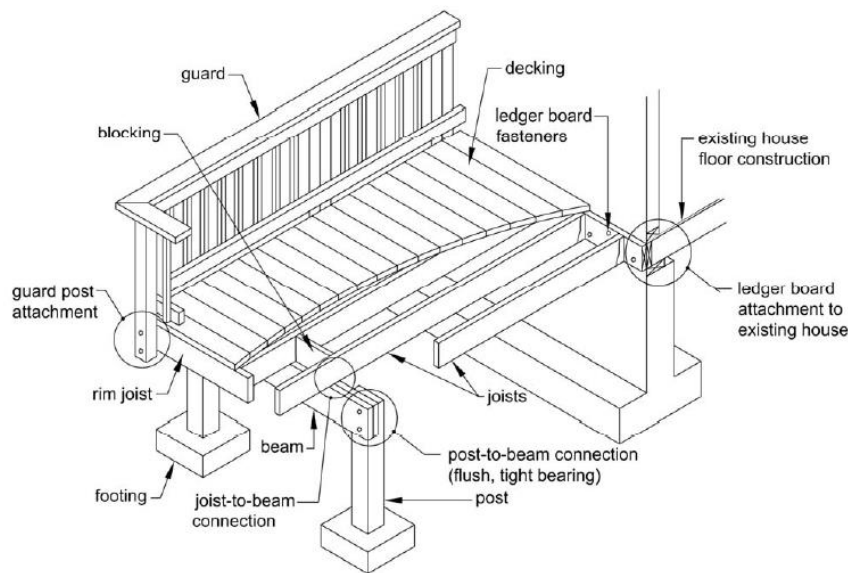


Single Family Residential Uncovered Decks



Building a new deck in the City of Hays

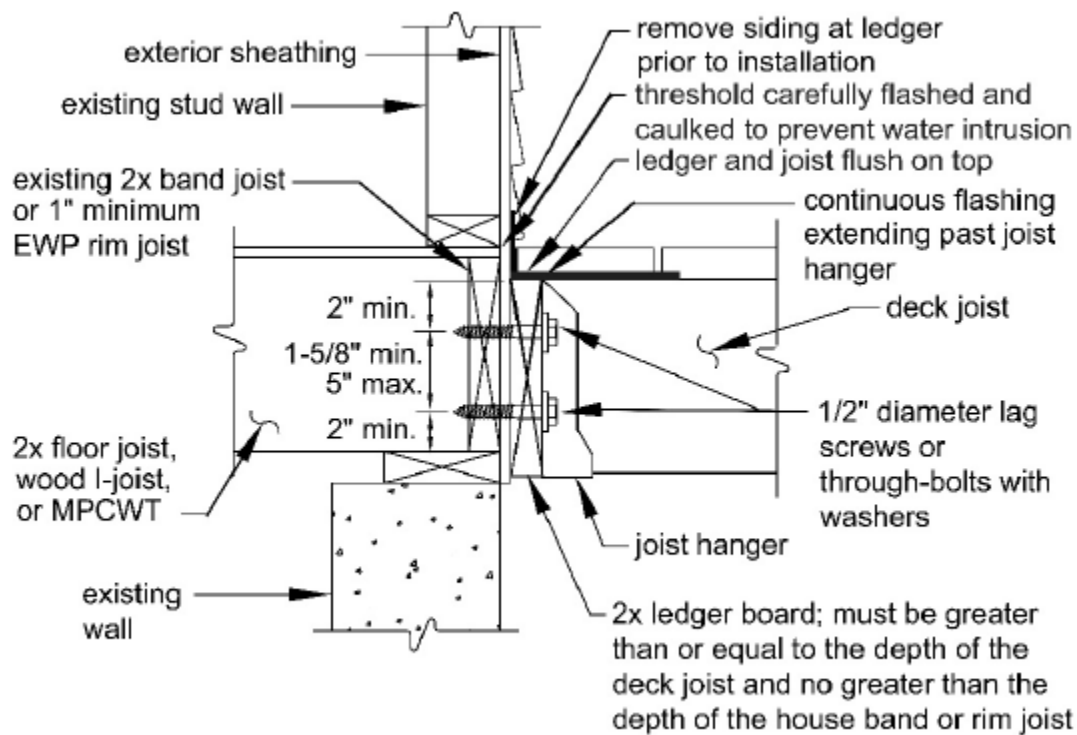
- Review this Building Guide
- Fill out the attached detailed framing plan. Must include post locations, joist spans, header spans, post sizes footing size and adjacent window locations.
- Complete a Residential Building Permit Application.
- Pay the \$20 Permit Fee
- Schedule the required inspections

