New Deck Code Quiz part 2 of 2

Instructions

1. Print these pages. **Fee $50**
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.

6 hour course for: **Course #17669**

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

Questions call Trisha at 920-381-6714 or email tmklinka@hotmail.com

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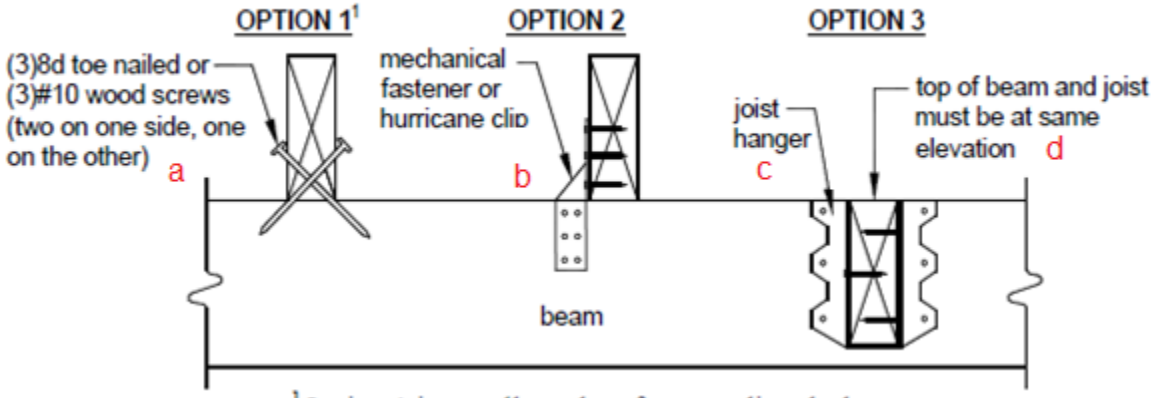
Figure 8
JOIST-TO-BEAM CONNECTIONS



[1]Option 1 is not allowed on free-standing decks.

1. If toe nailing or wood screwing the joist to beam, _____.
   a. 2 fasteners on both sides required
   b. 2 fasteners on one side and 1 fastener on the other side required
   c. 1 fastener on each side required
   d. none of the above

SECTION 7: JOIST HANGERS

Joist hangers must comply with all of the following:

1. The joist-hanger depth (d, as shown in Figure 9) must be at least 60 percent of the joist depth.
2. The manufactured width of the joist hanger must accommodate the number of plies being carried.
3. Do not bend hanger flanges to accommodate field conditions.
4. For joist hangers that are fastened to a ledger board, screws which are recommended by the manufacturer must be used. All other fasteners are permitted to be nails. The number of fasteners and the manner in which they are used must be as specified by the manufacturer.
5. Use joist hangers with inside flanges if clearances to the edge of the beam or ledger board dictate.
6. Clip-angles or brackets used to support framing members in lieu of joist hangers are prohibited.
7. Joists must not frame in from both sides of the same beam. Engineering analysis is needed if more beams are needed than are shown in Figures 5 to 7.
8. Each joist hanger must have the minimum capacity listed in Table 5.

2. Joists _____ not frame in from both sides of the same beam.
   a. may

b. should
c. must
d. all of the above

3. Each joist hanger must have the minimum capacity listed in Table ___.
a. 1
b. 2
c. 3 & 4
d. 5

4. _____ used to support framing members in lieu of joist hangers are prohibited
a. Clip-angles
b. Brackets
c. Toe nailing
d. both a & b

5. Use joist hangers with _____ flanges if clearances to the edge of the beam or ledger board dictate.
a. outside
b. inside
c. both a & b
d. none of the above

6. For joist hangers that are fastened to a ledger board, screws which are recommended by the manufacturer must be used.

7. All other fasteners are permitted to be ____.
a. nails
b. galvanized staples
c. galvanized drywall screws
d. all of the above

8. The number of fasteners and the manner in which they are used must be as specified by the _____.
a. inspector
b. lumber supplier
c. manufacturer
d. all of the above

9. Field bends on hanger flanges to accommodate field conditions are _____.
a. allowed
b. allowed if recommended by the lumber supplier
c. not allowed
d. none of the above

10. The manufactured _____ of the joist hanger must accommodate the number of plies being carried.
a. height
b. length
c. width
d. all of the above

11. The joist-hanger depth (d, as shown in Figure 9) must be at least ___ percent of the joist depth.
a. 50
b. 60
c. 70
d. 40

Figure 9
JOIST HANGERS

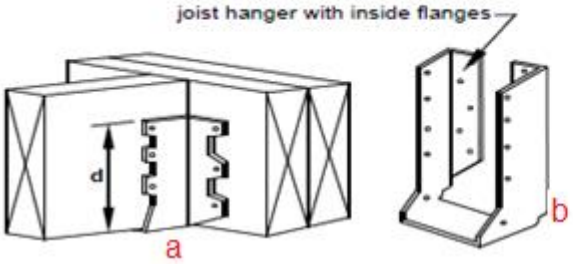


Table 5
JOIST HANGER DOWNLOAD

Joist Size	Minimum Capacity, lbs
2x6	500
2x8	500
2x10	600
2x12	700

12. Hanger "b" represent a _____ hanger.
    a. outside
    b. inside
    c. angle
    d. none of the above
13. Hanger "a" represents an _____ hanger.
    a. outside
    b. inside
    c. angle
    d. none of the above
14. Joist hanger download minimum capacity for a 2 x 12 would be _____?
    a. 500
    b. 600
    c. 700
    d. none of the above
15. Joist hanger download minimum capacity for a 2 x 8 would be _____?
    a. 500
    b. 600
    c. 700
    d. none of the above

SECTION 8: LEDGER ATTACHMENTS

General requirements. Ledger boards must be attached to the existing house in accordance with all of the following and section 9. Compliance is critical to ensure the safety and structural stability of your deck.

1. The ledger-board depth must be greater than or equal to the depth of the deck joists, but not less than a 2x8 – and must be less than or equal to the depth of the band board on the house.
2. The ledger board must be attached in accordance with one of the conditions shown in Figures 11 through 13 – except if metal-plate-connected wood floor trusses were used in the house, see the text below for manufactured wood trusses.
3. The existing band board on the house must be capable of supporting the deck. If this cannot be verified or if existing conditions differ from the details here, then a free-standing deck or an engineered design is required.
4. The top of the ledger board and the top of the deck joists must be at the same elevation.

16. Ledger boards must be attached to the existing house in accordance with only one of the following or just section 9.
    a. true
    b. false
17. The top of the ledger board and the top of the deck joists may be at the same elevation.

a. true
b. false

18. The ledger board must be attached in accordance with one of the conditions shown in Figures ___.
a. 11
b. 12
c. 13
d. all of the above

19. The ledger board exception- if metal-plate-connected wood floor _____ were used in the house, see the text below for manufactured wood trusses.
a. rim board
b. sheeting
c. trusses
d. all of the above

20. The ledger-board depth must be greater than or equal to the depth of the deck joists, but not less than a ____ – and must be less than or equal to the depth of the band board on the house.
a. 2 x 4
b. 2 x 6
c. 2 x 8
d. 2 x 10

21. The existing band board on the house must be capable of supporting the deck. If this cannot be verified or if existing conditions differ from the details here, then _____ is required.
a. a free-standing deck
b. an engineered design
c. both a & b
d. none of the above

22. Ledger boards must be attached to the existing house in accordance with all of the following and section 9. Compliance is critical to ensure the _____ of your deck.
a. safety
b. structural stability
c. both a & b
d. none of the above

Wood I-joists. Many homes are constructed with wood I-joists, as shown in Figure 10. Rather than utilize a 2x band board, these systems are often constructed with a minimum 1-inch-thick engineered wood product (EWP) band board capable of supporting a deck. If a minimum 1-inch EWP or 2x band board is not present, then a free-standing deck is required, as addressed in section 10.

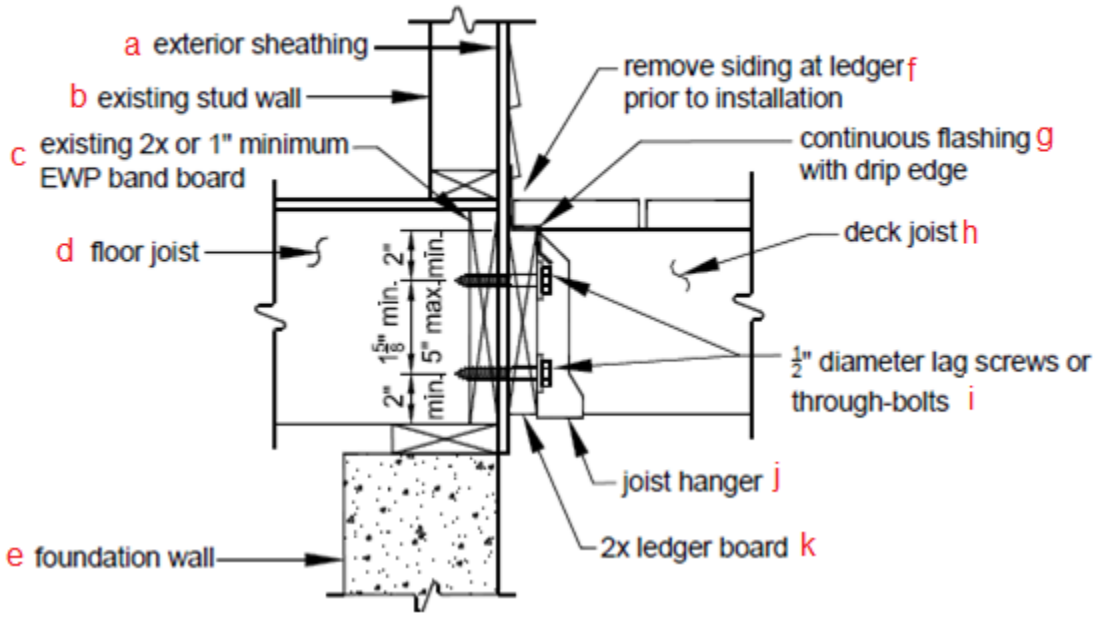
Manufactured wood trusses. A metal-plate-connected wood truss (MPCWT) is an engineered, prefabricated structural component that is designed for each specific application. MPCWT systems that are used in residential floors are often installed with a 2x4 lumber "ribbon" board at the ends of the trusses to tie the ends of the trusses together (see Detail 1 in section 7 of Appendix C.). The ribbon board, by itself, is not intended to support the deck ledger and deck. Installing a residential deck where the floor for the house uses a MPCWT system must be in accordance with a standard detail provided by the truss designer, a corresponding detail in section 7 of Appendix C, or a full plan submission – unless the deck is free-standing as addressed in section 10.

Siding and flashing. Flashing must be installed in accordance with all of the following:
1. The exterior finish, such as house siding, must be removed in the area for the ledger board prior to the installation of the ledger board.

2. Continuous flashing with a drip edge, as shown in Figure 11, is required at a ledger board that is attached to wood-framed construction. Caulking is needed with the flashing at a threshold to prevent water intrusion due to splash from the deck or due to melting snow and ice.
3. Flashing must be a corrosion-resistant metal having a minimum nominal 0.019-inch thickness – such as galvanized steel coated with 1.85 ounces of zinc per square foot (G-185 coating), copper (attached using copper nails only), or stainless steel – or must be a UV-resistant plastic recommended by its manufacturer for this use. Do not use aluminum in direct contact with lumber treated with preservatives that contain copper, such as ACQ, copper azole, or ACZA.

