

Code Adoption Changes 2021 International Residential Code

Phase I: Underground and slab: Post permit and address visible from the street. Maintain erosion control. **Inspections will fail if erosion control is not installed and maintained. Inspections will fail if site conditions do not match the plans.**

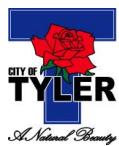
1. Install erosion control/silt fences.
2. Plumbing rough-in inspections are to be called in by the plumbing contractor.
3. Temporary power pole inspections are to be called in by the electrical contractor.
4. Pre-pour slab inspection is done after rebar is in place and termite treatment has been done. String lines must be up to mark property lines, or form-board survey completed.

Code Changes:

1. Piers in slab will not be accepted without engineer design. Either a compaction test on every lift of fill or extend footings 12" into undisturbed soil. **IRC 403.1.4**
2. A drain and sewer relining permit requires a video submitted **PRIOR** to the permit being issued to determine if relining will be allowed, and then a video after the work is done. **P3011**

Phase II: Rough-in and Frame: Post permit and address visible from the street. Maintain erosion control. **Inspections will fail if erosion control is not installed and maintained. Inspections will fail if site conditions do not match the plans.**

1. Mechanical rough-in, electrical rough-in, and plumbing top-out inspections are called in by the contractors of each trade **before** the framing inspection is done. **R109.1.4** The shower liner test will be done on site-built-up shower receptors at the time of the plumbing top-out inspection. **P2709**
A2L line set pressure test for AC systems using A2L refrigerant will be done at rough-in.
2. Building framing inspection is done after the above inspections have been approved and the building is dried-in (windows and roof completed). The framing inspection will not be done before their approval. **Do not insulate without frame approval, or insulation will have to be removed.**
3. Anchor bolt, brick-tie, and drip edge flashing inspections will be done at frame inspection.
4. Insulation is to be inspected by an independent 3rd party inspector, and the approved report is **submitted prior to installing sheetrock.**



Code Changes:

Building:

1. Roof bracing will not be accepted on double ceiling joists or strongbacks without engineer approval. The roof must be braced to a wall or beam designed to support the load. **IRC 802.4-802.6**
2. 11' walls that support a floor and roof must be 2x6. 12' walls must be 2x6. (Except 2x4 12" o-c) **Table 602.3(6) (see figure 5)**
3. Rafter and joist span charts have been changed. A new span chart was added for deck floor joists.
4. Ceiling joists must run parallel with rafters and be nailed to rafters every 48" **OR** the ridge constructed as a beam. When these conditions don't exist, a 2x4 rafter tie must be installed above the ceiling joists and nailed to the rafters every 24", or the ridge be designed as a beam. This provision is intended to prevent the outward thrust of supporting walls. Code language has changed to prevent the use of hurricane ties or "finger joists" as the sole means of accomplishing this. **IRC 802.5.2 (see figures 1-3)**
5. New brick tie style requirements and air space requirements to account for continuous insulation **Table 703.8.4(1) (see figure 6)**
6. **Choice between prescriptive or performance paths for energy codes. Extensive changes to the prescriptive path.**
7. Dryer ducts must not be deformed when concealed within a wall (4" dryer duct cannot be in a 2x4 wall.) **M1502.4.2**
8. Storm shelters and safe rooms must be engineered and designed to ICC 500. **R323**
9. Fastener spacing for wood structural panels (OSB, plywood) for walls and roof decks has changed to 6" O-C in the field and at edges for nails and 3" O-C for staples in the field and at edges. **Table 602.3(1) & (2)**
10. Smoke detectors must be installed in the hallway, and the room open into the hallway, when the ceiling height of the room open into the hallway serving bedrooms exceeds 24". (Most commonly, in the living room and hallway outside a bedroom) **R314.3 item 5 (see figure 4)**

Mechanical:

1. Building framing cavities shall not be used as a duct or plenum (including return air) **IRC 1103.3.7**
2. Dryer duct booster fans are prohibited, and a dryer duct power ventilator is required instead **IRC 1502.4.4 (must be UL-705 Listed)**
3. Multiple gas appliances connected to a common flue must be tied together by a listed connector **M1803**
4. When HVAC replacements of fuel fire appliances happen in existing houses, carbon monoxide detectors must be installed and interconnected. Wireless interconnectivity is acceptable. **R315.2.2**
5. Return and supply ducts to be insulated to R-8 **N1103.3.1 (prescriptive)**
6. Smoke detectors must be installed in the hallway, and the room open into the hallway, when the ceiling height of the room open into the hallway serving bedrooms exceeds 24". (most commonly, in the living room and hallway outside a bedroom) (Return ducts cannot be placed within 3' of the smoke detector) **R314.3 item 5 (see figure 4)**



Plumbing:

