

The accompanying chart and formula present the load capacity guidelines for Subterra, Subterra Plus and Subterra Protection Board when placed beneath concrete slabs.

This chart details load capacities for both dynamic and static pressures. Based on the type of load and the thickness of the concrete slab, it specifies the suitable compressive strengths for Subterra, Subterra Plus and Subterra Protection Board.

For this document, “Subterra,” Subterra Plus,” and “Subterra Protection Board” will be collectively referred to as simply “Subterra.”

### **DYNAMIC LOADS**

The chart illustrates dynamic loads varying between 2,000 and 16,000 lbs, corresponding to wheel loads. On the y-axis, the chart displays the load transfer to the slab’s bottom, signifying the compressive load that Subterra boards are designed to withstand.

### **STATIC LOADS**

The compressive loads on the slab surface can be computed to ascertain the load that is subsequently transferred to the slab’s bottom. By consulting the chart, one can then identify the necessary compressive strength for Subterra.

To determine the compressive load at the bottom of the slab, the following variables are required:

1. Load applied at the slab surface, P, in pounds.
2. Length and width of the area that the load is applied over, L x W, in inches.
3. Slab thickness, t, in inches.

The compressive load at the bottom of the slab is then determined by the following equations:

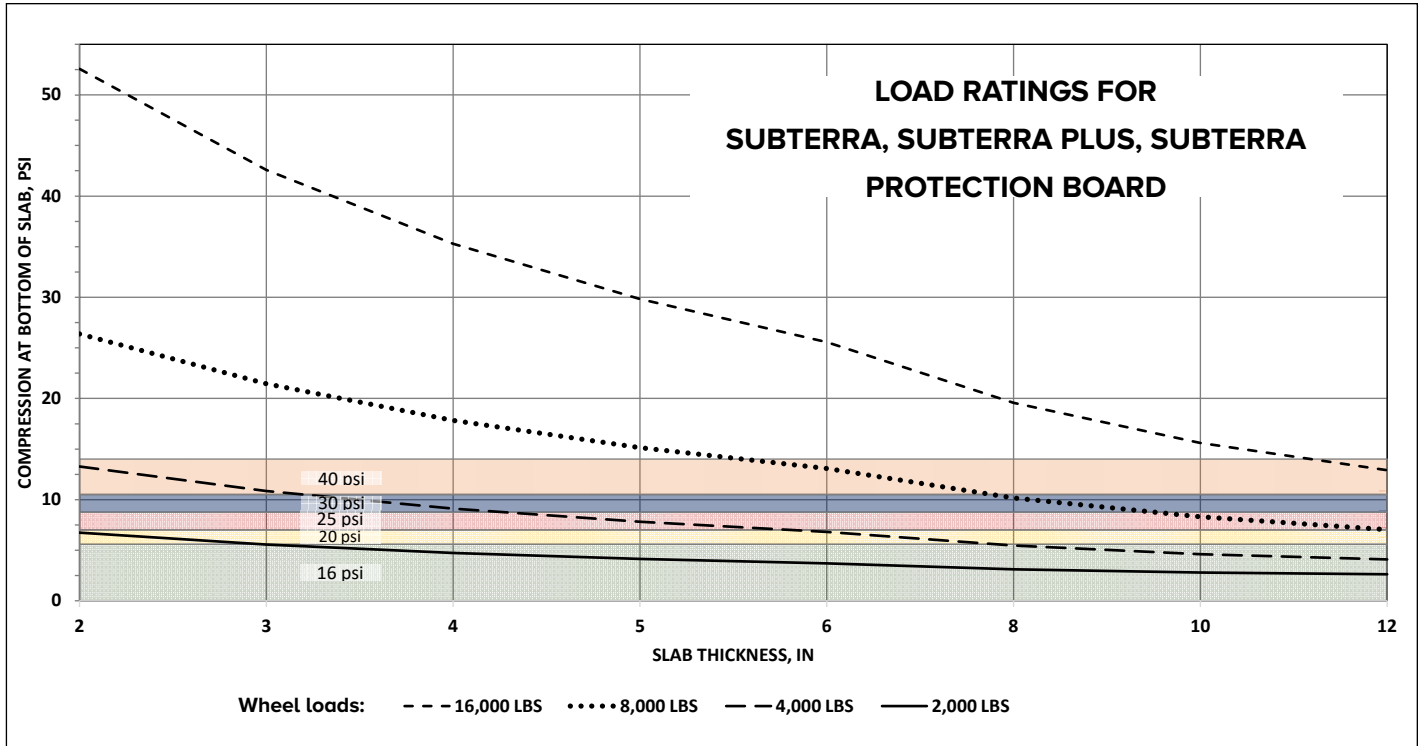
$$\text{Load distribution area at bottom of slab, } A_{\text{bot}} = (2t+L)(2t+W)$$

$$\text{Compressive load at bottom of slab, } w = (P/A_{\text{bot}})+0.0868t$$

For further information, please contact Logix Brands at [info@logixbrands.com](mailto:info@logixbrands.com).



