

# SLEEPING AREAS

## Basement And Ground Floor

If you're considering a basement renovation as a way to expand your sleeping area, be aware that City and State building codes have requirements including: ceiling height, natural light and ventilation, exiting, heating, smoke detectors, exits, electrical design, etc. that must be followed. And because very few houses are built to meet these requirements, such projects may get somewhat involved.

This brochure contains excerpts from the building codes pertaining to development of basements or ground floors for use as sleeping areas. It is intended as an aid to owners of one or two family detached dwellings that may be seeking information as to code requirements for a sleeping room in a basement or ground floor.

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#### Comm 320.07 Definitions

- ◆ "First floor" means the first floor level above any groundfloor or basement or, in the absence of a groundfloor or basement, means the lowest floor level in the dwelling.
- ◆ "Groundfloor" means that level of a dwelling, below the first floor, located on a site with a sloping or multilevel grade and which has a portion of its floor line at grade.
- ◆ "Basement" means that portion of a dwelling below the first floor or groundfloor with its entire floor below grade.
- ◆ "Natural light" means light provided by the glazed area of a window, door or skylight serving a specific room or space.
- ◆ "Natural ventilation" means the openable area of windows, doors or skylights serving a room or space.

#### Comm 21.03 Exits, doors and hallways.

(5) EXITS FROM BASEMENTS AND GROUND FLOORS.

(a) *General.* Except as provided in par. (b), all basements and ground floors shall be provided with at least one exit of the following types:

1. A door to the exterior of the dwelling.
2. A stairway or ramp that leads to the floor above.

(b) *Basements and ground floors used for sleeping.*

1. Basements and ground floors used for sleeping shall be provided with at least 2 exits.
2. The exits shall be located as far apart as practical.
3. The exits may not be accessed from the same ramp or stairway.

4. In addition to the exit type required under par. (a), the second exit from a basement or ground floor used for sleeping shall be one of the following types:

- a. A door to the exterior of the dwelling.
- b. A stairway or ramp that leads to the floor above.
- c. A stairway that leads to a garage provided the garage has an exit door other than the overhead door.
- d. An egress window that complies with sub. (6), located in each bedroom.

(6) WINDOWS USED FOR EXITING. Windows which are installed for exit purposes shall comply with the requirements of this subsection.

(a) The window shall be openable from the inside without the use of tools or the removal of a sash. If equipped with a storm or screen, it shall be openable from the inside.

(b) 1. The nominal size of the net clear window opening shall be at least 20 inches by 24 inches irrespective of height or width. Nominal dimensions shall be determined by rounding up fractions of inches if they are ½-inch or greater or rounding down fractions of inches if they are less than ½-inch.

2. No portion of the window, including stops, stools, meeting rails and operator arms, shall infringe on the required opening.

(c) The area and dimension requirements of par. (b) may be infringed on by a storm window.

(d) 1. For any window used for exiting, the lowest point of clear opening shall be no more than 60 inches above the floor.

2. If the lowest point of clear opening is more than 46 inches above the floor, a permanent platform or fixture shall be installed such that a flat surface at least 20 inches wide and 9 inches deep is located no more than 46 inches directly below the clear opening.

3. The topmost surface of the platform or fixture shall be no more than 24 inches above the floor.

4. The topmost surface of the platform or fixture shall support a live load of at least 200 pounds.

5. A Step used for the sole purpose of reaching the top of the platform or fixture is exempt from the requirements of s. [SPS 321.04](#).

(e) 1. An egress window with any point of clear opening below adjacent grade shall be provided with an areaway in accordance with this section.

2. The width of the areaway shall be at least equal to the width of the window.

3. The areaway shall be a minimum of 36 inches measured perpendicular from the outer surface of the below-grade wall.

4. If the bottom of the areaway is more than 46 inches below adjacent grade or the top of the areaway enclosure, the areaway shall be provided

with a ladder or at least one additional step to aid egress. Steps used to comply with this section are exempt from the requirements of s. [SPS 321.04](#).

