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

51ST AVENUE BRIDGE

FIRST REVIEW

10/12/79

RETURN TO PAUL EASTIEN

southwest computing inc.
automated engineering services

51st AVENUE BRIDGE

COMPUTER RUNS

Run No.	Parameters Used
CAL-1	Existing cross section (N=.030); Q=100,000 cfs; 110,000 cfs; 120,000 cfs; 130,000 cfs; starting elevation = 997.5.
CAL-2	Existing cross section (N=.035); Q=100,000 cfs; 110,000 cfs; 120,000 cfs; 130,000 cfs; starting elevation = 997.5.
CAL-3	Existing cross section (N=.025); Q=100,000 cfs; 110,000 cfs; 120,000 cfs; 130,000 cfs; starting elevation = 997.5.
CAL-4	Existing cross section (N=.030); Q=100,000 cfs; 110,000 cfs; 120,000 cfs; 130,000 cfs; starting elevation = 996.0.
ALT-1A	900 foot bridge addition to existing 175 foot bridge; channel under bridge cleaned to elevation 995.8; no other channelization; dyking from cross section 9 thru cross section 19 on south bank; sanitary sewer not there.
ALT-1B	900 foot bridge addition to existing 175 foot bridge; channel under bridge cleaned to elevation 998.8; no other channelization; dyking from cross section 9 thru cross section 19 on south bank; sanitary sewer not there.
ALT-1C	900 foot bridge addition to existing 175 foot bridge; channel under bridge cleaned to elevation 992.8; no other channelization; dyking from cross section 9 thru cross section 19 on south bank; sanitary sewer not there.
ALT-2A	900 foot bridge addition to existing 175 foot bridge; channelization from x-section 9 (EL. 992.3) thru x-section 17 (EL. 995.0); dyking from x-section 9 thru X-section 19 on south bank, sanitary sewer not there.

ALT-2B 900 foot bridge addition to existing 175 foot bridge; channelization from x-section 9 (EL. 992.3) thru x-section 17 (EL. 997.4); dyking from x-section 9 thru x-section 19 on south bank; sanitary sewer not there.

ALT-3A 900 foot bridge addition to existing 175 foot bridge; channelization from x-section 12 (EL. 1000.7) thru x-section 17 (EL. 1001.86); dyking from x-section 9 thru x-section 19 on south bank; sanitary sewer in.

ALT-4A 1000 foot new bridge; channel under bridge cleaned to elevation 995.8; no other channelization; dyking from cross section 9 thru cross section 19 on south bank; sanitary sewer not there.

ALT-4B 1000 foot new bridge; channel under bridge cleaned to elevation 998.8; no other channelization; dyking from cross section 9 thru cross section 19 on south bank; sanitary sewer not there.

ALT-4C 1000 foot new bridge; channel under bridge cleaned to elevation 992.8; no other channelization; dyking from cross section 9 thru cross section 19 on south bank; sanitary sewer not there.

ALT-5A 1000 foot new bridge; channelization from x-section 9 (EL. 992.3) thru x-section 17 (EL.995.0); dyking from x-section 9 thru x-section 19 on south bank; sanitary sewer not there.

ALT-5B 1000 foot new bridge; channelization from x-section 9 (EL. 992.3) thru x-section 17 (997.4); dyking from x-section 9 thru x-section 19 on south bank; sanitary sewer not there.

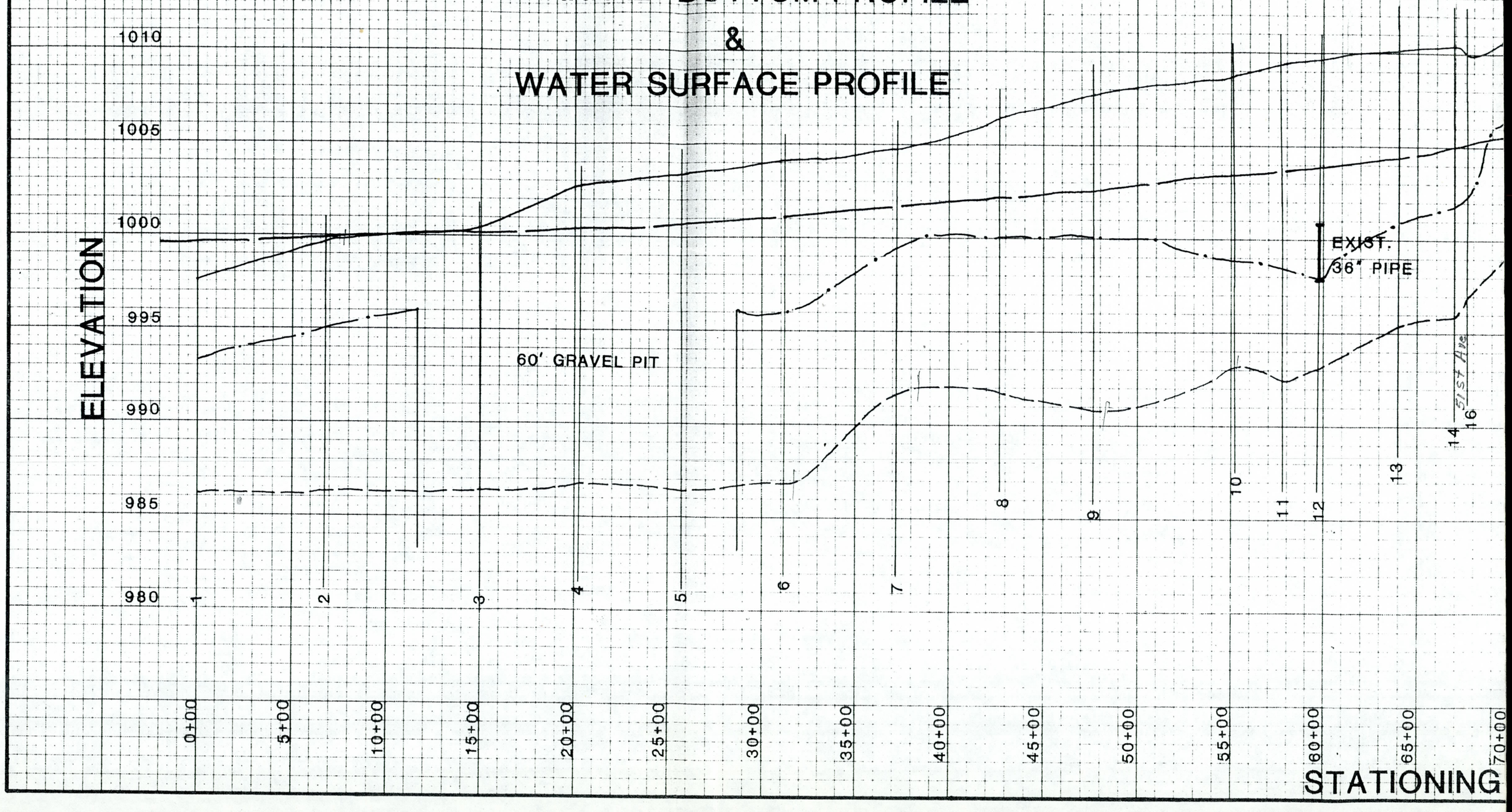
ALT-6A 1000 foot new bridge; channelization from x-section 12 (EL. 1000.7) thru x-section 17 (EL.1001.86); dyking from x-section 9 thru x-section 19 on south bank; sanitary sewer in.

51ST AVENUE BRIDGE

CHANNEL BOTTOM PROFILE

&

WATER SURFACE PROFILE



DEGRADATION OF SALT RIVER

EXISTING 180,000 CFS

1963 GROUNDLINE (MADDOCK)

1952 GROUNDLINE (USGS)

EXISTING GROUND

EXIST. 36" PIPE

STATIONING

10 11 12 13 14 16 51st Ave. 17 18 19 20 21 22 23 24 25

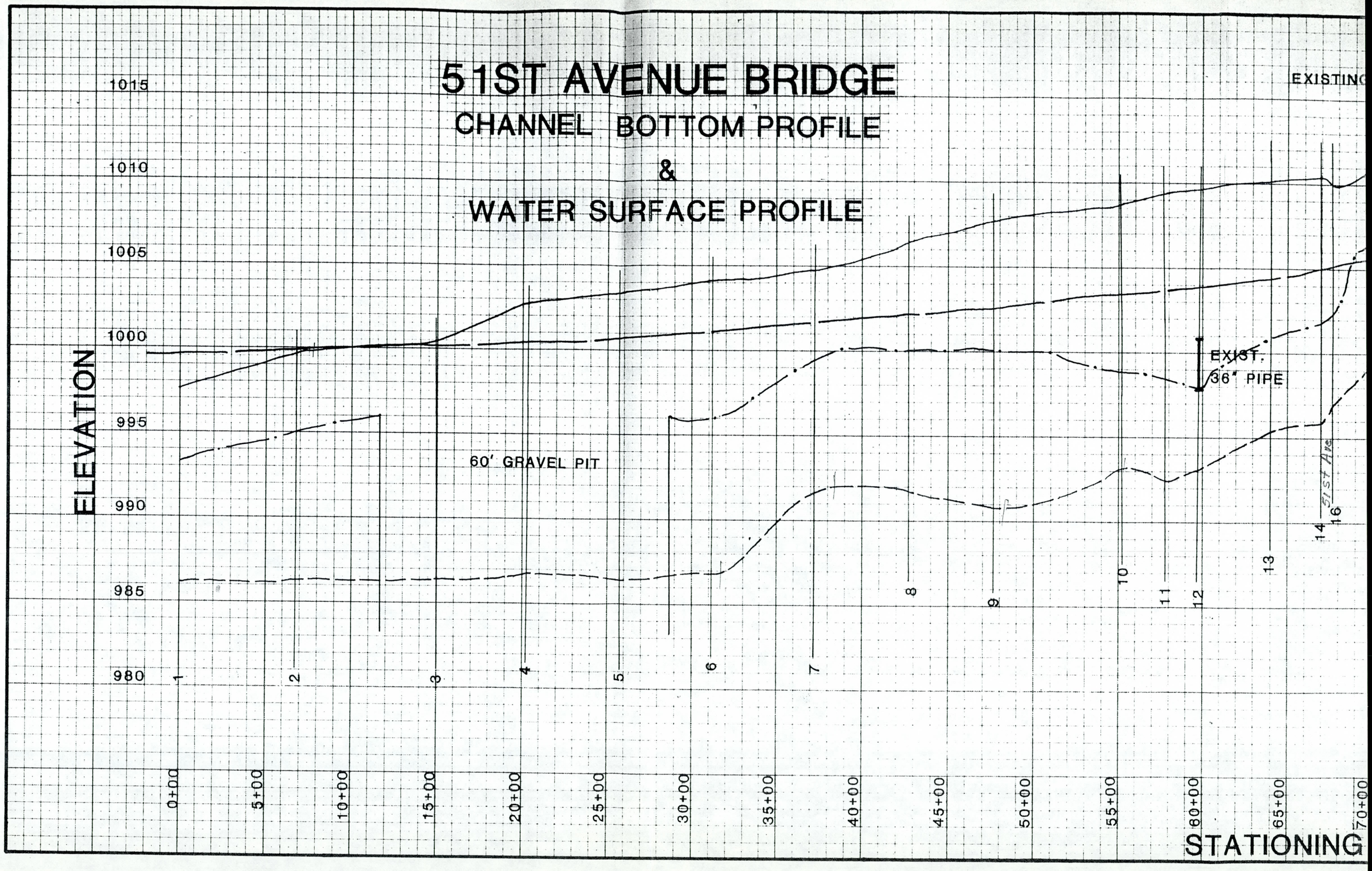
55+00 60+00 65+00 70+00 75+00 80+00 85+00 90+00 95+00 100+00 105+00 110+00 115+00 120+00 125+00

