OVERLAND PARK
KANSAS
ABOVE AND BEYOND. BY DESIGN.

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Guidelines For Residential Decks

The information provided includes general requirements that should be considered as part of a project to construct, repair, or replace a deck. This should not be considered as a complete list of code requirements. Complete information is available in the codes and ordinances adopted by the City. Code books can be viewed at City Hall or are available for review online at https://codes.iccsafe.org/search/. Some materials and construction methods may require the use of an architect, engineer, or other design professional.

PLANS AND PERMITS

A building permit is required to construct or replace a deck. A site plan, drawn to scale, shall be submitted showing the location of the deck and setbacks from property lines. A construction plan showing the footings, columns, beams and joists sizes, spacing and connections is required to be submitted for review and approval with the permit application. For covered decks requiring a ridge beam, an engineered design including structural calculations shall be submitted for review.

EXCEPTIONS TO PERMIT REQUIREMENT (OPMC 16.100.105.2)

Decks do not require a permit if they meet all of the following: are detached from the dwelling, do not exceed 200 square feet in area, are not more than 30 inches above grade measured 36 inches out from the perimeter of the deck at any point, and do not serve an egress door required by section R311 of the 2018 IRC.

Repairs of the deck walking surface, guardrails, or handrails do not require a permit.

INSPECTIONS

Footings or pier holes are not required to be inspected for open decks. Footing inspections are required for covered decks. A separate framing (rough-in) inspection is required if the under-roof or floor framing and connections cannot be easily inspected during the final inspection. A final inspection is required after all work is complete.

- Scheduling an inspection: Inspections can be requested by contacting the Building Safety Division at (913) 895-6220, or; Online using our electronic permitting and inspections system, ePlace at energov.opkansas.org/CSS/SelfService#/home.
- First time users will be required to create an online account using ePlace.
- To schedule inspections through ePlace your account must be associated with your permit. Contact Building Safety at (913) 895-6220 to verify that your account is associated with your permit.

  Note: Inspections are scheduled for the next day unless a later date is requested.

SETBACKS

Unified Development Ordinance (UDO) 18.180.030, 18.200.030, 18.420.050

The following setbacks **only** apply to **R-1, RP-1, R-2 and RP-2** Zoning Districts:

- **Front Yard:** The setback for a front yard is 20 feet, or 30 feet if the property has been preliminary platted prior to January 1, 2010 or there is a platted building line from the deck to the front property line. Open decks and porches may project 6 feet into the **front** yard setback, provided the area of the encroachment does not exceed 60 square feet.
- **Rear Yard:** The setback for a rear yard is 25 feet from the deck to the rear property line. Open decks and porches may project 6 feet into the **rear** yard setback, provided the area of the encroachment does not exceed 60 square feet.
- **Side Yard:** The setback for a side yard is a minimum of 7 feet, and the total width of both side yards must not be less than 20 percent of the width of the lot; 20 feet must be provided on the street side of a corner lot. Generally, decks shall not extend beyond platted building setback lines or into a platted landscape easement.

SETBACK EXCEPTIONS

Unified Development Ordinance (UDO) 18.180.070, 18.200.050, 18.420.050

- Detached decks may be treated like a detached accessory building when they are under 30 inches in height above natural grade. Detached decks in that case are permitted to be 3 feet from any interior property line, provided they are at least 20 feet (for R-1 and RP-1 zones) or 22 feet (for R-2 and RP-2 zones) from any street right-of-way and provided that they are fully located within 25 feet of the rear property line. If the parts or the whole structure is more than 25 feet away from the rear property line, then the distance from the side property line must be minimum of 7 feet. A deck that is 5 feet or more from the house is considered to be detached.
- Patios or similar structures that are at or below grade may be located in any side or rear yard area provided they are at least 3 feet from any property line.
- In the case of a double frontage lot or corner lot whose rear yard abuts a super-collector, collector or local street, no accessory structure of any kind shall be built closer than 15 feet to the street right-of-way.

  Note: Some homes associations may have requirements other than those established by the City. Please contact your homes association if you have questions regarding its requirements.

BUILDING CODES

- **Materials** - The deck must be constructed of either a naturally decay-resistant lumber or a pressure-treated lumber and be designed to support a live load of 40 psf, per 2018 IRC Table R301.5. Wood materials shall be No. 2 grade or better lumber, preservative-treated in accordance with 2018 IRC Section R317. When a design in accordance with Section R301 is provided, wood structural members shall be designed using wet service factor in AWC NDS. All preservative-treated wood products in contact with ground shall be labeled for such use. All plastic and plastic composite materials (not 100% wood) shall be labeled and listed to comply with ASTM D 7032. Reference 2018 IRC Section R507.2.
- **Electrical** - All overhead power lines must be located at least 10 feet above the deck floor or be at least 3 feet horizontally away from the floor's surface. An exterior light for illumination of any steps is required. Reference 2018 IRC Sections R303.8 and E3604.
- Where a deck is accessible from the inside of the dwelling, an exterior GFCI electrical outlet is required. The outlet shall be within the perimeter of the deck and no more than 6 foot-6 inches above the deck walking surface per 2018 IRC Sections E3901.7 and E3902.3. Where the deck is open, a receptacle shall have an enclosure that is weatherproof both when the attachment plug is inserted and when it is removed. These are commonly referred to as a "bubble type cover" which will allow an electrical cord to be in use when the cover is closed. Where the deck is covered and creates only a damp condition, an outlet cover that can be closed without an electrical cord to be in use is permitted.

