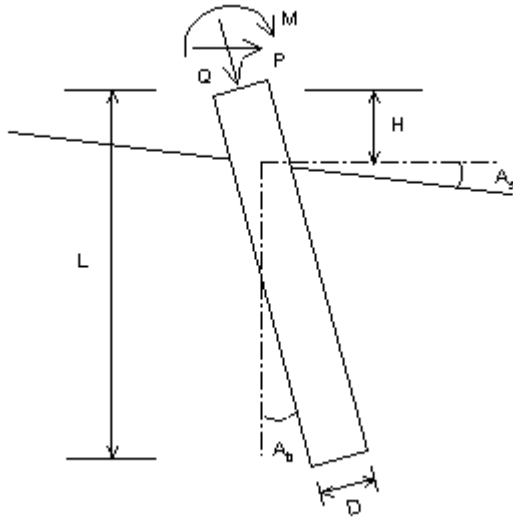


LATERAL ANALYSIS



Driving Steel Pile (Open end)

Loads:

Load Factor for Vertical Loads= 1.0
 Load Factor for Lateral Loads= 1.0
 Loads Supported by Pile Cap= 0 %
 Shear Condition: Cyclic
 Number of Cycles: 4

(with Load Factor)

Vertical Load, Q= 30.0 -kp
 Shear Load, P= 3.0 -kp
 Moment, M= 0.0 -kp-f

Profile:

Pile Length, L= 15.5 -ft
 Top Height, H= 0 -ft
 Slope Angle, As= 0
 Batter Angle, Ab= 0.0
 Free Head Condition

Soil Data:

Depth -ft	Gamma -lb/ft ³	Phi	C -kp/f ²	K -lb/i ³	e50 or Dr %	Nspt
0	100	31	0.00	50	40	12
4	100	31	0.00	50	40	12
6	60	33	0.00	60	54	20
8	35	27	0.35	40	1.25	5
10	57	32	0.00	55	50	17
16	52	32	0.00	55	48	16

Pile Data:

Depth -ft	Width -in	Area -in ²	Per. -in	I -in ⁴	E -kp/i ²	Weight -kp/f
0.0	8	43.77	25.13	197.70	31920	0.044
12.0	2.875	1.6	9.0	1.45	29000	0.0058
15.5						

Single Pile Lateral Analysis:

Top Deflection, yt= 0.11300-in
 Max. Moment, M= 9.08-kp-f
 Top Deflection Slope, St= -0.00183
 OK! Top Deflection, 0.1130-in is less than the Allowable Deflection= 1.00-in

Note: If the program cannot find a result or the result exceeds the upper limit. The result will be displayed as 99999.

The Max. Moment calculated by program is an internal force from the applied load conditions. Structural engineer has to check whether the pile has enough capacity to resist the moment with adequate factor of safety. If not, the pile may fail under the load conditions.

Weight of grout

$$w_c = 125 \text{ lb/ft}^3$$

$$f'_c = 4,000 \text{ psi}$$

$$E_c = 33w_c^{1.5} \sqrt{f'_c} = 33 \times 125^{1.5} \times \sqrt{4,000} = 2,920 \text{ kip/in}^2$$

$$E_{\text{effective}} = E_{\text{grout}} + E_{\text{steel}} = 2,920 + 29,000 = 31,920 \text{ ksi}$$

$$I_{\text{pipe}} = 1.45 \text{ in}^4 \rightarrow \text{AISC Manual 14}^{\text{th}} \text{ Edition}$$

$$I_{\text{grout}} = \frac{\pi \times (R^4 - r^4)}{4} = \frac{\pi \times (4^4 - 1.4375^4)}{4} - \frac{\pi \times 251.73}{4} = 197.71 \text{ in}^4$$

