2009 International Residential Code

Proposed Amendments of OUBCC

100% of IRC Building Code Technical Review Recommend adding:

Chapter 1 Preamble:

Pursuant to 59 O.S. § 1000.23, the Uniform Building Code Commission has adopted the 2009 International Residential Code ("2009 IRC"), as amended and revised by the Commission, as the minimum standards to be used by all entities for residential construction in jurisdictions throughout the State of Oklahoma. However, the Commission's adoption of Chapter 1 "Scope and Administration" of the 2009 IRC is for continuity purposes only and the Commission's adoption of Chapter 1 is limited to the Commission's recognition of best practice in fully implementing the minimum standards for residential construction.

All other provisions of the Oklahoma adopted 2009 IRC other than Chapter 1, as amended and revised by the Commission, are hereby established and adopted as the statewide minimum standards for residential building construction in Oklahoma pursuant to 59 O.S. § 1000.23, which may only be amended or altered pursuant to Oklahoma law and the administrative rules of the Oklahoma Uniform Building Code Commission as set forth in Title 748, Chapter 15 of the Oklahoma Administrative Code.

The Commission's limited adoption of Chapter 1 is made with the recognition that the legal authority granting state and local code administration and enforcement jurisdictions the power and discretion to administer and enforce codes arises from Oklahoma laws governing those jurisdictions. Furthermore, the Commission also recognizes that many state and local code administration and enforcement jurisdictions have already created, or have the lawful authority to create, departments, offices and administrative policies pursuant to various applicable laws and other adopted model codes with "Scope and Administration" provisions similar Chapter 1 of the 2009 IRC.

Accordingly, the provisions of Chapter 1 adopted herein are only intended to be in force and effect to the extent that the respective provisions do not conflict with State law or the lawful exercise of code administration and enforcement jurisdiction by entities empowered to do so pursuant to applicable law. Additionally, it is the intent of the Uniform Building Code Commission that the adoption of Chapter 1 shall create no positive or greater duties, responsibilities or obligations to code administration and enforcement jurisdictions other than those which already exist or hereafter arise as a matter of state or local law.

Justification:

Informs the reader of the adoption of the 2009 IRC, forces the adoption to comply with Oklahoma law and limits the administrative impact of chapter one to municipalities.

100% of IRC Building Code Technical Review Recommend amending:

R 302.1 Table Exterior Walls

EXTERIOR WALL ELEMENT		MINIMUM FIRE-RESISTANCE RATING	MINIMUM FIRE SEPARATION DISTANCE
Walls	(Fire-resistance rated)	1 hour-tested in accordance with ASTM E 119 or UL 263 with exposure from both sides	< 5 feet
	(Not fire-resistance rated)	0 hours	≥ 5 feet
Projections	(Fire-resistance rated)	1 hour on the underside	≥ 2 feet to ~~5~~3 feet
	(Not fire-resistance rated)	0 hours	~~5~~ 3 feet
Openings in walls	Not allowed	N/A	< 3 feet
	25% maximum of wall area	0 hours	3 feet
	Unlimited	0 hours	5 feet
Penetrations	All	Comply with Section R302.4	< 5 feet
		None Required	5 feet

Justification:

Multiple city requested for this revision to accept current practice and zoning requirements of individual municipalities. Also, there is confusion on how building inspectors would enforce a 5 ft minimum fire separation distance on lots with a 5 ft building setback. i.e. the roof eave, a projection, would not meet a 5 ft minimum fire separation distance.

100% of IRC Building Code Technical Review Recommend amending:

R 310.1.1 Minimum Opening Area. All emergency escape and rescue openings shall have a minimum net clear opening of ~~5.7~~ 5 square feet (0.530 m^2).

Exception: *Grade* floor openings shall have a minimum net clear opening of 5 square feet (0.465 m^2).

Justification:

-This modification would make all windows subject to the same minimum opening area.

-Larger window required in prior codes in 2nd story not necessary due to size of equipment of firefighters utilize in house fires. i.e. firefights equipment does not allow easy access with either size of opening without removing the window system with their axe.

-window size and minimum required open for egress out of building of 5 ft is sufficient in first floor and being on second floor doesn't change amount of space needed for egress.

100% of IRC Building Code Technical Review Recommend amending:

R 311.7.4.1 Riser Heights. The maximum riser height shall be 7 ¾ inches (196 mm). The riser shall be measured vertically between leading edges of the adjacent treads. The greatest riser height within any flight of stairs shall not exceed the smallest by more than 3/8 inch (9.5 mm) at rough-in. Top and bottom riser may vary by ¾" at final inspection.

