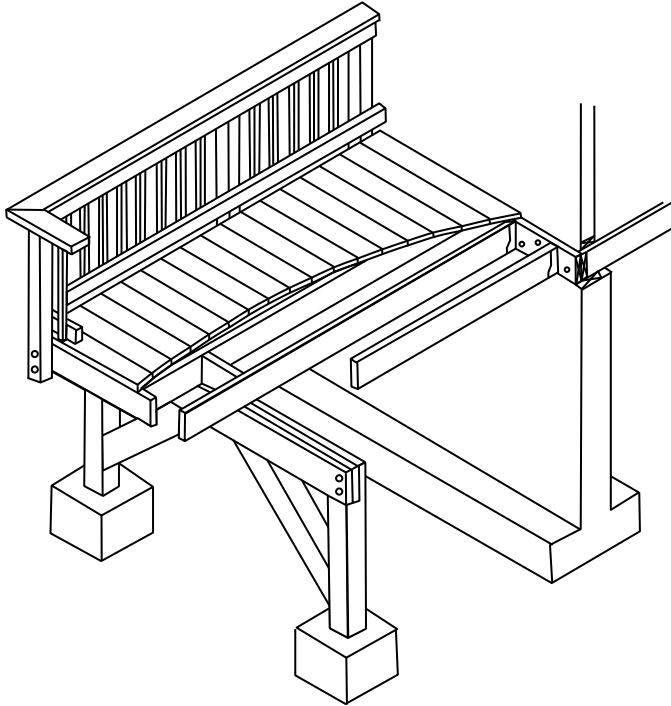




Typical Deck Details

Based on the 2021 International Residential Code



Inspection Services Department

171 North Ross Street
Auburn, AL
(334) 501-3170

Hours of Operation

Monday—Friday
7:30 to 4:30

The information contained within this bulletin is the most common needed to obtain a permit and is not representative of all the conditions that may be encountered during the construction of your project. It is the responsibility of the permit holder or the permit holder's representative to notify the city when the stages of construction are reached that require an inspection. All inspections need to be requested 24 hours prior by calling Inspection Services.

Section1 General Notes2

Design Considerations2

Material Specifications2

Section 2 Deck Surface3

Decking3

Safety Glazing4

Electrical4

Section 3 Joists5

Joist size5

Joist Framing at Projections7

Joist Hangers7

Joist-to-Beam Connection7

Section 4 Beams8

Beam Size9

Beam Assembly9

Section 5 Footings & Posts10

Footing Size10

Post-to-Footing Connection11

Post Size & Maximum Height10

Beam-to-Post Connection11

Section 6 Ledger Attachment 12

General Requirements 12

Ledger Board Fasteners 14

Section 7 Lateral Support 16

Bracing Methods 16

Bracing-to-Framing Connection 18

Section 8 Guards 18

Guard Construction 18

Guard Post Connections 19

Section 9 Stairs 20

Stair Geometry 20

Stair Landing 20

Stair Construction 20

1 - General Notes

These typical deck details are provided to ensure design and construction of decks in Auburn is consistent and code compliant. Prior to designing your deck, read this publication thoroughly and pay close attention to each applicable detail. Once you have selected the size of your deck, use the joist and beam span tables to determine their size, spacing, span lengths and overhang dimensions. Use the remaining details to guide you in determining the other design

elements of your deck.

If you have questions, please contact Auburn Inspection Services at 334-501-3170. Information regarding permit application, zoning setbacks and inspection requirements can be found at auburnalabama.org.

Design Considerations

1. These details are based on the prescriptive requirements of the 2015 International Residential Code, industry best-practices and applicable referenced standards such as the National Design Specification for Wood Construction.
2. Framing members in these details are designed for a 40 PSF live load, 10 PSF dead load, normal loading duration, wet service conditions and deflections of $\ell/360$ for main spans and $\ell/180$ for overhangs with a 220-pound point load.
3. The use of these details to design and construct multi-level decks is prohibited.
4. Deviation from these details require approval by staff prior to construction.
5. Decks constructed in accordance with these details are not approved for privacy screens, planters, or hot tubs.
6. Decks must be designed to ensure rain and melting ice and snow flow away from the existing house.
7. Publication “DCA6” from the American Wood Council can also be used to obtain a permit in Auburn. Go to awc.org to download.

Material Specifications

1. Lumber shall be preservative-treated, southern pine, grade #2 or better. Lumber not native to North America, such as Ipe, may be used as decking only; its use in guards is prohibited.
2. Lumber in contact with the ground shall be rated as “ground-contact.” Not all treated lumber is rated for ground contact.
3. Concrete in footings shall have a minimum compressive strength of 3,000 PSI.
4. Nails shall be threaded, ring-shanked or annular grooved. A 1/8-inch pilot hole shall be used at toenailing locations.
5. Carriage-bolts may be substituted where through-bolts are specified provided carriage-bolt washers (with square holes) are installed at the bolt head.
6. Fasteners shall be hot-dipped galvanized, stainless steel or approved for use with preservative-treated lumber.

7. Hardware and mechanical connectors, e.g., joist hangers or post anchors, shall be stainless steel or galvanized with 1.85 ounces of zinc per square foot (G-185 coating). Look for product lines such as “Zmax,” “Triple Zinc” or “Gold Coat.”
8. Flashing at ledger board connections (see Page 13) shall be copper (with copper nails only), stainless steel, UV resistant plastic or galvanized steel with a G-185 coating.
9. Plastic composites are materials composed of bound wood and plastic fibers. Permissible as noted in this document, plastic composites must bear a label indicating its compliance with ASTM D 7032. Plastic composite’s label and installation instructions must be available to the inspector.
10. When using plastic composites, exercise caution as some members do not have the same capacity as their wood equivalents.
11. PVC decking and guards are permitted provided they have a valid evaluation report from an accredited listing agency such as the International Code Council – Evaluation Service. Installation shall be in conformance with the report and the manufacturer's instructions which must be available to the inspector. For a list of approved products, go to fairfaxcounty.gov and search on “structural plastics.”
12. The use of other materials and products, other than those permitted herein, shall be approved by the county prior to installation.

2 - Deck Surfaces

Decking

- Decking shall be per TABLE 1 and placed perpendicularly or at an angle up to 45 degrees to the joists.
- Wood decking shall be attached per FIGURE 1. If installed wet, place decking with no gap so after drying a 1/8-inch gap is created.
- The use of hidden fasteners and similar attachment devices is prohibited.
- Each decking member shall bear on a minimum of three joists or blocking between joists.
- Placement and attachment of plastic composites shall be per manufacturer’s instructions.

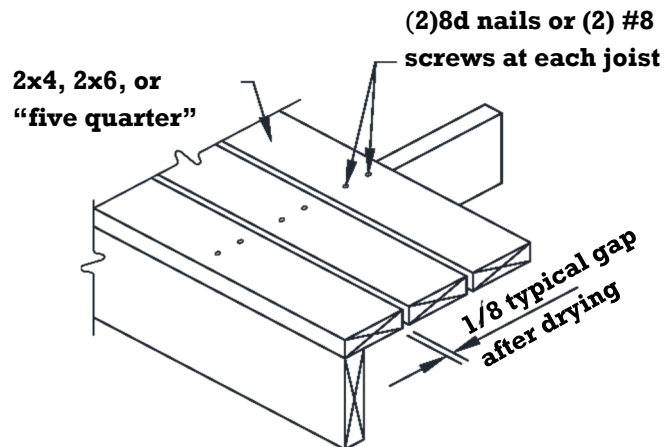


Figure 1: Typical Decking Table 1:

Table 1: Decking Requirements and Maximum Joist Spacing

Material Type and Nominal Size	Maximum Joist Spacing (Inches)	
	Angular	Perpendicular
Wood “five quarter” board	12	16
Wood 2x4 or 2x6	16	24
Plastic composites , PVC	Per manufacturer	Per manufacturer

SAFETY GLAZING

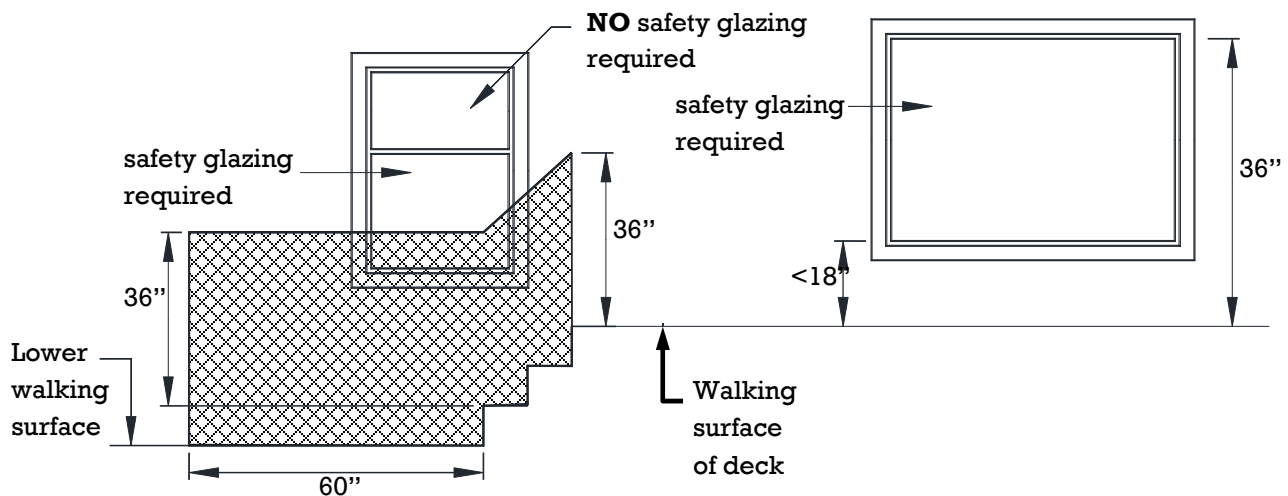
To reduce injury due to an accidental impact, safety glazing in window glass is required when the existing house wall encloses any portion of the deck surface or acts as a barrier to stairs, landings and areas at the top and bottom of the stairs.

Windows adjacent a deck surface. As shown in FIGURE 2, single panes of glass meeting all the requirements listed below must be safety-glazed.

- Glass area is greater than 9 square feet,
- The bottom edge of the pane is less than 18 inches above the walking surface of the deck, and
- The top edge of the pane is greater than 36 inches above the walking surface of the deck.

In the absence of safety glazing, a horizontal rail across the window must be installed. The rail must meet the requirements of a stair handrail per Page 23.

Windows adjacent stairways and landings. Single panes, partially or wholly located in the hatched area shown in FIGURE 2, must be safety-glazed. In the absence of safety glazing, a stair guard per Page 22 or handrail per Page 23, must be constructed to separate the window from the stairway.



ADJACENT STAIRS/LANDING

Figure 2: Safety Glazing Requirements

ELECTRICAL

Outlets. Decks shall have a minimum of one electrical outlet along the perimeter of the deck and within 6.5 feet of the floor.

Stair lighting. Each stairway section shall have a light source that illuminates all stairs and landings. Lights shall be operated from interior switches, motion detectors or timed switches. Low voltage lighting at each stair tread is permissible.

3 - Joist

- Joists are repetitively placed framing members spaced at 12, 16 or 24 inches on center which are supported at each end by a beam or ledger board.
- Single span decks are framed with joists that have one span between supports (not including overhang) as shown in FIGURES 3 and 4. Multi-span decks have joists with more than one span which bear on multiple beam as shown in FIGURES 5 and 6.
- At the house connection, joists bear on the attached ledger board. Joists on a free-standing deck do not connect to the house; instead bearing is provided by an additional beam located at or near the house wall as shown in FIGURE 7.

