

School Occupant Loads for COVID-19 Restrictions

Introduction/scope

This document is intended to demonstrate the method of calculating occupant loads for various areas within a school at 50 percent of maximum capacity, as described in scenario two of the Minnesota Department of Health's [2020-2021 Planning Guide for Schools](#). Reduced capacity is only one aspect of these guidelines. This document does not address social distancing strategies.

The Minnesota State Fire Code and Minnesota Building Code provide a method for establishing building occupant loads. Each room or space within a building has its own occupant load based on how it's used. It's important to understand that these occupant loads, called "design" occupant loads, are not intended to strictly limit the number of occupants within a building, room or area. In most cases, it's the egress capacity that will limit the number of occupants. The design occupant load is instead used for determining building design features such as the number, location and width of exits and exit access doorways, door hardware requirements, fire protection systems and features, the number of plumbing fixtures, etc. It is possible to calculate a total occupant load for an entire school building by taking the sum of all occupant loads from each individual room or area, but for the purposes of COVID-19 restrictions each space should be addressed individually.

Calculating occupant load

To calculate the occupant load for a room or area, divide the area (in square feet) by the occupant load factor that best corresponds with its use. Below are common occupant load factors (i.e. number of square feet allocated per person) for various use areas commonly found in school buildings. For areas with fixed seating like theaters and auditoriums, the occupant load equals the number of seats.

- Standard classrooms (desks or table/chair setup): 20 square feet/occupant (net)
- Music classrooms: 20 square feet/occupant (net)
- Science labs (lab stations): 50 square feet/occupant (net)
- Shops and similar vocational areas: 50 square feet/occupant (net)
- Child care/day care rooms: 35 square feet/occupant (net)
- Libraries/media centers – reading and work areas: 50 square feet/occupant (net)
- Libraries/media centers – book shelving/stack areas: 100 square feet/occupant (gross)
- Cafeterias: 15 square feet/occupant (net)
- Gymnasiums and exercise areas: 50 square feet/occupant (gross)
 - When gymnasiums are used for assembly purposes such as school assemblies, public viewing of sporting events, graduation ceremonies, etc., calculating the occupant load becomes more complicated. Please contact your assigned State Fire Marshal Division school inspector, local fire marshal, or local building official for guidance.



Minnesota Department of Public Safety State Fire Marshal Division

- Locker rooms: 50 square feet/occupant (gross)
- Business offices: 100 square feet/occupant (gross)

Gross floor area vs. net floor area

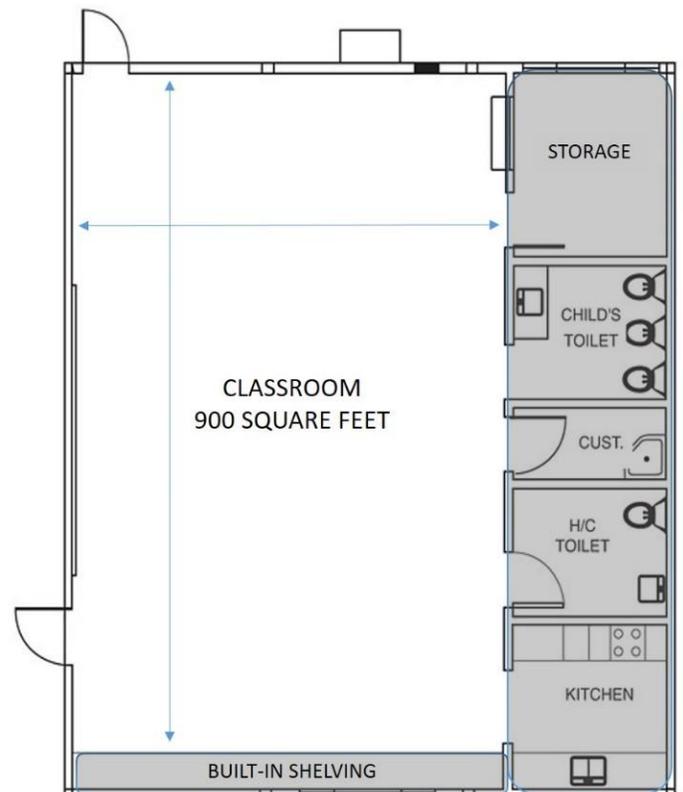
- **Gross floor area** is the area within the inside perimeter of the walls and includes all spaces except for shafts or courts.
- **Net floor area** is the area that can actually be occupied by people and excludes areas where people would not normally congregate (such as stairs, corridors, restrooms, mechanical rooms, etc.).

Occupant load calculation example

Below is an example using a standard 900 square foot classroom.

The occupant load factor for a standard classroom is 20 square feet per occupant. Thus, a 900 square foot classroom has a design occupant load of 45 ($900 \text{ ft}^2 / 20 \text{ ft}^2$ per occupant). To determine the occupant load based on reduced capacity due to COVID-19 restrictions, multiply the design occupant load by the applicable reduction percentage. For example, at 50 percent capacity, this classroom could have 22.5 occupants ($45 \times 0.50 = 22.5$). And since people don't come in fractions, we always round up, so the actual number is 23.

Note that when determining the occupant load for the classroom, non-occupied accessory spaces (the shaded areas in the adjacent figure) are not included in the total net area.



More information

Email the State Fire Marshal Division Fire Code Team at fire.code@state.mn.us. Visit sfm.dps.mn.gov for the latest updates to this information.

