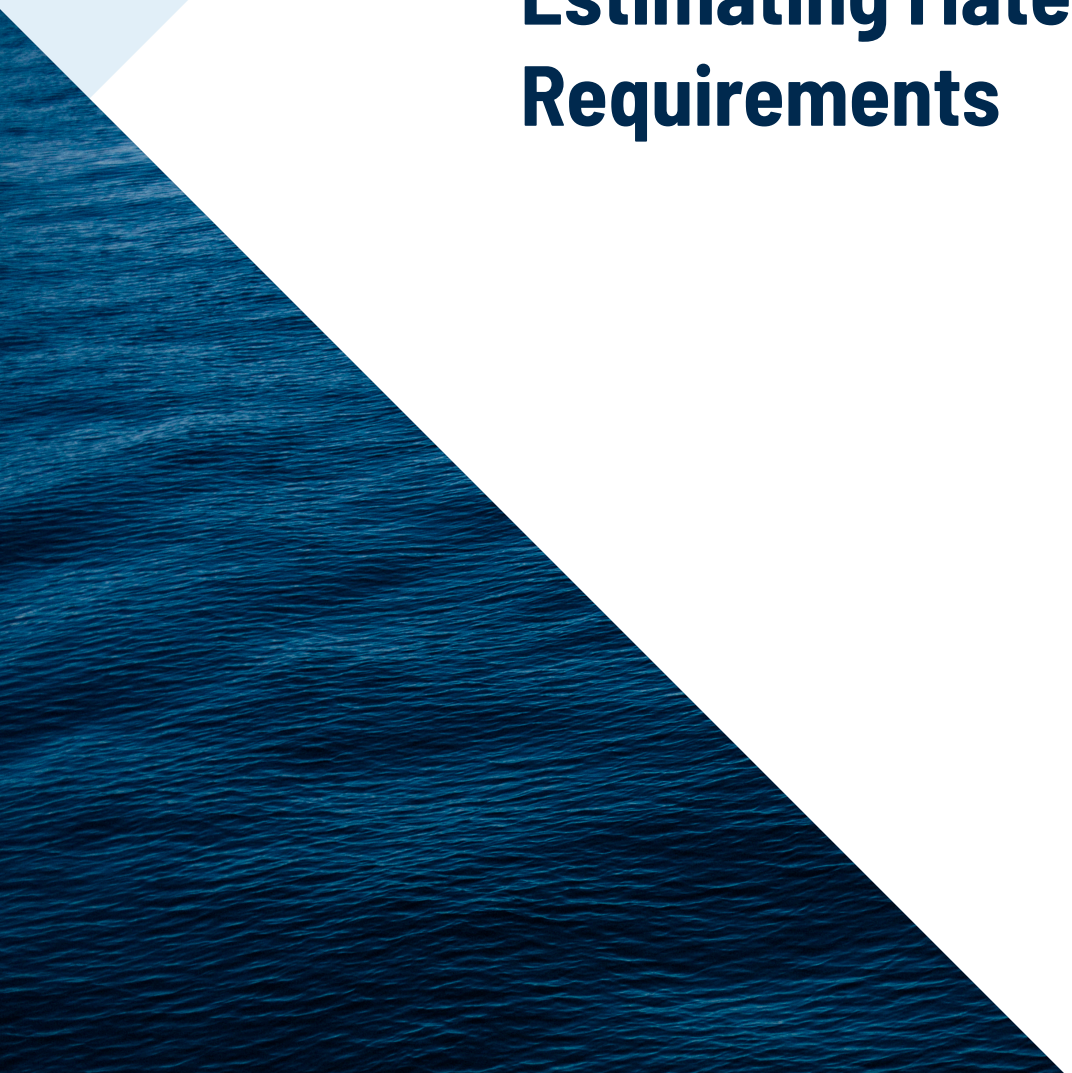
Estimating Material Requirements



Estimating Material Requirements

A seawall, like the foundation of a building, must be designed and constructed to handle very high loads and withstand numerous forces and environmental influences.

A typical seawall is made up of sheet piling, and an anchor system (typically a wale beam, tie rods, and "dead-man" anchors).

All components must be made of materials designed to withstand the forces and environmental conditions expected. If any one component is overlooked, the system can fail. High performance seawall components are available in a number of colors and styles, and are produced in a wide range of strength capabilities.

Soil characteristics, surcharge loads, and other environmental conditions are the primary factors in determining sheet pile requirements. Using these properties and standard design methods, the wall's designer will be able to specify sheet length and the required structural capacity of the sheet piling and anchor system components.

For the budgetary and comparison purposes of this exercise, CMI has evaluated several wall construction styles in typical soil conditions. These evaluations, in no way, represent the loading, soil, and/or site conditions for any particular project or location.

- WARNING -
The following charts and tables list typical values for budgetary purposes only. Please rely on your engineer for specific design recommendations. Because of the complexity of geotechnical loading calculations and the susceptibility to extreme change of wall loads with minor changes in local site conditions such as soil parameters, water levels, and surcharge loads, etc., we strongly recommend the use of design professionals who are familiar with local wall construction to determine the required sheet piling and component capacity.

Estimating Material Requirements

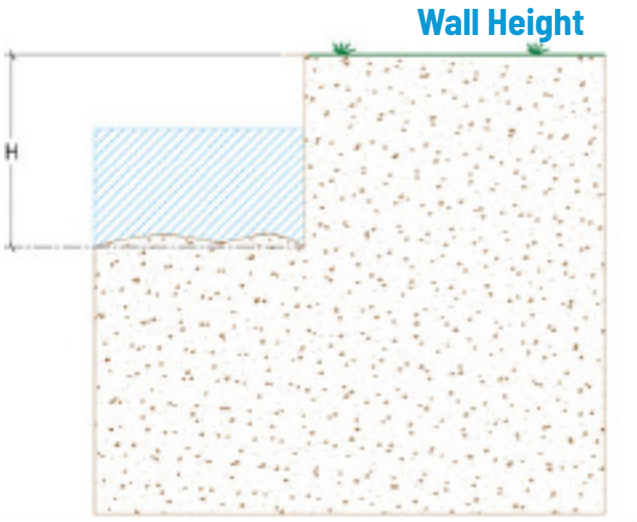
Before you begin:

Have in mind the architectural style the owner would like to achieve.

Long gone are the days when a seawall was built solely to retain earth. In the new sheet piling market, aesthetics often drive the structural decisions. A seawall is an investment. Much like a house, you have to live with this investment day in and day out. Choose the look that you want, and suitable components are available to fill that desire. A comprehensive sampling of color and architectural variations can be reviewed at www.cmilc.com.

Determine the effective height of the wall (H).

Wall height (H) is defined as the distance from firm soil at the base of the wall to the top of the wall. This value will be used throughout the guide.