JOIST SIZE

- Joist span length is measured from the ledger board to the centerline of the supporting beam or between the centerlines of the supporting beams at each end.
- Joists are permitted to overhang past a dropped beam; joist span length does not include overhangs.
- The joists' design is based on spacing, size and span length. Use TABLE 2 to determine joist size and the corresponding maximum allowable overhang. Note: the overhang dimension shall never exceed one-fourth of the actual joist span.
- Provide full-depth 2x blocking between overhanging joists above beam locations. Exception: blocking may be omitted if the overhang is less than or equal to 2 feet.
- Where blocking between joists is required, attach blocking using joist hangers at each end or by toe-nailing blocking to joists at each end, top and bottom with 10d nails.
- Attach a continuous rim joist or blocking at the joist ends as shown in FIGURES 3, 5 and 7. Attach a rim joist to the end of each joist with (3) 10d nails or (3) #10 by 3-inch wood screws.
- When choosing 2x6 joists, the corresponding ledger board must be a 2x8 minimum. See Page 13 for more information.
- Guards cannot be attached to decks framed with 2x6 joists. See Page 20 for more information.

Table 2: Maximum Joist Span Length

Joist Spacing (inches on center)	Joist Size	Allowable Span	Allowable Overhang ¹
12	2x6	9'-11"	1'-3"
	2x8	13'-1"	2'-1"
	2x10	16'-2"	3'-4"
	2x12	18'-0"	4'-6"
16	2x6	9'-0"	1'-4"
	2x8	11'-10"	2'-3"
	2x10	14'-0"	3'-6"
	2x12	16'-6"	4'-2"
24	2x6	7'-7"	1'-6"
	2x8	9'-8"	2'-5"
	2x10	11'-5"	2'-10"
	2x12	13'-6"	3'-4"

1 Overhang dimension shall not exceed one-fourth of the actual joist span.

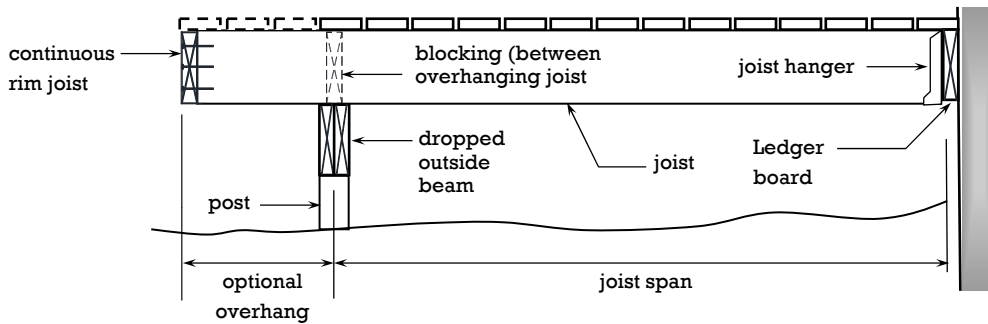


FIGURE 3: SINGLE SPAN DECK - JOISTS ATTACHED AT HOUSE WITH DROPPED BEAM

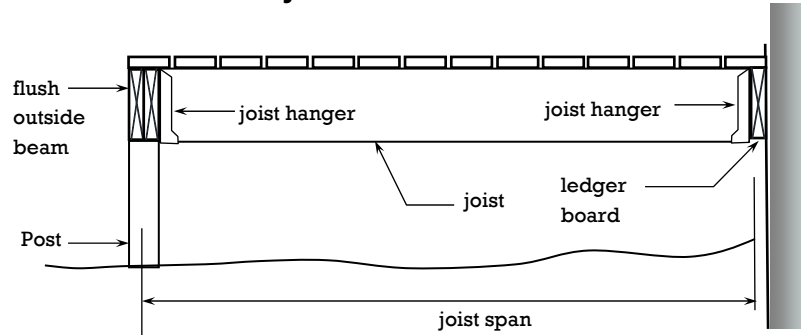


FIGURE 4: SINGLE SPAN DECK - JOISTS ATTACHED AT HOUSE WITH FLUSH BEAM

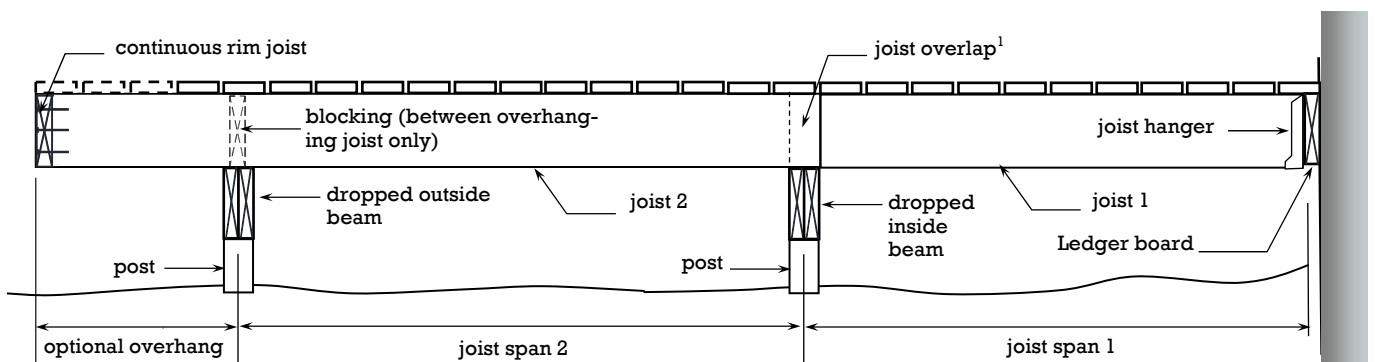


FIGURE 5: MULTI-SPAN DECK - JOISTS WITH DROPPED BEAMS

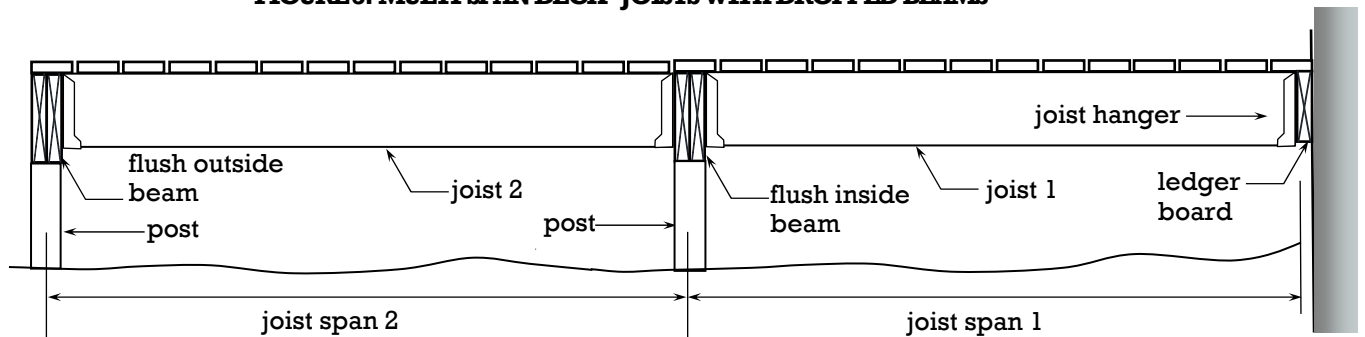


FIGURE 6: MULTI-SPAN DECK - JOISTS WITH FLUSH BEAMS

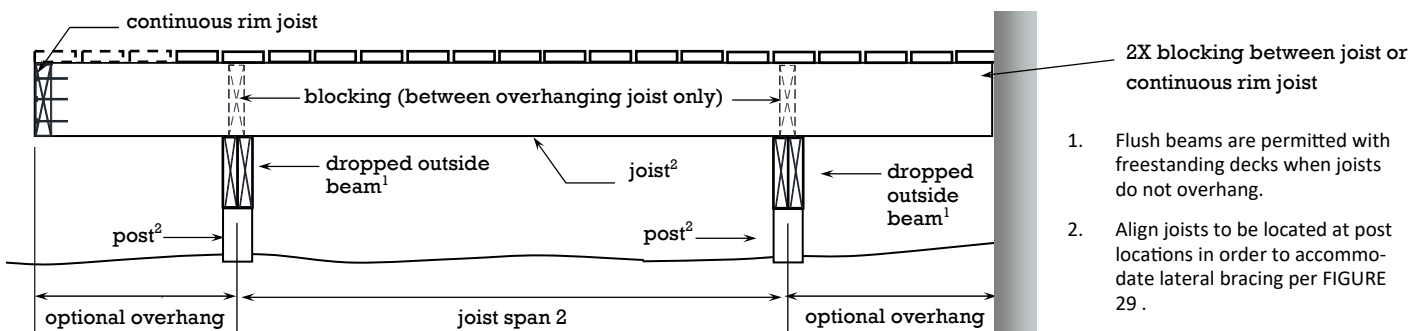
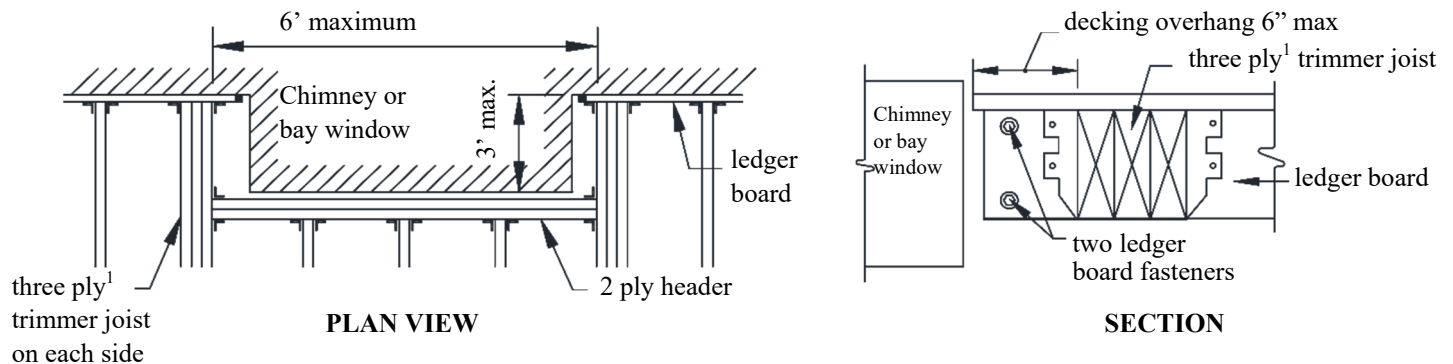


FIGURE 7: JOISTS WITH FREE-

STANDING DECKS

Framing at Projections

Additional framing and ledger board fasteners per Section 6 on Page 15 are required at projections such as chimneys or bay windows as shown in FIGURE 8. Each ply of the header shall be equal to the deck joist size. Joist hangers shall meet the requirements below.



1 May be reduced to two-ply trimmer joist if joist spacing equals 24 inches on center or joist span is less than or equal to 8.5 feet.

Figure 8: Framing at Chimney or Bay Window

Joist Hangers

- Joist hanger depth, d , as shown in FIGURE 9, shall be greater than or equal to 60 percent of the joist depth.
- The manufactured width of the joist hanger shall accommodate the number of plies being carried.
- Do not bend hanger flanges to accommodate field conditions.
- Joist hangers shall be fastened to the ledger board or flush beam using its manufacturer's recommended screws. All other fasteners are permitted to be nails.
- Use joist hangers with inside flanges when clearances to the edge of the beam or ledger board dictate.
- Clip angles or brackets used to support framing members in lieu of joist hangers are prohibited.