- **Footings/Soil bearing** - All decks must sit on footing or piers that are adequately designed to support the imposed loads (maximum assumed bearing capacity is 1500 pounds per square foot). The code prescribes the minimum size and depth of concrete deck footings based on the tributary area, snow and deck live load and soil bearing pressure. The 2018 IRC Table R507.3.1 provides prescriptive values for either square or round footings (see Table 6 below). Footings or piers shall extend 36 inches below the finished ground level. The bottom of piers cannot bear on backfill. Reference 2018 IRC Section R507.3.
- **Guardrails** - Porches, balconies or raised floor surfaces located more than 30 inches above the floor or grade within 36 inches from the edge or perimeter of the deck below shall have guardrails not less than 36 inches in height. Insect screening shall not be considered as a guard. Open sides of stairs with a total rise of more than 30 inches above the floor or grade below shall have guardrails not less than 34 inches in height measured vertically from a line connecting the nosings. Where the top of the guard serves as a handrail on the open sides of stairs, the top of the guard shall be not less than 34 inches and not more than 38 inches. Required guardrails on open sides of stairways, raised floor areas, balconies and porches shall have intermediate rails or ornamental closures that do not allow passage of an sphere 4 inches or more in diameter. The triangular openings formed by the riser, tread and bottom rail of a guard at the open side of a stairway shall not allow passage of a sphere 6 inches or more in diameter. Guards on the open side of the stairs shall not have openings that allow passage of a sphere 4 3/8 inches in diameter. Reference 2018 IRC Section R312.1.
- **Handrails** – A graspable handrail is required on at least one side of stairs with 4 or more risers, regardless of the height of the stairs. Handrails shall be mounted a minimum 34 inches and a maximum 38 inches above the nosing of the treads, be continuous for the run of the stair, and have no less than 1-1/2 inch clearance from the wall or any obstruction. The handrail ends shall be returned or terminated in the newel post or safety terminal.
- Handrails with a circular cross-section shall have a minimum 1-1/4 inch and maximum 2 inch diameter. If the handrail is not circular, it shall have a perimeter dimension of at least 4 inches and not greater than 6-1/4 inches with a maximum cross section dimension of 2-1/4 inches.
- Handrails with a perimeter greater than 6-1/4 inches shall have a recessed graspable finger groove on both sides of the profile. The finger recess shall begin within 3/4 inches measured vertically from the tallest portion of the profile and have a minimum depth of 5/16 inches located within 7/8 inches below the widest portion of the profile. This required depth shall continue for not less than 3/8 inches to a level that is not less than 1-3/4 inches below the tallest portion of the profile.
- Handrails of composite material (not 100% wood) shall be labeled and listed to comply with ASTM D7032.
- Handrails shall have a minimum radius on any edge of 0.01 inch on the graspable portions of its surface. Reference 2018 IRC Sections R311.7.8 and R507.2.2.
- **Stairways** - The width of the stairs must be at least 36 inches. The maximum rise of each step is 7-3/4 inches and the minimum depth of each tread is 10 inches. A maximum 3/8 inch variation is permitted between the greatest and smallest rise. Reference 2018 IRC Section R311.7. A landing shall be provided at the bottom and top of the stairs that extends a minimum of 36 inches in the direction of travel.
- **Framing** - Maximum span for decking shall comply with the joist span chart, Table 1, below.
- **Ledger** - The prescriptive method for deck attachment applies to a minimum 2x8 inch deck ledger connected to a 2 inch nominal solid-sawn spruce-pine-fir lumber band joist or a minimum 1x9-1/2 inch Douglas fir laminated veneer lumber band joist. Attachment to other structural composite lumber band joists requires design in accordance with accepted engineering practices. Reference 2018 IRC Section R507.9.1.
- Fasteners must be minimum 1/2 inch diameter hot-dipped galvanized or stainless steel lag screws or bolts installed with washers of the same material. The maximum spacing is based on joist span. The code requires a staggered fastener pattern with bolts or lag screws located not less than 2 inches from the top edge and not less than 3/4 inch

from the bottom edge of the deck ledger and 2 to 5 inches from the end of the ledger. Refer to Table 5 below, per 2018 IRC Table R507.9.1.3. Other methods may be used with approval by the building official. Deck ledgers shall not be attached to or through exterior veneers such as brick, masonry, stone, or stucco. Where the ledger is attached directly to the house, care is required to provide an attachment method that will not cause deterioration of the house siding. When installing a deck over standard panel siding we recommend adding the ledger directly over the batten board. For walls without batten boards, 1x furring strips (a.k.a. ribbon strips, ledge strips) should be added at each lag screw or bolt location. This will minimize the potential for water accumulation. Where 1x furring strips are added, they should be full depth of the ledger and beveled directing water away from the house (edges should be caulked prior to attachment). Reference 2018 IRC Section R507.9. Therefore, a 1x3 treated spacer or a plastic donut or galvanized washers shall be placed between the siding and the ledger board to allow for water drainage and for air to get to the siding, so it can stay dry. The attachment of the 1x3 is made using three 16d hot dipped galvanized nails in a staggered pattern, nailed through the siding and into the rim joist of the house. The lag screws must then go through the 1x3 and into the house rim joist. Note that this attachment requires the lag screw to penetrate the house rim joist and extend at least 1/2-inch beyond on the inside face. That means this connection requires a minimum 5-inch galvanized lag screw with a standard galvanized washer. Donut type spacers may be used provided they are not more than 1/2-inch thick (See Figure 6 of the Johnson County Residential Decks Guidelines). Reference 2018 IRC Section R507.9.

