FINISHED BASEMENT SUBMITTAL GUIDE

1. PLAN REQUIREMENTS

Two (2) copies of plans must be submitted.

PLAN SPECIFICATIONS

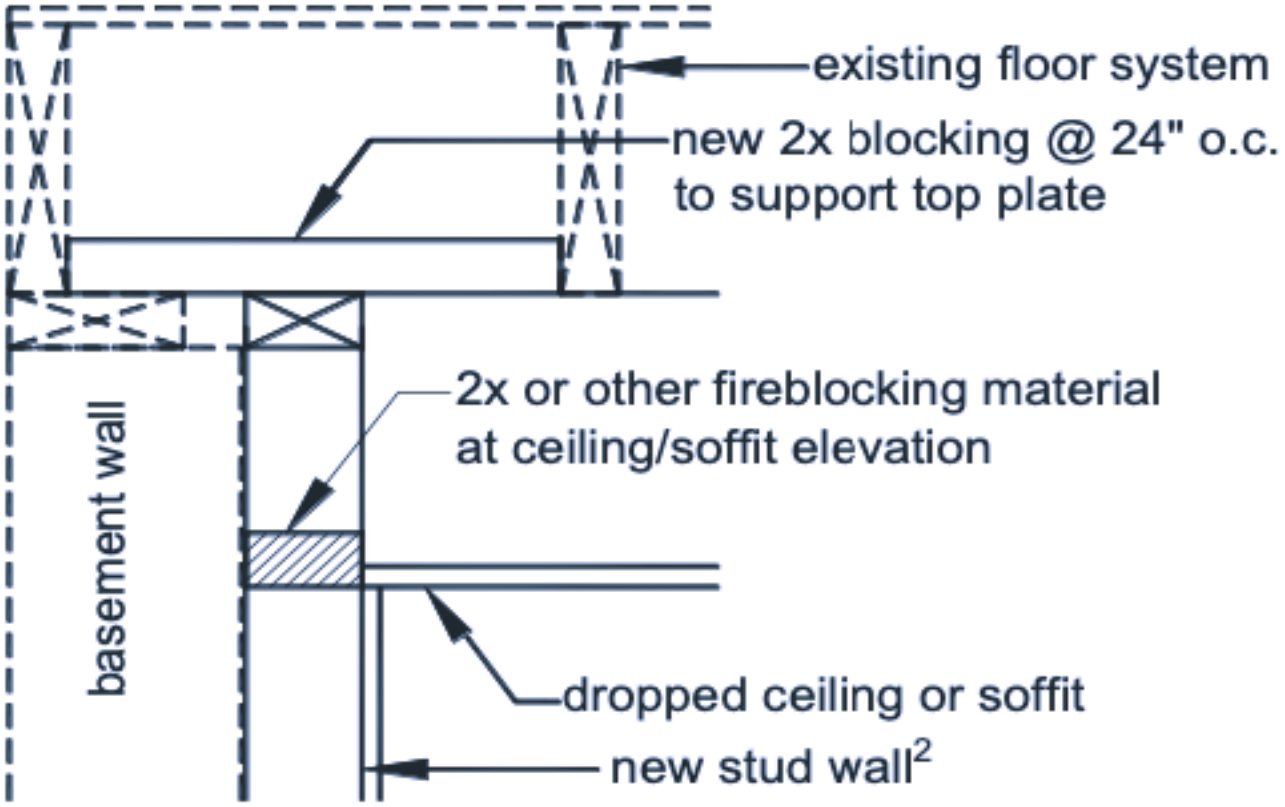
Basement Floor Plan

- Label each room specific to its use within the finished and unfinished portions of the basement.
- Location of all existing and proposed partition walls.
- Location of emergency escape and rescue opening including wells or "Bilco" type stairways. (approved window or door) **A site plan will be needed for window well and/or "Bilco" stair additions, which protrude into the lot. Include the square footage of stair or well and all applicable dimensions to property lines.**
- Location of the required 110-volt smoke detector(s) with 9-volt battery back-up(s).
- Location of electrical service panel(s) or sub-panel(s). 30" wide x 36" deep working space is needed in front of all electrical service panels.
- Location of stairway guards (if applicable) and continuous, graspable handrail.
- Location of all plumbing fixtures including sump and sewage ejector pits/pumps.
- Location, type, manufacturer and model number of any proposed factory built fireplaces.
- Location and size of all dropped soffits or ceiling height changes. (identify unique soffit heights on plans)