1. Threaded gas joints must use joint sealing material. Must be a nonhardening type. **IRC 2414.8.3**
2. Developed length of hot water lines cannot exceed 100' from the source (water heater or recirculation line) **P2905.3 (see figure 7)**
3. Shutoff valves installed in tubing systems shall be rigidly and securely supported *independently* of the tubing. **G2420.6 (see figure 9)**
4. T&P lines constructed of tubing utilizing insert fittings must be 1 nominal size larger, with the outlet end fastened in place. **P2804.6.1 item 14**
5. All hot water lines must be insulated, even in conditioned spaces **N1103.5.2 (prescriptive)**

Electrical:

1. Solar panels must be arranged to provide access and walk paths for emergency services. **R324.6 (see figure 10)**
2. Island and peninsular countertop and work surfaces: If a receptacle is not installed, provisions must be provided for future installation. **'23 NEC 210.52 © 2 & 3**
3. Electric Vehicle Supply Equipment (EVSE) Load shall be calculated at either 7200 Watts or the nameplate of the equipment, whichever is greater. **'23 NEC 220.57**
4. Emergency disconnects shall be installed on one- and two-family dwellings in a readily accessible outdoor location (visible and within 50' from the dwelling) **'23 NEC 230.85**
5. Emergency disconnects shall be labeled in accordance with **'23 NEC 230.82 (3)**
6. Grade, floors, and working platforms for the required working space shall be as flat and level as practical. **'23 NEC 11.26 (a)(6)**
7. Open equipment doors shall not impede egress to or from the workspace **'23 NEC 110.33(a)**
8. Barriers (covers) shall be placed so that no energized, uninsulated, ungrounded busbar or terminal is exposed to inadvertent contact. **'23 NEC 215**
9. Flexible cords on appliances must be listed for flexible cords or per **'23 NEC Article 422**
10. Smoke detectors must be installed in the hallway, and the room open into the hallway, when the ceiling height of the room open into the hallway serving bedrooms exceeds 24". (Most commonly, in the living room and hallway outside a bedroom) **R314.3 item 5 (see figure 4)**

Phase III: Finals: Post permit and address visible from the street. Maintain erosion control.

1. Submittal documents required before finals:
 - a. Duct pressure test required before the mechanical final.
 - b. CSI report required before the plumbing final.
 - c. Backflow-test result required before the irrigation final.



d. 3rd party energy inspection with 2021 IECC compliance report.

2. Mechanical, electrical, plumbing, and irrigation finals must be called in by the contractors of each trade prior to the final building inspection.
3. At the time of the electrical final, **100%** of lighting (lamps, bulbs, etc.) must be energy efficient to meet energy codes.

Code Changes:

Building:

1. Garage doors must be labeled by the manufacturer **R609.4.1**
2. Doors between the garage and house must be self-latching and self-closing. **R302.5 OR install a smoke/carbon monoxide combo detector inside the house at the door into the garage.**
3. Guard rails must have a means of positive attachment that doesn't rely on fasteners into the end grain that is subject to withdrawal **R507.10.1.1**
4. The energy certificate must be posted on the electrical panel, wall next to the furnace, or utility room **N1101.14**

Plumbing:

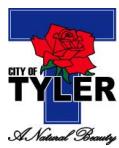
1. Water hammer arrestors shall be installed where quick-closing valves are utilized (refrigerator, dishwasher, washing machine, etc) **P2903.5 (see figure 8)**
2. T&P discharge pipes on water heaters that use insert fittings must be 1 nominal size larger than the relief valve opening **P2804.6.1 item 14**
3. Tubing used for T&P discharge pipe must be fastened in place on the outlet end

Electrical:

1. Surge protection device required to be installed per **'23 NEC 215.18**
2. GFCI requirements have been expanded to include all areas with sinks, provisions for food preparation, beverage preparation, or cooking. **'23 NEC 210.(a) (7) exceptions per city ordinance: 1. Refrigeration equipment including freezer, refrigerator, and Air Conditioning equipment when installed on a dedicated circuit. 2. GFCI protection shall not be required for HVAC equipment.**
3. Specific appliances; GFCI protection: GFCI protection shall be provided (hardwired or plug and cord) for branch circuits supplying the following appliances rated 150 volts or less and 60 amps or less, single- or 3-phase: sump pumps, dishwashers, electric ranges, wall-mounted cooking units, clothes dryers, microwave ovens. **'23 NEC 210.8 (D)**
4. Flexible cords on appliances must be listed for flexible cords or per **'23 NEC Article 422**

Mechanical:

1. Refrigerant line insulation must be protected **IRC 1411.6.1**
2. Refrigerant lines must be supported within 6ft of condensing unit **IRC1411.8**
3. Locking access port caps are required **IRC 1411.9**



ORDER OF INSPECTIONS

Residential

(Continued)

Secondary Systems:

Swimming pools and driveways, if applicable, must be inspected and finalized before building final is issued.

