Structural Calculations and Drawings

Load Case	Load Description	Load Category	Factored Loads
LC1	Normal Operation	0%	(D + EH + EV)
LC3	Construction	16.67%	(D + Sur)
LC4	Construction + Wind	33%	(D + Sur + W)
LC5	Flowline + Imperv Uplift	0%	(D + EH + EV + HF + IU)
LC6	Flowline + Perv Uplift	0%	(D + EH + EV + HF + PU)
LC7	Flowline + Imperv Uplift + Wind + Debris	33%	(D + EH + EV + HF + IU + I + W
LC8	Flowline + Perv Uplift + Wind + Debris	33%	(D + EH + EV + HF + PU + I + W
LC9	Freeboard + Imperv Uplift + Debris	33%	(D + EH + EV + HTW + I + IU)
LC10	Freeboard + Perv Uplift + Debris	33%	(D + EH + EV + HTW + I + PU)

D= Dead Load
EH= Horizontal Soil
EV = Vertical Soil
ES = Surcharge Load (200 psf)
W = Wind
HF = Water at Flowline
PU = Pervious Uplift
IU = Impervious Uplift
I = Debris Impact
H_{TW} = Water at Top of Wall
Sur = Surcharge

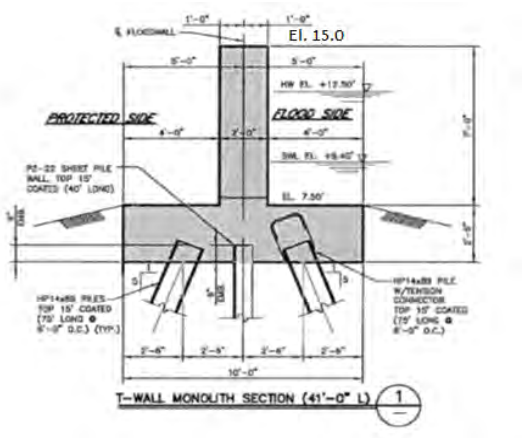
ASCE 7-10 Wind Load Calculation

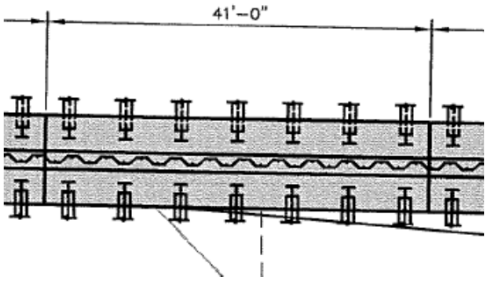
Wind on Wall

$$q_z = 0.00256 K_z K_{zt} K_d V^2 \text{ (lb/ft}^2\text{)} \qquad (27.3\text{-}1)$$

K_z=	1.03	
K_{zt}=	1	
K_d=	0.85	
V=	158	mph
q_z=	56.0	lb/ft^2

Reach D Sunset twall (TOW El. 15.0)
T-Wall Foundation Loads: Unfactored Loads for Pile Analysis





Top of Stem EL.	15.0		Weight of Water:	0.062	k/ft^3	
Top of Slab EL.	7.5		Weight Soil (FS)	0.120	k/ft^3	
Bottom of Slab EL.	5.0		Weight of Soil (PS):	0.12	k/ft^4	
Stem Width:	2.00	ft	Weight of Concrete:	0.150	k/ft^3	
F.S. Slab Width:	4	ft	Ko:	0.8		
P.S. Slab Width:	4	ft	Wave Load:	0	k/ft	
Length of Monolith:	41	ft	Wave Arm EL.	0		
Dist to Sheet Pile:	5	ft	Unbal. Load SWL:	0.0	k/ft	
F.S. Soil EL.	7.5		Unbal. Load HWL:	0.0	k/ft	
P.S. Soil EL.	7.5		Wind Load:	0.056	ksf	
S.W.L EL. (Flowline)	9.4		Boat Impact	0.5	k/ft	Debris applied at TOW for TOW LC
P.S. Water EL.	0.0		Construction Surcharge:	0.2	k/ft^2	

Width of Monolith:	10.0	ft	Area of Stem:	15.00	ft^2
Area of Base Slab:	25	ft^2	Bouyant Soil Weight (PS):	0.058	k/ft^3
			Bouyant Soil Weight (FS):	0.058	k/ft^4

Load Sheet Limitations - a) Straight aligned monoliths only b) No varying soil elevations along monolith
c) Constant stem thickness only d) Sheet only handles minimal impact loads

LC 1: **Load Case 1a.** Normal Operation

Item	Fx	Fy	Fz	x	y	z	Mx	My	Mz
Concrete Base			3.8		5.0		18.8		
Concrete Stem			2.3		5.000		11.3		
F.S. Vertical Soil			0.0		2.000		0.0		
F.S. Horizontal Soil (Base)		0.3				0.83	0.3		
P.S. Vertical Soil			0.0		8.00		0.0		
Sub Total:		0.3	6.0				30.3	0.0	0.0
Sub Total x Monolith Length:		12	246				1240	0	0
Total		**12**	**246**	**0**	**0**	**0**	**1240**	**0**	**0**

LC 3: **Load Case 2a.** Construction

Item	Fx	Fy	Fz	x	y	z	Mx	My	Mz
Concrete Base			3.8		5.0		18.8		
Concrete Stem			2.3		5.000		11.3		
F.S. Horizontal Soil (Base)		0.3				0.83	0.3		
Construction Surcharge(FS)			0.8		2.00		1.6		
Construction Surcharge(PS)			0.8		8.00		6.4		
Sub Total:		0.3	7.6				38.3		
Sub Total x Monolith Length:		12.3	311.6				1568.25	0	0
Total		**12**	**312**				**1568**		

LC 4: **Load Case 2b**. Construction + Wind

Item	Fx	Fy	Fz	x	y	z	Mx	My	Mz
Concrete Base			3.8		5.0		18.8		
Concrete Stem			2.3		5.000		11.3		
F.S. Horizontal Soil (Base)		0.3				0.83	0.3		
Construction Surcharge(FS)			0.8		2.0		1.6		
Construction Surcharge(PS)			0.8		8		6.4		
Wind		0.42				6.3	2.6		
Sub Total:		0.72	7.60				40.88	0.00	0.00
Sub Total x Monolith Length:		29.52	311.6				1675.875	0	0
Total		**30**	**312**				**1676**		

LC 5: **Load Case 3a**. Flowline, Impervious Uplift

Item	Fx	Fy	Fz	x	y	z	Mx	My	Mz
Concrete Base			3.8		5.00		18.8		
Concrete Stem			2.3		5.000		11.3		
F.S. Vertical Water			0.5		2.00		0.9		
F.S. Vertical Soil			0.0		2.00		0.0		
P.S. Vertical Water			0.0000		8.000		0.0		
P.S. Vertical Soil			0.0000		8.000		0.0		
F.S. Horizontal Water		0.6				1.47	0.9		
F.S. Horizontal Soil		0.144				0.83	0.1		
P.S. Horizontal Water		0.0000				0.00	0.0		
P.S. Horizontal Soil ($\gamma_{m\ tri}$)		-0.3000				0.83	-0.3		
P.S. Horizontal Soil ($\gamma_{m\ rec}$)		0.0				0.00	0.0		
P.S. Horizontal Soil ($\gamma_{sat\ tri}$)		0.0				0.00	0.0		
F.S. Impervious Uplift			-1.4		2.50		-3.4		
P.S. Impervious Uplift			0.0		7.50		0.0		
Unbalanced Force		0.0							
Sub Total:		0.4	5.1				28.3		
Sub Total x Monolith Length:		18.4	209.2				1,159.2	0.0	0.0
Total		**18**	**209**				**1159**		

LC 6: **Load Case 3b**. Flowline, Pervious Uplift

Item	Fx	Fy	Fz	x	y	z	Mx	My	Mz
Concrete Base			3.8		5.00		18.8		
Concrete Stem			2.3		5.000		11.3		
F.S. Vertical Water			0.5		2.00		0.9		
F.S. Vertical Soil			0.0		2.00		0.0		
P.S. Vertical Water			0.0		8.000		0.0		
P.S. Vertical Soil			0.000		8.000		0.0		
F.S. Horizontal Water		0.6				1.47	0.9		
F.S. Horizontal Soil		0.1				0.83	0.1		
P.S. Horizontal Water		0.000				0.00	0.0		
P.S. Horizontal Soil ($\gamma_{m\ tri}$)		-0.300				0.83	-0.3		
P.S. Horizontal Soil ($\gamma_{m\ rec}$)		0.0				0.00	0.0		
P.S. Horizontal Soil ($\gamma_{sat\ tri}$)		0.0				0.00	0.0		
Pervious Uplift (Rec.)			0.0		5.00		0.0		
Pervious Uplift (Tri.)			-1.4		3.33		-4.6		
Unbalanced Force		0.0							
Sub Total:		0.4	5.1				27.1		

Sub Total x Monolith Length:		18.4	209.2			1112.3	0.0	0.0
Total		**18**	**209**			**1112**		

LC 7: **Load Case 3c**. Flowline + Wind + Debri, Impervious Uplift

Item	Fx	Fy	Fz	x	y	z	Mx	My	Mz
Concrete Base			3.8		5.00		18.8		
Concrete Stem			2.3		5.000		11.3		
F.S. Vertical Water			0.5		2.00		0.9		
F.S. Vertical Soil			0.0		2.00		0.0		
P.S. Vertical Water			0.0		8.000		0.0		
P.S. Vertical Soil			0.000		8.000		0.0		
F.S. Horizontal Water		0.6				1.47	0.9		
F.S. Horizontal Soil		0.1				0.83	0.1		
P.S. Horizontal Water		0.000				0.00	0.0		
P.S. Horizontal Soil ($\gamma_{m\ tri}$)		-0.300				0.83	-0.3		
P.S. Horizontal Soil ($\gamma_{m\ rec}$)		0.0				0.00	0.0		
P.S. Horizontal Soil ($\gamma_{sat\ tri}$)		0.0				0.00	0.0		
F.S. Impervious Uplift			-1.4		2.50		-3.4		
P.S. Impervious Uplift			0.0		7.50		0.0		
Wind		0.3				7.20	2.3		
Debri		0.5				5.40	2.7		
Sub Total:		1.3	5.1				33.2		
Sub Total x Monolith Length:		51.7	209.2				1362.4	0.0	0.0
Total		**52**	**209**				**1362**		

LC 8: **Load Case 3d**. Flowline + Wind + Debri, Pervious Uplift

Item	Fx	Fy	Fz	x	y	z	Mx	My	Mz
Concrete Base			3.8		5.00		18.8		
Concrete Stem			2.3		5.000		11.3		
F.S. Vertical Water			0.5		2.00		0.9		
F.S. Vertical Soil			0.0		2.00		0.0		
P.S. Vertical Water			0.0		8.000		0.0		
P.S. Vertical Soil			0.000		8.000		0.0		
F.S. Horizontal Water		0.6				1.47	0.9		
F.S. Horizontal Soil		0.1				0.83	0.1		
P.S. Horizontal Water		0.000				0.00	0.0		
P.S. Horizontal Soil ($\gamma_{m\ tri}$)		-0.300				0.83	-0.3		
P.S. Horizontal Soil ($\gamma_{m\ rec}$)		0.0				0.00	0.0		
P.S. Horizontal Soil ($\gamma_{sat\ tri}$)		0.0				0.00	0.0		
Pervious Uplift (Rec.)			0.0		5.00		0.0		
Pervious Uplift (Tri.)			-1.4		3.33		-4.6		
Wind		0.3				7.20	2.3		
Debri		0.5				5.40	2.7		
Sub Total:		1.3	5.1				32.1		
Sub Total x Monolith Length:		51.7	209.2				1315.5	0.0	0.0
Total		**52**	**209**				**1316**		

LC 9: **Load Case 4a.** Water to the Top+ Debri, Impervious Uplift

Item	Fx	Fy	Fz	x	y	z	Mx	My	Mz
Concrete Base			3.8		5.00		18.8		
Concrete Stem			2.3		5.000		11.3		
F.S. Vertical Water			1.9		2.00		3.7		
F.S. Vertical Soil			0.0		2.00		0.0		
P.S. Vertical Water			0.0		8.000		0.0		
P.S. Vertical Soil			0.000		8.000		0.0		
F.S. Horizontal Water		3.1				3.33	10.4		
F.S. Horizontal Soil		0.1				0.83	0.1		
P.S. Horizontal Water		0.000				0.00	0.0		
P.S. Horizontal Soil ($\gamma_{m\ tri}$)		-0.300				0.83	-0.3		
P.S. Horizontal Soil ($\gamma_{m\ rec}$)		0.0				0.00	0.0		
P.S. Horizontal Soil ($\gamma_{sat\ tri}$)		0.0				0.00	0.0		
F.S. Impervious Uplift			-3.1		2.50		-7.8		
P.S. Impervious Uplift			0.0		7.50		0.0		
Debri		0.5				10.00	5.0		

Unbalanced Load		0.0						
Sub Total:		3.5	4.8			41.2		
Sub Total x Monolith Length:		142.0	194.8			1689.8	0.0	0.0
Total		**142**	**195**			**1690**		

LC 10: **Load Case 4b.** Water to the Top + Debri, Pervious Uplift

Item	Fx	Fy	Fz	x	y	z	Mx	My	Mz
Concrete Base			3.8		5.00		18.8		
Concrete Stem			2.3		5.000		11.3		
F.S. Vertical Water			1.9		2.00		3.7		
F.S. Vertical Soil			0.0		2.00		0.0		
P.S. Vertical Water			0.0		8.000		0.0		
P.S. Vertical Soil			0.000		8.000		0.0		
F.S. Horizontal Water		3.1				3.33	10.4		
F.S. Horizontal Soil		0.1				0.83	0.1		
P.S. Horizontal Water		0.000				0.00	0.0		
P.S. Horizontal Soil ($\gamma_{m\ tri}$)		-0.300				0.83	-0.3		
P.S. Horizontal Soil ($\gamma_{m\ rec}$)		0.0				0.00	0.0		
P.S. Horizontal Soil ($\gamma_{sat\ tri}$)		0.0				0.00	0.0		
Pervious Uplift (Rec.)			0.0		5.00		0.0		
Pervious Uplift (Tri.)			-3.1		3.33		-10.4		
Debri		0.5				10.00	5.0		
Unbalanced Load		0.0							
Sub Total:		3.5	4.8				38.6		
Sub Total x Monolith Length:		142.0	194.8				1583.2	0.0	0.0
Total		**142**	**195**				**1583**		

Summary Table of CPGA Loads

		Fx	Fy	Fz	Mx	My	Mz
Load Case 1a	**LOAD 1**	**0.0**	**12.3**	**246.0**	**1,240.3**	**0.0**	**0.0**
Load Case 2a	**LOAD 3**	**0.0**	**12.3**	**311.6**	**1,568.3**	**0.0**	**0.0**
Load Case 2b	**LOAD 4**	**0.0**	**29.5**	**311.6**	**1,675.9**	**0.0**	**0.0**
Load Case 3a	**LOAD 5**	**0.0**	**18.4**	**209.2**	**1,159.2**	**0.0**	**0.0**
Load Case 3b	**LOAD 6**	**0.0**	**18.4**	**209.2**	**1,112.3**	**0.0**	**0.0**
Load Case 3c	**LOAD 7**	**0.0**	**51.7**	**209.2**	**1,362.4**	**0.0**	**0.0**
Load Case 3d	**LOAD 8**	**0.0**	**51.7**	**209.2**	**1,315.5**	**0.0**	**0.0**
Load Case 4a	**LOAD 9**	**0.0**	**142.0**	**194.8**	**1,689.8**	**0.0**	**0.0**
Load Case 4b	**LOAD 10**	**0.0**	**142.0**	**194.8**	**1,583.2**	**0.0**	**0.0**

- It is recommended that a factor of safety of at least 3.0 be applied to arrive at allowable values, when an axial pile load test is not performed.

5.1.2 Settlement

A detailed analysis of axial load versus settlement was beyond the scope of this study. However, for a single isolated pile designed in accordance with the computed ultimate capacities and recommended factor of safety, the settlement should be on the order of one (1) inch. A detailed settlement analysis for piles in a group was beyond the scope of this study.

5.1.3 Battered Pile Capacity

For a pile penetrated to a certain elevation, the pile capacities in the batter direction are similar to the pile capacities in vertical direction at that particular elevation. In other words, the piles would have an axial capacity corresponding to the elevation regardless of the angle at which it is installed to the vertical. This should hold true for small batter angles to the vertical. As previously mentioned, the plates in Appendix VII indicate ultimate axial capacity versus elevation. These curves could be used to estimate the batter pile capacity for a pile driven to any given elevation.

5.2 LATERAL CAPACITY

5.2.1 Soil Parameters for CPGA Analyses

It is understood that CPGA Analyses will be performed by an Engineer. In accordance with the HSDRRS-DG, Modulus of Subgrade Reaction (Es) values for the different soil strata are presented in Table 15.

Table 15a - Soil Parameters for CPGA Analyses (Reach 3)[1]

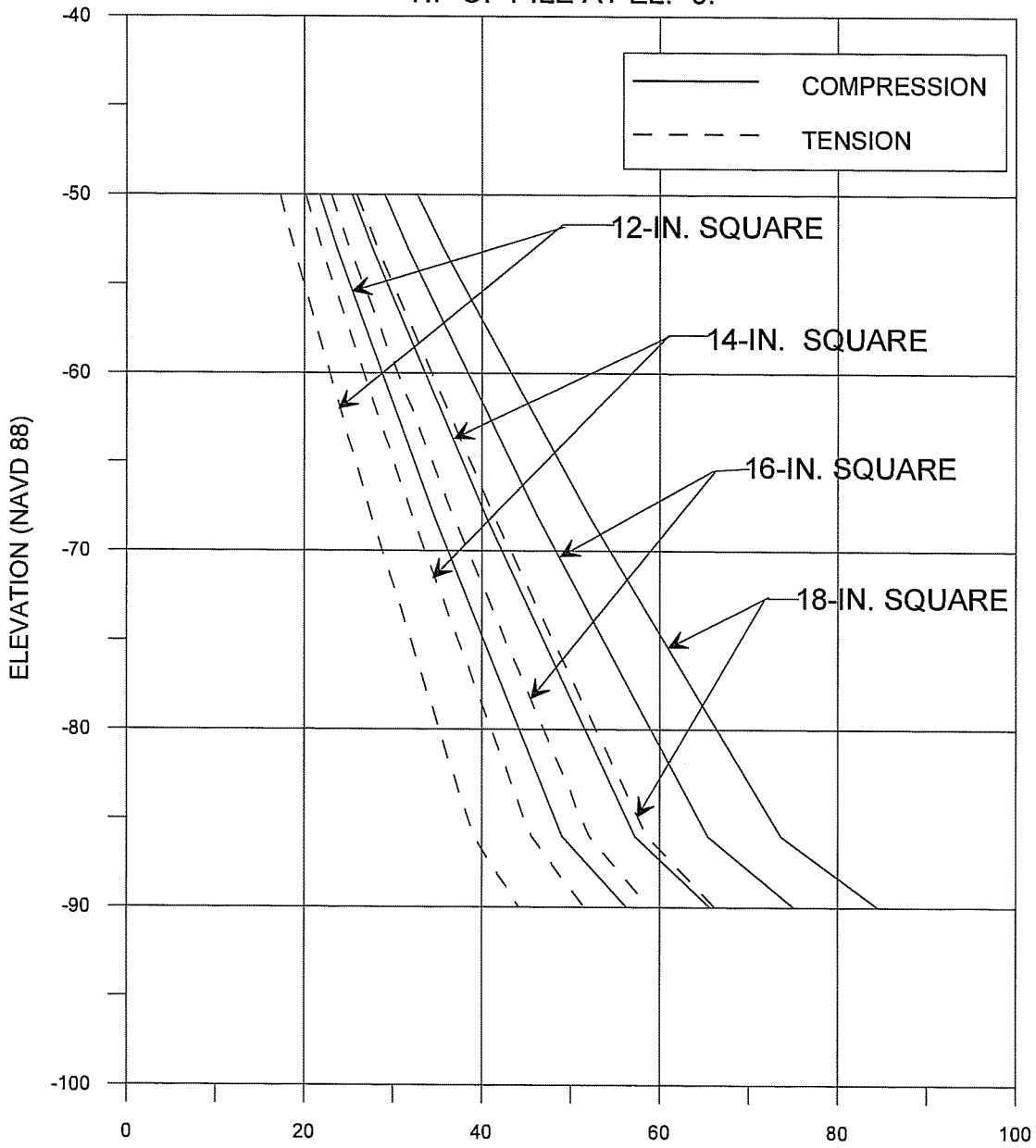
Elevation Range, ft.	Soil Type	Total Unit Weight, (pcf)	S_u (psf)	E_s (pci)
+8 to +1	Soft Clay	115	500	100
+1 to -15	Soft Clay	117	500	100
-15 to -23	Very soft Clay	110	300	30
-23 to -31	Very soft Clay	105	300 to 350	30
-31 to -68	Very soft to soft Clay	105	350 to 545	30-100
-68 to -93	Soft Clay	110	545	100
-93 to -120	Sand	122	400	30

Notes: [1] Based on levee centerline borings
[2] Values reduced above critical failure surface per HSDRRSD guidelines

Upper Barataria Risk Reduction Sta.
145+00 to 175+00 T-Wall Design
Subgrade Modulus Calculation

Start EL.	End EL.	Layer Depth (ft)	Weighted Ave. Depth (EL. +8 to -120)	Subgrade Modulus (ES) (PSI)	Weighted Subgrade Modulus Ave. (EL. +8 to -120)
8	1	7	5.469%	100	5.47
1	-15	16	12.500%	100	12.50
-15	-23	8	6.250%	30	1.88
-23	-31	8	6.250%	30	1.88
-31	-68	37	28.906%	30	8.67
-68	-93	25	19.531%	100	19.53
-93	-120	27	21.094%	30	6.33
				ES (Endwall Monolith)	56.25

ESTIMATED ALLOWABLE SINGLE PILE LOAD CAPACITY
STEEL H PILES
BAYOU BARATARIA STRUCTURE
GIWW ALIGNMENT - REACH 1 SOIL DESIGN PARAMETERS
STATION NOS. 650+00 TO 1411+41
TIP OF PILE AT EL. -5.



ESTIMATED ALLOWABLE SINGLE PILE LOAD CAPACITY IN TONS
FACTOR OF SAFETY ≈ 2

NOTES:

(1) Allowable pile load capacities presented on this figure do not include the weight of the piles.

(2) Piles assumed to be installed by impact driving equipment without assistance from jetting or vibratory equipment.

(3) Use of a factor of safety≈2 assumes a pile load test will be performed.

EUSTIS ENGINEERING SERVICES, L.L.C. GEOTECHNICAL ENGINEERS 3011 28TH STREET METAIRIE, LOUISIANA		
ALLOWABLE SINGLE PILE LOAD CAPACITIES STEEL H PILES GIWW ALIGNMENT BAYOU BARATARIA STRUCTURE TOP OF PILE AT EL. -5 U.S. ARMY CORPS OF ENGINEERS GEOTECHNICAL DESIGN FEASIBILITY STUDY PRELIMINARY SCREENING PHASE DONALDSONVILLE TO THE GULF, LOUISIANA		
DRAWN BY: L.J.J.	5 NOVEMBER 2008	FILE: SHreach 1-5ft.grf
CHECKED BY: B.M.C.	JOB NO.: 20065	FIGURE 50

```
10  Sunset Reach D TOW El 15.0 Fixed
20  PIL  1   -18   2.5   0
30  BAT   5   1
40  ANG   270   1
50  PIL  2   -12   2.5   0
60  BAT   5   2
70  ANG   270   2
80  PIL  3   -6   2.5   0
90  BAT   5   3
100  ANG   270   3
110  PIL  4  0   2.5   0
120  BAT   5   4
130  ANG   270   4
140  PIL  5  6   2.5   0
150  BAT   5   5
160  ANG   270   5
170  PIL  6  12 2.5   0
180  BAT   5   6
190  ANG   270   6
200  PIL  7   18   2.5   0
210  BAT   5   7
220  ANG   270   7
230  PIL  8   -18   7.5   0
240  BAT   5   8
250  ANG   90   8
260  PIL  9   -12  7.5   0
270  BAT   5   9
280  ANG   90   9
290  PIL  10  -6   7.5   0
300  BAT   5   10
310  ANG   90   10
320  PIL  11  0   7.5   0
330  BAT   5   11
340  ANG   90   11
350  PIL  12  6   7.5   0
360  BAT   5   12
370  ANG   90   12
380  PIL  13  12   7.5   0
390  BAT   5   13
400  ANG   90   13
401  PIL  14  18   7.5   0
402  BAT   5   14
403  ANG   90   14
404  PRO  29000  261  729  21.4  2  0  1 TO 14
405  SOI ES 0.056 L  73  0  1 TO 14
406  RED  1  1  1
410  ALL H 90 70 387  387  527  1667  1 TO 14
420  FIX  1 TO 14
430 LOAD 1 0 12 246 1240 0 0
430 LOAD 2 0 12 312 1568 0 0
```

```
430 LOAD 3 0 30 312 1676 0 0
430 LOAD 4 0 18 209 1159 0 0
430 LOAD 5 0 18 209 1112 0 0
430 LOAD 6 0 52 209 1362 0 0
430 LOAD 7 0 52 209 1316 0 0
430  FOV  1.167  1.167  2
430  FOV  1.33  1.33  3
430  FOV  1.33  1.33  6
430  FOV  1.33  1.33  7
440  TOUT 1 2 3 4 5 6 7
450  PFO ALL
460  PLB ALL
```

CPGA - CASE PILE GROUP ANALYSIS PROGRAM
RUN DATE: 01-SEP-20 RUN TIME: 20:25:38

FOR PILES WITH UNSUPPORTED HEIGHT:
A. CPGA CANNOT CALCULATE PMAXMOM FOR NH TYPE SOIL
B. THE ALLOWABLE STRESS CHECKS, ASC AND AST, ARE
NOT FULLY DEVELOPED FOR UNSUPPORTED PILES.
WORK IS IN PROGRESS TO COMPLETE THIS ASPECT OF CPGA.

ELASTIC CENTER LOCATION IS NOT COMPUTED FOR 3-DIMENSIONAL PROBLEMS.

SUNSET REACH D TOW EL 15.0 FIXED
DATA UNKNOWN - REJECTED.

THERE ARE 14 PILES AND
7 LOAD CASES IN THIS RUN.

ALL PILE COORDINATES ARE CONTAINED WITHIN A BOX

	X	Y	Z
WITH DIAGONAL COORDINATES = (	-18.00 ,	2.50 ,	0.00)
(	18.00 ,	7.50 ,	0.00)

****

PILE PROPERTIES AS INPUT

E	I1	I2	A	C33	B66
KSI	IN**4	IN**4	IN**2		
0.29000E+05	0.26100E+03	0.72900E+03	0.21400E+02	0.20000E+01	0.00000E+00

THESE PILE PROPERTIES APPLY TO THE FOLLOWING PILES -

ALL

****

SOIL DESCRIPTIONS AS INPUT

ES	ESOIL	LENGTH	L	LU
	K/IN**2		FT	FT

```
        0.56000E-01    L      0.73000E+02   0.00000E+00

 ESOIL(ORIGINAL)     RGROUP     RCYCLIC
   K/IN**2
  0.56000E-01       0.1000E+01 0.1000E+01
```

THIS SOIL DESCRIPTION APPLIES TO THE FOLLOWING PILES -

ALL

****

PILE STIFFNESSES AS CALCULATED FROM PROPERTIES

```
 0.11039E+02  0.00000E+00  0.00000E+00  0.00000E+00  0.10881E+04  0.00000E+00
 0.00000E+00  0.85392E+01  0.00000E+00 -0.65105E+03  0.00000E+00  0.00000E+00
 0.00000E+00  0.00000E+00  0.14169E+04  0.00000E+00  0.00000E+00  0.00000E+00
 0.00000E+00 -0.65105E+03  0.00000E+00  0.99275E+05  0.00000E+00  0.00000E+00
 0.10881E+04  0.00000E+00  0.00000E+00  0.00000E+00  0.21449E+06  0.00000E+00
 0.00000E+00  0.00000E+00  0.00000E+00  0.00000E+00  0.00000E+00  0.00000E+00
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THIS MATRIX APPLIES TO THE FOLLOWING PILES -

1

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PILE GEOMETRY AS INPUT AND/OR GENERATED

NUM	X FT	Y FT	Z FT	BATTER	ANGLE	LENGTH FT	FIXITY
1	-18.00	2.50	0.00	5.00	270.00	73.00	F
2	-12.00	2.50	0.00	5.00	270.00	73.00	F
3	-6.00	2.50	0.00	5.00	270.00	73.00	F
4	0.00	2.50	0.00	5.00	270.00	73.00	F
5	6.00	2.50	0.00	5.00	270.00	73.00	F
6	12.00	2.50	0.00	5.00	270.00	73.00	F
7	18.00	2.50	0.00	5.00	270.00	73.00	F
8	-18.00	7.50	0.00	5.00	90.00	73.00	F
9	-12.00	7.50	0.00	5.00	90.00	73.00	F
10	-6.00	7.50	0.00	5.00	90.00	73.00	F
11	0.00	7.50	0.00	5.00	90.00	73.00	F
12	6.00	7.50	0.00	5.00	90.00	73.00	F
13	12.00	7.50	0.00	5.00	90.00	73.00	F
14	18.00	7.50	0.00	5.00	90.00	73.00	F

1022.00

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APPLIED LOADS

LOAD CASE	PX K	PY K	PZ K	MX FT-K	MY FT-K	MZ FT-K	OVERSTRESS COM	OVERSTRESS TEN
1	0.0	12.0	246.0	1240.0	0.0	0.0		
2	0.0	12.0	312.0	1568.0	0.0	0.0	1.17	1.17
3	0.0	30.0	312.0	1676.0	0.0	0.0	1.33	1.33
4	0.0	18.0	209.0	1159.0	0.0	0.0		
5	0.0	18.0	209.0	1112.0	0.0	0.0		
6	0.0	52.0	209.0	1362.0	0.0	0.0	1.33	1.33
7	0.0	52.0	209.0	1316.0	0.0	0.0	1.33	1.33

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ORIGINAL PILE GROUP STIFFNESS MATRIX

0.11955E+03	0.19274E-04	-0.46056E-04	-0.14600E-03	0.89377E+04	-0.71729E+04
0.19274E-04	0.91155E+03	0.17053E-11	0.98613E+05	0.14600E-03	-0.88908E-03
-0.46056E-04	0.90949E-12	0.19080E+05	0.11448E+07	0.36351E-04	0.00000E+00
-0.14600E-03	0.98613E+05	0.11448E+07	0.89040E+08	-0.40555E-01	-0.11453E+00
0.89377E+04	0.14600E-03	0.36351E-04	-0.40555E-01	0.39697E+09	-0.53626E+06
-0.71729E+04	-0.88908E-03	-0.14552E-10	-0.11453E+00	-0.53626E+06	0.19601E+08

14 PILES 7 LOAD CASES

LOAD CASE 1. NUMBER OF FAILURES = 0. NUMBER OF PILES IN TENSION = 0.

LOAD CASE 2. NUMBER OF FAILURES = 0. NUMBER OF PILES IN TENSION = 0.

LOAD CASE 3. NUMBER OF FAILURES = 0. NUMBER OF PILES IN TENSION = 0.

LOAD CASE 4. NUMBER OF FAILURES = 0. NUMBER OF PILES IN TENSION = 0.

LOAD CASE 5. NUMBER OF FAILURES = 0. NUMBER OF PILES IN TENSION = 0.

LOAD CASE 6. NUMBER OF FAILURES = 0. NUMBER OF PILES IN TENSION = 0.

LOAD CASE 7. NUMBER OF FAILURES = 0. NUMBER OF PILES IN TENSION = 0.

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PILE CAP DISPLACEMENTS

LOAD CASE	DX IN	DY IN	DZ IN	RX RAD	RY RAD	RZ RAD
1	0.3499E-08	0.2632E-01	0.2019E-01	-0.1216E-03	-0.1004E-12	0.1761E-11
2	0.4875E-08	0.2659E-01	0.2380E-01	-0.1241E-03	-0.1314E-12	0.2262E-11
3	0.1974E-08	0.5361E-01	0.2783E-01	-0.1914E-03	-0.8351E-13	0.2034E-11
4	0.1387E-08	0.2622E-01	0.1454E-01	-0.5981E-04	-0.4649E-13	0.1346E-11
5	0.1650E-08	0.3252E-01	0.1804E-01	-0.1180E-03	-0.6094E-13	0.1387E-11
6	-0.4088E-08	0.7739E-01	0.2224E-01	-0.1881E-03	0.4357E-13	0.9167E-12
7	-0.3831E-08	0.8356E-01	0.2566E-01	-0.2450E-03	0.2943E-13	0.9571E-12

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PILE FORCES IN LOCAL GEOMETRY

M1 & M2 NOT AT PILE HEAD FOR PINNED PILES
* INDICATES PILE FAILURE
# INDICATES CBF BASED ON MOMENTS DUE TO
(F3*EMIN) FOR CONCRETE PILES
B INDICATES BUCKLING CONTROLS

LOAD CASE - 1

PILE	F1 K	F2 K	F3 K	M1 IN-K	M2 IN-K	M3 IN-K	ALF	CBF
1	-0.5	0.0	15.7	0.0	-57.7	0.0	0.17	0.08
2	-0.5	0.0	15.7	0.0	-57.7	0.0	0.17	0.08
3	-0.5	0.0	15.7	0.0	-57.7	0.0	0.17	0.08
4	-0.5	0.0	15.7	0.0	-57.7	0.0	0.17	0.08
5	-0.5	0.0	15.7	0.0	-57.7	0.0	0.17	0.08
6	-0.5	0.0	15.7	0.0	-57.7	0.0	0.17	0.08
7	-0.5	0.0	15.7	0.0	-57.7	0.0	0.17	0.08
8	0.4	0.0	20.2	0.0	52.2	0.0	0.22	0.08
9	0.4	0.0	20.2	0.0	52.2	0.0	0.22	0.08
10	0.4	0.0	20.2	0.0	52.2	0.0	0.22	0.08
11	0.4	0.0	20.2	0.0	52.2	0.0	0.22	0.08
12	0.4	0.0	20.2	0.0	52.2	0.0	0.22	0.08
13	0.4	0.0	20.2	0.0	52.2	0.0	0.22	0.08
14	0.4	0.0	20.2	0.0	52.2	0.0	0.22	0.08

LOAD CASE - 2

PILE	F1 K	F2 K	F3 K	M1 IN-K	M2 IN-K	M3 IN-K	ALF	CBF
1	-0.5	0.0	20.5	0.0	-59.3	0.0	0.20	0.08
2	-0.5	0.0	20.5	0.0	-59.3	0.0	0.20	0.08
3	-0.5	0.0	20.5	0.0	-59.3	0.0	0.20	0.08
4	-0.5	0.0	20.5	0.0	-59.3	0.0	0.20	0.08
5	-0.5	0.0	20.5	0.0	-59.3	0.0	0.20	0.08
6	-0.5	0.0	20.5	0.0	-59.3	0.0	0.20	0.08
7	-0.5	0.0	20.5	0.0	-59.3	0.0	0.20	0.08
8	0.4	0.0	24.9	0.0	52.3	0.0	0.24	0.08
9	0.4	0.0	24.9	0.0	52.3	0.0	0.24	0.08
10	0.4	0.0	24.9	0.0	52.3	0.0	0.24	0.08
11	0.4	0.0	24.9	0.0	52.3	0.0	0.24	0.08
12	0.4	0.0	24.9	0.0	52.3	0.0	0.24	0.08
13	0.4	0.0	24.9	0.0	52.3	0.0	0.24	0.08
14	0.4	0.0	24.9	0.0	52.3	0.0	0.24	0.08

LOAD CASE - 3

PILE	F1 K	F2 K	F3 K	M1 IN-K	M2 IN-K	M3 IN-K	ALF	CBF
1	-0.8	0.0	15.8	0.0	-103.0	0.0	0.13	0.08
2	-0.8	0.0	15.8	0.0	-103.0	0.0	0.13	0.08
3	-0.8	0.0	15.8	0.0	-103.0	0.0	0.13	0.08
4	-0.8	0.0	15.8	0.0	-103.0	0.0	0.13	0.08
5	-0.8	0.0	15.8	0.0	-103.0	0.0	0.13	0.08
6	-0.8	0.0	15.8	0.0	-103.0	0.0	0.13	0.08
7	-0.8	0.0	15.8	0.0	-103.0	0.0	0.13	0.08
8	0.8	0.0	29.6	0.0	96.0	0.0	0.25	0.10
9	0.8	0.0	29.6	0.0	96.0	0.0	0.25	0.10
10	0.8	0.0	29.6	0.0	96.0	0.0	0.25	0.10
11	0.8	0.0	29.6	0.0	96.0	0.0	0.25	0.10
12	0.8	0.0	29.6	0.0	96.0	0.0	0.25	0.10
13	0.8	0.0	29.6	0.0	96.0	0.0	0.25	0.10
14	0.8	0.0	29.6	0.0	96.0	0.0	0.25	0.10

LOAD CASE - 4

PILE	F1 K	F2 K	F3 K	M1 IN-K	M2 IN-K	M3 IN-K	ALF	CBF
1	-0.4	0.0	10.4	0.0	-43.5	0.0	0.12	0.05
2	-0.4	0.0	10.4	0.0	-43.5	0.0	0.12	0.05
3	-0.4	0.0	10.4	0.0	-43.5	0.0	0.12	0.05

4	-0.4	0.0	10.4	0.0	-43.5	0.0	0.12	0.05
5	-0.4	0.0	10.4	0.0	-43.5	0.0	0.12	0.05
6	-0.4	0.0	10.4	0.0	-43.5	0.0	0.12	0.05
7	-0.4	0.0	10.4	0.0	-43.5	0.0	0.12	0.05
8	0.3	0.0	20.0	0.0	38.8	0.0	0.22	0.08
9	0.3	0.0	20.0	0.0	38.8	0.0	0.22	0.08
10	0.3	0.0	20.0	0.0	38.8	0.0	0.22	0.08
11	0.3	0.0	20.0	0.0	38.8	0.0	0.22	0.08
12	0.3	0.0	20.0	0.0	38.8	0.0	0.22	0.08
13	0.3	0.0	20.0	0.0	38.8	0.0	0.22	0.08
14	0.3	0.0	20.0	0.0	38.8	0.0	0.22	0.08

LOAD CASE - 5

PILE	F1 K	F2 K	F3 K	M1 IN-K	M2 IN-K	M3 IN-K	ALF	CBF
1	-0.5	0.0	11.1	0.0	-63.1	0.0	0.12	0.07
2	-0.5	0.0	11.1	0.0	-63.1	0.0	0.12	0.07
3	-0.5	0.0	11.1	0.0	-63.1	0.0	0.12	0.07
4	-0.5	0.0	11.1	0.0	-63.1	0.0	0.12	0.07
5	-0.5	0.0	11.1	0.0	-63.1	0.0	0.12	0.07
6	-0.5	0.0	11.1	0.0	-63.1	0.0	0.12	0.07
7	-0.5	0.0	11.1	0.0	-63.1	0.0	0.12	0.07
8	0.5	0.0	19.3	0.0	58.4	0.0	0.21	0.09
9	0.5	0.0	19.3	0.0	58.4	0.0	0.21	0.09
10	0.5	0.0	19.3	0.0	58.4	0.0	0.21	0.09
11	0.5	0.0	19.3	0.0	58.4	0.0	0.21	0.09
12	0.5	0.0	19.3	0.0	58.4	0.0	0.21	0.09
13	0.5	0.0	19.3	0.0	58.4	0.0	0.21	0.09
14	0.5	0.0	19.3	0.0	58.4	0.0	0.21	0.09

LOAD CASE - 6

PILE	F1 K	F2 K	F3 K	M1 IN-K	M2 IN-K	M3 IN-K	ALF	CBF
1	-1.1	0.0	1.6	0.0	-126.4	0.0	0.01	0.06
2	-1.1	0.0	1.6	0.0	-126.4	0.0	0.01	0.06
3	-1.1	0.0	1.6	0.0	-126.4	0.0	0.01	0.06
4	-1.1	0.0	1.6	0.0	-126.4	0.0	0.01	0.06
5	-1.1	0.0	1.6	0.0	-126.4	0.0	0.01	0.06
6	-1.1	0.0	1.6	0.0	-126.4	0.0	0.01	0.06
7	-1.1	0.0	1.6	0.0	-126.4	0.0	0.01	0.06
8	1.0	0.0	28.9	0.0	121.8	0.0	0.24	0.11
9	1.0	0.0	28.9	0.0	121.8	0.0	0.24	0.11
10	1.0	0.0	28.9	0.0	121.8	0.0	0.24	0.11
11	1.0	0.0	28.9	0.0	121.8	0.0	0.24	0.11

12	1.0	0.0	28.9	0.0	121.8	0.0	0.24	0.11
13	1.0	0.0	28.9	0.0	121.8	0.0	0.24	0.11
14	1.0	0.0	28.9	0.0	121.8	0.0	0.24	0.11

LOAD CASE - 7

PILE	F1 K	F2 K	F3 K	M1 IN-K	M2 IN-K	M3 IN-K	ALF	CBF
1	-1.2	0.0	2.2	0.0	-145.6	0.0	0.02	0.07
2	-1.2	0.0	2.2	0.0	-145.6	0.0	0.02	0.07
3	-1.2	0.0	2.2	0.0	-145.6	0.0	0.02	0.07
4	-1.2	0.0	2.2	0.0	-145.6	0.0	0.02	0.07
5	-1.2	0.0	2.2	0.0	-145.6	0.0	0.02	0.07
6	-1.2	0.0	2.2	0.0	-145.6	0.0	0.02	0.07
7	-1.2	0.0	2.2	0.0	-145.6	0.0	0.02	0.07
8	1.2	0.0	28.2	0.0	140.9	0.0	0.24	0.12
9	1.2	0.0	28.2	0.0	140.9	0.0	0.24	0.12
10	1.2	0.0	28.2	0.0	140.9	0.0	0.24	0.12
11	1.2	0.0	28.2	0.0	140.9	0.0	0.24	0.12
12	1.2	0.0	28.2	0.0	140.9	0.0	0.24	0.12
13	1.2	0.0	28.2	0.0	140.9	0.0	0.24	0.12
14	1.2	0.0	28.2	0.0	140.9	0.0	0.24	0.12

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PILE FORCES IN GLOBAL GEOMETRY

LOAD CASE - 1

PILE	PX K	PY K	PZ K	MX IN-K	MY IN-K	MZ IN-K
1	0.0	-2.6	15.5	-57.7	0.0	0.0
2	0.0	-2.6	15.5	-57.7	0.0	0.0
3	0.0	-2.6	15.5	-57.7	0.0	0.0
4	0.0	-2.6	15.5	-57.7	0.0	0.0
5	0.0	-2.6	15.5	-57.7	0.0	0.0
6	0.0	-2.6	15.5	-57.7	0.0	0.0
7	0.0	-2.6	15.5	-57.7	0.0	0.0
8	0.0	4.3	19.7	-52.2	0.0	0.0
9	0.0	4.3	19.7	-52.2	0.0	0.0
10	0.0	4.3	19.7	-52.2	0.0	0.0
11	0.0	4.3	19.7	-52.2	0.0	0.0
12	0.0	4.3	19.7	-52.2	0.0	0.0
13	0.0	4.3	19.7	-52.2	0.0	0.0

14	0.0	4.3	19.7	-52.2	0.0	0.0

LOAD CASE - 2

PILE	PX K	PY K	PZ K	MX IN-K	MY IN-K	MZ IN-K
1	0.0	-3.6	20.2	-59.3	0.0	0.0
2	0.0	-3.6	20.2	-59.3	0.0	0.0
3	0.0	-3.6	20.2	-59.3	0.0	0.0
4	0.0	-3.6	20.2	-59.3	0.0	0.0
5	0.0	-3.6	20.2	-59.3	0.0	0.0
6	0.0	-3.6	20.2	-59.3	0.0	0.0
7	0.0	-3.6	20.2	-59.3	0.0	0.0
8	0.0	5.3	24.4	-52.3	0.0	0.0
9	0.0	5.3	24.4	-52.3	0.0	0.0
10	0.0	5.3	24.4	-52.3	0.0	0.0
11	0.0	5.3	24.4	-52.3	0.0	0.0
12	0.0	5.3	24.4	-52.3	0.0	0.0
13	0.0	5.3	24.4	-52.3	0.0	0.0
14	0.0	5.3	24.4	-52.3	0.0	0.0

LOAD CASE - 3

PILE	PX K	PY K	PZ K	MX IN-K	MY IN-K	MZ IN-K
1	0.0	-2.3	15.7	-103.0	0.0	0.0
2	0.0	-2.3	15.7	-103.0	0.0	0.0
3	0.0	-2.3	15.7	-103.0	0.0	0.0
4	0.0	-2.3	15.7	-103.0	0.0	0.0
5	0.0	-2.3	15.7	-103.0	0.0	0.0
6	0.0	-2.3	15.7	-103.0	0.0	0.0
7	0.0	-2.3	15.7	-103.0	0.0	0.0
8	0.0	6.6	28.9	-96.0	0.0	0.0
9	0.0	6.6	28.9	-96.0	0.0	0.0
10	0.0	6.6	28.9	-96.0	0.0	0.0
11	0.0	6.6	28.9	-96.0	0.0	0.0
12	0.0	6.6	28.9	-96.0	0.0	0.0
13	0.0	6.6	28.9	-96.0	0.0	0.0
14	0.0	6.6	28.9	-96.0	0.0	0.0

LOAD CASE - 4

PILE	PX K	PY K	PZ K	MX IN-K	MY IN-K	MZ IN-K

1	0.0	-1.7	10.3	-43.5	0.0	0.0
2	0.0	-1.7	10.3	-43.5	0.0	0.0
3	0.0	-1.7	10.3	-43.5	0.0	0.0
4	0.0	-1.7	10.3	-43.5	0.0	0.0
5	0.0	-1.7	10.3	-43.5	0.0	0.0
6	0.0	-1.7	10.3	-43.5	0.0	0.0
7	0.0	-1.7	10.3	-43.5	0.0	0.0
8	0.0	4.2	19.6	-38.8	0.0	0.0
9	0.0	4.2	19.6	-38.8	0.0	0.0
10	0.0	4.2	19.6	-38.8	0.0	0.0
11	0.0	4.2	19.6	-38.8	0.0	0.0
12	0.0	4.2	19.6	-38.8	0.0	0.0
13	0.0	4.2	19.6	-38.8	0.0	0.0
14	0.0	4.2	19.6	-38.8	0.0	0.0

LOAD CASE - 5

PILE	PX K	PY K	PZ K	MX IN-K	MY IN-K	MZ IN-K
1	0.0	-1.7	11.0	-63.1	0.0	0.0
2	0.0	-1.7	11.0	-63.1	0.0	0.0
3	0.0	-1.7	11.0	-63.1	0.0	0.0
4	0.0	-1.7	11.0	-63.1	0.0	0.0
5	0.0	-1.7	11.0	-63.1	0.0	0.0
6	0.0	-1.7	11.0	-63.1	0.0	0.0
7	0.0	-1.7	11.0	-63.1	0.0	0.0
8	0.0	4.2	18.9	-58.4	0.0	0.0
9	0.0	4.2	18.9	-58.4	0.0	0.0
10	0.0	4.2	18.9	-58.4	0.0	0.0
11	0.0	4.2	18.9	-58.4	0.0	0.0
12	0.0	4.2	18.9	-58.4	0.0	0.0
13	0.0	4.2	18.9	-58.4	0.0	0.0
14	0.0	4.2	18.9	-58.4	0.0	0.0

LOAD CASE - 6

PILE	PX K	PY K	PZ K	MX IN-K	MY IN-K	MZ IN-K
1	0.0	0.8	1.7	-126.4	0.0	0.0
2	0.0	0.8	1.7	-126.4	0.0	0.0
3	0.0	0.8	1.7	-126.4	0.0	0.0
4	0.0	0.8	1.7	-126.4	0.0	0.0
5	0.0	0.8	1.7	-126.4	0.0	0.0
6	0.0	0.8	1.7	-126.4	0.0	0.0
7	0.0	0.8	1.7	-126.4	0.0	0.0
8	0.0	6.7	28.1	-121.8	0.0	0.0

9	0.0	6.7	28.1	-121.8	0.0	0.0
10	0.0	6.7	28.1	-121.8	0.0	0.0
11	0.0	6.7	28.1	-121.8	0.0	0.0
12	0.0	6.7	28.1	-121.8	0.0	0.0
13	0.0	6.7	28.1	-121.8	0.0	0.0
14	0.0	6.7	28.1	-121.8	0.0	0.0

LOAD CASE - 7

PILE	PX K	PY K	PZ K	MX IN-K	MY IN-K	MZ IN-K
1	0.0	0.8	2.4	-145.6	0.0	0.0
2	0.0	0.8	2.4	-145.6	0.0	0.0
3	0.0	0.8	2.4	-145.6	0.0	0.0
4	0.0	0.8	2.4	-145.6	0.0	0.0
5	0.0	0.8	2.4	-145.6	0.0	0.0
6	0.0	0.8	2.4	-145.6	0.0	0.0
7	0.0	0.8	2.4	-145.6	0.0	0.0
8	0.0	6.7	27.4	-140.9	0.0	0.0
9	0.0	6.7	27.4	-140.9	0.0	0.0
10	0.0	6.7	27.4	-140.9	0.0	0.0
11	0.0	6.7	27.4	-140.9	0.0	0.0
12	0.0	6.7	27.4	-140.9	0.0	0.0
13	0.0	6.7	27.4	-140.9	0.0	0.0
14	0.0	6.7	27.4	-140.9	0.0	0.0

NO FILES WERE GENERATED DURING THIS RUN.

```
10  Sunset Reach D TOW El 15.0 Fixed
20  PIL  1   -18   2.5   0
30  BAT   5   1
40  ANG   270   1
50  PIL  2   -12   2.5   0
60  BAT   5   2
70  ANG   270   2
80  PIL  3   -6   2.5   0
90  BAT   5   3
100  ANG   270   3
110  PIL  4  0   2.5   0
120  BAT   5   4
130  ANG   270   4
140  PIL  5  6   2.5   0
150  BAT   5   5
160  ANG   270   5
170  PIL  6  12 2.5   0
180  BAT   5   6
190  ANG   270   6
200  PIL  7   18   2.5   0
210  BAT   5   7
220  ANG   270   7
230  PIL  8   -18   7.5   0
240  BAT   5   8
250  ANG   90   8
260  PIL  9   -12  7.5   0
270  BAT   5   9
280  ANG   90   9
290  PIL  10  -6   7.5   0
300  BAT   5   10
310  ANG   90   10
320  PIL  11  0   7.5   0
330  BAT   5   11
340  ANG   90   11
350  PIL  12  6   7.5   0
360  BAT   5   12
370  ANG   90   12
380  PIL  13  12   7.5   0
390  BAT   5   13
400  ANG   90   13
401  PIL  14  18   7.5   0
402  BAT   5   14
403  ANG   90   14
404  PRO  29000  261  729  21.4  2  0  1 TO 14
405  SOI ES 0.056 L  73  0  1 TO 14
406  RED  1  1  1
410  ALL H 90 70 387  387  527  1667  1 TO 14
420  FIX  1 TO 14
430 LOAD 8 0 142 195 1690 0 0
430 LOAD 9 0 142 195 1583 0 0
```

```
430  FOV  1.33  1.33  8
430  FOV  1.33  1.33  9
440  TOUT 1 2 3 4 5 6 7
450  PFO ALL
460  PLB ALL
```

CPGA - CASE PILE GROUP ANALYSIS PROGRAM
RUN DATE: 01-SEP-20 RUN TIME: 20:26:24

FOR PILES WITH UNSUPPORTED HEIGHT:
A. CPGA CANNOT CALCULATE PMAXMOM FOR NH TYPE SOIL
B. THE ALLOWABLE STRESS CHECKS, ASC AND AST, ARE
NOT FULLY DEVELOPED FOR UNSUPPORTED PILES.
WORK IS IN PROGRESS TO COMPLETE THIS ASPECT OF CPGA.

ELASTIC CENTER LOCATION IS NOT COMPUTED FOR 3-DIMENSIONAL PROBLEMS.

SUNSET REACH D TOW EL 15.0 FIXED
DATA UNKNOWN - REJECTED.

THERE ARE 14 PILES AND
2 LOAD CASES IN THIS RUN.

ALL PILE COORDINATES ARE CONTAINED WITHIN A BOX

	X	Y	Z
WITH DIAGONAL COORDINATES = (	-18.00 ,	2.50 ,	0.00)
(	18.00 ,	7.50 ,	0.00)

****

PILE PROPERTIES AS INPUT

E	I1	I2	A	C33	B66
KSI	IN**4	IN**4	IN**2		
0.29000E+05	0.26100E+03	0.72900E+03	0.21400E+02	0.20000E+01	0.00000E+00

THESE PILE PROPERTIES APPLY TO THE FOLLOWING PILES -

ALL

****

SOIL DESCRIPTIONS AS INPUT

ES	ESOIL	LENGTH	L	LU
	K/IN**2		FT	FT

```
        0.56000E-01    L      0.73000E+02   0.00000E+00

 ESOIL(ORIGINAL)     RGROUP     RCYCLIC
   K/IN**2
  0.56000E-01       0.1000E+01 0.1000E+01
```

THIS SOIL DESCRIPTION APPLIES TO THE FOLLOWING PILES -

ALL

****

PILE STIFFNESSES AS CALCULATED FROM PROPERTIES

```
 0.11039E+02  0.00000E+00  0.00000E+00  0.00000E+00  0.10881E+04  0.00000E+00
 0.00000E+00  0.85392E+01  0.00000E+00 -0.65105E+03  0.00000E+00  0.00000E+00
 0.00000E+00  0.00000E+00  0.14169E+04  0.00000E+00  0.00000E+00  0.00000E+00
 0.00000E+00 -0.65105E+03  0.00000E+00  0.99275E+05  0.00000E+00  0.00000E+00
 0.10881E+04  0.00000E+00  0.00000E+00  0.00000E+00  0.21449E+06  0.00000E+00
 0.00000E+00  0.00000E+00  0.00000E+00  0.00000E+00  0.00000E+00  0.00000E+00
```

THIS MATRIX APPLIES TO THE FOLLOWING PILES -

1

****

PILE GEOMETRY AS INPUT AND/OR GENERATED

NUM	X FT	Y FT	Z FT	BATTER	ANGLE	LENGTH FT	FIXITY
1	-18.00	2.50	0.00	5.00	270.00	73.00	F
2	-12.00	2.50	0.00	5.00	270.00	73.00	F
3	-6.00	2.50	0.00	5.00	270.00	73.00	F
4	0.00	2.50	0.00	5.00	270.00	73.00	F
5	6.00	2.50	0.00	5.00	270.00	73.00	F
6	12.00	2.50	0.00	5.00	270.00	73.00	F
7	18.00	2.50	0.00	5.00	270.00	73.00	F
8	-18.00	7.50	0.00	5.00	90.00	73.00	F
9	-12.00	7.50	0.00	5.00	90.00	73.00	F
10	-6.00	7.50	0.00	5.00	90.00	73.00	F
11	0.00	7.50	0.00	5.00	90.00	73.00	F
12	6.00	7.50	0.00	5.00	90.00	73.00	F
13	12.00	7.50	0.00	5.00	90.00	73.00	F
14	18.00	7.50	0.00	5.00	90.00	73.00	F

```
                                                      ------
                                                     1022.00
```

****

APPLIED LOADS

LOAD CASE	PX K	PY K	PZ K	MX FT-K	MY FT-K	MZ FT-K	OVERSTRESS COM	OVERSTRESS TEN
8	0.0	142.0	195.0	1690.0	0.0	0.0	1.33	1.33
9	0.0	142.0	195.0	1583.0	0.0	0.0	1.33	1.33

****

ORIGINAL PILE GROUP STIFFNESS MATRIX

0.11955E+03	0.19274E-04	-0.46056E-04	-0.14600E-03	0.89377E+04	-0.71729E+04
0.19274E-04	0.91155E+03	0.17053E-11	0.98613E+05	0.14600E-03	-0.88908E-03
-0.46056E-04	0.90949E-12	0.19080E+05	0.11448E+07	0.36351E-04	0.00000E+00
-0.14600E-03	0.98613E+05	0.11448E+07	0.89040E+08	-0.40555E-01	-0.11453E+00
0.89377E+04	0.14600E-03	0.36351E-04	-0.40555E-01	0.39697E+09	-0.53626E+06
-0.71729E+04	-0.88908E-03	-0.14552E-10	-0.11453E+00	-0.53626E+06	0.19601E+08

14 PILES 2 LOAD CASES

LOAD CASE 8. NUMBER OF FAILURES = 0. NUMBER OF PILES IN TENSION = 7.

LOAD CASE 9. NUMBER OF FAILURES = 0. NUMBER OF PILES IN TENSION = 7.

****

PILE CAP DISPLACEMENTS

LOAD CASE	DX IN	DY IN	DZ IN	RX RAD	RY RAD	RZ RAD
8	-0.1809E-07	0.2315E+00	0.5223E-01	-0.7002E-03	0.2456E-12	-0.2030E-12
9	-0.1749E-07	0.2459E+00	0.6019E-01	-0.8328E-03	0.2127E-12	-0.1090E-12

****

PILE FORCES IN LOCAL GEOMETRY

M1 & M2 NOT AT PILE HEAD FOR PINNED PILES
* INDICATES PILE FAILURE
# INDICATES CBF BASED ON MOMENTS DUE TO
(F3*EMIN) FOR CONCRETE PILES
B INDICATES BUCKLING CONTROLS

LOAD CASE - 8

PILE	F1 K	F2 K	F3 K	M1 IN-K	M2 IN-K	M3 IN-K	ALF	CBF
1	-3.3	0.0	-21.0	0.0	-403.9	0.0	0.23	0.22
2	-3.3	0.0	-21.0	0.0	-403.9	0.0	0.23	0.22
3	-3.3	0.0	-21.0	0.0	-403.9	0.0	0.23	0.22
4	-3.3	0.0	-21.0	0.0	-403.9	0.0	0.23	0.22
5	-3.3	0.0	-21.0	0.0	-403.9	0.0	0.23	0.22
6	-3.3	0.0	-21.0	0.0	-403.9	0.0	0.23	0.22
7	-3.3	0.0	-21.0	0.0	-403.9	0.0	0.23	0.22
8	3.3	0.0	49.4	0.0	399.5	0.0	0.41	0.28
9	3.3	0.0	49.4	0.0	399.5	0.0	0.41	0.28
10	3.3	0.0	49.4	0.0	399.5	0.0	0.41	0.28
11	3.3	0.0	49.4	0.0	399.5	0.0	0.41	0.28
12	3.3	0.0	49.4	0.0	399.5	0.0	0.41	0.28
13	3.3	0.0	49.4	0.0	399.5	0.0	0.41	0.28
14	3.3	0.0	49.4	0.0	399.5	0.0	0.41	0.28

LOAD CASE - 9

PILE	F1 K	F2 K	F3 K	M1 IN-K	M2 IN-K	M3 IN-K	ALF	CBF
1	-3.6	0.0	-19.4	0.0	-448.5	0.0	0.21	0.24
2	-3.6	0.0	-19.4	0.0	-448.5	0.0	0.21	0.24
3	-3.6	0.0	-19.4	0.0	-448.5	0.0	0.21	0.24
4	-3.6	0.0	-19.4	0.0	-448.5	0.0	0.21	0.24
5	-3.6	0.0	-19.4	0.0	-448.5	0.0	0.21	0.24
6	-3.6	0.0	-19.4	0.0	-448.5	0.0	0.21	0.24
7	-3.6	0.0	-19.4	0.0	-448.5	0.0	0.21	0.24
8	3.6	0.0	47.8	0.0	444.1	0.0	0.40	0.29
9	3.6	0.0	47.8	0.0	444.1	0.0	0.40	0.29
10	3.6	0.0	47.8	0.0	444.1	0.0	0.40	0.29
11	3.6	0.0	47.8	0.0	444.1	0.0	0.40	0.29
12	3.6	0.0	47.8	0.0	444.1	0.0	0.40	0.29
13	3.6	0.0	47.8	0.0	444.1	0.0	0.40	0.29
14	3.6	0.0	47.8	0.0	444.1	0.0	0.40	0.29

****

PILE FORCES IN GLOBAL GEOMETRY

LOAD CASE - 8

PILE	PX K	PY K	PZ K	MX IN-K	MY IN-K	MZ IN-K
1	0.0	7.4	-19.9	-403.9	0.0	0.0
2	0.0	7.4	-19.9	-403.9	0.0	0.0
3	0.0	7.4	-19.9	-403.9	0.0	0.0
4	0.0	7.4	-19.9	-403.9	0.0	0.0
5	0.0	7.4	-19.9	-403.9	0.0	0.0
6	0.0	7.4	-19.9	-403.9	0.0	0.0
7	0.0	7.4	-19.9	-403.9	0.0	0.0
8	0.0	12.9	47.7	-399.5	0.0	0.0
9	0.0	12.9	47.7	-399.5	0.0	0.0
10	0.0	12.9	47.7	-399.5	0.0	0.0
11	0.0	12.9	47.7	-399.5	0.0	0.0
12	0.0	12.9	47.7	-399.5	0.0	0.0
13	0.0	12.9	47.7	-399.5	0.0	0.0
14	0.0	12.9	47.7	-399.5	0.0	0.0

LOAD CASE - 9

PILE	PX K	PY K	PZ K	MX IN-K	MY IN-K	MZ IN-K
1	0.0	7.4	-18.3	-448.5	0.0	0.0
2	0.0	7.4	-18.3	-448.5	0.0	0.0
3	0.0	7.4	-18.3	-448.5	0.0	0.0
4	0.0	7.4	-18.3	-448.5	0.0	0.0
5	0.0	7.4	-18.3	-448.5	0.0	0.0
6	0.0	7.4	-18.3	-448.5	0.0	0.0
7	0.0	7.4	-18.3	-448.5	0.0	0.0
8	0.0	12.9	46.2	-444.1	0.0	0.0
9	0.0	12.9	46.2	-444.1	0.0	0.0
10	0.0	12.9	46.2	-444.1	0.0	0.0
11	0.0	12.9	46.2	-444.1	0.0	0.0
12	0.0	12.9	46.2	-444.1	0.0	0.0
13	0.0	12.9	46.2	-444.1	0.0	0.0
14	0.0	12.9	46.2	-444.1	0.0	0.0

NO FILES WERE GENERATED DURING THIS RUN.

```
10  Sunset Reach D TOW El 15.0 pinned
20  PIL  1  -18   2.5   0
30  BAT   5   1
40  ANG   270   1
50  PIL  2  -12   2.5   0
60  BAT   5   2
70  ANG   270   2
80  PIL  3  -6   2.5   0
90  BAT   5   3
100  ANG   270   3
110  PIL  4   0   2.5   0
120  BAT   5   4
130  ANG   270   4
140  PIL  5   6   2.5   0
150  BAT   5   5
160  ANG   270   5
170  PIL  6   12   2.5   0
180  BAT   5   6
190  ANG   270   6
200  PIL  7   18   2.5   0
210  BAT   5   7
220  ANG   270   7
230  PIL  8  -18   7.5   0
240  BAT   5   8
250  ANG   90   8
260  PIL  9  -12   7.5   0
270  BAT   5   9
280  ANG   90   9
290  PIL  10  -6   7.5   0
300  BAT   5   10
310  ANG   90   10
320  PIL  11   0   7.5   0
330  BAT   5   11
340  ANG   90   11
350  PIL  12   6   7.5   0
360  BAT   5   12
370  ANG   90   12
380  PIL  13   12   7.5   0
390  BAT   5   13
400  ANG   90   13
410  PIL  14   18   7.5   0
420  BAT   5   14
430  ANG   90   14
440  PRO  29000  261  729  21.4  2  0  1 TO 14
450  SOI ES 0.056 L  73  0  1 TO 14
460  RED  1  1  1
470  ALL H 90  70  387  387  527  1667  1 TO 14
480  PIN  1 TO 14
490  LOA  1  0  12  246  1240  0  0
490  LOA  2  0  12  312  1568  0  0
```

```
490  LOA  3  0  30  312  1676  0  0
490  LOA  4  0  18  209  1159  0  0
490  LOA  5  0  18  209  1112  0  0
490  LOA  6  0  52  209  1362  0  0
490  LOA  7  0  52  209  1316  0  0
490  FOV  1.167  1.167  2
490  FOV  1.33  1.33  3
490  FOV  1.33  1.33  6
490  FOV  1.33  1.33  7
500  TOUT 1 2 3 4 5 6 7
510  PFO ALL
520  PLB ALL
```

CPGA - CASE PILE GROUP ANALYSIS PROGRAM
RUN DATE: 01-SEP-20 RUN TIME: 20:26:57

FOR PILES WITH UNSUPPORTED HEIGHT:
A. CPGA CANNOT CALCULATE PMAXMOM FOR NH TYPE SOIL
B. THE ALLOWABLE STRESS CHECKS, ASC AND AST, ARE
NOT FULLY DEVELOPED FOR UNSUPPORTED PILES.
WORK IS IN PROGRESS TO COMPLETE THIS ASPECT OF CPGA.

ELASTIC CENTER LOCATION IS NOT COMPUTED FOR 3-DIMENSIONAL PROBLEMS.

SUNSET REACH D TOW EL 15.0 PINNED
DATA UNKNOWN - REJECTED.

THERE ARE 14 PILES AND
7 LOAD CASES IN THIS RUN.

ALL PILE COORDINATES ARE CONTAINED WITHIN A BOX

	X	Y	Z
WITH DIAGONAL COORDINATES = (	-18.00 ,	2.50 ,	0.00)
(	18.00 ,	7.50 ,	0.00)

****

PILE PROPERTIES AS INPUT

E	I1	I2	A	C33	B66
KSI	IN**4	IN**4	IN**2		
0.29000E+05	0.26100E+03	0.72900E+03	0.21400E+02	0.20000E+01	0.00000E+00

THESE PILE PROPERTIES APPLY TO THE FOLLOWING PILES -

ALL

****

SOIL DESCRIPTIONS AS INPUT

ES	ESOIL	LENGTH	L	LU
	K/IN**2		FT	FT

0.56000E-01 L 0.73000E+02 0.00000E+00

ESOIL(ORIGINAL) K/IN**2	RGROUP	RCYCLIC
0.56000E-01	0.1000E+01	0.1000E+01

THIS SOIL DESCRIPTION APPLIES TO THE FOLLOWING PILES -

ALL

****

PILE STIFFNESSES AS CALCULATED FROM PROPERTIES

0.55196E+01	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00
0.00000E+00	0.42696E+01	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00
0.00000E+00	0.00000E+00	0.14169E+04	0.00000E+00	0.00000E+00	0.00000E+00
0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00
0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00
0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00

THIS MATRIX APPLIES TO THE FOLLOWING PILES -

1

****

PILE GEOMETRY AS INPUT AND/OR GENERATED

NUM	X FT	Y FT	Z FT	BATTER	ANGLE	LENGTH FT	FIXITY
1	-18.00	2.50	0.00	5.00	270.00	73.00	P
2	-12.00	2.50	0.00	5.00	270.00	73.00	P
3	-6.00	2.50	0.00	5.00	270.00	73.00	P
4	0.00	2.50	0.00	5.00	270.00	73.00	P
5	6.00	2.50	0.00	5.00	270.00	73.00	P
6	12.00	2.50	0.00	5.00	270.00	73.00	P
7	18.00	2.50	0.00	5.00	270.00	73.00	P
8	-18.00	7.50	0.00	5.00	90.00	73.00	P
9	-12.00	7.50	0.00	5.00	90.00	73.00	P
10	-6.00	7.50	0.00	5.00	90.00	73.00	P
11	0.00	7.50	0.00	5.00	90.00	73.00	P
12	6.00	7.50	0.00	5.00	90.00	73.00	P
13	12.00	7.50	0.00	5.00	90.00	73.00	P
14	18.00	7.50	0.00	5.00	90.00	73.00	P

1022.00

****

APPLIED LOADS

LOAD CASE	PX K	PY K	PZ K	MX FT-K	MY FT-K	MZ FT-K	OVERSTRESS COM	OVERSTRESS TEN
1	0.0	12.0	246.0	1240.0	0.0	0.0		
2	0.0	12.0	312.0	1568.0	0.0	0.0	1.17	1.17
3	0.0	30.0	312.0	1676.0	0.0	0.0	1.33	1.33
4	0.0	18.0	209.0	1159.0	0.0	0.0		
5	0.0	18.0	209.0	1112.0	0.0	0.0		
6	0.0	52.0	209.0	1362.0	0.0	0.0	1.33	1.33
7	0.0	52.0	209.0	1316.0	0.0	0.0	1.33	1.33

****

ORIGINAL PILE GROUP STIFFNESS MATRIX

0.59774E+02	0.18920E-04	-0.46237E-04	-0.32526E-18	0.00000E+00	-0.35865E+04
0.18920E-04	0.83725E+03	0.17053E-11	0.11400E+06	-0.72760E-11	-0.85142E-03
-0.46237E-04	0.90949E-12	0.19077E+05	0.11446E+07	-0.58208E-10	0.00000E+00
-0.32526E-18	0.11400E+06	0.11446E+07	0.85845E+08	0.00000E+00	-0.12484E+00
-0.43368E-18	0.00000E+00	0.58208E-10	0.74506E-08	0.39557E+09	-0.29802E-07
-0.35865E+04	-0.85142E-03	-0.14552E-10	-0.12484E+00	-0.31665E-07	0.17630E+08

14 PILES 7 LOAD CASES

LOAD CASE 1. NUMBER OF FAILURES = 0. NUMBER OF PILES IN TENSION = 0.

LOAD CASE 2. NUMBER OF FAILURES = 0. NUMBER OF PILES IN TENSION = 0.

LOAD CASE 3. NUMBER OF FAILURES = 0. NUMBER OF PILES IN TENSION = 0.

LOAD CASE 4. NUMBER OF FAILURES = 0. NUMBER OF PILES IN TENSION = 0.

LOAD CASE 5. NUMBER OF FAILURES = 0. NUMBER OF PILES IN TENSION = 0.

LOAD CASE 6. NUMBER OF FAILURES = 0. NUMBER OF PILES IN TENSION = 0.

LOAD CASE 7. NUMBER OF FAILURES = 0. NUMBER OF PILES IN TENSION = 0.

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PILE CAP DISPLACEMENTS

LOAD CASE	DX IN	DY IN	DZ IN	RX RAD	RY RAD	RZ RAD
1	0.8601E-08	0.1394E+00	0.6802E-01	-0.9187E-03	0.7296E-20	0.1977E-11
2	0.1136E-07	0.1414E+00	0.7235E-01	-0.9333E-03	0.6932E-20	0.2531E-11
3	0.6862E-08	0.2583E+00	0.1144E+00	-0.1634E-02	0.1394E-19	0.2300E-11
4	0.3937E-08	0.1110E+00	0.5038E-01	-0.6571E-03	0.4963E-20	0.1507E-11
5	0.5075E-08	0.1576E+00	0.7092E-01	-0.9994E-03	0.8388E-20	0.1565E-11
6	-0.4533E-08	0.3328E+00	0.1302E+00	-0.1988E-02	0.1828E-19	0.1072E-11
7	-0.3419E-08	0.3784E+00	0.1503E+00	-0.2323E-02	0.2163E-19	0.1129E-11

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PILE FORCES IN LOCAL GEOMETRY

M1 & M2 NOT AT PILE HEAD FOR PINNED PILES
* INDICATES PILE FAILURE
# INDICATES CBF BASED ON MOMENTS DUE TO
(F3*EMIN) FOR CONCRETE PILES
B INDICATES BUCKLING CONTROLS

LOAD CASE - 1

PILE	F1 K	F2 K	F3 K	M1 IN-K	M2 IN-K	M3 IN-K	ALF	CBF
1	-0.8	0.0	17.5	0.0	50.7	0.0	0.19	0.08
2	-0.8	0.0	17.5	0.0	50.7	0.0	0.19	0.08
3	-0.8	0.0	17.5	0.0	50.7	0.0	0.19	0.08
4	-0.8	0.0	17.5	0.0	50.7	0.0	0.19	0.08
5	-0.8	0.0	17.5	0.0	50.7	0.0	0.19	0.08
6	-0.8	0.0	17.5	0.0	50.7	0.0	0.19	0.08
7	-0.8	0.0	17.5	0.0	50.7	0.0	0.19	0.08
8	0.8	0.0	18.4	0.0	-48.9	0.0	0.20	0.08
9	0.8	0.0	18.4	0.0	-48.9	0.0	0.20	0.08
10	0.8	0.0	18.4	0.0	-48.9	0.0	0.20	0.08
11	0.8	0.0	18.4	0.0	-48.9	0.0	0.20	0.08
12	0.8	0.0	18.4	0.0	-48.9	0.0	0.20	0.08
13	0.8	0.0	18.4	0.0	-48.9	0.0	0.20	0.08
14	0.8	0.0	18.4	0.0	-48.9	0.0	0.20	0.08

LOAD CASE - 2

PILE	F1 K	F2 K	F3 K	M1 IN-K	M2 IN-K	M3 IN-K	ALF	CBF
1	-0.8	0.0	22.3	0.0	51.6	0.0	0.21	0.08
2	-0.8	0.0	22.3	0.0	51.6	0.0	0.21	0.08
3	-0.8	0.0	22.3	0.0	51.6	0.0	0.21	0.08
4	-0.8	0.0	22.3	0.0	51.6	0.0	0.21	0.08
5	-0.8	0.0	22.3	0.0	51.6	0.0	0.21	0.08
6	-0.8	0.0	22.3	0.0	51.6	0.0	0.21	0.08
7	-0.8	0.0	22.3	0.0	51.6	0.0	0.21	0.08
8	0.8	0.0	23.1	0.0	-49.4	0.0	0.22	0.08
9	0.8	0.0	23.1	0.0	-49.4	0.0	0.22	0.08
10	0.8	0.0	23.1	0.0	-49.4	0.0	0.22	0.08
11	0.8	0.0	23.1	0.0	-49.4	0.0	0.22	0.08
12	0.8	0.0	23.1	0.0	-49.4	0.0	0.22	0.08
13	0.8	0.0	23.1	0.0	-49.4	0.0	0.22	0.08
14	0.8	0.0	23.1	0.0	-49.4	0.0	0.22	0.08

LOAD CASE - 3

PILE	F1 K	F2 K	F3 K	M1 IN-K	M2 IN-K	M3 IN-K	ALF	CBF
1	-1.5	0.0	19.1	0.0	93.2	0.0	0.16	0.08
2	-1.5	0.0	19.1	0.0	93.2	0.0	0.16	0.08
3	-1.5	0.0	19.1	0.0	93.2	0.0	0.16	0.08
4	-1.5	0.0	19.1	0.0	93.2	0.0	0.16	0.08
5	-1.5	0.0	19.1	0.0	93.2	0.0	0.16	0.08
6	-1.5	0.0	19.1	0.0	93.2	0.0	0.16	0.08
7	-1.5	0.0	19.1	0.0	93.2	0.0	0.16	0.08
8	1.4	0.0	26.4	0.0	-91.0	0.0	0.22	0.09
9	1.4	0.0	26.4	0.0	-91.0	0.0	0.22	0.09
10	1.4	0.0	26.4	0.0	-91.0	0.0	0.22	0.09
11	1.4	0.0	26.4	0.0	-91.0	0.0	0.22	0.09
12	1.4	0.0	26.4	0.0	-91.0	0.0	0.22	0.09
13	1.4	0.0	26.4	0.0	-91.0	0.0	0.22	0.09
14	1.4	0.0	26.4	0.0	-91.0	0.0	0.22	0.09

LOAD CASE - 4

PILE	F1 K	F2 K	F3 K	M1 IN-K	M2 IN-K	M3 IN-K	ALF	CBF
1	-0.6	0.0	11.8	0.0	40.2	0.0	0.13	0.05
2	-0.6	0.0	11.8	0.0	40.2	0.0	0.13	0.05
3	-0.6	0.0	11.8	0.0	40.2	0.0	0.13	0.05

4	-0.6	0.0	11.8	0.0	40.2	0.0	0.13	0.05
5	-0.6	0.0	11.8	0.0	40.2	0.0	0.13	0.05
6	-0.6	0.0	11.8	0.0	40.2	0.0	0.13	0.05
7	-0.6	0.0	11.8	0.0	40.2	0.0	0.13	0.05
8	0.6	0.0	18.7	0.0	-38.7	0.0	0.21	0.07
9	0.6	0.0	18.7	0.0	-38.7	0.0	0.21	0.07
10	0.6	0.0	18.7	0.0	-38.7	0.0	0.21	0.07
11	0.6	0.0	18.7	0.0	-38.7	0.0	0.21	0.07
12	0.6	0.0	18.7	0.0	-38.7	0.0	0.21	0.07
13	0.6	0.0	18.7	0.0	-38.7	0.0	0.21	0.07
14	0.6	0.0	18.7	0.0	-38.7	0.0	0.21	0.07

LOAD CASE - 5

PILE	F1 K	F2 K	F3 K	M1 IN-K	M2 IN-K	M3 IN-K	ALF	CBF
1	-0.9	0.0	13.1	0.0	56.9	0.0	0.15	0.07
2	-0.9	0.0	13.1	0.0	56.9	0.0	0.15	0.07
3	-0.9	0.0	13.1	0.0	56.9	0.0	0.15	0.07
4	-0.9	0.0	13.1	0.0	56.9	0.0	0.15	0.07
5	-0.9	0.0	13.1	0.0	56.9	0.0	0.15	0.07
6	-0.9	0.0	13.1	0.0	56.9	0.0	0.15	0.07
7	-0.9	0.0	13.1	0.0	56.9	0.0	0.15	0.07
8	0.9	0.0	17.4	0.0	-55.4	0.0	0.19	0.08
9	0.9	0.0	17.4	0.0	-55.4	0.0	0.19	0.08
10	0.9	0.0	17.4	0.0	-55.4	0.0	0.19	0.08
11	0.9	0.0	17.4	0.0	-55.4	0.0	0.19	0.08
12	0.9	0.0	17.4	0.0	-55.4	0.0	0.19	0.08
13	0.9	0.0	17.4	0.0	-55.4	0.0	0.19	0.08
14	0.9	0.0	17.4	0.0	-55.4	0.0	0.19	0.08

LOAD CASE - 6

PILE	F1 K	F2 K	F3 K	M1 IN-K	M2 IN-K	M3 IN-K	ALF	CBF
1	-1.9	0.0	5.6	0.0	119.2	0.0	0.05	0.06
2	-1.9	0.0	5.6	0.0	119.2	0.0	0.05	0.06
3	-1.9	0.0	5.6	0.0	119.2	0.0	0.05	0.06
4	-1.9	0.0	5.6	0.0	119.2	0.0	0.05	0.06
5	-1.9	0.0	5.6	0.0	119.2	0.0	0.05	0.06
6	-1.9	0.0	5.6	0.0	119.2	0.0	0.05	0.06
7	-1.9	0.0	5.6	0.0	119.2	0.0	0.05	0.06
8	1.9	0.0	24.8	0.0	-117.7	0.0	0.21	0.10
9	1.9	0.0	24.8	0.0	-117.7	0.0	0.21	0.10
10	1.9	0.0	24.8	0.0	-117.7	0.0	0.21	0.10
11	1.9	0.0	24.8	0.0	-117.7	0.0	0.21	0.10

12	1.9	0.0	24.8	0.0	-117.7	0.0	0.21	0.10
13	1.9	0.0	24.8	0.0	-117.7	0.0	0.21	0.10
14	1.9	0.0	24.8	0.0	-117.7	0.0	0.21	0.10

LOAD CASE - 7

PILE	F1 K	F2 K	F3 K	M1 IN-K	M2 IN-K	M3 IN-K	ALF	CBF
1	-2.1	0.0	6.9	0.0	135.6	0.0	0.06	0.07
2	-2.1	0.0	6.9	0.0	135.6	0.0	0.06	0.07
3	-2.1	0.0	6.9	0.0	135.6	0.0	0.06	0.07
4	-2.1	0.0	6.9	0.0	135.6	0.0	0.06	0.07
5	-2.1	0.0	6.9	0.0	135.6	0.0	0.06	0.07
6	-2.1	0.0	6.9	0.0	135.6	0.0	0.06	0.07
7	-2.1	0.0	6.9	0.0	135.6	0.0	0.06	0.07
8	2.1	0.0	23.5	0.0	-134.0	0.0	0.20	0.11
9	2.1	0.0	23.5	0.0	-134.0	0.0	0.20	0.11
10	2.1	0.0	23.5	0.0	-134.0	0.0	0.20	0.11
11	2.1	0.0	23.5	0.0	-134.0	0.0	0.20	0.11
12	2.1	0.0	23.5	0.0	-134.0	0.0	0.20	0.11
13	2.1	0.0	23.5	0.0	-134.0	0.0	0.20	0.11
14	2.1	0.0	23.5	0.0	-134.0	0.0	0.20	0.11

****

PILE FORCES IN GLOBAL GEOMETRY

LOAD CASE - 1

PILE	PX K	PY K	PZ K	MX IN-K	MY IN-K	MZ IN-K
1	0.0	-2.6	17.3	0.0	0.0	0.0
2	0.0	-2.6	17.3	0.0	0.0	0.0
3	0.0	-2.6	17.3	0.0	0.0	0.0
4	0.0	-2.6	17.3	0.0	0.0	0.0
5	0.0	-2.6	17.3	0.0	0.0	0.0
6	0.0	-2.6	17.3	0.0	0.0	0.0
7	0.0	-2.6	17.3	0.0	0.0	0.0
8	0.0	4.4	17.9	0.0	0.0	0.0
9	0.0	4.4	17.9	0.0	0.0	0.0
10	0.0	4.4	17.9	0.0	0.0	0.0
11	0.0	4.4	17.9	0.0	0.0	0.0
12	0.0	4.4	17.9	0.0	0.0	0.0
13	0.0	4.4	17.9	0.0	0.0	0.0

14	0.0	4.4	17.9	0.0	0.0	0.0

LOAD CASE - 2

PILE	PX K	PY K	PZ K	MX IN-K	MY IN-K	MZ IN-K
1	0.0	-3.6	22.1	0.0	0.0	0.0
2	0.0	-3.6	22.1	0.0	0.0	0.0
3	0.0	-3.6	22.1	0.0	0.0	0.0
4	0.0	-3.6	22.1	0.0	0.0	0.0
5	0.0	-3.6	22.1	0.0	0.0	0.0
6	0.0	-3.6	22.1	0.0	0.0	0.0
7	0.0	-3.6	22.1	0.0	0.0	0.0
8	0.0	5.3	22.5	0.0	0.0	0.0
9	0.0	5.3	22.5	0.0	0.0	0.0
10	0.0	5.3	22.5	0.0	0.0	0.0
11	0.0	5.3	22.5	0.0	0.0	0.0
12	0.0	5.3	22.5	0.0	0.0	0.0
13	0.0	5.3	22.5	0.0	0.0	0.0
14	0.0	5.3	22.5	0.0	0.0	0.0

LOAD CASE - 3

PILE	PX K	PY K	PZ K	MX IN-K	MY IN-K	MZ IN-K
1	0.0	-2.3	19.0	0.0	0.0	0.0
2	0.0	-2.3	19.0	0.0	0.0	0.0
3	0.0	-2.3	19.0	0.0	0.0	0.0
4	0.0	-2.3	19.0	0.0	0.0	0.0
5	0.0	-2.3	19.0	0.0	0.0	0.0
6	0.0	-2.3	19.0	0.0	0.0	0.0
7	0.0	-2.3	19.0	0.0	0.0	0.0
8	0.0	6.6	25.6	0.0	0.0	0.0
9	0.0	6.6	25.6	0.0	0.0	0.0
10	0.0	6.6	25.6	0.0	0.0	0.0
11	0.0	6.6	25.6	0.0	0.0	0.0
12	0.0	6.6	25.6	0.0	0.0	0.0
13	0.0	6.6	25.6	0.0	0.0	0.0
14	0.0	6.6	25.6	0.0	0.0	0.0

LOAD CASE - 4

PILE	PX K	PY K	PZ K	MX IN-K	MY IN-K	MZ IN-K

1	0.0	-1.7	11.7	0.0	0.0	0.0
2	0.0	-1.7	11.7	0.0	0.0	0.0
3	0.0	-1.7	11.7	0.0	0.0	0.0
4	0.0	-1.7	11.7	0.0	0.0	0.0
5	0.0	-1.7	11.7	0.0	0.0	0.0
6	0.0	-1.7	11.7	0.0	0.0	0.0
7	0.0	-1.7	11.7	0.0	0.0	0.0
8	0.0	4.3	18.2	0.0	0.0	0.0
9	0.0	4.3	18.2	0.0	0.0	0.0
10	0.0	4.3	18.2	0.0	0.0	0.0
11	0.0	4.3	18.2	0.0	0.0	0.0
12	0.0	4.3	18.2	0.0	0.0	0.0
13	0.0	4.3	18.2	0.0	0.0	0.0
14	0.0	4.3	18.2	0.0	0.0	0.0

LOAD CASE - 5

PILE	PX K	PY K	PZ K	MX IN-K	MY IN-K	MZ IN-K
1	0.0	-1.7	13.0	0.0	0.0	0.0
2	0.0	-1.7	13.0	0.0	0.0	0.0
3	0.0	-1.7	13.0	0.0	0.0	0.0
4	0.0	-1.7	13.0	0.0	0.0	0.0
5	0.0	-1.7	13.0	0.0	0.0	0.0
6	0.0	-1.7	13.0	0.0	0.0	0.0
7	0.0	-1.7	13.0	0.0	0.0	0.0
8	0.0	4.3	16.8	0.0	0.0	0.0
9	0.0	4.3	16.8	0.0	0.0	0.0
10	0.0	4.3	16.8	0.0	0.0	0.0
11	0.0	4.3	16.8	0.0	0.0	0.0
12	0.0	4.3	16.8	0.0	0.0	0.0
13	0.0	4.3	16.8	0.0	0.0	0.0
14	0.0	4.3	16.8	0.0	0.0	0.0

LOAD CASE - 6

PILE	PX K	PY K	PZ K	MX IN-K	MY IN-K	MZ IN-K
1	0.0	0.7	5.9	0.0	0.0	0.0
2	0.0	0.7	5.9	0.0	0.0	0.0
3	0.0	0.7	5.9	0.0	0.0	0.0
4	0.0	0.7	5.9	0.0	0.0	0.0
5	0.0	0.7	5.9	0.0	0.0	0.0
6	0.0	0.7	5.9	0.0	0.0	0.0
7	0.0	0.7	5.9	0.0	0.0	0.0
8	0.0	6.7	24.0	0.0	0.0	0.0

9	0.0	6.7	24.0	0.0	0.0	0.0
10	0.0	6.7	24.0	0.0	0.0	0.0
11	0.0	6.7	24.0	0.0	0.0	0.0
12	0.0	6.7	24.0	0.0	0.0	0.0
13	0.0	6.7	24.0	0.0	0.0	0.0
14	0.0	6.7	24.0	0.0	0.0	0.0

LOAD CASE - 7

PILE	PX K	PY K	PZ K	MX IN-K	MY IN-K	MZ IN-K
1	0.0	0.7	7.2	0.0	0.0	0.0
2	0.0	0.7	7.2	0.0	0.0	0.0
3	0.0	0.7	7.2	0.0	0.0	0.0
4	0.0	0.7	7.2	0.0	0.0	0.0
5	0.0	0.7	7.2	0.0	0.0	0.0
6	0.0	0.7	7.2	0.0	0.0	0.0
7	0.0	0.7	7.2	0.0	0.0	0.0
8	0.0	6.7	22.7	0.0	0.0	0.0
9	0.0	6.7	22.7	0.0	0.0	0.0
10	0.0	6.7	22.7	0.0	0.0	0.0
11	0.0	6.7	22.7	0.0	0.0	0.0
12	0.0	6.7	22.7	0.0	0.0	0.0
13	0.0	6.7	22.7	0.0	0.0	0.0
14	0.0	6.7	22.7	0.0	0.0	0.0

NO FILES WERE GENERATED DURING THIS RUN.

```
10  Sunset Reach D TOW El 15.0 Pinned
20  PIL  1  -18   2.5   0
30  BAT   5   1
40  ANG   270   1
50  PIL  2  -12   2.5   0
60  BAT   5   2
70  ANG   270   2
80  PIL  3  -6   2.5   0
90  BAT   5   3
100  ANG   270   3
110  PIL  4   0   2.5   0
120  BAT   5   4
130  ANG   270   4
140  PIL  5   6   2.5   0
150  BAT   5   5
160  ANG   270   5
170  PIL  6   12   2.5   0
180  BAT   5   6
190  ANG   270   6
200  PIL  7   18   2.5   0
210  BAT   5   7
220  ANG   270   7
230  PIL  8  -18   7.5   0
240  BAT   5   8
250  ANG   90   8
260  PIL  9  -12   7.5   0
270  BAT   5   9
280  ANG   90   9
290  PIL  10  -6   7.5   0
300  BAT   5   10
310  ANG   90   10
320  PIL  11   0   7.5   0
330  BAT   5   11
340  ANG   90   11
350  PIL  12   6   7.5   0
360  BAT   5   12
370  ANG   90   12
380  PIL  13   12   7.5   0
390  BAT   5   13
400  ANG   90   13
410  PIL  14   18   7.5   0
420  BAT   5   14
430  ANG   90   14
440  PRO  29000  261  729  21.4  2  0  1 TO 14
450  SOI ES 0.056 L  73  0  1 TO 14
460  RED  1  1  1
470  ALL H 90  70  387  387  527  1667  1 TO 14
480  PIN  1 TO 14
490  LOA  8  0  142  195  1690  0  0
490  LOA  9  0  142  195  1583  0  0
```

```
490  FOV  1.33  1.33  8
490  FOV  1.33  1.33  9
500  TOUT 1 2 3 4 5 6 7
510  PFO ALL
520  PLB ALL
```

CPGA - CASE PILE GROUP ANALYSIS PROGRAM
RUN DATE: 01-SEP-20 RUN TIME: 20:28:01

FOR PILES WITH UNSUPPORTED HEIGHT:
A. CPGA CANNOT CALCULATE PMAXMOM FOR NH TYPE SOIL
B. THE ALLOWABLE STRESS CHECKS, ASC AND AST, ARE
NOT FULLY DEVELOPED FOR UNSUPPORTED PILES.
WORK IS IN PROGRESS TO COMPLETE THIS ASPECT OF CPGA.

ELASTIC CENTER LOCATION IS NOT COMPUTED FOR 3-DIMENSIONAL PROBLEMS.

SUNSET REACH D TOW EL 15.0 PINNED
DATA UNKNOWN - REJECTED.

THERE ARE 14 PILES AND
2 LOAD CASES IN THIS RUN.

ALL PILE COORDINATES ARE CONTAINED WITHIN A BOX

	X	Y	Z
WITH DIAGONAL COORDINATES = (	-18.00 ,	2.50 ,	0.00)
(	18.00 ,	7.50 ,	0.00)

****

PILE PROPERTIES AS INPUT

E	I1	I2	A	C33	B66
KSI	IN**4	IN**4	IN**2		
0.29000E+05	0.26100E+03	0.72900E+03	0.21400E+02	0.20000E+01	0.00000E+00

THESE PILE PROPERTIES APPLY TO THE FOLLOWING PILES -

ALL

****

SOIL DESCRIPTIONS AS INPUT

ES	ESOIL	LENGTH	L	LU
	K/IN**2		FT	FT

0.56000E-01 L 0.73000E+02 0.00000E+00

ESOIL(ORIGINAL) K/IN**2	RGROUP	RCYCLIC
0.56000E-01	0.1000E+01	0.1000E+01

THIS SOIL DESCRIPTION APPLIES TO THE FOLLOWING PILES -

ALL

****

PILE STIFFNESSES AS CALCULATED FROM PROPERTIES

0.55196E+01	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00
0.00000E+00	0.42696E+01	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00
0.00000E+00	0.00000E+00	0.14169E+04	0.00000E+00	0.00000E+00	0.00000E+00
0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00
0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00
0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00

THIS MATRIX APPLIES TO THE FOLLOWING PILES -

1

****

PILE GEOMETRY AS INPUT AND/OR GENERATED

NUM	X FT	Y FT	Z FT	BATTER	ANGLE	LENGTH FT	FIXITY
1	-18.00	2.50	0.00	5.00	270.00	73.00	P
2	-12.00	2.50	0.00	5.00	270.00	73.00	P
3	-6.00	2.50	0.00	5.00	270.00	73.00	P
4	0.00	2.50	0.00	5.00	270.00	73.00	P
5	6.00	2.50	0.00	5.00	270.00	73.00	P
6	12.00	2.50	0.00	5.00	270.00	73.00	P
7	18.00	2.50	0.00	5.00	270.00	73.00	P
8	-18.00	7.50	0.00	5.00	90.00	73.00	P
9	-12.00	7.50	0.00	5.00	90.00	73.00	P
10	-6.00	7.50	0.00	5.00	90.00	73.00	P
11	0.00	7.50	0.00	5.00	90.00	73.00	P
12	6.00	7.50	0.00	5.00	90.00	73.00	P
13	12.00	7.50	0.00	5.00	90.00	73.00	P
14	18.00	7.50	0.00	5.00	90.00	73.00	P

```
                                                      ------
                                                     1022.00
```

****

APPLIED LOADS

LOAD CASE	PX K	PY K	PZ K	MX FT-K	MY FT-K	MZ FT-K	OVERSTRESS COM	OVERSTRESS TEN
8	0.0	142.0	195.0	1690.0	0.0	0.0	1.33	1.33
9	0.0	142.0	195.0	1583.0	0.0	0.0	1.33	1.33

****

ORIGINAL PILE GROUP STIFFNESS MATRIX

```
 0.59774E+02  0.18920E-04 -0.46237E-04 -0.32526E-18  0.00000E+00 -0.35865E+04
 0.18920E-04  0.83725E+03  0.17053E-11  0.11400E+06 -0.72760E-11 -0.85142E-03
-0.46237E-04  0.90949E-12  0.19077E+05  0.11446E+07 -0.58208E-10  0.00000E+00
-0.32526E-18  0.11400E+06  0.11446E+07  0.85845E+08  0.00000E+00 -0.12484E+00
-0.43368E-18  0.00000E+00  0.58208E-10  0.74506E-08  0.39557E+09 -0.29802E-07
-0.35865E+04 -0.85142E-03 -0.14552E-10 -0.12484E+00 -0.31665E-07  0.17630E+08
```

14 PILES   2 LOAD CASES

LOAD CASE   8. NUMBER OF FAILURES =   0. NUMBER OF PILES IN TENSION =   7.

LOAD CASE   9. NUMBER OF FAILURES =   0. NUMBER OF PILES IN TENSION =   7.

****

PILE CAP DISPLACEMENTS

LOAD CASE	DX IN	DY IN	DZ IN	RX RAD	RY RAD	RZ RAD
8	-0.2415E-07	0.1058E+01	0.4018E+00	-0.6527E-02	0.6380E-19	-0.2224E-13
9	-0.2156E-07	0.1164E+01	0.4486E+00	-0.7306E-02	0.7160E-19	0.1107E-12

****

PILE FORCES IN LOCAL GEOMETRY

M1 & M2 NOT AT PILE HEAD FOR PINNED PILES
* INDICATES PILE FAILURE
# INDICATES CBF BASED ON MOMENTS DUE TO
(F3*EMIN) FOR CONCRETE PILES
B INDICATES BUCKLING CONTROLS

LOAD CASE - 8

PILE	F1 K	F2 K	F3 K	M1 IN-K	M2 IN-K	M3 IN-K	ALF	CBF
1	-6.0	0.0	-7.8	0.0	377.7	0.0	0.08	0.19
2	-6.0	0.0	-7.8	0.0	377.7	0.0	0.08	0.19
3	-6.0	0.0	-7.8	0.0	377.7	0.0	0.08	0.19
4	-6.0	0.0	-7.8	0.0	377.7	0.0	0.08	0.19
5	-6.0	0.0	-7.8	0.0	377.7	0.0	0.08	0.19
6	-6.0	0.0	-7.8	0.0	377.7	0.0	0.08	0.19
7	-6.0	0.0	-7.8	0.0	377.7	0.0	0.08	0.19
8	5.9	0.0	36.2	0.0	-376.3	0.0	0.30	0.24
9	5.9	0.0	36.2	0.0	-376.3	0.0	0.30	0.24
10	5.9	0.0	36.2	0.0	-376.3	0.0	0.30	0.24
11	5.9	0.0	36.2	0.0	-376.3	0.0	0.30	0.24
12	5.9	0.0	36.2	0.0	-376.3	0.0	0.30	0.24
13	5.9	0.0	36.2	0.0	-376.3	0.0	0.30	0.24
14	5.9	0.0	36.2	0.0	-376.3	0.0	0.30	0.24

LOAD CASE - 9

PILE	F1 K	F2 K	F3 K	M1 IN-K	M2 IN-K	M3 IN-K	ALF	CBF
1	-6.6	0.0	-4.8	0.0	415.8	0.0	0.05	0.20
2	-6.6	0.0	-4.8	0.0	415.8	0.0	0.05	0.20
3	-6.6	0.0	-4.8	0.0	415.8	0.0	0.05	0.20
4	-6.6	0.0	-4.8	0.0	415.8	0.0	0.05	0.20
5	-6.6	0.0	-4.8	0.0	415.8	0.0	0.05	0.20
6	-6.6	0.0	-4.8	0.0	415.8	0.0	0.05	0.20
7	-6.6	0.0	-4.8	0.0	415.8	0.0	0.05	0.20
8	6.5	0.0	33.2	0.0	-414.4	0.0	0.28	0.25
9	6.5	0.0	33.2	0.0	-414.4	0.0	0.28	0.25
10	6.5	0.0	33.2	0.0	-414.4	0.0	0.28	0.25
11	6.5	0.0	33.2	0.0	-414.4	0.0	0.28	0.25
12	6.5	0.0	33.2	0.0	-414.4	0.0	0.28	0.25
13	6.5	0.0	33.2	0.0	-414.4	0.0	0.28	0.25
14	6.5	0.0	33.2	0.0	-414.4	0.0	0.28	0.25

****

PILE FORCES IN GLOBAL GEOMETRY

LOAD CASE - 8

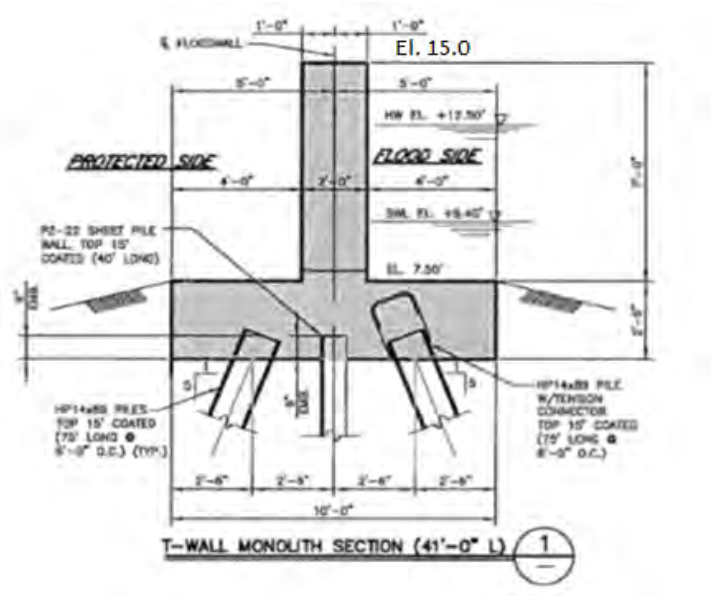
PILE	PX K	PY K	PZ K	MX IN-K	MY IN-K	MZ IN-K
1	0.0	7.4	-6.5	0.0	0.0	0.0
2	0.0	7.4	-6.5	0.0	0.0	0.0
3	0.0	7.4	-6.5	0.0	0.0	0.0
4	0.0	7.4	-6.5	0.0	0.0	0.0
5	0.0	7.4	-6.5	0.0	0.0	0.0
6	0.0	7.4	-6.5	0.0	0.0	0.0
7	0.0	7.4	-6.5	0.0	0.0	0.0
8	0.0	12.9	34.4	0.0	0.0	0.0
9	0.0	12.9	34.4	0.0	0.0	0.0
10	0.0	12.9	34.4	0.0	0.0	0.0
11	0.0	12.9	34.4	0.0	0.0	0.0
12	0.0	12.9	34.4	0.0	0.0	0.0
13	0.0	12.9	34.4	0.0	0.0	0.0
14	0.0	12.9	34.4	0.0	0.0	0.0

LOAD CASE - 9

PILE	PX K	PY K	PZ K	MX IN-K	MY IN-K	MZ IN-K
1	0.0	7.4	-3.4	0.0	0.0	0.0
2	0.0	7.4	-3.4	0.0	0.0	0.0
3	0.0	7.4	-3.4	0.0	0.0	0.0
4	0.0	7.4	-3.4	0.0	0.0	0.0
5	0.0	7.4	-3.4	0.0	0.0	0.0
6	0.0	7.4	-3.4	0.0	0.0	0.0
7	0.0	7.4	-3.4	0.0	0.0	0.0
8	0.0	12.9	31.3	0.0	0.0	0.0
9	0.0	12.9	31.3	0.0	0.0	0.0
10	0.0	12.9	31.3	0.0	0.0	0.0
11	0.0	12.9	31.3	0.0	0.0	0.0
12	0.0	12.9	31.3	0.0	0.0	0.0
13	0.0	12.9	31.3	0.0	0.0	0.0
14	0.0	12.9	31.3	0.0	0.0	0.0

NO FILES WERE GENERATED DURING THIS RUN.

Reach D Sunset Twall
T-Wall Stems Loads



Top of Stem EL.	15.0	Weight of Water:	0.062	k/ft^3
Bottom of Stem EL.	7.5	Moist Weight of Soil	0.120	k/ft^3
F.S. Soil EL.	7.5	Wave Load:	0	k/ft
P.S. Soil EL.	7.5	Wave Arm EL.	0	
S.W.L EL.	9.4	Debri	0.5	k/ft
P.S. Water EL.	0.0	Wind Load:	0.056	ksf
Ko:	0.8	Sat. Soil Weight:	0.058	k/ft^3

Note: Inputs are already referenced from t-wall foundation sheet.

Load Case 2b. Construction + Wind 1.6(D + Sur + Wind)

Item	Fy	z	**Mx**	**Vx**
Wind	0.42	3.75	1.58	0.42
Sub Total:			1.58	0.42
Total (Factored)			**2.52** ft-k/ft	**0.67** k/ft

Load Case 3a. Flowline 1.6(D + EH + EV + HF+ IU)

Item	Fy	z	**Mx**	**Vx**
F.S. Horizontal Water	0.11	0.63	0.07	0.11
P.S. Horizontal Water	0.00	0.00	0.00	0.00
F.S. Horizontal Soil	0.00	0.00	0.00	0.00
P.S. Horizontal Soil ($\gamma_{m\ tri}$)	0.00	0	0.0000	0.00
P.S. Horizontal Soil ($\gamma_{m\ rec}$)	0.00	-3.75	0.00	0.00
P.S. Horizontal Soil ($\gamma_{sat\ tri}$)	0.00	-2.50	0.00	0.00
Sub Total:			0.07	0.11
Total (Factored)			**0.11**	**0.18**
			ft-k/ft	k/ft

Load Case 3c. Flowline+Wind+Debri 1.6(D + EH + EV + H_F+ PU + I + W)

Item	Fy	z	**Mx**	**Vx**
F.S. Horizontal Water	0.11	0.63	0.07	0.11
P.S. Horizontal Water	0.00	0.00	0.00	0.00
F.S. Horizontal Soil	0.00	0.00	0.00	0.00
P.S. Horizontal Soil ($\gamma_{m\ tri}$)	0.00	0.00	0.00	0.00
P.S. Horizontal Soil ($\gamma_{m\ rec}$)	0.00	-3.75	0.00	0.00
P.S. Horizontal Soil ($\gamma_{sat\ tri}$)	0.00	-2.50	0.00	0.00
Wind	0.31	4.70	1.47	0.31
Debri	0.50	2.90	1.45	0.50
Sub Total:			3.00	0.93
Total (Factored)			**4.79**	**1.48**
			ft-k/ft	k/ft

Load Case 4a. Water to the Top + Debri 1.2D + 1.35EH_D + 0.9EH_R + 1.35EV + 1.3(H_{TW} + I + IU)

Item	Fy	z	**Mx**	**Vx**
F.S. Horizontal Water	1.76	2.50	4.39	1.76
P.S. Horizontal Water	0.00	0.00	0.00	0.00
F.S. Horizontal Soil	0.00	0.00	0.00	0.00
P.S. Horizontal Soil ($\gamma_{m\ tri}$)	0.00	0.00	0.00	0.00
P.S. Horizontal Soil ($\gamma_{m\ rec}$)	0.00	-3.75	0.00	0.00
P.S. Horizontal Soil ($\gamma_{sat\ tri}$)	0.00	-2.50	0.00	0.00
Debri	0.50	7.50	3.75	0.50
Total (Factored)			**10.58**	**2.93**
			ft-k/ft	k/ft

Load Case 4b. Water to the Top + Debri 0.9D + 1.35EH_D + 0.9EH_R + 1.0EV + 1.3(H_{TW} + I + IU)

Item	Fy	z	**Mx**	**Vx**

F.S. Horizontal Water	1.76	2.50	4.39	1.76
P.S. Horizontal Water	0.00	0.00	0.00	0.00
F.S. Horizontal Soil	0.00	0.00	0.00	0.00
P.S. Horizontal Soil ($\gamma_{m\ tri}$)	0.00	0.00	0.00	0.00
P.S. Horizontal Soil ($\gamma_{m\ rec}$)	0.00	-3.75	0.00	0.00
P.S. Horizontal Soil ($\gamma_{sat\ tri}$)	0.00	-2.50	0.00	0.00
Debri	0.50	7.50	3.75	0.50
Total (Factored)			**10.58**	**2.93**
			ft-k/ft	k/ft

Summary of Stem Loads		
	Mu	Vu
Load Case 2b	2.52	0.67
Load Case 3a	0.11	0.18
Load Case 3c	4.79	1.48
Load Case 4a	10.58	2.93
Load Case 4b	10.58	2.93
Maximum	10.58	2.93
	ft-k/ft	k/ft

Notation:

$A_{s\ min}$ = Minimum Area of Steel per linear foot of structure allowed by ACI / USACE. **(in^2)**

$A_{s\ Req'd}$ = Required Area of Steel per linear foot of structure using Ultimate Moment. **(in^2)**

b = Member width. **(Use 12in if forces are per linear foot of structure.)**

β_1 = ACI 318-14 Section 22.2

d = Distance from extreme compression fiber to centroid of tension reinforcement. **(in)**

f'c = Compressive strength of concrete. **(ksi ** except in Vc formula psi)**

f_y = Yield strength of steel. **(Usually 60 ksi.)**

ϕM_n = Nominal Moment strength **(k-in / linear foot)** ϕ = 0.9

M_u = Ultimate moment in sttructure. **(k-in / linear foot)**

ϕV_c = Nominal Shear strength **(lb / linear foot)** ϕ = 0.75

V_u = Ultimate shear in structure. **(lb / linear foot)**

t = Thickness of structure. **(In direction of applied moment) (in)**

ρ = Ratio of Reinforcement

ρ_b = Balanced Ratio of Reinforcement (0.0285 for 4ksi concrete)

Project: **Reach D Sunset twall**

Reference: **T-wall** **40 ft Slab** **Stem Rebar Design**

Inputs:

M_u = 126.95 k-in / linear ft

V_u = 2931.50 lb/linear ft

b = 12 in

d = 19.5 in

t = 24 in

f'c = 4 ksi

f_y = 60 ksi

β_1 = 0.85 (unitless)

ρ_b = 0.0285 (unitless)

Check d_d

Mn= Mu/ϕ

Mn= 141.05 k-in / linear ft

$$d_d = \sqrt{\frac{2.4956 M_n}{b_w}} =$$ EM 1110-2-2104 (Table D-1)

d_d= 5.42 in

d > d_d ok

Calculations: ** All Areas are per side.

$$K_u = 1 - \sqrt{1 - \frac{M_n + P_n\left(d - \frac{h}{2}\right)}{0.425 f_c' b d^2}}$$ EM 1110-2-2104 (Table D-8)

P_n= 0

K_u= 0.009133

$$A_s = \frac{0.85 f_c' K_u b d - P_n}{f_y}$$ EM 1110-2-2104 (D-9)

$A_{s\ Req'd}$ = 0.12 in^2 /ft

$A_{s\ min}$ = 0.74 in^2 /ft = [3 b d √(f'c)] / F_y (psi) EM 1110-2-2104, Chapter 3

$A_{s\ min}$ = 0.78 in^2 /ft = 200 b d / F_y (psi) EM 1110-2-2104, Chapter 3

$A_{s\ min}$ = 0.16 in^2 /ft = 1.33 ($A_{s\ Req'd}$) EM 1110-2-2104, Chapter 3

Use A_s = 0.16 in^2 /ft Flexural

Temperature and Shrinkage Rebar

$A_{s\ t\&s}$ = 0.72 in^2 /ft = 0.005b t/2 per face -- EM 1110-2-2104 Table 2-3

Table 2-3. Minimum Shrinkage and Temperature Reinforcement Ratios for Various Joint Spacings.

Length Between Control Joints (ft)	Minimum Temperature and Shrinkage Reinforcement Ratio, Grade 60
Less than 30 ft	0.003
30-40 ft	0.004
Greater than 40 ft	0.005

Use $A_{s\ t\&s}$ =	0.72	in^2 /ft	per face	Use:	#8@12in	As:	0.78	in^2 /ft

Check Moment:

Calculate ϕM_n and compare to original M_u.

As Used:	0.78	in^2 /ft	Use:	#8@12in

ϕM_n = 797.18 k-in $= 0.9\ A_s\ F_y\ d\ (\ 1\ -(\ A_s\ F_y\ /\ 2\ \beta\ b\ d\ f'c)\ )$

M_u = 126.945 k-in

If $\phi M_n > M_u$ then A_s is acceptable. **OK**

Check Shear:

Calculate ϕV_c and compare to V_u.

ϕV_c = 22.20 k $= 0.75 \times 2\ (\ \sqrt{f'c}\ )\ b\ d$

V_u = 2.93 k

If $\phi V_c > V_u$ then A_s is acceptable. **OK**

Check Ratio of Reinforcement: EM 1110-2-2104, Chapter 3.5

ρ = 0.003333 $\rho = A_s / b\ d$

$0.25\ \rho_b$ = 0.007125

$0.5\rho_b$ = 0.010688

$\rho \leq 0.25\ \rho_b$ (if possible)	OK
$\rho \leq 0.5\ \rho_b$ (always)	OK

Quantities
Sunset T-wall Reach D (3A)

1) Cast-in place concrete

Area of Base Slab per linear ft:	25	ft^2
Area of Stem per linear ft:	15.00	ft^2
Total area per linear ft:	40.00	ft^2
Width of slab:	10.00	ft

Sta. start:	146+74	
Sta end:	174+00	
Total stationing feet:	2726	ft
extra wall:	73.83	ft
Total Linear ft of wall:	2799.83	ft
Total Volume of Base Slab (CY)	2592.435	CY
Total Volume of Stem (CY):	1555.461	CY
Total volume of concrete (ft^3):	111993.2	ft^3
Total volume of concrete (CY):	4147.896	CY

2) Steel Sheet Piling

Cut off El.	5.75	
Tip El.	-34.25	
Length:	40	ft
Area of sheet pile:	114393.2	ft^2

3) HP 14x89 pile

Cut off El.	5.75	
Tip El.	-75	
Batter:	5	
Length:	82.34917	ft
spacing between piles	6	ft
total piles per row	2	
Total length of piles:	76854.55	LF

4) Stab slab

Depth:	0.333	ft
Total volume:	9323.434	ft^3
Total volume:	345.3124	CY

Load Case	Load Description	Load Category	Factored Loads
LC1	Normal Operation	0%	(D + EH + EV)
LC3	Construction	16.67%	(D + Sur)
LC4	Construction + Wind	33%	(D + Sur + W)
LC5	Flowline + Imperv Uplift	0%	(D + EH + EV + HF + IU)
LC6	Flowline + Perv Uplift	0%	(D + EH + EV + HF + PU)
LC7	Flowline + Imperv Uplift + Wind + Debris	33%	(D + EH + EV + HF + IU + I + W
LC8	Flowline + Perv Uplift + Wind + Debris	33%	(D + EH + EV + HF + PU + I + W
LC9	Freeboard + Imperv Uplift + Debris	33%	(D + EH + EV + HTW + I + IU)
LC10	Freeboard + Perv Uplift + Debris	33%	(D + EH + EV + HTW + I + PU)

D= Dead Load
EH= Horizontal Soil
EV = Vertical Soil
ES = Surcharge Load (200 psf)
W = Wind
HF = Water at Flowline
PU = Pervious Uplift
IU = Impervious Uplift
I = Debris Impact
H_{TW} = Water at Top of Wall
Sur = Surcharge

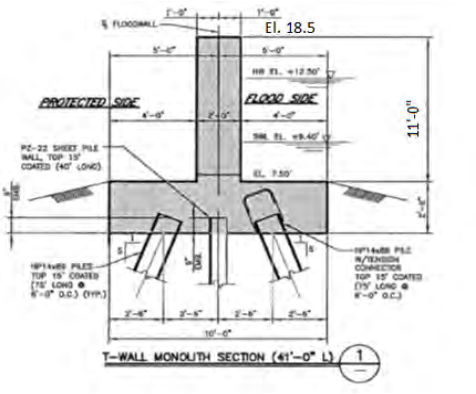
ASCE 7-10 Wind Load Calculation

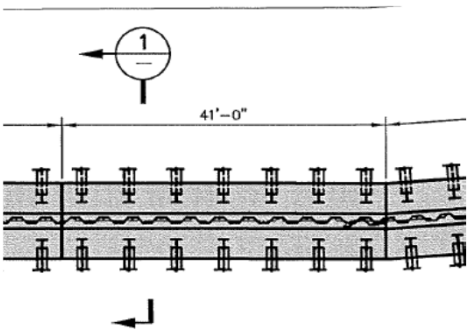
Wind on Wall

$$q_z = 0.00256 K_z K_{zt} K_d V^2 \text{ (lb/ft}^2\text{)} \qquad (27.3\text{-}1)$$

K_z=	1.03	
K_{zt}=	1	
K_d=	0.85	
V=	158	mph
q_z=	56.0	lb/ft^2

Reach E Sunset twall (T-wall TOW El. 18.5)
T-Wall Foundation Loads: Unfactored Loads for Pile Analysis





Top of Stem EL.	18.5		Weight of Water:	0.062	k/ft^3	
Top of Slab EL.	7.5		Weight Soil (FS)	0.120	k/ft^3	
Bottom of Slab EL.	5.0		Weight of Soil (PS):	0.12	k/ft^4	
Stem Width:	2.00	ft	Weight of Concrete:	0.150	k/ft^3	
F.S. Slab Width:	4	ft	Ko:	0.8		
P.S. Slab Width:	4	ft	Wave Load:	0	k/ft	
Length of Monolith:	41	ft	Wave Arm EL.	0		
Dist to Sheet Pile:	5	ft	Unbal. Load SWL:	0.0	k/ft	
F.S. Soil EL.	7.5		Unbal. Load HWL:	0.0	k/ft	
P.S. Soil EL.	7.5		Wind Load:	0.056	ksf	
S.W.L EL. (Flowline)	9.4		Boat Impact	0.5	k/ft	Debris applied at TOW for TOW LC
P.S. Water EL.	0.0		Construction Surcharge:	0.2	k/ft^2	

Width of Monolith:	10.0	ft	Area of Stem:	22.00	ft²
Area of Base Slab:	25	ft²	Bouyant Soil Weight (PS):	0.058	k/ft^3
			Bouyant Soil Weight (FS):	0.058	k/ft^4

Load Sheet Limitations - a) Straight aligned monoliths only b) No varying soil elevations along monolith
c) Constant stem thickness only d) Sheet only handles minimal impact loads

LC 1: **Load Case 1a.** Normal Operation

Item	Fx	Fy	Fz	x	y	z	Mx	My	Mz
Concrete Base			3.8		5.0		18.8		
Concrete Stem			3.3		5.000		16.5		
F.S. Vertical Soil			0.0		2.000		0.0		
F.S. Horizontal Soil (Base)		0.3				0.83	0.3		
P.S. Vertical Soil			0.0		8.00		0.0		
Sub Total:		0.3	7.1				35.5	0.0	0.0
Sub Total x Monolith Length:		12	289				1456	0	0
Total		**12**	**289**	**0**	**0**	**0**	**1456**	**0**	**0**

LC 3: **Load Case 2a.** Construction

Item	Fx	Fy	Fz	x	y	z	Mx	My	Mz
Concrete Base			3.8		5.0		18.8		
Concrete Stem			3.3		5.000		16.5		
F.S. Horizontal Soil (Base)		0.3				0.83	0.3		
Construction Surcharge(FS)			0.8		2.00		1.6		
Construction Surcharge(PS)			0.8		8.00		6.4		
Sub Total:		0.3	8.7				43.5		
Sub Total x Monolith Length:		12.3	354.65				1783.5	0	0
Total		**12**	**355**				**1784**		

LC 4: **Load Case 2b**. Construction + Wind

Item	Fx	Fy	Fz	x	y	z	Mx	My	Mz
Concrete Base			3.8		5.0		18.8		
Concrete Stem			3.3		5.000		16.5		
F.S. Horizontal Soil (Base)		0.3				0.83	0.3		
Construction Surcharge(FS)			0.8		2.0		1.6		
Construction Surcharge(PS)			0.8		8		6.4		
Wind		0.616				8.0	4.9		
Sub Total:		0.92	8.65				48.43	0.00	0.00
Sub Total x Monolith Length:		37.556	354.65				1985.548	0	0
Total		**38**	**355**				**1986**		

LC 5: **Load Case 3a**. Flowline, Impervious Uplift

Item	Fx	Fy	Fz	x	y	z	Mx	My	Mz
Concrete Base			3.8		5.00		18.8		
Concrete Stem			3.3		5.000		16.5		
F.S. Vertical Water			0.5		2.00		0.9		
F.S. Vertical Soil			0.0		2.00		0.0		
P.S. Vertical Water			0.0000		8.000		0.0		
P.S. Vertical Soil			0.0000		8.000		0.0		
F.S. Horizontal Water		0.6				1.47	0.9		
F.S. Horizontal Soil		0.144				0.83	0.1		
P.S. Horizontal Water		0.0000				0.00	0.0		
P.S. Horizontal Soil ($\gamma_{m\ tri}$)		-0.3000				0.83	-0.3		
P.S. Horizontal Soil ($\gamma_{m\ rec}$)		0.0				0.00	0.0		
P.S. Horizontal Soil ($\gamma_{sat\ tri}$)		0.0				0.00	0.0		
F.S. Impervious Uplift			-1.4		2.50		-3.4		
P.S. Impervious Uplift			0.0		7.50		0.0		
Unbalanced Force		0.0							
Sub Total:		0.4	6.2				33.5		
Sub Total x Monolith Length:		18.4	252.2				1,374.4	0.0	0.0
Total		**18**	**252**				**1374**		

LC 6: **Load Case 3b**. Flowline, Pervious Uplift

Item	Fx	Fy	Fz	x	y	z	Mx	My	Mz
Concrete Base			3.8		5.00		18.8		
Concrete Stem			3.3		5.000		16.5		
F.S. Vertical Water			0.5		2.00		0.9		
F.S. Vertical Soil			0.0		2.00		0.0		
P.S. Vertical Water			0.0		8.000		0.0		
P.S. Vertical Soil			0.000		8.000		0.0		
F.S. Horizontal Water		0.6				1.47	0.9		
F.S. Horizontal Soil		0.1				0.83	0.1		
P.S. Horizontal Water		0.000				0.00	0.0		
P.S. Horizontal Soil ($\gamma_{m\ tri}$)		-0.300				0.83	-0.3		
P.S. Horizontal Soil ($\gamma_{m\ rec}$)		0.0				0.00	0.0		
P.S. Horizontal Soil ($\gamma_{sat\ tri}$)		0.0				0.00	0.0		
Pervious Uplift (Rec.)			0.0		5.00		0.0		
Pervious Uplift (Tri.)			-1.4		3.33		-4.6		
Unbalanced Force		0.0							
Sub Total:		0.4	6.2				32.4		

Sub Total x Monolith Length:		18.4	252.2				1327.5	0.0	0.0
Total		**18**	**252**				**1328**		

LC 7: **Load Case 3c**. Flowline + Wind + Debri, Impervious Uplift

Item	Fx	Fy	Fz	x	y	z	Mx	My	Mz
Concrete Base			3.8		5.00		18.8		
Concrete Stem			3.3		5.000		16.5		
F.S. Vertical Water			0.5		2.00		0.9		
F.S. Vertical Soil			0.0		2.00		0.0		
P.S. Vertical Water			0.0		8.000		0.0		
P.S. Vertical Soil			0.000		8.000		0.0		
F.S. Horizontal Water		0.6				1.47	0.9		
F.S. Horizontal Soil		0.1				0.83	0.1		
P.S. Horizontal Water		0.000				0.00	0.0		
P.S. Horizontal Soil ($\gamma_{m\ tri}$)		-0.300				0.83	-0.3		
P.S. Horizontal Soil ($\gamma_{m\ rec}$)		0.0				0.00	0.0		
P.S. Horizontal Soil ($\gamma_{sat\ tri}$)		0.0				0.00	0.0		
F.S. Impervious Uplift			-1.4		2.50		-3.4		
P.S. Impervious Uplift			0.0		7.50		0.0		
Wind		0.5				8.95	4.6		
Debri		0.5				13.50	6.8		
Sub Total:		1.5	6.2				44.8		
Sub Total x Monolith Length:		59.8	252.2				1838.2	0.0	0.0
Total		**60**	**252**				**1838**		

LC 8: **Load Case 3d**. Flowline + Wind + Debri, Pervious Uplift

Item	Fx	Fy	Fz	x	y	z	Mx	My	Mz
Concrete Base			3.8		5.00		18.8		
Concrete Stem			3.3		5.000		16.5		
F.S. Vertical Water			0.5		2.00		0.9		
F.S. Vertical Soil			0.0		2.00		0.0		
P.S. Vertical Water			0.0		8.000		0.0		
P.S. Vertical Soil			0.000		8.000		0.0		
F.S. Horizontal Water		0.6				1.47	0.9		
F.S. Horizontal Soil		0.1				0.83	0.1		
P.S. Horizontal Water		0.000				0.00	0.0		
P.S. Horizontal Soil ($\gamma_{m\ tri}$)		-0.300				0.83	-0.3		
P.S. Horizontal Soil ($\gamma_{m\ rec}$)		0.0				0.00	0.0		
P.S. Horizontal Soil ($\gamma_{sat\ tri}$)		0.0				0.00	0.0		
Pervious Uplift (Rec.)			0.0		5.00		0.0		
Pervious Uplift (Tri.)			-1.4		3.33		-4.6		
Wind		0.5				8.95	4.6		
Debri		0.5				13.50	6.8		
Sub Total:		1.5	6.2				43.7		
Sub Total x Monolith Length:		59.8	252.2				1791.3	0.0	0.0
Total		**60**	**252**				**1791**		

LC 9: **Load Case 4a.** Water to the Top+ Debri, Impervious Uplift

Item	Fx	Fy	Fz	x	y	z	Mx	My	Mz
Concrete Base			3.8		5.00		18.8		
Concrete Stem			3.3		5.000		16.5		
F.S. Vertical Water			2.7		2.00		5.5		
F.S. Vertical Soil			0.0		2.00		0.0		
P.S. Vertical Water			0.0		8.000		0.0		
P.S. Vertical Soil			0.000		8.000		0.0		
F.S. Horizontal Water		5.7				4.50	25.6		
F.S. Horizontal Soil		0.1				0.83	0.1		
P.S. Horizontal Water		0.000				0.00	0.0		
P.S. Horizontal Soil ($\gamma_{m\ tri}$)		-0.300				0.83	-0.3		
P.S. Horizontal Soil ($\gamma_{m\ rec}$)		0.0				0.00	0.0		
P.S. Horizontal Soil ($\gamma_{sat\ tri}$)		0.0				0.00	0.0		
F.S. Impervious Uplift			-4.2		2.50		-10.5		
P.S. Impervious Uplift			0.0		7.50		0.0		
Debri		0.5				13.50	6.8		

Unbalanced Load		0.0						
Sub Total:		6.0	5.6			62.4		
Sub Total x Monolith Length:		247.2	228.9			2559.2	0.0	0.0
Total		**247**	**229**			**2559**		

LC 10: **Load Case 4b.** Water to the Top + Debri, Pervious Uplift

Item	Fx	Fy	Fz	x	y	z	Mx	My	Mz
Concrete Base			3.8		5.00		18.8		
Concrete Stem			3.3		5.000		16.5		
F.S. Vertical Water			2.7		2.00		5.5		
F.S. Vertical Soil			0.0		2.00		0.0		
P.S. Vertical Water			0.0		8.000		0.0		
P.S. Vertical Soil			0.000		8.000		0.0		
F.S. Horizontal Water		5.7				4.50	25.6		
F.S. Horizontal Soil		0.1				0.83	0.1		
P.S. Horizontal Water		0.000				0.00	0.0		
P.S. Horizontal Soil ($\gamma_{m\ tri}$)		-0.300				0.83	-0.3		
P.S. Horizontal Soil ($\gamma_{m\ rec}$)		0.0				0.00	0.0		
P.S. Horizontal Soil ($\gamma_{sat\ tri}$)		0.0				0.00	0.0		
Pervious Uplift (Rec.)			0.0		5.00		0.0		
Pervious Uplift (Tri.)			-4.2		3.33		-14.0		
Debri		0.5				13.50	6.8		
Unbalanced Load		0.0							
Sub Total:		6.0	5.6				58.9		
Sub Total x Monolith Length:		247.2	228.9				2415.3	0.0	0.0
Total		**247**	**229**				**2415**		

Summary Table of CPGA Loads

		Fx	Fy	Fz	Mx	My	Mz
Load Case 1a	**LOAD 1**	**0.0**	**12.3**	**289.1**	**1,455.5**	**0.0**	**0.0**
Load Case 2a	**LOAD 6**	**0.0**	**12.3**	**354.7**	**1,783.5**	**0.0**	**0.0**
Load Case 2b	**LOAD 7**	**0.0**	**37.6**	**354.7**	**1,985.5**	**0.0**	**0.0**
Load Case 3a	**LOAD 8**	**0.0**	**18.4**	**252.2**	**1,374.4**	**0.0**	**0.0**
Load Case 3b	**LOAD 9**	**0.0**	**18.4**	**252.2**	**1,327.5**	**0.0**	**0.0**
Load Case 3c	**LOAD 10**	**0.0**	**59.8**	**252.2**	**1,838.2**	**0.0**	**0.0**
Load Case 3d	**LOAD 11**	**0.0**	**59.8**	**252.2**	**1,791.3**	**0.0**	**0.0**
Load Case 4a	**LOAD 12**	**0.0**	**247.2**	**228.9**	**2,559.2**	**0.0**	**0.0**
Load Case 4b	**LOAD 13**	**0.0**	**247.2**	**228.9**	**2,415.3**	**0.0**	**0.0**

- It is recommended that a factor of safety of at least 3.0 be applied to arrive at allowable values, when an axial pile load test is not performed.

5.1.2 Settlement

A detailed analysis of axial load versus settlement was beyond the scope of this study. However, for a single isolated pile designed in accordance with the computed ultimate capacities and recommended factor of safety, the settlement should be on the order of one (1) inch. A detailed settlement analysis for piles in a group was beyond the scope of this study.

5.1.3 Battered Pile Capacity

For a pile penetrated to a certain elevation, the pile capacities in the batter direction are similar to the pile capacities in vertical direction at that particular elevation. In other words, the piles would have an axial capacity corresponding to the elevation regardless of the angle at which it is installed to the vertical. This should hold true for small batter angles to the vertical. As previously mentioned, the plates in Appendix VII indicate ultimate axial capacity versus elevation. These curves could be used to estimate the batter pile capacity for a pile driven to any given elevation.

5.2 LATERAL CAPACITY

5.2.1 Soil Parameters for CPGA Analyses

It is understood that CPGA Analyses will be performed by an Engineer. In accordance with the HSDRRS-DG, Modulus of Subgrade Reaction (Es) values for the different soil strata are presented in Table 15.

Table 15a - Soil Parameters for CPGA Analyses (Reach 3)[1]

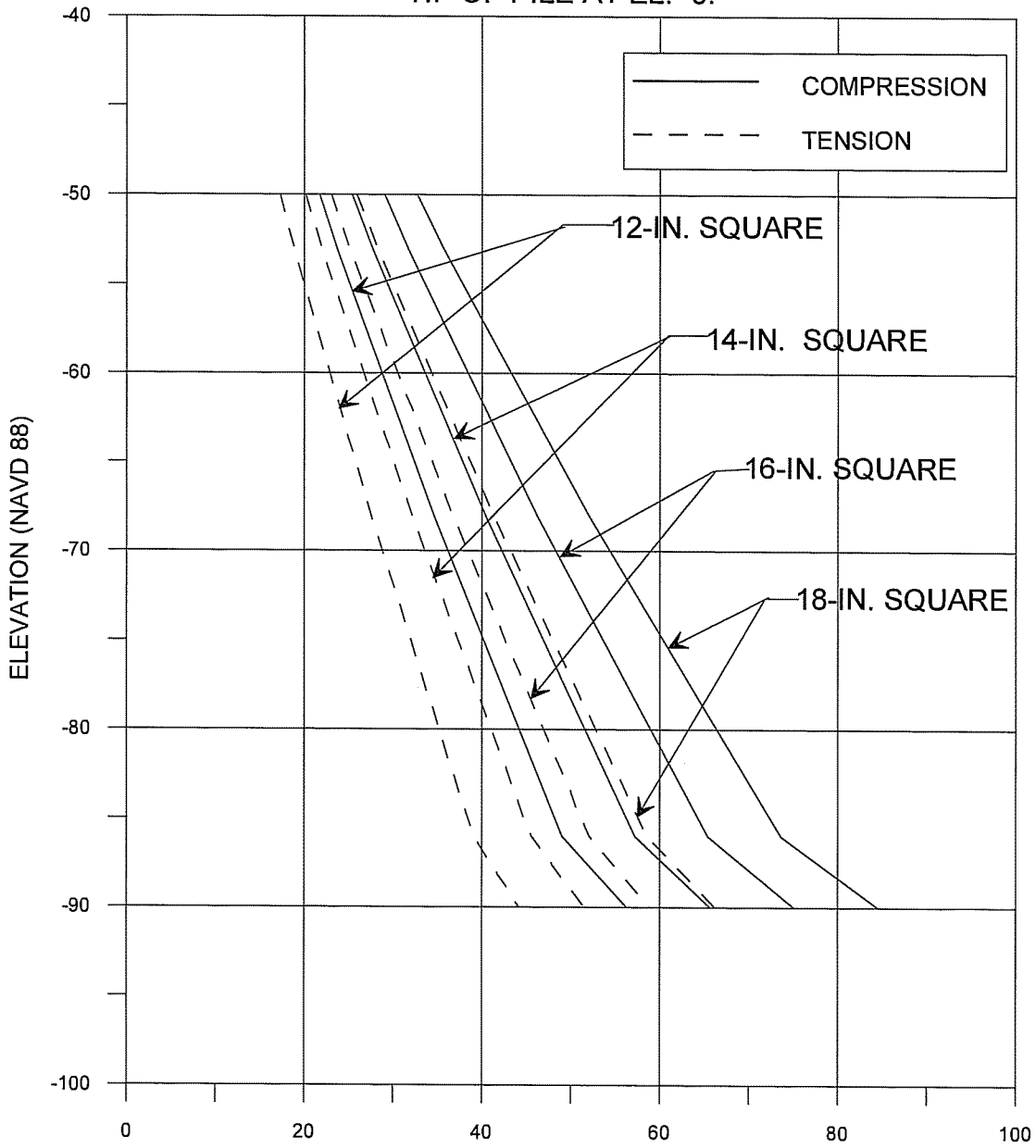
Elevation Range, ft.	Soil Type	Total Unit Weight, (pcf)	S_u (psf)	E_s (pci)
+8 to +1	Soft Clay	115	500	100
+1 to -15	Soft Clay	117	500	100
-15 to -23	Very soft Clay	110	300	30
-23 to -31	Very soft Clay	105	300 to 350	30
-31 to -68	Very soft to soft Clay	105	350 to 545	30-100
-68 to -93	Soft Clay	110	545	100
-93 to -120	Sand	122	400	30

Notes: [1] Based on levee centerline borings
[2] Values reduced above critical failure surface per HSDRRSD guidelines

Upper Barataria Risk Reduction Sta.
145+00 to 175+00 T-Wall Design
Subgrade Modulus Calculation

Start EL.	End EL.	Layer Depth (ft)	Weighted Ave. Depth (EL. +8 to -120)	Subgrade Modulus (ES) (PSI)	Weighted Subgrade Modulus Ave. (EL. +8 to -120)
8	1	7	5.469%	100	5.47
1	-15	16	12.500%	100	12.50
-15	-23	8	6.250%	30	1.88
-23	-31	8	6.250%	30	1.88
-31	-68	37	28.906%	30	8.67
-68	-93	25	19.531%	100	19.53
-93	-120	27	21.094%	30	6.33
				ES (Endwall Monolith)	56.25

ESTIMATED ALLOWABLE SINGLE PILE LOAD CAPACITY
STEEL H PILES
BAYOU BARATARIA STRUCTURE
GIWW ALIGNMENT - REACH 1 SOIL DESIGN PARAMETERS
STATION NOS. 650+00 TO 1411+41
TIP OF PILE AT EL. -5.



ESTIMATED ALLOWABLE SINGLE PILE LOAD CAPACITY IN TONS
FACTOR OF SAFETY ≈ 2

NOTES:

(1) Allowable pile load capacities presented on this figure do not include the weight of the piles.

(2) Piles assumed to be installed by impact driving equipment without assistance from jetting or vibratory equipment.

(3) Use of a factor of safety≈2 assumes a pile load test will be performed.

EUSTIS ENGINEERING SERVICES, L.L.C. GEOTECHNICAL ENGINEERS 3011 28TH STREET METAIRIE, LOUISIANA		
ALLOWABLE SINGLE PILE LOAD CAPACITIES STEEL H PILES GIWW ALIGNMENT BAYOU BARATARIA STRUCTURE TOP OF PILE AT EL. -5 U.S. ARMY CORPS OF ENGINEERS GEOTECHNICAL DESIGN FEASIBILITY STUDY PRELIMINARY SCREENING PHASE DONALDSONVILLE TO THE GULF, LOUISIANA		
DRAWN BY: L.J.J.	5 NOVEMBER 2008	FILE: SHreach 1-5ft.grf
CHECKED BY: B.M.C.	JOB NO.: 20065	FIGURE 50

```
10  Sunset Reach E (5A) TOW El 18.5 Fixed
20  PIL  1   -18   2.5   0
30  BAT   5   1
40  ANG   270   1
50  PIL  2   -12   2.5   0
60  BAT   5   2
70  ANG   270   2
80  PIL  3   -6   2.5   0
90  BAT   5   3
100  ANG   270   3
110  PIL  4  0   2.5   0
120  BAT   5   4
130  ANG   270   4
140  PIL  5  6   2.5   0
150  BAT   5   5
160  ANG   270   5
170  PIL  6  12 2.5   0
180  BAT   5   6
190  ANG   270   6
200  PIL  7   18   2.5   0
210  BAT   5   7
220  ANG   270   7
230  PIL  8   -18   7.5   0
240  BAT   5   8
250  ANG   90   8
260  PIL  9   -12  7.5   0
270  BAT   5   9
280  ANG   90   9
290  PIL  10  -6   7.5   0
300  BAT   5   10
310  ANG   90   10
320  PIL  11  0   7.5   0
330  BAT   5   11
340  ANG   90   11
350  PIL  12  6   7.5   0
360  BAT   5   12
370  ANG   90   12
380  PIL  13  12   7.5   0
390  BAT   5   13
400  ANG   90   13
401  PIL  14  18   7.5   0
402  BAT   5   14
403  ANG   90   14
404  PRO  29000  261  729  21.4  2  0  1 TO 14
405  SOI ES 0.056 L  73  0  1 TO 14
406  RED  1  1  1
410  ALL H 90 70 387  387  527  1667  1 TO 14
420  FIX  1 TO 14
430 LOAD 1 0 12 289 1456 0 0
430 LOAD 2 0 12 355 1784 0 0
```

```
430 LOAD 3 0 38 355 1986 0 0
430 LOAD 4 0 18 252 1374 0 0
430 LOAD 5 0 18 252 1328 0 0
430 LOAD 6 0 60 252 1838 0 0
430 LOAD 7 0 60 252 1791 0 0
430  FOV  1.167  1.167  2
430  FOV  1.33  1.33  3
430  FOV  1.33  1.33  6
430  FOV  1.33  1.33  7
440  TOUT 1 2 3 4 5 6 7
450  PFO ALL
460  PLB ALL
```

CPGA - CASE PILE GROUP ANALYSIS PROGRAM
RUN DATE: 01-SEP-20 RUN TIME: 20:19:01

FOR PILES WITH UNSUPPORTED HEIGHT:
A. CPGA CANNOT CALCULATE PMAXMOM FOR NH TYPE SOIL
B. THE ALLOWABLE STRESS CHECKS, ASC AND AST, ARE
NOT FULLY DEVELOPED FOR UNSUPPORTED PILES.
WORK IS IN PROGRESS TO COMPLETE THIS ASPECT OF CPGA.

ELASTIC CENTER LOCATION IS NOT COMPUTED FOR 3-DIMENSIONAL PROBLEMS.

SUNSET REACH E (5A) TOW EL 18.5 FIXED
DATA UNKNOWN - REJECTED.

THERE ARE 14 PILES AND
7 LOAD CASES IN THIS RUN.

ALL PILE COORDINATES ARE CONTAINED WITHIN A BOX

	X	Y	Z
WITH DIAGONAL COORDINATES = (	-18.00 ,	2.50 ,	0.00)
(	18.00 ,	7.50 ,	0.00)

****

PILE PROPERTIES AS INPUT

E	I1	I2	A	C33	B66
KSI	IN**4	IN**4	IN**2		
0.29000E+05	0.26100E+03	0.72900E+03	0.21400E+02	0.20000E+01	0.00000E+00

THESE PILE PROPERTIES APPLY TO THE FOLLOWING PILES -

ALL

****

SOIL DESCRIPTIONS AS INPUT

ES	ESOIL	LENGTH	L	LU
	K/IN**2		FT	FT

```
        0.56000E-01    L      0.73000E+02   0.00000E+00

 ESOIL(ORIGINAL)     RGROUP     RCYCLIC
   K/IN**2
  0.56000E-01       0.1000E+01 0.1000E+01
```

THIS SOIL DESCRIPTION APPLIES TO THE FOLLOWING PILES -

ALL

****

PILE STIFFNESSES AS CALCULATED FROM PROPERTIES

```
 0.11039E+02  0.00000E+00  0.00000E+00  0.00000E+00  0.10881E+04  0.00000E+00
 0.00000E+00  0.85392E+01  0.00000E+00 -0.65105E+03  0.00000E+00  0.00000E+00
 0.00000E+00  0.00000E+00  0.14169E+04  0.00000E+00  0.00000E+00  0.00000E+00
 0.00000E+00 -0.65105E+03  0.00000E+00  0.99275E+05  0.00000E+00  0.00000E+00
 0.10881E+04  0.00000E+00  0.00000E+00  0.00000E+00  0.21449E+06  0.00000E+00
 0.00000E+00  0.00000E+00  0.00000E+00  0.00000E+00  0.00000E+00  0.00000E+00
```

THIS MATRIX APPLIES TO THE FOLLOWING PILES -

1

****

PILE GEOMETRY AS INPUT AND/OR GENERATED

NUM	X FT	Y FT	Z FT	BATTER	ANGLE	LENGTH FT	FIXITY
1	-18.00	2.50	0.00	5.00	270.00	73.00	F
2	-12.00	2.50	0.00	5.00	270.00	73.00	F
3	-6.00	2.50	0.00	5.00	270.00	73.00	F
4	0.00	2.50	0.00	5.00	270.00	73.00	F
5	6.00	2.50	0.00	5.00	270.00	73.00	F
6	12.00	2.50	0.00	5.00	270.00	73.00	F
7	18.00	2.50	0.00	5.00	270.00	73.00	F
8	-18.00	7.50	0.00	5.00	90.00	73.00	F
9	-12.00	7.50	0.00	5.00	90.00	73.00	F
10	-6.00	7.50	0.00	5.00	90.00	73.00	F
11	0.00	7.50	0.00	5.00	90.00	73.00	F
12	6.00	7.50	0.00	5.00	90.00	73.00	F
13	12.00	7.50	0.00	5.00	90.00	73.00	F
14	18.00	7.50	0.00	5.00	90.00	73.00	F

1022.00

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APPLIED LOADS

LOAD CASE	PX K	PY K	PZ K	MX FT-K	MY FT-K	MZ FT-K	OVERSTRESS COM	OVERSTRESS TEN
1	0.0	12.0	289.0	1456.0	0.0	0.0		
2	0.0	12.0	355.0	1784.0	0.0	0.0	1.17	1.17
3	0.0	38.0	355.0	1986.0	0.0	0.0	1.33	1.33
4	0.0	18.0	252.0	1374.0	0.0	0.0		
5	0.0	18.0	252.0	1328.0	0.0	0.0		
6	0.0	60.0	252.0	1838.0	0.0	0.0	1.33	1.33
7	0.0	60.0	252.0	1791.0	0.0	0.0	1.33	1.33

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ORIGINAL PILE GROUP STIFFNESS MATRIX

0.11955E+03	0.19274E-04	-0.46056E-04	-0.14600E-03	0.89377E+04	-0.71729E+04
0.19274E-04	0.91155E+03	0.17053E-11	0.98613E+05	0.14600E-03	-0.88908E-03
-0.46056E-04	0.90949E-12	0.19080E+05	0.11448E+07	0.36351E-04	0.00000E+00
-0.14600E-03	0.98613E+05	0.11448E+07	0.89040E+08	-0.40555E-01	-0.11453E+00
0.89377E+04	0.14600E-03	0.36351E-04	-0.40555E-01	0.39697E+09	-0.53626E+06
-0.71729E+04	-0.88908E-03	-0.14552E-10	-0.11453E+00	-0.53626E+06	0.19601E+08

14 PILES 7 LOAD CASES

LOAD CASE 1. NUMBER OF FAILURES = 0. NUMBER OF PILES IN TENSION = 0.

LOAD CASE 2. NUMBER OF FAILURES = 0. NUMBER OF PILES IN TENSION = 0.

LOAD CASE 3. NUMBER OF FAILURES = 0. NUMBER OF PILES IN TENSION = 0.

LOAD CASE 4. NUMBER OF FAILURES = 0. NUMBER OF PILES IN TENSION = 0.

LOAD CASE 5. NUMBER OF FAILURES = 0. NUMBER OF PILES IN TENSION = 0.

LOAD CASE 6. NUMBER OF FAILURES = 0. NUMBER OF PILES IN TENSION = 7.

LOAD CASE 7. NUMBER OF FAILURES = 0. NUMBER OF PILES IN TENSION = 0.

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PILE CAP DISPLACEMENTS

LOAD CASE	DX IN	DY IN	DZ IN	RX RAD	RY RAD	RZ RAD
1	0.4383E-08	0.2619E-01	0.2237E-01	-0.1204E-03	-0.1198E-12	0.2085E-11
2	0.5759E-08	0.2646E-01	0.2598E-01	-0.1229E-03	-0.1508E-12	0.2586E-11
3	0.1311E-08	0.5932E-01	0.2839E-01	-0.1630E-03	-0.6759E-13	0.2216E-11
4	0.2276E-08	0.2622E-01	0.1680E-01	-0.5981E-04	-0.6628E-13	0.1671E-11
5	0.2533E-08	0.3238E-01	0.2022E-01	-0.1168E-03	-0.8042E-13	0.1711E-11
6	-0.5679E-08	0.6085E-01	0.1045E-01	0.4596E-04	0.1105E-12	0.9533E-12
7	-0.5417E-08	0.6715E-01	0.1394E-01	-0.1228E-04	0.9607E-13	0.9946E-12

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PILE FORCES IN LOCAL GEOMETRY

M1 & M2 NOT AT PILE HEAD FOR PINNED PILES
* INDICATES PILE FAILURE
# INDICATES CBF BASED ON MOMENTS DUE TO
(F3*EMIN) FOR CONCRETE PILES
B INDICATES BUCKLING CONTROLS

LOAD CASE - 1

PILE	F1 K	F2 K	F3 K	M1 IN-K	M2 IN-K	M3 IN-K	ALF	CBF
1	-0.5	0.0	18.8	0.0	-57.8	0.0	0.21	0.08
2	-0.5	0.0	18.8	0.0	-57.8	0.0	0.21	0.08
3	-0.5	0.0	18.8	0.0	-57.8	0.0	0.21	0.08
4	-0.5	0.0	18.8	0.0	-57.8	0.0	0.21	0.08
5	-0.5	0.0	18.8	0.0	-57.8	0.0	0.21	0.08
6	-0.5	0.0	18.8	0.0	-57.8	0.0	0.21	0.08
7	-0.5	0.0	18.8	0.0	-57.8	0.0	0.21	0.08
8	0.4	0.0	23.3	0.0	51.3	0.0	0.26	0.09
9	0.4	0.0	23.3	0.0	51.3	0.0	0.26	0.09
10	0.4	0.0	23.3	0.0	51.3	0.0	0.26	0.09
11	0.4	0.0	23.3	0.0	51.3	0.0	0.26	0.09
12	0.4	0.0	23.3	0.0	51.3	0.0	0.26	0.09
13	0.4	0.0	23.3	0.0	51.3	0.0	0.26	0.09
14	0.4	0.0	23.3	0.0	51.3	0.0	0.26	0.09

LOAD CASE - 2

PILE	F1 K	F2 K	F3 K	M1 IN-K	M2 IN-K	M3 IN-K	ALF	CBF
1	-0.5	0.0	23.6	0.0	-59.3	0.0	0.22	0.08
2	-0.5	0.0	23.6	0.0	-59.3	0.0	0.22	0.08
3	-0.5	0.0	23.6	0.0	-59.3	0.0	0.22	0.08
4	-0.5	0.0	23.6	0.0	-59.3	0.0	0.22	0.08
5	-0.5	0.0	23.6	0.0	-59.3	0.0	0.22	0.08
6	-0.5	0.0	23.6	0.0	-59.3	0.0	0.22	0.08
7	-0.5	0.0	23.6	0.0	-59.3	0.0	0.22	0.08
8	0.4	0.0	28.1	0.0	51.4	0.0	0.27	0.09
9	0.4	0.0	28.1	0.0	51.4	0.0	0.27	0.09
10	0.4	0.0	28.1	0.0	51.4	0.0	0.27	0.09
11	0.4	0.0	28.1	0.0	51.4	0.0	0.27	0.09
12	0.4	0.0	28.1	0.0	51.4	0.0	0.27	0.09
13	0.4	0.0	28.1	0.0	51.4	0.0	0.27	0.09
14	0.4	0.0	28.1	0.0	51.4	0.0	0.27	0.09

LOAD CASE - 3

PILE	F1 K	F2 K	F3 K	M1 IN-K	M2 IN-K	M3 IN-K	ALF	CBF
1	-0.9	0.0	16.2	0.0	-103.3	0.0	0.14	0.08
2	-0.9	0.0	16.2	0.0	-103.3	0.0	0.14	0.08
3	-0.9	0.0	16.2	0.0	-103.3	0.0	0.14	0.08
4	-0.9	0.0	16.2	0.0	-103.3	0.0	0.14	0.08
5	-0.9	0.0	16.2	0.0	-103.3	0.0	0.14	0.08
6	-0.9	0.0	16.2	0.0	-103.3	0.0	0.14	0.08
7	-0.9	0.0	16.2	0.0	-103.3	0.0	0.14	0.08
8	0.8	0.0	35.5	0.0	95.3	0.0	0.30	0.11
9	0.8	0.0	35.5	0.0	95.3	0.0	0.30	0.11
10	0.8	0.0	35.5	0.0	95.3	0.0	0.30	0.11
11	0.8	0.0	35.5	0.0	95.3	0.0	0.30	0.11
12	0.8	0.0	35.5	0.0	95.3	0.0	0.30	0.11
13	0.8	0.0	35.5	0.0	95.3	0.0	0.30	0.11
14	0.8	0.0	35.5	0.0	95.3	0.0	0.30	0.11

LOAD CASE - 4

PILE	F1 K	F2 K	F3 K	M1 IN-K	M2 IN-K	M3 IN-K	ALF	CBF
1	-0.4	0.0	13.6	0.0	-44.0	0.0	0.15	0.06
2	-0.4	0.0	13.6	0.0	-44.0	0.0	0.15	0.06
3	-0.4	0.0	13.6	0.0	-44.0	0.0	0.15	0.06

4	-0.4	0.0	13.6	0.0	-44.0	0.0	0.15	0.06
5	-0.4	0.0	13.6	0.0	-44.0	0.0	0.15	0.06
6	-0.4	0.0	13.6	0.0	-44.0	0.0	0.15	0.06
7	-0.4	0.0	13.6	0.0	-44.0	0.0	0.15	0.06
8	0.3	0.0	23.1	0.0	38.4	0.0	0.26	0.08
9	0.3	0.0	23.1	0.0	38.4	0.0	0.26	0.08
10	0.3	0.0	23.1	0.0	38.4	0.0	0.26	0.08
11	0.3	0.0	23.1	0.0	38.4	0.0	0.26	0.08
12	0.3	0.0	23.1	0.0	38.4	0.0	0.26	0.08
13	0.3	0.0	23.1	0.0	38.4	0.0	0.26	0.08
14	0.3	0.0	23.1	0.0	38.4	0.0	0.26	0.08

LOAD CASE - 5

PILE	F1 K	F2 K	F3 K	M1 IN-K	M2 IN-K	M3 IN-K	ALF	CBF
1	-0.5	0.0	14.2	0.0	-63.2	0.0	0.16	0.07
2	-0.5	0.0	14.2	0.0	-63.2	0.0	0.16	0.07
3	-0.5	0.0	14.2	0.0	-63.2	0.0	0.16	0.07
4	-0.5	0.0	14.2	0.0	-63.2	0.0	0.16	0.07
5	-0.5	0.0	14.2	0.0	-63.2	0.0	0.16	0.07
6	-0.5	0.0	14.2	0.0	-63.2	0.0	0.16	0.07
7	-0.5	0.0	14.2	0.0	-63.2	0.0	0.16	0.07
8	0.5	0.0	22.5	0.0	57.5	0.0	0.25	0.09
9	0.5	0.0	22.5	0.0	57.5	0.0	0.25	0.09
10	0.5	0.0	22.5	0.0	57.5	0.0	0.25	0.09
11	0.5	0.0	22.5	0.0	57.5	0.0	0.25	0.09
12	0.5	0.0	22.5	0.0	57.5	0.0	0.25	0.09
13	0.5	0.0	22.5	0.0	57.5	0.0	0.25	0.09
14	0.5	0.0	22.5	0.0	57.5	0.0	0.25	0.09

LOAD CASE - 6

PILE	F1 K	F2 K	F3 K	M1 IN-K	M2 IN-K	M3 IN-K	ALF	CBF
1	-0.6	0.0	-0.5	0.0	-57.6	0.0	0.01	0.03
2	-0.6	0.0	-0.5	0.0	-57.6	0.0	0.01	0.03
3	-0.6	0.0	-0.5	0.0	-57.6	0.0	0.01	0.03
4	-0.6	0.0	-0.5	0.0	-57.6	0.0	0.01	0.03
5	-0.6	0.0	-0.5	0.0	-57.6	0.0	0.01	0.03
6	-0.6	0.0	-0.5	0.0	-57.6	0.0	0.01	0.03
7	-0.6	0.0	-0.5	0.0	-57.6	0.0	0.01	0.03
8	0.6	0.0	37.2	0.0	52.0	0.0	0.31	0.10
9	0.6	0.0	37.2	0.0	52.0	0.0	0.31	0.10
10	0.6	0.0	37.2	0.0	52.0	0.0	0.31	0.10
11	0.6	0.0	37.2	0.0	52.0	0.0	0.31	0.10

12	0.6	0.0	37.2	0.0	52.0	0.0	0.31	0.10
13	0.6	0.0	37.2	0.0	52.0	0.0	0.31	0.10
14	0.6	0.0	37.2	0.0	52.0	0.0	0.31	0.10

LOAD CASE - 7

PILE	F1 K	F2 K	F3 K	M1 IN-K	M2 IN-K	M3 IN-K	ALF	CBF
1	-0.8	0.0	0.2	0.0	-77.2	0.0	0.00	0.04
2	-0.8	0.0	0.2	0.0	-77.2	0.0	0.00	0.04
3	-0.8	0.0	0.2	0.0	-77.2	0.0	0.00	0.04
4	-0.8	0.0	0.2	0.0	-77.2	0.0	0.00	0.04
5	-0.8	0.0	0.2	0.0	-77.2	0.0	0.00	0.04
6	-0.8	0.0	0.2	0.0	-77.2	0.0	0.00	0.04
7	-0.8	0.0	0.2	0.0	-77.2	0.0	0.00	0.04
8	0.7	0.0	36.5	0.0	71.5	0.0	0.30	0.10
9	0.7	0.0	36.5	0.0	71.5	0.0	0.30	0.10
10	0.7	0.0	36.5	0.0	71.5	0.0	0.30	0.10
11	0.7	0.0	36.5	0.0	71.5	0.0	0.30	0.10
12	0.7	0.0	36.5	0.0	71.5	0.0	0.30	0.10
13	0.7	0.0	36.5	0.0	71.5	0.0	0.30	0.10
14	0.7	0.0	36.5	0.0	71.5	0.0	0.30	0.10

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PILE FORCES IN GLOBAL GEOMETRY

LOAD CASE - 1

PILE	PX K	PY K	PZ K	MX IN-K	MY IN-K	MZ IN-K
1	0.0	-3.2	18.5	-57.8	0.0	0.0
2	0.0	-3.2	18.5	-57.8	0.0	0.0
3	0.0	-3.2	18.5	-57.8	0.0	0.0
4	0.0	-3.2	18.5	-57.8	0.0	0.0
5	0.0	-3.2	18.5	-57.8	0.0	0.0
6	0.0	-3.2	18.5	-57.8	0.0	0.0
7	0.0	-3.2	18.5	-57.8	0.0	0.0
8	0.0	5.0	22.8	-51.3	0.0	0.0
9	0.0	5.0	22.8	-51.3	0.0	0.0
10	0.0	5.0	22.8	-51.3	0.0	0.0
11	0.0	5.0	22.8	-51.3	0.0	0.0
12	0.0	5.0	22.8	-51.3	0.0	0.0
13	0.0	5.0	22.8	-51.3	0.0	0.0

14	0.0	5.0	22.8	-51.3	0.0	0.0

LOAD CASE - 2

PILE	PX K	PY K	PZ K	MX IN-K	MY IN-K	MZ IN-K
1	0.0	-4.2	23.3	-59.3	0.0	0.0
2	0.0	-4.2	23.3	-59.3	0.0	0.0
3	0.0	-4.2	23.3	-59.3	0.0	0.0
4	0.0	-4.2	23.3	-59.3	0.0	0.0
5	0.0	-4.2	23.3	-59.3	0.0	0.0
6	0.0	-4.2	23.3	-59.3	0.0	0.0
7	0.0	-4.2	23.3	-59.3	0.0	0.0
8	0.0	5.9	27.5	-51.4	0.0	0.0
9	0.0	5.9	27.5	-51.4	0.0	0.0
10	0.0	5.9	27.5	-51.4	0.0	0.0
11	0.0	5.9	27.5	-51.4	0.0	0.0
12	0.0	5.9	27.5	-51.4	0.0	0.0
13	0.0	5.9	27.5	-51.4	0.0	0.0
14	0.0	5.9	27.5	-51.4	0.0	0.0

LOAD CASE - 3

PILE	PX K	PY K	PZ K	MX IN-K	MY IN-K	MZ IN-K
1	0.0	-2.3	16.0	-103.3	0.0	0.0
2	0.0	-2.3	16.0	-103.3	0.0	0.0
3	0.0	-2.3	16.0	-103.3	0.0	0.0
4	0.0	-2.3	16.0	-103.3	0.0	0.0
5	0.0	-2.3	16.0	-103.3	0.0	0.0
6	0.0	-2.3	16.0	-103.3	0.0	0.0
7	0.0	-2.3	16.0	-103.3	0.0	0.0
8	0.0	7.7	34.7	-95.3	0.0	0.0
9	0.0	7.7	34.7	-95.3	0.0	0.0
10	0.0	7.7	34.7	-95.3	0.0	0.0
11	0.0	7.7	34.7	-95.3	0.0	0.0
12	0.0	7.7	34.7	-95.3	0.0	0.0
13	0.0	7.7	34.7	-95.3	0.0	0.0
14	0.0	7.7	34.7	-95.3	0.0	0.0

LOAD CASE - 4

PILE	PX K	PY K	PZ K	MX IN-K	MY IN-K	MZ IN-K

1	0.0	-2.3	13.4	-44.0	0.0	0.0
2	0.0	-2.3	13.4	-44.0	0.0	0.0
3	0.0	-2.3	13.4	-44.0	0.0	0.0
4	0.0	-2.3	13.4	-44.0	0.0	0.0
5	0.0	-2.3	13.4	-44.0	0.0	0.0
6	0.0	-2.3	13.4	-44.0	0.0	0.0
7	0.0	-2.3	13.4	-44.0	0.0	0.0
8	0.0	4.9	22.6	-38.4	0.0	0.0
9	0.0	4.9	22.6	-38.4	0.0	0.0
10	0.0	4.9	22.6	-38.4	0.0	0.0
11	0.0	4.9	22.6	-38.4	0.0	0.0
12	0.0	4.9	22.6	-38.4	0.0	0.0
13	0.0	4.9	22.6	-38.4	0.0	0.0
14	0.0	4.9	22.6	-38.4	0.0	0.0

LOAD CASE - 5

PILE	PX K	PY K	PZ K	MX IN-K	MY IN-K	MZ IN-K
1	0.0	-2.3	14.0	-63.2	0.0	0.0
2	0.0	-2.3	14.0	-63.2	0.0	0.0
3	0.0	-2.3	14.0	-63.2	0.0	0.0
4	0.0	-2.3	14.0	-63.2	0.0	0.0
5	0.0	-2.3	14.0	-63.2	0.0	0.0
6	0.0	-2.3	14.0	-63.2	0.0	0.0
7	0.0	-2.3	14.0	-63.2	0.0	0.0
8	0.0	4.9	22.0	-57.5	0.0	0.0
9	0.0	4.9	22.0	-57.5	0.0	0.0
10	0.0	4.9	22.0	-57.5	0.0	0.0
11	0.0	4.9	22.0	-57.5	0.0	0.0
12	0.0	4.9	22.0	-57.5	0.0	0.0
13	0.0	4.9	22.0	-57.5	0.0	0.0
14	0.0	4.9	22.0	-57.5	0.0	0.0

LOAD CASE - 6

PILE	PX K	PY K	PZ K	MX IN-K	MY IN-K	MZ IN-K
1	0.0	0.7	-0.3	-57.6	0.0	0.0
2	0.0	0.7	-0.3	-57.6	0.0	0.0
3	0.0	0.7	-0.3	-57.6	0.0	0.0
4	0.0	0.7	-0.3	-57.6	0.0	0.0
5	0.0	0.7	-0.3	-57.6	0.0	0.0
6	0.0	0.7	-0.3	-57.6	0.0	0.0
7	0.0	0.7	-0.3	-57.6	0.0	0.0
8	0.0	7.9	36.3	-52.0	0.0	0.0

9	0.0	7.9	36.3	-52.0	0.0	0.0
10	0.0	7.9	36.3	-52.0	0.0	0.0
11	0.0	7.9	36.3	-52.0	0.0	0.0
12	0.0	7.9	36.3	-52.0	0.0	0.0
13	0.0	7.9	36.3	-52.0	0.0	0.0
14	0.0	7.9	36.3	-52.0	0.0	0.0

LOAD CASE - 7

PILE	PX K	PY K	PZ K	MX IN-K	MY IN-K	MZ IN-K
1	0.0	0.7	0.4	-77.2	0.0	0.0
2	0.0	0.7	0.4	-77.2	0.0	0.0
3	0.0	0.7	0.4	-77.2	0.0	0.0
4	0.0	0.7	0.4	-77.2	0.0	0.0
5	0.0	0.7	0.4	-77.2	0.0	0.0
6	0.0	0.7	0.4	-77.2	0.0	0.0
7	0.0	0.7	0.4	-77.2	0.0	0.0
8	0.0	7.9	35.6	-71.5	0.0	0.0
9	0.0	7.9	35.6	-71.5	0.0	0.0
10	0.0	7.9	35.6	-71.5	0.0	0.0
11	0.0	7.9	35.6	-71.5	0.0	0.0
12	0.0	7.9	35.6	-71.5	0.0	0.0
13	0.0	7.9	35.6	-71.5	0.0	0.0
14	0.0	7.9	35.6	-71.5	0.0	0.0

NO FILES WERE GENERATED DURING THIS RUN.

```
10  Sunset Reach E (5A) TOW El 18.5 Fixed
20  PIL  1   -18   2.5   0
30  BAT   5   1
40  ANG   270   1
50  PIL  2   -12   2.5   0
60  BAT   5   2
70  ANG   270   2
80  PIL  3   -6   2.5   0
90  BAT   5   3
100  ANG   270   3
110  PIL  4  0   2.5   0
120  BAT   5   4
130  ANG   270   4
140  PIL  5  6   2.5   0
150  BAT   5   5
160  ANG   270   5
170  PIL  6  12 2.5   0
180  BAT   5   6
190  ANG   270   6
200  PIL  7   18   2.5   0
210  BAT   5   7
220  ANG   270   7
230  PIL  8   -18   7.5   0
240  BAT   5   8
250  ANG   90   8
260  PIL  9   -12  7.5   0
270  BAT   5   9
280  ANG   90   9
290  PIL  10  -6   7.5   0
300  BAT   5   10
310  ANG   90   10
320  PIL  11  0   7.5   0
330  BAT   5   11
340  ANG   90   11
350  PIL  12  6   7.5   0
360  BAT   5   12
370  ANG   90   12
380  PIL  13  12   7.5   0
390  BAT   5   13
400  ANG   90   13
401  PIL  14  18   7.5   0
402  BAT   5   14
403  ANG   90   14
404  PRO  29000  261  729  21.4  2  0  1 TO 14
405  SOI ES 0.056 L  73  0  1 TO 14
406  RED  1  1  1
410  ALL H 90 70 387  387  527  1667  1 TO 14
420  FIX  1 TO 14
430 LOAD 8 0 247 229 2559 0 0
430 LOAD 9 0 247 229 2415 0 0
```

```
430  FOV  1.33  1.33  8
430  FOV  1.33  1.33  9
440  TOUT 1 2 3 4 5 6 7
450  PFO ALL
460  PLB ALL
```

CPGA - CASE PILE GROUP ANALYSIS PROGRAM
RUN DATE: 01-SEP-20 RUN TIME: 20:20:33

FOR PILES WITH UNSUPPORTED HEIGHT:
A. CPGA CANNOT CALCULATE PMAXMOM FOR NH TYPE SOIL
B. THE ALLOWABLE STRESS CHECKS, ASC AND AST, ARE
NOT FULLY DEVELOPED FOR UNSUPPORTED PILES.
WORK IS IN PROGRESS TO COMPLETE THIS ASPECT OF CPGA.

ELASTIC CENTER LOCATION IS NOT COMPUTED FOR 3-DIMENSIONAL PROBLEMS.

SUNSET REACH E (5A) TOW EL 18.5 FIXED
DATA UNKNOWN - REJECTED.

THERE ARE 14 PILES AND
2 LOAD CASES IN THIS RUN.

ALL PILE COORDINATES ARE CONTAINED WITHIN A BOX

	X	Y	Z
WITH DIAGONAL COORDINATES = (	-18.00 ,	2.50 ,	0.00)
(	18.00 ,	7.50 ,	0.00)

****

PILE PROPERTIES AS INPUT

E	I1	I2	A	C33	B66
KSI	IN**4	IN**4	IN**2		
0.29000E+05	0.26100E+03	0.72900E+03	0.21400E+02	0.20000E+01	0.00000E+00

THESE PILE PROPERTIES APPLY TO THE FOLLOWING PILES -

ALL

****

SOIL DESCRIPTIONS AS INPUT

ES	ESOIL	LENGTH	L	LU
	K/IN**2		FT	FT

```
        0.56000E-01    L      0.73000E+02   0.00000E+00

 ESOIL(ORIGINAL)     RGROUP     RCYCLIC
   K/IN**2
  0.56000E-01       0.1000E+01 0.1000E+01
```

THIS SOIL DESCRIPTION APPLIES TO THE FOLLOWING PILES -

ALL

****

PILE STIFFNESSES AS CALCULATED FROM PROPERTIES

```
 0.11039E+02  0.00000E+00  0.00000E+00  0.00000E+00  0.10881E+04  0.00000E+00
 0.00000E+00  0.85392E+01  0.00000E+00 -0.65105E+03  0.00000E+00  0.00000E+00
 0.00000E+00  0.00000E+00  0.14169E+04  0.00000E+00  0.00000E+00  0.00000E+00
 0.00000E+00 -0.65105E+03  0.00000E+00  0.99275E+05  0.00000E+00  0.00000E+00
 0.10881E+04  0.00000E+00  0.00000E+00  0.00000E+00  0.21449E+06  0.00000E+00
 0.00000E+00  0.00000E+00  0.00000E+00  0.00000E+00  0.00000E+00  0.00000E+00
```

THIS MATRIX APPLIES TO THE FOLLOWING PILES -

1

****

PILE GEOMETRY AS INPUT AND/OR GENERATED

NUM	X FT	Y FT	Z FT	BATTER	ANGLE	LENGTH FT	FIXITY
1	-18.00	2.50	0.00	5.00	270.00	73.00	F
2	-12.00	2.50	0.00	5.00	270.00	73.00	F
3	-6.00	2.50	0.00	5.00	270.00	73.00	F
4	0.00	2.50	0.00	5.00	270.00	73.00	F
5	6.00	2.50	0.00	5.00	270.00	73.00	F
6	12.00	2.50	0.00	5.00	270.00	73.00	F
7	18.00	2.50	0.00	5.00	270.00	73.00	F
8	-18.00	7.50	0.00	5.00	90.00	73.00	F
9	-12.00	7.50	0.00	5.00	90.00	73.00	F
10	-6.00	7.50	0.00	5.00	90.00	73.00	F
11	0.00	7.50	0.00	5.00	90.00	73.00	F
12	6.00	7.50	0.00	5.00	90.00	73.00	F
13	12.00	7.50	0.00	5.00	90.00	73.00	F
14	18.00	7.50	0.00	5.00	90.00	73.00	F

```
                                                      ------
                                                     1022.00
```

****

APPLIED LOADS

LOAD CASE	PX K	PY K	PZ K	MX FT-K	MY FT-K	MZ FT-K	OVERSTRESS COM	OVERSTRESS TEN
8	0.0	247.0	229.0	2559.0	0.0	0.0	1.33	1.33
9	0.0	247.0	229.0	2415.0	0.0	0.0	1.33	1.33

****

ORIGINAL PILE GROUP STIFFNESS MATRIX

```
 0.11955E+03  0.19274E-04 -0.46056E-04 -0.14600E-03  0.89377E+04 -0.71729E+04
 0.19274E-04  0.91155E+03  0.17053E-11  0.98613E+05  0.14600E-03 -0.88908E-03
-0.46056E-04  0.90949E-12  0.19080E+05  0.11448E+07  0.36351E-04  0.00000E+00
-0.14600E-03  0.98613E+05  0.11448E+07  0.89040E+08 -0.40555E-01 -0.11453E+00
 0.89377E+04  0.14600E-03  0.36351E-04 -0.40555E-01  0.39697E+09 -0.53626E+06
-0.71729E+04 -0.88908E-03 -0.14552E-10 -0.11453E+00 -0.53626E+06  0.19601E+08
```

14 PILES   2 LOAD CASES

LOAD CASE   8. NUMBER OF FAILURES =   0. NUMBER OF PILES IN TENSION =   7.

LOAD CASE   9. NUMBER OF FAILURES =   0. NUMBER OF PILES IN TENSION =   7.

****

PILE CAP DISPLACEMENTS

LOAD CASE	DX IN	DY IN	DZ IN	RX RAD	RY RAD	RZ RAD
8	-0.3470E-07	0.3799E+00	0.7242E-01	-0.1007E-02	0.5302E-12	-0.1335E-11
9	-0.3389E-07	0.3992E+00	0.8312E-01	-0.1185E-02	0.4860E-12	-0.1209E-11

****

PILE FORCES IN LOCAL GEOMETRY

M1 & M2 NOT AT PILE HEAD FOR PINNED PILES
* INDICATES PILE FAILURE
# INDICATES CBF BASED ON MOMENTS DUE TO
(F3*EMIN) FOR CONCRETE PILES
B INDICATES BUCKLING CONTROLS

LOAD CASE - 8

PILE	F1 K	F2 K	F3 K	M1 IN-K	M2 IN-K	M3 IN-K	ALF	CBF
1	-5.3	0.0	-46.9	0.0	-630.3	0.0	0.50	0.38
2	-5.3	0.0	-46.9	0.0	-630.3	0.0	0.50	0.38
3	-5.3	0.0	-46.9	0.0	-630.3	0.0	0.50	0.38
4	-5.3	0.0	-46.9	0.0	-630.3	0.0	0.50	0.38
5	-5.3	0.0	-46.9	0.0	-630.3	0.0	0.50	0.38
6	-5.3	0.0	-46.9	0.0	-630.3	0.0	0.50	0.38
7	-5.3	0.0	-46.9	0.0	-630.3	0.0	0.50	0.38
8	5.2	0.0	80.3	0.0	625.2	0.0	0.67	0.44
9	5.2	0.0	80.3	0.0	625.2	0.0	0.67	0.44
10	5.2	0.0	80.3	0.0	625.2	0.0	0.67	0.44
11	5.2	0.0	80.3	0.0	625.2	0.0	0.67	0.44
12	5.2	0.0	80.3	0.0	625.2	0.0	0.67	0.44
13	5.2	0.0	80.3	0.0	625.2	0.0	0.67	0.44
14	5.2	0.0	80.3	0.0	625.2	0.0	0.67	0.44

LOAD CASE - 9

PILE	F1 K	F2 K	F3 K	M1 IN-K	M2 IN-K	M3 IN-K	ALF	CBF
1	-5.7	0.0	-44.8	0.0	-690.3	0.0	0.48	0.40
2	-5.7	0.0	-44.8	0.0	-690.3	0.0	0.48	0.40
3	-5.7	0.0	-44.8	0.0	-690.3	0.0	0.48	0.40
4	-5.7	0.0	-44.8	0.0	-690.3	0.0	0.48	0.40
5	-5.7	0.0	-44.8	0.0	-690.3	0.0	0.48	0.40
6	-5.7	0.0	-44.8	0.0	-690.3	0.0	0.48	0.40
7	-5.7	0.0	-44.8	0.0	-690.3	0.0	0.48	0.40
8	5.7	0.0	78.2	0.0	685.2	0.0	0.65	0.46
9	5.7	0.0	78.2	0.0	685.2	0.0	0.65	0.46
10	5.7	0.0	78.2	0.0	685.2	0.0	0.65	0.46
11	5.7	0.0	78.2	0.0	685.2	0.0	0.65	0.46
12	5.7	0.0	78.2	0.0	685.2	0.0	0.65	0.46
13	5.7	0.0	78.2	0.0	685.2	0.0	0.65	0.46
14	5.7	0.0	78.2	0.0	685.2	0.0	0.65	0.46

****

PILE FORCES IN GLOBAL GEOMETRY

LOAD CASE - 8

PILE	PX K	PY K	PZ K	MX IN-K	MY IN-K	MZ IN-K
1	0.0	14.4	-45.0	-630.3	0.0	0.0
2	0.0	14.4	-45.0	-630.3	0.0	0.0
3	0.0	14.4	-45.0	-630.3	0.0	0.0
4	0.0	14.4	-45.0	-630.3	0.0	0.0
5	0.0	14.4	-45.0	-630.3	0.0	0.0
6	0.0	14.4	-45.0	-630.3	0.0	0.0
7	0.0	14.4	-45.0	-630.3	0.0	0.0
8	0.0	20.9	77.7	-625.2	0.0	0.0
9	0.0	20.9	77.7	-625.2	0.0	0.0
10	0.0	20.9	77.7	-625.2	0.0	0.0
11	0.0	20.9	77.7	-625.2	0.0	0.0
12	0.0	20.9	77.7	-625.2	0.0	0.0
13	0.0	20.9	77.7	-625.2	0.0	0.0
14	0.0	20.9	77.7	-625.2	0.0	0.0

LOAD CASE - 9

PILE	PX K	PY K	PZ K	MX IN-K	MY IN-K	MZ IN-K
1	0.0	14.4	-42.9	-690.3	0.0	0.0
2	0.0	14.4	-42.9	-690.3	0.0	0.0
3	0.0	14.4	-42.9	-690.3	0.0	0.0
4	0.0	14.4	-42.9	-690.3	0.0	0.0
5	0.0	14.4	-42.9	-690.3	0.0	0.0
6	0.0	14.4	-42.9	-690.3	0.0	0.0
7	0.0	14.4	-42.9	-690.3	0.0	0.0
8	0.0	20.9	75.6	-685.2	0.0	0.0
9	0.0	20.9	75.6	-685.2	0.0	0.0
10	0.0	20.9	75.6	-685.2	0.0	0.0
11	0.0	20.9	75.6	-685.2	0.0	0.0
12	0.0	20.9	75.6	-685.2	0.0	0.0
13	0.0	20.9	75.6	-685.2	0.0	0.0
14	0.0	20.9	75.6	-685.2	0.0	0.0

NO FILES WERE GENERATED DURING THIS RUN.

```
10  Sunset Reach E (5A) TOW El 18.5 Pinned
20  PIL  1  -18   2.5   0
30  BAT   5   1
40  ANG   270   1
50  PIL  2  -12   2.5   0
60  BAT   5   2
70  ANG   270   2
80  PIL  3  -6   2.5   0
90  BAT   5   3
100  ANG   270   3
110  PIL  4   0   2.5   0
120  BAT   5   4
130  ANG   270   4
140  PIL  5   6   2.5   0
150  BAT   5   5
160  ANG   270   5
170  PIL  6   12   2.5   0
180  BAT   5   6
190  ANG   270   6
200  PIL  7   18   2.5   0
210  BAT   5   7
220  ANG   270   7
230  PIL  8  -18   7.5   0
240  BAT   5   8
250  ANG   90   8
260  PIL  9  -12   7.5   0
270  BAT   5   9
280  ANG   90   9
290  PIL  10  -6   7.5   0
300  BAT   5   10
310  ANG   90   10
320  PIL  11   0   7.5   0
330  BAT   5   11
340  ANG   90   11
350  PIL  12   6   7.5   0
360  BAT   5   12
370  ANG   90   12
380  PIL  13   12   7.5   0
390  BAT   5   13
400  ANG   90   13
410  PIL  14   18   7.5   0
420  BAT   5   14
430  ANG   90   14
440  PRO  29000  261  729  21.4  2  0  1 TO 14
450  SOI ES 0.056 L  73  0  1 TO 14
460  RED  1  1  1
470  ALL H 90  70  387  387  527  1667  1 TO 14
480  PIN  1 TO 14
490  LOA  1  0  12  289  1456  0  0
490  LOA  2  0  12  355  1784  0  0
```

```
490  LOA  3  0  38  355  1986  0  0
490  LOA  4  0  18  252  1374  0  0
490  LOA  5  0  18  252  1328  0  0
490  LOA  6  0  60  252  1838  0  0
490  LOA  7  0  60  252  1791  0  0
490  FOV  1.167  1.167  2
490  FOV  1.33  1.33  3
490  FOV  1.33  1.33  6
490  FOV  1.33  1.33  7
500  TOUT   1  2  3  4  5  6  7
510  PFO ALL
520  PLB ALL
```

CPGA - CASE PILE GROUP ANALYSIS PROGRAM
RUN DATE: 01-SEP-20 RUN TIME: 20:21:07

FOR PILES WITH UNSUPPORTED HEIGHT:
A. CPGA CANNOT CALCULATE PMAXMOM FOR NH TYPE SOIL
B. THE ALLOWABLE STRESS CHECKS, ASC AND AST, ARE
NOT FULLY DEVELOPED FOR UNSUPPORTED PILES.
WORK IS IN PROGRESS TO COMPLETE THIS ASPECT OF CPGA.

ELASTIC CENTER LOCATION IS NOT COMPUTED FOR 3-DIMENSIONAL PROBLEMS.

SUNSET REACH E (5A) TOW EL 18.5 PINNED
DATA UNKNOWN - REJECTED.

THERE ARE 14 PILES AND
7 LOAD CASES IN THIS RUN.

ALL PILE COORDINATES ARE CONTAINED WITHIN A BOX

	X	Y	Z
WITH DIAGONAL COORDINATES = (	-18.00 ,	2.50 ,	0.00)
(	18.00 ,	7.50 ,	0.00)

****

PILE PROPERTIES AS INPUT

E	I1	I2	A	C33	B66
KSI	IN**4	IN**4	IN**2		
0.29000E+05	0.26100E+03	0.72900E+03	0.21400E+02	0.20000E+01	0.00000E+00

THESE PILE PROPERTIES APPLY TO THE FOLLOWING PILES -

ALL

****

SOIL DESCRIPTIONS AS INPUT

ES	ESOIL	LENGTH	L	LU
	K/IN**2		FT	FT

0.56000E-01 L 0.73000E+02 0.00000E+00

ESOIL(ORIGINAL) K/IN**2	RGROUP	RCYCLIC
0.56000E-01	0.1000E+01	0.1000E+01

THIS SOIL DESCRIPTION APPLIES TO THE FOLLOWING PILES -

ALL

****

PILE STIFFNESSES AS CALCULATED FROM PROPERTIES

0.55196E+01	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00
0.00000E+00	0.42696E+01	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00
0.00000E+00	0.00000E+00	0.14169E+04	0.00000E+00	0.00000E+00	0.00000E+00
0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00
0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00
0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00

THIS MATRIX APPLIES TO THE FOLLOWING PILES -

1

****

PILE GEOMETRY AS INPUT AND/OR GENERATED

NUM	X FT	Y FT	Z FT	BATTER	ANGLE	LENGTH FT	FIXITY
1	-18.00	2.50	0.00	5.00	270.00	73.00	P
2	-12.00	2.50	0.00	5.00	270.00	73.00	P
3	-6.00	2.50	0.00	5.00	270.00	73.00	P
4	0.00	2.50	0.00	5.00	270.00	73.00	P
5	6.00	2.50	0.00	5.00	270.00	73.00	P
6	12.00	2.50	0.00	5.00	270.00	73.00	P
7	18.00	2.50	0.00	5.00	270.00	73.00	P
8	-18.00	7.50	0.00	5.00	90.00	73.00	P
9	-12.00	7.50	0.00	5.00	90.00	73.00	P
10	-6.00	7.50	0.00	5.00	90.00	73.00	P
11	0.00	7.50	0.00	5.00	90.00	73.00	P
12	6.00	7.50	0.00	5.00	90.00	73.00	P
13	12.00	7.50	0.00	5.00	90.00	73.00	P
14	18.00	7.50	0.00	5.00	90.00	73.00	P

```
                                                      ------
                                                     1022.00
```

****

APPLIED LOADS

LOAD CASE	PX K	PY K	PZ K	MX FT-K	MY FT-K	MZ FT-K	OVERSTRESS COM	OVERSTRESS TEN
1	0.0	12.0	289.0	1456.0	0.0	0.0		
2	0.0	12.0	355.0	1784.0	0.0	0.0	1.17	1.17
3	0.0	38.0	355.0	1986.0	0.0	0.0	1.33	1.33
4	0.0	18.0	252.0	1374.0	0.0	0.0		
5	0.0	18.0	252.0	1328.0	0.0	0.0		
6	0.0	60.0	252.0	1838.0	0.0	0.0	1.33	1.33
7	0.0	60.0	252.0	1791.0	0.0	0.0	1.33	1.33

****

ORIGINAL PILE GROUP STIFFNESS MATRIX

```
 0.59774E+02  0.18920E-04 -0.46237E-04 -0.32526E-18  0.00000E+00 -0.35865E+04
 0.18920E-04  0.83725E+03  0.17053E-11  0.11400E+06 -0.72760E-11 -0.85142E-03
-0.46237E-04  0.90949E-12  0.19077E+05  0.11446E+07 -0.58208E-10  0.00000E+00
-0.32526E-18  0.11400E+06  0.11446E+07  0.85845E+08  0.00000E+00 -0.12484E+00
-0.43368E-18  0.00000E+00  0.58208E-10  0.74506E-08  0.39557E+09 -0.29802E-07
-0.35865E+04 -0.85142E-03 -0.14552E-10 -0.12484E+00 -0.31665E-07  0.17630E+08
```

14 PILES 7 LOAD CASES

```
LOAD CASE    1.  NUMBER OF FAILURES =   0.  NUMBER OF PILES IN TENSION =   0.