Cross Section

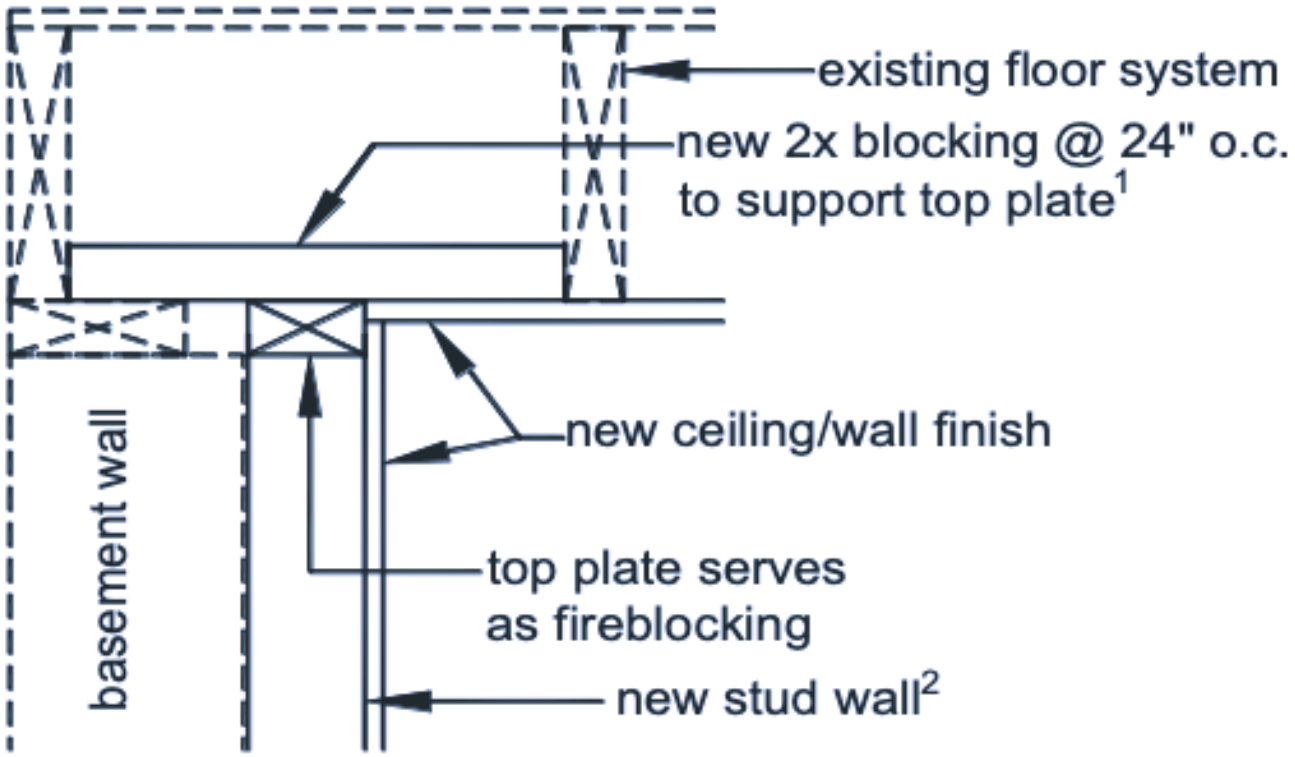
- Ceiling heights within finished portion of basement including heights under dropped soffits and within stairways leading to basement.
- Lumber size and on center spacing of partition wall studs with pressure treated sill plates.
- Approved fireblock material at top plate separation preventing free air flow between wall system and floor system.
- Minimum R-13 cavity (batt) insulation or R-10 continuous foam insulation within all exterior and interior partition walls enclosing habitable space. Expanded foam insulation boards are approved in concealed construction only. Foam plastics are not approved for interior partitions that are exposed to the unfinished areas.