Where the house has stucco or lap-siding the siding should be removed and the ledger attached directly to the rim joist. Ledgers shall be flashed in accordance with IRC Section R703.4 to prevent water from contacting the house band joist. This typically requires the flashing to extend a minimum of 1-1/2 inches under the siding and over the ledger capping it. Very close attention is required for flashing details so that water cannot get into the house rim and cause structural damage to the rim or the floor joists. Proper flashing extends at least 6 inches up behind the siding and housewrap. The flashing should then extend down past the ledger board and end with a drip-edge at the bottom. To avoid deterioration, the flashing should be galvanized steel, or copper. Aluminum may now be used with the new μCA-C treatment. Holes drilled for the lag screws should be caulked before the ledger is applied to prevent water from entering the main structure of the house. A double flashing over the top of the ledger should also be installed. Make sure any overlapping joints in multiple flashing strips are sealed and the ends are run long and bent down so water cannot run in under the flashing and get in the wall behind. (See Figure 7 of the Johnson County Residential Decks Guidelines)

To eliminate the ledger, a beam line can be added 3 feet from the house and the deck cantilevered back towards the house. Reference 2018 IRC Table 507.6.

- **Joist and beam Spans -** To find spans for joists and beams look at the Tables 1 and 3 below, or 2018 IRC Tables R507.5 and R507.6.

Note: See following tables and diagrams.

SPAN TABLES

Tables are based on the 2018 International Residential Code (IRC) for the species and grade of lumber shown. For other situations, consult the tables in the code.

Table 1 (Based on 2018 IRC Table R507.6)
Floor Joist Spans for Southern Pine and Cedar wood species, Grade #2

Floor Joists Spans - 40# LL & 10 #DL Decks			
Member	*Species/grade*	*Spacing*	*Max. span*
2x6	*SP#2 acq*	*12" o.c.*	*9'11"*
2x6	*SP#2 acq*	*16" o.c.*	*9'*
2x6	*SP#2 acq*	*24" o.c.*	*7'7"*
2x8	*SP#2 acq*	*12" o.c.*	*13'1"*
2x8	*SP#2 acq*	*16" o.c.*	*11'10"*
2x8	*SP#2 acq*	*24" o.c.*	*9'8"*
2x10	*SP#2 acq*	*12" o.c.*	*16'2"*
2x10	*SP#2 acq*	*16" o.c.*	*14'*
2x10	*SP#2 acq*	*24" o.c.*	*11'5"*
2x12	*SP#2 acq*	*12" o.c.*	*18'*
2x12	*SP#2 acq*	*16" o.c.*	*16'6"*
2x12	*SP#2 acq*	*24" o.c.*	*13'6"*
2x6	*Cedar#2*	*12" o.c.*	*8'10"*
2x6	*Cedar#2*	*16" o.c.*	*8'*
2x6	*Cedar#2*	*24" o.c.*	*7'*
2x8	*Cedar#2*	*12" o.c.*	*11'8"*
2x8	*Cedar#2*	*16" o.c.*	*10'7"*
2x8	*Cedar#2*	*24" o.c.*	*8'8"*
2x10	*Cedar#2*	*12" o.c.*	*14'11"*
2x10	*Cedar#2*	*16" o.c.*	*13'*
2x10	*Cedar#2*	*24" o.c.*	*10'7"*
2x12	*Cedar#2*	*12" o.c.*	*17'5"*
2x12	*Cedar#2*	*16" o.c.*	*15'1"*
2x12	*Cedar#2*	*24" o.c.*	*12'4"*

Use the proper fasteners for joist hangers or other metal clips (no screws, roofing nails, non-galvanized fasteners). ACQ lumber requires the use of galvanized, stainless steel, or special-coated fasteners.

