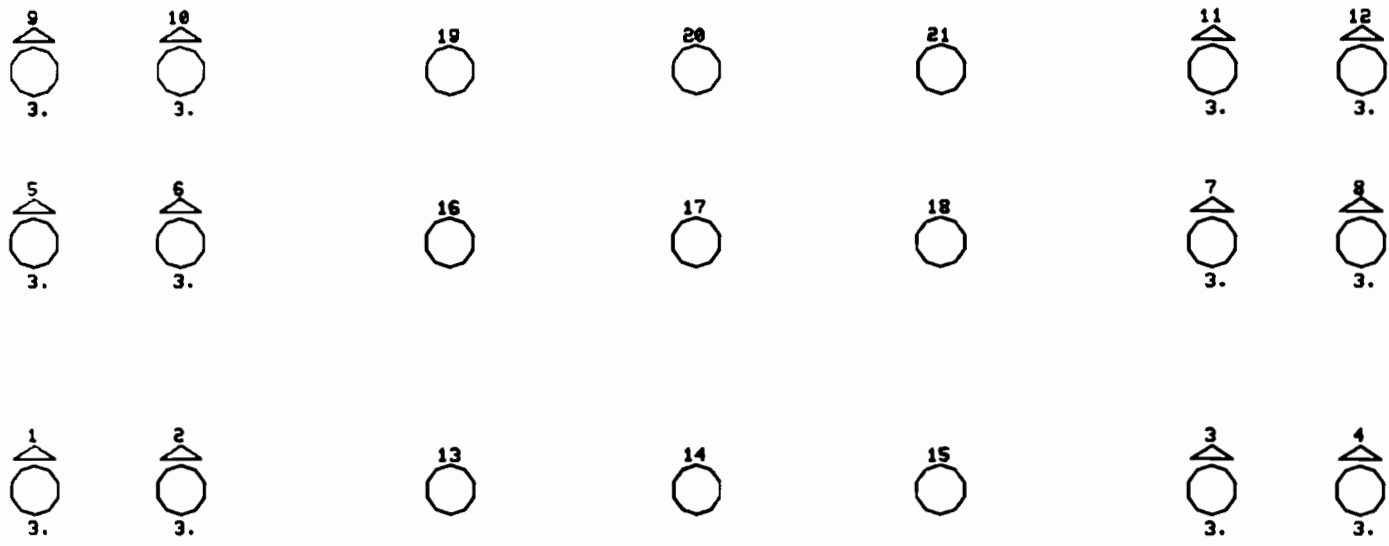


PILE GEOMETRY PLOT

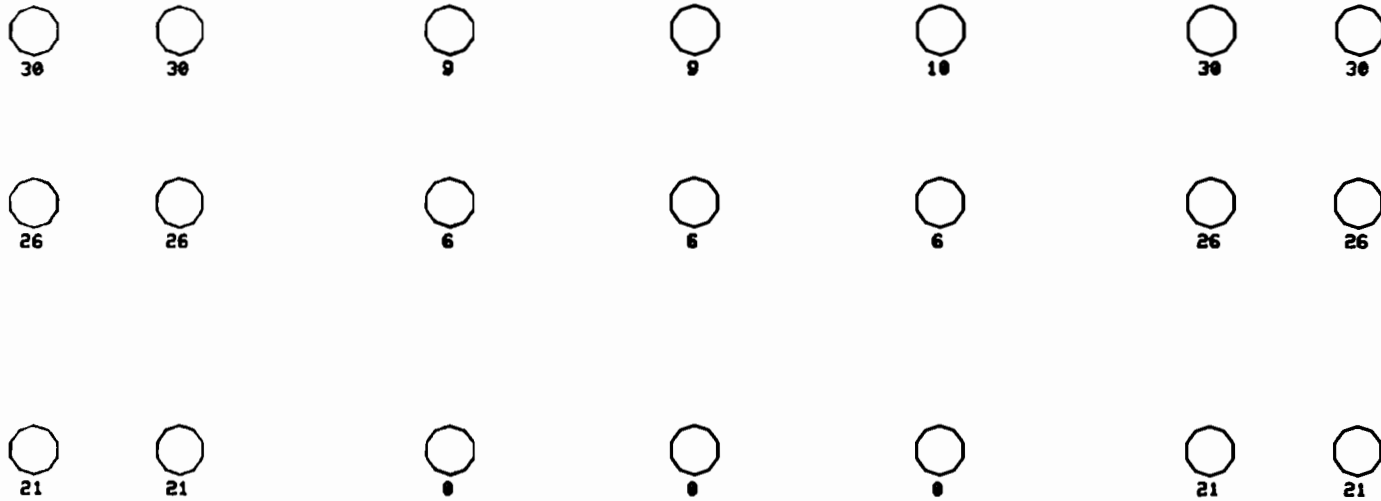


17TH ST. CANAL PUMPING STATION  
 3-D PILE ANALYSIS OF R.R. SWING GATE

□: RECTANGULAR PILE  
 ○: CIRCULAR PILE  
 I: SPECIAL SHAPE PILE

PILE NUMBER  
 □  
 PILE BATTER  
 SCALE: 1" = 2.3 FT.

PILE AXIAL FORCES (KIPS), LOAD CASE 1

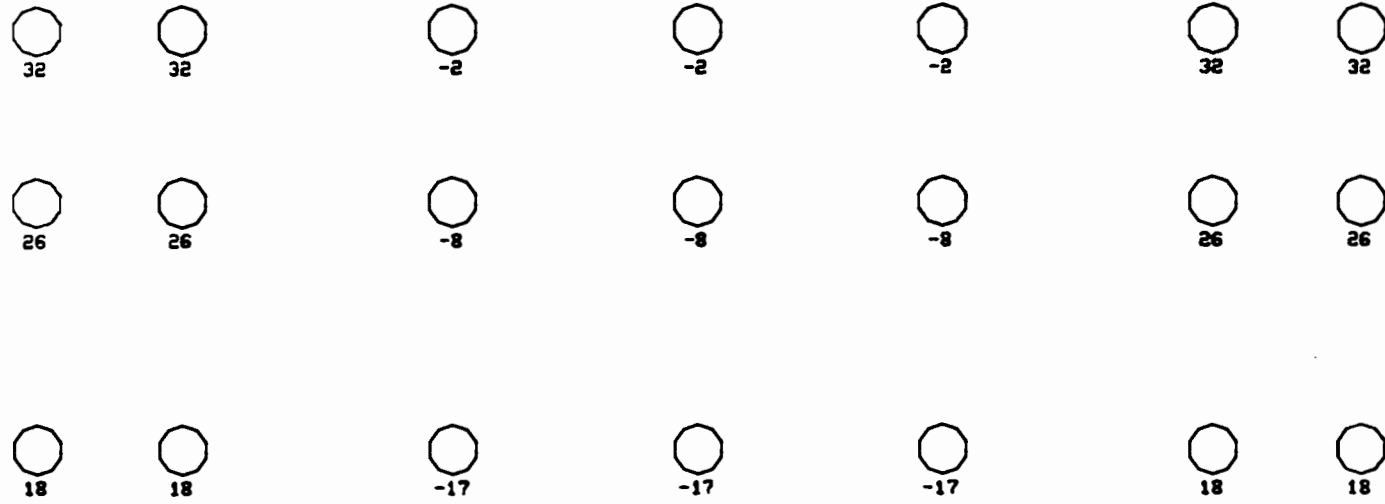


17TH ST. CANAL PUMPING STATION  
3-D PILE ANALYSIS OF R.R. SWING GATE

□: RECTANGULAR PILE  
○: CIRCULAR PILE  
I: SPECIAL SHAPE PILE

SCALE: 1" = 2.3 FT.

PILE AXIAL FORCES (KIPS), LOAD CASE 2

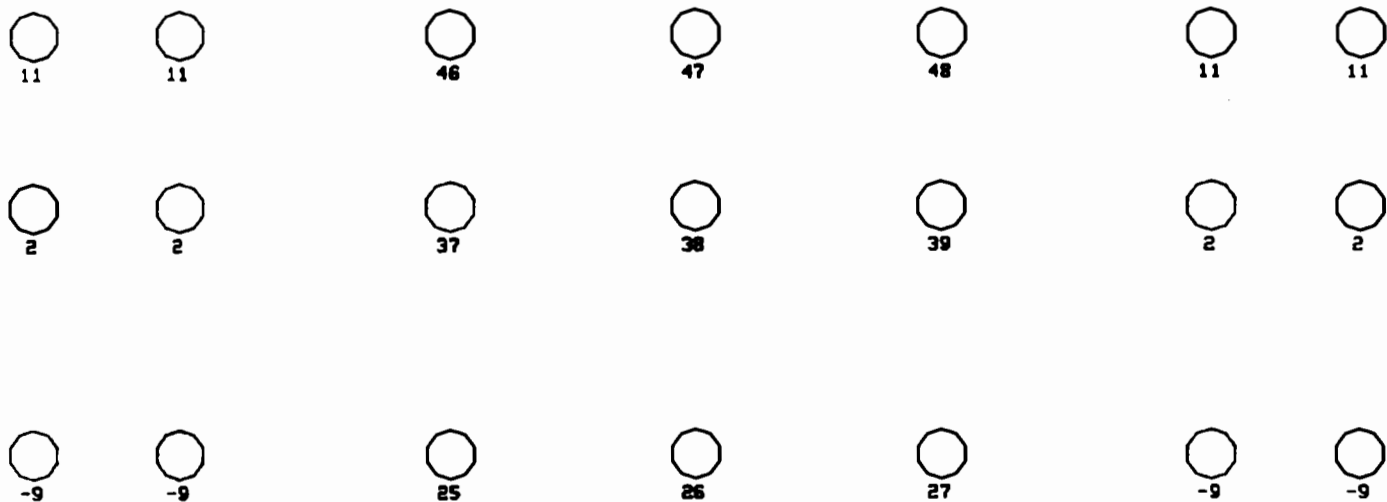


17TH ST. CANAL PUMPING STATION  
3-D PILE ANALYSIS OF R.R. SWING GATE

□: RECTANGULAR PILE  
○: CIRCULAR PILE  
I: SPECIAL SHAPE PILE

SCALE: 1" = 2.3 FT.

PILE AXIAL FORCES (KIPS), LOAD CASE 3

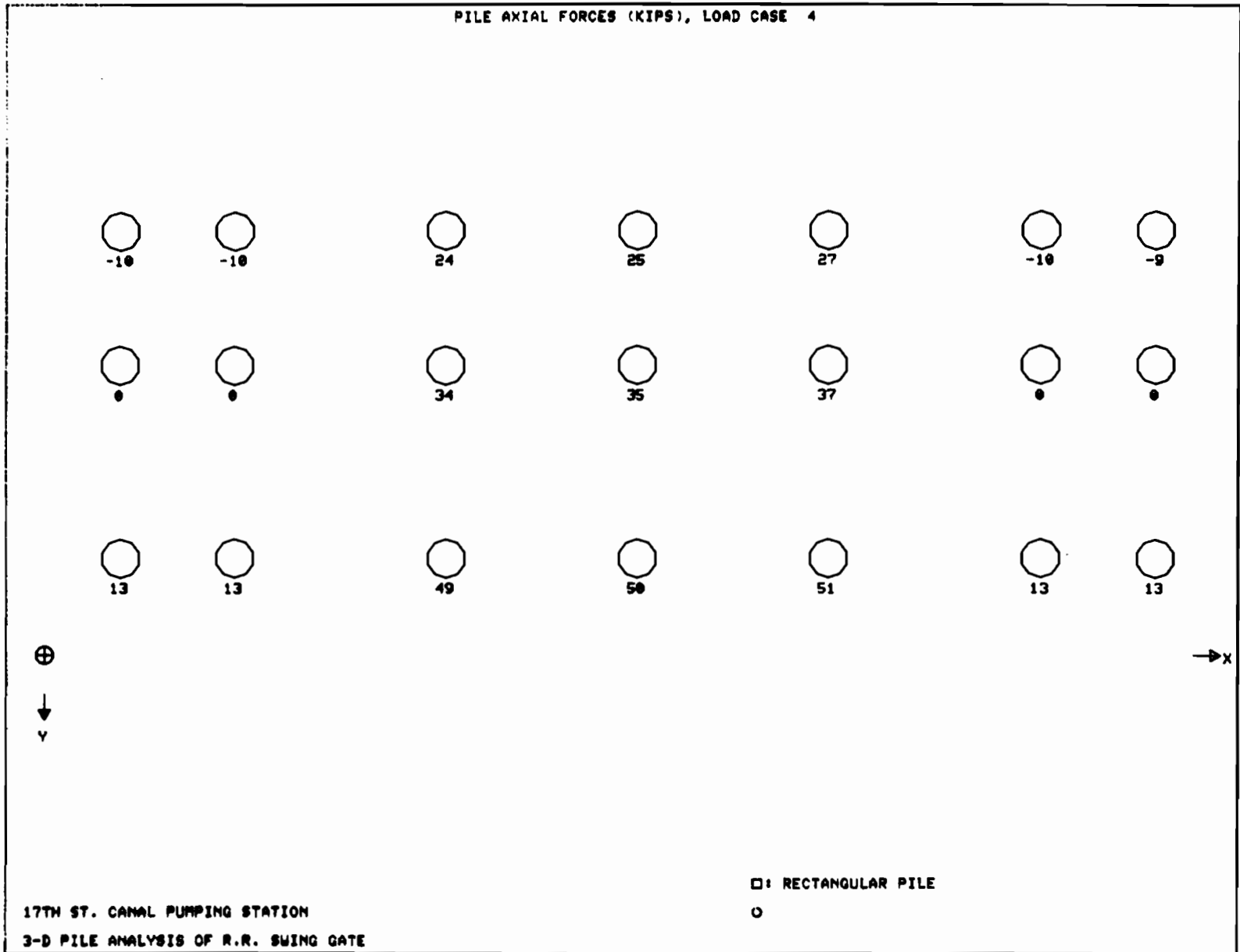


17TH ST. CANAL PUMPING STATION  
3-D PILE ANALYSIS OF R.R. SWING GATE

□: RECTANGULAR PILE  
○: CIRCULAR PILE  
I: SPECIAL SHAPE PILE

SCALE: 1" = 2.3 FT.

