Deck Submittal & Information Pack

The Mayor & Council of Middletown
19 West Green Street
Middletown, DE 19709-1315
Phone: 302-378-1171
Fax: 302-378-5675
www.middletown.delaware.gov
permits&inspections@middletown.delaware.gov

2024 International Residential Code
Deck Information Pack
Town of Middletown Zoning Code

- All contractors must be licensed by the Town of Middletown.
- Please Note: All communities that have Homeowner Associations (HOA) or Architectural Committees may require review and approval of any improvements made on the exterior of your home. Please follow your communities' rules and regulations.
- Three (3) copies of a site plot plan / mortgage survey must be submitted, for review, to the Licensing and Inspection Department showing property lines and setbacks (measurements), from the property lines to the proposed deck. Decks must be drawn to scale and drawn in the exact location.
- Three (3) sets of construction drawings / building plans of the proposed deck are required to be submitted for review. These construction documents shall be drawn upon suitable material and legible.
- Inspections need to be scheduled with the Town of Middletown by calling 302-378-1171; all requested inspections must be confirmed by 2:30 pm for next day inspection. Please reference your job site by the building permit number and address. A 2-hour window, 1 hour before or 1 hour after the scheduled time of inspection is permitted for Town of Middletown Code Officials to arrive to perform the scheduled inspection.
- Please **post permits** and have **approved plans** on site at all times prior to beginning of your project. Please have all permits and approved plans on site at the time of required inspections. This is to verify placement and construction of the project.
- All electrical work is State regulated. Please follow all rules and regulations if electrical work is to be installed. Visit the State of Delaware's website at DPR.DELAWARE.GOV and click or search, Board of Electrical Examiners for electrical work permit information.
- Please call Miss Utility at 1-800-282-8555 or 811 prior to any digging.

Cost of Deck Permits

$150.00 single story deck - $175.00 2nd story deck
This includes the plan review and inspections.
Please Note: Plan review revisions may be subject to additional fees.

Required Inspections
(Please call 302-378-1171 schedule inspections)

1. **Footer inspection** – For decks and steps, the inspection process involves two key steps. First footings must be inspection and approved, ensuring the are free of all loose soil, debris, and water. Second, if the concrete pour is not conducted on the same day, a new footing pour inspection must be called in and scheduled
2. **Framing** –At this inspection access for visible inspection is required, i.e., no lattice or deck material should be installed in order to provide visible observation of construction.
3. **Final inspection** – upon completion, access is required to all areas for inspection.

*A minimum of three (3) inspections are required for all decks

The following pages are illustrations to help guide the design and construction of your deck. The pages are simple, fill in the blank deck drawing to help with the permit application and construction clarity. Please keep in mind, using these deck drawings, if there are any deviations existing from the approved plans, this may result in resubmission of such changes. A sample plot plan and permit are also included.

Residential Building Permit Application

The Mayor & Council of Middletown
19 West Green Street
Middletown, DE 19709
Phone: (302) 378-1171 Fax: 302-378-5675
www.middletown.delaware.gov
permits&inspections@middletown.delaware.gov

APPLICANT *(Individual Applying For Permit)*

Name: _____ Phone #: _____
Address: _____ Cell #: _____
City, State: _____ Fax #: _____
Zip Code: _____ Email: _____

Applicant's Signature: _____

PROPERTY INFORMATION

Parcel Number: _____ Zoning: _____
Street Address: _____ Lot #: _____
Owner's Name: _____ Development: _____
Street Address: _____ Phone #: _____
City, State & Zip: _____ Cell #: _____

CONTRACTOR **Middletown Business License #: ___ ___ - ___ ___ ___ ___ ___**

Name: _____ Phone #: _____
Address: _____ Cell #: _____
City & State: _____ Fax #: _____
Zip Code: _____ Email: _____

License Holder's Signature: _____

TO BE COMPLETED FOR RESIDENTIAL HOME IMPROVEMENTS ONLY

Description of Job: _____

Total Square Feet: _____ **Cost of Materials:** _____

FOR OFFICE USE ONLY

NFIP / FLOOD ZONE EVALUATION:

Is Property Located in SFHA? _____ Yes _____ No What Zone? _____ A _____ AO _____ AE
Base Flood Elevation: _____ WRPA: _____
Reviewed By: _____ Riparian Buffer: _____

Plan Examiner: _____ Plan Review Fee: _____
Date: _____ Inspection Fee: _____

Application ID #: _____ Permit #: _____ Date: _____

Plan Submittals:

The following information shall be submitted to the building department for their review in order to obtain a deck permit.

***All the information shown are sample documents. Additional information may be necessary.**

1. Site Plot Plan:

All lot dimensions shall be shown on the Site Plot Plan. The distances to property lines and easements must meet any side and rare yard setback requirements. This Site Plot Plan may be drawn by the builder or homeowner and does not have to be sealed by a design professional. See **FIGURE A** for a sample site plot plan.

