EXAMPLES OF RESIDENTIAL BUILDING METHODS AND BASIC CONSTRUCTION CODES

These examples are a general outline for residential construction. Refer to your 2015 Michigan Residential Code Book and other resources for actual methods and code specifications, as they apply to your specific project.

2017 Exterior Residential Wood Deck Construction Guide

General Deck Requirements- Exterior residential wood decks must be constructed as per the 2015 Michigan Residential Code section 507 and all other applicable codes. Exterior decks constructed in a designated flood plain must comply with the FEMA construction requirements. Decks maybe attached to buildings with conventional framing. Decks for manufactured homes may not be attached to the building without manufacturer's approval and attachment details.

Deck Ledger Board- This is the framing member that fastens the deck to the building. The ledger board must be attached directly to the framing or exterior sheeting, with a moisture barrier between the treated ledger board and house framing. Ledger boards that are attached to the build shall comply with 2015 MRC section 507 (note 5/16" exterior structural screws that rate equivalent to ½" lag screws are acceptable). Decks attached to a building must be provided with a siding flashing system that prevents water from damaging the buildings structure.

Deck Support Footings- Deck support footings shall be wet poured concrete of 2500lbs. psi. or pre-cast concrete pads of 5000lbs. psi. Alterative footing systems must be submitted to the building official for approval. Deck footings must be properly sized for the deck loads and soil type. Footings must be set in 42" below grade. Commonly accepted footings are pre-cast concrete pads 8"thick x 12" diameter. Decks supporting a roof commonly have pre-cast concrete pads 8"thick x 16" diameter.

Deck Support Posts- Support posts must be properly sized for the deck loads, height above grade, and rated for below grade use if buried. Support posts commonly sit on top of the support footing. Support posts encased in concrete footings must be pre-approved by the Building Official. Decks commonly have 4"x 6" treated support posts; decks within 30" above grade may have 4"x 4" treated posts. Deck support posts must have a method of wind uplift resistance, commonly a 2"x4"x12" block is nailed to the side of the post horizontally below grade.

Deck Support Beams- Support beams must be properly sized for deck loads and support post/footing spacing. Deck support beams must be fastened together as per AWA requirements. Beams that mount to the top of the support post must be connected to the post with an approved metal bracket. Beams that are mounted to the side of the support post must have a minimum of 4-1/2"x3" lag screws or equivalent fastener at each post/beam connection. Carriage bolts of ½" diameter grade #5 with appropriate washers and nuts that extend through the entire assembly, 2 bolts per connection. Beam slices must be made at a post connection.

Deck Floor Joists- Floor joists must be properly sized for deck loads, joist spans and spacing. Joist with end connections must be supported with metal joist hangers. Joist that mount on top of the support beam must be fastened to the beam with metal brackets. Joist assemblies without an outer rim joist must have blocking or brackets to provide lateral stability. Floor joists may cantilever over the support beam up to ¼ of the total joist span. Rim joists and/or band joist used to fasten guard railing assemblies must be properly blocked and secured to resist lateral movement.

Deck Sheathing Boards- Must be properly fastened to the floor joist to resist wind uplift forces. Composite sheathing materials must be installed as required by the manufacture. Deck sheathing of 1 ¼" thickness or less are supported by joists not more than 16"on center (o.c.) and sheathing of 1 ½ "thickness are supported by joists not more than 24"o.c.

Deck Fall Protection Requirements- Decks, stairway assemblies, landings, and other attachments that are more than 30" above the finished grade (including the grade area within 36" horizontally) must meet the fall protection requirements of the 2015 Michigan Residential Code section R 311.

Free Standing Decks- Decks that do not use the adjoining building as a support structure and more than 24" above grade must comply with the AWA Free Standing Deck diagonal bracing requirements. The commonly used diagonal bracing is a treated 2x4 or 4x4 treated framing member installed on a 45deg. angle from the support posts to the support beam. These braces usually extend from 24"down the top of the support post to 24" horizontally over on the support beam. Diagonal braces are installed in all outside corners both parallel and perpendicular to the support beams. Diagonal bracing connections must be securely fastened with 2- ½"x 3" lag screws or an equivalent fastener.