Table 2
Maximum Span of Wood Deckings based on Size and Type

Decking - 300# Concentrated Load		
Member	Species/grade	Max. span
2x6	SP #2 ACQ	3'-0"
2x6	Cedar #2	2'-6"
5/4x6	SP #2 ACQ	2'-3"
5/4x6	trex	1'-4"

Table 3 (2018 IRC Table R507.7)
Floor Joist Spacings for Different Types of Decking

TABLE R507.7
MAXIMUM JOIST SPACING FOR DECKING

DECKING MATERIAL TYPE AND NOMINAL SIZE	MAXIMUM ON-CENTER JOIST SPACING	
	Decking perpendicular to joist	Decking diagonal to joist[a]
$1^{1}/_{4}$-inch-thick wood	16 inches	12 inches
2 inch thick wood	24 inches	16 inches
Plastic composite	In accordance with Section R507.2	In accordance with Section R507.2

Table 3 (compiled from 2018 IRC Table R507.5)
Deck Beam Spans - Southern Pine

Maximum Beam Span – Residential Decks (40 psf live load / 10 psf dead load)							
Southern Pine ACQ #2	Tributary Load Width (Tributary width is the portion of the joist span supported by the beam)[1]						
	Tributary width	**Tributary width**	**Tributary width**	**Tributary width**	**Tributary width**	**Tributary width**	**Tributary width**
Beam size	**3'**	**4'**	**5'**	**6'**	**7'**	**8'**	**9'**
1-2x8	5'-11"	5'-1"	4'-7"	4'-7"	2'-10"	3'-7"	3'-5"
2-2x8	8'-9"	7'-7"	6'-9"	6'-2"	5'-9"	5'-4"	5'-0"
3-2x8	10'-10"	9'-6"	8'-6"	7'-9"	7'-2"	6'-8"	6'-4"
1-2x10	7'-0"	6'-0"	5'-5"	4'-11"	4'-7"	4'-3"	4'-0"
2-2x10	10'-4"	9'-0"	8'-0"	7'-4"	6'-9"	6'-4"	6'0"
3-2x10	13'-0"	11'-3"	10'-0"	9'-2"	8'-6"	7'-11"	7'6"
1-2x12	8'-3"	7'-1"	6'-4"	5'-10"	5'-5"	5'-0"	4'9"
2-2x12	12'-2"	10'-7"	9'-5"	8'-7"	8'-0"	7'-6"	7'0"

1. For simple spans the tributary width is half of the actual joist span – for a center beam the tributary width is the sum of half of the span from each side of the beam.

Table 4 (compiled from 2018 IRC Table R507.5)
Deck Beam Spans - Western Cedar

Maximum Beam Spans - Residential Decks (40 psf live load / 10 psf dead load)							
Western Cedar	Tributary Load Width (Tributary width is the portion of the joist span supported by the beam)[1]						
	Tributary width	**Tributary width**	**Tributary width**	**Tributary width**	**Tributary width**	**Tributary width**	**Tributary width**
Beam size	**3'**	**4'**	**5'**	**6'**	**7'**	**8'**	**9'**
4x10	9'-11"	8'-7"	7'-8"	7'0"	6'6"	6'1	5'8"
3-2x10	12'-0"	10'-5"	9'-4"	8'6"	7'10"	7'4"	6'11"
3-2x12	13'-11"	12'-1"	10'-9"	9'10	9'1"	8'6"	8'1"

Table 5

Lag size	**On-center spacing of lag screws (inches) Joist span (feet)**				
½" Dia. Lag	**0-5 ft**	**6-7 ft**	**7-10 ft**	**11-14 ft**	**15-18 ft**
	32" o.c.	24" o.c.	16" o.c.	12" o.c.	8" o.c.
Equivalent spacing joists @ 16" o.c.	Every other joist space	Two every third joist spaces	Each joist space	Each joist space with two every other space	Two in each joist space
3/8" Dia. Lag	**0-4 ft**	**5-6 ft**	**7-8 ft**	**9-12 ft**	**13-18 ft**
Equivalent spacing joists @ 16" o.c.	24" o.c.	16" o.c.	12" o.c.	8" o.c.	6" o.c.
	Every other joist space	Each joist space	Each joist space with two every other space	Two in each joist space	Two each joist space with three every other space

Table 6
Pier sizes required for supporting decks

Pier diameter	Maximum load (pounds)	Square footage of deck that can be supported (tributary area)
8”	525	11
10”	825	17
12”	1200	24
14”	1600	32
16”	2100	42
18”	2650	53
20”	3300	66
22”	4000	80
24”	4700	94