23. Many homes are constructed with wood I-joists, as shown in Figure 10. Rather than utilize a 2x band board, these systems are often constructed with a minimum 1-inch-thick engineered wood product (EWP) band board capable of supporting a deck. If a minimum 1-inch EWP or 2x band board is not present, then a free-standing deck is required, as addressed in section 10. This defines:
    a. Standard dimensional floor joist
    b. Manufactured wood trusses
    c. Wood I-joists
    d. none of the above
24. A metal-plate-connected wood truss (MPCWT) is an engineered, prefabricated structural component that is designed for each specific application. MPCWT systems that are used in residential floors are often installed with a 2x4 lumber “ribbon” board at the ends of the trusses to tie the ends of the trusses together (see Detail 1 in section 7 of Appendix C.). The ribbon board, by itself, is not intended to support the deck ledger and deck. Installing a residential deck where the floor for the house uses a MPCWT system must be in accordance with a standard detail provided by the truss designer, a corresponding detail in section 7 of Appendix C, or a full plan submission – unless the deck is free-standing as addressed in section 10.
    a. Standard dimensional floor joist
    b. Manufactured wood trusses
    c. Wood I-joists
    d. none of the above
25. Flashing must be installed in accordance with the following:
    a. The interior finish, such as house siding, must be removed in the area for the ledger board after to the installation of the ledger board.
    b. Non-continuous flashing with a drip edge, as shown in Figure 1, is required at a ledger board that is attached to wood-framed construction. Caulking is not needed with the flashing at a threshold to prevent water intrusion due to splash from the deck or due to melting snow and ice.
    c. Flashing may be a non-corrosion-resistant plasticl having a minimum nominal 0.19-inch thickness – such as galvanized steel coated with .185 ounces of zinc per square foot (G-185 coating), copper (attached using copper nails only), or stainless steel – or must be a UV-resistant plastic recommended by its manufacturer for this use. Do not use aluminum in direct contact with lumber treated with preservatives that contain copper, such as ACQ, copper azole, or ACZA.
    d. none of the above

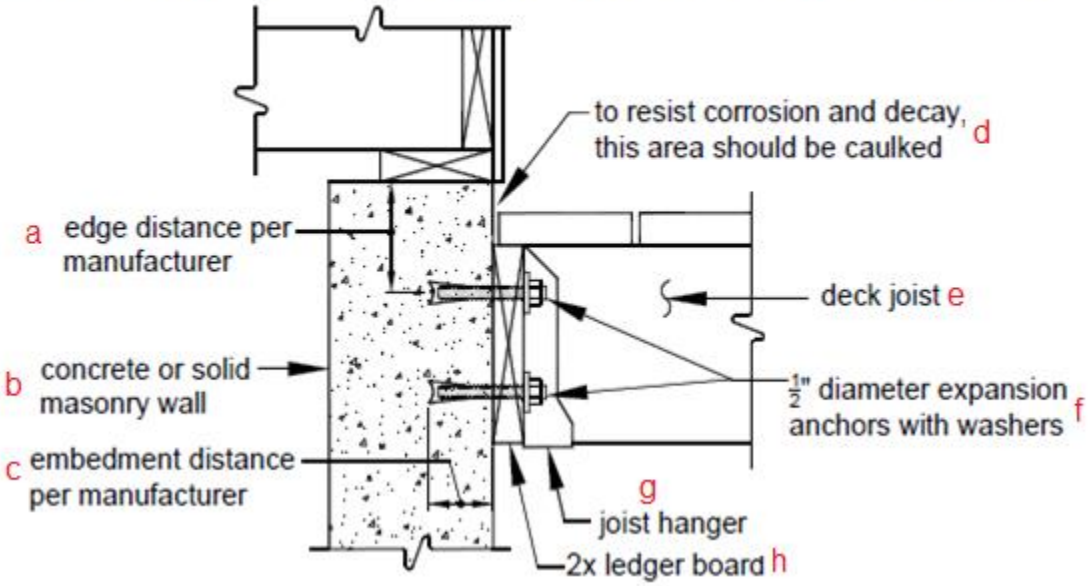
Figure 11
ATTACHMENT OF LEDGER BOARD TO BAND BOARD OR BAND JOIST



26. Floor joist is represented by letter ___?
    a. a
    b. b
    c. c
    d. d
27. EWP band board is represented by letter ___.
    a. a
    b. b
    c. c
    d. d
28. Building stud wall is represented by letter ___.
    a. a
    b. b
    c. c
    d. d
29. Exterior sheeting is represented by letter ___.
    a. a
    b. b
    c. c
    d. d
30. Foundation wall is represented by letter ___.
    a. e
    b. f
    c. g
    d. h
31. Remove siding at ledger board prior to installation is represented by letter ___.
    a. e
    b. f
    c. g
    d. h

32. Deck joist is represented by letter ___.
    a. e
    b. f
    c. g
    d. h
33. Continuous flashing with drip edge is represented by letter ___.
    a. e
    b. f
    c. g
    d. h
34. ½" diameter lag screws for through bolts are represented by letter ___.
    a. i
    b. j
    c. k
    d. l
35. Joist hanger is represented by letter ___.
    a. i
    b. j
    c. k
    d. l
36. 2 x ledger board is represented by letter ___.
    a. i
    b. j
    c. k
    d. l

Figure 12
ATTACHMENT OF LEDGER BOARD TO SOLID FOUNDATION

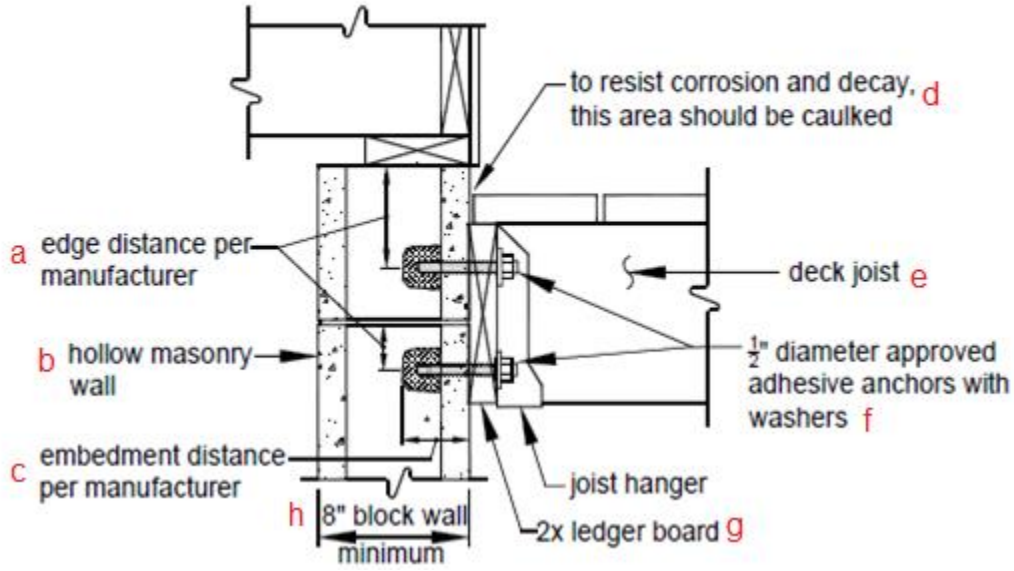


37. This area should be caulked is represented by letter ___.
    a. a
    b. b
    c. c
    d. d
38. Embedment distance per manufacturer is represented by letter ___.

a. a
b. b
c. c
d. d

39. Solid masonry wall is represented by letter ___.
    a. a
    b. b
    c. c
    d. d
40. Edge distance per manufacturer is represented by letter ___.
    a. a
    b. b
    c. c
    d. d
41. Deck joist is represented by letter ___.
    a. e
    b. f
    c. g
    d. h
42. 1/2” expansion anchors with washer is represented by letter ___.
    a. e
    b. f
    c. g
    d. h
43. Joist hanger is represented by letter ___.
    a. e
    b. f
    c. g
    d. h
44. 2x ledger board is represented by letter ___.
    a. e
    b. f
    c. g
    d. h

Figure 13
ATTACHMENT OF LEDGER BOARD TO HOLLOW FOUNDATION



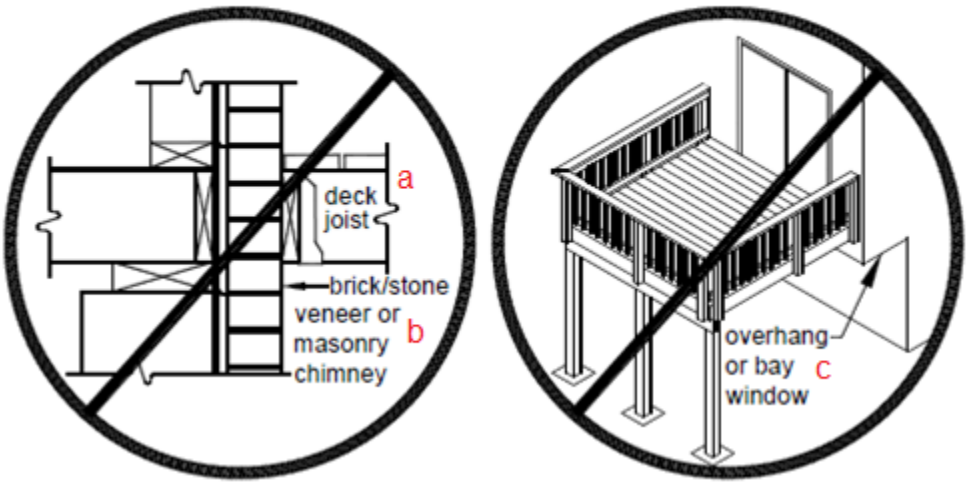
45. resist corrosion and decay is represented by letter ___.
    a. a
    b. b
    c. c
    d. d
46. Embedment distance per manufacturer is represented by letter ___.
    a. a
    b. b
    c. c
    d. d
47. Hollow masonry wall is represented by letter ___.
    a. a
    b. b
    c. c
    d. d
48. Edge distance per manufacturer is represented by letter ___.
    a. a
    b. b
    c. c
    d. d
49. Deck joist is represented by letter ___.
    a. e
    b. f
    c. g
    d. h
50. 2x ledger board is represented by letter ___.
    a. e
    b. f
    c. g
    d. h
51. ½" diameter approved adhesive anchors with washer is represented by letter ___.
    a. e

b. f
c. g
d. h

52. 8” minimum block wall is represented by letter ___.
a. e
b. f
c. g
d. h

Prohibited ledger attachments. Attaching a ledger board to or through an exterior veneer such as brick or stone, or to or through a masonry chimney, or to a house overhang – as shown below – are prohibited. In such cases, the deck must be free-standing, as addressed in section 10.

Figure 14
d PROHIBITED LEDGER ATTACHMENTS



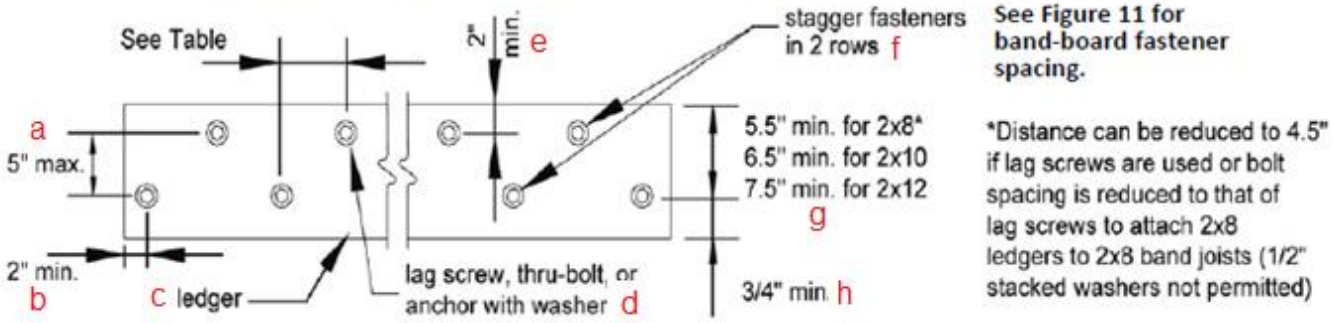
53. Attaching a ledger board to or through an exterior veneer such as _____– as shown above – are prohibited.
a. brick
b. stone
c. both a & b
d. none of the above

54. Attaching a ledger board to or through an exterior veneer such as _____– as shown above – are prohibited.
a. through a masonry chimney
b. house overhang
c. above a bay window
d. all of the above

SECTION 9: LEDGER-BOARD FASTENERS

General requirements. Ledger board fasteners must be installed in accordance with this section. Placement and spacing must be in accordance with Figure 15 and Table 6. Only the fastener types listed here are approved for use; lead anchors are prohibited. Adequacy of connections may be verified by local inspectors.

