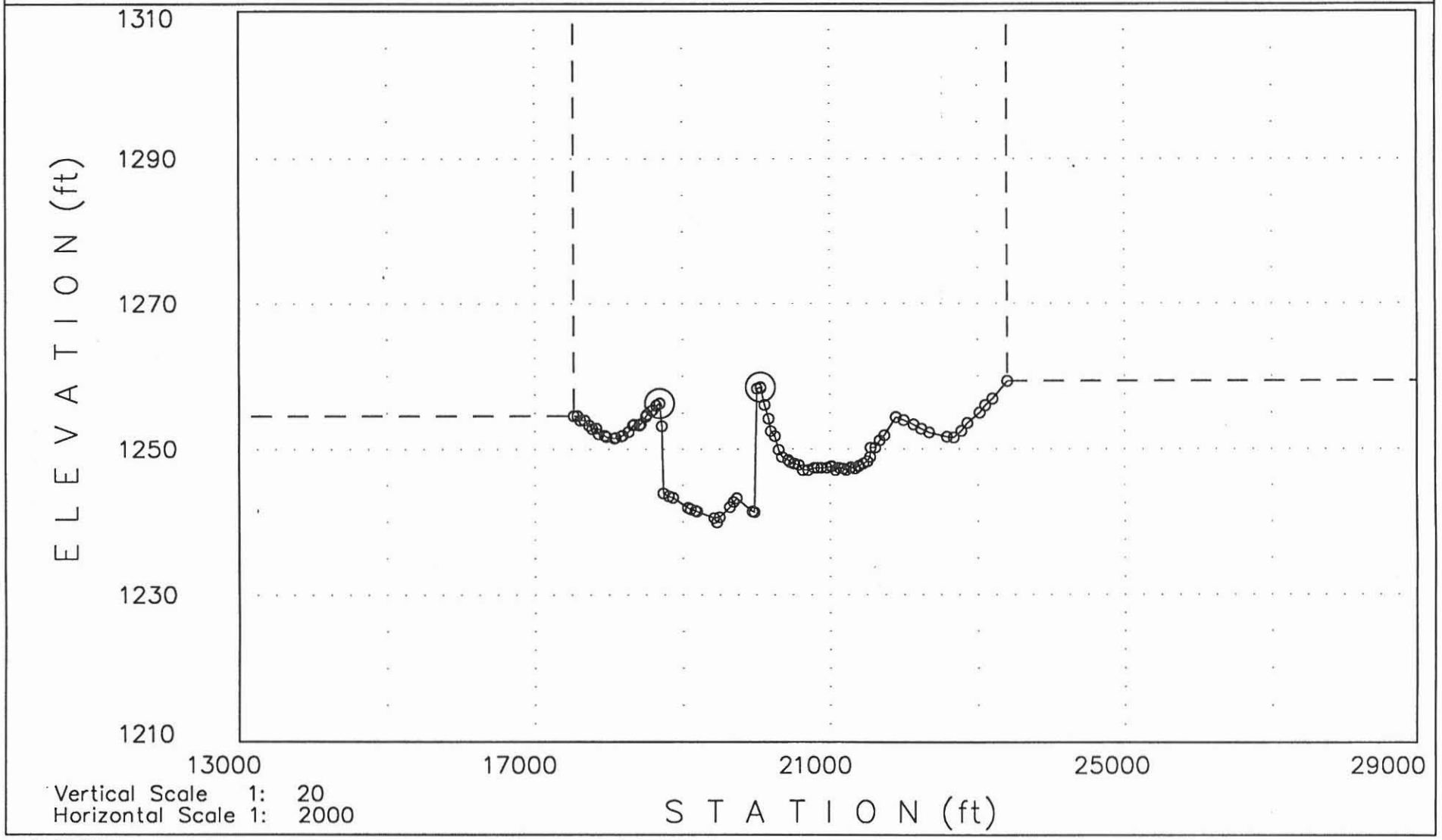
04-20-1994

<<<<<< Cross Section: 31.522: (FN = SALT.I) >>>>>>



04-12-1994

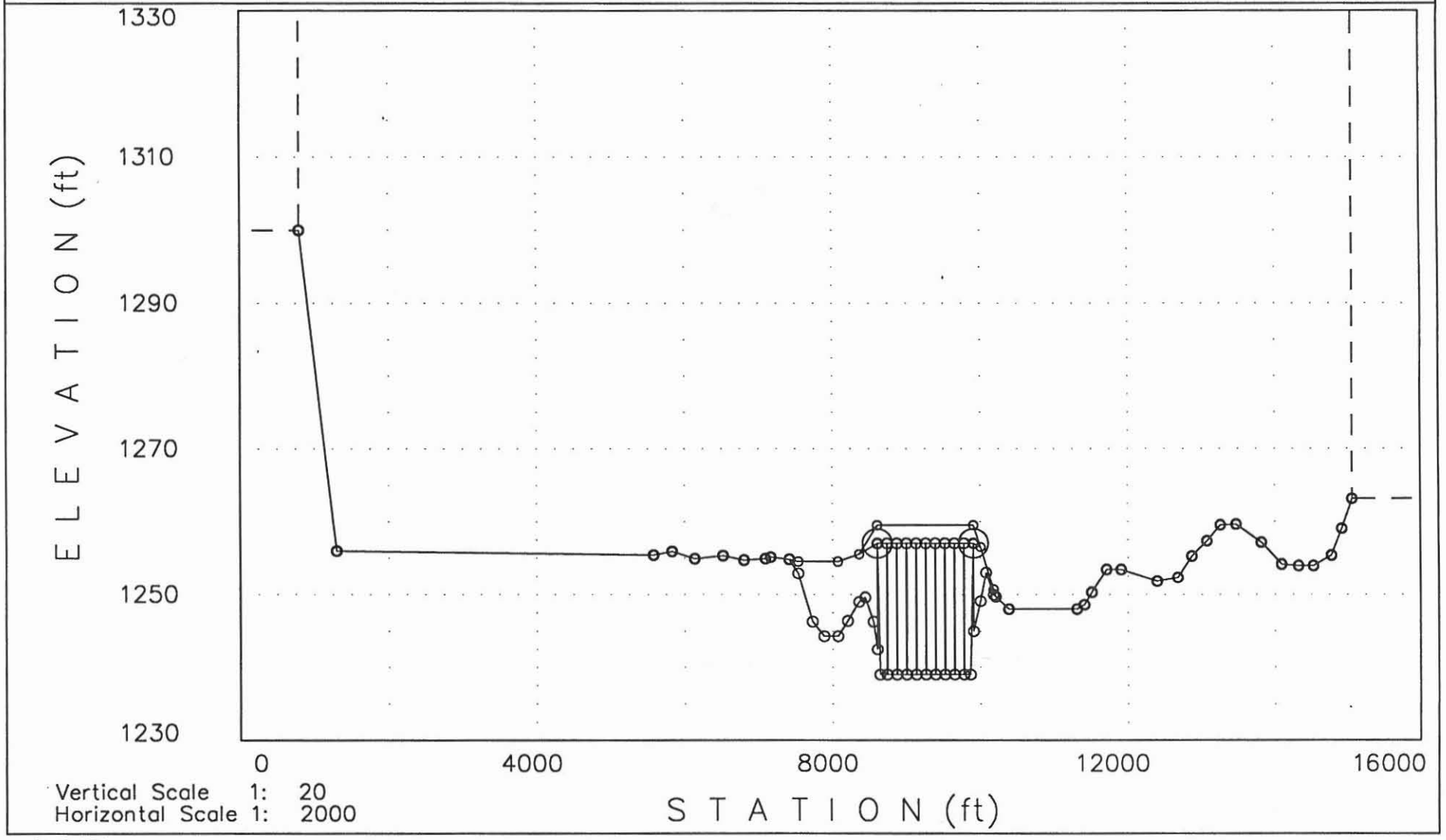
<<<<<< Cross Section: 232.2: (FN = R5PRQ.DAT) >>>>>>