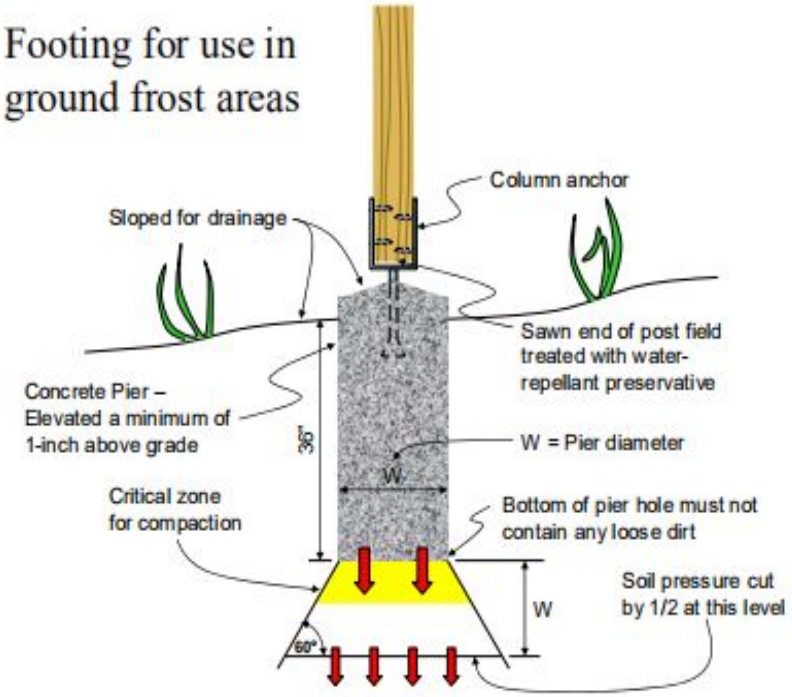


Figure 1 - Pier

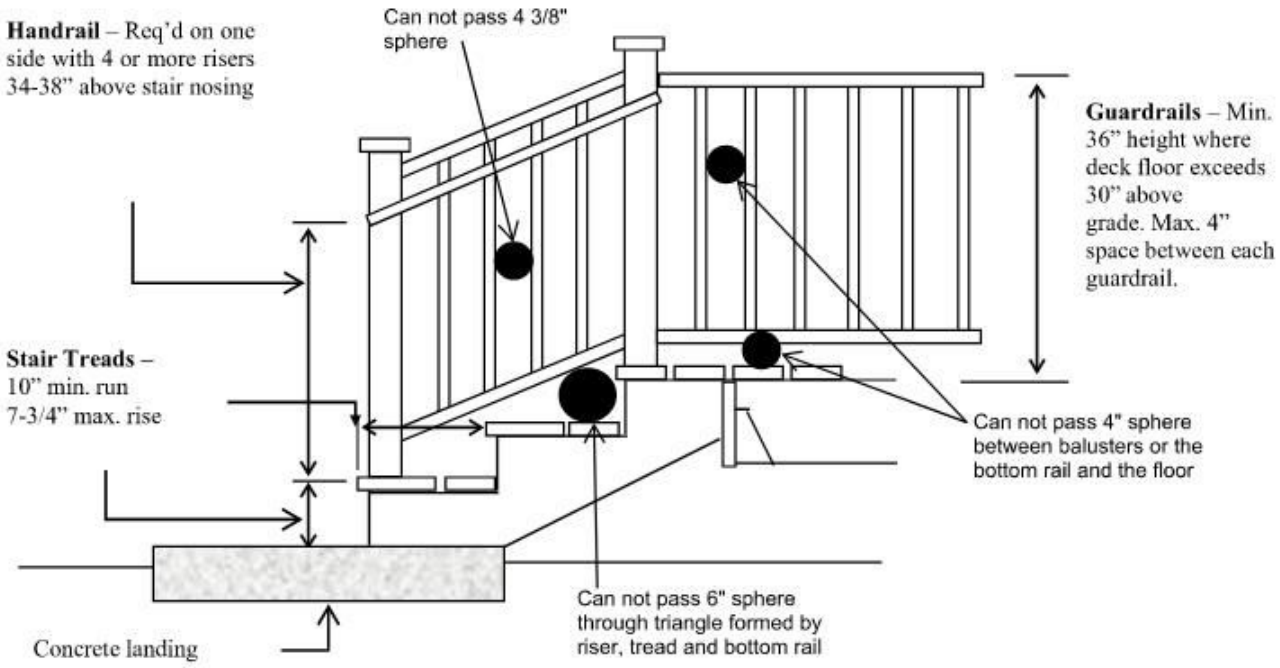


Figure 2 - Guardrail Detail

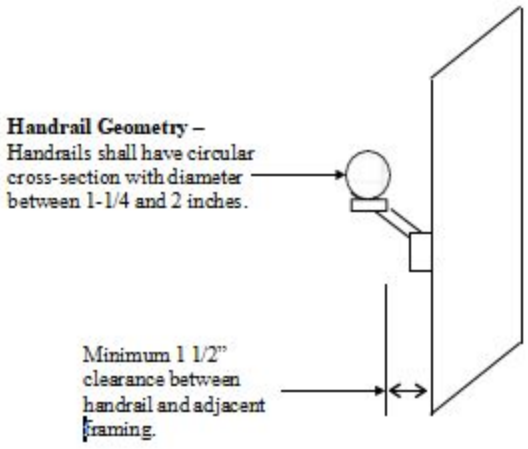