Figure 15
LEDGER BOARD FASTENER SPACING AND CLEARANCES



55. Ledger board fasteners. Lead anchors are prohibited.
    a. true
    b. false
56. Adequacy of connections _____ be verified by local inspectors.
    a. shall
    b. must
    c. might
    d. may
57. The letter g above represents _____.
    a. 5.5” minimum for 2 x 8
    b. 6.5” minimum for 2 x 10
    c. 7.5” minimum for 2 x 12
    d. all of the above
58. The letter d above represents _____.
    a. lag screw
    b. thru-bolt
    c. anchor with washer
    d. all of the above
59. The letter h above represents _____.
    a. 2” minimum
    b. 5” maximum
    c. ¾” minimum
    d. staggered fasteners in 2 rows
60. The letter b above represents _____.
    a. 2” minimum
    b. 5” maximum
    c. ¾” minimum
    d. staggered fasteners in 2 rows
61. The letter a above represents _____.
    a. 2” minimum
    b. 5” maximum
    c. ¾” minimum
    d. staggered fasteners in 2 rows
62. The letter f above represents _____.
    a. 2” minimum
    b. 5” maximum
    c. ¾” minimum
    d. staggered fasteners in 2 rows

Table 6
LEDGER BOARD FASTENER SPACING, ON CENTER[1,2,3]

Fastener	Band Board	Joist Span: less than or equal to						
		6'	8'	10'	12'	14'	16'	18'
Lag screws	1" EWP	24"	18"	14"	12"	10"	9"	8"
	$1^1/_8$" EWP	28"	21"	16"	14"	12"	10"	9"
	2x Lumber	30"	23"	18"	15"	13"	11"	10"
Through-Bolts	1" EWP	24"	18"	14"	12"	10"	9"	8"
	$1^1/_8$" EWP	28"	21"	16"	14"	12"	10"	9"
	2x Lumber	36"	36"	34"	29"	24"	21"	19"
Through-Bolts with ½" stacked washers[4,5]	2x Lumber	36"	36"	29"	24"	21"	18"	16"
Adhesive anchors	———	32"	32"	32"	24"	24"	16"	16"

1. These values are valid for deck ledgers consisting of douglas fir/larch, hem/fir, or southern pine; and for band boards consisting of douglas fir-larch, hem-fir, spruce-pine-fir, southern pine, or engineered wood product (EWP).
2. Where solid-sawn pressure-preservative-treated deck ledgers are attached to engineered wood products (minimum 1" thick wood structural panel band joist or structural composite lumber including laminated veneer lumber), the ledger attachment must be designed in accordance with accepted engineering practice. These tabulated values are in accordance with that practice and are based on 300 lbs and 350 lbs for 1" and 11/8" EWP rim board, respectively.
3. The thickness of the sheathing over the band board must not exceed 15/32".
4 The maximum gap between the face of the ledger board and face of the wall sheathing is ½".
5. Wood structural panel sheathing, gypsum board sheathing, or foam sheathing is permitted between the ledger board and the band board. Stacked washers are permitted in combination with wood structural panel sheathing, but are not permitted in combination with gypsum board or foam sheathing. The maximum distance between the face of the ledger board and the face of the band board is 1".

63. Fasteners included on Table 6 are _____.
    a. adhesive anchors
    b. through-bolts
    c. lag screws
    d. all of the above
64. Referencing Table 6, adhesive anchors are _____.
    a. prohibited
    b. allowed
    c. none of the above
    d. both a or b
65. Ledger board fastener spacing for a lag screw, 1" EWP, joist span of 14', would be ____.
    a. 8"
    b. 9"
    c. 10"
    d. 12"
66. Wood structural _____ is permitted between the ledger board and the band board.
    a. panel sheathing
    b. gypsum board sheathing
    c. foam sheathing
    d. all of the above
67. The maximum distance between the face of the ledger board and the face of the band board is __".

a. 3/4
b. 7/8
c. 15/32
d. 1

68. The thickness of the sheathing over the band board must not exceed _____".
a. 3/4
b. 7/8
c. 15/32
d. 1

Through-bolts. Through-bolts must have a diameter of ½ inch. Pilot holes for through-bolts must be 17/32 to 9/16 inches in diameter. Through-bolts must be equipped with washers at the bolt head and nut. Bolts should be tightened 6 to 12 months after construction due to drying and wood shrinkage.
Expansion anchors. Expansion or adhesive anchors must be used for attaching a ledger board to a concrete or solid masonry wall, as shown in Figure 12. The bolt or threaded rod of expansion anchors must have a diameter of ½ inch, which in some cases may result in needing a 5/8-inch-diameter anchor. Expansion anchors must be installed in accordance with the manufacturer's instructions and must be equipped with washers.
Adhesive anchors. Approved adhesive anchors with a ½-inch-diameter threaded rod must be used for attaching a ledger board to hollow masonry, as shown in Figure 13. Examples of approved adhesive anchors include the Epcon Acrylic 7 by ITW Ramset/Red Head, and the HY-20 by Hilti. Adhesive anchors are also permitted with concrete or solid masonry installations. Adhesive anchors must be installed in accordance with the manufacturer's instructions and must be equipped with washers. Adhesive cartridges should remain on the jobsite for inspector verification.
Lag screws. The diameter, length, and shank of lag screws must comply with Figure 16. Lag screws must be equipped with washers and be installed in the following sequence:
1. Drill a ½-inch-diameter hole in the ledger board and a 5/16-inch-diameter pilot hole into the solid-connection material of the existing house.
2. Insert the lag screw through the ledger board and into the pilot hole by turning. Do not drive with a hammer. Use soap or a wood-compatible lubricant if needed to facilitate tightening.
3. Tighten each lag screw snugly, but do not over-tighten so as to cause wood damage.

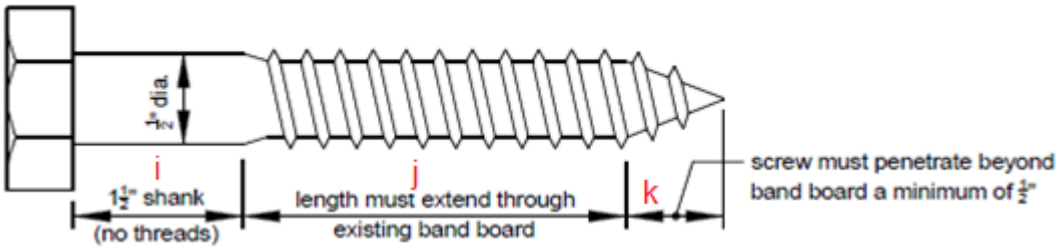
69. Expansion or adhesive anchors must be used for attaching a ledger board to a concrete or solid masonry wall defines:
a. Through-bolts.
b. Adhesive anchors
c. Lag screws
d. Expansion anchors

70. Approved adhesive anchors with a ½-inch-diameter threaded rod must be used for attaching a ledger board to hollow masonry defines:
a. Through-bolts.
b. Adhesive anchors
c. Lag screws
d. Expansion anchors

71. Through-bolts must have a diameter of ½ inch. Pilot holes for through-bolts must be 17/32 to 9/16 inches in diameter defines:
a. Through-bolts
b. Adhesive anchors
c. Lag screws
d. Expansion anchors

72. The diameter, length, and shank of lag screws must comply with Figure 16. Lag screws must be equipped with washers defines:
    a. Through-bolts
    b. Adhesive anchors
    c. Lag screws
    d. Expansion anchors

Figure 16
LAG SCREW



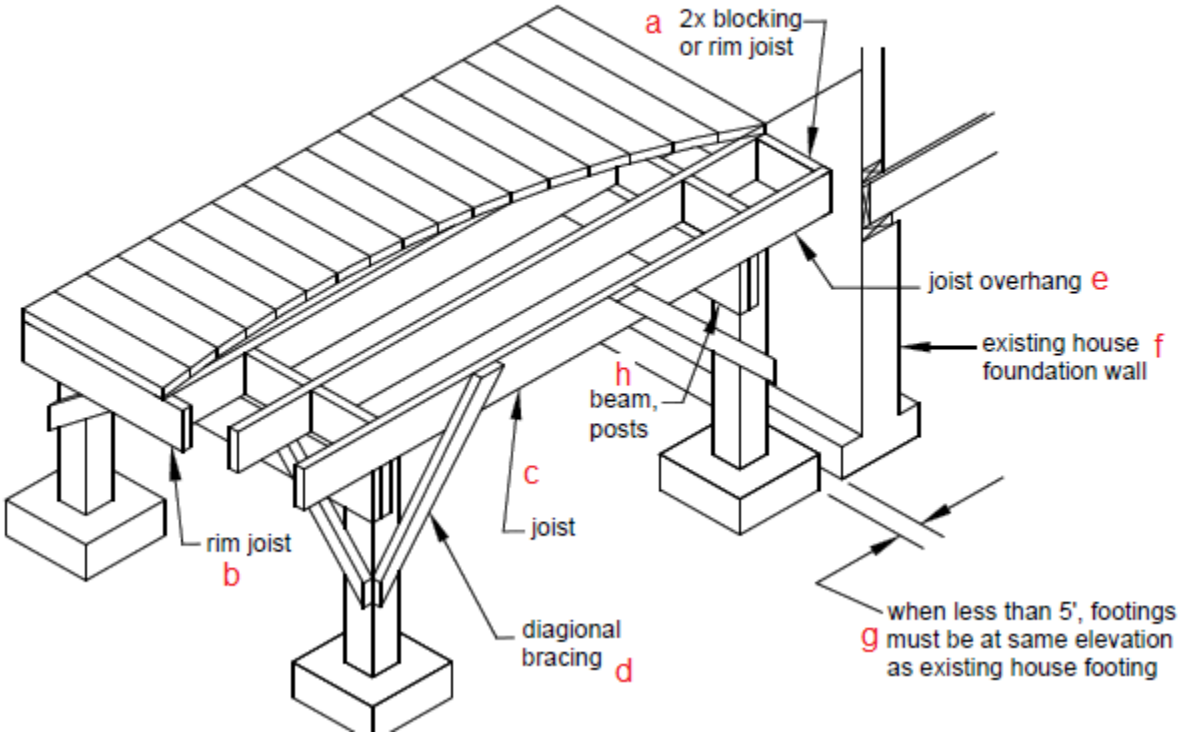
73. The letter k represents _____.
    a. 1.5” shank with no threads
    b. length must extend through existing band board
    c. screw must penetrate beyond band board a minimum of ½”
74. The letter j represents _____.
    a. 1.5” shank with no threads
    b. length must extend through existing band board
    c. screw must penetrate beyond band board a minimum of ½”
75. The letter i represents _____.
    a. 1.5” shank with no threads
    b. length must extend through existing band board
    c. screw must penetrate beyond band board a minimum of ½”

SECTION 10: FREE-STANDING DECKS

A deck that is free-standing does not utilize the exterior wall of the existing house to support vertical loads. Instead, an additional beam is provided at or offset from the existing house wall, as shown in Figure 17. If the edge of a deck footing is closer than 5 feet to an existing exterior house wall, the footing must bear at the same elevation as the existing wall footing as shown in Figure 17. For a house with a basement, a cylindrical footing (caisson) is recommended to minimize required excavation at the basement wall.

76. If the edge of a deck footing is closer than ___ feet to an existing exterior house wall, the footing must bear at the same elevation as the existing wall footing
    a. 3
    b. 4
    c. 5
    d. 6
77. A deck that is free-standing ____ utilize the exterior wall of the existing house to support vertical loads.
    a. may
    b. does
    c. does not
    d. none of the above

Figure 17
FREE-STANDING DECK



78. The letter d represents _____.
    a. diagonal bracing
    b. joist overhang
    c. when less than 5', footing must be at the same elevation as the existing house footing
    d. beam posts
79. The letter g represents _____.
    a. diagonal bracing
    b. joist overhang
    c. when less than 5', footing must be at the same elevation as the existing house footing
    d. beam posts
80. The letter h represents _____.
    a. diagonal bracing
    b. joist overhang
    c. when less than 5', footing must be at the same elevation as the existing house footing
    d. beam posts
81. The letter e represents _____.
    a. diagonal bracing
    b. joist overhang
    c. when less than 5', footing must be at the same elevation as the existing house footing
    d. beam posts