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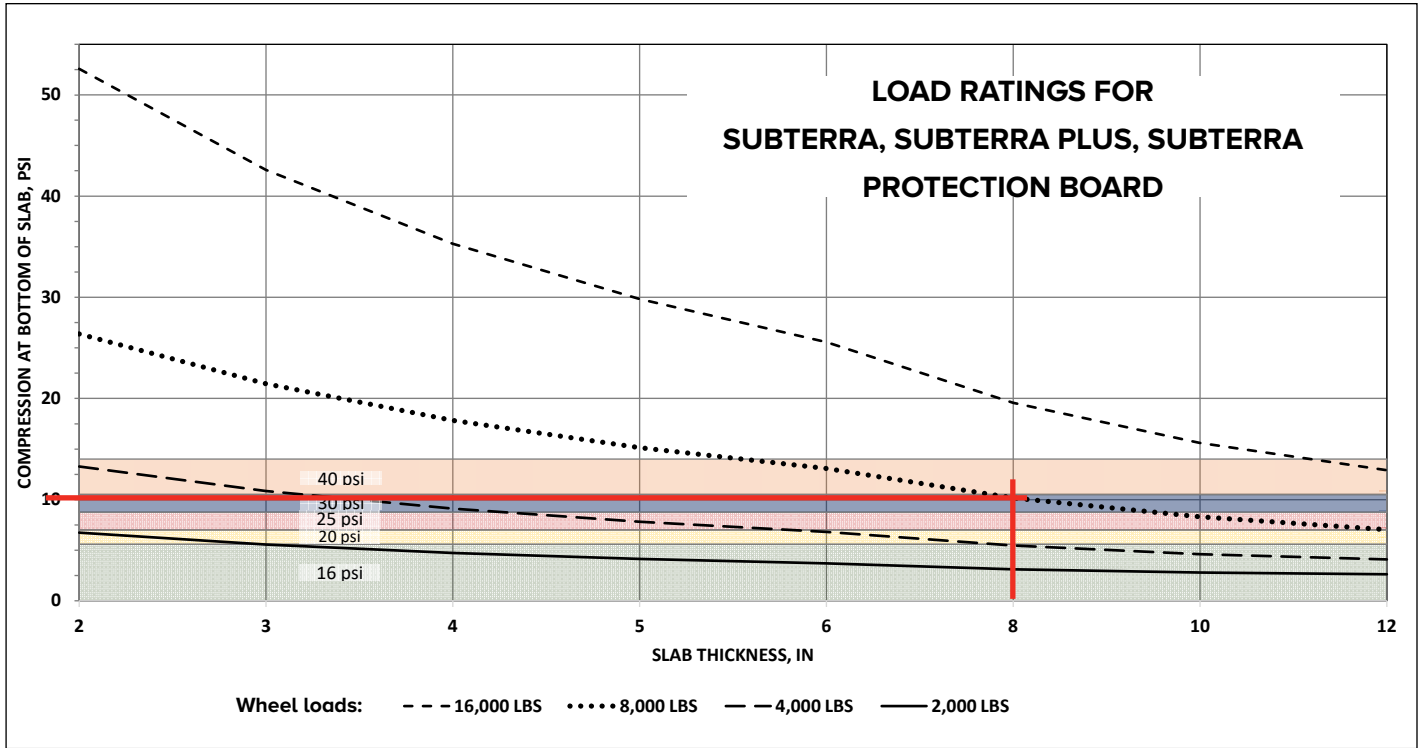


**NOTES:**

1. Load chart applies to Subterra, Subterra Plus and Subterra Protection Board.
2. Confirm availability with your local supplier.
3. Wheel foot print is based on 20"x10" at slab surface.
4. 10% impact load included with dynamic load conditions.
5. Wheel loads includes self-weight of concrete slab.
6. Interpolation between wheel loads permitted.
7. To account for long-term creep and deflection, compression is kept to no more than 35% of the compressive strength of Subterra, Subterra Plus and Subterra Protection Board.