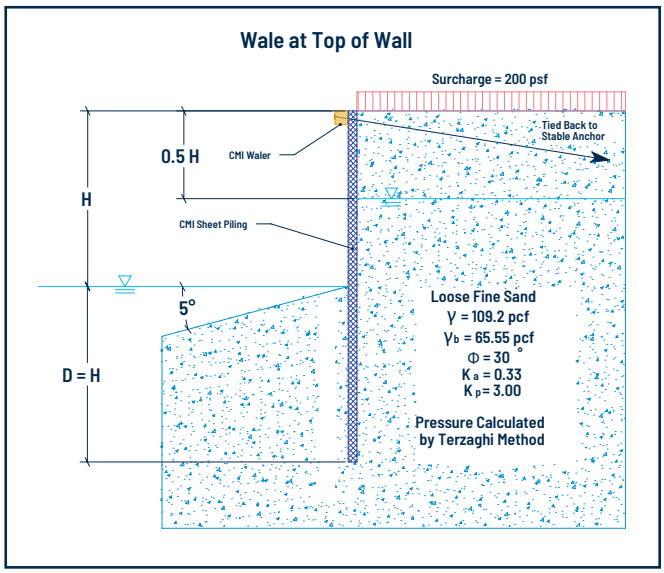
Determine the Linear Footage of the wall (L).

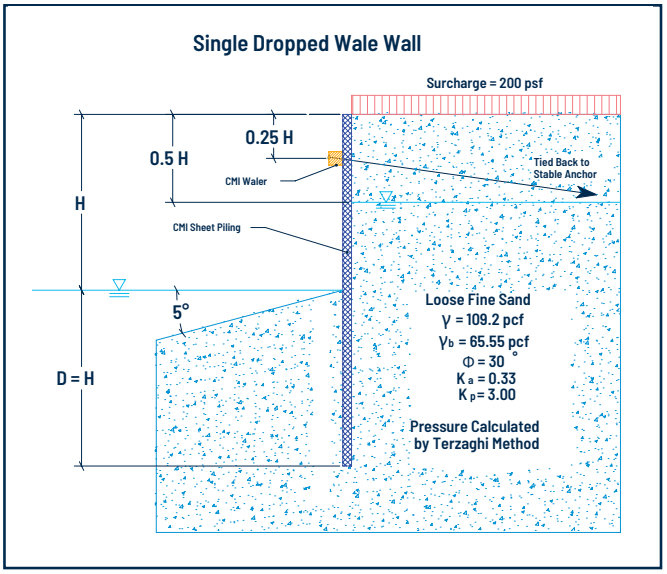
Linear Footage (L) is defined as the total length or distance along the shoreline the seawall is intended to protect.

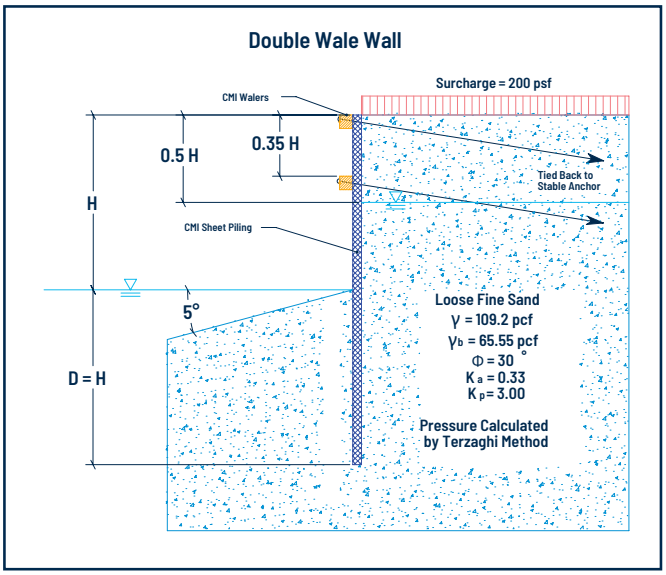
Estimating Material Requirements

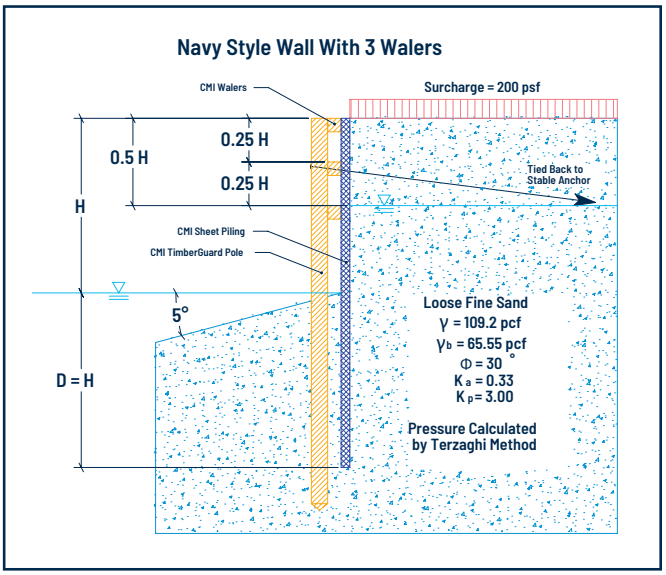
Step 1. Choose the wall type.

While there is no single "right" way to construct a sheet pile wall, there are different advantages and tradeoffs and conditions. This guide will evaluate component selection based on these scenarios.





