ERIC J. HOLCOMB, Governor
STATE OF INDIANA

INDIANA DEPARTMENT OF HOMELAND SECURITY
302 West Washington Street
Indianapolis, IN 46204

James L. Greeson
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July 21, 2017

ICE/WATER SHIELD AND METAL DRIP EDGE IN CLASS 2 RESIDENTIAL CONSTRUCTION

State and local building officials have received many questions about ice/water shield and drip edge in Class 2 residential construction. In response to these questions, this document has been created to provide guidance and share the code sections that govern this subject in the State of Indiana.

As of the date of this document, residential construction in the State of Indiana is governed by the 2005 Indiana Residential Code (see 675 IAC 14-4.3). The 2005 Indiana Residential Code adopts, but amends, the fifth printing of the 2003 International Residential Code. The 2005 Indiana Residential Code regulates ice/water shield and drip edge as follows:

Ice/Water Shield

The sections pertinent to ice and water shield are as follows:

R903 WEATHER PROTECTION:

R903.1 General. Roof decks shall be covered with approved roof coverings secured to the building or structure in accordance with the provisions of this chapter. **Roof assemblies shall be designed and installed in accordance with this code *and the approved manufacturer's installation instructions*** such that the roof assembly shall serve to protect the building or structure.

R904 MATERIALS:

R904.1 Scope. The requirements set forth in this section shall apply to the application of roof covering materials specified herein. **Roof assemblies shall be applied in accordance with this chapter *and the manufacturer's installation instructions*.** Installation of roof assemblies shall comply with the applicable provisions of Section R905.

R905 REQUIREMENTS FOR ROOF COVERINGS

R905.1 Roof covering application. **Roof coverings shall be applied in accordance with the applicable provisions of this section *and the manufacturer's installation instructions*.**

R905.2.7.1 Ice protection. In areas where the average daily temperature in January is 25° F (-4° C) or less or when Table R301.2(1) criteria so designates, an ice barrier that consists of at least two layers of underlayment cemented together or of a self-adhering polymer modified bitumen sheet, shall be used in lieu of normal underlayment and extend from the eave's edge to a point at least 24 inches (610 mm) inside the exterior wall line of the building.

Exception: Detached accessory structures that contain no conditioned floor area.

Section R905.2.7.1 refers to Table R301.2(1) CLIMATIC AND GEOGRAPHIC DESIGN CRITERIA, which is amended by 675 IAC 14-4.3-6. A copy of the amended table follows at the end of this document. Note that the table lists specific Indiana counties in which the use of ice/water shield is required. Note also, however, that the sections cited above (R903.1, R904.1, and R905.1) further require that all roofing materials be installed in accordance with the manufacturer's installation instructions, and that R905.2.7.1 requires ice/water shield in any additional location in Indiana in which the average daily temperature in January is 25° F or lower. Together, these sections and Table R301.2(1) set forth the locations and circumstances in which ice/water shield are required. In short, there are specific counties in which the product is always required (per Table R301.2(1) and Section 905.2.7.1), and specific counties in which it is required only when the roofing manufacturer's installation instructions require it (per Sections R903.1, R904.1 and R905.1).

Metal Drip Edge:

Metal drip edge is a type of base flashing. It is necessary to safeguard the otherwise unprotected edge of roof sheathing or other deck materials from exposure to and absorption of moisture, and the deterioration of the material resulting from that exposure. Drip edge is not specifically addressed among the types of base and cap flashings discussed in amended Section R905.2.8.1, however its use is established good roofing practice, and should be included in all roofing work. Further, under the provisions of Sections R903.1, R904.1 and R905.1, it *shall* be provided and installed if it is required by the roofing manufacturer's installation instructions.

It is clear that flashings are required by the Indiana Residential Code, as approved and adopted by the Indiana Fire Prevention and Building Safety Commission. Installation of flashings, including ice/water shield and drip edge, is also established good roofing practice that provides value and extended life to a structure, with the potential to save homeowners and insurers thousands of dollars over time.

All Building Code Officials around the state are required to enforce the 2005 Indiana Residential Code. However, it is not their responsibility, nor the responsibility of this office, to enforce provisions of any manufacturer's or installer's warranty, other than citing non-compliant conditions, if any exist. Determining who shall be responsible for the cost of replacing ice/water shield, drip edge, or any other roofing material that is required by the 2005 Indiana Residential Code is not a matter governed by the Department or any other state or local building official, but is left for the interested parties to determine.

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~~a.m.: 20110831-IR-675110254RFA; filed Aug 1, 2014, 11:12 a.m.: 20140827-IR-675130339FRA, eff Dec 1, 2014; readopted filed~~ *Mar 10, 2017, 9:37 a.m.: 20170405-IR-675170005RFA)*

675 IAC 14-4.3-4 Section R301.2; climatic and geographic design criteria

Authority: IC 22-13-2-2; IC 22-13-2-13
Affected: IC 22-12; IC 22-13; IC 22-14; IC 22-15; IC 36-7

Sec. 4. Delete the last sentence of SECTION R301.2. *(Fire Prevention and Building Safety Commission; 675 IAC 14-4.3-4; filed Jun 13, 2005, 3:00 p.m.: 28 IR 3259, eff 90 days after filing with the Secretary of State; readopted filed Aug 4, 2011, 8:35 a.m.: 20110831-IR-675110254RFA; readopted filed Mar 10, 2017, 9:37 a.m.: 20170405-IR-675170005RFA)*

675 IAC 14-4.3-5 Sections R301.2.1.1 and R301.2.1.2; design criteria, internal pressure

Authority: IC 22-13-2-2; IC 22-13-2-13
Affected: IC 22-12; IC 22-13; IC 22-14; IC 22-15; IC 36-7

Sec. 5. Delete SECTIONS R301.2.1.1 and R301.2.1.2. *(Fire Prevention and Building Safety Commission; 675 IAC 14-4.3-5; filed Jun 13, 2005, 3:00 p.m.: 28 IR 3259, eff 90 days after filing with the Secretary of State; readopted filed Aug 4, 2011, 8:35* ~~*a.m.: 20110831-IR-675110254RFA; readopted filed Mar 10, 2017, 9:37 a.m.: 20170405-IR-675170005RFA)*~~

675 IAC 14-4.3-6 Table R301.2(1); climatic and geographical design criteria

Authority: IC 22-13-2-2; IC 22-13-2-13
Affected: IC 22-12; IC 22-13; IC 22-14; IC 22-15; IC 36-7

Sec. 6. Delete TABLE R301.2(1) and the corresponding footnotes and substitute to read as follows:

TABLE R301.2(1)

No.	County	Wind Speed[1] (MPH)	Seismic Zone[2]	Ground Snow (PSF)	Found-ation[3]	Winter Design Temp	Decay	Termite	Weathering[4]	Ice Shield Under-layment Required	Air Freezing Index	Mean Annual Temp
01	Adams	90	B	20	36	1°	Slight to Moderate	Moderate to Heavy	Severe	Yes	1303	50.9
02	Allen	90	B	20	36	1°	Slight to Moderate	Moderate to Heavy	Severe	Yes	1490	49.9
03	Bartholomew	90	B	20	24	9°	Slight to Moderate	Moderate to Heavy	Severe	No	1083	53.1
04	Benton	90	B	20	36	1°	Slight to Moderate	Moderate to Heavy	Severe	Yes	1350	49.1
05	Blackford	90	B	20	30	2°	Slight to Moderate	Moderate to Heavy	Severe	No	1425	51.4
06	Boone	90	B	20	30	2°	Slight to Moderate	Moderate to Heavy	Severe	No	1401	52.3
07	Brown	90	B	20	24	9°	Slight to Moderate	Moderate to Heavy	Severe	No	1080	53.1
08	Carroll	90	B	20	36	1°	Slight to Moderate	Moderate to Heavy	Severe	Yes	1321	51.7
09	Cass	90	A	20	36	1°	Slight to Moderate	Moderate to Heavy	Severe	Yes	1450	50.3

