



Approved by: \_\_\_\_\_

Department of Engineering & Building  
CITY OF WYANDOTTE  
3200 Biddle Ave., Ste. 200  
(734) 324-4551

Permit #: \_\_\_\_\_

Rec'd By: \_\_\_\_\_

Date: \_\_\_\_\_

## APPLICATION FOR DECK AND PORCH

*Location, Ownership, and Detail must be correct, complete, and legible before a Building Permit will be issued.*

Date: \_\_\_\_\_

**Building Located At:** \_\_\_\_\_

Lot No. & Subdivision: \_\_\_\_\_

Applicant's Name: \_\_\_\_\_

Address: \_\_\_\_\_  
\_\_\_\_\_

Phone #: \_\_\_\_\_

Owner's Name: \_\_\_\_\_ Address: \_\_\_\_\_

Lot Size: \_\_\_\_\_ feet WIDE (x) \_\_\_\_\_ Owner's Phone #: \_\_\_\_\_

Interior Lot ( ) Corner Lot ( ) Alley: \_\_\_\_\_ feet WIDE Rear Alley ( ) Side Alley ( )

Building Size: \_\_\_\_\_ feet WIDE (x) \_\_\_\_\_ feet LONG (x) \_\_\_\_\_ feet HIGH \_\_\_\_\_ Stories

Space Between House & Alley: \_\_\_\_\_ feet Between House & Building on Rear: \_\_\_\_\_ feet

Width of Yards: Front: \_\_\_\_\_ feet Side \_\_\_\_\_ feet Side \_\_\_\_\_ feet

Show details as to location and sizes of all or any buildings and yard spaces on application for Certificate of Occupancy. Plans may be required for this work.

STATE CLEARLY THE NATURE OF THE PROPOSED WORK:

Plan Review Fee: \$ \_\_\_\_\_ (to be paid when applying)

Estimated Cost by Department: \$ \_\_\_\_\_

Estimated Cost by Owner: \$ \_\_\_\_\_

Section 23a of the state construction code act of 1972, 1972 PA 230, MCL 125.1523A, prohibits a person from conspiring to circumvent the licensing requirements of this state relating to persons who are to perform work on a residential building or a residential structure. Violators of section 23a are subjected to civil fines.

X

\_\_\_\_\_  
Signature of Owner or Authorized Agent

City of Wyandotte  
Department of Engineering & Building  
3200 Biddle Avenue, Suite 200  
(734) 324-4551

In accordance with Section 2006 of the Zoning Ordinance, application is hereby made for a Certificate of Occupancy for a \_\_\_\_\_

(single, 2-family, multiple dwelling, garage, addition, kind of business, etc...)

Located at: \_\_\_\_\_

**PLOT PLAN**

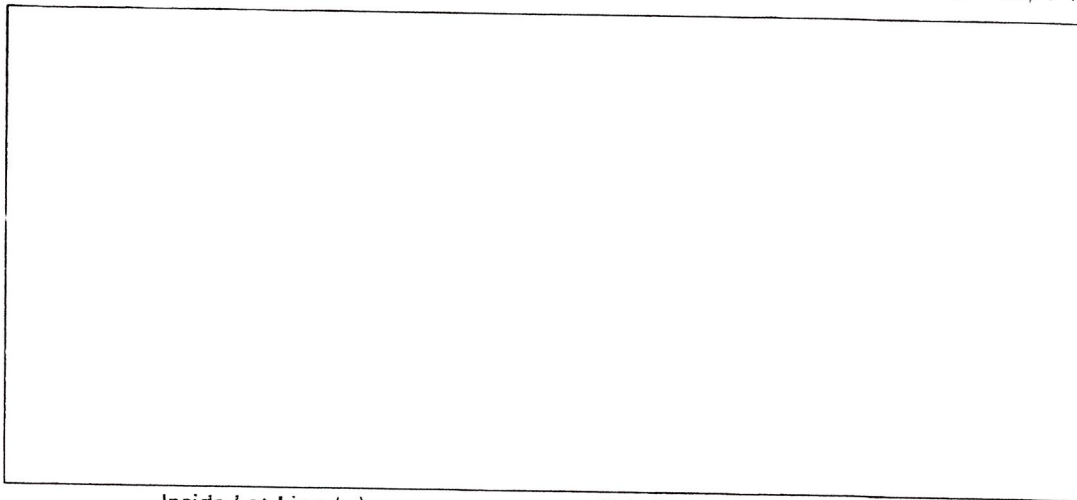
Note: SHOW SIZE OF ALL BUILDINGS & YARD DIMENSIONS  
ON PLOT. ALSO DESIGNATE VEHICLE STORAGE SPACE.

Inside Lot Line ( )

Side Street ( )

Or Alley ( )

Front Lot  
Line



Alley: open ( ) vacated ( )  
Rear Lot Line

Inside Lot Line ( )

Side Street ( )

Or Alley ( )

Owner: \_\_\_\_\_  
Address: \_\_\_\_\_  
City: \_\_\_\_\_  
Phone No.: \_\_\_\_\_

Authorized Signature: \_\_\_\_\_  
Address: \_\_\_\_\_  
City: \_\_\_\_\_  
Phone No.: \_\_\_\_\_

\*\*\*\*\*  
For Office Use Only  
Zoning District: \_\_\_\_\_ Examined By: \_\_\_\_\_ Date: \_\_\_\_\_  
Lot Size: \_\_\_\_\_ Area in Sq. Feet: \_\_\_\_\_  
Max. Area Of Occupancy: \_\_\_\_\_ Area Of Exist. Struc.: \_\_\_\_\_  
Area Of Prop. Struc.: \_\_\_\_\_ Total Area: \_\_\_\_\_  
Parking Provided For: \_\_\_\_\_ Parking Required: \_\_\_\_\_  
Approved By: \_\_\_\_\_ Refused Because Of Non-Compliance to Section: \_\_\_\_\_

- A) Vacated alley with \_\_\_\_\_ feet non-buildable easement  
B) Open alley.