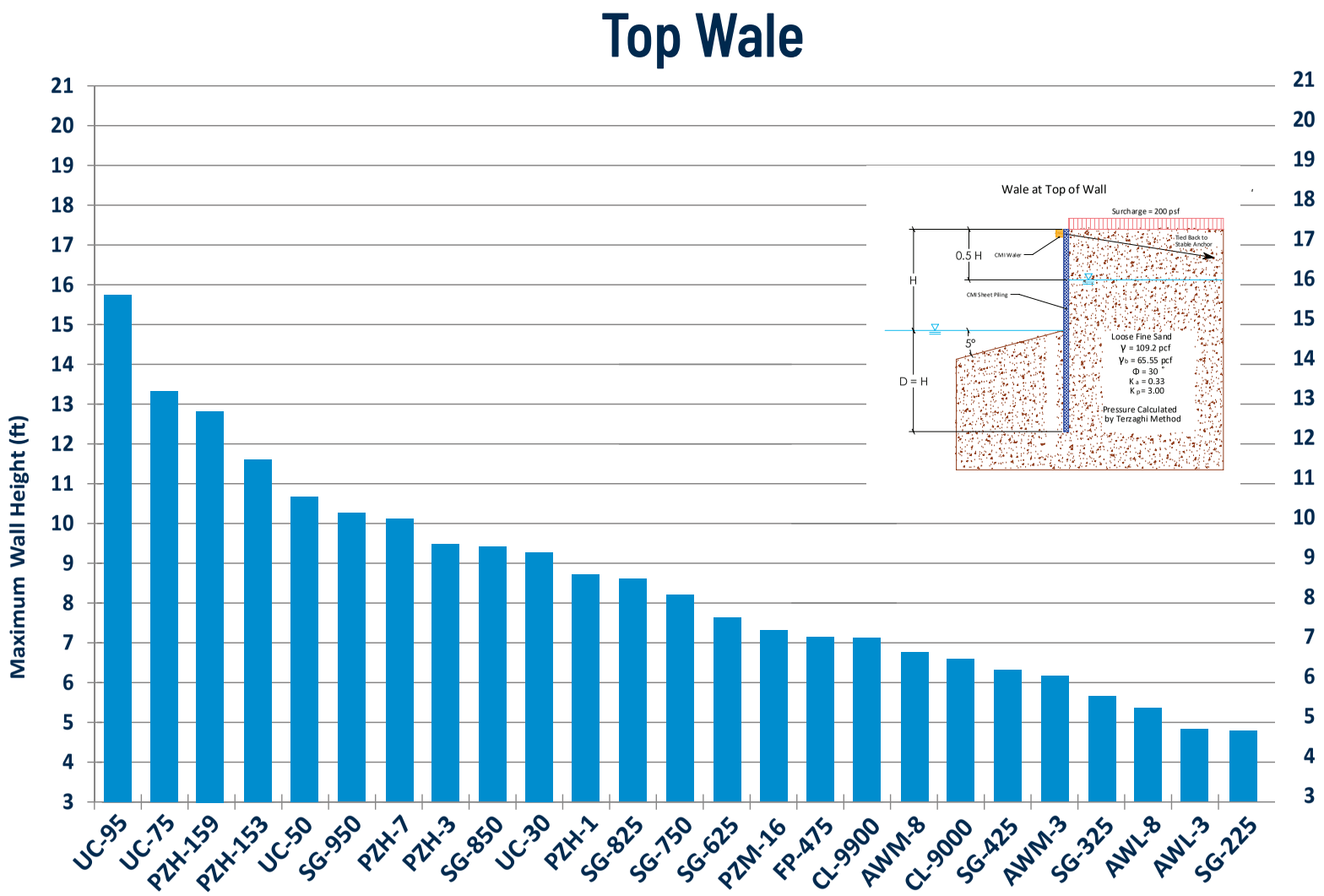




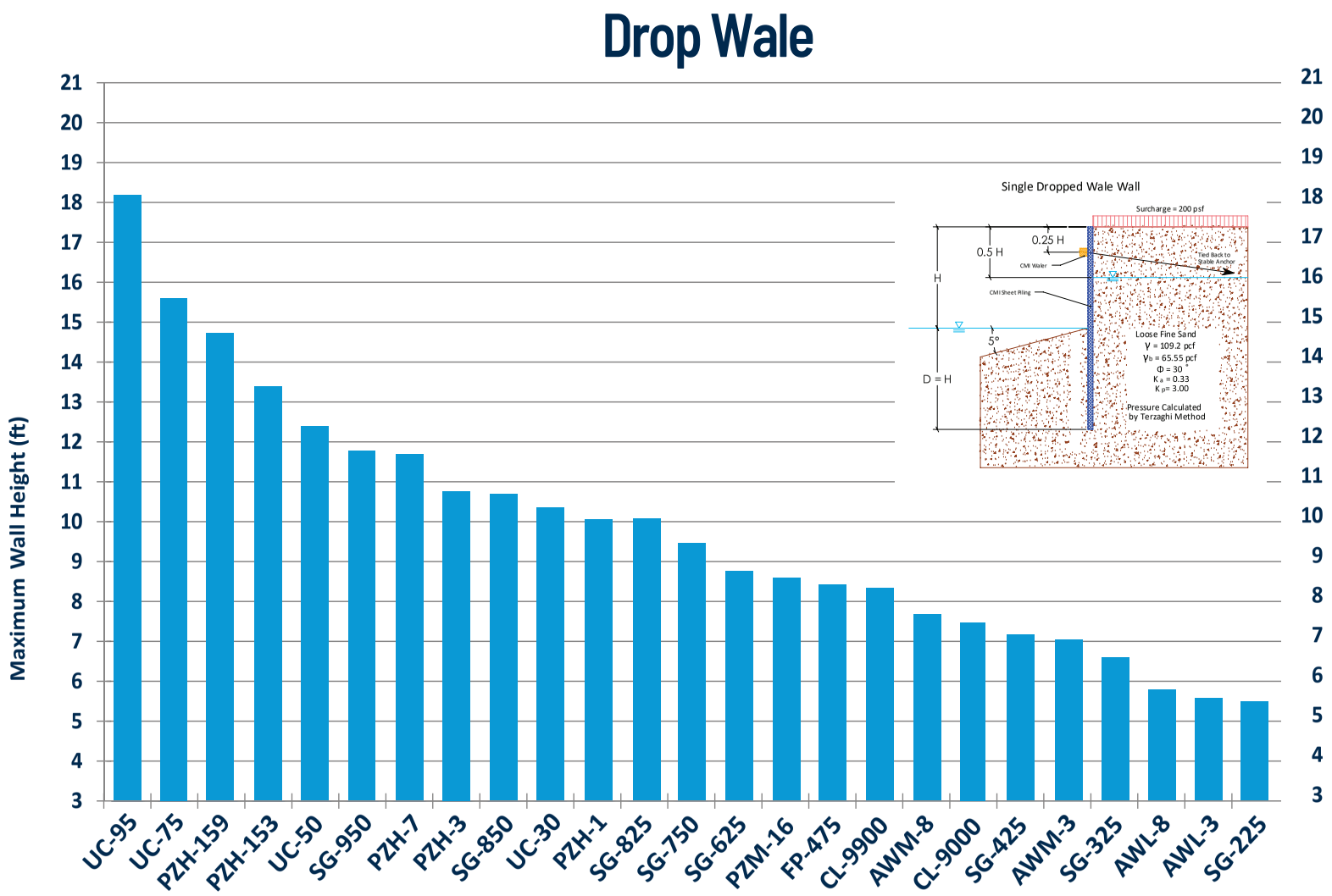
Step 2. Select a Sheet Pile Profile

The charts on the following pages show each profile's estimated maximum wall height (H) based on moment capacity (the sheet's ability to resist bending). Maximum allowable deflection, as determined by your engineer, should also be considered. Depending on local site conditions and allowable deflection requirements, the sheet pile selected may change.

