



(A0007129)

EUSTIS ENGINEERING
GEOTECHNICAL ENGINEERS

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11 June 1986

Modjeski and Masters
Consulting Engineers
John Hancock Building
Room 510
1055 St. Charles Avenue
New Orleans, Louisiana 70113

Attention Mr. Barney Martin

Gentlemen:

Geotechnical Analyses - Revised Condition
Board of Levee Commissioners of the
Orleans Levee District
Metairie Relief Canal
Station 539+00 to Station 554+00
Orleans and Jefferson Parishes, Louisiana

This letter contains the results of slope stability and "I"-type floodwall analyses based on the furnished revised conditions between Stations 539+00 and 554+00 at the subject site. Soil parameters used for the analyses are contained in our previous report entitled "Subsoil Investigation, Sewerage and Water Board of New Orleans, Metairie Relief Canal, Station 539+00 to Station 554+00, Orleans and Jefferson Parishes, Louisiana," dated 27 October 1981.

Slope stability analyses were performed using the Corps of Engineers' Method of Planes wherein horizontal potential failure surfaces were varied along with active and passive wedge locations to arrive at the lowest numerical value of safety factor. The computations indicate a minimum factor of safety of 1.31 for a potential land side failure and a minimum factor of safety of 1.35 for a potential canal side failure. The results of the computations are shown on Enclosure 1 along with the furnished cross-section and the location of the critical wedges.

Analysis of the proposed "I"-type floodwall was performed in accordance with the following Corps of Engineers criteria: application of full hydrostatic pressure without dissipation; evaluation using "Q" and "S" soil shear strengths; a safety factor of 1.5 applied to the soil strengths for determination of the

11 June 1986

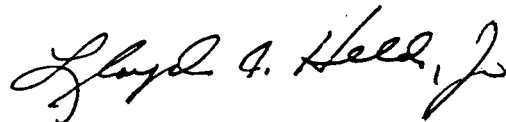
required embedment; and a safety factor of 1.0 applied to the soil strengths for determination of the maximum bending moment. The computations indicate a required penetration to el 14 C.D. and a maximum bending moment of 5.4 ft-kips per linear foot at el 24 C.D. The cross-section and combined net lateral pressure diagram (FS=1.5) are shown on Enclosure 2.

All adjacent structures should be inspected prior to pile driving operations and vibrations should be monitored during all pile driving operations. If vibrations are measured at a level which is sufficient to cause damage to adjacent structures, all pile driving operations should cease immediately. Eustis Engineering is available to monitor vibrations during driving operations and can provide consultations concerning the effects of vibrations on existing structures.

If you have any questions concerning the analyses, do not hesitate to contact us.