CITY OF WYANDOTTE, MICHIGAN

*Department of Engineering & Building*

Gregory J. Mayhew, P.E. City Engineer

### Affidavit for Building, Sidewalk, Approaches, and Curb Cut Permits

LOCATION: \_\_\_\_\_

A bona fide owner may do his/her own work, providing he/she applies for and secures a permit, pay the fee, does the work himself/herself in accordance with the provisions of the codes and rules of the City of Wyandotte, applies for inspections and receives approval of his/her work by the appropriate inspection authority. Failure to comply with these requirements will subject the owners permit to cancellation.

In making the application, I realize I am assuming the responsibility of a licensed contractor for the construction and/or installation of the work mentioned in the permit. I further agree that I shall neither hire any other person for the purpose of constructing and/or installing, nor sub-contract to any other person, firm, or corporation any portion of the construction and/or installation of equipment at the above premises.

I agree to request inspection as required by City Ordinance and Department Rules and to keep all parts of the construction and/or installation exposed until the Department of Engineering and Building has accepted the construction and/or installation as being in compliance with the Code Requirements.

I certify that I will perform the work under the requirements of the above rules governing homeowner's permits.

I further agree to correct all violations and will provide access to the premises between the hours of 9:00 a.m. to 5:00 p.m., Monday through Friday for necessary inspections.

\_\_\_\_\_  
Owner (Signature)

\_\_\_\_\_  
Present Address

\_\_\_\_\_  
Print Name

\_\_\_\_\_  
City, State, Zip Code

\_\_\_\_\_  
Phone No.

\_\_\_\_\_  
Email Address:

Subscribed and sworn to me before this

\_\_\_\_\_ day of \_\_\_\_\_, \_\_\_\_\_

\_\_\_\_\_  
Notary Public, State of Michigan, County of Wayne

My Commission Expires: \_\_\_\_\_

Acting in the County of \_\_\_\_\_

If you have any questions regarding the work, please consult the Inspector prior to beginning work.

If other problems arise, please contact the Engineering Office Supervisor at (734) 324-4551. .

W:Owner's Affidavit.doc





City of Wyandotte  
Department of Engineering and Building  
3200 Biddle Avenue  
Wyandotte, Michigan 48192  
(734) 324-4551  
[Engineering1@wyandottemi.gov](mailto:Engineering1@wyandottemi.gov)

## CONTRACTOR LICENSE REGISTRATION OR RENEWAL

Licensee Name: \_\_\_\_\_

Address: \_\_\_\_\_ Fax: \_\_\_\_\_

\_\_\_\_\_ Phone: \_\_\_\_\_

E-mail Address: \_\_\_\_\_

Michigan Contractor License No: \_\_\_\_\_ Exp. Date: \_\_\_\_\_

Company/Business Name: \_\_\_\_\_

NOTE: Permits will only be issued to name on State License.

Federal Employer ID Number or  
Reason for Exemption: \_\_\_\_\_

Workers' Comp. Insurance Carrier or  
Reason for Exemption: \_\_\_\_\_

MESC Employer Number or  
Reason for Exemption: \_\_\_\_\_

**Section 23a of the state construction code act of 1972, 1972 PA 230, MCL 125.1523A, prohibits a person from conspiring to circumvent the licensing requirements of this state relating to persons who are to perform work on a residential building or a residential structure. Violators of Section 23a are subject to civil fines.**

Date: \_\_\_\_\_ Authorized Signature: \_\_\_\_\_

The following individuals are also authorized to secure permits for the above named company:

\_\_\_\_\_  
\_\_\_\_\_

Registration Fee: \$45.00 (Registration expires when license expires.)

Include the following information with the signed and completed application:

- Current Michigan driver's license
- Current Michigan Builder/Plumbing/Electrical/Mechanical License
- Insurance Certificate showing both liability and workers comp



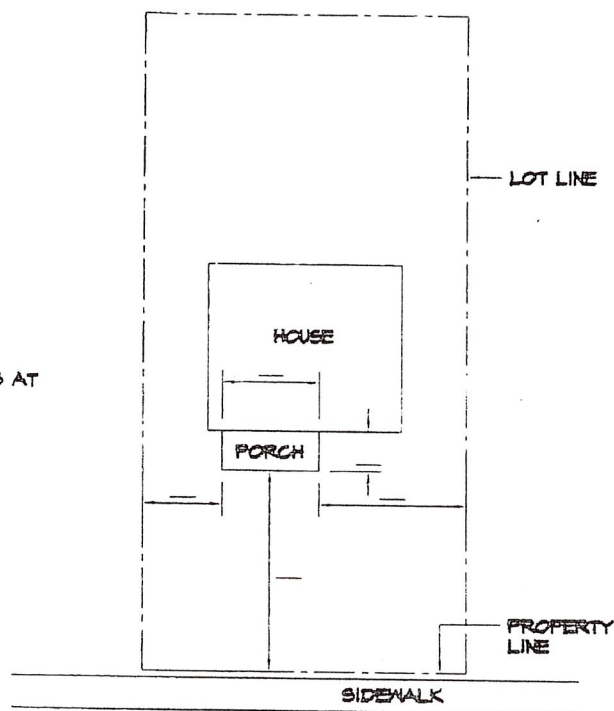
## **INSTRUCTIONS FOR PERMIT APPLICANTS**

In order to properly process an application for a porch or deck permit, it is required that you provide all of the following information. Failure to do so will result in a delay of issuing a permit and possible additional visits to the Building Department.