PILE AXIAL FORCES (KIPS), LOAD CASE 4



LISTH LTBR

08/13/84 12.75

010 17TH ST. CANAL PUMPING STATION  
020 3-D FILE ANALYSIS OF R.R. SWING GATE  
030 2 4 1  
040 -1 4.16  
050 2 0 40 80 120  
060 2 12  
070 2 0.7 1.05 0.7 1.05 1000  
080 0 2 1  
090 12 3 270  
100 223  
110 2.0 5.0 25.0 29.0  
120 42-2.5 42-7.5 42-11.0  
130 1220.0  
140 9 0 90  
150 223  
160 10.5 15.5 20.5  
170 32-2.5 32-7.5 32-11.0  
180 920.0  
190 0 -101.2 340.7 -2646.8 -5224.9 -1568.6  
200 0 -101.2 210.4 -1900.6 -3265.2 -1568.6  
210 0 0.0 347.0 -3022.2 -5423.3 0.0  
220 0 0.0 347.0 -1742.2 -5423.3 0.0

\*FRN RK29010,R

08/13/84 12.762

TYPE 3 FILE NAMES (OR ?)  
-LTB RR DEL  
LTBR LTBRRA LTBRB  
CREATED PERMFILE WITH CAT-FILE DESCRIPTION:  
BKXNHJA/LTBRRA;  
SUB-OPENF  
CREATED PERMFILE WITH CAT-FILE DESCRIPTION:  
BKXNHJA/LTBRB;  
SUB-OPENF

PROG. NO. 713-F3A2-210(MOD 2.4, 05-81)

12:46:00 08/13/84 PAGE 1

17TH ST. CANAL PUMPING STATION  
3-D FILE ANALYSIS OF R.R. SWING GATE

TOTAL NUMBER OF FILES = 21

LOAD CONDITION 1

APPLIED LOADS ON PILE CAP (KIPS & FT-KIPS)

X	Y	Z	MX	MY	MZ
0.	-101.2	340.7	-2646.8	-5224.9	-1568.6

DISPLACEMENT OF PILE CAP (INCHES & RADIANS)

X	Y	Z	RX	RY	RZ
-5.681E-04	-8.982E-02	-3.770E-03	-1.201E-04	-2.313E-06	6.782E-06

PILE LOADS (PILE AXES)

FOR GROUP 1 WITH 12 PILES:

PILE NO.	STRESS RATIO	FLAGS R P B	FORCES (KIPS)		
			X	Y	Z
1	0.341		0.13	-0.00	21.298
5	0.404		0.13	0.00	26.455
9	0.448		0.13	0.00	30.064

FOR GROUP 2 WITH 9 PILES:

PILE NO.	STRESS RATIO	FLAGS R P B	FORCES (KIPS)		
			X	Y	Z
13	0.076		-0.14	0.00	0.095
16	0.144		-0.14	-0.00	5.530
19	0.193		-0.14	-0.00	9.335

1 SUMMATION OF PILE LOADS (STRUCTURE AXIS)

LC	X	Y	Z	MX	MY	MZ
1	-0.0	-101.2	340.7	-2646.8	-5224.9	-1568.6

PROG. NO. 713-F3A2-210(MOD 2.4, 05-81) 12:46:00 02/13/84 PAGE 2

17TH ST. CANAL PUMPING STATION  
3-D PILE ANALYSIS OF R.R. SWING GATE

LOAD CONDITION 2

APPLIED LOADS ON PILE CAP (KIPS & FT-KIPS)

X	Y	Z	MX	MY	MZ
---	---	---	----	----	----

0. -101.2 210.4 -1900.6 -3285.2 -1568.6

DISPLACEMENT OF PILE CAP (INCHES & RADIANS)

X Y Z RX RY RZ  
 -5.610E-04 -1.489E-01 -2.892E-02 -1.962E-04 -2.294E-06 6.672E-06

PILE LOADS (PILE AXES)

FOR GROUP 1 WITH 12 PILES:  
 PILE STRESS FLAGS FORCES (KIPS)  
 NO. RATIO R P B X Y Z  
 1 0.346 0.23 -0.00 17.891  
 5 0.449 0.22 0.00 26.314  
 9 0.521 0.22 0.00 32.810

FOR GROUP 2 WITH 9 PILES:  
 PILE STRESS FLAGS FORCES (KIPS)  
 NO. RATIO R P B X Y Z  
 13 0.222 -0.23 0.00 -16.851  
 16 0.147 -0.23 -0.00 -7.973  
 19 0.094 -0.23 -0.00 -1.758

2 SUMMATION OF PILE LOADS (STRUCTURE AXIS)  
 LC X Y Z RX RY RZ  
 2 -0.0 -101.2 210.4 -1900.6 -3285.2 -1568.6

PROG. NO. 713-F3A2-210(MOD 8.4, 05-81) 12:46:00 08/13/84 PAGE 3

17TH ST. CANAL PUMPING STATION  
 3-D PILE ANALYSIS OF R.R. SWING GATE

LOAD CONDITION 3

APPLIED LOADS ON PILE CAP (KIPS & FT-KIPS)  
 X Y Z RX RY RZ  
 0. 0. 347.0 -3022.2 -5483.3 0.



DISPLACEMENT OF PILE CAP (INCHES & RADIAN)  
 X Y Z RX RY RZ  
 -6.283E-03 1.278E-01 2.130E-02 -2.721E-04 -2.552E-05 7.489E-05

PILE LOADS (PILE AXES)

FOR GROUP 1 WITH 12 PILES:  
 PILE STRESS FLAGS FORCES (KIPS)  
 NO. RATIO R P B X Y Z  
 1 0.155 -0.21 -0.01 -9.341  
 5 0.145 -0.22 0.00 2.338  
 9 0.254 -0.22 0.01 10.513

FOR GROUP 2 WITH 9 PILES:  
 PILE STRESS FLAGS FORCES (KIPS)  
 NO. RATIO R P B X Y Z  
 13 0.430 0.22 0.01 24.644  
 14 0.448 0.22 0.01 25.801  
 15 0.466 0.23 0.01 26.958  
 16 0.582 0.22 -0.00 36.954  
 17 0.600 0.22 -0.00 38.112  
 18 0.619 0.23 -0.00 39.269  
 19 0.694 XX 0.22 -0.01 45.572  
 20 0.712 XX 0.22 -0.01 46.729  
 21 0.730 XX 0.23 -0.01 47.886

PROG. NO. 713-F3AE-210(MOD 8.4, 05-81) 12:48:00 08/13/84 PAGE 4

17TH ST. CANAL PUMPING STATION  
 3-D PILE ANALYSIS OF R.R. SWING GATE

LOAD CONDITION 3

PILE LOADS (PILE AXES)

FOR GROUP 2 WITH 9 PILES:  
 LOADS ON PILE THAT HAS MAXIMUM STRESS RATIO(R):

DISPLACEMENT OF PILE CAP (INCHES & RADIAN)S

X	Y	Z	RM	RY	RZ
-6.283E-03	1.278E-01	7.062E-02	3.161E-04	-2.658E-05	7.480E-05

PILE LOADS (PILE AXES)

FOR GROUP 1 WITH 12 PILES:

PILE NO.	STRESS RATIO	FLAGS R P B	FORCES (KIPS)		
			X	Y	Z
1	0.291		-0.23	-0.01	13.339
5	0.078		-0.22	0.00	-0.182
9	0.157		-0.21	0.01	-9.647

FOR GROUP 2 WITH 9 PILES:

PILE NO.	STRESS RATIO	FLAGS R P B	FORCES (KIPS)		
			X	Y	Z
13	0.732	xx	0.22	0.01	48.551
14	0.750	xx	0.22	0.01	49.708
15	0.768	xx	0.23	0.01	50.866
16	0.549		0.22	-0.00	34.298
17	0.567		0.22	-0.00	35.455
18	0.585		0.23	-0.00	36.613
19	0.425		0.22	-0.01	24.321
20	0.444		0.22	-0.01	25.478
21	0.462		0.23	-0.01	26.635

PROC. NO. 713-F3A2-210(MOD 8.4, 05-81) 12:46:00 08/13/84 PAGE 6

17TH ST. CANAL PUMPING STATION  
3-D PILE ANALYSIS OF R.R. SWING GATE

LOAD CONDITION 4

PILE LOADS (PILE AXES)

FOR GROUP 2 WITH 9 PILES:  
LOADS ON PILE THAT HAS MAXIMUM STRESS RATIO(R):

PILE NO.	STRESS RATIO	FLAGS R P B	FORCES (KIPS)		
			X	Y	Z

15 0.768 \*\* 0.23 0.01 50.888  
3 PILES EXCEEDED ALLOWABLE COMP. BUCK. LOAD OF 43.80 KIPS.  
3 PILES EXCEEDED ONE OR MORE OF ABOVE ALLOWABLE VALUES.

\*\*\* EXCEEDS ESTIMATED CRITICAL BUCKLING LOAD ( 43.8 KIPS).

4	SUMMATION OF PILE LOADS (STRUCTURE AXIS)					
LC	X	Y	Z	MX	MY	MZ
4	-0.0	-0.0	347.0	-1742.2	-5423.3	-0.0

PROG. NO. 713-F3A2-210(MOD 8.4, 05-81) 12:47:40 08/13/84 PAGE 7

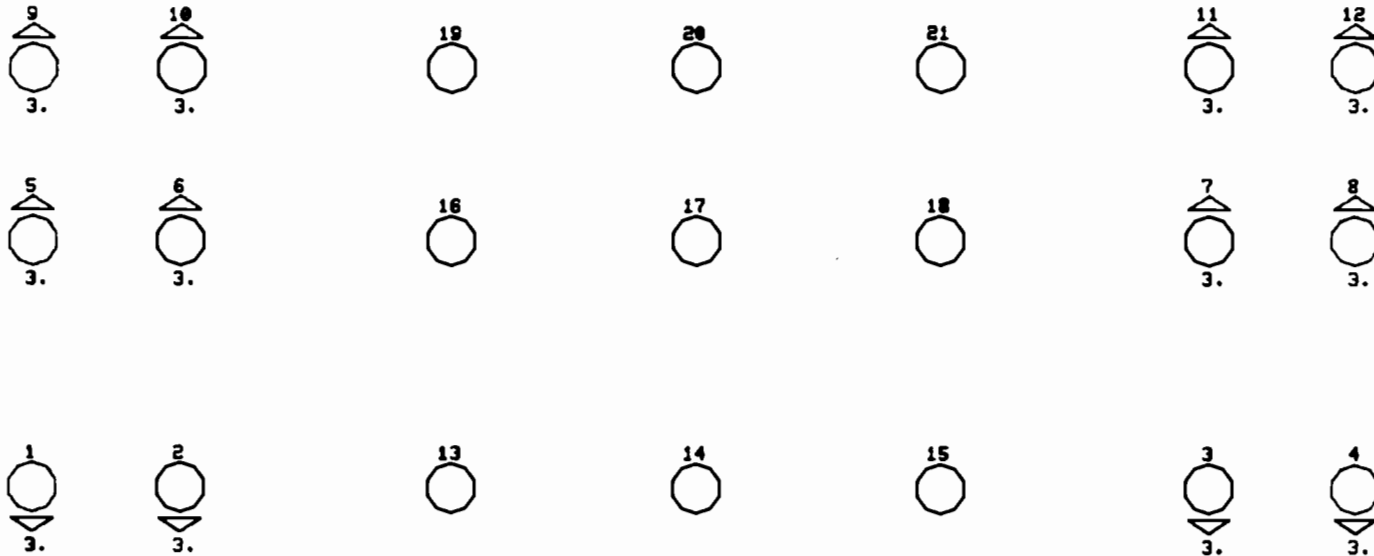
17TH ST. CANAL PUMPING STATION  
3-D PILE ANALYSIS OF R.R. SWING GATE

INPUT DATA FILE USED FOR THIS RUN WAS: LTBRR

DETAILED OUTPUT FILE FROM THIS RUN IS: LTBRRR  
BINARY OUTPUT FILE FROM THIS RUN IS: LTBRRB

EOJ 12:47:41 08/13/84

PILE GEOMETRY PLOT

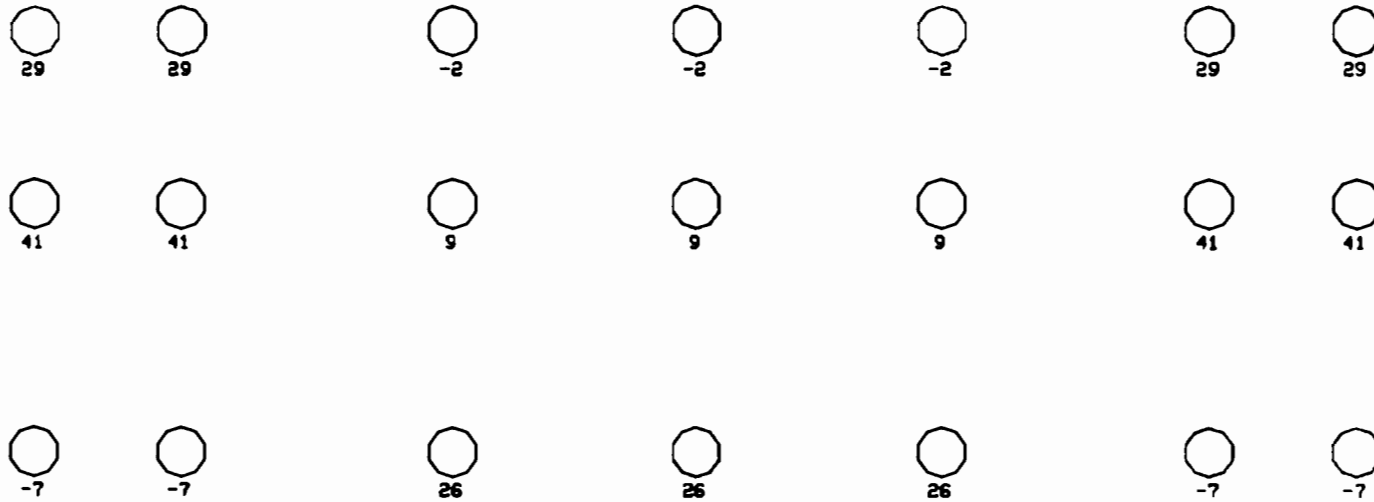


17TH ST. CANAL PUMPING STATION  
 3-D PILE ANALYSIS OF R.R. SWING GATE

□: RECTANGULAR PILE  
 ○: CIRCULAR PILE  
 I: SPECIAL SHAPE PILE

PILE NUMBER  
 □ PILE BATTER  
 SCALE: 1" = 2.3 FT.

