

County of Shenandoah



DEPARTMENT OF BUILDING INSPECTIONS
Shenandoah County Government Center
600 N. Main Street, Suite 107
Woodstock, VA 22664
540-459-6185

RESIDENTIAL DECK APPLICATION PACKET



County of Shenandoah

BUILDING DEPARTMENT
600 N. Main Street, Ste 107
WOODSTOCK, VA 22664
www.shenandoahcountyva.us

CONTENTS OF PACKET & DESCRIPTION OF EACH FORM

Page 1: Deck Plan Requirements. This document shows the requirements for a deck plan submittal. It is important to show on your plan all materials used and dimensions in order to process your application in a timelier manner.

Page 2: Virginia Department of Health (VDH) Request. The Building Department is required by State Law to engage VDH on all additions or alterations that may affect existing sanitary facilities and water supplies. Along with this form, a site plan showing the location of the house and the addition, existing septic tank, drain-field area, water supply, and the estimated distances between the components and proposed addition. This form, and site plan, is to be signed by the Building Department. The form and site plan is then to be submitted, by you the applicant, to VDH.

Page 3: Universal Application for Permits. This document is required to be completed for any permit application. Check each box that pertains to what you are specifically applying for. For the installation of the deck, check "building". Be sure that you fill this application out completely.

Page 4: Site Plan for Zoning Permit. If the deck is being constructed outside of any township, this zoning form is to be completed. Fill out this application completely and also draw where the deck is to be located on the property and show the dimensions from the property lines. It is also helpful to show the dwelling on you site plan as well. If you are within the town limits of any township, zoning approval from that town is required and to be submitted with your permit application.

Page 5: Owners Affidavit. This document is required to be filled out if you, the owner of the property, are conducting any portion of the installation of the deck yourself. If you are hiring a licensed contractor to perform all work, this form is not to be completed.

Page 6 & 7: Contractor List Form/Permit Authorization Affidavit. Complete the Contractor List Form to show who will be performing the work. The Affidavit to be completed if the permit applicant is any person other than the licensed contractor performing the work. The contractor whom will be performing the work is required to complete this form. If the contractor is applying for the permits themselves, this form is not to be completed.

Page 8: Deck Requirement Guide. This document is to assist you with your deck plan submittal. This document has the code requirements, span tables, and other important information to refer to prior to submitting your deck application submittal.



County of Shenandoah

BUILDING DEPARTMENT
600 N. Main Street, Ste 107
WOODSTOCK, VA 22664
www.shenandoahcountyva.us

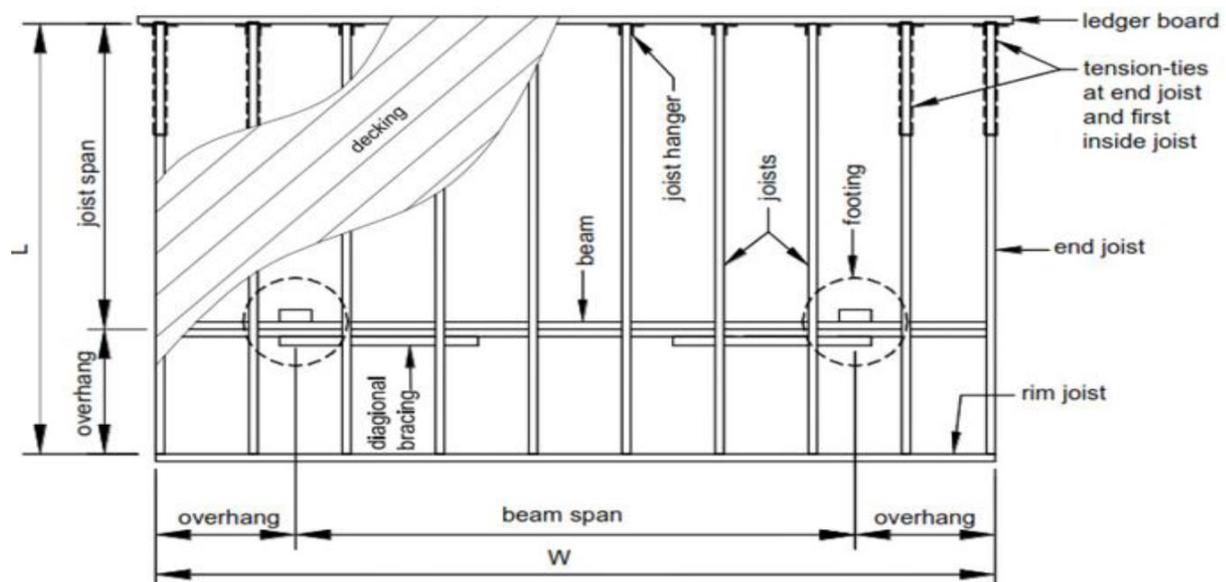
DECK PLAN REQUIREMENTS

(What should be shown on your deck plan submittal)

Use the deck guide that is included in this packet to assist you.

- Footing diagram:** Footing depth below grade, thickness of footing, width of footing.
- Ledger Connection:** Size of ledger board, fasteners being used, spacing of fasteners
- Deck posts:** Post size, post height, connection to both footing and the deck beam.
- Deck beam:** Size of beam, spacing between posts, how many plies
- Deck joists:** Size joists, spacing of joists, cantilever if applicable
- Decking:** Size of decking, orientation to joist (Perpendicular or Diagonally)
- Guarding:** Type of guarding, spacing between guard posts, guard post attachment, Spacing between pickets, height to the top of the guarding.
- Stairs:** Height of stairway from grade, stairway width, riser height, tread width, nosing length.
- Handrail:** Handrail detail showing grip size, height of the handrail.

Example of a deck framing plan:





Shenandoah County Building Inspection Request for Health Department Review

To Be Completed By Property Owner or Agent:

Owner Name: _____	_____ (Phone)	_____ (e-mail address)
Mailing Address: _____ (Street or PO Box)	_____ (City/Town)	_____ (State) _____ (Zip Code)
Contractor/Agent: _____	_____ (Phone)	_____ (e-mail address)
Mailing Address: _____ (Street or PO Box)	_____ (City/Town)	_____ (State) _____ (Zip Code)
Property Physical Address: _____		
Tax Map #: _____ Current Number of Bedrooms: _____ Number of Bedrooms Added (if applicable): _____		

PLEASE READ CAREFULLY:

This report is only intended to address the above referenced request and does not address evaluation procedures for sewage systems being sold through real estate transfers, or systems and water supplies being re-used as part of a subdivision process. This document specifically addresses VDH's implementation of §32.1-165 of the *Code of Virginia* and is not to be used for any unauthorized use.

The property boundaries and building locations are clearly marked or identified at the property. I give permission to the Virginia Department of Health to enter the property described, if necessary, for the purpose of processing this application. An accurate sketch of the property, existing structures, wells, sewage disposal systems, and proposed structure(s) is attached.

Owner or Agent Signature: _____ **Date:** _____

The Shenandoah County Building and Code Enforcement Department hereby requests that the Virginia Department of Health evaluate the onsite sewage system and/or water supply on the property prior to the issuance of a building permit.

Description of Proposed Work: _____

Related Building Permit #: _____

Building Inspections Representative: _____ **Date:** _____

Please take this completed form to Local Health Department (See reverse for Site Sketch & contact information)

- Please attach any recent records of system maintenance (Pump-outs or Operation and Maintenance Reports).
- (To prevent potential damage to the system VDH recommends homeowners first contact Miss Utility for marking any underground utilities. The septic tank and distribution box should be carefully uncovered by hand.)

Please indicate proposed addition(s) in relation to existing structure. Also, please show location of **existing septic tank, drainfield area and water supply** and indicate actual or estimated distances between the proposed improvement and the closest septic system component(s). The footprint of proposed addition(s) must be staked or otherwise marked on the property. **Please note:** you may be required to uncover certain sewage components for evaluation.

