



Building Division

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Single Family Residential Basement Finish

Please note: This guide is intended for use as a reference along with the 2009 International Residential Code. It may be used for basic plan submittal however, additional information may be required as it pertains to individual projects.

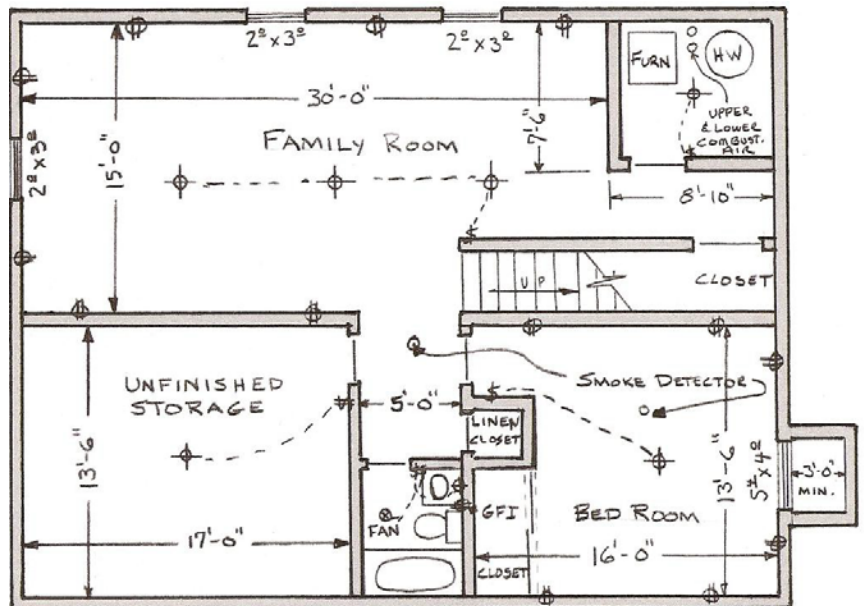
To Use this Guide

1. Review required specifications.
2. Submit 2 (two) complete sets of required information: Draw a floor-plan with dimensions drawn to scale, showing the layout of the entire basement. Label the use for ALL of the rooms and areas.

Show electrical outlets, switches, smoke alarm/detectors, lighting, fans, plumbing fixtures, cleanouts, furnace and water heaters, etc.

List door and window sizes, types, identify emergency escape and rescue windows, and egress window wells with ladder and clear dimensions of window well (if applicable).

Identify modifications to the existing structure such as posts, beams and floor joists.



Indicate height of dropped ceiling areas less than 7 feet.

3. Fill out a building permit application.

The majority of permit applications are processed within 3-5 working days. The submitted documents will help determine if the project is in compliance with building safety codes, zoning ordinances and other applicable laws.

INCOMPLETE PLANS AND/OR APPLICATIONS WILL NOT BE ACCEPTED

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Basement Finish Code Requirements:

- 1. Ceiling Heights:** Minimum ceiling height shall be not less than 7'-0" for habitable spaces in basements. Portions of basements that do not contain habitable spaces (hallways, bathrooms, toilet rooms and laundry rooms) shall have a ceiling height of not less than 6'-8". *Exception: Beams, girders, ducts or other obstructions may project to within 6'-4" of the finished floor.*
- 2. Minimum Room Areas:** Habitable rooms shall have a floor area of not less than 70 square feet and shall not be less than 7'-0" in any horizontal dimension. Hallways shall not be less than 3'-0" wide.
- 3. Bedroom Definition:** A room suitable for sleeping segregated by walls and a door from the main body of the basement and incorporates a closet into the room.
- 4. Bathroom Ventilation:** Bathrooms shall be equipped with a mechanical ventilation system vented directly to the outside. Mechanical ventilation is not required when a window is provided with a minimum 4% of floor area.

Note: Mechanical ventilation shall have a minimum exhaust capacity of 50 CFM intermittent or 20 CFM continuous. *Exhaust air shall not discharge into an attic, crawl space or other areas inside the building.*

- 5. Dual Sensor Smoke Alarms:** Shall conform to UL 217.

