Key No. 4.13 Soldier Pile Wall, Section E, W16x89, Grade 50, Spacing 8 ft

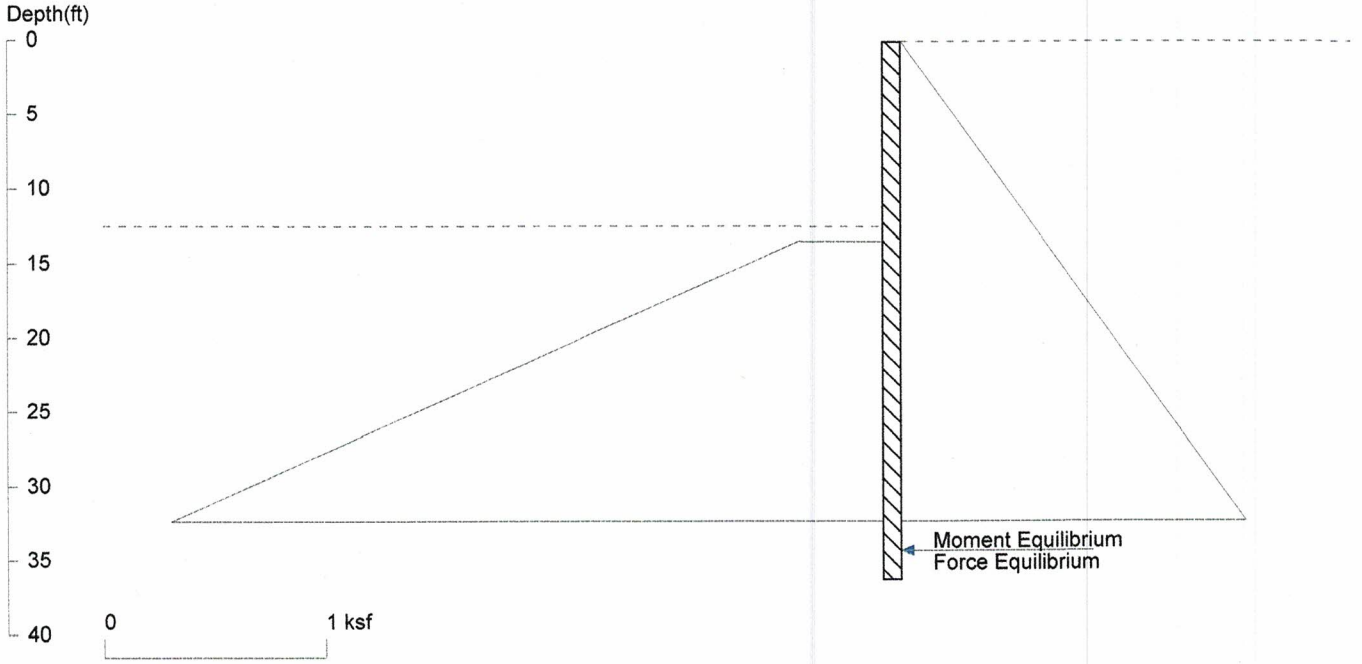
Soil conditions for calculation per geotechnical report

	Equivalent Fluid weight at rest (sloped backfill)		48 pcf
	Fluid unit weight	passive	300 pcf
		Seismic	375 pcf
	Pile hole diameter		2.5 ft
Section E	Retained height of wall:	h	12.5 ft
	Uniform seismic load	8 x H	100 psf
	For temporary condition (with 5 ft bench at passive side)		
	Passive pressure		150 pcf
	Soldier pile section		W16x89
	Soldier pile min embedment	24 ft, say	28 ft
	(embedment governed by temporary load condition)		

For calculation see attached design sheets

4634 Mercer Way

Key No. 4.13 Section E temporary w Bench



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File: E:\Projects 2019\4634 Mercer Way Barcelo\4634 E Mercer structural\SP w Bench\4_13 Section E temporary w bench

Wall Height=12.5 Pile Diameter=2.5 Pile Spacing=8.0 Wall Type: 2. Soldier Pile, Drilled

PILE LENGTH: Min. Embedment=23.85 Min. Pile Length=36.35 Embedment on Drawing 28 ft

MOMENT IN PILE: Max. Moment=354.10 per Pile Spacing=8.0 at Depth=23.12 Section is adequate

PILE SELECTION:

Request Min. Section Modulus = 128.8 in3/pile=2110.04 cm3/pile, Fy= 50 ksi = 345 MPa, Fb/Fy=0.66

W16X89 has Section Modulus = 155.0 in3/pile=2539.99 cm3/pile. It is greater than Min. Requirements!

Top Deflection = 1.60(in) based on E (ksi)=29000.00 and I (in4)/pile=1300.0

DRIVING PRESSURES (ACTIVE, WATER, & SURCHARGE):

Z1	P1	Z2	P2	Slope
0	0	99	4.752	0.048

PASSIVE PRESSURES:

Z1	P1	Z2	P2	Slope
13.5	0.375	99	13.200	0.15

ACTIVE SPACING:

No.	Z depth	Spacing
1	0.00	8.00
2	12.50	2.50

PASSIVE SPACING:

No.	Z depth	Spacing
1	12.50	5.00

UNITS: Width,Spacing,Diameter,Length,and Depth - ft; Force - kip; Moment - kip-ft
Friction,Bearing,and Pressure - ksf; Pres. Slope - kip/ft3; Deflection - in