



Date: July 1, 2025

To: Whom it may concern

Re: Roof/re-roof compliance

The City of Ankeny Building Division has adopted and enforces the 2024 International Residential Building Code. A copy of Ankeny's adopting construction code ordinances may be found here: <https://www.ankenyiowa.gov/367/Building-Codes> .

As most requested, the following asphalt shingle code references and information is provided.

Pursuant to adopting Ordinance 2220, Chapter 184, the City of Ankeny requires ice barrier protection as noted in the following ordinance section 184.20 and table R301.2:

**184.20 TABLE R301.2 AMENDED - - CLIMATIC AND GEOGRAPHIC DESIGN CRITERIA.** Table R301.2, Climatic and Geographic Design Criteria, of the IRC, is hereby amended by modifying said table:

Table R301.2, Climatic and Geographic Design Criteria

Ground Snow Load	Wind Design				Seismic Design Category	Subject To Damage From			Ice Barrier Underlayment Required	Flood Hazards		NFIP Adoption	Air Freezing Index	Mean Annual Temp.
	Speed MPH	Topo Effects	Special Wind	Wind Debris		Weathering	Frost Line Depth	Tennite						
33 psf	107(48)	No	No	No	A	Severe	42"	No	Yes	1-Feb-19	1833			48.6

See Manual J for HVAC Design Criteria

The following code sections, not inclusive, of the 2024 International Residential Code are hereby provided for reference:

- R905.2 Asphalt Shingles- general
- R905.2.7 Ice Barrier – required
- R905.2.8 Flashing – required
- R905.2.8.5 Drip Edge – required
- R806 Ventilation – required
- R803.2 Wood structural panel sheathing – see table R503.2.1.1(1)
- R908 Reroofing – general
- R908.2 Structural and construction loads – general
- R908.3.1.1 Roof recovering not allowed - where the existing roof has two or more applications of any type of roof covering (tear-off required)

TABLE R503.2.1.1(1)  
ALLOWABLE SPANS AND LOADS FOR WOOD STRUCTURAL PANELS FOR ROOF AND  
SUBFLOOR SHEATHING AND COMBINATION SUBFLOOR UNDERLayment<sup>a, b, c</sup>

SPAN RATING	MINIMUM NOMINAL PANEL THICKNESS (inch)	ALLOWABLE LIVE LOAD (psf) <sup>a, i</sup>		MAXIMUM SPAN (inches)		LOAD (pounds per square foot, at maximum span)		MAXIMUM SPAN (inches)
		SPAN @ 16" o.c.	SPAN @ 24" o.c.	With edge support <sup>d</sup>	Without edge support	Total load	Live load	
<b>Sheathing<sup>e</sup></b>				<b>Roof<sup>f</sup></b>				<b>Subfloor<sup>g</sup></b>
16/0	3/8	30	—	16	16	40	30	0
20/0	3/8	50	—	20	20	40	30	0
24/0	3/8	100	30	24	20 <sup>h</sup>	40	30	0
24/16	7/16	100	40	24	24	50	40	16
32/16	15/32, 1/2	180	70	32	28	40	30	16 <sup>h</sup>
40/20	19/32, 5/8	305	130	40	32	40	30	20 <sup>h, i</sup>
48/24	23/32, 3/4	—	175	48	36	45	35	24
60/32	7/8	—	305	60	48	45	35	32
<b>Underlayment, C-C plugged, single floor<sup>j</sup></b>				<b>Roof<sup>f</sup></b>				<b>Combination subfloor underlayment<sup>k</sup></b>
16 o.c.	19/32, 5/8	100	40	24	24	50	40	16 <sup>l</sup>
20 o.c.	19/32, 5/8	150	60	32	32	40	30	20 <sup>l, i</sup>
24 o.c.	23/32, 3/4	240	100	48	36	35	25	24
32 o.c.	7/8	—	185	48	40	50	40	32
48 o.c.	1 3/32, 1 1/8	—	290	60	48	50	40	48

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

- a. The allowable total loads were determined using a dead load of 10 psf. If the dead load exceeds 10 psf, then the live load shall be reduced accordingly.
- b. Panels continuous over two or more spans with long dimension (strength axis) perpendicular to supports. Spans shall be limited to values shown because of possible effect of concentrated loads.
- c. Applies to panels 24 inches or wider.
- d. Lumber blocking, panel edge clips (one midway between each support, except two equally spaced between supports where span is 48 inches), tongue-and-groove panel edges, or other approved type of edge support.
- e. Includes Structural I panels in these grades.
- f. Uniform load deflection limitation: 1/180 of span under live load plus dead load, 1/240 of span under live load only.
- g. Maximum span 24 inches for 15/32- and 1/2-inch panels.
- h. Maximum span 24 inches where 3/4-inch wood finish flooring is installed at right angles to joists.
- i. Maximum span 24 inches where 1.5 inches of lightweight concrete or approved cellular concrete is placed over the subfloor.
- j. Unsupported edges shall have tongue-and-groove joints or shall be supported with blocking unless minimum nominal 1/4-inch-thick wood panel-type underlayment, fiber-cement underlayment with end and edge joints offset not less than 2 inches or 11/2 inches of lightweight concrete or approved cellular concrete is placed over the subfloor, or 3/4-inch wood finish flooring is installed at right angles to the supports. Fiber-cement underlayment shall comply with ASTM C1288 or ISO 8336 Category C. Allowable uniform live load at maximum span, based on deflection of 1/360 of span, is 100 psf.
- k. Unsupported edges shall have tongue-and-groove joints or shall be supported by blocking unless nominal 1/4-inch-thick wood panel-type underlayment, fiber-cement underlayment with end and edge joints offset not less than 2 inches or 3/4-inch wood finish flooring is installed at right angles to the supports. Fiber-cement underlayment shall comply with ASTM C1288 or ISO 8336 Category C. Allowable uniform live load at maximum span, based on deflection of 1/360 of span, is 100 psf, except panels with a span rating of 48 on center are limited to 65 psf total uniform load at maximum span.
- l. Allowable live load values at spans of 16 inches on center and 24 inches on center taken from reference standard APA E30, APA Engineered Wood Construction Guide. Refer to reference standard for allowable spans not listed in the table.

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