2016 Code Update Quiz Part 2 of 2

Instructions

1. Print these pages. **Fee $ 35**
2. Answer the Simple questions that follow the mini sections of the code language.
3. Circle the correct answers and transfer the answers to the answer sheets (see last pages).
4. After answering the simple questions you will become familiar with the new code changes.
5. Page down to the last page for the verification form, answer sheets and mailing instructions.

4 course hours for: **Course # 17801**

1. Dwelling Contractor Qualifier Certification.
2. UDC Construction Inspector.

Live Support at 920-381-6714 or tmklinka@hotmail.com

SECTION 58. SPS 321.08 Table 321.08 is amended to read:

SPS 321.08 Table 321.08

Between Dwelling And:	Distance Between Objects[1]	Fire Rated Construction[2,5]
Detached garage, or accessory building on same property	Less than 5 feet	3/4-hour wall[3] 1/3-hour door or window[3]
Another dwelling on same property	Less than 5 feet	3/4-hour wall[4] 1/3-hour door or window[4]
Detached garage, accessory building, or other dwelling on same property	5 to 10 feet	3/4-hour wall[3] ~~No requirement on openings~~ 1/3-hour door or window[3]
Detached garage, accessory building, or other dwelling on same property	More than 10 feet	No requirements
Property Lines	Less than 3 feet	3/4-hour wall 1/3-hour door or window
Property Lines	3 feet or more	No requirements
Zero Lot Line	None	Follow sub. (2) (d) requirements

1. Distance shall be measured perpendicular from wall to wall or property line, ignoring overhangs.
2. Fire rated construction shall protect the dwelling from an exterior fire source.
3. Fire rated construction may be in either facing wall.
4. Fire rated construction shall be in both facing walls.
5. The methods for garage separation in par. (a) 1. are examples of ¾ hour wall construction.

1. Detached garage, accessory building, or other dwelling on same property with 5 to 10 feet Distance Between Objects requires a 1/3 hour _____.
   a. window
   b. door
   c. both a & b
   d. none of the above

2. Detached garage, accessory building, or other dwelling on same property with 5 to 10 feet "Distance Between Objects" requires _____.
   a. Fire rated construction shall protect the dwelling from an exterior fire source
   b. Fire rated construction may be in either facing wall

c. Fire rated construction shall be in both facing walls
d. No requirement on openings

3. Detached garage, accessory building, or other dwelling on same property with 5 to 10 feet "Distance Between Objects" shall be measured _____from wall to wall or property line, ignoring overhangs.
a. parallel
b. perpendicular
c. in a line
d. all of the above

4. Detached garage, accessory building, or other dwelling on same property with 5 to 10 feet "Distance Between Objects" may have the fire rated construction on _____ facing wall.
a. the interior
b. the exterior
c. either
d. all the above

5. Detached garage, accessory building, or other dwelling on same property with 5 to 10 feet "Distance Between Objects" shall have _____ hour wall fire rated construction
a. 1/3
b. 1/2
c. 3/4
d. none of the above

SECTION 59. SPS 321.08 (3) (c) is created to read:

SPS 321.08 (3) (c) *Plastic Piping*. Penetrations of a required separation by plastic pipe shall be protected by a penetration firestop system approved by the department and installed as tested in accordance with ASTM E 814 or UL 1479, with a minimum positive pressure differential of 0.01 inch of water (3 pa), and shall have an F rating of not less than the required fire-resistance rating of the assembly penetrated.

SECTION 60. SPS 321.09 (2) (a) (Note) is created to read:

SPS 321.09 (2) (a) **Note:** Wireless interconnectivity is permitted under this paragraph.

SECTION 61. SPS 321.10 (2) (f) is renumbered SPS 321.10 (2) (f) 1.

SECTION 62. SPS 321.10 (2) (f) 2. is created to read:

SPS 321.10 (2) (f) 2. Siding and sheathing in contact with concrete or masonry and within 2 inches above an impervious surface.

SECTION 63. SPS 321.12 is renumbered SPS 321.12 (1) and amended to read:

SPS 321.12 (1) GRADE. The finished grade of the soil shall slope away from the dwelling at a rate of at least ~~½ inch~~ ½ inch per foot for ~~a minimum distance of~~ at least 10 feet~~, or to the lot line, whichever is less~~ except as provided in subs. (2) and (3).

SECTION 64. SPS 321.12 (title), (2), and (3) are created to read:

SPS 321.12 (title) **Drainage.**

(2) OTHER SURFACES. Where the finished surface is impervious, it shall slope away from the dwelling for at least 10 feet at a rate that ensures equivalent drainage.

(3) OBSTRUCTIONS. Where lot lines, walls, slopes, or other barriers prevent having the 10-foot distance in sub. (2), swales or other means shall be provided to ensure equivalent drainage away from the dwelling.

6. Penetrations of a required separation by plastic pipe shall be protected by a penetration firestop system approved by the department and installed as tested in accordance with _____.

a. ASTM E 814
b. UL 1479
c. both a or b
d. none of the above

7. The finished grade of the soil shall slope away from the dwelling at a rate of at least ___inch per foot for at least 10 feet.

a. 1/4
b. 3/8
c. 1/2
d. 3/4

8. 8. SPS 321.09 (2) (a) Smoke detectors. Note**:** Wireless interconnectivity is _____ under this paragraph.

a. may be allowed
b. not permitted
c. permitted
d. none of the above

SECTION 65. SPS 321.125 (3) (a) 2. is amended to read:

SPS 321.125 (3) (a) 2. Seven and ½ tons per acre per year where silt, silty clay loam, or silt loam textures are exposed.

SECTION 66. SPS 321.125 (3) (a) 2. (Note) and (b) are repealed.

SECTION 67 SPS 321.126 is repealed.

SECTION 68. SPS 321.15 (1) (e) is renumbered SPS 321.15 (1) (e) 1. and amended to read:

SPS 321.15 (1) (e) 1. Structures supported on floating slabs or similar shallow foundations may not be physically attached to structures that are supported by footings that extend below the frost line unless an isolation joint is used between the structures, except as provided in subd. 2. This isolation shall extend for the full height of the structure.

SECTION 69. SPS 321.15 (1) (e) 2. is created to read:

SPS 321.15 (1) (e) 2. Exterior ramps are not required to comply with subd. 1.

SECTION 70. SPS 321.16 (1) (a) is amended to read:

SPS 321.16 (1) (a) ~~Except as allowed under sub. (2), footings~~ Footings and foundations, including those for ~~ramps~~ landings and stoops, shall be placed below the frost penetration level or at least 48 inches below adjacent grade, whichever is deeper, except as allowed under sub. (2).

SECTION 71. SPS 321.16 (2) (d) is created to read:

SPS 321.16 (2) (d) Subsection (1) (a) does not apply to the footing for a ramp and its handrail posts unless the ramp abuts a frost-protected stoop or landing, in which case only the footing for that abutting end of the ramp is required to have the frost protection under sub. (1) (a), such as by bearing onto the stoop or landing, so that a tripping hazard is not created.

9. Footings and foundations, including those for _____, shall be placed below the frost penetration level or at least 48 inches below adjacent grade, whichever is deeper.
   a. ramps
   b. landings
   c. stoops
   d. both b & c

10. The above question does not apply to the footing for a _____ unless the ramp abuts a frost-protected stoop or landing.
   a. ramp
   b. ramp handrail posts
   c. both a & b
   d. none of the above

11. Ramp footings that abut a frost-protected stoop or landing, the abutting end of the ramp is required to have the frost protection under sub. (1) (a), such as by bearing onto the stoop or landing, so that a _____ is not created.
   a. spring board
   b. drop off
   c. tripping hazard
   d. all of the above

12. Structures supported on floating slabs or similar shallow foundations shall be physically attached to structures that are supported by footings that extend below the frost.
   a. true
   b. false

13. Structures supported on floating slabs or similar shallow foundations may use an isolation joint between the structures. This isolation shall extend for the full _____ of the structure.
   a. width
   b. length
   c. height
   d. none of the above

SECTION 72. SPS 321.18 (1) (c) 3. a. is amended to read:

SPS 321.18 (1) (c) 3. a. Structural steel anchor bolts, at least ½ inch in diameter, embedded at least 7 inches into the ~~[concrete or]~~ concrete or grouted masonry with a maximum spacing of 72 inches and located within 18 inches of wall corners.

SECTION 73. SPS 321.18 (1) (c) 3. d. is created to read:

SPS 321.18 (1) (c) 3. d. Alternate foundation anchorage, designed and spaced in accordance with structural analysis and as required to provide equivalent anchorage to the requirements of subd. 3a., is allowable.

SECTION 74. SPS 321.18 (1) (d) 2. c. is amended to read:

SPS 321.18 (1) (d) 2. c. Fastening of the blocking or bridging shall be in accordance with structural analysis or the fastener ~~table printed~~ schedule in ~~the appendix~~ ~~to this code~~ Table 321.02-2.

SECTION 75. SPS 321.18 (1) (d) 2. c. (Note) is created to read:

14. Alternate foundation anchorage, designed and spaced in accordance with _____ and as required to provide equivalent anchorage to the requirements of subd. 3a., is allowable.
    a. common sense
    b. load imposed
    c. structural analysis
    d. all of the above
15. Fastening of the blocking or bridging shall be in accordance with structural analysis or the fastener schedule in _____.
    a. the appendix
    b. Table 321.02-2
    c. the printed table
    d. none of the above
16. Structural steel anchor bolts, at least ___ inch in diameter.
    a. 3/8
    b. 7/16
    c. 1/2
    d. 5/8
17. Structural steel anchor bolts shall be embedded at least __inches into the concrete or grouted masonry.
    a. 6
    b. 7
    c. 8
    d. 12
18. Structural steel anchor bolts shall be placed with a maximum spacing of ___ inches apart.
    a. 60
    b. 70
    c. 72
    d. 48
19. Structural steel anchor bolts shall be located within ___ inches of wall corners.
    a. 12
    b. 16
    c. 18
    d. 6

SPS 321.18 (1) (d) 2. c. **Note:** The floor-framing elements required in this section are intended to provide lateral support to the top of the foundation wall. See s. SPS 321.22 (9) for further requirements relating to floor framing, including for bridging of floor framing to provide restraint against rotation or lateral displacement of the floor framing.

SECTION 76. SPS 321.18 (4) is amended to read:

SPS 321.18 (4) WOOD FOUNDATIONS. Wood foundations shall be designed and constructed in accordance with the wood-foundation standard adopted in Table ~~320.24-2~~ 320.24-6m.