LOAD CASE    2.  NUMBER OF FAILURES =   0.  NUMBER OF PILES IN TENSION =   0.

LOAD CASE    3.  NUMBER OF FAILURES =   0.  NUMBER OF PILES IN TENSION =   0.

LOAD CASE    4.  NUMBER OF FAILURES =   0.  NUMBER OF PILES IN TENSION =   0.

LOAD CASE    5.  NUMBER OF FAILURES =   0.  NUMBER OF PILES IN TENSION =   0.

LOAD CASE    6.  NUMBER OF FAILURES =   0.  NUMBER OF PILES IN TENSION =   0.

LOAD CASE    7.  NUMBER OF FAILURES =   0.  NUMBER OF PILES IN TENSION =   0.
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PILE CAP DISPLACEMENTS

LOAD CASE	DX IN	DY IN	DZ IN	RX RAD	RY RAD	RZ RAD
1	0.1034E-07	0.1384E+00	0.6984E-01	-0.9115E-03	0.6891E-20	0.2335E-11
2	0.1310E-07	0.1404E+00	0.7417E-01	-0.9260E-03	0.6528E-20	0.2889E-11
3	0.5491E-08	0.2637E+00	0.1148E+00	-0.1603E-02	0.1330E-19	0.2498E-11
4	0.5702E-08	0.1110E+00	0.5264E-01	-0.6571E-03	0.4632E-20	0.1866E-11
5	0.6816E-08	0.1566E+00	0.7274E-01	-0.9921E-03	0.7984E-20	0.1923E-11
6	-0.9922E-08	0.1736E+00	0.5812E-01	-0.7485E-03	0.5546E-20	0.1064E-11
7	-0.8784E-08	0.2202E+00	0.7866E-01	-0.1091E-02	0.8971E-20	0.1123E-11

****

PILE FORCES IN LOCAL GEOMETRY

M1 & M2 NOT AT PILE HEAD FOR PINNED PILES
* INDICATES PILE FAILURE
# INDICATES CBF BASED ON MOMENTS DUE TO
(F3*EMIN) FOR CONCRETE PILES
B INDICATES BUCKLING CONTROLS

LOAD CASE - 1

PILE	F1 K	F2 K	F3 K	M1 IN-K	M2 IN-K	M3 IN-K	ALF	CBF
1	-0.8	0.0	20.6	0.0	50.5	0.0	0.23	0.08
2	-0.8	0.0	20.6	0.0	50.5	0.0	0.23	0.08
3	-0.8	0.0	20.6	0.0	50.5	0.0	0.23	0.08
4	-0.8	0.0	20.6	0.0	50.5	0.0	0.23	0.08
5	-0.8	0.0	20.6	0.0	50.5	0.0	0.23	0.08
6	-0.8	0.0	20.6	0.0	50.5	0.0	0.23	0.08
7	-0.8	0.0	20.6	0.0	50.5	0.0	0.23	0.08
8	0.8	0.0	21.5	0.0	-48.4	0.0	0.24	0.08
9	0.8	0.0	21.5	0.0	-48.4	0.0	0.24	0.08
10	0.8	0.0	21.5	0.0	-48.4	0.0	0.24	0.08
11	0.8	0.0	21.5	0.0	-48.4	0.0	0.24	0.08
12	0.8	0.0	21.5	0.0	-48.4	0.0	0.24	0.08
13	0.8	0.0	21.5	0.0	-48.4	0.0	0.24	0.08
14	0.8	0.0	21.5	0.0	-48.4	0.0	0.24	0.08

LOAD CASE - 2

PILE	F1 K	F2 K	F3 K	M1 IN-K	M2 IN-K	M3 IN-K	ALF	CBF
1	-0.8	0.0	25.4	0.0	51.4	0.0	0.24	0.08
2	-0.8	0.0	25.4	0.0	51.4	0.0	0.24	0.08
3	-0.8	0.0	25.4	0.0	51.4	0.0	0.24	0.08
4	-0.8	0.0	25.4	0.0	51.4	0.0	0.24	0.08
5	-0.8	0.0	25.4	0.0	51.4	0.0	0.24	0.08
6	-0.8	0.0	25.4	0.0	51.4	0.0	0.24	0.08
7	-0.8	0.0	25.4	0.0	51.4	0.0	0.24	0.08
8	0.8	0.0	26.3	0.0	-48.9	0.0	0.25	0.08
9	0.8	0.0	26.3	0.0	-48.9	0.0	0.25	0.08
10	0.8	0.0	26.3	0.0	-48.9	0.0	0.25	0.08
11	0.8	0.0	26.3	0.0	-48.9	0.0	0.25	0.08
12	0.8	0.0	26.3	0.0	-48.9	0.0	0.25	0.08
13	0.8	0.0	26.3	0.0	-48.9	0.0	0.25	0.08
14	0.8	0.0	26.3	0.0	-48.9	0.0	0.25	0.08

LOAD CASE - 3

PILE	F1 K	F2 K	F3 K	M1 IN-K	M2 IN-K	M3 IN-K	ALF	CBF
1	-1.5	0.0	19.4	0.0	95.2	0.0	0.16	0.08
2	-1.5	0.0	19.4	0.0	95.2	0.0	0.16	0.08
3	-1.5	0.0	19.4	0.0	95.2	0.0	0.16	0.08
4	-1.5	0.0	19.4	0.0	95.2	0.0	0.16	0.08
5	-1.5	0.0	19.4	0.0	95.2	0.0	0.16	0.08
6	-1.5	0.0	19.4	0.0	95.2	0.0	0.16	0.08
7	-1.5	0.0	19.4	0.0	95.2	0.0	0.16	0.08
8	1.5	0.0	32.3	0.0	-92.6	0.0	0.27	0.10
9	1.5	0.0	32.3	0.0	-92.6	0.0	0.27	0.10
10	1.5	0.0	32.3	0.0	-92.6	0.0	0.27	0.10
11	1.5	0.0	32.3	0.0	-92.6	0.0	0.27	0.10
12	1.5	0.0	32.3	0.0	-92.6	0.0	0.27	0.10
13	1.5	0.0	32.3	0.0	-92.6	0.0	0.27	0.10
14	1.5	0.0	32.3	0.0	-92.6	0.0	0.27	0.10

LOAD CASE - 4

PILE	F1 K	F2 K	F3 K	M1 IN-K	M2 IN-K	M3 IN-K	ALF	CBF
1	-0.6	0.0	14.9	0.0	40.4	0.0	0.17	0.06
2	-0.6	0.0	14.9	0.0	40.4	0.0	0.17	0.06
3	-0.6	0.0	14.9	0.0	40.4	0.0	0.17	0.06

4	-0.6	0.0	14.9	0.0	40.4	0.0	0.17	0.06
5	-0.6	0.0	14.9	0.0	40.4	0.0	0.17	0.06
6	-0.6	0.0	14.9	0.0	40.4	0.0	0.17	0.06
7	-0.6	0.0	14.9	0.0	40.4	0.0	0.17	0.06
8	0.6	0.0	21.8	0.0	-38.6	0.0	0.24	0.08
9	0.6	0.0	21.8	0.0	-38.6	0.0	0.24	0.08
10	0.6	0.0	21.8	0.0	-38.6	0.0	0.24	0.08
11	0.6	0.0	21.8	0.0	-38.6	0.0	0.24	0.08
12	0.6	0.0	21.8	0.0	-38.6	0.0	0.24	0.08
13	0.6	0.0	21.8	0.0	-38.6	0.0	0.24	0.08
14	0.6	0.0	21.8	0.0	-38.6	0.0	0.24	0.08

LOAD CASE - 5

PILE	F1 K	F2 K	F3 K	M1 IN-K	M2 IN-K	M3 IN-K	ALF	CBF
1	-0.9	0.0	16.2	0.0	56.7	0.0	0.18	0.08
2	-0.9	0.0	16.2	0.0	56.7	0.0	0.18	0.08
3	-0.9	0.0	16.2	0.0	56.7	0.0	0.18	0.08
4	-0.9	0.0	16.2	0.0	56.7	0.0	0.18	0.08
5	-0.9	0.0	16.2	0.0	56.7	0.0	0.18	0.08
6	-0.9	0.0	16.2	0.0	56.7	0.0	0.18	0.08
7	-0.9	0.0	16.2	0.0	56.7	0.0	0.18	0.08
8	0.9	0.0	20.5	0.0	-54.9	0.0	0.23	0.09
9	0.9	0.0	20.5	0.0	-54.9	0.0	0.23	0.09
10	0.9	0.0	20.5	0.0	-54.9	0.0	0.23	0.09
11	0.9	0.0	20.5	0.0	-54.9	0.0	0.23	0.09
12	0.9	0.0	20.5	0.0	-54.9	0.0	0.23	0.09
13	0.9	0.0	20.5	0.0	-54.9	0.0	0.23	0.09
14	0.9	0.0	20.5	0.0	-54.9	0.0	0.23	0.09

LOAD CASE - 6

PILE	F1 K	F2 K	F3 K	M1 IN-K	M2 IN-K	M3 IN-K	ALF	CBF
1	-1.0	0.0	1.3	0.0	62.1	0.0	0.01	0.03
2	-1.0	0.0	1.3	0.0	62.1	0.0	0.01	0.03
3	-1.0	0.0	1.3	0.0	62.1	0.0	0.01	0.03
4	-1.0	0.0	1.3	0.0	62.1	0.0	0.01	0.03
5	-1.0	0.0	1.3	0.0	62.1	0.0	0.01	0.03
6	-1.0	0.0	1.3	0.0	62.1	0.0	0.01	0.03
7	-1.0	0.0	1.3	0.0	62.1	0.0	0.01	0.03
8	0.9	0.0	35.4	0.0	-60.3	0.0	0.30	0.10
9	0.9	0.0	35.4	0.0	-60.3	0.0	0.30	0.10
10	0.9	0.0	35.4	0.0	-60.3	0.0	0.30	0.10
11	0.9	0.0	35.4	0.0	-60.3	0.0	0.30	0.10

12	0.9	0.0	35.4	0.0	-60.3	0.0	0.30	0.10
13	0.9	0.0	35.4	0.0	-60.3	0.0	0.30	0.10
14	0.9	0.0	35.4	0.0	-60.3	0.0	0.30	0.10

LOAD CASE - 7

PILE	F1 K	F2 K	F3 K	M1 IN-K	M2 IN-K	M3 IN-K	ALF	CBF
1	-1.2	0.0	2.6	0.0	78.8	0.0	0.02	0.04
2	-1.2	0.0	2.6	0.0	78.8	0.0	0.02	0.04
3	-1.2	0.0	2.6	0.0	78.8	0.0	0.02	0.04
4	-1.2	0.0	2.6	0.0	78.8	0.0	0.02	0.04
5	-1.2	0.0	2.6	0.0	78.8	0.0	0.02	0.04
6	-1.2	0.0	2.6	0.0	78.8	0.0	0.02	0.04
7	-1.2	0.0	2.6	0.0	78.8	0.0	0.02	0.04
8	1.2	0.0	34.1	0.0	-77.0	0.0	0.28	0.10
9	1.2	0.0	34.1	0.0	-77.0	0.0	0.28	0.10
10	1.2	0.0	34.1	0.0	-77.0	0.0	0.28	0.10
11	1.2	0.0	34.1	0.0	-77.0	0.0	0.28	0.10
12	1.2	0.0	34.1	0.0	-77.0	0.0	0.28	0.10
13	1.2	0.0	34.1	0.0	-77.0	0.0	0.28	0.10
14	1.2	0.0	34.1	0.0	-77.0	0.0	0.28	0.10

****

PILE FORCES IN GLOBAL GEOMETRY

LOAD CASE - 1

PILE	PX K	PY K	PZ K	MX IN-K	MY IN-K	MZ IN-K
1	0.0	-3.3	20.3	0.0	0.0	0.0
2	0.0	-3.3	20.3	0.0	0.0	0.0
3	0.0	-3.3	20.3	0.0	0.0	0.0
4	0.0	-3.3	20.3	0.0	0.0	0.0
5	0.0	-3.3	20.3	0.0	0.0	0.0
6	0.0	-3.3	20.3	0.0	0.0	0.0
7	0.0	-3.3	20.3	0.0	0.0	0.0
8	0.0	5.0	21.0	0.0	0.0	0.0
9	0.0	5.0	21.0	0.0	0.0	0.0
10	0.0	5.0	21.0	0.0	0.0	0.0
11	0.0	5.0	21.0	0.0	0.0	0.0
12	0.0	5.0	21.0	0.0	0.0	0.0
13	0.0	5.0	21.0	0.0	0.0	0.0

14	0.0	5.0	21.0	0.0	0.0	0.0

LOAD CASE - 2

PILE	PX K	PY K	PZ K	MX IN-K	MY IN-K	MZ IN-K
1	0.0	-4.2	25.1	0.0	0.0	0.0
2	0.0	-4.2	25.1	0.0	0.0	0.0
3	0.0	-4.2	25.1	0.0	0.0	0.0
4	0.0	-4.2	25.1	0.0	0.0	0.0
5	0.0	-4.2	25.1	0.0	0.0	0.0
6	0.0	-4.2	25.1	0.0	0.0	0.0
7	0.0	-4.2	25.1	0.0	0.0	0.0
8	0.0	5.9	25.6	0.0	0.0	0.0
9	0.0	5.9	25.6	0.0	0.0	0.0
10	0.0	5.9	25.6	0.0	0.0	0.0
11	0.0	5.9	25.6	0.0	0.0	0.0
12	0.0	5.9	25.6	0.0	0.0	0.0
13	0.0	5.9	25.6	0.0	0.0	0.0
14	0.0	5.9	25.6	0.0	0.0	0.0

LOAD CASE - 3

PILE	PX K	PY K	PZ K	MX IN-K	MY IN-K	MZ IN-K
1	0.0	-2.3	19.3	0.0	0.0	0.0
2	0.0	-2.3	19.3	0.0	0.0	0.0
3	0.0	-2.3	19.3	0.0	0.0	0.0
4	0.0	-2.3	19.3	0.0	0.0	0.0
5	0.0	-2.3	19.3	0.0	0.0	0.0
6	0.0	-2.3	19.3	0.0	0.0	0.0
7	0.0	-2.3	19.3	0.0	0.0	0.0
8	0.0	7.8	31.4	0.0	0.0	0.0
9	0.0	7.8	31.4	0.0	0.0	0.0
10	0.0	7.8	31.4	0.0	0.0	0.0
11	0.0	7.8	31.4	0.0	0.0	0.0
12	0.0	7.8	31.4	0.0	0.0	0.0
13	0.0	7.8	31.4	0.0	0.0	0.0
14	0.0	7.8	31.4	0.0	0.0	0.0

LOAD CASE - 4

PILE	PX K	PY K	PZ K	MX IN-K	MY IN-K	MZ IN-K

1	0.0	-2.3	14.7	0.0	0.0	0.0
2	0.0	-2.3	14.7	0.0	0.0	0.0
3	0.0	-2.3	14.7	0.0	0.0	0.0
4	0.0	-2.3	14.7	0.0	0.0	0.0
5	0.0	-2.3	14.7	0.0	0.0	0.0
6	0.0	-2.3	14.7	0.0	0.0	0.0
7	0.0	-2.3	14.7	0.0	0.0	0.0
8	0.0	4.9	21.3	0.0	0.0	0.0
9	0.0	4.9	21.3	0.0	0.0	0.0
10	0.0	4.9	21.3	0.0	0.0	0.0
11	0.0	4.9	21.3	0.0	0.0	0.0
12	0.0	4.9	21.3	0.0	0.0	0.0
13	0.0	4.9	21.3	0.0	0.0	0.0
14	0.0	4.9	21.3	0.0	0.0	0.0

LOAD CASE - 5

PILE	PX K	PY K	PZ K	MX IN-K	MY IN-K	MZ IN-K
1	0.0	-2.3	16.1	0.0	0.0	0.0
2	0.0	-2.3	16.1	0.0	0.0	0.0
3	0.0	-2.3	16.1	0.0	0.0	0.0
4	0.0	-2.3	16.1	0.0	0.0	0.0
5	0.0	-2.3	16.1	0.0	0.0	0.0
6	0.0	-2.3	16.1	0.0	0.0	0.0
7	0.0	-2.3	16.1	0.0	0.0	0.0
8	0.0	4.9	19.9	0.0	0.0	0.0
9	0.0	4.9	19.9	0.0	0.0	0.0
10	0.0	4.9	19.9	0.0	0.0	0.0
11	0.0	4.9	19.9	0.0	0.0	0.0
12	0.0	4.9	19.9	0.0	0.0	0.0
13	0.0	4.9	19.9	0.0	0.0	0.0
14	0.0	4.9	19.9	0.0	0.0	0.0

LOAD CASE - 6

PILE	PX K	PY K	PZ K	MX IN-K	MY IN-K	MZ IN-K
1	0.0	0.7	1.5	0.0	0.0	0.0
2	0.0	0.7	1.5	0.0	0.0	0.0
3	0.0	0.7	1.5	0.0	0.0	0.0
4	0.0	0.7	1.5	0.0	0.0	0.0
5	0.0	0.7	1.5	0.0	0.0	0.0
6	0.0	0.7	1.5	0.0	0.0	0.0
7	0.0	0.7	1.5	0.0	0.0	0.0
8	0.0	7.9	34.5	0.0	0.0	0.0

9	0.0	7.9	34.5	0.0	0.0	0.0
10	0.0	7.9	34.5	0.0	0.0	0.0
11	0.0	7.9	34.5	0.0	0.0	0.0
12	0.0	7.9	34.5	0.0	0.0	0.0
13	0.0	7.9	34.5	0.0	0.0	0.0
14	0.0	7.9	34.5	0.0	0.0	0.0

LOAD CASE - 7

PILE	PX K	PY K	PZ K	MX IN-K	MY IN-K	MZ IN-K
1	0.0	0.7	2.8	0.0	0.0	0.0
2	0.0	0.7	2.8	0.0	0.0	0.0
3	0.0	0.7	2.8	0.0	0.0	0.0
4	0.0	0.7	2.8	0.0	0.0	0.0
5	0.0	0.7	2.8	0.0	0.0	0.0
6	0.0	0.7	2.8	0.0	0.0	0.0
7	0.0	0.7	2.8	0.0	0.0	0.0
8	0.0	7.9	33.2	0.0	0.0	0.0
9	0.0	7.9	33.2	0.0	0.0	0.0
10	0.0	7.9	33.2	0.0	0.0	0.0
11	0.0	7.9	33.2	0.0	0.0	0.0
12	0.0	7.9	33.2	0.0	0.0	0.0
13	0.0	7.9	33.2	0.0	0.0	0.0
14	0.0	7.9	33.2	0.0	0.0	0.0

NO FILES WERE GENERATED DURING THIS RUN.

```
10  Sunset Reach E (5A) TOW El 18.5 Pinned
20  PIL  1  -18   2.5   0
30  BAT   5   1
40  ANG   270   1
50  PIL  2  -12   2.5   0
60  BAT   5   2
70  ANG   270   2
80  PIL  3  -6   2.5   0
90  BAT   5   3
100  ANG   270   3
110  PIL  4   0   2.5   0
120  BAT   5   4
130  ANG   270   4
140  PIL  5   6   2.5   0
150  BAT   5   5
160  ANG   270   5
170  PIL  6   12   2.5   0
180  BAT   5   6
190  ANG   270   6
200  PIL  7   18   2.5   0
210  BAT   5   7
220  ANG   270   7
230  PIL  8  -18   7.5   0
240  BAT   5   8
250  ANG   90   8
260  PIL  9  -12   7.5   0
270  BAT   5   9
280  ANG   90   9
290  PIL  10  -6   7.5   0
300  BAT   5   10
310  ANG   90   10
320  PIL  11   0   7.5   0
330  BAT   5   11
340  ANG   90   11
350  PIL  12   6   7.5   0
360  BAT   5   12
370  ANG   90   12
380  PIL  13   12   7.5   0
390  BAT   5   13
400  ANG   90   13
410  PIL  14   18   7.5   0
420  BAT   5   14
430  ANG   90   14
440  PRO  29000  261  729  21.4  2  0  1 TO 14
450  SOI ES 0.056 L  73  0  1 TO 14
460  RED  1  1  1
470  ALL H 90  70  387  387  527  1667  1 TO 14
480  PIN  1 TO 14
490  LOA  8  0  247  229  2559  0  0
490  LOA  9  0  247  229  2415  0  0
```

```
490  FOV  1.33  1.33  8
490  FOV  1.33  1.33  9
500  TOUT   1  2  3  4  5  6  7
510  PFO ALL
520  PLB ALL
```

CPGA - CASE PILE GROUP ANALYSIS PROGRAM
RUN DATE: 01-SEP-20 RUN TIME: 20:22:01

FOR PILES WITH UNSUPPORTED HEIGHT:
A. CPGA CANNOT CALCULATE PMAXMOM FOR NH TYPE SOIL
B. THE ALLOWABLE STRESS CHECKS, ASC AND AST, ARE
NOT FULLY DEVELOPED FOR UNSUPPORTED PILES.
WORK IS IN PROGRESS TO COMPLETE THIS ASPECT OF CPGA.

ELASTIC CENTER LOCATION IS NOT COMPUTED FOR 3-DIMENSIONAL PROBLEMS.

SUNSET REACH E (5A) TOW EL 18.5 PINNED
DATA UNKNOWN - REJECTED.

THERE ARE 14 PILES AND
2 LOAD CASES IN THIS RUN.

ALL PILE COORDINATES ARE CONTAINED WITHIN A BOX

	X	Y	Z
WITH DIAGONAL COORDINATES = (	-18.00 ,	2.50 ,	0.00)
(	18.00 ,	7.50 ,	0.00)

****

PILE PROPERTIES AS INPUT

E	I1	I2	A	C33	B66
KSI	IN**4	IN**4	IN**2		
0.29000E+05	0.26100E+03	0.72900E+03	0.21400E+02	0.20000E+01	0.00000E+00

THESE PILE PROPERTIES APPLY TO THE FOLLOWING PILES -

ALL

****

SOIL DESCRIPTIONS AS INPUT

ES	ESOIL	LENGTH	L	LU
	K/IN**2		FT	FT

0.56000E-01 L 0.73000E+02 0.00000E+00

ESOIL(ORIGINAL) K/IN**2	RGROUP	RCYCLIC
0.56000E-01	0.1000E+01	0.1000E+01

THIS SOIL DESCRIPTION APPLIES TO THE FOLLOWING PILES -

ALL

****

PILE STIFFNESSES AS CALCULATED FROM PROPERTIES

0.55196E+01	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00
0.00000E+00	0.42696E+01	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00
0.00000E+00	0.00000E+00	0.14169E+04	0.00000E+00	0.00000E+00	0.00000E+00
0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00
0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00
0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00

THIS MATRIX APPLIES TO THE FOLLOWING PILES -

1

****

PILE GEOMETRY AS INPUT AND/OR GENERATED

NUM	X FT	Y FT	Z FT	BATTER	ANGLE	LENGTH FT	FIXITY
1	-18.00	2.50	0.00	5.00	270.00	73.00	P
2	-12.00	2.50	0.00	5.00	270.00	73.00	P
3	-6.00	2.50	0.00	5.00	270.00	73.00	P
4	0.00	2.50	0.00	5.00	270.00	73.00	P
5	6.00	2.50	0.00	5.00	270.00	73.00	P
6	12.00	2.50	0.00	5.00	270.00	73.00	P
7	18.00	2.50	0.00	5.00	270.00	73.00	P
8	-18.00	7.50	0.00	5.00	90.00	73.00	P
9	-12.00	7.50	0.00	5.00	90.00	73.00	P
10	-6.00	7.50	0.00	5.00	90.00	73.00	P
11	0.00	7.50	0.00	5.00	90.00	73.00	P
12	6.00	7.50	0.00	5.00	90.00	73.00	P
13	12.00	7.50	0.00	5.00	90.00	73.00	P
14	18.00	7.50	0.00	5.00	90.00	73.00	P

```
                                                      ------
                                                     1022.00
```

****

APPLIED LOADS

LOAD CASE	PX K	PY K	PZ K	MX FT-K	MY FT-K	MZ FT-K	OVERSTRESS COM	OVERSTRESS TEN
8	0.0	247.0	229.0	2559.0	0.0	0.0	1.33	1.33
9	0.0	247.0	229.0	2415.0	0.0	0.0	1.33	1.33

****

ORIGINAL PILE GROUP STIFFNESS MATRIX

```
 0.59774E+02  0.18920E-04 -0.46237E-04 -0.32526E-18  0.00000E+00 -0.35865E+04
 0.18920E-04  0.83725E+03  0.17053E-11  0.11400E+06 -0.72760E-11 -0.85142E-03
-0.46237E-04  0.90949E-12  0.19077E+05  0.11446E+07 -0.58208E-10  0.00000E+00
-0.32526E-18  0.11400E+06  0.11446E+07  0.85845E+08  0.00000E+00 -0.12484E+00
-0.43368E-18  0.00000E+00  0.58208E-10  0.74506E-08  0.39557E+09 -0.29802E-07
-0.35865E+04 -0.85142E-03 -0.14552E-10 -0.12484E+00 -0.31665E-07  0.17630E+08
```

14 PILES 2 LOAD CASES

LOAD CASE 8. NUMBER OF FAILURES = 0. NUMBER OF PILES IN TENSION = 7.

LOAD CASE 9. NUMBER OF FAILURES = 0. NUMBER OF PILES IN TENSION = 7.

****

PILE CAP DISPLACEMENTS

LOAD CASE	DX IN	DY IN	DZ IN	RX RAD	RY RAD	RZ RAD
8	-0.5066E-07	0.1672E+01	0.6187E+00	-0.1011E-01	0.9942E-19	-0.1170E-11
9	-0.4717E-07	0.1815E+01	0.6817E+00	-0.1116E-01	0.1099E-18	-0.9915E-12

****

PILE FORCES IN LOCAL GEOMETRY

M1 & M2 NOT AT PILE HEAD FOR PINNED PILES
* INDICATES PILE FAILURE
# INDICATES CBF BASED ON MOMENTS DUE TO
(F3*EMIN) FOR CONCRETE PILES
B INDICATES BUCKLING CONTROLS

LOAD CASE - 8

PILE	F1 K	F2 K	F3 K	M1 IN-K	M2 IN-K	M3 IN-K	ALF	CBF
1	-9.4	0.0	-26.4	0.0	596.0	0.0	0.28	0.32
2	-9.4	0.0	-26.4	0.0	596.0	0.0	0.28	0.32
3	-9.4	0.0	-26.4	0.0	596.0	0.0	0.28	0.32
4	-9.4	0.0	-26.4	0.0	596.0	0.0	0.28	0.32
5	-9.4	0.0	-26.4	0.0	596.0	0.0	0.28	0.32
6	-9.4	0.0	-26.4	0.0	596.0	0.0	0.28	0.32
7	-9.4	0.0	-26.4	0.0	596.0	0.0	0.28	0.32
8	9.4	0.0	59.8	0.0	-594.4	0.0	0.50	0.38
9	9.4	0.0	59.8	0.0	-594.4	0.0	0.50	0.38
10	9.4	0.0	59.8	0.0	-594.4	0.0	0.50	0.38
11	9.4	0.0	59.8	0.0	-594.4	0.0	0.50	0.38
12	9.4	0.0	59.8	0.0	-594.4	0.0	0.50	0.38
13	9.4	0.0	59.8	0.0	-594.4	0.0	0.50	0.38
14	9.4	0.0	59.8	0.0	-594.4	0.0	0.50	0.38

LOAD CASE - 9

PILE	F1 K	F2 K	F3 K	M1 IN-K	M2 IN-K	M3 IN-K	ALF	CBF
1	-10.2	0.0	-22.4	0.0	647.3	0.0	0.24	0.34
2	-10.2	0.0	-22.4	0.0	647.3	0.0	0.24	0.34
3	-10.2	0.0	-22.4	0.0	647.3	0.0	0.24	0.34
4	-10.2	0.0	-22.4	0.0	647.3	0.0	0.24	0.34
5	-10.2	0.0	-22.4	0.0	647.3	0.0	0.24	0.34
6	-10.2	0.0	-22.4	0.0	647.3	0.0	0.24	0.34
7	-10.2	0.0	-22.4	0.0	647.3	0.0	0.24	0.34
8	10.2	0.0	55.7	0.0	-645.6	0.0	0.47	0.40
9	10.2	0.0	55.7	0.0	-645.6	0.0	0.47	0.40
10	10.2	0.0	55.7	0.0	-645.6	0.0	0.47	0.40
11	10.2	0.0	55.7	0.0	-645.6	0.0	0.47	0.40
12	10.2	0.0	55.7	0.0	-645.6	0.0	0.47	0.40
13	10.2	0.0	55.7	0.0	-645.6	0.0	0.47	0.40
14	10.2	0.0	55.7	0.0	-645.6	0.0	0.47	0.40

****

PILE FORCES IN GLOBAL GEOMETRY

LOAD CASE - 8

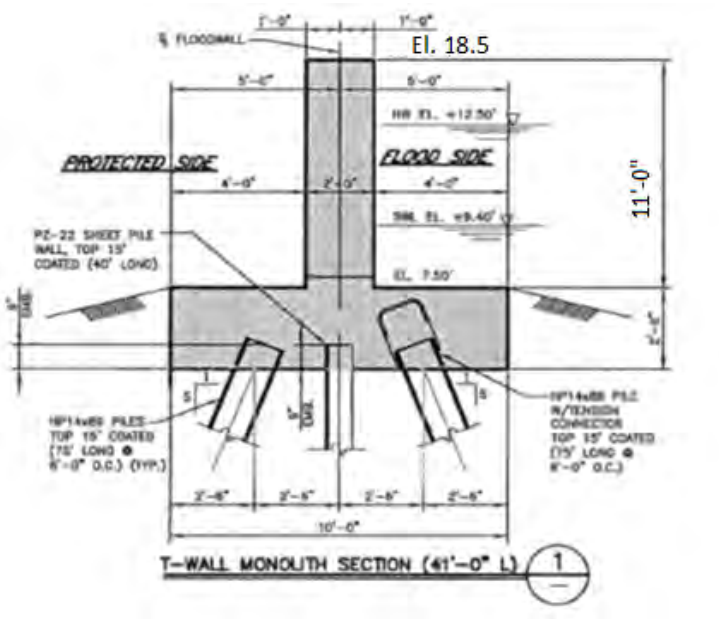
PILE	PX K	PY K	PZ K	MX IN-K	MY IN-K	MZ IN-K
1	0.0	14.4	-24.0	0.0	0.0	0.0
2	0.0	14.4	-24.0	0.0	0.0	0.0
3	0.0	14.4	-24.0	0.0	0.0	0.0
4	0.0	14.4	-24.0	0.0	0.0	0.0
5	0.0	14.4	-24.0	0.0	0.0	0.0
6	0.0	14.4	-24.0	0.0	0.0	0.0
7	0.0	14.4	-24.0	0.0	0.0	0.0
8	0.0	20.9	56.8	0.0	0.0	0.0
9	0.0	20.9	56.8	0.0	0.0	0.0
10	0.0	20.9	56.8	0.0	0.0	0.0
11	0.0	20.9	56.8	0.0	0.0	0.0
12	0.0	20.9	56.8	0.0	0.0	0.0
13	0.0	20.9	56.8	0.0	0.0	0.0
14	0.0	20.9	56.8	0.0	0.0	0.0

LOAD CASE - 9

PILE	PX K	PY K	PZ K	MX IN-K	MY IN-K	MZ IN-K
1	0.0	14.4	-19.9	0.0	0.0	0.0
2	0.0	14.4	-19.9	0.0	0.0	0.0
3	0.0	14.4	-19.9	0.0	0.0	0.0
4	0.0	14.4	-19.9	0.0	0.0	0.0
5	0.0	14.4	-19.9	0.0	0.0	0.0
6	0.0	14.4	-19.9	0.0	0.0	0.0
7	0.0	14.4	-19.9	0.0	0.0	0.0
8	0.0	20.9	52.6	0.0	0.0	0.0
9	0.0	20.9	52.6	0.0	0.0	0.0
10	0.0	20.9	52.6	0.0	0.0	0.0
11	0.0	20.9	52.6	0.0	0.0	0.0
12	0.0	20.9	52.6	0.0	0.0	0.0
13	0.0	20.9	52.6	0.0	0.0	0.0
14	0.0	20.9	52.6	0.0	0.0	0.0

NO FILES WERE GENERATED DURING THIS RUN.

Reach E Sunset twall (T-wall TOW El. 18.5)
T-Wall Stems Loads



Top of Stem EL.	18.5	Weight of Water:	0.062	k/ft^3
Bottom of Stem EL.	7.5	Moist Weight of Soil	0.120	k/ft^3
F.S. Soil EL.	7.5	Wave Load:	0	k/ft
P.S. Soil EL.	7.5	Wave Arm EL.	0	
S.W.L EL.	9.4	Debri	0.5	k/ft
P.S. Water EL.	0.0	Wind Load:	0.056	ksf
Ko:	0.8	Sat. Soil Weight:	0.058	k/ft^3

Note: Inputs are already referenced from t-wall foundation sheet.

Load Case 2b. Construction + Wind 1.6(D + Sur + Wind)

Item	Fy	z	**Mx**	**Vx**
Wind	0.62	5.50	3.39	0.62
Sub Total:			3.39	0.62
Total (Factored)			**5.42** ft-k/ft	**0.99** k/ft

Load Case 3a. Flowline 1.6(D + EH + EV + HF+ IU)

Item	Fy	z	**Mx**	**Vx**
F.S. Horizontal Water	0.11	0.63	0.07	0.11
P.S. Horizontal Water	0.00	0.00	0.00	0.00
F.S. Horizontal Soil	0.00	0.00	0.00	0.00
P.S. Horizontal Soil ($\gamma_{m\ tri}$)	0.00	0	0.0000	0.00
P.S. Horizontal Soil ($\gamma_{m\ rec}$)	0.00	-3.75	0.00	0.00
P.S. Horizontal Soil ($\gamma_{sat\ tri}$)	0.00	-2.50	0.00	0.00
Sub Total:			0.07	0.11
Total (Factored)			**0.11**	**0.18**
			ft-k/ft	k/ft

Load Case 3c. Flowline+Wind+Debri 1.6(D + EH + EV + H_F+ PU + I + W)

Item	Fy	z	**Mx**	**Vx**
F.S. Horizontal Water	0.11	0.63	0.07	0.11
P.S. Horizontal Water	0.00	0.00	0.00	0.00
F.S. Horizontal Soil	0.00	0.00	0.00	0.00
P.S. Horizontal Soil ($\gamma_{m\ tri}$)	0.00	0.00	0.00	0.00
P.S. Horizontal Soil ($\gamma_{m\ rec}$)	0.00	-3.75	0.00	0.00
P.S. Horizontal Soil ($\gamma_{sat\ tri}$)	0.00	-2.50	0.00	0.00
Wind	0.51	6.45	3.29	0.51
Debri	0.50	11.00	5.50	0.50
Sub Total:			8.86	1.12
Total (Factored)			**14.17**	**1.80**
			ft-k/ft	k/ft

Load Case 4a. Water to the Top + Debri 1.2D + 1.35EH_D + 0.9EH_R + 1.35EV + 1.3(H_{TW} + I + IU)

Item	Fy	z	**Mx**	**Vx**
F.S. Horizontal Water	3.78	3.67	13.84	3.78
P.S. Horizontal Water	0.00	0.00	0.00	0.00
F.S. Horizontal Soil	0.00	0.00	0.00	0.00
P.S. Horizontal Soil ($\gamma_{m\ tri}$)	0.00	0.00	0.00	0.00
P.S. Horizontal Soil ($\gamma_{m\ rec}$)	0.00	-3.75	0.00	0.00
P.S. Horizontal Soil ($\gamma_{sat\ tri}$)	0.00	-2.50	0.00	0.00
Debri	0.50	11.00	5.50	0.50
Total (Factored)			**25.15**	**5.56**
			ft-k/ft	k/ft

Load Case 4b. Water to the Top + Debri 0.9D + 1.35EH_D + 0.9EH_R + 1.0EV + 1.3(H_{TW} + I + IU)

Item	Fy	z	**Mx**	**Vx**

F.S. Horizontal Water	3.78	3.67	13.84	3.78
P.S. Horizontal Water	0.00	0.00	0.00	0.00
F.S. Horizontal Soil	0.00	0.00	0.00	0.00
P.S. Horizontal Soil ($\gamma_{m\ tri}$)	0.00	0.00	0.00	0.00
P.S. Horizontal Soil ($\gamma_{m\ rec}$)	0.00	-3.75	0.00	0.00
P.S. Horizontal Soil ($\gamma_{sat\ tri}$)	0.00	-2.50	0.00	0.00
Debri	0.50	11.00	5.50	0.50
Total (Factored)			**25.15**	**5.56**
			ft-k/ft	k/ft

Summary of Stem Loads		
	Mu	Vu
Load Case 2b	5.42	0.99
Load Case 3a	0.11	0.18
Load Case 3c	14.17	1.80
Load Case 4a	25.15	5.56
Load Case 4b	25.15	5.56
Maximum	25.15	5.56
	ft-k/ft	k/ft

Notation:

$A_{s\ min}$ = Minimum Area of Steel per linear foot of structure allowed by ACI / USACE. **(in^2)**

$A_{s\ Req'd}$ = Required Area of Steel per linear foot of structure using Ultimate Moment. **(in^2)**

b = Member width. **(Use 12in if forces are per linear foot of structure.)**

β_1 = ACI 318-14 Section 22.2

d = Distance from extreme compression fiber to centroid of tension reinforcement. **(in)**

f'c = Compressive strength of concrete. **(ksi ** except in Vc formula psi)**

f_y = Yield strength of steel. **(Usually 60 ksi.)**

ϕM_n = Nominal Moment strength **(k-in / linear foot)** ϕ = 0.9

M_u = Ultimate moment in sttructure. **(k-in / linear foot)**

ϕV_c = Nominal Shear strength **(lb / linear foot)** ϕ = 0.75

V_u = Ultimate shear in structure. **(lb / linear foot)**

t = Thickness of structure. **(In direction of applied moment) (in)**

ρ = Ratio of Reinforcement

ρ_b = Balanced Ratio of Reinforcement (0.0285 for 4ksi concrete)

Project: **Reach E Sunset twall (T-wall TOW El. 18.5)**
Reference: **T-wall** **40 ft Slab** **Stem Rebar Design**

Inputs:

M_u = 301.74 k-in / linear ft

V_u = 5557.76 lb/linear ft

b = 12 in

d = 19.5 in

t = 24 in

f'c = 4 ksi

f_y = 60 ksi

β_1 = 0.85 (unitless)

ρ_b = 0.0285 (unitless)

Check d_d

Mn= Mu/ϕ

Mn= 335.27 k-in / linear ft

$$d_d = \sqrt{\frac{2.4956 M_n}{b_w}} =$$ EM 1110-2-2104 (Table D-1)

d_d= 8.35 in

d > d_d ok

Calculations: ** All Areas are per side.

$$K_u = 1 - \sqrt{1 - \frac{M_n + P_n\left(d - \frac{h}{2}\right)}{0.425 f_c' b d^2}}$$ EM 1110-2-2104 (Table D-8)

P_n= 0

K_u= 0.021849

$$A_s = \frac{0.85 f_c' K_u b d - P_n}{f_y}$$ EM 1110-2-2104 (D-9)

$A_{s\ Req'd}$ = 0.29 in^2 /ft

$A_{s\ min}$ = 0.74 in^2 /ft = [3 b d √(f'c)] / F_y (psi) EM 1110-2-2104, Chapter 3

$A_{s\ min}$ = 0.78 in^2 /ft = 200 b d / F_y (psi) EM 1110-2-2104, Chapter 3

$A_{s\ min}$ = 0.39 in^2 /ft = 1.33 ($A_{s\ Req'd}$) EM 1110-2-2104, Chapter 3

Use A_s = 0.39 in^2 /ft Flexural

Temperature and Shrinkage Rebar

$A_{s\ t\&s}$ = 0.72 in^2 /ft = 0.005b t/2 per face -- EM 1110-2-2104 Table 2-3

Table 2-3. Minimum Shrinkage and Temperature Reinforcement Ratios for Various Joint Spacings.

Length Between Control Joints (ft)	Minimum Temperature and Shrinkage Reinforcement Ratio, Grade 60
Less than 30 ft	0.003
30-40 ft	0.004
Greater than 40 ft	0.005

Use $A_{s\ t\&s}$ =	0.72	in^2 /ft	per face	Use:	#8@12in	As:	0.78	in^2 /ft

Check Moment:

Calculate ϕM_n and compare to original M_u.

As Used:	0.78	in^2 /ft	Use:	#8@12in

ϕM_n = 797.18 k-in $= 0.9\ A_s\ F_y\ d\ (\ 1\ -(\ A_s\ F_y\ /\ 2\ \beta\ b\ d\ f'c)\ )$

M_u = 301.7414 k-in

If $\phi M_n > M_u$ then A_s is acceptable. **OK**

Check Shear:

Calculate ϕV_c and compare to V_u.

ϕV_c = 22.20 k $= 0.75 \times 2\ (\ \sqrt{f'c}\ )\ b\ d$

V_u = 5.56 k

If $\phi V_c > V_u$ then A_s is acceptable. **OK**

Check Ratio of Reinforcement: EM 1110-2-2104, Chapter 3.5

ρ = 0.003333 $\rho = A_s / b\ d$

$0.25\ \rho_b$ = 0.007125

$0.5\rho_b$ = 0.010688

$\rho \leq 0.25\ \rho_b$ (if possible)	OK
$\rho \leq 0.5\ \rho_b$ (always)	OK

Quantities
Sunset T-wall Reach E (5A)

1) Cast-in place concrete

Area of Base Slab per linear ft:	25	ft^2
Area of Stem per linear ft:	22.00	ft^2
Total area per linear ft:	47.00	ft^2
Width of slab:	10.00	ft

Sta. start:	223+84	
Sta end:	307+00	
Total stationing feet:	8316	ft
extra wall:	0	ft
Total Linear ft of wall:	8316	ft
Total Volume of Base Slab (CY)	7700	CY
Total Volume of Stem (CY):	6776	CY
Total volume of concrete (ft^3):	390852	ft^3
Total volume of concrete (CY):	14476	CY

2) Steel Sheet Piling

Cut off El.	5.75	
Tip El.	-34.25	
Length:	40	ft
Area of sheet pile:	335040	ft^2

3) HP 14x89 pile

Cut off El.	5.75	
Tip El.	-75	
Batter:	5	
Length:	82.34917	ft
spacing between piles	6	ft
total piles per row	2	
Total length of piles:	228271.9	LF

4) Stab slab

Depth:	0.333	ft
Total volume:	27692.28	ft^3
Total volume:	1025.64	CY

Load Case	Load Description	Load Category	Factored Loads
LC1	Normal Operation	0%	(D + EH + EV)
LC3	Construction	16.67%	(D + Sur)
LC4	Construction + Wind	33%	(D + Sur + W)
LC5	Flowline + Imperv Uplift	0%	(D + EH + EV + HF + IU)
LC6	Flowline + Perv Uplift	0%	(D + EH + EV + HF + PU)
LC7	Flowline + Imperv Uplift + Wind + Debris	33%	(D + EH + EV + HF + IU + I + W
LC8	Flowline + Perv Uplift + Wind + Debris	33%	(D + EH + EV + HF + PU + I + W
LC9	Freeboard + Imperv Uplift + Debris	33%	(D + EH + EV + HTW + I + IU)
LC10	Freeboard + Perv Uplift + Debris	33%	(D + EH + EV + HTW + I + PU)

D= Dead Load
EH= Horizontal Soil
EV = Vertical Soil
ES = Surcharge Load (200 psf)
W = Wind
HF = Water at Flowline
PU = Pervious Uplift
IU = Impervious Uplift
I = Debris Impact
H_{TW} = Water at Top of Wall
Sur = Surcharge

ASCE 7-10 Wind Load Calculation

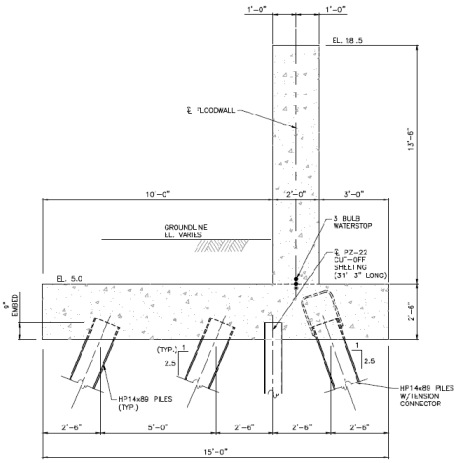
Wind on Wall

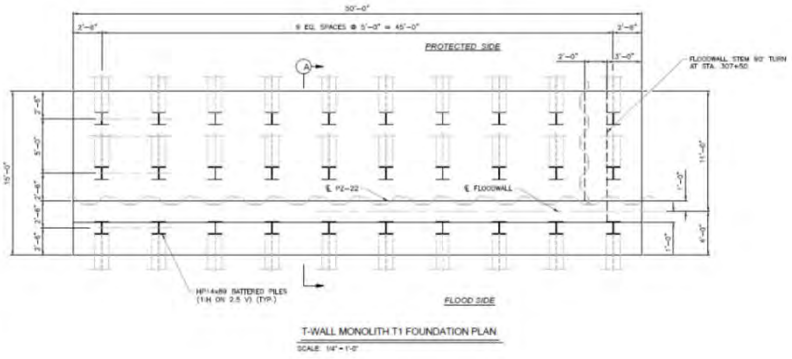
$$q_z = 0.00256 K_z K_{zt} K_d V^2 \text{ (lb/ft}^2\text{)} \qquad (27.3\text{-}1)$$

K_z=	1.03	
K_{zt}=	1	
K_d=	0.85	
V=	158	mph
q_z=	56.0	lb/ft^2

Reach E (5B) T1 Sunset twall

T-Wall Foundation Loads: Unfactored Loads for Pile Analysis





T-WALL MONOLITH T1 FOUNDATION PLAN

SCALE: 1/4" = 1'-0"

Top of Stem EL.	18.5		Weight of Water:	0.062	k/ft^3	
Top of Slab EL.	5.0		Weight Soil (FS)	0.120	k/ft^3	
Bottom of Slab EL.	2.5		Weight of Soil (PS):	0.12	k/ft^4	
Stem Width:	2.00	ft	Weight of Concrete:	0.150	k/ft^3	
F.S. Slab Width:	3	ft	Ko:	0.8		
P.S. Slab Width:	10	ft	Wave Load:	0	k/ft	
Length of Monolith:	50	ft	Wave Arm EL.	0		
Dist to Sheet Pile:	5	ft	Unbal. Load SWL:	0.0	k/ft	
F.S. Soil EL.	5.0		Unbal. Load HWL:	0.0	k/ft	
P.S. Soil EL.	5.0		Wind Load:	0.056	ksf	
S.W.L EL. (Flowline)	9.4		Boat Impact	0.5	k/ft	Debris applied at TOW for TOW LC
P.S. Water EL.	0.0		Construction Surcharge:	0.2	k/ft^2	

Width of Monolith:	15.0	ft	Area of Stem:	27.00	ft^2
Area of Base Slab:	37.5	ft^2	Bouyant Soil Weight (PS):	0.058	k/ft^3
			Bouyant Soil Weight (FS):	0.058	k/ft^4

Load Sheet Limitations - a) Straight aligned monoliths only b) No varying soil elevations along monolith
c) Constant stem thickness only d) Sheet only handles minimal impact loads

LC 1: **Load Case 1a.** Normal Operation

Item	Fx	Fy	Fz	x	y	z	Mx	My	Mz
Concrete Base			5.6		7.5		42.2		
Concrete Stem			4.1		4.000		16.2		
F.S. Vertical Soil			0.0		1.500		0.0		
F.S. Horizontal Soil (Base)		0.3				0.83	0.3		
P.S. Vertical Soil			0.0		10.00		0.0		
Sub Total:		0.3	9.7				58.6	0.0	0.0
Sub Total x Monolith Length:		15	484				2932	0	0
Total		**15**	**484**	**0**	**0**	**0**	**2932**	**0**	**0**

LC 3: **Load Case 2a.** Construction

Item	Fx	Fy	Fz	x	y	z	Mx	My	Mz
Concrete Base			5.6		7.5		42.2		
Concrete Stem			4.1		4.000		16.2		
F.S. Horizontal Soil (Base)		0.3				0.83	0.3		
Construction Surcharge(FS)			0.6		1.50		0.9		
Construction Surcharge(PS)			2.0		10.00		20.0		
Sub Total:		0.3	12.3				79.5		
Sub Total x Monolith Length:		15	613.75				3976.875	0	0
Total		**15**	**614**				**3977**		

LC 4: **Load Case 2b**. Construction + Wind

Item	Fx	Fy	Fz	x	y	z	Mx	My	Mz
Concrete Base			5.6		7.5		42.2		
Concrete Stem			4.1		4.000		16.2		
F.S. Horizontal Soil (Base)		0.3				0.83	0.3		
Construction Surcharge(FS)			0.6		1.5		0.9		
Construction Surcharge(PS)			2		10		20.0		
Wind		0.756				9.3	7.0		
Sub Total:		1.06	12.28				86.53	0.00	0.00
Sub Total x Monolith Length:		52.8	613.75				4326.525	0	0
Total		**53**	**614**				**4327**		

LC 5: **Load Case 3a**. Flowline, Impervious Uplift

Item	Fx	Fy	Fz	x	y	z	Mx	My	Mz
Concrete Base			5.6		7.50		42.2		
Concrete Stem			4.1		4.000		16.2		
F.S. Vertical Water			0.8		1.50		1.2		
F.S. Vertical Soil			0.0		1.50		0.0		
P.S. Vertical Water			0.0000		10.000		0.0		
P.S. Vertical Soil			0.0000		10.000		0.0		
F.S. Horizontal Water		1.5				2.30	3.4		
F.S. Horizontal Soil		0.144				0.83	0.1		
P.S. Horizontal Water		0.0000				0.00	0.0		
P.S. Horizontal Soil ($\gamma_{m\ tri}$)		-0.3000				0.83	-0.3		
P.S. Horizontal Soil ($\gamma_{m\ rec}$)		0.0				0.00	0.0		
P.S. Horizontal Soil ($\gamma_{sat\ tri}$)		0.0				0.00	0.0		
F.S. Impervious Uplift			-2.2		2.50		-5.4		
P.S. Impervious Uplift			0.0		10.00		0.0		
Unbalanced Force		0.0							
Sub Total:		1.3	8.3				57.5		
Sub Total x Monolith Length:		66.5	417.3				2,876.4	0.0	0.0
Total		**66**	**417**				**2876**		

LC 6: **Load Case 3b**. Flowline, Pervious Uplift

Item	Fx	Fy	Fz	x	y	z	Mx	My	Mz
Concrete Base			5.6		7.50		42.2		
Concrete Stem			4.1		4.000		16.2		
F.S. Vertical Water			0.8		1.50		1.2		
F.S. Vertical Soil			0.0		1.50		0.0		
P.S. Vertical Water			0.0		10.000		0.0		
P.S. Vertical Soil			0.000		10.000		0.0		
F.S. Horizontal Water		1.5				2.30	3.4		
F.S. Horizontal Soil		0.1				0.83	0.1		
P.S. Horizontal Water		0.000				0.00	0.0		
P.S. Horizontal Soil ($\gamma_{m\ tri}$)		-0.300				0.83	-0.3		
P.S. Horizontal Soil ($\gamma_{m\ rec}$)		0.0				0.00	0.0		
P.S. Horizontal Soil ($\gamma_{sat\ tri}$)		0.0				0.00	0.0		
Pervious Uplift (Rec.)			0.0		7.50		0.0		
Pervious Uplift (Tri.)			-3.2		5.00		-16.1		
Unbalanced Force		0.0							
Sub Total:		1.3	7.3				46.8		

Sub Total x Monolith Length:		66.5	363.5				2338.2	0.0	0.0
Total		**66**	**363**				**2338**		

LC 7: **Load Case 3c**. Flowline + Wind + Debri, Impervious Uplift

Item	Fx	Fy	Fz	x	y	z	Mx	My	Mz
Concrete Base			5.6		7.50		42.2		
Concrete Stem			4.1		4.000		16.2		
F.S. Vertical Water			0.8		1.50		1.2		
F.S. Vertical Soil			0.0		1.50		0.0		
P.S. Vertical Water			0.0		10.000		0.0		
P.S. Vertical Soil			0.000		10.000		0.0		
F.S. Horizontal Water		1.5				2.30	3.4		
F.S. Horizontal Soil		0.1				0.83	0.1		
P.S. Horizontal Water		0.000				0.00	0.0		
P.S. Horizontal Soil ($\gamma_{m\ tri}$)		-0.300				0.83	-0.3		
P.S. Horizontal Soil ($\gamma_{m\ rec}$)		0.0				0.00	0.0		
P.S. Horizontal Soil ($\gamma_{sat\ tri}$)		0.0				0.00	0.0		
F.S. Impervious Uplift			-2.2		2.50		-5.4		
P.S. Impervious Uplift			0.0		10.00		0.0		
Wind		0.5				11.45	5.8		
Debri		0.5				16.00	8.0		
Sub Total:		2.3	8.3				71.4		
Sub Total x Monolith Length:		117.0	417.3				3568.1	0.0	0.0
Total		**117**	**417**				**3568**		

LC 8: **Load Case 3d**. Flowline + Wind + Debri, Pervious Uplift

Item	Fx	Fy	Fz	x	y	z	Mx	My	Mz
Concrete Base			5.6		7.50		42.2		
Concrete Stem			4.1		4.000		16.2		
F.S. Vertical Water			0.8		1.50		1.2		
F.S. Vertical Soil			0.0		1.50		0.0		
P.S. Vertical Water			0.0		10.000		0.0		
P.S. Vertical Soil			0.000		10.000		0.0		
F.S. Horizontal Water		1.5				2.30	3.4		
F.S. Horizontal Soil		0.1				0.83	0.1		
P.S. Horizontal Water		0.000				0.00	0.0		
P.S. Horizontal Soil ($\gamma_{m\ tri}$)		-0.300				0.83	-0.3		
P.S. Horizontal Soil ($\gamma_{m\ rec}$)		0.0				0.00	0.0		
P.S. Horizontal Soil ($\gamma_{sat\ tri}$)		0.0				0.00	0.0		
Pervious Uplift (Rec.)			0.0		7.50		0.0		
Pervious Uplift (Tri.)			-3.2		5.00		-16.1		
Wind		0.5				11.45	5.8		
Debri		0.5				16.00	8.0		
Sub Total:		2.3	7.3				60.6		
Sub Total x Monolith Length:		117.0	363.5				3029.9	0.0	0.0
Total		**117**	**363**				**3030**		

LC 9: **Load Case 4a.** Water to the Top+ Debri, Impervious Uplift

Item	Fx	Fy	Fz	x	y	z	Mx	My	Mz
Concrete Base			5.6		7.50		42.2		
Concrete Stem			4.1		4.000		16.2		
F.S. Vertical Water			2.5		1.50		3.8		
F.S. Vertical Soil			0.0		1.50		0.0		
P.S. Vertical Water			0.0		10.000		0.0		
P.S. Vertical Soil			0.000		10.000		0.0		
F.S. Horizontal Water		8.0				5.33	42.6		
F.S. Horizontal Soil		0.1				0.83	0.1		
P.S. Horizontal Water		0.000				0.00	0.0		
P.S. Horizontal Soil ($\gamma_{m\ tri}$)		-0.300				0.83	-0.3		
P.S. Horizontal Soil ($\gamma_{m\ rec}$)		0.0				0.00	0.0		
P.S. Horizontal Soil ($\gamma_{sat\ tri}$)		0.0				0.00	0.0		
F.S. Impervious Uplift			-5.0		2.50		-12.5		
P.S. Impervious Uplift			0.0		10.00		0.0		
Debri		0.5				16.00	8.0		

Unbalanced Load		0.0						
Sub Total:		8.3	7.2			100.2		
Sub Total x Monolith Length:		416.6	360.5			5008.3	0.0	0.0
Total		**417**	**361**			**5008**		

LC 10: **Load Case 4b.** Water to the Top + Debri, Pervious Uplift

Item	Fx	Fy	Fz	x	y	z	Mx	My	Mz
Concrete Base			5.6		7.50		42.2		
Concrete Stem			4.1		4.000		16.2		
F.S. Vertical Water			2.5		1.50		3.8		
F.S. Vertical Soil			0.0		1.50		0.0		
P.S. Vertical Water			0.0		10.000		0.0		
P.S. Vertical Soil			0.000		10.000		0.0		
F.S. Horizontal Water		8.0				5.33	42.6		
F.S. Horizontal Soil		0.1				0.83	0.1		
P.S. Horizontal Water		0.000				0.00	0.0		
P.S. Horizontal Soil ($\gamma_{m\ tri}$)		-0.300				0.83	-0.3		
P.S. Horizontal Soil ($\gamma_{m\ rec}$)		0.0				0.00	0.0		
P.S. Horizontal Soil ($\gamma_{sat\ tri}$)		0.0				0.00	0.0		
Pervious Uplift (Rec.)			0.0		7.50		0.0		
Pervious Uplift (Tri.)			-7.5		5.00		-37.4		
Debri		0.5				16.00	8.0		
Unbalanced Load		0.0							
Sub Total:		8.3	4.7				75.2		
Sub Total x Monolith Length:		416.6	235.7				3760.3	0.0	0.0
Total		**417**	**236**				**3760**		

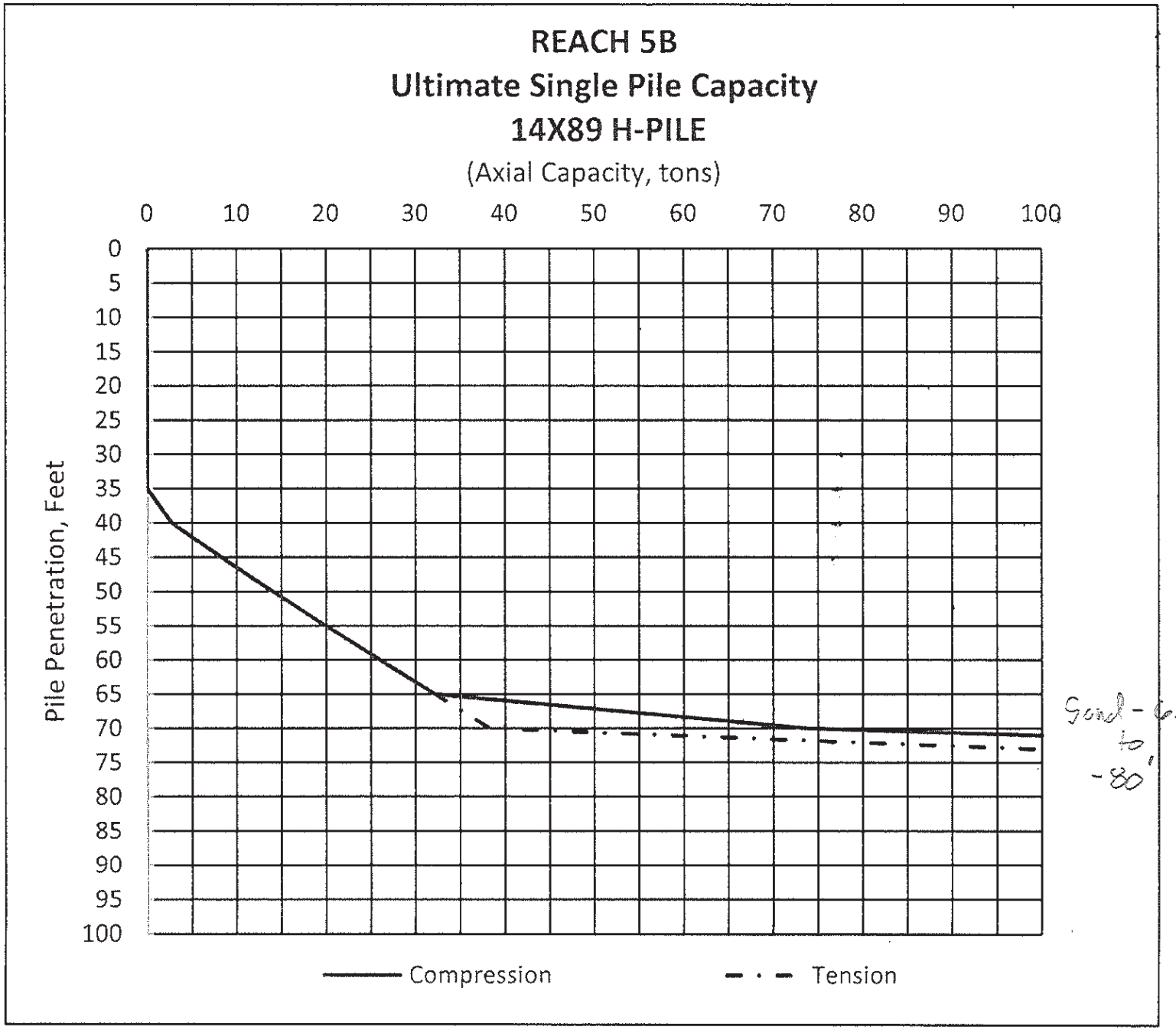
Summary Table of CPGA Loads

		Fx	Fy	Fz	Mx	My	Mz
Load Case 1a	**LOAD 1**	**0.0**	**15.0**	**483.8**	**2,931.9**	**0.0**	**0.0**
Load Case 2a	**LOAD 3**	**0.0**	**15.0**	**613.8**	**3,976.9**	**0.0**	**0.0**
Load Case 2b	**LOAD 4**	**0.0**	**52.8**	**613.8**	**4,326.5**	**0.0**	**0.0**
Load Case 3a	**LOAD 5**	**0.0**	**66.5**	**417.3**	**2,876.4**	**0.0**	**0.0**
Load Case 3b	**LOAD 6**	**0.0**	**66.5**	**363.5**	**2,338.2**	**0.0**	**0.0**
Load Case 3c	**LOAD 7**	**0.0**	**117.0**	**417.3**	**3,568.1**	**0.0**	**0.0**
Load Case 3d	**LOAD 8**	**0.0**	**117.0**	**363.5**	**3,029.9**	**0.0**	**0.0**
Load Case 4a	**LOAD 9**	**0.0**	**416.6**	**360.5**	**5,008.3**	**0.0**	**0.0**
Load Case 4b	**LOAD 10**	**0.0**	**416.6**	**235.7**	**3,760.3**	**0.0**	**0.0**

Table 7l - Reach 05A Centerline/ Protected Side Subsoil Profile Description					
Soil Stratum	Elevation (ft., NAVD88)	Wet Unit Weight (pcf)	Cohesion (psf)		Friction Angle (deg.)
			Top	Bottom	
1 - Levee Fill: Compacted Clay (CH)	+8 to +1	115	500	500	0
2 - Firm Clay (CL/CH)	+1 to -7	110	350	350	0
3 - Firm Clay (CL/CH)	-7 to -10	110	350	350	0
4 - Firm Clay (CL/CH)	-10 to -16	106	300	300	0
5 - Firm Clay (CL/CH)	-16 to -31	106	300	300	0
6 - Firm Clay (CL/CH)	-31 to -47	106	425	425	0
7 - Firm Clay (CL/CH)	-47 to -63	108	425	425	0
8 - Dense Sand (SP/SM)	-63 to -70	122	0	0	30
9 - Dense Sand (SP/SM)	-70 to -125	122	0	0	30

Table 7m - Reach 05B Water Subsoil Profile Description					
Soil Stratum	Elevation (ft., NAVD88)	Wet Unit Weight (pcf)	Cohesion (psf)		Friction Angle (deg.)
			Top	Bottom	
1 - --	+8 to +2	--	--	--	--
2 - Soft Clay (CL/CH)	+2 to -10	103	250	250	0
3 - Soft Clay (CL/CH)	-10 to -16	103	250	250	0
4 - Soft Clay (CL/CH)	-16 to -31	105	250	250	0
5 - Soft Clay (CL/CH)	-31 to -47	105	250	250	0
6 - Soft Clay (CL/CH)	-47 to -61	105	250	250	0
7 - Dense Sand (SP/SM)	-61 to -75	122	0	0	30
8 - Firm Clay (CL/CH)	-75 to 125	110	450	450	0

Table 7n - Reach 05B Flood Side Subsoil Profile Description					
Soil Stratum	Elevation (ft., NAVD88)	Wet Unit Weight (pcf)	Cohesion (psf)		Friction Angle (deg.)
			Top	Bottom	
1 - Levee Fill: Compacted Clay (CH)	+8 to +2	115	500	500	0
2 - Firm Clay (CL/CH)	+2 to -10	95	350	350	0
3 - Firm Clay (CL/CH)	-10 to -16	103	350	383	0
4 - Firm Clay (CL/CH)	-16 to -31	103	383	463	0
5 - Firm Clay (CL/CH)	-31 to -47	103	463	550	0
6 - Firm Clay (CL/CH)	-47 to -61	103	525	525	0
7 - Dense Sand (SP/SM)	-61 to -80	122	0	0	30
8 - Firm Clay (CL/CH)	-80 to 125	110	450	450	0


REACH 5B
Ultimate Single Pile Capacity
14X89 H-PILE
(Axial Capacity, tons)
0
10
20
30
40
50
60
70
80
90
100
Pile Penetration, Feet
0
5
10
15
20
25
30
35
40
45
50
55
60
65
70
75
80
85
90
95
100
Compression
Tension
Sand - 62'
to
-80'

```
10  Sunset Reach E (5B) T1 Twall Fixed
20  PIL  1  -22.5   2.5   0
30  BAT   2   1
40  ANG   270   1
50  PIL  2  -17.5   2.5   0
60  BAT   2   2
70  ANG   270   2
80  PIL  3  -12.5   2.5   0
90  BAT   2   3
100  ANG   270   3
110  PIL  4  -7.5   2.5   0
120  BAT   2   4
130  ANG   270   4
140  PIL  5  -2.5   2.5   0
150  BAT   2   5
160  ANG   270   5
170  PIL  6   2.5   2.5   0
180  BAT   2   6
190  ANG   270   6
200  PIL  7   7.5   2.5   0
210  BAT   2   7
220  ANG   270   7
230  PIL  8   12.5   2.5   0
240  BAT   2   8
250  ANG   270   8
260  PIL  9   17.5   2.5   0
270  BAT   2   9
280  ANG   270   9
290  PIL  10   22.5   2.5   0
300  BAT   2   10
310  ANG   270   10
320  PIL  11  -22.5   7.5   0
330  BAT   2   11
340  ANG   90   11
350  PIL  12  -17.5   7.5   0
360  BAT   2   12
370  ANG   90   12
380  PIL  13  -12.5   7.5   0
390  BAT   2   13
400  ANG   90   13
410  PIL  14  -7.5   7.5   0
420  BAT   2   14
430  ANG   90   14
440  PIL  15  -2.5   7.5   0
450  BAT   2   15
460  ANG   90   15
470  PIL  16   2.5   7.5   0
480  BAT   2   16
490  ANG   90   16
500  PIL  17   7.5   7.5   0
```

```
510  BAT   2   17
520  ANG   90   17
530  PIL  18   12.5   7.5   0
540  BAT   2   18
550  ANG   90   18
560  PIL  19   17.5   7.5   0
570  BAT   2   19
580  ANG   90   19
590  PIL  20   22.5   7.5   0
600  BAT   2   20
610  ANG   90   20
620  PIL  21  -22.5   12.5   0
630  BAT   2   21
640  ANG   90   21
650  PIL  22  -17.5   12.5   0
660  BAT   2   22
670  ANG   90   22
680  PIL  23  -12.5   12.5   0
690  BAT   2   23
700  ANG   90   23
710  PIL  24  -7.5   12.5   0
720  BAT   2   24
730  ANG   90   24
740  PIL  25  -2.5   12.5   0
750  BAT   2   25
760  ANG   90   25
770  PIL  26   2.5   12.5   0
780  BAT   2   26
790  ANG   90   26
800  PIL  27   7.5   12.5   0
810  BAT   2   27
820  ANG   90   27
830  PIL  28   12.5   12.5   0
840  BAT   2   28
850  ANG   90   28
860  PIL  29   17.5   12.5   0
870  BAT   2   29
880  ANG   90   29
890  PIL  30   22.5   12.5   0
900  BAT   2   30
910  ANG   90   30
920  PRO  29000  326  904  26.1  2  0  1 TO 30
930  SOI ES 0.0345 L  69  0  1 TO 30
940  RED  1  1  1
950  ALL H 107  85  652  652  1107  3275  1 TO 30
960  FIX  1 TO 30
970  LOA  1  0  15  484  2932  0  0
970  LOA  2  0  15  614  3977  0  0
970  LOA  3  0  53  614  4327  0  0
970  LOA  4  0  66  417  2876  0  0
```

```
970  LOA  5  0  66  363  2338  0  0
970  LOA  6  0  117  417  3568  0  0
970  LOA  7  0  117  363  3030  0  0
970  FOV  1.167  1.167  2
970  FOV  1.33  1.33  3
970  FOV  1.33  1.33  6
970  FOV  1.33  1.33  7
980  TOUT 1 2 3 4 5 6 7
990  PFO ALL
1000  PLB ALL
```

CPGA - CASE PILE GROUP ANALYSIS PROGRAM
RUN DATE: 01-SEP-20 RUN TIME: 20:06:20

FOR PILES WITH UNSUPPORTED HEIGHT:
A. CPGA CANNOT CALCULATE PMAXMOM FOR NH TYPE SOIL
B. THE ALLOWABLE STRESS CHECKS, ASC AND AST, ARE
NOT FULLY DEVELOPED FOR UNSUPPORTED PILES.
WORK IS IN PROGRESS TO COMPLETE THIS ASPECT OF CPGA.

ELASTIC CENTER LOCATION IS NOT COMPUTED FOR 3-DIMENSIONAL PROBLEMS.

SUNSET REACH E (5B) T1 TWALL FIXED
DATA UNKNOWN - REJECTED.

THERE ARE 30 PILES AND
7 LOAD CASES IN THIS RUN.

ALL PILE COORDINATES ARE CONTAINED WITHIN A BOX

	X	Y	Z
WITH DIAGONAL COORDINATES = (	-22.50 ,	2.50 ,	0.00)
(	22.50 ,	12.50 ,	0.00)

****

PILE PROPERTIES AS INPUT

E	I1	I2	A	C33	B66
KSI	IN**4	IN**4	IN**2		
0.29000E+05	0.32600E+03	0.90400E+03	0.26100E+02	0.20000E+01	0.00000E+00

THESE PILE PROPERTIES APPLY TO THE FOLLOWING PILES -

ALL

****

SOIL DESCRIPTIONS AS INPUT

ES	ESOIL	LENGTH	L	LU
	K/IN**2		FT	FT

```
        0.34500E-01    L      0.69000E+02   0.00000E+00

 ESOIL(ORIGINAL)     RGROUP     RCYCLIC
   K/IN**2
  0.34500E-01       0.1000E+01 0.1000E+01
```

THIS SOIL DESCRIPTION APPLIES TO THE FOLLOWING PILES -

ALL

****

PILE STIFFNESSES AS CALCULATED FROM PROPERTIES

```
 0.81007E+01  0.00000E+00  0.00000E+00  0.00000E+00  0.95103E+03  0.00000E+00
 0.00000E+00  0.62774E+01  0.00000E+00 -0.57111E+03  0.00000E+00  0.00000E+00
 0.00000E+00  0.00000E+00  0.18283E+04  0.00000E+00  0.00000E+00  0.00000E+00
 0.00000E+00 -0.57111E+03  0.00000E+00  0.10392E+06  0.00000E+00  0.00000E+00
 0.95103E+03  0.00000E+00  0.00000E+00  0.00000E+00  0.22330E+06  0.00000E+00
 0.00000E+00  0.00000E+00  0.00000E+00  0.00000E+00  0.00000E+00  0.00000E+00
```

THIS MATRIX APPLIES TO THE FOLLOWING PILES -

1

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PILE GEOMETRY AS INPUT AND/OR GENERATED

NUM	X FT	Y FT	Z FT	BATTER	ANGLE	LENGTH FT	FIXITY
1	-22.50	2.50	0.00	2.00	270.00	69.00	F
2	-17.50	2.50	0.00	2.00	270.00	69.00	F
3	-12.50	2.50	0.00	2.00	270.00	69.00	F
4	-7.50	2.50	0.00	2.00	270.00	69.00	F
5	-2.50	2.50	0.00	2.00	270.00	69.00	F
6	2.50	2.50	0.00	2.00	270.00	69.00	F
7	7.50	2.50	0.00	2.00	270.00	69.00	F
8	12.50	2.50	0.00	2.00	270.00	69.00	F
9	17.50	2.50	0.00	2.00	270.00	69.00	F
10	22.50	2.50	0.00	2.00	270.00	69.00	F
11	-22.50	7.50	0.00	2.00	90.00	69.00	F
12	-17.50	7.50	0.00	2.00	90.00	69.00	F
13	-12.50	7.50	0.00	2.00	90.00	69.00	F
14	-7.50	7.50	0.00	2.00	90.00	69.00	F

15	-2.50	7.50	0.00	2.00	90.00	69.00	F
16	2.50	7.50	0.00	2.00	90.00	69.00	F
17	7.50	7.50	0.00	2.00	90.00	69.00	F
18	12.50	7.50	0.00	2.00	90.00	69.00	F
19	17.50	7.50	0.00	2.00	90.00	69.00	F
20	22.50	7.50	0.00	2.00	90.00	69.00	F
21	-22.50	12.50	0.00	2.00	90.00	69.00	F
22	-17.50	12.50	0.00	2.00	90.00	69.00	F
23	-12.50	12.50	0.00	2.00	90.00	69.00	F
24	-7.50	12.50	0.00	2.00	90.00	69.00	F
25	-2.50	12.50	0.00	2.00	90.00	69.00	F
26	2.50	12.50	0.00	2.00	90.00	69.00	F
27	7.50	12.50	0.00	2.00	90.00	69.00	F
28	12.50	12.50	0.00	2.00	90.00	69.00	F
29	17.50	12.50	0.00	2.00	90.00	69.00	F
30	22.50	12.50	0.00	2.00	90.00	69.00	F

						2070.00	

****

APPLIED LOADS

LOAD CASE	PX K	PY K	PZ K	MX FT-K	MY FT-K	MZ FT-K	OVERSTRESS COM	TEN
1	0.0	15.0	484.0	2932.0	0.0	0.0		
2	0.0	15.0	614.0	3977.0	0.0	0.0	1.17	1.17
3	0.0	53.0	614.0	4327.0	0.0	0.0	1.33	1.33
4	0.0	66.0	417.0	2876.0	0.0	0.0		
5	0.0	66.0	363.0	2338.0	0.0	0.0		
6	0.0	117.0	417.0	3568.0	0.0	0.0	1.33	1.33
7	0.0	117.0	363.0	3030.0	0.0	0.0	1.33	1.33

****

ORIGINAL PILE GROUP STIFFNESS MATRIX

0.18832E+03	0.22259E-03	-0.88591E-04	0.13082E-01	0.15324E+05	-0.19503E+05
0.22259E-03	0.11164E+05	0.72806E+04	0.15034E+07	0.20674E-03	-0.14722E-01
-0.88591E-04	0.72806E+04	0.43927E+05	0.39577E+07	0.51752E-04	-0.13289E-01
0.13082E-01	0.15034E+07	0.39577E+07	0.46972E+09	-0.93042E-01	-0.24530E+01
0.15324E+05	0.20674E-03	0.51752E-04	-0.93042E-01	0.13071E+10	-0.21803E+09
-0.19503E+05	-0.14722E-01	-0.13289E-01	-0.24530E+01	-0.21803E+09	0.33524E+09

30 PILES 7 LOAD CASES

LOAD CASE 1. NUMBER OF FAILURES = 0. NUMBER OF PILES IN TENSION = 0.

LOAD CASE 2. NUMBER OF FAILURES = 0. NUMBER OF PILES IN TENSION = 0.

LOAD CASE 3. NUMBER OF FAILURES = 0. NUMBER OF PILES IN TENSION = 0.

LOAD CASE 4. NUMBER OF FAILURES = 0. NUMBER OF PILES IN TENSION = 0.

LOAD CASE 5. NUMBER OF FAILURES = 0. NUMBER OF PILES IN TENSION = 0.

LOAD CASE 6. NUMBER OF FAILURES = 0. NUMBER OF PILES IN TENSION = 0.

LOAD CASE 7. NUMBER OF FAILURES = 0. NUMBER OF PILES IN TENSION = 0.

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PILE CAP DISPLACEMENTS

LOAD CASE	DX IN	DY IN	DZ IN	RX RAD	RY RAD	RZ RAD
1	0.1386E-07	-0.5908E-03	0.1742E-01	-0.7002E-04	-0.9141E-14	0.9527E-12
2	0.1771E-07	-0.8277E-02	0.1581E-01	-0.5138E-05	0.2469E-14	0.1258E-11
3	0.1278E-07	-0.6464E-02	0.1339E-01	0.1841E-04	0.4447E-13	0.1154E-11
4	0.5239E-08	0.5483E-02	0.1472E-01	-0.6810E-04	0.4205E-13	0.6581E-12
5	0.3780E-08	0.1126E-01	0.1770E-01	-0.1255E-03	0.3070E-13	0.5181E-12
6	-0.1677E-08	0.2381E-02	0.6528E-02	0.2853E-04	0.1124E-12	0.5476E-12
7	-0.3137E-08	0.8161E-02	0.9508E-02	-0.2882E-04	0.1010E-12	0.4076E-12

****

PILE FORCES IN LOCAL GEOMETRY

M1 & M2 NOT AT PILE HEAD FOR PINNED PILES
* INDICATES PILE FAILURE
# INDICATES CBF BASED ON MOMENTS DUE TO
(F3*EMIN) FOR CONCRETE PILES
B INDICATES BUCKLING CONTROLS

LOAD CASE - 1

PILE	F1 K	F2 K	F3 K	M1 IN-K	M2 IN-K	M3 IN-K	ALF	CBF

1	-0.1	0.0	25.5	0.0	-21.7	0.0	0.24	0.05
2	-0.1	0.0	25.5	0.0	-21.7	0.0	0.24	0.05
3	-0.1	0.0	25.5	0.0	-21.7	0.0	0.24	0.05
4	-0.1	0.0	25.5	0.0	-21.7	0.0	0.24	0.05
5	-0.1	0.0	25.5	0.0	-21.7	0.0	0.24	0.05
6	-0.1	0.0	25.5	0.0	-21.7	0.0	0.24	0.05
7	-0.1	0.0	25.5	0.0	-21.7	0.0	0.24	0.05
8	-0.1	0.0	25.5	0.0	-21.7	0.0	0.24	0.05
9	-0.1	0.0	25.5	0.0	-21.7	0.0	0.24	0.05
10	-0.1	0.0	25.5	0.0	-21.7	0.0	0.24	0.05
11	0.0	0.0	17.7	0.0	10.4	0.0	0.17	0.03
12	0.0	0.0	17.7	0.0	10.4	0.0	0.17	0.03
13	0.0	0.0	17.7	0.0	10.4	0.0	0.17	0.03
14	0.0	0.0	17.7	0.0	10.4	0.0	0.17	0.03
15	0.0	0.0	17.7	0.0	10.4	0.0	0.17	0.03
16	0.0	0.0	17.7	0.0	10.4	0.0	0.17	0.03
17	0.0	0.0	17.7	0.0	10.4	0.0	0.17	0.03
18	0.0	0.0	17.7	0.0	10.4	0.0	0.17	0.03
19	0.0	0.0	17.7	0.0	10.4	0.0	0.17	0.03
20	0.0	0.0	17.7	0.0	10.4	0.0	0.17	0.03
21	0.0	0.0	10.8	0.0	12.2	0.0	0.10	0.02
22	0.0	0.0	10.8	0.0	12.2	0.0	0.10	0.02
23	0.0	0.0	10.8	0.0	12.2	0.0	0.10	0.02
24	0.0	0.0	10.8	0.0	12.2	0.0	0.10	0.02
25	0.0	0.0	10.8	0.0	12.2	0.0	0.10	0.02
26	0.0	0.0	10.8	0.0	12.2	0.0	0.10	0.02
27	0.0	0.0	10.8	0.0	12.2	0.0	0.10	0.02
28	0.0	0.0	10.8	0.0	12.2	0.0	0.10	0.02
29	0.0	0.0	10.8	0.0	12.2	0.0	0.10	0.02
30	0.0	0.0	10.8	0.0	12.2	0.0	0.10	0.02

LOAD CASE - 2

PILE	F1 K	F2 K	F3 K	M1 IN-K	M2 IN-K	M3 IN-K	ALF	CBF
1	0.0	0.0	32.4	0.0	-0.8	0.0	0.26	0.04
2	0.0	0.0	32.4	0.0	-0.8	0.0	0.26	0.04
3	0.0	0.0	32.4	0.0	-0.8	0.0	0.26	0.04
4	0.0	0.0	32.4	0.0	-0.8	0.0	0.26	0.04
5	0.0	0.0	32.4	0.0	-0.8	0.0	0.26	0.04
6	0.0	0.0	32.4	0.0	-0.8	0.0	0.26	0.04
7	0.0	0.0	32.4	0.0	-0.8	0.0	0.26	0.04
8	0.0	0.0	32.4	0.0	-0.8	0.0	0.26	0.04
9	0.0	0.0	32.4	0.0	-0.8	0.0	0.26	0.04
10	0.0	0.0	32.4	0.0	-0.8	0.0	0.26	0.04
11	-0.1	0.0	18.3	0.0	-12.4	0.0	0.15	0.03
12	-0.1	0.0	18.3	0.0	-12.4	0.0	0.15	0.03
13	-0.1	0.0	18.3	0.0	-12.4	0.0	0.15	0.03

14	-0.1	0.0	18.3	0.0	-12.4	0.0	0.15	0.03
15	-0.1	0.0	18.3	0.0	-12.4	0.0	0.15	0.03
16	-0.1	0.0	18.3	0.0	-12.4	0.0	0.15	0.03
17	-0.1	0.0	18.3	0.0	-12.4	0.0	0.15	0.03
18	-0.1	0.0	18.3	0.0	-12.4	0.0	0.15	0.03
19	-0.1	0.0	18.3	0.0	-12.4	0.0	0.15	0.03
20	-0.1	0.0	18.3	0.0	-12.4	0.0	0.15	0.03
21	-0.1	0.0	17.8	0.0	-12.3	0.0	0.14	0.03
22	-0.1	0.0	17.8	0.0	-12.3	0.0	0.14	0.03
23	-0.1	0.0	17.8	0.0	-12.3	0.0	0.14	0.03
24	-0.1	0.0	17.8	0.0	-12.3	0.0	0.14	0.03
25	-0.1	0.0	17.8	0.0	-12.3	0.0	0.14	0.03
26	-0.1	0.0	17.8	0.0	-12.3	0.0	0.14	0.03
27	-0.1	0.0	17.8	0.0	-12.3	0.0	0.14	0.03
28	-0.1	0.0	17.8	0.0	-12.3	0.0	0.14	0.03
29	-0.1	0.0	17.8	0.0	-12.3	0.0	0.14	0.03
30	-0.1	0.0	17.8	0.0	-12.3	0.0	0.14	0.03

LOAD CASE - 3

PILE	F1 K	F2 K	F3 K	M1 IN-K	M2 IN-K	M3 IN-K	ALF	CBF
1	0.0	0.0	28.1	0.0	3.7	0.0	0.20	0.03
2	0.0	0.0	28.1	0.0	3.7	0.0	0.20	0.03
3	0.0	0.0	28.1	0.0	3.7	0.0	0.20	0.03
4	0.0	0.0	28.1	0.0	3.7	0.0	0.20	0.03
5	0.0	0.0	28.1	0.0	3.7	0.0	0.20	0.03
6	0.0	0.0	28.1	0.0	3.7	0.0	0.20	0.03
7	0.0	0.0	28.1	0.0	3.7	0.0	0.20	0.03
8	0.0	0.0	28.1	0.0	3.7	0.0	0.20	0.03
9	0.0	0.0	28.1	0.0	3.7	0.0	0.20	0.03
10	0.0	0.0	28.1	0.0	3.7	0.0	0.20	0.03
11	-0.1	0.0	19.3	0.0	-16.0	0.0	0.14	0.03
12	-0.1	0.0	19.3	0.0	-16.0	0.0	0.14	0.03
13	-0.1	0.0	19.3	0.0	-16.0	0.0	0.14	0.03
14	-0.1	0.0	19.3	0.0	-16.0	0.0	0.14	0.03
15	-0.1	0.0	19.3	0.0	-16.0	0.0	0.14	0.03
16	-0.1	0.0	19.3	0.0	-16.0	0.0	0.14	0.03
17	-0.1	0.0	19.3	0.0	-16.0	0.0	0.14	0.03
18	-0.1	0.0	19.3	0.0	-16.0	0.0	0.14	0.03
19	-0.1	0.0	19.3	0.0	-16.0	0.0	0.14	0.03
20	-0.1	0.0	19.3	0.0	-16.0	0.0	0.14	0.03
21	-0.1	0.0	21.1	0.0	-16.5	0.0	0.15	0.03
22	-0.1	0.0	21.1	0.0	-16.5	0.0	0.15	0.03
23	-0.1	0.0	21.1	0.0	-16.5	0.0	0.15	0.03
24	-0.1	0.0	21.1	0.0	-16.5	0.0	0.15	0.03
25	-0.1	0.0	21.1	0.0	-16.5	0.0	0.15	0.03
26	-0.1	0.0	21.1	0.0	-16.5	0.0	0.15	0.03

27	-0.1	0.0	21.1	0.0	-16.5	0.0	0.15	0.03
28	-0.1	0.0	21.1	0.0	-16.5	0.0	0.15	0.03
29	-0.1	0.0	21.1	0.0	-16.5	0.0	0.15	0.03
30	-0.1	0.0	21.1	0.0	-16.5	0.0	0.15	0.03

LOAD CASE - 4

PILE	F1 K	F2 K	F3 K	M1 IN-K	M2 IN-K	M3 IN-K	ALF	CBF
1	-0.2	0.0	16.2	0.0	-25.3	0.0	0.15	0.03
2	-0.2	0.0	16.2	0.0	-25.3	0.0	0.15	0.03
3	-0.2	0.0	16.2	0.0	-25.3	0.0	0.15	0.03
4	-0.2	0.0	16.2	0.0	-25.3	0.0	0.15	0.03
5	-0.2	0.0	16.2	0.0	-25.3	0.0	0.15	0.03
6	-0.2	0.0	16.2	0.0	-25.3	0.0	0.15	0.03
7	-0.2	0.0	16.2	0.0	-25.3	0.0	0.15	0.03
8	-0.2	0.0	16.2	0.0	-25.3	0.0	0.15	0.03
9	-0.2	0.0	16.2	0.0	-25.3	0.0	0.15	0.03
10	-0.2	0.0	16.2	0.0	-25.3	0.0	0.15	0.03
11	0.1	0.0	18.5	0.0	16.2	0.0	0.17	0.03
12	0.1	0.0	18.5	0.0	16.2	0.0	0.17	0.03
13	0.1	0.0	18.5	0.0	16.2	0.0	0.17	0.03
14	0.1	0.0	18.5	0.0	16.2	0.0	0.17	0.03
15	0.1	0.0	18.5	0.0	16.2	0.0	0.17	0.03
16	0.1	0.0	18.5	0.0	16.2	0.0	0.17	0.03
17	0.1	0.0	18.5	0.0	16.2	0.0	0.17	0.03
18	0.1	0.0	18.5	0.0	16.2	0.0	0.17	0.03
19	0.1	0.0	18.5	0.0	16.2	0.0	0.17	0.03
20	0.1	0.0	18.5	0.0	16.2	0.0	0.17	0.03
21	0.1	0.0	11.8	0.0	18.0	0.0	0.11	0.02
22	0.1	0.0	11.8	0.0	18.0	0.0	0.11	0.02
23	0.1	0.0	11.8	0.0	18.0	0.0	0.11	0.02
24	0.1	0.0	11.8	0.0	18.0	0.0	0.11	0.02
25	0.1	0.0	11.8	0.0	18.0	0.0	0.11	0.02
26	0.1	0.0	11.8	0.0	18.0	0.0	0.11	0.02
27	0.1	0.0	11.8	0.0	18.0	0.0	0.11	0.02
28	0.1	0.0	11.8	0.0	18.0	0.0	0.11	0.02
29	0.1	0.0	11.8	0.0	18.0	0.0	0.11	0.02
30	0.1	0.0	11.8	0.0	18.0	0.0	0.11	0.02

LOAD CASE - 5

PILE	F1 K	F2 K	F3 K	M1 IN-K	M2 IN-K	M3 IN-K	ALF	CBF
1	-0.3	0.0	13.6	0.0	-43.5	0.0	0.13	0.03
2	-0.3	0.0	13.6	0.0	-43.5	0.0	0.13	0.03

3	-0.3	0.0	13.6	0.0	-43.5	0.0	0.13	0.03
4	-0.3	0.0	13.6	0.0	-43.5	0.0	0.13	0.03
5	-0.3	0.0	13.6	0.0	-43.5	0.0	0.13	0.03
6	-0.3	0.0	13.6	0.0	-43.5	0.0	0.13	0.03
7	-0.3	0.0	13.6	0.0	-43.5	0.0	0.13	0.03
8	-0.3	0.0	13.6	0.0	-43.5	0.0	0.13	0.03
9	-0.3	0.0	13.6	0.0	-43.5	0.0	0.13	0.03
10	-0.3	0.0	13.6	0.0	-43.5	0.0	0.13	0.03
11	0.2	0.0	19.7	0.0	34.9	0.0	0.18	0.04
12	0.2	0.0	19.7	0.0	34.9	0.0	0.18	0.04
13	0.2	0.0	19.7	0.0	34.9	0.0	0.18	0.04
14	0.2	0.0	19.7	0.0	34.9	0.0	0.18	0.04
15	0.2	0.0	19.7	0.0	34.9	0.0	0.18	0.04
16	0.2	0.0	19.7	0.0	34.9	0.0	0.18	0.04
17	0.2	0.0	19.7	0.0	34.9	0.0	0.18	0.04
18	0.2	0.0	19.7	0.0	34.9	0.0	0.18	0.04
19	0.2	0.0	19.7	0.0	34.9	0.0	0.18	0.04
20	0.2	0.0	19.7	0.0	34.9	0.0	0.18	0.04
21	0.2	0.0	7.4	0.0	38.1	0.0	0.07	0.02
22	0.2	0.0	7.4	0.0	38.1	0.0	0.07	0.02
23	0.2	0.0	7.4	0.0	38.1	0.0	0.07	0.02
24	0.2	0.0	7.4	0.0	38.1	0.0	0.07	0.02
25	0.2	0.0	7.4	0.0	38.1	0.0	0.07	0.02
26	0.2	0.0	7.4	0.0	38.1	0.0	0.07	0.02
27	0.2	0.0	7.4	0.0	38.1	0.0	0.07	0.02
28	0.2	0.0	7.4	0.0	38.1	0.0	0.07	0.02
29	0.2	0.0	7.4	0.0	38.1	0.0	0.07	0.02
30	0.2	0.0	7.4	0.0	38.1	0.0	0.07	0.02

LOAD CASE - 6

PILE	F1 K	F2 K	F3 K	M1 IN-K	M2 IN-K	M3 IN-K	ALF	CBF
1	0.0	0.0	10.1	0.0	1.2	0.0	0.07	0.01
2	0.0	0.0	10.1	0.0	1.2	0.0	0.07	0.01
3	0.0	0.0	10.1	0.0	1.2	0.0	0.07	0.01
4	0.0	0.0	10.1	0.0	1.2	0.0	0.07	0.01
5	0.0	0.0	10.1	0.0	1.2	0.0	0.07	0.01
6	0.0	0.0	10.1	0.0	1.2	0.0	0.07	0.01
7	0.0	0.0	10.1	0.0	1.2	0.0	0.07	0.01
8	0.0	0.0	10.1	0.0	1.2	0.0	0.07	0.01
9	0.0	0.0	10.1	0.0	1.2	0.0	0.07	0.01
10	0.0	0.0	10.1	0.0	1.2	0.0	0.07	0.01
11	0.0	0.0	16.8	0.0	-8.2	0.0	0.12	0.02
12	0.0	0.0	16.8	0.0	-8.2	0.0	0.12	0.02
13	0.0	0.0	16.8	0.0	-8.2	0.0	0.12	0.02
14	0.0	0.0	16.8	0.0	-8.2	0.0	0.12	0.02
15	0.0	0.0	16.8	0.0	-8.2	0.0	0.12	0.02

16	0.0	0.0	16.8	0.0	-8.2	0.0	0.12	0.02
17	0.0	0.0	16.8	0.0	-8.2	0.0	0.12	0.02
18	0.0	0.0	16.8	0.0	-8.2	0.0	0.12	0.02
19	0.0	0.0	16.8	0.0	-8.2	0.0	0.12	0.02
20	0.0	0.0	16.8	0.0	-8.2	0.0	0.12	0.02
21	0.0	0.0	19.6	0.0	-8.9	0.0	0.14	0.02
22	0.0	0.0	19.6	0.0	-8.9	0.0	0.14	0.02
23	0.0	0.0	19.6	0.0	-8.9	0.0	0.14	0.02
24	0.0	0.0	19.6	0.0	-8.9	0.0	0.14	0.02
25	0.0	0.0	19.6	0.0	-8.9	0.0	0.14	0.02
26	0.0	0.0	19.6	0.0	-8.9	0.0	0.14	0.02
27	0.0	0.0	19.6	0.0	-8.9	0.0	0.14	0.02
28	0.0	0.0	19.6	0.0	-8.9	0.0	0.14	0.02
29	0.0	0.0	19.6	0.0	-8.9	0.0	0.14	0.02
30	0.0	0.0	19.6	0.0	-8.9	0.0	0.14	0.02

LOAD CASE - 7

PILE	F1 K	F2 K	F3 K	M1 IN-K	M2 IN-K	M3 IN-K	ALF	CBF
1	-0.1	0.0	7.5	0.0	-17.1	0.0	0.05	0.01
2	-0.1	0.0	7.5	0.0	-17.1	0.0	0.05	0.01
3	-0.1	0.0	7.5	0.0	-17.1	0.0	0.05	0.01
4	-0.1	0.0	7.5	0.0	-17.1	0.0	0.05	0.01
5	-0.1	0.0	7.5	0.0	-17.1	0.0	0.05	0.01
6	-0.1	0.0	7.5	0.0	-17.1	0.0	0.05	0.01
7	-0.1	0.0	7.5	0.0	-17.1	0.0	0.05	0.01
8	-0.1	0.0	7.5	0.0	-17.1	0.0	0.05	0.01
9	-0.1	0.0	7.5	0.0	-17.1	0.0	0.05	0.01
10	-0.1	0.0	7.5	0.0	-17.1	0.0	0.05	0.01
11	0.1	0.0	18.0	0.0	10.4	0.0	0.13	0.02
12	0.1	0.0	18.0	0.0	10.4	0.0	0.13	0.02
13	0.1	0.0	18.0	0.0	10.4	0.0	0.13	0.02
14	0.1	0.0	18.0	0.0	10.4	0.0	0.13	0.02
15	0.1	0.0	18.0	0.0	10.4	0.0	0.13	0.02
16	0.1	0.0	18.0	0.0	10.4	0.0	0.13	0.02
17	0.1	0.0	18.0	0.0	10.4	0.0	0.13	0.02
18	0.1	0.0	18.0	0.0	10.4	0.0	0.13	0.02
19	0.1	0.0	18.0	0.0	10.4	0.0	0.13	0.02
20	0.1	0.0	18.0	0.0	10.4	0.0	0.13	0.02
21	0.1	0.0	15.2	0.0	11.2	0.0	0.11	0.02
22	0.1	0.0	15.2	0.0	11.2	0.0	0.11	0.02
23	0.1	0.0	15.2	0.0	11.2	0.0	0.11	0.02
24	0.1	0.0	15.2	0.0	11.2	0.0	0.11	0.02
25	0.1	0.0	15.2	0.0	11.2	0.0	0.11	0.02
26	0.1	0.0	15.2	0.0	11.2	0.0	0.11	0.02
27	0.1	0.0	15.2	0.0	11.2	0.0	0.11	0.02
28	0.1	0.0	15.2	0.0	11.2	0.0	0.11	0.02

29	0.1	0.0	15.2	0.0	11.2	0.0	0.11	0.02
30	0.1	0.0	15.2	0.0	11.2	0.0	0.11	0.02

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PILE FORCES IN GLOBAL GEOMETRY

LOAD CASE - 1

PILE	PX K	PY K	PZ K	MX IN-K	MY IN-K	MZ IN-K
1	0.0	-11.3	22.9	-21.7	0.0	0.0
2	0.0	-11.3	22.9	-21.7	0.0	0.0
3	0.0	-11.3	22.9	-21.7	0.0	0.0
4	0.0	-11.3	22.9	-21.7	0.0	0.0
5	0.0	-11.3	22.9	-21.7	0.0	0.0
6	0.0	-11.3	22.9	-21.7	0.0	0.0
7	0.0	-11.3	22.9	-21.7	0.0	0.0
8	0.0	-11.3	22.9	-21.7	0.0	0.0
9	0.0	-11.3	22.9	-21.7	0.0	0.0
10	0.0	-11.3	22.9	-21.7	0.0	0.0
11	0.0	7.9	15.8	-10.4	0.0	0.0
12	0.0	7.9	15.8	-10.4	0.0	0.0
13	0.0	7.9	15.8	-10.4	0.0	0.0
14	0.0	7.9	15.8	-10.4	0.0	0.0
15	0.0	7.9	15.8	-10.4	0.0	0.0
16	0.0	7.9	15.8	-10.4	0.0	0.0
17	0.0	7.9	15.8	-10.4	0.0	0.0
18	0.0	7.9	15.8	-10.4	0.0	0.0
19	0.0	7.9	15.8	-10.4	0.0	0.0
20	0.0	7.9	15.8	-10.4	0.0	0.0
21	0.0	4.9	9.7	-12.2	0.0	0.0
22	0.0	4.9	9.7	-12.2	0.0	0.0
23	0.0	4.9	9.7	-12.2	0.0	0.0
24	0.0	4.9	9.7	-12.2	0.0	0.0
25	0.0	4.9	9.7	-12.2	0.0	0.0
26	0.0	4.9	9.7	-12.2	0.0	0.0
27	0.0	4.9	9.7	-12.2	0.0	0.0
28	0.0	4.9	9.7	-12.2	0.0	0.0
29	0.0	4.9	9.7	-12.2	0.0	0.0
30	0.0	4.9	9.7	-12.2	0.0	0.0

LOAD CASE - 2

PILE	PX	PY	PZ	MX	MY	MZ

	K	K	K	IN-K	IN-K	IN-K
1	0.0	-14.5	29.0	-0.8	0.0	0.0
2	0.0	-14.5	29.0	-0.8	0.0	0.0
3	0.0	-14.5	29.0	-0.8	0.0	0.0
4	0.0	-14.5	29.0	-0.8	0.0	0.0
5	0.0	-14.5	29.0	-0.8	0.0	0.0
6	0.0	-14.5	29.0	-0.8	0.0	0.0
7	0.0	-14.5	29.0	-0.8	0.0	0.0
8	0.0	-14.5	29.0	-0.8	0.0	0.0
9	0.0	-14.5	29.0	-0.8	0.0	0.0
10	0.0	-14.5	29.0	-0.8	0.0	0.0
11	0.0	8.1	16.4	12.4	0.0	0.0
12	0.0	8.1	16.4	12.4	0.0	0.0
13	0.0	8.1	16.4	12.4	0.0	0.0
14	0.0	8.1	16.4	12.4	0.0	0.0
15	0.0	8.1	16.4	12.4	0.0	0.0
16	0.0	8.1	16.4	12.4	0.0	0.0
17	0.0	8.1	16.4	12.4	0.0	0.0
18	0.0	8.1	16.4	12.4	0.0	0.0
19	0.0	8.1	16.4	12.4	0.0	0.0
20	0.0	8.1	16.4	12.4	0.0	0.0
21	0.0	7.9	16.0	12.3	0.0	0.0
22	0.0	7.9	16.0	12.3	0.0	0.0
23	0.0	7.9	16.0	12.3	0.0	0.0
24	0.0	7.9	16.0	12.3	0.0	0.0
25	0.0	7.9	16.0	12.3	0.0	0.0
26	0.0	7.9	16.0	12.3	0.0	0.0
27	0.0	7.9	16.0	12.3	0.0	0.0
28	0.0	7.9	16.0	12.3	0.0	0.0
29	0.0	7.9	16.0	12.3	0.0	0.0
30	0.0	7.9	16.0	12.3	0.0	0.0

LOAD CASE - 3

PILE	PX	PY	PZ	MX	MY	MZ
	K	K	K	IN-K	IN-K	IN-K
1	0.0	-12.6	25.1	3.7	0.0	0.0
2	0.0	-12.6	25.1	3.7	0.0	0.0
3	0.0	-12.6	25.1	3.7	0.0	0.0
4	0.0	-12.6	25.1	3.7	0.0	0.0
5	0.0	-12.6	25.1	3.7	0.0	0.0
6	0.0	-12.6	25.1	3.7	0.0	0.0
7	0.0	-12.6	25.1	3.7	0.0	0.0
8	0.0	-12.6	25.1	3.7	0.0	0.0
9	0.0	-12.6	25.1	3.7	0.0	0.0
10	0.0	-12.6	25.1	3.7	0.0	0.0
11	0.0	8.5	17.3	16.0	0.0	0.0

12	0.0	8.5	17.3	16.0	0.0	0.0
13	0.0	8.5	17.3	16.0	0.0	0.0
14	0.0	8.5	17.3	16.0	0.0	0.0
15	0.0	8.5	17.3	16.0	0.0	0.0
16	0.0	8.5	17.3	16.0	0.0	0.0
17	0.0	8.5	17.3	16.0	0.0	0.0
18	0.0	8.5	17.3	16.0	0.0	0.0
19	0.0	8.5	17.3	16.0	0.0	0.0
20	0.0	8.5	17.3	16.0	0.0	0.0
21	0.0	9.3	19.0	16.5	0.0	0.0
22	0.0	9.3	19.0	16.5	0.0	0.0
23	0.0	9.3	19.0	16.5	0.0	0.0
24	0.0	9.3	19.0	16.5	0.0	0.0
25	0.0	9.3	19.0	16.5	0.0	0.0
26	0.0	9.3	19.0	16.5	0.0	0.0
27	0.0	9.3	19.0	16.5	0.0	0.0
28	0.0	9.3	19.0	16.5	0.0	0.0
29	0.0	9.3	19.0	16.5	0.0	0.0
30	0.0	9.3	19.0	16.5	0.0	0.0

LOAD CASE - 4

PILE	PX K	PY K	PZ K	MX IN-K	MY IN-K	MZ IN-K
1	0.0	-7.1	14.6	-25.3	0.0	0.0
2	0.0	-7.1	14.6	-25.3	0.0	0.0
3	0.0	-7.1	14.6	-25.3	0.0	0.0
4	0.0	-7.1	14.6	-25.3	0.0	0.0
5	0.0	-7.1	14.6	-25.3	0.0	0.0
6	0.0	-7.1	14.6	-25.3	0.0	0.0
7	0.0	-7.1	14.6	-25.3	0.0	0.0
8	0.0	-7.1	14.6	-25.3	0.0	0.0
9	0.0	-7.1	14.6	-25.3	0.0	0.0
10	0.0	-7.1	14.6	-25.3	0.0	0.0
11	0.0	8.4	16.5	-16.2	0.0	0.0
12	0.0	8.4	16.5	-16.2	0.0	0.0
13	0.0	8.4	16.5	-16.2	0.0	0.0
14	0.0	8.4	16.5	-16.2	0.0	0.0
15	0.0	8.4	16.5	-16.2	0.0	0.0
16	0.0	8.4	16.5	-16.2	0.0	0.0
17	0.0	8.4	16.5	-16.2	0.0	0.0
18	0.0	8.4	16.5	-16.2	0.0	0.0
19	0.0	8.4	16.5	-16.2	0.0	0.0
20	0.0	8.4	16.5	-16.2	0.0	0.0
21	0.0	5.4	10.6	-18.0	0.0	0.0
22	0.0	5.4	10.6	-18.0	0.0	0.0
23	0.0	5.4	10.6	-18.0	0.0	0.0
24	0.0	5.4	10.6	-18.0	0.0	0.0

25	0.0	5.4	10.6	-18.0	0.0	0.0
26	0.0	5.4	10.6	-18.0	0.0	0.0
27	0.0	5.4	10.6	-18.0	0.0	0.0
28	0.0	5.4	10.6	-18.0	0.0	0.0
29	0.0	5.4	10.6	-18.0	0.0	0.0
30	0.0	5.4	10.6	-18.0	0.0	0.0

LOAD CASE - 5

PILE	PX K	PY K	PZ K	MX IN-K	MY IN-K	MZ IN-K
1	0.0	-5.8	12.3	-43.5	0.0	0.0
2	0.0	-5.8	12.3	-43.5	0.0	0.0
3	0.0	-5.8	12.3	-43.5	0.0	0.0
4	0.0	-5.8	12.3	-43.5	0.0	0.0
5	0.0	-5.8	12.3	-43.5	0.0	0.0
6	0.0	-5.8	12.3	-43.5	0.0	0.0
7	0.0	-5.8	12.3	-43.5	0.0	0.0
8	0.0	-5.8	12.3	-43.5	0.0	0.0
9	0.0	-5.8	12.3	-43.5	0.0	0.0
10	0.0	-5.8	12.3	-43.5	0.0	0.0
11	0.0	9.0	17.5	-34.9	0.0	0.0
12	0.0	9.0	17.5	-34.9	0.0	0.0
13	0.0	9.0	17.5	-34.9	0.0	0.0
14	0.0	9.0	17.5	-34.9	0.0	0.0
15	0.0	9.0	17.5	-34.9	0.0	0.0
16	0.0	9.0	17.5	-34.9	0.0	0.0
17	0.0	9.0	17.5	-34.9	0.0	0.0
18	0.0	9.0	17.5	-34.9	0.0	0.0
19	0.0	9.0	17.5	-34.9	0.0	0.0
20	0.0	9.0	17.5	-34.9	0.0	0.0
21	0.0	3.5	6.5	-38.1	0.0	0.0
22	0.0	3.5	6.5	-38.1	0.0	0.0
23	0.0	3.5	6.5	-38.1	0.0	0.0
24	0.0	3.5	6.5	-38.1	0.0	0.0
25	0.0	3.5	6.5	-38.1	0.0	0.0
26	0.0	3.5	6.5	-38.1	0.0	0.0
27	0.0	3.5	6.5	-38.1	0.0	0.0
28	0.0	3.5	6.5	-38.1	0.0	0.0
29	0.0	3.5	6.5	-38.1	0.0	0.0
30	0.0	3.5	6.5	-38.1	0.0	0.0

LOAD CASE - 6

PILE	PX K	PY K	PZ K	MX IN-K	MY IN-K	MZ IN-K

1	0.0	-4.5	9.1	1.2	0.0	0.0
2	0.0	-4.5	9.1	1.2	0.0	0.0
3	0.0	-4.5	9.1	1.2	0.0	0.0
4	0.0	-4.5	9.1	1.2	0.0	0.0
5	0.0	-4.5	9.1	1.2	0.0	0.0
6	0.0	-4.5	9.1	1.2	0.0	0.0
7	0.0	-4.5	9.1	1.2	0.0	0.0
8	0.0	-4.5	9.1	1.2	0.0	0.0
9	0.0	-4.5	9.1	1.2	0.0	0.0
10	0.0	-4.5	9.1	1.2	0.0	0.0
11	0.0	7.5	15.1	8.2	0.0	0.0
12	0.0	7.5	15.1	8.2	0.0	0.0
13	0.0	7.5	15.1	8.2	0.0	0.0
14	0.0	7.5	15.1	8.2	0.0	0.0
15	0.0	7.5	15.1	8.2	0.0	0.0
16	0.0	7.5	15.1	8.2	0.0	0.0
17	0.0	7.5	15.1	8.2	0.0	0.0
18	0.0	7.5	15.1	8.2	0.0	0.0
19	0.0	7.5	15.1	8.2	0.0	0.0
20	0.0	7.5	15.1	8.2	0.0	0.0
21	0.0	8.7	17.6	8.9	0.0	0.0
22	0.0	8.7	17.6	8.9	0.0	0.0
23	0.0	8.7	17.6	8.9	0.0	0.0
24	0.0	8.7	17.6	8.9	0.0	0.0
25	0.0	8.7	17.6	8.9	0.0	0.0
26	0.0	8.7	17.6	8.9	0.0	0.0
27	0.0	8.7	17.6	8.9	0.0	0.0
28	0.0	8.7	17.6	8.9	0.0	0.0
29	0.0	8.7	17.6	8.9	0.0	0.0
30	0.0	8.7	17.6	8.9	0.0	0.0

LOAD CASE - 7

PILE	PX K	PY K	PZ K	MX IN-K	MY IN-K	MZ IN-K
1	0.0	-3.2	6.7	-17.1	0.0	0.0
2	0.0	-3.2	6.7	-17.1	0.0	0.0
3	0.0	-3.2	6.7	-17.1	0.0	0.0
4	0.0	-3.2	6.7	-17.1	0.0	0.0
5	0.0	-3.2	6.7	-17.1	0.0	0.0
6	0.0	-3.2	6.7	-17.1	0.0	0.0
7	0.0	-3.2	6.7	-17.1	0.0	0.0
8	0.0	-3.2	6.7	-17.1	0.0	0.0
9	0.0	-3.2	6.7	-17.1	0.0	0.0
10	0.0	-3.2	6.7	-17.1	0.0	0.0
11	0.0	8.1	16.1	-10.4	0.0	0.0
12	0.0	8.1	16.1	-10.4	0.0	0.0
13	0.0	8.1	16.1	-10.4	0.0	0.0

14	0.0	8.1	16.1	-10.4	0.0	0.0
15	0.0	8.1	16.1	-10.4	0.0	0.0
16	0.0	8.1	16.1	-10.4	0.0	0.0
17	0.0	8.1	16.1	-10.4	0.0	0.0
18	0.0	8.1	16.1	-10.4	0.0	0.0
19	0.0	8.1	16.1	-10.4	0.0	0.0
20	0.0	8.1	16.1	-10.4	0.0	0.0
21	0.0	6.8	13.5	-11.2	0.0	0.0
22	0.0	6.8	13.5	-11.2	0.0	0.0
23	0.0	6.8	13.5	-11.2	0.0	0.0
24	0.0	6.8	13.5	-11.2	0.0	0.0
25	0.0	6.8	13.5	-11.2	0.0	0.0
26	0.0	6.8	13.5	-11.2	0.0	0.0
27	0.0	6.8	13.5	-11.2	0.0	0.0
28	0.0	6.8	13.5	-11.2	0.0	0.0
29	0.0	6.8	13.5	-11.2	0.0	0.0
30	0.0	6.8	13.5	-11.2	0.0	0.0

NO FILES WERE GENERATED DURING THIS RUN.

```
10  Sunset Reach E (5B) T-1 Twall Fixed
20  PIL  1  -22.5   2.5   0
30  BAT   2   1
40  ANG   270   1
50  PIL  2  -17.5   2.5   0
60  BAT   2   2
70  ANG   270   2
80  PIL  3  -12.5   2.5   0
90  BAT   2   3
100  ANG   270   3
110  PIL  4  -7.5   2.5   0
120  BAT   2   4
130  ANG   270   4
140  PIL  5  -2.5   2.5   0
150  BAT   2   5
160  ANG   270   5
170  PIL  6   2.5   2.5   0
180  BAT   2   6
190  ANG   270   6
200  PIL  7   7.5   2.5   0
210  BAT   2   7
220  ANG   270   7
230  PIL  8   12.5   2.5   0
240  BAT   2   8
250  ANG   270   8
260  PIL  9   17.5   2.5   0
270  BAT   2   9
280  ANG   270   9
290  PIL  10   22.5   2.5   0
300  BAT   2   10
310  ANG   270   10
320  PIL  11  -22.5   7.5   0
330  BAT   2   11
340  ANG   90   11
350  PIL  12  -17.5   7.5   0
360  BAT   2   12
370  ANG   90   12
380  PIL  13  -12.5   7.5   0
390  BAT   2   13
400  ANG   90   13
410  PIL  14  -7.5   7.5   0
420  BAT   2   14
430  ANG   90   14
440  PIL  15  -2.5   7.5   0
450  BAT   2   15
460  ANG   90   15
470  PIL  16   2.5   7.5   0
480  BAT   2   16
490  ANG   90   16
500  PIL  17   7.5   7.5   0
```

```
510  BAT   2   17
520  ANG   90   17
530  PIL  18   12.5   7.5   0
540  BAT   2   18
550  ANG   90   18
560  PIL  19   17.5   7.5   0
570  BAT   2   19
580  ANG   90   19
590  PIL  20   22.5   7.5   0
600  BAT   2   20
610  ANG   90   20
620  PIL  21  -22.5   12.5   0
630  BAT   2   21
640  ANG   90   21
650  PIL  22  -17.5   12.5   0
660  BAT   2   22
670  ANG   90   22
680  PIL  23  -12.5   12.5   0
690  BAT   2   23
700  ANG   90   23
710  PIL  24  -7.5   12.5   0
720  BAT   2   24
730  ANG   90   24
740  PIL  25  -2.5   12.5   0
750  BAT   2   25
760  ANG   90   25
770  PIL  26   2.5   12.5   0
780  BAT   2   26
790  ANG   90   26
800  PIL  27   7.5   12.5   0
810  BAT   2   27
820  ANG   90   27
830  PIL  28   12.5   12.5   0
840  BAT   2   28
850  ANG   90   28
860  PIL  29   17.5   12.5   0
870  BAT   2   29
880  ANG   90   29
890  PIL  30   22.5   12.5   0
900  BAT   2   30
910  ANG   90   30
920  PRO  29000  326  904  26.1  2  0  1 TO 30
930  SOI ES 0.0345 L  69  0  1 TO 30
940  RED  1  1  1
950  ALL H 107  85  652  652  1107  3275  1 TO 30
960  FIX  1 TO 30
970  LOA  8  0  417  361  5008  0  0
970  LOA  9  0  417  236  3760  0  0
970  FOV  1.33  1.33  8
970  FOV  1.33  1.33  9
```

```
980  TOUT 1 2 3 4 5 6 7
990  PFO ALL
1000  PLB ALL
```

CPGA - CASE PILE GROUP ANALYSIS PROGRAM
RUN DATE: 01-SEP-20 RUN TIME: 20:10:30

FOR PILES WITH UNSUPPORTED HEIGHT:
A. CPGA CANNOT CALCULATE PMAXMOM FOR NH TYPE SOIL
B. THE ALLOWABLE STRESS CHECKS, ASC AND AST, ARE
NOT FULLY DEVELOPED FOR UNSUPPORTED PILES.
WORK IS IN PROGRESS TO COMPLETE THIS ASPECT OF CPGA.

ELASTIC CENTER LOCATION IS NOT COMPUTED FOR 3-DIMENSIONAL PROBLEMS.

SUNSET REACH E (5B) T-1 TWALL FIXED
DATA UNKNOWN - REJECTED.

THERE ARE 30 PILES AND
2 LOAD CASES IN THIS RUN.

ALL PILE COORDINATES ARE CONTAINED WITHIN A BOX

	X	Y	Z
WITH DIAGONAL COORDINATES = (	-22.50 ,	2.50 ,	0.00)
(	22.50 ,	12.50 ,	0.00)

****

PILE PROPERTIES AS INPUT

E	I1	I2	A	C33	B66
KSI	IN**4	IN**4	IN**2		
0.29000E+05	0.32600E+03	0.90400E+03	0.26100E+02	0.20000E+01	0.00000E+00

THESE PILE PROPERTIES APPLY TO THE FOLLOWING PILES -

ALL

****

SOIL DESCRIPTIONS AS INPUT

ES	ESOIL	LENGTH	L	LU
	K/IN**2		FT	FT

```
        0.34500E-01    L      0.69000E+02   0.00000E+00

 ESOIL(ORIGINAL)     RGROUP     RCYCLIC
   K/IN**2
  0.34500E-01       0.1000E+01 0.1000E+01
```

THIS SOIL DESCRIPTION APPLIES TO THE FOLLOWING PILES -

ALL

****

PILE STIFFNESSES AS CALCULATED FROM PROPERTIES

```
 0.81007E+01  0.00000E+00  0.00000E+00  0.00000E+00  0.95103E+03  0.00000E+00
 0.00000E+00  0.62774E+01  0.00000E+00 -0.57111E+03  0.00000E+00  0.00000E+00
 0.00000E+00  0.00000E+00  0.18283E+04  0.00000E+00  0.00000E+00  0.00000E+00
 0.00000E+00 -0.57111E+03  0.00000E+00  0.10392E+06  0.00000E+00  0.00000E+00
 0.95103E+03  0.00000E+00  0.00000E+00  0.00000E+00  0.22330E+06  0.00000E+00
 0.00000E+00  0.00000E+00  0.00000E+00  0.00000E+00  0.00000E+00  0.00000E+00
```

THIS MATRIX APPLIES TO THE FOLLOWING PILES -

1

****

PILE GEOMETRY AS INPUT AND/OR GENERATED

NUM	X FT	Y FT	Z FT	BATTER	ANGLE	LENGTH FT	FIXITY
1	-22.50	2.50	0.00	2.00	270.00	69.00	F
2	-17.50	2.50	0.00	2.00	270.00	69.00	F
3	-12.50	2.50	0.00	2.00	270.00	69.00	F
4	-7.50	2.50	0.00	2.00	270.00	69.00	F
5	-2.50	2.50	0.00	2.00	270.00	69.00	F
6	2.50	2.50	0.00	2.00	270.00	69.00	F
7	7.50	2.50	0.00	2.00	270.00	69.00	F
8	12.50	2.50	0.00	2.00	270.00	69.00	F
9	17.50	2.50	0.00	2.00	270.00	69.00	F
10	22.50	2.50	0.00	2.00	270.00	69.00	F
11	-22.50	7.50	0.00	2.00	90.00	69.00	F
12	-17.50	7.50	0.00	2.00	90.00	69.00	F
13	-12.50	7.50	0.00	2.00	90.00	69.00	F
14	-7.50	7.50	0.00	2.00	90.00	69.00	F

15	-2.50	7.50	0.00	2.00	90.00	69.00	F
16	2.50	7.50	0.00	2.00	90.00	69.00	F
17	7.50	7.50	0.00	2.00	90.00	69.00	F
18	12.50	7.50	0.00	2.00	90.00	69.00	F
19	17.50	7.50	0.00	2.00	90.00	69.00	F
20	22.50	7.50	0.00	2.00	90.00	69.00	F
21	-22.50	12.50	0.00	2.00	90.00	69.00	F
22	-17.50	12.50	0.00	2.00	90.00	69.00	F
23	-12.50	12.50	0.00	2.00	90.00	69.00	F
24	-7.50	12.50	0.00	2.00	90.00	69.00	F
25	-2.50	12.50	0.00	2.00	90.00	69.00	F
26	2.50	12.50	0.00	2.00	90.00	69.00	F
27	7.50	12.50	0.00	2.00	90.00	69.00	F
28	12.50	12.50	0.00	2.00	90.00	69.00	F
29	17.50	12.50	0.00	2.00	90.00	69.00	F
30	22.50	12.50	0.00	2.00	90.00	69.00	F

						2070.00	

****

APPLIED LOADS

LOAD CASE	PX K	PY K	PZ K	MX FT-K	MY FT-K	MZ FT-K	OVERSTRESS COM	TEN
8	0.0	417.0	361.0	5008.0	0.0	0.0	1.33	1.33
9	0.0	417.0	236.0	3760.0	0.0	0.0	1.33	1.33

****

ORIGINAL PILE GROUP STIFFNESS MATRIX

0.18832E+03	0.22259E-03	-0.88591E-04	0.13082E-01	0.15324E+05	-0.19503E+05
0.22259E-03	0.11164E+05	0.72806E+04	0.15034E+07	0.20674E-03	-0.14722E-01
-0.88591E-04	0.72806E+04	0.43927E+05	0.39577E+07	0.51752E-04	-0.13289E-01
0.13082E-01	0.15034E+07	0.39577E+07	0.46972E+09	-0.93042E-01	-0.24530E+01
0.15324E+05	0.20674E-03	0.51752E-04	-0.93042E-01	0.13071E+10	-0.21803E+09
-0.19503E+05	-0.14722E-01	-0.13289E-01	-0.24530E+01	-0.21803E+09	0.33524E+09

30 PILES 2 LOAD CASES

LOAD CASE 8. NUMBER OF FAILURES = 0. NUMBER OF PILES IN TENSION = 10.

LOAD CASE 9. NUMBER OF FAILURES = 0. NUMBER OF PILES IN TENSION = 10.

****

PILE CAP DISPLACEMENTS

LOAD CASE	DX IN	DY IN	DZ IN	RX RAD	RY RAD	RZ RAD
8	-0.4109E-07	0.4174E-01	0.7510E-02	-0.6892E-04	0.3841E-12	-0.5146E-12
9	-0.4447E-07	0.5518E-01	0.1447E-01	-0.2025E-03	0.3577E-12	-0.8390E-12

****

PILE FORCES IN LOCAL GEOMETRY

M1 & M2 NOT AT PILE HEAD FOR PINNED PILES
* INDICATES PILE FAILURE
# INDICATES CBF BASED ON MOMENTS DUE TO
(F3*EMIN) FOR CONCRETE PILES
B INDICATES BUCKLING CONTROLS

LOAD CASE - 8

PILE	F1 K	F2 K	F3 K	M1 IN-K	M2 IN-K	M3 IN-K	ALF	CBF
1	-0.4	0.0	-25.2	0.0	-53.2	0.0	0.22	0.04
2	-0.4	0.0	-25.2	0.0	-53.2	0.0	0.22	0.04
3	-0.4	0.0	-25.2	0.0	-53.2	0.0	0.22	0.04
4	-0.4	0.0	-25.2	0.0	-53.2	0.0	0.22	0.04
5	-0.4	0.0	-25.2	0.0	-53.2	0.0	0.22	0.04
6	-0.4	0.0	-25.2	0.0	-53.2	0.0	0.22	0.04
7	-0.4	0.0	-25.2	0.0	-53.2	0.0	0.22	0.04
8	-0.4	0.0	-25.2	0.0	-53.2	0.0	0.22	0.04
9	-0.4	0.0	-25.2	0.0	-53.2	0.0	0.22	0.04
10	-0.4	0.0	-25.2	0.0	-53.2	0.0	0.22	0.04
11	0.4	0.0	36.3	0.0	50.3	0.0	0.25	0.05
12	0.4	0.0	36.3	0.0	50.3	0.0	0.25	0.05
13	0.4	0.0	36.3	0.0	50.3	0.0	0.25	0.05
14	0.4	0.0	36.3	0.0	50.3	0.0	0.25	0.05
15	0.4	0.0	36.3	0.0	50.3	0.0	0.25	0.05
16	0.4	0.0	36.3	0.0	50.3	0.0	0.25	0.05
17	0.4	0.0	36.3	0.0	50.3	0.0	0.25	0.05
18	0.4	0.0	36.3	0.0	50.3	0.0	0.25	0.05
19	0.4	0.0	36.3	0.0	50.3	0.0	0.25	0.05
20	0.4	0.0	36.3	0.0	50.3	0.0	0.25	0.05

21	0.4	0.0	29.5	0.0	52.1	0.0	0.21	0.05
22	0.4	0.0	29.5	0.0	52.1	0.0	0.21	0.05
23	0.4	0.0	29.5	0.0	52.1	0.0	0.21	0.05
24	0.4	0.0	29.5	0.0	52.1	0.0	0.21	0.05
25	0.4	0.0	29.5	0.0	52.1	0.0	0.21	0.05
26	0.4	0.0	29.5	0.0	52.1	0.0	0.21	0.05
27	0.4	0.0	29.5	0.0	52.1	0.0	0.21	0.05
28	0.4	0.0	29.5	0.0	52.1	0.0	0.21	0.05
29	0.4	0.0	29.5	0.0	52.1	0.0	0.21	0.05
30	0.4	0.0	29.5	0.0	52.1	0.0	0.21	0.05

LOAD CASE - 9

PILE	F1 K	F2 K	F3 K	M1 IN-K	M2 IN-K	M3 IN-K	ALF	CBF
1	-0.6	0.0	-31.4	0.0	-95.7	0.0	0.28	0.06
2	-0.6	0.0	-31.4	0.0	-95.7	0.0	0.28	0.06
3	-0.6	0.0	-31.4	0.0	-95.7	0.0	0.28	0.06
4	-0.6	0.0	-31.4	0.0	-95.7	0.0	0.28	0.06
5	-0.6	0.0	-31.4	0.0	-95.7	0.0	0.28	0.06
6	-0.6	0.0	-31.4	0.0	-95.7	0.0	0.28	0.06
7	-0.6	0.0	-31.4	0.0	-95.7	0.0	0.28	0.06
8	-0.6	0.0	-31.4	0.0	-95.7	0.0	0.28	0.06
9	-0.6	0.0	-31.4	0.0	-95.7	0.0	0.28	0.06
10	-0.6	0.0	-31.4	0.0	-95.7	0.0	0.28	0.06
11	0.6	0.0	39.0	0.0	93.7	0.0	0.27	0.07
12	0.6	0.0	39.0	0.0	93.7	0.0	0.27	0.07
13	0.6	0.0	39.0	0.0	93.7	0.0	0.27	0.07
14	0.6	0.0	39.0	0.0	93.7	0.0	0.27	0.07
15	0.6	0.0	39.0	0.0	93.7	0.0	0.27	0.07
16	0.6	0.0	39.0	0.0	93.7	0.0	0.27	0.07
17	0.6	0.0	39.0	0.0	93.7	0.0	0.27	0.07
18	0.6	0.0	39.0	0.0	93.7	0.0	0.27	0.07
19	0.6	0.0	39.0	0.0	93.7	0.0	0.27	0.07
20	0.6	0.0	39.0	0.0	93.7	0.0	0.27	0.07
21	0.6	0.0	19.1	0.0	98.9	0.0	0.13	0.04
22	0.6	0.0	19.1	0.0	98.9	0.0	0.13	0.04
23	0.6	0.0	19.1	0.0	98.9	0.0	0.13	0.04
24	0.6	0.0	19.1	0.0	98.9	0.0	0.13	0.04
25	0.6	0.0	19.1	0.0	98.9	0.0	0.13	0.04
26	0.6	0.0	19.1	0.0	98.9	0.0	0.13	0.04
27	0.6	0.0	19.1	0.0	98.9	0.0	0.13	0.04
28	0.6	0.0	19.1	0.0	98.9	0.0	0.13	0.04
29	0.6	0.0	19.1	0.0	98.9	0.0	0.13	0.04
30	0.6	0.0	19.1	0.0	98.9	0.0	0.13	0.04

****

PILE FORCES IN GLOBAL GEOMETRY

LOAD CASE - 8

PILE	PX K	PY K	PZ K	MX IN-K	MY IN-K	MZ IN-K
1	0.0	11.6	-22.4	-53.2	0.0	0.0
2	0.0	11.6	-22.4	-53.2	0.0	0.0
3	0.0	11.6	-22.4	-53.2	0.0	0.0
4	0.0	11.6	-22.4	-53.2	0.0	0.0
5	0.0	11.6	-22.4	-53.2	0.0	0.0
6	0.0	11.6	-22.4	-53.2	0.0	0.0
7	0.0	11.6	-22.4	-53.2	0.0	0.0
8	0.0	11.6	-22.4	-53.2	0.0	0.0
9	0.0	11.6	-22.4	-53.2	0.0	0.0
10	0.0	11.6	-22.4	-53.2	0.0	0.0
11	0.0	16.5	32.3	-50.3	0.0	0.0
12	0.0	16.5	32.3	-50.3	0.0	0.0
13	0.0	16.5	32.3	-50.3	0.0	0.0
14	0.0	16.5	32.3	-50.3	0.0	0.0
15	0.0	16.5	32.3	-50.3	0.0	0.0
16	0.0	16.5	32.3	-50.3	0.0	0.0
17	0.0	16.5	32.3	-50.3	0.0	0.0
18	0.0	16.5	32.3	-50.3	0.0	0.0
19	0.0	16.5	32.3	-50.3	0.0	0.0
20	0.0	16.5	32.3	-50.3	0.0	0.0
21	0.0	13.5	26.2	-52.1	0.0	0.0
22	0.0	13.5	26.2	-52.1	0.0	0.0
23	0.0	13.5	26.2	-52.1	0.0	0.0
24	0.0	13.5	26.2	-52.1	0.0	0.0
25	0.0	13.5	26.2	-52.1	0.0	0.0
26	0.0	13.5	26.2	-52.1	0.0	0.0
27	0.0	13.5	26.2	-52.1	0.0	0.0
28	0.0	13.5	26.2	-52.1	0.0	0.0
29	0.0	13.5	26.2	-52.1	0.0	0.0
30	0.0	13.5	26.2	-52.1	0.0	0.0

LOAD CASE - 9

PILE	PX K	PY K	PZ K	MX IN-K	MY IN-K	MZ IN-K
1	0.0	14.6	-27.8	-95.7	0.0	0.0
2	0.0	14.6	-27.8	-95.7	0.0	0.0
3	0.0	14.6	-27.8	-95.7	0.0	0.0

4	0.0	14.6	-27.8	-95.7	0.0	0.0
5	0.0	14.6	-27.8	-95.7	0.0	0.0
6	0.0	14.6	-27.8	-95.7	0.0	0.0
7	0.0	14.6	-27.8	-95.7	0.0	0.0
8	0.0	14.6	-27.8	-95.7	0.0	0.0
9	0.0	14.6	-27.8	-95.7	0.0	0.0
10	0.0	14.6	-27.8	-95.7	0.0	0.0
11	0.0	18.0	34.6	-93.7	0.0	0.0
12	0.0	18.0	34.6	-93.7	0.0	0.0
13	0.0	18.0	34.6	-93.7	0.0	0.0
14	0.0	18.0	34.6	-93.7	0.0	0.0
15	0.0	18.0	34.6	-93.7	0.0	0.0
16	0.0	18.0	34.6	-93.7	0.0	0.0
17	0.0	18.0	34.6	-93.7	0.0	0.0
18	0.0	18.0	34.6	-93.7	0.0	0.0
19	0.0	18.0	34.6	-93.7	0.0	0.0
20	0.0	18.0	34.6	-93.7	0.0	0.0
21	0.0	9.1	16.8	-98.9	0.0	0.0
22	0.0	9.1	16.8	-98.9	0.0	0.0
23	0.0	9.1	16.8	-98.9	0.0	0.0
24	0.0	9.1	16.8	-98.9	0.0	0.0
25	0.0	9.1	16.8	-98.9	0.0	0.0
26	0.0	9.1	16.8	-98.9	0.0	0.0
27	0.0	9.1	16.8	-98.9	0.0	0.0
28	0.0	9.1	16.8	-98.9	0.0	0.0
29	0.0	9.1	16.8	-98.9	0.0	0.0
30	0.0	9.1	16.8	-98.9	0.0	0.0

NO FILES WERE GENERATED DURING THIS RUN.

```
10  Sunset Reach E (5B) T1 Twall Pinned
20  PIL  1  -22.5   2.5   0
30  BAT   2   1
40  ANG   270   1
50  PIL  2  -17.5   2.5   0
60  BAT   2   2
70  ANG   270   2
80  PIL  3  -12.5   2.5   0
90  BAT   2   3
100  ANG   270   3
110  PIL  4  -7.5   2.5   0
120  BAT   2   4
130  ANG   270   4
140  PIL  5  -2.5   2.5   0
150  BAT   2   5
160  ANG   270   5
170  PIL  6   2.5   2.5   0
180  BAT   2   6
190  ANG   270   6
200  PIL  7   7.5   2.5   0
210  BAT   2   7
220  ANG   270   7
230  PIL  8   12.5   2.5   0
240  BAT   2   8
250  ANG   270   8
260  PIL  9   17.5   2.5   0
270  BAT   2   9
280  ANG   270   9
290  PIL  10   22.5   2.5   0
300  BAT   2   10
310  ANG   270   10
320  PIL  11  -22.5   7.5   0
330  BAT   2   11
340  ANG   90   11
350  PIL  12  -17.5   7.5   0
360  BAT   2   12
370  ANG   90   12
380  PIL  13  -12.5   7.5   0
390  BAT   2   13
400  ANG   90   13
410  PIL  14  -7.5   7.5   0
420  BAT   2   14
430  ANG   90   14
440  PIL  15  -2.5   7.5   0
450  BAT   2   15
460  ANG   90   15
470  PIL  16   2.5   7.5   0
480  BAT   2   16
490  ANG   90   16
500  PIL  17   7.5   7.5   0
```

```
510  BAT   2   17
520  ANG   90   17
530  PIL  18   12.5   7.5   0
540  BAT   2   18
550  ANG   90   18
560  PIL  19   17.5   7.5   0
570  BAT   2   19
580  ANG   90   19
590  PIL  20   22.5   7.5   0
600  BAT   2   20
610  ANG   90   20
620  PIL  21  -22.5   12.5   0
630  BAT   2   21
640  ANG   90   21
650  PIL  22  -17.5   12.5   0
660  BAT   2   22
670  ANG   90   22
680  PIL  23  -12.5   12.5   0
690  BAT   2   23
700  ANG   90   23
710  PIL  24  -7.5   12.5   0
720  BAT   2   24
730  ANG   90   24
740  PIL  25  -2.5   12.5   0
750  BAT   2   25
760  ANG   90   25
770  PIL  26   2.5   12.5   0
780  BAT   2   26
790  ANG   90   26
800  PIL  27   7.5   12.5   0
810  BAT   2   27
820  ANG   90   27
830  PIL  28   12.5   12.5   0
840  BAT   2   28
850  ANG   90   28
860  PIL  29   17.5   12.5   0
870  BAT   2   29
880  ANG   90   29
890  PIL  30   22.5   12.5   0
900  BAT   2   30
910  ANG   90   30
920  PRO  29000  326  904  26.1  2  0  1 TO 30
930  SOI ES 0.0345 L  69  0  1 TO 30
940  RED  1  1  1
950  ALL H 107  85  652  652  1107  3275  1 TO 30
960  PIN  1 TO 30
970  LOA  1  0  15  484  2932  0  0
970  LOA  2  0  15  614  3977  0  0
970  LOA  3  0  53  614  4327  0  0
970  LOA  4  0  66  417  2876  0  0
```

```
970  LOA  5  0  66  363  2338  0  0
970  LOA  6  0  117  417  3568  0  0
970  LOA  7  0  117  363  3030  0  0
970  FOV  1.167  1.167  2
970  FOV  1.33  1.33  3
970  FOV  1.33  1.33  6
970  FOV  1.33  1.33  7
980  TOUT   1  2  3  4  5  6  7
990  PFO ALL
1000  PLB ALL
```

CPGA - CASE PILE GROUP ANALYSIS PROGRAM
RUN DATE: 01-SEP-20 RUN TIME: 20:07:42

FOR PILES WITH UNSUPPORTED HEIGHT:
A. CPGA CANNOT CALCULATE PMAXMOM FOR NH TYPE SOIL
B. THE ALLOWABLE STRESS CHECKS, ASC AND AST, ARE
NOT FULLY DEVELOPED FOR UNSUPPORTED PILES.
WORK IS IN PROGRESS TO COMPLETE THIS ASPECT OF CPGA.

ELASTIC CENTER LOCATION IS NOT COMPUTED FOR 3-DIMENSIONAL PROBLEMS.

SUNSET REACH E (5B) T1 TWALL PINNED
DATA UNKNOWN - REJECTED.

THERE ARE 30 PILES AND
7 LOAD CASES IN THIS RUN.

ALL PILE COORDINATES ARE CONTAINED WITHIN A BOX

	X	Y	Z
WITH DIAGONAL COORDINATES = (	-22.50 ,	2.50 ,	0.00)
(	22.50 ,	12.50 ,	0.00)

****

PILE PROPERTIES AS INPUT

E	I1	I2	A	C33	B66
KSI	IN**4	IN**4	IN**2		
0.29000E+05	0.32600E+03	0.90400E+03	0.26100E+02	0.20000E+01	0.00000E+00

THESE PILE PROPERTIES APPLY TO THE FOLLOWING PILES -

ALL

****

SOIL DESCRIPTIONS AS INPUT

ES	ESOIL	LENGTH	L	LU
	K/IN**2		FT	FT

```
        0.34500E-01    L      0.69000E+02   0.00000E+00

 ESOIL(ORIGINAL)     RGROUP     RCYCLIC
   K/IN**2
  0.34500E-01       0.1000E+01 0.1000E+01

THIS SOIL DESCRIPTION APPLIES TO THE FOLLOWING PILES -

    ALL

*************************************************************************

         PILE STIFFNESSES AS CALCULATED FROM PROPERTIES


 0.40503E+01  0.00000E+00  0.00000E+00  0.00000E+00  0.00000E+00  0.00000E+00
 0.00000E+00  0.31387E+01  0.00000E+00  0.00000E+00  0.00000E+00  0.00000E+00
 0.00000E+00  0.00000E+00  0.18283E+04  0.00000E+00  0.00000E+00  0.00000E+00
 0.00000E+00  0.00000E+00  0.00000E+00  0.00000E+00  0.00000E+00  0.00000E+00
 0.00000E+00  0.00000E+00  0.00000E+00  0.00000E+00  0.00000E+00  0.00000E+00
 0.00000E+00  0.00000E+00  0.00000E+00  0.00000E+00  0.00000E+00  0.00000E+00


THIS MATRIX APPLIES TO THE FOLLOWING PILES -

   1


*************************************************************************

         PILE GEOMETRY AS INPUT AND/OR GENERATED

NUM        X          Y          Z      BATTER    ANGLE    LENGTH  FIXITY
          FT         FT         FT                          FT

  1     -22.50       2.50       0.00      2.00    270.00    69.00     P
  2     -17.50       2.50       0.00      2.00    270.00    69.00     P
  3     -12.50       2.50       0.00      2.00    270.00    69.00     P
  4      -7.50       2.50       0.00      2.00    270.00    69.00     P
  5      -2.50       2.50       0.00      2.00    270.00    69.00     P
  6       2.50       2.50       0.00      2.00    270.00    69.00     P
  7       7.50       2.50       0.00      2.00    270.00    69.00     P
  8      12.50       2.50       0.00      2.00    270.00    69.00     P
  9      17.50       2.50       0.00      2.00    270.00    69.00     P
 10      22.50       2.50       0.00      2.00    270.00    69.00     P
 11     -22.50       7.50       0.00      2.00     90.00    69.00     P
 12     -17.50       7.50       0.00      2.00     90.00    69.00     P
 13     -12.50       7.50       0.00      2.00     90.00    69.00     P
 14      -7.50       7.50       0.00      2.00     90.00    69.00     P
```

15	-2.50	7.50	0.00	2.00	90.00	69.00	P
16	2.50	7.50	0.00	2.00	90.00	69.00	P
17	7.50	7.50	0.00	2.00	90.00	69.00	P
18	12.50	7.50	0.00	2.00	90.00	69.00	P
19	17.50	7.50	0.00	2.00	90.00	69.00	P
20	22.50	7.50	0.00	2.00	90.00	69.00	P
21	-22.50	12.50	0.00	2.00	90.00	69.00	P
22	-17.50	12.50	0.00	2.00	90.00	69.00	P
23	-12.50	12.50	0.00	2.00	90.00	69.00	P
24	-7.50	12.50	0.00	2.00	90.00	69.00	P
25	-2.50	12.50	0.00	2.00	90.00	69.00	P
26	2.50	12.50	0.00	2.00	90.00	69.00	P
27	7.50	12.50	0.00	2.00	90.00	69.00	P
28	12.50	12.50	0.00	2.00	90.00	69.00	P
29	17.50	12.50	0.00	2.00	90.00	69.00	P
30	22.50	12.50	0.00	2.00	90.00	69.00	P

						2070.00	

****

APPLIED LOADS

LOAD CASE	PX K	PY K	PZ K	MX FT-K	MY FT-K	MZ FT-K	OVERSTRESS COM	TEN
1	0.0	15.0	484.0	2932.0	0.0	0.0		
2	0.0	15.0	614.0	3977.0	0.0	0.0	1.17	1.17
3	0.0	53.0	614.0	4327.0	0.0	0.0	1.33	1.33
4	0.0	66.0	417.0	2876.0	0.0	0.0		
5	0.0	66.0	363.0	2338.0	0.0	0.0		
6	0.0	117.0	417.0	3568.0	0.0	0.0	1.33	1.33
7	0.0	117.0	363.0	3030.0	0.0	0.0	1.33	1.33

****

ORIGINAL PILE GROUP STIFFNESS MATRIX

0.94162E+02	0.22252E-03	-0.88788E-04	0.13318E-01	0.00000E+00	-0.84746E+04
0.22252E-03	0.11067E+05	0.72968E+04	0.15323E+07	-0.87311E-10	-0.14687E-01
-0.88788E-04	0.72968E+04	0.43903E+05	0.39512E+07	-0.11642E-09	-0.13318E-01
0.13318E-01	0.15323E+07	0.39512E+07	0.46098E+09	-0.14901E-07	-0.24772E+01
0.21684E-17	0.29104E-10	-0.17462E-09	0.14901E-07	0.13039E+10	-0.21672E+09
-0.84746E+04	-0.14687E-01	-0.13318E-01	-0.24772E+01	-0.21672E+09	0.32967E+09

30 PILES 7 LOAD CASES

LOAD CASE 1. NUMBER OF FAILURES = 0. NUMBER OF PILES IN TENSION = 0.

LOAD CASE 2. NUMBER OF FAILURES = 0. NUMBER OF PILES IN TENSION = 0.

LOAD CASE 3. NUMBER OF FAILURES = 0. NUMBER OF PILES IN TENSION = 0.

LOAD CASE 4. NUMBER OF FAILURES = 0. NUMBER OF PILES IN TENSION = 0.

LOAD CASE 5. NUMBER OF FAILURES = 0. NUMBER OF PILES IN TENSION = 0.

LOAD CASE 6. NUMBER OF FAILURES = 0. NUMBER OF PILES IN TENSION = 0.

LOAD CASE 7. NUMBER OF FAILURES = 0. NUMBER OF PILES IN TENSION = 0.

****

PILE CAP DISPLACEMENTS

LOAD CASE	DX IN	DY IN	DZ IN	RX RAD	RY RAD	RZ RAD
1	0.2744E-07	0.1615E-02	0.1912E-01	-0.9292E-04	0.1589E-12	0.9559E-12
2	0.3555E-07	-0.9476E-02	0.1491E-01	0.7229E-05	0.2143E-12	0.1289E-11
3	0.2575E-07	-0.8275E-02	0.1202E-01	0.3710E-04	0.1974E-12	0.1187E-11
4	0.1010E-07	0.8448E-02	0.1699E-01	-0.9885E-04	0.1081E-12	0.6506E-12
5	0.6834E-08	0.1708E-01	0.2214E-01	-0.1857E-03	0.8128E-13	0.4890E-12
6	-0.3280E-08	0.1461E-02	0.5833E-02	0.3803E-04	0.9370E-13	0.5637E-12
7	-0.6542E-08	0.1009E-01	0.1099E-01	-0.4882E-04	0.6684E-13	0.4022E-12

****

PILE FORCES IN LOCAL GEOMETRY

M1 & M2 NOT AT PILE HEAD FOR PINNED PILES
* INDICATES PILE FAILURE
# INDICATES CBF BASED ON MOMENTS DUE TO
(F3*EMIN) FOR CONCRETE PILES
B INDICATES BUCKLING CONTROLS

LOAD CASE - 1

PILE	F1 K	F2 K	F3 K	M1 IN-K	M2 IN-K	M3 IN-K	ALF	CBF

1	0.0	0.0	25.4	0.0	2.7	0.0	0.24	0.04
2	0.0	0.0	25.4	0.0	2.7	0.0	0.24	0.04
3	0.0	0.0	25.4	0.0	2.7	0.0	0.24	0.04
4	0.0	0.0	25.4	0.0	2.7	0.0	0.24	0.04
5	0.0	0.0	25.4	0.0	2.7	0.0	0.24	0.04
6	0.0	0.0	25.4	0.0	2.7	0.0	0.24	0.04
7	0.0	0.0	25.4	0.0	2.7	0.0	0.24	0.04
8	0.0	0.0	25.4	0.0	2.7	0.0	0.24	0.04
9	0.0	0.0	25.4	0.0	2.7	0.0	0.24	0.04
10	0.0	0.0	25.4	0.0	2.7	0.0	0.24	0.04
11	0.0	0.0	18.9	0.0	1.0	0.0	0.18	0.03
12	0.0	0.0	18.9	0.0	1.0	0.0	0.18	0.03
13	0.0	0.0	18.9	0.0	1.0	0.0	0.18	0.03
14	0.0	0.0	18.9	0.0	1.0	0.0	0.18	0.03
15	0.0	0.0	18.9	0.0	1.0	0.0	0.18	0.03
16	0.0	0.0	18.9	0.0	1.0	0.0	0.18	0.03
17	0.0	0.0	18.9	0.0	1.0	0.0	0.18	0.03
18	0.0	0.0	18.9	0.0	1.0	0.0	0.18	0.03
19	0.0	0.0	18.9	0.0	1.0	0.0	0.18	0.03
20	0.0	0.0	18.9	0.0	1.0	0.0	0.18	0.03
21	0.0	0.0	9.8	0.0	0.3	0.0	0.09	0.02
22	0.0	0.0	9.8	0.0	0.3	0.0	0.09	0.02
23	0.0	0.0	9.8	0.0	0.3	0.0	0.09	0.02
24	0.0	0.0	9.8	0.0	0.3	0.0	0.09	0.02
25	0.0	0.0	9.8	0.0	0.3	0.0	0.09	0.02
26	0.0	0.0	9.8	0.0	0.3	0.0	0.09	0.02
27	0.0	0.0	9.8	0.0	0.3	0.0	0.09	0.02
28	0.0	0.0	9.8	0.0	0.3	0.0	0.09	0.02
29	0.0	0.0	9.8	0.0	0.3	0.0	0.09	0.02
30	0.0	0.0	9.8	0.0	0.3	0.0	0.09	0.02

LOAD CASE - 2

PILE	F1 K	F2 K	F3 K	M1 IN-K	M2 IN-K	M3 IN-K	ALF	CBF
1	0.0	0.0	32.5	0.0	-0.5	0.0	0.26	0.04
2	0.0	0.0	32.5	0.0	-0.5	0.0	0.26	0.04
3	0.0	0.0	32.5	0.0	-0.5	0.0	0.26	0.04
4	0.0	0.0	32.5	0.0	-0.5	0.0	0.26	0.04
5	0.0	0.0	32.5	0.0	-0.5	0.0	0.26	0.04
6	0.0	0.0	32.5	0.0	-0.5	0.0	0.26	0.04
7	0.0	0.0	32.5	0.0	-0.5	0.0	0.26	0.04
8	0.0	0.0	32.5	0.0	-0.5	0.0	0.26	0.04
9	0.0	0.0	32.5	0.0	-0.5	0.0	0.26	0.04
10	0.0	0.0	32.5	0.0	-0.5	0.0	0.26	0.04
11	-0.1	0.0	17.7	0.0	4.7	0.0	0.14	0.02
12	-0.1	0.0	17.7	0.0	4.7	0.0	0.14	0.02
13	-0.1	0.0	17.7	0.0	4.7	0.0	0.14	0.02

14	-0.1	0.0	17.7	0.0	4.7	0.0	0.14	0.02
15	-0.1	0.0	17.7	0.0	4.7	0.0	0.14	0.02
16	-0.1	0.0	17.7	0.0	4.7	0.0	0.14	0.02
17	-0.1	0.0	17.7	0.0	4.7	0.0	0.14	0.02
18	-0.1	0.0	17.7	0.0	4.7	0.0	0.14	0.02
19	-0.1	0.0	17.7	0.0	4.7	0.0	0.14	0.02
20	-0.1	0.0	17.7	0.0	4.7	0.0	0.14	0.02
21	-0.1	0.0	18.4	0.0	4.8	0.0	0.15	0.03
22	-0.1	0.0	18.4	0.0	4.8	0.0	0.15	0.03
23	-0.1	0.0	18.4	0.0	4.8	0.0	0.15	0.03
24	-0.1	0.0	18.4	0.0	4.8	0.0	0.15	0.03
25	-0.1	0.0	18.4	0.0	4.8	0.0	0.15	0.03
26	-0.1	0.0	18.4	0.0	4.8	0.0	0.15	0.03
27	-0.1	0.0	18.4	0.0	4.8	0.0	0.15	0.03
28	-0.1	0.0	18.4	0.0	4.8	0.0	0.15	0.03
29	-0.1	0.0	18.4	0.0	4.8	0.0	0.15	0.03
30	-0.1	0.0	18.4	0.0	4.8	0.0	0.15	0.03

LOAD CASE - 3

PILE	F1 K	F2 K	F3 K	M1 IN-K	M2 IN-K	M3 IN-K	ALF	CBF
1	0.0	0.0	28.2	0.0	-0.5	0.0	0.20	0.03
2	0.0	0.0	28.2	0.0	-0.5	0.0	0.20	0.03
3	0.0	0.0	28.2	0.0	-0.5	0.0	0.20	0.03
4	0.0	0.0	28.2	0.0	-0.5	0.0	0.20	0.03
5	0.0	0.0	28.2	0.0	-0.5	0.0	0.20	0.03
6	0.0	0.0	28.2	0.0	-0.5	0.0	0.20	0.03
7	0.0	0.0	28.2	0.0	-0.5	0.0	0.20	0.03
8	0.0	0.0	28.2	0.0	-0.5	0.0	0.20	0.03
9	0.0	0.0	28.2	0.0	-0.5	0.0	0.20	0.03
10	0.0	0.0	28.2	0.0	-0.5	0.0	0.20	0.03
11	-0.1	0.0	18.4	0.0	4.4	0.0	0.13	0.02
12	-0.1	0.0	18.4	0.0	4.4	0.0	0.13	0.02
13	-0.1	0.0	18.4	0.0	4.4	0.0	0.13	0.02
14	-0.1	0.0	18.4	0.0	4.4	0.0	0.13	0.02
15	-0.1	0.0	18.4	0.0	4.4	0.0	0.13	0.02
16	-0.1	0.0	18.4	0.0	4.4	0.0	0.13	0.02
17	-0.1	0.0	18.4	0.0	4.4	0.0	0.13	0.02
18	-0.1	0.0	18.4	0.0	4.4	0.0	0.13	0.02
19	-0.1	0.0	18.4	0.0	4.4	0.0	0.13	0.02
20	-0.1	0.0	18.4	0.0	4.4	0.0	0.13	0.02
21	-0.1	0.0	22.0	0.0	4.7	0.0	0.15	0.03
22	-0.1	0.0	22.0	0.0	4.7	0.0	0.15	0.03
23	-0.1	0.0	22.0	0.0	4.7	0.0	0.15	0.03
24	-0.1	0.0	22.0	0.0	4.7	0.0	0.15	0.03
25	-0.1	0.0	22.0	0.0	4.7	0.0	0.15	0.03
26	-0.1	0.0	22.0	0.0	4.7	0.0	0.15	0.03

27	-0.1	0.0	22.0	0.0	4.7	0.0	0.15	0.03
28	-0.1	0.0	22.0	0.0	4.7	0.0	0.15	0.03
29	-0.1	0.0	22.0	0.0	4.7	0.0	0.15	0.03
30	-0.1	0.0	22.0	0.0	4.7	0.0	0.15	0.03

LOAD CASE - 4

PILE	F1 K	F2 K	F3 K	M1 IN-K	M2 IN-K	M3 IN-K	ALF	CBF
1	-0.1	0.0	16.0	0.0	4.2	0.0	0.15	0.03
2	-0.1	0.0	16.0	0.0	4.2	0.0	0.15	0.03
3	-0.1	0.0	16.0	0.0	4.2	0.0	0.15	0.03
4	-0.1	0.0	16.0	0.0	4.2	0.0	0.15	0.03
5	-0.1	0.0	16.0	0.0	4.2	0.0	0.15	0.03
6	-0.1	0.0	16.0	0.0	4.2	0.0	0.15	0.03
7	-0.1	0.0	16.0	0.0	4.2	0.0	0.15	0.03
8	-0.1	0.0	16.0	0.0	4.2	0.0	0.15	0.03
9	-0.1	0.0	16.0	0.0	4.2	0.0	0.15	0.03
10	-0.1	0.0	16.0	0.0	4.2	0.0	0.15	0.03
11	0.0	0.0	20.1	0.0	-1.2	0.0	0.19	0.03
12	0.0	0.0	20.1	0.0	-1.2	0.0	0.19	0.03
13	0.0	0.0	20.1	0.0	-1.2	0.0	0.19	0.03
14	0.0	0.0	20.1	0.0	-1.2	0.0	0.19	0.03
15	0.0	0.0	20.1	0.0	-1.2	0.0	0.19	0.03
16	0.0	0.0	20.1	0.0	-1.2	0.0	0.19	0.03
17	0.0	0.0	20.1	0.0	-1.2	0.0	0.19	0.03
18	0.0	0.0	20.1	0.0	-1.2	0.0	0.19	0.03
19	0.0	0.0	20.1	0.0	-1.2	0.0	0.19	0.03
20	0.0	0.0	20.1	0.0	-1.2	0.0	0.19	0.03
21	0.0	0.0	10.4	0.0	-2.0	0.0	0.10	0.02
22	0.0	0.0	10.4	0.0	-2.0	0.0	0.10	0.02
23	0.0	0.0	10.4	0.0	-2.0	0.0	0.10	0.02
24	0.0	0.0	10.4	0.0	-2.0	0.0	0.10	0.02
25	0.0	0.0	10.4	0.0	-2.0	0.0	0.10	0.02
26	0.0	0.0	10.4	0.0	-2.0	0.0	0.10	0.02
27	0.0	0.0	10.4	0.0	-2.0	0.0	0.10	0.02
28	0.0	0.0	10.4	0.0	-2.0	0.0	0.10	0.02
29	0.0	0.0	10.4	0.0	-2.0	0.0	0.10	0.02
30	0.0	0.0	10.4	0.0	-2.0	0.0	0.10	0.02

LOAD CASE - 5

PILE	F1 K	F2 K	F3 K	M1 IN-K	M2 IN-K	M3 IN-K	ALF	CBF
1	-0.1	0.0	13.1	0.0	6.9	0.0	0.12	0.02
2	-0.1	0.0	13.1	0.0	6.9	0.0	0.12	0.02

3	-0.1	0.0	13.1	0.0	6.9	0.0	0.12	0.02
4	-0.1	0.0	13.1	0.0	6.9	0.0	0.12	0.02
5	-0.1	0.0	13.1	0.0	6.9	0.0	0.12	0.02
6	-0.1	0.0	13.1	0.0	6.9	0.0	0.12	0.02
7	-0.1	0.0	13.1	0.0	6.9	0.0	0.12	0.02
8	-0.1	0.0	13.1	0.0	6.9	0.0	0.12	0.02
9	-0.1	0.0	13.1	0.0	6.9	0.0	0.12	0.02
10	-0.1	0.0	13.1	0.0	6.9	0.0	0.12	0.02
11	0.1	0.0	22.8	0.0	-3.9	0.0	0.21	0.04
12	0.1	0.0	22.8	0.0	-3.9	0.0	0.21	0.04
13	0.1	0.0	22.8	0.0	-3.9	0.0	0.21	0.04
14	0.1	0.0	22.8	0.0	-3.9	0.0	0.21	0.04
15	0.1	0.0	22.8	0.0	-3.9	0.0	0.21	0.04
16	0.1	0.0	22.8	0.0	-3.9	0.0	0.21	0.04
17	0.1	0.0	22.8	0.0	-3.9	0.0	0.21	0.04
18	0.1	0.0	22.8	0.0	-3.9	0.0	0.21	0.04
19	0.1	0.0	22.8	0.0	-3.9	0.0	0.21	0.04
20	0.1	0.0	22.8	0.0	-3.9	0.0	0.21	0.04
21	0.1	0.0	4.6	0.0	-5.5	0.0	0.04	0.01
22	0.1	0.0	4.6	0.0	-5.5	0.0	0.04	0.01
23	0.1	0.0	4.6	0.0	-5.5	0.0	0.04	0.01
24	0.1	0.0	4.6	0.0	-5.5	0.0	0.04	0.01
25	0.1	0.0	4.6	0.0	-5.5	0.0	0.04	0.01
26	0.1	0.0	4.6	0.0	-5.5	0.0	0.04	0.01
27	0.1	0.0	4.6	0.0	-5.5	0.0	0.04	0.01
28	0.1	0.0	4.6	0.0	-5.5	0.0	0.04	0.01
29	0.1	0.0	4.6	0.0	-5.5	0.0	0.04	0.01
30	0.1	0.0	4.6	0.0	-5.5	0.0	0.04	0.01

LOAD CASE - 6

PILE	F1 K	F2 K	F3 K	M1 IN-K	M2 IN-K	M3 IN-K	ALF	CBF
1	0.0	0.0	10.2	0.0	1.4	0.0	0.07	0.01
2	0.0	0.0	10.2	0.0	1.4	0.0	0.07	0.01
3	0.0	0.0	10.2	0.0	1.4	0.0	0.07	0.01
4	0.0	0.0	10.2	0.0	1.4	0.0	0.07	0.01
5	0.0	0.0	10.2	0.0	1.4	0.0	0.07	0.01
6	0.0	0.0	10.2	0.0	1.4	0.0	0.07	0.01
7	0.0	0.0	10.2	0.0	1.4	0.0	0.07	0.01
8	0.0	0.0	10.2	0.0	1.4	0.0	0.07	0.01
9	0.0	0.0	10.2	0.0	1.4	0.0	0.07	0.01
10	0.0	0.0	10.2	0.0	1.4	0.0	0.07	0.01
11	0.0	0.0	16.3	0.0	0.9	0.0	0.11	0.02
12	0.0	0.0	16.3	0.0	0.9	0.0	0.11	0.02
13	0.0	0.0	16.3	0.0	0.9	0.0	0.11	0.02
14	0.0	0.0	16.3	0.0	0.9	0.0	0.11	0.02
15	0.0	0.0	16.3	0.0	0.9	0.0	0.11	0.02

16	0.0	0.0	16.3	0.0	0.9	0.0	0.11	0.02
17	0.0	0.0	16.3	0.0	0.9	0.0	0.11	0.02
18	0.0	0.0	16.3	0.0	0.9	0.0	0.11	0.02
19	0.0	0.0	16.3	0.0	0.9	0.0	0.11	0.02
20	0.0	0.0	16.3	0.0	0.9	0.0	0.11	0.02
21	0.0	0.0	20.1	0.0	1.2	0.0	0.14	0.02
22	0.0	0.0	20.1	0.0	1.2	0.0	0.14	0.02
23	0.0	0.0	20.1	0.0	1.2	0.0	0.14	0.02
24	0.0	0.0	20.1	0.0	1.2	0.0	0.14	0.02
25	0.0	0.0	20.1	0.0	1.2	0.0	0.14	0.02
26	0.0	0.0	20.1	0.0	1.2	0.0	0.14	0.02
27	0.0	0.0	20.1	0.0	1.2	0.0	0.14	0.02
28	0.0	0.0	20.1	0.0	1.2	0.0	0.14	0.02
29	0.0	0.0	20.1	0.0	1.2	0.0	0.14	0.02
30	0.0	0.0	20.1	0.0	1.2	0.0	0.14	0.02

LOAD CASE - 7

PILE	F1 K	F2 K	F3 K	M1 IN-K	M2 IN-K	M3 IN-K	ALF	CBF
1	-0.1	0.0	7.3	0.0	4.1	0.0	0.05	0.01
2	-0.1	0.0	7.3	0.0	4.1	0.0	0.05	0.01
3	-0.1	0.0	7.3	0.0	4.1	0.0	0.05	0.01
4	-0.1	0.0	7.3	0.0	4.1	0.0	0.05	0.01
5	-0.1	0.0	7.3	0.0	4.1	0.0	0.05	0.01
6	-0.1	0.0	7.3	0.0	4.1	0.0	0.05	0.01
7	-0.1	0.0	7.3	0.0	4.1	0.0	0.05	0.01
8	-0.1	0.0	7.3	0.0	4.1	0.0	0.05	0.01
9	-0.1	0.0	7.3	0.0	4.1	0.0	0.05	0.01
10	-0.1	0.0	7.3	0.0	4.1	0.0	0.05	0.01
11	0.0	0.0	19.0	0.0	-1.9	0.0	0.13	0.02
12	0.0	0.0	19.0	0.0	-1.9	0.0	0.13	0.02
13	0.0	0.0	19.0	0.0	-1.9	0.0	0.13	0.02
14	0.0	0.0	19.0	0.0	-1.9	0.0	0.13	0.02
15	0.0	0.0	19.0	0.0	-1.9	0.0	0.13	0.02
16	0.0	0.0	19.0	0.0	-1.9	0.0	0.13	0.02
17	0.0	0.0	19.0	0.0	-1.9	0.0	0.13	0.02
18	0.0	0.0	19.0	0.0	-1.9	0.0	0.13	0.02
19	0.0	0.0	19.0	0.0	-1.9	0.0	0.13	0.02
20	0.0	0.0	19.0	0.0	-1.9	0.0	0.13	0.02
21	0.0	0.0	14.2	0.0	-2.3	0.0	0.10	0.02
22	0.0	0.0	14.2	0.0	-2.3	0.0	0.10	0.02
23	0.0	0.0	14.2	0.0	-2.3	0.0	0.10	0.02
24	0.0	0.0	14.2	0.0	-2.3	0.0	0.10	0.02
25	0.0	0.0	14.2	0.0	-2.3	0.0	0.10	0.02
26	0.0	0.0	14.2	0.0	-2.3	0.0	0.10	0.02
27	0.0	0.0	14.2	0.0	-2.3	0.0	0.10	0.02
28	0.0	0.0	14.2	0.0	-2.3	0.0	0.10	0.02

29	0.0	0.0	14.2	0.0	-2.3	0.0	0.10	0.02
30	0.0	0.0	14.2	0.0	-2.3	0.0	0.10	0.02

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PILE FORCES IN GLOBAL GEOMETRY

LOAD CASE - 1

PILE	PX K	PY K	PZ K	MX IN-K	MY IN-K	MZ IN-K
1	0.0	-11.3	22.7	0.0	0.0	0.0
2	0.0	-11.3	22.7	0.0	0.0	0.0
3	0.0	-11.3	22.7	0.0	0.0	0.0
4	0.0	-11.3	22.7	0.0	0.0	0.0
5	0.0	-11.3	22.7	0.0	0.0	0.0
6	0.0	-11.3	22.7	0.0	0.0	0.0
7	0.0	-11.3	22.7	0.0	0.0	0.0
8	0.0	-11.3	22.7	0.0	0.0	0.0
9	0.0	-11.3	22.7	0.0	0.0	0.0
10	0.0	-11.3	22.7	0.0	0.0	0.0
11	0.0	8.4	16.9	0.0	0.0	0.0
12	0.0	8.4	16.9	0.0	0.0	0.0
13	0.0	8.4	16.9	0.0	0.0	0.0
14	0.0	8.4	16.9	0.0	0.0	0.0
15	0.0	8.4	16.9	0.0	0.0	0.0
16	0.0	8.4	16.9	0.0	0.0	0.0
17	0.0	8.4	16.9	0.0	0.0	0.0
18	0.0	8.4	16.9	0.0	0.0	0.0
19	0.0	8.4	16.9	0.0	0.0	0.0
20	0.0	8.4	16.9	0.0	0.0	0.0
21	0.0	4.4	8.8	0.0	0.0	0.0
22	0.0	4.4	8.8	0.0	0.0	0.0
23	0.0	4.4	8.8	0.0	0.0	0.0
24	0.0	4.4	8.8	0.0	0.0	0.0
25	0.0	4.4	8.8	0.0	0.0	0.0
26	0.0	4.4	8.8	0.0	0.0	0.0
27	0.0	4.4	8.8	0.0	0.0	0.0
28	0.0	4.4	8.8	0.0	0.0	0.0
29	0.0	4.4	8.8	0.0	0.0	0.0
30	0.0	4.4	8.8	0.0	0.0	0.0

LOAD CASE - 2

PILE	PX	PY	PZ	MX	MY	MZ

	K	K	K	IN-K	IN-K	IN-K
1	0.0	-14.5	29.1	0.0	0.0	0.0
2	0.0	-14.5	29.1	0.0	0.0	0.0
3	0.0	-14.5	29.1	0.0	0.0	0.0
4	0.0	-14.5	29.1	0.0	0.0	0.0
5	0.0	-14.5	29.1	0.0	0.0	0.0
6	0.0	-14.5	29.1	0.0	0.0	0.0
7	0.0	-14.5	29.1	0.0	0.0	0.0
8	0.0	-14.5	29.1	0.0	0.0	0.0
9	0.0	-14.5	29.1	0.0	0.0	0.0
10	0.0	-14.5	29.1	0.0	0.0	0.0
11	0.0	7.9	15.9	0.0	0.0	0.0
12	0.0	7.9	15.9	0.0	0.0	0.0
13	0.0	7.9	15.9	0.0	0.0	0.0
14	0.0	7.9	15.9	0.0	0.0	0.0
15	0.0	7.9	15.9	0.0	0.0	0.0
16	0.0	7.9	15.9	0.0	0.0	0.0
17	0.0	7.9	15.9	0.0	0.0	0.0
18	0.0	7.9	15.9	0.0	0.0	0.0
19	0.0	7.9	15.9	0.0	0.0	0.0
20	0.0	7.9	15.9	0.0	0.0	0.0
21	0.0	8.2	16.5	0.0	0.0	0.0
22	0.0	8.2	16.5	0.0	0.0	0.0
23	0.0	8.2	16.5	0.0	0.0	0.0
24	0.0	8.2	16.5	0.0	0.0	0.0
25	0.0	8.2	16.5	0.0	0.0	0.0
26	0.0	8.2	16.5	0.0	0.0	0.0
27	0.0	8.2	16.5	0.0	0.0	0.0
28	0.0	8.2	16.5	0.0	0.0	0.0
29	0.0	8.2	16.5	0.0	0.0	0.0
30	0.0	8.2	16.5	0.0	0.0	0.0

LOAD CASE - 3

PILE	PX	PY	PZ	MX	MY	MZ
	K	K	K	IN-K	IN-K	IN-K
1	0.0	-12.6	25.3	0.0	0.0	0.0
2	0.0	-12.6	25.3	0.0	0.0	0.0
3	0.0	-12.6	25.3	0.0	0.0	0.0
4	0.0	-12.6	25.3	0.0	0.0	0.0
5	0.0	-12.6	25.3	0.0	0.0	0.0
6	0.0	-12.6	25.3	0.0	0.0	0.0
7	0.0	-12.6	25.3	0.0	0.0	0.0
8	0.0	-12.6	25.3	0.0	0.0	0.0
9	0.0	-12.6	25.3	0.0	0.0	0.0
10	0.0	-12.6	25.3	0.0	0.0	0.0
11	0.0	8.2	16.4	0.0	0.0	0.0

12	0.0	8.2	16.4	0.0	0.0	0.0
13	0.0	8.2	16.4	0.0	0.0	0.0
14	0.0	8.2	16.4	0.0	0.0	0.0
15	0.0	8.2	16.4	0.0	0.0	0.0
16	0.0	8.2	16.4	0.0	0.0	0.0
17	0.0	8.2	16.4	0.0	0.0	0.0
18	0.0	8.2	16.4	0.0	0.0	0.0
19	0.0	8.2	16.4	0.0	0.0	0.0
20	0.0	8.2	16.4	0.0	0.0	0.0
21	0.0	9.8	19.7	0.0	0.0	0.0
22	0.0	9.8	19.7	0.0	0.0	0.0
23	0.0	9.8	19.7	0.0	0.0	0.0
24	0.0	9.8	19.7	0.0	0.0	0.0
25	0.0	9.8	19.7	0.0	0.0	0.0
26	0.0	9.8	19.7	0.0	0.0	0.0
27	0.0	9.8	19.7	0.0	0.0	0.0
28	0.0	9.8	19.7	0.0	0.0	0.0
29	0.0	9.8	19.7	0.0	0.0	0.0
30	0.0	9.8	19.7	0.0	0.0	0.0

LOAD CASE - 4

PILE	PX K	PY K	PZ K	MX IN-K	MY IN-K	MZ IN-K
1	0.0	-7.1	14.4	0.0	0.0	0.0
2	0.0	-7.1	14.4	0.0	0.0	0.0
3	0.0	-7.1	14.4	0.0	0.0	0.0
4	0.0	-7.1	14.4	0.0	0.0	0.0
5	0.0	-7.1	14.4	0.0	0.0	0.0
6	0.0	-7.1	14.4	0.0	0.0	0.0
7	0.0	-7.1	14.4	0.0	0.0	0.0
8	0.0	-7.1	14.4	0.0	0.0	0.0
9	0.0	-7.1	14.4	0.0	0.0	0.0
10	0.0	-7.1	14.4	0.0	0.0	0.0
11	0.0	9.0	18.0	0.0	0.0	0.0
12	0.0	9.0	18.0	0.0	0.0	0.0
13	0.0	9.0	18.0	0.0	0.0	0.0
14	0.0	9.0	18.0	0.0	0.0	0.0
15	0.0	9.0	18.0	0.0	0.0	0.0
16	0.0	9.0	18.0	0.0	0.0	0.0
17	0.0	9.0	18.0	0.0	0.0	0.0
18	0.0	9.0	18.0	0.0	0.0	0.0
19	0.0	9.0	18.0	0.0	0.0	0.0
20	0.0	9.0	18.0	0.0	0.0	0.0
21	0.0	4.7	9.3	0.0	0.0	0.0
22	0.0	4.7	9.3	0.0	0.0	0.0
23	0.0	4.7	9.3	0.0	0.0	0.0
24	0.0	4.7	9.3	0.0	0.0	0.0

25	0.0	4.7	9.3	0.0	0.0	0.0
26	0.0	4.7	9.3	0.0	0.0	0.0
27	0.0	4.7	9.3	0.0	0.0	0.0
28	0.0	4.7	9.3	0.0	0.0	0.0
29	0.0	4.7	9.3	0.0	0.0	0.0
30	0.0	4.7	9.3	0.0	0.0	0.0

LOAD CASE - 5

PILE	PX K	PY K	PZ K	MX IN-K	MY IN-K	MZ IN-K
1	0.0	-5.8	11.8	0.0	0.0	0.0
2	0.0	-5.8	11.8	0.0	0.0	0.0
3	0.0	-5.8	11.8	0.0	0.0	0.0
4	0.0	-5.8	11.8	0.0	0.0	0.0
5	0.0	-5.8	11.8	0.0	0.0	0.0
6	0.0	-5.8	11.8	0.0	0.0	0.0
7	0.0	-5.8	11.8	0.0	0.0	0.0
8	0.0	-5.8	11.8	0.0	0.0	0.0
9	0.0	-5.8	11.8	0.0	0.0	0.0
10	0.0	-5.8	11.8	0.0	0.0	0.0
11	0.0	10.3	20.4	0.0	0.0	0.0
12	0.0	10.3	20.4	0.0	0.0	0.0
13	0.0	10.3	20.4	0.0	0.0	0.0
14	0.0	10.3	20.4	0.0	0.0	0.0
15	0.0	10.3	20.4	0.0	0.0	0.0
16	0.0	10.3	20.4	0.0	0.0	0.0
17	0.0	10.3	20.4	0.0	0.0	0.0
18	0.0	10.3	20.4	0.0	0.0	0.0
19	0.0	10.3	20.4	0.0	0.0	0.0
20	0.0	10.3	20.4	0.0	0.0	0.0
21	0.0	2.1	4.1	0.0	0.0	0.0
22	0.0	2.1	4.1	0.0	0.0	0.0
23	0.0	2.1	4.1	0.0	0.0	0.0
24	0.0	2.1	4.1	0.0	0.0	0.0
25	0.0	2.1	4.1	0.0	0.0	0.0
26	0.0	2.1	4.1	0.0	0.0	0.0
27	0.0	2.1	4.1	0.0	0.0	0.0
28	0.0	2.1	4.1	0.0	0.0	0.0
29	0.0	2.1	4.1	0.0	0.0	0.0
30	0.0	2.1	4.1	0.0	0.0	0.0

LOAD CASE - 6

PILE	PX K	PY K	PZ K	MX IN-K	MY IN-K	MZ IN-K

1	0.0	-4.5	9.1	0.0	0.0	0.0
2	0.0	-4.5	9.1	0.0	0.0	0.0
3	0.0	-4.5	9.1	0.0	0.0	0.0
4	0.0	-4.5	9.1	0.0	0.0	0.0
5	0.0	-4.5	9.1	0.0	0.0	0.0
6	0.0	-4.5	9.1	0.0	0.0	0.0
7	0.0	-4.5	9.1	0.0	0.0	0.0
8	0.0	-4.5	9.1	0.0	0.0	0.0
9	0.0	-4.5	9.1	0.0	0.0	0.0
10	0.0	-4.5	9.1	0.0	0.0	0.0
11	0.0	7.3	14.6	0.0	0.0	0.0
12	0.0	7.3	14.6	0.0	0.0	0.0
13	0.0	7.3	14.6	0.0	0.0	0.0
14	0.0	7.3	14.6	0.0	0.0	0.0
15	0.0	7.3	14.6	0.0	0.0	0.0
16	0.0	7.3	14.6	0.0	0.0	0.0
17	0.0	7.3	14.6	0.0	0.0	0.0
18	0.0	7.3	14.6	0.0	0.0	0.0
19	0.0	7.3	14.6	0.0	0.0	0.0
20	0.0	7.3	14.6	0.0	0.0	0.0
21	0.0	9.0	17.9	0.0	0.0	0.0
22	0.0	9.0	17.9	0.0	0.0	0.0
23	0.0	9.0	17.9	0.0	0.0	0.0
24	0.0	9.0	17.9	0.0	0.0	0.0
25	0.0	9.0	17.9	0.0	0.0	0.0
26	0.0	9.0	17.9	0.0	0.0	0.0
27	0.0	9.0	17.9	0.0	0.0	0.0
28	0.0	9.0	17.9	0.0	0.0	0.0
29	0.0	9.0	17.9	0.0	0.0	0.0
30	0.0	9.0	17.9	0.0	0.0	0.0

LOAD CASE - 7

PILE	PX K	PY K	PZ K	MX IN-K	MY IN-K	MZ IN-K
1	0.0	-3.2	6.6	0.0	0.0	0.0
2	0.0	-3.2	6.6	0.0	0.0	0.0
3	0.0	-3.2	6.6	0.0	0.0	0.0
4	0.0	-3.2	6.6	0.0	0.0	0.0
5	0.0	-3.2	6.6	0.0	0.0	0.0
6	0.0	-3.2	6.6	0.0	0.0	0.0
7	0.0	-3.2	6.6	0.0	0.0	0.0
8	0.0	-3.2	6.6	0.0	0.0	0.0
9	0.0	-3.2	6.6	0.0	0.0	0.0
10	0.0	-3.2	6.6	0.0	0.0	0.0
11	0.0	8.5	17.0	0.0	0.0	0.0
12	0.0	8.5	17.0	0.0	0.0	0.0
13	0.0	8.5	17.0	0.0	0.0	0.0

14	0.0	8.5	17.0	0.0	0.0	0.0
15	0.0	8.5	17.0	0.0	0.0	0.0
16	0.0	8.5	17.0	0.0	0.0	0.0
17	0.0	8.5	17.0	0.0	0.0	0.0
18	0.0	8.5	17.0	0.0	0.0	0.0
19	0.0	8.5	17.0	0.0	0.0	0.0
20	0.0	8.5	17.0	0.0	0.0	0.0
21	0.0	6.4	12.7	0.0	0.0	0.0
22	0.0	6.4	12.7	0.0	0.0	0.0
23	0.0	6.4	12.7	0.0	0.0	0.0
24	0.0	6.4	12.7	0.0	0.0	0.0
25	0.0	6.4	12.7	0.0	0.0	0.0
26	0.0	6.4	12.7	0.0	0.0	0.0
27	0.0	6.4	12.7	0.0	0.0	0.0
28	0.0	6.4	12.7	0.0	0.0	0.0
29	0.0	6.4	12.7	0.0	0.0	0.0
30	0.0	6.4	12.7	0.0	0.0	0.0

NO FILES WERE GENERATED DURING THIS RUN.

```
10  Sunset Reach E (5B) T-1 Twall Pinned
20  PIL  1  -22.5   2.5   0
30  BAT   2   1
40  ANG   270   1
50  PIL  2  -17.5   2.5   0
60  BAT   2   2
70  ANG   270   2
80  PIL  3  -12.5   2.5   0
90  BAT   2   3
100  ANG   270   3
110  PIL  4  -7.5   2.5   0
120  BAT   2   4
130  ANG   270   4
140  PIL  5  -2.5   2.5   0
150  BAT   2   5
160  ANG   270   5
170  PIL  6   2.5   2.5   0
180  BAT   2   6
190  ANG   270   6
200  PIL  7   7.5   2.5   0
210  BAT   2   7
220  ANG   270   7
230  PIL  8   12.5   2.5   0
240  BAT   2   8
250  ANG   270   8
260  PIL  9   17.5   2.5   0
270  BAT   2   9
280  ANG   270   9
290  PIL  10   22.5   2.5   0
300  BAT   2   10
310  ANG   270   10
320  PIL  11  -22.5   7.5   0
330  BAT   2   11
340  ANG   90   11
350  PIL  12  -17.5   7.5   0
360  BAT   2   12
370  ANG   90   12
380  PIL  13  -12.5   7.5   0
390  BAT   2   13
400  ANG   90   13
410  PIL  14  -7.5   7.5   0
420  BAT   2   14
430  ANG   90   14
440  PIL  15  -2.5   7.5   0
450  BAT   2   15
460  ANG   90   15
470  PIL  16   2.5   7.5   0
480  BAT   2   16
490  ANG   90   16
500  PIL  17   7.5   7.5   0
```

```
510  BAT   2   17
520  ANG   90   17
530  PIL  18   12.5   7.5   0
540  BAT   2   18
550  ANG   90   18
560  PIL  19   17.5   7.5   0
570  BAT   2   19
580  ANG   90   19
590  PIL  20   22.5   7.5   0
600  BAT   2   20
610  ANG   90   20
620  PIL  21  -22.5   12.5   0
630  BAT   2   21
640  ANG   90   21
650  PIL  22  -17.5   12.5   0
660  BAT   2   22
670  ANG   90   22
680  PIL  23  -12.5   12.5   0
690  BAT   2   23
700  ANG   90   23
710  PIL  24  -7.5   12.5   0
720  BAT   2   24
730  ANG   90   24
740  PIL  25  -2.5   12.5   0
750  BAT   2   25
760  ANG   90   25
770  PIL  26   2.5   12.5   0
780  BAT   2   26
790  ANG   90   26
800  PIL  27   7.5   12.5   0
810  BAT   2   27
820  ANG   90   27
830  PIL  28   12.5   12.5   0
840  BAT   2   28
850  ANG   90   28
860  PIL  29   17.5   12.5   0
870  BAT   2   29
880  ANG   90   29
890  PIL  30   22.5   12.5   0
900  BAT   2   30
910  ANG   90   30
920  PRO  29000  326  904  26.1  2  0  1 TO 30
930  SOI ES 0.0345 L  69  0  1 TO 30
940  RED  1  1  1
950  ALL H 107  85  652  652  1107  3275  1 TO 30
960  PIN  1 TO 30
970  LOA  8  0  417  361  5008  0  0
970  LOA  9  0  417  236  3760  0  0
970  FOV  1.33  1.33  8
970  FOV  1.33  1.33  9
```

```
980  TOUT   1  2  3  4  5  6  7
990  PFO ALL
1000  PLB ALL
```

CPGA - CASE PILE GROUP ANALYSIS PROGRAM
RUN DATE: 01-SEP-20 RUN TIME: 20:11:31

FOR PILES WITH UNSUPPORTED HEIGHT:
A. CPGA CANNOT CALCULATE PMAXMOM FOR NH TYPE SOIL
B. THE ALLOWABLE STRESS CHECKS, ASC AND AST, ARE
NOT FULLY DEVELOPED FOR UNSUPPORTED PILES.
WORK IS IN PROGRESS TO COMPLETE THIS ASPECT OF CPGA.

ELASTIC CENTER LOCATION IS NOT COMPUTED FOR 3-DIMENSIONAL PROBLEMS.

SUNSET REACH E (5B) T-1 TWALL PINNED
DATA UNKNOWN - REJECTED.

THERE ARE 30 PILES AND
2 LOAD CASES IN THIS RUN.