Basement: Dual sensor smoke alarms shall be installed in the basement and in each basement bedroom. New smoke alarms shall be hardwired (120V) with a battery backup and interconnected so that when one is activated, all will sound.

In the remainder of the house: If dual sensor smoke alarms are not located on each floor, in each bedroom and in the vicinity of bedrooms, then one shall be installed in such locations. Alarms need not be interconnected and may be battery powered only where access to wiring is limited.

- 6. Insulation:** Minimum R-13 insulation or equivalent shall be used in all frame walls adjacent to basement exterior walls. *Plastic vapor barrier is not permitted to be installed on walls below grade.* Foam board used as an insulating material shall be applied directly to the concrete wall and covered by ½ inch gypsum board.

- 7. Fuel Burning Appliances/Clearance Requirements:**

Furnaces and water heaters are not permitted to be located in a bedroom or bathroom unless the appliances are installed in a dedicated enclosure, in which all combustion air is taken directly from outdoors, and a weather stripped solid door equipped with an approved self closing device is installed.

Where the volume of the space in which fuel-burning appliances are located is less than 50 cubic feet per 1,000 Btu, such as in an enclosed closet or room, other means shall be provided to bring combustion air into the space.

Clearance to combustibles shall be maintained around furnaces and water heaters. Clearances can be found in the manufacturer's installation guide for the make and model of the furnace/water heater provided.

Maintenance or removal of each appliance shall be possible without removing or disturbing walls, piping, valves, wiring and junction boxes.

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8. **Emergency Egress:** All basements and sleeping rooms shall have an emergency egress window or exterior door.

Emergency Egress Options:

Escape window opening directly to the outside (walk-out basement condition).

Escape window opening into a window well or areaway.

Door opening directly to outside (walk-out basement condition).

Emergency Egress Door/Window Requirements:

All doors and windows utilized as emergency egress shall be operable from the inside without the need of a key, tool or special knowledge.

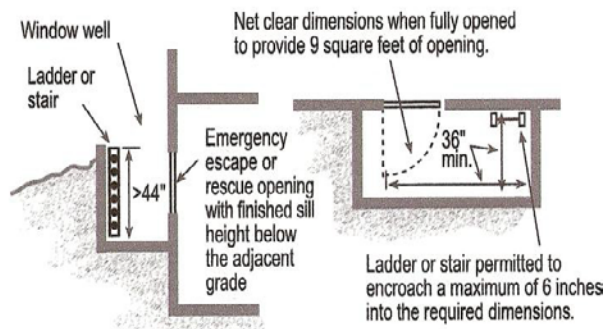
The opening used for emergency egress shall be a minimum of 5.7 square feet. *Windows in a basement wall may have a clear opening of 5 square feet.*

Windows must have a sill 44 inches or less above the finished floor.

Window Well Requirements: When grade conditions require the sill of the egress window to be below the outside grade elevation, then a window well must be installed. The required horizontal area of a window well is a minimum of 9 square feet (3'-0" x 3'-0") which is measured when the window is in the open position (this is important when using is a crank-out/casement type window).

Ladder Requirements: When a window well is greater than 44 inches deep, permanently attached ladders or steps must be provided. Ladders must be a minimum of 12 inches wide and rungs must be spaced a maximum of 18 inches on center. Ladders must be a minimum of 3 inches away from the wall or well and may project into the required window well area no more than 6 inches. If the ladder projects more than 6 inches into the required area, the size of the window well must be increased to maintain the required area.

Emergency Escape And Rescue window wells must provide a minimum area of 9 square feet with a minimum dimension of 36 inches and shall enable the window to open fully. If the depth of the window well exceeds 44 inches, a permanently affixed ladder must be provided. The ladder must not interfere with the operation of the window.



9. **Framing:** Studs may be utility grade or better and shall be spaced at 16" or 24" on center. Walls shall have a single pressure treated bottom plate and can have a single or double top plate.