**5. a.** Ladders or other steps used to comply with subd. [4](#), may infringe on the required area of the areaway by a maximum of 6 inches.

**b.** Ladder rungs shall have a minimum inside width of at least 12 inches and shall project at least 3 inches from the wall behind the ladder.

**c.** Ladder rungs shall be able to support a concentrated load of 200 pounds.

**d.** Ladder rungs shall have a maximum rise of 12 inches between rungs and shall extend to within 12 inches of exterior grade.

**6.** The areaway shall be constructed such that water entering the areaway does not enter the dwelling.

**(7) DOORS USED FOR EXITING.**

**(a)** Doors used for exiting from a dwelling shall meet the following dimensions:

**1.** At least one exit door shall be a swing-type door at least 80 inches high by 36 inches wide.

**2.** Except as allowed under subds. [3](#), and [4](#), other required exit doors shall be at least 76 inches high by 32 inches wide.

**3.** Where double doors are used as a required exit, each door leaf shall provide a clear opening at least 30 inches wide and be at least 76 inches high.

**4.** Where sliding doors are used as a required exit, the clear opening shall be at least 30 inches wide and be at least 76 inches high.

**(b)** All exit doors shall be openable from the interior without the use of a key.

**(8) BALCONIES.**

**(a)** Balconies shall be made of concrete, metal or wood which is treated, protected or naturally decay-resistant in accordance with s. [SPS 321.10](#).

**(b)** Balconies shall be provided with guardrails in accordance with s. [SPS 321.04 \(3\)](#).

**(c)** Balconies which are required for exit purposes shall also comply with all of the following requirements:

**1.** The balcony guardrail shall terminate no more than 46 inches above the floor level of the balcony.

**2.** The floor level of the balcony shall be no more than 15 feet above the grade below.

**3.** The floor of the balcony shall have minimum dimensions of 3 feet by 3 feet. The guardrail and its supports may infringe on the dimensions of the required area.

**(9) SPLIT LEVEL DWELLINGS.** In determining the exit requirement in a split level dwelling, all levels that are to be considered a single story shall be within 5 feet of each other.

## **SPS 321.04 Stairways and elevated areas.**

**(1) SCOPE.**

**(a) General.** Except as provided under par. [\(b\)](#), the following stairways shall conform to the requirements of this section.

**1.** Every interior and exterior stairway attached to, or supported by any part of the structure covered under this code.

**2.** Tub access steps, unless they are an integral part of an approved plumbing product.

**(b) Exceptions.** The following stairways are not required to comply with the requirements of this section:

**1.** Stairways leading to non-habitable attics or crawl spaces.

**2.** Non-required stairways connecting the basement directly to the exterior of the structure without communicating with any other part of the structure.

**(2) DETAILS.**

**(a) Width.**

**1.** Except for spiral staircases under subd. [2](#), stairways shall measure at least 36 inches in width. Handrails and associated trim may project a maximum of 4.5 inches into the required width at each side of the stairway.

**2.** Spiral staircases shall be at least 26 inches wide measured from the outer edge of the supporting column to the inner edge of the handrail.

**(b) Riser height.**

**1. a.** Except for spiral staircases under subd. [2](#), risers may not exceed 8 inches in height measured vertically from tread to tread.

**b.** At the top and bottom of a flight, measurement shall be taken from the top of the nosing to the finished floor surface unless the finished surface is carpeting, in which case measurement shall be made to the hard surface below the carpeting.

**2.** Risers in spiral staircases may not exceed 9.5 inches in height measured vertically from tread to tread.

**(c) Tread depth.**

**1.** 'Rectangular treads.' Rectangular treads shall have minimum tread depth of 9 inches measured horizontally from nosing to nosing.