Swimming Pool Inspections:

1. Separate Pool and Electrical pool permits
2. Belly steel and bonding inspections
3. Deck bonding inspection
4. Pool and electrical final inspections

Before the final approval, the pool must be completed and filled, required fencing installed, and alarms on doors that open into the enclosed pool area.

Driveways: Requires a separate permit

1. Pre-pour inspection to verify compliance with City of Tyler specifications

Retaining walls: Retaining walls over 4ft; walls within 1.5x it's height of a building, driveway, or another retaining wall, must be engineered.

1. Footing inspection
2. Final inspection

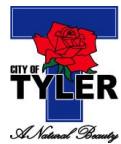
Temporary Gas Service: Requires a separate permit

1. Gas must be connected to all appliances
2. The house must be ready to be conditioned (doors & windows installed, sheetrocked)
3. Gas pressure test
4. Temp gas meter inspection – release of meter

Temporary Electrical Service: Requires a separate permit

1. Panels and fixtures, receptacles, switches, etc. below 8ft must be finished/trimmed out. The building must be lockable.
2. Elec Temp Service inspection – release of meter

Drain Relining: A drain and sewer relining permit requires a video submitted **PRIOR** to the permit being issued to determine if relining will be allowed, and then a video after the work is done. **P3011**



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Emails that need to be sent to all inspectors, reviewers, permit techs, and the Building Official can be sent to the following email groups:
Buildinginspectors@tylertexas.com & Permittechs@tylertexas.com

Inspections called in through the inspection request voicemails after 7 a.m. will not be received until the next business day.

Inspections requested on Trakit must be done the day before the inspection is needed. If the midnight deadline is missed, call the voicemail request line at the numbers above before 7 a.m. for same-day inspections.

www.TylerInspections.com

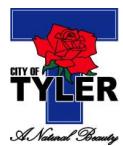


Figure 1:

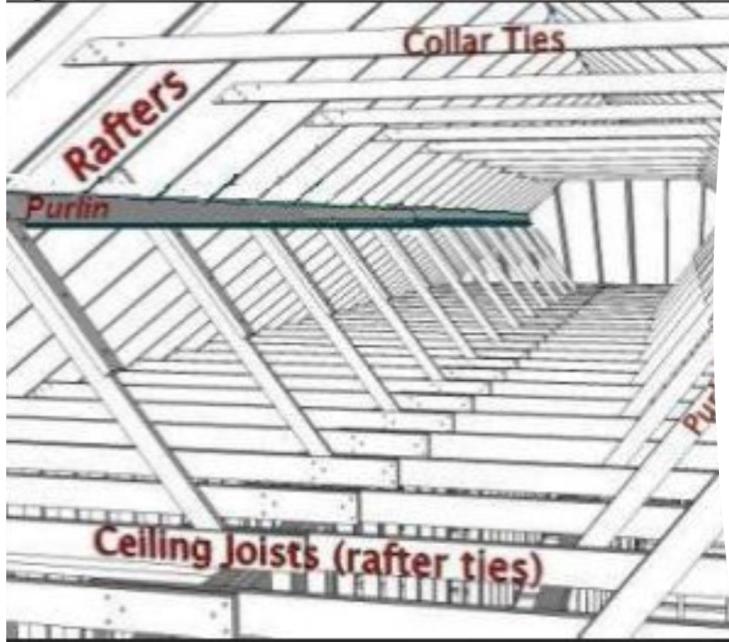
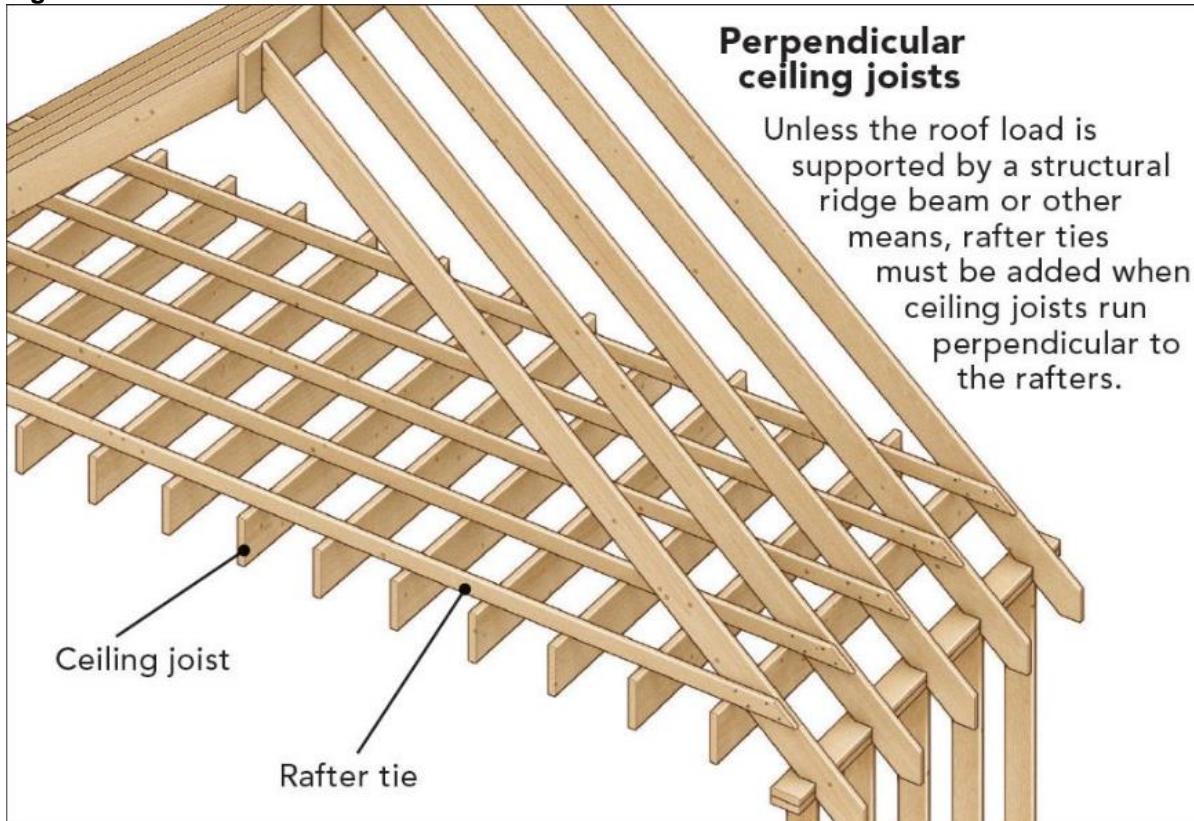


