UPDATING TO THE 2018 IRC

City of Norman

7/28/2022

STATUS OF CODES IN OKLAHOMA

- The Oklahoma Uniform Building Code Commission (OUBCC) adopts the minimum code for all jurisdictions in Oklahoma.
- Municipalities are required by statute to adopt these minimums and enforce them in a timely manner.
- Municipalities are allowed to adopt more stringent standards than what the State requires but they are not supposed to adopt less restrictive standards.
- September 14th 2021, the OUBCC adopted the 2018 I-Codes and 2017 NEC as the minimum standard for all buildings and work that is not One and Two Family Dwellings/Townhouses.
- Effective September 14th 2022, the OUBCC informed the municipalities that the minimum standards for One and Two Family Dwellings/Townhouses will be the 2018 International Residential Code with modifications provided in their updated rules.

UPDATING THE CODES IN NORMAN

- To stay in compliance with the state statute the City of Norman will need to update our codes to the 2018 I-Codes with modifications by the OUBCC.
- The base 2018 Code can be found on the ICC website here.
- The rule changes by the OUBCC can be found on their website here.
- An unofficial compilation of the state changes and base code can be found on UpCodes website here.
- The timeline for the City of Norman's adoption is to have this updated and in place before the end of 2022.
- As we transition City staff will be pliable in working on the Updated Standards. Any permits applied for prior to this adoption will be viewed for compliance with the 2015 ICC standards.

CHANGE OF OCCUPANCY R110.1 AND DEFINITIONS.

The code added a definition of Change of Occupancy. A permit and new Certificate of Occupancy is required when a building undergoes a change of ~~its~~ use. The implication is that a cold dark storage building that is converted to a "man cave" or "she shed" would require a permit and ultimately a Certificate of Occupancy.

[RB] CHANGE OF OCCUPANCY. A change in the use of a building or portion of a building that involves a change in the application of the requirements of this code.

ICE BARRIER TABLE 301.2(1) AND 905.1.2

Roofing

- The OUBCC has determined that ice barrier's are not required in the State of Oklahoma at the eaves.
- The OUBCC added into the code to add a 36" ice barrier centered on all valleys.
- The OUBCC added into the code a 36" ice barrier at pitch changes. This should be centered at the pitch change.

MANUAL J AND S FOR MECHANICAL SYSTEMS TABLE R301.2(1), N1103.7, M1401.3

While the code has always obligated heat and air systems to be designed per Manual J and S it was never a requirement that this submittal be obligated by the AHJ. The code has been updated to require the AHJ to publish the climate conditions in Table R301.2(1). The OUBCC went further and requires the AHJ to require documentation demonstrating compliance that the system is being designed in accordance with Manual J and S before issuing a mechanical permit for NEW residential permits. This will be an impactful change to our permitting process and for the mechanical contractors.

N1103.7 (R403.7) Equipment sizing and efficiency rating (Mandatory). Heating and cooling equipment shall be sized in accordance with ACCA Manual S based on building loads calculated in accordance with ACCA Manual J or other approved heating and cooling calculation methodologies. New or replacement heating and cooling equipment shall have an efficiency rating equal to or greater than the minimum required by federal law for the geographic location where the equipment is installed. Documentation demonstrating compliance with this section is to be provided ot the authority having jurisdiction at the time a Mechanical Permit is required on new one-and two-family dwellings and townhouses.

M1401.3 Equipment and appliance sizing. Heating and cooling equipment and appliances shall be sized in accordance with ACCA Manual S or other approved sizing methodologies based on building loads calculated in accordance with ACCA Manual J or other approved heating and cooling methodologies. Documentation demonstrating compliance with this section is to be provided ot the authority having jurisdiction at the time a Mechanical Permit is required on new one-and two-family dwellings and townhouses.

MANUAL J DESIGN CRITERIA[a]

Elevation	Latitude	Winter heating	Summer cooling	Altitude correction factor	Indoor design temperature	Design temperature cooling	Heating temperature difference
—	—	—	—	—	—	—	—
Cooling temperature difference	Wind velocity heating	Wind velocity cooling	Coincident wet bulb	Daily range	Winter humidity	Summer humidity	—
—	—	—	—	—	—	—	—

SMOKE ALARMS ADDITIONS/ALTERATIONS R314.4

The code has removed an exception that was previously allowed on additions/alterations where it wasn't practical to NOT interconnect the alarms. Now ALL alarms must be interconnected. The likely basis for this is the expanded acceptance by the code of wireless interconnected alarms and the increase in options in this market.

SMOKES (Smoke Detectors required in every sleeping room, outside sleeping rooms, on each story)

	NEW HOME		HOME ADDITION ALTERATION		
	2015	2018	2015	2018	
Hard Wired Power Required?	YES*	YES*	NO	NO	
Battery Allowed?	NO	NO	YES	YES	
Wireless Interconnection allowed?	YES	YES	YES**	YES	**2015 allowed for certain Additions/Alterations to not be interconnected.
Wired Interconnection allowed?	YES	YES	YES**	YES	

* Fire Alarm Systems compliant with NFPA 72 could have a central panel that is hard wired with battery powered Smokes compliant with UL 268 and CO detectors compliant with UL2075

CARBON MONOXIDE ALARMS R315

Carbon Monoxide detectors are now required to be interconnected where more than one detector is installed. On additions and alterations where it is not practical to interconnect them because work is not open or accessible, they do not have to be interconnected.

CO (CO DETECTORS Required if gas is in the home or if home has an attached garage.) Where required they are to be outside of sleeping rooms or in sleeping rooms with fuel burning appliances					
	NEW HOME		HOME ADDITION ALTERATION		
	2015	2018	2015	2018	
Hard Wired Power Required?	YES	YES	NO	NO	
Battery Allowed?	NO	NO	YES	YES	
Interconnection Required?	NO	YES	NO	YES*	* If possible they should be interconnected.

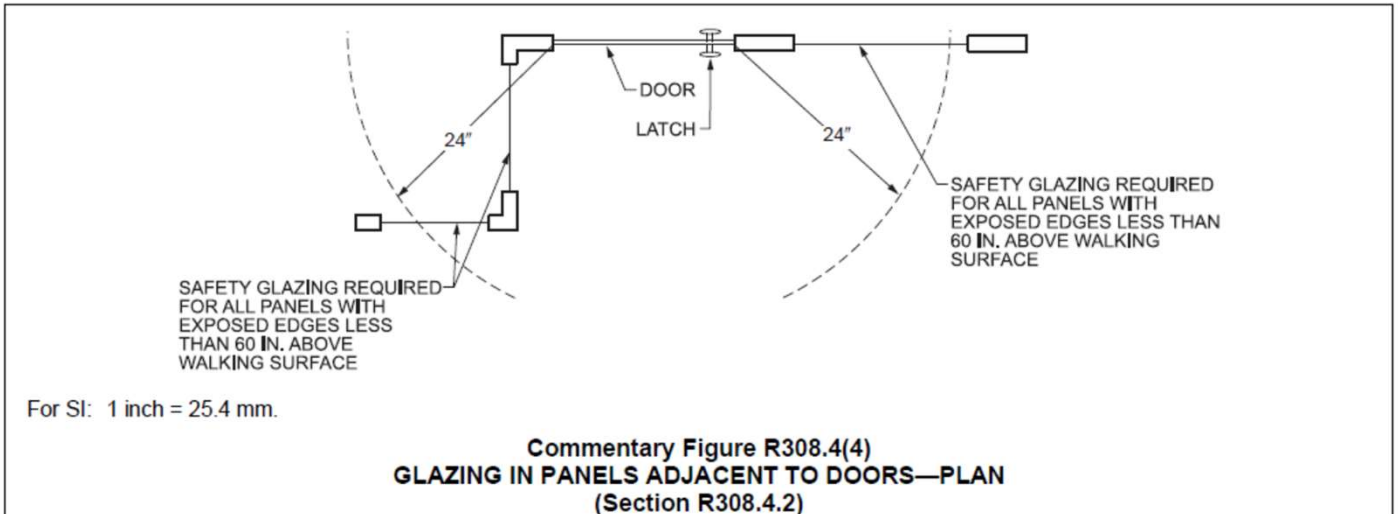
FIRE PROTECTION OF CRAWL SPECS R302.13

Crawl space floors **with heating appliances or storage** are now required to have membrane protection of 1/2" gypsum or 5/8"wood structural panels on the bottom side of the floor member.

SAFETY GLASS AND DOORS R308.4.2

The code requires all glass in the plane of a door closer than 24" to be safety glass.