SECTION 77. SPS 321.22 (9) (a) (Note) and (b) (Note) and (10) and (10) (Notes) are created to read:

SPS 321.22 (9) (a) **Note:** This 4:1 ratio means bridging is required for wood-framed floors having nominal 2X10 or deeper solid-sawn-lumber joists, to provide restraint against rotation or lateral displacement.

(b) **Note:** See s. SPS 321.18 (1) (d) for further requirements relating to floor framing, including for bridging or blocking of floor framing to provide lateral support to the top of foundation walls.

20. The floor-framing elements required in this section are intended to provide lateral support to the ____ of the foundation wall.
    a. bottom
    b. center
    c. top
    d. mid-point
21. Wood foundations shall be designed and constructed in accordance with the wood-foundation standard adopted in Table _____.
    a. 320.24-2
    b. 320.24-6m.
    c. both a & b
    d. none of the above
22. This 4:1 ratio means bridging is required for wood-framed floors having nominal _____ or deeper
    a. 2 x 6
    b. 2 x 8
    c. 2 x 10
    d. all of the above
23. Bridging is required for solid-sawn-lumber joists, to provide restraint _____.
    a. against rotation
    b. lateral displacement
    c. both a & b
    d. none of the above

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(10) SILL PLATES. All of the following requirements apply to a sawn-lumber sill plate with uniform loading that is partially extended beyond the load-bearing surface of a foundation wall in order to put the exterior surface of an upper-lying wall flush with or beyond the exterior surface of insulation that is placed on the outside of the foundation wall:

(a) The center of any anchor bolt shall be set back from the side edge of the sill plate by a distance of at least 4 times the diameter of the bolt.

(b) The thickness of the concrete or mortar cover around any anchor bolt shall comply with ACI 318 section 7.7.

Note: Under ACI 318 section 7.7, the minimum cover for a 5/8-inch-diameter or smaller bolt is 1 1/2 inches.

(c) With wood floor joists that are parallel to the foundation wall, the sill plate may not extend beyond the load-bearing surface of the wall by more than one-half of the nominal thickness of the joist that bears on the sill plate.

Note: As used throughout this chapter and in the standards that the chapter incorporates by reference, the shorter side of the cross-sectional area of a wood member is the thickness of the member. The longer side

of the cross-sectional area is the depth, when the longer side is vertical; and it is the width when the longer side is horizontal.

Note: Under sub. (6), wood floor joists that are perpendicular to the foundation wall can extend beyond the foundation wall by a distance of up to the depth of the joist.

Note: Subsection (1) (d) requires a full-width sill plate for floor joists over open-core masonry uints.

24. With wood floor joists that are parallel to the foundation wall, the sill plate may not extend beyond the load-bearing surface of the wall by more than ____ of the nominal thickness of the joist that bears on the sill plate.
    a. 1/3
    b. 3/8
    c. 1/2
    d. 3/4
25. The center of any anchor bolt shall be set back from the side edge of the sill plate by a distance of at least ___ times the diameter of the bolt.
    a. 2
    b. 3
    c. 4
    d. 5
26. The thickness of the _____ cover around any anchor bolt shall comply with ACI 318 section 7.7.
    a. concrete
    b. mortar
    c. both a & b
    d. none of the above
27. Under ACI 318 section 7.7, the minimum cover for a 5/8-inch-diameter or smaller bolt is ____ inches.
    a. 1
    b. 1 1/2
    c. 2
    d. 3
28. Subsection (1) (d) requires a full-width sill plate for floor joists over _____-core masonry units.
    a. closed
    b. filled
    c. open
    d. all of the above

SECTION 78. SPS 321.24 (3) (e) and (Note) and (f) and (Note) are created to read:
SPS 321.24 (3) (e) For a roof that intersects with an upper-lying head wall and rake wall, such as where a dormer is provided, the vertical metal flashing along the rake wall shall extend down the roof at least one-half inch past the vertical flashing on the head wall.

Note: A head wall as addressed in this paragraph intersects a sloping roof at a horizontal line along the top of a roof segment. A rake wall intersects a sloping roof along the side of a roof segment.

(f) For a roof eave that intersects with a sidewall, the end of the roof flashing shall be installed so that it diverts water away from the sidewall and onto the roof or into the gutter.
Note: See s. SPS 321.26 (8) for further requirements relating to flashing for masonry.

29. A head wall as addressed in this paragraph intersects a sloping roof at a _____ line along the top of a roof segment.
    a. vertical
    b. parallel
    c. horizontal
    d. side
30. A rake wall intersects a sloping roof along the _____ of a roof segment.
    a. vertical
    b. parallel
    c. horizontal
    d. side
31. For a roof that intersects with an upper-lying head wall and rake wall, such as where a dormer is provided, the vertical metal flashing along the rake wall shall extend down the roof at least ____ inch past the vertical flashing on the head wall.
    a. 1/4
    b. 3/8
    c. 1/2
    d. 5/8

SECTION 79. SPS 321.25 (2m) is created to read:

SPS 321.25 (2m) BOTTOM PLATES. (a) *Masonry foundation walls with open top course.* 1. Where a masonry foundation wall has an open top course, a bottom plate at least as wide as the foundation wall shall be fastened to the foundation.

2. Where anchor bolts are used on a masonry foundation wall with an open top course, the minimum width of an individual piece making up the bottom plate shall be at least 5 1/2 inches.

Note: A sill plate can be made of multiple pieces to achieve the full width.

(b) *Extension beyond the bearing surface.* All of the following requirements apply to a sawn-lumber sill plate with uniform loading that is partially extended beyond the load-bearing surface of a foundation wall in order to put the exterior surface of an upper-lying wall flush with or beyond the exterior surface of insulation which is placed on the outside of the foundation wall:

1. The center of any anchor bolt shall be set back from the side edge of the sill plate by a distance of at least 4 times the diameter of the bolt.

2. The thickness of the concrete or mortar cover around any anchor bolt shall comply with ACI 318 section 7.7.

Note: Under ACI 318 section 7.7, the minimum cover for a 5/8-inch-diameter or smaller bolt is 1 1/2 inches.

3. Where a stud wall bears directly on a double bottom plate, the plate may not extend more than 1 1/2 inches beyond the load-bearing surface of the foundation wall.

4. Where a stud wall bears directly on a single bottom plate, the plate may not extend more than 1 inch beyond the load-bearing surface of the foundation wall.

32. Where anchor bolts are used on a masonry foundation wall with an open top course, the minimum width of an individual piece making up the bottom plate shall be at least ____ inches.
    a. 4
    b. 5
    c. 5 1/2
    d. 6
33. A sill plate can be made of _____ to achieve the full width.
    a. a single piece
    b. multiple pieces
    c. both a & b
    d. none of the above
34. Where a masonry foundation wall has an open top course, a bottom plate at least as wide as the foundation wall shall be _____ to the foundation.
    a. adjacent
    b. fastened
    c. below
    b. none of the above
35. Where a stud wall bears directly on a _____ bottom plate, the plate may not extend more than 1 1/2 inches beyond the load-bearing surface of the foundation wall.
    a. single
    b. double
    c. triple
    d. all of the above
36. Where a stud wall bears directly on a _____ bottom plate, the plate may not extend more than 1 inch beyond the load-bearing surface of the foundation wall.
    a. single
    b. double
    c. triple
    d. all of the above

SECTION 80. SPS 321.25 (3) (intro.), (a), and (b) are renumbered SPS 321.25 (3) (am), (bm), and (cm).

SECTION 81. SPS 321.25 (3) (am) (title) is created to read:

SPS 321.25 (3) (am) (title) *Headers.*

SECTION 82. SPS 321.25 Table 321.25–A footnote d, Table 321.25–I (title), and Table 321.25–J (title) are amended to read:

SPS 321.25 Table 321.25–A footnote [d] ~~Unless supported by structural analysis, use~~ Use of stud heights that range from over 10 feet to 12 feet ~~is limited to where all of the following conditions are met: snow loads do not exceed 25 psf; tributary dimensions for floors and roofs do not exceed 6 feet; spans for floors and roofs do not exceed 12 feet; eave projections do not exceed 2 feet; the bending modulus of elasticity is at least 1,600,000 lbf per square inch; the allowable fiber stress in bending for the wood is not less than 1310 psi as determined by multiplying the AF&PA NDS tabular base design value by the repetitive use factor, and by the size factor for all species except southern pine; utility, standard, stud, and No. 3 grade lumber of any species is not used; and the~~ for bearing and exterior nonbearing walls is prohibited unless supported by structural analysis. The allowable deflection ~~does~~ may not exceed whichever of the following are applicable:
Interior walls and partitions — span height/180.

Exterior walls with plaster or stucco finish — span height/360. Exterior walls with other brittle finishes — span height/240. Exterior walls with flexible finishes — span height/120.
Exterior walls with interior gypsum wallboard finish — span height/180. Any manufacturer-specified limits for any included windows or doors.

37. Use of stud heights that range from over 10 feet to 12 feet for bearing and exterior nonbearing walls is prohibited unless supported by _____.
    a. local enforcement
    b. common sense
    c. structural analysis
    d. all of the above
38. The allowable deflection may not exceed whichever of the following are applicable: Interior walls and partitions — span height/_____.
    a. 120
    b. 180
    c. 240
    d. 360
39. The allowable deflection may not exceed whichever of the following are applicable: Exterior walls with plaster or stucco finish — span height/____.
    a. 120
    b. 180
    c. 240
    d. 360
40. The allowable deflection may not exceed whichever of the following are applicable: Exterior walls with other brittle finishes — span height/_____.
    a. 120
    b. 180
    c. 240
    d. 360
41. The allowable deflection may not exceed whichever of the following are applicable: Exterior walls with flexible finishes — span height/____.
    a. 120
    b. 180
    c. 240
    d. 360
42. The allowable deflection may not exceed whichever of the following are applicable: Exterior walls with interior gypsum wallboard finish — span height/_____.
    a. 120
    b. 180
    c. 240
    d. 360
43. The allowable deflection for included windows or doors would be _____.
    a. 120
    b. Any manufacturer-specified limits
    c. 240
    d. 180

Table 321.25–I (Title)
REQUIRED NUMBER OF INTERMITTENT BRACED WALL PANELS ON WALLS PARALLEL TO EACH RECTANGLE SIDE AT EACH FLOOR LEVEL[a,b,c,d,e,f,h,j]

Table 321.25–J (Title)
REQUIRED LENGTH OF CONTINUOUS BRACING ON WALLS PARALLEL TO EACH RECTANGLE SIDE AT EACH FLOOR LEVEL[a,b,c,d,e,g,h,j]

SECTION 83. SPS 321.25 Table 321.25–I footnote j and Table 321.25–J footnote j are created to read:

SPS 321.25 Table 321.25–I footnote j Any floor, habitable or otherwise, that is contained wholly within the roof rafters or roof trusses is exempt from being considered a floor for purposes of determining wall bracing if the top-of-wall-to-ridge height does not exceed 20 feet and if no opening in the roof exceeds 48 inches in height.