Vertical Scale 1: 20
Horizontal Scale 1: 2000

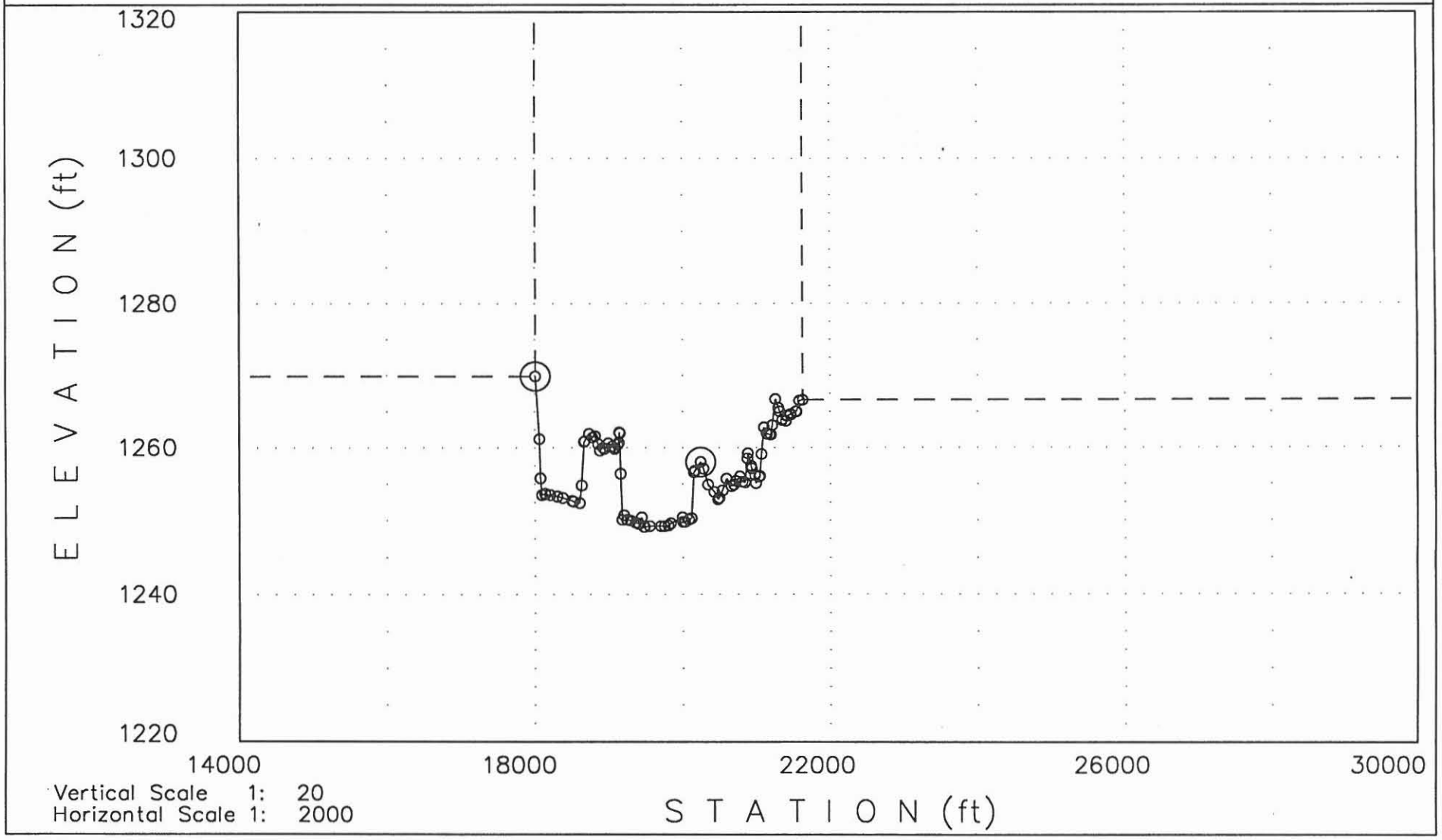
04-20-1994

<<<<<< Cross Section: 32.655: (FN = SALT.I) >>>>>>

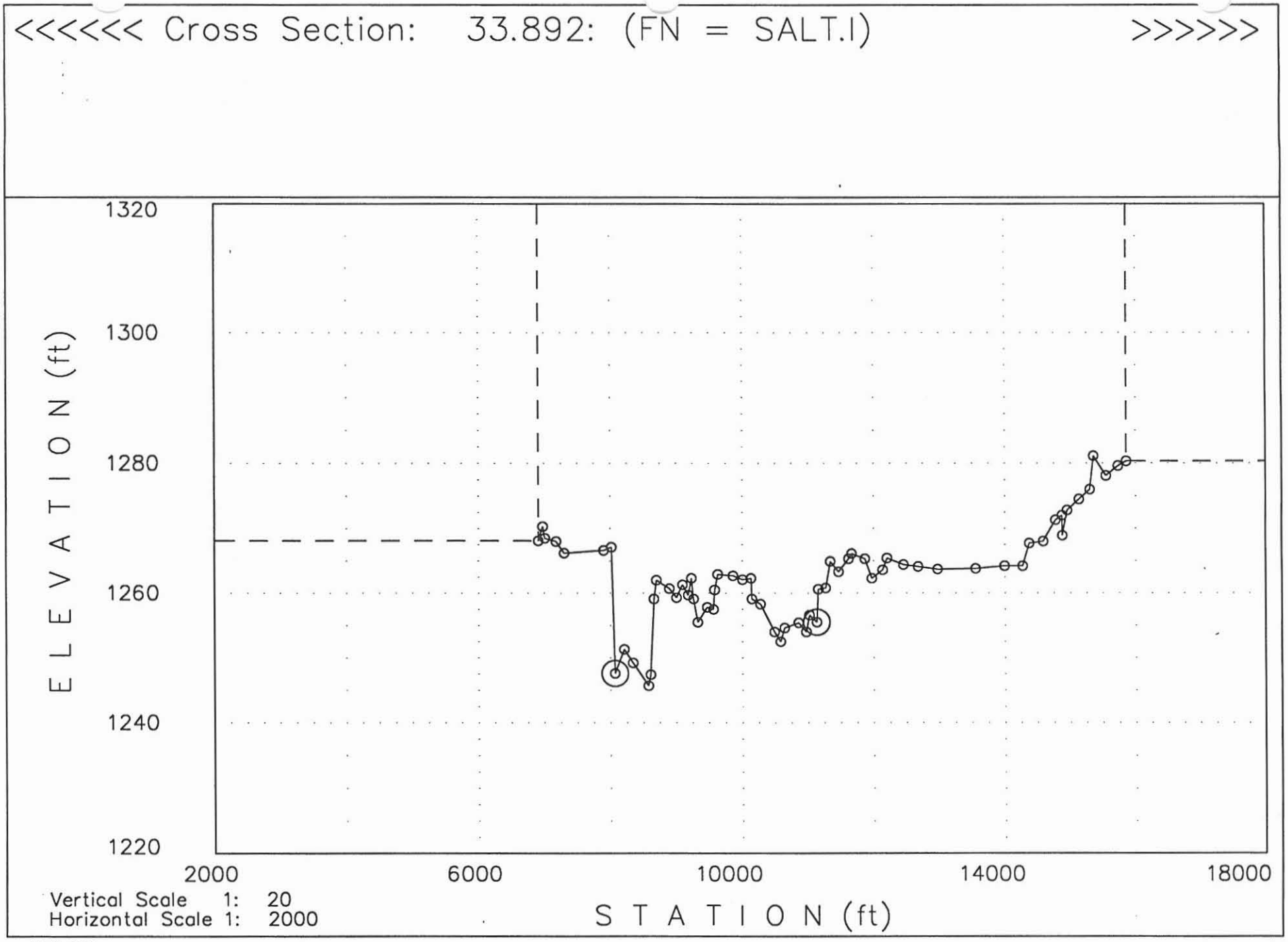


04-12-1994

<<<<<< Cross Section: 233.42: (FN = R5PRQ.DAT) >>>>>>