Figure 3 - Handrail Detail

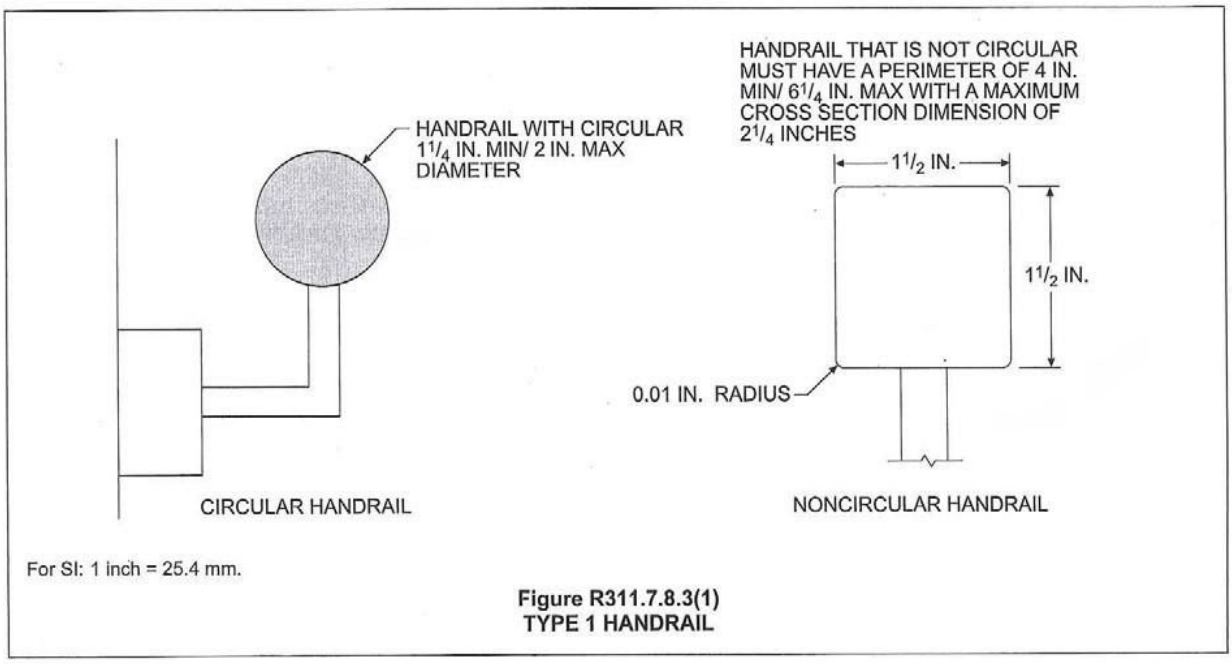


Figure 4 - Handrail Detail

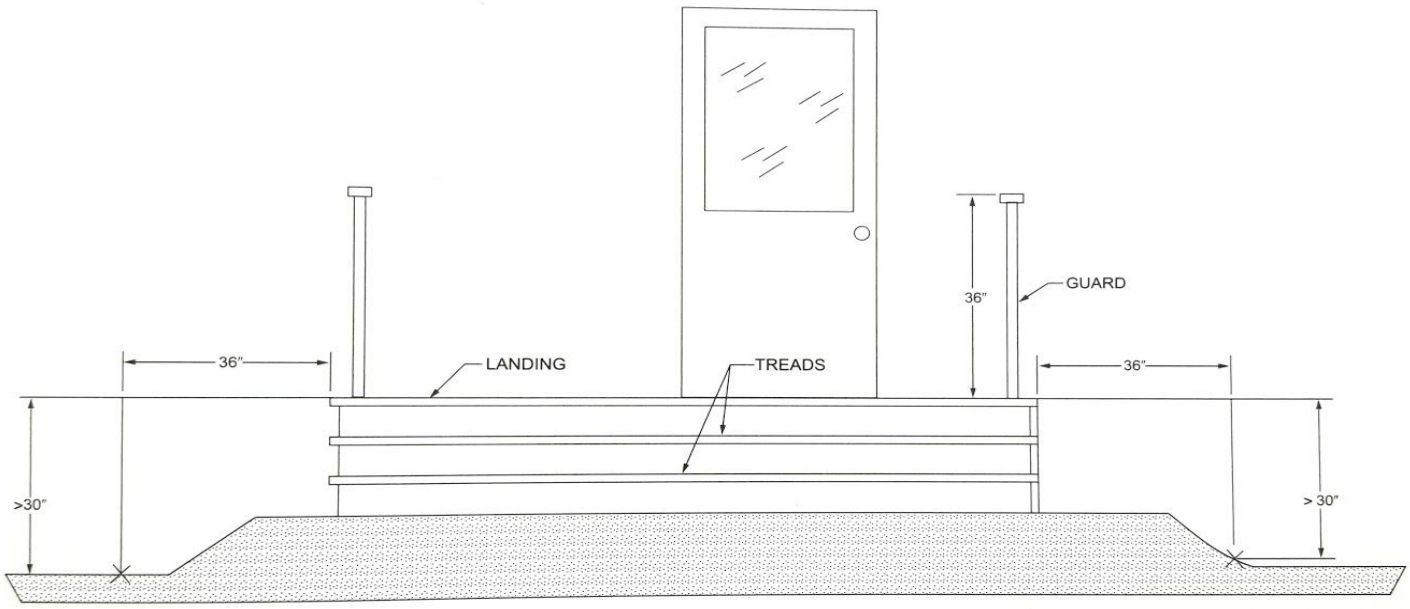


Figure 5

2018 IRC Commentary R312.1.1 - Drop off and Guard height requirements

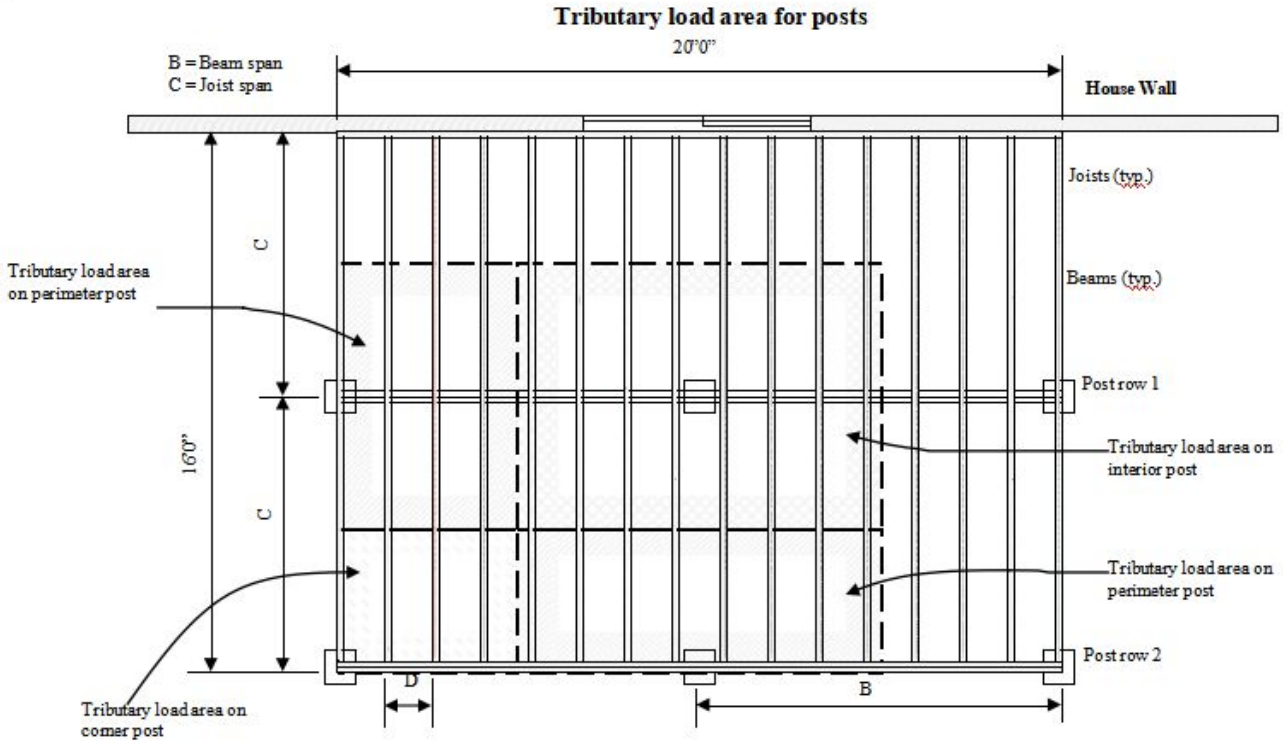


Figure 6

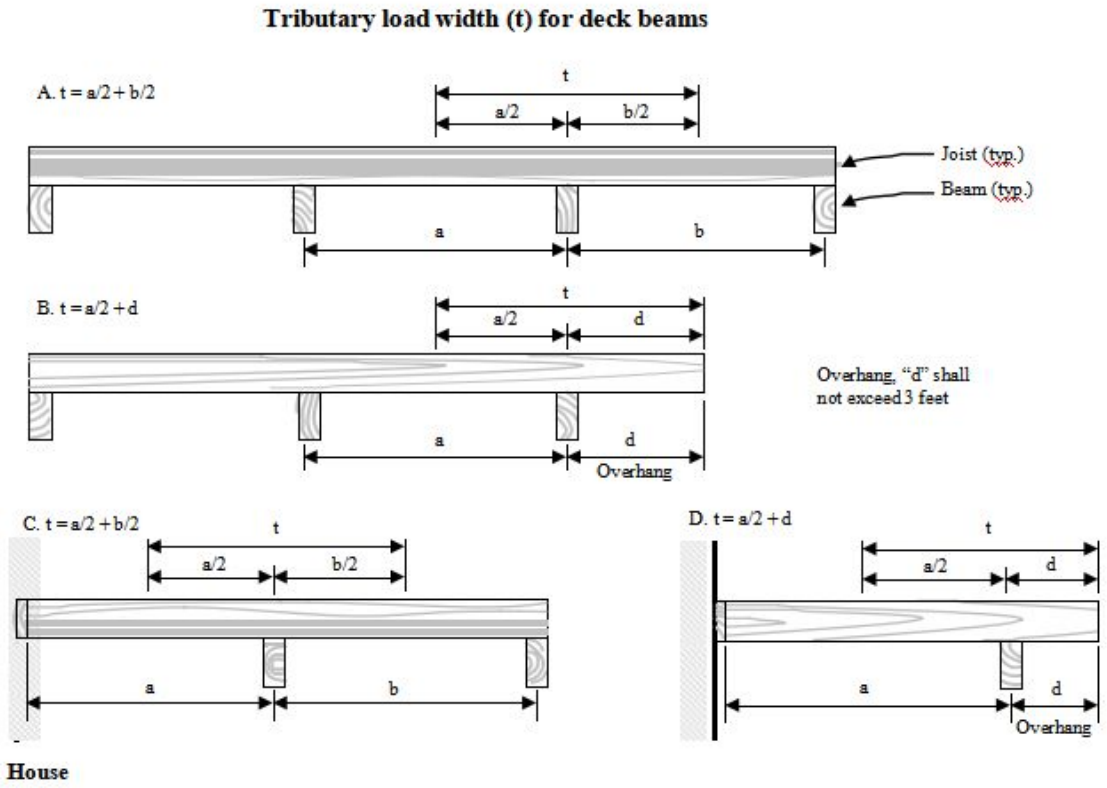
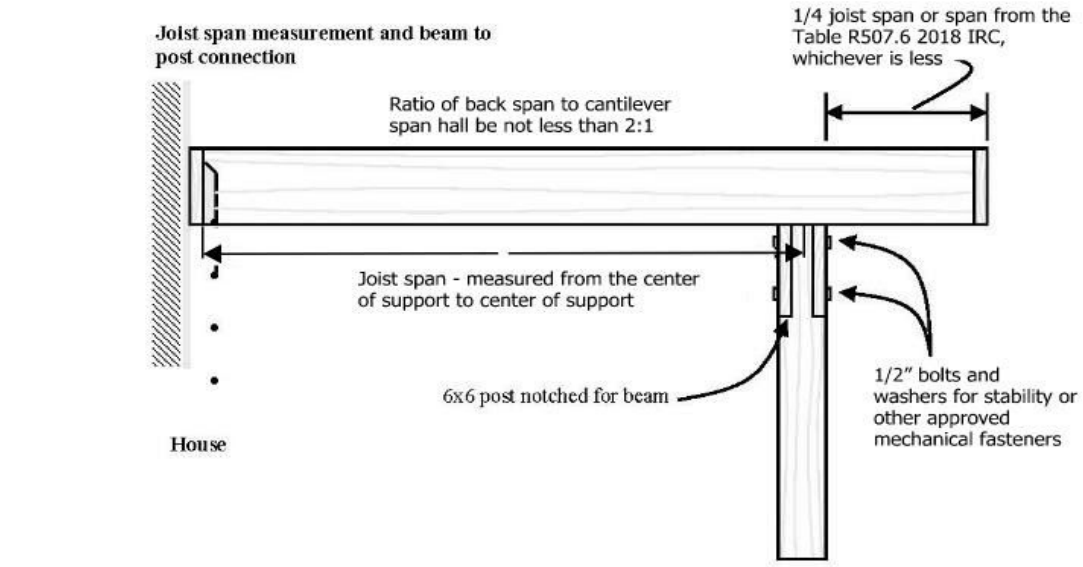