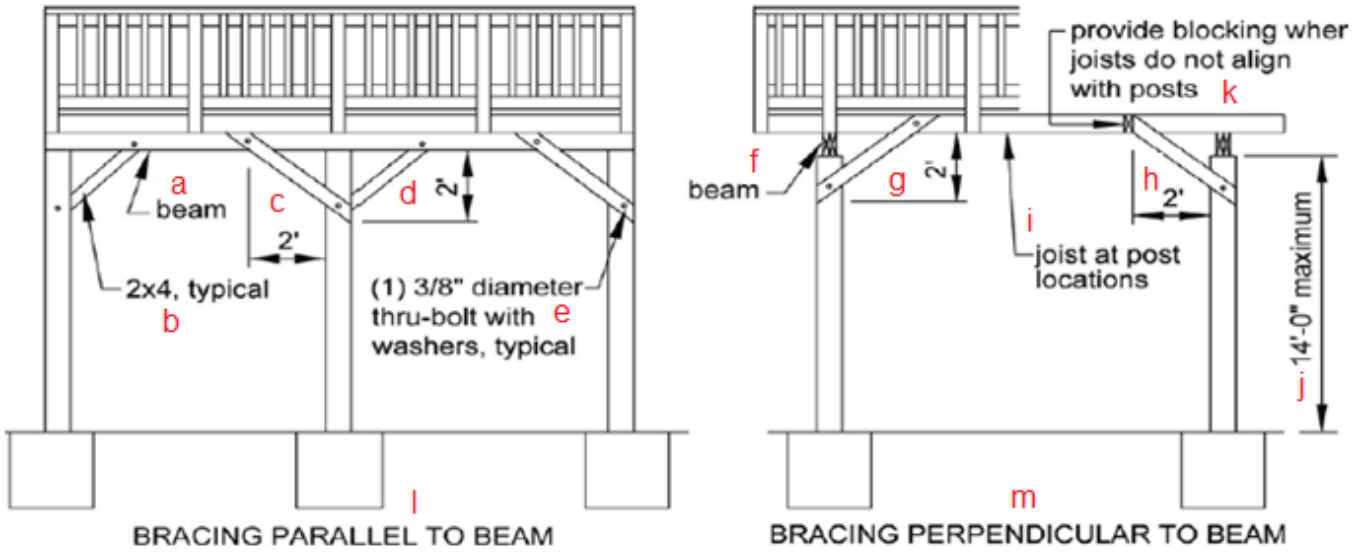
SECTION 11: LATERAL SUPPORT

A deck that is more than 24 inches above grade must resist lateral loads in accordance with the following: **Diagonal Bracing.** Provide diagonal bracing both parallel and perpendicular to the beam at each post as shown in Figure 18. Where parallel to the beam, the bracing must be bolted to the post at one end and to the beam at the other. Where perpendicular to the beam, the bracing must be bolted to the post at one end

and to a joist or blocking between joists at the other. Where a joist does not align with the bracing location, provide blocking between the adjacent joists. **Exceptions:** Bracing is not required perpendicular to the house for a deck that is attached to the house with both a ledger board under sections 8 and 9 and the connection specified in either Figure 19 or 20. For a free-standing deck that is attached to the house as specified in Figure 21, bracing parallel to the house may be omitted at the beam adjacent to the house. All bracing may be omitted for a deck which is attached to the house in accordance with sections 8 and 9 or Figures 21 and which has all of its decking installed at a 45 degree angle to the deck joists.

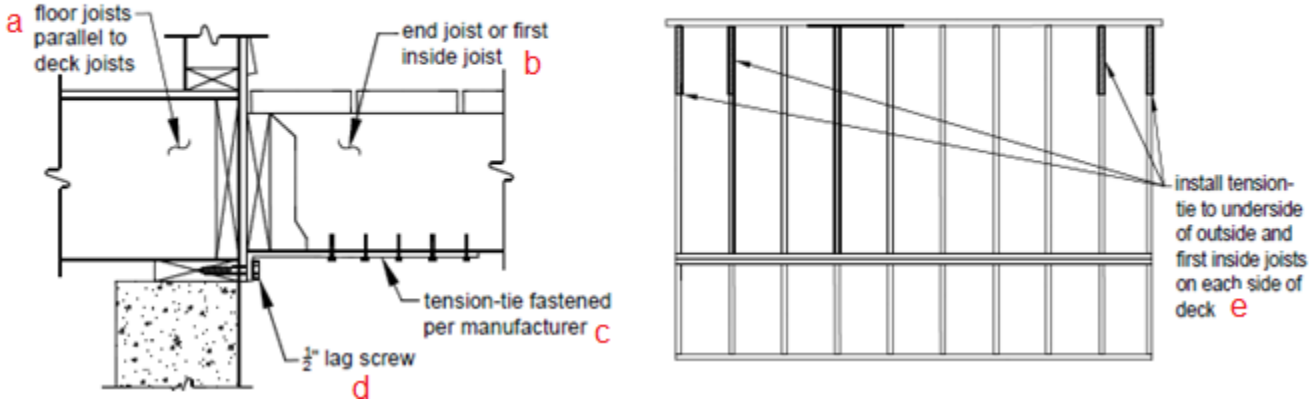
82. A deck that is more than 24 inches above grade must resist lateral loads in accordance with the following: _____, the bracing must be bolted to the post at one end and to the beam at the other.
    a. Where a joist does not align with the bracing location
    b. Where perpendicular to the beam
    c. Where parallel to the beam
    d. all of the above
83. A deck that is more than 24 inches above grade must resist lateral loads in accordance with the following: _____, the bracing must be bolted to the post at one end and to a joist or blocking between joists at the other.
    a. Where a joist does not align with the bracing location
    b. Where perpendicular to the beam
    c. Where parallel to the beam
    d. all of the above
84. A deck that is more than 24 inches above grade must resist lateral loads in accordance with the following: _____, provide blocking between the adjacent joists.
    a. Where a joist does not align with the bracing location
    b. Where perpendicular to the beam
    c. Where parallel to the beam
    d. all of the above
85. For a free-standing deck that is than 24 inches above grade and attached to the house as specified in Figure 21, bracing parallel to the house may be omitted at the beam _____.
    a. front and back
    b. front only
    c. adjacent to the house
    d. adjacent to the house and front of deck
86. All bracing may be omitted for a free-standing deck that is than 24 inches above grade which is attached to the house in accordance with sections 8 and 9 or Figures 21 and which has all of its decking installed _____ to the deck joists.
    a. perpendicular
    b. parallel
    c. at a 45 degree angle
    d. none of the above

Figure 18
DIAGONAL BRACING REQUIREMENTS



87. The letter m represents _____.
    a. provide blocking where joist do not align with posts
    b. (1) 3/8” diameter thru-bolt with washers
    c. bracing parallel to beam
    d. bracing perpendicular to beam
88. The letter k represents _____.
    a. provide blocking where joist do not align with posts
    b. (1) 3/8” diameter thru-bolt with washers
    c. bracing parallel to beam
    d. bracing perpendicular to beam
89. The letter e represents _____.
    a. provide blocking where joist do not align with posts
    b. (1) 3/8” diameter thru-bolt with washers
    c. bracing parallel to beam
    d. bracing perpendicular to beam
90. The letter l represents _____.
    a. provide blocking where joist do not align with posts
    b. (1) 3/8” diameter thru-bolt with washers
    c. bracing parallel to beam
    d. bracing perpendicular to beam

Figure 19
TENSION-TIE CONNECTION, WITH LEDGER BOARD



91. The letter d represents _____.
    a. floor joist parallel to deck joists
    b. tension-tie fastened per manufacturer
    c. install tension tie to underside of outside and first inside joists on each side of deck.
    d. 1/2" lag screw
92. The letter c represents _____.
    a. floor joist parallel to deck joists
    b. tension-tie fastened per manufacturer
    c. install tension tie to underside of outside and first inside joists on each side of deck.
    d. 1/2" lag screw
93. The letter e represents _____.
    a. floor joist parallel to deck joists
    b. tension-tie fastened per manufacturer
    c. install tension tie to underside of outside and first inside joists on each side of deck.
    d. 1/2" lag screw
94. The letter a represents _____.
    a. floor joist parallel to deck joists
    b. tension-tie fastened per manufacturer
    c. install tension tie to underside of outside and first inside joists on each side of deck.
    d. 1/2" lag screw

Tension-tie requirements. Tension ties, if used instead of perpendicular bracing as described above, must comply with all of the following, but are not permitted for free-standing decks:
1. The deck joists and floor joists must be parallel.
2. At least 4 ties must be installed, at the end joist and first inside joist at each end of the deck as shown in Figure 19. A set of tension-ties must be installed for each structurally independent section of a multi-level deck.
3. Approved tension-ties include the LTS19 from USP or LTT19 from Simpson Strong-Tie.
4. The minimum capacity of each tension-tie is 750 pounds.
5. Tension ties are not available in a G-185 zinc coating, therefore a barrier membrane must separate the tension tie and the preservative-treated joist. The barrier membrane must be recommended for this location by its manufacturer.
6. Tension-ties must be attached to the underside of the joists in accordance with the manufacturer's instructions. Tension-ties must be attached to the exterior wall with lag screws as shown in Figure 19. Lag screws must penetrate a minimum of 3 inches into the sill plate or top plate of a wood-framed wall.

7. Where attaching to a concrete wall, lags screws may be replaced with adhesive or expansion anchors and a ½-inch threaded rod, with a withdrawal capacity of at least 750 pounds. The anchor must be installed in accordance with the manufacturer's instructions.

Hold-down tension devices. Hold-down tension devices, if used instead of perpendicular bracing as described above, must be provided in at least two locations per deck, and each device must have an allowable-stress-design capacity of at least 1,500 pounds.

Free-standing deck – attachment to house. Attach the deck's rim joist to the existing house exterior wall as shown in Figure 21 for a free-standing deck, if diagonal bracing parallel to the house is omitted, as described above. The wall must be sheathed with minimum 3/8-inch wood structural panel sheathing. Use lag screws or through-bolts if fastening to an existing band joist or wall stud; and use expansion or adhesive anchors if fastening to concrete or masonry. Do not attach to brick veneers. Verify this condition in the field prior to utilizing this method. Fasteners must be 16 inches on center and staggered in 2 rows. Flashing over the rim joist is required and must be installed in accordance with the flashing provisions in section 8.

95. Tension ties are permitted for free-standing decks.
    a. true
    b. false

96. Tension ties, if used instead of perpendicular bracing as described above, must comply with all of the following:
    a. Tension ties are not available in a G-185 zinc coating, therefore a barrier membrane must separate the tension tie and the preservative-treated joist. The barrier membrane must be recommended for this location by its manufacturer.
    b. Tension-ties must be attached to the underside of the joists in accordance with the manufacturer's instructions. Tension-ties must be attached to the exterior wall with lag screws as shown in Figure 19. Lag screws must penetrate a minimum of 3 inches into the sill plate or top plate of a wood-framed wall.
    c. Where attaching to a concrete wall, lags screws may be replaced with adhesive or expansion anchors and a ½-inch threaded rod, with a withdrawal capacity of at least 750 pounds. The anchor must be installed in accordance with the manufacturer's instructions.
    d. all of the above

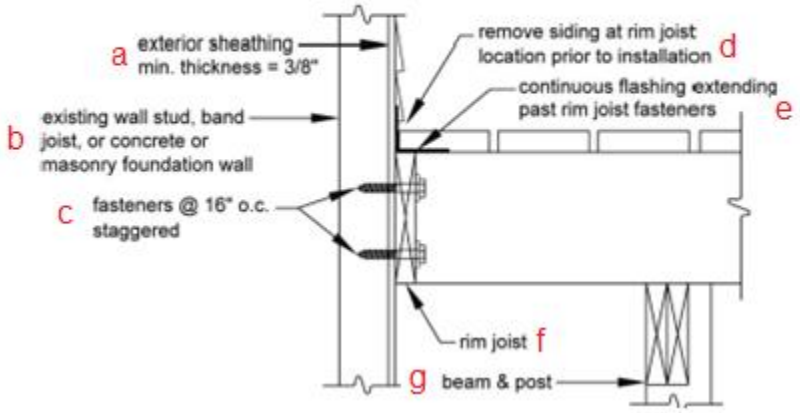
97. Tension ties, if used instead of perpendicular bracing as described above, must comply with all of the following:
    a. The deck joists and floor joists must be perpendicular.
    b. At least 14 ties must be installed, at the end joist and first inside joist at each end of the deck as shown in Figure 1. A set of tension-ties must be installed for each structurally independent section of a multi-level deck < 24" to grade.
    c. Store bought tension-ties include the LTS19 from USP or LTT19 from Simpson Strong-Tie & the minimum capacity of each tension-tie is 175 pounds.
    d. none of the above

98. Hold-down tension devices, if used instead of perpendicular bracing as described above, must be provided in at least ____ locations per deck,
    a. 1
    b. 2
    c. 3
    d. 4

99. Hold-down tension devices, if used instead of perpendicular bracing as described above, each device must have an allowable-stress-design capacity of at least _____ pounds.
    a. 150

b. 1500
c. 15000
d. none of the above

Figure 21
ATTACHMENT OF FREE-STANDING DECK TO HOUSE FOR LATERAL SUPPORT



100. The letter e represents _____.
a. exterior sheathing minimum thickness = 3/8”
b. fasteners @ 16” O. C. staggered
c. remove siding at rim joist location prior to installation
d. continuous flashing extending past the rim joist fasteners
101. The letter a represents _____.
a. exterior sheathing minimum thickness = 3/8”
b. fasteners @ 16” O. C. staggered
c. remove siding at rim joist location prior to installation
d. continuous flashing extending past the rim joist fasteners
102. The letter c represents _____.
a. exterior sheathing minimum thickness = 3/8”
b. fasteners @ 16” O. C. staggered
c. remove siding at rim joist location prior to installation
d. continuous flashing extending past the rim joist fasteners
103. The letter d represents _____.
a. exterior sheathing minimum thickness = 3/8”
b. fasteners @ 16” O. C. staggered
c. remove siding at rim joist location prior to installation
d. continuous flashing extending past the rim joist fasteners

---

SECTION 12: DECKING

All decking materials must be wood or a wood-plastic composite and must comply with all of the following:
1. Wood decking must be 2x4s, 2x6s, or five-quarter span-rated decking boards. Wood-plastic-composite sizes must be in accordance with the manufacturer’s instructions. Plastic decking may be used if it is approved by a professional testing organization for supporting a live load of 40 psf and is installed according to the manufacturer’s instructions.
2. Decking must be attached in accordance with Figure 22, and may be placed at an angle of 45 to 90 degrees to the joists unless disallowed in the manufacturer’s instructions. If the decking is wet, place it with no gap so that after drying, a ⅛-inch gap is created.