10 Clark	90	B	20	24	9°	Slight to Moderate	Moderate to Heavy	Severe	No	825	54.7
11 Clay	90	C	20	24	9°	Slight to Moderate	Moderate to Heavy	Severe	No	1175	52.1
12 Clinton	90	B	20	30	2°	Slight to Moderate	Moderate to Heavy	Severe	No	1405	50.7
13 Crawford	90	C	20	24	9°	Slight to Moderate	Moderate to Heavy	Severe	No	750	54.7
14 Daviess	90	C_1	20	24	9°	Slight to Moderate	Moderate to Heavy	Severe	No	743	56.1
15 Dearborn	90	B	20	24	9°	Slight to Moderate	Moderate to Heavy	Severe	No	900	50.5
16 Decatur	90	B	20	24	9°	Slight to Moderate	Moderate to Heavy	Severe	No	1115	52.4
17 Dekalb	90	B	30	36	1°	Slight to Moderate	Moderate to Heavy	Severe	Yes	1389	50.0
18 Delaware	90	B	20	30	2°	Slight to Moderate	Moderate to Heavy	Severe	No	1400	50.8
19 Dubois	90	C	20	24	9°	Slight to Moderate	Moderate to Heavy	Severe	No	770	53.9
20 Elkhart	90	A	30	36	1°	Slight to Moderate	Moderate to Heavy	Severe	Yes	1358	50.5
21 Fayette	90	B	20	30	2°	Slight to Moderate	Moderate to Heavy	Severe	No	1369	51.5
22 Floyd	90	B	20	24	9°	Slight to Moderate	Moderate to Heavy	Severe	No	770	54.7
23 Fountain	90	B	20	30	2°	Slight to Moderate	Moderate to Heavy	Severe	No	1525	51.2
24 Franklin	90	B	20	24	9°	Slight to Moderate	Moderate to Heavy	Severe	No	1174	51.8
25 Fulton	90	A	30	36	1°	Slight to Moderate	Moderate to Heavy	Severe	Yes	1553	49.3
26 Gibson	90	C_1	20	24	9°	Slight to Moderate	Moderate to Heavy	Severe	No	893	55.2
27 Grant	90	B	20	30	2°	Slight to Moderate	Moderate to Heavy	Severe	No	1430	50.3
28 Greene	90	C	20	24	9°	Slight to Moderate	Moderate to Heavy	Severe	No	990	52.9
29 Hamilton	90	B	20	30	2°	Slight to Moderate	Moderate to Heavy	Severe	No	1400	51.5
30 Hancock	90	B	20	30	2°	Slight to Moderate	Moderate to Heavy	Severe	No	1356	51.6
31 Harrison	90	B	20	24	9°	Slight to Moderate	Moderate to Heavy	Severe	No	740	54.7
32 Hendricks	90	B	20	30	2°	Slight to Moderate	Moderate to Heavy	Severe	No	1175	52.3

33 Henry	90	B	20	30	2°	Slight to Moderate	Moderate to Heavy	Severe	No	1432	49.9
34 Howard	90	A	20	30	2°	Slight to Moderate	Moderate to Heavy	Severe	No	1523	49.6
35 Huntington	90	B	20	36	1°	Slight to Moderate	Moderate to Heavy	Severe	Yes	1270	50.4
36 Jackson	90	B	20	24	9°	Slight to Moderate	Moderate to Heavy	Severe	No	1048	52.5
37 Jasper	90	B	30	36	1°	Slight to Moderate	Moderate to Heavy	Severe	Yes	1647	49.6
38 Jay	90	B	20	30	2°	Slight to Moderate	Moderate to Heavy	Severe	No	1400	49.7
39 Jefferson	90	B	20	24	9°	Slight to Moderate	Moderate to Heavy	Severe	No	870	54.7
40 Jennings	90	B	20	24	9°	Slight to Moderate	Moderate to Heavy	Severe	No	789	54.3
41 Johnson	90	B	20	30	2°	Slight to Moderate	Moderate to Heavy	Severe	No	1390	52.0
42 Knox	90	C_1	20	24	9°	Slight to Moderate	Moderate to Heavy	Severe	No	1029	53.4
43 Kosciusko	90	A	30	36	1°	Slight to Moderate	Moderate to Heavy	Severe	Yes	1450	49.0
44 LaGrange	90	A	30	36	1°	Slight to Moderate	Moderate to Heavy	Severe	Yes	1360	47.9
45 Lake	90	B	30	36	1°	Slight to Moderate	Moderate to Heavy	Severe	Yes	1300	49.0
46 LaPorte	90	A	30	36	1°	Slight to Moderate	Moderate to Heavy	Severe	Yes	1395	49.7
47 Lawrence	90	C	20	24	9°	Slight to Moderate	Moderate to Heavy	Severe	No	1115	52.6
48 Madison	90	B	20	30	2°	Slight to Moderate	Moderate to Heavy	Severe	No	1420	50.8
49 Marion	90	B	20	30	2°	Slight to Moderate	Moderate to Heavy	Severe	No	1215	51.8
50 Marshall	90	A	30	36	1°	Slight to Moderate	Moderate to Heavy	Severe	Yes	1424	50.0
51 Martin	90	C	20	24	9°	Slight to Moderate	Moderate to Heavy	Severe	No	849	54.2
52 Miami	90	A	20	36	1°	Slight to Moderate	Moderate to Heavy	Severe	Yes	1425	49.4
53 Monroe	90	C	20	24	9°	Slight to Moderate	Moderate to Heavy	Severe	No	1075	53.1
54 Montgomery	90	B	20	30	2°	Slight to Moderate	Moderate to Heavy	Severe	No	1435	50.1
55 Morgan	90	B	20	30	2°	Slight to Moderate	Moderate to Heavy	Severe	No	1200	51.5

56	Newton	90	B	30	36	1°	Slight to Moderate	Moderate to Heavy	Severe	Yes	1399	50.2
57	Noble	90	A	30	36	1°	Slight to Moderate	Moderate to Heavy	Severe	Yes	1375	49.0
58	Ohio	90	B	20	24	9°	Slight to Moderate	Moderate to Heavy	Severe	No	800	53.0
59	Orange	90	C	20	24	9°	Slight to Moderate	Moderate to Heavy	Severe	No	988	53.0
60	Owen	90	C	20	24	9°	Slight to Moderate	Moderate to Heavy	Severe	No	1224	50.1
61	Parke	90	B	20	30	2°	Slight to Moderate	Moderate to Heavy	Severe	No	1109	53.9
62	Perry	90	C	20	24	9°	Slight to Moderate	Moderate to Heavy	Severe	No	731	55.8
63	Pike	90	C_1	20	24	9°	Slight to Moderate	Moderate to Heavy	Severe	No	810	54.8
64	Porter	90	B	30	36	1°	Slight to Moderate	Moderate to Heavy	Severe	Yes	1396	49.6
65	Posey	90	C_1	20	24	9°	Slight to Moderate	Moderate to Heavy	Severe	No	867	55.4
66	Pulaski	90	A	30	36	1°	Slight to Moderate	Moderate to Heavy	Severe	Yes	1480	49.7
67	Putnam	90	B	20	30	2°	Slight to Moderate	Moderate to Heavy	Severe	No	1121	52.6
68	Randolph	90	B	20	30	2°	Slight to Moderate	Moderate to Heavy	Severe	No	1398	49.9
69	Ripley	90	B	20	24	9°	Slight to Moderate	Moderate to Heavy	Severe	No	820	54.5
70	Rush	90	B	20	30	2°	Slight to Moderate	Moderate to Heavy	Severe	No	1369	51.2
71	St. Joseph	90	A	30	36	1°	Slight to Moderate	Moderate to Heavy	Severe	Yes	1379	49.1
72	Scott	90	B	20	24	9°	Slight to Moderate	Moderate to Heavy	Severe	No	941	53.9
73	Shelby	90	B	20	30	2°	Slight to Moderate	Moderate to Heavy	Severe	No	1393	52.6
74	Spencer	90	C_1	20	24	9°	Slight to Moderate	Moderate to Heavy	Severe	No	710	56.2
75	Starke	90	A	30	36	1°	Slight to Moderate	Moderate to Heavy	Severe	Yes	1425	49.7
76	Steuben	90	A	30	36	1°	Slight to Moderate	Moderate to Heavy	Severe	Yes	1370	47.3
77	Sullivan	90	C_1	20	24	9°	Slight to Moderate	Moderate to Heavy	Severe	No	1090	52.7
78	Switzerland	90	B	20	24	9°	Slight to Moderate	Moderate to Heavy	Severe	No	727	55.7

79	Tippecanoe	90	B	20	30	2°	Slight to Moderate	Moderate to Heavy	Severe	No	1557	50.9
80	Tipton	90	B	20	30	2°	Slight to Moderate	Moderate to Heavy	Severe	No	1420	49.2
81	Union	90	B	20	30	2°	Slight to Moderate	Moderate to Heavy	Severe	No	1350	51.5
82	Vanderburgh	90	C_1	20	24	9°	Slight to Moderate	Moderate to Heavy	Severe	No	581	57.0
83	Vermillion	90	B	20	30	2°	Slight to Moderate	Moderate to Heavy	Severe	No	1100	50.8
84	Vigo	90	C	20	24	9°	Slight to Moderate	Moderate to Heavy	Severe	No	1198	53.1
85	Wabash	90	A	20	36	1°	Slight to Moderate	Moderate to Heavy	Severe	Yes	1536	49.0
86	Warren	90	B	20	30	2°	Slight to Moderate	Moderate to Heavy	Severe	No	1400	51.0
87	Warrick	90	C_1	20	24	9°	Slight to Moderate	Moderate to Heavy	Severe	No	690	56.2
88	Washington	90	B	20	24	9°	Slight to Moderate	Moderate to Heavy	Severe	No	950	54.5
89	Wayne	90	B	20	30	2°	Slight to Moderate	Moderate to Heavy	Severe	No	1383	49.9
90	Wells	90	B	20	36	1°	Slight to Moderate	Moderate to Heavy	Severe	Yes	1295	49.9
91	White	90	B	20	36	1°	Slight to Moderate	Moderate to Heavy	Severe	Yes	1410	50.3
92	Whitley	90	A	20	36	1°	Slight to Moderate	Moderate to Heavy	Severe	Yes	1493	48.8

[1]Wind exposure category shall be determined on a site-specific basis in accordance with SECTION R301.2.1.4.

[2]See SECTION R301.2.2.

[3]Foundation is minimum foundation depth to bottom of footing from the top of the finished grade above the footing in inches.