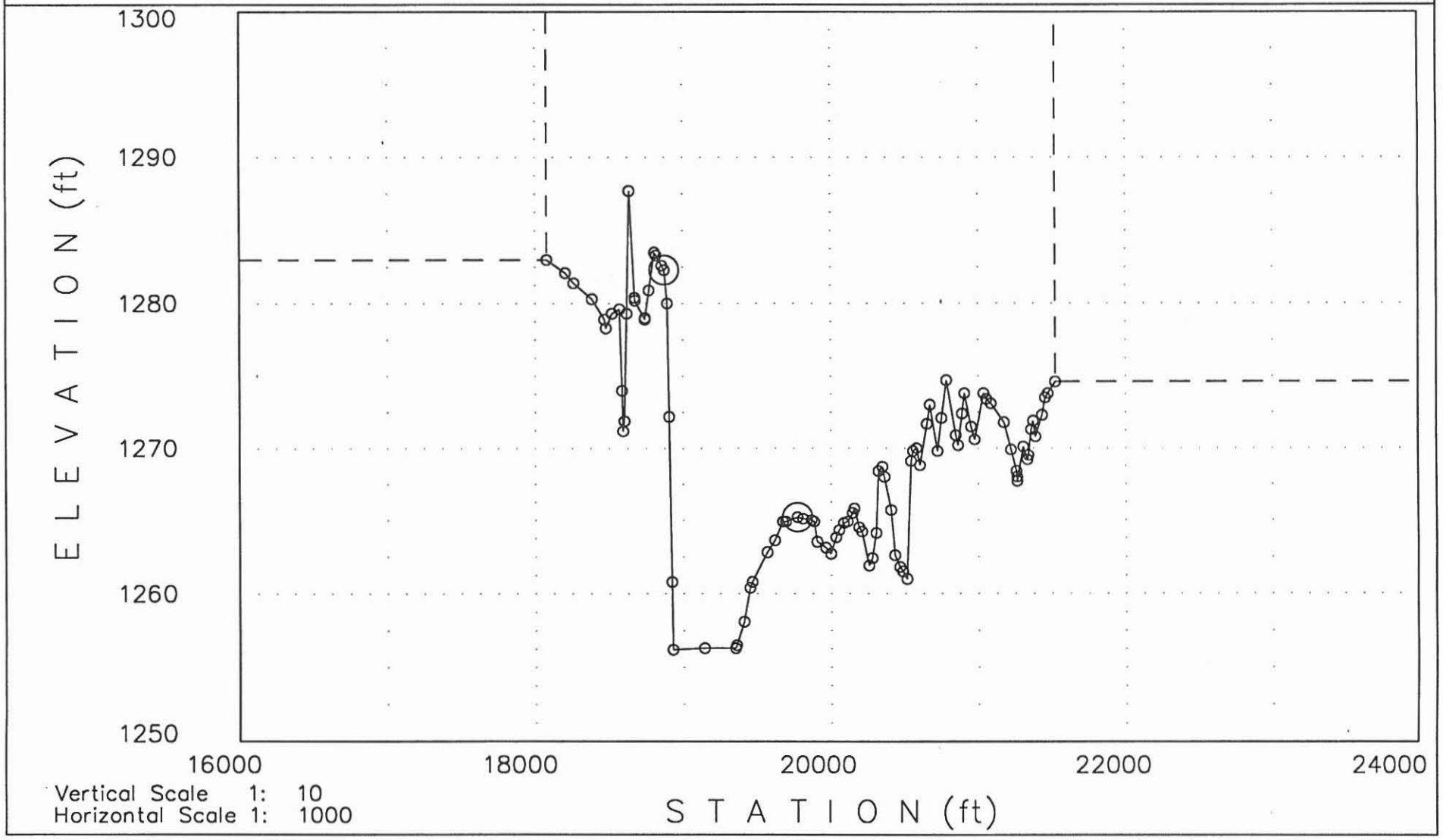


04-20-1994


<<<<<< Cross Section: 33.892: (FN = SALT.I) >>>>>>
ELEVATION (ft)
1320
1300
1280
1260
1240
1220
2000
6000
10000
14000
18000
STATION (ft)
Vertical Scale 1: 20
Horizontal Scale 1: 2000