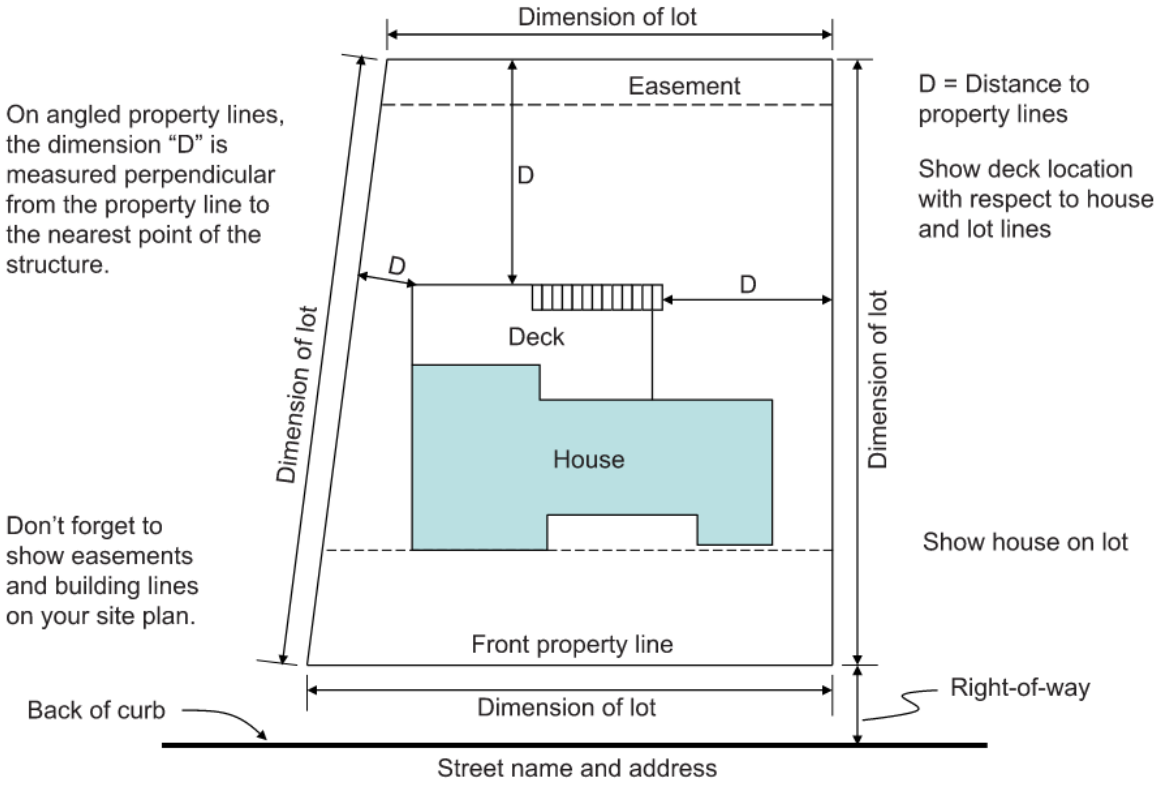
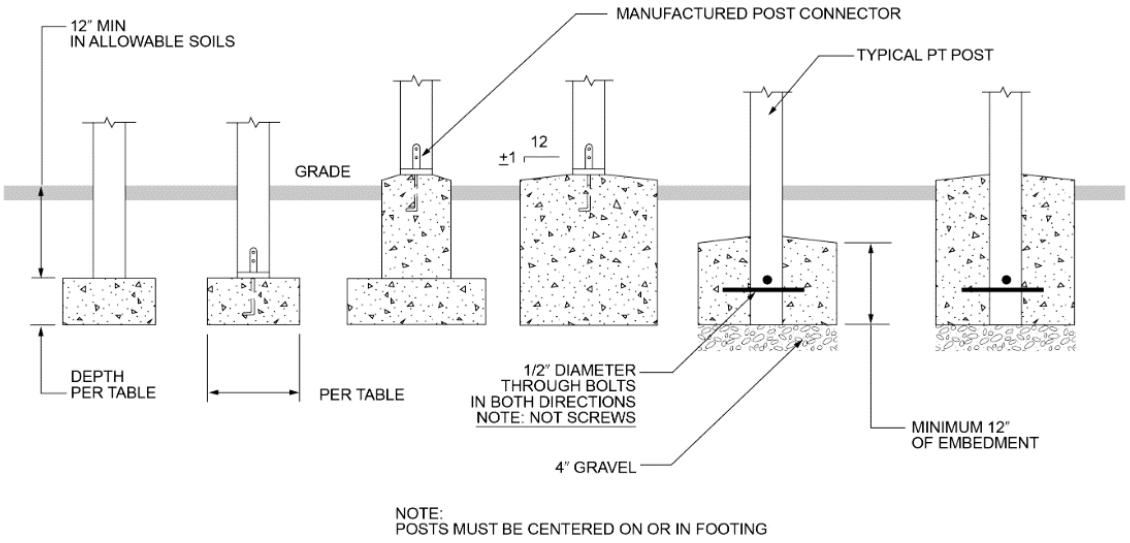


FIGURE A – SAMPLE SITE PLOT PLAN

2. Footing Size:

- For minimum Footing size for Decks refer to ***IRC2024 Section R507.3 Table R507.3.1***.
- Deck footing shall be placed no less than 12 inches (305mm) below the undisturbed ground surface.
- Footings for deck staircase needs to be provided when the deck is greater than or equal 30" from the ground.



For SI: 1 inch = 25.4 mm.

FIGURE B - DECK POSTS TO DECK FOOTING CONNECTION

LIVE OR GROUND SNOW LOAD[b] (psf)	TRIBUTARY AREA[e] (ft^2)	LOAD-BEARING VALUE OF SOILS[a, c, d] (psf)								
		1,500			2,000			≥ 3,000		
		Side of a square footing (inches)	Diameter of a round footing (inches)	Plain concrete thickness (inches)	Side of a square footing (inches)	Diameter of a round footing (inches)	Plain concrete thickness (inches)	Side of a square footing (inches)	Diameter of a round footing (inches)	Plain concrete thickness (inches)
40	5	7	8	6	7	8	~~6~~ 8	7	8	6
	20	10	12	6	9	9	~~6~~ 8	7	8	6
	40	14	16	6	12	14	~~6~~ 8	10	12	6
	60	17	19	6	15	17	~~6~~ 8	12	14	6
	80	20	22	7	17	19	~~6~~ 8	14	16	6
	100	22	25	8	19	21	~~6~~ 8	15	17	6
	120	24	27	9	21	23	~~7~~ 8	17	19	6
	140	26	29	10	22	25	8	18	21	6
	160	28	31	11	24	27	9	20	22	7

For SI: 1 inch = 25.4 mm, 1 square foot = 0.0929 m^2, 1 pound per square foot = 0.0479 kPa.

a. Interpolation permitted, extrapolation not permitted.
b. Based on highest load case: Dead + Live or Dead + Snow.
c. Footing dimensions shall allow complete bearing of the post.
d. If the support is a brick or CMU pier, the footing shall have a minimum 2-inch projection on all sides.
e. Area, in square feet, of deck surface supported by post and footings.

TABLE 507.3.1 - MINIMUM FOOTING SIZE FOR DECK

*Load-bearing Value: When the load-bearing value of soil is unknown, the assumed load-bearing value of soil is 2000 psf.
Section R507.3- Footings: In accordance to Town of Middletown adoption of Ordinance 25.05.01, all footings shall be provided with a thickness of not less than 8 inches.

3. Deck Post Height:

For single level decks, wood post size will be in accordance to ***IRC2024 Section R507 Table R507.4.***

LOADS (psf)[b]	POST SPECIES[c]	POST SIZE[d]	TRIBUTARY AREA (ft^2)[g, h]							
			20	40	60	80	100	120	140	160
			MAXIMUM DECK POST HEIGHT[a] (feet-inches)							
40 live load	Southern pine	4 × 4	14-0	13-8	11-0	9-5	8-4	7-5	6-9	6-2
		4× 6	14-0	14-0	13-11	12-0	10-8	9-8	8-10	8-2
		6 × 6	14-0	14-0	14-0	14-0	14-0	14-0	14-0	14-0
		8 × 8	14-0	14-0	14-0	14-0	14-0	14-0	14-0	14-0
	Douglas fir[e]	4 × 4	14-0	13-6	10-10	9-3	8-0	7-0	6-2	5-3
	Hem-fir[e]	4 × 6	14-0	14-0	13-10	11-10	10-6	9-5	8-7	7-10
		6 × 6	14-0	14-0	14-0	14-0	14-0	14-0	14-0	14-0
	Spruce-pine-fir[e]	8 × 8	14-0	14-0	14-0	14-0	14-0	14-0	14-0	14-0
	Redwood[f]	4 × 4	14-0	13-2	10-3	8-1	5-8	NP	NP	NP
	Western cedars[f]	4 × 6	14-0	14-0	13-6	11-4	9-9	8-4	6-9	4-7
	Ponderosa pine[f]	6 × 6	14-0	14-0	14-0	14-0	14-0	14-0	13-7	9-7
	Red pine[f]	8 × 8	14-0	14-0	14-0	14-0	14-0	14-0	14-0	14-0