[4]The grade of masonry units shall be determined from ASTM C34, C55, C62, C73, C90, C129, C216, or C652.

(Fire Prevention and Building Safety Commission; 675 IAC 14-4.3-6; filed Jun 13, 2005, 3:00 p.m.: 28 IR 3259, eff 90 days after filing with the Secretary of State; readopted filed Aug 4, 2011, 8:35 a.m.: 20110831-IR-675110254RFA; readopted filed Mar 10, 2017, 9:37 a.m.: 20170405-IR-675170005RFA)

~~**675 IAC 14-4.3-7 Figures R301.2(1), R301.2(2), R301.2(3), R301.2(4), R301.2(5), R301.2(6), R301.2(7), and R301.2(8)**~~

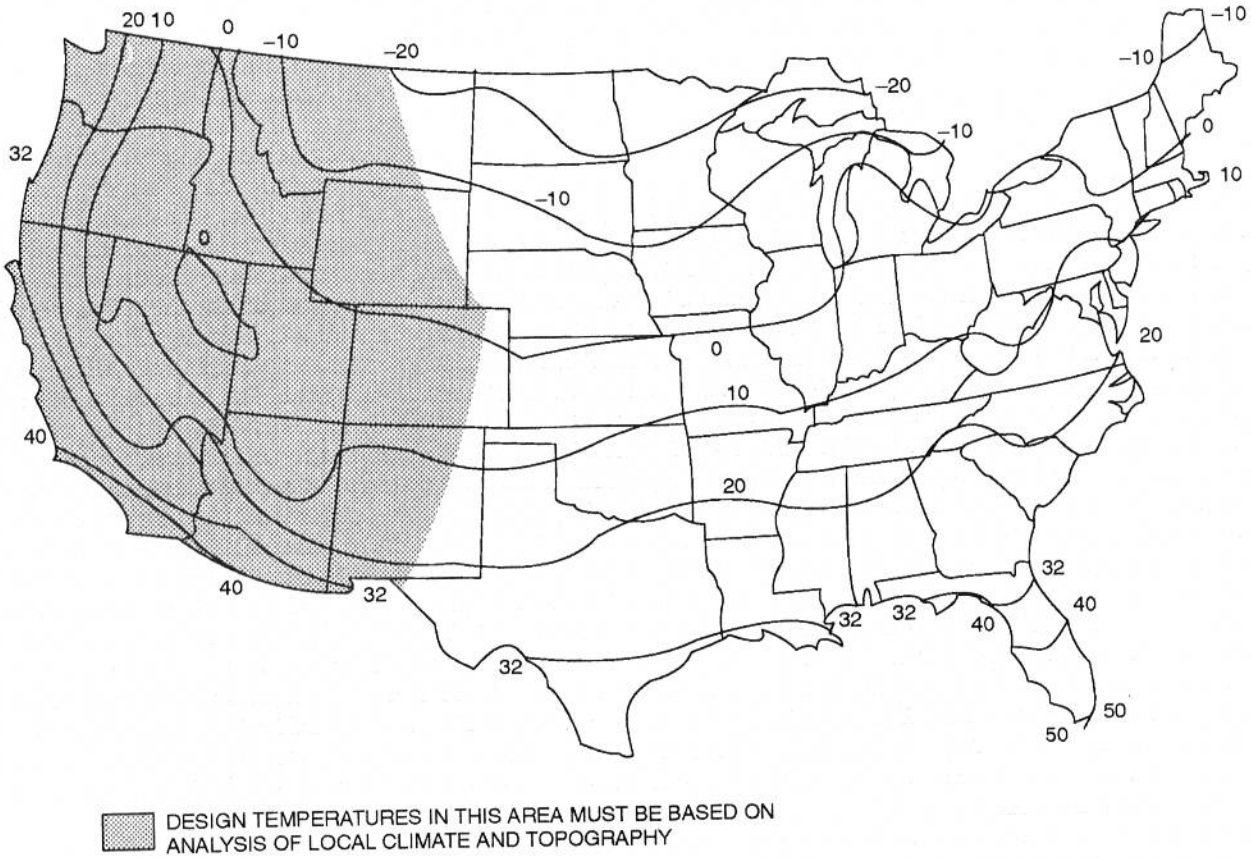
Authority: IC 22-13-2-2; IC 22-13-2-13

Affected: IC 22-12; IC 22-13; IC 22-14; IC 22-15; IC 36-7

Sec. 7. Delete Figures R301.2(1), R301.2(2), R301.2(3), R301.2(4), R301.2(5), R301.2(6), R301.2(7), and R301.2(8). ~~*(Fire Prevention and Building Safety Commission; 675 IAC 14-4.3-7; filed Jun 13, 2005, 3:00 p.m.: 28 IR 3262, eff 90 days after filing with the Secretary of State; readopted filed Aug 4, 2011, 8:35 a.m.: 20110831-IR-675110254RFA; readopted filed Mar 10, 2017, 9:37 a.m.: 20170405-IR-675170005RFA)*~~

TABLE R301.2(3)
HEIGHT AND EXPOSURE ADJUSTMENT COEFFICIENTS FOR TABLE R301.2(2)

MEAN ROOF HEIGHT	EXPOSURE		
	B	C	D
15	1.00	1.21	1.47
20	1.00	1.29	1.55
25	1.00	1.35	1.61
30	1.00	1.40	1.66
35	1.05	1.45	1.70
40	1.09	1.49	1.74
45	1.12	1.53	1.78
50	1.16	1.56	1.81
55	1.19	1.59	1.84
60	1.22	1.62	1.87



For SI: °C = [(°F)-32] /1.8.

FIGURE R301.2(1)
ISOLINES OF THE 97½ PERCENT WINTER (DECEMBER, JANUARY AND FEBRUARY) DESIGN TEMPERATURES (°F)

675 IAC 14-4.3-4 Section R301.2; climatic and geographic design criteria

Authority: IC 22-13-2-2; IC 22-13-2-13
Affected: IC 22-12; IC 22-13; IC 22-14; IC 22-15; IC 36-7

Sec. 4. Delete the last sentence of SECTION R301.2. *(Fire Prevention and Building Safety Commission; 675 IAC 14-4.3-4; filed Jun 13, 2005, 3:00 p.m.: 28 IR 3259, eff 90 days after filing with the Secretary of State; readopted filed Aug 4, 2011, 8:35 a.m.: 20110831-IR-675110254RFA)*

675 IAC 14-4.3-5 Sections R301.2.1.1 and R301.2.1.2; design criteria, internal pressure

Authority: IC 22-13-2-2; IC 22-13-2-13
Affected: IC 22-12; IC 22-13; IC 22-14; IC 22-15; IC 36-7

Sec. 5. Delete SECTIONS R301.2.1.1 and R301.2.1.2. *(Fire Prevention and Building Safety Commission; 675 IAC 14-4.3-5; filed Jun 13, 2005, 3:00 p.m.: 28 IR 3259, eff 90 days after filing with the Secretary of State; readopted filed Aug 4, 2011, 8:35 a.m.: 20110831-IR-675110254RFA)*

675 IAC 14-4.3-6 Table R301.2(1); climatic and geographical design criteria

Authority: IC 22-13-2-2; IC 22-13-2-13
Affected: IC 22-12; IC 22-13; IC 22-14; IC 22-15; IC 36-7

Sec. 6. Delete TABLE R301.2(1) and the corresponding footnotes and substitute to read as follows:

TABLE R301.2(1)

No.	County	Wind Speed[1] (MPH)	Seismic Zone[2]	Ground Snow (PSF)	Found-ation[3]	Winter Design Temp	Decay	Termite	Weathering[4]	Ice Shield Under-layment Required	Air Freezing Index	Mean Annual Temp
01	Adams	90	B	20	36	1°	Slight to Moderate	Moderate to Heavy	Severe	Yes	1303	50.9
02	Allen	90	B	20	36	1°	Slight to Moderate	Moderate to Heavy	Severe	Yes	1490	49.9
03	Bartholomew	90	B	20	24	9°	Slight to Moderate	Moderate to Heavy	Severe	No	1083	53.1
04	Benton	90	B	20	36	1°	Slight to Moderate	Moderate to Heavy	Severe	Yes	1350	49.1
05	Blackford	90	B	20	30	2°	Slight to Moderate	Moderate to Heavy	Severe	No	1425	51.4
06	Boone	90	B	20	30	2°	Slight to Moderate	Moderate to Heavy	Severe	No	1401	52.3
07	Brown	90	B	20	24	9°	Slight to Moderate	Moderate to Heavy	Severe	No	1080	53.1
08	Carroll	90	B	20	36	1°	Slight to Moderate	Moderate to Heavy	Severe	Yes	1321	51.7
09	Cass	90	A	20	36	1°	Slight to Moderate	Moderate to Heavy	Severe	Yes	1450	50.3
10	Clark	90	B	20	24	9°	Slight to Moderate	Moderate to Heavy	Severe	No	825	54.7
11	Clay	90	C	20	24	9°	Slight to Moderate	Moderate to Heavy	Severe	No	1175	52.1