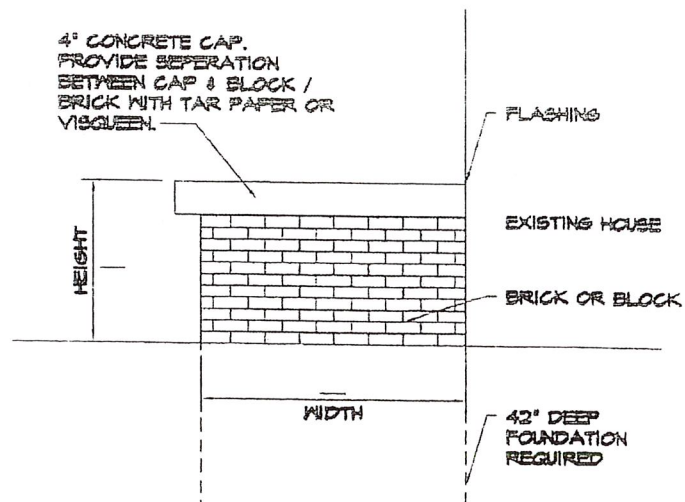
1. Provide a building permit application that is complete. Fill in all blanks that are on the application to the best of your knowledge.
2. Provide an accurate plot plan that indicates size of home and accessory buildings. Also indicate all set backs to property lines: front, sides, rear, and from house to accessory building.
3. Provide accurate construction drawings that indicate all structural supports, postholes, size of headers and span, size of floor joist, rafters, ceiling joists and span.
4. Indicate if underneath part of deck is enclosed or open. Indicate height above grade. Indicate height of guardrails and handrails.

**Please be aware that it will take our Engineers 3-5 days to review and process your building application. We will call you if further information is needed and when your building permit is ready to be picked up.**

INDICATE DIMENSIONS AT ALL ARROWS.



INDICATE HOW MANY STEPS



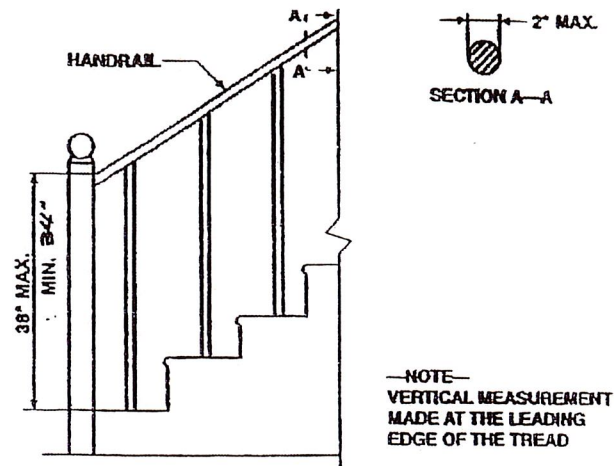
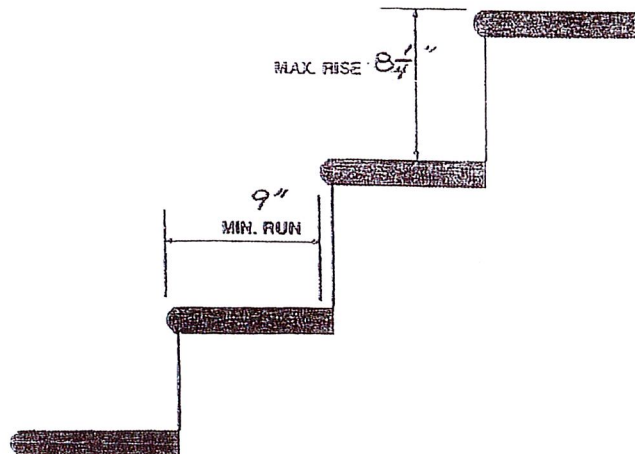
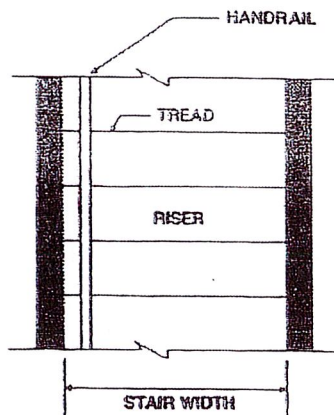
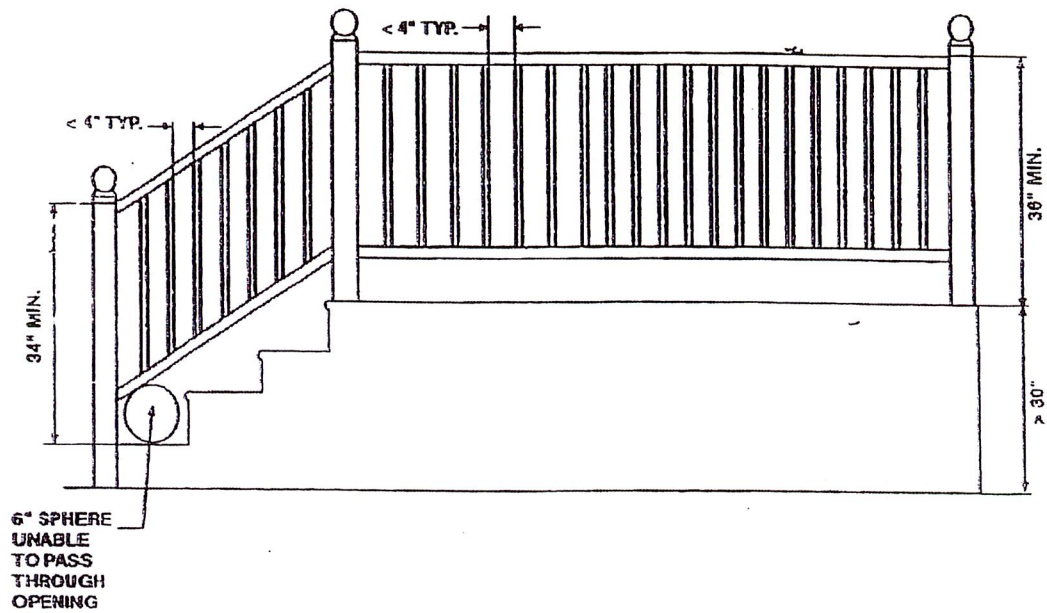