Required inspections

- Footing Inspection – Verify Size and depth of all post footings
- Rough Framing Inspection – This inspection is scheduled before decking material is installed
- Final – Verify all life safety components – Guardrails, handrails, stairs and window glazing

Provide positive ledger attachment to the exterior wall

- Siding must be removed to attach the ledger
- Ledgers must be flashed in to prevent leakage
- Attachment of the ledger to stone, masonry veneer and cantilevers is prohibited
- Deck ledgers shall be an approved treated or naturally durable lumber, minimum 2 x 8
- Use diagram and chart below to properly attach a ledger



Bolt spacing for the Deck Ledger Connection to the house

Connection Details	Rim Joist or Band Joist	Joist Span						
		6'-0" and less	6'-1" to 8'-0"	8'-1" to 10'-0"	10'-1" to 12'-0"	12'-1" to 14'-0"	14'-1" to 16'-0"	16'-1" to 18'-0"
On-Center Spacing of Fasteners								
$\frac{1}{2}$ " diameter lag screw ¹ with $\frac{15}{32}$ " maximum sheathing	1" LVL	24"	18"	14"	12"	10"	9"	8"
	1- $\frac{1}{8}$ " LVL	28"	21"	16"	14"	12"	10"	9"
	1- $\frac{1}{2}$ " Lumber	30"	23"	18"	15"	13"	11"	10"
$\frac{1}{2}$ " diameter bolt with $\frac{15}{32}$ " maximum sheathing	1" LVL	24"	18"	14"	12"	10"	9"	8"
	1- $\frac{1}{8}$ " LVL	28"	21"	16"	14"	12"	10"	9"
	1- $\frac{1}{2}$ " Lumber	36"	36"	34"	29"	24"	21"	19"
$\frac{1}{2}$ " diameter bolt with $\frac{15}{32}$ " maximum sheathing and $\frac{1}{2}$ " stacked washers ^{2,7}	1- $\frac{1}{2}$ " Lumber	36"	36"	29"	24"	21"	18"	16"

Footing Calculation Formula

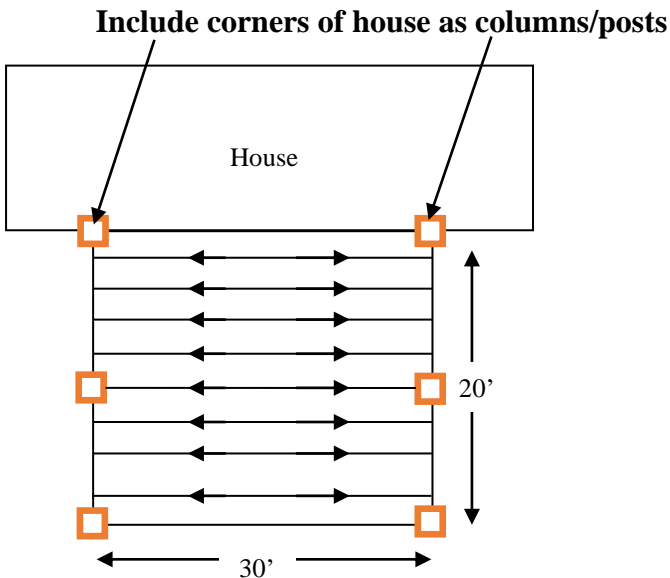
1. $L \times W = \text{SqFt}$
2. $\text{SqFt} \times 50^* = \text{TWOR}$
 *(Use 80 for deck with roof or use 50 for just deck)
3. $\text{TWOR} \div \text{NOC} = \text{WPC}$ (include corners of the house as columns/posts)
4. $\text{WPC} \div 1500 = \text{SqFt} + \text{OC}$
5. $\sqrt{\text{SqFt} + \text{OC}} = A$ (Feet)
6. $A \times 12 = B$ (Inches)
- 7.