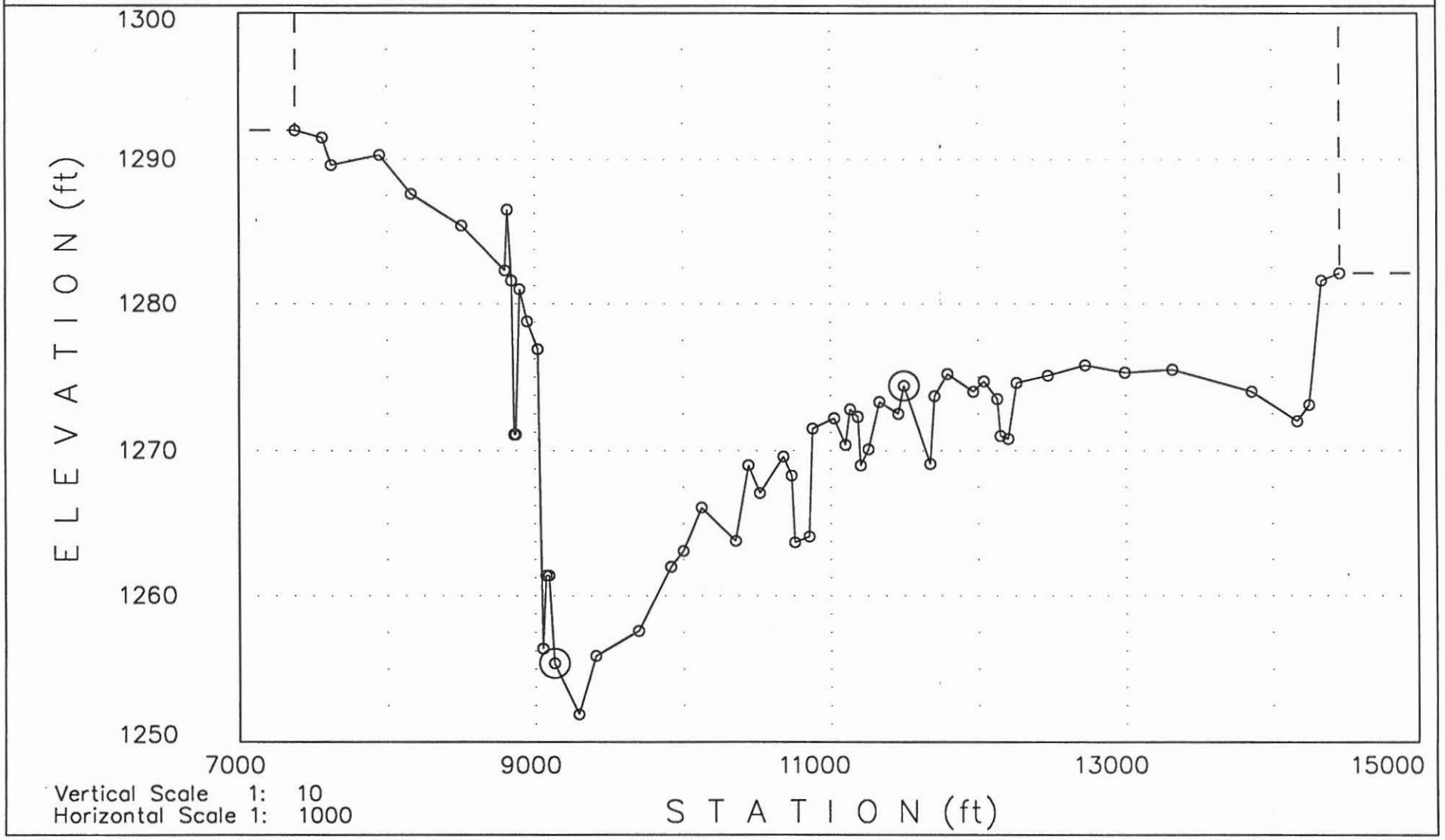
04-21-1994

<<<<<< Cross Section: 234.18: (FN = R5PRQ.DAT) >>>>>>



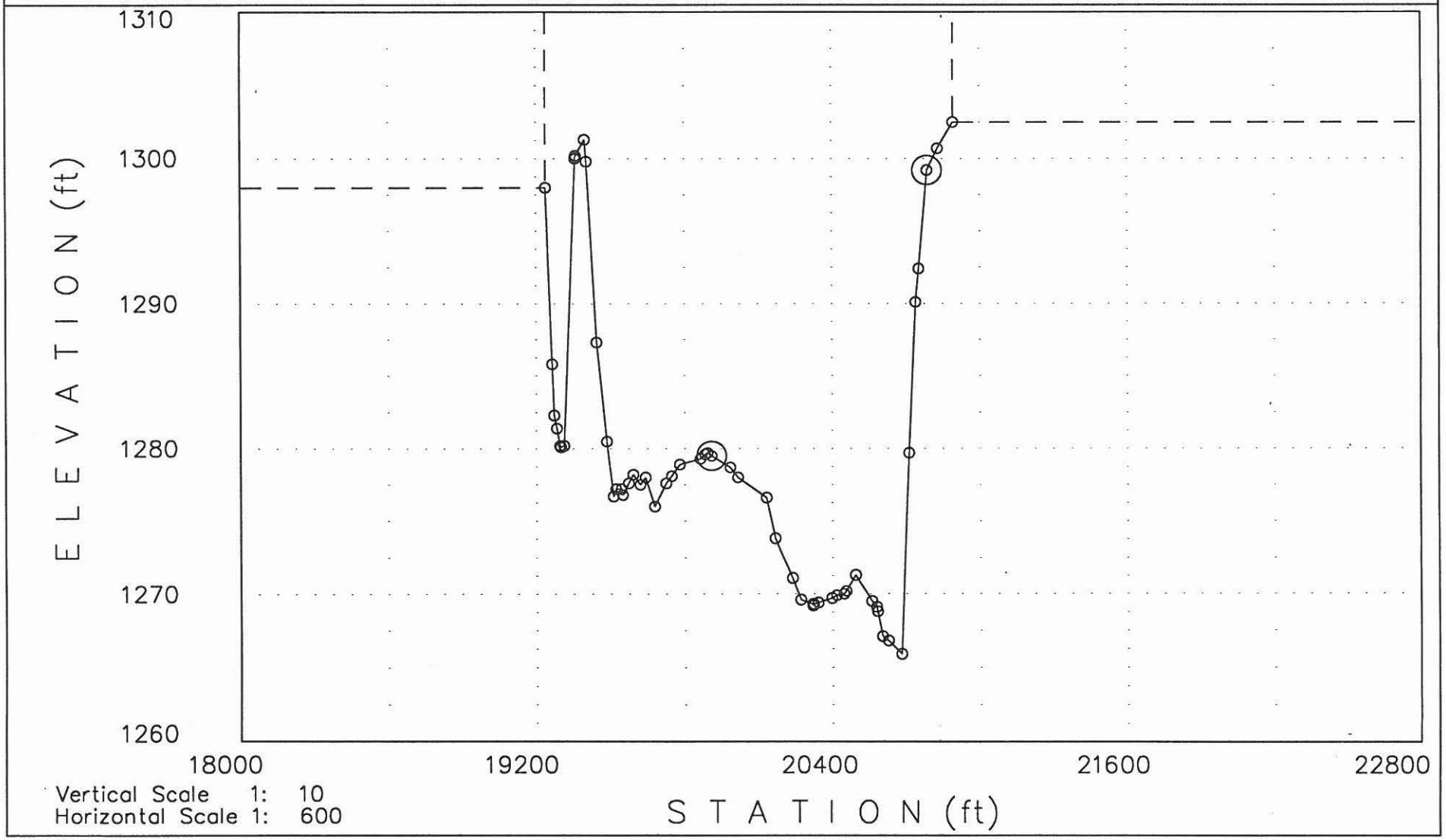
04-20-1994