FIGURE 315.1  
HANDRAILS

For SI: 1 inch = 25.4 mm.





## SECTION R506 CONCRETE FLOORS (ON GROUND)

**R506.1 General.** Concrete slab-on-ground floors shall be designed and constructed in accordance with the provisions of this section or ACI 332. Floors shall be a minimum 3 1/2 inches (89 mm) thick (for expansive soils, see Section R301.8). The specified compressive strength of concrete shall be as set forth in Section R402.2.

**R506.2 Site preparation.** The area within the foundation shall have all vegetation, top soil and foreign material removed.

**R506.2.1 Fill.** Fill material shall be free of vegetation and foreign material. The fill shall be compacted to ensure uniform support of the slab, and except where *approved*, the fill depths shall not exceed 24 inches (610 mm) for clean sand or gravel and 8 inches (203 mm) for earth.

**R506.2.2 Base.** A 4-inch-thick (102 mm) base course consisting of clean graded sand, gravel, crushed stone, crushed concrete or crushed blast-furnace slag passing a 2-inch (51 mm) sieve shall be placed on the prepared subgrade where the slab is below *grade*.

**Exception:** A base course is not required where the concrete slab is installed on well-drained or sand-gravel mixture soils classified as Group I according to the United Soil Classification System in accordance with Table R405.1.

**R506.2.3 Vapor retarder.** A 6-mil (0.006 inch; 152 µm) polyethylene or *approved* vapor retarder with joints lapped not less than 6 inches (152 mm) shall be placed between the concrete floor slab and the base course or the prepared subgrade where no base course exists.

**Exception:** The vapor retarder is not required for the following:

1. Garages, utility buildings and other unheated *accessory structures*.
2. For unheated storage rooms having an area of less than 70 square feet (6.5 m<sup>2</sup>) and carports.
3. Driveways, walks, patios and other flatwork not likely to be enclosed and heated at a later date.
4. Where *approved* by the *building official*, based on local site conditions.

**R506.2.4 Reinforcement support.** Where provided in slabs-on-ground, reinforcement shall be supported to remain in place from the center to upper one-third of the slab for the duration of the concrete placement.

## SECTION R507 EXTERIOR DECKS

**R507.1 Decks.** Wood-framed decks shall be in accordance with this section or Section R301 for materials and conditions not prescribed herein. Where supported by attachment to an exterior wall, decks shall be positively anchored to the primary structure and designed for both vertical and lateral loads.

Such attachment shall not be accomplished by the use of toenails or nails subject to withdrawal. Where positive connection to the primary building structure cannot be verified during inspection, decks shall be self-supporting. For decks with cantilevered framing members connections to exterior walls or other framing members shall be designed and constructed to resist uplift resulting from the full live load specified in Table R301.5 acting on the cantilevered portion of the deck.

**R507.2 Deck ledger connection to band joist.** Deck ledger connections to band joists shall be in accordance with this section, Tables R507.2 and R507.2.1, and Figures R507.2.1(1) and R507.2.1(2). For other grades, species, connection details and loading conditions, deck ledger connections shall be designed in accordance with Section R301.

**R507.2.1 Ledger details.** Deck ledgers installed in accordance with Section R507.2 shall be a minimum 2-inch by 8-inch (51 mm by 203 mm) nominal, pressure-preservative-treated southern pine, incised pressure-preservative-treated Hem-fir, or approved, naturally durable, No. 2 grade or better lumber. Deck ledgers installed in accordance with Section R507.2 shall not support concentrated loads from beams or girders. Deck ledgers shall not be supported on stone or masonry veneer.

**R507.2.2 Band joist details.** Band joists attached by a ledger in accordance with Section R507.2 shall be a minimum 2-inch-nominal (51 mm), solid-sawn, spruce-pine-fir lumber or a minimum 1-inch by 9 1/2-inch (25 mm x 241 mm) dimensional, Douglas fir, laminated veneer lumber. Band joists attached by a ledger in accordance with Section R507.2 shall be fully supported by a wall or sill plate below.

**R507.2.3 Ledger to band joist fastener details.** Fasteners used in deck ledger connections in accordance with Table R507.2 shall be hot-dipped galvanized or stainless steel and shall be installed in accordance with Table R507.2.1 and Figures R507.2.1(1) and R507.2.1(2).

**R507.2.4 Flashing.** An approved corrosion-resistant flashing as required by Section R703.8 shall be installed above the attached ledger as shown in Figure R507.2.1(2) or as approved.

R408.30523a

**R507.3 Plastic composite deck boards, stair treads, guards, or handrails.** Plastic composite exterior deck boards, stair treads, guards and handrails shall comply with the requirements of ASTM D7032 and the requirements of Section 507.3.