Site Sketch (may be attached)



Shenandoah County Health Department
494 North Main Street // Suite 100
Woodstock, VA 22664
540-459-3733



County of Shenandoah



DEPARTMENT OF COMMUNITY DEVELOPMENT
 Shenandoah County Government Center
 600 N. Main St., Suite 107
 Woodstock, VA 22664
 (540) 459-6185

APPLICATION FOR BUILDING PERMIT

PERMITS APPLIED FOR Building Electric Plumbing HVAC Gas
 Zoning Alarm Suppression Demo Other _____

Owner: _____ Phone: _____ Email: _____

Mailing Address: _____

Location of Jobsite: _____ Location In: Town County

Directions from County Office: _____

Purpose of Permit: New Building Addition Alteration Remodel Other _____

Use of Proposed Structure or Building: _____

Size of Proposed Structure or Building (Includes Basement) (Square Feet): _____ Ridge Height of Purposed Structure of Building _____ Ft.

Description of Work: _____

Single Family Dwelling Mobile Home Modular Townhouse Commercial Industrial Multi-Family Dwelling

<u>Cost of Improvement</u>	<u>Type of Construction</u>	<u>Type of Sewage Disposal</u>	<u>Type of Foundation</u>
Building: \$ _____	_____	<input type="checkbox"/> Public Sewer	<input type="checkbox"/> Crawlspace
Electric: \$ _____	_____	<input type="checkbox"/> Private Septic	<input type="checkbox"/> Unfinished Basement
Plumbing: \$ _____	Type of Heat/AC _____ _____	<u>Type of Water Supply</u>	
Heat/AC: \$ _____		<input type="checkbox"/> Public Water	<input type="checkbox"/> Finished Basement
Other: \$ _____		<input type="checkbox"/> Private Well	<input type="checkbox"/> Slab on Grade
Total: \$ _____	_____	<input type="checkbox"/> Other _____	<input type="checkbox"/> Post to Footing

of Stories: _____ # of Bedrooms: _____ # of Full Baths: _____ # of Half Baths: _____ Garage: Attached Detached None

Contractor: _____ Phone #: _____ Cell #: _____

Email: _____ VA Contractor License #: _____ VA Class: A B C County License

Mechanic's Lien Agent: _____ None Designated

I Certify the Above Information is True and Correct to the best of my knowledge:

Owner Lessee Contractor Agent Architect/Engineer

Applicant Signature: _____ Phone #: _____ Email: _____

Print Name: _____ Date: _____ Best way to contact you: _____



Shenandoah County
 Office of Community Development
 600 N. Main St., Suite 107
 Woodstock, VA 22664
 540-459-6185

Site Plan for Zoning Permit - Minor

APPLICANT / OWNER

Name _____ Address _____
 Daytime Telephone _____
 E-Mail _____

PROPERTY

Address / Location _____
 Tax Map # _____ Parcel size _____ ac \ sf
 Proposed Setbacks: Front _____ Right Side _____ Left Side _____ Rear _____

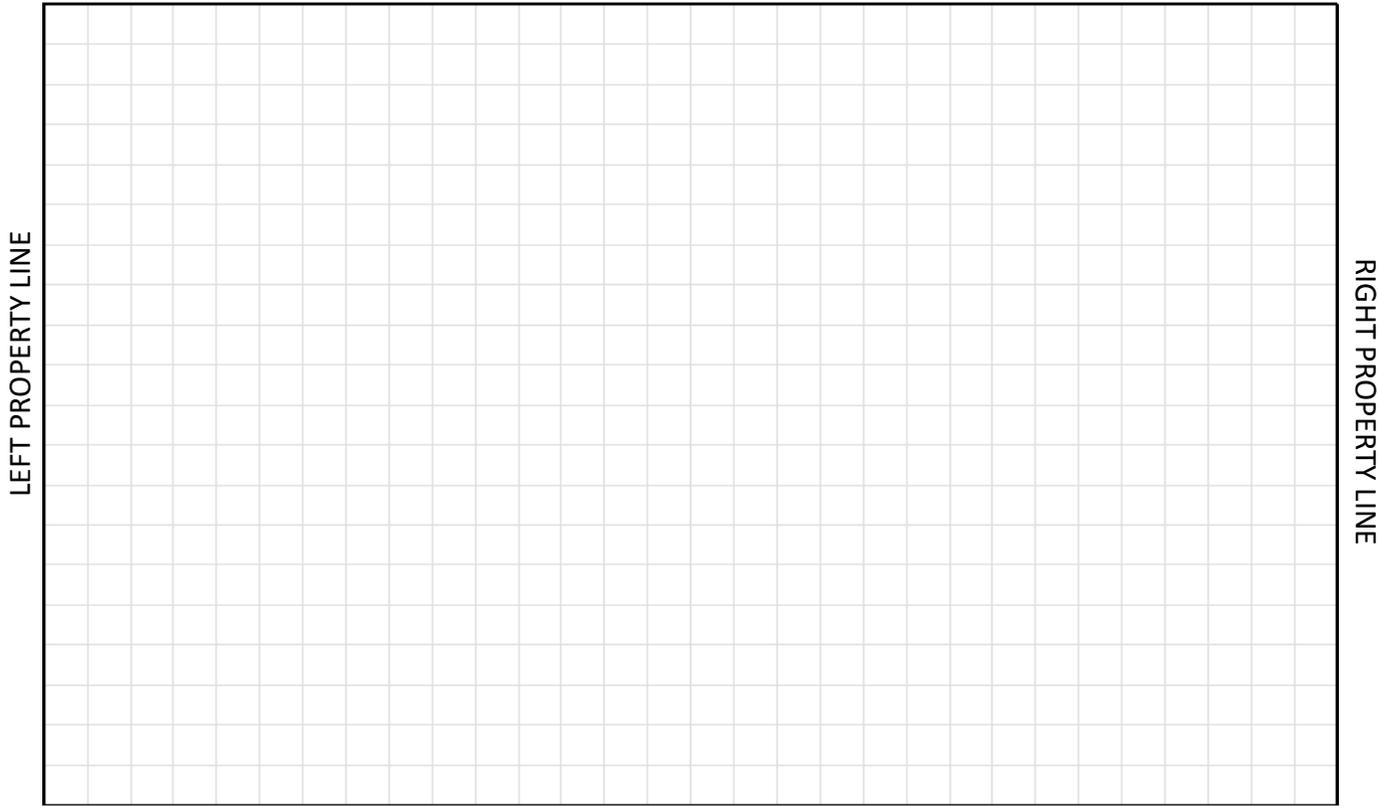
Proposed Structure

Height: _____ Size: _____ Located in Floodplain: Y / N

SITE PLAN INSTRUCTIONS

The site plan must show: the proposed structure(s); all existing structures; all roads and waterways; and the distance from the proposed structures to all property lines. **Be as accurate as possible.**

REAR PROPERTY LINE



FRONT PROPERTY LINE

I certify the above information provided is correct and true.

Signature _____ Date _____

OFFICE USE ONLY

Permit # _____ Date Rec'd _____ Floodplain? Y \ N Firm Panel# _____ Zoning _____



County of Shenandoah

BUILDING DEPARTMENT
600 N. Main Street, Suite 107
WOODSTOCK, VA 22664
www.shenandoahcountyva.us

OWNER'S AFFIDAVIT

I, _____ of (address) _____
_____ affirm that I am the legal owner of a certain tract or parcel of the
land located at: _____.

I understand that I am applying for a building permit as owner of the above referenced property and I am acting as my own contractor. I further understand that if I hire or enter into a contractual agreement with any person(s) on this project, they must be licensed with Shenandoah County and the Commonwealth of Virginia. If I decided to use a licensed contractor, I will notify the Shenandoah County Community Development office prior to the contractor starting any work.

Owner's signature

SIGNED AND ACKNOWLEDGED IN SHENANDOAH COUNTY, VIRGINIA ON THE
_____ DAY OF _____, 20____, IN THE PRESENCE OF THE UNDERSIGNED WITNESS.

Witness' signature

Please note that if you are not the owner of the property, owner must sign and give written permission to perform work, prior to the issuance of any permit.



DEPARTMENT OF COMMUNITY DEVELOPMENT
600 N. Main St., Suite 107
Woodstock, VA 22664
(540) 459-6185

CONTRACTOR LISTING FORM

Owner's Name: _____ Date: _____

In accordance with §81-1 License Required of the Code of Shenandoah County, I understand the person, firm, or corporation, providing the following services must be licensed. **A Permit Authorization Affidavit must be filled out by the person performing the Plumbing, Electric, Heating & A/C, Gas Service and Foundation work.** Please indicate who will be doing the following:

GENERAL CONTRACTING: _____

EXCAVATION/GRADING: _____

FOUNDATION WORK: _____

FRAMING: _____

ELECTRIC: _____

PLUMBING: _____

HEATING & A/C: _____

GAS SERVICE: _____

I CERTIFY THE ABOVE INFORMATION IS TRUE AND CORRECT. I AM AUTHORIZED BY THE CONTRACTORS LISTED ABOVE TO MAKE APPLICATION FOR THIS PROJECT.