(**Please refer to the sample floor plan and wall cross section prior to submitting your permit package.)**



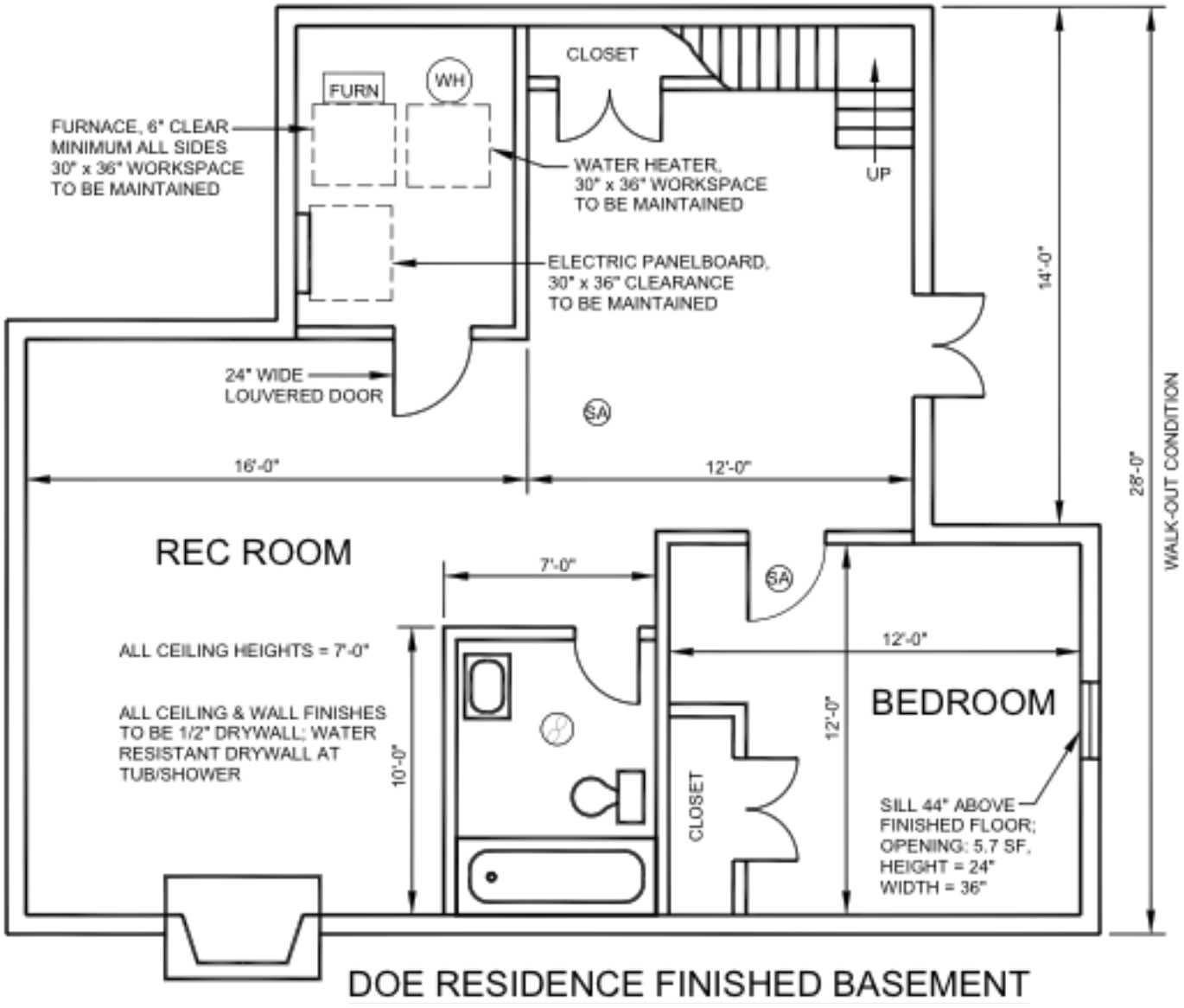
[1] Attach top plate to underside of joists where floor framing is perpendicular to stud wall.