Figure 2:



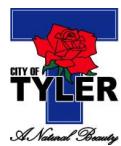


Figure 3:

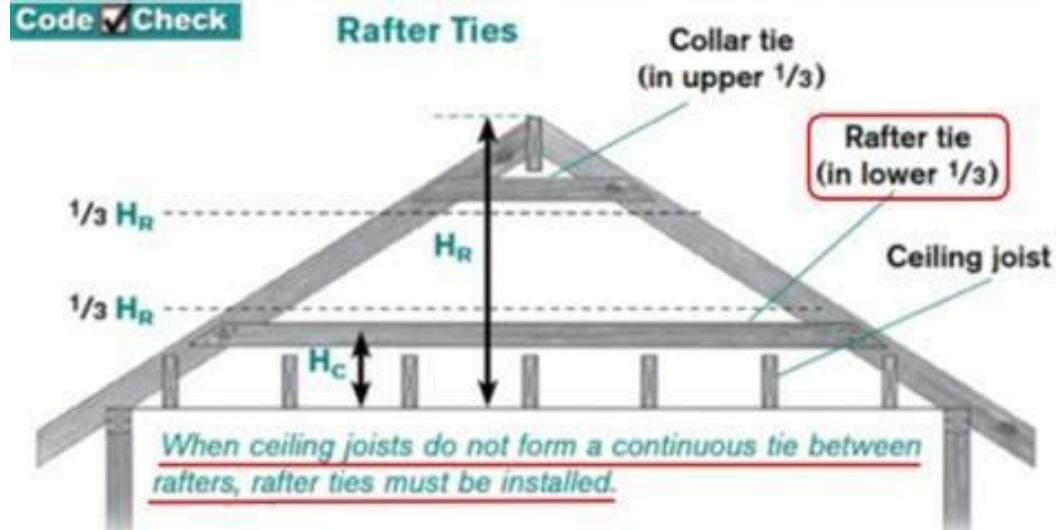
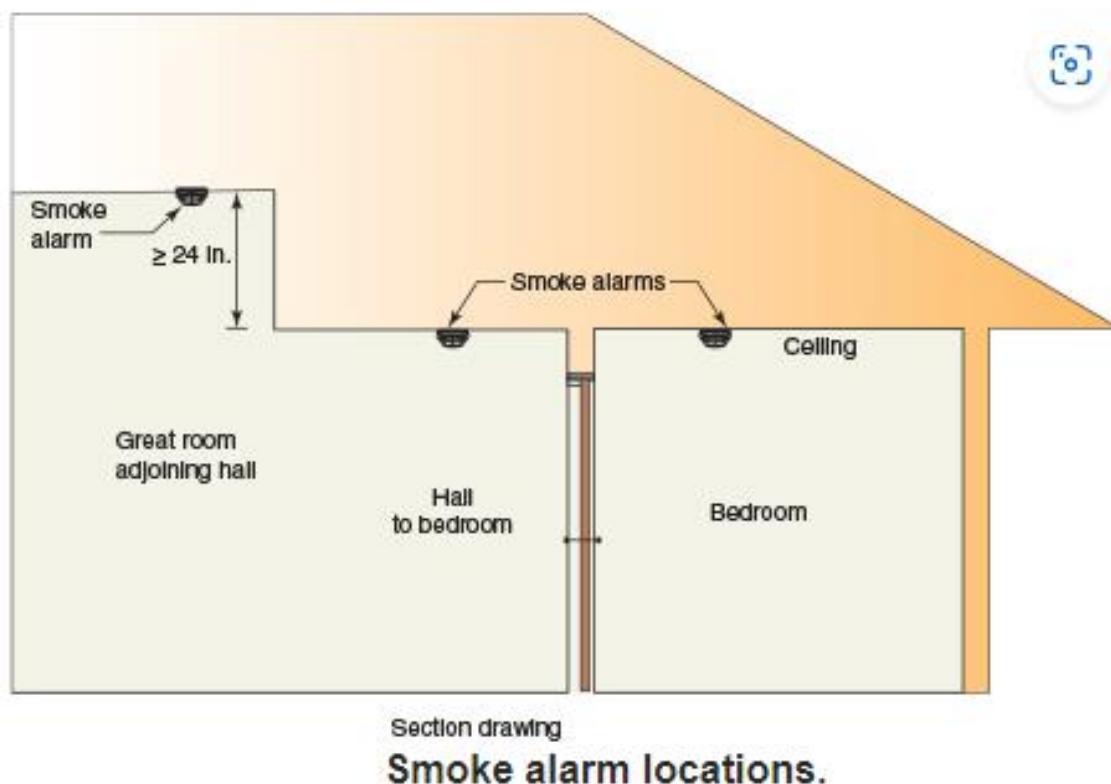


