



OPEN DECKS

Reference: 2021 International Residential Building Code
City of Marion Building, Section 160.03, 160.19 to 160.21

Permit requirements:

- A building permit is required if unenclosed platforms or decks will be any one or more of the following: exceeding 200 square feet, more than 30 inches above grade at any point, over any basement or story, supporting a roof or unusual loads, or serving the required (main) exit door.
- A building permit is required regardless of height from grade when the deck includes a roof or trellis. (Suggestion: if you ever anticipate enclosing the deck as a screened-in porch or a 4-season porch, we suggest you design the deck and footings for the increased loads and purchase a permit for your deck and ask for the required inspections.)
- All decks are to be located per the zoning guidelines listed below.

Zoning guidelines: Planning & Zoning Dept. Phone: 319-743-6320 Email: planning@cityofmarion.org

- Decks attached to the primary structure (home) cannot be constructed in the required side yard or required rear yard.
- An unenclosed deck may encroach into the required front yard setback for a distance not to exceed five feet.

Applying for a permit: (Submit digital copies of building plans for review and approval.)

- Complete the "Application" and "Sample Site Plan" showing all required information
- Fill out all the applicable information on the "Open Deck Construction Worksheet" at the end of this handout or submit detailed, scaled plans
- Email the application and all completed plans to the Building Dept at buildingpermits@cityofmarion.org
- Upon completion of the review, you will be notified by phone or email to secure your permit

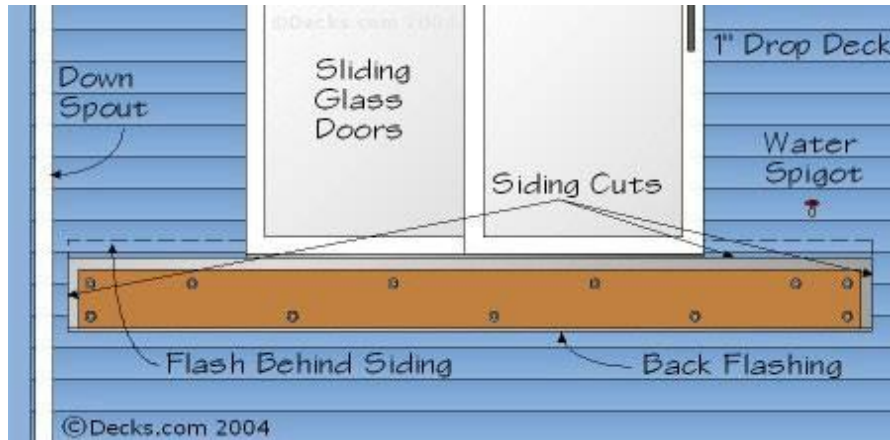
Design consideration:

- All wooden members of decks shall be pressure treated (approved pressure treated to .40 retention) or rot resistant wood (redwood or cedar).
- Decks shall be designed and constructed for a load of 50# per square foot. If there will be additional loads (large planters, hot tub, etc.), additional design issues must be addressed.
- Metal flashing (stainless steel, copper, or vinyl) is required behind the ledger board where it attaches to the house. Galvanized metal or aluminum is not to be used.
- Look for hardware with "zamx" or "triple zinc".
- Joist hangers with proper nails are required whenever joists do not have at least 1 ½ "bearing. (Hangers must be rated for the ACQ treated lumber.)
- Footings are to be a minimum of 42" deep below grade. Footing diameters will vary with the size of the deck and number of posts. Footing holes shall not contain loose soil and be flared at the bottom. (If you are considering a future 3-seasons porch or enclosed deck, footings should be located at the outer extremities of the deck and adjusted in size for the increased loads.)
- Posts to be anchored to prevent movement.
- Maximum cantilever (joist overhang past the beam) is one quarter of the actual span, without special design. Also beams should not overhang posts by more than 1' without special design.
- Guardrails at least 36" high are required on decks over 30" above the adjacent grade.
- Decks can be constructed over escape windows with certain conditions.
- Handrails are required for 4 or more stair risers. The height shall be 34 – 38" above the tread nosing.

