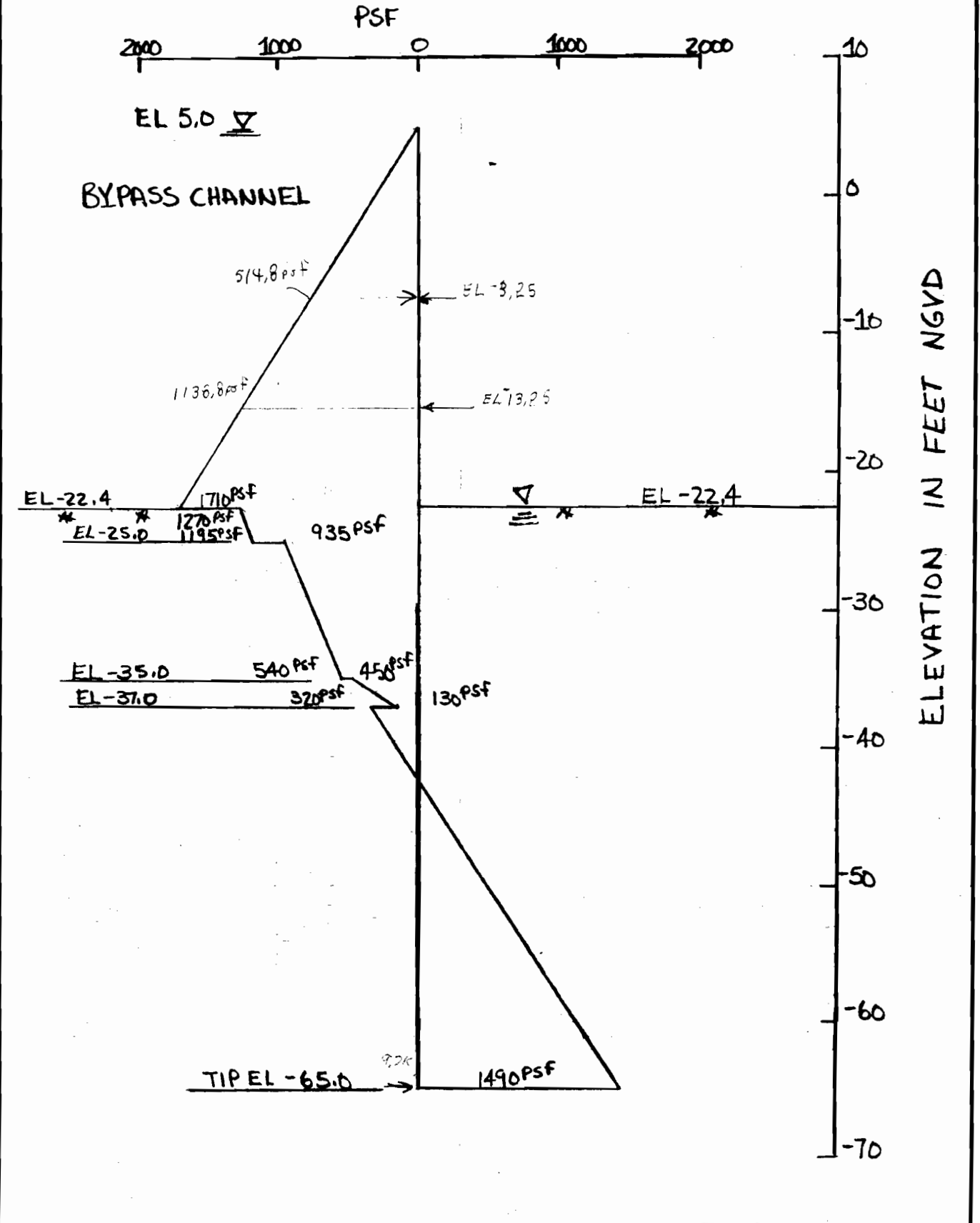


PROJECT	17th St Outfall Canal Valve Structure	OF	COMPUTED BY	DATE
SUBJECT	PRESSURE DIAGRAM EAST BRACED WALL		CHECKED BY	DATE

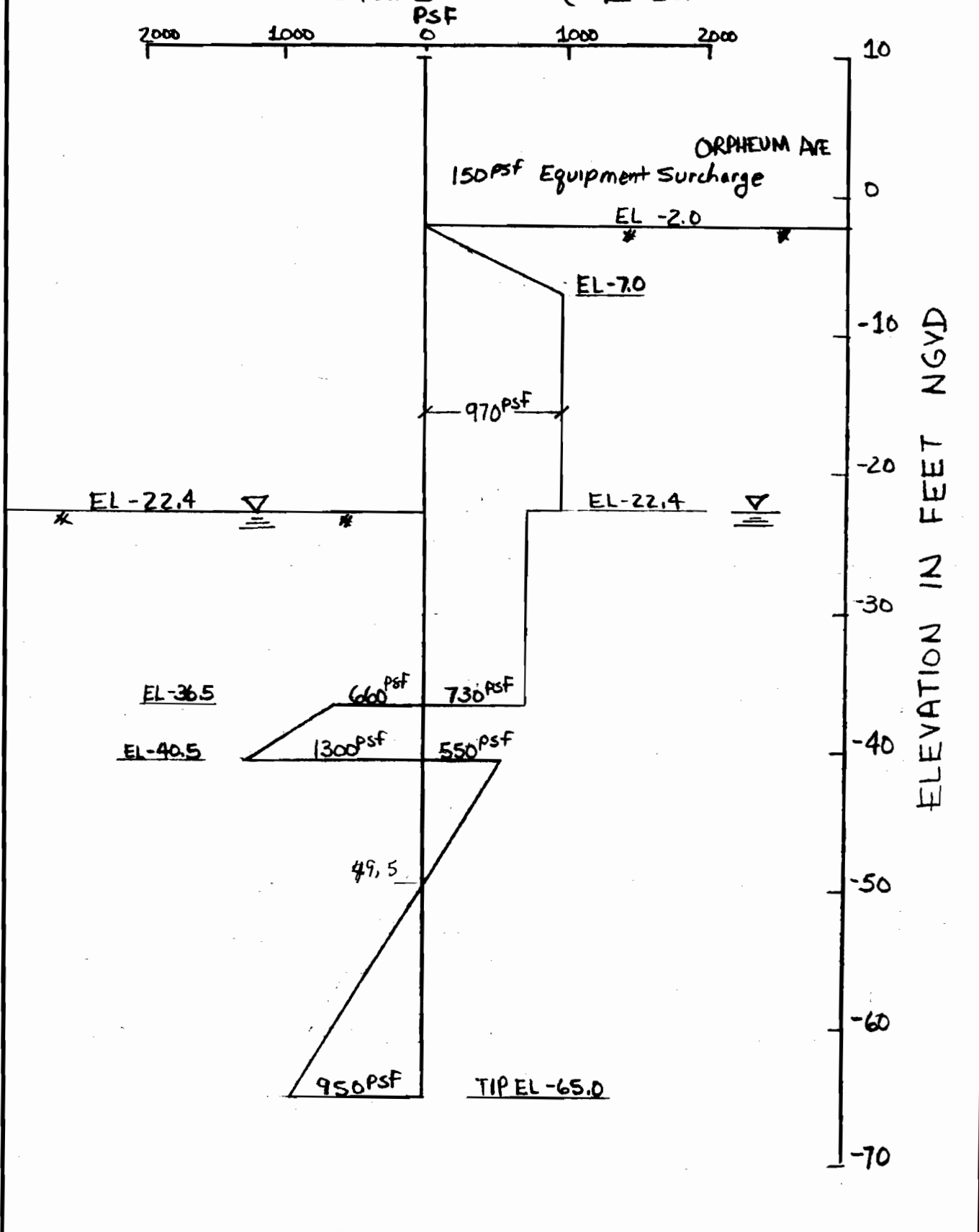
COFFERDAM PHASE I CONSTRUCTION



COMPUTATION SHEET

PROJECT	17th St Outfall Canal Valve Structure	PAGE	OF	COMPUTED BY	DATE
SUBJECT	PRESSURE DIAGRAM WEST BRACED WALL			FJV	8/87
				CHECKED BY	DATE

COFFERDAM PHASE I CONSTRUCTION
CASE I Water @ EL-22.4

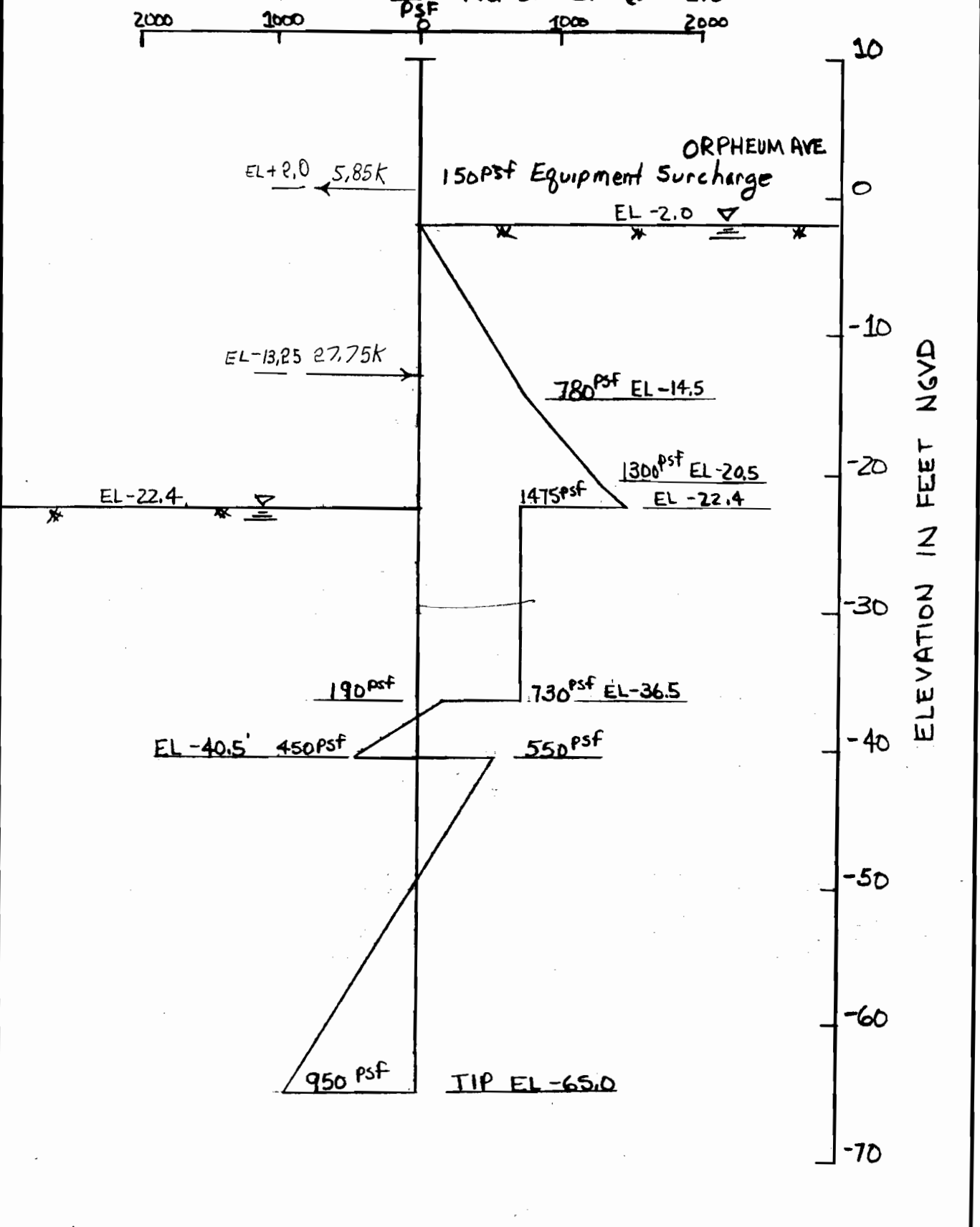


COMPUTATION SHEET

PROJECT	17th St Outfall Canal Valve Structure	PAGE OF	COMPUTED BY	DATE
SUBJECT	PRESSURE DIAGRAM WEST BRACED WALL		FTV	8/87
			CHECKED BY	DATE

COFFERDAM PHASE I CONSTRUCTION

CASE II Water EL @ -2.0



COMPUTATION SHEET

PROJECT	1754 Canal GDM	PAGE 3 OF	COMPUTED BY Laborde, CA	DATE 6 Jan 87
SUBJECT	Cofferdam for Butterfly Valve Alt.		CHECKED BY	DATE

SIZE sht pile for Cofferdam cell

PROGRAM	SUPPORTS	TIE BACK FORCE	MAX sht pile moment
BEAMS	EL-17,5	31,2 K/ft	118,4'K @ -17,5
BEAMS	EL-13	29,1 K/ft	73,5'K @ -27,8
BEAMS	EL-13,25	29,3 K/ft	→ 68,8'K @ -28,0
BEAMS	EL +2,0	22,6 K/ft	338,2'K @ -22,0
CFRAME	EL-13,25	30,1 K/ft	→ 80,8'K @ -29,2
CFRAME	EL -12,0 ‡ EL +1,5	34,5 K/ft -9,5 K/ft	108,5'K @ -12,0 2nd highest 67,4'K @ -29,2
CFRAME	EL -13,25 ‡ +1,5	32,7 K/ft -2,1 K/ft*	93,7'K @ -13,25 2nd highest 60'K @ -30,0
CFRAME	EL -13,25 ‡ EL -3,25	34,1 K/ft - 3,4 K/ft*	97'K @ -13,25 2nd highest 57,5'K @ -30,0

* Negative load will not exist since water will not be attached to the sheet pile

SIZE sht pile using CFRAME RUN w/ support @ EL -13,25

$$M_{max} = 80,8'K$$

$$S_{xmin} = \frac{80,8'K (12)}{20ksi} = 48,48 in^3/ft \quad PZ-35 \quad S_x = 48,5 in^3/ft$$

```

TYPE A: 17RWD
00 SEVENTEENTH ST CANAL BUTTERFLY VALVE ALT*
10 COFFERDAM AT C/L OF CANAL
20 KSI FT IN IN LB
30 ( 4 1 29000 0.3
40 . 0 -65.0 2 0 -22.4 3 0 -13.25 4 0 1.5 5 0 5.0
50 FIX X 1 3 4 FIX Y 1 3 4
60 1 1 2 2 2 3 3 3 4 4 4 5
70 361.2 10.28 7.5 1 2 3 4
80 LOAD CASE 1 0 8 0 0
90 0 -1490.0 20 0.0 0. 1
00 20 0.0 28 320.0 0. 1
10 28 130.0 30 450.0 0. 1
20 30 540.0 40 935.0 0. 1
30 40 1195.0 42.6 1270.0 0. 1
40 0 1710.0 9.15 1139.0 0. 2
50 0 1139.0 14.75 218.4 0. 3
60 0 218.4 3.5 0. 0. 4

```

SUPPORTS @ +1.5 & -13.25

```

\STRUC\CFRAME>TYPE OUTPUT
*****
PROGRAM CFRAME V02.05 24JUL84
*****

```

```

RUN DATE = 87/12/10
RUN TIME = 16.14.12

```

```

SEVENTEENTH ST CANAL BUTTERFLY VALVE ALT
COFFERDAM AT C/L OF CANAL

```

*** JOINT DATA ***

JOINT	X Y		FIXITY			KX KY		KR	
	--- FT ---		X	Y	R	---LB / IN---		IN-LB /RAD	
1	.00	-65.00	*	*					
2	.00	-22.40							
3	.00	-13.25	*	*					
4	.00	1.50	*	*					
5	.00	5.00							

*** MEMBER DATA ***

MEMBER	END END		LENGTH FT	I IN**4	A IN**2	AS IN**2	E KSI	G KSI
	A	B						
1	1	2	42.60	.3612E+03	.1028E+02	.7500E+01	.2900E+05	.1115E+05
2	2	3	9.15	.3612E+03	.1028E+02	.7500E+01	.2900E+05	.1115E+05
3	3	4	14.75	.3612E+03	.1028E+02	.7500E+01	.2900E+05	.1115E+05
4	4	5	3.50	.3612E+03	.1028E+02	.7500E+01	.2900E+05	.1115E+05

*** LOAD CASE 1

MEMBER	LA FT	PA LB / FT	LB FT	PB LB / FT	ANGLE DEG
1	.00	-.1490E+04	20.00	.0000E+00	.00
1	20.00	.0000E+00	28.00	.3200E+03	.00
(28.00	.1300E+03	30.00	.4500E+03	.00
.	30.00	.5400E+03	40.00	.9350E+03	.00
1	40.00	.1195E+04	42.60	.1270E+04	.00
2	.00	.1710E+04	9.15	.1139E+04	.00
3	.00	.1139E+04	14.75	.2184E+03	.00
4	.00	.2184E+03	3.50	.0000E+00	.00

LOAD CASE 1

JOINT	JOINT DISPLACEMENTS		
	DX IN	DY IN	DR RAD
1	.0000E+00	.0000E+00	.2258E-03
2	.8613E+00	.0000E+00	.7494E-02
3	.0000E+00	.0000E+00	.5117E-02
4	.0000E+00	.0000E+00	-.1933E-02
5	.8141E-01	.0000E+00	-.1938E-02

MEMBER	JOINT	MEMBER END FORCES				LOCATION IN
		AXIAL LB	SHEAR LB	MOMENT IN-LB	MOMENT EXTREMA IN-LB	
1	1	.0000E+00	-.9686E+04	.0000E+00	.7180E+06	419.18
	2	.0000E+00	.7225E+04	.4323E+06	-.4335E+06	102.24
2	2	.0000E+00	-.7225E+04	.4323E+06	.4323E+06	.00
	3	.0000E+00	.2026E+05	-.1124E+07	-.1124E+07	109.80
3	3	.0000E+00	.1246E+05	-.1124E+07	-.5351E+04	177.00
	4	.0000E+00	-.2448E+04	-.5351E+04	-.1124E+07	.00
4	4	.0000E+00	.3822E+03	-.5351E+04	.0000E+00	42.00
	5	.0000E+00	.0000E+00	.0000E+00	-.5351E+04	.00

→ 1124 "K

JOINT	STRUCTURE REACTIONS		
	FORCE X LB	FORCE Y LB	MOMENT IN-LB
1	.9686E+04	.0000E+00	.0000E+00
3	-.3272E+05	.0000E+00	.0000E+00
4	.2066E+04	.0000E+00	.0000E+00

TOTAL	-.2097E+05	.0000E+00	

MEMBER	LOAD CASE	JOINT	MEMBER END FORCES				MOMENT EXTREMA IN-LB	LOCATION IN
			AXIAL LB	SHEAR LB	MOMENT IN-LB			

1	1	1	.0000E+00	-.9686E+04	.0000E+00	.7180E+06	419.18
		2	.0000E+00	.7225E+04	.4323E+06	-.4335E+06	102.24
2	1	2	.0000E+00	-.7225E+04	.4323E+06	.4323E+06	.00
		3	.0000E+00	.2026E+05	-.1124E+07	-.1124E+07	109.80
3	1	3	.0000E+00	.1246E+05	-.1124E+07	-.5351E+04	177.00
		4	.0000E+00	-.2448E+04	-.5351E+04	-.1124E+07	.00
4	1	4	.0000E+00	.3822E+03	-.5351E+04	.0000E+00	42.00
		5	.0000E+00	.0000E+00	.0000E+00	-.5351E+04	.00

); \STRUC\CFRAME>

TYPE A:17RWDM

100 SEVENTEENTH ST CANAL BUTTERFLY VALVE ALT*

110 COFFERDAM AT C/L OF CANAL

120 KSI FT IN IN LB

130 5 4 1 29000 0.3

140 1 0 -65.0 2 0 -22.4 3 0 -12.00 4 0 1.5 5 0 5.0

150 FIX X 1 3 4 FIX Y 1 3 4

160 1 1 2 2 2 3 3 3 4 4 4 5

170 361.2 10.28 7.5 1 2 3 4

180 LOAD CASE 1 0 8 0 0

190 0 -1490.0 20 0.0 0. 1

200 20 0.0 28 320.0 0. 1

210 28 130.0 30 450.0 0. 1

220 30 540.0 40 935.0 0. 1

230 40 1195.0 42.6 1270.0 0. 1

240 0 1710.0 10.4 1061.0 0. 2

250 0 1061.0 12.0 218.4 0. 3

260 0 218.4 3.5 0. 0. 4

*CFRAME RUNS W/ 2 tie Backs
@ EL'S -12.0 and +1.5,*

C:\STRUC\CFRAME>

TYPE OUTPUT

1*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*
 PROGRAM CFRAME V02.05 24JUL84
 --*-*-*-*-*-*-*-*-*-*-*-*-*-*

RUN DATE = 87/12/ 8
 RUN TIME = 16. 3.55

SEVENTEENTH ST CANAL BUTTERFLY VALVE ALT
 COFFERDAM AT C/L OF CANAL

1 *** JOINT DATA ***

JOINT	X --- FT ---	Y --- FT ---	-----FIXITY-----					
			X	Y	R	KX ---LB / IN---	KY ---LB / IN---	KR IN-LB /RAD
1	.00	-65.00	*	*				
2	.00	-22.40						
3	.00	-12.00	*	*				
4	.00	1.50	*	*				
5	.00	5.00						

1 *** MEMBER DATA ***

MEMBER	END END		LENGTH FT	I IN**4	A IN**2	AS IN**2	E KSI	G KSI
	A	B						
1	1	2	42.60	.3612E+03	.1028E+02	.7500E+01	.2900E+05	.1115E+05
2	2	3	10.40	.3612E+03	.1028E+02	.7500E+01	.2900E+05	.1115E+05
3	3	4	13.50	.3612E+03	.1028E+02	.7500E+01	.2900E+05	.1115E+05
4	4	5	3.50	.3612E+03	.1028E+02	.7500E+01	.2900E+05	.1115E+05

1 *** LOAD CASE 1

MEMBER	LA	PA	LB	PB	ANGLE DEG
	FT	LB / FT	FT	LB / FT	
1	.00	-.1490E+04	20.00	.0000E+00	.00
1	20.00	.0000E+00	28.00	.3200E+03	.00
1	28.00	.1300E+03	30.00	.4500E+03	.00
1	30.00	.5400E+03	40.00	.9350E+03	.00
1	40.00	.1195E+04	42.60	.1270E+04	.00
2	.00	.1710E+04	10.40	.1061E+04	.00
3	.00	.1061E+04	12.00	.2184E+03	.00
4	.00	.2184E+03	3.50	.0000E+00	.00

JOINT	JOINT DISPLACEMENTS		
	DX IN	DY IN	DR RAD
1	.0000E+00	.0000E+00	-.1263E-02
2	.1166E+01	.0000E+00	.8691E-02
3	.0000E+00	.0000E+00	.5952E-02
4	.0000E+00	.0000E+00	-.2519E-02
5	.1060E+00	.0000E+00	-.2524E-02

MEMBER END FORCES

MEMBER	JOINT	MEMBER END FORCES				LOCATION IN
		AXIAL LB	SHEAR LB	MOMENT IN-LB	MOMENT EXTREMA IN-LB	
1	1	.0000E+00	-.9470E+04	.0000E+00	.8093E+06	429.41
	2	.0000E+00	.7010E+04	.5424E+06	-.4130E+06	92.02
2	2	.0000E+00	-.7010E+04	.5424E+06	.5424E+06	.00
	3	.0000E+00	.2142E+05	-.1302E+07	-.1302E+07	124.80
3	3	.0000E+00	.1302E+05	-.1302E+07	-.5351E+04	162.00
	4	.0000E+00	-.5340E+04	-.5351E+04	-.1302E+07	.00
4	4	.0000E+00	.3822E+03	-.5351E+04	.0000E+00	42.00
	5	.0000E+00	.0000E+00	.0000E+00	-.5351E+04	.00

JOINT	STRUCTURE REACTIONS		
	FORCE X LB	FORCE Y LB	MOMENT IN-LB
1	.9470E+04	.0000E+00	.0000E+00
3	-.3444E+05	.0000E+00	.0000E+00
4	.4958E+04	.0000E+00	.0000E+00

TOTAL -.2001E+05 .0000E+00

MEMBER	LOAD CASE	JOINT	MEMBER END FORCES				LOCATION IN
			AXIAL LB	SHEAR LB	MOMENT IN-LB	MOMENT EXTREMA IN-LB	
1	1	1	.0000E+00	-.9470E+04	.0000E+00	.8093E+06	429.41
		2	.0000E+00	.7010E+04	.5424E+06	-.4130E+06	92.02
2	1	2	.0000E+00	-.7010E+04	.5424E+06	.5424E+06	.00
		3	.0000E+00	.2142E+05	-.1302E+07	-.1302E+07	124.80
3	1	3	.0000E+00	.1302E+05	-.1302E+07	-.5351E+04	162.00
		4	.0000E+00	-.5340E+04	-.5351E+04	-.1302E+07	.00
4	1	4	.0000E+00	.3822E+03	-.5351E+04	.0000E+00	42.00
		5	.0000E+00	.0000E+00	.0000E+00	-.5351E+04	.00

C:\STRUC\CFRAME>

100 SEVENTEENTH ST CANAL BUTTERFLY VALVE ALT*
110 COFFERDAM CELL AT C/L OF CANAL; PZ-35
120 KSI FT IN IN LB
130 5 4 1 29000 0.3
140 1 0 -65.0 2 0 -22.4 3 0 -13.25 4 0 -3.25 5 0 5.0
150 FIX X 1 3 4 FIX Y 1 3 4
) 1 1 2 2 2 3 3 3 4 4 4 5
170 361.2 10.29 4.0 1 2 3 4
180 LOAD CASE 1 0 8 0 0
190 0 -1490.0 20 0.0 0. 1
200 20 0.0 28 320.0 0. 1
210 28 130.0 30 450.0 0. 1
220 30 540.0 40 935.0 0. 1
230 40 1195.0 42.6 1270.0 0. 1
240 0 1710.0 9.15 1139.0 0. 2
250 0 1139.0 10.0 514.8 0. 3
260 0 514.8 8.25 0. 0. 4

SEVENTEENTH ST CANAL BUTTERFLY VALVE ALT
COFFERDAM CELL AT C/L OF CANAL; PZ-35



 = .2033E+5 LB
LOAD CASE 1

SHEAR

1/ 6/88

8.59.44

SEVENTEENTH ST CANAL BUTTERFLY VALVE ALT
COFFERDAM CELL AT C/L OF CANAL; PZ-35



 = .1165E+7 IN-
LOAD CASE 1 LB

MOMENT

1/ 6/88 8.59.44

1*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*
 PROGRAM CFRAME V02.05 24JUL84
 --*-*-*-*-*-*-*-*-*-*-*-*-*-*

RUN DATE = 88/ 1/ 6
 JN TIME = 9.13. 9

SEVENTEENTH ST CANAL BUTTERFLY VALVE ALT
 COFFERDAM CELL AT C/L OF CANAL; PZ-35

1 *** JOINT DATA ***

JOINT	X --- FT ---	Y --- FT ---	-----FIXITY-----					
			X	Y	R	KX ---LB / IN---	KY ---LB / IN---	KR IN-LB /RAD
1	.00	-65.00	*	*				
2	.00	-22.40						
3	.00	-13.25	*	*				
4	.00	-3.25	*	*				
5	.00	5.00						

1 *** MEMBER DATA ***

MEMBER	END END		LENGTH FT	I IN**4	A IN**2	AS IN**2	E KSI	G KSI
	A	B						
1	1	2	42.60	.3612E+03	.1029E+02	.4000E+01	.2900E+05	.1115E+05
2	2	3	9.15	.3612E+03	.1029E+02	.4000E+01	.2900E+05	.1115E+05
3	3	4	10.00	.3612E+03	.1029E+02	.4000E+01	.2900E+05	.1115E+05
4	4	5	8.25	.3612E+03	.1029E+02	.4000E+01	.2900E+05	.1115E+05

1 *** LOAD CASE 1

MEMBER	LA	PA	LB	PB	ANGLE DEG
	FT	LB / FT	FT	LB / FT	
1	.00	-.1490E+04	20.00	.0000E+00	.00
1	20.00	.0000E+00	28.00	.3200E+03	.00
1	28.00	.1300E+03	30.00	.4500E+03	.00
1	30.00	.5400E+03	40.00	.9350E+03	.00
1	40.00	.1195E+04	42.60	.1270E+04	.00
2	.00	.1710E+04	9.15	.1139E+04	.00
3	.00	.1139E+04	10.00	.5148E+03	.00
4	.00	.5148E+03	8.25	.0000E+00	.00

1 LOAD CASE 1

JOINT DISPLACEMENTS

JOINT	DX IN	DY IN	DR RAD
1	.0000E+00	.0000E+00	.6264E-03
2	.8105E+00	.0000E+00	.7070E-02
3	.0000E+00	.0000E+00	.4301E-02
4	.0000E+00	.0000E+00	-.1829E-02
5	.1956E+00	.0000E+00	-.1994E-02

MEMBER END FORCES

MEMBER	JOINT	AXIAL LB	SHEAR LB	MOMENT IN-LB	MOMENT EXTREMA IN-LB	LOCATION IN
1	1	.0000E+00	-.9752E+04	.0000E+00	.6903E+06	419.18
	2	.0000E+00	.7291E+04	.3985E+06	-.4402E+06	102.24
2	2	.0000E+00	-.7291E+04	.3985E+06	.3985E+06	.00
	3	.0000E+00	.2033E+05	-.1165E+07	-.1165E+07	109.80
3	3	.0000E+00	.1378E+05	-.1165E+07	-.7008E+05	120.00
	4	.0000E+00	-.5514E+04	-.7008E+05	-.1165E+07	.00
4	4	.0000E+00	.2124E+04	-.7008E+05	.0000E+00	99.00
	5	.0000E+00	.0000E+00	.0000E+00	-.7008E+05	.00

JOINT	STRUCTURE FORCE X LB	REACTIONS FORCE Y LB	MOMENT IN-LB
1	.9752E+04	.0000E+00	.0000E+00
3	-.3411E+05	.0000E+00	.0000E+00
4	.3390E+04	.0000E+00	.0000E+00

TOTAL	-.2097E+05	.0000E+00	

$F_B = .6 F_y = .6 (50) = 30 \text{ Ksi}$

Try PZ-27, GR 50 sh+Pile
 $\frac{1165^4 \text{K}}{30 \text{ Ksi}} = 38,9 \text{ in}^3 > 30,4 \text{ in}^3$
 use PZ-35 A328

1

MEMBER	LOAD CASE	JOINT	AXIAL LB	SHEAR LB	MOMENT IN-LB	MOMENT EXTREMA IN-LB	LOCATION IN
1	1	1	.0000E+00	-.9752E+04	.0000E+00	.6903E+06	419.18
		2	.0000E+00	.7291E+04	.3985E+06	-.4402E+06	102.24
2	1	2	.0000E+00	-.7291E+04	.3985E+06	.3985E+06	.00
		3	.0000E+00	.2033E+05	-.1165E+07	-.1165E+07	109.80
3	1	3	.0000E+00	.1378E+05	-.1165E+07	-.7008E+05	120.00
		4	.0000E+00	-.5514E+04	-.7008E+05	-.1165E+07	.00
4	1	4	.0000E+00	.2124E+04	-.7008E+05	.0000E+00	99.00
		5	.0000E+00	.0000E+00	.0000E+00	-.7008E+05	.00

```

A:17RWD
100 SEVENTEENTH ST CANAL BUTTERFLY VALVE ALT*
110 COFFERDAM AT C/L OF CANAL
120 KSI FT IN IN LB
130 5 4 1 29000 0.3
140 1 0 -65.0 2 0 -22.4 3 0 -13.25 4 0 1.5 5 0 5.0
150 FIX X 1 3 FIX Y 1 3
160 1 1 2 2 2 3 3 3 4 4 4 5
170 361.2 10.28 7.5 1 2 3 4
180 LOAD CASE 1 0 8 0 0
190 0 -1490.0 20 0.0 0. 1
200 20 0.0 28 320.0 0. 1
210 28 130.0 30 450.0 0. 1
220 30 540.0 40 935.0 0. 1
230 40 1195.0 42.6 1270.0 0. 1
240 0 1710.0 9.15 1139.0 0. 2
250 0 1139.0 14.75 218.4 0. 3
260 0 218.4 3.5 0. 0. 4

```

*CFRAME RUN W/ ONE TIE-BACK
@ EL. -13.25*

C:\STRUC\CFRAME>CFRAME

C:\STRUC\CFRAME>ECHO=OFF



```

*****
* CORPS PROGRAM # X0030 *
* IBM-PC VERSION # 84/07/24 *
*****

```

INSTRUCTION REPORT K-83-1 .
 USER'S GUIDE: COMPUTER PROGRAM WITH
 INTERACTIVE GRAPHICS FOR ANALYSIS
 OF PLANE FRAME STRUCTURES (CFRAME)
 JANUARY 1983
 REVISION OF INSTRUCTION REPORT O-79-2

TYPE OUTPUT

1*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*
 PROGRAM CFRAME V02.05 24JUL84
 --*-*-*-*-*-*-*-*-*-*-*-*-*-*

RUN DATE = 87/12/ 8
 RUN TIME = 16.34.47

SEVENTEENTH ST CANAL BUTTERFLY VALVE ALT
 COFFERDAM AT C/L OF CANAL

1 *** JOINT DATA ***

JOINT	X --- FT ---	Y --- FT ---	-----FIXITY-----						
			X	Y	R	KX ---LB / IN---	KY ---LB / IN---	KR IN-LB /RAD	
1	.00	-65.00	*	*					
2	.00	-22.40							
3	.00	-13.25	*	*					
4	.00	1.50							
5	.00	5.00							

1 *** MEMBER DATA ***

MEMBER	END END		LENGTH FT	I IN**4	A IN**2	AS IN**2	E KSI	G KSI
	A	B						
1	1	2	42.60	.3612E+03	.1028E+02	.7500E+01	.2900E+05	.1115E+05
2	2	3	9.15	.3612E+03	.1028E+02	.7500E+01	.2900E+05	.1115E+05
3	3	4	14.75	.3612E+03	.1028E+02	.7500E+01	.2900E+05	.1115E+05
4	4	5	3.50	.3612E+03	.1028E+02	.7500E+01	.2900E+05	.1115E+05

1 *** LOAD CASE 1

MEMBER	LA	PA	LB	PB	ANGLE DEG
	FT	LB / FT	FT	LB / FT	
1	.00	-.1490E+04	20.00	.0000E+00	.00
1	20.00	.0000E+00	28.00	.3200E+03	.00
1	28.00	.1300E+03	30.00	.4500E+03	.00
1	30.00	.5400E+03	40.00	.9350E+03	.00
1	40.00	.1195E+04	42.60	.1270E+04	.00
2	.00	.1710E+04	9.15	.1139E+04	.00
3	.00	.1139E+04	14.75	.2184E+03	.00
4	.00	.2184E+03	3.50	.0000E+00	.00

JOINT	JOINT DISPLACEMENTS		
	DX IN	DY IN	DR RAD
1	.0000E+00	.0000E+00	-.3381E-02
2	.1457E+01	.0000E+00	.1123E-01
3	.0000E+00	.0000E+00	.1235E-01
4	-.1649E+01	.0000E+00	.8391E-02
5	-.2002E+01	.0000E+00	.8386E-02

MEMBER END FORCES

MEMBER	JOINT	AXIAL LB	SHEAR LB	MOMENT IN-LB	MOMENT EXTREMA IN-LB	LOCATION IN
1	1	.0000E+00	-.9097E+04	.0000E+00	.9698E+06	429.41
	2	.0000E+00	.6636E+04	.7334E+06	-.3786E+06	92.02
2	2	.0000E+00	-.6636E+04	.7334E+06	.7334E+06	.00
	3	.0000E+00	.1967E+05	-.7587E+06	-.7587E+06	109.80
3	3	.0000E+00	.1039E+05	-.7587E+06	-.5351E+04	177.00
	4	.0000E+00	-.3822E+03	-.5351E+04	-.7587E+06	.00
4	4	.0000E+00	.3822E+03	-.5351E+04	.0000E+00	42.00
	5	.0000E+00	.0000E+00	.0000E+00	-.5351E+04	.00

JOINT	STRUCTURE REACTIONS		
	FORCE X LB	FORCE Y LB	MOMENT IN-LB
1	.9097E+04	.0000E+00	.0000E+00
3	-.3006E+05	.0000E+00	.0000E+00

TOTAL	-.2097E+05	.0000E+00	

PZ-35 → 48,5 in³/ft

$\frac{969.8 \text{ "K}}{20 \text{ ksi}} = 48,5 \text{ in}^3/\text{ft}$

MEMBER	LOAD CASE	JOINT	MEMBER END FORCES			MOMENT EXTREMA IN-LB	LOCATION IN
			AXIAL LB	SHEAR LB	MOMENT IN-LB		
1	1	1	.0000E+00	-.9097E+04	.0000E+00	.9698E+06	429.41
		2	.0000E+00	.6636E+04	.7334E+06	-.3786E+06	92.02
2	1	2	.0000E+00	-.6636E+04	.7334E+06	.7334E+06	.00
		3	.0000E+00	.1967E+05	-.7587E+06	-.7587E+06	109.80
3	1	3	.0000E+00	.1039E+05	-.7587E+06	-.5351E+04	177.00
		4	.0000E+00	-.3822E+03	-.5351E+04	-.7587E+06	.00
4	1	4	.0000E+00	.3822E+03	-.5351E+04	.0000E+00	42.00
		5	.0000E+00	.0000E+00	.0000E+00	-.5351E+04	.00

LIST RWPZ35

1 1000 RETAINING WALL W/STRUT SUPP.

2 1010 2 5.0 -65.0 -1 -65.0 0 -1

3 1020 BRCD COFFDM

4 1030 29000000 10.28 361.2

1040 -65.0 2.0 ← Brace @ EL +2.0

6 1050 3 5.0 0

7 1060 3 -22.4 1710

8 1070 3 -22.5 1270

9 1080 3 -25.0 1195

10 1090 3 -25.1 935

11 1100 3 -35.0 540

12 1110 3 -35.1 450

13 1120 3 -37.0 130

14 1130 3 -37.1 320

15 1140 3 -42.0 0

16 1150 3 -65.0 -1490

17 1160 4 -65.0 0

18 1170 0

EOT..

CORPS

ARE YOU USING A PRINTER TERMINAL OR CRT?

ENTER P OR C

C

CORPS SYSTEM COMMANDS:

BRIEF - LIST EXPLANATION OF A PROGRAM.

EXECUTE - RUN A CORPS PROGRAM

LIST - LIST THE AVAILABLE CORPS PROGRAMS.

STOP - EXIT FROM CORPS SYSTEM MACRO.

HELP - HELP AND EXPLANATION OF CORPS SYSTEM AND THE RUNNING OF ITS MACRO.

NOTE: COMMANDS MAY BE ABBREVIATED TO THE FIRST LETTER OF THE COMMAND.

ENTER COMMAND(BRIEF, EXECUTE, LIST, HELP, STOP):

E

WHICH CORPS PROGRAM DO YOU WANT TO RUN?

X0015

* CORPS PROGRAM # X0015 *

* HARRIS VERSION # 83/10/01 *

BEAMS (SHEAR, MOMENT, DEFLECTION)

DO YOU WANT OUTPUT SAVED IN A FILE (YES/NO)?

Y

ENTER EITHER A NEW OR EXISTING OUTPUT FILE NAME UP TO 6 CHARACTERS. OUTPUT

IS THE LOADING ON THE MEMBER TO BE READ FROM A FILE CREATED BY THE "CANTILEVER RETAINING WALL STABILITY" PROGRAM (YES/NO)?

DO YOU WANT TO RUN AN EXISTING DATA FILE (YES/NO)?

Y

ENTER THE DATA FILE NAME.

RWPZ35

STOP 7774

WOULD YOU LIKE TO LIST A FILE?

Y

TRIAL CASE

NAME OF FILE?
OUTPUT

BEAMS (SHEAR, MOMENT, DEFLECTION)

RETAINING WALL W/STRUT SUPP.

THE REFERENCE SYSTEM SELECTED DEFINES POSITIVE FORCES AS TO THE RIGHT
INCREASING MEMBER COORDINATES AS UPWARD, AND POSITIVE MOMENTS
AS CLOCKWISE.

THE MAXIMUM DEFLECTION IS 57.34 INCHES AND OCCURS AT MEMBER COORDINATE
5.00 FT.

BRCD COFFD HAS BEEN GIVEN TO SUPPORT THE LOAD SYSTEM.

THE WEIGHT OF THIS VERTICAL MEMBER HAS BEEN NEGLECTED.

LIST MORE?
Y

CALCULATED EXTERNAL LOADS

DISTANCE FROM REFERENCE(FT)	TYPE OF LOAD	MAGNITUDE OF LOAD
-65.00	POINT LD	4282.12 LBF
2.00	POINT LD	-22619.12 LBF

INPUTTED LOADS

DISTANCE FROM REFERENCE(FT)	TYPE OF LOAD	MAGNITUDE OF LOAD
5.00	CONTN LD	0.00 LBF/FT
-22.40	CONTN LD	1710.00 LBF/FT
-22.50	CONTN LD	1270.00 LBF/FT
-25.00	CONTN LD	1195.00 LBF/FT
-25.10	CONTN LD	935.00 LBF/FT

LIST MORE?
Y

-35.00	CONTN LD	540.00 LBF/FT
-35.10	CONTN LD	450.00 LBF/FT
-37.00	CONTN LD	130.00 LBF/FT
-37.10	CONTN LD	320.00 LBF/FT
-42.00	CONTN LD	0.00 LBF/FT
-65.00	CONTN LD	-1490.00 LBF/FT
-65.00	CONTN LD	0.00 LBF/FT

BRCD COFFD PROPERTIES ARE AS FOLLOWS.

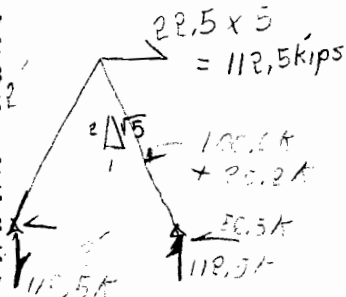
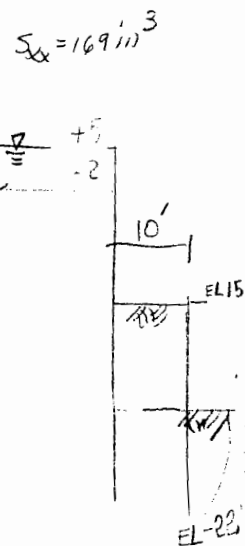
WEIGHT= 0.00 LBF/FT
MOMENT OF INERTIA= 361.20 IN. TO THE 4TH
CROSS SECTIONAL AREA= 10.28 SQ IN.
ELASTIC MODULUS= 29000000. LBF/SQ IN.
DEFLECTION REFERENCE IS AT -65.000

THE MAXIMUM BENDING MOMENT IS 339131.95 LBF-FT AND OCCURS AT -21.92

LIST MORE?

