

# Shoring Load Calculations for the MI Treehouse

**Job:** 18-025

**Site** 5637 East Mercer Way

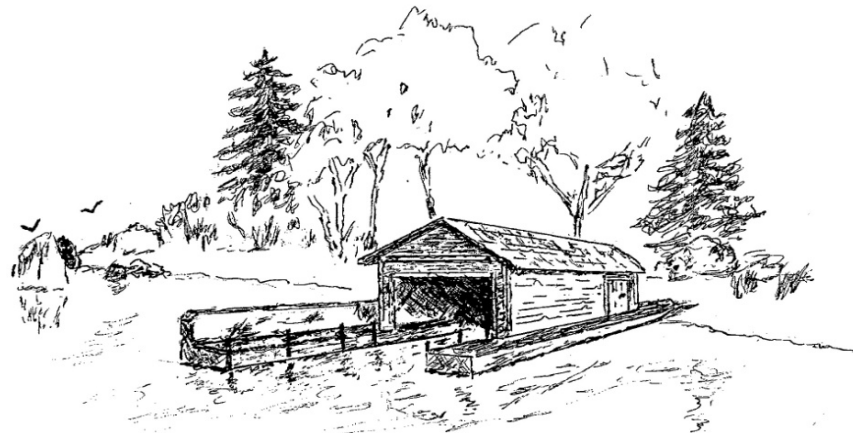
**Address :** Mercer Island, WA 98040

**Date:** August 22, 2022

**Revised Shoring Wall  
Calculations**



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**Sheet:** 2 Shoring Wall Calculations

# Soldier Pile Wall Design

#	Soil									Pile											Timber Lagging																		
	Safety Factor		Pressures						Geometry					Depths/Moments						Steel		Lower Third			Middle Third			Upper Third											
	Typ.	Seis. & Debris	Act. P <sub>Act</sub>		Sur. P <sub>Sur</sub>	Seis. Sur. P <sub>Seis</sub>	Debris Flow P <sub>DF</sub>	Passive Pressure		Shape	Grade	Back Fill H <sub>BF</sub>	Debris Flow. H <sub>DF</sub>	Spac. Sp.	Pile Dia. D	Arch. Factor A	Typ.			Seis.			Act. f' <sub>b</sub>	Allw. F' <sub>b</sub>	Timber	Grade	Loads	Stresses		Timber	Grade	Loads	Stresses		Timber	Grade	Loads	Stresses	
			AG	BG				P <sub>p</sub>	h <sub>n</sub>								Zero Shear d <sub>Typ.</sub>	Pile Depth E <sub>Typ.</sub>	Max. Mom. Typ. M <sub>max</sub>	Zero Shear d <sub>Seis.</sub>	Pile Depth E <sub>Seis.</sub>	Max. Mom. Seis. M <sub>max</sub>						Max. Mom. M <sub>max</sub>	Act. f' <sub>b</sub>				All. F' <sub>b</sub>	Max. Mom. M <sub>max</sub>				Act. f' <sub>b</sub>	All. F' <sub>b</sub>
			(pcf)	(pcf)	(psf)	(psf)	(pcf)	(pcf)	(ft)			(ft)	(ft)	(ft)	(in)	(ft)	(ft)	(kip-ft)	(ft)	(ft)	(kip-ft)	(ksi)	(ksi)	Arch =	0.50	(lb-ft)	(psi)	(psi)	Arch =	0.50	(lb-ft)	(psi)	(psi)	Arch =	0.50	(lb-ft)	(psi)	(psi)	
1-4	1.5	1.2	35	35	80.0			225	2.5	W6x20	A572	4.00		7.50	18.0	2.00	3.81	7.13	29.72	3.22	6.15	21.40	26.6	33.0	4x8	DF#2	492	399	1015	4x8	DF#2	328	266	1015	4x8	DF#2	164	133	1015
5-8	1.5	1.2	35	35	80.0			225	2.5	W6x20	A572	3.30		7.50	18.0	2.00	3.32	6.20	19.39	2.81	5.34	13.93	17.4	33.0	4x8	DF#2	406	329	1015	4x8	DF#2	271	219	1015	4x8	DF#2	135	110	1015
9-11	1.5	1.2	35	35	80.0			225	2.5	W6x20	A572	2.00		7.50	18.0	2.00	2.39	4.41	6.76	2.02	3.78	4.82	6.1	33.0	4x8	DF#1	246	200	1508	4x8	DF#2	164	133	1015	4x8	DF#2	82	67	1015
12-15	1.5	1.2	60	60			100	225		W8x35	A572	1.00	6.00	6.00	18.0	2.00	0.84	1.55	0.26	4.69	9.29	80.58	31.0	33.0	4x8	DF#1	135	109	1508	4x8	DF#2	90	73	1015	4x8	DF#2	45	36	1015
16-23	1.5	1.2	60	60			100	225		W14x145	A572	12.50	6.00	6.00	24.0	2.00	9.38	17.30	472.41	8.68	17.16	621.30	32.1	33.0	4x8	DF#1	1688	1368	1508	4x8	DF#2	1125	912	1015	4x8	DF#2	563	456	1015
24	1.5	1.2	60	60			225			W12x72	A572	10.00		6.00	24.0	2.00	7.50	13.84	241.88	6.05	11.44	167.91	29.8	33.0	4x8	DF#1	1350	1094	1508	4x8	DF#1	900	730	1508	4x8	DF#1	450	365	1508
25	1.5	1.2	60	60			225			W12x50	A572	9.00		6.00	24.0	2.00	6.75	12.45	176.33	5.45	10.30	122.41	33.0	33.0	4x8	DF#1	1215	985	1508	4x8	DF#1	810	657	1508	4x8	DF#1	405	328	1508
26	1.5	1.2	60	60			225			W12x35	A572	8.00		6.00	24.0	2.00	6.00	11.07	123.84	4.84	9.15	85.97	32.6	33.0	4x8	DF#1	1080	876	1508	4x8	DF#1	720	584	1508	4x8	DF#1	360	292	1508
27	1.5	1.2	60	60			225			W10x39	A572	7.50		6.00	24.0	2.00	5.63	10.38	102.04	4.54	8.58	70.84	29.1	33.0	4x8	DF#1	1013	821	1508	4x8	DF#1	675	547	1508	4x8	DF#1	338	274	1508
28	1.5	1.2	60	60			225			W10x30	A572	7.00		6.00	24.0	2.00	5.25	9.69	82.96	4.24	8.01	57.59	30.7	33.0	4x8	DF#2	945	766	1015	4x8	DF#2	630	511	1015	4x8	DF#2	315	255	1015