Wall construction shall be fastened in accordance with the TABLE below:

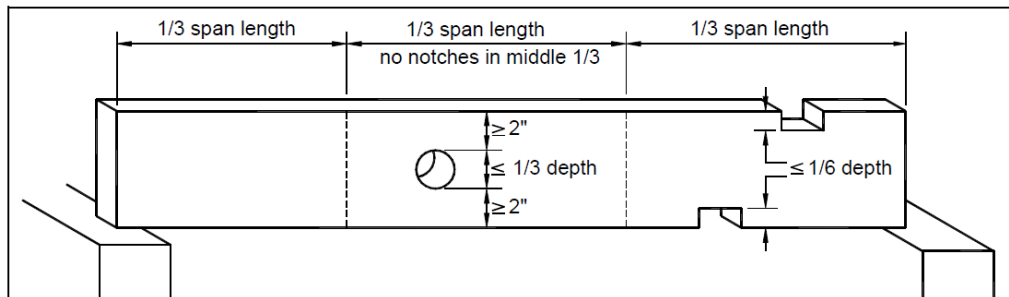
Connection	Nailing method
Top plate to stud	end nail, 2-16d @ 24"o.c.
Stud to bottom plate	toe nail, 2-16d
Bottom plate to floor	face nail, 6d (concrete nail) @ 16"o.c.

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9. Framing (cont.):

Drilling and Notching Studs: Studs in non-load bearing walls may be notched up to 40 percent of the stud width. Studs may be drilled up to a diameter equal to 60 percent of the stud width provided the edge of the hole is no closer than 5/8 inches to the edge of the stud and the hole is not located in the same section as a cut or notch.

Drilling and Notching Joists: Notches in the top or bottom of joists shall not exceed one-sixth the of the joists' depth and is not permitted in the middle third of the span. Cantilevered (overhanging) joists shall not be notched. Holes drilled in joists shall not be within 2 inches of the top or bottom of joists and their diameter shall not exceed one-third the depth of the joist. (See FIGURE below). *Drilling and notching of manufactured wood I-joists shall be per the manufacturers' instructions.*



Drilling and Notching Joists

10. Fire-Blocking: Fire-blocking shall be provided to cut off all concealed draft openings (both vertical and horizontal) and to form an effective fire barrier between stories. Fire-blocking shall be provided in concealed spaces of wood-furred walls at the ceiling level, at 10 foot intervals along the length of the wall and at all interconnections of concealed vertical and horizontal spaces, such as intersection of stud walls and soffits or dropped ceilings, at gaps 1 inch or less and at openings around vents, pipes and ducts at the ceiling and floor level.

Fire Blocking Material: Fire blocking shall consist of one of the materials listed below. The integrity of all fire blocking must be maintained.

1/2-inch gypsum board.

Two inch nominal lumber (2x4, 2x6, etc.).

Two thicknesses of 1-inch nominal lumber (1x4, 1x6, etc.) with staggered joints.

One thickness of 23/32-inch of wood structural panels with joints backed by 23/32-inch wood structural panels.

One thickness of 3/4-inch particleboard with joints backed by 3/4-inch particleboard.

1/4-inch cement based millboard.

Batts or blankets of mineral wool or fiberglass or other *approved* materials installed in such a manner as to be securely retained in place.

Spaces Under Stairs: Enclosed accessible space under stairs shall have walls and ceilings protected with 1/2 - inch drywall on the enclosed side.

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11. Bathroom Fixture Clearances: Shall comply with the minimum clearances listed below.

24 inches in front of sinks and toilets.

24 inches in front of shower stall opening.

4 inches between two adjacent sinks.

4 inches between a sink and a toilet.

4 inches between a sink and a wall.

2 inches between a sink and a bathtub.

15 inches clearance from a toilet's centerline to an adjacent fixture or wall on each side.

Showers: shall have a minimum inside dimension of 900 square inches, capable of encompassing a 30 inch circle and be finished 72 inches above the floor with non-absorbent materials.

Hinged shower doors must open outward.

All glass which encloses a shower must be safety glazed.

Shower control valves must be scald resistant (in accordance with ASSE/ANSI 1016) with a hot water limit of 120 degree F.

12. Heating: All heating apparatus shall be capable of maintaining a minimum room temperature of 68°F at a point 3 feet above the floor and 2 feet from exterior walls in all habitable rooms at the design temperature. The installation of one or more portable space heaters shall not be used to achieve compliance.