$$I_{\text{total}} = 197.71 + 1.45 = 199.116 \text{ in}^4$$

$$A_{\text{grout}} = \frac{\pi}{4} (8^2 - 2.875^2) = 43.77 \text{ in}^2$$

PILE DEFLECTION & FORCE vs DEPTH
Single Pile, Khead=2, Kbc=1

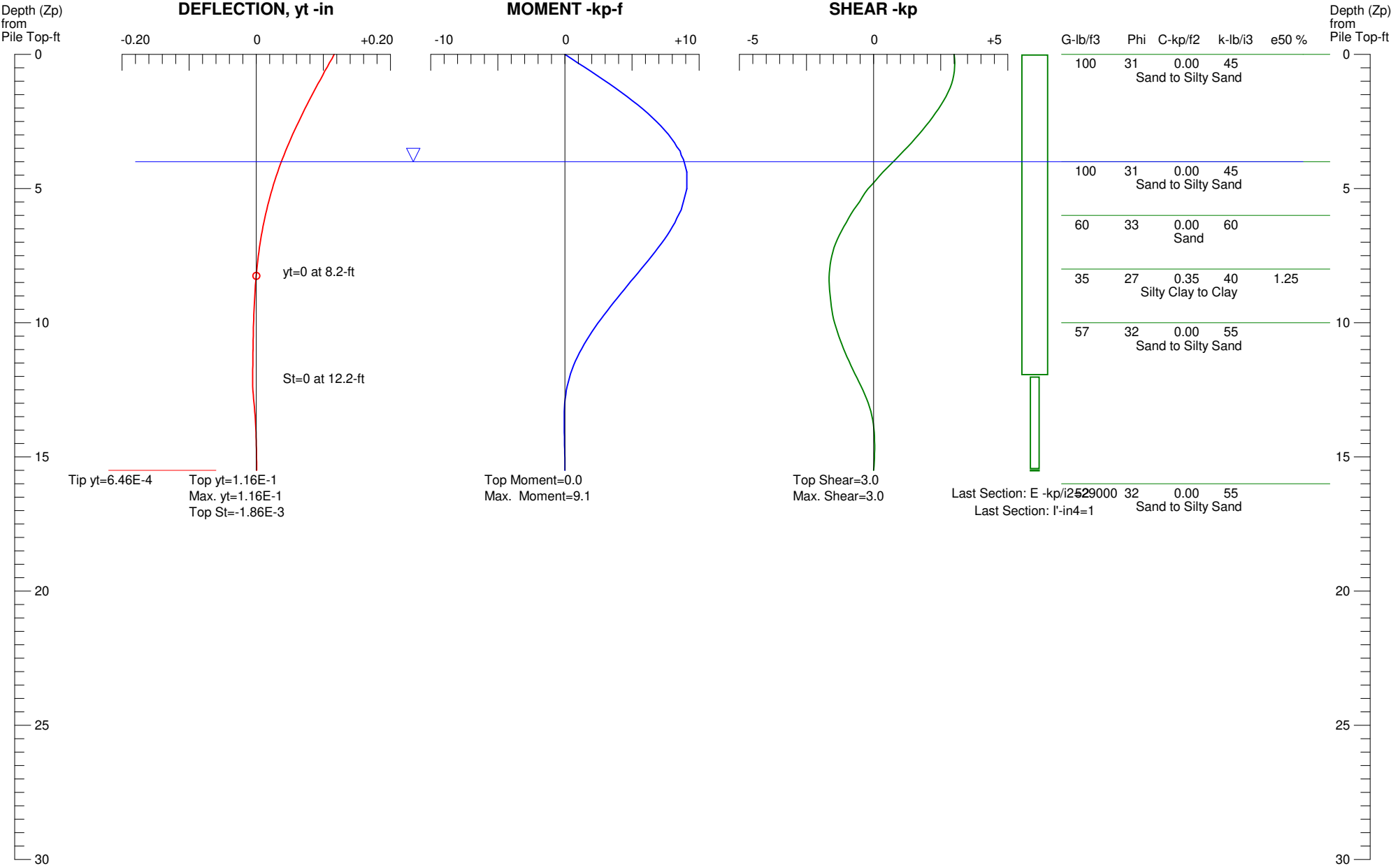
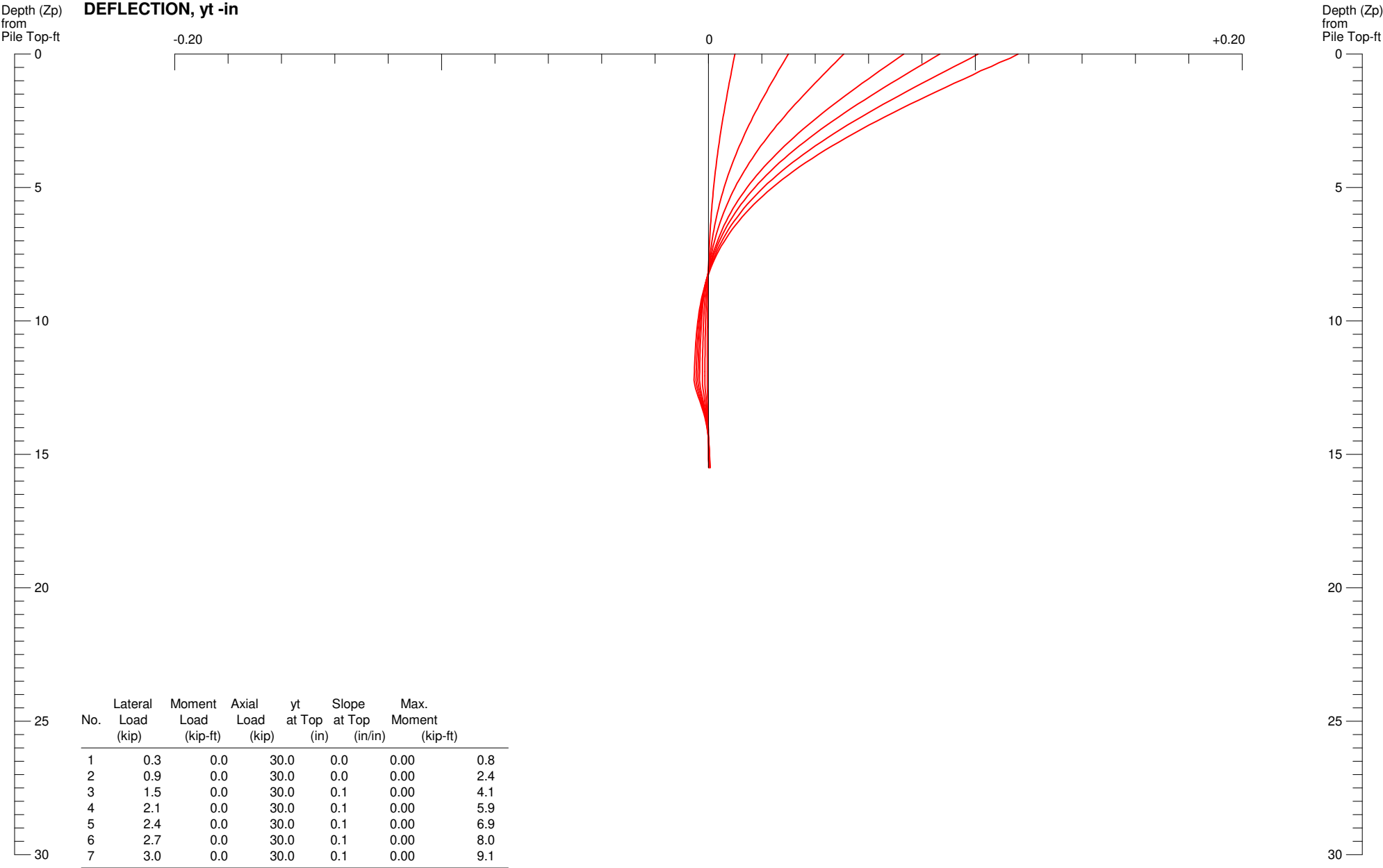