<<<<<< Cross Section: 34.856: (FN = SALT.I) >>>>>>



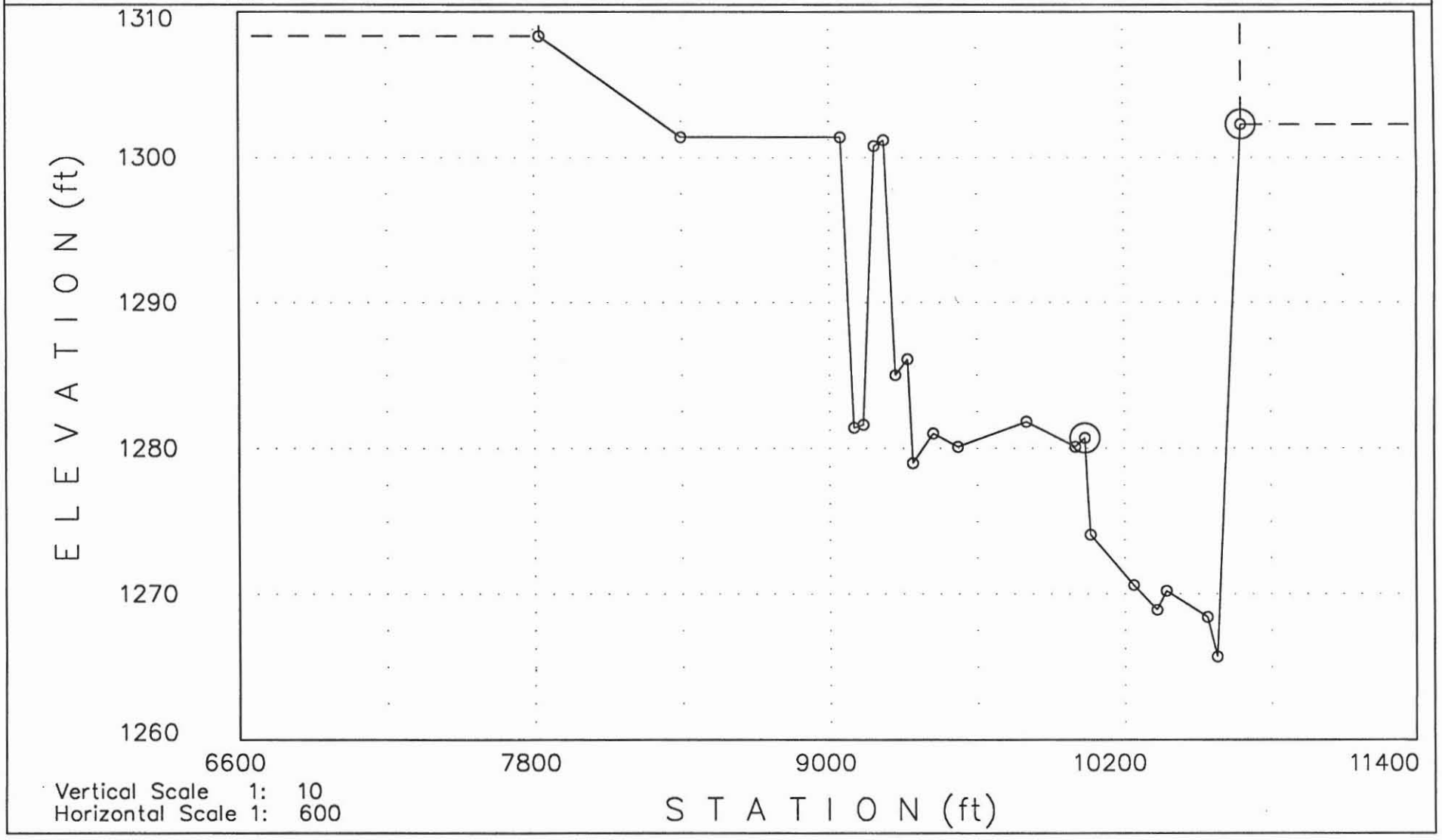
04-12-1994

<<<<<< Cross Section: 236.15: (FN = R5PRQ.DAT) >>>>>>