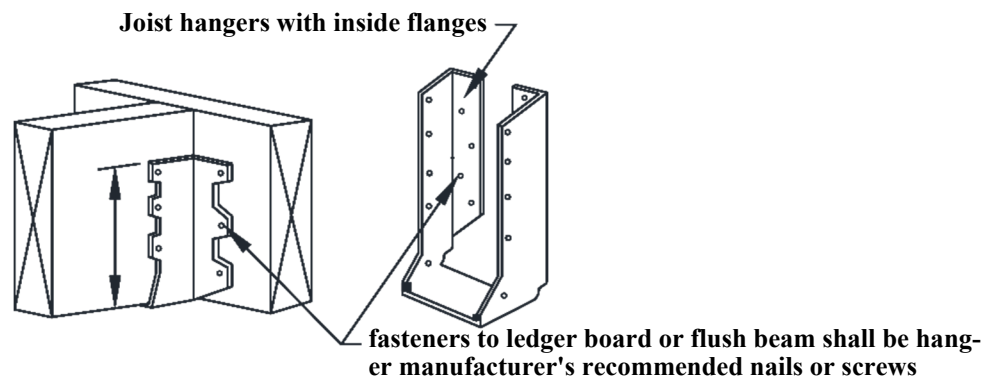


Figure 9: Joist Hangers

Joist to Beam Connection

- Each joist shall be attached to the beam in accordance with FIGURE 10.
- Mechanical connectors or hurricane clips shall have a minimum capacity of 100 pounds in both uplift and lateral directions. Installation shall be per manufacturer's instructions.
- As shown in FIGURE 10, multi-span joists are permitted to span continuously over a dropped interior beam with one mechanical connector or overlap with a mechanical connector at each joist.

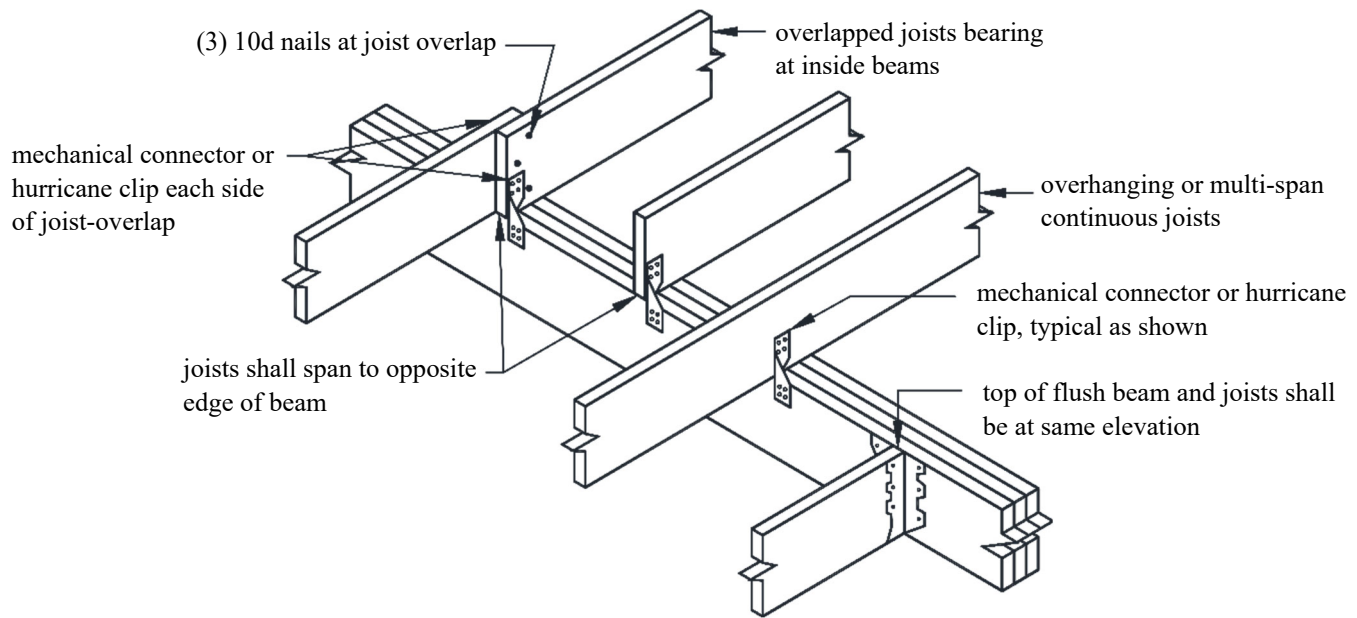


Figure 10: Joist-to-Beam Connection

4 - Beams

- Beams are assembled, multi-ply framing members which span between supporting posts. Multi-span decks have more than one beam; spacing between beams is dependent on the allowable span lengths of the supported joists.
- Inside beams have joists bearing from each side. Outside beams have joists, with or without an overhang, bearing from one side.
- Dropped beams have joists bearing above; flush beams have joists with hangers bearing on its sides; see FIGURES 3 through 7 and FIGURE 11.
- Multi-span decks are permitted to mix flush and dropped beams.

Joist Hangers

- Beam size is based on its influence width and longest span length per TABLE 3. Beam influence width, as shown in FIGURE 12, is based on supported joists' span lengths and overhang dimensions.
- Beam span length, as shown in FIGURE 11, is measured between the centerlines of two adjacent posts and does not include the beam overhangs.
- Beams may overhang past the center of the post up to one-fourth of the actual beam span.
- Flush beams shall have a depth greater than or equal to the deepest joist.

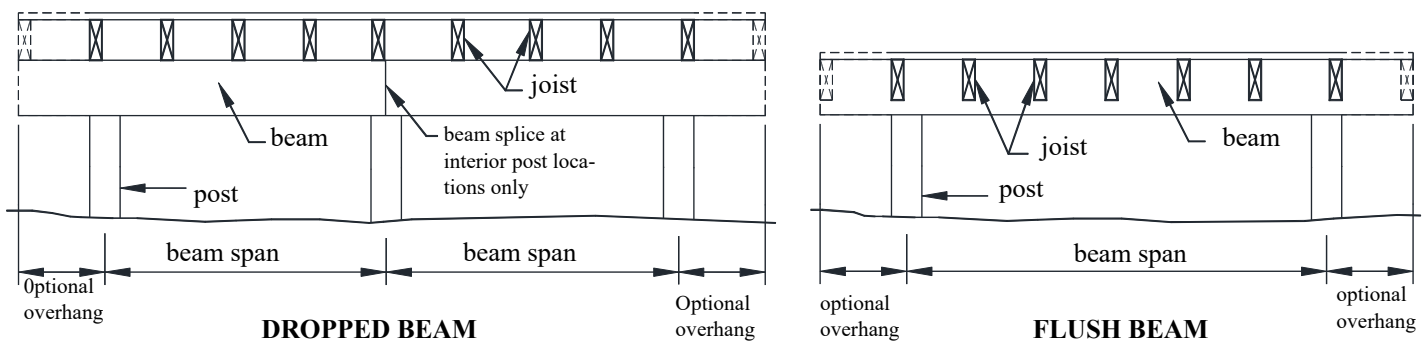


Figure 11: Beam Types

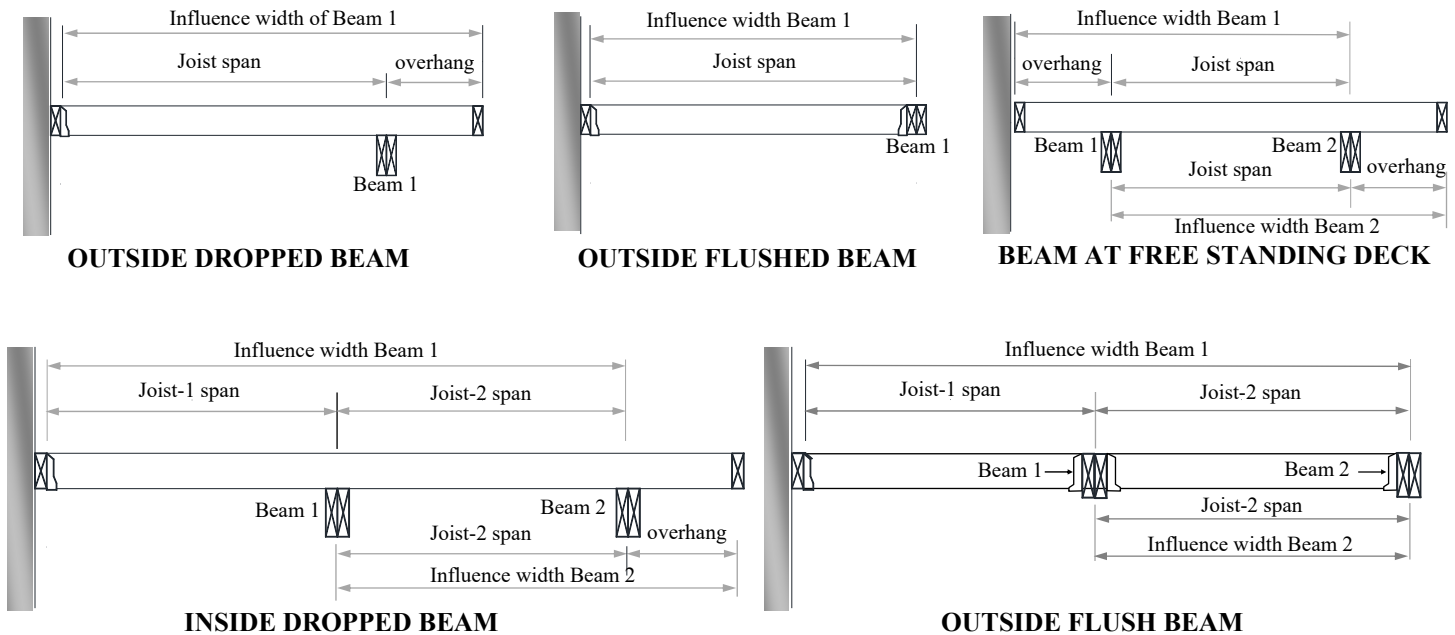


Figure 12: Beam Influence width

Table 3: Deck Beam Span Lengths ^a (ft-in)

Species ^b	Size ^c	Deck Joist Span Less Than Or Equal To: (beam influence width)						
		6	8	10	12	14	16	18
SOUTHERN PINE	2- 2 x6	6-11	5-11	5-4	4-10	4-6	4-3	4-0
	2- 2 x 8	(8-9)	7-7	6-9	6-2	5-9	5-4	5-0
	2- 2x10	10-4	9-0	8-0	7-4	6-9	6-4	6-0
	2- 2x12	12-2	10-7	9-5	8-7	8-0	7-6	7-0
	3- 2x6	8-2	7-5	6-8	6-1	5-8	5-3	5-0
	3-2x8	10-10	9-6	8-6	7-9	7-2	6-8	6-4
	3-2x10	13-0	11-3	10-0	9-2	8-6	7-11	7-6
	3- 2x12	15-3	13-3	11-10	10-9	10-0	9-4	8-10

- a. Ground snow load, live load=40psf, dead load= 10 psf, L/ = 180 at cantilever with a 220-pound point load applied at the end.
b. No. 2, wet service factor
c. Beam depth shall be greater than or equal to depth of joist with a flush beam condition

Beam Assembly

- Beam size is based on its influence width and longest span length per TABLE 3. Beam influence width, as shown in FIGURE 12, is based on supported joists' span lengths and overhang dimensions.
- Beam span length, as shown in FIGURE 11, is measured between the centerlines of two adjacent posts and does not include the beam overhangs.
- Beams may overhang past the center of the post up to one-fourth of the actual beam span.
- Flush beams shall have a depth greater than or equal to the deepest joist.