3. Decking may overhang a joist by up to 3 inches unless disallowed in the manufacturer's instructions.
4. The center-to-center joist spacing may be up to 24 inches for wood decking, but may not exceed 16 inches for wood-plastic-composite decking unless specified otherwise by the manufacturer.
5. Each wood decking member must bear on a minimum of 4 joists or intermediate blocking between joists.
6. Placement and attachment of wood-plastic composites must be in accordance with the manufacturer's instructions.
7. Attach the decking to the rim joist in accordance with Figure 23.

Figure 22
TYPICAL DECKING

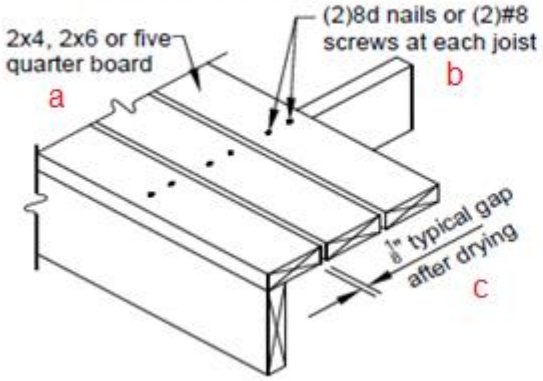
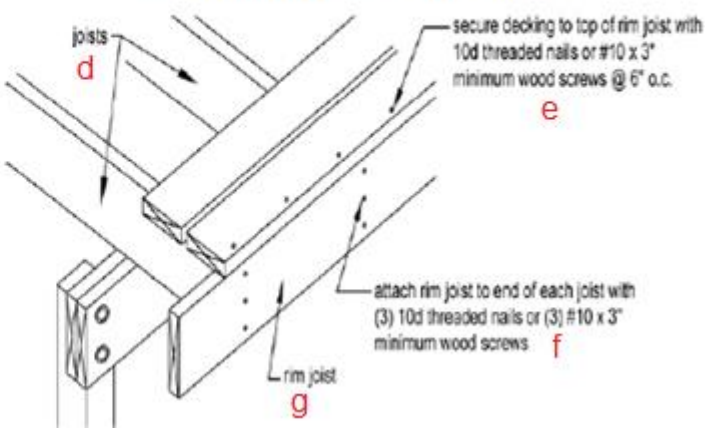


Figure 23
RIM JOIST CONNECTION



104. The letter c represents _____.
    a. 1/8" typical gap after drying
    b. (2) 8d or (2) #8 screws at each joist
    c. secure decking to top of rim joist with 10d threaded nails or #10 x 3" min. wood screws 6" o.c.
    d. attached rim to end of each joist with (3) 10d threaded or (3) #10 x 3" min. wood screws
105. The letter b represents _____.
    a. 1/8" typical gap after drying
    b. (2) 8d or (2) #8 screws at each joist
    c. secure decking to top of rim joist with 10d threaded nails or #10 x 3" min. wood screws 6" o.c.
    d. attached rim to end of each joist with (3) 10d threaded or (3) #10 x 3" min. wood screws
106. The letter f represents _____.
    a. 1/8" typical gap after drying
    b. (2) 8d or (2) #8 screws at each joist
    c. secure decking to top of rim joist with 10d threaded nails or #10 x 3" min. wood screws 6" o.c.
    d. attached rim to end of each joist with (3) 10d threaded or (3) #10 x 3" min. wood screws
107. The letter e represents _____.
    a. 1/8" typical gap after drying
    b. (2) 8d or (2) #8 screws at each joist
    c. secure decking to top of rim joist with 10d threaded nails or #10 x 3" min. wood screws 6" o.c.
    d. attached rim to end of each joist with (3) 10d threaded or (3) #10 x 3" min. wood screws
108. Decking may overhang a joist by up to ___" unless disallowed in the manufacturer's instructions.
    a. 2
    b. 3
    c. 4
    d. none of the above
109. The center-to-center joist spacing may be up to ____ inches for wood decking.
    a. 16

b. 24
c. 32
d. all of the above

110. The center-to-center joist spacing may not exceed ___ inches for wood-plastic-composite decking unless specified otherwise by the manufacturer.
a. 16
b. 24
c. 32
d. all of the above

111. Each wood decking member must bear on a minimum of ___ joists or intermediate blocking between joists.
a. 2
b. 3
c. 4
d. none of the above

112. Plastic decking may be used if it is approved by a professional testing organization for supporting a live load of ___ psf and is installed according to the manufacturer's instructions.
a. 20
b. 30
c. 40
d. 50

113. Decking may be placed at an angle of ____ degrees to the joists unless disallowed in the manufacturer's instructions.
a. 45 to 60
b. 60 to 90
c. 45 to 90
d. none of the above

114. If the decking is wet, place it with no gap so that after drying, a ___-inch gap is created.
a. 1/16
b. 1/8
c. 3/16
d. 1/4

SECTION 13: GUARDRAILS AND POSTS

All open sides of a deck area that is more than 24 inches above grade – at any point within 36 inches beyond the edge of the deck – must have a guardrail that complies with Figure 24 and with all of the following:

1. Every opening between balusters, between a baluster and a post, and between the bottom 2x4 and the deck must prevent the through-passage of a sphere having a diameter of 4 3/8 inches, when applying a force of 4 pounds. Wet lumber must be spaced such that when shrinkage due to drying occurs, a compliant opening is maintained.
2. Rope, cable, or a similar non-rigid material may be used instead of balusters if it is strung with maximum openings of 3½ inches and with vertical supports no more than 4 feet apart.
3. The guardrail and posts must withstand a 200-pound load applied in any direction.
4. Guardrail-infill components, such as balusters and panel fillers, must withstand a horizontally applied, perpendicular load of 50 pounds on any one-foot-square area.
5. Wood-plastic composites of equivalent dimensions may be substituted for the guardrail cap and infill elements shown in Figure 24 if the manufacturer's instructions permit this use.

115. The guardrail and posts must withstand a ____-pound load applied in any direction.

a. 100
b. 150
c. 200
d. 250

116. Rope, cable, or a similar non-rigid material may be used instead of balusters if it is strung with maximum openings of ____ inches.

a. 3
b. 3.25
c. 3.5
d. 4

117. Rope, cable, or a similar non-rigid material may be used instead of balusters if the vertical supports no more than ___ feet apart.

a. 3
b. 4
c. 5
d. 6

118. Every opening between balusters, between a baluster and a post, and between the bottom 2x4 and the deck must prevent the through-passage of a sphere having a diameter of __ inches,

a. 3
b. 3.25
c. 3.5
d. 4 3/8

119. All open sides of a deck area that is more than 24 inches above grade – at any point within ___ inches beyond the edge of the deck – must have a guardrail

a. 12
b. 24
c. 36
d. 48

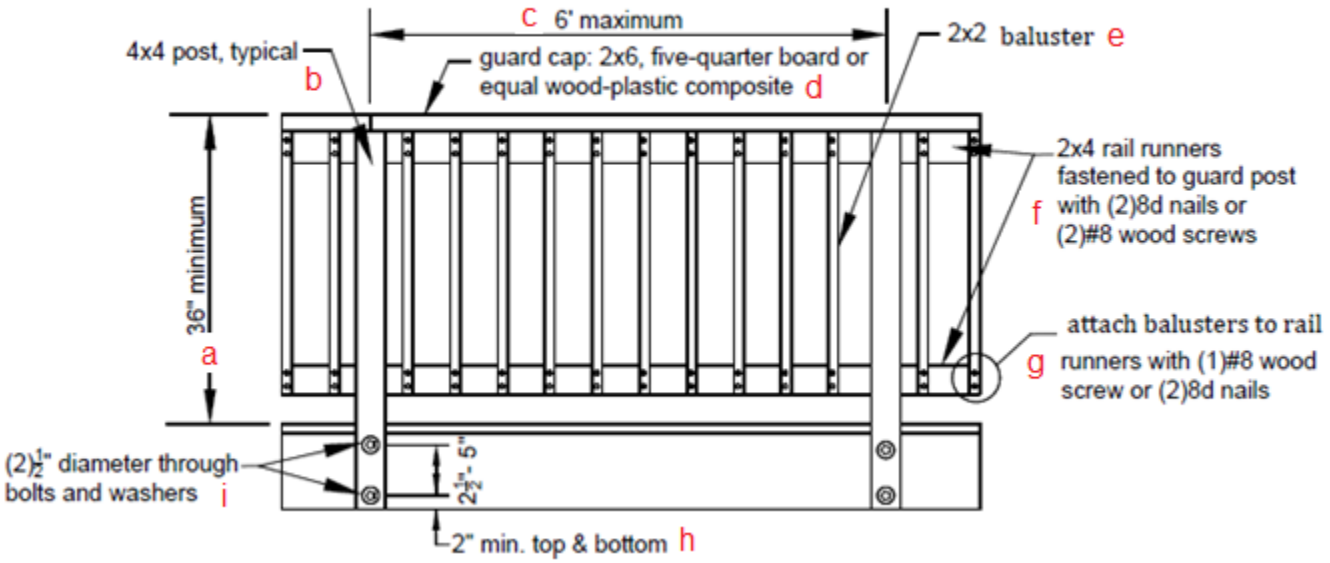
120. Every opening between balusters, between a baluster and a post, and between the bottom 2x4 and the deck must prevent the through-passage of a sphere when applying a force of __ pounds.

a. 3
b. 3.25
c. 3.5
d. 4

121. Wet lumber must be spaced such that when shrinkage due to drying occurs, a compliant opening is maintained.

a. true
b. false

Figure 24
GUARDRAILS



122. The letter h represents _____.
    a. 6’ maximum
    b. 36” minimum
    c. 2” minimum top and bottom
    d. (2) 1/2” diameter through bolts and washers
123. The letter c represents _____.
    a. 6’ maximum
    b. 36” minimum
    c. 2” minimum top and bottom
    d. (2) 1/2” diameter through bolts and washers
124. The letter i represents _____.
    a. 6’ maximum
    b. 36” minimum
    c. 2” minimum top and bottom
    d. (2) 1/2” diameter through bolts and washers
125. The letter a represents _____.
    a. 6’ maximum
    b. 36” minimum
    c. 2” minimum top and bottom
    d. (2) 1/2” diameter through bolts and washers

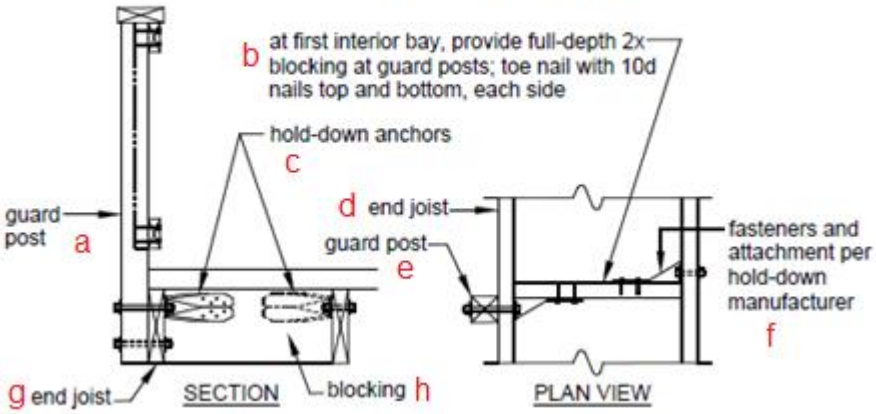
Guard posts. Guard posts must be attached to the deck structure in accordance with all of the following:
1. Notching guard posts, as shown in Figure 25, is prohibited.
2. Hold-down anchors, as shown in Figures 26 and 27 must be used to attach the guard post to the end joist and rim joist, respectively.
3. Hold-down anchors must have a minimum capacity of 1,800 pounds.
4. Guard posts may be attached to either side of the end joist or rim joist.
5. Bolt holes for a post must be at least 2 inches from the wood edge, at least 2½ inches apart, and no more than 5 inches apart.