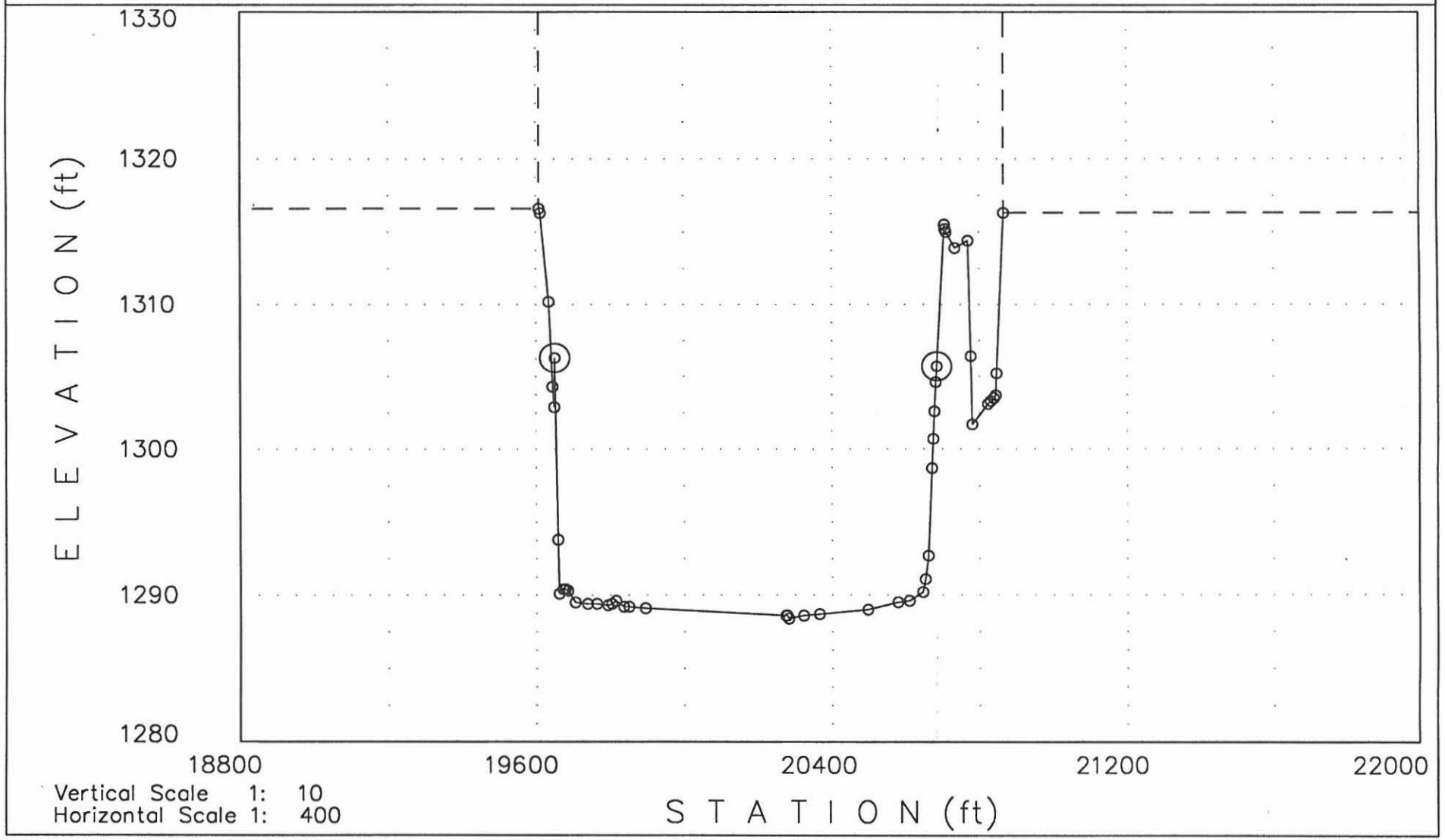
04-12-1994

<<<<<< Cross Section: 36.775: (FN = SALT.I) >>>>>>



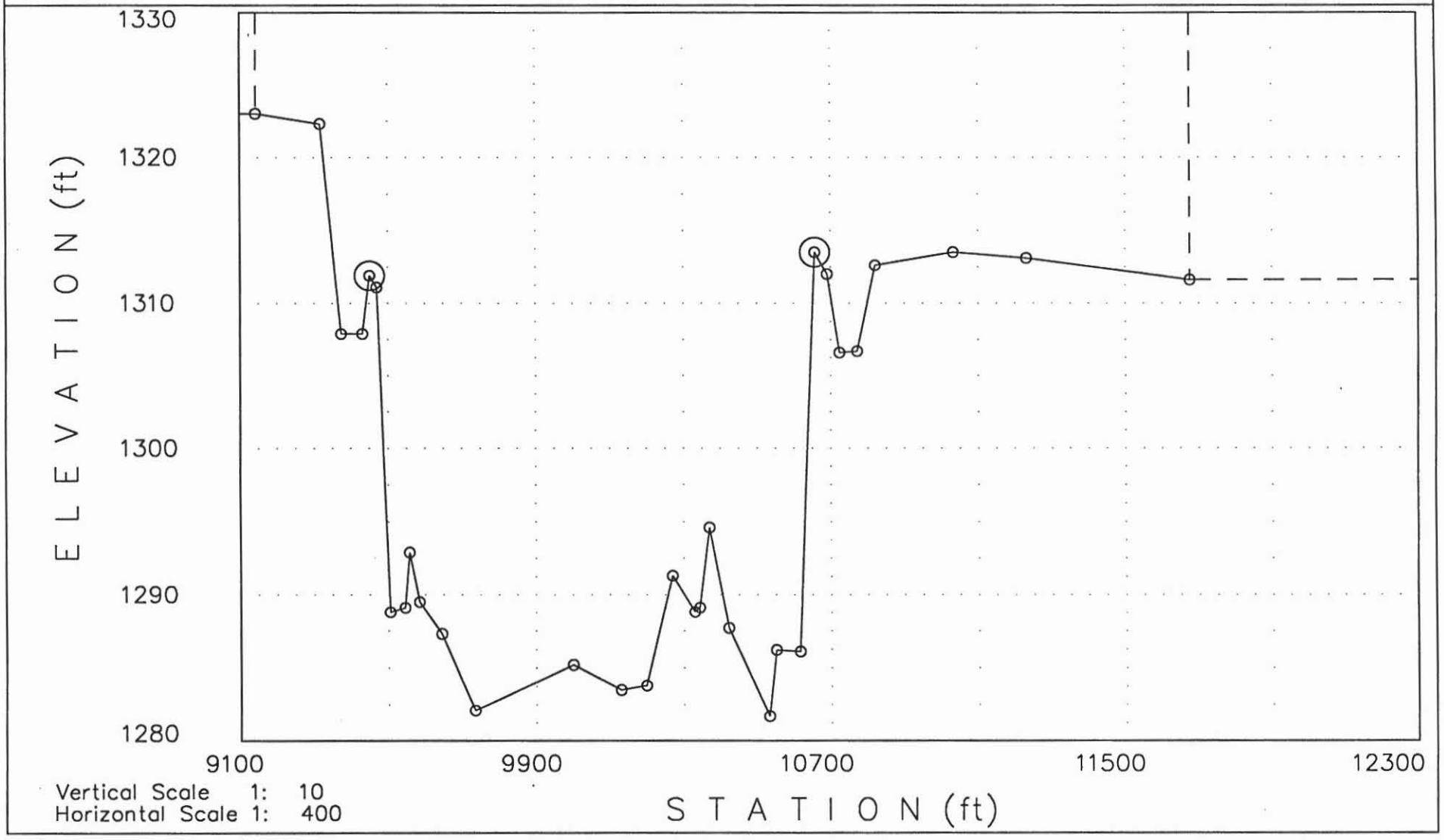
04-12-1994