**2.** 'Spiral staircase treads.' Spiral staircase treads shall have a minimum tread depth of 7 inches from nosing to nosing measured at a point 12 inches from the outer edge of the center column.

**3.** 'Winder treads in series.' Two or more winder treads may be placed immediately adjacent to each other anywhere in a stairway provided both of the following conditions are met:

**a.** The winder treads shall have a minimum tread depth of 7 inches measured at a point 12 inches from the narrow end of the tread.

**b.** The depth of the immediately adjoining winder treads shall be equal at a point 12 inches from the narrow end of the tread or inside face of spindles or balusters.

**c.** Winder treads may not be used on a straight stairway.

**4.** 'Individual winder treads.'

**a.** An individual winder tread may be placed between rectangular treads or at the end of a flight of rectangular treads provided the tread depth, measured at a point 12 inches from the narrow end, is equal to the tread depth of the rectangular steps in the flight.

**b.** There may be more than one individual winder tread in a stairway or in a flight of stairs.

**c.** Winder treads may not be used on a straight stairway.

**(d) Headroom.**

**1.** Stairways shall be provided with a minimum headroom clearance of 76 inches measured vertically from a line parallel to the nosing of the treads to the

ceiling, soffit or any overhead obstruction directly above that line.

2. The headroom clearance shall be maintained over an intermediate landing.

3. The headroom clearance shall be maintained over a landing that is at the top or bottom of a stairway for a minimum distance of 36 inches in the direction of travel of the stairway.

**(e) Uniformity.**

1. Within a stairway flight, the greatest tread depth may not exceed the smallest tread depth by more than 3/8 inch and the greatest riser height may not exceed the smallest riser height by more than 3/8 inch.

2. The allowed variation in uniformity under subd. 1. may not be used to exceed the maximum riser height under par. (b) or to decrease the minimum tread depth under par. (c).

**(f) Open risers.** Stairways with open risers shall be constructed to prevent the through-passage of a sphere with a diameter of 4 inches or larger between any 2 adjacent treads.

**(g) Walking surface.** The walking surface of stair treads and landings shall be a planar surface that is free of lips or protrusions that could present a tripping hazard.

**(3) HANDRAILS AND GUARDRAILS.**

**(a) General.**

1. Stair flights with more than 3 risers shall be provided with at least one handrail for the full length of the stair flight.

2. Handrails or guardrails shall be provided on all open sides of stair flights consisting of more than 3 risers and on all open sides of areas that are elevated more than 24 inches above the floor or exterior grade.

**Note:** A handrail provided at 30 to 38 inches above the tread nosing meets the height requirement for a guardrail on a stairway.

3. a. Except as provided in subd. 3. b., handrails and guardrails shall be constructed to prevent the through-passage of a sphere with a diameter of 4 inches or larger.

b. The triangular area formed by the tread, riser and bottom rail shall have an opening size that prevents the through-passage of a sphere with a diameter of 6 inches or larger.

c. Rope, cable or similar materials used in handrail or guardrail infill shall be strung with maximum openings of 3½ inches with vertical supports a maximum of 4 feet apart.

**Note:** In some cases, the vertical supports could be simple cable stays that offer vertical support to the rope or cable span. Structural posts must be supplied to provide the rail with the minimum 200 pound load resistance, as well as to resist the tensile loads exerted by the tightened rope or cable.

4. a. Handrails and guardrails shall be designed and constructed to withstand a 200 pound load applied in any direction.

b. Handrail or guardrail infill components, balusters and panel fillers shall withstand a horizontally applied perpendicular load of 50 pounds on any one-foot-square area.

c. Glazing used in handrail or guardrail assemblies shall be safety glazing.

5. Exterior handrails and guardrails shall be constructed of metal, decay resistant or pressure-treated wood, or shall be protected from the weather.

**(b) Handrails.**

1. 'Height.' Handrails shall be located at least 30 inches, but no more than 38 inches above the nosing of the treads. Measurement shall be taken from the hard structural surface beneath any finish material to the top of the rail. Variations in uniformity are allowed only when a rail contacts a wall or newel post or where a turnout or volute is provided at the bottom step.

