

RESIDENTIAL INSPECTIONS 102

Attend the next BUILD: SANDY SPRINGS seminar on residential inspections. This is a continuation of the first seminar to learn about additional requirements of the 2012 International Residential Code (2012 IRC).

This seminar is presented by the Building Official and will cover the highlights of the code and help explain what the inspectors are looking for.

When: Wednesday, January 16, 2019
@ 8:30am

Where: Sandy Springs City Hall
Terrace Meeting Room (3rd floor)
1 Galambos Way
Sandy Springs, GA 30328

Register: spr.gs/BuildSeminars

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The background is a detailed architectural floor plan in white lines on a dark blue background. It shows various rooms including bedrooms (QUARTO), bathrooms (SANIT), a service area (SERVICO), and a hall. Rooms are labeled with their area in square meters (M²). For example, QUARTO 2 is 12.04 M², SANIT 4.36 M², SANIT 5.02 M², SANIT 5.04 M², SERVICO 2.25 M², and SERVICO 2.25 M². There are also labels for P1, P2, and P3, likely representing parking or entrance points. The plan includes furniture like beds, sofas, and tables, and architectural details like doors, windows, and stairs.

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- **“BUILD: SANDY SPRINGS”** is a series of seminars presented by the Community Development department of the City of Sandy Springs, GA.
- It is intended to educate the public on the current policies, procedures and expectations of the City of Sandy Springs, GA as it relates to construction within the jurisdiction.
- The information presented in these seminars is subject to change with new Code adoptions, changes in City ordinances and zoning, and changes in office policy as it relates to current construction trends.

RESIDENTIAL INSPECTIONS 102

2012 International Residential Building Code (2012 IRC)



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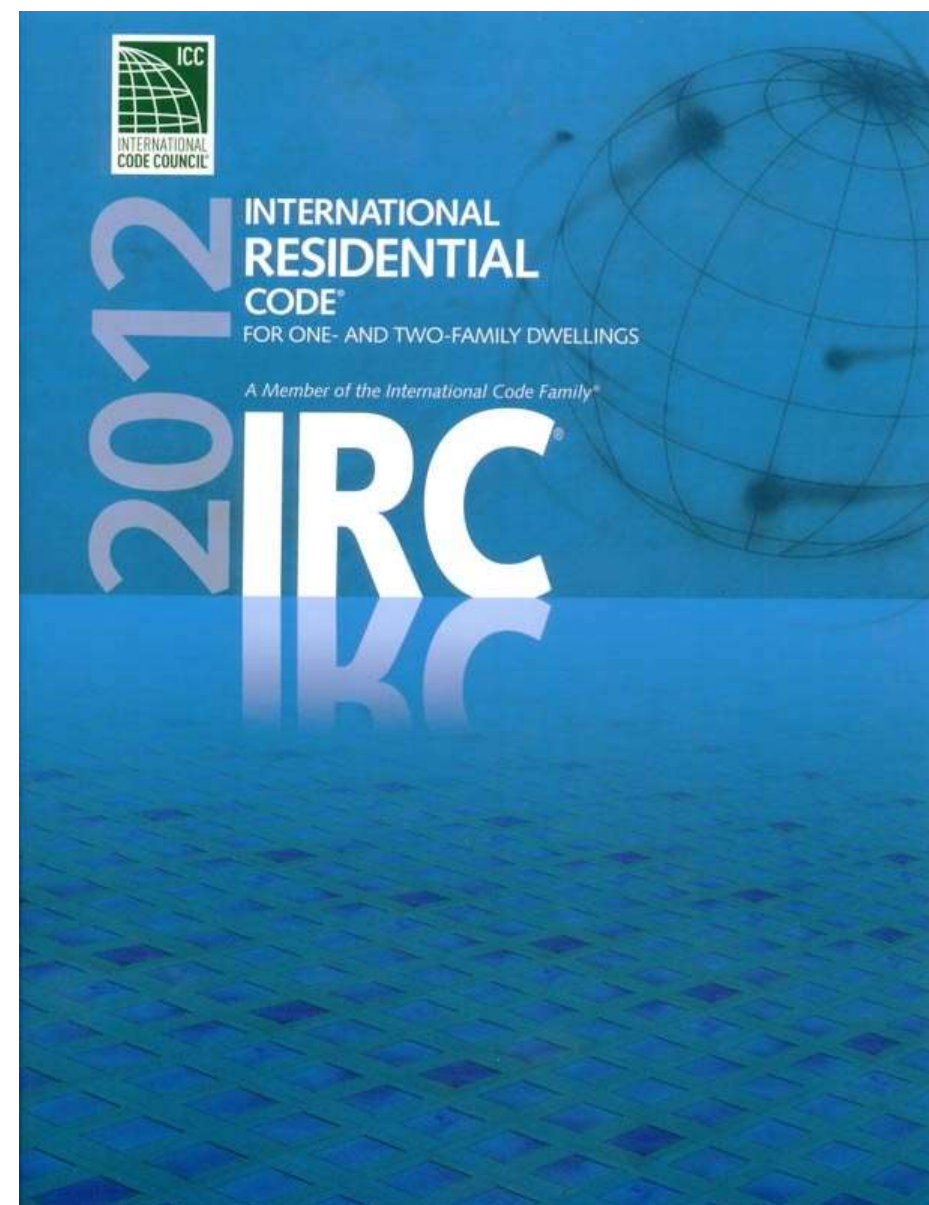
January 16, 2019

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- Stairs & Landings
- Handrails & Guardrails

Building Codes

Building Codes



International Residential Code, 2012 Edition (2012 IRC)

- Including Georgia Amendments (2014) (2015) (2018)
- 2012 IRC Appendices G, J, O



International Fire Code, 2012 Edition (2012 IFC)

- Including Georgia Amendments (2014)



International Plumbing Code, 2012 Edition (2012 IPC)

- Including Georgia Amendments (2014) (2015)
- 2012 International Plumbing Code Appendices C, I



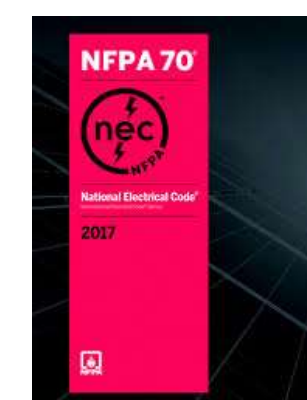
International Mechanical Code, 2012 Edition (2012 IMC)

- Including Georgia Amendments (2014) (2015)



International Fuel Gas Code, 2012 Edition (2012 IFGC)

- Including Georgia Amendments (2014) (2015)



National Electrical Code, 2017 Edition

- No Georgia Amendments



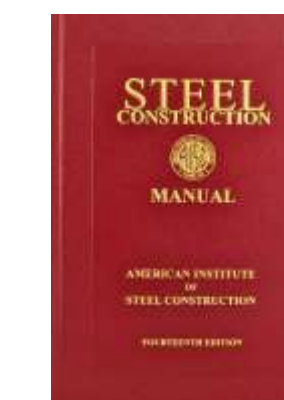
International Energy Conservation Code, 2009 Edition (2009 IECC)

- Including Georgia Supplements and Amendments (2011) (2012)



International Swimming Pool and Spa Code, 2012 Edition (2012 ISPSC)

- Including Georgia Amendments (2014)



Purpose of the Building Codes

- Establish minimum requirements to safeguard the public safety, health and general welfare of the public through:
 - ✓ Affordability
 - ✓ Structural strength
 - ✓ Means of egress
 - ✓ Stability
 - ✓ Sanitation
 - ✓ Light
 - ✓ Ventilation
 - ✓ Energy conservation
 - ✓ Safety to life and property from fire and other hazards
 - ✓ Provide safety to fire fighters and emergency responders during emergency operations.

Inspections

Inspection Guidelines

- Required inspections must be requested prior to concealment of work.
- Concealment of work without required inspections will result in the inspection being rejected.
- Rejected inspections are subject to a \$250 penalty fee and require a Building Official review on site.
- Failed inspections are subject to a \$75 re-inspection fee.
- Subsequent inspections cannot commence without passing the previous required inspection.

Inspection Guidelines (cont.)

- Work completed without a permit are subject to the following:
 - Possible fine and/or ticket
 - Required to apply for a permit for the unpermitted work
 - Plan review and approval
 - Subject to double permit fees
 - Require a Building Official review on site
 - Removal of existing finishes as necessary to verify code compliance of the concealed scope of work to the satisfaction of the Building Official

Residential Single Family Inspections

1. Site Preconstruction Meeting (Site Inspector)
2. Building Preconstruction Meeting
3. Temporary Power Pole
4. Foundation Form Survey Submittal
5. Foundation
6. Foundation Wall Reinforcement
7. Foundation Wall Form
8. Foundation Waterproofing & Dampproofing
9. Under Slab
10. Slab On Grade
11. Sheathing Inspection
12. **Water Resistive Barrier ("House Wrap")**
13. Building Rough Combo
 - Rough Framing
 - Rough Mechanical
 - Rough Electrical
 - Plumbing
14. Gas Pressure Test
15. Insulation
16. Temporary to Permanent Power
17. Water Service Tap
18. Sewer Service Tap
19. Water Quality Device / Storm Water Receptor (Site Inspector)
20. Building Final
 - Final Mechanical
 - Final Electrical
 - Final Plumbing
21. Final Site Inspection (Site Inspector)
22. Final Zoning Inspection



Mechanical

MECHANICAL – FORCED AIR FURNACE

- Fuel burning appliances cannot be installed in sleeping rooms, bathrooms, toilet rooms, storage closets, or in a space that opens into such rooms or spaces unless they are direct vented or listed for use within a living space.
- Heat producing equipment installed shall maintain clearances to combustibles as required by the listing of the appliance and as required for minimum service.
- Switch controlled lighting shall be provided for servicing of equipment.
- Electrical receptacle is required at or near the appliance.
- Means of disconnect required within sight of appliance.
- Condensate drain required to drain by gravity to an approved drain or condensate pump.
- Drain pipe shall be minimum **3/4"** diameter with 1/8 in/ft. slope.

MECHANICAL – FORCED AIR FURNACE (cont.)

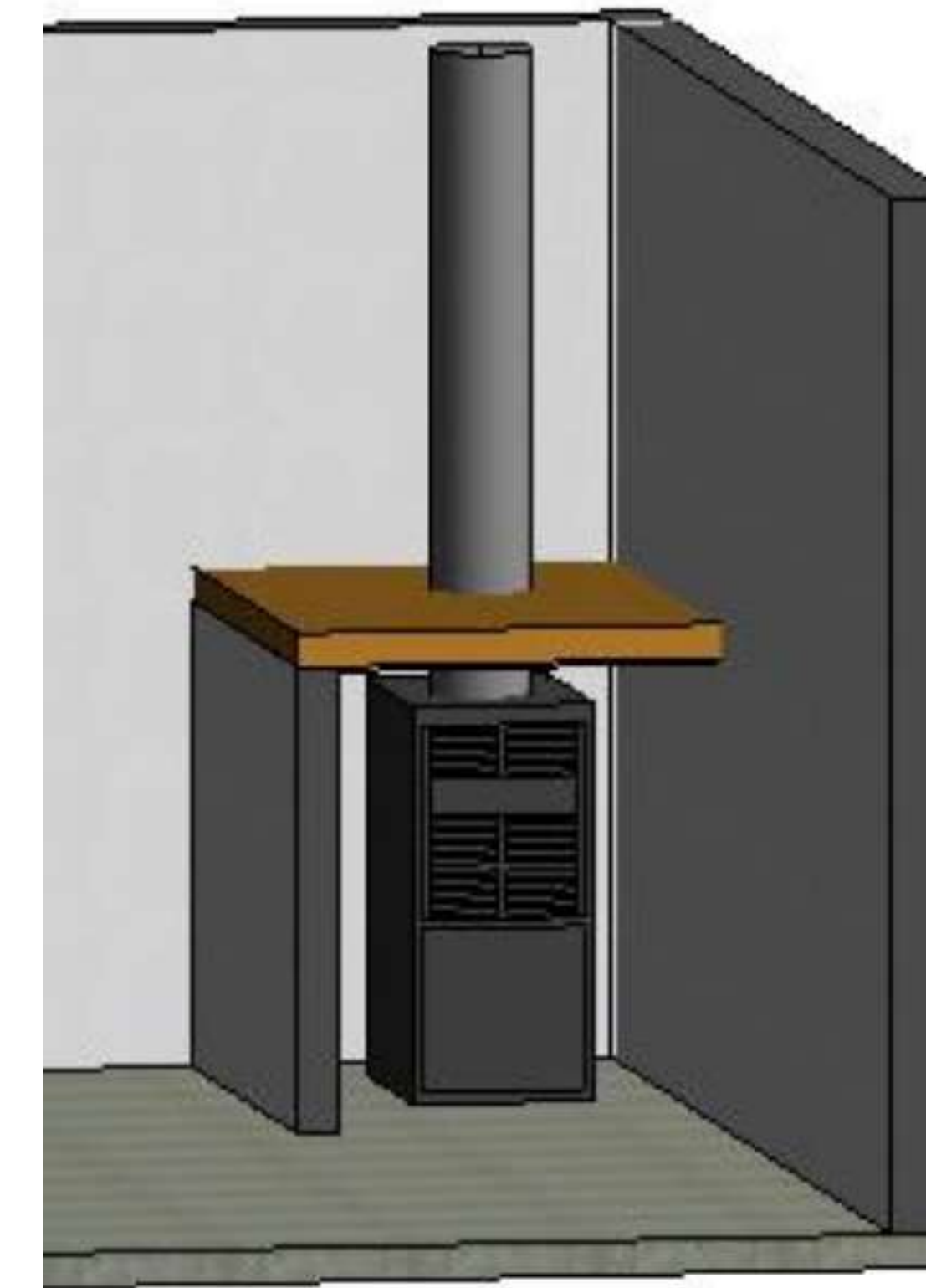
- Equipment which has a flame, generates a spark or uses a glowing ignition source that is open to the space in which it is installed shall be elevated such **that the source of ignition is at least 18" above the floor, unless the appliance** is flammable vapor ignition resistant.
- Ducts which penetrate a wall or ceiling separating the garage from the dwelling shall be 26 gauge minimum and shall be sealed with fire-rated caulk and/or foam.
- When a furnace is installed in a crawlspace, installation shall meet either of the following criteria:
 1. Be suspended **a minimum of 6" above** grade
 2. Installed on a concrete slab extending above the adjoining grade
 3. Be installed on a pressure treated wood platform when installed within **18" of soil to** the bottom of the framing.