126. Guard posts must be attached to the deck structure in accordance with the following:
    a. Hold-down anchors must have a minimum capacity of 1,800 pounds.

b. Guard posts may be attached to either side of the end joist or rim joist.
c. Bolt holes for a post must be at least 2 inches from the wood edge, at least 2½ inches apart, and no more than 5 inches apart.
d. all of the above

Figure 25
POST NOTCHING PROHIBITED

Figure 26
GUARD POST TO END JOIST



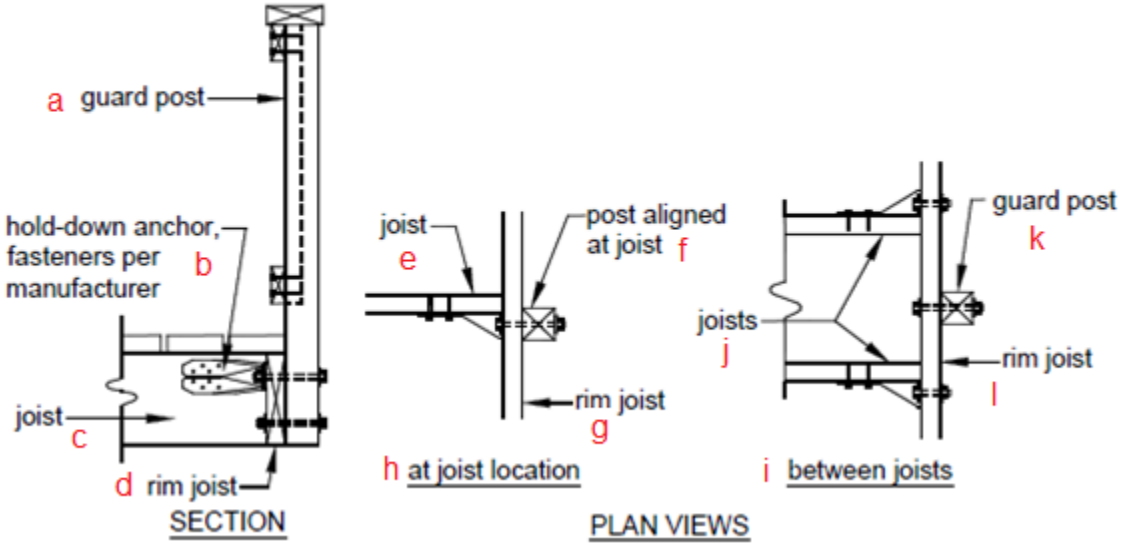
127. The letter f represents _____.
a. hold-down anchors
b. at first bay provide full depth 2x blocking at guard posts
c. fasteners and attachment per hold-down manufacturer
d. do not notch

128. The letter i represents _____.
a. hold-down anchors
b. at first bay provide full depth 2x blocking at guard posts
c. fasteners and attachment per hold-down manufacturer
d. do not notch

129. The letter b represents _____.
a. hold-down anchors
b. at first bay provide full depth 2x blocking at guard posts
c. fasteners and attachment per hold-down manufacturer
d. do not notch

130. The letter c represents _____.
a. hold-down anchors
b. at first bay provide full depth 2x blocking at guard posts
c. fasteners and attachment per hold-down manufacturer
d. do not notch

Figure 26
GUARD POST TO RIM JOIST



SECTION 14: STAIRS

Stair dimensions. Stair dimensions must comply with all of the following:
1. The minimum width of a stairway is 36 inches.
2. Handrails and associated trim may project a maximum of 4½ inches into the required width at each side of the stairway. The minimum clear width at and below the handrail, including at treads and landings, cannot be less than 31½ inches where a handrail is installed on one side, and 27 inches where handrails are provided on both sides.
3. Stair geometry and openings must be as shown in Figure 27.
4. Within a stairway flight, the largest tread depth may not exceed the smallest tread depth by more than 3/8 inch, and the largest riser height may not exceed the smallest riser height by more than 3/8 inch.
5. If the total vertical height of a stairway exceeds 12 feet, an intermediate landing is required and must be constructed as a free-standing deck with flush beams, and with posts as shown in Figure 29.
6. Any landing width must equal or exceed the total width of the stairway it serves.

131. The minimum clear width at and below the handrail, including at treads and landings, cannot be less than ___ inches where a handrail is installed on one side
   a. 36
   b. 4.5
   c. 31.5
   d. 27
132. The minimum clear width at and below the handrail, including at treads and landings, cannot be less than ____ inches where handrails are provided on both sides.
   a. 4.5
   b. 28
   c. 31.5
   d. 27
133. Handrails and associated trim may project a maximum of ___ inches into the required width at each side of the stairway.
   a. 4.5
   b. 36

c. 31.5
d. 27

134. The minimum width of a stairway is ___ inches.
a. 4.5
b. 36
c. 31.5
d. 27

135. Within a stairway flight, the largest tread depth may not exceed the smallest tread depth by more than ___ inch.
a. 1/8
b. 3/16
c. 1/4
d. 3/8

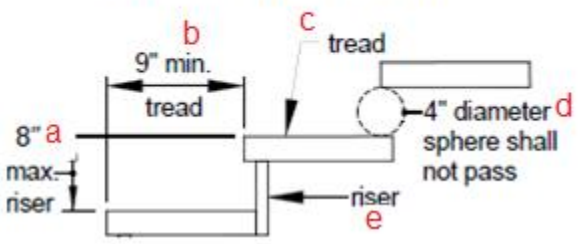
136 Within a stairway flight, the largest riser height may not exceed the smallest riser height by more than ___ inch.
a. 1/8
b. 3/16
c. 1/4
d. 3/8

137. If the total vertical height of a stairway exceeds ___ feet, an intermediate landing is required.
a. 10
b. 11
c. 12
d. 14

138. If the total vertical height of a stairway exceeds 12 feet, an intermediate landing must be constructed as a free-standing deck with _____.
a. flush beams
b. posts
c. both a & b
d. none of the above

139. Any landing width must _____ the total width of the stairway it serves.
a. less than
b. equal to
c. exceed
d. both b & c

Figure 27
TREADS AND RISERS



140. The letter c represents _____.
a. 9” minimum tread
b. 8” maximum rise
c. 4” diameter sphere shall not pass
d. tread

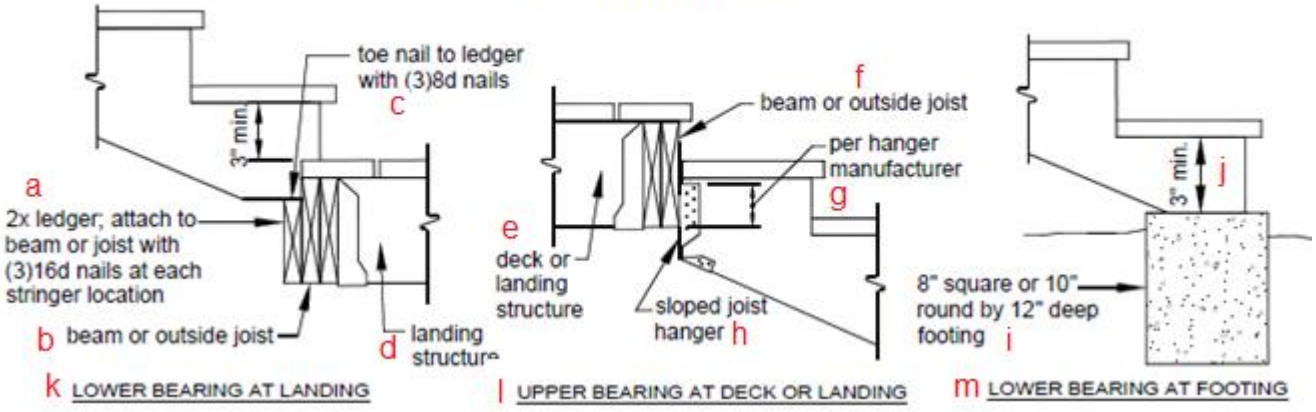
141. The letter b represents _____.
    a. 9” minimum tread
    b. 8” maximum rise
    c. 4” diameter sphere shall not pass
    d. tread
142. The letter d represents _____.
    a. 9” minimum tread
    b. 8” maximum rise
    c. 4” diameter sphere shall not pass
    d. tread
143. The letter a represents _____.
    a. 9” minimum tread
    b. 8” maximum rise
    c. 4” diameter sphere shall not pass
    d. tread

Stair stringers. Stringers must comply with all of the following:
1. Stringers must be sawn or solid 2x12s complying with the above tread and riser dimensions.
2. Stringers must be spaced no more than 18 inches on center.
3. Stringers must bear on footings and attach to the deck or a landing in accordance with Figure 28, except the footings must comply with Figure 29 if the vertical drop of the stairway is more than 24 inches. The depth to below frost must not be less than 48 inches.
4. Stringer-span length is measured using the horizontally projected distance between the centerlines of bearing at each end.
5. The span length of a stringer must not exceed 6 feet-0 inches, and the throat size of cut stringers must not be less than 5 inches, as shown in Figure 30.
Solid-stringer exception: Stringers for a stairway that has a width of 36 inches may have a horizontally projected span of up to 13 feet 3 inches if the stairway is framed solely with 2 solid stringers.
Intermediate-supported stringers: If the total stringer length exceeds the above dimensions, a 4x4 post may be provided to support the stringer and shorten its span length. The 4x4 post must be notched and bolted to the stringer in accordance with Figure 2. The post must bear over the middle one-third of a footing that is constructed in accordance with Figure 29 and is attached to the post as shown in Figure 2. An intermediate landing as described above may also be provided to shorten the stringer span.

144. Stringers must be spaced no more than ___ inches on center.
    a. 16
    b. 18
    c. 24
    d. 32
145. The span length of a stringer must not exceed ___ feet.
    a. 4
    b. 6
    c. 8
    d. 10
146. The throat size of cut stringers must not be less than ___ inches.
    a. 4
    b. 5
    c. 6
    d. 3

147. Stringer-span length is measured using the horizontally projected distance between the ___of bearing at each end.
    a. post edges
    b. centerlines of post edges
    c. centerlines
    d. mid-lines
148. Stringers must bear on footings and attach to the _____.
    a. deck
    b. landing
    c. both a & b
    d. none of the above
149. The stringer footing depth to below frost must not be less than ___ inches.
    a. 42
    b. 46
    c. 48
    d. no footing is required.
150. Stringers must be _____ 2x12s.
    a. sawn
    b. solid
    c. both a & b
    d. none of the above

Figure 28
STRINGER BEARING



151. The letter h represents _____.
    a. sloped joist hanger
    b. lower bearing at landing
    c. upper bearing at deck or landing
    d. lower bearing at footing
152. The letter k represents _____.
    a. sloped joist hanger
    b. lower bearing at landing
    c. upper bearing at deck or landing
    d. lower bearing at footing
153. The letter l represents _____.
    a. sloped joist hanger
    b. lower bearing at landing
    c. upper bearing at deck or landing

d. lower bearing at footing

154. The letter m represent _____.
   a. sloped joist hanger
   b. lower bearing at landing
   c. upper bearing at deck or landing
   d. lower bearing at footing

Figure 29
STAIR OR POST FOOTING

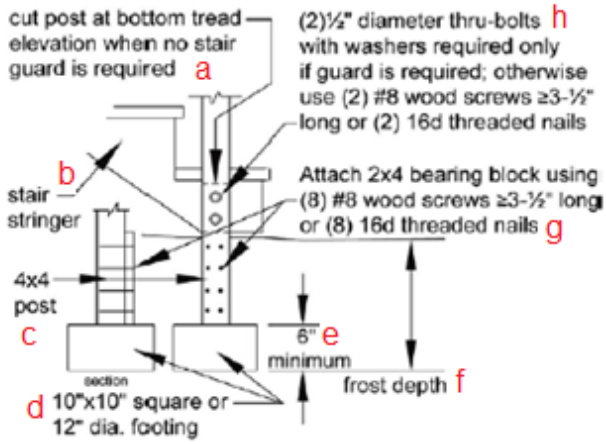
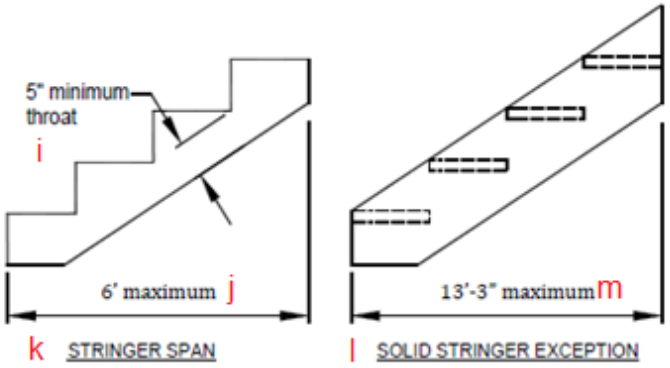


Figure 30
STRINGER SPAN LENGTH



155. The letter i represents _____.
   a. 6' maximum
   b. 5" minimum
   c. 13' 3" maximum
   d. 6' minimum

156. The letter j represents _____.
   a. 6' maximum
   b. 5" minimum
   c. 13' 3" maximum
   d. 6" minimum

157. The letter e represents _____.
   a. 6' maximum
   b. 5" minimum
   c. 13' 3" maximum
   d. 6" minimum

158. The letter m represents _____.
   a. 6' maximum
   b. 5" minimum
   c. 13' 3" maximum
   d. 6" minimum

Tread and riser material. Treads and risers must comply with all of the following:

1. Tread material must be equivalent to the decking specified in section 12 and be attached in accordance with Figure 31, except wood-plastic composites must be attached in accordance with the manufacturer's instructions.
2. Stairs constructed using the solid-stringer exception noted above must have treads constructed of 2x wood material only and be attached in accordance with Figure 31.
3. Risers that are not open (as shown in Figure 27) must be framed with 1x lumber minimum or an equivalent wood-plastic composite.

