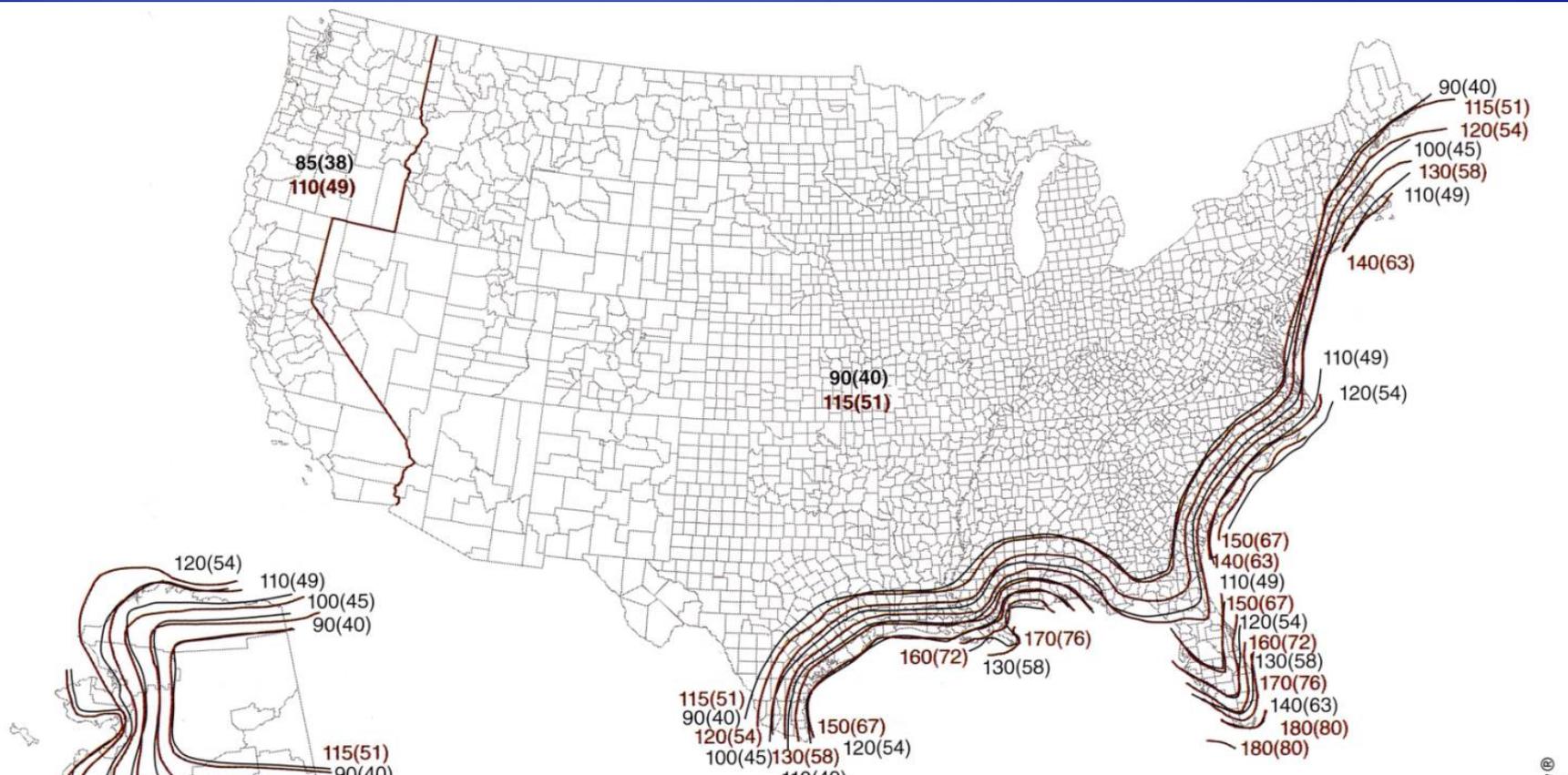


Significant changes to the International Residential Code 2015

Development Services

City of Lawrence, KS

Comparison of Wind Speed 2012/2015 IRC



CHANGE SUMMARY: Ultimate design wind speed values replace basic wind speed values for 3-sec gust wind speeds in Section R301.2.1. A wind speed conversion table has been added for conversion from ultimate design to nominal design wind speeds.

Design Criteria

Building Planning

Table R301.2 (1)

Climatic & Geographic Design Criteria

The design criteria for wind speed increased from 90 MPH to 115 MPH.

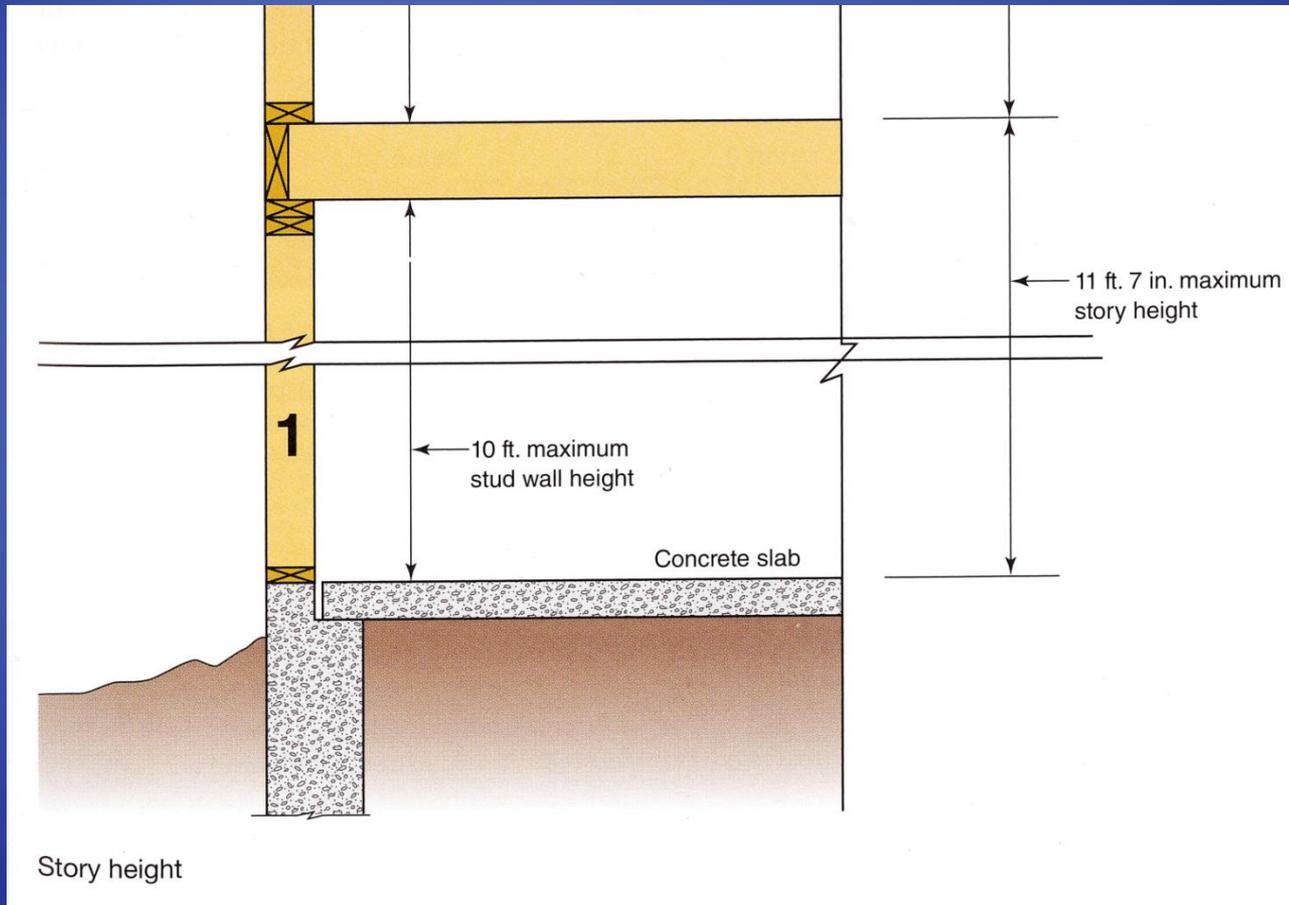
GROUND SNOW LOAD	WIND DESIGN				SEISMIC DESIGN CATEGORY ^f	SUBJECT TO DAMAGE FROM			WINTER DESIGN TEMP ^e	ICE BARRIER UNDERLAYMENT REQUIRED ^h	FLOOD HAZARD ^g	AIR FREEZING INDEX ⁱ	MEAN ANNUAL TEMP ^j
	Speed ^d	Topographic effects ^k	Special wind region ^l	Wind-borne debris zone ^m		Weathering ^a	Frost line depth ^b	Termite ^c					
20 lbs	<u>115</u>	<u>No</u>	<u>No</u>	<u>No</u>	<u>A</u>	<u>Severe</u>	<u>30"</u>	<u>Moderate to Heavy</u>	<u>4</u>	<u>No</u>	<u>COL Code Chapter 20 Article 12</u>	<u>778</u>	<u>56.0</u>