Table 321.25–J footnote j Any floor, habitable or otherwise, that is contained wholly within the roof rafters or roof trusses is exempt from being considered a floor for purposes of determining wall bracing if the top-of-wall-to-ridge height does not exceed 20 feet and if no opening in the roof exceeds 48 inches in height.

44. Any floor, habitable or otherwise, that is contained wholly within the roof rafters or roof trusses is exempt from being considered a floor for purposes of determining wall bracing if the top-of-wall-to-ridge height does not exceed ___ feet and.
    a. 15
    b. 18
    c. 20
    d. none of the above
45. Continuing the question above: and if no opening in the roof exceeds ___ inches in height.
    a. 30
    b. 36
    c. 42
    d. 48

SECTION 84. SPS 321.25 (8) (a) (Note) [2] is created to read:

SPS 321.25 (8) (a) **(Note)** [2]: For a walk-out basement where some of the walls are concrete and other walls or portions thereof are wood-framed, the Department considers a minimum 8-inch- nominal-thickness poured-in-place concrete basement wall as being equivalent in lateral load and shear resistance to any of the allowable wood-framed wall bracing materials. To determine the required bracing for a walk-out basement, first draw a rectangle around the entire floor plan and projections as if all of the walls are wood-framed. Determine the required bracing amounts per the chosen bracing material and method and then locate the bracing to meet the requirements of Figure 321.25-C. Any required braced wall panel locations that occur on a wall or portion of a wall that is actually of poured-in-place concrete construction is considered equivalent, and that amount of bracing will count towards the minimum required amount and will not need to be provided in another location on that rectangle side.

SECTION 85. SPS 321.26 (8) (Note) is created to read:

SPS 321.26 (8) Note: See s. SPS 321.24 (3) for further requirements relating to flashing for masonry.

SECTION 86. SPS 321.27 (4) (d) is amended to read:

SPS 321.27 (4) (d) *Bearing.* The required bearing for wood rafters shall be in accordance with the NDS adopted in Table ~~320.24-2~~ 320.24-6m, except in no case shall the bearing be less than 1½ inches on wood or metal or less than 3 inches on masonry or concrete.

46. The Department considers a minimum 8-inch- nominal-thickness poured-in-place concrete basement wall as being equivalent in _____ to any of the allowable wood-framed wall bracing materials
    a. lateral load
    b. shear resistance
    c. both a & b
    d. none of the above
47. Any required braced wall panel locations that occur on a wall or portion of a wall that is actually of poured-in-place concrete construction is considered _____.
    a. inadequate
    b. equivalent
    c. a fail safe
    d. none of the above
48. Required bearing for wood rafters in no case shall the bearing be less than ___ inches on wood.
    a. 1
    b. 1½
    c. 2
    d. 3
49. Required bearing for wood rafters in no case shall the bearing be less than ___ inches on masonry or concrete.
    a. 1
    b. 1½
    c. 2
    d. 3

SECTION 87. SPS 321.28 (3) (a) 2. is amended to read:

SPS 321.28 (3) (a) 2. Each shingle package shall be labeled by the manufacturer to indicate conformance to the applicable ASTM standard for each type of shingle or the exception in par. ~~(c)~~ (b).

SECTION 88. SPS 321.28 (3) (a) 6. is created to read:

SPS 321.28 (3) (a) 6. All fasteners for shingles shall be corrosion-resistant. SECTION 89. SPS 321.28 (3) (a) (Note) [2] and (b) are repealed
SECTION 90. SPS 321.28 (7) (c) is renumbered to (7) (c) (intro.) and 1. and amended to read:

SPS 321.28 (7) (c) *Flashing of closed valleys.* Where shingles are laced or woven over the valley, the valley shall be flashed with ~~at~~ one of the following:

1. At least one layer of 50-pound roofing, at least 20 inches wide, over a layer of number 15 roofing underlayment.

SECTION 88. SPS 321.28 (7) (c) 2. is created to read:

2. A product labeled as meeting the requirements of ASTM D1970. SECTION 91. SPS 322.01 (3) is renumbered SPS 322.01 (3) (a).

50. All fasteners for shingles shall be _____.
    a. coated
    b. preserved
    c. corrosion-resistant
    d. none of the above

SPS 322.01 (3) (b) is created to read:

SPS 322.01 (3) (b) The vapor retarder requirements under s. SPS 322.38 do not apply to an unheated space, such as an attached, unheated garage.

SECTION 93. SPS 322.01 (3) (Note) is repealed.

SECTION 94. SPS 322.21 (3) (b) is amended to read:

SPS 322.21 (3) (b) The protective covering shall cover the exposed exterior insulation and extend a minimum of 2 inches below grade, except the covering is not required below a brick ledge.

SECTION 95. SPS 322.31 Table 322.31–1 is amended to read:

51. The protective covering shall cover the exposed exterior insulation and extend a minimum of ____ inches below grade.
    a. 2
    b. 4
    c. 6
    d. 8

52. The protective covering shall cover the exposed exterior insulation including the covering required below a brick ledge.
    a. true
    b. false

53. The vapor retarder requirements under s. SPS 322.38 do not apply to an _____ space, such as an attached, unheated garage.
    a. tempered
    b. heated
    c. unheated
    d. all of the above

SECTION 95. SPS 322.31 Table 322.31–1 is amended to read:

TABLE 322.31-1
INSULATION AND FENESTRATION REQUIREMENTS BY COMPONENT[a] a

Zone	Fenestration U-Factor	Skylight U-Factor	Ceiling R-Value	Wood Frame Wall R-Value	Mass Wall R-Value[i] i	Floor R-Value	Basement ~~or Crawl Space~~ Wall R-Value[b] b	Crawl Space Wall R-Value[b] b	Heated Slab R-Value[c] c	Unheated Slab R-Value[d] d
1	0.35	0.60	49[e] e	~~19[f]~~ 20[f] f or 13+5[g] g	15/19	30[h] h	~~10/13~~ 15/19	10/13	10/15	10
2	0.35	0.60	49[e] e	21[f] f	19/21	~~30[h]~~38[h] h	~~10/13~~ 15/19	10/13	10/15	10

a. R−values are minimums. U−factors are maximums.
b. The first R−value applies to continuous insulation. The second R−value applies to framing cavity insulation. Either insulation meets the requirement.
c. The first R−value applies under the entire slab, regardless of depth below grade. The second R−value applies to the slab edge where the bottom of the slab is less than 12 inches below adjacent grade. Slab edge insulation shall extend downward from the top of the slab for a minimum of 48 inches or downward to at least the bottom of the slab and then horizontally to the interior or exterior for a minimum total distance of 48 inches. Also, see s. SPS 321.16 for protection against frost for slabs with supports less than 4 feet below grade.
d. The R−value applies to any slab, the bottom of which is less than 12 inches below adjacent grade. Also, see s. SPS 321.16 for protection against frost for slabs with supports less than 4 feet below grade.
e. See s. SPS 322.32 (1) for application and permitted reduced R−value.
f. R-19 R-20 and R-21 may be compressed into a 2X6 cavity.
g. "13+5" means R−13 cavity insulation plus R−5 insulated sheathing. If structural sheathing covers 25% or less of the exterior, insulating sheathing is not required where structural sheathing is used. If structural sheathing covers more than 25% of the exterior, structural sheathing shall be covered with insulated sheathing of at least R−2.
h. Or insulation sufficient to fill the framing cavity with a minimum of R−19.
i. The second R-value applies when more than half of the insulation is on the interior of the mass wall.

54. Heated Slab R-Value. The first R−value applies to the:
    a. under the entire slab, regardless of depth below grade
    b. slab edge where the bottom of the slab is less than 12 inches below adjacent grade
    c. both a & b
    d. none of the above
55. 4. Heated Slab R-Value. The second R−value applies to:
    a. under the entire slab, regardless of depth below grade
    b. slab edge where the bottom of the slab is less than 12 inches below adjacent grade
    c. both a & b
    d. none of the above
56. Heated Slab R-Value. The first R−value would be _____.
    a. 10
    b. 13
    c. 15
    d. 19
57. Heated Slab R-Value. The second R−value would be _____.

a. 10
b. 13
c. 15
d. 19

58. Unheated Slab R-Value. The R−value applies to any slab, the bottom of which is less than ___ inches below adjacent grade.
a. 6
b. 8
c. 12
d. 4

59. Unheated Slab R-Value. Also, see s. SPS 321.16 for protection against frost for slabs with supports less than ____ feet below grade.
a. 6
b. 8
c. 12
d. 4

60. Unheated Slab R-Value. The minimum R-value for an unheated slab which is less than 12 inches below adjacent grade would require R ____?
a. 10
b. 13
c. 15
d. 19

61. Minimum ceiling R-value in zone 2 would require R ____.
a. 49
b. 30
c. 38
d. 21

62 Minimum wood frame wall R-value in zone 2 would require R _____.
a. 49
b. 30
c. 38
d. 21

63. R-____ may be compressed into a 2x6 cavity in a wood frame wall.
a. 25
b. 20
c. 21
d. both b & c

64. Minimum wood frame wall R-value. 13+5 means _____.
a. R−13 cavity insulation
b. R−5 insulated sheathing
c. both a & b
d. none of the above

65. Minimum 13+5 wood frame wall R-value. If structural sheathing covers _____ % or less of the exterior, insulating sheathing is not required where structural sheathing is used.
a. 10
b. 15
c. 20
d. 25

66. Minimum 13+5 wood frame wall R-value. If structural sheathing covers more than 25% of the exterior, structural sheathing shall be covered with insulated sheathing of at least R−____.
    a. 2
    b. 3
    c. 4
    d. 5
67. Minimum Floor R-value would be _____.
    a. R-30 for zone 1
    b. R-38 for zone 2
    c. Or insulation sufficient to fill the framing cavity with a minimum of R−19
    d. all of the above
68. See s. SPS _____ for application and permitted reduced R−value.
    a. 322.31 (1)
    b. 322.32 (1)
    c. 322.33 (1)
    d. none of the above
69. Minimum crawl space wall R-Value in zone 1 would be _____.
    a. R-10 continuous insulation
    b. R-13 framing cavity insulation
    c. both a & b
    d. none of the above
70. Minimum crawl space wall R-Value in zone 2 would be _____.
    a. R-13 continuous insulation
    b. R-10 framing cavity insulation
    c. both a & b
    d. none of the above
71. R−values are minimums and U−factors are maximums for the above table.
    a. true
    b. false
22. The _____R-value applies when more than half of the insulation is on the interior of the mass wall.
    a. first
    b. second
    c. both
    d. none of the above
73. The second R-value for a mass wall in zone 2 would be _____.
    a. 15
    b. 19
    c. 21
    d. none of the above
74. TABLE 322.31-1. INSULATION AND FENESTRATION REQUIREMENTS BY _____.
    a. alterative methods
    b. component
    c. U-factors
    d. R-values

SECTION 96. SPS 322.31 Table 322.31–2 is amended to read:

TABLE 322.31-2
EQUIVALENT U-FACTORS

Zone	Fenestration U-Factor	Skylight U-Factor	Ceiling U-Factor	Wood Frame Wall U-Factor	Mass Wall U-Factor	Floor U-Factor	Basement Wall U-Factor	Crawl Space Wall U-Factor	Unheated Slab U-Factor
1	0.35	0.60	0.026	~~0.060~~ 0.057	0.060[a] a	0.033	~~0.065~~ 0.050	0.065	10
2	0.35	0.60	0.026	0.057	0.057[a] a	~~0.033~~ 0.028	~~0.065~~ 0.050	0.065	10

a When more than half the insulation is on the interior, the mass wall U-factors shall be the same as the frame wall U-factor.