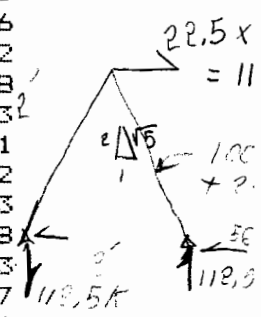
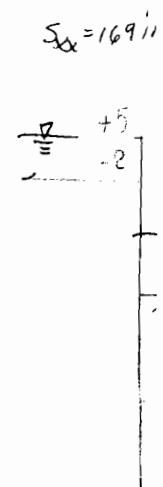
WHICH HAS THE SHEAR FORCE OF -2.24 LBF.

DISTANCE (FEET)	SHEAR FOR (LBF)	SHEAR STR (LBF/SQIN)	BENDING MOM (LBF-FT)	DEFLECTION FROM TANG. THRU DEFLE REFERENCE (INCHES)	DEFL. FROM A PARALLEL TO THE UNDEFORMED AXIS & THRU DEFLE REF NOTE SIGN (IN.)
5.000	0.00	0.00	0.00	57.3415	3.4818
4.999	0.00	0.00	0.00	57.3415	3.4826
4.000	31.20	3.04	10.40	55.4127	2.3225
3.000	124.82	12.14	83.21	53.4821	1.1613
2.000	-22338.28	-2172.98	280.84	51.5514	0.0000
1.000	-22119.85	-2151.74	-21953.43	49.6212	-1.1607
0.000	-21839.01	-2124.42	-43938.06	47.6947	-2.3178
-1.000	-21495.77	-2091.03	-65610.65	45.7755	-3.4676
-2.000	-21090.11	-2051.57	-86908.79	43.8670	-4.6066
-3.000	-20622.04	-2006.04	-107770.07	41.9729	-5.7313
-4.000	-20091.57	-1954.43	-128132.07	40.0966	-6.8383
-5.000	-19498.69	-1896.76	-147932.40	38.2413	-7.9241
-6.000	-18843.39	-1833.01	-167108.64	36.4105	-8.9855
-7.000	-18125.69	-1763.20	-185598.39	34.6072	-10.0194
-8.000	-17345.58	-1687.31	-203339.22	32.8345	-11.0227
-9.000	-16503.06	-1605.36	-220268.75	31.0953	-11.9924
-10.000	-15598.14	-1517.33	-236324.55	29.3924	-12.9259
-11.000	-14630.80	-1423.23	-251444.22	27.7285	-13.8204
-12.000	-13601.06	-1323.06	-265565.35	26.1060	-14.6734
-13.000	-12508.90	-1216.82	-278625.53	24.5274	-15.4826
-14.000	-11354.34	-1104.51	-290562.36	22.9946	-16.2460
-15.000	-10137.37	-986.13	-301313.41	21.5098	-16.9614
-16.000	-8857.99	-861.67	-310816.30	20.0746	-17.6271
-17.000	-7516.20	-731.15	-319008.60	18.6907	-18.2416
-18.000	-6112.01	-594.55	-325827.90	17.3593	-18.8036
-19.000	-4645.40	-451.89	-331211.80	16.0817	-19.3118
-20.000	-3116.39	-303.15	-335097.90	14.8587	-19.7654
-21.000	-1524.96	-148.34	-337423.77	13.6909	-20.1638
-21.922	-2.24	-0.22	-338131.95	12.6634	-20.4818
-22.000	128.87	12.54	-338127.02	12.5787	-20.5065
-23.000	1588.13	154.49	-337214.84	11.5223	-20.7935
-24.000	2828.13	275.11	-335004.21	10.5214	-21.0249
-25.000	4038.13	392.81	-331568.58	9.5758	-21.2011
-26.000	4969.97	483.46	-327055.24	8.6849	-21.3226
-27.000	5849.11	568.98	-321642.37	7.8479	-21.3902
-28.000	6688.35	650.62	-315370.32	7.0639	-21.4048
-29.000	7487.70	728.38	-308278.97	6.3319	-21.3673
-30.000	8247.14	802.25	-300408.23	5.6508	-21.2791
-31.000	8966.68	872.25	-291797.99	5.0192	-21.1412
-32.000	9646.33	938.36	-282488.16	4.4357	-20.9553
-33.000	10286.08	1000.59	-272518.63	3.8988	-20.7228
-34.000	10885.93	1058.94	-261929.30	3.4068	-20.4453
-35.000	11445.88	1113.41	-250760.07	2.9580	-20.1247
-36.000	11832.17	1150.99	-239105.31	2.5506	-19.7626
-37.000	12046.38	1171.83	-227152.00	2.1827	-19.3612
-38.000	12330.43	1199.46	-214962.74	1.8521	-18.9223
-39.000	12559.00	1221.69	-202512.59	1.5571	-18.4479
0.000	12722.26	1237.57	-189866.51	1.2954	-17.9402
1.000	12820.22	1247.10	-177089.83	1.0651	-17.4011
2.000	12852.88	1250.28	-164247.83	0.8640	-16.8328
3.000	12820.49	1247.13	-151405.75	0.6899	-16.2374
4.000	12723.31	1237.68	-138628.46	0.5409	-15.6177



WHICH HAS THE SHEAR FORCE OF -2.24 LBF.

DISTANCE (FEET)	SHEAR FOR (LBF)	SHEAR STR (LBF/SQIN)	BENDING MOM (LBF-FT)	DEFLECTION FROM TANG. THRU DEFL REFERENCE (INCHES)	DEFL. FROM A PARALLEL TO THE UNDEFORMED AXIS & THRU DEFL REF NOTE SIGN (IN.)
5.000	0.00	0.00	0.00	57.3415	3.4818
4.999	0.00	0.00	0.00	57.3415	3.4826
4.000	31.20	3.04	10.40	55.4127	2.3225
3.000	124.82	12.14	83.21	53.4821	1.1613
2.000	-22338.28	-2172.98	280.84	51.5514	0.0000
1.000	-22119.85	-2151.74	-21953.43	49.6212	-1.1607
0.000	-21839.01	-2124.42	-43938.06	47.6947	-2.3178
-1.000	-21495.77	-2091.03	-65610.65	45.7755	-3.4676
-2.000	-21090.11	-2051.57	-86908.79	43.8670	-4.6066
-3.000	-20622.04	-2006.04	-107770.07	41.9729	-5.7313
-4.000	-20091.57	-1954.43	-128132.07	40.0966	-6.8383
-5.000	-19498.69	-1896.76	-147932.40	38.2413	-7.9241
LIST MORE?					
Y					
-6.000	-18843.39	-1833.01	-167108.64	36.4105	-8.9855
-7.000	-18125.69	-1763.20	-185598.39	34.6072	-10.0194
-8.000	-17345.58	-1687.31	-203339.22	32.8345	-11.0227
-9.000	-16503.06	-1605.36	-220268.75	31.0953	-11.9924
-10.000	-15598.14	-1517.33	-236324.55	29.3924	-12.9259
-11.000	-14630.80	-1423.23	-251444.22	27.7285	-13.8204
-12.000	-13601.06	-1323.06	-265565.35	26.1060	-14.6734
-13.000	-12508.90	-1216.82	-278625.53	24.5274	-15.4826
-14.000	-11354.34	-1104.51	-290562.36	22.9946	-16.2460
-15.000	-10137.37	-986.13	-301313.41	21.5098	-16.9614
-16.000	-8857.99	-861.67	-310816.30	20.0746	-17.6271
-17.000	-7516.20	-731.15	-319008.60	18.6907	-18.2416
-18.000	-6112.01	-594.55	-325827.90	17.3593	-18.8036
-19.000	-4645.40	-451.89	-331211.80	16.0817	-19.3118
-20.000	-3116.39	-303.15	-335097.90	14.8587	-19.7654
-21.000	-1524.96	-148.34	-337423.77	13.6909	-20.1638
-21.922	-2.24	-0.22	-338131.95	12.6634	-20.4818
-22.000	128.87	12.54	-338127.02	12.5787	-20.5065
-23.000	1588.13	154.49	-337214.84	11.5223	-20.7935
-24.000	2828.13	275.11	-335004.21	10.5214	-21.0249
LIST MORE?					
Y					
-25.000	4038.13	392.81	-331568.58	9.5758	-21.2011
-26.000	4969.97	483.46	-327055.24	8.6849	-21.3226
-27.000	5849.11	568.98	-321642.37	7.8479	-21.3902
-28.000	6688.35	650.62	-315370.32	7.0639	-21.4048
-29.000	7487.70	728.38	-308278.97	6.3319	-21.3673
-30.000	8247.14	802.25	-300408.23	5.6508	-21.2791
-31.000	8966.68	872.25	-291797.99	5.0192	-21.1412
-32.000	9646.33	938.36	-282488.16	4.4357	-20.9553
-33.000	10286.08	1000.59	-272518.63	3.8988	-20.7228
-34.000	10885.93	1058.94	-261929.30	3.4068	-20.4453
-35.000	11445.88	1113.41	-250760.07	2.9580	-20.1247
-36.000	11832.17	1150.99	-239105.31	2.5506	-19.7626
-37.000	12046.38	1171.83	-227152.00	2.1827	-19.3612
-38.000	12330.43	1199.46	-214962.74	1.8521	-18.9223
-39.000	12559.00	1221.69	-202512.59	1.5571	-18.4479
-40.000	12722.26	1237.57	-189866.51	1.2954	-17.9402
-41.000	12820.22	1247.10	-177089.83	1.0651	-17.4011
-42.000	12852.88	1250.28	-164247.83	0.8640	-16.8328
-43.000	12820.49	1247.13	-151405.75	0.6899	-16.2374
-44.000	12723.31	1237.68	-138628.46	0.5409	-15.6170



Y					
-45.000	12561.36	1221.92	-125980.73	0.4147	-14.9738
-46.000	12334.62	1199.87	x -113527.34	0.3093	-14.3097
-47.000	12043.09	1171.51	-101333.09	0.2227	-13.6269
-48.000	11686.79	1136.85	-89462.75	0.1527	-12.9275
-49.000	11265.70	1095.89	-77981.10	0.0976	-12.2132
-50.000	10779.83	1048.62	-66952.94	0.0553	-11.4860
-51.000	10229.18	995.06	-56443.03	0.0241	-10.7478
-52.000	9613.75	935.19	-46516.17	0.0022	-10.0003
-53.000	8933.53	869.02	-37237.13	-0.0120	-9.2451
-54.000	8188.53	796.55	-28670.70	-0.0201	-8.4837
-55.000	7378.75	717.78	-20881.67	-0.0233	-7.7176
-56.000	6504.18	632.70	-13934.80	-0.0232	-6.9480
-57.000	5564.83	541.33	-7894.90	-0.0207	-6.1761
-58.000	4560.70	443.65	-2826.73	-0.0168	-5.4028
-59.000	3491.79	339.67	1204.91	-0.0125	-4.6291
-60.000	2358.09	229.39	4135.25	-0.0084	-3.8555
-61.000	1159.62	112.80	5899.51	-0.0049	-3.0825
-62.000	-103.64	-10.08	6432.89	-0.0023	-2.3106
-63.000	-1431.69	-139.27	5670.62	-0.0007	-1.5396
-64.000	-2824.51	-274.76	3547.92	-0.0001	-0.7695

LIST MORE?

Y					
-64.999	-4280.63	-416.40	4.28	0.0000	-0.0008
-65.000	0.00	0.00	0.00	0.0000	0.0000

RUN COMPLETED

EOT.
LIST MORE?

BEAMS (SHEAR, MOMENT, DEFLECTION)

RETAINING WALL W/STRUT SUPP.

THE REFERENCE SYSTEM SELECTED DEFINES POSITIVE FORCES AS TO THE RIGHT INCREASING MEMBER COORDINATES AS UPWARD, AND POSITIVE MOMENTS AS CLOCKWISE.

THE MAXIMUM DEFLECTION IS -2.22 INCHES AND OCCURS AT MEMBER COORDINATE -28.00 FT.

BRCD COFFD HAS BEEN GIVEN TO SUPPORT THE LOAD SYSTEM.

THE WEIGHT OF THIS VERTICAL MEMBER HAS BEEN NEGLECTED.

LIST MORE?
Y

CALCULATED EXTERNAL LOADS

DISTANCE FROM REFERENCE(FT)	TYPE OF LOAD	MAGNITUDE OF LOAD
-65.00	POINT LD	10947.66 LBF
-13.25	POINT LD	-29284.66 LBF

INPUTTED LOADS

DISTANCE FROM REFERENCE(FT)	TYPE OF LOAD	MAGNITUDE OF LOAD
5.00	CONTN LD	0.00 LBF/FT
-22.40	CONTN LD	1710.00 LBF/FT
-22.50	CONTN LD	1270.00 LBF/FT
-25.00	CONTN LD	1195.00 LBF/FT
-25.10	CONTN LD	935.00 LBF/FT

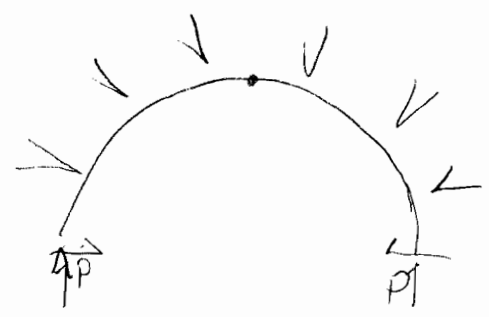
LIST MORE?
Y

-35.00	CONTN LD	540.00 LBF/FT
-35.10	CONTN LD	450.00 LBF/FT
-37.00	CONTN LD	130.00 LBF/FT
-37.10	CONTN LD	320.00 LBF/FT
-42.00	CONTN LD	0.00 LBF/FT
-65.00	CONTN LD	-1490.00 LBF/FT
-65.00	CONTN LD	0.00 LBF/FT

BRCD COFFD PROPERTIES ARE AS FOLLOWS.

WEIGHT= 0.00 LBF/FT
MOMENT OF INERTIA= 361.20 IN. TO THE 4TH
CROSS SECTIONAL AREA= 10.28 SQ IN.
ELASTIC MODULUS= 29000000. LBF/SQ IN.
DEFLECTION REFERENCE IS AT -65.000

$$\frac{P \times \pi r}{2}$$



$$P = q \times r$$

1831 Kips (com)

$$\sqrt{t} = -2p \frac{r_2^2}{r_2^2 - r_1^2}$$

$$= -2(2931 \text{ kips}) \frac{61^2}{61^2 - 58^2 - 4^2}$$

$$T_f = 611 \text{ k/ft}^2 \text{ comp} \quad 4.24 \text{ ksi}$$

-44.000	6057.77	589.28	1347.86	-1.1563	-1.1563
LIST MORE?					
Y					
-45.000	5895.82	573.52	7330.05	-1.0514	-1.0514
-46.000	5669.08	551.47	13117.89	-0.9477	-0.9477
-47.000	5377.56	523.11	18646.61	-0.8461	-0.8461
-48.000	5021.25	488.45	23851.41	-0.7476	-0.7476
-49.000	4600.16	447.49	28667.52	-0.6531	-0.6531
-50.000	4114.29	400.22	33030.14	-0.5632	-0.5632
-51.000	3563.64	346.66	36874.51	-0.4788	-0.4788
-52.000	2948.21	286.79	40135.84	-0.4004	-0.4004
-53.000	2267.99	220.62	42749.33	-0.3287	-0.3287
-54.000	1522.99	148.15	44650.22	-0.2640	-0.2640
-55.000	713.21	69.38	45773.72	-0.2066	-0.2066
-56.000	-161.36	-15.70	46055.04	-0.1568	-0.1568
-57.000	-1100.71	-107.07	45429.41	-0.1145	-0.1145
-58.000	-2104.84	-204.75	43832.04	-0.0797	-0.0797
-59.000	-3173.75	-308.73	41198.14	-0.0521	-0.0521
-60.000	-4307.44	-419.01	37462.95	-0.0313	-0.0313
-61.000	-5505.92	-535.60	32561.66	-0.0166	-0.0166
-62.000	-6769.18	-658.48	26429.51	-0.0072	-0.0072
-63.000	-8097.23	-787.67	19001.70	-0.0022	-0.0022
-64.000	-9490.05	-923.16	10213.46	-0.0003	-0.0003
LIST MORE?					
Y					
-64.999	-10946.17	-1064.80	10.95	0.0000	0.0000
-65.000	0.00	0.00	0.00	0.0000	0.0000

RUN COMPLETED

END.
LIST MORE?

LIST MORE?

Y

WHICH HAS THE SHEAR FORCE OF 0.53 LBF.

DISTANCE (FEET)	SHEAR FOR (LBF)	SHEAR STR (LBF/SQIN)	BENDING MOM (LBF-FT)	DEFLECTION FROM TANG. THRU DEFLE REFERENCE (INCHES)	DEFL.FROM A PARALLEL TO THE UNDEFORMED AXIS & THRU DEFL REF NOTE SIGN (IN.)
5.000	0.00	0.00	0.00	-0.6313	-0.6313
4.999	0.00	0.00	0.00	-0.6313	-0.6313
4.000	31.20	3.04	10.40	-0.6561	-0.6561
3.000	124.82	12.14	83.21	-0.6809	-0.6809
2.000	280.84	27.32	280.84	-0.7058	-0.7058
1.000	499.27	48.57	665.69	-0.7307	-0.7307
0.000	780.11	75.89	1300.18	-0.7557	-0.7557
-1.000	1123.36	109.28	2246.72	-0.7809	-0.7809
-2.000	1529.01	148.74	3567.70	-0.8066	-0.8066
-3.000	1997.08	194.27	5325.55	-0.8328	-0.8328
-4.000	2527.55	245.87	7582.66	-0.8599	-0.8599
-5.000	3120.44	303.54	10401.46	-0.8883	-0.8883

LIST MORE?

Y

-6.000	3775.73	367.29	13844.34	-0.9184	-0.9184
-7.000	4493.43	437.10	17973.72	-0.9508	-0.9508
-8.000	5273.54	512.99	22852.01	-0.9862	-0.9862
-9.000	6116.06	594.95	28541.61	-1.0254	-1.0254
-10.000	7020.99	682.98	35104.93	-1.0693	-1.0693
-11.000	7988.32	777.07	42604.38	-1.1191	-1.1191
-12.000	9018.07	877.24	51102.37	-1.1759	-1.1759
-13.000	10110.22	983.48	60661.31	-1.2411	-1.2411
-14.000	-18019.88	-1752.91	49380.12	-1.3158	-1.3158
-15.000	-16802.91	-1634.52	31963.52	-1.3985	-1.3985
-16.000	-15523.53	-1510.07	15795.10	-1.4865	-1.4865
-17.000	-14181.74	-1379.55	937.26	-1.5771	-1.5771
-18.000	-12777.55	-1242.95	-12547.58	-1.6679	-1.6679
-19.000	-11310.94	-1100.29	-24597.02	-1.7567	-1.7567
-20.000	-9781.92	-951.55	-35148.66	-1.8414	-1.8414
-21.000	-8190.50	-796.74	-44140.07	-1.9205	-1.9205
-22.000	-6536.67	-635.86	-51508.86	-1.9922	-1.9922
-23.000	-5077.41	-493.91	-57262.21	-2.0555	-2.0555
-24.000	-3837.41	-373.29	-61717.12	-2.1095	-2.1095
-25.000	-2627.41	-255.58	-64947.03	-2.1532	-2.1532

LIST MORE?

Y

-26.000	-1695.57	-164.94	-67099.23	-2.1863	-2.1863
-27.000	-816.43	-79.42	-68351.90	-2.2083	-2.2083
-27.973	0.53	0.05	-68745.70	-2.2190	-2.2190
-28.000	22.81	2.22	-68745.39	-2.2191	-2.2191
-29.000	822.16	79.98	-68319.58	-2.2186	-2.2186
-30.000	1581.60	153.85	-67114.37	-2.2068	-2.2068
-31.000	2301.15	223.85	-65169.68	-2.1839	-2.1839
-32.000	2980.79	289.96	-62525.38	-2.1504	-2.1504
-33.000	3620.54	352.19	-59221.39	-2.1065	-2.1065
-34.000	4220.39	410.54	-55297.60	-2.0529	-2.0529
-35.000	4780.34	465.01	-50793.91	-1.9901	-1.9901
-36.000	5166.63	502.59	-45804.69	-1.9190	-1.9190
-37.000	5380.84	523.43	-40516.92	-1.8404	-1.8404
-38.000	5664.89	551.06	-34993.20	-1.7551	-1.7551
-39.000	5893.46	573.29	-29208.58	-1.6640	-1.6640
-40.000	6056.73	589.18	-23228.05	-1.5681	-1.5681
-41.000	6154.69	598.70	-17116.90	-1.4684	-1.4684
-42.000	6187.34	601.88	-10940.44	-1.3658	-1.3658
-43.000	6154.95	598.73	-4763.90	-1.2615	-1.2615



LIST RWPZ35 STRUT @ EL -13.25
 1 1000 RETAINING WALL W/STRUT SUPP.
 2 1010 215.0 -65.0 -1 -65.0 0 -1
 3 1020 BRCD COFFDM
 4 1030 290000000 10.28 361.2
 5 1040 -65.0 -13.25 ← BRACE @ EL -13.25
 6 1050 315.0 0
 7 1060 3 -22.4 1710
 8 1070 3 -22.5 1270
 9 1080 3 -25.0 1195
 10 1090 3 -25.1 935
 11 1100 3 -35.0 540
 12 1110 3 -35.1 450
 13 1120 3 -37.0 130
 14 1130 3 -37.1 320
 15 1140 3 -42.0 0
 16 1150 3 -65.0 -1490
 17 1160 4 -65.0 0
 18 1170 0
 EOT..

EL +5
 + EL -22.4

 27.4

9.1
 3 | 27.4

-22.4
 9.1

 EL -13.3

LIST RWPZ35

1 1000 BRACED WALL C/L OF CANAL
2 1010 2 5.0 -65.0 -1 -65.0 0 -1
3 1020 USE PZ-35'S
4 1030 29000000 10.28 361.2
5 1040 -65.0 -13.0
6 1050 3 5.0 0
7 1060 3 -22.4 1710
8 1070 3 -22.5 1270
9 1080 3 -25.0 1195
10 1090 3 -25.0 935
11 1100 3 -35.0 540
12 1110 3 -35.0 450
13 1120 3 -37.0 130
14 1130 3 -37.0 320
15 1140 3 -42.0 0
16 1150 3 -65.0 -1490
17 1160 4 -65.0 0
18 1170 0

EOT..

CORPS

ARE YOU USING A PRINTER TERMINAL OR CRT?

ENTER P OR C

C

CORPS SYSTEM COMMANDS:

BRIEF - LIST EXPLANATION OF A PROGRAM.
EXECUTE - RUN A CORPS PROGRAM
LIST - LIST THE AVAILABLE CORPS PROGRAMS.
STOP - EXIT FROM CORPS SYSTEM MACRO.
HELP - HELP AND EXPLANATION OF CORPS
SYSTEM AND THE RUNNING OF ITS MACRO.

NOTE: COMMANDS MAY BE ABBREVIATED TO THE
FIRST LETTER OF THE COMMAND.

ENTER COMMAND (BRIEF, EXECUTE, LIST, HELP, STOP):

E

WHICH CORPS PROGRAM DO YOU WANT TO RUN?

X0015

* CORPS PROGRAM # X0015 *
* HARRIS VERSION # 83/10/01 *

BEAMS (SHEAR, MOMENT, DEFLECTION)

DO YOU WANT OUTPUT SAVED IN A FILE (YES/NO)?

Y

ENTER EITHER A NEW OR EXISTING OUTPUT FILE NAME UP TO 6 CHARACTERS.
OUTPUT

IS THE LOADING ON THE MEMBER TO BE READ FROM A FILE CREATED BY THE
"CANTILEVER RETAINING WALL STABILITY" PROGRAM (YES/NO)?

DO YOU WANT TO RUN AN EXISTING DATA FILE (YES/NO)?

Y

ENTER THE DATA FILE NAME.

RWPZ35

STOP 7774

WOULD YOU LIKE TO LIST A FILE?

NAME OF FILE?
OUTPUT

BEAMS (SHEAR, MOMENT, DEFLECTION)

BRACED WALL C/L OF CANAL

THE REFERENCE SYSTEM SELECTED DEFINES POSITIVE FORCES AS TO THE RIGHT INCREASING MEMBER COORDINATES AS UPWARD, AND POSITIVE MOMENTS AS CLOCKWISE.

THE MAXIMUM DEFLECTION IS -2.07 INCHES AND OCCURS AT MEMBER COORDINATE -30.00 FT.

USE PZ-35' HAS BEEN GIVEN TO SUPPORT THE LOAD SYSTEM.

THE WEIGHT OF THIS VERTICAL MEMBER HAS BEEN NEGLECTED.

LIST MORE?
Y

CALCULATED EXTERNAL LOADS

DISTANCE FROM REFERENCE(FT)	TYPE OF LOAD	MAGNITUDE OF LOAD
-65.00	POINT LD	10828.12 LBF
-13.00	POINT LD	-29105.37 LBF

INPUTTED LOADS

DISTANCE FROM REFERENCE(FT)	TYPE OF LOAD	MAGNITUDE OF LOAD
5.00	CONTN LD	0.00 LBF/FT
-22.40	CONTN LD	1710.00 LBF/FT
-22.50	CONTN LD	1270.00 LBF/FT
-25.00	CONTN LD	1195.00 LBF/FT
-25.00	CONTN LD	935.00 LBF/FT

LIST MORE?
Y

-35.00	CONTN LD	540.00 LBF/FT
-35.00	CONTN LD	450.00 LBF/FT
-37.00	CONTN LD	130.00 LBF/FT
-37.00	CONTN LD	320.00 LBF/FT
-42.00	CONTN LD	0.00 LBF/FT
-65.00	CONTN LD	-1490.00 LBF/FT
-65.00	CONTN LD	0.00 LBF/FT

USE PZ-35' PROPERTIES ARE AS FOLLOWS.

WEIGHT= 0.00 LBF/FT
MOMENT OF INERTIA= 361.20 IN. TO THE 4TH
CROSS SECTIONAL AREA= 10.28 SQ IN.
ELASTIC MODULUS= 29000000. LBF/SQ IN.
DEFLECTION REFERENCE IS AT -65.000

~~MOMENT OF INERTIA= 77450.03 LBF-FT AND OCCURS AT -27.70~~

LIST MORE?

Y

WHICH HAS THE SHEAR FORCE OF 3.32 LBF.

DISTANCE (FEET)	SHEAR FOR (LBF)	SHEAR STR (LBF/SQIN)	BENDING MOM (LBF-FT)	DEFLECTION FROM TANG. THRU DEFLE REFERENCE (INCHES)	DEFL.FROM A PARALLEL TO THE UNDEFORMED AXIS & THRU DEFLE REF NOTE SIGN (IN.)
5.000	0.00	0.00	0.00	0.3459	1.3770
4.999	0.00	0.00	0.00	0.3459	1.3770
4.000	31.20	3.04	10.40	0.2932	1.3096
3.000	124.82	12.14	83.21	0.2405	1.2422
2.000	280.84	27.32	280.84	0.1877	1.1747
1.000	499.27	48.57	665.69	0.1349	1.1072
0.000	780.11	75.89	1300.18	0.0820	1.0395
-1.000	1123.36	109.28	2246.72	0.0289	0.9717
-2.000	1529.01	148.74	3567.70	-0.0246	0.9034
-3.000	1997.08	194.27	5325.55	-0.0787	0.8346
-4.000	2527.55	245.87	7582.66	-0.1337	0.7649
-5.000	3120.44	303.54	10401.46	-0.1900	0.6938

LIST MORE?

Y

-6.000	3775.73	367.29	13844.34	-0.2480	0.6211
-7.000	4493.43	437.10	17973.72	-0.3083	0.5461
-8.000	5273.54	512.99	22852.01	-0.3716	0.4680
-9.000	6116.06	594.95	28541.61	-0.4387	0.3862
-10.000	7020.99	682.98	35104.93	-0.5105	0.2997
-11.000	7988.32	777.07	42604.38	-0.5882	0.2073
-12.000	9018.07	877.24	51102.37	-0.6729	0.1079
-13.000	-18995.15	-1847.78	60661.31	-0.7660	0.0000
-14.000	-17840.59	-1735.47	42238.24	-0.8684	-0.1171
-15.000	-16623.62	-1617.08	25000.93	-0.9778	-0.2412
-16.000	-15344.24	-1492.63	9011.80	-1.0913	-0.3695
-17.000	-14002.45	-1362.11	-5666.75	-1.2064	-0.4993
-18.000	-12598.26	-1225.51	-18972.30	-1.3206	-0.6282
-19.000	-11131.65	-1082.85	-30842.46	-1.4317	-0.7540
-20.000	-9602.64	-934.11	-41214.80	-1.5377	-0.8748
-21.000	-8011.21	-779.30	-50026.93	-1.6370	-0.9888
-22.000	-6357.38	-618.42	-57216.42	-1.7281	-1.0946
-23.000	-4898.12	-476.47	-62790.49	-1.8097	-1.1910
-24.000	-3658.12	-355.85	-67066.11	-1.8811	-1.2771
-25.000	-2448.12	-238.14	-70116.74	-1.9414	-1.3522

LIST MORE?

Y

-26.000	-1532.87	-149.11	-72103.94	-1.9902	-1.4157
-27.000	-657.12	-63.92	-73195.65	-2.0271	-1.4673
-27.786	3.32	0.32	-73450.93	-2.0477	-1.4995
-28.000	179.13	17.42	-73431.36	-2.0520	-1.5069
-29.000	975.88	94.93	-72850.56	-2.0648	-1.5344
-30.000	1733.13	168.59	-71492.77	-2.0655	-1.5499
-31.000	2450.88	238.41	-69397.48	-2.0545	-1.5537
-32.000	3129.13	304.39	-66604.18	-2.0321	-1.5460
-33.000	3767.88	366.52	-63152.39	-1.9987	-1.5273
-34.000	4367.13	424.82	-59081.60	-1.9549	-1.4982
-35.000	4926.88	479.27	-54431.30	-1.9014	-1.4594
-36.000	5296.88	515.26	-49306.09	-1.8389	-1.4117
-37.000	5506.88	535.69	-43890.88	-1.7682	-1.3558
-38.000	5794.88	563.70	-38234.67	-1.6904	-1.2927
-39.000	6018.88	585.49	-32322.46	-1.6062	-1.2232
-40.000	6178.88	601.06	-26218.25	-1.5167	-1.1485
-41.000	6274.88	610.40	-19986.04	-1.4229	-1.0694
-42.000	6306.88	613.51	-13689.83	-1.3258	-0.9870
-43.000	6274.49	610.36	-7393.75	-1.2265	-0.9024

LIST MORE?

Y

-45.000	6015.36	585.15	4939.28	-1.0251	-0.7305
-46.000	5788.62	563.09	10846.66	-0.9252	-0.6453
-47.000	5497.09	534.74	16494.91	-0.8270	-0.5618
-48.000	5140.79	500.08	21819.25	-0.7315	-0.4811
-49.000	4719.70	459.12	26754.90	-0.6396	-0.4039
-50.000	4233.83	411.85	31237.07	-0.5521	-0.3312
-51.000	3683.18	358.29	35200.97	-0.4698	-0.2635
-52.000	3067.75	298.42	38581.83	-0.3932	-0.2017
-53.000	2387.53	232.25	41314.87	-0.3230	-0.1462
-54.000	1642.53	159.78	43335.30	-0.2596	-0.0976
-55.000	832.75	81.01	44578.33	-0.2033	-0.0560
-56.000	-41.82	-4.07	44979.20	-0.1544	-0.0218
-57.000	-981.17	-95.44	44473.10	-0.1128	0.0050
-58.000	-1985.30	-193.12	42995.27	-0.0786	0.0245
-59.000	-3054.21	-297.10	40480.91	-0.0514	0.0370
-60.000	-4187.91	-407.38	36865.25	-0.0309	0.0428
-61.000	-5386.38	-523.97	32083.51	-0.0164	0.0426
-62.000	-6649.64	-646.85	26070.89	-0.0071	0.0371
-63.000	-7977.69	-776.04	18762.62	-0.0022	0.0273
-64.000	-9370.51	-911.53	10093.92	-0.0003	0.0145

LIST MORE?

Y

-64.999	-10826.63	-1053.17	10.83	0.0000	0.0000
-65.000	0.00	0.00	0.00	0.0000	0.0000

RUN COMPLETED

EOT..

LIST MORE?

ST RWPZ35
 1000 RETAINING WALL W/STRUT SUPP.
 1010 2 5.0 -65.0 -1 -65.0 0 -1
 1020 BRCD COFFDM
 1030 290000000 10.28 361.2
 1040 -65.0 -17.5 ← BRACE @ EL-17.5
 1050 3 5.0 0
 1060 3 -22.4 1710
 1070 3 -22.5 1270
 1080 3 -25.0 1195
 1090 3 -25.1 935
 1100 3 -35.0 540
 1110 3 -35.1 450
 1120 3 -37.0 130
 1130 3 -37.1 320
 1140 3 -42.0 0
 1150 3 -65.0 -1490
 1160 4 -65.0 0
 1170 0

E OF CANAL
 BRACE @ EL-17.5

TRIAL CASE
MISL.

T..
 RPS
 E YOU USING A PRINTER TERMINAL OR CRT?
 ENTER P OR C

RPS SYSTEM COMMANDS:
 BIEF - LIST EXPLANATION OF A PROGRAM.
 EXECUTE - RUN A CORPS PROGRAM
 LIST - LIST THE AVAILABLE CORPS PROGRAMS.
 STOP - EXIT FROM CORPS SYSTEM MACRO.
 HELP - HELP AND EXPLANATION OF CORPS SYSTEM AND THE RUNNING OF ITS MACRO.

NOTE: COMMANDS MAY BE ABBREVIATED TO THE FIRST LETTER OF THE COMMAND.

ENTER COMMAND (BRIEF, EXECUTE, LIST, HELP, STOP):

WHICH CORPS PROGRAM DO YOU WANT TO RUN?
 0015

 CORPS PROGRAM # X0015 *
 HARRIS VERSION # 83/10/01 *

BEAMS (SHEAR, MOMENT, DEFLECTION)

DO YOU WANT OUTPUT SAVED IN A FILE (YES/NO)?

ENTER EITHER A NEW OR EXISTING OUTPUT FILE NAME UP TO 6 CHARACTERS.
 OUTPUT
 DO THE LOADING ON THE MEMBER TO BE READ FROM A FILE CREATED BY THE "CANTILEVER RETAINING WALL STABILITY" PROGRAM (YES/NO)?

DO YOU WANT TO RUN AN EXISTING DATA FILE (YES/NO)?

ENTER THE DATA FILE NAME.

RWPZ35
 TOP 7774

WOULD YOU LIKE TO LIST A FILE?

Y

WHICH HAS THE SHEAR FORCE OF 15790.43 LBF.

DISTANCE (FEET)	SHEAR FOR (LBF)	SHEAR STR (LBF/SQIN)	BENDING MOM (LBF-FT)	DEFLECTION FROM TANG. THRU DEFLE REFERENCE (INCHES)	DEFL.FROM A PARALLEL TO THE UNDEFORMED AXIS & THRU DEFL REF NOTE SIGN (IN.)
5.000	0.00	0.00	0.00	-20.2510	-6.4789
4.999	0.00	0.00	0.00	-20.2510	-6.4791
4.000	31.20	3.04	10.40	-19.7447	-6.1693
3.000	124.82	12.14	83.21	-19.2378	-5.8592
2.000	280.84	27.32	280.84	-18.7310	-5.5491
1.000	499.27	48.57	665.69	-18.2242	-5.2391
0.000	780.11	75.89	1300.18	-17.7175	-4.9291
-1.000	1123.36	109.28	2246.72	-17.2111	-4.6194
-2.000	1529.01	148.74	3567.70	-16.7050	-4.3101
-3.000	1997.08	194.27	5325.55	-16.1995	-4.0014
-4.000	2527.55	245.87	7582.66	-15.6949	-3.6935
-5.000	3120.44	303.54	10401.46	-15.1916	-3.3870

LIST MORE?

Y

-6.000	3775.73	367.29	13844.34	-14.6900	-3.0821
-7.000	4493.43	437.10	17973.72	-14.1908	-2.7796
-8.000	5273.54	512.99	22852.01	-13.6945	-2.4800
-9.000	6116.06	594.95	28541.61	-13.2020	-2.1843
-10.000	7020.99	682.98	35104.93	-12.7142	-1.8933
-11.000	7988.32	777.07	42604.38	-12.2322	-1.6081
-12.000	9018.07	877.24	51102.37	-11.7574	-1.3299
-13.000	10110.22	983.48	60661.31	-11.2909	-1.0602
-14.000	11264.78	1095.80	71343.61	-10.8345	-0.8006
-15.000	12481.75	1214.18	83211.68	-10.3899	-0.5527
-16.000	13761.13	1338.63	96327.92	-9.9591	-0.3186
-17.000	15102.92	1469.16	110754.74	-9.5442	-0.1005
-17.495	15790.43	1536.03	118402.79	-9.3454	0.0010
-18.000	-15397.75	-1497.84	110602.13	-9.1475	0.0995
-19.000	-13931.15	-1355.17	95932.48	-8.7689	0.2813
-20.000	-12402.13	-1206.43	82760.64	-8.4062	0.4473
-21.000	-10810.71	-1051.63	71149.02	-8.0572	0.5995
-22.000	-9156.88	-890.75	61160.03	-7.7200	0.7400
-23.000	-7697.62	-748.80	52786.47	-7.3930	0.8703
-24.000	-6457.62	-628.17	45711.35	-7.0746	0.9919

LIST MORE?

Y

-25.000	-5247.62	-510.47	39861.23	-6.7639	1.1059
-26.000	-4315.78	-419.82	35088.83	-6.4597	1.2133
-27.000	-3436.64	-334.30	31215.95	-6.1614	1.3149
-28.000	-2597.39	-252.66	28202.26	-5.8682	1.4113
-29.000	-1798.05	-174.91	26007.86	-5.5797	1.5031
-30.000	-1038.61	-101.03	24592.86	-5.2955	1.5905
-31.000	-319.06	-31.04	23917.35	-5.0154	1.6739
-32.000	360.59	35.08	23941.44	-4.7393	1.7533
-33.000	1000.33	97.31	24625.22	-4.4671	1.8287
-34.000	1600.18	155.66	25928.80	-4.1991	1.9000
-35.000	2160.13	210.13	27812.29	-3.9353	1.9671
-36.000	2546.42	247.71	30181.30	-3.6761	2.0295
-37.000	2760.63	268.54	32848.87	-3.4219	2.0870
-38.000	3044.68	296.18	35752.38	-3.1731	2.1390
-39.000	3273.25	318.41	38916.79	-2.9302	2.1852
-40.000	3436.52	334.29	42277.12	-2.6937	2.2249
-41.000	3534.48	343.82	45768.06	-2.4643	2.2576
-42.000	3567.13	347.00	49324.31	-2.2424	2.2828
-43.000	3534.74	343.85	52880.64	-2.0286	2.2998
-44.000	3437.57	334.39	56372.19	-1.8235	2.3081

BEAMS (SHEAR, MOMENT, DEFLECTION)

RETAINING WALL W/STRUT SUPP.

THE REFERENCE SYSTEM SELECTED DEFINES POSITIVE FORCES AS TO THE RIGHT INCREASING MEMBER COORDINATES AS UPWARD, AND POSITIVE MOMENTS AS CLOCKWISE.

THE MAXIMUM DEFLECTION IS -20.25 INCHES AND OCCURS AT MEMBER COORDINATE 5.00 FT.

BRCD COFFD HAS BEEN GIVEN TO SUPPORT THE LOAD SYSTEM.

THE WEIGHT OF THIS VERTICAL MEMBER HAS BEEN NEGLECTED.

LIST MORE?

Y

CALCULATED EXTERNAL LOADS

DISTANCE FROM REFERENCE (FT)	TYPE OF LOAD	MAGNITUDE OF LOAD
-65.00	POINT LD	13567.87 LBF
-17.50	POINT LD	-31904.87 LBF

INPUTTED LOADS

DISTANCE FROM REFERENCE (FT)	TYPE OF LOAD	MAGNITUDE OF LOAD
5.00	CONTN LD	0.00 LBF/FT
-22.40	CONTN LD	1710.00 LBF/FT
-22.50	CONTN LD	1270.00 LBF/FT
-25.00	CONTN LD	1195.00 LBF/FT
-25.10	CONTN LD	935.00 LBF/FT

LIST MORE?

Y

-35.00	CONTN LD	540.00 LBF/FT
-35.10	CONTN LD	450.00 LBF/FT
-37.00	CONTN LD	130.00 LBF/FT
-37.10	CONTN LD	320.00 LBF/FT
-42.00	CONTN LD	0.00 LBF/FT
-65.00	CONTN LD	-1490.00 LBF/FT
-65.00	CONTN LD	0.00 LBF/FT

BRCD COFFD PROPERTIES ARE AS FOLLOWS.

WEIGHT= 0.00 LBF/FT
 MOMENT OF INERTIA= 361.20 IN. TO THE 4TH
 CROSS SECTIONAL AREA= 10.28 SQ IN.
 ELASTIC MODULUS= 29000000. LBF/SQ IN.
 DEFLECTION REFERENCE IS AT -65.000

THE MAXIMUM BENDING MOMENT IS 118402.79 LBF-FT AND OCCURS AT -17.50

Y

-45.000	3275.61	318.64	59734.18	-1.6277	2.3071
-46.000	3048.87	296.58	62901.82	-1.4418	2.2963
-47.000	2757.35	268.22	65810.33	-1.2663	2.2751
-48.000	2401.04	233.56	68394.92	-1.1016	2.2431
-49.000	1979.96	192.60	70590.82	-0.9482	2.1998
-50.000	1494.09	145.34	72333.24	-0.8064	2.1448
-51.000	943.44	91.77	73557.40	-0.6765	2.0779
-52.000	328.00	31.91	74198.52	-0.5587	1.9990
-53.000	-352.22	-34.26	74191.81	-0.4532	1.9077
-54.000	-1097.22	-106.73	73472.49	-0.3599	1.8043
-55.000	-1907.00	-185.51	71975.79	-0.2787	1.6888
-56.000	-2781.56	-270.58	69636.90	-0.2093	1.5614
-57.000	-3720.91	-361.96	66391.06	-0.1514	1.4226
-58.000	-4725.04	-459.63	62173.48	-0.1044	1.2728
-59.000	-5793.96	-563.61	56919.38	-0.0677	1.1128
-60.000	-6927.65	-673.90	50563.98	-0.0403	0.9435
-61.000	-8126.13	-790.48	43042.49	-0.0212	0.7658
-62.000	-9389.39	-913.36	34290.13	-0.0092	0.5811
-63.000	-10717.43	-1042.55	24242.11	-0.0028	0.3907
-64.000	-12110.26	-1178.04	12833.67	-0.0004	0.1964

LIST MORE?