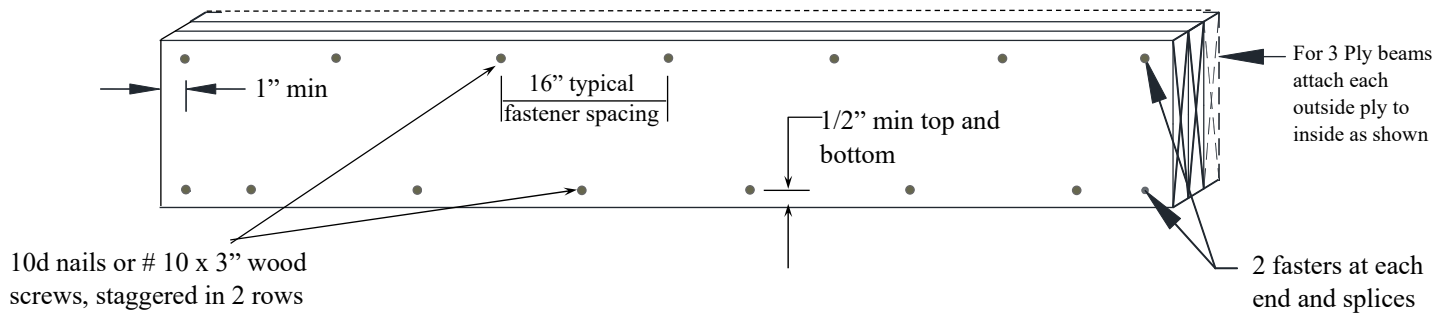


Figure 13: Beam Ply Fastening

5 - Footings and Post

Footing size

- Footing size is found by using TABLE 4 to obtain the footing type based on the beam influence width and the longest beam span length and TABLE 5 to determine the minimum footing dimensions.
- Footing sizes shall be consistent for each beam and designed for its maximum span.
- Footings shall bear on solid ground 24 inches below grade; footings shall be deeper if solid ground is not found. Bearing conditions must be verified by inspectors prior to placement of concrete.
- When 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 house footings as shown in FIGURE 14.
- Do not construct footings over utility lines or service pipe. Call line locators at 811 before you dig

Table 4: Footing Type and Maximum Post Height

Max post height is based on a 6 x 6 post. See **TABLE 4.1** for 4 x 4 and 4 x 6 post

Beam Influence Width (ft)	Longest Beam Span Length (feet), less than or equal to:													
	6		8		10		12		14		16		18	
	Footing Type	Max. Post Ht.	Footing Type	Max. Post Ht.	Footing Type	Max. Post Ht.	Footing Type	Max. Post Ht.	Footing Type	Max. Post Ht.	Footing Type	Max. Post Ht.	Footing Type	Max. Post Ht.
2	A	14	A	14	A	14	A	14	A	14	B	14	B	14
3	A	14	A	14	B	14	B	14	B	14	B	14	C	14
4	A	14	B	14	B	14	B	14	C	14	D	14		
5	B	14	B	14	C	14	D	14	E	14				
6	B	14	B	14	D	14	E	14						
7	B	14	C	14	E	14	E	13						
8	B	14	C	14	E	13								
9	C	14	D	14	E	12								
10	D	14	E	13	F	11								
11	D	14	E	13										
12	E	14	F	12										
13	E	14	F	11										
14	E	13	F	10										
15	F	12	G	9										
16	F	12	H	9										
17	G	11	H	9										
18	G	11												

Table 4.1: Max Post Height for 4 x 4 and 4 x 6

Deck Post Size	Maximum Height ^a
4 x 4	8'
4 x 6	8'

a. Measured to the underside of the beam

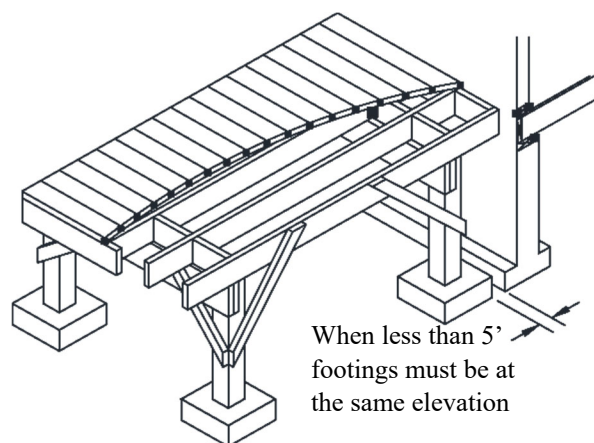


Table 5: Footing Size

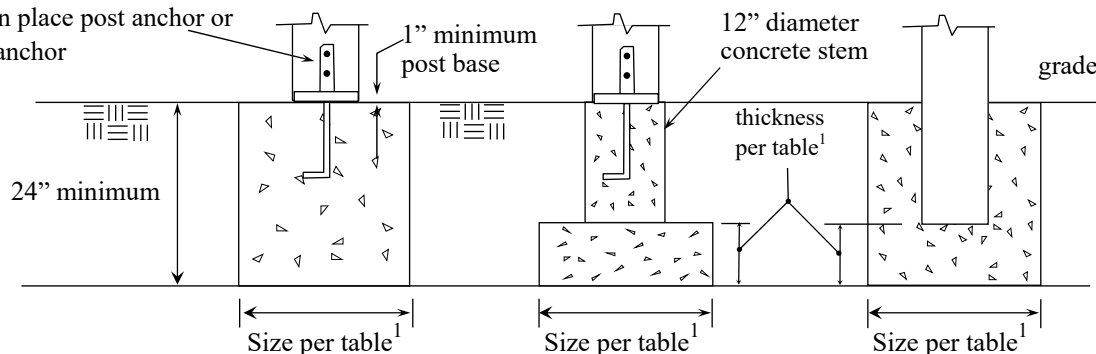
Type	Sides of Square (inches)	Diameter of Round (inches)	Thick-ness (inches)
A	12	14	6
B	14	16	6
C	16	18	6
D	18	20	6
E	20	22	8
F	22	24	8
G	24	26	9
H	26	28	10

Figure 14: Footings Adjacent Existing Houses

Footing size

Pre-manufactured post base

with cast in place post anchor or approved anchor



¹ See Table 5 for footing dimensions

Figure 15: Footings

Post size and Maximum Height

- Post size shall be 6x6 with a maximum height based on the corresponding beam influence width and longest beam span length in accordance with TABLE 4.
- For maximum heights for 4 x 4 and 4 x 6 post see TABLE 4.1
- Post height is measured from the top of the footing to the underside of the beam.
- Cut ends of posts shall be field treated with a wood preservative containing copper naphthenate which can be found in the paint department of most hardware or home center stores.

Beam to post Connection

- Beams shall be attached to 6x6 posts using one of the methods shown in FIGURE 16 or 17. Beams shall be attached to 4x4 posts using the method shown in FIGURE 17.
- 4x4 posts are prohibited from supporting three-ply beams.
- Beams shall not be attached to the sides of an un-notched post as shown in FIGURE 18.
- Pre-manufactured post caps shall be specifically designed for two- or three-ply beams and the post size used. Attachment shall be per manufacturer's instructions.

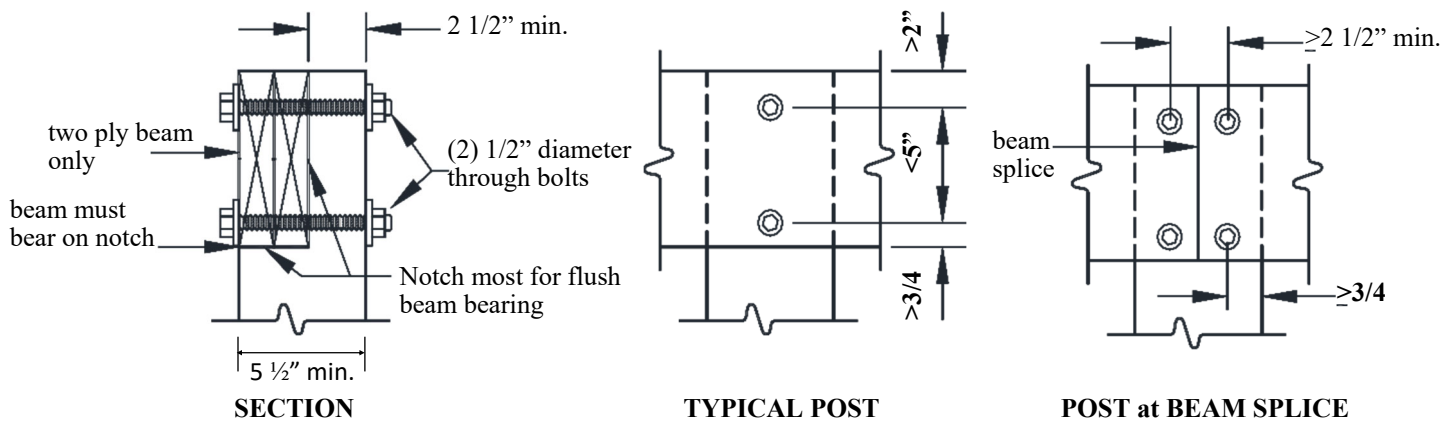


Figure 16: Notched 6x6 Post to Beam Connection

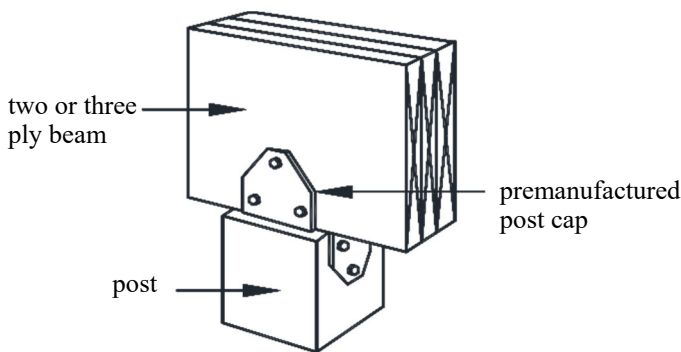


Figure 17: Post Cap Connection

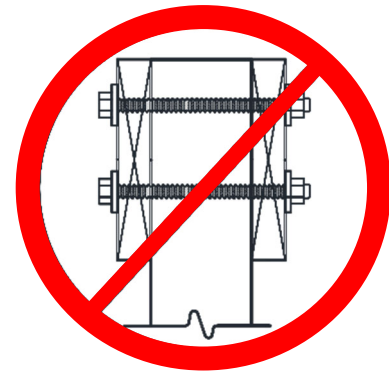


Figure 18: Prohibited Connection

6 - Ledger Board Attachment

General Requirements

- Ledger boards shall be attached to the existing house in accordance with the requirements herein.
- Compliance is critical to ensure the safety and structural stability of your deck.
- Ledger board depth shall be greater than or equal to the depth of the deck joists, but not less than a 2x8.
- The ledger board shall be attached in accordance with one of the conditions shown in FIGURES 20 through 22.
- The existing band board shall be capable of supporting the deck. If this cannot be verified or existing conditions differ from the details herein, then a free-standing deck or an engineered design is required.
- The top of the ledger board and top of the deck joists shall be at the same elevation.

Wood I-joists. Many homes are constructed with wood I-joists, as shown in FIGURE 19. 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 or an engineered design is required.

Flashing. Flashing shall be installed in accordance with the following requirements. See Page 3 for flashing material specifications.

- The exterior finish, i.e., house siding, must be removed prior to the installation of the ledger board.
- Continuous flashing, as shown in FIGURE 20, is required at the ledger board Figure 17: Post Cap Connection when attached to wood- framed construction.