51ST AVENUE BRIDGE

CHANNEL BOTTOM PROFILE

&

WATER SURFACE PROFILE



EXISTING 130,000 CFS

1963 GROUNDLINE (MADDOCK)

1952 GROUNDLINE (USGS)

EXISTING GROUND

EXIST. 36" PIPE

51ST AVE

10 11 12 13 14 16 17 18 19 20 21 22 23 24 25

55+00 60+00 65+00 70+00 75+00 80+00 85+00 90+00 95+00 100+00 105+00 110+00 115+00 120+00 125+00

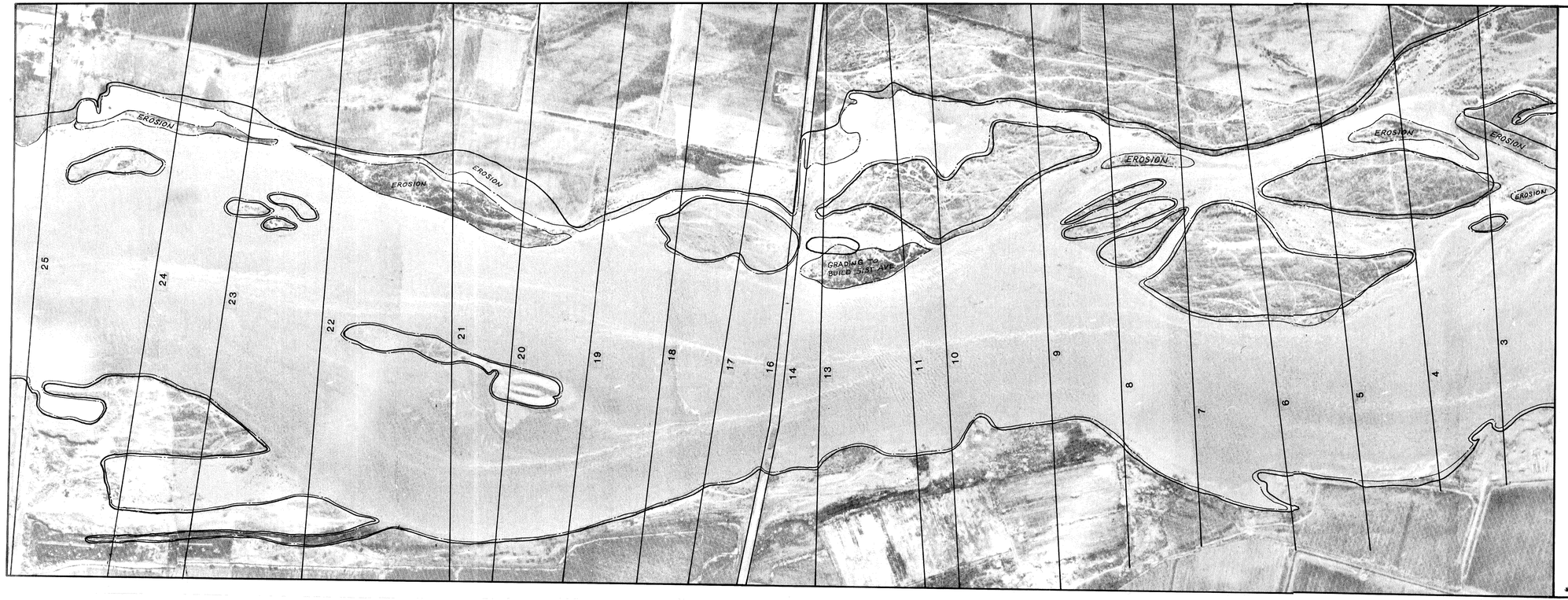
STATIONING

DEGRADATION OF SALT RIVER

51st AVENUE BRIDGE

ALTERNATE COMPARISONS

RUN NO.	EL 9	VEL 9	EL 10	VEL 10	EL 11	VEL 11	EL 13	VEL 13	EL 14	VEL 14	EL BR	VEL BR	EL 16	VEL 16	EL 17	VEL 17	EL 18	VEL 18	EL 19	VEL 19	
CAL-1	7.76	8.0	8.83	8.1	9.46	6.8	10.05	7.2	10.40	7.1	0.0	0.0	9.88	10.5	11.58	8.4	12.44	8.8	13.89	7.4	Exist 130,000 cfs
ALT-1A	7.61	8.7	8.92	8.4	9.32	8.2	10.08	9.0	10.68	8.1	10.64	8.3	10.72	8.1	10.76	10.3	12.26	9.5	13.95	7.7	900' addition 995.8
ALT-1B	7.61	8.7	8.92	8.4	9.32	8.2	10.08	9.0	10.30	10.5	10.21	10.8	10.40	10.4	11.40	9.5	12.55	9.1	14.06	7.6	900' addition 998.8
ALT-1C	7.61	8.7	8.92	8.4	9.32	8.2	10.08	9.0	10.94	6.7	10.91	6.8	10.95	6.7	10.50	10.6	12.18	9.5	13.93	7.7	900' addition 992.8
ALT-2A	7.61	8.7	8.92	8.4	9.77	5.4	9.79	6.9	9.84	7.7	9.80	7.9	9.86	7.8	10.50	5.6	10.30	13.1	13.95	7.7	Channel 9(992.3) thru 17(995.0)
ALT-2B	7.61	8.7	8.92	8.4	9.77	5.4	9.73	7.5	9.75	8.7	9.70	8.8	9.80	8.8	10.65	6.6	10.29	13.1	13.95	7.7	Channel 9(992.3) thru 17(997.4)
ALT-3A	7.61	8.7	8.92	8.4	9.32	8.2	10.30	12.4	11.30	12.3	11.14	12.7	11.51	12.1	13.60	7.4	14.04	7.5	14.89	6.8	Fill to top of pipe from 12-17
ALT-4A	7.61	8.7	8.92	8.4	9.25	8.6	10.03	9.8	10.75	8.7	10.70	8.9	10.79	8.7	10.92	10.6	12.51	9.3	14.09	7.6	1000' new 995.8
ALT-4B	7.61	8.7	8.92	8.4	9.25	8.6	10.03	9.8	10.29	11.3	10.18	11.6	10.42	11.2	11.73	9.6	12.90	8.8	14.26	7.4	1000' new 998.8
ALT-4C	7.61	8.7	8.92	8.4	9.25	8.6	10.03	9.8	11.04	7.1	11.01	7.3	11.06	7.1	10.67	10.9	12.42	9.4	14.06	7.6	1000' new 992.8
ALT-5A	7.61	8.7	8.92	8.4	9.76	5.5	9.67	7.9	9.80	8.3	9.76	8.5	9.84	8.4	10.62	5.9	10.24	13.3	13.97	7.7	Channel 9(995.0) thru 17(995.0)
ALT-5B	7.61	8.7	8.92	8.4	9.76	5.5	9.58	8.5	9.71	9.4	9.65	9.6	9.76	9.5	10.78	7.0	10.24	13.3	13.97	7.7	Channel 9(992.3) thru 17(997.4)
ALT-6A	7.61	8.7	8.92	8.4	9.25	8.6	10.27	14.1	12.11	12.2	11.92	12.6	10.81	12.3	14.31	7.5	14.81	7.1	15.50	6.3	Fill to top of pipe from 12-17



51ST AVENUE BRIDGE

105,000 CFS CALIBRATION

SCALE: 1" = 420'

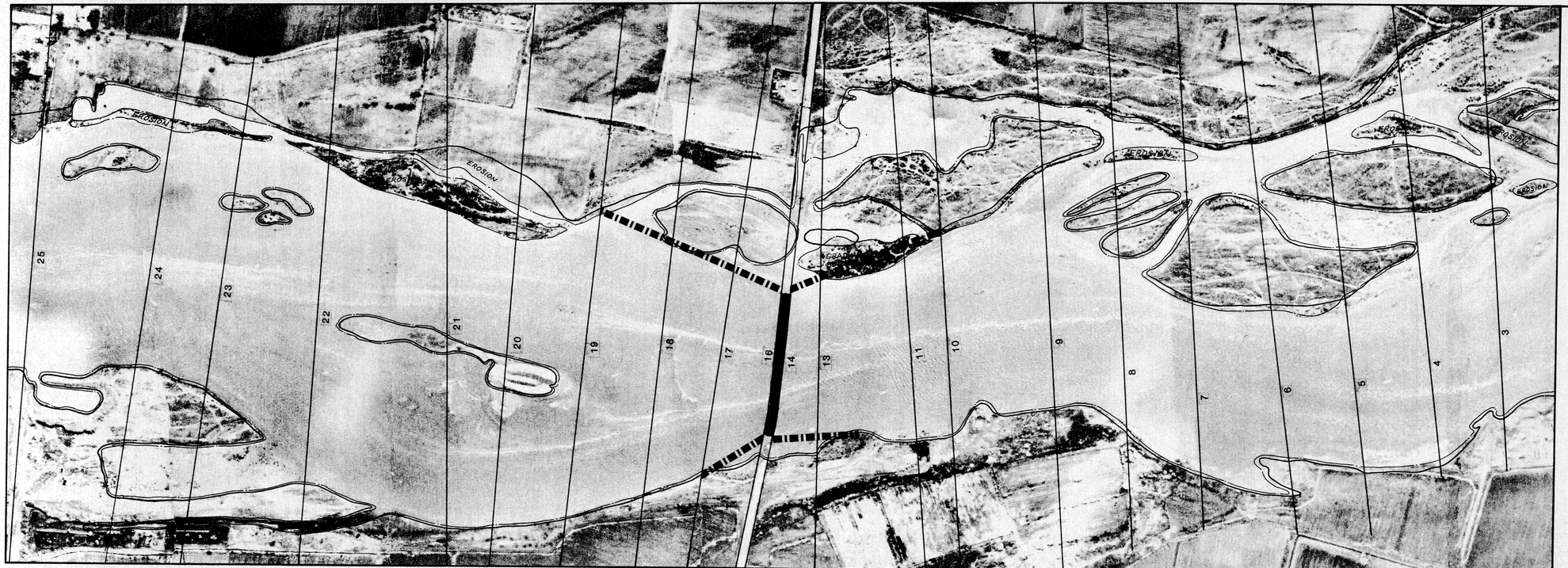
LEGEND

1 — LOCATION OF SECTION 1

FLOOD LIMITS FROM PHOTO * DEC. 19,1978

FLOOD LIMITS FROM COMPUTER (SURVEY DATE: AUG. 1979)