2. 'Clearance.' The clearance between a handrail and the wall surface shall be at least 1½ inches.

3. 'Winders.'

a. Except as provided under subd. 3. b., the required handrail on winder steps shall be placed on the side where the treads are wider.

b. Where all winder steps in a flight have a tread depth of at least 9 inches from nosing to nosing measured at a point 12 inches from the narrow end of the tread, the required handrail may be located on either side of the stairway.

4. 'Projection.' Handrails and associated trim may project into the required width of stairs and landings a maximum of 4½ inches on each side.

5. 'Size and configuration.' Handrails shall be symmetrical about the vertical centerline to allow for equal wraparound of the thumb and fingers.

a. Handrails with a round or truncated round cross sectional gripping surface shall have a maximum whole diameter of 2 inches.

b. Handrails with a rectangular cross sectional gripping surface shall have a maximum perimeter of 6¼ inches with a maximum cross sectional dimension of 27/8 inches.

c. Handrails with other cross sections shall have a maximum cross sectional dimension of the gripping surface of 27/8 inches with a maximum linear gripping surface measurement of 6¼ inches and a minimum linear gripping surface of 4 inches.

**Note:** See appendix for further information on handrail measurement.

6. 'Continuity.' Handrails shall be continuous for the entire length of the stairs except in any one of the following cases:

a. A handrail may be discontinuous at an intermediate landing.

b. A handrail may have newel posts.

c. A handrail may terminate at an intermediate wall provided the lower end of the upper rail is returned to the wall or provided with a flared end, the horizontal offset between the 2 rails is no more than 12 inches measured from the center of the rails, and both the upper and lower rails can be reached from the same tread without taking a step.

**(c) Guardrails.**

1. 'Application.'

a. All openings between floors, and open sides of landings, platforms, balconies or porches that are more than 24 inches above grade or a floor shall be protected with guardrails.

b. The requirements under subd. 1. a. apply where insect screens are the only means of enclosure or protection for a surface that is more than 24 inches above grade or a floor.

c. For exterior applications, the 24 inch vertical measurement shall be taken from the lowest point within 3 feet horizontally from the edge of the deck, landing, porch or similar structure.

2. 'Height.' Guardrails shall be located at least 36 inches above the floor. Measurement shall be taken from the hard structural surface beneath any finish material to the top of the rail.

3. 'Opening size.' Guardrails shall be constructed to prevent the through-passage of a sphere with a diameter of 4 inches or larger.

**(4) LANDINGS.**

**(a) Intermediate landings.**

1. A level intermediate landing shall be provided in any stairway with a height of 12 feet or more.

2. Intermediate landings that connect 2 or more straight flights of stairs, or 2 flights of stairs at a right angle, shall be at least as wide as the stairway and shall measure at least 36 inches in the direction of travel.

3. Curved or irregular landing shall have a radius of at least 36 inches.

4. Curved or irregular landings shall have a minimum straight line measurement of 26 inches between the nosing of the 2 connecting treads measured at a point 18 inches from the narrow end of the landing measured along the nosing of the 2 treads.

**(b) Landings at the top and base of stairs.** A level landing shall be provided at the top and base of every stairs. The landing shall be at least as wide as the stairs and shall measure at least 3 feet in the direction of travel.

**(c) Doors at landings.**

1. Except as provided in subd. [1. a.](#) to [c.](#), level landings shall be provided on each side of any door located at the top or base of a stairs, regardless of the direction of swing. In the following exceptions, stairways to attached garages, carports or porches are considered interior stairs:

a. A landing is not required between the door and the top of interior stairs if the door does not swing over the stairs.

b. A landing is not required between the door and the top of an interior stairs of 1 or 2 risers regardless of the direction of swing.

c. A landing is not required between a sliding glass door and the top of an exterior stairway of 3 or fewer risers.