PILE AXIAL FORCES (KIPS), LOAD CASE 1

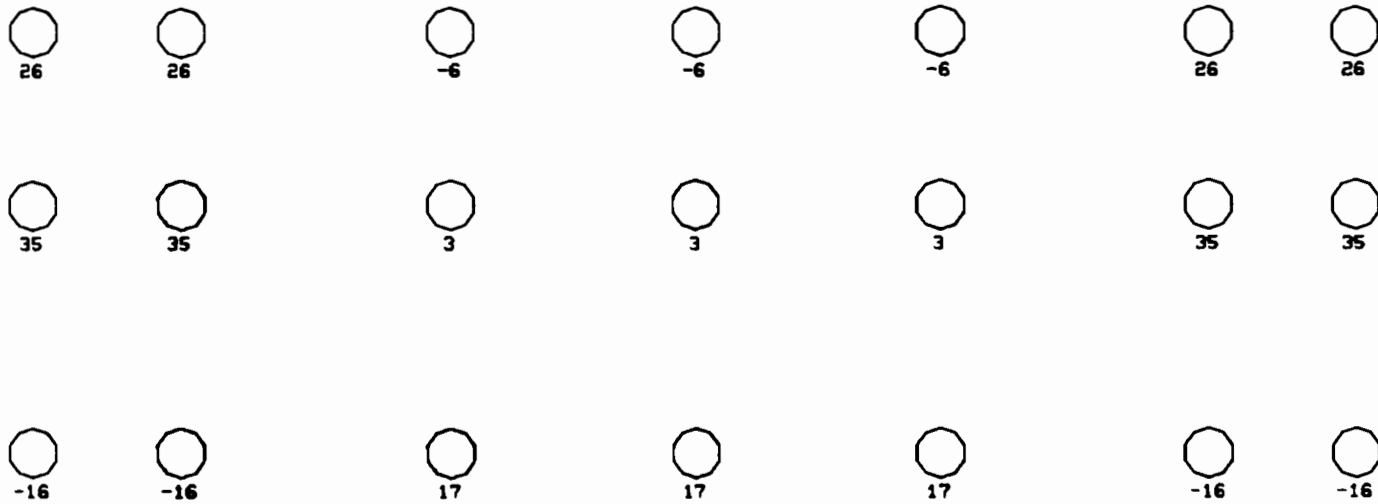


17TH ST. CANAL PUMPING STATION  
3-D PILE ANALYSIS OF R.R. SWING GATE

□: RECTANGULAR PILE  
○: CIRCULAR PILE  
I: SPECIAL SHAPE PILE

SCALE: 1" = 2.3 FT.

PILE AXIAL FORCES (KIPS), LOAD CASE 2

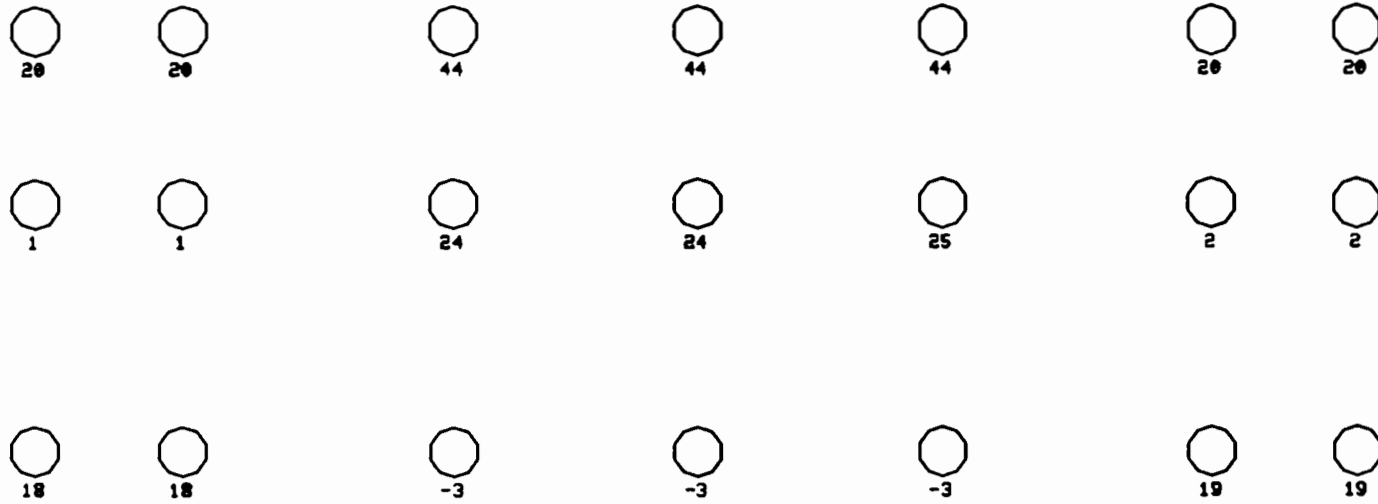


17TH ST. CANAL PUMPING STATION  
3-D PILE ANALYSIS OF R.R. SWING GATE

□: RECTANGULAR PILE  
○: CIRCULAR PILE  
I: SPECIAL SHAPE PILE

SCALE: 1" = 2.3 FT.

PILE AXIAL FORCES (KIPS), LOAD CASE 3

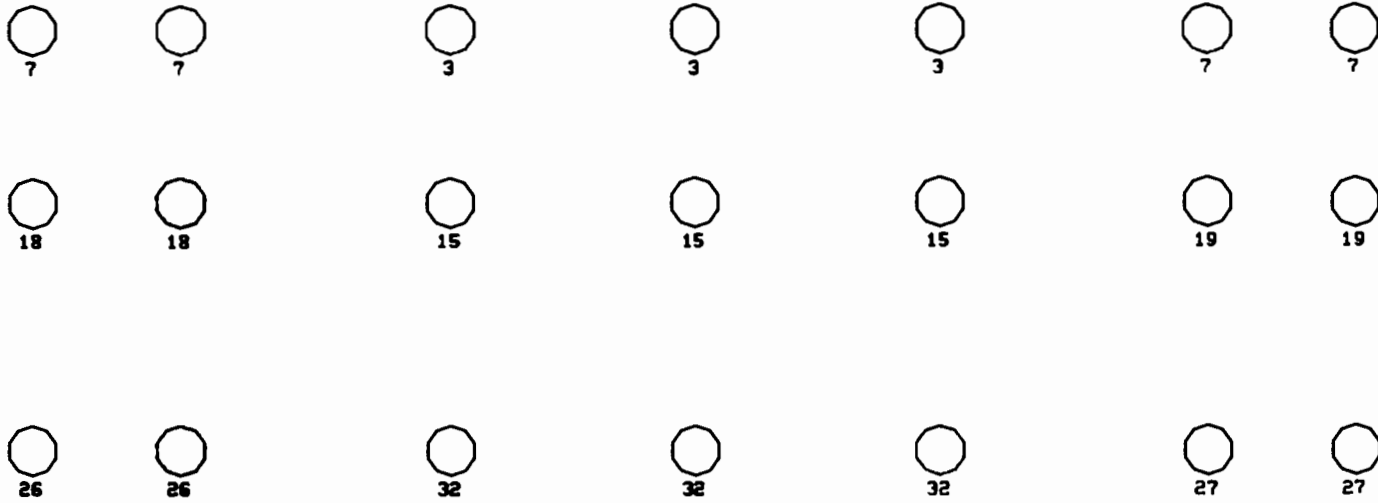


17TH ST. CANAL PUMPING STATION  
3-D PILE ANALYSIS OF R.R. SWING GATE

□: RECTANGULAR PILE  
○: CIRCULAR PILE  
I: SPECIAL SHAPE PILE

SCALE: 1" = 2.3 FT.

PILE AXIAL FORCES (KIPS), LOAD CASE 4



17TH ST. CANAL PUMPING STATION  
3-D PILE ANALYSIS OF R.R. SWING GATE

□: RECTANGULAR PILE  
○: CIRCULAR PILE  
I: SPECIAL SHAPE PILE

SCALE: 1" = 2.3 FT.



LISTH LTBRH

08/14/84 13.01

010 17TH ST. CANAL PUMPING STATION  
020 3-D PILE ANALYSIS OF R.R. SWING GATE  
030 3 4 1  
040 -1 4.16  
050 2 0 40 80 120  
060 2 12  
070 2 0.7 1.05 0.7 1.05 1600  
080 0 2 1  
090 4 3 90  
110 2.0 5.0 26.0 29.0  
120 4x-2.5  
130 8x0.0  
131 8 3 270  
132 1x2  
133 2.0 5.0 26.0 29.0  
134 4x-7.5 4x-11.0  
135 8x0.0  
140 9 0 90  
150 1x3  
160 10.5 15.5 20.5  
170 3x-2.5 3x-7.5 3x-11.0  
180 9x0.0  
190 0 -101.2 340.7 -2646.8 -5284.9 -1568.6  
200 0 -101.2 210.4 -1900.6 -3265.2 -1568.6  
210 0 0.0 347.0 -3022.2 -5423.3 0.0  
220 0 0.0 347.0 -1742.2 -5423.3 0.0

\*FRN RK29010,R

08/14/84 13.024

TYPE 3 FILE NAMES (OR ?)  
-LTBRH LTBRR LTBRRB

PROG. NO. 713-F3A2-210(MOD 8.4, 05-81) 13:01:47 08/14/84 PAGE 1

17TH ST. CANAL PUMPING STATION  
3-D PILE ANALYSIS OF R.R. SWING GATE

TOTAL NUMBER OF PILES = 21((LkK3(

LOAD CONDITION 1

APPLIED LOADS ON PILE CAP (KIPS & FT-KIPS)

X	Y	Z	MX	MY	MZ
0.	-101.2	340.7	-2646.8	-5284.9	-1568.6

DISPLACEMENT OF PILE CAP (INCHES & RADIANS)

X	Y	Z	RX	RY	RZ
-2.354E-05	-1.330E-01	4.628E-02	3.755E-04	-2.871E-07	2.799E-07

PILE LOADS (PILE AXES)

FOR GROUP 1 WITH 4 PILES:

PILE NO.	STRESS RATIO	FLAGS R P B	FORCES (KIPS)		
			X	Y	Z
1	0.133		-0.22	0.00	-6.670

FOR GROUP 2 WITH 8 PILES:

PILE NO.	STRESS RATIO	FLAGS R P B	FORCES (KIPS)		
			X	Y	Z
5	0.616		0.19	0.00	40.637
9	0.478		0.20	0.00	29.358

FOR GROUP 3 WITH 9 PILES:

PILE NO.	STRESS RATIO	FLAGS R P B	FORCES (KIPS)		
			X	Y	Z
13	0.445		-0.21	0.00	26.417
16	0.231		-0.21	-0.00	9.432
19	0.095		-0.21	-0.00	-2.458

1 SUMMATION OF PILE LOADS (STRUCTURE AXIS)

LC	X	Y	Z	MX	MY	MZ
1	-0.0	-101.2	340.7	-2646.8	-5284.9	-1568.6

PROG. NO. 713-F3A2-210(MOD 8.4, 05-81) 13:01:47 08/14/84 PAGE 2

17TH ST. CANAL PUMPING STATION  
3-D PILE ANALYSIS OF R.R. SWING GATE

LOAD CONDITION 2

APPLIED LOADS ON PILE CAP (KIPS & FT-KIPS)

X	Y	Z	MX	MY	MZ
0.	-101.2	210.4	-1900.6	-3265.8	-1568.6

DISPLACEMENT OF PILE CAP (INCHES & RADIAN)  
 X Y Z RX RY RZ  
 -2.325E-05 -1.339E-01 3.137E-02 3.028E-04 -8.838E-07 2.764E-07

PILE LOADS (PILE AXES)

FOR GROUP 1 WITH 4 PILES:  
 PILE STRESS FLAGS FORCES (KIPS)  
 NO. RATIO R P B X Y Z  
 1 0.209 -0.21 0.00 -15.973

FOR GROUP 2 WITH 8 PILES:  
 PILE STRESS FLAGS FORCES (KIPS)  
 NO. RATIO R P B X Y Z  
 5 0.546 0.20 0.00 34.880  
 9 0.435 0.21 0.00 25.788

FOR GROUP 3 WITH 9 PILES:  
 PILE STRESS FLAGS FORCES (KIPS)  
 NO. RATIO R P B X Y Z  
 13 0.325 -0.21 0.00 16.832  
 16 0.152 -0.21 -0.00 3.141  
 19 0.129 -0.21 -0.00 -6.443

2 SUMMATION OF PILE LOADS (STRUCTURE AXIS)  
 LC X Y Z MX MY MZ  
 2 -0.0 -101.2 210.4 -1900.6 -3265.2 -1568.6

PROG. NO. 713-F3A2-210(MOD 8.4, 05-81) 13:01:47 08/14/84 PAGE 3

17TH ST. CANAL PUMPING STATION  
 3-D PILE ANALYSIS OF R.R. SWING GATE

LOAD CONDITION 3

APPLIED LOADS ON PILE CAP (KIPS & FT-KIPS)  
 X Y Z MX MY MZ  
 0. 0. 347.0 -3022.2 -5423.3 0.

DISPLACEMENT OF PILE CAP (INCHES & RADIAN)

X Y Z RX RY RZ  
 -2.600E-04 9.114E-02 -2.338E-02 -8.140E-04 -3.178E-06 3.095E-06

PILE LOADS (PILE AXES)

FOR GROUP 1 WITH 4 PILES:  
 PILE STRESS FLAGS FORCES (KIPS)  
 NO. RATIO R P B X Y Z  
 1 0.305 0.14 0.00 18.855  
 3 0.316 0.14 0.00 19.181

FOR GROUP 2 WITH 8 PILES:  
 PILE STRESS FLAGS FORCES (KIPS)  
 NO. RATIO R P B X Y Z  
 5 0.096 -0.15 0.00 1.110  
 9 0.335 -0.17 0.00 19.556

FOR GROUP 3 WITH 9 PILES:  
 PILE STRESS FLAGS FORCES (KIPS)  
 NO. RATIO R P B X Y Z  
 13 0.000 0.15 0.00 -3.438  
 16 0.384 0.15 -0.00 24.339  
 19 0.630 xx 0.15 -0.00 43.783  
 20 0.632 xx 0.15 -0.00 43.926  
 21 0.634 xx 0.15 -0.00 44.070

PROG. NO. 713-F3AB-210(MOD 8.4, 05-81) 13:01:4 ROB/14/84 PAGE 4

17TH ST. CANAL PUMPING STATION  
 3-D PILE ANALYSIS OF R.R. SWING GATE

LOAD CONDITION 3

PILE LOADS (PILE AXES)

FOR GROUP 3 WITH 9 PILES:  
 LOADS ON PILE THAT HAS MAXIMUM STRESS RATIO(R):  
 PILE STRESS FLAGS FORCES (KIPS)  
 NO. RATIO R P B X Y Z  
 21 0.634 xx 0.15 -0.00 44.070

3 PILES EXCEEDED ALLOWABLE COMP. BUCK. LOAD OF 43.20 KIPS.  
 3 PILES EXCEEDED ONE OR MORE OF ABOVE ALLOWABLE VALUES.

\*\*\* EXCEEDS ESTIMATED CRITICAL BUCKLING LOAD ( 43.2 KIPS).