TABLE 507.4 - DECK POST HEIGHT

4. Deck Beam Span:

Typical Deck Beam Spans will be in accordance to ***IRC2024 Section R507.5 Table R507.5(1).***

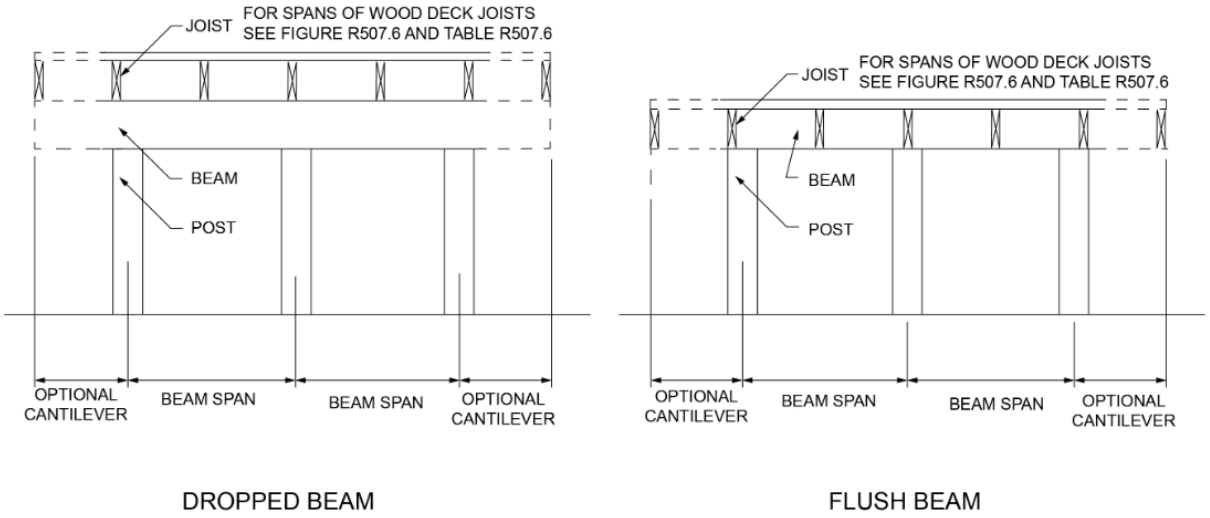
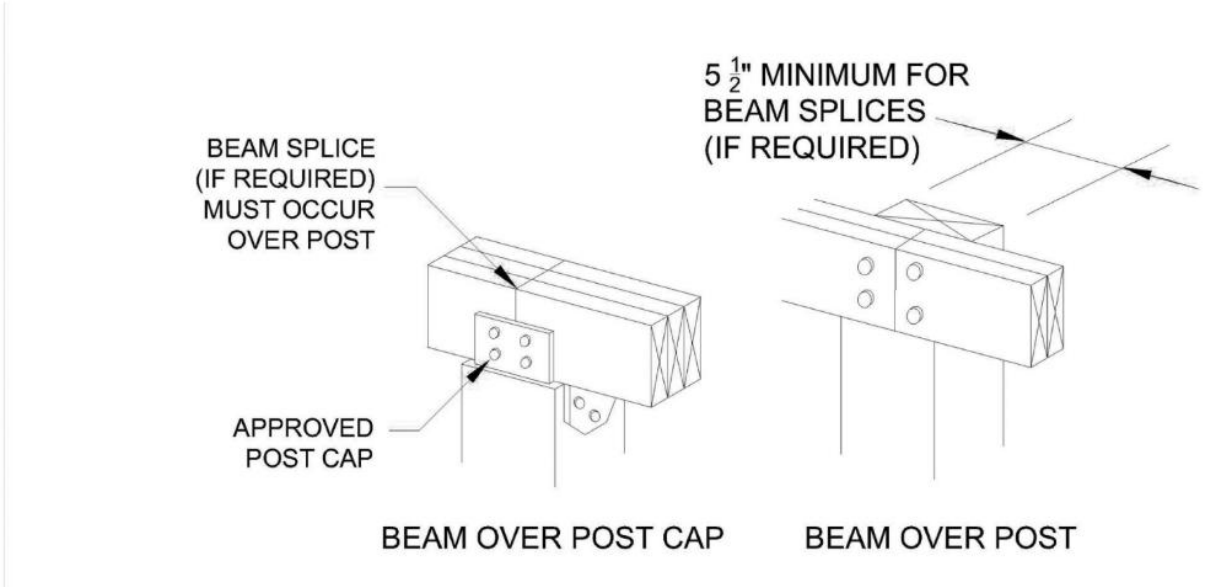


FIGURE C – TYPICAL DECK BEAM SPANS

JOIST SPAN		JOIST SPAN LENGTH AND JOIST CANTILEVER LENGTH [a, i] (feet & feet)									
6		6 & 0	6 & 1.5	—	—	—	—	—	—	—	—
8		—	8 & 0	8 & 1	8 & 2	—	—	—	—	—	—
10		—	—	10 & 0	10 & 1	10 & 2.5	—	—	—	—	—
12		—	—	—	12 & 0	12 & 1	12 & 2	12 & 3	—	—	—
14		—	—	—	—	14 & 0	14 & 1	14 & 2	14 & 3.5	—	—
16		—	—	—	—	—	16 & 0	16 & 1	16 & 2.5	—	—
18		—	—	—	—	—	—	18 & 0	18 & 1.5	18 & 3	18 & 4.5
BEAM SPECIES[d]	BEAM SIZE[e]	MAXIMUM DECK BEAM SPAN LENGTH[a, b, f] (feet-inches)									
Southern pine	1 – 2 × 6	4-10	4-7	4-3	4-0	3-7	3-5	3-3	3-0	2-10	2-8
	1 – 2 × 8	6-4	5-11	5-6	5-1	4-7	4-4	4-2	3-10	3-7	3-5
	1 – 2 × 10	7-6	7-0	6-6	6-0	5-5	5-2	4-11	4-7	4-3	4-0
	1 – 2 × 12	8-8	8-3	7-8	7-1	6-4	6-1	5-10	5-5	5-0	4-9
	2 – 2 × 6	7-4	6-11	6-5	5-11	5-4	5-1	4-10	4-6	4-3	4-0
	2 – 2 × 8	9-4	8-9	8-2	7-7	6-9	6-5	6-2	5-9	5-4	5-0
	2 – 2 × 10	11-0	10-4	9-8	9-0	8-0	7-8	7-4	6-9	6-4	6-0
	2 – 2 × 12	13-0	12-2	11-4	10-7	9-5	9-0	8-7	8-0	7-5	7-0
	3 – 2 × 6	9-0	8-6	7-11	7-5	6-8	6-4	6-1	5-8	5-3	4-11
	3 – 2 × 8	11-7	10-11	10-3	9-6	8-6	8-1	7-9	7-2	6-8	6-4
	3 – 2 × 10	13-11	13-0	12-1	11-2	10-0	9-7	9-2	8-6	7-11	7-6
	3 – 2 × 12	16-3	15-3	14-3	13-3	11-10	11-3	10-9	10-0	9-4	8-10