2. The exterior landing, platform or sidewalk at an exterior doorway shall be located a maximum of 8 inches below the interior floor elevation and shall have a length of at least 36 inches in the direction of travel out of the dwelling.

**SPS 321.05 Natural light and natural ventilation.**

**(1) NATURAL LIGHT.** All habitable rooms shall be provided with natural light by means of glazed openings. The area of the glazed openings shall be at least 8% of the net floor area, except under the following circumstances:

**(a) Exception.** Habitable rooms, other than bedrooms, located in basements or ground floors do not require natural light.

**(b) Exception.** Natural light may be obtained from adjoining areas through glazed openings, louvers or

other approved methods. Door openings into adjoining areas may not be used to satisfy this requirement.

**(2) VENTILATION.**

**(a) Natural ventilation.** Natural ventilation shall be provided to all habitable rooms by means of openable doors, skylights or windows. The net area of the openable doors, skylights or windows shall be at least 3.5% of the net floor area of the room. Balanced mechanical ventilation may be provided in lieu of openable exterior doors, skylights or windows provided the system is capable of providing at least one air change per hour of fresh outside air while the room is occupied. Infiltration may not be considered as make-up air for balancing purposes.

**(b) Exhaust ventilation.** All exhaust ventilation shall terminate outside the building.

**SPS 321.06 Ceiling height.** All habitable rooms, kitchens, hallways, bathrooms and corridors shall have a ceiling height of at least 7 feet. Habitable rooms may have ceiling heights of less than 7 feet provided at least 50% of the room's floor area has a ceiling height of at least 7 feet. Beams and girders or other projections shall not project more than 8 inches below the required ceiling height.

**SPS 321.09 Smoke detectors.**

**(1)** A listed and labeled multiple-station smoke alarm with battery backup shall be installed in all of the following locations:

**(a)** An alarm shall be installed inside each sleeping room.

**(b)** On floor levels that contain one or more sleeping areas, an alarm shall be installed outside of the sleeping rooms, within 21 feet of the centerline of the door opening to any sleeping room and in an exit path from any sleeping room.

**(c)** On floor levels that do not contain a sleeping area, an alarm shall be installed in a common area on each floor level.

**(2) (a)** Except for dwellings with no electrical service, smoke detectors required by this section shall be continuously powered by the house electrical service, and shall be interconnected so that activation of one detector will cause activation of all detectors.

**(b)** Dwellings with no electrical service shall be provided with battery-powered smoke detectors in the locations under sub. [\(1\)](#). Interconnection and battery-backup are not required in these dwellings.

**(3)** For family living units with one or more communicating split levels or open adjacent levels with less than 5 feet of separation between levels, one smoke detector on the upper level shall suffice for an adjacent lower level, including basements. Where there is an intervening door between one level and the adjacent lower level, smoke detectors shall be installed on each level.

**(4)** Smoke alarms and detectors shall be maintained in accordance with the manufacturer's specifications.

**(5)** For envelope dwellings, at least 3 smoke alarms shall be placed in the air passageways. The alarms shall be placed as far apart as possible.

**(6)** In basements where two required exits are separated by a continuous wall, a smoke detector



shall be placed on each side of the wall within 21 feet of each exit.

### **SPS 321.11 Foam plastic.**

(1) (a) *General.* Foam plastic insulation shall have a flame-spread rating of 75 or less and a smoke-developed rating of 450 or less when tested in accordance with ASTM E-84.

(b) *Thermal barrier.* Except as provided in par. (c), foam plastic insulation shall be separated from the interior of the dwelling by one of the following thermal barriers:

1. ½ -inch gypsum wallboard.
2. ½ -inch nominal wood structural panel.
3. ¾ -inch sawn lumber with tongue-and-groove or lap joints.
4. 1-inch of masonry or concrete.
5. A product or material shown by an independent laboratory to limit the temperature rise on the unexposed surface to 250°F for 15 minutes when tested in accordance with ASTM E-119.