3	SUMMATION OF PILE LOADS (STRUCTURE AXIS)					
LC	X	Y	Z	RX	RY	RZ
3	-0.0	0.0	347.0	-3022.2	-5423.3	-0.0

PROG. NO. 713-F3A2-210(MOD B.4, 05-81) 13:01:47 08/14/84 PAGE 5

17TH ST. CANAL PUMPING STATION  
 3-D PILE ANALYSIS OF R.R. SWING GATE

LOAD CONDITION 4

APPLIED LOADS ON PILE CAP (KIPS & FT-KIPS)						
X	Y	Z	RX	RY	RZ	
0.	0.	347.0	-1742.2	-5423.3	0.	

DISPLACEMENT OF PILE CAP (INCHES & RADIANS)						
X	Y	Z	RX	RY	RZ	
-2.000E-04	-1.837E-02	5.386E-02	3.851E-04	-3.176E-06	3.095E-06	

IEE LOADS (PILE AXES)

FOR GROUP 1 WITH 4 PILES:  
 PILE STRESS FLAGS FORCES (KIPS)  
 NO. RATIO R P B X Y Z  
 1 0.352 -0.05 0.00 25.717  
 3 0.362 -0.05 0.00 26.584

FOR GROUP 2 WITH 2 PILES:  
 PILE STRESS FLAGS FORCES (KIPS)  
 NO. RATIO R P B X Y Z  
 5 0.243 0.02 0.00 18.391  
 9 0.101 0.03 0.00 6.821

FOR GROUP 3 WITH 9 PILES:  
 PILE STRESS FLAGS FORCES (KIPS)  
 NO. RATIO R P B X Y Z  
 13 0.423 -0.03 0.00 32.203  
 16 0.203 -0.03 -0.00 14.780  
 19 0.049 -0.03 -0.00 2.584

4 SUMMATION OF PILE LOADS (STRUCTURE AXIS)  
 LC X Y Z MX MY MZ  
 4 -0.0 0.0 347.0 -1742.2 -5423.3 -0.0

PROG. NO. 713-F3A2-210(MOD 8.4, 06-81) 13:02:56 08/14/84 PAGE 6

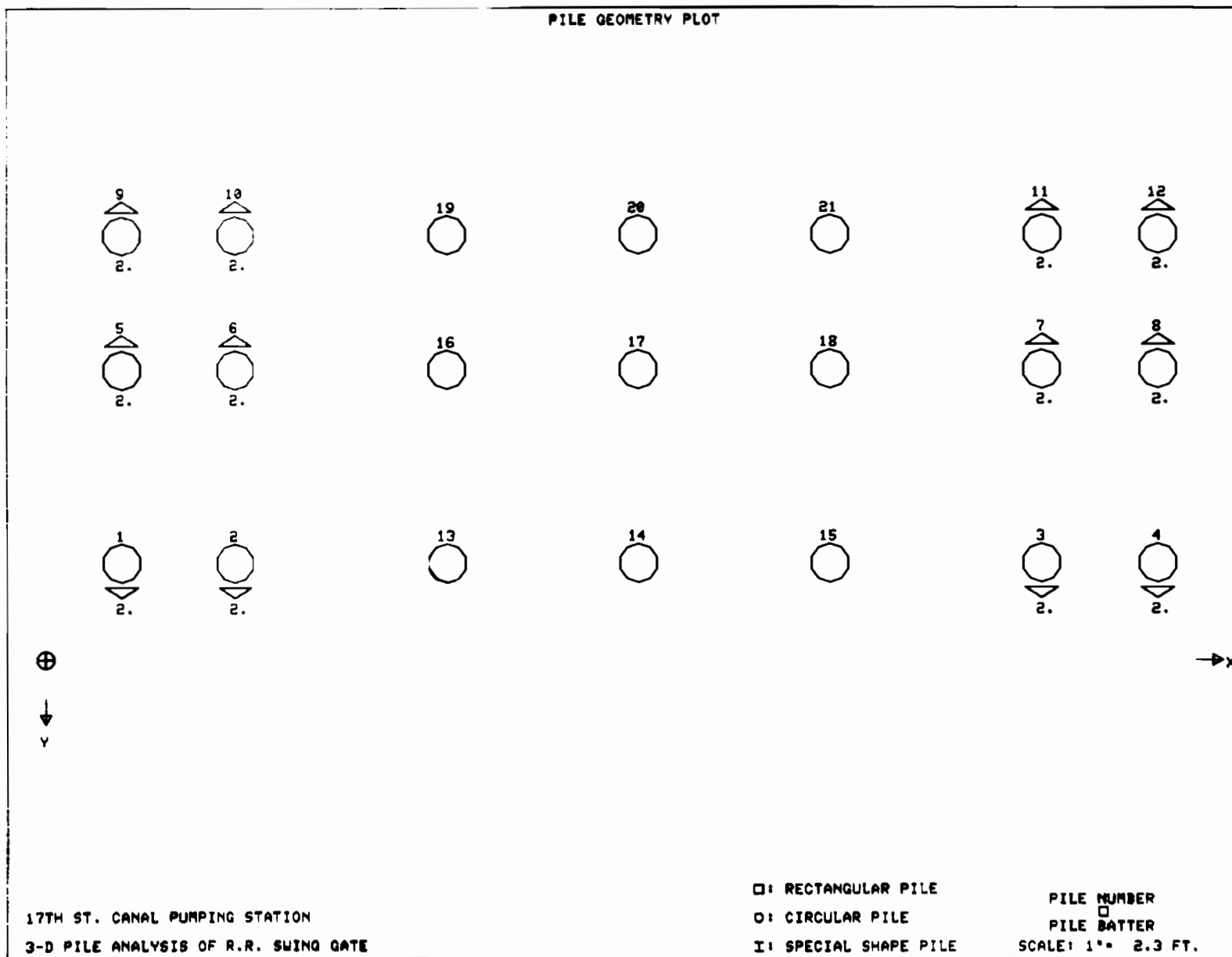
17TH ST. CANAL PUMPING STATION  
 3-D PILE ANALYSIS OF R.R. SWING GATE

INPUT DATA FILE USED FOR THIS RUN WAS: LTBRR

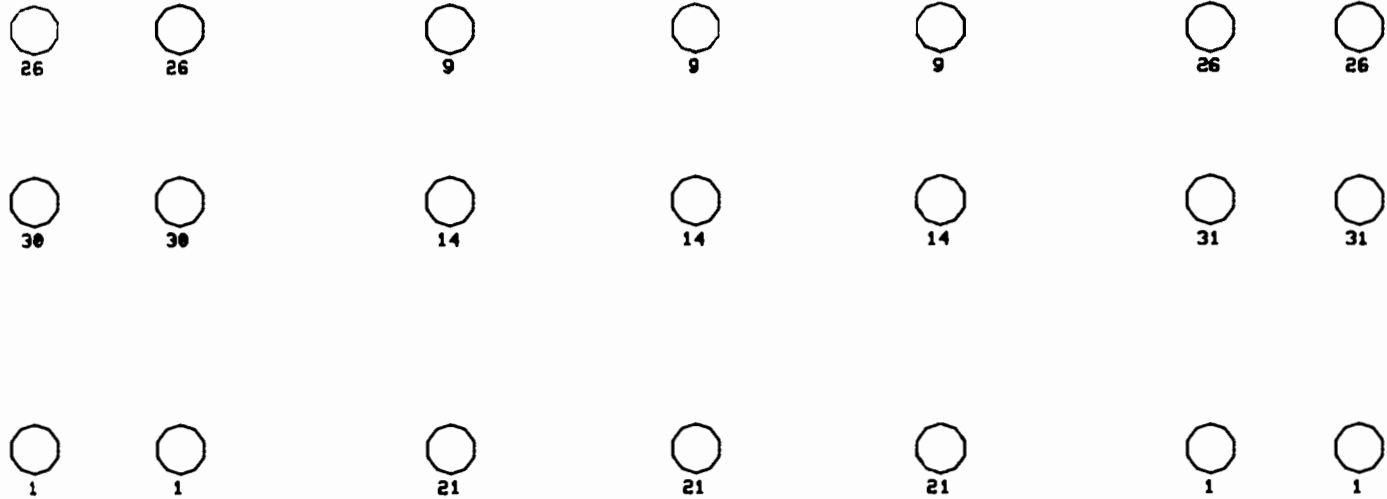
DETAILED OUTPUT FILE FROM THIS RUN IS: LTBRRR  
 BINARY OUTPUT FILE FROM THIS RUN IS: LTBRRB

EOJ 13:02:58 08/14/84

PILE GEOMETRY PLOT



PILE AXIAL FORCES (KIPS), LOAD CASE 1



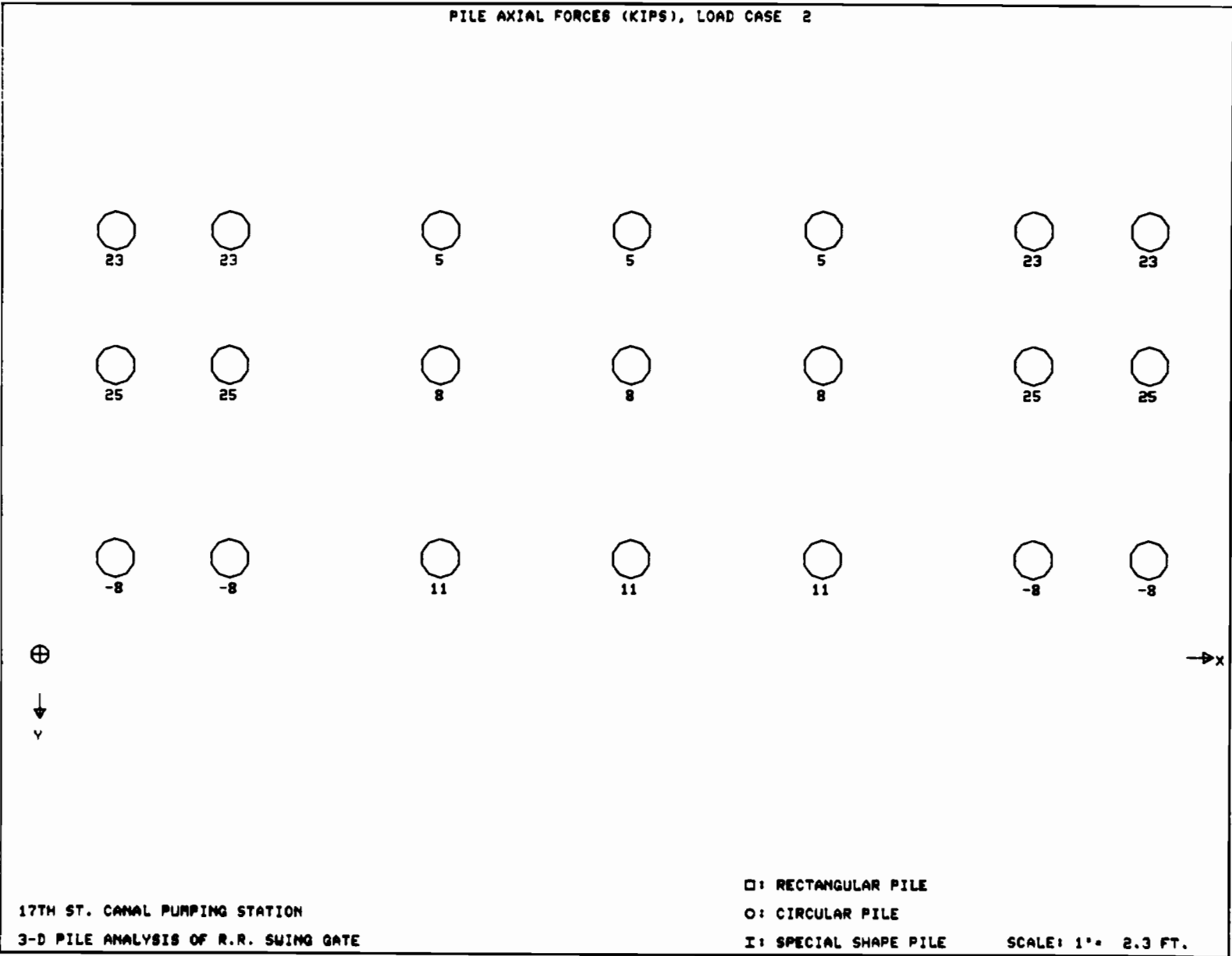
17TH ST. CANAL PUMPING STATION  
3-D PILE ANALYSIS OF R.R. SWING GATE

□: RECTANGULAR PILE  
○: CIRCULAR PILE  
I: SPECIAL SHAPE PILE

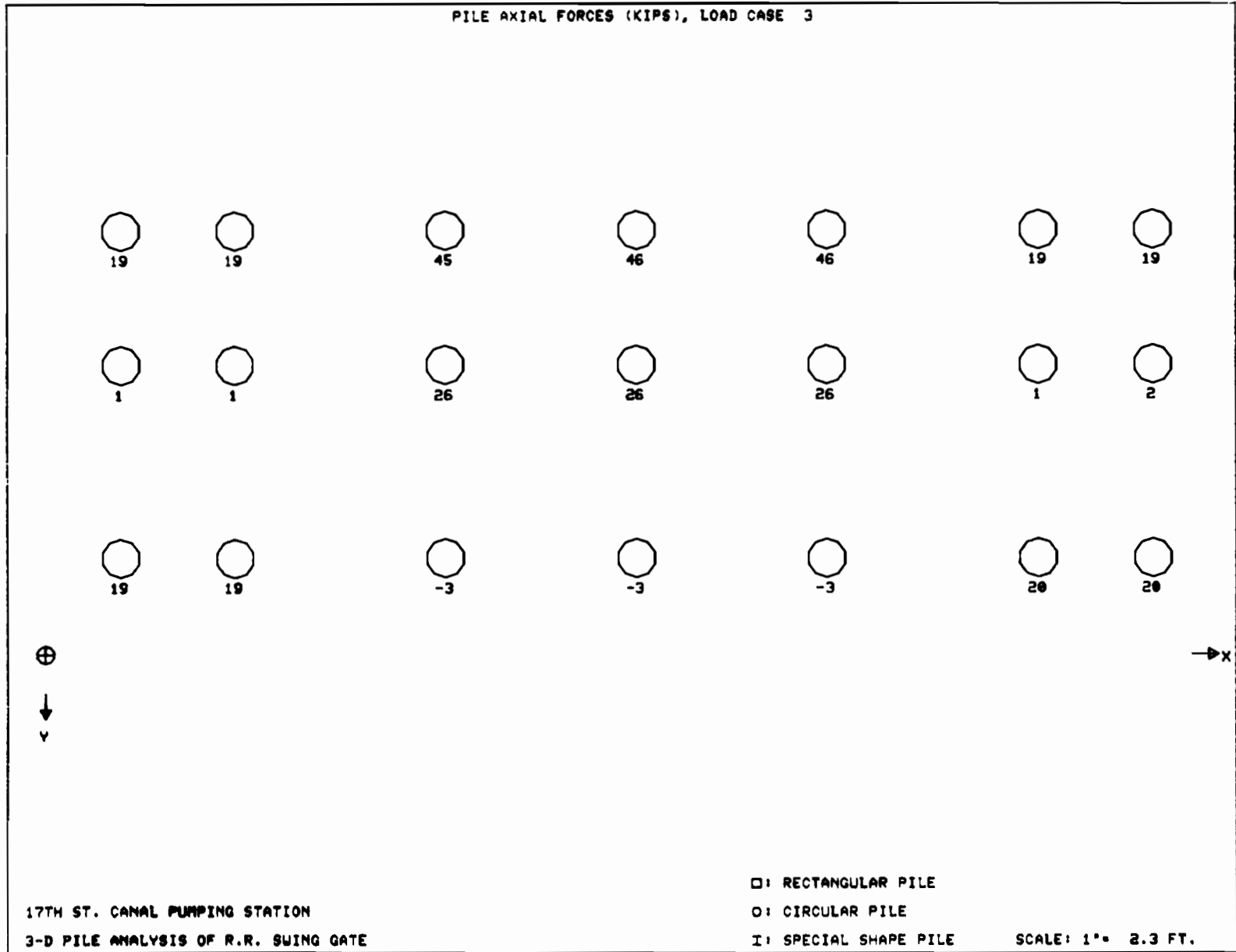
SCALE: 1" = 2.3 FT.