Signature (Owner or Agent): _____

Date: _____



County of Shenandoah

BUILDING DEPARTMENT
600 N. Main Street, Ste 107
WOODSTOCK, VA 22664
www.shenandoahcountyva.us

PERMIT AUTHORIZATION AFFIDAVIT

§ 54.1-1111. Prerequisites to obtaining business license; building, etc., permit.

It shall be unlawful for the building inspector or other authority to issue or allow the issuance of such permits unless the applicant has furnished his license or certificate number issued pursuant to this chapter or evidence of being exempt from the provisions of this chapter.

I, _____ do hereby authorize the following person, _____ the right to act as my agent to obtain a(n) _____ permit in my absence and that I will be performing the work associated with the above permit located at _____, Virginia.

***Any misrepresentation of submitted data may result in legal prosecution.**

_____ (signature) _____ (date)

_____ (printed name)

_____ (DPOR license number)

Shenandoah County, Virginia

Typical Deck Details

Based on the 2015 Virginia Residential Code



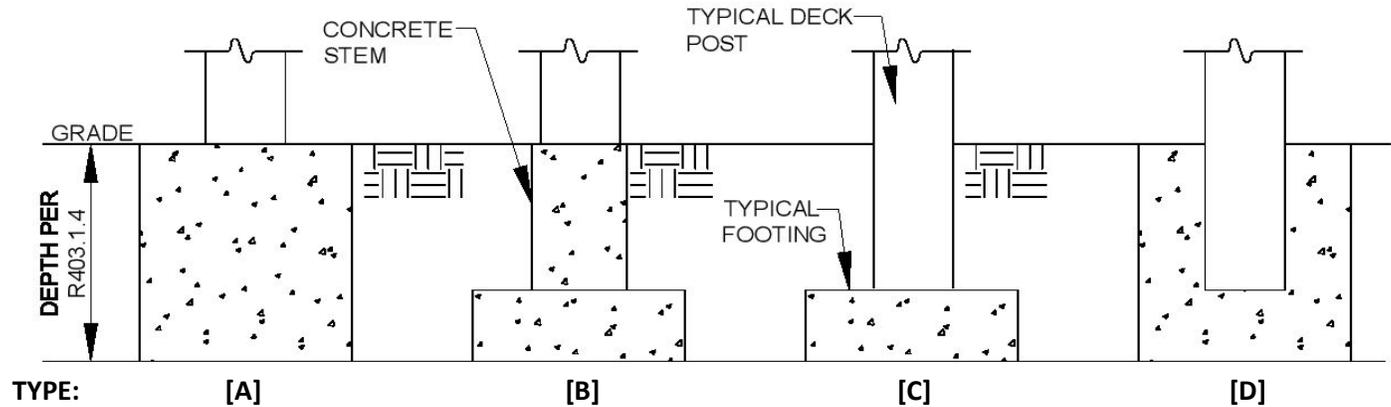
The design details in this document apply to residential decks only. Framing requirements are limited to single span, single level decks. Construction must not deviate from the details herein unless prior Approval is obtained by the county. A copy of this document must be n the job site and available during each required inspection. Please Contact Liz Morgan at lmorgan@shenandoahcountyva.us or 540-459-6185 for any questions.



FOOTINGS

Footings shall be constructed in accordance with the requirements below:

- Footings shall bear on solid ground at a minimum of 24 inches below grade for frost protection (**R403.1.4**). Footings shall be deeper if solid ground is not found. Bearing conditions must be verified by the Building Inspector prior to placement of concrete.
- (**R403.1.1**) The size of footings supporting piers and columns shall be based on the tributary load and allowable soil pressure in accordance with **Table R401.4.1**.
- Detail below is an illustration of the four types of pier footings that are acceptable. In your submittal drawings, please show which type of footing will be used.

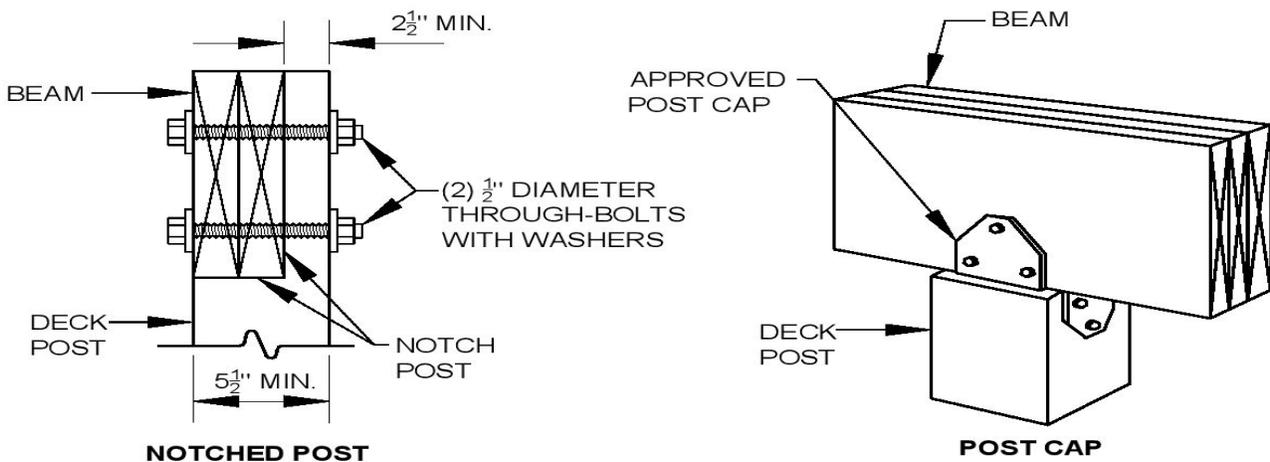


POSTS

Posts and post connections shall meet the requirements listed below:

- Refer to **Table R507.8** for post sizing based on height from grade to underside of deck beam. Posts that are over listed heights require an engineered design.
- Per **R507.8.1**, Posts shall be restrained from lateral displacement at the footing. Lateral restraint shall be provided by manufactured connectors or by minimum post embedment of 12 inches in surrounding soils or concrete piers.
- Deck beam to deck post shall be connected together by either a post cap or by a notched post to accommodate all plied of the deck beam and bolted together in accordance with **Figure R507.7.1**. Do not notch 4x4 posts.

Post Size	Maximum Height
4x4	8'-0"
4x6	8'-0"
6x6	14'-0"



LEDGER CONNECTION TO HOUSE

Below are the general requirements for ledger boards that are positively connected to the house. Code compliance is critical to ensure the safety and structural stability of your deck. Ledger connections are the leading cause of deck failure.

- Girders supporting deck joists shall not be supported on deck ledgers or band joists. Ledger board shall not be supported on stone or masonry veneer. **(R507.2.2)**.
- The ledger board shall be attached in accordance with **Table R507.2, Table R507.2.1, and Figure R507.2.1 (1)**.
- Deck ledger shall be a minimum of 2x8 pressure-preservative treated No.2 grade lumber.
- 2x2 ledger strips are not permissible. Joists shall have full bearing or in a joist hanger. **(R507.7)**
- It is apparent that we determine what the ledger will be fastened to and if that cannot be verified the deck shall be a self-supporting structure **(R507.2.1 (1))**.
- Deck lateral load devices are required for decks that cannot be positively anchored to withstand lateral movement as specified in **R507.1**. Lateral load devices shall be designed to withstand 1500 pounds and installed in two locations minimum.

TABLE R507.2
DECK LEDGER CONNECTION TO BAND JOIST^{a,b}
(Deck live load = 40 psf, deck dead load = 10 psf, snow load ≤ 40 psf)

CONNECTION DETAILS	JOIST SPAN						
	6' and less	6'1" to 8'	8'1" to 10'	10'1" to 12'	12'1" to 14'	14'1" to 16'	16'1" to 18'
	On-center spacing of fasteners						
1/2-inch diameter lag screw with 1/2-inch maximum sheathing ^{c,d}	30	23	18	15	13	11	10
1/2-inch diameter bolt with 1/2-inch maximum sheathing ^d	36	36	34	29	24	21	19
1/2-inch diameter bolt with 1-inch maximum sheathing ^e	36	36	29	24	21	18	16

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 pound per square foot = 0.0479 kPa.