[2] R-13 insulation should be provided between studs.



[1] Attach top plate to underside of joists where floor framing is perpendicular to stud wall.

[2] R-13 insulation should be provided between studs.



DOE RESIDENCE FINISHED BASEMENT

2018 IRC CODE REFERENCES

The following code sections are applicable for basement alterations. This list, although not all inclusive, provides guidance on code provisions affecting basement alterations.

- **R302.11 Fireblocking required.** Fireblocking shall be provided to cut off all concealed draft openings (both vertical and horizontal) and to form an effective fire barrier between stories. 2-inch nominal lumber, (2) thicknesses of 1-inch nominal lumber with broken lap joints, ¾" particleboard, ½" gypsum wallboard, ¼" cement-based millboard or batts / blankets of mineral wool or glass fiber installed in such a manner as to be securely retained in place are approved fireblock materials.
- **R303.3 Bathrooms.** Bathroom, water closet compartments and other similar rooms shall be provided with aggregate glazing area in windows of not less than 3 square feet, one-half of which must be openable. **Exception**: The glazed area shall not be required where artificial light and an approved mechanical ventilation system are provided. *Bathroom exhausts shall be vented directly to the outside. (50 CFM minimum)*
- **R303.7 Stairway illumination.** All interior and exterior stairs shall be provided with a means to illuminate the stairway, including the landings and treads. Interior stairways shall be provided with an artificial light source in the immediate vicinity of each landing and at the top and bottom of the stair.
- **R303.10 Required heating.** Every habitable room shall be provided with heating facilities capable of maintaining a minimum room temperature of 68 degrees Fahrenheit.
- **R305.1 Minimum ceiling height.** Ceiling heights in basements with habitable spaces may not be less than 7 feet clear height except for under beams, girders, ducts, or other obstructions where clear heights shall be not less than 6 feet 6 inches.
- **R305.1.2 Minimum ceiling height within bathrooms.** Bathrooms shall have a ceiling height of 6 feet 8 inches at the center of the front clearance area for fixtures. The ceiling height above the fixture shall be such that the fixture is capable of being used for its intended purpose.
- **R307.1 Toilet, bath and shower spaces.** Fixtures shall be spaced as per the attached Figure R307.1.
- **R310.1 Emergency escape and rescue.** Basements **and** every sleeping room shall have at least one approved, openable emergency escape and rescue opening. Escape windows shall have a sill height not to exceed 44" above the floor. Windows are to provide a clear opening of not less than 24" high and 20" wide with a net clear opening of 5.7 square feet. Windows below grade are to be provided with an approved window well 9 square feet in area with a minimum horizontal projection and width of 36 inches. The area of the window well shall allow the emergency escape and rescue opening to be fully opened. Wells with a vertical depth greater than 44" are to be equipped with a permanently affixed ladder or steps usable with the window in the fully open position. Walkout exits opening directly to the exterior and bulkhead enclosure stairways are approved emergency escape and rescue openings.
- **R311.7.2 Stairway headroom.** The minimum headroom in all parts along the stairway shall not be less than 6 feet 8 inches measured vertically from the sloped plane adjoining the tread nosing or from the floor surface of the landing or platform.
- **R311.7.7 Handrails.** Handrails having a minimum and maximum heights of 34 inches and 38 inches respectively, measured vertically from the nosing of the treads, shall be provided on at least one side of the stairways of four or more risers. All required handrails shall be continuous the full length of the stairs. Where half walls or partial guardrails are installed, handrails are to remain continuous through these transition points. Ends shall be returned or shall terminate in newel posts or into the adjacent wall.
- **R312.1 & R312.2 Stairway Guardrails.** Open sides of stairs with a total rise of more than 30 inches above the adjacent floor or grade below shall have guards not less than 34 inches in height measured vertically from the nosing of the treads. Openings for required guards on the side of stair treads shall not allow a sphere 4-3/8 inches to pass through.
- **R314 Smoke alarms.** 110-volt, UL listed smoke alarms with 9-volt battery back-ups are to be installed within a finished basement and in any bedrooms within the basement. Multiple smoke alarms added as part of a basement alteration are to be interconnected. The remainder of the dwelling is to be provided with no less than battery powered smoke alarms on each level of the dwelling, outside of each separate sleeping area and in each bedroom. *110-volt, interconnected smoke alarms are recommended to enhance life safety.*
- **R315 Carbon monoxide alarms.** Where work requiring a permit occurs in existing dwellings that have attached garages or in existing dwellings within which fuel-fired appliances exist, carbon monoxide alarms shall be provided outside of each sleeping area in the immediate vicinity of the bedrooms.
- **R316.4 Foam plastic thermal barrier.** Foam plastic, except where otherwise noted, shall be separated from the interior of a building by minimum ½" gypsum board. Reliance on adhesives to ensure that the gypsum board will remain in place when exposed to fire shall be prohibited.