* NOTE: SOME DISTORTION IN PHOTO



51ST AVENUE BRIDGE

DYKING FOR 1075' BRIDGE

SCALE: 1" = 420'

LEGEND

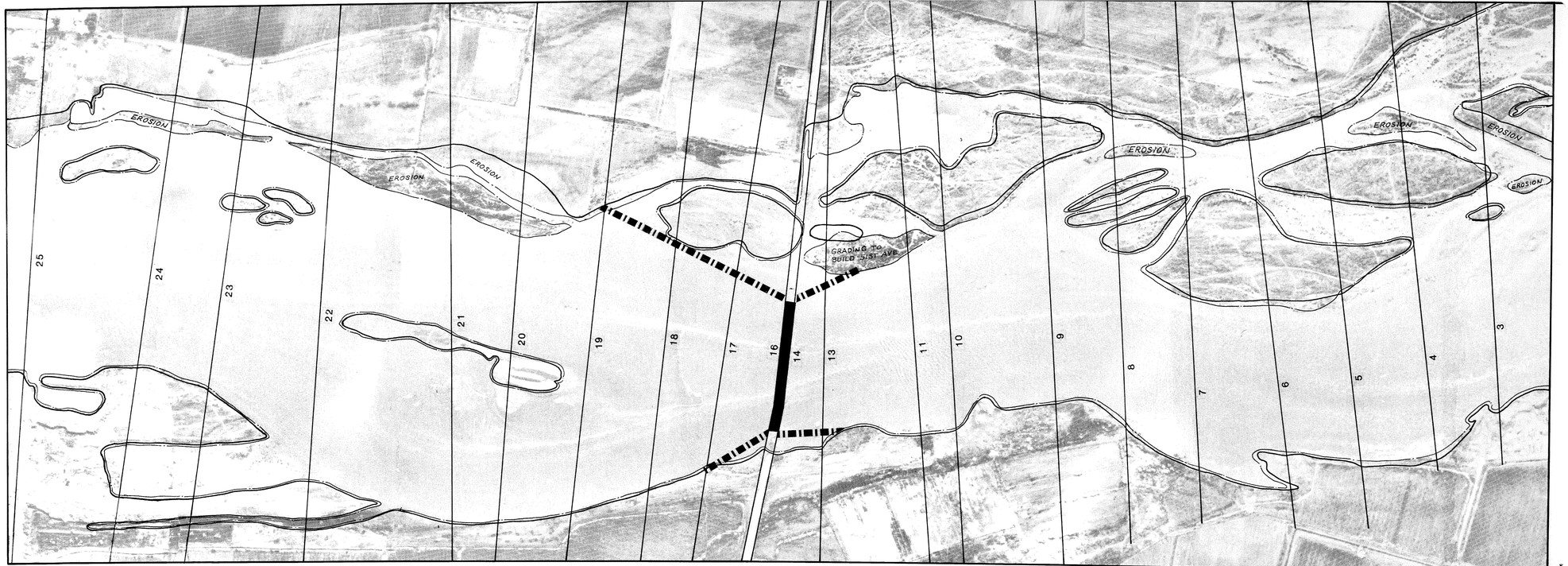
1 — LOCATION OF SECTION 1

FLOOD LIMITS FROM PHOTO * DEC. 19,1978

FLOOD LIMITS FROM COMPUTER (SURVEY DATE: AUG. 1979)

DYKING

* NOTE: SOME DISTORTION IN PHOTO



51ST AVENUE BRIDGE

DIKING FOR 1000′ BRIDGE

SCALE: 1" = 420′

LEGEND

1 — LOCATION OF SECTION 1

FLOOD LIMITS FROM PHOTO * DEC. 19,1978

FLOOD LIMITS FROM COMPUTER (SURVEY DATE: AUG. 1979)