Figure 17: Wood I-Joist

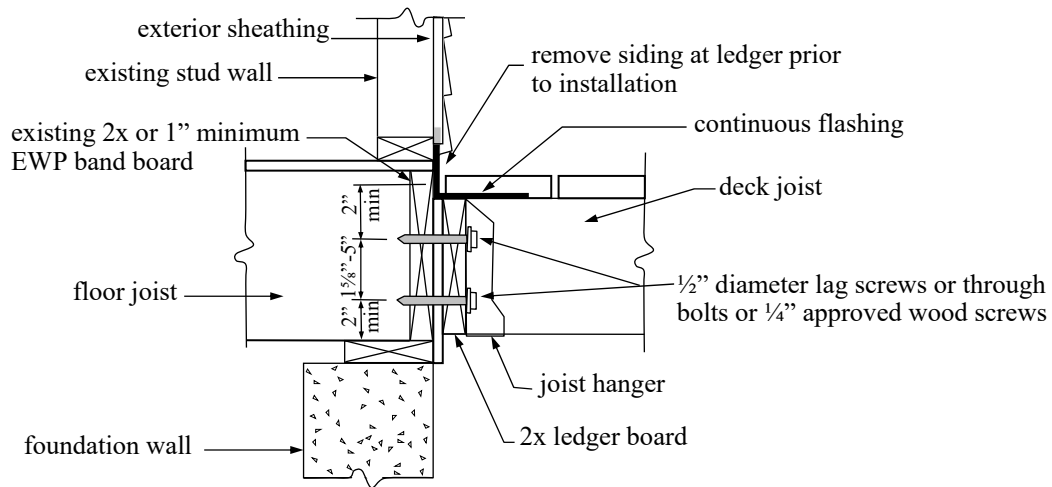


Figure 20: Ledger Board to Band Board Attachment

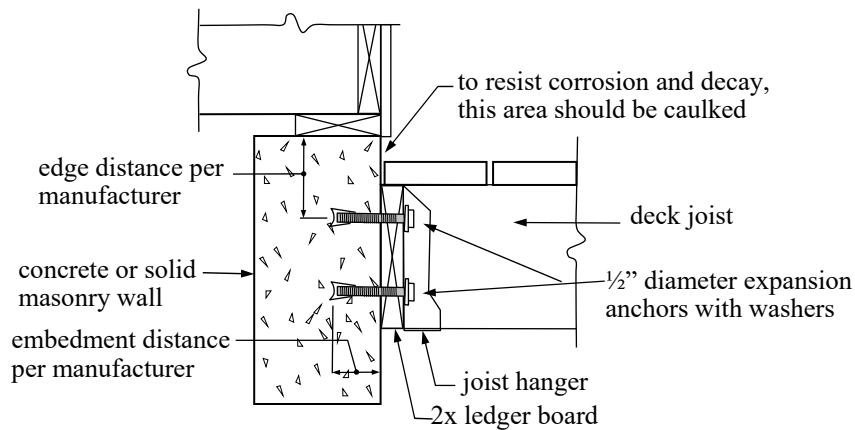


Figure 21: Ledger Board to Solid Foundation Attachment

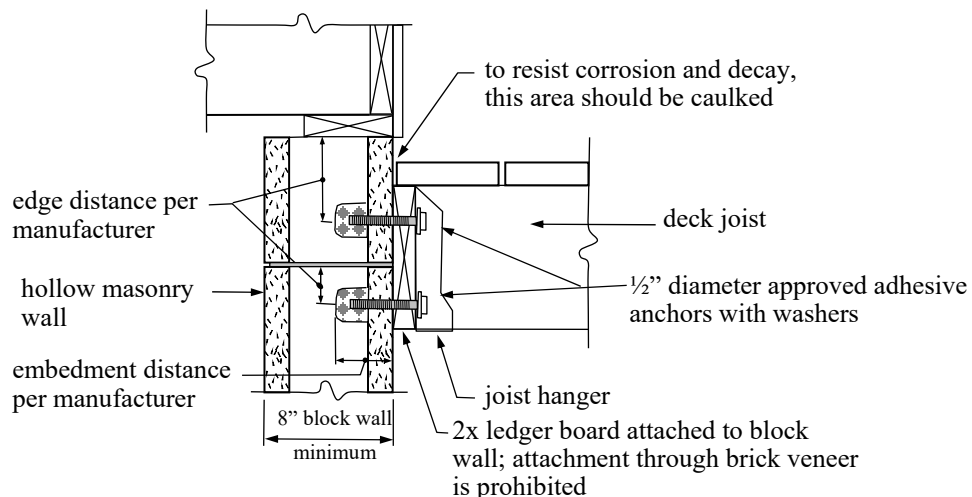


Figure 20: Ledger Board to Hollow Foundation Attachment

Prohibited ledger attachments. The ledger board attachment conditions shown below are prohibited. In such cases, a free-standing deck or engineering design is required

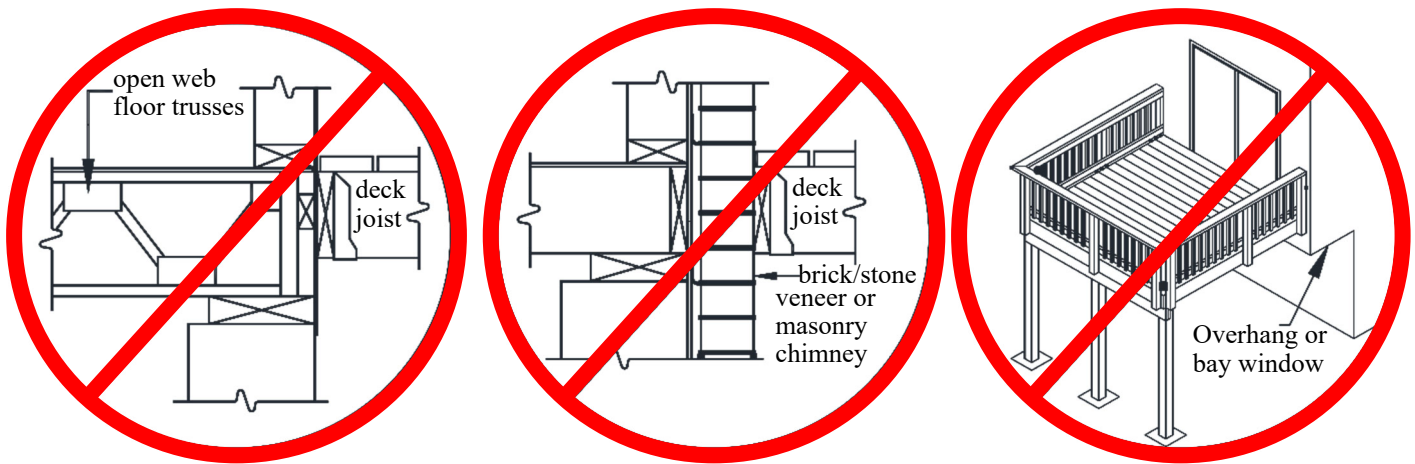


Figure 23: Prohibited Ledger Attachments

Ledger Board Fasteners

General requirements. Ledger board fasteners shall be installed in accordance with this section. Placement and spacing shall be in accordance with FIGURE 24 and TABLE 6. Only those fastener types noted herein are approved for use; lead anchors are prohibited. Adequacy of connections will be verified by inspectors.

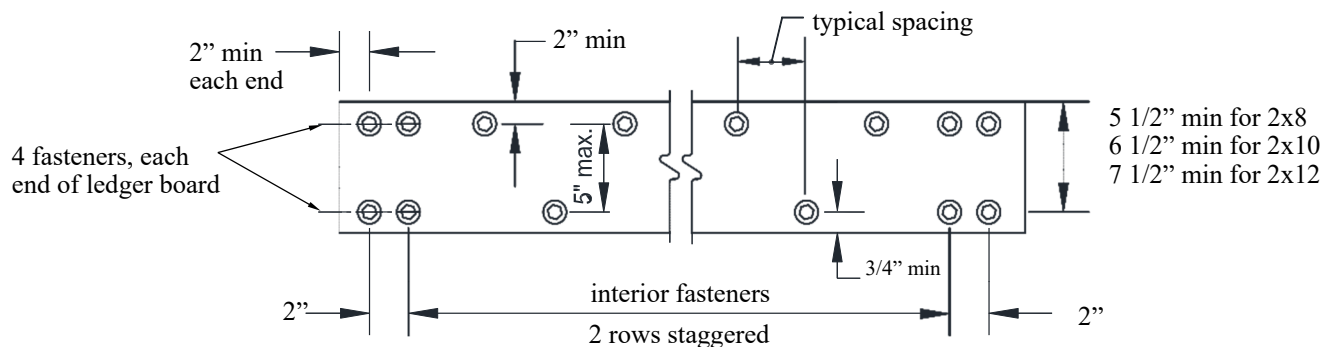


Figure 24: Ledger Board Fastener Spacing and Clearances

Table 6: Ledger Board Fastener Spacing, Inches on Center

Fastener	Band Board	Joist Span (feet), less than or equal to:						
		6	8	10	12	14	16	18
Lag Screws	EWP ¹	24	18	14	12	10	9	8
	2x lumber	30	23	18	15	13	11	10
Through-Bolts	EWP ¹	24	18	14	12	10	9	8
	2x lumber	36	36	34	29	24	21	19
SDS, LedgerLOK Wood Screws ²	EWP ¹	12	9	7	6	5	4	4
	2x lumber	13	10	8	6	5	5	4
SDWS Wood Screws ²	EWP ¹	14	10	8	7	6	5	5
	2x lumber	22	16	13	11	9	8	7
Expansion Anchors	—	36	36	34	29	24	21	19
Adhesive Anchors	—	32	32	32	24	24	16	16

¹ EWP = 1-inch minimum manufactured engineered wood product; see Page 13 for more information.

² Wood screws shall be permitted to be spaced in accordance with its current corresponding evaluation report if less restrictive than the values in TABLE 6.

Through-bolts. Through-bolts shall have a minimum ½-inch diameter. Pilot holes for through-bolts shall 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 six to 12 months after construction due to drying and wood shrinkage.

Expansion anchors. Expansion anchors shall be used only when attaching a ledger board to a concrete or solid masonry wall as shown in FIGURE 21. The bolt or threaded rod of expansion anchors shall have a ½-inch diameter minimum; in some cases, this may require a ¾-inch anchor size. Expansion anchors must be installed per manufacturer’s instructions and shall be equipped with washers.

Adhesive anchors. The adhesive anchors listed in TABLE 7 with a minimum ½-inch diameter threaded rod shall be used when attaching to concrete or solid or hollow masonry as shown in FIGURE 22. Anchors shall be installed per manufacturer’s instructions and shall be equipped with washers. Adhesive cartridges must remain on the jobsite for inspector verification.

Table 7: Approved Adhesive Anchors

Manufacturer	Product
Red Head	Epcon A7
Hilti	HY-70

Lag screws. Lag screws shall be hot-dipped galvanized or stainless steel with a ½-inch minimum diameter. Length and shank requirements shall be in accordance with FIGURE 25. Lag screws shall be equipped with washers and installed in the sequence below.

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 as required to facilitate tightening.
3. Tighten each lag screw snugly, but do not over tighten so as to cause wood damage.

Wood screws. The wood screws listed in TABLE 8 with a ¼-inch diameter may be used to attach to wood- framed construction.

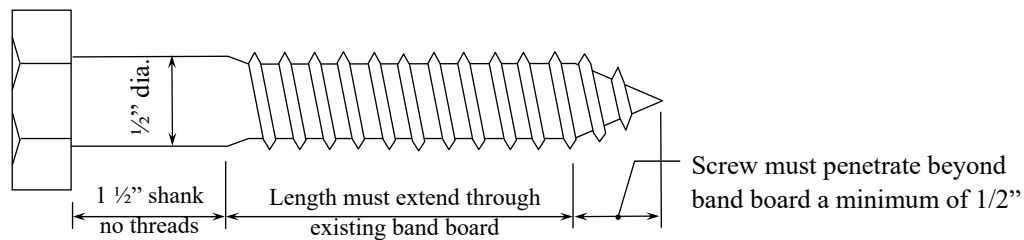


Figure 25: Lag Screw

Wood screws shall have a sufficient length to fully penetrate the existing house band board. Installation shall be in conformance with the manufacturer’s instructions.

