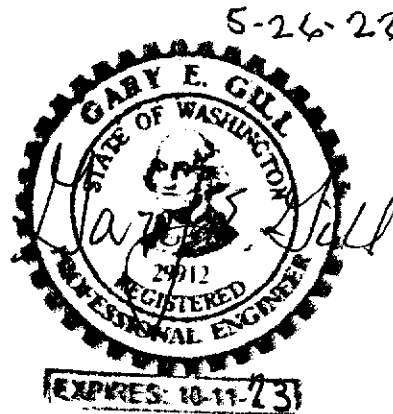


# Bird McDonald Residence Slope Stability Update

4304 East Mercer Way  
Mercer Island, WA 98040

## STRUCTURAL CALCULATIONS

May 26, 2022

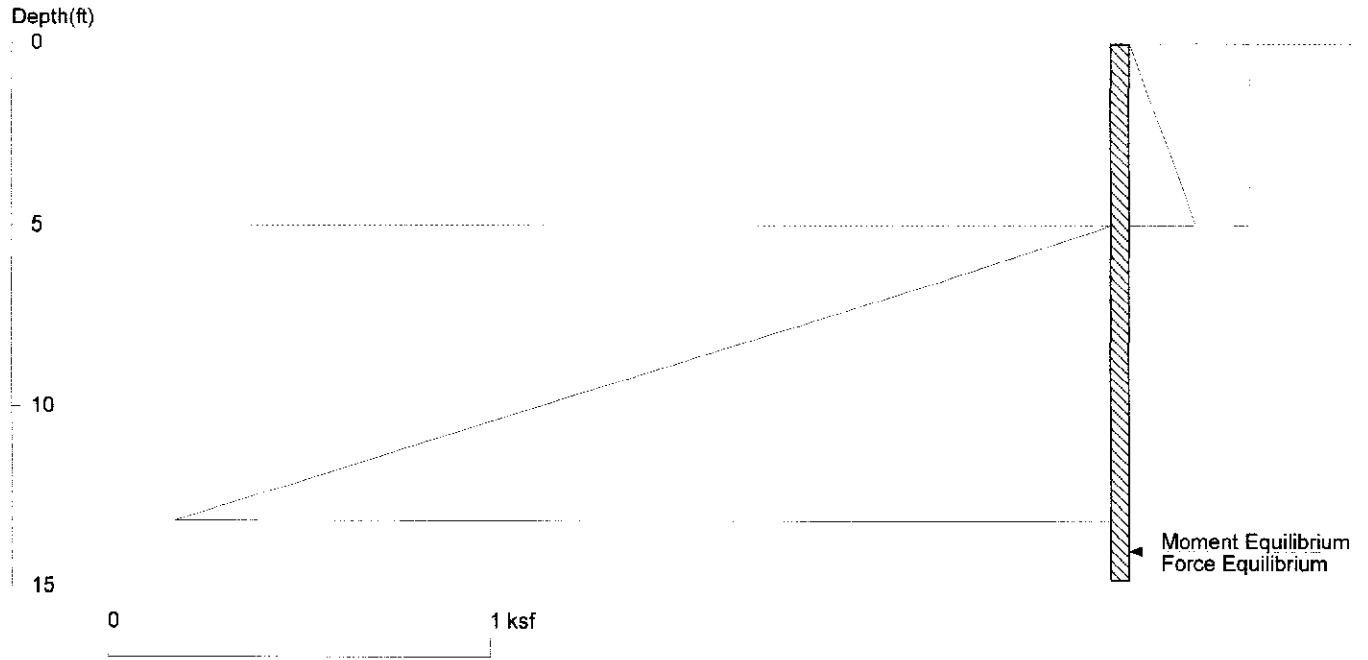


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# Bird MacDonald

## Slope Retention Driven Piles



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Date: 5/26/2022

File: C:\Users\gill2\OneDrive\projects\bird mcdonald\calcs\W6 PILE PREL.sh8

Wall Height=5.0      Pile Diameter=0.3      Pile Spacing=2.3      Wall Type: 3. Soldier Pile, Driving

PILE LENGTH: Min. Embedment=9.80    Min. Pile Length=14.80

MOMENT IN PILE: Max. Moment=7.07 per Pile Spacing=2.3 at Depth=9.25

**PILE SELECTION:**

Request Min. Section Modulus = 3.6 in<sup>3</sup>/pile=58.48 cm<sup>3</sup>/pile, Fy= 36 ksi = 248 MPa, Fb/Fy=0.66

-> Piles meet Min. Section Requirements:      Top Deflection is shown in (in)

- W4X13 (2.12)    W5X16 (1.12)    W6X8.5 (1.61)    HP8X36 (0.20)    W8X10 (0.78)
- HP10X42 (0.11)    W10X12 (0.44)    HP12X53 (0.06)    W12X14 (0.27)    HP13X60 (0.05)
- HP14X73 (0.03)    W14X22 (0.12)    W16X26 (0.08)    HP16X88 (0.02)

**DRIVING PRESSURES (ACTIVE, WATER, & SURCHARGE):**

Z1	P1	Z2	P2	Slope
0	0	5	0.175	.035
0	.04	5	0.040	0

**PASSIVE PRESSURES:** Pressures below will be divided by a Factor of Safety =1.2

Z1	P1	Z2	P2	Slope
5	0	20	4.500	.3

**ACTIVE SPACING:**

No.	Z depth	Spacing
1	0.00	2.33

**PASSIVE SPACING:**

No.	Z depth	Spacing
1	5.00	0.66

**UNITS:** Width, Spacing, Diameter, Length, and Depth - ft; Force - kip; Moment - kip-ft  
Friction, Bearing, and Pressure - ksf; Pres. Slope - kip/ft<sup>3</sup>; Deflection - in