TABLE 507.5(1) – MAXIMUM DECK BEAM SPAN – 40 PSF LIVE LOAD



For SI: 1 inch = 25.4 mm.

FIGURE D – DECK BEAM TO DECK POST

5. Deck Joist Span:

Typical Deck Beam Spans will be in accordance to ***IRC2024 Section R507.6 Table R507.6.***

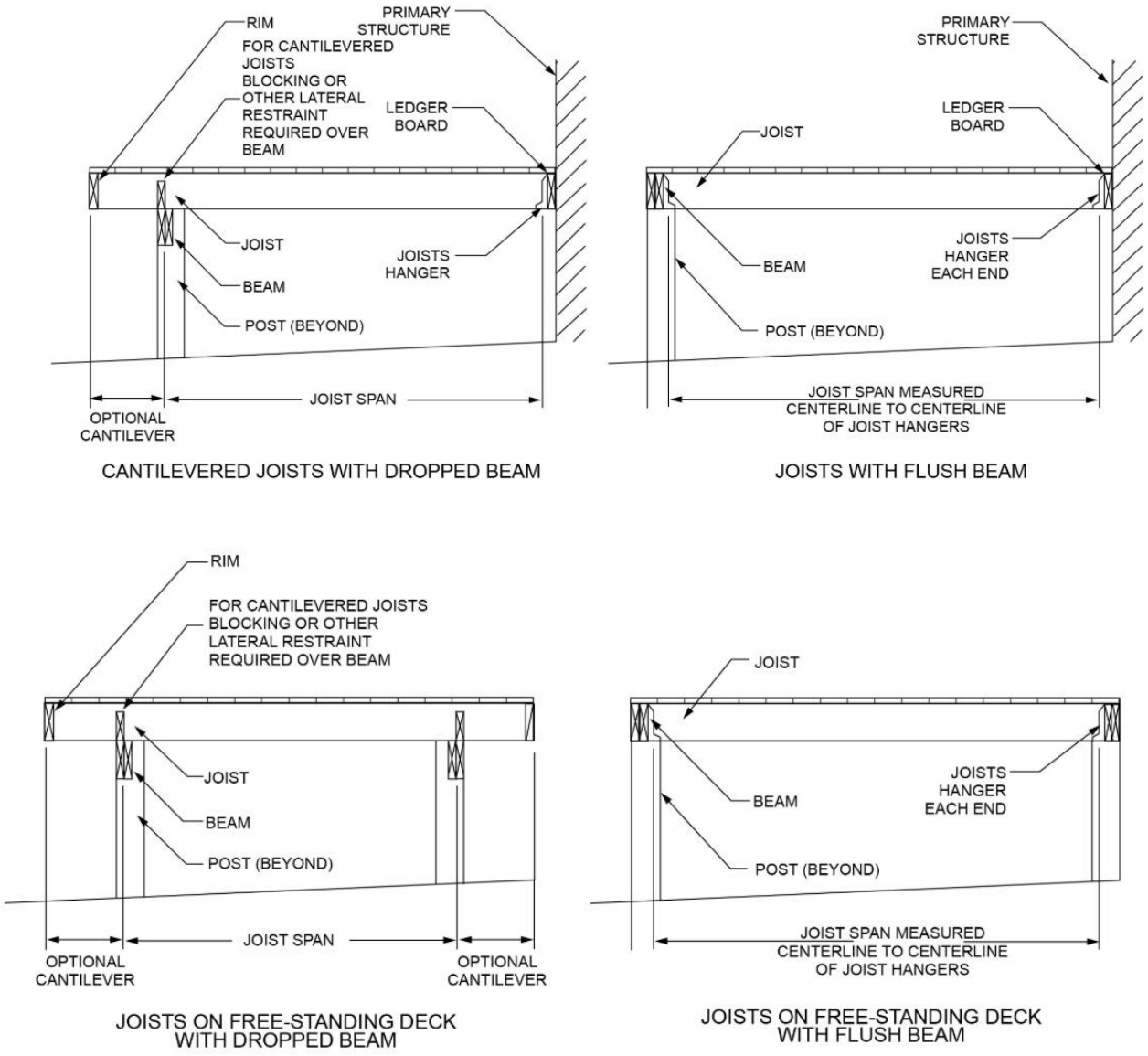


FIGURE E – TYPICAL DECK JOIST SPANS

LOAD[a] (psf)	JOIST SPECIES[b]	JOIST SIZE	ALLOWABLE JOIST SPAN[b, c] (feet-inches)			MAXIMUM CANTILEVER[d, f] (feet-inches)							
			Joist spacing (inches)			Joist back span[g] (feet)							
			12	16	24	4	6	8	10	12	14	16	18
40 live load	Southern pine	2 × 6	9-11	9-0	7-7	1-0	1-6	1-5	NP	NP	NP	NP	NP
		2 × 8	13-1	11-10	9-8	1-0	1-6	2-0	2-6	2-3	NP	NP	NP
		2 × 10	16-2	14-0	11-5	1-0	1-6	2-0	2-6	3-0	3-4	3-4	NP
		2 × 12	18-0	16-6	13-6	1-0	1-6	2-0	2-6	3-0	3-6	4-0	4-1
	Douglas fir-larch[e] Hem-fir[e] Spruce-pine-fir[e]	2 × 6	9-6	8-4	6-10	1-0	1-6	1-4	NP	NP	NP	NP	NP
		2 × 8	12-6	11-1	9-1	1-0	1-6	2-0	2-3	2-0	NP	NP	NP
		2 × 10	15-8	13-7	11-1	1-0	1-6	2-0	2-6	3-0	3-3	NP	NP
		2 × 12	18-0	15-9	12-10	1-0	1-6	2-0	2-6	3-0	3-6	3-11	3-11
	Redwood[f] Western cedars[f]	2 × 6	8-10	8-0	6-10	1-0	1-4	1-1	NP	NP	NP	NP	NP
		2 × 8	11-8	10-7	8-8	1-0	1-6	2-0	1-11	NP	NP	NP	NP
	Ponderosa pine[f]	2 × 10	14-11	13-0	10-7	1-0	1-6	2-0	2-6	3-0	2-9	NP	NP
	Red pine[f]	2 × 12	17-5	15-1	12-4	1-0	1-6	2-0	2-6	3-0	3-6	3-8	NP