DYKING

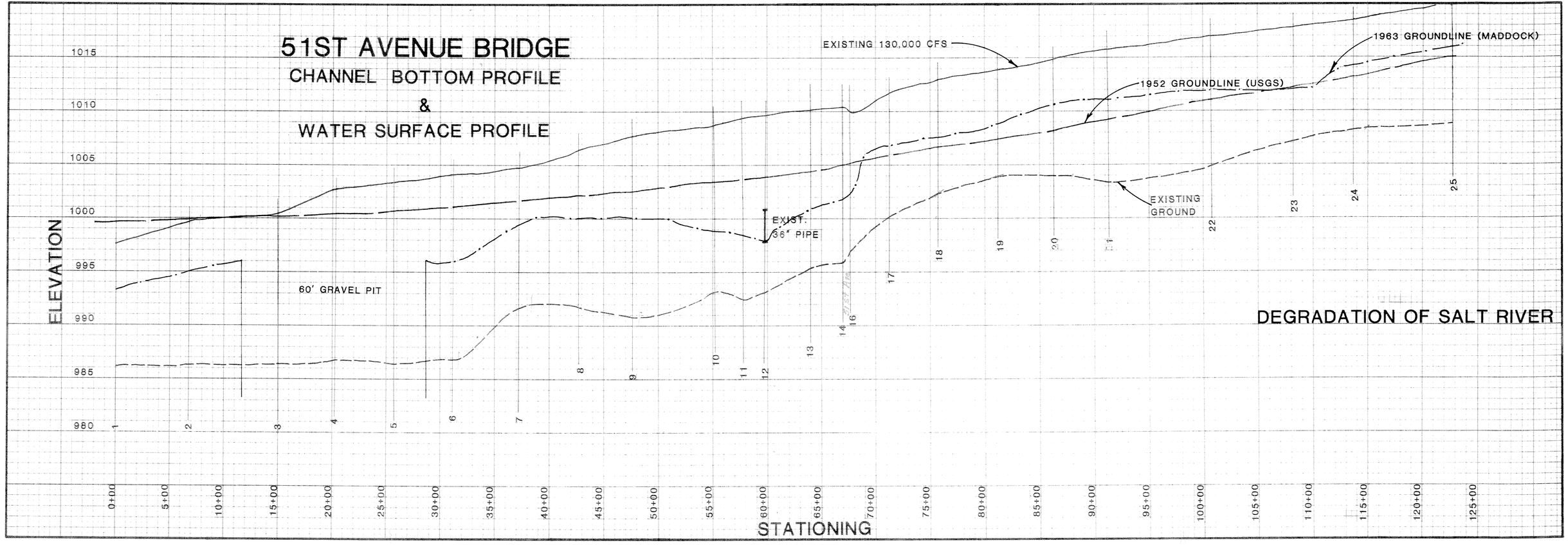
* NOTE: SOME DISTORTION IN PHOTO

51ST AVENUE BRIDGE

CHANNEL BOTTOM PROFILE

&

WATER SURFACE PROFILE



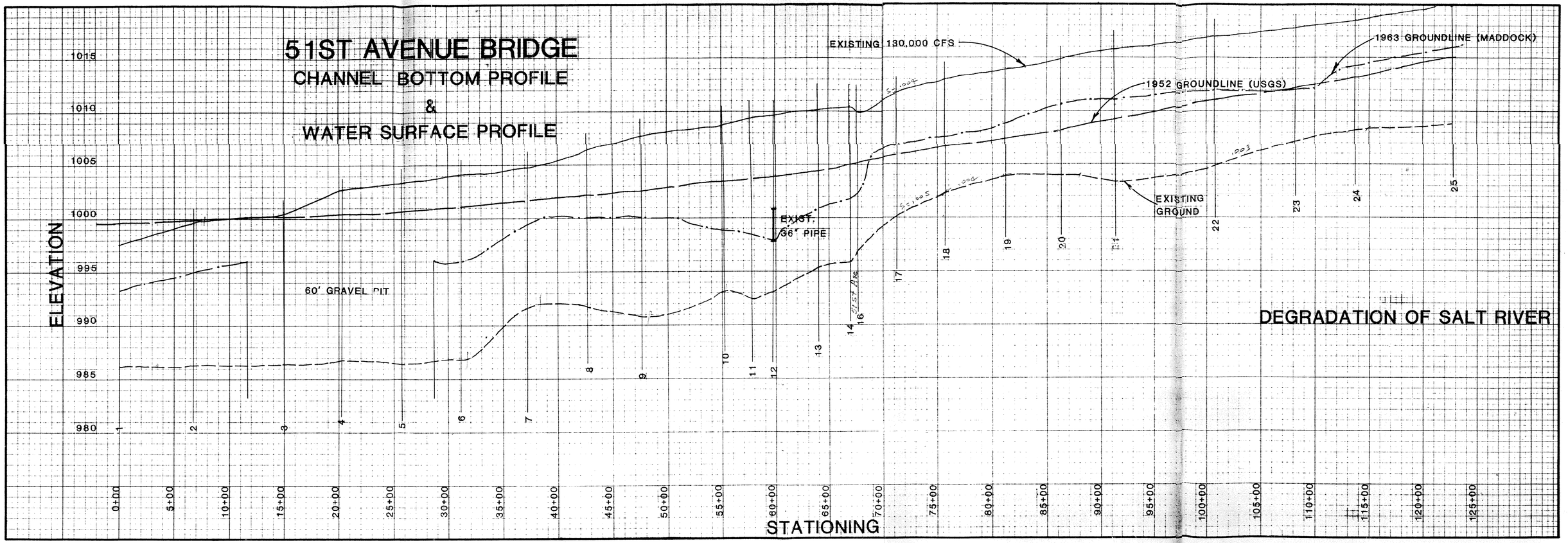
DEGRADATION OF SALT RIVER

51ST AVENUE BRIDGE

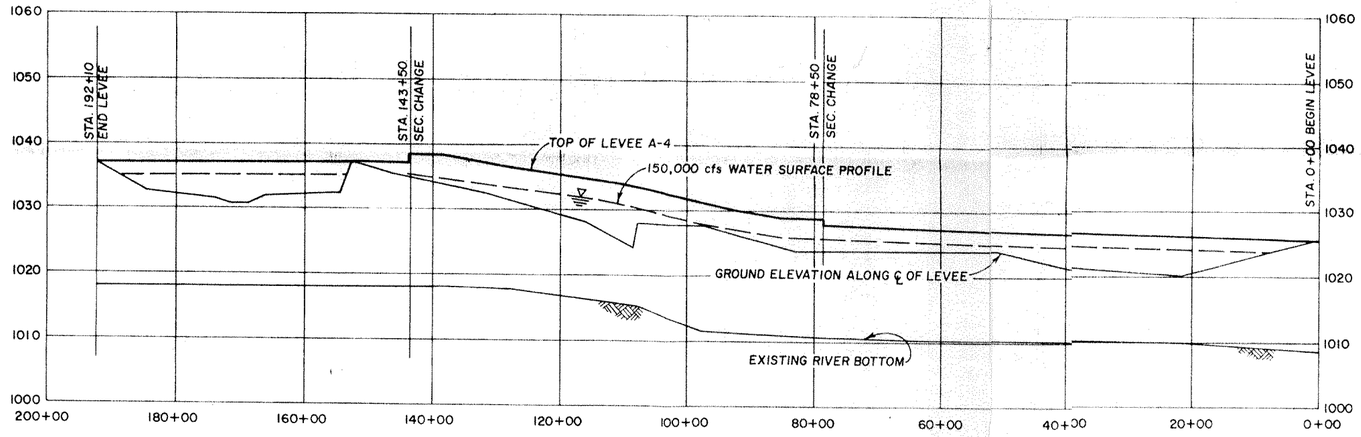
CHANNEL BOTTOM PROFILE

&

WATER SURFACE PROFILE



DEGRADATION OF SALT RIVER

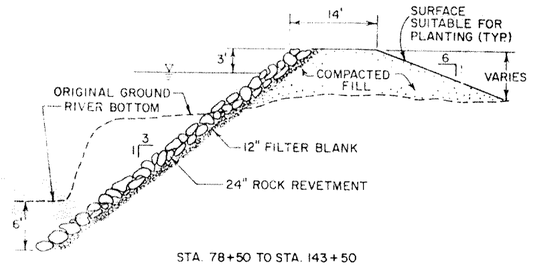


PROFILE

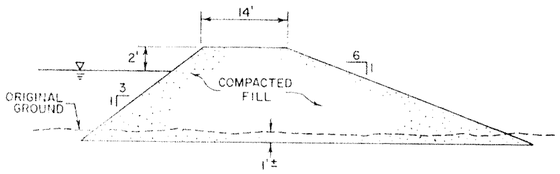
HORIZ. SCALE 1000 0 1000 2000 FEET

VERT. SCALE 10 0 10 20 FEET

NOTE: SUBSTITUTE LIMITED LEVEE A-4 IS DESIGNED TO PROTECT A SMALL AREA



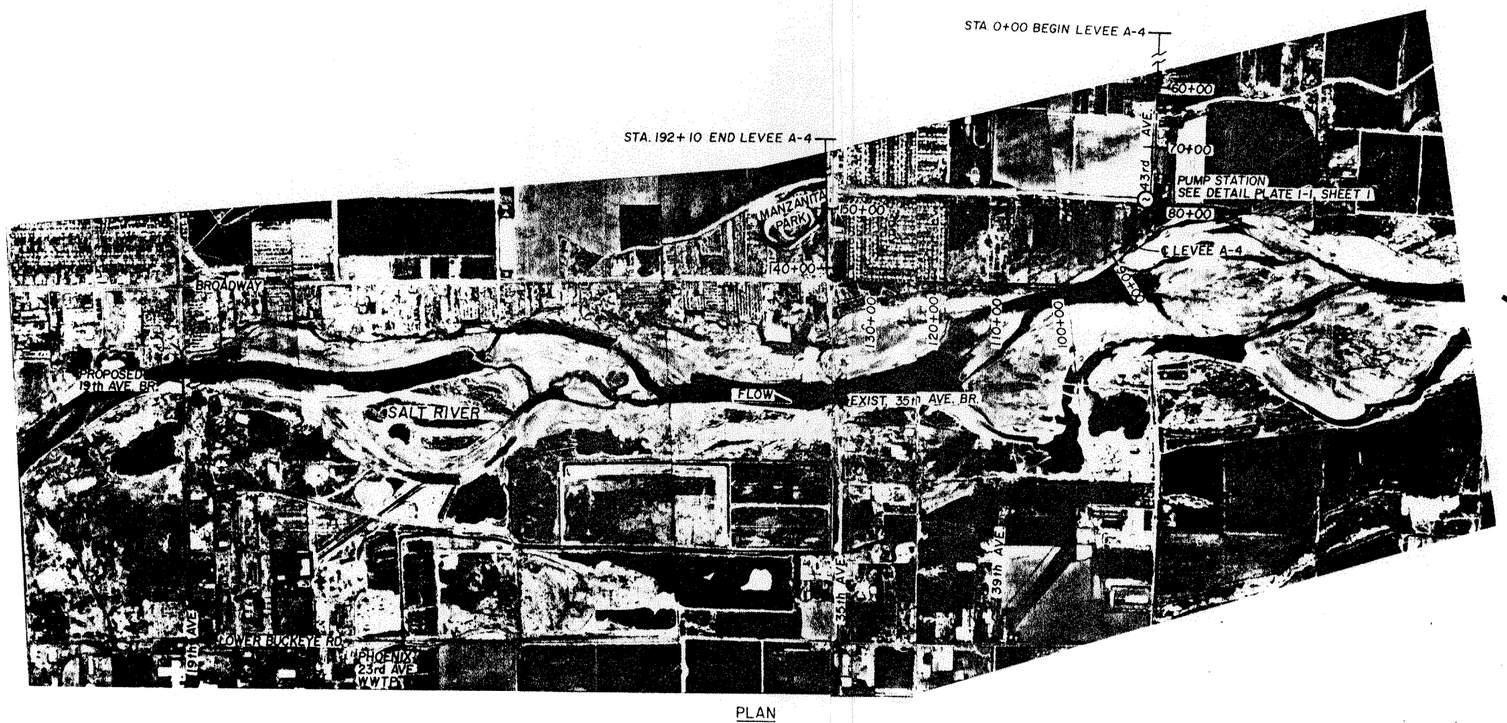
STA. 78+50 TO STA. 143+50



STA. 0+00 TO STA. 78+50
STA. 143+50 TO STA. 192+10

TYPICAL LEVEE SECTIONS

N T S



PLAN

SCALE 1000 0 1000 2000 FEET

PLATE 1-2

SYMBOL	DESCRIPTIONS	DATE	APPROVAL

REVISIONS

CAMP DRESSER & McKEE INC.
710 South Broadway
Walnut Creek, California 94596

U. S. ARMY ENGINEER DISTRICT
LOS ANGELES
CORPS OF ENGINEERS

DESIGNED BY: M. J. W.
DRAWN BY: D. A. P.
CHECKED BY: H. M. N.

CENTRAL ARIZONA WATER CONTROL STUDY
STRUCTURAL FLOOD CONTROL ALTERNATIVES

SUBSTITUTE LIMITED LEVEES ALONG SALT RIVER

LEVEE A-4
PLAN, PROFILE AND SECTION DETAILS
DESIGN Q = 150,000 cfs

SUBMITTED BY: DATE APPROVED:

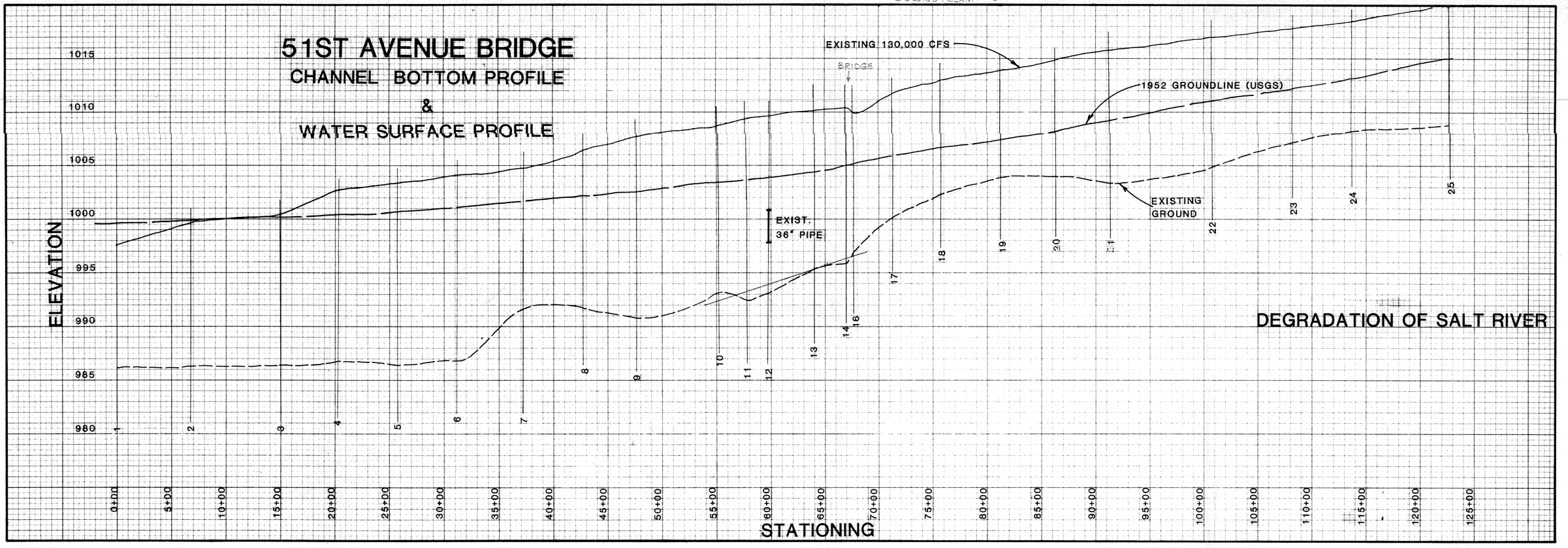
CHIEF, BRANCH

SPEC. NO. DACW09- ____ B- ____

DISTRICT FILE NO.