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**EXAMPLE 1: DYNAMIC LOAD**

Given: wheel load = 8,000 lbs  
 slab thickness = 8 inches

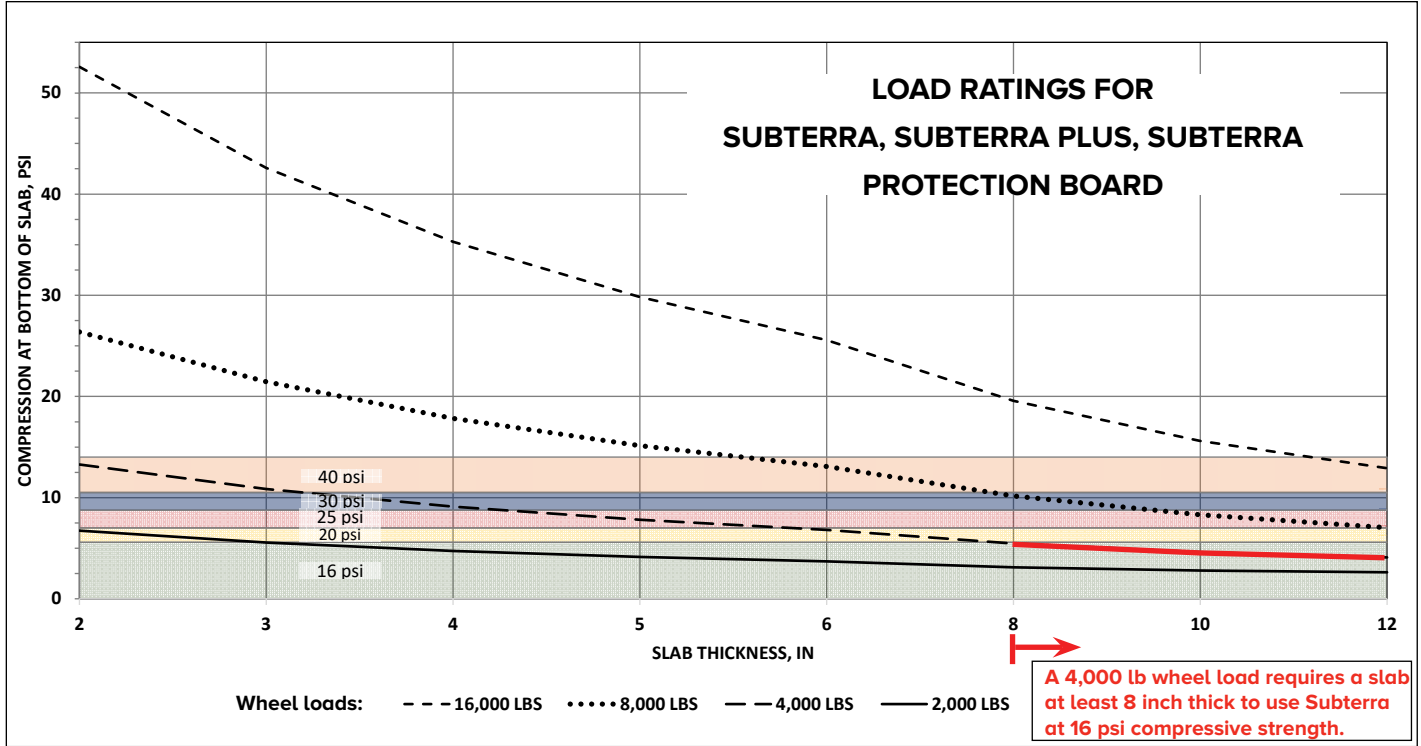
Find: Subterra compressive strength required.

Solution: From Load Rating chart, select 8 inch along horizontal axis, move vertically to where the 8,000 lb chart is intersected. The intersection falls in the region where a Subterra minimum compressive strength of 30 psi is required.

Note, in addition, the wheel load distribution to Subterra (or bottom of slab) is about 10 psi. The compressive load is kept to no more than 35% of the compressive strength of Subterra to account for long-term creep and deflection.