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.
NP = Not Permitted.

a. Dead load = 10 psf. Snow load not assumed to be concurrent with live load.
b. No. 2 grade, wet service factor included.
c. L/Δ = 360 at main span.
d. L/Δ = 180 at cantilever with a 220-pound point load applied to end.
e. Includes incising factor.
f. Incising factor not included.
g. Interpolation allowed. Extrapolation is not allowed.

TABLE 507.6 – MAXIMUM DECK JOIST SPANS

6. Flashing:

Flashing shall be corrosion-resistant metal of nominal thickness not less than 0.019 inch (0.48 mm) or approved nonmetallic material that is compatible with the substrate of the structure and the decking materials. Self-adhered membranes used as flashing and counterflashing shall comply with FGIA 711. ***IRC2024 Section R507.2.4.***

7. Fasteners and Connectors:

Metal fasteners and connectors used for all decks will be in accordance to ***IRC2024 Section R304.3Table R507.7.2.3.*** *Refer to Appendix A for suggested Connector Fastener Types and Fastening Identification.*

ITEM	MATERIAL	MINIMUM FINISH/COATING	ALTERNATE FINISH/COATING[c]
Nails and glulam rivets	In accordance with ASTM F1667	Hot-dipped galvanized per ASTM A153, Class D or ASTM A641 Class 3S for $^3/_8$-inch diameter and less	Stainless steel, silicon bronze or copper
Bolts	In accordance with ASTM A307 (bolts), ASTM A563 (nuts), ASTM F844 (washers)	Hot-dipped galvanized per ASTM A153, Class C (Class D for $^3/_8$-inch diameter and less) or mechanically galvanized per ASTM B695, Class 55 or 410 stainless steel	Stainless steel, silicon bronze or copper
Lag screws (including nuts and washers)			
Metal connectors	Per manufacturer's specification	ASTM A653 type G185 zinc-coated galvanized steel or post hot-dipped galvanized per ASTM A123 providing a minimum average coating weight of 2.0 oz./ft^2 (total both sides)	Stainless steel

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

a. Equivalent materials, coatings and finishes shall be permitted.

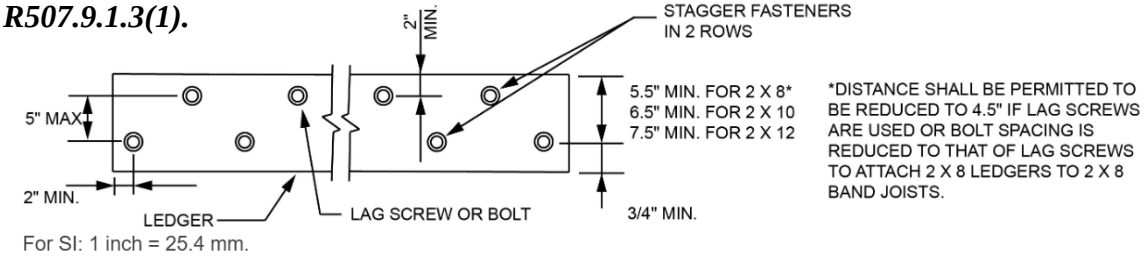
b. Fasteners and connectors exposed to salt water or located within 300 feet of a salt water shoreline shall be stainless steel.

c. Stainless-steel-driven fasteners shall be in accordance with ASTM F1667.

TABLE 507.2.3 – FASTERNER AND CONNECTOR SPECIFICATIONS FOR DECKS

8. Deck Ledger Connection to Band Joist:

Typical Deck Beam Spans will be in accordance to ***IRC2024 Section R507.9.1.3 Table R507.9.1.3(1).***



For SI: 1 inch = 25.4 mm.

FIGURE F – PLACEMENT OF LAG SCREWS AND BOLTS IN LEDGERS

LOAD[c] (psf)	JOIST SPAN[a] (feet)	ON-CENTER SPACING OF FASTENERS[b] (inches)		
		$^1/_2$-inch diameter lag screw with $^1/_2$-inch maximum sheathing[d, e]	$^1/_2$-inch diameter bolt with $^1/_2$-inch maximum sheathing[e]	$^1/_2$-inch diameter bolt with 1-inch maximum sheathing[f]
40 live load	6	30	36	36
	8	23	36	36
	10	18	34	29
	12	15	29	24
	14	13	24	21
	16	11	21	18
	18	10	19	16

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

a. Interpolation permitted. Extrapolation is not permitted.

b. Ledgers shall be flashed in accordance with Section R703.4 to prevent water from contacting the house band joist.

c. Dead Load = 10 psf. Snow load shall not be assumed to act concurrently with live load.

d. The tip of the lag screw shall fully extend beyond the inside face of the band joist. Lag screws shall be full-body diameter screws.

e. Sheathing shall be wood structural panel or solid sawn lumber.

f. 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 507.9.1.3(1) – DECK LEDGER CONNECTION TO BANS JOIST