TABLE R301.2.1.3 Wind Speed Conversions^a

V_{ult}	<u>110</u>	<u>115</u>	<u>120</u>	<u>130</u>	<u>140</u>	<u>150</u>	<u>160</u>	<u>170</u>	<u>180</u>	<u>190</u>	<u>200</u>
V_{asd}	<u>85</u>	<u>89</u>	<u>93</u>	<u>101</u>	<u>108</u>	<u>116</u>	<u>124</u>	<u>132</u>	<u>139</u>	<u>147</u>	<u>155</u>

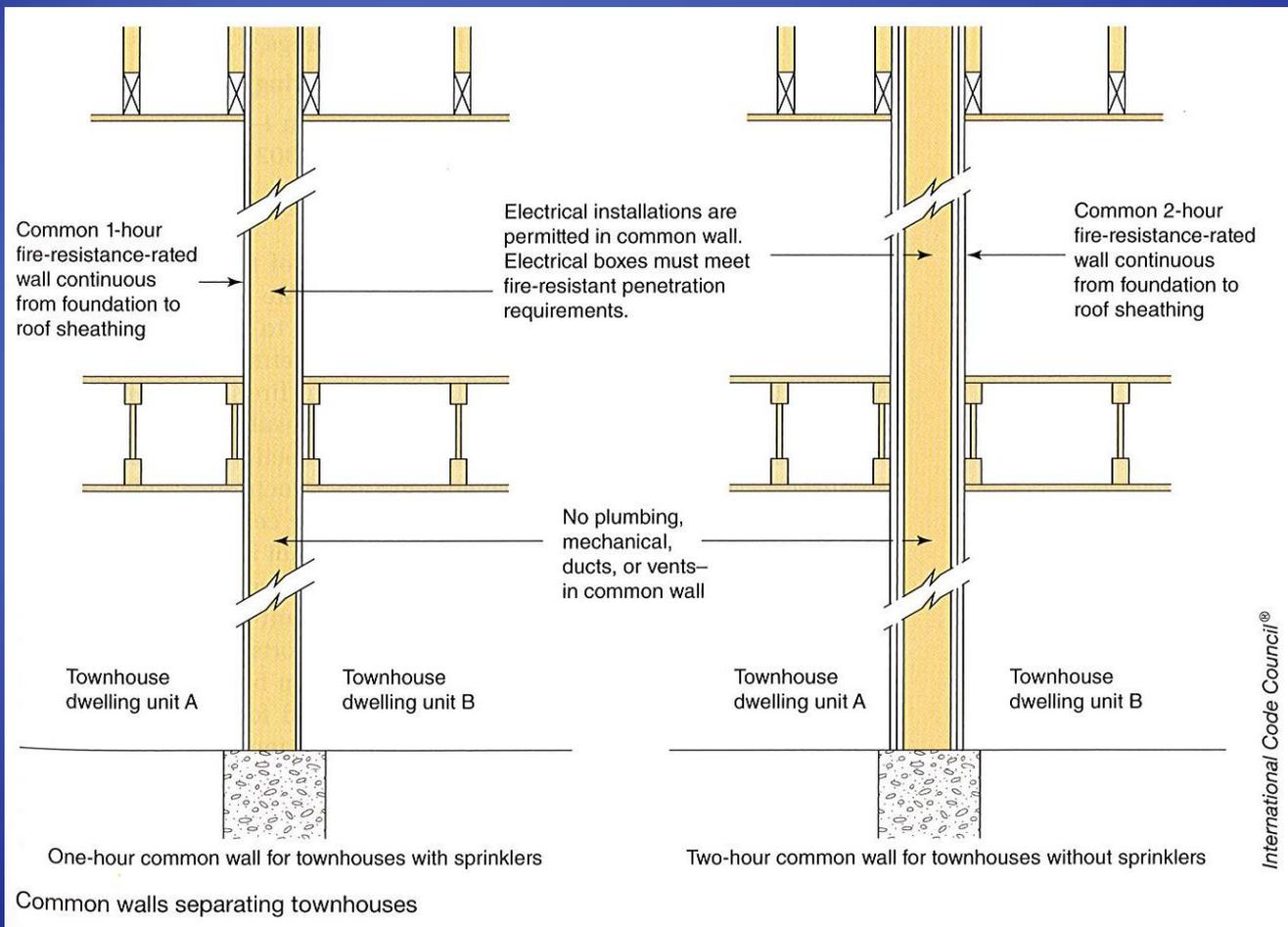
Story Height

R301.3



Story height of wood wall framing is 11'-7" maximum. Bearing stud height is 10'-0" maximum.

Townhouse Separation R302.2

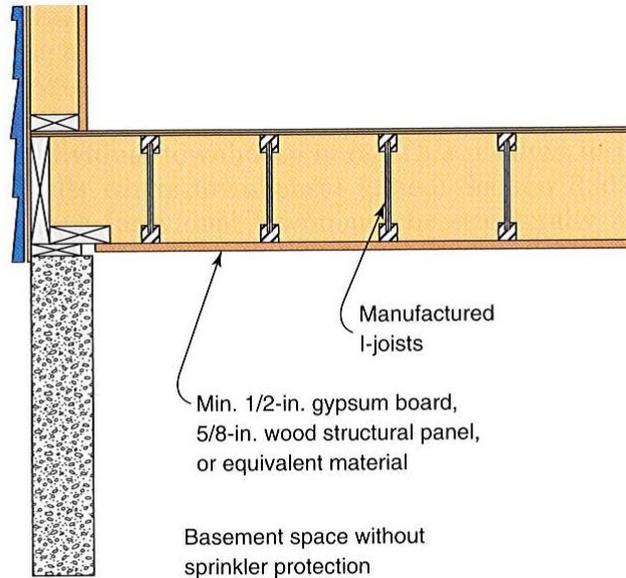


One-hour common wall is allowed for townhouses with sprinklers.

A common wall is allowed with 2-hour fire rating for townhouse separation, non-sprinkled.

Fire Protection of Floors

R302.13



Fire protection of floors

International Code Council®



Open web floor trusses requiring membrane protection on the underside

International Code Council®

The provisions for fire protection of floors has been relocated from Chapter 5 to the Fire Resistive section in Chapter 3.

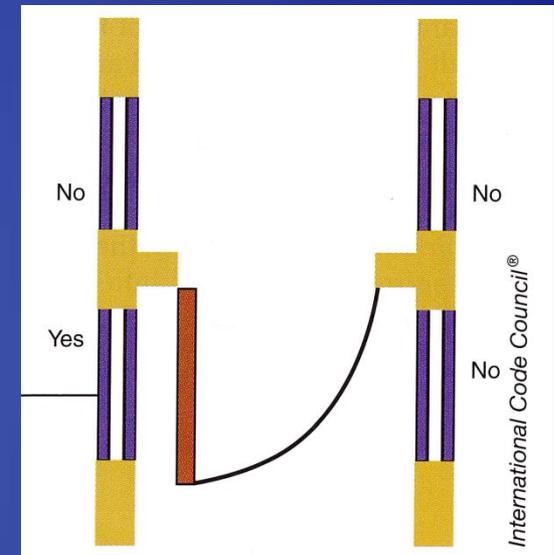
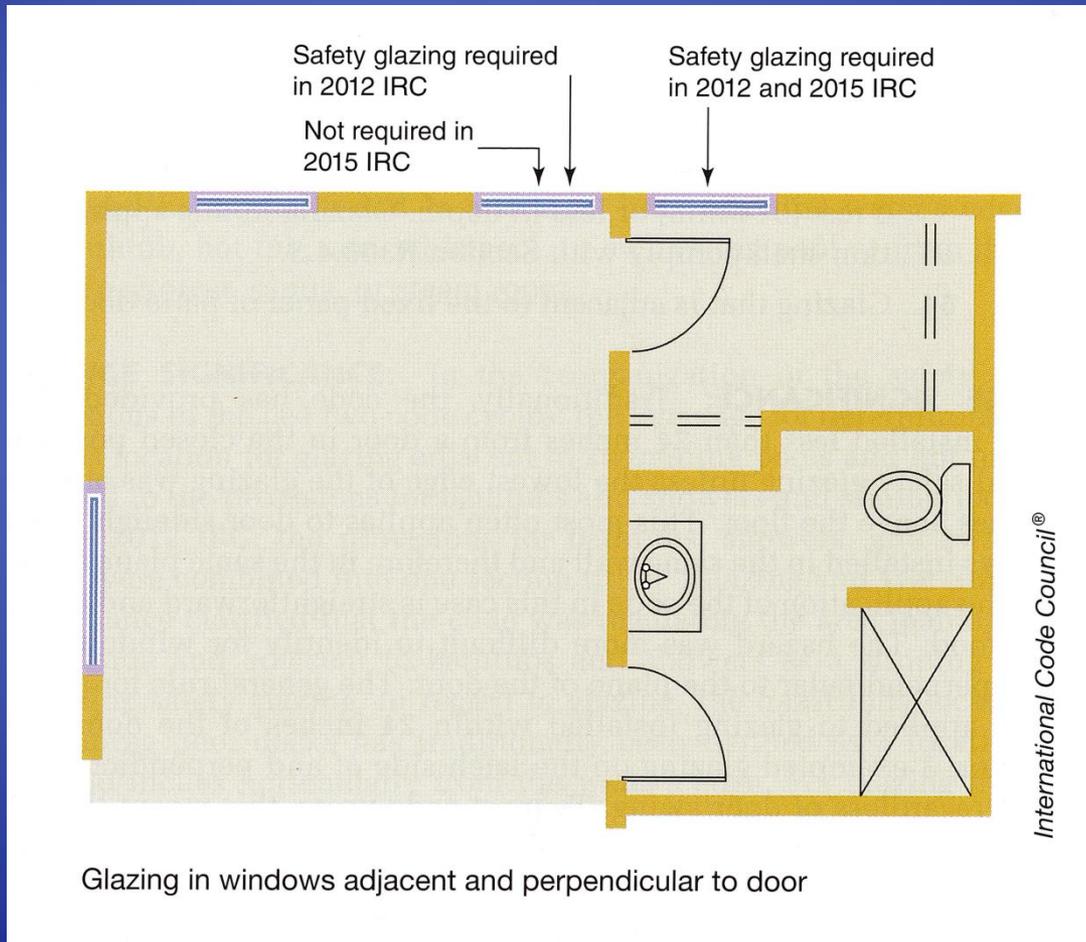
Minimum Habitable Room Area R304.1

70

Habitable rooms shall have a floor area of not less than 70 sq. ft. Exception – kitchens.