No.	County	Wind Speed[1] (MPH)	Seismic Zone[2]	Ground Snow (PSF)	Found-ation[3]	Winter Design Temp	Decay	Termite	Weathering[4]	Ice Shield Under-layment Required	Air Freezing Index	Mean Annual Temp
35	Huntington	90	B	20	36	1°	Slight to Moderate	Moderate to Heavy	Severe	Yes	1270	50.4
36	Jackson	90	B	20	24	9°	Slight to Moderate	Moderate to Heavy	Severe	No	1048	52.5
37	Jasper	90	B	30	36	1°	Slight to Moderate	Moderate to Heavy	Severe	Yes	1647	49.6
38	Jay	90	B	20	30	2°	Slight to Moderate	Moderate to Heavy	Severe	No	1400	49.7
39	Jefferson	90	B	20	24	9°	Slight to Moderate	Moderate to Heavy	Severe	No	870	54.7
40	Jennings	90	B	20	24	9°	Slight to Moderate	Moderate to Heavy	Severe	No	789	54.3
41	Johnson	90	B	20	30	2°	Slight to Moderate	Moderate to Heavy	Severe	No	1390	52.0
42	Knox	90	C_1	20	24	9°	Slight to Moderate	Moderate to Heavy	Severe	No	1029	53.4
43	Kosciusko	90	A	30	36	1°	Slight to Moderate	Moderate to Heavy	Severe	Yes	1450	49.0
44	LaGrange	90	A	30	36	1°	Slight to Moderate	Moderate to Heavy	Severe	Yes	1360	47.9
45	Lake	90	B	30	36	1°	Slight to Moderate	Moderate to Heavy	Severe	Yes	1300	49.0
46	LaPorte	90	A	30	36	1°	Slight to Moderate	Moderate to Heavy	Severe	Yes	1395	49.7
47	Lawrence	90	C	20	24	9°	Slight to Moderate	Moderate to Heavy	Severe	No	1115	52.6
48	Madison	90	B	20	30	2°	Slight to Moderate	Moderate to Heavy	Severe	No	1420	50.8
49	Marion	90	B	20	30	2°	Slight to Moderate	Moderate to Heavy	Severe	No	1215	51.8
50	Marshall	90	A	30	36	1°	Slight to Moderate	Moderate to Heavy	Severe	Yes	1424	50.0
51	Martin	90	C	20	24	9°	Slight to Moderate	Moderate to Heavy	Severe	No	849	54.2
52	Miami	90	A	20	36	1°	Slight to Moderate	Moderate to Heavy	Severe	Yes	1425	49.4
53	Monroe	90	C	20	24	9°	Slight to Moderate	Moderate to Heavy	Severe	No	1075	53.1
54	Montgomery	90	B	20	30	2°	Slight to Moderate	Moderate to Heavy	Severe	No	1435	50.1
55	Morgan	90	B	20	30	2°	Slight to Moderate	Moderate to Heavy	Severe	No	1200	51.5
56	Newton	90	B	30	36	1°	Slight to Moderate	Moderate to Heavy	Severe	Yes	1399	50.2
57	Noble	90	A	30	36	1°	Slight to Moderate	Moderate to Heavy	Severe	Yes	1375	49.0

CHAPTER 9
ROOF ASSEMBLIES

SECTION R901
GENERAL

R901.1 Scope. The provisions of this chapter shall govern the design, materials, construction and quality of roof assemblies.

SECTION R902
ROOF CLASSIFICATION

R902.1 Roofing covering materials. Roofs shall be covered with materials as set forth in Sections R904 and R905. Class A, B or C roofing shall be installed in areas designated by law as requiring their use or when the edge of the roof is less than 3 feet (914 mm) from a property line. Classes A, B and C roofing required to be listed by this section shall be tested in accordance with UL 790 or ASTM E 108. Roof assemblies with coverings of brick, masonry, slate, clay or concrete roof tile, exposed concrete roof deck, ferrous or copper shingles or sheets, and metal sheets and shingles, shall be considered Class A roof coverings.

R902.2 Fire-retardant-treated shingles and shakes. Fire-retardant-treated wood shakes and shingles shall be treated by impregnation with chemicals by the full-cell vacuum-pressure process, in accordance with AWPA C1. Each bundle shall be marked to identify the manufactured unit and the manufacturer, and shall also be labeled to identify the classification of the material in accordance with the testing required in Section R902.1, the treating company and the quality control agency.

SECTION R903
WEATHER PROTECTION

R903.1 General. Roof decks shall be covered with approved roof coverings secured to the building or structure in accordance with the provisions of this chapter. Roof assemblies shall be designed and installed in accordance with this code and the approved manufacturer's installation instructions such that the roof assembly shall serve to protect the building or structure.

R903.2 Flashing. Flashings shall be installed in such a manner so as to prevent moisture entering the wall and roof through joints in copings, through moisture permeable materials, and at intersections with parapet walls and other penetrations through the roof plane.

R903.2.1 Locations. Flashings shall be installed at wall and roof intersections; wherever there is a change in roof slope or direction; and around roof openings. Where flashing is of metal, the metal shall be corrosion resistant with a thickness of not less than 0.019 inch (No. 26 galvanized sheet).

R903.3 Coping. Parapet walls shall be properly coped with noncombustible, weatherproof materials of a width no less than the thickness of the parapet wall.

R903.4 Roof drainage. Unless roofs are sloped to drain over roof edges, roof drains shall be installed at each low point of the roof. Where required for roof drainage, scuppers shall be placed level with the roof surface in a wall or parapet. The scupper shall be located as determined by the roof slope and contributing roof area.

R903.4.1 Overflow drains and scuppers. Where roof drains are required, overflow drains having the same size as the roof drains shall be installed with the inlet flow line located 2 inches (51 mm) above the low point of the roof, or overflow scuppers having three times the size of the roof drains and having a minimum opening height of 4 inches (102 mm) shall be installed in the adjacent parapet walls with the inlet flow located 2 inches (51 mm) above the low point of the roof served. The installation and sizing of overflow drains, leaders and conductors shall comply with the *International Plumbing Code*.

Overflow drains shall discharge to an approved location and shall not be connected to roof drain lines.

SECTION R904
MATERIALS

R904.1 Scope. The requirements set forth in this section shall apply to the application of roof covering materials specified herein. Roof assemblies shall be applied in accordance with this chapter and the manufacturer's installation instructions. Installation of roof assemblies shall comply with the applicable provisions of Section R905.

R904.2 Compatibility of materials. Roof assemblies shall be of materials that are compatible with each other and with the building or structure to which the materials are applied.

R904.3 Material specifications and physical characteristics. Roof covering materials shall conform to the applicable standards listed in this chapter. In the absence of applicable standards or where materials are of questionable suitability, testing by an approved testing agency shall be required by the building official to determine the character, quality and limitations of application of the materials.

R904.4 Product identification. Roof covering materials shall be delivered in packages bearing the manufacturer's identifying marks and approved testing agency labels when required. Bulk shipments of materials shall be accompanied with the same information issued in the form of a certificate or on a bill of lading by the manufacturer.

SECTION R905
REQUIREMENTS FOR ROOF COVERINGS

R905.1 Roof covering application. Roof coverings shall be applied in accordance with the applicable provisions of this section and the manufacturer's installation instructions.

R905.2 Asphalt shingles. The installation of asphalt shingles shall comply with the provisions of this section.

R905.2.1 Sheathing requirements. Asphalt shingles shall be fastened to solidly sheathed decks.

R905.2.2 Slope. Asphalt shingles shall only be used on roof slopes of two units vertical in 12 units horizontal (2:12) or greater. For roof slopes from two units vertical in 12 units horizontal (2:12) up to four units vertical in 12 units horizontal (4:12), double underlayment application is required in accordance with Section R905.2.7.

R905.2.3 Underlayment. Unless otherwise noted, required underlayment shall conform with ASTM D 226, Type I, or ASTM D 4869, Type I.

Self-adhering polymer modified bitumen sheet shall comply with ASTM D 1970.

R905.2.4 Asphalt shingles. Asphalt shingles shall have self-seal strips or be interlocking, and comply with ASTM D 225 or D 3462.

R905.2.5 Fasteners. Fasteners for asphalt shingles shall be galvanized steel, stainless steel, aluminum or copper roofing nails, minimum 12 gage [0.105 inch (2.67 mm)] shank with a minimum $^3/_8$-inch (9.5 mm) diameter head, ASTM F 1667, of a length to penetrate through the roofing materials and a minimum of $^3/_4$ inch (19.1 mm) into the roof sheathing. Where the roof sheathing is less than $^3/_4$ inch (19.1 mm) thick, the fasteners shall penetrate through the sheathing. Fasteners shall comply with ASTM F 1667.

R905.2.6 Attachment. Asphalt shingles shall have the minimum number of fasteners required by the manufacturer. For normal application, asphalt shingles shall be secured to the roof with not less than four fasteners per strip shingle or two fasteners per individual shingle. Where the roof slope exceeds 20 units vertical in 12 units horizontal (20:12), special methods of fastening are required. For roofs located where the basic wind speed per Figure R301.2(4) is 110 mph (177 km/h) or greater, special methods of fastening are required. Special fastening methods shall be tested in accordance with ASTM D 3161, modified to use a wind speed of 110 mph (177 km/h).

Shingles classified using ASTM D 3161 are acceptable for use in wind zones less than 110 mph. Shingles classified using ASTM D 3161 modified to use a wind speed of 110 mph are acceptable for use in all cases where special fastening is required.