2015 IRC CODE REFERENCES, cont'd.

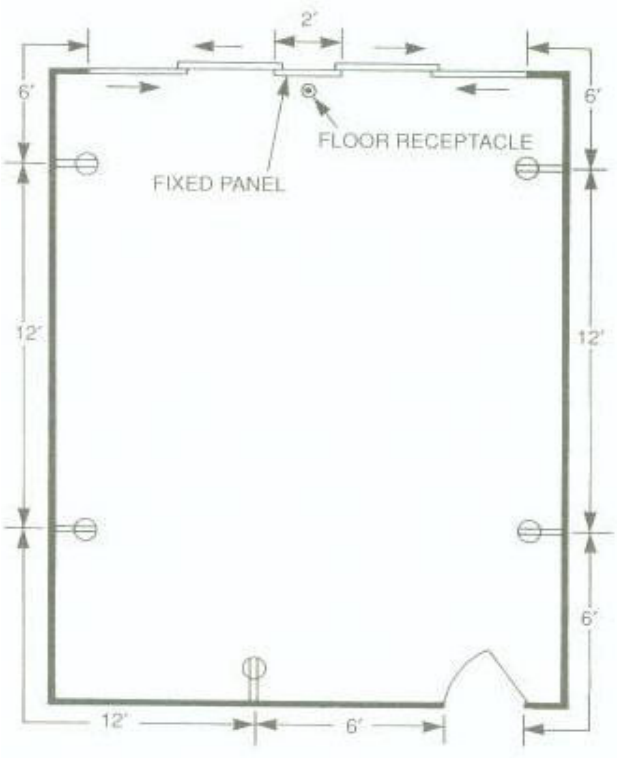
- **R602.5 Interior nonbearing walls.** Interior nonbearing walls shall be constructed with 2"x3" or 2"x4" studs spaced 24 inches on center or 2"x4" studs installed flat and spaced 16 inches on center. Interior nonbearing walls shall be capped with at least a single top plate.
- **Table N1102.1.2 Energy Efficiency Requirements.** Basement walls must be insulated from the top of the wall to 10 foot below grade or the bottom of the wall (whichever is less) with a minimum insulation R-value of R-13 cavity or R-10 continuous. Windows and/or doors within the basement thermal envelope are to have a U-factor not more than 0.35.
- **N1104.1 Lighting equipment.** A minimum of 50 percent of the lamps in permanently installed lighting fixtures shall be high-efficacy lamps. High efficacy is defined as lamps providing **(1)** 60 lumens per watt for lamps over 40 watts, **(2)** 50 lumens for lamps over 15 watts to 40 watts or **(3)** 40 lumens per watt for lamps 15 watts or less.
- **M1701/G2407.5 Combustion air.** Air for combustion of flue gases for fossil fuel appliances shall be provided. The minimum required volume shall be 50 cubic feet per 1000 Btu/h input rating. Partitions between confined equipment and adjacent spaces shall be provided with two openings with a minimum free area of 1 square inch per 1000 Btu/h input rating, but not less than 100 square inches each. One opening shall be within 12" of the top and one opening shall be within 12" of the bottom of the enclosure.
- **G2411.1.1 CSST – Corrugated Stainless Steel Tubing.** CSST gas piping systems installed as part of a finished basement shall be bonded to the electrical service grounding electrode system at the point where the gas service enters the building. The bonding jumper shall not be smaller than 6 AWG copper wire or equivalent.
- **G2420.5 Shutoff valves.** Each appliance shall be provided with a manual, non-displaceable type shutoff valve separate from the appliance. The shutoff valve shall be located in the same room as the appliance, not further than 6 feet from the appliance, and shall be installed upstream from the union, connector or quick disconnect device it serves. Shutoff valves shall be provided with access. (Valves are not to be concealed behind wall or ceiling finishes)
- **P3005.2.10 Cleanout accessibility.** Cleanouts shall be accessible. Minimum clearance in front of cleanouts shall be 18 inches on 6 inch and smaller pipes, and 36 inches on larger pipes.