Inspections required:

- Footing – call for a footing inspection after footing holes are dug and before pouring concrete. (Footing holes shall not contain loose soil and should be flared at the bottom of the holes.)
- Final inspection – after all work is completed and prior to use.

Deck Ledger Board Installation



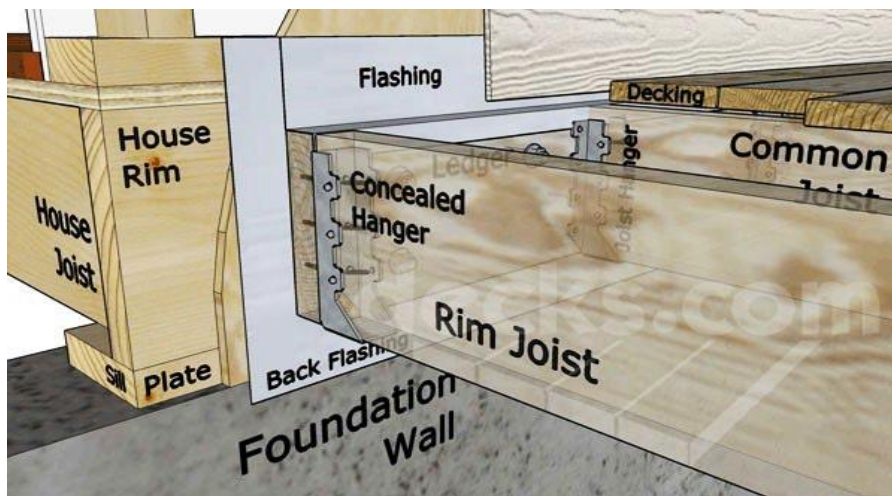
LEDGER

Photo courtesy of Decks.com

- Minimum of ½” lag screws or bolts are required and are to be staggered with spacing as shown in the table below.
- All screws or bolts are to be placed 2 inches in from the bottom and top edge of the ledger and between 2 and 5 inches in from the ends.
- Tips of the lag screws are to extend past the inside face of the band joist.
- Lag screws, bolts, and washers are to be hot-dipped galvanized or stainless steel when using.
- Ledger boards shall not be attached to open web trusses, brick veneers, or hollow concrete block.

JOIST SPAN	6' OR 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'
Connection details	Inches on center spacing of fasteners						
½” diameter lag screw	30	23	18	15	13	11	10
½” diameter bolt	36	36	34	29	24	21	19

- When using engineered fastener screws (Ledgerlock®), follow manufacturer’s instructions for spacing and location.



FLASHING

- House siding must be removed prior to the installation of the ledger board.
- Flashing is required where a ledger is fastened to wood construction.
- Flashing material shall be copper with copper nails, stainless steel, UV resistant plastic, or galvanized steel coated with G-185 coating.

Beam, Footing, & Span Table

(Maximum allowable spans are based on #2 Southern Pine CCA .40 pressure treated lumber with no cantilever. Other lumber species will have shorter spans than indicated.)