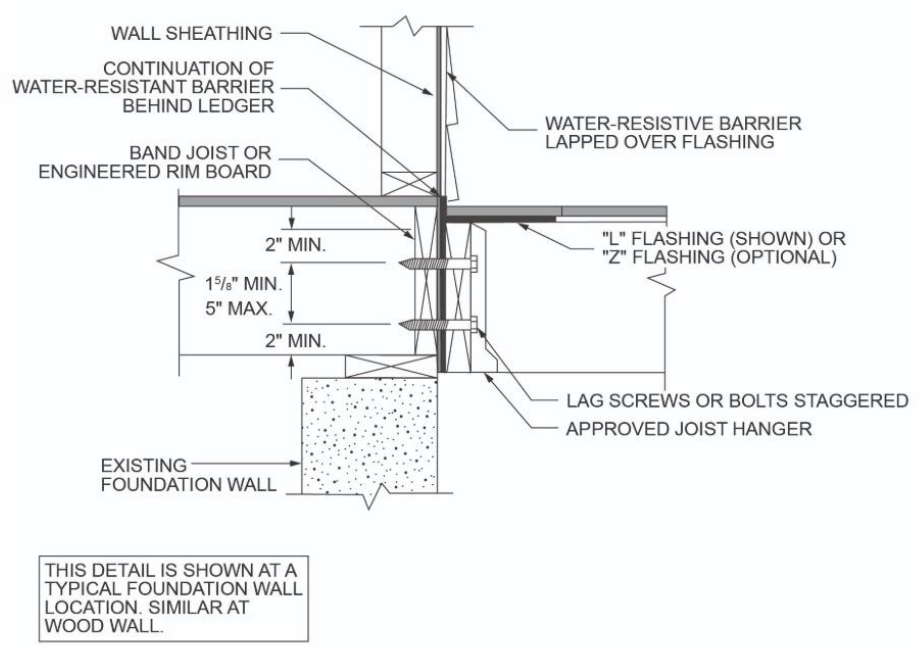


FIGURE G – PLACEMENT OF LAG SCREWS AND BOLTS IN BAND JOISTS

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

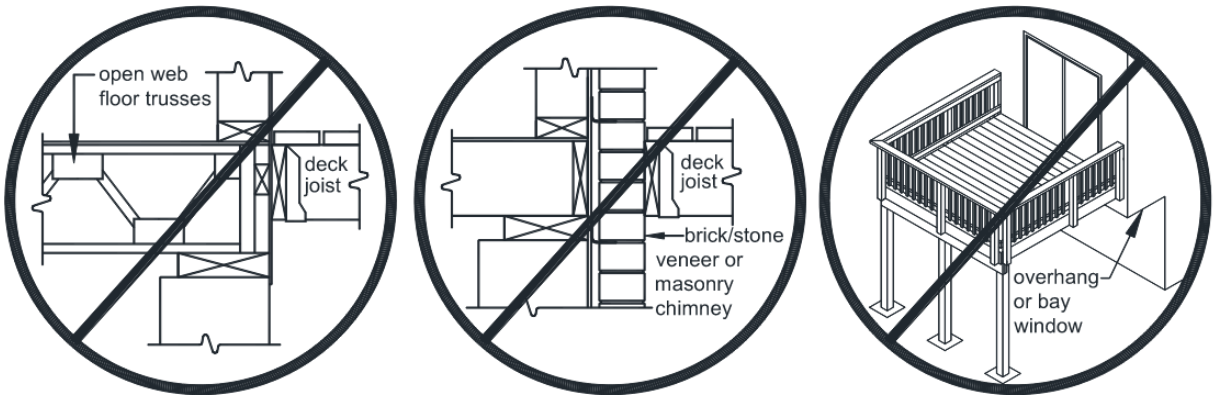
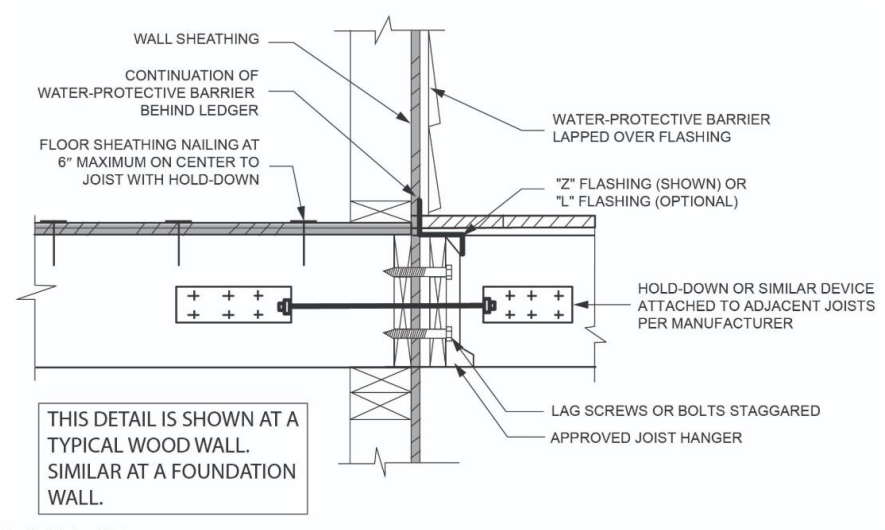


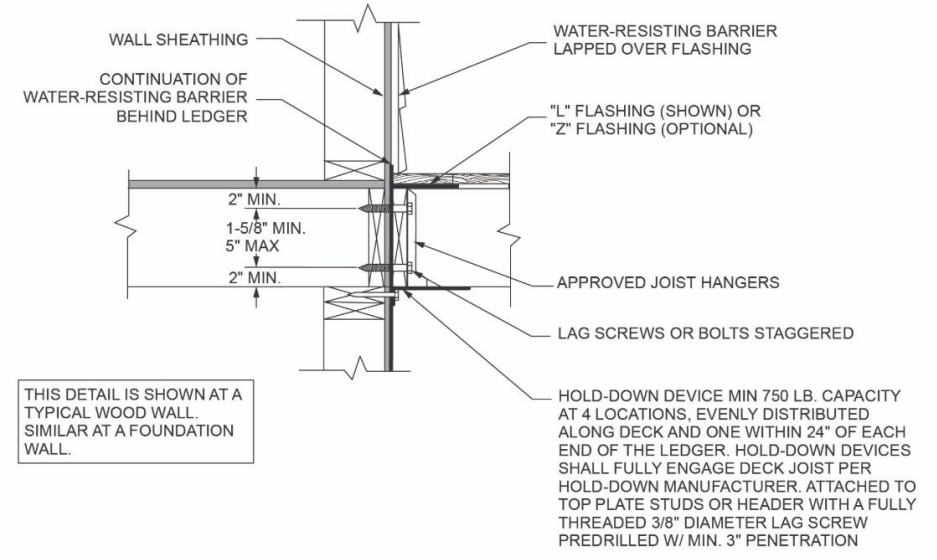
FIGURE H – PROHIBITED LEDGER ATTACHMENTS

9. Lateral Connection:

Lateral loads shall be transferred to the ground or to a structure capable of transmitting them to the ground. Where the lateral load connection is provided in accordance with **Figure J**, hold-down tension devices shall be installed in not less than two locations per deck, within 24 inches (610 mm) of each end of the deck. Each device shall have an allowable stress design capacity of not less than 1,500 pounds (6672 N). Where the lateral load connections are provided in accordance with **Figure J**, the hold-down tension devices shall be installed in not less than four locations per deck, and each device shall have an allowable stress design capacity of not less than 750 pounds (3336 N).



For SI: 1 inch = 25.4 mm.



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

FIGURE J – DECK ATTACHMENT FOR LATERAL LOADS

10.Stairs and 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 the **FIGURE K**. Guards shall be constructed in accordance with the requirements. Guards which are not required, but nevertheless provided, must also comply with these requirements.

