

How to Build Assets and not Liabilities

The “RIGHT” Design Loads for Snow and Wind

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Have a GROWTH mindset! Be open to new information and be alert for thoughts on how you can use this information after EXPO is over... Make your notes on the other side!

What are the “Right” Design Loads?

1. ASCE 7 Standard (and Building Codes)
2. Experience-based guidance of the Builder and Engineer / Architect
3. Owner’s Desired Level of Safety / Risk

ALL 3 should be considered, then use the most conservative

Key Design Terms you must know:

<u>Risk Category</u> { I, II, III, or IV }		1 st Key Term: <u>Risk Category</u>	
Wind related Terms:	Snow related Terms:	<u>Risk Category</u>	Buildings Suitable for this Category
<u>Basic Wind Speed</u> V mph	<u>Ground Snow Load</u> p_g psf	I	Little risk to human life (or welfare) in the event of a building failure
<u>Exposure Cat.</u> {B,C,D}	<u>Roof Snow Load</u> p_s psf	II	All buildings except those in Category I, III, and IV – (Default, “normal”)
<u>Velocity Pressure</u> q_h psf		III	Substantial Risk to Human Life (or welfare) in the event of failure
Also, which Edition of <u>ASCE 7</u> - {10, 16, 22...}		IV	Essential Facilities – Critical to function of society, emergency response centers, etc.

Owners and other stakeholders should be given the opportunity to learn about what each of these terms mean for their building, review what recommendations are being made, and to modify (increase) any of these factors if they wish!

Basic Wind Speed, V mph

Find online at <https://asce7hazardtool.online> Need: Building Location, Risk Category, and which edition of ASCE 7

Wind Exposure Category “C” should be default, B results in lower forces. *B-ware of Category “B”, Say sí to Category “C”*

Velocity Pressure q_h psf This is the “result” used by engineers and other designers, and has other factors calculated into it. If you want to compare apples to apples on two different designs, you should check the q_h for each.

Ground Snow Load, p_g psf

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Be careful of any building designed for snow which uses factors that are not conservative: Thermal Factor (C_t) should not be less than 1.1 and Exposure (C_e) should not be less than 1.0 Also, do not assume roof will be slippery (use $C_s = 1.0$)

Balanced Sloped Roof Snow Load (or Roof Snow Load), p_s psf This is the “result” used by engineers and other designers and has the adjustment factors calculated into it. To compare apples to apples, compare p_s for each.

For snow, do not forget about UNBALANCED SNOW (ridge drift) and High/Low Snow Drift requirements. Important!

