Soldier Beam Design - Conventional Method

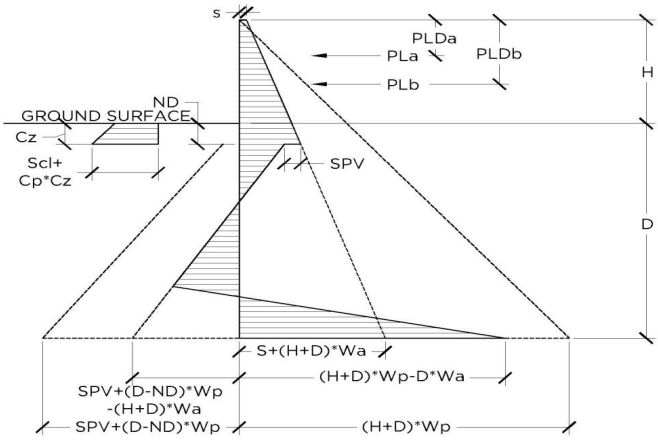
10'-0" Wall

Loading

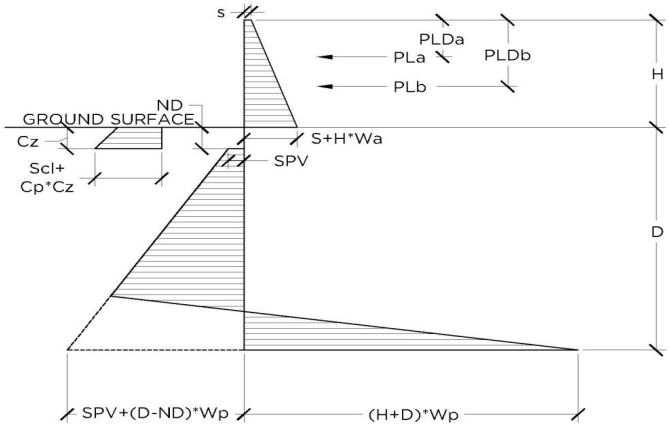
		Granular Soils	
Surcharge:	S	0	psf
Active Load:	Wa	45	pcf
Passive:	Wp	350	pcf
Factor of Safety:	FS	1	
Creep Load:	Cp	0	pcf
Starting Creep Load:	Csl	0	psf
Creep Zone:	Cz	0	ft
Eff. Creep Factor	Cf	0	Factor x Cp
Point Load:	PLa	0	lbs
PLa Dist.from top of wall:	PLDa	0	ft
Point Load:	PLb	0	lbs
PLb Dist. from top of wall:	PLDb	0	ft
Retained Height:	H	15	ft
Neglected Depth:	ND	0	ft
Starting Passive Value:	SPV	0	psf
Pier Diameter:	PD	24	in
Pier Spacing:	PS	6	ft
Eff. Passive Factor	PF	3	Factor x PD
Eff. Active Factor	AF	3	Factor x PD
Required Depth:	D	16.59	ft
Location of Zero Shear:	X	8.39	ft
Design Moment:	M	4,430	k-in
Cover on Soldier Beam:	CC	1	in
Minimum Lagging Bearing:	BL	2	in
Soldier Beam Yield Stress	Fy	50	ksi
Lagging Braces Beam?:		Yes	

Minimum Size:	W18X86	
Specified Size:	W18X86	
Demand-to-Capacity:	**0.89**	<1, OK

Use W18X86 soldier beam placed in 24" diameter pier w/17'-0" minimum embedment



Granular Soil Loading Distribution



Bedrock @ Top of Passive Loading Distribution

Stitch Pier Design - Simplified Method

10'-0" Wall

Loading

		Granular Soils	
Surcharge:	S	0	psf
Active Load:	Wa	45	pcf
Passive:	Wp	350	pcf
Factor of Safety:	FS	1	
Creep Load:	Cp	0	pcf
Eff. Creep Factor	Cf	0	Factor x Cp
Point Load:	PLa	0	lbs
PLa Dist.from top of wall:	PLDa	0	ft
Point Load:	PLb	0	lbs
PLb Dist. from top of wall:	PLDb	0	ft
Retained Height:	H	15	ft
Neglected Depth:	ND	0	ft
Starting Passive Value:	SPV	0	pcf
Pier Diameter:	PD	24	in
Pier Spacing:	PS	6	ft
Eff. Passive Factor	PF	3	Factor x PD
Equilibrium Depth:	D	15.29	ft
Required Depth = 1.2*D:	RD	18.34	ft
Location of Zero Shear:	Y	8.39	ft
Design Moment:	M	4,430	k-in
Cover on Soldier Beam:	CC	1	in
Minimum Lagging Bearing:	BL	2	in
Soldier Beam Yield Stress	Fy	50	ksi
Lagging Braces Beam?:		Yes	

Recommended Size	W18X86
Soldier Pier Size Used:	W18X86
Demand-to-Capacity:	**0.89** <1, OK

Use W18X86 soldier beam placed in 24" diameter pier
w/19'-0" minimum embedment