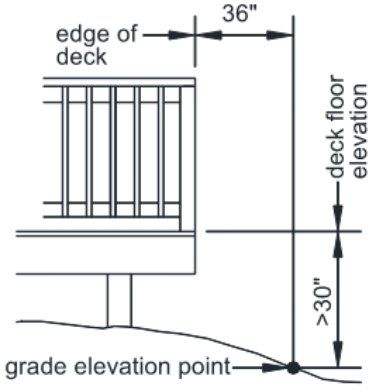


FIGURE K – WHEN GUARD IS REQUIRED

Staircase Construction:

- Typical Stairway will be in accordance to ***IRC2024 Section R318.7.***
- Footings for deck staircase needs to be provided when the deck is greater than or equal to 30" from the ground. Intermediate support needs to be provided for stairs that spans greater than or equal to 8 feet.

See **FIGURE K AND FIGURE L** for reference only. Refer to ***Deck Information Pack*** for additional details.

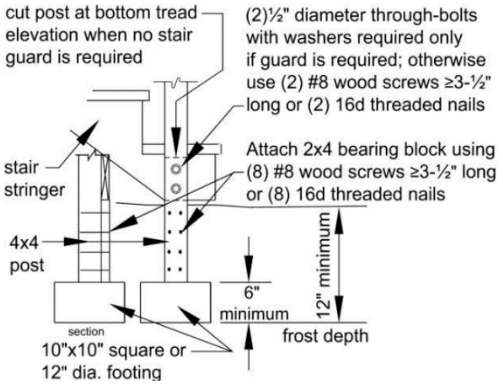
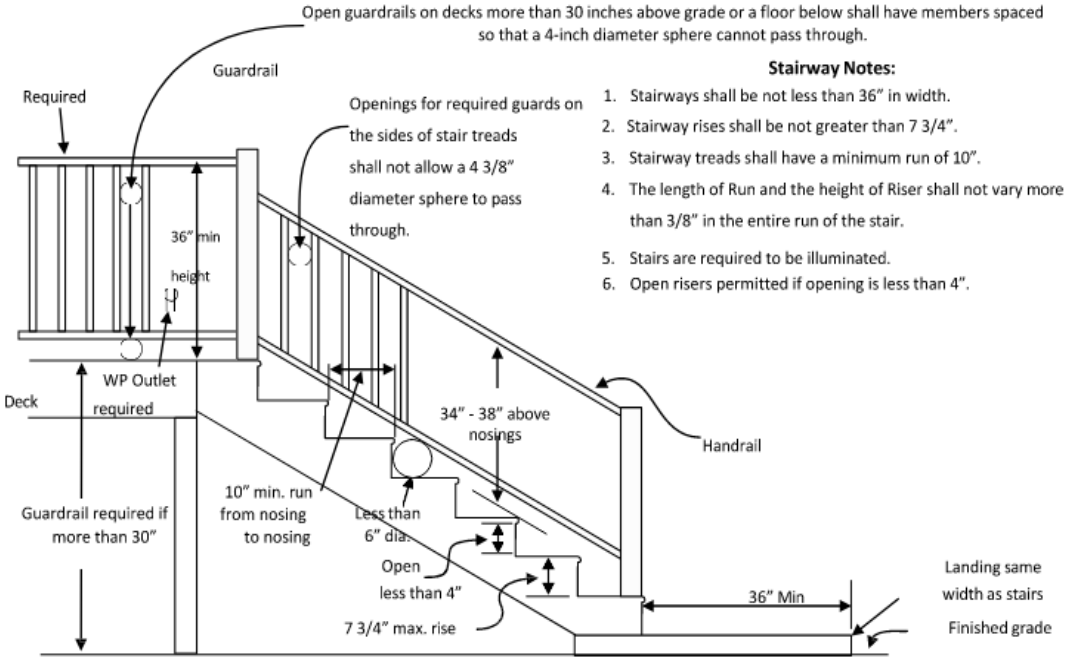


FIGURE L – STAIRCASE FOOTING



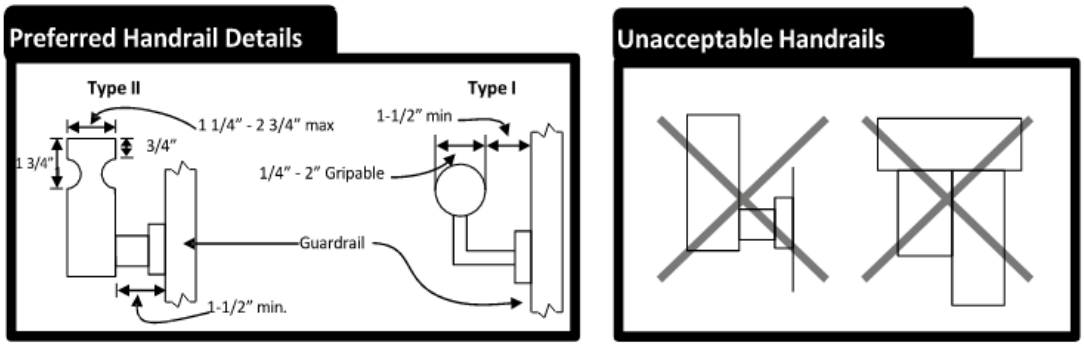
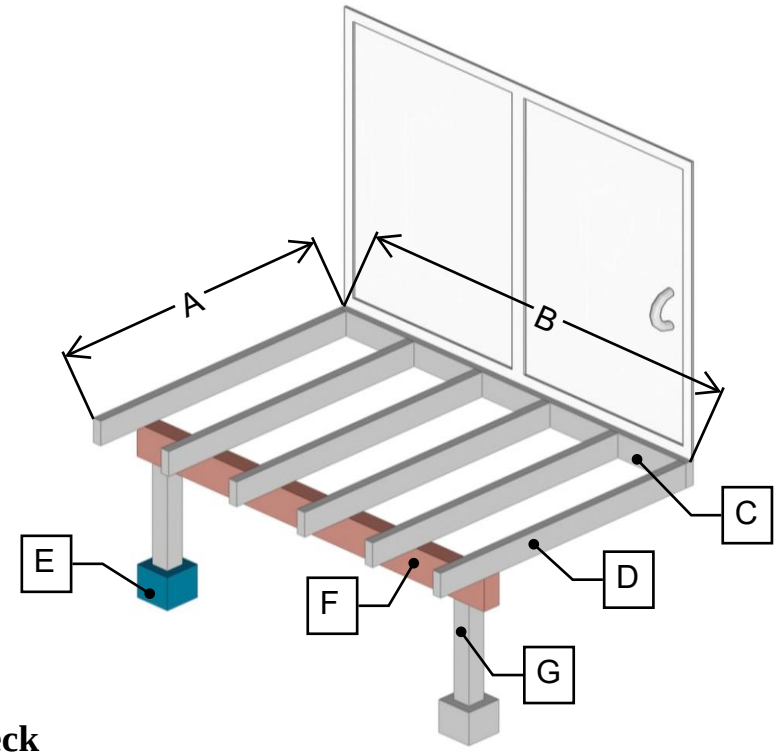


FIGURE M – STAIRCASE AND HANDRAIL REFERENCE

Typical Deck Layout

Additional drawings may be required based on the design and complexity of the deck layout.