**R507.3.1 Labeling.** Plastic composite deck boards and stair treads, or their packaging, shall bear a label that indicates compliance to ASTM D7032 and includes the allowable load and maximum allowable span determined in accordance with ASTM D7032. Plastic or composite handrails and guards, or their packaging, shall bear a label that indicates compliance to ASTM D7032 and includes the maximum allowable span determined in accordance with ASTM D7032.

**R507.3.2 Flame spread index.** Plastic composite deck boards, stair treads, guards, and handrails shall exhibit a flame spread index not exceeding 200 when tested in accor-



## FLOORS

dance with ASTM E84 or UL 723 with the test specimen remaining in place during the test.

**Exception:** Plastic composites determined to be non-combustible.

**R507.3.3 Decay resistance.** Plastic composite deck boards, stair treads, guards and handrails containing wood, cellulosic or other biodegradable materials shall be decay resistant in accordance with ASTM D7032.

**R507.3.4 Termite resistance.** Where required by Section 318, plastic composite deck boards, stair treads, guards and handrails containing wood, cellulosic or other biodegradable materials shall be termite resistant in accordance with ASTM D7032.

**507.3.5 Installation of plastic composites.** Plastic composite deck boards, stair treads, guards and handrails shall be installed in accordance with this code and the manufacturer's instructions.

**R507.4 Decking.** Maximum allowable spacing for joists supporting decking shall be in accordance with Table R507.4. Wood decking shall be attached to each supporting member with not less than (2) 8d threaded nails or (2) No. 8 wood screws.

**R507.5 Deck joists.** Maximum allowable spans for wood deck joists, as shown in Figure R507.5, shall be in accordance with Table R507.5. Deck joists shall be permitted to cantilever not greater than one-fourth of the actual, adjacent joist span.

**R507.5.1 Lateral restraint at supports.** Joist ends and bearing locations shall be provided with lateral restraint to prevent rotation. Where lateral restraint is provided by joist hangers or blocking between joists, their depth shall be equal not less than 60 percent of the joist depth. Where lateral restraint is provided by rim joists, they shall be secured to the end of each joist with not less than (3) 10d (3-inch × 0.128-inch) nails or (3) No. 10 × 3-inch (76 mm) long wood screws.

**R507.6 Deck Beams.** Maximum allowable spans for wood deck beams, as shown in Figure R507.6, shall be in accordance with Table R507.6. Beam plies shall be fastened with two rows of 10d (3-inch × 0.128-inch) nails minimum at 16 inches (406 mm) on center along each edge. Beams shall be permitted to cantilever at each end up to one-fourth of the actual beam span. Splices of multispan beams shall be located at interior post locations.

**TABLE R507.2**  
**DECK LEDGER CONNECTION TO BAND JOIST<sup>a,b</sup>**  
(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 <sup>c,d</sup>	30	23	18	15	13	11	10
1/2-inch diameter bolt with 1/2-inch maximum sheathing <sup>d</sup>	36	36	34	29	24	21	19
1/2-inch diameter bolt with 1-inch maximum sheathing <sup>e</sup>	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 R703.8 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.

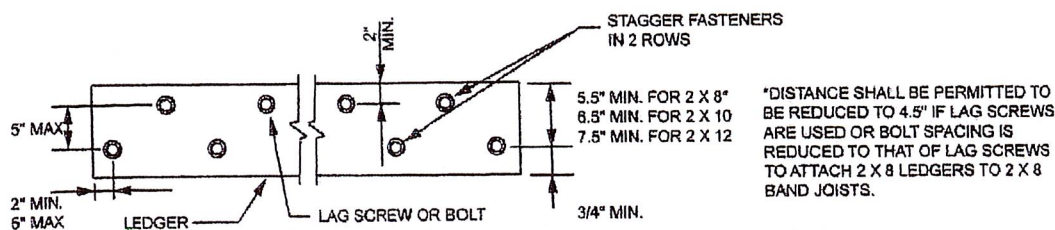
**TABLE 507.2.1**  
**PLACEMENT OF LAG SCREWS AND BOLTS IN DECK LEDGERS AND BAND JOISTS**

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

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).

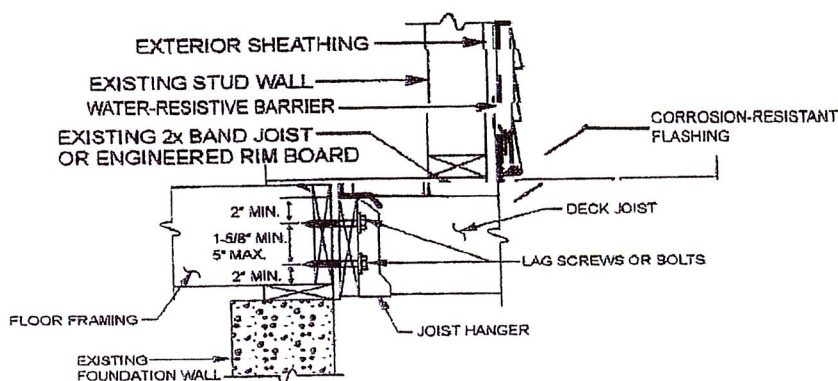




For SI: 1 inch = 25.4 mm.

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

R 408.30523



For SI: 1 inch = 25.4 mm.

FIGURE R507.2.1(2)  
PLACEMENT OF LAG SCREWS AND BOLTS IN BAND JOISTS

R 408.30523a

**R507.7 Deck joist and deck beam bearing.** The ends of each joist and beam shall have not less than 1 1/2 inches (38 mm) of bearing on wood or metal and not less than 3 inches (76 mm) on concrete or masonry for the entire width of the beam. Joist framing into the side of a ledger board or beam shall be supported by approved joist hangers. Joists bearing on a beam shall be connected to the beam to resist lateral displacement.