ALL PILE COORDINATES ARE CONTAINED WITHIN A BOX

	X	Y	Z
WITH DIAGONAL COORDINATES = (	-22.50 ,	2.50 ,	0.00)
(	22.50 ,	12.50 ,	0.00)

****

PILE PROPERTIES AS INPUT

E	I1	I2	A	C33	B66
KSI	IN**4	IN**4	IN**2		
0.29000E+05	0.32600E+03	0.90400E+03	0.26100E+02	0.20000E+01	0.00000E+00

THESE PILE PROPERTIES APPLY TO THE FOLLOWING PILES -

ALL

****

SOIL DESCRIPTIONS AS INPUT

ES	ESOIL	LENGTH	L	LU
	K/IN**2		FT	FT

```
        0.34500E-01    L      0.69000E+02   0.00000E+00

 ESOIL(ORIGINAL)     RGROUP     RCYCLIC
   K/IN**2
  0.34500E-01       0.1000E+01 0.1000E+01

THIS SOIL DESCRIPTION APPLIES TO THE FOLLOWING PILES -

    ALL

*************************************************************************

         PILE STIFFNESSES AS CALCULATED FROM PROPERTIES


 0.40503E+01  0.00000E+00  0.00000E+00  0.00000E+00  0.00000E+00  0.00000E+00
 0.00000E+00  0.31387E+01  0.00000E+00  0.00000E+00  0.00000E+00  0.00000E+00
 0.00000E+00  0.00000E+00  0.18283E+04  0.00000E+00  0.00000E+00  0.00000E+00
 0.00000E+00  0.00000E+00  0.00000E+00  0.00000E+00  0.00000E+00  0.00000E+00
 0.00000E+00  0.00000E+00  0.00000E+00  0.00000E+00  0.00000E+00  0.00000E+00
 0.00000E+00  0.00000E+00  0.00000E+00  0.00000E+00  0.00000E+00  0.00000E+00


THIS MATRIX APPLIES TO THE FOLLOWING PILES -

   1


*************************************************************************

         PILE GEOMETRY AS INPUT AND/OR GENERATED

NUM        X          Y          Z      BATTER    ANGLE    LENGTH  FIXITY
          FT         FT         FT                          FT

  1     -22.50       2.50       0.00      2.00    270.00    69.00     P
  2     -17.50       2.50       0.00      2.00    270.00    69.00     P
  3     -12.50       2.50       0.00      2.00    270.00    69.00     P
  4      -7.50       2.50       0.00      2.00    270.00    69.00     P
  5      -2.50       2.50       0.00      2.00    270.00    69.00     P
  6       2.50       2.50       0.00      2.00    270.00    69.00     P
  7       7.50       2.50       0.00      2.00    270.00    69.00     P
  8      12.50       2.50       0.00      2.00    270.00    69.00     P
  9      17.50       2.50       0.00      2.00    270.00    69.00     P
 10      22.50       2.50       0.00      2.00    270.00    69.00     P
 11     -22.50       7.50       0.00      2.00     90.00    69.00     P
 12     -17.50       7.50       0.00      2.00     90.00    69.00     P
 13     -12.50       7.50       0.00      2.00     90.00    69.00     P
 14      -7.50       7.50       0.00      2.00     90.00    69.00     P
```

15	-2.50	7.50	0.00	2.00	90.00	69.00	P
16	2.50	7.50	0.00	2.00	90.00	69.00	P
17	7.50	7.50	0.00	2.00	90.00	69.00	P
18	12.50	7.50	0.00	2.00	90.00	69.00	P
19	17.50	7.50	0.00	2.00	90.00	69.00	P
20	22.50	7.50	0.00	2.00	90.00	69.00	P
21	-22.50	12.50	0.00	2.00	90.00	69.00	P
22	-17.50	12.50	0.00	2.00	90.00	69.00	P
23	-12.50	12.50	0.00	2.00	90.00	69.00	P
24	-7.50	12.50	0.00	2.00	90.00	69.00	P
25	-2.50	12.50	0.00	2.00	90.00	69.00	P
26	2.50	12.50	0.00	2.00	90.00	69.00	P
27	7.50	12.50	0.00	2.00	90.00	69.00	P
28	12.50	12.50	0.00	2.00	90.00	69.00	P
29	17.50	12.50	0.00	2.00	90.00	69.00	P
30	22.50	12.50	0.00	2.00	90.00	69.00	P

						2070.00	

****

APPLIED LOADS

LOAD CASE	PX K	PY K	PZ K	MX FT-K	MY FT-K	MZ FT-K	OVERSTRESS COM	TEN
8	0.0	417.0	361.0	5008.0	0.0	0.0	1.33	1.33
9	0.0	417.0	236.0	3760.0	0.0	0.0	1.33	1.33

****

ORIGINAL PILE GROUP STIFFNESS MATRIX

0.94162E+02	0.22252E-03	-0.88788E-04	0.13318E-01	0.00000E+00	-0.84746E+04
0.22252E-03	0.11067E+05	0.72968E+04	0.15323E+07	-0.87311E-10	-0.14687E-01
-0.88788E-04	0.72968E+04	0.43903E+05	0.39512E+07	-0.11642E-09	-0.13318E-01
0.13318E-01	0.15323E+07	0.39512E+07	0.46098E+09	-0.14901E-07	-0.24772E+01
0.21684E-17	0.29104E-10	-0.17462E-09	0.14901E-07	0.13039E+10	-0.21672E+09
-0.84746E+04	-0.14687E-01	-0.13318E-01	-0.24772E+01	-0.21672E+09	0.32967E+09

30 PILES 2 LOAD CASES

LOAD CASE 8. NUMBER OF FAILURES = 0. NUMBER OF PILES IN TENSION = 10.

LOAD CASE 9. NUMBER OF FAILURES = 0. NUMBER OF PILES IN TENSION = 10.

****

PILE CAP DISPLACEMENTS

LOAD CASE	DX IN	DY IN	DZ IN	RX RAD	RY RAD	RZ RAD
8	-0.8324E-07	0.4950E-01	0.1344E-01	-0.1494E-03	-0.9589E-13	-0.5770E-12
9	-0.9079E-07	0.6958E-01	0.2545E-01	-0.3516E-03	-0.1582E-12	-0.9516E-12

****

PILE FORCES IN LOCAL GEOMETRY

M1 & M2 NOT AT PILE HEAD FOR PINNED PILES
* INDICATES PILE FAILURE
# INDICATES CBF BASED ON MOMENTS DUE TO
(F3*EMIN) FOR CONCRETE PILES
B INDICATES BUCKLING CONTROLS

LOAD CASE - 8

PILE	F1 K	F2 K	F3 K	M1 IN-K	M2 IN-K	M3 IN-K	ALF	CBF
1	-0.2	0.0	-25.8	0.0	14.8	0.0	0.23	0.03
2	-0.2	0.0	-25.8	0.0	14.8	0.0	0.23	0.03
3	-0.2	0.0	-25.8	0.0	14.8	0.0	0.23	0.03
4	-0.2	0.0	-25.8	0.0	14.8	0.0	0.23	0.03
5	-0.2	0.0	-25.8	0.0	14.8	0.0	0.23	0.03
6	-0.2	0.0	-25.8	0.0	14.8	0.0	0.23	0.03
7	-0.2	0.0	-25.8	0.0	14.8	0.0	0.23	0.03
8	-0.2	0.0	-25.8	0.0	14.8	0.0	0.23	0.03
9	-0.2	0.0	-25.8	0.0	14.8	0.0	0.23	0.03
10	-0.2	0.0	-25.8	0.0	14.8	0.0	0.23	0.03
11	0.2	0.0	40.5	0.0	-13.6	0.0	0.28	0.05
12	0.2	0.0	40.5	0.0	-13.6	0.0	0.28	0.05
13	0.2	0.0	40.5	0.0	-13.6	0.0	0.28	0.05
14	0.2	0.0	40.5	0.0	-13.6	0.0	0.28	0.05
15	0.2	0.0	40.5	0.0	-13.6	0.0	0.28	0.05
16	0.2	0.0	40.5	0.0	-13.6	0.0	0.28	0.05
17	0.2	0.0	40.5	0.0	-13.6	0.0	0.28	0.05
18	0.2	0.0	40.5	0.0	-13.6	0.0	0.28	0.05
19	0.2	0.0	40.5	0.0	-13.6	0.0	0.28	0.05
20	0.2	0.0	40.5	0.0	-13.6	0.0	0.28	0.05

21	0.2	0.0	25.8	0.0	-14.8	0.0	0.18	0.03
22	0.2	0.0	25.8	0.0	-14.8	0.0	0.18	0.03
23	0.2	0.0	25.8	0.0	-14.8	0.0	0.18	0.03
24	0.2	0.0	25.8	0.0	-14.8	0.0	0.18	0.03
25	0.2	0.0	25.8	0.0	-14.8	0.0	0.18	0.03
26	0.2	0.0	25.8	0.0	-14.8	0.0	0.18	0.03
27	0.2	0.0	25.8	0.0	-14.8	0.0	0.18	0.03
28	0.2	0.0	25.8	0.0	-14.8	0.0	0.18	0.03
29	0.2	0.0	25.8	0.0	-14.8	0.0	0.18	0.03
30	0.2	0.0	25.8	0.0	-14.8	0.0	0.18	0.03

LOAD CASE - 9

PILE	F1 K	F2 K	F3 K	M1 IN-K	M2 IN-K	M3 IN-K	ALF	CBF
1	-0.3	0.0	-32.5	0.0	21.1	0.0	0.29	0.04
2	-0.3	0.0	-32.5	0.0	21.1	0.0	0.29	0.04
3	-0.3	0.0	-32.5	0.0	21.1	0.0	0.29	0.04
4	-0.3	0.0	-32.5	0.0	21.1	0.0	0.29	0.04
5	-0.3	0.0	-32.5	0.0	21.1	0.0	0.29	0.04
6	-0.3	0.0	-32.5	0.0	21.1	0.0	0.29	0.04
7	-0.3	0.0	-32.5	0.0	21.1	0.0	0.29	0.04
8	-0.3	0.0	-32.5	0.0	21.1	0.0	0.29	0.04
9	-0.3	0.0	-32.5	0.0	21.1	0.0	0.29	0.04
10	-0.3	0.0	-32.5	0.0	21.1	0.0	0.29	0.04
11	0.3	0.0	46.8	0.0	-19.9	0.0	0.33	0.06
12	0.3	0.0	46.8	0.0	-19.9	0.0	0.33	0.06
13	0.3	0.0	46.8	0.0	-19.9	0.0	0.33	0.06
14	0.3	0.0	46.8	0.0	-19.9	0.0	0.33	0.06
15	0.3	0.0	46.8	0.0	-19.9	0.0	0.33	0.06
16	0.3	0.0	46.8	0.0	-19.9	0.0	0.33	0.06
17	0.3	0.0	46.8	0.0	-19.9	0.0	0.33	0.06
18	0.3	0.0	46.8	0.0	-19.9	0.0	0.33	0.06
19	0.3	0.0	46.8	0.0	-19.9	0.0	0.33	0.06
20	0.3	0.0	46.8	0.0	-19.9	0.0	0.33	0.06
21	0.3	0.0	12.3	0.0	-22.8	0.0	0.09	0.02
22	0.3	0.0	12.3	0.0	-22.8	0.0	0.09	0.02
23	0.3	0.0	12.3	0.0	-22.8	0.0	0.09	0.02
24	0.3	0.0	12.3	0.0	-22.8	0.0	0.09	0.02
25	0.3	0.0	12.3	0.0	-22.8	0.0	0.09	0.02
26	0.3	0.0	12.3	0.0	-22.8	0.0	0.09	0.02
27	0.3	0.0	12.3	0.0	-22.8	0.0	0.09	0.02
28	0.3	0.0	12.3	0.0	-22.8	0.0	0.09	0.02
29	0.3	0.0	12.3	0.0	-22.8	0.0	0.09	0.02
30	0.3	0.0	12.3	0.0	-22.8	0.0	0.09	0.02

****

PILE FORCES IN GLOBAL GEOMETRY

LOAD CASE - 8

PILE	PX K	PY K	PZ K	MX IN-K	MY IN-K	MZ IN-K
1	0.0	11.7	-23.0	0.0	0.0	0.0
2	0.0	11.7	-23.0	0.0	0.0	0.0
3	0.0	11.7	-23.0	0.0	0.0	0.0
4	0.0	11.7	-23.0	0.0	0.0	0.0
5	0.0	11.7	-23.0	0.0	0.0	0.0
6	0.0	11.7	-23.0	0.0	0.0	0.0
7	0.0	11.7	-23.0	0.0	0.0	0.0
8	0.0	11.7	-23.0	0.0	0.0	0.0
9	0.0	11.7	-23.0	0.0	0.0	0.0
10	0.0	11.7	-23.0	0.0	0.0	0.0
11	0.0	18.3	36.1	0.0	0.0	0.0
12	0.0	18.3	36.1	0.0	0.0	0.0
13	0.0	18.3	36.1	0.0	0.0	0.0
14	0.0	18.3	36.1	0.0	0.0	0.0
15	0.0	18.3	36.1	0.0	0.0	0.0
16	0.0	18.3	36.1	0.0	0.0	0.0
17	0.0	18.3	36.1	0.0	0.0	0.0
18	0.0	18.3	36.1	0.0	0.0	0.0
19	0.0	18.3	36.1	0.0	0.0	0.0
20	0.0	18.3	36.1	0.0	0.0	0.0
21	0.0	11.7	23.0	0.0	0.0	0.0
22	0.0	11.7	23.0	0.0	0.0	0.0
23	0.0	11.7	23.0	0.0	0.0	0.0
24	0.0	11.7	23.0	0.0	0.0	0.0
25	0.0	11.7	23.0	0.0	0.0	0.0
26	0.0	11.7	23.0	0.0	0.0	0.0
27	0.0	11.7	23.0	0.0	0.0	0.0
28	0.0	11.7	23.0	0.0	0.0	0.0
29	0.0	11.7	23.0	0.0	0.0	0.0
30	0.0	11.7	23.0	0.0	0.0	0.0

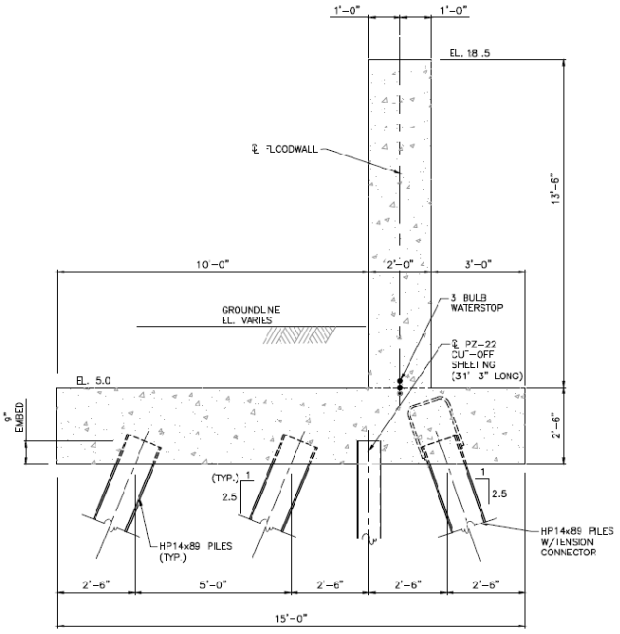
LOAD CASE - 9

PILE	PX K	PY K	PZ K	MX IN-K	MY IN-K	MZ IN-K
1	0.0	14.8	-29.0	0.0	0.0	0.0
2	0.0	14.8	-29.0	0.0	0.0	0.0
3	0.0	14.8	-29.0	0.0	0.0	0.0

4	0.0	14.8	-29.0	0.0	0.0	0.0
5	0.0	14.8	-29.0	0.0	0.0	0.0
6	0.0	14.8	-29.0	0.0	0.0	0.0
7	0.0	14.8	-29.0	0.0	0.0	0.0
8	0.0	14.8	-29.0	0.0	0.0	0.0
9	0.0	14.8	-29.0	0.0	0.0	0.0
10	0.0	14.8	-29.0	0.0	0.0	0.0
11	0.0	21.2	41.7	0.0	0.0	0.0
12	0.0	21.2	41.7	0.0	0.0	0.0
13	0.0	21.2	41.7	0.0	0.0	0.0
14	0.0	21.2	41.7	0.0	0.0	0.0
15	0.0	21.2	41.7	0.0	0.0	0.0
16	0.0	21.2	41.7	0.0	0.0	0.0
17	0.0	21.2	41.7	0.0	0.0	0.0
18	0.0	21.2	41.7	0.0	0.0	0.0
19	0.0	21.2	41.7	0.0	0.0	0.0
20	0.0	21.2	41.7	0.0	0.0	0.0
21	0.0	5.8	10.8	0.0	0.0	0.0
22	0.0	5.8	10.8	0.0	0.0	0.0
23	0.0	5.8	10.8	0.0	0.0	0.0
24	0.0	5.8	10.8	0.0	0.0	0.0
25	0.0	5.8	10.8	0.0	0.0	0.0
26	0.0	5.8	10.8	0.0	0.0	0.0
27	0.0	5.8	10.8	0.0	0.0	0.0
28	0.0	5.8	10.8	0.0	0.0	0.0
29	0.0	5.8	10.8	0.0	0.0	0.0
30	0.0	5.8	10.8	0.0	0.0	0.0

NO FILES WERE GENERATED DURING THIS RUN.

Reach E (5B) T1 Sunset twall
T-Wall Stems Loads



Top of Stem EL.	18.5	Weight of Water:	0.062	k/ft^3
Bottom of Stem EL.	5	Moist Weight of Soil	0.120	k/ft^3
F.S. Soil EL.	5.0	Wave Load:	0	k/ft
P.S. Soil EL.	5.0	Wave Arm EL.	0	
S.W.L EL.	9.4	Debri	0.5	k/ft
P.S. Water EL.	0.0	Wind Load:	0.056	ksf
Ko:	0.8	Sat. Soil Weight:	0.058	k/ft^3

Note: Inputs are already referenced from t-wall foundation sheet.

Load Case 2b. Construction + Wind 1.6(D + Sur + Wind)

Item	Fy	z	**Mx**	**Vx**
Wind	0.76	6.75	5.10	0.76
Sub Total:			5.10	0.76
Total (Factored)			**8.16** ft-k/ft	**1.21** k/ft

Load Case 3a. Flowline 1.6(D + EH + EV + HF+ IU)

Item	Fy	z	**Mx**	**Vx**
F.S. Horizontal Water	0.60	1.47	0.89	0.60
P.S. Horizontal Water	0.00	0.00	0.00	0.00
F.S. Horizontal Soil	0.00	0.00	0.00	0.00
P.S. Horizontal Soil ($\gamma_{m\ tri}$)	0.00	0	0.0000	0.00
P.S. Horizontal Soil ($\gamma_{m\ rec}$)	0.00	-2.5	0.00	0.00
P.S. Horizontal Soil ($\gamma_{sat\ tri}$)	0.00	-1.67	0.00	0.00
Sub Total:			0.89	0.60
Total (Factored)			**1.42**	**0.97**
			ft-k/ft	k/ft

Load Case 3c. Flowline+Wind+Debri 1.6(D + EH + EV + H_F+ PU + I + W)

Item	Fy	z	**Mx**	**Vx**
F.S. Horizontal Water	0.60	1.47	0.89	0.60
P.S. Horizontal Water	0.00	0.00	0.00	0.00
F.S. Horizontal Soil	0.00	0.00	0.00	0.00
P.S. Horizontal Soil ($\gamma_{m\ tri}$)	0.00	0.00	0.00	0.00
P.S. Horizontal Soil ($\gamma_{m\ rec}$)	0.00	-2.50	0.00	0.00
P.S. Horizontal Soil ($\gamma_{sat\ tri}$)	0.00	-1.67	0.00	0.00
Wind	0.51	8.95	4.56	0.51
Debri	0.50	13.50	6.75	0.50
Sub Total:			12.20	1.61
Total (Factored)			**19.51**	**2.58**
			ft-k/ft	k/ft

Load Case 4a. Water to the Top + Debri 1.2D + 1.35EH_D + 0.9EH_R + 1.35EV + 1.3(H_{TW} + I + IU)

Item	Fy	z	**Mx**	**Vx**
F.S. Horizontal Water	5.69	4.50	25.59	5.69
P.S. Horizontal Water	0.00	0.00	0.00	0.00
F.S. Horizontal Soil	0.00	0.00	0.00	0.00
P.S. Horizontal Soil ($\gamma_{m\ tri}$)	0.00	0.00	0.00	0.00
P.S. Horizontal Soil ($\gamma_{m\ rec}$)	0.00	-2.50	0.00	0.00
P.S. Horizontal Soil ($\gamma_{sat\ tri}$)	0.00	-1.67	0.00	0.00
Debri	0.50	13.50	6.75	0.50
Total (Factored)			**42.04**	**8.04**
			ft-k/ft	k/ft

Load Case 4b. Water to the Top + Debri $0.9D + 1.35EH_D + 0.9EH_R + 1.0EV + 1.3(H_{TW} + I + IU)$

Item	Fy	z	**Mx**	**Vx**
F.S. Horizontal Water	5.69	4.50	25.59	5.69
P.S. Horizontal Water	0.00	0.00	0.00	0.00
F.S. Horizontal Soil	0.00	0.00	0.00	0.00
P.S. Horizontal Soil ($\gamma_{m\ tri}$)	0.00	0.00	0.00	0.00
P.S. Horizontal Soil ($\gamma_{m\ rec}$)	0.00	-2.50	0.00	0.00
P.S. Horizontal Soil ($\gamma_{sat\ tri}$)	0.00	-1.67	0.00	0.00
Debri	0.50	13.50	6.75	0.50
Total (Factored)			**42.04**	**8.04**
			ft-k/ft	k/ft

Summary of Stem Loads		
	Mu	Vu
Load Case 2b	8.16	1.21
Load Case 3a	1.42	0.97
Load Case 3c	19.51	2.58
Load Case 4a	42.04	8.04
Load Case 4b	42.04	8.04
Maximum	42.04	8.04
	ft-k/ft	k/ft

Notation:

$A_{s\ min}$ = Minimum Area of Steel per linear foot of structure allowed by ACI / USACE. **(in^2)**

$A_{s\ Req'd}$ = Required Area of Steel per linear foot of structure using Ultimate Moment. **(in^2)**

b = Member width. **(Use 12in if forces are per linear foot of structure.)**

β_1 = ACI 318-14 Section 22.2

d = Distance from extreme compression fiber to centroid of tension reinforcement. **(in)**

f'c = Compressive strength of concrete. **(ksi ** except in Vc formula psi)**

f_y = Yield strength of steel. **(Usually 60 ksi.)**

ϕM_n = Nominal Moment strength **(k-in / linear foot)** ϕ = 0.9

M_u = Ultimate moment in sttructure. **(k-in / linear foot)**

ϕV_c = Nominal Shear strength **(lb / linear foot)** ϕ = 0.75

V_u = Ultimate shear in structure. **(lb / linear foot)**

t = Thickness of structure. **(In direction of applied moment) (in)**

ρ = Ratio of Reinforcement

ρ_b = Balanced Ratio of Reinforcement (0.0285 for 4ksi concrete)

Project: **Reach E (5B) T1 Sunset twall**

Reference: **T-wall** **40 ft Slab** **Stem Rebar Design**

Inputs:

M_u =	504.47	k-in / linear ft
V_u =	8042.06	lb/linear ft
b =	12	in
d =	19.5	in
t =	24	in
f'c =	4	ksi
f_y =	60	ksi

β_1 = 0.85 (unitless)

ρ_b = 0.0285 (unitless)

Check d_d

Mn= Mu/ϕ

Mn= 560.52 k-in / linear ft

$$d_d = \sqrt{\frac{2.4956 M_n}{b_w}} =$$ EM 1110-2-2104 (Table D-1)

d_d= 10.80 in

d > d_d ok

Calculations: ** All Areas are per side.

$$K_u = 1 - \sqrt{1 - \frac{M_n + P_n\left(d - \frac{h}{2}\right)}{0.425 f_c' b d^2}}$$ EM 1110-2-2104 (Table D-8)

P_n= 0

K_u= 0.036807

$$A_s = \frac{0.85 f_c' K_u b d - P_n}{f_y}$$ EM 1110-2-2104 (D-9)

$A_{s\ Req'd}$ =	0.49	in^2 /ft		
$A_{s\ min}$ =	0.74	in^2 /ft	= [3 b d √(f'c)] / F_y (psi)	EM 1110-2-2104, Chapter 3
$A_{s\ min}$ =	0.78	in^2 /ft	= 200 b d / F_y (psi)	EM 1110-2-2104, Chapter 3
$A_{s\ min}$ =	0.65	in^2 /ft	= 1.33 ($A_{s\ Req'd}$)	EM 1110-2-2104, Chapter 3

Use A_s = 0.65 in^2 /ft Flexural

Temperature and Shrinkage Rebar

$A_{s\ t\&s}$ = 0.72 in^2 /ft = 0.005b t/2 per face -- EM 1110-2-2104 Table 2-3

Table 2-3. Minimum Shrinkage and Temperature Reinforcement Ratios for Various Joint Spacings.

Length Between Control Joints (ft)	Minimum Temperature and Shrinkage Reinforcement Ratio, Grade 60
Less than 30 ft	0.003
30-40 ft	0.004
Greater than 40 ft	0.005

Use $A_{s\ t\&s}$ = 0.72 in^2 /ft per face Use: #8@12in As: 0.78 in^2 /ft

Check Moment:

Calculate ϕM_n and compare to original M_u.

As Used: 0.78 in^2 /ft Use: #8@12in

ϕM_n = 797.18 k-in = 0.9 $A_s F_y d (1 -(A_s F_y / 2 \beta b d f'c))$

M_u = 504.4712 k-in

If $\phi M_n > M_u$ then A_s is acceptable. **OK**

Check Shear:

Calculate ϕV_c and compare to V_u.

ϕV_c = 22.20 k = 0.75 x 2 ($\sqrt{}$ f'c) b d

V_u = 8.04 k

If $\phi V_c > V_u$ then A_s is acceptable. **OK**

Check Ratio of Reinforcement: EM 1110-2-2104, Chapter 3.5

ρ = 0.003333 $\rho = A_s / b d$

0.25 ρ_b = 0.007125

0.5ρ_b = 0.010688

$\rho \leq 0.25\ \rho_b$ (if possible)	OK
$\rho \leq 0.5\ \rho_b$ (always)	OK

Quantities
Sunset T-wall T-1 Reach E (5B)

1) Cast-in place concrete		
Area of Base Slab per linear ft:	37.5	ft^2
Area of Stem per linear ft:	27.00	ft^2
Total area per linear ft:	64.50	ft^2
Width of slab:	15.00	ft
Total Linear ft of wall:	650	ft
Total Volume of Base Slab (CY)	902.7778	CY
Total Volume of Stem (CY):	650	CY
Total volume of concrete (ft^3):	41925	ft^3
Total volume of concrete (CY):	1552.778	CY
2) Steel Sheet Piling		
Cut off El.	5.75	
Tip El.	-25.5	
Length:	31.25	ft
Area of sheet pile:	20312.5	ft^2
3) HP 14x89 pile		
Cut off El.	3.25	
Tip El.	-73	
Batter:	2	
Length:	85.25009	ft
spacing between piles	5	ft
total piles per row	3	
Total length of piles:	33247.54	LF
4) Stab slab		
Depth:	1	ft
Total volume:	9750	ft^3
Total volume:	361.1111	CY

Load Case	Load Description	Load Category	Factored Loads
LC1	Normal Operation	0%	(D + EH + EV)
LC3	Construction	16.67%	(D + Sur)
LC4	Construction + Wind	33%	(D + Sur + W)
LC5	Flowline + Imperv Uplift	0%	(D + EH + EV + HF + IU)
LC6	Flowline + Perv Uplift	0%	(D + EH + EV + HF + PU)
LC7	Flowline + Imperv Uplift + Wind + Debris	33%	(D + EH + EV + HF + IU + I + W
LC8	Flowline + Perv Uplift + Wind + Debris	33%	(D + EH + EV + HF + PU + I + W
LC9	Freeboard + Imperv Uplift + Debris	33%	(D + EH + EV + HTW + I + IU)
LC10	Freeboard + Perv Uplift + Debris	33%	(D + EH + EV + HTW + I + PU)

D= Dead Load
EH= Horizontal Soil
EV = Vertical Soil
ES = Surcharge Load (200 psf)
W = Wind
HF = Water at Flowline
PU = Pervious Uplift
IU = Impervious Uplift
I = Debris Impact
H_{TW} = Water at Top of Wall
Sur = Surcharge

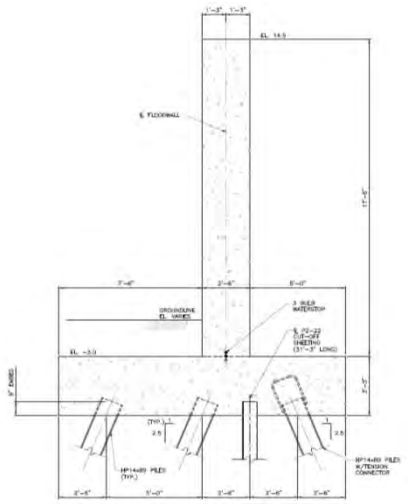
ASCE 7-10 Wind Load Calculation

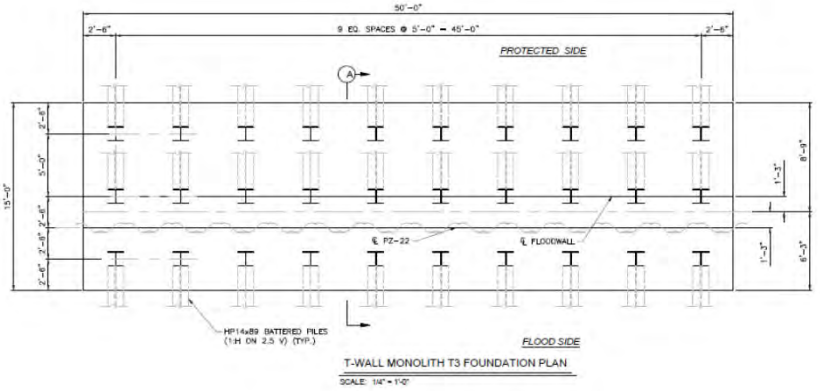
Wind on Wall

$$q_z = 0.00256 K_z K_{zt} K_d V^2 \text{ (lb/ft}^2\text{)} \qquad (27.3\text{-}1)$$

K_z=	1.03	
K_{zt}=	1	
K_d=	0.85	
V=	158	mph
q_z=	56.0	lb/ft^2

Reach E (5B) T2 Sunset twall
T-Wall Foundation Loads: Unfactored Loads for Pile Analysis





Top of Stem EL.	18.5		Weight of Water:	0.062	k/ft^3	
Top of Slab EL.	1.0		Weight Soil (FS)	0.120	k/ft^3	
Bottom of Slab EL.	-2.3		Weight of Soil (PS):	0.12	k/ft^4	
Stem Width:	2.25	ft	Weight of Concrete:	0.150	k/ft^3	
F.S. Slab Width:	4.875	ft	Ko:	0.8		
P.S. Slab Width:	7.875	ft	Wave Load:	0	k/ft	
Length of Monolith:	50	ft	Wave Arm EL.	0		
Dist to Sheet Pile:	10	ft	Unbal. Load SWL:	0.0	k/ft	
F.S. Soil EL.	1.0		Unbal. Load HWL:	0.0	k/ft	
P.S. Soil EL.	3.0		Wind Load:	0.056	ksf	
S.W.L EL. (Flowline)	9.4		Boat Impact	0.5	k/ft	Debris applied at TOW for TOW LC
P.S. Water EL.	0.0		Construction Surcharge:	0.2	k/ft^2	

Width of Monolith:	15.0	ft	Area of Stem:	39.38	ft²
Area of Base Slab:	48.75	ft²	Bouyant Soil Weight (PS):	0.058	k/ft^3
			Bouyant Soil Weight (FS):	0.058	k/ft^4

Load Sheet Limitations - a) Straight aligned monoliths only b) No varying soil elevations along monolith
c) Constant stem thickness only d) Sheet only handles minimal impact loads

LC 1: **Load Case 1a.** Normal Operation

Item	Fx	Fy	Fz	x	y	z	Mx	My	Mz
Concrete Base			7.3		7.5		54.8		
Concrete Stem			5.9		6.000		35.4		
F.S. Vertical Soil			0.0		2.438		0.0		
F.S. Horizontal Soil (Base)		0.5				1.08	0.5		
P.S. Vertical Soil			0.0		11.06		0.0		
Sub Total:		0.5	13.2				90.8	0.0	0.0
Sub Total x Monolith Length:		25	661				4542	0	0
Total		**25**	**661**	**0**	**0**	**0**	**4542**	**0**	**0**

LC 3: **Load Case 2a.** Construction

Item	Fx	Fy	Fz	x	y	z	Mx	My	Mz
Concrete Base			7.3		7.5		54.8		
Concrete Stem			5.9		6.000		35.4		
F.S. Horizontal Soil (Base)		0.5				1.08	0.5		
Construction Surcharge(FS)			1.0		2.44		2.4		
Construction Surcharge(PS)			1.6		11.06		17.4		
Sub Total:		0.5	15.8				110.6		
Sub Total x Monolith Length:		25.35	788.4375				5531.525	0	0
Total		**25**	**788**				**5532**		

LC 4: **Load Case 2b**. Construction + Wind

Item	Fx	Fy	Fz	x	y	z	Mx	My	Mz
Concrete Base			7.3		7.5		54.8		
Concrete Stem			5.9		6.000		35.4		
F.S. Horizontal Soil (Base)		0.5				1.08	0.5		
Construction Surcharge(FS)			1.0		2.4		2.4		
Construction Surcharge(PS)			1.575		11.0625		17.4		
Wind		0.98				12.0	11.8		
Sub Total:		1.49	15.77				122.39	0.00	0.00
Sub Total x Monolith Length:		74.35	788.4375				6119.525	0	0
Total		**74**	**788**				**6120**		

LC 5: **Load Case 3a**. Flowline, Impervious Uplift

Item	Fx	Fy	Fz	x	y	z	Mx	My	Mz
Concrete Base			7.3		7.50		54.8		
Concrete Stem			5.9		6.000		35.4		
F.S. Vertical Water			2.6		2.44		6.2		
F.S. Vertical Soil			0.0		2.44		0.0		
P.S. Vertical Water			0.0000		11.063		0.0		
P.S. Vertical Soil			1.8900		11.063		20.9		
F.S. Horizontal Water		4.2				3.88	16.4		
F.S. Horizontal Soil		0.243				1.08	0.3		
P.S. Horizontal Water		-0.1580				0.75	-0.1		
P.S. Horizontal Soil ($\gamma_{m\ tri}$)		-0.4320				3.25	-1.4		
P.S. Horizontal Soil ($\gamma_{m\ rec}$)		-0.6				1.13	-0.7		
P.S. Horizontal Soil ($\gamma_{sat\ tri}$)		-0.1				0.75	-0.1		
F.S. Impervious Uplift			-7.3		5.00		-36.3		
P.S. Impervious Uplift			-0.7		12.50		-8.8		
Unbalanced Force		0.0							
Sub Total:		3.1	9.7				86.7		
Sub Total x Monolith Length:		156.2	484.6				4,333.2	0.0	0.0
Total		**156**	**485**				**4333**		

LC 6: **Load Case 3b**. Flowline, Pervious Uplift

Item	Fx	Fy	Fz	x	y	z	Mx	My	Mz
Concrete Base			7.3		7.50		54.8		
Concrete Stem			5.9		6.000		35.4		
F.S. Vertical Water			2.6		2.44		6.2		
F.S. Vertical Soil			0.0		2.44		0.0		
P.S. Vertical Water			0.0		11.063		0.0		
P.S. Vertical Soil			1.890		11.063		20.9		
F.S. Horizontal Water		4.2				3.88	16.4		
F.S. Horizontal Soil		0.2				1.08	0.3		
P.S. Horizontal Water		-0.158				0.75	-0.1		
P.S. Horizontal Soil ($\gamma_{m\ tri}$)		-0.432				3.25	-1.4		
P.S. Horizontal Soil ($\gamma_{m\ rec}$)		-0.6				1.13	-0.7		
P.S. Horizontal Soil ($\gamma_{sat\ tri}$)		-0.1				0.75	-0.1		
Pervious Uplift (Rec.)			-2.1		7.50		-15.8		
Pervious Uplift (Tri.)			-4.4		5.00		-22.0		
Unbalanced Force		0.0							
Sub Total:		3.1	11.2				94.0		

Sub Total x Monolith Length:		156.2	557.9			4699.8	0.0	0.0
Total		**156**	**558**			**4700**		

LC 7: **Load Case 3c**. Flowline + Wind + Debri, Impervious Uplift

Item	Fx	Fy	Fz	x	y	z	Mx	My	Mz
Concrete Base			7.3		7.50		54.8		
Concrete Stem			5.9		6.000		35.4		
F.S. Vertical Water			2.6		2.44		6.2		
F.S. Vertical Soil			0.0		2.44		0.0		
P.S. Vertical Water			0.0		11.063		0.0		
P.S. Vertical Soil			1.890		11.063		20.9		
F.S. Horizontal Water		4.2				3.88	16.4		
F.S. Horizontal Soil		0.2				1.08	0.3		
P.S. Horizontal Water		-0.158				0.75	-0.1		
P.S. Horizontal Soil ($\gamma_{m\ tri}$)		-0.432				3.25	-1.4		
P.S. Horizontal Soil ($\gamma_{m\ rec}$)		-0.6				1.13	-0.7		
P.S. Horizontal Soil ($\gamma_{sat\ tri}$)		-0.1				0.75	-0.1		
F.S. Impervious Uplift			-7.3		5.00		-36.3		
P.S. Impervious Uplift			-0.7		12.50		-8.8		
Wind		0.5				16.20	8.3		
Debri		0.5				20.75	10.4		
Sub Total:		4.1	9.7				105.3		
Sub Total x Monolith Length:		206.6	484.6				5264.7	0.0	0.0
Total		**207**	**485**				**5265**		

LC 8: **Load Case 3d**. Flowline + Wind + Debri, Pervious Uplift

Item	Fx	Fy	Fz	x	y	z	Mx	My	Mz
Concrete Base			7.3		7.50		54.8		
Concrete Stem			5.9		6.000		35.4		
F.S. Vertical Water			2.6		2.44		6.2		
F.S. Vertical Soil			0.0		2.44		0.0		
P.S. Vertical Water			0.0		11.063		0.0		
P.S. Vertical Soil			1.890		11.063		20.9		
F.S. Horizontal Water		4.2				3.88	16.4		
F.S. Horizontal Soil		0.2				1.08	0.3		
P.S. Horizontal Water		-0.158				0.75	-0.1		
P.S. Horizontal Soil ($\gamma_{m\ tri}$)		-0.432				3.25	-1.4		
P.S. Horizontal Soil ($\gamma_{m\ rec}$)		-0.6				1.13	-0.7		
P.S. Horizontal Soil ($\gamma_{sat\ tri}$)		-0.1				0.75	-0.1		
Pervious Uplift (Rec.)			-2.1		7.50		-15.8		
Pervious Uplift (Tri.)			-4.4		5.00		-22.0		
Wind		0.5				16.20	8.3		
Debri		0.5				20.75	10.4		
Sub Total:		4.1	11.2				112.6		
Sub Total x Monolith Length:		206.6	557.9				5631.3	0.0	0.0
Total		**207**	**558**				**5631**		

LC 9: **Load Case 4a.** Water to the Top+ Debri, Impervious Uplift

Item	Fx	Fy	Fz	x	y	z	Mx	My	Mz
Concrete Base			7.3		7.50		54.8		
Concrete Stem			5.9		6.000		35.4		
F.S. Vertical Water			5.3		2.44		13.0		
F.S. Vertical Soil			0.0		2.44		0.0		
P.S. Vertical Water			0.0		11.063		0.0		
P.S. Vertical Soil			1.890		11.063		20.9		
F.S. Horizontal Water		13.4				6.92	92.9		
F.S. Horizontal Soil		0.2				1.08	0.3		
P.S. Horizontal Water		-0.158				0.75	-0.1		
P.S. Horizontal Soil ($\gamma_{m\ tri}$)		-0.432				3.25	-1.4		
P.S. Horizontal Soil ($\gamma_{m\ rec}$)		-0.6				1.13	-0.7		
P.S. Horizontal Soil ($\gamma_{sat\ tri}$)		-0.1				0.75	-0.1		
F.S. Impervious Uplift			-12.9		5.00		-64.7		
P.S. Impervious Uplift			-0.7		12.50		-8.8		
Debri		0.5				20.75	10.4		

Unbalanced Load		0.0						
Sub Total:		12.8	6.8			151.9		
Sub Total x Monolith Length:		641.1	339.1			7593.3	0.0	0.0
Total		**641**	**339**			**7593**		

LC 10: **Load Case 4b.** Water to the Top + Debri, Pervious Uplift

Item	Fx	Fy	Fz	x	y	z	Mx	My	Mz
Concrete Base			7.3		7.50		54.8		
Concrete Stem			5.9		6.000		35.4		
F.S. Vertical Water			5.3		2.44		13.0		
F.S. Vertical Soil			0.0		2.44		0.0		
P.S. Vertical Water			0.0		11.063		0.0		
P.S. Vertical Soil			1.890		11.063		20.9		
F.S. Horizontal Water		13.4				6.92	92.9		
F.S. Horizontal Soil		0.2				1.08	0.3		
P.S. Horizontal Water		-0.158				0.75	-0.1		
P.S. Horizontal Soil ($\gamma_{m\ tri}$)		-0.432				3.25	-1.4		
P.S. Horizontal Soil ($\gamma_{m\ rec}$)		-0.6				1.13	-0.7		
P.S. Horizontal Soil ($\gamma_{sat\ tri}$)		-0.1				0.75	-0.1		
Pervious Uplift (Rec.)			-2.1		7.50		-15.8		
Pervious Uplift (Tri.)			-8.7		5.00		-43.3		
Debri		0.5				20.75	10.4		
Unbalanced Load		0.0							
Sub Total:		12.8	9.7				166.3		
Sub Total x Monolith Length:		641.1	483.4				8314.8	0.0	0.0
Total		**641**	**483**				**8315**		

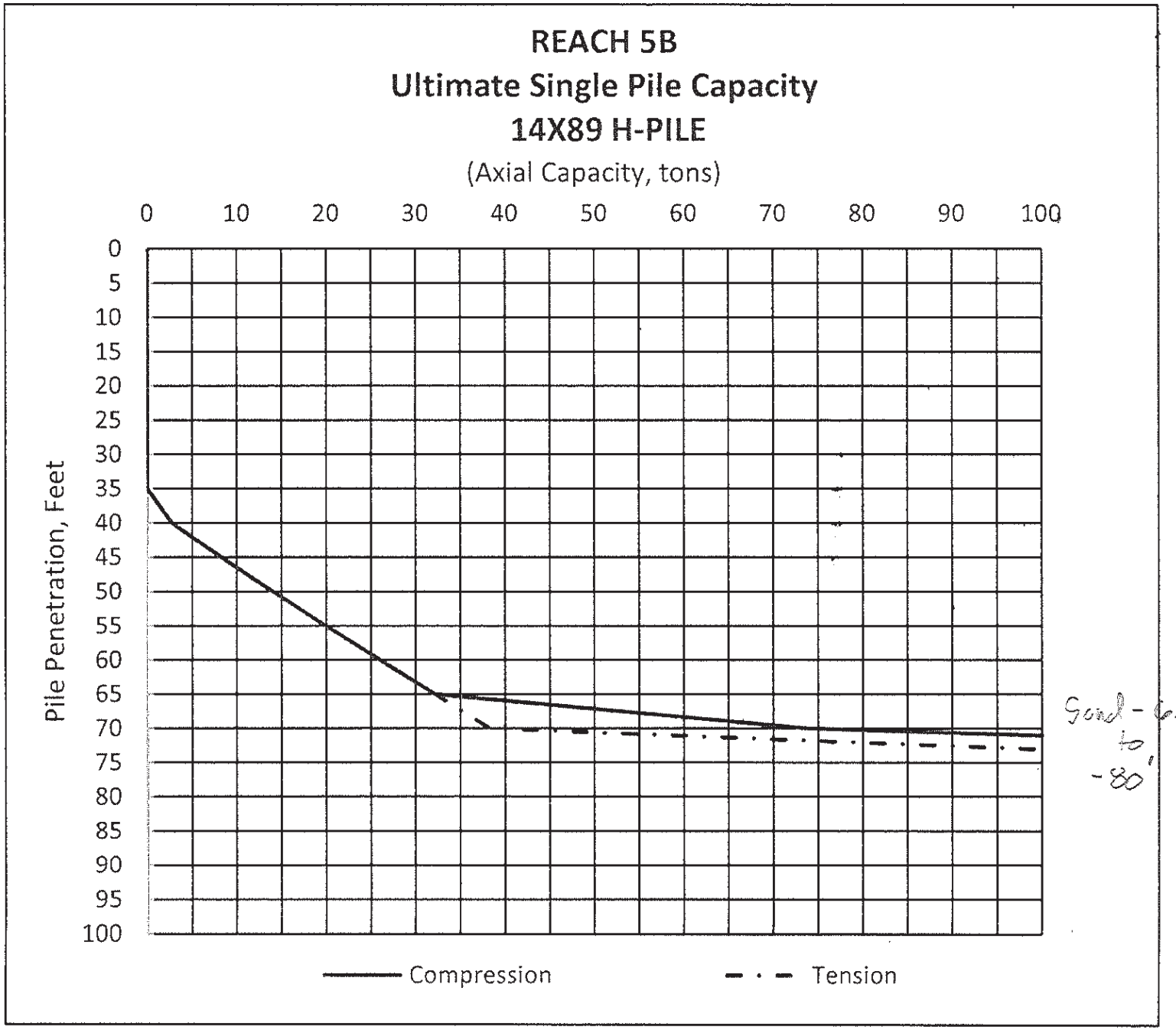
Summary Table of CPGA Loads

		Fx	Fy	Fz	Mx	My	Mz
Load Case 1a	**LOAD 1**	**0.0**	**25.4**	**660.9**	**4,541.5**	**0.0**	**0.0**
Load Case 2a	**LOAD 3**	**0.0**	**25.4**	**788.4**	**5,531.5**	**0.0**	**0.0**
Load Case 2b	**LOAD 4**	**0.0**	**74.4**	**788.4**	**6,119.5**	**0.0**	**0.0**
Load Case 3a	**LOAD 5**	**0.0**	**156.2**	**484.6**	**4,333.2**	**0.0**	**0.0**
Load Case 3b	**LOAD 6**	**0.0**	**156.2**	**557.9**	**4,699.8**	**0.0**	**0.0**
Load Case 3c	**LOAD 7**	**0.0**	**206.6**	**484.6**	**5,264.7**	**0.0**	**0.0**
Load Case 3d	**LOAD 8**	**0.0**	**206.6**	**557.9**	**5,631.3**	**0.0**	**0.0**
Load Case 4a	**LOAD 9**	**0.0**	**641.1**	**339.1**	**7,593.3**	**0.0**	**0.0**
Load Case 4b	**LOAD 10**	**0.0**	**641.1**	**483.4**	**8,314.8**	**0.0**	**0.0**

Table 7l - Reach 05A Centerline/ Protected Side Subsoil Profile Description					
Soil Stratum	Elevation (ft., NAVD88)	Wet Unit Weight (pcf)	Cohesion (psf)		Friction Angle (deg.)
			Top	Bottom	
1 - Levee Fill: Compacted Clay (CH)	+8 to +1	115	500	500	0
2 - Firm Clay (CL/CH)	+1 to -7	110	350	350	0
3 - Firm Clay (CL/CH)	-7 to -10	110	350	350	0
4 - Firm Clay (CL/CH)	-10 to -16	106	300	300	0
5 - Firm Clay (CL/CH)	-16 to -31	106	300	300	0
6 - Firm Clay (CL/CH)	-31 to -47	106	425	425	0
7 - Firm Clay (CL/CH)	-47 to -63	108	425	425	0
8 - Dense Sand (SP/SM)	-63 to -70	122	0	0	30
9 - Dense Sand (SP/SM)	-70 to -125	122	0	0	30

Table 7m - Reach 05B Water Subsoil Profile Description					
Soil Stratum	Elevation (ft., NAVD88)	Wet Unit Weight (pcf)	Cohesion (psf)		Friction Angle (deg.)
			Top	Bottom	
1 - --	+8 to +2	--	--	--	--
2 - Soft Clay (CL/CH)	+2 to -10	103	250	250	0
3 - Soft Clay (CL/CH)	-10 to -16	103	250	250	0
4 - Soft Clay (CL/CH)	-16 to -31	105	250	250	0
5 - Soft Clay (CL/CH)	-31 to -47	105	250	250	0
6 - Soft Clay (CL/CH)	-47 to -61	105	250	250	0
7 - Dense Sand (SP/SM)	-61 to -75	122	0	0	30
8 - Firm Clay (CL/CH)	-75 to 125	110	450	450	0

Table 7n - Reach 05B Flood Side Subsoil Profile Description					
Soil Stratum	Elevation (ft., NAVD88)	Wet Unit Weight (pcf)	Cohesion (psf)		Friction Angle (deg.)
			Top	Bottom	
1 - Levee Fill: Compacted Clay (CH)	+8 to +2	115	500	500	0
2 - Firm Clay (CL/CH)	+2 to -10	95	350	350	0
3 - Firm Clay (CL/CH)	-10 to -16	103	350	383	0
4 - Firm Clay (CL/CH)	-16 to -31	103	383	463	0
5 - Firm Clay (CL/CH)	-31 to -47	103	463	550	0
6 - Firm Clay (CL/CH)	-47 to -61	103	525	525	0
7 - Dense Sand (SP/SM)	-61 to -80	122	0	0	30
8 - Firm Clay (CL/CH)	-80 to 125	110	450	450	0


REACH 5B
Ultimate Single Pile Capacity
14X89 H-PILE
(Axial Capacity, tons)
0
10
20
30
40
50
60
70
80
90
100
Pile Penetration, Feet
0
5
10
15
20
25
30
35
40
45
50
55
60
65
70
75
80
85
90
95
100
Compression
Tension
Sand - 62'
to
-80'

```
10  Sunset Twall2 Fixed
20  PIL  1  -22.5   2.5   0
30  BAT   2   1
40  ANG   270   1
50  PIL  2  -17.5   2.5   0
60  BAT   2   2
70  ANG   270   2
80  PIL  3  -12.5   2.5   0
90  BAT   2   3
100  ANG   270   3
110  PIL  4  -7.5   2.5   0
120  BAT   2   4
130  ANG   270   4
140  PIL  5  -2.5   2.5   0
150  BAT   2   5
160  ANG   270   5
170  PIL  6   2.5   2.5   0
180  BAT   2   6
190  ANG   270   6
200  PIL  7   7.5   2.5   0
210  BAT   2   7
220  ANG   270   7
230  PIL  8   12.5   2.5   0
240  BAT   2   8
250  ANG   270   8
260  PIL  9   17.5   2.5   0
270  BAT   2   9
280  ANG   270   9
290  PIL  10   22.5   2.5   0
300  BAT   2   10
310  ANG   270   10
320  PIL  11  -22.5   7.5   0
330  BAT   2   11
340  ANG   90   11
350  PIL  12  -17.5   7.5   0
360  BAT   2   12
370  ANG   90   12
380  PIL  13  -12.5   7.5   0
390  BAT   2   13
400  ANG   90   13
410  PIL  14  -7.5   7.5   0
420  BAT   2   14
430  ANG   90   14
440  PIL  15  -2.5   7.5   0
450  BAT   2   15
460  ANG   90   15
470  PIL  16   2.5   7.5   0
480  BAT   2   16
490  ANG   90   16
500  PIL  17   7.5   7.5   0
```

```
510  BAT   2   17
520  ANG   90   17
530  PIL  18   12.5   7.5   0
540  BAT   2   18
550  ANG   90   18
560  PIL  19   17.5   7.5   0
570  BAT   2   19
580  ANG   90   19
590  PIL  20   22.5   7.5   0
600  BAT   2   20
610  ANG   90   20
620  PIL  21  -22.5   12.5   0
630  BAT   2   21
640  ANG   90   21
650  PIL  22  -17.5   12.5   0
660  BAT   2   22
670  ANG   90   22
680  PIL  23  -12.5   12.5   0
690  BAT   2   23
700  ANG   90   23
710  PIL  24  -7.5   12.5   0
720  BAT   2   24
730  ANG   90   24
740  PIL  25  -2.5   12.5   0
750  BAT   2   25
760  ANG   90   25
770  PIL  26   2.5   12.5   0
780  BAT   2   26
790  ANG   90   26
800  PIL  27   7.5   12.5   0
810  BAT   2   27
820  ANG   90   27
830  PIL  28   12.5   12.5   0
840  BAT   2   28
850  ANG   90   28
860  PIL  29   17.5   12.5   0
870  BAT   2   29
880  ANG   90   29
890  PIL  30   22.5   12.5   0
900  BAT   2   30
910  ANG   90   30
920  PRO  29000  326  904  26.1  2  0  1 TO 30
930  SOI ES 0.0345 L  69  0  1 TO 30
940  RED  1  1  1
950  ALL H 107  85  652  652  1107  3275  1 TO 30
960  FIX  1 TO 30
970  LOA  1  0  25  661  4542  0  0
970  LOA  2  0  25  788  5532  0  0
970  LOA  3  0  74  788  6120  0  0
970  LOA  4  0  156  485  4333  0  0
```

```
970  LOA  5  0  156  558  4700  0  0
970  LOA  6  0  207  485  5265  0  0
970  LOA  7  0  207  558  5631  0  0
970  FOV  1.167  1.167  2
970  FOV  1.33  1.33  3
970  FOV  1.33  1.33  6
970  FOV  1.33  1.33  7
980  TOUT 1 2 3 4 5 6 7
990  PFO ALL
1000  PLB ALL
```

CPGA - CASE PILE GROUP ANALYSIS PROGRAM
RUN DATE: 11-SEP-20 RUN TIME: 18:50:05

FOR PILES WITH UNSUPPORTED HEIGHT:
A. CPGA CANNOT CALCULATE PMAXMOM FOR NH TYPE SOIL
B. THE ALLOWABLE STRESS CHECKS, ASC AND AST, ARE
NOT FULLY DEVELOPED FOR UNSUPPORTED PILES.
WORK IS IN PROGRESS TO COMPLETE THIS ASPECT OF CPGA.

ELASTIC CENTER LOCATION IS NOT COMPUTED FOR 3-DIMENSIONAL PROBLEMS.

SUNSET TWALL2 FIXED
DATA UNKNOWN - REJECTED.

THERE ARE 30 PILES AND
7 LOAD CASES IN THIS RUN.

ALL PILE COORDINATES ARE CONTAINED WITHIN A BOX

	X	Y	Z
WITH DIAGONAL COORDINATES = (	-22.50 ,	2.50 ,	0.00)
(	22.50 ,	12.50 ,	0.00)

****

PILE PROPERTIES AS INPUT

E	I1	I2	A	C33	B66
KSI	IN**4	IN**4	IN**2		
0.29000E+05	0.32600E+03	0.90400E+03	0.26100E+02	0.20000E+01	0.00000E+00

THESE PILE PROPERTIES APPLY TO THE FOLLOWING PILES -

ALL

****

SOIL DESCRIPTIONS AS INPUT

ES	ESOIL	LENGTH	L	LU
	K/IN**2		FT	FT

```
        0.34500E-01    L      0.69000E+02   0.00000E+00

 ESOIL(ORIGINAL)     RGROUP     RCYCLIC
   K/IN**2
  0.34500E-01       0.1000E+01 0.1000E+01
```

THIS SOIL DESCRIPTION APPLIES TO THE FOLLOWING PILES -

ALL

****

PILE STIFFNESSES AS CALCULATED FROM PROPERTIES

```
 0.81007E+01  0.00000E+00  0.00000E+00  0.00000E+00  0.95103E+03  0.00000E+00
 0.00000E+00  0.62774E+01  0.00000E+00 -0.57111E+03  0.00000E+00  0.00000E+00
 0.00000E+00  0.00000E+00  0.18283E+04  0.00000E+00  0.00000E+00  0.00000E+00
 0.00000E+00 -0.57111E+03  0.00000E+00  0.10392E+06  0.00000E+00  0.00000E+00
 0.95103E+03  0.00000E+00  0.00000E+00  0.00000E+00  0.22330E+06  0.00000E+00
 0.00000E+00  0.00000E+00  0.00000E+00  0.00000E+00  0.00000E+00  0.00000E+00
```

THIS MATRIX APPLIES TO THE FOLLOWING PILES -

1

****

PILE GEOMETRY AS INPUT AND/OR GENERATED

NUM	X FT	Y FT	Z FT	BATTER	ANGLE	LENGTH FT	FIXITY
1	-22.50	2.50	0.00	2.00	270.00	69.00	F
2	-17.50	2.50	0.00	2.00	270.00	69.00	F
3	-12.50	2.50	0.00	2.00	270.00	69.00	F
4	-7.50	2.50	0.00	2.00	270.00	69.00	F
5	-2.50	2.50	0.00	2.00	270.00	69.00	F
6	2.50	2.50	0.00	2.00	270.00	69.00	F
7	7.50	2.50	0.00	2.00	270.00	69.00	F
8	12.50	2.50	0.00	2.00	270.00	69.00	F
9	17.50	2.50	0.00	2.00	270.00	69.00	F
10	22.50	2.50	0.00	2.00	270.00	69.00	F
11	-22.50	7.50	0.00	2.00	90.00	69.00	F
12	-17.50	7.50	0.00	2.00	90.00	69.00	F
13	-12.50	7.50	0.00	2.00	90.00	69.00	F
14	-7.50	7.50	0.00	2.00	90.00	69.00	F

15	-2.50	7.50	0.00	2.00	90.00	69.00	F
16	2.50	7.50	0.00	2.00	90.00	69.00	F
17	7.50	7.50	0.00	2.00	90.00	69.00	F
18	12.50	7.50	0.00	2.00	90.00	69.00	F
19	17.50	7.50	0.00	2.00	90.00	69.00	F
20	22.50	7.50	0.00	2.00	90.00	69.00	F
21	-22.50	12.50	0.00	2.00	90.00	69.00	F
22	-17.50	12.50	0.00	2.00	90.00	69.00	F
23	-12.50	12.50	0.00	2.00	90.00	69.00	F
24	-7.50	12.50	0.00	2.00	90.00	69.00	F
25	-2.50	12.50	0.00	2.00	90.00	69.00	F
26	2.50	12.50	0.00	2.00	90.00	69.00	F
27	7.50	12.50	0.00	2.00	90.00	69.00	F
28	12.50	12.50	0.00	2.00	90.00	69.00	F
29	17.50	12.50	0.00	2.00	90.00	69.00	F
30	22.50	12.50	0.00	2.00	90.00	69.00	F

						2070.00	

****

APPLIED LOADS

LOAD CASE	PX K	PY K	PZ K	MX FT-K	MY FT-K	MZ FT-K	OVERSTRESS COM	TEN
1	0.0	25.0	661.0	4542.0	0.0	0.0		
2	0.0	25.0	788.0	5532.0	0.0	0.0	1.17	1.17
3	0.0	74.0	788.0	6120.0	0.0	0.0	1.33	1.33
4	0.0	156.0	485.0	4333.0	0.0	0.0		
5	0.0	156.0	558.0	4700.0	0.0	0.0		
6	0.0	207.0	485.0	5265.0	0.0	0.0	1.33	1.33
7	0.0	207.0	558.0	5631.0	0.0	0.0	1.33	1.33

****

ORIGINAL PILE GROUP STIFFNESS MATRIX

0.18832E+03	0.22259E-03	-0.88591E-04	0.13082E-01	0.15324E+05	-0.19503E+05
0.22259E-03	0.11164E+05	0.72806E+04	0.15034E+07	0.20674E-03	-0.14722E-01
-0.88591E-04	0.72806E+04	0.43927E+05	0.39577E+07	0.51752E-04	-0.13289E-01
0.13082E-01	0.15034E+07	0.39577E+07	0.46972E+09	-0.93042E-01	-0.24530E+01
0.15324E+05	0.20674E-03	0.51752E-04	-0.93042E-01	0.13071E+10	-0.21803E+09
-0.19503E+05	-0.14722E-01	-0.13289E-01	-0.24530E+01	-0.21803E+09	0.33524E+09

30 PILES 7 LOAD CASES

LOAD CASE 1. NUMBER OF FAILURES = 0. NUMBER OF PILES IN TENSION = 0.

LOAD CASE 2. NUMBER OF FAILURES = 0. NUMBER OF PILES IN TENSION = 0.

LOAD CASE 3. NUMBER OF FAILURES = 0. NUMBER OF PILES IN TENSION = 0.

LOAD CASE 4. NUMBER OF FAILURES = 0. NUMBER OF PILES IN TENSION = 0.

LOAD CASE 5. NUMBER OF FAILURES = 0. NUMBER OF PILES IN TENSION = 0.

LOAD CASE 6. NUMBER OF FAILURES = 0. NUMBER OF PILES IN TENSION = 0.

LOAD CASE 7. NUMBER OF FAILURES = 0. NUMBER OF PILES IN TENSION = 0.

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PILE CAP DISPLACEMENTS

LOAD CASE	DX IN	DY IN	DZ IN	RX RAD	RY RAD	RZ RAD
1	0.1767E-07	-0.1295E-01	0.1248E-01	0.5233E-04	0.2370E-13	0.1353E-11
2	0.2148E-07	-0.1969E-01	0.1159E-01	0.1067E-03	0.3310E-13	0.1646E-11
3	0.1493E-07	-0.2075E-01	0.5428E-02	0.1770E-03	0.9585E-13	0.1530E-11
4	-0.4536E-08	0.3727E-02	0.6330E-02	0.4543E-04	0.1527E-12	0.5825E-12
5	-0.2079E-08	0.4884E-02	0.1031E-01	0.1756E-04	0.1454E-12	0.7253E-12
6	-0.1177E-07	-0.5351E-02	-0.7197E-02	0.2123E-03	0.2382E-12	0.5028E-12
7	-0.9316E-08	-0.4169E-02	-0.3194E-02	0.1841E-03	0.2308E-12	0.6456E-12

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PILE FORCES IN LOCAL GEOMETRY

M1 & M2 NOT AT PILE HEAD FOR PINNED PILES
* INDICATES PILE FAILURE
# INDICATES CBF BASED ON MOMENTS DUE TO
(F3*EMIN) FOR CONCRETE PILES
B INDICATES BUCKLING CONTROLS

LOAD CASE - 1

PILE	F1 K	F2 K	F3 K	M1 IN-K	M2 IN-K	M3 IN-K	ALF	CBF

1	0.1	0.0	33.6	0.0	16.7	0.0	0.31	0.06
2	0.1	0.0	33.6	0.0	16.7	0.0	0.31	0.06
3	0.1	0.0	33.6	0.0	16.7	0.0	0.31	0.06
4	0.1	0.0	33.6	0.0	16.7	0.0	0.31	0.06
5	0.1	0.0	33.6	0.0	16.7	0.0	0.31	0.06
6	0.1	0.0	33.6	0.0	16.7	0.0	0.31	0.06
7	0.1	0.0	33.6	0.0	16.7	0.0	0.31	0.06
8	0.1	0.0	33.6	0.0	16.7	0.0	0.31	0.06
9	0.1	0.0	33.6	0.0	16.7	0.0	0.31	0.06
10	0.1	0.0	33.6	0.0	16.7	0.0	0.31	0.06
11	-0.2	0.0	17.5	0.0	-30.0	0.0	0.16	0.04
12	-0.2	0.0	17.5	0.0	-30.0	0.0	0.16	0.04
13	-0.2	0.0	17.5	0.0	-30.0	0.0	0.16	0.04
14	-0.2	0.0	17.5	0.0	-30.0	0.0	0.16	0.04
15	-0.2	0.0	17.5	0.0	-30.0	0.0	0.16	0.04
16	-0.2	0.0	17.5	0.0	-30.0	0.0	0.16	0.04
17	-0.2	0.0	17.5	0.0	-30.0	0.0	0.16	0.04
18	-0.2	0.0	17.5	0.0	-30.0	0.0	0.16	0.04
19	-0.2	0.0	17.5	0.0	-30.0	0.0	0.16	0.04
20	-0.2	0.0	17.5	0.0	-30.0	0.0	0.16	0.04
21	-0.2	0.0	22.7	0.0	-31.3	0.0	0.21	0.04
22	-0.2	0.0	22.7	0.0	-31.3	0.0	0.21	0.04
23	-0.2	0.0	22.7	0.0	-31.3	0.0	0.21	0.04
24	-0.2	0.0	22.7	0.0	-31.3	0.0	0.21	0.04
25	-0.2	0.0	22.7	0.0	-31.3	0.0	0.21	0.04
26	-0.2	0.0	22.7	0.0	-31.3	0.0	0.21	0.04
27	-0.2	0.0	22.7	0.0	-31.3	0.0	0.21	0.04
28	-0.2	0.0	22.7	0.0	-31.3	0.0	0.21	0.04
29	-0.2	0.0	22.7	0.0	-31.3	0.0	0.21	0.04
30	-0.2	0.0	22.7	0.0	-31.3	0.0	0.21	0.04

LOAD CASE - 2

PILE	F1 K	F2 K	F3 K	M1 IN-K	M2 IN-K	M3 IN-K	ALF	CBF
1	0.2	0.0	40.3	0.0	34.3	0.0	0.32	0.06
2	0.2	0.0	40.3	0.0	34.3	0.0	0.32	0.06
3	0.2	0.0	40.3	0.0	34.3	0.0	0.32	0.06
4	0.2	0.0	40.3	0.0	34.3	0.0	0.32	0.06
5	0.2	0.0	40.3	0.0	34.3	0.0	0.32	0.06
6	0.2	0.0	40.3	0.0	34.3	0.0	0.32	0.06
7	0.2	0.0	40.3	0.0	34.3	0.0	0.32	0.06
8	0.2	0.0	40.3	0.0	34.3	0.0	0.32	0.06
9	0.2	0.0	40.3	0.0	34.3	0.0	0.32	0.06
10	0.2	0.0	40.3	0.0	34.3	0.0	0.32	0.06
11	-0.3	0.0	18.6	0.0	-49.6	0.0	0.15	0.04
12	-0.3	0.0	18.6	0.0	-49.6	0.0	0.15	0.04
13	-0.3	0.0	18.6	0.0	-49.6	0.0	0.15	0.04

14	-0.3	0.0	18.6	0.0	-49.6	0.0	0.15	0.04
15	-0.3	0.0	18.6	0.0	-49.6	0.0	0.15	0.04
16	-0.3	0.0	18.6	0.0	-49.6	0.0	0.15	0.04
17	-0.3	0.0	18.6	0.0	-49.6	0.0	0.15	0.04
18	-0.3	0.0	18.6	0.0	-49.6	0.0	0.15	0.04
19	-0.3	0.0	18.6	0.0	-49.6	0.0	0.15	0.04
20	-0.3	0.0	18.6	0.0	-49.6	0.0	0.15	0.04
21	-0.3	0.0	29.0	0.0	-52.3	0.0	0.23	0.05
22	-0.3	0.0	29.0	0.0	-52.3	0.0	0.23	0.05
23	-0.3	0.0	29.0	0.0	-52.3	0.0	0.23	0.05
24	-0.3	0.0	29.0	0.0	-52.3	0.0	0.23	0.05
25	-0.3	0.0	29.0	0.0	-52.3	0.0	0.23	0.05
26	-0.3	0.0	29.0	0.0	-52.3	0.0	0.23	0.05
27	-0.3	0.0	29.0	0.0	-52.3	0.0	0.23	0.05
28	-0.3	0.0	29.0	0.0	-52.3	0.0	0.23	0.05
29	-0.3	0.0	29.0	0.0	-52.3	0.0	0.23	0.05
30	-0.3	0.0	29.0	0.0	-52.3	0.0	0.23	0.05

LOAD CASE - 3

PILE	F1 K	F2 K	F3 K	M1 IN-K	M2 IN-K	M3 IN-K	ALF	CBF
1	0.3	0.0	34.5	0.0	52.6	0.0	0.24	0.05
2	0.3	0.0	34.5	0.0	52.6	0.0	0.24	0.05
3	0.3	0.0	34.5	0.0	52.6	0.0	0.24	0.05
4	0.3	0.0	34.5	0.0	52.6	0.0	0.24	0.05
5	0.3	0.0	34.5	0.0	52.6	0.0	0.24	0.05
6	0.3	0.0	34.5	0.0	52.6	0.0	0.24	0.05
7	0.3	0.0	34.5	0.0	52.6	0.0	0.24	0.05
8	0.3	0.0	34.5	0.0	52.6	0.0	0.24	0.05
9	0.3	0.0	34.5	0.0	52.6	0.0	0.24	0.05
10	0.3	0.0	34.5	0.0	52.6	0.0	0.24	0.05
11	-0.4	0.0	18.0	0.0	-66.3	0.0	0.13	0.04
12	-0.4	0.0	18.0	0.0	-66.3	0.0	0.13	0.04
13	-0.4	0.0	18.0	0.0	-66.3	0.0	0.13	0.04
14	-0.4	0.0	18.0	0.0	-66.3	0.0	0.13	0.04
15	-0.4	0.0	18.0	0.0	-66.3	0.0	0.13	0.04
16	-0.4	0.0	18.0	0.0	-66.3	0.0	0.13	0.04
17	-0.4	0.0	18.0	0.0	-66.3	0.0	0.13	0.04
18	-0.4	0.0	18.0	0.0	-66.3	0.0	0.13	0.04
19	-0.4	0.0	18.0	0.0	-66.3	0.0	0.13	0.04
20	-0.4	0.0	18.0	0.0	-66.3	0.0	0.13	0.04
21	-0.4	0.0	35.3	0.0	-70.8	0.0	0.25	0.06
22	-0.4	0.0	35.3	0.0	-70.8	0.0	0.25	0.06
23	-0.4	0.0	35.3	0.0	-70.8	0.0	0.25	0.06
24	-0.4	0.0	35.3	0.0	-70.8	0.0	0.25	0.06
25	-0.4	0.0	35.3	0.0	-70.8	0.0	0.25	0.06
26	-0.4	0.0	35.3	0.0	-70.8	0.0	0.25	0.06

27	-0.4	0.0	35.3	0.0	-70.8	0.0	0.25	0.06
28	-0.4	0.0	35.3	0.0	-70.8	0.0	0.25	0.06
29	-0.4	0.0	35.3	0.0	-70.8	0.0	0.25	0.06
30	-0.4	0.0	35.3	0.0	-70.8	0.0	0.25	0.06

LOAD CASE - 4

PILE	F1 K	F2 K	F3 K	M1 IN-K	M2 IN-K	M3 IN-K	ALF	CBF
1	0.0	0.0	9.5	0.0	3.7	0.0	0.09	0.02
2	0.0	0.0	9.5	0.0	3.7	0.0	0.09	0.02
3	0.0	0.0	9.5	0.0	3.7	0.0	0.09	0.02
4	0.0	0.0	9.5	0.0	3.7	0.0	0.09	0.02
5	0.0	0.0	9.5	0.0	3.7	0.0	0.09	0.02
6	0.0	0.0	9.5	0.0	3.7	0.0	0.09	0.02
7	0.0	0.0	9.5	0.0	3.7	0.0	0.09	0.02
8	0.0	0.0	9.5	0.0	3.7	0.0	0.09	0.02
9	0.0	0.0	9.5	0.0	3.7	0.0	0.09	0.02
10	0.0	0.0	9.5	0.0	3.7	0.0	0.09	0.02
11	-0.1	0.0	20.1	0.0	-11.4	0.0	0.19	0.03
12	-0.1	0.0	20.1	0.0	-11.4	0.0	0.19	0.03
13	-0.1	0.0	20.1	0.0	-11.4	0.0	0.19	0.03
14	-0.1	0.0	20.1	0.0	-11.4	0.0	0.19	0.03
15	-0.1	0.0	20.1	0.0	-11.4	0.0	0.19	0.03
16	-0.1	0.0	20.1	0.0	-11.4	0.0	0.19	0.03
17	-0.1	0.0	20.1	0.0	-11.4	0.0	0.19	0.03
18	-0.1	0.0	20.1	0.0	-11.4	0.0	0.19	0.03
19	-0.1	0.0	20.1	0.0	-11.4	0.0	0.19	0.03
20	-0.1	0.0	20.1	0.0	-11.4	0.0	0.19	0.03
21	-0.1	0.0	24.5	0.0	-12.6	0.0	0.23	0.04
22	-0.1	0.0	24.5	0.0	-12.6	0.0	0.23	0.04
23	-0.1	0.0	24.5	0.0	-12.6	0.0	0.23	0.04
24	-0.1	0.0	24.5	0.0	-12.6	0.0	0.23	0.04
25	-0.1	0.0	24.5	0.0	-12.6	0.0	0.23	0.04
26	-0.1	0.0	24.5	0.0	-12.6	0.0	0.23	0.04
27	-0.1	0.0	24.5	0.0	-12.6	0.0	0.23	0.04
28	-0.1	0.0	24.5	0.0	-12.6	0.0	0.23	0.04
29	-0.1	0.0	24.5	0.0	-12.6	0.0	0.23	0.04
30	-0.1	0.0	24.5	0.0	-12.6	0.0	0.23	0.04

LOAD CASE - 5

PILE	F1 K	F2 K	F3 K	M1 IN-K	M2 IN-K	M3 IN-K	ALF	CBF
1	-0.1	0.0	13.7	0.0	-4.8	0.0	0.13	0.02
2	-0.1	0.0	13.7	0.0	-4.8	0.0	0.13	0.02

3	-0.1	0.0	13.7	0.0	-4.8	0.0	0.13	0.02
4	-0.1	0.0	13.7	0.0	-4.8	0.0	0.13	0.02
5	-0.1	0.0	13.7	0.0	-4.8	0.0	0.13	0.02
6	-0.1	0.0	13.7	0.0	-4.8	0.0	0.13	0.02
7	-0.1	0.0	13.7	0.0	-4.8	0.0	0.13	0.02
8	-0.1	0.0	13.7	0.0	-4.8	0.0	0.13	0.02
9	-0.1	0.0	13.7	0.0	-4.8	0.0	0.13	0.02
10	-0.1	0.0	13.7	0.0	-4.8	0.0	0.13	0.02
11	0.0	0.0	23.4	0.0	-4.8	0.0	0.22	0.04
12	0.0	0.0	23.4	0.0	-4.8	0.0	0.22	0.04
13	0.0	0.0	23.4	0.0	-4.8	0.0	0.22	0.04
14	0.0	0.0	23.4	0.0	-4.8	0.0	0.22	0.04
15	0.0	0.0	23.4	0.0	-4.8	0.0	0.22	0.04
16	0.0	0.0	23.4	0.0	-4.8	0.0	0.22	0.04
17	0.0	0.0	23.4	0.0	-4.8	0.0	0.22	0.04
18	0.0	0.0	23.4	0.0	-4.8	0.0	0.22	0.04
19	0.0	0.0	23.4	0.0	-4.8	0.0	0.22	0.04
20	0.0	0.0	23.4	0.0	-4.8	0.0	0.22	0.04
21	0.0	0.0	25.2	0.0	-5.3	0.0	0.24	0.04
22	0.0	0.0	25.2	0.0	-5.3	0.0	0.24	0.04
23	0.0	0.0	25.2	0.0	-5.3	0.0	0.24	0.04
24	0.0	0.0	25.2	0.0	-5.3	0.0	0.24	0.04
25	0.0	0.0	25.2	0.0	-5.3	0.0	0.24	0.04
26	0.0	0.0	25.2	0.0	-5.3	0.0	0.24	0.04
27	0.0	0.0	25.2	0.0	-5.3	0.0	0.24	0.04
28	0.0	0.0	25.2	0.0	-5.3	0.0	0.24	0.04
29	0.0	0.0	25.2	0.0	-5.3	0.0	0.24	0.04
30	0.0	0.0	25.2	0.0	-5.3	0.0	0.24	0.04

LOAD CASE - 6

PILE	F1 K	F2 K	F3 K	M1 IN-K	M2 IN-K	M3 IN-K	ALF	CBF
1	0.2	0.0	3.0	0.0	52.3	0.0	0.02	0.02
2	0.2	0.0	3.0	0.0	52.3	0.0	0.02	0.02
3	0.2	0.0	3.0	0.0	52.3	0.0	0.02	0.02
4	0.2	0.0	3.0	0.0	52.3	0.0	0.02	0.02
5	0.2	0.0	3.0	0.0	52.3	0.0	0.02	0.02
6	0.2	0.0	3.0	0.0	52.3	0.0	0.02	0.02
7	0.2	0.0	3.0	0.0	52.3	0.0	0.02	0.02
8	0.2	0.0	3.0	0.0	52.3	0.0	0.02	0.02
9	0.2	0.0	3.0	0.0	52.3	0.0	0.02	0.02
10	0.2	0.0	3.0	0.0	52.3	0.0	0.02	0.02
11	-0.3	0.0	15.1	0.0	-57.0	0.0	0.11	0.03
12	-0.3	0.0	15.1	0.0	-57.0	0.0	0.11	0.03
13	-0.3	0.0	15.1	0.0	-57.0	0.0	0.11	0.03
14	-0.3	0.0	15.1	0.0	-57.0	0.0	0.11	0.03
15	-0.3	0.0	15.1	0.0	-57.0	0.0	0.11	0.03

16	-0.3	0.0	15.1	0.0	-57.0	0.0	0.11	0.03
17	-0.3	0.0	15.1	0.0	-57.0	0.0	0.11	0.03
18	-0.3	0.0	15.1	0.0	-57.0	0.0	0.11	0.03
19	-0.3	0.0	15.1	0.0	-57.0	0.0	0.11	0.03
20	-0.3	0.0	15.1	0.0	-57.0	0.0	0.11	0.03
21	-0.3	0.0	35.9	0.0	-62.4	0.0	0.25	0.06
22	-0.3	0.0	35.9	0.0	-62.4	0.0	0.25	0.06
23	-0.3	0.0	35.9	0.0	-62.4	0.0	0.25	0.06
24	-0.3	0.0	35.9	0.0	-62.4	0.0	0.25	0.06
25	-0.3	0.0	35.9	0.0	-62.4	0.0	0.25	0.06
26	-0.3	0.0	35.9	0.0	-62.4	0.0	0.25	0.06
27	-0.3	0.0	35.9	0.0	-62.4	0.0	0.25	0.06
28	-0.3	0.0	35.9	0.0	-62.4	0.0	0.25	0.06
29	-0.3	0.0	35.9	0.0	-62.4	0.0	0.25	0.06
30	-0.3	0.0	35.9	0.0	-62.4	0.0	0.25	0.06

LOAD CASE - 7

PILE	F1 K	F2 K	F3 K	M1 IN-K	M2 IN-K	M3 IN-K	ALF	CBF
1	0.2	0.0	7.2	0.0	43.7	0.0	0.05	0.02
2	0.2	0.0	7.2	0.0	43.7	0.0	0.05	0.02
3	0.2	0.0	7.2	0.0	43.7	0.0	0.05	0.02
4	0.2	0.0	7.2	0.0	43.7	0.0	0.05	0.02
5	0.2	0.0	7.2	0.0	43.7	0.0	0.05	0.02
6	0.2	0.0	7.2	0.0	43.7	0.0	0.05	0.02
7	0.2	0.0	7.2	0.0	43.7	0.0	0.05	0.02
8	0.2	0.0	7.2	0.0	43.7	0.0	0.05	0.02
9	0.2	0.0	7.2	0.0	43.7	0.0	0.05	0.02
10	0.2	0.0	7.2	0.0	43.7	0.0	0.05	0.02
11	-0.3	0.0	18.5	0.0	-50.3	0.0	0.13	0.03
12	-0.3	0.0	18.5	0.0	-50.3	0.0	0.13	0.03
13	-0.3	0.0	18.5	0.0	-50.3	0.0	0.13	0.03
14	-0.3	0.0	18.5	0.0	-50.3	0.0	0.13	0.03
15	-0.3	0.0	18.5	0.0	-50.3	0.0	0.13	0.03
16	-0.3	0.0	18.5	0.0	-50.3	0.0	0.13	0.03
17	-0.3	0.0	18.5	0.0	-50.3	0.0	0.13	0.03
18	-0.3	0.0	18.5	0.0	-50.3	0.0	0.13	0.03
19	-0.3	0.0	18.5	0.0	-50.3	0.0	0.13	0.03
20	-0.3	0.0	18.5	0.0	-50.3	0.0	0.13	0.03
21	-0.3	0.0	36.5	0.0	-55.0	0.0	0.26	0.05
22	-0.3	0.0	36.5	0.0	-55.0	0.0	0.26	0.05
23	-0.3	0.0	36.5	0.0	-55.0	0.0	0.26	0.05
24	-0.3	0.0	36.5	0.0	-55.0	0.0	0.26	0.05
25	-0.3	0.0	36.5	0.0	-55.0	0.0	0.26	0.05
26	-0.3	0.0	36.5	0.0	-55.0	0.0	0.26	0.05
27	-0.3	0.0	36.5	0.0	-55.0	0.0	0.26	0.05
28	-0.3	0.0	36.5	0.0	-55.0	0.0	0.26	0.05

29	-0.3	0.0	36.5	0.0	-55.0	0.0	0.26	0.05
30	-0.3	0.0	36.5	0.0	-55.0	0.0	0.26	0.05

****

PILE FORCES IN GLOBAL GEOMETRY

LOAD CASE - 1

PILE	PX K	PY K	PZ K	MX IN-K	MY IN-K	MZ IN-K
1	0.0	-15.1	30.0	16.7	0.0	0.0
2	0.0	-15.1	30.0	16.7	0.0	0.0
3	0.0	-15.1	30.0	16.7	0.0	0.0
4	0.0	-15.1	30.0	16.7	0.0	0.0
5	0.0	-15.1	30.0	16.7	0.0	0.0
6	0.0	-15.1	30.0	16.7	0.0	0.0
7	0.0	-15.1	30.0	16.7	0.0	0.0
8	0.0	-15.1	30.0	16.7	0.0	0.0
9	0.0	-15.1	30.0	16.7	0.0	0.0
10	0.0	-15.1	30.0	16.7	0.0	0.0
11	0.0	7.7	15.8	30.0	0.0	0.0
12	0.0	7.7	15.8	30.0	0.0	0.0
13	0.0	7.7	15.8	30.0	0.0	0.0
14	0.0	7.7	15.8	30.0	0.0	0.0
15	0.0	7.7	15.8	30.0	0.0	0.0
16	0.0	7.7	15.8	30.0	0.0	0.0
17	0.0	7.7	15.8	30.0	0.0	0.0
18	0.0	7.7	15.8	30.0	0.0	0.0
19	0.0	7.7	15.8	30.0	0.0	0.0
20	0.0	7.7	15.8	30.0	0.0	0.0
21	0.0	9.9	20.4	31.3	0.0	0.0
22	0.0	9.9	20.4	31.3	0.0	0.0
23	0.0	9.9	20.4	31.3	0.0	0.0
24	0.0	9.9	20.4	31.3	0.0	0.0
25	0.0	9.9	20.4	31.3	0.0	0.0
26	0.0	9.9	20.4	31.3	0.0	0.0
27	0.0	9.9	20.4	31.3	0.0	0.0
28	0.0	9.9	20.4	31.3	0.0	0.0
29	0.0	9.9	20.4	31.3	0.0	0.0
30	0.0	9.9	20.4	31.3	0.0	0.0

LOAD CASE - 2

PILE	PX	PY	PZ	MX	MY	MZ

	K	K	K	IN-K	IN-K	IN-K
1	0.0	-18.2	35.9	34.3	0.0	0.0
2	0.0	-18.2	35.9	34.3	0.0	0.0
3	0.0	-18.2	35.9	34.3	0.0	0.0
4	0.0	-18.2	35.9	34.3	0.0	0.0
5	0.0	-18.2	35.9	34.3	0.0	0.0
6	0.0	-18.2	35.9	34.3	0.0	0.0
7	0.0	-18.2	35.9	34.3	0.0	0.0
8	0.0	-18.2	35.9	34.3	0.0	0.0
9	0.0	-18.2	35.9	34.3	0.0	0.0
10	0.0	-18.2	35.9	34.3	0.0	0.0
11	0.0	8.0	16.7	49.6	0.0	0.0
12	0.0	8.0	16.7	49.6	0.0	0.0
13	0.0	8.0	16.7	49.6	0.0	0.0
14	0.0	8.0	16.7	49.6	0.0	0.0
15	0.0	8.0	16.7	49.6	0.0	0.0
16	0.0	8.0	16.7	49.6	0.0	0.0
17	0.0	8.0	16.7	49.6	0.0	0.0
18	0.0	8.0	16.7	49.6	0.0	0.0
19	0.0	8.0	16.7	49.6	0.0	0.0
20	0.0	8.0	16.7	49.6	0.0	0.0
21	0.0	12.7	26.1	52.3	0.0	0.0
22	0.0	12.7	26.1	52.3	0.0	0.0
23	0.0	12.7	26.1	52.3	0.0	0.0
24	0.0	12.7	26.1	52.3	0.0	0.0
25	0.0	12.7	26.1	52.3	0.0	0.0
26	0.0	12.7	26.1	52.3	0.0	0.0
27	0.0	12.7	26.1	52.3	0.0	0.0
28	0.0	12.7	26.1	52.3	0.0	0.0
29	0.0	12.7	26.1	52.3	0.0	0.0
30	0.0	12.7	26.1	52.3	0.0	0.0

LOAD CASE - 3

PILE	PX	PY	PZ	MX	MY	MZ
	K	K	K	IN-K	IN-K	IN-K
1	0.0	-15.7	30.8	52.6	0.0	0.0
2	0.0	-15.7	30.8	52.6	0.0	0.0
3	0.0	-15.7	30.8	52.6	0.0	0.0
4	0.0	-15.7	30.8	52.6	0.0	0.0
5	0.0	-15.7	30.8	52.6	0.0	0.0
6	0.0	-15.7	30.8	52.6	0.0	0.0
7	0.0	-15.7	30.8	52.6	0.0	0.0
8	0.0	-15.7	30.8	52.6	0.0	0.0
9	0.0	-15.7	30.8	52.6	0.0	0.0
10	0.0	-15.7	30.8	52.6	0.0	0.0
11	0.0	7.7	16.2	66.3	0.0	0.0

12	0.0	7.7	16.2	66.3	0.0	0.0
13	0.0	7.7	16.2	66.3	0.0	0.0
14	0.0	7.7	16.2	66.3	0.0	0.0
15	0.0	7.7	16.2	66.3	0.0	0.0
16	0.0	7.7	16.2	66.3	0.0	0.0
17	0.0	7.7	16.2	66.3	0.0	0.0
18	0.0	7.7	16.2	66.3	0.0	0.0
19	0.0	7.7	16.2	66.3	0.0	0.0
20	0.0	7.7	16.2	66.3	0.0	0.0
21	0.0	15.4	31.8	70.8	0.0	0.0
22	0.0	15.4	31.8	70.8	0.0	0.0
23	0.0	15.4	31.8	70.8	0.0	0.0
24	0.0	15.4	31.8	70.8	0.0	0.0
25	0.0	15.4	31.8	70.8	0.0	0.0
26	0.0	15.4	31.8	70.8	0.0	0.0
27	0.0	15.4	31.8	70.8	0.0	0.0
28	0.0	15.4	31.8	70.8	0.0	0.0
29	0.0	15.4	31.8	70.8	0.0	0.0
30	0.0	15.4	31.8	70.8	0.0	0.0

LOAD CASE - 4

PILE	PX K	PY K	PZ K	MX IN-K	MY IN-K	MZ IN-K
1	0.0	-4.3	8.5	3.7	0.0	0.0
2	0.0	-4.3	8.5	3.7	0.0	0.0
3	0.0	-4.3	8.5	3.7	0.0	0.0
4	0.0	-4.3	8.5	3.7	0.0	0.0
5	0.0	-4.3	8.5	3.7	0.0	0.0
6	0.0	-4.3	8.5	3.7	0.0	0.0
7	0.0	-4.3	8.5	3.7	0.0	0.0
8	0.0	-4.3	8.5	3.7	0.0	0.0
9	0.0	-4.3	8.5	3.7	0.0	0.0
10	0.0	-4.3	8.5	3.7	0.0	0.0
11	0.0	8.9	18.0	11.4	0.0	0.0
12	0.0	8.9	18.0	11.4	0.0	0.0
13	0.0	8.9	18.0	11.4	0.0	0.0
14	0.0	8.9	18.0	11.4	0.0	0.0
15	0.0	8.9	18.0	11.4	0.0	0.0
16	0.0	8.9	18.0	11.4	0.0	0.0
17	0.0	8.9	18.0	11.4	0.0	0.0
18	0.0	8.9	18.0	11.4	0.0	0.0
19	0.0	8.9	18.0	11.4	0.0	0.0
20	0.0	8.9	18.0	11.4	0.0	0.0
21	0.0	10.9	22.0	12.6	0.0	0.0
22	0.0	10.9	22.0	12.6	0.0	0.0
23	0.0	10.9	22.0	12.6	0.0	0.0
24	0.0	10.9	22.0	12.6	0.0	0.0

25	0.0	10.9	22.0	12.6	0.0	0.0
26	0.0	10.9	22.0	12.6	0.0	0.0
27	0.0	10.9	22.0	12.6	0.0	0.0
28	0.0	10.9	22.0	12.6	0.0	0.0
29	0.0	10.9	22.0	12.6	0.0	0.0
30	0.0	10.9	22.0	12.6	0.0	0.0

LOAD CASE - 5

PILE	PX K	PY K	PZ K	MX IN-K	MY IN-K	MZ IN-K
1	0.0	-6.1	12.3	-4.8	0.0	0.0
2	0.0	-6.1	12.3	-4.8	0.0	0.0
3	0.0	-6.1	12.3	-4.8	0.0	0.0
4	0.0	-6.1	12.3	-4.8	0.0	0.0
5	0.0	-6.1	12.3	-4.8	0.0	0.0
6	0.0	-6.1	12.3	-4.8	0.0	0.0
7	0.0	-6.1	12.3	-4.8	0.0	0.0
8	0.0	-6.1	12.3	-4.8	0.0	0.0
9	0.0	-6.1	12.3	-4.8	0.0	0.0
10	0.0	-6.1	12.3	-4.8	0.0	0.0
11	0.0	10.5	21.0	4.8	0.0	0.0
12	0.0	10.5	21.0	4.8	0.0	0.0
13	0.0	10.5	21.0	4.8	0.0	0.0
14	0.0	10.5	21.0	4.8	0.0	0.0
15	0.0	10.5	21.0	4.8	0.0	0.0
16	0.0	10.5	21.0	4.8	0.0	0.0
17	0.0	10.5	21.0	4.8	0.0	0.0
18	0.0	10.5	21.0	4.8	0.0	0.0
19	0.0	10.5	21.0	4.8	0.0	0.0
20	0.0	10.5	21.0	4.8	0.0	0.0
21	0.0	11.2	22.5	5.3	0.0	0.0
22	0.0	11.2	22.5	5.3	0.0	0.0
23	0.0	11.2	22.5	5.3	0.0	0.0
24	0.0	11.2	22.5	5.3	0.0	0.0
25	0.0	11.2	22.5	5.3	0.0	0.0
26	0.0	11.2	22.5	5.3	0.0	0.0
27	0.0	11.2	22.5	5.3	0.0	0.0
28	0.0	11.2	22.5	5.3	0.0	0.0
29	0.0	11.2	22.5	5.3	0.0	0.0
30	0.0	11.2	22.5	5.3	0.0	0.0

LOAD CASE - 6

PILE	PX K	PY K	PZ K	MX IN-K	MY IN-K	MZ IN-K

1	0.0	-1.6	2.6	52.3	0.0	0.0
2	0.0	-1.6	2.6	52.3	0.0	0.0
3	0.0	-1.6	2.6	52.3	0.0	0.0
4	0.0	-1.6	2.6	52.3	0.0	0.0
5	0.0	-1.6	2.6	52.3	0.0	0.0
6	0.0	-1.6	2.6	52.3	0.0	0.0
7	0.0	-1.6	2.6	52.3	0.0	0.0
8	0.0	-1.6	2.6	52.3	0.0	0.0
9	0.0	-1.6	2.6	52.3	0.0	0.0
10	0.0	-1.6	2.6	52.3	0.0	0.0
11	0.0	6.5	13.6	57.0	0.0	0.0
12	0.0	6.5	13.6	57.0	0.0	0.0
13	0.0	6.5	13.6	57.0	0.0	0.0
14	0.0	6.5	13.6	57.0	0.0	0.0
15	0.0	6.5	13.6	57.0	0.0	0.0
16	0.0	6.5	13.6	57.0	0.0	0.0
17	0.0	6.5	13.6	57.0	0.0	0.0
18	0.0	6.5	13.6	57.0	0.0	0.0
19	0.0	6.5	13.6	57.0	0.0	0.0
20	0.0	6.5	13.6	57.0	0.0	0.0
21	0.0	15.8	32.3	62.4	0.0	0.0
22	0.0	15.8	32.3	62.4	0.0	0.0
23	0.0	15.8	32.3	62.4	0.0	0.0
24	0.0	15.8	32.3	62.4	0.0	0.0
25	0.0	15.8	32.3	62.4	0.0	0.0
26	0.0	15.8	32.3	62.4	0.0	0.0
27	0.0	15.8	32.3	62.4	0.0	0.0
28	0.0	15.8	32.3	62.4	0.0	0.0
29	0.0	15.8	32.3	62.4	0.0	0.0
30	0.0	15.8	32.3	62.4	0.0	0.0

LOAD CASE - 7

PILE	PX K	PY K	PZ K	MX IN-K	MY IN-K	MZ IN-K
1	0.0	-3.4	6.4	43.7	0.0	0.0
2	0.0	-3.4	6.4	43.7	0.0	0.0
3	0.0	-3.4	6.4	43.7	0.0	0.0
4	0.0	-3.4	6.4	43.7	0.0	0.0
5	0.0	-3.4	6.4	43.7	0.0	0.0
6	0.0	-3.4	6.4	43.7	0.0	0.0
7	0.0	-3.4	6.4	43.7	0.0	0.0
8	0.0	-3.4	6.4	43.7	0.0	0.0
9	0.0	-3.4	6.4	43.7	0.0	0.0
10	0.0	-3.4	6.4	43.7	0.0	0.0
11	0.0	8.0	16.6	50.3	0.0	0.0
12	0.0	8.0	16.6	50.3	0.0	0.0
13	0.0	8.0	16.6	50.3	0.0	0.0

14	0.0	8.0	16.6	50.3	0.0	0.0
15	0.0	8.0	16.6	50.3	0.0	0.0
16	0.0	8.0	16.6	50.3	0.0	0.0
17	0.0	8.0	16.6	50.3	0.0	0.0
18	0.0	8.0	16.6	50.3	0.0	0.0
19	0.0	8.0	16.6	50.3	0.0	0.0
20	0.0	8.0	16.6	50.3	0.0	0.0
21	0.0	16.1	32.8	55.0	0.0	0.0
22	0.0	16.1	32.8	55.0	0.0	0.0
23	0.0	16.1	32.8	55.0	0.0	0.0
24	0.0	16.1	32.8	55.0	0.0	0.0
25	0.0	16.1	32.8	55.0	0.0	0.0
26	0.0	16.1	32.8	55.0	0.0	0.0
27	0.0	16.1	32.8	55.0	0.0	0.0
28	0.0	16.1	32.8	55.0	0.0	0.0
29	0.0	16.1	32.8	55.0	0.0	0.0
30	0.0	16.1	32.8	55.0	0.0	0.0

NO FILES WERE GENERATED DURING THIS RUN.

```
10  Sunset Twall2 Fixed
20  PIL  1  -22.5   2.5   0
30  BAT   2   1
40  ANG   270   1
50  PIL  2  -17.5   2.5   0
60  BAT   2   2
70  ANG   270   2
80  PIL  3  -12.5   2.5   0
90  BAT   2   3
100  ANG   270   3
110  PIL  4  -7.5   2.5   0
120  BAT   2   4
130  ANG   270   4
140  PIL  5  -2.5   2.5   0
150  BAT   2   5
160  ANG   270   5
170  PIL  6   2.5   2.5   0
180  BAT   2   6
190  ANG   270   6
200  PIL  7   7.5   2.5   0
210  BAT   2   7
220  ANG   270   7
230  PIL  8   12.5   2.5   0
240  BAT   2   8
250  ANG   270   8
260  PIL  9   17.5   2.5   0
270  BAT   2   9
280  ANG   270   9
290  PIL  10   22.5   2.5   0
300  BAT   2   10
310  ANG   270   10
320  PIL  11  -22.5   7.5   0
330  BAT   2   11
340  ANG   90   11
350  PIL  12  -17.5   7.5   0
360  BAT   2   12
370  ANG   90   12
380  PIL  13  -12.5   7.5   0
390  BAT   2   13
400  ANG   90   13
410  PIL  14  -7.5   7.5   0
420  BAT   2   14
430  ANG   90   14
440  PIL  15  -2.5   7.5   0
450  BAT   2   15
460  ANG   90   15
470  PIL  16   2.5   7.5   0
480  BAT   2   16
490  ANG   90   16
500  PIL  17   7.5   7.5   0
```

```
510  BAT   2   17
520  ANG   90   17
530  PIL  18   12.5   7.5   0
540  BAT   2   18
550  ANG   90   18
560  PIL  19   17.5   7.5   0
570  BAT   2   19
580  ANG   90   19
590  PIL  20   22.5   7.5   0
600  BAT   2   20
610  ANG   90   20
620  PIL  21  -22.5   12.5   0
630  BAT   2   21
640  ANG   90   21
650  PIL  22  -17.5   12.5   0
660  BAT   2   22
670  ANG   90   22
680  PIL  23  -12.5   12.5   0
690  BAT   2   23
700  ANG   90   23
710  PIL  24  -7.5   12.5   0
720  BAT   2   24
730  ANG   90   24
740  PIL  25  -2.5   12.5   0
750  BAT   2   25
760  ANG   90   25
770  PIL  26   2.5   12.5   0
780  BAT   2   26
790  ANG   90   26
800  PIL  27   7.5   12.5   0
810  BAT   2   27
820  ANG   90   27
830  PIL  28   12.5   12.5   0
840  BAT   2   28
850  ANG   90   28
860  PIL  29   17.5   12.5   0
870  BAT   2   29
880  ANG   90   29
890  PIL  30   22.5   12.5   0
900  BAT   2   30
910  ANG   90   30
920  PRO  29000  326  904  26.1  2  0  1 TO 30
930  SOI ES 0.0345 L  69  0  1 TO 30
940  RED  1  1  1
950  ALL H 107  85  652  652  1107  3275  1 TO 30
960  FIX  1 TO 30
970  LOA  8  0  641  339  7593  0  0
970  LOA  9  0  641  483  8315  0  0
970  FOV  1.33  1.33  8
970  FOV  1.33  1.33  9
```

```
980  TOUT 1 2 3 4 5 6 7
990  PFO ALL
1000  PLB ALL
```

CPGA - CASE PILE GROUP ANALYSIS PROGRAM
RUN DATE: 11-SEP-20 RUN TIME: 18:50:34

FOR PILES WITH UNSUPPORTED HEIGHT:
A. CPGA CANNOT CALCULATE PMAXMOM FOR NH TYPE SOIL
B. THE ALLOWABLE STRESS CHECKS, ASC AND AST, ARE
NOT FULLY DEVELOPED FOR UNSUPPORTED PILES.
WORK IS IN PROGRESS TO COMPLETE THIS ASPECT OF CPGA.

ELASTIC CENTER LOCATION IS NOT COMPUTED FOR 3-DIMENSIONAL PROBLEMS.

SUNSET TWALL2 FIXED
DATA UNKNOWN - REJECTED.

THERE ARE 30 PILES AND
2 LOAD CASES IN THIS RUN.

ALL PILE COORDINATES ARE CONTAINED WITHIN A BOX

	X	Y	Z
WITH DIAGONAL COORDINATES = (	-22.50 ,	2.50 ,	0.00)
(	22.50 ,	12.50 ,	0.00)

****

PILE PROPERTIES AS INPUT

E	I1	I2	A	C33	B66
KSI	IN**4	IN**4	IN**2		
0.29000E+05	0.32600E+03	0.90400E+03	0.26100E+02	0.20000E+01	0.00000E+00

THESE PILE PROPERTIES APPLY TO THE FOLLOWING PILES -

ALL

****

SOIL DESCRIPTIONS AS INPUT

ES	ESOIL	LENGTH	L	LU
	K/IN**2		FT	FT

```
        0.34500E-01    L      0.69000E+02   0.00000E+00

 ESOIL(ORIGINAL)     RGROUP     RCYCLIC
   K/IN**2
  0.34500E-01       0.1000E+01 0.1000E+01
```

THIS SOIL DESCRIPTION APPLIES TO THE FOLLOWING PILES -

ALL

****

PILE STIFFNESSES AS CALCULATED FROM PROPERTIES

```
 0.81007E+01  0.00000E+00  0.00000E+00  0.00000E+00  0.95103E+03  0.00000E+00
 0.00000E+00  0.62774E+01  0.00000E+00 -0.57111E+03  0.00000E+00  0.00000E+00
 0.00000E+00  0.00000E+00  0.18283E+04  0.00000E+00  0.00000E+00  0.00000E+00
 0.00000E+00 -0.57111E+03  0.00000E+00  0.10392E+06  0.00000E+00  0.00000E+00
 0.95103E+03  0.00000E+00  0.00000E+00  0.00000E+00  0.22330E+06  0.00000E+00
 0.00000E+00  0.00000E+00  0.00000E+00  0.00000E+00  0.00000E+00  0.00000E+00
```

THIS MATRIX APPLIES TO THE FOLLOWING PILES -

1

****

PILE GEOMETRY AS INPUT AND/OR GENERATED

NUM	X FT	Y FT	Z FT	BATTER	ANGLE	LENGTH FT	FIXITY
1	-22.50	2.50	0.00	2.00	270.00	69.00	F
2	-17.50	2.50	0.00	2.00	270.00	69.00	F
3	-12.50	2.50	0.00	2.00	270.00	69.00	F
4	-7.50	2.50	0.00	2.00	270.00	69.00	F
5	-2.50	2.50	0.00	2.00	270.00	69.00	F
6	2.50	2.50	0.00	2.00	270.00	69.00	F
7	7.50	2.50	0.00	2.00	270.00	69.00	F
8	12.50	2.50	0.00	2.00	270.00	69.00	F
9	17.50	2.50	0.00	2.00	270.00	69.00	F
10	22.50	2.50	0.00	2.00	270.00	69.00	F
11	-22.50	7.50	0.00	2.00	90.00	69.00	F
12	-17.50	7.50	0.00	2.00	90.00	69.00	F
13	-12.50	7.50	0.00	2.00	90.00	69.00	F
14	-7.50	7.50	0.00	2.00	90.00	69.00	F

15	-2.50	7.50	0.00	2.00	90.00	69.00	F
16	2.50	7.50	0.00	2.00	90.00	69.00	F
17	7.50	7.50	0.00	2.00	90.00	69.00	F
18	12.50	7.50	0.00	2.00	90.00	69.00	F
19	17.50	7.50	0.00	2.00	90.00	69.00	F
20	22.50	7.50	0.00	2.00	90.00	69.00	F
21	-22.50	12.50	0.00	2.00	90.00	69.00	F
22	-17.50	12.50	0.00	2.00	90.00	69.00	F
23	-12.50	12.50	0.00	2.00	90.00	69.00	F
24	-7.50	12.50	0.00	2.00	90.00	69.00	F
25	-2.50	12.50	0.00	2.00	90.00	69.00	F
26	2.50	12.50	0.00	2.00	90.00	69.00	F
27	7.50	12.50	0.00	2.00	90.00	69.00	F
28	12.50	12.50	0.00	2.00	90.00	69.00	F
29	17.50	12.50	0.00	2.00	90.00	69.00	F
30	22.50	12.50	0.00	2.00	90.00	69.00	F

						2070.00	

****

APPLIED LOADS

LOAD CASE	PX K	PY K	PZ K	MX FT-K	MY FT-K	MZ FT-K	OVERSTRESS COM	TEN
8	0.0	641.0	339.0	7593.0	0.0	0.0	1.33	1.33
9	0.0	641.0	483.0	8315.0	0.0	0.0	1.33	1.33

****

ORIGINAL PILE GROUP STIFFNESS MATRIX

0.18832E+03	0.22259E-03	-0.88591E-04	0.13082E-01	0.15324E+05	-0.19503E+05
0.22259E-03	0.11164E+05	0.72806E+04	0.15034E+07	0.20674E-03	-0.14722E-01
-0.88591E-04	0.72806E+04	0.43927E+05	0.39577E+07	0.51752E-04	-0.13289E-01
0.13082E-01	0.15034E+07	0.39577E+07	0.46972E+09	-0.93042E-01	-0.24530E+01
0.15324E+05	0.20674E-03	0.51752E-04	-0.93042E-01	0.13071E+10	-0.21803E+09
-0.19503E+05	-0.14722E-01	-0.13289E-01	-0.24530E+01	-0.21803E+09	0.33524E+09

30 PILES 2 LOAD CASES

LOAD CASE 8. NUMBER OF FAILURES = 0. NUMBER OF PILES IN TENSION = 10.

LOAD CASE 9. NUMBER OF FAILURES = 0. NUMBER OF PILES IN TENSION = 10.

****

PILE CAP DISPLACEMENTS

LOAD CASE	DX IN	DY IN	DZ IN	RX RAD	RY RAD	RZ RAD
8	-0.7175E-07	0.3632E-01	-0.2203E-01	0.2633E-03	0.6737E-12	-0.1087E-11
9	-0.6690E-07	0.3865E-01	-0.1413E-01	0.2078E-03	0.6591E-12	-0.8059E-12

****

PILE FORCES IN LOCAL GEOMETRY

M1 & M2 NOT AT PILE HEAD FOR PINNED PILES
* INDICATES PILE FAILURE
# INDICATES CBF BASED ON MOMENTS DUE TO
(F3*EMIN) FOR CONCRETE PILES
B INDICATES BUCKLING CONTROLS

LOAD CASE - 8

PILE	F1 K	F2 K	F3 K	M1 IN-K	M2 IN-K	M3 IN-K	ALF	CBF
1	0.0	0.0	-52.8	0.0	33.9	0.0	0.47	0.07
2	0.0	0.0	-52.8	0.0	33.9	0.0	0.47	0.07
3	0.0	0.0	-52.8	0.0	33.9	0.0	0.47	0.07
4	0.0	0.0	-52.8	0.0	33.9	0.0	0.47	0.07
5	0.0	0.0	-52.8	0.0	33.9	0.0	0.47	0.07
6	0.0	0.0	-52.8	0.0	33.9	0.0	0.47	0.07
7	0.0	0.0	-52.8	0.0	33.9	0.0	0.47	0.07
8	0.0	0.0	-52.8	0.0	33.9	0.0	0.47	0.07
9	0.0	0.0	-52.8	0.0	33.9	0.0	0.47	0.07
10	0.0	0.0	-52.8	0.0	33.9	0.0	0.47	0.07
11	0.0	0.0	32.4	0.0	-28.6	0.0	0.23	0.04
12	0.0	0.0	32.4	0.0	-28.6	0.0	0.23	0.04
13	0.0	0.0	32.4	0.0	-28.6	0.0	0.23	0.04
14	0.0	0.0	32.4	0.0	-28.6	0.0	0.23	0.04
15	0.0	0.0	32.4	0.0	-28.6	0.0	0.23	0.04
16	0.0	0.0	32.4	0.0	-28.6	0.0	0.23	0.04
17	0.0	0.0	32.4	0.0	-28.6	0.0	0.23	0.04
18	0.0	0.0	32.4	0.0	-28.6	0.0	0.23	0.04
19	0.0	0.0	32.4	0.0	-28.6	0.0	0.23	0.04
20	0.0	0.0	32.4	0.0	-28.6	0.0	0.23	0.04

21	-0.1	0.0	58.3	0.0	-35.3	0.0	0.41	0.08
22	-0.1	0.0	58.3	0.0	-35.3	0.0	0.41	0.08
23	-0.1	0.0	58.3	0.0	-35.3	0.0	0.41	0.08
24	-0.1	0.0	58.3	0.0	-35.3	0.0	0.41	0.08
25	-0.1	0.0	58.3	0.0	-35.3	0.0	0.41	0.08
26	-0.1	0.0	58.3	0.0	-35.3	0.0	0.41	0.08
27	-0.1	0.0	58.3	0.0	-35.3	0.0	0.41	0.08
28	-0.1	0.0	58.3	0.0	-35.3	0.0	0.41	0.08
29	-0.1	0.0	58.3	0.0	-35.3	0.0	0.41	0.08
30	-0.1	0.0	58.3	0.0	-35.3	0.0	0.41	0.08

LOAD CASE - 9

PILE	F1 K	F2 K	F3 K	M1 IN-K	M2 IN-K	M3 IN-K	ALF	CBF
1	-0.1	0.0	-44.5	0.0	16.9	0.0	0.39	0.06
2	-0.1	0.0	-44.5	0.0	16.9	0.0	0.39	0.06
3	-0.1	0.0	-44.5	0.0	16.9	0.0	0.39	0.06
4	-0.1	0.0	-44.5	0.0	16.9	0.0	0.39	0.06
5	-0.1	0.0	-44.5	0.0	16.9	0.0	0.39	0.06
6	-0.1	0.0	-44.5	0.0	16.9	0.0	0.39	0.06
7	-0.1	0.0	-44.5	0.0	16.9	0.0	0.39	0.06
8	-0.1	0.0	-44.5	0.0	16.9	0.0	0.39	0.06
9	-0.1	0.0	-44.5	0.0	16.9	0.0	0.39	0.06
10	-0.1	0.0	-44.5	0.0	16.9	0.0	0.39	0.06
11	0.1	0.0	39.1	0.0	-15.5	0.0	0.27	0.05
12	0.1	0.0	39.1	0.0	-15.5	0.0	0.27	0.05
13	0.1	0.0	39.1	0.0	-15.5	0.0	0.27	0.05
14	0.1	0.0	39.1	0.0	-15.5	0.0	0.27	0.05
15	0.1	0.0	39.1	0.0	-15.5	0.0	0.27	0.05
16	0.1	0.0	39.1	0.0	-15.5	0.0	0.27	0.05
17	0.1	0.0	39.1	0.0	-15.5	0.0	0.27	0.05
18	0.1	0.0	39.1	0.0	-15.5	0.0	0.27	0.05
19	0.1	0.0	39.1	0.0	-15.5	0.0	0.27	0.05
20	0.1	0.0	39.1	0.0	-15.5	0.0	0.27	0.05
21	0.0	0.0	59.5	0.0	-20.8	0.0	0.42	0.07
22	0.0	0.0	59.5	0.0	-20.8	0.0	0.42	0.07
23	0.0	0.0	59.5	0.0	-20.8	0.0	0.42	0.07
24	0.0	0.0	59.5	0.0	-20.8	0.0	0.42	0.07
25	0.0	0.0	59.5	0.0	-20.8	0.0	0.42	0.07
26	0.0	0.0	59.5	0.0	-20.8	0.0	0.42	0.07
27	0.0	0.0	59.5	0.0	-20.8	0.0	0.42	0.07
28	0.0	0.0	59.5	0.0	-20.8	0.0	0.42	0.07
29	0.0	0.0	59.5	0.0	-20.8	0.0	0.42	0.07
30	0.0	0.0	59.5	0.0	-20.8	0.0	0.42	0.07

****

PILE FORCES IN GLOBAL GEOMETRY

LOAD CASE - 8

PILE	PX K	PY K	PZ K	MX IN-K	MY IN-K	MZ IN-K
1	0.0	23.6	-47.2	33.9	0.0	0.0
2	0.0	23.6	-47.2	33.9	0.0	0.0
3	0.0	23.6	-47.2	33.9	0.0	0.0
4	0.0	23.6	-47.2	33.9	0.0	0.0
5	0.0	23.6	-47.2	33.9	0.0	0.0
6	0.0	23.6	-47.2	33.9	0.0	0.0
7	0.0	23.6	-47.2	33.9	0.0	0.0
8	0.0	23.6	-47.2	33.9	0.0	0.0
9	0.0	23.6	-47.2	33.9	0.0	0.0
10	0.0	23.6	-47.2	33.9	0.0	0.0
11	0.0	14.5	29.0	28.6	0.0	0.0
12	0.0	14.5	29.0	28.6	0.0	0.0
13	0.0	14.5	29.0	28.6	0.0	0.0
14	0.0	14.5	29.0	28.6	0.0	0.0
15	0.0	14.5	29.0	28.6	0.0	0.0
16	0.0	14.5	29.0	28.6	0.0	0.0
17	0.0	14.5	29.0	28.6	0.0	0.0
18	0.0	14.5	29.0	28.6	0.0	0.0
19	0.0	14.5	29.0	28.6	0.0	0.0
20	0.0	14.5	29.0	28.6	0.0	0.0
21	0.0	26.0	52.1	35.3	0.0	0.0
22	0.0	26.0	52.1	35.3	0.0	0.0
23	0.0	26.0	52.1	35.3	0.0	0.0
24	0.0	26.0	52.1	35.3	0.0	0.0
25	0.0	26.0	52.1	35.3	0.0	0.0
26	0.0	26.0	52.1	35.3	0.0	0.0
27	0.0	26.0	52.1	35.3	0.0	0.0
28	0.0	26.0	52.1	35.3	0.0	0.0
29	0.0	26.0	52.1	35.3	0.0	0.0
30	0.0	26.0	52.1	35.3	0.0	0.0

LOAD CASE - 9

PILE	PX K	PY K	PZ K	MX IN-K	MY IN-K	MZ IN-K
1	0.0	20.0	-39.8	16.9	0.0	0.0
2	0.0	20.0	-39.8	16.9	0.0	0.0
3	0.0	20.0	-39.8	16.9	0.0	0.0

4	0.0	20.0	-39.8	16.9	0.0	0.0
5	0.0	20.0	-39.8	16.9	0.0	0.0
6	0.0	20.0	-39.8	16.9	0.0	0.0
7	0.0	20.0	-39.8	16.9	0.0	0.0
8	0.0	20.0	-39.8	16.9	0.0	0.0
9	0.0	20.0	-39.8	16.9	0.0	0.0
10	0.0	20.0	-39.8	16.9	0.0	0.0
11	0.0	17.5	34.9	15.5	0.0	0.0
12	0.0	17.5	34.9	15.5	0.0	0.0
13	0.0	17.5	34.9	15.5	0.0	0.0
14	0.0	17.5	34.9	15.5	0.0	0.0
15	0.0	17.5	34.9	15.5	0.0	0.0
16	0.0	17.5	34.9	15.5	0.0	0.0
17	0.0	17.5	34.9	15.5	0.0	0.0
18	0.0	17.5	34.9	15.5	0.0	0.0
19	0.0	17.5	34.9	15.5	0.0	0.0
20	0.0	17.5	34.9	15.5	0.0	0.0
21	0.0	26.6	53.2	20.8	0.0	0.0
22	0.0	26.6	53.2	20.8	0.0	0.0
23	0.0	26.6	53.2	20.8	0.0	0.0
24	0.0	26.6	53.2	20.8	0.0	0.0
25	0.0	26.6	53.2	20.8	0.0	0.0
26	0.0	26.6	53.2	20.8	0.0	0.0
27	0.0	26.6	53.2	20.8	0.0	0.0
28	0.0	26.6	53.2	20.8	0.0	0.0
29	0.0	26.6	53.2	20.8	0.0	0.0
30	0.0	26.6	53.2	20.8	0.0	0.0

NO FILES WERE GENERATED DURING THIS RUN.

```
10  Sunset Twall2 Pinned
20  PIL  1  -22.5   2.5   0
30  BAT   2   1
40  ANG   270   1
50  PIL  2  -17.5   2.5   0
60  BAT   2   2
70  ANG   270   2
80  PIL  3  -12.5   2.5   0
90  BAT   2   3
100  ANG   270   3
110  PIL  4  -7.5   2.5   0
120  BAT   2   4
130  ANG   270   4
140  PIL  5  -2.5   2.5   0
150  BAT   2   5
160  ANG   270   5
170  PIL  6   2.5   2.5   0
180  BAT   2   6
190  ANG   270   6
200  PIL  7   7.5   2.5   0
210  BAT   2   7
220  ANG   270   7
230  PIL  8   12.5   2.5   0
240  BAT   2   8
250  ANG   270   8
260  PIL  9   17.5   2.5   0
270  BAT   2   9
280  ANG   270   9
290  PIL  10   22.5   2.5   0
300  BAT   2   10
310  ANG   270   10
320  PIL  11  -22.5   7.5   0
330  BAT   2   11
340  ANG   90   11
350  PIL  12  -17.5   7.5   0
360  BAT   2   12
370  ANG   90   12
380  PIL  13  -12.5   7.5   0
390  BAT   2   13
400  ANG   90   13
410  PIL  14  -7.5   7.5   0
420  BAT   2   14
430  ANG   90   14
440  PIL  15  -2.5   7.5   0
450  BAT   2   15
460  ANG   90   15
470  PIL  16   2.5   7.5   0
480  BAT   2   16
490  ANG   90   16
500  PIL  17   7.5   7.5   0
```

```
510  BAT   2   17
520  ANG   90   17
530  PIL  18   12.5   7.5   0
540  BAT   2   18
550  ANG   90   18
560  PIL  19   17.5   7.5   0
570  BAT   2   19
580  ANG   90   19
590  PIL  20   22.5   7.5   0
600  BAT   2   20
610  ANG   90   20
620  PIL  21  -22.5   12.5   0
630  BAT   2   21
640  ANG   90   21
650  PIL  22  -17.5   12.5   0
660  BAT   2   22
670  ANG   90   22
680  PIL  23  -12.5   12.5   0
690  BAT   2   23
700  ANG   90   23
710  PIL  24  -7.5   12.5   0
720  BAT   2   24
730  ANG   90   24
740  PIL  25  -2.5   12.5   0
750  BAT   2   25
760  ANG   90   25
770  PIL  26   2.5   12.5   0
780  BAT   2   26
790  ANG   90   26
800  PIL  27   7.5   12.5   0
810  BAT   2   27
820  ANG   90   27
830  PIL  28   12.5   12.5   0
840  BAT   2   28
850  ANG   90   28
860  PIL  29   17.5   12.5   0
870  BAT   2   29
880  ANG   90   29
890  PIL  30   22.5   12.5   0
900  BAT   2   30
910  ANG   90   30
920  PRO  29000  326  904  26.1  2  0  1 TO 30
930  SOI ES 0.0345 L  69  0  1 TO 30
940  RED  1  1  1
950  ALL H 107  85  652  652  1107  3275  1 TO 30
960  PIN  1 TO 30
970  LOA  1  0  25  661  4542  0  0
970  LOA  2  0  25  788  5532  0  0
970  LOA  3  0  74  788  6120  0  0
970  LOA  4  0  156  485  4333  0  0
```

```
970  LOA  5  0  156  558  4700  0  0
970  LOA  6  0  207  485  5265  0  0
970  LOA  7  0  207  558  5631  0  0
970  FOV  1.167  1.167  2
970  FOV  1.33  1.33  3
970  FOV  1.33  1.33  6
970  FOV  1.33  1.33  7
980  TOUT 1 2 3 4 5 6 7
990  PFO ALL
1000  PLB ALL
```

CPGA - CASE PILE GROUP ANALYSIS PROGRAM
RUN DATE: 11-SEP-20 RUN TIME: 18:51:33

FOR PILES WITH UNSUPPORTED HEIGHT:
A. CPGA CANNOT CALCULATE PMAXMOM FOR NH TYPE SOIL
B. THE ALLOWABLE STRESS CHECKS, ASC AND AST, ARE
NOT FULLY DEVELOPED FOR UNSUPPORTED PILES.
WORK IS IN PROGRESS TO COMPLETE THIS ASPECT OF CPGA.

ELASTIC CENTER LOCATION IS NOT COMPUTED FOR 3-DIMENSIONAL PROBLEMS.

SUNSET TWALL2 PINNED
DATA UNKNOWN - REJECTED.

THERE ARE 30 PILES AND
7 LOAD CASES IN THIS RUN.

ALL PILE COORDINATES ARE CONTAINED WITHIN A BOX

	X	Y	Z
WITH DIAGONAL COORDINATES = (	-22.50 ,	2.50 ,	0.00)
(	22.50 ,	12.50 ,	0.00)

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PILE PROPERTIES AS INPUT

E	I1	I2	A	C33	B66
KSI	IN**4	IN**4	IN**2		
0.29000E+05	0.32600E+03	0.90400E+03	0.26100E+02	0.20000E+01	0.00000E+00

THESE PILE PROPERTIES APPLY TO THE FOLLOWING PILES -

ALL

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SOIL DESCRIPTIONS AS INPUT

ES	ESOIL	LENGTH	L	LU
	K/IN**2		FT	FT

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        0.34500E-01    L      0.69000E+02   0.00000E+00

 ESOIL(ORIGINAL)     RGROUP     RCYCLIC
   K/IN**2
  0.34500E-01       0.1000E+01 0.1000E+01

THIS SOIL DESCRIPTION APPLIES TO THE FOLLOWING PILES -

    ALL

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         PILE STIFFNESSES AS CALCULATED FROM PROPERTIES


 0.40503E+01  0.00000E+00  0.00000E+00  0.00000E+00  0.00000E+00  0.00000E+00
 0.00000E+00  0.31387E+01  0.00000E+00  0.00000E+00  0.00000E+00  0.00000E+00
 0.00000E+00  0.00000E+00  0.18283E+04  0.00000E+00  0.00000E+00  0.00000E+00
 0.00000E+00  0.00000E+00  0.00000E+00  0.00000E+00  0.00000E+00  0.00000E+00
 0.00000E+00  0.00000E+00  0.00000E+00  0.00000E+00  0.00000E+00  0.00000E+00
 0.00000E+00  0.00000E+00  0.00000E+00  0.00000E+00  0.00000E+00  0.00000E+00


THIS MATRIX APPLIES TO THE FOLLOWING PILES -

   1


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         PILE GEOMETRY AS INPUT AND/OR GENERATED

NUM        X          Y          Z      BATTER    ANGLE    LENGTH  FIXITY
          FT         FT         FT                          FT

  1     -22.50       2.50       0.00      2.00    270.00    69.00     P
  2     -17.50       2.50       0.00      2.00    270.00    69.00     P
  3     -12.50       2.50       0.00      2.00    270.00    69.00     P
  4      -7.50       2.50       0.00      2.00    270.00    69.00     P
  5      -2.50       2.50       0.00      2.00    270.00    69.00     P
  6       2.50       2.50       0.00      2.00    270.00    69.00     P
  7       7.50       2.50       0.00      2.00    270.00    69.00     P
  8      12.50       2.50       0.00      2.00    270.00    69.00     P
  9      17.50       2.50       0.00      2.00    270.00    69.00     P
 10      22.50       2.50       0.00      2.00    270.00    69.00     P
 11     -22.50       7.50       0.00      2.00     90.00    69.00     P
 12     -17.50       7.50       0.00      2.00     90.00    69.00     P
 13     -12.50       7.50       0.00      2.00     90.00    69.00     P
 14      -7.50       7.50       0.00      2.00     90.00    69.00     P
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15	-2.50	7.50	0.00	2.00	90.00	69.00	P
16	2.50	7.50	0.00	2.00	90.00	69.00	P
17	7.50	7.50	0.00	2.00	90.00	69.00	P
18	12.50	7.50	0.00	2.00	90.00	69.00	P
19	17.50	7.50	0.00	2.00	90.00	69.00	P
20	22.50	7.50	0.00	2.00	90.00	69.00	P
21	-22.50	12.50	0.00	2.00	90.00	69.00	P
22	-17.50	12.50	0.00	2.00	90.00	69.00	P
23	-12.50	12.50	0.00	2.00	90.00	69.00	P
24	-7.50	12.50	0.00	2.00	90.00	69.00	P
25	-2.50	12.50	0.00	2.00	90.00	69.00	P
26	2.50	12.50	0.00	2.00	90.00	69.00	P
27	7.50	12.50	0.00	2.00	90.00	69.00	P
28	12.50	12.50	0.00	2.00	90.00	69.00	P
29	17.50	12.50	0.00	2.00	90.00	69.00	P
30	22.50	12.50	0.00	2.00	90.00	69.00	P

						2070.00	

****

APPLIED LOADS

LOAD CASE	PX K	PY K	PZ K	MX FT-K	MY FT-K	MZ FT-K	OVERSTRESS COM	OVERSTRESS TEN
1	0.0	25.0	661.0	4542.0	0.0	0.0		
2	0.0	25.0	788.0	5532.0	0.0	0.0	1.17	1.17
3	0.0	74.0	788.0	6120.0	0.0	0.0	1.33	1.33
4	0.0	156.0	485.0	4333.0	0.0	0.0		
5	0.0	156.0	558.0	4700.0	0.0	0.0		
6	0.0	207.0	485.0	5265.0	0.0	0.0	1.33	1.33
7	0.0	207.0	558.0	5631.0	0.0	0.0	1.33	1.33

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ORIGINAL PILE GROUP STIFFNESS MATRIX

0.94162E+02	0.22252E-03	-0.88788E-04	0.13318E-01	0.00000E+00	-0.84746E+04
0.22252E-03	0.11067E+05	0.72968E+04	0.15323E+07	-0.87311E-10	-0.14687E-01
-0.88788E-04	0.72968E+04	0.43903E+05	0.39512E+07	-0.11642E-09	-0.13318E-01
0.13318E-01	0.15323E+07	0.39512E+07	0.46098E+09	-0.14901E-07	-0.24772E+01
0.21684E-17	0.29104E-10	-0.17462E-09	0.14901E-07	0.13039E+10	-0.21672E+09
-0.84746E+04	-0.14687E-01	-0.13318E-01	-0.24772E+01	-0.21672E+09	0.32967E+09

30 PILES 7 LOAD CASES

LOAD CASE 1. NUMBER OF FAILURES = 0. NUMBER OF PILES IN TENSION = 0.

LOAD CASE 2. NUMBER OF FAILURES = 0. NUMBER OF PILES IN TENSION = 0.

LOAD CASE 3. NUMBER OF FAILURES = 0. NUMBER OF PILES IN TENSION = 0.

LOAD CASE 4. NUMBER OF FAILURES = 0. NUMBER OF PILES IN TENSION = 0.

LOAD CASE 5. NUMBER OF FAILURES = 0. NUMBER OF PILES IN TENSION = 0.

LOAD CASE 6. NUMBER OF FAILURES = 0. NUMBER OF PILES IN TENSION = 0.

LOAD CASE 7. NUMBER OF FAILURES = 0. NUMBER OF PILES IN TENSION = 0.

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PILE CAP DISPLACEMENTS

LOAD CASE	DX IN	DY IN	DZ IN	RX RAD	RY RAD	RZ RAD
1	0.3580E-07	-0.1685E-01	0.9513E-02	0.9270E-04	0.2334E-12	0.1404E-11
2	0.4376E-07	-0.2649E-01	0.6414E-02	0.1771E-03	0.2863E-12	0.1723E-11
3	0.3098E-07	-0.3023E-01	-0.1789E-02	0.2751E-03	0.2696E-12	0.1622E-11
4	-0.8951E-08	0.2341E-02	0.5280E-02	0.5976E-04	0.1001E-12	0.6023E-12
5	-0.4174E-08	0.4617E-02	0.1012E-01	0.2028E-04	0.1231E-12	0.7404E-12
6	-0.2257E-07	-0.1393E-01	-0.1374E-01	0.3011E-03	0.9457E-13	0.5690E-12
7	-0.1779E-07	-0.1162E-01	-0.8870E-02	0.2612E-03	0.1175E-12	0.7069E-12

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PILE FORCES IN LOCAL GEOMETRY

M1 & M2 NOT AT PILE HEAD FOR PINNED PILES
* INDICATES PILE FAILURE
# INDICATES CBF BASED ON MOMENTS DUE TO
(F3*EMIN) FOR CONCRETE PILES
B INDICATES BUCKLING CONTROLS

LOAD CASE - 1

PILE	F1 K	F2 K	F3 K	M1 IN-K	M2 IN-K	M3 IN-K	ALF	CBF

1	0.0	0.0	33.9	0.0	-2.9	0.0	0.32	0.05
2	0.0	0.0	33.9	0.0	-2.9	0.0	0.32	0.05
3	0.0	0.0	33.9	0.0	-2.9	0.0	0.32	0.05
4	0.0	0.0	33.9	0.0	-2.9	0.0	0.32	0.05
5	0.0	0.0	33.9	0.0	-2.9	0.0	0.32	0.05
6	0.0	0.0	33.9	0.0	-2.9	0.0	0.32	0.05
7	0.0	0.0	33.9	0.0	-2.9	0.0	0.32	0.05
8	0.0	0.0	33.9	0.0	-2.9	0.0	0.32	0.05
9	0.0	0.0	33.9	0.0	-2.9	0.0	0.32	0.05
10	0.0	0.0	33.9	0.0	-2.9	0.0	0.32	0.05
11	-0.1	0.0	15.4	0.0	7.1	0.0	0.14	0.03
12	-0.1	0.0	15.4	0.0	7.1	0.0	0.14	0.03
13	-0.1	0.0	15.4	0.0	7.1	0.0	0.14	0.03
14	-0.1	0.0	15.4	0.0	7.1	0.0	0.14	0.03
15	-0.1	0.0	15.4	0.0	7.1	0.0	0.14	0.03
16	-0.1	0.0	15.4	0.0	7.1	0.0	0.14	0.03
17	-0.1	0.0	15.4	0.0	7.1	0.0	0.14	0.03
18	-0.1	0.0	15.4	0.0	7.1	0.0	0.14	0.03
19	-0.1	0.0	15.4	0.0	7.1	0.0	0.14	0.03
20	-0.1	0.0	15.4	0.0	7.1	0.0	0.14	0.03
21	-0.1	0.0	24.5	0.0	7.8	0.0	0.23	0.04
22	-0.1	0.0	24.5	0.0	7.8	0.0	0.23	0.04
23	-0.1	0.0	24.5	0.0	7.8	0.0	0.23	0.04
24	-0.1	0.0	24.5	0.0	7.8	0.0	0.23	0.04
25	-0.1	0.0	24.5	0.0	7.8	0.0	0.23	0.04
26	-0.1	0.0	24.5	0.0	7.8	0.0	0.23	0.04
27	-0.1	0.0	24.5	0.0	7.8	0.0	0.23	0.04
28	-0.1	0.0	24.5	0.0	7.8	0.0	0.23	0.04
29	-0.1	0.0	24.5	0.0	7.8	0.0	0.23	0.04
30	-0.1	0.0	24.5	0.0	7.8	0.0	0.23	0.04

LOAD CASE - 2

PILE	F1 K	F2 K	F3 K	M1 IN-K	M2 IN-K	M3 IN-K	ALF	CBF
1	0.1	0.0	40.8	0.0	-5.6	0.0	0.33	0.06
2	0.1	0.0	40.8	0.0	-5.6	0.0	0.33	0.06
3	0.1	0.0	40.8	0.0	-5.6	0.0	0.33	0.06
4	0.1	0.0	40.8	0.0	-5.6	0.0	0.33	0.06
5	0.1	0.0	40.8	0.0	-5.6	0.0	0.33	0.06
6	0.1	0.0	40.8	0.0	-5.6	0.0	0.33	0.06
7	0.1	0.0	40.8	0.0	-5.6	0.0	0.33	0.06
8	0.1	0.0	40.8	0.0	-5.6	0.0	0.33	0.06
9	0.1	0.0	40.8	0.0	-5.6	0.0	0.33	0.06
10	0.1	0.0	40.8	0.0	-5.6	0.0	0.33	0.06
11	-0.1	0.0	14.9	0.0	10.3	0.0	0.12	0.02
12	-0.1	0.0	14.9	0.0	10.3	0.0	0.12	0.02
13	-0.1	0.0	14.9	0.0	10.3	0.0	0.12	0.02

14	-0.1	0.0	14.9	0.0	10.3	0.0	0.12	0.02
15	-0.1	0.0	14.9	0.0	10.3	0.0	0.12	0.02
16	-0.1	0.0	14.9	0.0	10.3	0.0	0.12	0.02
17	-0.1	0.0	14.9	0.0	10.3	0.0	0.12	0.02
18	-0.1	0.0	14.9	0.0	10.3	0.0	0.12	0.02
19	-0.1	0.0	14.9	0.0	10.3	0.0	0.12	0.02
20	-0.1	0.0	14.9	0.0	10.3	0.0	0.12	0.02
21	-0.2	0.0	32.3	0.0	11.8	0.0	0.26	0.05
22	-0.2	0.0	32.3	0.0	11.8	0.0	0.26	0.05
23	-0.2	0.0	32.3	0.0	11.8	0.0	0.26	0.05
24	-0.2	0.0	32.3	0.0	11.8	0.0	0.26	0.05
25	-0.2	0.0	32.3	0.0	11.8	0.0	0.26	0.05
26	-0.2	0.0	32.3	0.0	11.8	0.0	0.26	0.05
27	-0.2	0.0	32.3	0.0	11.8	0.0	0.26	0.05
28	-0.2	0.0	32.3	0.0	11.8	0.0	0.26	0.05
29	-0.2	0.0	32.3	0.0	11.8	0.0	0.26	0.05
30	-0.2	0.0	32.3	0.0	11.8	0.0	0.26	0.05

LOAD CASE - 3

PILE	F1 K	F2 K	F3 K	M1 IN-K	M2 IN-K	M3 IN-K	ALF	CBF
1	0.1	0.0	35.3	0.0	-7.4	0.0	0.25	0.04
2	0.1	0.0	35.3	0.0	-7.4	0.0	0.25	0.04
3	0.1	0.0	35.3	0.0	-7.4	0.0	0.25	0.04
4	0.1	0.0	35.3	0.0	-7.4	0.0	0.25	0.04
5	0.1	0.0	35.3	0.0	-7.4	0.0	0.25	0.04
6	0.1	0.0	35.3	0.0	-7.4	0.0	0.25	0.04
7	0.1	0.0	35.3	0.0	-7.4	0.0	0.25	0.04
8	0.1	0.0	35.3	0.0	-7.4	0.0	0.25	0.04
9	0.1	0.0	35.3	0.0	-7.4	0.0	0.25	0.04
10	0.1	0.0	35.3	0.0	-7.4	0.0	0.25	0.04
11	-0.2	0.0	12.9	0.0	11.4	0.0	0.09	0.02
12	-0.2	0.0	12.9	0.0	11.4	0.0	0.09	0.02
13	-0.2	0.0	12.9	0.0	11.4	0.0	0.09	0.02
14	-0.2	0.0	12.9	0.0	11.4	0.0	0.09	0.02
15	-0.2	0.0	12.9	0.0	11.4	0.0	0.09	0.02
16	-0.2	0.0	12.9	0.0	11.4	0.0	0.09	0.02
17	-0.2	0.0	12.9	0.0	11.4	0.0	0.09	0.02
18	-0.2	0.0	12.9	0.0	11.4	0.0	0.09	0.02
19	-0.2	0.0	12.9	0.0	11.4	0.0	0.09	0.02
20	-0.2	0.0	12.9	0.0	11.4	0.0	0.09	0.02
21	-0.2	0.0	39.8	0.0	13.7	0.0	0.28	0.05
22	-0.2	0.0	39.8	0.0	13.7	0.0	0.28	0.05
23	-0.2	0.0	39.8	0.0	13.7	0.0	0.28	0.05
24	-0.2	0.0	39.8	0.0	13.7	0.0	0.28	0.05
25	-0.2	0.0	39.8	0.0	13.7	0.0	0.28	0.05
26	-0.2	0.0	39.8	0.0	13.7	0.0	0.28	0.05

27	-0.2	0.0	39.8	0.0	13.7	0.0	0.28	0.05
28	-0.2	0.0	39.8	0.0	13.7	0.0	0.28	0.05
29	-0.2	0.0	39.8	0.0	13.7	0.0	0.28	0.05
30	-0.2	0.0	39.8	0.0	13.7	0.0	0.28	0.05

LOAD CASE - 4

PILE	F1 K	F2 K	F3 K	M1 IN-K	M2 IN-K	M3 IN-K	ALF	CBF
1	0.0	0.0	9.7	0.0	1.6	0.0	0.09	0.02
2	0.0	0.0	9.7	0.0	1.6	0.0	0.09	0.02
3	0.0	0.0	9.7	0.0	1.6	0.0	0.09	0.02
4	0.0	0.0	9.7	0.0	1.6	0.0	0.09	0.02
5	0.0	0.0	9.7	0.0	1.6	0.0	0.09	0.02
6	0.0	0.0	9.7	0.0	1.6	0.0	0.09	0.02
7	0.0	0.0	9.7	0.0	1.6	0.0	0.09	0.02
8	0.0	0.0	9.7	0.0	1.6	0.0	0.09	0.02
9	0.0	0.0	9.7	0.0	1.6	0.0	0.09	0.02
10	0.0	0.0	9.7	0.0	1.6	0.0	0.09	0.02
11	0.0	0.0	19.3	0.0	0.8	0.0	0.18	0.03
12	0.0	0.0	19.3	0.0	0.8	0.0	0.18	0.03
13	0.0	0.0	19.3	0.0	0.8	0.0	0.18	0.03
14	0.0	0.0	19.3	0.0	0.8	0.0	0.18	0.03
15	0.0	0.0	19.3	0.0	0.8	0.0	0.18	0.03
16	0.0	0.0	19.3	0.0	0.8	0.0	0.18	0.03
17	0.0	0.0	19.3	0.0	0.8	0.0	0.18	0.03
18	0.0	0.0	19.3	0.0	0.8	0.0	0.18	0.03
19	0.0	0.0	19.3	0.0	0.8	0.0	0.18	0.03
20	0.0	0.0	19.3	0.0	0.8	0.0	0.18	0.03
21	0.0	0.0	25.2	0.0	1.3	0.0	0.24	0.04
22	0.0	0.0	25.2	0.0	1.3	0.0	0.24	0.04
23	0.0	0.0	25.2	0.0	1.3	0.0	0.24	0.04
24	0.0	0.0	25.2	0.0	1.3	0.0	0.24	0.04
25	0.0	0.0	25.2	0.0	1.3	0.0	0.24	0.04
26	0.0	0.0	25.2	0.0	1.3	0.0	0.24	0.04
27	0.0	0.0	25.2	0.0	1.3	0.0	0.24	0.04
28	0.0	0.0	25.2	0.0	1.3	0.0	0.24	0.04
29	0.0	0.0	25.2	0.0	1.3	0.0	0.24	0.04
30	0.0	0.0	25.2	0.0	1.3	0.0	0.24	0.04

LOAD CASE - 5

PILE	F1 K	F2 K	F3 K	M1 IN-K	M2 IN-K	M3 IN-K	ALF	CBF
1	0.0	0.0	13.8	0.0	2.7	0.0	0.13	0.02
2	0.0	0.0	13.8	0.0	2.7	0.0	0.13	0.02

3	0.0	0.0	13.8	0.0	2.7	0.0	0.13	0.02
4	0.0	0.0	13.8	0.0	2.7	0.0	0.13	0.02
5	0.0	0.0	13.8	0.0	2.7	0.0	0.13	0.02
6	0.0	0.0	13.8	0.0	2.7	0.0	0.13	0.02
7	0.0	0.0	13.8	0.0	2.7	0.0	0.13	0.02
8	0.0	0.0	13.8	0.0	2.7	0.0	0.13	0.02
9	0.0	0.0	13.8	0.0	2.7	0.0	0.13	0.02
10	0.0	0.0	13.8	0.0	2.7	0.0	0.13	0.02
11	0.0	0.0	23.3	0.0	0.4	0.0	0.22	0.04
12	0.0	0.0	23.3	0.0	0.4	0.0	0.22	0.04
13	0.0	0.0	23.3	0.0	0.4	0.0	0.22	0.04
14	0.0	0.0	23.3	0.0	0.4	0.0	0.22	0.04
15	0.0	0.0	23.3	0.0	0.4	0.0	0.22	0.04
16	0.0	0.0	23.3	0.0	0.4	0.0	0.22	0.04
17	0.0	0.0	23.3	0.0	0.4	0.0	0.22	0.04
18	0.0	0.0	23.3	0.0	0.4	0.0	0.22	0.04
19	0.0	0.0	23.3	0.0	0.4	0.0	0.22	0.04
20	0.0	0.0	23.3	0.0	0.4	0.0	0.22	0.04
21	0.0	0.0	25.3	0.0	0.5	0.0	0.24	0.04
22	0.0	0.0	25.3	0.0	0.5	0.0	0.24	0.04
23	0.0	0.0	25.3	0.0	0.5	0.0	0.24	0.04
24	0.0	0.0	25.3	0.0	0.5	0.0	0.24	0.04
25	0.0	0.0	25.3	0.0	0.5	0.0	0.24	0.04
26	0.0	0.0	25.3	0.0	0.5	0.0	0.24	0.04
27	0.0	0.0	25.3	0.0	0.5	0.0	0.24	0.04
28	0.0	0.0	25.3	0.0	0.5	0.0	0.24	0.04
29	0.0	0.0	25.3	0.0	0.5	0.0	0.24	0.04
30	0.0	0.0	25.3	0.0	0.5	0.0	0.24	0.04

LOAD CASE - 6

PILE	F1 K	F2 K	F3 K	M1 IN-K	M2 IN-K	M3 IN-K	ALF	CBF
1	0.1	0.0	3.7	0.0	-4.5	0.0	0.03	0.01
2	0.1	0.0	3.7	0.0	-4.5	0.0	0.03	0.01
3	0.1	0.0	3.7	0.0	-4.5	0.0	0.03	0.01
4	0.1	0.0	3.7	0.0	-4.5	0.0	0.03	0.01
5	0.1	0.0	3.7	0.0	-4.5	0.0	0.03	0.01
6	0.1	0.0	3.7	0.0	-4.5	0.0	0.03	0.01
7	0.1	0.0	3.7	0.0	-4.5	0.0	0.03	0.01
8	0.1	0.0	3.7	0.0	-4.5	0.0	0.03	0.01
9	0.1	0.0	3.7	0.0	-4.5	0.0	0.03	0.01
10	0.1	0.0	3.7	0.0	-4.5	0.0	0.03	0.01
11	-0.1	0.0	10.5	0.0	5.6	0.0	0.07	0.01
12	-0.1	0.0	10.5	0.0	5.6	0.0	0.07	0.01
13	-0.1	0.0	10.5	0.0	5.6	0.0	0.07	0.01
14	-0.1	0.0	10.5	0.0	5.6	0.0	0.07	0.01
15	-0.1	0.0	10.5	0.0	5.6	0.0	0.07	0.01

16	-0.1	0.0	10.5	0.0	5.6	0.0	0.07	0.01
17	-0.1	0.0	10.5	0.0	5.6	0.0	0.07	0.01
18	-0.1	0.0	10.5	0.0	5.6	0.0	0.07	0.01
19	-0.1	0.0	10.5	0.0	5.6	0.0	0.07	0.01
20	-0.1	0.0	10.5	0.0	5.6	0.0	0.07	0.01
21	-0.1	0.0	40.0	0.0	8.1	0.0	0.28	0.05
22	-0.1	0.0	40.0	0.0	8.1	0.0	0.28	0.05
23	-0.1	0.0	40.0	0.0	8.1	0.0	0.28	0.05
24	-0.1	0.0	40.0	0.0	8.1	0.0	0.28	0.05
25	-0.1	0.0	40.0	0.0	8.1	0.0	0.28	0.05
26	-0.1	0.0	40.0	0.0	8.1	0.0	0.28	0.05
27	-0.1	0.0	40.0	0.0	8.1	0.0	0.28	0.05
28	-0.1	0.0	40.0	0.0	8.1	0.0	0.28	0.05
29	-0.1	0.0	40.0	0.0	8.1	0.0	0.28	0.05
30	-0.1	0.0	40.0	0.0	8.1	0.0	0.28	0.05

LOAD CASE - 7

PILE	F1 K	F2 K	F3 K	M1 IN-K	M2 IN-K	M3 IN-K	ALF	CBF
1	0.0	0.0	7.8	0.0	-3.3	0.0	0.05	0.01
2	0.0	0.0	7.8	0.0	-3.3	0.0	0.05	0.01
3	0.0	0.0	7.8	0.0	-3.3	0.0	0.05	0.01
4	0.0	0.0	7.8	0.0	-3.3	0.0	0.05	0.01
5	0.0	0.0	7.8	0.0	-3.3	0.0	0.05	0.01
6	0.0	0.0	7.8	0.0	-3.3	0.0	0.05	0.01
7	0.0	0.0	7.8	0.0	-3.3	0.0	0.05	0.01
8	0.0	0.0	7.8	0.0	-3.3	0.0	0.05	0.01
9	0.0	0.0	7.8	0.0	-3.3	0.0	0.05	0.01
10	0.0	0.0	7.8	0.0	-3.3	0.0	0.05	0.01
11	-0.1	0.0	14.4	0.0	5.2	0.0	0.10	0.02
12	-0.1	0.0	14.4	0.0	5.2	0.0	0.10	0.02
13	-0.1	0.0	14.4	0.0	5.2	0.0	0.10	0.02
14	-0.1	0.0	14.4	0.0	5.2	0.0	0.10	0.02
15	-0.1	0.0	14.4	0.0	5.2	0.0	0.10	0.02
16	-0.1	0.0	14.4	0.0	5.2	0.0	0.10	0.02
17	-0.1	0.0	14.4	0.0	5.2	0.0	0.10	0.02
18	-0.1	0.0	14.4	0.0	5.2	0.0	0.10	0.02
19	-0.1	0.0	14.4	0.0	5.2	0.0	0.10	0.02
20	-0.1	0.0	14.4	0.0	5.2	0.0	0.10	0.02
21	-0.1	0.0	40.1	0.0	7.3	0.0	0.28	0.05
22	-0.1	0.0	40.1	0.0	7.3	0.0	0.28	0.05
23	-0.1	0.0	40.1	0.0	7.3	0.0	0.28	0.05
24	-0.1	0.0	40.1	0.0	7.3	0.0	0.28	0.05
25	-0.1	0.0	40.1	0.0	7.3	0.0	0.28	0.05
26	-0.1	0.0	40.1	0.0	7.3	0.0	0.28	0.05
27	-0.1	0.0	40.1	0.0	7.3	0.0	0.28	0.05
28	-0.1	0.0	40.1	0.0	7.3	0.0	0.28	0.05

29	-0.1	0.0	40.1	0.0	7.3	0.0	0.28	0.05
30	-0.1	0.0	40.1	0.0	7.3	0.0	0.28	0.05

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PILE FORCES IN GLOBAL GEOMETRY

LOAD CASE - 1

PILE	PX K	PY K	PZ K	MX IN-K	MY IN-K	MZ IN-K
1	0.0	-15.2	30.3	0.0	0.0	0.0
2	0.0	-15.2	30.3	0.0	0.0	0.0
3	0.0	-15.2	30.3	0.0	0.0	0.0
4	0.0	-15.2	30.3	0.0	0.0	0.0
5	0.0	-15.2	30.3	0.0	0.0	0.0
6	0.0	-15.2	30.3	0.0	0.0	0.0
7	0.0	-15.2	30.3	0.0	0.0	0.0
8	0.0	-15.2	30.3	0.0	0.0	0.0
9	0.0	-15.2	30.3	0.0	0.0	0.0
10	0.0	-15.2	30.3	0.0	0.0	0.0
11	0.0	6.8	13.8	0.0	0.0	0.0
12	0.0	6.8	13.8	0.0	0.0	0.0
13	0.0	6.8	13.8	0.0	0.0	0.0
14	0.0	6.8	13.8	0.0	0.0	0.0
15	0.0	6.8	13.8	0.0	0.0	0.0
16	0.0	6.8	13.8	0.0	0.0	0.0
17	0.0	6.8	13.8	0.0	0.0	0.0
18	0.0	6.8	13.8	0.0	0.0	0.0
19	0.0	6.8	13.8	0.0	0.0	0.0
20	0.0	6.8	13.8	0.0	0.0	0.0
21	0.0	10.9	22.0	0.0	0.0	0.0
22	0.0	10.9	22.0	0.0	0.0	0.0
23	0.0	10.9	22.0	0.0	0.0	0.0
24	0.0	10.9	22.0	0.0	0.0	0.0
25	0.0	10.9	22.0	0.0	0.0	0.0
26	0.0	10.9	22.0	0.0	0.0	0.0
27	0.0	10.9	22.0	0.0	0.0	0.0
28	0.0	10.9	22.0	0.0	0.0	0.0
29	0.0	10.9	22.0	0.0	0.0	0.0
30	0.0	10.9	22.0	0.0	0.0	0.0

LOAD CASE - 2

PILE	PX	PY	PZ	MX	MY	MZ

	K	K	K	IN-K	IN-K	IN-K
1	0.0	-18.3	36.5	0.0	0.0	0.0
2	0.0	-18.3	36.5	0.0	0.0	0.0
3	0.0	-18.3	36.5	0.0	0.0	0.0
4	0.0	-18.3	36.5	0.0	0.0	0.0
5	0.0	-18.3	36.5	0.0	0.0	0.0
6	0.0	-18.3	36.5	0.0	0.0	0.0
7	0.0	-18.3	36.5	0.0	0.0	0.0
8	0.0	-18.3	36.5	0.0	0.0	0.0
9	0.0	-18.3	36.5	0.0	0.0	0.0
10	0.0	-18.3	36.5	0.0	0.0	0.0
11	0.0	6.5	13.4	0.0	0.0	0.0
12	0.0	6.5	13.4	0.0	0.0	0.0
13	0.0	6.5	13.4	0.0	0.0	0.0
14	0.0	6.5	13.4	0.0	0.0	0.0
15	0.0	6.5	13.4	0.0	0.0	0.0
16	0.0	6.5	13.4	0.0	0.0	0.0
17	0.0	6.5	13.4	0.0	0.0	0.0
18	0.0	6.5	13.4	0.0	0.0	0.0
19	0.0	6.5	13.4	0.0	0.0	0.0
20	0.0	6.5	13.4	0.0	0.0	0.0
21	0.0	14.3	28.9	0.0	0.0	0.0
22	0.0	14.3	28.9	0.0	0.0	0.0
23	0.0	14.3	28.9	0.0	0.0	0.0
24	0.0	14.3	28.9	0.0	0.0	0.0
25	0.0	14.3	28.9	0.0	0.0	0.0
26	0.0	14.3	28.9	0.0	0.0	0.0
27	0.0	14.3	28.9	0.0	0.0	0.0
28	0.0	14.3	28.9	0.0	0.0	0.0
29	0.0	14.3	28.9	0.0	0.0	0.0
30	0.0	14.3	28.9	0.0	0.0	0.0

LOAD CASE - 3

PILE	PX	PY	PZ	MX	MY	MZ
	K	K	K	IN-K	IN-K	IN-K
1	0.0	-15.9	31.5	0.0	0.0	0.0
2	0.0	-15.9	31.5	0.0	0.0	0.0
3	0.0	-15.9	31.5	0.0	0.0	0.0
4	0.0	-15.9	31.5	0.0	0.0	0.0
5	0.0	-15.9	31.5	0.0	0.0	0.0
6	0.0	-15.9	31.5	0.0	0.0	0.0
7	0.0	-15.9	31.5	0.0	0.0	0.0
8	0.0	-15.9	31.5	0.0	0.0	0.0
9	0.0	-15.9	31.5	0.0	0.0	0.0
10	0.0	-15.9	31.5	0.0	0.0	0.0
11	0.0	5.6	11.6	0.0	0.0	0.0

12	0.0	5.6	11.6	0.0	0.0	0.0
13	0.0	5.6	11.6	0.0	0.0	0.0
14	0.0	5.6	11.6	0.0	0.0	0.0
15	0.0	5.6	11.6	0.0	0.0	0.0
16	0.0	5.6	11.6	0.0	0.0	0.0
17	0.0	5.6	11.6	0.0	0.0	0.0
18	0.0	5.6	11.6	0.0	0.0	0.0
19	0.0	5.6	11.6	0.0	0.0	0.0
20	0.0	5.6	11.6	0.0	0.0	0.0
21	0.0	17.7	35.7	0.0	0.0	0.0
22	0.0	17.7	35.7	0.0	0.0	0.0
23	0.0	17.7	35.7	0.0	0.0	0.0
24	0.0	17.7	35.7	0.0	0.0	0.0
25	0.0	17.7	35.7	0.0	0.0	0.0
26	0.0	17.7	35.7	0.0	0.0	0.0
27	0.0	17.7	35.7	0.0	0.0	0.0
28	0.0	17.7	35.7	0.0	0.0	0.0
29	0.0	17.7	35.7	0.0	0.0	0.0
30	0.0	17.7	35.7	0.0	0.0	0.0

LOAD CASE - 4

PILE	PX K	PY K	PZ K	MX IN-K	MY IN-K	MZ IN-K
1	0.0	-4.3	8.6	0.0	0.0	0.0
2	0.0	-4.3	8.6	0.0	0.0	0.0
3	0.0	-4.3	8.6	0.0	0.0	0.0
4	0.0	-4.3	8.6	0.0	0.0	0.0
5	0.0	-4.3	8.6	0.0	0.0	0.0
6	0.0	-4.3	8.6	0.0	0.0	0.0
7	0.0	-4.3	8.6	0.0	0.0	0.0
8	0.0	-4.3	8.6	0.0	0.0	0.0
9	0.0	-4.3	8.6	0.0	0.0	0.0
10	0.0	-4.3	8.6	0.0	0.0	0.0
11	0.0	8.6	17.3	0.0	0.0	0.0
12	0.0	8.6	17.3	0.0	0.0	0.0
13	0.0	8.6	17.3	0.0	0.0	0.0
14	0.0	8.6	17.3	0.0	0.0	0.0
15	0.0	8.6	17.3	0.0	0.0	0.0
16	0.0	8.6	17.3	0.0	0.0	0.0
17	0.0	8.6	17.3	0.0	0.0	0.0
18	0.0	8.6	17.3	0.0	0.0	0.0
19	0.0	8.6	17.3	0.0	0.0	0.0
20	0.0	8.6	17.3	0.0	0.0	0.0
21	0.0	11.3	22.6	0.0	0.0	0.0
22	0.0	11.3	22.6	0.0	0.0	0.0
23	0.0	11.3	22.6	0.0	0.0	0.0
24	0.0	11.3	22.6	0.0	0.0	0.0

25	0.0	11.3	22.6	0.0	0.0	0.0
26	0.0	11.3	22.6	0.0	0.0	0.0
27	0.0	11.3	22.6	0.0	0.0	0.0
28	0.0	11.3	22.6	0.0	0.0	0.0
29	0.0	11.3	22.6	0.0	0.0	0.0
30	0.0	11.3	22.6	0.0	0.0	0.0

LOAD CASE - 5

PILE	PX K	PY K	PZ K	MX IN-K	MY IN-K	MZ IN-K
1	0.0	-6.1	12.3	0.0	0.0	0.0
2	0.0	-6.1	12.3	0.0	0.0	0.0
3	0.0	-6.1	12.3	0.0	0.0	0.0
4	0.0	-6.1	12.3	0.0	0.0	0.0
5	0.0	-6.1	12.3	0.0	0.0	0.0
6	0.0	-6.1	12.3	0.0	0.0	0.0
7	0.0	-6.1	12.3	0.0	0.0	0.0
8	0.0	-6.1	12.3	0.0	0.0	0.0
9	0.0	-6.1	12.3	0.0	0.0	0.0
10	0.0	-6.1	12.3	0.0	0.0	0.0
11	0.0	10.4	20.8	0.0	0.0	0.0
12	0.0	10.4	20.8	0.0	0.0	0.0
13	0.0	10.4	20.8	0.0	0.0	0.0
14	0.0	10.4	20.8	0.0	0.0	0.0
15	0.0	10.4	20.8	0.0	0.0	0.0
16	0.0	10.4	20.8	0.0	0.0	0.0
17	0.0	10.4	20.8	0.0	0.0	0.0
18	0.0	10.4	20.8	0.0	0.0	0.0
19	0.0	10.4	20.8	0.0	0.0	0.0
20	0.0	10.4	20.8	0.0	0.0	0.0
21	0.0	11.3	22.6	0.0	0.0	0.0
22	0.0	11.3	22.6	0.0	0.0	0.0
23	0.0	11.3	22.6	0.0	0.0	0.0
24	0.0	11.3	22.6	0.0	0.0	0.0
25	0.0	11.3	22.6	0.0	0.0	0.0
26	0.0	11.3	22.6	0.0	0.0	0.0
27	0.0	11.3	22.6	0.0	0.0	0.0
28	0.0	11.3	22.6	0.0	0.0	0.0
29	0.0	11.3	22.6	0.0	0.0	0.0
30	0.0	11.3	22.6	0.0	0.0	0.0

LOAD CASE - 6

PILE	PX K	PY K	PZ K	MX IN-K	MY IN-K	MZ IN-K

1	0.0	-1.7	3.3	0.0	0.0	0.0
2	0.0	-1.7	3.3	0.0	0.0	0.0
3	0.0	-1.7	3.3	0.0	0.0	0.0
4	0.0	-1.7	3.3	0.0	0.0	0.0
5	0.0	-1.7	3.3	0.0	0.0	0.0
6	0.0	-1.7	3.3	0.0	0.0	0.0
7	0.0	-1.7	3.3	0.0	0.0	0.0
8	0.0	-1.7	3.3	0.0	0.0	0.0
9	0.0	-1.7	3.3	0.0	0.0	0.0
10	0.0	-1.7	3.3	0.0	0.0	0.0
11	0.0	4.6	9.4	0.0	0.0	0.0
12	0.0	4.6	9.4	0.0	0.0	0.0
13	0.0	4.6	9.4	0.0	0.0	0.0
14	0.0	4.6	9.4	0.0	0.0	0.0
15	0.0	4.6	9.4	0.0	0.0	0.0
16	0.0	4.6	9.4	0.0	0.0	0.0
17	0.0	4.6	9.4	0.0	0.0	0.0
18	0.0	4.6	9.4	0.0	0.0	0.0
19	0.0	4.6	9.4	0.0	0.0	0.0
20	0.0	4.6	9.4	0.0	0.0	0.0
21	0.0	17.8	35.8	0.0	0.0	0.0
22	0.0	17.8	35.8	0.0	0.0	0.0
23	0.0	17.8	35.8	0.0	0.0	0.0
24	0.0	17.8	35.8	0.0	0.0	0.0
25	0.0	17.8	35.8	0.0	0.0	0.0
26	0.0	17.8	35.8	0.0	0.0	0.0
27	0.0	17.8	35.8	0.0	0.0	0.0
28	0.0	17.8	35.8	0.0	0.0	0.0
29	0.0	17.8	35.8	0.0	0.0	0.0
30	0.0	17.8	35.8	0.0	0.0	0.0

LOAD CASE - 7

PILE	PX K	PY K	PZ K	MX IN-K	MY IN-K	MZ IN-K
1	0.0	-3.5	7.0	0.0	0.0	0.0
2	0.0	-3.5	7.0	0.0	0.0	0.0
3	0.0	-3.5	7.0	0.0	0.0	0.0
4	0.0	-3.5	7.0	0.0	0.0	0.0
5	0.0	-3.5	7.0	0.0	0.0	0.0
6	0.0	-3.5	7.0	0.0	0.0	0.0
7	0.0	-3.5	7.0	0.0	0.0	0.0
8	0.0	-3.5	7.0	0.0	0.0	0.0
9	0.0	-3.5	7.0	0.0	0.0	0.0
10	0.0	-3.5	7.0	0.0	0.0	0.0
11	0.0	6.4	12.9	0.0	0.0	0.0
12	0.0	6.4	12.9	0.0	0.0	0.0
13	0.0	6.4	12.9	0.0	0.0	0.0

14	0.0	6.4	12.9	0.0	0.0	0.0
15	0.0	6.4	12.9	0.0	0.0	0.0
16	0.0	6.4	12.9	0.0	0.0	0.0
17	0.0	6.4	12.9	0.0	0.0	0.0
18	0.0	6.4	12.9	0.0	0.0	0.0
19	0.0	6.4	12.9	0.0	0.0	0.0
20	0.0	6.4	12.9	0.0	0.0	0.0
21	0.0	17.8	35.9	0.0	0.0	0.0
22	0.0	17.8	35.9	0.0	0.0	0.0
23	0.0	17.8	35.9	0.0	0.0	0.0
24	0.0	17.8	35.9	0.0	0.0	0.0
25	0.0	17.8	35.9	0.0	0.0	0.0
26	0.0	17.8	35.9	0.0	0.0	0.0
27	0.0	17.8	35.9	0.0	0.0	0.0
28	0.0	17.8	35.9	0.0	0.0	0.0
29	0.0	17.8	35.9	0.0	0.0	0.0
30	0.0	17.8	35.9	0.0	0.0	0.0

NO FILES WERE GENERATED DURING THIS RUN.

```
10  Sunset Twall2 Pinned
20  PIL  1  -22.5   2.5   0
30  BAT   2   1
40  ANG   270   1
50  PIL  2  -17.5   2.5   0
60  BAT   2   2
70  ANG   270   2
80  PIL  3  -12.5   2.5   0
90  BAT   2   3
100  ANG   270   3
110  PIL  4  -7.5   2.5   0
120  BAT   2   4
130  ANG   270   4
140  PIL  5  -2.5   2.5   0
150  BAT   2   5
160  ANG   270   5
170  PIL  6   2.5   2.5   0
180  BAT   2   6
190  ANG   270   6
200  PIL  7   7.5   2.5   0
210  BAT   2   7
220  ANG   270   7
230  PIL  8   12.5   2.5   0
240  BAT   2   8
250  ANG   270   8
260  PIL  9   17.5   2.5   0
270  BAT   2   9
280  ANG   270   9
290  PIL  10   22.5   2.5   0
300  BAT   2   10
310  ANG   270   10
320  PIL  11  -22.5   7.5   0
330  BAT   2   11
340  ANG   90   11
350  PIL  12  -17.5   7.5   0
360  BAT   2   12
370  ANG   90   12
380  PIL  13  -12.5   7.5   0
390  BAT   2   13
400  ANG   90   13
410  PIL  14  -7.5   7.5   0
420  BAT   2   14
430  ANG   90   14
440  PIL  15  -2.5   7.5   0
450  BAT   2   15
460  ANG   90   15
470  PIL  16   2.5   7.5   0
480  BAT   2   16
490  ANG   90   16
500  PIL  17   7.5   7.5   0
```

```
510  BAT   2   17
520  ANG   90   17
530  PIL  18   12.5   7.5   0
540  BAT   2   18
550  ANG   90   18
560  PIL  19   17.5   7.5   0
570  BAT   2   19
580  ANG   90   19
590  PIL  20   22.5   7.5   0
600  BAT   2   20
610  ANG   90   20
620  PIL  21  -22.5   12.5   0
630  BAT   2   21
640  ANG   90   21
650  PIL  22  -17.5   12.5   0
660  BAT   2   22
670  ANG   90   22
680  PIL  23  -12.5   12.5   0
690  BAT   2   23
700  ANG   90   23
710  PIL  24  -7.5   12.5   0
720  BAT   2   24
730  ANG   90   24
740  PIL  25  -2.5   12.5   0
750  BAT   2   25
760  ANG   90   25
770  PIL  26   2.5   12.5   0
780  BAT   2   26
790  ANG   90   26
800  PIL  27   7.5   12.5   0
810  BAT   2   27
820  ANG   90   27
830  PIL  28   12.5   12.5   0
840  BAT   2   28
850  ANG   90   28
860  PIL  29   17.5   12.5   0
870  BAT   2   29
880  ANG   90   29
890  PIL  30   22.5   12.5   0
900  BAT   2   30
910  ANG   90   30
920  PRO  29000  326  904  26.1  2  0  1 TO 30
930  SOI ES 0.0345 L  69  0  1 TO 30
940  RED  1  1  1
950  ALL H 107  85  652  652  1107  3275  1 TO 30
960  PIN  1 TO 30
970  LOA  8  0  641  339  7593  0  0
970  LOA  9  0  641  483  8315  0  0
970  FOV  1.33  1.33  8
970  FOV  1.33  1.33  9
```

```
980  TOUT   1  2  3  4  5  6  7
990  PFO ALL
1000  PLB ALL
```

CPGA - CASE PILE GROUP ANALYSIS PROGRAM
RUN DATE: 11-SEP-20 RUN TIME: 18:51:55

FOR PILES WITH UNSUPPORTED HEIGHT:
A. CPGA CANNOT CALCULATE PMAXMOM FOR NH TYPE SOIL
B. THE ALLOWABLE STRESS CHECKS, ASC AND AST, ARE
NOT FULLY DEVELOPED FOR UNSUPPORTED PILES.
WORK IS IN PROGRESS TO COMPLETE THIS ASPECT OF CPGA.

ELASTIC CENTER LOCATION IS NOT COMPUTED FOR 3-DIMENSIONAL PROBLEMS.

SUNSET TWALL2 PINNED
DATA UNKNOWN - REJECTED.

THERE ARE 30 PILES AND
2 LOAD CASES IN THIS RUN.

ALL PILE COORDINATES ARE CONTAINED WITHIN A BOX

	X	Y	Z
WITH DIAGONAL COORDINATES = (	-22.50 ,	2.50 ,	0.00)
(	22.50 ,	12.50 ,	0.00)

****

PILE PROPERTIES AS INPUT

E	I1	I2	A	C33	B66
KSI	IN**4	IN**4	IN**2		
0.29000E+05	0.32600E+03	0.90400E+03	0.26100E+02	0.20000E+01	0.00000E+00

THESE PILE PROPERTIES APPLY TO THE FOLLOWING PILES -

ALL

****

SOIL DESCRIPTIONS AS INPUT

ES	ESOIL	LENGTH	L	LU
	K/IN**2		FT	FT

```
        0.34500E-01    L      0.69000E+02   0.00000E+00

 ESOIL(ORIGINAL)     RGROUP     RCYCLIC
   K/IN**2
  0.34500E-01       0.1000E+01 0.1000E+01

THIS SOIL DESCRIPTION APPLIES TO THE FOLLOWING PILES -

    ALL

*************************************************************************

         PILE STIFFNESSES AS CALCULATED FROM PROPERTIES


 0.40503E+01  0.00000E+00  0.00000E+00  0.00000E+00  0.00000E+00  0.00000E+00
 0.00000E+00  0.31387E+01  0.00000E+00  0.00000E+00  0.00000E+00  0.00000E+00
 0.00000E+00  0.00000E+00  0.18283E+04  0.00000E+00  0.00000E+00  0.00000E+00
 0.00000E+00  0.00000E+00  0.00000E+00  0.00000E+00  0.00000E+00  0.00000E+00
 0.00000E+00  0.00000E+00  0.00000E+00  0.00000E+00  0.00000E+00  0.00000E+00
 0.00000E+00  0.00000E+00  0.00000E+00  0.00000E+00  0.00000E+00  0.00000E+00


THIS MATRIX APPLIES TO THE FOLLOWING PILES -

   1


*************************************************************************

         PILE GEOMETRY AS INPUT AND/OR GENERATED

NUM        X          Y          Z      BATTER    ANGLE    LENGTH  FIXITY
          FT         FT         FT                          FT

  1     -22.50       2.50       0.00      2.00    270.00    69.00     P
  2     -17.50       2.50       0.00      2.00    270.00    69.00     P
  3     -12.50       2.50       0.00      2.00    270.00    69.00     P
  4      -7.50       2.50       0.00      2.00    270.00    69.00     P
  5      -2.50       2.50       0.00      2.00    270.00    69.00     P
  6       2.50       2.50       0.00      2.00    270.00    69.00     P
  7       7.50       2.50       0.00      2.00    270.00    69.00     P
  8      12.50       2.50       0.00      2.00    270.00    69.00     P
  9      17.50       2.50       0.00      2.00    270.00    69.00     P
 10      22.50       2.50       0.00      2.00    270.00    69.00     P
 11     -22.50       7.50       0.00      2.00     90.00    69.00     P
 12     -17.50       7.50       0.00      2.00     90.00    69.00     P
 13     -12.50       7.50       0.00      2.00     90.00    69.00     P
 14      -7.50       7.50       0.00      2.00     90.00    69.00     P
```

15	-2.50	7.50	0.00	2.00	90.00	69.00	P
16	2.50	7.50	0.00	2.00	90.00	69.00	P
17	7.50	7.50	0.00	2.00	90.00	69.00	P
18	12.50	7.50	0.00	2.00	90.00	69.00	P
19	17.50	7.50	0.00	2.00	90.00	69.00	P
20	22.50	7.50	0.00	2.00	90.00	69.00	P
21	-22.50	12.50	0.00	2.00	90.00	69.00	P
22	-17.50	12.50	0.00	2.00	90.00	69.00	P
23	-12.50	12.50	0.00	2.00	90.00	69.00	P
24	-7.50	12.50	0.00	2.00	90.00	69.00	P
25	-2.50	12.50	0.00	2.00	90.00	69.00	P
26	2.50	12.50	0.00	2.00	90.00	69.00	P
27	7.50	12.50	0.00	2.00	90.00	69.00	P
28	12.50	12.50	0.00	2.00	90.00	69.00	P
29	17.50	12.50	0.00	2.00	90.00	69.00	P
30	22.50	12.50	0.00	2.00	90.00	69.00	P

						2070.00	

****

APPLIED LOADS

LOAD CASE	PX K	PY K	PZ K	MX FT-K	MY FT-K	MZ FT-K	OVERSTRESS COM	TEN
8	0.0	641.0	339.0	7593.0	0.0	0.0	1.33	1.33
9	0.0	641.0	483.0	8315.0	0.0	0.0	1.33	1.33

****

ORIGINAL PILE GROUP STIFFNESS MATRIX

0.94162E+02	0.22252E-03	-0.88788E-04	0.13318E-01	0.00000E+00	-0.84746E+04
0.22252E-03	0.11067E+05	0.72968E+04	0.15323E+07	-0.87311E-10	-0.14687E-01
-0.88788E-04	0.72968E+04	0.43903E+05	0.39512E+07	-0.11642E-09	-0.13318E-01
0.13318E-01	0.15323E+07	0.39512E+07	0.46098E+09	-0.14901E-07	-0.24772E+01
0.21684E-17	0.29104E-10	-0.17462E-09	0.14901E-07	0.13039E+10	-0.21672E+09
-0.84746E+04	-0.14687E-01	-0.13318E-01	-0.24772E+01	-0.21672E+09	0.32967E+09

30 PILES 2 LOAD CASES

LOAD CASE 8. NUMBER OF FAILURES = 0. NUMBER OF PILES IN TENSION = 10.

LOAD CASE 9. NUMBER OF FAILURES = 0. NUMBER OF PILES IN TENSION = 10.

****

PILE CAP DISPLACEMENTS

LOAD CASE	DX IN	DY IN	DZ IN	RX RAD	RY RAD	RZ RAD
8	-0.1431E-06	0.3143E-01	-0.2576E-01	0.3140E-03	-0.1790E-12	-0.1077E-11
9	-0.1337E-06	0.3599E-01	-0.1616E-01	0.2353E-03	-0.1338E-12	-0.8047E-12

****

PILE FORCES IN LOCAL GEOMETRY

M1 & M2 NOT AT PILE HEAD FOR PINNED PILES
* INDICATES PILE FAILURE
# INDICATES CBF BASED ON MOMENTS DUE TO
(F3*EMIN) FOR CONCRETE PILES
B INDICATES BUCKLING CONTROLS

LOAD CASE - 8

PILE	F1 K	F2 K	F3 K	M1 IN-K	M2 IN-K	M3 IN-K	ALF	CBF
1	-0.1	0.0	-52.4	0.0	6.4	0.0	0.46	0.06
2	-0.1	0.0	-52.4	0.0	6.4	0.0	0.46	0.06
3	-0.1	0.0	-52.4	0.0	6.4	0.0	0.46	0.06
4	-0.1	0.0	-52.4	0.0	6.4	0.0	0.46	0.06
5	-0.1	0.0	-52.4	0.0	6.4	0.0	0.46	0.06
6	-0.1	0.0	-52.4	0.0	6.4	0.0	0.46	0.06
7	-0.1	0.0	-52.4	0.0	6.4	0.0	0.46	0.06
8	-0.1	0.0	-52.4	0.0	6.4	0.0	0.46	0.06
9	-0.1	0.0	-52.4	0.0	6.4	0.0	0.46	0.06
10	-0.1	0.0	-52.4	0.0	6.4	0.0	0.46	0.06
11	0.1	0.0	29.8	0.0	-8.3	0.0	0.21	0.04
12	0.1	0.0	29.8	0.0	-8.3	0.0	0.21	0.04
13	0.1	0.0	29.8	0.0	-8.3	0.0	0.21	0.04
14	0.1	0.0	29.8	0.0	-8.3	0.0	0.21	0.04
15	0.1	0.0	29.8	0.0	-8.3	0.0	0.21	0.04
16	0.1	0.0	29.8	0.0	-8.3	0.0	0.21	0.04
17	0.1	0.0	29.8	0.0	-8.3	0.0	0.21	0.04
18	0.1	0.0	29.8	0.0	-8.3	0.0	0.21	0.04
19	0.1	0.0	29.8	0.0	-8.3	0.0	0.21	0.04
20	0.1	0.0	29.8	0.0	-8.3	0.0	0.21	0.04

21	0.1	0.0	60.6	0.0	-5.7	0.0	0.43	0.07
22	0.1	0.0	60.6	0.0	-5.7	0.0	0.43	0.07
23	0.1	0.0	60.6	0.0	-5.7	0.0	0.43	0.07
24	0.1	0.0	60.6	0.0	-5.7	0.0	0.43	0.07
25	0.1	0.0	60.6	0.0	-5.7	0.0	0.43	0.07
26	0.1	0.0	60.6	0.0	-5.7	0.0	0.43	0.07
27	0.1	0.0	60.6	0.0	-5.7	0.0	0.43	0.07
28	0.1	0.0	60.6	0.0	-5.7	0.0	0.43	0.07
29	0.1	0.0	60.6	0.0	-5.7	0.0	0.43	0.07
30	0.1	0.0	60.6	0.0	-5.7	0.0	0.43	0.07

LOAD CASE - 9

PILE	F1 K	F2 K	F3 K	M1 IN-K	M2 IN-K	M3 IN-K	ALF	CBF
1	-0.1	0.0	-44.3	0.0	8.6	0.0	0.39	0.05
2	-0.1	0.0	-44.3	0.0	8.6	0.0	0.39	0.05
3	-0.1	0.0	-44.3	0.0	8.6	0.0	0.39	0.05
4	-0.1	0.0	-44.3	0.0	8.6	0.0	0.39	0.05
5	-0.1	0.0	-44.3	0.0	8.6	0.0	0.39	0.05
6	-0.1	0.0	-44.3	0.0	8.6	0.0	0.39	0.05
7	-0.1	0.0	-44.3	0.0	8.6	0.0	0.39	0.05
8	-0.1	0.0	-44.3	0.0	8.6	0.0	0.39	0.05
9	-0.1	0.0	-44.3	0.0	8.6	0.0	0.39	0.05
10	-0.1	0.0	-44.3	0.0	8.6	0.0	0.39	0.05
11	0.1	0.0	37.6	0.0	-9.2	0.0	0.26	0.05
12	0.1	0.0	37.6	0.0	-9.2	0.0	0.26	0.05
13	0.1	0.0	37.6	0.0	-9.2	0.0	0.26	0.05
14	0.1	0.0	37.6	0.0	-9.2	0.0	0.26	0.05
15	0.1	0.0	37.6	0.0	-9.2	0.0	0.26	0.05
16	0.1	0.0	37.6	0.0	-9.2	0.0	0.26	0.05
17	0.1	0.0	37.6	0.0	-9.2	0.0	0.26	0.05
18	0.1	0.0	37.6	0.0	-9.2	0.0	0.26	0.05
19	0.1	0.0	37.6	0.0	-9.2	0.0	0.26	0.05
20	0.1	0.0	37.6	0.0	-9.2	0.0	0.26	0.05
21	0.1	0.0	60.7	0.0	-7.2	0.0	0.43	0.07
22	0.1	0.0	60.7	0.0	-7.2	0.0	0.43	0.07
23	0.1	0.0	60.7	0.0	-7.2	0.0	0.43	0.07
24	0.1	0.0	60.7	0.0	-7.2	0.0	0.43	0.07
25	0.1	0.0	60.7	0.0	-7.2	0.0	0.43	0.07
26	0.1	0.0	60.7	0.0	-7.2	0.0	0.43	0.07
27	0.1	0.0	60.7	0.0	-7.2	0.0	0.43	0.07
28	0.1	0.0	60.7	0.0	-7.2	0.0	0.43	0.07
29	0.1	0.0	60.7	0.0	-7.2	0.0	0.43	0.07
30	0.1	0.0	60.7	0.0	-7.2	0.0	0.43	0.07

****

PILE FORCES IN GLOBAL GEOMETRY

LOAD CASE - 8

PILE	PX K	PY K	PZ K	MX IN-K	MY IN-K	MZ IN-K
1	0.0	23.5	-46.8	0.0	0.0	0.0
2	0.0	23.5	-46.8	0.0	0.0	0.0
3	0.0	23.5	-46.8	0.0	0.0	0.0
4	0.0	23.5	-46.8	0.0	0.0	0.0
5	0.0	23.5	-46.8	0.0	0.0	0.0
6	0.0	23.5	-46.8	0.0	0.0	0.0
7	0.0	23.5	-46.8	0.0	0.0	0.0
8	0.0	23.5	-46.8	0.0	0.0	0.0
9	0.0	23.5	-46.8	0.0	0.0	0.0
10	0.0	23.5	-46.8	0.0	0.0	0.0
11	0.0	13.4	26.6	0.0	0.0	0.0
12	0.0	13.4	26.6	0.0	0.0	0.0
13	0.0	13.4	26.6	0.0	0.0	0.0
14	0.0	13.4	26.6	0.0	0.0	0.0
15	0.0	13.4	26.6	0.0	0.0	0.0
16	0.0	13.4	26.6	0.0	0.0	0.0
17	0.0	13.4	26.6	0.0	0.0	0.0
18	0.0	13.4	26.6	0.0	0.0	0.0
19	0.0	13.4	26.6	0.0	0.0	0.0
20	0.0	13.4	26.6	0.0	0.0	0.0
21	0.0	27.2	54.2	0.0	0.0	0.0
22	0.0	27.2	54.2	0.0	0.0	0.0
23	0.0	27.2	54.2	0.0	0.0	0.0
24	0.0	27.2	54.2	0.0	0.0	0.0
25	0.0	27.2	54.2	0.0	0.0	0.0
26	0.0	27.2	54.2	0.0	0.0	0.0
27	0.0	27.2	54.2	0.0	0.0	0.0
28	0.0	27.2	54.2	0.0	0.0	0.0
29	0.0	27.2	54.2	0.0	0.0	0.0
30	0.0	27.2	54.2	0.0	0.0	0.0

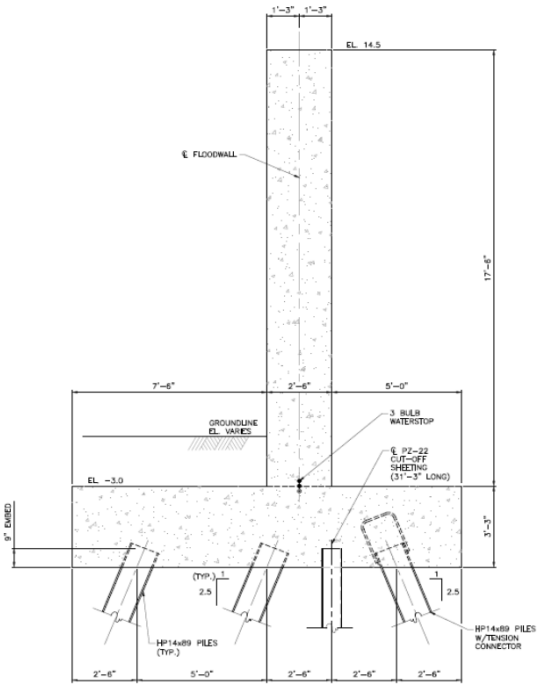
LOAD CASE - 9

PILE	PX K	PY K	PZ K	MX IN-K	MY IN-K	MZ IN-K
1	0.0	19.9	-39.6	0.0	0.0	0.0
2	0.0	19.9	-39.6	0.0	0.0	0.0
3	0.0	19.9	-39.6	0.0	0.0	0.0

4	0.0	19.9	-39.6	0.0	0.0	0.0
5	0.0	19.9	-39.6	0.0	0.0	0.0
6	0.0	19.9	-39.6	0.0	0.0	0.0
7	0.0	19.9	-39.6	0.0	0.0	0.0
8	0.0	19.9	-39.6	0.0	0.0	0.0
9	0.0	19.9	-39.6	0.0	0.0	0.0
10	0.0	19.9	-39.6	0.0	0.0	0.0
11	0.0	16.9	33.6	0.0	0.0	0.0
12	0.0	16.9	33.6	0.0	0.0	0.0
13	0.0	16.9	33.6	0.0	0.0	0.0
14	0.0	16.9	33.6	0.0	0.0	0.0
15	0.0	16.9	33.6	0.0	0.0	0.0
16	0.0	16.9	33.6	0.0	0.0	0.0
17	0.0	16.9	33.6	0.0	0.0	0.0
18	0.0	16.9	33.6	0.0	0.0	0.0
19	0.0	16.9	33.6	0.0	0.0	0.0
20	0.0	16.9	33.6	0.0	0.0	0.0
21	0.0	27.2	54.3	0.0	0.0	0.0
22	0.0	27.2	54.3	0.0	0.0	0.0
23	0.0	27.2	54.3	0.0	0.0	0.0
24	0.0	27.2	54.3	0.0	0.0	0.0
25	0.0	27.2	54.3	0.0	0.0	0.0
26	0.0	27.2	54.3	0.0	0.0	0.0
27	0.0	27.2	54.3	0.0	0.0	0.0
28	0.0	27.2	54.3	0.0	0.0	0.0
29	0.0	27.2	54.3	0.0	0.0	0.0
30	0.0	27.2	54.3	0.0	0.0	0.0

NO FILES WERE GENERATED DURING THIS RUN.

Reach E (5B) T2 Sunset twall
T-Wall Stems Loads



Top of Stem EL.	18.5	Weight of Water:	0.062	k/ft^3
Bottom of Stem EL.	1	Moist Weight of Soil	0.120	k/ft^3
F.S. Soil EL.	1.0	Wave Load:	0	k/ft
P.S. Soil EL.	3.0	Wave Arm EL.	0	
S.W.L EL.	9.4	Debri	0.5	k/ft
P.S. Water EL.	0.0	Wind Load:	0.056	ksf
Ko:	0.8	Sat. Soil Weight:	0.058	k/ft^3

Note: Inputs are already referenced from t-wall foundation sheet.