Justification:

This amendment increases the tolerance at top and bottom landing area of staircases to 3/4" due to varying types of flooring material that can be used at those locations. It is not always possible to maintain 3/8" tolerance in those areas due to homes that sell at various stages of construction and homeowners changing of flooring materials throughout process and after occupancy. This amendment in no way affects the safety intent of the code. The code requires minimum variation between risers of 3/8" through the risers while a person is in a rythmn walking up/down stairs. The variation at top and bottom will not affect safety due to the landing areas when the rythmn is already changing. This amendment further clarifies when to measure the riser height in Section R 311.7.4 2009 IRC that requires inspection of stairs at rough-in stage, prior to flooring materials becoming a influence to the riser height.

100% of IRC Building Code Technical Review Recommend moving the following to the Appendix

~~**R 313.2 One- and two-family dwellings automatic fire systems.** Effective January 1, 2011, an automatic residential fire sprinkler system shall be installed in one- and two- family *dwellings.*~~

~~**Exception:** An automatic residential fire sprinkler system shall not be required for additions or alterations to existing buildings that are not already provided with an automatic residential sprinkler system.~~

~~**R313.2.1 Design and installation.** Automatic residential fie sprinkler systems shall be designed and installed in accordance with Section P2904 or NFPA 13D.~~

Justification:

R313.2 and R313.2.1 were discussed at length and the justifications listed below are opinions held by some, but not all of the committee. After much internal discussion, written requests from the public and an open forum presentation from the Fire Marshalls and sprinkler industry our committee voted 100% to move these sections to the appendix. Fundamentally the IRC Building Code Technical Review committee decided that these sections are not in the best interest of the State of Oklahoma for full state adoption at this time.

- **National Trend.** To date, as the 2009 IRC is adopted in the United States, most states have removed section R 313 from the code. Currently 27 states have passed legislation prohibiting the mandate of fire suppression systems, seeing these systems as an unnecessary burden and unreliable measure in 1-2 Family Dwellings.

- **Local Jurisdiction.** This has been a controversial code change in the United States. There where tremendous lobby efforts by the fire suppression industry to have this introduced in this code cycle. In the past the ICC had place this in the Appendix and let local municipalities evaluate their need for such systems. Municipalities are capable of considering their local fire support and if insufficient can decide to implement this as a measure to address egress for occupants.

- **Lack of significant safety enhancement vs. hardwired smoke alarms.** The introduction into the code of these systems is an unnecessary measure of redundancy when considering it as an egress system on top of current requirement for hardwired smoke alarms with battery back up. A system that is very difficult for the occupant to "disconnect".

    - There are many statistics available on the pro's and con's of these types of systems, however, the most telling may be from the NFPA, which reports that the rate of survival in a house fire in home with working smoke detector is 99.45% and the rate of survival of home with sprinkler suppression system is 99.89%, an increase of 0.44%. Less the one half of one percent. This is an unacceptable performance improvement when considering the cost and other issues discussed concerning these systems.

- **New homes are much more fire resistant.** There are many issues and studies that have been conducted looking into the performance and reliability of these systems (such as Maryland University Fire Engineering Study). Fire issue and deaths of occupants largely occur in aged housing stock of 30 years and older.
    - The code bodies recognize the issues in slowing fire spread rates over the years and have incorporated much more stringent standard in construction to allow for occupants egress out of structures.
    - Appliances that contribute to fires are much safer than in past and have many redundant systems now to prevent them from becoming source of fires.
- **Durability.** There are a number of other concerns with these systems and the way they are installed in attics of homes in Oklahoma. The lines are run through the attic and exposed to freezing temperatures that Oklahoma often experience. While "tenting" the lines with insulation does reduce the risk of freeze up it does not eliminate the risk of water damage due to broken lines.
    - This state also has areas that experience total electrical outages just about every winter and in those times no heat is being generated from the building to keep those lines from freezing which will lead to disaterous loss from water damage.
- **Sprinkler performance.** Another concern of the building industry is occupant actions that can cause these systems to be rendered useless.
    - Many homeowners hire contractors (cable , phone, stereo, etc.) to enter the attics to run wires and make modification to their homes and will disturb measures taken in insulation attempts to protect water lines causing freezing and resulting in water damage.
    - Other occupant behavioral concerns are those of interior modification. Homeowners often add fixture and other aesthetic elements that can hinder the capability of these sprinklers performance.
    - Another common issue is for homeowners to paint and repaint rooms and ceilings. Individuals and contractors many times paint the outlets, air supply grills and everything else in the room and **if these sensors get painted they will not perform.**

By a vote of 8 for and 1 against, the IRC Building Code Technical Review Recommend amending:

R 315.1 Carbon monoxide alarm. For new construction, an approved carbon monoxide alarm shall be installed outside of each separate sleeping area in the immediate vicinity of the bedrooms in dwelling units within which fuel-fired appliances are installed and in dwelling units that have attached garages.