MECHANICAL – FORCED AIR FURNACE (cont.)

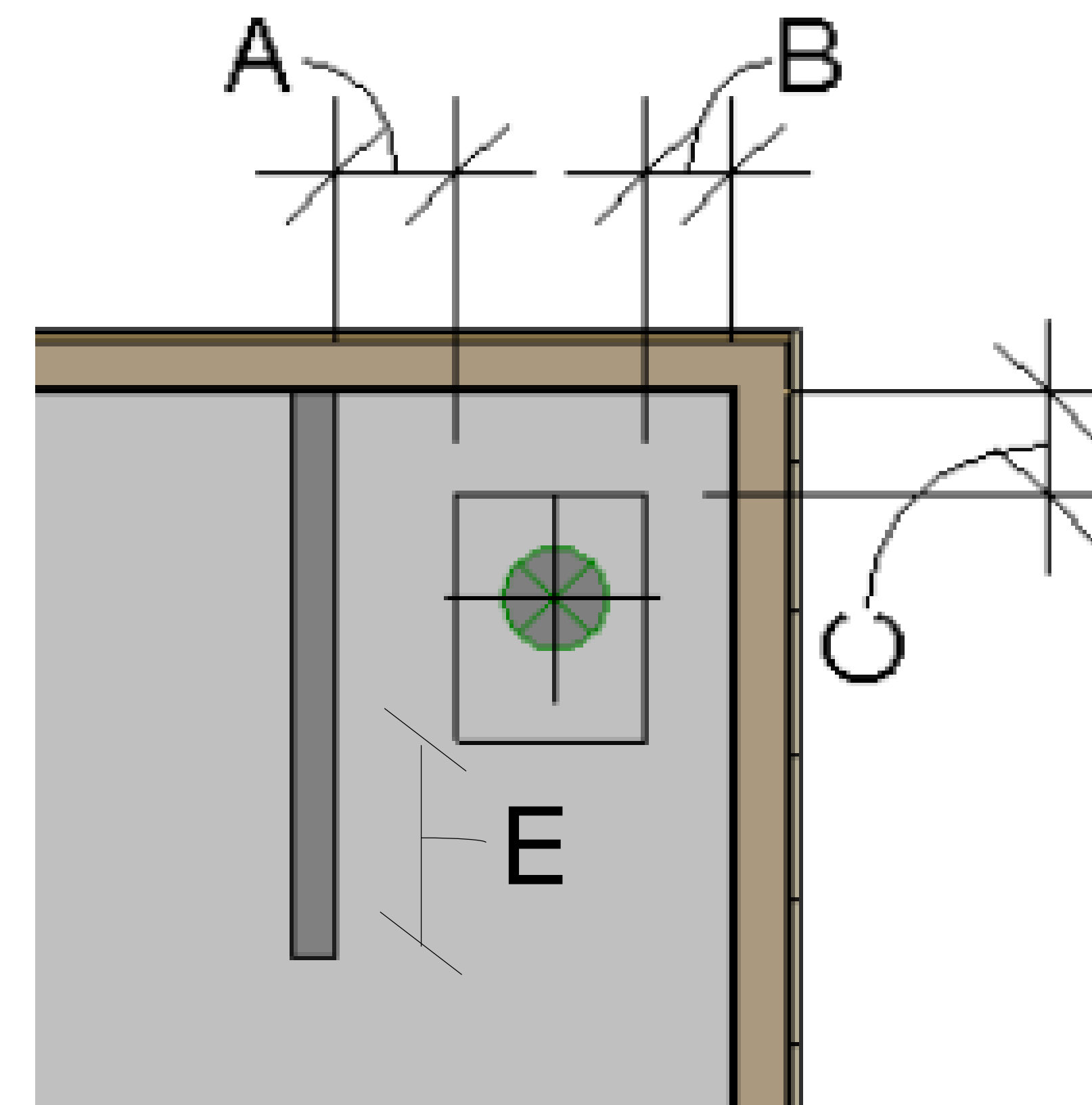
- Attics containing appliances shall meet the following requirements:
 - **Provide a clear access opening with a minimum dimension of 20"x30"** and large enough to allow removal of the largest appliance.
 - The clear access opening shall not be located more than 20 feet away from the appliance measured along the centerline of the passageway.
 - Provide a clear and unobstructed passageway to the appliance not less **than 30" high and 22" wide and** large enough to allow removal of the largest appliance.
 - The passageway shall have a continuous solid flooring not less than 24" wide.
 - **Provide a level service space at least 30" wide and 30" deep on all sides** of the appliance where access is required.

MECHANICAL – CLEARANCES

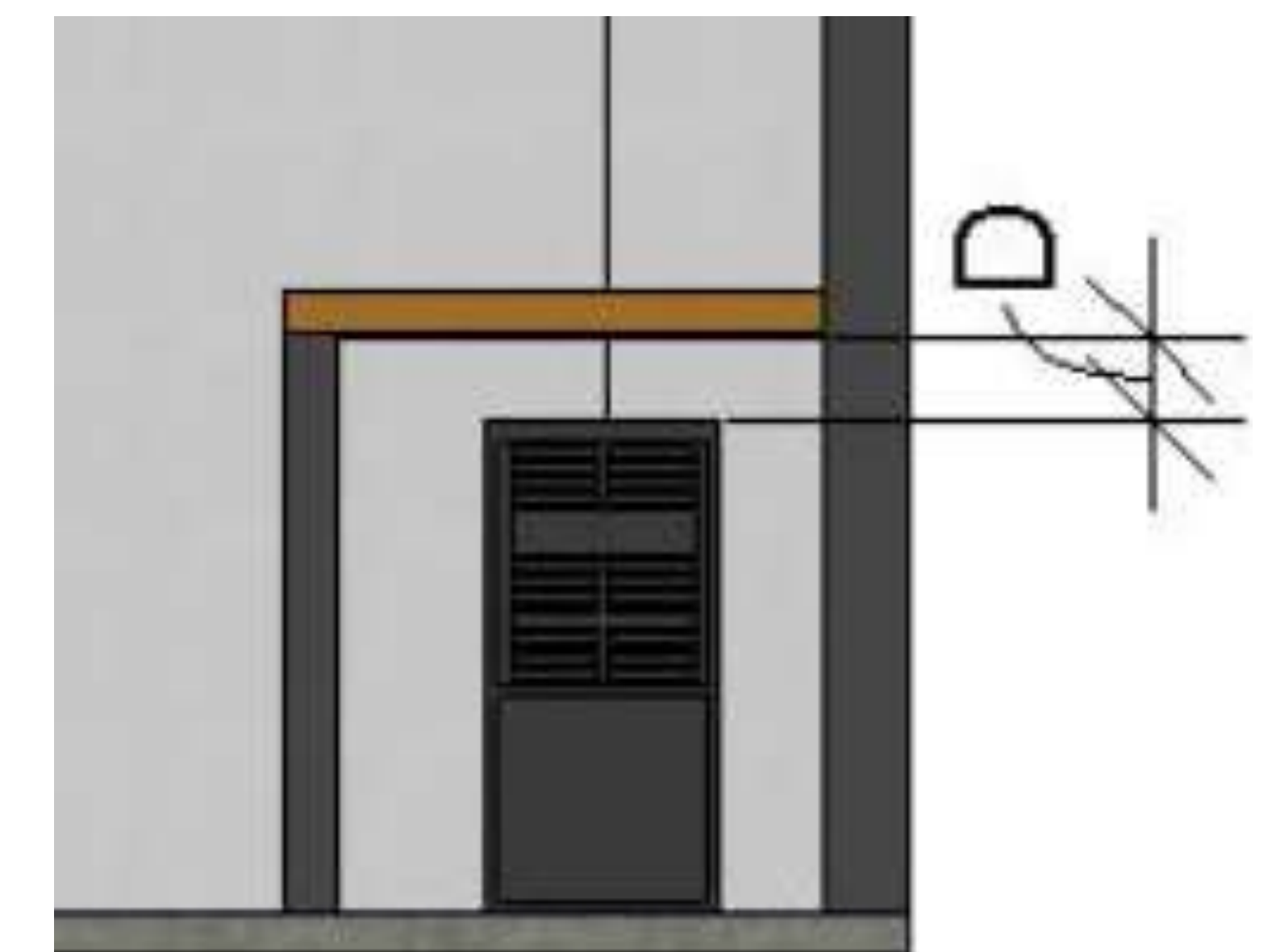
- Maintain manufacturer's minimum clearance for all mechanical equipment.
- Minimum working space clearances:
 - 3" minimum along each side (A and B) with a total clearance width (A+B) at **least 12" wider** than the furnace
 - 3" minimum behind (C) the unit
 - 3" minimum above (D) of the unit
 - 30" minimum in front of the unit (E) the full height of the unit



$$\begin{aligned}A_{\min} &= 3 \text{ inches} \\B_{\min} &= 3 \text{ inches} \\(A+B)_{\min} &= 12 \text{ inches} \\C_{\min} &= 3 \text{ inches} \\D_{\min} &= 3 \text{ inches} \\E_{\min} &= 30 \text{ inches}\end{aligned}$$



Plan View



Elevation View

MECHANICAL – VEHICLE IMPACT PROTECTION

- Appliances shall not be installed in a location subject to vehicle damage except where protected by *approved barriers*.
- *Approved barriers* shall be installed where the appliances are exposed in the normal path of travel of a vehicle (impact zone) determined by the extents of the garage door opening width projected into the garage (yellow highlight in attached diagram).
- If any part of any appliance is located within the impact zone, then an *approved barrier* shall be installed adjacent to the appliance as indicated on the attached diagram and shall not impede with any doors or required maintenance clearances.
- If the appliances are located within a utility closet within the impact zone and the closet has a door **opening 5'-0" or less in width, then no barrier is** required. However, the utility closet door jambs shall be secured to the slab with a holdown anchor to provide addition restraint from impact.

MECHANICAL – VEHICLE IMPACT PROTECTION

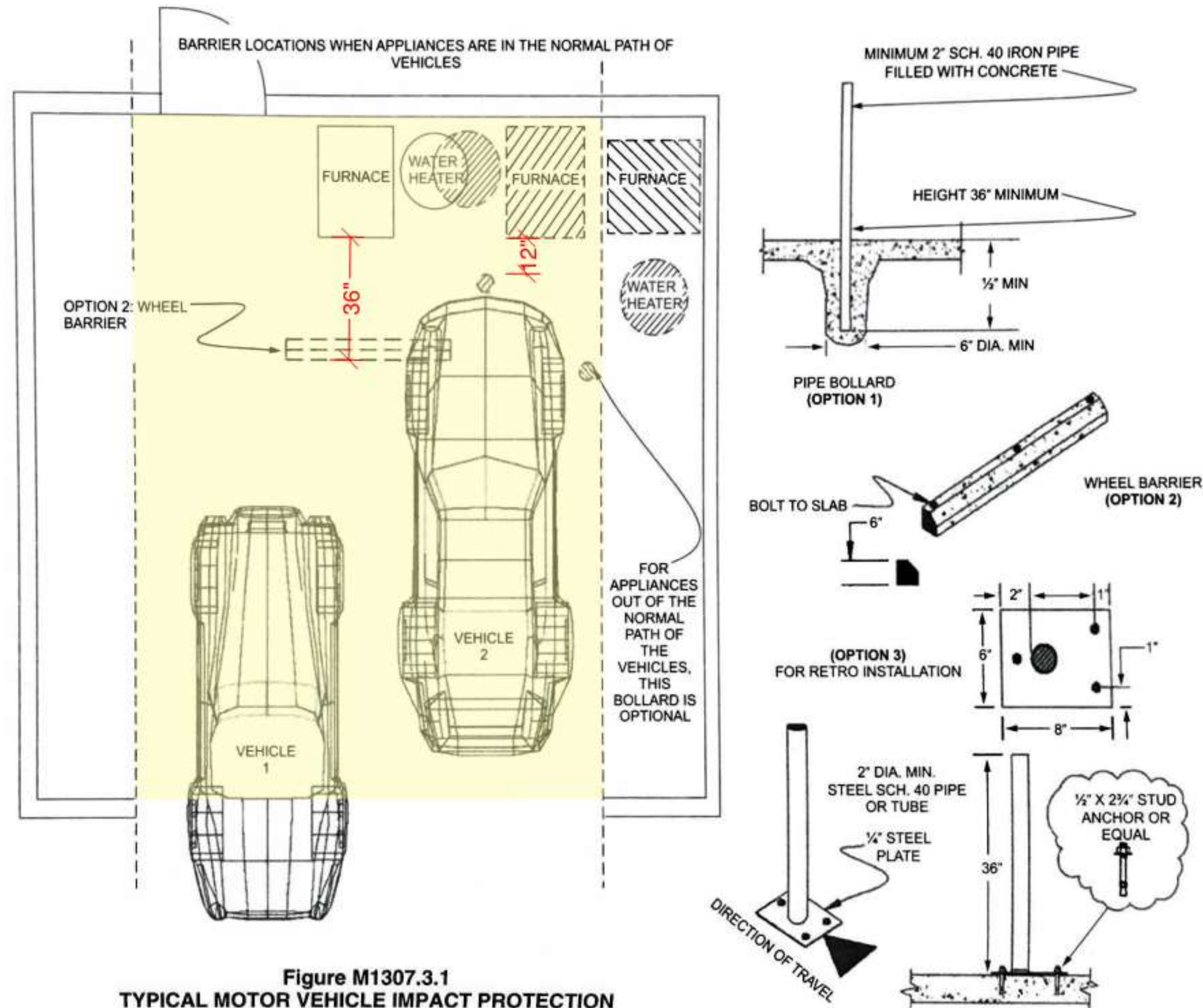
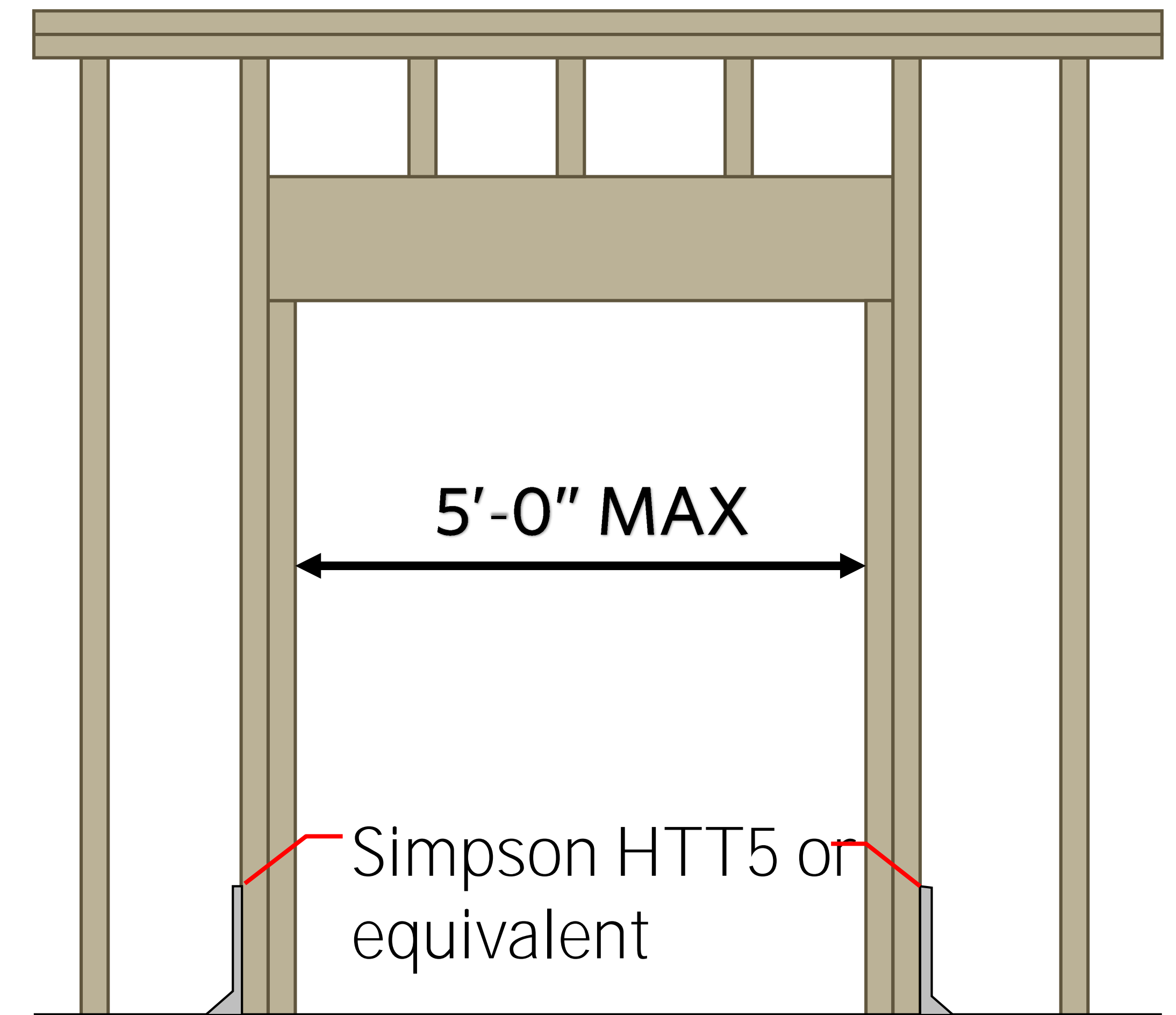