Glazing Adjacent to Doors

R308.4.2



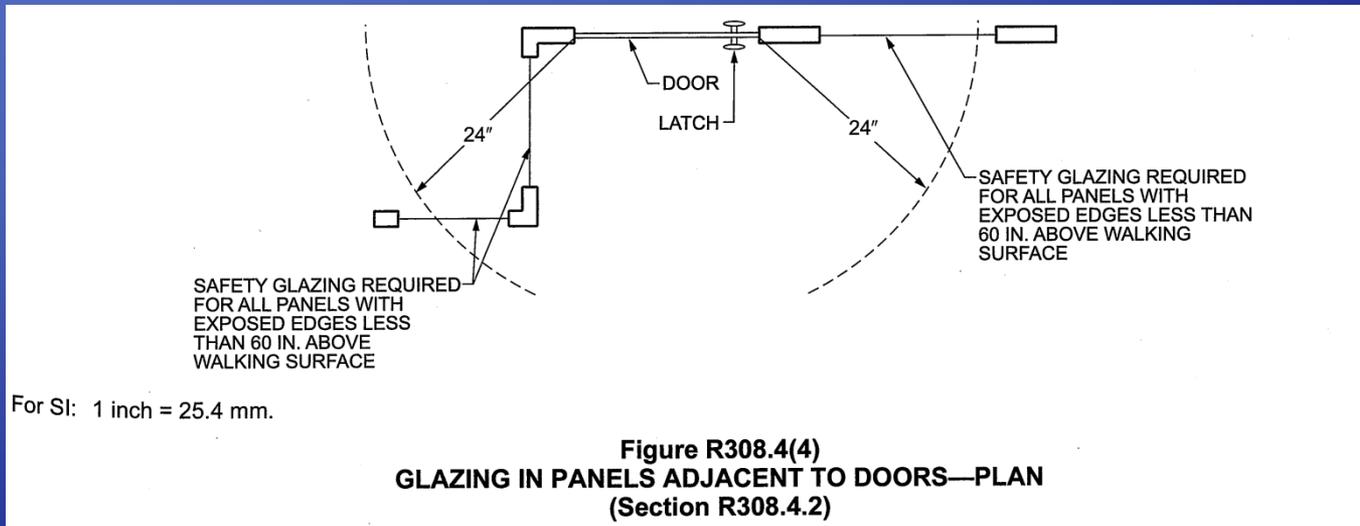
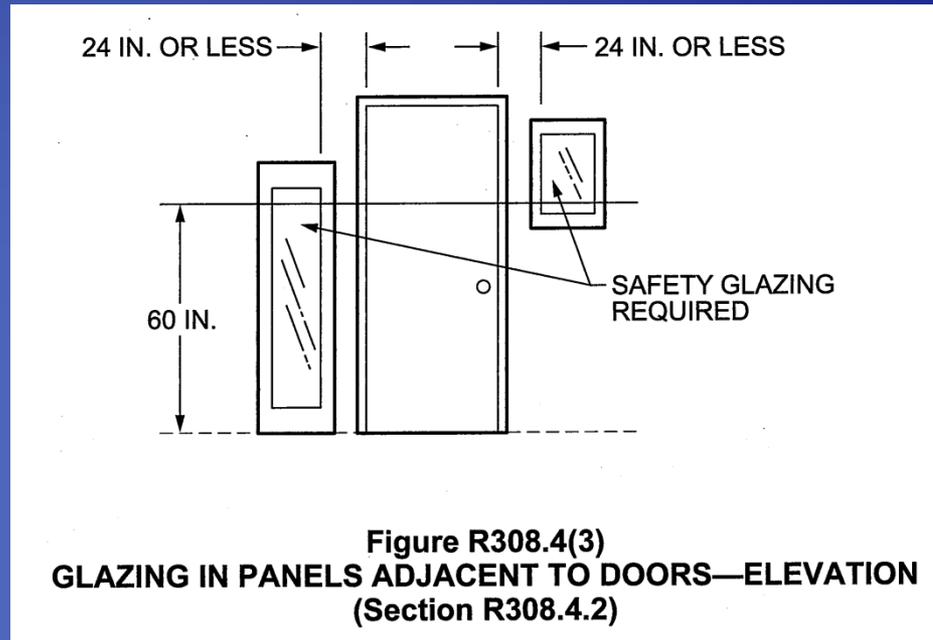
Tempered glass required on the hinge side of an in-swinging door.

Glazing Parallel or Adjacent to Doors

R308.4(3)

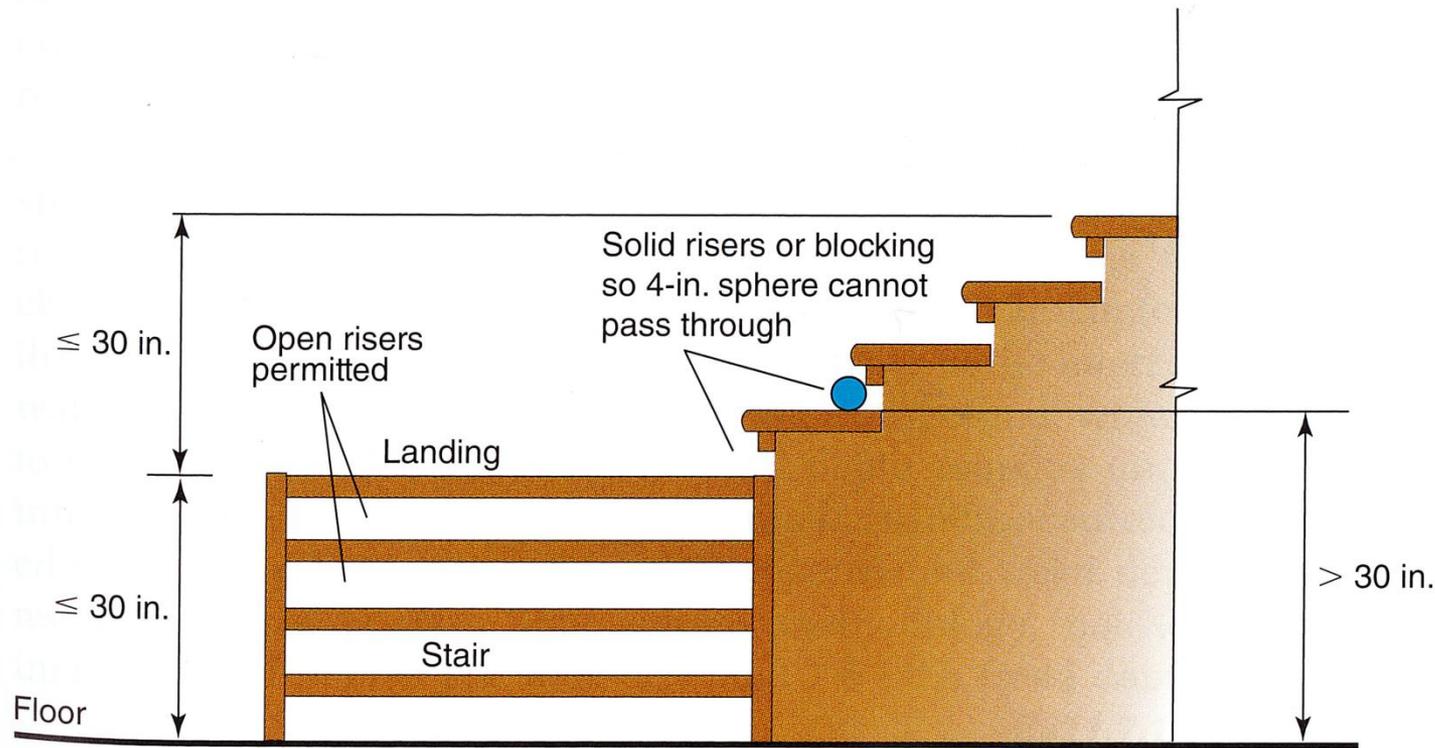
R308.4(4)

Tempered glass is required within 24" of either side of door in a closed partition.