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**EXAMPLE 2: DYNAMIC LOAD**

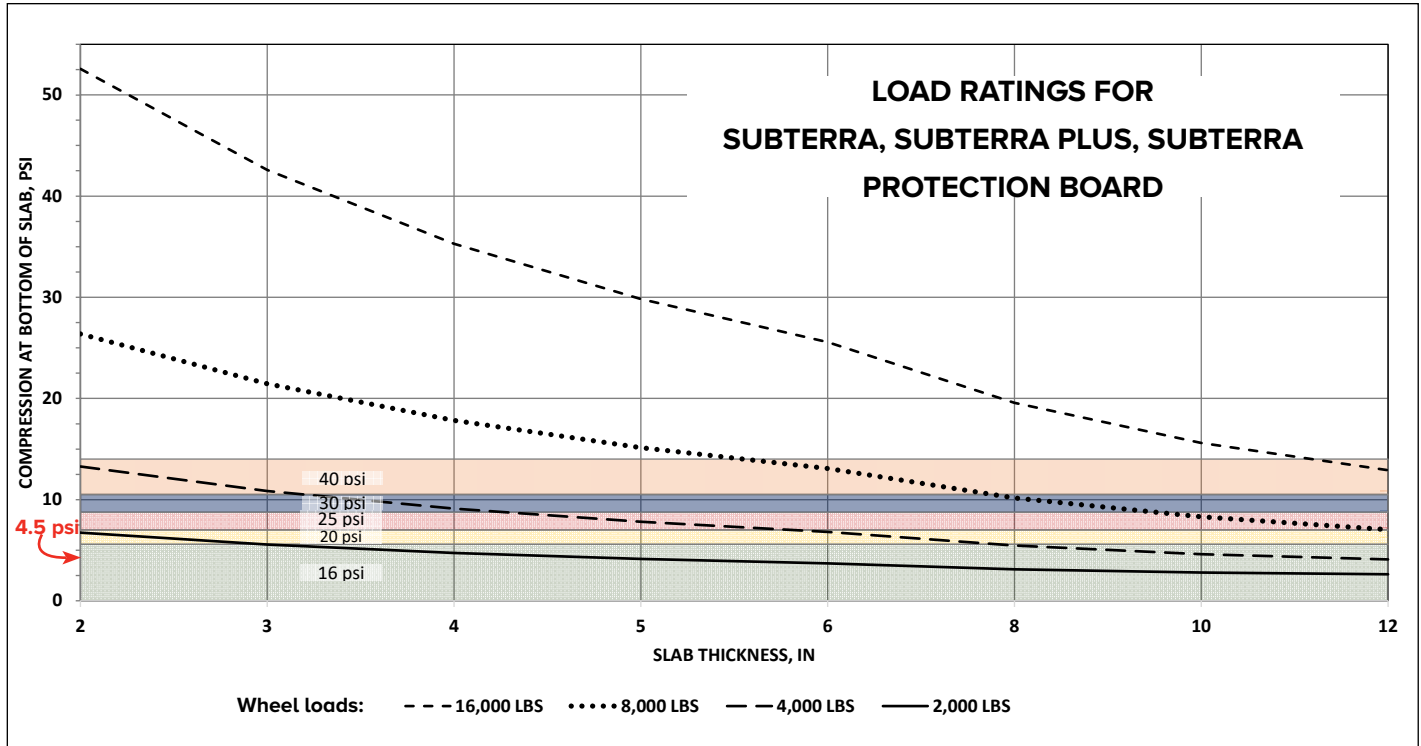
Given: wheel load = 4,000 lbs  
 Subterra compressive strength = 16 psi

Find: Required slab thickness.

Solution: From Load Rating chart, the line chart for 4,000 lbs wheel load falls within the 16 psi region at slab thicknesses greater than 8 inches. Therefore, the required slab thickness must be greater than 8 inches in order to use Subterra with a compressive strength of 16 psi.



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**EXAMPLE 3: STATIC LOAD**

Given: applied load,  $P = 5,000$  lbs  
 length of applied area,  $L = 24$  inches  
 width of applied area,  $W = 30$  inches  
 slab thickness,  $t = 4$  inches

Find: Subterra minimum compressive strength.

Solution: Determine compressive load at bottom of slab.

Load distribution area at bottom of slab,  $A_{bot}$ :

$$A_{bot} = (2t+L)(2t+W) = [(2*4)+24][(2*4)+30] = [8+24][8+30] = 32*38 = 1,216 \text{ in}^2$$

Therefore, compressive load at bottom of slab,  $w$ :

$$w = (P/A_{bot}) + 0.0868t = (5000/1216) + (0.0868*4) = 4.112 + 0.347 = 4.5 \text{ psi}$$

From the Load Rating Chart, along the vertical axis, 4.5 psi falls in the region where the minimum compressive strength for Subterra is 16 psi.



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