Figure M1307.3.1
TYPICAL MOTOR VEHICLE IMPACT PROTECTION



Utility Closet Elevation

Simpson HTT5 or equivalent



MECHANICAL – DUCTING

- **Maintain 4" minimum clearance from** the duct to the ground.
- Round ducts shall have crimped joints lapped a minimum of 1" **and fastened** with (3) sheet-metal screws or rivets equally spaced around the joint.
- Joints, seams, and fittings of ducts shall be sealed with mastic or foil tape meeting the UL181B requirements.
- **Flex duct supported per manufacturer's** specifications and as follows:
 - **5'-0" maximum with no more than 1/2" per foot sag between supports.**
 - Supports should be at least 1.5 inches wide.
 - Straps should not compress the inner core or constrict air flow. The supports should not excessively compress the vapor barrier and insulation material because compressing the insulation could lead to condensation at that point.
- **Metal duct supported every 10'-0" maximum.**

MECHANICAL – DUCTING (cont.)

- Ducts shall not displace required insulation of walls, floors, or ceilings.
- Building cavities may not be used as ducts.
- Venting systems shall not extend into or pass through any fabricated air duct or furnace plenum.
- Return air shall meet the following criteria:
 - Shall be taken from a room or space greater than 25% of the total volume served.
 - **Can't be taken from a closet, bathroom, toilet room, kitchen, garage, boiler room, furnace room, unconditioned attic or other dwelling unit.**
 - Return air inlets shall not be located **within 10' of any fuel burning** appliance fire box or draft hood located in the same space.

MECHANICAL – VENTS & CONNECTORS

- Vent **connector clearances to combustibles per manufacturer's listing or performance standards.**
- Exhaust vent terminations for mechanical draft and direct venting shall not **be less than 4' below or 4' horizontally from, and not less than 1' above a door, an operable window or a gravity air inlet into a building, nor less than 3' above any forced air intake within 10', nor within 12" of grade.**
- Where two gas appliances are vented through a common vent connector it is equal to largest connector plus 50% of the smaller flue outlet and not less than the combined area of the flue outlets for which it acts as a common connector.

MECHANICAL – VENTS & CONNECTORS (cont.)

- Vent terminal (except direct-vents) **not mounted directly above or within 3'** horizontally of a gas meter or oil tank vent.
- **Vent terminal no closer than 3'** to an interior corner formed by (2) perpendicular walls.
- Venting systems shall not extend into or pass through any fabricated air duct or furnace plenum.
- Where vents extending into an attic pass through insulated assemblies, an insulation shield of 26 gage sleeve not less than 2 inches above the insulation, secured in place and shall be installed to provide clearance between the vent and the combustible insulation materials, specified by the vent manufacturer.

MECHANICAL – CLOTHES DRYER

- Exhausted per manufacturer's instructions.
- Clothes dryer exhaust ducts of metal with smooth interior surfaces, with joints running in the direction of air flow.
- **Provide 0.062" thick nail guards where dryer exhaust duct is less than 1-1/4" behind the finished face of the framing member.**
- Screws allowed as fasteners. No more than 1/8 inch protrusion.
- Duct connector shall be 4" **minimum or** the appliance outlet size.
- Clothes dryer ducting shall run independently of other ducted systems and shall convey moisture to the outdoors.
- Exterior termination is backdraft dampered, **with no screens, and 3' min.** from away from any openings into the building

MECHANICAL – CLOTHES DRYER (cont.)

- Clothes dryer ducting concealed in construction must be labeled with the **equivalent length. Label shall be located within 6' of the exhaust connection.**
- 2 Methods for determining dryer duct length:
 - **1) Exhaust duct doesn't exceed 35 feet. Deduct 2.5' for each 45-degree elbow and 5' for each 90-degree bend.**
 - **2) Max. length determined by the manufacturer's installation** instructions when make and model of dryer are provided to the code official at rough in.
- Dryer exhaust duct required at time of occupancy. If dryer not installed, exhaust duct shall be capped at the location of the future dryer
- Gas shutoff valve installed immediately ahead of connector, and in the same room.

MECHANICAL – RANGE COOKTOP

- Vertical clearance to combustibles is 30" minimum or per manufacturer's listing.
- Gas connector line shall be **6' long maximum**.
- Shutoff valve installed immediately ahead of connector.
- Range hoods shall discharge to the outside through a single wall duct.
- The duct serving the range hood shall have a smooth interior surface (no flexible and semi rigid corrugated ducts), shall be air tight, shall be equipped with a backdraft damper and shall be independent of all other exhaust systems.
- Ducting is galvanized steel, stainless steel, or copper, with a smooth interior. Exception: Ducts for domestic cooking appliances equipped with a downdraft exhaust system can be schedule 40 PVC pipe.

MECHANICAL – FIREPLACES

- Factory built fireplaces shall be certified, listed, labeled and installed per the **manufacturer's installation** instructions.
- All penetrations shall be sealed with the listed materials per the **manufacturer's** installation instructions.
- Hearth extensions are to be readily distinguishable from the surrounding floor and in accordance with the fireplace listing.
- Appliance shutoff valves shall be located in the same room **and within 6' of** the appliance.
- Appliance shutoff valves located in fireplace firebox shall be installed per the **appliance manufacturer's instructions**.
- Shutoff valves for vented decorative appliances and room heaters shall be permitted to be installed in a remote area where such valves are provided with ready access, permanent identification and serve no other appliance.

MECHANICAL – AIR CONDITIONING

- **Require a 30"x30" minimum working space.**
- Condensate line shall be a minimum of 3/4" **and sloped to drain termination** without sags a minimum of 1/8 unit in 12 units (1% slope).
- Condensate disposal line shall discharge to an approved place of disposal but not to a public street, alley, or create a nuisance.
- Auxiliary and Secondary Drain Systems - A secondary drain or auxiliary drain pan shall be required for each cooling or evaporator coil where damage to any building components will occur as a result of overflow from the equipment drain pan. One of the following methods shall be used:
 1. An auxiliary drain pan with a separate drain line that discharges to a conspicuous point of disposal to alert occupants in the event of stoppage of the primary drain.

MECHANICAL – AIR CONDITIONING

- Auxiliary and Secondary Drain Systems (cont.):
 2. A separate overflow drain line shall be connected to the drain pan installed with the equipment that discharges to a conspicuous point of disposal to alert occupants in the event of stoppage of the primary drain. The overflow drain line shall be installed at an elevation higher than the primary drain connection.
 3. An auxiliary drain pan without a separate drain line that is equipped with a water level detection device conforming to UL 508 that will shut off the equipment served prior to overflow of the pan.
 4. A water level detection device conforming to UL 508 shall be installed that will shut off the equipment served in the event that the primary drain is blocked. The device shall be installed in the primary drain line, the overflow drain line, or the equipment supplied drain pan located at a point higher than the primary drain line connection and below the overflow rim of such pan.

MECHANICAL – EXHAUST VENTING

- Source specific ventilation fans are required in kitchens, bathrooms, water closet rooms, laundry rooms and indoor swimming pools, spas, or other rooms where water vapor or cooking odor is produced.
- Bathroom fans 50 cfm minimum, or 20 cfm continuous.
- Kitchen fans 100 cfm or 25 cfm continuous.
- All exhaust ducts shall:
 - Terminate outside the building
 - Must be equipped with back draft dampers
 - Insulated to a minimum of R-4 in unconditioned spaces such as attics and crawlspaces.

MECHANICAL – OUTDOOR AIR INLETS

- Inlets are screened.
- Inlets located so as not to draw air from any of the following locations:
 - **Within 10' of an appliance vent outlet, unless such vent outlet is 3' above the outdoor air inlet.**
 - Where it will pick up objectionable odors, fumes or flammable vapors.
 - A hazardous or unsanitary location.
 - A room or space having any fuel burning appliances therein.
 - **Within 10' of a vent opening for a plumbing drainage system unless the vent opening is at least 3' above the air inlet.**
 - Attic, crawl spaces or garages.



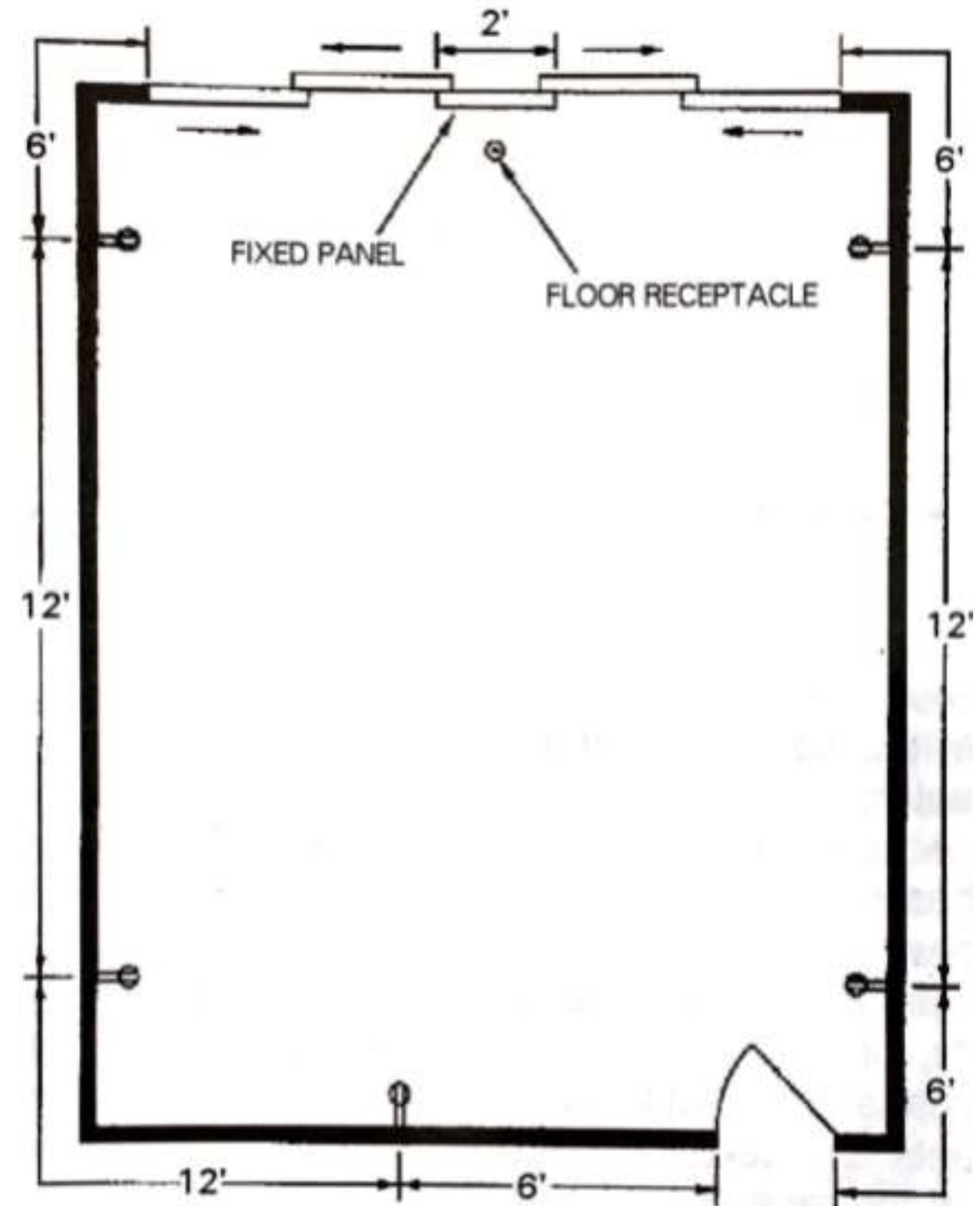
Electrical

ELECTRICAL

- All circuits and circuit modifications shall be clearly and legibly identified as to their clear, evident and specific purpose. Spare positions shall be labeled accordingly.
- Service conductors supplying a building shall not pass through the interior of another building.
- All grounding rod connections shall be readily accessible.
- For townhome construction, the City of Sandy Springs requires that each individual residence have its own dedicated grounding rods.
 - This is required to ensure that the connections are readily accessible for each residence without having to gain access to a neighboring residence.
 - It eliminates the potential of disconnecting a grounded service from a neighboring electrical service panel resulting in a safety hazard.
 - This will eliminate the necessity of an electrical easement that is often overlooked and not typically included with the sale of a townhome.