Yours very truly,

EUSTIS ENGINEERING

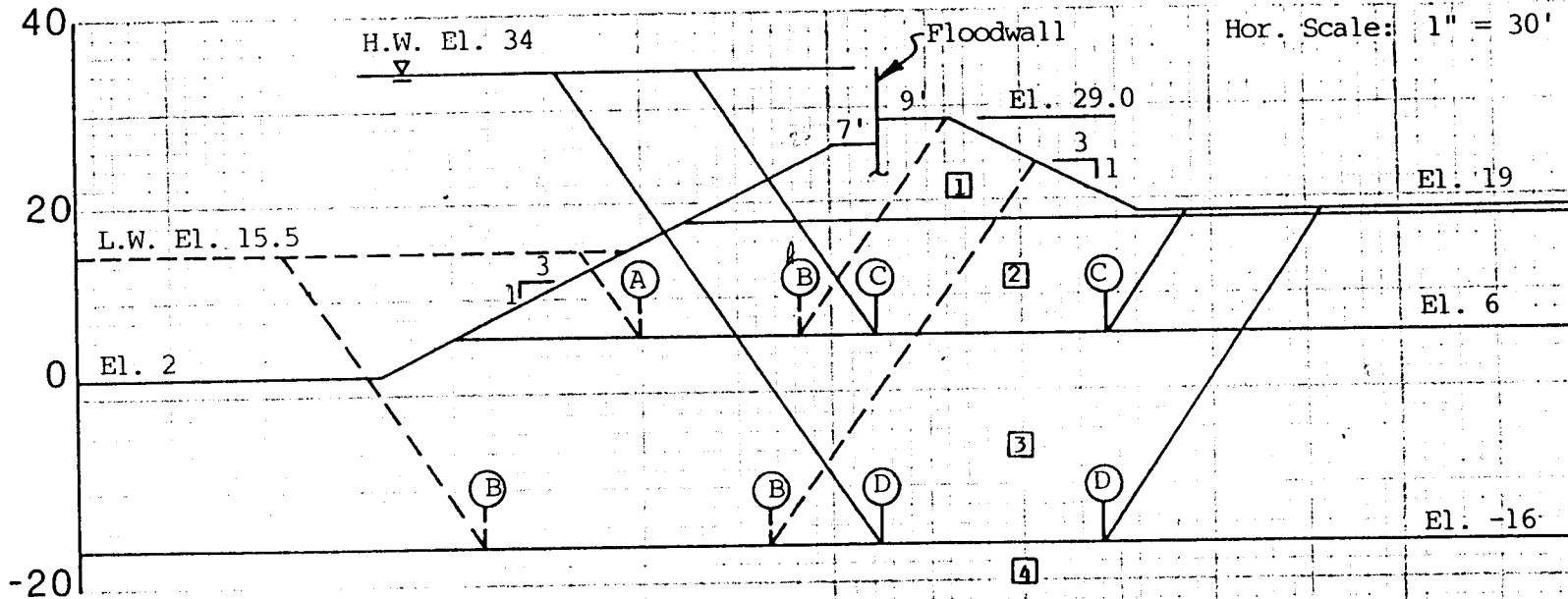


Lloyd A. Held, Jr.

L. J. Napolitano:bh

Enclosures 1 and 2

STA. 539+00 TO STA. 554+00



NOTE: See Figure 27 of report entitled "Subsoil Investigation, Sewerage & Water Board of New Orleans, Metairie Relief Canal, Station 539+00 to Station 554+00, Jefferson and Orleans Parishes, Louisiana" dated 27 October 1981 for Soil Parameters.

TYPICAL COMPUTER ANALYSIS

SURFACE		DRIVING FORCE			RESISTING FORCE				FACTOR OF SAFETY
NO.	EL.	D_A	D_P	ΣD	R_A	R_B	R_P	ΣR	
AA	6	20210	959	19251	18000	7500	4500	30000	1.56
BB	-16	58913	7310	51603	33260	21591	14940	69791	1.35
CC	6	31432	7974	23458	11803	10800	8000	32103	1.31
DD	-16	101952	56130	45822	25078	18550	26260	69888	1.52

ELEVATION IN FEET - C.D.