**R507.7.1 Deck post to deck beam.** Deck beams shall be attached to deck posts in accordance with Figure R507.7.1 or by other equivalent means capable to resist lateral displacement. Manufactured post-to-beam connectors shall be sized for the post and beam sizes. All bolts shall have washers under the head and nut.

**Exception:** Where deck beams bear directly on footings in accordance with Section R507.8.1.

**R507.8 Deck posts.** For single-level wood-framed decks with beams sized in accordance with Table R507.6, deck post size shall be in accordance with Table R507.8.

TABLE R507.8  
DECK POST HEIGHT<sup>a</sup>

DECK POST SIZE	MAXIMUM HEIGHT <sup>a</sup>
4 x 4	8'
4 x 6	8'
6 x 6	14'

For SI: 1 foot = 304.8 mm.

a. Measured to the underside of the beam.

**R507.8.1 Deck post to deck footing.** Posts shall bear on footings in accordance with Section R403 and Figure R507.8.1. Posts shall be restrained to prevent lateral displacement at the bottom support. Such lateral restraint



## FLOORS

shall be provided by manufactured connectors installed in accordance with Section R507 and the manufacturers' instructions or a minimum post embedment of 12 inches (305 mm) in surrounding soils or concrete piers.

**TABLE R507.4  
MAXIMUM JOIST SPACING**

MATERIAL TYPE AND NOMINAL SIZE	MAXIMUM ON-CENTER JOIST SPACING	
	Perpendicular to joist	Diagonal to joist <sup>a</sup>
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

**TABLE R507.5  
DECK JOIST SPANS FOR COMMON LUMBER SPECIES<sup>f</sup> (ft. - in.)**

SPECIES <sup>a</sup>	SIZE	SPACING OF DECK JOISTS WITH NO CANTILEVER <sup>b</sup> (inches)			SPACING OF DECK JOISTS WITH CANTILEVERS <sup>c</sup> (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 <sup>d</sup> , hem-fir <sup>d</sup> , spruce-pine-fir <sup>d</sup>	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 <sup>e</sup> , red pine <sup>e</sup>	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.

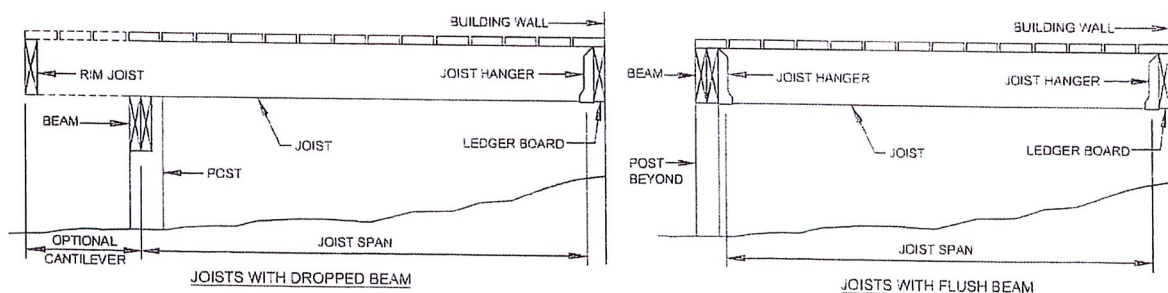
b. Ground snow load, live load = 40 psf, dead load = 10 psf,  $L/\Delta = 360$ .

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.



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

TABLE R507.6  
DECK BEAM SPAN LENGTHS<sup>a, b</sup> (ft. - in.)

SPECIES <sup>c</sup>	SIZE <sup>d</sup>	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
Douglas fir-larch <sup>e</sup> , hem-fir <sup>e</sup> , spruce-pine-fir <sup>e</sup> , redwood, western cedars, ponderosa pine <sup>f</sup> , red pine <sup>f</sup>	3 × 6 or 2 - 2 × 6	5-5	4-8	4-2	3-10	3-6	3-1	2-9
	3 × 8 or 2 - 2 × 8	6-10	5-11	5-4	4-10	4-6	4-1	3-8
	3 × 10 or 2 - 2 × 10	8-4	7-3	6-6	5-11	5-6	5-1	4-8
	3 × 12 or 2 - 2 × 12	9-8	8-5	7-6	6-10	6-4	5-11	5-7
	4 × 6	6-5	5-6	4-11	4-6	4-2	3-11	3-8
	4 × 8	8-5	7-3	6-6	5-11	5-6	5-2	4-10
	4 × 10	9-11	8-7	7-8	7-0	6-6	6-1	5-8
	4 × 12	11-5	9-11	8-10	8-1	7-6	7-0	6-7
	3 - 2 × 6	7-4	6-8	6-0	5-6	5-1	4-9	4-6
	3 - 2 × 8	9-8	8-6	7-7	6-11	6-5	6-0	5-8
	3 - 2 × 10	12-0	10-5	9-4	8-6	7-10	7-4	6-11
	3 - 2 × 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,  $L/\Delta = 360$  at main span,  $L/\Delta = 180$  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.