SHEET 2 OF 2

THRU ENGINEERING

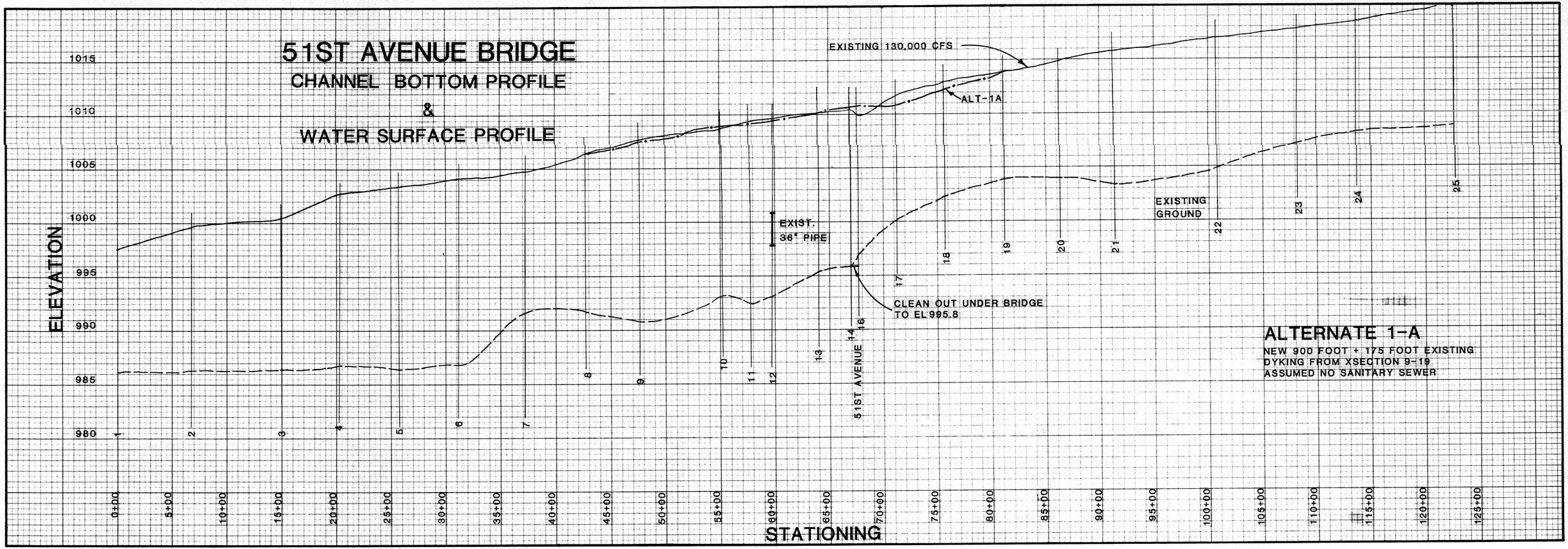

DOWNSTREAM
51ST AVENUE BRIDGE
CHANNEL BOTTOM PROFILE
&
WATER SURFACE PROFILE
EXISTING 130,000 CFS
BRIDGE
1952 GROUNDLINE (USGS)
EXISTING GROUND
EXIST. 36" PIPE
DEGRADATION OF SALT RIVER
ELEVATION
1015
1010
1005
1000
995
990
985
980
STATIONING
0+00
5+00
10+00
15+00
20+00
25+00
30+00
35+00
40+00
45+00
50+00
55+00
60+00
65+00
70+00
75+00
80+00
85+00
90+00
95+00
100+00
105+00
110+00
115+00
120+00
125+00

51ST AVENUE BRIDGE

CHANNEL BOTTOM PROFILE

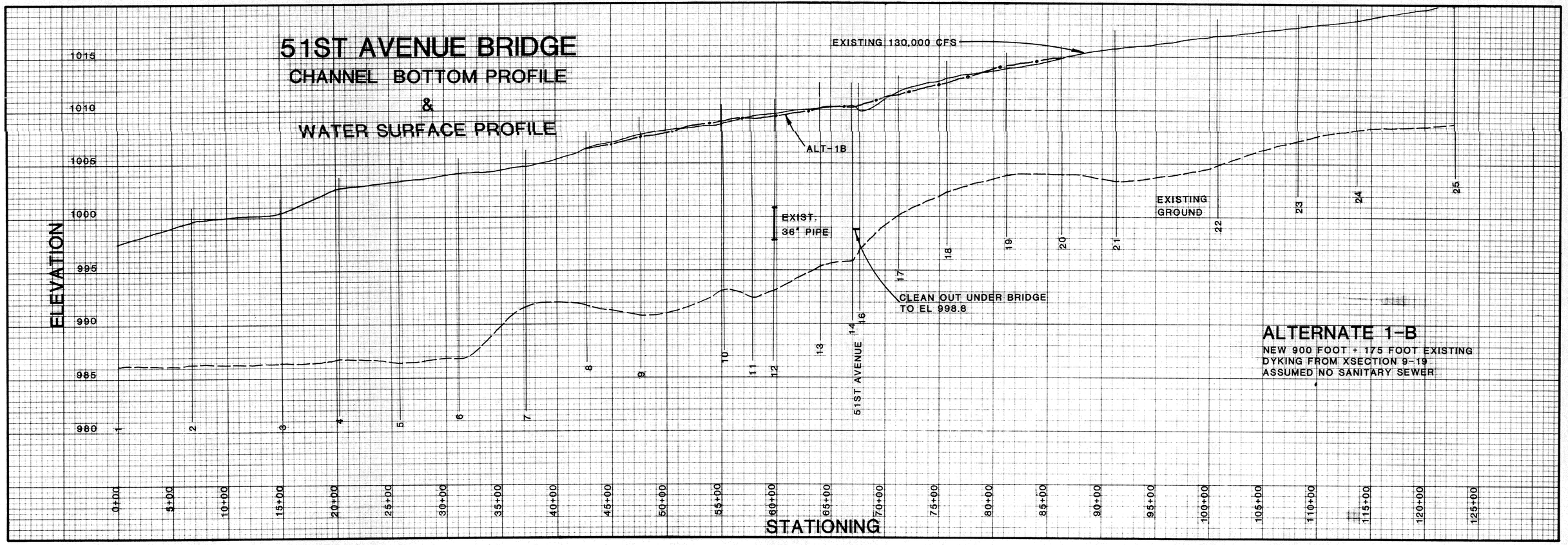
&

WATER SURFACE PROFILE



ALTERNATE 1-A

NEW 900 FOOT + 175 FOOT EXISTING DYKING FROM XSECTION 9-19
ASSUMED NO SANITARY SEWER

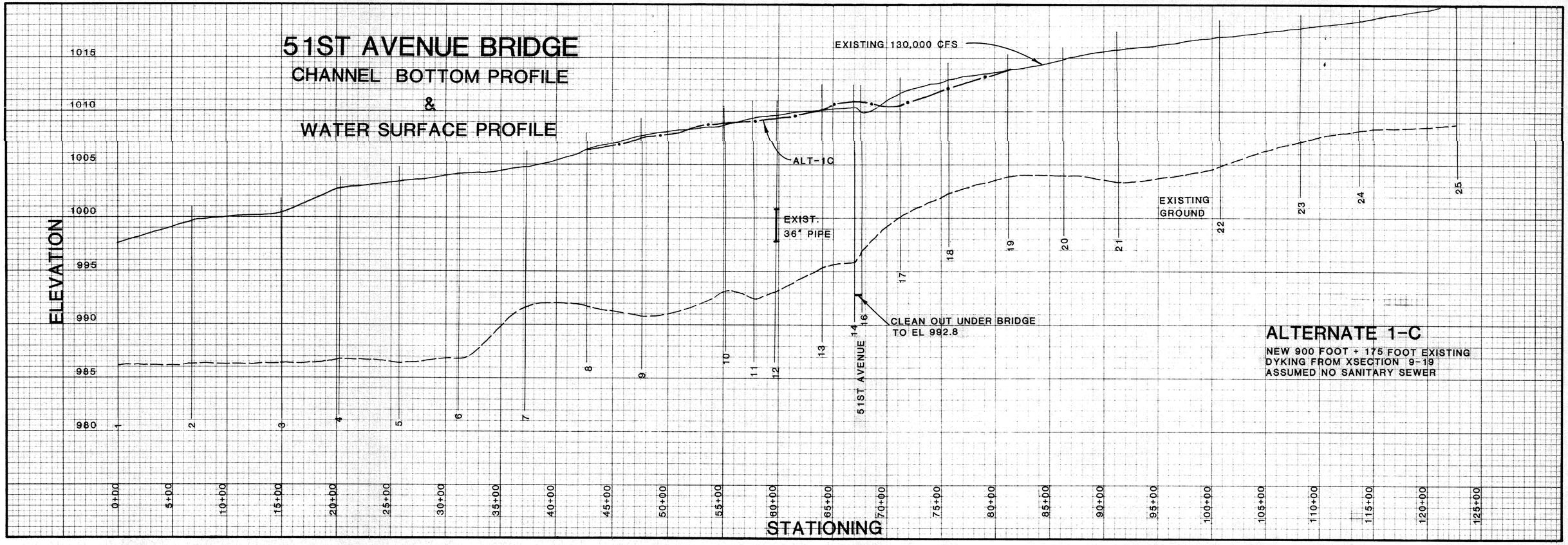

51ST AVENUE BRIDGE
CHANNEL BOTTOM PROFILE
&
WATER SURFACE PROFILE
EXISTING 130,000 CFS
ALT-1B
EXIST.
36" PIPE
EXISTING
GROUND
CLEAN OUT UNDER BRIDGE
TO EL 998.8
51ST AVENUE
ELEVATION
STATIONING
1015
1010
1005
1000
995
990
985
980
0+00
5+00
10+00
15+00
20+00
25+00
30+00
35+00
40+00
45+00
50+00
55+00
60+00
65+00
70+00
75+00
80+00
85+00
90+00
95+00
100+00
105+00
110+00
115+00
120+00
125+00
ALTERNATE 1-B
NEW 900 FOOT + 175 FOOT EXISTING
DYKING FROM XSECTION 9-19
ASSUMED NO SANITARY SEWER