75. TABLE 322.31-2. EQUIVALENT _____.

a. alterative methods
b. component
c. U-factors
d. R-values

76. When more than half the insulation is on the _____, the mass wall U-factors shall be the same as the frame wall U-factor.

a. exterior
b. mid-point
c. interior
d. none of the above

SECTION 97. SPS 322.31 Table 322.31–4 is amended to read:

TABLE 322.31-4
COMPONENT DWELLING THERMAL ENVELOPE REQUIREMENTS FOR DWELLINGS USING LOWER EFFICIENCY APPLIANCES[a] a

Fenestration U-Factor	Skylight U-Factor	Ceiling R-Value	Wood Frame Wall R-Value	Mass Wall R-Value	Floor R-Value	Basement or Crawl Space Wall b R-Value[b]	Heated Slab R-Value[c] c	Unheated Slab R-Value[d] d
0.30	0.60	49[e] e	21[f] or f 19+5[g] g	19	30[h] h	15/19	10/20	15
Equivalent U-Factors								
0.30	0.60	~~0.26*~~ 0.026	0.057	0.057	0.033	0.045	0.033	0.047

* **Note:** The correct number is .026. An error was discovered in the rule order after completion of the rule−making process.

a. R−values are minimums. U−factors are maximums.

b. The first R−value applies to continuous insulation. The second R−value applies to framing cavity insulation.

c. The first R−value applies under the entire slab, regardless of depth below grade. The second R−value applies to the slab edge. Slab edge insulation shall extend downward from the top of the slab for a

minimum of 48 inches or downward to at least the bottom of the slab and then horizontally to the interior or exterior for a minimum total distance of 48 inches.
d. The R−value applies to the slab perimeter insulation, where the bottom of the slab is less than 12 inches below adjacent grade. Slab edge insulation shall extend downward from the top of the slab for a minimum of 48 inches or downward to at least the bottom of the slab and then horizontally to the interior or exterior for a minimum total distance of 48 inches. Also, see s. SPS 321.16 for protection against frost for slabs with supports less than 4 feet below grade.
e. See s. SPS 322.32 (1) for application and permitted reduced R−value.
f. R−21 may be compressed into a 2X6 cavity.
g. "19+5" means R−19 cavity insulation plus R−5 insulated sheathing. If structural sheathing covers 25% or less of the exterior, insulating sheathing is not required where structural sheathing is used. If structural sheathing covers more than 25% of the exterior, structural sheathing shall be covered with insulated sheathing of at least R−2.
h. Or insulation sufficient to fill the framing cavity with a minimum of R−19.

77. TABLE 322.31-4. COMPONENT DWELLING THERMAL ENVELOPE REQUIREMENTS FOR DWELLINGS USING _____ EFFICIENCY APPLIANCES.
a. higher
b. mid-grade
c. lower
d. none of the above

78. The minimum U-value for a ceiling would be _____.
a. 0.26
b. 0.026
c. 0.0026
d. none of the above

SECTION 98. SPS 322.31 Table 322.31–4 (Note) is repealed:

SECTION 99. SPS 322.31 (2) (b) (Note) is amended to read:
SPS 322.31 (2) (b) Note: (b) *Software version.* If a REScheck software program is used to show compliance with this section, a version approved by the department shall be used.
Note: The IECC 2009 version of REScheck meets the thermal envelope requirements of this code.

79. The _____ version of REScheck meets the thermal envelope requirements of this code.
a. 4.2.2
b. 4.6.1 Wisconsin 2009 Code
c. IECC 2009 (International Energy Conservation Code)
d. none of the above

Wisconsin "Uniform Dwelling Code" REScheck software guidance
Energy Code Compliance will still need to be completed for homes permitted starting January 1,2016 and the REScheck software is the most commonly used method used to demonstrate that Compliance. REScheck is by definition the "Total UA Tradeoff" method which allows you to 'trade off' thermal values from one component to another. This is what makes it so popular and practical. Most of us are reasonably familiar with the workings and process related to running a Compliance report using REScheck.
Since the Wisconsin Energy Code effective January 1, 2016 has increased the "Prescriptive Table

Reference Values", the trade off method with REScheck will be even more valuable. As you can see from Table 322.31-1 the most significant change occurs with Basements. These R-values come directly from the 2009 International Energy Conservation Code (IECC) which moves Wisconsin similar to the 2009 IECC.

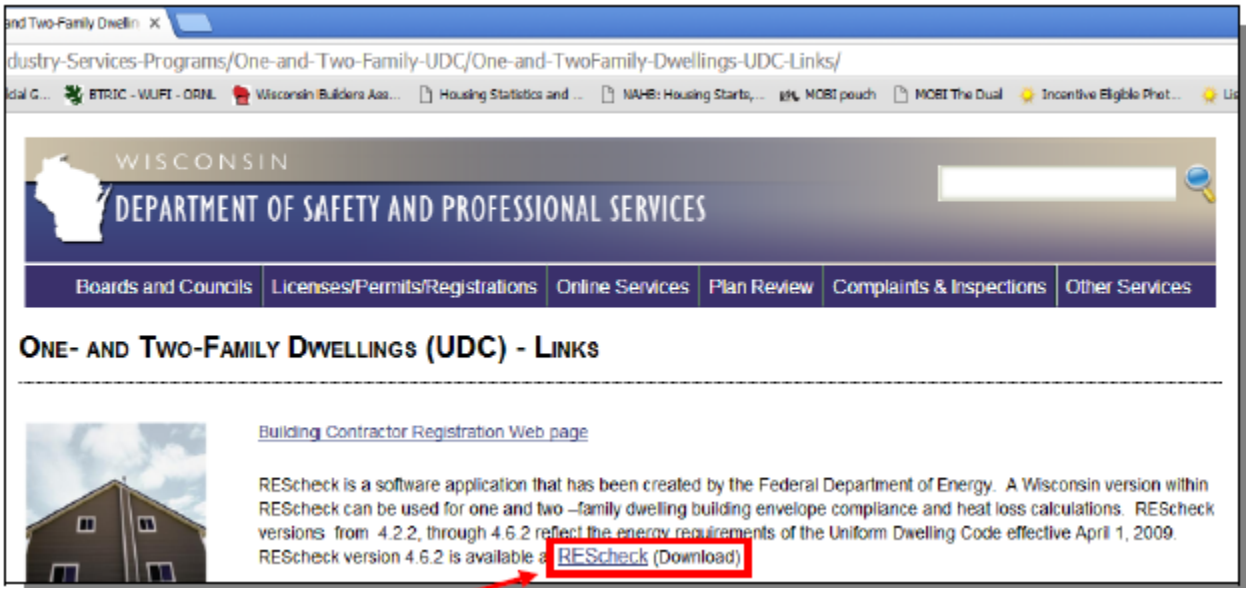
TABLE 322.31-1
INSULATION AND FENESTRATION REQUIREMENTS BY COMPONENT[a]

Zone	Fenestration U-Factor	Skylight U-Factor	Ceiling R-Value	Wood Frame Wall R-Value	Mass Wall R-Value[i]	Floor R-Value	Basement ~~or Crawl Space~~ Wall R-Value[b]	Crawl Space Wall R-Value[b]	Heated Slab R-Value[c]	Unheated Slab R-Value[d]
1	0.35	0.60	49[e]	~~19~~[f] 20[f] or 13+5[g]	15/19	30[h]	~~10/13~~ 15/19	10/13	10/15	10
2	0.35	0.60	49[e]	21[f]	19/21	~~30~~[f] 38[h]	~~10/13~~ 15/19	10/13	10/15	10

The temporary challenge with using REScheck is that REScheck has not yet been updated to integrate this table effective January 1, 2016. This REScheck update is currently being worked on.

In the meantime you can still use the current version of REScheck 4.62. Many of you may already have this version. If not you can download a copy directly from the Wisconsin DSPS website. Here is the link.