Exception. Residences with attached garages and: 1) sealed door between the residence and the garage, and 2) no fuel burning devices in the residence then carbon monoxide detection is not required within the residence.

Justification:

- This only removes the need for a carbon monoxide alarm in homes there are no fuel burning appliances within the conditioned envelope of structure. i.e. no source of carbon monoxide.
- Carbon monoxide detectors have been used in homes in recent years and have been problematic with false alarms being caused by common household products that are used in homes.
    - In addition, their sensitivity to dust particle pulled across their sensors from HVAC operation creates an unacceptable nuisance to homeowners and many times leads to the occupant disabling them.
    - We feel that by next code cycle the industry will make improvements in their products performance and acceptance can be determined at that time.

100% of IRC Building Code Technical Review Recommend removing the following from the code.

Section R 323
Storm Shelters

R323.1 General. This section applies to the construction of storm shelters when constructed as separate detached buildings or when constructed as safe rooms within buildings for the purpose of providing safe refuge from storms that produce high winds, such as tornadoes and hurricanes. ~~In addition to other applicable requirements in this code, storm shelters shall be constructed in addordance with ICC/NSSA-500.~~

Justification:

- Consumers choose to build safe areas in homes for varying purposes and spec levels should not be required in all cases to achieve such a high level of construction.
    - This is a consumer choice and they should the ability to choose the level of protection they desire to achieve.
- There are many other standards that meet the intent of this section such as the FEMA specification developed in conjunction with the Wind Engineering Research Center at the University of Texas Tech.
    - The IRC 2009 code does not dictate that a Storm Shelter should be built in a home, therefore, the code should not dictate what type of construction should be achieved if consumer choose to build one.

100% of IRC Building Code Technical Review Recommend adding:

R 403.1.6 Foundation Anchorage. Sill plates and walls supported directly on continuous foundations shall be anchored to the foundation in accordance with this section.

Wood sole plates at all exterior walls on monolithic slabs wood sole plates of *braced wall panels* at building interiors on monolithic slabs and all wood sill plates shall be anchored to the foundation with anchor bolts spaced a maximum of 6 feet (1829 mm) on center. Bolts shall be at least 1/2 inch (12.7 mm) in diameter and shall extend a minimum of 7 inches (178 mm) into concrete or grouted cells of concrete masonry units. A nut and washer shall be tightened on each anchor bolt. There shall be a minimum of two bolts per plate section with one bolt located not more than 12 inches (305 mm) or less than seven bolt diameters from each end of the plate section. Interior bearing wall sole plates on monolithic slab foundation that are not part of a *braced wall panel* shall be positively anchored with *approved* fasteners. Sill plates and sole plates shall be protected against decay and termites where required by Sections R317 and R318. Cold-formed steel framing systems shall be fastened to wood sill plates or anchored directly to the foundation as required in Section R505.3.1 or R603.3.1.

Exceptions:

1. Foundation anchorage, spaced as required to provide equivalent anchorage to 1/2 inch diameter (12.7 mm) anchor bolts.
2. Walls 24 inches (610 mm) total length or shorter connecting offset *braced wall panels* shall be anchored to the foundation with a minimum of one anchor bolt located in the center third of the plate section and shall be attached to adjacent *braced wall panels* at corners as shown in Figure R602.10.4.4(1).
3. Connection of walls 12 inches (305 mm) total length or shorter connecting offset *braced wall panels* to the foundation without anchor bolts shall be permitted. The wall shall be attached to adjacent braced wall panels at corners as shown in Figure602.10.4.4(1).
4. Wood sole plates of *braced wall panels* at building interiors on monolithic slabs may be anchored using connector(s) with a shear capacity of 2300 lbs and a tensile capacity of 800 lbs over a maximum span of 6 feet.

Justification:

Note: this is the same justification for R 602.10.6 Braced Wall Panel Connections

The committee established minimum values to allow the use of alternative anchorage systems due to the difficulty of installation of concrete imbedded J-bolts in the interior of the slabs. Placement of the imbedded J-bolt would need to be within 1" of accurate for a 3-1/2" plate. This is almost unachievable without use of other anchorage systems.

This amendment allows for code officials and builders to use alternative methods that meet the prescribed strengths noted above when using other fastening systems. These systems are not prescriptively referenced in the IRC 2009 code and by providing minimum values the need for job specific engineered designs is not required.