51ST AVENUE BRIDGE

CHANNEL BOTTOM PROFILE

&

WATER SURFACE PROFILE



ALTERNATE 1-C

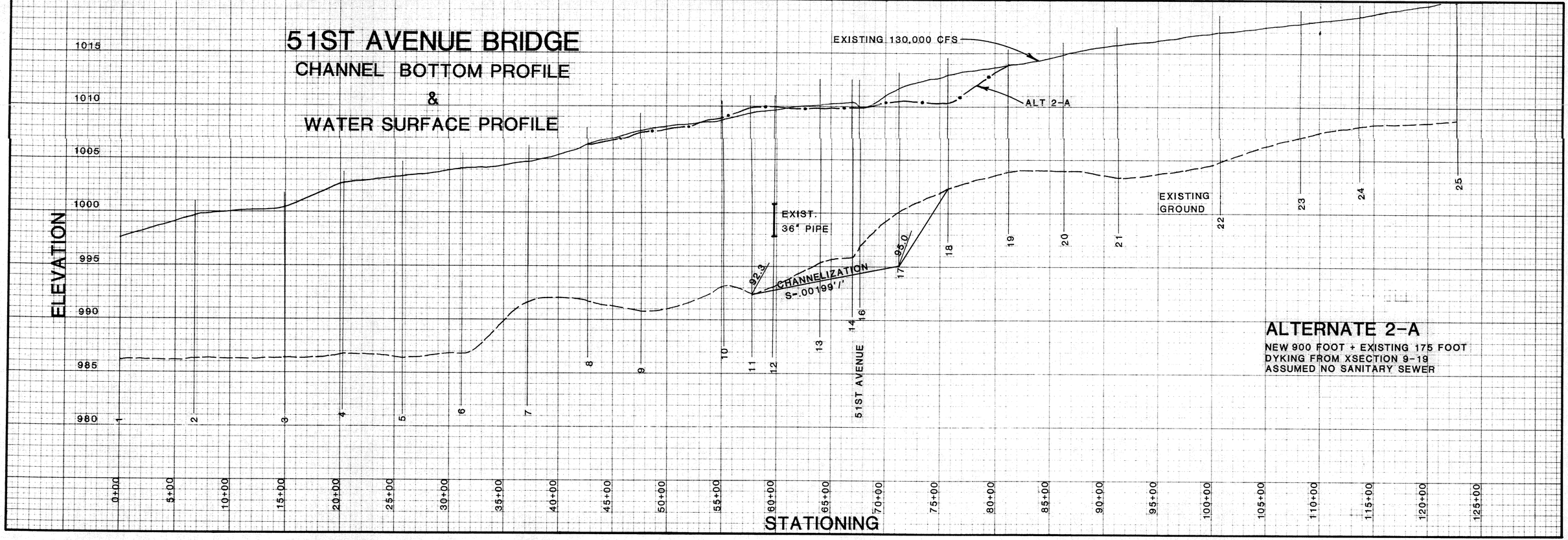
NEW 900 FOOT + 175 FOOT EXISTING
DYKING FROM XSECTION 9-19
ASSUMED NO SANITARY SEWER

51ST AVENUE BRIDGE

CHANNEL BOTTOM PROFILE

&

WATER SURFACE PROFILE



ALTERNATE 2-A

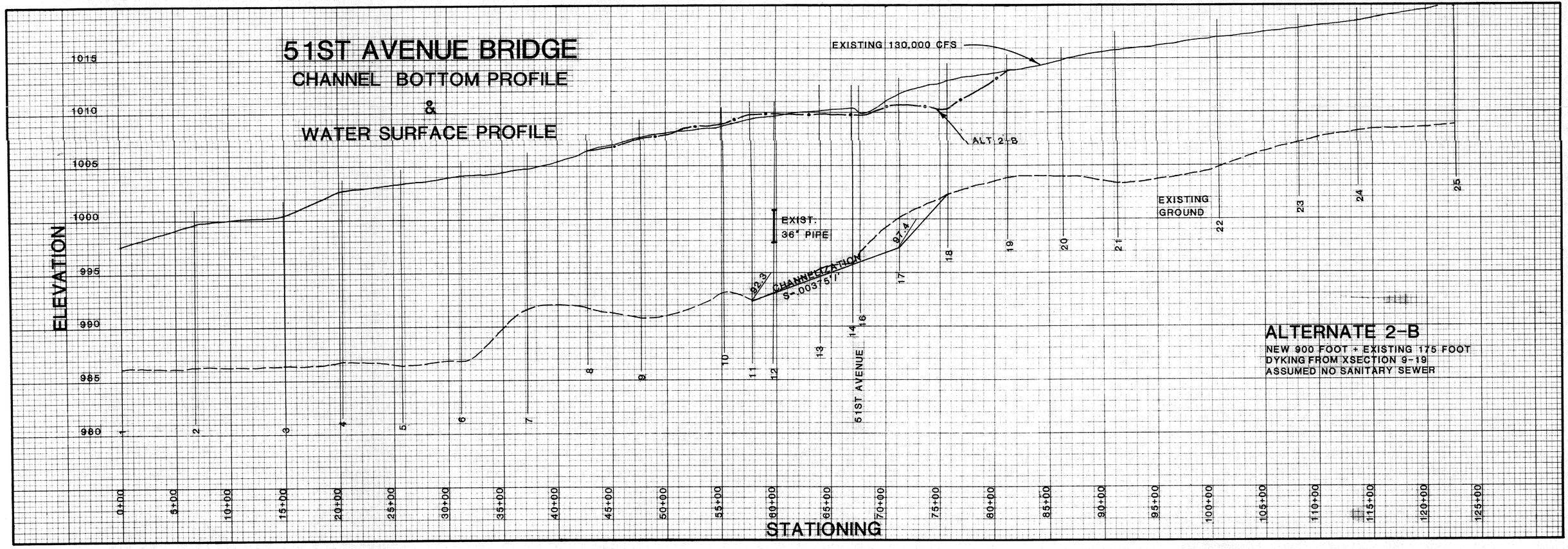
NEW 900 FOOT + EXISTING 175 FOOT
DYKING FROM XSECTION 9-19
ASSUMED NO SANITARY SEWER

