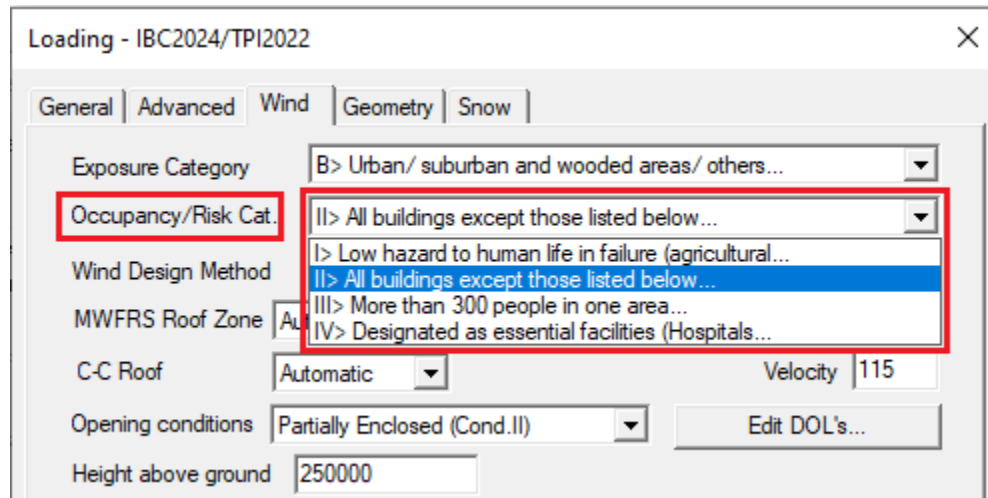
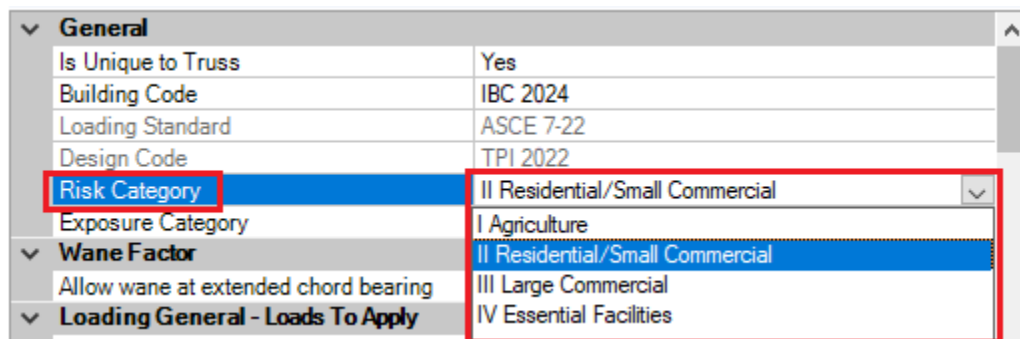


One of the first considerations in the design of any structure starts with determining the Risk (Occupancy) Category of the structure. Per ASCE 7, there are four basic categories from which the Building Designer can select, based on the end use of the structure. These categories are defined in section 1.5 and Table 1.5-1 of ASCE 7.



*Occupancy/Risk Category in MiTek 20/20 Engineering*



*Occupancy/Risk Category in Structure with Truss Design*

Risk Category I is intended for buildings that have a “low hazard to human life in the event of a failure”. This includes buildings where there’s no human occupancy, or only for a very short time, mainly just long enough to store things or to tend to livestock. Examples are agricultural facilities, certain temporary facilities, and minor storage facilities.

Risk Category II, the most used, is for buildings and other structures except those listed in Risk Categories I, III, and IV. Typically, One-and-Two Family buildings, small commercial buildings would be classified as Category II.

Risk Category III is intended for buildings and other structures, the failure of which could pose a substantial risk to human life, buildings and other structures not included in Risk Category IV, with potential to cause a substantial economic impact and /or mass disruption of day-to-day civilian life in

the event of failure, and buildings and other structures not included in Risk Category IV, containing toxic or explosive substances where the quantity of the materials exceeds a threshold quantity established by the Authority Having Jurisdiction and is sufficient to pose a threat to the public if released. Typically, large commercial buildings, large day care facilities, schools, colleges would be classified as Category III.

Category IV buildings and other structures designated as Essential Facilities; buildings and other structures the failure of which could pose a substantial hazard to the community, buildings and other structures, containing quantities of highly toxic substances where the quantity of the materials exceeds a threshold quantity established by the Authority Having Jurisdiction and is sufficient to pose a threat to the public if released, and buildings and other structures required to maintain the functionality of other Risk Category IV structures. Examples are hospitals and other health care facilities where surgery and/or emergency treatment is available, water storage and ancillary buildings, fire, rescue, ambulance, and police stations and garages, designated earthquake, hurricane, or other emergency shelters. Basically, all buildings critical for emergencies and defense.

The type of occupancy is reflected in the “Importance Factor” that is used throughout the load calculations. As the Importance Factor increases, the resulting wind and snow loads are increased, thus providing a larger factor of safety for essential structures.

A barn for livestock and livestock supplies would be an example of a Category I building. A one family house, for example, would be a Category II since it’s a building that has the potential for people to get hurt in the event of a structural failure. A day care facility might be a Category III since it is a building that has the potential for more people to occupy it for activities and there is an even greater potential for people to get hurt in the event of a structural failure. A firehouse would be a Category IV since it is a building critical for emergencies.

Per ANSI/TPI 1, it is the Building Designer’s responsibility to specify which Risk Category to use and this should be reported in the construction documents.

Risk Category is just one of the many design parameters that are used in developing a truss design. During the design review MiTek engineers are using the design parameters that are provided to us by the Component Manufacturer. Thus, it is extremely important that the Component Manufacturer reviews these parameters to ensure that they meet the Building Designers plans. MiTek recommends that the Component Manufacturer be very cautious in their involvement with the selection of any design parameter, as this may add to your liability on the project. It is possible that we would advise to change a Risk Category. For example, if a truss has a label that clearly states it is a school, and it has been run as a category II, we may advise you that it should probably be run as a minimum of a Category III.

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