In the committee's opinion there is a lack of logic in anchorage systems used for concrete slabs and those of wood framed foundation systems such as crawl spaces and 2nd and 3rd floor of multi-story buildings. The prescribed braced wall anchorage in wood frame floor calls for (3) 16d nails driven together and spaced every 16" in the braced wall line. The capacity of three 16d nails is far less than described in 403.1.6 Foundation Anchorage. There should not be such a difference in capacity depending on whether the floor system is concrete or wood system. That being said, the committee chose the much higher values, consistent with the shear value of a ½" diameter steel anchor bolt and the tensile capacity mentioned in R602.10.5.3 as a hold down device.

100% of IRC Building Code Technical Review Recommend amending:

R 402.2 Concrete. Concrete shall have a minimum specified compressive strength of f'c, as shown in Table R402.2. Concrete subject to moderated or severe weathering as indicated in Table R301.2(1) shall be air entrained as specified in Table R402.2. The maximum weight of fly ash, other pozzolans, silica fume, slag or blended cements that is included in concrete mixtures for garage floor slabs and for exterior porches, carport slabs and steps that will be exposed to deicing chemicals shall not exceed the percentages of the total weight of cementitious materials specified in Section 4.2.3 of ACI 318. Materials used to produce concrete and testing thereof shall comply with the applicable standards listed in Chapter 3 of ACI 318 or ACI 332.

Exception. Interior concrete slabs on grade and enclosed garage slabs are not required to be air entrained.

Justification:

- This section was amended to remove the requirement for air entrainment in floor slabs and garages of homes exposed to freezing weather during construction. The primary reason is that freeze-thaw damage to concrete is directly related to the number of cycles of freezing and thawing the concrete is subjected too. For instance, ASTM C 666 tests the freeze-thaw durability of concrete for 300 cycles. For concrete that is only exposed during the construction period the number of freeze-thaw cycles are inconsequential to the long term durability of the concrete.
    - The committee recognizes that the air entrainment is required for concrete that will remain exposed indefinitely to freeze-thaw conditions for indefinite period of time. For concrete to be damaged from freeze-thaw it must be exposed for many more cycles than a home under construction could ever experience.
- Also air entrainment additives counteract the performance of other additives to concrete. One example of this is water repellant additives used to prevent subsurface migration of moisture and vapor is counteracted when concrete is entrained with air.
- Air entrained concrete causes many finishing issues that prohibit the desire of consumers for smooth trowel floors that may remain exposed stained and sealed.

100% of IRC Building Code Technical Review Recommend amending:

R 406.2 Concrete and masonry foundation waterproofing. In areas where a high water table or other severe soil-water conditions are known to exist, exterior foundation walls that retain earth and enclose interior spaces and floors below grade shall be waterproofed in accordance with one of the following:

1. Two-ply hot-mopped felts.
2. Fifty five pound (25 kg) roll roofing
3. Six-mil (0.15 mm) polyvinyl chloride.
4. Six-mil (0.15 mm) polyethylene
5. Forty-mil (1 mm) polymer-modified asphalt.
6. Sixty-mil (1.5 mm) flexible polymer cement.
7. One-eighth inch (3 mm) cement-based, fiber-reinforced, waterproof coating.
8. Bentonite.

Justification:

Committee identified this additional product commonly used in Oklahoma as waterproofing that the IRC 2009 code didn't address prescriptively.

100% of IRC Building Code Technical Review Recommend amending:

R 506.2.3 Vapor retarder. A 6 mil (0.006 inch; 152 μm) polyethylene, other industry accepted vapor retarder products per manufacturer specifications or approved vapor retarder with joint lapped not less than 6 inches (152 mm) shall be placed between the concrete floor slab and the base course or the prepared subgrade where no base course exists.

Justification:

Committee recognized that code only prescriptively addresses one method of limiting moisture movement through a concrete slab on grade. There are other materials and methods available. i.e. denser concrete, water repellant additives to concrete, sealing coats on the concrete and other types of sheeting. These methods address the intent of the IRC 2009 code to protect sensitive flooring materials that could be damaged due to the migration of moisture.

100% of IRC Building Code Technical Review Recommend amending:

R 602.4 Interior load bearing walls. Interior load-bearing walls shall be constructed, framed and fireblocked as specified for exterior walls. Table R602.3(5) should be used to establish stud spacing of walls up to 10 feet (3048 mm) high, and Table R602.3(1) applies to walls over 10 feet (3048 mm).

Justification:

Per commentary this clarifies that this section is limited to stud spacing and height studs per table R602.3(5) and table R602.3(1). The wording suggested is directly from the IRC 2009 Commentary.

100% of IRC Building Code Technical Review Recommend amending:

R 602.10.6 Braced wall panel connections. Braced wall panels shall be connected to floor framing or foundations as follows:

1. Where joists are perpendicular to a braced wall panel above or below, a rim joist, band joist or blocking shall be provided along the entire length of the braced wall panel in accordance with Figure R602.10.6(1). Fastening of top and bottom wall plates to framing, rim joist, band joist and/or blocking shall be in accordance with Table R602.3(1).