51ST AVENUE BRIDGE

CHANNEL BOTTOM PROFILE

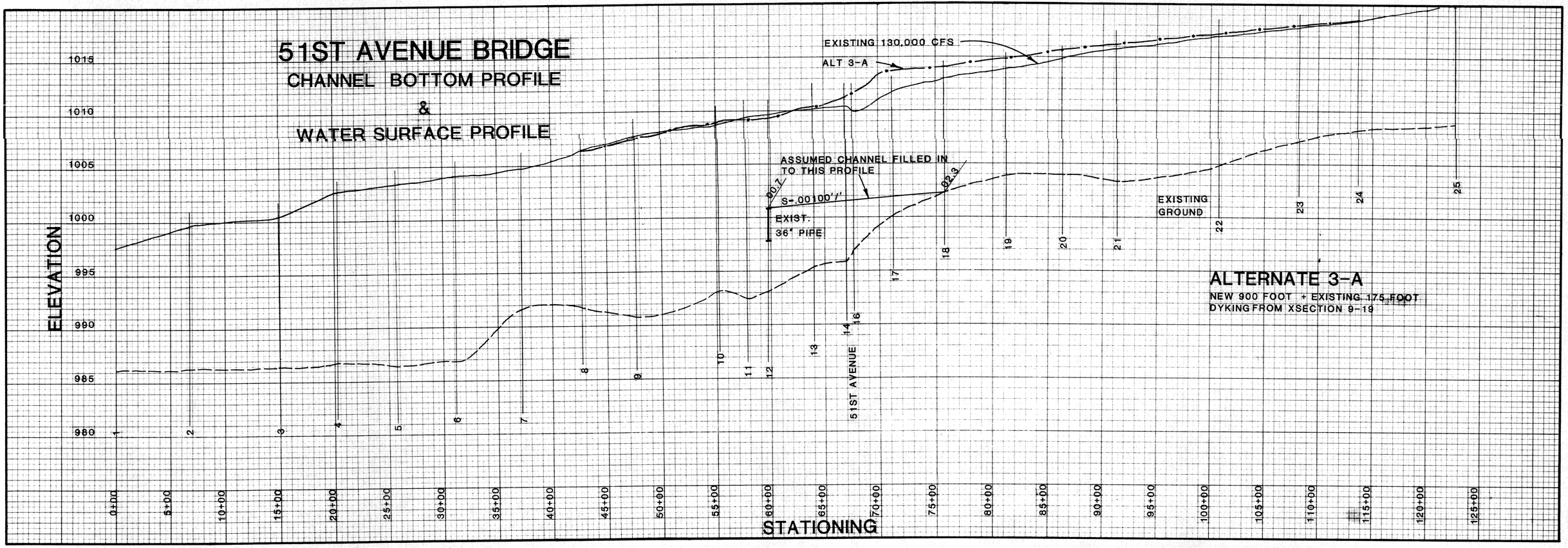
&

WATER SURFACE PROFILE



ALTERNATE 2-B

NEW 900 FOOT + EXISTING 175 FOOT
DYKING FROM XSECTION 9-19
ASSUMED NO SANITARY SEWER


51ST AVENUE BRIDGE
CHANNEL BOTTOM PROFILE
&
WATER SURFACE PROFILE
EXISTING 130,000 CFS
ALT 3-A
ASSUMED CHANNEL FILLED IN TO THIS PROFILE
S=.00100'/'
EXIST. 36" PIPE
EXISTING GROUND
ALTERNATE 3-A
NEW 900 FOOT + EXISTING 175 FOOT DYKING FROM XSECTION 9-19
ELEVATION
STATIONING
51ST AVENUE
1015
1010
1005
1000
995
990
985
980
0+00
5+00
10+00
15+00
20+00
25+00
30+00
35+00
40+00
45+00
50+00
55+00
60+00
65+00
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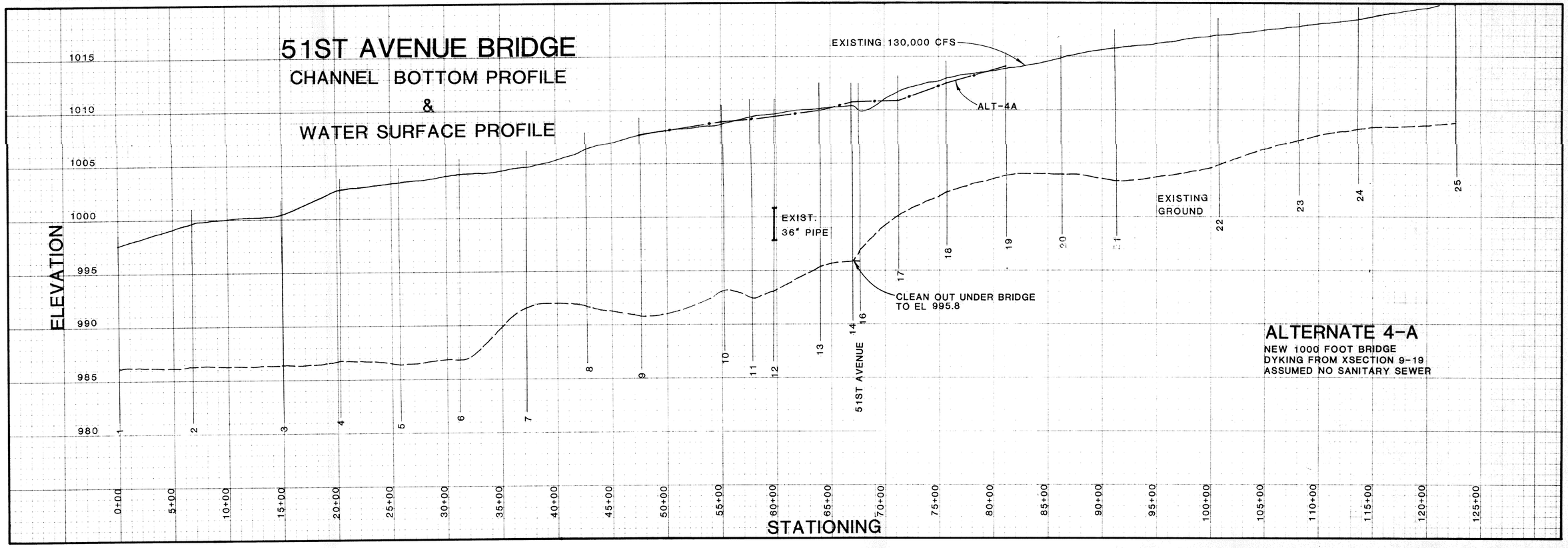
110+00
115+00
120+00
125+00


51ST AVENUE BRIDGE
CHANNEL BOTTOM PROFILE
&
WATER SURFACE PROFILE
EXISTING 130,000 CFS
ALT-4A
EXISTING GROUND
EXIST. 36" PIPE
CLEAN OUT UNDER BRIDGE TO EL 995.8
51ST AVENUE
ELEVATION
STATIONING
1015
1010
1005
1000
995
990
985
980
0+00
5+00
10+00
15+00
20+00
25+00
30+00
35+00
40+00
45+00
50+00
55+00
60+00
65+00
70+00
75+00
80+00
85+00
90+00
95+00
100+00
105+00
110+00
115+00
120+00
125+00
1
2
3
4
5
6
7
8
9
10
11
12
13
14
16
17
18
19
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21
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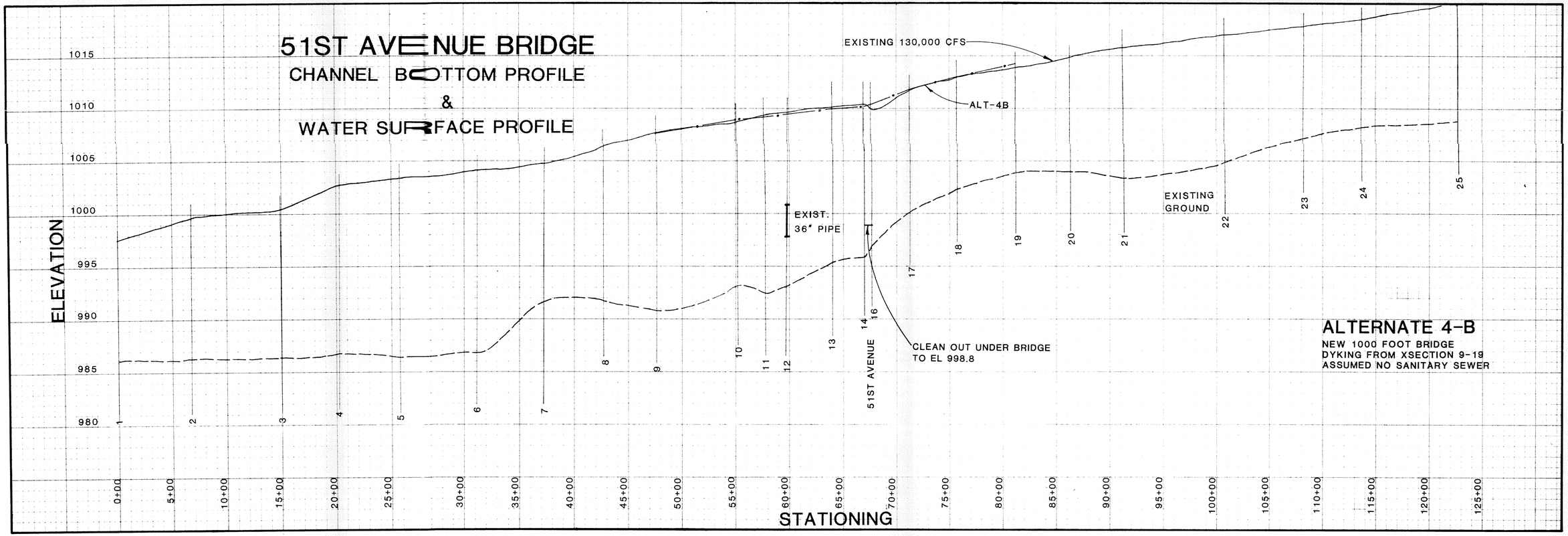
23
24
25
ALTERNATE 4-A
NEW 1000 FOOT BRIDGE
DYKING FROM XSECTION 9-19
ASSUMED NO SANITARY SEWER


51ST AVENUE BRIDGE
CHANNEL BOTTOM PROFILE
&
WATER SURFACE PROFILE
EXISTING 130,000 CFS
ALT-4B
EXISTING GROUND
EXIST. 36" PIPE
51ST AVENUE
CLEAN OUT UNDER BRIDGE TO EL 998.8
ALTERNATE 4-B
NEW 1000 FOOT BRIDGE
DYKING FROM XSECTION 9-19
ASSUMED NO SANITARY SEWER
ELEVATION
1015
1010
1005
1000
995
990
985
980
1
2
3
4
5
6
7
8
9
10
11
12
13
14
16
17
18
19
20
21
22
23
24
25
0+00
5+00
10+00
15+00
20+00
25+00
30+00
35+00
40+00
45+00
50+00
55+00
60+00
65+00
70+00
75+00
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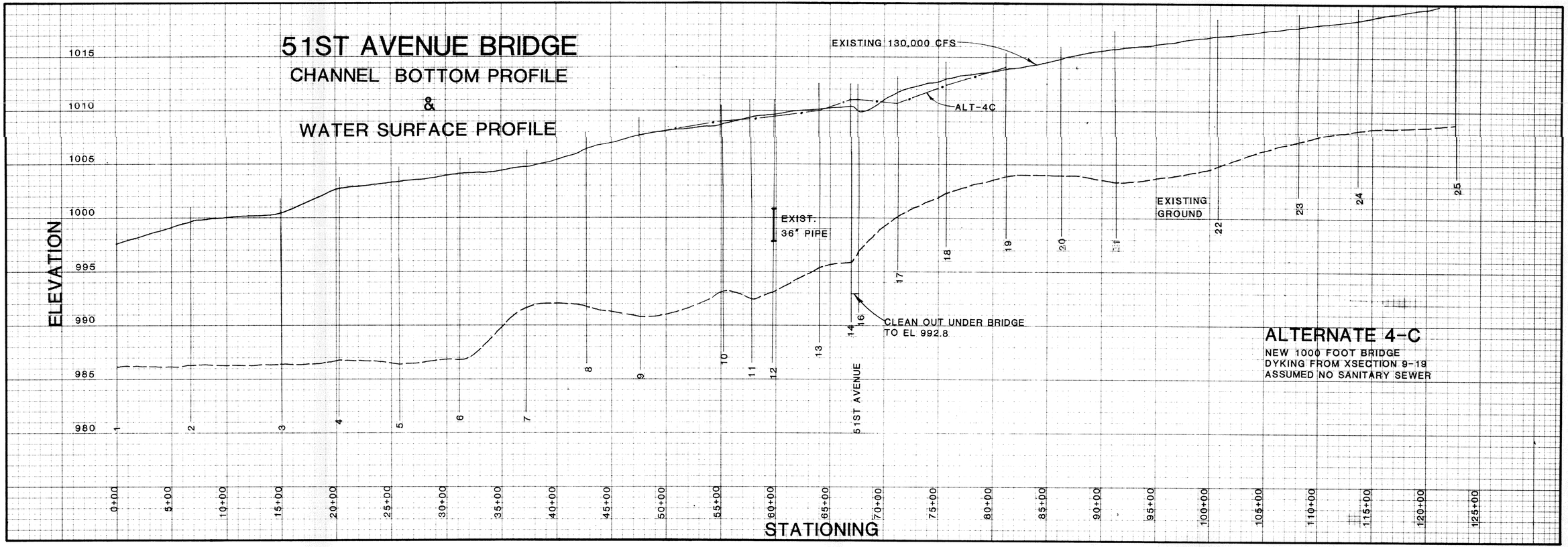
95+00
100+00
105+00
110+00
115+00
120+00
125+00
STATIONING