Load Case 2b. Construction + Wind 1.6(D + Sur + Wind)

Item	Fy	z	**Mx**	**Vx**
Wind	0.98	8.75	8.58	0.98
Sub Total:			8.58	0.98
Total (Factored)			**13.72**	**1.57**
			ft-k/ft	k/ft

Load Case 3a. Flowline 1.6(D + EH + EV + HF+ IU)

Item	Fy	z	**Mx**	**Vx**
F.S. Horizontal Water	2.20	2.80	6.16	2.20
P.S. Horizontal Water	0.00	0.00	0.00	0.00
F.S. Horizontal Soil	0.00	0.00	0.00	0.00
P.S. Horizontal Soil ($\gamma_{m\ tri}$)	-0.19	0.666667	-0.1280	-0.19
P.S. Horizontal Soil ($\gamma_{m\ rec}$)	0.00	-0.5	0.00	0.00
P.S. Horizontal Soil ($\gamma_{sat\ tri}$)	0.00	-0.33	0.00	0.00
Sub Total:			6.04	2.01
Total (Factored)			**9.66**	**3.22**
			ft-k/ft	k/ft

Load Case 3c. Flowline+Wind+Debri 1.6(D + EH + EV + H_F+ PU + I + W)

Item	Fy	z	**Mx**	**Vx**
F.S. Horizontal Water	2.20	2.80	6.16	2.20
P.S. Horizontal Water	0.00	0.00	0.00	0.00
F.S. Horizontal Soil	0.00	0.00	0.00	0.00
P.S. Horizontal Soil ($\gamma_{m\ tri}$)	-0.19	0.67	-0.13	-0.19
P.S. Horizontal Soil ($\gamma_{m\ rec}$)	0.00	-0.50	0.00	0.00
P.S. Horizontal Soil ($\gamma_{sat\ tri}$)	0.00	-0.33	0.00	0.00
Wind	0.51	12.95	6.60	0.51
Debri	0.50	17.50	8.75	0.50
Sub Total:			21.39	3.02
Total (Factored)			**34.22**	**4.83**
			ft-k/ft	k/ft

Load Case 4a. Water to the Top + Debri 1.2D + 1.35EH_D + 0.9EH_R + 1.35EV + 1.3(H_{TW} + I + IU)

Item	Fy	z	**Mx**	**Vx**
F.S. Horizontal Water	9.56	5.83	55.74	9.56
P.S. Horizontal Water	0.00	0.00	0.00	0.00
F.S. Horizontal Soil	0.00	0.00	0.00	0.00
P.S. Horizontal Soil ($\gamma_{m\ tri}$)	-0.19	0.67	-0.13	-0.19
P.S. Horizontal Soil ($\gamma_{m\ rec}$)	0.00	-0.50	0.00	0.00
P.S. Horizontal Soil ($\gamma_{sat\ tri}$)	0.00	-0.33	0.00	0.00
Debri	0.50	17.50	8.75	0.50
Total (Factored)			**83.72**	**12.90**
			ft-k/ft	k/ft

Load Case 4b. Water to the Top + Debri $0.9D + 1.35EH_D + 0.9EH_R + 1.0EV + 1.3(H_{TW} + I + IU)$

Item	Fy	z	**Mx**	**Vx**
F.S. Horizontal Water	9.56	5.83	55.74	9.56
P.S. Horizontal Water	0.00	0.00	0.00	0.00
F.S. Horizontal Soil	0.00	0.00	0.00	0.00
P.S. Horizontal Soil ($\gamma_{m\ tri}$)	-0.19	0.67	-0.13	-0.19
P.S. Horizontal Soil ($\gamma_{m\ rec}$)	0.00	-0.50	0.00	0.00
P.S. Horizontal Soil ($\gamma_{sat\ tri}$)	0.00	-0.33	0.00	0.00
Debri	0.50	17.50	8.75	0.50
Total (Factored)			**83.72**	**12.90**
			ft-k/ft	k/ft

Summary of Stem Loads		
	Mu	Vu
Load Case 2b	13.72	1.57
Load Case 3a	9.66	3.22
Load Case 3c	34.22	4.83
Load Case 4a	83.72	12.90
Load Case 4b	83.72	12.90
Maximum	83.72	12.90
	ft-k/ft	k/ft

Notation:

$A_{s\ min}$ = Minimum Area of Steel per linear foot of structure allowed by ACI / USACE. **(in^2)**

$A_{s\ Req'd}$ = Required Area of Steel per linear foot of structure using Ultimate Moment. **(in^2)**

b = Member width. **(Use 12in if forces are per linear foot of structure.)**

β_1 = ACI 318-14 Section 22.2

d = Distance from extreme compression fiber to centroid of tension reinforcement. **(in)**

f'c = Compressive strength of concrete. **(ksi ** except in Vc formula psi)**

f_y = Yield strength of steel. **(Usually 60 ksi.)**

ϕM_n = Nominal Moment strength **(k-in / linear foot)** ϕ = 0.9

M_u = Ultimate moment in sttructure. **(k-in / linear foot)**

ϕV_c = Nominal Shear strength **(lb / linear foot)** ϕ = 0.75

V_u = Ultimate shear in structure. **(lb / linear foot)**

t = Thickness of structure. **(In direction of applied moment) (in)**

ρ = Ratio of Reinforcement

ρ_b = Balanced Ratio of Reinforcement (0.0285 for 4ksi concrete)

Project: **Reach E (5B) T2 Sunset twall**

Reference: **T-wall** **40 ft Slab** **Stem Rebar Design**

Inputs:

M_u = 1004.62 k-in / linear ft

V_u = 12898.70 lb/linear ft

b = 12 in

d = 25.5 in

t = 30 in

f'c = 4 ksi

f_y = 60 ksi

β_1 = 0.85 (unitless)

ρ_b = 0.0285 (unitless)

Check d_d

Mn= Mu/ϕ

Mn= 1116.25 k-in / linear ft

$$d_d = \sqrt{\frac{2.4956 M_n}{b_w}} =$$ EM 1110-2-2104 (Table D-1)

d_d= 15.24 in

d > d_d ok

Calculations: ** All Areas are per side.

$$K_u = 1 - \sqrt{1 - \frac{M_n + P_n\left(d - \frac{h}{2}\right)}{0.425 f_c' b d^2}}$$ EM 1110-2-2104 (Table D-8)

P_n= 0

K_u= 0.042999

$$A_s = \frac{0.85 f_c' K_u b d - P_n}{f_y}$$ EM 1110-2-2104 (D-9)

$A_{s\ Req'd}$ =	0.75	in^2 /ft		
$A_{s\ min}$ =	0.97	in^2 /ft	= [3 b d √(f'c)] / F_y (psi)	EM 1110-2-2104, Chapter 3
$A_{s\ min}$ =	1.02	in^2 /ft	= 200 b d / F_y (psi)	EM 1110-2-2104, Chapter 3
$A_{s\ min}$ =	0.99	in^2 /ft	= 1.33 ($A_{s\ Req'd}$)	EM 1110-2-2104, Chapter 3

Use A_s = 0.99 in^2 /ft Flexural

Temperature and Shrinkage Rebar

$A_{s\ t\&s}$ = 0.90 in^2 /ft = 0.005b t/2 per face -- EM 1110-2-2104 Table 2-3

Table 2-3. Minimum Shrinkage and Temperature Reinforcement Ratios for Various Joint Spacings.

Length Between Control Joints (ft)	Minimum Temperature and Shrinkage Reinforcement Ratio, Grade 60
Less than 30 ft	0.003

Less than 30 ft	0.003
30-40 ft	0.004
Greater than 40 ft	0.005

Use $A_{s\ t\&s}$ =	0.90	in^2 /ft	per face	Use:	#9@12in	As:	1	in^2 /ft

Check Moment:

Calculate ϕM_n and compare to original M_u.

As Used:	1.5	in^2 /ft	Use:	#9@8in

ϕM_n = 1976.16 k-in $= 0.9\ A_s\ F_y\ d\ (\ 1\ -(\ A_s\ F_y\ /\ 2\ \beta\ b\ d\ f'c)\ )$

M_u = 1004.623 k-in

If $\phi M_n > M_u$ then A_s is acceptable. **OK**

Check Shear:

Calculate ϕV_c and compare to V_u.

ϕV_c = 29.03 k $= 0.75 \times 2\ (\ \sqrt{f'c}\ )\ b\ d$

V_u = 12.90 k

If $\phi V_c > V_u$ then A_s is acceptable. **OK**

Check Ratio of Reinforcement: EM 1110-2-2104, Chapter 3.5

ρ = 0.004902 $\rho = A_s / b\ d$

$0.25\ \rho_b$ = 0.007125

$0.5\rho_b$ = 0.010688

$\rho \leq 0.25\ \rho_b$ (if possible)	OK
$\rho \leq 0.5\ \rho_b$ (always)	OK

Quantities
Sunset T-wall T-2 Reach E (5B)

1) Cast-in place concrete

Area of Base Slab per linear ft:	48.75	ft^2
Area of Stem per linear ft:	39.38	ft^2
Total area per linear ft:	88.13	ft^2
Width of slab:	15.00	ft
Total Linear ft of wall:	625	ft
Total Volume of Base Slab (CY)	1128.472	CY
Total Volume of Stem (CY):	911.4583	CY
Total volume of concrete (ft^3):	55078.13	ft^3
Total volume of concrete (CY):	2039.931	CY

2) Steel Sheet Piling

Cut off El.	-0.75	
Tip El.	-32	
Length:	31.25	ft
Area of sheet pile:	19531.25	ft^2

3) HP 14x89 pile

Cut off El.	-0.75	
Tip El.	-73	
Batter:	2	
Length:	80.77796	ft
spacing between piles	5	ft
total piles per row	3	
Total length of piles:	30291.73	LF

4) Stab slab

Depth:	1	ft
Total volume:	9375	ft^3
Total volume:	347.2222	CY

Load Case	Load Description	Load Category	Factored Loads
LC1	Normal Operation	0%	(D + EH + EV)
LC3	Construction	16.67%	(D + Sur)
LC4	Construction + Wind	33%	(D + Sur + W)
LC5	Flowline + Imperv Uplift	0%	(D + EH + EV + HF + IU)
LC6	Flowline + Perv Uplift	0%	(D + EH + EV + HF + PU)
LC7	Flowline + Imperv Uplift + Wind + Debris	33%	(D + EH + EV + HF + IU + I + W
LC8	Flowline + Perv Uplift + Wind + Debris	33%	(D + EH + EV + HF + PU + I + W
LC9	Freeboard + Imperv Uplift + Debris	33%	(D + EH + EV + HTW + I + IU)
LC10	Freeboard + Perv Uplift + Debris	33%	(D + EH + EV + HTW + I + PU)

D= Dead Load
EH= Horizontal Soil
EV = Vertical Soil
ES = Surcharge Load (200 psf)
W = Wind
HF = Water at Flowline
PU = Pervious Uplift
IU = Impervious Uplift
I = Debris Impact
H_{TW} = Water at Top of Wall
Sur = Surcharge

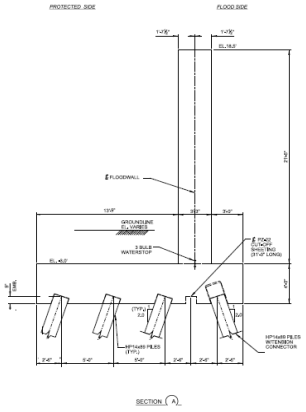
ASCE 7-10 Wind Load Calculation

Wind on Wall

$$q_z = 0.00256 K_z K_{zt} K_d V^2 \text{ (lb/ft}^2\text{)} \qquad (27.3\text{-}1)$$

K_z=	1.03	
K_{zt}=	1	
K_d=	0.85	
V=	158	mph
q_z=	56.0	lb/ft^2

Reach E (5B) T3 Sunset twall
T-Wall Foundation Loads: Unfactored Loads for Pile Analysis



Top of Stem EL.	18.5		Weight of Water:	0.062	k/ft^3	
Top of Slab EL.	-3.0		Weight Soil (FS)	0.120	k/ft^3	
Bottom of Slab EL.	-7.0		Weight of Soil (PS):	0.12	k/ft^4	
Stem Width:	3.25	ft	Weight of Concrete:	0.150	k/ft^3	
F.S. Slab Width:	3	ft	Ko:	0.8		
P.S. Slab Width:	13.75	ft	Wave Load:	0	k/ft	
Length of Monolith:	50	ft	Wave Arm EL.	0		
Dist to Sheet Pile:	5	ft	Unbal. Load SWL:	0.0	k/ft	
F.S. Soil EL.	-3.0		Unbal. Load HWL:	0.0	k/ft	
P.S. Soil EL.	0.0		Wind Load:	0.056	ksf	
S.W.L EL. (Flowline)	9.4		Boat Impact	0.5	k/ft	Debris applied at TOW for TOW LC
P.S. Water EL.	0.0		Construction Surcharge:	0.2	k/ft^2	

Width of Monolith:	20.0	ft	Area of Stem:	69.88	ft²
Area of Base Slab:	80	ft²	Bouyant Soil Weight (PS):	0.058	k/ft^3
			Bouyant Soil Weight (FS):	0.058	k/ft^4

Load Sheet Limitations - a) Straight aligned monoliths only b) No varying soil elevations along monolith
c) Constant stem thickness only d) Sheet only handles minimal impact loads

LC 1: **Load Case 1a.** Normal Operation

Item	Fx	Fy	Fz	x	y	z	Mx	My	Mz
Concrete Base			12.0		10.0		120.0		
Concrete Stem			10.5		4.625		48.5		
F.S. Vertical Soil			0.0		1.500		0.0		
F.S. Horizontal Soil (Base)		0.8				1.33	1.0		
P.S. Vertical Soil			0.0		13.13		0.0		
Sub Total:		0.8	22.5				169.5	0.0	0.0
Sub Total x Monolith Length:		38	1124				8475	0	0
Total		**38**	**1124**	**0**	**0**	**0**	**8475**	**0**	**0**

LC 3: **Load Case 2a.** Construction

Item	Fx	Fy	Fz	x	y	z	Mx	My	Mz
Concrete Base			12.0		10.0		120.0		
Concrete Stem			10.5		4.625		48.5		
F.S. Horizontal Soil (Base)		0.8				1.33	1.0		
Construction Surcharge(FS)			0.6		1.50		0.9		
Construction Surcharge(PS)			2.8		13.13		36.1		
Sub Total:		0.8	25.8				206.5		
Sub Total x Monolith Length:		38.4	1291.5625				10324.6766	0	0
Total		**38**	**1292**				**10325**		

LC 4: **Load Case 2b**. Construction + Wind

Item	Fx	Fy	Fz	x	y	z	Mx	My	Mz
Concrete Base			12.0		10.0		120.0		
Concrete Stem			10.5		4.625		48.5		
F.S. Horizontal Soil (Base)		0.8				1.33	1.0		
Construction Surcharge(FS)			0.6		1.5		0.9		
Construction Surcharge(PS)			2.75		13.125		36.1		
Wind		1.204				14.8	17.8		
Sub Total:		1.97	25.83				224.25	0.00	0.00
Sub Total x Monolith Length:		98.6	1291.5625				11212.6266	0	0
Total		**99**	**1292**				**11213**		

LC 5: **Load Case 3a**. Flowline, Impervious Uplift

Item	Fx	Fy	Fz	x	y	z	Mx	My	Mz
Concrete Base			12.0		10.00		120.0		
Concrete Stem			10.5		4.625		48.5		
F.S. Vertical Water			2.3		1.50		3.5		
F.S. Vertical Soil			0.0		1.50		0.0		
P.S. Vertical Water			2.5740		13.125		33.8		
P.S. Vertical Soil			2.3760		13.125		31.2		
F.S. Horizontal Water		8.4				5.47	45.9		
F.S. Horizontal Soil		0.369				1.33	0.5		
P.S. Horizontal Water		-1.5288				2.33	-3.6		
P.S. Horizontal Soil ($\gamma_{m\ tri}$)		0.0000				7.00	0.0		
P.S. Horizontal Soil ($\gamma_{m\ rec}$)		0.0				3.50	0.0		
P.S. Horizontal Soil ($\gamma_{sat\ tri}$)		-1.1				2.33	-2.6		
F.S. Impervious Uplift			-5.1		2.50		-12.8		
P.S. Impervious Uplift			-6.6		12.50		-81.9		
Unbalanced Force		0.0							
Sub Total:		6.1	18.1				182.4		
Sub Total x Monolith Length:		305.1	904.2				9,119.9	0.0	0.0
Total		**305**	**904**				**9120**		

LC 6: **Load Case 3b**. Flowline, Pervious Uplift

Item	Fx	Fy	Fz	x	y	z	Mx	My	Mz
Concrete Base			12.0		10.00		120.0		
Concrete Stem			10.5		4.625		48.5		
F.S. Vertical Water			2.3		1.50		3.5		
F.S. Vertical Soil			0.0		1.50		0.0		
P.S. Vertical Water			2.6		13.125		33.8		
P.S. Vertical Soil			2.376		13.125		31.2		
F.S. Horizontal Water		8.4				5.47	45.9		
F.S. Horizontal Soil		0.4				1.33	0.5		
P.S. Horizontal Water		-1.529				2.33	-3.6		
P.S. Horizontal Soil ($\gamma_{m\ tri}$)		0.000				7.00	0.0		
P.S. Horizontal Soil ($\gamma_{m\ rec}$)		0.0				3.50	0.0		
P.S. Horizontal Soil ($\gamma_{sat\ tri}$)		-1.1				2.33	-2.6		
Pervious Uplift (Rec.)			-8.7		10.00		-87.4		
Pervious Uplift (Tri.)			-5.9		6.67		-39.1		
Unbalanced Force		0.0							
Sub Total:		6.1	15.2				150.6		

Sub Total x Monolith Length:		305.1	757.5				7531.3	0.0	0.0
Total		**305**	**758**				**7531**		

LC 7: **Load Case 3c**. Flowline + Wind + Debri, Impervious Uplift

Item	Fx	Fy	Fz	x	y	z	Mx	My	Mz
Concrete Base			12.0		10.00		120.0		
Concrete Stem			10.5		4.625		48.5		
F.S. Vertical Water			2.3		1.50		3.5		
F.S. Vertical Soil			0.0		1.50		0.0		
P.S. Vertical Water			2.6		13.125		33.8		
P.S. Vertical Soil			2.376		13.125		31.2		
F.S. Horizontal Water		8.4				5.47	45.9		
F.S. Horizontal Soil		0.4				1.33	0.5		
P.S. Horizontal Water		-1.529				2.33	-3.6		
P.S. Horizontal Soil ($\gamma_{m\ tri}$)		0.000				7.00	0.0		
P.S. Horizontal Soil ($\gamma_{m\ rec}$)		0.0				3.50	0.0		
P.S. Horizontal Soil ($\gamma_{sat\ tri}$)		-1.1				2.33	-2.6		
F.S. Impervious Uplift			-5.1		2.50		-12.8		
P.S. Impervious Uplift			-6.6		12.50		-81.9		
Wind		0.5				20.95	10.7		
Debri		0.5				25.50	12.8		
Sub Total:		7.1	18.1				205.8		
Sub Total x Monolith Length:		355.6	904.2				10291.2	0.0	0.0
Total		**356**	**904**				**10291**		

LC 8: **Load Case 3d**. Flowline + Wind + Debri, Pervious Uplift

Item	Fx	Fy	Fz	x	y	z	Mx	My	Mz
Concrete Base			12.0		10.00		120.0		
Concrete Stem			10.5		4.625		48.5		
F.S. Vertical Water			2.3		1.50		3.5		
F.S. Vertical Soil			0.0		1.50		0.0		
P.S. Vertical Water			2.6		13.125		33.8		
P.S. Vertical Soil			2.376		13.125		31.2		
F.S. Horizontal Water		8.4				5.47	45.9		
F.S. Horizontal Soil		0.4				1.33	0.5		
P.S. Horizontal Water		-1.529				2.33	-3.6		
P.S. Horizontal Soil ($\gamma_{m\ tri}$)		0.000				7.00	0.0		
P.S. Horizontal Soil ($\gamma_{m\ rec}$)		0.0				3.50	0.0		
P.S. Horizontal Soil ($\gamma_{sat\ tri}$)		-1.1				2.33	-2.6		
Pervious Uplift (Rec.)			-8.7		10.00		-87.4		
Pervious Uplift (Tri.)			-5.9		6.67		-39.1		
Wind		0.5				20.95	10.7		
Debri		0.5				25.50	12.8		
Sub Total:		7.1	15.2				174.1		
Sub Total x Monolith Length:		355.6	757.5				8702.6	0.0	0.0
Total		**356**	**758**				**8703**		

LC 9: **Load Case 4a.** Water to the Top+ Debri, Impervious Uplift

Item	Fx	Fy	Fz	x	y	z	Mx	My	Mz
Concrete Base			12.0		10.00		120.0		
Concrete Stem			10.5		4.625		48.5		
F.S. Vertical Water			4.0		1.50		6.0		
F.S. Vertical Soil			0.0		1.50		0.0		
P.S. Vertical Water			2.6		13.125		33.8		
P.S. Vertical Soil			2.376		13.125		31.2		
F.S. Horizontal Water		20.3				8.50	172.4		
F.S. Horizontal Soil		0.4				1.33	0.5		
P.S. Horizontal Water		-1.529				2.33	-3.6		
P.S. Horizontal Soil ($\gamma_{m\ tri}$)		0.000				7.00	0.0		
P.S. Horizontal Soil ($\gamma_{m\ rec}$)		0.0				3.50	0.0		
P.S. Horizontal Soil ($\gamma_{sat\ tri}$)		-1.1				2.33	-2.6		
F.S. Impervious Uplift			-8.0		2.50		-19.9		
P.S. Impervious Uplift			-6.6		12.50		-81.9		
Debri		0.5				25.50	12.8		

Unbalanced Load		0.0						
Sub Total:		18.5	16.9			317.2		
Sub Total x Monolith Length:		924.9	847.4			15858.9	0.0	0.0
Total		**925**	**847**			**15859**		

LC 10: **Load Case 4b.** Water to the Top + Debri, Pervious Uplift

Item	Fx	Fy	Fz	x	y	z	Mx	My	Mz
Concrete Base			12.0		10.00		120.0		
Concrete Stem			10.5		4.625		48.5		
F.S. Vertical Water			4.0		1.50		6.0		
F.S. Vertical Soil			0.0		1.50		0.0		
P.S. Vertical Water			2.6		13.125		33.8		
P.S. Vertical Soil			2.376		13.125		31.2		
F.S. Horizontal Water		20.3				8.50	172.4		
F.S. Horizontal Soil		0.4				1.33	0.5		
P.S. Horizontal Water		-1.529				2.33	-3.6		
P.S. Horizontal Soil ($\gamma_{m\ tri}$)		0.000				7.00	0.0		
P.S. Horizontal Soil ($\gamma_{m\ rec}$)		0.0				3.50	0.0		
P.S. Horizontal Soil ($\gamma_{sat\ tri}$)		-1.1				2.33	-2.6		
Pervious Uplift (Rec.)			-8.7		10.00		-87.4		
Pervious Uplift (Tri.)			-11.5		6.67		-77.0		
Debri		0.5				25.50	12.8		
Unbalanced Load		0.0							
Sub Total:		18.5	11.2				254.6		
Sub Total x Monolith Length:		924.9	558.8				12732.4	0.0	0.0
Total		**925**	**559**				**12732**		

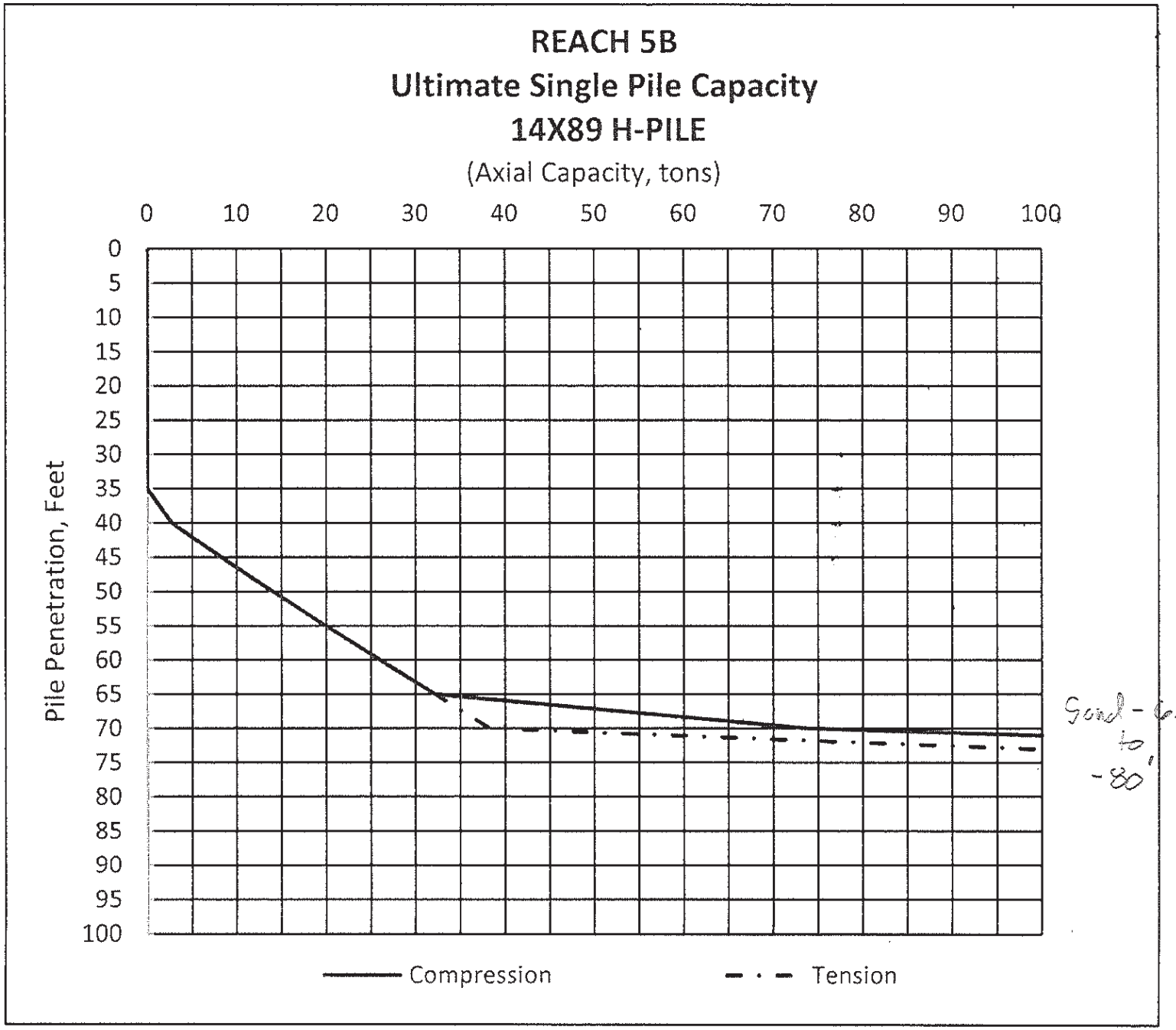
Summary Table of CPGA Loads

		Fx	Fy	Fz	Mx	My	Mz
Load Case 1a	**LOAD 1**	**0.0**	**38.4**	**1,124.1**	**8,475.0**	**0.0**	**0.0**
Load Case 2a	**LOAD 2**	**0.0**	**38.4**	**1,291.6**	**10,324.7**	**0.0**	**0.0**
Load Case 2b	**LOAD 3**	**0.0**	**98.6**	**1,291.6**	**11,212.6**	**0.0**	**0.0**
Load Case 3a	**LOAD 4**	**0.0**	**305.1**	**904.2**	**9,119.9**	**0.0**	**0.0**
Load Case 3b	**LOAD 5**	**0.0**	**305.1**	**757.5**	**7,531.3**	**0.0**	**0.0**
Load Case 3c	**LOAD 6**	**0.0**	**355.6**	**904.2**	**10,291.2**	**0.0**	**0.0**
Load Case 3d	**LOAD 7**	**0.0**	**355.6**	**757.5**	**8,702.6**	**0.0**	**0.0**
Load Case 4a	**LOAD 8**	**0.0**	**924.9**	**847.4**	**15,858.9**	**0.0**	**0.0**
Load Case 4b	**LOAD 9**	**0.0**	**924.9**	**558.8**	**12,732.4**	**0.0**	**0.0**

Table 7l - Reach 05A Centerline/ Protected Side Subsoil Profile Description					
Soil Stratum	Elevation (ft., NAVD88)	Wet Unit Weight (pcf)	Cohesion (psf)		Friction Angle (deg.)
			Top	Bottom	
1 - Levee Fill: Compacted Clay (CH)	+8 to +1	115	500	500	0
2 - Firm Clay (CL/CH)	+1 to -7	110	350	350	0
3 - Firm Clay (CL/CH)	-7 to -10	110	350	350	0
4 - Firm Clay (CL/CH)	-10 to -16	106	300	300	0
5 - Firm Clay (CL/CH)	-16 to -31	106	300	300	0
6 - Firm Clay (CL/CH)	-31 to -47	106	425	425	0
7 - Firm Clay (CL/CH)	-47 to -63	108	425	425	0
8 - Dense Sand (SP/SM)	-63 to -70	122	0	0	30
9 - Dense Sand (SP/SM)	-70 to -125	122	0	0	30

Table 7m - Reach 05B Water Subsoil Profile Description					
Soil Stratum	Elevation (ft., NAVD88)	Wet Unit Weight (pcf)	Cohesion (psf)		Friction Angle (deg.)
			Top	Bottom	
1 - --	+8 to +2	--	--	--	--
2 - Soft Clay (CL/CH)	+2 to -10	103	250	250	0
3 - Soft Clay (CL/CH)	-10 to -16	103	250	250	0
4 - Soft Clay (CL/CH)	-16 to -31	105	250	250	0
5 - Soft Clay (CL/CH)	-31 to -47	105	250	250	0
6 - Soft Clay (CL/CH)	-47 to -61	105	250	250	0
7 - Dense Sand (SP/SM)	-61 to -75	122	0	0	30
8 - Firm Clay (CL/CH)	-75 to 125	110	450	450	0

Table 7n - Reach 05B Flood Side Subsoil Profile Description					
Soil Stratum	Elevation (ft., NAVD88)	Wet Unit Weight (pcf)	Cohesion (psf)		Friction Angle (deg.)
			Top	Bottom	
1 - Levee Fill: Compacted Clay (CH)	+8 to +2	115	500	500	0
2 - Firm Clay (CL/CH)	+2 to -10	95	350	350	0
3 - Firm Clay (CL/CH)	-10 to -16	103	350	383	0
4 - Firm Clay (CL/CH)	-16 to -31	103	383	463	0
5 - Firm Clay (CL/CH)	-31 to -47	103	463	550	0
6 - Firm Clay (CL/CH)	-47 to -61	103	525	525	0
7 - Dense Sand (SP/SM)	-61 to -80	122	0	0	30
8 - Firm Clay (CL/CH)	-80 to 125	110	450	450	0


REACH 5B
Ultimate Single Pile Capacity
14X89 H-PILE
(Axial Capacity, tons)
0
10
20
30
40
50
60
70
80
90
100
Pile Penetration, Feet
0
5
10
15
20
25
30
35
40
45
50
55
60
65
70
75
80
85
90
95
100
Compression
Tension
Sand - 62'
to
-80'

```
10  Sunset T3 Twall Fixed
20  PIL  1  -22.5   2.5   0
30  BAT   2   1
40  ANG   270   1
50  PIL  2  -17.5   2.5   0
60  BAT   2   2
70  ANG   270   2
80  PIL  3  -12.5   2.5   0
90  BAT   2   3
100  ANG   270   3
110  PIL  4  -7.5   2.5   0
120  BAT   2   4
130  ANG   270   4
140  PIL  5  -2.5   2.5   0
150  BAT   2   5
160  ANG   270   5
170  PIL  6   2.5   2.5   0
180  BAT   2   6
190  ANG   270   6
200  PIL  7   7.5   2.5   0
210  BAT   2   7
220  ANG   270   7
230  PIL  8   12.5   2.5   0
240  BAT   2   8
250  ANG   270   8
260  PIL  9   17.5   2.5   0
270  BAT   2   9
280  ANG   270   9
290  PIL  10   22.5   2.5   0
300  BAT   2   10
310  ANG   270   10
320  PIL  11  -22.5   7.5   0
330  BAT   2   11
340  ANG   90   11
350  PIL  12  -17.5   7.5   0
360  BAT   2   12
370  ANG   90   12
380  PIL  13  -12.5   7.5   0
390  BAT   2   13
400  ANG   90   13
410  PIL  14  -7.5   7.5   0
420  BAT   2   14
430  ANG   90   14
440  PIL  15  -2.5   7.5   0
450  BAT   2   15
460  ANG   90   15
470  PIL  16   2.5   7.5   0
480  BAT   2   16
490  ANG   90   16
500  PIL  17   7.5   7.5   0
```

```
510  BAT   2   17
520  ANG   90   17
530  PIL  18   12.5   7.5   0
540  BAT   2   18
550  ANG   90   18
560  PIL  19   17.5   7.5   0
570  BAT   2   19
580  ANG   90   19
590  PIL  20   22.5   7.5   0
600  BAT   2   20
610  ANG   90   20
620  PIL  21  -22.5   12.5   0
630  BAT   2   21
640  ANG   90   21
650  PIL  22  -17.5   12.5   0
660  BAT   2   22
670  ANG   90   22
680  PIL  23  -12.5   12.5   0
690  BAT   2   23
700  ANG   90   23
710  PIL  24  -7.5   12.5   0
720  BAT   2   24
730  ANG   90   24
740  PIL  25  -2.5   12.5   0
750  BAT   2   25
760  ANG   90   25
770  PIL  26   2.5   12.5   0
780  BAT   2   26
790  ANG   90   26
800  PIL  27   7.5   12.5   0
810  BAT   2   27
820  ANG   90   27
830  PIL  28   12.5   12.5   0
840  BAT   2   28
850  ANG   90   28
860  PIL  29   17.5   12.5   0
870  BAT   2   29
880  ANG   90   29
890  PIL  30   22.5   12.5   0
900  BAT   2   30
910  ANG   90   30
920  PIL  31  -22.5   17.5   0
930  BAT   2   31
940  ANG   90   31
950  PIL  32  -17.5   17.5   0
960  BAT   2   32
970  ANG   90   32
980  PIL  33  -12.5   17.5   0
990  BAT   2   33
1000  ANG   90   33
```

```
1010  PIL  34  -7.5   17.5   0
1020  BAT   2   34
1030  ANG   90   34
1040  PIL  35  -2.5   17.5   0
1050  BAT   2   35
1060  ANG   90   35
1070  PIL  36   2.5   17.5   0
1080  BAT   2   36
1090  ANG   90   36
1100  PIL  37   7.5   17.5   0
1110  BAT   2   37
1120  ANG   90   37
1130  PIL  38   12.5   17.5   0
1140  BAT   2   38
1150  ANG   90   38
1160  PIL  39   17.5   17.5   0
1170  BAT   2   39
1180  ANG   90   39
1190  PIL  40   22.5   17.5   0
1200  BAT   2   40
1210  ANG   90   40
1220  PRO  29000  326  904  26.1  2  0  1 TO 40
1230  SOI ES 0.0345 L  69  0  1 TO 40
1240  RED  1  1  1
1250  ALL H 107  85  652  652  1107  3275  1 TO 40
1260  FIX  1 TO 40
1270  LOA  1  0  38  1124  8475  0  0
1270  LOA  2  0  38  1292  10325  0  0
1270  LOA  3  0  99  1292  11213  0  0
1270  LOA  4  0  305  904  9120  0  0
1270  LOA  5  0  305  758  7531  0  0
1270  LOA  6  0  356  904  10291  0  0
1270  LOA  7  0  356  758  8703  0  0
1270  FOV  1.167  1.167  2
1270  FOV  1.33  1.33  3
1270  FOV  1.33  1.33  6
1270  FOV  1.33  1.33  7
1280  TOUT 1 2 3 4 5 6 7
1290  PFO ALL
1300  PLB ALL
```

CPGA - CASE PILE GROUP ANALYSIS PROGRAM
RUN DATE: 11-SEP-20 RUN TIME: 19:21:33

FOR PILES WITH UNSUPPORTED HEIGHT:
A. CPGA CANNOT CALCULATE PMAXMOM FOR NH TYPE SOIL
B. THE ALLOWABLE STRESS CHECKS, ASC AND AST, ARE
NOT FULLY DEVELOPED FOR UNSUPPORTED PILES.
WORK IS IN PROGRESS TO COMPLETE THIS ASPECT OF CPGA.

ELASTIC CENTER LOCATION IS NOT COMPUTED FOR 3-DIMENSIONAL PROBLEMS.

SUNSET T3 TWALL FIXED
DATA UNKNOWN - REJECTED.

THERE ARE 40 PILES AND
7 LOAD CASES IN THIS RUN.

ALL PILE COORDINATES ARE CONTAINED WITHIN A BOX

	X	Y	Z
WITH DIAGONAL COORDINATES = (	-22.50 ,	2.50 ,	0.00)
(	22.50 ,	17.50 ,	0.00)

****

PILE PROPERTIES AS INPUT

E	I1	I2	A	C33	B66
KSI	IN**4	IN**4	IN**2		
0.29000E+05	0.32600E+03	0.90400E+03	0.26100E+02	0.20000E+01	0.00000E+00

THESE PILE PROPERTIES APPLY TO THE FOLLOWING PILES -

ALL

****

SOIL DESCRIPTIONS AS INPUT

ES	ESOIL	LENGTH	L	LU
	K/IN**2		FT	FT

```
        0.34500E-01    L      0.69000E+02   0.00000E+00

 ESOIL(ORIGINAL)     RGROUP     RCYCLIC
   K/IN**2
  0.34500E-01       0.1000E+01 0.1000E+01
```

THIS SOIL DESCRIPTION APPLIES TO THE FOLLOWING PILES -

ALL

****

PILE STIFFNESSES AS CALCULATED FROM PROPERTIES

```
 0.81007E+01  0.00000E+00  0.00000E+00  0.00000E+00  0.95103E+03  0.00000E+00
 0.00000E+00  0.62774E+01  0.00000E+00 -0.57111E+03  0.00000E+00  0.00000E+00
 0.00000E+00  0.00000E+00  0.18283E+04  0.00000E+00  0.00000E+00  0.00000E+00
 0.00000E+00 -0.57111E+03  0.00000E+00  0.10392E+06  0.00000E+00  0.00000E+00
 0.95103E+03  0.00000E+00  0.00000E+00  0.00000E+00  0.22330E+06  0.00000E+00
 0.00000E+00  0.00000E+00  0.00000E+00  0.00000E+00  0.00000E+00  0.00000E+00
```

THIS MATRIX APPLIES TO THE FOLLOWING PILES -

1

****

PILE GEOMETRY AS INPUT AND/OR GENERATED

NUM	X FT	Y FT	Z FT	BATTER	ANGLE	LENGTH FT	FIXITY
1	-22.50	2.50	0.00	2.00	270.00	69.00	F
2	-17.50	2.50	0.00	2.00	270.00	69.00	F
3	-12.50	2.50	0.00	2.00	270.00	69.00	F
4	-7.50	2.50	0.00	2.00	270.00	69.00	F
5	-2.50	2.50	0.00	2.00	270.00	69.00	F
6	2.50	2.50	0.00	2.00	270.00	69.00	F
7	7.50	2.50	0.00	2.00	270.00	69.00	F
8	12.50	2.50	0.00	2.00	270.00	69.00	F
9	17.50	2.50	0.00	2.00	270.00	69.00	F
10	22.50	2.50	0.00	2.00	270.00	69.00	F
11	-22.50	7.50	0.00	2.00	90.00	69.00	F
12	-17.50	7.50	0.00	2.00	90.00	69.00	F
13	-12.50	7.50	0.00	2.00	90.00	69.00	F
14	-7.50	7.50	0.00	2.00	90.00	69.00	F

15	-2.50	7.50	0.00	2.00	90.00	69.00	F
16	2.50	7.50	0.00	2.00	90.00	69.00	F
17	7.50	7.50	0.00	2.00	90.00	69.00	F
18	12.50	7.50	0.00	2.00	90.00	69.00	F
19	17.50	7.50	0.00	2.00	90.00	69.00	F
20	22.50	7.50	0.00	2.00	90.00	69.00	F
21	-22.50	12.50	0.00	2.00	90.00	69.00	F
22	-17.50	12.50	0.00	2.00	90.00	69.00	F
23	-12.50	12.50	0.00	2.00	90.00	69.00	F
24	-7.50	12.50	0.00	2.00	90.00	69.00	F
25	-2.50	12.50	0.00	2.00	90.00	69.00	F
26	2.50	12.50	0.00	2.00	90.00	69.00	F
27	7.50	12.50	0.00	2.00	90.00	69.00	F
28	12.50	12.50	0.00	2.00	90.00	69.00	F
29	17.50	12.50	0.00	2.00	90.00	69.00	F
30	22.50	12.50	0.00	2.00	90.00	69.00	F
31	-22.50	17.50	0.00	2.00	90.00	69.00	F
32	-17.50	17.50	0.00	2.00	90.00	69.00	F
33	-12.50	17.50	0.00	2.00	90.00	69.00	F
34	-7.50	17.50	0.00	2.00	90.00	69.00	F
35	-2.50	17.50	0.00	2.00	90.00	69.00	F
36	2.50	17.50	0.00	2.00	90.00	69.00	F
37	7.50	17.50	0.00	2.00	90.00	69.00	F
38	12.50	17.50	0.00	2.00	90.00	69.00	F
39	17.50	17.50	0.00	2.00	90.00	69.00	F
40	22.50	17.50	0.00	2.00	90.00	69.00	F

						2760.00	

****

APPLIED LOADS

LOAD CASE	PX K	PY K	PZ K	MX FT-K	MY FT-K	MZ FT-K	OVERSTRESS COM	OVERSTRESS TEN
1	0.0	38.0	1124.0	8475.0	0.0	0.0		
2	0.0	38.0	1292.0	10325.0	0.0	0.0	1.17	1.17
3	0.0	99.0	1292.0	11213.0	0.0	0.0	1.33	1.33
4	0.0	305.0	904.0	9120.0	0.0	0.0		
5	0.0	305.0	758.0	7531.0	0.0	0.0		
6	0.0	356.0	904.0	10291.0	0.0	0.0	1.33	1.33
7	0.0	356.0	758.0	8703.0	0.0	0.0	1.33	1.33

****

ORIGINAL PILE GROUP STIFFNESS MATRIX

```
 0.25110E+03  0.26710E-03  0.84703E-19  0.31645E-01  0.20433E+05 -0.35240E+05
 0.26710E-03  0.14885E+05  0.14561E+05  0.30238E+07  0.24809E-03 -0.24039E-01
 0.84703E-19  0.14561E+05  0.58569E+05  0.70368E+07 -0.17462E-09 -0.31893E-01
 0.31645E-01  0.30238E+07  0.70368E+07  0.11195E+10 -0.12097E+00 -0.63562E+01
 0.20433E+05  0.24809E-03  0.23283E-09 -0.12097E+00  0.17428E+10 -0.43575E+09
-0.35240E+05 -0.24039E-01 -0.31893E-01 -0.63562E+01 -0.43575E+09  0.44982E+09
```

40 PILES 7 LOAD CASES

LOAD CASE 1. NUMBER OF FAILURES = 0. NUMBER OF PILES IN TENSION = 0.

LOAD CASE 2. NUMBER OF FAILURES = 0. NUMBER OF PILES IN TENSION = 0.

LOAD CASE 3. NUMBER OF FAILURES = 0. NUMBER OF PILES IN TENSION = 0.

LOAD CASE 4. NUMBER OF FAILURES = 0. NUMBER OF PILES IN TENSION = 0.

LOAD CASE 5. NUMBER OF FAILURES = 0. NUMBER OF PILES IN TENSION = 0.

LOAD CASE 6. NUMBER OF FAILURES = 0. NUMBER OF PILES IN TENSION = 0.

LOAD CASE 7. NUMBER OF FAILURES = 0. NUMBER OF PILES IN TENSION = 0.

****

PILE CAP DISPLACEMENTS

LOAD CASE	DX IN	DY IN	DZ IN	RX RAD	RY RAD	RZ RAD
1	0.2342E-07	-0.1618E-01	0.2879E-01	-0.4643E-04	0.4136E-12	0.2756E-11
2	0.2713E-07	-0.2576E-01	0.2781E-01	0.5475E-05	0.5087E-12	0.3291E-11
3	0.2118E-07	-0.2362E-01	0.2380E-01	0.3439E-04	0.5280E-12	0.3082E-11
4	-0.7101E-08	0.1431E-01	0.1951E-01	-0.6353E-04	0.3303E-12	0.1014E-11
5	-0.1034E-07	0.2244E-01	0.2021E-01	-0.1069E-03	0.2487E-12	0.5521E-12
6	-0.1230E-07	0.1162E-01	0.1251E-01	0.2535E-06	0.3691E-12	0.9061E-12
7	-0.1554E-07	0.1974E-01	0.1320E-01	-0.4303E-04	0.2875E-12	0.4444E-12

****

PILE FORCES IN LOCAL GEOMETRY

M1 & M2 NOT AT PILE HEAD FOR PINNED PILES
* INDICATES PILE FAILURE
# INDICATES CBF BASED ON MOMENTS DUE TO

(F3*EMIN) FOR CONCRETE PILES
B INDICATES BUCKLING CONTROLS

LOAD CASE - 1

PILE	F1 K	F2 K	F3 K	M1 IN-K	M2 IN-K	M3 IN-K	ALF	CBF
1	0.0	0.0	58.0	0.0	-8.3	0.0	0.54	0.09
2	0.0	0.0	58.0	0.0	-8.3	0.0	0.54	0.09
3	0.0	0.0	58.0	0.0	-8.3	0.0	0.54	0.09
4	0.0	0.0	58.0	0.0	-8.3	0.0	0.54	0.09
5	0.0	0.0	58.0	0.0	-8.3	0.0	0.54	0.09
6	0.0	0.0	58.0	0.0	-8.3	0.0	0.54	0.09
7	0.0	0.0	58.0	0.0	-8.3	0.0	0.54	0.09
8	0.0	0.0	58.0	0.0	-8.3	0.0	0.54	0.09
9	0.0	0.0	58.0	0.0	-8.3	0.0	0.54	0.09
10	0.0	0.0	58.0	0.0	-8.3	0.0	0.54	0.09
11	-0.2	0.0	27.0	0.0	-13.9	0.0	0.25	0.05
12	-0.2	0.0	27.0	0.0	-13.9	0.0	0.25	0.05
13	-0.2	0.0	27.0	0.0	-13.9	0.0	0.25	0.05
14	-0.2	0.0	27.0	0.0	-13.9	0.0	0.25	0.05
15	-0.2	0.0	27.0	0.0	-13.9	0.0	0.25	0.05
16	-0.2	0.0	27.0	0.0	-13.9	0.0	0.25	0.05
17	-0.2	0.0	27.0	0.0	-13.9	0.0	0.25	0.05
18	-0.2	0.0	27.0	0.0	-13.9	0.0	0.25	0.05
19	-0.2	0.0	27.0	0.0	-13.9	0.0	0.25	0.05
20	-0.2	0.0	27.0	0.0	-13.9	0.0	0.25	0.05
21	-0.2	0.0	22.5	0.0	-12.7	0.0	0.21	0.04
22	-0.2	0.0	22.5	0.0	-12.7	0.0	0.21	0.04
23	-0.2	0.0	22.5	0.0	-12.7	0.0	0.21	0.04
24	-0.2	0.0	22.5	0.0	-12.7	0.0	0.21	0.04
25	-0.2	0.0	22.5	0.0	-12.7	0.0	0.21	0.04
26	-0.2	0.0	22.5	0.0	-12.7	0.0	0.21	0.04
27	-0.2	0.0	22.5	0.0	-12.7	0.0	0.21	0.04
28	-0.2	0.0	22.5	0.0	-12.7	0.0	0.21	0.04
29	-0.2	0.0	22.5	0.0	-12.7	0.0	0.21	0.04
30	-0.2	0.0	22.5	0.0	-12.7	0.0	0.21	0.04
31	-0.1	0.0	17.9	0.0	-11.5	0.0	0.17	0.03
32	-0.1	0.0	17.9	0.0	-11.5	0.0	0.17	0.03
33	-0.1	0.0	17.9	0.0	-11.5	0.0	0.17	0.03
34	-0.1	0.0	17.9	0.0	-11.5	0.0	0.17	0.03
35	-0.1	0.0	17.9	0.0	-11.5	0.0	0.17	0.03
36	-0.1	0.0	17.9	0.0	-11.5	0.0	0.17	0.03
37	-0.1	0.0	17.9	0.0	-11.5	0.0	0.17	0.03
38	-0.1	0.0	17.9	0.0	-11.5	0.0	0.17	0.03
39	-0.1	0.0	17.9	0.0	-11.5	0.0	0.17	0.03
40	-0.1	0.0	17.9	0.0	-11.5	0.0	0.17	0.03

LOAD CASE - 2

PILE	F1 K	F2 K	F3 K	M1 IN-K	M2 IN-K	M3 IN-K	ALF	CBF
1	0.1	0.0	66.8	0.0	11.2	0.0	0.53	0.09
2	0.1	0.0	66.8	0.0	11.2	0.0	0.53	0.09
3	0.1	0.0	66.8	0.0	11.2	0.0	0.53	0.09
4	0.1	0.0	66.8	0.0	11.2	0.0	0.53	0.09
5	0.1	0.0	66.8	0.0	11.2	0.0	0.53	0.09
6	0.1	0.0	66.8	0.0	11.2	0.0	0.53	0.09
7	0.1	0.0	66.8	0.0	11.2	0.0	0.53	0.09
8	0.1	0.0	66.8	0.0	11.2	0.0	0.53	0.09
9	0.1	0.0	66.8	0.0	11.2	0.0	0.53	0.09
10	0.1	0.0	66.8	0.0	11.2	0.0	0.53	0.09
11	-0.3	0.0	25.2	0.0	-35.2	0.0	0.20	0.04
12	-0.3	0.0	25.2	0.0	-35.2	0.0	0.20	0.04
13	-0.3	0.0	25.2	0.0	-35.2	0.0	0.20	0.04
14	-0.3	0.0	25.2	0.0	-35.2	0.0	0.20	0.04
15	-0.3	0.0	25.2	0.0	-35.2	0.0	0.20	0.04
16	-0.3	0.0	25.2	0.0	-35.2	0.0	0.20	0.04
17	-0.3	0.0	25.2	0.0	-35.2	0.0	0.20	0.04
18	-0.3	0.0	25.2	0.0	-35.2	0.0	0.20	0.04
19	-0.3	0.0	25.2	0.0	-35.2	0.0	0.20	0.04
20	-0.3	0.0	25.2	0.0	-35.2	0.0	0.20	0.04
21	-0.3	0.0	25.8	0.0	-35.3	0.0	0.21	0.04
22	-0.3	0.0	25.8	0.0	-35.3	0.0	0.21	0.04
23	-0.3	0.0	25.8	0.0	-35.3	0.0	0.21	0.04
24	-0.3	0.0	25.8	0.0	-35.3	0.0	0.21	0.04
25	-0.3	0.0	25.8	0.0	-35.3	0.0	0.21	0.04
26	-0.3	0.0	25.8	0.0	-35.3	0.0	0.21	0.04
27	-0.3	0.0	25.8	0.0	-35.3	0.0	0.21	0.04
28	-0.3	0.0	25.8	0.0	-35.3	0.0	0.21	0.04
29	-0.3	0.0	25.8	0.0	-35.3	0.0	0.21	0.04
30	-0.3	0.0	25.8	0.0	-35.3	0.0	0.21	0.04
31	-0.3	0.0	26.3	0.0	-35.5	0.0	0.21	0.04
32	-0.3	0.0	26.3	0.0	-35.5	0.0	0.21	0.04
33	-0.3	0.0	26.3	0.0	-35.5	0.0	0.21	0.04
34	-0.3	0.0	26.3	0.0	-35.5	0.0	0.21	0.04
35	-0.3	0.0	26.3	0.0	-35.5	0.0	0.21	0.04
36	-0.3	0.0	26.3	0.0	-35.5	0.0	0.21	0.04
37	-0.3	0.0	26.3	0.0	-35.5	0.0	0.21	0.04
38	-0.3	0.0	26.3	0.0	-35.5	0.0	0.21	0.04
39	-0.3	0.0	26.3	0.0	-35.5	0.0	0.21	0.04
40	-0.3	0.0	26.3	0.0	-35.5	0.0	0.21	0.04

LOAD CASE - 3

PILE	F1 K	F2 K	F3 K	M1 IN-K	M2 IN-K	M3 IN-K	ALF	CBF
1	0.1	0.0	59.9	0.0	17.2	0.0	0.42	0.07
2	0.1	0.0	59.9	0.0	17.2	0.0	0.42	0.07
3	0.1	0.0	59.9	0.0	17.2	0.0	0.42	0.07
4	0.1	0.0	59.9	0.0	17.2	0.0	0.42	0.07
5	0.1	0.0	59.9	0.0	17.2	0.0	0.42	0.07
6	0.1	0.0	59.9	0.0	17.2	0.0	0.42	0.07
7	0.1	0.0	59.9	0.0	17.2	0.0	0.42	0.07
8	0.1	0.0	59.9	0.0	17.2	0.0	0.42	0.07
9	0.1	0.0	59.9	0.0	17.2	0.0	0.42	0.07
10	0.1	0.0	59.9	0.0	17.2	0.0	0.42	0.07
11	-0.3	0.0	24.7	0.0	-39.2	0.0	0.17	0.04
12	-0.3	0.0	24.7	0.0	-39.2	0.0	0.17	0.04
13	-0.3	0.0	24.7	0.0	-39.2	0.0	0.17	0.04
14	-0.3	0.0	24.7	0.0	-39.2	0.0	0.17	0.04
15	-0.3	0.0	24.7	0.0	-39.2	0.0	0.17	0.04
16	-0.3	0.0	24.7	0.0	-39.2	0.0	0.17	0.04
17	-0.3	0.0	24.7	0.0	-39.2	0.0	0.17	0.04
18	-0.3	0.0	24.7	0.0	-39.2	0.0	0.17	0.04
19	-0.3	0.0	24.7	0.0	-39.2	0.0	0.17	0.04
20	-0.3	0.0	24.7	0.0	-39.2	0.0	0.17	0.04
21	-0.3	0.0	28.0	0.0	-40.1	0.0	0.20	0.04
22	-0.3	0.0	28.0	0.0	-40.1	0.0	0.20	0.04
23	-0.3	0.0	28.0	0.0	-40.1	0.0	0.20	0.04
24	-0.3	0.0	28.0	0.0	-40.1	0.0	0.20	0.04
25	-0.3	0.0	28.0	0.0	-40.1	0.0	0.20	0.04
26	-0.3	0.0	28.0	0.0	-40.1	0.0	0.20	0.04
27	-0.3	0.0	28.0	0.0	-40.1	0.0	0.20	0.04
28	-0.3	0.0	28.0	0.0	-40.1	0.0	0.20	0.04
29	-0.3	0.0	28.0	0.0	-40.1	0.0	0.20	0.04
30	-0.3	0.0	28.0	0.0	-40.1	0.0	0.20	0.04
31	-0.3	0.0	31.4	0.0	-41.0	0.0	0.22	0.05
32	-0.3	0.0	31.4	0.0	-41.0	0.0	0.22	0.05
33	-0.3	0.0	31.4	0.0	-41.0	0.0	0.22	0.05
34	-0.3	0.0	31.4	0.0	-41.0	0.0	0.22	0.05
35	-0.3	0.0	31.4	0.0	-41.0	0.0	0.22	0.05
36	-0.3	0.0	31.4	0.0	-41.0	0.0	0.22	0.05
37	-0.3	0.0	31.4	0.0	-41.0	0.0	0.22	0.05
38	-0.3	0.0	31.4	0.0	-41.0	0.0	0.22	0.05
39	-0.3	0.0	31.4	0.0	-41.0	0.0	0.22	0.05
40	-0.3	0.0	31.4	0.0	-41.0	0.0	0.22	0.05

LOAD CASE - 4

PILE	F1 K	F2 K	F3 K	M1 IN-K	M2 IN-K	M3 IN-K	ALF	CBF

1	-0.2	0.0	17.1	0.0	-33.8	0.0	0.16	0.04
2	-0.2	0.0	17.1	0.0	-33.8	0.0	0.16	0.04
3	-0.2	0.0	17.1	0.0	-33.8	0.0	0.16	0.04
4	-0.2	0.0	17.1	0.0	-33.8	0.0	0.16	0.04
5	-0.2	0.0	17.1	0.0	-33.8	0.0	0.16	0.04
6	-0.2	0.0	17.1	0.0	-33.8	0.0	0.16	0.04
7	-0.2	0.0	17.1	0.0	-33.8	0.0	0.16	0.04
8	-0.2	0.0	17.1	0.0	-33.8	0.0	0.16	0.04
9	-0.2	0.0	17.1	0.0	-33.8	0.0	0.16	0.04
10	-0.2	0.0	17.1	0.0	-33.8	0.0	0.16	0.04
11	0.1	0.0	34.3	0.0	20.5	0.0	0.32	0.06
12	0.1	0.0	34.3	0.0	20.5	0.0	0.32	0.06
13	0.1	0.0	34.3	0.0	20.5	0.0	0.32	0.06
14	0.1	0.0	34.3	0.0	20.5	0.0	0.32	0.06
15	0.1	0.0	34.3	0.0	20.5	0.0	0.32	0.06
16	0.1	0.0	34.3	0.0	20.5	0.0	0.32	0.06
17	0.1	0.0	34.3	0.0	20.5	0.0	0.32	0.06
18	0.1	0.0	34.3	0.0	20.5	0.0	0.32	0.06
19	0.1	0.0	34.3	0.0	20.5	0.0	0.32	0.06
20	0.1	0.0	34.3	0.0	20.5	0.0	0.32	0.06
21	0.1	0.0	28.0	0.0	22.1	0.0	0.26	0.05
22	0.1	0.0	28.0	0.0	22.1	0.0	0.26	0.05
23	0.1	0.0	28.0	0.0	22.1	0.0	0.26	0.05
24	0.1	0.0	28.0	0.0	22.1	0.0	0.26	0.05
25	0.1	0.0	28.0	0.0	22.1	0.0	0.26	0.05
26	0.1	0.0	28.0	0.0	22.1	0.0	0.26	0.05
27	0.1	0.0	28.0	0.0	22.1	0.0	0.26	0.05
28	0.1	0.0	28.0	0.0	22.1	0.0	0.26	0.05
29	0.1	0.0	28.0	0.0	22.1	0.0	0.26	0.05
30	0.1	0.0	28.0	0.0	22.1	0.0	0.26	0.05
31	0.1	0.0	21.8	0.0	23.7	0.0	0.20	0.04
32	0.1	0.0	21.8	0.0	23.7	0.0	0.20	0.04
33	0.1	0.0	21.8	0.0	23.7	0.0	0.20	0.04
34	0.1	0.0	21.8	0.0	23.7	0.0	0.20	0.04
35	0.1	0.0	21.8	0.0	23.7	0.0	0.20	0.04
36	0.1	0.0	21.8	0.0	23.7	0.0	0.20	0.04
37	0.1	0.0	21.8	0.0	23.7	0.0	0.20	0.04
38	0.1	0.0	21.8	0.0	23.7	0.0	0.20	0.04
39	0.1	0.0	21.8	0.0	23.7	0.0	0.20	0.04
40	0.1	0.0	21.8	0.0	23.7	0.0	0.20	0.04

LOAD CASE - 5

PILE	F1 K	F2 K	F3 K	M1 IN-K	M2 IN-K	M3 IN-K	ALF	CBF
1	-0.3	0.0	9.5	0.0	-50.2	0.0	0.09	0.03
2	-0.3	0.0	9.5	0.0	-50.2	0.0	0.09	0.03

3	-0.3	0.0	9.5	0.0	-50.2	0.0	0.09	0.03
4	-0.3	0.0	9.5	0.0	-50.2	0.0	0.09	0.03
5	-0.3	0.0	9.5	0.0	-50.2	0.0	0.09	0.03
6	-0.3	0.0	9.5	0.0	-50.2	0.0	0.09	0.03
7	-0.3	0.0	9.5	0.0	-50.2	0.0	0.09	0.03
8	-0.3	0.0	9.5	0.0	-50.2	0.0	0.09	0.03
9	-0.3	0.0	9.5	0.0	-50.2	0.0	0.09	0.03
10	-0.3	0.0	9.5	0.0	-50.2	0.0	0.09	0.03
11	0.2	0.0	35.7	0.0	38.5	0.0	0.33	0.07
12	0.2	0.0	35.7	0.0	38.5	0.0	0.33	0.07
13	0.2	0.0	35.7	0.0	38.5	0.0	0.33	0.07
14	0.2	0.0	35.7	0.0	38.5	0.0	0.33	0.07
15	0.2	0.0	35.7	0.0	38.5	0.0	0.33	0.07
16	0.2	0.0	35.7	0.0	38.5	0.0	0.33	0.07
17	0.2	0.0	35.7	0.0	38.5	0.0	0.33	0.07
18	0.2	0.0	35.7	0.0	38.5	0.0	0.33	0.07
19	0.2	0.0	35.7	0.0	38.5	0.0	0.33	0.07
20	0.2	0.0	35.7	0.0	38.5	0.0	0.33	0.07
21	0.2	0.0	25.2	0.0	41.2	0.0	0.24	0.05
22	0.2	0.0	25.2	0.0	41.2	0.0	0.24	0.05
23	0.2	0.0	25.2	0.0	41.2	0.0	0.24	0.05
24	0.2	0.0	25.2	0.0	41.2	0.0	0.24	0.05
25	0.2	0.0	25.2	0.0	41.2	0.0	0.24	0.05
26	0.2	0.0	25.2	0.0	41.2	0.0	0.24	0.05
27	0.2	0.0	25.2	0.0	41.2	0.0	0.24	0.05
28	0.2	0.0	25.2	0.0	41.2	0.0	0.24	0.05
29	0.2	0.0	25.2	0.0	41.2	0.0	0.24	0.05
30	0.2	0.0	25.2	0.0	41.2	0.0	0.24	0.05
31	0.3	0.0	14.7	0.0	43.9	0.0	0.14	0.04
32	0.3	0.0	14.7	0.0	43.9	0.0	0.14	0.04
33	0.3	0.0	14.7	0.0	43.9	0.0	0.14	0.04
34	0.3	0.0	14.7	0.0	43.9	0.0	0.14	0.04
35	0.3	0.0	14.7	0.0	43.9	0.0	0.14	0.04
36	0.3	0.0	14.7	0.0	43.9	0.0	0.14	0.04
37	0.3	0.0	14.7	0.0	43.9	0.0	0.14	0.04
38	0.3	0.0	14.7	0.0	43.9	0.0	0.14	0.04
39	0.3	0.0	14.7	0.0	43.9	0.0	0.14	0.04
40	0.3	0.0	14.7	0.0	43.9	0.0	0.14	0.04

LOAD CASE - 6

PILE	F1 K	F2 K	F3 K	M1 IN-K	M2 IN-K	M3 IN-K	ALF	CBF
1	-0.1	0.0	11.0	0.0	-15.2	0.0	0.08	0.02
2	-0.1	0.0	11.0	0.0	-15.2	0.0	0.08	0.02
3	-0.1	0.0	11.0	0.0	-15.2	0.0	0.08	0.02
4	-0.1	0.0	11.0	0.0	-15.2	0.0	0.08	0.02
5	-0.1	0.0	11.0	0.0	-15.2	0.0	0.08	0.02

6	-0.1	0.0	11.0	0.0	-15.2	0.0	0.08	0.02
7	-0.1	0.0	11.0	0.0	-15.2	0.0	0.08	0.02
8	-0.1	0.0	11.0	0.0	-15.2	0.0	0.08	0.02
9	-0.1	0.0	11.0	0.0	-15.2	0.0	0.08	0.02
10	-0.1	0.0	11.0	0.0	-15.2	0.0	0.08	0.02
11	0.0	0.0	30.0	0.0	4.5	0.0	0.21	0.04
12	0.0	0.0	30.0	0.0	4.5	0.0	0.21	0.04
13	0.0	0.0	30.0	0.0	4.5	0.0	0.21	0.04
14	0.0	0.0	30.0	0.0	4.5	0.0	0.21	0.04
15	0.0	0.0	30.0	0.0	4.5	0.0	0.21	0.04
16	0.0	0.0	30.0	0.0	4.5	0.0	0.21	0.04
17	0.0	0.0	30.0	0.0	4.5	0.0	0.21	0.04
18	0.0	0.0	30.0	0.0	4.5	0.0	0.21	0.04
19	0.0	0.0	30.0	0.0	4.5	0.0	0.21	0.04
20	0.0	0.0	30.0	0.0	4.5	0.0	0.21	0.04
21	0.0	0.0	30.0	0.0	4.5	0.0	0.21	0.04
22	0.0	0.0	30.0	0.0	4.5	0.0	0.21	0.04
23	0.0	0.0	30.0	0.0	4.5	0.0	0.21	0.04
24	0.0	0.0	30.0	0.0	4.5	0.0	0.21	0.04
25	0.0	0.0	30.0	0.0	4.5	0.0	0.21	0.04
26	0.0	0.0	30.0	0.0	4.5	0.0	0.21	0.04
27	0.0	0.0	30.0	0.0	4.5	0.0	0.21	0.04
28	0.0	0.0	30.0	0.0	4.5	0.0	0.21	0.04
29	0.0	0.0	30.0	0.0	4.5	0.0	0.21	0.04
30	0.0	0.0	30.0	0.0	4.5	0.0	0.21	0.04
31	0.0	0.0	30.1	0.0	4.5	0.0	0.21	0.04
32	0.0	0.0	30.1	0.0	4.5	0.0	0.21	0.04
33	0.0	0.0	30.1	0.0	4.5	0.0	0.21	0.04
34	0.0	0.0	30.1	0.0	4.5	0.0	0.21	0.04
35	0.0	0.0	30.1	0.0	4.5	0.0	0.21	0.04
36	0.0	0.0	30.1	0.0	4.5	0.0	0.21	0.04
37	0.0	0.0	30.1	0.0	4.5	0.0	0.21	0.04
38	0.0	0.0	30.1	0.0	4.5	0.0	0.21	0.04
39	0.0	0.0	30.1	0.0	4.5	0.0	0.21	0.04
40	0.0	0.0	30.1	0.0	4.5	0.0	0.21	0.04

LOAD CASE - 7

PILE	F1 K	F2 K	F3 K	M1 IN-K	M2 IN-K	M3 IN-K	ALF	CBF
1	-0.2	0.0	3.3	0.0	-31.5	0.0	0.02	0.01
2	-0.2	0.0	3.3	0.0	-31.5	0.0	0.02	0.01
3	-0.2	0.0	3.3	0.0	-31.5	0.0	0.02	0.01
4	-0.2	0.0	3.3	0.0	-31.5	0.0	0.02	0.01
5	-0.2	0.0	3.3	0.0	-31.5	0.0	0.02	0.01
6	-0.2	0.0	3.3	0.0	-31.5	0.0	0.02	0.01
7	-0.2	0.0	3.3	0.0	-31.5	0.0	0.02	0.01
8	-0.2	0.0	3.3	0.0	-31.5	0.0	0.02	0.01

9	-0.2	0.0	3.3	0.0	-31.5	0.0	0.02	0.01
10	-0.2	0.0	3.3	0.0	-31.5	0.0	0.02	0.01
11	0.2	0.0	31.4	0.0	22.4	0.0	0.22	0.04
12	0.2	0.0	31.4	0.0	22.4	0.0	0.22	0.04
13	0.2	0.0	31.4	0.0	22.4	0.0	0.22	0.04
14	0.2	0.0	31.4	0.0	22.4	0.0	0.22	0.04
15	0.2	0.0	31.4	0.0	22.4	0.0	0.22	0.04
16	0.2	0.0	31.4	0.0	22.4	0.0	0.22	0.04
17	0.2	0.0	31.4	0.0	22.4	0.0	0.22	0.04
18	0.2	0.0	31.4	0.0	22.4	0.0	0.22	0.04
19	0.2	0.0	31.4	0.0	22.4	0.0	0.22	0.04
20	0.2	0.0	31.4	0.0	22.4	0.0	0.22	0.04
21	0.2	0.0	27.2	0.0	23.5	0.0	0.19	0.04
22	0.2	0.0	27.2	0.0	23.5	0.0	0.19	0.04
23	0.2	0.0	27.2	0.0	23.5	0.0	0.19	0.04
24	0.2	0.0	27.2	0.0	23.5	0.0	0.19	0.04
25	0.2	0.0	27.2	0.0	23.5	0.0	0.19	0.04
26	0.2	0.0	27.2	0.0	23.5	0.0	0.19	0.04
27	0.2	0.0	27.2	0.0	23.5	0.0	0.19	0.04
28	0.2	0.0	27.2	0.0	23.5	0.0	0.19	0.04
29	0.2	0.0	27.2	0.0	23.5	0.0	0.19	0.04
30	0.2	0.0	27.2	0.0	23.5	0.0	0.19	0.04
31	0.2	0.0	23.0	0.0	24.6	0.0	0.16	0.03
32	0.2	0.0	23.0	0.0	24.6	0.0	0.16	0.03
33	0.2	0.0	23.0	0.0	24.6	0.0	0.16	0.03
34	0.2	0.0	23.0	0.0	24.6	0.0	0.16	0.03
35	0.2	0.0	23.0	0.0	24.6	0.0	0.16	0.03
36	0.2	0.0	23.0	0.0	24.6	0.0	0.16	0.03
37	0.2	0.0	23.0	0.0	24.6	0.0	0.16	0.03
38	0.2	0.0	23.0	0.0	24.6	0.0	0.16	0.03
39	0.2	0.0	23.0	0.0	24.6	0.0	0.16	0.03
40	0.2	0.0	23.0	0.0	24.6	0.0	0.16	0.03

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PILE FORCES IN GLOBAL GEOMETRY

LOAD CASE - 1

PILE	PX K	PY K	PZ K	MX IN-K	MY IN-K	MZ IN-K
1	0.0	-25.9	51.9	-8.3	0.0	0.0
2	0.0	-25.9	51.9	-8.3	0.0	0.0
3	0.0	-25.9	51.9	-8.3	0.0	0.0
4	0.0	-25.9	51.9	-8.3	0.0	0.0
5	0.0	-25.9	51.9	-8.3	0.0	0.0

6	0.0	-25.9	51.9	-8.3	0.0	0.0
7	0.0	-25.9	51.9	-8.3	0.0	0.0
8	0.0	-25.9	51.9	-8.3	0.0	0.0
9	0.0	-25.9	51.9	-8.3	0.0	0.0
10	0.0	-25.9	51.9	-8.3	0.0	0.0
11	0.0	11.9	24.2	13.9	0.0	0.0
12	0.0	11.9	24.2	13.9	0.0	0.0
13	0.0	11.9	24.2	13.9	0.0	0.0
14	0.0	11.9	24.2	13.9	0.0	0.0
15	0.0	11.9	24.2	13.9	0.0	0.0
16	0.0	11.9	24.2	13.9	0.0	0.0
17	0.0	11.9	24.2	13.9	0.0	0.0
18	0.0	11.9	24.2	13.9	0.0	0.0
19	0.0	11.9	24.2	13.9	0.0	0.0
20	0.0	11.9	24.2	13.9	0.0	0.0
21	0.0	9.9	20.2	12.7	0.0	0.0
22	0.0	9.9	20.2	12.7	0.0	0.0
23	0.0	9.9	20.2	12.7	0.0	0.0
24	0.0	9.9	20.2	12.7	0.0	0.0
25	0.0	9.9	20.2	12.7	0.0	0.0
26	0.0	9.9	20.2	12.7	0.0	0.0
27	0.0	9.9	20.2	12.7	0.0	0.0
28	0.0	9.9	20.2	12.7	0.0	0.0
29	0.0	9.9	20.2	12.7	0.0	0.0
30	0.0	9.9	20.2	12.7	0.0	0.0
31	0.0	7.9	16.1	11.5	0.0	0.0
32	0.0	7.9	16.1	11.5	0.0	0.0
33	0.0	7.9	16.1	11.5	0.0	0.0
34	0.0	7.9	16.1	11.5	0.0	0.0
35	0.0	7.9	16.1	11.5	0.0	0.0
36	0.0	7.9	16.1	11.5	0.0	0.0
37	0.0	7.9	16.1	11.5	0.0	0.0
38	0.0	7.9	16.1	11.5	0.0	0.0
39	0.0	7.9	16.1	11.5	0.0	0.0
40	0.0	7.9	16.1	11.5	0.0	0.0

LOAD CASE - 2

PILE	PX K	PY K	PZ K	MX IN-K	MY IN-K	MZ IN-K
1	0.0	-30.0	59.7	11.2	0.0	0.0
2	0.0	-30.0	59.7	11.2	0.0	0.0
3	0.0	-30.0	59.7	11.2	0.0	0.0
4	0.0	-30.0	59.7	11.2	0.0	0.0
5	0.0	-30.0	59.7	11.2	0.0	0.0
6	0.0	-30.0	59.7	11.2	0.0	0.0
7	0.0	-30.0	59.7	11.2	0.0	0.0
8	0.0	-30.0	59.7	11.2	0.0	0.0

9	0.0	-30.0	59.7	11.2	0.0	0.0
10	0.0	-30.0	59.7	11.2	0.0	0.0
11	0.0	11.0	22.7	35.2	0.0	0.0
12	0.0	11.0	22.7	35.2	0.0	0.0
13	0.0	11.0	22.7	35.2	0.0	0.0
14	0.0	11.0	22.7	35.2	0.0	0.0
15	0.0	11.0	22.7	35.2	0.0	0.0
16	0.0	11.0	22.7	35.2	0.0	0.0
17	0.0	11.0	22.7	35.2	0.0	0.0
18	0.0	11.0	22.7	35.2	0.0	0.0
19	0.0	11.0	22.7	35.2	0.0	0.0
20	0.0	11.0	22.7	35.2	0.0	0.0
21	0.0	11.3	23.2	35.3	0.0	0.0
22	0.0	11.3	23.2	35.3	0.0	0.0
23	0.0	11.3	23.2	35.3	0.0	0.0
24	0.0	11.3	23.2	35.3	0.0	0.0
25	0.0	11.3	23.2	35.3	0.0	0.0
26	0.0	11.3	23.2	35.3	0.0	0.0
27	0.0	11.3	23.2	35.3	0.0	0.0
28	0.0	11.3	23.2	35.3	0.0	0.0
29	0.0	11.3	23.2	35.3	0.0	0.0
30	0.0	11.3	23.2	35.3	0.0	0.0
31	0.0	11.5	23.6	35.5	0.0	0.0
32	0.0	11.5	23.6	35.5	0.0	0.0
33	0.0	11.5	23.6	35.5	0.0	0.0
34	0.0	11.5	23.6	35.5	0.0	0.0
35	0.0	11.5	23.6	35.5	0.0	0.0
36	0.0	11.5	23.6	35.5	0.0	0.0
37	0.0	11.5	23.6	35.5	0.0	0.0
38	0.0	11.5	23.6	35.5	0.0	0.0
39	0.0	11.5	23.6	35.5	0.0	0.0
40	0.0	11.5	23.6	35.5	0.0	0.0

LOAD CASE - 3

PILE	PX K	PY K	PZ K	MX IN-K	MY IN-K	MZ IN-K
1	0.0	-26.9	53.5	17.2	0.0	0.0
2	0.0	-26.9	53.5	17.2	0.0	0.0
3	0.0	-26.9	53.5	17.2	0.0	0.0
4	0.0	-26.9	53.5	17.2	0.0	0.0
5	0.0	-26.9	53.5	17.2	0.0	0.0
6	0.0	-26.9	53.5	17.2	0.0	0.0
7	0.0	-26.9	53.5	17.2	0.0	0.0
8	0.0	-26.9	53.5	17.2	0.0	0.0
9	0.0	-26.9	53.5	17.2	0.0	0.0
10	0.0	-26.9	53.5	17.2	0.0	0.0
11	0.0	10.8	22.2	39.2	0.0	0.0

12	0.0	10.8	22.2	39.2	0.0	0.0
13	0.0	10.8	22.2	39.2	0.0	0.0
14	0.0	10.8	22.2	39.2	0.0	0.0
15	0.0	10.8	22.2	39.2	0.0	0.0
16	0.0	10.8	22.2	39.2	0.0	0.0
17	0.0	10.8	22.2	39.2	0.0	0.0
18	0.0	10.8	22.2	39.2	0.0	0.0
19	0.0	10.8	22.2	39.2	0.0	0.0
20	0.0	10.8	22.2	39.2	0.0	0.0
21	0.0	12.3	25.2	40.1	0.0	0.0
22	0.0	12.3	25.2	40.1	0.0	0.0
23	0.0	12.3	25.2	40.1	0.0	0.0
24	0.0	12.3	25.2	40.1	0.0	0.0
25	0.0	12.3	25.2	40.1	0.0	0.0
26	0.0	12.3	25.2	40.1	0.0	0.0
27	0.0	12.3	25.2	40.1	0.0	0.0
28	0.0	12.3	25.2	40.1	0.0	0.0
29	0.0	12.3	25.2	40.1	0.0	0.0
30	0.0	12.3	25.2	40.1	0.0	0.0
31	0.0	13.8	28.2	41.0	0.0	0.0
32	0.0	13.8	28.2	41.0	0.0	0.0
33	0.0	13.8	28.2	41.0	0.0	0.0
34	0.0	13.8	28.2	41.0	0.0	0.0
35	0.0	13.8	28.2	41.0	0.0	0.0
36	0.0	13.8	28.2	41.0	0.0	0.0
37	0.0	13.8	28.2	41.0	0.0	0.0
38	0.0	13.8	28.2	41.0	0.0	0.0
39	0.0	13.8	28.2	41.0	0.0	0.0
40	0.0	13.8	28.2	41.0	0.0	0.0

LOAD CASE - 4

PILE	PX K	PY K	PZ K	MX IN-K	MY IN-K	MZ IN-K
1	0.0	-7.4	15.4	-33.8	0.0	0.0
2	0.0	-7.4	15.4	-33.8	0.0	0.0
3	0.0	-7.4	15.4	-33.8	0.0	0.0
4	0.0	-7.4	15.4	-33.8	0.0	0.0
5	0.0	-7.4	15.4	-33.8	0.0	0.0
6	0.0	-7.4	15.4	-33.8	0.0	0.0
7	0.0	-7.4	15.4	-33.8	0.0	0.0
8	0.0	-7.4	15.4	-33.8	0.0	0.0
9	0.0	-7.4	15.4	-33.8	0.0	0.0
10	0.0	-7.4	15.4	-33.8	0.0	0.0
11	0.0	15.4	30.6	-20.5	0.0	0.0
12	0.0	15.4	30.6	-20.5	0.0	0.0
13	0.0	15.4	30.6	-20.5	0.0	0.0
14	0.0	15.4	30.6	-20.5	0.0	0.0

15	0.0	15.4	30.6	-20.5	0.0	0.0
16	0.0	15.4	30.6	-20.5	0.0	0.0
17	0.0	15.4	30.6	-20.5	0.0	0.0
18	0.0	15.4	30.6	-20.5	0.0	0.0
19	0.0	15.4	30.6	-20.5	0.0	0.0
20	0.0	15.4	30.6	-20.5	0.0	0.0
21	0.0	12.6	25.0	-22.1	0.0	0.0
22	0.0	12.6	25.0	-22.1	0.0	0.0
23	0.0	12.6	25.0	-22.1	0.0	0.0
24	0.0	12.6	25.0	-22.1	0.0	0.0
25	0.0	12.6	25.0	-22.1	0.0	0.0
26	0.0	12.6	25.0	-22.1	0.0	0.0
27	0.0	12.6	25.0	-22.1	0.0	0.0
28	0.0	12.6	25.0	-22.1	0.0	0.0
29	0.0	12.6	25.0	-22.1	0.0	0.0
30	0.0	12.6	25.0	-22.1	0.0	0.0
31	0.0	9.9	19.4	-23.7	0.0	0.0
32	0.0	9.9	19.4	-23.7	0.0	0.0
33	0.0	9.9	19.4	-23.7	0.0	0.0
34	0.0	9.9	19.4	-23.7	0.0	0.0
35	0.0	9.9	19.4	-23.7	0.0	0.0
36	0.0	9.9	19.4	-23.7	0.0	0.0
37	0.0	9.9	19.4	-23.7	0.0	0.0
38	0.0	9.9	19.4	-23.7	0.0	0.0
39	0.0	9.9	19.4	-23.7	0.0	0.0
40	0.0	9.9	19.4	-23.7	0.0	0.0

LOAD CASE - 5

PILE	PX K	PY K	PZ K	MX IN-K	MY IN-K	MZ IN-K
1	0.0	-3.9	8.6	-50.2	0.0	0.0
2	0.0	-3.9	8.6	-50.2	0.0	0.0
3	0.0	-3.9	8.6	-50.2	0.0	0.0
4	0.0	-3.9	8.6	-50.2	0.0	0.0
5	0.0	-3.9	8.6	-50.2	0.0	0.0
6	0.0	-3.9	8.6	-50.2	0.0	0.0
7	0.0	-3.9	8.6	-50.2	0.0	0.0
8	0.0	-3.9	8.6	-50.2	0.0	0.0
9	0.0	-3.9	8.6	-50.2	0.0	0.0
10	0.0	-3.9	8.6	-50.2	0.0	0.0
11	0.0	16.1	31.8	-38.5	0.0	0.0
12	0.0	16.1	31.8	-38.5	0.0	0.0
13	0.0	16.1	31.8	-38.5	0.0	0.0
14	0.0	16.1	31.8	-38.5	0.0	0.0
15	0.0	16.1	31.8	-38.5	0.0	0.0
16	0.0	16.1	31.8	-38.5	0.0	0.0
17	0.0	16.1	31.8	-38.5	0.0	0.0

18	0.0	16.1	31.8	-38.5	0.0	0.0
19	0.0	16.1	31.8	-38.5	0.0	0.0
20	0.0	16.1	31.8	-38.5	0.0	0.0
21	0.0	11.5	22.4	-41.2	0.0	0.0
22	0.0	11.5	22.4	-41.2	0.0	0.0
23	0.0	11.5	22.4	-41.2	0.0	0.0
24	0.0	11.5	22.4	-41.2	0.0	0.0
25	0.0	11.5	22.4	-41.2	0.0	0.0
26	0.0	11.5	22.4	-41.2	0.0	0.0
27	0.0	11.5	22.4	-41.2	0.0	0.0
28	0.0	11.5	22.4	-41.2	0.0	0.0
29	0.0	11.5	22.4	-41.2	0.0	0.0
30	0.0	11.5	22.4	-41.2	0.0	0.0
31	0.0	6.8	13.0	-43.9	0.0	0.0
32	0.0	6.8	13.0	-43.9	0.0	0.0
33	0.0	6.8	13.0	-43.9	0.0	0.0
34	0.0	6.8	13.0	-43.9	0.0	0.0
35	0.0	6.8	13.0	-43.9	0.0	0.0
36	0.0	6.8	13.0	-43.9	0.0	0.0
37	0.0	6.8	13.0	-43.9	0.0	0.0
38	0.0	6.8	13.0	-43.9	0.0	0.0
39	0.0	6.8	13.0	-43.9	0.0	0.0
40	0.0	6.8	13.0	-43.9	0.0	0.0

LOAD CASE - 6

PILE	PX K	PY K	PZ K	MX IN-K	MY IN-K	MZ IN-K
1	0.0	-4.8	9.9	-15.2	0.0	0.0
2	0.0	-4.8	9.9	-15.2	0.0	0.0
3	0.0	-4.8	9.9	-15.2	0.0	0.0
4	0.0	-4.8	9.9	-15.2	0.0	0.0
5	0.0	-4.8	9.9	-15.2	0.0	0.0
6	0.0	-4.8	9.9	-15.2	0.0	0.0
7	0.0	-4.8	9.9	-15.2	0.0	0.0
8	0.0	-4.8	9.9	-15.2	0.0	0.0
9	0.0	-4.8	9.9	-15.2	0.0	0.0
10	0.0	-4.8	9.9	-15.2	0.0	0.0
11	0.0	13.5	26.8	-4.5	0.0	0.0
12	0.0	13.5	26.8	-4.5	0.0	0.0
13	0.0	13.5	26.8	-4.5	0.0	0.0
14	0.0	13.5	26.8	-4.5	0.0	0.0
15	0.0	13.5	26.8	-4.5	0.0	0.0
16	0.0	13.5	26.8	-4.5	0.0	0.0
17	0.0	13.5	26.8	-4.5	0.0	0.0
18	0.0	13.5	26.8	-4.5	0.0	0.0
19	0.0	13.5	26.8	-4.5	0.0	0.0
20	0.0	13.5	26.8	-4.5	0.0	0.0

21	0.0	13.5	26.8	-4.5	0.0	0.0
22	0.0	13.5	26.8	-4.5	0.0	0.0
23	0.0	13.5	26.8	-4.5	0.0	0.0
24	0.0	13.5	26.8	-4.5	0.0	0.0
25	0.0	13.5	26.8	-4.5	0.0	0.0
26	0.0	13.5	26.8	-4.5	0.0	0.0
27	0.0	13.5	26.8	-4.5	0.0	0.0
28	0.0	13.5	26.8	-4.5	0.0	0.0
29	0.0	13.5	26.8	-4.5	0.0	0.0
30	0.0	13.5	26.8	-4.5	0.0	0.0
31	0.0	13.5	26.9	-4.5	0.0	0.0
32	0.0	13.5	26.9	-4.5	0.0	0.0
33	0.0	13.5	26.9	-4.5	0.0	0.0
34	0.0	13.5	26.9	-4.5	0.0	0.0
35	0.0	13.5	26.9	-4.5	0.0	0.0
36	0.0	13.5	26.9	-4.5	0.0	0.0
37	0.0	13.5	26.9	-4.5	0.0	0.0
38	0.0	13.5	26.9	-4.5	0.0	0.0
39	0.0	13.5	26.9	-4.5	0.0	0.0
40	0.0	13.5	26.9	-4.5	0.0	0.0

LOAD CASE - 7

PILE	PX K	PY K	PZ K	MX IN-K	MY IN-K	MZ IN-K
1	0.0	-1.3	3.1	-31.5	0.0	0.0
2	0.0	-1.3	3.1	-31.5	0.0	0.0
3	0.0	-1.3	3.1	-31.5	0.0	0.0
4	0.0	-1.3	3.1	-31.5	0.0	0.0
5	0.0	-1.3	3.1	-31.5	0.0	0.0
6	0.0	-1.3	3.1	-31.5	0.0	0.0
7	0.0	-1.3	3.1	-31.5	0.0	0.0
8	0.0	-1.3	3.1	-31.5	0.0	0.0
9	0.0	-1.3	3.1	-31.5	0.0	0.0
10	0.0	-1.3	3.1	-31.5	0.0	0.0
11	0.0	14.2	28.0	-22.4	0.0	0.0
12	0.0	14.2	28.0	-22.4	0.0	0.0
13	0.0	14.2	28.0	-22.4	0.0	0.0
14	0.0	14.2	28.0	-22.4	0.0	0.0
15	0.0	14.2	28.0	-22.4	0.0	0.0
16	0.0	14.2	28.0	-22.4	0.0	0.0
17	0.0	14.2	28.0	-22.4	0.0	0.0
18	0.0	14.2	28.0	-22.4	0.0	0.0
19	0.0	14.2	28.0	-22.4	0.0	0.0
20	0.0	14.2	28.0	-22.4	0.0	0.0
21	0.0	12.3	24.2	-23.5	0.0	0.0
22	0.0	12.3	24.2	-23.5	0.0	0.0
23	0.0	12.3	24.2	-23.5	0.0	0.0

24	0.0	12.3	24.2	-23.5	0.0	0.0
25	0.0	12.3	24.2	-23.5	0.0	0.0
26	0.0	12.3	24.2	-23.5	0.0	0.0
27	0.0	12.3	24.2	-23.5	0.0	0.0
28	0.0	12.3	24.2	-23.5	0.0	0.0
29	0.0	12.3	24.2	-23.5	0.0	0.0
30	0.0	12.3	24.2	-23.5	0.0	0.0
31	0.0	10.4	20.5	-24.6	0.0	0.0
32	0.0	10.4	20.5	-24.6	0.0	0.0
33	0.0	10.4	20.5	-24.6	0.0	0.0
34	0.0	10.4	20.5	-24.6	0.0	0.0
35	0.0	10.4	20.5	-24.6	0.0	0.0
36	0.0	10.4	20.5	-24.6	0.0	0.0
37	0.0	10.4	20.5	-24.6	0.0	0.0
38	0.0	10.4	20.5	-24.6	0.0	0.0
39	0.0	10.4	20.5	-24.6	0.0	0.0
40	0.0	10.4	20.5	-24.6	0.0	0.0

NO FILES WERE GENERATED DURING THIS RUN.

```
10  Sunset T3 Twall Fixed
20  PIL  1  -22.5   2.5   0
30  BAT   2   1
40  ANG   270   1
50  PIL  2  -17.5   2.5   0
60  BAT   2   2
70  ANG   270   2
80  PIL  3  -12.5   2.5   0
90  BAT   2   3
100  ANG   270   3
110  PIL  4  -7.5   2.5   0
120  BAT   2   4
130  ANG   270   4
140  PIL  5  -2.5   2.5   0
150  BAT   2   5
160  ANG   270   5
170  PIL  6   2.5   2.5   0
180  BAT   2   6
190  ANG   270   6
200  PIL  7   7.5   2.5   0
210  BAT   2   7
220  ANG   270   7
230  PIL  8   12.5   2.5   0
240  BAT   2   8
250  ANG   270   8
260  PIL  9   17.5   2.5   0
270  BAT   2   9
280  ANG   270   9
290  PIL  10   22.5   2.5   0
300  BAT   2   10
310  ANG   270   10
320  PIL  11  -22.5   7.5   0
330  BAT   2   11
340  ANG   90   11
350  PIL  12  -17.5   7.5   0
360  BAT   2   12
370  ANG   90   12
380  PIL  13  -12.5   7.5   0
390  BAT   2   13
400  ANG   90   13
410  PIL  14  -7.5   7.5   0
420  BAT   2   14
430  ANG   90   14
440  PIL  15  -2.5   7.5   0
450  BAT   2   15
460  ANG   90   15
470  PIL  16   2.5   7.5   0
480  BAT   2   16
490  ANG   90   16
500  PIL  17   7.5   7.5   0
```

```
510  BAT   2   17
520  ANG   90   17
530  PIL  18   12.5   7.5   0
540  BAT   2   18
550  ANG   90   18
560  PIL  19   17.5   7.5   0
570  BAT   2   19
580  ANG   90   19
590  PIL  20   22.5   7.5   0
600  BAT   2   20
610  ANG   90   20
620  PIL  21  -22.5   12.5   0
630  BAT   2   21
640  ANG   90   21
650  PIL  22  -17.5   12.5   0
660  BAT   2   22
670  ANG   90   22
680  PIL  23  -12.5   12.5   0
690  BAT   2   23
700  ANG   90   23
710  PIL  24  -7.5   12.5   0
720  BAT   2   24
730  ANG   90   24
740  PIL  25  -2.5   12.5   0
750  BAT   2   25
760  ANG   90   25
770  PIL  26   2.5   12.5   0
780  BAT   2   26
790  ANG   90   26
800  PIL  27   7.5   12.5   0
810  BAT   2   27
820  ANG   90   27
830  PIL  28   12.5   12.5   0
840  BAT   2   28
850  ANG   90   28
860  PIL  29   17.5   12.5   0
870  BAT   2   29
880  ANG   90   29
890  PIL  30   22.5   12.5   0
900  BAT   2   30
910  ANG   90   30
920  PIL  31  -22.5   17.5   0
930  BAT   2   31
940  ANG   90   31
950  PIL  32  -17.5   17.5   0
960  BAT   2   32
970  ANG   90   32
980  PIL  33  -12.5   17.5   0
990  BAT   2   33
1000  ANG   90   33
```

```
1010  PIL  34  -7.5   17.5   0
1020  BAT   2   34
1030  ANG   90   34
1040  PIL  35  -2.5   17.5   0
1050  BAT   2   35
1060  ANG   90   35
1070  PIL  36   2.5   17.5   0
1080  BAT   2   36
1090  ANG   90   36
1100  PIL  37   7.5   17.5   0
1110  BAT   2   37
1120  ANG   90   37
1130  PIL  38   12.5   17.5   0
1140  BAT   2   38
1150  ANG   90   38
1160  PIL  39   17.5   17.5   0
1170  BAT   2   39
1180  ANG   90   39
1190  PIL  40   22.5   17.5   0
1200  BAT   2   40
1210  ANG   90   40
1220  PRO  29000  326  904  26.1  2  0  1 TO 40
1230  SOI ES 0.0345 L  69  0  1 TO 40
1240  RED  1  1  1
1250  ALL H 107  85  652  652  1107  3275  1 TO 40
1260  FIX  1 TO 40
1270  LOA  8  0  925  847  15859  0  0
1270  LOA  9  0  925  559  12732  0  0
1270  FOV  1.33  1.33  8
1270  FOV  1.33  1.33  9
1280  TOUT   1  2  3  4  5  6  7
1290  PFO ALL
1300  PLB ALL
```

CPGA - CASE PILE GROUP ANALYSIS PROGRAM
RUN DATE: 11-SEP-20 RUN TIME: 19:21:56

FOR PILES WITH UNSUPPORTED HEIGHT:
A. CPGA CANNOT CALCULATE PMAXMOM FOR NH TYPE SOIL
B. THE ALLOWABLE STRESS CHECKS, ASC AND AST, ARE
NOT FULLY DEVELOPED FOR UNSUPPORTED PILES.
WORK IS IN PROGRESS TO COMPLETE THIS ASPECT OF CPGA.

ELASTIC CENTER LOCATION IS NOT COMPUTED FOR 3-DIMENSIONAL PROBLEMS.

SUNSET T3 TWALL FIXED
DATA UNKNOWN - REJECTED.

THERE ARE 40 PILES AND
2 LOAD CASES IN THIS RUN.

ALL PILE COORDINATES ARE CONTAINED WITHIN A BOX

	X	Y	Z
WITH DIAGONAL COORDINATES = (	-22.50 ,	2.50 ,	0.00)
(	22.50 ,	17.50 ,	0.00)

****

PILE PROPERTIES AS INPUT

E	I1	I2	A	C33	B66
KSI	IN**4	IN**4	IN**2		
0.29000E+05	0.32600E+03	0.90400E+03	0.26100E+02	0.20000E+01	0.00000E+00

THESE PILE PROPERTIES APPLY TO THE FOLLOWING PILES -

ALL

****

SOIL DESCRIPTIONS AS INPUT

ES	ESOIL	LENGTH	L	LU
	K/IN**2		FT	FT

```
        0.34500E-01    L      0.69000E+02   0.00000E+00

 ESOIL(ORIGINAL)     RGROUP     RCYCLIC
   K/IN**2
  0.34500E-01       0.1000E+01 0.1000E+01
```

THIS SOIL DESCRIPTION APPLIES TO THE FOLLOWING PILES -

ALL

****

PILE STIFFNESSES AS CALCULATED FROM PROPERTIES

```
 0.81007E+01  0.00000E+00  0.00000E+00  0.00000E+00  0.95103E+03  0.00000E+00
 0.00000E+00  0.62774E+01  0.00000E+00 -0.57111E+03  0.00000E+00  0.00000E+00
 0.00000E+00  0.00000E+00  0.18283E+04  0.00000E+00  0.00000E+00  0.00000E+00
 0.00000E+00 -0.57111E+03  0.00000E+00  0.10392E+06  0.00000E+00  0.00000E+00
 0.95103E+03  0.00000E+00  0.00000E+00  0.00000E+00  0.22330E+06  0.00000E+00
 0.00000E+00  0.00000E+00  0.00000E+00  0.00000E+00  0.00000E+00  0.00000E+00
```

THIS MATRIX APPLIES TO THE FOLLOWING PILES -

1

****

PILE GEOMETRY AS INPUT AND/OR GENERATED

NUM	X FT	Y FT	Z FT	BATTER	ANGLE	LENGTH FT	FIXITY
1	-22.50	2.50	0.00	2.00	270.00	69.00	F
2	-17.50	2.50	0.00	2.00	270.00	69.00	F
3	-12.50	2.50	0.00	2.00	270.00	69.00	F
4	-7.50	2.50	0.00	2.00	270.00	69.00	F
5	-2.50	2.50	0.00	2.00	270.00	69.00	F
6	2.50	2.50	0.00	2.00	270.00	69.00	F
7	7.50	2.50	0.00	2.00	270.00	69.00	F
8	12.50	2.50	0.00	2.00	270.00	69.00	F
9	17.50	2.50	0.00	2.00	270.00	69.00	F
10	22.50	2.50	0.00	2.00	270.00	69.00	F
11	-22.50	7.50	0.00	2.00	90.00	69.00	F
12	-17.50	7.50	0.00	2.00	90.00	69.00	F
13	-12.50	7.50	0.00	2.00	90.00	69.00	F
14	-7.50	7.50	0.00	2.00	90.00	69.00	F

15	-2.50	7.50	0.00	2.00	90.00	69.00	F
16	2.50	7.50	0.00	2.00	90.00	69.00	F
17	7.50	7.50	0.00	2.00	90.00	69.00	F
18	12.50	7.50	0.00	2.00	90.00	69.00	F
19	17.50	7.50	0.00	2.00	90.00	69.00	F
20	22.50	7.50	0.00	2.00	90.00	69.00	F
21	-22.50	12.50	0.00	2.00	90.00	69.00	F
22	-17.50	12.50	0.00	2.00	90.00	69.00	F
23	-12.50	12.50	0.00	2.00	90.00	69.00	F
24	-7.50	12.50	0.00	2.00	90.00	69.00	F
25	-2.50	12.50	0.00	2.00	90.00	69.00	F
26	2.50	12.50	0.00	2.00	90.00	69.00	F
27	7.50	12.50	0.00	2.00	90.00	69.00	F
28	12.50	12.50	0.00	2.00	90.00	69.00	F
29	17.50	12.50	0.00	2.00	90.00	69.00	F
30	22.50	12.50	0.00	2.00	90.00	69.00	F
31	-22.50	17.50	0.00	2.00	90.00	69.00	F
32	-17.50	17.50	0.00	2.00	90.00	69.00	F
33	-12.50	17.50	0.00	2.00	90.00	69.00	F
34	-7.50	17.50	0.00	2.00	90.00	69.00	F
35	-2.50	17.50	0.00	2.00	90.00	69.00	F
36	2.50	17.50	0.00	2.00	90.00	69.00	F
37	7.50	17.50	0.00	2.00	90.00	69.00	F
38	12.50	17.50	0.00	2.00	90.00	69.00	F
39	17.50	17.50	0.00	2.00	90.00	69.00	F
40	22.50	17.50	0.00	2.00	90.00	69.00	F

						2760.00	

****

APPLIED LOADS

LOAD CASE	PX K	PY K	PZ K	MX FT-K	MY FT-K	MZ FT-K	OVERSTRESS COM	TEN
8	0.0	925.0	847.0	15859.0	0.0	0.0	1.33	1.33
9	0.0	925.0	559.0	12732.0	0.0	0.0	1.33	1.33

****

ORIGINAL PILE GROUP STIFFNESS MATRIX

0.25110E+03	0.26710E-03	0.84703E-19	0.31645E-01	0.20433E+05	-0.35240E+05
0.26710E-03	0.14885E+05	0.14561E+05	0.30238E+07	0.24809E-03	-0.24039E-01
0.84703E-19	0.14561E+05	0.58569E+05	0.70368E+07	-0.17462E-09	-0.31893E-01
0.31645E-01	0.30238E+07	0.70368E+07	0.11195E+10	-0.12097E+00	-0.63562E+01
0.20433E+05	0.24809E-03	0.23283E-09	-0.12097E+00	0.17428E+10	-0.43575E+09

-0.35240E+05 -0.24039E-01 -0.31893E-01 -0.63562E+01 -0.43575E+09 0.44982E+09

40 PILES   2 LOAD CASES

LOAD CASE   8. NUMBER OF FAILURES =   0. NUMBER OF PILES IN TENSION = 10.

LOAD CASE   9. NUMBER OF FAILURES =   0. NUMBER OF PILES IN TENSION = 10.

****

PILE CAP DISPLACEMENTS

LOAD CASE	DX IN	DY IN	DZ IN	RX RAD	RY RAD	RZ RAD
8	-0.6805E-07	0.5669E-01	-0.6780E-02	0.5949E-04	0.4070E-12	-0.1547E-11
9	-0.7444E-07	0.7265E-01	-0.5467E-02	-0.2539E-04	0.2462E-12	-0.2457E-11

****

PILE FORCES IN LOCAL GEOMETRY

M1 & M2 NOT AT PILE HEAD FOR PINNED PILES
* INDICATES PILE FAILURE
# INDICATES CBF BASED ON MOMENTS DUE TO
(F3*EMIN) FOR CONCRETE PILES
B INDICATES BUCKLING CONTROLS

LOAD CASE -   8

PILE	F1 K	F2 K	F3 K	M1 IN-K	M2 IN-K	M3 IN-K	ALF	CBF
1	-0.3	0.0	-54.5	0.0	-32.8	0.0	0.48	0.07
2	-0.3	0.0	-54.5	0.0	-32.8	0.0	0.48	0.07
3	-0.3	0.0	-54.5	0.0	-32.8	0.0	0.48	0.07
4	-0.3	0.0	-54.5	0.0	-32.8	0.0	0.48	0.07
5	-0.3	0.0	-54.5	0.0	-32.8	0.0	0.48	0.07
6	-0.3	0.0	-54.5	0.0	-32.8	0.0	0.48	0.07
7	-0.3	0.0	-54.5	0.0	-32.8	0.0	0.48	0.07
8	-0.3	0.0	-54.5	0.0	-32.8	0.0	0.48	0.07
9	-0.3	0.0	-54.5	0.0	-32.8	0.0	0.48	0.07
10	-0.3	0.0	-54.5	0.0	-32.8	0.0	0.48	0.07

11	0.4	0.0	44.0	0.0	35.5	0.0	0.31	0.06
12	0.4	0.0	44.0	0.0	35.5	0.0	0.31	0.06
13	0.4	0.0	44.0	0.0	35.5	0.0	0.31	0.06
14	0.4	0.0	44.0	0.0	35.5	0.0	0.31	0.06
15	0.4	0.0	44.0	0.0	35.5	0.0	0.31	0.06
16	0.4	0.0	44.0	0.0	35.5	0.0	0.31	0.06
17	0.4	0.0	44.0	0.0	35.5	0.0	0.31	0.06
18	0.4	0.0	44.0	0.0	35.5	0.0	0.31	0.06
19	0.4	0.0	44.0	0.0	35.5	0.0	0.31	0.06
20	0.4	0.0	44.0	0.0	35.5	0.0	0.31	0.06
21	0.3	0.0	49.9	0.0	34.0	0.0	0.35	0.07
22	0.3	0.0	49.9	0.0	34.0	0.0	0.35	0.07
23	0.3	0.0	49.9	0.0	34.0	0.0	0.35	0.07
24	0.3	0.0	49.9	0.0	34.0	0.0	0.35	0.07
25	0.3	0.0	49.9	0.0	34.0	0.0	0.35	0.07
26	0.3	0.0	49.9	0.0	34.0	0.0	0.35	0.07
27	0.3	0.0	49.9	0.0	34.0	0.0	0.35	0.07
28	0.3	0.0	49.9	0.0	34.0	0.0	0.35	0.07
29	0.3	0.0	49.9	0.0	34.0	0.0	0.35	0.07
30	0.3	0.0	49.9	0.0	34.0	0.0	0.35	0.07
31	0.3	0.0	55.7	0.0	32.5	0.0	0.39	0.07
32	0.3	0.0	55.7	0.0	32.5	0.0	0.39	0.07
33	0.3	0.0	55.7	0.0	32.5	0.0	0.39	0.07
34	0.3	0.0	55.7	0.0	32.5	0.0	0.39	0.07
35	0.3	0.0	55.7	0.0	32.5	0.0	0.39	0.07
36	0.3	0.0	55.7	0.0	32.5	0.0	0.39	0.07
37	0.3	0.0	55.7	0.0	32.5	0.0	0.39	0.07
38	0.3	0.0	55.7	0.0	32.5	0.0	0.39	0.07
39	0.3	0.0	55.7	0.0	32.5	0.0	0.39	0.07
40	0.3	0.0	55.7	0.0	32.5	0.0	0.39	0.07

LOAD CASE - 9

PILE	F1 K	F2 K	F3 K	M1 IN-K	M2 IN-K	M3 IN-K	ALF	CBF
1	-0.5	0.0	-69.6	0.0	-64.8	0.0	0.62	0.10
2	-0.5	0.0	-69.6	0.0	-64.8	0.0	0.62	0.10
3	-0.5	0.0	-69.6	0.0	-64.8	0.0	0.62	0.10
4	-0.5	0.0	-69.6	0.0	-64.8	0.0	0.62	0.10
5	-0.5	0.0	-69.6	0.0	-64.8	0.0	0.62	0.10
6	-0.5	0.0	-69.6	0.0	-64.8	0.0	0.62	0.10
7	-0.5	0.0	-69.6	0.0	-64.8	0.0	0.62	0.10
8	-0.5	0.0	-69.6	0.0	-64.8	0.0	0.62	0.10
9	-0.5	0.0	-69.6	0.0	-64.8	0.0	0.62	0.10
10	-0.5	0.0	-69.6	0.0	-64.8	0.0	0.62	0.10
11	0.6	0.0	46.7	0.0	70.8	0.0	0.33	0.07
12	0.6	0.0	46.7	0.0	70.8	0.0	0.33	0.07
13	0.6	0.0	46.7	0.0	70.8	0.0	0.33	0.07

14	0.6	0.0	46.7	0.0	70.8	0.0	0.33	0.07
15	0.6	0.0	46.7	0.0	70.8	0.0	0.33	0.07
16	0.6	0.0	46.7	0.0	70.8	0.0	0.33	0.07
17	0.6	0.0	46.7	0.0	70.8	0.0	0.33	0.07
18	0.6	0.0	46.7	0.0	70.8	0.0	0.33	0.07
19	0.6	0.0	46.7	0.0	70.8	0.0	0.33	0.07
20	0.6	0.0	46.7	0.0	70.8	0.0	0.33	0.07
21	0.6	0.0	44.2	0.0	71.4	0.0	0.31	0.07
22	0.6	0.0	44.2	0.0	71.4	0.0	0.31	0.07
23	0.6	0.0	44.2	0.0	71.4	0.0	0.31	0.07
24	0.6	0.0	44.2	0.0	71.4	0.0	0.31	0.07
25	0.6	0.0	44.2	0.0	71.4	0.0	0.31	0.07
26	0.6	0.0	44.2	0.0	71.4	0.0	0.31	0.07
27	0.6	0.0	44.2	0.0	71.4	0.0	0.31	0.07
28	0.6	0.0	44.2	0.0	71.4	0.0	0.31	0.07
29	0.6	0.0	44.2	0.0	71.4	0.0	0.31	0.07
30	0.6	0.0	44.2	0.0	71.4	0.0	0.31	0.07
31	0.6	0.0	41.7	0.0	72.1	0.0	0.29	0.06
32	0.6	0.0	41.7	0.0	72.1	0.0	0.29	0.06
33	0.6	0.0	41.7	0.0	72.1	0.0	0.29	0.06
34	0.6	0.0	41.7	0.0	72.1	0.0	0.29	0.06
35	0.6	0.0	41.7	0.0	72.1	0.0	0.29	0.06
36	0.6	0.0	41.7	0.0	72.1	0.0	0.29	0.06
37	0.6	0.0	41.7	0.0	72.1	0.0	0.29	0.06
38	0.6	0.0	41.7	0.0	72.1	0.0	0.29	0.06
39	0.6	0.0	41.7	0.0	72.1	0.0	0.29	0.06
40	0.6	0.0	41.7	0.0	72.1	0.0	0.29	0.06

****

PILE FORCES IN GLOBAL GEOMETRY

LOAD CASE - 8

PILE	PX K	PY K	PZ K	MX IN-K	MY IN-K	MZ IN-K
1	0.0	24.7	-48.6	-32.8	0.0	0.0
2	0.0	24.7	-48.6	-32.8	0.0	0.0
3	0.0	24.7	-48.6	-32.8	0.0	0.0
4	0.0	24.7	-48.6	-32.8	0.0	0.0
5	0.0	24.7	-48.6	-32.8	0.0	0.0
6	0.0	24.7	-48.6	-32.8	0.0	0.0
7	0.0	24.7	-48.6	-32.8	0.0	0.0
8	0.0	24.7	-48.6	-32.8	0.0	0.0
9	0.0	24.7	-48.6	-32.8	0.0	0.0
10	0.0	24.7	-48.6	-32.8	0.0	0.0

11	0.0	20.0	39.2	-35.5	0.0	0.0
12	0.0	20.0	39.2	-35.5	0.0	0.0
13	0.0	20.0	39.2	-35.5	0.0	0.0
14	0.0	20.0	39.2	-35.5	0.0	0.0
15	0.0	20.0	39.2	-35.5	0.0	0.0
16	0.0	20.0	39.2	-35.5	0.0	0.0
17	0.0	20.0	39.2	-35.5	0.0	0.0
18	0.0	20.0	39.2	-35.5	0.0	0.0
19	0.0	20.0	39.2	-35.5	0.0	0.0
20	0.0	20.0	39.2	-35.5	0.0	0.0
21	0.0	22.6	44.4	-34.0	0.0	0.0
22	0.0	22.6	44.4	-34.0	0.0	0.0
23	0.0	22.6	44.4	-34.0	0.0	0.0
24	0.0	22.6	44.4	-34.0	0.0	0.0
25	0.0	22.6	44.4	-34.0	0.0	0.0
26	0.0	22.6	44.4	-34.0	0.0	0.0
27	0.0	22.6	44.4	-34.0	0.0	0.0
28	0.0	22.6	44.4	-34.0	0.0	0.0
29	0.0	22.6	44.4	-34.0	0.0	0.0
30	0.0	22.6	44.4	-34.0	0.0	0.0
31	0.0	25.2	49.7	-32.5	0.0	0.0
32	0.0	25.2	49.7	-32.5	0.0	0.0
33	0.0	25.2	49.7	-32.5	0.0	0.0
34	0.0	25.2	49.7	-32.5	0.0	0.0
35	0.0	25.2	49.7	-32.5	0.0	0.0
36	0.0	25.2	49.7	-32.5	0.0	0.0
37	0.0	25.2	49.7	-32.5	0.0	0.0
38	0.0	25.2	49.7	-32.5	0.0	0.0
39	0.0	25.2	49.7	-32.5	0.0	0.0
40	0.0	25.2	49.7	-32.5	0.0	0.0

LOAD CASE - 9

PILE	PX K	PY K	PZ K	MX IN-K	MY IN-K	MZ IN-K
1	0.0	31.6	-62.0	-64.8	0.0	0.0
2	0.0	31.6	-62.0	-64.8	0.0	0.0
3	0.0	31.6	-62.0	-64.8	0.0	0.0
4	0.0	31.6	-62.0	-64.8	0.0	0.0
5	0.0	31.6	-62.0	-64.8	0.0	0.0
6	0.0	31.6	-62.0	-64.8	0.0	0.0
7	0.0	31.6	-62.0	-64.8	0.0	0.0
8	0.0	31.6	-62.0	-64.8	0.0	0.0
9	0.0	31.6	-62.0	-64.8	0.0	0.0
10	0.0	31.6	-62.0	-64.8	0.0	0.0
11	0.0	21.4	41.5	-70.8	0.0	0.0
12	0.0	21.4	41.5	-70.8	0.0	0.0
13	0.0	21.4	41.5	-70.8	0.0	0.0

14	0.0	21.4	41.5	-70.8	0.0	0.0
15	0.0	21.4	41.5	-70.8	0.0	0.0
16	0.0	21.4	41.5	-70.8	0.0	0.0
17	0.0	21.4	41.5	-70.8	0.0	0.0
18	0.0	21.4	41.5	-70.8	0.0	0.0
19	0.0	21.4	41.5	-70.8	0.0	0.0
20	0.0	21.4	41.5	-70.8	0.0	0.0
21	0.0	20.3	39.3	-71.4	0.0	0.0
22	0.0	20.3	39.3	-71.4	0.0	0.0
23	0.0	20.3	39.3	-71.4	0.0	0.0
24	0.0	20.3	39.3	-71.4	0.0	0.0
25	0.0	20.3	39.3	-71.4	0.0	0.0
26	0.0	20.3	39.3	-71.4	0.0	0.0
27	0.0	20.3	39.3	-71.4	0.0	0.0
28	0.0	20.3	39.3	-71.4	0.0	0.0
29	0.0	20.3	39.3	-71.4	0.0	0.0
30	0.0	20.3	39.3	-71.4	0.0	0.0
31	0.0	19.2	37.1	-72.1	0.0	0.0
32	0.0	19.2	37.1	-72.1	0.0	0.0
33	0.0	19.2	37.1	-72.1	0.0	0.0
34	0.0	19.2	37.1	-72.1	0.0	0.0
35	0.0	19.2	37.1	-72.1	0.0	0.0
36	0.0	19.2	37.1	-72.1	0.0	0.0
37	0.0	19.2	37.1	-72.1	0.0	0.0
38	0.0	19.2	37.1	-72.1	0.0	0.0
39	0.0	19.2	37.1	-72.1	0.0	0.0
40	0.0	19.2	37.1	-72.1	0.0	0.0

NO FILES WERE GENERATED DURING THIS RUN.

```
10  Sunset T3 Twall Pinned
20  PIL  1  -22.5   2.5   0
30  BAT   2   1
40  ANG   270   1
50  PIL  2  -17.5   2.5   0
60  BAT   2   2
70  ANG   270   2
80  PIL  3  -12.5   2.5   0
90  BAT   2   3
100  ANG   270   3
110  PIL  4  -7.5   2.5   0
120  BAT   2   4
130  ANG   270   4
140  PIL  5  -2.5   2.5   0
150  BAT   2   5
160  ANG   270   5
170  PIL  6   2.5   2.5   0
180  BAT   2   6
190  ANG   270   6
200  PIL  7   7.5   2.5   0
210  BAT   2   7
220  ANG   270   7
230  PIL  8   12.5   2.5   0
240  BAT   2   8
250  ANG   270   8
260  PIL  9   17.5   2.5   0
270  BAT   2   9
280  ANG   270   9
290  PIL  10   22.5   2.5   0
300  BAT   2   10
310  ANG   270   10
320  PIL  11  -22.5   7.5   0
330  BAT   2   11
340  ANG   90   11
350  PIL  12  -17.5   7.5   0
360  BAT   2   12
370  ANG   90   12
380  PIL  13  -12.5   7.5   0
390  BAT   2   13
400  ANG   90   13
410  PIL  14  -7.5   7.5   0
420  BAT   2   14
430  ANG   90   14
440  PIL  15  -2.5   7.5   0
450  BAT   2   15
460  ANG   90   15
470  PIL  16   2.5   7.5   0
480  BAT   2   16
490  ANG   90   16
500  PIL  17   7.5   7.5   0
```

```
510  BAT   2   17
520  ANG   90   17
530  PIL  18   12.5   7.5   0
540  BAT   2   18
550  ANG   90   18
560  PIL  19   17.5   7.5   0
570  BAT   2   19
580  ANG   90   19
590  PIL  20   22.5   7.5   0
600  BAT   2   20
610  ANG   90   20
620  PIL  21  -22.5   12.5   0
630  BAT   2   21
640  ANG   90   21
650  PIL  22  -17.5   12.5   0
660  BAT   2   22
670  ANG   90   22
680  PIL  23  -12.5   12.5   0
690  BAT   2   23
700  ANG   90   23
710  PIL  24  -7.5   12.5   0
720  BAT   2   24
730  ANG   90   24
740  PIL  25  -2.5   12.5   0
750  BAT   2   25
760  ANG   90   25
770  PIL  26   2.5   12.5   0
780  BAT   2   26
790  ANG   90   26
800  PIL  27   7.5   12.5   0
810  BAT   2   27
820  ANG   90   27
830  PIL  28   12.5   12.5   0
840  BAT   2   28
850  ANG   90   28
860  PIL  29   17.5   12.5   0
870  BAT   2   29
880  ANG   90   29
890  PIL  30   22.5   12.5   0
900  BAT   2   30
910  ANG   90   30
920  PIL  31  -22.5   17.5   0
930  BAT   2   31
940  ANG   90   31
950  PIL  32  -17.5   17.5   0
960  BAT   2   32
970  ANG   90   32
980  PIL  33  -12.5   17.5   0
990  BAT   2   33
1000  ANG   90   33
```

```
1010  PIL  34  -7.5   17.5   0
1020  BAT   2   34
1030  ANG   90   34
1040  PIL  35  -2.5   17.5   0
1050  BAT   2   35
1060  ANG   90   35
1070  PIL  36   2.5   17.5   0
1080  BAT   2   36
1090  ANG   90   36
1100  PIL  37   7.5   17.5   0
1110  BAT   2   37
1120  ANG   90   37
1130  PIL  38   12.5   17.5   0
1140  BAT   2   38
1150  ANG   90   38
1160  PIL  39   17.5   17.5   0
1170  BAT   2   39
1180  ANG   90   39
1190  PIL  40   22.5   17.5   0
1200  BAT   2   40
1210  ANG   90   40
1220  PRO  29000  326  904  26.1  2  0  1 TO 40
1230  SOI ES 0.0345 L  69  0  1 TO 40
1240  RED  1  1  1
1250  ALL H 107  85  652  652  1107  3275  1 TO 40
1260  PIN  1 TO 40
1270  LOA  1  0  38  1124  8475  0  0
1270  LOA  2  0  38  1292  10325  0  0
1270  LOA  3  0  99  1292  11213  0  0
1270  LOA  4  0  305  904  9120  0  0
1270  LOA  5  0  305  758  7531  0  0
1270  LOA  6  0  356  904  10291  0  0
1270  LOA  7  0  356  758  8703  0  0
1270  FOV  1.167  1.167  2
1270  FOV  1.33  1.33  3
1270  FOV  1.33  1.33  6
1270  FOV  1.33  1.33  7
1280  TOUT   1  2  3  4  5  6  7
1290  PFO ALL
1300  PLB ALL
```

CPGA - CASE PILE GROUP ANALYSIS PROGRAM
RUN DATE: 11-SEP-20 RUN TIME: 19:22:27

FOR PILES WITH UNSUPPORTED HEIGHT:
A. CPGA CANNOT CALCULATE PMAXMOM FOR NH TYPE SOIL
B. THE ALLOWABLE STRESS CHECKS, ASC AND AST, ARE
NOT FULLY DEVELOPED FOR UNSUPPORTED PILES.
WORK IS IN PROGRESS TO COMPLETE THIS ASPECT OF CPGA.

ELASTIC CENTER LOCATION IS NOT COMPUTED FOR 3-DIMENSIONAL PROBLEMS.

SUNSET T3 TWALL PINNED
DATA UNKNOWN - REJECTED.

THERE ARE 40 PILES AND
7 LOAD CASES IN THIS RUN.

ALL PILE COORDINATES ARE CONTAINED WITHIN A BOX

	X	Y	Z
WITH DIAGONAL COORDINATES = (	-22.50 ,	2.50 ,	0.00)
(	22.50 ,	17.50 ,	0.00)

****

PILE PROPERTIES AS INPUT

E	I1	I2	A	C33	B66
KSI	IN**4	IN**4	IN**2		
0.29000E+05	0.32600E+03	0.90400E+03	0.26100E+02	0.20000E+01	0.00000E+00

THESE PILE PROPERTIES APPLY TO THE FOLLOWING PILES -

ALL

****

SOIL DESCRIPTIONS AS INPUT

ES	ESOIL	LENGTH	L	LU
	K/IN**2		FT	FT

```
        0.34500E-01    L      0.69000E+02   0.00000E+00

 ESOIL(ORIGINAL)     RGROUP     RCYCLIC
   K/IN**2
  0.34500E-01       0.1000E+01 0.1000E+01

THIS SOIL DESCRIPTION APPLIES TO THE FOLLOWING PILES -

    ALL

*************************************************************************

         PILE STIFFNESSES AS CALCULATED FROM PROPERTIES


 0.40503E+01  0.00000E+00  0.00000E+00  0.00000E+00  0.00000E+00  0.00000E+00
 0.00000E+00  0.31387E+01  0.00000E+00  0.00000E+00  0.00000E+00  0.00000E+00
 0.00000E+00  0.00000E+00  0.18283E+04  0.00000E+00  0.00000E+00  0.00000E+00
 0.00000E+00  0.00000E+00  0.00000E+00  0.00000E+00  0.00000E+00  0.00000E+00
 0.00000E+00  0.00000E+00  0.00000E+00  0.00000E+00  0.00000E+00  0.00000E+00
 0.00000E+00  0.00000E+00  0.00000E+00  0.00000E+00  0.00000E+00  0.00000E+00


THIS MATRIX APPLIES TO THE FOLLOWING PILES -

   1


*************************************************************************

         PILE GEOMETRY AS INPUT AND/OR GENERATED

NUM        X          Y          Z      BATTER    ANGLE    LENGTH  FIXITY
          FT         FT         FT                          FT

  1     -22.50       2.50       0.00      2.00    270.00    69.00     P
  2     -17.50       2.50       0.00      2.00    270.00    69.00     P
  3     -12.50       2.50       0.00      2.00    270.00    69.00     P
  4      -7.50       2.50       0.00      2.00    270.00    69.00     P
  5      -2.50       2.50       0.00      2.00    270.00    69.00     P
  6       2.50       2.50       0.00      2.00    270.00    69.00     P
  7       7.50       2.50       0.00      2.00    270.00    69.00     P
  8      12.50       2.50       0.00      2.00    270.00    69.00     P
  9      17.50       2.50       0.00      2.00    270.00    69.00     P
 10      22.50       2.50       0.00      2.00    270.00    69.00     P
 11     -22.50       7.50       0.00      2.00     90.00    69.00     P
 12     -17.50       7.50       0.00      2.00     90.00    69.00     P
 13     -12.50       7.50       0.00      2.00     90.00    69.00     P
 14      -7.50       7.50       0.00      2.00     90.00    69.00     P
```

15	-2.50	7.50	0.00	2.00	90.00	69.00	P
16	2.50	7.50	0.00	2.00	90.00	69.00	P
17	7.50	7.50	0.00	2.00	90.00	69.00	P
18	12.50	7.50	0.00	2.00	90.00	69.00	P
19	17.50	7.50	0.00	2.00	90.00	69.00	P
20	22.50	7.50	0.00	2.00	90.00	69.00	P
21	-22.50	12.50	0.00	2.00	90.00	69.00	P
22	-17.50	12.50	0.00	2.00	90.00	69.00	P
23	-12.50	12.50	0.00	2.00	90.00	69.00	P
24	-7.50	12.50	0.00	2.00	90.00	69.00	P
25	-2.50	12.50	0.00	2.00	90.00	69.00	P
26	2.50	12.50	0.00	2.00	90.00	69.00	P
27	7.50	12.50	0.00	2.00	90.00	69.00	P
28	12.50	12.50	0.00	2.00	90.00	69.00	P
29	17.50	12.50	0.00	2.00	90.00	69.00	P
30	22.50	12.50	0.00	2.00	90.00	69.00	P
31	-22.50	17.50	0.00	2.00	90.00	69.00	P
32	-17.50	17.50	0.00	2.00	90.00	69.00	P
33	-12.50	17.50	0.00	2.00	90.00	69.00	P
34	-7.50	17.50	0.00	2.00	90.00	69.00	P
35	-2.50	17.50	0.00	2.00	90.00	69.00	P
36	2.50	17.50	0.00	2.00	90.00	69.00	P
37	7.50	17.50	0.00	2.00	90.00	69.00	P
38	12.50	17.50	0.00	2.00	90.00	69.00	P
39	17.50	17.50	0.00	2.00	90.00	69.00	P
40	22.50	17.50	0.00	2.00	90.00	69.00	P

						2760.00	

****

APPLIED LOADS

LOAD CASE	PX K	PY K	PZ K	MX FT-K	MY FT-K	MZ FT-K	OVERSTRESS COM	OVERSTRESS TEN
1	0.0	38.0	1124.0	8475.0	0.0	0.0		
2	0.0	38.0	1292.0	10325.0	0.0	0.0	1.17	1.17
3	0.0	99.0	1292.0	11213.0	0.0	0.0	1.33	1.33
4	0.0	305.0	904.0	9120.0	0.0	0.0		
5	0.0	305.0	758.0	7531.0	0.0	0.0		
6	0.0	356.0	904.0	10291.0	0.0	0.0	1.33	1.33
7	0.0	356.0	758.0	8703.0	0.0	0.0	1.33	1.33

****

ORIGINAL PILE GROUP STIFFNESS MATRIX

```
 0.12555E+03  0.26703E-03 -0.40658E-19  0.31964E-01  0.00000E+00 -0.15066E+05
 0.26703E-03  0.14756E+05  0.14594E+05  0.30647E+07 -0.87311E-10 -0.24033E-01
-0.40658E-19  0.14594E+05  0.58537E+05  0.70244E+07 -0.11642E-09 -0.31964E-01
 0.31964E-01  0.30647E+07  0.70244E+07  0.11063E+10 -0.29802E-07 -0.63927E+01
 0.21684E-17  0.29104E-10 -0.17462E-09  0.29802E-07  0.17385E+10 -0.43343E+09
-0.15066E+05 -0.24033E-01 -0.31964E-01 -0.63927E+01 -0.43343E+09  0.44062E+09
```

40 PILES 7 LOAD CASES

LOAD CASE 1. NUMBER OF FAILURES = 0. NUMBER OF PILES IN TENSION = 0.

LOAD CASE 2. NUMBER OF FAILURES = 0. NUMBER OF PILES IN TENSION = 0.

LOAD CASE 3. NUMBER OF FAILURES = 0. NUMBER OF PILES IN TENSION = 0.

LOAD CASE 4. NUMBER OF FAILURES = 0. NUMBER OF PILES IN TENSION = 0.

LOAD CASE 5. NUMBER OF FAILURES = 0. NUMBER OF PILES IN TENSION = 0.

LOAD CASE 6. NUMBER OF FAILURES = 0. NUMBER OF PILES IN TENSION = 0.

LOAD CASE 7. NUMBER OF FAILURES = 0. NUMBER OF PILES IN TENSION = 0.

****

PILE CAP DISPLACEMENTS

LOAD CASE	DX IN	DY IN	DZ IN	RX RAD	RY RAD	RZ RAD
1	0.4682E-07	-0.1681E-01	0.2845E-01	-0.4216E-04	0.7057E-12	0.2831E-11
2	0.5469E-07	-0.2820E-01	0.2641E-01	0.2240E-04	0.8499E-12	0.3409E-11
3	0.4289E-07	-0.2648E-01	0.2216E-01	0.5427E-04	0.7984E-12	0.3203E-11
4	-0.1485E-07	0.1638E-01	0.2072E-01	-0.7804E-04	0.2500E-12	0.1003E-11
5	-0.2170E-07	0.2604E-01	0.2231E-01	-0.1321E-03	0.1256E-12	0.5039E-12
6	-0.2487E-07	0.1221E-01	0.1287E-01	-0.3884E-05	0.2288E-12	0.9176E-12
7	-0.3171E-07	0.2185E-01	0.1444E-01	-0.5780E-04	0.1045E-12	0.4191E-12

****

PILE FORCES IN LOCAL GEOMETRY

M1 & M2 NOT AT PILE HEAD FOR PINNED PILES
* INDICATES PILE FAILURE
# INDICATES CBF BASED ON MOMENTS DUE TO

(F3*EMIN) FOR CONCRETE PILES
B INDICATES BUCKLING CONTROLS

LOAD CASE - 1

PILE	F1 K	F2 K	F3 K	M1 IN-K	M2 IN-K	M3 IN-K	ALF	CBF
1	0.0	0.0	58.2	0.0	-0.9	0.0	0.54	0.09
2	0.0	0.0	58.2	0.0	-0.9	0.0	0.54	0.09
3	0.0	0.0	58.2	0.0	-0.9	0.0	0.54	0.09
4	0.0	0.0	58.2	0.0	-0.9	0.0	0.54	0.09
5	0.0	0.0	58.2	0.0	-0.9	0.0	0.54	0.09
6	0.0	0.0	58.2	0.0	-0.9	0.0	0.54	0.09
7	0.0	0.0	58.2	0.0	-0.9	0.0	0.54	0.09
8	0.0	0.0	58.2	0.0	-0.9	0.0	0.54	0.09
9	0.0	0.0	58.2	0.0	-0.9	0.0	0.54	0.09
10	0.0	0.0	58.2	0.0	-0.9	0.0	0.54	0.09
11	-0.1	0.0	26.6	0.0	8.0	0.0	0.25	0.04
12	-0.1	0.0	26.6	0.0	8.0	0.0	0.25	0.04
13	-0.1	0.0	26.6	0.0	8.0	0.0	0.25	0.04
14	-0.1	0.0	26.6	0.0	8.0	0.0	0.25	0.04
15	-0.1	0.0	26.6	0.0	8.0	0.0	0.25	0.04
16	-0.1	0.0	26.6	0.0	8.0	0.0	0.25	0.04
17	-0.1	0.0	26.6	0.0	8.0	0.0	0.25	0.04
18	-0.1	0.0	26.6	0.0	8.0	0.0	0.25	0.04
19	-0.1	0.0	26.6	0.0	8.0	0.0	0.25	0.04
20	-0.1	0.0	26.6	0.0	8.0	0.0	0.25	0.04
21	-0.1	0.0	22.4	0.0	7.6	0.0	0.21	0.04
22	-0.1	0.0	22.4	0.0	7.6	0.0	0.21	0.04
23	-0.1	0.0	22.4	0.0	7.6	0.0	0.21	0.04
24	-0.1	0.0	22.4	0.0	7.6	0.0	0.21	0.04
25	-0.1	0.0	22.4	0.0	7.6	0.0	0.21	0.04
26	-0.1	0.0	22.4	0.0	7.6	0.0	0.21	0.04
27	-0.1	0.0	22.4	0.0	7.6	0.0	0.21	0.04
28	-0.1	0.0	22.4	0.0	7.6	0.0	0.21	0.04
29	-0.1	0.0	22.4	0.0	7.6	0.0	0.21	0.04
30	-0.1	0.0	22.4	0.0	7.6	0.0	0.21	0.04
31	-0.1	0.0	18.3	0.0	7.3	0.0	0.17	0.03
32	-0.1	0.0	18.3	0.0	7.3	0.0	0.17	0.03
33	-0.1	0.0	18.3	0.0	7.3	0.0	0.17	0.03
34	-0.1	0.0	18.3	0.0	7.3	0.0	0.17	0.03
35	-0.1	0.0	18.3	0.0	7.3	0.0	0.17	0.03
36	-0.1	0.0	18.3	0.0	7.3	0.0	0.17	0.03
37	-0.1	0.0	18.3	0.0	7.3	0.0	0.17	0.03
38	-0.1	0.0	18.3	0.0	7.3	0.0	0.17	0.03
39	-0.1	0.0	18.3	0.0	7.3	0.0	0.17	0.03
40	-0.1	0.0	18.3	0.0	7.3	0.0	0.17	0.03

LOAD CASE - 2

PILE	F1 K	F2 K	F3 K	M1 IN-K	M2 IN-K	M3 IN-K	ALF	CBF
1	0.1	0.0	67.4	0.0	-4.0	0.0	0.54	0.09
2	0.1	0.0	67.4	0.0	-4.0	0.0	0.54	0.09
3	0.1	0.0	67.4	0.0	-4.0	0.0	0.54	0.09
4	0.1	0.0	67.4	0.0	-4.0	0.0	0.54	0.09
5	0.1	0.0	67.4	0.0	-4.0	0.0	0.54	0.09
6	0.1	0.0	67.4	0.0	-4.0	0.0	0.54	0.09
7	0.1	0.0	67.4	0.0	-4.0	0.0	0.54	0.09
8	0.1	0.0	67.4	0.0	-4.0	0.0	0.54	0.09
9	0.1	0.0	67.4	0.0	-4.0	0.0	0.54	0.09
10	0.1	0.0	67.4	0.0	-4.0	0.0	0.54	0.09
11	-0.2	0.0	23.4	0.0	11.6	0.0	0.19	0.03
12	-0.2	0.0	23.4	0.0	11.6	0.0	0.19	0.03
13	-0.2	0.0	23.4	0.0	11.6	0.0	0.19	0.03
14	-0.2	0.0	23.4	0.0	11.6	0.0	0.19	0.03
15	-0.2	0.0	23.4	0.0	11.6	0.0	0.19	0.03
16	-0.2	0.0	23.4	0.0	11.6	0.0	0.19	0.03
17	-0.2	0.0	23.4	0.0	11.6	0.0	0.19	0.03
18	-0.2	0.0	23.4	0.0	11.6	0.0	0.19	0.03
19	-0.2	0.0	23.4	0.0	11.6	0.0	0.19	0.03
20	-0.2	0.0	23.4	0.0	11.6	0.0	0.19	0.03
21	-0.2	0.0	25.6	0.0	11.8	0.0	0.21	0.04
22	-0.2	0.0	25.6	0.0	11.8	0.0	0.21	0.04
23	-0.2	0.0	25.6	0.0	11.8	0.0	0.21	0.04
24	-0.2	0.0	25.6	0.0	11.8	0.0	0.21	0.04
25	-0.2	0.0	25.6	0.0	11.8	0.0	0.21	0.04
26	-0.2	0.0	25.6	0.0	11.8	0.0	0.21	0.04
27	-0.2	0.0	25.6	0.0	11.8	0.0	0.21	0.04
28	-0.2	0.0	25.6	0.0	11.8	0.0	0.21	0.04
29	-0.2	0.0	25.6	0.0	11.8	0.0	0.21	0.04
30	-0.2	0.0	25.6	0.0	11.8	0.0	0.21	0.04
31	-0.2	0.0	27.8	0.0	12.0	0.0	0.22	0.04
32	-0.2	0.0	27.8	0.0	12.0	0.0	0.22	0.04
33	-0.2	0.0	27.8	0.0	12.0	0.0	0.22	0.04
34	-0.2	0.0	27.8	0.0	12.0	0.0	0.22	0.04
35	-0.2	0.0	27.8	0.0	12.0	0.0	0.22	0.04
36	-0.2	0.0	27.8	0.0	12.0	0.0	0.22	0.04
37	-0.2	0.0	27.8	0.0	12.0	0.0	0.22	0.04
38	-0.2	0.0	27.8	0.0	12.0	0.0	0.22	0.04
39	-0.2	0.0	27.8	0.0	12.0	0.0	0.22	0.04
40	-0.2	0.0	27.8	0.0	12.0	0.0	0.22	0.04

LOAD CASE - 3

PILE	F1 K	F2 K	F3 K	M1 IN-K	M2 IN-K	M3 IN-K	ALF	CBF
1	0.1	0.0	60.6	0.0	-4.0	0.0	0.43	0.07
2	0.1	0.0	60.6	0.0	-4.0	0.0	0.43	0.07
3	0.1	0.0	60.6	0.0	-4.0	0.0	0.43	0.07
4	0.1	0.0	60.6	0.0	-4.0	0.0	0.43	0.07
5	0.1	0.0	60.6	0.0	-4.0	0.0	0.43	0.07
6	0.1	0.0	60.6	0.0	-4.0	0.0	0.43	0.07
7	0.1	0.0	60.6	0.0	-4.0	0.0	0.43	0.07
8	0.1	0.0	60.6	0.0	-4.0	0.0	0.43	0.07
9	0.1	0.0	60.6	0.0	-4.0	0.0	0.43	0.07
10	0.1	0.0	60.6	0.0	-4.0	0.0	0.43	0.07
11	-0.1	0.0	22.6	0.0	11.0	0.0	0.16	0.03
12	-0.1	0.0	22.6	0.0	11.0	0.0	0.16	0.03
13	-0.1	0.0	22.6	0.0	11.0	0.0	0.16	0.03
14	-0.1	0.0	22.6	0.0	11.0	0.0	0.16	0.03
15	-0.1	0.0	22.6	0.0	11.0	0.0	0.16	0.03
16	-0.1	0.0	22.6	0.0	11.0	0.0	0.16	0.03
17	-0.1	0.0	22.6	0.0	11.0	0.0	0.16	0.03
18	-0.1	0.0	22.6	0.0	11.0	0.0	0.16	0.03
19	-0.1	0.0	22.6	0.0	11.0	0.0	0.16	0.03
20	-0.1	0.0	22.6	0.0	11.0	0.0	0.16	0.03
21	-0.2	0.0	27.9	0.0	11.4	0.0	0.20	0.03
22	-0.2	0.0	27.9	0.0	11.4	0.0	0.20	0.03
23	-0.2	0.0	27.9	0.0	11.4	0.0	0.20	0.03
24	-0.2	0.0	27.9	0.0	11.4	0.0	0.20	0.03
25	-0.2	0.0	27.9	0.0	11.4	0.0	0.20	0.03
26	-0.2	0.0	27.9	0.0	11.4	0.0	0.20	0.03
27	-0.2	0.0	27.9	0.0	11.4	0.0	0.20	0.03
28	-0.2	0.0	27.9	0.0	11.4	0.0	0.20	0.03
29	-0.2	0.0	27.9	0.0	11.4	0.0	0.20	0.03
30	-0.2	0.0	27.9	0.0	11.4	0.0	0.20	0.03
31	-0.2	0.0	33.2	0.0	11.8	0.0	0.23	0.04
32	-0.2	0.0	33.2	0.0	11.8	0.0	0.23	0.04
33	-0.2	0.0	33.2	0.0	11.8	0.0	0.23	0.04
34	-0.2	0.0	33.2	0.0	11.8	0.0	0.23	0.04
35	-0.2	0.0	33.2	0.0	11.8	0.0	0.23	0.04
36	-0.2	0.0	33.2	0.0	11.8	0.0	0.23	0.04
37	-0.2	0.0	33.2	0.0	11.8	0.0	0.23	0.04
38	-0.2	0.0	33.2	0.0	11.8	0.0	0.23	0.04
39	-0.2	0.0	33.2	0.0	11.8	0.0	0.23	0.04
40	-0.2	0.0	33.2	0.0	11.8	0.0	0.23	0.04

LOAD CASE - 4

PILE	F1 K	F2 K	F3 K	M1 IN-K	M2 IN-K	M3 IN-K	ALF	CBF

1	-0.1	0.0	16.7	0.0	7.0	0.0	0.16	0.03
2	-0.1	0.0	16.7	0.0	7.0	0.0	0.16	0.03
3	-0.1	0.0	16.7	0.0	7.0	0.0	0.16	0.03
4	-0.1	0.0	16.7	0.0	7.0	0.0	0.16	0.03
5	-0.1	0.0	16.7	0.0	7.0	0.0	0.16	0.03
6	-0.1	0.0	16.7	0.0	7.0	0.0	0.16	0.03
7	-0.1	0.0	16.7	0.0	7.0	0.0	0.16	0.03
8	-0.1	0.0	16.7	0.0	7.0	0.0	0.16	0.03
9	-0.1	0.0	16.7	0.0	7.0	0.0	0.16	0.03
10	-0.1	0.0	16.7	0.0	7.0	0.0	0.16	0.03
11	0.0	0.0	35.8	0.0	-2.6	0.0	0.33	0.06
12	0.0	0.0	35.8	0.0	-2.6	0.0	0.33	0.06
13	0.0	0.0	35.8	0.0	-2.6	0.0	0.33	0.06
14	0.0	0.0	35.8	0.0	-2.6	0.0	0.33	0.06
15	0.0	0.0	35.8	0.0	-2.6	0.0	0.33	0.06
16	0.0	0.0	35.8	0.0	-2.6	0.0	0.33	0.06
17	0.0	0.0	35.8	0.0	-2.6	0.0	0.33	0.06
18	0.0	0.0	35.8	0.0	-2.6	0.0	0.33	0.06
19	0.0	0.0	35.8	0.0	-2.6	0.0	0.33	0.06
20	0.0	0.0	35.8	0.0	-2.6	0.0	0.33	0.06
21	0.0	0.0	28.1	0.0	-3.3	0.0	0.26	0.04
22	0.0	0.0	28.1	0.0	-3.3	0.0	0.26	0.04
23	0.0	0.0	28.1	0.0	-3.3	0.0	0.26	0.04
24	0.0	0.0	28.1	0.0	-3.3	0.0	0.26	0.04
25	0.0	0.0	28.1	0.0	-3.3	0.0	0.26	0.04
26	0.0	0.0	28.1	0.0	-3.3	0.0	0.26	0.04
27	0.0	0.0	28.1	0.0	-3.3	0.0	0.26	0.04
28	0.0	0.0	28.1	0.0	-3.3	0.0	0.26	0.04
29	0.0	0.0	28.1	0.0	-3.3	0.0	0.26	0.04
30	0.0	0.0	28.1	0.0	-3.3	0.0	0.26	0.04
31	0.1	0.0	20.5	0.0	-3.9	0.0	0.19	0.03
32	0.1	0.0	20.5	0.0	-3.9	0.0	0.19	0.03
33	0.1	0.0	20.5	0.0	-3.9	0.0	0.19	0.03
34	0.1	0.0	20.5	0.0	-3.9	0.0	0.19	0.03
35	0.1	0.0	20.5	0.0	-3.9	0.0	0.19	0.03
36	0.1	0.0	20.5	0.0	-3.9	0.0	0.19	0.03
37	0.1	0.0	20.5	0.0	-3.9	0.0	0.19	0.03
38	0.1	0.0	20.5	0.0	-3.9	0.0	0.19	0.03
39	0.1	0.0	20.5	0.0	-3.9	0.0	0.19	0.03
40	0.1	0.0	20.5	0.0	-3.9	0.0	0.19	0.03

LOAD CASE - 5

PILE	F1 K	F2 K	F3 K	M1 IN-K	M2 IN-K	M3 IN-K	ALF	CBF
1	-0.1	0.0	8.7	0.0	9.6	0.0	0.08	0.02
2	-0.1	0.0	8.7	0.0	9.6	0.0	0.08	0.02

3	-0.1	0.0	8.7	0.0	9.6	0.0	0.08	0.02
4	-0.1	0.0	8.7	0.0	9.6	0.0	0.08	0.02
5	-0.1	0.0	8.7	0.0	9.6	0.0	0.08	0.02
6	-0.1	0.0	8.7	0.0	9.6	0.0	0.08	0.02
7	-0.1	0.0	8.7	0.0	9.6	0.0	0.08	0.02
8	-0.1	0.0	8.7	0.0	9.6	0.0	0.08	0.02
9	-0.1	0.0	8.7	0.0	9.6	0.0	0.08	0.02
10	-0.1	0.0	8.7	0.0	9.6	0.0	0.08	0.02
11	0.1	0.0	38.3	0.0	-5.7	0.0	0.36	0.06
12	0.1	0.0	38.3	0.0	-5.7	0.0	0.36	0.06
13	0.1	0.0	38.3	0.0	-5.7	0.0	0.36	0.06
14	0.1	0.0	38.3	0.0	-5.7	0.0	0.36	0.06
15	0.1	0.0	38.3	0.0	-5.7	0.0	0.36	0.06
16	0.1	0.0	38.3	0.0	-5.7	0.0	0.36	0.06
17	0.1	0.0	38.3	0.0	-5.7	0.0	0.36	0.06
18	0.1	0.0	38.3	0.0	-5.7	0.0	0.36	0.06
19	0.1	0.0	38.3	0.0	-5.7	0.0	0.36	0.06
20	0.1	0.0	38.3	0.0	-5.7	0.0	0.36	0.06
21	0.1	0.0	25.4	0.0	-6.8	0.0	0.24	0.04
22	0.1	0.0	25.4	0.0	-6.8	0.0	0.24	0.04
23	0.1	0.0	25.4	0.0	-6.8	0.0	0.24	0.04
24	0.1	0.0	25.4	0.0	-6.8	0.0	0.24	0.04
25	0.1	0.0	25.4	0.0	-6.8	0.0	0.24	0.04
26	0.1	0.0	25.4	0.0	-6.8	0.0	0.24	0.04
27	0.1	0.0	25.4	0.0	-6.8	0.0	0.24	0.04
28	0.1	0.0	25.4	0.0	-6.8	0.0	0.24	0.04
29	0.1	0.0	25.4	0.0	-6.8	0.0	0.24	0.04
30	0.1	0.0	25.4	0.0	-6.8	0.0	0.24	0.04
31	0.1	0.0	12.4	0.0	-7.9	0.0	0.12	0.02
32	0.1	0.0	12.4	0.0	-7.9	0.0	0.12	0.02
33	0.1	0.0	12.4	0.0	-7.9	0.0	0.12	0.02
34	0.1	0.0	12.4	0.0	-7.9	0.0	0.12	0.02
35	0.1	0.0	12.4	0.0	-7.9	0.0	0.12	0.02
36	0.1	0.0	12.4	0.0	-7.9	0.0	0.12	0.02
37	0.1	0.0	12.4	0.0	-7.9	0.0	0.12	0.02
38	0.1	0.0	12.4	0.0	-7.9	0.0	0.12	0.02
39	0.1	0.0	12.4	0.0	-7.9	0.0	0.12	0.02
40	0.1	0.0	12.4	0.0	-7.9	0.0	0.12	0.02

LOAD CASE - 6

PILE	F1 K	F2 K	F3 K	M1 IN-K	M2 IN-K	M3 IN-K	ALF	CBF
1	-0.1	0.0	10.9	0.0	5.1	0.0	0.08	0.01
2	-0.1	0.0	10.9	0.0	5.1	0.0	0.08	0.01
3	-0.1	0.0	10.9	0.0	5.1	0.0	0.08	0.01
4	-0.1	0.0	10.9	0.0	5.1	0.0	0.08	0.01
5	-0.1	0.0	10.9	0.0	5.1	0.0	0.08	0.01

6	-0.1	0.0	10.9	0.0	5.1	0.0	0.08	0.01
7	-0.1	0.0	10.9	0.0	5.1	0.0	0.08	0.01
8	-0.1	0.0	10.9	0.0	5.1	0.0	0.08	0.01
9	-0.1	0.0	10.9	0.0	5.1	0.0	0.08	0.01
10	-0.1	0.0	10.9	0.0	5.1	0.0	0.08	0.01
11	0.0	0.0	30.4	0.0	-1.6	0.0	0.21	0.04
12	0.0	0.0	30.4	0.0	-1.6	0.0	0.21	0.04
13	0.0	0.0	30.4	0.0	-1.6	0.0	0.21	0.04
14	0.0	0.0	30.4	0.0	-1.6	0.0	0.21	0.04
15	0.0	0.0	30.4	0.0	-1.6	0.0	0.21	0.04
16	0.0	0.0	30.4	0.0	-1.6	0.0	0.21	0.04
17	0.0	0.0	30.4	0.0	-1.6	0.0	0.21	0.04
18	0.0	0.0	30.4	0.0	-1.6	0.0	0.21	0.04
19	0.0	0.0	30.4	0.0	-1.6	0.0	0.21	0.04
20	0.0	0.0	30.4	0.0	-1.6	0.0	0.21	0.04
21	0.0	0.0	30.1	0.0	-1.7	0.0	0.21	0.04
22	0.0	0.0	30.1	0.0	-1.7	0.0	0.21	0.04
23	0.0	0.0	30.1	0.0	-1.7	0.0	0.21	0.04
24	0.0	0.0	30.1	0.0	-1.7	0.0	0.21	0.04
25	0.0	0.0	30.1	0.0	-1.7	0.0	0.21	0.04
26	0.0	0.0	30.1	0.0	-1.7	0.0	0.21	0.04
27	0.0	0.0	30.1	0.0	-1.7	0.0	0.21	0.04
28	0.0	0.0	30.1	0.0	-1.7	0.0	0.21	0.04
29	0.0	0.0	30.1	0.0	-1.7	0.0	0.21	0.04
30	0.0	0.0	30.1	0.0	-1.7	0.0	0.21	0.04
31	0.0	0.0	29.7	0.0	-1.7	0.0	0.21	0.03
32	0.0	0.0	29.7	0.0	-1.7	0.0	0.21	0.03
33	0.0	0.0	29.7	0.0	-1.7	0.0	0.21	0.03
34	0.0	0.0	29.7	0.0	-1.7	0.0	0.21	0.03
35	0.0	0.0	29.7	0.0	-1.7	0.0	0.21	0.03
36	0.0	0.0	29.7	0.0	-1.7	0.0	0.21	0.03
37	0.0	0.0	29.7	0.0	-1.7	0.0	0.21	0.03
38	0.0	0.0	29.7	0.0	-1.7	0.0	0.21	0.03
39	0.0	0.0	29.7	0.0	-1.7	0.0	0.21	0.03
40	0.0	0.0	29.7	0.0	-1.7	0.0	0.21	0.03

LOAD CASE - 7

PILE	F1 K	F2 K	F3 K	M1 IN-K	M2 IN-K	M3 IN-K	ALF	CBF
1	-0.1	0.0	2.9	0.0	7.7	0.0	0.02	0.01
2	-0.1	0.0	2.9	0.0	7.7	0.0	0.02	0.01
3	-0.1	0.0	2.9	0.0	7.7	0.0	0.02	0.01
4	-0.1	0.0	2.9	0.0	7.7	0.0	0.02	0.01
5	-0.1	0.0	2.9	0.0	7.7	0.0	0.02	0.01
6	-0.1	0.0	2.9	0.0	7.7	0.0	0.02	0.01
7	-0.1	0.0	2.9	0.0	7.7	0.0	0.02	0.01
8	-0.1	0.0	2.9	0.0	7.7	0.0	0.02	0.01

9	-0.1	0.0	2.9	0.0	7.7	0.0	0.02	0.01
10	-0.1	0.0	2.9	0.0	7.7	0.0	0.02	0.01
11	0.1	0.0	33.0	0.0	-4.7	0.0	0.23	0.04
12	0.1	0.0	33.0	0.0	-4.7	0.0	0.23	0.04
13	0.1	0.0	33.0	0.0	-4.7	0.0	0.23	0.04
14	0.1	0.0	33.0	0.0	-4.7	0.0	0.23	0.04
15	0.1	0.0	33.0	0.0	-4.7	0.0	0.23	0.04
16	0.1	0.0	33.0	0.0	-4.7	0.0	0.23	0.04
17	0.1	0.0	33.0	0.0	-4.7	0.0	0.23	0.04
18	0.1	0.0	33.0	0.0	-4.7	0.0	0.23	0.04
19	0.1	0.0	33.0	0.0	-4.7	0.0	0.23	0.04
20	0.1	0.0	33.0	0.0	-4.7	0.0	0.23	0.04
21	0.1	0.0	27.3	0.0	-5.2	0.0	0.19	0.03
22	0.1	0.0	27.3	0.0	-5.2	0.0	0.19	0.03
23	0.1	0.0	27.3	0.0	-5.2	0.0	0.19	0.03
24	0.1	0.0	27.3	0.0	-5.2	0.0	0.19	0.03
25	0.1	0.0	27.3	0.0	-5.2	0.0	0.19	0.03
26	0.1	0.0	27.3	0.0	-5.2	0.0	0.19	0.03
27	0.1	0.0	27.3	0.0	-5.2	0.0	0.19	0.03
28	0.1	0.0	27.3	0.0	-5.2	0.0	0.19	0.03
29	0.1	0.0	27.3	0.0	-5.2	0.0	0.19	0.03
30	0.1	0.0	27.3	0.0	-5.2	0.0	0.19	0.03
31	0.1	0.0	21.6	0.0	-5.7	0.0	0.15	0.03
32	0.1	0.0	21.6	0.0	-5.7	0.0	0.15	0.03
33	0.1	0.0	21.6	0.0	-5.7	0.0	0.15	0.03
34	0.1	0.0	21.6	0.0	-5.7	0.0	0.15	0.03
35	0.1	0.0	21.6	0.0	-5.7	0.0	0.15	0.03
36	0.1	0.0	21.6	0.0	-5.7	0.0	0.15	0.03
37	0.1	0.0	21.6	0.0	-5.7	0.0	0.15	0.03
38	0.1	0.0	21.6	0.0	-5.7	0.0	0.15	0.03
39	0.1	0.0	21.6	0.0	-5.7	0.0	0.15	0.03
40	0.1	0.0	21.6	0.0	-5.7	0.0	0.15	0.03

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PILE FORCES IN GLOBAL GEOMETRY

LOAD CASE - 1

PILE	PX K	PY K	PZ K	MX IN-K	MY IN-K	MZ IN-K
1	0.0	-26.0	52.0	0.0	0.0	0.0
2	0.0	-26.0	52.0	0.0	0.0	0.0
3	0.0	-26.0	52.0	0.0	0.0	0.0
4	0.0	-26.0	52.0	0.0	0.0	0.0
5	0.0	-26.0	52.0	0.0	0.0	0.0

6	0.0	-26.0	52.0	0.0	0.0	0.0
7	0.0	-26.0	52.0	0.0	0.0	0.0
8	0.0	-26.0	52.0	0.0	0.0	0.0
9	0.0	-26.0	52.0	0.0	0.0	0.0
10	0.0	-26.0	52.0	0.0	0.0	0.0
11	0.0	11.8	23.8	0.0	0.0	0.0
12	0.0	11.8	23.8	0.0	0.0	0.0
13	0.0	11.8	23.8	0.0	0.0	0.0
14	0.0	11.8	23.8	0.0	0.0	0.0
15	0.0	11.8	23.8	0.0	0.0	0.0
16	0.0	11.8	23.8	0.0	0.0	0.0
17	0.0	11.8	23.8	0.0	0.0	0.0
18	0.0	11.8	23.8	0.0	0.0	0.0
19	0.0	11.8	23.8	0.0	0.0	0.0
20	0.0	11.8	23.8	0.0	0.0	0.0
21	0.0	9.9	20.1	0.0	0.0	0.0
22	0.0	9.9	20.1	0.0	0.0	0.0
23	0.0	9.9	20.1	0.0	0.0	0.0
24	0.0	9.9	20.1	0.0	0.0	0.0
25	0.0	9.9	20.1	0.0	0.0	0.0
26	0.0	9.9	20.1	0.0	0.0	0.0
27	0.0	9.9	20.1	0.0	0.0	0.0
28	0.0	9.9	20.1	0.0	0.0	0.0
29	0.0	9.9	20.1	0.0	0.0	0.0
30	0.0	9.9	20.1	0.0	0.0	0.0
31	0.0	8.1	16.4	0.0	0.0	0.0
32	0.0	8.1	16.4	0.0	0.0	0.0
33	0.0	8.1	16.4	0.0	0.0	0.0
34	0.0	8.1	16.4	0.0	0.0	0.0
35	0.0	8.1	16.4	0.0	0.0	0.0
36	0.0	8.1	16.4	0.0	0.0	0.0
37	0.0	8.1	16.4	0.0	0.0	0.0
38	0.0	8.1	16.4	0.0	0.0	0.0
39	0.0	8.1	16.4	0.0	0.0	0.0
40	0.0	8.1	16.4	0.0	0.0	0.0

LOAD CASE - 2

PILE	PX K	PY K	PZ K	MX IN-K	MY IN-K	MZ IN-K
1	0.0	-30.2	60.2	0.0	0.0	0.0
2	0.0	-30.2	60.2	0.0	0.0	0.0
3	0.0	-30.2	60.2	0.0	0.0	0.0
4	0.0	-30.2	60.2	0.0	0.0	0.0
5	0.0	-30.2	60.2	0.0	0.0	0.0
6	0.0	-30.2	60.2	0.0	0.0	0.0
7	0.0	-30.2	60.2	0.0	0.0	0.0
8	0.0	-30.2	60.2	0.0	0.0	0.0

9	0.0	-30.2	60.2	0.0	0.0	0.0
10	0.0	-30.2	60.2	0.0	0.0	0.0
11	0.0	10.3	21.0	0.0	0.0	0.0
12	0.0	10.3	21.0	0.0	0.0	0.0
13	0.0	10.3	21.0	0.0	0.0	0.0
14	0.0	10.3	21.0	0.0	0.0	0.0
15	0.0	10.3	21.0	0.0	0.0	0.0
16	0.0	10.3	21.0	0.0	0.0	0.0
17	0.0	10.3	21.0	0.0	0.0	0.0
18	0.0	10.3	21.0	0.0	0.0	0.0
19	0.0	10.3	21.0	0.0	0.0	0.0
20	0.0	10.3	21.0	0.0	0.0	0.0
21	0.0	11.3	23.0	0.0	0.0	0.0
22	0.0	11.3	23.0	0.0	0.0	0.0
23	0.0	11.3	23.0	0.0	0.0	0.0
24	0.0	11.3	23.0	0.0	0.0	0.0
25	0.0	11.3	23.0	0.0	0.0	0.0
26	0.0	11.3	23.0	0.0	0.0	0.0
27	0.0	11.3	23.0	0.0	0.0	0.0
28	0.0	11.3	23.0	0.0	0.0	0.0
29	0.0	11.3	23.0	0.0	0.0	0.0
30	0.0	11.3	23.0	0.0	0.0	0.0
31	0.0	12.3	25.0	0.0	0.0	0.0
32	0.0	12.3	25.0	0.0	0.0	0.0
33	0.0	12.3	25.0	0.0	0.0	0.0
34	0.0	12.3	25.0	0.0	0.0	0.0
35	0.0	12.3	25.0	0.0	0.0	0.0
36	0.0	12.3	25.0	0.0	0.0	0.0
37	0.0	12.3	25.0	0.0	0.0	0.0
38	0.0	12.3	25.0	0.0	0.0	0.0
39	0.0	12.3	25.0	0.0	0.0	0.0
40	0.0	12.3	25.0	0.0	0.0	0.0

LOAD CASE - 3

PILE	PX K	PY K	PZ K	MX IN-K	MY IN-K	MZ IN-K
1	0.0	-27.1	54.1	0.0	0.0	0.0
2	0.0	-27.1	54.1	0.0	0.0	0.0
3	0.0	-27.1	54.1	0.0	0.0	0.0
4	0.0	-27.1	54.1	0.0	0.0	0.0
5	0.0	-27.1	54.1	0.0	0.0	0.0
6	0.0	-27.1	54.1	0.0	0.0	0.0
7	0.0	-27.1	54.1	0.0	0.0	0.0
8	0.0	-27.1	54.1	0.0	0.0	0.0
9	0.0	-27.1	54.1	0.0	0.0	0.0
10	0.0	-27.1	54.1	0.0	0.0	0.0
11	0.0	10.0	20.3	0.0	0.0	0.0

12	0.0	10.0	20.3	0.0	0.0	0.0
13	0.0	10.0	20.3	0.0	0.0	0.0
14	0.0	10.0	20.3	0.0	0.0	0.0
15	0.0	10.0	20.3	0.0	0.0	0.0
16	0.0	10.0	20.3	0.0	0.0	0.0
17	0.0	10.0	20.3	0.0	0.0	0.0
18	0.0	10.0	20.3	0.0	0.0	0.0
19	0.0	10.0	20.3	0.0	0.0	0.0
20	0.0	10.0	20.3	0.0	0.0	0.0
21	0.0	12.3	25.0	0.0	0.0	0.0
22	0.0	12.3	25.0	0.0	0.0	0.0
23	0.0	12.3	25.0	0.0	0.0	0.0
24	0.0	12.3	25.0	0.0	0.0	0.0
25	0.0	12.3	25.0	0.0	0.0	0.0
26	0.0	12.3	25.0	0.0	0.0	0.0
27	0.0	12.3	25.0	0.0	0.0	0.0
28	0.0	12.3	25.0	0.0	0.0	0.0
29	0.0	12.3	25.0	0.0	0.0	0.0
30	0.0	12.3	25.0	0.0	0.0	0.0
31	0.0	14.7	29.8	0.0	0.0	0.0
32	0.0	14.7	29.8	0.0	0.0	0.0
33	0.0	14.7	29.8	0.0	0.0	0.0
34	0.0	14.7	29.8	0.0	0.0	0.0
35	0.0	14.7	29.8	0.0	0.0	0.0
36	0.0	14.7	29.8	0.0	0.0	0.0
37	0.0	14.7	29.8	0.0	0.0	0.0
38	0.0	14.7	29.8	0.0	0.0	0.0
39	0.0	14.7	29.8	0.0	0.0	0.0
40	0.0	14.7	29.8	0.0	0.0	0.0

LOAD CASE - 4

PILE	PX K	PY K	PZ K	MX IN-K	MY IN-K	MZ IN-K
1	0.0	-7.4	14.9	0.0	0.0	0.0
2	0.0	-7.4	14.9	0.0	0.0	0.0
3	0.0	-7.4	14.9	0.0	0.0	0.0
4	0.0	-7.4	14.9	0.0	0.0	0.0
5	0.0	-7.4	14.9	0.0	0.0	0.0
6	0.0	-7.4	14.9	0.0	0.0	0.0
7	0.0	-7.4	14.9	0.0	0.0	0.0
8	0.0	-7.4	14.9	0.0	0.0	0.0
9	0.0	-7.4	14.9	0.0	0.0	0.0
10	0.0	-7.4	14.9	0.0	0.0	0.0
11	0.0	16.0	32.0	0.0	0.0	0.0
12	0.0	16.0	32.0	0.0	0.0	0.0
13	0.0	16.0	32.0	0.0	0.0	0.0
14	0.0	16.0	32.0	0.0	0.0	0.0

15	0.0	16.0	32.0	0.0	0.0	0.0
16	0.0	16.0	32.0	0.0	0.0	0.0
17	0.0	16.0	32.0	0.0	0.0	0.0
18	0.0	16.0	32.0	0.0	0.0	0.0
19	0.0	16.0	32.0	0.0	0.0	0.0
20	0.0	16.0	32.0	0.0	0.0	0.0
21	0.0	12.6	25.2	0.0	0.0	0.0
22	0.0	12.6	25.2	0.0	0.0	0.0
23	0.0	12.6	25.2	0.0	0.0	0.0
24	0.0	12.6	25.2	0.0	0.0	0.0
25	0.0	12.6	25.2	0.0	0.0	0.0
26	0.0	12.6	25.2	0.0	0.0	0.0
27	0.0	12.6	25.2	0.0	0.0	0.0
28	0.0	12.6	25.2	0.0	0.0	0.0
29	0.0	12.6	25.2	0.0	0.0	0.0
30	0.0	12.6	25.2	0.0	0.0	0.0
31	0.0	9.2	18.3	0.0	0.0	0.0
32	0.0	9.2	18.3	0.0	0.0	0.0
33	0.0	9.2	18.3	0.0	0.0	0.0
34	0.0	9.2	18.3	0.0	0.0	0.0
35	0.0	9.2	18.3	0.0	0.0	0.0
36	0.0	9.2	18.3	0.0	0.0	0.0
37	0.0	9.2	18.3	0.0	0.0	0.0
38	0.0	9.2	18.3	0.0	0.0	0.0
39	0.0	9.2	18.3	0.0	0.0	0.0
40	0.0	9.2	18.3	0.0	0.0	0.0

LOAD CASE - 5

PILE	PX K	PY K	PZ K	MX IN-K	MY IN-K	MZ IN-K
1	0.0	-3.8	7.8	0.0	0.0	0.0
2	0.0	-3.8	7.8	0.0	0.0	0.0
3	0.0	-3.8	7.8	0.0	0.0	0.0
4	0.0	-3.8	7.8	0.0	0.0	0.0
5	0.0	-3.8	7.8	0.0	0.0	0.0
6	0.0	-3.8	7.8	0.0	0.0	0.0
7	0.0	-3.8	7.8	0.0	0.0	0.0
8	0.0	-3.8	7.8	0.0	0.0	0.0
9	0.0	-3.8	7.8	0.0	0.0	0.0
10	0.0	-3.8	7.8	0.0	0.0	0.0
11	0.0	17.2	34.2	0.0	0.0	0.0
12	0.0	17.2	34.2	0.0	0.0	0.0
13	0.0	17.2	34.2	0.0	0.0	0.0
14	0.0	17.2	34.2	0.0	0.0	0.0
15	0.0	17.2	34.2	0.0	0.0	0.0
16	0.0	17.2	34.2	0.0	0.0	0.0
17	0.0	17.2	34.2	0.0	0.0	0.0

18	0.0	17.2	34.2	0.0	0.0	0.0
19	0.0	17.2	34.2	0.0	0.0	0.0
20	0.0	17.2	34.2	0.0	0.0	0.0
21	0.0	11.4	22.7	0.0	0.0	0.0
22	0.0	11.4	22.7	0.0	0.0	0.0
23	0.0	11.4	22.7	0.0	0.0	0.0
24	0.0	11.4	22.7	0.0	0.0	0.0
25	0.0	11.4	22.7	0.0	0.0	0.0
26	0.0	11.4	22.7	0.0	0.0	0.0
27	0.0	11.4	22.7	0.0	0.0	0.0
28	0.0	11.4	22.7	0.0	0.0	0.0
29	0.0	11.4	22.7	0.0	0.0	0.0
30	0.0	11.4	22.7	0.0	0.0	0.0
31	0.0	5.6	11.1	0.0	0.0	0.0
32	0.0	5.6	11.1	0.0	0.0	0.0
33	0.0	5.6	11.1	0.0	0.0	0.0
34	0.0	5.6	11.1	0.0	0.0	0.0
35	0.0	5.6	11.1	0.0	0.0	0.0
36	0.0	5.6	11.1	0.0	0.0	0.0
37	0.0	5.6	11.1	0.0	0.0	0.0
38	0.0	5.6	11.1	0.0	0.0	0.0
39	0.0	5.6	11.1	0.0	0.0	0.0
40	0.0	5.6	11.1	0.0	0.0	0.0

LOAD CASE - 6

PILE	PX K	PY K	PZ K	MX IN-K	MY IN-K	MZ IN-K
1	0.0	-4.8	9.7	0.0	0.0	0.0
2	0.0	-4.8	9.7	0.0	0.0	0.0
3	0.0	-4.8	9.7	0.0	0.0	0.0
4	0.0	-4.8	9.7	0.0	0.0	0.0
5	0.0	-4.8	9.7	0.0	0.0	0.0
6	0.0	-4.8	9.7	0.0	0.0	0.0
7	0.0	-4.8	9.7	0.0	0.0	0.0
8	0.0	-4.8	9.7	0.0	0.0	0.0
9	0.0	-4.8	9.7	0.0	0.0	0.0
10	0.0	-4.8	9.7	0.0	0.0	0.0
11	0.0	13.6	27.2	0.0	0.0	0.0
12	0.0	13.6	27.2	0.0	0.0	0.0
13	0.0	13.6	27.2	0.0	0.0	0.0
14	0.0	13.6	27.2	0.0	0.0	0.0
15	0.0	13.6	27.2	0.0	0.0	0.0
16	0.0	13.6	27.2	0.0	0.0	0.0
17	0.0	13.6	27.2	0.0	0.0	0.0
18	0.0	13.6	27.2	0.0	0.0	0.0
19	0.0	13.6	27.2	0.0	0.0	0.0
20	0.0	13.6	27.2	0.0	0.0	0.0

21	0.0	13.5	26.9	0.0	0.0	0.0
22	0.0	13.5	26.9	0.0	0.0	0.0
23	0.0	13.5	26.9	0.0	0.0	0.0
24	0.0	13.5	26.9	0.0	0.0	0.0
25	0.0	13.5	26.9	0.0	0.0	0.0
26	0.0	13.5	26.9	0.0	0.0	0.0
27	0.0	13.5	26.9	0.0	0.0	0.0
28	0.0	13.5	26.9	0.0	0.0	0.0
29	0.0	13.5	26.9	0.0	0.0	0.0
30	0.0	13.5	26.9	0.0	0.0	0.0
31	0.0	13.3	26.5	0.0	0.0	0.0
32	0.0	13.3	26.5	0.0	0.0	0.0
33	0.0	13.3	26.5	0.0	0.0	0.0
34	0.0	13.3	26.5	0.0	0.0	0.0
35	0.0	13.3	26.5	0.0	0.0	0.0
36	0.0	13.3	26.5	0.0	0.0	0.0
37	0.0	13.3	26.5	0.0	0.0	0.0
38	0.0	13.3	26.5	0.0	0.0	0.0
39	0.0	13.3	26.5	0.0	0.0	0.0
40	0.0	13.3	26.5	0.0	0.0	0.0

LOAD CASE - 7

PILE	PX K	PY K	PZ K	MX IN-K	MY IN-K	MZ IN-K
1	0.0	-1.2	2.6	0.0	0.0	0.0
2	0.0	-1.2	2.6	0.0	0.0	0.0
3	0.0	-1.2	2.6	0.0	0.0	0.0
4	0.0	-1.2	2.6	0.0	0.0	0.0
5	0.0	-1.2	2.6	0.0	0.0	0.0
6	0.0	-1.2	2.6	0.0	0.0	0.0
7	0.0	-1.2	2.6	0.0	0.0	0.0
8	0.0	-1.2	2.6	0.0	0.0	0.0
9	0.0	-1.2	2.6	0.0	0.0	0.0
10	0.0	-1.2	2.6	0.0	0.0	0.0
11	0.0	14.8	29.5	0.0	0.0	0.0
12	0.0	14.8	29.5	0.0	0.0	0.0
13	0.0	14.8	29.5	0.0	0.0	0.0
14	0.0	14.8	29.5	0.0	0.0	0.0
15	0.0	14.8	29.5	0.0	0.0	0.0
16	0.0	14.8	29.5	0.0	0.0	0.0
17	0.0	14.8	29.5	0.0	0.0	0.0
18	0.0	14.8	29.5	0.0	0.0	0.0
19	0.0	14.8	29.5	0.0	0.0	0.0
20	0.0	14.8	29.5	0.0	0.0	0.0
21	0.0	12.3	24.4	0.0	0.0	0.0
22	0.0	12.3	24.4	0.0	0.0	0.0
23	0.0	12.3	24.4	0.0	0.0	0.0

24	0.0	12.3	24.4	0.0	0.0	0.0
25	0.0	12.3	24.4	0.0	0.0	0.0
26	0.0	12.3	24.4	0.0	0.0	0.0
27	0.0	12.3	24.4	0.0	0.0	0.0
28	0.0	12.3	24.4	0.0	0.0	0.0
29	0.0	12.3	24.4	0.0	0.0	0.0
30	0.0	12.3	24.4	0.0	0.0	0.0
31	0.0	9.7	19.3	0.0	0.0	0.0
32	0.0	9.7	19.3	0.0	0.0	0.0
33	0.0	9.7	19.3	0.0	0.0	0.0
34	0.0	9.7	19.3	0.0	0.0	0.0
35	0.0	9.7	19.3	0.0	0.0	0.0
36	0.0	9.7	19.3	0.0	0.0	0.0
37	0.0	9.7	19.3	0.0	0.0	0.0
38	0.0	9.7	19.3	0.0	0.0	0.0
39	0.0	9.7	19.3	0.0	0.0	0.0
40	0.0	9.7	19.3	0.0	0.0	0.0

NO FILES WERE GENERATED DURING THIS RUN.

```
10  Sunset T3 Twall Pinned
20  PIL  1  -22.5   2.5   0
30  BAT   2   1
40  ANG   270   1
50  PIL  2  -17.5   2.5   0
60  BAT   2   2
70  ANG   270   2
80  PIL  3  -12.5   2.5   0
90  BAT   2   3
100  ANG   270   3
110  PIL  4  -7.5   2.5   0
120  BAT   2   4
130  ANG   270   4
140  PIL  5  -2.5   2.5   0
150  BAT   2   5
160  ANG   270   5
170  PIL  6   2.5   2.5   0
180  BAT   2   6
190  ANG   270   6
200  PIL  7   7.5   2.5   0
210  BAT   2   7
220  ANG   270   7
230  PIL  8   12.5   2.5   0
240  BAT   2   8
250  ANG   270   8
260  PIL  9   17.5   2.5   0
270  BAT   2   9
280  ANG   270   9
290  PIL  10   22.5   2.5   0
300  BAT   2   10
310  ANG   270   10
320  PIL  11  -22.5   7.5   0
330  BAT   2   11
340  ANG   90   11
350  PIL  12  -17.5   7.5   0
360  BAT   2   12
370  ANG   90   12
380  PIL  13  -12.5   7.5   0
390  BAT   2   13
400  ANG   90   13
410  PIL  14  -7.5   7.5   0
420  BAT   2   14
430  ANG   90   14
440  PIL  15  -2.5   7.5   0
450  BAT   2   15
460  ANG   90   15
470  PIL  16   2.5   7.5   0
480  BAT   2   16
490  ANG   90   16
500  PIL  17   7.5   7.5   0
```

```
510  BAT   2   17
520  ANG   90   17
530  PIL  18   12.5   7.5   0
540  BAT   2   18
550  ANG   90   18
560  PIL  19   17.5   7.5   0
570  BAT   2   19
580  ANG   90   19
590  PIL  20   22.5   7.5   0
600  BAT   2   20
610  ANG   90   20
620  PIL  21  -22.5   12.5   0
630  BAT   2   21
640  ANG   90   21
650  PIL  22  -17.5   12.5   0
660  BAT   2   22
670  ANG   90   22
680  PIL  23  -12.5   12.5   0
690  BAT   2   23
700  ANG   90   23
710  PIL  24  -7.5   12.5   0
720  BAT   2   24
730  ANG   90   24
740  PIL  25  -2.5   12.5   0
750  BAT   2   25
760  ANG   90   25
770  PIL  26   2.5   12.5   0
780  BAT   2   26
790  ANG   90   26
800  PIL  27   7.5   12.5   0
810  BAT   2   27
820  ANG   90   27
830  PIL  28   12.5   12.5   0
840  BAT   2   28
850  ANG   90   28
860  PIL  29   17.5   12.5   0
870  BAT   2   29
880  ANG   90   29
890  PIL  30   22.5   12.5   0
900  BAT   2   30
910  ANG   90   30
920  PIL  31  -22.5   17.5   0
930  BAT   2   31
940  ANG   90   31
950  PIL  32  -17.5   17.5   0
960  BAT   2   32
970  ANG   90   32
980  PIL  33  -12.5   17.5   0
990  BAT   2   33
1000  ANG   90   33
```

```
1010  PIL  34  -7.5   17.5   0
1020  BAT   2   34
1030  ANG   90   34
1040  PIL  35  -2.5   17.5   0
1050  BAT   2   35
1060  ANG   90   35
1070  PIL  36   2.5   17.5   0
1080  BAT   2   36
1090  ANG   90   36
1100  PIL  37   7.5   17.5   0
1110  BAT   2   37
1120  ANG   90   37
1130  PIL  38   12.5   17.5   0
1140  BAT   2   38
1150  ANG   90   38
1160  PIL  39   17.5   17.5   0
1170  BAT   2   39
1180  ANG   90   39
1190  PIL  40   22.5   17.5   0
1200  BAT   2   40
1210  ANG   90   40
1220  PRO  29000  326  904  26.1  2  0  1 TO 40
1230  SOI ES 0.0345 L  69  0  1 TO 40
1240  RED  1  1  1
1250  ALL H 107  85  652  652  1107  3275  1 TO 40
1260  PIN  1 TO 40
1270  LOA  8  0  925  847  15859  0  0
1270  LOA  9  0  925  559  12732  0  0
1270  FOV  1.33  1.33  8
1270  FOV  1.33  1.33  9
1280  TOUT   1  2  3  4  5  6  7
1290  PFO ALL
1300  PLB ALL
```

CPGA - CASE PILE GROUP ANALYSIS PROGRAM
RUN DATE: 11-SEP-20 RUN TIME: 19:23:02

FOR PILES WITH UNSUPPORTED HEIGHT:
A. CPGA CANNOT CALCULATE PMAXMOM FOR NH TYPE SOIL
B. THE ALLOWABLE STRESS CHECKS, ASC AND AST, ARE
NOT FULLY DEVELOPED FOR UNSUPPORTED PILES.
WORK IS IN PROGRESS TO COMPLETE THIS ASPECT OF CPGA.

ELASTIC CENTER LOCATION IS NOT COMPUTED FOR 3-DIMENSIONAL PROBLEMS.

SUNSET T3 TWALL PINNED
DATA UNKNOWN - REJECTED.

THERE ARE 40 PILES AND
2 LOAD CASES IN THIS RUN.

ALL PILE COORDINATES ARE CONTAINED WITHIN A BOX

	X	Y	Z
WITH DIAGONAL COORDINATES = (	-22.50 ,	2.50 ,	0.00)
(	22.50 ,	17.50 ,	0.00)

****

PILE PROPERTIES AS INPUT

E	I1	I2	A	C33	B66
KSI	IN**4	IN**4	IN**2		
0.29000E+05	0.32600E+03	0.90400E+03	0.26100E+02	0.20000E+01	0.00000E+00

THESE PILE PROPERTIES APPLY TO THE FOLLOWING PILES -

ALL

****

SOIL DESCRIPTIONS AS INPUT

ES	ESOIL	LENGTH	L	LU
	K/IN**2		FT	FT

```
        0.34500E-01    L      0.69000E+02   0.00000E+00

 ESOIL(ORIGINAL)     RGROUP     RCYCLIC
   K/IN**2
  0.34500E-01       0.1000E+01 0.1000E+01

THIS SOIL DESCRIPTION APPLIES TO THE FOLLOWING PILES -

    ALL

*************************************************************************

         PILE STIFFNESSES AS CALCULATED FROM PROPERTIES


 0.40503E+01  0.00000E+00  0.00000E+00  0.00000E+00  0.00000E+00  0.00000E+00
 0.00000E+00  0.31387E+01  0.00000E+00  0.00000E+00  0.00000E+00  0.00000E+00
 0.00000E+00  0.00000E+00  0.18283E+04  0.00000E+00  0.00000E+00  0.00000E+00
 0.00000E+00  0.00000E+00  0.00000E+00  0.00000E+00  0.00000E+00  0.00000E+00
 0.00000E+00  0.00000E+00  0.00000E+00  0.00000E+00  0.00000E+00  0.00000E+00
 0.00000E+00  0.00000E+00  0.00000E+00  0.00000E+00  0.00000E+00  0.00000E+00


THIS MATRIX APPLIES TO THE FOLLOWING PILES -

   1


*************************************************************************

         PILE GEOMETRY AS INPUT AND/OR GENERATED

NUM        X          Y          Z      BATTER    ANGLE    LENGTH  FIXITY
          FT         FT         FT                          FT

  1     -22.50       2.50       0.00      2.00    270.00    69.00     P
  2     -17.50       2.50       0.00      2.00    270.00    69.00     P
  3     -12.50       2.50       0.00      2.00    270.00    69.00     P
  4      -7.50       2.50       0.00      2.00    270.00    69.00     P
  5      -2.50       2.50       0.00      2.00    270.00    69.00     P
  6       2.50       2.50       0.00      2.00    270.00    69.00     P
  7       7.50       2.50       0.00      2.00    270.00    69.00     P
  8      12.50       2.50       0.00      2.00    270.00    69.00     P
  9      17.50       2.50       0.00      2.00    270.00    69.00     P
 10      22.50       2.50       0.00      2.00    270.00    69.00     P
 11     -22.50       7.50       0.00      2.00     90.00    69.00     P
 12     -17.50       7.50       0.00      2.00     90.00    69.00     P
 13     -12.50       7.50       0.00      2.00     90.00    69.00     P
 14      -7.50       7.50       0.00      2.00     90.00    69.00     P
```

15	-2.50	7.50	0.00	2.00	90.00	69.00	P
16	2.50	7.50	0.00	2.00	90.00	69.00	P
17	7.50	7.50	0.00	2.00	90.00	69.00	P
18	12.50	7.50	0.00	2.00	90.00	69.00	P
19	17.50	7.50	0.00	2.00	90.00	69.00	P
20	22.50	7.50	0.00	2.00	90.00	69.00	P
21	-22.50	12.50	0.00	2.00	90.00	69.00	P
22	-17.50	12.50	0.00	2.00	90.00	69.00	P
23	-12.50	12.50	0.00	2.00	90.00	69.00	P
24	-7.50	12.50	0.00	2.00	90.00	69.00	P
25	-2.50	12.50	0.00	2.00	90.00	69.00	P
26	2.50	12.50	0.00	2.00	90.00	69.00	P
27	7.50	12.50	0.00	2.00	90.00	69.00	P
28	12.50	12.50	0.00	2.00	90.00	69.00	P
29	17.50	12.50	0.00	2.00	90.00	69.00	P
30	22.50	12.50	0.00	2.00	90.00	69.00	P
31	-22.50	17.50	0.00	2.00	90.00	69.00	P
32	-17.50	17.50	0.00	2.00	90.00	69.00	P
33	-12.50	17.50	0.00	2.00	90.00	69.00	P
34	-7.50	17.50	0.00	2.00	90.00	69.00	P
35	-2.50	17.50	0.00	2.00	90.00	69.00	P
36	2.50	17.50	0.00	2.00	90.00	69.00	P
37	7.50	17.50	0.00	2.00	90.00	69.00	P
38	12.50	17.50	0.00	2.00	90.00	69.00	P
39	17.50	17.50	0.00	2.00	90.00	69.00	P
40	22.50	17.50	0.00	2.00	90.00	69.00	P

						2760.00	

****

APPLIED LOADS

LOAD CASE	PX K	PY K	PZ K	MX FT-K	MY FT-K	MZ FT-K	OVERSTRESS COM	TEN
8	0.0	925.0	847.0	15859.0	0.0	0.0	1.33	1.33
9	0.0	925.0	559.0	12732.0	0.0	0.0	1.33	1.33

****

ORIGINAL PILE GROUP STIFFNESS MATRIX

0.12555E+03	0.26703E-03	-0.40658E-19	0.31964E-01	0.00000E+00	-0.15066E+05
0.26703E-03	0.14756E+05	0.14594E+05	0.30647E+07	-0.87311E-10	-0.24033E-01
-0.40658E-19	0.14594E+05	0.58537E+05	0.70244E+07	-0.11642E-09	-0.31964E-01
0.31964E-01	0.30647E+07	0.70244E+07	0.11063E+10	-0.29802E-07	-0.63927E+01
0.21684E-17	0.29104E-10	-0.17462E-09	0.29802E-07	0.17385E+10	-0.43343E+09

-0.15066E+05 -0.24033E-01 -0.31964E-01 -0.63927E+01 -0.43343E+09 0.44062E+09

40 PILES   2 LOAD CASES

LOAD CASE   8. NUMBER OF FAILURES =   0. NUMBER OF PILES IN TENSION = 10.