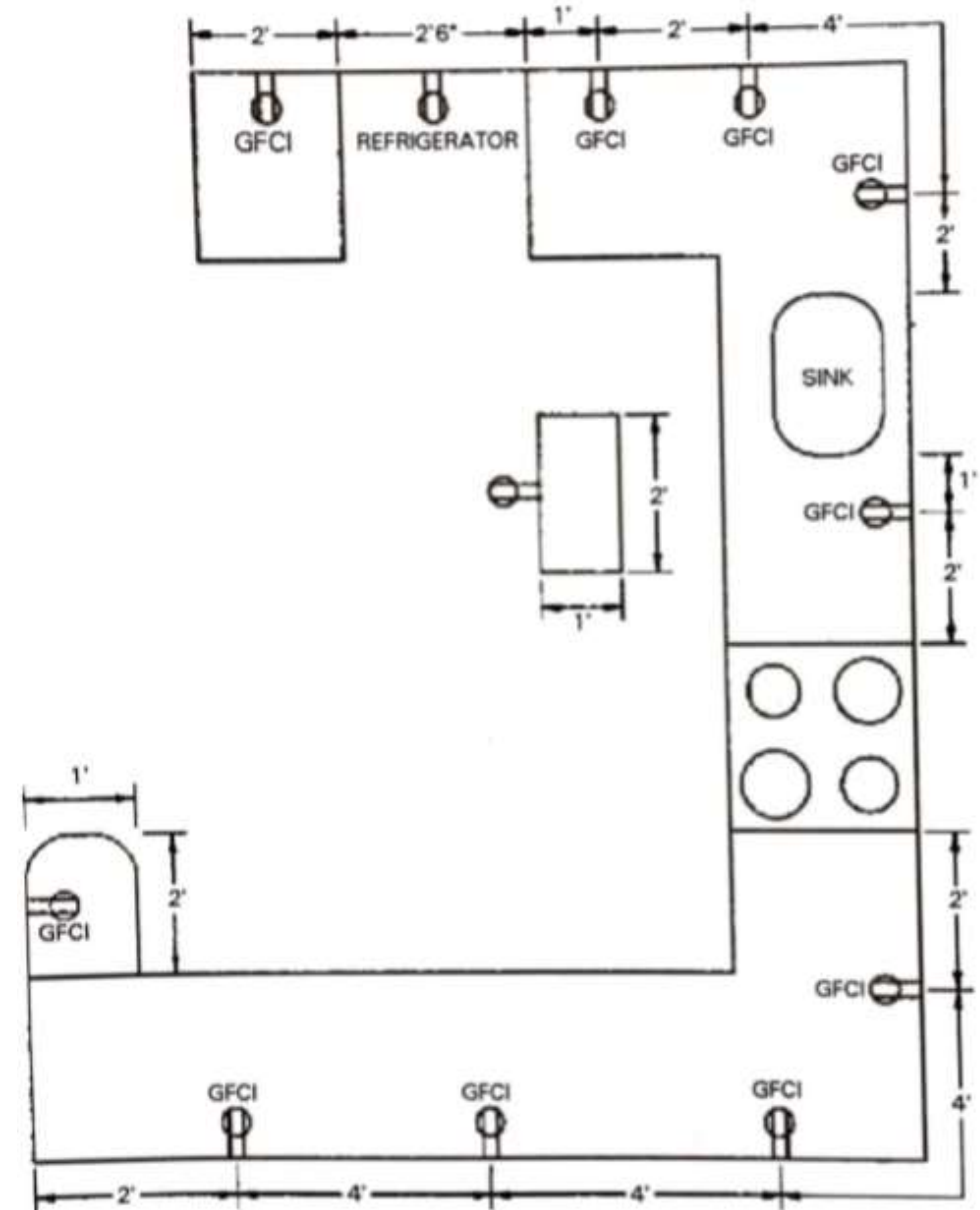
ELECTRICAL

- Receptacle outlets are required in every kitchen, family room, dining room, living room, parlor, library, den, sun room, bedroom, recreation room, or similar room or area of dwelling units.
- Receptacles shall be installed so that no point measured horizontally along the floor line of any wall space is more than **6'-0" from a receptacle outlet.**
- Receptacle outlets in floors shall not be counted as part of the required number of receptacles outlets.



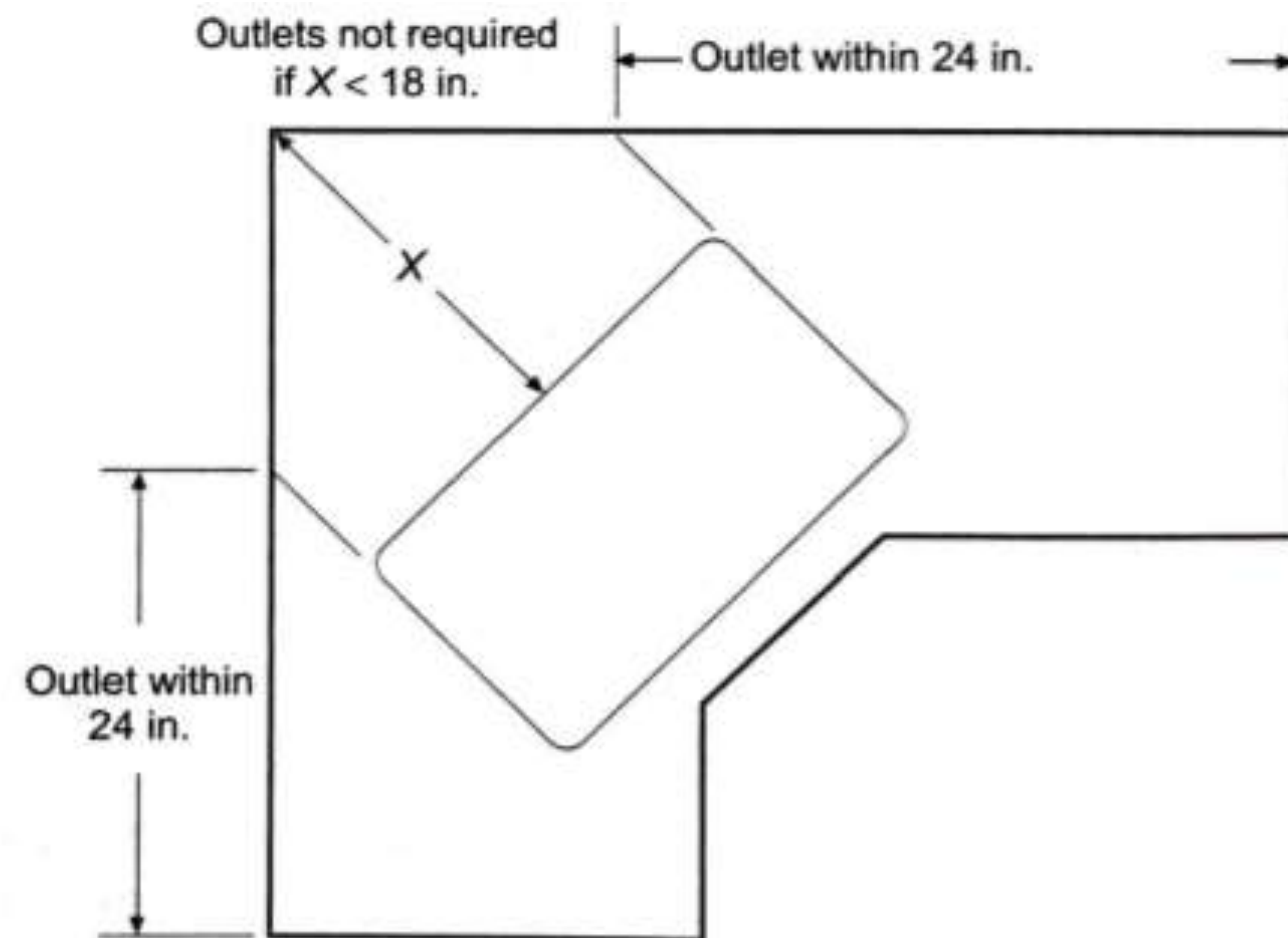
ELECTRICAL

- Receptacles outlets for countertop spaces in kitchens, pantries, breakfast rooms, dining rooms and other similar areas of dwelling units are required to be installed:
 - **At each wall countertop space 12" or wider**
 - So that no point measured along the **wall line is more than 24" from a receptacle outlet (4'-0" spacing)**.
- At least one receptacle outlet shall be installed at each island and peninsular countertop space with a long dimension of 24" or greater and a short dimension of 12" or greater.

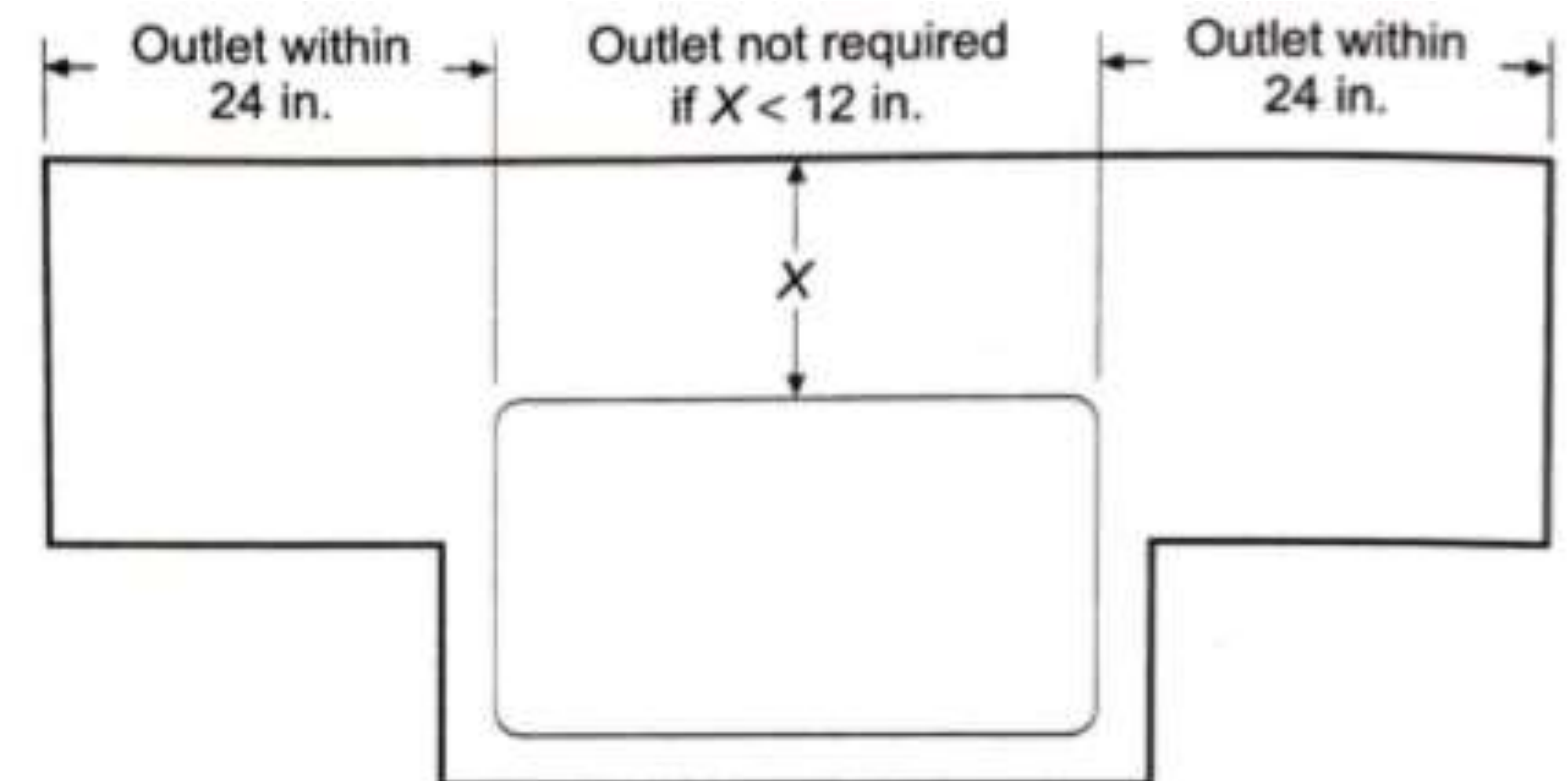


ELECTRICAL

- Countertop spaces separated by range tops, refrigerators, or sinks shall be considered as separate countertop spaces in applying these requirements.