Stair Risers

R311.7.3

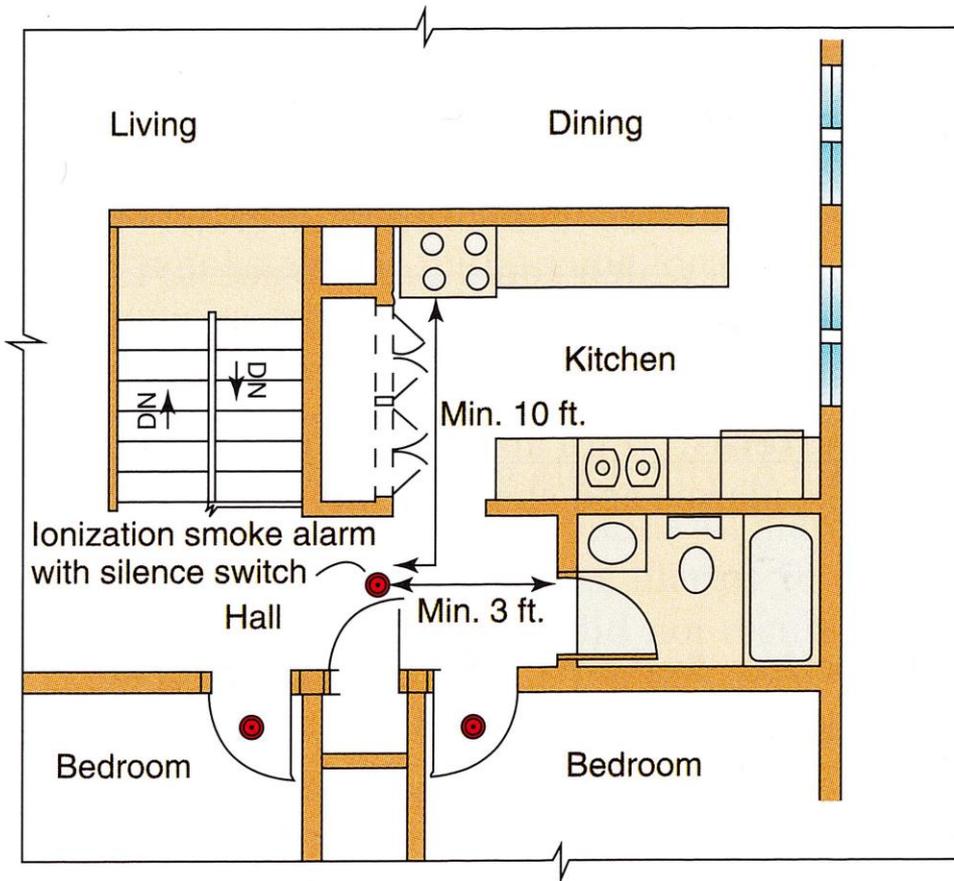


International Code Council®

Open risers are only permitted when they are 30 inches or less above the floor.

Smoke Alarms

R314



Smoke alarm distances from bathrooms and cooking appliances

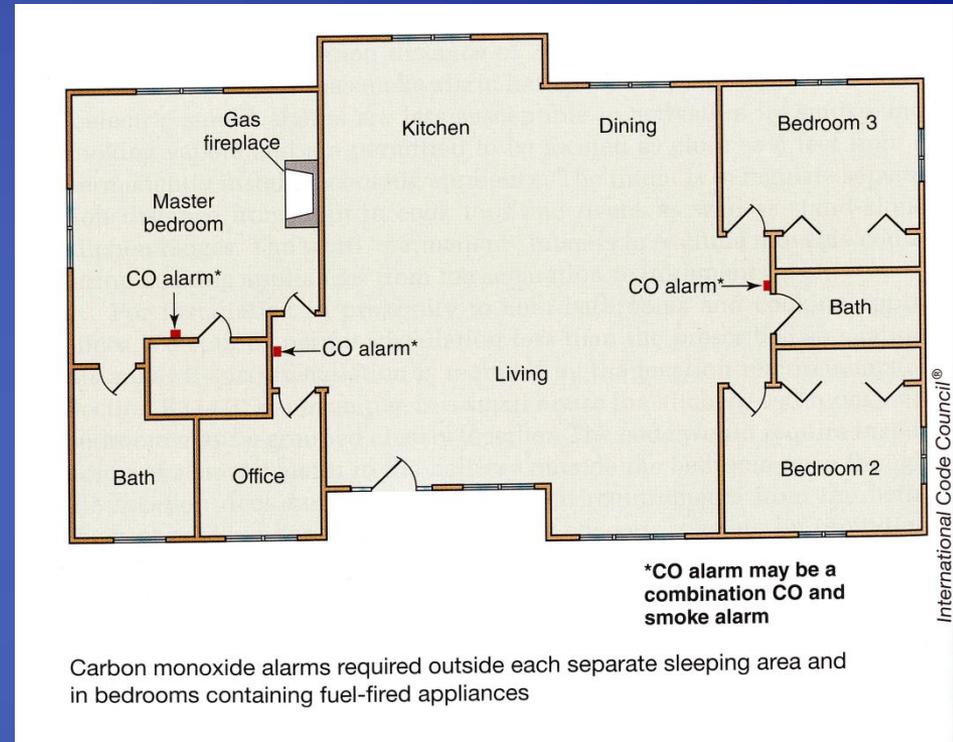
Smoke alarms shall be installed no closer than 3 feet to a bathroom door containing a tub or shower; 20 feet from a cooking appliance; 10 feet from a cooking appliance when the alarm has a silencing switch.

Carbon Monoxide Alarms

R315

Hardwire and battery backup in new construction:

- Dwellings with fuel fired appliances
- Attached garage w/ opening to dwelling
- Bedrooms and adjoining bathrooms with fuel fired appliances
- Installed outside of each sleeping area
- Alterations, repairs or additions requiring a permit but not roofing, siding, windows, doors and deck or porch additions
- One or more sleeping rooms added to an existing dwelling



CO detectors are required to be hardwired with battery backup. Exterior work such as decks and porch additions shall not require adding CO detectors. Furnace and water heater replacement shall not require a CO detector at change out.

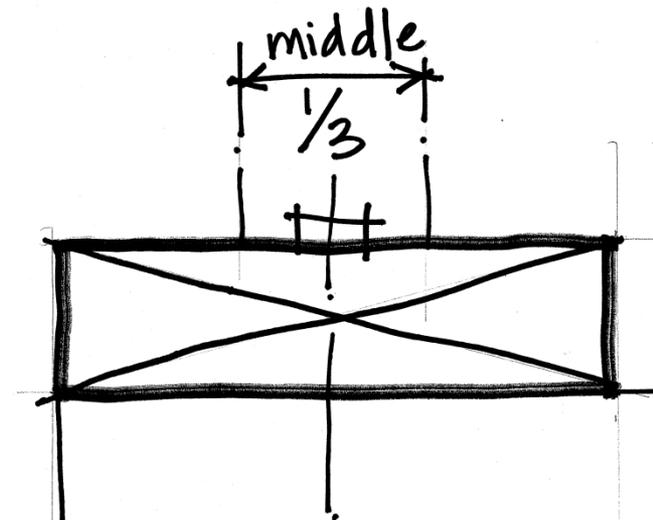
Foundation Anchorage

R403.1.6



© International Code Council

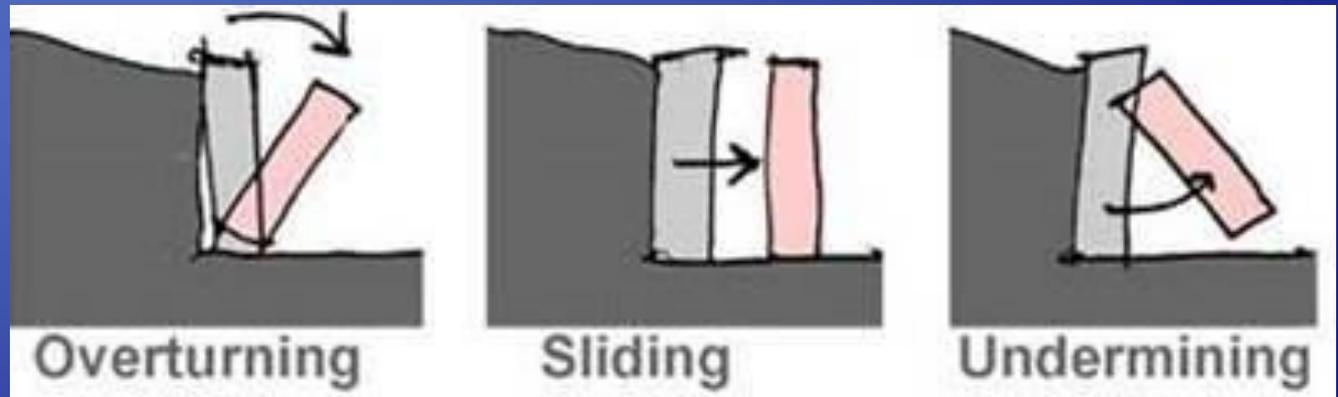
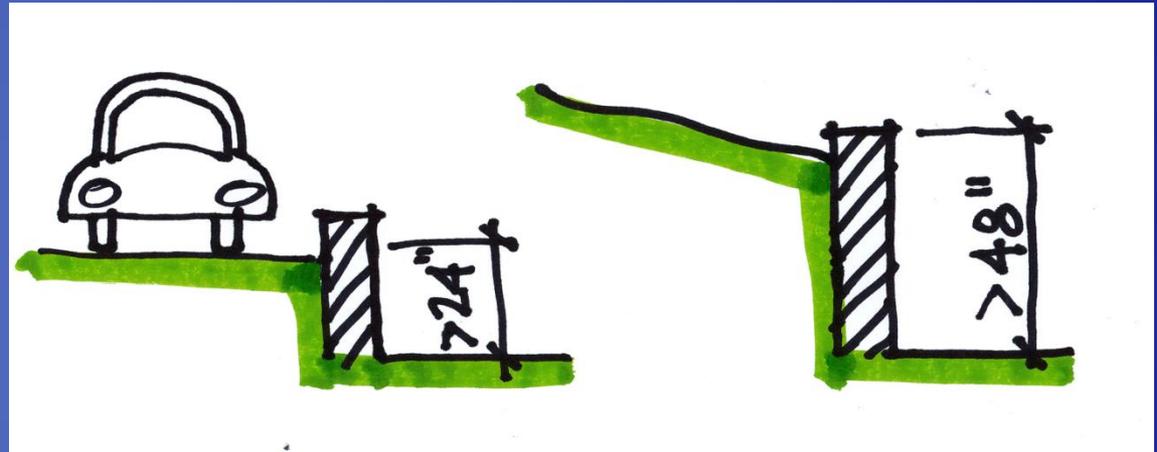
Anchor bolt placement - centered in sill plate