----Copy and paste this 'http' address directly into your web browser----
http://dsps.wi.gov/Programs/Industry-Services/Industry-Services-Programs/One-and-Two-Family-UDC/One-and-TwoFamily-Dwellings-UDC-Links/

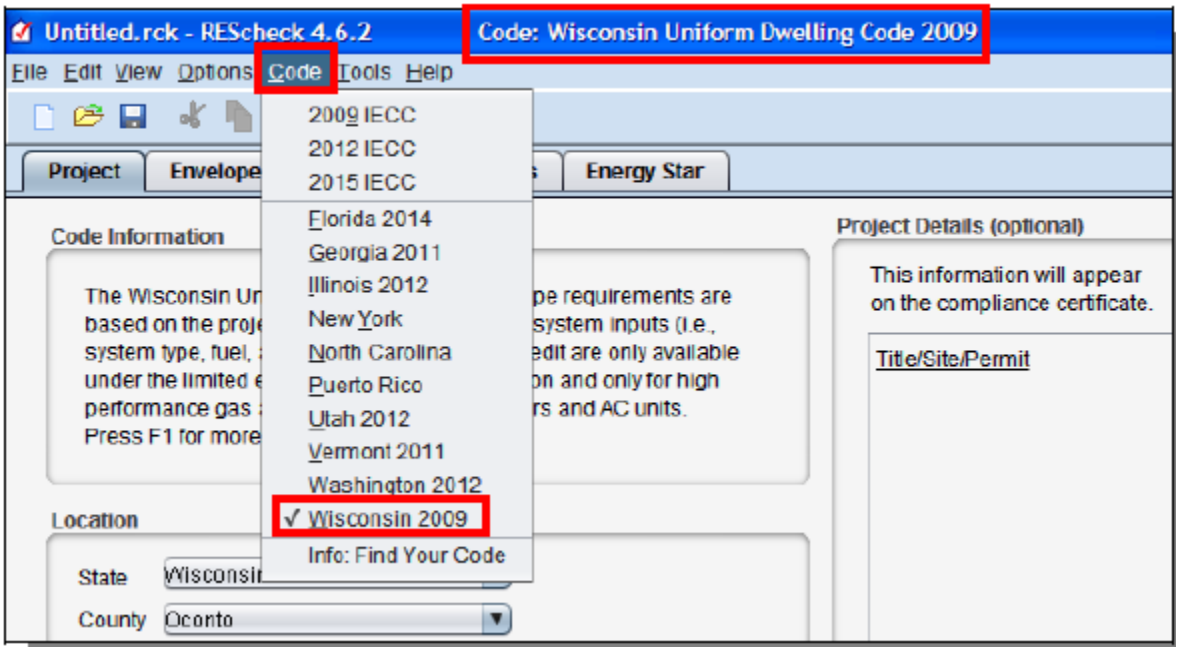


Click on the REScheck download hotlink and a copy will automatically be downloaded to your computer. Once the download is complete, double-click on it and 'run' the installer and follow the setup instructions.
The REScheck download should put a 'shortcut' directly on your computer desktop.
Locate this shortcut and open and run REScheck 4.62. You may get 3 pop-up dialog boxes.

1) Read the reminder about multi-family and toggle 'ok'

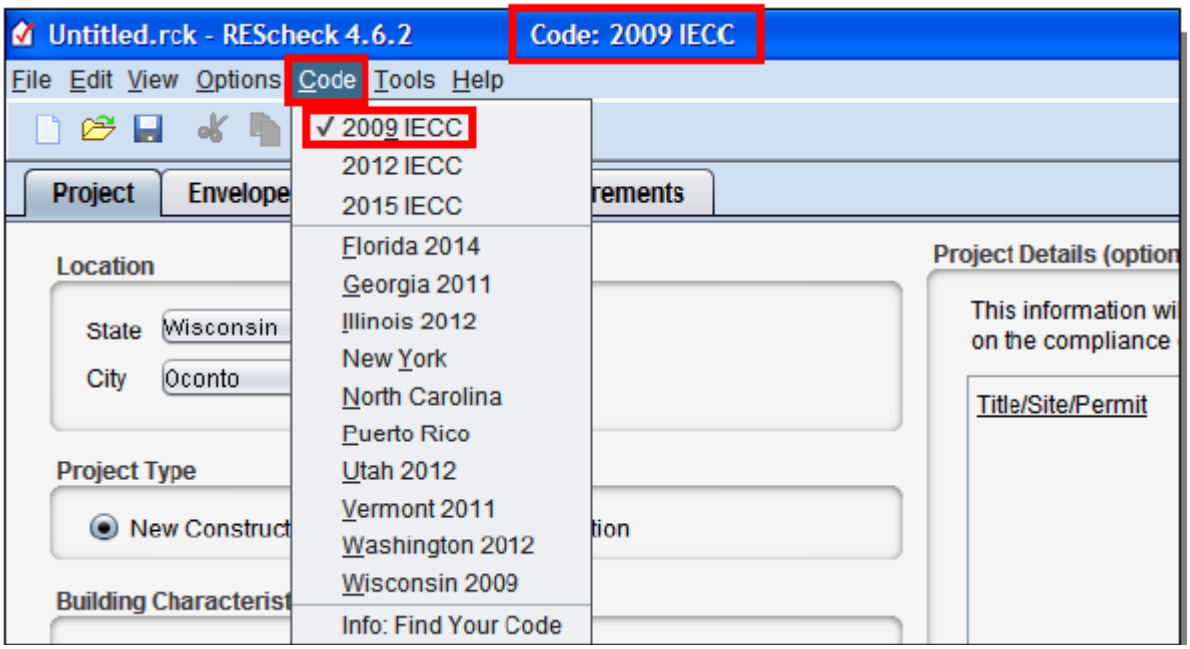
2) You may then get a reminder about the Wisconsin code. Ignore this and hit 'ok'.
3) You may now get another reminder about the Wisconsin Uniform Dwelling Code; hit 'ok'

At this point you should be ready to enter the information for a new home project: STOP!



Until further notice you CANNOT use the "Wisconsin 2009" Code selection as shown. This represents the pre-2016 Energy Code for Wisconsin. This is wrong until further notice.

Temporarily you will need to select the code as the "2009 IECC". This will set the new thermal values used to calculate compliance per the updated Table 322.31-1



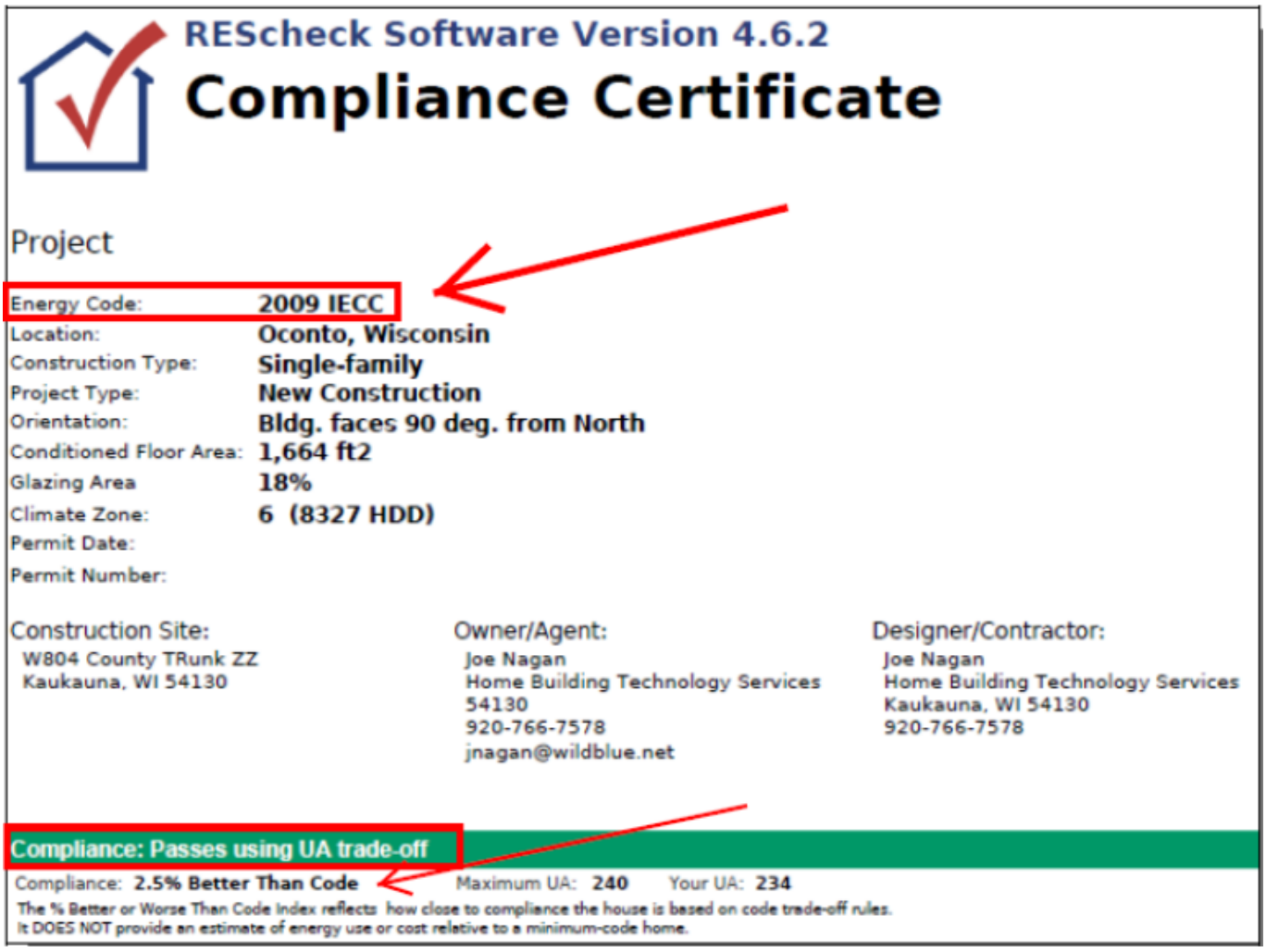
Wisconsin will still require the Compliance with Table 322.31-3 for Minimum Equipment Efficiencies. Using this code selection of "2009 IECC" will not provide an option to actually enter equipment AFUE as

before under the Mechanical tab. Ignore this but you must comply with the Minimum Equipment Efficiencies.

Reference to Table 322.31-3 Minimum Efficiencies: 90% AFUE for Furnaces & Boilers.

When completed this is how your compliance certificate should look:

1) Must meet the energy requirements shown as "% Better than Code"
2) The 'Climate Zone' will not show a UDC Zone as previous. This is temporary.
3) There will be NO 'Equipment Sizing' report as previously. This is temporary.



REScheck Software Version 4.6.2

Compliance Certificate

Project

Energy Code:	**2009 IECC**
Location:	**Oconto, Wisconsin**
Construction Type:	**Single-family**
Project Type:	**New Construction**
Orientation:	**Bldg. faces 90 deg. from North**
Conditioned Floor Area:	**1,664 ft2**
Glazing Area	**18%**
Climate Zone:	**6 (8327 HDD)**
Permit Date:	
Permit Number:	

Construction Site:
W804 County TRunk ZZ
Kaukauna, WI 54130

Owner/Agent:
Joe Nagan
Home Building Technology Services
54130
920-766-7578
jnagan@wildblue.net

Designer/Contractor:
Joe Nagan
Home Building Technology Services
Kaukauna, WI 54130
920-766-7578

Compliance: Passes using UA trade-off

Compliance: **2.5% Better Than Code** Maximum UA: **240** Your UA: **234**

The % Better or Worse Than Code Index reflects how close to compliance the house is based on code trade-off rules.
It DOES NOT provide an estimate of energy use or cost relative to a minimum-code home.

FYI: Most homes will require the below items when using the updated REScheck.

a) Windows at 0.30 U-value or lower
b) Attic insulation at R-49
c) Above grade walls at R-19
d) Rim joist at R-19
e) Basement walls at R-10 to R-15

SECTION 100. SPS 322.32 (1) is renumbered SPS 322.32 (1) (a).