2. Where joists are parallel to a braced wall panel above or below, a rim joist, end joist or other parallel framing member shall be provided directly above and below the braced wall panel in accordance with Figure R602.10.6(2). Where a parallel framing member cannot be located directly above and below the panel, full-depth blocking at 16 inch (406 mm) spacing shall be provided between the parallel framing members to each side of the braced wall panel in accordance with Figure R602.10.6(2). Fastening of blocking and wall plates shall be in accordance with Table R602.3(1) and Figure R602.10.6(2).

3. Connections of braced wall panels to concrete or masonry shall be in accordance with Section R403.1.6.

4. Wood sole plates of *braced wall panels* at building interiors on monolithic slabs may be anchored using connector(s) with a shear capacity of 2300 lbs and a tensile capacity of 800 lbs over a maximum span of 6 feet.

Justification:

The committee established minimum values to allow the use of alternative anchorage systems due to the difficulty of installation of concrete imbedded J-bolts in the interior of the slabs. Placement of the imbedded J-bolt would need to be within 1" of accurate for a 3-1/2" plate. This is almost unachievable without use of other anchorage systems.

This amendment allows for code officials and builders to use alternative methods that meet the prescribed strengths noted above when using other fastening systems. These systems are not prescriptively referenced in the IRC 2009 code and by providing minimum values the need for job specific engineered designs is not required.

In the committee's opinion there is a lack of logic in anchorage systems used for concrete slabs and those of wood framed foundation systems such as crawl spaces and 2nd and 3rd floor of multi-story buildings. The prescribed braced wall anchorage in wood frame floor calls for (3) 16d nails driven together and spaced every 16" in the braced wall line. The capacity of three 16d nails is far less than described in 403.1.6 Foundation Anchorage. There should not be such a difference in capacity depending on whether the floor system is concrete or wood system. That being said, the committee chose the much higher values, consistent with the shear value of a ½" diameter steel anchor bolt and the tensile capacity mentioned in R602.10.5.3 as a hold down device.

100% of IRC Building Code Technical Review Recommend amending:

R 703.8 Flashing. Approved corrosion-resistant flashing shall be applied shingle-fashion in a manner to prevent entry of water into the wall cavity or penetration of water to the building structural framing components. 6 mil visqueen is an approved corrosion resistant flashing when not exposed to UV rays. Self-adhered membranes used as flashing shall comply with AAMA 711. The flashing shall extend to the surface of the exterior wall finish. Approved corrosion-resistant flashings shall be installed at all of the following locations.

Justification:

In rural areas of Oklahoma, where historically there has been no residential construction code, finding "approval" for a product may be difficult. In this case the committee is trying to provide a bit of guidance as to one approved flashing product for walls.

The intent here is to prescriptively specify 6 mil visqueen to be used behind the finished facade materials of building where metal flashings would be unable to be used and create continuity of flashing system. It also allows a product that can be used to create a path to the exterior of building if required. The specific locations discussed are at sill plate where base flashing is required behind wall sheathing on masonry veneer buildings when masonry is placed on slab in brick/stone pockets so the flashing can discharge bulk water to the exterior of building. In addition, it is acceptable to use as head flashings at windows/doors or seams in sheet good material used as exterior water resistant sheathings. This has been common practice in industry and clarifies to code officials and contractors what products may be used in this application.

This in no way substitutes the use of this product on roof and wall intersections or other areas were exposed to UV light. All roof flashing will comply with specification in Chapter 9 of IRC.

100% of IRC Building Code Technical Review Recommends removing from the code.

~~**R 801.3 Roof drainage.** In areas where expansive or collapsible soils are known to exist, all dwellings shall have a controlled method of water disposal from roofs that will collect and discharge roof drainage to the ground surface at least 5 feet (1524 mm) from foundation walls or to an approved drainage system.~~

Justification:

The committee felt like surface drainage is addressed in Section R 401.3 Drainage with an established method for how surface water is to be directed away from a structure by grading with minimum slopes and swalles to divert water away from structure in a controlled manner.

Also, the committee felt this new section to the IRC code was poorly written and prone to misinterpretation. Especially the portion stating "where expansive or collapsible soils are known to exist". This could include all of the state of Oklahoma or it may only include areas with soils that show a high placticity index. But this is not "common" knowledge across the state and the problem is handled in a more straight forward manner in Section 401.3 Drainage.

