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Guideline For Basement Remodeling

Purpose: Existing unfinished basement space is often remodeled to create more habitable (living, sleeping, eating, dining) space in a home. Building codes establish the minimum health and safety requirements for habitable space. The applicable code requirements for basement remodeling work are summarized in this guideline and must be indicated on the plans submitted for the building permit and included in the work. Please refer to the full text of the code sections (in parentheses) to ensure that the proposed design is complete and accurate. In addition, you may contact the Community Development Department for questions and staff assistance.

1. Exit Stair:

In most cases, an existing interior stairway provides access to and from the basement space. If this stair met the code requirements when it was first constructed and has been maintained in a safe condition, it does not need to comply with current stairway construction requirements. However, if the existing stair is altered, it must completely conform to all applicable current code requirements. The existing stair must be provided with a handrail on at least one side, a guardrail if applicable, and must be lighted and switched at the top and bottom landing. Any enclosed but accessible space beneath the stair must be finished with ½" gypsum board on all surfaces (2009 IRC, R311.4).

2. Emergency Exit:

In addition to an exit stair, another exit must be provided from the basement level. This is generally provided through an emergency escape opening (window and well) or an exterior door from the basement to an outside stair up to the grade. If a room in the basement is to be used as a bedroom, then an emergency exit must be provided in each and every bedroom (2009 IRC, R310).

3. Emergency Escape and Rescue Opening (window and well):

An emergency escape and rescue opening is required from all habitable levels including the basement. If bedrooms are created, an emergency escape and rescue opening is required in each bedroom. When an unfinished basement is finished and habitable space is created, the current requirements for emergency escape and rescue openings must be met.

The emergency escape window opening must meet certain size, operation and sill height requirements which are provided on the last two pages of this guideline. New fenestration (windows) must meet the current energy requirements (2018 IECC, R402). The maximum U-factor for fenestration (windows and glazed doors) is 0.30.

The window well also must meet size and clearance requirements and include an escape ladder if it is more than 44 inches deep (2009 IRC, R310.1). Window and door wells that extend more than 30" below the adjacent grade shall be provided with bars, grilles, covers, screens or similar devices that are designed and listed to resist human impact unless other guards that comply with section R312 are provided. Window well guards enclosing emergency escape and rescue openings shall meet the minimum opening area requirement and be operable from the inside of the well without the use of keys, tools, or special knowledge or effort. (Village Code, 4-1-8(B)30).

4. Room Dimensions:

The minimum habitable room size is 70 square feet with a minimum room width of 7 feet (2009 IRC, R304). Bathrooms, closets, hallways, storage and utility spaces are not considered habitable spaces. The minimum room ceiling height is 7 feet except under structural or mechanical obstructions where it may be reduced to 6 feet 4 inches. The ceiling height above bathroom fixtures must be a minimum of 6 feet 8 inches (2009 IRC, R304).

5. Perimeter Wall Construction:

Typical 2x4 wall framing is generally provided around the perimeter foundation wall to accommodate electrical outlets and insulation with a R13 minimum rating (2018 IECC, Table R402.1.2 with Illinois amendments). The wall sole plate must be preservative treated wood (2009 IRC, R317). A 1-inch air space must be provided between the face of the foundation wall and the back of the studs or the studs must be preservative treated (2009 IRC, R317). When this air space is provided, the opening at the top of the stud wall must be filled or covered (fire stopped). A vapor barrier must be provided to control moisture penetration from the interior, and if water enters through the basement wall, a means for stopping or controlling water entry is required.

6. Interior Finishes:

Generally, ½ inch thick gypsum board is installed over wood stud walls, and is required over insulation that exceeds a 25 flame spread rating or 450 smoke density rating. Other materials may be used or installed over the gypsum board and as a ceiling finish provided, they do not exceed a 200 flame spread index (R302.9.1) or 450 smoke-developed index (2009 IRC, R302.9.2).

7. Natural and Artificial Light:

Each habitable room must be provided with natural light through glass window or door areas that total at least 8% of the floor area of the room. As an alternative, the code permits artificial light at an average minimum of 6-foot candles measured 30 inches above the floor. Normal room lighting generally meets this requirement (2009 IRC, R303).