Anchor bolts shall be located in the middle $1/3$ of a bottom plate.

Retaining Walls

Retaining walls with more than 48" of unbalanced fill and walls resisting additional lateral loads with more than 24" of unbalanced fill shall be designed by an engineer.



Floor Joist Spans- Common Lumber

R502.3.1(1)

CHANGE SUMMARY: Changes to Southern Pine (SP), Douglas Fir-Larch (DFL), and Hemlock Fir (HF) lumber capacities have changed the floor joist span length in the prescriptive tables of the IRC. Span lengths for Southern Pine have decreased; lengths for DFL and HF joists have increased.

Example—Floor Spans

- #1 **Bedroom**
 Dead load = 10 psf
 2×10 joists
 16" o.c. spacing
 Southern Pine (SP) #2

Maximum Span Allowed	2012	2015
	18'-0"	15'-8"

The SP #2 span length is significantly reduced from the 2012 IRC span length.

Note: An SP #1 joist will span about the same length in the 2015 IRC Table R502.3.1(1) or R502.3.1(2) as the SP #2 did in the tables in the 2012 IRC.

- #2 **Bathroom**
 Dead load = 20 psf
 2×8 joists
 16" o.c. spacing
 Douglas Fir-Larch (DFL) #2

Maximum Span Allowed	2012	2015
	11'-6"	11'-8"

The span has increased about 2 inches which is the typical increase in the table. Some cells for Douglas Fir and Hemlock have not changed. Others increased by 1-2 inches.

Floor Joist Spans- Common Lumber

R502.3.1(1)

CHANGE SUMMARY: Changes to Southern Pine (SP), Douglas Fir-Larch (DFL), and Hemlock Fir (HF) lumber capacities have changed the floor joist span length in the prescriptive tables of the IRC. Span lengths for Southern Pine have decreased; lengths for DFL and HF joists have increased.

TABLE R502.3.1(1) Floor Joist Spans for Common Lumber Species (Residential sleeping areas, live load = 30 psf, L/Δ = 360)^a

Joist Spacing (inches)	Species and Grade	Dead Load = 10 psf				Dead Load = 20 psf			
		2 × 6	2 × 8	2 × 10	2 × 12	2 × 6	2 × 8	2 × 10	2 × 12
		Maximum floor joist spans							
		(ft - in.)	(ft - in.)	(ft - in.)	(ft - in.)	(ft - in.)	(ft - in.)	(ft - in.)	(ft - in.)
12	Douglas fir-larch SS	12-6	16-6	21-0	25-7	12-6	16-6	21-0	25-7
	Douglas fir-larch #1	12-0	15-10	20-3	24-8	12-0	15-7	19-0	22-0
	Douglas fir-larch #2	11-10	15-7	19-10	23-4	11-8	14-9	18-0	20-11
	Douglas fir-larch #3	9-11	12-7	15-5	17-10	8-11	11-3	13-9	16-0
	Hem-fir SS	11-10	15-7	19-10	24-2	11-10	15-7	19-10	24-2
	Hem-fir #1	11-7	15-3	19-5	23-7	11-7	15-3	18-9	21-9
	Hem-fir #2	11-0	14-6	18-6	22-6	11-0	14-4	17-6	20-4
	Hem-fir #3	9-8	12-4	15-0	17-5	8-8	11-0	13-5	15-7
	Southern pine SS	12-3	16-2	20-8	25-1	12-3	16-2	20-8	25-1
	Southern pine #1	11-10	15-7	19-10	24-2	11-10	15-7	18-7	22-0
	Southern pine #2	11-3	14-11	18-1	21-4	10-9	13-8	16-2	19-1
	Southern pine #3	9-2	11-6	14-0	16-6	8-2	10-3	12-6	14-9
	Spruce-pine-fir SS	11-7	15-3	19-5	23-7	11-7	15-3	19-5	23-7
	Spruce-pine-fir #1	11-3	14-11	19-0	23-0	11-3	14-7	17-9	20-7
	Spruce-pine-fir #2	11-3	14-11	19-0	23-0	11-3	14-7	17-9	20-7
	Spruce-pine-fir #3	9-8	12-4	15-0	17-5	8-8	11-0	13-5	15-7

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 pound per square foot = 0.0479 kPa.

Note: Check sources for availability of lumber in lengths greater than 20 feet.

a. Dead load limits for townhouses in Seismic Design Category C and all structures in Seismic Design Categories D₀, D₁, and D₂ shall be determined in accordance with Section R301.2.2.2.1.

(Portions of table not show for brevity and clarity.)

Deck Joists and Beams

R507.5

TABLE R507.5 Deck Joist Spans for Common Lumber Species^f (ft.-in.)

Species ^a	Size	Spacing of Deck Joists With No Cantilever ^b (inches)			Spacing of Deck Joists With Cantilevers ^c (inches)		
		12	16	24	12	16	24
Southern pine	2 × 6	9-11	9-0	7-7	6-8	6-8	6-8
	2 × 8	13-1	11-10	9-8	10-1	10-1	9-8
	2 × 10	16-2	14-0	11-5	14-6	14-0	11-5
	2 × 12	18-0	16-6	13-6	18-0	16-6	13-6
Douglas fir-larch ^d , hem-fir ^d spruce-pine-fir ^d	2 × 6	9-6	8-8	7-2	6-3	6-3	6-3
	2 × 8	12-6	11-1	9-1	9-5	9-5	9-1
	2 × 10	15-8	13-7	11-1	13-7	13-7	11-1
	2 × 12	18-0	15-9	12-10	18-0	15-9	12-10
Redwood, western cedars, ponderosa pine ^e , red pine ^e	2 × 6	8-10	8-0	7-0	5-7	5-7	5-7
	2 × 8	11-8	10-7	8-8	8-6	8-6	8-6
	2 × 10	14-11	13-0	10-7	12-3	12-3	10-7
	2 × 12	17-5	15-1	12-4	16-5	15-1	12

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 pound per square foot = 0.0479 kPa.

- No. 2 grade with wet service factor.
- Ground snow load, live load = 40 psf, dead load = 10 psf, $L/\Delta = 360$.
- Ground snow load, live load = 40 psf, dead load = 10 psf, $L/\Delta = 360$ at main span, $L/\Delta = 180$ at cantilever with a 220-pound point load applied to end.
- Includes incising factor.
- Northern species with no incising factor.
- Cantilevered spans not exceeding the nominal depth of the joist are permitted.

New sections and tables provide prescriptive methods for joists and beams in deck construction.

Headers

R602.7

TABLE R502.5(1) R602.7(1) Girder Spans^a and Header Spans^a for Exterior Bearing Walls

(Maximum Spans for Douglas Fir-Larch, Hem-Fir, Southern Pine and Spruce-Pine-Fir^b and Required Number of Jack Studs)

Girders and Headers Supporting	Size	Ground Snow Load (psf) ^e					
		30					
		Building width ^c (feet)					
		20		28		36	
	Span	NJ ^d	Span	NJ ^d	Span	NJ ^d	
Roof and ceiling	1-2 × 8	4-6	1	3-10	1	3-5	1
	1-2 × 10	5-8	1	4-11	1	4-4	1
	1-2 × 12	6-11	1	5-11	2	5-3	2
	2-2 × 4	3-6	1	3-2	1	2-10	1
	2-2 × 6	5-5	1	4-8	1	4-2	1
	2-2 × 8	6-10	1	5-11	2	5-4	2
	2-2 × 10	8-5	2	7-3	2	6-6	2
	2-2 × 12	9-9	2	8-5	2	7-6	2
	3-2 × 8	8-4	1	7-5	1	6-8	1
	3-2 × 10	10-6	1	9-1	2	8-2	2
	3-2 × 12	12-2	2	10-7	2	9-5	2
	4-2 × 8	9-2	1	8-4	1	7-8	1
	4-2 × 10	11-8	1	10-6	1	9-5	2
	4-2 × 12	14-1	1	12-2	2	10-11	2

(Portions of table not shown for brevity and clarity. No changes to footnotes.)