Y

-64.999	-13566.38	-1319.69	13.57	0.0000	0.0002
-65.000	0.00	0.00	0.00	0.0000	0.0000

RUN COMPLETED

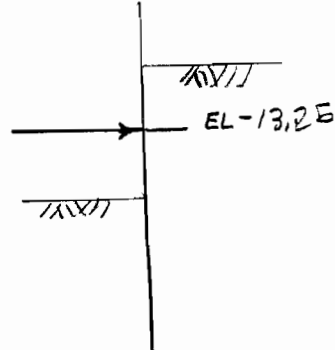
EOT..

LIST MORE?

```

100 BRACED WALL WEST SIDE CASE II*
110 STRUT AT EL -13.25
120 KSI FT IN IN LB
130 5 4 1 29000 0.3
140 1 0 -65.0 2 0 -22.4 3 0 -13.25 4 0 2.0 5 0 10.0
150 FIX X 1 3 FIX Y 1 3
160 1 1 2 2 2 3 3 3 4 4 4 5
170 490.8 11.76 8.0 1 2 3 4
180 LOAD CASE 1 0 9 0 0
190 0 -950.0 15.5 0. 0. 1
200 15.5 0. 24.5 550.0 0. 1
210 24.5 -450.0 27.375 0. 0. 1
220 27.375 0. 28.5 190.0 0. 1
230 28.5 730.0 42.6 730.0 0. 1
240 0 1475.0 1.9 1300.0 0. 2
250 1.9 1300.0 7.9 780.0 0. 2
260 7.9 780.0 9.15 702.0 0. 2
270 0.0 702.0 11.25 0. 0. 3
1*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*
PROGRAM CFRAME V02.05 24JUL84
*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*

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RUN DATE = 88/ 1/12
RUN TIME = 11.27.16

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BRACED WALL WEST SIDE CASE II
STRUT AT EL -13.25

```

1 *** JOINT DATA ***

JOINT	X --- FT ---	Y --- FT ---	-----FIXITY-----					
			X	Y	R	KX ---LB / IN---	KY ---LB / IN---	KR IN-LB /RAD
1	.00	-65.00	*	*				
2	.00	-22.40						
3	.00	-13.25	*	*				
4	.00	2.00						
5	.00	10.00						

1 *** MEMBER DATA ***

MEMBER	END END		LENGTH FT	I IN**4	A IN**2	AS IN**2	E KSI	G KSI
	A	B						
1	1	2	42.60	.4908E+03	.1176E+02	.8000E+01	.2900E+05	.1115E+05
2	2	3	9.15	.4908E+03	.1176E+02	.8000E+01	.2900E+05	.1115E+05
3	3	4	15.25	.4908E+03	.1176E+02	.8000E+01	.2900E+05	.1115E+05
4	4	5	8.00	.4908E+03	.1176E+02	.8000E+01	.2900E+05	.1115E+05

1 *** LOAD CASE 1

MEMBER	LA FT	PA LB / FT	LB FT	PB LB / FT	ANGLE DEG
--------	----------	---------------	----------	---------------	--------------

1	.00	-.9500E+03	15.50	.0000E+00	.00
1	15.50	.0000E+00	24.50	.5500E+03	.00
1	24.50	-.4500E+03	27.38	.0000E+00	.00
1	27.38	.0000E+00	28.50	.1900E+03	.00
1	28.50	.7300E+03	42.60	.7300E+03	.00
2	.00	.1475E+04	1.90	.1300E+04	.00
2	1.90	.1300E+04	7.90	.7800E+03	.00
2	7.90	.7800E+03	9.15	.7020E+03	.00
3	.00	.7020E+03	11.25	.0000E+00	.00

1 LOAD CASE 1

JOINT	JOINT DISPLACEMENTS		
	DX IN	DY IN	DR RAD
1	.0000E+00	.0000E+00	-.1398E-01
2	.2130E+01	.0000E+00	.1623E-01
3	.0000E+00	.0000E+00	.2060E-01
4	-.3702E+01	.0000E+00	.2018E-01
5	-.5639E+01	.0000E+00	.2018E-01

MEMBER END FORCES

MEMBER	JOINT	MEMBER END FORCES				LOCATION IN
		AXIAL LB	SHEAR LB	MOMENT IN-LB	MOMENT EXTREMA IN-LB	
1	1	.0000E+00	-.1552E+04	.0000E+00	.1469E+07	408.96
	2	.0000E+00	.6417E+04	.1131E+07	-.1579E+05	20.45
2	2	.0000E+00	-.6417E+04	.1131E+07	.1131E+07	.00
	3	.0000E+00	.1622E+05	-.1777E+06	-.1777E+06	109.80
3	3	.0000E+00	.3949E+04	-.1777E+06	.7328E-01	175.68
	4	.0000E+00	.0000E+00	.0000E+00	-.1777E+06	.00
4	4	.0000E+00	.0000E+00	.0000E+00	.0000E+00	.00
	5	.0000E+00	.0000E+00	.0000E+00	.0000E+00	.00

JOINT	STRUCTURE REACTIONS		
	FORCE X LB	FORCE Y LB	MOMENT IN-LB
1	.1552E+04	.0000E+00	.0000E+00
3	-.2017E+05	.0000E+00	.0000E+00

TOTAL -.1862E+05 .0000E+00

MEMBER	LOAD CASE	JOINT	MEMBER END FORCES				LOCATION IN
			AXIAL LB	SHEAR LB	MOMENT IN-LB	MOMENT EXTREMA IN-LB	
1	1	1	.0000E+00	-.1552E+04	.0000E+00	.1469E+07	408.96
		2	.0000E+00	.6417E+04	.1131E+07	-.1579E+05	20.45

2	1	2	.0000E+00	-.6417E+04	.1131E+07	.1131E+07	.00
		3	.0000E+00	.1622E+05	-.1777E+06	-.1777E+06	109.80
3	1	3	.0000E+00	.3949E+04	-.1777E+06	.7328E-01	175.68
		4	.0000E+00	.0000E+00	.0000E+00	-.1777E+06	.00
4	1	4	.0000E+00	.0000E+00	.0000E+00	.0000E+00	.00
		5	.0000E+00	.0000E+00	.0000E+00	.0000E+00	.00

RWPZ35

1000 BRACED WALL WEST SIDE,CASE I

1010 2 10.0 -65.0 -1 -65.0 0 -1

1020 FHS1 W-CASI

1030 29000000 10.28 361.2

040 -65.0 -12.0 ← EXTRA RUN W/ BRACE @ EL, -12.0

1050 3 -2.0 0

1060 3 -7.0 970

1070 3 -22.4 970

1080 3 -22.4 730

1090 3 -36.5 730

1100 3 -36.5 0

1110 3 -36.5 -660

1120 3 -40.5 -1300

1130 3 -40.5 0

1140 3 -40.5 550

1150 3 -49.5 0

1160 3 -65.0 -950

1170 4 -65.0 0

1180 0

EOT..

LIST MORE?

N

WOULD YOU LIKE TO LIST A FILE?

Y

NAME OF FILE?

OUTPUT

BEAMS (SHEAR, MOMENT, DEFLECTION)

BRACED WALL WEST SIDE,CASE I

THE REFERENCE SYSTEM SELECTED DEFINES POSITIVE FORCES AS TO THE RIGHT INCREASING MEMBER COORDINATES AS UPWARD, AND POSITIVE MOMENTS AS CLOCKWISE.

THE MAXIMUM DEFLECTION IS 14.69 INCHES AND OCCURS AT MEMBER COORDINATE 10.00 FT.

FHS1 W-CAS HAS BEEN GIVEN TO SUPPORT THE LOAD SYSTEM.

THE WEIGHT OF THIS VERTICAL MEMBER HAS BEEN NEGLECTED.

LIST MORE?

Y

CALCULATED EXTERNAL LOADS

DISTANCE FROM REFERENCE (FT)	TYPE OF LOAD	MAGNITUDE OF LOAD
-65.00	POINT LD	3305.00 LBF
-12.00	POINT LD	-22153.50 LBF

INPUTTED LOADS

DISTANCE FROM REFERENCE (FT)	TYPE OF LOAD	MAGNITUDE OF LOAD
------------------------------	--------------	-------------------

-7.00 CONTN LD 970.00 LBF/FT
 -22.40 CONTN LD 970.00 LBF/FT
 -22.40 CONTN LD 730.00 LBF/FT
 -36.50 CONTN LD 730.00 LBF/FT

LIST MORE?

Y

-36.50 CONTN LD 0.00 LBF/FT
 -36.50 CONTN LD -660.00 LBF/FT
 -40.50 CONTN LD -1300.00 LBF/FT
 -40.50 CONTN LD 0.00 LBF/FT
 -40.50 CONTN LD 550.00 LBF/FT
 -49.50 CONTN LD 0.00 LBF/FT
 -65.00 CONTN LD -950.00 LBF/FT
 -65.00 CONTN LD 0.00 LBF/FT

PHS1 W-CAS PROPERTIES ARE AS FOLLOWS.

WEIGHT= 0.00 LBF/FT
 MOMENT OF INERTIA= 361.20 IN. TO THE 4TH
 CROSS SECTIONAL AREA= 10.28 SQ IN.
 ELASTIC MODULUS= 29000000. LBF/SQ IN.
 DEFLECTION REFERENCE IS AT -65.000

LIST MORE?

Y

THE MAXIMUM BENDING MOMENT IS -89705.54 LBF-FT AND OCCURS AT -28.96
 WHICH HAS THE SHEAR FORCE OF 0.00 LBF.

DISTANCE (FEET)	SHEAR FOR (LBF)	SHEAR STR (LBF/SQIN)	BENDING MOM (LBF-FT)	DEFLECTION FROM TANG. THRU DEFLE REFERENCE (INCHES)	DEFL.FROM A PARALLEL TO THE UNDEFORMED AXIS & THRU DEFL REF NOTE SIGN (IN.)
10.000	0.00	0.00	0.00	14.6918	4.6543
9.999	0.00	0.00	0.00	14.6918	4.6544
9.000	0.00	0.00	0.00	14.3479	4.4443
8.000	0.00	0.00	0.00	14.0037	4.2339
7.000	0.00	0.00	0.00	13.6595	4.0235
6.000	0.00	0.00	0.00	13.3153	3.8131
5.000	0.00	0.00	0.00	12.9711	3.6027
4.000	0.00	0.00	0.00	12.6268	3.3923
3.000	0.00	0.00	0.00	12.2826	3.1820
2.000	0.00	0.00	0.00	11.9384	2.9716
1.000	0.00	0.00	0.00	11.5942	2.7612

LIST MORE?

Y

0.000	0.00	0.00	0.00	11.2500	2.5508
-1.000	0.00	0.00	0.00	10.9058	2.3404
-2.000	0.00	0.00	0.00	10.5615	2.1300
-3.000	97.00	9.44	32.33	10.2173	1.9197
-4.000	388.00	37.74	258.67	9.8731	1.7093
-5.000	873.00	84.92	873.00	9.5288	1.4988
-6.000	1552.00	150.97	2069.33	9.1844	1.2882
-7.000	2425.00	235.89	4041.67	8.8396	1.0772
-8.000	3395.00	330.25	6951.67	8.4941	0.8656
-9.000	4365.00	424.61	10831.67	8.1474	0.6527
-10.000	5335.00	518.97	15681.67	7.7989	0.4381
-11.000	6305.00	613.33	21501.67	7.4478	0.2208
-12.000	-14878.50	-1447.32	28291.67	7.0932	0.0000
-13.000	-13908.50	-1352.97	13898.17	6.7344	-0.2249
-14.000	-12938.50	-1258.61	474.67	6.3733	-0.4522

-16.000	-10998.50	-1069.89	-23462.33	5.6529	-0.9049
-17.000	-10028.50	-975.53	-33975.83	5.2975	-1.1265
-18.000	-9058.50	-881.18	-43519.33	4.9477	-1.3424
-19.000	-8088.50	-786.82	-52092.83	4.6051	-1.5513

LIST MORE?

-20.000	-7118.50	-692.46	-59696.33	4.2710	-1.7515
-21.000	-6148.50	-598.10	-66329.83	3.9467	-1.9419
-22.000	-5178.50	-503.75	-71993.33	3.6334	-2.1215
-23.000	-4352.50	-423.39	-76730.03	3.3319	-2.2891
-24.000	-3622.50	-352.38	-80717.53	3.0430	-2.4442
-25.000	-2892.50	-281.37	-83975.03	2.7674	-2.5859
-26.000	-2162.50	-210.36	-86502.52	2.5057	-2.7138
-27.000	-1432.50	-139.35	-88300.02	2.2582	-2.8274
-28.000	-702.50	-68.34	-89367.52	2.0253	-2.9265
-28.962	0.00	0.00	-89705.54	1.8150	-3.0080
-29.000	27.50	2.68	-89705.02	1.8071	-3.0109
-30.000	757.50	73.69	-89312.52	1.6036	-3.0805
-31.000	1487.50	144.70	-88190.02	1.4149	-3.1354
-32.000	2217.50	215.71	-86337.52	1.2407	-3.1758
-33.000	2947.50	286.72	-83755.02	1.0807	-3.2019
-34.000	3677.50	357.73	-80442.52	0.9346	-3.2143
-35.000	4407.50	428.75	-76400.02	0.8017	-3.2133
-36.000	5137.50	499.76	-71627.52	0.6813	-3.1999
-36.500	5502.50	535.26	-68967.52	0.6256	-3.1886
-37.000	5152.50	501.22	-66302.10	0.5728	-3.1746

LIST MORE?

-38.000	4332.50	421.45	-61546.27	0.4752	-3.1383
-39.000	3352.50	326.12	-57690.43	0.3878	-3.0919
-40.000	2212.50	215.22	-54894.60	0.3099	-3.0359
-40.500	1582.50	153.94	-53944.18	0.2744	-3.0045
-41.000	1849.86	179.95	-53085.45	0.2411	-2.9709
-42.000	2338.75	227.50	-50986.06	0.1811	-2.8971
-43.000	2766.53	269.12	-48428.32	0.1295	-2.8149
-44.000	3133.20	304.79	-45473.37	0.0858	-2.7247
-45.000	3438.75	334.51	-42182.30	0.0496	-2.6270
-46.000	3683.20	358.29	-38616.24	0.0204	-2.5224
-47.000	3866.53	376.12	-34836.28	-0.0024	-2.4114
-48.000	3988.75	388.01	-30903.55	-0.0195	-2.2947
-49.000	4049.86	393.96	-26879.15	-0.0315	-2.1729
-49.499	4057.50	394.70	-24855.73	-0.0358	-2.1104
-49.501	4057.50	394.70	-24847.62	-0.0358	-2.1101
-50.000	4049.84	393.95	-22824.20	-0.0391	-2.0466
-51.000	3988.55	387.99	-18799.90	-0.0429	-1.9166
-52.000	3865.97	376.07	-14867.54	-0.0436	-1.7835
-53.000	3682.10	358.18	-11088.39	-0.0419	-1.6479
-54.000	3436.94	334.33	-7523.77	-0.0383	-1.5105

LIST MORE?

-55.000	3130.48	304.52	-4234.95	-0.0335	-1.3718
-56.000	2762.74	268.75	-1283.23	-0.0280	-1.2325
-57.000	2333.71	227.01	1270.10	-0.0222	-1.0929
-58.000	1843.39	179.32	3363.76	-0.0166	-0.9535
-59.000	1291.77	125.66	4936.45	-0.0116	-0.8146
-60.000	678.87	66.04	5926.88	-0.0074	-0.6766
-61.000	4.68	0.46	6273.76	-0.0041	-0.5395
-62.000	-730.81	-71.09	5915.80	-0.0019	-0.4034
-63.000	-1527.58	-148.60	4791.72	-0.0006	-0.2683
-64.000	-2385.64	-232.07	2840.21	-0.0001	-0.1339
-64.999	-3304.05	-321.41	3.30	0.0000	-0.0001
-65.000	0.00	0.00	0.00	0.0000	0.0000

LIST-PZRWPZ35

1 1000 BRACED WALL WEST SIDE, CASE I
 2 1010 2 10.0 -65.0 -1 -65.0 0 -1
 3 1020 PHS1 W-CASI
 4 1030 29000000 10.28 361.2
 1040 -65.0 -13.0
 6 1050 3 -2.0 0
 7 1060 3 -7.0 970
 8 1070 3 -22.4 970
 9 1080 3 -22.4 730
 10 1090 3 -36.5 730
 11 1100 3 -36.5 0
 12 1110 3 -36.5 -660
 13 1120 3 -40.5 -1300
 14 1130 3 -40.5 0
 15 1140 3 -40.5 550
 16 1150 3 -49.5 0
 17 1160 3 -65.0 -950
 18 1170 4 -65.0 0
 19 1180 0

BRACE @ EL-13,0

EOT..

CORPS

ARE YOU USING A PRINTER TERMINAL OR CRT?

ENTER P OR C

C

CORPS SYSTEM COMMANDS:

BRIEF - LIST EXPLANATION OF A PROGRAM.

EXECUTE - RUN A CORPS PROGRAM

LIST - LIST THE AVAILABLE CORPS PROGRAMS.

STOP - EXIT FROM CORPS SYSTEM MACRO.

HELP - HELP AND EXPLANATION OF CORPS SYSTEM AND THE RUNNING OF ITS MACRO.

NOTE: COMMANDS MAY BE ABBREVIATED TO THE FIRST LETTER OF THE COMMAND.

ENTER COMMAND (BRIEF, EXECUTE, LIST, HELP, STOP):

E

WHICH CORPS PROGRAM DO YOU WANT TO RUN?

X0015

 * CORPS PROGRAM # X0015 *
 * HARRIS VERSION # 83/10/01 *

BEAMS (SHEAR, MOMENT, DEFLECTION)

DO YOU WANT OUTPUT SAVED IN A FILE (YES/NO)?

Y

ENTER EITHER A NEW OR EXISTING OUTPUT FILE NAME UP TO 6 CHARACTERS.

OUTPUT

IS THE LOADING ON THE MEMBER TO BE READ FROM A FILE CREATED BY THE "CANTILEVER RETAINING WALL STABILITY" PROGRAM (YES/NO)?

N

DO YOU WANT TO RUN AN EXISTING DATA FILE (YES/NO)?

Y

ENTER THE DATA FILE NAME.

RWPZ35

STOP 7774

WOULD YOU LIKE TO LIST A FILE?

NAME OF FILE?
OUTPUT

BEAMS (SHEAR, MOMENT, DEFLECTION)

BRACED WALL WEST SIDE,CASE I

THE REFERENCE SYSTEM SELECTED DEFINES POSITIVE FORCES AS TO THE RIGHT
INCREASING MEMBER COORDINATES AS UPWARD, AND POSITIVE MOMENTS
AS CLOCKWISE.

THE MAXIMUM DEFLECTION IS 10.82 INCHES AND OCCURS AT MEMBER COORDINATE
10.00 FT.

PHS1 W-CAS HAS BEEN GIVEN TO SUPPORT THE LOAD SYSTEM.

THE WEIGHT OF THIS VERTICAL MEMBER HAS BEEN NEGLECTED.

LIST MORE?

Y

CALCULATED EXTERNAL LOADS

DISTANCE FROM REFERENCE(FT)	TYPE OF LOAD	MAGNITUDE OF LOAD
-65.00	POINT LD	3731.03 LBF
-13.00	POINT LD	-22579.53 LBF

INPUTTED LOADS

DISTANCE FROM REFERENCE(FT)	TYPE OF LOAD	MAGNITUDE OF LOAD
-2.00	CONTN LD	0.00 LBF/FT
-7.00	CONTN LD	970.00 LBF/FT
-22.40	CONTN LD	970.00 LBF/FT
-22.40	CONTN LD	730.00 LBF/FT
-36.50	CONTN LD	730.00 LBF/FT

LIST MORE?

Y

-36.50	CONTN LD	0.00 LBF/FT
-36.50	CONTN LD	-660.00 LBF/FT
-40.50	CONTN LD	-1300.00 LBF/FT
-40.50	CONTN LD	0.00 LBF/FT
-40.50	CONTN LD	550.00 LBF/FT
-49.50	CONTN LD	0.00 LBF/FT
-65.00	CONTN LD	-950.00 LBF/FT
-65.00	CONTN LD	0.00 LBF/FT

PHS1 W-CAS PROPERTIES ARE AS FOLLOWS.

WEIGHT= 0.00 LBF/FT
MOMENT OF INERTIA= 361.20 IN. TO THE 4TH
CROSS SECTIONAL AREA= 10.28 SQ IN.
ELASTIC MODULUS= 29000000. LBF/SQ IN.
DEFLECTION REFERENCE IS AT -65.000

LIST MORE?

Y

THE MAXIMUM BENDING MOMENT IS -74476.77 LBF-FT AND OCCURS AT -29.55 WHICH HAS THE SHEAR FORCE OF 0.00 LBF.

DISTANCE (FEET)	SHEAR FOR (LBF)	SHEAR STR (LBF/SQIN)	BENDING MOM (LBF-FT)	DEFLECTION FROM TANG. THRU DEFLE REFERENCE (INCHES)	DEFL.FROM A PARALLEL TO THE UNDEFORMED AXIS & THRU DEFLE REF NOTE SIGN (IN.)
10.000	0.00	0.00	0.00	10.8184	3.4805 ←
9.999	0.00	0.00	0.00	10.8184	3.4806
9.000	0.00	0.00	0.00	10.5713	3.3312
8.000	0.00	0.00	0.00	10.3239	3.1817
7.000	0.00	0.00	0.00	10.0765	3.0321
6.000	0.00	0.00	0.00	9.8291	2.8826
5.000	0.00	0.00	0.00	9.5818	2.7331
4.000	0.00	0.00	0.00	9.3344	2.5835
3.000	0.00	0.00	0.00	9.0870	2.4340
2.000	0.00	0.00	0.00	8.8396	2.2845
1.000	0.00	0.00	0.00	8.5923	2.1349

LIST MORE?

Y

0.000	0.00	0.00	0.00	8.3449	1.9854
-1.000	0.00	0.00	0.00	8.0975	1.8358
-2.000	0.00	0.00	0.00	7.8501	1.6863
-3.000	97.00	9.44	32.33	7.6027	1.5368
-4.000	388.00	37.74	258.67	7.3554	1.3872
-5.000	873.00	84.92	873.00	7.1079	1.2376
-6.000	1552.00	150.97	2069.33	6.8603	1.0878
-7.000	2425.00	235.89	4041.67	6.6124	0.9377
-8.000	3395.00	330.25	6951.67	6.3637	0.7869
-9.000	4365.00	424.61	10831.67	6.1139	0.6349
-10.000	5335.00	518.97	15681.67	5.8622	0.4811
-11.000	6305.00	613.33	21501.67	5.6080	0.3247
-12.000	7275.00	707.68	28291.67	5.3501	0.1647
-13.000	-14334.53	-1394.41	36051.67	5.0876	0.0000
-14.000	-13364.53	-1300.05	22202.14	4.8197	-0.1700
-15.000	-12394.53	-1205.69	9322.61	4.5482	-0.3438
-16.000	-11424.53	-1111.34	-2586.92	4.2750	-0.5191
-17.000	-10454.53	-1016.98	-13526.45	4.0023	-0.6940
-18.000	-9484.53	-922.62	-23495.97	3.7318	-0.8666
-19.000	-8514.53	-828.26	-32495.50	3.4651	-1.0355

LIST MORE?

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-20.000	-7544.53	-733.90	-40525.03	3.2037	-1.1990
-21.000	-6574.53	-639.55	-47584.56	2.9491	-1.3558
-22.000	-5604.53	-545.19	-53674.09	2.7022	-1.5049
-23.000	-4778.53	-464.84	-58836.82	2.4642	-1.6451
-24.000	-4048.53	-393.83	-63250.34	2.2358	-1.7756
-25.000	-3318.53	-322.81	-66933.87	2.0179	-1.8957
-26.000	-2588.53	-251.80	-69887.40	1.8110	-2.0047
-27.000	-1858.53	-180.79	-72110.93	1.6156	-2.1023
-28.000	-1128.53	-109.78	-73604.46	1.4320	-2.1880
-29.000	-398.53	-38.77	-74367.98	1.2606	-2.2616
-29.546	0.00	0.00	-74476.77	1.1722	-2.2966
-30.000	331.47	32.24	-74401.51	1.1015	-2.3229
-31.000	1061.47	103.26	-73705.04	0.9546	-2.3719
-32.000	1791.47	174.27	-72278.57	0.8198	-2.4088
-33.000	2521.47	245.28	-70122.10	0.6970	-2.4339
-34.000	3251.47	316.29	-67235.63	0.5857	-2.4473
-35.000	3981.47	387.30	-63619.15	0.4854	-2.4497
-36.000	4711.47	458.31	-59272.68	0.3957	-2.4416
-36.500	5076.47	493.82	-56825.70	0.3545	-2.4339

-37.000
LIST MORE?

Y
-38.000 3906.47 380.01 -50043.49 0.2447 -2.3970
-39.000 2926.47 284.68 -46613.68 0.1819 -2.3619
-40.000 1786.47 173.78 -44243.88 0.1269 -2.3190
-40.500 1156.47 112.50 -43506.48 0.1022 -2.2949
-41.000 1423.83 138.51 -42860.76 0.0792 -2.2689
-42.000 1912.72 186.06 -41187.39 0.0386 -2.2117
-43.000 2340.50 227.68 -39055.69 0.0048 -2.1477
-44.000 2707.17 263.34 -36526.76 -0.0226 -2.0772
-45.000 3012.72 293.07 -33661.73 -0.0440 -2.0008
-46.000 3257.17 316.84 -30521.69 -0.0599 -1.9188
-47.000 3440.50 334.68 -27167.77 -0.0707 -1.8318
-48.000 3562.72 346.57 -23661.06 -0.0770 -1.7403
-49.000 3623.83 352.51 -20062.69 -0.0795 -1.6449
-49.499 3631.47 353.26 -18251.86 -0.0794 -1.5960
-49.501 3631.47 353.26 -18244.60 -0.0794 -1.5958
-50.000 3623.81 352.51 -16433.77 -0.0786 -1.5462
-51.000 3562.52 346.55 -12835.50 -0.0751 -1.4448
-52.000 3439.94 334.62 -9329.16 -0.0694 -1.3413
-53.000 3256.07 316.74 -5976.05 -0.0621 -1.2362
-54.000 3010.91 292.89 -2837.45 -0.0539 -1.1301

LIST MORE?

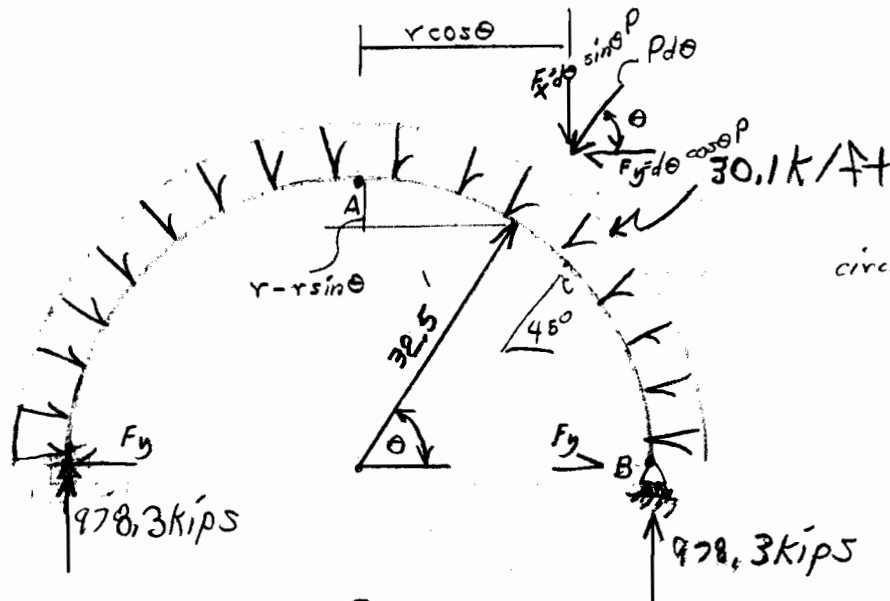
Y
-55.000 2704.46 263.08 25.34 -0.0452 -1.0236
-56.000 2336.71 227.31 2551.03 -0.0365 -0.9170
-57.000 1907.68 185.57 4678.33 -0.0282 -0.8109
-58.000 1417.36 137.88 6345.96 -0.0207 -0.7055
-59.000 865.75 84.22 7492.62 -0.0141 -0.6012
-60.000 252.84 24.60 8057.02 -0.0089 -0.4981
-61.000 -421.35 -40.99 7977.88 -0.0049 -0.3962
-62.000 -1156.83 -112.53 7193.89 -0.0022 -0.2957
-63.000 -1953.61 -190.04 5643.78 -0.0007 -0.1964
-64.000 -2811.67 -273.51 3266.24 -0.0001 -0.0979
-64.999 -3730.08 -362.85 3.73 0.0000 -0.0001
-65.000 0.00 0.00 0.00 0.0000 0.0000

RUN COMPLETED

EOT..
LIST MORE?

COMPUTATION SHEET

PROJECT	PAGE OF	COMPUTED BY	DATE
SUBJECT		CHECKED BY	DATE



circumference = πd
 $= \frac{\pi d}{4}$
 $= \frac{\pi r}{2}$

$$M_A = 32.5 (978.3) - \int_0^{\pi/2} [P \cos \theta r^2 - P \cos \theta r \sin \theta + (P \sin \theta \cos \theta)] d\theta$$

$$M_A = 31794.8 - \int_0^{\pi/2} P r^2 \cos \theta d\theta$$

$$31794.8 - (30.1)(32.5)^2 \sin \theta \Big|_0^{\pi/2}$$

$$M_A = 0 \quad \text{K}$$

$$M_B @ 60^\circ = 978.3(r - r \cos \theta) - P r^2 \sin \theta$$

$$= 978.3(32.2 + 32.2(0.5)) - 31208.9(0.866)$$

$$= -11276.3 \text{ K}$$

$$M_C @ 45^\circ = 978.3(32.5 - 23) \int_0^{\pi/4} P r^2 \cos \theta d\theta$$

$$= 9293.9 - P r^2 (0.7071)$$

$$= 9293.9 - 30.1(32.5^2)(0.7071)$$

$$= -13187 \text{ K}$$

$$M_C @ 30^\circ = 978.3(32.5 - 28.2) - (30.1)(32.5)^2(0.5)$$

$$= 4206.7 - 15896.6$$

$$= -11690 \text{ K}$$

COMPUTATION SHEET

PROJECT	17th St. Canal GDM	PAGE 1 OF	COMPUTED BY Liberde CA	DATE 5 Jan 88
SUBJECT	Cofferdam for Butterfly Valve Alt.	CHECKED BY		DATE

SIZE A RING WALE USING U.S. steel sheet pile manual
 A962, Eq → $f_s = \frac{T}{A} + \frac{M}{S}$

Assume single wale @ EL. -13.25 Load/ft = 30.1 k/ft
 from CFRAME Run

Diameter of cofferdam ≈ 122 ft

$$T = 61 \text{ ft} \times 30.1 \text{ k/ft} = 1836.1 \text{ kips}$$

USE a W33x118 as in Larose Fldgate GDM

$$A = 34.7 \text{ in}^2$$

$$b = R - \sqrt{R^2 - \left(\frac{C}{2}\right)^2}$$

$$b = 122 - \sqrt{122^2 - \left(\frac{14}{2}\right)^2} = .0037$$

$$M = .86 T \times b = .86 (1836.1) (.0037) = 5.84 \text{ k}$$

$$S = 359 \text{ in}^3$$

$$f_s = \frac{1836.1 \text{ k}}{34.7 \text{ in}^2} + \frac{5.84(12)}{359} = 52.9 \text{ ksi} + 0.2 \text{ ksi} = 53.1 \text{ ksi}$$

$$f_s = \frac{T}{A} + \frac{M}{S}$$

$$f_s = \frac{T}{A}$$

$$24 \text{ ksi} = \frac{1836.1 \text{ kips}}{A_{\text{req'd}}}$$

$$A_{\text{req'd}} = 76.5 \text{ in}^2$$

$$W36 \times 200 \quad A_s = 76.5 \text{ in}^2$$

$$\frac{KL}{r} = \frac{1.0(120)}{3.78} = 31.75 \quad F_a = 19.82 \text{ ksi}$$

$$19.82 \text{ ksi} = \frac{1836.1 \text{ k}}{A_{\text{req'd}}}$$

$$92.7 \text{ in}^2 = A_{\text{req'd}}$$

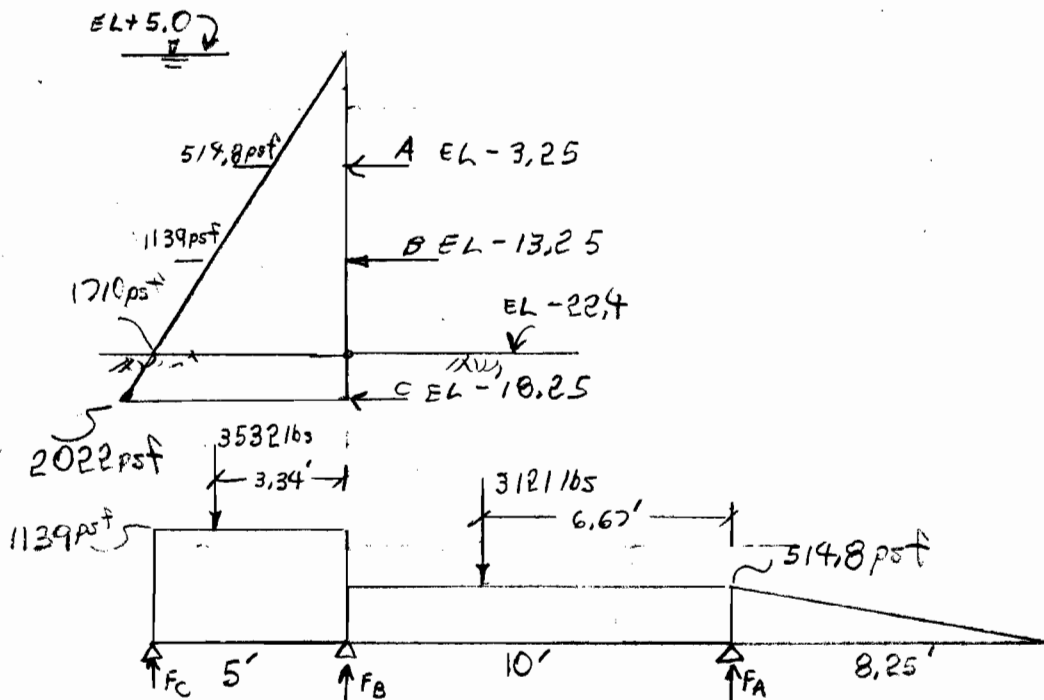
Try W14x392 → A = 101 in² $\frac{KL}{r} = \frac{1.0(120)}{4.24} = 28.3 \rightarrow F_a = 20.06$

$$A_{\text{req'd}} = \frac{1836.1 \text{ k}}{20.06 \text{ ksi}} = 91.53$$

COMPUTATION SHEET

PROJECT	175t Canal/GDM	PAGE 2 OF	COMPUTED BY L. G. Horde, CA	DATE 5 Jan 88
SUBJECT	Cofferdam for Butterfly Valve Alt.	CHECKED BY		DATE

calc. strut. Loads 1ft following U.S. steel Sht Pile Manual, pg 59



0	.33	.67	1	0
2373	-2373	4290'	-4290'	-5840' / lbs
-2614	-1289	4619'	-2278'	
-4987	3662	8909	-6568	
		-364	+728	
		-1852	-5840	-5840
		72494		
		-823	+1671	
		-3843	-3843	

$$(\sum M_B = 0) \curvearrowright$$

$$-3843 + 3121(3.33') + (514.8)(10)^2/2 + (514.8)(8.25/2)(12.75) = 10F_A$$

$$5937 \text{ lbs} = F_A$$

$$5937 + F_B = 3121 + 514.8(10) + 514.8(8.25)(1.5)$$

$$F_B = 4456 \text{ lbs}$$

COMPUTATION SHEET

PROJECT 125th Canal GDM
 SUBJECT Cofferdam for Butterfly Valve A17
 PAGE 3 OF
 COMPUTED BY Labeyrie, CA
 CHECKED BY
 DATE 7/2/58

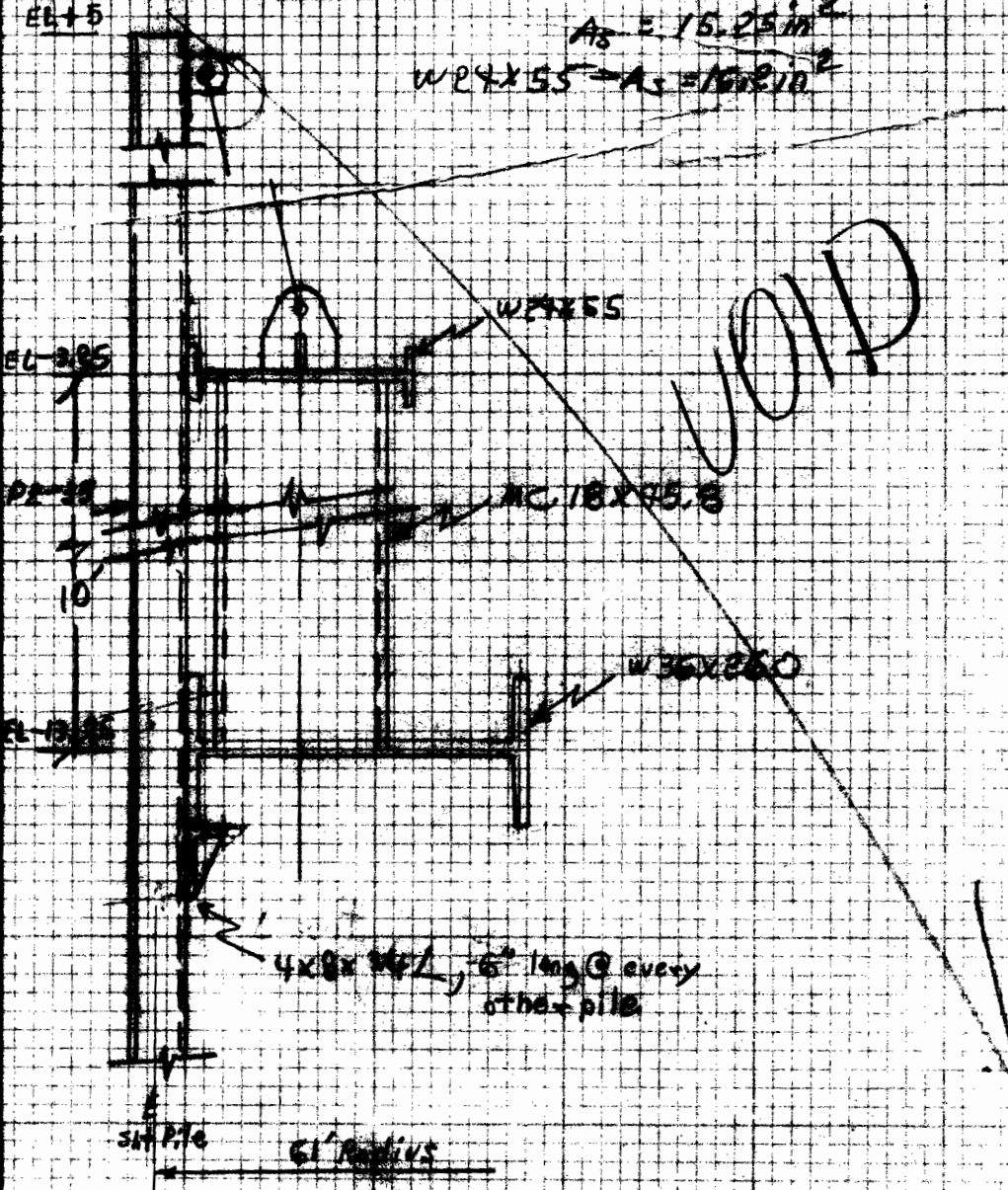
SIZE TOP WALKER @ EL - 3.25 for 6000/ft

$$V_s = \frac{V}{A} = \frac{6,000/ft (6/ft)}{A_s} = 24 A_s$$

EL + 5

$$A_s = 15.25 in^2$$

$$W 2 \times 4 \times 55 \rightarrow A_s = 16.2 in^2$$



COMPUTATION SHEET

PROJECT 17th St Canal GDM	PAGE 4 OF	COMPUTED BY Lobore CA	DATE 1/20/88
SUBJECT Cofferdam for Butter Fly Valve #4	CHECKED BY		DATE

SIZE TOP RIBLER (10' x 10' - 3' x 5' x 6' x 14')

