C A N T I L E V E R S O L D I E R B E A M W A L L

Beams 11 through 19

Active soil pressure 55H (triangular distribution). Surcharge pressure 6H (rectangular), full height. Allowable passive resistance 375D. Maximum "excavation height" (for design) 8 feet. Caissons drilled in rock. 1982 UBC 2907(f)1 (unconstrained).

PARAMETER	UNITS	55H & 6s
BEAM DESIGN		
UNIT ACTIVE PRESSURE	PCF	55
UNIT SURCH PRESSURE	PCF	6
EXCAVATION HEIGHT-H	FEET	8.00
SURCH HEIGHT-Hs	FEET	8.00
CENTROID HEIGHT-Ya	FEET	2.67
CENTROID HEIGHT-Ys	FEET	4.00
ACTIVE SOIL PRESS-Pa	PSF	1760
SURCHARGE PRESSURE-Ps	PSF	384
PRESSURE/FT F=Pa+Ps	PSF/FT	2144
CAISSON SPACING-X	FEET	8.00
CAISSON PRESSURE-F	LBS	17152
MOMENT-Mc	FT-LBS	49835
ALLOWABLE STRESS-Fb	LB/IN-2	23760
REQ'D SECTION MODULUS-Sc	IN-3	25.17
S	IN-3	29.0
I	IN-4	199
DEFLECTION	INCH	0.239

W12x16=17.1 IN-3	W14x22=29.0*	W18x35=57.6
W12x19=21.3	W14x26=35.3	W18x40=68.4
W12x22=25.4	W14x30=42.0	W18x46=78.8
W12x26=33.4	W14x34=48.6	W18x50=88.9
W12x30=47.2	W14x38=54.6	W18x55=98.3
W12x35=45.6	W14x38=54.6	W16x50=81.0

CAISSON DESIGN		
FACTOR	NONE	2.34
LATERAL FORCE F	LBS	17152
DISTANCE M/F=Hr	FEET	2.91
ALLOW LATERAL BRG	LBS/SF/FT-DEPTH	375
CAISSON DIAMETER	FEET	2.00
DEPTH D (estimate)	FEET	10.89
CAISSON SHAPE FACTOR	NONE	1.75
UBC "S1"	NONE	1361.25
UBC "A"	NONE	8.42
DEPTH D	FEET	10.88

Result: Use W14x22 soldier beams 18'-0" long, embed 11'-0" in 24" in 24" caissons (structural concrete), spaced at 8'-0". Lean concrete to grade. 3x pressure treated wood lagging between beams, against front flanges, above caissons. All steel components to be double corrosion protected. Concrete wall 8' high w/1' freeboard above top of steel.