R905.2.7 Underlayment application. For roof slopes from two units vertical in 12 units horizontal (17-percent slope), up to four units vertical in 12 units horizontal (33-percent slope), underlayment shall be two layers applied in the following manner. Apply a 19-inch (483 mm) strip of underlayment felt parallel with and starting at the eaves, fastened sufficiently to hold in place. Starting at the eave, apply 36-inch-wide (914 mm) sheets of underlayment, overlapping successive sheets 19 inches (483 mm), and fastened sufficiently to hold in place. For roof slopes of four units vertical in 12 units horizontal (33-percent slope) or greater, underlayment shall be one layer applied in the following manner. Underlayment shall be applied shingle fashion, parallel to and starting from the eave and lapped 2 inches (51 mm), fastened sufficiently to hold in place. End laps shall be offset by 6 feet (1829 mm).

R905.2.7.1 Ice protection. In areas where the average daily temperature in January is 25°F (-4°C) or less or when Table R301.2(1) criteria so designates, an ice barrier that consists of a least two layers of underlayment cemented together or of a self-adhering polymer modified bitumen sheet, shall be used in lieu of normal underlayment and extend from the eave's edge to a point at least 24 inches (610 mm) inside the exterior wall line of the building.

Exception: Detached accessory structures that contain no conditioned floor area.

R905.2.7.2 Underlayment and high wind. Underlayment applied in areas subject to high winds [greater than 110 mph (177km/h) per Figure R301.2(4)] shall be applied with corrosion-resistant fasteners in accordance with manufacturer's installation instructions. Fasteners are to be applied along the overlap not farther apart than 36 inches (914 mm) on center.

R905.2.8 Flashing. Flashing for asphalt shingles shall comply with this section.

R905.2.8.1 Base and cap flashing. Base and cap flashing shall be installed in accordance with manufacturer's installation instructions. Base flashing shall be of either corrosion-resistant metal of minimum nominal 0.019-inch (0.483 mm) thickness or mineral surface roll roofing weighing a minimum of 77 pounds per 100 square feet (3.76 kg/m^2). Cap flashing shall be corrosion-resistant metal of minimum nominal 0.019-inch (0.483 mm) thickness.

R905.2.8.2 Valleys. Valley linings shall be installed in accordance with manufacturer's installation instructions before applying shingles. Valley linings of the following types shall be permitted:

1. For open valley (valley lining exposed) lined with metal, the valley lining shall be at least 24 inches (610 mm) wide and of any of the corrosion-resistant metals in Table R905.2.8.2.
2. For open valleys, valley lining of two plies of mineral surface roll roofing, complying with ASTM D 249, shall be permitted. The bottom layer shall be 18 inches (457 mm) and the top layer a minimum of 36 inches (914 mm) wide.
3. For closed valleys (valley covered with shingles), valley lining of one ply of smooth roll roofing complying with ASTM D 224 Type II or Type III and at least 36 inches (914 mm) wide or valley lining as described in Items 1 and 2 above shall be permitted. Specialty underlayment complying with ASTM D 1970 may be used in lieu of the lining material.

IAC 14-4.3-132.5; filed Mar 6, 2008, 11:13 a.m.: 20080402-IR-675070483FRA; readopted filed Aug 4, 2011, 8:35 a.m.: 20110831-IR-675110254RFA)

675 IAC 14-4.3-132.6 Section R905.2.8.2; valleys

Authority: IC 22-13-2-2; IC 22-13-2-13
Affected: IC 22-12; IC 22-13; IC 22-14; IC 22-15; IC 36-7

Sec. 132.6. (a) In Section R905.2.8.2, item 2, delete "ASTM D 249" and substitute "ASTM D 3909 or ASTM D 6380 Class M".

(b) In Section R905.2.8.2, item 3, delete "ASTM D 224 Type II or Type III" and substitute "ASTM D 6380 Class S Type III, Class M Type II, or ASTM D 3909". *(Fire Prevention and Building Safety Commission; 675 IAC 14-4.3-132.6; filed Mar 6, 2008, 11:13 a.m.: 20080402-IR-675070483FRA; readopted filed Aug 4, 2011, 8:35 a.m.: 20110831-IR-675110254RFA)*

675 IAC 14-4.3-132.7 Section R905.2.8.3; crickets and saddles

Authority: IC 22-13-2-2; IC 22-13-2-13
Affected: IC 22-12; IC 22-13; IC 22-14; IC 22-15; IC 36-7

Sec. 132.7. Change Section R905.2.8.3 to read as follows: A cricket or saddle shall be installed on the ridge side of any chimney more than 30 inches (762 mm) wide as measured perpendicular to the slope. Cricket or saddle coverings shall be sheet metal in accordance with Section R905.2.8.1 or of the same material as the roof covering. Base and cap flashing of the cricket or saddle shall also be in accordance with Section R905.2.8.1. *(Fire Prevention and Building Safety Commission; 675 IAC 14-4.3-132.7; filed Mar 6, 2008, 11:13 a.m.: 20080402-IR-675070483FRA; readopted filed Aug 4, 2011, 8:35 a.m.: 20110831-IR-675110254RFA)*

675 IAC 14-4.3-133 Section R905.5.3; underlayment

Authority: IC 22-13-2-2; IC 22-13-2-13
Affected: IC 22-12; IC 22-13; IC 22-14; IC 22-15; IC 36-7

Sec. 133. In the first sentence of SECTION R905.5.3 delete the phrase "is 25°F (-4°C) or less" and insert "is less than 25°F(-4°C)". *(Fire Prevention and Building Safety Commission; 675 IAC 14-4.3-133; filed Jun 13, 2005, 3:00 p.m.: 28 IR 3282, eff 90 days after filing with the Secretary of State; readopted filed Aug 4, 2011, 8:35 a.m.: 20110831-IR-675110254RFA)*

675 IAC 14-4.3-134 Section R907.3; recovering versus replacement (Repealed)

Sec. 134. *(Repealed by Fire Prevention and Building Safety Commission; filed Mar 6, 2008, 11:13 a.m.: 20080402-IR-675070483FRA)*

675 IAC 14-4.3-135 Figure R1001.6; termination

Authority: IC 22-13-2-2; IC 22-13-2-13
Affected: IC 22-12; IC 22-13; IC 22-14; IC 22-15; IC 36-7

Sec. 135. Add FIGURE R1001.6 as follows:

FIGURE R1001.6
Chimney Termination

MICHAEL R. PENCE, Governor
STATE OF INDIANA

INDIANA DEPARTMENT OF HOMELAND SECURITY
302 West Washington Street
Indianapolis, IN 46204

September 23, 2016

Ice/Water Shield and Drip Edge;

The State of Indiana uses the Indiana Residential Code which consist of the 2003 International Residential Code with the 2005 Indiana amendments. The state and locals have received many questions about ice/water shields and drip edge. The intent of this document is to share the code sections that relate to the subject. These sections are of as follows:

The first section is R903 Weather Protection R903.1 General.

> **R903.1 General.** Roof decks shall be covered with approved roof coverings secured to the building or structure in accordance with the provisions of this chapter. Roof assemblies shall be designed and installed in accordance with this code and the approved manufacturer's installation instructions such that the roof assembly shall serve to protect the building or structure.

The second section is R904 Materials R904.1 Scope.

> **R904.1 Scope.** The requirements set forth in this section shall apply to the application of roof covering materials specified herein. Roof assemblies shall be applied in accordance with this chapter and the manufacturer's installation instructions. Installation of roof assemblies shall comply with the applicable provisions of Section R905.

The third section is R905 Requirements for Roof Coverings R905.1 Roof Covering Application.

> **R905.1 Roof covering application.** Roof coverings shall be applied in accordance with the applicable provisions of this section and the manufacturer's installation instructions.

The fourth section is R905.2.7.1 Ice Protection.

> **R905.2.7.1 Ice Protection.** In areas where the average daily temperature in January is 25^{0}F (-4^{0}C) or less or when Table R301.2 (1) criteria so designates, an ice barrier that consists of at least two layers of underlayment cemented together or of a self-adhering polymer modified bitumen sheet, shall be used in lieu of normal underlayment and extend from the eave's edge to a point at least 24 inches (610 mm) inside the exterior wall line of the building.
>
> **Exception:** Detached accessory structures that contain no conditioned floor area.

Per R905.2.7.1 the code refers to Table R301.2 (1) which is amended in the Indiana Amendments 675 IAC 14-4.3-6 climatic and geographical design criteria.

> **Table R301.2 (1) See attached.**
>
> The additional exception to the table is when a manufacturer requires ice/water shield with their product. If it required it should be applied for the purpose of the warranty, regardless of code.

These sections are clear that ice/water shield is required in specific counties by the 2005 Indiana Residential Code, as approved by the Indiana Fire Prevention and Building Safety Commission. They need to be installed per the manufacturer's requirements.