Size of Desired Deck

1. Deck Width _____ ft. x _____in. **B. Deck Length _____ft. x _____in.**

C. Ledger Board Attachment (Flashing required):

Size: _____ x _____

Fastener Type: _____

Spacing: _____

D. Joists:

Size: _____ x _____

Spacing: _____on center

Overhang (if applicable): _____

E. Footings (8" min. concrete footing):

Footing Dimension: _____

F. Beams:

Beam Size: _____ x _____

Length of Beam: _____

Overhang (if applicable): _____

G. Post:

Height of deck off the ground: _____

Posts spacing: _____

Number of posts: _____

Flashing Material: _____

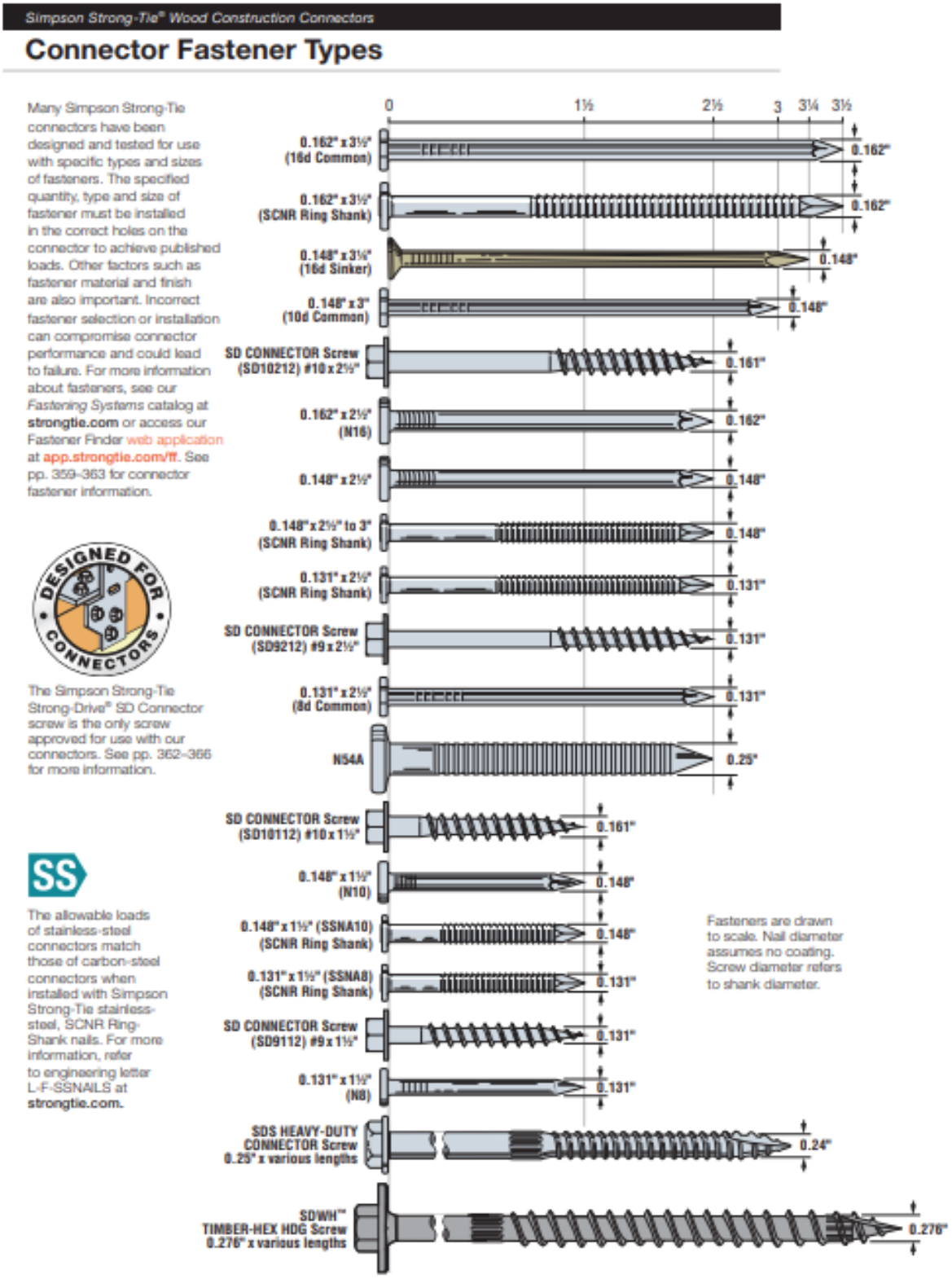
Decking Material: _____

Additional Information (if any):

_____

_____

Appendix A- Suggested Connector Fastener Types and Fastening Identification.



Fastening Identification

Round Holes
Purpose:
To fasten a connector.

Fill Requirements:
Always fill, unless noted otherwise.

Obround Holes
Purpose:
To make fastening a connector in a tight location easier.

Fill Requirements:
Always fill, unless noted otherwise.

Square Holes
Purpose:
To fasten a connector.

Fill Requirements:
Always fill, unless noted otherwise.

Hexagonal Holes
Purpose:
To fasten a connector to concrete or masonry.

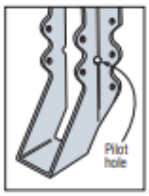
Fill Requirements:
Always fill when fastening a connector to concrete or masonry.

Triangular Holes
Purpose:
To increase a connector's strength or to achieve max. strength.

Fill Requirements:
When the designer specifies max. nailing.

Diamond Holes
Purpose:
To temporarily fasten a connector to make installing it easier.

Fill Requirements:
None.



Pilot Holes
Tooling holes for manufacturing purposes. No fasteners required.

Speed Prongs
Used to temporarily position and secure the connector for easier and faster installation.

Positive Angle Nailing (PAN)
Provided when wood splitting may occur, and to speed installation.

Dome Nailing
This feature guides the nail into the joist and header at a 45° angle.

Double-Shear Nailing
The nail is installed into the joist and header, distributing the load through two points on each joist nail for greater strength. Double-shear nailing must be full-length catalog nail.

ITS/IUS Strong-Grip
The Strong-Grip™ seat allows the I-joist to "snap" in securely without the need for joist nails.