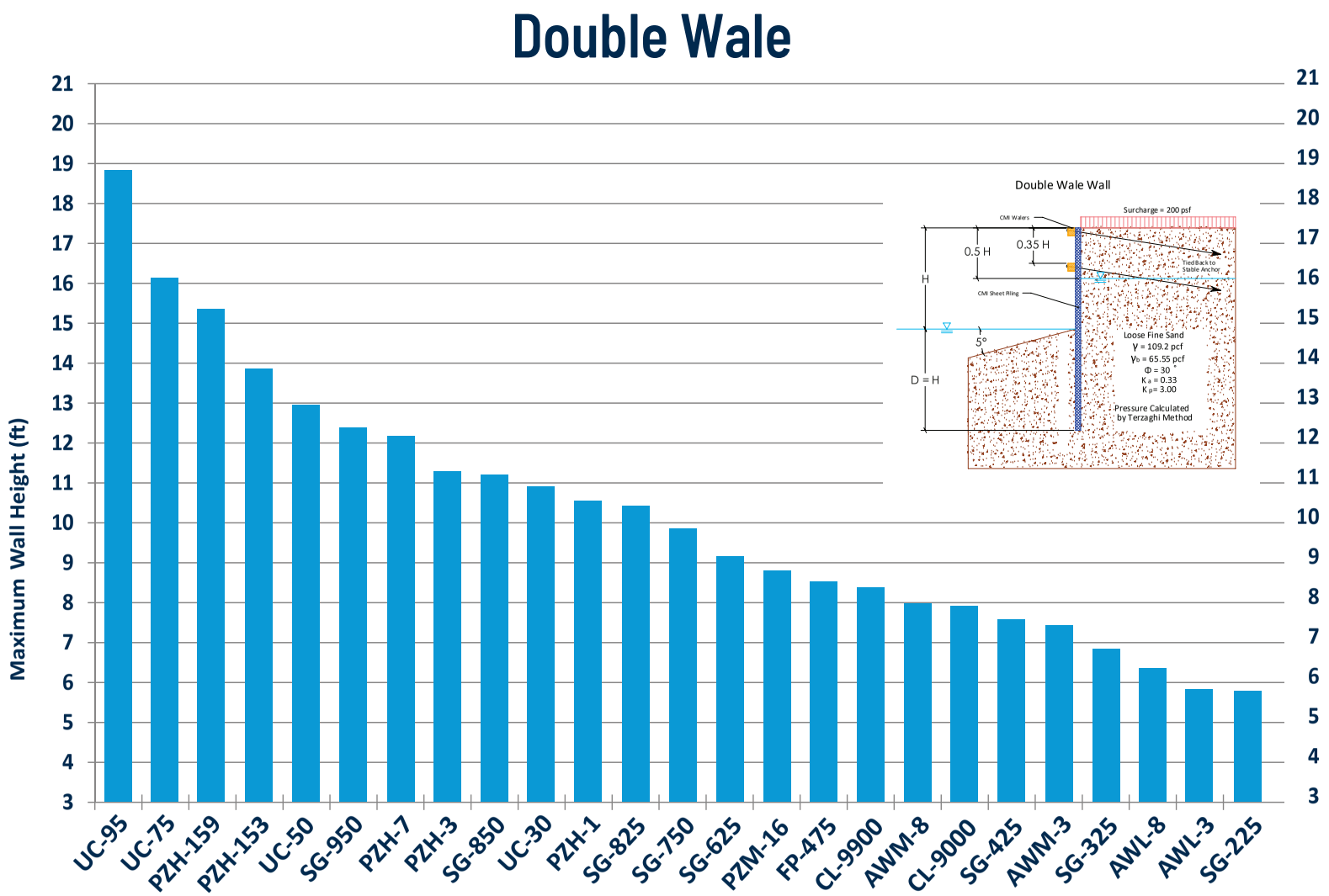
Estimating Material Requirements



Estimating Material Requirements

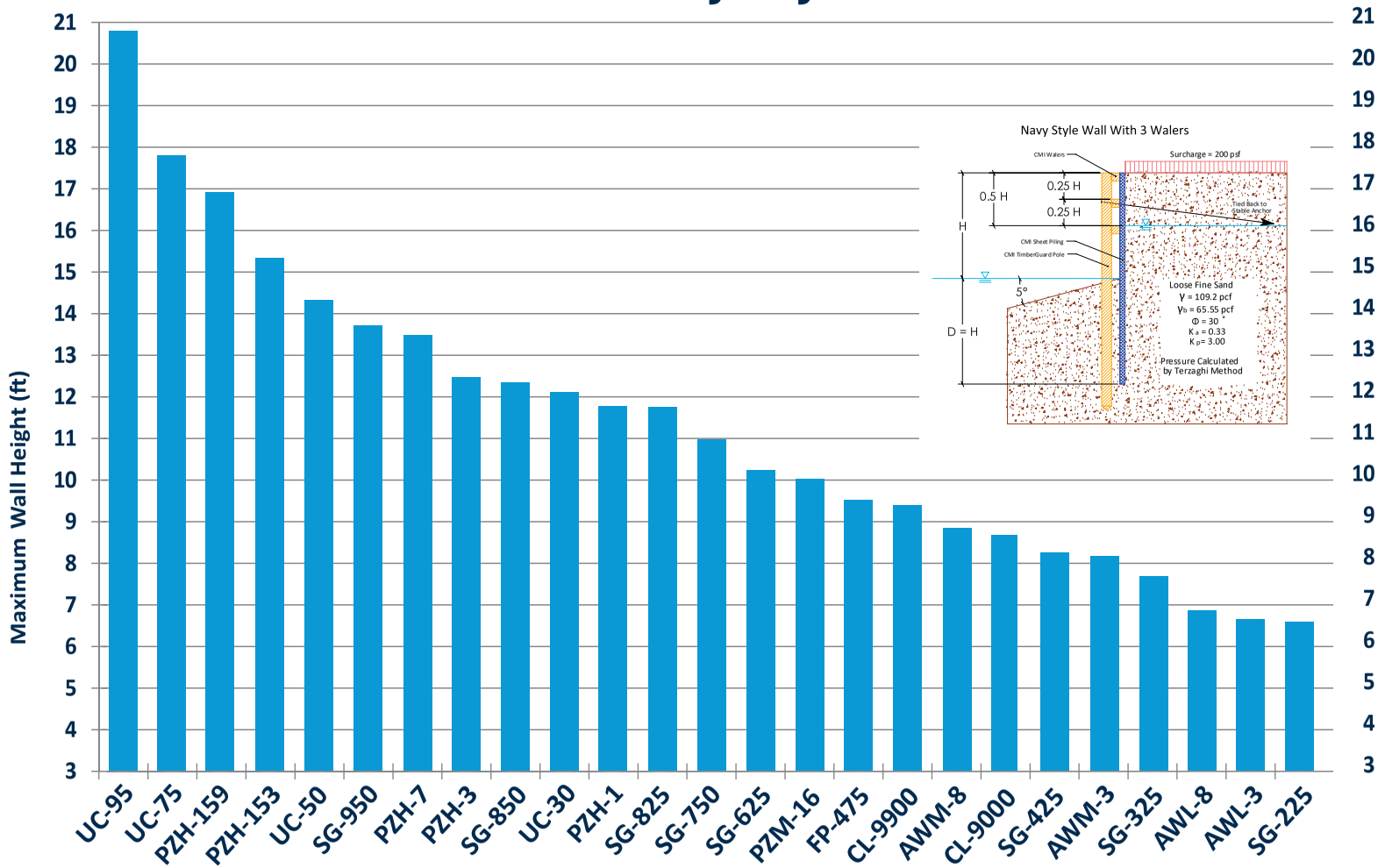


Estimating Material Requirements



Estimating Material Requirements

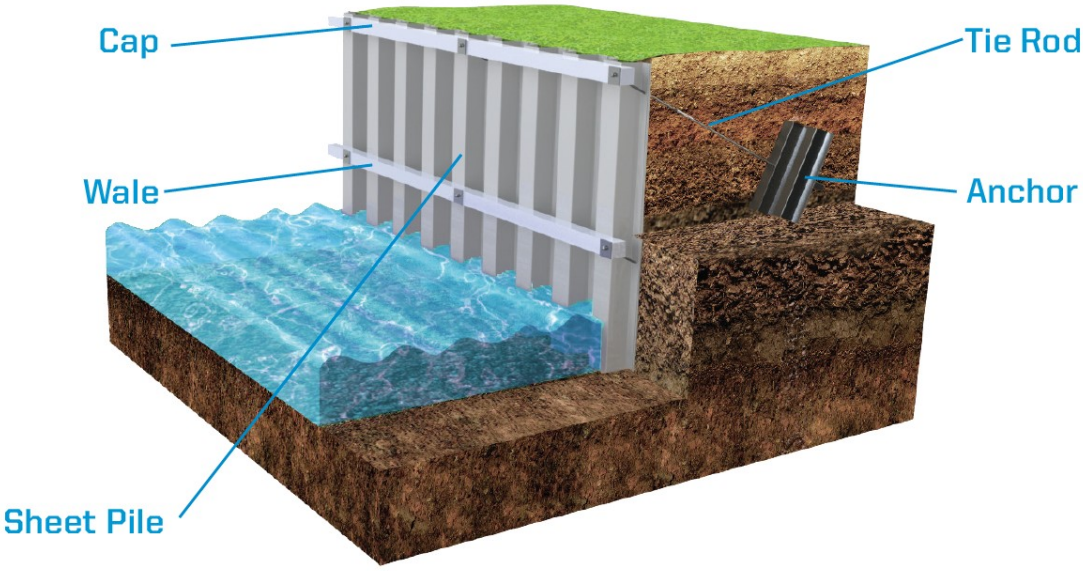
Navy Style



Estimating Material Requirements

Step 3. Select the anchor system components and cap

The anchor system is composed of anchors (buried in stable soil), tie rods (which connect the wall to the anchors), and a wale (which distributes the load from the wall to tie rods). Capping is used to finish the look of the seawall and in many circumstances can perform the function of a top wale as well.



Wale Selection

Appearance commonly dictates wale selection. The wale may lose its "laser straight" look long before actual failure. For this exercise, a deflection limit of L/360 was imposed, as well as the maximum allowable bending moment. The maximum allowable rod load was also evaluated for a minimum washer size of 4"x4". Several wale options are given for each typical scenario as defined in step 1.

Tie Rod Spacing

It is important to ensure that tie rods fall on the outer corrugations of the sheet for proper load transfer. This consideration, as well as budgetary concerns, should be evaluated when deciding on the tie rod spacing. Polymer coated steel as well as aluminum rod options are shown.

Anchor Selection

Anchor selection is heavily dependant on soil conditions. Your wall relies on the anchor and soil interaction to resist the forces placed on them by the wall. As with all components, proper design techniques should be executed to determine the suitability and placement of the anchor.

Capping

Capping is the finishing touch to a seawall, and is often used as a top wale as well. When performing the function of a wale, the suitability of a cap product is highly dependant on site conditions and each product should be evaluated on a case-by-case basis.

Using the charts on the following pages, select the appropriate wale, anchor rods, and anchor, then choose your capping.

Estimating Material Requirements

Wale at Top		Anchor Rod Spacing (ft)											
		4			5			6			8		
		Wale	Rod	Anchor	Wale	Rod	Anchor	Wale	Rod	Anchor	Wale	Rod	Anchor
Wall Height (ft)	3	TG 4x6 AW-6 UC-6	AW 3/4	DMA-8	TG 6x6 AW-6 UC-6	AW 3/4	DMA-8	TG 6x6 AW-6 UC-6	AW 3/4	DMA-8	TG 8x8 AW-6 UC-6	AW 3/4	DMA-8