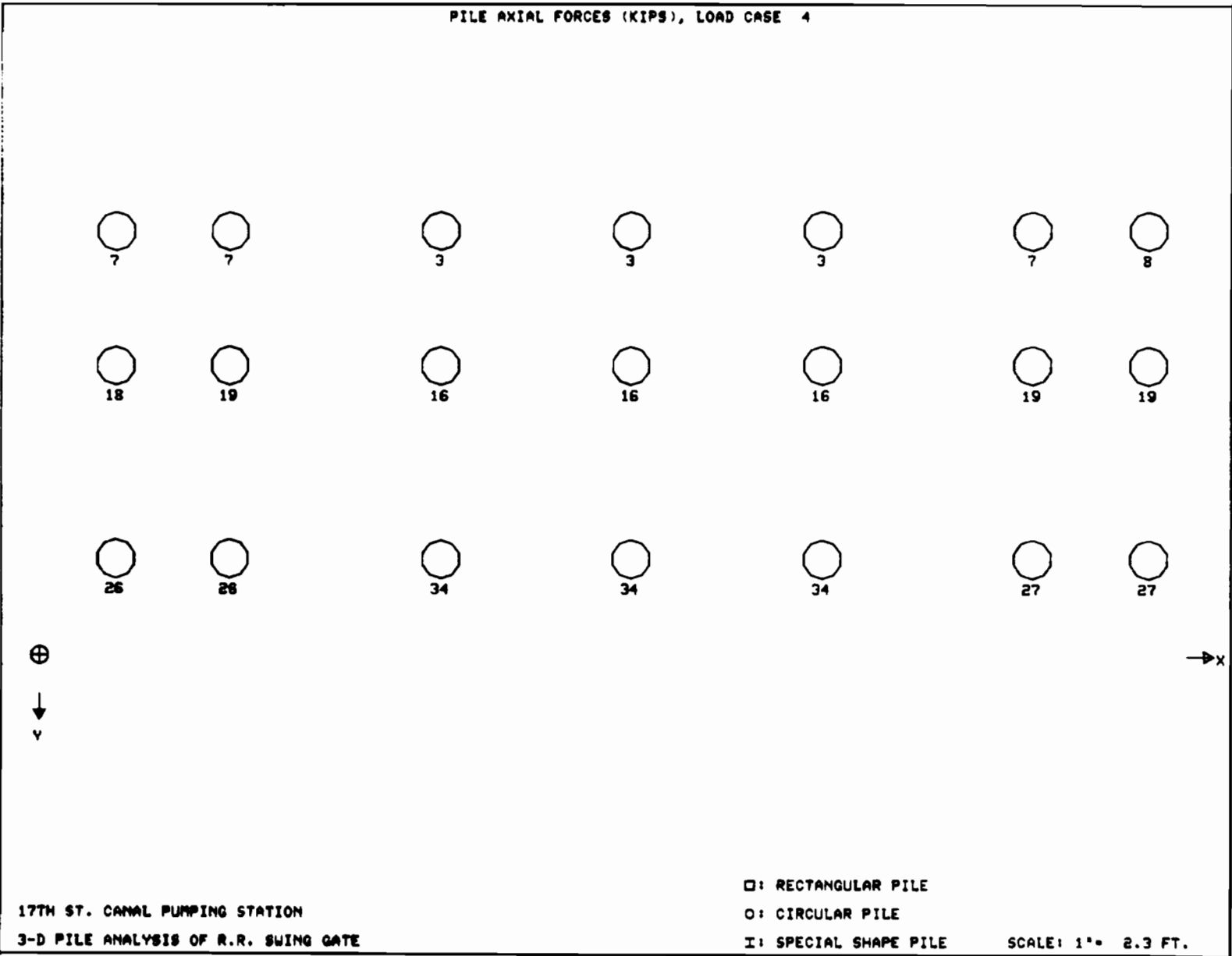
PILE AXIAL FORCES (KIPS), LOAD CASE 2



PILE AXIAL FORCES (KIPS), LOAD CASE 3



PILE AXIAL FORCES (KIPS), LOAD CASE 4



LISTH LTBR

08/14/84 13.13

010 17TH ST. CANAL PUMPING STATION  
020 3-D PILE ANALYSIS OF R.R. SWING GATE  
030 3 4 1  
040 -1 4.16  
050 2 0 40 80 120  
060 2 12  
070 2 0.7 1.05 0.7 1.05 1600  
080 0 2 1  
090 4 2 90  
110 2.0 5.0 26.0 29.0  
120 4x-2.5  
130 4x0.0  
131 8 2 270  
132 xx2  
133 2.0 5.0 26.0 29.0  
134 4x-7.5 4x-11.0  
135 8x0.0  
140 9 0 90  
150 xx3  
160 10.5 15.5 20.5  
170 3x-2.5 3x-7.5 3x-11.0  
180 9x0.0  
190 0 -101.2 340.7 -2646.8 -5284.9 -1568.6  
200 0 -101.2 210.4 -1900.6 -3265.2 -1568.6  
210 0 0.0 347.0 -3022.2 -5423.3 0.0  
220 0 0.0 347.0 -1742.2 -5423.3 0.0

FROM RKU029010,R

08/14/84 13.142

TYPE 3 FILE NAMES (OR ?)  
-LTBR LTBR LTBR

PROG. NO. 713-F3A2-210(ROD 8.4, 05-81) 13:08:54 08/14/84 PAGE 1

17TH ST. CANAL PUMPING STATION  
3-D PILE ANALYSIS OF R.R. SWING GATE

TOTAL NUMBER OF PILES = 21

LOAD CONDITION 1

APPLIED LOADS ON PILE CAP (KIPS & FT-KIPS)

X	Y	Z	MX	MY	MZ
0.	-101.2	340.7	-2646.8	-5284.9	-1568.6

DISPLACEMENT OF PILE CAP (INCHES & RADIAN)

X	Y	Z	RX	RY	RZ
-1.770E-05	-5.284E-02	3.842E-02	1.515E-04	-3.195E-07	2.103E-07

PILE LOADS (PILE AXES)

FOR GROUP 1 WITH 4 PILES:

PILE NO.	STRESS RATIO	FLAGS	X	Y	Z
1	0.063		-0.00	0.00	0.087

FOR GROUP 2 WITH 8 PILES:

PILE NO.	STRESS RATIO	FLAGS	X	Y	Z
5	0.418		0.06	0.00	30.492
9	0.366		0.07	0.00	26.202

FOR GROUP 3 WITH 9 PILES:

PILE NO.	STRESS RATIO	FLAGS	X	Y	Z
13	0.310		-0.02	0.00	21.048
16	0.224		-0.02	-0.00	14.196
19	0.163		-0.02	-0.00	9.400

SUMMATION OF PILE LOADS (STRUCTURE AXIS)

LC	X	Y	Z	MX	MY	MZ
1	-0.0	-101.2	340.7	-2646.8	-5284.9	-1568.6

PROG. NO. 713-F3A2-210(MOD 8.4, 05-81) 13:08:54 08/14/84 PAGE 2

17TH ST. CANAL PUMPING STATION  
3-D PILE ANALYSIS OF R.R. SWING GATE

LOAD CONDITION 2

APPLIED LOADS ON PILE CAP (KIPS & FT-KIPS)

X	Y	Z	MX	MY	MZ
0.	-101.2	210.4	-1900.6	-3265.2	-1568.6

DISPLACEMENT OF PILE CAP (INCHES & RADIANB)  
 X Y Z RX RY RZ  
 -1.747E-05 -5.346E-02 1.655E-02 7.374E-05 -3.156E-07 2.077E-07

PILE LOADS (PILE AXES)

FOR GROUP 1 WITH 4 PILES:  
 PILE STRESS FLAGS FORCES (KIPS)  
 NO. RATIO R P B X Y Z  
 1 0.101 -0.09 0.00 -8.352

FOR GROUP 2 WITH 8 PILES:  
 PILE STRESS FLAGS FORCES (KIPS)  
 NO. RATIO R P B X Y Z  
 5 0.349 0.07 0.00 24.716  
 9 0.323 0.07 0.00 22.627

FOR GROUP 3 WITH 9 PILES:  
 PILE STRESS FLAGS FORCES (KIPS)  
 NO. RATIO R P B X Y Z  
 13 0.182 -0.08 0.00 19.840  
 16 0.140 -0.08 -0.00 7.504  
 19 0.110 -0.08 -0.00 5.169

2 SUMMATION OF PILE LOADS (STRUCTURE AXIS)  
 LC X Y Z MX MY MZ  
 2 -0.0 -101.2 210.4 -1900.6 -3265.2 -1568.6

PROG. NO. 713-F3A2-210(MOD 2.4, 05-81) 13:08:54 08/14/84 PAGE 3

17TH ST. CANAL PUMPING STATION  
 3-D PILE ANALYSIS OF R.R. SWING GATE

LOAD CONDITION 3

APPLIED LOADS ON PILE CAP (KIPS & FT-KIPS)  
 X Y Z MX MY MZ  
 0. 0. 347.0 -3022.2 -5423.3 0.

DISPLACEMENT OF PILE CAP (INCHES & RADIANB)

X            Y            Z            RX            RY            RZ  
 -1.954E-04  6.392E-02 -2.332E-02 -6.301E-04 -3.534E-06  2.326E-06

PILE LOADS (PILE AXES)

FOR GROUP 1 WITH 4 PILES:  
 PILE STRESS FLAGS            FORCES (KIPS)  
 NO.    RATIO R P B            X            Y            Z  
 1      0.285            0.00       0.00       18.848  
 3      0.297            0.00       0.00       19.559

FOR GROUP 2 WITH 8 PILES:  
 PILE STRESS FLAGS            FORCES (KIPS)  
 NO.    RATIO R P B            X            Y            Z  
 5      0.073            -0.11       0.00       0.998  
 9      0.309            -0.13       0.00       18.844

FOR GROUP 3 WITH 9 PILES:  
 PILE STRESS FLAGS            FORCES (KIPS)  
 NO.    RATIO R P B            X            Y            Z  
 13     0.061            0.10       0.00       -2.998  
 16     0.376            0.10       -0.00       25.505  
 19     0.628            XX        0.10       -0.00       45.457  
 20     0.630            XX        0.10       -0.00       45.617  
 21     0.632            XX        0.10       -0.00       45.777

PROG. NO. 713-F3A2-210(MOD 8.4, 06-81)      13:08:54 08/14/84      PAGE 4

17TH ST. CANAL PUMPING STATION  
 3-D PILE ANALYSIS OF R.R. SWING GATE

LOAD CONDITION 3

PILE LOADS (PILE AXES)

FOR GROUP 3 WITH 9 PILES:  
 LOADS ON PILE THAT HAS MAXIMUM STRESS RATIO(R):  
 PILE STRESS FLAGS            FORCES (KIPS)  
 NO.    RATIO R P B            X            Y            Z  
 21     0.632            XX        0.10       -0.00       45.777

3 PILES EXCEEDED ALLOWABLE COMP. BUCK. LOAD OF 43.20 KIPS.  
3 PILES EXCEEDED ONE OR MORE OF ABOVE ALLOWABLE VALUES.

\*\*\* EXCEEDS ESTIMATED CRITICAL BUCKLING LOAD ( 43.2 KIPS).

3	SUMMATION OF PILE LOADS (STRUCTURE AXIS)					
LC	X	Y	Z	MX	MY	MZ
3	0.0	0.0	347.0	-3022.2	-5423.3	0.0

PROG. NO. 713-F3A2-210(MOD 2.4, 05-81) 13:02:54 02/14/84 PAGE 5

17TH ST. CANAL PUMPING STATION  
3-D PILE ANALYSIS OF R.R. SWING GATE

LOAD CONDITION 4

APPLIED LOADS ON PILE CAP (KIPS & FT-KIPS)						
X	Y	Z	MX	MY	MZ	
0.	0.	347.0	-1742.2	-5423.3	0.	