TABLE R602.7(3) Girder and Header Spans^a for Open Porches

(Maximum Span for Douglas Fir-Larch, Hem-Fir, Southern Pine, and Spruce-Pine-Fir^b)

Size	Supporting Roof						Supporting Floor	
	Ground Snow Load ^c (psf)							
	30		50		70			
	Depth of Porch ^d (feet)							
	8	14	8	14	8	14	8	14
2-2 × 6	7-6	5-8	6-2	4-8	5-4	4-0	6-4	4-9
2-2 × 8	10-1	7-7	8-3	6-2	7-1	5-4	8-5	6-4
2-2 × 10	12-4	9-4	10-1	7-7	8-9	6-7	10-4	7-9
2-2 × 12	14-4	10-10	11-8	8-10	10-1	7-8	11-11	9-0

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 pound per square foot = 0.0479 kPa

- a. Spans are given in feet and inches.
- b. Tabulated values assume #2 grade lumber, wet service and incising for refractory species. Use 30 psf ground snow load for cases in which ground snow load is less than 30 psf and the roof live load is equal to or less than 20 psf.
- c. Porch width is measured horizontally from building face to the centerline of the header. For widths between those shown, spans are permitted to be interpolated.

Girder and header span tables from chapter 5 have been moved to chapter 6 to a HEADER section. Multiple and single headers are combined. A new section describing rim board headers has been added.

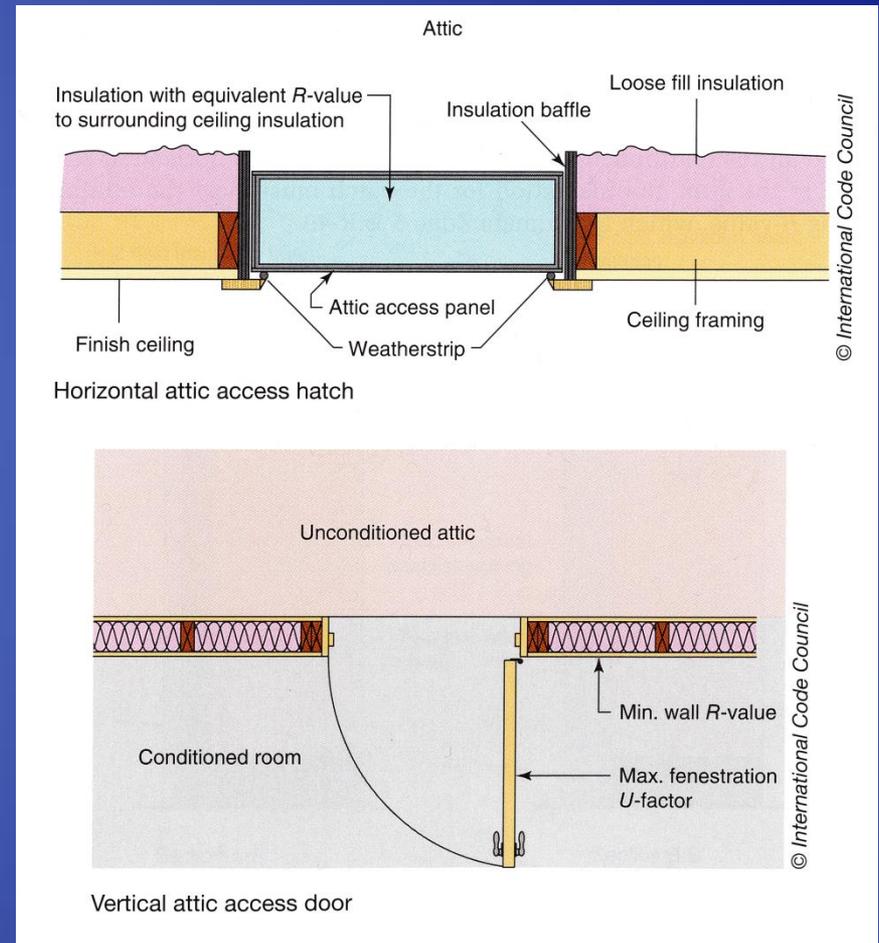
TABLE R602.7.5 Minimum Number of Full Height Studs at Each End of Headers in Exterior Walls

Header Span (feet)	Maximum Stud Spacing (in.) per Table R602.3(5)	
	16	24
≤3	1	1
4	2	1
8	3	2
12	5	3
16	6	4

Access Hatches and Doors

N1102.2.4

Weatherstrip is required at attic access hatches and doors. Insulation baffle is required where loose fill type insulation is used.



Duct Testing (Mandatory)

R1103.3.2

N1103.3.3 (R403.3.3) Duct Testing (Mandatory)

Exceptions: A duct air leakage test shall not be required where:

1. The ducts and air handlers are located entirely within the building thermal envelope; or
2. A whole house air leakage test is performed.

ERI- Energy Rating Index for Lawrence

70

Energy Efficiency- Amendment

Energy Efficiency
Amendment

Table N1106.4

TABLE N1106.4 (R406.4)
MAXIMUM ENERGY RATING INDEX

CLIMATEZONE	ENERGYRATINGINDEX
1	52
2	52
3	51
4	54 -70
5	55
6	54
7	53
8	53

Amended ERI table.

HERS*average in Lawrence

64

*HERS (Home Energy Rating System) is now referred to in the 2015 IRC as ERI (Energy Rating Index)

Hot Water Pipe Insulation (Prescriptive)

N1103.5.1.1

N1103.5.3 (R403.5.3) Hot water pipe insulation (Prescriptive). Insulation for hot water pipe with a minimum thermal resistance (R-value) of R-2 shall be applied to the following:

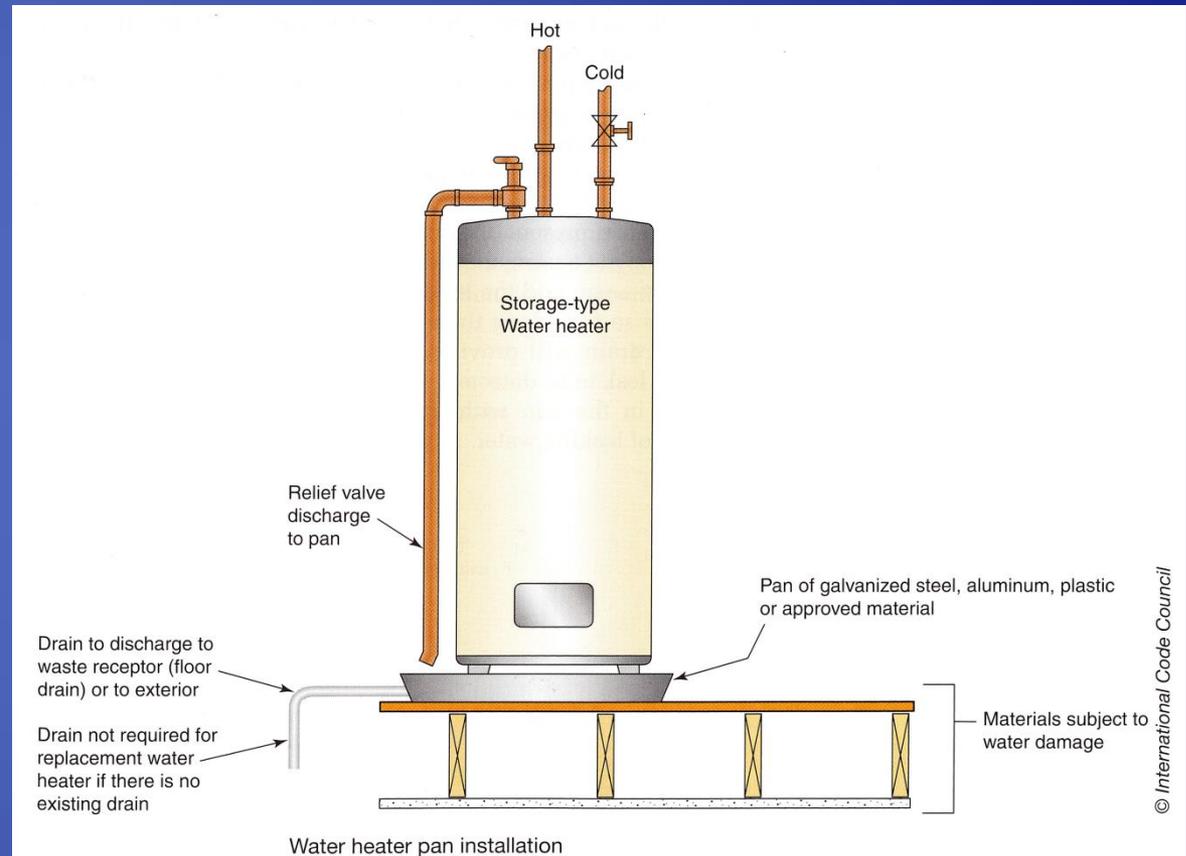
1. Piping located outside the conditioned space.
2. Piping from the water heater to a distribution manifold.
3. Piping located under a floor slab.*
4. Buried in piping.
5. Supply and return piping in recirculation systems other than demand recirculation systems.