This section is expanded to require safety glass where the glazing is on a wall less than 180 degrees from the plane of the door in a closed position and within 24" of the hinge side of an in-swinging door



Commentary Figure R308.4(4)
GLAZING IN PANELS ADJACENT TO DOORS—PLAN
(Section R308.4.2)

EMERGENCY ESCAPE OPENINGS BASEMENTS R310.1

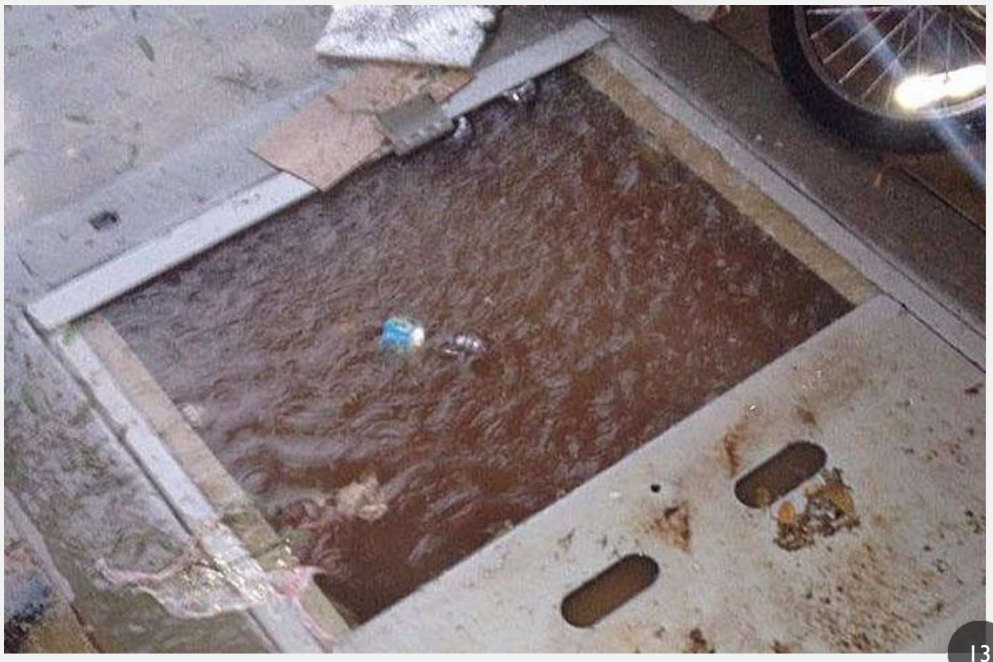
Sleeping rooms in basements are exempt from having an emergency escape opening if the home is sprinkled, and it has two "normal" means of egress or one means of egress and one emergency escape opening.

LOFTS, MEZZANINE AND SIMILAR R311.7.11 (.12)

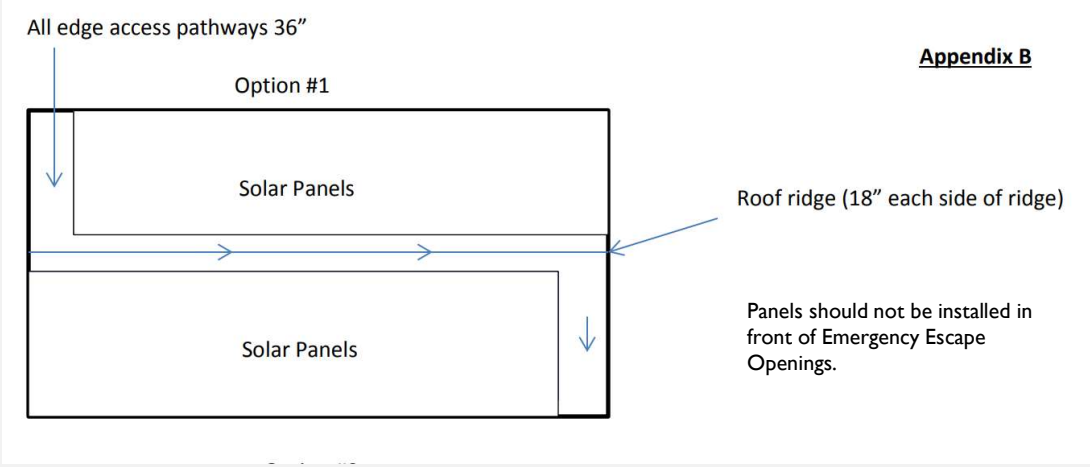
The code now recognizes sleeping lofts and similar and allows egress to be by an alternating tread device or ships ladder if the space is less than 200 sq. ft.

IN-GROUND GARAGE SHELTERS R323.2.2

In-ground garage shelters are now required to be raised a minimum of 1" above the adjacent garage floor to mitigate water intrusion.

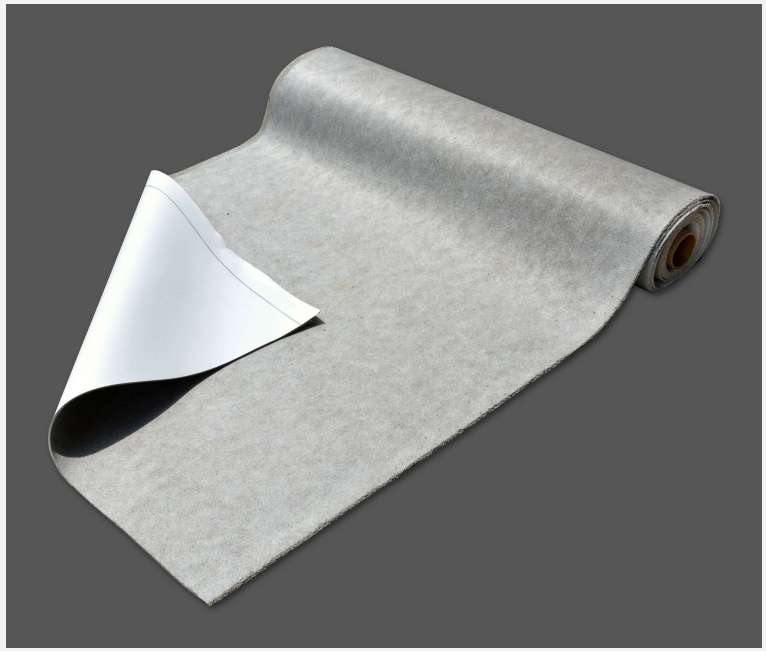


ROOF TOP SOLAR SYSTEMS TO REQUIRE PATH WAYS R324.6.1



CONCRETE WALL WATERPROOFING R406.2

Bentonite is no longer an approved material to waterproof a concrete or masonry backfill~~ed~~ with living space on the interior ~~of the~~ wall.



UNVENTED CRAWL SPACES CAN NOW BE SERVED BY A DEHUMIDIFICATION SYSTEM INSTEAD OF CONDITIONING/EXHAUSTING R408.3

DECKS R507

The code as it relates to decks has been updated significantly to provide builders a lot of prescriptive options to build a deck without having to rely on other code sections. There are now stand alone deck foundation requirements, and beam requirements to name a few.

A 200 sq. ft. deck (20 wide with 10' long joist) with connection to a house and three bearing post is shown to the right.

TABLE R507.3.1
MINIMUM FOOTING SIZE FOR DECKS

LIVE OR GROUND SNOW LOAD[b] (psf)	TRIBUTARY AREA (sq. ft)	LOAD BEARING VALUE OF SOILS [a, c, d]						
		1500[e]			2000[e]			
		Side of a square footing (inches)	Diameter of a round footing (inches)	Thickness (inches)	Side of a square footing (inches)	Diameter of a round footing (inches)	Thickness (inches)	Side of a square footing (inches)
40	20	12	14	6	12	14	6	12
	40	14	16	6	12	14	6	12
	60	17	19	6	15	17	6	13
	80	20	22	7	17	19	6	15
	100	22	25	8	19	21	6	17
	120	24	27	9	21	23	7	19
	140	26	29	10	22	25	8	20
	160	28	31	11	24	27	9	21

TABLE R507.5
DECK BEAM SPAN LENGTHS[a, b, g] (feet - inches)

SPECIES[c]	SIZE[d]	DECK JOIST SPAN LESS THAN OR EQUAL TO: (feet)						
		6	8	10	12	14	16	18
Southern pine	1 – 2 × 6	4-11	4-0	3-7	3-3	3-0	2-10	2-8
	1 – 2 × 8	5-11	5-1	4-7	4-2	2-10	3-7	3-5
	1 – 2 × 10	7-0	6-0	5-5	4-11	4-7	4-3	4-0
	1 – 2 × 12	8-3	7-1	6-4	5-10	5-5	5-0	4-9
	2 – 2 × 6	6-11	5-11	5-4	4-10	4-6	4-3	4-0
	2 – 2 × 8	8-9	7-7	6-9	6-2	5-9	5-4	5-0
	2 – 2 × 10	10-4	9-0	8-0	7-4	6-9	6-4	6-0
	2 – 2 × 12	12-2	10-7	9-5	8-7	8-0	7-6	7-0
	3 – 2 × 6	8-2	7-5	6-8	6-1	5-8	5-3	5-0
	3 – 2 × 8	10-10	9-6	8-6	7-9	7-2	6-8	6-4
	3 – 2 × 10	13-0	11-3	10-0	9-2	8-6	7-11	7-6
	3 – 2 × 12	15-3	13-3	11-10	10-9	10-0	9-4	8-10

WALL STUD FRAMING R602.3.1

R602.3.1 Stud size, height and spacing. The size, height and spacing of studs shall be in accordance with Table R602.3(5).

