

Fortress Carbon-Kevlar Strap 8-inch CMU Wall Spacing Tables



Description: These tables provide the recommended center-to-center spacing of Fortress Carbon-Kevlar Straps bonded to ungrouted, 8-inch nominal wythe, hollow or solid concrete masonry unit (CMU) walls.

Carbon-Kevlar Strap Spacing in Inches					
Wall Height	7 feet				
Unbalanced Fill Height (ft)	Soil Equivalent Fluid Pressure (psf/ft)				
	30	45	60	75	100
5 or less	48	48	48	48	48
6	48	48	48	48	40
7	48	48	48	40	32

Carbon-Kevlar Strap Spacing in Inches					
Wall Height	8 feet				
Unbalanced Fill Height (ft)	Soil Equivalent Fluid Pressure (psf/ft)				
	30	45	60	75	100
5 or less	48	48	48	48	48
6	48	48	48	48	32
7	48	48	40	32	24
8	48	40	32	24	

Carbon-Kevlar Strap Spacing in Inches					
Wall Height	9 feet				
Unbalanced Fill Height (ft)	Soil Equivalent Fluid Pressure (psf/ft)				
	30	45	60	75	100
5 or less	48	48	48	48	48
6	48	48	48	40	32
7	48	48	40	32	24
8	48	40	32	24	
9	40	32			

Carbon-Kevlar Strap Spacing in Inches					
Wall Height	10 feet				
Unbalanced Fill Height (ft)	Soil Equivalent Fluid Pressure (psf/ft)				
	30	45	60	75	100
5 or less	48	48	48	48	48
6	48	48	48	40	32
7	48	48	32	24	
8	48	32	24		
9	40	24			
10	32				

Carbon-Kevlar Strap Spacing in Inches					
Wall Height	11 feet				
Unbalanced Fill Height (ft)	Soil Equivalent Fluid Pressure (psf/ft)				
	30	45	60	75	100
5 or less	48	48	48	48	40
6	48	48	48	40	24
7	48	40	32	24	
8	48	32	24		
9	32	24			
10	24				
11	24				

Carbon-Kevlar Strap Spacing in Inches					
Wall Height	12 feet				
Unbalanced Fill Height (ft)	Soil Equivalent Fluid Pressure (psf/ft)				
	30	45	60	75	100
5 or less	48	48	48	48	40
6	48	48	40	32	24
7	48	40	32	24	
8	40	32	24		
9	32	24			
10	24				

Table Qualifications:

1. Spacing dimensions are Strap center-to-center.
2. Walls shall be adequately restrained from out-of-plane movement at both the top and bottom of the wall with Fortress Kevlar Necktie and Bottom Plate wall anchors.
3. For basement applications, the exterior grade shall be flat or sloping down and away from the wall a distance equal or greater to the Unbalanced Fill Height.
4. Variations between Unbalanced Fill Heights and Equivalent Fluid Pressures shown may be interpolated linearly.
5. Walls constructed with concrete masonry units (CMU) shall have a minimum compressive strength of 1,250 psi with Type N mortar or better in good condition.
6. Masonry shall be laid in running bond.
7. Refer to the latest Fortress Installation Guide for other restrictions and use.

For wall heights greater than 12 feet, or soil equivalent fluid pressures greater than 100 psf/ft, contact Fortress Stabilization Systems.

Always install Fortress approved top and bottom wall anchors with each Carbon-Kevlar Strap.

HOW TO USE THE SPACING TABLES

- 1. Wall Height:** Determine the clear height of the wall which is the distance between the top and bottom horizontal restraints. For basement applications, this is usually the distance between the bottom of the main floor joist and the top of the concrete slab. With this dimension select the table with the corresponding wall height. For wall height dimensions other than whole feet, Carbon-Kevlar Strap spacing may be interpolated linearly.
- 2. Unbalanced Backfill Height:** The height of the soil between the bottom of the wall on the interior and the finished grade on the exterior.
- 3. Soil Equivalent Fluid Pressure:** Check the local building code or construction code office for the appropriate Soil Equivalent Fluid Pressure to be used. Where local codes are not available to determine the Equivalent Fluid Pressure of soil, Fortress recommends that a qualified geotechnical or civil engineer familiar with the local area be contacted.
- 4. Carbon-Kevlar Strap Spacing:** Find the recommended Fortress Carbon-Kevlar Strap horizontal center-to-center spacing in inches at the intersection of the Unbalanced Fill Height and Soil Equivalent Fluid Pressure in the appropriate table

Example:

8-inch thick, hollow core, CMU basement wall has a clear height of 8 feet, 6 inches and an unbalanced backfill height of 8 feet. Find the recommended Fortress Carbon Kevlar Strap spacing.

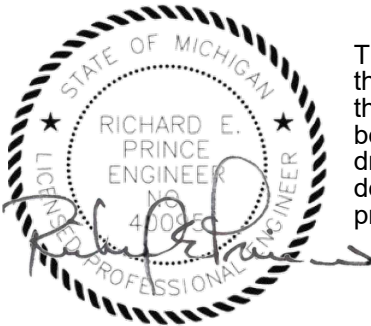
Solution:

Using the tables for an 8-foot and 9-foot tall walls, find the recommended Carbon-Kevlar Strap spacing for an unbalanced backfill height of 8 feet. The 8-foot table results in a 40-inch spacing and the 9-foot table results in a 32-inch spacing. Linearly interpolate the results as follows:

$$(40'' + 32'')/2 = 36''$$

The Carbon-Kevlar Straps should be installed at 36-inches on center in this example.

If the wall in this example were made of 8-inch nominal concrete masonry units (CMU), decrease the calculated spacing to the nearest number divisible by 8 so that the Carbon-Kevlar Strap is installed between vertical mortar joints. The recommended Carbon-Kevlar Strap spacing in this example for an 8-inch nominal CMU wall would be decreased from 36-inches to the nearest number divisible by 8 to 32-inches.



The Carbon-Kevlar Strap spacing tables were calculated assuming optimal soil conditions, the groundwater table is located below the basement wall footings, and the soil retained by the basement walls is not saturated. Basement wall out-of-plane deflection was assumed to be less than two inches. Because the conditions of the soil, wall components, mortar, drainage, and any other circumstances affecting the capacity of basement wall, the spacing design and installation of the Straps should be performed under the supervision of a licensed professional engineer.

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