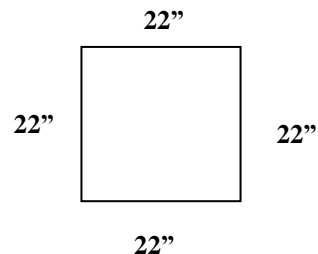
KEY

- L – Length
- W – Width
- SqFt – Square Feet
- 50 or 80 – Dead Load & Snow Load & Live Load in Pounds (LBS)
- TWOR – Total Weight of Roof
- NOC – Number of Columns/Posts
- WPC – Weight Per Columns/Posts
- 1500 – PSF soil bearing
- SqFt+OC – Square Foot of Column

EXAMPLE



1. $30 \times 20 = 600$
2. $600 \times 50 = 30,000$
3. $30,000 \div 6 = 5,000$
4. $5,000 \div 1,500 = 3.3$
5. $\sqrt{3.3} = 1.8'$
6. $1.8' \times 12 = 22''$



**Minimum Footing size is 22" x 22" x 6"
Square to Round footing conversion on
next page**

Square to Round Footing Conversion

Square Feet = Answer from #4 of the equation, round up to nearest square feet

$$12'' = .75 \text{ square feet}$$

$$16'' = 1.5 \text{ square feet}$$

$$18'' = 1.75 \text{ square feet}$$

$$24'' = 3.25 \text{ square feet}$$

$$30'' = 5 \text{ square feet}$$

$$36'' = 7 \text{ square feet}$$

Example (Same as above)

1. $30 \times 20 = 600$

2. $600 \times 50 = 30,000$

3. $30,000 \div 6 = 5,000$

4. $5,000 \div 1,500 = 3.3$

30'' round footing needed

Use Properly Sized Floor Joist and Headers

Use the following chart to size floor joist

Species	Size	Joist Spacing (o.c.)					
		12"	16"	24"	12"	16"	24"
		Allowable Span ² (L _J)			Allowable Overhang ³ (L _O)		
Southern Pine	2x6 ⁶	9' - 11"	9' - 0"	7' - 7"	1' - 0"	1' - 1"	1' - 3"
	2x8	13' - 1"	11' - 10"	9' - 8"	1' - 10"	2' - 0"	2' - 4"
	2x10	16' - 2"	14' - 0"	11' - 5"	3' - 1"	3' - 5"	2' - 10"
	2x12	18' - 0" ⁷	16' - 6"	13' - 6"	4' - 6"	4' - 2"	3' - 4"
Douglas Fir-Larch, Hem-Fir, Spruce-Pine-Fir ⁴	2x6 ⁶	9' - 6"	8' - 4"	6' - 10"	0' - 11"	1' - 0"	1' - 2"
	2x8	12' - 6"	11' - 1"	9' - 1"	1' - 8"	1' - 10"	2' - 2"
	2x10	15' - 8"	13' - 7"	11' - 1"	2' - 10"	3' - 2"	2' - 9"
	2x12	18' - 0" ⁷	15' - 9"	12' - 10"	4' - 4"	3' - 11"	3' - 3"
Redwood, Western Cedars, Ponderosa Pine ⁵ , Red Pine ⁵	2x6 ⁶	8' - 10"	8' - 0"	6' - 10"	0' - 9"	0' - 10"	0' - 11"
	2x8	11' - 8"	10' - 7"	8' - 8"	1' - 5"	1' - 7"	1' - 9"
	2x10	14' - 11"	13' - 0"	10' - 7"	2' - 5"	2' - 7"	2' - 8"
	2x12	17' - 5"	15' - 1"	12' - 4"	3' - 7"	3' - 9"	3' - 1"