		WB-2	AI 1 1/8		WB-2	AI 1 1/8		WB-2	AI 1 1/8		WB-2	AI 1 1/8	
	4	TG 6x6 AW-6 UC-6	AW 3/4	DMA-8	TG 6x6 AW-6 UC-6	AW 3/4	DMA-8	TG 8x8 AW-6 UC-6	AW 3/4	DMA-8	TG 8x12 AW-6 UC-6	AW 3/4	DMA-8
		WB-2	AI 1 1/8		WB-2	AI 1 1/8		WB-2	AI 1 1/8		WB-2	AI 1 1/8	
	5	TG 6x6 AW-6 UC-6	AW 3/4	DMA-8	TG 8x8 AW-6 UC-6	AW 3/4	DMA-8	TG 8x8 AW-6 UC-6	AW 3/4	DMA-8	TG 10x10 AW-6 UC-6 STR	AW 3/4	DMA-8
		WB-2	AI 1 1/8		WB-2	AI 1 1/8		WB-2	AI 1 1/8		WB-2	AI 1 1/8	
	6	TG 6x8 AW-6 UC-6	AW 3/4	DMA-8	TG 8x8 AW-6 UC-6	AW 3/4	DMA-8	TG 8x12 AW-6 UC-6	AW 3/4	DMA-8	TG 10x12 AW-6STR	AW 3/4	DMA-8
		WB-2	AI 1 1/8		WB-2	AI 1 1/8		WB-2	AI 1 1/8		WB-2	AI 1 1/8	
	7	TG 8x8 AW-6 UC-6	AW 3/4	DMA-8	TG 8x12 AW-6 UC-6	AW 3/4	DMA-8	TG 8x12 AW-6 UC-6	AW 3/4	DMA-8	TG 12x12 AW-6STR	AW 1	DMA-8
		WB-2	AI 1 1/8		WB-2	AI 1 1/8		WB-2	AI 1 1/8		WB-2	AI 1 1/8	
	8	TG 8x8 AW-6 UC-6	AW 3/4	DMA-8	TG 8x12 AW-6 UC-6	AW 3/4	DMA-8	TG 10x10 AW-6STR UC-6 STR	AW 3/4	DMA-8	TG 12x12	AW 1	DMA-9
		WB-2	AI 1 1/8		WB-2	AI 1 1/8		WB-2	AI 1 1/8		WB-8	AI 1 1/4	
	9	TG 8x12 AW-6 UC-6	AW 3/4	DMA-8	TG 10x10 AW-6STR UC-6 STR	AW 3/4	DMA-8	TG 10x12 AW-6 STR	AW 1	DMA-8		AW 1	DMA-12
		WB-2	AI 1 1/8		WB-2	AI 1 1/8		WB-2	AI 1 1/8		WB-8	AI 1 1/2	
	10	TG 8x12 AW-6STR UC-6 STR	AW 3/4	DMA-8	TG 10x10 AW-6 STR UC-6 STR	AW 1	DMA-8	TG 12x12	AW 1	DMA-9			
		WB-2	AI 1 1/8		WB-2	AI 1 1/8		WB-2	AI 1 1/4				
	11	TG 8x12 AW-6STR UC-6 STR	AW 1	DMA-8	TG 10x12	AW 1	DMA-9	TG 12x12	AW 1	DMA-12			
		WB-2	AI 1 1/8		WB-2	AI 1 1/4		WB-8	AI 1 1/2				
	12	TG 10x10	AW 1	DMA-9	TG 12x12	AW 1	DMA-12						
		WB-2	AI 1 1/4		WB-2	AI 1 1/2							
	13	TG 10x10	AW 1	DMA-9	TG 12x12		DMA-12						
		WB-2	AI 1 1/4		WB-8	AI 1 1/2							
	14	TG 10x12	AW 1	DMA-12	TG 12x12		DMA-12						
		WB-2	AI 1 1/2			AI 1 1/2							
	15	TG 12x12		DMA-12									
		WB-2	AI 1 1/2										
	16	TG 12x12		DMA-12									
		WB-2	AI 1 1/2										

The charts above are based off typical values, shown in step 1, for budgetary purposes only. Please rely on your engineer for specific design recommendations. Because of the complexity of geotechnical loading calculations and the susceptibility to extreme change of soil loads with minor changes in local site conditions such as soil parameters, water levels, surcharge loads, etc., we strongly recommend the use of design professionals who are familiar with local wall construction to determine the required sheet piling and component capacities.