Figure 31
STAIRWAY TREADS

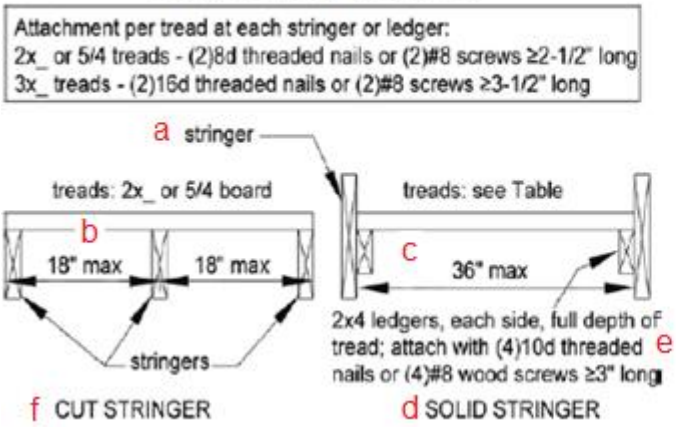


Table 7
MINIMUM TREAD SIZES[1]

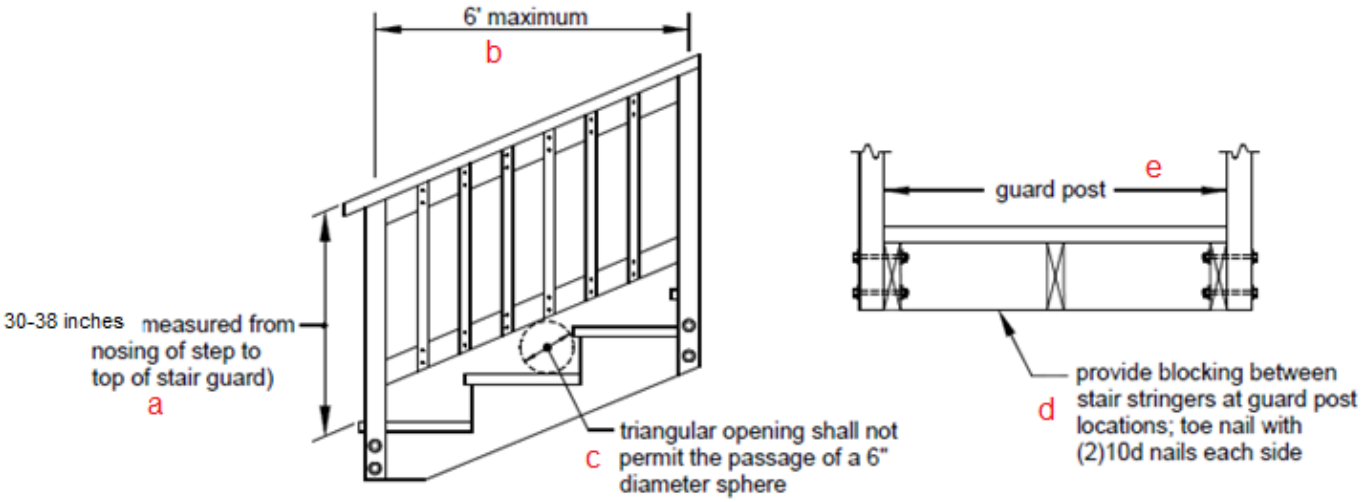
Species	Cut Stringer	Solid Stringer
Douglas Fir/Larch, Hem/Fir, SPF[2]	2x4 or 5/4	2x8 or 3x4
Southern Pine	2x4 or 5/4	2x8
Redwood, Western Cedars, Ponderosa Pine[3], Red Pine[3]	2x4 or 5/4	2x10 or 3x4

[1] Assumes 300 lb concentrated load, L/288 deflection limit, No. 2 grade, and wet service conditions.
[2] Incising assumed for refractory species including Douglas fir-larch, hem-fir, and spruce-pine-fir.
[3] Design values based on northern species with no incising assumed.

159. The letter a represents _____.
    a. 18” maximum
    b. 36” maximum
    c. 2 x 4 ledgers, each side, full depth f ftread
    d. stringer
160. 339. The letter b represents _____.
    a. 18” maximum
    b. 36” maximum
    c. 2 x 4 ledgers, each side, full depth of tread
    d. stringer
161. 339. The letter c represents _____.
    a. 18” maximum
    b. 36” maximum
    c. 2 x 4 ledgers, each side, full depth of tread
    d. stringer
162. 339. The letter e represents _____.
    a. 18” maximum
    b. 36” maximum
    c. 2 x 4 ledgers, each side, full depth of tread
    d. stringer
163. Wood-plastic composites must be attached in accordance with the _____ instructions.
    a. inspector’s
    b. supplier’s
    c. manufacturer’s
    d. lumber yard’s
164. Footnote Table 7. Minimum tread size assumes _____ lb. concentrated load.
    a. 200
    b. 250
    c. 300
    d. none of the above

Stair guardrails. Guardrails must be provided on all open sides of stairs consisting of more than 3 risers. Stair guardrails must comply with section 13 and Figure 32.

Figure 32
STAIR GUARDRAILS



165. Guardrails must be provided on all open sides of stairs consisting of more than ___ risers.
    a. 2
    b. 3
    c. 4
    d. 5
166. The letter a represents _____.
    a. 6’ maximum
    b. 30-38” measured from nosing of step to top of stair guard
    c. triangular opening shall not permit the passage of a 6” diameter sphere
    d. provide blocking between stair stringers and guard post locations
167. The letter b represents _____.
    a. 6’ maximum
    b. 30-38” measured from nosing of step to top of stair guard
    c. triangular opening shall not permit the passage of a 6” diameter sphere
    d. provide blocking between stair stringers and guard post locations
168. The letter c represents _____.
    a. 6’ maximum
    b. 30-38” measured from nosing of step to top of stair guard
    c. triangular opening shall not permit the passage of a 6” diameter sphere
    d. provide blocking between stair stringers and guard post locations
169. The letter d represent _____.
    a. 6’ maximum
    b. 30-38” measured from nosing of step to top of stair guard
    c. triangular opening shall not permit the passage of a 6” diameter sphere
    d. provide blocking between stair stringers and guard post locations

---

Stair handrails. A flight of stairs with more than 3 risers must have at least one handrail that complies with all of the following:
1. The handrail must be located at least 30 inches, but no more than 38 inches above the nosing of the treads – except that a volute, turnout, starting easing, or transition fitting may depart from these dimensions. Measurement must be taken from the nosing to the top of the rail.
2. The handrail must be attached to a stair guardrail or exterior wall acting as a barrier as shown in Figure 33.
3. The handrail and connecting hardware must be decay- and corrosion-resistant.

4. The handrail must have a smooth surface with no sharp corners and must be graspable, as shown in Figure 34. Recessed sections may be shaped from a 2x6 or five-quarter board, as shown there.
5. Handrails must run continuously from a point directly over the lowest riser to a point directly over the highest riser.
6. Handrails may be interrupted by guard posts at a turn in the stair only.

170. A flight of stairs with less than 3 risers must have at least ____handrail.
    a. 1
    b. 2
    c. both a & b
    d. none of the above
171. The handrail must be attached to a _____ acting as a barrier
    a. stair guardrail
    b. exterior wall
    c. both a & b
    d. none of the above
172. The handrail and connecting hardware must be _____ resistant.
    a. decay
    b. corrosion
    c. both a & b
    d. none of the above
173. Handrails may run continuously from a point directly over the lowest riser to a point directly over the highest riser.
    a. true
    b. false

Figure 33
STAIR HANDRAILS

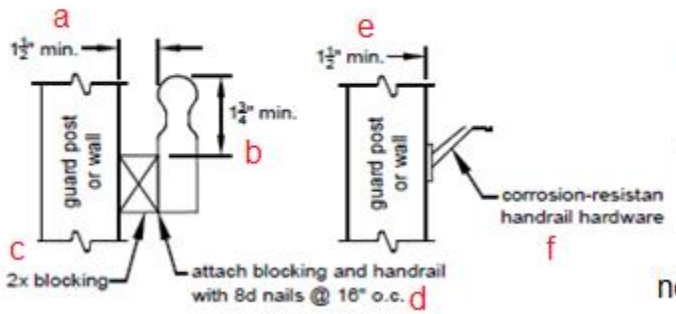
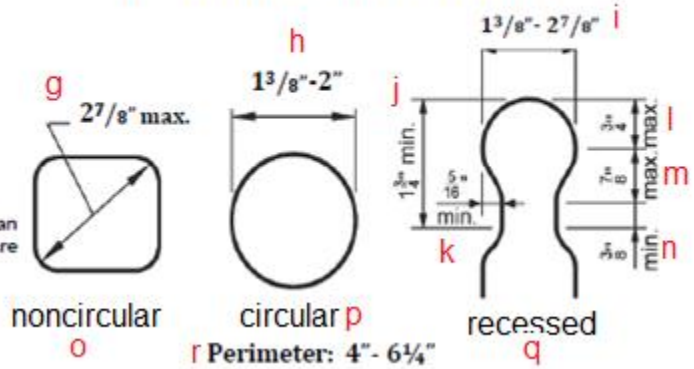


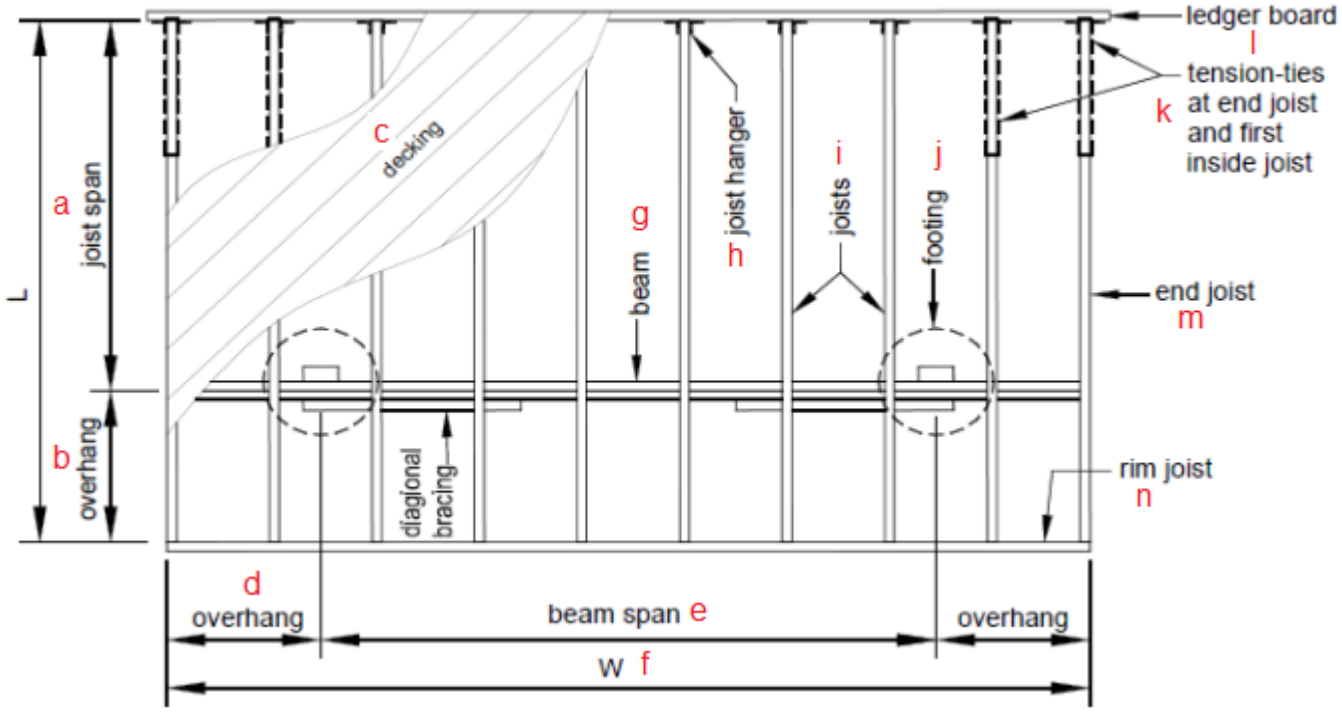
Figure 34
HANDRAIL GRASPABILITY



SECTION 15: FRAMING PLAN

A typical framing plan shows a bird's-eye view of the joist and beam layout; the location of the ledger board, diagonal bracing or hold-down devices, posts, and footings; and the type, size, and spacing of the ledger board fasteners. You can use the sample typical deck framing plan shown on the next page in combination with the requirements in this document to complete your deck.