Geotechnical Analyses - Revised Condition

Board of Levee Commissioners of the Orleans Levee District

Metairie Relief Canal

Station 539+00 to Station 554+00

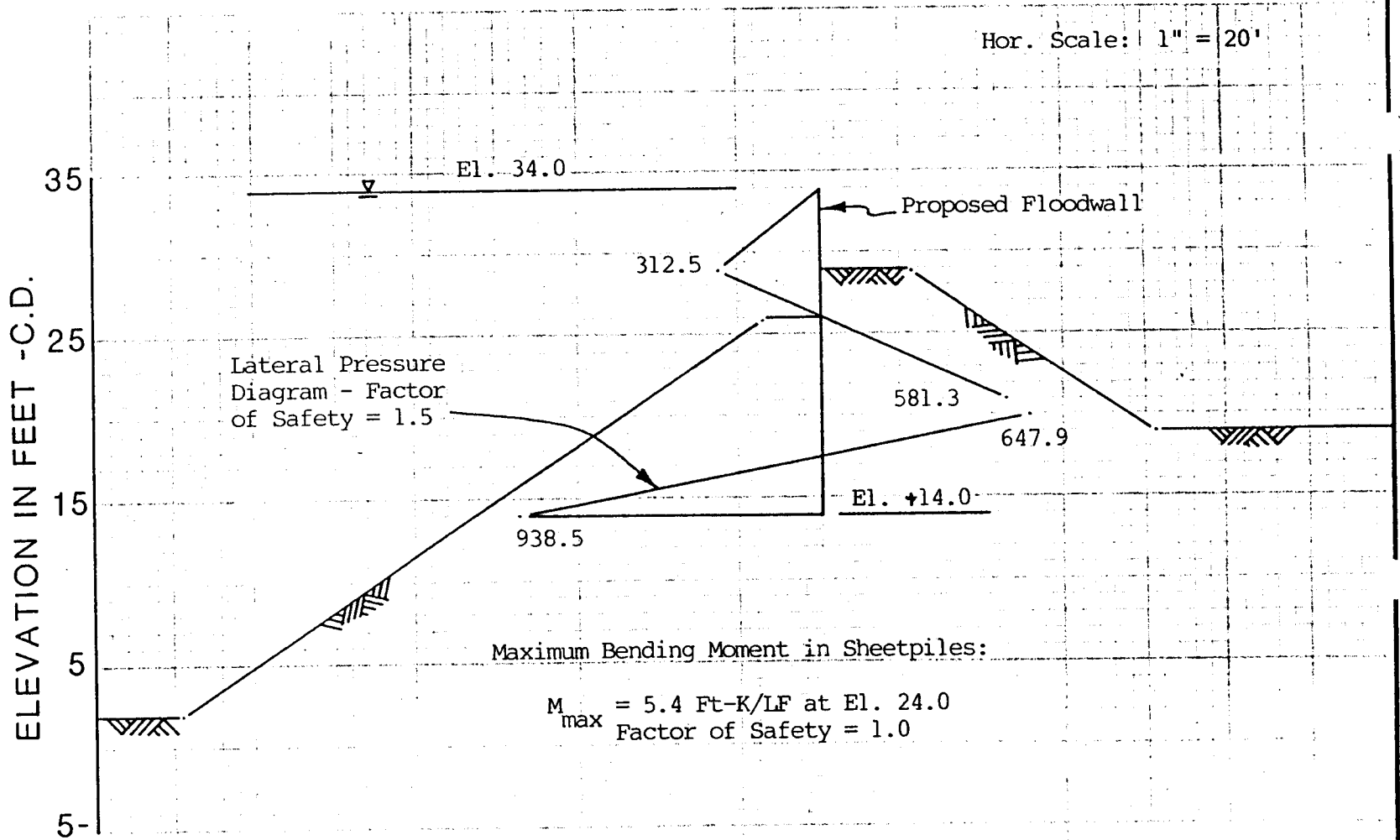
Orleans and Jefferson Parishes, Louisiana

For: Modjeski and Masters, Consulting Engineers, New Orleans, Louisiana

Enc. 1

STA. 539+00 TO STA. 554+00

Hor. Scale: 1" = 20'



NOTE: Computations were made for "Q"-case and "S"-case, and "S"-case governs.

Geotechnical Analyses - Revised Condition
Board of Levee Commissioners of the Orleans Levee District
Metairie Relief Canal
Station 539+00 to Station 554+00
Orleans and Jefferson Parishes, Louisiana