- Ledgers shall be flashed in accordance with Section R703.4 to prevent water from contacting the house band joist.
- Snow load shall not be assumed to act concurrently with live load.
- The tip of the lag screw shall fully extend beyond the inside face of the band joist.
- Sheathing shall be wood structural panel or solid sawn lumber.
- Sheathing shall be permitted to be wood structural panel, gypsum board, fiberboard, lumber or foam sheathing. Up to 1/2-inch thickness of stacked washers shall be permitted to substitute for up to 1/2 inch of allowable sheathing thickness where combined with wood structural panel or lumber sheathing.

TABLE R507.2.1
PLACEMENT OF LAG SCREWS AND BOLTS IN DECK LEDGERS AND BAND JOISTS

	MINIMUM END AND EDGE DISTANCES AND SPACING BETWEEN ROWS			
	TOP EDGE	BOTTOM EDGE	ENDS	ROW SPACING
Ledger ^a	2 inches ^d	3/4 inch	2 inches ^b	1 ⁵ / ₈ inches ^b
Band Joist ^c	3/4 inch	2 inches	2 inches ^b	1 ⁵ / ₈ inches ^b

For SI: 1 inch = 25.4 mm.

- Lag screws or bolts shall be staggered from the top to the bottom along the horizontal run of the deck ledger in accordance with Figure R507.2.1(1).
- Maximum 5 inches.
- For engineered rim joists, the manufacturer's recommendations shall govern.
- The minimum distance from bottom row of lag screws or bolts to the top edge of the ledger shall be in accordance with Figure R507.2.1(1).

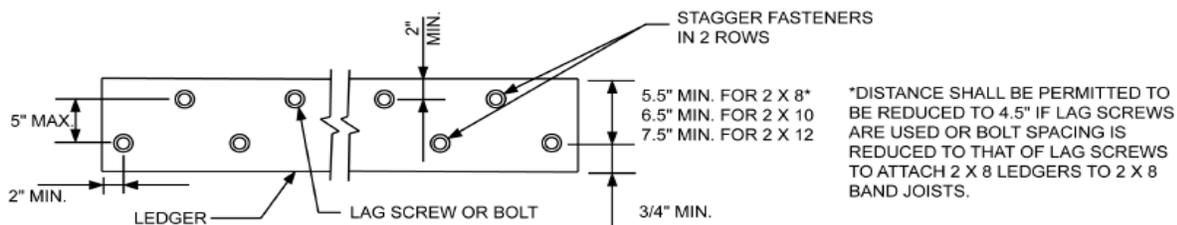


FIGURE R507.2.1(1)
PLACEMENT OF LAG SCREWS AND BOLTS IN LEDGERS

DECK BEAMS

Beams shall be designed and assembled in accordance with the requirements below:

- As shown in Figure **R507.6**, beam span is measured between the centerlines of the two adjacent posts and does not include the overhangs.
- Girders supporting deck joists shall not be supported on deck ledgers or band joists. **R507.2.2**
- Beam size is determined using **Table R507.6**. Flush beams shall be greater or equal to the joist depth.
- As shown in Figure **R507.6**, beams may overhang past the center of the post up to one-fourth of the actual beam span.
- Beam plies shall be fastened with two rows of 10d nails minimum of 16 inches on center along each edge. This is for up to 3 plies.
- Deck beams with splices shall be located at an interior post location.

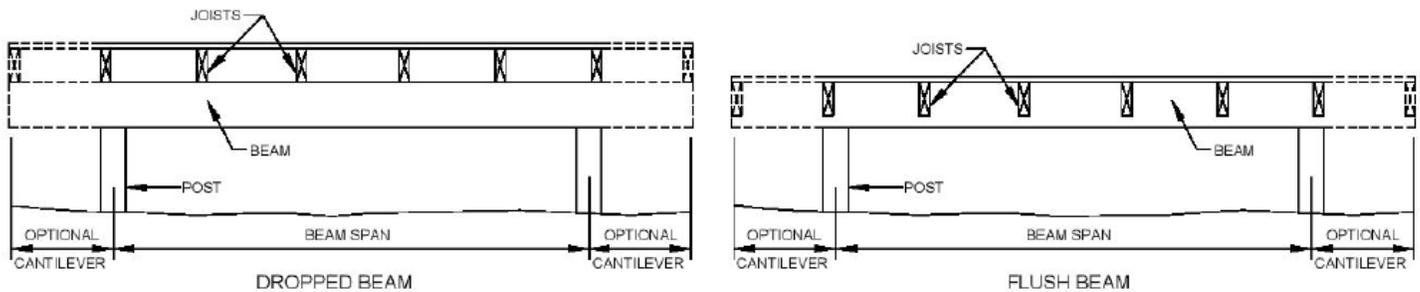


FIGURE R507.6
TYPICAL DECK BEAM SPANS

TABLE R507.6
DECK BEAM SPAN LENGTHS^{a, b} (ft. - in.)

SPECIES ^c	SIZE ^d	DECK JOIST SPAN LESS THAN OR EQUAL TO: (feet)						
		6	8	10	12	14	16	18
Southern pine	2-2 x 6	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
	2-2 x 10	10-4	9-0	8-0	7-4	6-9	6-4	6-0
	2-2 x 12	12-2	10-7	9-5	8-7	8-0	7-6	7-0
	3-2 x 6	8-2	7-5	6-8	6-1	5-8	5-3	5-0
	3-2 x 8	10-10	9-6	8-6	7-9	7-2	6-8	6-4
	3-2 x 12	13-0	11-3	10-0	9-2	8-6	7-11	7-6
Douglas fir-larch ^e , hem-fir ^e , spruce-pine-fir ^e , redwood, western cedars, ponderosa pine ^f , red pine ^f	3 x 6 or 2-2 x 6	5-5	4-8	4-2	3-10	3-6	3-1	2-9
	3 x 8 or 2-2 x 8	6-10	5-11	5-4	4-10	4-6	4-1	3-8
	3 x 10 or 2-2 x 10	8-4	7-3	6-6	5-11	5-6	5-1	4-8
	3 x 12 or 2-2 x 12	9-8	8-5	7-6	6-10	6-4	5-11	5-7
	4 x 6	6-5	5-6	4-11	4-6	4-2	3-11	3-8
	4 x 8	8-5	7-3	6-6	5-11	5-6	5-2	4-10
	4 x 10	9-11	8-7	7-8	7-0	6-6	6-1	5-8
	4 x 12	11-5	9-11	8-10	8-1	7-6	7-0	6-7
	3-2 x 6	7-4	6-8	6-0	5-6	5-1	4-9	4-6
	3-2 x 8	9-8	8-6	7-7	6-11	6-5	6-0	5-8
	3-2 x 10	12-0	10-5	9-4	8-6	7-10	7-4	6-11
	3-2 x 12	13-11	12-1	10-9	9-10	9-1	8-6	8-1

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 pound per square foot = 0.0479 kPa, 1 pound = 0.454 kg.

a. Ground snow load, live load = 40 psf, dead load = 10 psf, L/Δ = 360 at main span, L/Δ = 180 at cantilever with a 220-pound point load applied at the end.

b. Beams supporting deck joists from one side only.

c. No. 2 grade, wet service factor.

d. Beam depth shall be greater than or equal to depth of joists with a flush beam condition.

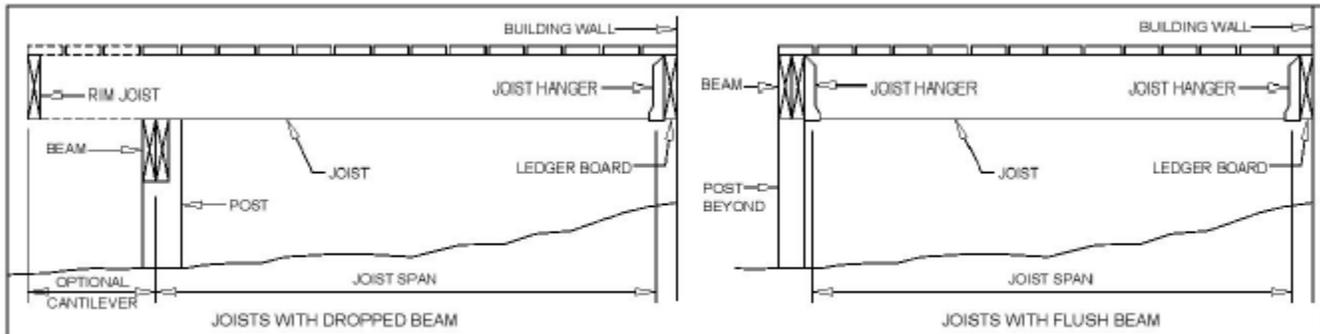
e. Includes incising factor.

f. Northern species. Incising factor not included.