Figure 36
TYPICAL DECK FRAMING PLAN



Decking: ☐ 2x4 ☐ 2x6 ☐ five-quarter board ☐ wood-plastic composite (per ASTM D 7032)
☐ Other decking, evaluation report number:_____

Joists: size: ☐ 2x6 ☐ 2x8 ☐ 2x10 ☐ 2x12 spacing: ☐ 12 in. ☐ 16 in. ☐ 24 in.
joist span dimension: _____ft. - _____in.
overhang: ☐ Yes ☐ No overhang dimension: _____ft. - _____in.
rim joist: ☐ 2x6 ☐ 2x8 ☐ 2x10 ☐ 2x12

Beam(s): number of plies: ☐ 2 ☐ 3 size: ☐ 2x6 ☐ 2x8 ☐ 2x10 ☐ 2x12
overhang: ☐ Yes ☐ No overhang dimension: _____ft. -_____in.

Posts: size: ☐ 4x4 ☐ 4x6 ☐ 6x6 height: _____ft. - _____in.

Footings: size:_____in. ☐ square ☐ round thickness: _____in.

Ledger: ledger board size: ☐ 2x8 ☐ 2x10 ☐ 2x12 ☐ Not applicable (free-standing deck)
fastener: ☐ Through bolt ☐ Lag screw ☐ Wood screw
☐ Expansion anchor ☐ Adhesive anchor

Lateral support: ☐ Tension-tie ☐ Diagonal bracing, size: ☐ 2x
(not permitted for free-standing deck)

Deck size: L=_____ft. - _____in. W=_____ft. - _____in.

SECTION 8.Chapters SPS 320 to 325 Appendix C is created to read:

Chapters SPS 320 –325 Appendix C
Supplemental Deck Features and Reference Information

CONTENTS

1.Wood preservatives for ground contact.
2. Specifications for fasteners.
3. Sources of design values.
4. Joist spans for alternate wood species.
5. Framing around a chimney or bay window.
6. Attachment of ledger boards to metal-plate-connected wood floor trusses.

1. Wood preservatives for ground contact. The following Table lists common pressure-preservative treatments and retention levels, in pounds per cubic foot, for sawn lumber in ground contact–based on the American Wood Protection Association's *Book of Standards*.

Table C–1
PRESERVATIVE TREATMENTS AND RETENTION LEVELS FOR GROUND CONTACT (IN POUNDS PER CUBIC FOOT)

Species	ACQ-B	ACQ-C	ACQ-D	CA-B	CuN-W
Southern Pine	0.40	0.40	0.40	0.21	0.11
Douglas Fir-Larch	0.40	0.40	NR	0.21	0.11
Hem-Fir	0.40	0.40	0.40	0.21	0.11
Ponderosa Pine	0.40	0.40	0.40	0.21	0.11
Red Pine	0.40	0.40	0.40	0.21	0.11
Spruce-Pine-Fir	NR[1]	0.40	NR	NR	NR
Redwood	NR	NR	NR	NR	NR

[1]NR = treatment not recommended.

2. Sources of design values. The sources of the design values in Appendix B are as follows:
• Table 1 – Minimum footing sizes: The Building Inspectors Association of Southeast Wisconsin, December 2014.
• Table 2 – Maximum post heights: *Typical Deck Details, Based on the 2009 International Residential Code,* Fairfax County, Virginia, July 2013.
• Tables 3A and 3B – Maximum beam spans: *Design for Code Acceptance 6,* American Wood Council, May 2013.
• Table 4 – Maximum joist spans: *Design for Code Acceptance 6* (DCA 6), American Wood Council, May 2013; except for the 2x6 values, which are from the Building Inspectors Association of Southeast Wisconsin, December 2014.
• Table 5 – Minimum joist-hanger download capacity: *Design for Code Acceptance 6,* American Wood Council, May 2013; except for the 2x6 values, which are repeated from the 2x8 values.
• Table 6 – Ledger-board-fastener spacing: *Design for Code Acceptance 6,* American Wood Council, May 2013.

• Figure 30 – Stringer span length, and Table 7 – Minimum tread sizes: *Design for Code Acceptance 6,* American Wood Council, May 2013.
• Table C–2 – Maximum joist spans for redwood, western cedars, ponderosa pine, and red pine: *Design for Code Acceptance 6,* American Wood Council, May 2013; except for the 2x6 values, which are from the Building Inspectors Association of Southeast Wisconsin, December 2014.
• Table C–3 – Trimmer joist download capacity: *Design for Code Acceptance 6,* American Wood Council, May 2013.

3. Joist spans for alternate wood species. The following Table lists maximum joist-span lengths for redwood, western cedars, ponderosa pine, and red pine.

Table C–2
MAXIMUM JOIST-SPAN LENGTH[1] FOR REDWOOD, WESTERN CEDARS, PONDEROSA PINE[2], AND RED PINE[2]

Joist Spacing (on center)	Joist Size	Without Overhang	With Overhangs
12"	2x6	8'-5"	7'-3"
	2x8	11'-8"	8'-6"
	2x10	14'-11"	12'-3"
	2x12	17'-5"	16'-5"
16"	2x6	7'-8"	7'-3"
	2x8	10'-7"	8'-6"
	2x10	13'-0"	12'-3"
	2x12	15'-1"	15'-1"
24"	2x6	6'-7"	6'-7"
	2x8	8'-8"	8'-6"
	2x10	10'-7"	10'-7"
	2x12	12'-4"	12'-4"

1. Spans are based on 40 psf live load, 10 psf dead load, normal loading duration, wet service conditions and deflections of Δ=L/360 for main span and L/180 for overhang with a 220-lb. point load.
2. Design values based on northern species with no incising assumed.

4. Alternate beam and joist spans. The table on the following two pages lists alternate beam and joist spans and corresponding footing sizes from the Southeast Wisconsin Building Inspectors Association that can be used instead of the values in Appendix B.

Beam and Footing Sizes with Overhangs

Based on No. 2 or better Southern Pine, Douglas Fir-Larch[2], and Ponderosa Pine

| Joist Length (JL)[1] | | Post Spacing (Measured Center to Center) | | |

Beam and Footing Sizes with Overhangs

Based on No. 2 or better Southern Pine, Douglas Fir-Larch[2], and Ponderosa Pine

| Joist Length (JL)[1] | | Post Spacing (Measured Center to Center) | | |

175. Framing around a chimney or bay window. _____ used to attach the hanger to the ledger must fully extend through the ledger into the 2-inch nominal lumber band joist (1½" actual) or the EWP rim board.
    a. Bolts
    b. Lag screws
    c. Nails
    d. both a & b
176. All members at a chimney or bay window must be framed in accordance with Figure C–1. Headers may span a maximum of ____ feet.
    a. 5
    b. 6
    c. 7
    d. 8

Figure C–1
DETAIL FOR FRAMING AROUND A CHIMNEY OR BAY WINDOW

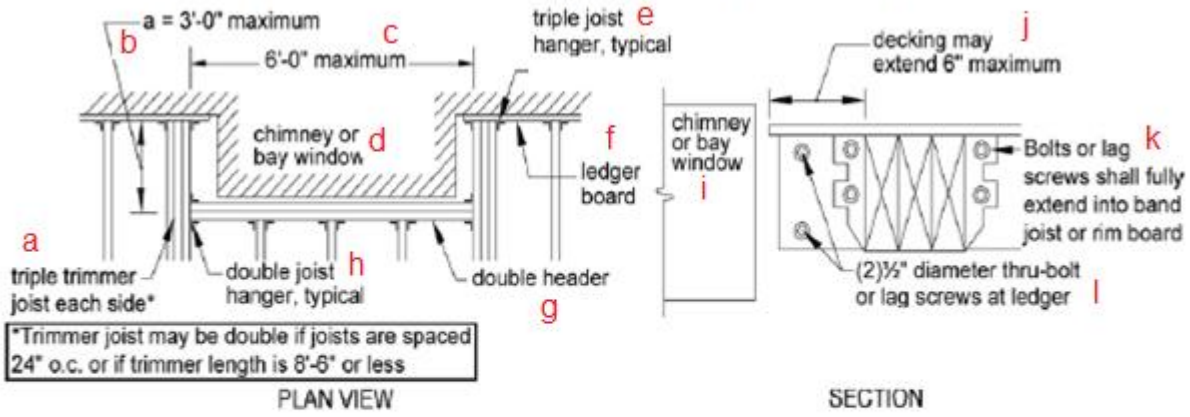


Table C–3
TRIMMER JOIST HANGER DOWNLOAD CAPACITY

Joist Size	Minimum Capacity, lbs
2x8	1050
2x10	1380
2x12	1500

177. The letter b represents _____.
    a. 3’ maximum
    b. 6’ maximum
    c. decking may extend 6” maximum
    d. double header
178. The letter c represents _____.
    a. 3’ maximum
    b. 6’ maximum
    c. decking may extend 6” maximum
    d. double header
179. The letter j represents _____.
    a. 3’ maximum
    b. 6’ maximum
    c. decking may extend 6” maximum
    d. double header
180. The letter g represents _____.

a. 3’ maximum
b. 6’ maximum
c. decking may extend 6” maximum
d. double header

---

6. Attachment of ledger boards to metal-plate-connected wood floor trusses. The research report on the following pages shows acceptable methods for attaching a ledger board to a metal-plate-connected wood-floor-truss system.

To obtain your Continuing Education Credits follow the below instructions.

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Address_____

Credential Number_____Phone#_____

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List each credential held by attendee_____

_____Credited Hours 6 hrs Fee:$50

Email address_____Fax#_____

To be completed by GaryKlinka.com

Course Password_____Course ID# 17669

Attendee passed the course with a greater than 70% score on Date_____

Instructor Signature_____

New Deck Code Quiz part 2 of 2

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

121	a	b	c	d	141	a	b	c	d	161	a	b	c	d
122	a	b	c	d	142	a	b	c	d	162	a	b	c	d
123	a	b	c	d	143	a	b	c	d	163	a	b	c	d
124	a	b	c	d	144	a	b	c	d	164	a	b	c	d
125	a	b	c	d	145	a	b	c	d	165	a	b	c	d
126	a	b	c	d	146	a	b	c	d	166	a	b	c	d
127	a	b	c	d	147	a	b	c	d	167	a	b	c	d
128	a	b	c	d	148	a	b	c	d	168	a	b	c	d
129	a	b	c	d	149	a	b	c	d	169	a	b	c	d
130	a	b	c	d	150	a	b	c	d	170	a	b	c	d
131	a	b	c	d	151	a	b	c	d	171	a	b	c	d
132	a	b	c	d	152	a	b	c	d	172	a	b	c	d
133	a	b	c	d	153	a	b	c	d	173	a	b	c	d
134	a	b	c	d	154	a	b	c	d	174	a	b	c	d
135	a	b	c	d	155	a	b	c	d	175	a	b	c	d
136	a	b	c	d	156	a	b	c	d	176	a	b	c	d
137	a	b	c	d	157	a	b	c	d	177	a	b	c	d
138	a	b	c	d	158	a	b	c	d	178	a	b	c	d
139	a	b	c	d	159	a	b	c	d	179	a	b	c	d
140	a	b	c	d	160	a	b	c	d	180	a	b	c	d