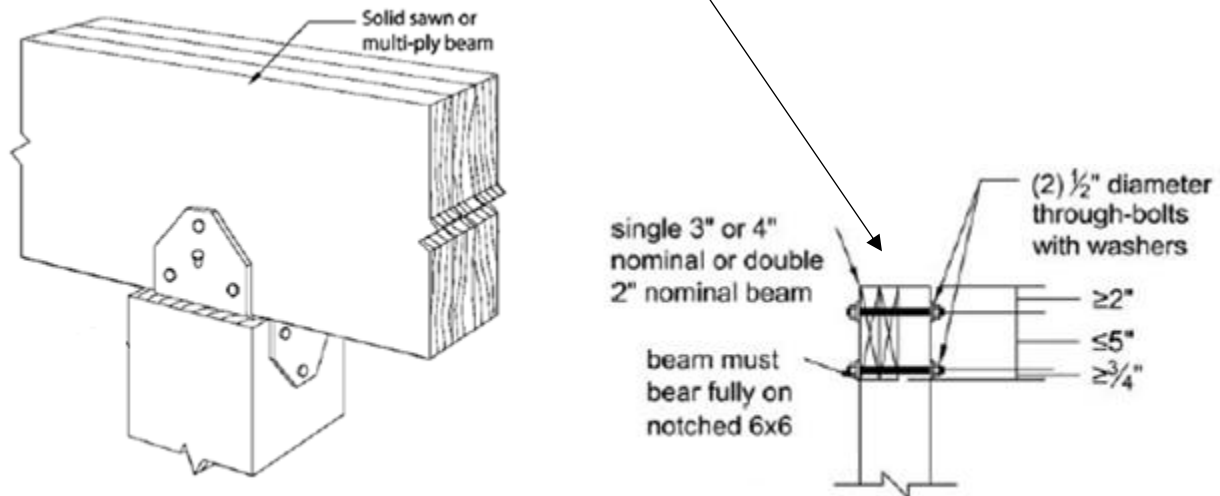
Use the following chart to size headers / Distance between posts

Species	Size ⁴	Joist Spans (L) Less Than or Equal to:						
		6'	8'	10'	12'	14'	16'	18'
Southern Pine	2-2x6	6' - 8"	5' - 8"	5' - 1"	4' - 7"	4' - 3"	4' - 0"	3' - 9"
	2-2x8	8' - 6"	7' - 4"	6' - 6"	5' - 11"	5' - 6"	5' - 1"	4' - 9"
	2-2x10	10' - 1"	8' - 9"	7' - 9"	7' - 1"	6' - 6"	6' - 1"	5' - 9"
	2-2x12	11' - 11"	10' - 4"	9' - 2"	8' - 4"	7' - 9"	7' - 3"	6' - 9"
	3-2x6	7' - 11"	7' - 2"	6' - 5"	5' - 10"	5' - 5"	5' - 0"	4' - 9"
	3-2x8	10' - 7"	9' - 3"	8' - 3"	7' - 6"	6' - 11"	6' - 5"	6' - 1"
	3-2x10	12' - 9"	11' - 0"	9' - 9"	8' - 9"	8' - 3"	7' - 8"	7' - 3"
	3-2x12	15' - 0"	13' - 0"	11' - 7"	10' - 6"	9' - 9"	9' - 1"	8' - 7"
Douglas Fir-Larch ² , Hem-Fir ² , Spruce-Pine-Fir ² , Redwood, Western Cedars, Ponderosa Pine ³ , Red Pine ³	3x6 or 2-2x6	5' - 2"	4' - 5"	3' - 11"	3' - 7"	3' - 3"	2' - 10"	2' - 6"
	3x8 or 2-2x8	6' - 7"	5' - 8"	5' - 1"	4' - 7"	4' - 3"	3' - 10"	3' - 5"
	3x10 or 2-2x10	8' - 1"	7' - 0"	6' - 3"	5' - 8"	5' - 3"	4' - 10"	4' - 5"
	3x12 or 2-2x12	9' - 5"	8' - 2"	7' - 3"	6' - 7"	6' - 1"	5' - 8"	5' - 4"
	4x6	6' - 2"	5' - 3"	4' - 8"	4' - 3"	3' - 11"	3' - 8"	3' - 5"
	4x8	8' - 2"	7' - 0"	6' - 3"	5' - 8"	5' - 3"	4' - 11"	4' - 7"
	4x10	9' - 8"	8' - 4"	7' - 5"	6' - 9"	6' - 3"	5' - 10"	5' - 5"
	4x12	11' - 2"	9' - 8"	8' - 7"	7' - 10"	7' - 3"	6' - 9"	6' - 4"
	3-2x6	7' - 1"	6' - 5"	5' - 9"	5' - 3"	4' - 10"	4' - 6"	4' - 3"
	3-2x8	9' - 5"	8' - 3"	7' - 4"	6' - 8"	6' - 2"	5' - 9"	5' - 5"
3-2x10	11' - 9"	10' - 2"	9' - 1"	8' - 3"	7' - 7"	7' - 1"	6' - 8"	
3-2x12	13' - 8"	11' - 10"	10' - 6"	9' - 7"	8' - 10"	8' - 3"	7' - 10"	