DISPLACEMENT OF PILE CAP (INCHES & RADIAN)						
X	Y	Z	RX	RY	RZ	
-1.054E-04	-1.362E-02	5.692E-02	4.051E-04	-3.534E-06	2.326E-06	



PILE LOADS (PILE AXES)

FOR GROUP 1 WITH 4 PILES:  
 PILE STRESS FLAGS FORCES (KIPS)  
 NO. RATIO R P B X Y Z  
 1 0.362 -0.05 0.00 25.711  
 3 0.363 -0.05 0.00 26.623

FOR GROUP 2 WITH 8 PILES:  
 PILE STRESS FLAGS FORCES (KIPS)  
 NO. RATIO R P B X Y Z  
 5 0.236 0.00 0.00 18.467  
 9 0.697 0.02 0.00 6.993

FOR GROUP 3 WITH 9 PILES:  
 PILE STRESS FLAGS FORCES (KIPS)  
 NO. RATIO R P B X Y Z  
 13 0.442 -0.02 0.00 34.132  
 16 0.211 -0.02 -0.00 15.895  
 19 0.649 -0.02 -0.00 2.976

4 SUMMATION OF PILE LOADS (STRUCTURE AXIS)  
 LC X Y Z MX MY MZ  
 4 0.0 0.0 347.0 -1742.2 -5423.3 0.0

PROG. NO. 713-F3A2-210(MOD 2.4, 05-81) 13:09:58 08/14/84 PAGE 6

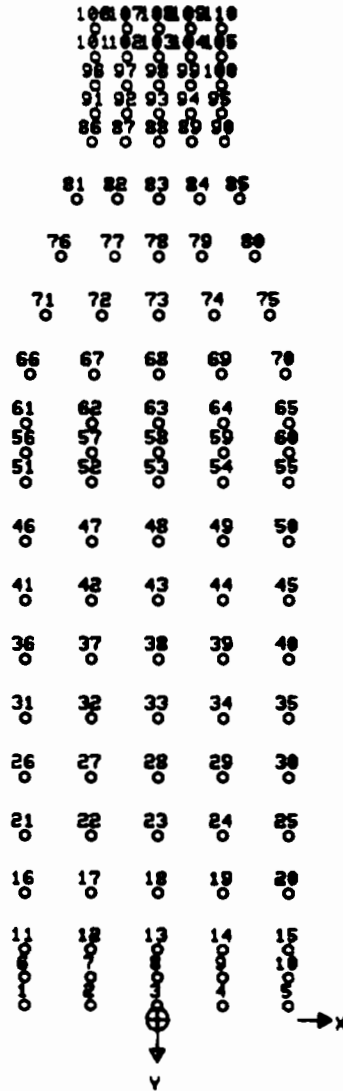
17TH ST. CANAL PUMPING STATION  
 3-D PILE ANALYSIS OF R.R. SWING GATE

INPUT DATA FILE USED FOR THIS RUN WAS: LTBR

DETAILED OUTPUT FILE FROM THIS RUN IS: LTBRD  
 BINARY OUTPUT FILE FROM THIS RUN IS: LTBRD

EOJ 13:09:58 08/14/84

PILE GEOMETRY PLOT

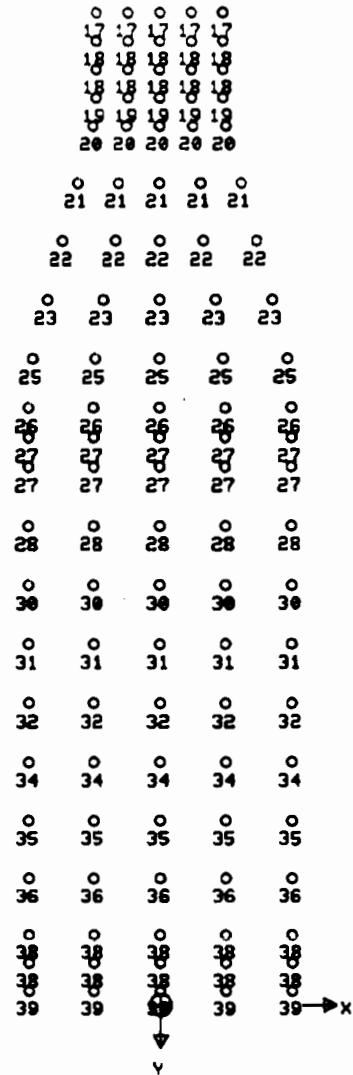


17TH ST CANAL PUMPING STATION  
 3-D PILE ANALYSIS OF HORIZ. DISCHARGE MONO.

□: RECTANGULAR PILE  
 ○: CIRCULAR PILE  
 ⊗: SPECIAL SHAPE PILE

PILE NUMBER  
 □  
 PILE BATTER  
 SCALE: 1" = 11.5 FT.

PILE AXIAL FORCES (KIPS), LOAD CASE 1



17TH ST CANAL PUMPING STATION

3-D PILE ANALYSIS OF HORIZ. DISCHARGE MONO.

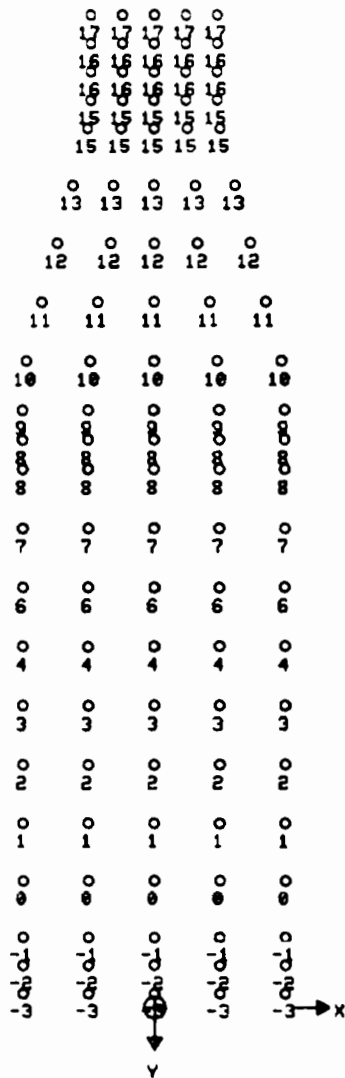
□: RECTANGULAR PILE

○: CIRCULAR PILE

I: SPECIAL SHAPE PILE

SCALE: 1" = 11.5 FT.

FILE AXIAL FORCES (KIPS), LOAD CASE 2

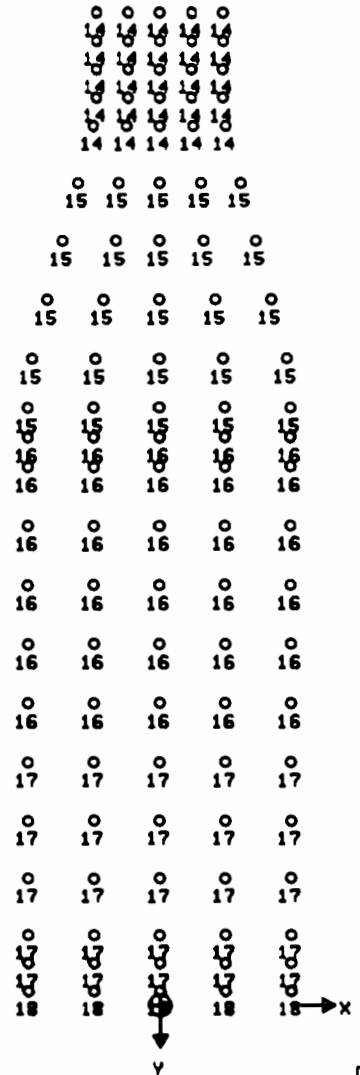


17TH ST CANAL PUMPING STATION  
 3-D PILE ANALYSIS OF HORIZ. DISCHARGE MONO.

□: RECTANGULAR PILE  
 ○: CIRCULAR PILE  
 I: SPECIAL SHAPE PILE

SCALE: 1" = 11.5 FT.

PILE AXIAL FORCES (KIPS), LOAD CASE 3



17TH ST CANAL PUMPING STATION  
 3-D PILE ANALYSIS OF HORIZ. DISCHARGE MONO.

□: RECTANGULAR PILE  
 ○: CIRCULAR PILE  
 I: SPECIAL SHAPE PILE  
 SCALE: 1" = 11.5 FT.

LISTH LTBHOR

08/13/84 13.48

010 17TH ST CANAL PUMPING STATION  
020 3-D PILE ANALYSIS OF HORIZ. DISCHARGE MONO.  
030 3 3 1  
040 -1 4.16  
050 2 0 40 80 120  
060 2 12  
070 2 0.7 1.05 0.7 1.05 1600  
080 0 2 1  
090 65 0 90  
100 \*\*13  
110 -13.5 -6.75 0 6.75 13.5  
120 5x-1.5 5x-4.5 5x-7.5 5x-13.5 5x-19.5 5x-25.5 5x-31.5,  
130 5x-37.5 5x-43.5 5x-49.5 5x-55.5 5x-58.5 5x-61.5  
140 65x0.0  
150 25 0 90  
160 -13.11 -6.55 0 6.55 13.11 -11.53 -5.77 0 5.77 11.53 -9.96 -4.48 0,  
170 4.48 9.96 -8.38 -4.19 0 4.19 8.38 -6.81 -3.40 0 3.40 6.81  
180 5x-66.5 5x-72.5 5x-78.5 5x-84.5 5x-90.5  
190 25x0.0  
200 20 0 90  
210 \*\*4  
220 -6.5 -3.25 0 3.25 6.5  
230 5x-93.5 5x-96.5 5x-99.5 5x-102.5  
240 20x0.0  
250 0 0.0 3018.6 -138776.7 0 0  
260 0 -727.6 838.9 -67746.8 0 0  
270 0 -727.6 1725.8 -89621.8 0 0

\*FRN RK29010,R

08/13/84 13.492

TYPE 3 FILE NAMES (OR ?)  
-LTBHOR LTBHORA LTBHORB

PROG. NO. 713-F3A2-210(MOD 8.4, 05-81) 13:29:48 08/13/84 PAGE 1

17TH ST CANAL PUMPING STATION  
3-D PILE ANALYSIS OF HORIZ. DISCHARGE MONO.

TOTAL NUMBER OF FILES = 110

LOAD CONDITION 1

APPLIED LOADS ON PILE CAP (KIPS & FT-KIPS)

X	Y	Z	MX	MY	MZ
0.	0.	3018.6	-138776.7	0.	0.

DISPLACEMENT OF PILE CAP (INCHES & RADIAN)

X	Y	Z	RX	RY	RZ
0.	0.	5.198E-02	8.392E-05	-1.405E-14	0.

PILE LOADS (PILE AXES)

FOR GROUP 1 WITH 65 PILES:

PILE NO.	STRESS RATIO	FLAGS	X	Y	Z
1	0.491		0.	0.	38.864
6	0.483		0.	0.	38.215
11	0.475		0.	0.	37.585
16	0.458		0.	0.	36.267
21	0.442		0.	0.	34.968
26	0.425		0.	0.	33.669
31	0.409		0.	0.	32.371
36	0.392		0.	0.	31.072
41	0.376		0.	0.	29.773
46	0.360		0.	0.	28.475
51	0.343		0.	0.	27.176
56	0.335		0.	0.	26.527
61	0.327		0.	0.	25.878

PROG. NO. 713-F3A2-210(MOD 8.4, 05-81) 13:29:48 08/13/84 PAGE 2

17TH ST CANAL PUMPING STATION  
3-D PILE ANALYSIS OF HORIZ. DISCHARGE MONO.

LOAD CONDITION 1

PILE LOADS (PILE AXES)

FOR GROUP 2 WITH 25 PILES:

PILE NO.	STRESS RATIO	FLAGS	X	Y	Z
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NO.	RATIO R P B	X	Y	Z
66	0.313	0.	0.	24.785
71	0.297	0.	0.	23.487
76	0.280	0.	0.	22.198
81	0.264	0.	0.	20.899
86	0.248	0.	0.	19.601

FOR GROUP 3 WITH 20 PILES:  
 PILE STRESS FLAGS FORCES (KIPS)

NO.	RATIO R P B	X	Y	Z
91	0.239	0.	0.	18.951
96	0.231	0.	0.	18.302
101	0.223	0.	0.	17.653
106	0.215	0.	0.	17.003

1 SUMMATION OF PILE LOADS (STRUCTURE AXIS)  
 LC X Y Z MX MY MZ  
 1 0. 0. 3018.6 -138776.7 0.0 0.

PROG. NO. 713-F3A2-210(MOD 8.4, 05-81) 13:29:48 08/13/84 PAGE 3

17TH ST CANAL PUMPING STATION  
 3-D PILE ANALYSIS OF HORIZ. DISCHARGE MONO.

LOAD CONDITION 2

APPLIED LOADS ON PILE CAP (KIPS & FT-KIPS)

X	Y	Z	MX	MY	MZ
0.	-727.8	838.9	-67746.8	0.	0.



DISPLACEMENT OF PILE CAP (INCHES & RADIANS)  
 X Y Z RX RY RZ  
 5.238E-09 -4.170E 00 -3.703E-03 -2.128E-05 -1.872E-13 -8.043E-12

PILE LOADS (PILE AXES)

FOR GROUP 1 WITH 65 PILES:  
 PILE STRESS FLAGS FORCES (KIPS)  
 NO. RATIO R P B X Y Z

1	2.352**	-6.61	-0.00	-2.504
2	2.352**	-6.61	-0.00	-2.504
3	2.352**	-6.61	-0.00	-2.504
4	2.352**	-6.61	-0.00	-2.504
5	2.352**	-6.61	-0.00	-2.504
6	2.347**	-6.61	-0.00	-1.928
7	2.347**	-6.61	-0.00	-1.928
8	2.347**	-6.61	-0.00	-1.928
9	2.347**	-6.61	-0.00	-1.928
10	2.347**	-6.61	-0.00	-1.928
11	2.342**	-6.61	-0.00	-1.352
12	2.342**	-6.61	-0.00	-1.352
13	2.342**	-6.61	-0.00	-1.352
14	2.342**	-6.61	-0.00	-1.352
15	2.342**	-6.61	-0.00	-1.352
16	2.333**	-6.61	-0.00	-0.200
17	2.333**	-6.61	-0.00	-0.200
18	2.333**	-6.61	-0.00	-0.200
19	2.333**	-6.61	-0.00	-0.200
20	2.333**	-6.61	-0.00	-0.200
21	3.508**	-6.61	-0.00	0.951
22	3.508**	-6.61	-0.00	0.951
23	3.508**	-6.61	-0.00	0.951
24	3.508**	-6.61	-0.00	0.951
25	3.508**	-6.61	-0.00	0.951
26	3.523**	-6.61	-0.00	2.103
27	3.523**	-6.61	-0.00	2.103
28	3.523**	-6.61	-0.00	2.103

PROG. NO. 713-F3A2-210(MOD 8.4, 05-81) 13:29:48 08/13/84 PAGE 4

17TH ST CANAL PUMPING STATION  
 3-D PILE ANALYSIS OF HORIZ. DISCHARGE MONO.