The last section is R905.2.8 Flashing. Metal drip edge is a type of base flashing

> **R903.1 General.** Roof decks shall be covered with approved roof coverings secured to the building or structure in accordance with the provisions of this chapter. Roof assemblies shall be designed and installed in accordance with this code and the approved manufacturer's installation instructions such that the roof assembly shall serve to protect the building or structure.
>
> **R903.2 Flashing.** Flashings shall be installed in such a manner so as to prevent moisture entering the wall and roof through joints in copings, through moisture permeable materials, and at intersections with parapet walls and other penetrations through the roof plane.
>
> **R903.2.1 Locations.** Flashings shall be installed at wall and roof intersections; wherever there is a change in roof slope or direction; and around roof openings. Where flashing is of metal, the metal shall be corrosion resistant with a thickness of not less than 0.019 inch (No. 26 galvanized sheet).

R904.1 Scope. The requirements set forth in this section shall apply to the application of roof covering materials specified herein. Roof assemblies shall be applied in accordance with this chapter and the manufacturer's installation instructions. Installation of roof assemblies shall comply with the applicable provisions of Section R905.

R905.1 Roof covering application. Roof coverings shall be applied in accordance with the applicable provisions of this section and the manufacturer's installation instructions.

R905.2.8 Flashing. Flashing for asphalt shingles shall comply with this section.

R905.2.8.1 Base and cap flashing. Base and cap flashing shall be installed in accordance with manufacturer's installation instructions. Base flashing shall be of either corrosion-resistant metal of minimum nominal 0.019-inch (0.483 mm) thickness or mineral surface roll roofing weighing a minimum of 77 pounds per 100 square feet (3.76 kg/m^{m}). Cap flashing shall be corrosion-resistant metal of minimum nominal 1.019-inche (0.483 mm) thickness.

It is clear that a base flashing is required by the Indiana Residential Building Code as approved by the Indiana Fire Prevention and Building Safety Commission to protect the exposed edge of the sheathing at the roof edge. Homeowners need to be aware ice/water shield and drip edge is a positive element protecting their home. This material will protect the roof deck and soffit over the life of the home, saving the homeowner thousands of dollars.

All Building Code Officials around the state are required to enforce the 2005 Indiana Residential Code. It is not their responsibility to enforce warranty issues above and beyond the Indiana Residential Building Code. Who pays for the ice/water shield and drip edge is a matter of home owner/insurance company discussion.

If you have other questions please contact your Local Building Official or my office.

Thanks

Dean

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a.m.: 20110831-IR-675110254RFA; filed Aug 1, 2014, 11:12 a.m.: 20140827-IR-675130339FRA, eff Dec 1, 2014)

675 IAC 14-4.3-4 Section R301.2; climatic and geographic design criteria
Authority: IC 22-13-2-2; IC 22-13-2-13
Affected: IC 22-12; IC 22-13; IC 22-14; IC 22-15; IC 36-7

Sec. 4. Delete the last sentence of SECTION R301.2. *(Fire Prevention and Building Safety Commission; 675 IAC 14-4.3-4; filed Jun 13, 2005, 3:00 p.m.: 28 IR 3259, eff 90 days after filing with the Secretary of State; readopted filed Aug 4, 2011, 8:35 a.m.: 20110831-IR-675110254RFA)*

675 IAC 14-4.3-5 Sections R301.2.1.1 and R301.2.1.2; design criteria, internal pressure
Authority: IC 22-13-2-2; IC 22-13-2-13
Affected: IC 22-12; IC 22-13; IC 22-14; IC 22-15; IC 36-7

Sec. 5. Delete SECTIONS R301.2.1.1 and R301.2.1.2. *(Fire Prevention and Building Safety Commission; 675 IAC 14-4.3-5; filed Jun 13, 2005, 3:00 p.m.: 28 IR 3259, eff 90 days after filing with the Secretary of State; readopted filed Aug 4, 2011, 8:35 a.m.: 20110831-IR-675110254RFA)*

675 IAC 14-4.3-6 Table R301.2(1); climatic and geographical design criteria
Authority: IC 22-13-2-2; IC 22-13-2-13
Affected: IC 22-12; IC 22-13; IC 22-14; IC 22-15; IC 36-7

Sec. 6. Delete TABLE R301.2(1) and the corresponding footnotes and substitute to read as follows:

TABLE R301.2(1)

No.	County	Wind Speed[1] (MPH)	Seismic Zone[2]	Ground Snow (PSF)	Found-ation[3]	Winter Design Temp	Decay	Termite	Weathering[4]	Ice Shield Under-layment Required	Air Freezing Index	Mean Annual Temp
01	Adams	90	B	20	36	1°	Slight to Moderate	Moderate to Heavy	Severe	Yes	1303	50.9
02	Allen	90	B	20	36	1°	Slight to Moderate	Moderate to Heavy	Severe	Yes	1490	49.9
03	Bartholomew	90	B	20	24	9°	Slight to Moderate	Moderate to Heavy	Severe	No	1083	53.1
04	Benton	90	B	20	36	1°	Slight to Moderate	Moderate to Heavy	Severe	Yes	1350	49.1
05	Blackford	90	B	20	30	2°	Slight to Moderate	Moderate to Heavy	Severe	No	1425	51.4
06	Boone	90	B	20	30	2°	Slight to Moderate	Moderate to Heavy	Severe	No	1401	52.3
07	Brown	90	B	20	24	9°	Slight to Moderate	Moderate to Heavy	Severe	No	1080	53.1
08	Carroll	90	B	20	36	1°	Slight to Moderate	Moderate to Heavy	Severe	Yes	1321	51.7
09	Cass	90	A	20	36	1°	Slight to Moderate	Moderate to Heavy	Severe	Yes	1450	50.3
10	Clark	90	B	20	24	9°	Slight to Moderate	Moderate to Heavy	Severe	No	825	54.7

11	Clay	90	C	20	24	9°	Slight to Moderate	Moderate to Heavy	Severe	No	1175	52.1
12	Clinton	90	B	20	30	2°	Slight to Moderate	Moderate to Heavy	Severe	No	1405	50.7
13	Crawford	90	C	20	24	9°	Slight to Moderate	Moderate to Heavy	Severe	No	750	54.7
14	Daviess	90	C_1	20	24	9°	Slight to Moderate	Moderate to Heavy	Severe	No	743	56.1
15	Dearborn	90	B	20	24	9°	Slight to Moderate	Moderate to Heavy	Severe	No	900	50.5
16	Decatur	90	B	20	24	9°	Slight to Moderate	Moderate to Heavy	Severe	No	1115	52.4
17	Dekalb	90	B	30	36	1°	Slight to Moderate	Moderate to Heavy	Severe	Yes	1389	50.0
18	Delaware	90	B	20	30	2°	Slight to Moderate	Moderate to Heavy	Severe	No	1400	50.8
19	Dubois	90	C	20	24	9°	Slight to Moderate	Moderate to Heavy	Severe	No	770	53.9
20	Elkhart	90	A	30	36	1°	Slight to Moderate	Moderate to Heavy	Severe	Yes	1358	50.5
21	Fayette	90	B	20	30	2°	Slight to Moderate	Moderate to Heavy	Severe	No	1369	51.5
22	Floyd	90	B	20	24	9°	Slight to Moderate	Moderate to Heavy	Severe	No	770	54.7
23	Fountain	90	B	20	30	2°	Slight to Moderate	Moderate to Heavy	Severe	No	1525	51.2
24	Franklin	90	B	20	24	9°	Slight to Moderate	Moderate to Heavy	Severe	No	1174	51.8
25	Fulton	90	A	30	36	1°	Slight to Moderate	Moderate to Heavy	Severe	Yes	1553	49.3
26	Gibson	90	C_1	20	24	9°	Slight to Moderate	Moderate to Heavy	Severe	No	893	55.2
27	Grant	90	B	20	30	2°	Slight to Moderate	Moderate to Heavy	Severe	No	1430	50.3
28	Greene	90	C	20	24	9°	Slight to Moderate	Moderate to Heavy	Severe	No	990	52.9
29	Hamilton	90	B	20	30	2°	Slight to Moderate	Moderate to Heavy	Severe	No	1400	51.5
30	Hancock	90	B	20	30	2°	Slight to Moderate	Moderate to Heavy	Severe	No	1356	51.6
31	Harrison	90	B	20	24	9°	Slight to Moderate	Moderate to Heavy	Severe	No	740	54.7
32	Hendricks	90	B	20	30	2°	Slight to Moderate	Moderate to Heavy	Severe	No	1175	52.3
33	Henry	90	B	20	30	2°	Slight to Moderate	Moderate to Heavy	Severe	No	1432	49.9