SECTION 101. SPS 322.32 (1) (b) is created to read:

SPS 322.32 (1) (b) An attic-access cover shall be weatherstripped and insulated to a level equivalent to the insulation on the surrounding surfaces when the attic is an unconditioned space. A wood framed or equivalent baffle or retainer is required to be provided when loose fill insulation is installed, the purpose of which is to prevent loose fill insulation from spilling into the living space when the attic access is opened, and to provide a permanent means of maintaining the installed R-value of the loose fill insulation.

SECTION 102. SPS 322.32 (3) (b) is repealed.

SECTION 103. SPS 322.32 (3) (title) and (a) are consolidated, renumbered, and amended to read:

SPS 322.32 (3) MASS WALLS. (a) The requirements of Table 322.31-1 are applicable in a to mass wall walls where at least 50 percent of the required insulation R- value is on the exterior of, or integral to, the wall.

SECTION 104. SPS 322.32 (9) is renumbered SPS 322.32 (9) (a).

SECTION 105. SPS 322.32 (9) (b) is created to read:

SPS 322.32 (9) (b) The vertical and flared walls in a skylight shall meet the insulation requirements for walls. Tube skylights shall be insulated per the manufacturer's recommendations.

80. An attic-access cover shall have a ___ that is required to be provided when loose fill insulation is installed.
a. wood framing
b. equivalent baffle
c. retainer
d. all of the above
81. Attic-access cover, the purpose of which is to _____.
a. prevent loose fill insulation from spilling into the living space when the attic access is opened
b. provide a permanent means of maintaining the installed R-value of the loose fill insulation
c. both a & b
d. none of the above
82. The _____ in a skylight shall meet the insulation requirements for walls.
a. vertical walls
b. flared walls
c. tube wall
d. both a & b
83. _____ shall be insulated per the manufacturer's recommendations.
a. vertical walls
b. flared walls
c. tube skylights
d. both a & b

SECTION 106. SPS 322.33 (1) is renumbered SPS 322.33 (1) (a) and amended to read:

SPS 322.33 (1) (a) Any heated or unheated slab floor, the bottom of which is less than 12 inches below adjacent grade, shall be provided with perimeter insulation in accordance with Table 322.31-1 or Table 322.31-4, except as provided in par. (b).

SECTION 107. SPS 322.33 (1) (b) and (3) (c) are created to read:

SPS 322.33 (1) (b) At the threshold or the base of any door opening that leads directly to the exterior of the structure, the vertical perimeter insulation shall be at least R-5, excluding all garage doors.

(3) (c) Insulation on a foundation wall for a basement may be interrupted at the junction with a foundation wall.

SECTION 108. SPS 322.34 (2) (d) is amended to read:

SPS 322.34 (2) (d) Crawl Spaces. The edges of the vapor retarder shall extend at least 6 inches up the foundation wall and shall be attached and sealed to the foundation wall or insulation.

84. Insulation on a foundation wall for a basement ____ be interrupted at the junction with a foundation wall.
a. shall not
b. may
c. shall
d. none of the above

35. The edges of the vapor retarder in a crawl space shall extend at least ____ inches up the foundation wall.
a. 4
b. 6
c. 8
d. 12

86. The edges of the vapor retarder in a crawl space shall be _____ to the foundation wall.
a. attached
b. sealed
c. attached or sealed
d. both a & b

87. The edges of the vapor retarder in a crawl space shall be attached and sealed to the _____.
a. foundation wall
b. insulation
c. both a or b
d. both a and b

88. At the threshold or the base of any door opening that leads directly to the exterior of the structure, the vertical perimeter insulation shall be at least R-___.
a. 2
b. 4
c. 5
d. 10

89. At the threshold or the base of any door opening that leads directly to the exterior of the structure, the vertical perimeter insulation may be excluded at all garage doors.
a. true
b. false

90. Any heated or unheated slab floor, the bottom of which is less than __ inches below adjacent grade, shall be provided with perimeter insulation in accordance with Table 322.31-1 or Table 322.31-4.

a. 6
b. 8
c. 12
d. 18

SECTION 109. SPS 322.37 (6) (intro), (a) 1. to 7. and (b) are created to read:

SPS 322.37 (6) COMPLIANCE DEMONSTRATION. Building envelope air tightness and insulation installation shall be demonstrated to comply with one of the following options:

(a) *Testing option*. Building envelope tightness and insulation installation shall be considered acceptable when tested air leakage is less than seven air changes per hour (ACH) when tested with a blower door at a pressure of 33.5 psf (50 Pa). Testing shall occur after rough in and after installation of penetrations of the building envelope, including penetrations for utilities, plumbing, electrical, ventilation and combustion appliances. During testing all of the following shall be done:

1. Exterior windows and doors, fireplace and stove doors shall be closed, but not sealed;
2. Dampers shall be closed, but not sealed, including exhaust, intake, makeup air, backdraft and flue dampers;
3. Interior doors shall be open;
4. Exterior openings for continuous ventilation systems and heat recovery ventilators shall be closed and sealed;
5. Heating and cooling system(s) shall be turned off;
6. HVAC ducts shall not be sealed; and
7. Supply and return registers shall not be sealed.

(b) *Visual inspection option*. Building envelope tightness and insulation installation shall be considered acceptable when the items listed in Table 332.37, applicable to the method of construction, are field verified. Where required by the code official, an approved party independent from the installer of the insulation shall inspect the air barrier and insulation.

91. COMPLIANCE DEMONSTRATION. Building envelope air tightness and insulation installation shall be demonstrated to comply with one of the following options:

a. Testing option
b. Visual inspection option
c. both a & b
d. none of the above

92. Testing option. During testing all of the following shall be done:

a. Heating and cooling system(s) shall be turned off
b. HVAC ducts shall not be sealed
c. Supply and return registers shall not be sealed
d. all of the above

93. Testing option. During testing all of the following shall be done:

a. Interior doors shall be closed
b. Dampers shall be open and sealed
c. Exterior windows and doors, fireplace and stove doors shall be open
d. none of the above

94. Visual inspection option. Where required by the code official, an approved party independent from the _____ shall inspect the air barrier and insulation.

a. inspector of the insulation
b. installer of the framing
c. installer of the insulation
d. all of the above

SECTION 110. SPS 322.37 (6) Table 322.37 is created to read:

TABLE 332.37
AIR BARRIER AND INSULATION INSPECTION COMPONENT CRITERIA

COMPONENT	CRITERIA
Air barrier and thermal barrier	Exterior thermal envelope insulation for framed walls is installed in substantial contact and continuous alignment with building envelope air barrier.
	Breaks or joints in the air barrier are filled or repaired. Air-permeable insulation is not used as a sealing material. Air-permeable insulation is inside of an air barrier.
Ceiling/attic	Air barrier in any dropped ceiling/soffit is substantially aligned with insulation and any gaps are sealed. Attic access (except unvented attic), knee wall door, or drop down stair is sealed.
Walls	Corners and headers are insulated. Junction of foundation and sill plate is sealed.
Windows and doors	Space between window/door jambs and framing is sealed.
Rim joists	Rim joists are insulated and include an air barrier.
Floors (including above-garage and cantilevered floors)	Insulation is installed to maintain permanent contact with underside of subfloor decking. Air barrier is installed at any exposed edge of insulation.
Crawl space walls	Insulation is permanently attached to walls. Exposed earth in unvented crawl spaces is covered with Class I vapor retarder with overlapping joints taped.
Shafts, penetrations	Duct shafts, utility penetrations, knee walls and flue shafts opening to exterior or unconditioned space are sealed.
Narrow cavities	Batts in narrow cavities are cut to fit, or narrow cavities are filled by sprayed/blown insulation.
Garage separation	Air sealing is provided between the garage and conditioned spaces.

Recessed lighting	Recessed light fixtures are air tight, IC rated, and sealed to drywall. Exception-fixtures in conditioned space.
Plumbing and wiring	Insulation is placed between outside and pipes. Batt insulation is cut to fit around wiring and plumbing, or sprayed/blown insulation extends behind piping and wiring.
Shower/tub on exterior wall	Showers and tubs on exterior walls have insulation and an air barrier separating them from the exterior wall.
Electrical/phone box on exterior walls	Air barrier extends behind boxes or air sealed-type boxes are installed.
Common wall	Air barrier is installed in common wall between dwelling units.
HVAC register boots	HVAC register boots that penetrate building envelope are sealed to subfloor or drywall.
Fireplace	Fireplace walls include an air barrier.

95. Air barrier extends behind boxes or air sealed−type boxes are installed defines:
    a. Garage separation
    b. Electrical/phone box on exterior walls
    c. Crawl space walls
    d. Shafts, penetrations
96. Air sealing is provided between the garage and conditioned spaces defines:
    a. Garage separation
    b. Electrical/phone box on exterior walls
    c. Crawl space walls
    d. Shafts, penetrations
97. Insulation is permanently attached to walls defines:
    a. Garage separation
    b. Electrical/phone box on exterior walls
    c. Crawl space walls
    d. Shafts, penetrations
98. Duct shafts, utility penetrations, knee walls and flue shafts opening to exterior or unconditioned space are sealed defines:
    a. Garage separation
    b. Electrical/phone box on exterior walls
    c. Crawl space walls
    d. Shafts, penetrations

SECTION 111. SPS 322.38 (1) (b) is renumbered SPS 322.38 (1) (b) 1. and amended to read:

SPS 322.38 (1) (b) 1. The vapor retarder shall be continuous. All joints in a vapor retarder consisting of sheet material shall be overlapped 6 inches and taped or sealed. except as provided in subd. 2. Rips, punctures, and voids in the vapor retarder shall be patched with vapor retarder materials and taped or sealed. Seams that are not over a framing member shall be taped or sealed.

SECTION 112. SPS 322.38 (1) (b) 2. is created to read:

SPS 322.38 (1) (b) 2. Taping or sealing a vapor retarder is not required around doors and windows, behind bathtub enclosures, and at top and bottom wall plates, if the retarder is held to those materials in an airtight manner by other building components, such as gypsum wallboard.

SECTION 113. SPS 322.38 (2) (c) 4. is amended to read:

SPS 322.38 (2) (c) 4. No vapor retarder is required over cavities that are insulated solely with have at least 50% of the required R-value provided by spray-applied foam having a perm rating of 1.0 or less, unless required by the foam manufacturer.

SECTION 114. SPS 322.38 (2) (c) 4. (Note) is repealed.

SECTION 115. SPS 322.38 (2) (c) 5. is created to read:

SPS 322.38 (2) (c) 5. A vapor retarder for a floor over an open, unheated area may consist of 5/8-inch tongue-and-groove oriented-strand board, or 3/4-inch tongue- and-groove CDX plywood, which is exposure-rated plywood.