LOAD CASE   9. NUMBER OF FAILURES =   0. NUMBER OF PILES IN TENSION = 10.

****

PILE CAP DISPLACEMENTS

LOAD CASE	DX IN	DY IN	DZ IN	RX RAD	RY RAD	RZ RAD
8	-0.1369E-06	0.5948E-01	-0.5164E-02	0.4004E-04	-0.4064E-12	-0.1630E-11
9	-0.1504E-06	0.7843E-01	-0.2118E-02	-0.6571E-04	-0.6513E-12	-0.2612E-11

****

PILE FORCES IN LOCAL GEOMETRY

M1 & M2 NOT AT PILE HEAD FOR PINNED PILES
* INDICATES PILE FAILURE
# INDICATES CBF BASED ON MOMENTS DUE TO
(F3*EMIN) FOR CONCRETE PILES
B INDICATES BUCKLING CONTROLS

LOAD CASE -   8

PILE	F1 K	F2 K	F3 K	M1 IN-K	M2 IN-K	M3 IN-K	ALF	CBF
1	-0.2	0.0	-55.1	0.0	15.7	0.0	0.49	0.07
2	-0.2	0.0	-55.1	0.0	15.7	0.0	0.49	0.07
3	-0.2	0.0	-55.1	0.0	15.7	0.0	0.49	0.07
4	-0.2	0.0	-55.1	0.0	15.7	0.0	0.49	0.07
5	-0.2	0.0	-55.1	0.0	15.7	0.0	0.49	0.07
6	-0.2	0.0	-55.1	0.0	15.7	0.0	0.49	0.07
7	-0.2	0.0	-55.1	0.0	15.7	0.0	0.49	0.07
8	-0.2	0.0	-55.1	0.0	15.7	0.0	0.49	0.07
9	-0.2	0.0	-55.1	0.0	15.7	0.0	0.49	0.07
10	-0.2	0.0	-55.1	0.0	15.7	0.0	0.49	0.07

11	0.2	0.0	46.1	0.0	-16.5	0.0	0.32	0.06
12	0.2	0.0	46.1	0.0	-16.5	0.0	0.32	0.06
13	0.2	0.0	46.1	0.0	-16.5	0.0	0.32	0.06
14	0.2	0.0	46.1	0.0	-16.5	0.0	0.32	0.06
15	0.2	0.0	46.1	0.0	-16.5	0.0	0.32	0.06
16	0.2	0.0	46.1	0.0	-16.5	0.0	0.32	0.06
17	0.2	0.0	46.1	0.0	-16.5	0.0	0.32	0.06
18	0.2	0.0	46.1	0.0	-16.5	0.0	0.32	0.06
19	0.2	0.0	46.1	0.0	-16.5	0.0	0.32	0.06
20	0.2	0.0	46.1	0.0	-16.5	0.0	0.32	0.06
21	0.2	0.0	50.0	0.0	-16.2	0.0	0.35	0.06
22	0.2	0.0	50.0	0.0	-16.2	0.0	0.35	0.06
23	0.2	0.0	50.0	0.0	-16.2	0.0	0.35	0.06
24	0.2	0.0	50.0	0.0	-16.2	0.0	0.35	0.06
25	0.2	0.0	50.0	0.0	-16.2	0.0	0.35	0.06
26	0.2	0.0	50.0	0.0	-16.2	0.0	0.35	0.06
27	0.2	0.0	50.0	0.0	-16.2	0.0	0.35	0.06
28	0.2	0.0	50.0	0.0	-16.2	0.0	0.35	0.06
29	0.2	0.0	50.0	0.0	-16.2	0.0	0.35	0.06
30	0.2	0.0	50.0	0.0	-16.2	0.0	0.35	0.06
31	0.2	0.0	53.9	0.0	-15.8	0.0	0.38	0.07
32	0.2	0.0	53.9	0.0	-15.8	0.0	0.38	0.07
33	0.2	0.0	53.9	0.0	-15.8	0.0	0.38	0.07
34	0.2	0.0	53.9	0.0	-15.8	0.0	0.38	0.07
35	0.2	0.0	53.9	0.0	-15.8	0.0	0.38	0.07
36	0.2	0.0	53.9	0.0	-15.8	0.0	0.38	0.07
37	0.2	0.0	53.9	0.0	-15.8	0.0	0.38	0.07
38	0.2	0.0	53.9	0.0	-15.8	0.0	0.38	0.07
39	0.2	0.0	53.9	0.0	-15.8	0.0	0.38	0.07
40	0.2	0.0	53.9	0.0	-15.8	0.0	0.38	0.07

LOAD CASE - 9

PILE	F1 K	F2 K	F3 K	M1 IN-K	M2 IN-K	M3 IN-K	ALF	CBF
1	-0.3	0.0	-70.8	0.0	20.9	0.0	0.63	0.09
2	-0.3	0.0	-70.8	0.0	20.9	0.0	0.63	0.09
3	-0.3	0.0	-70.8	0.0	20.9	0.0	0.63	0.09
4	-0.3	0.0	-70.8	0.0	20.9	0.0	0.63	0.09
5	-0.3	0.0	-70.8	0.0	20.9	0.0	0.63	0.09
6	-0.3	0.0	-70.8	0.0	20.9	0.0	0.63	0.09
7	-0.3	0.0	-70.8	0.0	20.9	0.0	0.63	0.09
8	-0.3	0.0	-70.8	0.0	20.9	0.0	0.63	0.09
9	-0.3	0.0	-70.8	0.0	20.9	0.0	0.63	0.09
10	-0.3	0.0	-70.8	0.0	20.9	0.0	0.63	0.09
11	0.3	0.0	51.0	0.0	-22.6	0.0	0.36	0.06
12	0.3	0.0	51.0	0.0	-22.6	0.0	0.36	0.06
13	0.3	0.0	51.0	0.0	-22.6	0.0	0.36	0.06

14	0.3	0.0	51.0	0.0	-22.6	0.0	0.36	0.06
15	0.3	0.0	51.0	0.0	-22.6	0.0	0.36	0.06
16	0.3	0.0	51.0	0.0	-22.6	0.0	0.36	0.06
17	0.3	0.0	51.0	0.0	-22.6	0.0	0.36	0.06
18	0.3	0.0	51.0	0.0	-22.6	0.0	0.36	0.06
19	0.3	0.0	51.0	0.0	-22.6	0.0	0.36	0.06
20	0.3	0.0	51.0	0.0	-22.6	0.0	0.36	0.06
21	0.3	0.0	44.5	0.0	-23.1	0.0	0.31	0.06
22	0.3	0.0	44.5	0.0	-23.1	0.0	0.31	0.06
23	0.3	0.0	44.5	0.0	-23.1	0.0	0.31	0.06
24	0.3	0.0	44.5	0.0	-23.1	0.0	0.31	0.06
25	0.3	0.0	44.5	0.0	-23.1	0.0	0.31	0.06
26	0.3	0.0	44.5	0.0	-23.1	0.0	0.31	0.06
27	0.3	0.0	44.5	0.0	-23.1	0.0	0.31	0.06
28	0.3	0.0	44.5	0.0	-23.1	0.0	0.31	0.06
29	0.3	0.0	44.5	0.0	-23.1	0.0	0.31	0.06
30	0.3	0.0	44.5	0.0	-23.1	0.0	0.31	0.06
31	0.3	0.0	38.1	0.0	-23.7	0.0	0.27	0.05
32	0.3	0.0	38.1	0.0	-23.7	0.0	0.27	0.05
33	0.3	0.0	38.1	0.0	-23.7	0.0	0.27	0.05
34	0.3	0.0	38.1	0.0	-23.7	0.0	0.27	0.05
35	0.3	0.0	38.1	0.0	-23.7	0.0	0.27	0.05
36	0.3	0.0	38.1	0.0	-23.7	0.0	0.27	0.05
37	0.3	0.0	38.1	0.0	-23.7	0.0	0.27	0.05
38	0.3	0.0	38.1	0.0	-23.7	0.0	0.27	0.05
39	0.3	0.0	38.1	0.0	-23.7	0.0	0.27	0.05
40	0.3	0.0	38.1	0.0	-23.7	0.0	0.27	0.05

****

PILE FORCES IN GLOBAL GEOMETRY

LOAD CASE - 8

PILE	PX K	PY K	PZ K	MX IN-K	MY IN-K	MZ IN-K
1	0.0	24.8	-49.2	0.0	0.0	0.0
2	0.0	24.8	-49.2	0.0	0.0	0.0
3	0.0	24.8	-49.2	0.0	0.0	0.0
4	0.0	24.8	-49.2	0.0	0.0	0.0
5	0.0	24.8	-49.2	0.0	0.0	0.0
6	0.0	24.8	-49.2	0.0	0.0	0.0
7	0.0	24.8	-49.2	0.0	0.0	0.0
8	0.0	24.8	-49.2	0.0	0.0	0.0
9	0.0	24.8	-49.2	0.0	0.0	0.0
10	0.0	24.8	-49.2	0.0	0.0	0.0

11	0.0	20.8	41.1	0.0	0.0	0.0
12	0.0	20.8	41.1	0.0	0.0	0.0
13	0.0	20.8	41.1	0.0	0.0	0.0
14	0.0	20.8	41.1	0.0	0.0	0.0
15	0.0	20.8	41.1	0.0	0.0	0.0
16	0.0	20.8	41.1	0.0	0.0	0.0
17	0.0	20.8	41.1	0.0	0.0	0.0
18	0.0	20.8	41.1	0.0	0.0	0.0
19	0.0	20.8	41.1	0.0	0.0	0.0
20	0.0	20.8	41.1	0.0	0.0	0.0
21	0.0	22.6	44.6	0.0	0.0	0.0
22	0.0	22.6	44.6	0.0	0.0	0.0
23	0.0	22.6	44.6	0.0	0.0	0.0
24	0.0	22.6	44.6	0.0	0.0	0.0
25	0.0	22.6	44.6	0.0	0.0	0.0
26	0.0	22.6	44.6	0.0	0.0	0.0
27	0.0	22.6	44.6	0.0	0.0	0.0
28	0.0	22.6	44.6	0.0	0.0	0.0
29	0.0	22.6	44.6	0.0	0.0	0.0
30	0.0	22.6	44.6	0.0	0.0	0.0
31	0.0	24.3	48.1	0.0	0.0	0.0
32	0.0	24.3	48.1	0.0	0.0	0.0
33	0.0	24.3	48.1	0.0	0.0	0.0
34	0.0	24.3	48.1	0.0	0.0	0.0
35	0.0	24.3	48.1	0.0	0.0	0.0
36	0.0	24.3	48.1	0.0	0.0	0.0
37	0.0	24.3	48.1	0.0	0.0	0.0
38	0.0	24.3	48.1	0.0	0.0	0.0
39	0.0	24.3	48.1	0.0	0.0	0.0
40	0.0	24.3	48.1	0.0	0.0	0.0

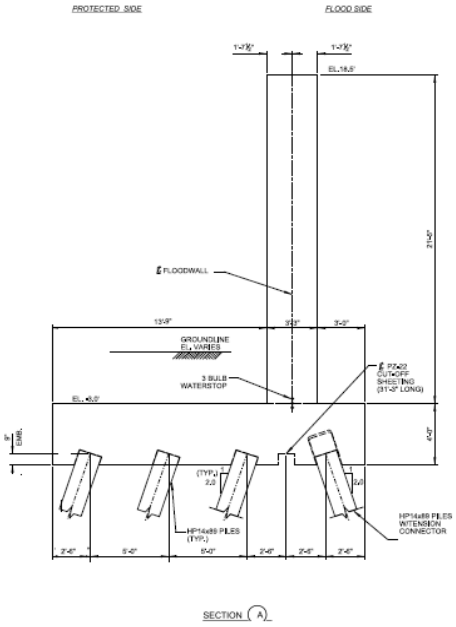
LOAD CASE - 9

PILE	PX K	PY K	PZ K	MX IN-K	MY IN-K	MZ IN-K
1	0.0	31.9	-63.2	0.0	0.0	0.0
2	0.0	31.9	-63.2	0.0	0.0	0.0
3	0.0	31.9	-63.2	0.0	0.0	0.0
4	0.0	31.9	-63.2	0.0	0.0	0.0
5	0.0	31.9	-63.2	0.0	0.0	0.0
6	0.0	31.9	-63.2	0.0	0.0	0.0
7	0.0	31.9	-63.2	0.0	0.0	0.0
8	0.0	31.9	-63.2	0.0	0.0	0.0
9	0.0	31.9	-63.2	0.0	0.0	0.0
10	0.0	31.9	-63.2	0.0	0.0	0.0
11	0.0	23.1	45.5	0.0	0.0	0.0
12	0.0	23.1	45.5	0.0	0.0	0.0
13	0.0	23.1	45.5	0.0	0.0	0.0

14	0.0	23.1	45.5	0.0	0.0	0.0
15	0.0	23.1	45.5	0.0	0.0	0.0
16	0.0	23.1	45.5	0.0	0.0	0.0
17	0.0	23.1	45.5	0.0	0.0	0.0
18	0.0	23.1	45.5	0.0	0.0	0.0
19	0.0	23.1	45.5	0.0	0.0	0.0
20	0.0	23.1	45.5	0.0	0.0	0.0
21	0.0	20.2	39.7	0.0	0.0	0.0
22	0.0	20.2	39.7	0.0	0.0	0.0
23	0.0	20.2	39.7	0.0	0.0	0.0
24	0.0	20.2	39.7	0.0	0.0	0.0
25	0.0	20.2	39.7	0.0	0.0	0.0
26	0.0	20.2	39.7	0.0	0.0	0.0
27	0.0	20.2	39.7	0.0	0.0	0.0
28	0.0	20.2	39.7	0.0	0.0	0.0
29	0.0	20.2	39.7	0.0	0.0	0.0
30	0.0	20.2	39.7	0.0	0.0	0.0
31	0.0	17.3	33.9	0.0	0.0	0.0
32	0.0	17.3	33.9	0.0	0.0	0.0
33	0.0	17.3	33.9	0.0	0.0	0.0
34	0.0	17.3	33.9	0.0	0.0	0.0
35	0.0	17.3	33.9	0.0	0.0	0.0
36	0.0	17.3	33.9	0.0	0.0	0.0
37	0.0	17.3	33.9	0.0	0.0	0.0
38	0.0	17.3	33.9	0.0	0.0	0.0
39	0.0	17.3	33.9	0.0	0.0	0.0
40	0.0	17.3	33.9	0.0	0.0	0.0

NO FILES WERE GENERATED DURING THIS RUN.

Reach E (5B) T3 Sunset twall
T-Wall Stems Loads



Top of Stem EL.	18.5	Weight of Water:	0.062	k/ft^3
Bottom of Stem EL.	-3	Moist Weight of Soil	0.120	k/ft^3
F.S. Soil EL.	-3.0	Wave Load:	0	k/ft
P.S. Soil EL.	0.0	Wave Arm EL.	0	
S.W.L EL.	9.4	Debri	0.5	k/ft
P.S. Water EL.	0.0	Wind Load:	0.056	ksf
Ko:	0.8	Sat. Soil Weight:	0.058	k/ft^3

Note: Inputs are already referenced from t-wall foundation sheet.

Load Case 2b. Construction + Wind 1.6(D + Sur + Wind)

Item	Fy	z	**Mx**	**Vx**
Wind	1.20	10.75	12.94	1.20
Sub Total:			12.94	1.20
Total (Factored)			**20.71**	**1.93**
			ft-k/ft	k/ft

Load Case 3a. Flowline 1.6(D + EH + EV + HF+ IU)

Item	Fy	z	**Mx**	**Vx**
F.S. Horizontal Water	4.80	4.13	19.83	4.80
P.S. Horizontal Water	-0.28	1.00	-0.28	-0.28
F.S. Horizontal Soil	0.00	0.00	0.00	0.00
P.S. Horizontal Soil ($\gamma_{m\ tri}$)	-0.21	3	-0.6221	-0.21
P.S. Horizontal Soil ($\gamma_{m\ rec}$)	0.00	1.5	0.00	0.00
P.S. Horizontal Soil ($\gamma_{sat\ tri}$)	0.00	1.00	0.00	0.00
Sub Total:			18.93	4.31
Total (Factored)			**30.28**	**6.89**
			ft-k/ft	k/ft

Load Case 3c. Flowline+Wind+Debri 1.6(D + EH + EV + H_F+ PU + I + W)

Item	Fy	z	**Mx**	**Vx**
F.S. Horizontal Water	4.80	4.13	19.83	4.80
P.S. Horizontal Water	-0.28	1.00	-0.28	-0.28
F.S. Horizontal Soil	0.00	0.00	0.00	0.00
P.S. Horizontal Soil ($\gamma_{m\ tri}$)	-0.21	3.00	-0.62	-0.21
P.S. Horizontal Soil ($\gamma_{m\ rec}$)	0.00	1.50	0.00	0.00
P.S. Horizontal Soil ($\gamma_{sat\ tri}$)	0.00	1.00	0.00	0.00
Wind	0.51	16.95	8.64	0.51
Debri	0.50	21.50	10.75	0.50
Sub Total:			38.31	5.32
Total (Factored)			**61.30**	**8.51**
			ft-k/ft	k/ft

Load Case 4a. Water to the Top + Debri 1.2D + 1.35EH_D + 0.9EH_R + 1.35EV + 1.3(H_{TW} + I + IU)

Item	Fy	z	**Mx**	**Vx**
F.S. Horizontal Water	14.42	7.17	103.36	14.42
P.S. Horizontal Water	-0.28	1.00	-0.28	-0.28
F.S. Horizontal Soil	0.00	0.00	0.00	0.00
P.S. Horizontal Soil ($\gamma_{m\ tri}$)	-0.21	3.00	-0.62	-0.21
P.S. Horizontal Soil ($\gamma_{m\ rec}$)	0.00	1.50	0.00	0.00
P.S. Horizontal Soil ($\gamma_{sat\ tri}$)	0.00	1.00	0.00	0.00
Debri	0.50	21.50	10.75	0.50
Total (Factored)			**147.42**	**18.85**
			ft-k/ft	k/ft

Load Case 4b. Water to the Top + Debri 0.9D + 1.35EH_D + 0.9EH_R + 1.0EV + 1.3(H_{TW} + I + IU)

Item	Fy	z	**Mx**	**Vx**

F.S. Horizontal Water	14.42	7.17	103.36	14.42
P.S. Horizontal Water	-0.28	1.00	-0.28	-0.28
F.S. Horizontal Soil	0.00	0.00	0.00	0.00
P.S. Horizontal Soil ($\gamma_{m\ tri}$)	-0.21	3.00	-0.62	-0.21
P.S. Horizontal Soil ($\gamma_{m\ rec}$)	0.00	1.50	0.00	0.00
P.S. Horizontal Soil ($\gamma_{sat\ tri}$)	0.00	1.00	0.00	0.00
Debri	0.50	21.50	10.75	0.50

Total (Factored)	**147.42**	**18.85**
	ft-k/ft	k/ft

Summary of Stem Loads		
	Mu	Vu
Load Case 2b	20.71	1.93
Load Case 3a	30.28	6.89
Load Case 3c	61.30	8.51
Load Case 4a	147.42	18.85
Load Case 4b	147.42	18.85
Maximum	147.42	18.85
	ft-k/ft	k/ft

Notation:

$A_{s\ min}$ = Minimum Area of Steel per linear foot of structure allowed by ACI / USACE. **(in^2)**

$A_{s\ Req'd}$ = Required Area of Steel per linear foot of structure using Ultimate Moment. **(in^2)**

b = Member width. **(Use 12in if forces are per linear foot of structure.)**

β_1 = ACI 318-14 Section 22.2

d = Distance from extreme compression fiber to centroid of tension reinforcement. **(in)**

f'c = Compressive strength of concrete. **(ksi ** except in Vc formula psi)**

f_y = Yield strength of steel. **(Usually 60 ksi.)**

ϕM_n = Nominal Moment strength **(k-in / linear foot)** ϕ = 0.9

M_u = Ultimate moment in sttructure. **(k-in / linear foot)**

ϕV_c = Nominal Shear strength **(lb / linear foot)** ϕ = 0.75

V_u = Ultimate shear in structure. **(lb / linear foot)**

t = Thickness of structure. **(In direction of applied moment) (in)**

ρ = Ratio of Reinforcement

ρ_b = Balanced Ratio of Reinforcement (0.0285 for 4ksi concrete)

Project: **Reach E (5B) T3 Sunset twall**

Reference: **T-wall** **50 ft Slab** **Stem Rebar Design**

Inputs:

M_u = 1769.00 k-in / linear ft

V_u = 18847.20 lb/linear ft

b = 12 in

d = 34.5 in

t = 39 in

f'c = 4 ksi

f_y = 60 ksi

β_1 = 0.85 (unitless)

ρ_b = 0.0285 (unitless)

Check d_d

Mn= Mu/ϕ

Mn= 1965.56 k-in / linear ft

$$d_d = \sqrt{\frac{2.4956 M_n}{b_w}} =$$ EM 1110-2-2104 (Table D-1)

d_d= 20.22 in

d > d_d ok

Calculations: ** All Areas are per side.

$$K_u = 1 - \sqrt{1 - \frac{M_n + P_n\left(d - \frac{h}{2}\right)}{0.425 f_c' b d^2}}$$ EM 1110-2-2104 (Table D-8)

P_n= 0

K_u= 0.041329

$$A_s = \frac{0.85 f_c' K_u b d - P_n}{f_y}$$ EM 1110-2-2104 (D-9)

$A_{s\ Req'd}$ = 0.97 in^2 /ft

$A_{s\ min}$ = 1.31 in^2 /ft = [3 b d √(f'c)] / F_y (psi) EM 1110-2-2104, Chapter 3

$A_{s\ min}$ = 1.38 in^2 /ft = 200 b d / F_y (psi) EM 1110-2-2104, Chapter 3

$A_{s\ min}$ = 1.29 in^2 /ft = 1.33 ($A_{s\ Req'd}$) EM 1110-2-2104, Chapter 3

Use A_s = 1.29 in^2 /ft Flexural

Temperature and Shrinkage Rebar

$A_{s\ t\&s}$ = 1.17 in^2 /ft = 0.005b t/2 per face -- EM 1110-2-2104 Table 2-3

Table 2-3. Minimum Shrinkage and Temperature Reinforcement Ratios for Various Joint Spacings.

Length Between Control Joints (ft)	Minimum Temperature and Shrinkage Reinforcement Ratio, Grade 60
Less than 30 ft	0.003

Less than 30 ft	0.003
30-40 ft	0.004
Greater than 40 ft	0.005

Use $A_{s\ t\&s}$ = 1.17 in^2 /ft per face Use: #9@9in As: 1.33 in^2 /ft

Check Moment:

Calculate ϕM_n and compare to original M_u.

As Used: 1.33 in^2 /ft Use: #9@9in

ϕM_n = 2407.55 k-in $= 0.9\ A_s\ F_y\ d\ (\ 1\ -(\ A_s\ F_y\ /\ 2\ \beta\ b\ d\ f'c)\ )$

M_u = 1769.003 k-in

If $\phi M_n > M_u$ then A_s is acceptable. **OK**

Check Shear:

Calculate ϕV_c and compare to V_u.

ϕV_c = 39.28 k $= 0.75 \times 2\ (\ \sqrt{f'c}\ )\ b\ d$

V_u = 18.85 k

If $\phi V_c > V_u$ then A_s is acceptable. **OK**

Check Ratio of Reinforcement: EM 1110-2-2104, Chapter 3.5

ρ = 0.003213 $\rho = A_s / b\ d$

$0.25\ \rho_b$ = 0.007125

$0.5\rho_b$ = 0.010688

$\rho \leq 0.25\ \rho_b$ (if possible) OK

$\rho \leq 0.5\ \rho_b$ (always) OK

Quantities
Sunset T-wall T-3 Reach E (5B)

1) Cast-in place concrete		
Area of Base Slab per linear ft:	80	ft^2
Area of Stem per linear ft:	69.88	ft^2
Total area per linear ft:	149.88	ft^2
Width of slab:	20.00	ft
Total Linear ft of wall:	1232	ft
Total Volume of Base Slab (CY)	3650.37	CY
Total Volume of Stem (CY):	3188.37	CY
Total volume of concrete (ft^3):	184646	ft^3
Total volume of concrete (CY):	6838.741	CY
2) Steel Sheet Piling		
Cut off El.	-6.25	
Tip El.	-37.5	
Length:	31.25	ft
Area of sheet pile:	38500	ft^2
3) HP 14x89 pile		
Cut off El.	-6.25	
Tip El.	-73	
Batter:	2	
Length:	74.62877	ft
spacing between piles	5	ft
total piles per row	4	
Total length of piles:	73554.11	LF
4) Stab slab		
Depth:	1	ft
Total volume:	24640	ft^3
Total volume:	912.5926	CY

Load Case	Load Description	Load Category	Factored Loads
LC1	Normal Operation	0%	(D + EH + EV)
LC3	Construction	16.67%	(D + Sur)
LC4	Construction + Wind	33%	(D + Sur + W)
LC5	Flowline + Imperv Uplift	0%	(D + EH + EV + HF + IU)
LC6	Flowline + Perv Uplift	0%	(D + EH + EV + HF + PU)
LC7	Flowline + Imperv Uplift + Wind + Debris	33%	(D + EH + EV + HF + IU + I + W
LC8	Flowline + Perv Uplift + Wind + Debris	33%	(D + EH + EV + HF + PU + I + W
LC9	Freeboard + Imperv Uplift + Debris	33%	(D + EH + EV + HTW + I + IU)
LC10	Freeboard + Perv Uplift + Debris	33%	(D + EH + EV + HTW + I + PU)

D= Dead Load
EH= Horizontal Soil
EV = Vertical Soil
ES = Surcharge Load (200 psf)
W = Wind
HF = Water at Flowline
PU = Pervious Uplift
IU = Impervious Uplift
I = Debris Impact
H_{TW} = Water at Top of Wall
Sur = Surcharge

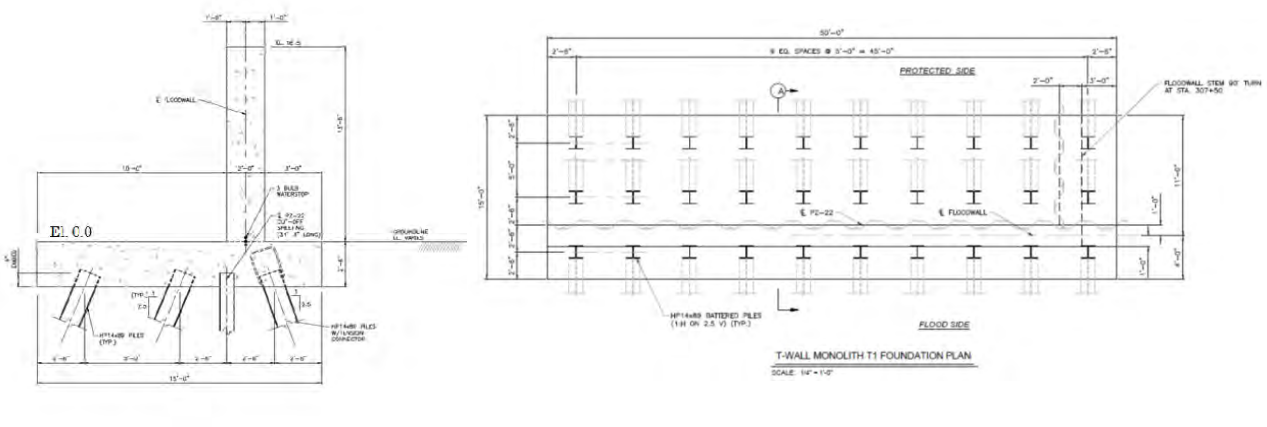
ASCE 7-10 Wind Load Calculation

Wind on Wall

$$q_z = 0.00256 K_z K_{zt} K_d V^2 \text{ (lb/ft}^2\text{)} \qquad (27.3\text{-}1)$$

K_z=	1.03	
K_{zt}=	1	
K_d=	0.85	
V=	158	mph
q_z=	56.0	lb/ft^2

Reach E New wall Pipeline crossing
T-Wall Foundation Loads: Unfactored Loads for Pile Analysis



Top of Stem EL.	18.5		Weight of Water:	0.062	k/ft^3	
Top of Slab EL.	0.0		Weight Soil (FS)	0.120	k/ft^3	
Bottom of Slab EL.	-2.5		Weight of Soil (PS):	0.12	k/ft^4	
Stem Width:	2.00	ft	Weight of Concrete:	0.150	k/ft^3	
F.S. Slab Width:	3	ft	Ko:	0.8		
P.S. Slab Width:	10	ft	Wave Load:	0	k/ft	
Length of Monolith:	50	ft	Wave Arm EL.	0		
Dist to Sheet Pile:	5	ft	Unbal. Load SWL:	0.0	k/ft	
F.S. Soil EL.	0.0		Unbal. Load HWL:	0.0	k/ft	
P.S. Soil EL.	0.0		Wind Load:	0.056	ksf	
S.W.L EL. (Flowline)	9.4		Boat Impact	0.5	k/ft	Debris applied at TOW for TOW LC
P.S. Water EL.	0.0		Construction Surcharge:	0.2	k/ft^2	

Width of Monolith:	15.0	ft	Area of Stem:	37.00	ft²
Area of Base Slab:	37.5	ft²	Bouyant Soil Weight (PS):	0.058	k/ft^3
			Bouyant Soil Weight (FS):	0.058	k/ft^4

Load Sheet Limitations - a) Straight aligned monoliths only b) No varying soil elevations along monolith
c) Constant stem thickness only d) Sheet only handles minimal impact loads

LC 1: **Load Case 1a.** Normal Operation

Item	Fx	Fy	Fz	x	y	z	Mx	My	Mz
Concrete Base			5.6		7.5		42.2		
Concrete Stem			5.6		4.000		22.2		
F.S. Vertical Soil			0.0		1.500		0.0		
F.S. Horizontal Soil (Base)		0.3				0.83	0.3		
P.S. Vertical Soil			0.0		10.00		0.0		
Sub Total:		0.3	11.2				64.6	0.0	0.0
Sub Total x Monolith Length:		15	559				3232	0	0
Total		**15**	**559**	**0**	**0**	**0**	**3232**	**0**	**0**

LC 6: **Load Case 2a.** Construction

Item	Fx	Fy	Fz	x	y	z	Mx	My	Mz
Concrete Base			5.6		7.5		42.2		
Concrete Stem			5.6		4.000		22.2		
F.S. Horizontal Soil (Base)		0.3				0.83	0.3		
Construction Surcharge(FS)			0.6		1.50		0.9		
Construction Surcharge(PS)			2.0		10.00		20.0		
Sub Total:		0.3	13.8				85.5		
Sub Total x Monolith Length:		15	688.75				4276.875	0	0
Total		**15**	**689**				**4277**		

LC 7: **Load Case 2b**. Construction + Wind

Item	Fx	Fy	Fz	x	y	z	Mx	My	Mz
Concrete Base			5.6		7.5		42.2		
Concrete Stem			5.6		4.000		22.2		
F.S. Horizontal Soil (Base)		0.3				0.83	0.3		
Construction Surcharge(FS)			0.6		1.5		0.9		
Construction Surcharge(PS)			2		10		20.0		
Wind		1.036				11.8	12.2		
Sub Total:		1.34	13.78				97.71	0.00	0.00
Sub Total x Monolith Length:		66.8	688.75				4885.525	0	0
Total		**67**	**689**				**4886**		

LC 8: **Load Case 3a**. Flowline, Impervious Uplift

Item	Fx	Fy	Fz	x	y	z	Mx	My	Mz
Concrete Base			5.6		7.50		42.2		
Concrete Stem			5.6		4.000		22.2		
F.S. Vertical Water			1.8		1.50		2.6		
F.S. Vertical Soil			0.0		1.50		0.0		
P.S. Vertical Water			0.0000		10.000		0.0		
P.S. Vertical Soil			0.0000		10.000		0.0		
F.S. Horizontal Water		4.4				3.97	17.5		
F.S. Horizontal Soil		0.144				0.83	0.1		
P.S. Horizontal Water		-0.1950				0.83	-0.2		
P.S. Horizontal Soil ($\gamma_{m\ tri}$)		0.0000				2.50	0.0		
P.S. Horizontal Soil ($\gamma_{m\ rec}$)		0.0				1.25	0.0		
P.S. Horizontal Soil ($\gamma_{sat\ tri}$)		-0.1				0.83	-0.1		
F.S. Impervious Uplift			-3.7		2.50		-9.3		
P.S. Impervious Uplift			-1.6		10.00		-15.6		
Unbalanced Force		0.0							
Sub Total:		4.2	7.7				59.5		
Sub Total x Monolith Length:		211.2	383.1				2,975.4	0.0	0.0
Total		**211**	**383**				**2975**		

LC 9: **Load Case 3b**. Flowline, Pervious Uplift

Item	Fx	Fy	Fz	x	y	z	Mx	My	Mz
Concrete Base			5.6		7.50		42.2		
Concrete Stem			5.6		4.000		22.2		
F.S. Vertical Water			1.8		1.50		2.6		
F.S. Vertical Soil			0.0		1.50		0.0		
P.S. Vertical Water			0.0		10.000		0.0		
P.S. Vertical Soil			0.000		10.000		0.0		
F.S. Horizontal Water		4.4				3.97	17.5		
F.S. Horizontal Soil		0.1				0.83	0.1		
P.S. Horizontal Water		-0.195				0.83	-0.2		
P.S. Horizontal Soil ($\gamma_{m\ tri}$)		0.000				2.50	0.0		
P.S. Horizontal Soil ($\gamma_{m\ rec}$)		0.0				1.25	0.0		
P.S. Horizontal Soil ($\gamma_{sat\ tri}$)		-0.1				0.83	-0.1		
Pervious Uplift (Rec.)			-2.3		7.50		-17.6		
Pervious Uplift (Tri.)			-4.4		5.00		-22.0		
Unbalanced Force		0.0							
Sub Total:		4.2	6.2				44.8		

Sub Total x Monolith Length:		211.2	309.8				2242.2	0.0	0.0
Total		**211**	**310**				**2242**		

LC 10: **Load Case 3c**. Flowline + Wind + Debri, Impervious Uplift

Item	Fx	Fy	Fz	x	y	z	Mx	My	Mz
Concrete Base			5.6		7.50		42.2		
Concrete Stem			5.6		4.000		22.2		
F.S. Vertical Water			1.8		1.50		2.6		
F.S. Vertical Soil			0.0		1.50		0.0		
P.S. Vertical Water			0.0		10.000		0.0		
P.S. Vertical Soil			0.000		10.000		0.0		
F.S. Horizontal Water		4.4				3.97	17.5		
F.S. Horizontal Soil		0.1				0.83	0.1		
P.S. Horizontal Water		-0.195				0.83	-0.2		
P.S. Horizontal Soil ($\gamma_{m\ tri}$)		0.000				2.50	0.0		
P.S. Horizontal Soil ($\gamma_{m\ rec}$)		0.0				1.25	0.0		
P.S. Horizontal Soil ($\gamma_{sat\ tri}$)		-0.1				0.83	-0.1		
F.S. Impervious Uplift			-3.7		2.50		-9.3		
P.S. Impervious Uplift			-1.6		10.00		-15.6		
Wind		0.5				16.45	8.4		
Debri		0.5				21.00	10.5		
Sub Total:		5.2	7.7				78.4		
Sub Total x Monolith Length:		261.6	383.1				3919.6	0.0	0.0
Total		**262**	**383**				**3920**		

LC 11: **Load Case 3d**. Flowline + Wind + Debri, Pervious Uplift

Item	Fx	Fy	Fz	x	y	z	Mx	My	Mz
Concrete Base			5.6		7.50		42.2		
Concrete Stem			5.6		4.000		22.2		
F.S. Vertical Water			1.8		1.50		2.6		
F.S. Vertical Soil			0.0		1.50		0.0		
P.S. Vertical Water			0.0		10.000		0.0		
P.S. Vertical Soil			0.000		10.000		0.0		
F.S. Horizontal Water		4.4				3.97	17.5		
F.S. Horizontal Soil		0.1				0.83	0.1		
P.S. Horizontal Water		-0.195				0.83	-0.2		
P.S. Horizontal Soil ($\gamma_{m\ tri}$)		0.000				2.50	0.0		
P.S. Horizontal Soil ($\gamma_{m\ rec}$)		0.0				1.25	0.0		
P.S. Horizontal Soil ($\gamma_{sat\ tri}$)		-0.1				0.83	-0.1		
Pervious Uplift (Rec.)			-2.3		7.50		-17.6		
Pervious Uplift (Tri.)			-4.4		5.00		-22.0		
Wind		0.5				16.45	8.4		
Debri		0.5				21.00	10.5		
Sub Total:		5.2	6.2				63.7		
Sub Total x Monolith Length:		261.6	309.8				3186.4	0.0	0.0
Total		**262**	**310**				**3186**		

LC 12: **Load Case 4a.** Water to the Top+ Debri, Impervious Uplift

Item	Fx	Fy	Fz	x	y	z	Mx	My	Mz
Concrete Base			5.6		7.50		42.2		
Concrete Stem			5.6		4.000		22.2		
F.S. Vertical Water			3.5		1.50		5.2		
F.S. Vertical Soil			0.0		1.50		0.0		
P.S. Vertical Water			0.0		10.000		0.0		
P.S. Vertical Soil			0.000		10.000		0.0		
F.S. Horizontal Water		13.8				7.00	96.3		
F.S. Horizontal Soil		0.1				0.83	0.1		
P.S. Horizontal Water		-0.195				0.83	-0.2		
P.S. Horizontal Soil ($\gamma_{m\ tri}$)		0.000				2.50	0.0		
P.S. Horizontal Soil ($\gamma_{m\ rec}$)		0.0				1.25	0.0		
P.S. Horizontal Soil ($\gamma_{sat\ tri}$)		-0.1				0.83	-0.1		
F.S. Impervious Uplift			-6.6		2.50		-16.4		
P.S. Impervious Uplift			-1.6		10.00		-15.6		
Debri		0.5				21.00	10.5		

Unbalanced Load		0.0						
Sub Total:		14.1	6.5			144.3		
Sub Total x Monolith Length:		703.2	326.3			7212.7	0.0	0.0
Total		**703**	**326**			**7213**		

LC 13: **Load Case 4b.** Water to the Top + Debri, Pervious Uplift

Item	Fx	Fy	Fz	x	y	z	Mx	My	Mz
Concrete Base			5.6		7.50		42.2		
Concrete Stem			5.6		4.000		22.2		
F.S. Vertical Water			3.5		1.50		5.2		
F.S. Vertical Soil			0.0		1.50		0.0		
P.S. Vertical Water			0.0		10.000		0.0		
P.S. Vertical Soil			0.000		10.000		0.0		
F.S. Horizontal Water		13.8				7.00	96.3		
F.S. Horizontal Soil		0.1				0.83	0.1		
P.S. Horizontal Water		-0.195				0.83	-0.2		
P.S. Horizontal Soil ($\gamma_{m\ tri}$)		0.000				2.50	0.0		
P.S. Horizontal Soil ($\gamma_{m\ rec}$)		0.0				1.25	0.0		
P.S. Horizontal Soil ($\gamma_{sat\ tri}$)		-0.1				0.83	-0.1		
Pervious Uplift (Rec.)			-2.3		7.50		-17.6		
Pervious Uplift (Tri.)			-8.7		5.00		-43.3		
Debri		0.5				21.00	10.5		
Unbalanced Load		0.0							
Sub Total:		14.1	3.6				115.4		
Sub Total x Monolith Length:		703.2	182.0				5769.7	0.0	0.0
Total		**703**	**182**				**5770**		

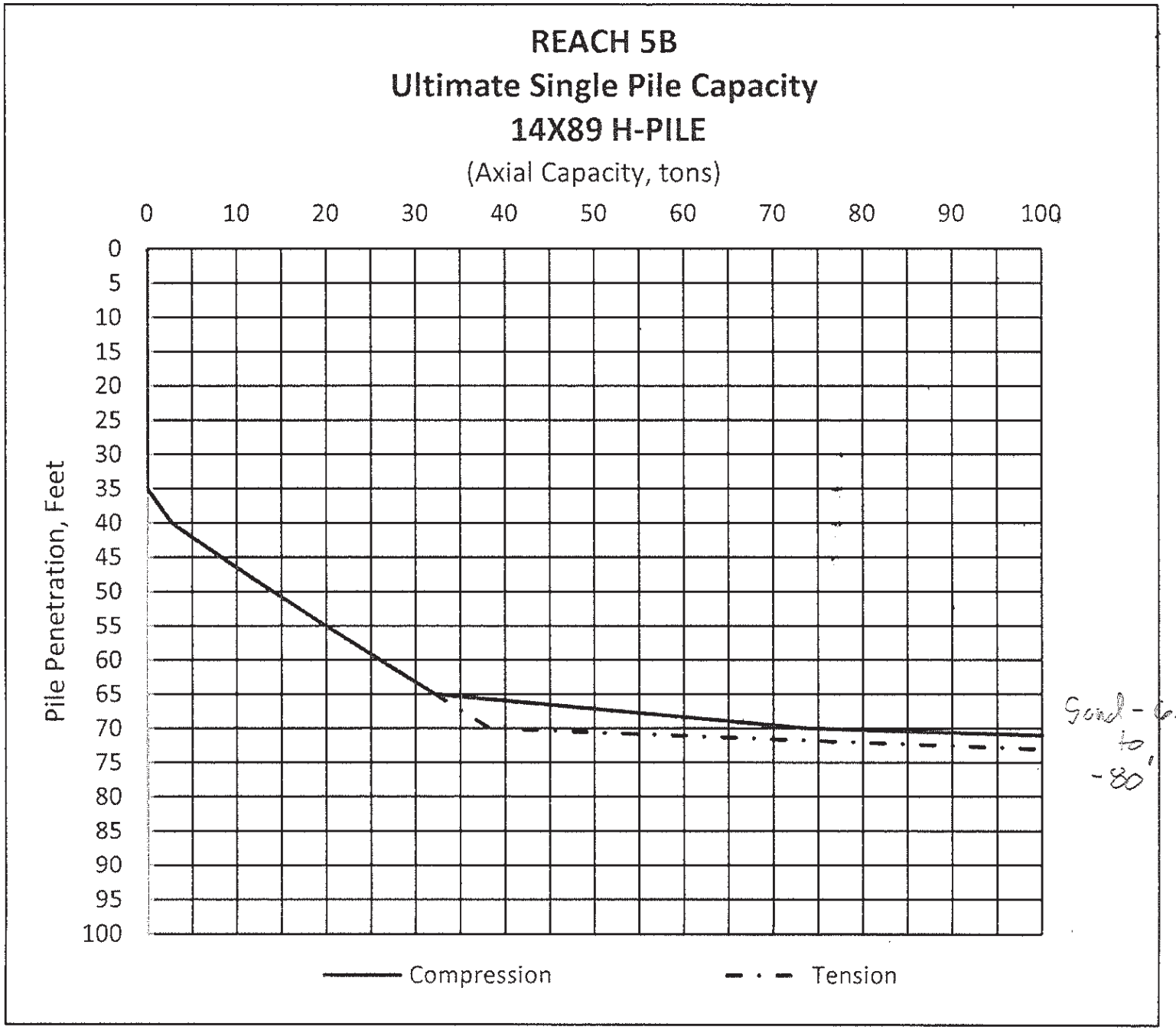
Summary Table of CPGA Loads

		Fx	Fy	Fz	Mx	My	Mz
Load Case 1a	**LOAD 1**	**0.0**	**15.0**	**558.8**	**3,231.9**	**0.0**	**0.0**
Load Case 2a	**LOAD 6**	**0.0**	**15.0**	**688.8**	**4,276.9**	**0.0**	**0.0**
Load Case 2b	**LOAD 7**	**0.0**	**66.8**	**688.8**	**4,885.5**	**0.0**	**0.0**
Load Case 3a	**LOAD 8**	**0.0**	**211.2**	**383.1**	**2,975.4**	**0.0**	**0.0**
Load Case 3b	**LOAD 9**	**0.0**	**211.2**	**309.8**	**2,242.2**	**0.0**	**0.0**
Load Case 3c	**LOAD 10**	**0.0**	**261.6**	**383.1**	**3,919.6**	**0.0**	**0.0**
Load Case 3d	**LOAD 11**	**0.0**	**261.6**	**309.8**	**3,186.4**	**0.0**	**0.0**
Load Case 4a	**LOAD 12**	**0.0**	**703.2**	**326.3**	**7,212.7**	**0.0**	**0.0**
Load Case 4b	**LOAD 13**	**0.0**	**703.2**	**182.0**	**5,769.7**	**0.0**	**0.0**

Table 7l - Reach 05A Centerline/ Protected Side Subsoil Profile Description					
Soil Stratum	Elevation (ft., NAVD88)	Wet Unit Weight (pcf)	Cohesion (psf)		Friction Angle (deg.)
			Top	Bottom	
1 - Levee Fill: Compacted Clay (CH)	+8 to +1	115	500	500	0
2 - Firm Clay (CL/CH)	+1 to -7	110	350	350	0
3 - Firm Clay (CL/CH)	-7 to -10	110	350	350	0
4 - Firm Clay (CL/CH)	-10 to -16	106	300	300	0
5 - Firm Clay (CL/CH)	-16 to -31	106	300	300	0
6 - Firm Clay (CL/CH)	-31 to -47	106	425	425	0
7 - Firm Clay (CL/CH)	-47 to -63	108	425	425	0
8 - Dense Sand (SP/SM)	-63 to -70	122	0	0	30
9 - Dense Sand (SP/SM)	-70 to -125	122	0	0	30

Table 7m - Reach 05B Water Subsoil Profile Description					
Soil Stratum	Elevation (ft., NAVD88)	Wet Unit Weight (pcf)	Cohesion (psf)		Friction Angle (deg.)
			Top	Bottom	
1 - --	+8 to +2	--	--	--	--
2 - Soft Clay (CL/CH)	+2 to -10	103	250	250	0
3 - Soft Clay (CL/CH)	-10 to -16	103	250	250	0
4 - Soft Clay (CL/CH)	-16 to -31	105	250	250	0
5 - Soft Clay (CL/CH)	-31 to -47	105	250	250	0
6 - Soft Clay (CL/CH)	-47 to -61	105	250	250	0
7 - Dense Sand (SP/SM)	-61 to -75	122	0	0	30
8 - Firm Clay (CL/CH)	-75 to 125	110	450	450	0

Table 7n - Reach 05B Flood Side Subsoil Profile Description					
Soil Stratum	Elevation (ft., NAVD88)	Wet Unit Weight (pcf)	Cohesion (psf)		Friction Angle (deg.)
			Top	Bottom	
1 - Levee Fill: Compacted Clay (CH)	+8 to +2	115	500	500	0
2 - Firm Clay (CL/CH)	+2 to -10	95	350	350	0
3 - Firm Clay (CL/CH)	-10 to -16	103	350	383	0
4 - Firm Clay (CL/CH)	-16 to -31	103	383	463	0
5 - Firm Clay (CL/CH)	-31 to -47	103	463	550	0
6 - Firm Clay (CL/CH)	-47 to -61	103	525	525	0
7 - Dense Sand (SP/SM)	-61 to -80	122	0	0	30
8 - Firm Clay (CL/CH)	-80 to 125	110	450	450	0


REACH 5B
Ultimate Single Pile Capacity
14X89 H-PILE
(Axial Capacity, tons)
0
10
20
30
40
50
60
70
80
90
100
Pile Penetration, Feet
0
5
10
15
20
25
30
35
40
45
50
55
60
65
70
75
80
85
90
95
100
Compression
Tension
Sand - 62'
to
-80'

```
10  Reach E Pipeline Twall Fixed
20  PIL  1  -22.5   2.5   0
30  BAT   2   1
40  ANG   270   1
50  PIL  2  -17.5   2.5   0
60  BAT   2   2
70  ANG   270   2
80  PIL  3  -12.5   2.5   0
90  BAT   2   3
100  ANG   270   3
110  PIL  4  -7.5   2.5   0
120  BAT   2   4
130  ANG   270   4
140  PIL  5  -2.5   2.5   0
150  BAT   2   5
160  ANG   270   5
170  PIL  6   2.5   2.5   0
180  BAT   2   6
190  ANG   270   6
200  PIL  7   7.5   2.5   0
210  BAT   2   7
220  ANG   270   7
230  PIL  8   12.5   2.5   0
240  BAT   2   8
250  ANG   270   8
260  PIL  9   17.5   2.5   0
270  BAT   2   9
280  ANG   270   9
290  PIL  10   22.5   2.5   0
300  BAT   2   10
310  ANG   270   10
320  PIL  11  -22.5   7.5   0
330  BAT   2   11
340  ANG   90   11
350  PIL  12  -17.5   7.5   0
360  BAT   2   12
370  ANG   90   12
380  PIL  13  -12.5   7.5   0
390  BAT   2   13
400  ANG   90   13
410  PIL  14  -7.5   7.5   0
420  BAT   2   14
430  ANG   90   14
440  PIL  15  -2.5   7.5   0
450  BAT   2   15
460  ANG   90   15
470  PIL  16   2.5   7.5   0
480  BAT   2   16
490  ANG   90   16
500  PIL  17   7.5   7.5   0
```

```
510  BAT   2   17
520  ANG   90   17
530  PIL  18   12.5   7.5   0
540  BAT   2   18
550  ANG   90   18
560  PIL  19   17.5   7.5   0
570  BAT   2   19
580  ANG   90   19
590  PIL  20   22.5   7.5   0
600  BAT   2   20
610  ANG   90   20
620  PIL  21  -22.5   12.5   0
630  BAT   2   21
640  ANG   90   21
650  PIL  22  -17.5   12.5   0
660  BAT   2   22
670  ANG   90   22
680  PIL  23  -12.5   12.5   0
690  BAT   2   23
700  ANG   90   23
710  PIL  24  -7.5   12.5   0
720  BAT   2   24
730  ANG   90   24
740  PIL  25  -2.5   12.5   0
750  BAT   2   25
760  ANG   90   25
770  PIL  26   2.5   12.5   0
780  BAT   2   26
790  ANG   90   26
800  PIL  27   7.5   12.5   0
810  BAT   2   27
820  ANG   90   27
830  PIL  28   12.5   12.5   0
840  BAT   2   28
850  ANG   90   28
860  PIL  29   17.5   12.5   0
870  BAT   2   29
880  ANG   90   29
890  PIL  30   22.5   12.5   0
900  BAT   2   30
910  ANG   90   30
920  PRO  29000  326  904  26.1  2  0  1 TO 30
930  SOI ES 0.0345 L  69  0  1 TO 30
940  RED  1  1  1
950  ALL H 107  85  652  652  1107  3275  1 TO 30
960  FIX  1 TO 30
970  LOA  1  0  15  559  3232  0  0
970  LOA  2  0  15  689  4277  0  0
970  LOA  3  0  67  689  4886  0  0
970  LOA  4  0  211  383  2975  0  0
```

```
970  LOA  5  0  211  310  2242  0  0
970  LOA  6  0  262  383  3920  0  0
970  LOA  7  0  262  310  3186  0  0
970  FOV  1.167  1.167  2
970  FOV  1.33  1.33  3
970  FOV  1.33  1.33  6
970  FOV  1.33  1.33  7
980  TOUT 1 2 3 4 5 6 7
990  PFO ALL
1000  PLB ALL
```

CPGA - CASE PILE GROUP ANALYSIS PROGRAM
RUN DATE: 01-OCT-20 RUN TIME: 17:40:29

FOR PILES WITH UNSUPPORTED HEIGHT:
A. CPGA CANNOT CALCULATE PMAXMOM FOR NH TYPE SOIL
B. THE ALLOWABLE STRESS CHECKS, ASC AND AST, ARE
NOT FULLY DEVELOPED FOR UNSUPPORTED PILES.
WORK IS IN PROGRESS TO COMPLETE THIS ASPECT OF CPGA.

ELASTIC CENTER LOCATION IS NOT COMPUTED FOR 3-DIMENSIONAL PROBLEMS.

REACH E PIPELINE TWALL FIXED
DATA UNKNOWN - REJECTED.

THERE ARE 30 PILES AND
7 LOAD CASES IN THIS RUN.

ALL PILE COORDINATES ARE CONTAINED WITHIN A BOX

	X	Y	Z
WITH DIAGONAL COORDINATES = (	-22.50 ,	2.50 ,	0.00)
(	22.50 ,	12.50 ,	0.00)

****

PILE PROPERTIES AS INPUT

E	I1	I2	A	C33	B66
KSI	IN**4	IN**4	IN**2		
0.29000E+05	0.32600E+03	0.90400E+03	0.26100E+02	0.20000E+01	0.00000E+00

THESE PILE PROPERTIES APPLY TO THE FOLLOWING PILES -

ALL

****

SOIL DESCRIPTIONS AS INPUT

ES	ESOIL	LENGTH	L	LU
	K/IN**2		FT	FT

```
        0.34500E-01    L      0.69000E+02   0.00000E+00

 ESOIL(ORIGINAL)     RGROUP     RCYCLIC
   K/IN**2
  0.34500E-01       0.1000E+01 0.1000E+01
```

THIS SOIL DESCRIPTION APPLIES TO THE FOLLOWING PILES -

ALL

****

PILE STIFFNESSES AS CALCULATED FROM PROPERTIES

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 0.81007E+01  0.00000E+00  0.00000E+00  0.00000E+00  0.95103E+03  0.00000E+00
 0.00000E+00  0.62774E+01  0.00000E+00 -0.57111E+03  0.00000E+00  0.00000E+00
 0.00000E+00  0.00000E+00  0.18283E+04  0.00000E+00  0.00000E+00  0.00000E+00
 0.00000E+00 -0.57111E+03  0.00000E+00  0.10392E+06  0.00000E+00  0.00000E+00
 0.95103E+03  0.00000E+00  0.00000E+00  0.00000E+00  0.22330E+06  0.00000E+00
 0.00000E+00  0.00000E+00  0.00000E+00  0.00000E+00  0.00000E+00  0.00000E+00
```

THIS MATRIX APPLIES TO THE FOLLOWING PILES -

1

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PILE GEOMETRY AS INPUT AND/OR GENERATED

NUM	X FT	Y FT	Z FT	BATTER	ANGLE	LENGTH FT	FIXITY
1	-22.50	2.50	0.00	2.00	270.00	69.00	F
2	-17.50	2.50	0.00	2.00	270.00	69.00	F
3	-12.50	2.50	0.00	2.00	270.00	69.00	F
4	-7.50	2.50	0.00	2.00	270.00	69.00	F
5	-2.50	2.50	0.00	2.00	270.00	69.00	F
6	2.50	2.50	0.00	2.00	270.00	69.00	F
7	7.50	2.50	0.00	2.00	270.00	69.00	F
8	12.50	2.50	0.00	2.00	270.00	69.00	F
9	17.50	2.50	0.00	2.00	270.00	69.00	F
10	22.50	2.50	0.00	2.00	270.00	69.00	F
11	-22.50	7.50	0.00	2.00	90.00	69.00	F
12	-17.50	7.50	0.00	2.00	90.00	69.00	F
13	-12.50	7.50	0.00	2.00	90.00	69.00	F
14	-7.50	7.50	0.00	2.00	90.00	69.00	F

15	-2.50	7.50	0.00	2.00	90.00	69.00	F
16	2.50	7.50	0.00	2.00	90.00	69.00	F
17	7.50	7.50	0.00	2.00	90.00	69.00	F
18	12.50	7.50	0.00	2.00	90.00	69.00	F
19	17.50	7.50	0.00	2.00	90.00	69.00	F
20	22.50	7.50	0.00	2.00	90.00	69.00	F
21	-22.50	12.50	0.00	2.00	90.00	69.00	F
22	-17.50	12.50	0.00	2.00	90.00	69.00	F
23	-12.50	12.50	0.00	2.00	90.00	69.00	F
24	-7.50	12.50	0.00	2.00	90.00	69.00	F
25	-2.50	12.50	0.00	2.00	90.00	69.00	F
26	2.50	12.50	0.00	2.00	90.00	69.00	F
27	7.50	12.50	0.00	2.00	90.00	69.00	F
28	12.50	12.50	0.00	2.00	90.00	69.00	F
29	17.50	12.50	0.00	2.00	90.00	69.00	F
30	22.50	12.50	0.00	2.00	90.00	69.00	F

						2070.00	

****

APPLIED LOADS

LOAD CASE	PX K	PY K	PZ K	MX FT-K	MY FT-K	MZ FT-K	OVERSTRESS COM	TEN
1	0.0	15.0	559.0	3232.0	0.0	0.0		
2	0.0	15.0	689.0	4277.0	0.0	0.0	1.17	1.17
3	0.0	67.0	689.0	4886.0	0.0	0.0	1.33	1.33
4	0.0	211.0	383.0	2975.0	0.0	0.0		
5	0.0	211.0	310.0	2242.0	0.0	0.0		
6	0.0	262.0	383.0	3920.0	0.0	0.0	1.33	1.33
7	0.0	262.0	310.0	3186.0	0.0	0.0	1.33	1.33

****

ORIGINAL PILE GROUP STIFFNESS MATRIX

0.18832E+03	0.22259E-03	-0.88591E-04	0.13082E-01	0.15324E+05	-0.19503E+05
0.22259E-03	0.11164E+05	0.72806E+04	0.15034E+07	0.20674E-03	-0.14722E-01
-0.88591E-04	0.72806E+04	0.43927E+05	0.39577E+07	0.51752E-04	-0.13289E-01
0.13082E-01	0.15034E+07	0.39577E+07	0.46972E+09	-0.93042E-01	-0.24530E+01
0.15324E+05	0.20674E-03	0.51752E-04	-0.93042E-01	0.13071E+10	-0.21803E+09
-0.19503E+05	-0.14722E-01	-0.13289E-01	-0.24530E+01	-0.21803E+09	0.33524E+09

30 PILES 7 LOAD CASES

LOAD CASE 1. NUMBER OF FAILURES = 0. NUMBER OF PILES IN TENSION = 0.

LOAD CASE 2. NUMBER OF FAILURES = 0. NUMBER OF PILES IN TENSION = 0.

LOAD CASE 3. NUMBER OF FAILURES = 0. NUMBER OF PILES IN TENSION = 0.

LOAD CASE 4. NUMBER OF FAILURES = 0. NUMBER OF PILES IN TENSION = 10.

LOAD CASE 5. NUMBER OF FAILURES = 0. NUMBER OF PILES IN TENSION = 10.

LOAD CASE 6. NUMBER OF FAILURES = 0. NUMBER OF PILES IN TENSION = 10.

LOAD CASE 7. NUMBER OF FAILURES = 0. NUMBER OF PILES IN TENSION = 10.

****

PILE CAP DISPLACEMENTS

LOAD CASE	DX IN	DY IN	DZ IN	RX RAD	RY RAD	RZ RAD
1	0.1649E-07	0.2517E-02	0.2323E-01	-0.1212E-03	-0.2148E-13	0.1090E-11
2	0.2034E-07	-0.5169E-02	0.2162E-01	-0.5632E-04	-0.9873E-14	0.1394E-11
3	0.1341E-07	-0.5927E-02	0.1541E-01	0.1395E-04	0.5578E-13	0.1269E-11
4	-0.1329E-07	0.3839E-01	0.2731E-01	-0.2770E-03	0.1387E-12	0.5876E-13
5	-0.1526E-07	0.4635E-01	0.3147E-01	-0.3562E-03	0.1230E-12	-0.1312E-12
6	-0.2055E-07	0.2899E-01	0.1350E-01	-0.1064E-03	0.2250E-12	-0.1920E-13
7	-0.2251E-07	0.3697E-01	0.1767E-01	-0.1859E-03	0.2092E-12	-0.2093E-12

****

PILE FORCES IN LOCAL GEOMETRY

M1 & M2 NOT AT PILE HEAD FOR PINNED PILES
* INDICATES PILE FAILURE
# INDICATES CBF BASED ON MOMENTS DUE TO
(F3*EMIN) FOR CONCRETE PILES
B INDICATES BUCKLING CONTROLS

LOAD CASE - 1

PILE	F1 K	F2 K	F3 K	M1 IN-K	M2 IN-K	M3 IN-K	ALF	CBF

1	-0.2	0.0	30.0	0.0	-37.5	0.0	0.28	0.06
2	-0.2	0.0	30.0	0.0	-37.5	0.0	0.28	0.06
3	-0.2	0.0	30.0	0.0	-37.5	0.0	0.28	0.06
4	-0.2	0.0	30.0	0.0	-37.5	0.0	0.28	0.06
5	-0.2	0.0	30.0	0.0	-37.5	0.0	0.28	0.06
6	-0.2	0.0	30.0	0.0	-37.5	0.0	0.28	0.06
7	-0.2	0.0	30.0	0.0	-37.5	0.0	0.28	0.06
8	-0.2	0.0	30.0	0.0	-37.5	0.0	0.28	0.06
9	-0.2	0.0	30.0	0.0	-37.5	0.0	0.28	0.06
10	-0.2	0.0	30.0	0.0	-37.5	0.0	0.28	0.06
11	0.1	0.0	22.2	0.0	24.0	0.0	0.21	0.04
12	0.1	0.0	22.2	0.0	24.0	0.0	0.21	0.04
13	0.1	0.0	22.2	0.0	24.0	0.0	0.21	0.04
14	0.1	0.0	22.2	0.0	24.0	0.0	0.21	0.04
15	0.1	0.0	22.2	0.0	24.0	0.0	0.21	0.04
16	0.1	0.0	22.2	0.0	24.0	0.0	0.21	0.04
17	0.1	0.0	22.2	0.0	24.0	0.0	0.21	0.04
18	0.1	0.0	22.2	0.0	24.0	0.0	0.21	0.04
19	0.1	0.0	22.2	0.0	24.0	0.0	0.21	0.04
20	0.1	0.0	22.2	0.0	24.0	0.0	0.21	0.04
21	0.1	0.0	10.3	0.0	27.1	0.0	0.10	0.02
22	0.1	0.0	10.3	0.0	27.1	0.0	0.10	0.02
23	0.1	0.0	10.3	0.0	27.1	0.0	0.10	0.02
24	0.1	0.0	10.3	0.0	27.1	0.0	0.10	0.02
25	0.1	0.0	10.3	0.0	27.1	0.0	0.10	0.02
26	0.1	0.0	10.3	0.0	27.1	0.0	0.10	0.02
27	0.1	0.0	10.3	0.0	27.1	0.0	0.10	0.02
28	0.1	0.0	10.3	0.0	27.1	0.0	0.10	0.02
29	0.1	0.0	10.3	0.0	27.1	0.0	0.10	0.02
30	0.1	0.0	10.3	0.0	27.1	0.0	0.10	0.02

LOAD CASE - 2

PILE	F1 K	F2 K	F3 K	M1 IN-K	M2 IN-K	M3 IN-K	ALF	CBF
1	-0.1	0.0	36.8	0.0	-16.7	0.0	0.29	0.05
2	-0.1	0.0	36.8	0.0	-16.7	0.0	0.29	0.05
3	-0.1	0.0	36.8	0.0	-16.7	0.0	0.29	0.05
4	-0.1	0.0	36.8	0.0	-16.7	0.0	0.29	0.05
5	-0.1	0.0	36.8	0.0	-16.7	0.0	0.29	0.05
6	-0.1	0.0	36.8	0.0	-16.7	0.0	0.29	0.05
7	-0.1	0.0	36.8	0.0	-16.7	0.0	0.29	0.05
8	-0.1	0.0	36.8	0.0	-16.7	0.0	0.29	0.05
9	-0.1	0.0	36.8	0.0	-16.7	0.0	0.29	0.05
10	-0.1	0.0	36.8	0.0	-16.7	0.0	0.29	0.05
11	0.0	0.0	22.8	0.0	1.1	0.0	0.18	0.03
12	0.0	0.0	22.8	0.0	1.1	0.0	0.18	0.03
13	0.0	0.0	22.8	0.0	1.1	0.0	0.18	0.03

14	0.0	0.0	22.8	0.0	1.1	0.0	0.18	0.03
15	0.0	0.0	22.8	0.0	1.1	0.0	0.18	0.03
16	0.0	0.0	22.8	0.0	1.1	0.0	0.18	0.03
17	0.0	0.0	22.8	0.0	1.1	0.0	0.18	0.03
18	0.0	0.0	22.8	0.0	1.1	0.0	0.18	0.03
19	0.0	0.0	22.8	0.0	1.1	0.0	0.18	0.03
20	0.0	0.0	22.8	0.0	1.1	0.0	0.18	0.03
21	0.0	0.0	17.3	0.0	2.6	0.0	0.14	0.02
22	0.0	0.0	17.3	0.0	2.6	0.0	0.14	0.02
23	0.0	0.0	17.3	0.0	2.6	0.0	0.14	0.02
24	0.0	0.0	17.3	0.0	2.6	0.0	0.14	0.02
25	0.0	0.0	17.3	0.0	2.6	0.0	0.14	0.02
26	0.0	0.0	17.3	0.0	2.6	0.0	0.14	0.02
27	0.0	0.0	17.3	0.0	2.6	0.0	0.14	0.02
28	0.0	0.0	17.3	0.0	2.6	0.0	0.14	0.02
29	0.0	0.0	17.3	0.0	2.6	0.0	0.14	0.02
30	0.0	0.0	17.3	0.0	2.6	0.0	0.14	0.02

LOAD CASE - 3

PILE	F1 K	F2 K	F3 K	M1 IN-K	M2 IN-K	M3 IN-K	ALF	CBF
1	0.0	0.0	30.7	0.0	1.4	0.0	0.22	0.04
2	0.0	0.0	30.7	0.0	1.4	0.0	0.22	0.04
3	0.0	0.0	30.7	0.0	1.4	0.0	0.22	0.04
4	0.0	0.0	30.7	0.0	1.4	0.0	0.22	0.04
5	0.0	0.0	30.7	0.0	1.4	0.0	0.22	0.04
6	0.0	0.0	30.7	0.0	1.4	0.0	0.22	0.04
7	0.0	0.0	30.7	0.0	1.4	0.0	0.22	0.04
8	0.0	0.0	30.7	0.0	1.4	0.0	0.22	0.04
9	0.0	0.0	30.7	0.0	1.4	0.0	0.22	0.04
10	0.0	0.0	30.7	0.0	1.4	0.0	0.22	0.04
11	-0.1	0.0	22.4	0.0	-15.2	0.0	0.16	0.03
12	-0.1	0.0	22.4	0.0	-15.2	0.0	0.16	0.03
13	-0.1	0.0	22.4	0.0	-15.2	0.0	0.16	0.03
14	-0.1	0.0	22.4	0.0	-15.2	0.0	0.16	0.03
15	-0.1	0.0	22.4	0.0	-15.2	0.0	0.16	0.03
16	-0.1	0.0	22.4	0.0	-15.2	0.0	0.16	0.03
17	-0.1	0.0	22.4	0.0	-15.2	0.0	0.16	0.03
18	-0.1	0.0	22.4	0.0	-15.2	0.0	0.16	0.03
19	-0.1	0.0	22.4	0.0	-15.2	0.0	0.16	0.03
20	-0.1	0.0	22.4	0.0	-15.2	0.0	0.16	0.03
21	-0.1	0.0	23.8	0.0	-15.6	0.0	0.17	0.03
22	-0.1	0.0	23.8	0.0	-15.6	0.0	0.17	0.03
23	-0.1	0.0	23.8	0.0	-15.6	0.0	0.17	0.03
24	-0.1	0.0	23.8	0.0	-15.6	0.0	0.17	0.03
25	-0.1	0.0	23.8	0.0	-15.6	0.0	0.17	0.03
26	-0.1	0.0	23.8	0.0	-15.6	0.0	0.17	0.03

27	-0.1	0.0	23.8	0.0	-15.6	0.0	0.17	0.03
28	-0.1	0.0	23.8	0.0	-15.6	0.0	0.17	0.03
29	-0.1	0.0	23.8	0.0	-15.6	0.0	0.17	0.03
30	-0.1	0.0	23.8	0.0	-15.6	0.0	0.17	0.03

LOAD CASE - 4

PILE	F1 K	F2 K	F3 K	M1 IN-K	M2 IN-K	M3 IN-K	ALF	CBF
1	-0.6	0.0	-0.3	0.0	-102.6	0.0	0.00	0.03
2	-0.6	0.0	-0.3	0.0	-102.6	0.0	0.00	0.03
3	-0.6	0.0	-0.3	0.0	-102.6	0.0	0.00	0.03
4	-0.6	0.0	-0.3	0.0	-102.6	0.0	0.00	0.03
5	-0.6	0.0	-0.3	0.0	-102.6	0.0	0.00	0.03
6	-0.6	0.0	-0.3	0.0	-102.6	0.0	0.00	0.03
7	-0.6	0.0	-0.3	0.0	-102.6	0.0	0.00	0.03
8	-0.6	0.0	-0.3	0.0	-102.6	0.0	0.00	0.03
9	-0.6	0.0	-0.3	0.0	-102.6	0.0	0.00	0.03
10	-0.6	0.0	-0.3	0.0	-102.6	0.0	0.00	0.03
11	0.5	0.0	35.3	0.0	93.5	0.0	0.33	0.08
12	0.5	0.0	35.3	0.0	93.5	0.0	0.33	0.08
13	0.5	0.0	35.3	0.0	93.5	0.0	0.33	0.08
14	0.5	0.0	35.3	0.0	93.5	0.0	0.33	0.08
15	0.5	0.0	35.3	0.0	93.5	0.0	0.33	0.08
16	0.5	0.0	35.3	0.0	93.5	0.0	0.33	0.08
17	0.5	0.0	35.3	0.0	93.5	0.0	0.33	0.08
18	0.5	0.0	35.3	0.0	93.5	0.0	0.33	0.08
19	0.5	0.0	35.3	0.0	93.5	0.0	0.33	0.08
20	0.5	0.0	35.3	0.0	93.5	0.0	0.33	0.08
21	0.6	0.0	8.1	0.0	100.6	0.0	0.08	0.04
22	0.6	0.0	8.1	0.0	100.6	0.0	0.08	0.04
23	0.6	0.0	8.1	0.0	100.6	0.0	0.08	0.04
24	0.6	0.0	8.1	0.0	100.6	0.0	0.08	0.04
25	0.6	0.0	8.1	0.0	100.6	0.0	0.08	0.04
26	0.6	0.0	8.1	0.0	100.6	0.0	0.08	0.04
27	0.6	0.0	8.1	0.0	100.6	0.0	0.08	0.04
28	0.6	0.0	8.1	0.0	100.6	0.0	0.08	0.04
29	0.6	0.0	8.1	0.0	100.6	0.0	0.08	0.04
30	0.6	0.0	8.1	0.0	100.6	0.0	0.08	0.04

LOAD CASE - 5

PILE	F1 K	F2 K	F3 K	M1 IN-K	M2 IN-K	M3 IN-K	ALF	CBF
1	-0.7	0.0	-3.9	0.0	-127.8	0.0	0.05	0.05
2	-0.7	0.0	-3.9	0.0	-127.8	0.0	0.05	0.05

3	-0.7	0.0	-3.9	0.0	-127.8	0.0	0.05	0.05
4	-0.7	0.0	-3.9	0.0	-127.8	0.0	0.05	0.05
5	-0.7	0.0	-3.9	0.0	-127.8	0.0	0.05	0.05
6	-0.7	0.0	-3.9	0.0	-127.8	0.0	0.05	0.05
7	-0.7	0.0	-3.9	0.0	-127.8	0.0	0.05	0.05
8	-0.7	0.0	-3.9	0.0	-127.8	0.0	0.05	0.05
9	-0.7	0.0	-3.9	0.0	-127.8	0.0	0.05	0.05
10	-0.7	0.0	-3.9	0.0	-127.8	0.0	0.05	0.05
11	0.7	0.0	36.9	0.0	119.2	0.0	0.35	0.09
12	0.7	0.0	36.9	0.0	119.2	0.0	0.35	0.09
13	0.7	0.0	36.9	0.0	119.2	0.0	0.35	0.09
14	0.7	0.0	36.9	0.0	119.2	0.0	0.35	0.09
15	0.7	0.0	36.9	0.0	119.2	0.0	0.35	0.09
16	0.7	0.0	36.9	0.0	119.2	0.0	0.35	0.09
17	0.7	0.0	36.9	0.0	119.2	0.0	0.35	0.09
18	0.7	0.0	36.9	0.0	119.2	0.0	0.35	0.09
19	0.7	0.0	36.9	0.0	119.2	0.0	0.35	0.09
20	0.7	0.0	36.9	0.0	119.2	0.0	0.35	0.09
21	0.8	0.0	2.0	0.0	128.3	0.0	0.02	0.04
22	0.8	0.0	2.0	0.0	128.3	0.0	0.02	0.04
23	0.8	0.0	2.0	0.0	128.3	0.0	0.02	0.04
24	0.8	0.0	2.0	0.0	128.3	0.0	0.02	0.04
25	0.8	0.0	2.0	0.0	128.3	0.0	0.02	0.04
26	0.8	0.0	2.0	0.0	128.3	0.0	0.02	0.04
27	0.8	0.0	2.0	0.0	128.3	0.0	0.02	0.04
28	0.8	0.0	2.0	0.0	128.3	0.0	0.02	0.04
29	0.8	0.0	2.0	0.0	128.3	0.0	0.02	0.04
30	0.8	0.0	2.0	0.0	128.3	0.0	0.02	0.04

LOAD CASE - 6

PILE	F1 K	F2 K	F3 K	M1 IN-K	M2 IN-K	M3 IN-K	ALF	CBF
1	-0.3	0.0	-6.8	0.0	-52.8	0.0	0.06	0.02
2	-0.3	0.0	-6.8	0.0	-52.8	0.0	0.06	0.02
3	-0.3	0.0	-6.8	0.0	-52.8	0.0	0.06	0.02
4	-0.3	0.0	-6.8	0.0	-52.8	0.0	0.06	0.02
5	-0.3	0.0	-6.8	0.0	-52.8	0.0	0.06	0.02
6	-0.3	0.0	-6.8	0.0	-52.8	0.0	0.06	0.02
7	-0.3	0.0	-6.8	0.0	-52.8	0.0	0.06	0.02
8	-0.3	0.0	-6.8	0.0	-52.8	0.0	0.06	0.02
9	-0.3	0.0	-6.8	0.0	-52.8	0.0	0.06	0.02
10	-0.3	0.0	-6.8	0.0	-52.8	0.0	0.06	0.02
11	0.3	0.0	30.1	0.0	46.7	0.0	0.21	0.05
12	0.3	0.0	30.1	0.0	46.7	0.0	0.21	0.05
13	0.3	0.0	30.1	0.0	46.7	0.0	0.21	0.05
14	0.3	0.0	30.1	0.0	46.7	0.0	0.21	0.05
15	0.3	0.0	30.1	0.0	46.7	0.0	0.21	0.05

16	0.3	0.0	30.1	0.0	46.7	0.0	0.21	0.05
17	0.3	0.0	30.1	0.0	46.7	0.0	0.21	0.05
18	0.3	0.0	30.1	0.0	46.7	0.0	0.21	0.05
19	0.3	0.0	30.1	0.0	46.7	0.0	0.21	0.05
20	0.3	0.0	30.1	0.0	46.7	0.0	0.21	0.05
21	0.3	0.0	19.7	0.0	49.5	0.0	0.14	0.03
22	0.3	0.0	19.7	0.0	49.5	0.0	0.14	0.03
23	0.3	0.0	19.7	0.0	49.5	0.0	0.14	0.03
24	0.3	0.0	19.7	0.0	49.5	0.0	0.14	0.03
25	0.3	0.0	19.7	0.0	49.5	0.0	0.14	0.03
26	0.3	0.0	19.7	0.0	49.5	0.0	0.14	0.03
27	0.3	0.0	19.7	0.0	49.5	0.0	0.14	0.03
28	0.3	0.0	19.7	0.0	49.5	0.0	0.14	0.03
29	0.3	0.0	19.7	0.0	49.5	0.0	0.14	0.03
30	0.3	0.0	19.7	0.0	49.5	0.0	0.14	0.03

LOAD CASE - 7

PILE	F1 K	F2 K	F3 K	M1 IN-K	M2 IN-K	M3 IN-K	ALF	CBF
1	-0.5	0.0	-10.4	0.0	-78.1	0.0	0.09	0.03
2	-0.5	0.0	-10.4	0.0	-78.1	0.0	0.09	0.03
3	-0.5	0.0	-10.4	0.0	-78.1	0.0	0.09	0.03
4	-0.5	0.0	-10.4	0.0	-78.1	0.0	0.09	0.03
5	-0.5	0.0	-10.4	0.0	-78.1	0.0	0.09	0.03
6	-0.5	0.0	-10.4	0.0	-78.1	0.0	0.09	0.03
7	-0.5	0.0	-10.4	0.0	-78.1	0.0	0.09	0.03
8	-0.5	0.0	-10.4	0.0	-78.1	0.0	0.09	0.03
9	-0.5	0.0	-10.4	0.0	-78.1	0.0	0.09	0.03
10	-0.5	0.0	-10.4	0.0	-78.1	0.0	0.09	0.03
11	0.4	0.0	31.8	0.0	72.5	0.0	0.22	0.05
12	0.4	0.0	31.8	0.0	72.5	0.0	0.22	0.05
13	0.4	0.0	31.8	0.0	72.5	0.0	0.22	0.05
14	0.4	0.0	31.8	0.0	72.5	0.0	0.22	0.05
15	0.4	0.0	31.8	0.0	72.5	0.0	0.22	0.05
16	0.4	0.0	31.8	0.0	72.5	0.0	0.22	0.05
17	0.4	0.0	31.8	0.0	72.5	0.0	0.22	0.05
18	0.4	0.0	31.8	0.0	72.5	0.0	0.22	0.05
19	0.4	0.0	31.8	0.0	72.5	0.0	0.22	0.05
20	0.4	0.0	31.8	0.0	72.5	0.0	0.22	0.05
21	0.5	0.0	13.5	0.0	77.3	0.0	0.10	0.03
22	0.5	0.0	13.5	0.0	77.3	0.0	0.10	0.03
23	0.5	0.0	13.5	0.0	77.3	0.0	0.10	0.03
24	0.5	0.0	13.5	0.0	77.3	0.0	0.10	0.03
25	0.5	0.0	13.5	0.0	77.3	0.0	0.10	0.03
26	0.5	0.0	13.5	0.0	77.3	0.0	0.10	0.03
27	0.5	0.0	13.5	0.0	77.3	0.0	0.10	0.03
28	0.5	0.0	13.5	0.0	77.3	0.0	0.10	0.03

29	0.5	0.0	13.5	0.0	77.3	0.0	0.10	0.03
30	0.5	0.0	13.5	0.0	77.3	0.0	0.10	0.03

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PILE FORCES IN GLOBAL GEOMETRY

LOAD CASE - 1

PILE	PX K	PY K	PZ K	MX IN-K	MY IN-K	MZ IN-K
1	0.0	-13.2	26.9	-37.5	0.0	0.0
2	0.0	-13.2	26.9	-37.5	0.0	0.0
3	0.0	-13.2	26.9	-37.5	0.0	0.0
4	0.0	-13.2	26.9	-37.5	0.0	0.0
5	0.0	-13.2	26.9	-37.5	0.0	0.0
6	0.0	-13.2	26.9	-37.5	0.0	0.0
7	0.0	-13.2	26.9	-37.5	0.0	0.0
8	0.0	-13.2	26.9	-37.5	0.0	0.0
9	0.0	-13.2	26.9	-37.5	0.0	0.0
10	0.0	-13.2	26.9	-37.5	0.0	0.0
11	0.0	10.0	19.8	-24.0	0.0	0.0
12	0.0	10.0	19.8	-24.0	0.0	0.0
13	0.0	10.0	19.8	-24.0	0.0	0.0
14	0.0	10.0	19.8	-24.0	0.0	0.0
15	0.0	10.0	19.8	-24.0	0.0	0.0
16	0.0	10.0	19.8	-24.0	0.0	0.0
17	0.0	10.0	19.8	-24.0	0.0	0.0
18	0.0	10.0	19.8	-24.0	0.0	0.0
19	0.0	10.0	19.8	-24.0	0.0	0.0
20	0.0	10.0	19.8	-24.0	0.0	0.0
21	0.0	4.7	9.2	-27.1	0.0	0.0
22	0.0	4.7	9.2	-27.1	0.0	0.0
23	0.0	4.7	9.2	-27.1	0.0	0.0
24	0.0	4.7	9.2	-27.1	0.0	0.0
25	0.0	4.7	9.2	-27.1	0.0	0.0
26	0.0	4.7	9.2	-27.1	0.0	0.0
27	0.0	4.7	9.2	-27.1	0.0	0.0
28	0.0	4.7	9.2	-27.1	0.0	0.0
29	0.0	4.7	9.2	-27.1	0.0	0.0
30	0.0	4.7	9.2	-27.1	0.0	0.0

LOAD CASE - 2

PILE	PX	PY	PZ	MX	MY	MZ

	K	K	K	IN-K	IN-K	IN-K
1	0.0	-16.4	33.0	-16.7	0.0	0.0
2	0.0	-16.4	33.0	-16.7	0.0	0.0
3	0.0	-16.4	33.0	-16.7	0.0	0.0
4	0.0	-16.4	33.0	-16.7	0.0	0.0
5	0.0	-16.4	33.0	-16.7	0.0	0.0
6	0.0	-16.4	33.0	-16.7	0.0	0.0
7	0.0	-16.4	33.0	-16.7	0.0	0.0
8	0.0	-16.4	33.0	-16.7	0.0	0.0
9	0.0	-16.4	33.0	-16.7	0.0	0.0
10	0.0	-16.4	33.0	-16.7	0.0	0.0
11	0.0	10.2	20.4	-1.1	0.0	0.0
12	0.0	10.2	20.4	-1.1	0.0	0.0
13	0.0	10.2	20.4	-1.1	0.0	0.0
14	0.0	10.2	20.4	-1.1	0.0	0.0
15	0.0	10.2	20.4	-1.1	0.0	0.0
16	0.0	10.2	20.4	-1.1	0.0	0.0
17	0.0	10.2	20.4	-1.1	0.0	0.0
18	0.0	10.2	20.4	-1.1	0.0	0.0
19	0.0	10.2	20.4	-1.1	0.0	0.0
20	0.0	10.2	20.4	-1.1	0.0	0.0
21	0.0	7.7	15.5	-2.6	0.0	0.0
22	0.0	7.7	15.5	-2.6	0.0	0.0
23	0.0	7.7	15.5	-2.6	0.0	0.0
24	0.0	7.7	15.5	-2.6	0.0	0.0
25	0.0	7.7	15.5	-2.6	0.0	0.0
26	0.0	7.7	15.5	-2.6	0.0	0.0
27	0.0	7.7	15.5	-2.6	0.0	0.0
28	0.0	7.7	15.5	-2.6	0.0	0.0
29	0.0	7.7	15.5	-2.6	0.0	0.0
30	0.0	7.7	15.5	-2.6	0.0	0.0

LOAD CASE - 3

PILE	PX	PY	PZ	MX	MY	MZ
	K	K	K	IN-K	IN-K	IN-K
1	0.0	-13.7	27.5	1.4	0.0	0.0
2	0.0	-13.7	27.5	1.4	0.0	0.0
3	0.0	-13.7	27.5	1.4	0.0	0.0
4	0.0	-13.7	27.5	1.4	0.0	0.0
5	0.0	-13.7	27.5	1.4	0.0	0.0
6	0.0	-13.7	27.5	1.4	0.0	0.0
7	0.0	-13.7	27.5	1.4	0.0	0.0
8	0.0	-13.7	27.5	1.4	0.0	0.0
9	0.0	-13.7	27.5	1.4	0.0	0.0
10	0.0	-13.7	27.5	1.4	0.0	0.0
11	0.0	9.9	20.1	15.2	0.0	0.0

12	0.0	9.9	20.1	15.2	0.0	0.0
13	0.0	9.9	20.1	15.2	0.0	0.0
14	0.0	9.9	20.1	15.2	0.0	0.0
15	0.0	9.9	20.1	15.2	0.0	0.0
16	0.0	9.9	20.1	15.2	0.0	0.0
17	0.0	9.9	20.1	15.2	0.0	0.0
18	0.0	9.9	20.1	15.2	0.0	0.0
19	0.0	9.9	20.1	15.2	0.0	0.0
20	0.0	9.9	20.1	15.2	0.0	0.0
21	0.0	10.5	21.3	15.6	0.0	0.0
22	0.0	10.5	21.3	15.6	0.0	0.0
23	0.0	10.5	21.3	15.6	0.0	0.0
24	0.0	10.5	21.3	15.6	0.0	0.0
25	0.0	10.5	21.3	15.6	0.0	0.0
26	0.0	10.5	21.3	15.6	0.0	0.0
27	0.0	10.5	21.3	15.6	0.0	0.0
28	0.0	10.5	21.3	15.6	0.0	0.0
29	0.0	10.5	21.3	15.6	0.0	0.0
30	0.0	10.5	21.3	15.6	0.0	0.0

LOAD CASE - 4

PILE	PX K	PY K	PZ K	MX IN-K	MY IN-K	MZ IN-K
1	0.0	0.7	0.0	-102.6	0.0	0.0
2	0.0	0.7	0.0	-102.6	0.0	0.0
3	0.0	0.7	0.0	-102.6	0.0	0.0
4	0.0	0.7	0.0	-102.6	0.0	0.0
5	0.0	0.7	0.0	-102.6	0.0	0.0
6	0.0	0.7	0.0	-102.6	0.0	0.0
7	0.0	0.7	0.0	-102.6	0.0	0.0
8	0.0	0.7	0.0	-102.6	0.0	0.0
9	0.0	0.7	0.0	-102.6	0.0	0.0
10	0.0	0.7	0.0	-102.6	0.0	0.0
11	0.0	16.3	31.3	-93.5	0.0	0.0
12	0.0	16.3	31.3	-93.5	0.0	0.0
13	0.0	16.3	31.3	-93.5	0.0	0.0
14	0.0	16.3	31.3	-93.5	0.0	0.0
15	0.0	16.3	31.3	-93.5	0.0	0.0
16	0.0	16.3	31.3	-93.5	0.0	0.0
17	0.0	16.3	31.3	-93.5	0.0	0.0
18	0.0	16.3	31.3	-93.5	0.0	0.0
19	0.0	16.3	31.3	-93.5	0.0	0.0
20	0.0	16.3	31.3	-93.5	0.0	0.0
21	0.0	4.2	7.0	-100.6	0.0	0.0
22	0.0	4.2	7.0	-100.6	0.0	0.0
23	0.0	4.2	7.0	-100.6	0.0	0.0
24	0.0	4.2	7.0	-100.6	0.0	0.0

25	0.0	4.2	7.0	-100.6	0.0	0.0
26	0.0	4.2	7.0	-100.6	0.0	0.0
27	0.0	4.2	7.0	-100.6	0.0	0.0
28	0.0	4.2	7.0	-100.6	0.0	0.0
29	0.0	4.2	7.0	-100.6	0.0	0.0
30	0.0	4.2	7.0	-100.6	0.0	0.0

LOAD CASE - 5

PILE	PX K	PY K	PZ K	MX IN-K	MY IN-K	MZ IN-K
1	0.0	2.4	-3.2	-127.8	0.0	0.0
2	0.0	2.4	-3.2	-127.8	0.0	0.0
3	0.0	2.4	-3.2	-127.8	0.0	0.0
4	0.0	2.4	-3.2	-127.8	0.0	0.0
5	0.0	2.4	-3.2	-127.8	0.0	0.0
6	0.0	2.4	-3.2	-127.8	0.0	0.0
7	0.0	2.4	-3.2	-127.8	0.0	0.0
8	0.0	2.4	-3.2	-127.8	0.0	0.0
9	0.0	2.4	-3.2	-127.8	0.0	0.0
10	0.0	2.4	-3.2	-127.8	0.0	0.0
11	0.0	17.1	32.7	-119.2	0.0	0.0
12	0.0	17.1	32.7	-119.2	0.0	0.0
13	0.0	17.1	32.7	-119.2	0.0	0.0
14	0.0	17.1	32.7	-119.2	0.0	0.0
15	0.0	17.1	32.7	-119.2	0.0	0.0
16	0.0	17.1	32.7	-119.2	0.0	0.0
17	0.0	17.1	32.7	-119.2	0.0	0.0
18	0.0	17.1	32.7	-119.2	0.0	0.0
19	0.0	17.1	32.7	-119.2	0.0	0.0
20	0.0	17.1	32.7	-119.2	0.0	0.0
21	0.0	1.6	1.4	-128.3	0.0	0.0
22	0.0	1.6	1.4	-128.3	0.0	0.0
23	0.0	1.6	1.4	-128.3	0.0	0.0
24	0.0	1.6	1.4	-128.3	0.0	0.0
25	0.0	1.6	1.4	-128.3	0.0	0.0
26	0.0	1.6	1.4	-128.3	0.0	0.0
27	0.0	1.6	1.4	-128.3	0.0	0.0
28	0.0	1.6	1.4	-128.3	0.0	0.0
29	0.0	1.6	1.4	-128.3	0.0	0.0
30	0.0	1.6	1.4	-128.3	0.0	0.0

LOAD CASE - 6

PILE	PX K	PY K	PZ K	MX IN-K	MY IN-K	MZ IN-K

1	0.0	3.4	-6.0	-52.8	0.0	0.0
2	0.0	3.4	-6.0	-52.8	0.0	0.0
3	0.0	3.4	-6.0	-52.8	0.0	0.0
4	0.0	3.4	-6.0	-52.8	0.0	0.0
5	0.0	3.4	-6.0	-52.8	0.0	0.0
6	0.0	3.4	-6.0	-52.8	0.0	0.0
7	0.0	3.4	-6.0	-52.8	0.0	0.0
8	0.0	3.4	-6.0	-52.8	0.0	0.0
9	0.0	3.4	-6.0	-52.8	0.0	0.0
10	0.0	3.4	-6.0	-52.8	0.0	0.0
11	0.0	13.7	26.8	-46.7	0.0	0.0
12	0.0	13.7	26.8	-46.7	0.0	0.0
13	0.0	13.7	26.8	-46.7	0.0	0.0
14	0.0	13.7	26.8	-46.7	0.0	0.0
15	0.0	13.7	26.8	-46.7	0.0	0.0
16	0.0	13.7	26.8	-46.7	0.0	0.0
17	0.0	13.7	26.8	-46.7	0.0	0.0
18	0.0	13.7	26.8	-46.7	0.0	0.0
19	0.0	13.7	26.8	-46.7	0.0	0.0
20	0.0	13.7	26.8	-46.7	0.0	0.0
21	0.0	9.1	17.5	-49.5	0.0	0.0
22	0.0	9.1	17.5	-49.5	0.0	0.0
23	0.0	9.1	17.5	-49.5	0.0	0.0
24	0.0	9.1	17.5	-49.5	0.0	0.0
25	0.0	9.1	17.5	-49.5	0.0	0.0
26	0.0	9.1	17.5	-49.5	0.0	0.0
27	0.0	9.1	17.5	-49.5	0.0	0.0
28	0.0	9.1	17.5	-49.5	0.0	0.0
29	0.0	9.1	17.5	-49.5	0.0	0.0
30	0.0	9.1	17.5	-49.5	0.0	0.0

LOAD CASE - 7

PILE	PX K	PY K	PZ K	MX IN-K	MY IN-K	MZ IN-K
1	0.0	5.1	-9.1	-78.1	0.0	0.0
2	0.0	5.1	-9.1	-78.1	0.0	0.0
3	0.0	5.1	-9.1	-78.1	0.0	0.0
4	0.0	5.1	-9.1	-78.1	0.0	0.0
5	0.0	5.1	-9.1	-78.1	0.0	0.0
6	0.0	5.1	-9.1	-78.1	0.0	0.0
7	0.0	5.1	-9.1	-78.1	0.0	0.0
8	0.0	5.1	-9.1	-78.1	0.0	0.0
9	0.0	5.1	-9.1	-78.1	0.0	0.0
10	0.0	5.1	-9.1	-78.1	0.0	0.0
11	0.0	14.6	28.2	-72.5	0.0	0.0
12	0.0	14.6	28.2	-72.5	0.0	0.0
13	0.0	14.6	28.2	-72.5	0.0	0.0

14	0.0	14.6	28.2	-72.5	0.0	0.0
15	0.0	14.6	28.2	-72.5	0.0	0.0
16	0.0	14.6	28.2	-72.5	0.0	0.0
17	0.0	14.6	28.2	-72.5	0.0	0.0
18	0.0	14.6	28.2	-72.5	0.0	0.0
19	0.0	14.6	28.2	-72.5	0.0	0.0
20	0.0	14.6	28.2	-72.5	0.0	0.0
21	0.0	6.5	11.9	-77.3	0.0	0.0
22	0.0	6.5	11.9	-77.3	0.0	0.0
23	0.0	6.5	11.9	-77.3	0.0	0.0
24	0.0	6.5	11.9	-77.3	0.0	0.0
25	0.0	6.5	11.9	-77.3	0.0	0.0
26	0.0	6.5	11.9	-77.3	0.0	0.0
27	0.0	6.5	11.9	-77.3	0.0	0.0
28	0.0	6.5	11.9	-77.3	0.0	0.0
29	0.0	6.5	11.9	-77.3	0.0	0.0
30	0.0	6.5	11.9	-77.3	0.0	0.0

NO FILES WERE GENERATED DURING THIS RUN.

```
10  Reach E Pipeline Crossing Twall Fixed
20  PIL  1  -22.5   2.5   0
30  BAT   2   1
40  ANG   270   1
50  PIL  2  -17.5   2.5   0
60  BAT   2   2
70  ANG   270   2
80  PIL  3  -12.5   2.5   0
90  BAT   2   3
100  ANG   270   3
110  PIL  4  -7.5   2.5   0
120  BAT   2   4
130  ANG   270   4
140  PIL  5  -2.5   2.5   0
150  BAT   2   5
160  ANG   270   5
170  PIL  6   2.5   2.5   0
180  BAT   2   6
190  ANG   270   6
200  PIL  7   7.5   2.5   0
210  BAT   2   7
220  ANG   270   7
230  PIL  8   12.5   2.5   0
240  BAT   2   8
250  ANG   270   8
260  PIL  9   17.5   2.5   0
270  BAT   2   9
280  ANG   270   9
290  PIL  10   22.5   2.5   0
300  BAT   2   10
310  ANG   270   10
320  PIL  11  -22.5   7.5   0
330  BAT   2   11
340  ANG   90   11
350  PIL  12  -17.5   7.5   0
360  BAT   2   12
370  ANG   90   12
380  PIL  13  -12.5   7.5   0
390  BAT   2   13
400  ANG   90   13
410  PIL  14  -7.5   7.5   0
420  BAT   2   14
430  ANG   90   14
440  PIL  15  -2.5   7.5   0
450  BAT   2   15
460  ANG   90   15
470  PIL  16   2.5   7.5   0
480  BAT   2   16
490  ANG   90   16
500  PIL  17   7.5   7.5   0
```

```
510  BAT   2   17
520  ANG   90   17
530  PIL  18   12.5   7.5   0
540  BAT   2   18
550  ANG   90   18
560  PIL  19   17.5   7.5   0
570  BAT   2   19
580  ANG   90   19
590  PIL  20   22.5   7.5   0
600  BAT   2   20
610  ANG   90   20
620  PIL  21  -22.5   12.5   0
630  BAT   2   21
640  ANG   90   21
650  PIL  22  -17.5   12.5   0
660  BAT   2   22
670  ANG   90   22
680  PIL  23  -12.5   12.5   0
690  BAT   2   23
700  ANG   90   23
710  PIL  24  -7.5   12.5   0
720  BAT   2   24
730  ANG   90   24
740  PIL  25  -2.5   12.5   0
750  BAT   2   25
760  ANG   90   25
770  PIL  26   2.5   12.5   0
780  BAT   2   26
790  ANG   90   26
800  PIL  27   7.5   12.5   0
810  BAT   2   27
820  ANG   90   27
830  PIL  28   12.5   12.5   0
840  BAT   2   28
850  ANG   90   28
860  PIL  29   17.5   12.5   0
870  BAT   2   29
880  ANG   90   29
890  PIL  30   22.5   12.5   0
900  BAT   2   30
910  ANG   90   30
920  PRO  29000  326  904  26.1  2  0  1 TO 30
930  SOI ES 0.0345 L  69  0  1 TO 30
940  RED  1  1  1
950  ALL H 107  85  652  652  1107  3275  1 TO 30
960  FIX  1 TO 30
970 LOAD 8 0 703 326 7213 0 0
970 LOAD 9 0 703 182 5770 0 0
970  FOV  1.33  1.33  8
970  FOV  1.33  1.33  9
```

```
980  TOUT 1 2 3 4 5 6 7
990  PFO ALL
1000  PLB ALL
```

CPGA - CASE PILE GROUP ANALYSIS PROGRAM
RUN DATE: 01-OCT-20 RUN TIME: 18:23:44

FOR PILES WITH UNSUPPORTED HEIGHT:
A. CPGA CANNOT CALCULATE PMAXMOM FOR NH TYPE SOIL
B. THE ALLOWABLE STRESS CHECKS, ASC AND AST, ARE
NOT FULLY DEVELOPED FOR UNSUPPORTED PILES.
WORK IS IN PROGRESS TO COMPLETE THIS ASPECT OF CPGA.

ELASTIC CENTER LOCATION IS NOT COMPUTED FOR 3-DIMENSIONAL PROBLEMS.

REACH E PIPELINE CROSSING TWALL FIXED
DATA UNKNOWN - REJECTED.

THERE ARE 30 PILES AND
2 LOAD CASES IN THIS RUN.

ALL PILE COORDINATES ARE CONTAINED WITHIN A BOX

	X	Y	Z
WITH DIAGONAL COORDINATES = (	-22.50 ,	2.50 ,	0.00)
(	22.50 ,	12.50 ,	0.00)

****

PILE PROPERTIES AS INPUT

E	I1	I2	A	C33	B66
KSI	IN**4	IN**4	IN**2		
0.29000E+05	0.32600E+03	0.90400E+03	0.26100E+02	0.20000E+01	0.00000E+00

THESE PILE PROPERTIES APPLY TO THE FOLLOWING PILES -

ALL

****

SOIL DESCRIPTIONS AS INPUT

ES	ESOIL	LENGTH	L	LU
	K/IN**2		FT	FT

```
        0.34500E-01    L      0.69000E+02   0.00000E+00

 ESOIL(ORIGINAL)     RGROUP     RCYCLIC
   K/IN**2
  0.34500E-01       0.1000E+01 0.1000E+01
```

THIS SOIL DESCRIPTION APPLIES TO THE FOLLOWING PILES -

ALL

****

PILE STIFFNESSES AS CALCULATED FROM PROPERTIES

```
 0.81007E+01  0.00000E+00  0.00000E+00  0.00000E+00  0.95103E+03  0.00000E+00
 0.00000E+00  0.62774E+01  0.00000E+00 -0.57111E+03  0.00000E+00  0.00000E+00
 0.00000E+00  0.00000E+00  0.18283E+04  0.00000E+00  0.00000E+00  0.00000E+00
 0.00000E+00 -0.57111E+03  0.00000E+00  0.10392E+06  0.00000E+00  0.00000E+00
 0.95103E+03  0.00000E+00  0.00000E+00  0.00000E+00  0.22330E+06  0.00000E+00
 0.00000E+00  0.00000E+00  0.00000E+00  0.00000E+00  0.00000E+00  0.00000E+00
```

THIS MATRIX APPLIES TO THE FOLLOWING PILES -

1

****

PILE GEOMETRY AS INPUT AND/OR GENERATED

NUM	X FT	Y FT	Z FT	BATTER	ANGLE	LENGTH FT	FIXITY
1	-22.50	2.50	0.00	2.00	270.00	69.00	F
2	-17.50	2.50	0.00	2.00	270.00	69.00	F
3	-12.50	2.50	0.00	2.00	270.00	69.00	F
4	-7.50	2.50	0.00	2.00	270.00	69.00	F
5	-2.50	2.50	0.00	2.00	270.00	69.00	F
6	2.50	2.50	0.00	2.00	270.00	69.00	F
7	7.50	2.50	0.00	2.00	270.00	69.00	F
8	12.50	2.50	0.00	2.00	270.00	69.00	F
9	17.50	2.50	0.00	2.00	270.00	69.00	F
10	22.50	2.50	0.00	2.00	270.00	69.00	F
11	-22.50	7.50	0.00	2.00	90.00	69.00	F
12	-17.50	7.50	0.00	2.00	90.00	69.00	F
13	-12.50	7.50	0.00	2.00	90.00	69.00	F
14	-7.50	7.50	0.00	2.00	90.00	69.00	F

15	-2.50	7.50	0.00	2.00	90.00	69.00	F
16	2.50	7.50	0.00	2.00	90.00	69.00	F
17	7.50	7.50	0.00	2.00	90.00	69.00	F
18	12.50	7.50	0.00	2.00	90.00	69.00	F
19	17.50	7.50	0.00	2.00	90.00	69.00	F
20	22.50	7.50	0.00	2.00	90.00	69.00	F
21	-22.50	12.50	0.00	2.00	90.00	69.00	F
22	-17.50	12.50	0.00	2.00	90.00	69.00	F
23	-12.50	12.50	0.00	2.00	90.00	69.00	F
24	-7.50	12.50	0.00	2.00	90.00	69.00	F
25	-2.50	12.50	0.00	2.00	90.00	69.00	F
26	2.50	12.50	0.00	2.00	90.00	69.00	F
27	7.50	12.50	0.00	2.00	90.00	69.00	F
28	12.50	12.50	0.00	2.00	90.00	69.00	F
29	17.50	12.50	0.00	2.00	90.00	69.00	F
30	22.50	12.50	0.00	2.00	90.00	69.00	F

						2070.00	

****

APPLIED LOADS

LOAD CASE	PX K	PY K	PZ K	MX FT-K	MY FT-K	MZ FT-K	OVERSTRESS COM	TEN
8	0.0	703.0	326.0	7213.0	0.0	0.0	1.33	1.33
9	0.0	703.0	182.0	5770.0	0.0	0.0	1.33	1.33

****

ORIGINAL PILE GROUP STIFFNESS MATRIX

0.18832E+03	0.22259E-03	-0.88591E-04	0.13082E-01	0.15324E+05	-0.19503E+05
0.22259E-03	0.11164E+05	0.72806E+04	0.15034E+07	0.20674E-03	-0.14722E-01
-0.88591E-04	0.72806E+04	0.43927E+05	0.39577E+07	0.51752E-04	-0.13289E-01
0.13082E-01	0.15034E+07	0.39577E+07	0.46972E+09	-0.93042E-01	-0.24530E+01
0.15324E+05	0.20674E-03	0.51752E-04	-0.93042E-01	0.13071E+10	-0.21803E+09
-0.19503E+05	-0.14722E-01	-0.13289E-01	-0.24530E+01	-0.21803E+09	0.33524E+09

30 PILES 2 LOAD CASES

LOAD CASE 8. NUMBER OF FAILURES = 0. NUMBER OF PILES IN TENSION = 10.

LOAD CASE 9. NUMBER OF FAILURES = 0. NUMBER OF PILES IN TENSION = 10.

****

PILE CAP DISPLACEMENTS

LOAD CASE	DX IN	DY IN	DZ IN	RX RAD	RY RAD	RZ RAD
8	-0.7904E-07	0.6113E-01	-0.6996E-02	0.4757E-04	0.6878E-12	-0.1396E-11
9	-0.8292E-07	0.7675E-01	0.1136E-02	-0.1078E-03	0.6570E-12	-0.1770E-11

****

PILE FORCES IN LOCAL GEOMETRY

M1 & M2 NOT AT PILE HEAD FOR PINNED PILES
* INDICATES PILE FAILURE
# INDICATES CBF BASED ON MOMENTS DUE TO
(F3*EMIN) FOR CONCRETE PILES
B INDICATES BUCKLING CONTROLS

LOAD CASE - 8

PILE	F1 K	F2 K	F3 K	M1 IN-K	M2 IN-K	M3 IN-K	ALF	CBF
1	-0.4	0.0	-59.1	0.0	-39.0	0.0	0.52	0.08
2	-0.4	0.0	-59.1	0.0	-39.0	0.0	0.52	0.08
3	-0.4	0.0	-59.1	0.0	-39.0	0.0	0.52	0.08
4	-0.4	0.0	-59.1	0.0	-39.0	0.0	0.52	0.08
5	-0.4	0.0	-59.1	0.0	-39.0	0.0	0.52	0.08
6	-0.4	0.0	-59.1	0.0	-39.0	0.0	0.52	0.08
7	-0.4	0.0	-59.1	0.0	-39.0	0.0	0.52	0.08
8	-0.4	0.0	-59.1	0.0	-39.0	0.0	0.52	0.08
9	-0.4	0.0	-59.1	0.0	-39.0	0.0	0.52	0.08
10	-0.4	0.0	-59.1	0.0	-39.0	0.0	0.52	0.08
11	0.4	0.0	45.5	0.0	42.5	0.0	0.32	0.06
12	0.4	0.0	45.5	0.0	42.5	0.0	0.32	0.06
13	0.4	0.0	45.5	0.0	42.5	0.0	0.32	0.06
14	0.4	0.0	45.5	0.0	42.5	0.0	0.32	0.06
15	0.4	0.0	45.5	0.0	42.5	0.0	0.32	0.06
16	0.4	0.0	45.5	0.0	42.5	0.0	0.32	0.06
17	0.4	0.0	45.5	0.0	42.5	0.0	0.32	0.06
18	0.4	0.0	45.5	0.0	42.5	0.0	0.32	0.06
19	0.4	0.0	45.5	0.0	42.5	0.0	0.32	0.06
20	0.4	0.0	45.5	0.0	42.5	0.0	0.32	0.06

21	0.4	0.0	50.2	0.0	41.3	0.0	0.35	0.07
22	0.4	0.0	50.2	0.0	41.3	0.0	0.35	0.07
23	0.4	0.0	50.2	0.0	41.3	0.0	0.35	0.07
24	0.4	0.0	50.2	0.0	41.3	0.0	0.35	0.07
25	0.4	0.0	50.2	0.0	41.3	0.0	0.35	0.07
26	0.4	0.0	50.2	0.0	41.3	0.0	0.35	0.07
27	0.4	0.0	50.2	0.0	41.3	0.0	0.35	0.07
28	0.4	0.0	50.2	0.0	41.3	0.0	0.35	0.07
29	0.4	0.0	50.2	0.0	41.3	0.0	0.35	0.07
30	0.4	0.0	50.2	0.0	41.3	0.0	0.35	0.07

LOAD CASE - 9

PILE	F1 K	F2 K	F3 K	M1 IN-K	M2 IN-K	M3 IN-K	ALF	CBF
1	-0.7	0.0	-66.2	0.0	-88.5	0.0	0.59	0.10
2	-0.7	0.0	-66.2	0.0	-88.5	0.0	0.59	0.10
3	-0.7	0.0	-66.2	0.0	-88.5	0.0	0.59	0.10
4	-0.7	0.0	-66.2	0.0	-88.5	0.0	0.59	0.10
5	-0.7	0.0	-66.2	0.0	-88.5	0.0	0.59	0.10
6	-0.7	0.0	-66.2	0.0	-88.5	0.0	0.59	0.10
7	-0.7	0.0	-66.2	0.0	-88.5	0.0	0.59	0.10
8	-0.7	0.0	-66.2	0.0	-88.5	0.0	0.59	0.10
9	-0.7	0.0	-66.2	0.0	-88.5	0.0	0.59	0.10
10	-0.7	0.0	-66.2	0.0	-88.5	0.0	0.59	0.10
11	0.7	0.0	48.7	0.0	93.0	0.0	0.34	0.08
12	0.7	0.0	48.7	0.0	93.0	0.0	0.34	0.08
13	0.7	0.0	48.7	0.0	93.0	0.0	0.34	0.08
14	0.7	0.0	48.7	0.0	93.0	0.0	0.34	0.08
15	0.7	0.0	48.7	0.0	93.0	0.0	0.34	0.08
16	0.7	0.0	48.7	0.0	93.0	0.0	0.34	0.08
17	0.7	0.0	48.7	0.0	93.0	0.0	0.34	0.08
18	0.7	0.0	48.7	0.0	93.0	0.0	0.34	0.08
19	0.7	0.0	48.7	0.0	93.0	0.0	0.34	0.08
20	0.7	0.0	48.7	0.0	93.0	0.0	0.34	0.08
21	0.7	0.0	38.2	0.0	95.8	0.0	0.27	0.07
22	0.7	0.0	38.2	0.0	95.8	0.0	0.27	0.07
23	0.7	0.0	38.2	0.0	95.8	0.0	0.27	0.07
24	0.7	0.0	38.2	0.0	95.8	0.0	0.27	0.07
25	0.7	0.0	38.2	0.0	95.8	0.0	0.27	0.07
26	0.7	0.0	38.2	0.0	95.8	0.0	0.27	0.07
27	0.7	0.0	38.2	0.0	95.8	0.0	0.27	0.07
28	0.7	0.0	38.2	0.0	95.8	0.0	0.27	0.07
29	0.7	0.0	38.2	0.0	95.8	0.0	0.27	0.07
30	0.7	0.0	38.2	0.0	95.8	0.0	0.27	0.07

****

PILE FORCES IN GLOBAL GEOMETRY

LOAD CASE - 8

PILE	PX K	PY K	PZ K	MX IN-K	MY IN-K	MZ IN-K
1	0.0	26.8	-52.7	-39.0	0.0	0.0
2	0.0	26.8	-52.7	-39.0	0.0	0.0
3	0.0	26.8	-52.7	-39.0	0.0	0.0
4	0.0	26.8	-52.7	-39.0	0.0	0.0
5	0.0	26.8	-52.7	-39.0	0.0	0.0
6	0.0	26.8	-52.7	-39.0	0.0	0.0
7	0.0	26.8	-52.7	-39.0	0.0	0.0
8	0.0	26.8	-52.7	-39.0	0.0	0.0
9	0.0	26.8	-52.7	-39.0	0.0	0.0
10	0.0	26.8	-52.7	-39.0	0.0	0.0
11	0.0	20.7	40.5	-42.5	0.0	0.0
12	0.0	20.7	40.5	-42.5	0.0	0.0
13	0.0	20.7	40.5	-42.5	0.0	0.0
14	0.0	20.7	40.5	-42.5	0.0	0.0
15	0.0	20.7	40.5	-42.5	0.0	0.0
16	0.0	20.7	40.5	-42.5	0.0	0.0
17	0.0	20.7	40.5	-42.5	0.0	0.0
18	0.0	20.7	40.5	-42.5	0.0	0.0
19	0.0	20.7	40.5	-42.5	0.0	0.0
20	0.0	20.7	40.5	-42.5	0.0	0.0
21	0.0	22.8	44.7	-41.3	0.0	0.0
22	0.0	22.8	44.7	-41.3	0.0	0.0
23	0.0	22.8	44.7	-41.3	0.0	0.0
24	0.0	22.8	44.7	-41.3	0.0	0.0
25	0.0	22.8	44.7	-41.3	0.0	0.0
26	0.0	22.8	44.7	-41.3	0.0	0.0
27	0.0	22.8	44.7	-41.3	0.0	0.0
28	0.0	22.8	44.7	-41.3	0.0	0.0
29	0.0	22.8	44.7	-41.3	0.0	0.0
30	0.0	22.8	44.7	-41.3	0.0	0.0

LOAD CASE - 9

PILE	PX K	PY K	PZ K	MX IN-K	MY IN-K	MZ IN-K
1	0.0	30.2	-58.9	-88.5	0.0	0.0
2	0.0	30.2	-58.9	-88.5	0.0	0.0
3	0.0	30.2	-58.9	-88.5	0.0	0.0

4	0.0	30.2	-58.9	-88.5	0.0	0.0
5	0.0	30.2	-58.9	-88.5	0.0	0.0
6	0.0	30.2	-58.9	-88.5	0.0	0.0
7	0.0	30.2	-58.9	-88.5	0.0	0.0
8	0.0	30.2	-58.9	-88.5	0.0	0.0
9	0.0	30.2	-58.9	-88.5	0.0	0.0
10	0.0	30.2	-58.9	-88.5	0.0	0.0
11	0.0	22.4	43.3	-93.0	0.0	0.0
12	0.0	22.4	43.3	-93.0	0.0	0.0
13	0.0	22.4	43.3	-93.0	0.0	0.0
14	0.0	22.4	43.3	-93.0	0.0	0.0
15	0.0	22.4	43.3	-93.0	0.0	0.0
16	0.0	22.4	43.3	-93.0	0.0	0.0
17	0.0	22.4	43.3	-93.0	0.0	0.0
18	0.0	22.4	43.3	-93.0	0.0	0.0
19	0.0	22.4	43.3	-93.0	0.0	0.0
20	0.0	22.4	43.3	-93.0	0.0	0.0
21	0.0	17.7	33.8	-95.8	0.0	0.0
22	0.0	17.7	33.8	-95.8	0.0	0.0
23	0.0	17.7	33.8	-95.8	0.0	0.0
24	0.0	17.7	33.8	-95.8	0.0	0.0
25	0.0	17.7	33.8	-95.8	0.0	0.0
26	0.0	17.7	33.8	-95.8	0.0	0.0
27	0.0	17.7	33.8	-95.8	0.0	0.0
28	0.0	17.7	33.8	-95.8	0.0	0.0
29	0.0	17.7	33.8	-95.8	0.0	0.0
30	0.0	17.7	33.8	-95.8	0.0	0.0

NO FILES WERE GENERATED DURING THIS RUN.

```
10  Reach E Pipeline Twall Pinned
20  PIL  1  -22.5   2.5   0
30  BAT   2   1
40  ANG   270   1
50  PIL  2  -17.5   2.5   0
60  BAT   2   2
70  ANG   270   2
80  PIL  3  -12.5   2.5   0
90  BAT   2   3
100  ANG   270   3
110  PIL  4  -7.5   2.5   0
120  BAT   2   4
130  ANG   270   4
140  PIL  5  -2.5   2.5   0
150  BAT   2   5
160  ANG   270   5
170  PIL  6   2.5   2.5   0
180  BAT   2   6
190  ANG   270   6
200  PIL  7   7.5   2.5   0
210  BAT   2   7
220  ANG   270   7
230  PIL  8   12.5   2.5   0
240  BAT   2   8
250  ANG   270   8
260  PIL  9   17.5   2.5   0
270  BAT   2   9
280  ANG   270   9
290  PIL  10   22.5   2.5   0
300  BAT   2   10
310  ANG   270   10
320  PIL  11  -22.5   7.5   0
330  BAT   2   11
340  ANG   90   11
350  PIL  12  -17.5   7.5   0
360  BAT   2   12
370  ANG   90   12
380  PIL  13  -12.5   7.5   0
390  BAT   2   13
400  ANG   90   13
410  PIL  14  -7.5   7.5   0
420  BAT   2   14
430  ANG   90   14
440  PIL  15  -2.5   7.5   0
450  BAT   2   15
460  ANG   90   15
470  PIL  16   2.5   7.5   0
480  BAT   2   16
490  ANG   90   16
500  PIL  17   7.5   7.5   0
```

```
510  BAT   2   17
520  ANG   90   17
530  PIL  18   12.5   7.5   0
540  BAT   2   18
550  ANG   90   18
560  PIL  19   17.5   7.5   0
570  BAT   2   19
580  ANG   90   19
590  PIL  20   22.5   7.5   0
600  BAT   2   20
610  ANG   90   20
620  PIL  21  -22.5   12.5   0
630  BAT   2   21
640  ANG   90   21
650  PIL  22  -17.5   12.5   0
660  BAT   2   22
670  ANG   90   22
680  PIL  23  -12.5   12.5   0
690  BAT   2   23
700  ANG   90   23
710  PIL  24  -7.5   12.5   0
720  BAT   2   24
730  ANG   90   24
740  PIL  25  -2.5   12.5   0
750  BAT   2   25
760  ANG   90   25
770  PIL  26   2.5   12.5   0
780  BAT   2   26
790  ANG   90   26
800  PIL  27   7.5   12.5   0
810  BAT   2   27
820  ANG   90   27
830  PIL  28   12.5   12.5   0
840  BAT   2   28
850  ANG   90   28
860  PIL  29   17.5   12.5   0
870  BAT   2   29
880  ANG   90   29
890  PIL  30   22.5   12.5   0
900  BAT   2   30
910  ANG   90   30
920  PRO  29000  326  904  26.1  2  0  1 TO 30
930  SOI ES 0.0345 L  69  0  1 TO 30
940  RED  1  1  1
950  ALL H 107  85  652  652  1107  3275  1 TO 30
960  PIN  1 TO 30
970  LOA  1  0  15  559  3232  0  0
970  LOA  2  0  15  689  4277  0  0
970  LOA  3  0  67  689  4886  0  0
970  LOA  4  0  211  383  2975  0  0
```

```
970  LOA  5  0  211  310  2242  0  0
970  LOA  6  0  262  383  3920  0  0
970  LOA  7  0  262  310  3186  0  0
970  FOV  1.167  1.167  2
970  FOV  1.33  1.33  3
970  FOV  1.33  1.33  6
970  FOV  1.33  1.33  7
980  TOUT 1 2 3 4 5 6 7
990  PFO ALL
1000  PLB ALL
```

CPGA - CASE PILE GROUP ANALYSIS PROGRAM
RUN DATE: 01-OCT-20 RUN TIME: 18:57:11

FOR PILES WITH UNSUPPORTED HEIGHT:
A. CPGA CANNOT CALCULATE PMAXMOM FOR NH TYPE SOIL
B. THE ALLOWABLE STRESS CHECKS, ASC AND AST, ARE
NOT FULLY DEVELOPED FOR UNSUPPORTED PILES.
WORK IS IN PROGRESS TO COMPLETE THIS ASPECT OF CPGA.

ELASTIC CENTER LOCATION IS NOT COMPUTED FOR 3-DIMENSIONAL PROBLEMS.

REACH E PIPELINE TWALL PINNED
DATA UNKNOWN - REJECTED.

THERE ARE 30 PILES AND
7 LOAD CASES IN THIS RUN.

ALL PILE COORDINATES ARE CONTAINED WITHIN A BOX

	X	Y	Z
WITH DIAGONAL COORDINATES = (	-22.50 ,	2.50 ,	0.00)
(	22.50 ,	12.50 ,	0.00)

****

PILE PROPERTIES AS INPUT

E	I1	I2	A	C33	B66
KSI	IN**4	IN**4	IN**2		
0.29000E+05	0.32600E+03	0.90400E+03	0.26100E+02	0.20000E+01	0.00000E+00

THESE PILE PROPERTIES APPLY TO THE FOLLOWING PILES -

ALL

****

SOIL DESCRIPTIONS AS INPUT

ES	ESOIL	LENGTH	L	LU
	K/IN**2		FT	FT

```
        0.34500E-01    L      0.69000E+02   0.00000E+00

 ESOIL(ORIGINAL)     RGROUP     RCYCLIC
   K/IN**2
  0.34500E-01       0.1000E+01 0.1000E+01

THIS SOIL DESCRIPTION APPLIES TO THE FOLLOWING PILES -

    ALL

*************************************************************************

         PILE STIFFNESSES AS CALCULATED FROM PROPERTIES


 0.40503E+01  0.00000E+00  0.00000E+00  0.00000E+00  0.00000E+00  0.00000E+00
 0.00000E+00  0.31387E+01  0.00000E+00  0.00000E+00  0.00000E+00  0.00000E+00
 0.00000E+00  0.00000E+00  0.18283E+04  0.00000E+00  0.00000E+00  0.00000E+00
 0.00000E+00  0.00000E+00  0.00000E+00  0.00000E+00  0.00000E+00  0.00000E+00
 0.00000E+00  0.00000E+00  0.00000E+00  0.00000E+00  0.00000E+00  0.00000E+00
 0.00000E+00  0.00000E+00  0.00000E+00  0.00000E+00  0.00000E+00  0.00000E+00


THIS MATRIX APPLIES TO THE FOLLOWING PILES -

   1


*************************************************************************

         PILE GEOMETRY AS INPUT AND/OR GENERATED

NUM        X          Y          Z      BATTER    ANGLE    LENGTH  FIXITY
          FT         FT         FT                          FT

  1     -22.50       2.50       0.00      2.00    270.00    69.00     P
  2     -17.50       2.50       0.00      2.00    270.00    69.00     P
  3     -12.50       2.50       0.00      2.00    270.00    69.00     P
  4      -7.50       2.50       0.00      2.00    270.00    69.00     P
  5      -2.50       2.50       0.00      2.00    270.00    69.00     P
  6       2.50       2.50       0.00      2.00    270.00    69.00     P
  7       7.50       2.50       0.00      2.00    270.00    69.00     P
  8      12.50       2.50       0.00      2.00    270.00    69.00     P
  9      17.50       2.50       0.00      2.00    270.00    69.00     P
 10      22.50       2.50       0.00      2.00    270.00    69.00     P
 11     -22.50       7.50       0.00      2.00     90.00    69.00     P
 12     -17.50       7.50       0.00      2.00     90.00    69.00     P
 13     -12.50       7.50       0.00      2.00     90.00    69.00     P
 14      -7.50       7.50       0.00      2.00     90.00    69.00     P
```

15	-2.50	7.50	0.00	2.00	90.00	69.00	P
16	2.50	7.50	0.00	2.00	90.00	69.00	P
17	7.50	7.50	0.00	2.00	90.00	69.00	P
18	12.50	7.50	0.00	2.00	90.00	69.00	P
19	17.50	7.50	0.00	2.00	90.00	69.00	P
20	22.50	7.50	0.00	2.00	90.00	69.00	P
21	-22.50	12.50	0.00	2.00	90.00	69.00	P
22	-17.50	12.50	0.00	2.00	90.00	69.00	P
23	-12.50	12.50	0.00	2.00	90.00	69.00	P
24	-7.50	12.50	0.00	2.00	90.00	69.00	P
25	-2.50	12.50	0.00	2.00	90.00	69.00	P
26	2.50	12.50	0.00	2.00	90.00	69.00	P
27	7.50	12.50	0.00	2.00	90.00	69.00	P
28	12.50	12.50	0.00	2.00	90.00	69.00	P
29	17.50	12.50	0.00	2.00	90.00	69.00	P
30	22.50	12.50	0.00	2.00	90.00	69.00	P

						2070.00	

****

APPLIED LOADS

LOAD CASE	PX K	PY K	PZ K	MX FT-K	MY FT-K	MZ FT-K	OVERSTRESS COM	TEN
1	0.0	15.0	559.0	3232.0	0.0	0.0		
2	0.0	15.0	689.0	4277.0	0.0	0.0	1.17	1.17
3	0.0	67.0	689.0	4886.0	0.0	0.0	1.33	1.33
4	0.0	211.0	383.0	2975.0	0.0	0.0		
5	0.0	211.0	310.0	2242.0	0.0	0.0		
6	0.0	262.0	383.0	3920.0	0.0	0.0	1.33	1.33
7	0.0	262.0	310.0	3186.0	0.0	0.0	1.33	1.33

****

ORIGINAL PILE GROUP STIFFNESS MATRIX

0.94162E+02	0.22252E-03	-0.88788E-04	0.13318E-01	0.00000E+00	-0.84746E+04
0.22252E-03	0.11067E+05	0.72968E+04	0.15323E+07	-0.87311E-10	-0.14687E-01
-0.88788E-04	0.72968E+04	0.43903E+05	0.39512E+07	-0.11642E-09	-0.13318E-01
0.13318E-01	0.15323E+07	0.39512E+07	0.46098E+09	-0.14901E-07	-0.24772E+01
0.21684E-17	0.29104E-10	-0.17462E-09	0.14901E-07	0.13039E+10	-0.21672E+09
-0.84746E+04	-0.14687E-01	-0.13318E-01	-0.24772E+01	-0.21672E+09	0.32967E+09

30 PILES 7 LOAD CASES

LOAD CASE 1. NUMBER OF FAILURES = 0. NUMBER OF PILES IN TENSION = 0.

LOAD CASE 2. NUMBER OF FAILURES = 0. NUMBER OF PILES IN TENSION = 0.

LOAD CASE 3. NUMBER OF FAILURES = 0. NUMBER OF PILES IN TENSION = 0.

LOAD CASE 4. NUMBER OF FAILURES = 0. NUMBER OF PILES IN TENSION = 10.

LOAD CASE 5. NUMBER OF FAILURES = 0. NUMBER OF PILES IN TENSION = 20.

LOAD CASE 6. NUMBER OF FAILURES = 0. NUMBER OF PILES IN TENSION = 10.

LOAD CASE 7. NUMBER OF FAILURES = 0. NUMBER OF PILES IN TENSION = 10.

****

PILE CAP DISPLACEMENTS

LOAD CASE	DX IN	DY IN	DZ IN	RX RAD	RY RAD	RZ RAD
1	0.3242E-07	0.6936E-02	0.2661E-01	-0.1670E-03	0.1796E-12	0.1081E-11
2	0.4053E-07	-0.4156E-02	0.2240E-01	-0.6688E-04	0.2350E-12	0.1414E-11
3	0.2699E-07	-0.7544E-02	0.1419E-01	0.3063E-04	0.2167E-12	0.1304E-11
4	-0.2843E-07	0.5320E-01	0.3862E-01	-0.4305E-03	-0.6517E-14	-0.3921E-13
5	-0.3284E-07	0.6509E-01	0.4577E-01	-0.5503E-03	-0.4303E-13	-0.2589E-12
6	-0.4206E-07	0.3643E-01	0.1918E-01	-0.1834E-03	-0.1158E-13	-0.6965E-13
7	-0.4647E-07	0.4835E-01	0.2636E-01	-0.3037E-03	-0.4813E-13	-0.2896E-12

****

PILE FORCES IN LOCAL GEOMETRY

M1 & M2 NOT AT PILE HEAD FOR PINNED PILES
* INDICATES PILE FAILURE
# INDICATES CBF BASED ON MOMENTS DUE TO
(F3*EMIN) FOR CONCRETE PILES
B INDICATES BUCKLING CONTROLS

LOAD CASE - 1

PILE	F1 K	F2 K	F3 K	M1 IN-K	M2 IN-K	M3 IN-K	ALF	CBF

1	-0.1	0.0	29.7	0.0	4.9	0.0	0.28	0.05
2	-0.1	0.0	29.7	0.0	4.9	0.0	0.28	0.05
3	-0.1	0.0	29.7	0.0	4.9	0.0	0.28	0.05
4	-0.1	0.0	29.7	0.0	4.9	0.0	0.28	0.05
5	-0.1	0.0	29.7	0.0	4.9	0.0	0.28	0.05
6	-0.1	0.0	29.7	0.0	4.9	0.0	0.28	0.05
7	-0.1	0.0	29.7	0.0	4.9	0.0	0.28	0.05
8	-0.1	0.0	29.7	0.0	4.9	0.0	0.28	0.05
9	-0.1	0.0	29.7	0.0	4.9	0.0	0.28	0.05
10	-0.1	0.0	29.7	0.0	4.9	0.0	0.28	0.05
11	0.0	0.0	24.6	0.0	-0.3	0.0	0.23	0.04
12	0.0	0.0	24.6	0.0	-0.3	0.0	0.23	0.04
13	0.0	0.0	24.6	0.0	-0.3	0.0	0.23	0.04
14	0.0	0.0	24.6	0.0	-0.3	0.0	0.23	0.04
15	0.0	0.0	24.6	0.0	-0.3	0.0	0.23	0.04
16	0.0	0.0	24.6	0.0	-0.3	0.0	0.23	0.04
17	0.0	0.0	24.6	0.0	-0.3	0.0	0.23	0.04
18	0.0	0.0	24.6	0.0	-0.3	0.0	0.23	0.04
19	0.0	0.0	24.6	0.0	-0.3	0.0	0.23	0.04
20	0.0	0.0	24.6	0.0	-0.3	0.0	0.23	0.04
21	0.0	0.0	8.2	0.0	-1.7	0.0	0.08	0.01
22	0.0	0.0	8.2	0.0	-1.7	0.0	0.08	0.01
23	0.0	0.0	8.2	0.0	-1.7	0.0	0.08	0.01
24	0.0	0.0	8.2	0.0	-1.7	0.0	0.08	0.01
25	0.0	0.0	8.2	0.0	-1.7	0.0	0.08	0.01
26	0.0	0.0	8.2	0.0	-1.7	0.0	0.08	0.01
27	0.0	0.0	8.2	0.0	-1.7	0.0	0.08	0.01
28	0.0	0.0	8.2	0.0	-1.7	0.0	0.08	0.01
29	0.0	0.0	8.2	0.0	-1.7	0.0	0.08	0.01
30	0.0	0.0	8.2	0.0	-1.7	0.0	0.08	0.01

LOAD CASE - 2

PILE	F1 K	F2 K	F3 K	M1 IN-K	M2 IN-K	M3 IN-K	ALF	CBF
1	0.0	0.0	36.8	0.0	1.7	0.0	0.29	0.05
2	0.0	0.0	36.8	0.0	1.7	0.0	0.29	0.05
3	0.0	0.0	36.8	0.0	1.7	0.0	0.29	0.05
4	0.0	0.0	36.8	0.0	1.7	0.0	0.29	0.05
5	0.0	0.0	36.8	0.0	1.7	0.0	0.29	0.05
6	0.0	0.0	36.8	0.0	1.7	0.0	0.29	0.05
7	0.0	0.0	36.8	0.0	1.7	0.0	0.29	0.05
8	0.0	0.0	36.8	0.0	1.7	0.0	0.29	0.05
9	0.0	0.0	36.8	0.0	1.7	0.0	0.29	0.05
10	0.0	0.0	36.8	0.0	1.7	0.0	0.29	0.05
11	0.0	0.0	23.4	0.0	3.4	0.0	0.19	0.03
12	0.0	0.0	23.4	0.0	3.4	0.0	0.19	0.03
13	0.0	0.0	23.4	0.0	3.4	0.0	0.19	0.03

14	0.0	0.0	23.4	0.0	3.4	0.0	0.19	0.03
15	0.0	0.0	23.4	0.0	3.4	0.0	0.19	0.03
16	0.0	0.0	23.4	0.0	3.4	0.0	0.19	0.03
17	0.0	0.0	23.4	0.0	3.4	0.0	0.19	0.03
18	0.0	0.0	23.4	0.0	3.4	0.0	0.19	0.03
19	0.0	0.0	23.4	0.0	3.4	0.0	0.19	0.03
20	0.0	0.0	23.4	0.0	3.4	0.0	0.19	0.03
21	0.0	0.0	16.8	0.0	2.8	0.0	0.13	0.02
22	0.0	0.0	16.8	0.0	2.8	0.0	0.13	0.02
23	0.0	0.0	16.8	0.0	2.8	0.0	0.13	0.02
24	0.0	0.0	16.8	0.0	2.8	0.0	0.13	0.02
25	0.0	0.0	16.8	0.0	2.8	0.0	0.13	0.02
26	0.0	0.0	16.8	0.0	2.8	0.0	0.13	0.02
27	0.0	0.0	16.8	0.0	2.8	0.0	0.13	0.02
28	0.0	0.0	16.8	0.0	2.8	0.0	0.13	0.02
29	0.0	0.0	16.8	0.0	2.8	0.0	0.13	0.02
30	0.0	0.0	16.8	0.0	2.8	0.0	0.13	0.02

LOAD CASE - 3

PILE	F1 K	F2 K	F3 K	M1 IN-K	M2 IN-K	M3 IN-K	ALF	CBF
1	0.0	0.0	30.9	0.0	0.0	0.0	0.22	0.04
2	0.0	0.0	30.9	0.0	0.0	0.0	0.22	0.04
3	0.0	0.0	30.9	0.0	0.0	0.0	0.22	0.04
4	0.0	0.0	30.9	0.0	0.0	0.0	0.22	0.04
5	0.0	0.0	30.9	0.0	0.0	0.0	0.22	0.04
6	0.0	0.0	30.9	0.0	0.0	0.0	0.22	0.04
7	0.0	0.0	30.9	0.0	0.0	0.0	0.22	0.04
8	0.0	0.0	30.9	0.0	0.0	0.0	0.22	0.04
9	0.0	0.0	30.9	0.0	0.0	0.0	0.22	0.04
10	0.0	0.0	30.9	0.0	0.0	0.0	0.22	0.04
11	-0.1	0.0	21.5	0.0	4.4	0.0	0.15	0.03
12	-0.1	0.0	21.5	0.0	4.4	0.0	0.15	0.03
13	-0.1	0.0	21.5	0.0	4.4	0.0	0.15	0.03
14	-0.1	0.0	21.5	0.0	4.4	0.0	0.15	0.03
15	-0.1	0.0	21.5	0.0	4.4	0.0	0.15	0.03
16	-0.1	0.0	21.5	0.0	4.4	0.0	0.15	0.03
17	-0.1	0.0	21.5	0.0	4.4	0.0	0.15	0.03
18	-0.1	0.0	21.5	0.0	4.4	0.0	0.15	0.03
19	-0.1	0.0	21.5	0.0	4.4	0.0	0.15	0.03
20	-0.1	0.0	21.5	0.0	4.4	0.0	0.15	0.03
21	-0.1	0.0	24.6	0.0	4.6	0.0	0.17	0.03
22	-0.1	0.0	24.6	0.0	4.6	0.0	0.17	0.03
23	-0.1	0.0	24.6	0.0	4.6	0.0	0.17	0.03
24	-0.1	0.0	24.6	0.0	4.6	0.0	0.17	0.03
25	-0.1	0.0	24.6	0.0	4.6	0.0	0.17	0.03
26	-0.1	0.0	24.6	0.0	4.6	0.0	0.17	0.03

27	-0.1	0.0	24.6	0.0	4.6	0.0	0.17	0.03
28	-0.1	0.0	24.6	0.0	4.6	0.0	0.17	0.03
29	-0.1	0.0	24.6	0.0	4.6	0.0	0.17	0.03
30	-0.1	0.0	24.6	0.0	4.6	0.0	0.17	0.03

LOAD CASE - 4

PILE	F1 K	F2 K	F3 K	M1 IN-K	M2 IN-K	M3 IN-K	ALF	CBF
1	-0.2	0.0	-1.5	0.0	18.1	0.0	0.02	0.01
2	-0.2	0.0	-1.5	0.0	18.1	0.0	0.02	0.01
3	-0.2	0.0	-1.5	0.0	18.1	0.0	0.02	0.01
4	-0.2	0.0	-1.5	0.0	18.1	0.0	0.02	0.01
5	-0.2	0.0	-1.5	0.0	18.1	0.0	0.02	0.01
6	-0.2	0.0	-1.5	0.0	18.1	0.0	0.02	0.01
7	-0.2	0.0	-1.5	0.0	18.1	0.0	0.02	0.01
8	-0.2	0.0	-1.5	0.0	18.1	0.0	0.02	0.01
9	-0.2	0.0	-1.5	0.0	18.1	0.0	0.02	0.01
10	-0.2	0.0	-1.5	0.0	18.1	0.0	0.02	0.01
11	0.2	0.0	43.3	0.0	-14.6	0.0	0.40	0.07
12	0.2	0.0	43.3	0.0	-14.6	0.0	0.40	0.07
13	0.2	0.0	43.3	0.0	-14.6	0.0	0.40	0.07
14	0.2	0.0	43.3	0.0	-14.6	0.0	0.40	0.07
15	0.2	0.0	43.3	0.0	-14.6	0.0	0.40	0.07
16	0.2	0.0	43.3	0.0	-14.6	0.0	0.40	0.07
17	0.2	0.0	43.3	0.0	-14.6	0.0	0.40	0.07
18	0.2	0.0	43.3	0.0	-14.6	0.0	0.40	0.07
19	0.2	0.0	43.3	0.0	-14.6	0.0	0.40	0.07
20	0.2	0.0	43.3	0.0	-14.6	0.0	0.40	0.07
21	0.2	0.0	1.1	0.0	-18.1	0.0	0.01	0.01
22	0.2	0.0	1.1	0.0	-18.1	0.0	0.01	0.01
23	0.2	0.0	1.1	0.0	-18.1	0.0	0.01	0.01
24	0.2	0.0	1.1	0.0	-18.1	0.0	0.01	0.01
25	0.2	0.0	1.1	0.0	-18.1	0.0	0.01	0.01
26	0.2	0.0	1.1	0.0	-18.1	0.0	0.01	0.01
27	0.2	0.0	1.1	0.0	-18.1	0.0	0.01	0.01
28	0.2	0.0	1.1	0.0	-18.1	0.0	0.01	0.01
29	0.2	0.0	1.1	0.0	-18.1	0.0	0.01	0.01
30	0.2	0.0	1.1	0.0	-18.1	0.0	0.01	0.01

LOAD CASE - 5

PILE	F1 K	F2 K	F3 K	M1 IN-K	M2 IN-K	M3 IN-K	ALF	CBF
1	-0.3	0.0	-5.4	0.0	21.8	0.0	0.06	0.01
2	-0.3	0.0	-5.4	0.0	21.8	0.0	0.06	0.01

3	-0.3	0.0	-5.4	0.0	21.8	0.0	0.06	0.01
4	-0.3	0.0	-5.4	0.0	21.8	0.0	0.06	0.01
5	-0.3	0.0	-5.4	0.0	21.8	0.0	0.06	0.01
6	-0.3	0.0	-5.4	0.0	21.8	0.0	0.06	0.01
7	-0.3	0.0	-5.4	0.0	21.8	0.0	0.06	0.01
8	-0.3	0.0	-5.4	0.0	21.8	0.0	0.06	0.01
9	-0.3	0.0	-5.4	0.0	21.8	0.0	0.06	0.01
10	-0.3	0.0	-5.4	0.0	21.8	0.0	0.06	0.01
11	0.2	0.0	47.1	0.0	-18.3	0.0	0.44	0.08
12	0.2	0.0	47.1	0.0	-18.3	0.0	0.44	0.08
13	0.2	0.0	47.1	0.0	-18.3	0.0	0.44	0.08
14	0.2	0.0	47.1	0.0	-18.3	0.0	0.44	0.08
15	0.2	0.0	47.1	0.0	-18.3	0.0	0.44	0.08
16	0.2	0.0	47.1	0.0	-18.3	0.0	0.44	0.08
17	0.2	0.0	47.1	0.0	-18.3	0.0	0.44	0.08
18	0.2	0.0	47.1	0.0	-18.3	0.0	0.44	0.08
19	0.2	0.0	47.1	0.0	-18.3	0.0	0.44	0.08
20	0.2	0.0	47.1	0.0	-18.3	0.0	0.44	0.08
21	0.3	0.0	-6.9	0.0	-22.9	0.0	0.08	0.02
22	0.3	0.0	-6.9	0.0	-22.9	0.0	0.08	0.02
23	0.3	0.0	-6.9	0.0	-22.9	0.0	0.08	0.02
24	0.3	0.0	-6.9	0.0	-22.9	0.0	0.08	0.02
25	0.3	0.0	-6.9	0.0	-22.9	0.0	0.08	0.02
26	0.3	0.0	-6.9	0.0	-22.9	0.0	0.08	0.02
27	0.3	0.0	-6.9	0.0	-22.9	0.0	0.08	0.02
28	0.3	0.0	-6.9	0.0	-22.9	0.0	0.08	0.02
29	0.3	0.0	-6.9	0.0	-22.9	0.0	0.08	0.02
30	0.3	0.0	-6.9	0.0	-22.9	0.0	0.08	0.02

LOAD CASE - 6

PILE	F1 K	F2 K	F3 K	M1 IN-K	M2 IN-K	M3 IN-K	ALF	CBF
1	-0.2	0.0	-7.4	0.0	11.8	0.0	0.07	0.01
2	-0.2	0.0	-7.4	0.0	11.8	0.0	0.07	0.01
3	-0.2	0.0	-7.4	0.0	11.8	0.0	0.07	0.01
4	-0.2	0.0	-7.4	0.0	11.8	0.0	0.07	0.01
5	-0.2	0.0	-7.4	0.0	11.8	0.0	0.07	0.01
6	-0.2	0.0	-7.4	0.0	11.8	0.0	0.07	0.01
7	-0.2	0.0	-7.4	0.0	11.8	0.0	0.07	0.01
8	-0.2	0.0	-7.4	0.0	11.8	0.0	0.07	0.01
9	-0.2	0.0	-7.4	0.0	11.8	0.0	0.07	0.01
10	-0.2	0.0	-7.4	0.0	11.8	0.0	0.07	0.01
11	0.1	0.0	34.1	0.0	-9.6	0.0	0.24	0.04
12	0.1	0.0	34.1	0.0	-9.6	0.0	0.24	0.04
13	0.1	0.0	34.1	0.0	-9.6	0.0	0.24	0.04
14	0.1	0.0	34.1	0.0	-9.6	0.0	0.24	0.04
15	0.1	0.0	34.1	0.0	-9.6	0.0	0.24	0.04

16	0.1	0.0	34.1	0.0	-9.6	0.0	0.24	0.04
17	0.1	0.0	34.1	0.0	-9.6	0.0	0.24	0.04
18	0.1	0.0	34.1	0.0	-9.6	0.0	0.24	0.04
19	0.1	0.0	34.1	0.0	-9.6	0.0	0.24	0.04
20	0.1	0.0	34.1	0.0	-9.6	0.0	0.24	0.04
21	0.1	0.0	16.2	0.0	-11.1	0.0	0.11	0.02
22	0.1	0.0	16.2	0.0	-11.1	0.0	0.11	0.02
23	0.1	0.0	16.2	0.0	-11.1	0.0	0.11	0.02
24	0.1	0.0	16.2	0.0	-11.1	0.0	0.11	0.02
25	0.1	0.0	16.2	0.0	-11.1	0.0	0.11	0.02
26	0.1	0.0	16.2	0.0	-11.1	0.0	0.11	0.02
27	0.1	0.0	16.2	0.0	-11.1	0.0	0.11	0.02
28	0.1	0.0	16.2	0.0	-11.1	0.0	0.11	0.02
29	0.1	0.0	16.2	0.0	-11.1	0.0	0.11	0.02
30	0.1	0.0	16.2	0.0	-11.1	0.0	0.11	0.02

LOAD CASE - 7

PILE	F1 K	F2 K	F3 K	M1 IN-K	M2 IN-K	M3 IN-K	ALF	CBF
1	-0.2	0.0	-11.3	0.0	15.6	0.0	0.10	0.02
2	-0.2	0.0	-11.3	0.0	15.6	0.0	0.10	0.02
3	-0.2	0.0	-11.3	0.0	15.6	0.0	0.10	0.02
4	-0.2	0.0	-11.3	0.0	15.6	0.0	0.10	0.02
5	-0.2	0.0	-11.3	0.0	15.6	0.0	0.10	0.02
6	-0.2	0.0	-11.3	0.0	15.6	0.0	0.10	0.02
7	-0.2	0.0	-11.3	0.0	15.6	0.0	0.10	0.02
8	-0.2	0.0	-11.3	0.0	15.6	0.0	0.10	0.02
9	-0.2	0.0	-11.3	0.0	15.6	0.0	0.10	0.02
10	-0.2	0.0	-11.3	0.0	15.6	0.0	0.10	0.02
11	0.2	0.0	37.9	0.0	-13.4	0.0	0.27	0.05
12	0.2	0.0	37.9	0.0	-13.4	0.0	0.27	0.05
13	0.2	0.0	37.9	0.0	-13.4	0.0	0.27	0.05
14	0.2	0.0	37.9	0.0	-13.4	0.0	0.27	0.05
15	0.2	0.0	37.9	0.0	-13.4	0.0	0.27	0.05
16	0.2	0.0	37.9	0.0	-13.4	0.0	0.27	0.05
17	0.2	0.0	37.9	0.0	-13.4	0.0	0.27	0.05
18	0.2	0.0	37.9	0.0	-13.4	0.0	0.27	0.05
19	0.2	0.0	37.9	0.0	-13.4	0.0	0.27	0.05
20	0.2	0.0	37.9	0.0	-13.4	0.0	0.27	0.05
21	0.2	0.0	8.1	0.0	-15.9	0.0	0.06	0.01
22	0.2	0.0	8.1	0.0	-15.9	0.0	0.06	0.01
23	0.2	0.0	8.1	0.0	-15.9	0.0	0.06	0.01
24	0.2	0.0	8.1	0.0	-15.9	0.0	0.06	0.01
25	0.2	0.0	8.1	0.0	-15.9	0.0	0.06	0.01
26	0.2	0.0	8.1	0.0	-15.9	0.0	0.06	0.01
27	0.2	0.0	8.1	0.0	-15.9	0.0	0.06	0.01
28	0.2	0.0	8.1	0.0	-15.9	0.0	0.06	0.01

29	0.2	0.0	8.1	0.0	-15.9	0.0	0.06	0.01
30	0.2	0.0	8.1	0.0	-15.9	0.0	0.06	0.01

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PILE FORCES IN GLOBAL GEOMETRY

LOAD CASE - 1

PILE	PX K	PY K	PZ K	MX IN-K	MY IN-K	MZ IN-K
1	0.0	-13.2	26.6	0.0	0.0	0.0
2	0.0	-13.2	26.6	0.0	0.0	0.0
3	0.0	-13.2	26.6	0.0	0.0	0.0
4	0.0	-13.2	26.6	0.0	0.0	0.0
5	0.0	-13.2	26.6	0.0	0.0	0.0
6	0.0	-13.2	26.6	0.0	0.0	0.0
7	0.0	-13.2	26.6	0.0	0.0	0.0
8	0.0	-13.2	26.6	0.0	0.0	0.0
9	0.0	-13.2	26.6	0.0	0.0	0.0
10	0.0	-13.2	26.6	0.0	0.0	0.0
11	0.0	11.0	22.0	0.0	0.0	0.0
12	0.0	11.0	22.0	0.0	0.0	0.0
13	0.0	11.0	22.0	0.0	0.0	0.0
14	0.0	11.0	22.0	0.0	0.0	0.0
15	0.0	11.0	22.0	0.0	0.0	0.0
16	0.0	11.0	22.0	0.0	0.0	0.0
17	0.0	11.0	22.0	0.0	0.0	0.0
18	0.0	11.0	22.0	0.0	0.0	0.0
19	0.0	11.0	22.0	0.0	0.0	0.0
20	0.0	11.0	22.0	0.0	0.0	0.0
21	0.0	3.7	7.3	0.0	0.0	0.0
22	0.0	3.7	7.3	0.0	0.0	0.0
23	0.0	3.7	7.3	0.0	0.0	0.0
24	0.0	3.7	7.3	0.0	0.0	0.0
25	0.0	3.7	7.3	0.0	0.0	0.0
26	0.0	3.7	7.3	0.0	0.0	0.0
27	0.0	3.7	7.3	0.0	0.0	0.0
28	0.0	3.7	7.3	0.0	0.0	0.0
29	0.0	3.7	7.3	0.0	0.0	0.0
30	0.0	3.7	7.3	0.0	0.0	0.0

LOAD CASE - 2

PILE	PX	PY	PZ	MX	MY	MZ

	K	K	K	IN-K	IN-K	IN-K
1	0.0	-16.4	32.9	0.0	0.0	0.0
2	0.0	-16.4	32.9	0.0	0.0	0.0
3	0.0	-16.4	32.9	0.0	0.0	0.0
4	0.0	-16.4	32.9	0.0	0.0	0.0
5	0.0	-16.4	32.9	0.0	0.0	0.0
6	0.0	-16.4	32.9	0.0	0.0	0.0
7	0.0	-16.4	32.9	0.0	0.0	0.0
8	0.0	-16.4	32.9	0.0	0.0	0.0
9	0.0	-16.4	32.9	0.0	0.0	0.0
10	0.0	-16.4	32.9	0.0	0.0	0.0
11	0.0	10.4	20.9	0.0	0.0	0.0
12	0.0	10.4	20.9	0.0	0.0	0.0
13	0.0	10.4	20.9	0.0	0.0	0.0
14	0.0	10.4	20.9	0.0	0.0	0.0
15	0.0	10.4	20.9	0.0	0.0	0.0
16	0.0	10.4	20.9	0.0	0.0	0.0
17	0.0	10.4	20.9	0.0	0.0	0.0
18	0.0	10.4	20.9	0.0	0.0	0.0
19	0.0	10.4	20.9	0.0	0.0	0.0
20	0.0	10.4	20.9	0.0	0.0	0.0
21	0.0	7.5	15.1	0.0	0.0	0.0
22	0.0	7.5	15.1	0.0	0.0	0.0
23	0.0	7.5	15.1	0.0	0.0	0.0
24	0.0	7.5	15.1	0.0	0.0	0.0
25	0.0	7.5	15.1	0.0	0.0	0.0
26	0.0	7.5	15.1	0.0	0.0	0.0
27	0.0	7.5	15.1	0.0	0.0	0.0
28	0.0	7.5	15.1	0.0	0.0	0.0
29	0.0	7.5	15.1	0.0	0.0	0.0
30	0.0	7.5	15.1	0.0	0.0	0.0

LOAD CASE - 3

PILE	PX	PY	PZ	MX	MY	MZ
	K	K	K	IN-K	IN-K	IN-K
1	0.0	-13.8	27.6	0.0	0.0	0.0
2	0.0	-13.8	27.6	0.0	0.0	0.0
3	0.0	-13.8	27.6	0.0	0.0	0.0
4	0.0	-13.8	27.6	0.0	0.0	0.0
5	0.0	-13.8	27.6	0.0	0.0	0.0
6	0.0	-13.8	27.6	0.0	0.0	0.0
7	0.0	-13.8	27.6	0.0	0.0	0.0
8	0.0	-13.8	27.6	0.0	0.0	0.0
9	0.0	-13.8	27.6	0.0	0.0	0.0
10	0.0	-13.8	27.6	0.0	0.0	0.0
11	0.0	9.6	19.3	0.0	0.0	0.0

12	0.0	9.6	19.3	0.0	0.0	0.0
13	0.0	9.6	19.3	0.0	0.0	0.0
14	0.0	9.6	19.3	0.0	0.0	0.0
15	0.0	9.6	19.3	0.0	0.0	0.0
16	0.0	9.6	19.3	0.0	0.0	0.0
17	0.0	9.6	19.3	0.0	0.0	0.0
18	0.0	9.6	19.3	0.0	0.0	0.0
19	0.0	9.6	19.3	0.0	0.0	0.0
20	0.0	9.6	19.3	0.0	0.0	0.0
21	0.0	10.9	22.0	0.0	0.0	0.0
22	0.0	10.9	22.0	0.0	0.0	0.0
23	0.0	10.9	22.0	0.0	0.0	0.0
24	0.0	10.9	22.0	0.0	0.0	0.0
25	0.0	10.9	22.0	0.0	0.0	0.0
26	0.0	10.9	22.0	0.0	0.0	0.0
27	0.0	10.9	22.0	0.0	0.0	0.0
28	0.0	10.9	22.0	0.0	0.0	0.0
29	0.0	10.9	22.0	0.0	0.0	0.0
30	0.0	10.9	22.0	0.0	0.0	0.0

LOAD CASE - 4

PILE	PX K	PY K	PZ K	MX IN-K	MY IN-K	MZ IN-K
1	0.0	0.9	-1.2	0.0	0.0	0.0
2	0.0	0.9	-1.2	0.0	0.0	0.0
3	0.0	0.9	-1.2	0.0	0.0	0.0
4	0.0	0.9	-1.2	0.0	0.0	0.0
5	0.0	0.9	-1.2	0.0	0.0	0.0
6	0.0	0.9	-1.2	0.0	0.0	0.0
7	0.0	0.9	-1.2	0.0	0.0	0.0
8	0.0	0.9	-1.2	0.0	0.0	0.0
9	0.0	0.9	-1.2	0.0	0.0	0.0
10	0.0	0.9	-1.2	0.0	0.0	0.0
11	0.0	19.5	38.6	0.0	0.0	0.0
12	0.0	19.5	38.6	0.0	0.0	0.0
13	0.0	19.5	38.6	0.0	0.0	0.0
14	0.0	19.5	38.6	0.0	0.0	0.0
15	0.0	19.5	38.6	0.0	0.0	0.0
16	0.0	19.5	38.6	0.0	0.0	0.0
17	0.0	19.5	38.6	0.0	0.0	0.0
18	0.0	19.5	38.6	0.0	0.0	0.0
19	0.0	19.5	38.6	0.0	0.0	0.0
20	0.0	19.5	38.6	0.0	0.0	0.0
21	0.0	0.7	0.9	0.0	0.0	0.0
22	0.0	0.7	0.9	0.0	0.0	0.0
23	0.0	0.7	0.9	0.0	0.0	0.0
24	0.0	0.7	0.9	0.0	0.0	0.0

25	0.0	0.7	0.9	0.0	0.0	0.0
26	0.0	0.7	0.9	0.0	0.0	0.0
27	0.0	0.7	0.9	0.0	0.0	0.0
28	0.0	0.7	0.9	0.0	0.0	0.0
29	0.0	0.7	0.9	0.0	0.0	0.0
30	0.0	0.7	0.9	0.0	0.0	0.0

LOAD CASE - 5

PILE	PX K	PY K	PZ K	MX IN-K	MY IN-K	MZ IN-K
1	0.0	2.7	-4.7	0.0	0.0	0.0
2	0.0	2.7	-4.7	0.0	0.0	0.0
3	0.0	2.7	-4.7	0.0	0.0	0.0
4	0.0	2.7	-4.7	0.0	0.0	0.0
5	0.0	2.7	-4.7	0.0	0.0	0.0
6	0.0	2.7	-4.7	0.0	0.0	0.0
7	0.0	2.7	-4.7	0.0	0.0	0.0
8	0.0	2.7	-4.7	0.0	0.0	0.0
9	0.0	2.7	-4.7	0.0	0.0	0.0
10	0.0	2.7	-4.7	0.0	0.0	0.0
11	0.0	21.3	42.0	0.0	0.0	0.0
12	0.0	21.3	42.0	0.0	0.0	0.0
13	0.0	21.3	42.0	0.0	0.0	0.0
14	0.0	21.3	42.0	0.0	0.0	0.0
15	0.0	21.3	42.0	0.0	0.0	0.0
16	0.0	21.3	42.0	0.0	0.0	0.0
17	0.0	21.3	42.0	0.0	0.0	0.0
18	0.0	21.3	42.0	0.0	0.0	0.0
19	0.0	21.3	42.0	0.0	0.0	0.0
20	0.0	21.3	42.0	0.0	0.0	0.0
21	0.0	-2.8	-6.3	0.0	0.0	0.0
22	0.0	-2.8	-6.3	0.0	0.0	0.0
23	0.0	-2.8	-6.3	0.0	0.0	0.0
24	0.0	-2.8	-6.3	0.0	0.0	0.0
25	0.0	-2.8	-6.3	0.0	0.0	0.0
26	0.0	-2.8	-6.3	0.0	0.0	0.0
27	0.0	-2.8	-6.3	0.0	0.0	0.0
28	0.0	-2.8	-6.3	0.0	0.0	0.0
29	0.0	-2.8	-6.3	0.0	0.0	0.0
30	0.0	-2.8	-6.3	0.0	0.0	0.0

LOAD CASE - 6

PILE	PX K	PY K	PZ K	MX IN-K	MY IN-K	MZ IN-K

1	0.0	3.5	-6.6	0.0	0.0	0.0
2	0.0	3.5	-6.6	0.0	0.0	0.0
3	0.0	3.5	-6.6	0.0	0.0	0.0
4	0.0	3.5	-6.6	0.0	0.0	0.0
5	0.0	3.5	-6.6	0.0	0.0	0.0
6	0.0	3.5	-6.6	0.0	0.0	0.0
7	0.0	3.5	-6.6	0.0	0.0	0.0
8	0.0	3.5	-6.6	0.0	0.0	0.0
9	0.0	3.5	-6.6	0.0	0.0	0.0
10	0.0	3.5	-6.6	0.0	0.0	0.0
11	0.0	15.4	30.5	0.0	0.0	0.0
12	0.0	15.4	30.5	0.0	0.0	0.0
13	0.0	15.4	30.5	0.0	0.0	0.0
14	0.0	15.4	30.5	0.0	0.0	0.0
15	0.0	15.4	30.5	0.0	0.0	0.0
16	0.0	15.4	30.5	0.0	0.0	0.0
17	0.0	15.4	30.5	0.0	0.0	0.0
18	0.0	15.4	30.5	0.0	0.0	0.0
19	0.0	15.4	30.5	0.0	0.0	0.0
20	0.0	15.4	30.5	0.0	0.0	0.0
21	0.0	7.4	14.4	0.0	0.0	0.0
22	0.0	7.4	14.4	0.0	0.0	0.0
23	0.0	7.4	14.4	0.0	0.0	0.0
24	0.0	7.4	14.4	0.0	0.0	0.0
25	0.0	7.4	14.4	0.0	0.0	0.0
26	0.0	7.4	14.4	0.0	0.0	0.0
27	0.0	7.4	14.4	0.0	0.0	0.0
28	0.0	7.4	14.4	0.0	0.0	0.0
29	0.0	7.4	14.4	0.0	0.0	0.0
30	0.0	7.4	14.4	0.0	0.0	0.0

LOAD CASE - 7

PILE	PX K	PY K	PZ K	MX IN-K	MY IN-K	MZ IN-K
1	0.0	5.2	-10.0	0.0	0.0	0.0
2	0.0	5.2	-10.0	0.0	0.0	0.0
3	0.0	5.2	-10.0	0.0	0.0	0.0
4	0.0	5.2	-10.0	0.0	0.0	0.0
5	0.0	5.2	-10.0	0.0	0.0	0.0
6	0.0	5.2	-10.0	0.0	0.0	0.0
7	0.0	5.2	-10.0	0.0	0.0	0.0
8	0.0	5.2	-10.0	0.0	0.0	0.0
9	0.0	5.2	-10.0	0.0	0.0	0.0
10	0.0	5.2	-10.0	0.0	0.0	0.0
11	0.0	17.1	33.9	0.0	0.0	0.0
12	0.0	17.1	33.9	0.0	0.0	0.0
13	0.0	17.1	33.9	0.0	0.0	0.0

14	0.0	17.1	33.9	0.0	0.0	0.0
15	0.0	17.1	33.9	0.0	0.0	0.0
16	0.0	17.1	33.9	0.0	0.0	0.0
17	0.0	17.1	33.9	0.0	0.0	0.0
18	0.0	17.1	33.9	0.0	0.0	0.0
19	0.0	17.1	33.9	0.0	0.0	0.0
20	0.0	17.1	33.9	0.0	0.0	0.0
21	0.0	3.8	7.2	0.0	0.0	0.0
22	0.0	3.8	7.2	0.0	0.0	0.0
23	0.0	3.8	7.2	0.0	0.0	0.0
24	0.0	3.8	7.2	0.0	0.0	0.0
25	0.0	3.8	7.2	0.0	0.0	0.0
26	0.0	3.8	7.2	0.0	0.0	0.0
27	0.0	3.8	7.2	0.0	0.0	0.0
28	0.0	3.8	7.2	0.0	0.0	0.0
29	0.0	3.8	7.2	0.0	0.0	0.0
30	0.0	3.8	7.2	0.0	0.0	0.0

NO FILES WERE GENERATED DURING THIS RUN.

