

## Post Frame Footing Information

**Post/Pier Footings:** When sizing the footings for a shed or a point load, it is not just the load to be concerned with. The soil under the footing also needs to be able to support the footing itself. If soil is poor and the footing is not wide enough, the soil will not support the footing.

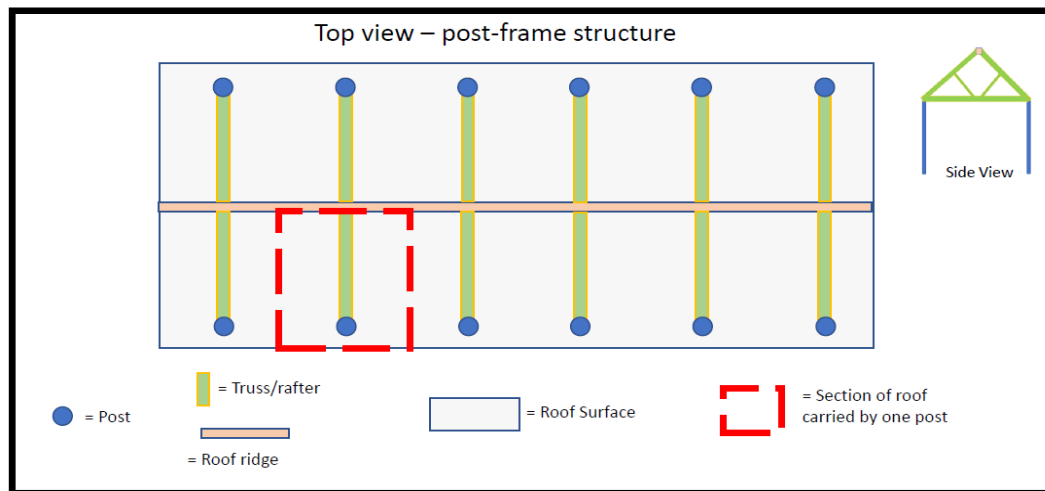
**SPS 321.15(1)d,** The bearing area of the footing shall be at least equal to the area required to transfer the loads to the supporting soil without exceeding the bearing capacity of the soil.

**SPS 321.15(2)b(1) &(2),** unless designed by structural analysis as allowed by **SPS 321.15(2)**, the minimum width and length of column or pier footings shall measure at least 2 feet by 2 feet. The minimum depth of column or pier footings shall measure at least 12 inches nominal.

**SPS 321.15(3),** No footing or foundation shall be placed on soil with a bearing capacity of less than 2,000 pounds per square foot unless the footing or foundation has been designed through structural analysis.

*A method of structural analysis is proper calculation indicating the footings will be sized per the load and soil conditions. You can determine the footing size needed to support the load by using this formula:  $A = B/C$*

- A**      **Area of Footing(Square Feet)**
- B**      **Load on post**
- C**      **Soil Bearing Capacity**



**Calculate "B"** *The Load on the Post* = **Roof Load Area Square Feet** X **Total Load PSF**

**Step One:**

Determine the roof load in Square feet. As shown in the diagram shown on the previous page, one post carries the weight of half of width of the shed and half the distance between the two post on each side.

(Width of shed/2) X Post Spacing = **Roof Load Area Square Feet**

Width of Shed/2 \_\_\_\_\_ Feet

Post Spacing \_\_\_\_\_ Feet

Square Feet of Roof Square Feet

**Step Two:**

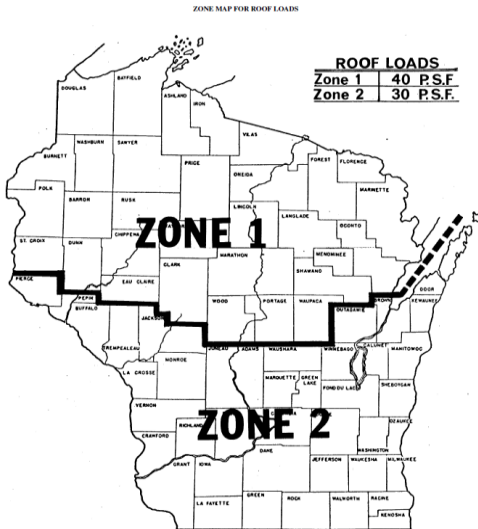
Determine the roof loads per square foot by adding up the values from the tables.

What is the determined snow load? This is based off of Figure SPS 321.02, Below

What is the Live Load? This is based off of Table 321.02-1, Below

What is the Dead Load? This load is the actual weight of all components and materials, **Typically 5 PSF**

**Figure SPS 321.02**



Dead Load 5 PSF

Live Load(Table) \_\_\_\_\_ PSF

Snow Load(Table) \_\_\_\_\_ PSF

Total Load PSF

Table 321.02-1

Component	Live Load (pounds per sq. ft.)
Floors .....	40
Garage floors .....	50
Exterior balconies, decks, porches ..	40
Ceilings (with storage) .....	20
Ceilings (without storage) .....	5

**Step Three:**

Determine the total load on the post. **Roof Load Area Square Feet X Total Roof Load PSF**

"B" =

Square Feet

X

Total Load PSF

=

PSF on the Post

**Calculate "C"** What are the Soil Conditions? Determine your soil conditions and utilize the Table found in SPS 321.15(3), Below.

**(3) SOIL-BEARING CAPACITY.** No footing or foundation shall be placed on soil with a bearing capacity of less than 2,000 pounds per square foot unless the footing or foundation has been designed through structural analysis. The soil-bearing values of common soils may be determined through soil identification.

**Note:** The department will accept the soil-bearing values for the types of soil listed in the following table:

Type of soil	PSF
1. Wet, soft clay; very loose silt; silty clay .....	2,000
2. Loose, fine sand; medium clay; loose sandy clay soils .....	2,000
3. Stiff clay; firm inorganic silt .....	3,000
4. Medium (firm) sand; loose sandy gravel; firm sandy clay soils; hard dry clay .....	4,000
5. Dense sand and gravel; very compact mixture of clay, sand and gravel .....	6,000
6. Rock .....	12,000

**Soil PSF**

**Calculate "A"**  $A = B/C$

**"A" Footing Sq. Foot =**

**"B" Weight on Post**

**Divided  
by**

**"C" Soil Bearing Capacity**

**=**

**A Footing Sq. Foot**

**Convert to Round Footings**

Round	Square Foot
10	0.55
12	0.79
14	1.07
16	1.40
18	1.77
20	2.18
22	2.64
24	3.14
26	3.69
28	4.27
30	4.91
32	5.58
34	6.30
36	7.07
38	7.87

**Minimum Size of Round Footing**