Table 8: Approved Wood Screws

Manufacturer	Product
FastenMaster	LedgerLOK
Simpson Strong-Tie	SDS Strong-Drive Screws
Simpson Strong-Tie	SDWS Strong-Drive Screws

7 - Lateral Support

Bracing Methods

All decks with post heights greater than 2.5 feet are required to be designed to resist lateral load caused by human activity and environmental forces. Use TABLE 9 to determine the applicable methods based on post height and deck type as defined in Section 3. Ledger Board Fasteners

Table 9: Lateral Support Requirements

Post Height (feet) less than or equal to:	Single Span Decks	Multi-span Decks	Free-standing Decks
2.5	None required	None required	None required
11	<ul style="list-style-type: none"> • Method 1 or • Method 2 	<ul style="list-style-type: none"> • Method 2¹ 	<ul style="list-style-type: none"> • Method 2¹ and • Method 3
14	<ul style="list-style-type: none"> • Method 1 and • Method 2 	<ul style="list-style-type: none"> • Method 1 and • Method 2 	<ul style="list-style-type: none"> • Method 1, • Method 2 and • Method 3

¹ Method 2 may be omitted from the beam closest to the existing house wall if Method 1 is utilized at the house connection.

Method-1, Tension-ties (four total):

- Install one tension-tie at each end joist and install the remaining two to inside joists equally spaced along the width of the deck as shown in FIGURE 26. A set of tension-ties shall be installed for each structurally independent section of deck.
- Tension-ties shall be attached to the joists and exterior wall per the manufacturer's instructions with specified fasteners as shown in FIGURE 27. Fasteners shall penetrate a minimum of 3 inches into the sill plate or top plate of a wood framed wall.
- Approved tension-ties are listed in TABLE 10. The minimum capacity of each tension-tie shall be 750 pounds.
- Where attaching to a concrete or solid masonry wall, fasteners are permitted to be substituted with expansion anchors or adhesive anchors with a threaded rod as recommended by the tension-tie manufacturer. The withdrawal capacity of the anchors shall be a minimum of 750 pounds. The anchor shall be installed per its manufacturer recommendations.

Table 10: Approved Tension Ties

Manufacturer	Product
Simpson Strong-Tie	DTT1
USP	LTS19
USP	ADTT-TZ

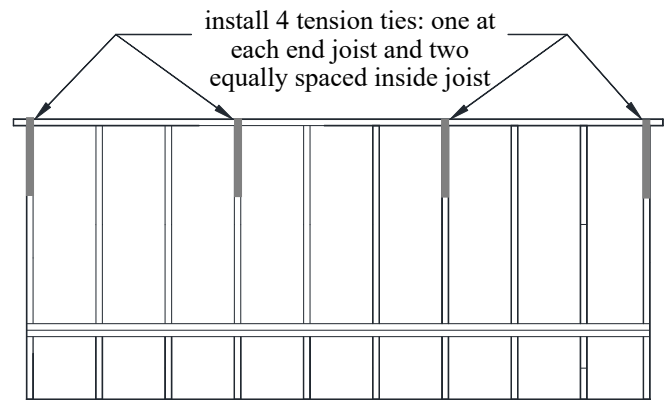


Figure 26: Method 1-Tension Tie Location

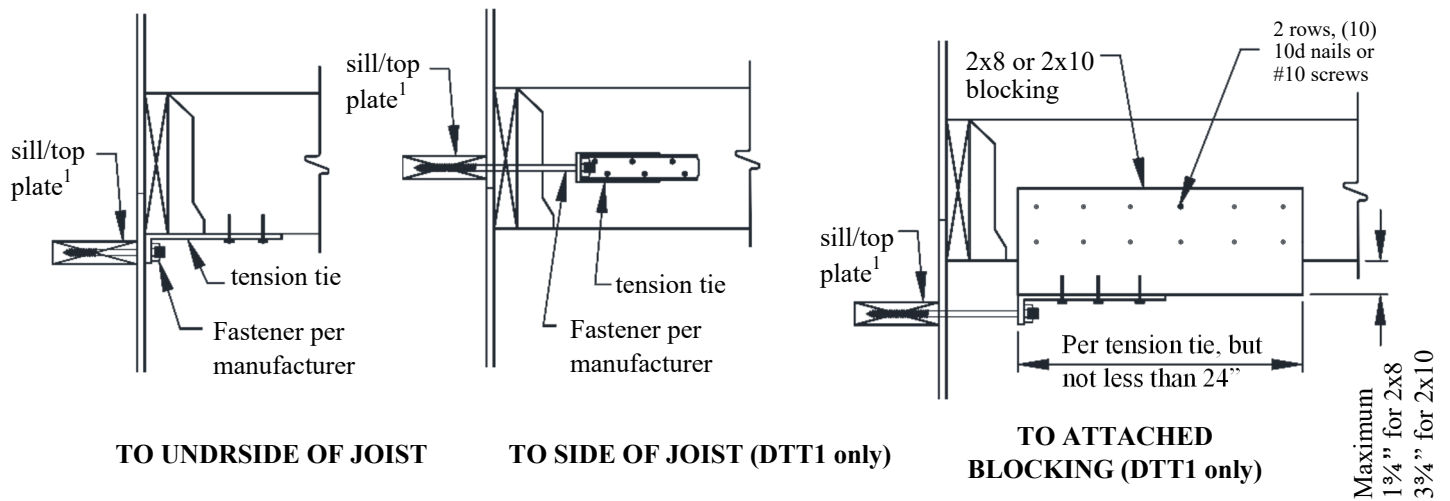


Figure 27: Method 1 Tension Tie Bracing

Method-2, Knee-bracing at beam:

- Knee-bracing shall be comprised of 2x or 6x6 members.
- Decks shall have 2x knee-bracing installed at each post-beam location or 6x6 knee-bracing at end posts and both sides of every other interior post in accordance with FIGURE 28.
- Connections of knee-bracing shall be in accordance with FIGURE 30 or 31.

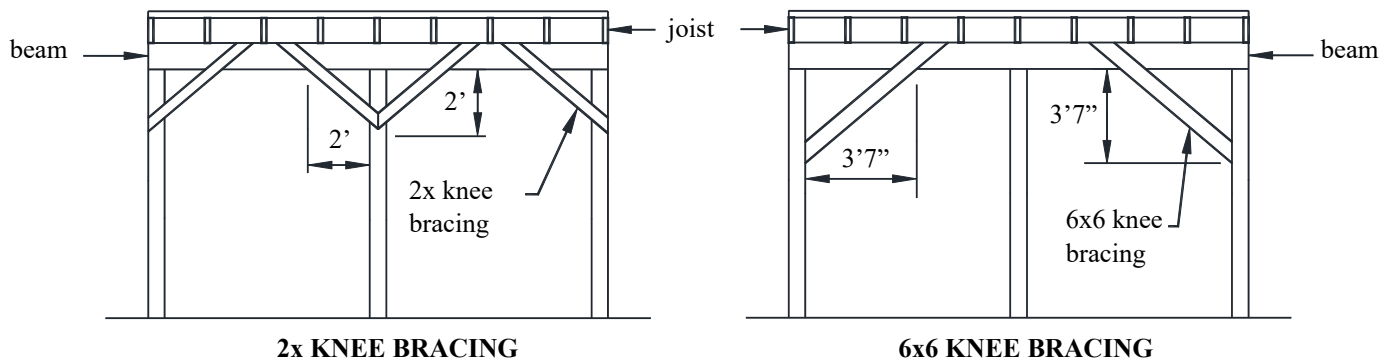


Figure 28 Method-2 Knee Bracing at Post Locations

Method-3, Knee-Bracing at joists-post locations (free-standing decks only):

- Knee-bracing shall be comprised of 2x or 6x6 members.
- Knee-bracing shall be installed at each post-joist location in accordance with FIGURE 29.
- Connections of knee-bracing shall be in accordance with FIGURE 30 or 31.

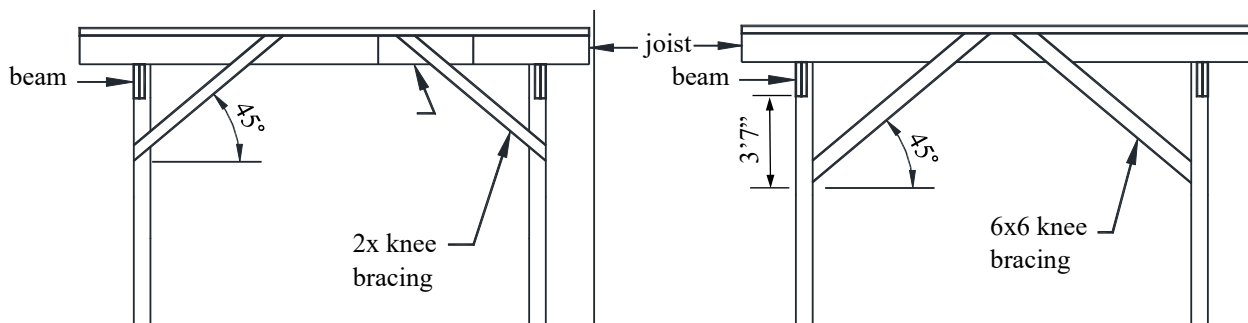
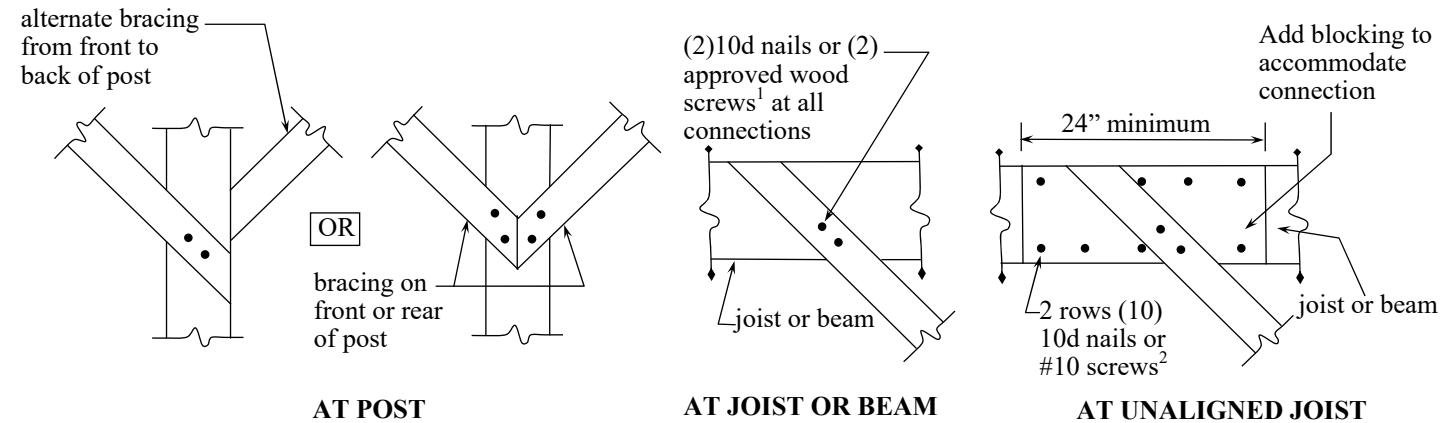


Figure 29 Method-3 Knee Bracing at Post Locations

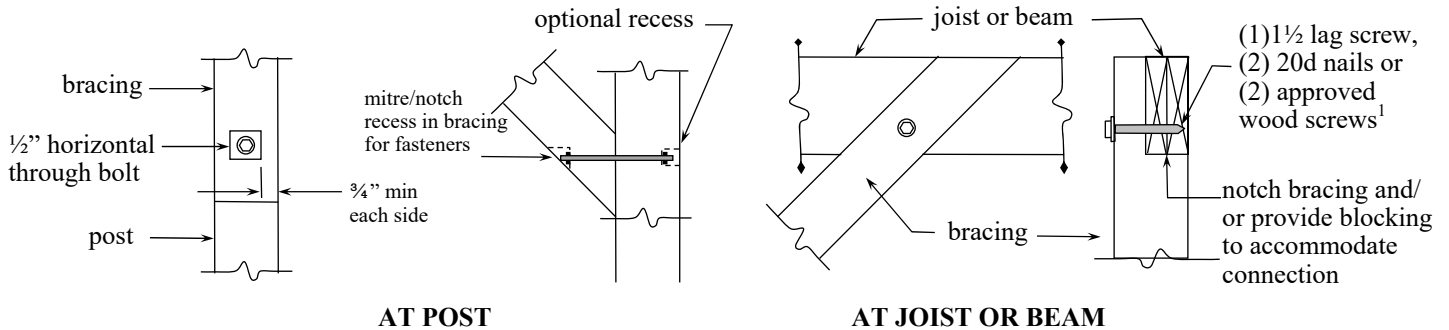
Bracing to Framing Connections



¹ Approved wood screws are listed in TABLE 8

² Nails shall have a distance of $\frac{3}{8}$ inches to all edges and $\frac{7}{8}$ inches to ends of the bracing member.