DECK JOISTS

Deck joist shall be designed in accordance with the requirements below:

- Joist span is measured from centerline of bearing at each joist end and does not include the overhangs. Use **Table R507.5** to determine joist size as well as allowable cantilever lengths up to one-fourth of the joist span.
- Refer to **Figure R507.5** for typical joist span details.
- Deck joist shall be supported by deck beam by using joist hangers, or have full bearing on top of the beam. If full bearing on top of the beam, blocking shall be installed between joists to prevent overturning. **R507.7**



**FIGURE R507.5
TYPICAL DECK JOIST SPANS**

**TABLE R507.5
DECK JOIST SPANS FOR COMMON LUMBER SPECIES (ft. - in.)**

SPECIES ^a	SIZE	SPACING OF DECK JOISTS WITH NO CANTILEVER ^{b,1} (inches)			SPACING OF DECK JOISTS WITH CANTILEVERS ^c (inches)		
		12	16	24	12	16	24
Southern pine	2 × 6	9-11	9-0	7-7	6-8	6-8	6-8
	2 × 8	13-1	11-10	9-8	10-1	10-1	9-8
	2 × 10	16-2	14-0	11-5	14-6	14-0	11-5
	2 × 12	18-0	16-6	13-6	18-0	16-6	13-6
Douglas fir-larch ^d , hem-fir ^d , spruce-pine-fir ^d	2 × 6	9-6	8-8	7-2	6-3	6-3	6-3
	2 × 8	12-6	11-1	9-1	9-5	9-5	9-1
	2 × 10	15-8	13-7	11-1	13-7	13-7	11-1
	2 × 12	18-0	15-9	12-10	18-0	15-9	12-10
Redwood, western cedars, ponderosa pine ^e , red pine ^e	2 × 6	8-10	8-0	7-0	5-7	5-7	5-7
	2 × 8	11-8	10-7	8-8	8-6	8-6	8-6
	2 × 10	14-11	13-0	10-7	12-3	12-3	10-7
	2 × 12	17-5	15-1	12-4	16-5	15-1	12-4

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 pound per square foot = 0.0479 kPa, 1 pound = 0.454 kg.

a. No. 2 grade with wet service factor.

b. Ground snow load, live load = 40 psf, dead load = 10 psf, $L/\Delta = 360$.

c. Ground snow load, live load = 40 psf, dead load = 10 psf, $L/\Delta = 360$ at main span, $L/\Delta = 180$ at cantilever with a 220-pound point load applied to end.

d. Includes incising factor.

e. Northern species with no incising factor

f. Cantilevered spans not exceeding the nominal depth of the joist are permitted.

FRAMING AROUND PROJECTIONS

Additional framing and ledger board fasteners are required at projections such as chimneys or bay windows as shown in FIGURE 10. Each ply of the header shall be equal to the deck joist size. Joist hangers shall meet the requirements below.

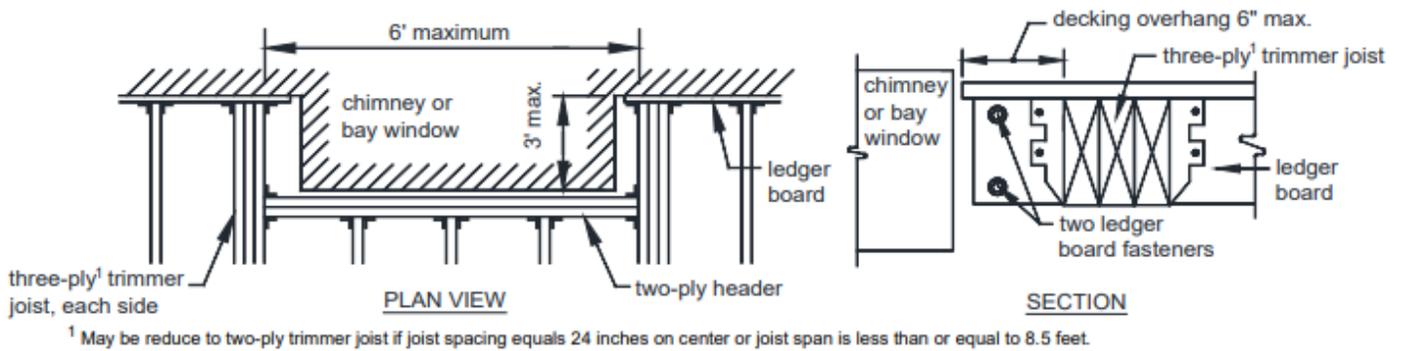


FIGURE 10: FRAMING AT CHIMNEY OR BAY WINDOW

JOIST HANGERS

- Joist hanger depth, d , as shown in FIGURE 11, 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.

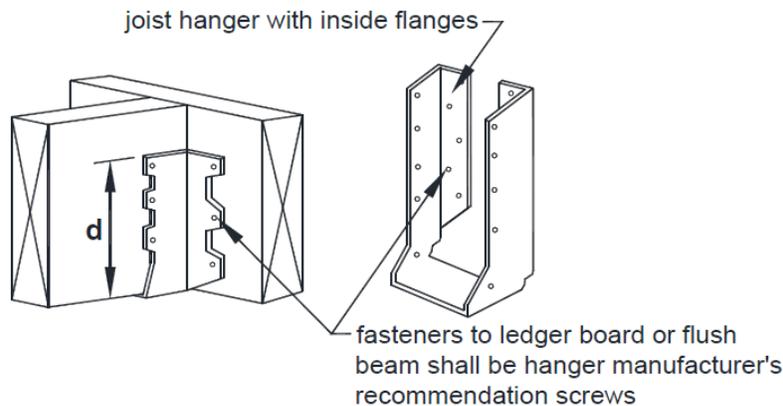


FIGURE 11: JOIST HANGERS

JOIST –TO-BEAM CONNECTION

- Each joist shall be attached to the beam in accordance with FIGURE 12 (Next Page).
- 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 12, 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.