Joist Size	Joist Spacing	Joist Max. Span	Beam Size	Beam Max Span (Post Spacing)	Posts: Size & Max. Height Above Grade			Footing Diameter Inches	Corner Footing Diameter Inches	Deck Boards Min. Size
					4 x 4 In Feet	4 x 6 In Feet	6 x 6 In Feet			
2 X 6	12" o.c.	9'-11"	2—2 x 6	5'-11"	8	8		14	12	5/4 x 6
2 x 6	16" o.c.	9'-0"	2—2 x 6	5'-11"	8	8		12	12	5/4 x 6
2 x 6	24" o.c.	7'-7"	2—2 x 6	5'-11"	8	8		12	12	2x4 or 2x6
2 x 8	12" o.c.	13'-1"	2—2 x 8	6'-2"	8	8	14	16	14	5/4 x 6
2 x 8	16" o.c.	11'-10"	2—2 x 8	6'-2"	8	8	14	16	12	5/4 x 6
2 x 8	16" o.c.	11'-10"	2—2 x 10	6'-2"	8	8	14	18	14	5/4 x 6
2 x 8	24" o.c.	9'-8"	2—2 x 8	6'-9"	8	8	14	16	12	2x4 or 2x6
2 x 8	24" o.c.	9'-8"	2—2 x 10	6'-9"	8	8	14	18	14	2x4 or 2x6
2 x 10	12" o.c.	16'-2"	2—2 x 10	6'-4"	8	8	14	20	16	5/4 x 6
2 x 10	16" o.c.	14'-0"	2—2 x 10	6'-9"	8	8	14	18	16	5/4 x 6
2 x 10	16" o.c.	14'-0"	2—2 x 12	6'-9"	8	8	14	20	16	5/4 x 6
2 x 10	24" o.c.	11'-5"	2—2 x 10	8'-0"	8	8	14	18	14	2x4 or 2x6
2 x 10	24" o.c.	11'-5"	2—2 x 12	8'-0"	8	8	14	20	16	2x4 or 2x6
2 x 12	12" o.c.	18'-0"	2—2 x 12	7'-0"	8	8	14	22	16	5/4 x 6
2 x 12	16" o.c.	16'-6"	2—2 x 10	6'-4"	8	8	14	20	16	5/4 x 6
2 x 12	16" o.c.	16'-6"	2—2 x 12	7'-5"	8	8	14	20	16	5/4 x 6
2 x 12	24" o.c.	13'-6"	2—2x10	6'-9"	8	8	14	18	14	2x4 or 2x6
2 x 12	24" o.c.	13'-6"	2—2 x 12	8'-7"	8	8	14	20	16	2x4 or 2x6

- Post and footing sizes are approximate based on 2000 psf soil bearing and other assumptions for a standard deck.
- Beam sizes are based on a 2' cantilever (joists overhang the beam by 2').
- Sway bracing may be required on taller posts.
- *Note: Covered decks or rooms will require larger footings and additional requirements.*
- **Charts and tables are for reference. All plans are verified by the building department.**

DECKING

- Verify the decking requirements with the spacing of the joists you intend to install.
- Most popular decking materials are treated 2 X 4, 2 X 6, or 5/4 X 6 lumber.
- When using "wood/plastic" composite material for deck boards, stair treads, handrail and guardrail systems, they should have a label showing it is in compliance with provisions of ASTM D 7032.

OPEN DECK CONSTRUCTION WORKSHEET

(not to scale)

Size of desired deck:

Deck width _____ ft. _____ in.

Joist length _____ ft. _____ in.

Ledger board: (Flashing required)

Size: _____ in. x _____ in. x _____ ft

Lag or bolt size: _____

Joists:

Size: _____ in. x _____ in. x _____ ft

Spacing: _____ in. on center

Length of cantilever: _____

Beams: (Any splices to be over a post.)

Beam size: _____ in. x _____ in. x _____ ply

Length of beam: _____ ft

Number of beams needed: _____

Length of cantilever: _____

Flashing material: _____

Posts:

Height of deck off ground: _____

Posts spacing: _____

Number of posts needed: _____

Decking:

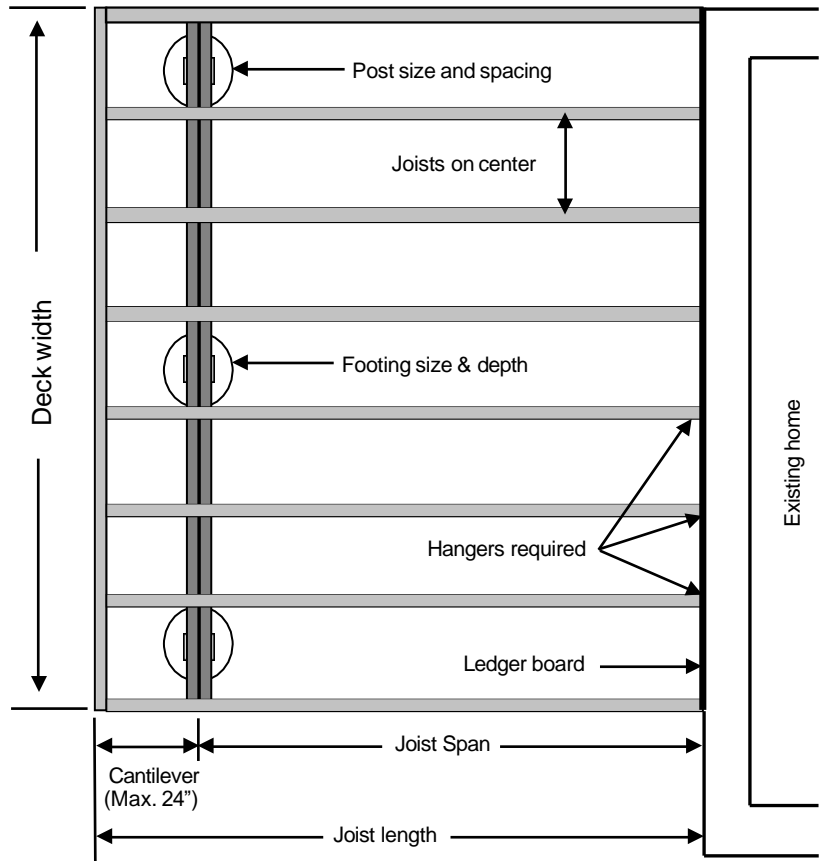
Material: _____

Size desired: _____ in. x _____ in.

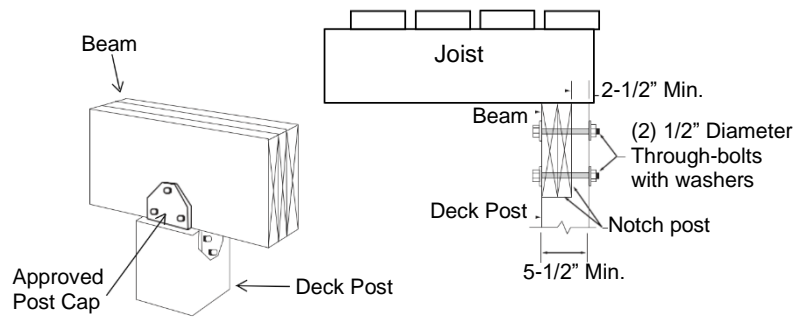
Footings: (42" min. depth)

Diameter of footing: _____

OPTION (see below): _____

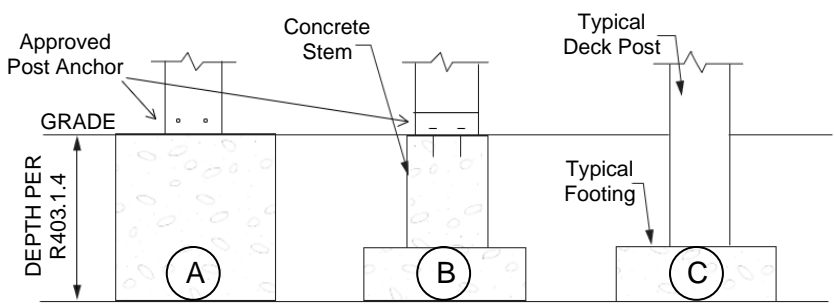
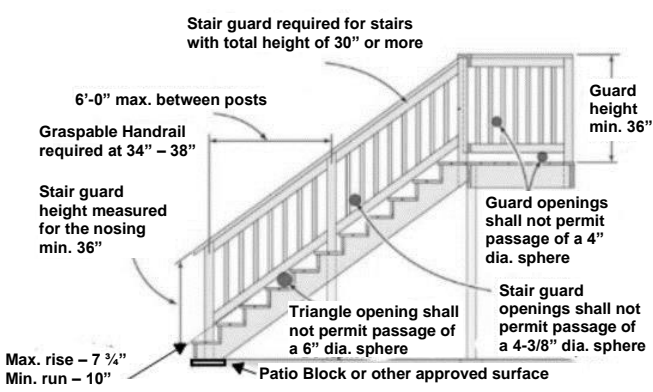


BEAM CONNECTION TO POSTS



Notched post/beam

Over the top post/beam



TYPICAL DECK POSTS TO DECK FOOTINGS