Exceptions:

1. Utility grade studs shall not be spaced more than 16 inches (406 mm) on center, shall not support more than a roof and ceiling, and shall not exceed 8 feet (2438 mm) in height for exterior walls and load-bearing walls or 10 feet (3048 mm) for interior non-load-bearing walls.
2. Where snow loads are less than or equal to 25 pounds per square foot (1.2 kPa), and the ultimate design wind speed is less than or equal to 130 mph (58.1 m/s), 2-inch by 6-inch (38 mm by 140 mm) studs supporting a roof load with not more than 6 feet (1829 mm) of tributary length shall have a maximum height of 18 feet (5486 mm) where spaced at 16 inches (406 mm) on center, or 20 feet (6096 mm) where spaced at 12 inches (305 mm) on center. Studs shall be No. 2 grade lumber or better.
3. Exterior load-bearing studs not exceeding 12 feet (3658 mm) in height provided in accordance with Table R602.3(6). The minimum number of full-height studs adjacent to openings shall be in accordance with Section R602.7.5. The building shall be located in Exposure B, the roof live load shall not exceed 20 psf (0.96 kPa), and the ground snow load shall not exceed 30 psf (1.4 kPa). Studs and plates shall be No. 2 grade lumber or better.

The code now allows 12' studs under certain conditions.

TABLE R602.3(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]		140 mph[b]	
			Maximum roof/floor span[c]		Maximum roof/floor span[c]		Maximum roof/floor span[c]	
			12 ft.	24 ft.	12 ft.	24 ft.	12 ft.	24 ft.
11 ft.	Roof Only	12 in.	2 × 4	2 × 4	2 × 4	2 × 4	2 × 4	2 × 4
		16 in.	2 × 4	2 × 4	2 × 4	2 × 6	2 × 4	2 × 6
		24 in.	2 × 6	2 × 6	2 × 6	2 × 6	2 × 6	2 × 6
	Roof and One Floor	12 in.	2 × 4	2 × 6	2 × 4	2 × 6	2 × 4	2 × 6
		16 in.	2 × 6	2 × 6	2 × 6	2 × 6	2 × 6	2 × 6
		24 in.	2 × 6	2 × 6	2 × 6	2 × 6	2 × 6	2 × 6
12 ft.	Roof Only	12 in	2 × 4	2 × 4	2 × 4	2 × 6	2 × 4	2 × 6
		16 in.	2 × 4	2 × 6	2 × 6	2 × 6	2 × 6	2 × 6
		24 in.	2 × 6	2 × 6	2 × 6	2 × 6	2 × 6	2 × 6
	Roof and One Floor	12 in	2 × 4	2 × 6	2 × 6	2 × 6	2 × 6	2 × 6
		16 in.	2 × 6	2 × 6	2 × 6	2 × 6	2 × 6	2 × 6
		24 in.	2 × 6	2 × 6	2 × 6	2 × 6	2 × 6	DR

For SI: 1 inch = 25.4mm, 1 foot = 304.8 mm, 1 mph = 0.447 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 $^{3}/_{8}$-inch wood structural panel sheathing on the exterior. Wood structural panel sheathing shall be attached with 8d (2.5" x 0.131") 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 connectors 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.

WALL STUD FRAMING R602.3.1(CONT.)

R602.3.1 Stud size, height and spacing. The size, height and spacing of studs shall be in accordance with Table R602.3(5).

Exceptions:

1. Utility grade studs shall not be spaced more than 16 inches (406 mm) on center, shall not support more than a roof and ceiling, and shall not exceed 8 feet (2438 mm) in height for exterior walls and load-bearing walls or 10 feet (3048 mm) for interior non-load-bearing walls.
2. Where snow loads are less than or equal to 25 pounds per square foot (1.2 kPa), and the ultimate design wind speed is less than or equal to 130 mph (58.1 m/s), 2-inch by 6-inch (38 mm by 140 mm) studs supporting a roof load with not more than 6 feet (1829 mm) of tributary length shall have a maximum height of 18 feet (5486 mm) where spaced at 16 inches (406 mm) on center, or 20 feet (6096 mm) where spaced at 12 inches (305 mm) on center. Studs shall be No. 2 grade lumber or better.
3. Exterior load-bearing studs not exceeding 12 feet (3658 mm) in height provided in accordance with Table R602.3(6). The minimum number of full-height studs adjacent to openings shall be in accordance with Section R602.7.5. The building shall be located in Exposure B, the roof live load shall not exceed 20 psf (0.96 kPa), and the ground snow load shall not exceed 30 psf (1.4 kPa). Studs and plates shall be No. 2 grade lumber or better.

CEMENT BOARD STUCCO EXTERIOR FINISH SYSTEMS R703.1

The OUBCC created a new exterior finish system that apparently was not addressed in the code, cement board stucco exterior finish systems.

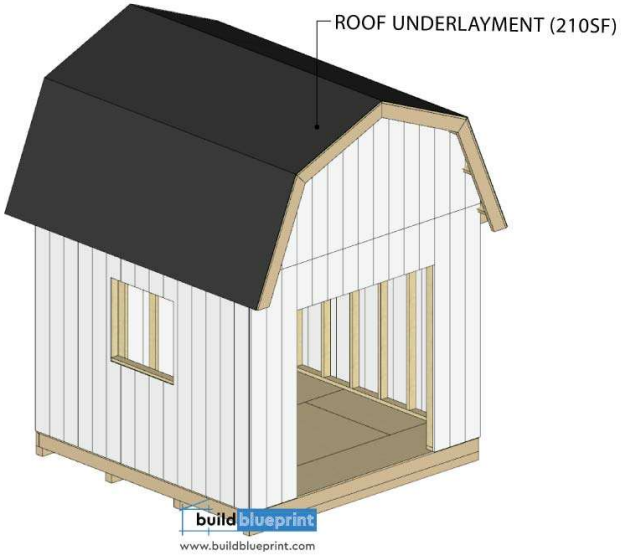
R703.1. General. Exterior walls shall provide the building with a weather-resistant exterior wall envelope. The exterior wall envelope shall include flashing as described in Section R703.4. Direct Applied Exterior Finish Systems Cement Board based stucco finish and direct applied masonry or stone shall comply with the following:

1. Direct applied masonry or stone shall comply with section R703.7.3 Water-resistive barriers and product manufacturer's installation specifications.
2. Cement Board Stucco Exterior Finish Systems shall be installed per manufacturer installation instructions or meet the minimum wall assembly details below. Products that make up the finished wall system that consist of base coat, secondary coat, reinforcing mesh and finish coat shall be of same manufacturer to ensure product/material compatibility and performance.
   a. Approved Sheathing.
   b. Base flashing at bottom of walls and roofs.
   c. Water resistant barrier equal to or greater than 60-minute Grade D paper or ASTM D226.
   d. Approved Cement Board for wall application base for exterior wall ASTM C1326.
   e. Approved Cement Board Joint Reinforcement Coat and Mesh.
   f. Base Coat.
   g. Reinforcing Mesh.
   h. Second Base Coat.
   i. Finish Coat.

j. Other Design Considerations: Separation Distance from finish exterior grade must be 6 inches or greater. Separation from roofs must be 1 inch or greater. Through wall flashing must be provided at horizontal locations at dissimilar materials. Expansion joints, if needed, shall comply with finish system manufacturer recommendations. Expansion gaps are required around all windows, doors or other dissimilar material integrated in the wall and joints are required to be sealed.

WATER-RESISTIVE BARRIER R703.2

The code removed an exception which previously allowed detached accessory buildings of certain scopes to not have a water-resistive barrier.



SOFFIT INSTALLATION R703.3.1

The code has added in material and fastening requirements for soffit materials.

R703.3.1.1 Wood structural panel soffit. The minimum nominal thickness for wood structural panel soffits shall be $^{3}/_{8}$ inch (9.5 mm) and shall be fastened to framing or nailing strips with 2-inch by 0.099-inch (51 mm × 2.5 mm) nails. Fasteners shall be in spaced not less than 6 inches (152 mm) on center at panel edges and 12 inches (305 mm) on center at intermediate supports.

- Wood structural soffit panel requirements are located in this section. Soffits must be fastened to framing or nailing strips with the standard maximum spacing of 6 inches at edges and 12 inches in the field.

EFIS 703.9.1 AND 703.9.2

The OUBCC modified the EFIS sections of the code to obligate that when using these systems the installer must use a single manufacture for all components. The stated intent is that the base coat and finish coats and drainage planes needed to be from a single manufacture to stay in compliance with installation instructions, and warranties.