Sink, range or counter-mounted cooking unit mounted in corner



Sink, range or counter-mounted cooking unit extending from face of counter

ELECTRICAL

- At least one wall receptacle outlet shall be installed in bathrooms and shall **be located within 36" of the outside edge of each lavatory basin.**
- The receptacle outlet shall be located on a wall or partition adjacent to the lavatory location, located on the countertop, or installed on the side or **face of the basin cabinet not more than 12" below the countertop.**
- At least one receptacle outlet that is accessible while standing at grade **and located not more than 6'-6" above grade shall be installed at the front and back of each dwelling unit.**
- Balconies, decks and porches that are accessible from inside the dwelling unit shall have at least one receptacle outlet installed within the perimeter of that space and shall be located not **more than 6'-6" above** grade.
- At least one receptacle outlet, in addition to any provided for specific equipment, shall be installed in each basement and garage.

ELECTRICAL

- Ground Fault Circuit Interruptor (GFCI) protection is required at each of the following locations:
 - Bathrooms
 - Garage and Accessory Buildings
 - Outdoor Receptacles
 - Crawlspace Receptacles
 - Unfinished Basements
 - Kitchen Receptacles
 - Sink Receptacles
- GFCIs shall be installed in a readily accessible location

ELECTRICAL

- Arc-Fault Circuit Interrupter (AFCI) protection is required at each of the following locations:
 - Family Rooms
 - Dining Rooms
 - Living Rooms
 - Parlors
 - Libraries
 - Dens
 - Bedrooms
 - Sunrooms
 - Recreation Rooms
 - Closets
 - Hallways
 - Similar Room Areas



Plumbing

PLUMBING

- Drains, Waste and Vents (DWV) shall be tested as follows:
 - **Water tested with a 10'-0** head for 15 minutes
 - Air tested at 5 psi for 15 minutes (Note: Plastic water piping is not allowed **to be tested with air except PEX piping per the manufacturer's specifications only** when subject to freezing.
- Water lines shall be tested to the working pressure or 50 psi for 15 minutes (Note: Plastic water piping is not allowed to be tested with air **except PEX piping per the manufacturer's specifications only** when subject to freezing.
- **Install 18 gage nail plates** where all plumbing lines are within 1" of the outside edge of framing.
- **Support plastic lines every 4'-0"**.
- Support vertical plastic lines at the base and at each floor.

PLUMBING (cont.)

- Each trap shall be protected by a vent
- Each horizontal drainage pipe shall be provided with a cleanout at its **upper terminal and at each 100' run of piping.**
- **Cleanouts shall be accessible. Maintain 12" clearance at lines less than or equal to 2" and maintain 18" clearance at lines greater than 2".**
- Install wet vents a minimum of one pipe size larger than the required waste (upper fixture) and one size larger than the minimum vent size for **fixture units (lower fixture) and a minimum of 2".**
- Water service maximum unregulated pressure shall be 80 psi. If water pressure exceeds 80 psi, a pressure reducing valve is required.
- All ferrous piping buried below grade and exposed to the elements shall have a protective coating of an approved type (epoxy or enamel paint are acceptable means and galvanizing is not deemed adequate protection).

PLUMBING (cont.)

- Water pipes shall not be in the same trench as the building sewer or drainage piping unless both of the following conditions are met:
 1. The **bottom of the water pipe at all points is at least 12" above the top** of the sewer or drain line
 2. The water pipe is placed on a solid shelf excavated at one side of the common trench with a minimum clear horizontal distance of at least **12" from the sewer or drain line.**
- Backflow prevention is required when the building has a fire sprinkler system.
- Water hammer arrestors are required at all locations with an automatic water shutoff valve (refrigerators, dishwashers, icemakers, washing machines, etc)
- Dishwasher drain line requires an air gap

PLUMBING (cont.)

- Provide literature on all anti-scald devices (120 degrees F maximum).
- Plumbing vents shall extend **at least 6" above the** roof and shall be installed at least 10'-0" **away and 3'-0" above windows that open.**
- All hosebibs shall have non-removable vacuum breakers of a self draining type.
- Water heaters located in attics, closets or other interior locations where damage may result from a leaking hot water heater require the installation **of a water tight metal pan with a 3/4" drain line that is piped to an** approved location.
- An expansion tank is only required when the public main pressure exceeds 120 psi or when the house is on a closed system. A closed system occurs when a check valve, backflow preventer or pressure regulating device is installed.



Fuel Gas

FUEL GAS

- All shutoff valves shall meet the following criteria:
 - Shall be accessible.
 - **Appliance shutoff valves shall be located within 6'-0" of the appliance and in the same room.**
 - Outdoor shutoff valves are required for all buildings.
 - All meters shall have a shutoff valve on the supply side.
 - Shutoff valves installed inside a firebox or fireplace shall be installed **per the manufacturer's specifications.**
- Gas line connectors shall not be concealed within or pass through walls, floors, partitions, ceilings or appliance housings.
- **Maximum appliance fuel connector line shall not exceed 6'-0".**

FUEL GAS (cont.)

- Gas pipes shall not run through air ducts, chimneys, ventgs, plenums, clothes chutes, dumbwaiters, elevator shafts or through adjoining townhouse party walls.
- Under floor or outdoor piping shall be a minimum of 3-**1/2"** **above ground.**
- Piping other than steel pipe requires nail plate protection if less than 1-**1/2"** from the stud face.
- All ferrous piping buried below grade and exposed to the elements shall have a protective coating of an approved type (epoxy or enamel paint are acceptable means of protection).
- Cast iron pipe is not suitable for gas.

FUEL GAS (cont.)

- Above grade metallic gas piping requires bonding.
- Gas piping shall not be used as a grounding electrode.
- **Minimum burial depth shall be 12"**
- Gas piping shall not be buried under a slab within the building footprint.
- Gas piping shall not penetrate foundation walls at any point below grade.

Stairs & Landings

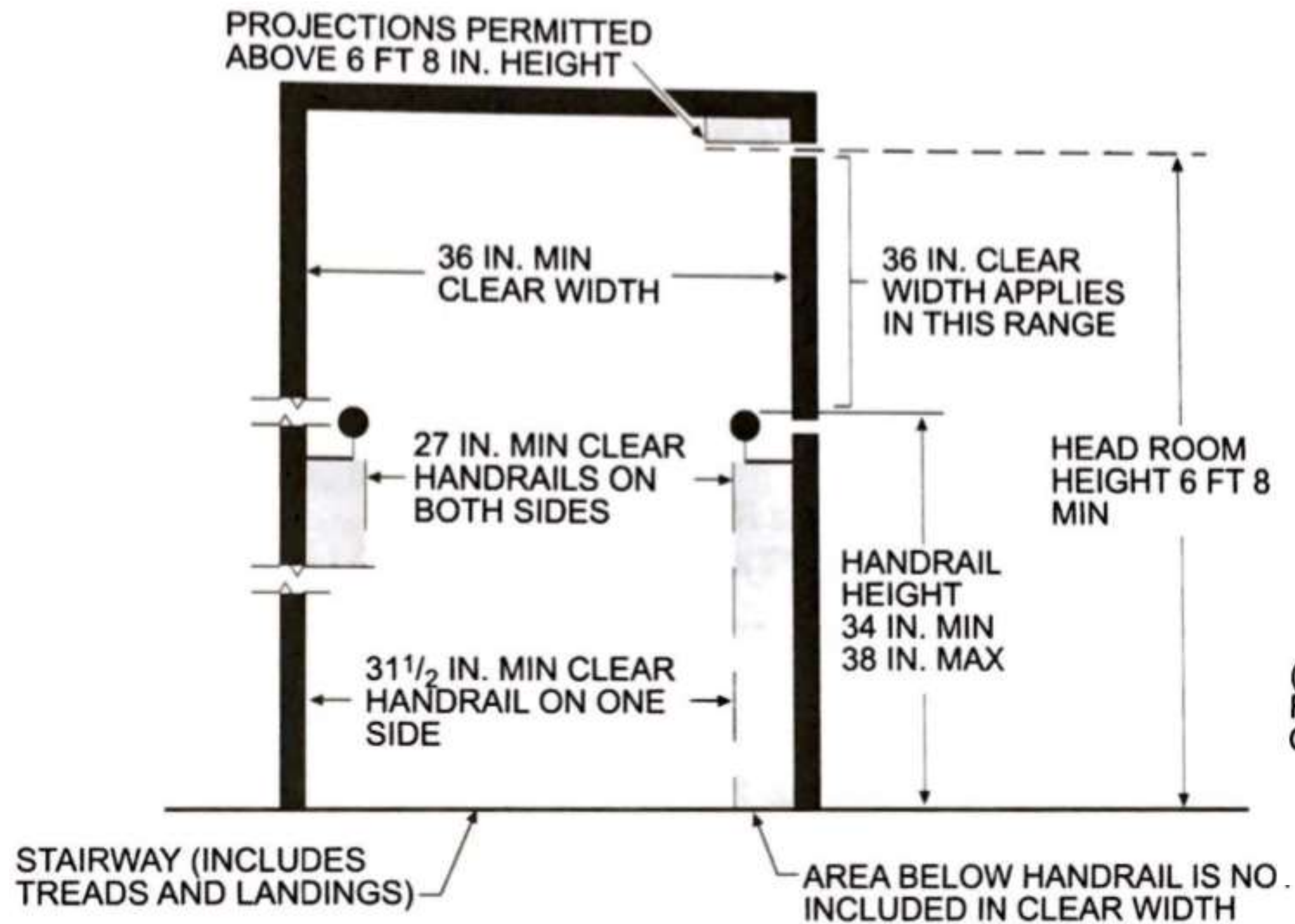
STAIRS & LANDINGS

- All dwellings shall be provided with a continuous and unobstructed path of vertical and horizontal egress travel from all portions of the dwelling to the exterior of the dwelling at the *required egress door* without requiring travel through a garage.
- There shall be a landing on each side of each exterior door.
 - The landing width shall be not be less than the door served.
 - **Every landing shall have a minimum dimension of 36" measured in the direction of travel.**
 - Exterior landings are permitted to have a slope not to exceed 1/4 unit vertical in 12 units horizontal (2%).

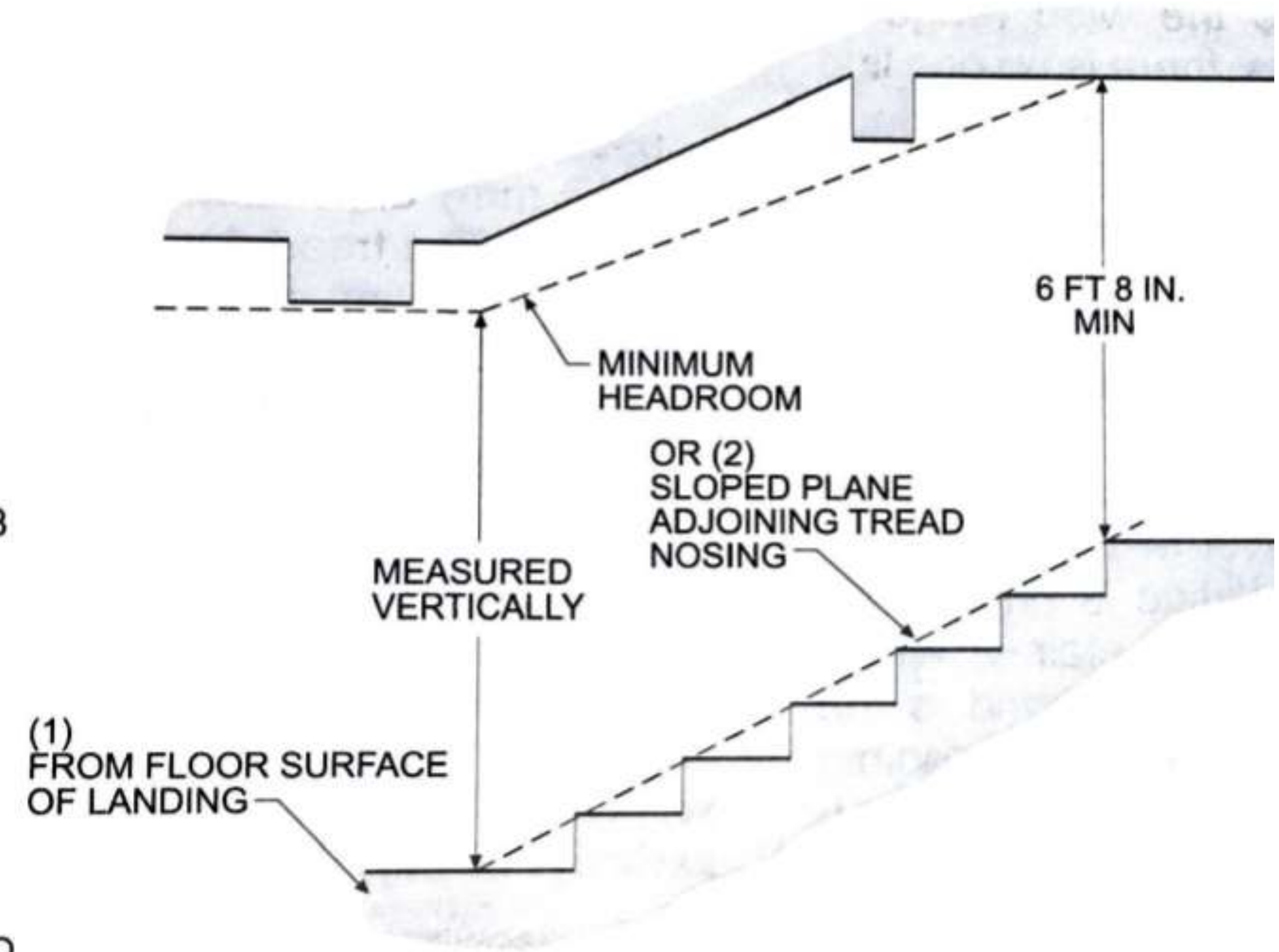
STAIRS & LANDINGS (cont.)