34	Howard	90	A	20	30	2°	Slight to Moderate	Moderate to Heavy	Severe	No	1523	49.6
35	Huntington	90	B	20	36	1°	Slight to Moderate	Moderate to Heavy	Severe	Yes	1270	50.4
36	Jackson	90	B	20	24	9°	Slight to Moderate	Moderate to Heavy	Severe	No	1048	52.5
37	Jasper	90	B	30	36	1°	Slight to Moderate	Moderate to Heavy	Severe	Yes	1647	49.6
38	Jay	90	B	20	30	2°	Slight to Moderate	Moderate to Heavy	Severe	No	1400	49.7
39	Jefferson	90	B	20	24	9°	Slight to Moderate	Moderate to Heavy	Severe	No	870	54.7
40	Jennings	90	B	20	24	9°	Slight to Moderate	Moderate to Heavy	Severe	No	789	54.3
41	Johnson	90	B	20	30	2°	Slight to Moderate	Moderate to Heavy	Severe	No	1390	52.0
42	Knox	90	C_1	20	24	9°	Slight to Moderate	Moderate to Heavy	Severe	No	1029	53.4
43	Kosciusko	90	A	30	36	1°	Slight to Moderate	Moderate to Heavy	Severe	Yes	1450	49.0
44	LaGrange	90	A	30	36	1°	Slight to Moderate	Moderate to Heavy	Severe	Yes	1360	47.9
45	Lake	90	B	30	36	1°	Slight to Moderate	Moderate to Heavy	Severe	Yes	1300	49.0
46	LaPorte	90	A	30	36	1°	Slight to Moderate	Moderate to Heavy	Severe	Yes	1395	49.7
47	Lawrence	90	C	20	24	9°	Slight to Moderate	Moderate to Heavy	Severe	No	1115	52.6
48	Madison	90	B	20	30	2°	Slight to Moderate	Moderate to Heavy	Severe	No	1420	50.8
49	Marion	90	B	20	30	2°	Slight to Moderate	Moderate to Heavy	Severe	No	1215	51.8
50	Marshall	90	A	30	36	1°	Slight to Moderate	Moderate to Heavy	Severe	Yes	1424	50.0
51	Martin	90	C	20	24	9°	Slight to Moderate	Moderate to Heavy	Severe	No	849	54.2
52	Miami	90	A	20	36	1°	Slight to Moderate	Moderate to Heavy	Severe	Yes	1425	49.4
53	Monroe	90	C	20	24	9°	Slight to Moderate	Moderate to Heavy	Severe	No	1075	53.1
54	Montgomery	90	B	20	30	2°	Slight to Moderate	Moderate to Heavy	Severe	No	1435	50.1
55	Morgan	90	B	20	30	2°	Slight to Moderate	Moderate to Heavy	Severe	No	1200	51.5
56	Newton	90	B	30	36	1°	Slight to Moderate	Moderate to Heavy	Severe	Yes	1399	50.2

57	Noble	90	A	30	36	1°	Slight to Moderate	Moderate to Heavy	Severe	Yes	1375	49.0
58	Ohio	90	B	20	24	9°	Slight to Moderate	Moderate to Heavy	Severe	No	800	53.0
59	Orange	90	C	20	24	9°	Slight to Moderate	Moderate to Heavy	Severe	No	988	53.0
60	Owen	90	C	20	24	9°	Slight to Moderate	Moderate to Heavy	Severe	No	1224	50.1
61	Parke	90	B	20	30	2°	Slight to Moderate	Moderate to Heavy	Severe	No	1109	53.9
62	Perry	90	C	20	24	9°	Slight to Moderate	Moderate to Heavy	Severe	No	731	55.8
63	Pike	90	C_1	20	24	9°	Slight to Moderate	Moderate to Heavy	Severe	No	810	54.8
64	Porter	90	B	30	36	1°	Slight to Moderate	Moderate to Heavy	Severe	Yes	1396	49.6
65	Posey	90	C_1	20	24	9°	Slight to Moderate	Moderate to Heavy	Severe	No	867	55.4
66	Pulaski	90	A	30	36	1°	Slight to Moderate	Moderate to Heavy	Severe	Yes	1480	49.7
67	Putnam	90	B	20	30	2°	Slight to Moderate	Moderate to Heavy	Severe	No	1121	52.6
68	Randolph	90	B	20	30	2°	Slight to Moderate	Moderate to Heavy	Severe	No	1398	49.9
69	Ripley	90	B	20	24	9°	Slight to Moderate	Moderate to Heavy	Severe	No	820	54.5
70	Rush	90	B	20	30	2°	Slight to Moderate	Moderate to Heavy	Severe	No	1369	51.2
71	St. Joseph	90	A	30	36	1°	Slight to Moderate	Moderate to Heavy	Severe	Yes	1379	49.1
72	Scott	90	B	20	24	9°	Slight to Moderate	Moderate to Heavy	Severe	No	941	53.9
73	Shelby	90	B	20	30	2°	Slight to Moderate	Moderate to Heavy	Severe	No	1393	52.6
74	Spencer	90	C_1	20	24	9°	Slight to Moderate	Moderate to Heavy	Severe	No	710	56.2
75	Starke	90	A	30	36	1°	Slight to Moderate	Moderate to Heavy	Severe	Yes	1425	49.7
76	Steuben	90	A	30	36	1°	Slight to Moderate	Moderate to Heavy	Severe	Yes	1370	47.3
77	Sullivan	90	C_1	20	24	9°	Slight to Moderate	Moderate to Heavy	Severe	No	1090	52.7
78	Switzerland	90	B	20	24	9°	Slight to Moderate	Moderate to Heavy	Severe	No	727	55.7
79	Tippecanoe	90	B	20	30	2°	Slight to Moderate	Moderate to Heavy	Severe	No	1557	50.9

80	Tipton	90	B	20	30	2°	Slight to Moderate	Moderate to Heavy	Severe	No	1420	49.2
81	Union	90	B	20	30	2°	Slight to Moderate	Moderate to Heavy	Severe	No	1350	51.5
82	Vanderburgh	90	C_1	20	24	9°	Slight to Moderate	Moderate to Heavy	Severe	No	581	57.0
83	Vermillion	90	B	20	30	2°	Slight to Moderate	Moderate to Heavy	Severe	No	1100	50.8
84	Vigo	90	C	20	24	9°	Slight to Moderate	Moderate to Heavy	Severe	No	1198	53.1
85	Wabash	90	A	20	36	1°	Slight to Moderate	Moderate to Heavy	Severe	Yes	1536	49.0
86	Warren	90	B	20	30	2°	Slight to Moderate	Moderate to Heavy	Severe	No	1400	51.0
87	Warrick	90	C_1	20	24	9°	Slight to Moderate	Moderate to Heavy	Severe	No	690	56.2
88	Washington	90	B	20	24	9°	Slight to Moderate	Moderate to Heavy	Severe	No	950	54.5
89	Wayne	90	B	20	30	2°	Slight to Moderate	Moderate to Heavy	Severe	No	1383	49.9
90	Wells	90	B	20	36	1°	Slight to Moderate	Moderate to Heavy	Severe	Yes	1295	49.9
91	White	90	B	20	36	1°	Slight to Moderate	Moderate to Heavy	Severe	Yes	1410	50.3
92	Whitley	90	A	20	36	1°	Slight to Moderate	Moderate to Heavy	Severe	Yes	1493	48.8

[1]Wind exposure category shall be determined on a site-specific basis in accordance with SECTION R301.2.1.4.

[2]See SECTION R301.2.2.

[3]Foundation is minimum foundation depth to bottom of footing from the top of the finished grade above the footing in inches.

[4]The grade of masonry units shall be determined from ASTM C34, C55, C62, C73, C90, C129, C216, or C652.

(Fire Prevention and Building Safety Commission; 675 IAC 14-4.3-6; filed Jun 13, 2005, 3:00 p.m.: 28 IR 3259, eff 90 days after filing with the Secretary of State; readopted filed Aug 4, 2011, 8:35 a.m.: 20110831-IR-675110254RFA)

675 IAC 14-4.3-7 Figures R301.2(1), R301.2(2), R301.2(3), R301.2(4), R301.2(5), R301.2(6), R301.2(7), and R301.2(8)

Authority: IC 22-13-2-2; IC 22-13-2-13
Affected: IC 22-12; IC 22-13; IC 22-14; IC 22-15; IC 36-7

Sec. 7. Delete Figures R301.2(1), R301.2(2), R301.2(3), R301.2(4), R301.2(5), R301.2(6), R301.2(7), and R301.2(8). *(Fire Prevention and Building Safety Commission; 675 IAC 14-4.3-7; filed Jun 13, 2005, 3:00 p.m.: 28 IR 3262, eff 90 days after filing with the Secretary of State; readopted filed Aug 4, 2011, 8:35 a.m.: 20110831-IR-675110254RFA)*

675 IAC 14-4.3-8 Table R301.2.1.2

Authority: IC 22-13-2-2; IC 22-13-2-13
Affected: IC 22-12; IC 22-13; IC 22-14; IC 22-15; IC 36-7

Sec. 8. Delete Table R301.2.1.2 and the corresponding footnotes. *(Fire Prevention and Building Safety Commission; 675 IAC 14-4.3-8; filed Jun 13, 2005, 3:00 p.m.: 28 IR 3262, eff 90 days after filing with the Secretary of State; readopted filed Aug*

TABLE R905.2.8.2
VALLEY LINING MATERIAL

MATERIAL	MINIMUM THICKNESS (inches)	GAGE	WEIGHT (pounds)
Cold–rolled copper	0.0216 nominal	—	ASTM B370, 16 oz. per square foot
Lead–coated copper	0.0216 nominal	—	ASTM B101, 16 oz. per square foot
High–yield copper	0.0162 nominal	—	ASTM B370, 12 oz. per square foot
Lead–coated high–yield copper	0.0162 nominal	—	ASTM B101, 12 oz. per square foot
Aluminum	0.024	—	—
Stainless steel	—	28	—
Galvanized steel	0.0179	26 (zinc coated G90)	—
Zinc alloy	0.027	—	—
Lead	—	—	$2^1/_2$
Painted terne	—	—	20

For SI: 1 inch = 25.4 mm, 1 pound = 0.454 kg.