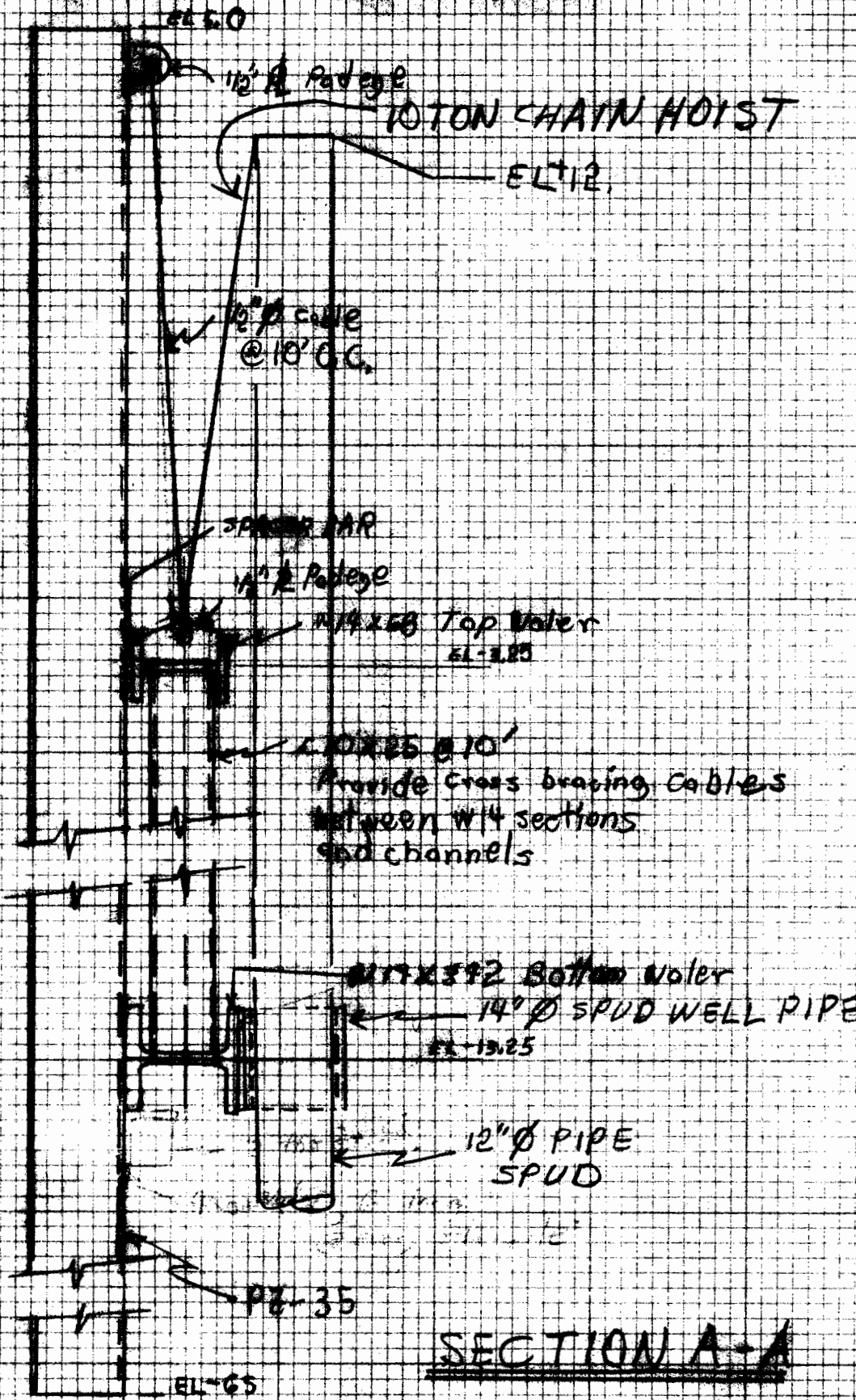
USE A W19 SECTION - Try W19 x 68

$$\frac{Kl}{r} = \frac{(10)(10)}{21.6} = 48.8 \quad F_a = 18.97 \text{ ksi}$$

$$A_{req'd} = \frac{T}{F_a} = \frac{(6.0 \text{ kft})(61)}{18.97 \text{ ksi}} = 19.82 \text{ in}^2 < 20.0 \text{ in}^2$$

OK

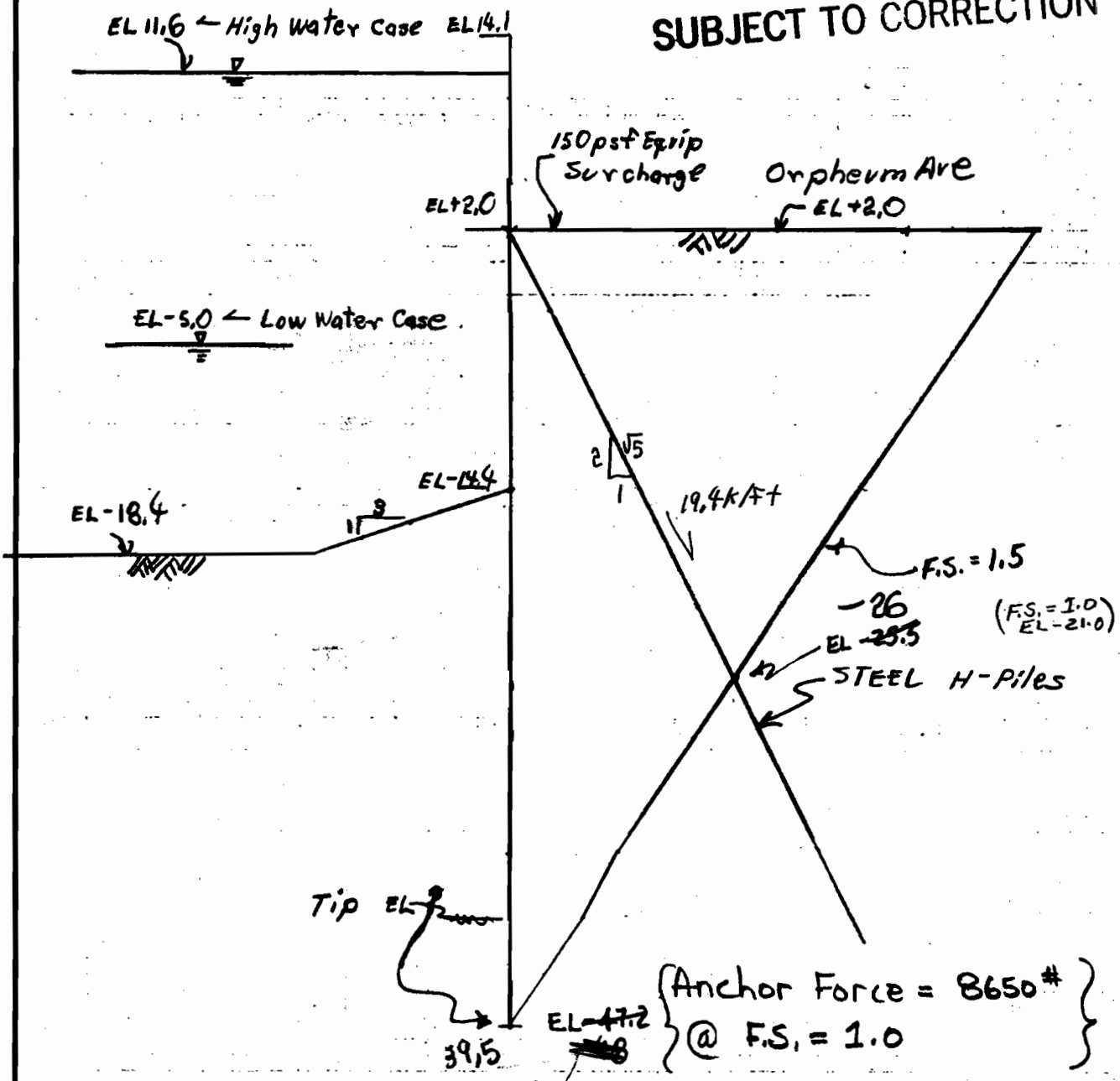
PROJECT	175 th Canal GDM	PAGE 5 OF	COMPUTED BY Loboyde, CA	DATE 12/11/88
SUBJECT	Cofferdam For butterfly Valve A11	CHECKED BY		DATE



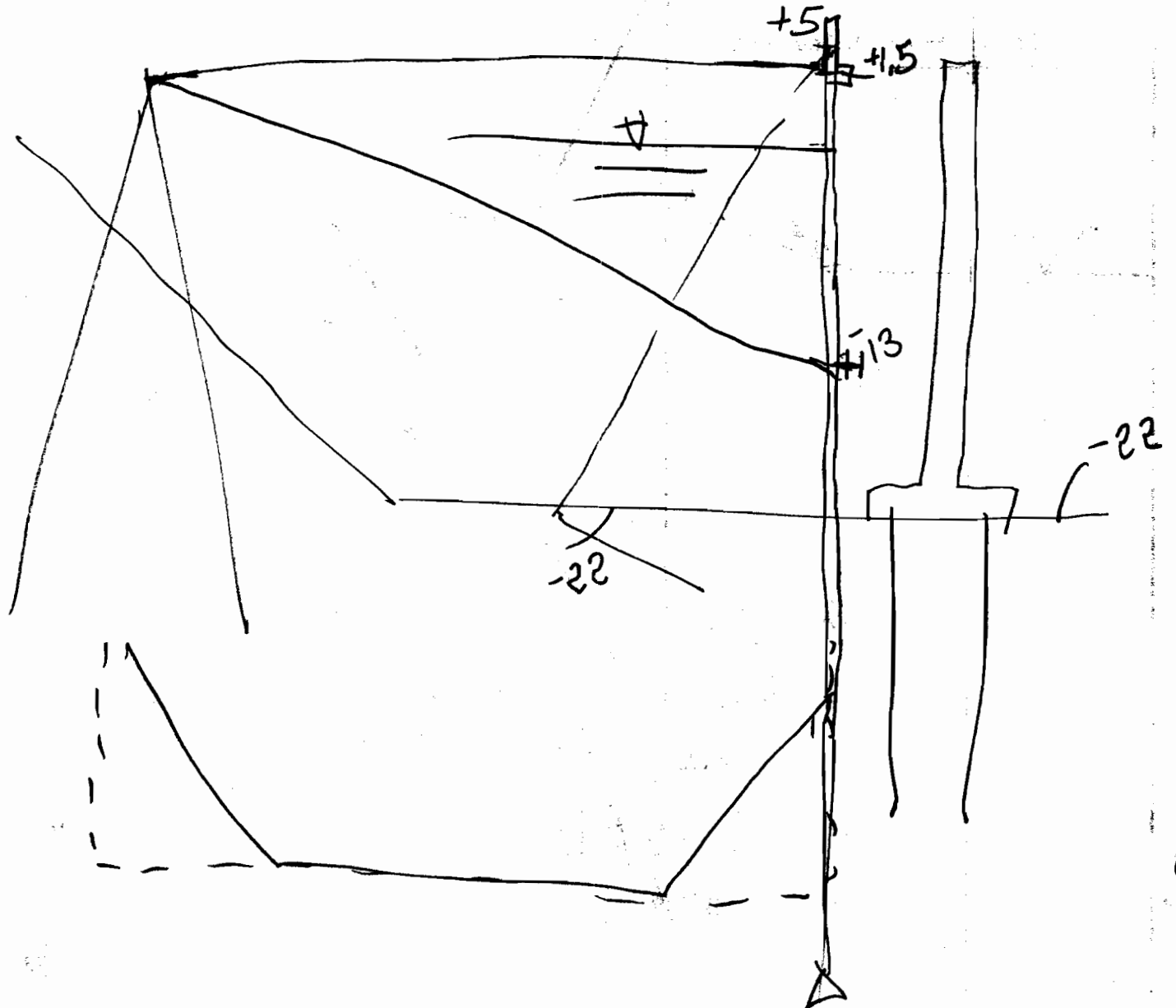
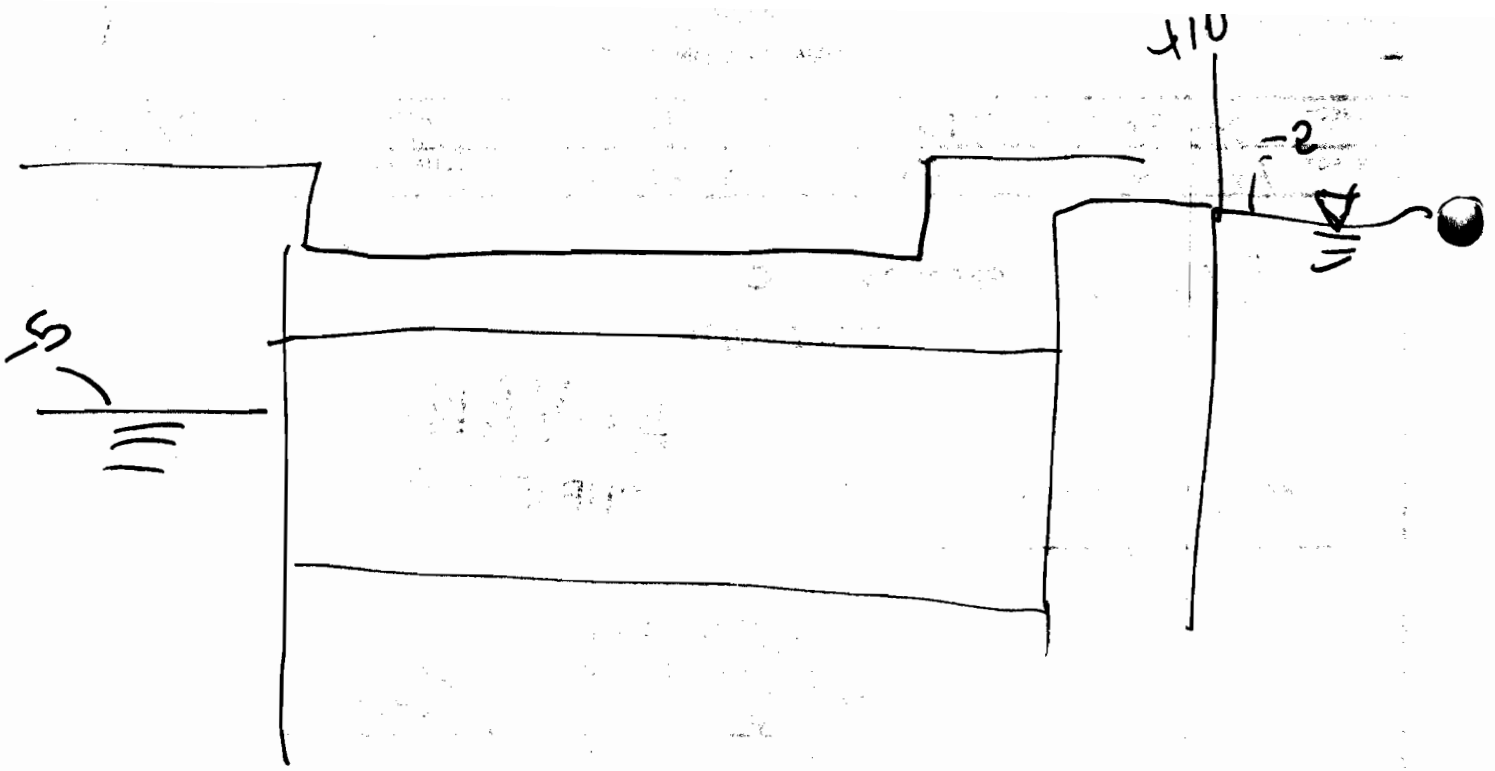
PROJECT	12th St Outfall Canal	PAGE	OF	COMPUTED BY	Laberde, CA	DATE	7 Dec 87
SUBJECT	Anchored Wall Flood Protection	CHECKED BY				DATE	

DMA17 SECTION C-C
FLOOD SIDE

ADVANCE COPY
SUBJECT TO CORRECTION



ADVANCE COPY
SUBJECT TO CORRECTION



LIISST DDHAA1177
17TH ST CANAL
'EXCAVATION

6 10057 3 -0.39470000E+02 -0.16098900E+04
57 10058 4 -0.39470000E+02 0.00000000E+01
58 10059 0 -0.39470000E+02 0.00000000E+01
59 10060 -0.39470000E+02 0.00000000E+01 0.25877300E+02
EOF..
EOT..

1	10001	3	0.30000000E+01	0.00000000E+01	0.00000000E+03
2	10002	3	0.20000000E+01	0.15000000E+03	0.65710000E+02
3	10003	3	0.20000000E+01	0.20000000E+01	0.65710000E+02
4	10004	3	0.10000000E+01	0.10000000E+01	0.11300000E+03
5	10005	3	0.00000000E+01	0.00000000E+01	0.16200000E+03
6	10006	3	0.00000000E+01	0.00000000E+01	0.24540000E+03
7	10007	3	0.00000000E+01	0.00000000E+01	0.32871000E+03
8	10008	3	0.00000000E+01	0.00000000E+01	0.32871000E+03
9	10009	3	0.00000000E+01	0.00000000E+01	0.48920000E+03
10	10010	3	0.00000000E+01	0.00000000E+01	0.56944000E+03
11	10011	3	0.00000000E+01	0.00000000E+01	0.56944000E+03
12	10012	3	0.00000000E+01	0.00000000E+01	0.58718000E+03
13	10013	3	0.00000000E+01	0.00000000E+01	0.60493000E+03
14	10014	3	0.00000000E+01	0.00000000E+01	0.62267000E+03
15	10015	3	0.00000000E+01	0.00000000E+01	0.64041000E+03
16	10016	3	0.00000000E+01	0.00000000E+01	0.65816000E+03
17	10017	3	0.00000000E+01	0.00000000E+01	0.67590000E+03
18	10018	3	0.00000000E+01	0.00000000E+01	0.69364000E+03
19	10019	3	0.00000000E+01	0.00000000E+01	0.71138000E+03
20	10020	3	0.00000000E+01	0.00000000E+01	0.72912000E+03
21	10021	3	0.00000000E+01	0.00000000E+01	0.74686000E+03
22	10022	3	0.00000000E+01	0.00000000E+01	0.76460000E+03
23	10023	3	0.00000000E+01	0.00000000E+01	0.78234000E+03
24	10024	3	0.00000000E+01	0.00000000E+01	0.80008000E+03
25	10025	3	0.00000000E+01	0.00000000E+01	0.81782000E+03
26	10026	3	0.00000000E+01	0.00000000E+01	0.83556000E+03
27	10027	3	0.00000000E+01	0.00000000E+01	0.85330000E+03
28	10028	3	0.00000000E+01	0.00000000E+01	0.87104000E+03
29	10029	3	0.00000000E+01	0.00000000E+01	0.88878000E+03
30	10030	3	0.00000000E+01	0.00000000E+01	0.90652000E+03
31	10031	3	0.00000000E+01	0.00000000E+01	0.92426000E+03
32	10032	3	0.00000000E+01	0.00000000E+01	0.94200000E+03
33	10033	3	0.00000000E+01	0.00000000E+01	0.95974000E+03
34	10034	3	0.00000000E+01	0.00000000E+01	0.97748000E+03
35	10035	3	0.00000000E+01	0.00000000E+01	0.99522000E+03
36	10036	3	0.00000000E+01	0.00000000E+01	1.01296000E+03
37	10037	3	0.00000000E+01	0.00000000E+01	1.03070000E+03
38	10038	3	0.00000000E+01	0.00000000E+01	1.04844000E+03
39	10039	3	0.00000000E+01	0.00000000E+01	1.06618000E+03
40	10040	3	0.00000000E+01	0.00000000E+01	1.08392000E+03
41	10041	3	0.00000000E+01	0.00000000E+01	1.10166000E+03
42	10042	3	0.00000000E+01	0.00000000E+01	1.11940000E+03
43	10043	3	0.00000000E+01	0.00000000E+01	1.13714000E+03
44	10044	3	0.00000000E+01	0.00000000E+01	1.15488000E+03
45	10045	3	0.00000000E+01	0.00000000E+01	1.17262000E+03
46	10046	3	0.00000000E+01	0.00000000E+01	1.19036000E+03
47	10047	3	0.00000000E+01	0.00000000E+01	1.20810000E+03
48	10048	3	0.00000000E+01	0.00000000E+01	1.22584000E+03
49	10049	3	0.00000000E+01	0.00000000E+01	1.24358000E+03
50	10050	3	0.00000000E+01	0.00000000E+01	1.26132000E+03
51	10051	3	0.00000000E+01	0.00000000E+01	1.27906000E+03
52	10052	3	0.00000000E+01	0.00000000E+01	1.29680000E+03
53	10053	3	0.00000000E+01	0.00000000E+01	1.31454000E+03
54	10054	3	0.00000000E+01	0.00000000E+01	1.33228000E+03
55	10055	3	0.00000000E+01	0.00000000E+01	1.35002000E+03
56	10056	3	0.00000000E+01	0.00000000E+01	1.36776000E+03

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BEAMS (SHEAR, MOMENT, DEFLECTION)

'17TH ST CANAL
XCA

THE REFERENCE SYSTEM SELECTED DEFINES POSITIVE FORCES AS TO THE RIGHT
INCREASING MEMBER COORDINATES AS UPWARD, AND POSITIVE MOMENTS
AS CLOCKWISE.

THE MAXIMUM DEFLECTION IS 7.29 INCHES AND OCCURS AT MEMBER COORDINATE
10.00 FT.

Z-40 HAS BEEN GIVEN TO SUPPORT THE LOAD SYSTEM.

THE WEIGHT OF THIS VERTICAL MEMBER HAS BEEN NEGLECTED.

CALCULATED EXTERNAL LOADS

DISTANCE FROM REFERENCE(FT)	TYPE OF LOAD	MAGNITUDE OF LOAD
-39.47	POINT LD	-7.84 LBF
2.00	POINT LD	-8887.81 LBF

INPUTTED LOADS

DISTANCE FROM REFERENCE(FT)	TYPE OF LOAD	MAGNITUDE OF LOAD
3.00	CONTN LD	0.00 LBF/SQ FT
2.00	CONTN LD	150.00 LBF/SQ FT
2.00	CONTN LD	65.71 LBF/SQ FT
2.00	CONTN LD	65.71 LBF/SQ FT
1.00	CONTN LD	113.90 LBF/SQ FT
0.00	CONTN LD	162.09 LBF/SQ FT
0.00	CONTN LD	162.09 LBF/SQ FT
-1.00	CONTN LD	245.40 LBF/SQ FT
-2.00	CONTN LD	328.71 LBF/SQ FT
-2.00	CONTN LD	328.71 LBF/SQ FT

47	-3.00	CONTN	LD	408.96	LBF/SQ	FT
48	-4.00	CONTN	LD	489.20	LBF/SQ	FT
49	-5.00	CONTN	LD	569.44	LBF/SQ	FT
50	-5.00	CONTN	LD	569.44	LBF/SQ	FT
51	-6.00	CONTN	LD	587.18	LBF/SQ	FT
52	-7.00	CONTN	LD	604.93	LBF/SQ	FT
53	-8.00	CONTN	LD	622.67	LBF/SQ	FT
54	-9.00	CONTN	LD	640.41	LBF/SQ	FT
55	-10.00	CONTN	LD	658.16	LBF/SQ	FT
56	-11.00	CONTN	LD	675.90	LBF/SQ	FT
57	-12.00	CONTN	LD	693.64	LBF/SQ	FT
58	-13.00	CONTN	LD	711.38	LBF/SQ	FT
59	-14.00	CONTN	LD	729.13	LBF/SQ	FT
60	-14.40	CONTN	LD	736.22	LBF/SQ	FT
61	-14.40	CONTN	LD	736.22	LBF/SQ	FT
62	-15.40	CONTN	LD	692.48	LBF/SQ	FT
63	-16.40	CONTN	LD	648.74	LBF/SQ	FT
64	-17.40	CONTN	LD	605.00	LBF/SQ	FT
65	-18.40	CONTN	LD	561.26	LBF/SQ	FT
66	-19.40	CONTN	LD	517.52	LBF/SQ	FT
67	-20.40	CONTN	LD	473.78	LBF/SQ	FT
68	-20.50	CONTN	LD	469.41	LBF/SQ	FT
69	-20.50	CONTN	LD	469.41	LBF/SQ	FT
70	-21.50	CONTN	LD	431.20	LBF/SQ	FT
71	-22.50	CONTN	LD	393.00	LBF/SQ	FT
72	-23.50	CONTN	LD	354.79	LBF/SQ	FT
73	-24.50	CONTN	LD	316.58	LBF/SQ	FT
74	-25.50	CONTN	LD	278.38	LBF/SQ	FT
75	-26.50	CONTN	LD	235.30	LBF/SQ	FT
76	-27.50	CONTN	LD	166.13	LBF/SQ	FT
77	-28.50	CONTN	LD	96.96	LBF/SQ	FT
78	-29.50	CONTN	LD	27.79	LBF/SQ	FT
79	-29.90	CONTN	LD	0.00	LBF/SQ	FT
80	-30.50	CONTN	LD	-41.38	LBF/SQ	FT
81	-31.50	CONTN	LD	-110.55	LBF/SQ	FT
82	-32.50	CONTN	LD	-179.72	LBF/SQ	FT
83	-33.50	CONTN	LD	-248.89	LBF/SQ	FT
84	-34.50	CONTN	LD	-318.06	LBF/SQ	FT
85	-35.50	CONTN	LD	-387.23	LBF/SQ	FT
86	-36.50	CONTN	LD	-456.40	LBF/SQ	FT
87	-36.50	CONTN	LD	-1137.90	LBF/SQ	FT
88	-37.50	CONTN	LD	-1296.57	LBF/SQ	FT
89	-38.50	CONTN	LD	-1455.23	LBF/SQ	FT
90	-39.47	CONTN	LD	-1609.89	LBF/SQ	FT
91	-39.47	CONTN	LD	0.00	LBF/SQ	FT
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Z-40

PROPERTIES ARE AS FOLLOWS.

MOMENT OF INERTIA= 490.85 IN. TO THE 4TH PER FOOT OF WALL
 CROSS SECTIONAL AREA= 11.76 SQ IN.
 ELASTIC MODULUS= 29000000. LBF/SQ IN.
 DEFLECTION REFERENCE IS AT -39.500

THE MAXIMUM BENDING MOMENT IS -92646.79 LBF-FT AND OCCURS AT -15.26
 WHICH HAS THE SHEAR FORCE OF 4.17 LBF.

DISTANCE (FEET)	SHEAR FOR (LBF)	SHEAR STR (LBF/SQIN)	BENDING MOM (LBF-FT)	DEFLECTION FROM TANG. THRU DEFLE REFERENCE (INCHES)	DEFL.FROM A PARALLEL TO THE UNDEFORMED AXIS & THRU DEFL REF NOTE SIGN (IN.)
10.000	0.00	0.00	0.00	7.2903	1.2047
9.999	0.00	0.00	0.00	7.2903	1.2048
9.000	0.00	0.00	0.00	7.0165	1.0539
8.000	0.00	0.00	0.00	6.7425	0.9028
7.000	0.00	0.00	0.00	6.4685	0.7517
6.000	0.00	0.00	0.00	6.1944	0.6006
5.000	0.00	0.00	0.00	5.9204	0.4496
4.000	0.00	0.00	0.00	5.6464	0.2985
3.000	0.00	0.00	0.00	5.3724	0.1474
2.000	-8812.81	-749.39	25.00	5.0984	-0.0037
1.000	-8723.00	-741.75	-8746.92	4.8245	-0.1546
0.000	-8585.01	-730.02	-17404.94	4.5517	-0.3044
-1.000	-8381.26	-712.69	-25895.02	4.2811	-0.4522
-2.000	-8094.21	-688.28	-34139.69	4.0135	-0.5968
-3.000	-7725.37	-656.92	-42056.17	3.7501	-0.7372
-4.000	-7276.29	-618.73	-49563.69	3.4918	-0.8726
-5.000	-6746.97	-573.72	-56582.01	3.2395	-1.0020
-6.000	-6168.66	-524.55	-63041.30	2.9941	-1.1245
-7.000	-5572.61	-473.86	-68913.42	2.7563	-1.2393
-8.000	-4958.81	-421.67	-74180.60	2.5268	-1.3458
-9.000	-4327.27	-367.96	-78825.12	2.3064	-1.4433
-10.000	-3677.98	-312.75	-82829.22	2.0955	-1.5313
-11.000	-3010.95	-256.03	-86175.17	1.8946	-1.6092
-12.000	-2326.18	-197.80	-88845.21	1.7042	-1.6767
-13.000	-1623.67	-138.07	-90821.62	1.5246	-1.7334
-14.000	-903.42	-76.82	-92086.64	1.3559	-1.7790
-15.000	-176.49	-15.01	-92624.75	1.1985	-1.8136

139	-15.256	4.17	0.35	-92646.79	1.1599	-1.8806
140	-16.000	511.62	43.50	-92453.54	1.0523	-1.8369
141	-17.000	1155.98	98.30	-91616.09	0.9172	-1.8489
142	-18.000	1756.61	149.37	-90156.15	0.7933	-1.8499
143	-19.000	2313.50	196.73	-88117.45	0.6803	-1.8399
144	-20.000	2826.64	240.36	-85543.74	0.5781	-1.8193
145	-21.000	3296.74	280.34	-82478.63	0.4861	-1.7883
146	-22.000	3727.94	317.00	-78963.11	0.4042	-1.7478
147	-23.000	4120.94	350.42	-75035.48	0.3319	-1.6966
148	-24.000	4475.73	380.59	-70733.96	0.2687	-1.6369
149	-25.000	4792.31	407.51	-66096.76	0.2140	-1.5686
150	-26.000	5070.08	431.13	-61162.17	0.1674	-1.4923
151	-27.000	5302.12	450.86	-55971.39	0.1282	-1.4086
152	-28.000	5468.25	464.99	-50580.44	0.0957	-1.3181
153	-29.000	5565.21	473.23	-45057.95	0.0694	-1.2214
154	-29.900	5593.31	475.62	-40032.40	0.0505	-1.1298
155	-30.000	5592.97	475.59	-39473.08	0.0486	-1.1193
156	-31.000	5551.56	472.07	-33895.06	0.0326	-1.0124
157	-32.000	5441.01	462.67	-28393.01	0.0207	-0.9014
158	-33.000	5261.29	447.39	-23036.10	0.0122	-0.7869
159	-34.000	5012.40	426.22	-17893.49	0.0066	-0.6696
160	-35.000	4694.34	399.18	-13034.35	0.0031	-0.5502
161	-36.000	4307.11	366.25	-8527.87	0.0012	-0.4291
162	-37.000	3498.77	297.51	-4530.24	0.0003	-0.3070
163	-38.000	2202.20	187.26	-1666.53	0.0000	-0.1844
164	-39.000	746.88	63.51	-178.74	0.0000	-0.0615
165	-39.469	9.45	0.80	-0.01	0.0000	-0.0038
166	-39.471	0.00	0.00	0.00	0.0000	-0.0036
167	-39.499	0.00	0.00	0.00	0.0000	-0.0001
168	-39.500	0.00	0.00	0.00	0.0000	0.0000
169						
170						
171						
172	SRUN COMPLETED					
173						
EOT..						

LIST RWPZ35

1 1000 BRACED WALL WEST SIDE,CASE I
2 1010 2 10.0 -65.0 -1 -65.0 0 -1
3 1020 PHS1 W-CASI
4 1030 290000000 10.28 361.2
5 1040 -65.0 -13.25
6 1050 3 -2.0 0
7 1060 3 -7.0 970
8 1070 3 -22.4 970
9 1080 3 -22.4 730
10 1090 3 -36.5 730
11 1100 3 -36.5 0
12 1110 3 -36.5 -660
13 1120 3 -40.5 -1300
14 1130 3 -40.5 0
15 1140 3 -40.5 550
16 1150 3 -49.5 0
17 1160 3 -65.0 -950
18 1170 4 -65.0 0
19 1180 0

EOT..

CORPS

ARE YOU USING A PRINTER TERMINAL OR CRT?

ENTER P OR C

C

CORPS SYSTEM COMMANDS:

BRIEF - LIST EXPLANATION OF A PROGRAM.

EXECUTE - RUN A CORPS PROGRAM

LIST - LIST THE AVAILABLE CORPS PROGRAMS.

STOP - EXIT FROM CORPS SYSTEM MACRO.

HELP - HELP AND EXPLANATION OF CORPS
SYSTEM AND THE RUNNING OF ITS MACRO.

NOTE: COMMANDS MAY BE ABBREVIATED TO THE
FIRST LETTER OF THE COMMAND.

ENTER COMMAND(BRIEF,EXECUTE,LIST,HELP,STOP):

E

WHICH CORPS PROGRAM DO YOU WANT TO RUN?

X0015

```
*****  
* CORPS PROGRAM # X0015 *  
* HARRIS VERSION # 83/10/01 *  
*****
```

BEAMS (SHEAR, MOMENT, DEFLECTION)

DO YOU WANT OUTPUT SAVED IN A FILE (YES/NO)?

Y

ENTER EITHER A NEW OR EXISTING OUTPUT FILE NAME UP TO 6 CHARACTERS.

OUTPUT

IS THE LOADING ON THE MEMBER TO BE READ FROM A FILE CREATED BY THE
"CANTILEVER RETAINING WALL STABILITY" PROGRAM (YES/NO)?

N

DO YOU WANT TO RUN AN EXISTING DATA FILE (YES/NO)?

Y

ENTER THE DATA FILE NAME.

RWPZ35

STOP 7774

WOULD YOU LIKE TO LIST A FILE?

NAME OF FILE?
OUTPUT

BEAMS (SHEAR, MOMENT, DEFLECTION)

BRACED WALL WEST SIDE,CASE I

THE REFERENCE SYSTEM SELECTED DEFINES POSITIVE FORCES AS TO THE RIGHT
INCREASING MEMBER COORDINATES AS UPWARD, AND POSITIVE MOMENTS
AS CLOCKWISE.

THE MAXIMUM DEFLECTION IS 9.85 INCHES AND OCCURS AT MEMBER COORDINATE
10.00 FT.

PHS1 W-CAS HAS BEEN GIVEN TO SUPPORT THE LOAD SYSTEM.

THE WEIGHT OF THIS VERTICAL MEMBER HAS BEEN NEGLECTED.

LIST MORE?

Y

CALCULATED EXTERNAL LOADS

DISTANCE FROM REFERENCE(FT)	TYPE OF LOAD	MAGNITUDE OF LOAD
-65.00	POINT LD	3840.11 LBF
-13.25	POINT LD	-22688.61 LBF

INPUTTED LOADS

DISTANCE FROM REFERENCE(FT)	TYPE OF LOAD	MAGNITUDE OF LOAD
-2.00	CONTN LD	0.00 LBF/FT
-7.00	CONTN LD	970.00 LBF/FT
-22.40	CONTN LD	970.00 LBF/FT
-22.40	CONTN LD	730.00 LBF/FT
-36.50	CONTN LD	730.00 LBF/FT

LIST MORE?

Y

-36.50	CONTN LD	0.00 LBF/FT
-36.50	CONTN LD	-660.00 LBF/FT
-40.50	CONTN LD	-1300.00 LBF/FT
-40.50	CONTN LD	0.00 LBF/FT
-40.50	CONTN LD	550.00 LBF/FT
-49.50	CONTN LD	0.00 LBF/FT
-65.00	CONTN LD	-950.00 LBF/FT
-65.00	CONTN LD	0.00 LBF/FT

PHS1 W-CAS PROPERTIES ARE AS FOLLOWS.

WEIGHT= 0.00 LBF/FT
MOMENT OF INERTIA= 361.20 IN. TO THE 4TH
CROSS SECTIONAL AREA= 10.28 SQ IN.
ELASTIC MODULUS= 29000000. LBF/SQ IN.
DEFLECTION REFERENCE IS AT -65.000

LIST MORE?

Y

THE MAXIMUM BENDING MOMENT IS -70617.59 LBF-FT AND OCCURS AT -29.70 WHICH HAS THE SHEAR FORCE OF 0.00 LBF.

DISTANCE (FEET)	SHEAR FOR (LBF)	SHEAR STR (LBF/SQIN)	BENDING MOM (LBF-FT)	DEFLECTION FROM TANG. THRU DEFLE REFERENCE (INCHES)	DEFL.FROM A PARALLEL TO THE UNDEFORMED AXIS & THRU DEFLE REF NOTE SIGN (IN.)
10.000	0.00	0.00	0.00	9.8481	9.8481
9.999	0.00	0.00	0.00	9.8481	9.8481
9.000	0.00	0.00	0.00	9.6248	9.6248
8.000	0.00	0.00	0.00	9.4013	9.4013
7.000	0.00	0.00	0.00	9.1778	9.1778
6.000	0.00	0.00	0.00	8.9542	8.9542
5.000	0.00	0.00	0.00	8.7307	8.7307
4.000	0.00	0.00	0.00	8.5072	8.5072
3.000	0.00	0.00	0.00	8.2837	8.2837
2.000	0.00	0.00	0.00	8.0602	8.0602
1.000	0.00	0.00	0.00	7.8367	7.8367

LIST MORE?

Y

0.000	0.00	0.00	0.00	7.6131	7.6131
-1.000	0.00	0.00	0.00	7.3896	7.3896
-2.000	0.00	0.00	0.00	7.1661	7.1661
-3.000	97.00	9.44	32.33	6.9426	6.9426
-4.000	388.00	37.74	258.67	6.7191	6.7191
-5.000	873.00	84.92	873.00	6.4955	6.4955
-6.000	1552.00	150.97	2069.33	6.2718	6.2718
-7.000	2425.00	235.89	4041.67	6.0476	6.0476
-8.000	3395.00	330.25	6951.67	5.8229	5.8229
-9.000	4365.00	424.61	10831.67	5.5969	5.5969
-10.000	5335.00	518.97	15681.67	5.3691	5.3691
-11.000	6305.00	613.33	21501.67	5.1387	5.1387
-12.000	7275.00	707.68	28291.67	4.9047	4.9047
-13.000	8245.00	802.04	36051.67	4.6661	4.6661
-14.000	-13473.61	-1310.66	27765.21	4.4219	4.4219
-15.000	-12503.61	-1216.30	14776.60	4.1733	4.1733
-16.000	-11533.61	-1121.95	2757.99	3.9222	3.9222
-17.000	-10563.61	-1027.59	-8290.61	3.6706	3.6706
-18.000	-9593.61	-933.23	-18369.22	3.4204	3.4204
-19.000	-8623.61	-838.87	-27477.83	3.1732	3.1732

LIST MORE?

Y

-20.000	-7653.61	-744.51	-35616.44	2.9305	2.9305
-21.000	-6683.61	-650.16	-42785.05	2.6936	2.6936
-22.000	-5713.61	-555.80	-48983.65	2.4638	2.4638
-23.000	-4887.61	-475.45	-54255.46	2.2420	2.2420
-24.000	-4157.61	-404.44	-58778.07	2.0291	2.0291
-25.000	-3427.61	-333.42	-62570.68	1.8259	1.8259
-26.000	-2697.61	-262.41	-65633.29	1.6331	1.6331
-27.000	-1967.61	-191.40	-67965.89	1.4510	1.4510
-28.000	-1237.61	-120.39	-69568.50	1.2801	1.2801
-29.000	-507.61	-49.38	-70441.11	1.1207	1.1207
-29.695	0.00	0.00	-70617.59	1.0167	1.0167
-30.000	222.39	21.63	-70583.72	0.9729	0.9729
-31.000	952.39	92.65	-69996.33	0.8367	0.8367
-32.000	1682.39	163.66	-68678.93	0.7121	0.7121
-33.000	2412.39	234.67	-66631.54	0.5987	0.5987
-34.000	3142.39	305.68	-63854.15	0.4963	0.4963
-35.000	3872.39	376.69	-60346.76	0.4045	0.4045
-36.000	4602.39	447.70	-56109.37	0.3225	0.3225
-36.500	4967.39	483.21	-53716.92	0.2851	0.2851

LIST MORE?

Y
-38.000 3797.39 369.40 -47098.33 0.1857 0.1857
-39.000 2817.39 274.07 -43777.61 0.1292 0.1292
-40.000 1677.39 163.17 -41516.88 0.0801 0.0801
-40.500 1047.39 101.89 -40834.02 0.0581 0.0581
-41.000 1314.75 127.89 -40242.85 0.0378 0.0378
-42.000 1803.64 175.45 -38678.56 0.0021 0.0021
-43.000 2231.42 217.06 -36655.93 -0.0272 -0.0272
-44.000 2598.09 252.73 -34236.09 -0.0504 -0.0504
-45.000 2903.64 282.46 -31480.13 -0.0680 -0.0680
-46.000 3148.09 306.23 -28449.17 -0.0804 -0.0804
-47.000 3331.42 324.07 -25204.33 -0.0882 -0.0882
-48.000 3453.64 335.96 -21806.70 -0.0918 -0.0918
-49.000 3514.75 341.90 -18317.41 -0.0918 -0.0918
-49.499 3522.39 342.65 -16561.01 -0.0906 -0.0906
-49.501 3522.39 342.65 -16553.97 -0.0906 -0.0906
-50.000 3514.73 341.90 -14797.57 -0.0887 -0.0887
-51.000 3453.44 335.94 -11308.38 -0.0833 -0.0833
-52.000 3330.86 324.01 -7911.12 -0.0760 -0.0760
-53.000 3146.99 306.13 -4667.09 -0.0673 -0.0673
-54.000 2901.83 282.28 -1637.57 -0.0579 -0.0579

LIST MORE?

Y
-55.000 2595.38 252.47 1116.13 -0.0482 -0.0482
-56.000 2227.63 216.70 3532.75 -0.0387 -0.0387
-57.000 1798.60 174.96 5550.97 -0.0297 -0.0297
-58.000 1308.28 127.26 7109.52 -0.0217 -0.0217
-59.000 756.67 73.61 8147.10 -0.0148 -0.0148
-60.000 143.76 13.98 8602.42 -0.0092 -0.0092
-61.000 -530.43 -51.60 8414.20 -0.0051 -0.0051
-62.000 -1265.91 -123.14 7521.13 -0.0023 -0.0023
-63.000 -2062.69 -200.65 5861.94 -0.0007 -0.0007
-64.000 -2920.75 -284.12 3375.32 -0.0001 -0.0001
-64.999 -3839.16 -373.46 3.84 0.0000 0.0000
-65.000 0.00 0.00 0.00 0.0000 0.0000

RUN COMPLETED

EOT..

LIST MORE?

LIST RWPZ~~35~~

- 1 1000 BRACED WALL WEST SIDE, CASE II ←
- 2 1010 2 10.0 -65.0 -1 -65.0 0 -1
- 3 1020 USE PZ-40'S ← PZ-40'S
- 4 1030 29000000 11.76 490.85
- 5 1040 -65.0 -15.0 ← STRUCT EL. @ -15.0
- 6 1050 3 -2.0 0
- 7 1060 3 -14.5 780
- 8 1070 3 -20.5 1300
- 9 1080 3 -22.4 1475
- 10 1090 3 -22.4 730
- 11 1100 3 -36.5 730
- 12 1110 3 -36.5 190
- 13 1120 3 -37.7 0
- 14 1130 3 -40.5 -450
- 15 1140 3 -40.5 0
- 16 1150 3 -40.5 550
- 17 1160 3 -57.2 0
- 18 1170 3 -65.0 -950
- 19 1180 4 -65.0 0
- 20 1190 0

EOT..

CORPS

ARE YOU USING A PRINTER TERMINAL OR CRT?

ENTER P OR C

C

CORPS SYSTEM COMMANDS:

- BRIEF - LIST EXPLANATION OF A PROGRAM.
- EXECUTE - RUN A CORPS PROGRAM
- LIST - LIST THE AVAILABLE CORPS PROGRAMS.
- TOP - EXIT FROM CORPS SYSTEM MACRO.
- HELP - HELP AND EXPLANATION OF CORPS SYSTEM AND THE RUNNING OF ITS MACRO.