B-67: R703.9.1 Exterior insulation and finish systems (EIFS). EFIS shall comply with the following:

1. ASTM E2568
2. EIFS shall be limited to applications over substrates of concrete or masonry wall assemblies.
3. Flashing of EIFS shall be provided in accordance with the requirements of Section R703.4.
4. EIFS shall be installed in accordance with the same manufacturer's instructions to ensure product/material compatibility and performance.
5. EIFS shall terminate not less than 6 inches (152 mm) above the finished ground level.
6. Decorative trim shall not be face-nailed through the EIFS.

B-66: R703.9.2 Exterior insulation and finish systems (EIFS) with drainage. EIFS with drainage shall comply with the following:

1. ASTM E2568.
2. EIFS with drainage shall be required over all wall assemblies with the exception of substrates of concrete or masonry wall assemblies.
3. EIFS with drainage shall have an average minimum drainage efficiency of 90 percent when tested in accordance with ASTM E2273.
4. The water-resistive barrier shall comply with Section R703.2 or ASTM E2570.
5. The water-resistive barrier shall be applied between the EIFS and the wall sheathing.
6. Flashing of EIFS with drainage shall be provided in accordance with the requirements of Section R703.4
7. EIFS with drainage shall be installed in accordance with the same manufacturer's instructions to ensure product/material compatibility and performance.
8. EIFS with drainage shall terminate not less than 6 inches (152 mm) above the finished ground level.
9. Decorative trim shall not be face-nailed through the EIFS.

VINYL SIDING OVER FOAM PLASTIC SHEATHING R703.11.2

The code has opened the door to possibly allowing vinyl siding over foam insulated sheathing materials. This would require a design to demonstrate compliance with the manufacture's installation requirements and further considerations about reduced wind pressure capabilities of the finish and wall framing. Tables have been added to reflect these variables.

ANCHORED STONE AND MASONRY VENEER R703.8

R703.8 Anchored stone and masonry veneer, general. Anchored stone and masonry veneer shall be installed in accordance with this chapter, Table R703.3.(1) and Figure R703.8. These veneers installed over a backing of wood or cold-formed steel shall be limited to the first story above grade plane and shall not exceed 5 inches (127 mm) in thickness. See Section R602.10 for wall bracing requirements for masonry veneer for wood-framed construction and Section R603.9.5 for wall bracing requirements for masonry veneer for cold-formed steel connections. Anchored stone walls shall have an additional layer of No. 15 asphalt felt complying with ASTM D226 for Type I felt or other approved water resistance barrier to provide a bond break between the primary water resistive barrier and back side of stone and mortar.

SOLID SHEATHING R905.2.1

The OUBCC removed some clarifying language from the asphalt shingle decking section of the code.

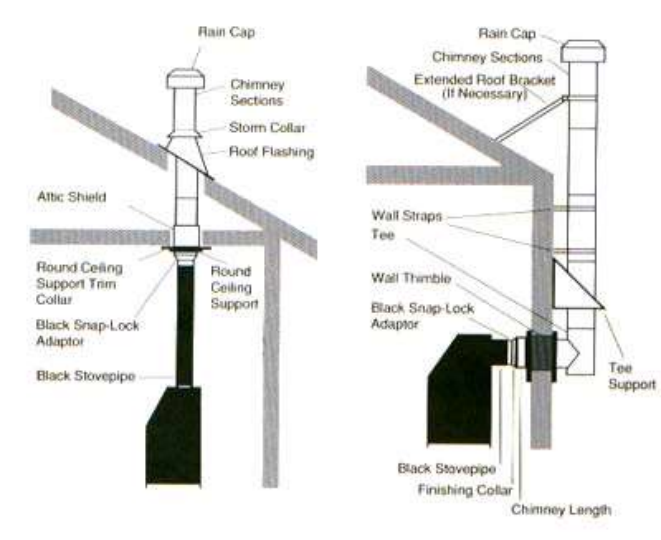
R905.2.1 Asphalt shingles should be fastened to solidly sheathed decks. ~~in accordance with Section 803 or to the asphalt shingles manufacturer's installation instructions.~~

SOLID SHEATHING (CONT.)

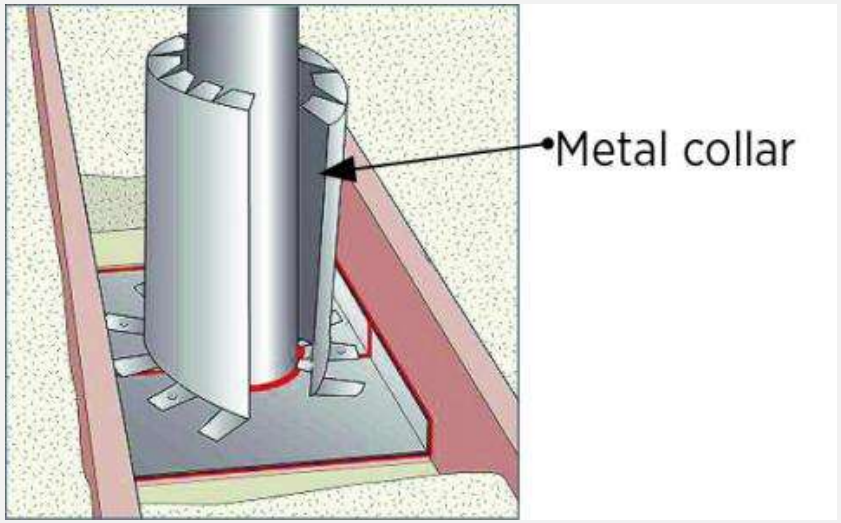
The OUBCC added into the sheathing requirements for most roofing materials a definition of solidly sheathed decks.

R905.2.1 Sheathing requirements. Asphalt shingles shall be fastened to solidly sheathed decks. Solidly sheathed decks shall be defined as sawn lumber boards or structural panels that provide a solid holding power for fasteners that do not have deficit conditions (gaps greater than those allowed by the roof covering manufacture's installation instructions, warped, split, cracked deteriorated or rotten boards).

INSULATION SHIELDS R1005.8



The code added into the fireplace section the insulation shield. This was really already required to comply with the code; however, ~~But~~ if there was a gap the addition closed it.



CHAPTER 11 ENERGY CODES (CONT.)

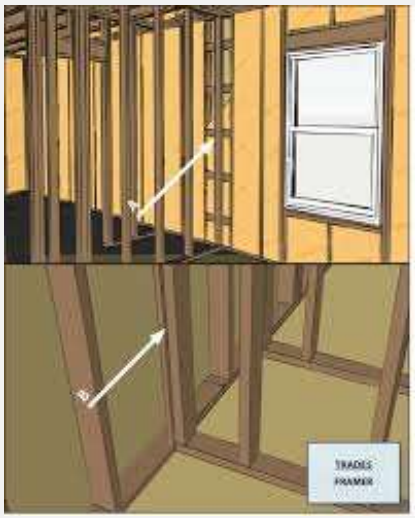
The OUBCC brought forth the 2018 IRC Chapter 11 with a number of modifications - overall the changes are minimal as compared to the actual 2018 IECC Standard.

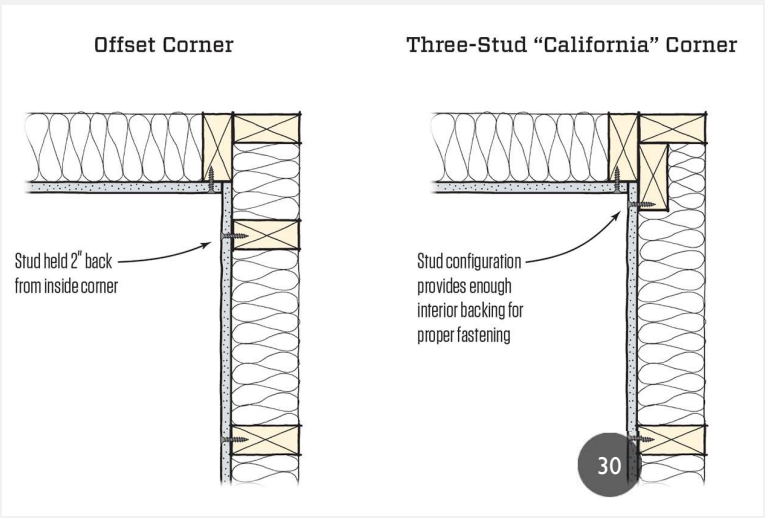
INSULATION AND FENESTRATION REQUIREMENTS BY COMPONENT[a]

CLIMATE ZONE	FENESTRATION *U*-FACTOR[b]	SKYLIGHT[b] *U*-FACTOR	GLAZED FENESTRATION SHGC[b, e]	CEILING *R*-VALUE	WOOD FRAME WALL *R*-VALUE	MASS WALL *R*-VALUE[i]	FLOOR *R*-VALUE	BASEMENT[c] WALL *R*-VALUE	SLAB[d] *R*-VALUE & DEPTH	CRAWL SPACE[c] WALL *R*-VALUE
1	NR	0.75	0.25	30	13	3/4	13	0	0	0
2	0.40	0.65	0.25	38	13	4/6	13	0	0	0
3	0.38 was .40	0.55	0.30 was .35	30	R13[h]	8/13	19	5/13[f]	0	5/13
4 except Marine	0.32	0.55	0.40	49	20 or 13 + 5[h]	8/13	19	10/13	10, 2 ft	10/13