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2017 Exterior Residential Wood Deck Details and Charts

eneral Attachment of Ledger Board to Band Joist or Rim Board

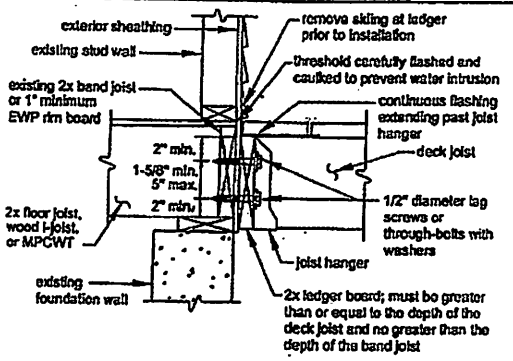
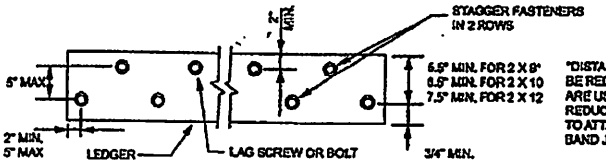


TABLE R507.2
DECK LEDGER CONNECTION TO BAND JOIST[a,b]
(Deck live load = 40 psf, deck dead load = 10 psf, snow load ≤ 40 psf)

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[d]	36	36	29	24	21	18	16



"DISTANCE SHALL BE PERMITTED TO BE REDUCED TO 4.5" IF LAG SCREWS ARE USED OR BOLT SPACING IS REDUCED TO THAT OF LAG SCREWS TO ATTACH 2 X 8 LEDGERS TO 2 X 8 BAND JOISTS.

TABLE R507.6
DECK BEAM SPAN LENGTHS[a,b] (ft. - in.)

SPECIES[a]	SIZE[c]	DECK JOIST SPAN LESS THAN OR EQUAL TO: (feet)						
		6	8	10	12	14	16	18
Southern pine	2 - 2 × 6	6-11	5-11	5-4	4-10	4-6	4-3	4-0
	2 - 2 × 8	8-9	7-7	6-9	6-2	5-9	5-4	5-0
	2 - 2 × 10	10-4	9-0	8-0	7-4	6-9	6-4	6-0
	2 - 2 × 12	12-2	10-7	9-5	8-7	8-0	7-6	7-0
	3 - 2 × 6	8-2	7-5	6-8	6-1	5-8	5-3	5-0
	3 - 2 × 8	10-10	9-6	8-6	7-9	7-2	6-8	6-4
	3 - 2 × 10	13-0	11-3	10-0	9-2	8-6	7-11	7-6
	3 - 2 × 12	15-3	13-3	11-10	10-9	10-0	9-4	8-10

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

SPECIES[a]	SIZE	SPACING OF DECK JOISTS WITH NO CANTILEVER[b] (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

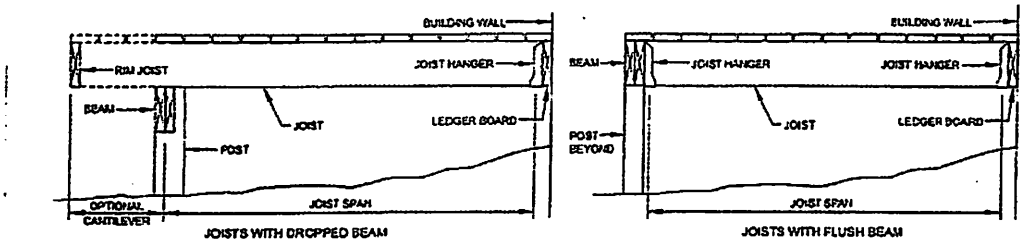


FIGURE R507.5
TYPICAL DECK JOIST SPANS