*All hot water lines under slabs shall be insulated to R-2.

Water Heater Drain Valves & Pans

P2801

Water heater pans shall be installed in any location where water leakage from the tank will cause damage.



Ground Clearance

M1305.1.4.1

M1305.1.4.1 Ground clearance.

Equipment and appliances supported from the ground shall be level and firmly supported on a concrete slab or other approved material extending not less than 3 inches (76 mm) above the adjoining ground. * Such support shall be in accordance with the manufacturer's installation instructions.

*Air conditioners shall be placed on a minimum 3" tall pad.

Elevation of Ignition Source

M1307.3

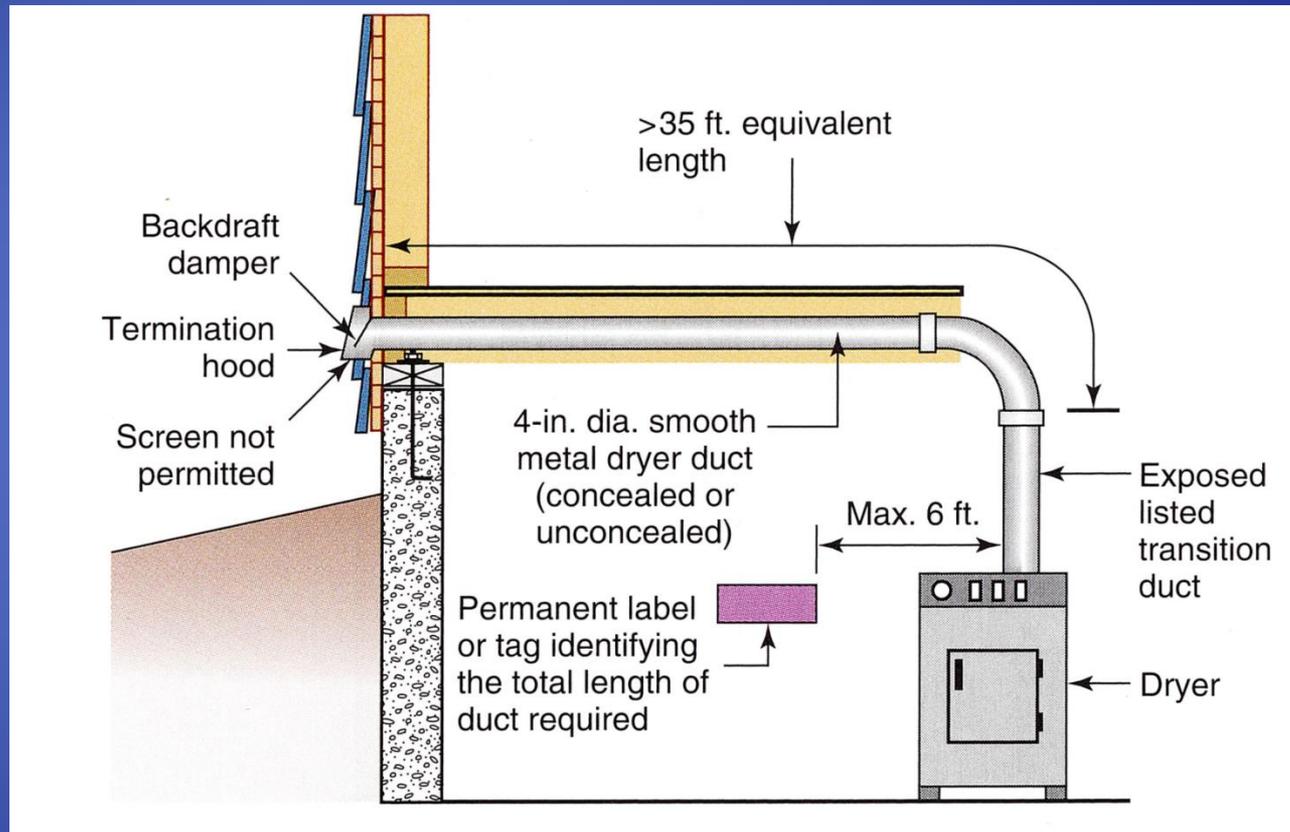
M1307.3 Elevation of ignition source. Permanently fixed mechanical equipment and appliances having an ignition source, including but not limited to motors, relays, or other electrical devices, shall be elevated such that bottom of the cabinet is not less than 14 inches above the floor for upflow furnaces and 18 inches above the floor for downflow furnaces in garages. For the purpose of this section, rooms or spaces that are not part of the living space of a dwelling unit and that communicate with a private garage through openings shall be considered to be part of the garage.

Exceptions:

1. Elevation of the ignition source is not required for appliances that are listed as flammable-vapor-ignition resistant.
2. Where the blower compartment is equipped with a gasketed door and locking fasteners, the furnace may be installed on the garage floor.

Dryer Duct Length

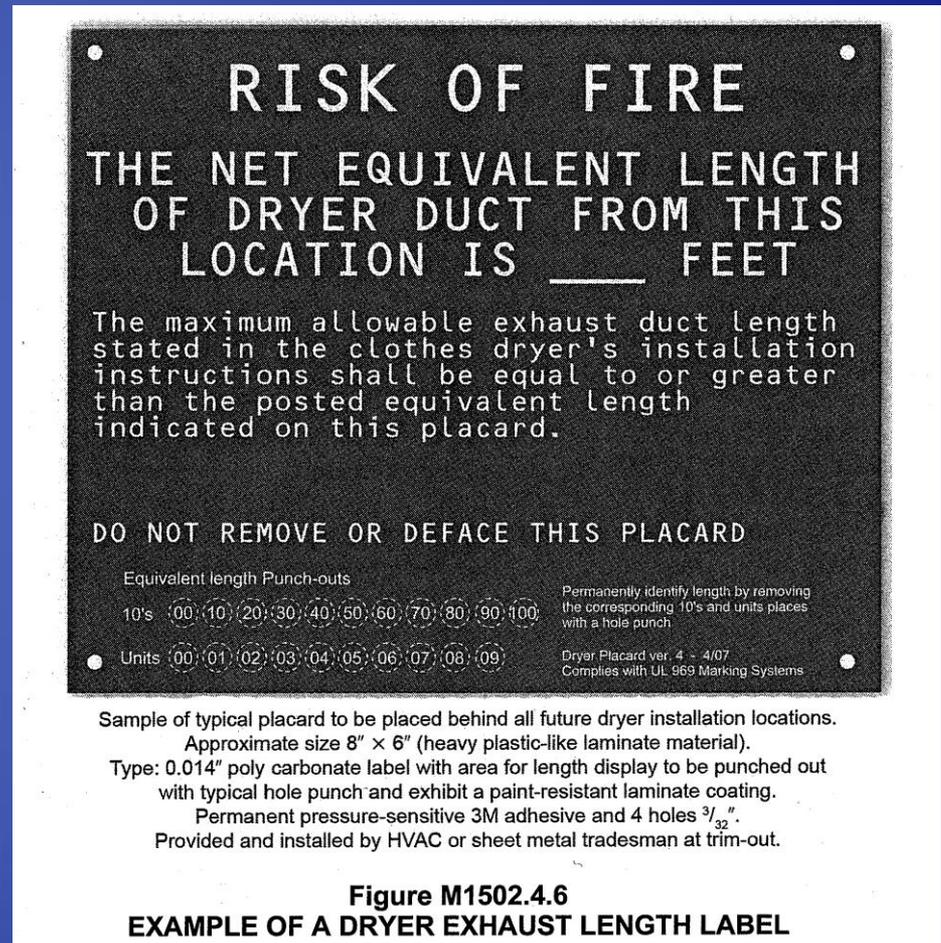
1502.4.6



A dryer vent length tag is required only when the dryer vent is over 35' in length.

Dryer Duct Length Label

1502.4.6



Example of a dryer vent label.

Duct Design

M1601.1.1

M1601.1.1 Above-ground duct systems. Above-ground duct systems shall conform to the following:

Exceptions:

7.3 Multiple floors shall not utilize the same stud wall cavity to convey air.*

*Return air cannot be obtained from more than one floor level (requires separate stud space for upper and lower floor levels).