<<<<<< Cross Section: 238.27: (FN = R5PRQ.DAT) >>>>>>



04-20-1994

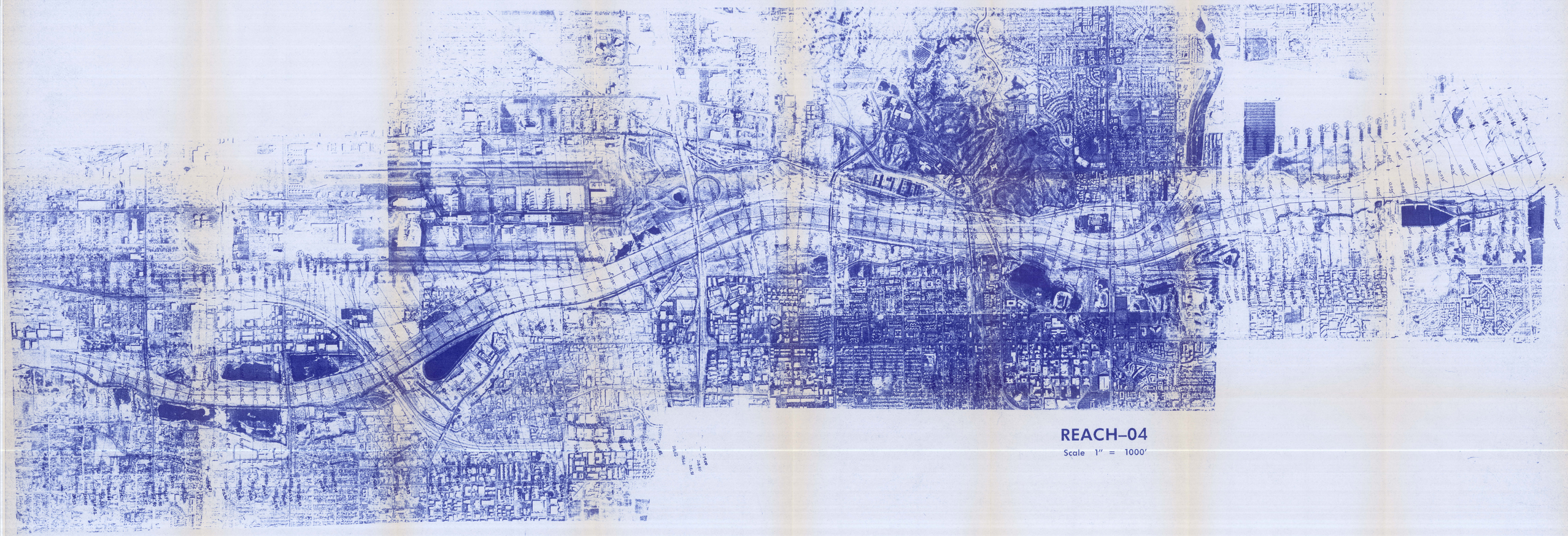
<<<<<< Cross Section: 39.098: (FN = SALT.I) >>>>>>