NOTE: COMMANDS MAY BE ABBREVIATED TO THE FIRST LETTER OF THE COMMAND.

ENTER COMMAND (BRIEF, EXECUTE, LIST, HELP, STOP):

E

WHICH CORPS PROGRAM DO YOU WANT TO RUN?

X0015

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*****
*   CORPS PROGRAM #   X0015   *
*   HARRIS VERSION # 83/10/01 *
*****
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BEAMS (SHEAR, MOMENT, DEFLECTION)

DO YOU WANT OUTPUT SAVED IN A FILE (YES/NO)?

Y

ENTER EITHER A NEW OR EXISTING OUTPUT FILE NAME UP TO 6 CHARACTERS.

OUTPUT

IS THE LOADING ON THE MEMBER TO BE READ FROM A FILE CREATED BY THE "CANTILEVER RETAINING WALL STABILITY" PROGRAM (YES/NO)?

N

DO YOU WANT TO RUN AN EXISTING DATA FILE (YES/NO)?

Y

ENTER THE DATA FILE NAME.

RWPZ35

STOP 7774

WOULD YOU LIKE TO LIST A FILE?

Y

NAME OF FILE?

OUTPUT

BEAMS (SHEAR, MOMENT, DEFLECTION)

BRACED WALL WEST SIDE, CASE II

THE REFERENCE SYSTEM SELECTED DEFINES POSITIVE FORCES AS TO THE RIGHT INCREASING MEMBER COORDINATES AS UPWARD, AND POSITIVE MOMENTS AS CLOCKWISE.

THE MAXIMUM DEFLECTION IS 21.23 INCHES AND OCCURS AT MEMBER COORDINATE 10.00 FT.

USE PZ-40' HAS BEEN GIVEN TO SUPPORT THE LOAD SYSTEM.

THE WEIGHT OF THIS VERTICAL MEMBER HAS BEEN NEGLECTED.

LIST MORE?

Y

CALCULATED EXTERNAL LOADS

DISTANCE FROM REFERENCE (FT)	TYPE OF LOAD	MAGNITUDE OF LOAD
-65.00	POINT LD	-2285.53 LBF
-15.00	POINT LD	-22130.22 LBF

INPUTTED LOADS

DISTANCE FROM REFERENCE (FT)	TYPE OF LOAD	MAGNITUDE OF LOAD
-2.00	CONTN LD	0.00 LBF/FT
-14.50	CONTN LD	780.00 LBF/FT
-20.50	CONTN LD	1300.00 LBF/FT
-22.40	CONTN LD	1475.00 LBF/FT
-22.40	CONTN LD	730.00 LBF/FT

LIST MORE?

Y

-36.50	CONTN LD	730.00 LBF/FT
-36.50	CONTN LD	190.00 LBF/FT
-37.70	CONTN LD	0.00 LBF/FT
-40.50	CONTN LD	-450.00 LBF/FT
-40.50	CONTN LD	0.00 LBF/FT
-40.50	CONTN LD	550.00 LBF/FT
-57.20	CONTN LD	0.00 LBF/FT
-65.00	CONTN LD	-950.00 LBF/FT
-65.00	CONTN LD	0.00 LBF/FT

USE PZ-40' PROPERTIES ARE AS FOLLOWS.

WEIGHT= 0.00 LBF/FT
MOMENT OF INERTIA= 490.85 IN. TO THE 4TH
CROSS SECTIONAL AREA= 11.76 SQ IN.
ELASTIC MODULUS= 29000000 LBF/IN

DEFLECTION REFERENCE IS AT -65.000

LIST MORE?

Y

THE MAXIMUM BENDING MOMENT IS-121557.89 LBF-FT AND OCCURS AT -33.88 WHICH HAS THE SHEAR FORCE OF 0.00 LBF.

DISTANCE (FEET)	SHEAR FOR (LBF)	SHEAR STR (LBF/SQIN)	BENDING MOM (LBF-FT)	DEFLECTION FROM TANG. THRU DEFLE REFERENCE (INCHES)	DEFL.FROM A PARALLEL TO THE UNDEFORMED AXIS & THRU DEFL REF NOTE SIGN (IN.)
10.000	0.00	0.00	0.00	21.2256	5.8644
9.999	0.00	0.00	0.00	21.2256	5.8646
9.000	0.00	0.00	0.00	20.7876	5.6312
8.000	0.00	0.00	0.00	20.3491	5.3975
7.000	0.00	0.00	0.00	19.9107	5.1639
6.000	0.00	0.00	0.00	19.4722	4.9302
5.000	0.00	0.00	0.00	19.0338	4.6966
4.000	0.00	0.00	0.00	18.5953	4.4630
3.000	0.00	0.00	0.00	18.1568	4.2293
2.000	0.00	0.00	0.00	17.7184	3.9957

LIST MORE?

Y

1.000	0.00	0.00	0.00	17.2799	3.7620
0.000	0.00	0.00	0.00	16.8414	3.5284
-1.000	0.00	0.00	0.00	16.4030	3.2947
-2.000	0.00	0.00	0.00	15.9645	3.0611
-3.000	31.20	2.65	10.40	15.5261	2.8274
-4.000	124.80	10.61	83.20	15.0876	2.5938
-5.000	280.80	23.88	280.80	14.6491	2.3601
-6.000	499.20	42.45	665.60	14.2106	2.1264
-7.000	780.00	66.33	1300.00	13.7720	1.8926
-8.000	1123.20	95.51	2246.40	13.3332	1.6587
-9.000	1528.80	130.00	3567.20	12.8942	1.4245
-10.000	1996.80	169.80	5324.80	12.4547	1.1898
-11.000	2527.20	214.90	7581.60	12.0145	0.9545
-12.000	3120.00	265.31	10400.00	11.5735	0.7182
-13.000	3775.20	321.02	13842.40	11.1311	0.4807
-14.000	4492.80	382.04	17971.20	10.6871	0.2414
-15.000	-16854.39	-1433.20	22849.31	10.2408	0.0000
-16.000	-15987.72	-1359.50	6421.03	9.7922	-0.2438
-17.000	-15034.39	-1278.43	-9097.24	9.3429	-0.4883
-18.000	-13994.39	-1190.00	-23618.85	8.8946	-0.7318

LIST MORE?

Y

-19.000	-12867.72	-1094.19	-37057.12	8.4491	-0.9725
-20.000	-11654.39	-991.02	-49325.40	8.0081	-1.2086
-21.000	-10353.71	-880.42	-60336.89	7.5731	-1.4388
-22.000	-8961.60	-762.04	-70002.22	7.1454	-1.6617
-23.000	-7940.97	-675.25	-78366.81	6.7261	-1.8762
-24.000	-7210.97	-613.18	-85942.77	6.3164	-2.0811
-25.000	-6480.97	-551.10	-92788.74	5.9171	-2.2756
-26.000	-5750.97	-489.03	-98904.71	5.5290	-2.4589
-27.000	-5020.97	-426.95	-104290.68	5.1529	-2.6301
-28.000	-4290.97	-364.88	-108946.65	4.7894	-2.7888
-29.000	-3560.97	-302.80	-112872.62	4.4392	-2.9342
-30.000	-2830.97	-240.73	-116068.59	4.1027	-3.0659
-31.000	-2100.97	-178.65	-118534.55	3.7802	-3.1836
-32.000	-1370.97	-116.58	-120270.52	3.4721	-3.2869
-33.000	-640.97	-54.50	-121276.49	3.1786	-3.3756
-33.878	0.00	0.00	-121557.89	2.9330	-3.4413
-34.000	89.03	7.57	-121552.46	2.8998	-3.4495
-35.000	819.03	40.45	-121200.00	2.8700	-3.4500

-36.000	1549.03	131.72	-119914.40	2.3863	-3.5533
-37.000	1989.24	169.15	-118071.16	2.1515	-3.5834
LIST MORE?					
Y					
-37.700	2028.03	172.45	-116660.59	1.9957	-3.5958
-38.000	2020.80	171.84	-116052.91	1.9310	-3.5991
-39.000	1892.23	160.90	-114083.00	1.7246	-3.6006
-40.000	1602.94	136.30	-112322.02	1.5320	-3.5884
-40.500	1398.03	118.88	-111570.11	1.4409	-3.5771
-41.000	1668.91	141.91	-110803.03	1.3531	-3.5625
-42.000	2185.98	185.88	-108872.83	1.1876	-3.5232
-43.000	2670.11	227.05	-106442.04	1.0354	-3.4706
-44.000	3121.31	265.42	-103543.59	0.8960	-3.4052
-45.000	3539.57	300.98	-100210.40	0.7692	-3.3271
-46.000	3924.90	333.75	-96475.42	0.6546	-3.2370
-47.000	4277.30	363.72	-92371.57	0.5516	-3.1351
-48.000	4596.76	390.88	-87931.80	0.4599	-3.0220
-49.000	4883.29	415.25	-83189.03	0.3788	-2.8982
-50.000	5136.88	436.81	-78176.21	0.3079	-2.7644
-51.000	5357.54	455.57	-72926.25	0.2464	-2.6211
-52.000	5545.26	471.54	-67472.11	0.1937	-2.4689
-53.000	5700.05	484.70	-61846.71	0.1493	-2.3085
-54.000	5821.91	495.06	-56082.98	0.1123	-2.1406
-55.000	5910.83	502.62	-50213.87	0.0822	-1.9660

LIST MORE?

Y					
-56.000	5966.82	507.38	-44272.30	0.0582	-1.7852
-57.000	5989.87	509.34	-38291.21	0.0395	-1.5990
-57.199	5990.53	509.40	-37099.14	0.0364	-1.5614
-57.201	5990.53	509.40	-37087.16	0.0364	-1.5610
-58.000	5951.56	506.08	-32311.11	0.0255	-1.4082
-59.000	5793.22	492.62	-26428.57	0.0154	-1.2135
-60.000	5513.10	468.80	-20765.26	0.0085	-1.0156
-61.000	5111.17	434.62	-15442.98	0.0041	-0.8151
-62.000	4587.45	390.09	-10583.52	0.0016	-0.6128
-63.000	3941.94	335.20	-6308.67	0.0005	-0.4092
-64.000	3174.63	269.95	-2740.23	0.0001	-0.2048
-64.999	2286.48	194.43	-2.29	0.0000	-0.0002
-65.000	0.00	0.00	0.00	0.0000	0.0000

RUN COMPLETED

EOT..

LIST MORE?

RWPZ35

1000 BRACED WALL WEST SIDE, CASE II

1010 2 10.0 -65.0 -1 -65.0 0 -1

1020 PHASE1WESTII

1030 290000000 10.28 361.2 PZ-35's

1040 -65.0 -15.0

1050 3 -2.0 0

1060 3 -14.5 780

1070 3 -20.5 1300

1080 3 -22.4 1475

1090 3 -22.4 730

1100 3 -36.5 730

1110 3 -36.5 190

1120 3 -37.7 0

1130 3 -40.5 -450

1140 3 -40.5 0

1150 3 -40.5 550

1160 3 -57.2 0

1170 3 -65.0 -950

1180 4 -65.0 0

1190 0

LIST MORE?

N

WOULD YOU LIKE TO LIST A FILE?

Y

NAME OF FILE?

OUTPUT

BEAMS (SHEAR, MOMENT, DEFLECTION)

BRACED WALL WEST SIDE, CASE II

THE REFERENCE SYSTEM SELECTED DEFINES POSITIVE FORCES AS TO THE RIGHT INCREASING MEMBER COORDINATES AS UPWARD, AND POSITIVE MOMENTS AS CLOCKWISE.

THE MAXIMUM DEFLECTION IS 28.84 INCHES AND OCCURS AT MEMBER COORDINATE 10.00 FT.

PHASE1WEST HAS BEEN GIVEN TO SUPPORT THE LOAD SYSTEM.

THE WEIGHT OF THIS VERTICAL MEMBER HAS BEEN NEGLECTED.

LIST MORE?

Y

CALCULATED EXTERNAL LOADS

DISTANCE FROM REFERENCE (FT)	TYPE OF LOAD	MAGNITUDE OF LOAD
------------------------------	--------------	-------------------

-65.00 POINT LD -2285.53 LBF

-15.00 POINT LD -22130.22 LBF

INPUTTED LOADS

DISTANCE FROM REFERENCE (FT)	TYPE OF LOAD	MAGNITUDE OF LOAD
------------------------------	--------------	-------------------

-2.00 CONTN LD 780.00 LBF/FT
 -14.50 CONTN LD 1300.00 LBF/FT
 -20.50 CONTN LD 1475.00 LBF/FT
 -22.40 CONTN LD 730.00 LBF/FT

LIST MORE?

Y
 -36.50 CONTN LD 730.00 LBF/FT
 -36.50 CONTN LD 190.00 LBF/FT
 -37.70 CONTN LD 0.00 LBF/FT
 -40.50 CONTN LD -450.00 LBF/FT
 -40.50 CONTN LD 0.00 LBF/FT
 -40.50 CONTN LD 550.00 LBF/FT
 -57.20 CONTN LD 0.00 LBF/FT
 -65.00 CONTN LD -950.00 LBF/FT
 -65.00 CONTN LD 0.00 LBF/FT

PHASE1WEST PROPERTIES ARE AS FOLLOWS.

WEIGHT= 0.00 LBF/FT
 MOMENT OF INERTIA= 361.20 IN. TO THE 4TH
 CROSS SECTIONAL AREA= 10.28 SQ IN.
 ELASTIC MODULUS= 29000000. LBF/SQ IN.
 DEFLECTION REFERENCE IS AT -65.000

LIST MORE?

Y

THE MAXIMUM BENDING MOMENT IS-121557.89 LBF-FT AND OCCURS AT -33.88
 WHICH HAS THE SHEAR FORCE OF 0.00 LBF.

DISTANCE (FEET)	SHEAR FOR (LBF)	SHEAR STR (LBF/SQIN)	BENDING MOM (LBF-FT)	DEFLECTION FROM TANG. THRU DEFLE REFERENCE (INCHES)	DEFL.FROM A PARALLEL TO THE UNDEFORMED AXIS & THRU DEFL REF NOTE SIGN (IN.)
10.000	0.00	0.00	0.00	28.8444	7.9694
9.999	0.00	0.00	0.00	28.8444	7.9696
9.000	0.00	0.00	0.00	28.2492	7.6525
8.000	0.00	0.00	0.00	27.6533	7.3349
7.000	0.00	0.00	0.00	27.0575	7.0174
6.000	0.00	0.00	0.00	26.4616	6.6999
5.000	0.00	0.00	0.00	25.8658	6.3824
4.000	0.00	0.00	0.00	25.2699	6.0649
3.000	0.00	0.00	0.00	24.6741	5.7474
2.000	0.00	0.00	0.00	24.0782	5.4299

LIST MORE?

Y

1.000	0.00	0.00	0.00	23.4824	5.1124
0.000	0.00	0.00	0.00	22.8865	4.7948
-1.000	0.00	0.00	0.00	22.2907	4.4773
-2.000	0.00	0.00	0.00	21.6949	4.1598
-3.000	31.20	3.04	10.40	21.0990	3.8423
-4.000	124.80	12.14	83.20	20.5032	3.5248
-5.000	280.80	27.32	280.80	19.9073	3.2073
-6.000	499.20	48.56	665.60	19.3114	2.8897
-7.000	780.00	75.88	1300.00	18.7153	2.5720
-8.000	1123.20	109.26	2246.40	18.1191	2.2541
-9.000	1528.80	148.72	3567.20	17.5224	1.9357
-10.000	1996.80	194.24	5324.80	16.9252	1.6168
-11.000	2527.20	245.84	7581.60	16.3271	1.2970
-12.000	3120.00	303.50	10400.00	15.7277	0.9760
-13.000	3775.20	367.24	13842.40	15.1265	0.6532
-14.000	4400.00	437.04	17971.20	14.5231	0.3301

-15.000	-16854.39	-1639.53	22849.31	13.7167	0.0000
-16.000	-15987.72	-1555.23	6421.03	13.3071	-0.3313
-17.000	-15034.39	-1462.49	-9097.24	12.6964	-0.6636
-18.000	-13994.39	-1361.32	-23618.85	12.0872	-0.9945

LIST MORE?

Y

-19.000	-12867.72	-1251.72	-37057.12	11.4818	-1.3215
-20.000	-11654.39	-1133.70	-49325.40	10.8826	-1.6424
-21.000	-10353.71	-1007.17	-60336.89	10.2914	-1.9553
-22.000	-8961.60	-871.75	-70002.22	9.7102	-2.2582
-23.000	-7940.97	-772.47	-78366.81	9.1404	-2.5496
-24.000	-7210.97	-701.46	-85942.77	8.5836	-2.8281
-25.000	-6480.97	-630.44	-92788.74	8.0409	-3.0924
-26.000	-5750.97	-559.43	-98904.71	7.5136	-3.3415
-27.000	-5020.97	-488.42	-104290.68	7.0025	-3.5742
-28.000	-4290.97	-417.41	-108946.65	6.5086	-3.7898
-29.000	-3560.97	-346.40	-112872.62	6.0326	-3.9874
-30.000	-2830.97	-275.39	-116068.59	5.5753	-4.1664
-31.000	-2100.97	-204.37	-118534.55	5.1371	-4.3263
-32.000	-1370.97	-133.36	-120270.52	4.7184	-4.4667
-33.000	-640.97	-62.35	-121276.49	4.3195	-4.5872
-33.878	0.00	0.00	-121557.89	3.9858	-4.6765
-34.000	89.03	8.66	-121552.46	3.9406	-4.6877
-35.000	819.03	79.67	-121098.43	3.5818	-4.7682
-36.000	1549.03	150.68	-119914.40	3.2429	-4.8288
-37.000	1989.24	193.51	-118071.16	2.9238	-4.8696

LIST MORE?

N

WOULD YOU LIKE TO LIST A FILE?

LIST RWPZ35

1 1000 BRACED WALL WEST SIDE, CASE II

2 1010 2 10.0 -65.0 -1 -65.0 0 -1

3 1020 PHASE1WESTII

4 1030 29000000 10.28 361.2

1040 -65.0 -13.0 ← BRACE ELEVATION w/PZ-35'S

6 1050 3 -2.0 0

7 1060 3 -14.5 780

8 1070 3 -20.5 1300

9 1080 3 -22.4 1475

10 1090 3 -22.4 730

11 1100 3 -36.5 730

12 1110 3 -36.5 190

13 1120 3 -37.7 0

14 1130 3 -40.5 -450

15 1140 3 -40.5 0

16 1150 3 -40.5 550

17 1160 3 -57.2 0

18 1170 3 -65.0 -950

19 1180 4 -65.0 0

20 1190 0

EDT..

CORPS

ARE YOU USING A PRINTER TERMINAL OR CRT?

ENTER P OR C

C

CORPS SYSTEM COMMANDS:

BRIEF - LIST EXPLANATION OF A PROGRAM.

EXECUTE - RUN A CORPS PROGRAM

LIST - LIST THE AVAILABLE CORPS PROGRAMS.

STOP - EXIT FROM CORPS SYSTEM MACRO.

ELP - HELP AND EXPLANATION OF CORPS SYSTEM AND THE RUNNING OF ITS MACRO.

NOTE: COMMANDS MAY BE ABBREVIATED TO THE FIRST LETTER OF THE COMMAND.

ENTER COMMAND (BRIEF, EXECUTE, LIST, HELP, STOP):

E

WHICH CORPS PROGRAM DO YOU WANT TO RUN?

X0015

* CORPS PROGRAM # X0015 *
* HARRIS VERSION # 83/10/01 *

BEAMS (SHEAR, MOMENT, DEFLECTION)

DO YOU WANT OUTPUT SAVED IN A FILE (YES/NO)?

Y

ENTER EITHER A NEW OR EXISTING OUTPUT FILE NAME UP TO 6 CHARACTERS.
OUTPUT

3 THE LOADING ON THE MEMBER TO BE READ FROM A FILE CREATED BY THE
"CANTILEVER RETAINING WALL STABILITY" PROGRAM (YES/NO)?

N

DO YOU WANT TO RUN AN EXISTING DATA FILE (YES/NO)?

Y

ENTER THE DATA FILE NAME.

RWPZ35

STOP 7774

WOULD YOU LIKE TO LIST A FILE?

Y
NAME OF FILE?
OUTPUT

BEAMS (SHEAR, MOMENT, DEFLECTION)

BRACED WALL WEST SIDE,CASE II

THE REFERENCE SYSTEM SELECTED DEFINES POSITIVE FORCES AS TO THE RIGHT
INCREASING MEMBER COORDINATES AS UPWARD, AND POSITIVE MOMENTS
AS CLOCKWISE.

THE MAXIMUM DEFLECTION IS 36.33 INCHES AND OCCURS AT MEMBER COORDINATE
10.00 FT.

PHASE1WEST HAS BEEN GIVEN TO SUPPORT THE LOAD SYSTEM.

THE WEIGHT OF THIS VERTICAL MEMBER HAS BEEN NEGLECTED.

LIST MORE?

Y

CALCULATED EXTERNAL LOADS

DISTANCE FROM REFERENCE(FT)	TYPE OF LOAD	MAGNITUDE OF LOAD
-65.00	POINT LD	-3136.69 LBF
-13.00	POINT LD	-21279.06 LBF

INPUTTED LOADS

DISTANCE FROM REFERENCE(FT)	TYPE OF LOAD	MAGNITUDE OF LOAD
-2.00	CONTN LD	0.00 LBF/FT
-14.50	CONTN LD	780.00 LBF/FT
-20.50	CONTN LD	1300.00 LBF/FT
-22.40	CONTN LD	1475.00 LBF/FT
-22.40	CONTN LD	730.00 LBF/FT

LIST MORE?

Y

-36.50	CONTN LD	730.00 LBF/FT
-36.50	CONTN LD	190.00 LBF/FT
-37.70	CONTN LD	0.00 LBF/FT
-40.50	CONTN LD	-450.00 LBF/FT
-40.50	CONTN LD	0.00 LBF/FT
-40.50	CONTN LD	550.00 LBF/FT
-57.20	CONTN LD	0.00 LBF/FT
-65.00	CONTN LD	-950.00 LBF/FT
-65.00	CONTN LD	0.00 LBF/FT

PHASE1WEST PROPERTIES ARE AS FOLLOWS.

WEIGHT= 0.00 LBF/FT
MOMENT OF INERTIA= 361.20 IN. TO THE 4TH
CROSS SECTIONAL AREA= 10.28 SQ IN.
ELASTIC MODULUS= 29000000. LBF/SQ IN.
DEFLECTION REFERENCE IS AT 15.000

LIST MORE?

Y

THE MAXIMUM BENDING MOMENT IS-148543.94 LBF-FT AND OCCURS AT -32.71
WHICH HAS THE SHEAR FORCE OF 0.00 LBF.

DISTANCE (FEET)	SHEAR FOR (LBF)	SHEAR STR (LBF/SQIN)	BENDING MOM (LBF-FT)	DEFLECTION FROM TANG. THRU DEFLE REFERENCE (INCHES)	DEFL.FROM A PARALLEL TO THE UNDEFORMED AXIS & THRU DEFLE REF NOTE SIGN (IN.)
10.000	0.00	0.00	0.00	36.3283	9.7722
9.999	0.00	0.00	0.00	36.3283	9.7726
9.000	0.00	0.00	0.00	35.5507	9.3487
8.000	0.00	0.00	0.00	34.7723	8.9244
7.000	0.00	0.00	0.00	33.9939	8.5001
6.000	0.00	0.00	0.00	33.2155	8.0758
5.000	0.00	0.00	0.00	32.4371	7.6515
4.000	0.00	0.00	0.00	31.6587	7.2272
3.000	0.00	0.00	0.00	30.8803	6.8029
2.000	0.00	0.00	0.00	30.1020	6.3786

LIST MORE?

Y

1.000	0.00	0.00	0.00	29.3236	5.9543
0.000	0.00	0.00	0.00	28.5452	5.5300
-1.000	0.00	0.00	0.00	27.7668	5.1057
-2.000	0.00	0.00	0.00	26.9884	4.6814
-3.000	31.20	3.04	10.40	26.2100	4.2571
-4.000	124.80	12.14	83.20	25.4316	3.8327
-5.000	280.80	27.32	280.80	24.6532	3.4084
-6.000	499.20	48.56	665.60	23.8748	2.9840
-7.000	780.00	75.88	1300.00	23.0962	2.5595
-8.000	1123.20	109.26	2246.40	22.3174	2.1348
-9.000	1528.80	148.72	3567.20	21.5382	1.7097
-10.000	1996.80	194.24	5324.80	20.7585	1.2840
-11.000	2527.20	245.84	7581.60	19.9778	0.8574
-12.000	3120.00	303.50	10400.00	19.1958	0.4296
-13.000	-17503.86	-1702.71	13842.40	18.4122	0.0000
-14.000	-16786.26	-1632.90	-3307.86	17.6268	-0.4313
-15.000	-16003.22	-1556.73	-19708.81	16.8419	-0.8621
-16.000	-15136.56	-1472.43	-35285.92	16.0603	-1.2896
-17.000	-14183.22	-1379.69	-49953.03	15.2845	-1.7114
-18.000	-13143.22	-1278.52	-63623.48	14.5168	-2.1249

LIST MORE?

Y

-19.000	-12016.56	-1168.93	-76210.59	13.7597	-2.5280
-20.000	-10803.22	-1050.90	-87627.70	13.0151	-2.9186
-21.000	-9502.54	-924.37	-97788.03	12.2849	-3.2947
-22.000	-8110.44	-788.95	-106602.20	11.5708	-3.6547
-23.000	-7089.81	-689.67	-114115.62	10.8742	-3.9972
-24.000	-6359.81	-618.66	-120840.43	10.1965	-4.3208
-25.000	-5629.81	-547.65	-126835.23	9.5386	-4.6246
-26.000	-4899.81	-476.63	-132100.04	8.9017	-4.9074
-27.000	-4169.81	-405.62	-136634.85	8.2865	-5.1685
-28.000	-3439.81	-334.61	-140439.65	7.6939	-5.4071
-29.000	-2709.81	-263.60	-143514.46	7.1244	-5.6225
-30.000	-1979.81	-192.59	-145859.26	6.5786	-5.8142
-31.000	-1249.81	-121.58	-147474.07	6.0568	-5.9819
-32.000	-519.81	-50.56	-148358.88	5.5593	-6.1253
-32.712	0.00	0.00	-148543.94	5.2200	-6.2126
-33.000	210.19	20.45	-148513.68	5.0863	-6.2443
-34.000	940.19	91.46	-147938.49	4.6377	-6.3388
-35.000	1670.19	162.47	-146633.30	4.2136	-6.4088

-37.000	2840.40	276.30	-141903.71	3.4374	-6.4768
LIST MORE?					
Y					
-37.700	2879.19	280.08	-139897.32	3.1881	-6.4783
-38.000	2871.96	279.37	-139034.29	3.0847	-6.4755
-39.000	2743.39	266.87	-136213.22	2.7549	-6.4512
-40.000	2454.10	238.73	-133601.08	2.4475	-6.4045
-40.500	2249.19	218.79	-132423.58	2.3022	-6.3728
-41.000	2520.08	245.14	-131230.92	2.1623	-6.3357
-42.000	3037.14	295.44	-128449.57	1.8986	-6.2452
-43.000	3521.27	342.54	-125167.61	1.6561	-6.1336
-44.000	3972.47	386.43	-121417.99	1.4343	-6.0014
-45.000	4390.74	427.11	-117233.65	1.2325	-5.8491
-46.000	4776.07	464.60	-112647.50	1.0500	-5.6775
-47.000	5128.46	498.88	-107692.49	0.8861	-5.4874
-48.000	5447.92	529.95	-102401.56	0.7399	-5.2795
-49.000	5734.45	557.83	-96807.63	0.6106	-5.0547
-50.000	5988.04	582.49	-90943.64	0.4973	-4.8139
-51.000	6208.70	603.96	-84842.52	0.3990	-4.5581
-52.000	6396.42	622.22	-78537.22	0.3147	-4.2884
-53.000	6551.21	637.28	-72060.65	0.2433	-4.0057
-54.000	6673.07	649.13	-65445.77	0.1838	-3.7111
-55.000	6761.99	657.78	-58725.49	0.1351	-3.4057

LIST MORE?

Y

-56.000	6817.98	663.23	-51932.76	0.0961	-3.0906
-57.000	6841.04	665.47	-45100.51	0.0656	-2.7670
-57.199	6841.69	665.53	-43739.05	0.0605	-2.7017
-57.201	6841.69	665.53	-43725.37	0.0605	-2.7010
-58.000	6802.72	661.74	-38269.25	0.0427	-2.4359
-59.000	6644.39	646.34	-31535.55	0.0260	-2.0985
-60.000	6364.26	619.09	-25021.08	0.0145	-1.7559
-61.000	5962.33	579.99	-18847.63	0.0071	-1.4092
-62.000	5438.62	529.05	-13137.00	0.0029	-1.0594
-63.000	4793.10	466.26	-8010.99	0.0008	-0.7073
-64.000	4025.80	391.61	-3591.39	0.0001	-0.3540
-64.999	3137.64	305.22	-3.14	0.0000	-0.0004
-65.000	0.00	0.00	0.00	0.0000	0.0000

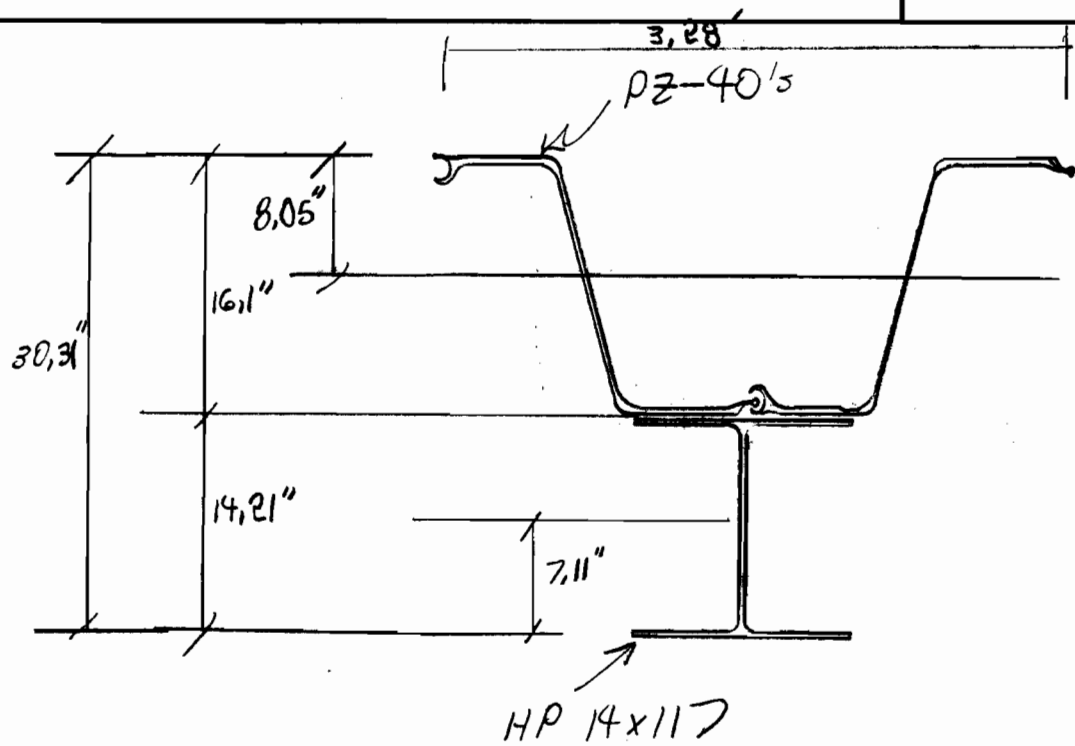
RUN COMPLETED

EOT..

LIST MORE?

COMPUTATION SHEET

PROJECT	17th St Canal GDM	PAGE	OF	COMPUTED BY	DATE
SUBJECT		CHECKED BY		DATE	



$$\bar{x} = \frac{7.11(34.4) + 22.26(38.6)}{34.4 + 38.6} = 15.12''$$

$$\bar{I}_{xx} = \sum I + Ad^2 = 1224 + 2(154.7) + 34.4(8.01)^2 + 38.6(7.14)^2$$

$$\bar{I}_{xx} = 5708.32 \text{ in}^4$$

$$\bar{S}_{xx} = \frac{I}{c} = \frac{5708.32}{15.12} = 377.54 \text{ in}^3 / 3.28' = 115.1 \text{ in}^3 / \text{ft}$$

$$m_{max} = F_b \bar{S}_{xx} = \frac{(24 \text{ ksi})(115.1 \text{ in}^3 / \text{ft})}{12 \text{ in} / \text{ft}} = 230.2 \text{ k} / \text{ft}$$

CALCULATION OF COFFERDAM USING SINGLE WALER

SOIL CONDITIONS:

$Ka\gamma$	=	90 pcf
$Kp\gamma$	=	300 pcf
$Kn\gamma = Kp\gamma - Ka\gamma$	=	210 pcf
Total Cut	=	15.0 ft
a	=	6.0 ft
b	=	9.0 ft

Calculate Sheeting Length

$w = (a+b)ka\gamma$	=	1,350.00 lb/ft
$y = w/Kn\gamma$	=	6.43 ft
$e1 = 1/3(a+b)$	=	5.00 ft
$e2 = 1/3(y)$	=	2.14 ft
$F1 = 1/2(w)(a+b)$	=	10,125.00 lb
$F2 = 1/2(w)(y)$	=	4,339.29 lb
$P = [F1(y+e1) + F2(y-e2)]/(y+b)$	=	8,705.36 lb
$R = [F1(b-e1) + F2(b+e2)]/(y+b)$	=	5,758.93 lb
$z = \sqrt{[R(2)/Kn\gamma]}$	=	7.41 ft
L, length = a+b+y+z	=	28.83 ft

Check Length and Waler Location

$ea = L/3$	=	9.67 ft
$ep = (L-a-b)/3$	=	4.67 ft
$Fa = 1/2(Ka\gamma)(L)(L)$	=	37,845 lb
$Fp = 1/2(kp\gamma)(L-a-b)(L-a-b)$	=	29,400 lb
$Ma = Fa(L-a-ea)$	=	504,600 ft-lb
$Mp = Fp(L-a-ep)$	=	539,000 ft-lb

SELECT (Using above as guide):

L, length = 29 ft

If $Mp > Ma$, L is okay

If $Mp < Ma$, increase L or a

Determine Section Modulus of Sheeting

$Fc = P = 1/2(Ka\gamma)(c+a)(c+a)$	
or $c = [\sqrt{2P/Ka\gamma}] - a$	7.91 ft
$Mc = (P)(c) - [(Fc)(c+a)]/3$	28,488 ft-lb
$SMs = Mc(12)/24,000$	14.24 in ³

Select Sheeting Section Modulus:

For Z22, SMs = 18.1 in³

Z27, SMs = 30.2 in³

Z38, SMs = 46.8 in³

Z40, SMs = 60.7 in³

Actual SMs =

30.2 psi

s, Actual Stress = $(Mc)(12)/SMs$

11,320 psi

If $As > 24,000$ psi, increase SMs

Select Waler

$M_w = (P)(d)(d)(12)/10$
 $SM_w = M_w/24000$

Actual $SM_w =$
 A_s , Actual Stress = M_w/SM_w

d , Waler Span = 17.67 ft
3,261,677 in-lb
135.90 in³

Select Waler Section Modulus:
For 14WF99 157 in³

157 psi
20,775 psi

If $A_s < 24,000$ psi, okay
If $A_s > 24,000$ psi, increase SM_w
or decrease d by adding struts

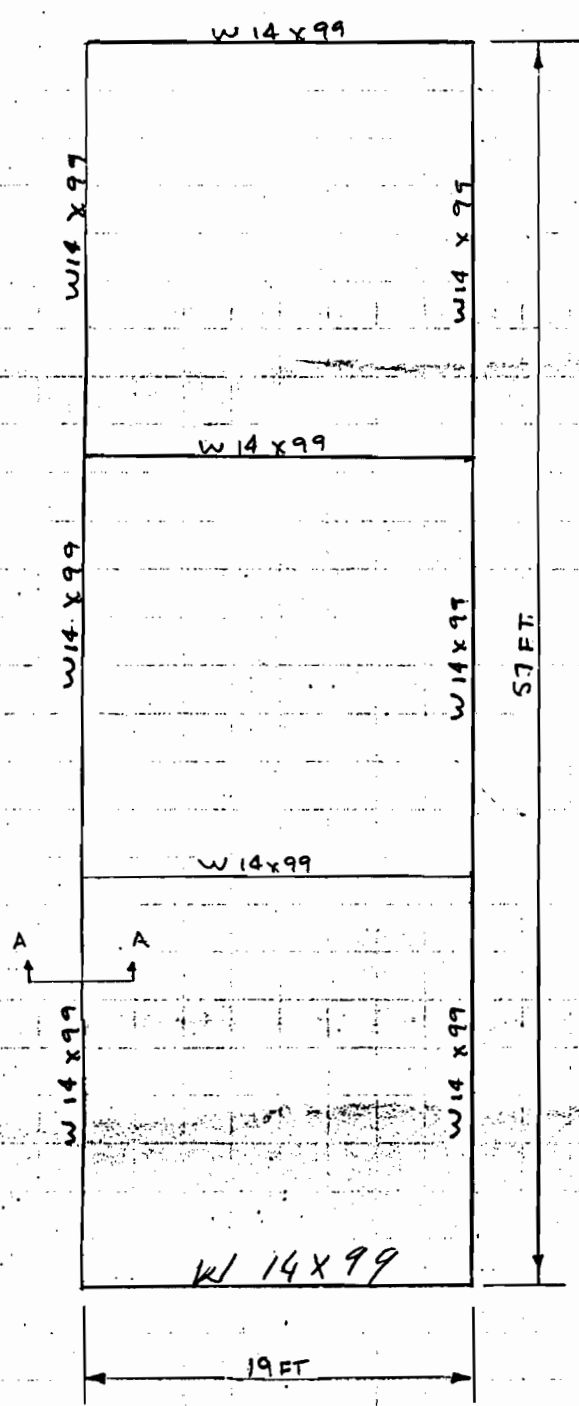
Select Strut

T_a , Strut Load = $(P/1000)(n)(1/\sin q)$
 $Km = (K)(m)$

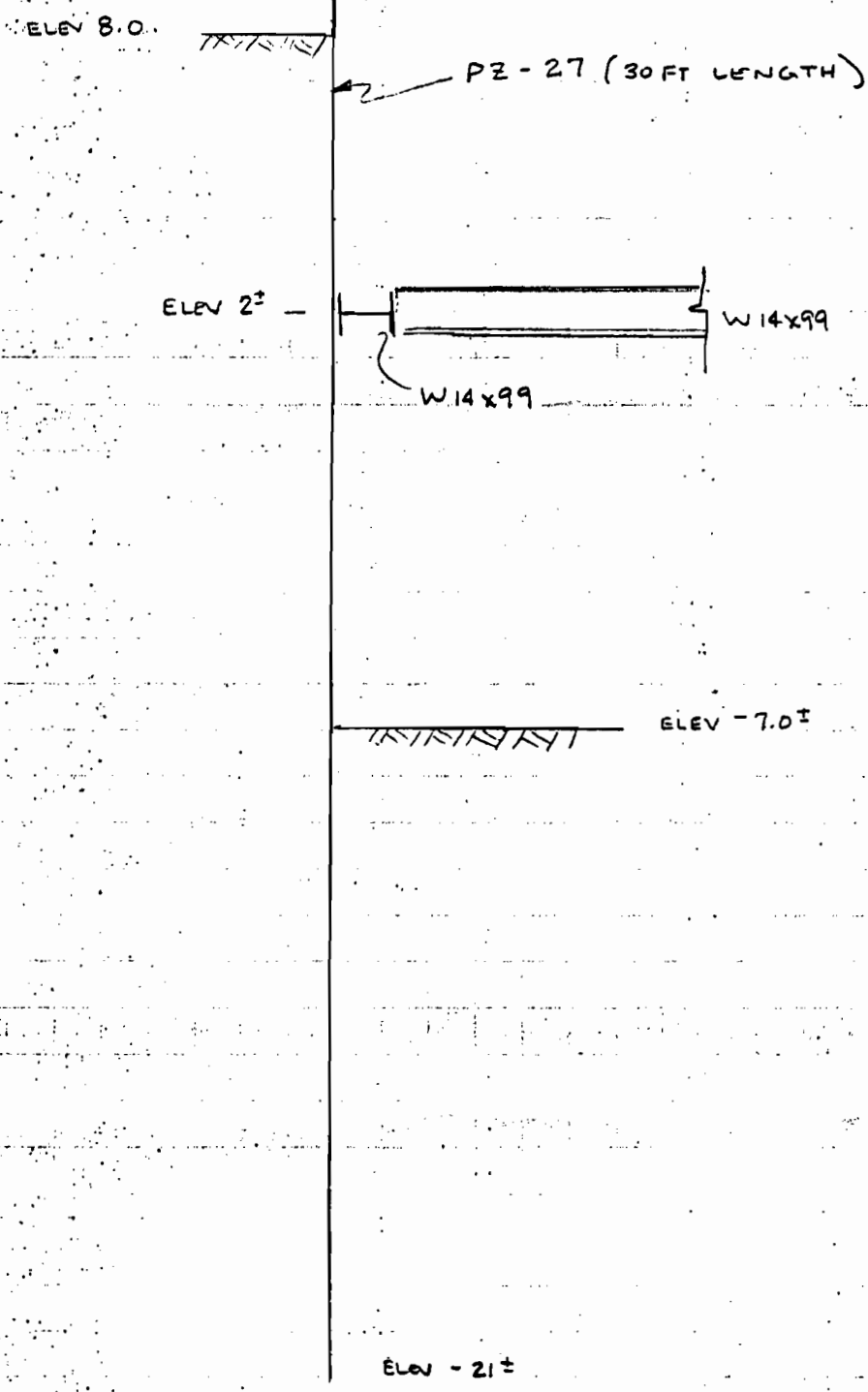
n , length of waler load on strut
 $n = 15$ ft
 m , strut length = 23 ft
 q , strut angle = 90 degrees
 K , end condition = 0.67

130.58 kips

Select Strut from Steel Handbook
For Km , select $T > T_a$
Strut Selected = 14 WF 99
 $T = 512$ kips