Air Connectors

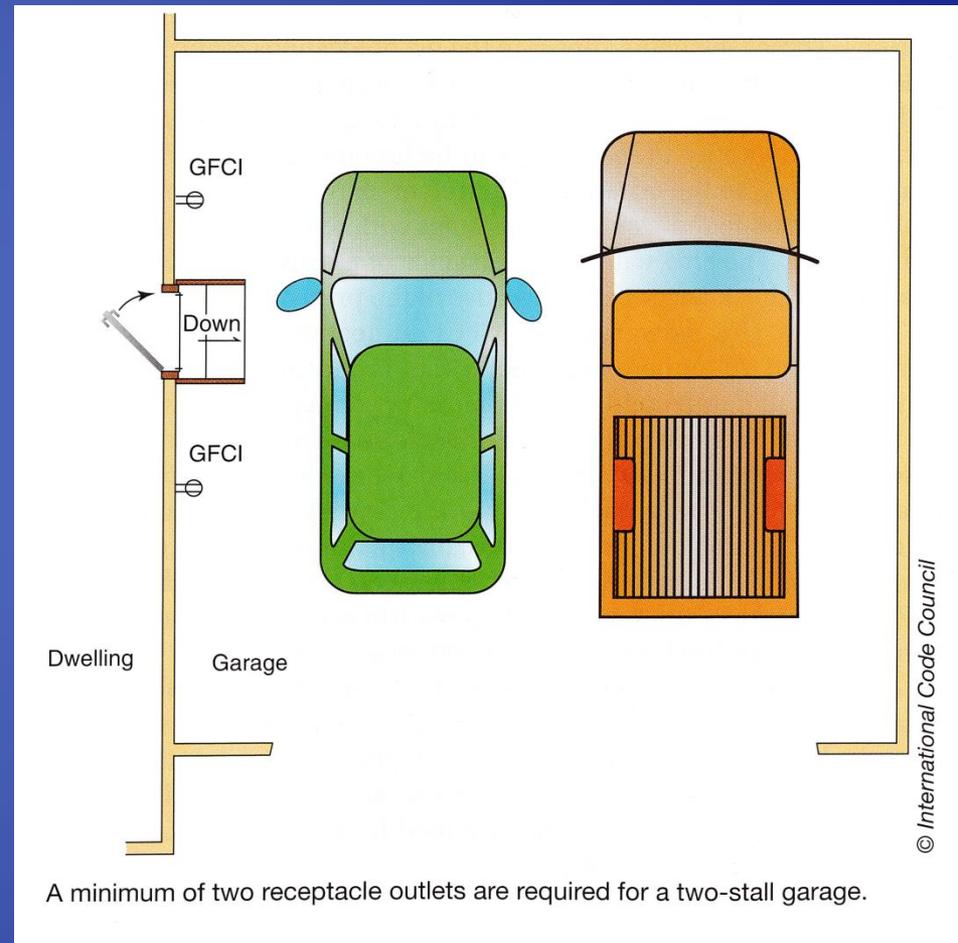
M1603.1

Air connectors allowed in residential for exhaust
(bathroom) fans in conditioned space.

Receptacle Outlet for Garages E3901.9

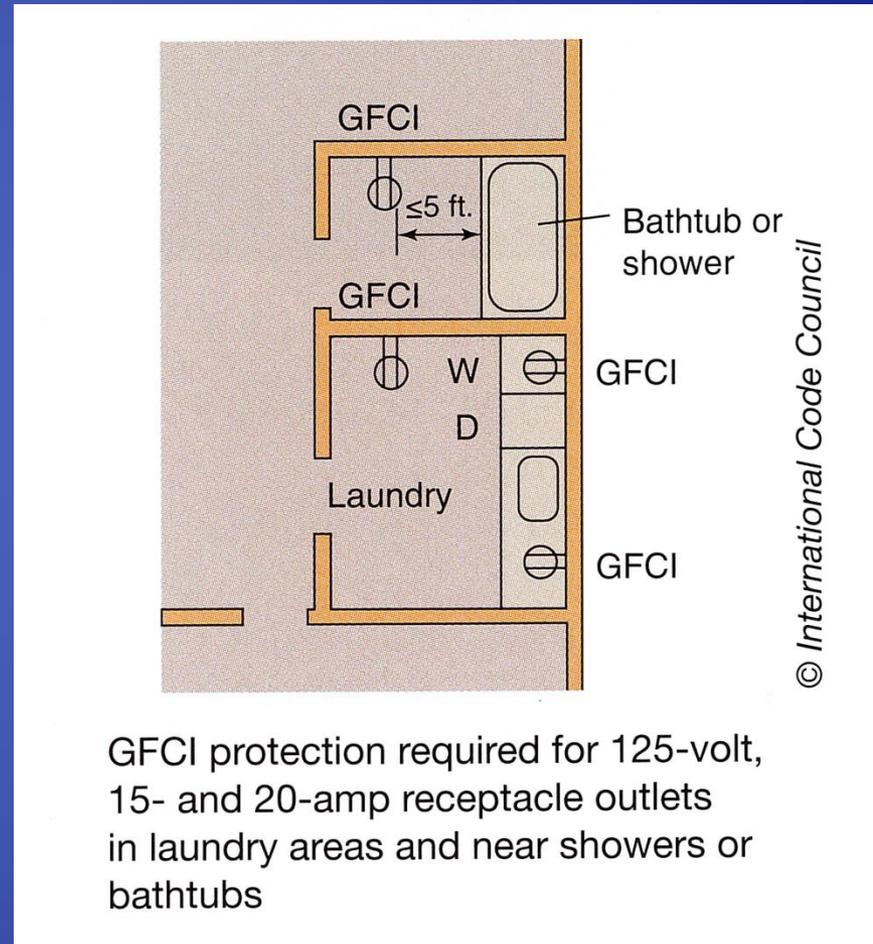
Outlets required for each motor vehicle space.

The branch circuit shall not supply outlets outside of the garage.



Receptacle Outlet for Laundry Room

E3902.9



GFCI protection required in laundry areas.

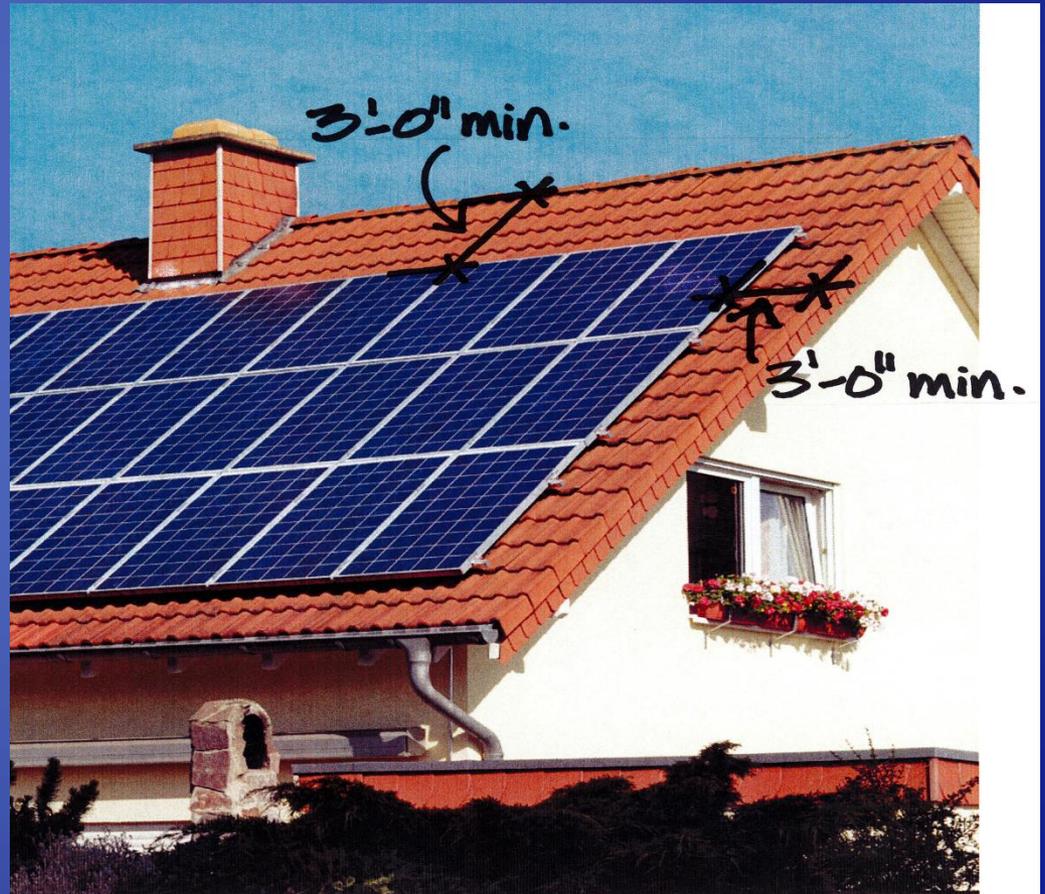
GFCI protection required for 125-volt, 15- and 20-amp receptacle outlets in laundry areas and near showers or bathtubs

Solar Panels

IFC 605.11

Solar voltaic residential installation- roof access for a rack mounted system:

- 3'-0" wide path below the ridge line
- 3'-0" wide clear access path from eave to ridge
- 18" clearance at a hip or valley
- Exception: 2:12 or less roof slope



AMENDMENTS

2015 Adopted Construction Codes Effective July 1, 2016

The 2015 editions of the International Building, Residential, Fire, Fuel Gas, Mechanical, Plumbing and Property Maintenance Codes, as well as the 2014 National Electrical Code have been adopted and will become effective July 1, 2016. City of Lawrence amendments to these codes are available online at:

<https://www.lawrenceks.org/pds/2015ConstructionCodes>