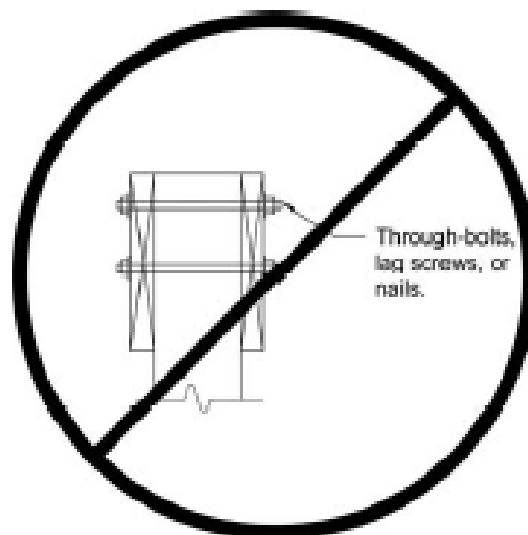
Use Appropriate Beam Attachment Options

Approved methods of beam attachment

- Beams must bear directly on posts
- Minimum post size to notch is 6x6



Prohibited method of beam attachment

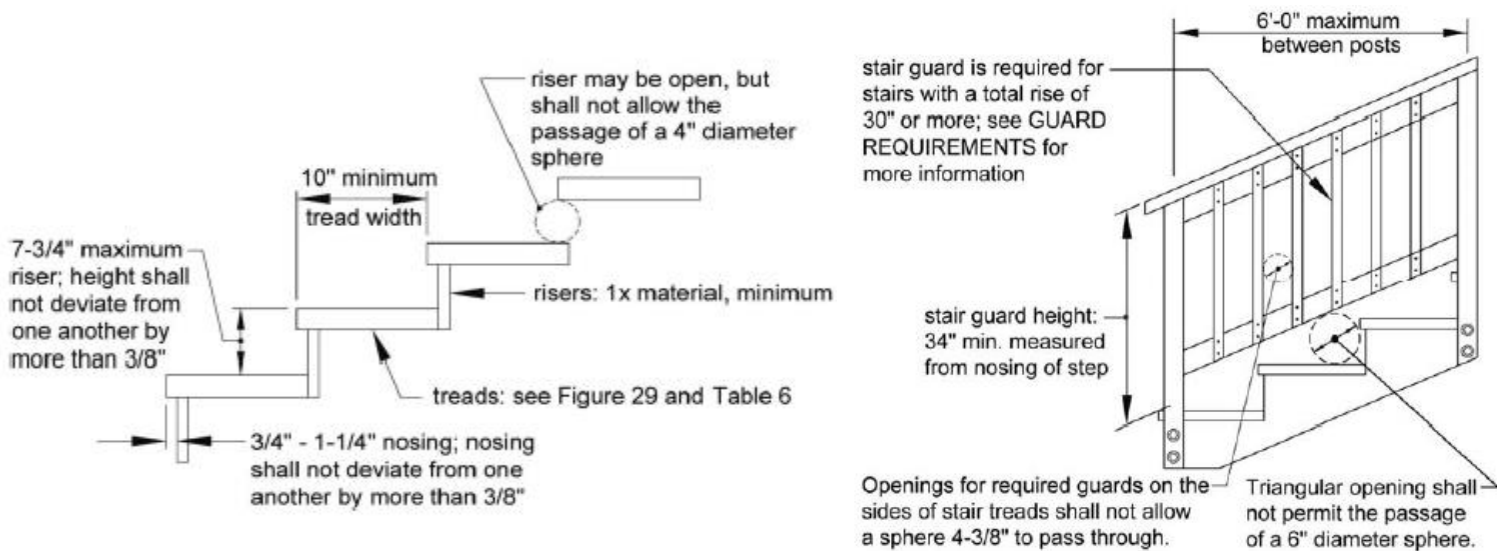


Support of beams with fasteners only is prohibited

Install Compliant Stairs, Handrails and Guardrails

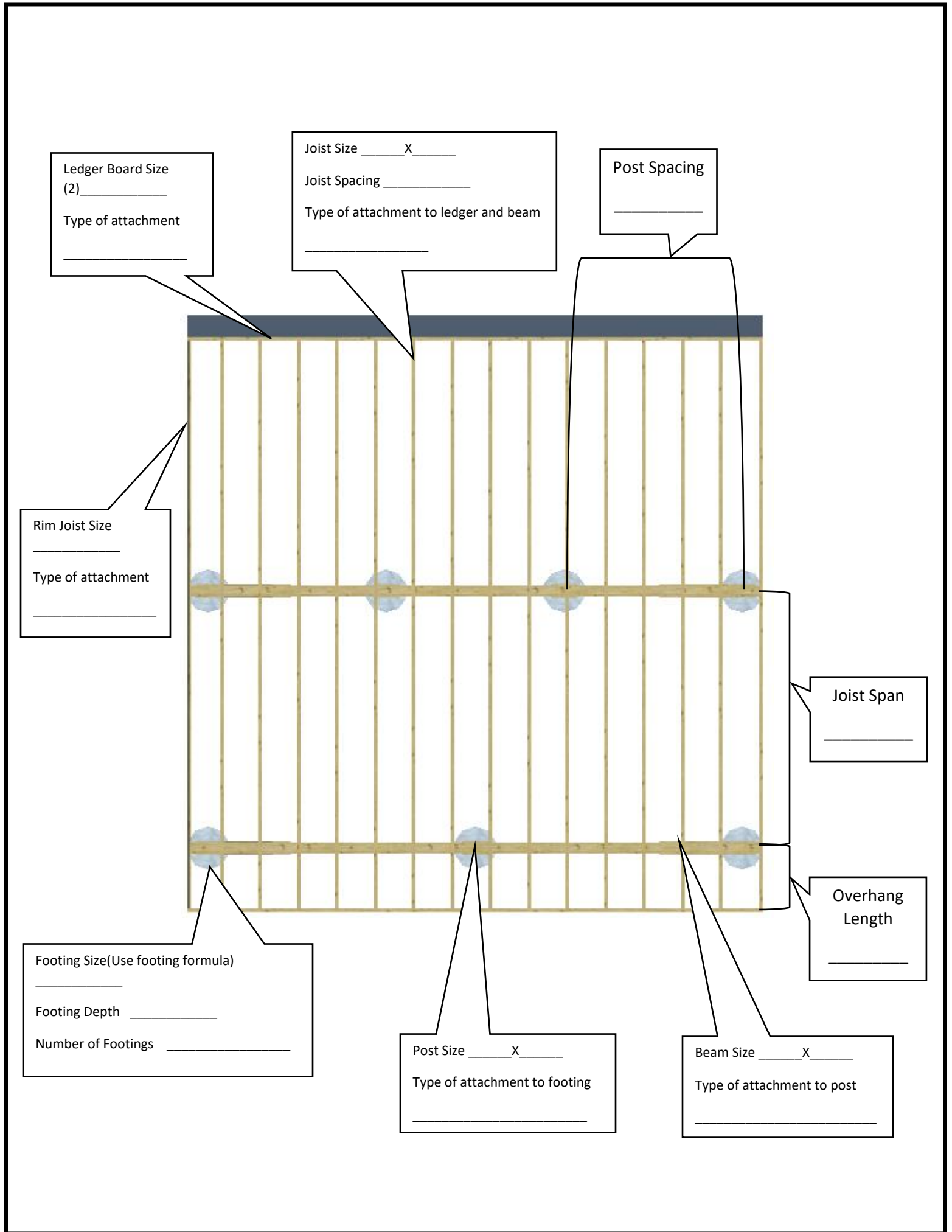
- Guardrail is required when more than 30 inches above grade
- Minimum height of guardrail 36 inches
- Openings in the guard on the edge of the deck shall not allow a 4 inch sphere to pass through

Basic stair tread/riser design



Watch for windows that now require safety glazing

- New decks can change glazing requirements for existing windows
- Any glazing less than 36 inches above the plane of your stair treads requires safety glazing
- Glazing within 5 feet of the bottom landing at stairs many times requires safety glazing
- safety glazing