For: Modjeski and Masters, Consulting Engineers, New Orleans, Louisiana

LI FJUPIU

1 110 '17TH ST CANAL WEST SIDE LEVEE @ PUMP STA 88'
2 180 'I-WALL ELEV. 35.0 WATER @ 33.25; PERMIT'
3 125 100 '5' 35
4 130 1 35 20.4 11 8 35 1.0 6 -10
5 140 0 0
6 150 0 0 0 0 0 0 0 0 35
7 160 23 47.5 0 0 23 110 0 0 27
8 170 23 45 0 0 23 107 0 0 26
9 180 23 45 0 0 23 45 0 0 20.4
10 190 23 45 0 0 23 45 0 0 18.5
11 200 30 59.5 0 0 30 59.5 0 0 -1
12 210 0 35 100 35 200 35 9999.9 0
13 220 0 11.5 51.4 11.5 51.6 18.5 51.8 20.4 52 24 100 27
14 230 115 27 128.5 22.5 200 22.5 9999.9 0
15 240 0 11.5 51.4 11.5 51.6 18.5 51.8 20.4 52 24 128.5 22
16 250 200 22.5 9999.9 0
17 290 0 11.5 51.4 11.5 51.6 18.5 51.8 20.4 100 20.4 200 20.4
18 295 9999.9 0
19 300 0 11.5 51.4 11.5 51.6 18.5 100 18.5 200 18.5 9999.9 0
20 310 0 -1 100 -1 200 -1 9999.9 0
21 320 0 -10 100 -10 200 -10 9999.9 0
EOT..
OF FILE-UTIUF1 QUALIFIER=312DEC PUBLIC READ 6/6/86 FOR F.S.-140

FLOODWALL - ANALYSIS

17TH ST. P. STA.

WEST BANK. - BETWEEN P. STA

& JUST NORTH OF RR. TRACKS.

UNDER CONTRACT BY NOS'WB

71 Jun 86

CANTILEVER RETAINING WALL STABILITY (VER. 05/11/12)

RUN TIME = 8 JUN 88 14:13:10
DATA FILE = FJUPIU

17TH ST CANAL WEST SIDE LEVEE @ PUMP STA 86
I-WALL ELEV. 35.0 WATER @ 33.25 PERMIT
FS/LS WATER @ PS WATER @ UPPER @ LOWER @ FS WATER @ FS @ NO.
ELEV @ @ ELEV @ RANGE @ RANGE @ GROUND EL @ @ @ STR
35.00 20.40 11.00 8.00 35.00 1.00 6