99. Taping or sealing a vapor retarder is not required around doors and windows, behind bathtub enclosures, and at top and bottom wall plates, if the retarder is held to those materials in an _____ manner by other building components, such as gypsum wallboard.
    a. workman type
    b. breathable
    c. airtight
    d. all of the above
100. No vapor retarder is required over cavities that _____ spray-applied foam having a perm rating of 1.0 or less, unless required by the foam manufacturer.
    a. are insulated solely with
    b. have at least 50% of the required R-value provided by
    c. both a & b
    d. none of the above
101. A vapor retarder for a floor over an open, unheated area may consist of _____ which is exposure-rated plywood.
    a. 5/8-inch tongue-and-groove oriented-strand board
    b. 3/4-inch tongue- and-groove CDX plywood
    c. both a & b
    d. none of the above
102. The vapor retarder shall be continuous. All joints in a vapor retarder consisting of sheet material shall be overlapped ___ inches and taped or sealed.
    a. 2
    b. 4
    c. 6
    d. 12
103. Rips, punctures, and voids in the vapor retarder shall be _____.
    a. taped
    b. sealed
    c. patched with vapor retarder materials
    d. all of the above
104. Seams that are just over a framing member shall be taped or sealed.

a. true
b. false

SECTION 116. SPS 322.42 (1m) is created to read.

SPS 322.42 (2) Cooling supply ducts that pass through unconditioned spaces conducive to condensation, such as attics, shall be provided with insulation having a thermal resistance of at least R–8. The exterior of that insulation shall be covered with a vapor retarder that meets the requirements in s. SPS 322.38 (1)

SECTION 117. SPS 322.43 (7) (intro) and 1. and 2. and (8) are created to read:

SPS 322.43 (7) Except where exempted as indicated in par. (8), duct tightness shall be verified by either of the following:

1. Post construction test: Leakage to outdoors shall be less than or equal to 8 cfm per 100 ft2 of conditioned floor area or a total leakage less than or equal to 12 cfm per 100 ft2 of conditioned floor area when tested at a pressure differential of 0.1 inches 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 per 100 ft2 of conditioned floor area when tested at a pressure differential of 0.1 inches 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 per 100 ft2 of conditioned floor area.

(8) A duct tightness test is not required if the air handler and all ducts are located within conditioned space.

SECTION 118. SPS 322.44 and (title) are renumbered 322.44, (title) and (3).

SECTION 119. SPS 322.44 (1) and (2) are created to read:

SPS 322.44 (1) Mechanical system piping capable of carrying fluids above 105°F (41°C) or below 55°F (13°C) shall be insulated to a minimum of R-3.

(2) All circulating service hot water piping shall be insulated to at least R-2. Circulating hot water systems shall include an automatic or readily accessible manual switch that can turn off the hot water circulating pump when the system is not in use.

105. Except where exempted as indicated in par. (8), duct tightness shall be verified by either of the following:
a. Post construction test
b. Rough-in test
c. both a or b
d. none of the above

106. Cooling supply ducts that pass through unconditioned spaces conducive to condensation, such as attics, shall be provided with insulation having a thermal resistance of at least R–____.
a. 4
b. 6

c. 8
d. 10

107. Cooling supply ducts that pass through unconditioned spaces conducive to condensation, such as attics, shall be provided with insulation. The exterior of that insulation shall be covered with a _____ that meets the requirements in s. SPS 322.38 (1).

a. foam insulation
b. bubble wrap
c. vapor retarder
d. all of the above

SECTION 120. SPS 322. 47 (title), and (1) and (2) are created to read:

SPS 322. 47 Equipment requirements. (1) Mechanical ventilation outdoor air intakes and exhausts shall have automatic or gravity dampers that close when the ventilation system is not operating.

(2) Snow melt system controls. Snow- and ice-melting systems, supplied through energy service to the building, shall include automatic controls capable of shutting off the system when the pavement temperature is above 50°F, and no precipitation is falling and an automatic or manual control that will allow shutoff when the outdoor temperature is above 40°F.

SECTION 121. SPS 322.48 (title), (intro), and (1), (2) (title) and (a) to (c), and (3) (title) and (a) and (b) are created to read:

108. Snow melt system controls. Snow- and ice-melting systems, supplied through energy service to the building, shall include _____ controls capable of shutting off the system when the pavement temperature is above 50°F, and no precipitation is falling and an automatic or manual control that will allow shutoff when the outdoor temperature is above 40°F.

a. manual
b. semi-automatic
c. automatic
d. all of the above

SPS 322.48 Indoor Pools. Indoor pools shall be provided with energy- conserving measures in accordance with all of the following:

(1) POOL HEATERS. All pool heaters shall be equipped with a readily accessible on-off switch to allow shutting off the heater without adjusting the thermostat setting. Pool heaters fired by natural gas shall not have continuously burning pilot lights.

(2) TIME SWITCHES. (a) Except where allowed in pars. (b) and (c), time switches that can automatically turn off and on heaters and pumps according to a preset schedule shall be installed on swimming pool heaters and pumps.

(b) Where public health standards require 24-hour pump operation, time switches are not required.

(c) Where pumps are required to operate solar- and waste-heat-recovery pool heating systems, time switches are not required.

SECTION 122. SPS 322.49 is created to read:

SPS 322.49 **Lighting Equipment.** A minimum of 50 percent of the lamps in permanently installed lighting fixtures shall be high-efficacy lamps.

109. POOL HEATERS. All pool heaters shall be equipped with a readily accessible on-off switch to allow shutting off the heater without adjusting the thermostat setting. Pool heaters fired by _____ gas shall not have continuously burning pilot lights.

a. LP
b. bottle
c. natural
d. all of the above

110. A minimum of ____ percent of the lamps in permanently installed lighting fixtures shall be high-efficacy lamps.

a. 40
b. 50
c. 60
d. 80

SECTION 123.

SPS 323.04 Table 323.04–A footnote 5 is amended to read:

SPS 323.04 Table 323.04–A footnote 5 To combustible material or metal cabinets. If the underside of such combustible material or metal cabinet is protected with asbestos millboard at least 1/4- inch thick covered with sheet metal of not less than No. 28 gauge, the distance may be not less than 24 inches. Also, if the manufacturer of the range, cooktop, or cooking stove specifies a shorter clearance, that clearance may be used instead.

SECTION 124. SPS 323.04 (4) is renumbered SPS 323.04 (4) (a).

SECTION 125. SPS 323.04 (4) (b) and (Note) [2] are created to read:

SPS 323.04 (4) (b) Solid fuel-fired water-heating appliances installed inside one or two family dwellings are exempt from the requirements of s. SPS 341.49 (3).

Note [2]: The appliances addressed in this section include non-pressurized solid-fuel-fired water- heating appliances used for space heating.

SECTION 126.

SPS 323.045 (5) (a) is renumbered SPS 323.045 (5).

SECTION 127. SPS 323.045 (5m) is created to read:

SPS 323.045 (5m) MOUNTING ON THE GROUND. Ground-based solid-fuel- burning appliances shall be installed in accordance with the manufacturer's specifications.

SECTION 128. SPS 323.045 (6) (a) (title) is created to read:

SPS 323.045 (6) (a) (title) *General.*

SECTION 129. SPS 323.045 (6) (a) (intro.) is renumbered SPS 323.045 (6) (a) and amended to read:

SPS 323.045 (6) (a) Solid-fuel-burning appliances shall be installed with clearances not less than specified in Table 323.045-D, except as provided in pars. (b) and (c).

SECTION 130. SPS 323.045 (6) (a) 1. and 2. are renumbered SPS 323.045 (6) (b) and (c).

SECTION 131. SPS 323.045 (8) (intro.) is amended to read:

SPS 323.045 (8) (intro.) SUPPLEMENTAL UNITS. Supplemental solid-fuel-burning units connected to a furnace shall be connected to the warm air side of the furnace as illustrated in Figures 323.045-C to E., and shall be installed in accordance with all of the following:

SECTION 132. SPS 323.06 (1) (d) to (f) are created to read:

SPS 323.06 (1) (d) Listed fireplace stoves are not required to comply with this section if permitted in the manufacturer's instructions.
(e) Masonry fireplaces shall conform to the requirements of s. SPS 321.29. (f) Listed factory-built fireplaces shall comply with the manufacturer's recommendations and shall conform with the requirements of s. SPS 321.32.

SECTION 133. SPS 323.14 (1) is renumbered SPS 323.14 (1) (a).

SECTION 134. SPS 323.14 (1) (b) is created to read:

SPS 323.14 (1) (b) Plastic pipes and fittings used in venting flue gas shall bear the manufacturer's identification data.

111. SUPPLEMENTAL UNITS. Supplemental solid-fuel-burning units connected to a furnace shall be connected to the _____air side of the furnace

a. cold
b. warm
c. warm or cold
d. all of the above

112. _____ fireplace stoves are not required to comply with this section if permitted in the manufacturer's instructions.

a. Site built
b. Approved
c. Listed
d. all the above

SECTION 135. SPS 323.14 (2) (a) is renumbered SPS 323.14 (2) (a) 2. and amended to read:

SPS 323.14 (2) (a) 2. Gas-fired clothes dryers shall be provided with metal venting ~~that terminates outside the structure~~.

SECTION 136. SPS 323.14 (2) (a) 1. is created to read:

SPS 323.14 (2) (a) 1. All venting for clothes dryers, including for electric dryers, shall be rigid and smooth-walled. The connection to the dryer shall be made in accordance with the manufacturer's recommendations.

SECTION 137. SPS 323.16 (2) (a) is amended to read:

SPS 323.16 (2) (a) The total oil storage capacity inside any dwelling unit shall be limited to 550 gallons in one tank, or not more than 275 gallons in each of 2 tanks cross−connected to a single.

SECTION 138. SPS 325.01 is renumbered SPS 325.01 (1) and amended to read:

SPS 325.01 (1) The design, construction, and installation of plumbing shall comply with the requirements of the Wisconsin Plumbing Code, chs. SPS 382 to 387, except as provided in this section.

SECTION 139. SPS 325.01 (1) (title) and (2) to (4) are created to read: **SPS 325.01** (title) GENERAL.

113. All venting for clothes dryers, _____ for electric dryers, shall be rigid and smooth-walled.
    a. excluding
    b. including
    c. none of the above
    d. both a or b

114. The total oil storage capacity inside any dwelling unit shall be limited to _____ gallons in one tank.
    a. 450
    b. 275
    c. 375
    d. 550

---

(2) TANKLESS WATER HEATERS. (a) The minimum flow rate of a tankless type water heater may be obtained by multiplying 0.65 by the calculated hot water gallons per minute demand, as determined by SPS 382 Tables 382.40–1b and 382.40–3, provided the heater will achieve a water temperature of 110° F at the terminal fitting or faucet.