- Landings or finished floors at the *required egress door* shall not be more than **1-1/2" lower than the top of the threshold**.
 - Exception: The landing or floor on the exterior side of the door shall not be more than **7-3/4" below the top of the threshold provided the door** does not swing over the landing or floor.
- Doors other than the required egress door shall be provided with landings or floors not more than **7-3/4" below the top of the** threshold.
- **Stairs shall not be less than 36" in clear width at all points above the** permitted handrail height and below the required headroom height.
- Stairs shall not be less than **31-1/2"** in clear width when a handrail is installed on one side not be less than **27"** in clear width when a handrail is installed on both sides.
- **Minimum headroom height shall not be less than 6'-8" at all locations** measured vertically from the sloped line of the tread nosing or landing.

STAIRS & LANDINGS (cont.)



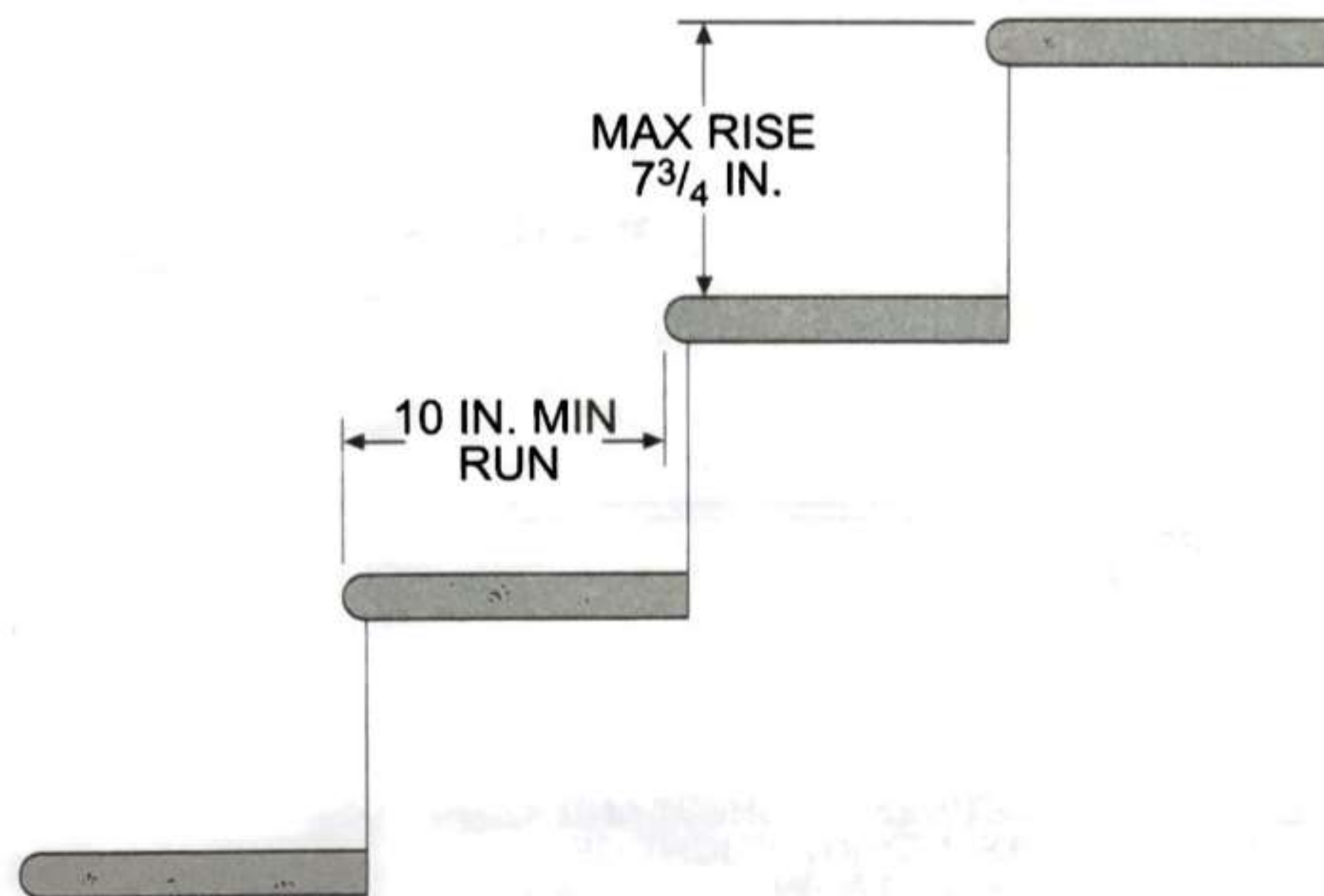
Stairway Clearances



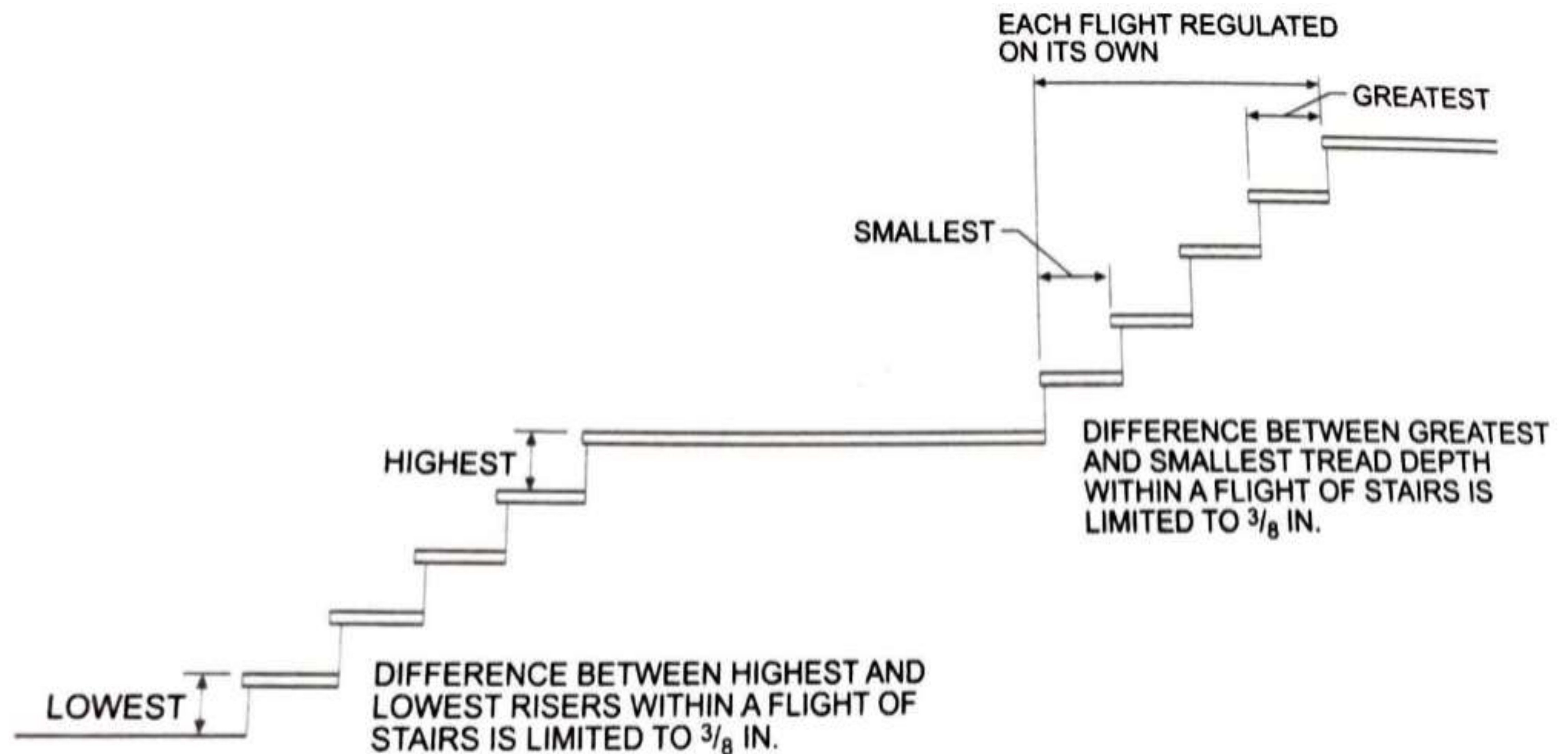
Minimum Headroom

STAIRS & LANDINGS (cont.)

- Maximum riser height shall be 7-3/4"
- The greatest riser height within any flight of stairs shall not exceed the smallest by more than 3/8".
- Minimum tread depth shall be 10"
- The greatest tread depth within any flight of stairs shall not exceed the smallest by more than 3/8".