04-12-1994

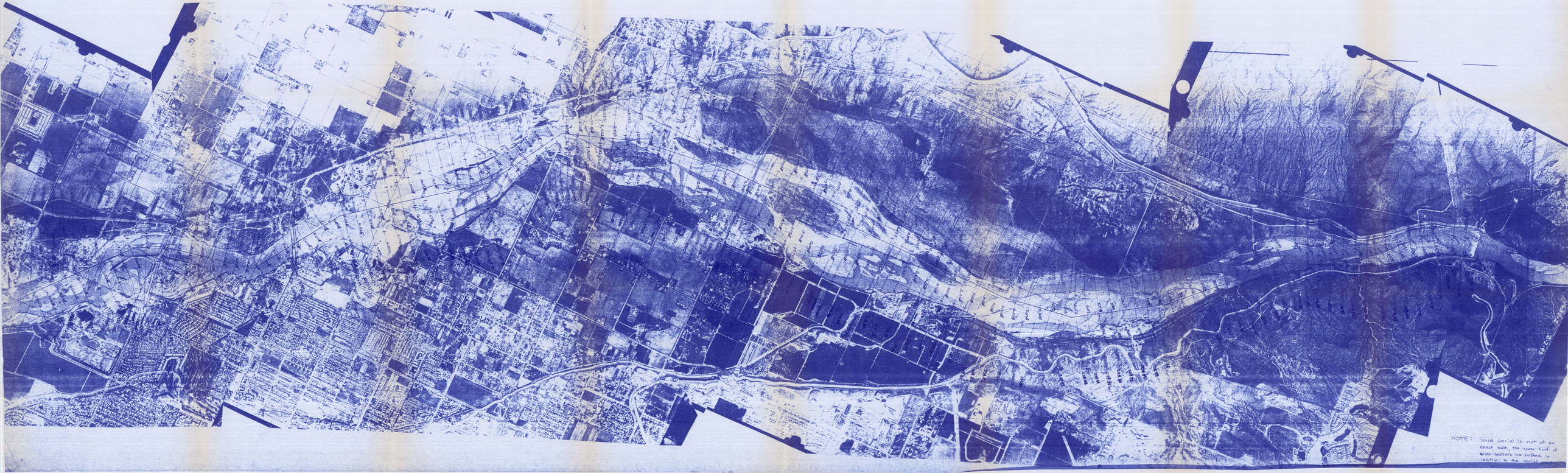
APPENDIX F

100-YEAR "n" VALUES
PLAN SHEETS
Reach 1 - Reach 5

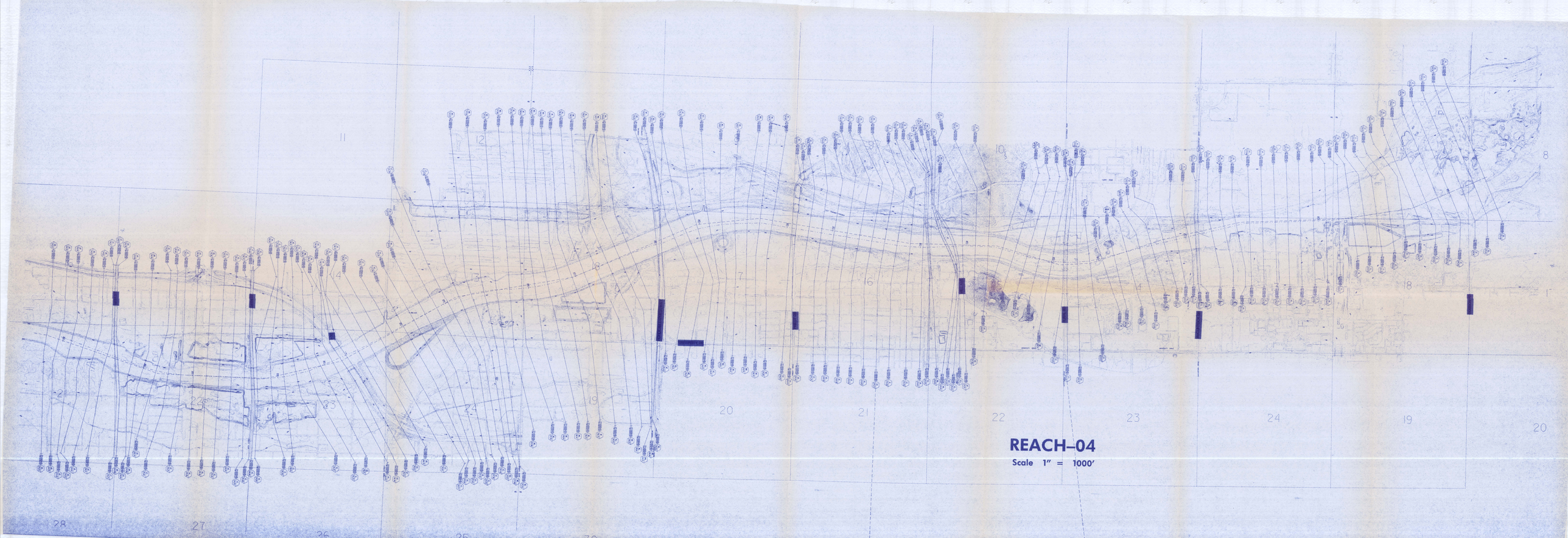


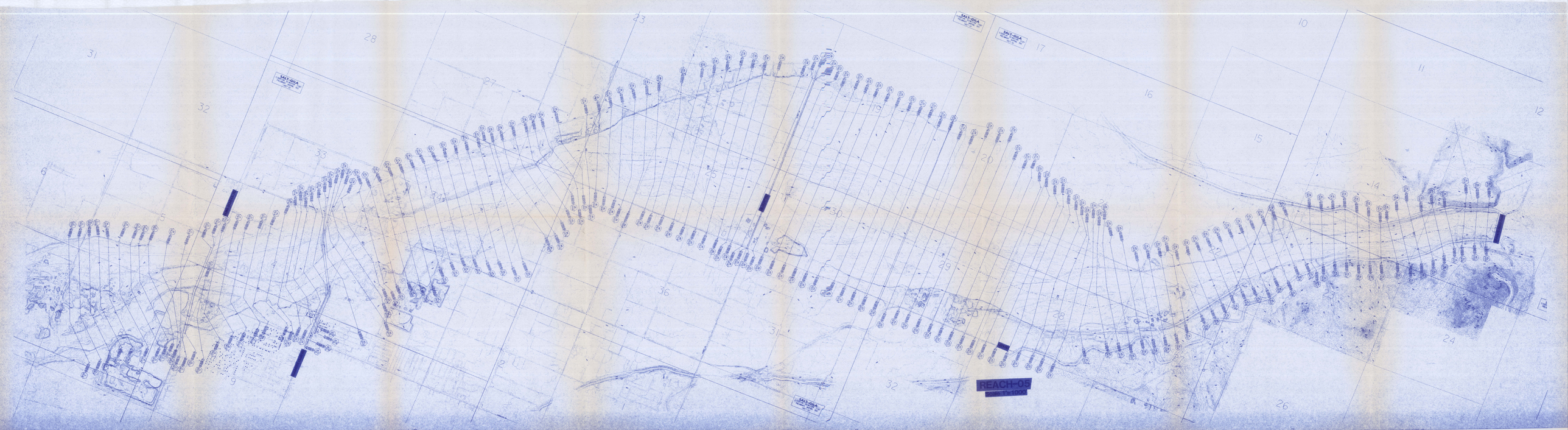
REACH–04

Scale 1″ = 1000′



NOTE: Since aerial is not at an exact scale, the upper half of cross-sections are shifted in relation to the aerial photo


REACH–04
Scale 1" = 1000'


REACH-05