8. Natural and Mechanical Ventilation:

Each habitable room must be provided with natural ventilation through open screened window or door areas that total at least 4% of the floor area of the room. As an alternative, the code permits mechanical ventilation to be provided that is capable of producing .35 outside air changes per hour in the room. This is approximately equivalent to 1 CFM (cubic feet per minute) of outside supply and exhaust air for every 20 square feet of room floor area. Most major manufacturers of ventilation equipment offer balanced supply and exhaust fan units for this purpose. Another code permitted alternative is to provide outside air directly into the return air plenum of a forced air HVAC unit in the required amount of 15 CFM per bedroom plus 15 CFM. Mechanical ventilation equipment manufacturer's specifications must be provided (AJ501.6) (2009 IRC, R303).

9. Combustion Air:

Furnaces, boilers, water heaters or other natural vented fuel burning equipment must be provided with adequate outside combustion air. In older homes, this combustion air may be supplied by infiltration through slight openings around doors and windows. Since this equipment is often enclosed in a small utility room or closet, a full louvered door or two wall openings, one within 12" of the ceiling and one within 12" of the floor, must be provided to transmit this air to the equipment. The size of each opening must equal 1 square inch for each 1,000 BTU/hr input rating of all equipment in the room, but not less than 100 square inches. In newer homes of tight construction one duct opening from the outdoors must be provided that is sized at one square inch for each 3,000 BTU/hr input rating of all equipment in the room, but not less than the total area of all equipment vents in the room (2009 IRC, G2407).

10. Electrical Work:

All electrical work must comply with the current applicable codes and be provided as required for any other habitable space in the home. This includes receptacle spacing, room light switching, and GFCI and AFCI receptacle protection. (2011 NEC, Section 210)

11. Mechanical Work:

All mechanical work must comply with the current applicable codes and be provided as required for any other habitable space in the home. This includes venting a clothes dryer and bathroom exhaust fan directly to the exterior, and provisions for heating the space to the minimum requirements (2009 IRC, R303).

12. Plumbing Work:

All plumbing work must comply with the current applicable codes and be provided as required for any other habitable space in the home (Illinois Plumbing Code). If new plumbing fixtures are added, a Plumbing Fixture Count Worksheet must be completed and submitted to the Community Development Department. Additional plumbing fixtures may result in a need to increase the home's incoming water supply pipe and/or meter size.

13. Fire Protection Work:

If the home is provided with automatic sprinklers, additional or relocated sprinkler heads are usually required to accommodate the new room layout. Fire sprinkler revisions prepared by a qualified fire sprinkler designer are required to be reviewed and approved prior to issuance of permit. A smoke detector/alarm must be installed in each sleeping room, in the immediate vicinity (within 15') of sleeping rooms and on every floor including the basement (2009 IRC R314 and 425 ILCS60 Smoke Detector Act). Smoke alarms shall receive their primary power from the building wiring (where accessible) with battery back-up. Smoke alarms shall be interconnected in such a manner that the actuation of one alarm will activate all the alarms in the residence. Such interconnection is permitted to be wireless.

14. Carbon monoxide detector:

A carbon monoxide detector/alarm is required within 15 feet of every bedroom (2009 IRC, Section 315).

The above items represent most typical code requirements for basement remodeling projects. Other code requirements may apply depending on the nature and extent of the work. Complete and accurate information on the submitted plan, indicating compliance with these code requirements, is necessary for permit plan approval.

SECTION R310 – EMERGENCY ESCAPE AND RESCUE OPENINGS

R310.1 Emergency Escape and Rescue Required.

Basements, habitable attics and every sleeping room shall have at least one operable emergency escape and rescue opening. Where basements contain one or more sleeping rooms, emergency egress and rescue openings shall be required in each sleeping room. Where emergency escape and rescue openings are provided they shall have a sill height of not more than 44 inches (1118 mm) above the floor. Where a door opening having a threshold below the adjacent ground elevation serves as an emergency escape and rescue opening and is provided with a bulkhead enclosure, the bulkhead enclosure shall comply with Section R310.3. The net clear opening dimensions required by this section shall be obtained by the normal operation of the emergency escape and rescue opening from the inside. Emergency escape and rescue openings with a finished sill height below the adjacent ground elevation shall be provided with a window well in accordance with Section R310.2. Emergency escape and rescue openings shall open directly into a public way, or to a yard or court that opens to a public way.