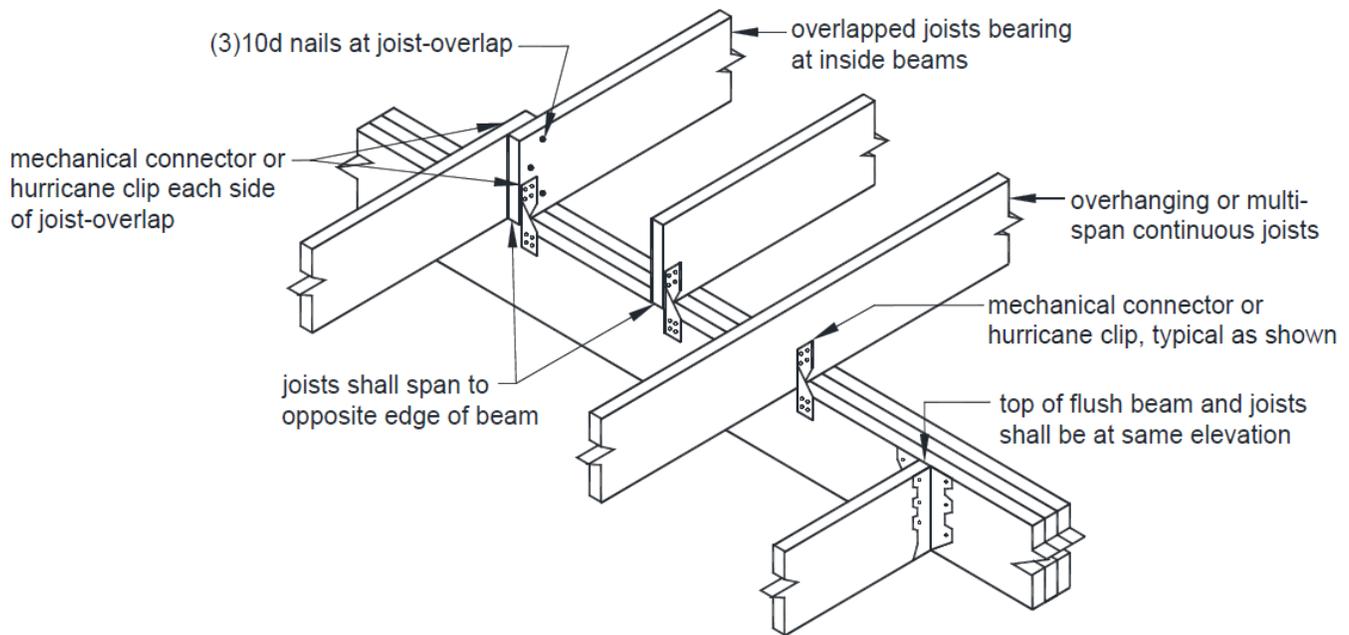
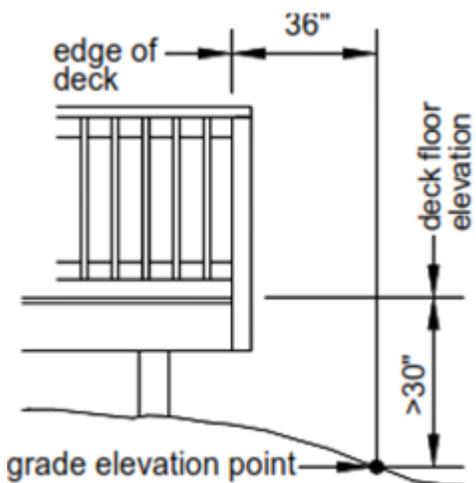


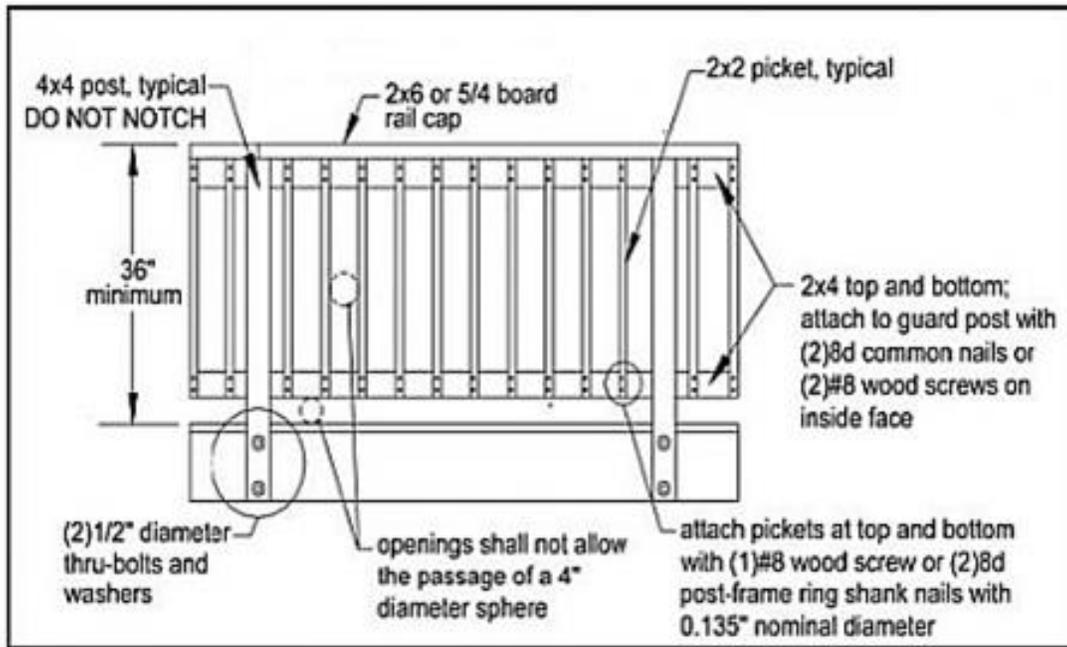
FIGURE 12: JOIST-TO-BEAM CONNECTION

GUARDING

Guarding shall be installed in accordance with the requirements below:

- Guarding is required at decks that are constructed at a height 30" or greater, measured from top of the walking surface to grade. See illustration below. **R312.1.1**
- Height of guarding shall be 36" measured vertically above the walking surface to top of the railing. **R312.1.2**
- There shall be no openings that will allow a passage of a 4" sphere between them. **R312.1.3**
- Guard systems with a valid evaluation report from an accredited listing agency are permitted.
- Guard posts shall not be notched. They shall be attached by installing (2) ½" bolts or hold down anchors per manufacturer's specifications.
- Guardrails and posts shall be installed to withstand 200# live load. **Table R301.5**

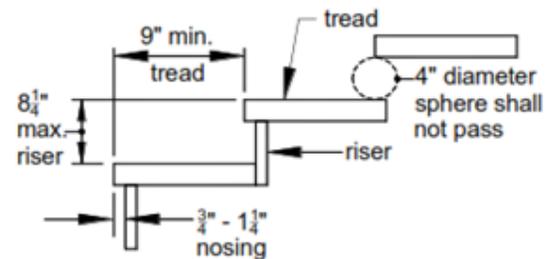




STAIRS

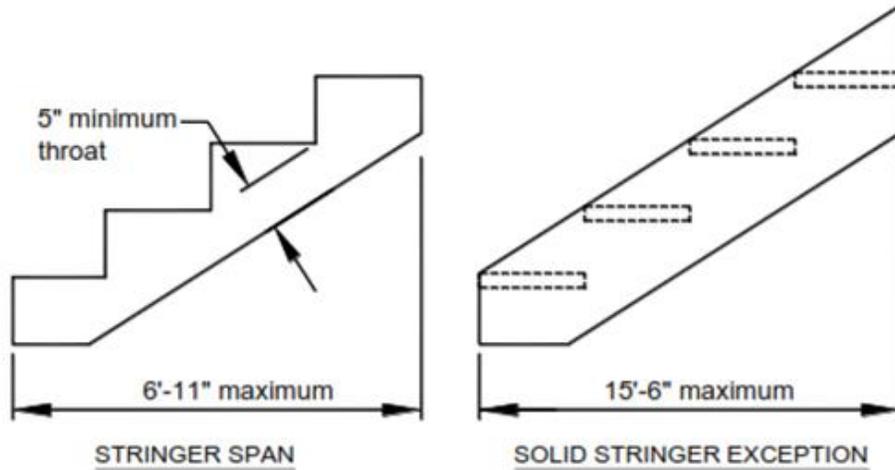
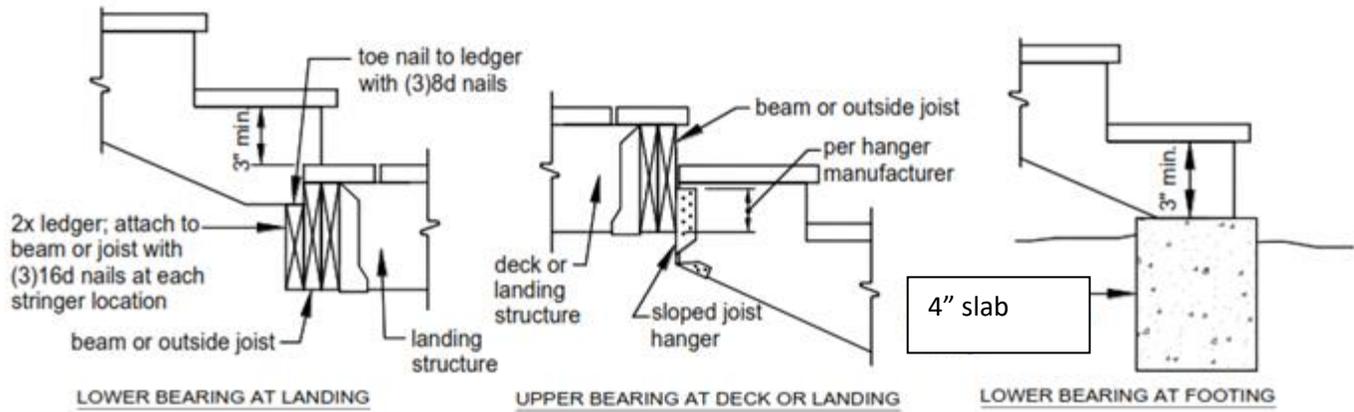
Stairs shall be constructed with the requirements below:

- The minimum stairway width shall be 36". **R311.7.1**
- Stair geometry & opening limitations shall meet the requirements as shown in the detail below. **R311.7.5.1 & R311.7.5.2**
- If the total vertical height of the stairway exceeds 12 feet, then a landing is required. **R311.7.3**
- Landing widths shall be equal to the total width(s) of the stairway(s) it serves. **R311.7.6**
- The triangular opening at the stair formed by the riser, tread and bottom rail of a guard, shall not allow the passage of a 6" diameter sphere. **R312.1.3**



Stair stringers shall be in accordance with the following requirements:

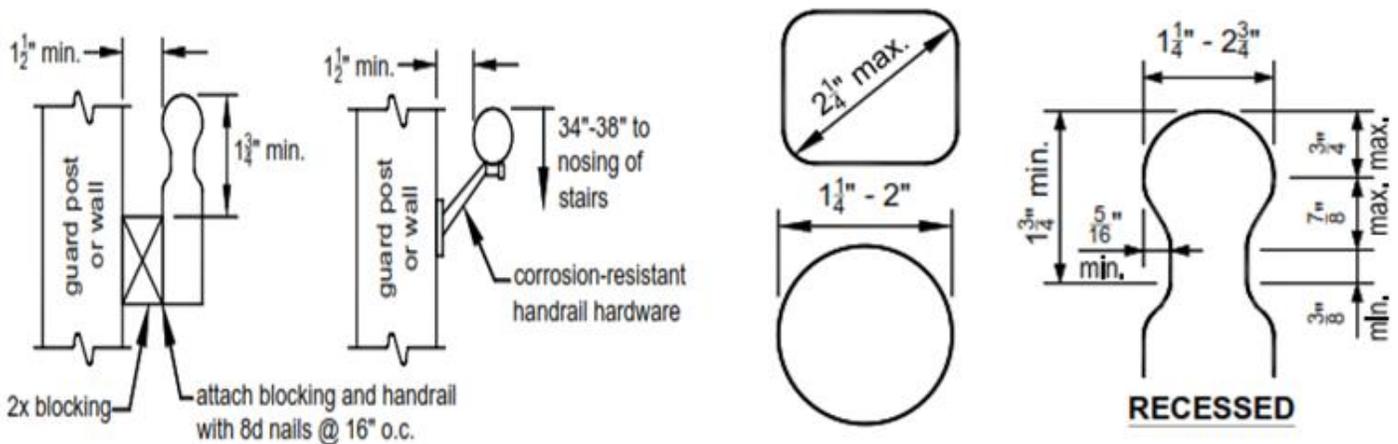
- Stringers shall be of sawn or solid 2x12's complying with the tread and riser geometry requirements.
- Stringers shall bear on footings to support a 40# live load or 300# concentrated load over 4 square inches per **R301.5**, or by the deck or landing they serve. See examples below.
- Stringer span length is measured using the horizontally projected distance between the centerlines of bearing at each end
- The span length of stringer shall not exceed 6 feet-11 inches, and the throat size of cut stringers shall not exceed 5 inches as shown below.
- The span length of a solid stringer with a width equal to 36 inches shall be permitted to have a horizontally projected span up to 15.5 feet when framed solely with two solid stringers. See example below.



HANDRAIL

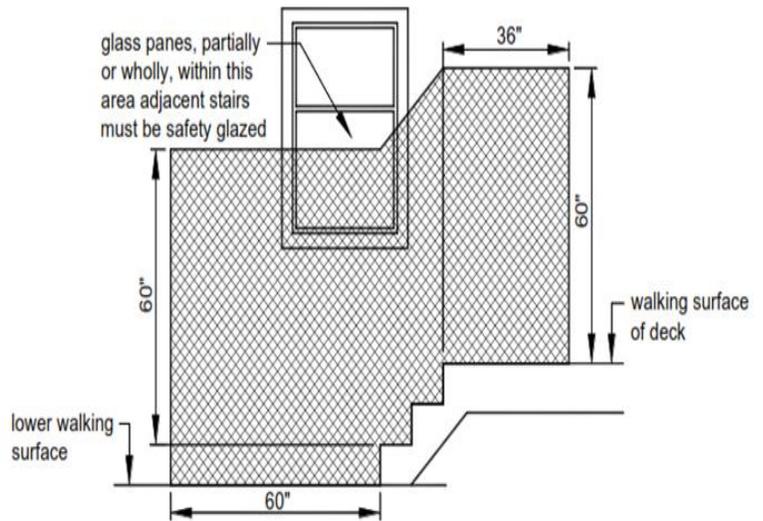
Handrails shall meet the requirements below:

- Handrails are required when there are 4 or more risers. **R311.7.8**
- Handrail height shall be no less than 34 inches and no more than 38 inches, measured vertically from the top of the tread nosing. **R311.7.8.1**
- Handrails shall be continuous for the full length of the flight of the stairs and shall be returned or terminate into a newel post or safety terminal. **R311.7.8.2**
- Grip size of handrail shall be in accordance with examples below or for handrails with a perimeter greater than 6- $\frac{1}{4}$ " shall have a graspable finger recess area on both sides of the profile. The finger recess shall begin with a distance of $\frac{3}{4}$ " measured vertically from the tallest portion of the profile and achieve a depth of at least $\frac{5}{16}$ " within $\frac{7}{8}$ " inch below the widest portion of the profile. **Refer to R311.7.8.3 Note #2.**



SAFETY GLAZING

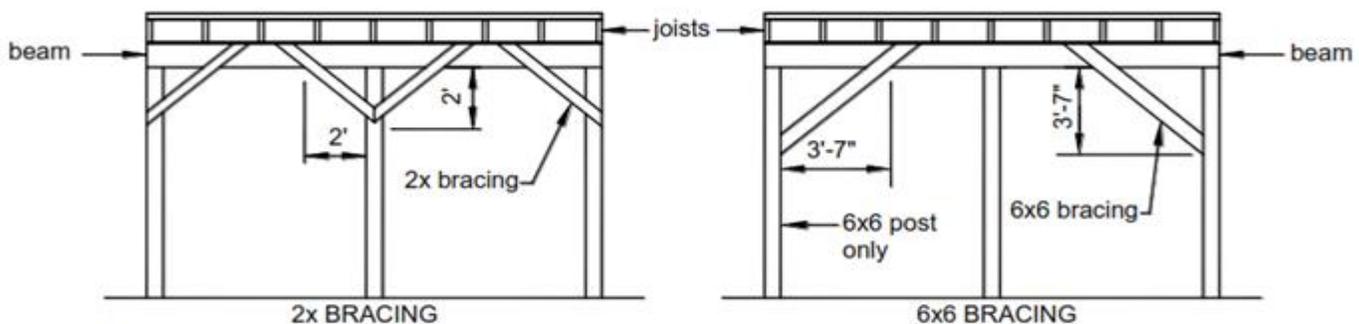
- To reduce injury due to an accidental impact, safety glazing in window and door glass is required when the existing house wall encloses any portion of the deck or acts as a barrier to stairs, landings and areas at the top and bottom of the stairs.
- **Windows adjacent stairway.** Individual panes, partially or wholly located in the hatched area shown in the example, must be safety-glazed. In the absence of safety glazing in a window adjacent a stairway, a stair guard must be constructed to separate the window from the stairway. In the absence of safety glazing in a window adjacent the 36-inch horizontal areas at the top or bottom of the stairs, a guard or horizontal rail must be installed at a height between 34 and 38 inches. The rail must meet the requirements of a stair handrail.



FREE-STANDING DECKS

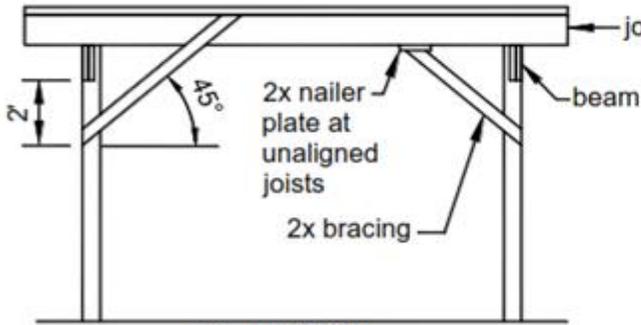
Free-standing decks shall be in accordance with the requirements below or by an engineered design.