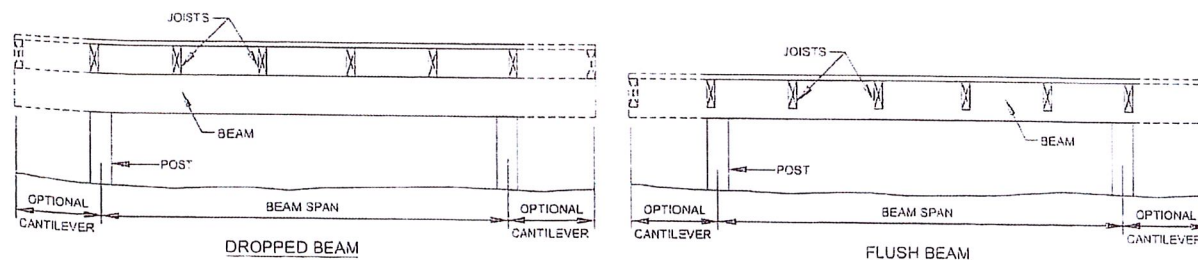
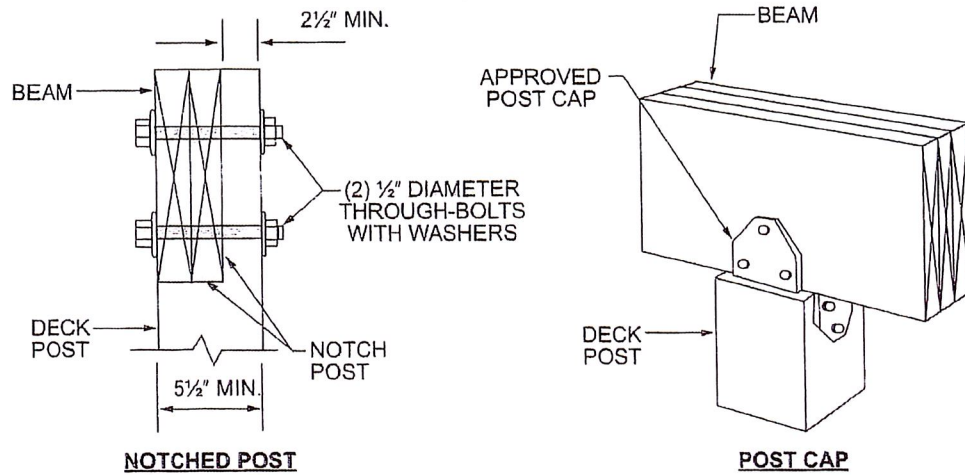


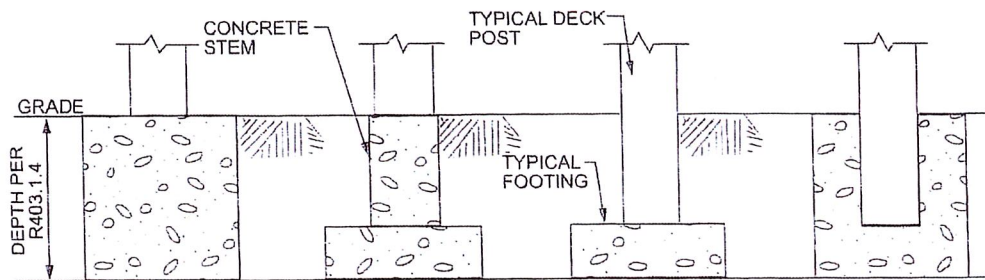
FIGURE R507.6  
TYPICAL DECK BEAM SPANS

# FLOORS



For SI: 1 inch = 25.4 mm.

**FIGURE R507.7.1**  
**DECK BEAM TO DECK POST**



**FIGURE R507.8.1**  
**TYPICAL DECK POSTS TO DECK FOOTINGS**



height at the fittings or bendings shall be permitted to exceed 38 inches (956 mm).

- ❖ Where handrails are required, they must be installed at a height of not less than 34 inches (864 mm) and not more than 38 inches (965 mm). This height is to be measured vertically to the top of the handrail from the plane adjoining the tread nosings of the flight or the surface of the ramp slope. Exception 1 allows common starting fittings used as terminals over the lowest tread to fall outside the required height range. Exception 2 allows transition fittings to exceed the required height when used to provide a continuous rail at changes in the pitch of the rail within the stairway.

**R311.7.8.2 Continuity.** Handrails for stairways shall be continuous for the full length of the flight, from a point directly above the top riser of the flight to a point directly above the lowest riser of the flight. Handrail ends shall be returned or shall terminate in newel posts or safety terminals. Handrails adjacent to a wall shall have a space of not less than 1½ inches (38 mm) between the wall and the handrails.

**Exceptions:**

1. Handrails shall be permitted to be interrupted by a newel post at the turn.
  2. The use of a volute, turnout, starting easing or starting newel shall be allowed over the lowest tread.
- ❖ The required handrail is to be continuous for the length of the flight. Where stairway flights are separated by landings or floor levels, handrails are not required (see Commentary Figure R311.7.8.2). The term "continuous" means not only that a single handrail must run from the top riser to the bottom riser, but it also indicates that users should be able to grasp the handrail and maintain their grasp without having to release the rail where it is supported. There is no requirement within the code for installation of a second handrail, but depending on the design and the placement of the required handrail, the requirement for a guard should be reviewed. The two exceptions to this section create situations where the graspable portion of the handrail may not be completely continuous from the top riser to the bottom riser. These traditional situations are well known to the occupants and have not been shown to represent a safety hazard requiring their restriction.

The ends of handrails are to be returned to the floor, or to end in some type of terminal that will catch clothing or limbs. A clear space of at least 38 mm (1½ inches) is necessary between the handrail and any abutting wall. This distance will permit the finger to slide past any adjacent rough surface that may cause injury, and it will provide an adequate distance so that the handrail may be quickly grabbed as assist in the arrest of a fall.