R905.2.8.3 Crickets and saddles. A cricket or saddle shall be installed on the ridge side of any chimney greater than 30 inches (762 mm) wide. Cricket or saddle coverings shall be sheet metal or of the same material as the roof covering.

R905.2.8.4 Sidewall flashing. Flashing against a vertical sidewall shall be by the step-flashing method.

R905.2.8.5 Other flashing. Flashing against a vertical front wall, as well as soil stack, vent pipe and chimney flashing, shall be applied according to asphalt shingle manufacturer's printed instructions.

R905.3 Clay and concrete tile. The installation of clay and concrete shall comply with the provisions of this section. Clay roof tile shall comply with ASTM C1167.

R905.3.1 Deck requirements. Concrete and clay tile shall be installed only over solid sheathing or spaced structural sheathing boards.

R905.3.2 Deck slope. Clay and concrete roof tile shall be installed on roof slopes of two and one-half units vertical in 12 units horizontal ($2^1/_2$:12) or greater. For roof slopes from two and one-half units vertical in 12 units horizontal ($2^1/_2$:12) to four units vertical in 12 units horizontal (4:12), double underlayment application is required in accordance with Section R905.3.3.

R905.3.3 Underlayment. Unless otherwise noted, required underlayment shall conform with ASTM D 226, Type II; ASTM D 2626, Type I; or ASTM D 249 mineral surfaced roll roofing.

R905.3.3.1 Low slope roofs. For roof slopes from two and one-half units vertical in 12 units horizontal ($2^1/_2$:12), up to four units vertical in 12 units horizontal (4:12), underlayment shall be a minimum of two layers underlayment applies as follows:

1. Starting at the eave, a 19-inch (483 mm) strip of underlayment shall be applied parallel with the eave and fastened sufficiently in place.
2. Starting at the eave, 36-inch-wide (914 mm) strips of underlayment felt shall be applied, overlapping successive sheets 19 inches (483 mm), and fastened sufficiently in place.

R905.3.3.2 High slope roofs. For roof slopes of four units vertical in 12 units horizontal (4:12) or greater, underlayment shall be a minimum of one layer of underlayment felt applied shingle fashion, parallel to and starting from the eaves and lapped 2 inches (51 mm), fastened sufficiently in place.

R905.3.3.3 Underlayment and high wind. Underlayment applied in areas subject to high wind [greater than 110 miles per hour (177 km/h) per Figure R301.2(4)] shall be applied with corrosion-resistant fasteners in accordance with manufacturer's installation instructions. Fasteners are to be applied along the overlap not farther apart than 36 inches (914 mm) on center.

R905.3.4 Tile. Clay roof tile shall comply with ASTM C 1167.

R905.3.5 Concrete tile. Concrete roof tile shall comply with ASTM C 1492.

R905.3.6 Fasteners. Nails shall be corrosion-resistant and not less than 11 gage, $^5/_{16}$-inch (10.6 mm) head, and of sufficient length to penetrate the deck a minimum of $^3/_4$ inch (19.1 mm) or through the thickness of the deck, whichever is less. Attaching wire for clay or concrete tile shall not be smaller than 0.083 inch (2.1 mm). Perimeter fastening areas include three tile courses but not less than 36 inches (914 mm) from either side of hips or ridges and edges of eaves and gable rakes.

R905.3.7 Application. Tile shall be applied in accordance with this chapter and the manufacturer's installation instructions, based on the following:

1. Climatic conditions.
2. Roof slope.
3. Underlayment system.
4. Type of tile being installed.

Clay and concrete roof tiles shall be fastened in accordance with this section and the manufacturer's installation instructions. Perimeter tiles shall be fastened with a minimum of one fastener per tile. Tiles with installed weight less than 9 pounds per square foot (0.43 kN/m^2) require a minimum of one fastener per tile regardless of roof slope. Clay and concrete roof tile attachment shall be in accordance with the manufacturer's installation instructions where applied in areas where the wind speed exceeds 100 miles per hour (161 km/h) and on buildings where the roof is located more than 40 feet (12 192 mm) above grade. In areas subject to snow, a minimum of two fasteners per tile is required. In

R905.2.1 Sheathing requirements. Asphalt shingles shall be fastened to solidly sheathed decks.

R905.2.2 Slope. Asphalt shingles shall only be used on roof slopes of two units vertical in 12 units horizontal (2:12) or greater. For roof slopes from two units vertical in 12 units horizontal (2:12) up to four units vertical in 12 units horizontal (4:12), double underlayment application is required in accordance with Section R905.2.7.

R905.2.3 Underlayment. Unless otherwise noted, required underlayment shall conform with ASTM D 226, Type I, or ASTM D 4869, Type I.

Self-adhering polymer modified bitumen sheet shall comply with ASTM D 1970.

R905.2.4 Asphalt shingles. Asphalt shingles shall have self-seal strips or be interlocking, and comply with ASTM D 225 or D 3462.

R905.2.5 Fasteners. Fasteners for asphalt shingles shall be galvanized steel, stainless steel, aluminum or copper roofing nails, minimum 12 gage [0.105 inch (2.67 mm)] shank with a minimum $^3/_8$-inch (9.5 mm) diameter head, ASTM F 1667, of a length to penetrate through the roofing materials and a minimum of $^3/_4$ inch (19.1 mm) into the roof sheathing. Where the roof sheathing is less than $^3/_4$ inch (19.1 mm) thick, the fasteners shall penetrate through the sheathing. Fasteners shall comply with ASTM F 1667.

R905.2.6 Attachment. Asphalt shingles shall have the minimum number of fasteners required by the manufacturer. For normal application, asphalt shingles shall be secured to the roof with not less than four fasteners per strip shingle or two fasteners per individual shingle. Where the roof slope exceeds 20 units vertical in 12 units horizontal (20:12), special methods of fastening are required. For roofs located where the basic wind speed per Figure R301.2(4) is 110 mph (177 km/h) or greater, special methods of fastening are required. Special fastening methods shall be tested in accordance with ASTM D 3161, modified to use a wind speed of 110 mph (177 km/h).

Shingles classified using ASTM D 3161 are acceptable for use in wind zones less than 110 mph. Shingles classified using ASTM D 3161 modified to use a wind speed of 110 mph are acceptable for use in all cases where special fastening is required.

R905.2.7 Underlayment application. For roof slopes from two units vertical in 12 units horizontal (17-percent slope), up to four units vertical in 12 units horizontal (33-percent slope), underlayment shall be two layers applied in the following manner. Apply a 19-inch (483 mm) strip of underlayment felt parallel with and starting at the eaves, fastened sufficiently to hold in place. Starting at the eave, apply 36-inch-wide (914 mm) sheets of underlayment, overlapping successive sheets 19 inches (483 mm), and fastened sufficiently to hold in place. For roof slopes of four units vertical in 12 units horizontal (33-percent slope) or greater, underlayment shall be one layer applied in the following manner. Underlayment shall be applied shingle fashion, parallel to and starting from the eave and lapped 2 inches (51 mm), fastened sufficiently to hold in place. End laps shall be offset by 6 feet (1829 mm).

R905.2.7.1 Ice protection. In areas where the average daily temperature in January is 25°F (-4°C) or less or when Table R301.2(1) criteria so designates, an ice barrier that consists of a least two layers of underlayment cemented together or of a self-adhering polymer modified bitumen sheet, shall be used in lieu of normal underlayment and extend from the eave's edge to a point at least 24 inches (610 mm) inside the exterior wall line of the building.

Exception: Detached accessory structures that contain no conditioned floor area.

R905.2.7.2 Underlayment and high wind. Underlayment applied in areas subject to high winds [greater than 110 mph (177km/h) per Figure R301.2(4)] shall be applied with corrosion-resistant fasteners in accordance with manufacturer's installation instructions. Fasteners are to be applied along the overlap not farther apart than 36 inches (914 mm) on center.

R905.2.8 Flashing. Flashing for asphalt shingles shall comply with this section.

R905.2.8.1 Base and cap flashing. Base and cap flashing shall be installed in accordance with manufacturer's installation instructions. Base flashing shall be of either corrosion-resistant metal of minimum nominal 0.019-inch (0.483 mm) thickness or mineral surface roll roofing weighing a minimum of 77 pounds per 100 square feet (3.76 kg/m^2). Cap flashing shall be corrosion-resistant metal of minimum nominal 0.019-inch (0.483 mm) thickness.

R905.2.8.2 Valleys. Valley linings shall be installed in accordance with manufacturer's installation instructions before applying shingles. Valley linings of the following types shall be permitted:

1. For open valley (valley lining exposed) lined with metal, the valley lining shall be at least 24 inches (610 mm) wide and of any of the corrosion-resistant metals in Table R905.2.8.2.
2. For open valleys, valley lining of two plies of mineral surface roll roofing, complying with ASTM D 249, shall be permitted. The bottom layer shall be 18 inches (457 mm) and the top layer a minimum of 36 inches (914 mm) wide.
3. For closed valleys (valley covered with shingles), valley lining of one ply of smooth roll roofing complying with ASTM D 224 Type II or Type III and at least 36 inches (914 mm) wide or valley lining as described in Items 1 and 2 above shall be permitted. Specialty underlayment complying with ASTM D 1970 may be used in lieu of the lining material.