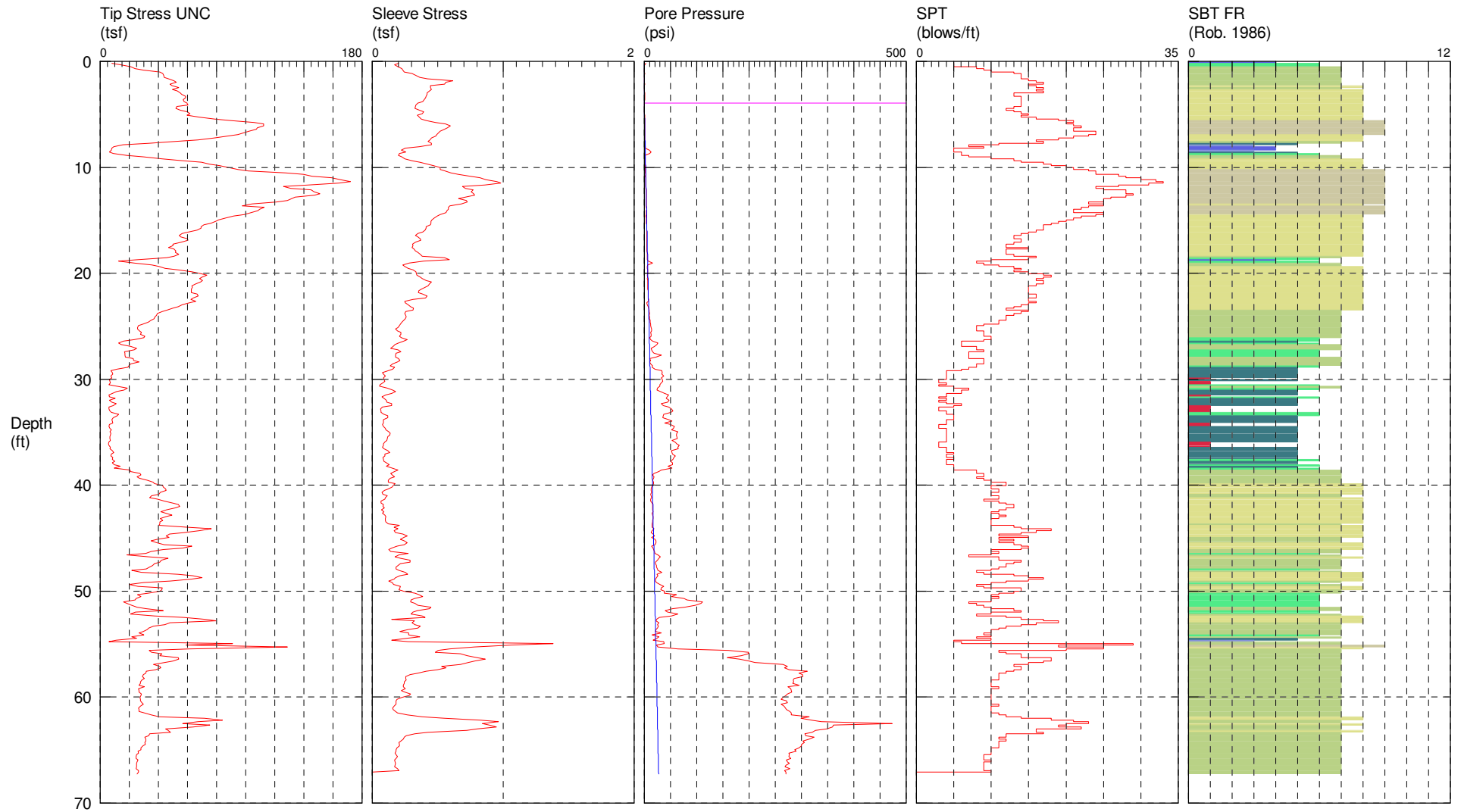
Figure 2

PILE DEFLECTION vs LOADING
Single Pile, Khead=2, Kbc=1



Cone Penetration Test Sounding Record

TOTAL DEPTH: 67.257 ft



- 1 Sensitive fine grained
- 2 Organic material
- 3 Clays

- 4 Silty clay to clay
- 5 Clayey silt to silty clay
- 6 Sandy silt to clayey silt

- 7 Silty sand to sandy silt
- 8 sand to silty sand
- 9 Sand

- 10 Gravely sand to sand
- 11 Very stiff fine grained **
- 12 Sand to clayey sand **

*SBT: Robertson 1986; **Overconsolidated or Cemented; *SBT/SPT CORRELATION: UBC-1983