51ST AVENUE BRIDGE
CHANNEL BOTTOM PROFILE
&
WATER SURFACE PROFILE
EXISTING 130,000 CFS
ALT-4C
EXISTING GROUND
EXIST. 36" PIPE
CLEAN OUT UNDER BRIDGE TO EL 992.8
51ST AVENUE
ELEVATION
STATIONING
1015
1010
1005
1000
995
990
985
980
0+00
5+00
10+00
15+00
20+00
25+00
30+00
35+00
40+00
45+00
50+00
55+00
60+00
65+00
70+00
75+00
80+00
85+00
90+00
95+00
100+00
105+00
110+00
115+00
120+00
125+00
1
2
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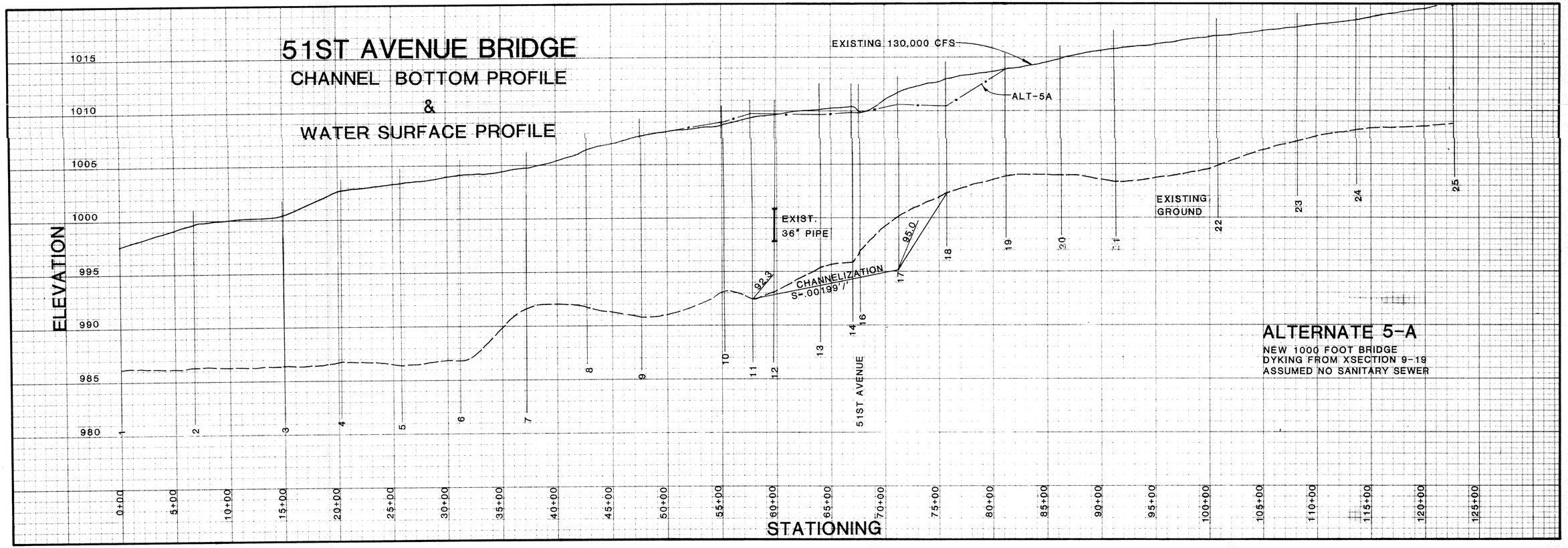
ALTERNATE 4-C
NEW 1000 FOOT BRIDGE
DYKING FROM XSECTION 9-19
ASSUMED NO SANITARY SEWER

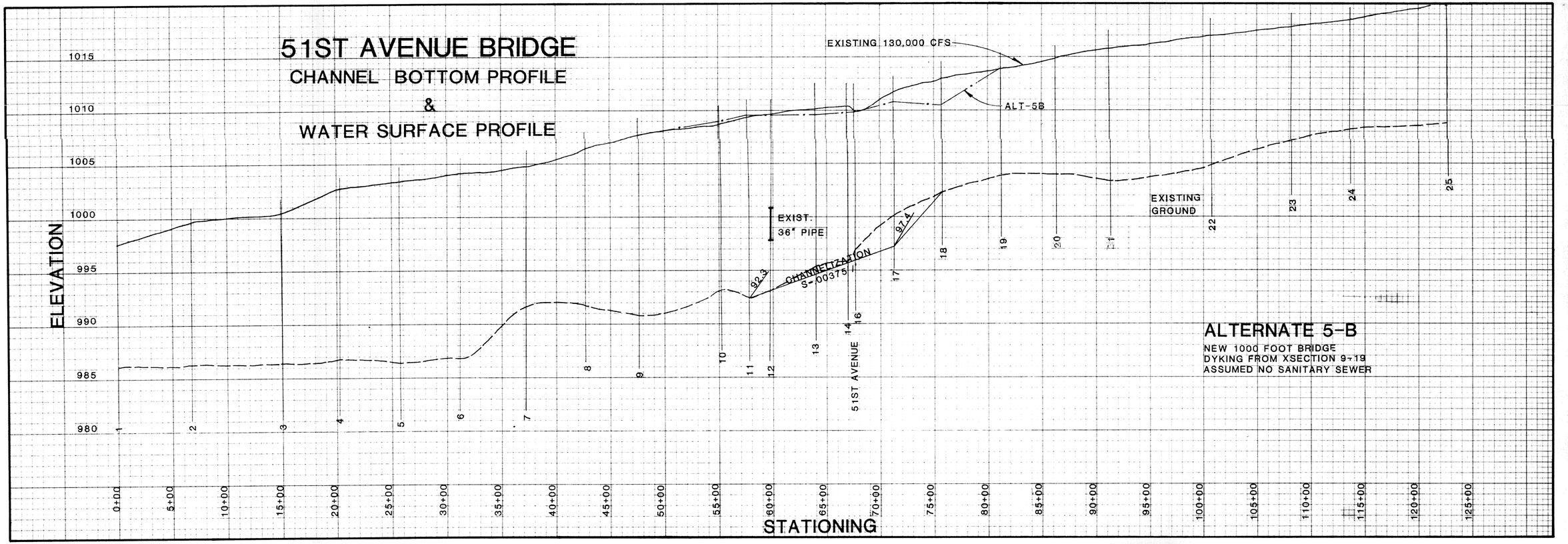

51ST AVENUE BRIDGE
CHANNEL BOTTOM PROFILE
&
WATER SURFACE PROFILE
EXISTING 130,000 CFS
ALT-5A
EXISTING GROUND
EXIST. 36" PIPE
CHANNELIZATION S=.00199'/'
92.3
95.0
51ST AVENUE
ELEVATION
STATIONING
1015
1010
1005
1000
995
990
985
980
0+00
5+00
10+00
15+00
20+00
25+00
30+00
35+00
40+00
45+00
50+00
55+00
60+00
65+00
70+00
75+00
80+00
85+00
90+00
95+00
100+00
105+00
110+00
115+00
120+00
125+00
ALTERNATE 5-A
NEW 1000 FOOT BRIDGE
DYKING FROM XSECTION 9-19
ASSUMED NO SANITARY SEWER

51ST AVENUE BRIDGE

CHANNEL BOTTOM PROFILE

&

WATER SURFACE PROFILE



ALTERNATE 5-B

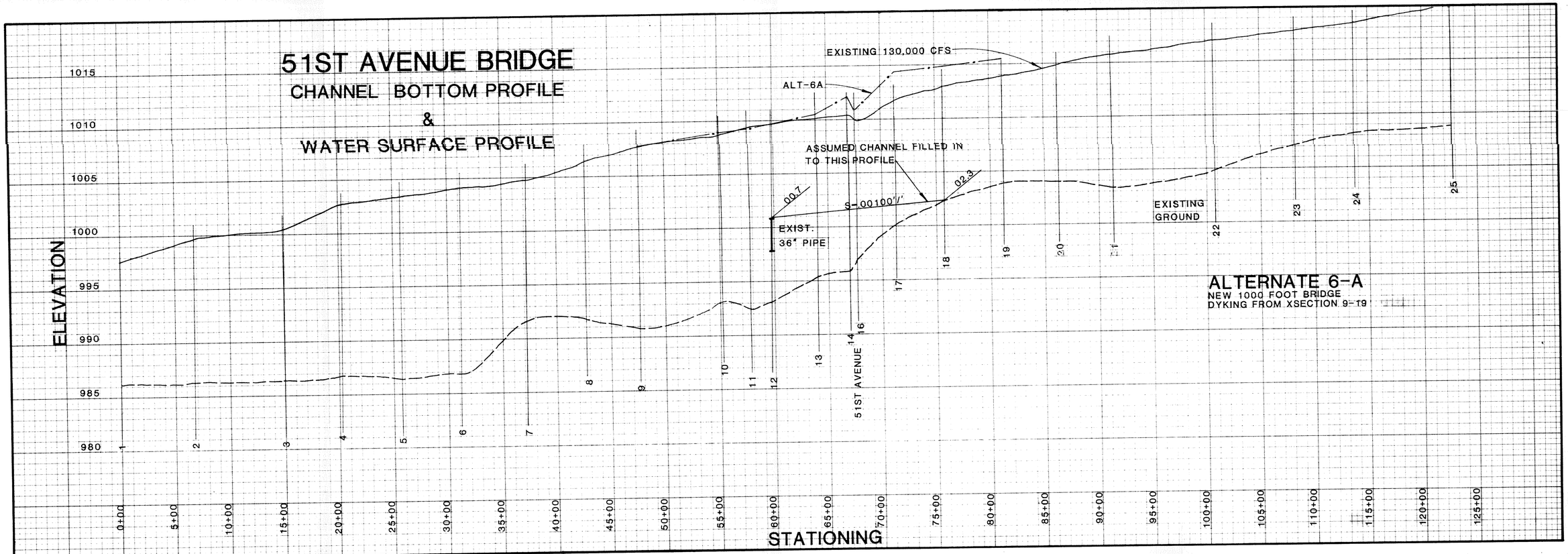
NEW 1000 FOOT BRIDGE
DYKING FROM XSECTION 9-19
ASSUMED NO SANITARY SEWER

51ST AVENUE BRIDGE

CHANNEL BOTTOM PROFILE

&

WATER SURFACE PROFILE



ALTERNATE 6-A

NEW 1000 FOOT BRIDGE
DYKING FROM XSECTION 9-19