**R311.7.8.3 Grip-size.** Required handrails shall be of one of the following types or provide equivalent graspability.

1. Type I. Handrails with a circular cross section shall have an outside diameter of not less than 1¼ inches (32 mm) and not greater than 2 inches (51 mm). If the handrail is not circular, it shall have a perimeter dimension of not less than 4 inches (102 mm) and not greater than 6¼ inches (160 mm) with a cross section dimension of not more than 2¼ inches (57 mm). Edges shall have a radius of not less than 0.01 inch (0.25 mm).
2. Type II. Handrails with a perimeter greater than 6¼ inches (160 mm) shall have a graspable finger recess area on both sides of the profile. The finger recess shall begin within a distance of ¾ inch (19 mm) measured vertically from the tallest portion of the profile and achieve a depth of not less than 5/16 inch (8 mm) within 7/8 inch (22 mm) below the widest portion of the profile. The required depth shall continue for not less than ¾ inch (19 mm) to a level that is not less than 1¾ inches (45 mm) below the tallest portion of the profile. The width of the handrail above the recess shall be not less than 1¼ inches (32 mm) and not more than 2¾ inches (70 mm). Edges shall have a radius of not less than 0.01 inch (0.25 mm).

- ❖ To be effective, a handrail must be easily grasped by the vast majority of users. If it is too large, it is difficult for a user to get a strong enough grip to provide the needed support. If it is too small the fingers wrap and interfere with the thumb and palm and cannot close in a sufficient grip. For this reason Type I rails have minimum and maximum perimeters to restrict their use to the effective size range. Tests have proven that it is beneficial to have graspable recesses for the fingers and opposing thumb such that wider and taller shapes can provide graspability comparable to rails within the

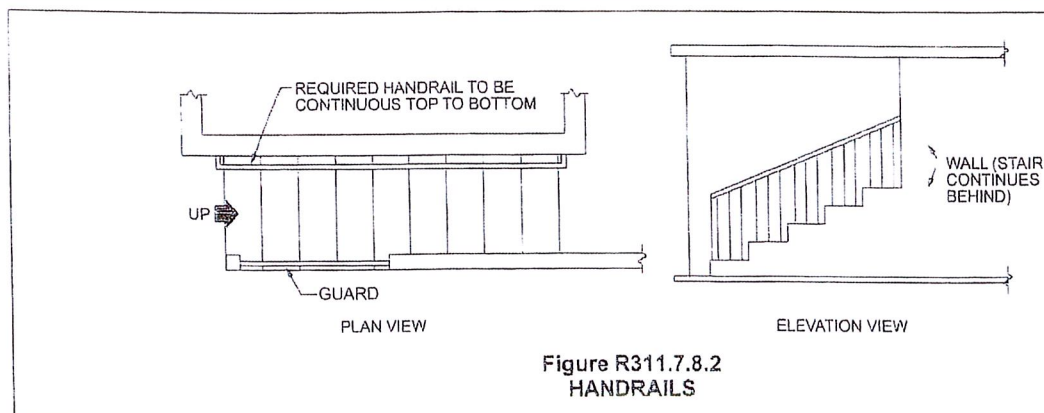


Figure R311.7.8.2  
HANDRAILS



Type I size range limitations. The Type II handrail requirements provide details for the location and depth of the recess as it relates to the variables of crown height and width to ensure that the design is of a graspable shape. The mountings of smaller profiles can cause interference, as well. Care should be taken to minimize the interference caused by brackets and balusters supporting profiles that require the bottom mounting surface to be grasped.

The code specifies that the handrail be either Type I or Type II, or be equivalently graspable. A Type I handrail can be either circular or noncircular in shape. See Commentary Figure R311.7.8.3(1) for examples of Type I handrails.

A Type II handrail has a perimeter larger than  $6\frac{1}{4}$  inches (160 mm) with graspable finger recess area on both sides of the profile. See Commentary Figure R311.7.8.3(2) for the limitations of a Type II handrail.

**R311.7.8.4 Exterior plastic composite handrails.** Plastic composite exterior handrails shall comply with the requirements of Section R507.3.

Handrails made of wood/plastic composite materials must meet the requirements for installation and labeling, and comply with ASTM D7032 in accordance with Section R507.3, in addition to the general requirements for handrails in this section.

**R311.7.9 Illumination.** Stairways shall be provided with illumination in accordance with Section R303.7.

♦ This section contains a reference to the illumination provisions of Section R303.7. The proper illumination of stairways is an important part of stairway safety. This lighting can assist users by making sure the level changes do not occur in areas with shadows or in contrasting light, which would therefore make them difficult to see. See the commentary to Section R303.7 for additional information.

**R311.7.10 Special stairways.** Spiral stairways and bulkhead enclosure stairways shall comply with the requirements of

Section R311.7 except as specified in Sections R311.7.10.1 and R311.7.10.2.

♦ Sections R311.7.10.1 and R311.7.10.2 are exceptions to the general requirements for stairways as prescribed in Section R311.7.

**R311.7.10.1 Spiral stairways.** Spiral stairways are permitted, provided that the clear width at and below the handrail is not less than 26 inches (660 mm) and the walkline radius is not greater than  $24\frac{1}{2}$  inches (622 mm). Each tread shall have a depth of not less than  $6\frac{3}{4}$  inches (171 mm) at the walkline. All treads shall be identical, and the rise shall be not more than  $9\frac{1}{2}$  inches (241 mm). Headroom shall be not less than 6 feet 6 inches (1982 mm).

♦ A spiral stairway is one of two types of special stairs that the code permits. Although a spiral stair may be difficult to use to move furniture from one level to another, the code places no limitations on its use within the egress system if it meets the size requirements of this section. A spiral stairway that meets these require-