CHAPTER 11 ENERGY CODES (CONT.)
AIR BARRIER/INSULATION

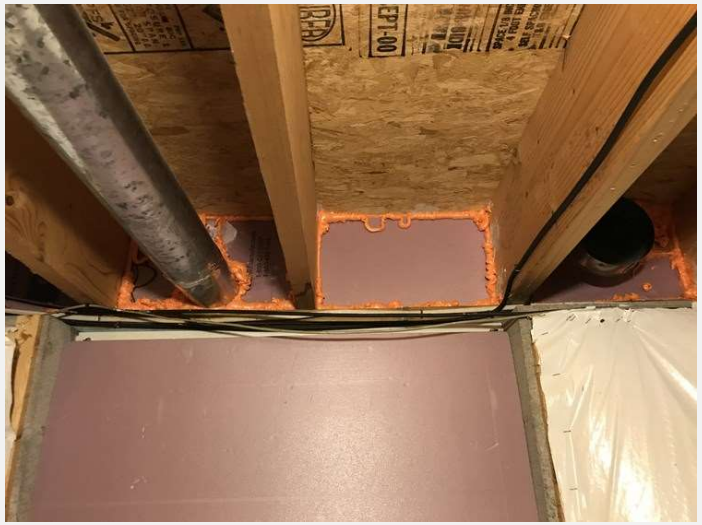
- The junction of the foundation and sill plate shall be sealed.
- Cavities within corners and headers shall be sealed. In a 2 x 6 wall system or greater of frame walls shall be insulated by completely filling the cavity with a material having a thermal resistance of not less than R-3 per inch.



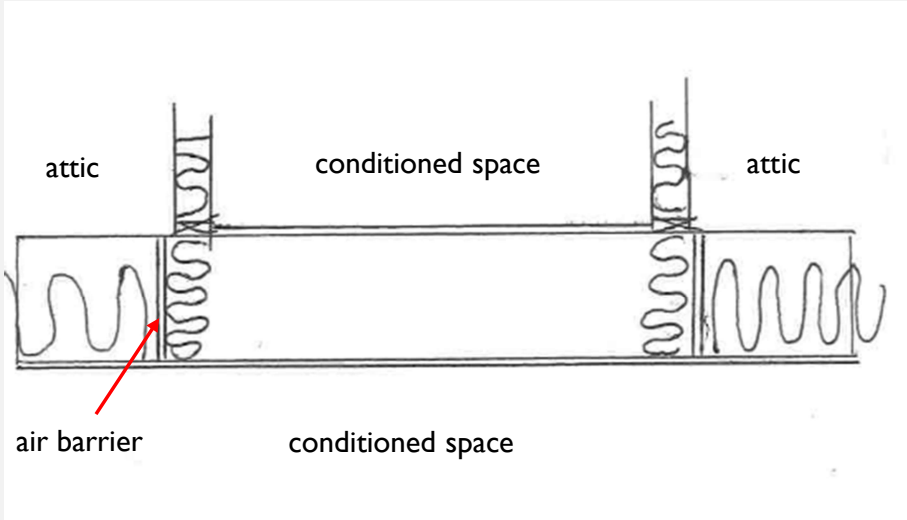


CHAPTER 11 ENERGY CODES (CONT.) AIR BARRIER/INSULATION

- Rim joists shall include the air barrier.
- Rim joists shall be insulated.
- Open floor joist require air barriers

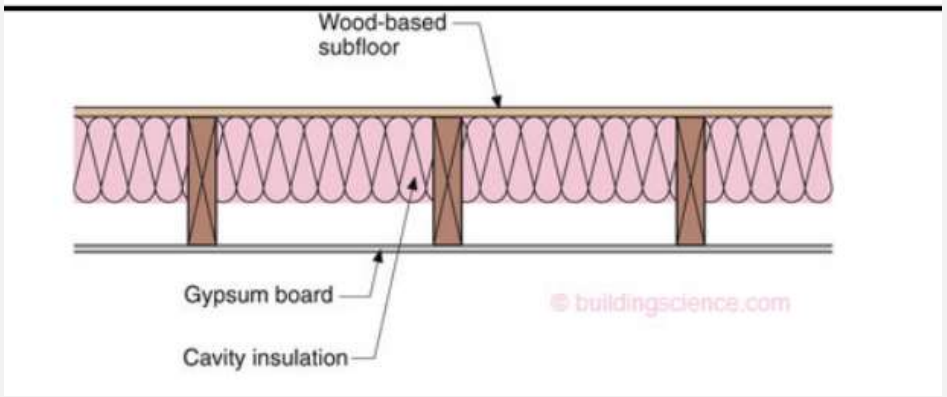


CHAPTER 11 ENERGY CODES (CONT.)



CHAPTER 11 ENERGY CODES (CONT.)

- Floors including cantilevered floors and floors above garages:
  The air barrier shall be installed at any exposed edge of insulation.
- Floor framing cavity insulation shall be installed to maintain permanent contact with the underside of subfloor decking.
- Air barriers required at joist ends.
- If an air barrier and insulation is installed typical of a wall the joist doesn't have to be installed tight to the flooring.



CHAPTER 11 ENERGY CODES (CONT.)

N1102.4.2 (R402.4.2) Fireplaces

New wood-burning fireplaces shall have tight-fitting flue dampers or doors, and outdoor combustion air. Where using tight-fitting doors on factory built fireplaces listed and labeled in accordance with UL 127, the doors shall be tested and listed for the fireplace.

CHAPTER 11 ENERGY CODES (CONT.)

N1102.4.4 (R402.4.4) Rooms Containing Fuel-Burning Appliances

In Climate Zones 3 through 8, where open combustion air ducts provide combustion air to open combustion fuel-burning appliances, the appliances and combustion air opening shall be located outside the building thermal envelope or enclosed in a room that is isolated from inside the thermal envelope. **Such rooms shall be sealed and insulated in accordance with the envelope requirements of Table N1102.1.2**, where the walls, floors and ceilings shall meet a minimum of the basement wall R-value requirement. **The door into the room shall be fully gasketed and any water lines and ducts in the room insulated in accordance with Section N1103. The combustion air duct shall be insulated where it passes through conditioned space to an R-value of not less than R-8.**

Exceptions:
1. Direct vent appliances with both intake and exhaust pipes installed continuous to the outside.
2. Fireplaces and stoves complying with Sections N1102.4.2 and R1006.

CHAPTER 11 ENERGY CODES (CONT.)

N1103.3.2 (R403.3.2) Sealing (Mandatory)

Ducts, air handler, plenums, start collar connections to plenum and filter boxes shall be sealed. Joints and seams shall comply with Section M1601.4.1. For duct systems with sheet metal plenums, Y's and supply boots, only liquid applied sealants complying with 181 BM (mastic or similar) shall be used to seal inner liners and start collars to plenum and any other seams in system.

CHAPTER 11 ENERGY CODES (CONT.)

N1104.1 (R404.1) Lighting Equipment (Mandatory)

Not less than 90 percent of the permanently installed lighting fixtures shall contain only high-efficacy lamps.

CHAPTER 11 ENERGY CODES (CONT.)

The OUBCC updated the State wide minimum ERI to a 64. Recently the City of Norman updated our score benchmark for the Energy Efficient Credit program to a benchmark of 57.

Table N1106.4 (R406.4) Maximum Energy Rating Index

CLIMATE ZONE	ENERGY RATING INDEX [a]
1	57
2	57
3	~~57~~ 64
4	62
5	61
6	61
7	58
8	58

Supporting information: This updates the ERI for the performance path to be more in line with prescriptive amendments proposed to the OUBCC

OUBCC Current ERI

City of Norman's Energy Efficient Credit HERS/ERI Program with a 57	
47 or less	Builder pays no permit fees
48	Pays 05% of permit fees
49	Pays 10% of permit fees
50	Pays 15% of permit fees
51	Pays 20% of permit fees
52	Pays 25% of permit fees
53	Pays 30% of permit fees
54	Pays 35% of permit fees
55	Pays 40% of permit fees
56	Pays 45% of permit fees
57	Pays 50% of permit fees

CHAPTER 11 ENERGY CODES (CONT.)

N1102.2.3 (R402.2.3) Eave Baffle

For air-permeable insulations in vented attics, a baffle shall be installed adjacent to soffit and eave vents. Baffles shall maintain an opening equal or greater than the size of the vent. The baffle shall extend over the top of the attic insulation. The baffle shall be permitted to be any solid material.