Figure 4:



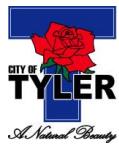


Figure 5:

TABLE R02.3(6) ALTERNATE WOOD BEARING WALL STUD SIZE, HEIGHT AND SPACING

STUD HEIGHT	SUPPORTING	STUD SPACING ^a	ULTIMATE DESIGN WIND SPEED					
			115 mph			130 mph ^b		
			Maximum roof/floor span ^c		Maximum roof/floor span ^c	Maximum roof/floor span ^c		Maximum roof/floor span ^c
11 ft	Roof only	12 in	12 ft	24 ft	12 ft	24 ft	12 ft	24 ft
		16 in	2 x 4	2 x 4	2 x 4	2 x 4	2 x 4	2 x 4
		24 in	2 x 4	2 x 4	2 x 4	2 x 6	2 x 4	2 x 6
	Roof and one floor	12 in	2 x 4	2 x 6	2 x 4	2 x 6	2 x 4	2 x 6
		16 in	2 x 6	2 x 6	2 x 6	2 x 6	2 x 6	2 x 6
		24 in	2 x 6	2 x 6	2 x 6	2 x 6	2 x 6	2 x 6
12 ft	Roof only	12 in	2 x 4	2 x 4	2 x 4	2 x 6	2 x 4	2 x 6
		16 in	2 x 4	2 x 6	2 x 6	2 x 6	2 x 6	2 x 6
		24 in	2 x 6	2 x 6	2 x 6	2 x 6	2 x 6	2 x 6
	Roof and one floor	12 in	2 x 4	2 x 4	2 x 4	2 x 6	2 x 4	2 x 6
		16 in	2 x 4	2 x 6	2 x 6	2 x 6	2 x 6	2 x 6
		24 in	2 x 6	2 x 6	2 x 6	2 x 6	2 x 6	2 x 6

For $Sf 1$ inch = 25.4 mm, 1 foot = 304.8 mm, 1 mph = 0.47 m/s, 1 pound = 4.448 N.

DR = Design Required.

a. Wall studs not exceeding 16 inches on center shall be sheathed with minimum 1/2-inch gypsum board on the interior and 1/2-inch wood structural panel sheathing on the exterior. Wood structural panel sheathing shall be attached with 8d (2.5" x 0.13") nails not greater than 6 inches on center along panel edges and 12 inches on center at intermediate supports, and all panel joints shall occur over studs or blocking.

b. Where the ultimate design wind speed exceeds 115 mph, studs shall be attached to top and bottom plates with corner blocks having a minimum 300-pound lateral capacity.

c. The maximum span is applicable to both single- and multiple-span roof and floor conditions. The roof assembly shall not contain a habitable attic.



