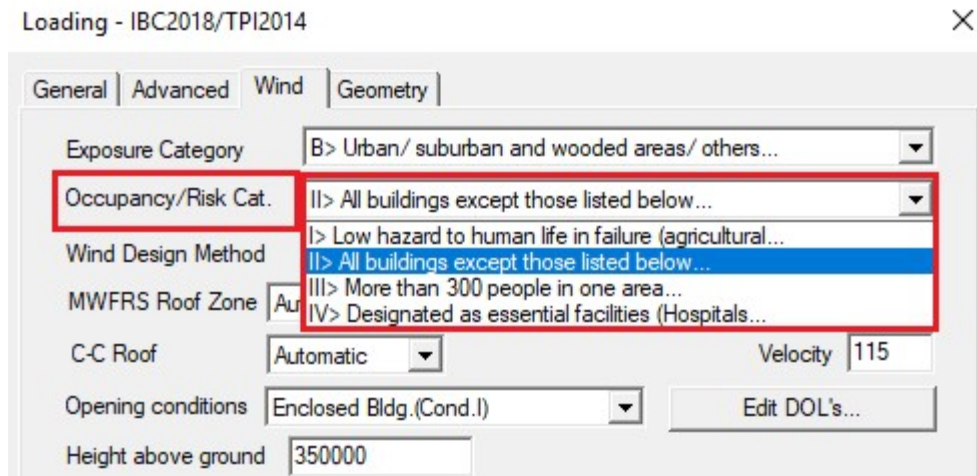
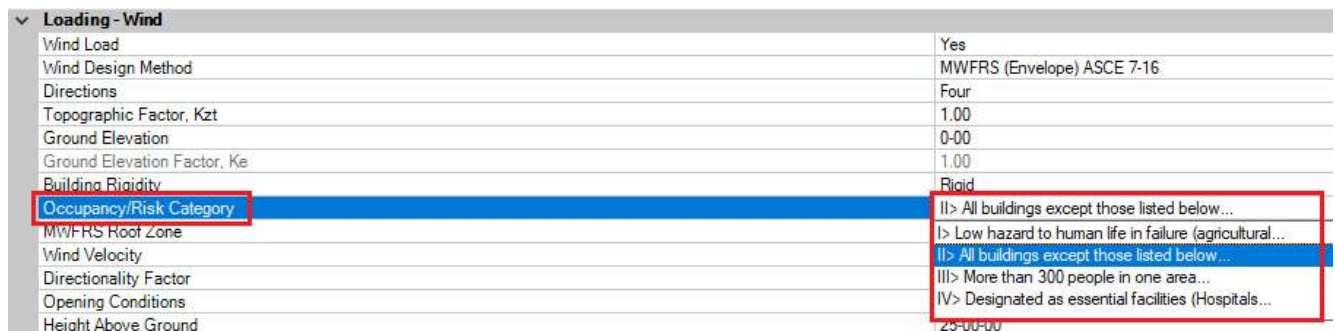


One of the first considerations in the design of any structure starts with determining the occupancy/risk category of the structure. Per ASCE 7, there are four basic categories from which the Building Designer can select, based on the end use of the structure. These categories are defined in section 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

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.

Category II, the most used, is for all buildings other than those listed in Category I, III, and IV. Typically, One-and-Two Family buildings would be classified as Category II. Also, “buildings containing hazardous materials are eligible for Category II if it can be demonstrated to the authority having jurisdiction that the hazardous material poses no threat to the general public”.

Category III is intended for “buildings that represent a substantial hazard to human life in the event of failure.” These include buildings where more than 300 people can congregate, day care facilities with a capacity of more than 150 people, schools with a capacity of more than 250 people, colleges or adult education facilities with a capacity greater than 500 people, health care facilities with 50 or more resident patients (health care facilities without surgery and emergency treatment taking place), jails and detention facilities, power generating stations and other public utility facilities not included in Category IV. Additionally, buildings containing hazardous materials, such as fuels, hazardous chemicals, hazardous waste, or explosives, with sufficient enough quantities to be a danger to the public if released should be classified as Category III.

Category IV buildings are essential facilities; these buildings include 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. Also, buildings containing extremely hazardous materials – where the quantity of the materials exceeds a threshold quantity established by the authority having jurisdiction – should be analyzed with Category IV.

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 horse-riding practice arena, for example, would be a Category II since it’s a building that has the potential for people to occupy it for activities and there is more potential for people to get hurt in the event of a structural failure. A horse show arena might be a Category III since it is a building that has the potential for more than 300 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.

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

Occupancy/Risk Category is just one of the many design parameters that are used in developing a truss design. MiTek reviews and seals these truss designs based on the design parameters that are provided to us by the Component Manufacture. Thus, it is extremely important that you review 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. During the design review at a MiTek

engineering office, it is possible that we would advise you to change an Occupancy/Risk Category. For example, if a truss has a label that clearly states it is a horse-riding arena, and it has been run as a category I, we would advise you that it should probably be run as a minimum of a Category II. If a truss design is analyzed with Category I, we assume it's a barn or storage facility with a "low hazard to human life".

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