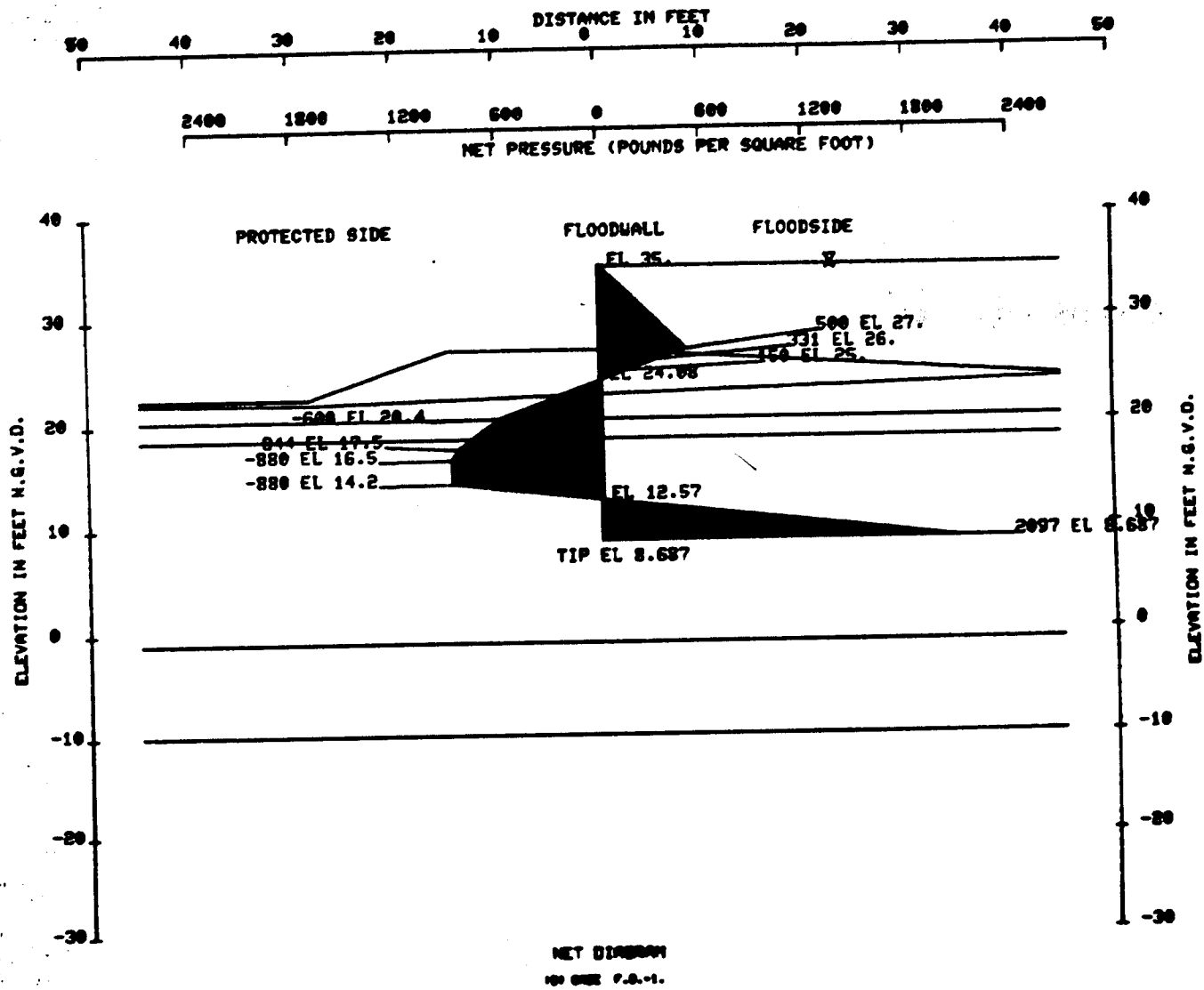
FLOODWALL ANALYSIS

AREA	SUM FORCE	MOM ARM	MOMENT		
X(1)	2725.99	20.01	54554.02		
X(2)	6798.85	8.80	59795.56		
X(3)	4072.65	1.20	5273.00		
TRIAL ELEV =	11.00	SUM OF FORCES =	0.00	SUM OF MOM =	10623.22
TRIAL ELEV =	8.00	SUM OF FORCES =	0.00	SUM OF MOM =	-3800.86
TRIAL ELEV =	8.79	SUM OF FORCES =	0.00	SUM OF MOM =	580.72
TRIAL ELEV =	7.79	SUM OF FORCES =	0.00	SUM OF MOM =	-5033.30
DESIGN EL =	8.69	SUM OF FORCES =	0.00	SUM OF MOM =	31.45

ELEVATION (FT)	NET DIAGRAM (LBS/SQ FT)
35.00	0.00
34.00	62.50
33.00	125.00
32.00	187.50
31.00	250.00
30.00	312.50
29.00	375.00
28.00	437.50
27.00	500.00
27.00	500.00
26.00	331.39
26.00	331.39
25.00	150.45
24.00	0.00
24.00	-12.69
23.00	-175.82
22.00	-338.95
21.00	-502.08
20.40	-599.96
20.40	-599.96
19.40	-684.07
18.50	-759.77
18.50	-759.77
17.50	-843.88
16.50	-879.91
16.50	-879.92
14.50	-879.94
14.20	-879.94
12.57	0.00
8.69	2007.04
8.69	0.00

COPY SCREEN, THEN STRIKE RETURN TO PLOT

DO YOU WANT A CALCOMP PLOT (Y/N)?



LI FJUPIU 1-EOF

1 110 '17TH ST CANAL WEST SIDE LEVEE @ PUMP STA 86'
2 120 '1-WALL ELEV. 35.0 WATER @ 33.25; PERMIT'
3 125 100 '5' 35
4 120 1 35 20.4 -2 -6 36 1.5 0 -10
5 140 0 0
6 150 0 0 0 0 0 0 0 0 35
7 160 23 47.5 0 0 23 110 0 0 27
8 170 23 45 0 0 23 107 0 0 26
9 180 23 45 0 0 23 45 0 0 20.4
10 180 23 45 0 0 23 45 0 0 18.5
11 200 30 59.5 0 0 30 59.5 0 0 -1
12 210 0 35 100 35 200 35 9999.9 0
13 220 0 11.5 51.4 11.5 51.6 18.5 51.8 20.4 52 24 100 27
14 230 115 27 128.5 22.5 200 22.5 9999.9 0
15 240 0 11.5 51.4 11.5 51.6 18.5 51.8 20.4 52 24 128.5 22
16 250 200 22.5 9999.9 0
17 290 0 11.5 51.4 11.5 51.6 18.5 51.8 20.4 100 20.4 200 20.4
18 295 9999.9 0
19 300 0 11.5 51.4 11.5 51.6 18.5 100 18.5 200 18.5 9999.9 0
20 310 0 -1 100 -1 200 -1 9999.9 0
21 320 0 -10 100 -10 200 -10 9999.9 0

EOT..