Figure 6:

TABLE R703.8.4(1) TIE ATTACHMENT AND AIRSPACE REQUIREMENTS

BACKING AND TIE	MINIMUM TIE	MINIMUM TIE FASTENER ^a	AIRSPACE ^b
Wood stud backing with corrugated sheet metal	22 U.S. gage (0.0299 in.) \times $\frac{7}{8}$ in. wide	8d common nail ^c ($2\frac{1}{2}$ in. \times 0.131 in.)	Nominal 1 in. between sheathing and veneer
Wood stud backing with adjustable metal strand wire	W1.7 (No. 9 U.S. gage, 0.148 in. dia.) with hook embedded in mortar joint ^d	8d common nail ^c ($2\frac{1}{2}$ in. \times 0.131 in.)	Minimum nominal 1 in. between sheathing and veneer Maximum $4\frac{1}{8}$ in. between backing and veneer
Wood stud backing with adjustable metal strand wire	W2.8 (0.187 in. dia.) with hook embedded in mortar joint ^e	8d common nail ^c ($2\frac{1}{2}$ in. \times 0.131 in.)	Greater than $4\frac{1}{8}$ in. between backing and veneer Maximum $6\frac{1}{8}$ in. between backing and veneer
Cold-formed steel stud backing with adjustable metal strand wire	W1.7 (No. 9 U.S. gage, 0.148 in. dia.) with hook embedded in mortar joint ^d	No. 10 screw extending through the steel framing a minimum of three exposed threads	Minimum nominal 1 in. between sheathing and veneer Maximum $4\frac{1}{8}$ in. between backing and veneer
Cold-formed steel stud backing with adjustable metal strand wire	W2.8 (0.187 in. dia.) with hook embedded in mortar joint ^e	No. 10 screw extending through the steel framing a minimum of three exposed threads	Greater than $4\frac{1}{8}$ in. between backing and veneer Maximum $6\frac{1}{8}$ in. between backing and veneer

For S1:1 inch = 25.4 mm.

- a. All fasteners shall have rust-inhibitive coating suitable for the installation in which they are being used, or be manufactured from material not susceptible to corrosion.
- b. An airspace that provides drainage shall be permitted to contain mortar from construction.
- c. In Seismic Design Category D₀, D₁ or D₂, the minimum tie fastener shall be an 8d ring-shank nail ($2\frac{1}{2}$ in. \times 0.131 in.).
- d. Adjustable tie fastener shall include not fewer than 1 prime leg of wire size W2.8 (MW18) with a maximum offset of $1\frac{1}{4}$ inches.
- e. Adjustable tie fastener shall include not fewer than 2 prime legs with a maximum offset of $1\frac{1}{4}$ inches. Distance between inside face of block and end of pin shall be a maximum of 2 inches.
- f. Adjustable tie backing attachment components shall consist of one of the following: eyes with minimum wire W2.8 (MW18), barret with minimum thickness of 0.074 inch and minimum width of $1\frac{1}{4}$ inches.

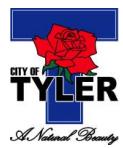


Figure 7:

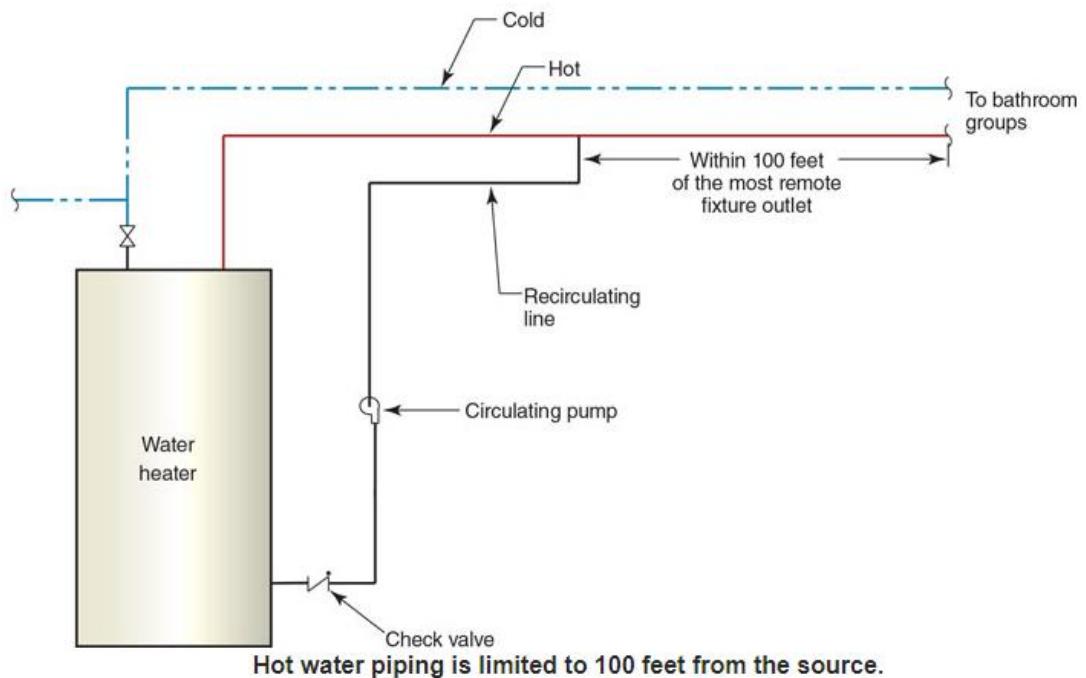


Figure 8:



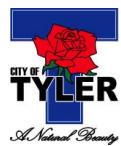
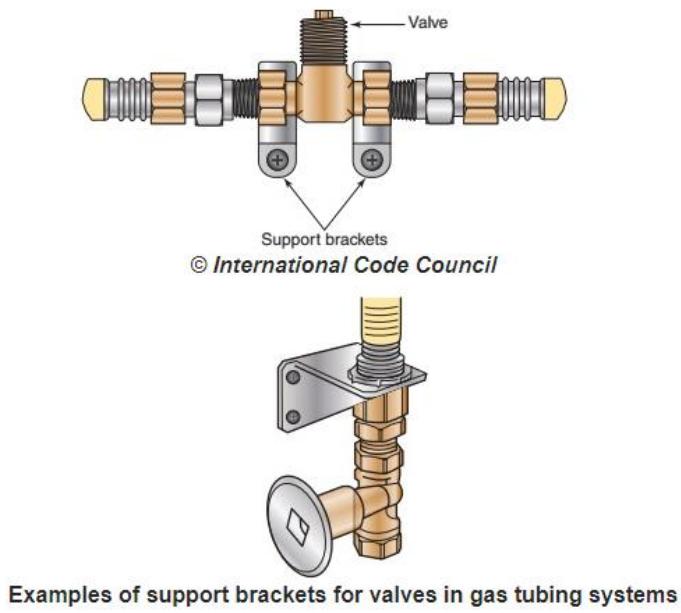


Figure 9:



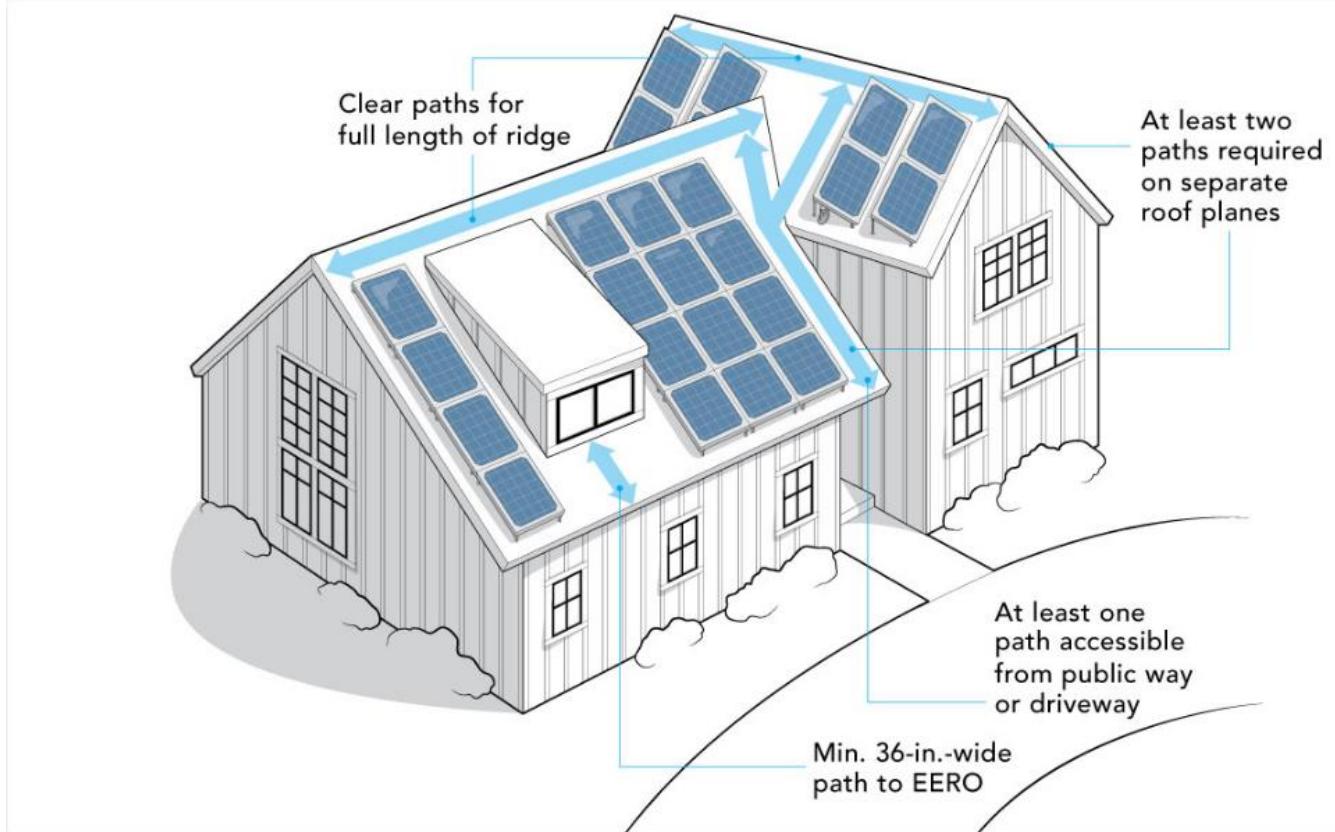
Examples of support brackets for valves in gas tubing systems