100% of IRC Building Code Technical Review Recommend amending:

R 802.3 Framing details. Rafters shall be framed to ridge board or to each other with a gusset plate as a tie. Ridge board shall be at least 1-inch (25 mm) nominal thickness and not less in depth than the cut end of the rafter. At all valleys and hips there shall be a valley or hip rafter not less than 2-inch (51 mm) nominal thickness and not less in depth than the cut end of the rafter. Hip and valley rafters shall be supported at the ridge by a brace to a bearing partition or be designed to carry and distribute the specific load at that point. Definition of brace includes: 1) a triangular configuration of framing members with a horizontal tie and rafter members, 2) king post or similar. Where the roof pitch is less than three units vertical in 12 units horizontal (25% slope), structural members that support rafter and ceiling joists, such as ridge beams, hips and valleys, shall be designed as beams.

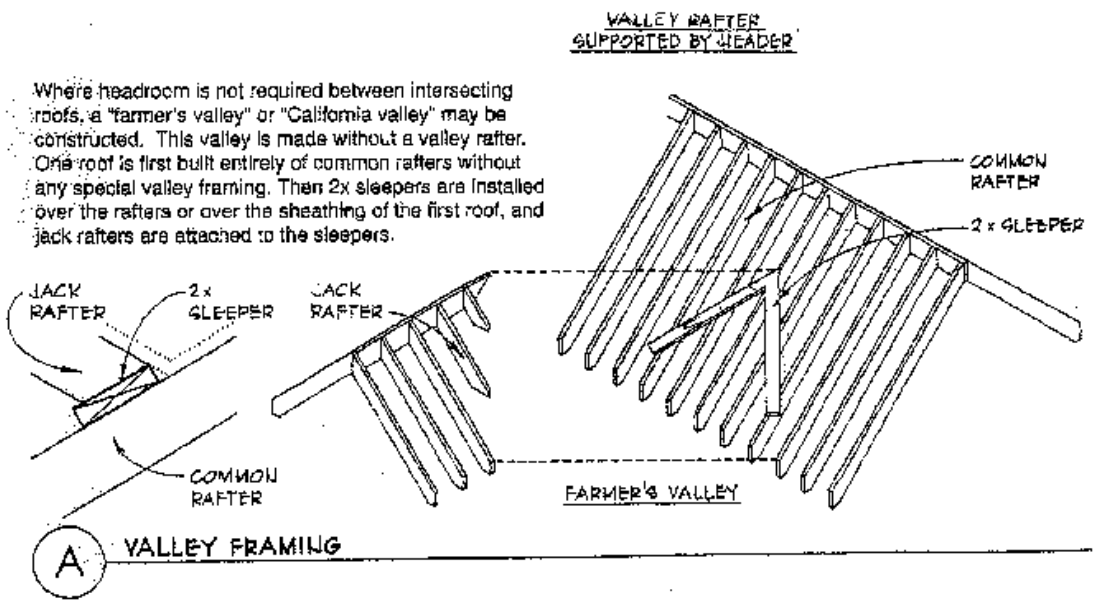
Justification:

The intent to clarify how a brace can be constructed. The code is ambiguous in this area and just says "members shall be braced to interior partition or be designed to carry and distribute load at that point". This leaves code officials and builders in predicament of trying to determine whether where and how loads are being distributed and trying to support in vertical manner which is sometimes impossible depending on the design of the building. This give a prescriptive definition of alternative bracing methods and how they can be achieved.

100% of IRC Building Code Technical Review Recommend amending:

R 802.3 Framing details. (see prior page)

Exception: The follow “farmers valley” or “California valley” will be permitted.



Justification:

To add a method for over-framing of roofs where a valley or ridge may be formed that doesn't meet the prescriptive definition in this section. This section say ridges shall be at least 1 inch and valley shall be at least 2 inches and be thickness of cut end of rafter being connected. This example is of a "California Valley" or "farmers Valley" where the first roof is constructed then 2x sleepers are applied to rafter then second roof built over top or first. This helps address many situation mentioned above where due to design of building bracing is not achieveable. This is a common practice in industry and same application is used to fill in truss roof construction where two perpendicular planes of roof tie to one another.

Note: the easiest method to incorporate this figure into the Oklahoma amended IRC code would be to allow our committee to create a similar figure from scratch. i.e. create our own detail that incorporates the elements of this valley framing diagram.

100% of IRC Building Code Technical Review Recommend amending:

R 802.5.1 Purlins. Installation of purlins to reduce the span of rafters is permitted as shown in Figure R802.5.1. Purlins shall be sized no less than the required size of the rafters that they support. Purlins shall be continuous and shall be supported by 2-inch by 4-inch (51mm by 102 mm) braces installed to bearing walls at a slope not less than 45 degrees from the horizontal. The braces shall be spaced not more than 4 feet (1219 mm) on center and the unbraced length of braces shall not exceed 8 feet (2438 mm).