Ledger Board Size
(2) _____
Type of attachment

Joist Size ____ X ____
Joist Spacing _____
Type of attachment to ledger and beam

Post Spacing

Rim Joist Size

Type of attachment

Joist Span

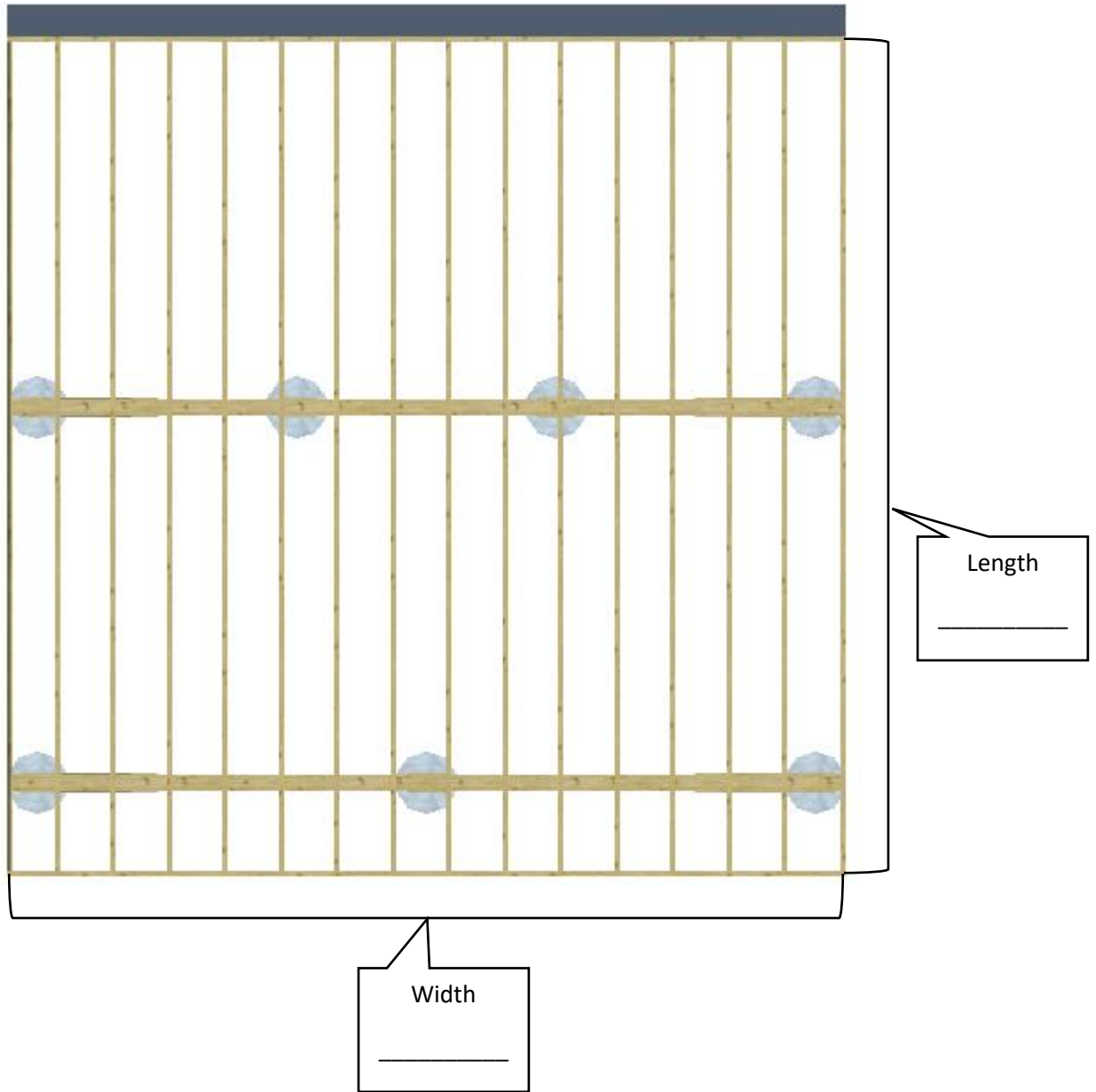
Overhang Length

Footing Size(Use footing formula)

Footing Depth _____
Number of Footings _____

Post Size ____ X ____
Type of attachment to footing

Beam Size ____ X ____
Type of attachment to post



Any omissions of requirements on submitted plans or omissions during plan review shall in no way authorize any violation of applicable requirements under the 2015 IRC, 2009 UMC & UPC, 2014 NEC, and City of Hays Ordinances. Owner/Contractor compliance with the standards adopted by the City of Hays is expected. All construction activities are subject to verification during routine inspections by an authorized representative of the City of Hays.

This hand out is provided by the City of Hays Public Works Dept. as a basic plan submittal under the 2015 IRC, 2009 UMC & UPC, 2014 NEC. This is not intended to cover all circumstances. Check with the Building Officials for additional requirements.