PLAN VIEW

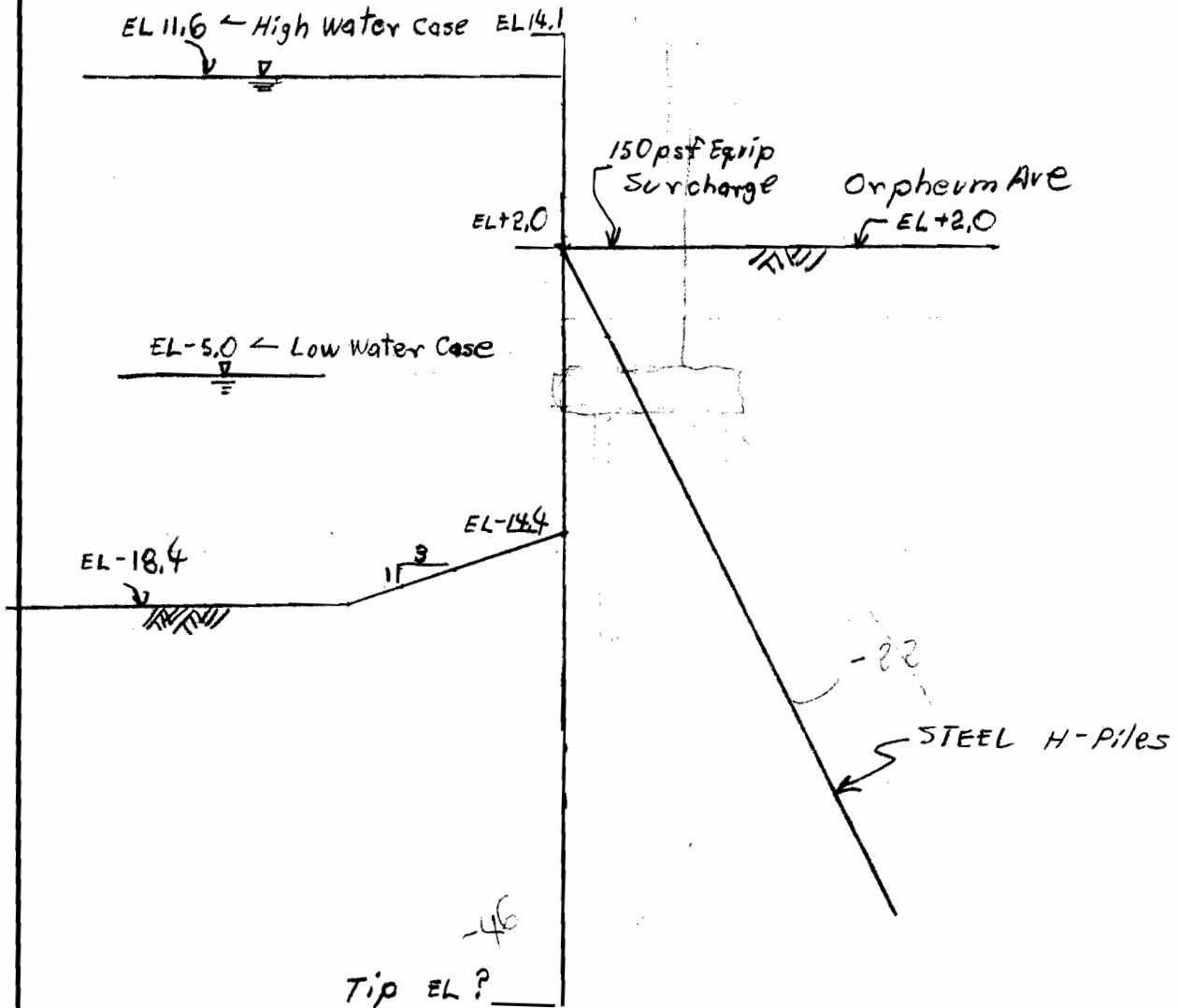


SECTION A-A

COMPUTATION SHEET

PROJECT	12th St Outfall Canal	PAGE	OF	COMPUTED BY	DATE
SUBJECT	Anchored Wall Flood Protection			Loborde, CA	7 Dec 87
				CHECKED BY	DATE

SECTION C-C
FLOOD SIDE



BRACED WALL WEST SIDE CASE II
TIED BACK WALL @ EL +2.0 W/ STRUT @ EL ~~14.5~~ -13.25

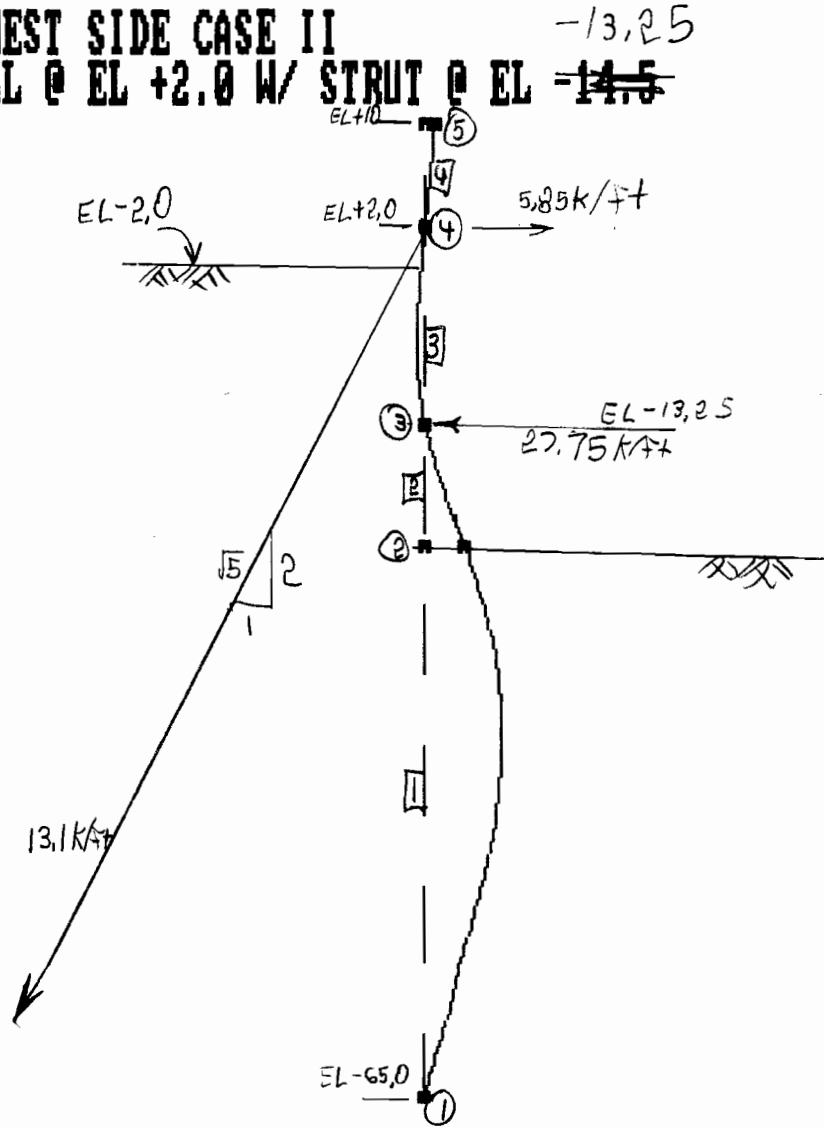
SPACE H-Piles @ 7' O.C.

Load/ft on water = 5.85 k/ft

$$M = .1071 w l^2$$

$$= .1071 (5.85 \text{ k/ft}) (7')^2$$

$$M = 30.7 \text{ k'}$$



1.664 IN DEFLECTION
LOAD CASE 1

1/12/88 10.54.52

100 BRACED WALL WEST SIDE CASE II*
110 TIED BACK WALL @ EL +2.0 W/ STRUT @ EL -14.5
120 KSI FT IN IN LB
130 5 4 1 29000 0.3

12 Jan 87

140 1 0 -65.0 2 0 -22.4 3 0 -13.25 4 0 2.0 5 0 10.0
150 FIX X 1 3 4 FIX Y 1 3 4
160 1 1 2 2 2 3 3 3 4 4 4 5
170 490.8 11.76 8.0 1 2 3 4
180 LOAD CASE 1 0 9 0 0
190 0 -950.0 15.5 0. 0. 1
200 15.5 0. 24.5 550.0 0. 1
210 24.5 -450.0 27.375 0. 0. 1
220 27.375 0. 28.5 190.0 0. 1
230 28.5 730.0 42.6 730.0 0. 1
240 0 1475.0 1.9 1300.0 0. 2
250 1.9 1300.0 7.9 780.0 0. 2
260 7.9 780.0 9.15 702.0 0. 2
270 0.0 702.0 11.25 0. 0. 3

1*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-
PROGRAM CFRAME V02.05 24JUL84
--*-*-*-*-*-*-*-*-*-*-*-*-*-

RUN DATE = 88/ 1/12
RUN TIME = 10.54.52

BRACED WALL WEST SIDE CASE II
TIED BACK WALL @ EL +2.0 W/ STRUT @ EL -14.5

1 *** JOINT DATA ***

JOINT	X --- FT ---	Y --- FT ---	-----FIXITY-----					
			X	Y	R	KX ---LB / IN---	KY ---LB / IN---	KR IN-LB /RAD
1	.00	-65.00	*	*				
2	.00	-22.40						
3	.00	-13.25	*	*				
4	.00	2.00	*	*				
5	.00	10.00						

1 *** MEMBER DATA ***

MEMBER	END END		LENGTH FT	I IN**4	A IN**2	AS IN**2	E KSI	G KSI
	A	B						
1	1	2	42.60	.4908E+03	.1176E+02	.8000E+01	.2900E+05	.1115E+05
2	2	3	9.15	.4908E+03	.1176E+02	.8000E+01	.2900E+05	.1115E+05
3	3	4	15.25	.4908E+03	.1176E+02	.8000E+01	.2900E+05	.1115E+05
4	4	5	8.00	.4908E+03	.1176E+02	.8000E+01	.2900E+05	.1115E+05

1 *** LOAD CASE 1

MEMBER	LA	PA	LB	PB	ANGLE DEG
	FT	LB / FT	FT	LB / FT	
1	.00	-.9500E+03	15.50	.0000E+00	.00
1	15.50	.0000E+00	24.50	.5500E+03	.00
1	24.50	-.4500E+03	27.38	.0000E+00	.00
1	27.38	.0000E+00	28.50	.1900E+03	.00
1	28.50	.7300E+03	42.60	.7300E+03	.00
2	.00	.1475E+04	1.90	.1300E+04	.00
2	1.90	.1300E+04	7.90	.7800E+03	.00
2	7.90	.7800E+03	9.15	.7020E+03	.00
3	.00	.7020E+03	11.25	.0000E+00	.00

JOINT	JOINT DISPLACEMENTS		
	DX IN	DY IN	DR RAD
1	.0000E+00	.0000E+00	-.6216E-02
2	.8480E+00	.0000E+00	.8175E-02
3	.0000E+00	.0000E+00	.5019E-02
4	.0000E+00	.0000E+00	-.2281E-02
5	.2190E+00	.0000E+00	-.2281E-02

MEMBER END FORCES

MEMBER	JOINT	AXIAL LB	SHEAR LB	MOMENT IN-LB	MOMENT	LOCATION IN
					EXTREMA IN-LB	
1	1	.0000E+00	-.3275E+04	.0000E+00	.7948E+06	378.29
	2	.0000E+00	.8140E+04	.2502E+06	-.7344E+05	51.12
2	2	.0000E+00	-.8140E+04	.2502E+06	.2502E+06	.00
	3	.0000E+00	.1794E+05	-.1248E+07	-.1248E+07	109.80
3	3	.0000E+00	.9795E+04	-.1248E+07	.0000E+00	183.00
	4	.0000E+00	-.5847E+04	.0000E+00	-.1248E+07	.00
4	4	.0000E+00	.0000E+00	.0000E+00	.0000E+00	.00
	5	.0000E+00	.0000E+00	.0000E+00	.0000E+00	.00

JOINT	STRUCTURE REACTIONS		
	FORCE X LB	FORCE Y LB	MOMENT IN-LB
1	.3275E+04	.0000E+00	.0000E+00
3	-.2774E+05	.0000E+00	.0000E+00
4	.5847E+04	.0000E+00	.0000E+00

TOTAL	-.1862E+05	.0000E+00	

$$\frac{1248 \text{ k}}{24 \text{ ksi}} = 52 \text{ in}^3/\text{ft} = 5 \text{ min}$$

$$PZ-40 \quad S=607 \text{ in}^3/\text{ft}$$

1

MEMBER END FORCES

MEMBER	LOAD CASE	JOINT	AXIAL LB	SHEAR LB	MOMENT IN-LB	MOMENT	LOCATION IN
						EXTREMA IN-LB	
1	1	1	.0000E+00	-.3275E+04	.0000E+00	.7948E+06	378.29
		2	.0000E+00	.8140E+04	.2502E+06	-.7344E+05	51.12
2	1	2	.0000E+00	-.8140E+04	.2502E+06	.2502E+06	.00
		3	.0000E+00	.1794E+05	-.1248E+07	-.1248E+07	109.80
3	1	3	.0000E+00	.9795E+04	-.1248E+07	.0000E+00	183.00
		4	.0000E+00	-.5847E+04	.0000E+00	-.1248E+07	.00
4	1	4	.0000E+00	.0000E+00	.0000E+00	.0000E+00	.00
		5	.0000E+00	.0000E+00	.0000E+00	.0000E+00	.00

COMPUTATION SHEET

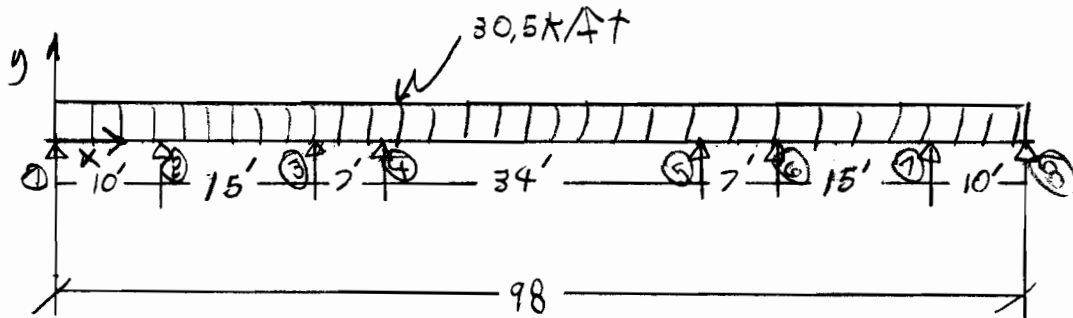
PROJECT	17th St Canal EDM	PAGE	OF	COMPUTED BY	DATE
SUBJECT	cofferdam Phase I			LABOR DE, CA	21 Nov 88
				CHECKED BY	DATE

USE COFFERDAM FRAME @ EL-13,25

LOAD PER FT = 29.3K/ft from Beams Run

DATA FILE A;WALER

LOAD PER FT = $29.3 \left(\frac{100}{98} \right) = 30.5K/ft$



100 WALER @ EL-13,25

110 KSI FT IN IN KIP

130 1 0 0 2 10 0 3 25 0 4 32 0 5 66 0 6 73 0

7 90 0 8 98 0

120 8 7 1 29000 0,3

140 FIX X 1 2 3 4 5 6 7 8 FIX Y 1 2 3 4 5 6 7 8

150 1 1 2 2 2 3 3 3 4 4 4 5 5 5 6 6 6 7 7 7 8

160 20300 88,3 34,75 1 2 3 4 5 6 7

170 LOAD CASE 1 1 0 0 0

180 Y -30.5 1 2 3 4 5 6 7

--*-*-*-*-*-*-*-*-*-*-*-*-*-*

RUN DATE = 88/ 1/21
 RUN TIME = 15.34.36

WHLER AT EL -13.25

1 *** JOINT DATA ***

JOINT	X ---- FT ----	Y ---- FT ----	-----FIXITY-----					
			X	Y	R	KX ---KIP / IN---	KY ---KIP / IN---	KR IN-KIP/RAD
1	.00	.00	*	*				
2	10.00	.00	*	*				
3	25.00	.00	*	*				
4	32.00	.00	*	*				
5	66.00	.00	*	*				
6	73.00	.00	*	*				
7	90.00	.00	*	*				
8	98.00	.00	*	*				

1 *** MEMBER DATA ***

MEMBER	END END		LENGTH FT	I IN**4	A IN**2	AS IN**2	E KSI	G KSI
	A	B						
1	1	2	10.00	.2030E+05	.8830E+02	.3475E+02	.2900E+05	.1115E+05
2	2	3	15.00	.2030E+05	.8830E+02	.3475E+02	.2900E+05	.1115E+05
3	3	4	7.00	.2030E+05	.8830E+02	.3475E+02	.2900E+05	.1115E+05
4	4	5	34.00	.2030E+05	.8830E+02	.3475E+02	.2900E+05	.1115E+05
5	5	6	7.00	.2030E+05	.8830E+02	.3475E+02	.2900E+05	.1115E+05
6	6	7	17.00	.2030E+05	.8830E+02	.3475E+02	.2900E+05	.1115E+05
7	7	8	8.00	.2030E+05	.8830E+02	.3475E+02	.2900E+05	.1115E+05

1 *** LOAD CASE 1

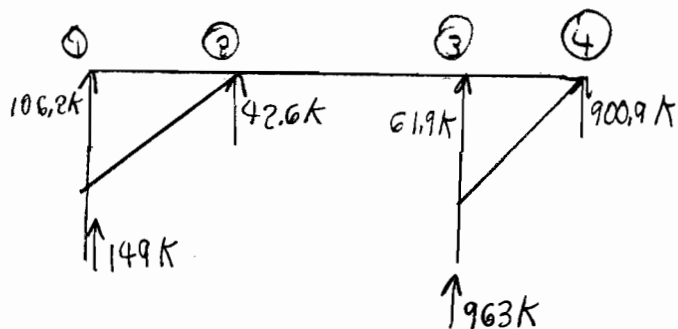
MEMBER	DIRECTION	PROJECTED LOAD KIP / FT
1	Y	-.3050E+02
2	Y	-.3050E+02
3	Y	-.3050E+02
4	Y	-.3050E+02
5	Y	-.3050E+02
6	Y	-.3050E+02
7	Y	-.3050E+02

JOINT	JOINT DISPLACEMENTS		
	DX IN	DY IN	DR RAD
1	.0000E+00	.0000E+00	-.2416E-03
2	.0000E+00	.0000E+00	-.1860E-03
3	.0000E+00	.0000E+00	.1560E-03
4	.0000E+00	.0000E+00	-.2130E-02
5	.0000E+00	.0000E+00	.2123E-02
6	.0000E+00	.0000E+00	-.2773E-03
7	.0000E+00	.0000E+00	.3641E-03
8	.0000E+00	.0000E+00	.1572E-03

MEMBER END FORCES

MEMBER	JOINT	AXIAL KIP	SHEAR KIP	MOMENT IN-KIP	MOMENT EXTREMA IN-KIP	LOCATION IN
1	1	.0000E+00	.1062E+03	.0000E+00	.2218E+04	40.80
	2	.0000E+00	.1988E+03	-.5555E+04	-.5555E+04	120.00
2	2	.0000E+00	.2267E+03	-.5555E+04	.4550E+04	90.00
	3	.0000E+00	.2308E+03	-.5932E+04	-.5932E+04	180.00
3	3	.0000E+00	-.1690E+03	-.5932E+04	-.5932E+04	.00
	4	.0000E+00	.3825E+03	-.2910E+05	-.2910E+05	84.00
4	4	.0000E+00	.5184E+03	-.2910E+05	.2377E+05	204.00
	5	.0000E+00	.5186E+03	-.2915E+05	-.2915E+05	408.00
5	5	.0000E+00	.3646E+03	-.2915E+05	-.7486E+04	84.00
	6	.0000E+00	-.1511E+03	-.7486E+04	-.2915E+05	.00
6	6	.0000E+00	.2644E+03	-.7486E+04	.6258E+04	102.00
	7	.0000E+00	.2541E+03	-.6441E+04	-.7486E+04	.00
7	7	.0000E+00	.1891E+03	-.6441E+04	.5927E+03	74.88
	8	.0000E+00	.5490E+02	.0000E+00	-.6441E+04	.00

JOINT	STRUCTURE REACTIONS		
	FORCE X KIP	FORCE Y KIP	MOMENT IN-KIP
1	.0000E+00	.1062E+03	.0000E+00
2	.0000E+00	.4254E+03	.0000E+00
3	.0000E+00	.6184E+02	.0000E+00
4	.0000E+00	.9009E+03	.0000E+00
5	.0000E+00	.8833E+03	.0000E+00
6	.0000E+00	.1132E+03	.0000E+00
7	.0000E+00	.4432E+03	.0000E+00
8	.0000E+00	.5490E+02	.0000E+00



TOTAL	.0000E+00	.2989E+04	
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MEMBER END FORCES

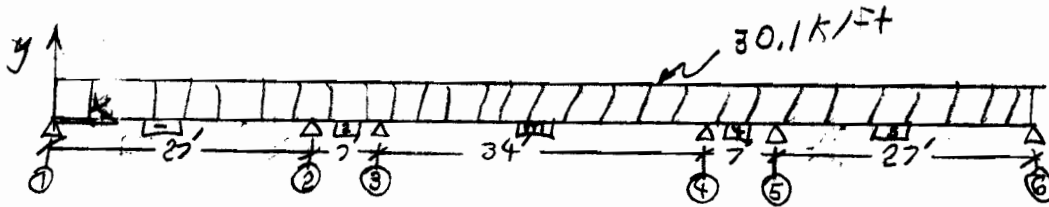
MEMBER	LOAD CASE	JOINT	AXIAL KIP	SHEAR KIP	MOMENT IN-KIP	MOMENT EXTREMA IN-KIP	LOCATION IN
1	1	1	.0000E+00	.1062E+03	.0000E+00	.2218E+04	40.80
		2	.0000E+00	.1988E+03	-.5555E+04	-.5555E+04	120.00
2	1	2	.0000E+00	.2267E+03	-.5555E+04	.4550E+04	90.00
		3	.0000E+00	.2308E+03	-.5932E+04	-.5932E+04	180.00
3	1	3	.0000E+00	-.1690E+03	-.5932E+04	-.5932E+04	.00
		4	.0000E+00	.3825E+03	-.2910E+05	-.2910E+05	84.00
4	1	4	.0000E+00	.5184E+03	-.2910E+05	.2377E+05	204.00
		5	.0000E+00	.5186E+03	-.2915E+05	-.2915E+05	408.00
5	1	5	.0000E+00	.3646E+03	-.2915E+05	-.7486E+04	84.00
		6	.0000E+00	-.1511E+03	-.7486E+04	-.2915E+05	.00
6	1	6	.0000E+00	.2644E+03	-.7486E+04	.6258E+04	102.00
		7	.0000E+00	.2541E+03	-.6441E+04	-.7486E+04	.00
7	1	7	.0000E+00	.1891E+03	-.6441E+04	.5927E+03	74.88
		8	.0000E+00	.5490E+02	.0000E+00	-.6441E+04	.00

		3	.0000E+00	.2308E+03	-.5932E+04	-.5932E+04	180.00
3	1	3	.0000E+00	-.1690E+03	-.5932E+04	-.5932E+04	.00
		4	.0000E+00	.3825E+03	-.2910E+05	-.2910E+05	84.00
4	1	4	.0000E+00	.5184E+03	-.2910E+05	.2377E+05	204.00
		5	.0000E+00	.5186E+03	-.2915E+05	-.2915E+05	408.00
5	1	5	.0000E+00	.3646E+03	-.2915E+05	-.7486E+04	84.00
		6	.0000E+00	-.1511E+03	-.7486E+04	-.2915E+05	.00
6	1	6	.0000E+00	.2644E+03	-.7486E+04	.6258E+04	102.00
		7	.0000E+00	.2541E+03	-.6441E+04	-.7486E+04	.00
7	1	7	.0000E+00	.1891E+03	-.6441E+04	.5927E+03	74.88
		8	.0000E+00	.5490E+02	.0000E+00	-.6441E+04	.00

COMPUTATION SHEET

PROJECT	17th St Canal GDM	PAGE 1 OF	COMPUTED BY	DATE
SUBJECT	Cofferdam Phase I		LABORDE, CA	7/1/88
			CHECKED BY	DATE

USE COFFERDAM FRAME @ EL 13.25
 A: WATER LOAD PER FT = 30.1K/FT



USE W36x300

- 100 WATER @ EL 13.25
- 110 KSI FT IN N RTP
- 120 6 5 1 29000 0.3
- 130 1 0 0 2 27 0 3 34 0 4 680 5 75 0
6 102 0
- 140 FIX X 1 2 3 4 5 6 FIX Y 1 2 3 4 5 6
- 150 1 1 2 2 3 3 4 4 4 5 5 5 6
- 160 20 300 88.3 34.75 1 2 3 4 5
- 170 LOAD CASE 1 1 0 0 0
- 180 -Y -30.1 1 2 3 4 5

SIZE BEAM COLUMN WATER FOR 335K axial, 29020"K moment

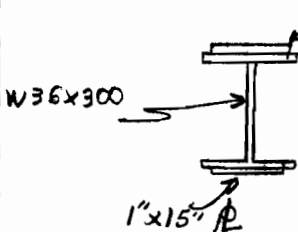
$$\frac{KL}{r} = \frac{24'}{1.385} = 6.2 \quad F_a = 21.3 \text{ ksi} \quad \frac{f_a}{F_a} = \frac{3.8}{21.3} = .178$$

$$F_b = 24 \text{ ksi} \quad f_a = \frac{335 \text{ K}}{88.3} = 3.8 \text{ ksi}$$

$$F_c = 21 \text{ ksi} \quad f_b = \frac{29020}{1170} = 26.1 \text{ ksi} \rightarrow \text{SIZE BEAM FOR } F_b = 20 \text{ ksi}$$

$$S_{xx} = \frac{29020 \text{ "K}}{20 \text{ ksi}} = 1451 \text{ in}^3$$

Add 1" thick flange to the flanges



$$I_{xx} = 20300 + 30(18.625)^2 = 30707 \text{ in}^4$$

$$S_{xx} = \frac{30707 \text{ in}^4}{18.88} = 1626 \text{ in}^3 \quad f_b = \frac{29020}{1626 \text{ in}^3} = 17.85$$

$$\frac{f_b}{(1 - \frac{f_a}{F_c}) F_b} = \frac{17.85}{(1 - \frac{3.8}{21}) 24} = 0.908 \quad 0.908 + .178 = 1.09 > 1.0 \text{ OK}$$

1*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-
 PROGRAM CFRAME V02.05 24JUL84
 --*-*-*-*-*-*-*-*-*-*-*-*-*-*-

RUN DATE = 88/ 1/19
 RUN TIME = 12.18.19

WALER AT EL -13.25

1 *** JOINT DATA ***

JOINT	X --- FT ---	Y ---	-----FIXITY-----					
			X	Y	R	KX ---KIP / IN---	KY ---	KR IN-KIP/RAD
1	.00	.00	*	*				
2	27.00	.00	*	*				
3	34.00	.00	*	*				
4	68.00	.00	*	*				
5	75.00	.00	*	*				
6	102.00	.00	*	*				

1 *** MEMBER DATA ***

MEMBER	END END		LENGTH FT	I IN**4	A IN**2	AS IN**2	E KSI	G KSI
	A	B						
1	1	2	27.00	.2030E+05	.8830E+02	.3475E+02	.2900E+05	.1115E+05
2	2	3	7.00	.2030E+05	.8830E+02	.3475E+02	.2900E+05	.1115E+05
3	3	4	34.00	.2030E+05	.8830E+02	.3475E+02	.2900E+05	.1115E+05
4	4	5	7.00	.2030E+05	.8830E+02	.3475E+02	.2900E+05	.1115E+05
5	5	6	27.00	.2030E+05	.8830E+02	.3475E+02	.2900E+05	.1115E+05

1 *** LOAD CASE 1

MEMBER	DIRECTION	PROJECTED LOAD KIP / FT
1	Y	-.3010E+02
2	Y	-.3010E+02
3	Y	-.3010E+02
4	Y	-.3010E+02
5	Y	-.3010E+02

1 LOAD CASE 1

JOINT DISPLACEMENTS

	IN	IN	RAD
1	.0000E+00	.0000E+00	-.4068E-02
2	.0000E+00	.0000E+00	.1535E-02
3	.0000E+00	.0000E+00	-.2003E-02
4	.0000E+00	.0000E+00	.2003E-02
5	.0000E+00	.0000E+00	-.1535E-02
6	.0000E+00	.0000E+00	.4068E-02

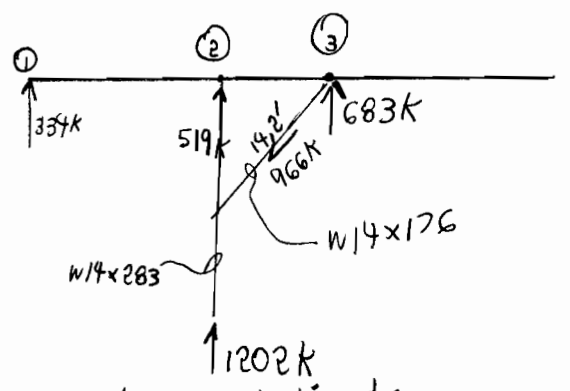
W36x300 S_{xx} = 1110

$$\frac{29020 \text{ K}}{1110 \text{ in}^3} = 26.1 \text{ ksi}$$

MEMBER END FORCES

MEMBER	JOINT	AXIAL KIP	SHEAR KIP	MOMENT IN-KIP	MOMENT EXTREMA IN-KIP	LOCATION IN
1	1	.0000E+00	.3337E+03	.0000E+00	.2219E+05	136.08
	2	.0000E+00	.4790E+03	-.2353E+05	-.2353E+05	324.00
2	2	.0000E+00	.3999E+02	-.2353E+05	-.2321E+05	15.12
	3	.0000E+00	.1707E+03	-.2902E+05	-.2902E+05	84.00
3	3	.0000E+00	.5117E+03	-.2902E+05	.2318E+05	204.00
	4	.0000E+00	.5117E+03	-.2902E+05	-.2902E+05	.00
4	4	.0000E+00	.1707E+03	-.2902E+05	-.2321E+05	68.88
	5	.0000E+00	.3999E+02	-.2353E+05	-.2902E+05	.00
5	5	.0000E+00	.4790E+03	-.2353E+05	.2219E+05	187.92
	6	.0000E+00	.3337E+03	.0000E+00	-.2353E+05	.00

JOINT	STRUCTURE FORCE X KIP	REACTIONS FORCE Y KIP	MOMENT IN-KIP
1	.0000E+00	.3337E+03	.0000E+00
2	.0000E+00	.5190E+03	.0000E+00
3	.0000E+00	.6824E+03	.0000E+00
4	.0000E+00	.6824E+03	.0000E+00
5	.0000E+00	.5190E+03	.0000E+00
6	.0000E+00	.3337E+03	.0000E+00
TOTAL		.0000E+00	.3070E+04



73' in short direction

$$\frac{k_x}{r_x} = \frac{73(12)}{6.79} = 129 \quad F_a = 8.92 \text{ ksi}$$

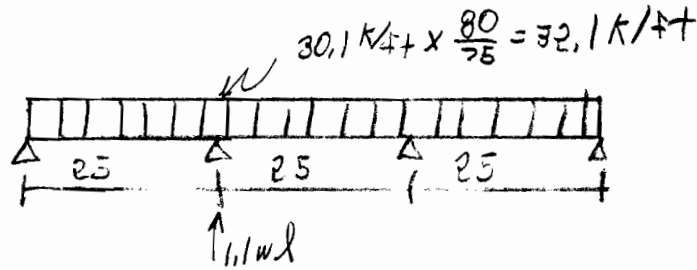
$$F_a = \frac{1202}{83.3} = 14.4 \text{ ksi}$$

MEMBER	LOAD CASE	JOINT	AXIAL KIP	SHEAR KIP	MOMENT IN-KIP	MOMENT EXTREMA IN-KIP	LOCATION IN
1	1	1	.0000E+00	.3337E+03	.0000E+00	.2219E+05	136.08 (11.34')
		2	.0000E+00	.4790E+03	-.2353E+05	-.2353E+05	324.00 (27')
2	1	2	.0000E+00	.3999E+02	-.2353E+05	-.2321E+05	15.12
		3	.0000E+00	.1707E+03	-.2902E+05	-.2902E+05	84.00 (7')
3	1	3	.0000E+00	.5117E+03	-.2902E+05	.2318E+05	204.00
		4	.0000E+00	.5117E+03	-.2902E+05	-.2902E+05	.00
4	1	4	.0000E+00	.1707E+03	-.2902E+05	-.2321E+05	68.88
		5	.0000E+00	.3999E+02	-.2353E+05	-.2902E+05	.00
5	1	5	.0000E+00	.4790E+03	-.2353E+05	.2219E+05	187.92
		6	.0000E+00	.3337E+03	.0000E+00	-.2353E+05	.00

COMPUTATION SHEET

PROJECT	17th St Canal GDM	PAGE	OF	COMPUTED BY	DATE
SUBJECT	Cofferdam	CHECKED BY			DATE

SIZE WALER IN 80' DIRECTION



$$M_{max} = .1wl^2 = .1(32.1)(25)^2 = 2006'k$$

$$S_{min} = \frac{2006'k(12)}{24ksi} = 1003in^3 \quad \underline{\text{use } W36 \times 280}$$

$$M_{@ \text{each midspan}} = 0.08wl^2 = \frac{0.08}{0.10} (1003in^3) = 802.4in^3$$

SIZE STRUT

$$R = 1.1wl = 1.1(32.1)(25) = 883kips$$

$$W14 \times 283 \quad \frac{K_{xx}}{r_{xx}} = \frac{(1.0)(95)(12)}{6.79} = 168 \quad F_a = 5.29$$

$$f_a = \frac{883}{833} = 10.6ksi > 5.29ksi \quad \text{NG}$$

Add Braces from sheet pile in vertical direction

$$l_{xx} = 75ft \quad \frac{K_{xx}}{r_{xx}} = \frac{(75)(12)}{6.79} = 133 \quad F_a = 8.44ksi$$

W24 x 104
w/ 2 ea 1" x 12" Flange Pl's
TOTAL WT/FT = 145

$$\text{Area} = 30.6 + 24 = 54.6in^2$$

$$r_{xx} = \sqrt{\frac{I}{A}} = \sqrt{\frac{3100 + 24(13)^2}{54.6}} = 11.45$$

57.6

COMPUTATION SHEET

PROJECT	12th St Canal GDM	PAGE	OF	COMPUTED BY	DATE
SUBJECT				LABORDE, CA	2/7/88
				CHECKED BY	DATE

Compute wt, of strut frame

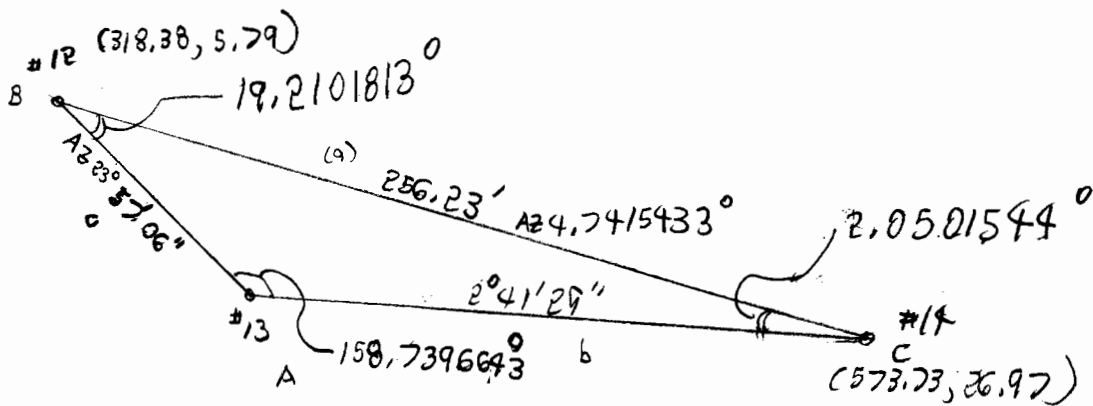
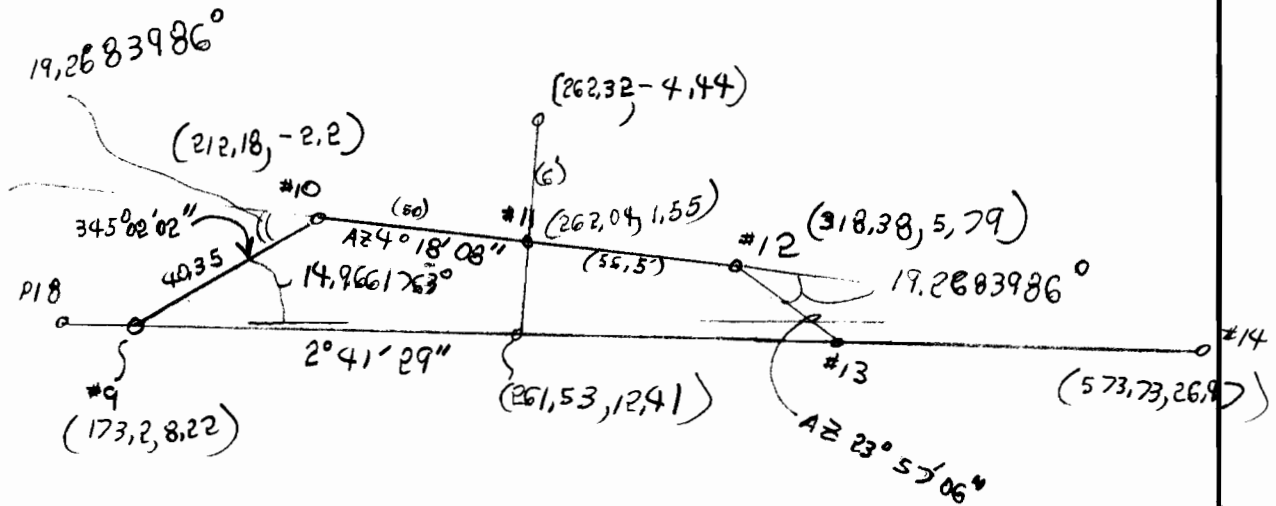
ITEM	wt/ft lbs/ft	Length	TOTAL WT
WALER W36x300 w/ 2 EA 1x15" 2's FOR LONG SPAN	402#/1	296'	119 kips
WALER IN SHORT DIRECTION W36x300	300#/1	152'	45.6 kips
STRUTS SHORT DIRECTION W14x283	283#/1	144'	40.8 kips
STRUTS LONG DIRECTION W14x455	455#/1	190'	86.5 kips
BRACES W14x283	283#/1	153'	43.3 kips
		SUBTOTAL	335.2K
		+10% for stiffeners & welds	33.5K
		TOTAL	368.7K

use 2 cranes → 184.4 kips

need 2 each
manitowoc 6000W
cranes

COMPUTATION SHEET

PROJECT	17th St Canal GDM (ALT)	PAGE 1 OF	COMPUTED BY Laborde CA	DATE 25 Jan 88
SUBJECT	Alignment west side Vic. Butterfly Strk	CHECKED BY	DATE	

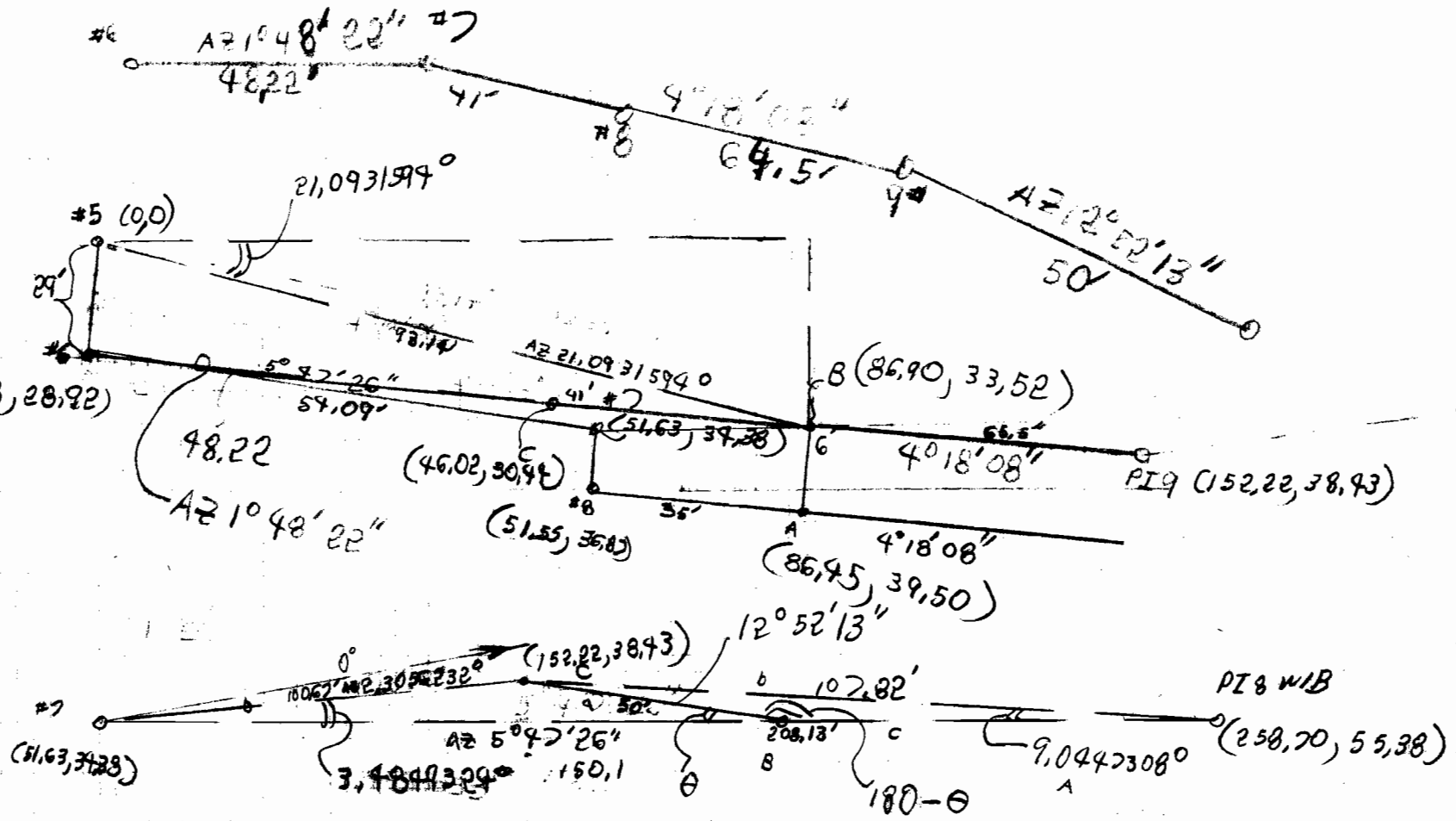


$$c = \frac{a}{\sin A} \cdot \sin (A+B)$$

$$c = \frac{256.23}{\sin 158,7396643} \sin (177,9499456^{\circ})$$

$$c = 25.28$$

PROJECT	17th St Canal EDM (ALT)	PAGE	2 OF	COMPUTED BY	Looye CA	DATE	25 Jan 88
SUBJECT	Alignment Eastside Vic Butterfly Strve,	CHECKED BY					



$$a^2 = b^2 + c^2 - 2bc \cos A$$

$$50^2 = b^2 + 100.67^2 - 2b(100.67) \cos 3,4849324^\circ$$

$$0 = b^2 - 200.97b + 7634.45$$

$$b = \frac{200.97 \pm \sqrt{40388.94 - 4(7634.45)}}{2} = \frac{150.1}{50.86}$$

$$\cos C = \frac{50^2 + 150.1^2 - 100.67^2}{2(50)(150.1)}$$

$$\theta = 20796280$$

$$704'47''$$

PROJECT BRACED WALL WEST SIDE CASE #1	PAGE 1 OF	COMPUTED BY L. Boyde, CA	DATE Dec 12, 88
SUBJECT		CHECKED BY	DATE

STRUT @ EL - 13,25

27,75 K/ft load will span 64 ft

Allow $f_a = 4,5 \text{ ksi}$ w/a strut spacing = 10'

$$A_{min} = \frac{(27,75 \text{ K/ft})(10')}{4,5 \text{ ksi}} = 61,7 \text{ in}^2$$