13. Electrical: This document contains limited information regarding circuit installation and wiring. When in doubt installations should be performed by professionals. All electrical work shall comply with the 2008 National Electrical Code.

Clearances and Access to Electrical Panels: Electric panels are not permitted within closets or bathrooms. A workspace 30 inches wide and 36 inches deep from floor to the ceiling with a minimum height of 6.5 feet shall be provided in front of the panel. The panel shall remain accessible so that the cover can be removed and accessed for future wiring needs or repair and maintenance.

Branch Circuits: Branch circuits shall meet the requirements listed below.

Use a 15- to 20-ampere rated branch circuit for general use purposes such as lighting and outlets.

One "plugged-in" electrical device shall not exceed 80 percent of the circuit rating.

Hardwired appliances or equipment may be included in a general use circuit provided its rating does not exceed 50 percent of the circuit rating.

A dedicated 20-ampere minimum branch circuit must be provided to serve laundry room outlets only.

A dedicated 20-ampere branch circuit must be provided to serve a single bathroom.

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13. Electrical (cont.):

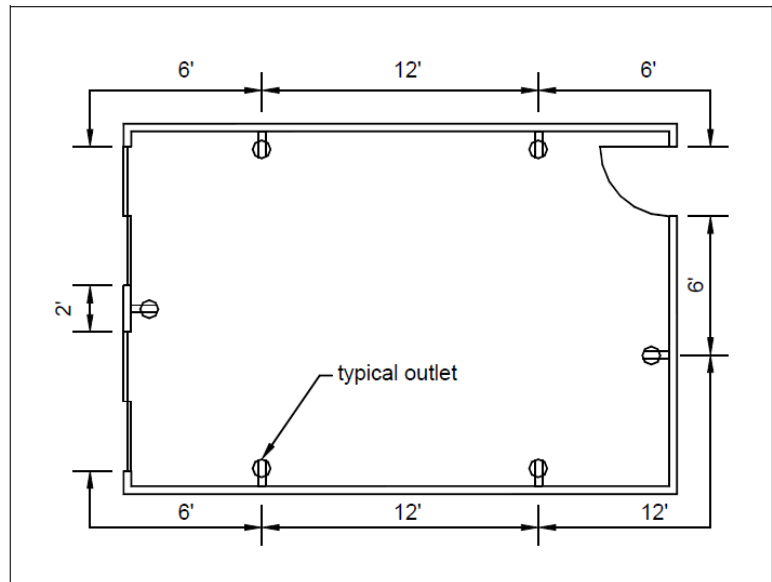
Outlets: Outlets shall meet the requirements listed below.

Outlets shall be placed so that no location along the floor/wall line is more than 6 feet from an outlet (See TYPICAL OUTLET DISTRIBUTION).

The minimum wall length which requires an outlet is 2 feet.

Knee-walls, built-in bars and other fixed room dividers shall be included in wall length for outlet spacing.

Hallways more than 10 feet long shall have a minimum of one outlet.



TYPICAL OUTLET DISTRIBUTION

Outlets installed for specific appliances shall be within 6 feet of the appliance location.

Bathrooms shall have at least one outlet located on a wall adjacent and within 36 inches of the bathroom sink. All bathroom outlets shall have ground fault circuit interrupter (GFCI) protection.

At least one outlet shall be provided to serve laundry appliances.

Each unfinished portion of the basement is required to have at least one outlet.

An outlet shall be provided within 25 feet of heating and air conditioning appliances and equipment.

All outlets shall be 125-volt, single phase, 15- or 20-ampere.

Lighting Requirements: Lights shall meet the requirements listed below.

At least one switch controlled light shall be provided in each room and hallway. A switch controlled outlet may be substituted in all rooms except bathrooms and hallways.

At least one switch controlled or pull chain light shall be provided in each storage area and at or near heating and air conditioning appliances and equipment.

Lighting fixtures shall not be installed within 3 feet horizontally and 8 feet vertically of a bathtub rim or shower stall threshold. A light fixture may be installed above a shower area if it is constructed so that water cannot enter or accumulate in wiring areas and the lighting fixture is marked "suitable for wet locations."

Light fixtures shall be installed so that combustible materials are not subject to temperatures greater than 90 degree F.