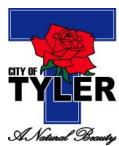
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► **CHANGE SIGNIFICANCE:** Shutoff valves at appliances such as furnaces, water heaters and boilers are typically supported by rigid steel piping. Even where CSST or other tubing is used, the shutoff valve connects to rigid piping on the outlet side of the valve. The rigid piping provides secure support that is not susceptible to damage. However, if a shutoff valve, such as a concealed T-handle keyed valve for a fireplace, is installed in a run of CSST or other tubing material, the torque applied to the valve rotating member will transfer to the tubing, causing stress and possible failure. This new code requirement is consistent with manufacturers' installation instructions for CSST. The method of support must be independent of the tubing. One solution could be a bracket made for the purpose, or adequate support could be accomplished with securely anchored rigid steel pipe nipples on the inlet and outlet sides of the valve. The intent is to prevent movement and stressing of the tubing when the valve is operated.



Figure 10:





Commonly Failed Items

Updated 11-6-23

1. Not building to approved plans. (i.e. foundation details; floor plans; building a 2-story house when a 1-story plan is submitted; flipping orientation of the house.)
2. Erosion control not installed or maintained.
3. Theft and vandalism are increasing in buildings that are not secure.

Electrical:

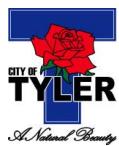
1. Plug spacing in kitchen countertops
2. GFCI in the laundry room
3. in-use covers on exterior plugs
4. The dishwasher requires GFCI protection
5. Ground screws in all metal boxes
6. No 30"x30" working space or 2' path to equipment/appliances*

Plumbing:

1. Unable to see backflow device on water service at finals (full of mud/water, no clearance)
2. No slope on plumbing vents
3. No pressure on gas gages
4. Gas line not bonded
5. Unable to verify backflow device and wye-strainer on irrigation finals (full of mud/water, no clearance)
6. No pressure or not enough pressure on the water system
7. CSI reports and backflow test results were not sent in before calling for an inspection
8. No 30"x30" working space or 2' path to equipment/appliances*
9. No combustion air provided to water heater closets
10. Flues touching combustibles
11. Exposed water lines in attics not insulated

Mechanical:

1. No 30"x30" working space or 2' path to equipment/appliances*
2. No duct leakage test submitted prior to calling for inspections
3. Flex ducts used on dryer and ventahood
4. Fireplace and exhaust fans not installed prior to calling for rough-in inspections
5. Condensate lines not tied in, or they are tied in to plumbing vents
6. No combustion air provided to mechanical closets
7. Flues touching combustibles, or foreign materials on flues
8. Fire/smoke dampers not installed in proper locations
9. Fresh air duct and dampers not installed per IECC*



Building:

1. Footings that do not extend 12" into undisturbed soil (or provide compaction test results)*
2. Improper rafter/plate connections. Missing hurricane ties*
3. Improper structural repairs on over-notched plates and studs*
4. Roof not on before requesting frame inspection*
5. No string lines marking property lines
6. Over-spanned beams and ceiling joists*
7. Missing tempered glass where required
8. Access to equipment in attics
9. Fireblocking and draft stopping are not installed properly
10. Roof braced from wrong locations (pony walls, ceilings, improperly sized beams)
11. Spliced framing members (hips/valleys, rafters) not properly supported
12. Handrails incorrectly installed. Stair rise/run incorrect.
13. Houses with pools that do not have self-latching/closing gates and the proper alarms on doors that open into the pool area.

****asterisks indicate items' increased frequency***

Reminders:

1. Permit holders must call for their own inspections. I.E. the builder cannot call for the trades' inspections. If using the online Trakit system, ensure that you are scheduling under the correct permit, I.E., do not schedule frame inspections on the plumbing permit.
2. Inspections must be called in before 7:00 am through voicemail, by midnight if online.
3. Corrections must be completed prior to calling for reinspection. If there are questions or concerns, contact the inspector who did the inspection for clarification. Failing to make corrections prior to reinspection will result in reinspection fees *
4. Failure to provide access (leaving doors unlocked, giving lockbox combinations, having the proper ladder onsite, etc) will result in reinspection fees.
5. Insulation inspections are required to be done by a certified 3rd party. Inspection reports are to be submitted for duct leakage, pre-sheetrock, and final insulation and blower door tests. Contractors cannot inspect their own work.