OFFILE-WESTIU QUALIFIER-312DEC PUBLIC READ ON 6/6/86

CANTILEVER RETAINING WALL STABILITY (VER. 05/11/12)

RUN TIME = 6 JUN 88 12:27:52
DATA FILE = FJUPIO

17TH ST CANAL WEST SIDE LEVEE @ PUMP STA 86

I-WALL ELEV. 35.0 WATER @ 33.25; PERMIT

FS/LS WATER ** PS WATER ** UPPER ** LOWER ** FS WATER ** FS ** NO.
ELEV ** ELEV ** RANGE ** RANGE ** GROUND EL ** ** ** STR

35.00 ** 20.40 -2.00 -6.00 35.00 1.50 6

3.50 -380.76
2.50 -378.30
1.50 -371.83
0.50 -363.60
0.39 -359.80
-0.06 0.00
-3.25 2902.45
-3.25 0.00

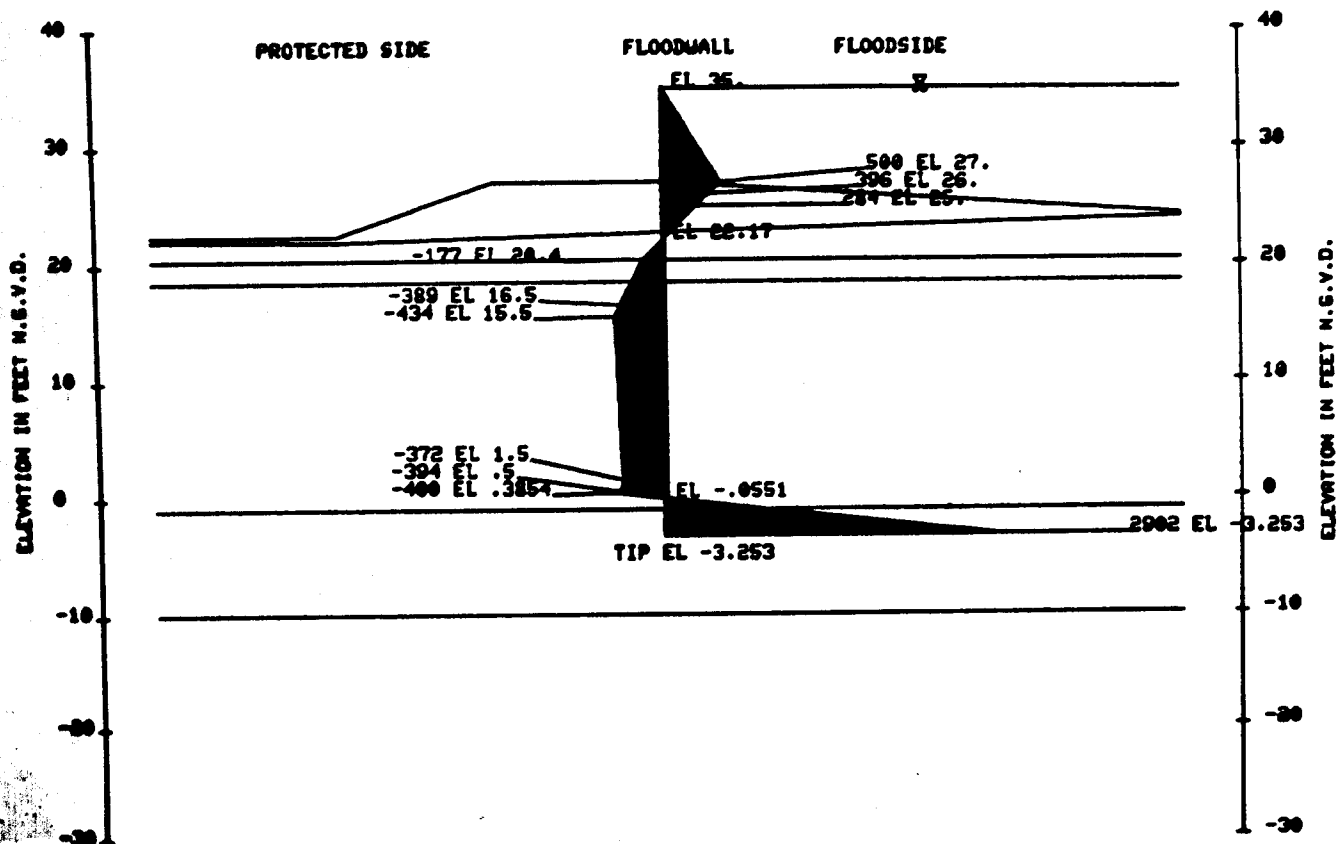
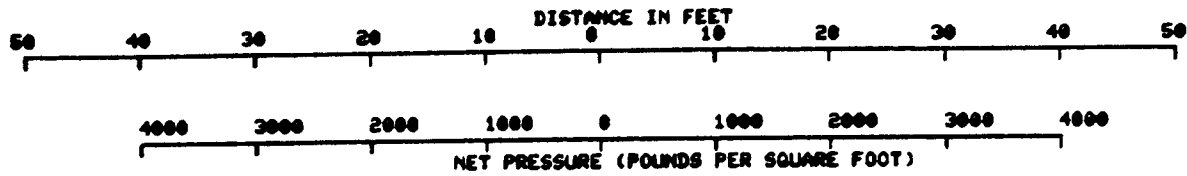
COPY SCREEN, THEN STRIKE RETURN TO PLOT