Estimating Material Requirements

Single Dropped Wale		Anchor Rod Spacing (ft)											
		4			5			6			8		
		Wale	Rod	Anchor	Wale	Rod	Anchor	Wale	Rod	Anchor	Wale	Rod	Anchor
Wall Height (ft)	3	TG 6x6 AW-6 UC-6 WB-2	AW 3/4 AI 1 1/8	DMA-8	TG 6x6 AW-6 UC-6 WB-2	AW 3/4 AI 1 1/8	DMA-8	TG 6x8 AW-6 UC-6 WB-2	AW 3/4 AI 1 1/8	DMA-8	TG 8x8 AW-6 UC-6 WB-2	AW 3/4 AI 1 1/8	DMA-8
	4	TG 6x6 AW-6 UC-6 WB-2	AW 3/4 AI 1 1/8	DMA-8	TG 6x8 AW-6 UC-6 WB-2	AW 3/4 AI 1 1/8	DMA-8	TG 8x8 AW-6 UC-6 WB-2	AW 3/4 AI 1 1/8	DMA-8	TG 8x12 AW-6 UC-6 WB-2	AW 3/4 AI 1 1/8	DMA-8
	5	TG 6x8 AW-6 UC-6 WB-2	AW 3/4 AI 1 1/8	DMA-8	TG 8x8 AW-6 UC-6 WB-2	AW 3/4 AI 1 1/8	DMA-8	TG 8x12 AW-6 UC-6 WB-2	AW 3/4 AI 1 1/8	DMA-8	TG 10x10 AW-6 WB-2	AW 3/4 AI 1 1/8	DMA-8
	6	TG 8x8 AW-6 UC-6 WB-2	AW 3/4 AI 1 1/8	DMA-8	TG 8x8 AW-6 UC-6 WB-2	AW 3/4 AI 1 1/8	DMA-8	TG 8x12 AW-6 UC-6 WB-2	AW 3/4 AI 1 1/8	DMA-8	TG 10x12 AW-6 STR WB-2	AW 3/4 AI 1 1/8	DMA-8
	7	TG 8x8 AW-6 UC-6 WB-2	AW 3/4 AI 1 1/8	DMA-8	TG 8x12 AW-6 UC-6 WB-2	AW 3/4 AI 1 1/8	DMA-8	TG 10x10 AW-6 STR UC-6 STR WB-2	AW 3/4 AI 1 1/8	DMA-8	TG 12x12 WB-8	AW 1 AI 1 1/8	DMA-8
	8	TG 8x10 AW-6 UC-6 WB-2	AW 3/4 AI 1 1/8	DMA-8	TG 10x10 AW-6 STR UC-6 STR WB-2	AW 3/4 AI 1 1/8	DMA-8	TG 10x12 AW-6 STR UC-6 STR WB-2	AW 1 AI 1 1/8	DMA-8	WB-8	AW 1 AI 1 1/4	DMA-9
	9	TG 8x12 AW-6 STR UC-6 WB-2	AW 3/4 AI 1 1/8	DMA-8	TG 10x10 AW-6 STR UC-6 STR WB-2	AW 1 AI 1 1/8	DMA-8	TG 12x12 WB-2	AW 1 AI 1 1/4	DMA-9			
	10	TG 8x12 AW-6 STR UC-6 STR WB-2	AW 1 AI 1 1/8	DMA-8	TG 10x12 WB-2	AW 1 AI 1 1/4	DMA-9	TG 12x12 WB-8	AW 1 AI 1 1/2	DMA-12			
	11	TG 10x10 UC-6 STR WB-2	AW 1 AI 1 1/4	DMA-9	TG 12x12 WB-2	AW 1 AI 1 1/2	DMA-12						
	12	TG 10x10 UC-6 STR WB-2	AW 1 AI 1 1/4	DMA-9	TG 12x12 WB-8	AI 1 1/2	DMA-12						
	13	TG 10x12 WB-2	AW 1 AI 1 1/2	DMA-12	TG 12x12 AI 1 1/2		DMA-12						
	14	TG 12x12 WB-2	AI 1 1/2	DMA-12									
	15	TG 12x12 AI 1 3/4		DMA-16									
	16	TG 12x12 AI 1 3/4		DMA-16									

The charts above are based off typical values, shown in step 1, for budgetary purposes only. Please rely on your engineer for specific design recommendations. Because of the complexity of geotechnical loading calculations and the susceptibility to extreme change of soil loads with minor changes in local site conditions such as soil parameters, water levels, surcharge loads, etc., we strongly recommend the use of design professionals who are familiar with local wall construction to determine the required sheet piling and component capacities.