Exception: Basements used only to house mechanical equipment and not exceeding total floor area of 200 square feet (18.58 m²).

R310.1.1 Minimum Opening Area.

All emergency escape and rescue openings shall have a minimum net clear opening of 5.7 square feet (0.530 m²). Exception: Grade floor openings shall have a minimum net clear opening of 5 square feet (0.465 m²).

R310.1.2 Minimum Opening Height.

The minimum net clear opening height shall be 24 inches (610 mm). R310.1.3 Minimum opening width. The minimum net clear opening width shall be 20 inches (508 mm).

R310.1.4 Operational Constraints.

Emergency escape and rescue openings shall be operational from the inside of the room without the use of keys, tools or special knowledge.

R310.2 Window Wells.

The minimum horizontal area of the window well shall be 9 square feet (0.9 m²), with a minimum horizontal projection and width of 36 inches (914 mm). The area of the window well shall allow the emergency escape and rescue opening to be fully opened.

Exception: The ladder or steps required by Section R310.2.1 shall be permitted to encroach a maximum of 6 inches (152 mm) into the required dimensions of the window well.

R310.2.1 Ladder and Steps.

Window wells with a vertical depth greater than 44 inches (1118 mm) shall be equipped with a permanently affixed ladder or steps usable with the window in the fully open position. Ladders or steps required by this section shall not be required to comply with Sections R311.7 and R311.8. Ladders or rungs shall have an inside width of at least 12 inches (305 mm), shall project at least 3 inches (76 mm) from the wall and shall be spaced not more than 18 inches (457 mm) on center vertically for the full height of the window well.

R310.3 Bulkhead Enclosures.

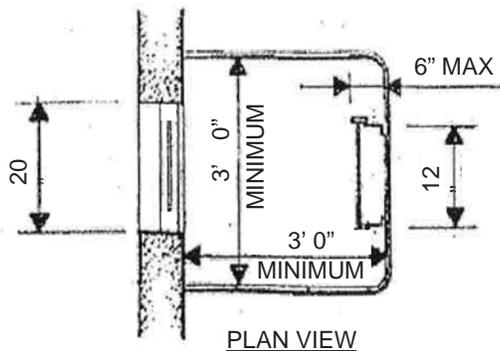
Bulkhead enclosures shall provide direct access to the basement. The bulkhead enclosure with the door panels in the fully open position shall provide the minimum net clear opening required by Section R310.1.1. Bulkhead enclosures shall also comply with Section R311.7.8.2.

R310.4 Bars, Grilles, Covers and Screens.

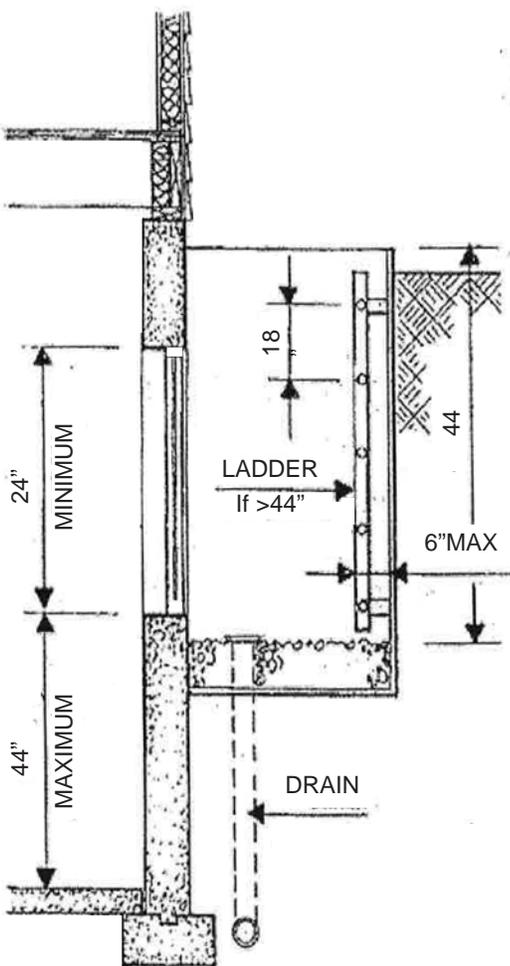
Bars, grilles, covers, screens or similar devices are permitted to be placed over emergency escape and rescue openings, bulkhead enclosures, or window wells that serve such openings, provided the minimum net clear opening size complies with Sections R310.1.1 to R310.1.3, and such devices shall be releasable or removable from the inside without the use of a key, tool, special knowledge or force greater than that which is required for normal operation of the escape and rescue opening.