LOAD CONDITION 2

PILE LOADS (PILE AXES)

FOR GROUP 1 WITH 65 PILES:  
 PILE STRESS FLAGS FORCES (KIPS)  
 NO. RATIO R P B X Y Z

29	3.523**	-6.61	-0.00	2.103
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30	3.523xx	-6.61	-0.00	8.103
31	3.538xx	-6.61	-0.00	3.855
32	3.538xx	-6.61	-0.00	3.855
33	3.538xx	-6.61	-0.00	3.855
34	3.538xx	-6.61	-0.00	3.855
35	3.538xx	-6.61	-0.00	3.855
36	3.552xx	-6.61	-0.00	4.407
37	3.552xx	-6.61	-0.00	4.407
38	3.552xx	-6.61	-0.00	4.407
39	3.552xx	-6.61	-0.00	4.407
40	3.552xx	-6.61	-0.00	4.407
41	3.567xx	-6.61	-0.00	5.558
42	3.567xx	-6.61	-0.00	5.558
43	3.567xx	-6.61	-0.00	5.558
44	3.567xx	-6.61	-0.00	5.558
45	3.567xx	-6.61	-0.00	5.558
46	3.581xx	-6.61	-0.00	6.710
47	3.581xx	-6.61	-0.00	6.710
48	3.581xx	-6.61	-0.00	6.710
49	3.581xx	-6.61	-0.00	6.710
50	3.581xx	-6.61	-0.00	6.710
51	3.596xx	-6.61	-0.00	7.862
52	3.596xx	-6.61	-0.00	7.862
53	3.596xx	-6.61	-0.00	7.862
54	3.596xx	-6.61	-0.00	7.862
55	3.596xx	-6.61	-0.00	7.862
56	3.603xx	-6.61	-0.00	8.438
57	3.603xx	-6.61	-0.00	8.438
58	3.603xx	-6.61	-0.00	8.438
59	3.603xx	-6.61	-0.00	8.438
60	3.603xx	-6.61	-0.00	8.438
61	3.610xx	-6.61	-0.00	9.014
62	3.610xx	-6.61	-0.00	9.014
63	3.610xx	-6.61	-0.00	9.014
64	3.610xx	-6.61	-0.00	9.014
65	3.610xx	-6.61	-0.00	9.014

PROG. NO. 713-F3A2-210(MOD 8.4, 05-81) 13:29:48 08/13/84 PAGE 5

17TH ST CANAL PUMPING STATION  
3-D PILE ANALYSIS OF HORIZ. DISCHARGE MONO.

LOAD CONDITION 2

PILE LOADS (PILE AXES)

FOR GROUP 1 WITH 65 PILES:  
LOADS ON PILE THAT HAS MAXIMUM STRESS RATIO(R):  
PILE STRESS FLAGS FORCES (KIPS)

NO.	RATIO R	P	X	Y	Z
61	3.610xx		-6.61	-0.00	9.014

65 PILES EXCEEDED ALLOWABLE STRESS RATIO OF UNITY.  
 65 PILES EXCEEDED ONE OR MORE OF ABOVE ALLOWABLE VALUES.

FOR GROUP 2 WITH 25 PILES:  
 PILE STRESS FLAGS FORCES (KIPS)  
 NO. RATIO R P B X Y Z

66	3.622xx			-6.61	-0.00	9.974
67	3.622xx			-6.61	-0.00	9.974
68	3.622xx			-6.61	-0.00	9.974
69	3.622xx			-6.61	-0.00	9.974
70	3.622xx			-6.61	-0.00	9.974
71	3.637xx			-6.61	-0.00	11.125
72	3.637xx			-6.61	-0.00	11.125
73	3.637xx			-6.61	-0.00	11.125
74	3.637xx			-6.61	-0.00	11.125
75	3.637xx			-6.61	-0.00	11.125
76	3.652xx			-6.61	-0.00	12.277
77	3.652xx			-6.61	-0.00	12.277
78	3.652xx			-6.61	-0.00	12.277
79	3.652xx			-6.61	-0.00	12.277
80	3.652xx			-6.61	-0.00	12.277
81	3.666xx			-6.61	-0.00	13.429
82	3.666xx			-6.61	-0.00	13.429
83	3.666xx			-6.61	-0.00	13.429
84	3.666xx			-6.61	-0.00	13.429
85	3.666xx			-6.61	-0.00	13.429
86	3.681xx			-6.61	-0.00	14.581
87	3.681xx			-6.61	-0.00	14.581
88	3.681xx			-6.61	-0.00	14.581
89	3.681xx			-6.61	-0.00	14.581
90	3.681xx			-6.61	-0.00	14.581

PROG. NO. 713-F3A2-210(MOD 8.4, 05-81) 13:29:48 08/13/84 PAGE 6

17TH ST CANAL PUMPING STATION  
 3-D PILE ANALYSIS OF HORIZ. DISCHARGE MONO.

LOAD CONDITION 2

PILE LOADS (PILE AXES)

FOR GROUP 2 WITH 25 PILES:  
 LOADS ON PILE THAT HAS MAXIMUM STRESS RATIO(R):  
 PILE STRESS FLAGS FORCES (KIPS)  
 NO. RATIO R P B X Y Z

86	3.881xx			-6.61	-0.00	14.581
----	---------	--	--	-------	-------	--------

25 PILES EXCEEDED ALLOWABLE STRESS RATIO OF UNITY.

25 PILES EXCEEDED ONE OR MORE OF ABOVE ALLOWABLE VALUES.

FOR GROUP 3 WITH 20 PILES:

FILE NO.	STRESS RATIO	FLAGS P B	FORCES (KIPS)		
			X	Y	Z
91	3.688xx		-6.61	-0.00	15.156
92	3.688xx		-6.61	-0.00	15.156
93	3.688xx		-6.61	-0.00	15.156
94	3.688xx		-6.61	-0.00	15.156
95	3.688xx		-6.61	-0.00	15.156
96	3.695xx		-6.61	-0.00	15.732
97	3.695xx		-6.61	-0.00	15.732
98	3.695xx		-6.61	-0.00	15.732
99	3.695xx		-6.61	-0.00	15.732
100	3.695xx		-6.61	-0.00	15.732
101	3.702xx		-6.61	0.00	16.308
102	3.702xx		-6.61	0.00	16.308
103	3.702xx		-6.61	0.00	16.308
104	3.702xx		-6.61	0.00	16.308
105	3.702xx		-6.61	0.00	16.308
106	3.710xx		-6.61	0.00	16.884
107	3.710xx		-6.61	0.00	16.884
108	3.710xx		-6.61	0.00	16.884
109	3.710xx		-6.61	0.00	16.884
110	3.710xx		-6.61	0.00	16.884

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17TH ST CANAL PUMPING STATION  
3-D PILE ANALYSIS OF HORIZ. DISCHARGE MONO.

LOAD CONDITION 2

PILE LOADS (PILE AXES)

FOR GROUP 3 WITH 20 PILES:  
LOADS ON PILE THAT HAS MAXIMUM STRESS RATIO(R):

FILE NO.	STRESS RATIO	FLAGS P B	FORCES (KIPS)		
			X	Y	Z
106	3.710xx		-6.61	0.00	16.884

20 PILES EXCEEDED ALLOWABLE STRESS RATIO OF UNITY.  
20 PILES EXCEEDED ONE OR MORE OF ABOVE ALLOWABLE VALUES.

SUMMATION OF PILE LOADS (STRUCTURE AXIS)						
LC	X	Y	Z	MX	MY	MZ
2	-0.0	-727.6	838.9	-87746.8	-0.0	-0.0

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17TH ST CANAL PUMPING STATION  
3-D PILE ANALYSIS OF HORIZ. DISCHARGE MONO.

LOAD CONDITION 3

APPLIED LOADS ON PILE CAP (KIPS & FT-KIPS)						
X	Y	Z	MX	MY	MZ	
0.	-727.6	1725.8	-89821.8	0.	0.	

DISPLACEMENT OF PILE CAP (INCHES & RADIANS)						
X	Y	Z	RX	RY	RZ	
5.838E-09	-4.170E 00	8.338E-08	3.860E-06	-7.262E-14	-8.043E-12	

PILE LOADS (PILE AXES)

FOR GROUP 1 WITH 66 PILES:

PILE NO.	STRESS FLAG	FORCES (KIPS)		
		RATIO R	P	B
1	3.718XX	-6.61	-0.00	17.538
2	3.718XX	-6.61	-0.00	17.538
3	3.718XX	-6.61	-0.00	17.538
4	3.718XX	-6.61	-0.00	17.538
5	3.718XX	-6.61	-0.00	17.538
6	3.717XX	-6.61	-0.00	17.427
7	3.717XX	-6.61	-0.00	17.427
8	3.717XX	-6.61	-0.00	17.427
9	3.717XX	-6.61	-0.00	17.427
10	3.717XX	-6.61	-0.00	17.427
11	3.715XX	-6.61	-0.00	17.323
12	3.715XX	-6.61	-0.00	17.323
13	3.715XX	-6.61	-0.00	17.323
14	3.715XX	-6.61	-0.00	17.323
15	3.715XX	-6.61	-0.00	17.323
16	3.713XX	-6.61	-0.00	17.113
17	3.713XX	-6.61	-0.00	17.113
18	3.713XX	-6.61	-0.00	17.113
19	3.713XX	-6.61	-0.00	17.113
20	3.713XX	-6.61	-0.00	17.113
21	3.710XX	-6.61	-0.00	16.903
22	3.710XX	-6.61	-0.00	16.903
23	3.710XX	-6.61	-0.00	16.903
24	3.710XX	-6.61	-0.00	16.903
25	3.710XX	-6.61	-0.00	16.903
26	3.707XX	-6.61	-0.00	16.694
27	3.707XX	-6.61	-0.00	16.694
28	3.707XX	-6.61	-0.00	16.694

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17TH ST CANAL PUMPING STATION  
3-D PILE ANALYSIS OF HORIZ. DISCHARGE MONO.

LOAD CONDITION 3

PILE LOADS (PILE AXES)

FOR GROUP 1 WITH 66 PILES:

PILE NO.	STRESS FLAG	FORCES (KIPS)		
		RATIO R	P	B
29	3.707XX	-6.61	-0.00	16.694
30	3.707XX	-6.61	-0.00	16.694
31	3.705XX	-6.61	-0.00	16.484
32	3.705XX	-6.61	-0.00	16.484
33	3.705XX	-6.61	-0.00	16.484
34	3.705XX	-6.61	-0.00	16.484

35	3.705XX	-6.61	-0.00	16.464
36	3.702XX	-6.61	-0.00	16.275
37	3.702XX	-6.61	-0.00	16.275
38	3.702XX	-6.61	-0.00	16.275
39	3.702XX	-6.61	-0.00	16.275
40	3.702XX	-6.61	-0.00	16.275
41	3.699XX	-6.61	-0.00	16.065
42	3.699XX	-6.61	-0.00	16.065
43	3.699XX	-6.61	-0.00	16.065
44	3.699XX	-6.61	-0.00	16.065
45	3.699XX	-6.61	-0.00	16.065
46	3.697XX	-6.61	-0.00	15.856
47	3.697XX	-6.61	-0.00	15.856
48	3.697XX	-6.61	-0.00	15.856
49	3.697XX	-6.61	-0.00	15.856
50	3.697XX	-6.61	-0.00	15.856
51	3.694XX	-6.61	-0.00	15.646
52	3.694XX	-6.61	-0.00	15.646
53	3.694XX	-6.61	-0.00	15.646
54	3.694XX	-6.61	-0.00	15.646
55	3.694XX	-6.61	-0.00	15.646
56	3.693XX	-6.61	-0.00	15.541
57	3.693XX	-6.61	-0.00	15.541
58	3.693XX	-6.61	-0.00	15.541
59	3.693XX	-6.61	-0.00	15.541
60	3.693XX	-6.61	-0.00	15.541
61	3.691XX	-6.61	-0.00	15.437
62	3.691XX	-6.61	-0.00	15.437
63	3.691XX	-6.61	-0.00	15.437
64	3.691XX	-6.61	-0.00	15.437
65	3.691XX	-6.61	-0.00	15.437

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17TH ST CANAL PUMPING STATION  
3-D PILE ANALYSIS OF HORIZ. DISCHARGE MONO.

LOAD CONDITION 3

PILE LOADS (PILE AXES)

FOR GROUP 1 WITH 65 PILES:  
LOADS ON PILE THAT HAS MAXIMUM STRESS RATIO(R):

PILE NO.	STRESS RATIO	FLAG	P	B	X	Y	Z	FORCES (KIPS)
1	3.718XX				-6.61	-0.00	17.538	

65 PILES EXCEEDED ALLOWABLE STRESS RATIO OF UNITY.  
65 PILES EXCEEDED ONE OR MORE OF ABOVE ALLOWABLE VALUES.

FOR GROUP 2 WITH 65 PILES:

PILE NO.	STRESS FLAGS RATIO R P B	FORCES (KIPS)		
		X	Y	Z
66	3.689xx	-6.81	-0.00	15.282
67	3.689xx	-6.81	-0.00	15.282
68	3.689xx	-6.81	-0.00	15.282
69	3.689xx	-6.81	-0.00	15.282
70	3.689xx	-6.81	-0.00	15.282
71	3.687xx	-6.81	-0.00	15.053
72	3.687xx	-6.81	-0.00	15.053
73	3.687xx	-6.81	-0.00	15.053
74	3.687xx	-6.81	-0.00	15.053
75	3.687xx	-6.81	-0.00	15.053
76	3.684xx	-6.61	-0.00	14.843
77	3.684xx	-6.61	-0.00	14.843
78	3.684xx	-6.61	-0.00	14.843
79	3.684xx	-6.61	-0.00	14.843
80	3.684xx	-6.61	-0.00	14.843
81	3.681xx	-6.61	-0.00	14.633
82	3.681xx	-6.61	-0.00	14.633
83	3.681xx	-6.61	-0.00	14.633
84	3.681xx	-6.61	-0.00	14.633
85	3.681xx	-6.61	-0.00	14.633
86	3.679xx	-6.61	-0.00	14.424
87	3.679xx	-6.61	-0.00	14.424
88	3.679xx	-6.61	-0.00	14.424
89	3.679xx	-6.61	-0.00	14.424
90	3.679xx	-6.61	-0.00	14.424

PROG. NO. 713-F3A2-210(MOD 8.4, 05-81) 13:29:48 08/13/84 PAGE 11

17TH ST CANAL PUMPING STATION  
3-D PILE ANALYSIS OF HORIZ. DISCHARGE MONO.