Figure 30: Typical Connections of 2x Knee Bracing



¹ Approved wood screws are listed in TABLE 8

Figure 31: Typical Connections of 6x6 Knee Bracing

8 - GUARDS

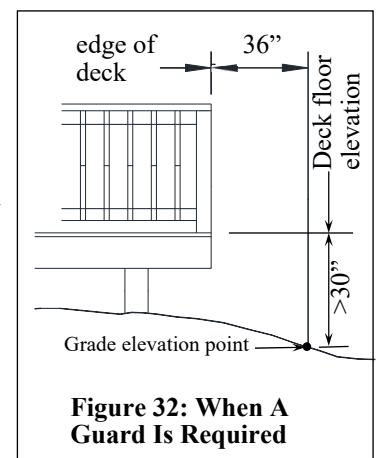
Guard Construction

A guard is required when a deck is greater than 30 inches above grade at a point 36 inches from the edge of the deck, as shown in FIGURE 32. Guards shall be constructed in accordance with the requirements herein; deviations are prohibited. Guards which are not required, but are nevertheless provided, must also comply with these requirements.

Plastic composites of equal dimension and complying with the criteria noted on Page 3 may be substituted for the guard cap and infill elements shown in FIGURE 33 provided the manufacturer's performance criteria specifically permit such use.

Guard systems. Guard systems with a valid evaluation report from an accredited listing agency are permitted as referenced on Page 3. Pre-fabricated systems without an evaluation report will require a plan review during the permit application process.

Openings. Guards shall be constructed to restrict the passage of a 4-inch diameter sphere through any opening. Wet lumber shall be spaced such that when shrinkage occurs, a compliant opening is maintained.



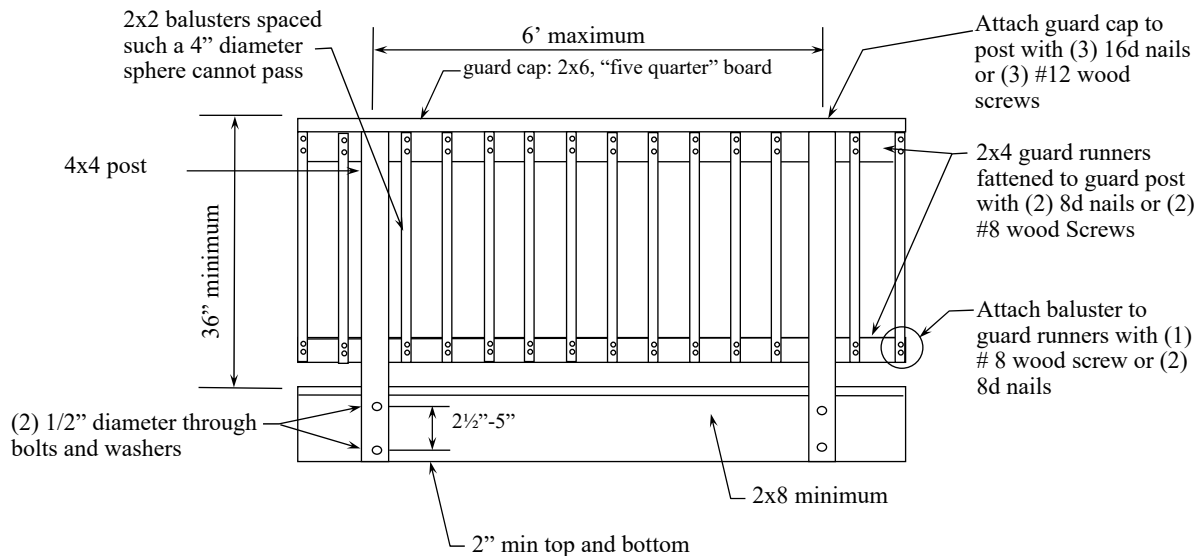


Figure 33: Guard Construction

Bracing Methods

Guard posts shall be attached to the deck structure in accordance with the requirements below in order to ensure resistance to imposed loads.

- Notching guard posts, as shown in FIGURE 34, is prohibited.
- Hold-down anchors, as shown in FIGURE 35 and FIGURE 36, shall be used to attach the guard post to the end joist and rim joist, respectively.
- Hold-down anchors shall have a minimum capacity of 1,800 pounds
- Guards may be attached to either side of the rim joist or end joist.



Figure 34: Post Notches Prohibited

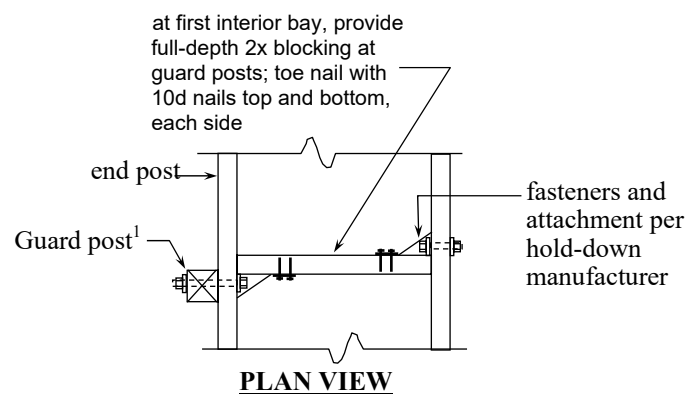
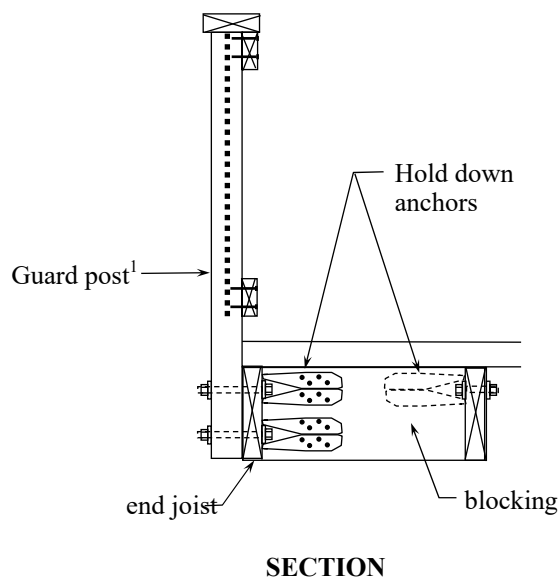
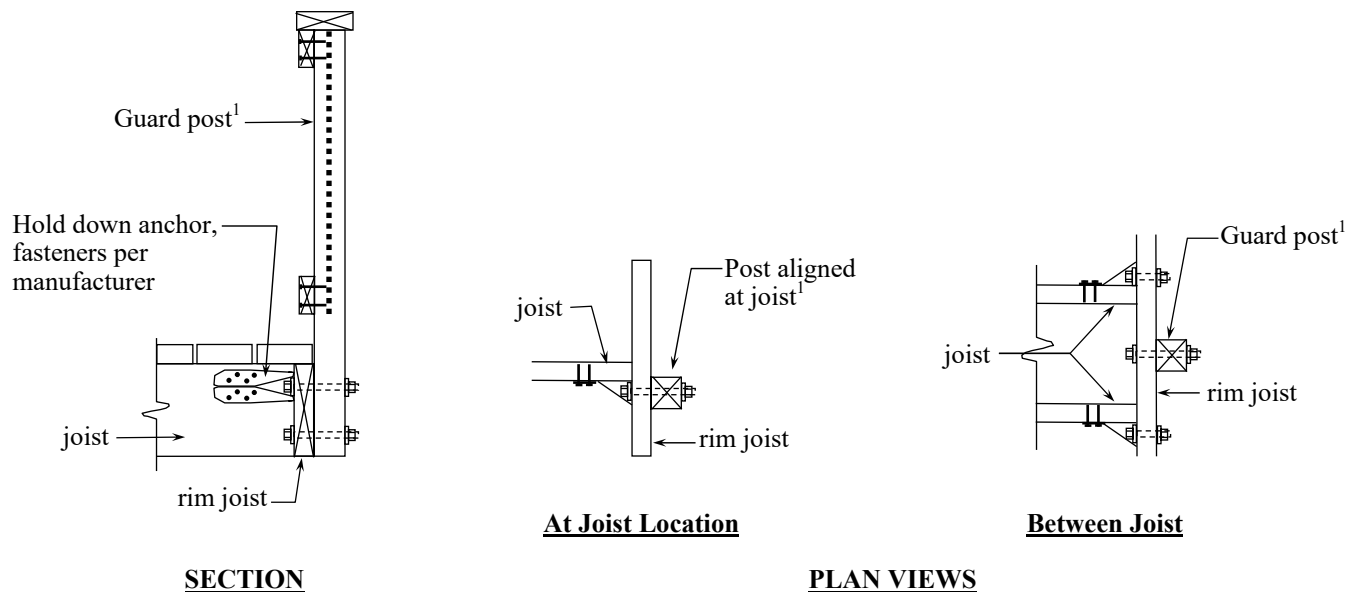


Figure 35: Guard Post to Post

¹ Guards can be attached to either side of the rim joist.



¹ Guards can be attached to either side of the rim joist.

Figure 36: Guard Post to Post

9 - Stairs

Stair Geometry

Stairs shall be constructed with the dimensions listed below.

- The minimum width of a stairway is 36 inches.
- Stair geometry and opening limitations shall meet the requirements shown in FIGURE 37. Treads, risers and nosing dimensions shall not deviate at each step by more than $\frac{3}{8}$ inches.

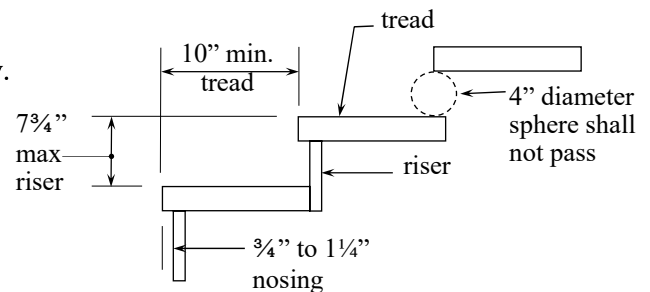


Figure 37: Treads and Risers

Stair Landing

- If the total vertical height of a stairway exceeds 12 feet, then an intermediate landing is required and must be constructed as a free-standing deck.
- Stair landings may be constructed with 4x4 posts with post heights no greater than 8 feet.
- Landing widths shall be equal to the total width(s) of the stairway(s) served.