```
10  Reach E Pipeline Crossing Twall Pinned
20  PIL  1  -22.5   2.5   0
30  BAT   2   1
40  ANG   270   1
50  PIL  2  -17.5   2.5   0
60  BAT   2   2
70  ANG   270   2
80  PIL  3  -12.5   2.5   0
90  BAT   2   3
100  ANG   270   3
110  PIL  4  -7.5   2.5   0
120  BAT   2   4
130  ANG   270   4
140  PIL  5  -2.5   2.5   0
150  BAT   2   5
160  ANG   270   5
170  PIL  6   2.5   2.5   0
180  BAT   2   6
190  ANG   270   6
200  PIL  7   7.5   2.5   0
210  BAT   2   7
220  ANG   270   7
230  PIL  8   12.5   2.5   0
240  BAT   2   8
250  ANG   270   8
260  PIL  9   17.5   2.5   0
270  BAT   2   9
280  ANG   270   9
290  PIL  10   22.5   2.5   0
300  BAT   2   10
310  ANG   270   10
320  PIL  11  -22.5   7.5   0
330  BAT   2   11
340  ANG   90   11
350  PIL  12  -17.5   7.5   0
360  BAT   2   12
370  ANG   90   12
380  PIL  13  -12.5   7.5   0
390  BAT   2   13
400  ANG   90   13
410  PIL  14  -7.5   7.5   0
420  BAT   2   14
430  ANG   90   14
440  PIL  15  -2.5   7.5   0
450  BAT   2   15
460  ANG   90   15
470  PIL  16   2.5   7.5   0
480  BAT   2   16
490  ANG   90   16
500  PIL  17   7.5   7.5   0
```

```
510  BAT   2   17
520  ANG   90   17
530  PIL  18   12.5   7.5   0
540  BAT   2   18
550  ANG   90   18
560  PIL  19   17.5   7.5   0
570  BAT   2   19
580  ANG   90   19
590  PIL  20   22.5   7.5   0
600  BAT   2   20
610  ANG   90   20
620  PIL  21  -22.5   12.5   0
630  BAT   2   21
640  ANG   90   21
650  PIL  22  -17.5   12.5   0
660  BAT   2   22
670  ANG   90   22
680  PIL  23  -12.5   12.5   0
690  BAT   2   23
700  ANG   90   23
710  PIL  24  -7.5   12.5   0
720  BAT   2   24
730  ANG   90   24
740  PIL  25  -2.5   12.5   0
750  BAT   2   25
760  ANG   90   25
770  PIL  26   2.5   12.5   0
780  BAT   2   26
790  ANG   90   26
800  PIL  27   7.5   12.5   0
810  BAT   2   27
820  ANG   90   27
830  PIL  28   12.5   12.5   0
840  BAT   2   28
850  ANG   90   28
860  PIL  29   17.5   12.5   0
870  BAT   2   29
880  ANG   90   29
890  PIL  30   22.5   12.5   0
900  BAT   2   30
910  ANG   90   30
920  PRO  29000  326  904  26.1  2  0  1 TO 30
930  SOI ES 0.0345 L  69  0  1 TO 30
940  RED  1  1  1
950  ALL H 107  85  652  652  1107  3275  1 TO 30
960  PIN  1 TO 30
970  LOA  8  0  703  326  7213  0  0
970  LOA  9  0  703  182  5770  0  0
970  FOV  1.33  1.33  8
970  FOV  1.33  1.33  9
```

```
980  TOUT   1  2  3  4  5  6  7
990  PFO ALL
1000  PLB ALL
```

CPGA - CASE PILE GROUP ANALYSIS PROGRAM
RUN DATE: 01-OCT-20 RUN TIME: 18:56:25

FOR PILES WITH UNSUPPORTED HEIGHT:
A. CPGA CANNOT CALCULATE PMAXMOM FOR NH TYPE SOIL
B. THE ALLOWABLE STRESS CHECKS, ASC AND AST, ARE
NOT FULLY DEVELOPED FOR UNSUPPORTED PILES.
WORK IS IN PROGRESS TO COMPLETE THIS ASPECT OF CPGA.

ELASTIC CENTER LOCATION IS NOT COMPUTED FOR 3-DIMENSIONAL PROBLEMS.

REACH E PIPELINE CROSSING TWALL PINNED
DATA UNKNOWN - REJECTED.

THERE ARE 30 PILES AND
2 LOAD CASES IN THIS RUN.

ALL PILE COORDINATES ARE CONTAINED WITHIN A BOX

	X	Y	Z
WITH DIAGONAL COORDINATES = (	-22.50 ,	2.50 ,	0.00)
(	22.50 ,	12.50 ,	0.00)

****

PILE PROPERTIES AS INPUT

E	I1	I2	A	C33	B66
KSI	IN**4	IN**4	IN**2		
0.29000E+05	0.32600E+03	0.90400E+03	0.26100E+02	0.20000E+01	0.00000E+00

THESE PILE PROPERTIES APPLY TO THE FOLLOWING PILES -

ALL

****

SOIL DESCRIPTIONS AS INPUT

ES	ESOIL	LENGTH	L	LU
	K/IN**2		FT	FT

```
        0.34500E-01    L      0.69000E+02   0.00000E+00

 ESOIL(ORIGINAL)     RGROUP     RCYCLIC
   K/IN**2
  0.34500E-01       0.1000E+01 0.1000E+01

THIS SOIL DESCRIPTION APPLIES TO THE FOLLOWING PILES -

    ALL

*************************************************************************

         PILE STIFFNESSES AS CALCULATED FROM PROPERTIES


 0.40503E+01  0.00000E+00  0.00000E+00  0.00000E+00  0.00000E+00  0.00000E+00
 0.00000E+00  0.31387E+01  0.00000E+00  0.00000E+00  0.00000E+00  0.00000E+00
 0.00000E+00  0.00000E+00  0.18283E+04  0.00000E+00  0.00000E+00  0.00000E+00
 0.00000E+00  0.00000E+00  0.00000E+00  0.00000E+00  0.00000E+00  0.00000E+00
 0.00000E+00  0.00000E+00  0.00000E+00  0.00000E+00  0.00000E+00  0.00000E+00
 0.00000E+00  0.00000E+00  0.00000E+00  0.00000E+00  0.00000E+00  0.00000E+00


THIS MATRIX APPLIES TO THE FOLLOWING PILES -

   1


*************************************************************************

         PILE GEOMETRY AS INPUT AND/OR GENERATED

NUM        X          Y          Z      BATTER    ANGLE    LENGTH  FIXITY
          FT         FT         FT                          FT

  1     -22.50       2.50       0.00      2.00    270.00    69.00     P
  2     -17.50       2.50       0.00      2.00    270.00    69.00     P
  3     -12.50       2.50       0.00      2.00    270.00    69.00     P
  4      -7.50       2.50       0.00      2.00    270.00    69.00     P
  5      -2.50       2.50       0.00      2.00    270.00    69.00     P
  6       2.50       2.50       0.00      2.00    270.00    69.00     P
  7       7.50       2.50       0.00      2.00    270.00    69.00     P
  8      12.50       2.50       0.00      2.00    270.00    69.00     P
  9      17.50       2.50       0.00      2.00    270.00    69.00     P
 10      22.50       2.50       0.00      2.00    270.00    69.00     P
 11     -22.50       7.50       0.00      2.00     90.00    69.00     P
 12     -17.50       7.50       0.00      2.00     90.00    69.00     P
 13     -12.50       7.50       0.00      2.00     90.00    69.00     P
 14      -7.50       7.50       0.00      2.00     90.00    69.00     P
```

15	-2.50	7.50	0.00	2.00	90.00	69.00	P
16	2.50	7.50	0.00	2.00	90.00	69.00	P
17	7.50	7.50	0.00	2.00	90.00	69.00	P
18	12.50	7.50	0.00	2.00	90.00	69.00	P
19	17.50	7.50	0.00	2.00	90.00	69.00	P
20	22.50	7.50	0.00	2.00	90.00	69.00	P
21	-22.50	12.50	0.00	2.00	90.00	69.00	P
22	-17.50	12.50	0.00	2.00	90.00	69.00	P
23	-12.50	12.50	0.00	2.00	90.00	69.00	P
24	-7.50	12.50	0.00	2.00	90.00	69.00	P
25	-2.50	12.50	0.00	2.00	90.00	69.00	P
26	2.50	12.50	0.00	2.00	90.00	69.00	P
27	7.50	12.50	0.00	2.00	90.00	69.00	P
28	12.50	12.50	0.00	2.00	90.00	69.00	P
29	17.50	12.50	0.00	2.00	90.00	69.00	P
30	22.50	12.50	0.00	2.00	90.00	69.00	P

						2070.00	

****

APPLIED LOADS

LOAD CASE	PX K	PY K	PZ K	MX FT-K	MY FT-K	MZ FT-K	OVERSTRESS COM	TEN
8	0.0	703.0	326.0	7213.0	0.0	0.0	1.33	1.33
9	0.0	703.0	182.0	5770.0	0.0	0.0	1.33	1.33

****

ORIGINAL PILE GROUP STIFFNESS MATRIX

0.94162E+02	0.22252E-03	-0.88788E-04	0.13318E-01	0.00000E+00	-0.84746E+04
0.22252E-03	0.11067E+05	0.72968E+04	0.15323E+07	-0.87311E-10	-0.14687E-01
-0.88788E-04	0.72968E+04	0.43903E+05	0.39512E+07	-0.11642E-09	-0.13318E-01
0.13318E-01	0.15323E+07	0.39512E+07	0.46098E+09	-0.14901E-07	-0.24772E+01
0.21684E-17	0.29104E-10	-0.17462E-09	0.14901E-07	0.13039E+10	-0.21672E+09
-0.84746E+04	-0.14687E-01	-0.13318E-01	-0.24772E+01	-0.21672E+09	0.32967E+09

30 PILES 2 LOAD CASES

LOAD CASE 8. NUMBER OF FAILURES = 0. NUMBER OF PILES IN TENSION = 10.

LOAD CASE 9. NUMBER OF FAILURES = 0. NUMBER OF PILES IN TENSION = 10.

****

PILE CAP DISPLACEMENTS

LOAD CASE	DX IN	DY IN	DZ IN	RX RAD	RY RAD	RZ RAD
8	-0.1590E-06	0.6725E-01	-0.2324E-02	-0.1588E-04	-0.2434E-12	-0.1465E-11
9	-0.1677E-06	0.9059E-01	0.1169E-01	-0.2511E-03	-0.3154E-12	-0.1897E-11

****

PILE FORCES IN LOCAL GEOMETRY

M1 & M2 NOT AT PILE HEAD FOR PINNED PILES
* INDICATES PILE FAILURE
# INDICATES CBF BASED ON MOMENTS DUE TO
(F3*EMIN) FOR CONCRETE PILES
B INDICATES BUCKLING CONTROLS

LOAD CASE - 8

PILE	F1 K	F2 K	F3 K	M1 IN-K	M2 IN-K	M3 IN-K	ALF	CBF
1	-0.2	0.0	-59.6	0.0	18.0	0.0	0.53	0.07
2	-0.2	0.0	-59.6	0.0	18.0	0.0	0.53	0.07
3	-0.2	0.0	-59.6	0.0	18.0	0.0	0.53	0.07
4	-0.2	0.0	-59.6	0.0	18.0	0.0	0.53	0.07
5	-0.2	0.0	-59.6	0.0	18.0	0.0	0.53	0.07
6	-0.2	0.0	-59.6	0.0	18.0	0.0	0.53	0.07
7	-0.2	0.0	-59.6	0.0	18.0	0.0	0.53	0.07
8	-0.2	0.0	-59.6	0.0	18.0	0.0	0.53	0.07
9	-0.2	0.0	-59.6	0.0	18.0	0.0	0.53	0.07
10	-0.2	0.0	-59.6	0.0	18.0	0.0	0.53	0.07
11	0.3	0.0	48.9	0.0	-18.9	0.0	0.34	0.06
12	0.3	0.0	48.9	0.0	-18.9	0.0	0.34	0.06
13	0.3	0.0	48.9	0.0	-18.9	0.0	0.34	0.06
14	0.3	0.0	48.9	0.0	-18.9	0.0	0.34	0.06
15	0.3	0.0	48.9	0.0	-18.9	0.0	0.34	0.06
16	0.3	0.0	48.9	0.0	-18.9	0.0	0.34	0.06
17	0.3	0.0	48.9	0.0	-18.9	0.0	0.34	0.06
18	0.3	0.0	48.9	0.0	-18.9	0.0	0.34	0.06
19	0.3	0.0	48.9	0.0	-18.9	0.0	0.34	0.06
20	0.3	0.0	48.9	0.0	-18.9	0.0	0.34	0.06

21	0.3	0.0	47.3	0.0	-19.1	0.0	0.33	0.06
22	0.3	0.0	47.3	0.0	-19.1	0.0	0.33	0.06
23	0.3	0.0	47.3	0.0	-19.1	0.0	0.33	0.06
24	0.3	0.0	47.3	0.0	-19.1	0.0	0.33	0.06
25	0.3	0.0	47.3	0.0	-19.1	0.0	0.33	0.06
26	0.3	0.0	47.3	0.0	-19.1	0.0	0.33	0.06
27	0.3	0.0	47.3	0.0	-19.1	0.0	0.33	0.06
28	0.3	0.0	47.3	0.0	-19.1	0.0	0.33	0.06
29	0.3	0.0	47.3	0.0	-19.1	0.0	0.33	0.06
30	0.3	0.0	47.3	0.0	-19.1	0.0	0.33	0.06

LOAD CASE - 9

PILE	F1 K	F2 K	F3 K	M1 IN-K	M2 IN-K	M3 IN-K	ALF	CBF
1	-0.3	0.0	-67.3	0.0	25.4	0.0	0.60	0.08
2	-0.3	0.0	-67.3	0.0	25.4	0.0	0.60	0.08
3	-0.3	0.0	-67.3	0.0	25.4	0.0	0.60	0.08
4	-0.3	0.0	-67.3	0.0	25.4	0.0	0.60	0.08
5	-0.3	0.0	-67.3	0.0	25.4	0.0	0.60	0.08
6	-0.3	0.0	-67.3	0.0	25.4	0.0	0.60	0.08
7	-0.3	0.0	-67.3	0.0	25.4	0.0	0.60	0.08
8	-0.3	0.0	-67.3	0.0	25.4	0.0	0.60	0.08
9	-0.3	0.0	-67.3	0.0	25.4	0.0	0.60	0.08
10	-0.3	0.0	-67.3	0.0	25.4	0.0	0.60	0.08
11	0.3	0.0	56.2	0.0	-26.3	0.0	0.40	0.07
12	0.3	0.0	56.2	0.0	-26.3	0.0	0.40	0.07
13	0.3	0.0	56.2	0.0	-26.3	0.0	0.40	0.07
14	0.3	0.0	56.2	0.0	-26.3	0.0	0.40	0.07
15	0.3	0.0	56.2	0.0	-26.3	0.0	0.40	0.07
16	0.3	0.0	56.2	0.0	-26.3	0.0	0.40	0.07
17	0.3	0.0	56.2	0.0	-26.3	0.0	0.40	0.07
18	0.3	0.0	56.2	0.0	-26.3	0.0	0.40	0.07
19	0.3	0.0	56.2	0.0	-26.3	0.0	0.40	0.07
20	0.3	0.0	56.2	0.0	-26.3	0.0	0.40	0.07
21	0.4	0.0	31.6	0.0	-28.4	0.0	0.22	0.04
22	0.4	0.0	31.6	0.0	-28.4	0.0	0.22	0.04
23	0.4	0.0	31.6	0.0	-28.4	0.0	0.22	0.04
24	0.4	0.0	31.6	0.0	-28.4	0.0	0.22	0.04
25	0.4	0.0	31.6	0.0	-28.4	0.0	0.22	0.04
26	0.4	0.0	31.6	0.0	-28.4	0.0	0.22	0.04
27	0.4	0.0	31.6	0.0	-28.4	0.0	0.22	0.04
28	0.4	0.0	31.6	0.0	-28.4	0.0	0.22	0.04
29	0.4	0.0	31.6	0.0	-28.4	0.0	0.22	0.04
30	0.4	0.0	31.6	0.0	-28.4	0.0	0.22	0.04

****

PILE FORCES IN GLOBAL GEOMETRY

LOAD CASE - 8

PILE	PX K	PY K	PZ K	MX IN-K	MY IN-K	MZ IN-K
1	0.0	26.9	-53.2	0.0	0.0	0.0
2	0.0	26.9	-53.2	0.0	0.0	0.0
3	0.0	26.9	-53.2	0.0	0.0	0.0
4	0.0	26.9	-53.2	0.0	0.0	0.0
5	0.0	26.9	-53.2	0.0	0.0	0.0
6	0.0	26.9	-53.2	0.0	0.0	0.0
7	0.0	26.9	-53.2	0.0	0.0	0.0
8	0.0	26.9	-53.2	0.0	0.0	0.0
9	0.0	26.9	-53.2	0.0	0.0	0.0
10	0.0	26.9	-53.2	0.0	0.0	0.0
11	0.0	22.1	43.6	0.0	0.0	0.0
12	0.0	22.1	43.6	0.0	0.0	0.0
13	0.0	22.1	43.6	0.0	0.0	0.0
14	0.0	22.1	43.6	0.0	0.0	0.0
15	0.0	22.1	43.6	0.0	0.0	0.0
16	0.0	22.1	43.6	0.0	0.0	0.0
17	0.0	22.1	43.6	0.0	0.0	0.0
18	0.0	22.1	43.6	0.0	0.0	0.0
19	0.0	22.1	43.6	0.0	0.0	0.0
20	0.0	22.1	43.6	0.0	0.0	0.0
21	0.0	21.4	42.2	0.0	0.0	0.0
22	0.0	21.4	42.2	0.0	0.0	0.0
23	0.0	21.4	42.2	0.0	0.0	0.0
24	0.0	21.4	42.2	0.0	0.0	0.0
25	0.0	21.4	42.2	0.0	0.0	0.0
26	0.0	21.4	42.2	0.0	0.0	0.0
27	0.0	21.4	42.2	0.0	0.0	0.0
28	0.0	21.4	42.2	0.0	0.0	0.0
29	0.0	21.4	42.2	0.0	0.0	0.0
30	0.0	21.4	42.2	0.0	0.0	0.0

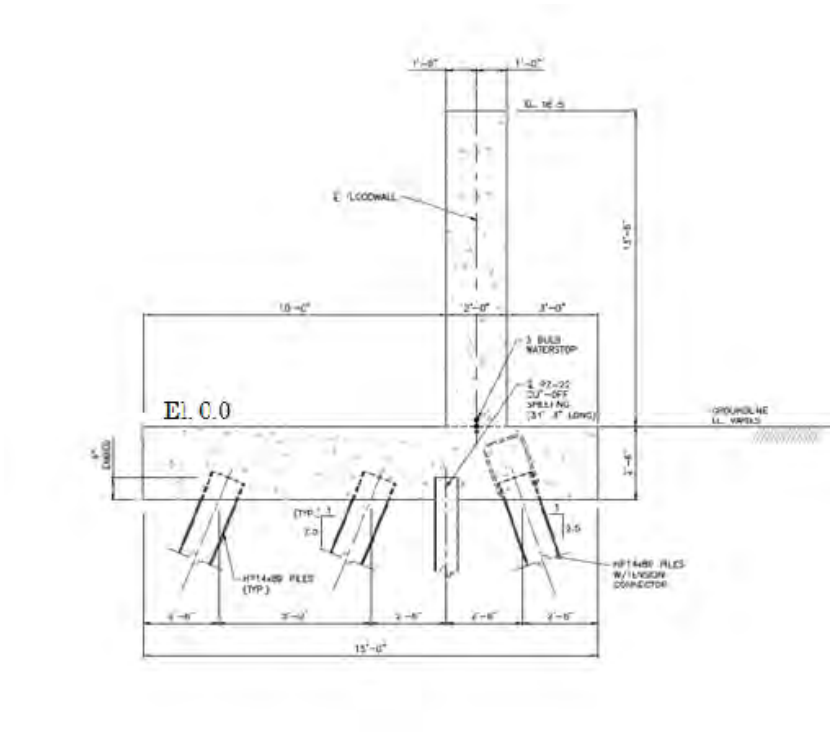
LOAD CASE - 9

PILE	PX K	PY K	PZ K	MX IN-K	MY IN-K	MZ IN-K
1	0.0	30.4	-60.0	0.0	0.0	0.0
2	0.0	30.4	-60.0	0.0	0.0	0.0
3	0.0	30.4	-60.0	0.0	0.0	0.0

4	0.0	30.4	-60.0	0.0	0.0	0.0
5	0.0	30.4	-60.0	0.0	0.0	0.0
6	0.0	30.4	-60.0	0.0	0.0	0.0
7	0.0	30.4	-60.0	0.0	0.0	0.0
8	0.0	30.4	-60.0	0.0	0.0	0.0
9	0.0	30.4	-60.0	0.0	0.0	0.0
10	0.0	30.4	-60.0	0.0	0.0	0.0
11	0.0	25.5	50.1	0.0	0.0	0.0
12	0.0	25.5	50.1	0.0	0.0	0.0
13	0.0	25.5	50.1	0.0	0.0	0.0
14	0.0	25.5	50.1	0.0	0.0	0.0
15	0.0	25.5	50.1	0.0	0.0	0.0
16	0.0	25.5	50.1	0.0	0.0	0.0
17	0.0	25.5	50.1	0.0	0.0	0.0
18	0.0	25.5	50.1	0.0	0.0	0.0
19	0.0	25.5	50.1	0.0	0.0	0.0
20	0.0	25.5	50.1	0.0	0.0	0.0
21	0.0	14.5	28.1	0.0	0.0	0.0
22	0.0	14.5	28.1	0.0	0.0	0.0
23	0.0	14.5	28.1	0.0	0.0	0.0
24	0.0	14.5	28.1	0.0	0.0	0.0
25	0.0	14.5	28.1	0.0	0.0	0.0
26	0.0	14.5	28.1	0.0	0.0	0.0
27	0.0	14.5	28.1	0.0	0.0	0.0
28	0.0	14.5	28.1	0.0	0.0	0.0
29	0.0	14.5	28.1	0.0	0.0	0.0
30	0.0	14.5	28.1	0.0	0.0	0.0

NO FILES WERE GENERATED DURING THIS RUN.

Reach E New wall Pipeline crossing
T-Wall Stems Loads



Top of Stem EL.	18.5	Weight of Water:	0.062	k/ft^3
Bottom of Stem EL.	0	Moist Weight of Soil	0.120	k/ft^3
F.S. Soil EL.	0.0	Wave Load:	0	k/ft
P.S. Soil EL.	0.0	Wave Arm EL.	0	
S.W.L EL.	9.4	Debri	0.5	k/ft
P.S. Water EL.	0.0	Wind Load:	0.056	ksf
Ko:	0.8	Sat. Soil Weight:	0.058	k/ft^3

Note: Inputs are already referenced from t-wall foundation sheet.

Load Case 2b. Construction + Wind 1.6(D + Sur + Wind)

Item	Fy	z	**Mx**	**Vx**
Wind	1.04	9.25	9.58	1.04
Sub Total:			9.58	1.04
Total (Factored)			**15.33** ft-k/ft	**1.66** k/ft

Load Case 3a. Flowline 1.6(D + EH + EV + HF+ IU)

Item	Fy	z	**Mx**	**Vx**
F.S. Horizontal Water	2.76	3.13	8.64	2.76
P.S. Horizontal Water	0.00	0.00	0.00	0.00
F.S. Horizontal Soil	0.00	0.00	0.00	0.00
P.S. Horizontal Soil ($\gamma_{m\ tri}$)	0.00	0	0.0000	0.00
P.S. Horizontal Soil ($\gamma_{m\ rec}$)	0.00	0	0.00	0.00
P.S. Horizontal Soil ($\gamma_{sat\ tri}$)	0.00	0.00	0.00	0.00
Sub Total:			8.64	2.76
Total (Factored)			**13.82**	**4.41**
			ft-k/ft	k/ft

Load Case 3c. Flowline+Wind+Debri 1.6(D + EH + EV + H_F+ PU + I + W)

Item	Fy	z	**Mx**	**Vx**
F.S. Horizontal Water	2.76	3.13	8.64	2.76
P.S. Horizontal Water	0.00	0.00	0.00	0.00
F.S. Horizontal Soil	0.00	0.00	0.00	0.00
P.S. Horizontal Soil ($\gamma_{m\ tri}$)	0.00	0.00	0.00	0.00
P.S. Horizontal Soil ($\gamma_{m\ rec}$)	0.00	0.00	0.00	0.00
P.S. Horizontal Soil ($\gamma_{sat\ tri}$)	0.00	0.00	0.00	0.00
Wind	0.51	13.95	7.11	0.51
Debri	0.50	18.50	9.25	0.50
Sub Total:			25.00	3.77
Total (Factored)			**40.00**	**6.03**
			ft-k/ft	k/ft

Load Case 4a. Water to the Top + Debri 1.2D + 1.35EH_D + 0.9EH_R + 1.35EV + 1.3(H_{TW} + I + IU)

Item	Fy	z	**Mx**	**Vx**
F.S. Horizontal Water	10.68	6.17	65.85	10.68
P.S. Horizontal Water	0.00	0.00	0.00	0.00
F.S. Horizontal Soil	0.00	0.00	0.00	0.00
P.S. Horizontal Soil ($\gamma_{m\ tri}$)	0.00	0.00	0.00	0.00
P.S. Horizontal Soil ($\gamma_{m\ rec}$)	0.00	0.00	0.00	0.00
P.S. Horizontal Soil ($\gamma_{sat\ tri}$)	0.00	0.00	0.00	0.00
Debri	0.50	18.50	9.25	0.50
Total (Factored)			**97.63**	**14.53**
			ft-k/ft	k/ft

Load Case 4b. Water to the Top + Debri $0.9D + 1.35EH_D + 0.9EH_R + 1.0EV + 1.3(H_{TW} + I + IU)$

Item	Fy	z	**Mx**	**Vx**
F.S. Horizontal Water	10.68	6.17	65.85	10.68
P.S. Horizontal Water	0.00	0.00	0.00	0.00
F.S. Horizontal Soil	0.00	0.00	0.00	0.00
P.S. Horizontal Soil ($\gamma_{m\ tri}$)	0.00	0.00	0.00	0.00
P.S. Horizontal Soil ($\gamma_{m\ rec}$)	0.00	0.00	0.00	0.00
P.S. Horizontal Soil ($\gamma_{sat\ tri}$)	0.00	0.00	0.00	0.00
Debri	0.50	18.50	9.25	0.50
Total (Factored)			**97.63**	**14.53**
			ft-k/ft	k/ft

Summary of Stem Loads		
	Mu	Vu
Load Case 2b	15.33	1.66
Load Case 3a	13.82	4.41
Load Case 3c	40.00	6.03
Load Case 4a	97.63	14.53
Load Case 4b	97.63	14.53
Maximum	97.63	14.53
	ft-k/ft	k/ft

Notation:

$A_{s\ min}$ = Minimum Area of Steel per linear foot of structure allowed by ACI / USACE. **(in^2)**

$A_{s\ Req'd}$ = Required Area of Steel per linear foot of structure using Ultimate Moment. **(in^2)**

b = Member width. **(Use 12in if forces are per linear foot of structure.)**

β_1 = ACI 318-14 Section 22.2

d = Distance from extreme compression fiber to centroid of tension reinforcement. **(in)**

f'c = Compressive strength of concrete. **(ksi ** except in Vc formula psi)**

f_y = Yield strength of steel. **(Usually 60 ksi.)**

ϕM_n = Nominal Moment strength **(k-in / linear foot)** ϕ = 0.9

M_u = Ultimate moment in sttructure. **(k-in / linear foot)**

ϕV_c = Nominal Shear strength **(lb / linear foot)** ϕ = 0.75

V_u = Ultimate shear in structure. **(lb / linear foot)**

t = Thickness of structure. **(In direction of applied moment) (in)**

ρ = Ratio of Reinforcement

ρ_b = Balanced Ratio of Reinforcement (0.0285 for 4ksi concrete)

Project: **Reach E New wall Pipeline crossing**

Reference: **T-wall** **40 ft Slab** **Stem Rebar Design**

Inputs:

M_u =	1171.54	k-in / linear ft
V_u =	14531.66	lb/linear ft
b =	12	in
d =	19.43	in
t =	24	in
f'c =	4	ksi
f_y =	60	ksi

β_1 = 0.85 (unitless)

ρ_b = 0.0285 (unitless)

Check d_d

Mn= Mu/ϕ

Mn= 1301.71 k-in / linear ft

$$d_d = \sqrt{\frac{2.4956 M_n}{b_w}} =$$ EM 1110-2-2104 (Table D-1)

d_d= 16.45 in

d > d_d ok

Calculations: ** All Areas are per side.

$$K_u = 1 - \sqrt{1 - \frac{M_n + P_n\left(d - \frac{h}{2}\right)}{0.425 f_c' b d^2}}$$ EM 1110-2-2104 (Table D-8)

P_n= 0

K_u= 0.088419

$$A_s = \frac{0.85 f_c' K_u b d - P_n}{f_y}$$ EM 1110-2-2104 (D-9)

$A_{s\ Req'd}$ = 1.17 in^2 /ft

$A_{s\ min}$ = 0.74 in^2 /ft = [3 b d √(f'c)] / F_y (psi) EM 1110-2-2104, Chapter 3

$A_{s\ min}$ = 0.78 in^2 /ft = 200 b d / F_y (psi) EM 1110-2-2104, Chapter 3

$A_{s\ min}$ = 1.55 in^2 /ft = 1.33 ($A_{s\ Req'd}$) EM 1110-2-2104, Chapter 3

Use A_s = 1.17 in^2 /ft Flexural

Temperature and Shrinkage Rebar

$A_{s\ t\&s}$ = 0.72 in^2 /ft = 0.005b t/2 per face -- EM 1110-2-2104 Table 2-3

Table 2-3. Minimum Shrinkage and Temperature Reinforcement Ratios for Various Joint Spacings.

Length Between Control Joints (ft)	Minimum Temperature and Shrinkage Reinforcement Ratio, Grade 60
Less than 30 ft	0.003
30-40 ft	0.004
Greater than 40 ft	0.005

Use $A_{s\ t\&s}$ = 0.72 in^2 /ft per face Use: #8@12in As: 0.78 in^2 /ft

Check Moment:

Calculate ϕM_n and compare to original M_u.

As Used: 1.2 in^2 /ft Use: #9@10in

ϕM_n = 1201.89 k-in = 0.9 $A_s F_y d (1 -(A_s F_y / 2 \beta b d f'c))$

M_u = 1171.543 k-in

If $\phi M_n > M_u$ then A_s is acceptable. **OK**

Check Shear:

Calculate ϕV_c and compare to V_u.

ϕV_c = 22.12 k = 0.75 x 2 ($\sqrt{}$ f'c) b d

V_u = 14.53 k

If $\phi V_c > V_u$ then A_s is acceptable. **OK**

Check Ratio of Reinforcement: EM 1110-2-2104, Chapter 3.5

ρ = 0.005147 $\rho = A_s / b d$

0.25 ρ_b = 0.007125

0.5ρ_b = 0.010688

$\rho \leq 0.25\ \rho_b$ (if possible)	OK
$\rho \leq 0.5\ \rho_b$ (always)	OK

Quantities
Reach E New Wall with pipeline crossing

1) Cast-in place concrete		
Area of Base Slab per linear ft:	37.5	ft^2
Area of Stem per linear ft:	37.00	ft^2
Total area per linear ft:	74.50	ft^2
Width of slab:	15.00	ft
Total Linear ft of wall:	400	ft
Total Volume of Base Slab (CY):	555.5556	CY
Total Volume of Stem (CY):	548.1481	CY
Total volume of concrete (ft^3):	29800	ft^3
Total volume of concrete (CY):	1103.704	CY
2) Steel Sheet Piling		
Cut off El.	-1.75	
Tip El.	-25.5	
Length:	23.75	ft
Extre tie in wall length (30' each side):	60	ft
Cut off El.	17.75	
Tip El.	-25.5	
Area of sheet pile:	12095	ft^2
3) HP 14x89 pile		
Cut off El.	-1.75	
Tip El.	-73	
Batter:	2	
Length:	79.65992	ft
spacing between piles	5	ft
total piles per row	3	
Total length of piles:	19118.38	LF
4) Stab slab		
Depth:	1	ft
Total volume:	6000	ft^3
Total volume:	222.2222	CY

Load Case	Load Description	Load Category	Factored Loads
LC1	Normal Operation	0%	(D + EH + EV)
LC3	Construction	16.67%	(D + Sur)
LC4	Construction + Wind	33%	(D + Sur + W)
LC5	Flowline + Imperv Uplift	0%	(D + EH + EV + HF + IU)
LC6	Flowline + Perv Uplift	0%	(D + EH + EV + HF + PU)
LC7	Flowline + Imperv Uplift + Wind + Debris	33%	(D + EH + EV + HF + IU + I + W
LC8	Flowline + Perv Uplift + Wind + Debris	33%	(D + EH + EV + HF + PU + I + W
LC9	Freeboard + Imperv Uplift + Debris	33%	(D + EH + EV + HTW + I + IU)
LC10	Freeboard + Perv Uplift + Debris	33%	(D + EH + EV + HTW + I + PU)

D= Dead Load
EH= Horizontal Soil
EV = Vertical Soil
ES = Surcharge Load (200 psf)
W = Wind
HF = Water at Flowline
PU = Pervious Uplift
IU = Impervious Uplift
I = Debris Impact
H_{TW} = Water at Top of Wall
Sur = Surcharge

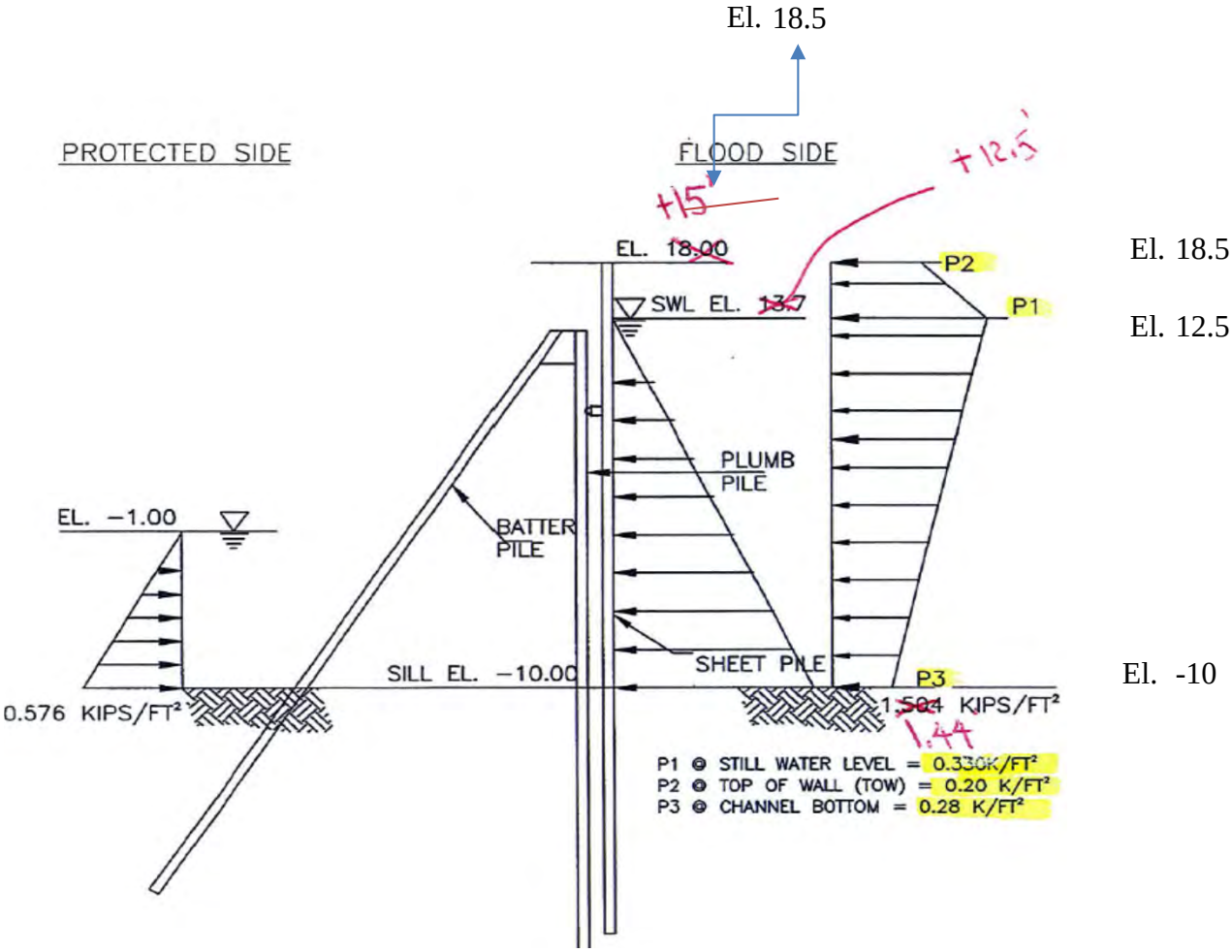
ASCE 7-10 Wind Load Calculation

Wind on Wall

$$q_z = 0.00256 K_z K_{zt} K_d V^2 \ (\text{lb/ft}^2) \qquad (27.3\text{-}1)$$

K_z=	1.03	
K_{zt}=	1	
K_d=	0.85	
V=	158	mph
q_z=	56.0	lb/ft^2

Wave Loads



P1=	0.33
P2=	0.2
P3=	0.28

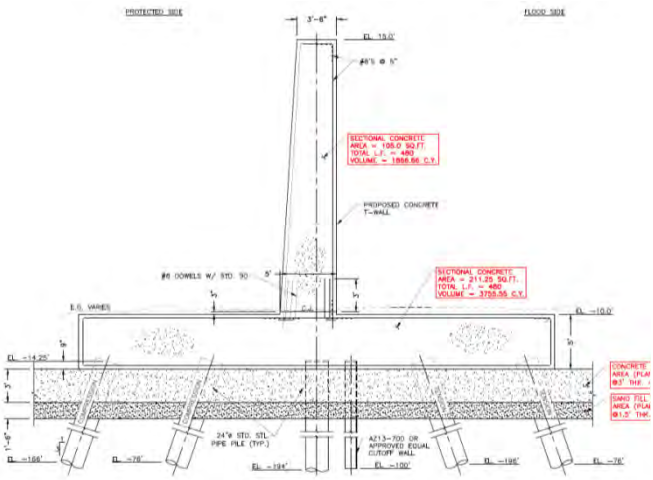
Wave load calc

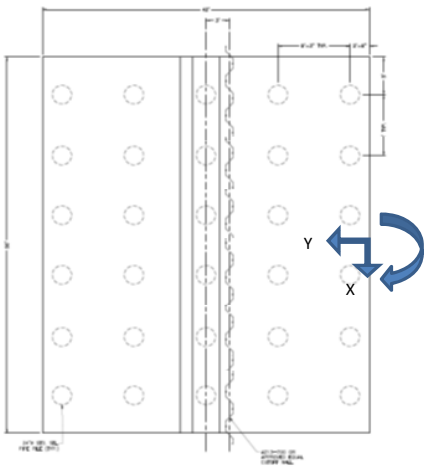
	Load (L) (k/ft^2)	y	Ly
1	6.3	11.25	70.875
2	0.5625	15	8.4375
3	1.2	25.5	30.6
4	0.39	24.5	9.555
∑=	8.4525		119.4675

Total wave=	8.4525	k/ft
ȳ=∑Ly/∑L=	14.13398	ft

Bayou Des Allemands T-wall

T-Wall Foundation Loads: Unfactored Loads for Pile Analysis





Top of Stem EL.	18.5		Weight of Water:	0.062	k/ft^3	
Top of Slab EL.	-10.0		Weight Soil (FS)	0.120	k/ft^3	
Bottom of Slab EL.	-15.0		Weight of Soil (PS):	0.12	k/ft^4	
Stem Width at TOW:	3.50	ft	Weight of Concrete:	0.150	k/ft^3	
Stem Width at Top of slab:	5.0	ft	Ko:	0.8		
F.S. Slab Width:	19.25	ft	Wave Load:	8.45	k/ft	
P.S. Slab Width:	17.75	ft	Wave Arm EL.	19.13	ft	
Length of Monolith:	50	ft	Unbal. Load SWL:	0.0	k/ft	
Dist to Sheet Pile:	18	ft	Unbal. Load HWL:	0.0	k/ft	
F.S. Soil EL.	-10.0		Wind Load:	0.056	ksf	
P.S. Soil EL.	-10.0		Boat Impact	0.5	k/ft	Debris applied at TOW for TOW LC
S.W.L EL. (Flowline)	12.5		Construction Surcharge:	0.2	k/ft^2	
P.S. Water EL.	-1.0		Walkway weight :	1.02	k/ft	Approx.

Width of Monolith:	42.0	ft	Area of Stem:	99.75	ft^2
Area of Base Slab:	210	ft^2	Bouyant Soil Weight (PS):	0.058	k/ft^3
			Bouyant Soil Weight (FS):	0.058	k/ft^4

Stem Areas	Area (ft^2)		y (ft)	Ay
Stem triangle area:	21.375	ft^2	21.5	459.5625
Stem rectangle area:	99.75	ft^2	21	2094.75
Stem area total:	121.125	ft^2		
			y=	21.09 ft

Load Sheet Limitations - a) Straight aligned monoliths only b) No varying soil elevations along monolith
c) Sheet only handles minimal impact loads

LC 1: **Load Case 1a.** Normal Operation

Item	Fx	Fy	Fz	x	y	z	Mx	My	Mz
Concrete Base			31.5		21.0		661.5		
Concrete Stem			18.2		21.088		383.1		
Walkway			1.0		21.088		21.5		
F.S. Vertical Soil			0.0		9.625		0.0		
F.S. Horizontal Soil (Base)		1.2				1.67	2.0		
P.S. Vertical Soil			0.0		33.13		0.0		
Sub Total:		1.2	50.7				1,068.2	0.0	0.0
Sub Total x Monolith Length:		60	2534				53408	0	0
Total		**60**	**2534**	**0**	**0**	**0**	**53408**	**0**	**0**

LC 3: **Load Case 2a.** Construction

Item	Fx	Fy	Fz	x	y	z	Mx	My	Mz
Concrete Base			31.5		21.0		661.5		
Concrete Stem			18.2		21.088		383.1		
Walkway			1.0		21.088		21.5		
F.S. Horizontal Soil (Base)		1.2				1.67	2.0		
Construction Surcharge(FS)			3.9		9.63		37.1		
Construction Surcharge(PS)			3.6		33.13		117.6		
Sub Total:		1.2	58.1				1,222.8		
Sub Total x Monolith Length:		60	2904.4375				61140.3438	0	0
Total		**60**	**2904**				**61140**		

LC 4: **Load Case 2b**. Construction + Wind

Item	Fx	Fy	Fz	x	y	z	Mx	My	Mz
Concrete Base			31.5		21.0		661.5		
Concrete Stem			18.2		21.088		383.1		
Walkway			1.0		21.088		21.5		
F.S. Horizontal Soil (Base)		1.2				1.67	2.0		
Construction Surcharge(FS)			3.9		9.6		37.1		
Construction Surcharge(PS)			3.55		33.125		117.6		
Wind		1.596				19.3	30.7		
Sub Total:		2.80	58.09				1,253.53	0.00	0.00
Sub Total x Monolith Length:		139.8	2904.4375				62676.4938	0	0
Total		**140**	**2904**				**62676**		

LC 5: **Load Case 3a**. Flowline, Impervious Uplift, Wave

Item	Fx	Fy	Fz	x	y	z	Mx	My	Mz
Concrete Base			31.5		21.00		661.5		
Concrete Stem			18.2		21.088		383.1		
Walkway			1.0		21.088		21.5		
F.S. Vertical Water			27.0		9.63		260.1		
F.S. Vertical Soil			0.0		9.63		0.0		
P.S. Vertical Water			9.9684		31.625		315.3		
P.S. Vertical Soil			0.0000		31.625		0.0		
F.S. Horizontal Water		23.6				9.17	216.3		
F.S. Horizontal Soil		0.576				1.67	1.0		
P.S. Horizontal Water		-6.1152				4.67	-28.5		
P.S. Horizontal Soil ($\gamma_{m\ tri}$)		-0.5760				1.67	-1.0		
P.S. Horizontal Soil ($\gamma_{m\ rec}$)		0.0				7.00	0.0		
P.S. Horizontal Soil ($\gamma_{sat\ tri}$)		0.0				4.67	0.0		
F.S. Impervious Uplift			-30.9		9.00		-278.0		
P.S. Impervious Uplift			-21.0		30.00		-629.0		
Wave		8.5				19.13	161.7		
Sub Total:		25.9	35.8				1,084.0		
Sub Total x Monolith Length:		1,296.6	1,791.5				54,201.9	0.0	0.0
Total		**1297**	**1791**				**54202**		

LC 6: **Load Case 3b**. Flowline, Pervious Uplift, Wave

Item	Fx	Fy	Fz	x	y	z	Mx	My	Mz
Concrete Base			31.5		21.00		661.5		
Concrete Stem			18.2		21.088		383.1		
Walkway			1.0		21.088		21.5		
F.S. Vertical Water			27.0		9.63		260.1		
F.S. Vertical Soil			0.0		9.63		0.0		
P.S. Vertical Water			10.0		31.625		315.3		
P.S. Vertical Soil			0.000		31.625		0.0		
F.S. Horizontal Water		23.6				9.17	216.3		
F.S. Horizontal Soil		0.6				1.67	1.0		
P.S. Horizontal Water		-6.115				4.67	-28.5		
P.S. Horizontal Soil ($\gamma_{m\ tri}$)		-0.576				1.67	-1.0		
P.S. Horizontal Soil ($\gamma_{m\ rec}$)		0.0				7.00	0.0		
P.S. Horizontal Soil ($\gamma_{sat\ tri}$)		0.0				4.67	0.0		

Pervious Uplift (Rec.)		-36.7		21.00		-770.5		
Pervious Uplift (Tri.)		-17.7		14.00		-247.7		
Wave	8.5				19.13	161.7		
Sub Total:	25.9	33.3				972.8		
Sub Total x Monolith Length:	1296.6	1665.1				48642.1	0.0	0.0
Total	**1297**	**1665**				**48642**		

LC 7: **Load Case 3c**. Flowline + Wind + Debri, Impervious Uplift

Item	Fx	Fy	Fz	x	y	z	Mx	My	Mz
Concrete Base			31.5		21.00		661.5		
Concrete Stem			18.2		21.088		383.1		
Walkway			1.0		21.088		21.5		
F.S. Vertical Water			27.0		9.63		260.1		
F.S. Vertical Soil			0.0		9.63		0.0		
P.S. Vertical Water			10.0		31.625		315.3		
P.S. Vertical Soil			0.000		31.625		0.0		
F.S. Horizontal Water		23.6				9.17	216.3		
F.S. Horizontal Soil		0.6				1.67	1.0		
P.S. Horizontal Water		-6.115				4.67	-28.5		
P.S. Horizontal Soil ($\gamma_{m\ tri}$)		-0.576				1.67	-1.0		
P.S. Horizontal Soil ($\gamma_{m\ rec}$)		0.0				7.00	0.0		
P.S. Horizontal Soil ($\gamma_{sat\ tri}$)		0.0				4.67	0.0		
F.S. Impervious Uplift			-30.9		9.00		-278.0		
P.S. Impervious Uplift			-21.0		30.00		-629.0		
Wind		0.3				30.50	10.2		
Debri		0.5				28.50	14.3		
Sub Total:		18.3	35.8				946.8		
Sub Total x Monolith Length:		915.8	1791.5				47340.3	0.0	0.0
Total		**916**	**1791**				**47340**		

LC 8: **Load Case 3d**. Flowline + Wind + Debri, Pervious Uplift

Item	Fx	Fy	Fz	x	y	z	Mx	My	Mz
Concrete Base			31.5		21.00		661.5		
Concrete Stem			18.2		21.088		383.1		
Walkway			1.0		21.088		21.5		
F.S. Vertical Water			27.0		9.63		260.1		
F.S. Vertical Soil			0.0		9.63		0.0		
P.S. Vertical Water			10.0		31.625		315.3		
P.S. Vertical Soil			0.000		31.625		0.0		
F.S. Horizontal Water		23.6				9.17	216.3		
F.S. Horizontal Soil		0.6				1.67	1.0		
P.S. Horizontal Water		-6.115				4.67	-28.5		
P.S. Horizontal Soil ($\gamma_{m\ tri}$)		-0.576				1.67	-1.0		
P.S. Horizontal Soil ($\gamma_{m\ rec}$)		0.0				7.00	0.0		
P.S. Horizontal Soil ($\gamma_{sat\ tri}$)		0.0				4.67	0.0		
Pervious Uplift (Rec.)			-36.7		21.00		-770.5		
Pervious Uplift (Tri.)			-17.7		14.00		-247.7		
Wind		0.3				30.50	10.2		
Debri		0.5				28.50	14.3		
Sub Total:		18.3	33.3				835.6		
Sub Total x Monolith Length:		915.8	1665.1				41780.5	0.0	0.0
Total		**916**	**1665**				**41780**		

LC 9: **Load Case 4a.** Water to the Top+ Debri, Impervious Uplift

Item	Fx	Fy	Fz	x	y	z	Mx	My	Mz
Concrete Base			31.5		21.00		661.5		
Concrete Stem			18.2		21.088		383.1		
Walkway			1.0		21.088		21.5		
F.S. Vertical Water			34.2		9.63		329.5		
F.S. Vertical Soil			0.0		9.63		0.0		
P.S. Vertical Water			10.0		31.625		315.3		
P.S. Vertical Soil			0.000		31.625		0.0		
F.S. Horizontal Water		35.0				11.17	391.0		
F.S. Horizontal Soil		0.6				1.67	1.0		

P.S. Horizontal Water		-6.115			4.67	-28.5		
P.S. Horizontal Soil ($\gamma_{m\ tri}$)		-0.576			1.67	-1.0		
P.S. Horizontal Soil ($\gamma_{m\ rec}$)		0.0			7.00	0.0		
P.S. Horizontal Soil ($\gamma_{sat\ tri}$)		0.0			4.67	0.0		
F.S. Impervious Uplift			-37.6	9.00		-338.6		
P.S. Impervious Uplift			-21.0	30.00		-629.0		
Debri		0.5			33.50	16.8		
Unbalanced Load		0.0						
Sub Total:		29.4	36.3			1122.5		
Sub Total x Monolith Length:		1470.0	1814.9			56124.0	0.0	0.0
Total		**1470**	**1815**			**56124**		

LC 10: **Load Case 4b.** Water to the Top + Debri, Pervious Uplift

Item	Fx	Fy	Fz	x	y	z	Mx	My	Mz
Concrete Base			31.5		21.00		661.5		
Concrete Stem			18.2		21.088		383.1		
Walkway			1.0		21.088		21.5		
F.S. Vertical Water			34.2		9.63		329.5		
F.S. Vertical Soil			0.0		9.63		0.0		
P.S. Vertical Water			10.0		31.625		315.3		
P.S. Vertical Soil			0.000		31.625		0.0		
F.S. Horizontal Water		35.0				11.17	391.0		
F.S. Horizontal Soil		0.6				1.67	1.0		
P.S. Horizontal Water		-6.115				4.67	-28.5		
P.S. Horizontal Soil ($\gamma_{m\ tri}$)		-0.576				1.67	-1.0		
P.S. Horizontal Soil ($\gamma_{m\ rec}$)		0.0				7.00	0.0		
P.S. Horizontal Soil ($\gamma_{sat\ tri}$)		0.0				4.67	0.0		
Pervious Uplift (Rec.)			-36.7		21.00		-770.5		
Pervious Uplift (Tri.)			-25.6		14.00		-357.7		
Debri		0.5				33.50	16.8		
Unbalanced Load		0.0							
Sub Total:		29.4	32.6				961.9		
Sub Total x Monolith Length:		1470.0	1632.4				48093.1	0.0	0.0
Total		**1470**	**1632**				**48093**		

Summary Table of CPGA Loads

		Fx	Fy	Fz	Mx	My	Mz
Load Case 1a	**LOAD 1**	**0.0**	**60.0**	**2,534.4**	**53,407.8**	**0.0**	**0.0**
Load Case 2a	**LOAD 2**	**0.0**	**60.0**	**2,904.4**	**61,140.3**	**0.0**	**0.0**
Load Case 2b	**LOAD 3**	**0.0**	**139.8**	**2,904.4**	**62,676.5**	**0.0**	**0.0**
Load Case 3a	**LOAD 4**	**0.0**	**1,296.6**	**1,791.5**	**54,201.9**	**0.0**	**0.0**
Load Case 3b	**LOAD 5**	**0.0**	**1,296.6**	**1,665.1**	**48,642.1**	**0.0**	**0.0**
Load Case 3c	**LOAD 6**	**0.0**	**915.8**	**1,791.5**	**47,340.3**	**0.0**	**0.0**
Load Case 3d	**LOAD 7**	**0.0**	**915.8**	**1,665.1**	**41,780.5**	**0.0**	**0.0**
Load Case 4a	**LOAD 8**	**0.0**	**1,470.0**	**1,814.9**	**56,124.0**	**0.0**	**0.0**
Load Case 4b	**LOAD 9**	**0.0**	**1,470.0**	**1,632.4**	**48,093.1**	**0.0**	**0.0**

Pile Load Capacity Plot For Control Structure
Segment 3 - Boring B-6 - Bayou Des Allemands

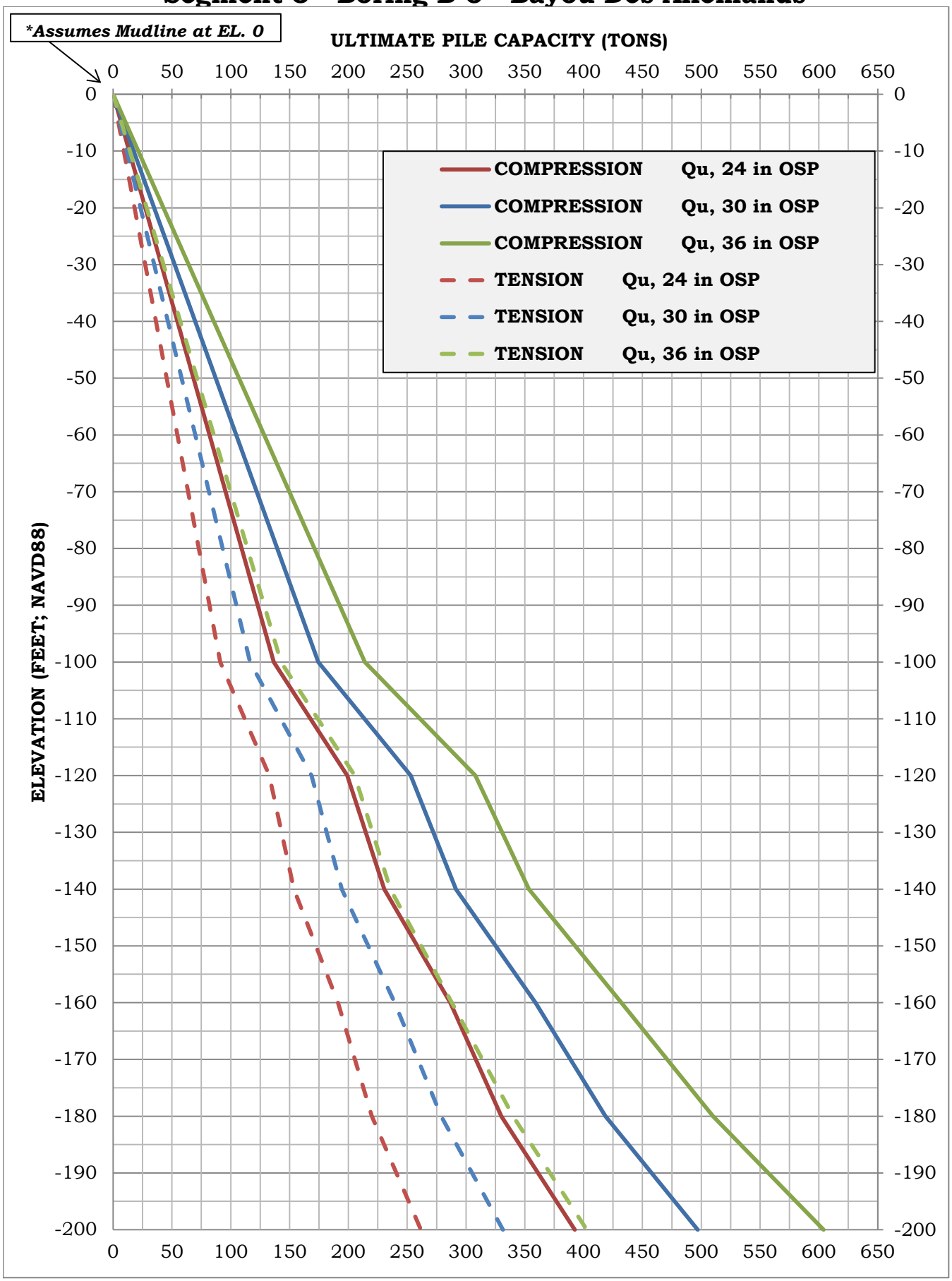


Figure 4.2

```
10  Bayou Des Allemands Twall Fixed
20  PIL  1  -20   2.5   0
30  BAT   2   1
40  ANG   270   1
50  PIL  2  -12   2.5   0
60  BAT   2   2
70  ANG   270   2
80  PIL  3  -4   2.5   0
90  BAT   2   3
100  ANG   270   3
110  PIL  4   4   2.5   0
120  BAT   2   4
130  ANG   270   4
140  PIL  5   12   2.5   0
150  BAT   2   5
160  ANG   270   5
170  PIL  6   20   2.5   0
180  BAT   2   6
190  ANG   270   6
200  PIL  7  -20   11.75   0
210  BAT   2   7
220  ANG   270   7
230  PIL  8  -12   11.75   0
240  BAT   2   8
250  ANG   270   8
260  PIL  9  -4   11.75   0
270  BAT   2   9
280  ANG   270   9
290  PIL  10   4   11.75   0
300  BAT   2   10
310  ANG   270   10
320  PIL  11   12   11.75   0
330  BAT   2   11
340  ANG   270   11
350  PIL  12   20   11.75   0
360  BAT   2   12
370  ANG   270   12
380  PIL  13  -20   21   0
390  BAT   2   13
400  ANG   90   13
410  PIL  14  -12   21   0
420  BAT   2   14
430  ANG   90   14
440  PIL  15  -4   21   0
450  BAT   2   15
460  ANG   90   15
470  PIL  16   4   21   0
480  BAT   2   16
490  ANG   90   16
500  PIL  17   12   21   0
```

```
510  BAT   2   17
520  ANG   90   17
530  PIL  18   20   21   0
540  BAT   2   18
550  ANG   90   18
560  PIL  19  -20   30.25   0
570  BAT   2   19
580  ANG   90   19
590  PIL  20  -12   30.25   0
600  BAT   2   20
610  ANG   90   20
620  PIL  21  -4   30.25   0
630  BAT   2   21
640  ANG   90   21
650  PIL  22   4   30.25   0
660  BAT   2   22
670  ANG   90   22
680  PIL  23   12   30.25   0
690  BAT   2   23
700  ANG   90   23
710  PIL  24   20   30.25   0
720  BAT   2   24
730  ANG   90   24
740  PIL  25  -20   39.5   0
750  BAT   2   25
760  ANG   90   25
770  PIL  26  -12   39.5   0
780  BAT   2   26
790  ANG   90   26
800  PIL  27  -4   39.5   0
810  BAT   2   27
820  ANG   90   27
830  PIL  28   4   39.5   0
840  BAT   2   28
850  ANG   90   28
860  PIL  29   12   39.5   0
870  BAT   2   29
880  ANG   90   29
890  PIL  30   20   39.5   0
900  BAT   2   30
910  ANG   90   30
920  PRO  29000  2549  2549  36.91  2  0  1 TO 30
930  SOI ES 0.056 L  180  0  1 TO 30
940  RED  1  1  1
950  ALL R 200  130  921  921  6890  6590  1 TO 30
960  FIX  1 TO 30
970  LOA  1  0  60  2534  53408  0  0
970  LOA  2  0  60  2904  61140  0  0
970  LOA  3  0  140  2904  62676  0  0
970  LOA  4  0  1297  1791  54202  0  0
```

```
970  LOA  5  0  1297  1665  48642  0  0
970  FOV  1.167  1.167  2
970  FOV  1.33  1.33  3
970  FOV  1.33  1.33  4
970  FOV  1.33  1.33  5
980  TOUT   1  2  3  4  5  6  7
990  PFO ALL
1000  PLB ALL
```

CPGA - CASE PILE GROUP ANALYSIS PROGRAM
RUN DATE: 28-AUG-20 RUN TIME: 15:18:30

FOR PILES WITH UNSUPPORTED HEIGHT:
A. CPGA CANNOT CALCULATE PMAXMOM FOR NH TYPE SOIL
B. THE ALLOWABLE STRESS CHECKS, ASC AND AST, ARE
NOT FULLY DEVELOPED FOR UNSUPPORTED PILES.
WORK IS IN PROGRESS TO COMPLETE THIS ASPECT OF CPGA.

ELASTIC CENTER LOCATION IS NOT COMPUTED FOR 3-DIMENSIONAL PROBLEMS.

BAYOU DES ALLEMANDS TWALL FIXED
DATA UNKNOWN - REJECTED.

THERE ARE 30 PILES AND
5 LOAD CASES IN THIS RUN.

ALL PILE COORDINATES ARE CONTAINED WITHIN A BOX

	X	Y	Z
WITH DIAGONAL COORDINATES = (	-20.00 ,	2.50 ,	0.00)
(	20.00 ,	39.50 ,	0.00)

****

PILE PROPERTIES AS INPUT

E	I1	I2	A	C33	B66
KSI	IN**4	IN**4	IN**2		
0.29000E+05	0.25490E+04	0.25490E+04	0.36910E+02	0.20000E+01	0.00000E+00

THESE PILE PROPERTIES APPLY TO THE FOLLOWING PILES -

ALL

****

SOIL DESCRIPTIONS AS INPUT

ES	ESOIL	LENGTH	L	LU
	K/IN**2		FT	FT

```
        0.56000E-01    L      0.18000E+03   0.00000E+00

 ESOIL(ORIGINAL)     RGROUP     RCYCLIC
   K/IN**2
  0.56000E-01       0.1000E+01 0.1000E+01
```

THIS SOIL DESCRIPTION APPLIES TO THE FOLLOWING PILES -

ALL

****

PILE STIFFNESSES AS CALCULATED FROM PROPERTIES

0.15096E+02	0.00000E+00	0.00000E+00	0.00000E+00	0.20346E+04	0.00000E+00
0.00000E+00	0.15096E+02	0.00000E+00	-0.20346E+04	0.00000E+00	0.00000E+00
0.00000E+00	0.00000E+00	0.99110E+03	0.00000E+00	0.00000E+00	0.00000E+00
0.00000E+00	-0.20346E+04	0.00000E+00	0.54845E+06	0.00000E+00	0.00000E+00
0.20346E+04	0.00000E+00	0.00000E+00	0.00000E+00	0.54845E+06	0.00000E+00
0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00

THIS MATRIX APPLIES TO THE FOLLOWING PILES -

1

****

PILE GEOMETRY AS INPUT AND/OR GENERATED

NUM	X FT	Y FT	Z FT	BATTER	ANGLE	LENGTH FT	FIXITY
1	-20.00	2.50	0.00	2.00	270.00	180.00	F
2	-12.00	2.50	0.00	2.00	270.00	180.00	F
3	-4.00	2.50	0.00	2.00	270.00	180.00	F
4	4.00	2.50	0.00	2.00	270.00	180.00	F
5	12.00	2.50	0.00	2.00	270.00	180.00	F
6	20.00	2.50	0.00	2.00	270.00	180.00	F
7	-20.00	11.75	0.00	2.00	270.00	180.00	F
8	-12.00	11.75	0.00	2.00	270.00	180.00	F
9	-4.00	11.75	0.00	2.00	270.00	180.00	F
10	4.00	11.75	0.00	2.00	270.00	180.00	F
11	12.00	11.75	0.00	2.00	270.00	180.00	F
12	20.00	11.75	0.00	2.00	270.00	180.00	F
13	-20.00	21.00	0.00	2.00	90.00	180.00	F
14	-12.00	21.00	0.00	2.00	90.00	180.00	F

15	-4.00	21.00	0.00	2.00	90.00	180.00	F
16	4.00	21.00	0.00	2.00	90.00	180.00	F
17	12.00	21.00	0.00	2.00	90.00	180.00	F
18	20.00	21.00	0.00	2.00	90.00	180.00	F
19	-20.00	30.25	0.00	2.00	90.00	180.00	F
20	-12.00	30.25	0.00	2.00	90.00	180.00	F
21	-4.00	30.25	0.00	2.00	90.00	180.00	F
22	4.00	30.25	0.00	2.00	90.00	180.00	F
23	12.00	30.25	0.00	2.00	90.00	180.00	F
24	20.00	30.25	0.00	2.00	90.00	180.00	F
25	-20.00	39.50	0.00	2.00	90.00	180.00	F
26	-12.00	39.50	0.00	2.00	90.00	180.00	F
27	-4.00	39.50	0.00	2.00	90.00	180.00	F
28	4.00	39.50	0.00	2.00	90.00	180.00	F
29	12.00	39.50	0.00	2.00	90.00	180.00	F
30	20.00	39.50	0.00	2.00	90.00	180.00	F

						5400.00	

****

APPLIED LOADS

LOAD CASE	PX K	PY K	PZ K	MX FT-K	MY FT-K	MZ FT-K	OVERSTRESS COM	TEN
1	0.0	60.0	2534.0	53408.0	0.0	0.0		
2	0.0	60.0	2904.0	61140.0	0.0	0.0	1.17	1.17
3	0.0	140.0	2904.0	62676.0	0.0	0.0	1.33	1.33
4	0.0	1297.0	1791.0	54202.0	0.0	0.0	1.33	1.33
5	0.0	1297.0	1665.0	48642.0	0.0	0.0	1.33	1.33

****

ORIGINAL PILE GROUP STIFFNESS MATRIX

0.45287E+03	0.12826E-03	-0.85507E-04	0.16417E-01	0.54594E+05	-0.11958E+06
0.12826E-03	0.63089E+04	0.23424E+04	0.20957E+07	0.43656E-10	-0.23030E-01
-0.85507E-04	0.23424E+04	0.23877E+05	0.60225E+07	0.19929E-03	-0.16417E-01
0.16417E-01	0.20957E+07	0.60225E+07	0.21311E+10	-0.11034E+00	-0.10145E+02
0.54594E+05	0.43656E-10	0.19929E-03	-0.11034E+00	0.65498E+09	-0.78038E+08
-0.11958E+06	-0.23030E-01	-0.16417E-01	-0.10145E+02	-0.78038E+08	0.22282E+09

30 PILES 5 LOAD CASES

LOAD CASE 1. NUMBER OF FAILURES = 0. NUMBER OF PILES IN TENSION = 0.

LOAD CASE 2. NUMBER OF FAILURES = 0. NUMBER OF PILES IN TENSION = 0.

LOAD CASE 3. NUMBER OF FAILURES = 0. NUMBER OF PILES IN TENSION = 0.

LOAD CASE 4. NUMBER OF FAILURES = 0. NUMBER OF PILES IN TENSION = 12.

LOAD CASE 5. NUMBER OF FAILURES = 0. NUMBER OF PILES IN TENSION = 12.

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PILE CAP DISPLACEMENTS

LOAD CASE	DX IN	DY IN	DZ IN	RX RAD	RY RAD	RZ RAD
1	0.3378E-07	-0.8108E-01	0.6308E-01	0.2022E-03	0.1201E-13	0.2360E-10
2	0.3912E-07	-0.9578E-01	0.7113E-01	0.2375E-03	-0.8122E-14	0.2714E-10
3	0.3493E-07	-0.8120E-01	0.7114E-01	0.2317E-03	0.2308E-12	0.2622E-10
4	-0.3810E-07	0.2660E+00	0.1320E+00	-0.3294E-03	0.3435E-11	0.2977E-11
5	-0.3849E-07	0.3073E+00	0.1627E+00	-0.4880E-03	0.3319E-11	0.2035E-11

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PILE FORCES IN LOCAL GEOMETRY

M1 & M2 NOT AT PILE HEAD FOR PINNED PILES
* INDICATES PILE FAILURE
# INDICATES CBF BASED ON MOMENTS DUE TO
(F3*EMIN) FOR CONCRETE PILES
B INDICATES BUCKLING CONTROLS

LOAD CASE - 1

PILE	F1 K	F2 K	F3 K	M1 IN-K	M2 IN-K	M3 IN-K	ALF	CBF
1	1.0	0.0	97.2	0.0	195.5	0.0	0.49	0.13
2	1.0	0.0	97.2	0.0	195.5	0.0	0.49	0.13
3	1.0	0.0	97.2	0.0	195.5	0.0	0.49	0.13
4	1.0	0.0	97.2	0.0	195.5	0.0	0.49	0.13
5	1.0	0.0	97.2	0.0	195.5	0.0	0.49	0.13
6	1.0	0.0	97.2	0.0	195.5	0.0	0.49	0.13
7	0.9	0.0	117.1	0.0	175.1	0.0	0.59	0.15
8	0.9	0.0	117.1	0.0	175.1	0.0	0.59	0.15

9	0.9	0.0	117.1	0.0	175.1	0.0	0.59	0.15
10	0.9	0.0	117.1	0.0	175.1	0.0	0.59	0.15
11	0.9	0.0	117.1	0.0	175.1	0.0	0.59	0.15
12	0.9	0.0	117.1	0.0	175.1	0.0	0.59	0.15
13	-2.3	0.0	65.2	0.0	-362.2	0.0	0.33	0.12
14	-2.3	0.0	65.2	0.0	-362.2	0.0	0.33	0.12
15	-2.3	0.0	65.2	0.0	-362.2	0.0	0.33	0.12
16	-2.3	0.0	65.2	0.0	-362.2	0.0	0.33	0.12
17	-2.3	0.0	65.2	0.0	-362.2	0.0	0.33	0.12
18	-2.3	0.0	65.2	0.0	-362.2	0.0	0.33	0.12
19	-2.4	0.0	85.0	0.0	-382.6	0.0	0.43	0.15
20	-2.4	0.0	85.0	0.0	-382.6	0.0	0.43	0.15
21	-2.4	0.0	85.0	0.0	-382.6	0.0	0.43	0.15
22	-2.4	0.0	85.0	0.0	-382.6	0.0	0.43	0.15
23	-2.4	0.0	85.0	0.0	-382.6	0.0	0.43	0.15
24	-2.4	0.0	85.0	0.0	-382.6	0.0	0.43	0.15
25	-2.6	0.0	104.9	0.0	-403.0	0.0	0.52	0.17
26	-2.6	0.0	104.9	0.0	-403.0	0.0	0.52	0.17
27	-2.6	0.0	104.9	0.0	-403.0	0.0	0.52	0.17
28	-2.6	0.0	104.9	0.0	-403.0	0.0	0.52	0.17
29	-2.6	0.0	104.9	0.0	-403.0	0.0	0.52	0.17
30	-2.6	0.0	104.9	0.0	-403.0	0.0	0.52	0.17

LOAD CASE - 2

PILE	F1 K	F2 K	F3 K	M1 IN-K	M2 IN-K	M3 IN-K	ALF	CBF
1	1.2	0.0	111.8	0.0	233.3	0.0	0.48	0.13
2	1.2	0.0	111.8	0.0	233.3	0.0	0.48	0.13
3	1.2	0.0	111.8	0.0	233.3	0.0	0.48	0.13
4	1.2	0.0	111.8	0.0	233.3	0.0	0.48	0.13
5	1.2	0.0	111.8	0.0	233.3	0.0	0.48	0.13
6	1.2	0.0	111.8	0.0	233.3	0.0	0.48	0.13
7	1.1	0.0	135.2	0.0	209.3	0.0	0.58	0.15
8	1.1	0.0	135.2	0.0	209.3	0.0	0.58	0.15
9	1.1	0.0	135.2	0.0	209.3	0.0	0.58	0.15
10	1.1	0.0	135.2	0.0	209.3	0.0	0.58	0.15
11	1.1	0.0	135.2	0.0	209.3	0.0	0.58	0.15
12	1.1	0.0	135.2	0.0	209.3	0.0	0.58	0.15
13	-2.7	0.0	73.6	0.0	-423.7	0.0	0.32	0.12
14	-2.7	0.0	73.6	0.0	-423.7	0.0	0.32	0.12
15	-2.7	0.0	73.6	0.0	-423.7	0.0	0.32	0.12
16	-2.7	0.0	73.6	0.0	-423.7	0.0	0.32	0.12
17	-2.7	0.0	73.6	0.0	-423.7	0.0	0.32	0.12
18	-2.7	0.0	73.6	0.0	-423.7	0.0	0.32	0.12
19	-2.8	0.0	97.0	0.0	-447.7	0.0	0.42	0.15
20	-2.8	0.0	97.0	0.0	-447.7	0.0	0.42	0.15
21	-2.8	0.0	97.0	0.0	-447.7	0.0	0.42	0.15

22	-2.8	0.0	97.0	0.0	-447.7	0.0	0.42	0.15
23	-2.8	0.0	97.0	0.0	-447.7	0.0	0.42	0.15
24	-2.8	0.0	97.0	0.0	-447.7	0.0	0.42	0.15
25	-3.0	0.0	120.4	0.0	-471.7	0.0	0.52	0.17
26	-3.0	0.0	120.4	0.0	-471.7	0.0	0.52	0.17
27	-3.0	0.0	120.4	0.0	-471.7	0.0	0.52	0.17
28	-3.0	0.0	120.4	0.0	-471.7	0.0	0.52	0.17
29	-3.0	0.0	120.4	0.0	-471.7	0.0	0.52	0.17
30	-3.0	0.0	120.4	0.0	-471.7	0.0	0.52	0.17

LOAD CASE - 3

PILE	F1 K	F2 K	F3 K	M1 IN-K	M2 IN-K	M3 IN-K	ALF	CBF
1	1.0	0.0	105.2	0.0	203.8	0.0	0.40	0.11
2	1.0	0.0	105.2	0.0	203.8	0.0	0.40	0.11
3	1.0	0.0	105.2	0.0	203.8	0.0	0.40	0.11
4	1.0	0.0	105.2	0.0	203.8	0.0	0.40	0.11
5	1.0	0.0	105.2	0.0	203.8	0.0	0.40	0.11
6	1.0	0.0	105.2	0.0	203.8	0.0	0.40	0.11
7	0.9	0.0	128.0	0.0	180.4	0.0	0.48	0.12
8	0.9	0.0	128.0	0.0	180.4	0.0	0.48	0.12
9	0.9	0.0	128.0	0.0	180.4	0.0	0.48	0.12
10	0.9	0.0	128.0	0.0	180.4	0.0	0.48	0.12
11	0.9	0.0	128.0	0.0	180.4	0.0	0.48	0.12
12	0.9	0.0	128.0	0.0	180.4	0.0	0.48	0.12
13	-2.4	0.0	78.8	0.0	-392.7	0.0	0.30	0.11
14	-2.4	0.0	78.8	0.0	-392.7	0.0	0.30	0.11
15	-2.4	0.0	78.8	0.0	-392.7	0.0	0.30	0.11
16	-2.4	0.0	78.8	0.0	-392.7	0.0	0.30	0.11
17	-2.4	0.0	78.8	0.0	-392.7	0.0	0.30	0.11
18	-2.4	0.0	78.8	0.0	-392.7	0.0	0.30	0.11
19	-2.6	0.0	101.6	0.0	-416.1	0.0	0.38	0.13
20	-2.6	0.0	101.6	0.0	-416.1	0.0	0.38	0.13
21	-2.6	0.0	101.6	0.0	-416.1	0.0	0.38	0.13
22	-2.6	0.0	101.6	0.0	-416.1	0.0	0.38	0.13
23	-2.6	0.0	101.6	0.0	-416.1	0.0	0.38	0.13
24	-2.6	0.0	101.6	0.0	-416.1	0.0	0.38	0.13
25	-2.8	0.0	124.4	0.0	-439.5	0.0	0.47	0.15
26	-2.8	0.0	124.4	0.0	-439.5	0.0	0.47	0.15
27	-2.8	0.0	124.4	0.0	-439.5	0.0	0.47	0.15
28	-2.8	0.0	124.4	0.0	-439.5	0.0	0.47	0.15
29	-2.8	0.0	124.4	0.0	-439.5	0.0	0.47	0.15
30	-2.8	0.0	124.4	0.0	-439.5	0.0	0.47	0.15

LOAD CASE - 4

PILE	F1 K	F2 K	F3 K	M1 IN-K	M2 IN-K	M3 IN-K	ALF	CBF
1	-5.1	0.0	-9.6	0.0	-775.8	0.0	0.06	0.09
2	-5.1	0.0	-9.6	0.0	-775.8	0.0	0.06	0.09
3	-5.1	0.0	-9.6	0.0	-775.8	0.0	0.06	0.09
4	-5.1	0.0	-9.6	0.0	-775.8	0.0	0.06	0.09
5	-5.1	0.0	-9.6	0.0	-775.8	0.0	0.06	0.09
6	-5.1	0.0	-9.6	0.0	-775.8	0.0	0.06	0.09
7	-4.8	0.0	-42.1	0.0	-742.5	0.0	0.24	0.12
8	-4.8	0.0	-42.1	0.0	-742.5	0.0	0.24	0.12
9	-4.8	0.0	-42.1	0.0	-742.5	0.0	0.24	0.12
10	-4.8	0.0	-42.1	0.0	-742.5	0.0	0.24	0.12
11	-4.8	0.0	-42.1	0.0	-742.5	0.0	0.24	0.12
12	-4.8	0.0	-42.1	0.0	-742.5	0.0	0.24	0.12
13	3.9	0.0	161.3	0.0	620.1	0.0	0.61	0.20
14	3.9	0.0	161.3	0.0	620.1	0.0	0.61	0.20
15	3.9	0.0	161.3	0.0	620.1	0.0	0.61	0.20
16	3.9	0.0	161.3	0.0	620.1	0.0	0.61	0.20
17	3.9	0.0	161.3	0.0	620.1	0.0	0.61	0.20
18	3.9	0.0	161.3	0.0	620.1	0.0	0.61	0.20
19	4.2	0.0	128.9	0.0	653.4	0.0	0.48	0.18
20	4.2	0.0	128.9	0.0	653.4	0.0	0.48	0.18
21	4.2	0.0	128.9	0.0	653.4	0.0	0.48	0.18
22	4.2	0.0	128.9	0.0	653.4	0.0	0.48	0.18
23	4.2	0.0	128.9	0.0	653.4	0.0	0.48	0.18
24	4.2	0.0	128.9	0.0	653.4	0.0	0.48	0.18
25	4.4	0.0	96.5	0.0	686.6	0.0	0.36	0.15
26	4.4	0.0	96.5	0.0	686.6	0.0	0.36	0.15
27	4.4	0.0	96.5	0.0	686.6	0.0	0.36	0.15
28	4.4	0.0	96.5	0.0	686.6	0.0	0.36	0.15
29	4.4	0.0	96.5	0.0	686.6	0.0	0.36	0.15
30	4.4	0.0	96.5	0.0	686.6	0.0	0.36	0.15

LOAD CASE - 5

PILE	F1 K	F2 K	F3 K	M1 IN-K	M2 IN-K	M3 IN-K	ALF	CBF
1	-6.1	0.0	-5.0	0.0	-961.5	0.0	0.03	0.11
2	-6.1	0.0	-5.0	0.0	-961.5	0.0	0.03	0.11
3	-6.1	0.0	-5.0	0.0	-961.5	0.0	0.03	0.11
4	-6.1	0.0	-5.0	0.0	-961.5	0.0	0.03	0.11
5	-6.1	0.0	-5.0	0.0	-961.5	0.0	0.03	0.11
6	-6.1	0.0	-5.0	0.0	-961.5	0.0	0.03	0.11
7	-5.8	0.0	-53.0	0.0	-912.3	0.0	0.31	0.14
8	-5.8	0.0	-53.0	0.0	-912.3	0.0	0.31	0.14
9	-5.8	0.0	-53.0	0.0	-912.3	0.0	0.31	0.14
10	-5.8	0.0	-53.0	0.0	-912.3	0.0	0.31	0.14

11	-5.8	0.0	-53.0	0.0	-912.3	0.0	0.31	0.14
12	-5.8	0.0	-53.0	0.0	-912.3	0.0	0.31	0.14
13	4.9	0.0	171.4	0.0	790.7	0.0	0.64	0.23
14	4.9	0.0	171.4	0.0	790.7	0.0	0.64	0.23
15	4.9	0.0	171.4	0.0	790.7	0.0	0.64	0.23
16	4.9	0.0	171.4	0.0	790.7	0.0	0.64	0.23
17	4.9	0.0	171.4	0.0	790.7	0.0	0.64	0.23
18	4.9	0.0	171.4	0.0	790.7	0.0	0.64	0.23
19	5.2	0.0	123.4	0.0	840.0	0.0	0.46	0.19
20	5.2	0.0	123.4	0.0	840.0	0.0	0.46	0.19
21	5.2	0.0	123.4	0.0	840.0	0.0	0.46	0.19
22	5.2	0.0	123.4	0.0	840.0	0.0	0.46	0.19
23	5.2	0.0	123.4	0.0	840.0	0.0	0.46	0.19
24	5.2	0.0	123.4	0.0	840.0	0.0	0.46	0.19
25	5.6	0.0	75.4	0.0	889.3	0.0	0.28	0.16
26	5.6	0.0	75.4	0.0	889.3	0.0	0.28	0.16
27	5.6	0.0	75.4	0.0	889.3	0.0	0.28	0.16
28	5.6	0.0	75.4	0.0	889.3	0.0	0.28	0.16
29	5.6	0.0	75.4	0.0	889.3	0.0	0.28	0.16
30	5.6	0.0	75.4	0.0	889.3	0.0	0.28	0.16

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PILE FORCES IN GLOBAL GEOMETRY

LOAD CASE - 1

PILE	PX K	PY K	PZ K	MX IN-K	MY IN-K	MZ IN-K
1	0.0	-44.4	86.5	195.5	0.0	0.0
2	0.0	-44.4	86.5	195.5	0.0	0.0
3	0.0	-44.4	86.5	195.5	0.0	0.0
4	0.0	-44.4	86.5	195.5	0.0	0.0
5	0.0	-44.4	86.5	195.5	0.0	0.0
6	0.0	-44.4	86.5	195.5	0.0	0.0
7	0.0	-53.2	104.4	175.1	0.0	0.0
8	0.0	-53.2	104.4	175.1	0.0	0.0
9	0.0	-53.2	104.4	175.1	0.0	0.0
10	0.0	-53.2	104.4	175.1	0.0	0.0
11	0.0	-53.2	104.4	175.1	0.0	0.0
12	0.0	-53.2	104.4	175.1	0.0	0.0
13	0.0	27.1	59.3	362.2	0.0	0.0
14	0.0	27.1	59.3	362.2	0.0	0.0
15	0.0	27.1	59.3	362.2	0.0	0.0
16	0.0	27.1	59.3	362.2	0.0	0.0
17	0.0	27.1	59.3	362.2	0.0	0.0

18	0.0	27.1	59.3	362.2	0.0	0.0
19	0.0	35.9	77.2	382.6	0.0	0.0
20	0.0	35.9	77.2	382.6	0.0	0.0
21	0.0	35.9	77.2	382.6	0.0	0.0
22	0.0	35.9	77.2	382.6	0.0	0.0
23	0.0	35.9	77.2	382.6	0.0	0.0
24	0.0	35.9	77.2	382.6	0.0	0.0
25	0.0	44.6	95.0	403.0	0.0	0.0
26	0.0	44.6	95.0	403.0	0.0	0.0
27	0.0	44.6	95.0	403.0	0.0	0.0
28	0.0	44.6	95.0	403.0	0.0	0.0
29	0.0	44.6	95.0	403.0	0.0	0.0
30	0.0	44.6	95.0	403.0	0.0	0.0

LOAD CASE - 2

PILE	PX K	PY K	PZ K	MX IN-K	MY IN-K	MZ IN-K
1	0.0	-51.1	99.5	233.3	0.0	0.0
2	0.0	-51.1	99.5	233.3	0.0	0.0
3	0.0	-51.1	99.5	233.3	0.0	0.0
4	0.0	-51.1	99.5	233.3	0.0	0.0
5	0.0	-51.1	99.5	233.3	0.0	0.0
6	0.0	-51.1	99.5	233.3	0.0	0.0
7	0.0	-61.4	120.4	209.3	0.0	0.0
8	0.0	-61.4	120.4	209.3	0.0	0.0
9	0.0	-61.4	120.4	209.3	0.0	0.0
10	0.0	-61.4	120.4	209.3	0.0	0.0
11	0.0	-61.4	120.4	209.3	0.0	0.0
12	0.0	-61.4	120.4	209.3	0.0	0.0
13	0.0	30.6	67.1	423.7	0.0	0.0
14	0.0	30.6	67.1	423.7	0.0	0.0
15	0.0	30.6	67.1	423.7	0.0	0.0
16	0.0	30.6	67.1	423.7	0.0	0.0
17	0.0	30.6	67.1	423.7	0.0	0.0
18	0.0	30.6	67.1	423.7	0.0	0.0
19	0.0	40.8	88.0	447.7	0.0	0.0
20	0.0	40.8	88.0	447.7	0.0	0.0
21	0.0	40.8	88.0	447.7	0.0	0.0
22	0.0	40.8	88.0	447.7	0.0	0.0
23	0.0	40.8	88.0	447.7	0.0	0.0
24	0.0	40.8	88.0	447.7	0.0	0.0
25	0.0	51.1	109.0	471.7	0.0	0.0
26	0.0	51.1	109.0	471.7	0.0	0.0
27	0.0	51.1	109.0	471.7	0.0	0.0
28	0.0	51.1	109.0	471.7	0.0	0.0
29	0.0	51.1	109.0	471.7	0.0	0.0
30	0.0	51.1	109.0	471.7	0.0	0.0

LOAD CASE - 3

PILE	PX K	PY K	PZ K	MX IN-K	MY IN-K	MZ IN-K
1	0.0	-48.0	93.6	203.8	0.0	0.0
2	0.0	-48.0	93.6	203.8	0.0	0.0
3	0.0	-48.0	93.6	203.8	0.0	0.0
4	0.0	-48.0	93.6	203.8	0.0	0.0
5	0.0	-48.0	93.6	203.8	0.0	0.0
6	0.0	-48.0	93.6	203.8	0.0	0.0
7	0.0	-58.0	114.1	180.4	0.0	0.0
8	0.0	-58.0	114.1	180.4	0.0	0.0
9	0.0	-58.0	114.1	180.4	0.0	0.0
10	0.0	-58.0	114.1	180.4	0.0	0.0
11	0.0	-58.0	114.1	180.4	0.0	0.0
12	0.0	-58.0	114.1	180.4	0.0	0.0
13	0.0	33.1	71.6	392.7	0.0	0.0
14	0.0	33.1	71.6	392.7	0.0	0.0
15	0.0	33.1	71.6	392.7	0.0	0.0
16	0.0	33.1	71.6	392.7	0.0	0.0
17	0.0	33.1	71.6	392.7	0.0	0.0
18	0.0	33.1	71.6	392.7	0.0	0.0
19	0.0	43.1	92.1	416.1	0.0	0.0
20	0.0	43.1	92.1	416.1	0.0	0.0
21	0.0	43.1	92.1	416.1	0.0	0.0
22	0.0	43.1	92.1	416.1	0.0	0.0
23	0.0	43.1	92.1	416.1	0.0	0.0
24	0.0	43.1	92.1	416.1	0.0	0.0
25	0.0	53.2	112.6	439.5	0.0	0.0
26	0.0	53.2	112.6	439.5	0.0	0.0
27	0.0	53.2	112.6	439.5	0.0	0.0
28	0.0	53.2	112.6	439.5	0.0	0.0
29	0.0	53.2	112.6	439.5	0.0	0.0
30	0.0	53.2	112.6	439.5	0.0	0.0

LOAD CASE - 4

PILE	PX K	PY K	PZ K	MX IN-K	MY IN-K	MZ IN-K
1	0.0	8.9	-6.4	-775.8	0.0	0.0
2	0.0	8.9	-6.4	-775.8	0.0	0.0
3	0.0	8.9	-6.4	-775.8	0.0	0.0
4	0.0	8.9	-6.4	-775.8	0.0	0.0
5	0.0	8.9	-6.4	-775.8	0.0	0.0
6	0.0	8.9	-6.4	-775.8	0.0	0.0

7	0.0	23.1	-35.5	-742.5	0.0	0.0
8	0.0	23.1	-35.5	-742.5	0.0	0.0
9	0.0	23.1	-35.5	-742.5	0.0	0.0
10	0.0	23.1	-35.5	-742.5	0.0	0.0
11	0.0	23.1	-35.5	-742.5	0.0	0.0
12	0.0	23.1	-35.5	-742.5	0.0	0.0
13	0.0	75.7	142.5	-620.1	0.0	0.0
14	0.0	75.7	142.5	-620.1	0.0	0.0
15	0.0	75.7	142.5	-620.1	0.0	0.0
16	0.0	75.7	142.5	-620.1	0.0	0.0
17	0.0	75.7	142.5	-620.1	0.0	0.0
18	0.0	75.7	142.5	-620.1	0.0	0.0
19	0.0	61.4	113.4	-653.4	0.0	0.0
20	0.0	61.4	113.4	-653.4	0.0	0.0
21	0.0	61.4	113.4	-653.4	0.0	0.0
22	0.0	61.4	113.4	-653.4	0.0	0.0
23	0.0	61.4	113.4	-653.4	0.0	0.0
24	0.0	61.4	113.4	-653.4	0.0	0.0
25	0.0	47.1	84.3	-686.6	0.0	0.0
26	0.0	47.1	84.3	-686.6	0.0	0.0
27	0.0	47.1	84.3	-686.6	0.0	0.0
28	0.0	47.1	84.3	-686.6	0.0	0.0
29	0.0	47.1	84.3	-686.6	0.0	0.0
30	0.0	47.1	84.3	-686.6	0.0	0.0

LOAD CASE - 5

PILE	PX K	PY K	PZ K	MX IN-K	MY IN-K	MZ IN-K
1	0.0	7.7	-1.7	-961.5	0.0	0.0
2	0.0	7.7	-1.7	-961.5	0.0	0.0
3	0.0	7.7	-1.7	-961.5	0.0	0.0
4	0.0	7.7	-1.7	-961.5	0.0	0.0
5	0.0	7.7	-1.7	-961.5	0.0	0.0
6	0.0	7.7	-1.7	-961.5	0.0	0.0
7	0.0	28.9	-44.8	-912.3	0.0	0.0
8	0.0	28.9	-44.8	-912.3	0.0	0.0
9	0.0	28.9	-44.8	-912.3	0.0	0.0
10	0.0	28.9	-44.8	-912.3	0.0	0.0
11	0.0	28.9	-44.8	-912.3	0.0	0.0
12	0.0	28.9	-44.8	-912.3	0.0	0.0
13	0.0	81.0	151.1	-790.7	0.0	0.0
14	0.0	81.0	151.1	-790.7	0.0	0.0
15	0.0	81.0	151.1	-790.7	0.0	0.0
16	0.0	81.0	151.1	-790.7	0.0	0.0
17	0.0	81.0	151.1	-790.7	0.0	0.0
18	0.0	81.0	151.1	-790.7	0.0	0.0
19	0.0	59.9	108.0	-840.0	0.0	0.0

20	0.0	59.9	108.0	-840.0	0.0	0.0
21	0.0	59.9	108.0	-840.0	0.0	0.0
22	0.0	59.9	108.0	-840.0	0.0	0.0
23	0.0	59.9	108.0	-840.0	0.0	0.0
24	0.0	59.9	108.0	-840.0	0.0	0.0
25	0.0	38.7	64.9	-889.3	0.0	0.0
26	0.0	38.7	64.9	-889.3	0.0	0.0
27	0.0	38.7	64.9	-889.3	0.0	0.0
28	0.0	38.7	64.9	-889.3	0.0	0.0
29	0.0	38.7	64.9	-889.3	0.0	0.0
30	0.0	38.7	64.9	-889.3	0.0	0.0

NO FILES WERE GENERATED DURING THIS RUN.

```
10  Bayou Des Allemands Twall Fixed
20  PIL  1  -20   2.5   0
30  BAT   2   1
40  ANG   270   1
50  PIL  2  -12   2.5   0
60  BAT   2   2
70  ANG   270   2
80  PIL  3  -4   2.5   0
90  BAT   2   3
100  ANG   270   3
110  PIL  4   4   2.5   0
120  BAT   2   4
130  ANG   270   4
140  PIL  5   12   2.5   0
150  BAT   2   5
160  ANG   270   5
170  PIL  6   20   2.5   0
180  BAT   2   6
190  ANG   270   6
200  PIL  7  -20   11.75   0
210  BAT   2   7
220  ANG   270   7
230  PIL  8  -12   11.75   0
240  BAT   2   8
250  ANG   270   8
260  PIL  9  -4   11.75   0
270  BAT   2   9
280  ANG   270   9
290  PIL  10   4   11.75   0
300  BAT   2   10
310  ANG   270   10
320  PIL  11   12   11.75   0
330  BAT   2   11
340  ANG   270   11
350  PIL  12   20   11.75   0
360  BAT   2   12
370  ANG   270   12
380  PIL  13  -20   21   0
390  BAT   2   13
400  ANG   90   13
410  PIL  14  -12   21   0
420  BAT   2   14
430  ANG   90   14
440  PIL  15  -4   21   0
450  BAT   2   15
460  ANG   90   15
470  PIL  16   4   21   0
480  BAT   2   16
490  ANG   90   16
500  PIL  17   12   21   0
```

```
510  BAT   2   17
520  ANG   90   17
530  PIL  18   20   21   0
540  BAT   2   18
550  ANG   90   18
560  PIL  19  -20   30.25   0
570  BAT   2   19
580  ANG   90   19
590  PIL  20  -12   30.25   0
600  BAT   2   20
610  ANG   90   20
620  PIL  21  -4   30.25   0
630  BAT   2   21
640  ANG   90   21
650  PIL  22   4   30.25   0
660  BAT   2   22
670  ANG   90   22
680  PIL  23   12   30.25   0
690  BAT   2   23
700  ANG   90   23
710  PIL  24   20   30.25   0
720  BAT   2   24
730  ANG   90   24
740  PIL  25  -20   39.5   0
750  BAT   2   25
760  ANG   90   25
770  PIL  26  -12   39.5   0
780  BAT   2   26
790  ANG   90   26
800  PIL  27  -4   39.5   0
810  BAT   2   27
820  ANG   90   27
830  PIL  28   4   39.5   0
840  BAT   2   28
850  ANG   90   28
860  PIL  29   12   39.5   0
870  BAT   2   29
880  ANG   90   29
890  PIL  30   20   39.5   0
900  BAT   2   30
910  ANG   90   30
920  PRO  29000  2549  2549  36.91  2  0  1 TO 30
930  SOI ES 0.056 L  180  0  1 TO 30
940  RED  1  1  1
950  ALL R 200  130  921  921  6890  6590  1 TO 30
960  FIX  1 TO 30
970  LOA  6  0  916  1791  47340  0  0
970  LOA  7  0  916  1665  41780  0  0
970  LOA  8  0  1470  1815  56124  0  0
970  LOA  9  0  1470  1632  48093  0  0
```

```
970  FOV  1.33  1.33  6
970  FOV  1.33  1.33  7
970  FOV  1.33  1.33  8
970  FOV  1.33  1.33  9
980  TOUT 1 2 3 4 5 6 7
990  PFO ALL
1000  PLB ALL
```

CPGA - CASE PILE GROUP ANALYSIS PROGRAM
RUN DATE: 28-AUG-20 RUN TIME: 15:13:58

FOR PILES WITH UNSUPPORTED HEIGHT:
A. CPGA CANNOT CALCULATE PMAXMOM FOR NH TYPE SOIL
B. THE ALLOWABLE STRESS CHECKS, ASC AND AST, ARE
NOT FULLY DEVELOPED FOR UNSUPPORTED PILES.
WORK IS IN PROGRESS TO COMPLETE THIS ASPECT OF CPGA.

ELASTIC CENTER LOCATION IS NOT COMPUTED FOR 3-DIMENSIONAL PROBLEMS.

BAYOU DES ALLEMANDS TWALL FIXED
DATA UNKNOWN - REJECTED.

THERE ARE 30 PILES AND
4 LOAD CASES IN THIS RUN.

ALL PILE COORDINATES ARE CONTAINED WITHIN A BOX

	X	Y	Z
WITH DIAGONAL COORDINATES = (	-20.00 ,	2.50 ,	0.00)
(	20.00 ,	39.50 ,	0.00)

****

PILE PROPERTIES AS INPUT

E	I1	I2	A	C33	B66
KSI	IN**4	IN**4	IN**2		
0.29000E+05	0.25490E+04	0.25490E+04	0.36910E+02	0.20000E+01	0.00000E+00

THESE PILE PROPERTIES APPLY TO THE FOLLOWING PILES -

ALL

****

SOIL DESCRIPTIONS AS INPUT

ES	ESOIL	LENGTH	L	LU
	K/IN**2		FT	FT

```
        0.56000E-01    L      0.18000E+03   0.00000E+00

 ESOIL(ORIGINAL)     RGROUP     RCYCLIC
   K/IN**2
  0.56000E-01       0.1000E+01 0.1000E+01
```

THIS SOIL DESCRIPTION APPLIES TO THE FOLLOWING PILES -

ALL

****

PILE STIFFNESSES AS CALCULATED FROM PROPERTIES

0.15096E+02	0.00000E+00	0.00000E+00	0.00000E+00	0.20346E+04	0.00000E+00
0.00000E+00	0.15096E+02	0.00000E+00	-0.20346E+04	0.00000E+00	0.00000E+00
0.00000E+00	0.00000E+00	0.99110E+03	0.00000E+00	0.00000E+00	0.00000E+00
0.00000E+00	-0.20346E+04	0.00000E+00	0.54845E+06	0.00000E+00	0.00000E+00
0.20346E+04	0.00000E+00	0.00000E+00	0.00000E+00	0.54845E+06	0.00000E+00
0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00

THIS MATRIX APPLIES TO THE FOLLOWING PILES -

1

****

PILE GEOMETRY AS INPUT AND/OR GENERATED

NUM	X FT	Y FT	Z FT	BATTER	ANGLE	LENGTH FT	FIXITY
1	-20.00	2.50	0.00	2.00	270.00	180.00	F
2	-12.00	2.50	0.00	2.00	270.00	180.00	F
3	-4.00	2.50	0.00	2.00	270.00	180.00	F
4	4.00	2.50	0.00	2.00	270.00	180.00	F
5	12.00	2.50	0.00	2.00	270.00	180.00	F
6	20.00	2.50	0.00	2.00	270.00	180.00	F
7	-20.00	11.75	0.00	2.00	270.00	180.00	F
8	-12.00	11.75	0.00	2.00	270.00	180.00	F
9	-4.00	11.75	0.00	2.00	270.00	180.00	F
10	4.00	11.75	0.00	2.00	270.00	180.00	F
11	12.00	11.75	0.00	2.00	270.00	180.00	F
12	20.00	11.75	0.00	2.00	270.00	180.00	F
13	-20.00	21.00	0.00	2.00	90.00	180.00	F
14	-12.00	21.00	0.00	2.00	90.00	180.00	F

15	-4.00	21.00	0.00	2.00	90.00	180.00	F
16	4.00	21.00	0.00	2.00	90.00	180.00	F
17	12.00	21.00	0.00	2.00	90.00	180.00	F
18	20.00	21.00	0.00	2.00	90.00	180.00	F
19	-20.00	30.25	0.00	2.00	90.00	180.00	F
20	-12.00	30.25	0.00	2.00	90.00	180.00	F
21	-4.00	30.25	0.00	2.00	90.00	180.00	F
22	4.00	30.25	0.00	2.00	90.00	180.00	F
23	12.00	30.25	0.00	2.00	90.00	180.00	F
24	20.00	30.25	0.00	2.00	90.00	180.00	F
25	-20.00	39.50	0.00	2.00	90.00	180.00	F
26	-12.00	39.50	0.00	2.00	90.00	180.00	F
27	-4.00	39.50	0.00	2.00	90.00	180.00	F
28	4.00	39.50	0.00	2.00	90.00	180.00	F
29	12.00	39.50	0.00	2.00	90.00	180.00	F
30	20.00	39.50	0.00	2.00	90.00	180.00	F

						5400.00	

****

APPLIED LOADS

LOAD CASE	PX K	PY K	PZ K	MX FT-K	MY FT-K	MZ FT-K	OVERSTRESS COM	TEN
6	0.0	916.0	1791.0	47340.0	0.0	0.0	1.33	1.33
7	0.0	916.0	1665.0	41780.0	0.0	0.0	1.33	1.33
8	0.0	1470.0	1815.0	56124.0	0.0	0.0	1.33	1.33
9	0.0	1470.0	1632.0	48093.0	0.0	0.0	1.33	1.33

****

ORIGINAL PILE GROUP STIFFNESS MATRIX

0.45287E+03	0.12826E-03	-0.85507E-04	0.16417E-01	0.54594E+05	-0.11958E+06
0.12826E-03	0.63089E+04	0.23424E+04	0.20957E+07	0.43656E-10	-0.23030E-01
-0.85507E-04	0.23424E+04	0.23877E+05	0.60225E+07	0.19929E-03	-0.16417E-01
0.16417E-01	0.20957E+07	0.60225E+07	0.21311E+10	-0.11034E+00	-0.10145E+02
0.54594E+05	0.43656E-10	0.19929E-03	-0.11034E+00	0.65498E+09	-0.78038E+08
-0.11958E+06	-0.23030E-01	-0.16417E-01	-0.10145E+02	-0.78038E+08	0.22282E+09

30 PILES 4 LOAD CASES

LOAD CASE 6. NUMBER OF FAILURES = 0. NUMBER OF PILES IN TENSION = 6.

LOAD CASE 7. NUMBER OF FAILURES = 0. NUMBER OF PILES IN TENSION = 6.

LOAD CASE 8. NUMBER OF FAILURES = 0. NUMBER OF PILES IN TENSION = 12.

LOAD CASE 9. NUMBER OF FAILURES = 0. NUMBER OF PILES IN TENSION = 12.

****

PILE CAP DISPLACEMENTS

LOAD CASE	DX IN	DY IN	DZ IN	RX RAD	RY RAD	RZ RAD
6	-0.1837E-07	0.1909E+00	0.1267E+00	-0.2794E-03	0.2316E-11	0.7307E-11
7	-0.1876E-07	0.2322E+00	0.1574E+00	-0.4380E-03	0.2200E-11	0.6365E-11
8	-0.4588E-07	0.3201E+00	0.1543E+00	-0.4347E-03	0.3870E-11	0.1393E-11
9	-0.4647E-07	0.3796E+00	0.1983E+00	-0.6629E-03	0.3704E-11	0.2112E-13

****

PILE FORCES IN LOCAL GEOMETRY

M1 & M2 NOT AT PILE HEAD FOR PINNED PILES
* INDICATES PILE FAILURE
# INDICATES CBF BASED ON MOMENTS DUE TO
(F3*EMIN) FOR CONCRETE PILES
B INDICATES BUCKLING CONTROLS

LOAD CASE - 6

PILE	F1 K	F2 K	F3 K	M1 IN-K	M2 IN-K	M3 IN-K	ALF	CBF
1	-3.9	0.0	20.3	0.0	-608.4	0.0	0.08	0.08
2	-3.9	0.0	20.3	0.0	-608.4	0.0	0.08	0.08
3	-3.9	0.0	20.3	0.0	-608.4	0.0	0.08	0.08
4	-3.9	0.0	20.3	0.0	-608.4	0.0	0.08	0.08
5	-3.9	0.0	20.3	0.0	-608.4	0.0	0.08	0.08
6	-3.9	0.0	20.3	0.0	-608.4	0.0	0.08	0.08
7	-3.7	0.0	-7.2	0.0	-580.2	0.0	0.04	0.07
8	-3.7	0.0	-7.2	0.0	-580.2	0.0	0.04	0.07
9	-3.7	0.0	-7.2	0.0	-580.2	0.0	0.04	0.07
10	-3.7	0.0	-7.2	0.0	-580.2	0.0	0.04	0.07
11	-3.7	0.0	-7.2	0.0	-580.2	0.0	0.04	0.07
12	-3.7	0.0	-7.2	0.0	-580.2	0.0	0.04	0.07

13	2.8	0.0	134.6	0.0	449.4	0.0	0.51	0.16
14	2.8	0.0	134.6	0.0	449.4	0.0	0.51	0.16
15	2.8	0.0	134.6	0.0	449.4	0.0	0.51	0.16
16	2.8	0.0	134.6	0.0	449.4	0.0	0.51	0.16
17	2.8	0.0	134.6	0.0	449.4	0.0	0.51	0.16
18	2.8	0.0	134.6	0.0	449.4	0.0	0.51	0.16
19	3.0	0.0	107.1	0.0	477.7	0.0	0.40	0.14
20	3.0	0.0	107.1	0.0	477.7	0.0	0.40	0.14
21	3.0	0.0	107.1	0.0	477.7	0.0	0.40	0.14
22	3.0	0.0	107.1	0.0	477.7	0.0	0.40	0.14
23	3.0	0.0	107.1	0.0	477.7	0.0	0.40	0.14
24	3.0	0.0	107.1	0.0	477.7	0.0	0.40	0.14
25	3.2	0.0	79.6	0.0	505.9	0.0	0.30	0.12
26	3.2	0.0	79.6	0.0	505.9	0.0	0.30	0.12
27	3.2	0.0	79.6	0.0	505.9	0.0	0.30	0.12
28	3.2	0.0	79.6	0.0	505.9	0.0	0.30	0.12
29	3.2	0.0	79.6	0.0	505.9	0.0	0.30	0.12
30	3.2	0.0	79.6	0.0	505.9	0.0	0.30	0.12

LOAD CASE - 7

PILE	F1 K	F2 K	F3 K	M1 IN-K	M2 IN-K	M3 IN-K	ALF	CBF
1	-5.0	0.0	25.0	0.0	-794.2	0.0	0.09	0.11
2	-5.0	0.0	25.0	0.0	-794.2	0.0	0.09	0.11
3	-5.0	0.0	25.0	0.0	-794.2	0.0	0.09	0.11
4	-5.0	0.0	25.0	0.0	-794.2	0.0	0.09	0.11
5	-5.0	0.0	25.0	0.0	-794.2	0.0	0.09	0.11
6	-5.0	0.0	25.0	0.0	-794.2	0.0	0.09	0.11
7	-4.7	0.0	-18.1	0.0	-749.9	0.0	0.10	0.10
8	-4.7	0.0	-18.1	0.0	-749.9	0.0	0.10	0.10
9	-4.7	0.0	-18.1	0.0	-749.9	0.0	0.10	0.10
10	-4.7	0.0	-18.1	0.0	-749.9	0.0	0.10	0.10
11	-4.7	0.0	-18.1	0.0	-749.9	0.0	0.10	0.10
12	-4.7	0.0	-18.1	0.0	-749.9	0.0	0.10	0.10
13	3.7	0.0	144.6	0.0	620.1	0.0	0.54	0.19
14	3.7	0.0	144.6	0.0	620.1	0.0	0.54	0.19
15	3.7	0.0	144.6	0.0	620.1	0.0	0.54	0.19
16	3.7	0.0	144.6	0.0	620.1	0.0	0.54	0.19
17	3.7	0.0	144.6	0.0	620.1	0.0	0.54	0.19
18	3.7	0.0	144.6	0.0	620.1	0.0	0.54	0.19
19	4.0	0.0	101.5	0.0	664.3	0.0	0.38	0.16
20	4.0	0.0	101.5	0.0	664.3	0.0	0.38	0.16
21	4.0	0.0	101.5	0.0	664.3	0.0	0.38	0.16
22	4.0	0.0	101.5	0.0	664.3	0.0	0.38	0.16
23	4.0	0.0	101.5	0.0	664.3	0.0	0.38	0.16
24	4.0	0.0	101.5	0.0	664.3	0.0	0.38	0.16
25	4.4	0.0	58.4	0.0	708.5	0.0	0.22	0.13

26	4.4	0.0	58.4	0.0	708.5	0.0	0.22	0.13
27	4.4	0.0	58.4	0.0	708.5	0.0	0.22	0.13
28	4.4	0.0	58.4	0.0	708.5	0.0	0.22	0.13
29	4.4	0.0	58.4	0.0	708.5	0.0	0.22	0.13
30	4.4	0.0	58.4	0.0	708.5	0.0	0.22	0.13

LOAD CASE - 8

PILE	F1 K	F2 K	F3 K	M1 IN-K	M2 IN-K	M3 IN-K	ALF	CBF
1	-6.2	0.0	-16.7	0.0	-949.5	0.0	0.10	0.12
2	-6.2	0.0	-16.7	0.0	-949.5	0.0	0.10	0.12
3	-6.2	0.0	-16.7	0.0	-949.5	0.0	0.10	0.12
4	-6.2	0.0	-16.7	0.0	-949.5	0.0	0.10	0.12
5	-6.2	0.0	-16.7	0.0	-949.5	0.0	0.10	0.12
6	-6.2	0.0	-16.7	0.0	-949.5	0.0	0.10	0.12
7	-5.8	0.0	-59.5	0.0	-905.6	0.0	0.34	0.15
8	-5.8	0.0	-59.5	0.0	-905.6	0.0	0.34	0.15
9	-5.8	0.0	-59.5	0.0	-905.6	0.0	0.34	0.15
10	-5.8	0.0	-59.5	0.0	-905.6	0.0	0.34	0.15
11	-5.8	0.0	-59.5	0.0	-905.6	0.0	0.34	0.15
12	-5.8	0.0	-59.5	0.0	-905.6	0.0	0.34	0.15
13	4.9	0.0	181.5	0.0	780.3	0.0	0.68	0.23
14	4.9	0.0	181.5	0.0	780.3	0.0	0.68	0.23
15	4.9	0.0	181.5	0.0	780.3	0.0	0.68	0.23
16	4.9	0.0	181.5	0.0	780.3	0.0	0.68	0.23
17	4.9	0.0	181.5	0.0	780.3	0.0	0.68	0.23
18	4.9	0.0	181.5	0.0	780.3	0.0	0.68	0.23
19	5.2	0.0	138.8	0.0	824.2	0.0	0.52	0.20
20	5.2	0.0	138.8	0.0	824.2	0.0	0.52	0.20
21	5.2	0.0	138.8	0.0	824.2	0.0	0.52	0.20
22	5.2	0.0	138.8	0.0	824.2	0.0	0.52	0.20
23	5.2	0.0	138.8	0.0	824.2	0.0	0.52	0.20
24	5.2	0.0	138.8	0.0	824.2	0.0	0.52	0.20
25	5.6	0.0	96.0	0.0	868.1	0.0	0.36	0.17
26	5.6	0.0	96.0	0.0	868.1	0.0	0.36	0.17
27	5.6	0.0	96.0	0.0	868.1	0.0	0.36	0.17
28	5.6	0.0	96.0	0.0	868.1	0.0	0.36	0.17
29	5.6	0.0	96.0	0.0	868.1	0.0	0.36	0.17
30	5.6	0.0	96.0	0.0	868.1	0.0	0.36	0.17

LOAD CASE - 9

PILE	F1 K	F2 K	F3 K	M1 IN-K	M2 IN-K	M3 IN-K	ALF	CBF
1	-7.7	0.0	-10.1	0.0	-1216.7	0.0	0.06	0.14

2	-7.7	0.0	-10.1	0.0	-1216.7	0.0	0.06	0.14
3	-7.7	0.0	-10.1	0.0	-1216.7	0.0	0.06	0.14
4	-7.7	0.0	-10.1	0.0	-1216.7	0.0	0.06	0.14
5	-7.7	0.0	-10.1	0.0	-1216.7	0.0	0.06	0.14
6	-7.7	0.0	-10.1	0.0	-1216.7	0.0	0.06	0.14
7	-7.2	0.0	-75.3	0.0	-1149.7	0.0	0.44	0.19
8	-7.2	0.0	-75.3	0.0	-1149.7	0.0	0.44	0.19
9	-7.2	0.0	-75.3	0.0	-1149.7	0.0	0.44	0.19
10	-7.2	0.0	-75.3	0.0	-1149.7	0.0	0.44	0.19
11	-7.2	0.0	-75.3	0.0	-1149.7	0.0	0.44	0.19
12	-7.2	0.0	-75.3	0.0	-1149.7	0.0	0.44	0.19
13	6.3	0.0	196.0	0.0	1025.9	0.0	0.74	0.27
14	6.3	0.0	196.0	0.0	1025.9	0.0	0.74	0.27
15	6.3	0.0	196.0	0.0	1025.9	0.0	0.74	0.27
16	6.3	0.0	196.0	0.0	1025.9	0.0	0.74	0.27
17	6.3	0.0	196.0	0.0	1025.9	0.0	0.74	0.27
18	6.3	0.0	196.0	0.0	1025.9	0.0	0.74	0.27
19	6.8	0.0	130.7	0.0	1092.8	0.0	0.49	0.23
20	6.8	0.0	130.7	0.0	1092.8	0.0	0.49	0.23
21	6.8	0.0	130.7	0.0	1092.8	0.0	0.49	0.23
22	6.8	0.0	130.7	0.0	1092.8	0.0	0.49	0.23
23	6.8	0.0	130.7	0.0	1092.8	0.0	0.49	0.23
24	6.8	0.0	130.7	0.0	1092.8	0.0	0.49	0.23
25	7.3	0.0	65.5	0.0	1159.8	0.0	0.25	0.18
26	7.3	0.0	65.5	0.0	1159.8	0.0	0.25	0.18
27	7.3	0.0	65.5	0.0	1159.8	0.0	0.25	0.18
28	7.3	0.0	65.5	0.0	1159.8	0.0	0.25	0.18
29	7.3	0.0	65.5	0.0	1159.8	0.0	0.25	0.18
30	7.3	0.0	65.5	0.0	1159.8	0.0	0.25	0.18

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PILE FORCES IN GLOBAL GEOMETRY

LOAD CASE - 6

PILE	PX K	PY K	PZ K	MX IN-K	MY IN-K	MZ IN-K
1	0.0	-5.5	19.9	-608.4	0.0	0.0
2	0.0	-5.5	19.9	-608.4	0.0	0.0
3	0.0	-5.5	19.9	-608.4	0.0	0.0
4	0.0	-5.5	19.9	-608.4	0.0	0.0
5	0.0	-5.5	19.9	-608.4	0.0	0.0
6	0.0	-5.5	19.9	-608.4	0.0	0.0
7	0.0	6.6	-4.8	-580.2	0.0	0.0
8	0.0	6.6	-4.8	-580.2	0.0	0.0

9	0.0	6.6	-4.8	-580.2	0.0	0.0
10	0.0	6.6	-4.8	-580.2	0.0	0.0
11	0.0	6.6	-4.8	-580.2	0.0	0.0
12	0.0	6.6	-4.8	-580.2	0.0	0.0
13	0.0	62.7	119.1	-449.4	0.0	0.0
14	0.0	62.7	119.1	-449.4	0.0	0.0
15	0.0	62.7	119.1	-449.4	0.0	0.0
16	0.0	62.7	119.1	-449.4	0.0	0.0
17	0.0	62.7	119.1	-449.4	0.0	0.0
18	0.0	62.7	119.1	-449.4	0.0	0.0
19	0.0	50.6	94.4	-477.7	0.0	0.0
20	0.0	50.6	94.4	-477.7	0.0	0.0
21	0.0	50.6	94.4	-477.7	0.0	0.0
22	0.0	50.6	94.4	-477.7	0.0	0.0
23	0.0	50.6	94.4	-477.7	0.0	0.0
24	0.0	50.6	94.4	-477.7	0.0	0.0
25	0.0	38.4	69.8	-505.9	0.0	0.0
26	0.0	38.4	69.8	-505.9	0.0	0.0
27	0.0	38.4	69.8	-505.9	0.0	0.0
28	0.0	38.4	69.8	-505.9	0.0	0.0
29	0.0	38.4	69.8	-505.9	0.0	0.0
30	0.0	38.4	69.8	-505.9	0.0	0.0

LOAD CASE - 7

PILE	PX K	PY K	PZ K	MX IN-K	MY IN-K	MZ IN-K
1	0.0	-6.7	24.6	-794.2	0.0	0.0
2	0.0	-6.7	24.6	-794.2	0.0	0.0
3	0.0	-6.7	24.6	-794.2	0.0	0.0
4	0.0	-6.7	24.6	-794.2	0.0	0.0
5	0.0	-6.7	24.6	-794.2	0.0	0.0
6	0.0	-6.7	24.6	-794.2	0.0	0.0
7	0.0	12.3	-14.1	-749.9	0.0	0.0
8	0.0	12.3	-14.1	-749.9	0.0	0.0
9	0.0	12.3	-14.1	-749.9	0.0	0.0
10	0.0	12.3	-14.1	-749.9	0.0	0.0
11	0.0	12.3	-14.1	-749.9	0.0	0.0
12	0.0	12.3	-14.1	-749.9	0.0	0.0
13	0.0	68.0	127.7	-620.1	0.0	0.0
14	0.0	68.0	127.7	-620.1	0.0	0.0
15	0.0	68.0	127.7	-620.1	0.0	0.0
16	0.0	68.0	127.7	-620.1	0.0	0.0
17	0.0	68.0	127.7	-620.1	0.0	0.0
18	0.0	68.0	127.7	-620.1	0.0	0.0
19	0.0	49.0	89.0	-664.3	0.0	0.0
20	0.0	49.0	89.0	-664.3	0.0	0.0
21	0.0	49.0	89.0	-664.3	0.0	0.0

22	0.0	49.0	89.0	-664.3	0.0	0.0
23	0.0	49.0	89.0	-664.3	0.0	0.0
24	0.0	49.0	89.0	-664.3	0.0	0.0
25	0.0	30.0	50.3	-708.5	0.0	0.0
26	0.0	30.0	50.3	-708.5	0.0	0.0
27	0.0	30.0	50.3	-708.5	0.0	0.0
28	0.0	30.0	50.3	-708.5	0.0	0.0
29	0.0	30.0	50.3	-708.5	0.0	0.0
30	0.0	30.0	50.3	-708.5	0.0	0.0

LOAD CASE - 8

PILE	PX K	PY K	PZ K	MX IN-K	MY IN-K	MZ IN-K
1	0.0	13.0	-12.2	-949.5	0.0	0.0
2	0.0	13.0	-12.2	-949.5	0.0	0.0
3	0.0	13.0	-12.2	-949.5	0.0	0.0
4	0.0	13.0	-12.2	-949.5	0.0	0.0
5	0.0	13.0	-12.2	-949.5	0.0	0.0
6	0.0	13.0	-12.2	-949.5	0.0	0.0
7	0.0	31.8	-50.6	-905.6	0.0	0.0
8	0.0	31.8	-50.6	-905.6	0.0	0.0
9	0.0	31.8	-50.6	-905.6	0.0	0.0
10	0.0	31.8	-50.6	-905.6	0.0	0.0
11	0.0	31.8	-50.6	-905.6	0.0	0.0
12	0.0	31.8	-50.6	-905.6	0.0	0.0
13	0.0	85.6	160.2	-780.3	0.0	0.0
14	0.0	85.6	160.2	-780.3	0.0	0.0
15	0.0	85.6	160.2	-780.3	0.0	0.0
16	0.0	85.6	160.2	-780.3	0.0	0.0
17	0.0	85.6	160.2	-780.3	0.0	0.0
18	0.0	85.6	160.2	-780.3	0.0	0.0
19	0.0	66.7	121.8	-824.2	0.0	0.0
20	0.0	66.7	121.8	-824.2	0.0	0.0
21	0.0	66.7	121.8	-824.2	0.0	0.0
22	0.0	66.7	121.8	-824.2	0.0	0.0
23	0.0	66.7	121.8	-824.2	0.0	0.0
24	0.0	66.7	121.8	-824.2	0.0	0.0
25	0.0	47.9	83.4	-868.1	0.0	0.0
26	0.0	47.9	83.4	-868.1	0.0	0.0
27	0.0	47.9	83.4	-868.1	0.0	0.0
28	0.0	47.9	83.4	-868.1	0.0	0.0
29	0.0	47.9	83.4	-868.1	0.0	0.0
30	0.0	47.9	83.4	-868.1	0.0	0.0

LOAD CASE - 9

PILE	PX K	PY K	PZ K	MX IN-K	MY IN-K	MZ IN-K
1	0.0	11.4	-5.6	-1216.7	0.0	0.0
2	0.0	11.4	-5.6	-1216.7	0.0	0.0
3	0.0	11.4	-5.6	-1216.7	0.0	0.0
4	0.0	11.4	-5.6	-1216.7	0.0	0.0
5	0.0	11.4	-5.6	-1216.7	0.0	0.0
6	0.0	11.4	-5.6	-1216.7	0.0	0.0
7	0.0	40.1	-64.1	-1149.7	0.0	0.0
8	0.0	40.1	-64.1	-1149.7	0.0	0.0
9	0.0	40.1	-64.1	-1149.7	0.0	0.0
10	0.0	40.1	-64.1	-1149.7	0.0	0.0
11	0.0	40.1	-64.1	-1149.7	0.0	0.0
12	0.0	40.1	-64.1	-1149.7	0.0	0.0
13	0.0	93.2	172.5	-1025.9	0.0	0.0
14	0.0	93.2	172.5	-1025.9	0.0	0.0
15	0.0	93.2	172.5	-1025.9	0.0	0.0
16	0.0	93.2	172.5	-1025.9	0.0	0.0
17	0.0	93.2	172.5	-1025.9	0.0	0.0
18	0.0	93.2	172.5	-1025.9	0.0	0.0
19	0.0	64.5	113.9	-1092.8	0.0	0.0
20	0.0	64.5	113.9	-1092.8	0.0	0.0
21	0.0	64.5	113.9	-1092.8	0.0	0.0
22	0.0	64.5	113.9	-1092.8	0.0	0.0
23	0.0	64.5	113.9	-1092.8	0.0	0.0
24	0.0	64.5	113.9	-1092.8	0.0	0.0
25	0.0	35.8	55.3	-1159.8	0.0	0.0
26	0.0	35.8	55.3	-1159.8	0.0	0.0
27	0.0	35.8	55.3	-1159.8	0.0	0.0
28	0.0	35.8	55.3	-1159.8	0.0	0.0
29	0.0	35.8	55.3	-1159.8	0.0	0.0
30	0.0	35.8	55.3	-1159.8	0.0	0.0

NO FILES WERE GENERATED DURING THIS RUN.

```
10  Bayou Des Allemands Twall Pinned
20  PIL  1  -20   2.5   0
30  BAT   2   1
40  ANG   270   1
50  PIL  2  -12   2.5   0
60  BAT   2   2
70  ANG   270   2
80  PIL  3  -4   2.5   0
90  BAT   2   3
100  ANG   270   3
110  PIL  4   4   2.5   0
120  BAT   2   4
130  ANG   270   4
140  PIL  5   12   2.5   0
150  BAT   2   5
160  ANG   270   5
170  PIL  6   20   2.5   0
180  BAT   2   6
190  ANG   270   6
200  PIL  7  -20   11.75   0
210  BAT   2   7
220  ANG   270   7
230  PIL  8  -12   11.75   0
240  BAT   2   8
250  ANG   270   8
260  PIL  9  -4   11.75   0
270  BAT   2   9
280  ANG   270   9
290  PIL  10   4   11.75   0
300  BAT   2   10
310  ANG   270   10
320  PIL  11   12   11.75   0
330  BAT   2   11
340  ANG   270   11
350  PIL  12   20   11.75   0
360  BAT   2   12
370  ANG   270   12
380  PIL  13  -20   21   0
390  BAT   2   13
400  ANG   90   13
410  PIL  14  -12   21   0
420  BAT   2   14
430  ANG   90   14
440  PIL  15  -4   21   0
450  BAT   2   15
460  ANG   90   15
470  PIL  16   4   21   0
480  BAT   2   16
490  ANG   90   16
500  PIL  17   12   21   0
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510  BAT   2   17
520  ANG   90   17
530  PIL  18   20   21   0
540  BAT   2   18
550  ANG   90   18
560  PIL  19  -20   30.25   0
570  BAT   2   19
580  ANG   90   19
590  PIL  20  -12   30.25   0
600  BAT   2   20
610  ANG   90   20
620  PIL  21  -4   30.25   0
630  BAT   2   21
640  ANG   90   21
650  PIL  22   4   30.25   0
660  BAT   2   22
670  ANG   90   22
680  PIL  23   12   30.25   0
690  BAT   2   23
700  ANG   90   23
710  PIL  24   20   30.25   0
720  BAT   2   24
730  ANG   90   24
740  PIL  25  -20   39.5   0
750  BAT   2   25
760  ANG   90   25
770  PIL  26  -12   39.5   0
780  BAT   2   26
790  ANG   90   26
800  PIL  27  -4   39.5   0
810  BAT   2   27
820  ANG   90   27
830  PIL  28   4   39.5   0
840  BAT   2   28
850  ANG   90   28
860  PIL  29   12   39.5   0
870  BAT   2   29
880  ANG   90   29
890  PIL  30   20   39.5   0
900  BAT   2   30
910  ANG   90   30
920  PRO  29000  2549  2549  36.91  2  0  1 TO 30
930  SOI ES 0.056 L  180  0  1 TO 30
940  RED  1  1  1
950  ALL R 200  130  921  921  6890  6590  1 TO 30
960  PIN  1 TO 30
970  LOA  1  0  60  2534  53408  0  0
970  LOA  2  0  60  2904  61140  0  0
970  LOA  3  0  140  2904  62676  0  0
970  LOA  4  0  1297  1791  54202  0  0
```

```
970  LOA  5  0  1297  1665  48642  0  0
970  FOV  1.167  1.167  2
970  FOV  1.33  1.33  3
970  FOV  1.33  1.33  4
970  FOV  1.33  1.33  5
980  TOUT   1  2  3  4  5  6  7
990  PFO ALL
1000  PLB ALL
```

CPGA - CASE PILE GROUP ANALYSIS PROGRAM
RUN DATE: 28-AUG-20 RUN TIME: 15:20:32

FOR PILES WITH UNSUPPORTED HEIGHT:
A. CPGA CANNOT CALCULATE PMAXMOM FOR NH TYPE SOIL
B. THE ALLOWABLE STRESS CHECKS, ASC AND AST, ARE
NOT FULLY DEVELOPED FOR UNSUPPORTED PILES.
WORK IS IN PROGRESS TO COMPLETE THIS ASPECT OF CPGA.

ELASTIC CENTER LOCATION IS NOT COMPUTED FOR 3-DIMENSIONAL PROBLEMS.

BAYOU DES ALLEMANDS TWALL PINNED
DATA UNKNOWN - REJECTED.

THERE ARE 30 PILES AND
5 LOAD CASES IN THIS RUN.

ALL PILE COORDINATES ARE CONTAINED WITHIN A BOX

	X	Y	Z
WITH DIAGONAL COORDINATES = (	-20.00 ,	2.50 ,	0.00)
(	20.00 ,	39.50 ,	0.00)

****

PILE PROPERTIES AS INPUT

E	I1	I2	A	C33	B66
KSI	IN**4	IN**4	IN**2		
0.29000E+05	0.25490E+04	0.25490E+04	0.36910E+02	0.20000E+01	0.00000E+00

THESE PILE PROPERTIES APPLY TO THE FOLLOWING PILES -

ALL

****

SOIL DESCRIPTIONS AS INPUT

ES	ESOIL	LENGTH	L	LU
	K/IN**2		FT	FT

0.56000E-01 L 0.18000E+03 0.00000E+00

ESOIL(ORIGINAL) K/IN**2	RGROUP	RCYCLIC
0.56000E-01	0.1000E+01	0.1000E+01

THIS SOIL DESCRIPTION APPLIES TO THE FOLLOWING PILES -

ALL

****

PILE STIFFNESSES AS CALCULATED FROM PROPERTIES

0.75478E+01	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00
0.00000E+00	0.75478E+01	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00
0.00000E+00	0.00000E+00	0.99110E+03	0.00000E+00	0.00000E+00	0.00000E+00
0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00
0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00
0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00

THIS MATRIX APPLIES TO THE FOLLOWING PILES -

1

****

PILE GEOMETRY AS INPUT AND/OR GENERATED

NUM	X FT	Y FT	Z FT	BATTER	ANGLE	LENGTH FT	FIXITY
1	-20.00	2.50	0.00	2.00	270.00	180.00	P
2	-12.00	2.50	0.00	2.00	270.00	180.00	P
3	-4.00	2.50	0.00	2.00	270.00	180.00	P
4	4.00	2.50	0.00	2.00	270.00	180.00	P
5	12.00	2.50	0.00	2.00	270.00	180.00	P
6	20.00	2.50	0.00	2.00	270.00	180.00	P
7	-20.00	11.75	0.00	2.00	270.00	180.00	P
8	-12.00	11.75	0.00	2.00	270.00	180.00	P
9	-4.00	11.75	0.00	2.00	270.00	180.00	P
10	4.00	11.75	0.00	2.00	270.00	180.00	P
11	12.00	11.75	0.00	2.00	270.00	180.00	P
12	20.00	11.75	0.00	2.00	270.00	180.00	P
13	-20.00	21.00	0.00	2.00	90.00	180.00	P
14	-12.00	21.00	0.00	2.00	90.00	180.00	P

15	-4.00	21.00	0.00	2.00	90.00	180.00	P
16	4.00	21.00	0.00	2.00	90.00	180.00	P
17	12.00	21.00	0.00	2.00	90.00	180.00	P
18	20.00	21.00	0.00	2.00	90.00	180.00	P
19	-20.00	30.25	0.00	2.00	90.00	180.00	P
20	-12.00	30.25	0.00	2.00	90.00	180.00	P
21	-4.00	30.25	0.00	2.00	90.00	180.00	P
22	4.00	30.25	0.00	2.00	90.00	180.00	P
23	12.00	30.25	0.00	2.00	90.00	180.00	P
24	20.00	30.25	0.00	2.00	90.00	180.00	P
25	-20.00	39.50	0.00	2.00	90.00	180.00	P
26	-12.00	39.50	0.00	2.00	90.00	180.00	P
27	-4.00	39.50	0.00	2.00	90.00	180.00	P
28	4.00	39.50	0.00	2.00	90.00	180.00	P
29	12.00	39.50	0.00	2.00	90.00	180.00	P
30	20.00	39.50	0.00	2.00	90.00	180.00	P

						5400.00	

****

APPLIED LOADS

LOAD CASE	PX K	PY K	PZ K	MX FT-K	MY FT-K	MZ FT-K	OVERSTRESS COM	TEN
1	0.0	60.0	2534.0	53408.0	0.0	0.0		
2	0.0	60.0	2904.0	61140.0	0.0	0.0	1.17	1.17
3	0.0	140.0	2904.0	62676.0	0.0	0.0	1.33	1.33
4	0.0	1297.0	1791.0	54202.0	0.0	0.0	1.33	1.33
5	0.0	1297.0	1665.0	48642.0	0.0	0.0	1.33	1.33

****

ORIGINAL PILE GROUP STIFFNESS MATRIX

0.22643E+03	0.12925E-03	-0.86169E-04	0.16544E-01	-0.21684E-18	-0.57061E+05
0.12925E-03	0.61278E+04	0.23605E+04	0.21670E+07	-0.14552E-10	-0.23007E-01
-0.86169E-04	0.23605E+04	0.23832E+05	0.60056E+07	0.29104E-10	-0.16544E-01
0.16544E-01	0.21670E+07	0.60056E+07	0.21007E+10	-0.14901E-07	-0.10271E+02
0.43368E-18	-0.14552E-10	0.29104E-10	0.14901E-07	0.64060E+09	-0.63451E+08
-0.57061E+05	-0.23007E-01	-0.16544E-01	-0.10271E+02	-0.63451E+08	0.18467E+09

30 PILES 5 LOAD CASES

LOAD CASE 1. NUMBER OF FAILURES = 0. NUMBER OF PILES IN TENSION = 0.

LOAD CASE 2. NUMBER OF FAILURES = 0. NUMBER OF PILES IN TENSION = 0.

LOAD CASE 3. NUMBER OF FAILURES = 0. NUMBER OF PILES IN TENSION = 0.

LOAD CASE 4. NUMBER OF FAILURES = 0. NUMBER OF PILES IN TENSION = 12.

LOAD CASE 5. NUMBER OF FAILURES = 0. NUMBER OF PILES IN TENSION = 6.

****

PILE CAP DISPLACEMENTS

LOAD CASE	DX IN	DY IN	DZ IN	RX RAD	RY RAD	RZ RAD
1	0.6500E-07	-0.1170E+00	0.3798E-01	0.3172E-03	0.2723E-11	0.2749E-10
2	0.7536E-07	-0.1380E+00	0.4160E-01	0.3727E-03	0.3132E-11	0.3162E-10
3	0.6694E-07	-0.1199E+00	0.4416E-01	0.3554E-03	0.3023E-11	0.3051E-10
4	-0.8255E-07	0.3481E+00	0.1901E+00	-0.5928E-03	0.1962E-12	0.1980E-11
5	-0.8470E-07	0.4110E+00	0.2360E+00	-0.8208E-03	0.5374E-13	0.5425E-12

****

PILE FORCES IN LOCAL GEOMETRY

M1 & M2 NOT AT PILE HEAD FOR PINNED PILES
* INDICATES PILE FAILURE
# INDICATES CBF BASED ON MOMENTS DUE TO
(F3*EMIN) FOR CONCRETE PILES
B INDICATES BUCKLING CONTROLS

LOAD CASE - 1

PILE	F1 K	F2 K	F3 K	M1 IN-K	M2 IN-K	M3 IN-K	ALF	CBF
1	0.6	0.0	94.0	0.0	-54.7	0.0	0.47	0.11
2	0.6	0.0	94.0	0.0	-54.7	0.0	0.47	0.11
3	0.6	0.0	94.0	0.0	-54.7	0.0	0.47	0.11
4	0.6	0.0	94.0	0.0	-54.7	0.0	0.47	0.11
5	0.6	0.0	94.0	0.0	-54.7	0.0	0.47	0.11
6	0.6	0.0	94.0	0.0	-54.7	0.0	0.47	0.11
7	0.5	0.0	125.2	0.0	-44.3	0.0	0.63	0.14
8	0.5	0.0	125.2	0.0	-44.3	0.0	0.63	0.14

9	0.5	0.0	125.2	0.0	-44.3	0.0	0.63	0.14
10	0.5	0.0	125.2	0.0	-44.3	0.0	0.63	0.14
11	0.5	0.0	125.2	0.0	-44.3	0.0	0.63	0.14
12	0.5	0.0	125.2	0.0	-44.3	0.0	0.63	0.14
13	-1.2	0.0	52.7	0.0	103.1	0.0	0.26	0.07
14	-1.2	0.0	52.7	0.0	103.1	0.0	0.26	0.07
15	-1.2	0.0	52.7	0.0	103.1	0.0	0.26	0.07
16	-1.2	0.0	52.7	0.0	103.1	0.0	0.26	0.07
17	-1.2	0.0	52.7	0.0	103.1	0.0	0.26	0.07
18	-1.2	0.0	52.7	0.0	103.1	0.0	0.26	0.07
19	-1.3	0.0	83.9	0.0	113.4	0.0	0.42	0.11
20	-1.3	0.0	83.9	0.0	113.4	0.0	0.42	0.11
21	-1.3	0.0	83.9	0.0	113.4	0.0	0.42	0.11
22	-1.3	0.0	83.9	0.0	113.4	0.0	0.42	0.11
23	-1.3	0.0	83.9	0.0	113.4	0.0	0.42	0.11
24	-1.3	0.0	83.9	0.0	113.4	0.0	0.42	0.11
25	-1.4	0.0	115.1	0.0	123.8	0.0	0.58	0.14
26	-1.4	0.0	115.1	0.0	123.8	0.0	0.58	0.14
27	-1.4	0.0	115.1	0.0	123.8	0.0	0.58	0.14
28	-1.4	0.0	115.1	0.0	123.8	0.0	0.58	0.14
29	-1.4	0.0	115.1	0.0	123.8	0.0	0.58	0.14
30	-1.4	0.0	115.1	0.0	123.8	0.0	0.58	0.14

LOAD CASE - 2

PILE	F1 K	F2 K	F3 K	M1 IN-K	M2 IN-K	M3 IN-K	ALF	CBF
1	0.8	0.0	108.0	0.0	-65.4	0.0	0.46	0.11
2	0.8	0.0	108.0	0.0	-65.4	0.0	0.46	0.11
3	0.8	0.0	108.0	0.0	-65.4	0.0	0.46	0.11
4	0.8	0.0	108.0	0.0	-65.4	0.0	0.46	0.11
5	0.8	0.0	108.0	0.0	-65.4	0.0	0.46	0.11
6	0.8	0.0	108.0	0.0	-65.4	0.0	0.46	0.11
7	0.6	0.0	144.7	0.0	-53.3	0.0	0.62	0.14
8	0.6	0.0	144.7	0.0	-53.3	0.0	0.62	0.14
9	0.6	0.0	144.7	0.0	-53.3	0.0	0.62	0.14
10	0.6	0.0	144.7	0.0	-53.3	0.0	0.62	0.14
11	0.6	0.0	144.7	0.0	-53.3	0.0	0.62	0.14
12	0.6	0.0	144.7	0.0	-53.3	0.0	0.62	0.14
13	-1.4	0.0	59.0	0.0	120.6	0.0	0.25	0.07
14	-1.4	0.0	59.0	0.0	120.6	0.0	0.25	0.07
15	-1.4	0.0	59.0	0.0	120.6	0.0	0.25	0.07
16	-1.4	0.0	59.0	0.0	120.6	0.0	0.25	0.07
17	-1.4	0.0	59.0	0.0	120.6	0.0	0.25	0.07
18	-1.4	0.0	59.0	0.0	120.6	0.0	0.25	0.07
19	-1.5	0.0	95.6	0.0	132.7	0.0	0.41	0.11
20	-1.5	0.0	95.6	0.0	132.7	0.0	0.41	0.11
21	-1.5	0.0	95.6	0.0	132.7	0.0	0.41	0.11

22	-1.5	0.0	95.6	0.0	132.7	0.0	0.41	0.11
23	-1.5	0.0	95.6	0.0	132.7	0.0	0.41	0.11
24	-1.5	0.0	95.6	0.0	132.7	0.0	0.41	0.11
25	-1.7	0.0	132.3	0.0	144.8	0.0	0.57	0.14
26	-1.7	0.0	132.3	0.0	144.8	0.0	0.57	0.14
27	-1.7	0.0	132.3	0.0	144.8	0.0	0.57	0.14
28	-1.7	0.0	132.3	0.0	144.8	0.0	0.57	0.14
29	-1.7	0.0	132.3	0.0	144.8	0.0	0.57	0.14
30	-1.7	0.0	132.3	0.0	144.8	0.0	0.57	0.14

LOAD CASE - 3

PILE	F1 K	F2 K	F3 K	M1 IN-K	M2 IN-K	M3 IN-K	ALF	CBF
1	0.6	0.0	101.7	0.0	-54.2	0.0	0.38	0.09
2	0.6	0.0	101.7	0.0	-54.2	0.0	0.38	0.09
3	0.6	0.0	101.7	0.0	-54.2	0.0	0.38	0.09
4	0.6	0.0	101.7	0.0	-54.2	0.0	0.38	0.09
5	0.6	0.0	101.7	0.0	-54.2	0.0	0.38	0.09
6	0.6	0.0	101.7	0.0	-54.2	0.0	0.38	0.09
7	0.5	0.0	136.7	0.0	-42.6	0.0	0.51	0.12
8	0.5	0.0	136.7	0.0	-42.6	0.0	0.51	0.12
9	0.5	0.0	136.7	0.0	-42.6	0.0	0.51	0.12
10	0.5	0.0	136.7	0.0	-42.6	0.0	0.51	0.12
11	0.5	0.0	136.7	0.0	-42.6	0.0	0.51	0.12
12	0.5	0.0	136.7	0.0	-42.6	0.0	0.51	0.12
13	-1.3	0.0	65.4	0.0	109.4	0.0	0.25	0.07
14	-1.3	0.0	65.4	0.0	109.4	0.0	0.25	0.07
15	-1.3	0.0	65.4	0.0	109.4	0.0	0.25	0.07
16	-1.3	0.0	65.4	0.0	109.4	0.0	0.25	0.07
17	-1.3	0.0	65.4	0.0	109.4	0.0	0.25	0.07
18	-1.3	0.0	65.4	0.0	109.4	0.0	0.25	0.07
19	-1.4	0.0	100.4	0.0	121.0	0.0	0.38	0.10
20	-1.4	0.0	100.4	0.0	121.0	0.0	0.38	0.10
21	-1.4	0.0	100.4	0.0	121.0	0.0	0.38	0.10
22	-1.4	0.0	100.4	0.0	121.0	0.0	0.38	0.10
23	-1.4	0.0	100.4	0.0	121.0	0.0	0.38	0.10
24	-1.4	0.0	100.4	0.0	121.0	0.0	0.38	0.10
25	-1.5	0.0	135.4	0.0	132.5	0.0	0.51	0.12
26	-1.5	0.0	135.4	0.0	132.5	0.0	0.51	0.12
27	-1.5	0.0	135.4	0.0	132.5	0.0	0.51	0.12
28	-1.5	0.0	135.4	0.0	132.5	0.0	0.51	0.12
29	-1.5	0.0	135.4	0.0	132.5	0.0	0.51	0.12
30	-1.5	0.0	135.4	0.0	132.5	0.0	0.51	0.12

LOAD CASE - 4

PILE	F1 K	F2 K	F3 K	M1 IN-K	M2 IN-K	M3 IN-K	ALF	CBF
1	-2.9	0.0	-1.6	0.0	254.4	0.0	0.01	0.03
2	-2.9	0.0	-1.6	0.0	254.4	0.0	0.01	0.03
3	-2.9	0.0	-1.6	0.0	254.4	0.0	0.01	0.03
4	-2.9	0.0	-1.6	0.0	254.4	0.0	0.01	0.03
5	-2.9	0.0	-1.6	0.0	254.4	0.0	0.01	0.03
6	-2.9	0.0	-1.6	0.0	254.4	0.0	0.01	0.03
7	-2.7	0.0	-59.9	0.0	235.2	0.0	0.35	0.07
8	-2.7	0.0	-59.9	0.0	235.2	0.0	0.35	0.07
9	-2.7	0.0	-59.9	0.0	235.2	0.0	0.35	0.07
10	-2.7	0.0	-59.9	0.0	235.2	0.0	0.35	0.07
11	-2.7	0.0	-59.9	0.0	235.2	0.0	0.35	0.07
12	-2.7	0.0	-59.9	0.0	235.2	0.0	0.35	0.07
13	2.2	0.0	190.3	0.0	-192.0	0.0	0.72	0.18
14	2.2	0.0	190.3	0.0	-192.0	0.0	0.72	0.18
15	2.2	0.0	190.3	0.0	-192.0	0.0	0.72	0.18
16	2.2	0.0	190.3	0.0	-192.0	0.0	0.72	0.18
17	2.2	0.0	190.3	0.0	-192.0	0.0	0.72	0.18
18	2.2	0.0	190.3	0.0	-192.0	0.0	0.72	0.18
19	2.4	0.0	132.0	0.0	-211.3	0.0	0.50	0.13
20	2.4	0.0	132.0	0.0	-211.3	0.0	0.50	0.13
21	2.4	0.0	132.0	0.0	-211.3	0.0	0.50	0.13
22	2.4	0.0	132.0	0.0	-211.3	0.0	0.50	0.13
23	2.4	0.0	132.0	0.0	-211.3	0.0	0.50	0.13
24	2.4	0.0	132.0	0.0	-211.3	0.0	0.50	0.13
25	2.7	0.0	73.7	0.0	-230.6	0.0	0.28	0.09
26	2.7	0.0	73.7	0.0	-230.6	0.0	0.28	0.09
27	2.7	0.0	73.7	0.0	-230.6	0.0	0.28	0.09
28	2.7	0.0	73.7	0.0	-230.6	0.0	0.28	0.09
29	2.7	0.0	73.7	0.0	-230.6	0.0	0.28	0.09
30	2.7	0.0	73.7	0.0	-230.6	0.0	0.28	0.09

LOAD CASE - 5

PILE	F1 K	F2 K	F3 K	M1 IN-K	M2 IN-K	M3 IN-K	ALF	CBF
1	-3.5	0.0	5.2	0.0	302.8	0.0	0.02	0.04
2	-3.5	0.0	5.2	0.0	302.8	0.0	0.02	0.04
3	-3.5	0.0	5.2	0.0	302.8	0.0	0.02	0.04
4	-3.5	0.0	5.2	0.0	302.8	0.0	0.02	0.04
5	-3.5	0.0	5.2	0.0	302.8	0.0	0.02	0.04
6	-3.5	0.0	5.2	0.0	302.8	0.0	0.02	0.04
7	-3.2	0.0	-75.6	0.0	276.1	0.0	0.44	0.09
8	-3.2	0.0	-75.6	0.0	276.1	0.0	0.44	0.09
9	-3.2	0.0	-75.6	0.0	276.1	0.0	0.44	0.09
10	-3.2	0.0	-75.6	0.0	276.1	0.0	0.44	0.09

11	-3.2	0.0	-75.6	0.0	276.1	0.0	0.44	0.09
12	-3.2	0.0	-75.6	0.0	276.1	0.0	0.44	0.09
13	2.7	0.0	208.0	0.0	-232.3	0.0	0.78	0.20
14	2.7	0.0	208.0	0.0	-232.3	0.0	0.78	0.20
15	2.7	0.0	208.0	0.0	-232.3	0.0	0.78	0.20
16	2.7	0.0	208.0	0.0	-232.3	0.0	0.78	0.20
17	2.7	0.0	208.0	0.0	-232.3	0.0	0.78	0.20
18	2.7	0.0	208.0	0.0	-232.3	0.0	0.78	0.20
19	3.0	0.0	127.3	0.0	-259.0	0.0	0.48	0.13
20	3.0	0.0	127.3	0.0	-259.0	0.0	0.48	0.13
21	3.0	0.0	127.3	0.0	-259.0	0.0	0.48	0.13
22	3.0	0.0	127.3	0.0	-259.0	0.0	0.48	0.13
23	3.0	0.0	127.3	0.0	-259.0	0.0	0.48	0.13
24	3.0	0.0	127.3	0.0	-259.0	0.0	0.48	0.13
25	3.3	0.0	46.5	0.0	-285.7	0.0	0.17	0.07
26	3.3	0.0	46.5	0.0	-285.7	0.0	0.17	0.07
27	3.3	0.0	46.5	0.0	-285.7	0.0	0.17	0.07
28	3.3	0.0	46.5	0.0	-285.7	0.0	0.17	0.07
29	3.3	0.0	46.5	0.0	-285.7	0.0	0.17	0.07
30	3.3	0.0	46.5	0.0	-285.7	0.0	0.17	0.07

****

PILE FORCES IN GLOBAL GEOMETRY

LOAD CASE - 1

PILE	PX K	PY K	PZ K	MX IN-K	MY IN-K	MZ IN-K
1	0.0	-42.6	83.8	0.0	0.0	0.0
2	0.0	-42.6	83.8	0.0	0.0	0.0
3	0.0	-42.6	83.8	0.0	0.0	0.0
4	0.0	-42.6	83.8	0.0	0.0	0.0
5	0.0	-42.6	83.8	0.0	0.0	0.0
6	0.0	-42.6	83.8	0.0	0.0	0.0
7	0.0	-56.4	111.7	0.0	0.0	0.0
8	0.0	-56.4	111.7	0.0	0.0	0.0
9	0.0	-56.4	111.7	0.0	0.0	0.0
10	0.0	-56.4	111.7	0.0	0.0	0.0
11	0.0	-56.4	111.7	0.0	0.0	0.0
12	0.0	-56.4	111.7	0.0	0.0	0.0
13	0.0	22.5	47.6	0.0	0.0	0.0
14	0.0	22.5	47.6	0.0	0.0	0.0
15	0.0	22.5	47.6	0.0	0.0	0.0
16	0.0	22.5	47.6	0.0	0.0	0.0
17	0.0	22.5	47.6	0.0	0.0	0.0

18	0.0	22.5	47.6	0.0	0.0	0.0
19	0.0	36.3	75.6	0.0	0.0	0.0
20	0.0	36.3	75.6	0.0	0.0	0.0
21	0.0	36.3	75.6	0.0	0.0	0.0
22	0.0	36.3	75.6	0.0	0.0	0.0
23	0.0	36.3	75.6	0.0	0.0	0.0
24	0.0	36.3	75.6	0.0	0.0	0.0
25	0.0	50.2	103.6	0.0	0.0	0.0
26	0.0	50.2	103.6	0.0	0.0	0.0
27	0.0	50.2	103.6	0.0	0.0	0.0
28	0.0	50.2	103.6	0.0	0.0	0.0
29	0.0	50.2	103.6	0.0	0.0	0.0
30	0.0	50.2	103.6	0.0	0.0	0.0

LOAD CASE - 2

PILE	PX K	PY K	PZ K	MX IN-K	MY IN-K	MZ IN-K
1	0.0	-49.0	96.2	0.0	0.0	0.0
2	0.0	-49.0	96.2	0.0	0.0	0.0
3	0.0	-49.0	96.2	0.0	0.0	0.0
4	0.0	-49.0	96.2	0.0	0.0	0.0
5	0.0	-49.0	96.2	0.0	0.0	0.0
6	0.0	-49.0	96.2	0.0	0.0	0.0
7	0.0	-65.2	129.1	0.0	0.0	0.0
8	0.0	-65.2	129.1	0.0	0.0	0.0
9	0.0	-65.2	129.1	0.0	0.0	0.0
10	0.0	-65.2	129.1	0.0	0.0	0.0
11	0.0	-65.2	129.1	0.0	0.0	0.0
12	0.0	-65.2	129.1	0.0	0.0	0.0
13	0.0	25.1	53.4	0.0	0.0	0.0
14	0.0	25.1	53.4	0.0	0.0	0.0
15	0.0	25.1	53.4	0.0	0.0	0.0
16	0.0	25.1	53.4	0.0	0.0	0.0
17	0.0	25.1	53.4	0.0	0.0	0.0
18	0.0	25.1	53.4	0.0	0.0	0.0
19	0.0	41.4	86.2	0.0	0.0	0.0
20	0.0	41.4	86.2	0.0	0.0	0.0
21	0.0	41.4	86.2	0.0	0.0	0.0
22	0.0	41.4	86.2	0.0	0.0	0.0
23	0.0	41.4	86.2	0.0	0.0	0.0
24	0.0	41.4	86.2	0.0	0.0	0.0
25	0.0	57.7	119.1	0.0	0.0	0.0
26	0.0	57.7	119.1	0.0	0.0	0.0
27	0.0	57.7	119.1	0.0	0.0	0.0
28	0.0	57.7	119.1	0.0	0.0	0.0
29	0.0	57.7	119.1	0.0	0.0	0.0
30	0.0	57.7	119.1	0.0	0.0	0.0

LOAD CASE - 3

PILE	PX K	PY K	PZ K	MX IN-K	MY IN-K	MZ IN-K
1	0.0	-46.0	90.7	0.0	0.0	0.0
2	0.0	-46.0	90.7	0.0	0.0	0.0
3	0.0	-46.0	90.7	0.0	0.0	0.0
4	0.0	-46.0	90.7	0.0	0.0	0.0
5	0.0	-46.0	90.7	0.0	0.0	0.0
6	0.0	-46.0	90.7	0.0	0.0	0.0
7	0.0	-61.6	122.0	0.0	0.0	0.0
8	0.0	-61.6	122.0	0.0	0.0	0.0
9	0.0	-61.6	122.0	0.0	0.0	0.0
10	0.0	-61.6	122.0	0.0	0.0	0.0
11	0.0	-61.6	122.0	0.0	0.0	0.0
12	0.0	-61.6	122.0	0.0	0.0	0.0
13	0.0	28.1	59.1	0.0	0.0	0.0
14	0.0	28.1	59.1	0.0	0.0	0.0
15	0.0	28.1	59.1	0.0	0.0	0.0
16	0.0	28.1	59.1	0.0	0.0	0.0
17	0.0	28.1	59.1	0.0	0.0	0.0
18	0.0	28.1	59.1	0.0	0.0	0.0
19	0.0	43.7	90.4	0.0	0.0	0.0
20	0.0	43.7	90.4	0.0	0.0	0.0
21	0.0	43.7	90.4	0.0	0.0	0.0
22	0.0	43.7	90.4	0.0	0.0	0.0
23	0.0	43.7	90.4	0.0	0.0	0.0
24	0.0	43.7	90.4	0.0	0.0	0.0
25	0.0	59.2	121.8	0.0	0.0	0.0
26	0.0	59.2	121.8	0.0	0.0	0.0
27	0.0	59.2	121.8	0.0	0.0	0.0
28	0.0	59.2	121.8	0.0	0.0	0.0
29	0.0	59.2	121.8	0.0	0.0	0.0
30	0.0	59.2	121.8	0.0	0.0	0.0

LOAD CASE - 4

PILE	PX K	PY K	PZ K	MX IN-K	MY IN-K	MZ IN-K
1	0.0	3.3	-0.1	0.0	0.0	0.0
2	0.0	3.3	-0.1	0.0	0.0	0.0
3	0.0	3.3	-0.1	0.0	0.0	0.0
4	0.0	3.3	-0.1	0.0	0.0	0.0
5	0.0	3.3	-0.1	0.0	0.0	0.0
6	0.0	3.3	-0.1	0.0	0.0	0.0

7	0.0	29.2	-52.4	0.0	0.0	0.0
8	0.0	29.2	-52.4	0.0	0.0	0.0
9	0.0	29.2	-52.4	0.0	0.0	0.0
10	0.0	29.2	-52.4	0.0	0.0	0.0
11	0.0	29.2	-52.4	0.0	0.0	0.0
12	0.0	29.2	-52.4	0.0	0.0	0.0
13	0.0	87.1	169.3	0.0	0.0	0.0
14	0.0	87.1	169.3	0.0	0.0	0.0
15	0.0	87.1	169.3	0.0	0.0	0.0
16	0.0	87.1	169.3	0.0	0.0	0.0
17	0.0	87.1	169.3	0.0	0.0	0.0
18	0.0	87.1	169.3	0.0	0.0	0.0
19	0.0	61.2	117.0	0.0	0.0	0.0
20	0.0	61.2	117.0	0.0	0.0	0.0
21	0.0	61.2	117.0	0.0	0.0	0.0
22	0.0	61.2	117.0	0.0	0.0	0.0
23	0.0	61.2	117.0	0.0	0.0	0.0
24	0.0	61.2	117.0	0.0	0.0	0.0
25	0.0	35.3	64.7	0.0	0.0	0.0
26	0.0	35.3	64.7	0.0	0.0	0.0
27	0.0	35.3	64.7	0.0	0.0	0.0
28	0.0	35.3	64.7	0.0	0.0	0.0
29	0.0	35.3	64.7	0.0	0.0	0.0
30	0.0	35.3	64.7	0.0	0.0	0.0

LOAD CASE - 5

PILE	PX K	PY K	PZ K	MX IN-K	MY IN-K	MZ IN-K
1	0.0	0.8	6.2	0.0	0.0	0.0
2	0.0	0.8	6.2	0.0	0.0	0.0
3	0.0	0.8	6.2	0.0	0.0	0.0
4	0.0	0.8	6.2	0.0	0.0	0.0
5	0.0	0.8	6.2	0.0	0.0	0.0
6	0.0	0.8	6.2	0.0	0.0	0.0
7	0.0	36.6	-66.2	0.0	0.0	0.0
8	0.0	36.6	-66.2	0.0	0.0	0.0
9	0.0	36.6	-66.2	0.0	0.0	0.0
10	0.0	36.6	-66.2	0.0	0.0	0.0
11	0.0	36.6	-66.2	0.0	0.0	0.0
12	0.0	36.6	-66.2	0.0	0.0	0.0
13	0.0	95.4	184.9	0.0	0.0	0.0
14	0.0	95.4	184.9	0.0	0.0	0.0
15	0.0	95.4	184.9	0.0	0.0	0.0
16	0.0	95.4	184.9	0.0	0.0	0.0
17	0.0	95.4	184.9	0.0	0.0	0.0
18	0.0	95.4	184.9	0.0	0.0	0.0
19	0.0	59.6	112.5	0.0	0.0	0.0

20	0.0	59.6	112.5	0.0	0.0	0.0
21	0.0	59.6	112.5	0.0	0.0	0.0
22	0.0	59.6	112.5	0.0	0.0	0.0
23	0.0	59.6	112.5	0.0	0.0	0.0
24	0.0	59.6	112.5	0.0	0.0	0.0
25	0.0	23.7	40.1	0.0	0.0	0.0
26	0.0	23.7	40.1	0.0	0.0	0.0
27	0.0	23.7	40.1	0.0	0.0	0.0
28	0.0	23.7	40.1	0.0	0.0	0.0
29	0.0	23.7	40.1	0.0	0.0	0.0
30	0.0	23.7	40.1	0.0	0.0	0.0

NO FILES WERE GENERATED DURING THIS RUN.

```
10  Bayou Des Allemands Twall Pinned
20  PIL  1  -20   2.5   0
30  BAT   2   1
40  ANG   270   1
50  PIL  2  -12   2.5   0
60  BAT   2   2
70  ANG   270   2
80  PIL  3  -4   2.5   0
90  BAT   2   3
100  ANG   270   3
110  PIL  4   4   2.5   0
120  BAT   2   4
130  ANG   270   4
140  PIL  5   12   2.5   0
150  BAT   2   5
160  ANG   270   5
170  PIL  6   20   2.5   0
180  BAT   2   6
190  ANG   270   6
200  PIL  7  -20   11.75   0
210  BAT   2   7
220  ANG   270   7
230  PIL  8  -12   11.75   0
240  BAT   2   8
250  ANG   270   8
260  PIL  9  -4   11.75   0
270  BAT   2   9
280  ANG   270   9
290  PIL  10   4   11.75   0
300  BAT   2   10
310  ANG   270   10
320  PIL  11   12   11.75   0
330  BAT   2   11
340  ANG   270   11
350  PIL  12   20   11.75   0
360  BAT   2   12
370  ANG   270   12
380  PIL  13  -20   21   0
390  BAT   2   13
400  ANG   90   13
410  PIL  14  -12   21   0
420  BAT   2   14
430  ANG   90   14
440  PIL  15  -4   21   0
450  BAT   2   15
460  ANG   90   15
470  PIL  16   4   21   0
480  BAT   2   16
490  ANG   90   16
500  PIL  17   12   21   0
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```
510  BAT   2   17
520  ANG   90   17
530  PIL  18   20   21   0
540  BAT   2   18
550  ANG   90   18
560  PIL  19  -20   30.25   0
570  BAT   2   19
580  ANG   90   19
590  PIL  20  -12   30.25   0
600  BAT   2   20
610  ANG   90   20
620  PIL  21  -4   30.25   0
630  BAT   2   21
640  ANG   90   21
650  PIL  22   4   30.25   0
660  BAT   2   22
670  ANG   90   22
680  PIL  23   12   30.25   0
690  BAT   2   23
700  ANG   90   23
710  PIL  24   20   30.25   0
720  BAT   2   24
730  ANG   90   24
740  PIL  25  -20   39.5   0
750  BAT   2   25
760  ANG   90   25
770  PIL  26  -12   39.5   0
780  BAT   2   26
790  ANG   90   26
800  PIL  27  -4   39.5   0
810  BAT   2   27
820  ANG   90   27
830  PIL  28   4   39.5   0
840  BAT   2   28
850  ANG   90   28
860  PIL  29   12   39.5   0
870  BAT   2   29
880  ANG   90   29
890  PIL  30   20   39.5   0
900  BAT   2   30
910  ANG   90   30
920  PRO  29000  2549  2549  36.91  2  0  1 TO 30
930  SOI ES 0.056 L  180  0  1 TO 30
940  RED  1  1  1
950  ALL R 200  130  921  921  6890  6590  1 TO 30
960  PIN  1 TO 30
970  LOA  6  0  916  1791  47340  0  0
970  LOA  7  0  916  1665  41780  0  0
970  LOA  8  0  1470  1815  56124  0  0
970  LOA  9  0  1470  1632  48093  0  0
```