(b) The sizing method in par. (a) may not be used for sizing a water heater serving a high-flow fixture, a hose bibb, a hydrant, or a fixture that is required to have a supply line with a diameter larger than one-half inch.

(c) For the purposes of this subsection, "high-flow fixture" means a fixture with a flow rate of more than 4 gallons per minute, at 80 pounds per square inch, and a water velocity not exceeding 8 feet per second.

(3) LOCAL WASTE PIPING. A trap may be omitted in local waste piping having a length of up to 20 feet.

(4) FLOOR DRAINS FOR GARAGES. (a) A trap may be omitted for a garage-floor drain that discharges to the ground surface.

(b) The sediment trap for a garage-floor drain shall be removable.

(c) The grate for a garage-floor drain may be nonmetallic if it has a thickness and strength that will withstand the anticipated loads.

SECTION 140. SPS 320 to 325 Appendix, Minimum Fastener Schedule Table is renumbered SPS 321.02 (3) (h) Table 321.02-2 and amended to read:

115. For the purposes of this subsection, "high-flow fixture" means a fixture _____.
    a. with a flow rate of more than 4 gallons per minute
    b. is at 80 pounds per square inch
    c. with water velocity not exceeding 8 feet per second
    d. all the above

SPS 321.02 (2) (h) Table 321.02-2
MINIMUM FASTENER SCHEDULE TABLE

Other interior and exterior panel products and finishes installed per manufacturer requirements. For engineered connectors, use manufacturer's specified fasteners.

Description of Building Materials/Connection	Number and Type of Fastener[1 2 3]
Floor Framing	
Joist to joist, face nailed over support	~~2–12d~~ 3–8d
Joist to sill or girder, toe nail	~~2–16d,~~ 3–8d
Band or rim joist to joist, end nail	3–16d
Band or rim joist to sill or top plate	2–16d at 16" o.c.
Bridging to joist, toe nail each end	2–8d
Built–up girder and beams, top loaded	10d at 32" o.c. at top and bottom and staggered and two at ends and at each splice
Built–up girder and beams, side–loaded	16d at 16" o.c. at top and bottom and staggered and two at ends and at each splice
Ledger strip to beam, face nail	3–16d each joist
Joist on ledger to beam, toe nail	3–8d
Wall Framing	
Sole plate to joist or blocking, face nail	2–16d at 16" o.c.
Top or sole plate to stud, end nail	2–16d
Stud to sole plate, toe nail	~~4–8d~~ 3–8d or ~~3–16d~~ 2–16d
Doubled studs, face nail	~~16d~~ 10d at 24" o.c.
Doubled top plates, face nail	~~16d~~ 10d at ~~16"~~ 24" o.c.
Doubled top plates, minimum 24-inch offset of end joints, face nail in lapped area	8–16d
Top plates, laps and intersections, face nail	~~2–16d~~ 2–10d
Continuous header, two pieces	16d at 16" o.c. along each edge
Continuous header to stud, toe nail	4–8d
1" corner brace to each stud and plate, face nail	2–8d or 2 staples, 1¾"
Built-up corner studs	~~16d at 30" o.c., 16d~~ 10d at 24" o.c.
Roof/Ceiling Framing	
Ceiling joists to plate, toe nail	~~2–16d,~~ 3–8d
Ceiling joist, laps over partitions, face nail	~~3–16d~~ 3–10d
Ceiling joist to parallel rafters, face nail	3–16d
Rafter to plate, toe nail (maximum 6 rafter span, engineered connector for longer)	2–16d~~, 3–8d~~
Roof rafters to ridge, valley or hip rafters, toe nail	4–16d
Roof rafters to ridge, valley or hip rafters, face nail	3–16d
Collar ties to rafters, face nail	3–8d
Boards and planks	
1" x 6" subfloor or less to each joist, face nail	2–8d or 2 staples, 1¾"
Wider than 1" x 6" subfloor toe to each joist, face nail	3–8d or 4 staples 1¾"
2" subfloor to joist or girder, blind and face nail	2–16d
1" x 6" roof or wall sheathing to each bearing, face nail	2–8d or 2 staples, 1¾"
1" x 8" roof or wall sheathing to each bearing, face nail	2–8d or 3 staples, 1¾"
Wider than 1" x 8" roof sheathing to each bearing, face nail	3–8d or 4 staples, 1¾"
2" planks	2–16d at each bearing

116. Wall framing: Minimum fastening for built up corner studs would be _____.
    a. 16-d 30" o.c.
    b. 16-d 24" o.c.
    c. 10-d 24" o.c.
    d. both b & c
117. Wall framing: Minimum fastening for double top plates with face nailing would be _____.
    a. 16-d 16" o.c.
    b. 16-d 24" o.c.
    c. 10-d 16" o.c.
    d. 16-d 24" o.c.

Panel Sheathing

Material	Fastener	Spacing of Fastener	
		Edges	Intermediate Supports
Engineered wood panel for sub-floor and roof sheathing and wall corner wind bracing to framing			
5/16" to ½"	6d common or deformed nail or staple, 1½"	6"	12" [4]
5/8" to ¾"	8d smooth or common, 6d deformed nail, or staple, 14 ga. 1¾"	6"	12" [4]
7/8" to 1"	8d common or deformed nail	6"	12"
1 1/8" to 1 ¼"	10d smooth or common, or 8d deformed nail	6"	12"
Combination subfloor/ underlayment to framing			
¾" or less	6d deformed or 8d smooth or common nail	6"	12"
7/8" to 1"	8d smooth, common or deformed nail	6"	12"
1 1/8" to 1 ¼"	10d smooth or common or 8d deformed nail	6"	12"
Wood panel siding to framing			
½" or less	6d corrosion–resistant siding and casing nails	6"	12"
5/8"	8d corrosion–resistant siding and casing nails	6"	12"
½" structural cellulosic fiberboard sheathing	1½" galvanized roofing nail; 8d common nail; staple 16 ga., 1½" long	3"	6"
25/32" structural cellulosic fiberboard sheathing	1¾" galvanized roofing nail; 8d common nail; staple 16 ga., 1¾" long	3"	6"
½" gypsum sheathing[5]	1½" galvanized roofing nail; 6d common nail; staple galvanized 1½" long; 1¼" screws, Type W or S	4"	8"
5/8" gypsum sheathing	1¾" galvanized roofing nail; 8d common nail; staple galvanized 1 5/8" long; 1 5/8" screws, Type	7"	7"

1. All nails are smooth–common, box or deformed shank except where otherwise stated.
2. Nail is a general description and may be T–head, modified round head or round head.
3. Staples are 16–gauge wire, unless otherwise noted, and have a minimum 7/16" o.d. crown width.
4. Staples shall be spaced at not more than 10" o.c. at intermediate supports for floors.

118. Panel Sheathing: Engineered wood panel for subfloor and roof sheathing and wall corner wind bracing to framing 5/8" to 3/4" minimum fastener sizes would be _____.

a. 8d smooth or common
b. 6d deformed nail
c. staple, 14ga. 1¾
d. all the above

119. Panel Sheathing: Engineered wood panel for 5/8" to 3/4" subfloor and roof sheathing and wall corner wind bracing to framing minimum fastening pattern would be _____.

a. 6" edge
b. 12" intermediate supports
c. both a & b
d. none of the above

120. Panel Sheathing: Engineered wood panel for 5/8" to 3/4" subfloor to framing minimum fastening pattern would be _____ if using staples.

a. 6" edge
b. 12" intermediate supports
c. both a & d
d. 10" intermediate supports

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1	a	b	c	d	41	a	b	c	d	81	a	b	c	d
2	a	b	c	d	42	a	b	c	d	82	a	b	c	d
3	a	b	c	d	43	a	b	c	d	83	a	b	c	d
4	a	b	c	d	44	a	b	c	d	84	a	b	c	d
5	a	b	c	d	45	a	b	c	d	85	a	b	c	d
6	a	b	c	d	46	a	b	c	d	86	a	b	c	d
7	a	b	c	d	47	a	b	c	d	87	a	b	c	d
8	a	b	c	d	48	a	b	c	d	88	a	b	c	d
9	a	b	c	d	49	a	b	c	d	89	a	b	c	d
10	a	b	c	d	50	a	b	c	d	90	a	b	c	d
11	a	b	c	d	51	a	b	c	d	91	a	b	c	d
12	a	b	c	d	52	a	b	c	d	92	a	b	c	d
13	a	b	c	d	53	a	b	c	d	93	a	b	c	d
14	a	b	c	d	54	a	b	c	d	94	a	b	c	d
15	a	b	c	d	55	a	b	c	d	95	a	b	c	d
16	a	b	c	d	56	a	b	c	d	96	a	b	c	d
17	a	b	c	d	57	a	b	c	d	97	a	b	c	d
18	a	b	c	d	58	a	b	c	d	98	a	b	c	d
19	a	b	c	d	59	a	b	c	d	99	a	b	c	d
20	a	b	c	d	60	a	b	c	d	100	a	b	c	d
21	a	b	c	d	61	a	b	c	d	101	a	b	c	d
22	a	b	c	d	62	a	b	c	d	102	a	b	c	d
23	a	b	c	d	63	a	b	c	d	103	a	b	c	d
24	a	b	c	d	64	a	b	c	d	104	a	b	c	d
25	a	b	c	d	65	a	b	c	d	105	a	b	c	d
26	a	b	c	d	66	a	b	c	d	106	a	b	c	d
27	a	b	c	d	67	a	b	c	d	107	a	b	c	d
28	a	b	c	d	68	a	b	c	d	108	a	b	c	d
29	a	b	c	d	69	a	b	c	d	109	a	b	c	d
30	a	b	c	d	70	a	b	c	d	110	a	b	c	d
31	a	b	c	d	71	a	b	c	d	111	a	b	c	d
32	a	b	c	d	72	a	b	c	d	112	a	b	c	d
33	a	b	c	d	73	a	b	c	d	113	a	b	c	d
34	a	b	c	d	74	a	b	c	d	114	a	b	c	d
35	a	b	c	d	75	a	b	c	d	115	a	b	c	d
36	a	b	c	d	76	a	b	c	d	116	a	b	c	d
37	a	b	c	d	77	a	b	c	d	117	a	b	c	d
38	a	b	c	d	78	a	b	c	d	118	a	b	c	d
39	a	b	c	d	79	a	b	c	d	119	a	b	c	d
40	a	b	c	d	80	a	b	c	d	120	a	b	c	d