Try Area = 70 in²

USE W14x25 $r_{min} = 4,13"$

$$\frac{KL}{r} = \frac{(1)(64)(12)}{4,13} = 186 \rightarrow F_a = 4,32 \text{ ksi}$$

$$A_{req'd} = \frac{(27,75 \text{ K})(10')}{4,32 \text{ ksi}} = 64,24 \text{ in}^2$$

$$\frac{f_a}{F_a} = \frac{3,67}{4,32} = 0,85$$

$$r_T = 4,43 \quad \frac{L_b}{r_T} = \frac{64(12)}{4,43} = 173,4 > 119$$

$$F_b = \frac{120,000(1)}{(173,4)^2} = 5,65 \text{ ksi}$$

$$F_b = \frac{12000(1)}{64(12)(0,54)} = 28,93 \text{ ksi}$$

use $.6 F_y = 22 \text{ ksi}$

$$F_b = \frac{(257(64)^2/8)(12)}{415} = 3,8 \text{ ksi}$$

$$\frac{f_b}{F_b} = \frac{3,8}{22} = 0,17$$

$$\frac{KL_b}{r_b} = \frac{(1)(64)(12)}{6,71} = 114,5 \quad F'_e = 11,39 \text{ ksi}$$

$$\frac{f_a}{F_a} + \frac{C_m f_b}{(1 - \frac{f_a}{F'_e}) F_b} = 0,85 + \frac{(1)(3,8)}{(1 - \frac{3,67}{11,39})(22)} = 1,10$$

$$\frac{f_a}{.6 F_y} + \frac{f_b}{F_b} = \frac{3,67}{22} + \frac{3,8}{22} = 0,34$$

COMPUTATION SHEET

PROJECT BRACED WALL WEST SIDE	PAGE 2 OF	COMPUTED BY Loborde, CA	DATE Dec 13, 1988
SUBJECT CASE II		CHECKED BY	DATE

STRUT @ EL-13,25

Try W14x90 w/ cross brace @ midspan

unsupported length = 32ft

$A = 26,5$ $S_{xx} = 143$ $r_{xx} = 6,14$
 $r_T = 3,99$ $S_{yy} = 49,9$ $r_{yy} = 3,70$
 $d/A_f = 1,36$

$\frac{KL}{r} = \frac{(1)(32)(12)}{3,70} = 103,8$ $F_a = 12,49$

$\frac{L}{r_T} = \frac{(32)(12)}{3,99} = 96,3$ $\rightarrow F_b = \left(\frac{2}{3} - \frac{36(96,3)^2}{1530,000} \right) 36$

$F_b = 16,2$

or
 $F_b = \frac{12 \times 10^3}{(32)(12)(1,36)} = 23 \text{ ksi}$

$F_b = 22 \text{ ksi}$

$E' = 38,24 \text{ ksi}$

$\frac{K_b}{r_b} = \frac{(1)(32)(12)}{6,14} = 62,5$

$f_a = \frac{(27,75)(10)}{26,5} = 10,5 \text{ ksi}$

$f_b = \frac{0,9(6,14)^2/8(12)}{143} = 2,0 \text{ ksi}$

$\frac{f_a}{F_a} + \frac{C_m f_b}{(1 - \frac{f_a}{E'}) F_b} \leq 1,0$

$\frac{10,5}{12,49} + \frac{2,0}{(1 - \frac{10,5}{38,24})^{22}} = ,89 + ,13 = ,97$

$\frac{f_a}{16 F_y} + \frac{f_b}{F_b} = \frac{10,5}{22} + \frac{2,0}{23} = 0,5 + ,09 = ,59$

SIZE WALKER

$27,75 \text{ k/ft} (10)^2 (1,071) = 297,2' \text{ k}$

USE W24x76

COMPUTATION SHEET

PROJECT Braced wall @ EL+2.0	PAGE 1 OF	COMPUTED BY L. Borde, CA	DATE 26 Dec 88
SUBJECT		CHECKED BY	DATE

WALER @ EL+2.0 size waler for $\frac{1}{2} \times 30K/ft = 15K/ft$
 USE SAME SCHEME FOR BRACING AS IN LOWER BRACE @
 EL-13.25,

$$M_{max} = 29150''K \left(\frac{15}{30}\right) = 14575''K$$

$$F_b = 24Ksi$$

USE SR=0.8

$$F_b = \frac{M}{S_{min}} \quad S_{min} = \frac{M}{F_b(0.8)}$$

$$= \frac{145.75''K}{24(.8)}$$

$$= 759 in^3$$

USE W36X230 $S_{xx} = 837 in^3$

SIZE STRUTS IN SHORT DIRECTION:

$$963 kips \left(\frac{1}{2}\right) = 481.5 kips$$

$$l_{xx} = 72'$$

$$l_{yy} = 25'$$

Try W14X193

$$r_{xx} = 6.5$$

$$r_{yy} = 4.05$$

$$f_a = \frac{481.5K}{56.8 in^2} = 8.48 Ksi \quad \frac{Kl}{r} = 129$$

$$\frac{Kl_{xx}}{r_{xx}} = \frac{72(12)}{6.5} = 132.9 > 129 \text{ NG}$$

$$\frac{Kl_{yy}}{r_{yy}} = \frac{25(12)}{4.05} = 74$$

∴ use W14X211

STRUT LOAD IN LONG DIRECTION

$$756K \left(\frac{1}{2}\right) = 378 kips$$

$$f_a = \frac{378K}{62 in^2} = 6.1 Ksi$$

Try W14X211

$$l_{xx} = 95'$$

$$l_{yy} = 28'$$

$$\frac{Kl_{xx}}{r_{xx}} = \frac{95(12)}{6.55} = 174$$

$$\frac{Kl_{yy}}{r_{yy}} = \frac{28(12)}{4.05} = 82.6$$

USE W14X257

COMPUTATION SHEET

PROJECT	Cofferdam, 12th Canal GDM	PAGE	OF	COMPUTED BY	LABORDE, CA	DATE	2/1/88
SUBJECT	Strut Design	CHECKED BY		DATE			

SIZE STRUTS

STRUT LOAD IN SHORT DIRECTION → 963 kips

$$l_{xx} = 72'$$

$$l_{yy} = 25'$$

Try W14x283 $f_a = \frac{963k}{83.3 in^2} = 11.56 ksi$

$$\frac{Kl}{r} = 110$$

$$\frac{Kl_{xx}}{r_{xx}} = \frac{(1)(72)(12)}{6.79} = 127.2 \text{ NG}$$

$$\frac{Kl_{yy}}{r_{yy}} = \frac{25(12)}{4.17} = 71.94 \text{ OK}$$

Try W14x342

$f_a = \frac{963}{101} = 9.53 ksi$ $\frac{Kl}{r} = 125$

$$\frac{Kl_{xx}}{r_{xx}} = \frac{(1)(72)(12)}{6.98} = 123.8 < 125 \text{ OK}$$

STRUT LOAD IN LONG DIRECTION

proportion load → $963k \left(\frac{80}{102}\right) = 756 \text{ kips}$

$$l_{xx} = 95'$$

$$l_{yy} = 28'$$

Try W14x342 $f_a = \frac{756k}{101 in^2} = 7.49 ksi$ $\frac{Kl}{r} = 141$

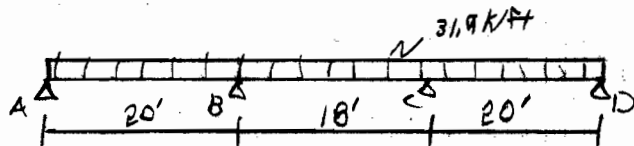
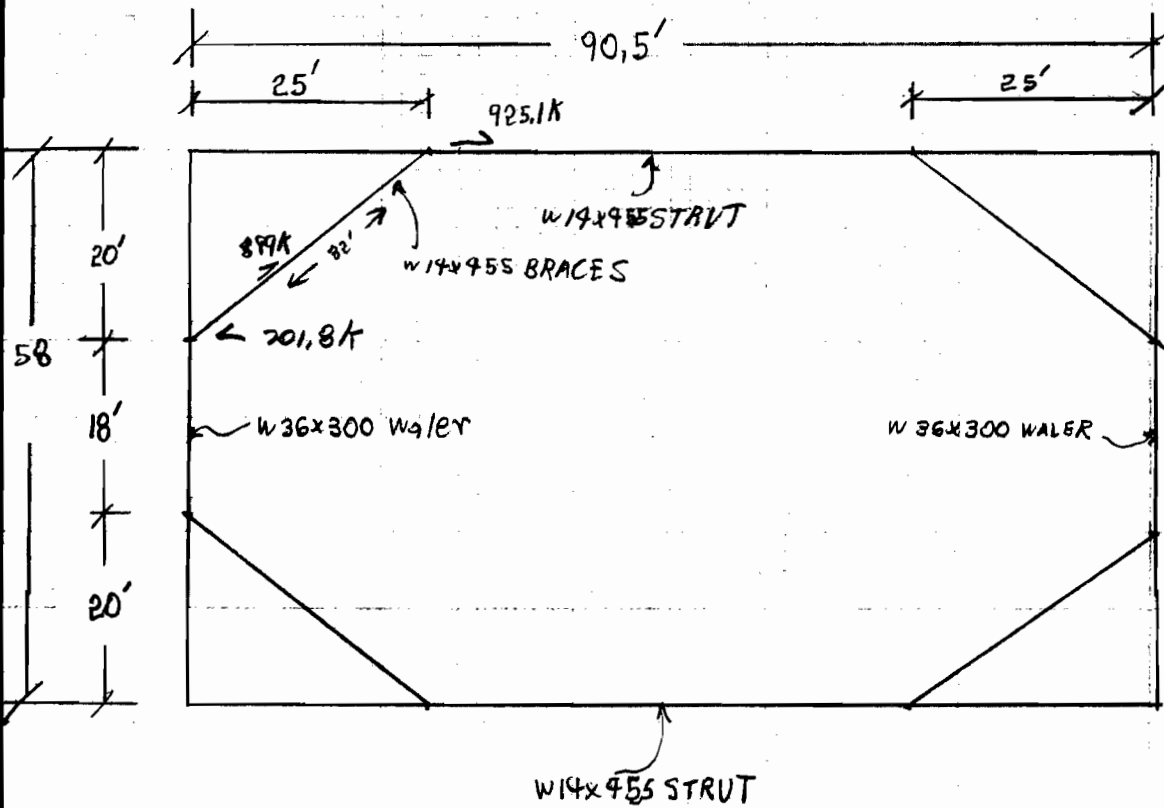
$$\frac{Kl_{xx}}{r_{xx}} = \frac{(1)(95)(12)}{6.98} = 163.3$$

$$\frac{Kl_{yy}}{r_{yy}} = \frac{(1)(28)(12)}{4.24} = 79.2$$

USE W14x465

COMPUTATION SHEET

PROJECT	17th St Canal GDM	PAGE	OF	COMPUTED BY	LABORDE, CA	DATE	28/1/88
SUBJECT	Phase III Cofferdam	CHECKED BY				DATE	



$$M_{max} = 0.1 w l^2 = 0.1 (31.9 \text{ K/ft}) (20)^2 = 1276 \text{ K}'$$

for W36x300 $f_b = \frac{1276 \text{ K}'(12)}{1110 \text{ in}^3} = 13.8 \text{ KSI} < 22 \text{ KSI}$

$$R_B = 1.1 w l = 1.1 (31.9)(20) = 701.8 \text{ kips}$$

SIZE STRUT: W14x455

$$\frac{K l_{xx}}{r_{xx}} = \frac{90.5(12)}{7.33} = 148.2 \rightarrow f_b = 6.82 \text{ KSI}$$

$$f_b = \frac{925.1 \text{ K}}{134} = 6.90 \text{ KSI} \approx 6.82 \text{ OK}$$

$$\frac{K l_{yy}}{r_{yy}} = \frac{40.5(12)}{4.69} = 103.6 \text{ OK}$$

DISPOSITION FORM

For use of this form, see AR 340-15; the proponent agency is TAGO.

TRENCH OR OFFICE SYMBOL

CELNN-ED-FS

SUBJECT

GDM Design, 17th Street Outfall Canal Control Structure, Lake Pontchartrain LA & Vic Hurricane Protection Project, HLP, Orleans/Jefferson Parish, LA

TO C/Des Br

FROM C/F&M Br

DATE 12 Aug 87

CMT1

Mr. Vojkovich/rww/1034

FV JR

1. Reference LMNED-DD DF dated 26 May 87 subject as above.
2. Furnished are sections (enclosures 1 thru 6) for the valve structure excavation for the 17th Street Outfall Canal GDM.
3. A SWL of 9.0 NGVD was used for the temporary flood protection while a SWL of 5.0 NGVD was used for the excavation flood protection. The SWL elevations were based on Orleans Ave. Outfall Canal GDM and other Lake Pontchartrain projects. Hydraulics should verify these elevations.
4. A sketch of the phase 1 and phase 2 excavation plan is shown in encl. 7.
5. Pressure diagrams, enclosures 8 thru 10, are furnished for the braced cofferdam.
6. Pile capacity and subgrade modulus curves, enclosure 11, for steel 14X73 piles are furnished for the sheetpile anchor piles.
7. The tip of the sheetpile cutoff beneath the valve structure should be EL - 35.0 NGVD.
8. The stability of the tie-in walls will be furnished in the future.

11 Encls.
as

RODNEY P. PICCIOLA
Chief, Foundations and Materials Branch

CF: Des Svcs Br

DISPOSITION FORM

For use of this form, see AR 340-15; the proponent agency is TAGO.

REFERENCE OR OFFICE SYMBOL

CELMN-ED-FS

SUBJECT

GDM Design, 17th Street Outfall Canal Control Structure, Lake Pontchartrain LA & Vic Hurricane Protection Project, HLP, Orleans/Jefferson Parish, LA

TO C/Des Br

FROM C/F&M Br

DATE 18 Aug 87

CMT1

Mr. Vojkovich/rww/1034

FV JR

1. Reference LMNED-DD DF dated 26 May 87 subject as above.
2. Furnished are sections (enclosures 1 thru 6) for the valve structure excavation for the 17th Street Outfall Canal GDM.
3. A SWL of 9.0 NGVD was used for the temporary flood protection while a SWL of 5.0 NGVD was used for the excavation flood protection. The SWL elevations were based on Orleans Ave. Outfall Canal GDM and other Lake Pontchartrain projects. Hydraulics should verify these elevations.
4. A sketch of the phase 1 and phase 2 excavation plan is shown in encl. 7.
5. Pressure diagrams, enclosures 8 thru 10, are furnished for the braced cofferdam.
6. Pile capacity and subgrade modulus curves, enclosure 11, for steel 14X73 H piles are furnished for the sheetpile anchor piles.
7. The tip of the sheetpile cutoff beneath the valve structure should be EL - 35.0 NGVD.
8. The stability of the tie-in walls will be furnished in the future.

11 Encls
as


RODNEY P. PICCIOLA
Chief, Foundations and Materials Branch

IDT

CF: Des Svcs Br
ED-SP w/o ENCL.

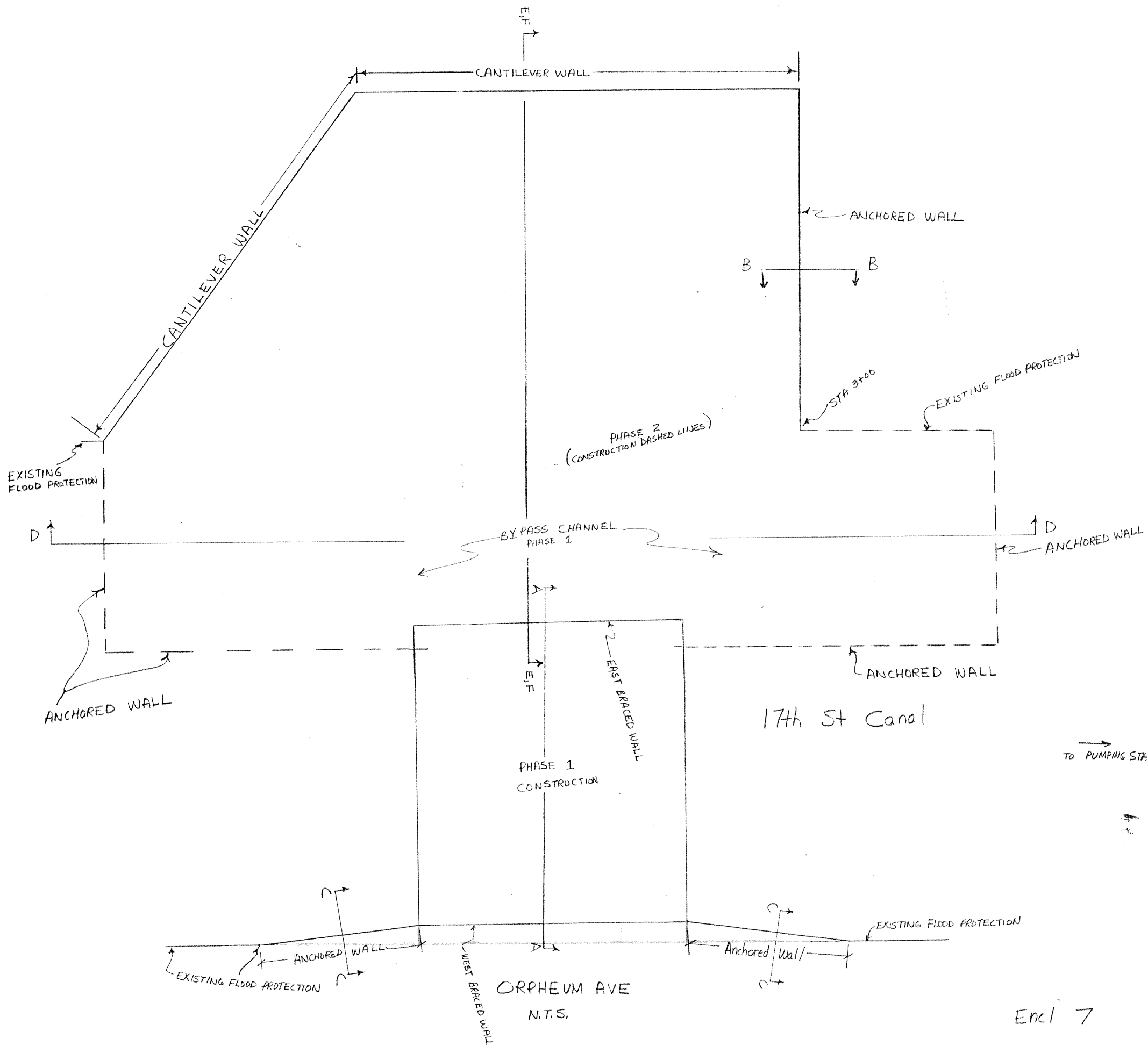
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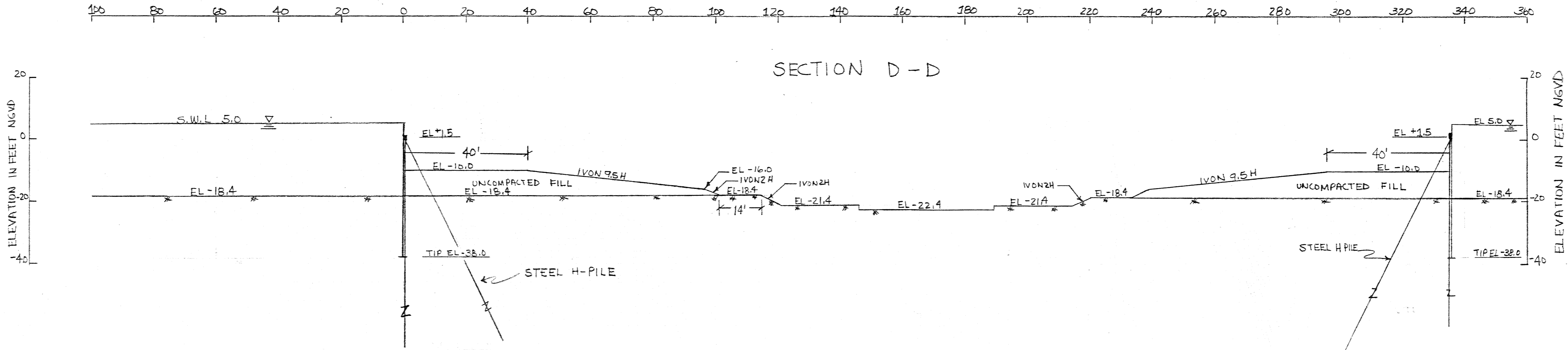
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PLSD

HAMMOND HIGHWAY BRIDGE



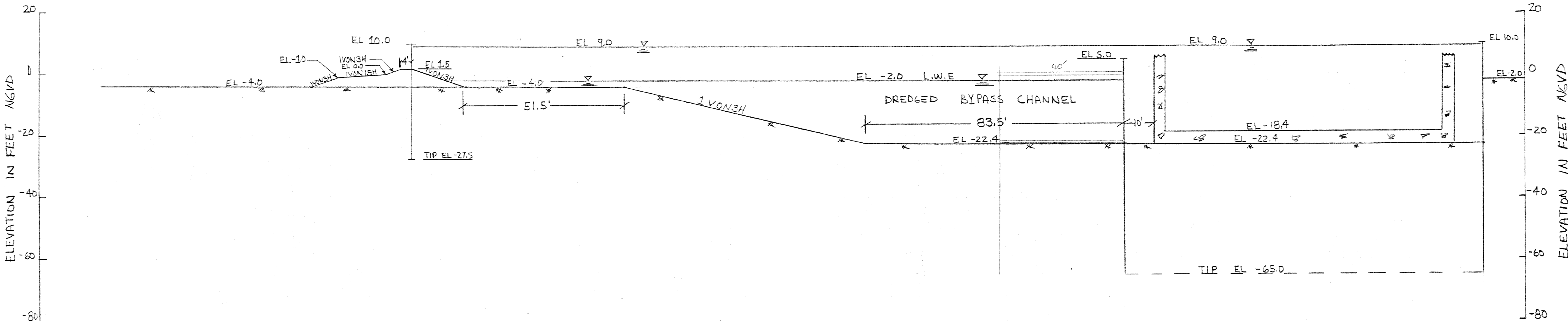


Anchor Force = 7350# for F.S. = 1.0
 Q File : QBW1A for F.S. = 1.0

17th St Outfall Canal GDM
 EXCAVATION PHASE 2
 VALVE STRUCTURE
 BRACED WALL STABILITY
 LMNED-FS AUG 87
 Encl 3

100 80 60 40 20 0 20 40 60 80 100 120 140 160 180 200 220 240 260 280 300 320 340 360

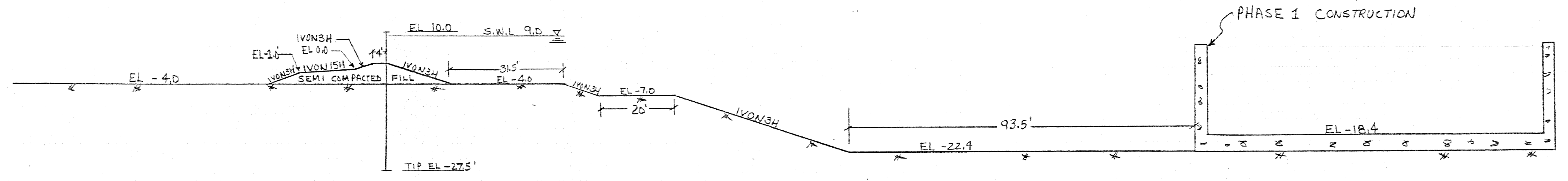
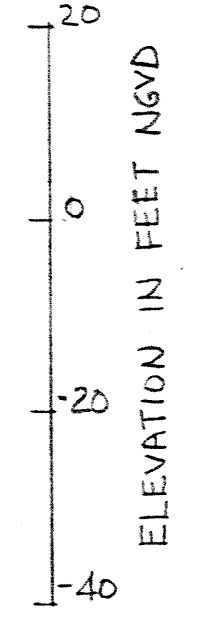
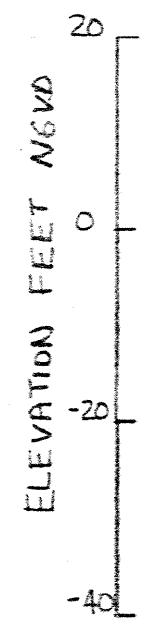
SECTION F-F



17th St Outfall Canal
EXCAVATION PHASE 1
VALVE STRUCTURE
BYPASS CHANNEL STABILITY
LMNED-FS AUGUST 87 End 1



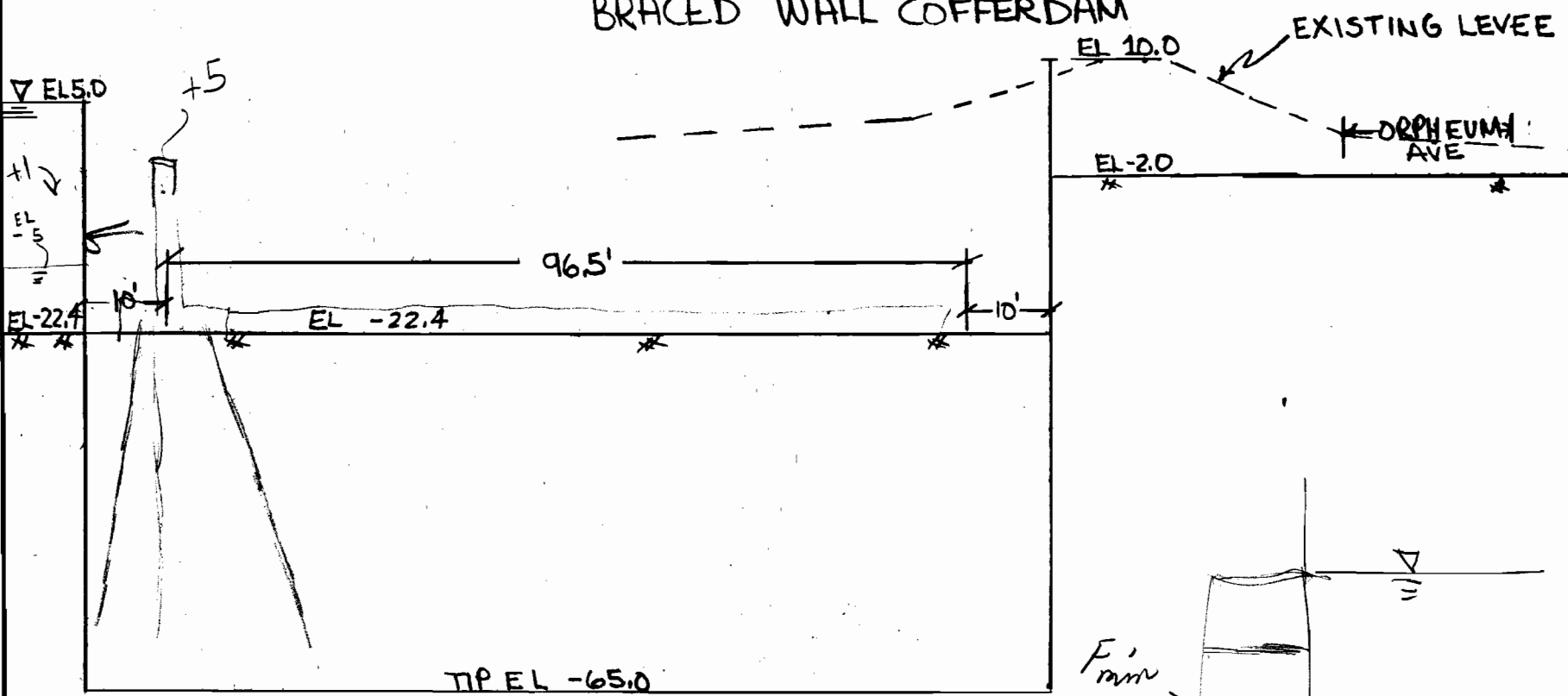
SECTION E-E



17th St Outfall Canal GDM
 EXCAVATION PHASE 2
 VALVE STRUCTURE
 OPEN CUT STABILITY
 LMNED-FS AUGUST 87

PROJECT	17th St Outfall Canal	PAGE	OF	COMPUTED BY	DATE
SUBJECT	BRACED WALL COFFERDAM			FJV	8/87
		CHECKED BY			
		DATE			

17th St Outfall Canal
BRACED WALL COFFERDAM



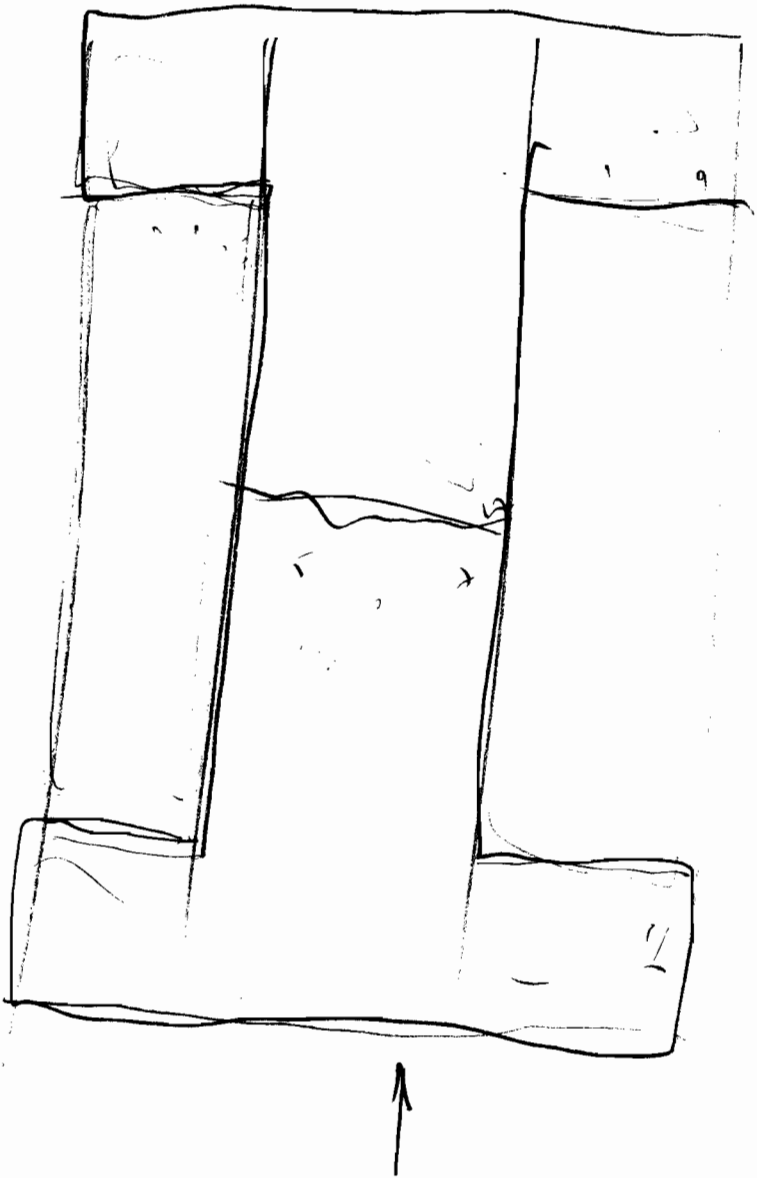
SECTION A-A

LMV FORM 107e
MAR 82

PREVIOUS EDITIONS MAY BE USED

(FOR USE WITH 10 x 10 GRID)

Encl 6

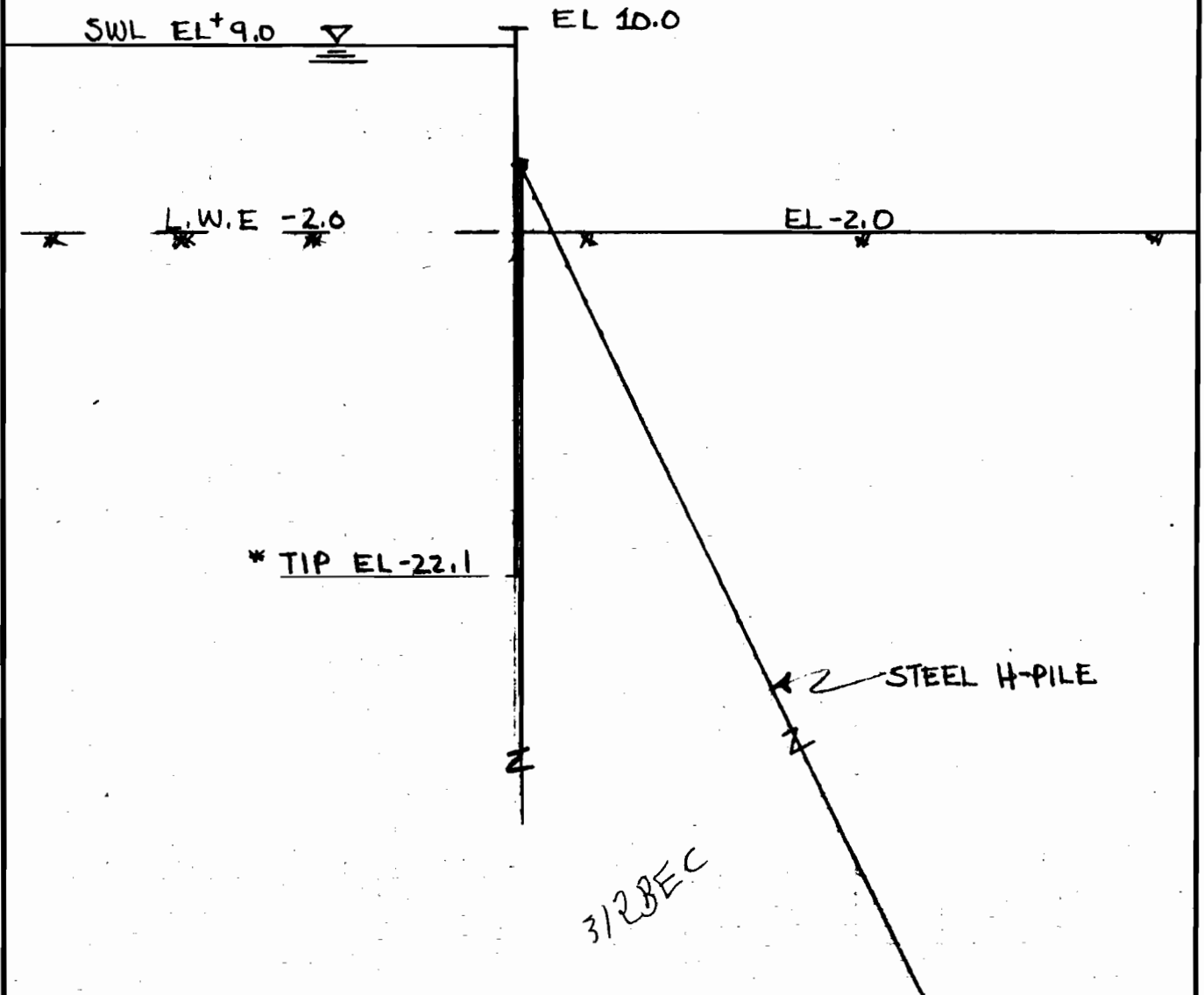


COMPUTATION SHEET

PROJECT	17th St Outfall Canal	PAGE	OF	COMPUTED BY	DATE
SUBJECT	Anchored Wall Phase 1 Construction			FSV	8/87
				CHECKED BY	DATE

VALVE STRUCTURE EXCAVATION

SECTION C-C



* ANCHOR FORCE = 3750 * F.S. = 1.0

Q FILE : QBW 1C F.S. = 1.0

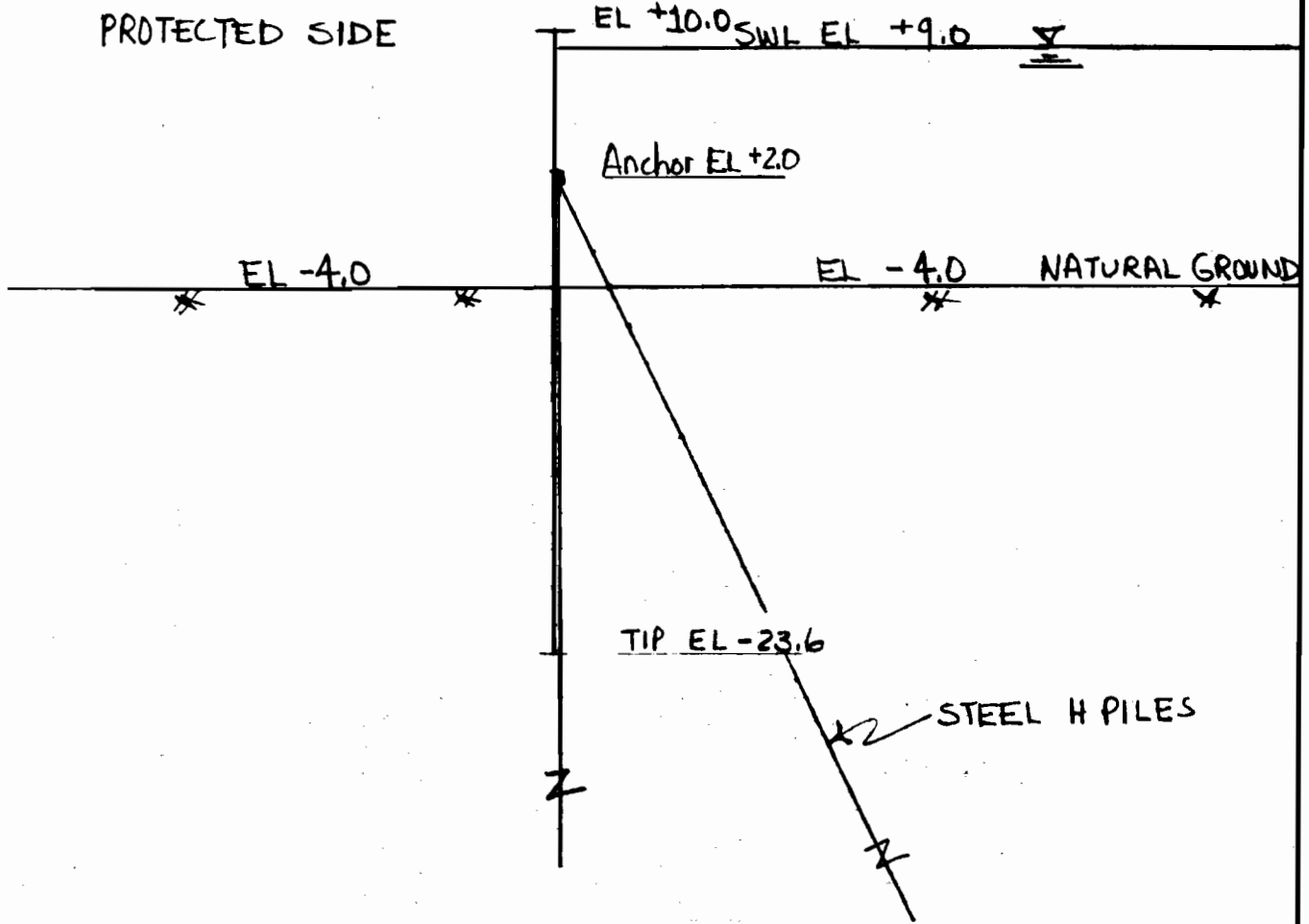
* Based on dredged section on flood side of wall.

COMPUTATION SHEET

PROJECT	17th St Outfall Canal	PAGE	OF	COMPUTED BY	FJV	DATE	8/87
SUBJECT	ANCHORED WALL PHASE 2 Construction			CHECKED BY		DATE	

VALVE STRUCTURE EXCAVATION

SECTION B-B



Anchor Force = 5120# F.S. = 1.0

Q File & QBW1B F.S. = 1.0

ELISSST Q08DUH188
1 10001 '17TH ST CANAL
2 10002 'EXCAVATION

3 10003	3	0.90000000E+01	0.00000000E+01
4 10004	3	0.80000000E+01	0.62500000E+02
5 10005	3	0.70000000E+01	0.12500000E+03
6 10006	3	0.60000000E+01	0.18750000E+03
7 10007	3	0.50000000E+01	0.25000000E+03
8 10008	3	0.40000000E+01	0.31250000E+03
9 10009	3	0.30000000E+01	0.37500000E+03
10 10010	3	0.20000000E+01	0.43750000E+03
11 10011	3	0.20000000E+01	0.43750000E+03
12 10013	3	0.10000000E+01	0.50000000E+03
13 10014	3	0.00000000E+01	0.56250000E+03
14 10015	3	-0.10000000E+01	0.62500000E+03
15 10016	3	-0.20000000E+01	0.68750000E+03
16 10017	3	-0.30000000E+01	0.75000000E+03
17 10018	3	-0.40000000E+01	0.81250000E+03
18 10019	3	-0.40000000E+01	0.25250000E+03
19 10020	3	-0.50000000E+01	0.21200000E+03
20 10021	3	-0.60000000E+01	0.17150000E+03
21 10022	3	-0.70000000E+01	0.13100000E+03
22 10023	3	-0.80000000E+01	0.90500000E+02
23 10024	3	-0.90000000E+01	0.50000000E+02
24 10025	3	-0.10000000E+02	0.95000000E+01
25 10026	3	-0.10230000E+02	0.00000000E+01
26 10027	3	-0.10500000E+02	-0.10750000E+02
27 10028	3	-0.10500000E+02	-0.10750000E+02
28 10029	3	-0.11500000E+02	-0.71250000E+02
29 10030	3	-0.12500000E+02	-0.13175000E+03
30 10031	3	-0.13500000E+02	-0.19225000E+03
31 10032	3	-0.14500000E+02	-0.25275000E+03
32 10033	3	-0.15500000E+02	-0.31325000E+03
33 10034	3	-0.15910000E+02	-0.33798000E+03
34 10035	4	-0.15910000E+02	0.00000000E+01
35 10036	0	-0.15910000E+02	0.00000000E+01
36 10037	0	-0.15910000E+02	0.59714900E+01

EOF..
EOT..