Estimating Material Requirements

Double Wale		Anchor Rod Spacing (ft)											
		4			5			6			8		
		Wale	Rod	Anchor	Wale	Rod	Anchor	Wale	Rod	Anchor	Wale	Rod	Anchor
Wall Height (ft)	4	TG 6x6 AW-6 UC-6	AW 3/4	DMA-8	TG 6x6 AW-6 UC-6	AW 3/4	DMA-8	TG 8x8 AW-6 UC-6	AW 3/4	DMA-8	TG 8x12 AW-6 UC-6	AW 3/4	DMA-8
		WB-2	AI 1 1/8		WB-2	AI 1 1/8		WB-2	AI 1 1/8		WB-2	AI 1 1/8	
	5	TG 6x6 AW-6 UC-6	AW 3/4	DMA-8	TG 8x8 AW-6 UC-6	AW 3/4	DMA-8	TG 8x8 AW-6 UC-6	AW 3/4	DMA-8	TG 10x10 AW-6 UC-6 STR	AW 3/4	DMA-8
		WB-2	AI 1 1/8		WB-2	AI 1 1/8		WB-2	AI 1 1/8		WB-2	AI 1 1/8	
	6	TG 6x8 AW-6 UC-6	AW 3/4	DMA-8	TG 8x8 AW-6 UC-6	AW 3/4	DMA-8	TG 8x12 AW-6 UC-6	AW 3/4	DMA-8	TG 10x12 AW-6 STR	AW 3/4	DMA-8
		WB-2	AI 1 1/8		WB-2	AI 1 1/8		WB-2	AI 1 1/8		WB-2	AI 1 1/8	
	7	TG 8x8 AW-6 UC-6	AW 3/4	DMA-8	TG 8x12 AW-6 UC-6	AW 3/4	DMA-8	TG 10x10 AW-6 UC-6	AW 3/4	DMA-8	TG 12x12	AW 1	DMA-8
		WB-2	AI 1 1/8		WB-2	AI 1 1/8		WB-2	AI 1 1/8		WB-2	AI 1 1/8	
	8	TG 8x8 AW-6 UC-6	AW 3/4	DMA-8	TG 8x12 AW-6 UC-6	AW 3/4	DMA-8	TG 10x10 AW-6 STR UC-6 STR	AW 3/4	DMA-8	TG 12x12	AW 1	DMA-9
		WB-2	AI 1 1/8		WB-2	AI 1 1/8		WB-2	AI 1 1/8		WB-8	AI 1 1/4	
	9	TG 8x12 AW-6 UC-6	AW 3/4	DMA-8	TG 10x10 AW-6 STR UC-6 STR	AW 1	DMA-8	TG 10x12 AW-6 STR	AW 1	DMA-8		AW 1	DMA-12
		WB-2	AI 1 1/8		WB-2	AI 1 1/8		WB-2	AI 1 1/8		WB-8	AI 1 1/2	
	10	TG 8x12 AW-6 STR UC-6 STR	AW 3/4	DMA-8	TG 10x10 AW-6 STR UC-6 STR	AW 1	DMA-8	TG 12x12	AW 1	DMA-9			
		WB-2	AI 1 1/8		WB-2	AI 1 1/8		WB-2	AI 1 1/4				
	11	TG 8x12 AW-6 STR UC-6 STR	AW 1	DMA-8	TG 10x12	AW 1	DMA-9	TG 12x12	AW 1	DMA-12			
		WB-2	AI 1 1/8		WB-2	AI 1 1/4		WB-8	AI 1 1/2				
	12	TG 10x10 WB-2	AW 1 AI 1 1/4	DMA-9	TG 12x12 WB-2	AW 1 AI 1 1/2	DMA-12						
	13	TG 10x12 WB-2	AW 1 AI 1 1/4	DMA-9	TG 12x12 WB-8	 AI 1 1/2	DMA-12						
	14	TG 10x12 WB-2	AW 1 AI 1 1/2	DMA-12									
	15	TG 12x12 WB-2	 AI 1 1/2	DMA-12									
	16	TG 12x12 	 AI 1 3/4	DMA-16									
	17	TG 12x12 	 AI 1 3/4										

The charts above are based off typical values, shown in step 1, for budgetary purposes only. Please rely on your engineer for specific design recommendations. Because of the complexity of geotechnical loading calculations and the susceptibility to extreme change of soil loads with minor changes in local site conditions such as soil parameters, water levels, surcharge loads, etc., we strongly recommend the use of design professionals who are familiar with local wall construction to determine the required sheet piling and component capacities.

Estimating Material Requirements

Navy Wall		Anchor Rod Spacing (ft)											
		4			5			6			8		
		Wale	Rod	Anchor	Wale	Rod	Anchor	Wale	Rod	Anchor	Wale	Rod	Anchor
Wall Height (ft)	5	TG 6x6 AW-6 UC-6 WB-2	AW 3/4 AI 1 1/8	DMA-8	TG 6x8 AW-6 UC-6 WB-2	AW 3/4 AI 1 1/8	DMA-8	TG 8x8 AW-6 UC-6 WB-2	AW 3/4 AI 1 1/8	DMA-8	TG 8x12 AW-6 UC-6 WB-2	AW 3/4 AI 1 1/8	DMA-8
	6	TG 6x8 AW-6 UC-6 WB-2	AW 3/4 AI 1 1/8	DMA-8	TG 8x8 AW-6 UC-6 WB-2	AW 3/4 AI 1 1/8	DMA-8	TG 8x12 AW-6 UC-6 WB-2	AW 3/4 AI 1 1/8	DMA-8	TG 10x10 AW-6 WB-2	AW 1 AI 1 1/8	DMA-8
	7	TG 8x8 AW-6 UC-6 WB-2	AW 3/4 AI 1 1/8	DMA-8	TG 8x8 AW-6 UC-6 WB-2	AW 3/4 AI 1 1/8	DMA-8	TG 8x12 AW-6 UC-6 STR WB-2	AW 3/4 AI 1 1/8	DMA-8	TG 10x12 AW-6 STR WB-2	AW 1 AI 1 1/4	DMA-9
	8	TG 8x8 AW-6 UC-6 WB-2	AW 3/4 AI 1 1/8	DMA-8	TG 8x12 AW-6 UC-6 STR WB-2	AW 1 AI 1 1/8	DMA-8	TG 10x10 AW-6 STR UC-6 STR WB-2	AW 1 AI 1 1/4	DMA-9	TG 12x12 WB-8	AW 1 AI 1 1/2	DMA-12
	9	TG 8x8 AW-6 UC-6 STR WB-2	AW 1 AI 1 1/8	DMA-8	TG 8x12 AW-6 STR WB-2	AW 1 AI 1 1/4	DMA-9	TG 10x12 AW-6 STR WB-2	AW 1 AI 1 1/4	DMA-9			
	10	TG 8x12 AW-6 STR UC-6 STR WB-2	AW 1 AI 1 1/8	DMA-8	TG 10x10 AW-6 STR WB-2	AW 1 AI 1 1/4	DMA-9	TG 12x12 WB-2	AI 1 1/2	DMA-12			
	11	TG 8x12 AW-6 STR WB-2	AW 1 AI 1 1/4	DMA-9	TG 10x10 WB-2	AI 1 1/2	DMA-12	TG 12x12 WB-8	AI 1 1/2	DMA-12			
	12	TG 10x10 AW-6 STR WB-2	AW 1 AI 1 1/2	DMA-12	TG 10x12 WB-2	AI 1 1/2	DMA-12						
	13	TG 10x10 WB-2	AI 1 1/2	DMA-12	TG 12x12 WB-2	AI 1 3/4	DMA-16						
	14	TG 10x12 WB-2	AI 1 3/4	DMA-16	TG 12x12	AI 1 3/4	DMA-16						
	15	TG 10x12 WB-2	AI 1 3/4	DMA-16									
	16	TG 12x12 WB-2	AI 1 3/4	DMA-16									
	17	TG 12x12	AI 2	DMA-20									
	18	TG 12x12	AI 2	DMA-20									

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Estimating Material Requirements

Sheet	Compatible Caps	
UC-95	AW-1900	UC-2400
UC-75	AW-1600	UC-1800
PZH-159	SC-15	
PZH-153	SC-15	
UC-50	AW-1075	AW-1075 STR
SG-950	AW-1500	
PZH-7	SC-13	
PZH-3	SC-13	
SG-850	AW-1075	AW-1075 STR
UC-30	AW-850	AW-850 STR
PZH-1	SC-13	
SG-825	AW-1500	
SG-750	AW-1075	AW-1075 STR
SG-625	AW-1075	AW-1075 STR
PZM-16	SC-9	
FP-475	AW-850	AW-850 STR
CL-9900	AW-1075	AW-1075 STR
AWM-8	SC-9	
CL-9000	AW-1075	AW-1075 STR
SG-425	AW-850	AW-850 STR
AWM-3	SC-9	
SG-325	AW-850	AW-850 STR
AWL-8	SC-7	
AWL-3	SC-7	
SG-225	AW-575	AW-575 STR

The time and expense of being short on materials can be crippling. Most contractors add around 3%-5% onto materials (rounded up) to account for the unknown and potential errors in the field.