```
970  FOV  1.33  1.33  6
970  FOV  1.33  1.33  7
970  FOV  1.33  1.33  8
970  FOV  1.33  1.33  9
980  TOUT   1  2  3  4  5  6  7
990  PFO ALL
1000  PLB ALL
```

CPGA - CASE PILE GROUP ANALYSIS PROGRAM
RUN DATE: 28-AUG-20 RUN TIME: 15:16:22

FOR PILES WITH UNSUPPORTED HEIGHT:
A. CPGA CANNOT CALCULATE PMAXMOM FOR NH TYPE SOIL
B. THE ALLOWABLE STRESS CHECKS, ASC AND AST, ARE
NOT FULLY DEVELOPED FOR UNSUPPORTED PILES.
WORK IS IN PROGRESS TO COMPLETE THIS ASPECT OF CPGA.

ELASTIC CENTER LOCATION IS NOT COMPUTED FOR 3-DIMENSIONAL PROBLEMS.

BAYOU DES ALLEMANDS TWALL PINNED
DATA UNKNOWN - REJECTED.

THERE ARE 30 PILES AND
4 LOAD CASES IN THIS RUN.

ALL PILE COORDINATES ARE CONTAINED WITHIN A BOX

	X	Y	Z
WITH DIAGONAL COORDINATES = (	-20.00 ,	2.50 ,	0.00)
(	20.00 ,	39.50 ,	0.00)

****

PILE PROPERTIES AS INPUT

E	I1	I2	A	C33	B66
KSI	IN**4	IN**4	IN**2		
0.29000E+05	0.25490E+04	0.25490E+04	0.36910E+02	0.20000E+01	0.00000E+00

THESE PILE PROPERTIES APPLY TO THE FOLLOWING PILES -

ALL

****

SOIL DESCRIPTIONS AS INPUT

ES	ESOIL	LENGTH	L	LU
	K/IN**2		FT	FT

0.56000E-01 L 0.18000E+03 0.00000E+00

ESOIL(ORIGINAL) K/IN**2	RGROUP	RCYCLIC
0.56000E-01	0.1000E+01	0.1000E+01

THIS SOIL DESCRIPTION APPLIES TO THE FOLLOWING PILES -

ALL

****

PILE STIFFNESSES AS CALCULATED FROM PROPERTIES

0.75478E+01	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00
0.00000E+00	0.75478E+01	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00
0.00000E+00	0.00000E+00	0.99110E+03	0.00000E+00	0.00000E+00	0.00000E+00
0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00
0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00
0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00

THIS MATRIX APPLIES TO THE FOLLOWING PILES -

1

****

PILE GEOMETRY AS INPUT AND/OR GENERATED

NUM	X FT	Y FT	Z FT	BATTER	ANGLE	LENGTH FT	FIXITY
1	-20.00	2.50	0.00	2.00	270.00	180.00	P
2	-12.00	2.50	0.00	2.00	270.00	180.00	P
3	-4.00	2.50	0.00	2.00	270.00	180.00	P
4	4.00	2.50	0.00	2.00	270.00	180.00	P
5	12.00	2.50	0.00	2.00	270.00	180.00	P
6	20.00	2.50	0.00	2.00	270.00	180.00	P
7	-20.00	11.75	0.00	2.00	270.00	180.00	P
8	-12.00	11.75	0.00	2.00	270.00	180.00	P
9	-4.00	11.75	0.00	2.00	270.00	180.00	P
10	4.00	11.75	0.00	2.00	270.00	180.00	P
11	12.00	11.75	0.00	2.00	270.00	180.00	P
12	20.00	11.75	0.00	2.00	270.00	180.00	P
13	-20.00	21.00	0.00	2.00	90.00	180.00	P
14	-12.00	21.00	0.00	2.00	90.00	180.00	P

15	-4.00	21.00	0.00	2.00	90.00	180.00	P
16	4.00	21.00	0.00	2.00	90.00	180.00	P
17	12.00	21.00	0.00	2.00	90.00	180.00	P
18	20.00	21.00	0.00	2.00	90.00	180.00	P
19	-20.00	30.25	0.00	2.00	90.00	180.00	P
20	-12.00	30.25	0.00	2.00	90.00	180.00	P
21	-4.00	30.25	0.00	2.00	90.00	180.00	P
22	4.00	30.25	0.00	2.00	90.00	180.00	P
23	12.00	30.25	0.00	2.00	90.00	180.00	P
24	20.00	30.25	0.00	2.00	90.00	180.00	P
25	-20.00	39.50	0.00	2.00	90.00	180.00	P
26	-12.00	39.50	0.00	2.00	90.00	180.00	P
27	-4.00	39.50	0.00	2.00	90.00	180.00	P
28	4.00	39.50	0.00	2.00	90.00	180.00	P
29	12.00	39.50	0.00	2.00	90.00	180.00	P
30	20.00	39.50	0.00	2.00	90.00	180.00	P

						5400.00	

****

APPLIED LOADS

LOAD CASE	PX K	PY K	PZ K	MX FT-K	MY FT-K	MZ FT-K	OVERSTRESS COM	TEN
6	0.0	916.0	1791.0	47340.0	0.0	0.0	1.33	1.33
7	0.0	916.0	1665.0	41780.0	0.0	0.0	1.33	1.33
8	0.0	1470.0	1815.0	56124.0	0.0	0.0	1.33	1.33
9	0.0	1470.0	1632.0	48093.0	0.0	0.0	1.33	1.33

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ORIGINAL PILE GROUP STIFFNESS MATRIX

0.22643E+03	0.12925E-03	-0.86169E-04	0.16544E-01	-0.21684E-18	-0.57061E+05
0.12925E-03	0.61278E+04	0.23605E+04	0.21670E+07	-0.14552E-10	-0.23007E-01
-0.86169E-04	0.23605E+04	0.23832E+05	0.60056E+07	0.29104E-10	-0.16544E-01
0.16544E-01	0.21670E+07	0.60056E+07	0.21007E+10	-0.14901E-07	-0.10271E+02
0.43368E-18	-0.14552E-10	0.29104E-10	0.14901E-07	0.64060E+09	-0.63451E+08
-0.57061E+05	-0.23007E-01	-0.16544E-01	-0.10271E+02	-0.63451E+08	0.18467E+09

30 PILES 4 LOAD CASES

LOAD CASE 6. NUMBER OF FAILURES = 0. NUMBER OF PILES IN TENSION = 6.

LOAD CASE 7. NUMBER OF FAILURES = 0. NUMBER OF PILES IN TENSION = 6.

LOAD CASE 8. NUMBER OF FAILURES = 0. NUMBER OF PILES IN TENSION = 12.

LOAD CASE 9. NUMBER OF FAILURES = 0. NUMBER OF PILES IN TENSION = 6.

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PILE CAP DISPLACEMENTS

LOAD CASE	DX IN	DY IN	DZ IN	RX RAD	RY RAD	RZ RAD
6	-0.4265E-07	0.2528E+00	0.1706E+00	-0.4780E-03	0.7191E-12	0.7260E-11
7	-0.4479E-07	0.3158E+00	0.2165E+00	-0.7060E-03	0.5767E-12	0.5822E-11
8	-0.9920E-07	0.4223E+00	0.2265E+00	-0.7625E-03	-0.1641E-13	-0.1657E-12
9	-0.1023E-06	0.5129E+00	0.2925E+00	-0.1091E-02	-0.2232E-12	-0.2254E-11

****

PILE FORCES IN LOCAL GEOMETRY

M1 & M2 NOT AT PILE HEAD FOR PINNED PILES
* INDICATES PILE FAILURE
# INDICATES CBF BASED ON MOMENTS DUE TO
(F3*EMIN) FOR CONCRETE PILES
B INDICATES BUCKLING CONTROLS

LOAD CASE - 6

PILE	F1 K	F2 K	F3 K	M1 IN-K	M2 IN-K	M3 IN-K	ALF	CBF
1	-2.2	0.0	26.4	0.0	193.9	0.0	0.10	0.04
2	-2.2	0.0	26.4	0.0	193.9	0.0	0.10	0.04
3	-2.2	0.0	26.4	0.0	193.9	0.0	0.10	0.04
4	-2.2	0.0	26.4	0.0	193.9	0.0	0.10	0.04
5	-2.2	0.0	26.4	0.0	193.9	0.0	0.10	0.04
6	-2.2	0.0	26.4	0.0	193.9	0.0	0.10	0.04
7	-2.1	0.0	-20.6	0.0	178.4	0.0	0.12	0.04
8	-2.1	0.0	-20.6	0.0	178.4	0.0	0.12	0.04
9	-2.1	0.0	-20.6	0.0	178.4	0.0	0.12	0.04
10	-2.1	0.0	-20.6	0.0	178.4	0.0	0.12	0.04
11	-2.1	0.0	-20.6	0.0	178.4	0.0	0.12	0.04
12	-2.1	0.0	-20.6	0.0	178.4	0.0	0.12	0.04

13	1.5	0.0	156.5	0.0	-133.5	0.0	0.59	0.14
14	1.5	0.0	156.5	0.0	-133.5	0.0	0.59	0.14
15	1.5	0.0	156.5	0.0	-133.5	0.0	0.59	0.14
16	1.5	0.0	156.5	0.0	-133.5	0.0	0.59	0.14
17	1.5	0.0	156.5	0.0	-133.5	0.0	0.59	0.14
18	1.5	0.0	156.5	0.0	-133.5	0.0	0.59	0.14
19	1.7	0.0	109.4	0.0	-149.0	0.0	0.41	0.11
20	1.7	0.0	109.4	0.0	-149.0	0.0	0.41	0.11
21	1.7	0.0	109.4	0.0	-149.0	0.0	0.41	0.11
22	1.7	0.0	109.4	0.0	-149.0	0.0	0.41	0.11
23	1.7	0.0	109.4	0.0	-149.0	0.0	0.41	0.11
24	1.7	0.0	109.4	0.0	-149.0	0.0	0.41	0.11
25	1.9	0.0	62.4	0.0	-164.5	0.0	0.23	0.07
26	1.9	0.0	62.4	0.0	-164.5	0.0	0.23	0.07
27	1.9	0.0	62.4	0.0	-164.5	0.0	0.23	0.07
28	1.9	0.0	62.4	0.0	-164.5	0.0	0.23	0.07
29	1.9	0.0	62.4	0.0	-164.5	0.0	0.23	0.07
30	1.9	0.0	62.4	0.0	-164.5	0.0	0.23	0.07

LOAD CASE - 7

PILE	F1 K	F2 K	F3 K	M1 IN-K	M2 IN-K	M3 IN-K	ALF	CBF
1	-2.8	0.0	33.2	0.0	242.2	0.0	0.12	0.05
2	-2.8	0.0	33.2	0.0	242.2	0.0	0.12	0.05
3	-2.8	0.0	33.2	0.0	242.2	0.0	0.12	0.05
4	-2.8	0.0	33.2	0.0	242.2	0.0	0.12	0.05
5	-2.8	0.0	33.2	0.0	242.2	0.0	0.12	0.05
6	-2.8	0.0	33.2	0.0	242.2	0.0	0.12	0.05
7	-2.5	0.0	-36.3	0.0	219.3	0.0	0.21	0.05
8	-2.5	0.0	-36.3	0.0	219.3	0.0	0.21	0.05
9	-2.5	0.0	-36.3	0.0	219.3	0.0	0.21	0.05
10	-2.5	0.0	-36.3	0.0	219.3	0.0	0.21	0.05
11	-2.5	0.0	-36.3	0.0	219.3	0.0	0.21	0.05
12	-2.5	0.0	-36.3	0.0	219.3	0.0	0.21	0.05
13	2.0	0.0	174.2	0.0	-173.7	0.0	0.65	0.16
14	2.0	0.0	174.2	0.0	-173.7	0.0	0.65	0.16
15	2.0	0.0	174.2	0.0	-173.7	0.0	0.65	0.16
16	2.0	0.0	174.2	0.0	-173.7	0.0	0.65	0.16
17	2.0	0.0	174.2	0.0	-173.7	0.0	0.65	0.16
18	2.0	0.0	174.2	0.0	-173.7	0.0	0.65	0.16
19	2.3	0.0	104.7	0.0	-196.7	0.0	0.39	0.11
20	2.3	0.0	104.7	0.0	-196.7	0.0	0.39	0.11
21	2.3	0.0	104.7	0.0	-196.7	0.0	0.39	0.11
22	2.3	0.0	104.7	0.0	-196.7	0.0	0.39	0.11
23	2.3	0.0	104.7	0.0	-196.7	0.0	0.39	0.11
24	2.3	0.0	104.7	0.0	-196.7	0.0	0.39	0.11
25	2.5	0.0	35.2	0.0	-219.6	0.0	0.13	0.05

26	2.5	0.0	35.2	0.0	-219.6	0.0	0.13	0.05
27	2.5	0.0	35.2	0.0	-219.6	0.0	0.13	0.05
28	2.5	0.0	35.2	0.0	-219.6	0.0	0.13	0.05
29	2.5	0.0	35.2	0.0	-219.6	0.0	0.13	0.05
30	2.5	0.0	35.2	0.0	-219.6	0.0	0.13	0.05

LOAD CASE - 8

PILE	F1 K	F2 K	F3 K	M1 IN-K	M2 IN-K	M3 IN-K	ALF	CBF
1	-3.5	0.0	-6.7	0.0	307.1	0.0	0.04	0.04
2	-3.5	0.0	-6.7	0.0	307.1	0.0	0.04	0.04
3	-3.5	0.0	-6.7	0.0	307.1	0.0	0.04	0.04
4	-3.5	0.0	-6.7	0.0	307.1	0.0	0.04	0.04
5	-3.5	0.0	-6.7	0.0	307.1	0.0	0.04	0.04
6	-3.5	0.0	-6.7	0.0	307.1	0.0	0.04	0.04
7	-3.3	0.0	-81.7	0.0	282.3	0.0	0.47	0.10
8	-3.3	0.0	-81.7	0.0	282.3	0.0	0.47	0.10
9	-3.3	0.0	-81.7	0.0	282.3	0.0	0.47	0.10
10	-3.3	0.0	-81.7	0.0	282.3	0.0	0.47	0.10
11	-3.3	0.0	-81.7	0.0	282.3	0.0	0.47	0.10
12	-3.3	0.0	-81.7	0.0	282.3	0.0	0.47	0.10
13	2.7	0.0	217.6	0.0	-237.4	0.0	0.82	0.20
14	2.7	0.0	217.6	0.0	-237.4	0.0	0.82	0.20
15	2.7	0.0	217.6	0.0	-237.4	0.0	0.82	0.20
16	2.7	0.0	217.6	0.0	-237.4	0.0	0.82	0.20
17	2.7	0.0	217.6	0.0	-237.4	0.0	0.82	0.20
18	2.7	0.0	217.6	0.0	-237.4	0.0	0.82	0.20
19	3.0	0.0	142.6	0.0	-262.2	0.0	0.54	0.15
20	3.0	0.0	142.6	0.0	-262.2	0.0	0.54	0.15
21	3.0	0.0	142.6	0.0	-262.2	0.0	0.54	0.15
22	3.0	0.0	142.6	0.0	-262.2	0.0	0.54	0.15
23	3.0	0.0	142.6	0.0	-262.2	0.0	0.54	0.15
24	3.0	0.0	142.6	0.0	-262.2	0.0	0.54	0.15
25	3.3	0.0	67.6	0.0	-287.0	0.0	0.25	0.09
26	3.3	0.0	67.6	0.0	-287.0	0.0	0.25	0.09
27	3.3	0.0	67.6	0.0	-287.0	0.0	0.25	0.09
28	3.3	0.0	67.6	0.0	-287.0	0.0	0.25	0.09
29	3.3	0.0	67.6	0.0	-287.0	0.0	0.25	0.09
30	3.3	0.0	67.6	0.0	-287.0	0.0	0.25	0.09

LOAD CASE - 9

PILE	F1 K	F2 K	F3 K	M1 IN-K	M2 IN-K	M3 IN-K	ALF	CBF
1	-4.3	0.0	3.0	0.0	376.6	0.0	0.01	0.04

2	-4.3	0.0	3.0	0.0	376.6	0.0	0.01	0.04
3	-4.3	0.0	3.0	0.0	376.6	0.0	0.01	0.04
4	-4.3	0.0	3.0	0.0	376.6	0.0	0.01	0.04
5	-4.3	0.0	3.0	0.0	376.6	0.0	0.01	0.04
6	-4.3	0.0	3.0	0.0	376.6	0.0	0.01	0.04
7	-3.9	0.0	-104.3	0.0	341.2	0.0	0.60	0.12
8	-3.9	0.0	-104.3	0.0	341.2	0.0	0.60	0.12
9	-3.9	0.0	-104.3	0.0	341.2	0.0	0.60	0.12
10	-3.9	0.0	-104.3	0.0	341.2	0.0	0.60	0.12
11	-3.9	0.0	-104.3	0.0	341.2	0.0	0.60	0.12
12	-3.9	0.0	-104.3	0.0	341.2	0.0	0.60	0.12
13	3.4	0.0	243.0	0.0	-295.3	0.0	0.91	0.23
14	3.4	0.0	243.0	0.0	-295.3	0.0	0.91	0.23
15	3.4	0.0	243.0	0.0	-295.3	0.0	0.91	0.23
16	3.4	0.0	243.0	0.0	-295.3	0.0	0.91	0.23
17	3.4	0.0	243.0	0.0	-295.3	0.0	0.91	0.23
18	3.4	0.0	243.0	0.0	-295.3	0.0	0.91	0.23
19	3.8	0.0	135.7	0.0	-330.8	0.0	0.51	0.15
20	3.8	0.0	135.7	0.0	-330.8	0.0	0.51	0.15
21	3.8	0.0	135.7	0.0	-330.8	0.0	0.51	0.15
22	3.8	0.0	135.7	0.0	-330.8	0.0	0.51	0.15
23	3.8	0.0	135.7	0.0	-330.8	0.0	0.51	0.15
24	3.8	0.0	135.7	0.0	-330.8	0.0	0.51	0.15
25	4.2	0.0	28.4	0.0	-366.3	0.0	0.11	0.06
26	4.2	0.0	28.4	0.0	-366.3	0.0	0.11	0.06
27	4.2	0.0	28.4	0.0	-366.3	0.0	0.11	0.06
28	4.2	0.0	28.4	0.0	-366.3	0.0	0.11	0.06
29	4.2	0.0	28.4	0.0	-366.3	0.0	0.11	0.06
30	4.2	0.0	28.4	0.0	-366.3	0.0	0.11	0.06

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PILE FORCES IN GLOBAL GEOMETRY

LOAD CASE - 6

PILE	PX K	PY K	PZ K	MX IN-K	MY IN-K	MZ IN-K
1	0.0	-9.8	24.6	0.0	0.0	0.0
2	0.0	-9.8	24.6	0.0	0.0	0.0
3	0.0	-9.8	24.6	0.0	0.0	0.0
4	0.0	-9.8	24.6	0.0	0.0	0.0
5	0.0	-9.8	24.6	0.0	0.0	0.0
6	0.0	-9.8	24.6	0.0	0.0	0.0
7	0.0	11.0	-17.5	0.0	0.0	0.0
8	0.0	11.0	-17.5	0.0	0.0	0.0

9	0.0	11.0	-17.5	0.0	0.0	0.0
10	0.0	11.0	-17.5	0.0	0.0	0.0
11	0.0	11.0	-17.5	0.0	0.0	0.0
12	0.0	11.0	-17.5	0.0	0.0	0.0
13	0.0	71.4	139.3	0.0	0.0	0.0
14	0.0	71.4	139.3	0.0	0.0	0.0
15	0.0	71.4	139.3	0.0	0.0	0.0
16	0.0	71.4	139.3	0.0	0.0	0.0
17	0.0	71.4	139.3	0.0	0.0	0.0
18	0.0	71.4	139.3	0.0	0.0	0.0
19	0.0	50.5	97.1	0.0	0.0	0.0
20	0.0	50.5	97.1	0.0	0.0	0.0
21	0.0	50.5	97.1	0.0	0.0	0.0
22	0.0	50.5	97.1	0.0	0.0	0.0
23	0.0	50.5	97.1	0.0	0.0	0.0
24	0.0	50.5	97.1	0.0	0.0	0.0
25	0.0	29.6	55.0	0.0	0.0	0.0
26	0.0	29.6	55.0	0.0	0.0	0.0
27	0.0	29.6	55.0	0.0	0.0	0.0
28	0.0	29.6	55.0	0.0	0.0	0.0
29	0.0	29.6	55.0	0.0	0.0	0.0
30	0.0	29.6	55.0	0.0	0.0	0.0

LOAD CASE - 7

PILE	PX K	PY K	PZ K	MX IN-K	MY IN-K	MZ IN-K
1	0.0	-12.4	30.9	0.0	0.0	0.0
2	0.0	-12.4	30.9	0.0	0.0	0.0
3	0.0	-12.4	30.9	0.0	0.0	0.0
4	0.0	-12.4	30.9	0.0	0.0	0.0
5	0.0	-12.4	30.9	0.0	0.0	0.0
6	0.0	-12.4	30.9	0.0	0.0	0.0
7	0.0	18.5	-31.3	0.0	0.0	0.0
8	0.0	18.5	-31.3	0.0	0.0	0.0
9	0.0	18.5	-31.3	0.0	0.0	0.0
10	0.0	18.5	-31.3	0.0	0.0	0.0
11	0.0	18.5	-31.3	0.0	0.0	0.0
12	0.0	18.5	-31.3	0.0	0.0	0.0
13	0.0	79.7	154.9	0.0	0.0	0.0
14	0.0	79.7	154.9	0.0	0.0	0.0
15	0.0	79.7	154.9	0.0	0.0	0.0
16	0.0	79.7	154.9	0.0	0.0	0.0
17	0.0	79.7	154.9	0.0	0.0	0.0
18	0.0	79.7	154.9	0.0	0.0	0.0
19	0.0	48.8	92.6	0.0	0.0	0.0
20	0.0	48.8	92.6	0.0	0.0	0.0
21	0.0	48.8	92.6	0.0	0.0	0.0

22	0.0	48.8	92.6	0.0	0.0	0.0
23	0.0	48.8	92.6	0.0	0.0	0.0
24	0.0	48.8	92.6	0.0	0.0	0.0
25	0.0	18.0	30.4	0.0	0.0	0.0
26	0.0	18.0	30.4	0.0	0.0	0.0
27	0.0	18.0	30.4	0.0	0.0	0.0
28	0.0	18.0	30.4	0.0	0.0	0.0
29	0.0	18.0	30.4	0.0	0.0	0.0
30	0.0	18.0	30.4	0.0	0.0	0.0

LOAD CASE - 8

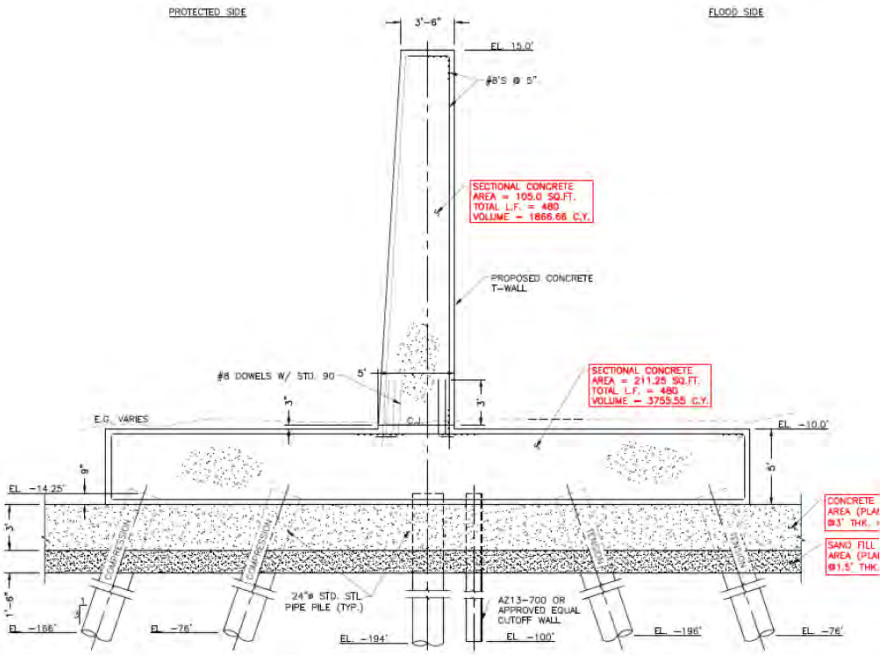
PILE	PX K	PY K	PZ K	MX IN-K	MY IN-K	MZ IN-K
1	0.0	6.2	-4.4	0.0	0.0	0.0
2	0.0	6.2	-4.4	0.0	0.0	0.0
3	0.0	6.2	-4.4	0.0	0.0	0.0
4	0.0	6.2	-4.4	0.0	0.0	0.0
5	0.0	6.2	-4.4	0.0	0.0	0.0
6	0.0	6.2	-4.4	0.0	0.0	0.0
7	0.0	39.5	-71.6	0.0	0.0	0.0
8	0.0	39.5	-71.6	0.0	0.0	0.0
9	0.0	39.5	-71.6	0.0	0.0	0.0
10	0.0	39.5	-71.6	0.0	0.0	0.0
11	0.0	39.5	-71.6	0.0	0.0	0.0
12	0.0	39.5	-71.6	0.0	0.0	0.0
13	0.0	99.8	193.4	0.0	0.0	0.0
14	0.0	99.8	193.4	0.0	0.0	0.0
15	0.0	99.8	193.4	0.0	0.0	0.0
16	0.0	99.8	193.4	0.0	0.0	0.0
17	0.0	99.8	193.4	0.0	0.0	0.0
18	0.0	99.8	193.4	0.0	0.0	0.0
19	0.0	66.5	126.2	0.0	0.0	0.0
20	0.0	66.5	126.2	0.0	0.0	0.0
21	0.0	66.5	126.2	0.0	0.0	0.0
22	0.0	66.5	126.2	0.0	0.0	0.0
23	0.0	66.5	126.2	0.0	0.0	0.0
24	0.0	66.5	126.2	0.0	0.0	0.0
25	0.0	33.2	58.9	0.0	0.0	0.0
26	0.0	33.2	58.9	0.0	0.0	0.0
27	0.0	33.2	58.9	0.0	0.0	0.0
28	0.0	33.2	58.9	0.0	0.0	0.0
29	0.0	33.2	58.9	0.0	0.0	0.0
30	0.0	33.2	58.9	0.0	0.0	0.0

LOAD CASE - 9

PILE	PX K	PY K	PZ K	MX IN-K	MY IN-K	MZ IN-K
1	0.0	2.6	4.6	0.0	0.0	0.0
2	0.0	2.6	4.6	0.0	0.0	0.0
3	0.0	2.6	4.6	0.0	0.0	0.0
4	0.0	2.6	4.6	0.0	0.0	0.0
5	0.0	2.6	4.6	0.0	0.0	0.0
6	0.0	2.6	4.6	0.0	0.0	0.0
7	0.0	50.2	-91.6	0.0	0.0	0.0
8	0.0	50.2	-91.6	0.0	0.0	0.0
9	0.0	50.2	-91.6	0.0	0.0	0.0
10	0.0	50.2	-91.6	0.0	0.0	0.0
11	0.0	50.2	-91.6	0.0	0.0	0.0
12	0.0	50.2	-91.6	0.0	0.0	0.0
13	0.0	111.7	215.8	0.0	0.0	0.0
14	0.0	111.7	215.8	0.0	0.0	0.0
15	0.0	111.7	215.8	0.0	0.0	0.0
16	0.0	111.7	215.8	0.0	0.0	0.0
17	0.0	111.7	215.8	0.0	0.0	0.0
18	0.0	111.7	215.8	0.0	0.0	0.0
19	0.0	64.1	119.7	0.0	0.0	0.0
20	0.0	64.1	119.7	0.0	0.0	0.0
21	0.0	64.1	119.7	0.0	0.0	0.0
22	0.0	64.1	119.7	0.0	0.0	0.0
23	0.0	64.1	119.7	0.0	0.0	0.0
24	0.0	64.1	119.7	0.0	0.0	0.0
25	0.0	16.5	23.5	0.0	0.0	0.0
26	0.0	16.5	23.5	0.0	0.0	0.0
27	0.0	16.5	23.5	0.0	0.0	0.0
28	0.0	16.5	23.5	0.0	0.0	0.0
29	0.0	16.5	23.5	0.0	0.0	0.0
30	0.0	16.5	23.5	0.0	0.0	0.0

NO FILES WERE GENERATED DURING THIS RUN.

Bayou Des Allemands T-wall
T-Wall Stems Loads



Top of Stem EL.	18.5	Weight of Water:	0.062	k/ft^3
Bottom of Stem EL.	-10	Moist Weight of Soil	0.120	k/ft^3
F.S. Soil EL.	-10.0	Wave Load:	8.5	k/ft
P.S. Soil EL.	-10.0	Wave Arm EL.	19.1	
S.W.L EL.	12.5	Debri	0.5	k/ft
P.S. Water EL.	-1.0	Wind Load:	0.056	ksf
Ko:	0.8	Sat. Soil Weight:	0.058	k/ft^3

Note: Inputs are already referenced from t-wall foundation sheet.

Load Case 2b. Construction + Wind 1.6(D + Sur + Wind)

Item	Fy	z	**Mx**	**Vx**
Wind	1.60	14.25	22.74	1.60
Sub Total:			22.74	1.60
Total (Factored)			**36.39** ft-k/ft	**2.55** k/ft

Load Case 3a. Flowline + Wave 1.6(D + EH + EV + HF + IU + Hw)

Item	Fy	z	**Mx**	**Vx**
F.S. Horizontal Water	15.80	7.50	118.46	15.80
P.S. Horizontal Water	-2.53	3.00	-7.58	-2.53
F.S. Horizontal Soil	0.00	0.00	0.00	0.00
P.S. Horizontal Soil ($\gamma_{m\ tri}$)	0.00	0	0.0000	0.00
P.S. Horizontal Soil ($\gamma_{m\ rec}$)	0.00	4.5	0.00	0.00
P.S. Horizontal Soil ($\gamma_{sat\ tri}$)	0.00	3.00	0.00	0.00
Wave	8.45	19.13	161.73	8.45
Sub Total:			272.61	21.72
Total (Factored)			**436.18**	**34.75**
			ft-k/ft	k/ft

Load Case 3c. Flowline+Wind+Debri 1.6(D + EH + EV + H_F+ PU + I + W)

Item	Fy	z	**Mx**	**Vx**
F.S. Horizontal Water	15.80	7.50	118.46	15.80
P.S. Horizontal Water	-2.53	3.00	-7.58	-2.53
F.S. Horizontal Soil	0.00	0.00	0.00	0.00
P.S. Horizontal Soil ($\gamma_{m\ tri}$)	0.00	0.00	0.00	0.00
P.S. Horizontal Soil ($\gamma_{m\ rec}$)	0.00	4.50	0.00	0.00
P.S. Horizontal Soil ($\gamma_{sat\ tri}$)	0.00	3.00	0.00	0.00
Wind	0.34	25.50	8.57	0.34
Debri	0.50	23.50	11.75	0.50
Sub Total:			131.20	14.10
Total (Factored)			**209.92**	**22.57**
			ft-k/ft	k/ft

Load Case 4a. Water to the Top + Debri 1.2D + 1.35EH_D + 0.9EH_R + 1.35EV + 1.3(H_{TW} + I + IU)

Item	Fy	z	**Mx**	**Vx**
F.S. Horizontal Water	25.34	9.50	240.75	25.34
P.S. Horizontal Water	-2.53	3.00	-7.58	-2.53
F.S. Horizontal Soil	0.00	0.00	0.00	0.00
P.S. Horizontal Soil ($\gamma_{m\ tri}$)	0.00	0.00	0.00	0.00
P.S. Horizontal Soil ($\gamma_{m\ rec}$)	0.00	4.50	0.00	0.00
P.S. Horizontal Soil ($\gamma_{sat\ tri}$)	0.00	3.00	0.00	0.00
Debri	0.50	28.50	14.25	0.50
Total (Factored)			**321.65**	**30.31**
			ft-k/ft	k/ft

Load Case 4b. Water to the Top + Debri 0.9D + 1.35EH_D + 0.9EH_R + 1.0EV + 1.3(H_{TW} + I + IU)

Item	Fy	z	**Mx**	**Vx**
F.S. Horizontal Water	25.34	9.50	240.75	25.34
P.S. Horizontal Water	-2.53	3.00	-7.58	-2.53
F.S. Horizontal Soil	0.00	0.00	0.00	0.00
P.S. Horizontal Soil ($\gamma_{m\ tri}$)	0.00	0.00	0.00	0.00
P.S. Horizontal Soil ($\gamma_{m\ rec}$)	0.00	4.50	0.00	0.00
P.S. Horizontal Soil ($\gamma_{sat\ tri}$)	0.00	3.00	0.00	0.00
Debri	0.50	28.50	14.25	0.50
Total (Factored)			**321.65**	**30.31**
			ft-k/ft	k/ft

Summary of Stem Loads		
	Mu	Vu
Load Case 2b	36.39	2.55
Load Case 3a	436.18	34.75
Load Case 3c	209.92	22.57
Load Case 4a	321.65	30.31
Load Case 4b	321.65	30.31
Maximum	436.18	34.75
	ft-k/ft	k/ft

Notation:

$A_{s\ min}$ = Minimum Area of Steel per linear foot of structure allowed by ACI / USACE. **(in^2)**

$A_{s\ Req'd}$ = Required Area of Steel per linear foot of structure using Ultimate Moment. **(in^2)**

b = Member width. **(Use 12in if forces are per linear foot of structure.)**

β_1 = ACI 318-14 Section 22.2

d = Distance from extreme compression fiber to centroid of tension reinforcement. **(in)**

f'c = Compressive strength of concrete. **(ksi ** except in Vc formula psi)**

f_y = Yield strength of steel. **(Usually 60 ksi.)**

ϕM_n = Nominal Moment strength **(k-in / linear foot)** ϕ = 0.9

M_u = Ultimate moment in sttructure. **(k-in / linear foot)**

ϕV_c = Nominal Shear strength **(lb / linear foot)** ϕ = 0.75

V_u = Ultimate shear in structure. **(lb / linear foot)**

t = Thickness of structure. **(In direction of applied moment) (in)**

ρ = Ratio of Reinforcement

ρ_b = Balanced Ratio of Reinforcement (0.0285 for 4ksi concrete)

Project: **Bayou Des Allemands T-wall**

Reference: **T-wall** **40 ft Slab** **Stem Rebar Design**

Inputs:

M_u = 5234.13 k-in / linear ft

V_u = 34752.48 lb/linear ft

b = 12 in

d = 55.3 in

t = 60 in

f'c = 4 ksi

f_y = 60 ksi

β_1 = 0.85 (unitless)

ρ_b = 0.0285 (unitless)

Check d_d

Mn= Mu/ϕ

Mn= 5815.70 k-in / linear ft

$$d_d = \sqrt{\frac{2.4956 M_n}{b_w}} =$$ EM 1110-2-2104 (Table D-1)

d_d= 34.78 in

d > d_d ok

Calculations: ** All Areas are per side.

$$K_u = 1 - \sqrt{1 - \frac{M_n + P_n\left(d - \frac{h}{2}\right)}{0.425 f_c' b d^2}}$$ EM 1110-2-2104 (Table D-8)

P_n= 0

K_u= 0.047751

$$A_s = \frac{0.85 f_c' K_u b d - P_n}{f_y}$$ EM 1110-2-2104 (D-9)

$A_{s\ Req'd}$ = 1.80 in^2 /ft

$A_{s\ min}$ = 2.10 in^2 /ft = [3 b d √(f'c)] / F_y (psi) EM 1110-2-2104, Chapter 3

$A_{s\ min}$ = 2.21 in^2 /ft = 200 b d / F_y (psi) EM 1110-2-2104, Chapter 3

$A_{s\ min}$ = 2.39 in^2 /ft = 1.33 ($A_{s\ Req'd}$) EM 1110-2-2104, Chapter 3

Use A_s = 2.39 in^2 /ft Flexural

Temperature and Shrinkage Rebar

$A_{s\ t\&s}$ = 2.20 in^2 /ft = 0.004b t/2 per face -- EM 1110-2-2104 Table 2-3

Table 2-3. Minimum Shrinkage and Temperature Reinforcement Ratios for Various Joint Spacings.

Length Between Control Joints (ft)	Minimum Temperature and Shrinkage Reinforcement Ratio, Grade 60
Less than 30 ft	0.003

Less than 30 ft	0.003
30-40 ft	0.004
Greater than 40 ft	0.005

Use $A_{s\ t\&s}$ =	**2.20**	**in^2 /ft**	**per face**	Use:	#11@8in	As: 2.34 **in^2 /ft**

Check Moment:

Calculate ϕM_n and compare to original M_u.

As Used:	2.08	**in^2 /ft**	Use:	#11@9in

ϕM_n = 6039.51 k-in = 0.9 $A_s F_y d (1 -(A_s F_y / 2 \beta b d f'c))$

M_u = 5234.129 k-in

If $\phi M_n > M_u$ then A_s is acceptable. **OK**

Check Shear:

Calculate ϕV_c and compare to V_u.

ϕV_c = 62.95 k = 0.75 x 2 ($\sqrt{f'c}$) b d

V_u = 34.75 k

If $\phi V_c > V_u$ then A_s is acceptable. **OK**

Check Ratio of Reinforcement: EM 1110-2-2104, Chapter 3.5

ρ = 0.003134 $\rho = A_s / b d$

0.25 ρ_b = 0.007125

0.5ρ_b = 0.010688

$\rho \leq 0.25\ \rho_b$ (if possible)	OK
$\rho \leq 0.5\ \rho_b$ (always)	OK

Bayou Des Allemands T-wall quantities

1) Cast-in place concrete		
Area of Base Slab per linear ft:	210	ft^2
Area of Stem per linear ft:	121.125	ft^2
Total area per linear ft:	331.125	ft^2
Linear ft of wall:	500	ft
Total volume of concrete (ft^3):	165562.5	ft^3
Total volume of concrete (CY):	6131.944	CY
2) Steel Sheet Piling		
Cut off El.	-14.25	
Tip El.	-100	
Length:	85.75	ft
Area of sheet pile:	42875	ft^2
3) 24" diameter pipe pile		
Cut off El.	-14.25	
Tip El.	-175	
Batter:	2	
Length:	179.724	ft
Piles per monolith	30	
monolith no.	10	
Total length of piles:	53917.19	LF
4) Concrete Sub base		
Dewatered Area:	61923.5	ft^2
Depth:	3	ft
Total volume:	185770.5	ft^3
Total volume:	6880.389	CY
5)Sand sub-base:		
Dewatered Area:	61923.5	ft^2
Depth:	1.5	ft
Total volume:	92885.25	ft^3
Total volume:	3440.194	CY

Reach G and H: Hydraulic Structures

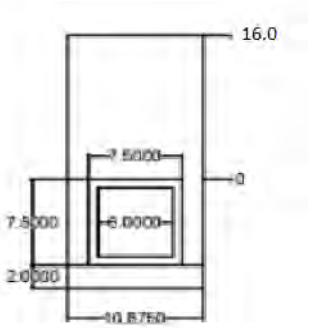
The following caclculations for the Hydraulic Structures follows the same methodology used in the 10% Conceptual report Calculations.
The main difference in calculations is the difference in Top of Levee elevations, from El. 12.5 to El 16.0 based on levee cross sectins provided by Geotechnical office for reaches G and H.

Assumptions

1. The soil fill for 30 ft on either side of levee center line was at +16.0
2. The soil fill outside of 30 ft on either side of the levee center line was at +10
3. Soil has a unit weight of 110 pcf
4. Salt water has a unit weight of 64 pcf
5. Assuming that the concrete used is normal weight at 150 pcf

Pile spacing under the levee crown

The cross-section to the left represents the typical areas used for the center 60 ft of the levee.



Areas:

Soil: (16.0 ft x 10.875 ft) + 3.375 ft x 7.5 ft = 199.31 ft^2

Salt water: 6 ft x 6 ft = 36 ft^2

Concrete: (2 ft x 10.875 ft) + $((7.5\ ft)^2 - (6\ ft)^2)$=42 ft^2

These areas were used to determine the distributed load.

Linear load:= $\dfrac{Area\ x\ Unit\ weight}{1000}$

Linear load of soil: $\dfrac{199.31\ ft^2\ x\ 110\ pcf}{1000} = 21.924\dfrac{kip}{ft}$

Linear load of water: $\dfrac{36\ ft^2\ x\ 64\ pcf}{1000} = 2.304\dfrac{kip}{ft}$

Linear load of concrete: $\dfrac{42\ ft^2\ x\ 150\ pcf}{1000} = 6.3\dfrac{kip}{ft}$

Total linear load: $21.924\dfrac{kip}{ft} + 2.304\dfrac{kip}{ft} + 6.3\dfrac{kip}{ft} = 30.5\dfrac{kip}{ft}$

To determine pile tip, unfactored total loads was used.
Pile capacities were provided by the geotechnical engineer.

24” OD steel pipe piles 180 feet long were selected for this structure.
Using SF= 3.0, pile capacity for a pile tipped at El. -185 is:

$$Pile\ Capacity = \frac{375\ T - 5\ T}{3.0} \times \frac{2\ kips}{1\ Ton} = 247\ kips$$

$$Spacing = \frac{Pile\ Capacity}{Total\ Load} = \frac{247\ kips}{30.5\ kips/ft} = 8.0\ ft$$

Pile spacing under the levee slopes

The cross-section to the left represents the typical areas used for the center 60 ft of the levee.

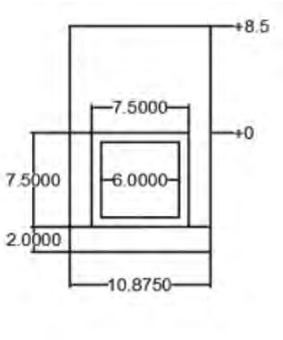
Areas:

Soil: (10 ft x 10.875 ft) + 3.375 ft x 7.5 ft = 134.06 ft^2

Salt waterz: 6 ft x 6 ft = 36 ft^2

Concrete: (2 ft x 10.875 ft) + ((7.5 ft)^2 - (6 ft)^2)=42 ft^2

These areas were used to determine the distributed load.



Linear load:= $\frac{Area\ x\ Unit\ weight}{1000}$

Linear load of soil: $\frac{134.06\ ft^2\ x\ 110\ pcf}{1000} = 14.75\frac{kip}{ft}$

Linear load of water: $\frac{36\ ft^2\ x\ 64\ pcf}{1000} = 2.304\frac{kip}{ft}$

Linear load of concrete: $\frac{42\ ft^2\ x\ 150\ pcf}{1000} = 6.3\frac{kip}{ft}$

Total linear load: $14.75\frac{kip}{ft} + 2.304\frac{kip}{ft} + 6.3\frac{kip}{ft} = 23.35\frac{kip}{ft}$

To determine pile tip, unfactored total loads was used.
Pile capacities were provided by the geotechnical engineer.
24” OD steel pipe piles 180 feet long were selected for this structure.
Using SF= 3.0, pile capacity for a pile tipped at El. -185 is:

$$Pile\ Capacity = \frac{375\ T - 5\ T}{3.0} \times \frac{2\ kips}{1\ Ton} = 247\ kips$$

$$Spacing = \frac{Pile\ Capacity}{Total\ Load} = \frac{227\ kips}{23.35\ kips/ft} = 10.0ft$$

*Use 9.75 ft as shown on 10% conceptual design

Hydraulic Structures Quantities

The Upper Barataria Basin Recommended Plan is a structural alignment constructed to a 100-yr future design elevation. These hydraulic structures are located in Reach G and Reach H.

The newly constructed levee would incorporate five sets of culverts, 4-6 X 6 foot box culverts with sluice gates (no screens), are needed to maintain the flows in and out of the marsh on the southern side of the alignment through small tributaries and oil and gas line canals. The proposed levee for Reach G would initially be constructed to an elevation of 14 feet in 2026, with a second (final) lift to an elevation of 16 feet in 2054 in order to maintain the 1% AEP design elevation over the 50-yr period of analysis.

The proposed construction for Reach H includes construction of a new levee which would parallel US Highway 90 through the marsh. The newly constructed levee would incorporate two sets of culverts for hydraulic exchange from the north to the south of the alignment. These are 2-84 inch in diameter culverts with sluice gates and a 1-60 inch in diameter culvert with sluice gate (no screens). The proposed levee for Reach H would be constructed with one lift to an elevation of 16 feet in 2026 in order to maintain the 1% AEP design elevation over the 50-yr period of analysis.

A) Large Hydraulic Structure (4) 6' x 6' RCB Culverts

Item	Description	10 % Conceptual Design Elevation El. 12.5	100-yr Future Lift Elevation El. 16.0	# Items	Difference (ft)	Total Difference (ft)	Area (ft^2)	Volume (ft^3)	Volume (CY)
		Length (ft)	Length (ft)						
1	6'x6' Culverts	242	170	4	-72	-288	-	-	-
2	Walkway	162.5	126.5	1	-36	-36	-	-	-
3	12" ϕ Steel Pile Pipes (0.375") - Pipes over sheet pile wall	9.5	13	4	3.5	14	-	-	-
4	12" ϕ Steel Pile Pipes (0.375") - Piles parallel to culverts	60	63.5	-3	-	-180	-	-	-
5	Concrete footing	242	170	1	-72	-72	87	-6264	-232
6	24" ϕ Steel Pile Pipes (0.375")	170	180	-28	-	-3660	-	-	-

B) Small Hydraulic Structure Single RCP culvert 60" ϕ

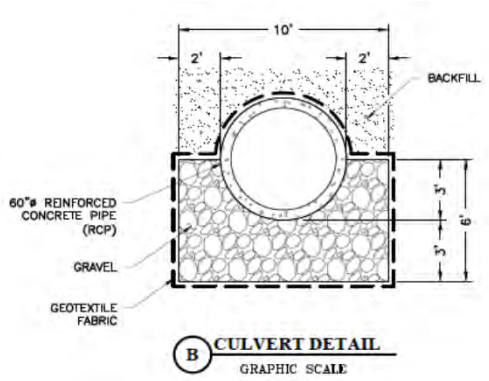
Item	Description	10 % Conceptual Design Elevation El. 12.5	100-yr Future Lift Elevation El. 16.0	# Items	Difference (ft)	Total Difference (ft)	Area (ft^2)	Volume (ft^3)	Volume (CY)
		Length (ft)	Length (ft)						
1	60" RC Pipes Culverts	76	98	1	22	22	-	-	-
2	Walkway	44.1	58.1	1	14	14	-	-	-
3	12" ϕ Steel Pile Pipes (0.375") - Pipes over concrete headwall	5.5	9	2	3.5	7	-	-	-
4	12" ϕ Steel Pile Pipes (0.375") - Piles parallel to culverts	60	63.5	1	-	63.5	-	-	-
5	Gravel (Bedding)	76	92	1	16	16	46	4232	156.7407
6	Geotextile	76	92	1	16	16	3259	-	-

C) Hydraulic Structure Double RCP culvert 84" ϕ

Item	Description	10 % Conceptual Design Elevation El. 12.5	100-yr Future Lift Elevation El. 16.0	# Items	Difference (ft)	Total Difference (ft)	Area (ft^2)	Volume (ft^3)	Volume (CY)
		Length (ft)	Length (ft)						
1	84" RC Pipes Culverts	122.5	168	2	45.5	91	-	-	-
2	Walkway	84.67	105.67	1	21	21	-	-	-
3	12" ϕ Steel Pile Pipes (0.375") - Pipes over concrete headwall	5.5	9	3	3.5	10.5	-	-	-
4	12" ϕ Steel Pile Pipes (0.375") - Piles parallel to culverts	60	63.5	3	-	190.5	-	-	-
5	Gravel (Bedding)	122.5	162	1	39.5	39.5	107.9	17481.42	647.46
6	Geotextile	122.5	162	1	39.5	39.5	11154	-	-

Gravel Quanitities calculations

1. Small Hydraulic Structure Single RCP culvert 60" ϕ



$$Area\ rectangle\ gravel = (6\ ft) * (10\ \text{ft}) = 60\ ft^2$$

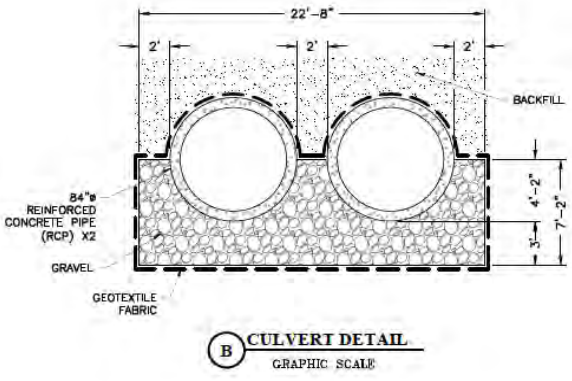
$$Area\ of\ semi\ circle = A = \pi r^2/2 = \pi * (3\ ft)^2 = 14.14 ft^2$$

$$Total\ Area\ of\ gravel = 60 ft^2 - 14.14 ft^2 = 46 ft^2$$

$$Total\ Volume\ of\ gravel = 46 ft^2 * (92 ft) = 4232 ft^3$$

$$Total\ Volume\ of\ gravel = \frac{4232 ft^3}{27} = 157\ CY$$

2.) Hydraulic Structure Double RCP culvert 84" ϕ



$$Total\ Area = (7.167 ft) * (22.67\ \text{ft}) = 162.45\ ft^2$$

$$Area\ of\ semi\ circle = A = 2 * \pi r^2/2 = \pi * (4.167\ ft)^2 = 54.54 ft^2$$

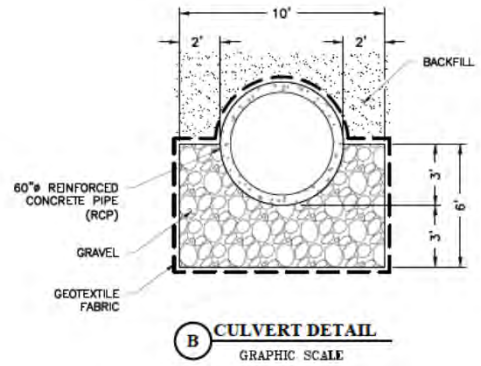
$$Total\ Area\ of\ gravel = 162.45 ft^2 - 54.54 ft^2 = 107.91 ft^2$$

$$Total\ Volume\ of\ gravel = 107.91 ft^2 * (162 ft) = 17481.42 ft^3$$

$$Total\ Volume\ of\ gravel = \frac{17481.42 ft^3}{27} = 648\ CY$$

Geotextile Quanitities calculations

1. Small Hydraulic Structure Single RCP culvert 60" ϕ

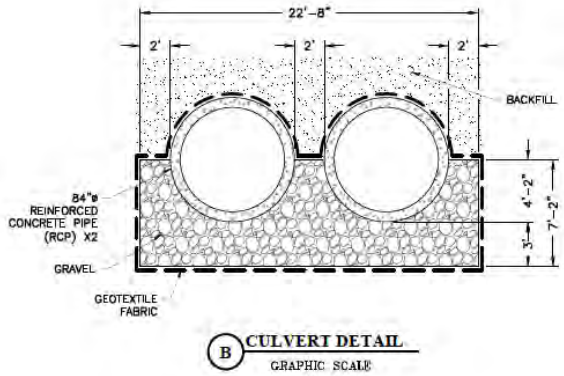


$$Length = (10ft) + 2(6\text{ ft}) + 2ft + 2ft + 2\pi\ (3\ ft)/2 = 35.42\ ft$$

$$Total\ Area\ of\ geotextile = 35.42ft * 92ft = 3259.08ft^2$$

$$Total\ Area\ of\ geotextile = \frac{3259.08ft^2}{9} = 362.12\ SY$$

2.) Hydraulic Structure Double RCP culvert 84" ϕ



$$Length = (22.67ft) + 2(7.0\text{ ft}) + 2ft + 2ft + 2ft + 2\pi\ (4.167\ ft) = 68.85\ ft$$

$$Total\ Area\ of\ geotextile = 68.85ft * 162ft = 11153.7ft^2$$

$$Total\ Area\ of\ geotextile = \frac{11153.7ft^2}{9} = 1239.3\ SY$$

1.) SLUICE GATE QUANTITIES - BAYOU DES ALLEMANDS 100 YR

A. CONCRETE

$t_{slab} := 8ft$ *Thickness of Base Slab*

$L_{slab} := 50ft$ *Length of Base Slab*

$t_{bw} := 36in$ *Thickness of Breast Wall*

$b_{opb} := 24in$ *Width of Operating Platform Beam*

$t_{opb} := 30in$ *Thickness of Operating Platform Beam*

$t_{pw} := 36in$ *Thickness of pier wall*

$No_{gates} := 6$ *Number of Sluice Gates*

$EL_{tslab} := -10ft$ *Top of Slab*

$h_{sg} := 15ft$ *Height of Sluice Gate*

$top_{FSpw} := 16ft$ *Top of Flood Side Pier Wall*

$top_{PSpw} := 12ft$ *Top of Protected Side Pier Wall*

$h_{FSpw} := top_{FSpw} - EL_{tslab} = 26 \cdot ft$ *Height of Flood Side Pier Wall*

$h_{PSpw} := top_{PSpw} - EL_{tslab} = 22 \cdot ft$ *Height of Protected Side Pier Wall*

$L_{FSpw} := 30ft$ *Length of Flood Side Pier Wall*

$L_{PSpw} := 20ft$ *Length of Protected Side Pier Wall*

$h_{bw} := \left(top_{FSpw} + t_{opb}\right) - \left(EL_{tslab} + h_{sg}\right) = 13.5 \cdot ft$ *Height of Breast Wall*

$Width_{slab} := No_{gates} \cdot 20ft + \left(No_{gates} + 2\right) \cdot t_{pw} = 144 \cdot ft$

$Volume_{slab} := Width_{slab} \cdot L_{slab} \cdot t_{slab} = 2.133 \times 10^{3} \cdot yd^{3}$

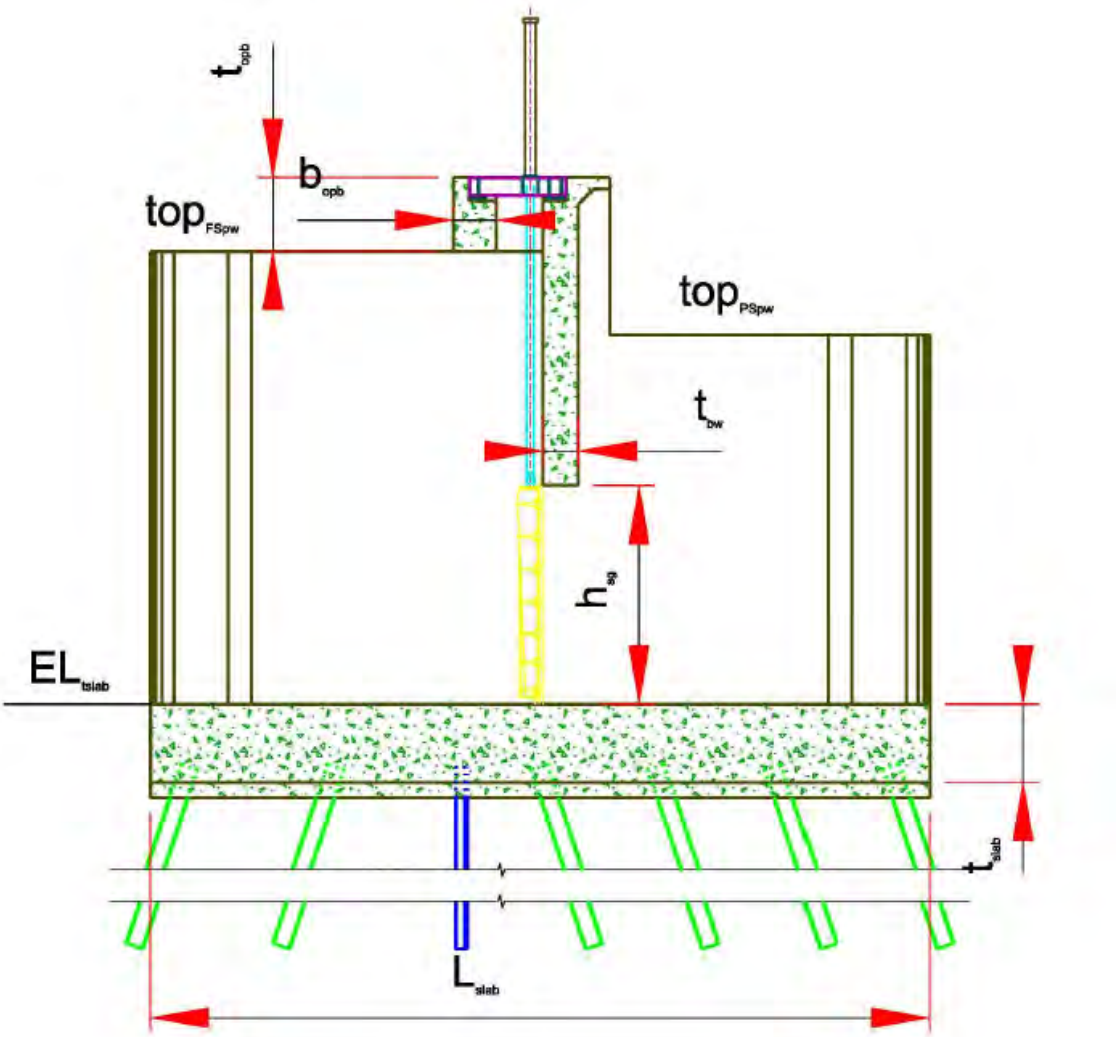
$Volume_{FSpw} := L_{FSpw} \cdot h_{FSpw} \cdot t_{pw} \cdot \left(No_{gates} + 2\right) = 693.333 \cdot yd^{3}$

$Volume_{PSpw} := L_{PSpw} \cdot h_{PSpw} \cdot t_{pw} \cdot \left(No_{gates} + 2\right) = 391.111 \cdot yd^{3}$

$Volume_{opb} := Width_{slab} \cdot b_{opb} \cdot t_{opb} = 26.667 \cdot yd^{3}$

$Volume_{bw} := t_{bw}\, h_{bw} \cdot No_{gates} \cdot 16ft = 144 \cdot yd^3$

$Volume_{walls} := Volume_{FSpw} + Volume_{PSpw} + Volume_{opb} + Volume_{bw} = 1.255 \times 10^3 \cdot yd^3$



B. STEEL PILES

$No_{pilerows} := 14$

$No_{pilecolumns} := 6$

$Cutoff_{pile} := -17.25ft$

$Tip_{pile} := -130ft$

$$Length_{pile} := \left[\left[\frac{\left(Tip_{pile} - Cutoff_{pile}\right)}{3}\right]^2 + \left(Tip_{pile} - Cutoff_{pile}\right)^2\right]^{.5} = 118.849 \cdot ft$$

$No_{piles} := No_{pilerows} \cdot No_{pilecolumns} = 84$

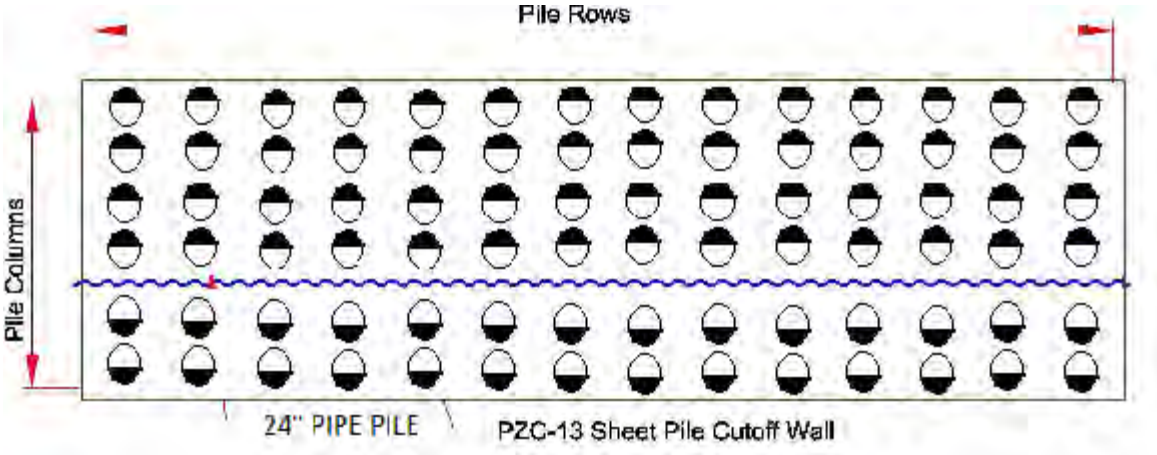
$TotLength_{pile} := Length_{pile} \cdot No_{piles} = 9.983 \times 10^3 \cdot ft$

C. STEEL SHEET PILE CUTOFF WALL

$Cutoff_{sheet} := -17.25ft$

$Tip_{sheet} := -100ft$

$Width_{sheets} := \left(Tip_{sheet} - Cutoff_{pile}\right) \cdot Width_{slab} = -1.192 \times 10^4 \cdot ft^2$



D. HANDRAIL

$L_{handrail} := Width_{slab} \cdot 2 = 288 \cdot ft$

$No_{posts} := \frac{L_{handrail}}{5ft} = 57.6$ *Assume 5' Spacing*

$\gamma_{al} := 165pcf$ *Unit Weight of Aluminum*

$A_{handrail} := 1.07in^2$ *Area of 2" STD Aluminum Pipe*

$Weight_{handrails} := \gamma_{al} \cdot A_{handrail} \cdot \left(L_{handrail} + No_{posts} \cdot 3.5ft\right) = 0.6\,kip$

E. BULKHEADS

$Width_{bulk} := 21ft$ *Width of Bulkhead*

$Height_{bulk} := top_{PSpw} - EL_{tslab} = 22 \cdot ft$ *Height of Bulkhead*

$t_{skinplate} := \frac{3}{8}in$ *Thickness of Skin Plate*

$\gamma_s := 490pcf$ *Unit Weight of Steel*

$WT_{skinplate} := \gamma_s \cdot Width_{bulk} \cdot Height_{bulk} \cdot t_{skinplate} = 7.074\,kip$

$No_{angles} := 10$ *Number of Angle Intercostals*

$WT_{angle} := 19.6\frac{lbf}{ft}$ *Weight of Angle L8X6X1/2*

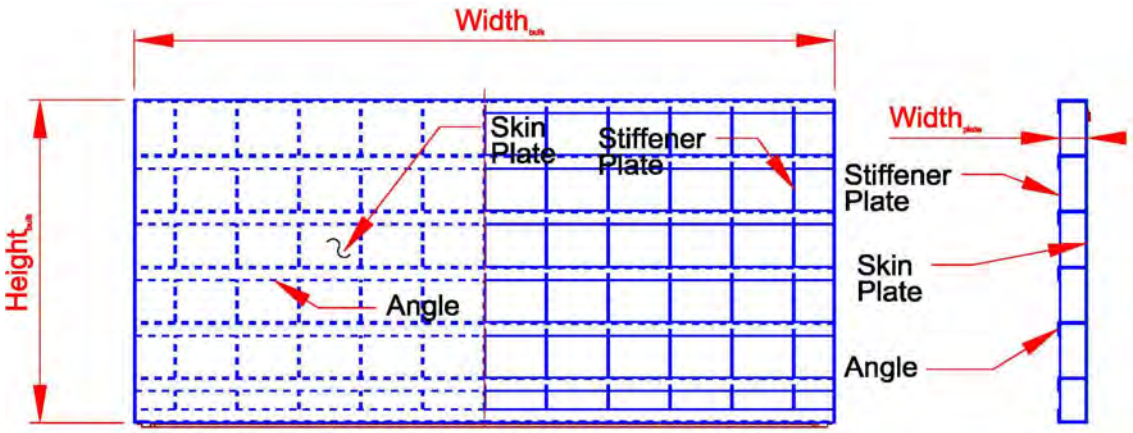
$WT_{int} := No_{angles} \cdot WT_{angle} \cdot Width_{bulk} = 4.116\,kip$

$t_{plate} := \frac{3}{8}in$ *Thickness of Stiffener Plate*

$Width_{plate} := 7.5in$ *Width of Stiffener Plate*

$WT_{stiffplate} := t_{plate} \cdot Width_{plate} \cdot Height_{bulk} \cdot 7 \cdot \gamma_s = 1.474\,kip$

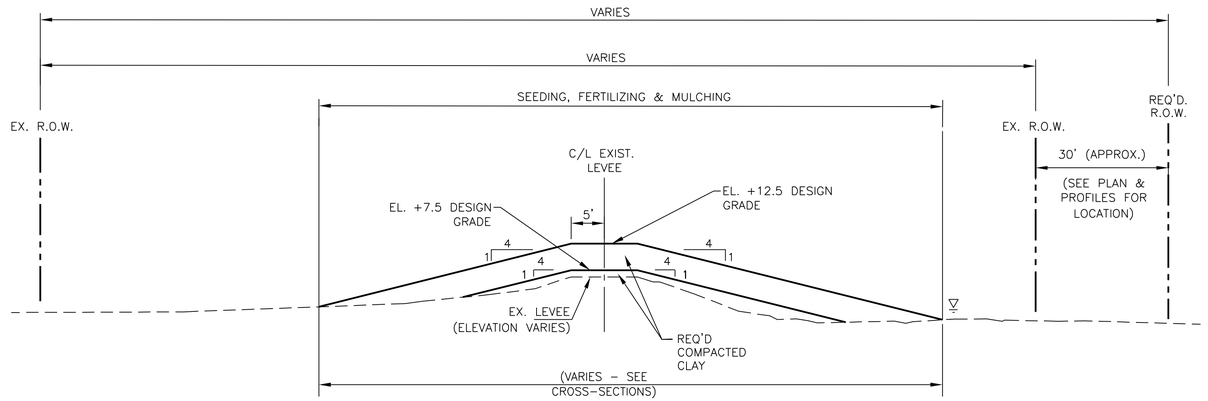
$WT_{bulkheads} := \left(WT_{skinplate} + WT_{int} + WT_{stiffplate}\right) \cdot 4 = 50.657\,kip$ *Weight of 4 Bulkheads*



US Army Corps of Engineers
New Orleans District

Upper Barataria Basin
Bayou Des Allemands
Lafourche Parish, Lousiana
Sluice Gate Quantity Take-Offs - 100 yr

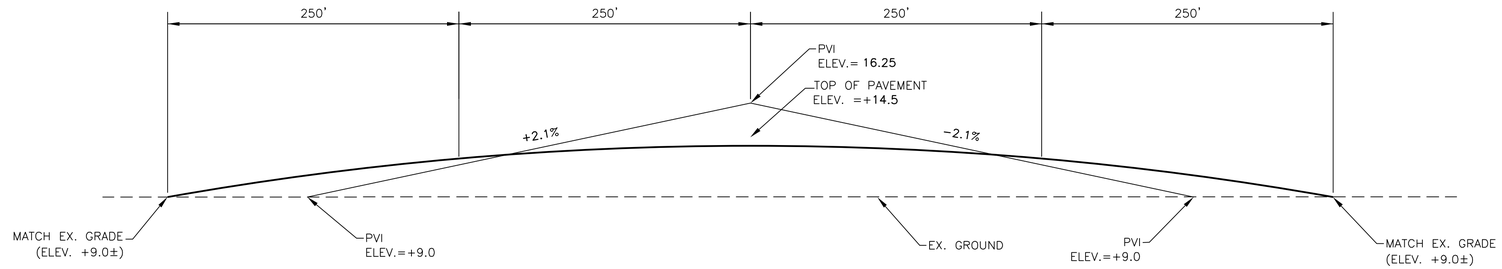
Des By: IBT 7/31/20
Chk By:



DAVIS DIVERSION LEVEE
TYPICAL SECTION

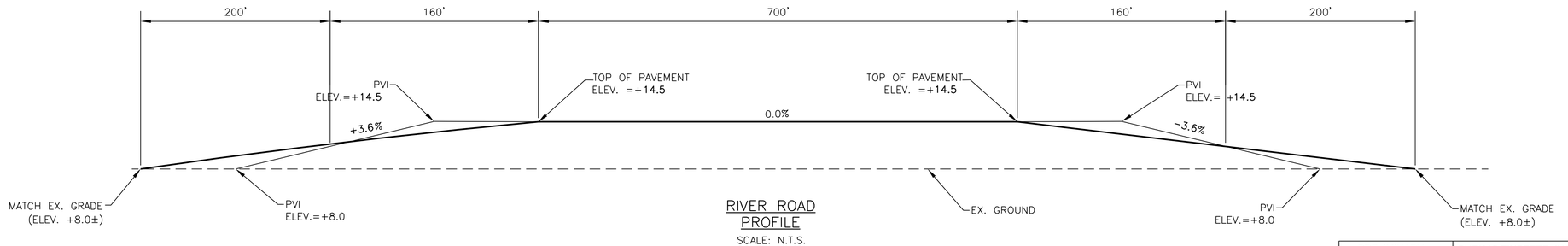
GRAPHIC SCALE (IN FEET)

10 0 5 10 20



HIGHWAY 90
PROFILE

SCALE: N.T.S.



RIVER ROAD
PROFILE

SCALE: N.T.S.

PRELIMINARY

NOT TO BE USED FOR CONSTRUCTION, BIDDING, RECORDATION, CONVEYANCE, SALES OR AS THE BASIS FOR THE ISSUANCE OF A PERMIT.

BURK-KLEINPETER, INC.

ENGINEER: Mark K. Roberts, P.E.
LA. LICENSE #: 28568
DATE: OCTOBER, 2018

SHEET IDENTIFICATION
1 OF 28

LA BASIN LEVEE DISTRICT

LAFOURCHE BASIN LEVEE DISTRICT
TS.8.

DESIGNED BY: XXX
DWN BY: DJM
CKD BY: MKR
SUBMITTED BY: MKR
PLOT SCALE: 1:1
PLOT DATE: OCT 2018
SIZE: 22"x34"
FILE NAME:
DATE: OCT. 2018
BKK JOB # NO.18.001

BURK KLEINPETER, INC.
4176 CANAL ST.,
NEW ORLEANS, LA, 70119
(504) 488-3901

UPPER BARATARIA RISK REDUCTION
CPRA PROJECT 002.HP.06
SEGMENT 1
SEGMENT 1-A
TYPICAL SECTIONS
(DAVIS POND WEST GUIDE LEVEE. RIVER RD. & HWY 90 CROSSING)

SHEET IDENTIFICATION
1 OF 28

US Army Corps of Engineers®
NEW ORLEANS DISTRICT

MARK	DESCRIPTION	DATE	APPR.

MARK	DESCRIPTION	DATE	APPR.

MARK	DESCRIPTION	DATE APPR.

MARK	DESCRIPTION	DATE APPR.

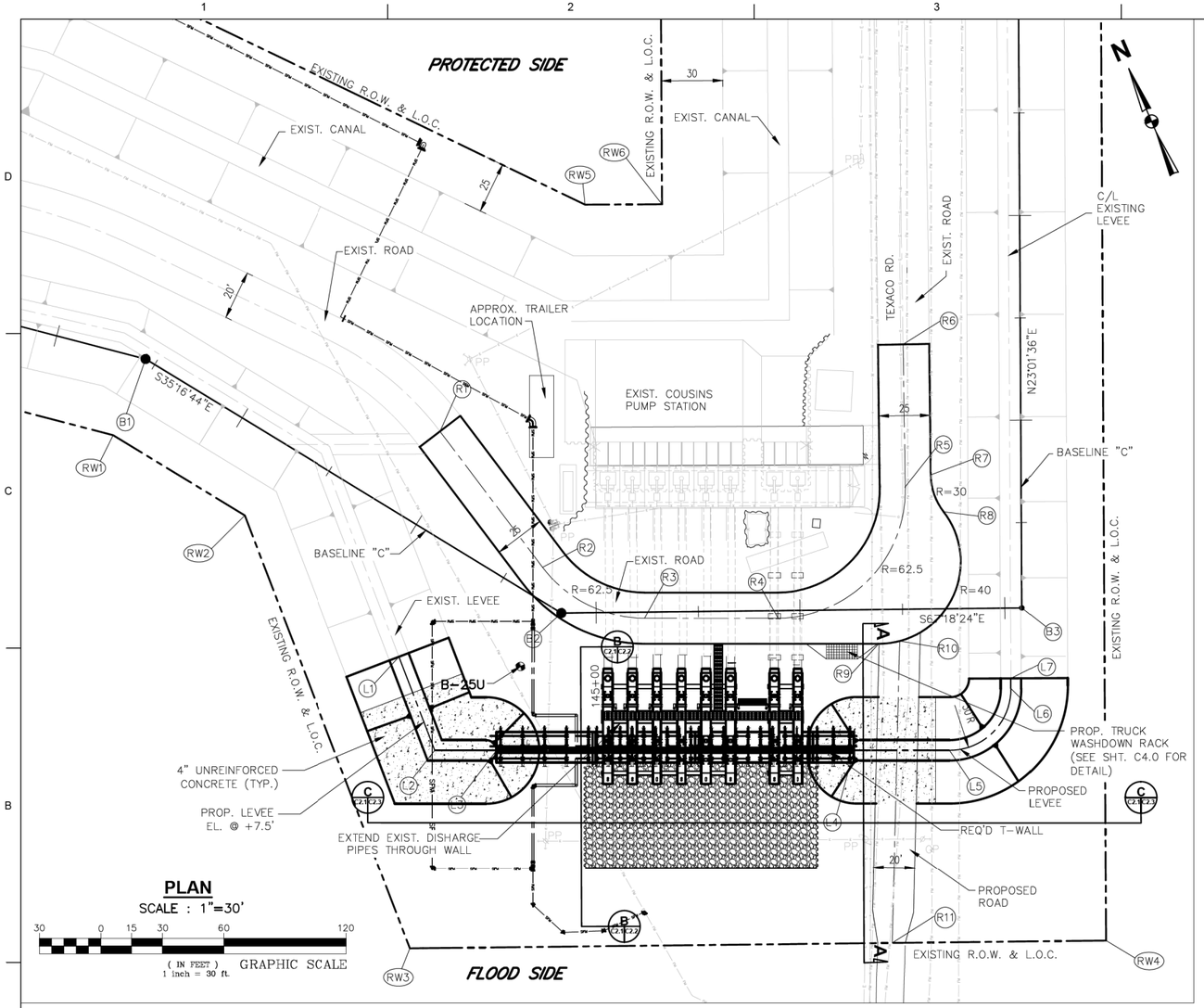
U.S. ARMY CORPS OF ENGINEERS
NEW ORLEANS DISTRICT
NEW ORLEANS, LOUISIANA

DESIGNED BY: XXX
DWN BY: DJM
CKD BY: XX
SUBMITTED BY: XXXX
PLOT SCALE:
PLOT DATE:
SIZE: ANSI D
FILE NAME: Architectural_Sheet_Seed2d.dgn

DATE: XXX
SOLICITATION NO.: X
CONTRACT NO.: X
FILE NUMBER: FMA0XXX

UPPER BARATARIA BASIN
LOUISIANA FEASIBILITY STUDY
-
LAFOURCHE AND ST. CHARLES PARISH, LA
SEGMENT 1-A
TYPICAL SECTIONS
(DAVIS POND WEST GUIDE LEVEE. RIVER RD. & HWY 90 CROSSING)

SHEET IDENTIFICATION
1 of 28



PLAN
SCALE : 1"=30'

NOTE: CONTRACTOR IS TO SEED, FERTILIZE AND MULCH ALL AREAS DISTURBED BY HIS OPERATIONS DURING CONSTRUCTION.

RIGHT OF WAY CONTROL POINTS

POINT	EASTING	NORTHING
RW1	3589907.11	507109.21
RW2	3589950.56	507047.80
RW3	3589940.98	506821.24
RW4	3590254.82	506689.99
RW5	3590163.63	507121.28
RW6	3590198.26	507106.56

BASELINE CONTROL POINTS

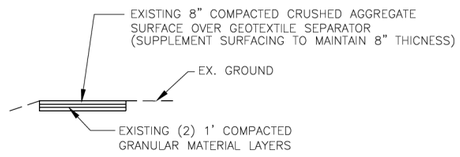
POINT	EASTING	NORTHING
B1	3589936.37	507137.12
B2	3590073.98	506942.61
B3	3590281.79	506855.71

LEVEE C/L CONTROL POINTS

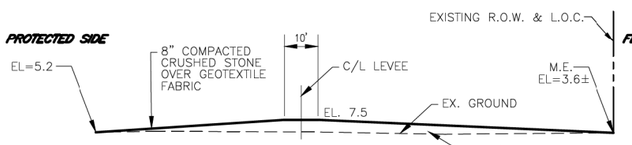
POINT	EASTING	NORTHING
L1	3589992.65	506954.45
L2	3589990.58	506905.55
L3	3590018.31	506893.59
L4	3590179.00	506824.28
L5	3590221.84	506805.81
L6	3590261.33	506821.62
L7	3590263.28	506826.21

ROAD CONTROL POINTS

POINT	EASTING	NORTHING
R1	3590054.67	507047.60
R2	3590074.40	506966.78
R3	3590110.36	506924.21
R4	3590170.22	506898.39
R5	3590252.9	506932.32
R6	3590279.57	506996.89
R7	3590266.73	506932.98
R8	3590265.35	506913.96
R9	3590210.77	506867.29
R10	3590220.64	506864.46
R11	3590158.80	506730.15



EXISTING ROAD SECTION
SCALE: N.T.S.



SECTION A-A
SCALE: N.T.S.

NOTE :
ALL ELEVATIONS REFERENCE NAVD88 (2004.65)

70% FINAL PLANS

PRELIMINARY	*BURK-KLEINPETER, INC.*
FOR REVIEW ONLY	*ENGINEER: HENRY M. PICARD III, P.E.* *LA. LICENSE #: 22289* *DATE: June 2020*

SHEET IDENTIFICATION
C2.1 OF 10

PARISH OF ST. CHARLES
ST. CHARLES PARISH, LOUISIANA

BURK KLEINPETER, INC.
4176 CANAL ST.
NEW ORLEANS, LA 70119
(504) 486-5261

ELLINGTON LEVEE STRUCTURES-COUSINS PS T-WALL
ST. CHARLES PARISH PROJECT NO. P080605-SH
STATE PROJECT NUMBER H.000XXX
ENLARGED PUMP STATION SITE PLAN

MARK	DESCRIPTION	DATE	APPR.
3	90% SUBMITTAL	03-06-2015	
2	60% SUBMITTAL	10-31-2014	
1	CONCEPTUAL DESIGN	07-17-2014	

DESIGNED BY: SLB
DWN BY: JPC
CKD BY: M.K.R.
SUBMITTED BY: M.K.R.
DATE: MARCH 2015
BKI JOB # 10475-0340
PLOT SCALE: 1:1
PLOT DATE: MARCH 2015
SIZE: 22"X34"
FILE NAME:

US Army Corps of Engineers
NEW ORLEANS DISTRICT

MARK	DESCRIPTION	DATE	APPR.

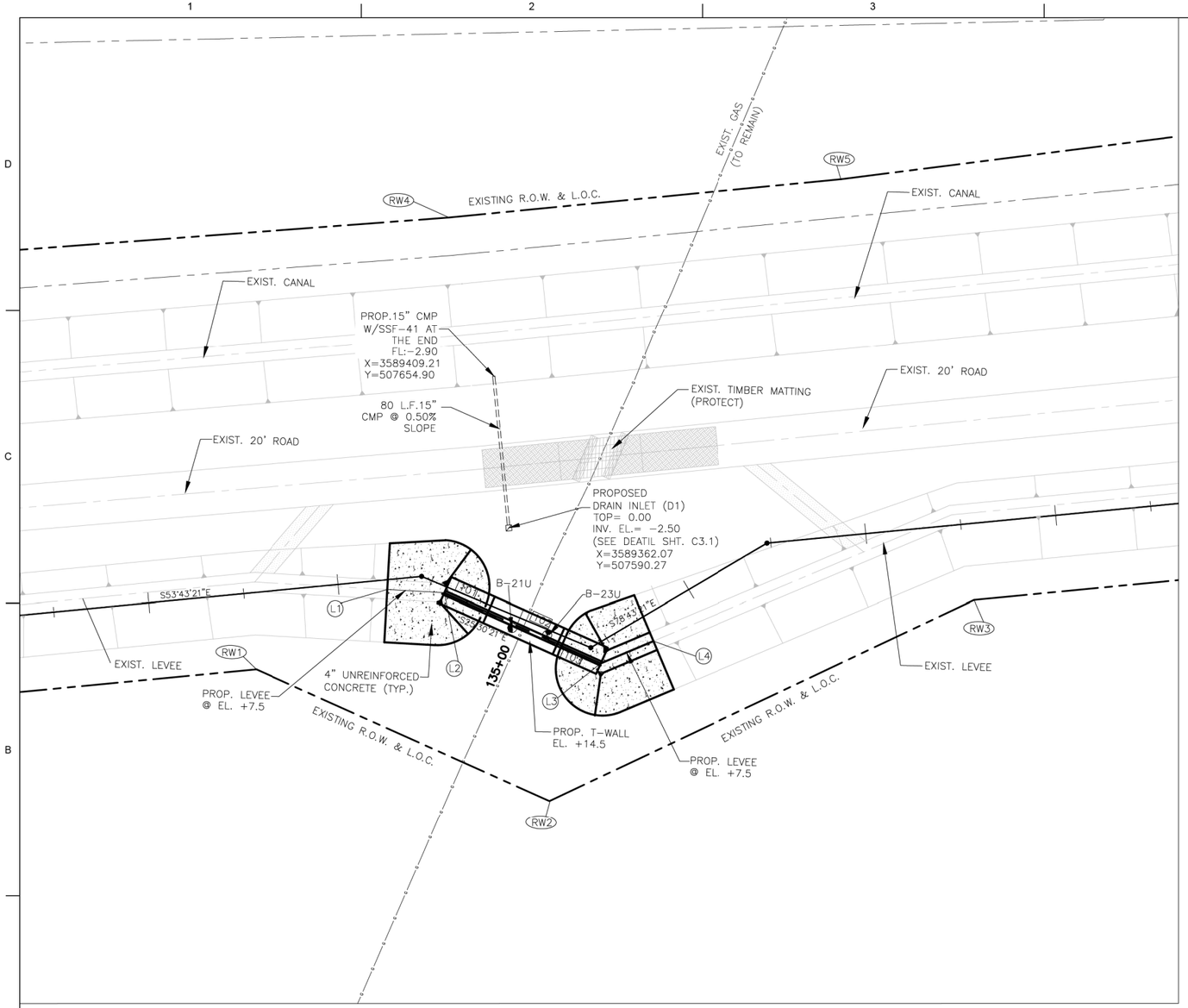
DESIGNED BY: XXX
DWN BY: DJM
CKD BY: XX
SUBMITTED BY: XXXX
DATE: XXX
SOLICITATION NO.: X
CONTRACT NO.: X
PLOT SCALE: 1:1
PLOT DATE: XX
FILE NUMBER: H44644
SIZE: ANSI D
FILE NAME: H44644_C-101.dgn

U.S. ARMY CORPS OF ENGINEERS
NEW ORLEANS DISTRICT
NEW ORLEANS, LOUISIANA

UPPER BARATARIA BASIN
LOUISIANA FEASIBILITY STUDY
-
LAFOURCHE AND ST. CHARLES PARISH, LA

COUSINS ENLARGED PUMP STATION
SITE PLAN

SHEET IDENTIFICATION
C-101



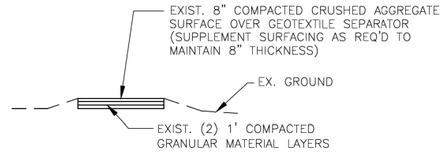
NOTE: CONTRACTOR IS TO SEED, FERTILIZE AND MULCH ALL AREAS DISTURBED BY HIS OPERATIONS UPON COMPLETION OF CONSTRUCTION.

RIGHT OF WAY CONTROL POINTS

POINT	EASTING	NORTHING
RW1	3589213.76	507623.56
RW2	3589282.62	507469.35
RW3	3589519.18	507399.39
RW4	3589447.37	507732.89
RW5	3589614.33	507610.73

LEVEE C/L CONTROL POINTS

POINT	EASTING	NORTHING
L1	3589292.98	507608.70
L2	3589314.19	507587.48
L3	3589350.89	507505.30
L4	3589379.27	507495.58



EXIST. ROAD SECTION

SCALE: N.T.S.

30 0 15 30 60 120

(IN FEET) 1 inch = 30 ft. GRAPHIC SCALE

NOTE :
ALL ELEVATIONS REFERENCE NAVD88 (2004.65)

70% FINAL PLANS

PRELIMINARY	*BURK-KLEINPETER, INC.*
FOR REVIEW ONLY	*ENGINEER: HENRY M. PICARD III, P.E.* *LA. LICENSE #: 22289* *DATE: June 2020*

PARISH OF ST. CHARLES
ST. CHARLES PARISH, LOUISIANA

DESIGNED BY: XXX
DRWN BY: JPC
SUBMITTED BY: XXXX
PLOT SCALE: 1:1
SIZE: 22"x34"
DATE: FEB. 2019
FILE NAME:

BURK KLEINPETER, INC.
4176 CANAL ST.
NEW ORLEANS, LA 70119
(504) 486-6601

ELLINGTON LEVEE STRUCTURE
EAST GAS PIPELINE #2 T-WALL
ST. CHARLES PARISH PROJECT NO. P2009005-5G
STATE PROJECT NUMBER H.000XX
ENLARGED PUMP STATION SITE PLAN

SHEET IDENTIFICATION
C2.1 OF 8

US Army Corps of Engineers
NEW ORLEANS DISTRICT

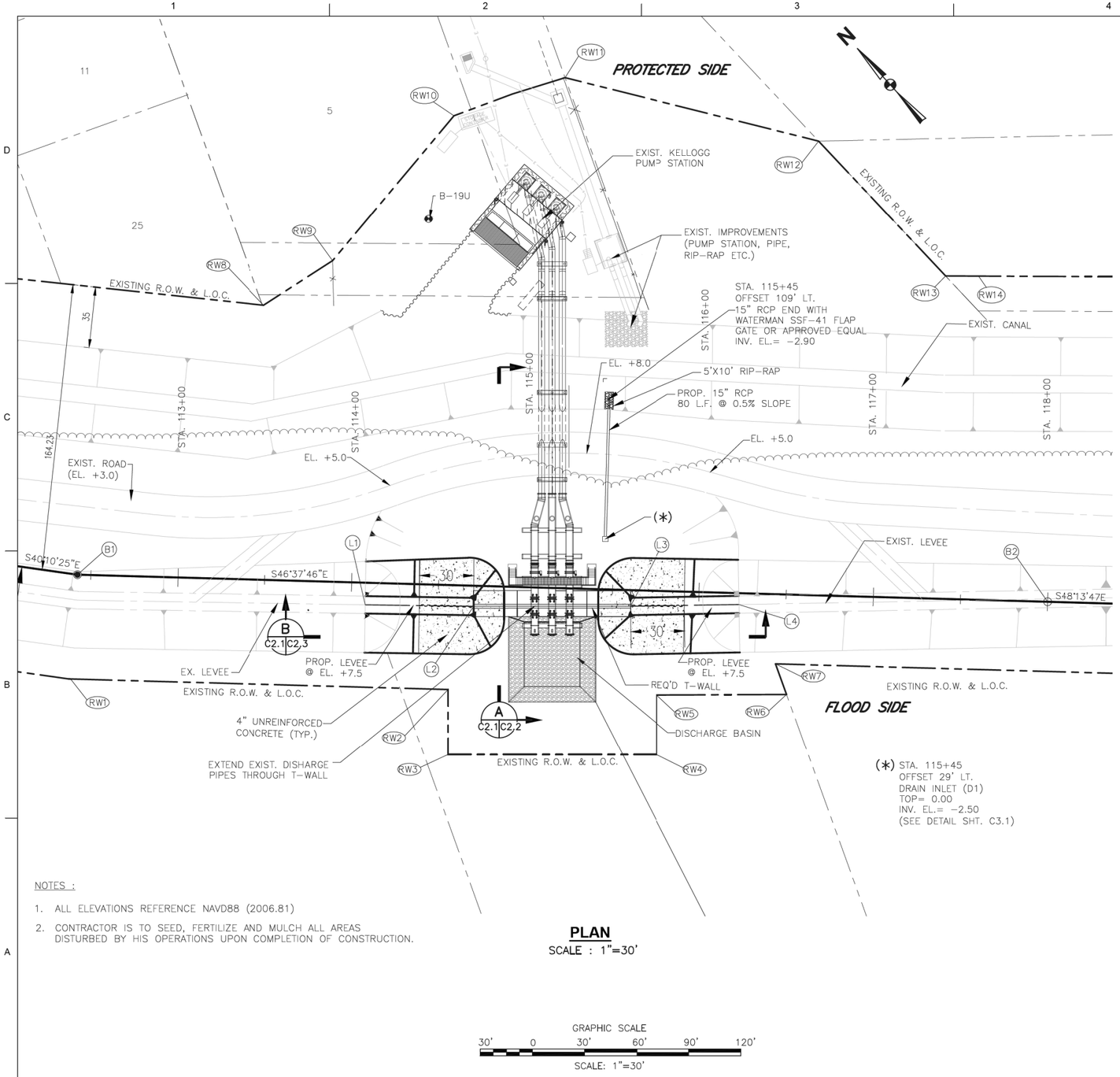
U.S. ARMY CORPS OF ENGINEERS
NEW ORLEANS DISTRICT
NEW ORLEANS, LOUISIANA

DESIGNED BY: XXX
DRWN BY: DJM
SUBMITTED BY: XXXX
PLOT SCALE: 1:1
SIZE: ANSI D
DATE: XXX
CHKD BY: XX
PLOT DATE: FEB. 2019
FILE NAME: H468444_C-102.dgn
SOLICITATION NO.: X
CONTRACT NO.: X
FILE NUMBER: H468XXX

UPPER BARATARIA BASIN
LOUISIANA FEASIBILITY STUDY
-
LAFOURCHE AND ST. CHARLES PARISH, LA

EAST GAS PIPELINE #2
ENLARGED PUMP STATION SITE PLAN

SHEET IDENTIFICATION
C-102



NOTES :

1. ALL ELEVATIONS REFERENCE NAVD88 (2006.81)
2. CONTRACTOR IS TO SEED, FERTILIZE AND MULCH ALL AREAS DISTURBED BY HIS OPERATIONS UPON COMPLETION OF CONSTRUCTION.

PLAN

SCALE : 1"=30'

GRAPHIC SCALE

30' 0 30' 60' 90' 120'

SCALE: 1"=30'

RIGHT OF WAY CONTROL POINTS

POINT	EASTING	NORTHING
RW1	3587625.07	509023.51
RW2	3587782.86	508874.45
RW3	3587757.81	508846.39
RW4	3587847.30	508766.45
RW5	3587870.29	508792.14
RW6	3587926.16	508742.63
RW7	3587930.13	508752.47

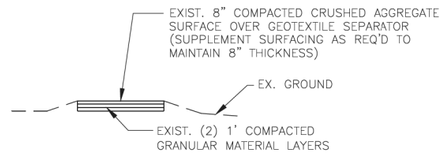
POINT	EASTING	NORTHING
RW8	3587850.77	509109.67
RW9	3587897.50	509102.39
RW10	3588005.14	509118.18
RW11	3588067.33	509092.00
RW12	3588151.81	508967.63
RW13	3588154.35	508861.14
RW14	3588168.39	508848.49

BASELINE CONTROL POINTS

POINT	EASTING	NORTHING
B1	3587667.91	509065.58
B2	3588073.32	508682.59

LEVEE C/L CONTROL POINTS

POINT	EASTING	NORTHING
L1	3587779.79	508942.44
L2	3587818.38	508906.84
L3	3587900.45	508833.61
L4	3587940.24	508799.35



EXIST. ROAD SECTION

SCALE: N.T.S.

70% FINAL PLANS

PRELIMINARY

FOR REVIEW ONLY

BURK-KLEINPETER, INC.

ENGINEER: HENRY M. PICARD III, P.E.
LA. LICENSE #: 22289
DATE: June 2020

SHEET IDENTIFICATION
C2.1 OF 11

PARISH OF ST. CHARLES
ST. CHARLES PARISH, LOUISIANA

BURK KLEINPETER, INC.
4176 CANAL ST.
NEW ORLEANS, LA 70119
(504) 486-5601

DESIGNED BY: BK
DWN BY: C.B.
CKD BY: H.M.P.
SUBMITTED BY: H.M.P.
PLOT SCALE: 1:1
PLOT DATE: FEB. 2020
SIZE: 22"X 34"
FILE NAME: C2.1 ENLARGED SITE PLAN.DWG
DATE: FEBRUARY 2020
BK/JOB # 5419

MARK	DESCRIPTION	DATE	APPR.
-	90% SUBMITTAL	03/06/2015	BK

ELLINGTON LEVEE STRUCTURE
KELLOGG PUMP STATION T-WALL
ST. CHARLES PARISH PROJECT NO. 0000905-SF
STATE PROJECT NUMBER H.000XXX

ENLARGED PUMP STATION SITE PLAN

US Army Corps of Engineers
NEW ORLEANS DISTRICT

MARK	DESCRIPTION	DATE	APPR.

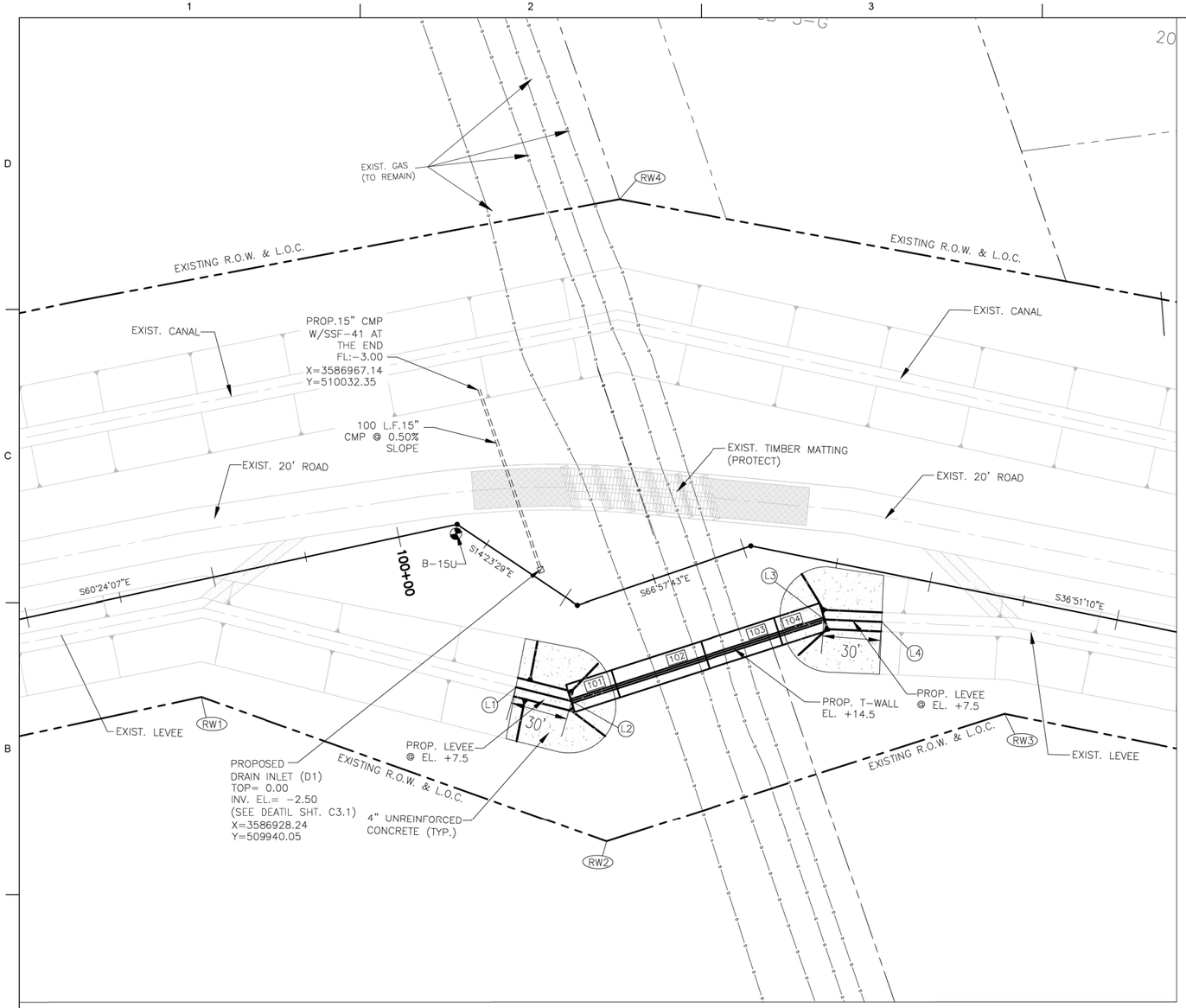
DESIGNED BY: XXX
DWN BY: DJM
CKD BY: XX
SUBMITTED BY: XXXX
PLOT SCALE:
SIZE: ANSI D
DATE: XXX
SOLICITATION NO.: X
CONTRACT NO.: X
PLOT DATE:
FILE NUMBER: H468444
FILE NAME: H468444_C-103.dgn

U.S. ARMY CORPS OF ENGINEERS
NEW ORLEANS DISTRICT
NEW ORLEANS, LOUISIANA

UPPER BARATARIA BASIN
LOUISIANA FEASIBILITY STUDY
-
LAFOURCHE AND ST. CHARLES PARISH, LA

KELLOGG PUMP STATION T-WALL
ENLARGED PUMP STATION SITE PLAN

SHEET IDENTIFICATION
C-103



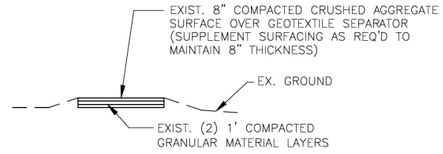
NOTE: CONTRACTOR IS TO SEED, FERTILIZE AND MULCH ALL AREAS DISTURBED BY HIS OPERATIONS UPON COMPLETION OF CONSTRUCTION.

RIGHT OF WAY CONTROL POINTS

POINT	EASTING	NORTHING
RW1	3586750.64	510009.45
RW2	3586859.00	509810.64
RW3	3587059.86	509721.39
RW4	3587088.91	510057.76

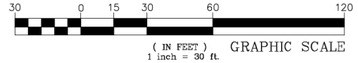
LEVEE C/L CONTROL POINTS

POINT	EASTING	NORTHING
L1	3586877.64	509902.96
L2	3586894.45	509878.11
L3	3587022.44	509821.24
L4	3587043.95	509800.33



EXIST. ROAD SECTION

SCALE: N.T.S.



NOTE :
ALL ELEVATIONS REFERENCE
NAVD88 (2004.65)

70% FINAL PLANS

PRELIMINARY	*BURK-KLEINPETER, INC.*
FOR REVIEW ONLY	*ENGINEER: HENRY M. PICARD III, P.E.* *LA. LICENSE #: 22289* *DATE: June 2020*

PARISH OF ST. CHARLES
ST. CHARLES PARISH, LOUISIANA

BURK KLEINPETER, INC.
4176 CANAL ST.
NEW ORLEANS, LA. 70119
(504) 482-3961

DESIGNED BY: XXX
DRAWN BY: JJP.C.
SUBMITTED BY: M.K.R.
PLOT SCALE: 1:1
SIZE: 22"x34"
CKD. BY: M.K.R.
PLOT DATE: FEB. 2019
FILE NAME:
DATE: FEBRUARY 2016
BKI JOB # 10475-0320

MARK	DESCRIPTION	DATE	APPR.

ELLINGTON LEVEE STRUCTURE
WEST GAS PIPELINE #1 T-WALL
ST. CHARLES PARISH PROJECT NO. P060905-5E
STATE PROJECT NUMBER: H.000001.1
ENLARGED PUMP STATION SITE PLAN

SHEET IDENTIFICATION
C2.1 OF 8

US Army Corps of Engineers
NEW ORLEANS DISTRICT

MARK	DESCRIPTION	DATE	APPR.

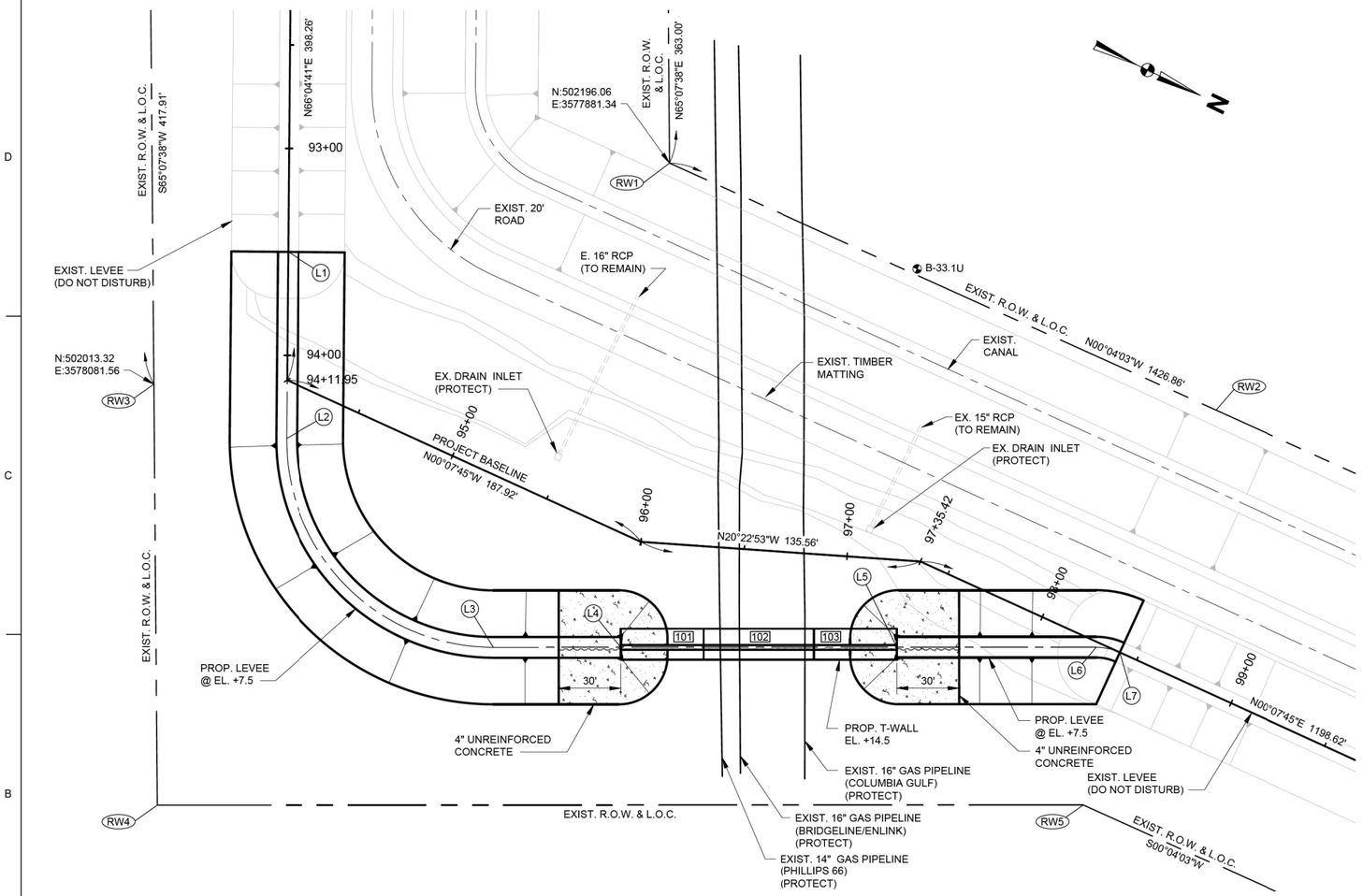
U.S. ARMY CORPS OF ENGINEERS
NEW ORLEANS DISTRICT
NEW ORLEANS, LOUISIANA

DESIGNED BY: XXX
DRAWN BY: DJM
SUBMITTED BY: XXXX
PLOT SCALE: XXX
SIZE: ANSI D
CKD BY: XX
PLOT DATE: XX-XX-XX
FILE NAME: H45644_C-104.dgn
DATE: XXX
SOLICITATION NO.: X
CONTRACT NO.: X
FILE NUMBER: H45XXX

UPPER BARATARIA BASIN
LOUISIANA FEASIBILITY STUDY
-
LAFOURCHE AND ST. CHARLES PARISH, LA

WEST PIPE LINE #1 T-WALL
ENLARGED PUMP STATION SITE PLAN

SHEET IDENTIFICATION
C-104

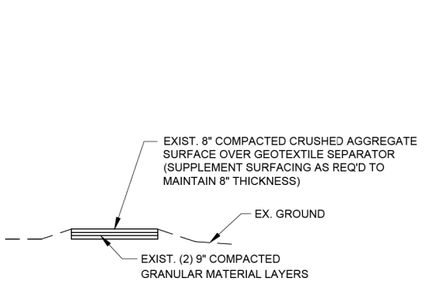


RIGHT OF WAY CONTROL POINTS

POINT	EASTING	NORTHING
RW1	3577881.34	502196.06
RW2	3577881.00	502485.59
RW3	3578081.56	502013.32
RW4	3578265.90	502098.78
RW5	3578080.98	502506.10

LEVEE C/L CONTROL POINTS

POINT	EASTING	NORTHING
L1	3577996.56	502045.95
L2	3578078.93	502082.48
L3	3578129.43	502215.23
L4	3578103.98	502271.29
L5	3578048.80	502392.85
L6	3578009.11	502480.27
L7	3578006.64	502491.70



EXISTING ROAD SECTION
N.T.S.

NOTE:

CONTRACTOR IS TO SEED, FERTILIZE AND MULCH ALL AREAS DISTURBED BY HIS OPERATIONS UPON COMPLETION OF CONSTRUCTION.

PLAN
SCALE : 1"=30'

30 0 15 30 60 120
(IN FEET)
1 inch = 30 ft.
GRAPHIC SCALE

70% FINAL PLANS

PRELIMINARY	*BURK-KLEINPETER, INC.*
FOR REVIEW ONLY	*ENGINEER: HENRY M. PICARD III, P.E.* *LA. LICENSE #: 22289* *DATE: June 2020*

US Army Corps of Engineers
NEW ORLEANS DISTRICT

ST. CHARLES PARISH LOUISIANA

MARK	DESCRIPTION	DATE	APPR.

DESIGNED BY: BK
DWN BY: J.P.C.
CKD BY: M.K.K.
SUBMITTED BY: M.K.K.
DATE: MAY 2018
BKI JOB # 19475-0130
PLOT SCALE: 1:1
PLOT DATE: 6/3/20
SIZE: 22"X34"
FILE NAME:

PARISH OF ST. CHARLES
ST. CHARLES PARISH, LOUISIANA

BURK KLEINPETER, INC.
4176 CANAL ST.
NEW ORLEANS, LA 70119
(504) 482-0301

MAGNOLIA RIDGE PIPE LINE T-WALL
ST. CHARLES PARISH PROJECT NO. P068905-6D
STATE PROJECT NUMBER XX-XX

CIVIL SITE PLAN

SHEET IDENTIFICATION
C2.0 OF X

DESIGNED BY:	DATE:
XXX	XXX
DWN BY: DJM	CKD BY: XX
SUBMITTED BY: XXXX	SOLICITATION NO.: X
	CONTRACT NO.: X
PLOT SCALE: 1:1	PLOT DATE: XX
SIZE: ANSI D	FILE NUMBER: H4454XX
	FILE NAME: H4454_C-105.dgn

U.S. ARMY CORPS OF ENGINEERS
NEW ORLEANS DISTRICT
NEW ORLEANS, LOUISIANA

UPPER BARATARIA BASIN
LOUISIANA FEASIBILITY STUDY
-
LAFOURCHE AND ST. CHARLES PARISH, LA

MAGNOLIA RIDGE PIPE LINE #1 T-WALL
ENLARGED PUMP STATION SITE PLAN

SHEET IDENTIFICATION
C-105

FSCPT-1
N:478364.71
E:3553561.70
LAT:N029°48'45.33"
LONG:W090°28'24.06"

CLCPT-1
LAT:N029°48'44.57"
LONG:W090°28'21.02"

WB-1 (PS1)
N:477950.37
E:3553834.69
LAT:N029°48'41.21"
LONG:W090°28'20.99"

B-6 (GSET)
N:475520.42
E:3554591.61
LAT:N029°48'17.10"
LONG:W090°28'12.61"

B-5 (GSET)
N:473266.97
E:3553146.91
LAT:N029°47'54.90"
LONG:W090°28'29.20"

B-8 (GSET)
N:473266.80
E:3554468.50
LAT:N029°47'54.80"
LONG:W090°28'14.20"

B-4 (GSET)
N:468389.72
E:3548368.72
LAT:N029°47'06.97"
LONG:W090°29'23.84"

B-3 (GSET)
N:461298.37
E:3543889.31
LAT:N029°45'57.13"
LONG:W090°30'20.93"

B-7 (GSET)
N:452250.17
E:3535708.37
LAT:N029°44'28.10"
LONG:W090°31'48.80"

B-2 (GSET)
N:450189.45
E:3531350.03
LAT:N029°44'08.00"
LONG:W090°32'38.40"

B-1 (GSET)
N:440208.26
E:3526797.89
LAT:N029°42'29.50"
LONG:W090°33'30.80"

N

BORING LOCATION PLAN

2000 0 1000 2000 4000
(IN FEET)

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PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION, BIDDING, RECORDATION, CONVEYANCE, SALES OR AS THE BASIS FOR THE ISSUANCE OF A PERMIT.

GIS ENGINEERING, LLC

ENGINEER: Kyle Joseph Galloway, P.E.
LA. LICENSE #: 0040317
DATE: AUGUST, 2018

THIS DRAWING HAS BEEN REDUCED TO ONE HALF SIZE.

LAFOURCHE BASIN LEVEE DISTRICT

GIS ENGINEERING LLC
Consulting Engineers & Geoscientists
117 Flavin Drive
Houma, LA 70360
985-414-2280

DESIGNED BY: K.J.G.	DATE: OCT., 2018
DWN BY: M.K., J.S.	CKD BY: K.J.G.
SUBMITTED BY: K.J.G.	
PLOT SCALE: 1:1	PLOT DATE: October 12, 2018
SIZE: 22"x34"	FILE NAME: BORING LOCATION PLAN.dwg

UPPER BARATARIA RISK REDUCTION
CPRA PROJECT NO.: 002.HP.06
SEGMENT 3

BORING LOCATION PLAN

SHEET IDENTIFICATION
C200

US Army Corps of Engineers®
NEW ORLEANS DISTRICT

MARK	DESCRIPTION	DATE	APPR.

MARK	DESCRIPTION	DATE	APPR.

MARK	DESCRIPTION	DATE	APPR.

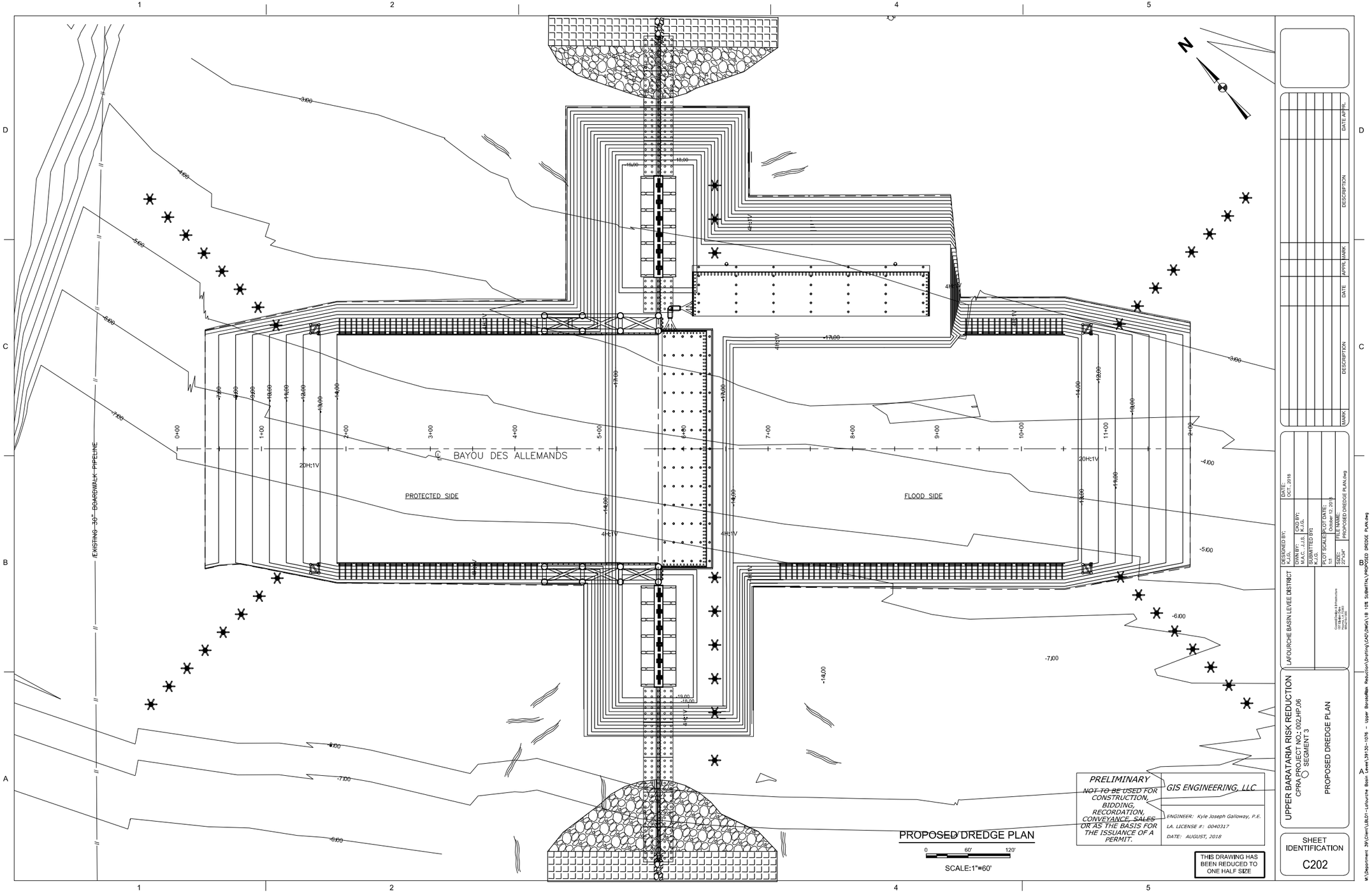
U.S. ARMY CORPS OF ENGINEERS
NEW ORLEANS DISTRICT
NEW ORLEANS, LOUISIANA

DESIGNED BY: XXX		DATE: XXX	
DWN BY: DJM	CKD BY: XX	SOLICITATION NO.: X	
SUBMITTED BY: XXXX		CONTRACT NO.: X	
PLOT SCALE: ANSI D	PLOT DATE: XX	FILE NUMBER: HHXXXX	
SIZE: ANSI D	FILE NAME: Architectural_Sheet_Seed2d.dgn		

UPPER BARATARIA BASIN
LOUISIANA FEASIBILITY STUDY
-
LAFOURCHE AND ST. CHARLES PARISH, LA

SHEET IDENTIFICATION
C200

M:\Department 39\Client\LBLD1-Lafourche Basin Levee\39193-1076 - Upper Barataria Risk Reduction\Drafting\CAD\DWGs\1B 10$ SUBMITTAL\BORING LOCATION PLAN.dwg



PROPOSED DREDGE PLAN

0 60' 120'

SCALE:1"=60'

PRELIMINARY

NOT TO BE USED FOR CONSTRUCTION, BIDDING, RECORDATION, CONVEYANCE, SALES OR AS THE BASIS FOR THE ISSUANCE OF A PERMIT.

GIS ENGINEERING, LLC

ENGINEER: Kyle Joseph Galloway, P.E.

LA. LICENSE #: 0040317

DATE: AUGUST, 2018

THIS DRAWING HAS BEEN REDUCED TO ONE HALF SIZE

SHEET IDENTIFICATION C202

M:\Department 39\Client\LBL01-Lafourche Basin Levee\39130-1076 - Upper Barataria Risk Reduction\Drafting\CAD\Dwgs\LB 105 SUBMITTAL\PROPOSED DREDGE PLAN.dwg

US Army Corps of Engineers
NEW ORLEANS DISTRICT

MARK	DESCRIPTION	DATE	APPR.
MARK	DESCRIPTION	DATE APPR.	
MARK	DESCRIPTION	DATE	APPR.
MARK	DESCRIPTION	DATE	APPR.

DESIGNED BY: KJG
DWN BY: MJC, TJB, KJG
CKD BY: KJG
SUBMITTED BY: KJG
PLOT SCALE: 1=1
PLOT DATE: October 12, 2018
FILE NUMBER: PROPOSED DREDGE PLAN.dwg
SIZE: 22"x34"

DATE: OCT., 2018

LAFOURCHE BASIN LEVEE DISTRICT

Coastal Data Information Program (CDIP) Wave Station 036 Grand Isle, Louisiana

UPPER BARATARIA RISK REDUCTION
CPRA PROJECT NO.: 002,HP.06
SEGMENT 3
PROPOSED DREDGE PLAN

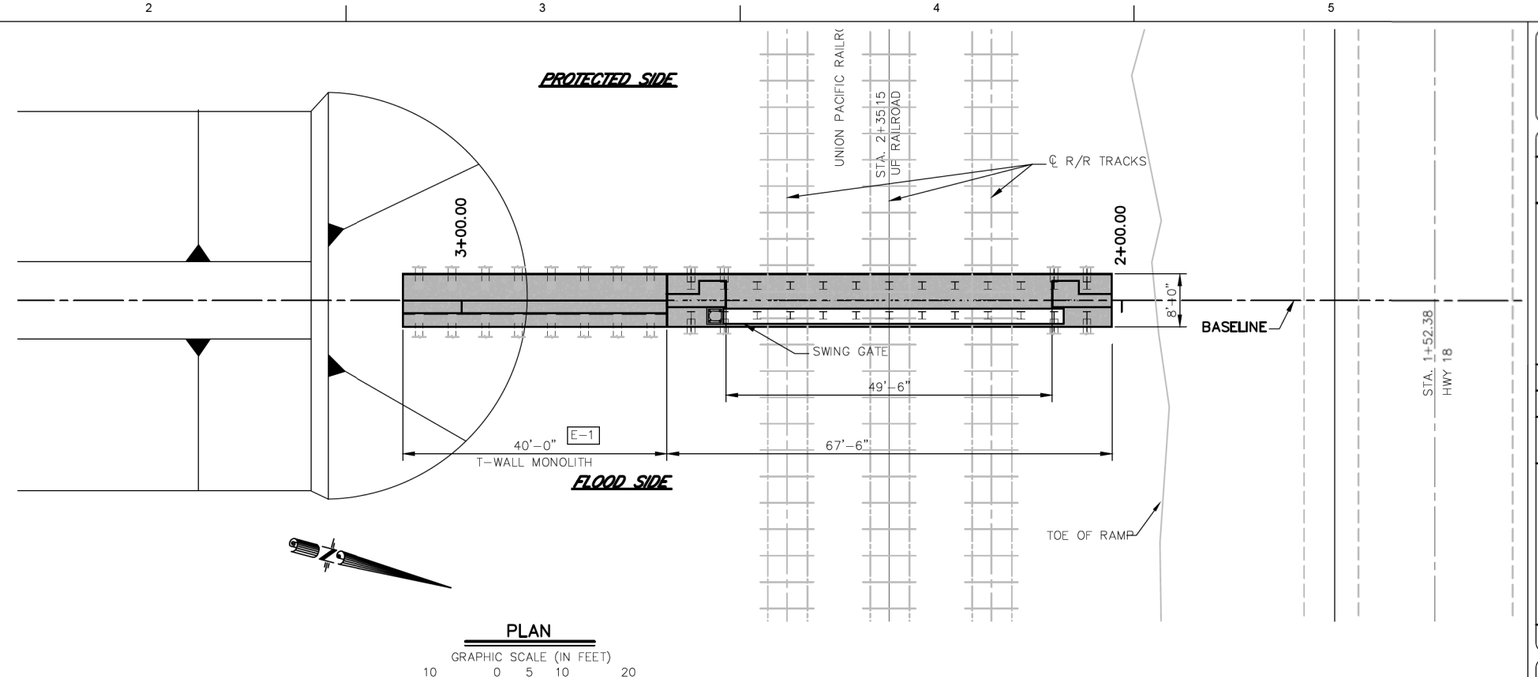
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DWN BY: DJM
CKD BY: XX
SUBMITTED BY: XXXX
DATE: XXX
SOLICITATION NO.: X
CONTRACT NO.: X
PLOT DATE: XX
FILE NUMBER: 144XXX
SIZE: ANSI D
FILE NAME: 144#444_C-202.dgn

U.S. ARMY CORPS OF ENGINEERS
NEW ORLEANS DISTRICT
NEW ORLEANS, LOUISIANA

UPPER BARATARIA BASIN
LOUISIANA FEASIBILITY STUDY
-
LAFOURCHE AND ST. CHARLES PARISH, LA

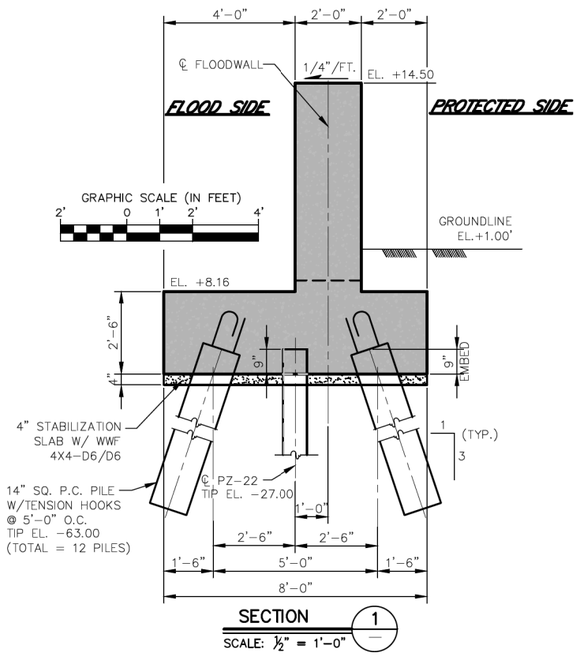
PROPOSED DREDGE PLAN

SHEET IDENTIFICATION C-202



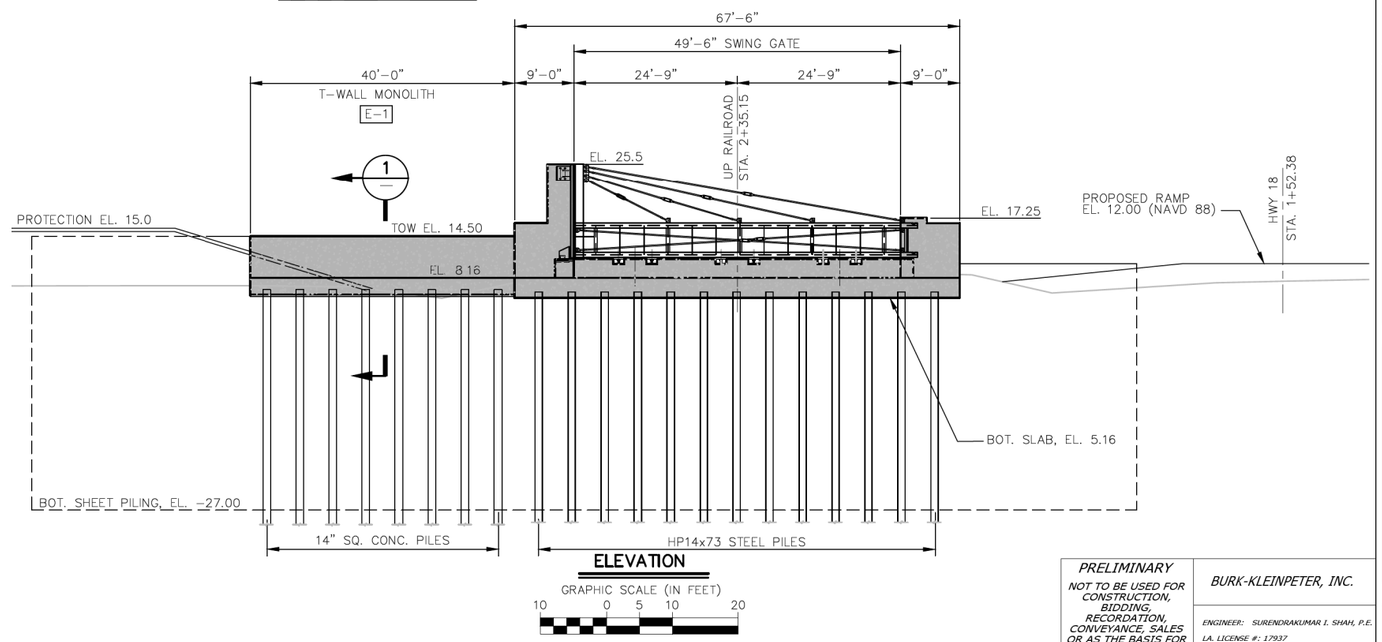
PLAN

GRAPHIC SCALE (IN FEET)
10 0 5 10 20



SECTION

SCALE: ½" = 1'-0"



ELEVATION

GRAPHIC SCALE (IN FEET)
10 0 5 10 20

PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION, BIDDING, RECORDATION, CONVEYANCE, SALES OR AS THE BASIS FOR THE ISSUANCE OF A PERMIT.

BURK-KLEINPETER, INC.

ENGINEER: SURENDRAKUMAR I. SHAH, P.E.
LA. LICENSE #: 17937
DATE: OCTOBER, 2018

US Army Corps of Engineers
NEW ORLEANS DISTRICT

LA FOURCHE BASIN LEVEE DISTRICT
THIBODAUX, LA.

MARK	DESCRIPTION	DATE	APPR.

LAFOURCHE BASIN LEVEE DISTRICT

DESIGNED BY: S.S.S.
DRN BY: C.M.
CKD BY: M.K.R.
SUBMITTED BY: M.K.R.
PLOT SCALE: 1:1
PLOT DATE: OCT. 2018
SIZE: 22"X34"
FILE NAME:
DATE: OCT. 2018
BKI JOB # NO.18.001

BURK KLEINPETER, INC.
4176 CANAL ST.
NEW ORLEANS, LA. 70119
(504) 486-5901

UPPER BARATARIA RISK REDUCTION
CPRA PROJECT 002.HP.06
SEGMENT 1
WBV-75
UNION PACIFIC SWING GATE & T-WALL
PLAN AND SECTION

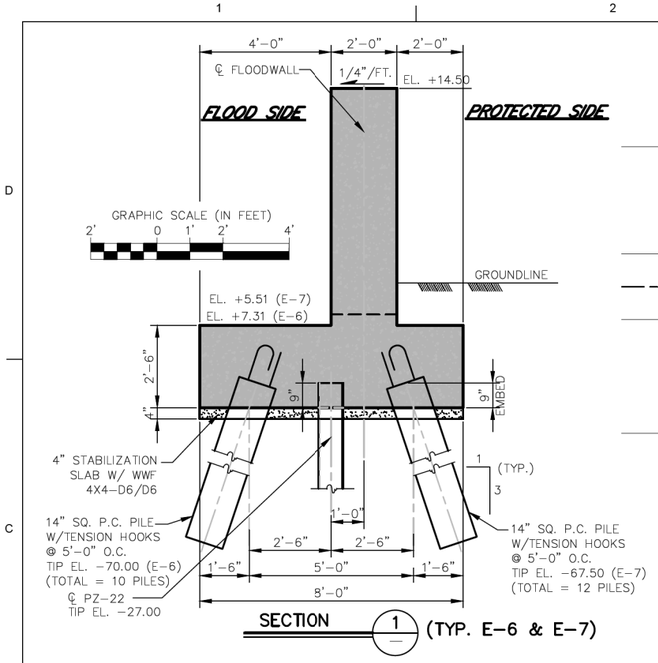
SHEET IDENTIFICATION
7 OF 28

U.S. ARMY CORPS OF ENGINEERS
NEW ORLEANS DISTRICT
NEW ORLEANS, LOUISIANA

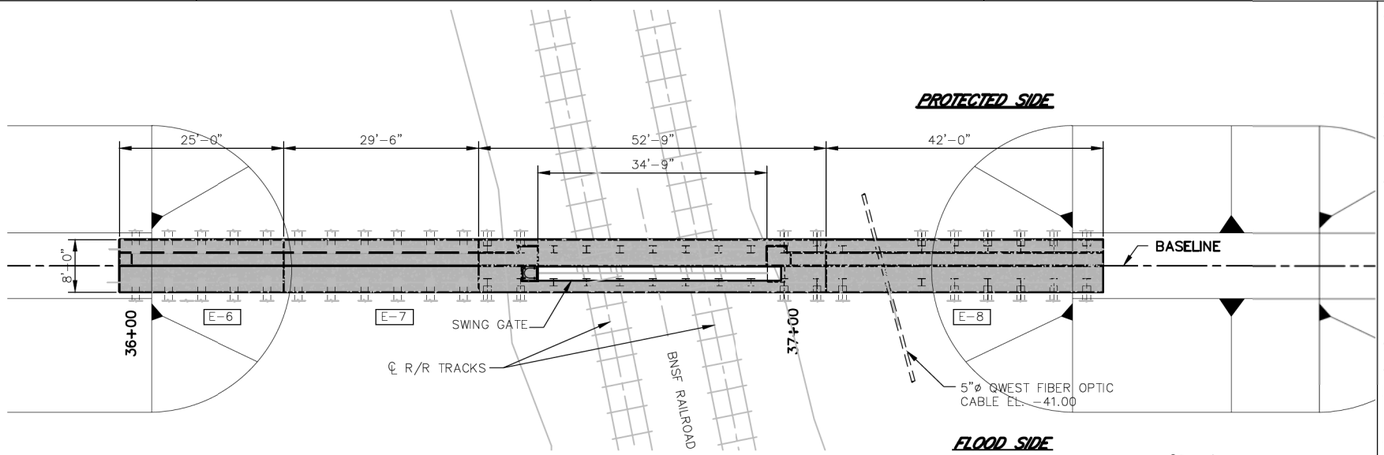
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CKD BY: XX
SUBMITTED BY: XXXX
PLOT SCALE: 1:X
DATE: XXX
SOLICITATION NO.: X
CONTRACT NO.: X
PLOT DATE: XX
FILE NUMBER: HA40XX
SIZE: ANSI D
FILE NAME: H4408441_S-012.dgn

UPPER BARATARIA BASIN
LOUISIANA FEASIBILITY STUDY
-
LAFOURCHE AND ST. CHARLES PARISH, LA
UNION PACIFIC SWING GATE & T-WALL
PLAN AND SECTION

SHEET IDENTIFICATION
S-012

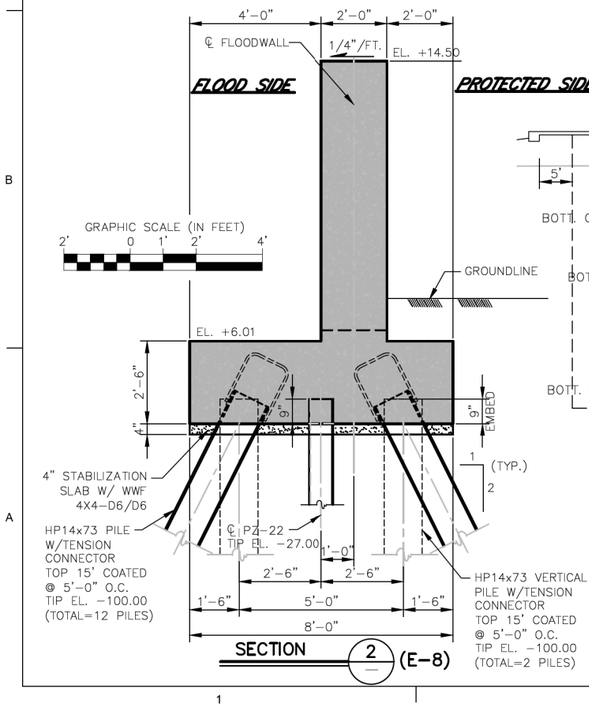


SECTION 1 (TYP. E–6 & E–7)

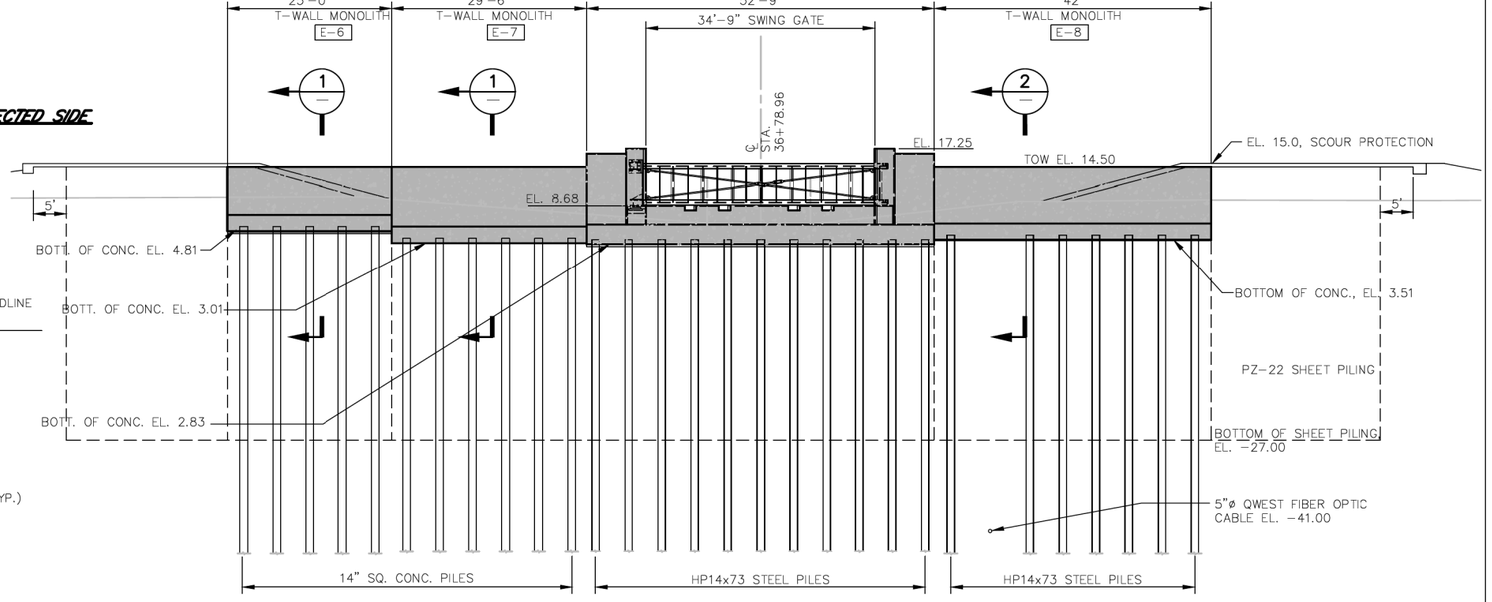


PLAN

GRAPHIC SCALE (IN FEET)
10 0 5 10 20



SECTION 2 (E–8)



ELEVATION

GRAPHIC SCALE (IN FEET)
10 0 5 10 20

PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION, BIDDING, RECORDATION, CONVEYANCE, SALES OR AS THE BASIS FOR THE ISSUANCE OF A PERMIT.

BURK-KLEINPETER, INC.

ENGINEER: SURENDRAKUMAR I. SHAH, P.E.
LA. LICENSE #: 17937
DATE: OCTOBER, 2018

LAFOURCHE BASIN LEVEE DISTRICT

DESIGNED BY: S.B.
DWN BY: D.M
CKD BY: M.K
SUBMITTED BY: M.K.R
PLOT SCALE: 1 : 1
PLOT DATE: OCT. 2018
SIZE: 22"X34"
FILE NAME:
DATE: OCT. 2018
BK JOB # NO.18.001

BURK KLEINPETER, INC.
4176 CANAL ST.
NEW ORLEANS, LA. 70119
(504) 486-5901

UPPER BARATARIA RISK REDUCTION
CPRA PROJECT 002.HP.06
SEGMENT 1
BNSF RAILROAD
SWING GATE & T-WALL
PLAN AND SECTION

SHEET IDENTIFICATION
8 OF 28

US Army Corps of Engineers
NEW ORLEANS DISTRICT

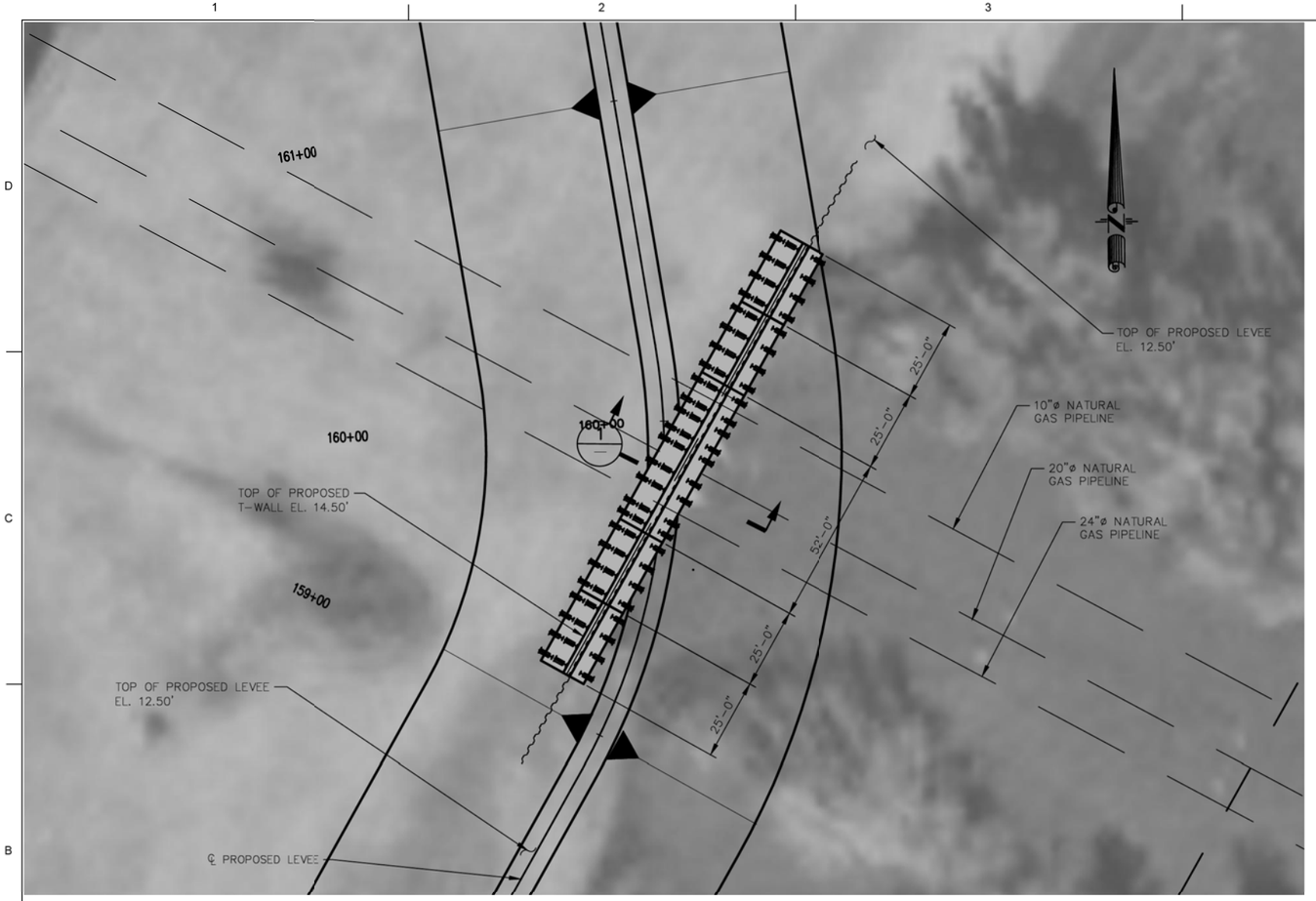
U.S. ARMY CORPS OF ENGINEERS
NEW ORLEANS DISTRICT
NEW ORLEANS, LOUISIANA

DESIGNED BY: XXX
DWN BY: DJM
CKD BY: XX
SUBMITTED BY: XXXX
PLOT SCALE: 1
PLOT DATE: XX
SIZE: ANSI D
FILE NAME: H48444_S-013.dgn
DATE: XXX
SOLICITATION NO.: X
CONTRACT NO.: X
FILE NUMBER: H48444

UPPER BARATARIA BASIN
LOUISIANA FEASIBILITY STUDY
-
LAFOURCHE AND ST. CHARLES PARISH, LA

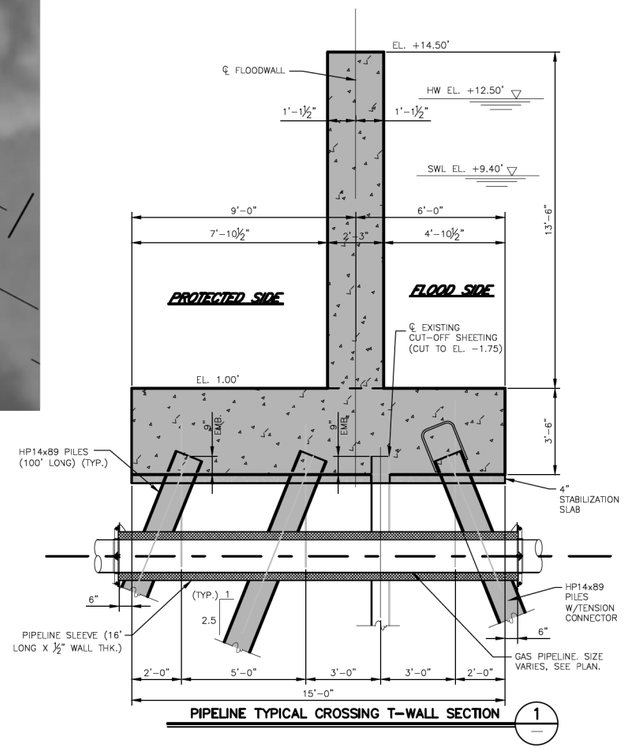
SWING GATE & T-WALL
PLAN AND SECTION

SHEET IDENTIFICATION
S-013



PLAN

GRAPHIC SCALE (IN FEET)
10 0 5 10 20



PIPELINE TYPICAL CROSSING T-WALL SECTION 1

PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION, BIDDING, RECORDATION, CONVEYANCE, SALES OR AS THE BASIS FOR THE ISSUANCE OF A PERMIT.

BURK-KLEINPETER, INC.

ENGINEER: SURENDRAKUMAR I. SHAH, P.E.
LA. LICENSE #: 17937
DATE: OCTOBER, 2018

LAFOURCHE BASIN LEVEE DISTRICT

BURK KLEINPETER, INC.
4173 CANAL STREET
NEW ORLEANS, LA. 70119
(504) 486-5901

DESIGNED BY: S.B.
DWN BY: E.B.
CKD BY: M.K.R.
SUBMITTED BY: M.K.R.
PLOT SCALE: 1:1
PLOT DATE: OCT. 2018
SIZE: 22"X34"
FILE NAME:

DATE: OCT. 2018
BKI JOB # NO.18.001

UPPER BARATARIA RISK REDUCTION
CPRA PROJECT 002 HP 06
SEGMENT 1

DAVIS DIVERSION PIPELINE CROSSING #1
PLAN AND SECTION

SHEET IDENTIFICATION
10 OF 28

US Army Corps of Engineers
NEW ORLEANS DISTRICT

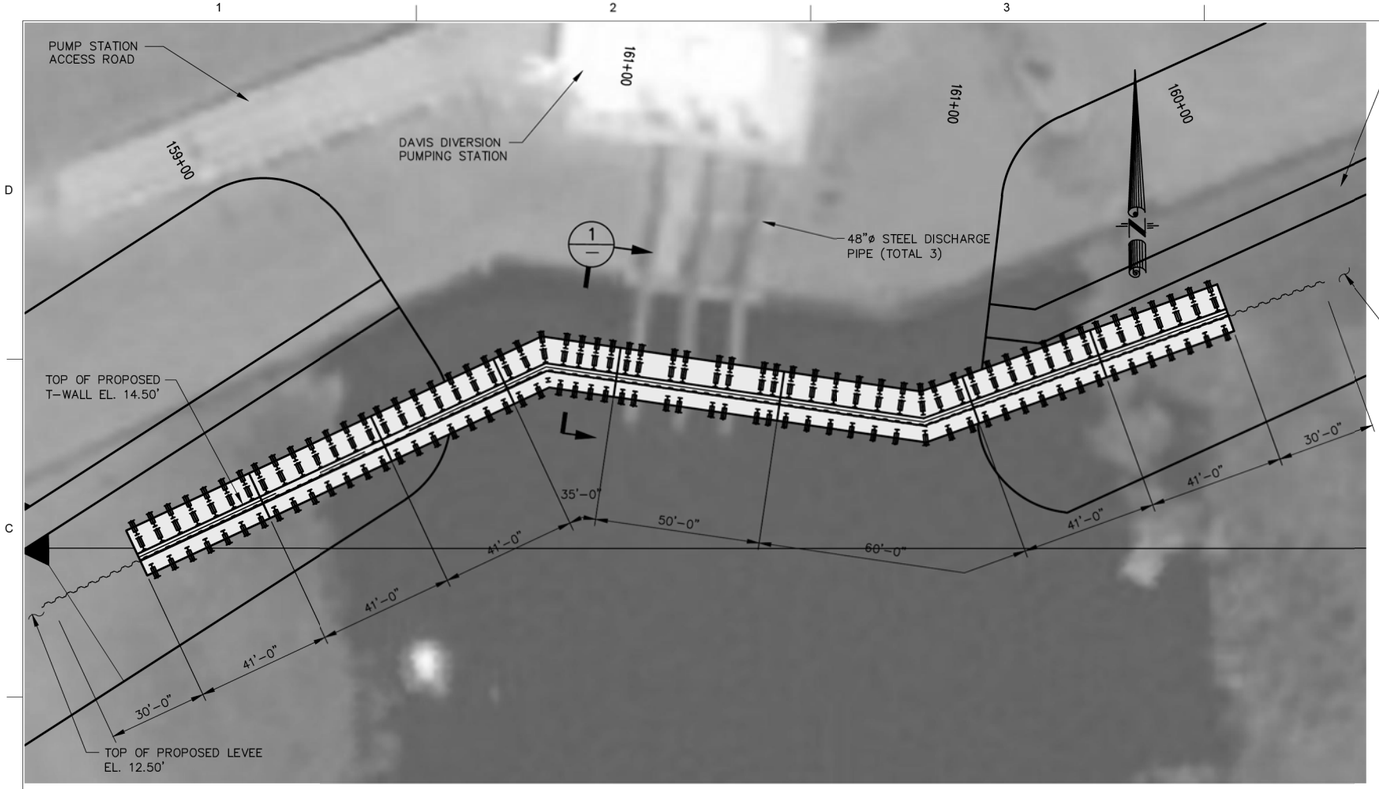
MARK	DESCRIPTION	DATE	APPR.

DESIGNED BY: XXX
DWN BY: DJM
SUBMITTED BY: XXXX
PLOT SCALE: 1:1
SIZE: ANSI D
DATE: XXX
SOLICITATION NO.: X
CONTRACT NO.: X
FILE NUMBER: H448XXX
PLOT DATE: 1:1
FILE NAME: H448444_S-015.dgn

U.S. ARMY CORPS OF ENGINEERS
NEW ORLEANS DISTRICT
NEW ORLEANS, LOUISIANA

UPPER BARATARIA BASIN
LOUISIANA FEASIBILITY STUDY
-
LAFOURCHE AND ST. CHARLES PARISH, LA
DAVIS DIVERSION PIPELINE CROSSING #1
PLAN AND SECTION

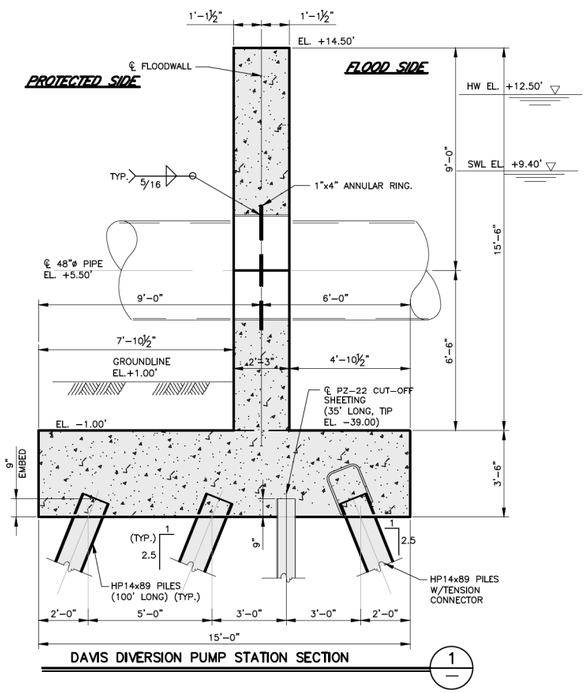
SHEET IDENTIFICATION
S-015



PLAN

GRAPHIC SCALE (IN FEET)

10 0 5 10 20



DAVIS DIVERSION PUMP STATION SECTION 1

PRELIMINARY

NOT TO BE USED FOR CONSTRUCTION, BIDDING, RECORDATION, CONVEYANCE, SALES OR AS THE BASIS FOR THE ISSUANCE OF A PERMIT.

BURK-KLEINPETER, INC.

ENGINEER: SURENDRAKUMAR I. SHAH, P.E.
LA. LICENSE #: 17937
DATE: OCTOBER, 2018

LA FOURCHE BASIN LEVEE DISTRICT
HOUMA, LA.

MARK	DESCRIPTION	DATE	APPR.

LAFOURCHE BASIN LEVEE DISTRICT

DESIGNED BY: SS | DRWN BY: C.B. | SUBMITTED BY: M.K.R. | DATE: OCT. 2018 | BKI JOB # NO.18.001 | PLOT SCALE: 1:1 | PLOT DATE: OCT. 2018 | SIZE: 22"x34" | FILE NAME:

BURK KLEINPETER, INC.
4176 CANAL ST.
NEW ORLEANS, LA. 70119
(504) 486-5001

UPPER BARATARIA RISK REDUCTION
CPRA PROJECT 002.HP.06
SEGMENT 1

DAVIS DIVERSION PUMPING STATION #1
PLAN AND SECTION

SHEET IDENTIFICATION
11 OF 28

US Army Corps of Engineers
NEW ORLEANS DISTRICT

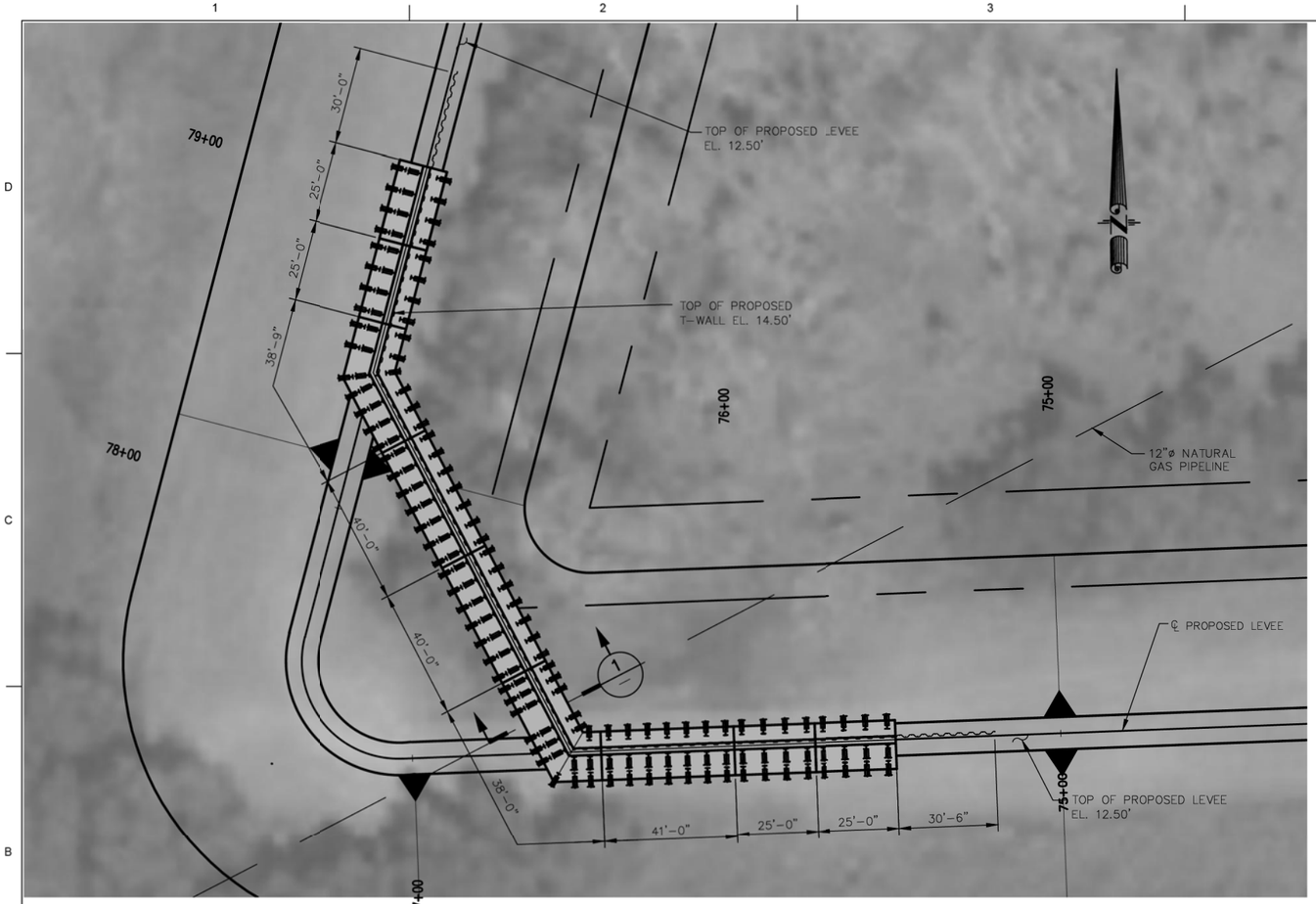
MARK	DESCRIPTION	DATE	APPR.

U.S. ARMY CORPS OF ENGINEERS
NEW ORLEANS DISTRICT
NEW ORLEANS, LOUISIANA

DESIGNED BY: XXX | DRWN BY: DJM | SUBMITTED BY: XXXX | PLOT SCALE: | SIZE: ANSI D | DATE: XXX | SOLICITATION NO.: X | CONTRACT NO.: X | PLOT DATE: XX | FILE NUMBER: H&HXXX | FILE NAME: H468444_S-016.dgn

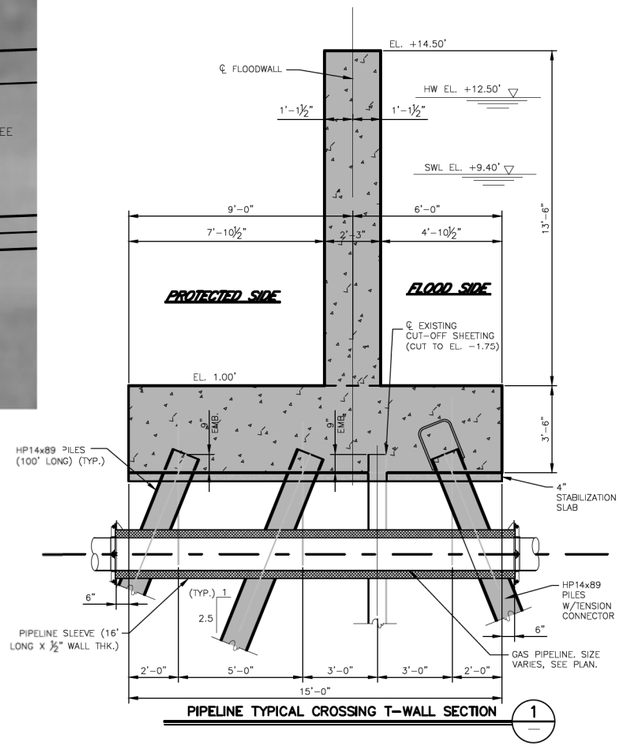
UPPER BARATARIA BASIN
LOUISIANA FEASIBILITY STUDY
-
LAFOURCHE AND ST. CHARLES PARISH, LA
DAVIS DIVERSION PUMPING STATION #1
PLAN AND SECTION

SHEET IDENTIFICATION
S-016



PLAN

GRAPHIC SCALE (IN FEET)
10 0 5 10 20



PIPELINE TYPICAL CROSSING T-WALL SECTION 1

PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION, BIDDING, RECORDATION, CONVEYANCE, SALES OR AS THE BASIS FOR THE ISSUANCE OF A PERMIT.

BURK-KLEINPETER, INC.

ENGINEER: SURENDRAKUMAR I. SHAH, P.E.
LA. LICENSE #: 17937
DATE: OCTOBER, 2018

LAFOURCHE BASIN LEVEE DISTRICT

DESIGNED BY: S.B.
DRAWN BY: D.M.
SUBMITTED BY: M.K.P.
PLOT SCALE: 1" = 20'-0"
SIZE: 22"X34"
DATE: OCT., 2018
CKD BY: M.K.P.
PLOT DATE: OCT., 2018
FILE NAME:

BURK-KLEINPETER, INC.
4176 CANAL ST.
NEW ORLEANS, LA. 70119
(504) 486-5901

UPPER BARATARIA RISK REDUCTION
CPRA PROJECT 002.HP 06
SEGMENT 1

DAVIS DIVERSION PIPELINE CROSSING #2
PLAN AND SECTION

SHEET IDENTIFICATION
13 OF 28

US Army Corps of Engineers
NEW ORLEANS DISTRICT

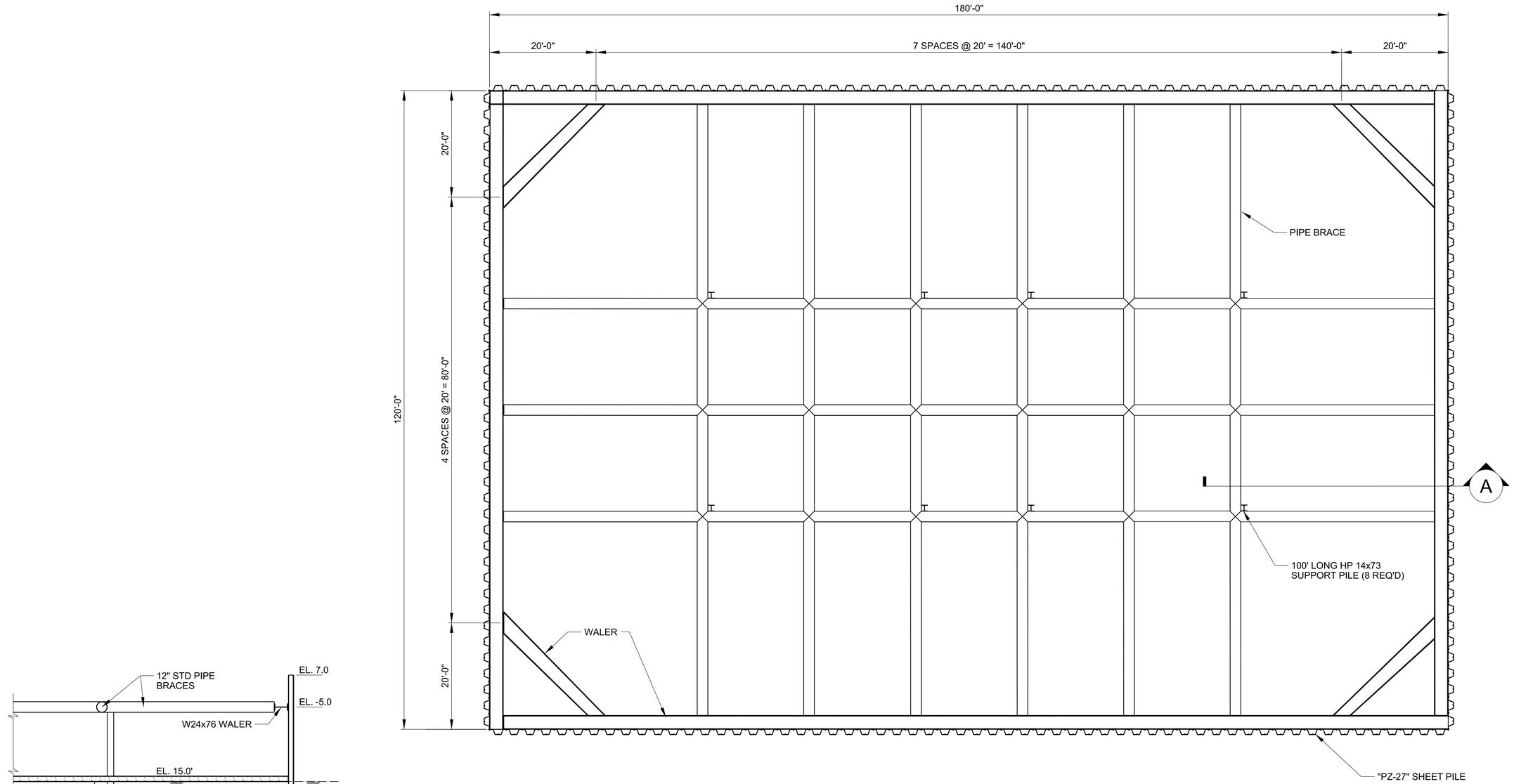
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U.S. ARMY CORPS OF ENGINEERS
NEW ORLEANS DISTRICT
NEW ORLEANS, LOUISIANA

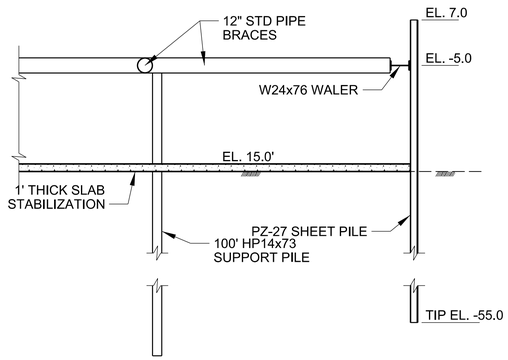
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DRWN BY: DJM
SUBMITTED BY: XXXX
PLOT SCALE: 1" = 20'-0"
SIZE: ANSI D
DATE: XXX
CKD BY: XX
SOLICITATION NO.: X
CONTRACT NO.: X