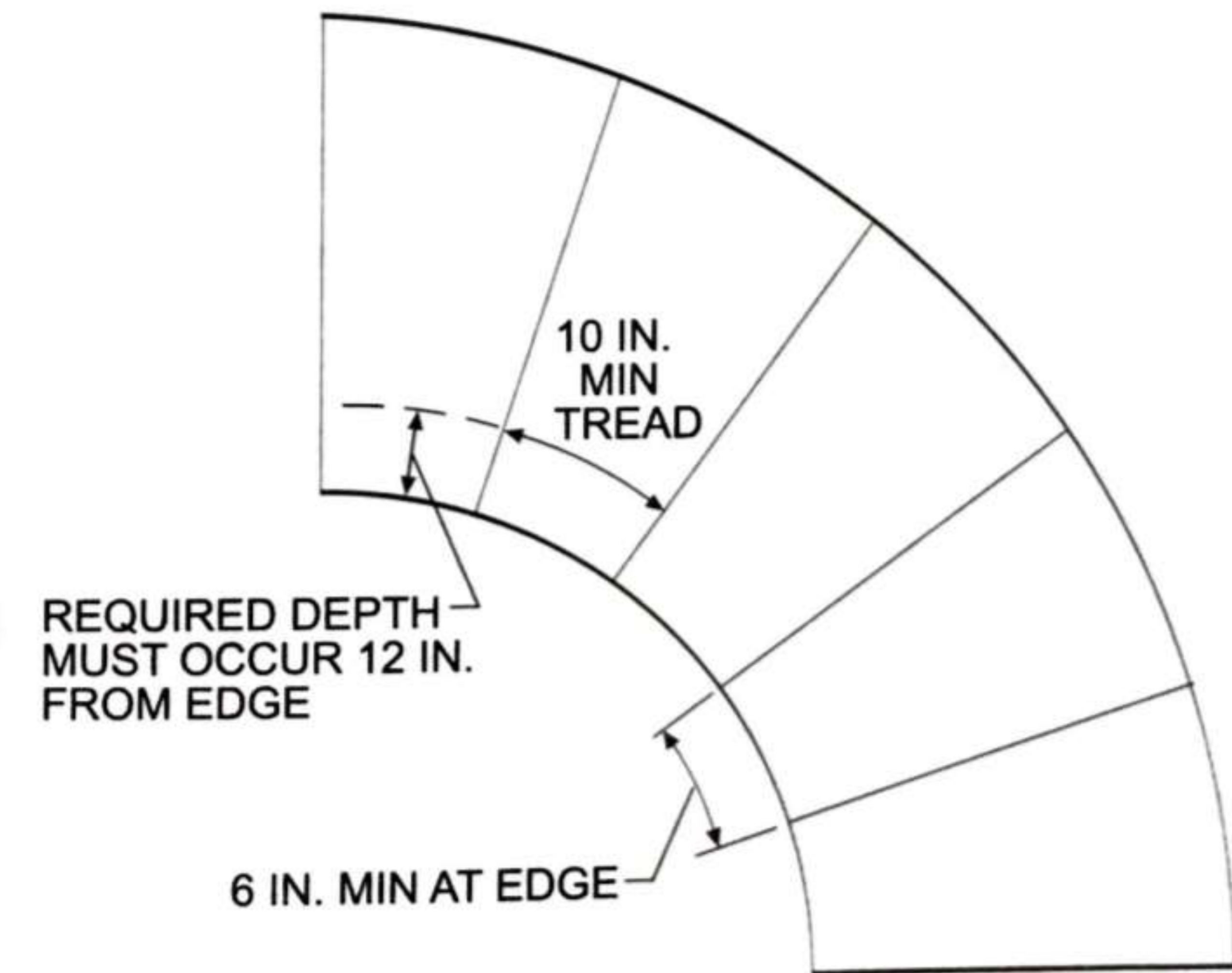
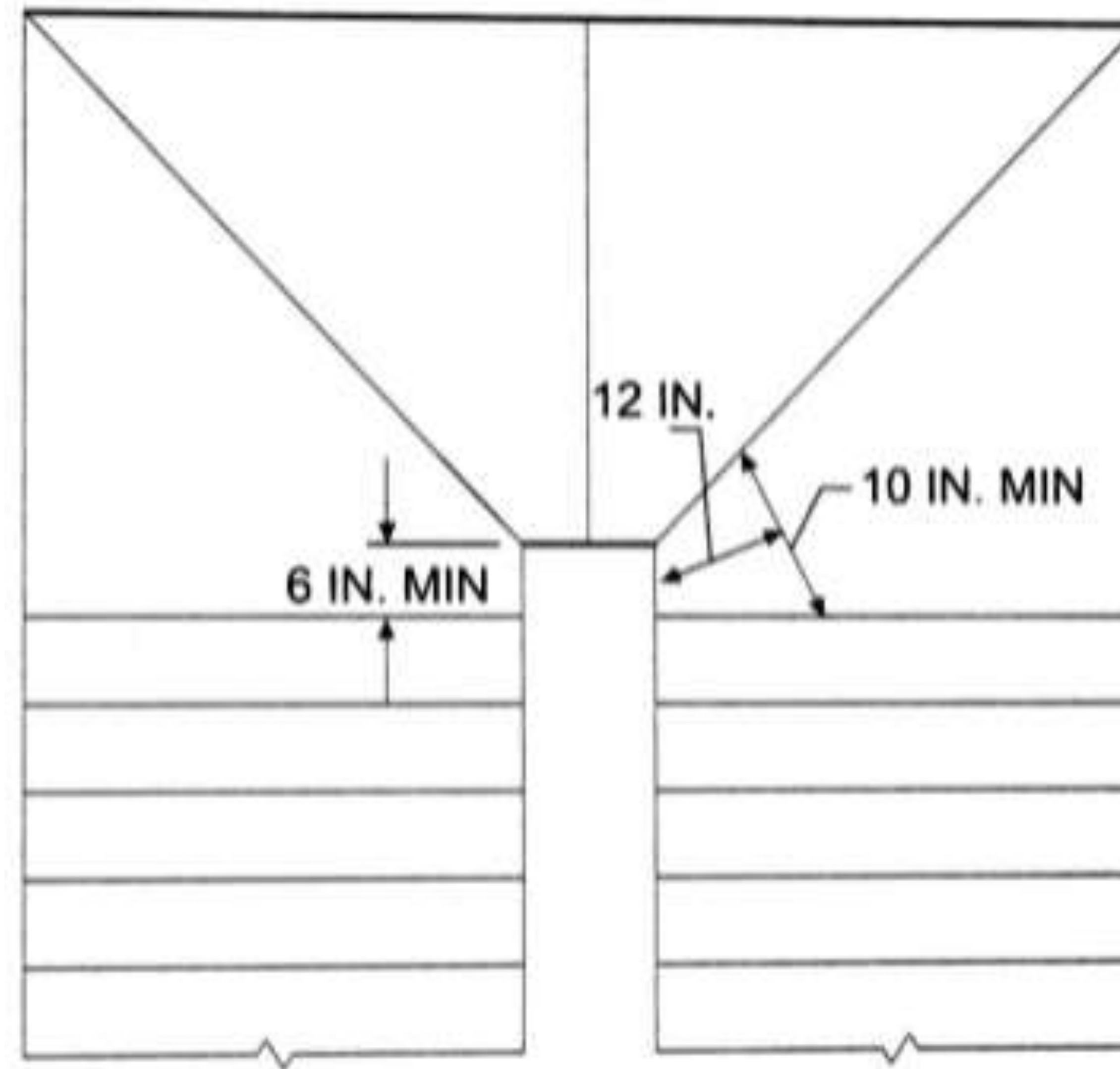
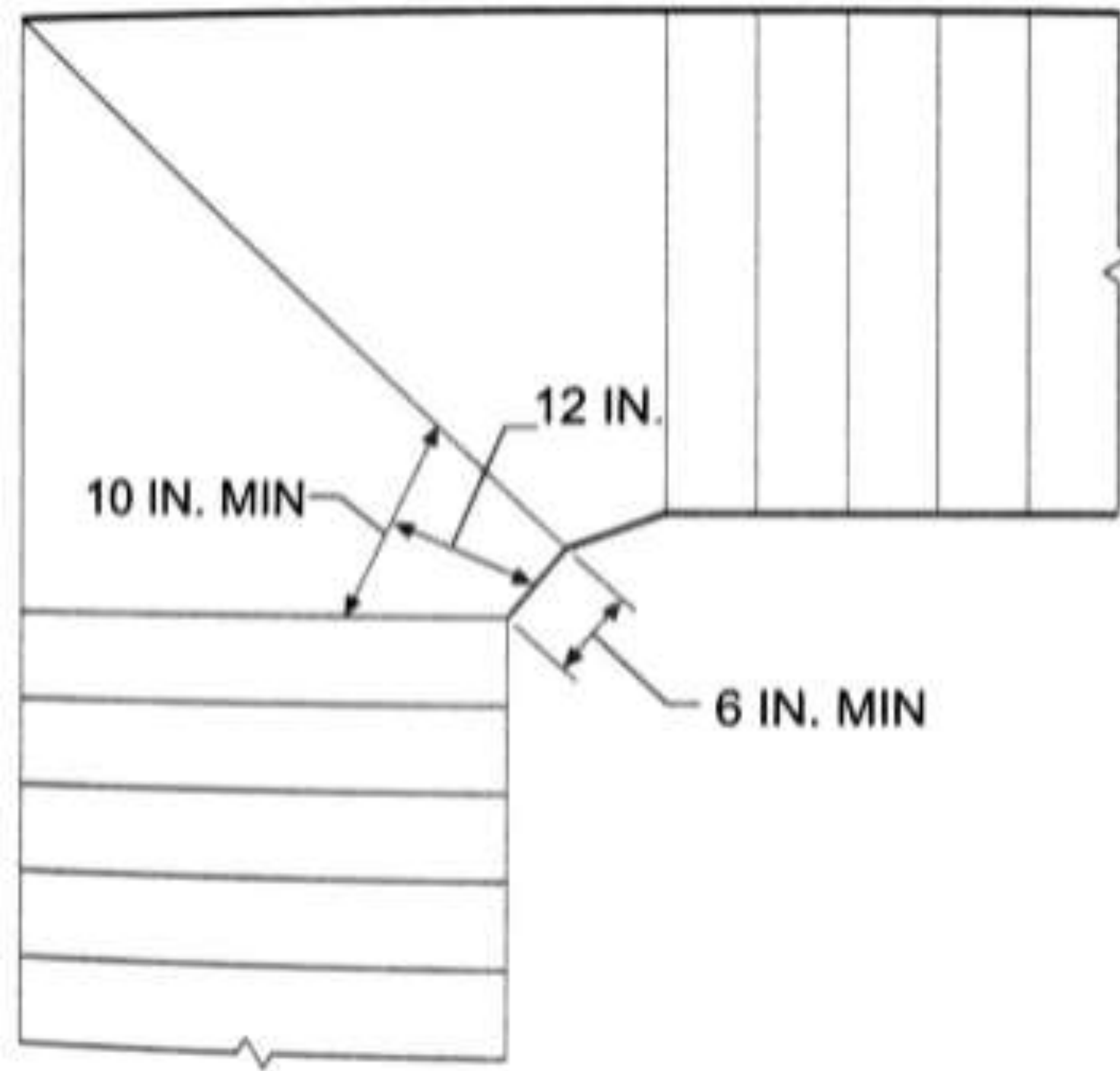
Conventional Stairway



Stair Tolerances

STAIRS & LANDINGS (cont.)

- Winder treads shall meet the following requirements:
 - Minimum tread depth of 6" at the edge
 - Minimum tread depth of 10" measured 12" from the edge



Minimum Tread Depth for Winder Stairs

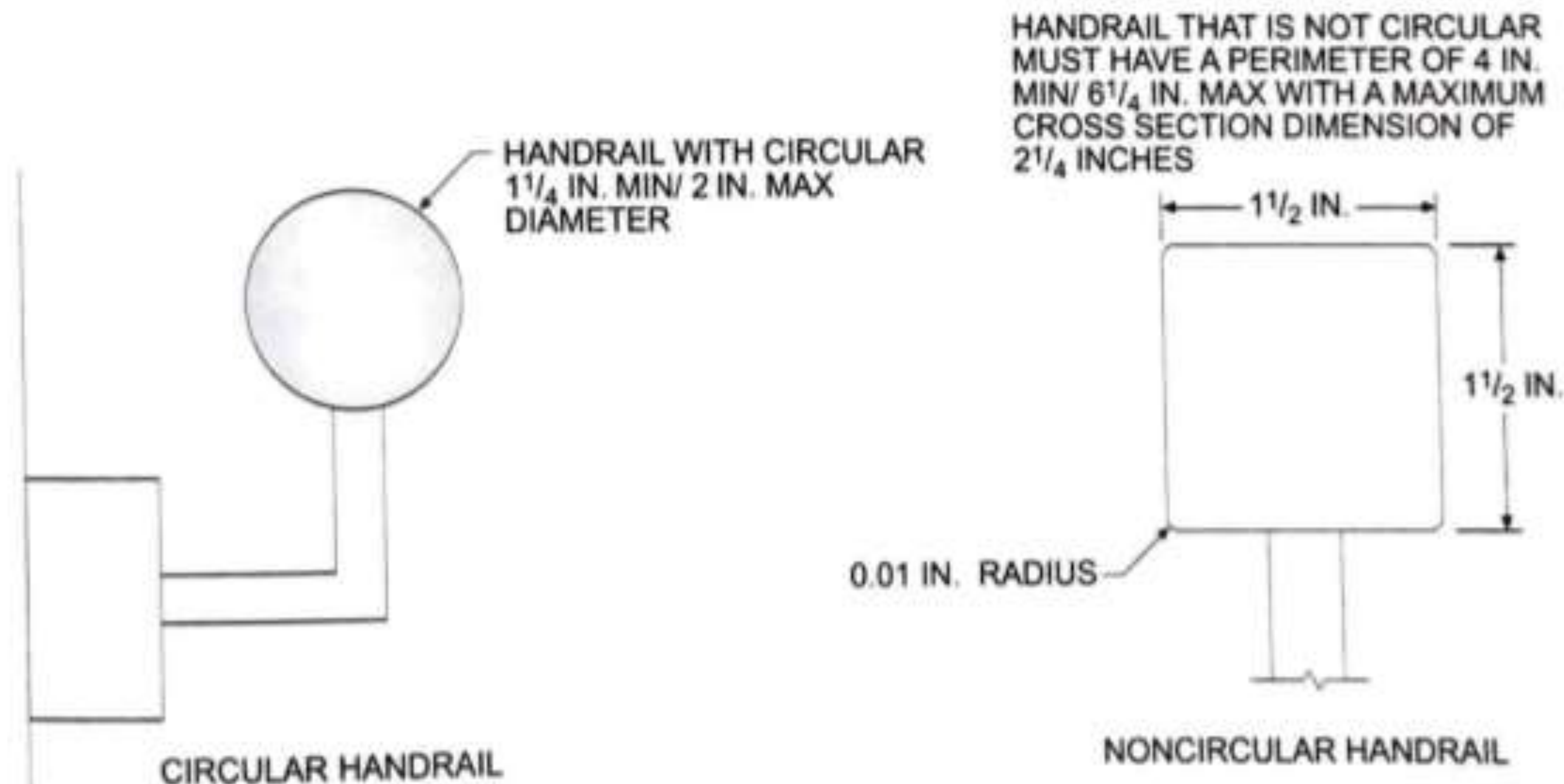
Handrails & Guardrails

HANDRAILS

- Shall be provided on at least one side of each flight of stairs with four or more risers.
- Shall be continuous for the full length of the flight of stairs from a point directly above the top riser to a point directly above the lowest riser.
- Inside handrails on switchback or dogleg stairs shall be continuous between flights or shall be interrupted by a newel post at the turn.
- **Height shall not be less than 34" and not more than 38" measured vertically** from the sloped plane adjoining the tread nosing.
- Ends shall be returned or terminated in a newel post.
- Handrails adjacent to a wall shall have a space of not less than 1-1/2" between the wall and the handrail.

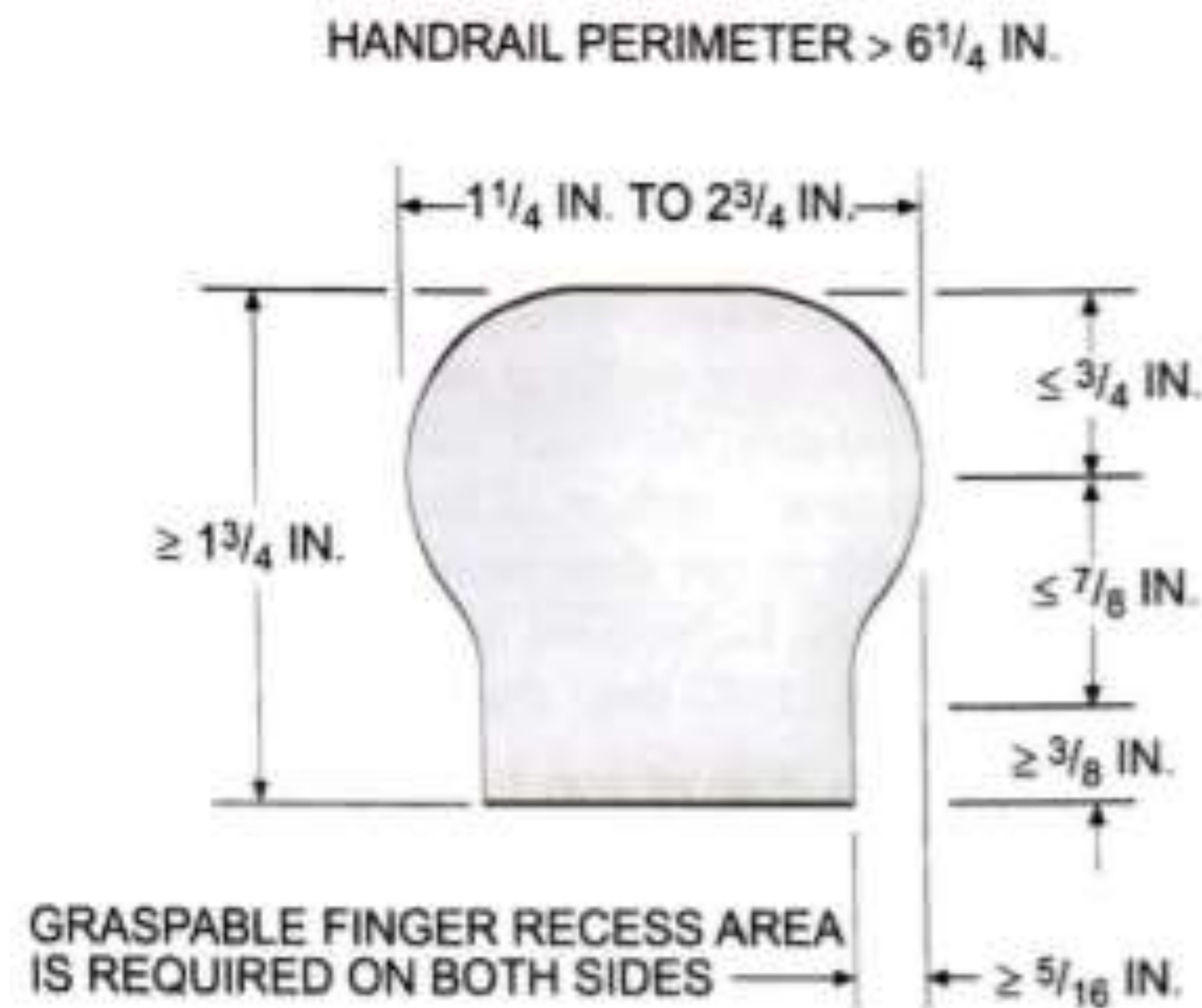
HANDRAILS – TYPE I

- Handrails with a circular cross section shall have an outside diameter of at least 1-1/4" and not greater than 2".
- Non-circular handrails shall have a perimeter dimension of at least 4" and not greater than 6-1/4" with a maximum cross sectional dimension of 2-1/4". All edges shall have a minimum radius of 0.01 inch.