- **P3007.2 Sewage ejectors or sewage pumps.** A check valve and a full open valve (gate/ball valve) located on the discharge side of the check valve shall be installed in the pump or ejector discharge piping between the pump or ejector and the drainage system. Access shall be provided to such valves. Such valves shall be located above the sump cover. Each sewage ejector pit is to be vented to outside air.
- **E3405.2 Working space and clearances.** Access and working space shall be provided and maintained around all electrical equipment to permit ready and safe operation and maintenance of such equipment. Working space dimensions shall not be less than 36 inches in depth and not less than 30 inches wide in front of the electrical equipment and not less than the width of such equipment. The work space shall be clear and extend from the floor to a height of 6'6". The work space shall allow at least a 90-degree opening of equipment doors or hinged panels.
- **E3901.2 Electrical receptacle distribution.** Receptacle outlets shall be provided per attached Figure E3901.2.
- **E3902.5 Unfinished basement receptacles.** At least one GFCI protected, tamper-resistant receptacle outlet, in addition to any provided for specific equipment, shall be installed in each unfinished portion of the basement.
- **E3902.16 Arc-fault circuit-interrupter protection.** All branch circuits that supply 120-volt, single-phase, 15- and 20-ampere outlets in habitable areas of a finished basement shall be protected by a combination arc-fault circuit interrupter listed to provide protection of the entire branch circuit.
- **E3903.1 Lighting outlets.** At least one wall switch-controlled lighting outlet shall be installed in every habitable room and bathroom.
- **E4002.14 Tamper-resistant receptacles.** All receptacles added in finished and unfinished portions of a basement shall be listed tamper-resistant receptacles.
- **E4003.12 Luminaires in clothes closets.** Clothes closet light fixtures are to be installed in accordance with IRC Section E4003.12. **1. Surface mounted incandescent or LED luminaires** require a minimum clearance of 12" between the fixture and the nearest shelf edge or nearest point of storage. **2. Surface mounted fluorescent lights** require a minimum clearance of 6" between the fixture and nearest shelf edge or point of storage. **3. Recessed incandescent or LED luminaires** and **recessed fluorescent lights** require a minimum clearance of 6" between the light and nearest shelf edge or point of storage. **4. Surface-mounted fluorescent or LED luminaires** shall be permitted to be installed within the storage space where identified for this use.
- **Radon Control Methods.** Existing passive or active radon mitigation systems are to be maintained during and after the proposed alteration.