- Diagonal bracing shall be required for decks over 8 foot tall and bracing shall be installed at post-beam locations as shown in details below.
- Diagonal bracing shall be 2x members at any post size or 6x6 members at 6x6 posts only.
- Connections of the diagonal bracing shall be in accordance with the illustrations below.
- Please note that if free-standing deck is over 14 foot tall, an engineered design shall be required.



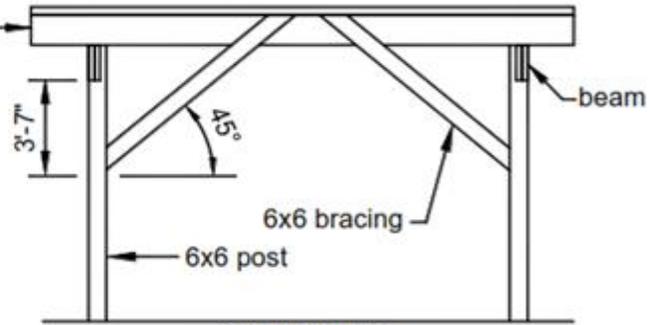
- Place 2x bracing at all beam-post locations.
- Alternate bracing between front and back of 4x4 or 4x6 posts.

- Permitted at 6x6 post locations only.
- Place 6x6 bracing at end posts and on both sides of every other interior post.



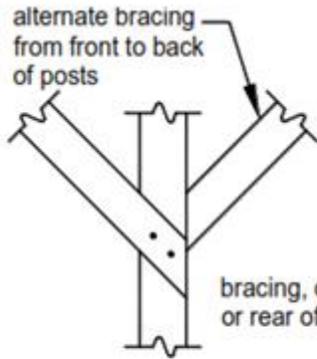
2x BRACING

- Place 2x bracing at all joist-post locations.
- Where bracing does not align with a joist, provide 2x nailer plate.

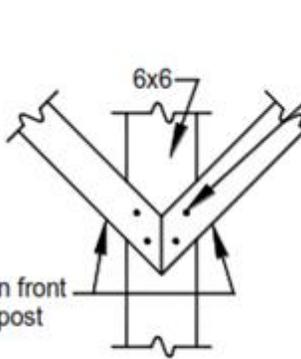


6x6 BRACING

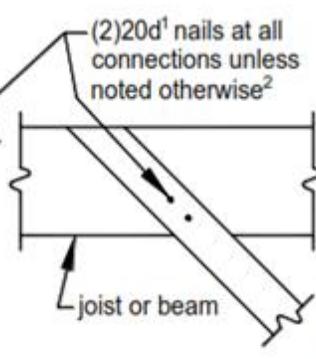
- Permitted at 6x6 post locations only.
- At unaligned joists, notch or add blocking as necessary to accommodate connection.



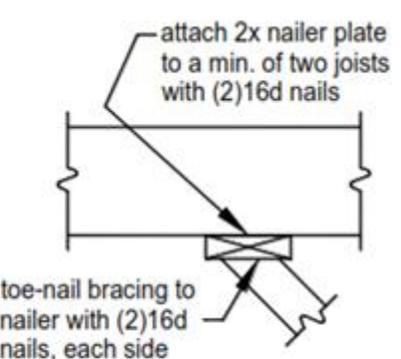
AT 4x4 OR 4x6 POST



AT 6x6 POST



AT JOIST OR BEAM

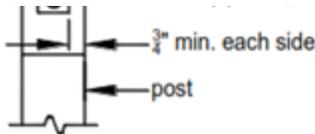


AT UNALIGNED JOIST

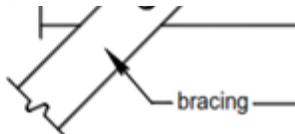
¹ Nails may be substituted with an equal number of the approved wood screws listed in TABLE 7.

² Nails shall have a distance of 3/4 inches to all edges and 1/4 inches to the end of the bracing member.

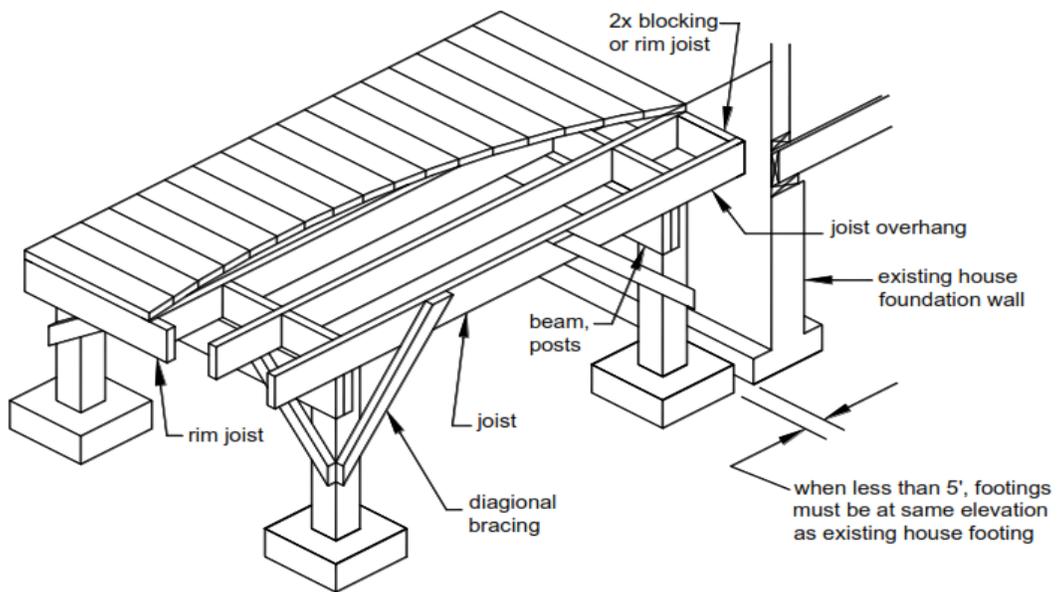
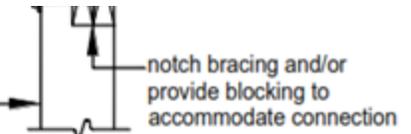
through-bolt



AT POST



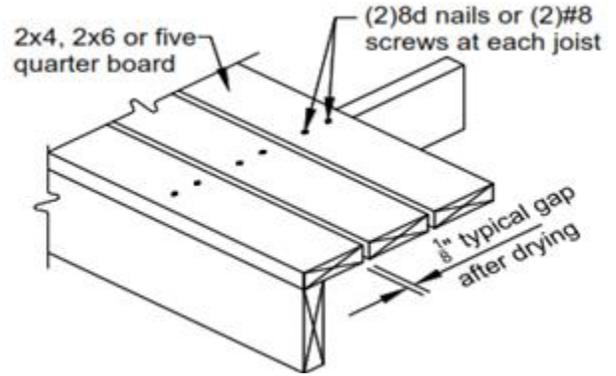
AT BEAM OR JOIST



DECKING

Wood or wood plastic composite decking shall be installed in accordance with the requirements below:

- Decking shall be 2 inch thick wood, 5/4 inch thick wood, or wood/plastic composite material. **R507.4**
- Wood decking may be placed at a maximum angle of 45 degrees to the joists. **Table R507.4 sub note a**
- Wood/plastic composite decking may be placed at an angle but in accordance with manufacturer's installations instructions. **R507.3.1**
- Refer to **Table R507.4** for maximum joist spacing based off the decking material that will be installed.



**TABLE R507.4
MAXIMUM JOIST SPACING**

MATERIAL TYPE AND NOMINAL SIZE	MAXIMUM ON-CENTER JOIST SPACING	
	Perpendicular to joist	Diagonal to joist ^a
1 1/4-inch-thick wood	16 inches	12 inches
2-inch-thick wood	24 inches	16 inches
Plastic composite	In accordance with Section R507.3	In accordance with Section R507.3

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 degree = 0.01745 rad.

a. Maximum angle of 45 degrees from perpendicular for wood deck boards