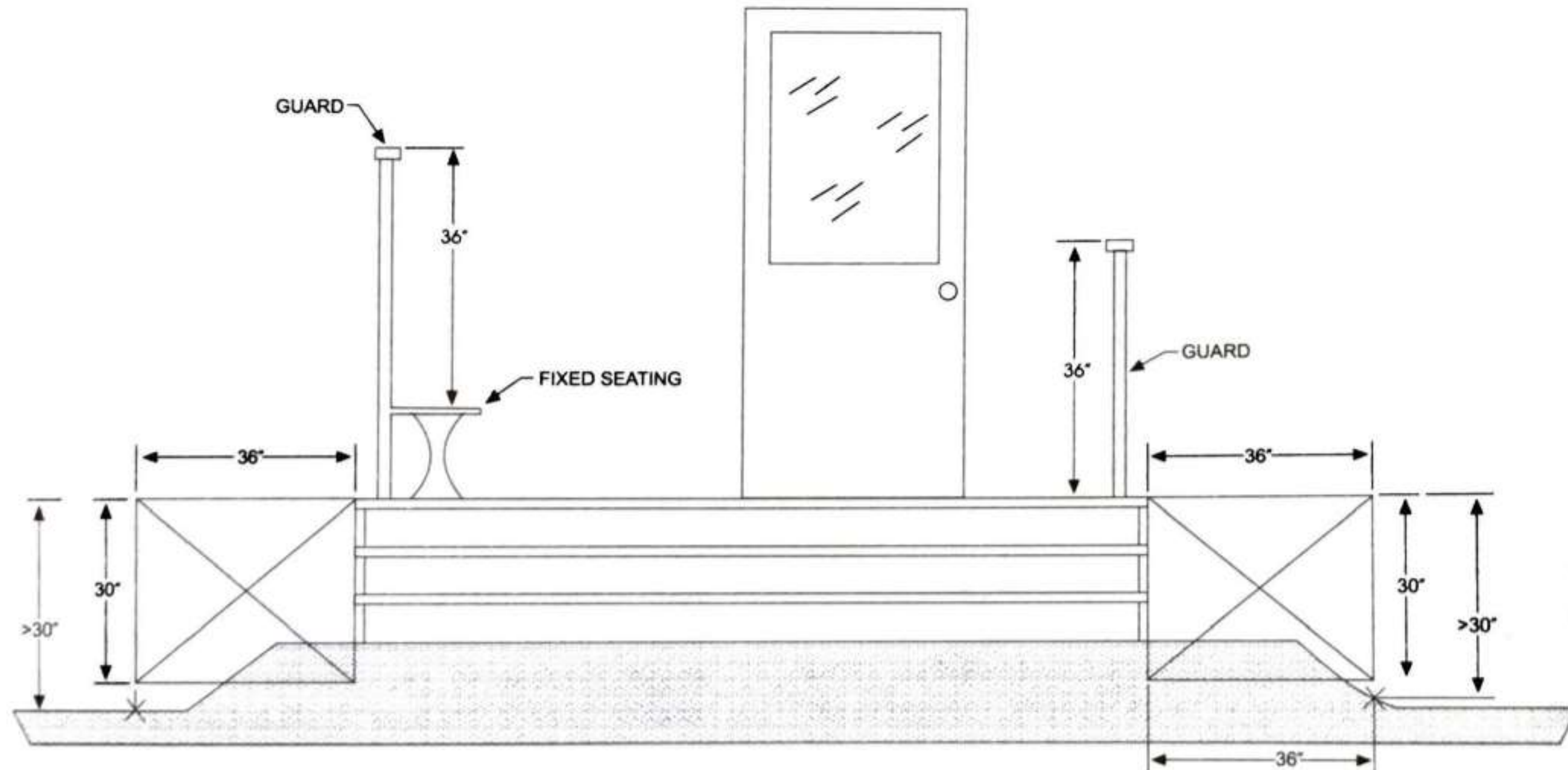
HANDRAILS – TYPE II

- Handrails with a perimeter greater than 6-1/4" shall have a graspable finger recess area on both sides of the profile as follows:
 - Shall begin within a distance of 3/4" measured vertically from the top of the handrail
 - Shall achieve a depth of 5/16" within 7/8" within the 4 widest portion of the profile.



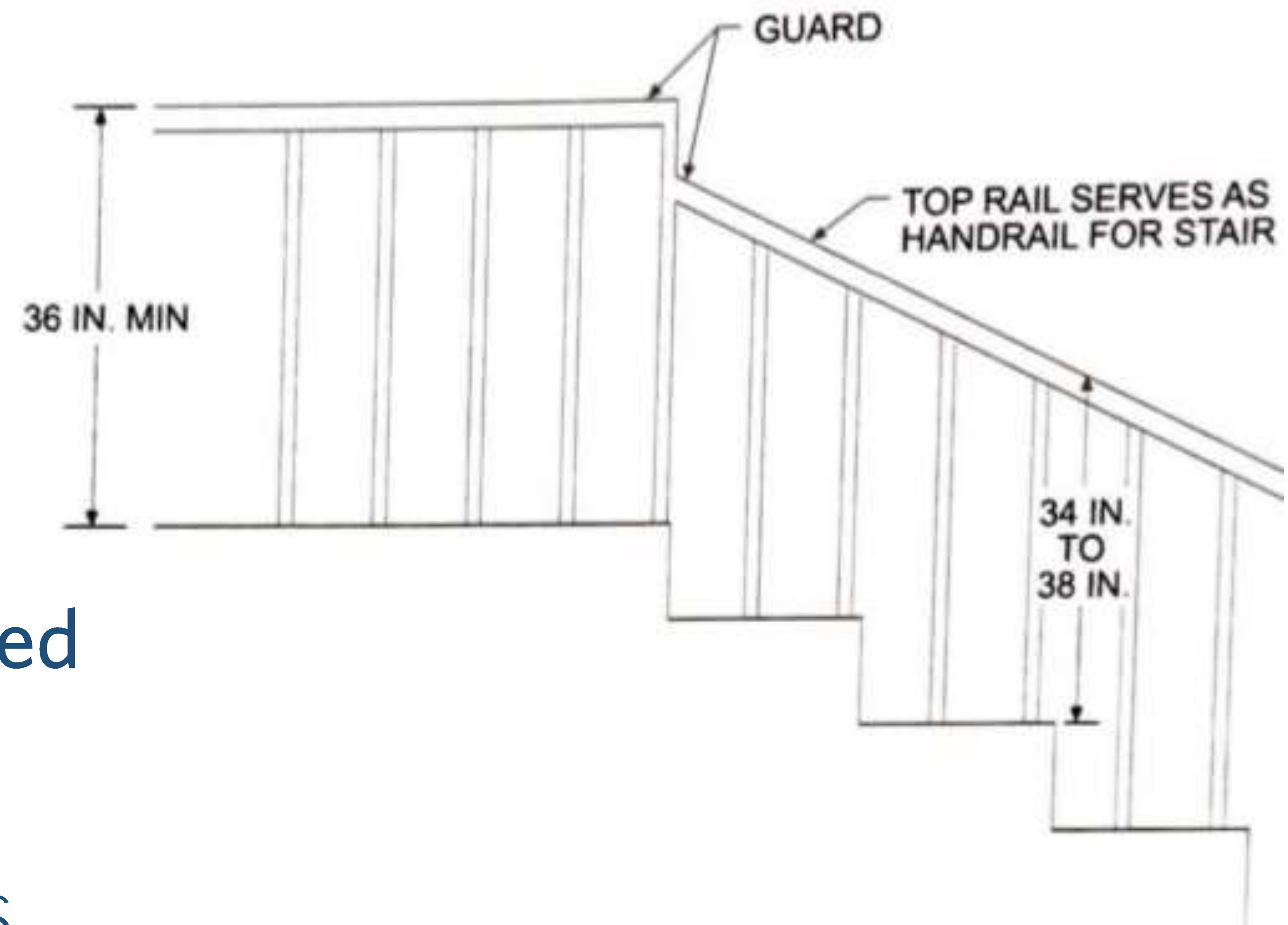
GUARDRAILS

- Guards shall be located along open sided walking surfaces including stairs, ramps and landings that are located more than 30" above the floor or grade below any point within 36" horizontally to the edge of the open side.



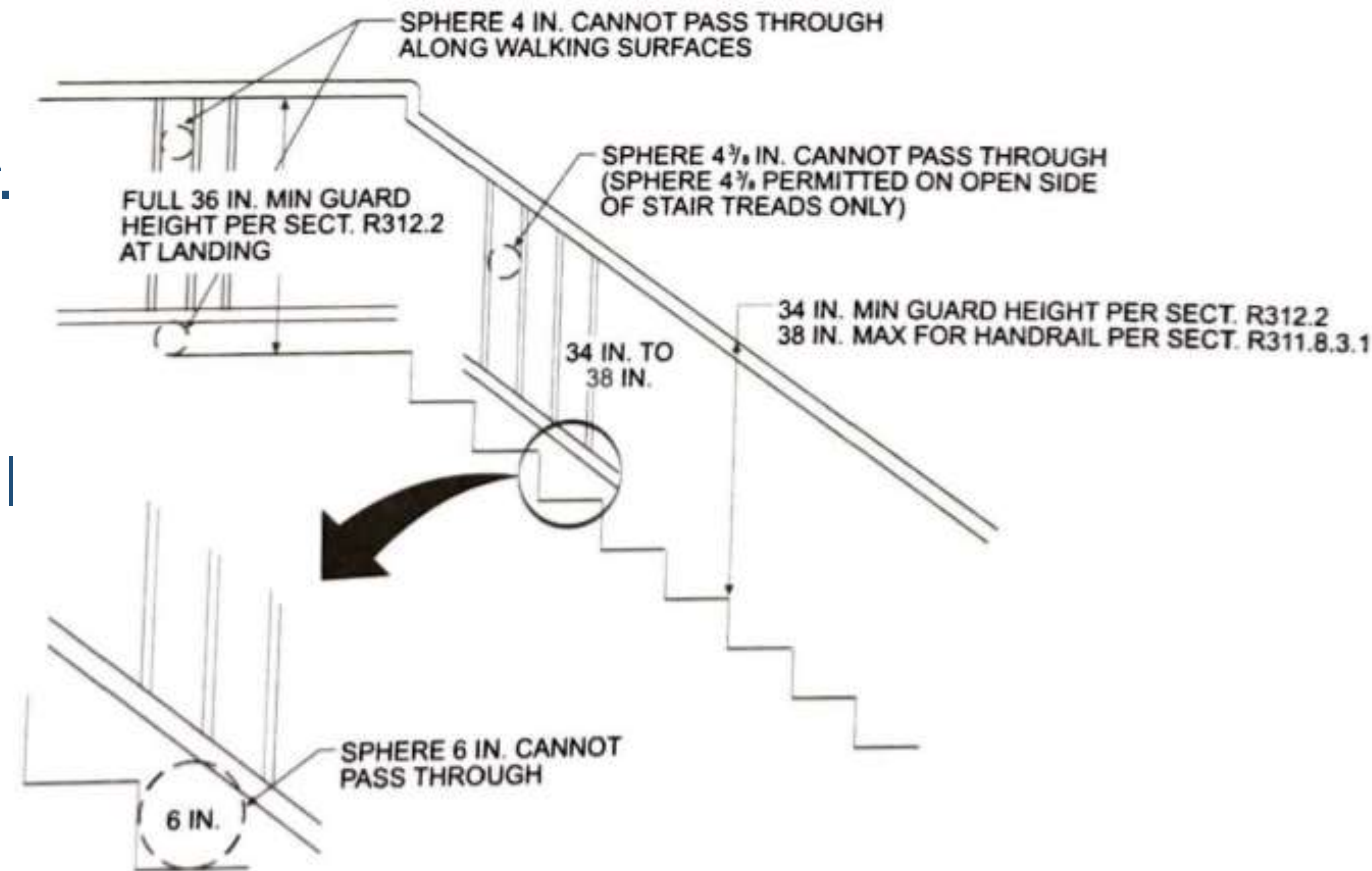
GUARDRAILS

- **Guards shall not be less than 36" high** measured vertically above the walking surface, adjacent fixed seating or the line connecting the leading edges of treads.
- Exceptions:
 1. Guards on the open side of stairs shall **have a height not less than 34" measured** vertically from a line connecting the leading edges of the treads.
 2. Where the top of the guard also serves as a handrail on the open side of stairs, the top of the guard shall not be less than **34" and not more than 38" measured** vertically from a line connecting the leading edges of the treads.



GUARDRAILS

- Guards shall not have openings from the walking surface to the required guard height which allow **passage of a sphere 4" in diameter.**
- Exceptions:
 1. The triangular opening at the open side of stairs formed by the riser, tread and bottom rail of a guard shall not allow **passage of a sphere 6" in diameter.**
 2. Guards on the open side of stairs shall not have openings which allow passage of a sphere 4- **$\frac{3}{8}$ " diameter.**



Future Seminar Topics

FUTURE SEMINAR TOPICS

- Residential Exterior Construction
 - Swimming Pools
 - Decks
 - Retaining Walls
 - Driveways
 - Site Work
 - Storm Water Management
- Planning & Zoning
 - Residential
 - Commercial
 - Signs
- Permitting & Submittal Process
 - Required Submittals
 - Review Process
 - **Developer's Meeting**



Questions?