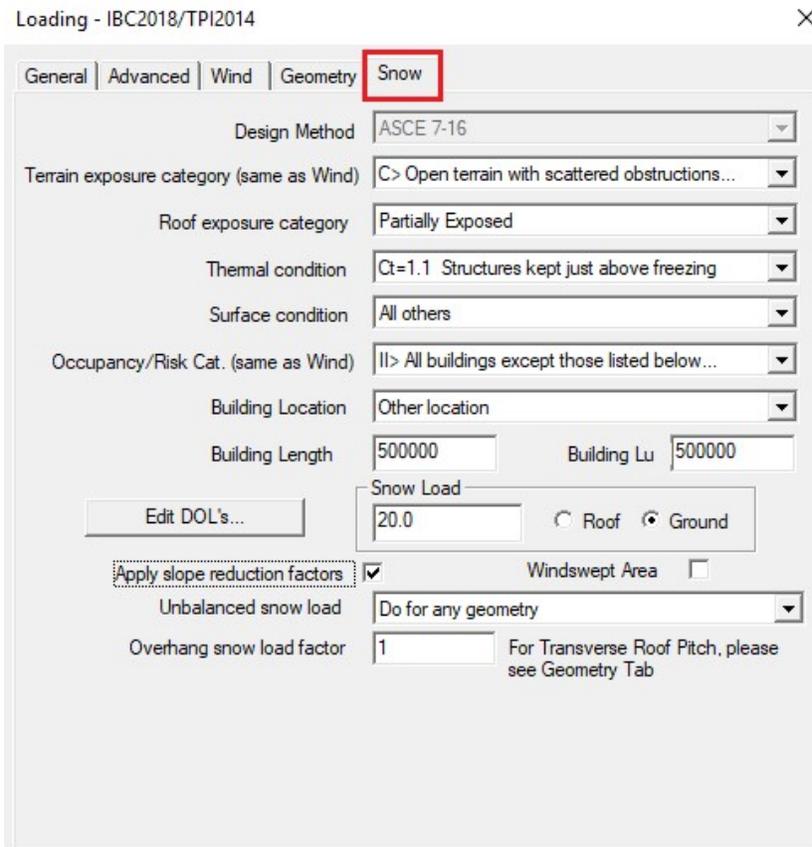


Let's look at some of the settings in the Snow Loading as shown here:



Snow Loading Tab in MiTek 20/20 Engineering

Property	Value
▼ Loading - Snow	
Consider Snow Load	Yes
Design Method	ASCE 7-16
Snow Load Location	Ground (Pg)
Snow Load	20.0 lb./ft ²
Roof Exposure Category	Partially Exposed
Windswept	No
Exposure Factor Ce	1.0
Surface Condition	All others
Overhang Snow Load Factor	1.00
Thermal Condition	Ct=1.1 Structures kept just above freezing
Roof 'R' Value	30.00
Roof Ventilation	Ventilated
Building Lu	50-00-00
Apply Slope Reduction Factor (Ps)	Yes
Unbalanced snow load	Do For Any Geometry

Loading-Snow Section in Structure with Truss Design

The Terrain exposure category (Surface Roughness category in ASCE 7-16) is dealing with the obstructions to wind within a 2600 feet distance of the structure or 1500 feet for structures with a mean roof height of 30 feet or less. Exposure B refers to urban and suburban areas, wooded areas, or other terrain with numerous closely spaced obstructions having the size of

single-family dwellings or larger. Exposure C is for open terrain with scattered obstructions having heights generally less than 30 feet. This category includes flat open country and grasslands. Exposure D is for flat unobstructed areas and water surfaces outside hurricane prone regions, it involves a structure a close distance (typically within 600 feet) from an "open waterway" one mile or more across. This category is readily distinguishable, where the locally enforced code very likely has considered this in their requirements. In Structure with Truss Design Terrain Exposure category is entered in General section of Building Code Settings.

The Roof exposure category deals with obstructions right next to the structure. Sheltered roofs are those that are tight in among conifers and fully exposed roofs are those that have no shelter from terrain, higher structures or trees. Partially exposed roofs are all of those that do not meet one of the first two definitions.

For a more detailed description of Terrain exposure and Roof exposure, see ASCE 7 "Minimum Design Loads for Buildings and Other Structures".

The Thermal condition deals with how much heat escapes from the space below the trusses up to the roof to melt the snow off. The IRC states that the minimum insulation to be used in the attic space in normal heated residential structures is R-30, R-38 or R-49 depending on location. ASCE says that if an R value of 25 or greater is used between the heated and ventilated space, a Ct factor of 1.1 is to be used. Therefore, a Ct factor of 1.1 should be used on almost all residential structures. On structures that are unheated such as most barns, the Ct factor should be 1.2. A Ct factor of 1.0 may apply to certain commercial structures but this would be the exception rather than the norm.

The Surface condition deals with snow's ability to slide off of the roof. This feature is activated only when Apply slope reduction factors is checked on. Unobstructed slippery is a roof of metal, slate, glass, bituminous, rubber, and plastic membranes with a smooth surface. To qualify for a smooth surface, there must be no obstructions to keep the snow from sliding off of the roof; otherwise you must choose "All others".

The Occupancy/Risk Categories are all described in the drop-down menu of the MiTek Engineering software. For a more complete description, refer to MiTek Engineering Technical Article "[ASCE 7 Occupancy Categories](#)". In Structure with Truss Design Occupancy/Risk Categories is entered in Loading - Wind section of Building Code Settings.

The Building Location should be left set to "Other location". The other options require programming to use and this does not affect loading as long as it is left at "Other location".

The Building Lu is the distance from the truss in question to the furthest Eave from that truss. It is used to account for snow blowing parallel to the ridge of a hip roof. You will notice that this has no effect on trusses that do not have a flat section. If you do not want to modify Building Lu for each individual truss in the job, enter Building Lu = Building Length, that would be the most

conservative case.

Apply slope reduction factors can reduce the roof snow load on trusses, but it depends on the pitch of the truss, surface, and thermal conditions. See section 7.4 of ASCE 7 for more detail.

Windswept Area must be checked on if you design trusses for the Arctic Circle or mountain tops (not applicable for ASCE 7-10 and previous editions).

The Unbalanced snow loads should be set to “Do for any geometry” so that a mono truss will have unbalanced snow loads applied to it. This can be very important if two mono trusses are placed back to back to form a full roof and on hip ends where the whole hip area could be subjected to drifting when the wind blows parallel to the ridge.

Overhang snow load factor should be set to 1, unless Ct factor of 1.0 in Thermal condition is used, Overhang snow load factor equal 2 is then required.

Exposure Factor Ce in Structure with Truss Design is grayed out. It is automatically determined by program using Table 7-2 in ASCE 7. It depends from Terrain and Roof exposure categories.

Roof “R” Value and Roof Ventilation in Structure with Truss Design require programming to use and this does not affect loading.

For additional information, or if you have questions, please contact the MiTek Engineering department.