LOAD CONDITION 3

PILE LOADS (PILE AXES)

FOR GROUP 2 WITH 25 PILES:  
LOADS ON PILE THAT HAS MAXIMUM STRESS RATIO(R):

PILE NO.	STRESS FLAGS RATIO R P B	FORCES (KIPS)		
		X	Y	Z
66	3.689xx	-6.61	-0.00	15.282

25 PILES EXCEEDED ALLOWABLE STRESS RATIO OF UNITY.  
25 PILES EXCEEDED ONE OR MORE OF ABOVE ALLOWABLE VALUES.

FOR GROUP 3 WITH 20 PILES:  
PILE STRESS FLAGS FORCES (KIPS)



NO.	RATIO R P B	X	Y	Z
91	3.677xx	-6.61	-0.00	14.319
92	3.677xx	-6.61	-0.00	14.319
93	3.677xx	-6.61	-0.00	14.319
94	3.677xx	-6.61	-0.00	14.319
95	3.677xx	-6.61	-0.00	14.319
96	3.676xx	-6.61	-0.00	14.214
97	3.676xx	-6.61	-0.00	14.214
98	3.676xx	-6.61	-0.00	14.214
99	3.676xx	-6.61	-0.00	14.214
100	3.676xx	-6.61	-0.00	14.214
101	3.675xx	-6.61	0.00	14.110
102	3.675xx	-6.61	0.00	14.110
103	3.675xx	-6.61	0.00	14.110
104	3.675xx	-6.61	0.00	14.110
105	3.675xx	-6.61	0.00	14.110
106	3.673xx	-6.61	0.00	14.005
107	3.673xx	-6.61	0.00	14.005
108	3.673xx	-6.61	0.00	14.005
109	3.673xx	-6.61	0.00	14.005
110	3.673xx	-6.61	0.00	14.005

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17TH ST CANAL PUMPING STATION  
3-D PILE ANALYSIS OF HORIZ. DISCHARGE MONO.

LOAD CONDITION 3

PILE LOADS (PILE AXES)

FOR GROUP 3 WITH 20 PILES:  
LOADS ON PILE THAT HAS MAXIMUM STRESS RATIO(R):  
FILE STRESS FLAGS FORCES (KIPS)  
NO. RATIO R P B X Y Z  
91 3.677xx -6.61 -0.00 14.319  
20 PILES EXCEEDED ALLOWABLE STRESS RATIO OF UNITY.  
20 PILES EXCEEDED ONE OR MORE OF ABOVE ALLOWABLE VALUES.

3 SUMMATION OF PILE LOADS (STRUCTURE AXIS)  
LC X Y Z RX RY RZ

3      -0.0 -787.6 1785.8 -89621.8      0.0      -0.0

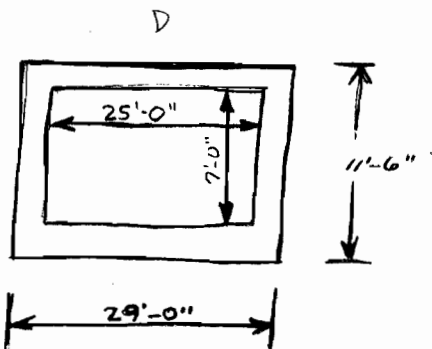
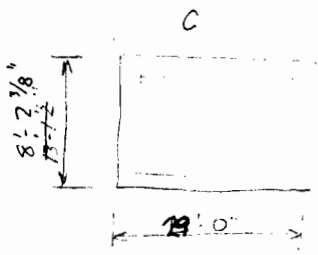
PROG. NO. 713-F3A2-210(MOD 8.4, 05-81)      13:32:54      08/13/84      PAGE 13

17TH ST CANAL PUMPING STATION  
3-D FILE ANALYSIS OF HORIZ. DISCHARGE MONO.

INPUT DATA FILE USED FOR THIS RUN WAS: LTBHOR

DETAILED OUTPUT FILE FROM THIS RUN IS: LTBHORA  
BINARY OUTPUT FILE FROM THIS RUN IS: LTBHORB

EOJ      13:33:30      08/13/84

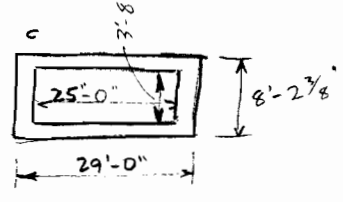
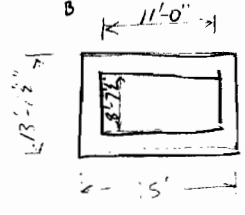
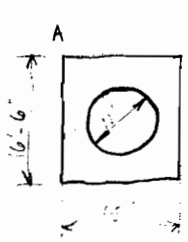
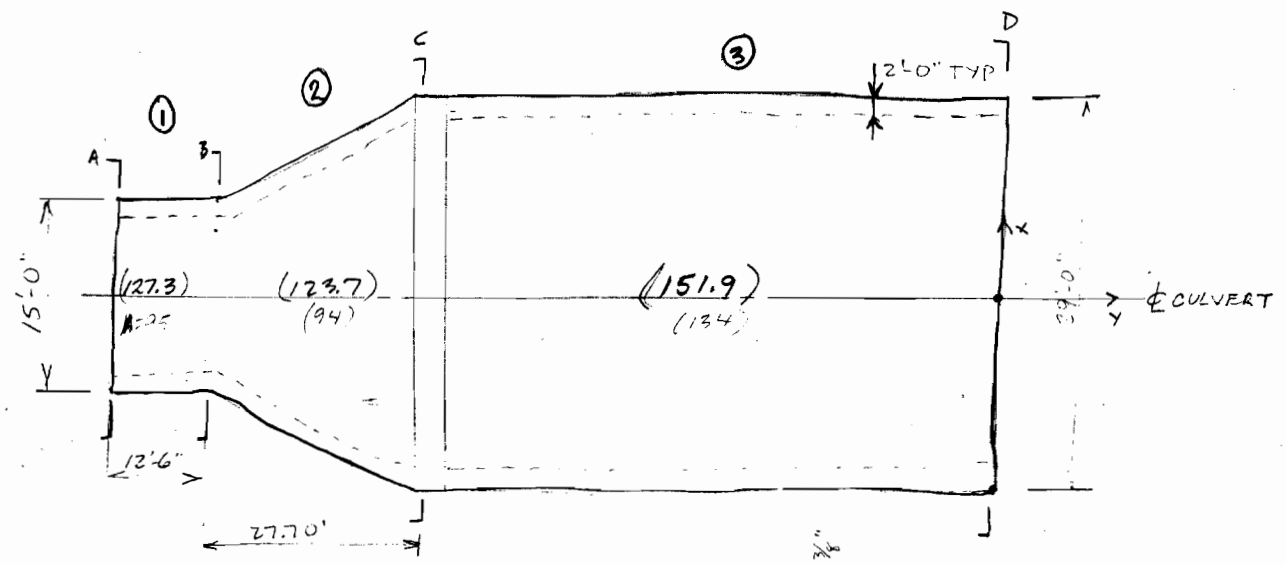
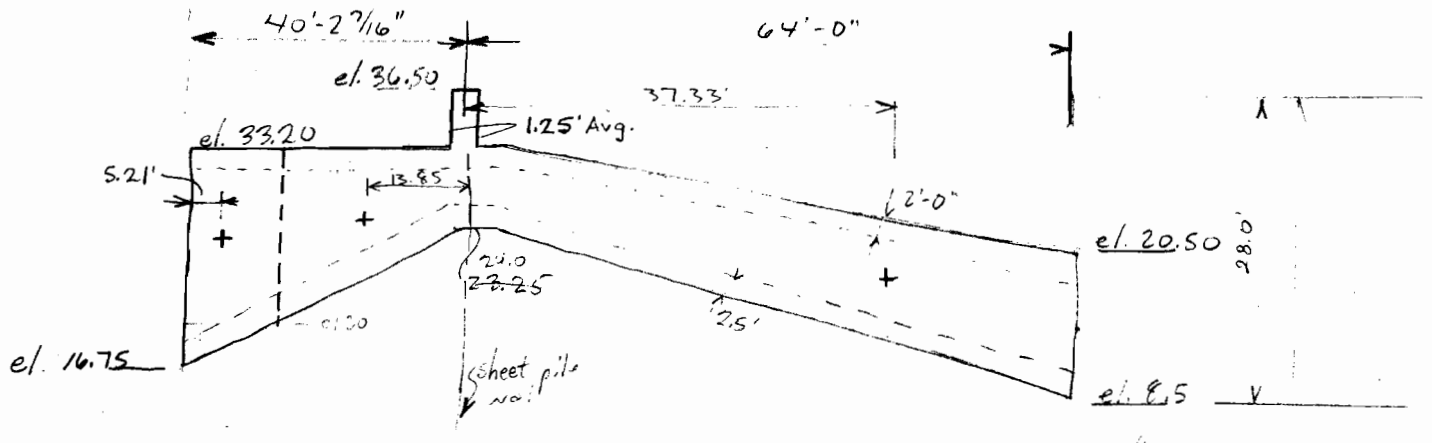


20.5  
90  
11.5

C  $(29 \times 8.2) - (25 \times 3.7) = 145.3$   
 D  $(29 \times 11.5) - (25 \times 7.0) = 158.5$   
 } AVG. C.S. AREA = 151.9

C.G.

TYPICAL MONOLITH FOR HORIZONTAL DISCHARGE TUBE



$(29 \times 8.20) - (25 \times 3.70)$   
 } AVG C.S. = 123.69

95.13  $(16.5 \times 15) - \left(\frac{\pi(11)^2}{4}\right) = 152.47$   
 95.03  $(15 \times 13.13) - (11 \times 8.63) = 102.02$   
 } AVG. CROSS SECTION AREA = 127.25

R.R. SWING GATE

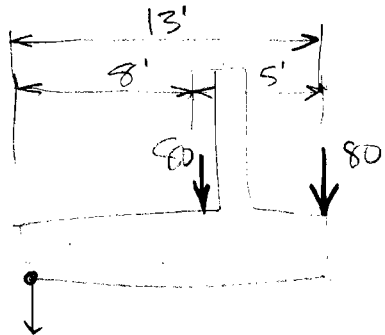
TOP	W14 X 30	23'-8"		1	710.1
BOTTOM	W14 X 48	23'-8"		1	1136.2
SKIN R	5/16" x 6' x	23'-8"	76.6	1	1812.2
EXT. COL.	TS 14 X 6 X 1/2	9'	62.46	1	562.1
R	1/2" x 13 7/8	5'-10 1/2"	23.6	4	552.4
	1/2" x 4	5'-10 1/2"		4	159.3
	3/8" x 6	22'-6"		1	172.3
	3/8" x 6	5'-10 1/2"		5	223.9
END R	1/2" x 13 7/8	6'		1	141.6
SEAL ANGLE	L 5 X 5 X 1/2	23'-8"	16.2	1	383.5

5853.6

ADD 15% 878

6731.6

SAY 6.7 K



1 AXLE	80 X 13	=	1040	
2 AXLES	80 X 13 :		1040	} 1680
	80 X 8 =		640	

3-D- PILE ANALYSIS

010 17<sup>th</sup> ST. CANAL PUMPING STATION

020 3-D PILE ANALYSIS OF HORIZONTAL DISCHARGE MONO.

030 3 3 1

040 -1 4.16

050 1 0 <sup>Length</sup>40 80 120

060 2 12

070 2 0.7 1.05 0.7 1.05 1600

080 0 2 1  
<sup>></sup>090 65 0 90  
 100 \* \* 13

110 -13.5 -6.75 0 6.75 13.5

120 5\*-1.5 5\*-4.5 5\*-7.5 5\*-13.5 5\*-19.5 5\*-25.5 5\*-31.5,

130 5\*-37.5 5\*-43.5 5\*-49.5 5\*-55.5 5\*-58.5 5\*-61.5

140 65 \* 0.0

150 25 0 90

160 -13.11 -6.55 0 6.55 13.11 -11.53 -5.77 0 5.77 11.53 9.96 -4.98 0

170 4.98 9.96 -8.38 -4.19 0 4.19 8.38 -6.81 -3.40 0 3.40 6.81

180 5\*-66.5 5\*-72.5 5\*-78.5 5\*-84.5 5\*-90.5

190 25 \* 0.0

200 20 0 90

210 \* \* 4

220 -6.5 -3.25 0 3.25 6.5

230 5\*-93.0 5\*-96.0 5\*-99.0 5\*-102.0 5\*-105.0

240 20 \* 0.0

250 0 0 0 3018.6 -138,776.7 0 0

260 0 0 -727.6 838.9 -67,746.8 0 0

270 0 0 -727.6 1725.8 -89,621.8 0 0

FRN RK29010, R

LTBHOZ LTBHOZA LTBHOZB  
 LTBRR LTBARRA LTBRRB

3-D- PILE ANALYSIS

010 17<sup>th</sup> ST. CANAL PUMPING STATION

020 3-D PILE ANALYSIS OF HORIZONTAL DISCHARGE MONO.

030 3 3 1

040 -1 4.16

050 1 0 <sup>Length</sup>40 80 120

060 2 12

070 2 0.7 1.05 0.7 1.05 1600

040 0 2 1  
~~090~~ 65 0 90  
 100 \* \* 13

110 -13.5 -6.75 0 6.75 13.5

120 5\*-1.5 5\*-4.5 5\*-7.5 5\*-13.5 5\*-19.5 5\*-25.5 5\*-31.5,

130 5\*-37.5 5\*-43.5 5\*-49.5 5\*-55.5 5\*-58.5 5\*-61.5

140 65 \* 0.0

150 25 0 90

160 -13.11 -6.55 0 6.55 13.11 -11.53 -5.77 0 5.77 11.53 9.96 -4.98 0

170 4.98 9.96 -8.38 -4.19 0 4.19 8.38 -6.81 -3.40 0 3.40 6.81

180 5\*-66.5 5\*-72.5 5\*-78.5 5\*-84.5 5\*-90.5

190 25 \* 0.0

200 20 0 90

210 \* \* 4

220 -6.5 -3.25 0 3.25 6.5

230 5\*-93.0 5\*-96.0 5\*-99.0 5\*-102.0 5\*-105.0

240 20 \* 0.0

250 0 0 0 3018.6 -138,776.7 0 0

260 0 0 -727.6 838.9 -67,746.8 0 0

270 0 0 -727.6 1725.8 -89,621.8 0 0

FRN RK29010, R

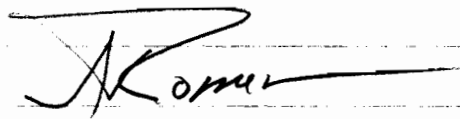
LTBHOZ      LTBHOZA      LTBHOZB  
 LTBRR      LTBARRA      LTBRRB

Note:

29 Aug 84

I called Jens Nielsen of Burk & Assoc. about permit request. I informed him that we had no further comments pertaining to the permit, but we had not reviewed their plans for creditability under the Lake Pont proj. He said that the S&WB would be interested in having this work credited by the Levee Board.

He said they (Burk) would resubmit the plans for our review under the proj. guidelines.

A handwritten signature in cursive script, appearing to read "J. Romer".