APPLIANCE ACCESS M1305.1.1

M1305.1 Appliance access for inspection service, repair and replacement. *Appliances* shall be located to allow for access for inspection, service, repair and replacement without removing permanent construction, other *appliances*, or any other piping or ducts not connected to the *appliance* being inspected, serviced, repaired or replaced. A level working space not less than 30 inches deep and 30 inches wide (762 mm by 762 mm) shall be provided in front of the control side to service an *appliance*.

MANUAL J AND S FOR MECHANICAL SYSTEMS TABLE R301.2(1), N1103.7, M1401.3

While the code has always obligated heat and air systems to be designed per Manual J and S it was never a requirement that this submittal be obligated by the AHJ. The code has been updated to require the AHJ to publish the climate conditions in Table R301.2(1). The OUBCC went further and requires the AHJ to require documentation demonstrating compliance that the system is being designed in accordance with Manual J and S before issuing a mechanical permit for NEW residential permits. This will be an impactful change to our permitting process and for the mechanical contractors.

N1103.7 (R403.7) Equipment sizing and efficiency rating (Mandatory). Heating and cooling equipment shall be sized in accordance with ACCA Manual S based on building loads calculated in accordance with ACCA Manual J or other approved heating and cooling calculation methodologies. New or replacement heating and cooling equipment shall have an efficiency rating equal to or greater than the minimum required by federal law for the geographic location where the equipment is installed. Documentation demonstrating compliance with this section is to be provided ot the authority having jurisdiction at the time a Mechanical Permit is required on new one-and two-family dwellings and townhouses.

M1401.3 Equipment and appliance sizing. Heating and cooling equipment and appliances shall be sized in accordance with ACCA Manual S or other approved sizing methodologies based on building loads calculated in accordance with ACCA Manual J or other approved heating and cooling methodologies. Documentation demonstrating compliance with this section is to be provided ot the authority having jurisdiction at the time a Mechanical Permit is required on new one-and two-family dwellings and townhouses.

MANUAL J DESIGN CRITERIA[h]

Elevation	Latitude	Winter heating	Summer cooling	Altitude correction factor	Indoor design temperature	Design temperature cooling	Heating temperature difference
—	—	—	—	—	—	—	—
Cooling temperature difference	Wind velocity heating	Wind velocity cooling	Coincident wet bulb	Daily range	Winter humidity	Summer humidity	—
—	—	—	—	—	—	—	—

M1402.1 ELECTRIC FURNACE STANDARDS (OUBCC)

M1402.1 General. Oil-fired central furnaces shall conform to ANSI/UL 727. Electric furnaces shall conform to UL 1995 or UL/CSA 60335-2-40.

M1403.1 HEAT PUMP STANDARDS (OUBCC)

M1403.1 Heat pumps. Electric heat pumps shall be listed and labeled in accordance with UL 1995 or UL/CSA/~~ANCE~~ 60335-2-40.

M1412.1 ABSORPTION SYSTEMS STANDARDS (OUBCC)

M1412.1 Approval of equipment. Absorption systems shall be installed in accordance with the manufacturer's instructions. Absorption equipment shall comply with UL 1995 or UL/CSA/~~ANCE~~ 60335-2-40.

M1413.1 EVAPORATIVE COOLING STANDARDS (OUBCC)

M1413.1 General. Evaporative cooling equipment and appliances shall comply with UL 1995 or UL/CSA/~~ANCE~~ 60335-2-40

DRYER EXHAUST TERMINATION FITTINGS M1502.3.1

M1502.3.1 Exhaust termination outlet and passageway size. The passageway of dryer exhaust duct terminals shall be undiminished in size and shall provide an open area of not less than 12.5 square inches (8065 mm^2).

DRYER DUCT INSTALLATION M1502.4.2

M1502.4.2 Duct installation. Exhaust ducts shall be supported at intervals not to exceed 12 feet (3658 mm) and shall be secured in place. The insert end of the duct shall extend into the adjoining duct or fitting in the direction of airflow. Exhaust duct joints shall be sealed in accordance with Section M1601.4.1 and shall be mechanically fastened. Ducts shall not be joined with screws or similar fasteners that protrude more than $^{1}/_{8}$ inch (3.2 mm) into the inside of the duct. Where dryer exhaust ducts are enclosed in wall or ceiling cavities, such cavities shall allow the installation of the duct without deformation.

The requirement in the last sentence of the code text will require a space larger than a 2 x 4 wall stud cavity to accommodate a 4-inch exhaust duct. The intent is to prevent ducts from being deformed by forcing them into interstitial spaces smaller than 4 inches in the least dimension. Deformed ducts impede flow; stress duct joints, seams and fittings; and interfere with duct cleaning. Any wall with a clothes dryer exhaust duct in it will have to be a 2 x 6 wall or furring strips will have to be added to the 2 x 4 walls.

MAKEUP AIR FOR KITCHEN HOODS M1503.6

M1503.6 Makeup air required. Where one or more gas, liquid or solid fuel-burning appliance that is neither direct-vent nor uses a mechanical draft venting system is located within a dwelling unit's air barrier, each exhaust system capable of exhausting in excess of 400 cubic feet per minute (0.19 m^3/s) shall be mechanically or passively provided with makeup air at a rate approximately equal to the exhaust air rate. Such makeup air systems shall be equipped with not fewer than one damper complying with Section M1503.6.2.

Code change now qualifies this section is only applicable for homes with fuel fired appliances. Direct vent appliances are exempt.

TABLE M1601.1 SHEET METAL DUCK THICKNESS (OUBCC)

TABLE M1601.1.1
DUCT CONSTRUCTION MINIMUM SHEET METAL THICKNESS FOR SINGLE DWELLING UNITS[a]

ROUND DUCT DIAMETER (inches)	STATIC PRESSURE			
	½-inch water gage		1-inch water gage	
	Thickness (inches)		Thickness (inches)	
	Galvanized	Aluminum	Galvanized	Aluminum
< 12	0.013	0.018	0.013	0.018
12 to 14	0.013	0.018	0.016	0.023
15 to 17	0.016	0.023	0.019	0.027
18	0.016	0.023	0.024	0.034
19 to 20	0.019	0.027	0.024	0.034

RECTANGULAR DUCT DIMENSION (inches)	STATIC PRESSURE			
	½-inch water gage		1-inch water gage	
	Thickness (inches)		Thickness (inches)	
	Galvanized	Aluminum	Galvanized	Aluminum
≤ 8	0.013	0.018	0.013	0.018
9 to 10	0.013	0.018	0.016	0.023
11 to 12	0.016	0.023	0.019	0.027
13 to 16	0.019	0.027	0.019	0.027
17 to 18	0.019	0.027	0.024	0.034
19 to 20	0.024	0.034	0.024	0.034

For SI: 1 inch = 25.4 mm, 1 inch water gage = 249 Pa.

a. Ductwork that exceeds 20 inches by dimension or exceeds a pressure of 1 inch water gage shall be constructed in accordance with SMACNA *HVAC Duct Construction Standards—Metal and Flexible*.

TABLE M1601.1.1DUCT CONSTRUCTION MINIMUM SHEET METAL THICKNESS FOR SINGLE DWELLING UNITS

Duct Size	Galvanized		Approximate Aluminum B and S Gage
	Minimum Thickness (inches)	Equivalent Galvanized Gage No.	
Round ducts and enclosed rectangular ducts 14 inches or less	0.013	30	26
Round ducts and enclosed rectangular ducts over 14 inches	0.016	28	24
Exposed rectangular ducts 14 inches or less	0.016	28	24
Exposed rectangular ducts over 14 inches	0.019	26	22

For SI: 1 inch is equal to 25.4 mm.

Ductwork that exceeds 20 inches by dimension or exceeds a pressure of 1-inch water gage (250 pa) shall be constructed in accordance with SMACNA *HVAC Duct Construction Standards Metal and Flexible*.

BELOW SLAB DUCTS M1601.1.2

Underground ducts, including both direct-burial ducts and those encased in concrete, require sealing and **testing.**

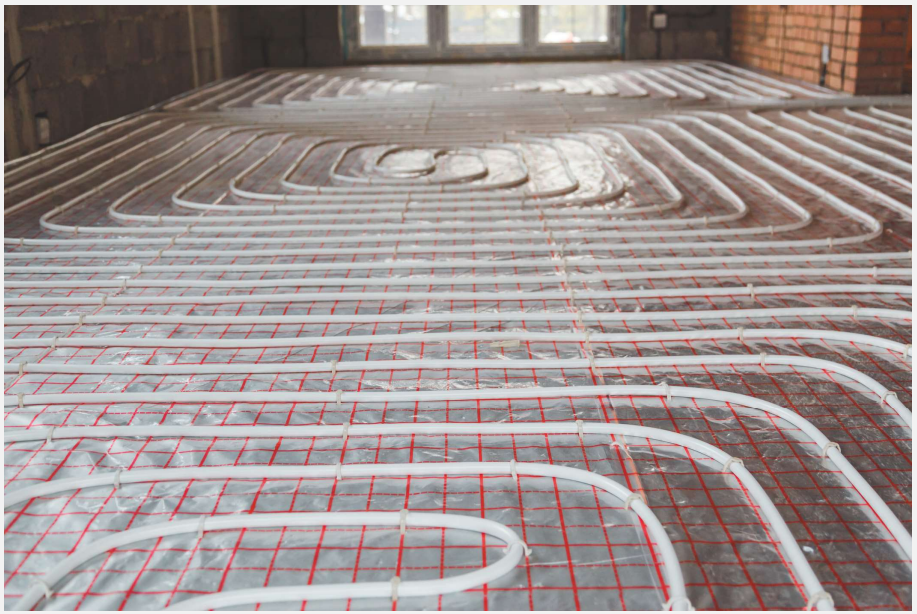
Per Chapter 11: Testing is allowed by visual verification by Authority having Jurisdiction, approved agency or licensed inspector.