Stair Construction

- Stringers shall be sawn or solid 2x12s complying with the tread and riser geometry requirements.
- Stringers shall be spaced at a maximum of 18 inches on center.
- Stringers shall bear on footings and attach to the deck or landing per FIGURE 38.
- Stringer span length is measured using the horizontally projected distance between the bearing at each end and shall not exceed the dimensions shown in FIGURE 39.
- **SOLID STRINGER EXCEPTION:** Solid stringers of stairways with a width equal to 36 inches shall be permitted to have a span as shown in FIGURE 39.
- Throat size of cut stringers shall not exceed the value shown in FIGURE 39.

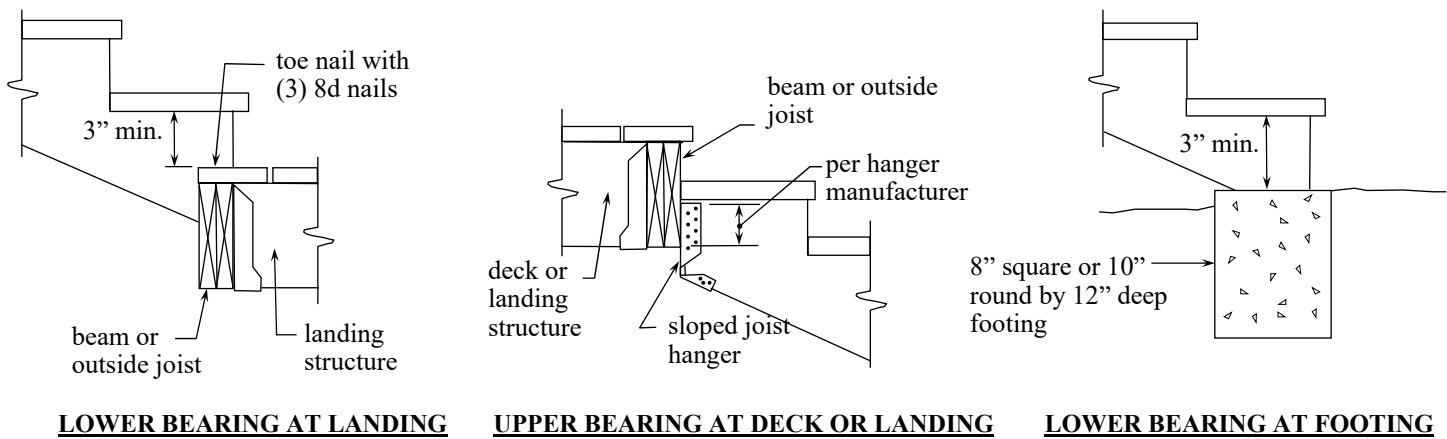


Figure 38: Stringer Bearing

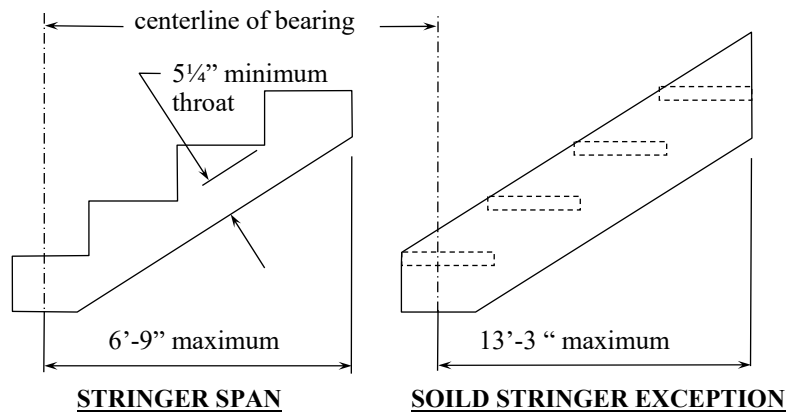
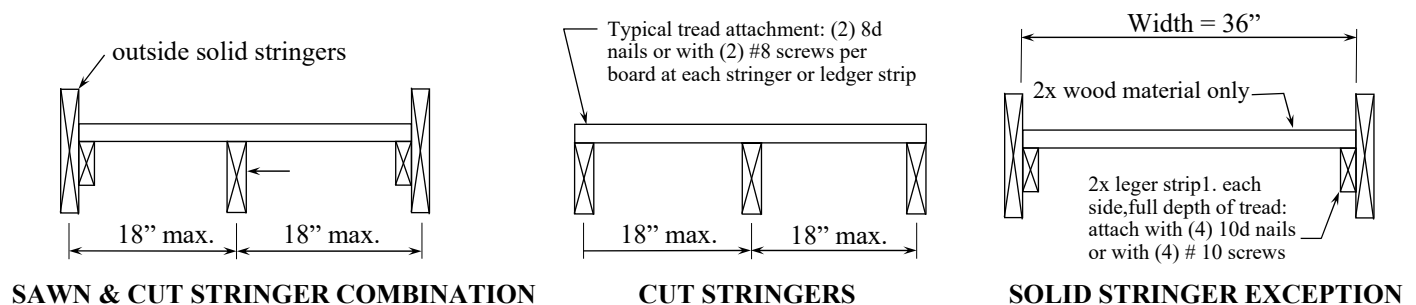


Figure 39: Maximum Stringer Span Length

Tread and riser material:

- Tread material shall be equivalent to the decking specified on Page 4 and attached in accordance with FIGURE 40. The span of plastic composites shall be per manufacturer and in some cases may be less than 18 inches specified in FIGURE 40.
- Stairs constructed using the solid stringer exception shall have treads constructed of 2x wood material only; see FIGURE 40.
- Risers may be framed with 1x lumber minimum or equivalent plastic composite. Open risers are permitted provided the opening does not allow the passage of a 4-inch diameter sphere.



1 A galvanized staircase clip angle, installed per manufacturer's instructions, is permitted to substitute for the 2 x leger strip.

Figure 40: Stringer Treads

Stair guards. Stair guards are required when the total rise of the stair is greater than 30 inches at a point 36 inches from the edge of the stair. Stair guards shall be constructed in accordance with Section 8 and FIGURE 41.

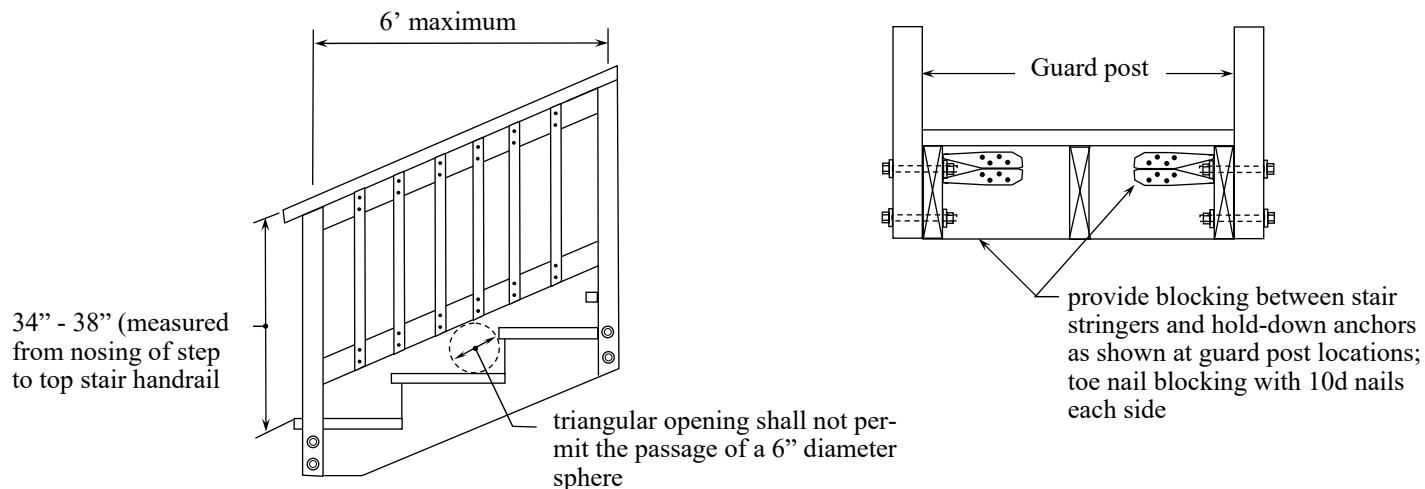


Figure 41: Stair Guard

Handrails:

- Stairs with four or more risers shall have a handrail on one side at a height between 34 to 38 inches above the nosing of the step.
- Handrails shall be attached to a stair guard or exterior wall acting as a barrier as shown in see FIGURE 42.
- Handrail and connecting hardware material shall be decay and corrosion resistant.
- Handrails shall have a smooth surface with no sharp corners and shall be graspable. Recessed sections may be shaped from a 2x6 or five-quarter board as shown in FIGURE 43.
- Handrails shall run continuously from a point directly over the lowest riser to a point directly over the highest riser and shall return to the guard or wall at each end.
- Handrails may be interrupted by guard posts at a turn in the stair only.
- Handrails installed in lieu of window safety glazing, as required on Page 5, shall be supported at appropriate intervals to ensure that when a 50-pound load is applied, the rail does not deflect into the glass.

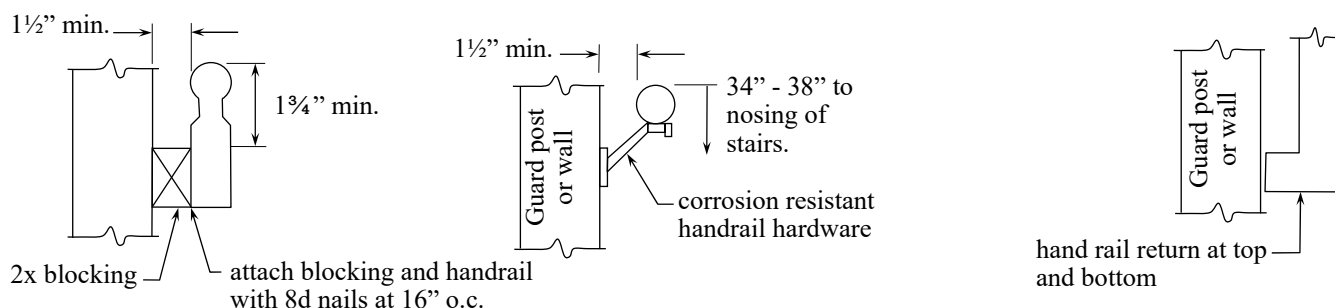


Figure 42: Handrails

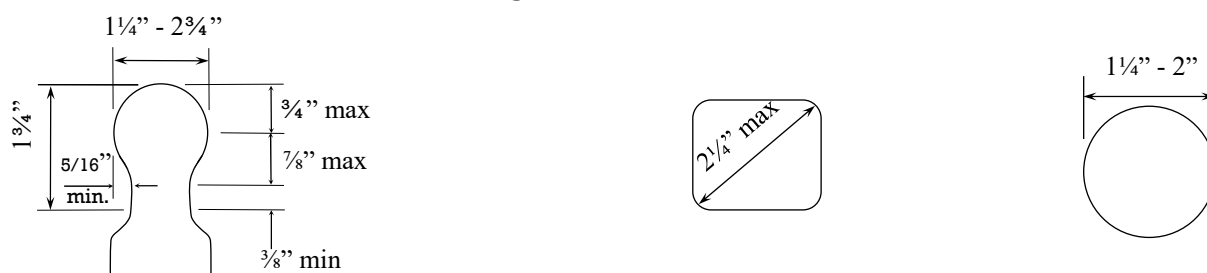


Figure 43: Handrail Graspability