Exception. Braces may be spaced not more than 6 feet (1829 mm) on center if: 1) the purlin brace is 2-inch by 6-inch (51 mm by 153 mm) 2) Purlins shall be sized one nominal size larger than the rafter they support, and 3) unbraced length of braces shall not exceed 8 feet (2438 mm)

Justification:

The committee proposes this as an alternative method to how purlins are braced. In many case due to design and interior partition walls layout, the increased spacing of the braces in a purlin system maybe required. This allows for spacing of bracing supporting purlin to be increased from 4ft to 6ft if three conditions are met:

100% of IRC Building Code Technical Review Recommends moving to the Appendix

~~**N 1101.9 Certificate.** A permanent certificate shall be posted on or in the electrical distribution panel. The certificate shall not cover or obstruct the visibility of the circuit directory label, service disconnect label or other required labels. The certificate shall be completed by the builder or registered design professional. The certificate shall list the predominant R-values of insulation installed in or on ceiling/roof, walls, foundation (slab, basement wall, crawlspace wall and/or floor) and ducts outside conditioned spaces; U-factors for fenestration; and the solar heat gain coefficient (SHGC) of fenestration. Where there is more than one value for each component, the certificate shall list the value covering the largest area. The certificate shall list the types of efficiencies of heating, cooling and service water heating equipment. Where a gas-fired unvented room heater, electric furnace and/or baseboard electric heater is installed in the residence, the certificate shall list "gas-fired unvented room heater," "electric furnace" or "baseboard electric heater," as appropriate. An efficiency shall not be listed for gas-fired unvented room heaters, electric furnaces or electric base board heaters.~~

Justification:

This section is inconsistent with other chapters and sections in the code, in the opinion of the committee this section no longer represents a minimum performance criteria of the structure. It is mandating paper work without providing accuracy or need.

This section requires that builder place a certificate on or in the electrical distribution panel of the R-values of insulation in walls, ceilings, slab and U-factor/SHGC of windows, In addition, listing of types and efficiencies of all appliances. The committee did not see the necessity of doing this for these components when no where else in the code does it require for the listing of types of product used in the structure. This is addressed in the plans and specification for the home with purchaser and homeowners can be assured the energy efficiency ratings are in compliances with what the code requires. This seemed irrational to require this and not require the specifications of the structural components of home such as foundation design, strength of concrete, framing member size/spacing, etc. The efficiency information on appliances can be retrieved by buyer in warranty manuals or by simply looking up model # of appliance on manufacturer website if they are interest in obtaining that information.

100% of IRC Building Code Technical Review Recommends removing from the code:

N 1102.4.3 Fireplaces. New wood-burning fireplaces shall have ~~gasketed doors and~~ outdoor combustion air.

Justification:

Remove requirement for gasket doors on wood burning fireplaces. Many masonry built in place fireplaces would be difficult to fit with “gasketed doors”. Frankly the construction members of the committee had no idea where to buy a “gasketed door” for a custom masonry fireplace.

Fireplace are required to have dampers to prevent the movement of exterior air when the fireplace is not in use. Also, the committee didn't feel like code should have an aesthetic requirement like this when it could simply be removed by homeowner.

100% of IRC Building Code Technical Review Recommends removing from the code

~~**N 1103.1.1 Programmable thermostat.** Where the primary heating system is a forced air furnace, at least one thermostat per dwelling unit shall be capable of controlling the heating and cooling system on a daily schedule to maintain different temperature set points at different times of the day. This thermostat shall include the capability to set back or temporarily operate the system to maintain zone temperatures down to 55° F (13° C) or up to 85° F (29° C). The thermostat shall initially be programmed with a heating temperature set point no higher than 70° F (21° C) and a cooling temperature set point no lower than 78° F (26° C).~~

Justification:

This is an option that any homeowner can have a builder install in their home or they can retrofit at later date if the wish. While some people may like these there are others that don't like the complexity of these units and have to be reset anytime there is a power surge of loss of electricity. People can adjust a standard thermostat if they wish while they are out of home for period of time. (i.e. the author has 2 graduate degrees in engineering but does not use or want a programmable thermostat)

There is also concern that programmable thermostats can be a negative as far as energy savings. Setting the thermostat back during the day can actually cost more energy. Often when set to high during the day in the summer, when people are at work, the system has to work much harder to get the house back to set point temperature people desired in the evening. If the system is design properly, which they should be per this chapter, they don't have the capacity to bring house temperatures down during the summer months in timely manner.