FILE NUMBER: H4456XX
PLOT DATE: XX
FILE NAME: H445644_S-018.dgn

UPPER BARATARIA BASIN
LOUISIANA FEASIBILITY STUDY
-
LAFOURCHE AND ST. CHARLES PARISH, LA
DAVIS DIVERSION PIPELINE CROSSING #2
PLAN AND SECTION

SHEET IDENTIFICATION
S-018



PLAN
SCALE: 1" = 10'



SECTION A
SCALE: 1" = 1'-0"

US Army Corps of Engineers
NEW ORLEANS DISTRICT

MARK	DESCRIPTION	DATE	APPR.

MARK	DESCRIPTION	DATE	APPR.

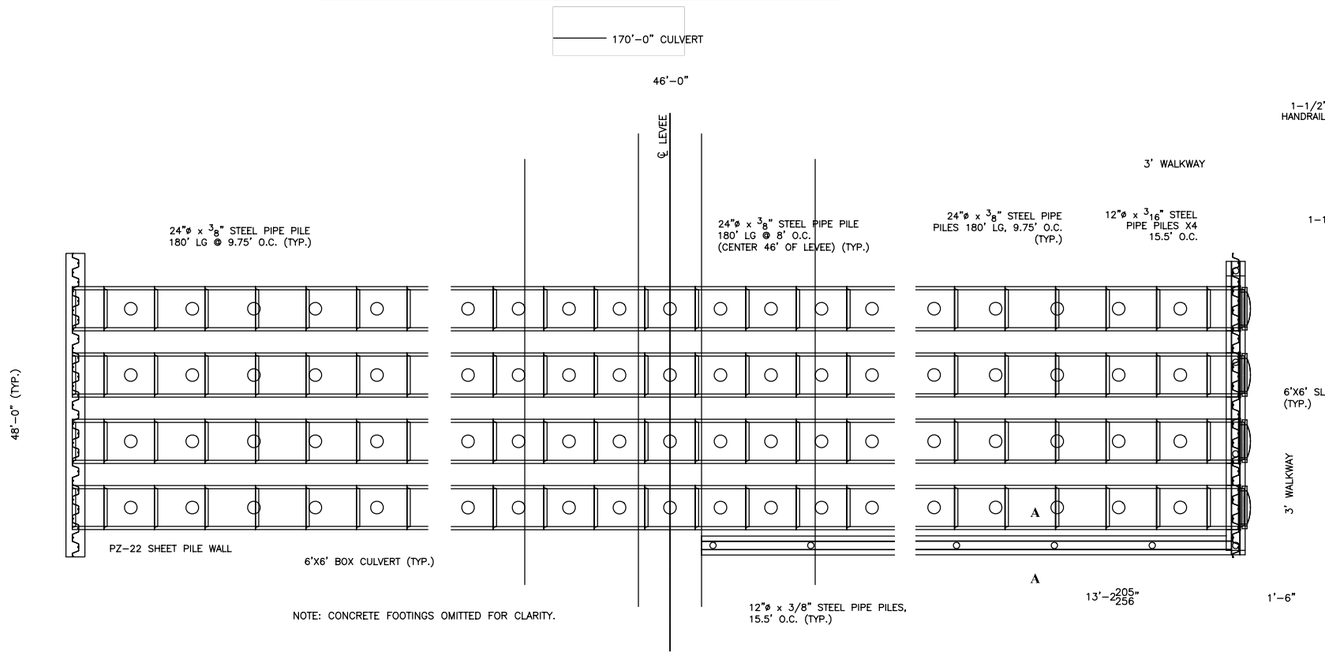
U.S. ARMY CORPS OF ENGINEERS
NEW ORLEANS DISTRICT
NEW ORLEANS, LOUISIANA

DESIGNED BY: XXX
DWN BY: DJM
SUBMITTED BY: XXXX
DATE: XXX
CKD BY: XX
PLOT SCALE: 1
PLOT DATE: XX
SOLICITATION NO.: X
CONTRACT NO.: X
FILE NUMBER: H44XXX
SIZE: ANSI D
FILE NAME: H84754_S-024---dgn

UPPER BARATARIA BASIN
LOUISIANA FEASIBILITY STUDY
-
LAFOURCHE AND ST. CHARLES PARISH, LA

BAYOU DES ALLEMAND
T-WALLS COFFERDAM

SHEET IDENTIFICATION
S-024



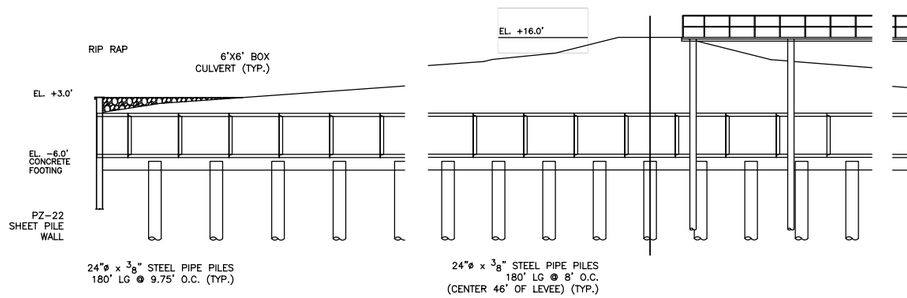
BOX CULVERT PLAN

GRAPHIC SCALE

5 0 5 10 15 20

(IN FEET)

NOTE: (*) DENOTES DIMENSION FOR SECOND LIFT STAGE OF LEVEE @ EL. 12.5'

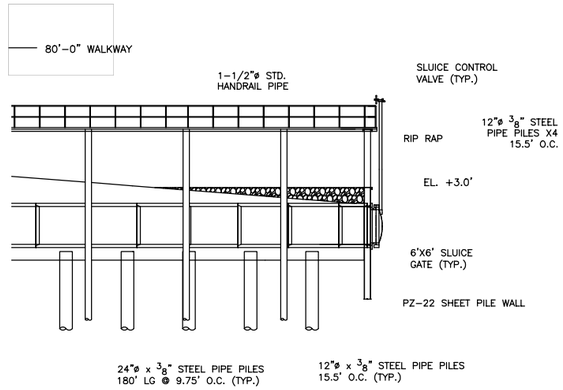


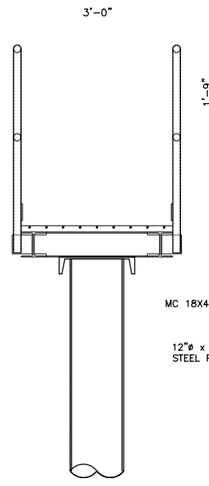
BOX CULVERT ELEV.

GRAPHIC SCALE

5 0 5 10 15 20

(IN FEET)



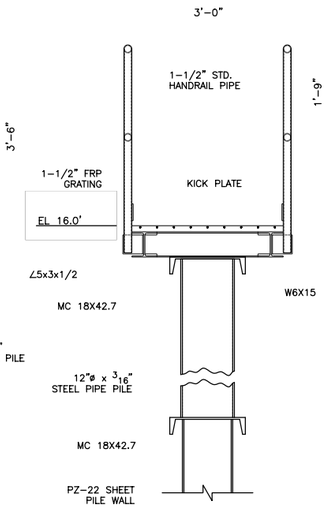


A WALKWAY DETAIL

GRAPHIC SCALE

3 0 3 6

(IN FEET)



B WALKWAY DETAIL

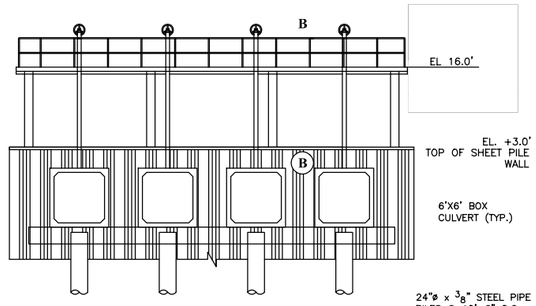
GRAPHIC SCALE

3 0 3 6

(IN FEET)

46'-6" WALKWAY

SLUICE CONTROL
VALVE (TYP.)



BOX CULVERT ELEV.

GRAPHIC SCALE

5 0 5 10 20

(IN FEET)

THIS DRAWING HAS BEEN REDUCED TO ONE HALF SIZE

PRELIMINARY

NOT TO BE USED FOR CONSTRUCTION, BIDDING, RECORDATION, CONVEYANCE, SALES OR AS THE BASIS FOR THE ISSUANCE OF A PERMIT.

GIS ENGINEERING, LLC

ENGINEER: Kyle Joseph Galloway, P.E.
LA. LICENSE #: 0040317
DATE: OCTOBER 2018

LAFOURCHE BASIN LEVEE DISTRICT

DESIGNED BY: K.J.G., J.D.A.
DRAWN BY: M.A.C., T.J.S.
SUBMITTED BY: K.J.G.
PLOT SCALE: 1" = 1'-0"
SIZE: 22"x34"
DATE: OCTOBER 2018
CKD BY: K.J.G.
PLOT DATE: FINAL PLOT
FILE NAME: HYDRAULIC STRUCTURE PLAN AND ELEVATION.dwg

GIS ENGINEERING LLC
Coastal Design & Infrastructure
Engineering Solutions
Metairie, LA 70001
www.gis-llc.com

UPPER BARATARIA RISK REDUCTION
CPRA PROJECT NO.: 002.HP.06
SEGMENT 5
6'x6' RCB
HYDRAULIC STRUCTURE PLAN AND ELEVATION

SHEET IDENTIFICATION
27 OF 29

US Army Corps of Engineers
NEW ORLEANS DISTRICT

DESCRIPTION	DATE	APPR.

U.S. ARMY CORPS OF ENGINEERS
NEW ORLEANS DISTRICT
NEW ORLEANS, LOUISIANA

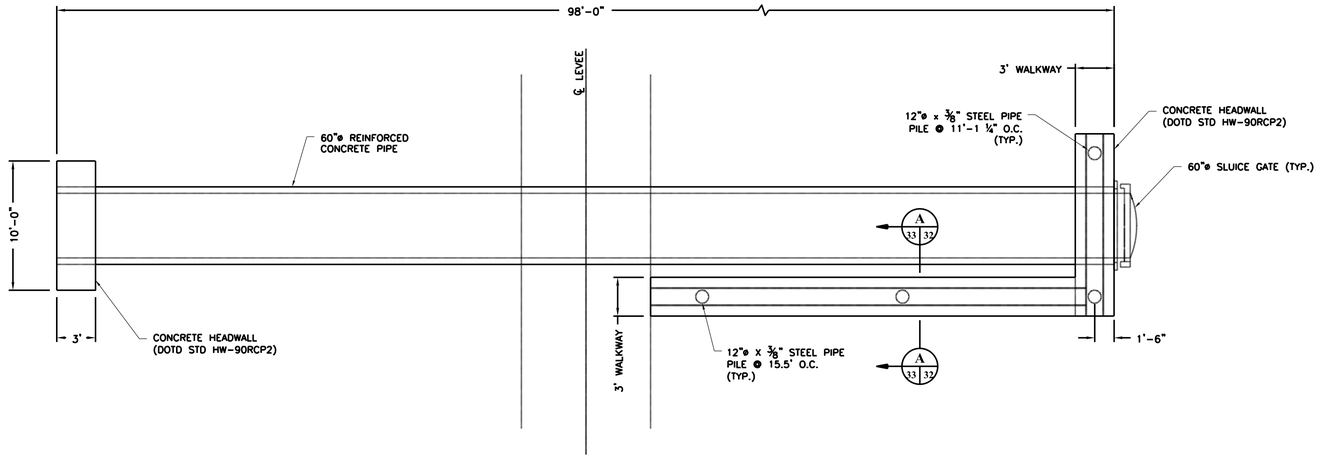
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DWN BY: DJM
CKD BY: XX
SUBMITTED BY: XXXX
PLOT SCALE: 1
PLOT DATE: XX
SOLICITATION NO.: X
CONTRACT NO.: X
FILE NUMBER: H44XXX
SIZE: ANSI D
FILE NAME: H44444_S-027.dgn
DATE: XXX

UPPER BARATARIA BASIN
LOUISIANA FEASIBILITY STUDY
-
LAFOURCHE AND ST. CHARLES PARISH, LA
6'x6' RCB
HYDRAULIC STRUCTURE PLAN AND ELEVATION

SHEET IDENTIFICATION
S-027

Xref .\xref\bki title block.dwg

M:\Department 39\Client\LBLD1-Lafourche Basin Levee\39130-1078 - Upper Barataria Risk Reduction\Drafting\CAD\CBRA\18 1005 SUBMITTAL - 100%\HYDRAULIC STRUCTURE PLAN AND ELEVATION.dwg



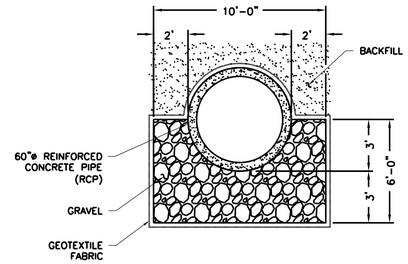
STA 396+70 PLAN

GRAPHIC SCALE

5 0 5 10

(IN FEET)

NOTE: (*) DENOTES DIMENSION FOR SECOND LIFT STAGE OF LEVEE @ EL. 12.5'

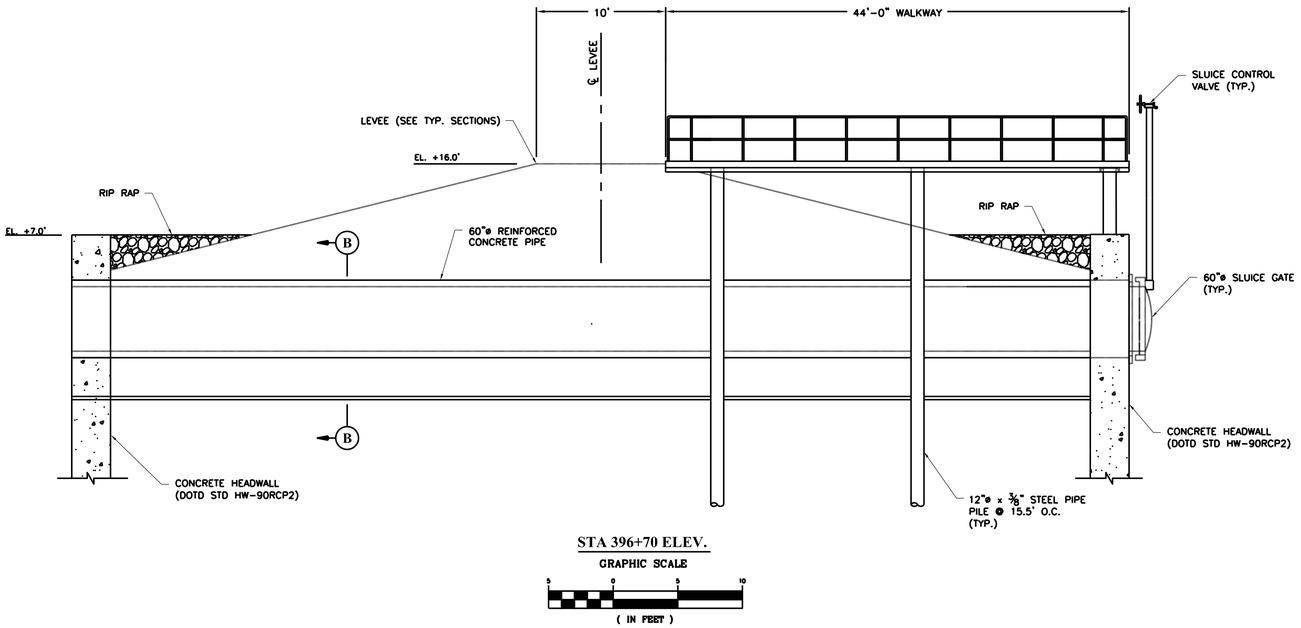


B CULVERT DETAIL

GRAPHIC SCALE

5 0 5 10

(IN FEET)

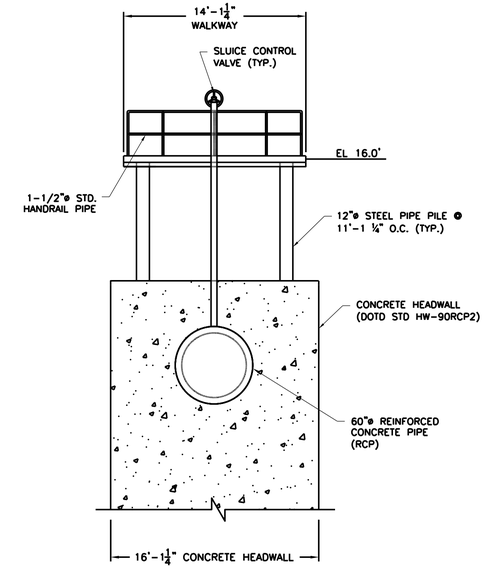


STA 396+70 ELEV.

GRAPHIC SCALE

5 0 5 10

(IN FEET)



STA 396+70 ELEV.

GRAPHIC SCALE

5 0 5 10

(IN FEET)

PRELIMINARY

NOT TO BE USED FOR CONSTRUCTION, BIDDING, RECORDATION, CONVEYANCE, SALES OR AS THE BASIS FOR THE ISSUANCE OF A PERMIT.

GIS ENGINEERING, LLC

ENGINEER: Kyle Joseph Galloway, P.E.

LA. LICENSE #: 0040317

DATE: OCTOBER 2018

THIS DRAWING HAS BEEN REDUCED TO ONE HALF SIZE

LAFOURCHE BASIN LEVEE DISTRICT

DESIGNED BY: K.J.G. - Z.D.A.
DRAWN BY: M.A.C. - J.A.S.
SUBMITTED BY: K.J.G.
DATE: OCTOBER 2018
PLOT SCALE: 1:1
PLOT DATE: October 12, 2018
SIZE: 22"x34"
FILE NAME: HYDRAULIC STRUCTURE PLAN AND ELEVATION.dwg

GIS ENGINEERING LLC
Civil Engineering & Surveying
107 Corporate Drive
Houma, Louisiana 70360
985-219-5320

UPPER BARATARIA RISK REDUCTION
CPRA PROJECT NO.: 002 HP 06
SEGMENT 5
60"Ø
HYDRAULIC STRUCTURE PLAN AND ELEVATION

SHEET IDENTIFICATION
28 OF 29

US Army Corps of Engineers
NEW ORLEANS DISTRICT

MARK	DESCRIPTION	DATE	APPR.

DESIGNED BY: XXX
DRAWN BY: DJM
SUBMITTED BY: XXXX
DATE: XXX
SOLICITATION NO.: X
CONTRACT NO.: X
PLOT SCALE: 1:1
PLOT DATE: XX
FILE NUMBER: HA40XX
SIZE: ANSI D
FILE NAME: H40444_S-028.dgn

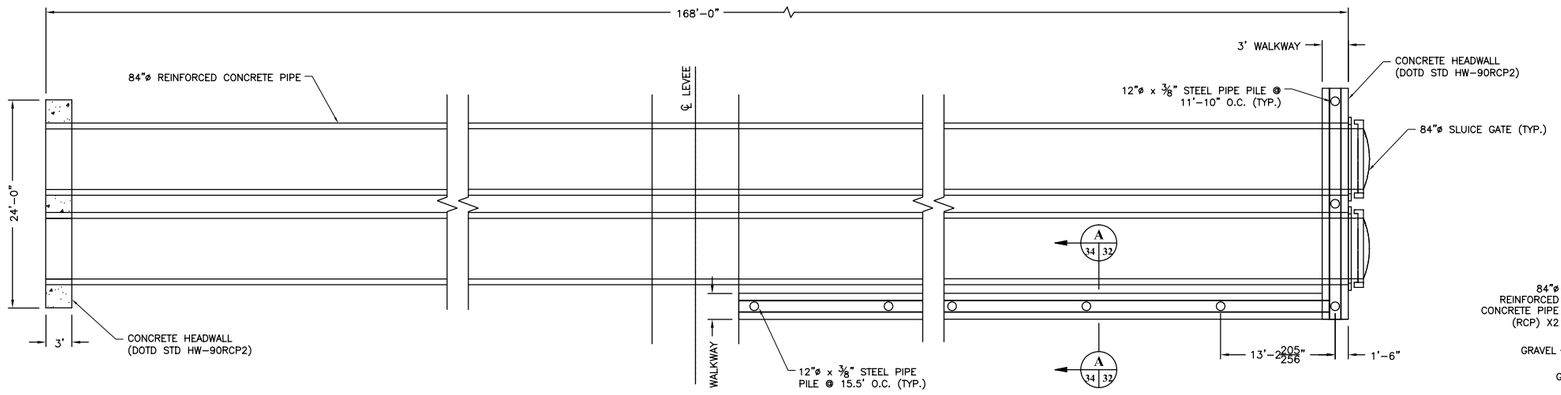
U.S. ARMY CORPS OF ENGINEERS
NEW ORLEANS DISTRICT
NEW ORLEANS, LOUISIANA

UPPER BARATARIA BASIN
LOUISIANA FEASIBILITY STUDY
-
LAFOURCHE AND ST. CHARLES PARISH, LA

HYDRAULIC STRUCTURE
PLAN AND ELEVATION

SHEET IDENTIFICATION
S-028

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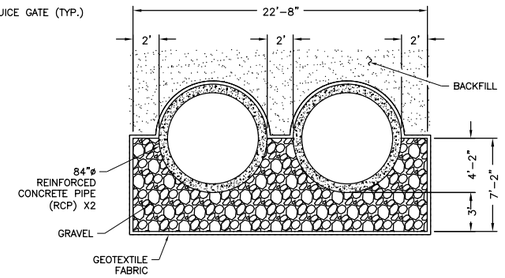


STA 369+50 PLAN

GRAPHIC SCALE

5 0 5 10 20

(IN FEET)



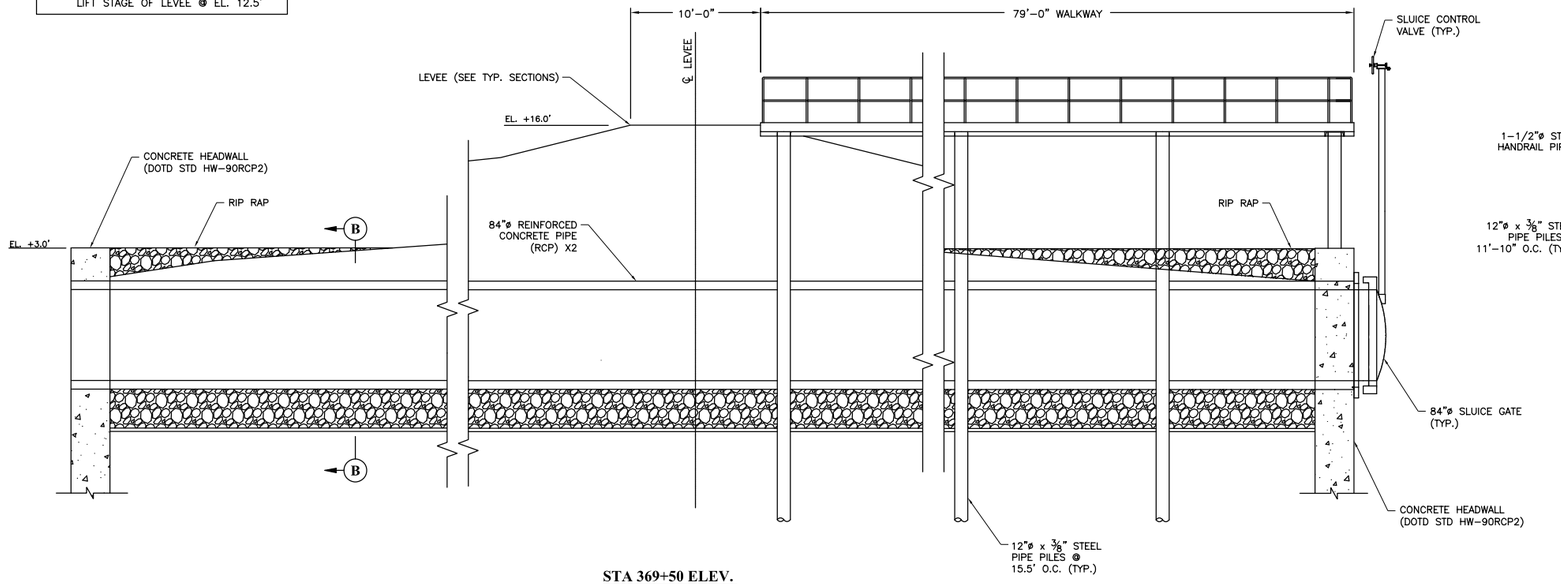
B CULVERT DETAIL

GRAPHIC SCALE

5 0 5 10

(IN FEET)

NOTE: (*) DENOTES DIMENSION FOR SECOND LIFT STAGE OF LEVEE @ EL. 12.5'

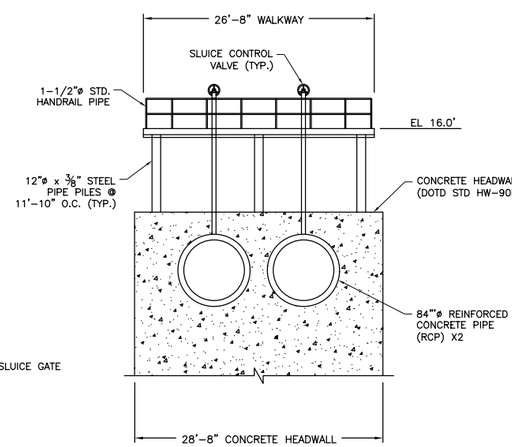


STA 369+50 ELEV.

GRAPHIC SCALE

5 0 5 10

(IN FEET)



STA 369+50 ELEV.

GRAPHIC SCALE

5 0 5 10 20

(IN FEET)

THIS DRAWING HAS BEEN REDUCED TO ONE HALF SIZE

PRELIMINARY

NOT TO BE USED FOR CONSTRUCTION, BIDDING, RECORDATION, CONVEYANCE, SALES OR AS THE BASIS FOR THE ISSUANCE OF A PERMIT.

GIS ENGINEERING, LLC

ENGINEER: Kyle Joseph Galloway, P.E.

LA. LICENSE #: 0040317

DATE: OCTOBER 2018

UPPER BARATARIA RISK REDUCTION
CPRA PROJECT NO.: 002 HP 06
SEGMENT 5

HYDRAULIC STRUCTURE PLAN AND ELEVATION

SHEET IDENTIFICATION
29 OF 29

LAFOURCHE BASIN LEVEE DISTRICT

DESIGNED BY: K.J.G.
DRWN BY: M.A.C., J.J.S
CKD BY: K.J.G
SUBMITTED BY: K.J.G
PLOT DATE: 10/29/2018
PLOT SCALE: 1:1
SIZE: 22"x34"
FILE NAME: HYDRAULIC STRUCTURE PLAN AND ELEVATION.dwg

GIS ENGINEERING LLC
Coastal Geology & Infrastructure
131 Desiard St., Ste 300
Monroe, LA 71201
(318) 855-7648
www.gisllc.com

US Army Corps of Engineers
NEW ORLEANS DISTRICT

MARK	DESCRIPTION	DATE	APPR.

U.S. ARMY CORPS OF ENGINEERS
NEW ORLEANS DISTRICT
NEW ORLEANS, LOUISIANA

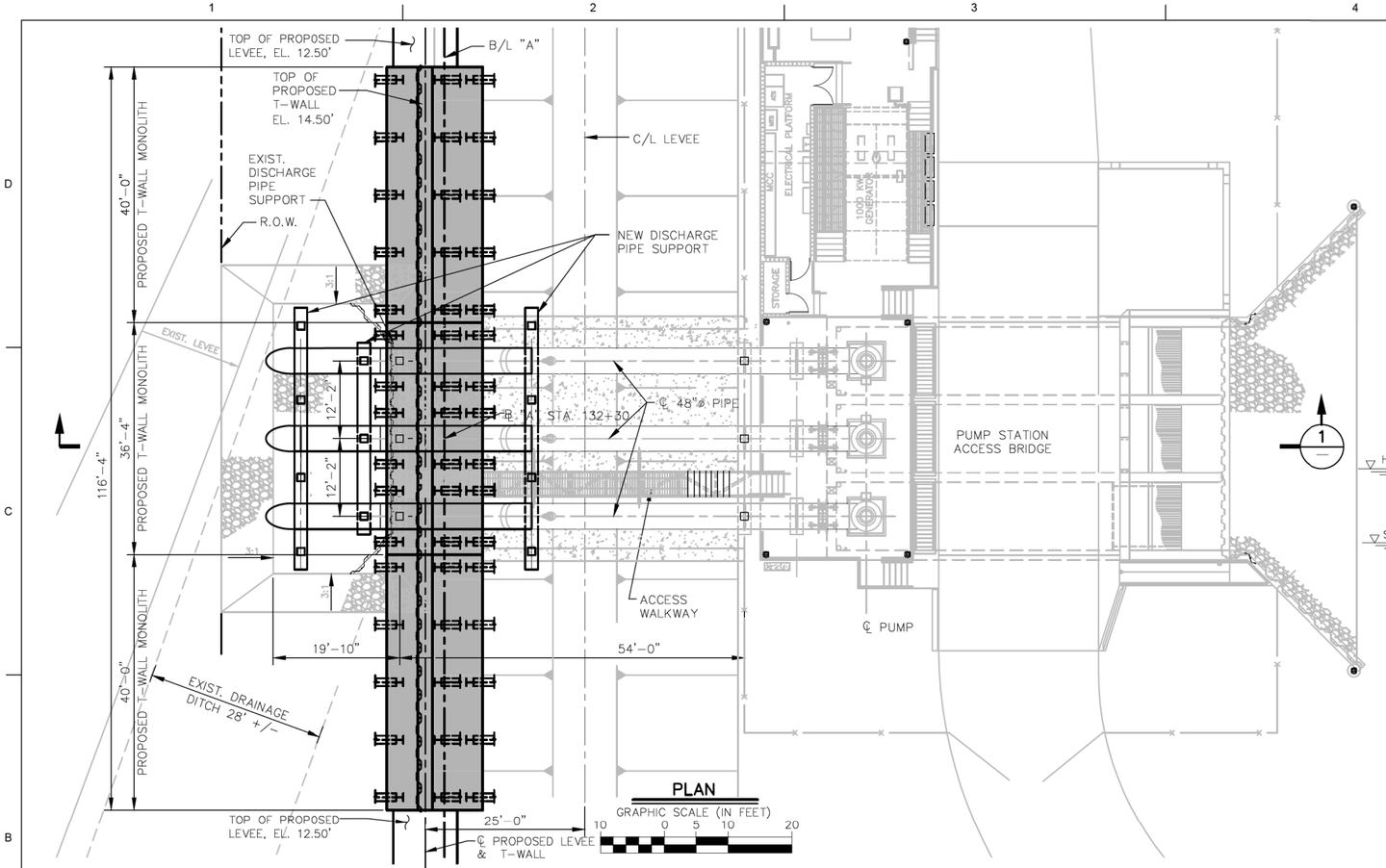
DESIGNED BY: XXX
DWN BY: DJM
CKD BY: XX
SUBMITTED BY: XXXX
PLOT SCALE: X:X
DATE: XXX
SOLICITATION NO.: X
CONTRACT NO.: X
PLOT DATE: XXX
FILE NUMBER: H44XXX
SIZE: ANSI D
FILE NAME: H44844_S-029.dgn

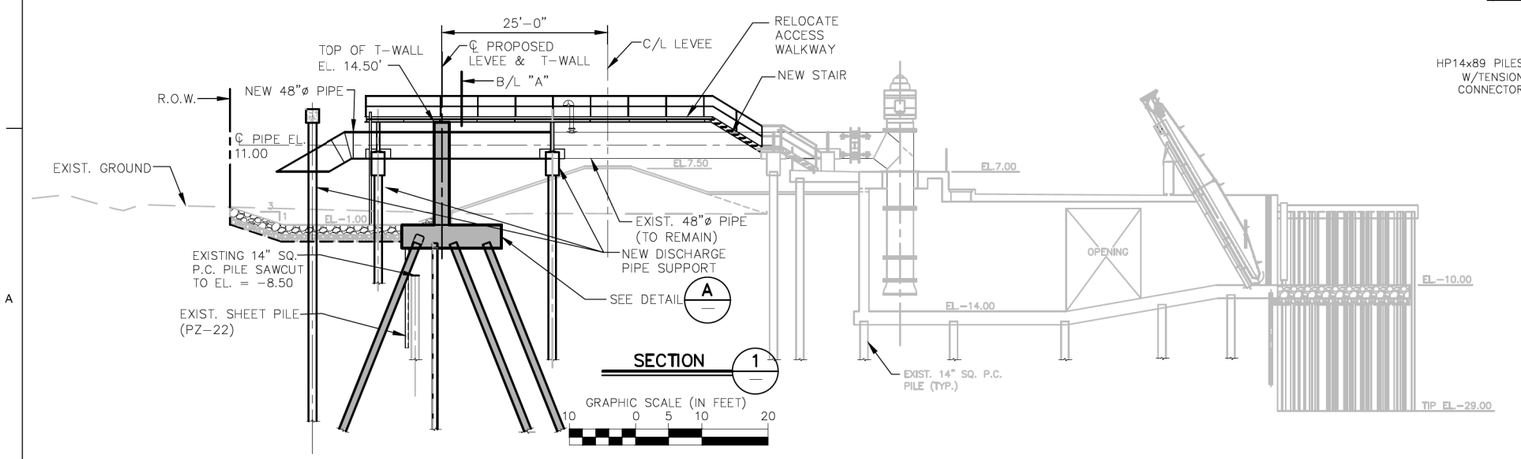
UPPER BARATARIA BASIN
LOUISIANA FEASIBILITY STUDY
-
LAFOURCHE AND ST. CHARLES PARISH, LA

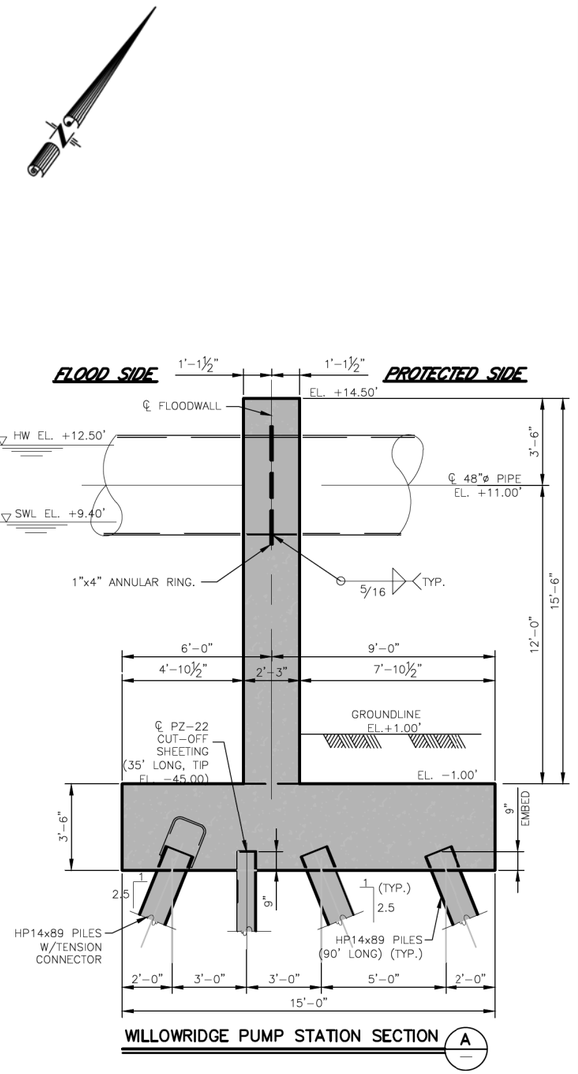
HYDRAULIC STRUCTURE PLAN AND ELEVATION

SHEET IDENTIFICATION
S-029

Xref .\xref\bki title block.dwg







PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION, BIDDING, RECORDATION, CONVEYANCE, SALES OR AS THE BASIS FOR THE ISSUANCE OF A PERMIT.

BURK-KLEINPETER, INC.

ENGINEER: SURENDRAKUMAR I. SHAH, P.E.
LA. LICENSE #: 17937
DATE: OCTOBER, 2018

LAFOURCHE BASIN LEVEE DISTRICT

DESIGNED BY: S.B. | DATE: OCT., 2018
DRAWN BY: S.B. | CHKD BY: M.K.B. | BKV JOB # NO.18.001
SUBMITTED BY: M.K.B. | PLOT SCALE: 1"=1'-0" | PLOT DATE: XXX
SIZE: 22"x34" ANSI D | FILE NAME: H45644_S-049.dgn

BURK KLEINPETER, INC.
4176 CANAL ST.
NEW ORLEANS, LA 70119
(504) 486-5901

UPPER BARATARIA RISK REDUCTION
CPRA PROJECT 002.HP.06
SEGMENT 1
SEGMENT 1-B
WILLOWRIDGE PUMP STATION - NEW T-WALL
PLAN AND SECTION
(WILLOWRIDGE LEVEE AREA)

SHEET IDENTIFICATION
15 OF 62

US Army Corps of Engineers
NEW ORLEANS DISTRICT

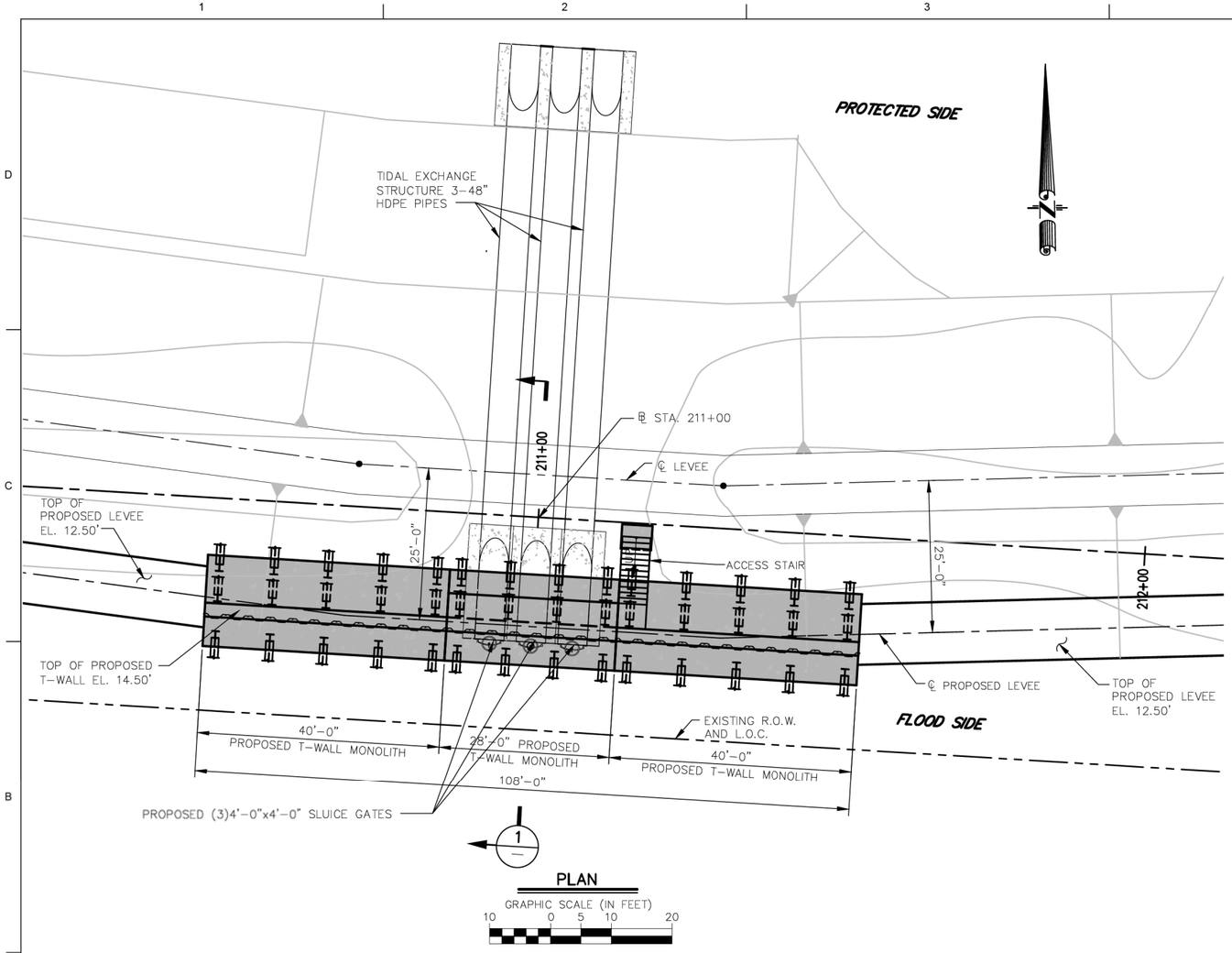
MARK	DESCRIPTION	DATE	APPR.

DESIGNED BY: XXX | DRAWN BY: DJM | SUBMITTED BY: XXXX | PLOT SCALE: 1"=1'-0" | SIZE: 22"x34" ANSI D
DATE: XXX | SOLICITATION NO.: X | CONTRACT NO.: X | FILE NUMBER: H45644X | PLOT DATE: XXX | FILE NAME: H45644_S-049.dgn

U.S. ARMY CORPS OF ENGINEERS
NEW ORLEANS DISTRICT
NEW ORLEANS, LOUISIANA

UPPER BARATARIA BASIN
LOUISIANA FEASIBILITY STUDY
-
LAFOURCHE AND ST. CHARLES PARISH, LA
-
WILLOWRIDGE PUMP STATION-NEW T-WALL
PLAN AND SECTION
(WILLOWRIDGE LEVEE AREA)

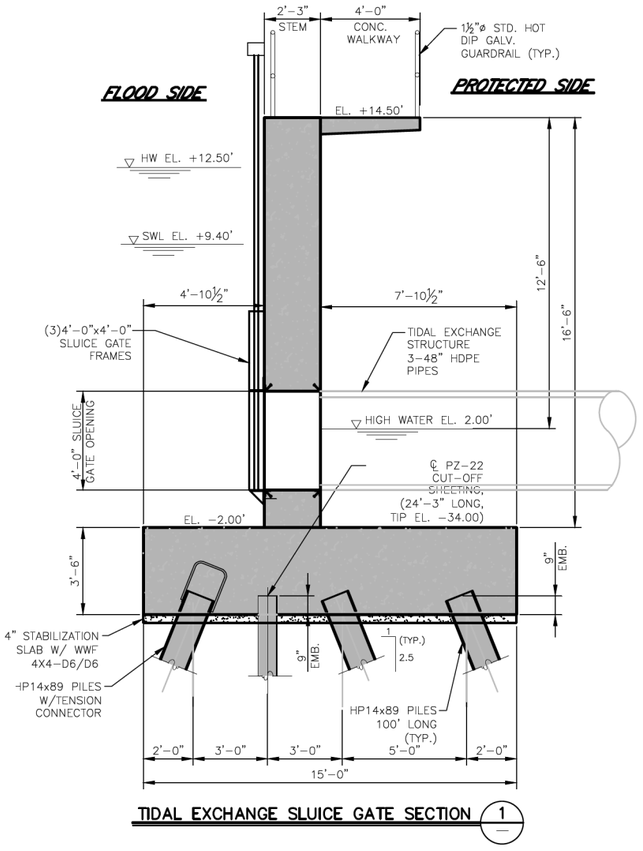
SHEET IDENTIFICATION
S-049



1

PLAN

GRAPHIC SCALE (IN FEET)
10 0 5 10 20



TIDAL EXCHANGE SLUICE GATE SECTION 1

PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION, BIDDING, RECORDATION, CONVEYANCE, SALES OR AS THE BASIS FOR THE ISSUANCE OF A PERMIT.

BURK-KLEINPETER, INC.

ENGINEER: SURENDRAKUMAR I. SHAH, P.E.
LA. LICENSE #: 17937
DATE: OCTOBER, 2018

LAFOURCHE BASIN LEVEE DISTRICT

DESIGNED BY: S.B.
DRAWN BY: K.K.
CKD BY: M.K.
SUBMITTED BY: M.K.R.
DATE: OCT., 2018
BKI JOB # NO. 18.001
PLOT DATE: XX-XX-XX
PLOT SCALE: 1" = 1'-0"
FILE NAME:
SIZE: 22"x34"

BURK KLEINPETER, INC.
4176 CANAL ST.
NEW ORLEANS, LA 70119
(504) 488-5901

UPPER BARATARIA RISK REDUCTION
CPRA PROJECT 002.HP.06
SEGMENT 1
SEGMENT 1-B
TIDAL EXCHANGE SLUICE GATE
PLAN AND SECTION
(WILLOWRIDGE LEVEE AREA)

SHEET IDENTIFICATION
16 OF 62

US Army Corps of Engineers®
NEW ORLEANS DISTRICT

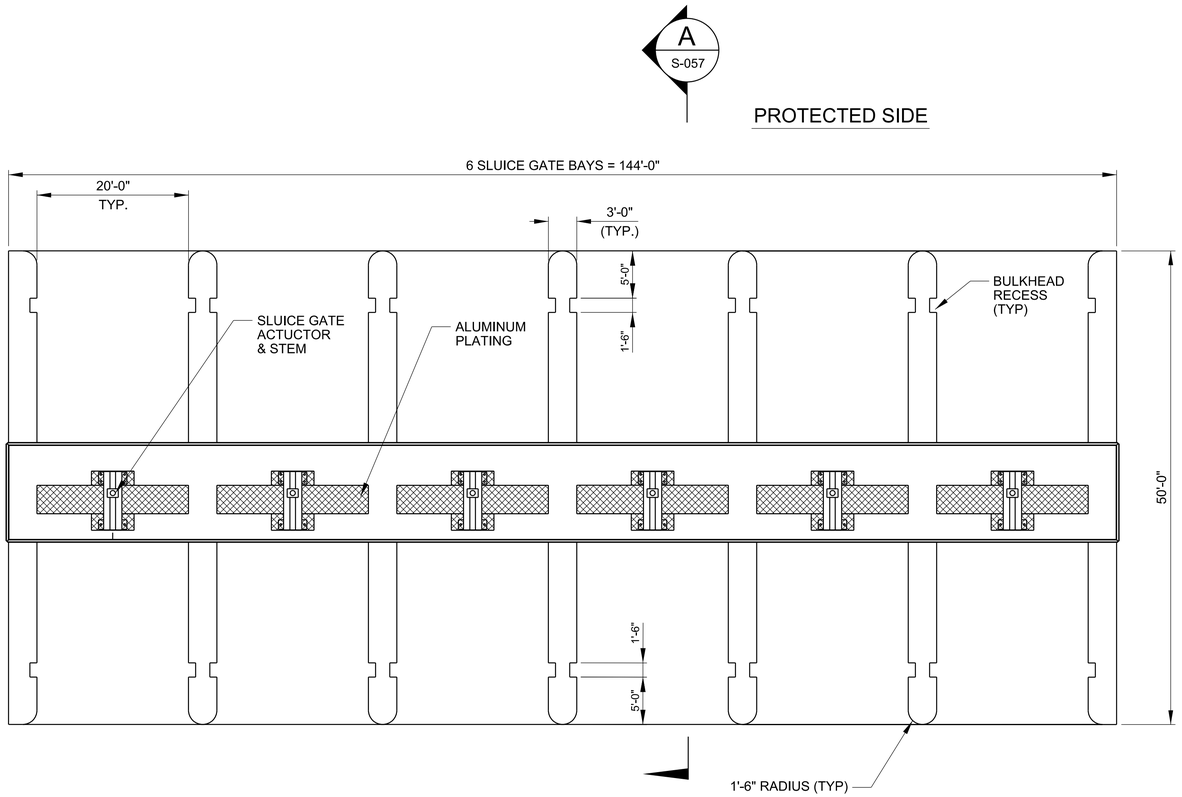
MARK	DESCRIPTION	DATE	APPR.

U.S. ARMY CORPS OF ENGINEERS
NEW ORLEANS DISTRICT
NEW ORLEANS, LOUISIANA

DESIGNED BY: XXX
DRAWN BY: DJM
CKD BY: XX
SUBMITTED BY: XXXX
DATE: XXX
SOLICITATION NO.: X
CONTRACT NO.: X
PLOT SCALE: X
PLOT DATE: X
FILE NUMBER: H44344
SIZE: ANSI D
FILE NAME: H44344_S-050.dgn

UPPER BARATARIA BASIN
LOUISIANA FEASIBILITY STUDY
-
LAFOURCHE AND ST. CHARLES PARISH, LA
TIDAL EXCHANGE SLUICE GATE
PLAN AND SECTION
(WILLOWRIDGE LEVEE AREA)

SHEET IDENTIFICATION
S-050



SLUICE GATE MASONRY PLAN

SCALE: 1/8" = 1'-0"

US Army Corps of Engineers
NEW ORLEANS DISTRICT

MARK	DESCRIPTION	DATE	APPR.

MARK	DESCRIPTION	DATE	APPR.

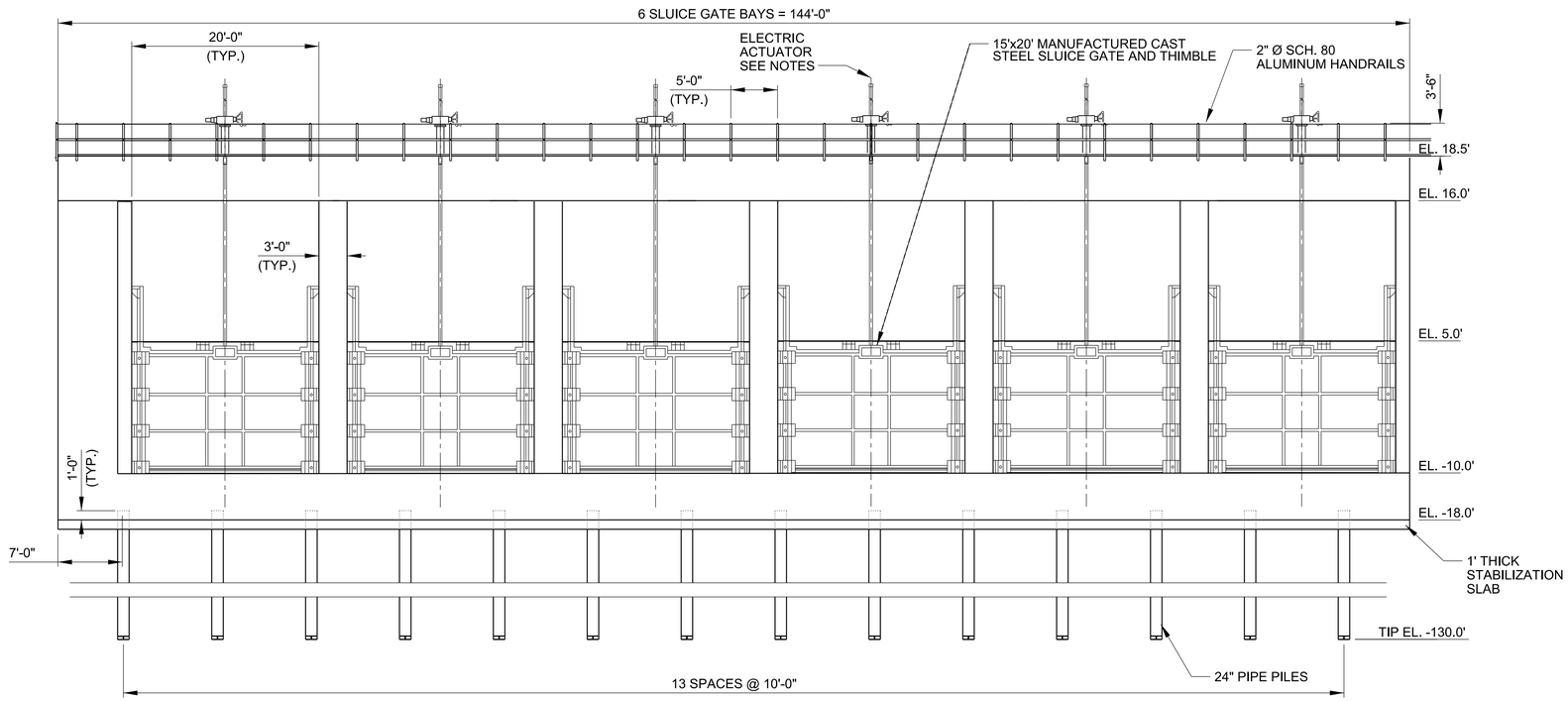
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DWN BY: DJM
CKD BY: XXX
SUBMITTED BY: XXXX
PLOT SCALE: 1:1
DATE: XXX
SOLICITATION NO.: X
CONTRACT NO.: X
PLOT DATE: XXX
FILE NUMBER: H44XXX
SIZE: ANSI D
FILE NAME: H94754 1-S-054A---.dgn

U.S. ARMY CORPS OF ENGINEERS
NEW ORLEANS DISTRICT
NEW ORLEANS, LOUISIANA

UPPER BARATARIA BASIN
LOUISIANA FEASIBILITY STUDY
-
LAFOURCHE AND ST. CHARLES PARISH, LA

SLUICE GATE
MASONRY PLAN

SHEET IDENTIFICATION
S-054A



SLUICE GATE FLOOD SIDE ELEVATION

SCALE: ⅛" = 1'-0"

US Army Corps of Engineers®
NEW ORLEANS DISTRICT

MARK	DESCRIPTION	DATE	APPR.

MARK	DESCRIPTION	DATE	APPR.

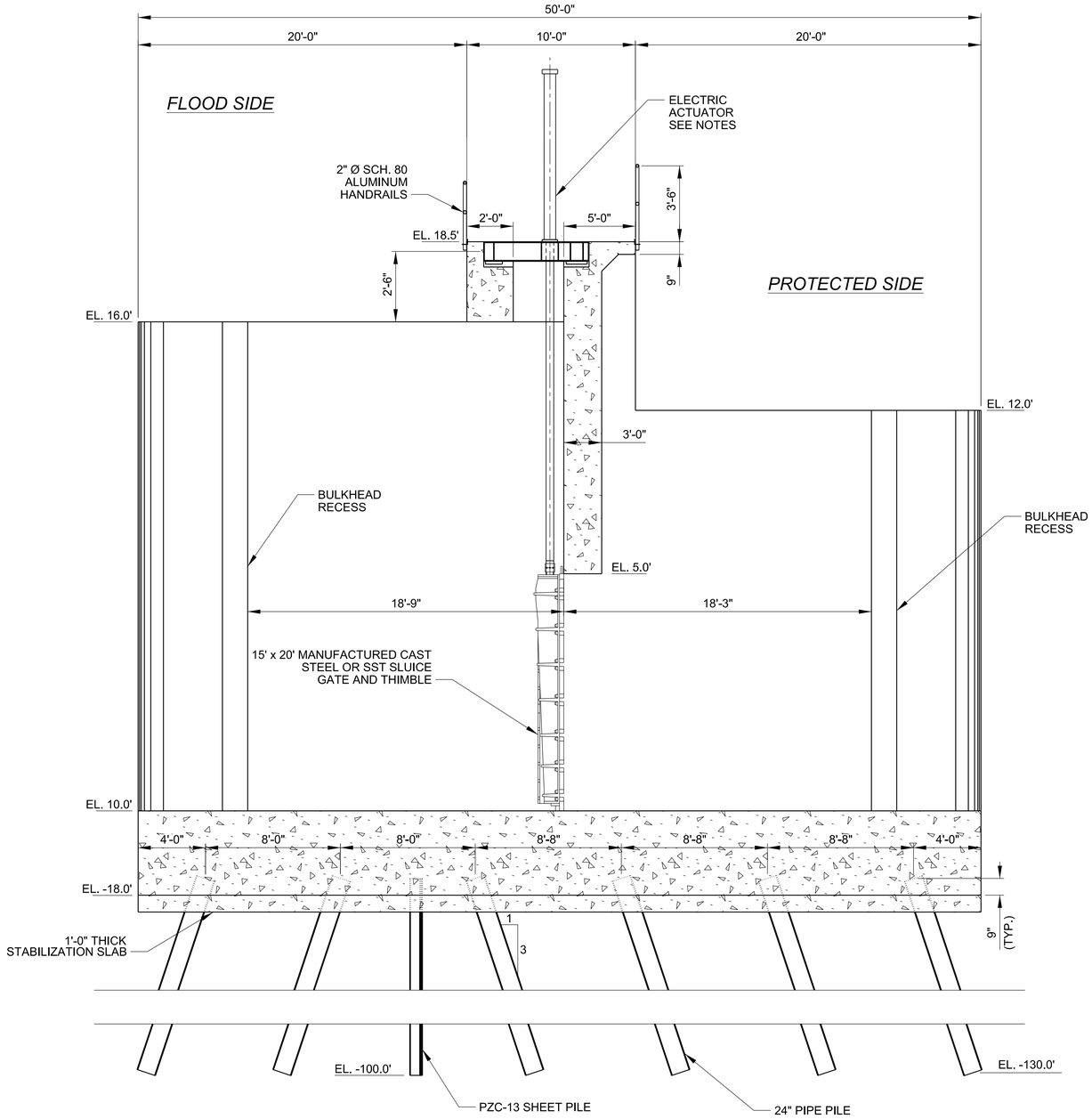
U.S. ARMY CORPS OF ENGINEERS
NEW ORLEANS DISTRICT
NEW ORLEANS, LOUISIANA

DESIGNED BY: XXX
DWN BY: DJM
SUBMITTED BY: XXXX
PLOT SCALE: X
DATE: XXX
CKD BY: XX
PLOT DATE: XX
SOLICITATION NO.: X
CONTRACT NO.: X
FILE NUMBER: H&HXXX
FILE NAME: H&H7541_S-055A---.dgn
SIZE: ANSI D

UPPER BARATARIA BASIN
LOUISIANA FEASIBILITY STUDY
-
LAFOURCHE AND ST. CHARLES PARISH, LA

SLUICE GATE
FRONT ELEVATION

SHEET IDENTIFICATION
S-055A



SECTION A
SCALE: ¼" = 1'-0"
S-054

NOTES:
1.) SLUICE GATES SHALL BE 15' x 20' W/ A BIFFI ICON 050/1440-173 ACTUATOR W/ A DIAMOND GEAR 105BG7 BEVEL GEAR W/ 4.9' DIAMETER, OR APPROVED EQUAL.
2.) ALL H PILES & SHEET PILES SHALL MEET THE REQUIREMENTS OF ASTM A572, GRADE 50.
3.) ALL CONCRETE SHALL HAVE A MIN. 28 DAY CPMPRESSIVE STRENGTH OF 4,000 PSI.
4.) ALL HANDRAILS SHALL BE 2" ALUMINUM PIPE ALLOY 6061-T6 W/ FLANGE FITTINGS.

US Army Corps of Engineers
NEW ORLEANS DISTRICT

MARK	DESCRIPTION	DATE	APPR.

MARK	DESCRIPTION	DATE	APPR.

U.S. ARMY CORPS OF ENGINEERS
NEW ORLEANS DISTRICT
NEW ORLEANS, LOUISIANA

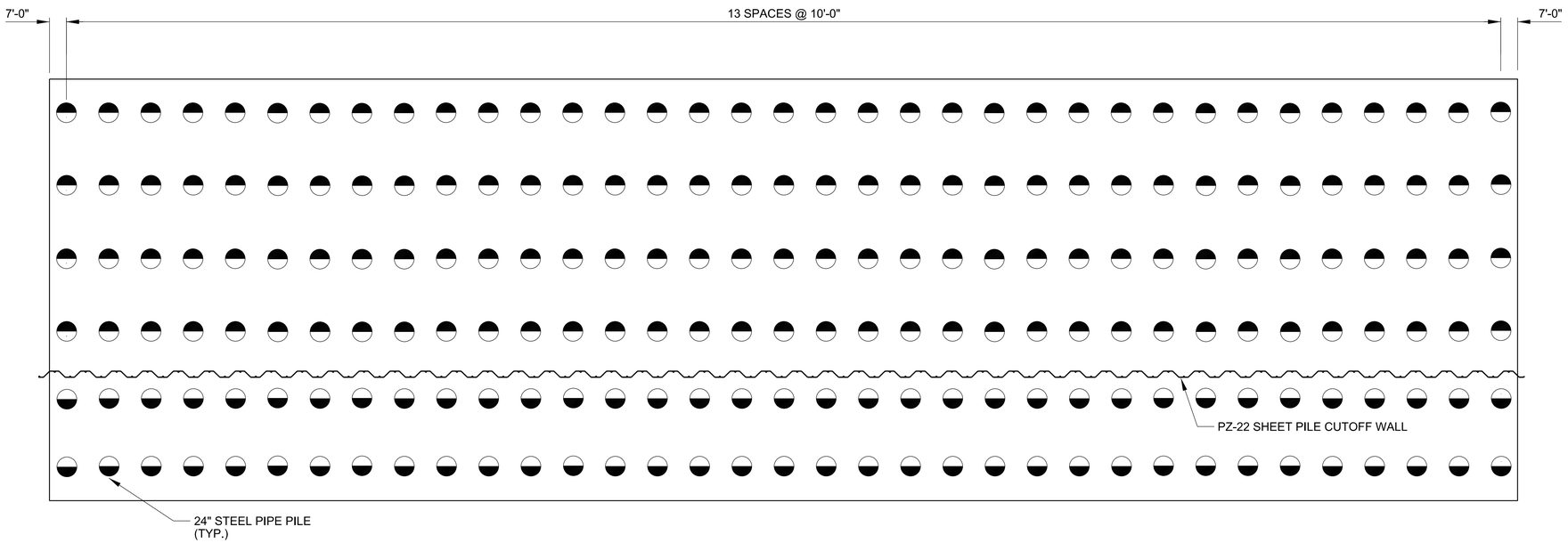
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DWN BY: DJM
CKD BY: CRL
SUBMITTED BY: XXXX
DATE: XXX
SOLICITATION NO.: X
CONTRACT NO.: X
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PLOT DATE: XXX
FILE NUMBER: H448444
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SIZE: ANSI D

UPPER BARATARIA BASIN
LOUISIANA FEASIBILITY STUDY
-
LAFOURCHE AND ST. CHARLES PARISH, LA

SLUICE GATE
SECTION

SHEET IDENTIFICATION
S-057A

PROTECTED SIDE



FLOOD SIDE

SLUICE GATE PILE FOUNDATION PLAN

SCALE: ⅛" = 1'-0"

LEGEND

BATTERED 3V: 1H 24" STEEL PIPE PILE
BOX INDICATES DIRECTION OF BATTER

NOTES:
1.) ALL PILES ON THE FLOOD SIDE OF THE SHEET PILE CUTOFF WALL RECEIVE TENSION ANCHORS
2.) ALL H PILES & SHEET PILE SHALL MEET THE REQUIREMENTS OF ATSM A572, GRADE 50.

US Army Corps of Engineers®
NEW ORLEANS DISTRICT

MARK	DESCRIPTION	DATE	APPR.

MARK	DESCRIPTION	DATE	APPR.

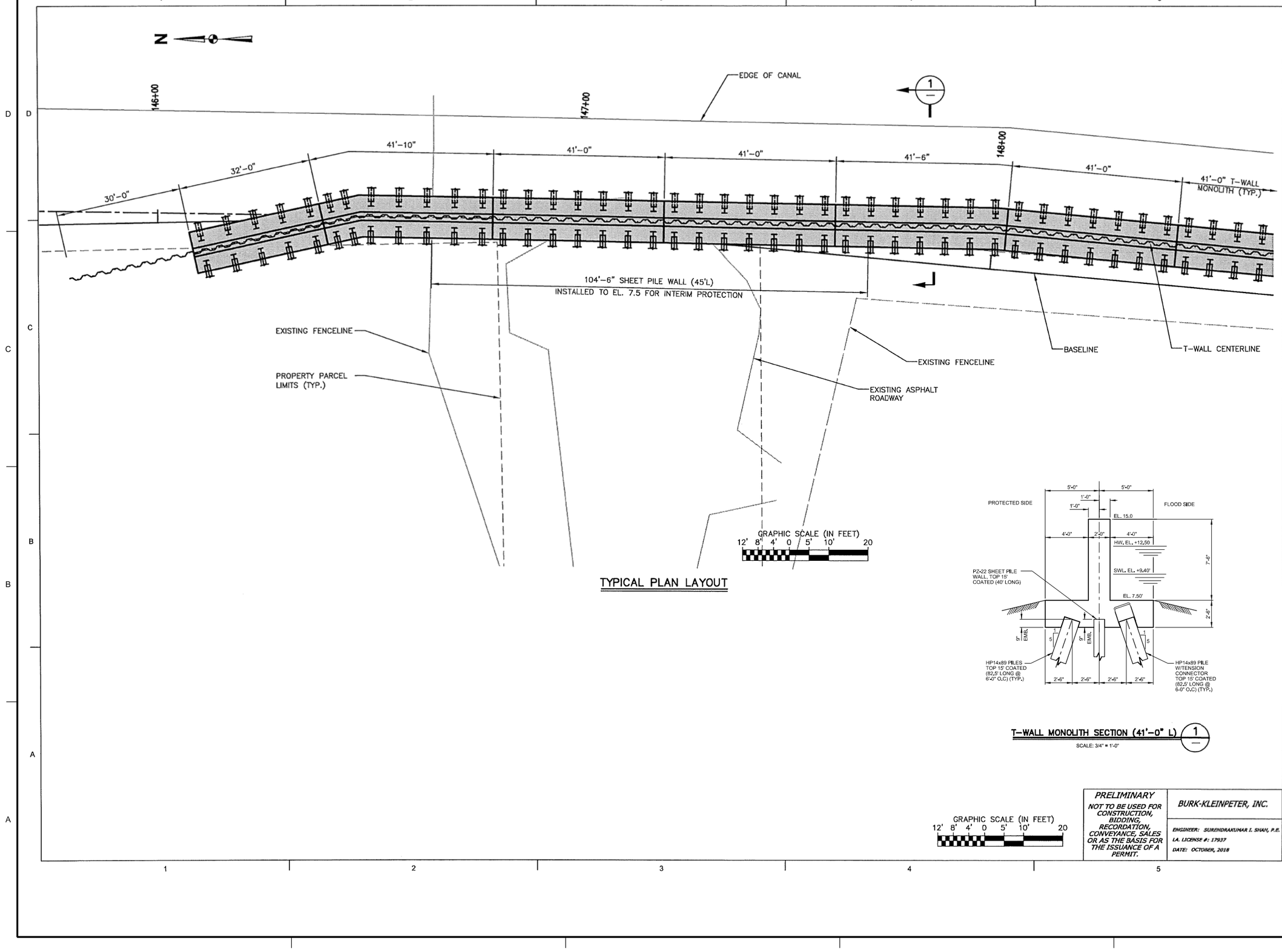
U.S. ARMY CORPS OF ENGINEERS
NEW ORLEANS DISTRICT
NEW ORLEANS, LOUISIANA

DESIGNED BY: DPL
DWN BY: DJM
CKD BY: CRL
SUBMITTED BY: XXXX
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PLOT DATE: XXX
DATE: XXX
SOLICITATION NO.: X
CONTRACT NO.: X
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SIZE: ANSI D
FILE NAME: H94754_S-058A---.dgn

UPPER BARATARIA BASIN
LOUISIANA FEASIBILITY STUDY
-
LAFOURCHE AND ST. CHARLES PARISH, LA

SLUICE GATE
PILE FOUNDATION
PLAN

SHEET IDENTIFICATION
S-058



TYPICAL PLAN LAYOUT

T-WALL MONOLITH SECTION (41'-0" L) 1

SCALE: 3/4" = 1'-0"

GRAPHIC SCALE (IN FEET)
12' 8' 4' 0 5' 10' 20

PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION, BIDDING, RECORDATION, CONVEYANCE, SALES OR AS THE BASIS FOR THE ISSUANCE OF A PERMIT.

BURK-KLEINPETER, INC.

ENGINEER: SURENDRAKUMAR I. SHAH, P.E.
LA. LICENSE #: 17937
DATE: OCTOBER, 2018

LAFOURCHE BASIN LEVEE DISTRICT

BURK KLEINPETER, INC.
4176 CANAL ST.
NEW ORLEANS, LA. 70119
(504) 486-5901

DESIGNED BY: S.B.
DWN BY: I.A.
CKD BY: M.K.
SUBMITTED BY: M.K.R.
PLOT SCALE: 22"X34"
PLOT DATE: OCT. 2018
FILE NAME:
DATE: OCT., 2018
BKI JOB # NO.18.001

MARK	DESCRIPTION	DATE	APPR.

UPPER BARATARIA BASIN RISK REDUCTION
CPRA PROJECT 002.HP.06
SEGMENT 2

SUNSET LEVEE FRONTAL PROTECTION
STA. 146+25 TO 174+35 NEW T-WALL
TYPICAL PLAN AND SECTION

SHEET IDENTIFICATION
60 OF 71

US Army Corps of Engineers
NEW ORLEANS DISTRICT

MARK	DESCRIPTION	DATE	APPR.

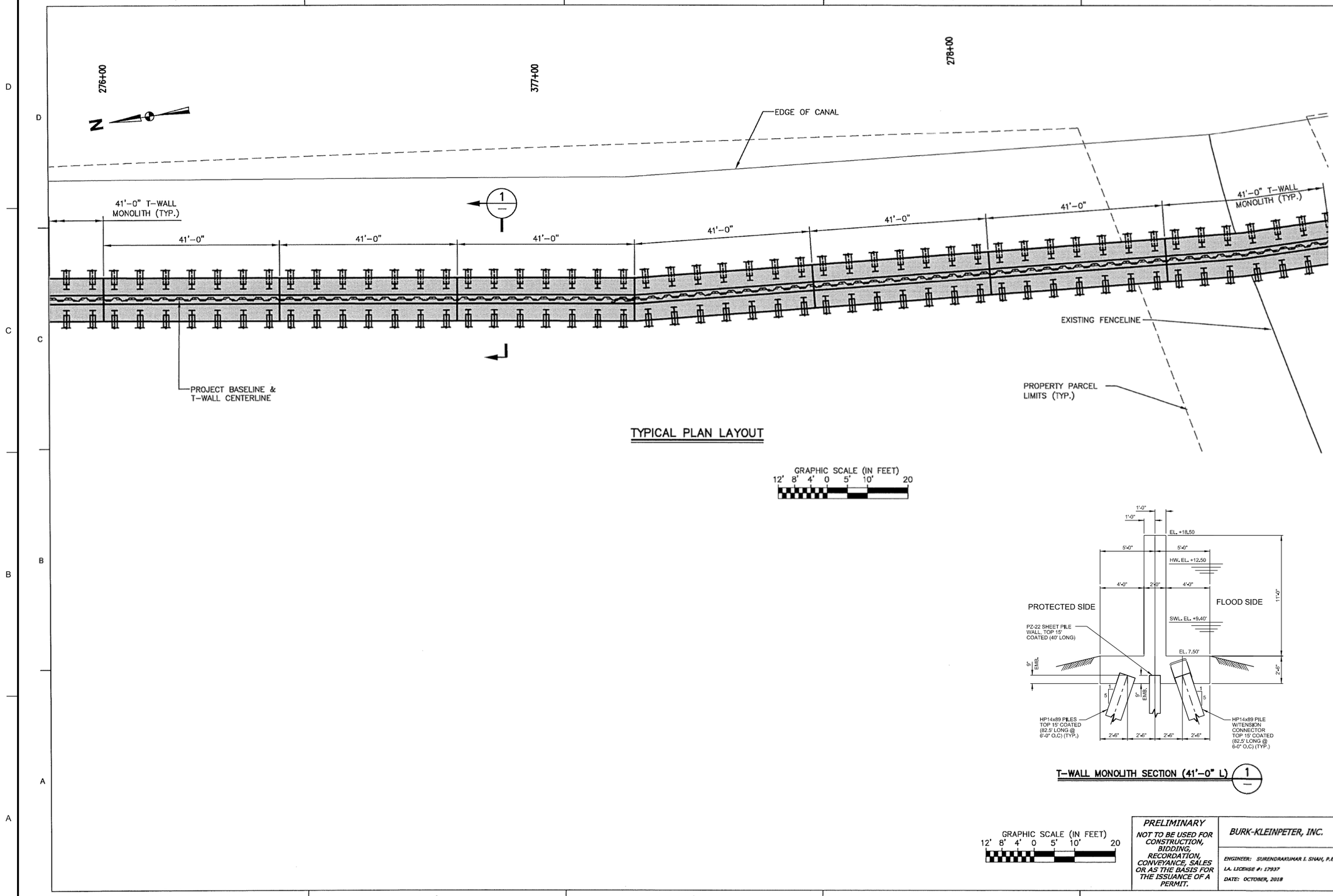
U.S. ARMY CORPS OF ENGINEERS
NEW ORLEANS DISTRICT
NEW ORLEANS, LOUISIANA

DESIGNED BY: XXX
DWN BY: DJM
CKD BY: XX
SUBMITTED BY: XXXX
PLOT SCALE: 1" = 1'
PLOT DATE: XX-XX-XX
FILE NUMBER: H438424
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DATE: XXX
SOLICITATION NO.: X
CONTRACT NO.: X

UPPER BARATARIA BASIN
LOUISIANA FEASIBILITY STUDY
-
LAFOURCHE AND ST. CHARLES PARISH, LA

FRONTING PROTECTION
TYPICAL PLAN AND SECTION

SHEET IDENTIFICATION
S-060



TYPICAL PLAN LAYOUT

GRAPHIC SCALE (IN FEET)
12' 8' 4' 0 5' 10' 20

T-WALL MONOLITH SECTION (41'-0" L) 1

GRAPHIC SCALE (IN FEET)
12' 8' 4' 0 5' 10' 20

PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION, BIDDING, RECORDATION, CONVEYANCE, SALES OR AS THE BASIS FOR THE ISSUANCE OF A PERMIT.

BURK-KLEINPETER, INC.

ENGINEER: SURENDRAKUMAR I. SHAH, P.E.
LA. LICENSE #: 17937
DATE: OCTOBER, 2018

SHEET IDENTIFICATION
61 OF 71

US Army Corps of Engineers
NEW ORLEANS DISTRICT

MARK	DESCRIPTION	DATE	APPR.

LA TOMBIGBEE BASIN LEVEE DISTRICT
WALKER, LA.

MARK	DESCRIPTION	DATE	APPR.

LAFOURCHE BASIN LEVEE DISTRICT

DESIGNED BY: M.K.R.
DWN BY: J.P.H.
SUBMITTED BY: M.K.R.
PLOT SCALE: 1:1
PLOT DATE: OCT. 2018
SIZE: 22"X34"
FILE NAME:
DATE: OCT., 2018
CHD BY: M.K.R.
BKI JOB # NO. 18.001

BURK KLEINPETER, INC.
4176 CANAL ST.
NEW ORLEANS, LA. 70119
(504) 488-5901

UPPER BARATARIA BASIN RISK REDUCTION
CPRA PROJECT 002.HP.06
SEGMENT 2
SUNSET LEVEE FRONTAL PROTECTION
STA. 223+84 TO STA. 307+00 NEW T-WALL
TYPICAL PLAN AND SECTION

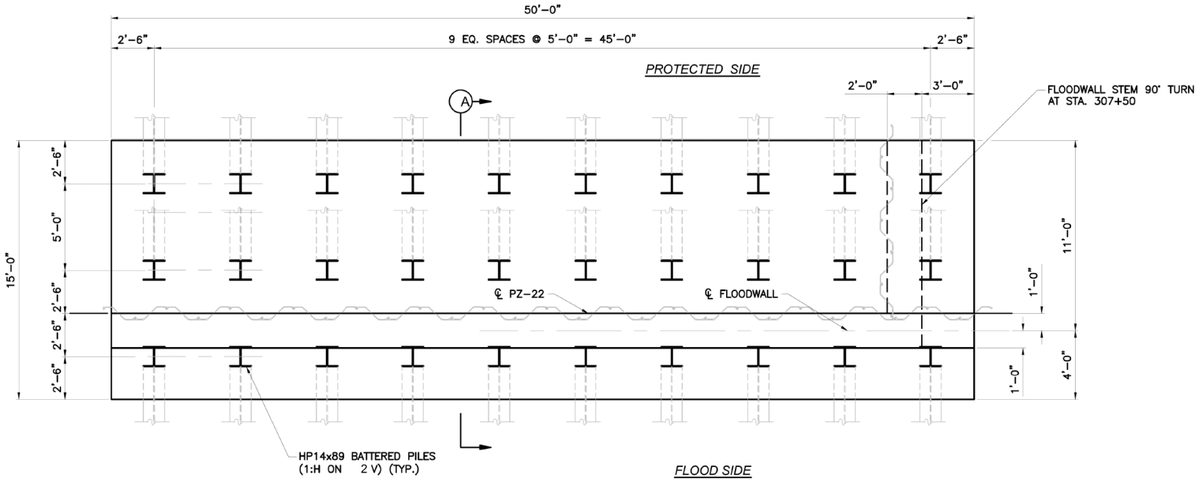
U.S. ARMY CORPS OF ENGINEERS
NEW ORLEANS DISTRICT
NEW ORLEANS, LOUISIANA

DESIGNED BY: XXX
DWN BY: DJM
SUBMITTED BY: XXXX
PLOT SCALE: XX
DATE: XXX
CKD BY: XX
PLOT DATE: XX
SIZE: ANSI D
FILE NAME: H44644_S-061.dgn
SOLICITATION NO.: X
CONTRACT NO.: X
FILE NUMBER: H44XXX

UPPER BARATARIA BASIN
LOUISIANA FEASIBILITY STUDY
-
LAFOURCHE AND ST. CHARLES PARISH, LA

TYPICAL PLAN AND SECTION

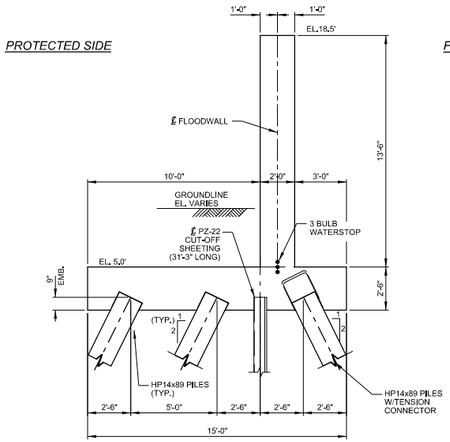
SHEET IDENTIFICATION
S-061



T-WALL MONOLITH T1 FOUNDATION PLAN

SCALE: 1/4" = 1'-0"

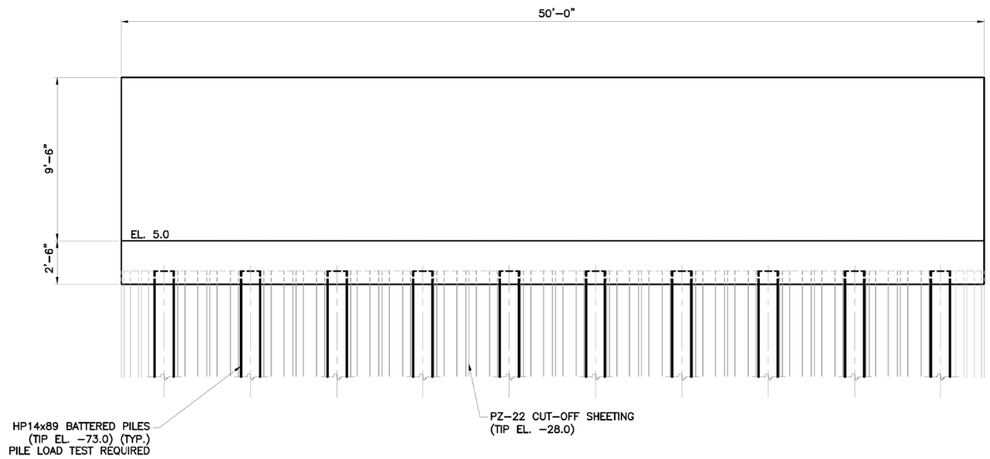
NOTE: T–WALL T1 TO BE CONSTRUCTED AT
STA. 307+50 TO STA. 309+00
STA. 322+25 TO STA. 327+00
STA. 333+50 TO STA. 333+75



SCALE: NTS

SECTION (A)

SCALE: NTS



T-WALL MONOLITH T1 FOUNDATION ELEVATION

SCALE: 1/4" = 1'-0"

GRAPHIC SCALE
4' 0 4' 8'
SCALE: 1/4"=1'-0"
2' 0 2' 4'
SCALE: 1/2"=1'-0"

THIS DRAWING HAS BEEN REDUCED TO ONE HALF SIZE

PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION, BIDDING, RECORDATION, CONVEYANCE, SALES OR AS THE BASIS FOR THE ISSUANCE OF A PERMIT.

APTIM ENVR. & INFR., INC.

ENGINEER: JAMES E. TROWBRIDGE
LA. LICENSE #: 16825
DATE: AUGUST, 2018

SHEET IDENTIFICATION
62 OF 71

LA FOURCHE BASIN LEVEE DIST. HOUMA, LA.

DESIGNED BY: J.E.T.	DATE: AUGUST 2018
DWN BY: T.O.T.	CKD BY: J.E.T.
SUBMITTED BY: R.P.M.	APTIM JOB# NO. 631233710
PLOT SCALE: 1:1	PLOT DATE: AS PER DATE
SIZE: 22"X34"	FILE NAME:

LAFOURCHE BASIN LEVEE DISTRICT

APTIM ENVR. & INFR., INC
2503 PETROLEUM DR.
HOUMA, LA 70363
(985) 868-3434

UPPER BARATARIA BASIN RISK REDUCTION
CPRA PROJECT 002 HP 06
SEGMENT 2
MONOLITH T1 DETAILS

US Army Corps of Engineers
NEW ORLEANS DISTRICT

MARK	DESCRIPTION	DATE	APPR.

DESIGNED BY: XXX	DATE: XXX
DWN BY: DJM	CKD BY: XX
SUBMITTED BY: XXXX	SOLICITATION NO.: X
PLOT SCALE: ANSI D	CONTRACT NO.: X
SIZE: ANSI D	PLOT DATE: XX
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	FILE NAME: H48444_S-062.dgn

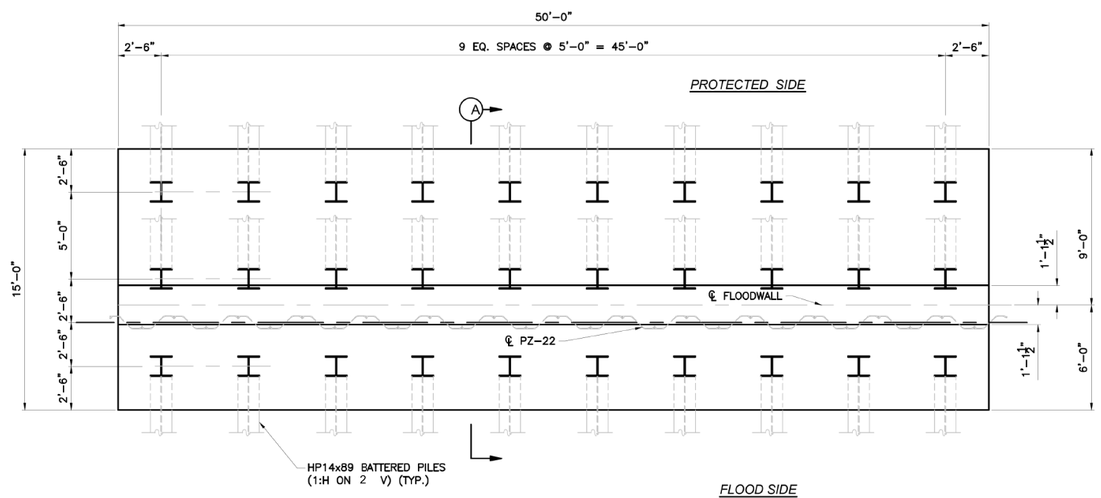
U.S. ARMY CORPS OF ENGINEERS
NEW ORLEANS DISTRICT
NEW ORLEANS, LOUISIANA

UPPER BARATARIA BASIN
LOUISIANA FEASIBILITY STUDY
-
LAFOURCHE AND ST. CHARLES PARISH, LA

MONOLITHE T1 DETAILS

SHEET IDENTIFICATION
S-062

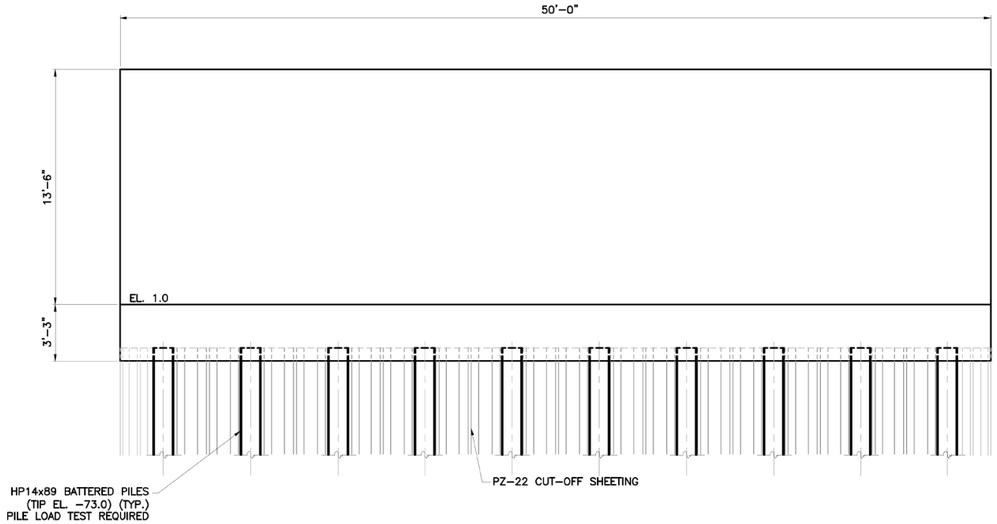
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T-WALL MONOLITH T2 FOUNDATION PLAN

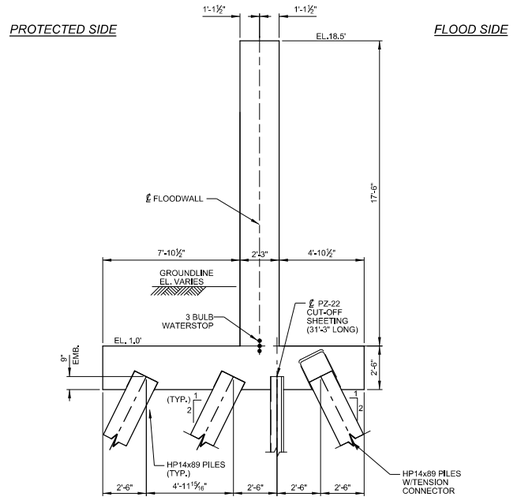
SCALE: 1/4" = 1'-0"

NOTE: T-WALL T2 TO BE CONSTRUCTED AT
STA. 309+00 TO STA. 309+50
STA. 321+75 TO STA. 322+25
STA. 327+00 TO STA. 331+75
STA. 333+00 TO STA. 333+50



T-WALL MONOLITH T2 FOUNDATION ELEVATION

SCALE: 1/4" = 1'-0"



SECTION A

SCALE: NTS

THIS DRAWING HAS BEEN REDUCED TO ONE HALF SIZE

GRAPHIC SCALE
4' 0 4' 8'
SCALE: 1/4"=1'-0"
2' 0 2' 4'
SCALE: 1/2"=1'-0"

PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION, BIDDING, RECORDATION, CONVEYANCE, SALES OR AS THE BASIS FOR THE ISSUANCE OF A PERMIT.

APTIM ENVR. & INFR., INC.
ENGINEER: JAMES E. TROWBRIDGE
LA. LICENSE #: 16825
DATE: AUGUST, 2018

SHEET IDENTIFICATION
63 OF 71

LA FOURCHE BASIN LEVEE DISTRICT
HOUMA, LA

MARK	DESCRIPTION	DATE	APPR.

DESIGNED BY: J.E.T.
DWN BY: T.N.T.
CKD BY: J.E.T.
SUBMITTED BY: N.P.M.
DATE: AUGUST 2018
APTIM JOB# NO. 631231710
PLOT SCALE: 1:1
PLOT DATE: Sept. 10, 2018
SIZE: 22"X34"
FILE NAME:

LAFOURCHE BASIN LEVEE DISTRICT

APTIM ENVR. & INFR., INC.
2903 PETROLEUM DR.
HOUMA, LA 70363
(985) 868-3434

UPPER BARATARIA BASIN RISK REDUCTION
CPRA PROJECT 002.HP.06
SEGMENT 2
MONOLITH T2 DETAILS

US Army Corps of Engineers
NEW ORLEANS DISTRICT

MARK	DESCRIPTION	DATE	APPR.

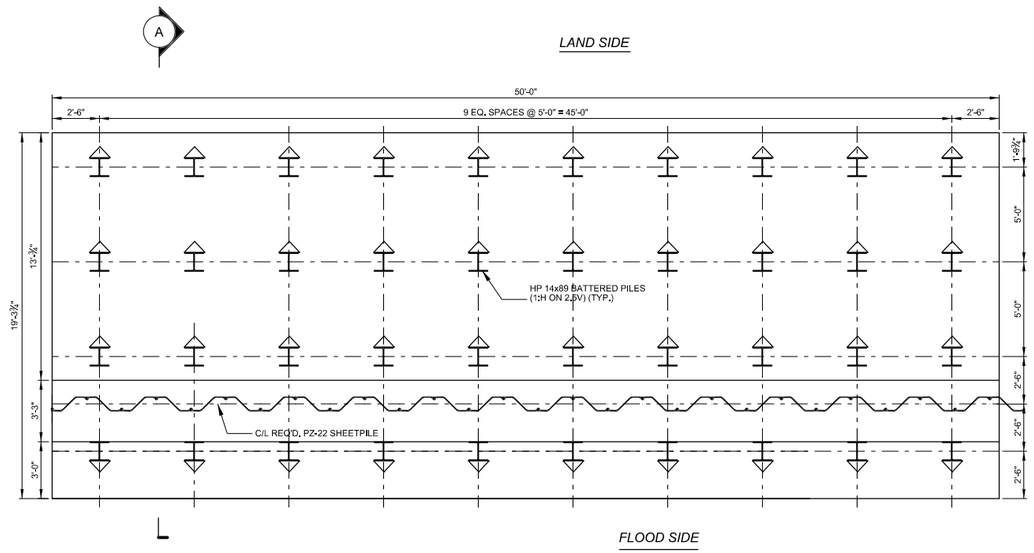
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CKD BY: XX
SUBMITTED BY: XXXX
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PLOT DATE: XX
DATE: XXX
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CONTRACT NO.: X
FILE NUMBER: H44XXX
SIZE: ANSI D
FILE NAME: H44444_S-063.dgn

U.S. ARMY CORPS OF ENGINEERS
NEW ORLEANS DISTRICT
NEW ORLEANS, LOUISIANA

UPPER BARATARIA BASIN
LOUISIANA FEASIBILITY STUDY
-
LAFOURCHE AND ST. CHARLES PARISH, LA

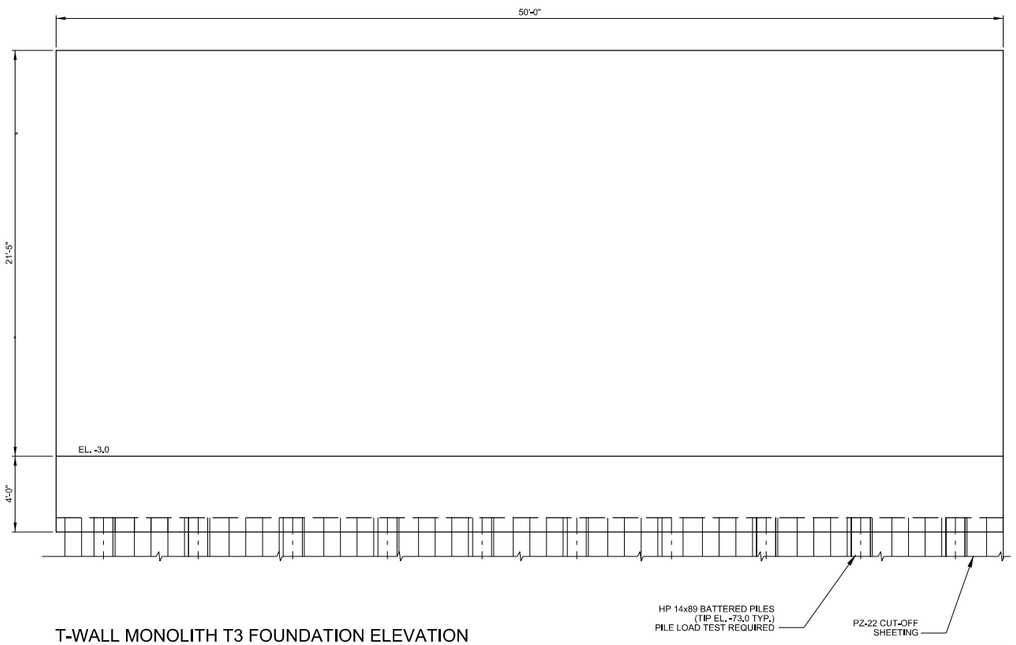
MONOLITH T2 DETAILS

SHEET IDENTIFICATION
S-063



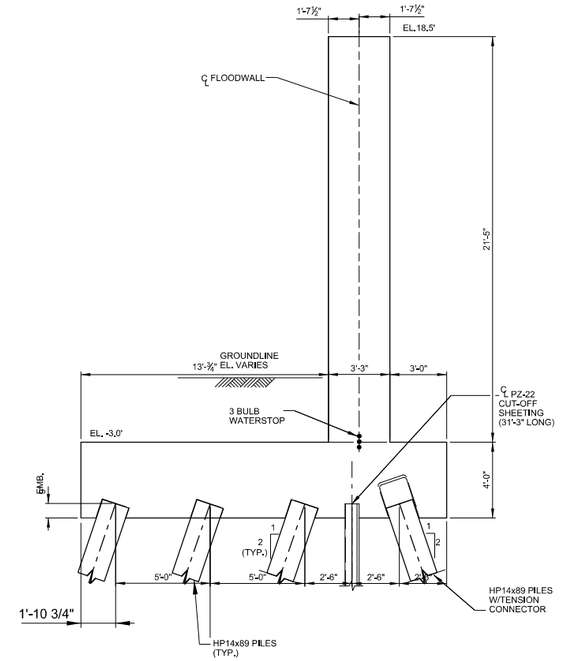
T-WALL MONOLITH T3 FOUNDATION PLAN

SCALE: 1/4" = 1'-0"
NOTE: T-WALL TO BE CONSTRUCTED AT STA. 309+50 TO STA. 318+35
STA. 318+83 TO STA. 321+75
STA. 331+75 TO STA. 332+00
STA. 332+70 TO STA. 333+00



T-WALL MONOLITH T3 FOUNDATION ELEVATION

SCALE: 1'= 1'-0"



A SECTION - T-WALL MONOLITH T3 FOUNDATION

SCALE: 1/4" = 1'-0"

US Army Corps of Engineers
NEW ORLEANS DISTRICT

MARK	DESCRIPTION	DATE	APPR.
MARK	DESCRIPTION	DATE	APPR.

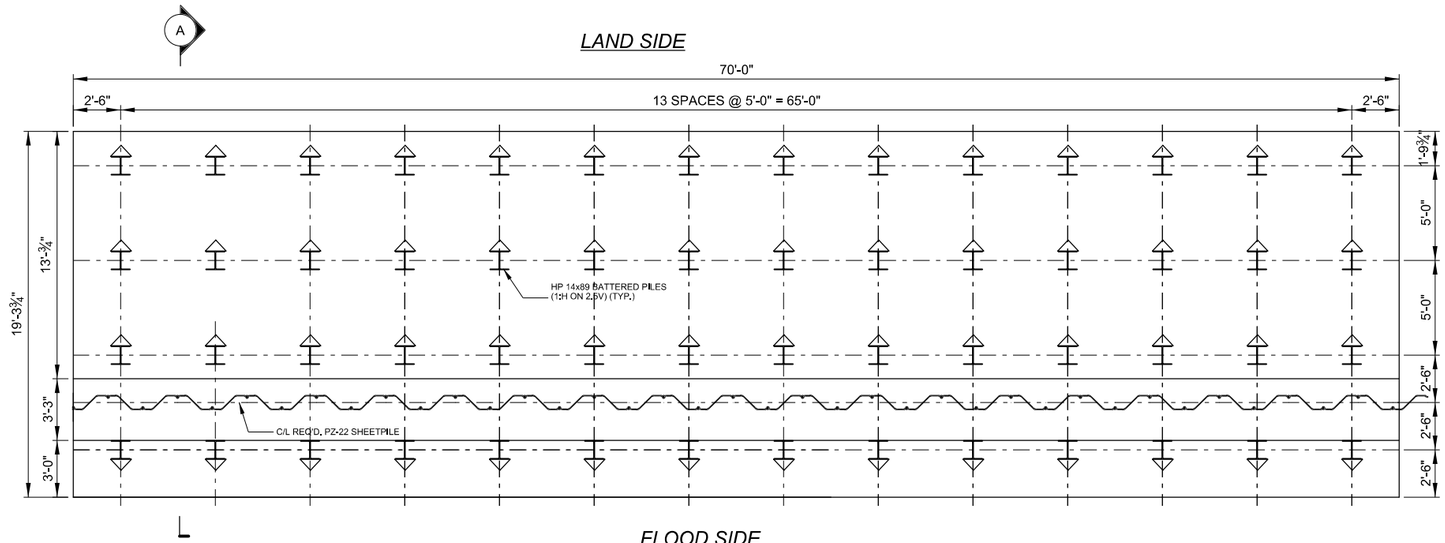
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SUBMITTED BY: XXXX
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SIZE: ANSI D

U.S. ARMY CORPS OF ENGINEERS
NEW ORLEANS DISTRICT
NEW ORLEANS, LOUISIANA

UPPER BARATARIA BASIN
LOUISIANA FEASIBILITY STUDY
-
LAFOURCHE AND ST. CHARLES PARISH, LA

MONOLITHE T-3 DETAILS

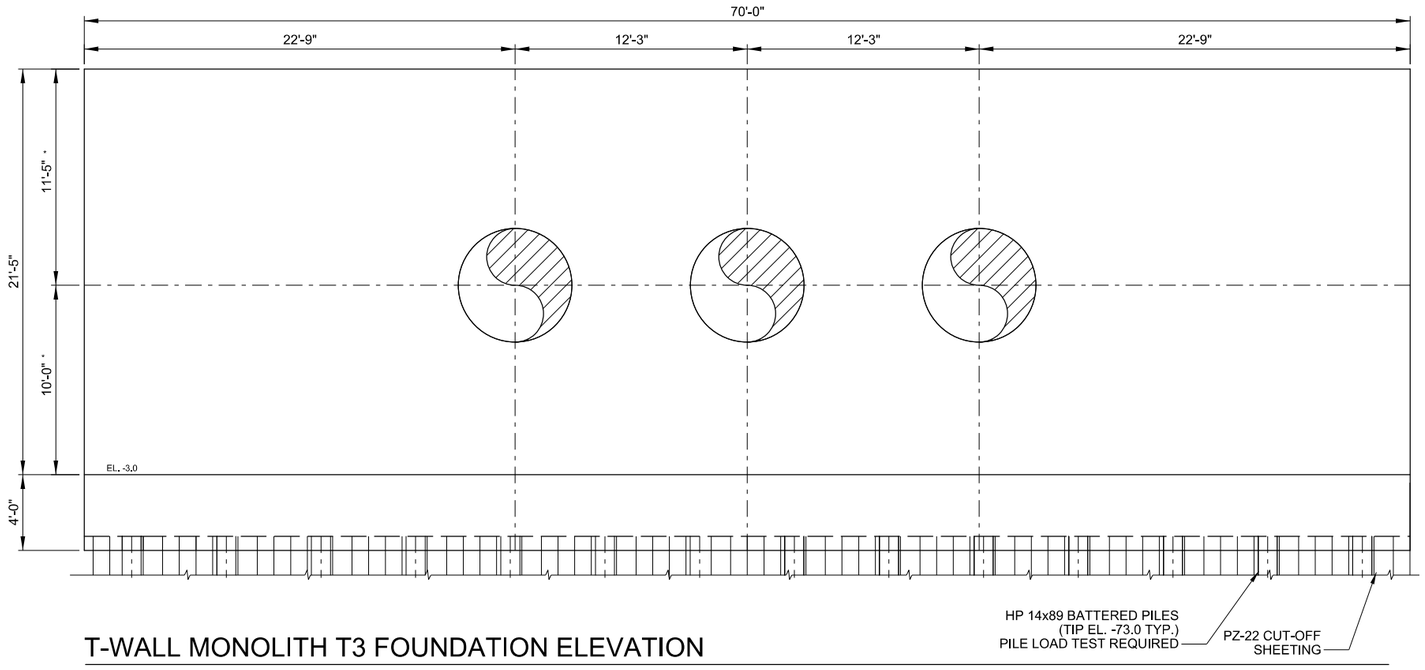
SHEET IDENTIFICATION
S-064



T-WALL MONOLITH T3 FOUNDATION PLAN

SCALE: 1/4" = 1'-0"

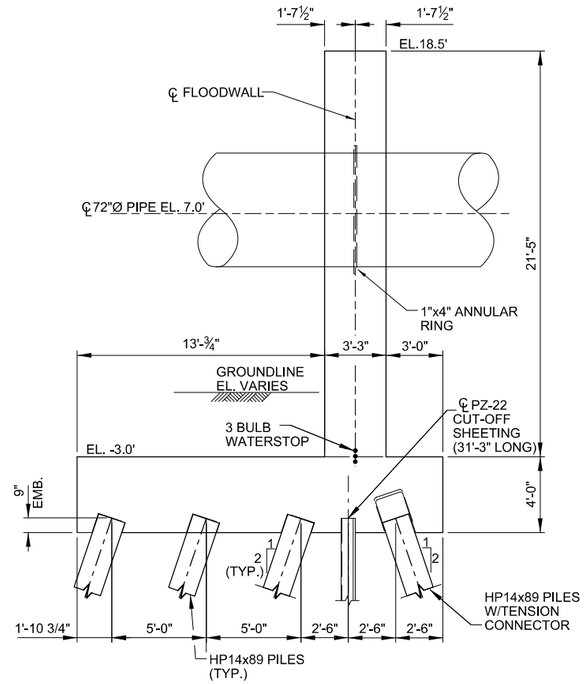
NOTE: T-WALL TO BE CONSTRUCTED AT STA. 332+00 TO STA. 332+70



T-WALL MONOLITH T3 FOUNDATION ELEVATION

SCALE: 1/4" = 1'-0"

*VERIFY PIPE SIZE AND ELEVATION



A SECTION - T-WALL MONOLITH T3 FOUNDATION

SCALE: 1/4" = 1'-0"

US Army Corps of Engineers
NEW ORLEANS DISTRICT

MARK	DESCRIPTION	DATE	APPR.

MARK	DESCRIPTION	DATE	APPR.

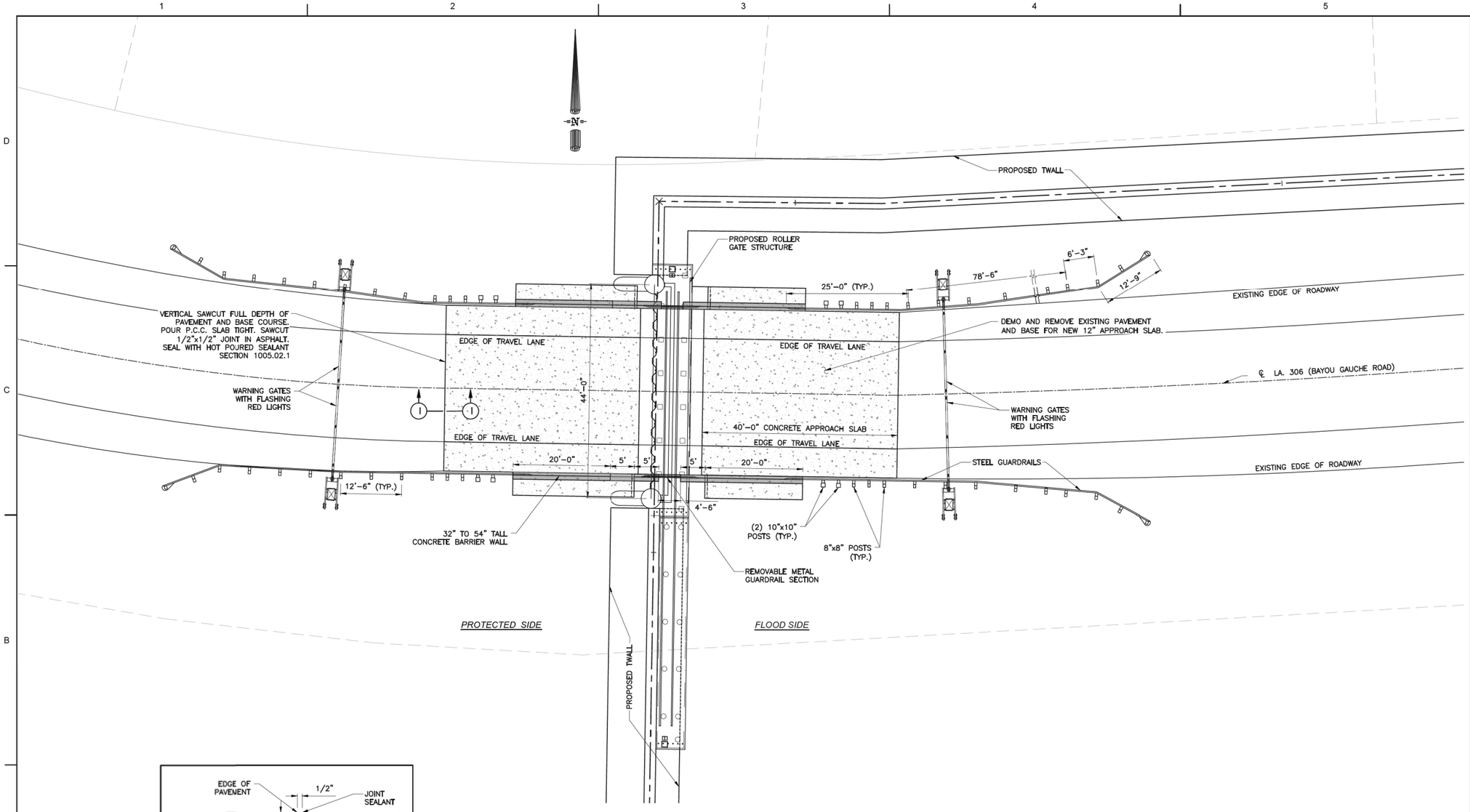
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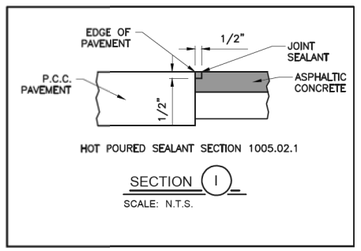
U.S. ARMY CORPS OF ENGINEERS
NEW ORLEANS DISTRICT
NEW ORLEANS, LOUISIANA

UPPER BARATARIA BASIN
LOUISIANA FEASIBILITY STUDY
-
LAFOURCHE AND ST. CHARLES PARISH, LA

65 OF 71

SHEET IDENTIFICATION
S-65





HOT POURED SEALANT SECTION 1005.02.1

SECTION I

SCALE: N.T.S.

ROLLERGATE ROAD PLAN

SCALE: 1"=10'

10' 0' 10' 20' 30'

THIS DRAWING HAS BEEN REDUCED TO ONE HALF SIZE

PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION, BIDDING, RECORDATION, CONVEYANCE, SALES OR AS THE BASIS FOR THE ISSUANCE OF A PERMIT.

APTIM ENVR. & INFR., INC.

ENGINEER: JAMES E. TROWBRIDGE
LA. LICENSE #: 16825
DATE: AUGUST, 2018

LAFOURCHE BASIN LEVEE DISTRICT

APTIM ENVR. & INFR., INC.
2503 PETROLEUM DR.
HOUMA, LA. 70363
(985) 868-3434

APTIM

DESIGNED BY:	DATE: AUGUST, 2018
DWN BY: T.O.T	CKD BY: J.E.T.
SUBMITTED BY:	APTIM JOB# NO. 631233/17103
PLOT SCALE: 1:1	PLOT DATE: Sept 10, 2018
SIZE: 22"x34"	FILE NAME:

UPPER BARATARIA BASIN RISK REDUCTION
CPRA PROJECT 002.HP.06
SEGMENT 2

ROLLERGATE ROAD PLAN

SHEET IDENTIFICATION
66 OF 71

US Army Corps of Engineers
NEW ORLEANS DISTRICT

MARK	DESCRIPTION	DATE	APPR.

DESIGNED BY: XXX	DATE: XXX
DWN BY: DJM	CKD BY: XX
SUBMITTED BY: XXXX	SOLICITATION NO.: X
PLOT SCALE: ANSI D	CONTRACT NO.: X
	PLOT DATE: XX
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	FILE NAME: H44644_S-066.dgn

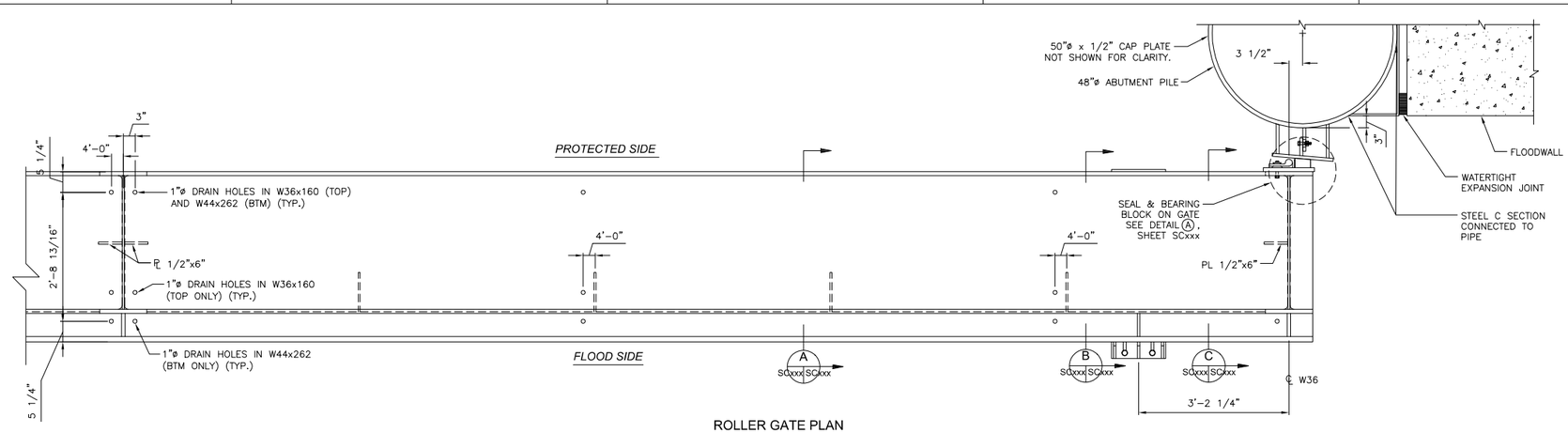
U.S. ARMY CORPS OF ENGINEERS
NEW ORLEANS DISTRICT
NEW ORLEANS, LOUISIANA

UPPER BARATARIA BASIN
LOUISIANA FEASIBILITY STUDY
-
LAFOURCHE AND ST. CHARLES PARISH, LA

ROLLERGATE ROAD PLAN

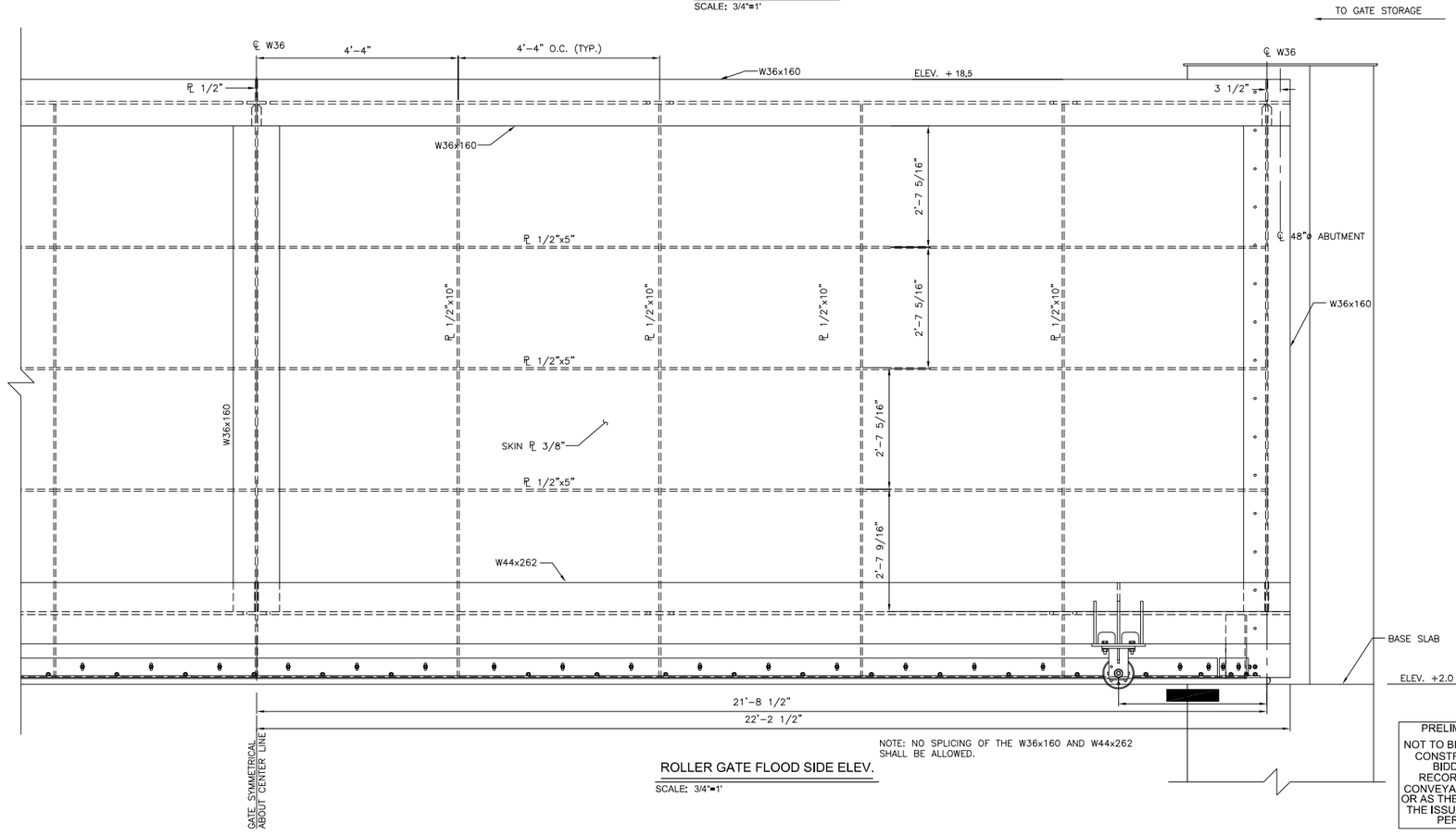
SHEET IDENTIFICATION
S-066

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ROLLER GATE PLAN

SCALE: 3/4"=1'



NOTE: NO SPLICING OF THE W36x160 AND W44x262 SHALL BE ALLOWED.

ROLLER GATE FLOOD SIDE ELEV.

SCALE: 3/4"=1'

THIS DRAWING HAS BEEN REDUCED TO ONE HALF SIZE

PRELIMINARY

NOT TO BE USED FOR CONSTRUCTION, BIDDING, RECORDATION, CONVEYANCE, SALES OR AS THE BASIS FOR THE ISSUANCE OF A PERMIT.

APTIM ENVR. & INFR., INC.

ENGINEER: JAMES E. TROWBRIDGE
LA. LICENSE #: 16825
DATE: AUGUST, 2018

US Army Corps of Engineers
NEW ORLEANS DISTRICT

MARK	DESCRIPTION	DATE	APPR.

MARK	DESCRIPTION	DATE	APPR.

DESIGNED BY: XXX
DRAWN BY: T.O.T.
CKD BY: JET.
SUBMITTED BY: N.M.A.
APTIM JOB# NO. 631233170
PLOT SCALE: 1:1
PLOT DATE: Sept. 10, 2018
SIZE: 22"x34"
FILE NAME:
DATE: AUGUST, 2018

APTIM ENVR. & INFR., INC.
2503 PETROLEUM DR.
HOUMA, LA 70363
(985) 868-3434

LAFOURCHE BASIN LEVEE DISTRICT

UPPER BARATARIA BASIN RISK REDUCTION
CPRA PROJECT 002.HP.06
SEGMENT 2

ROLLER GATE PLAN AND ELEVATION

SHEET IDENTIFICATION
67 OF 71

U.S. ARMY CORPS OF ENGINEERS
NEW ORLEANS DISTRICT
NEW ORLEANS, LOUISIANA

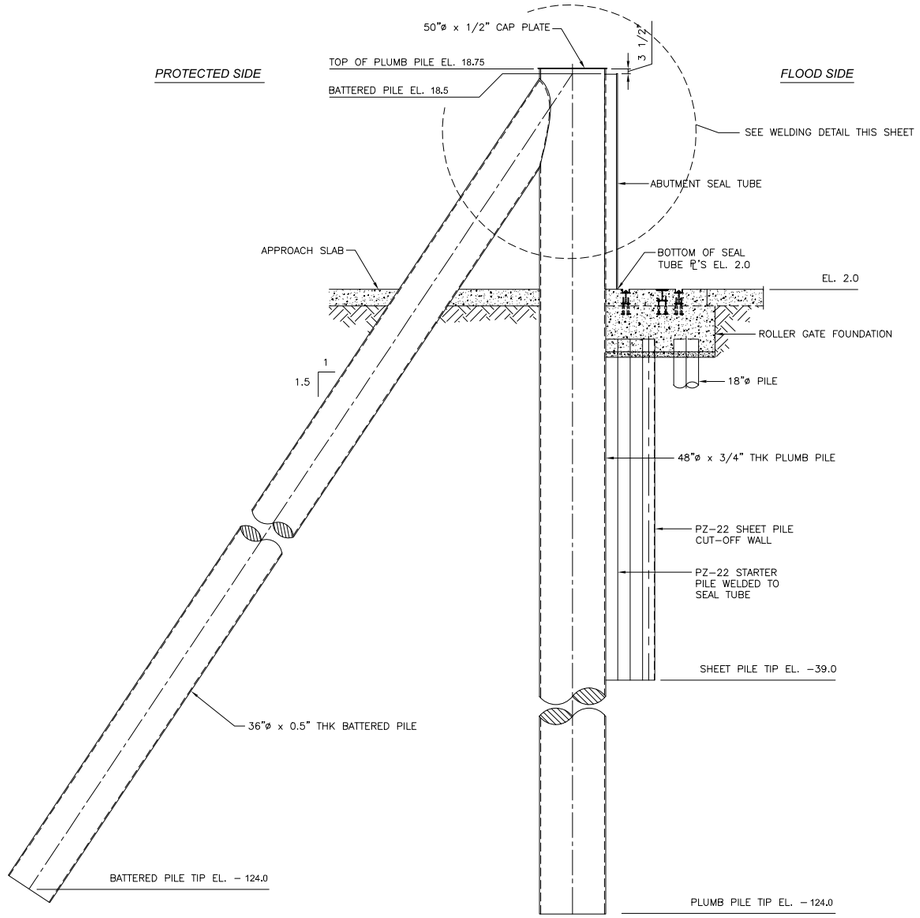
DESIGNED BY: XXX
DRAWN BY: DJM
CKD BY: XX
SUBMITTED BY: XXXX
DATE: XXX
SOLICITATION NO.: X
CONTRACT NO.: X
PLOT SCALE: 1:1
PLOT DATE: XX
FILE NUMBER: HA42XX
SIZE: ANSI D
FILE NAME: H48444_S-067.dgn

UPPER BARATARIA BASIN
LOUISIANA FEASIBILITY STUDY
-
LAFOURCHE AND ST. CHARLES PARISH, LA

ROLLER GATE PLAN AND ELEVATION

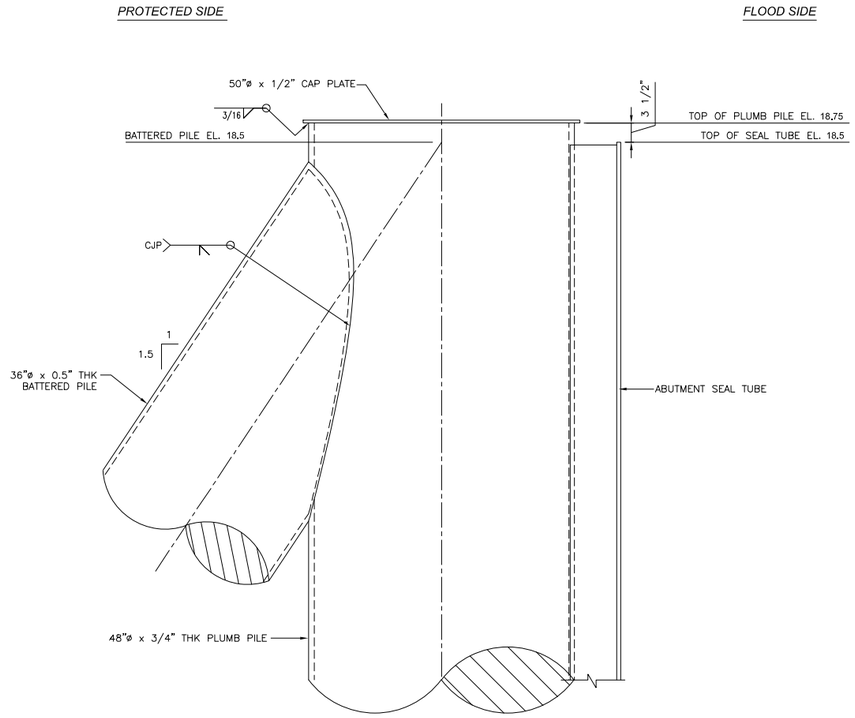
SHEET IDENTIFICATION
S-067

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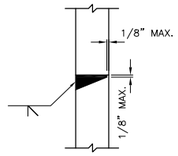
SECTION AT ABUTMENT

SCALE: 1/4" = 1'-0"



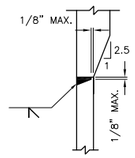
WELDING DETAIL

SCALE: 1" = 1'-0"



EQUAL THICKNESS WELDED SPLICE DETAIL

SCALE: N.T.S.



TRANSITION WELD SPLICE DETAIL

SCALE: N.T.S.

THIS DRAWING HAS BEEN REDUCED TO ONE HALF SIZE

PRELIMINARY NOT TO BE USED FOR CONSTRUCTION, BIDDING, RECORDATION, CONVEYANCE, SALES OR AS THE BASIS FOR THE ISSUANCE OF A PERMIT.	APTIM ENVR. & INFR., INC. ENGINEER: JAMES E. TROWBRIDGE LA. LICENSE #: 16825 DATE: AUGUST, 2018

US Army Corps of Engineers
NEW ORLEANS DISTRICT

MARK	DESCRIPTION	DATE	APPR.

MARK	DESCRIPTION	DATE	APPR.

DESIGNED BY: XXX
DRAWN BY: TJO,L
CHKD BY: J.E.T.
SUBMITTED BY: NPAK
DATE: AUGUST, 2018
APTIM JOB# NO. 631233171(6)
PLOT SCALE: 1:1
PLOT DATE: Sept. 10, 2018
SIZE: 22"X34
FILE NAME:

APTIM ENVR. & INFR., INC.
2503 PETROLEUM DR.
HOUMA, LA 70363
(985) 868-3434

LAFOURCHE BASIN LEVEE DISTRICT

UPPER BARATARIA BASIN RISK REDUCTION
CPRA PROJECT 002.HP.06
SEGMENT 2

RECEIVING STRUCTURE SECTION AND DETAILS

SHEET IDENTIFICATION
68 OF 71

DESIGNED BY: XXX
DRAWN BY: DJM
CHKD BY: XX
SUBMITTED BY: XXXX
DATE: XXX
SOLICITATION NO.: X
CONTRACT NO.: X
PLOT SCALE: 1:1
PLOT DATE: XX
FILE NUMBER: H45XXX
SIZE: ANSI D
FILE NAME: H45644_S-068.dgn

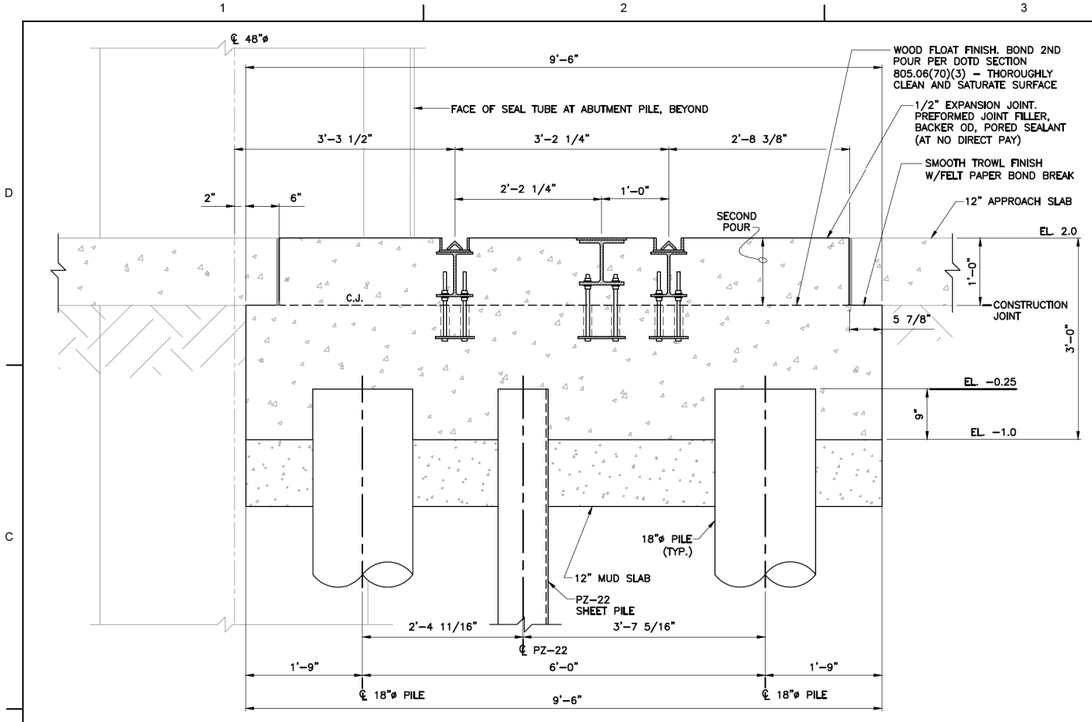
U.S. ARMY CORPS OF ENGINEERS
NEW ORLEANS DISTRICT
NEW ORLEANS, LOUISIANA

UPPER BARATARIA BASIN
LOUISIANA FEASIBILITY STUDY
-
LAFOURCHE AND ST. CHARLES PARISH, LA

RECEIVING STRUCTURE SECTION AND DETAILS

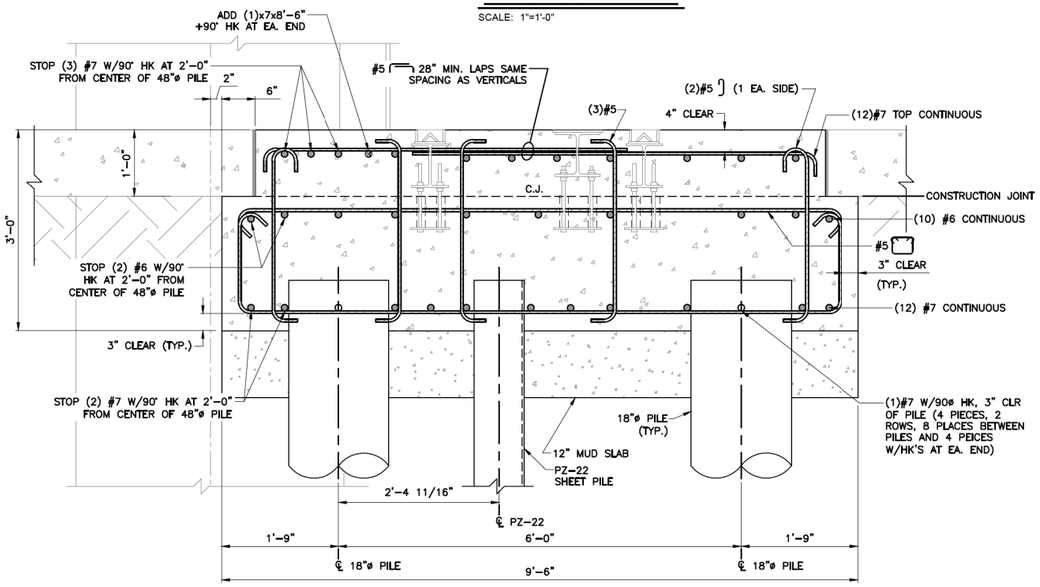
SHEET IDENTIFICATION
S-068

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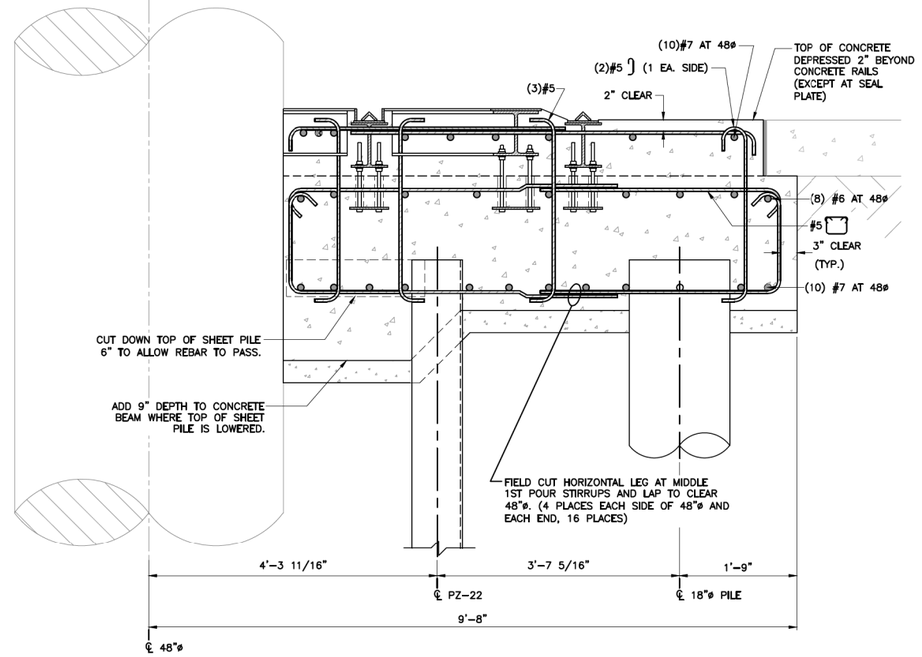
RAIL PLACEMENT SECTION

SCALE: 1"=1'-0"



FOUNDATION SECTION REINFORCING DETAIL

SCALE: 1"=1'-0"



FOUNDATION SECTION AT 48"Ø

SCALE: 1"=1'-0"

NOTES:

1. #5 STIRRUP & VERTICAL BAR SPACING: 4 @ 4" EA. END FROM FACE OF 18"ø PILE, REMAINDER (6 SETS) AT 7 EQ. SPACES (14.25" O.C.). 2 SETS BETWEEN 48"ø AND END OF BEAM.
2. FIELD CUT 1" WIDE SLOTS IN SHEET PILE FOR STIRRUP BARS.
3. FIELD CUT 2"ø HOLES IN WF BEAMS FOR TOP STIRRUP/TRANSVERSE BARS.

THIS DRAWING HAS BEEN REDUCED TO ONE HALF SIZE

PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION, BIDDING, RECORDATION, CONVEYANCE, SALES, OR AS THE BASIS FOR THE ISSUANCE OF A PERMIT.

APTIM ENVR. & INFR., INC.
ENGINEER: JAMES E. TROWBRIDGE
LA. LICENSE #: 16825
DATE: AUGUST, 2018

US Army Corps of Engineers
NEW ORLEANS DISTRICT

LAFOURCHE BASIN LEVEE DISTRICT
DESIGNED BY: J.E.T. | DATE: AUGUST, 2018
DWN BY: T.C. | CKD BY: J.E.T.
SUBMITTED BY: N.P.M. | APTIM JOB NO. 613233710
PLOT SCALE: 1" = 22"
PLOT DATE: Sept 10, 2018
SIZE: 22"x34"
FILE NAME: S-069.dgn

APTIM ENVR. & INFR., INC
2503 PETROLEUM DR.
HOUMA, LA 70363
(985) 868-3434

UPPER BARATARIA BASIN RISK REDUCTION
CPRA PROJECT 002.HP.06
SEGMENT 2
ROLLER GATE FOUNDATION SECTIONS AND DETAILS

SHEET IDENTIFICATION
69 OF 71

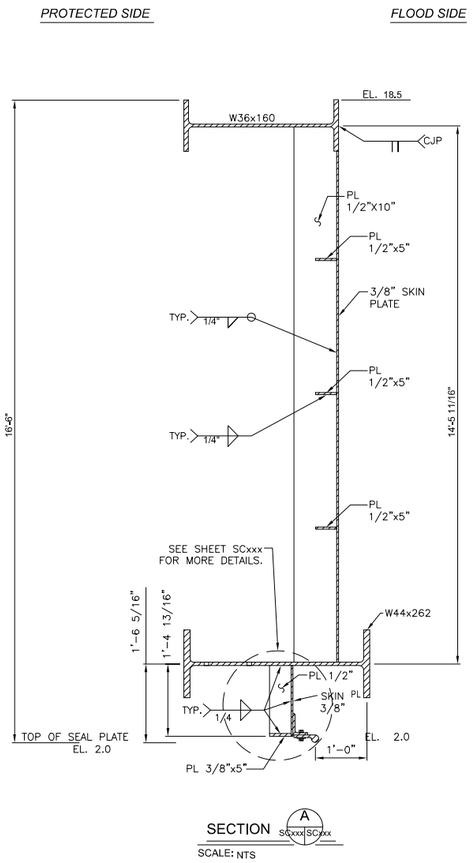
DESIGNED BY: XXX | DATE: XXX
DWN BY: DJM | CKD BY: XX | SOLICITATION NO.: X
SUBMITTED BY: XXXX | CONTRACT NO.: X
PLOT SCALE: AS NOTED | PLOT DATE: XX-XX-XX
SIZE: ANSI D | FILE NAME: H448444_S-069.dgn | FILE NUMBER: H448444

U.S. ARMY CORPS OF ENGINEERS
NEW ORLEANS DISTRICT
NEW ORLEANS, LOUISIANA

UPPER BARATARIA BASIN
LOUISIANA FEASIBILITY STUDY
-
LAFOURCHE AND ST. CHARLES PARISH, LA
ROLLER GATE FOUNDATION SECTIONS AND DETAILS

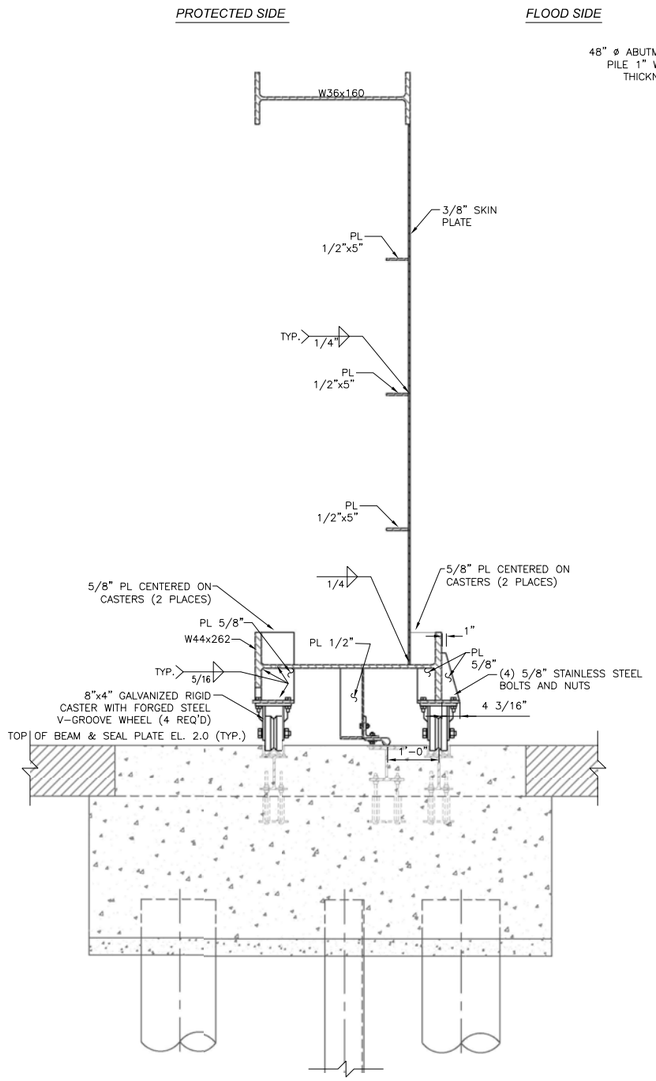
SHEET IDENTIFICATION
S-069

P:\DWG\CLIENT\Lafourche Basin Levee District\613233710_Upper Barataria Risk Reduction\Design\Production Drawings\Water Gate\Water Gate Foundation Sections and Details.dwg



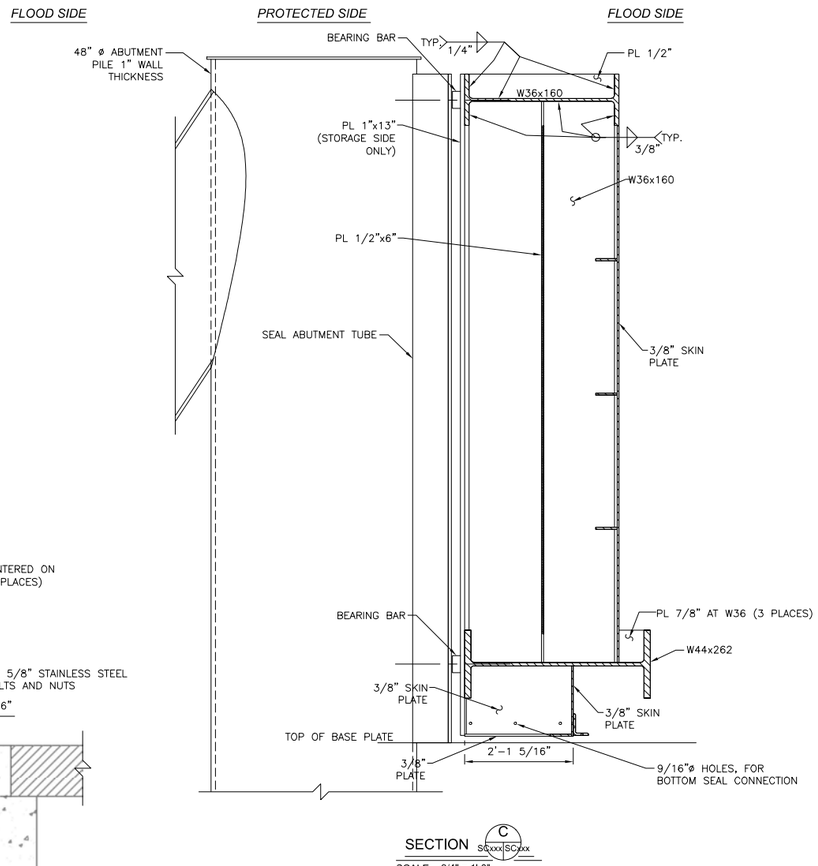
SECTION A (SCxxx | SCxxx)

SCALE: NTS



SECTION B (SCxxx | SCxxx)

SCALE: 3/4" = 1'-0"



SECTION C (SCxxx | SCxxx)

SCALE: 3/4" = 1'-0"

THIS DRAWING HAS BEEN REDUCED TO ONE HALF SIZE

PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION, BIDDING, RECORDATION, CONVEYANCE, SALES OR AS THE BASIS FOR THE ISSUANCE OF A PERMIT.

APTIM ENVR. & INFR., INC.

ENGINEER: JAMES E. TROWBRIDGE
LA. LICENSE #: 16825
DATE: AUGUST, 2018

SHEET IDENTIFICATION
70 OF 71

LA FOURCHE BASIN LEVEE DISTRICT

MARK	DESCRIPTION	DATE	APPR.	MARK	DESCRIPTION	DATE	APPR.

DESIGNED BY: J.E.T.
DWN BY: CKD BY: T.O.T. J.E.T.
SUBMITTED BY: J.E.T.
DATE: AUGUST, 2018
APTIM JOB# NO. 631233717(0)
PLOT SCALE: 1:1
PLOT DATE: Sept. 10, 2018
SIZE: 22"X34"
FILE NAME:

APTIM ENVR. & INFR., INC.
2503 PETROLEUM DR.
HOUMA, LA 70363
(985) 868-3434

UPPER BARATARIA BASIN RISK REDUCTION
CPRA PROJECT 002.HP.06
SEGMENT 2

ROLLER GATE SECTIONS

SHEET IDENTIFICATION
70 OF 71

US Army Corps of Engineers
NEW ORLEANS DISTRICT

MARK	DESCRIPTION	DATE	APPR.

DESIGNED BY: XXX
DWN BY: DJM
CKD BY: XX
SUBMITTED BY: XXXX
DATE: XXX
SOLICITATION NO.: X
CONTRACT NO.: X
PLOT SCALE:
PLOT DATE: XX
FILE NUMBER: H442XX
SIZE: ANSI D
FILE NAME: H44844_S-070.dgn

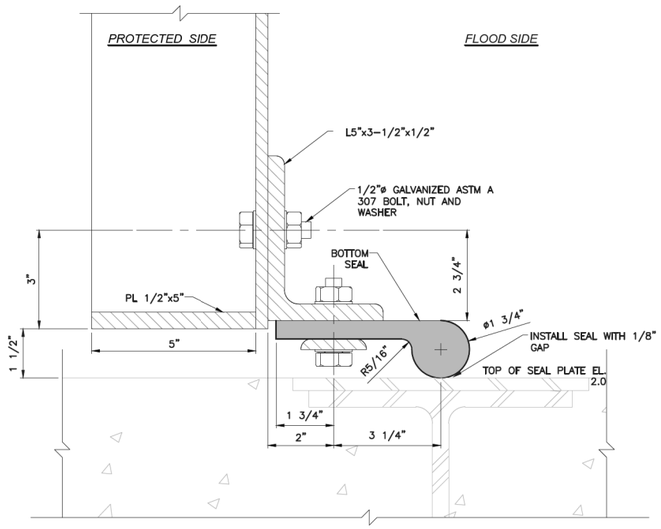
U.S. ARMY CORPS OF ENGINEERS
NEW ORLEANS DISTRICT
NEW ORLEANS, LOUISIANA

UPPER BARATARIA BASIN
LOUISIANA FEASIBILITY STUDY
-
LAFOURCHE AND ST. CHARLES PARISH, LA

ROLLER GATE SECTIONS

SHEET IDENTIFICATION
S-070

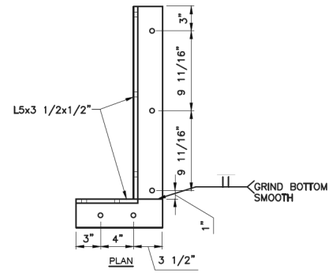
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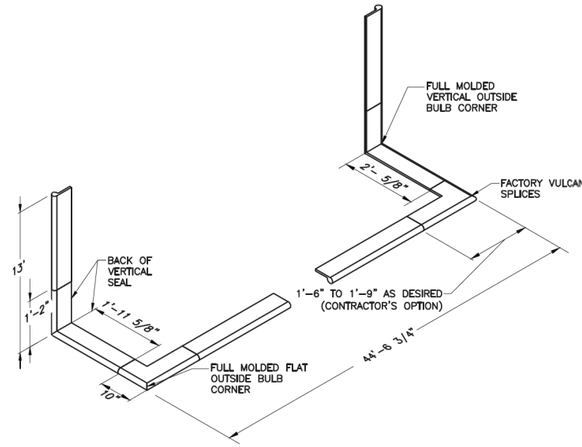


TYPICAL SECTION THROUGH BOTTOM SEAL

SCALE: 6"=1'

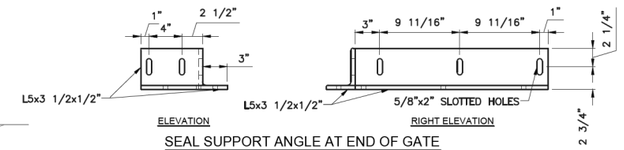
NOTE: SEAL SHALL BE SEAL UNLIMITED INC. MOLDED SOLID BULB "J" SEAL, MOLD NO. 4071B WITH 50 TO 60 DUROMETER, NATURAL RUBBER / POLYISOPRENE COMPOUND NO. SU13366.





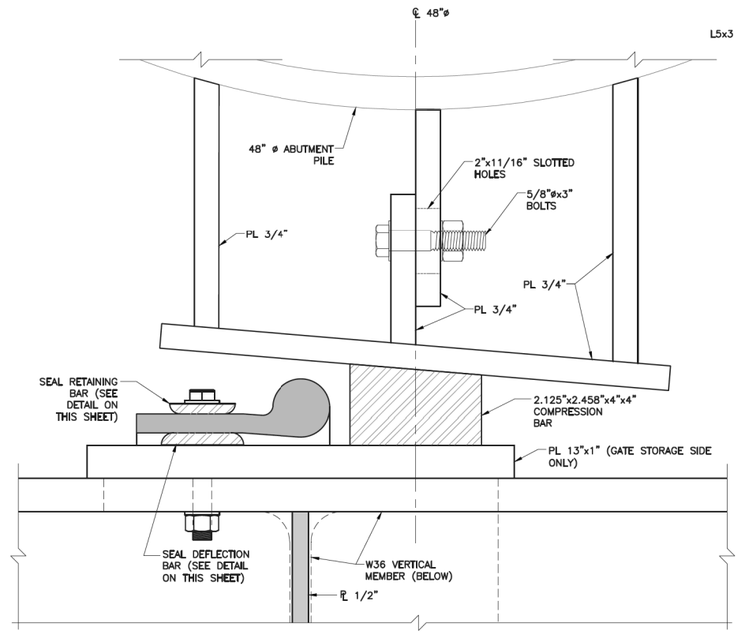
TYPICAL GATE SEAL

SCALE: N.T.S.



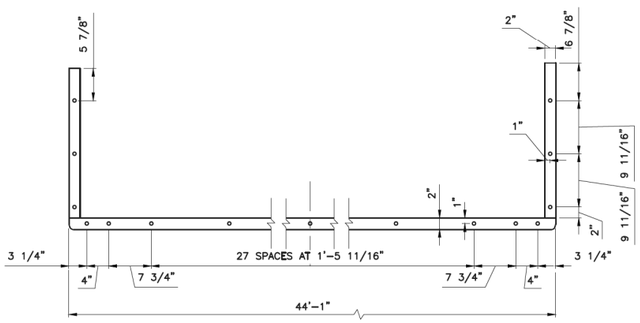
SEAL SUPPORT ANGLE AT END OF GATE

SCALE: 1"=1'



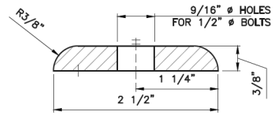
DETAIL (A) SEAL & BEARING BLOCK PLAN

SCALE: 6"=1'



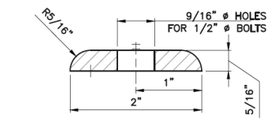
SEAL RETAINING BAR AT BOTTOM OF GATE

SCALE: 1"=1'



SEAL DEFLECTION BAR

SCALE: 1:1



SEAL RETAINING BAR

SCALE: 1:1

THIS DRAWING HAS BEEN REDUCED TO ONE HALF SIZE

PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION, BIDDING, RECORDATION, CONVEYANCE, SALES OR AS THE BASIS FOR THE ISSUANCE OF A PERMIT.

APTIM ENVR. & INFR., INC.

ENGINEER: JAMES E. TROWBRIDGE
LA. LICENSE #: 16825
DATE: AUGUST, 2018

LAFOURCHE BASIN LEVEE DISTRICT

DESIGNED BY: JET
DWN BY: T.O.T
CKD BY: J.E.T
SUBMITTED BY: N.M.A
DATE: AUGUST, 2018
APTIM JOB# NO. 631233/7103
PLOT SCALE: 1:1
PLOT DATE: Sept. 10, 2018
SIZE: 22"x34"
FILE NAME:

APTIM ENVR. & INFR., INC.
2503 PETROLEUM DR
HOUMA, LA 70363
(985) 868-3434

UPPER BARATARIA BASIN RISK REDUCTION
CPRA PROJECT 002.HP.06
SEGMENT 2

ROLLERGATE SEAL DETAILS

SHEET IDENTIFICATION
71 OF 71

US Army Corps of Engineers
NEW ORLEANS DISTRICT

MARK	DESCRIPTION	DATE	APPR.

U.S. ARMY CORPS OF ENGINEERS
NEW ORLEANS DISTRICT
NEW ORLEANS, LOUISIANA

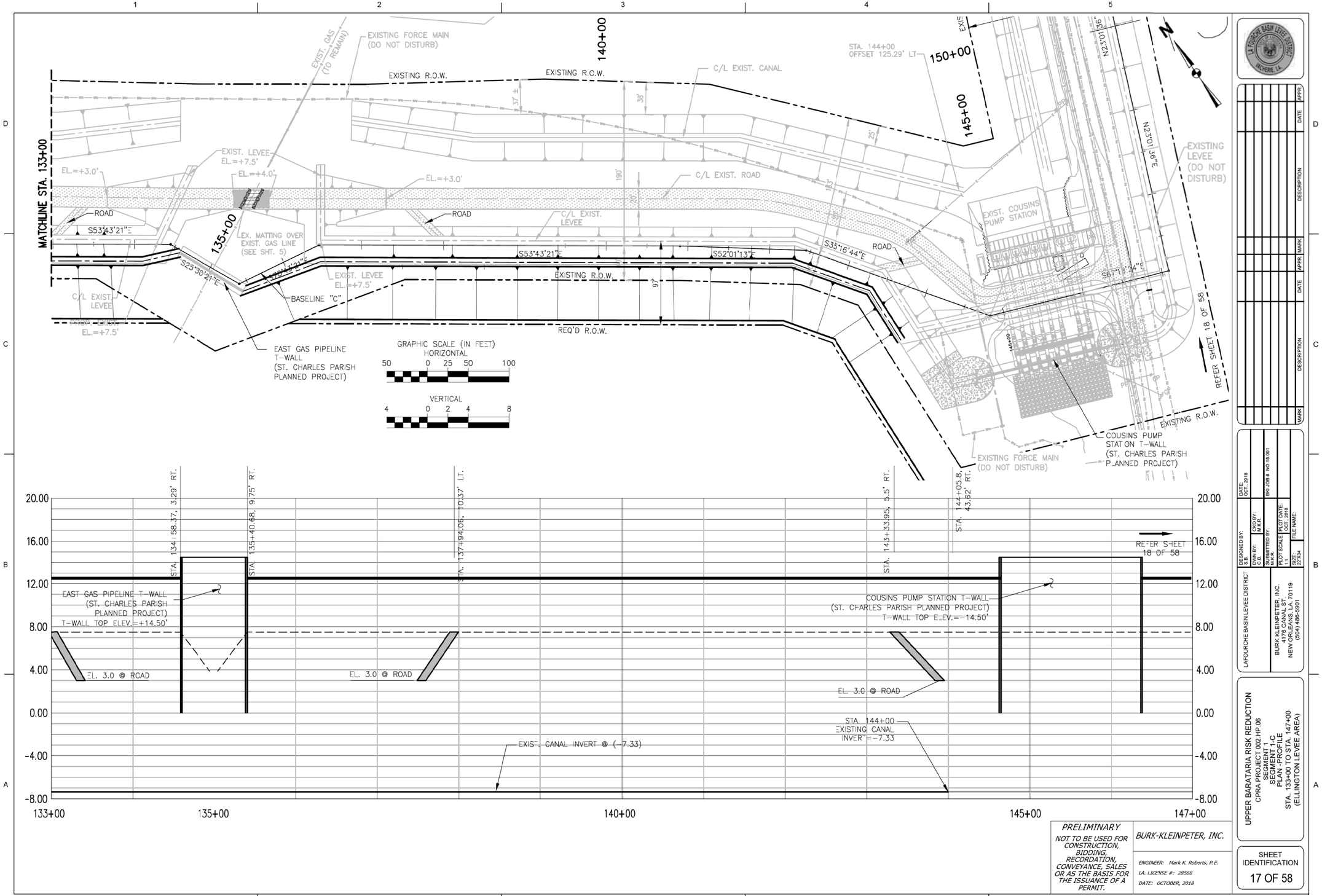
DESIGNED BY: XXX
DWN BY: DJM
CKD BY: XX
SUBMITTED BY: XXXX
PLOT SCALE: XX
PLOT DATE: XX
SIZE: ANSI D
DATE: XXX
SOLICITATION NO.: X
CONTRACT NO.: X
FILE NUMBER: H446XX
FILE NAME: H446444_S-071.dgn

UPPER BARATARIA BASIN
LOUISIANA FEASIBILITY STUDY
-
LAFOURCHE AND ST. CHARLES PARISH, LA

ROLLERGATE SEAL DETAILS

SHEET IDENTIFICATION
S-071

F:\ENG\CLIENT\Lafourche Basin Levee District\631233\7103_Upper Barataria Risk Reduction\Design\Production Drawings\Roller Gate\RollerGate Seal Details.dwg



PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION, BIDDING, RECORDATION, CONVEYANCE, SALES OR AS THE BASIS FOR THE ISSUANCE OF A PERMIT.

BURK-KLEINPETER, INC.

ENGINEER: Mark K. Roberts, P.E.
LA. LICENSE #: 28568
DATE: OCTOBER, 2018

UPPER BARATARIA RISK REDUCTION
CPRA PROJECT 002 HP 06
SEGMENT 1
SEGMENT 1-C
PLAN -PROFILE
STA. 133+00 TO STA. 147+00
(ELLINGTON LEVEE AREA)

SHEET IDENTIFICATION
17 OF 58

DESIGNED BY: S.B.
DRAWN BY: K.F.
CKD BY: M.K.R.
SUBMITTED BY: M.K.R.
PLOT SCALE: 1:1
PLOT DATE: OCT. 2018
DATE: OCT. 2018
FILE NAME: 22734
BPI JOB # NO.18.001

LAFOURCHE BASIN LEVEE DISTRICT

BURK-KLEINPETER, INC.
4176 CANAL ST.
NEW ORLEANS, LA. 70119
(504) 486-5901

US Army Corps of Engineers
NEW ORLEANS DISTRICT

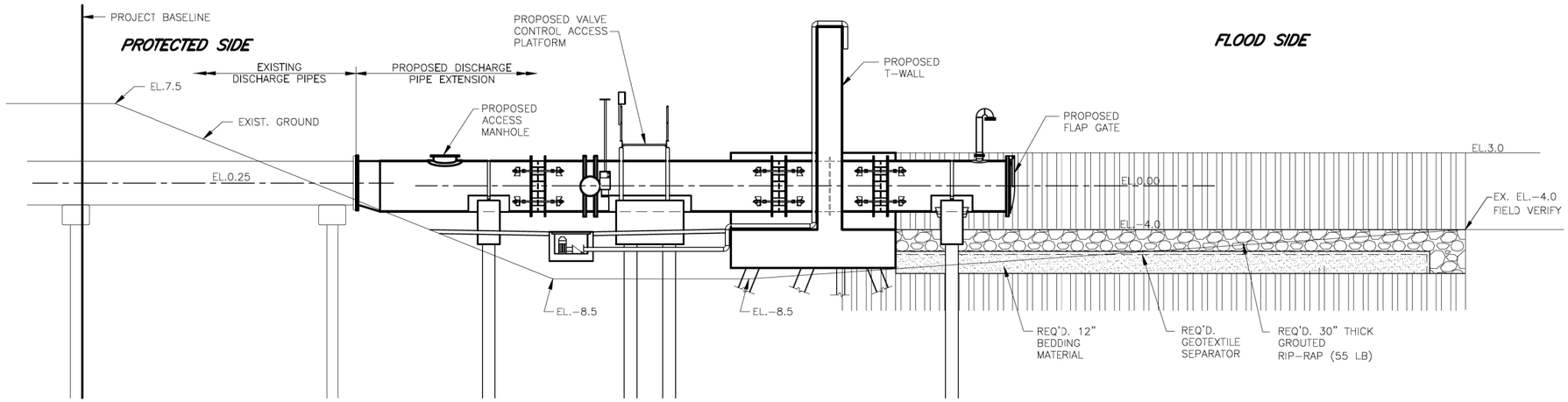
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DRAWN BY: DJM
SUBMITTED BY: XXXX
PLOT SCALE: XX
SIZE: ANSI D
DATE: XXX
CKD BY: XX
PLOT DATE: XX
FILE NAME: 1448444_S-114.dgn
SOLICITATION NO.: X
CONTRACT NO.: X
FILE NUMBER: HA0XXX

U.S. ARMY CORPS OF ENGINEERS
NEW ORLEANS DISTRICT
NEW ORLEANS, LOUISIANA

UPPER BARATARIA BASIN
LOUISIANA FEASIBILITY STUDY
-
LAFOURCHE AND ST. CHARLES PARISH, LA

COUSINS PUMP STATION
FRONTAGE PROTECTION

SHEET IDENTIFICATION
S-114



SECTION B / C2.2

SCALE: 3/16"=1'-0"

0 5 10 15 20 25

(IN FEET)
3/16 inch = 1 ft.

GRAPHIC SCALE

NOTE :
ALL ELEVATIONS REFERENCE
NAVD88 (2004.65)

90% FINAL PLANS

PRELIMINARY

FOR REVIEW ONLY

BURK-KLEINPETER, INC.

ENGINEER: HENRY M. PICARD III, P.E.
LA. LICENSE #: 22289
DATE: June 2020

MARK	DESCRIPTION	DATE	APPR.
3	90% SUBMITTAL	03-06-2015	
2	60% SUBMITTAL	10-31-2014	
1	CONCEPTUAL DESIGN	07-17-2014	

DESIGNED BY: S.B.
DWN BY: D.M.C.
CKD BY: M.K.
SUBMITTED BY: M.K.R.
PLOT DATE: MARCH 2015
PLOT SCALE: 1:1
FILE NAME:
SIZE: 22"X34"

DATE: MARCH 2015
BKI JOB # 13475.0340

PARISH OF ST. CHARLES
ST. CHARLES PARISH, LOUISIANA

BURK KLEINPETER, INC.
4176 CANAL ST.
NEW ORLEANS, LA. 70119
(504) 488-5601

ELLINGTON LEVEE STRUCTURES-COUSINS PS T-WALL
ST. CHARLES PARISH PROJECT NO. P060905-5H
STATE PROJECT NUMBER H.00XXXX

DISCHARGE BASIN DETAILS

SHEET IDENTIFICATION
C2.2 OF 10

US Army Corps of Engineers
NEW ORLEANS DISTRICT

MARK	DESCRIPTION	DATE	APPR.

DESIGNED BY: XXX
DWN BY: DJM
SUBMITTED BY: XXXX

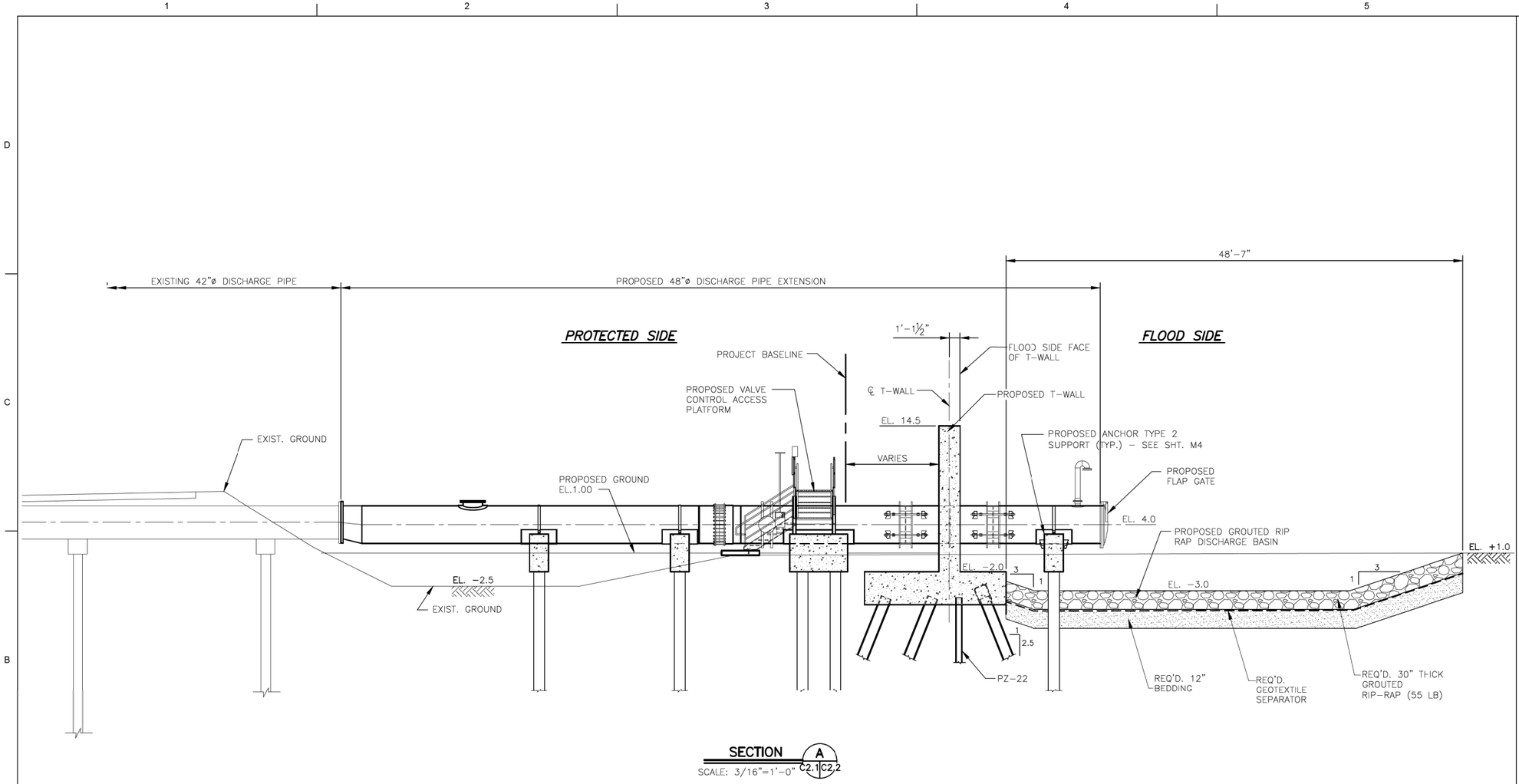
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SOLICITATION NO.: X
CONTRACT NO.: X
FILE NUMBER: H4XXXX
PLOT DATE: X
PLOT SCALE: X
FILE NAME: H448444_S-115.dgn
SIZE: ANSI D

U.S. ARMY CORPS OF ENGINEERS
NEW ORLEANS DISTRICT
NEW ORLEANS, LOUISIANA

UPPER BARATARIA BASIN
LOUISIANA FEASIBILITY STUDY
-
LAFOURCHE AND ST. CHARLES PARISH, LA

COUSINS PUMP STATION
DISCHARGE BASIN DETAILS

SHEET IDENTIFICATION
S-115



SECTION A

SCALE: 3/16"=1'-0" C2.1|C2.2

NOTE :
ALL ELEVATIONS REFERENCE NAVD88 (2006.81)

GRAPHIC SCALE
4' 0 4' 8' 12'
SCALE: 3/16"=1'-0"

90% FINAL PLANS

PRELIMINARY

FOR REVIEW ONLY

BURK-KLEINPETER, INC.

ENGINEER: HENRY M. PICARD III, P.E.
LA. LICENSE #: 22289
DATE: June 2020

US Army Corps of Engineers
NEW ORLEANS DISTRICT

ST. CHARLES PARISH LOUISIANA

MARK	DESCRIPTION	DATE	APPR.
-	90% SUBMITTAL	03/06/2015	BKI

DESIGNED BY: S.B.
DWN BY: C.B.
CKD BY: K.M.P.
SUBMITTED BY: K.M.P.
PLOT SCALE: 1:1
PLOT DATE: FEB 2020
SIZE: 22"X 34"
FILE NAME:
DATE: FEBRUARY 2020

PARISH OF ST. CHARLES
ST. CHARLES PARISH, LOUISIANA

BURK-KLEINPETER, INC.
4176 CANAL ST.
NEW ORLEANS, LA 70119
(504) 486-5901

ELLINGTON LEVEE STRUCTURE
KELLOGG PUMP STATION T-WALL
ST. CHARLES PARISH PROJECT NO. P080905-5F
STATE PROJECT NUMBER H.00XXXX

DISCHARGE BASIN DETAILS

SHEET IDENTIFICATION
C2.2 OF 11

MARK	DESCRIPTION	DATE	APPR.

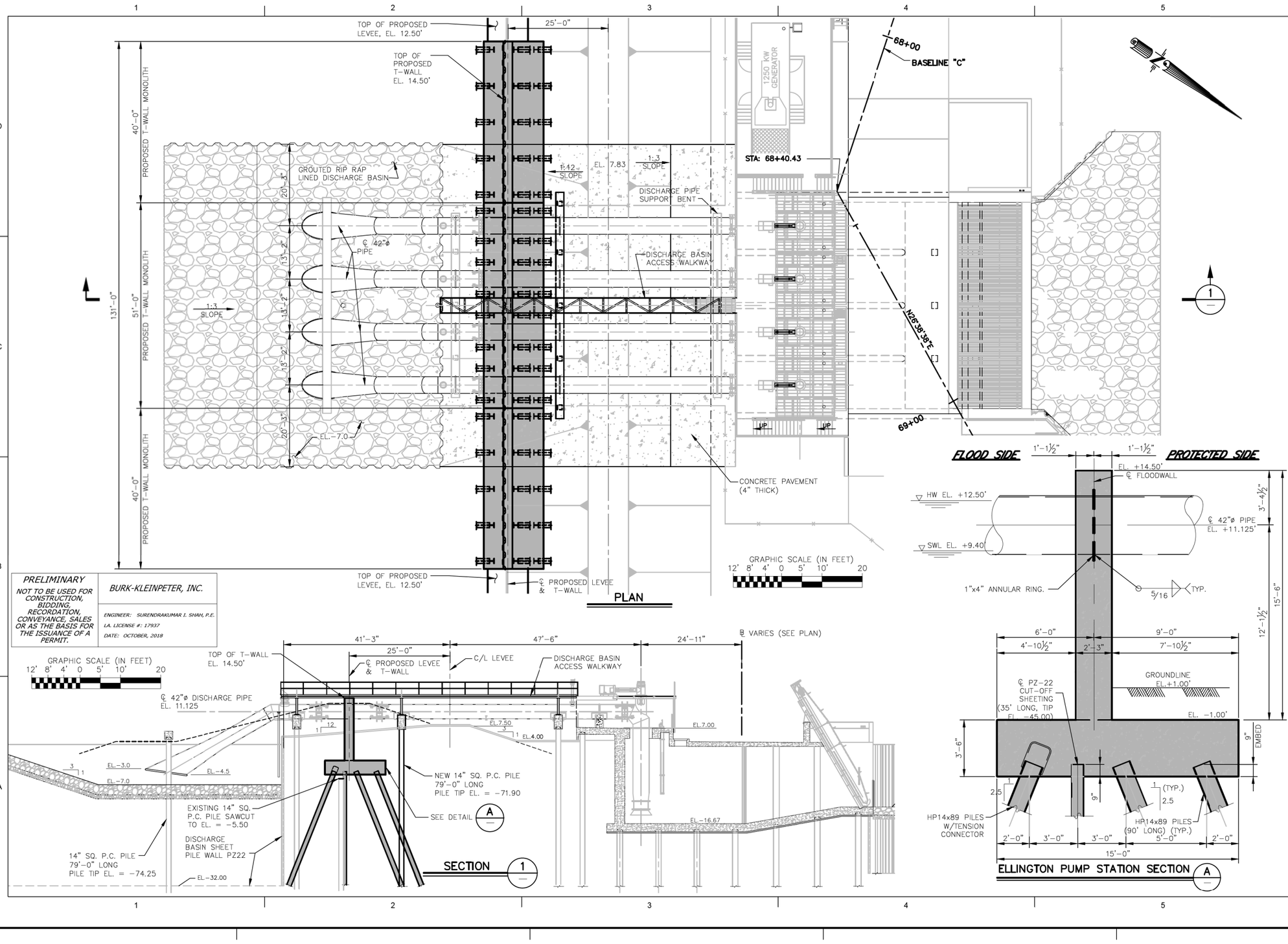
DESIGNED BY: XXX
DWN BY: DJM
CKD BY: XX
SUBMITTED BY: XXXX
PLOT SCALE: XX
PLOT DATE: XX
SIZE: ANSI D
FILE NAME: H45844_S-116.dgn
DATE: XXX
SOLICITATION NO.: X
CONTRACT NO.: X
FILE NUMBER: H45XXX

U.S. ARMY CORPS OF ENGINEERS
NEW ORLEANS DISTRICT
NEW ORLEANS, LOUISIANA

UPPER BARATARIA BASIN
LOUISIANA FEASIBILITY STUDY
-
LAFOURCHE AND ST. CHARLES PARISH, LA

KELLOGG PUMP STATION
DISCHARGE BASIN DETAILS

SHEET IDENTIFICATION
S-116



US Army Corps of Engineers
NEW ORLEANS DISTRICT

LAFOURCHE BASIN LEVEE DISTRICT

DESIGNED BY: S.B.
DRAWN BY: S.B.
SUBMITTED BY:
DATE: OCT. 2018
CKD BY: M.K.K.
BKI JOB # NO.18.001
PLOT SCALE: 1 = 1
PLOT DATE: OCT. 2018
SIZE: 22"x34"
FILE NAME:

BURK-KLEINPETER, INC.
4176 CANAL ST.
NEW ORLEANS, LA. 70119
(504) 486-6901

UPPER BARATARIA RISK REDUCTION
CPRA PROJECT 002 HP 06
SEGMENT 1
SEGMENT 1-C
ELLINGTON PUMP STATION - NEW T-WALL
PLAN AND SECTION
(ELLINGTON LEVEE AREA)

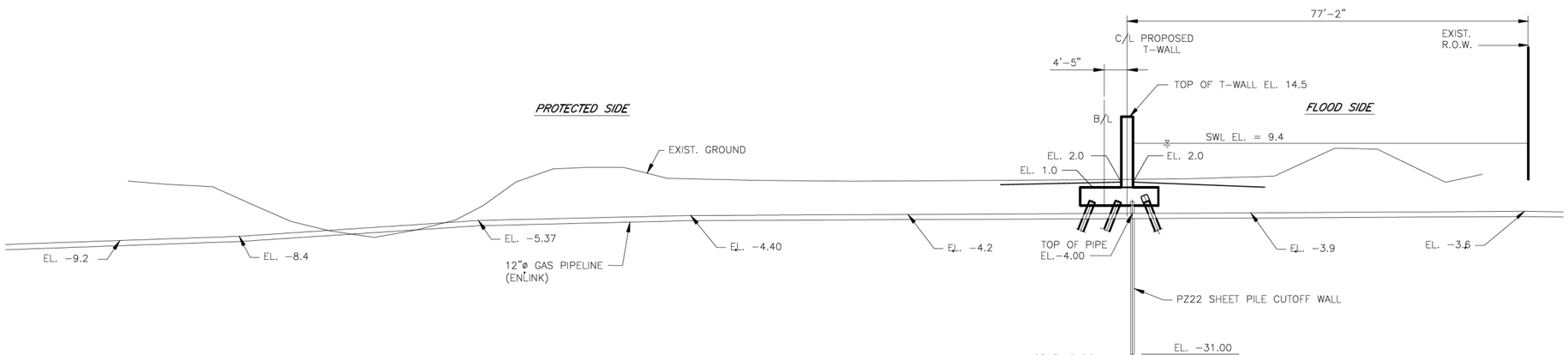
SHEET IDENTIFICATION
20 OF 58

U.S. ARMY CORPS OF ENGINEERS
NEW ORLEANS DISTRICT
NEW ORLEANS, LOUISIANA

DESIGNED BY: XXX
DRAWN BY: DJM
SUBMITTED BY: XXXX
PLOT SCALE: 1 = 1
DATE: XXX
SOLICITATION NO.: X
CONTRACT NO.: X
FILE NUMBER: H442XX
PLOT DATE: XX XX XX
FILE NAME: H442844_S-117.dgn
SIZE: ANSI D

UPPER BARATARIA BASIN
LOUISIANA FEASIBILITY STUDY
-
LAFOURCHE AND ST. CHARLES PARISH, LA
ELLINGTON PUMPSTATION - NEW T-WALL
PLAN AND SECTION
(ELLINGTON LEVEE AREA)

SHEET IDENTIFICATION
S-117



TYPICAL SECTION

SCALE: 3/32" = 1'-0"

BASELINE "C" STA. 135+03.50

GRAPHIC SCALE

8' 0 8' 16' 24'

SCALE: 3/32" = 1'-0"

70% FINAL PLANS

PRELIMINARY

FOR REVIEW ONLY

BURK-KLEINPETER, INC.

ENGINEER: RENE' CHOPIN III, P.E.
LA. LICENSE #: 25174
DATE: June 2020

PARISH OF ST. CHARLES
ST. CHARLES PARISH, LOUISIANA

BURK KLEINPETER, INC.
4176 CANAL ST.
NEW ORLEANS, LA. 70119
(504) 488-3901

DESIGNED BY: KIM
DRN BY: BL
SUBMITTED BY: M.K.R.
PLOT SCALE: 1:1
SIZE: 22"X 34"
DATE: MARCH 2016
CKD BY: S.S.
BKI JOB # 10475-0340
PLOT DATE: MAR 2016
FILE NAME: S3.0-TYPICAL SECTION

ELLINGTON LEVEE STRUCTURE
EAST GAS PIPELINE #2 T-WALL
ST. CHARLES PARISH PROJECT NO. P060905-SG
STATE PROJECT NUMBER H.000XXX

TYPICAL SECTION

SHEET IDENTIFICATION
S3.0 OF

US Army Corps of Engineers
NEW ORLEANS DISTRICT

MARK	DESCRIPTION	DATE	APPR.

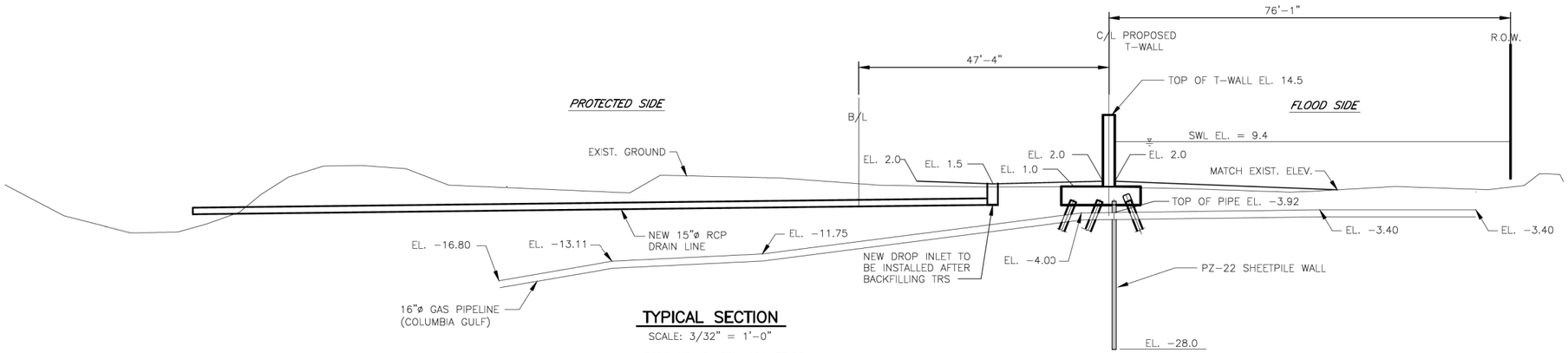
U.S. ARMY CORPS OF ENGINEERS
NEW ORLEANS DISTRICT
NEW ORLEANS, LOUISIANA

DESIGNED BY: XXX
DWN BY: DJM
SUBMITTED BY: XXXX
PLOT SCALE:
SIZE: ANSI D
DATE: XXX
SOLICITATION NO.: X
CONTRACT NO.: X
PLOT DATE:
FILE NUMBER: H4XXXX
FILE NAME: H448441_S-118.dgn

UPPER BARATARIA BASIN
LOUISIANA FEASIBILITY STUDY
-
LAFOURCHE AND ST. CHARLES PARISH, LA

EAST GAS PIPELINE #2
TYPICAL SECTION

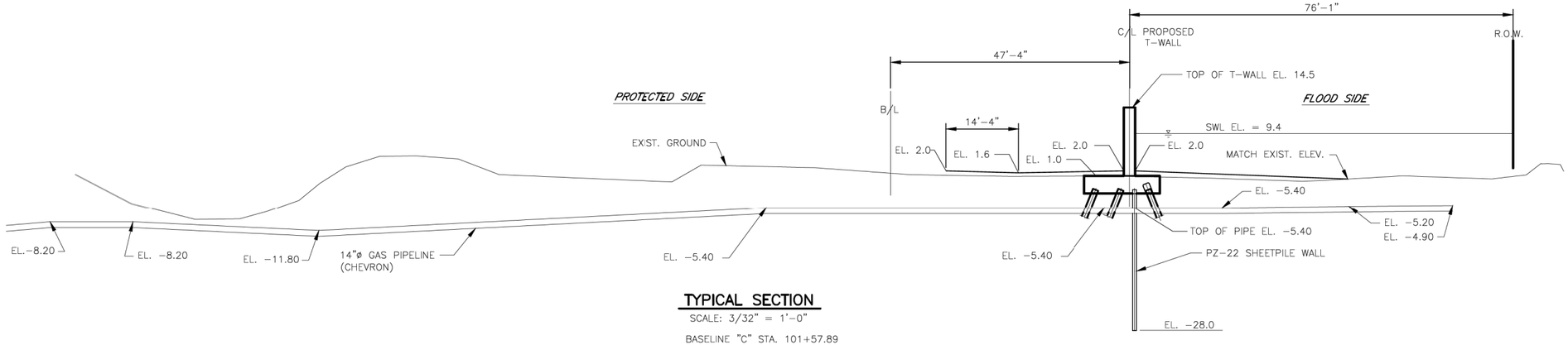
SHEET IDENTIFICATION
S-118



TYPICAL SECTION

SCALE: 3/32" = 1'-0"

BASELINE "C" STA. 101+33.08



TYPICAL SECTION

SCALE: 3/32" = 1'-0"

BASELINE "C" STA. 101+57.89

GRAPHIC SCALE
8' 0 8' 16' 24'
SCALE: 3/32" = 1'-0"

70% FINAL PLANS

PRELIMINARY

FOR REVIEW ONLY

BURK-KLEINPETER, INC.

ENGINEER: RENE' CHOPIN III, P.E.
LA. LICENSE #: 25174
DATE: June 2020

PARISH OF ST. CHARLES
ST. CHARLES PARISH, LOUISIANA

BURK KLEINPETER, INC.
4176 CANAL ST
NEW ORLEANS, LA. 70119
(504) 486-5961

DESIGNED BY: K.M.
DWN BY: K.F.
CKD BY: S.C.
SUBMITTED BY: M.K.R.
PLOT SCALE: 1:1
PLOT DATE: MAR.2016
SIZE: 22"X 34"
FILE NAME: S3.0-S3.1-TYP. SECTIONS
DATE: MARCH 2016
BKI JOB # 10475-0340

ELLINGTON LEVEE STRUCTURE
WEST GAS PIPELINE #1 T-WALL
ST. CHARLES PARISH PROJECT NO.: P060005-SE
STATE PROJECT NUMBER H.000XXXX

TYPICAL SECTION

SHEET IDENTIFICATION
S3.0 OF

US Army Corps of Engineers
NEW ORLEANS DISTRICT

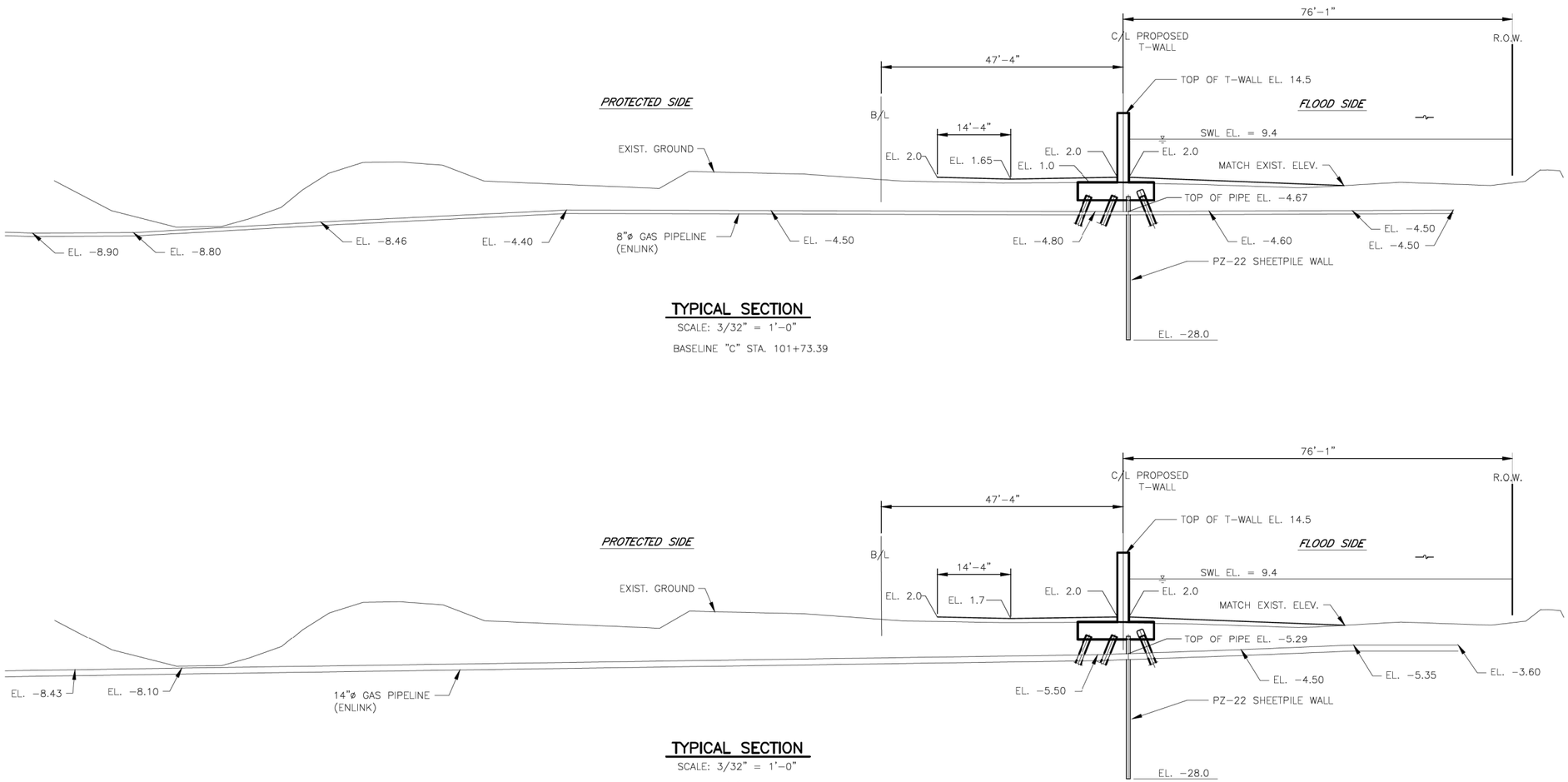
U.S. ARMY CORPS OF ENGINEERS
NEW ORLEANS DISTRICT
NEW ORLEANS, LOUISIANA

DESIGNED BY: XXX
DWN BY: DJM
CKD BY: XX
SUBMITTED BY: XXXX
PLOT SCALE: 1:1
PLOT DATE: XX"X"
SIZE: ANSI D
DATE: XXX
SOLICITATION NO.: X
CONTRACT NO.: X
FILE NUMBER: H44XXXX
FILE NAME: H44644_S-119.dgn

UPPER BARATARIA BASIN
LOUISIANA FEASIBILITY STUDY
-
LAFOURCHE AND ST. CHARLES PARISH, LA

WEST GAS PIPELINE #1 T-WALL
TYPICAL SECTION

SHEET IDENTIFICATION
S-119



TYPICAL SECTION

SCALE: 3/32" = 1'–0"

BASELINE "C" STA. 101+73.39

TYPICAL SECTION

SCALE: 3/32" = 1'–0"

BASELINE "C" STA. 101+84.31

GRAPHIC SCALE
8' 0 8' 16' 24'
SCALE: 3/32" = 1'–0"

70% FINAL PLANS

PRELIMINARY

FOR REVIEW ONLY

BURK-KLEINPETER, INC.

ENGINEER: RENE' CHOPIN III, P.E.
LA. LICENSE #: 25174
DATE: June 2020

ELLINGTON LEVEE STRUCTURE
WEST GAS PIPELINE #1 T-WALL
ST. CHARLES PARISH PROJECT NO. P060905-5E
STATE PROJECT NUMBER H.000XXX
TYPICAL SECTION

SHEET IDENTIFICATION
S3.1 OF

PARISH OF ST. CHARLES
ST. CHARLES PARISH, LOUISIANA

BURK-KLEINPETER, INC.
4176 CANAL ST.
NEW ORLEANS, LA. 70119
(504) 486-5901

DESIGNED BY: RM
DRAWN BY: BT
CKD BY: SS
DATE: MARCH 2018
SUBMITTED BY: M.K.P.
BKI JOB # 19472-0040
PLOT SCALE: 1"=1'
PLOT DATE: MAR 2019
SIZE: 22"X 34"
FILE NAME: S3.0-S3.1-TYP. SECTIONS

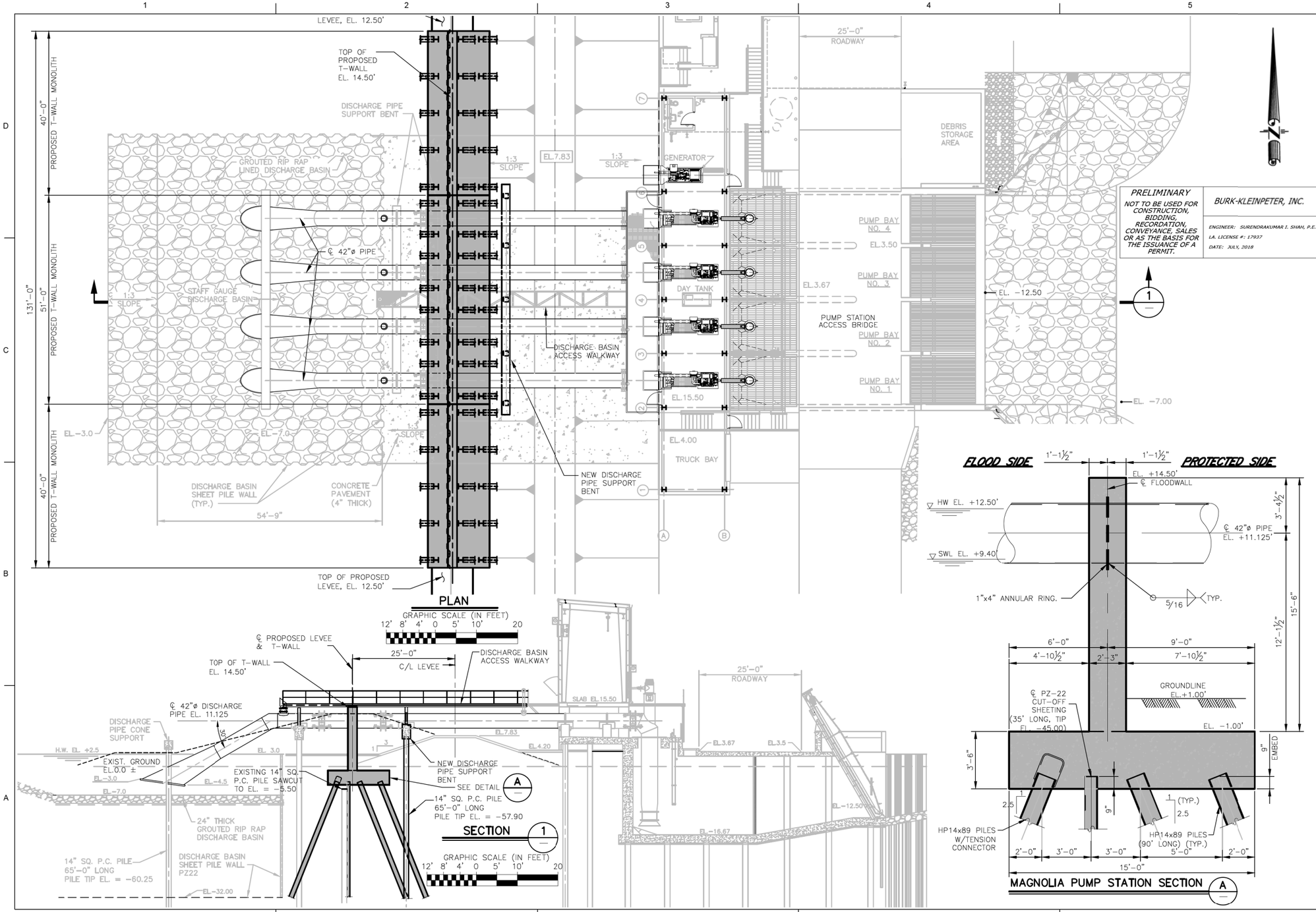
US Army Corps of Engineers
NEW ORLEANS DISTRICT

U.S. ARMY CORPS OF ENGINEERS
NEW ORLEANS DISTRICT
NEW ORLEANS, LOUISIANA

DESIGNED BY: XXX
DRWN BY: DJM
SUBMITTED BY: XXXX
DATE: XXX
SOLICITATION NO.: X
CONTRACT NO.: X
PLOT DATE: XX
FILE NUMBER: H4400XX
SIZE: ANSI D
FILE NAME: H448444_S~120.dgn

UPPER BARATARIA BASIN
LOUISIANA FEASIBILITY STUDY
-
LAFOURCHE AND ST. CHARLES PARISH, LA
WEST GAS PIPELINE #1 T-WALL
TYPICAL SECTION

SHEET IDENTIFICATION
S-120



PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION, BIDDING, RECORDATION, CONVEYANCE, SALES OR AS THE BASIS FOR THE ISSUANCE OF A PERMIT.

BURK-KLEINPETER, INC.

ENGINEER: SURENDRAKUMAR I. SHAH, P.E.
LA. LICENSE #: 17937
DATE: JULY, 2018

US Army Corps of Engineers
NEW ORLEANS DISTRICT

LAFOURCHE BASIN LEVEE DISTRICT

DESIGNED BY: S.B.
DRAWN BY: E.B.
CKD BY: M.K.
SUBMITTED BY: M.K.E.
PLOT SCALE: 1:1
PLOT DATE: 10/27/2018
SIZE: 22"X34"
FILE NAME:

BURK-KLEINPETER, INC.
4176 CANAL ST.
NEW ORLEANS, LA 70119
(504) 486-5901

DATE: OCT. 2018
BK-JOB # NO.18.001

U.S. ARMY CORPS OF ENGINEERS
NEW ORLEANS DISTRICT
NEW ORLEANS, LOUISIANA

DESIGNED BY: XXX
DRAWN BY: DJM
CKD BY: XX
SUBMITTED BY: XXXX
PLOT SCALE: 1
PLOT DATE: XX
DATE: XXX
SOLICITATION NO.: X
CONTRACT NO.: X
FILE NUMBER: H46XXX
SIZE: ANSI D
FILE NAME: H46844_S-173.dgn

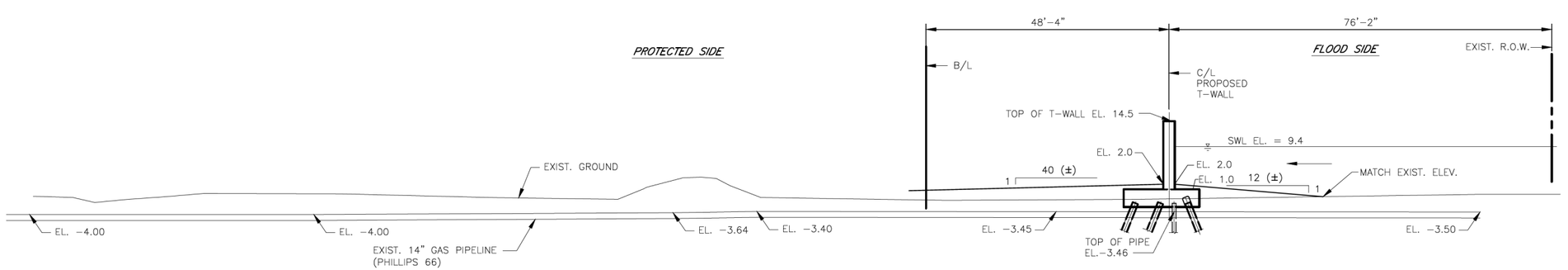
UPPER BARATARIA BASIN
LOUISIANA FEASIBILITY STUDY
-
LAFOURCHE AND ST. CHARLES PARISH, LA

MAGNOLIA PUPM STATIOM - NEW T-WALL
PLAN AND SECTION
(MAGNOLIA RIDGE LEVEE AREA)

UPPER BARATARIA RISK REDUCTION
CPRA PROJECT 002, HP 06
SEGMENT 1
SEGMENT 1-D
MAGNOLIA PUMP STATION - NEW T-WALL
PLAN AND SECTION
(MAGNOLIA RIDGE LEVEE AREA)

SHEET IDENTIFICATION
17 OF 47

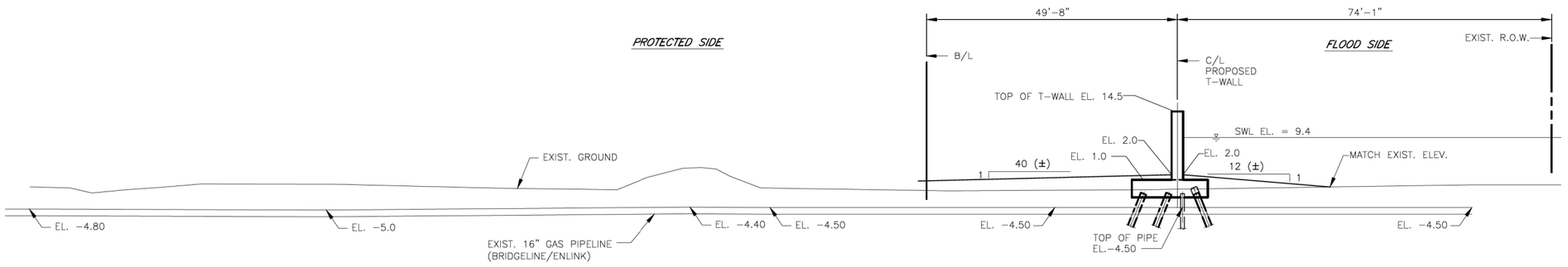
SHEET IDENTIFICATION
S-173



TYPICAL SECTION

SCALE: 3/32" = 1'-0"

BASELINE STA. 96+41.73



TYPICAL SECTION

SCALE: 3/32" = 1'-0"

BASELINE STA. 96+51.01

12' 8' 4' 0 10' 20'

3/32"=1'-0"

70% FINAL PLANS

PRELIMINARY	*BURK-KLEINPETER, INC.*
FOR REVIEW ONLY	*ENGINEER: RENE' CHOPIN III, P.E.* *LA. LICENSE #: 25174* *DATE: June 2020*

US Army Corps of Engineers
NEW ORLEANS DISTRICT

MARK	DESCRIPTION	DATE	APPR.

DESIGNED BY: RJM
DWN BY: MAT
CKD BY: SVB
SUBMITTED BY: SVB
PLOT SCALE: 1:1
PLOT DATE: AUTO
SIZE: 22"x34"
FILE NAME: S3.0-TYPICAL SECTION
DATE: MAY 2016
BK JOB # 10475.0130

PARISH OF ST. CHARLES
ST. CHARLES PARISH, LOUISIANA

BURK KLEINPETER, INC.
4176 CANAL ST.
NEW ORLEANS, LA. 70119
(504) 486-5901

MAGNOLIA RIDGE PIPE LINE T-WALL
ST. CHARLES PARISH PROJECT NO. P080905-6D
STATE PROJECT NUMBER XX-XX

TYPICAL SECTION

SHEET IDENTIFICATION
S3.0 OF

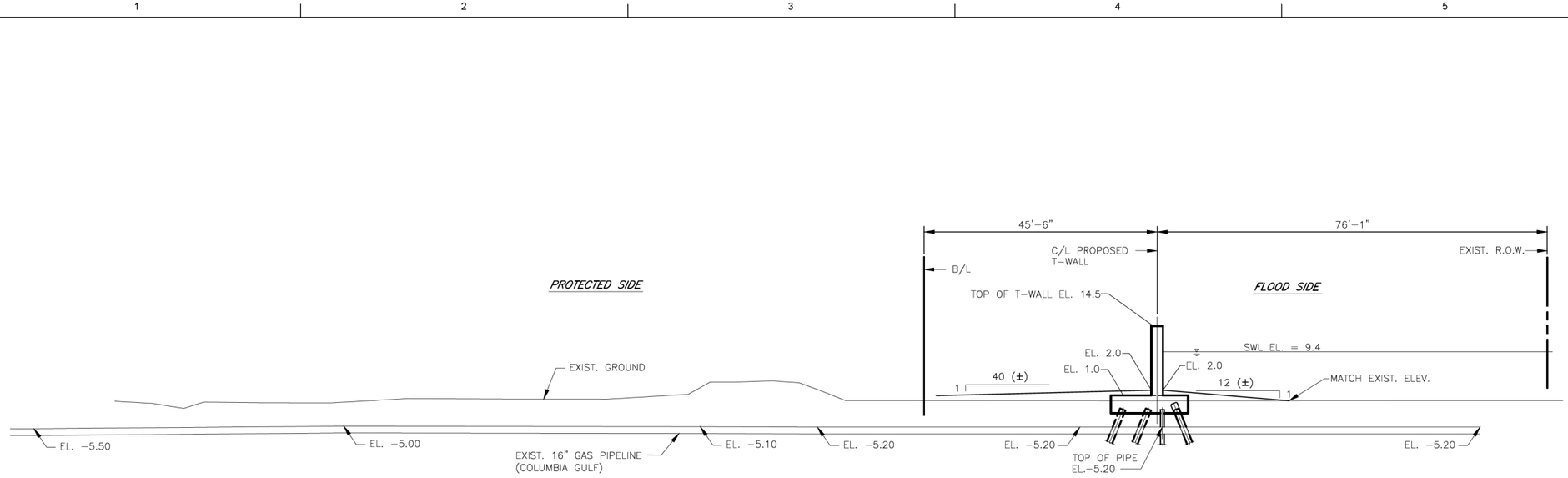
DESIGNED BY: XXX
DWN BY: DJM
CKD BY: XX
SUBMITTED BY: XXXX
PLOT SCALE: 1:1
PLOT DATE: XX
SIZE: ANSI D
DATE: XXX
SOLICITATION NO.: X
CONTRACT NO.: X
FILE NUMBER: H45644
FILE NAME: H45644_S-174.dgn

U.S. ARMY CORPS OF ENGINEERS
NEW ORLEANS DISTRICT
NEW ORLEANS, LOUISIANA

UPPER BARATARIA BASIN
LOUISIANA FEASIBILITY STUDY
-
LAFOURCHE AND ST. CHARLES PARISH, LA

MAGNOLIA RIDGE PIPELINE T-WALL
TYPICAL SECTION

SHEET IDENTIFICATION
S-174



TYPICAL SECTION

SCALE: 3/32" = 1'-0"

BASELINE STA. 96+82.79

12' 8' 4' 0 10' 20'

3/32"=1'-0"

70% FINAL PLANS

PRELIMINARY	*BURK-KLEINPETER, INC.*
FOR REVIEW ONLY	*ENGINEER: RENE' CHOPIN III, P.E.* *LA. LICENSE #: 25174* *DATE: June 2020*

PARISH OF ST. CHARLES
ST. CHARLES PARISH LOUISIANA

BURK KLEINPETER, INC.
4176 CANAL ST.
NEW ORLEANS, LA. 70119
(504) 486-5901

DESIGNED BY: DJM
DWN BY: KXX
CKD BY: SXS
SUBMITTED BY: SLS
DATE: MAY 2019
BKI JOB # 19475-0130
PLOT SCALE: 1:1
PLOT DATE: AUTO
SIZE: 22"X34"
FILE NAME: S3.0-TYPICAL SECTION

MAGNOLIA RIDGE PIPE LINE T-WALL
ST. CHARLES PARISH PROJECT NO. P060605-6D
STATE PROJECT NUMBER XX-XX

TYPICAL SECTION

SHEET IDENTIFICATION
S3.1 OF

US Army Corps of Engineers
NEW ORLEANS DISTRICT

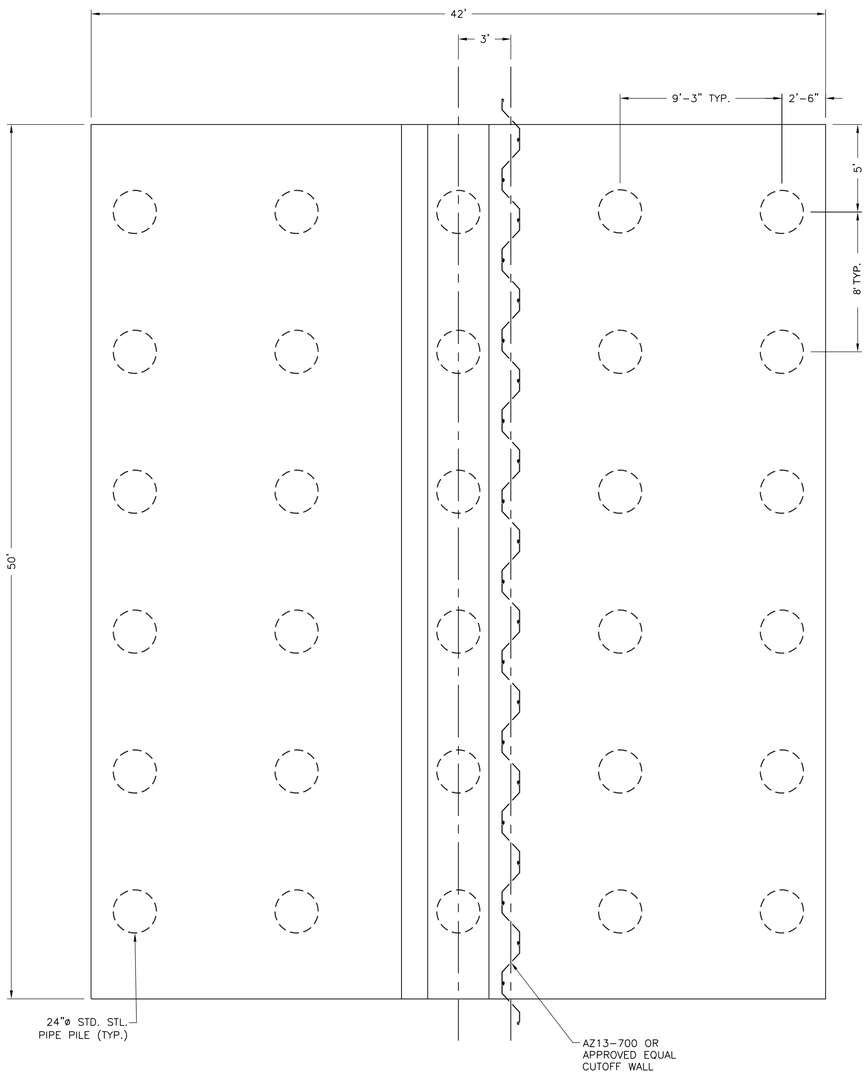
MARK	DESCRIPTION	DATE	APPR.
MARK	DESCRIPTION	DATE	APPR.
MARK	DESCRIPTION	DATE	APPR.

U.S. ARMY CORPS OF ENGINEERS
NEW ORLEANS DISTRICT
NEW ORLEANS, LOUISIANA

DESIGNED BY: XXX
DWN BY: DJM
CKD BY: XX
SUBMITTED BY: XXXX
DATE: XXX
SOLICITATION NO.: X
CONTRACT NO.: X
PLOT SCALE: ANSI D
PLOT DATE: AUTO
FILE NUMBER: HA63XX
FILE NAME: H48444_S-175.dgn

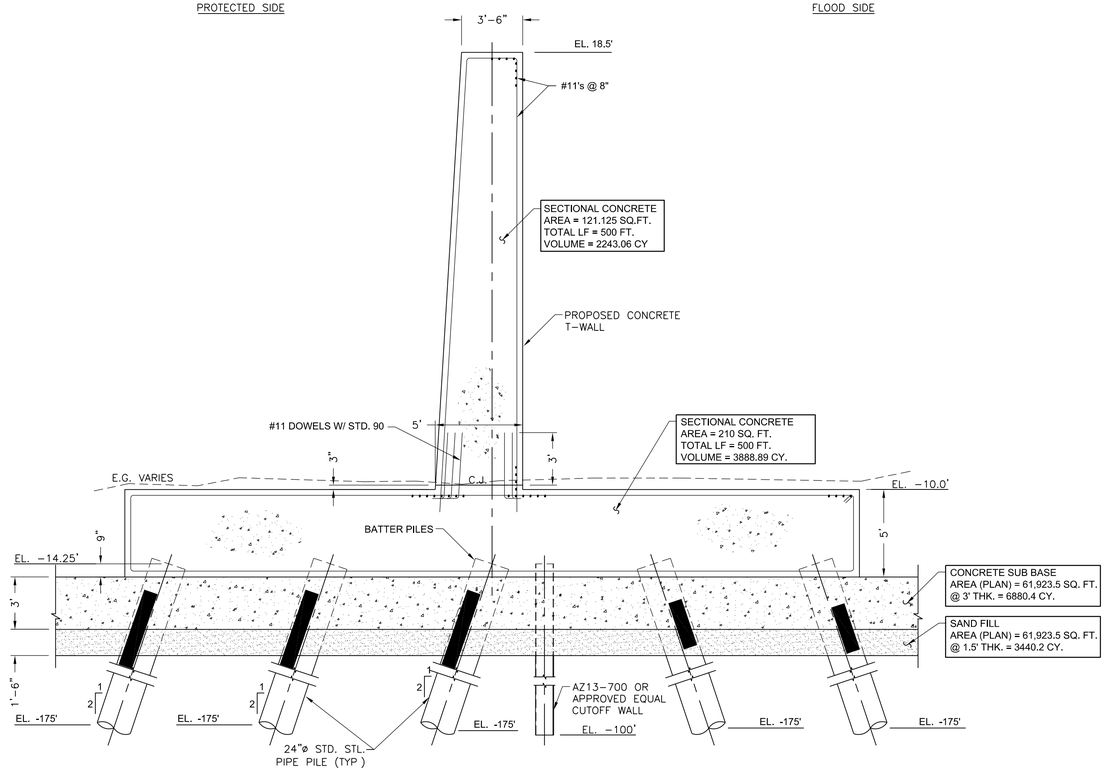
UPPER BARATARIA BASIN
LOUISIANA FEASIBILITY STUDY
-
LAFOURCHE AND ST. CHARLES PARISH, LA
MAGNOLIA RIDGE PIPELINE T-WALL
TYPICAL SECTION

SHEET IDENTIFICATION
S-175



TYPICAL TWALL PLAN (UNMODIFIED)

SCALE: NTS



TYPICAL TWALL SECTION (UNMODIFIED)

SCALE: NTS

PRELIMINARY

NOT TO BE USED FOR CONSTRUCTION, BIDDING, RECORDATION, CONVEYANCE, SALES OR AS THE BASIS FOR THE ISSUANCE OF A PERMIT.

GIS ENGINEERING, LLC

ENGINEER: Kyle Joseph Galloway, P.E.

LA. LICENSE #: 0040317

DATE: AUGUST, 2018

THIS DRAWING HAS BEEN REDUCED TO ONE HALF SIZE

UPPER BARATARIA RISK REDUCTION
CPRA PROJECT NO.: 002.HP.06
SEGMENT 3

TYPICAL TWALL PLAN AND ELEV

SHEET IDENTIFICATION
T401

US Army Corps of Engineers
NEW ORLEANS DISTRICT

MARK	DESCRIPTION	DATE	APPR.

MARK	DESCRIPTION	DATE	APPR.

DESIGNED BY: K.J.G.
DRN BY: M.M.T. / A.J.S.
SUBMITTED BY: K.J.G.
DATE: OCT. 2018
PLOT SCALE: 1:1
PLOT DATE: October 12, 2018
FILE NAME: T-TYPICAL TWALL PLAN AND ELEV.dwg
SIZE: ARCH D

LAFOURCHE BASIN LEVEE DISTRICT

GIS ENGINEERING LLC
Civil Engineering & Professional Land Surveying
107 Belle Oaks
Houma, LA 70360
985-575-7050

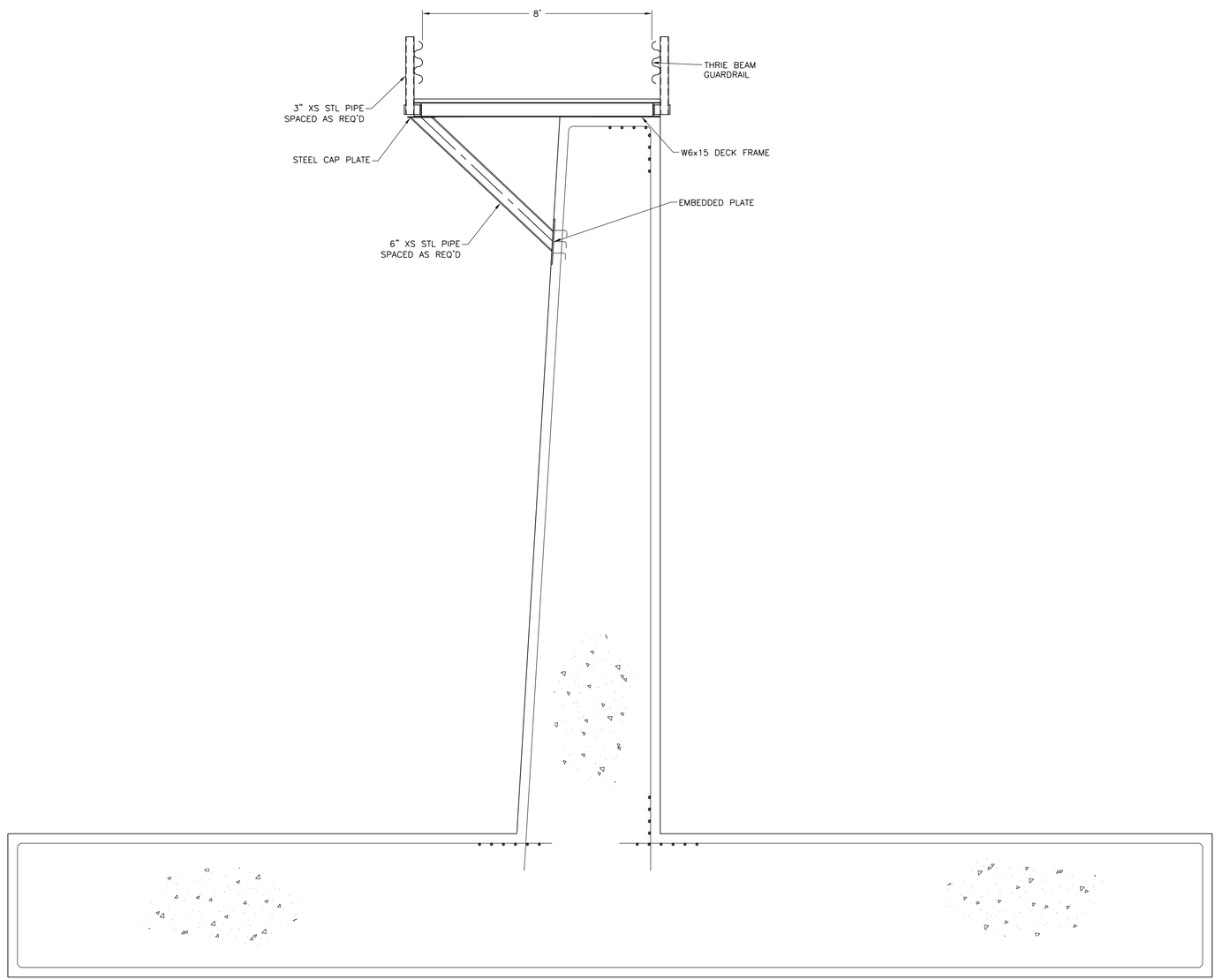
U.S. ARMY CORPS OF ENGINEERS
NEW ORLEANS DISTRICT
NEW ORLEANS, LOUISIANA

DESIGNED BY: XXX
DRN BY: DJM
SUBMITTED BY: XXXX
DATE: XXX
SOLICITATION NO.: X
CONTRACT NO.: X
PLOT SCALE: ANSI D
PLOT DATE: XX
FILE NUMBER: H44XXXX
FILE NAME: Architectural_Sheet_Size(2d.dgn

UPPER BARATARIA BASIN
LOUISIANA FEASIBILITY STUDY
-
LAFOURCHE AND ST. CHARLES PARISH, LA

TYPICAL T-WALL PLAN AND ELEVATION

SHEET IDENTIFICATION
T-401



TYPICAL TWALL SECTION OPTION 2

4 0 2 4 8

(IN FEET)

PRELIMINARY

NOT TO BE USED FOR CONSTRUCTION, BIDDING, RECORDATION, CONVEYANCE, SALES OR AS THE BASIS FOR THE ISSUANCE OF A PERMIT.

GIS ENGINEERING, LLC

ENGINEER: Kyle Joseph Galloway, P.E.

LA. LICENSE #: 0040317

DATE: AUGUST, 2018

THIS DRAWING HAS BEEN REDUCED TO ONE HALF SIZE

LAFOURCHE BASIN LEVEE DISTRICT

ENGINEERING LLC

DESIGNED BY: K.J.G. | DATE: OCT. 2018

DWN BY: M.A.C., J.J.S. | CKD BY: K.J.G.

SUBMITTED BY: K.J.G.

PLOT SCALE: 1:1 | PLOT DATE: October 12, 2018

SIZE: 22"x34" | FILE NAME: TYPICAL TWALL PLAN AND ELEV.dwg

UPPER BARATARIA RISK REDUCTION
CPRA PROJECT NO.: 002.HP.06
SEGMENT 3

TYPICAL TWALL PLAN AND ELEV

SHEET IDENTIFICATION
T402

M:\Department 39\Client\LBLD1-Lafourche Basin Levee\39130-1076 - Upper Barataria Risk Reduction\Drafting\CAD\DWGs\1CE submittal twall option\TYPICAL TWALL PLAN AND ELEV.dwg

US Army Corps of Engineers®
NEW ORLEANS DISTRICT

MARK	DESCRIPTION	DATE	APPR.

MARK	DESCRIPTION	DATE	APPR.

DESIGNED BY: XXX | DWN BY: DJM | SUBMITTED BY: XXXX | DATE: XXX | CKD BY: XX | PLOT SCALE: AS IS | SIZE: ANSI D

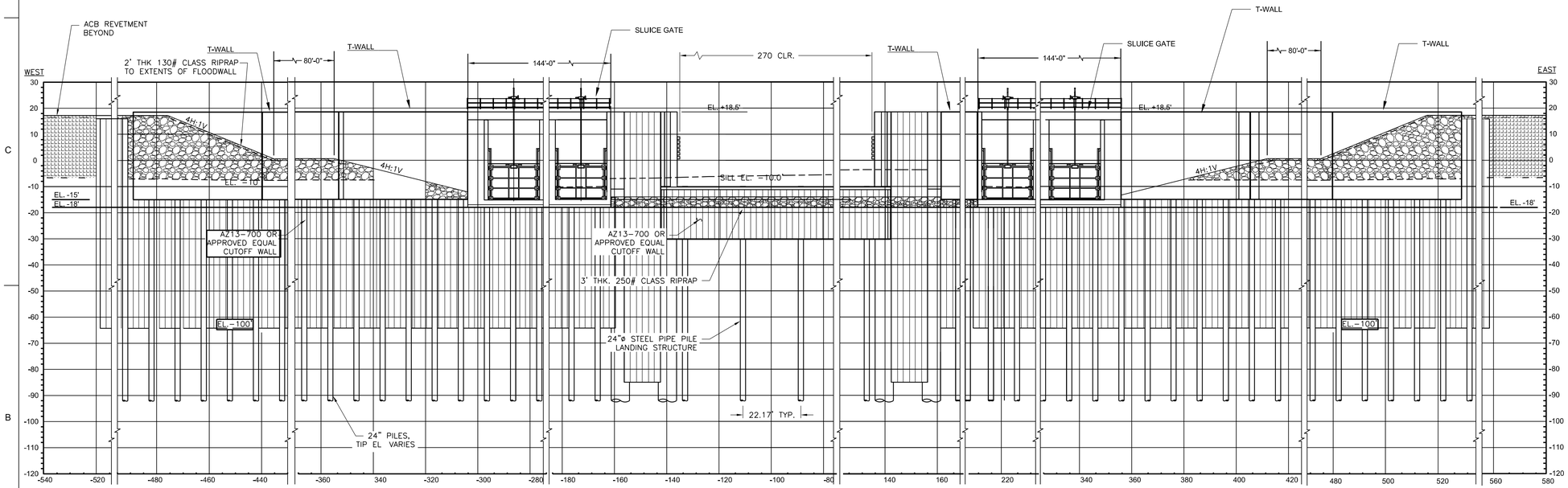
U.S. ARMY CORPS OF ENGINEERS
NEW ORLEANS DISTRICT
NEW ORLEANS, LOUISIANA

SOLICITATION NO.: X | CONTRACT NO.: X | PLOT DATE: AS IS | FILE NUMBER: H4XXXX | FILE NAME: Architectural_Sheet_Seed2d.dgn

UPPER BARATARIA BASIN
LOUISIANA FEASIBILITY STUDY
-
LAFOURCHE AND ST. CHARLES PARISH, LA

TYPICAL TWALL PLANS AND ELEVATIONS

SHEET IDENTIFICATION
T-402



CL SECTION - FLOOD SIDE

STA. 6+00

SCALE: NTS

PRELIMINARY NOT TO BE USED FOR CONSTRUCTION, BIDDING, RECORDATION, CONVEYANCE, SALES OR AS THE BASIS FOR THE ISSUANCE OF A PERMIT.	GIS ENGINEERING, LLC ENGINEER: Kyle Joseph Galloway, P.E. LA. LICENSE #: 0040317 DATE: AUGUST, 2018

THIS DRAWING HAS BEEN REDUCED TO ONE HALF SIZE

LAFOURCHE BASIN LEVEE DISTRICT

DESIGNED BY: K.J.G.
DWN BY: M.C., J.J.S.
CKD BY: K.J.G.
SUBMITTED BY: K.J.G.
PLOT SCALE: 1:1
PLOT DATE: 09/07/2018
SIZE: 22"x34"
FILE NAME: PROPOSED CL CROSS SECTIONS.dwg

GIS ENGINEERING LLC
Coastal Hydro & Morphodynamic Engineering
Metairie, LA 70001

UPPER BARATARIA RISK REDUCTION
CPRA PROJECT NO.: 002.HP.06
SEGMENT 3

PROPOSED CL CROSS SECTIONS

SHEET IDENTIFICATION
T404

M:\Department 39\Client\LBLD1 - Lafourche Basin Levee\393-30-1076 - Upper Barataria Risk Reduction\Drafting\CAD\DWGs\105 submittal (will update)\PROPOSED CL CROSS SECTIONS.dwg

US Army Corps of Engineers®
NEW ORLEANS DISTRICT

MARK	DESCRIPTION	DATE	APPR.

MARK	DESCRIPTION	DATE	APPR.

MARK	DESCRIPTION	DATE	APPR.

DESIGNED BY: XXX
DWN BY: DJM
SUBMITTED BY: XXXX
DATE: XXX
CKD BY: XX
PLOT SCALE: ANSI D
SOLICITATION NO.: X
CONTRACT NO.: X
FILE NUMBER: HAXXXX
PLOT DATE: 09/07/2018
FILE NAME: Architectural_Sheet_Seed2d.dgn

U.S. ARMY CORPS OF ENGINEERS
NEW ORLEANS DISTRICT
NEW ORLEANS, LOUISIANA

UPPER BARATARIA BASIN
LOUISIANA FEASIBILITY STUDY
-
LAFOURCHE AND ST. CHARLES PARISH, LA

PROPOSED CL CROSS SECTIONS

SHEET IDENTIFICATION
T-404

PROTECTED SIDE

BAYOU DES ALLEMANDS

FLOOD SIDE

RING GIRDER, SEE SHT. 10 FOR DETAILS

ø280.79

12"ø STD. STEEL SPUD PIPE (TYP.)

TEMPORARY TIMBER PROTECTION FENDERS

LAT: 29° 48' 03.771"
LONG: -90° 27' 57.477"
N: 474184.0883
E: 3555934.9637

LAT: 29° 48' 07.957"
LONG: -90° 27' 53.260"
N: 474609.7125
E: 3556303.2882

DEWATERED AREA = 61,923.5 SQ.FT. (PLAN)

PROPOSED COFFERDAM

AZ13-700 SHEETPILE FLOODWALL OR APPROVED EQUAL (174 PILE PAIRS EA. COFFERDAM)

A 06|07

NOTES:

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL DESIGN, PUMPING, EXCAVATION, TEMPORARY STOCKPILE OF EXCAVATED MATERIAL, BACKFILLING TO ORIGINAL GROUND ELEVATION, AND ANY MAINTENANCE REQUIRED FOR THE INSTALLATION OF THE TEMPORARY COFFERDAM STRUCTURE REQUIRED FOR THE INSTALLATION OF THE PILE SUPPORTED CONCRETE SILL. CONTRACTOR SHALL SUBMIT THE COFFERDAM STRUCTURE DESIGN STAMPED BY A LICENSED PROFESSIONAL ENGINEER IN THE STATE OF LOUISIANA FOR REVIEW AND APPROVAL. COFFERDAM DETAILS SHOWN ON THE DRAWINGS ARE FOR REFERENCE AND BIDDING PURPOSES ONLY.
2. CONTRACTOR WILL BE REQUIRED TO SUBMIT A WRITTEN PROCEDURE TO BE FOLLOWED FOR THE INSTALLATION OF THE COFFERDAM, EXCAVATION WITHIN THE COFFERDAM, TEMPORARY FENDER SYSTEMS AND DEWATERING; PRIOR TO THE WORK BEGINNING. THE ENGINEER WILL REVIEW THE PROCEDURE TO ENSURE THAT THERE ARE NO CONFLICTS WITH LOCAL ACTIVITIES IN THE PROJECT AREA.
3. TEMPORARY TIMBER FENDERS (GUIDE WALLS) SHOULD BE COMPLETED PRIOR TO OR IN CONJUNCTION WITH THE COMMENCEMENT OF COFFERDAM CONSTRUCTION.
4. STRUCTURAL STEEL TO BE A-36
5. RING GIRDER TO BE SHOP ASSEMBLED TO TOLERANCE OF A TRUE CIRCLE ± 2.0"
6. TEST ALL COMPARTMENTS WITH NOT OVER 5 P.S.I. FOR LEAKS. ALL COMPARTMENTS TO BE WATERTIGHT.

PROPOSED DEWATERING PLAN

30 0 15 30 60
(IN FEET)

NOTE: QUANTITIES SHOWN ARE GROSS GEOMETRIC ESTIMATES WITH NO FACTORS APPLIED.

PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION, BIDDING, RECORDATION, CONVEYANCE, SALES OR AS THE BASIS FOR THE ISSUANCE OF A PERMIT.

GIS ENGINEERING, LLC

ENGINEER: Kyle Joseph Galloway, P.E.
LA. LICENSE #: 0040317
DATE: AUGUST, 2018

THIS DRAWING HAS BEEN REDUCED TO ONE HALF SIZE

LAFOURCHE BASIN LEVEE DISTRICT

DESIGNED BY: K.J.G. | DATE: OCT., 2018
DRAWN BY: M.A.C., J.J.S. | CKD BY: K.J.G.
SUBMITTED BY: K.J.G.
PLOT SCALE: 1:1 | PLOT DATE: (Date of Plot) 22, 2018
SIZE: 22"x34" | FILE NAME: PROPOSED DEWATERING PLAN.dwg

GIS ENGINEERING LLC
Coastal Ecology & Infrastructure
1 Galerie Blvd., Suite 310
Houma, LA 70360
985.876.3799

UPPER BARATARIA RISK REDUCTION
CPRA PROJECT NO.: 002.HP.06
SEGMENT 3
PROPOSED DEWATERING PLAN

SHEET IDENTIFICATION
T405

US Army Corps of Engineers®
NEW ORLEANS DISTRICT

MARK	DESCRIPTION	DATE	APPR.

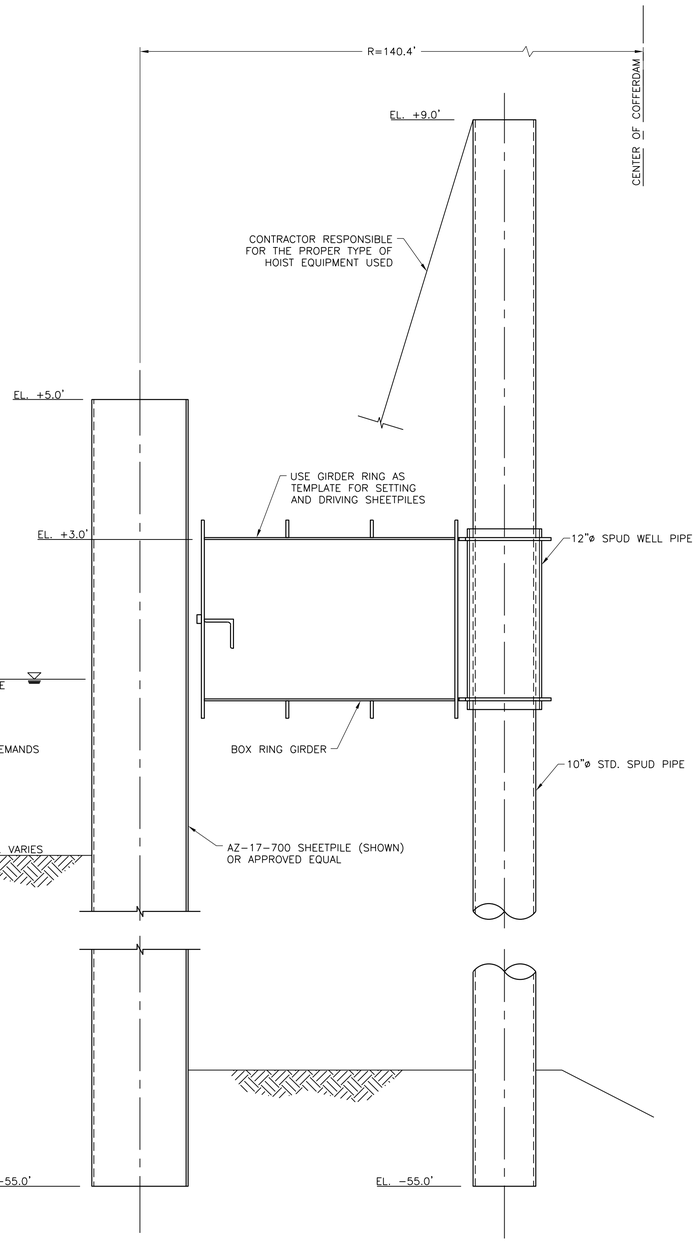
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DWN BY: XX | CKD BY: XX | SOLICITATION NO.: XXXXXXXXXX
QUALITY CONTROL BY: XXX | CONTRACT NO.: XXXXXXXXXX
PLOT SCALE: As Shown | PLOT DATE: XX | FILE NAME: M:\Department 39\Client\LBLD\Lafourche Basin Levee\39130-1076 - Upper Barataria Risk Reduction\Drafting\CAD\DWGs\10% submittal (wet option)\PROPOSED DEWATERING PLAN .dwg
SIZE: ANSI D | FILE NAME: MMDDYYXXX_14th #####

U.S. ARMY CORPS OF ENGINEERS
NEW ORLEANS DISTRICT
NEW ORLEANS, LOUISIANA

UPPER BARATARIA BASIN
LOUISIANA FEASIBILITY STUDY
LAFOURCHE AND ST. CHARLES PARISH, LA
PROPOSED DEWATERING PLAN

SHEET IDENTIFICATION
T-405

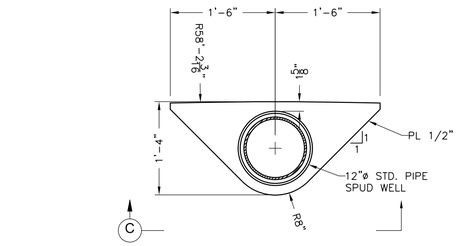
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COFFERDAM SECTION

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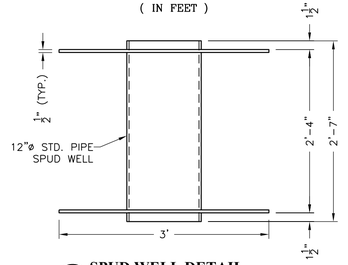
(IN FEET)



SPUD WELL DETAIL

2 0 1 2 4

(IN FEET)

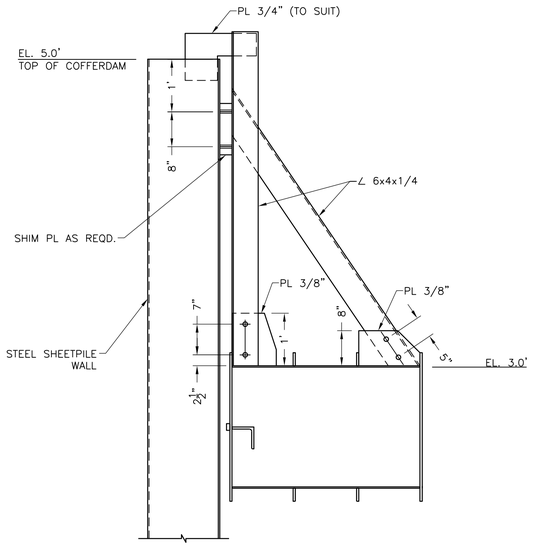


C SPUD WELL DETAIL

SCALE: 1"=1'-0"

2 0 1 2 4

(IN FEET)



HANGER DETAIL

2 0 1 2 4

(IN FEET)

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GIS ENGINEERING, LLC

ENGINEER: Kyle Joseph Galloway, P.E.

LA. LICENSE #: 0040317

DATE: AUGUST, 2018

THIS DRAWING HAS BEEN REDUCED TO ONE HALF SIZE

LAFOURCHE BASIN LEVEE DISTRICT

DESIGNED BY: KJG
DWN BY: MAC, JJS
SUBMITTED BY: KJG
PLOT SCALE: 1:1
PLOT DATE: October 12, 2018
SIZE: 22"x34"
FILE NAME: COFFERDAM SECTIONS AND DETAILS.dwg
DATE: OCT., 2018
CKD BY: K.J.G.

GIS ENGINEERING LLC
137 Rue Jean Lafitte
Houma, Louisiana 70360
985-414-0092

UPPER BARATARIA RISK REDUCTION
CPRA PROJECT NO.: 002.HP.06
SEGMENT 3

COFFERDAM SECTIONS AND DETAILS

SHEET IDENTIFICATION
T406

US Army Corps of Engineers
NEW ORLEANS DISTRICT

MARK	DESCRIPTION	DATE	APPR.

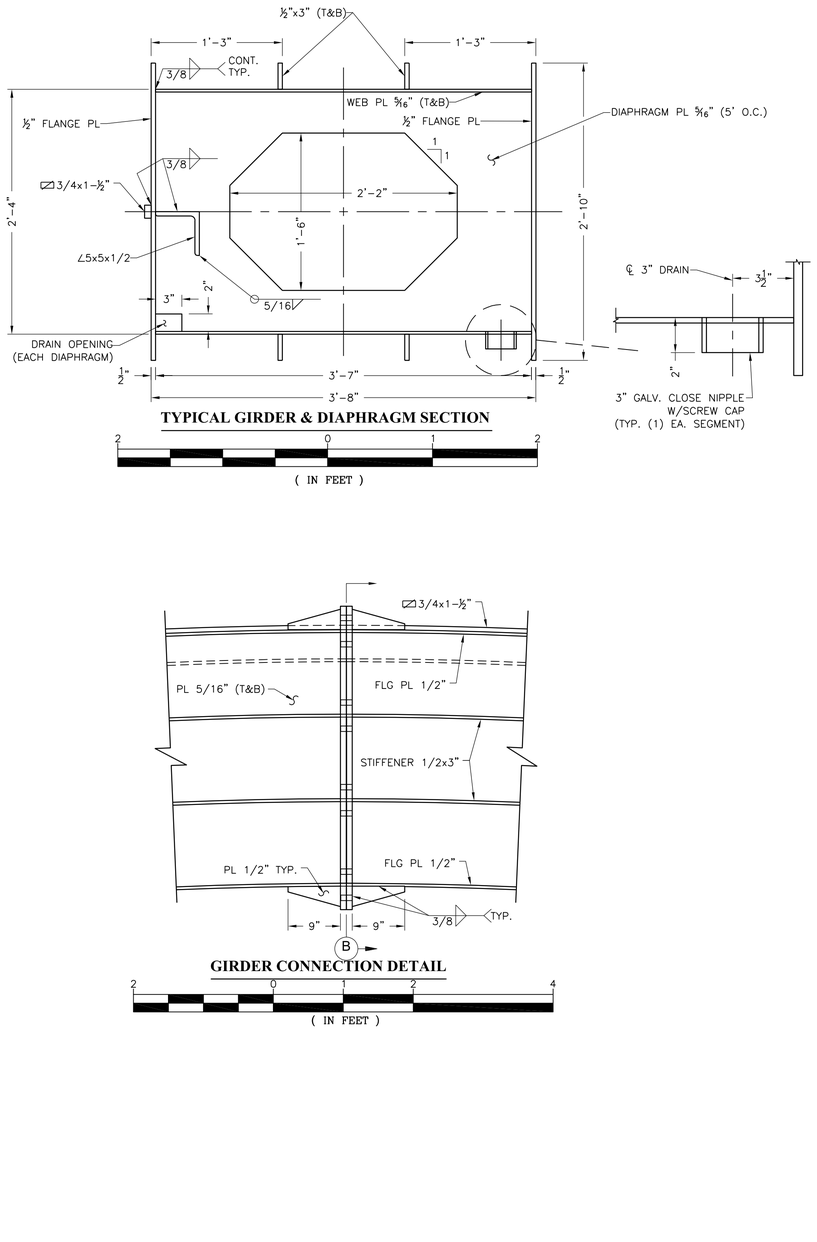
U.S. ARMY CORPS OF ENGINEERS
NEW ORLEANS DISTRICT
NEW ORLEANS, LOUISIANA

DESIGNED BY: XXX
DWN BY: DJM
SUBMITTED BY: XXXX
PLOT SCALE: XX
DATE: XXX
CKD BY: XX
PLOT DATE: XX
SIZE: ANSI D
SOLICITATION NO.: X
CONTRACT NO.: X
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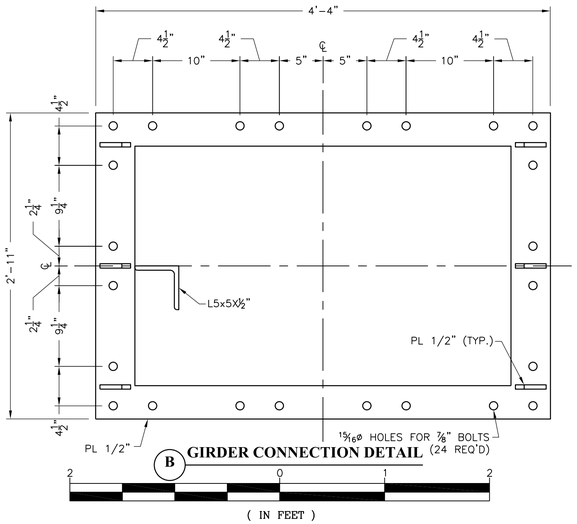
UPPER BARATARIA BASIN
LOUISIANA FEASIBILITY STUDY
-
LAFOURCHE AND ST. CHARLES PARISH, LA

COFFERDAM SECTIONS AND DETAILS

SHEET IDENTIFICATION
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TYPICAL GIRDER & DIAPHRAGM SECTION



GIRDER CONNECTION DETAIL

GIRDER CONNECTION DETAIL

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GIS ENGINEERING, LLC

ENGINEER: Kyle Joseph Galloway, P.E.
LA. LICENSE #: 0040317
DATE: AUGUST, 2018

THIS DRAWING HAS BEEN REDUCED TO ONE HALF SIZE

SHEET IDENTIFICATION
T407

US Army Corps of Engineers
NEW ORLEANS DISTRICT

MARK	DESCRIPTION	DATE	APPR.

MARK	DESCRIPTION	DATE	APPR.

MARK	DESCRIPTION	DATE APPR.

LAFOURCHE BASIN LEVEE DISTRICT

GIS ENGINEERING LLC
127 Fabacher Rd.
Houma, LA 70360
985-414-1080

DESIGNED BY: K.J.G.
DWN BY: M.A.C., J.J.S.
CKD BY: K.J.G.
SUBMITTED BY: K.J.G.
DATE: OCT., 2018
PLOT SCALE: 1:1
PLOT DATE: October 12, 2018
SIZE: 22"x34"
FILE NAME: COFFERDAM SECTIONS AND DETAILS.dwg

UPPER BARATARIA RISK REDUCTION
CPRA PROJECT NO.: 002.HP.06
SEGMENT 3

COFFERDAM SECTIONS AND DETAILS

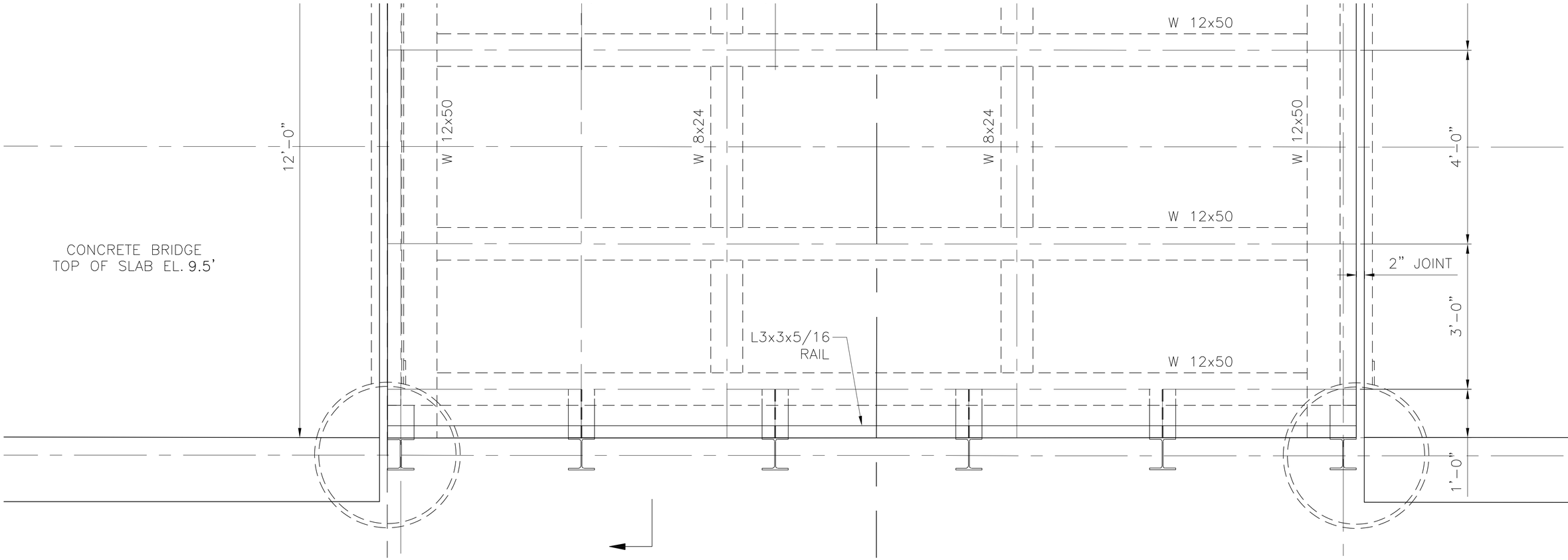
U.S. ARMY CORPS OF ENGINEERS
NEW ORLEANS DISTRICT
NEW ORLEANS, LOUISIANA

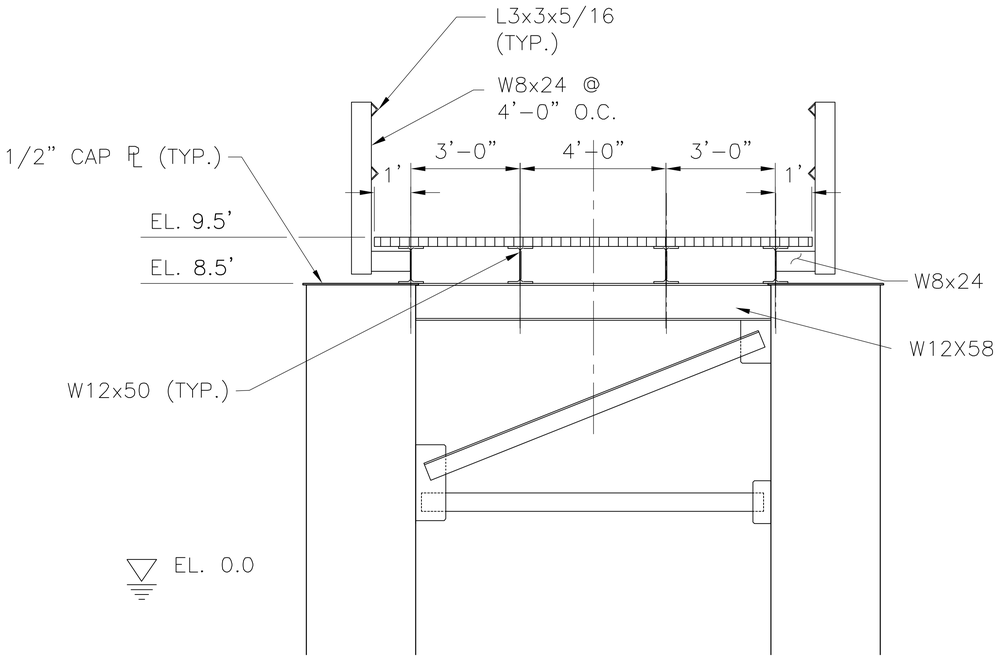
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PLOT SCALE: X:X
PLOT DATE: X:X
FILE NUMBER: HHHXXX
SIZE: ANSI D
FILE NAME: Architectural_Sheet_Seed2d.dgn

UPPER BARATARIA BASIN
LOUISIANA FEASIBILITY STUDY
-
LAFOURCHE AND ST. CHARLES PARISH, LA

COFFERDAM SECTIONS AND DETAILS

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T-407





REMOVABLE BRIDGE - PLAN VIEW

0 1' 2' 4'

(IN FEET)