R310.5 Emergency Escape Windows Under Decks and Porches.

Emergency escape windows are allowed to be installed under decks and porches provided the location of the deck allows the emergency escape window to be fully opened and provides a path not less than 36 inches (914 mm) in height to a yard or court.



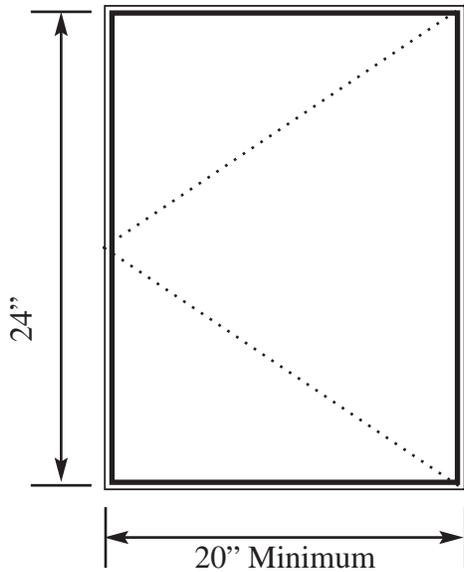
PLAN VIEW



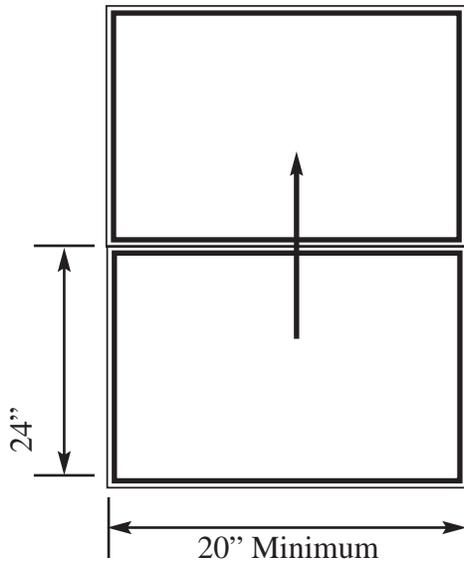
Section Through Window Well

Acceptable Operational Escape Windows

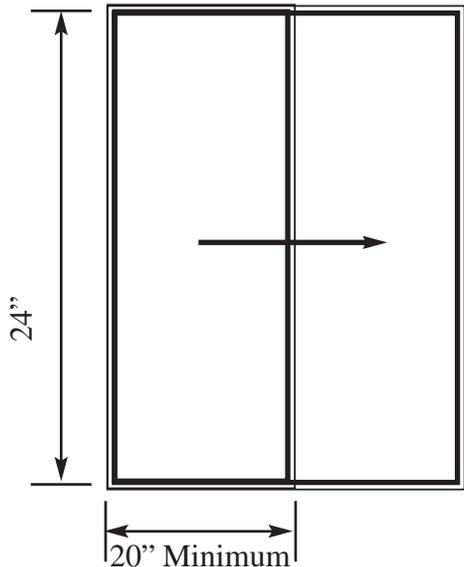
CASEMENT



DOUBLE OR SINGLE HUNG



SLIDER



- All emergency escape windows shall have a minimum net clear opening of 5.7 square feet.

- All emergency escape windows shall be operational from the inside without the use of keys or tools.

- Pull-out or removable window systems are not acceptable.

- Pull chains or quick release window systems are not acceptable.