Figure 7



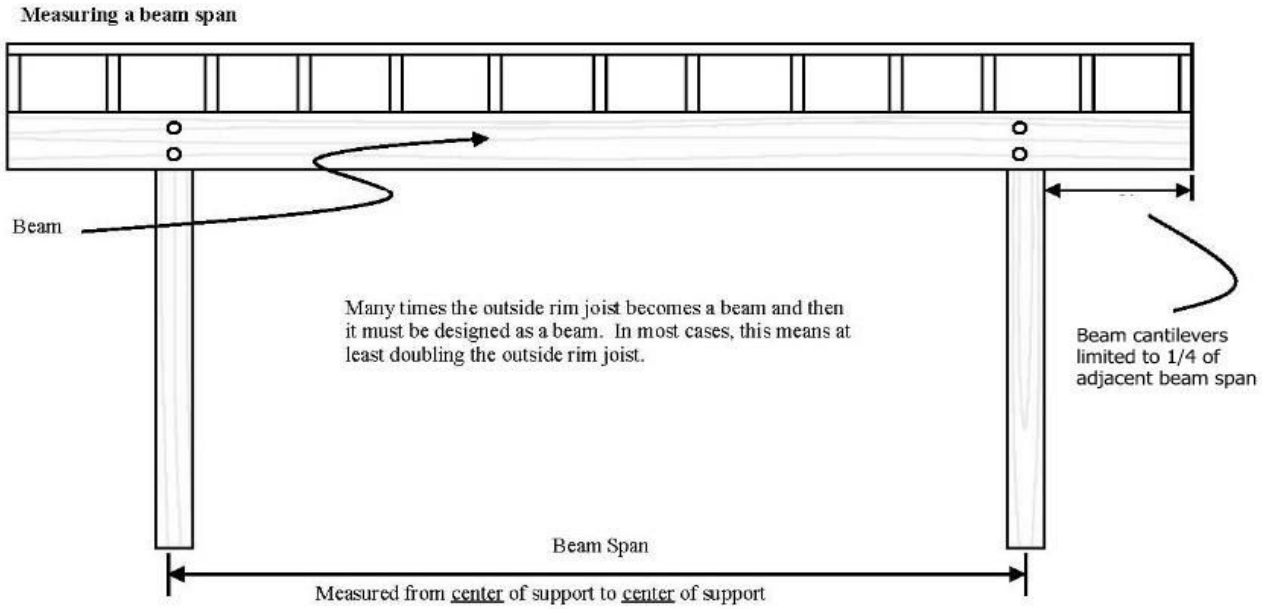


Figure 8 - Joist span and Beam span diagrams

The City of Overland Park does not warrant the accuracy, completeness, or timeliness of the information contained in this handout. To verify the city requirements please refer to the official version of the Municipal Code.