FLOODWALL ANALYSIS

AREA	SUM FORCE	MOM ARM	MOMENT
X(1)	3190.69	31.33	99060.69
X(2)	7831.93	13.39	104862.46
X(3)	4641.25	1.07	4947.81
TRIAL ELEV = -2.00	SUM OF FORCES =	9.89	SUM OF MOM = 8346.18
TRIAL ELEV = -6.00	SUM OF FORCES =	-1356.71	SUM OF MOM = -20755.77
TRIAL ELEV = -2.94	SUM OF FORCES =	0.24	SUM OF MOM = 1690.28
TRIAL ELEV = -3.94	SUM OF FORCES =	0.00	SUM OF MOM = -3647.68
DESIGN EL = -3.25	SUM OF FORCES =	0.00	SUM OF MOM = 46.04

ELEVATION (FT)	NET DIAGRAM (LBS/50 FT)
35.00	0.00
34.00	62.50
33.00	125.00
32.00	187.50
31.00	250.00
30.00	312.50
29.00	375.00
28.00	437.50
27.00	500.00
27.00	500.00
26.00	396.12
26.00	396.12
25.00	284.10
24.00	183.84
23.00	83.57
22.17	0.00
22.00	-16.69
21.00	-116.96
20.40	-177.12
20.40	-177.12
19.40	-231.48
18.50	-280.41
18.50	-280.41
17.50	-334.78
16.50	-389.15
15.50	-434.35
14.50	-429.89
13.50	-425.42
12.50	-420.96
11.50	-416.49
10.50	-412.02
9.50	-407.56
8.50	-403.09
7.50	-398.63
6.50	-394.16
5.50	-389.69
4.50	-385.23

DO YOU WANT A CALCOMP PLOT (Y/N)?



NET DIAGRAM
100 ONE P.S.-1.5

SUMMARY

<u>Section</u>	<u>Max. Deflection</u>	<u>Max Stress</u>
PZ-22	3.99 in	12,566 psi
PZ-27	1.83 in	7,531 psi
PZ-35	0.80 in	4,690 psi