Most HVAC systems in the most energy efficient homes (i.e. sized to run at maximum efficiency, not oversized for the home) can only recover approximately 2 degrees per hour. There are many other variables which can cause this to be less than 2 degrees per hour. Therefore it is not recommended to do adjust temperature ranges drastically. Actually for a truly efficient home the system works most efficiently when set at one temperature and is maintained at that temperature throughout day. If the system is turned off or short cycled the home will experience a substantial rise in humidity which is much more energy inefficient and uncomfortable.

100% of IRC Building Code Technical Review Recommend amending:

N1103.2 Ducts.

N 1103.2.2 Sealing. Ducts, air handlers, filter boxes and building cavities used as ducts shall be sealed. Joints and seams shall comply with Section M1601.4 Duct tightness shall be verified be either of the following.

1. Post-construction test: Leakage to outdoors shall be less than or equal to 8 cfm (3.78 L/s) per 100 ft^2 (9.29 m^2) of conditioned floor area or a total leakage less than or equal to 12 cfm (5.66 L/s) per 100 ft^2 (9.29 m^2) of conditioned floor area when tested at a pressure differential of 0.1 inch w.g. (25 Pa) across the entire system, including the manufacturer's air handler enclosure. All register boots shall be taped or otherwise sealed during the test.

2. Rough-in test: Total leakage shall be less than or equal to 6 cfm (2.83 L/s) per 100 ft^2 (9.29 m^2) of conditioned floor area when tested at a pressure differential of 0.1 inch w.g. (25 Pa) across the roughed in system, including the manufacturer's air handler enclosure. All register boots shall be taped or otherwise sealed during the test. If the air handler is not installed at the time of the test, total leakage shall be less than or equal to 4 cfm (1.89 L/s) per 100 ft^2 (9.29 m^2) of conditioned floor area.

Exception: Duct tightness is not required if the air handler and all ducts are located within conditioned space.

Exception: Visual inspection may be used instead of the rough-in test and post construction test

Justification:

The committee recommends adding visual inspections on duct system. With the requirement to use mastic sealants to connect duct to plenum, y's and supply boot in M1601.4 will greatly enhance the tightness of systems in future.

N1102.4.2 Air sealing and insulation allows for either N1102.4.2.1 Testing option and N1102.4.2.2 Visual inspection option. Philosophically the code is providing either a physical test or visual inspection in chapter 11 with the exception of this section N 1103.2.2 (Duct) Sealing where the code only provides for a physical test. (The rest of the entire code has been based of prescriptive measures and visual inspections.) Our committee believe that this unduly favors the residential testing companies and is adding a visual inspection option to correct this issue.

It is inconsistent to require a performance based test for duct sealing when the rest of the code is prescriptive. This again is an above and beyond code requirements found in energy programs such as DOE Builder Challenge, LEED and Energy Star.

The other issue the committee discussed in how would the current municipalities inspect to such a standard? They would have to buy the equipment necessary to perform test and train there people to be able to perform. The time it would require to perform these test would put an unnecessary burden on municipalities requiring them hire more people to perform inspections. This doesn't even address the areas of state that are outside incorporated areas that builders would have no way to conform to this requirement.

100% of IRC Building Code Technical Review Recommend amending:

N 1103.8.3 Pool Covers. ~~Heated pools shall be equipped with a vapor retardant pool cover on or at the water surface.~~ Pools heated to more than 90 F (32 C) shall have a pool cover with a minimum insulation value of R-12.

Justification:

Remove first sentence of this section "Heated pools shall be equipped with a vapor retardant pool cover on or at the water surface".

The committee was concerned with Life safety issues with the covers over a pool. If a child or animal walks or falls in the pool the cover could 1) obscure the problem from sight 2) obstruct the child or animal from getting out of the pool i.e. get tangled in the cover.

The committee proposes to amend this section due to the complexity of accomplishing the criteria and the attempt to regulate consumer behavior. There are many pools of various shapes and sizes that would require expensive custom made covers to be purchase to meet this provision. The reality is that most people don't leave pool open during winter months and those that do certainly don't heat due to the cost. So what would be the purpose of requiring such a requirement? Even if it was in code, who is going to enforce it after people take possession of home? People that have pools do so for aesthetic reasons as well as recreational activities. Do we really think that they are going to leave some plastic cover over the pool all winter? If they are heating it they probably would cover due to the extreme cost of heating pool.

100% of IRC Building Code Technical Review Recommend amending:

N 1104.1 Lighting equipment. A minimum of 50 percent of the lamps in permanently installed lighting fixture shall be high-efficiency lamps.

Exception: Can or recessed lights are exempt from this section of code.

Justification:

At the present no one makes a high-efficiency lamp with reasonable durability and lighting characteristics. i.e. dimmable with reasonable longevity.