6. For doors only, sheet metal with a minimum thickness of 26 standard steel gauge or aluminum with a minimum thickness of 0.032 inch.

(c) *Exemptions from thermal barrier requirement.* The following applications of foam plastic do not require a thermal barrier:

1. On overhead garage doors.
2. In the box sill of the basement or ground floor, above the bottom of the floor joists.

(2) Insulation that does not meet the requirements of this section may be approved by the department in accordance with s. [SPS 320.18](#). Approval will be based on tests that evaluate materials or products representative of actual end-use applications.

### **SPS 323.02 Heating and Cooling Design.**

Every dwelling shall be equipped with a heating system designed in accordance with this section. Heating equipment requirements may be waived for recreational dwellings used only during the non-heating season. Where a cooling system is provided, the cooling requirements of this section shall be met.

**SPS 324.01 Electrical standards.** All electrical wiring, installations, equipment and materials used in the construction of dwellings shall comply with the requirements of the Wisconsin Administrative Electrical Code, Vol. 2., ch. [SPS 316](#).

### **Sec. 4-66. (Municipal Ordinance) Required; exception.**

(a) No person shall excavate for a building; construct, enlarge, alter, remove or demolish or change the occupancy of a building from one use to another requiring greater strength, exit or sanitary provisions or change to a prohibited use; or install or alter any wiring equipment or electrical, plumbing, heating and ventilating facilities for which provision is made or the installation of which is regulated by this chapter without first filing an application with the Inspection Supervisor on the form provided in writing and obtaining the required permit therefore, except that ordinary repairs which do not involve any

violation of this chapter shall be exempt from this provision.

### **Sec. 4-67. Application generally.**

(a) *Submission.* Application for a permit under this division shall be made by the owner or lessee of the building or structure or agent of either or by the licensed engineer or architect employed in connection with the proposed work. The full names and addresses of the owner, lessee, applicant and of the responsible officers, if the owner or lessee is a corporate body, shall be stated in the application.

(b) *Description of work.* The application shall contain a general description of the proposed work, its location, the use and occupancy of all parts of the building or structure and of all portions of the site or lot not covered by the building, and such additional information as may be required by the Inspection Supervisor.

(c) *Plans and specifications.* The application for the permit shall be accompanied by not less than three (3) copies of specifications, if any, and of plans drawn to scale on paper not less than twelve (12) inches by eighteen (18) inches in size with sufficient clarity and detailed dimensions to show the nature and character of the work to be performed. Plans shall include floor plans and a front elevation. In addition, the Fire Department shall be sent two (2) copies of plans for any building subject to the Wisconsin Administrative Code, SPS chapters 350 through 364, 366 and 369.

(d) *Plot diagram.* There shall also be filed a plot plan showing to scale the size and location of all the new construction and all existing structures on the site and distances from lot lines and the established street grades. The plot plan shall be drawn in accordance with an accurate boundary line survey. In the case of demolition, the plot plan shall show all construction to be demolished and the location and size of all existing buildings and construction that are to remain on the site or plot.

### **SPS 321.097 Carbon Monoxide Alarms**

Carbon monoxide alarms are required for all residential properties built after June 1, 1980. Properties built after February 1, 2011 must have hard wired alarms.

**Location.** On floor levels that contain one or more sleeping areas, a carbon monoxide alarm shall be installed outside of the sleeping area, within 21 feet of the centerline of the door opening to any sleeping area and in an exit path from any sleeping area. On floor levels that do not contain a sleeping area, a carbon monoxide alarm shall be installed in a common area on each floor level.

CONTACT THE INSPECTION DIVISION AT 832-6411 FOR INFORMATION ABOUT REQUIRED INSPECTIONS OF BUILDING, HEATING AND VENTILATING, ELECTRICAL, ETC.