← ~~STANDARD~~ STANDARD PRESS. DIAGRAM
W/TIE BACK @ EL+20

BEAMS (SHEAR, MOMENT, DEFLECTION)

'17TH ST CANAL
XCA

-6.00	CONTN LD	171.50 LBF/SQ FT
-7.00	CONTN LD	131.00 LBF/SQ FT
-8.00	CONTN LD	90.50 LBF/SQ FT
-9.00	CONTN LD	50.00 LBF/SQ FT
-10.00	CONTN LD	9.50 LBF/SQ FT
-10.23	CONTN LD	0.00 LBF/SQ FT
-10.50	CONTN LD	-10.75 LBF/SQ FT

LIST MORE?

THE REFERENCE SYSTEM SELECTED DEFINES POSITIVE FORCES AS TO THE LEFT
INCREASING MEMBER COORDINATES AS UPWARD, AND POSITIVE MOMENTS
AS COUNTERCLOCKWISE.

-10.50	CONTN LD	-10.75 LBF/SQ FT
-11.50	CONTN LD	-71.25 LBF/SQ FT
-12.50	CONTN LD	-131.75 LBF/SQ FT
-13.50	CONTN LD	-192.25 LBF/SQ FT
-14.50	CONTN LD	-252.75 LBF/SQ FT
-15.50	CONTN LD	-313.25 LBF/SQ FT
-15.91	CONTN LD	-337.98 LBF/SQ FT
-15.91	CONTN LD	0.00 LBF/SQ FT

THE MAXIMUM DEFLECTION IS -0.34 INCHES AND OCCURS AT MEMBER COORDINATE
10.00 FT.

Z-27 HAS BEEN GIVEN TO SUPPORT THE LOAD SYSTEM.

Z-27 PROPERTIES ARE AS FOLLOWS.

THE WEIGHT OF THIS VERTICAL MEMBER HAS BEEN NEGLECTED.
LIST MORE?
YY

MOMENT OF INERTIA= 184.20 IN. TO THE 4TH PER FOOT OF WALL
CROSS SECTIONAL AREA= 7.94 SQ IN.
ELASTIC MODULUS= 29000000. LBF/SQ IN.
DEFLECTION REFERENCE IS AT -24.000

CALCULATED EXTERNAL LOADS

DISTANCE FROM REFERENCE(FT)	TYPE OF LOAD	MAGNITUDE OF LOAD
-15.91	POINT LD	0.11 LBF
2.00	POINT LD	-5123.50 LBF

THE MAXIMUM BENDING MOMENT IS -7870.94 LBF-FT AND OCCURS AT
T -3.80
LIST MORE?

INPUTTED LOADS

DISTANCE FROM REFERENCE(FT)	TYPE OF LOAD	MAGNITUDE OF LOAD
9.00	CONTN LD	0.00 LBF/SQ FT
8.00	CONTN LD	62.50 LBF/SQ FT
7.00	CONTN LD	125.00 LBF/SQ FT
6.00	CONTN LD	187.50 LBF/SQ FT

LIST MORE?
YY

5.00	CONTN LD	250.00 LBF/SQ FT
4.00	CONTN LD	312.50 LBF/SQ FT
3.00	CONTN LD	375.00 LBF/SQ FT
2.00	CONTN LD	437.50 LBF/SQ FT
2.00	CONTN LD	437.50 LBF/SQ FT
1.00	CONTN LD	500.00 LBF/SQ FT
0.00	CONTN LD	562.50 LBF/SQ FT
-1.00	CONTN LD	625.00 LBF/SQ FT
-2.00	CONTN LD	687.50 LBF/SQ FT
-3.00	CONTN LD	750.00 LBF/SQ FT
-4.00	CONTN LD	812.50 LBF/SQ FT
-4.00	CONTN LD	252.50 LBF/SQ FT
-5.00	CONTN LD	212.00 LBF/SQ FT

YY WHICH HAS THE SHEAR FORCE OF -5.04 LBF.

EOT.
LIST MORE?
DEFLECTION FROM TANG. THRU DEFL REFERENCE (INCHES)
DEFL. FROM A PARALLEL TO THE UNDEFORMED AXIS & THRU DEFL REF NOTE SIGN (IN.)

DISTANCE (FEET)	SHEAR FOR (LBF)	SHEAR STR (LBF/SQIN)	BENDING MOM (LBF-FT)	DEFLECTION FROM TANG. THRU DEFL REFERENCE (INCHES)	DEFL. FROM A PARALLEL TO THE UNDEFORMED AXIS & THRU DEFL REF NOTE SIGN (IN.)
10.000	0.00	0.00	0.00	-0.3440	-0.0079
9.999	0.00	0.00	0.00	-0.3440	-0.0079
9.000	0.00	0.00	0.00	-0.3235	0.0027
8.000	31.25	3.94	10.42	-0.3030	0.0133
7.000	125.00	15.74	83.33	-0.2825	0.0239
6.000	281.25	35.42	281.25	-0.2619	0.0346
5.000	500.00	62.97	666.67	-0.2413	0.0454
4.000	781.25	98.39	1302.08	-0.2204	0.0563
3.000	1125.00	141.69	2250.00	-0.1991	0.0678
2.000	-3592.25	-452.42	3572.92	-0.1770	0.0800
1.000	-3123.50	-393.39	209.84	-0.1541	0.0930
0.000	-2592.25	-326.48	-2653.25	-0.1310	0.1062
LIST MORE?					
YY					
-1.000	-1998.50	-251.70	-4953.83	-0.1088	0.1186
-2.000	-1342.25	-169.05	-6629.41	-0.0881	0.1293
-3.000	-623.50	-78.53	-7617.49	-0.0695	0.1380
-3.798	-5.04	-0.63	-7870.94	-0.0565	0.1432
-4.000	157.75	19.87	-7855.57	-0.0534	0.1443
-5.000	390.00	49.12	-7578.32	-0.0398	0.1480
-6.000	581.75	73.27	-7089.06	-0.0286	0.1493
-7.000	733.00	92.32	-6428.31	-0.0197	0.1483
-8.000	843.75	106.27	-5636.56	-0.0129	0.1452
-9.000	914.00	115.11	-4754.31	-0.0079	0.1403
-10.000	943.75	118.86	-3822.05	-0.0045	0.1339
-10.230	944.84	119.00	-3604.82	-0.0039	0.1322
-11.000	930.46	117.19	-2880.75	-0.0023	0.1262
-12.000	859.21	108.21	-1980.88	-0.0010	0.1176
-13.000	727.46	91.62	-1182.51	-0.0003	0.1084
-14.000	535.21	67.41	-546.14	-0.0001	0.0988
-15.000	282.46	35.57	-132.26	0.0000	0.0889
-15.909	0.23	0.03	0.00	0.0000	0.0800
-15.911	0.00	0.00	0.00	0.0000	0.0799
-16.000	0.00	0.00	0.00	0.0000	0.0791
LIST MORE?					
YY					
-17.000	0.00	0.00	0.00	0.0000	0.0692
-18.000	0.00	0.00	0.00	0.0000	0.0593
-19.000	0.00	0.00	0.00	0.0000	0.0494
-20.000	0.00	0.00	0.00	0.0000	0.0395
-21.000	0.00	0.00	0.00	0.0000	0.0297
-22.000	0.00	0.00	0.00	0.0000	0.0198
-23.000	0.00	0.00	0.00	0.0000	0.0099
-23.999	0.00	0.00	0.00	0.0000	0.0000
-24.000	0.00	0.00	0.00	0.0000	0.0000

BRUN COMPLETED

I			
1	10001	'17TH ST CANAL	
2	10002	'EXCAVATION	
3	10003		J 0.90000000E+01 0.00000000E+01
4	10004		J 0.80000000E+01 0.62500000E+02
5	10005		J 0.70000000E+01 0.12500000E+03
6	10006		J 0.60000000E+01 0.18750000E+03
7	10007		J 0.50000000E+01 0.25000000E+03
8	10008		J 0.40000000E+01 0.31250000E+03
9	10009		J 0.30000000E+01 0.37500000E+03
10	10010		J 0.20000000E+01 0.43750000E+03
11	10011		J 0.20000000E+01 0.43750000E+03
12	10012		1 0.20000000E+01 -0.51238455E+04
13	10013		J 0.10000000E+01 0.50000000E+03
14	10014		J 0.00000000E+01 0.56250000E+03
15	10015		J -0.10000000E+01 0.62500000E+03
16	10016		J -0.20000000E+01 0.68750000E+03
17	10017		J -0.30000000E+01 0.75000000E+03
18	10018		J -0.40000000E+01 0.81250000E+03
19	10019		J -0.40000000E+01 0.25250000E+03
20	10020		J -0.50000000E+01 0.21200000E+03
21	10021		J -0.60000000E+01 0.17150000E+03
22	10022		J -0.70000000E+01 0.13100000E+03
23	10023		J -0.80000000E+01 0.90500000E+02
24	10024		J -0.90000000E+01 0.50000000E+02
25	10025		J -0.10000000E+02 0.95000000E+01
26	10026		J -0.10230000E+02 0.00000000E+01
27	10027		J -0.10500000E+02 -0.10750000E+02
28	10028		J -0.10500000E+02 -0.10750000E+02
29	10029		J -0.11500000E+02 -0.71250000E+02
30	10030		J -0.12500000E+02 -0.13175000E+03
31	10031		J -0.13500000E+02 -0.19225000E+03
32	10032		J -0.14500000E+02 -0.25275000E+03
33	10033		J -0.15500000E+02 -0.31325000E+03
34	10034		J -0.15910000E+02 -0.33798000E+03
35	10035		4 -0.15910000E+02 0.00000000E+01
36	10036		0 -0.15910000E+02 0.00000000E+01
37	10037	-0.15910000E+02	0.00000000E+01 0.59714900E+01
EOF..			
EOT..			

← TIE BACK FORCE

BEAMS (SHEAR, MOMENT, DEFLECTION)

17TH ST CANAL
XCA

-5.00	CONTN LD	212.00	LBF/SQ FT
-6.00	CONTN LD	171.50	LBF/SQ FT
-7.00	CONTN LD	131.00	LBF/SQ FT
-8.00	CONTN LD	90.50	LBF/SQ FT
-9.00	CONTN LD	50.00	LBF/SQ FT
-10.00	CONTN LD	9.50	LBF/SQ FT
-10.23	CONTN LD	0.00	LBF/SQ FT

LIST MORE?
THE REFERENCE SYSTEM SELECTED DEFINES POSITIVE FORCES AS TO THE LEFT
INCREASING MEMBER COORDINATES AS UPWARD, AND POSITIVE MOMENTS
AS COUNTERCLOCKWISE.

-10.50	CONTN LD	-10.75	LBF/SQ FT
-10.50	CONTN LD	-10.75	LBF/SQ FT
-11.50	CONTN LD	-71.25	LBF/SQ FT
-12.50	CONTN LD	-131.75	LBF/SQ FT
-13.50	CONTN LD	-192.25	LBF/SQ FT
-14.50	CONTN LD	-252.75	LBF/SQ FT
-15.50	CONTN LD	-313.25	LBF/SQ FT
-15.91	CONTN LD	-337.98	LBF/SQ FT
-15.91	CONTN LD	0.00	LBF/SQ FT

THE MAXIMUM DEFLECTION IS -0.34 INCHES AND OCCURS AT MEMBER COORDINATE
10.00 FT.

Z-27 HAS BEEN GIVEN TO SUPPORT THE LOAD SYSTEM.

THE WEIGHT OF THIS VERTICAL MEMBER HAS BEEN NEGLECTED.
LIST MORE?
YY

CALCULATED EXTERNAL LOADS

DISTANCE FROM REFERENCE(FT)	TYPE OF LOAD	MAGNITUDE OF LOAD
-15.91	POINT LD	0.46 LBF
-15.91	COUPLE	6.23 LBF-FT

INPUTTED LOADS

DISTANCE FROM REFERENCE(FT)	TYPE OF LOAD	MAGNITUDE OF LOAD
9.00	CONTN LD	0.00 LBF/SQ FT
8.00	CONTN LD	62.50 LBF/SQ FT
7.00	CONTN LD	125.00 LBF/SQ FT
6.00	CONTN LD	187.50 LBF/SQ FT
LIST MORE?		
YY		
5.00	CONTN LD	250.00 LBF/SQ FT
4.00	CONTN LD	312.50 LBF/SQ FT
3.00	CONTN LD	375.00 LBF/SQ FT
2.00	CONTN LD	437.50 LBF/SQ FT
2.00	CONTN LD	437.50 LBF/SQ FT
2.00	POINT LD	-5123.85 LBF
1.00	CONTN LD	500.00 LBF/SQ FT
0.00	CONTN LD	562.50 LBF/SQ FT
-1.00	CONTN LD	625.00 LBF/SQ FT
-2.00	CONTN LD	687.50 LBF/SQ FT
-3.00	CONTN LD	750.00 LBF/SQ FT
-4.00	CONTN LD	812.50 LBF/SQ FT
-4.00	CONTN LD	852.50 LBF/SQ FT

Z-27 PROPERTIES ARE AS FOLLOWS.

MOMENT OF INERTIA= 184.20 IN. TO THE 4TH PER FOOT OF WALL
CROSS SECTIONAL AREA= 7.94 SQ IN.
ELASTIC MODULUS= 29000000. LBF/SQ IN.
DEFLECTION REFERENCE IS AT -24.000

LIST MORE?
YY

THE MAXIMUM BENDING MOMENT IS -7872.96 LBF-FT AND OCCURS AT
-3.80
WHICH HAS THE SHEAR FORCE OF -5.03 LBF.

DISTANCE (FEET)	SHEAR FOR (LBF)	SHEAR STR (LBF/SQIN)	BENDING MOM (LBF-FT)	DEFLECTION THRU DEFLE REFERENCE (INCHES)
10.000	0.0	0.0	0.0	-0.3443
9.999	0.0	0.0	0.0	-0.3443
9.000	0.0	0.0	0.0	-0.3237
8.000	31.3	3.9	10.4	-0.3032
7.000	125.0	15.7	83.3	-0.2827
6.000	281.3	35.4	281.2	-0.2621
5.000	500.0	63.0	666.7	-0.2415
4.000	781.2	98.4	1302.1	-0.2206
3.000	1185.0	141.7	2250.0	-0.1992
2.001	1530.8	192.8	3571.4	-0.1772
1.999	-3592.2	-452.4	3569.3	-0.1772
1.000	-3123.8	-393.4	209.5	-0.1542
LIST MORE?				

YY				
0.000	-2592.6	-326.6	-2653.9	-0.1311
-1.000	-1998.8	-251.7	-4954.9	-0.1089
-2.000	-1342.6	-169.1	-6630.8	-0.0882
-3.000	-623.8	-78.6	-7619.2	-0.0696
-3.799	-5.0	-0.6	-7873.0	-0.0565
-4.000	157.4	19.8	-7857.7	-0.0535
-5.000	389.7	49.1	-7580.8	-0.0399
-6.000	581.4	73.2	-7091.8	-0.0287
-7.000	732.7	92.3	-6431.4	-0.0198
-8.000	843.4	106.2	-5640.0	-0.0130
-9.000	913.7	115.1	-4758.1	-0.0080
-10.000	943.4	118.8	-3826.2	-0.0045
-10.229	944.5	119.0	-3610.0	-0.0039
-10.231	944.5	119.0	-3608.1	-0.0039
-11.000	930.1	117.1	-2885.3	-0.0023
-12.000	858.9	108.2	-1985.8	-0.0010
-13.000	727.1	91.6	-1187.7	-0.0003
-14.000	534.9	67.4	-551.7	-0.0001
-15.000	282.1	35.5	-138.2	0.0000
-15.999	-0.1	0.0	-6.2	0.0000

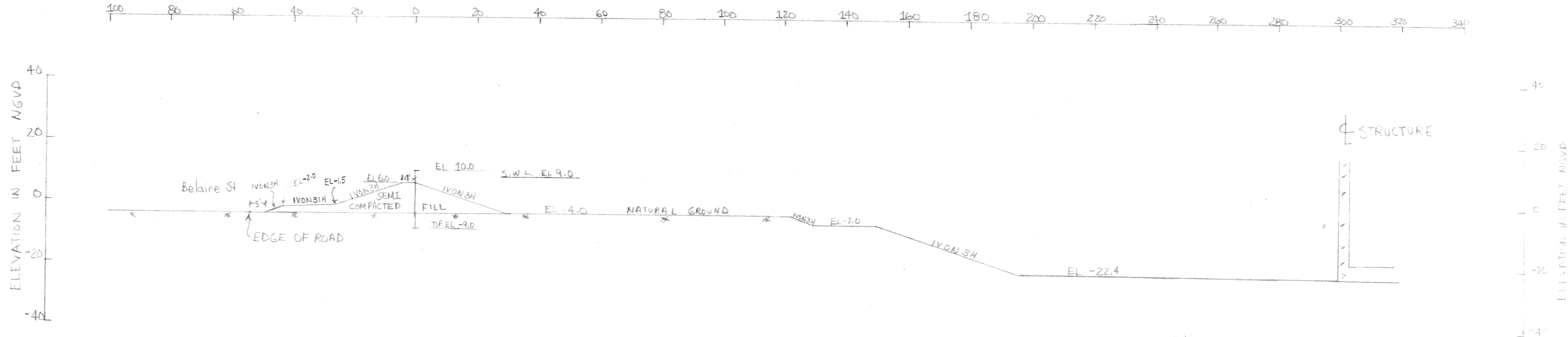
LIST MORE?

YY				
-15.911	0.0	0.0	0.0	0.0000
-16.000	0.0	0.0	0.0	0.0000
-17.000	0.0	0.0	0.0	0.0000
-18.000	0.0	0.0	0.0	0.0000
-19.000	0.0	0.0	0.0	0.0000
-20.000	0.0	0.0	0.0	0.0000
-21.000	0.0	0.0	0.0	0.0000
-22.000	0.0	0.0	0.0	0.0000
-23.000	0.0	0.0	0.0	0.0000
-23.999	0.0	0.0	0.0	0.0000
-24.000	0.0	0.0	0.0	0.0000

RUN COMPLETED

EOT..

LIST MORE?



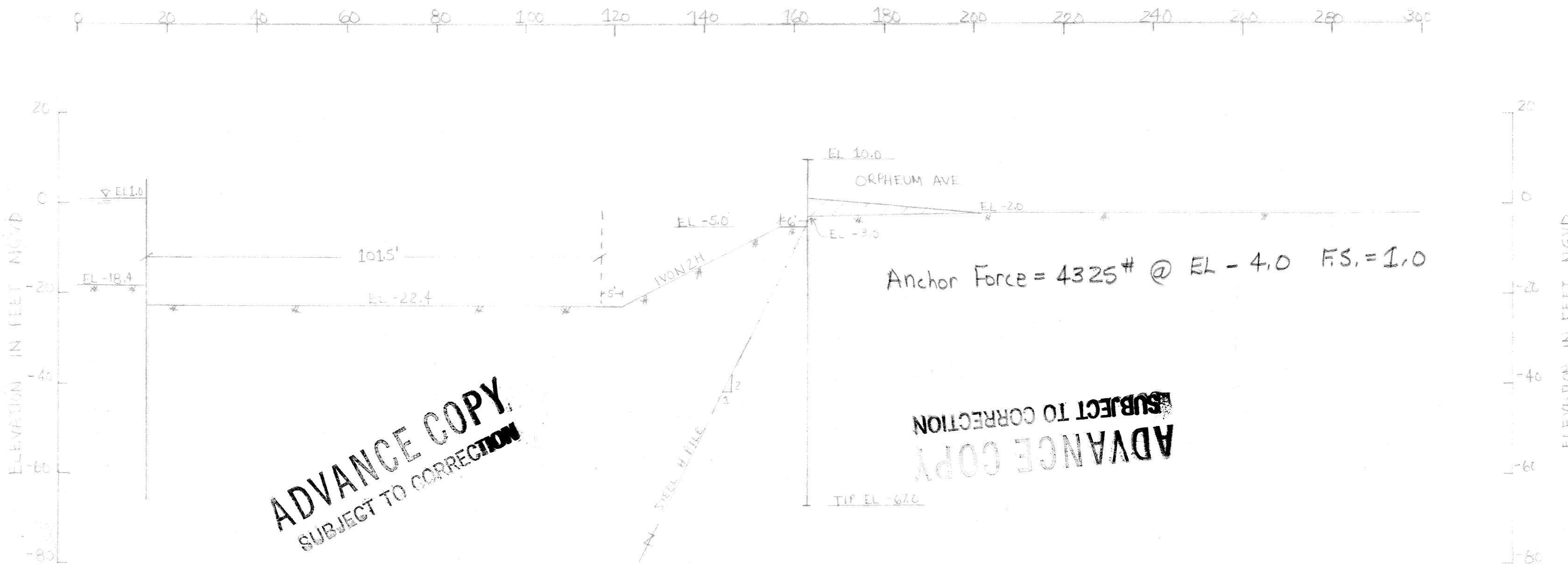
NOTE Section Applies for both PHASE I AND PHASE II CONSTRUCTION
 PHASE I = BYPASS channel (Bottom @ -18.4 or -22.4) L.W.E -2.0
 PHASE II = EXCAVATION DRY HOLE TO EL -22.4

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Received
 8/3/87

17th St Outfall Canal
 Valve Structure
 EXCAVATION

LMNED-FS JULY 87

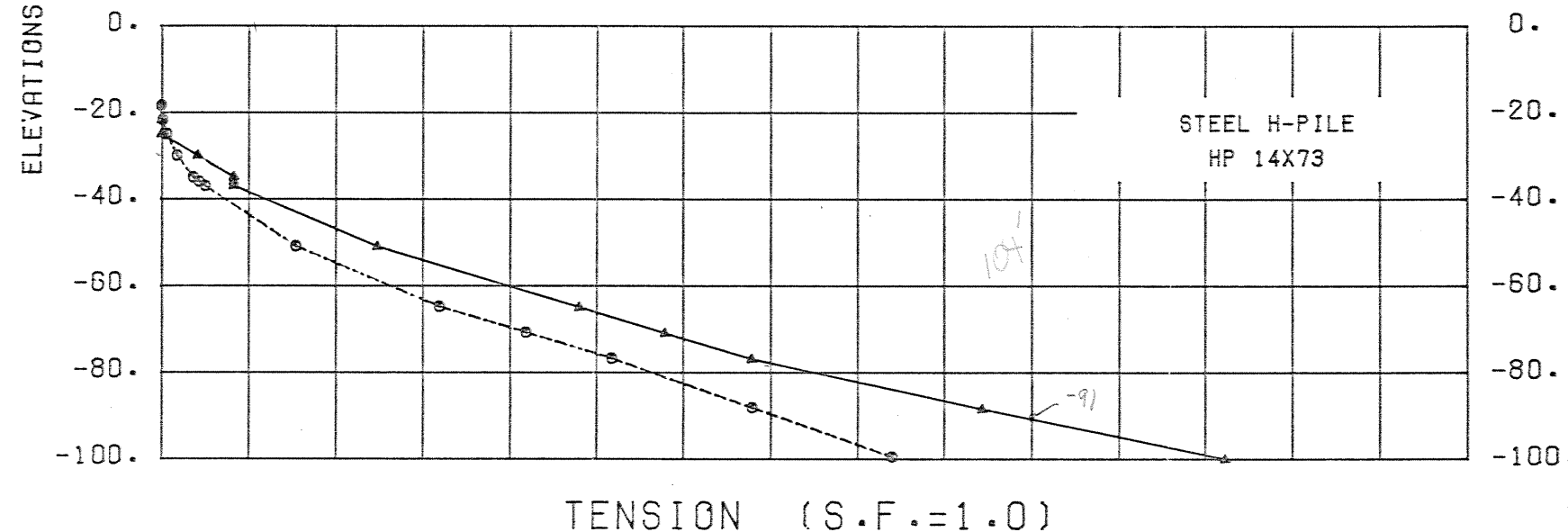
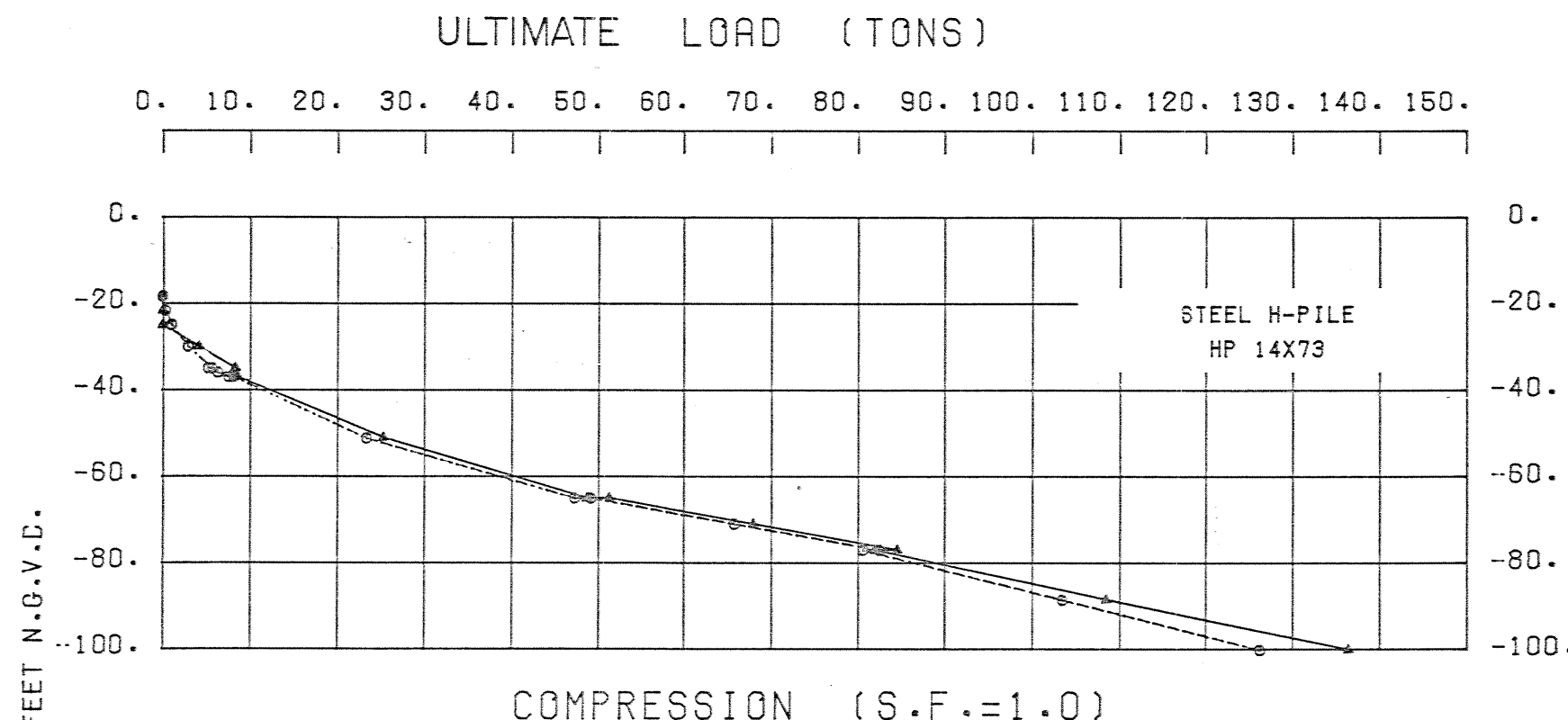
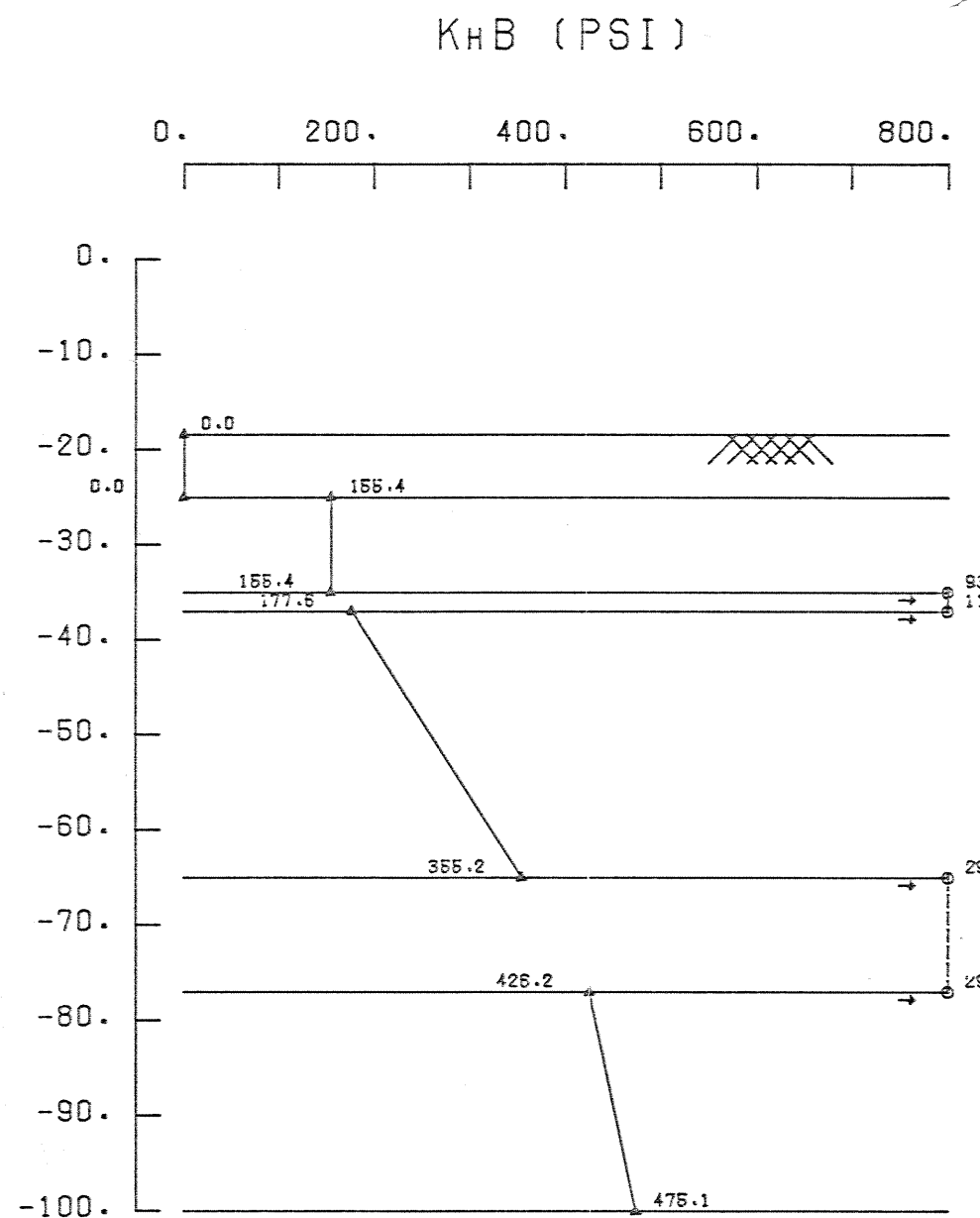
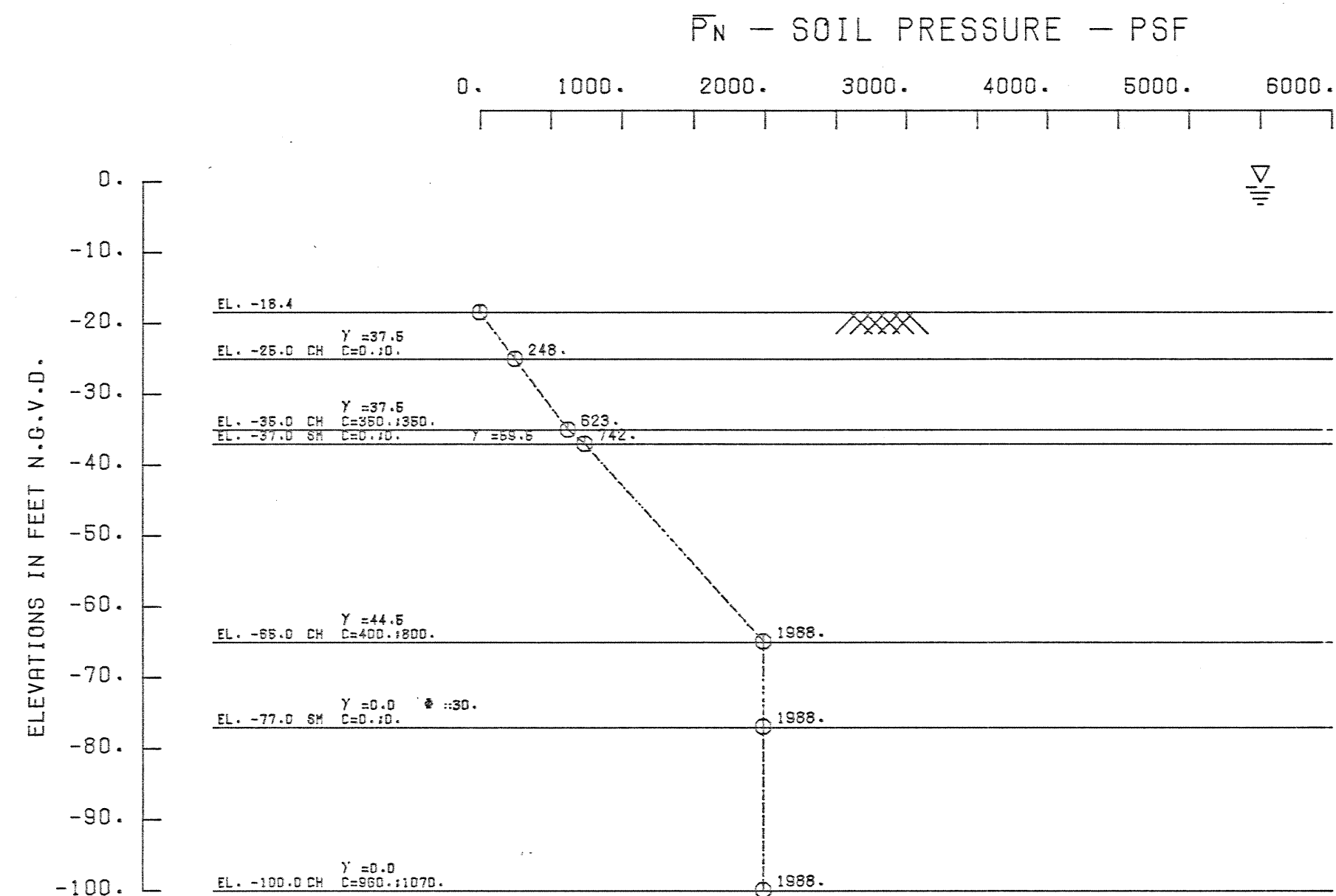


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 SUBJECT TO CORRECTION

17th St Outfall Canal GDM
 VALVE STRUCTURE
 EXCAVATION
 CE-LMN-EL-FS AUGUST 1987

Received
 8/3/87



S-CASE
 CH, CL- $\phi=23^\circ$
 ML- $\phi=30^\circ$
 SM, SP- $\phi=30^\circ, 33^\circ$

TYPICAL SOIL PROFILE

SOIL STRATIFICATION IS BASED ON GEOLOGIC PROFILE
 SHEAR STRENGTH AND WET DENSITIES SEE PLATE

D	PILE SPACING IN DIRECTION OF LOADING
1.00	8B
0.85	7B
0.70	6B
0.55	5B
0.40	4B
0.25	3B
C	LOADING CONDITION
1.00	INITIAL LOADING
0.30	CYCLIC LOADING

NOTES: $K_h = \alpha k_1/B = (0.2222 \alpha u/B)(C)(D)$ COHESIVE
 $\alpha = 0.4$ = Factor of material properties of soil and pile
 k_1 = Modulus of subgrade reaction for test plate (pci)
 B_1 = Width or diameter of test plate (in)
 $k_1 = k_1 B_1 = 80 \alpha u$ (psf) = $0.5556 \alpha u$ (psf)
 $\alpha u = 2 \cdot c$ = Unconfined compressive strength (psf)
 C = Reduction for cyclic loading-not applicable
 D = Group effect reduction factor
 B = Width of pile measured at right angles to the direction of displacement (in)
 $K_h = (n_h)(Z/B)(C)(D)$ COHESIONLESS
 n_h = Coefficient of horizontal subgrade reaction (pci)
 Z = Depth below equivalent ground surface (in)

THE FACTOR SHOWN, (MODULUS OF HORIZONTAL SUBGRADE K_h , TIMES THE PILE WIDTH IN INCHES (B), MEASURED AT RIGHT ANGLES TO THE DIRECTION OF DISPLACEMENT) MUST BE MODIFIED BY A REDUCTION FACTOR FOR THE EFFECT OF GROUP ACTION (D) AND A REDUCTION FACTOR FOR CYCLIC LOADING (C) EX: $K_h = \frac{0.2222 \alpha u (C)(D)}{(B)}$

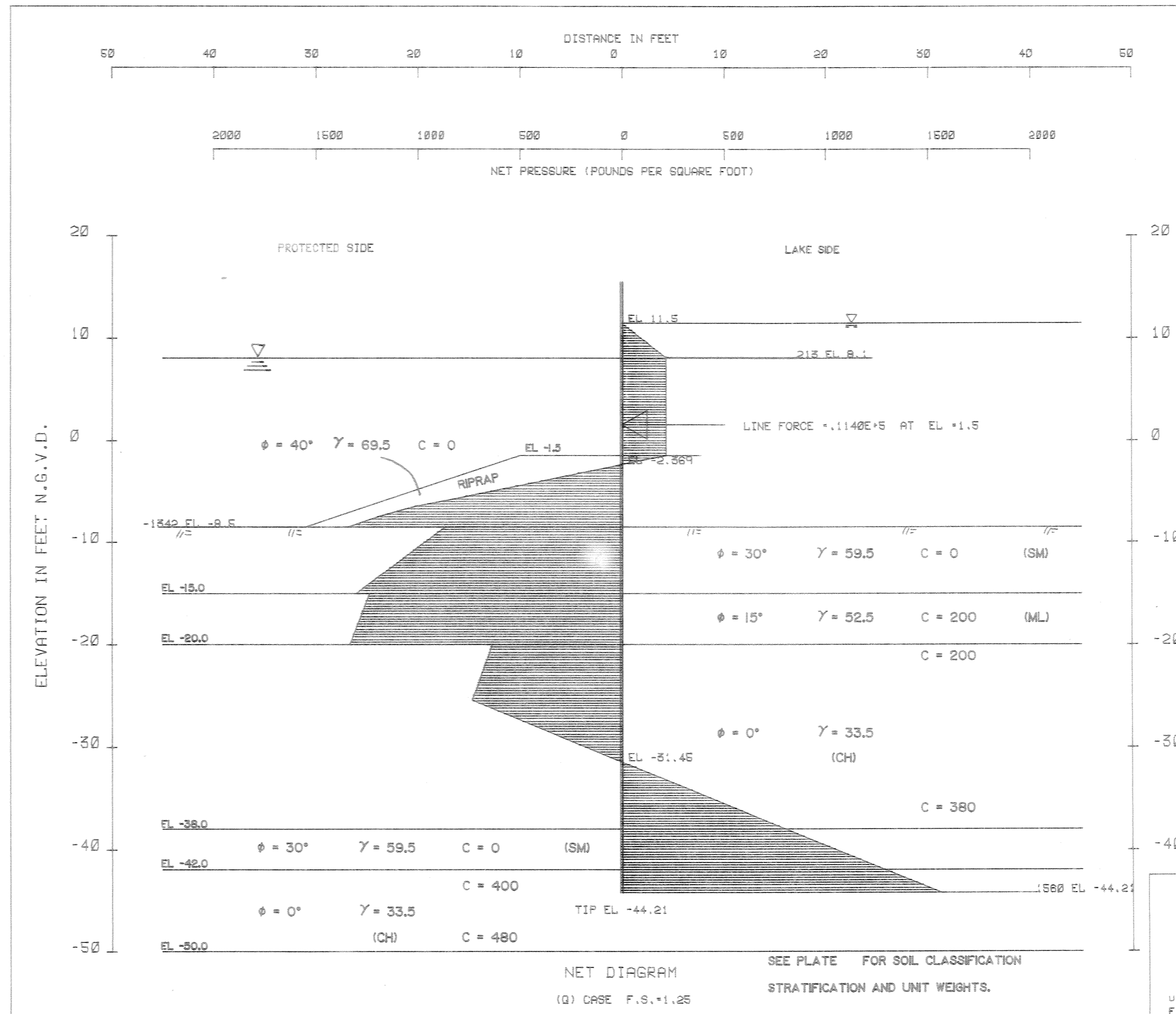
----- S-CASE
 _____ Q-CASE

NOTE: ALLOWABLE CAPACITIES SHOULD BE DETERMINED INCORPORATING F.S.=2.0 WITH PILE TEST OR F.S.=3.0 WITHOUT PILE TEST.

17TH ST OUTFALL CANAL GDM
 VALVE STRUCTURE EXCAVATION
 14X73 STEEL H-PILES
PILE CAPACITY CURVES

U.S. ARMY ENGINEER DISTRICT
 CORPS OF ENGINEERS

NEW ORLEANS
 AUGUST 1987



ELEVATION	PRESSURE
11.50	0.0
8.10	212.5
-1.50	212.5
-2.37	0.0
-6.50	-1010.1
-7.50	-1191.7
-8.50	-1342.2
-8.50	-967.6
-15.00	-1300.8
-15.00	-1235.8
-20.00	-1331.0
-20.00	-636.4
-25.45	-733.1
-31.45	0.0
-44.21	1559.6
-44.21	0.0

I-WALL ANALYSIS

U.S. ARMY ENGINEER DISTRICT NEW ORLEANS
F & M BRANCH