Receptacle Spacing Requirements
IRC Sections E3901.2.1 & E3901.2.2

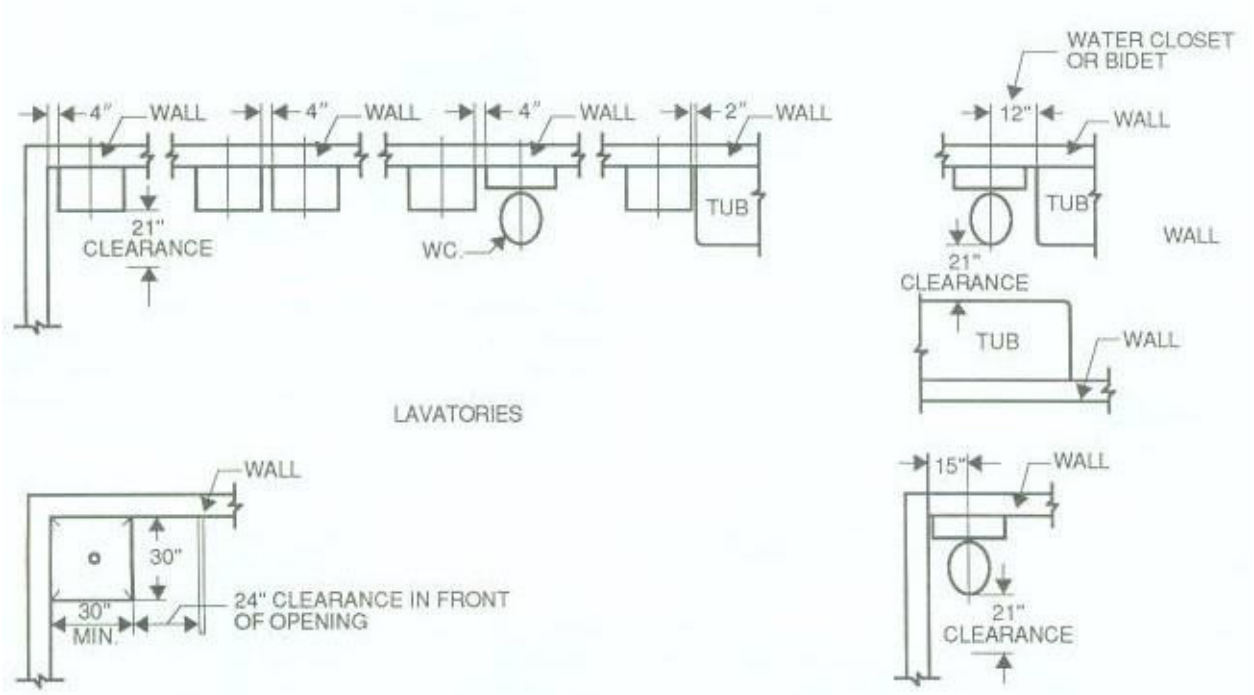
Receptacles shall be installed so that no point measured horizontally along the floor line in any wall space is more than 6 feet, from a receptacle outlet. **(12 foot maximum spacing along unbroken wall space)**

A wall space shall include:

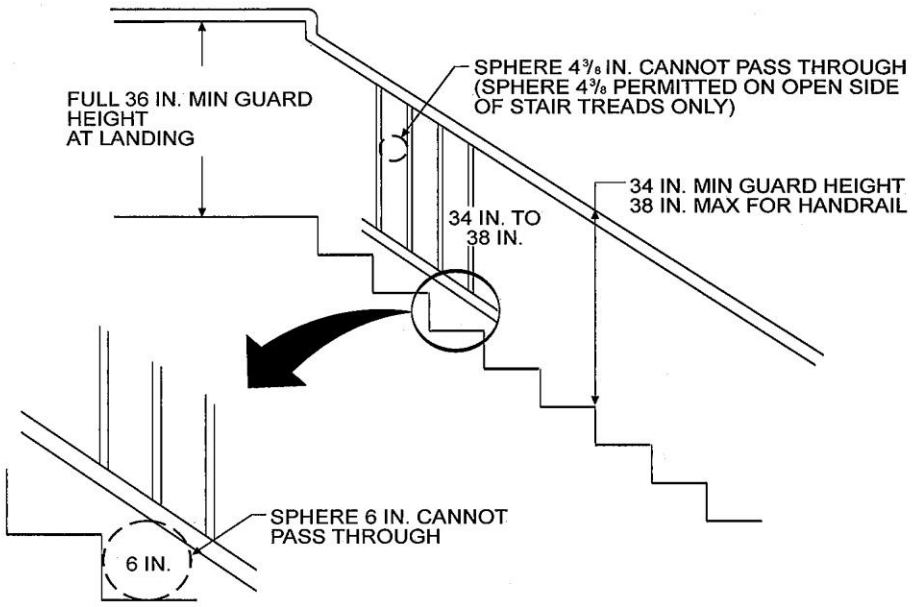
1. Any space that is 2 feet or more in width, including space measured around corners, and that is unbroken along the floor line by doorways, fireplaces, and similar openings.
2. The space occupied by fixed panels in exterior walls, excluding sliding panels.
3. The space created by fixed room dividers such as railings and free-standing bar-type counters.



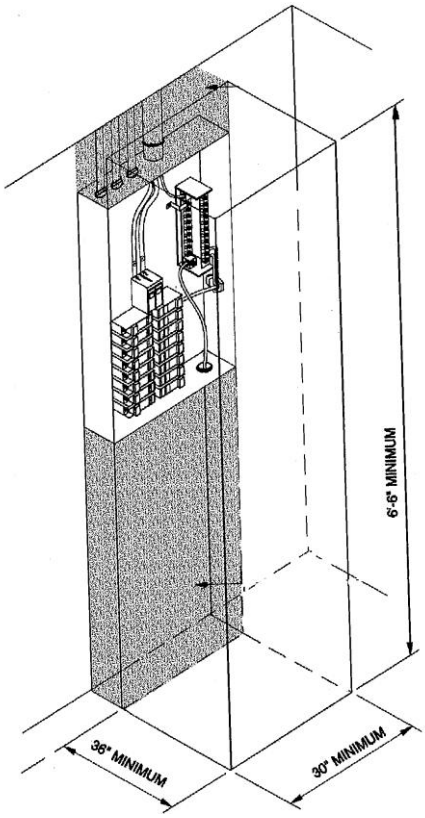
Minimum Plumbing Fixture Clearances
IRC Figure R307.1



Open Stair Guardrail Details
IRC Section R312



Electrical Panel(s) Working Space and Clearances
IRC Sections E3405.1, E3405.2, E3405.3, E3405.6



Working Clearances for Panelboards

- 36 inches deep measured from the enclosure front or opening where such parts are exposed.
- 30 inches wide in front of electrical equipment and not less than the width of such equipment.
- The work space shall be clear and shall extend from the floor to a height of 6.5 feet.
- In all cases, the work space shall allow at least a 90-degree opening of equipment doors or hinged panels.
- The space equal to the width and depth of the panelboard(s) and extending from the floor to the structural ceiling shall be dedicated to the electrical installation. **Piping, ducts, leak protection apparatus and other equipment foreign to the electrical installation shall not be installed in such dedicated space.**
- Artificial illumination shall be provided for all working spaces for service equipment and panelboards installed indoors.