DUCT SEALING M1601.4.1 (OUBCC)

The OUBCC amendment to require duct systems with sheet metal plenums, Y's and supply boots, only liquid applied sealants complying with UL 181 BM (Mastic or similar) or equivalent method shall be used to seal inner liners and start collars to plenum and any other seams in system.

RADIANT FLOOR HEATING M2103.2

OUBCC Amendment allows an R-3 floor insulation for floor heating systems.



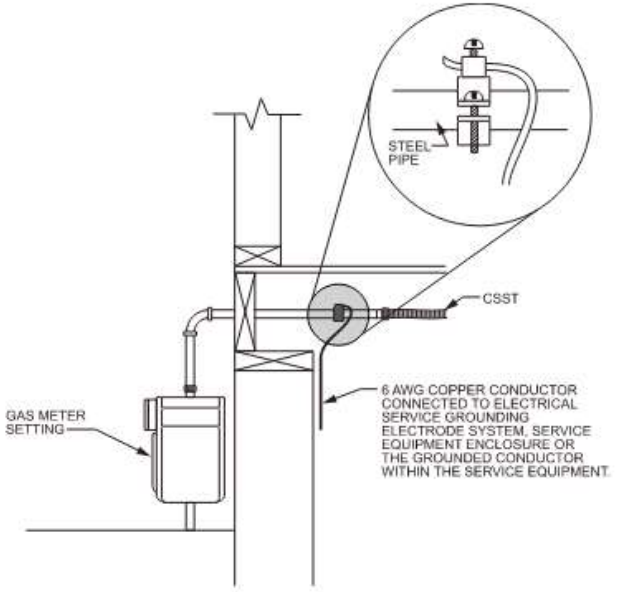
CSST G2411.2

G2411.2.1 (310.2.1) Point of connection. The bonding jumper shall connect to a metallic pipe, pipe fitting or CSST fitting.

G2411.2.2 (310.2.2) Size and material of jumper. The bonding jumper shall be not smaller than 6 AWG copper wire or equivalent.

G2411.2.3 (310.2.3) Bonding jumper length. The length of the bonding jumper between the connection to a gas piping system and the connection to a grounding electrode system shall not exceed 75 feet (22 860 mm). Any additional grounding electrodes installed to meet this requirement shall be bonded to the electrical service grounding electrode system or, where provided, the lightning protection grounding electrode system.

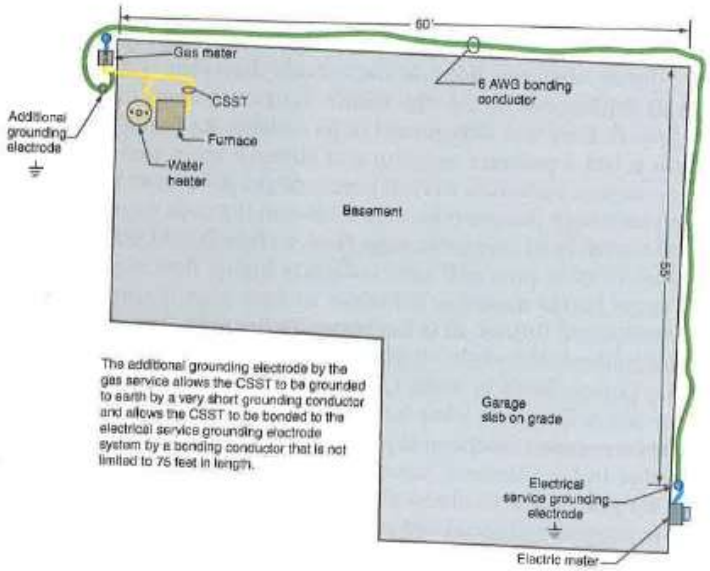
The code does not obligate the CSST connection at the service entrance. And with the bonding jumper limited to 75' there are times bonding at this location wouldn't be allowed.



Commentary Figure G2411.2(2)
ALTERNATIVE LOCATION FOR BONDING CLAMP

CSST G2411.2.3

G2411.2.3 (310.2.3) Bonding jumper length. The length of the bonding jumper between the connection to a gas piping system and the connection to a grounding electrode system shall not exceed 75 feet (22 860 mm). Any additional grounding electrodes installed to meet this requirement shall be bonded to the electrical service grounding electrode system or, where provided, the lightning protection grounding electrode system.



An additional grounding electrode can be installed to stay within the length limitation of 75 feet.

SCHEDULE 10 STEEL GAS PIPE G2414.10.1

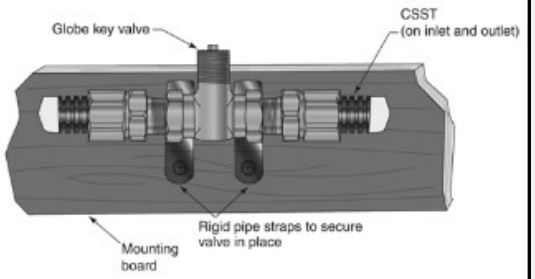
The code now allows schedule 10 steel pipe to be used in gas applications. This is likely in response to the popularity of press fittings as schedule 10 can not be threaded.

SHUTOFF VALVE ACCESS G2420.5.1

Shutoff valves located behind movable appliances are considered to meet the requirement for access.

SUPPORT FOR VALVES FOR GAS TUBING G2420.6

The code now clearly requires support for valves associated with gas tubing (CSST).



Commentary Figure G2420.6
SHUTOFF VALVES REQUIRE SUPPORT INDEPENDENT OF GAS TUBING

TESTING OF PEX P2503.7

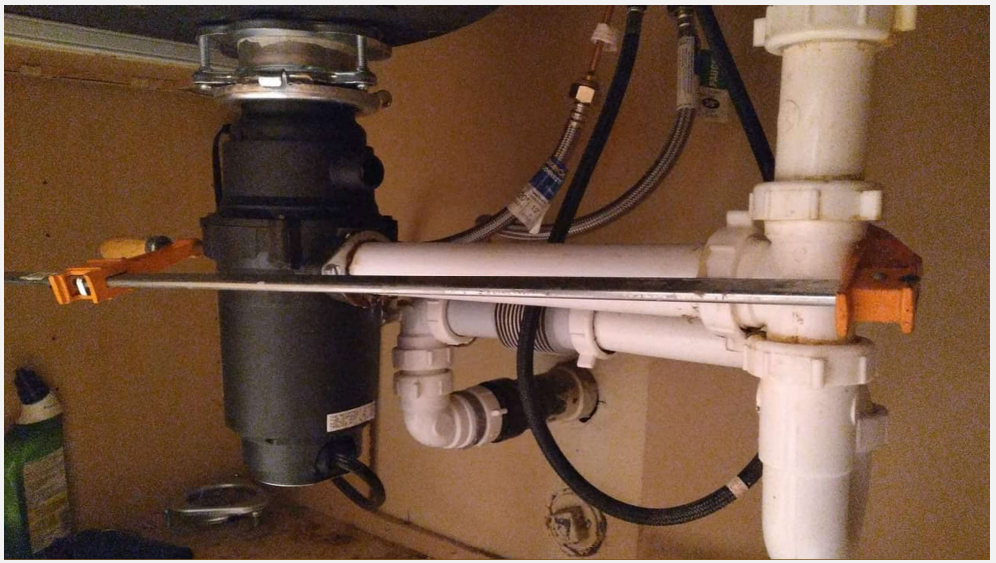
Compressed air testing of PEX water supply piping is now allowed when testing is in accordance with the manufacturer's instructions.

PROTECTION OF PIPES P2603.2.1 (OUBCC)

P2603.2.1 Protection against physical damage. In concealed locations, where piping, other than cast-iron or galvanized steel is installed through holes or notches in studs, joists, rafters or similar members less than ~~1 ¼~~ 1 ½ inches (38 mm) from the nearest edge of the member, the pipe shall be protected by steel shield plates. Such shield plates shall have a thickness of not less than 0.0575 inch (1.463mm) (No. 16 Gage). Such plates shall cover the area of the pipe where the member is notched or bored and shall extend not less than 2inches (51 mm) above sole plates and below top plates.