Estimating Material Requirements

Step 4. Estimate the required sheet pile length.

Although proper design techniques will yield the required sheet pile length, the sheet piling industry rule of thumb for an anchored wall is "half-in, half out." The estimated sheet length is typically two times the wall height (H). If the soil at the base of the wall is soft or irregular in depth, longer sheets may be required.

Estimated Sheet Length ~ 2 x H

Step 5. Estimate the number of sheets required

Divide the anticipated linear footage (L) of your wall by the width of your sheeting choice and round up to the next whole number.

$$\text{Sheet quantity} \sim \frac{L_{(Linear\ footage)}}{Sheet\ \ Width}$$

Sheet Widths (ft)					
1	1 ¼	1 ½	2	2 ½	3
AWL-3	PZH-153	SG-225	SG-325	SG-625	UC-50
AWL-8	PZH-159	SG-750	SG-425	SG-825	
AWM-3		SG-950	CL-9000	UC-95	
AWM-8		UC-30	CL-9900		
PZM-16			FP-475		
PZH-1			UC-75		
PZH-3					
PZH-7					

Step 6. Estimate the number of wale sections

Divide the anticipated linear footage (L) of your wall by the length of your wale choice and round up to the next whole number.

$$\text{Wale section quantity} \sim \frac{L_{(Linear\ footage)}}{Wale\ Length}$$

Wale Beam Lengths (ft)			
16	20	25	40
TG 4x6	TG 4x6	WB-2	WB-6
TG 6x6	TG 6x6		WB-8
TG 6x8	TG 6x8		
TG 8x8	TG 8x8		
TG 8x12	TG 8x12		
TG 10x10	TG 10x10		
TG 10x12	TG 10x12		
TG 12x12	TG 12x12		
	AW-6		
	AW-6 STR		
	UC-6		
	UC-6 STR		

Estimating Material Requirements

Step 7. Estimate the number of Anchor rods and Anchors

Divide the anticipated linear footage (L) of your wall by the rod spacing (A), round up to the next whole number, then add 1.

Anchor rod and Anchor Quantity ~ $\frac{L_{(Linear\ footage)}}{A_{(Rod\ spacing)}} + 1$

Step 8. Estimate the number of cap sections

Divide the anticipated linear footage (L) of your wall by the length of your cap choice and round up to the next whole number.

Wale section quantity ~ $\frac{L_{(Linear\ footage)}}{Cap\ Length}$

Cap Lengths (ft)	
20	25
AW-575	SC-7
AW-575 STR	SC-9
AW-850	SC-13
AW-850 STR	SC-15
AW-1075	
AW-1075 STR	
AW-1500	
AW-1600	
AW-1900	
UC-1800	
UC-2400	

Step 9. Estimate the number of component corners and accessories

Estimate the number of sheet, cap, and wale corners that will be required as well as any accessories desired. Most sheets have around 7-10 of degrees of rotation in each lock. If a larger angle needs to be made, corner pieces may be required. Cap and wale corner inserts are available in 45 and 90 for most products. A wide array of special washers and other accessories are available as well.

Corner	Sheet
UC 75-95	UC-75, UC-95
SG 950	SG-950
SG 650-750	SG-625, SG-750, SG-825, SG-950, UC-50
SG 550	UC-30
MCL 2	AWL-3, AWL-8, AWM-8, PZM-16
MCH 1	PZH-1, PZH-3, PZH-7, PZH-153, PZH-159
SG 225-425	SG-225,SG-325,SG-425,FP-475, CL-9000, UC-30, CL-9900

Material Estimating Worksheet

Gather Preliminary Information

What is the wall height (H)? _____

Anticipated Linear footage (L)? _____

Choose your Components

From Step 1. **What type of wall will you be building?** _____

From Step 2. **What sheet did you choose?** _____

From Step 3. **What rod spacing (A) did you choose?** _____

What wale option did you choose? _____

What anchor rod did you choose? _____

What anchor did you choose? _____

What capping option did you choose? _____

Determining Lengths and Quantities

From Step 4. **Estimated sheet length** $2 \times H_{(wall\ height)}$ _____

From Step 5. **Sheet quantity** $\frac{L_{(Linear\ footage)}}{Sheet\ \ Width}$ _____

From Step 6. **Wale quantity** $\frac{L_{(Linear\ footage)}}{Wale\ \ Length}$ _____

From Step 7. **Tie Rod/Anchor quantities** $\frac{L_{(Linear\ footage)}}{A_{(Rod\ spacing)}} + 1$ _____

From Step 8. **Cap quantity** $\frac{L_{(Linear\ footage)}}{Cap\ \ Length}$ _____

From Step 9. **Corners and other accessories** _____

The time and expense of being short on materials can be crippling. Most contractors add around 3%-5% onto materials (rounded up) to account for the unknown and potential errors in the field.Contact your CMI representative 866-867-3762 for pricing, technical resources and/or experienced engineers serving your area.

Material Estimating Worksheet Example

Gather Preliminary Information

What is the wall height (H)?		7′
Anticipated Linear footage (L)?		635′

Choose your Components

From Step 1.	What type of wall will you be building?		Wale at Top
From Step 2.	What sheet did you choose?	I like the look of vinyl, and the box profile	CL 9900
From Step 3.	What rod spacing (A) did you choose?	CL 9900 is a 2' wide sheet, so it needs to be divided by 2. I will use a TimberGuard wale so I would like it to divide into 16' or 20	4′
	What wale option did you choose?	I want to keep the look and color similar to the sheet	TG 8x8
	What anchor rod did you choose?		AW ¾
	What anchor did you choose?		DMA 8
	What capping option did you choose?		AW-1075

Determining Lengths and Quantities

From Step 4.	Estimated sheet length	$2 \times H_{(wall\ height)}$	2x7=14	14′
From Step 5.	Sheet quantity	$\frac{L_{(Linear\ footage)}}{Sheet\ \ Width}$	635/2=317.5 318+10(3% buffer)=328	328
From Step 6.	Wale quantity	$\frac{L_{(Linear\ footage)}}{Wale\ \ Length}$	635/20=31.75 32+1(3% buffer)=33	33
From Step 7.	Tie Rod/Anchor quantities	$\frac{L_{(Linear\ footage)}}{A_{(Rod\ spacing)}} + 1$	635/4=158.75 159+1+5(3% buffer)=165	165
From Step 8.	Cap quantity	$\frac{L_{(Linear\ footage)}}{Cap\ \ Length}$	635/20=317.5 32+1(3% buffer)=33	33
From Step 9.	Corners and other accessories			SG 225-425 Corner (2), AW-1075 45" Corner Insert (2), Beveled PVC Washers (165)

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