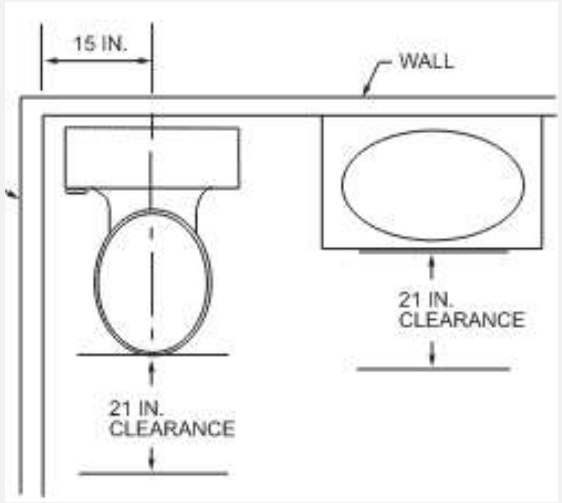
SLIP JOINT CONNECTIONS P2704

Slip joint connections are permitted anywhere between the fixture outlet and the drainage piping, and are no longer limited to the trap inlet, outlet and trap seal locations.



WATER CLOSET FLOOR SPACE P2705.1(OUBCC)

Vanity countertops shall be permitted to extend a maximum of 1.5 inches (38.1 mm) into the water closet floor space.



BATHTUB OVERFLOW P2713.1

Bathtub overflow outlets are no longer required; however, the code clarifies if an overflow outlet is provided it must be utilized and not blanked off.

PLASTIC PANS WATER HEATERS R2801.6

P2801.6 Required pan. Where a storage tank-type water heater or a hot water storage tank is installed in a location where water leakage from the tank will cause damage, the tank shall be installed in a pan constructed of one of the following:

1. Galvanized steel or aluminum of not less than 0.0236 inch (0.6010 mm) in thickness.
2. Plastic not less than 0.036 inch (0.9 mm) in thickness.
3. Other *approved* materials.

A plastic pan beneath a gas-fired water heater shall be constructed of material having a flame spread index of 25 or less and a smoke-developed index of 450 or less when tested in accordance with ASTM E84 or UL 723.

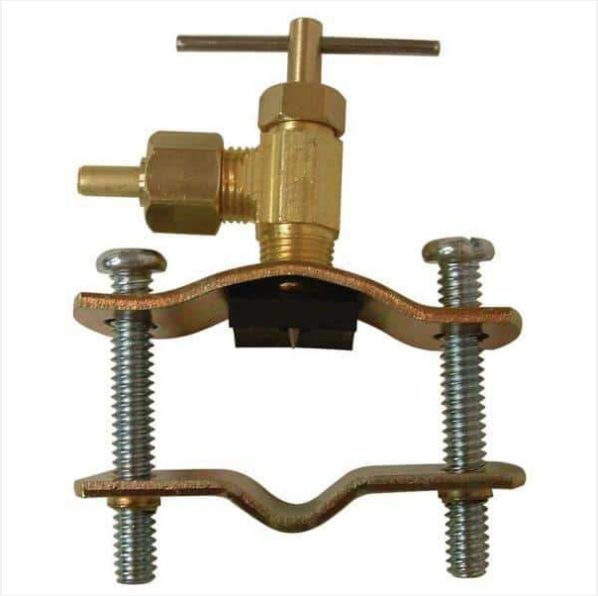
WATER HAMMER ARRESTORS P2903.5

P2903.5 Water hammer. The flow velocity of the water distribution system shall be controlled to reduce the possibility of water hammer. A water-hammer arrestor shall be installed where quick-closing valves are utilized. Water-hammer arrestors shall be installed in accordance with the manufacturer's instructions. Water-hammer arrestors shall conform to ASSE 1010.

SADDLE TAP FITTINGS P2906.6.1

P2906.6.1 Saddle tap fittings. The use of saddle tap fittings and combination saddle tap and valve fittings shall be prohibited.

- Saddle tap fittings are not a reliable, leak-free water connection, especially for use inside of a building.



PROHIBITED JOINTS P3003.2

A solvent cement joint is now permitted for joining ABS and PVC piping at the connection of the building drain to the building sewer.

DRAINAGE SIZE REDUCTION P3005.1.6

P3005.1.6 Drainage piping size reduction in the direction of flow. The size of the drainage piping shall not be reduced in the direction of the flow. The following shall not be considered a reduction in size in the direction of flow:

1. A 4-inch by 3-inch (102 mm by 76 mm) water closet flange.
2. A water closet bend fitting having a 4-inch (102 mm) inlet and a 3-inch (76 mm) outlet provided that the 4-inch leg of the fitting is upright and below, but not necessarily directly connected to, the water closet flange.
3. An offset closet flange.

GARAGE BRANCH CIRCUITS E3703.5

E3703.5 Garage branch circuits. In addition to the number of branch circuits required by other parts of this section, not less than one 120-volt, 20-ampere branch circuit shall be installed to supply receptacle outlets in attached garages and in detached garages with electric power. This circuit shall not have other outlets.

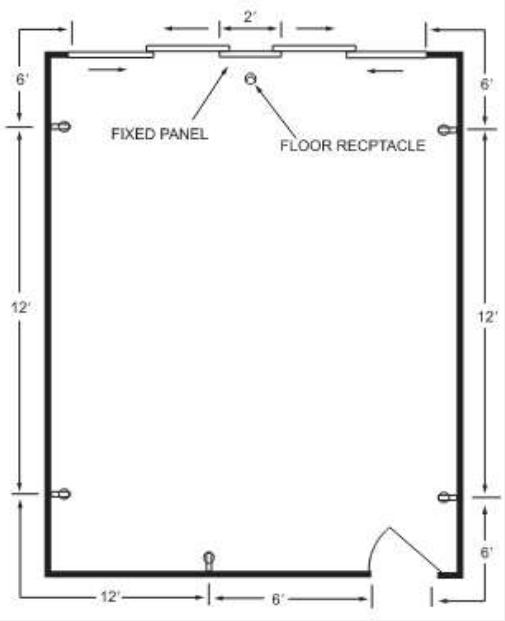
Exception: This circuit shall be permitted to supply readily accessible outdoor receptacle outlets.

COUNTER TOPS AS WALL SPACE R3901.2

Fixed cabinets that have countertops or work surfaces are not excluded from wall space measurements and are therefore considered as wall space.

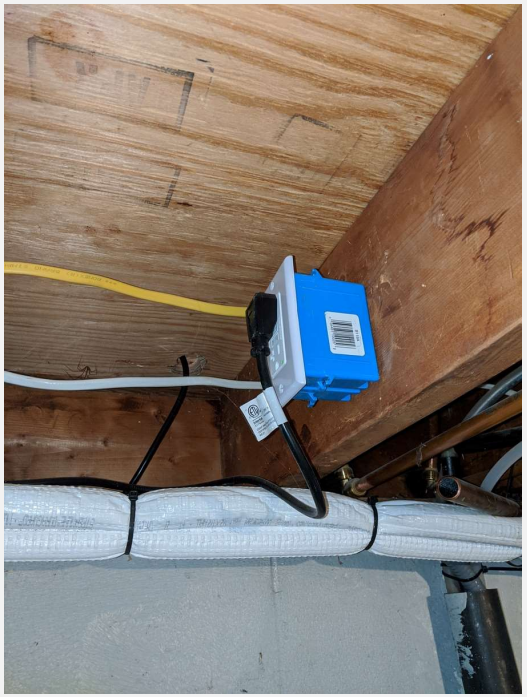
E3901.2.2 Wall space. As used in this section, a wall space shall include the following: [210.52(A)(2)]

1. Any space that is 2 feet (610 mm) or more in width, including space measured around corners, and that is unbroken along the floor line by doorways and similar openings, fireplaces, and fixed cabinets that do not have countertops or similar work surfaces.



CRAWL SPACE CIRCUITS REQUIRE GFCI PROTECTION E3902.4

E3902.4 Crawl space receptacles and lighting outlets. Where a crawl space is at or below grade level, 125-volt, single-phase, 15- and 20-ampere receptacles installed in such spaces shall have ground-fault circuit-interrupter protection for personnel. Lighting outlets not exceeding 120 volts shall have ground-fault circuit-interrupter protection. [210.8(A)(4), 2108(E)]



FLEXIBLE CORD LENGTHS E4101.3

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TABLE E4101.3
FLEXIBLE CORD LENGTH

APPLIANCE	MINIMUM CORD LENGTH (inches)	MAXIMUM CORD LENGTH (inches)
Electrically operated in-sink waste disposal	18	36
Built-in dishwasher	36	48
Trash compactor	36	48
Range hoods	18	36

2018

TABLE E4101.3
FLEXIBLE CORD LENGTH

APPLIANCE	MINIMUM CORD LENGTH (inches)	MAXIMUM CORD LENGTH (inches)
Electrically operated in-sink waste disposal	18	36
Built-in dishwasher	36	78
Trash compactor	36	48
Range hoods	18	48