

Greene County

TYPICAL DECK REQUIREMENTS

The following construction guidelines are for one and two-family residential decks

These guidelines are for single-level and roof covered single-level deck construction. Other deck design or decks supporting additional loads may be subject to an approved engineered design.

All exterior decks are considered as permanent structures and required to follow the guidelines as described in this document.

Exception: Decks for manufactured housing (mobile homes) are required to be free standing and are subject to approval at the final inspection.

The proposed deck or decks shall be included on the required floor plan when applying for a one or two-family residential building permits. The deck plan shall include the size, location and dimensions.

ROOF COVERED SINGLE LEVEL DECK REQUIREMENTS ON PAGES 12 AND 13

DESIGN LOADS:

Decks are required to be designed to support a live load of 40 pounds per square foot. Guardrails are required to be designed to support a load of 200 pounds applied to a concentrated point along the top of the rail.

DECK MATERIAL:

All lumber shall be #2 grade or better. Decks shall be constructed of either naturally decay-resistant or pressure-treated lumber according to American Wood-Preservers' Association. All lumber in contact with the ground shall be rated as "approved for ground contact". Alternate construction material must have prior approval by the Chief Building Inspector.

CONNECTORS:

All connectors shall be hot-dipped galvanized or stainless steel. These connectors include bolts, screws, nails, joist hangers, post anchors, flashings and all other connectors.

All carriage bolts and lag screws are required to be a minimum of one-half (1/2) inch in diameter or have prior approval from the Chief Building Inspector. All carriage bolts and lag screws shall be placed a minimum of two (2) inches from the ends and edges of lumber. The pilot holes for the installation of the carriage bolts and all-thru-bolts are required to be the same diameter as the bolt. Pilot holes for lag screws shall be drilled one-eighth (1/8) inch smaller than the diameter of the lag screw and shall not exceed three-quarters (3/4) of the combined length of the screw shank and thread length.

FOOTINGS:

All deck posts are required to be supported by concrete footings. The footings shall be a minimum of sixteen (16) inches in diameter, eight (8) inches thick and eighteen (18) inches deep from finished yard grade. Footings are to be placed on undisturbed or compacted soil. Slabs supporting posts shall have the approved footings directly under the support locations. *Precast piers will not be allowed.*

All footings are required to be inspected prior to placing concrete. These inspections may be incorporated with other on-site inspections during the dwelling construction.

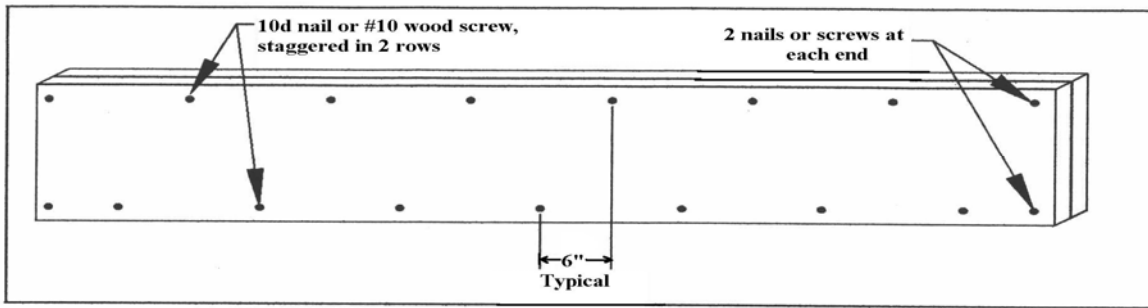
POSTS:

All decks are required to have a minimum of a 6-inch by 6-inch support post at all required support locations. Support posts are required to be placed apart at a maximum of eight (8) feet on center with a maximum height of fourteen (14) feet from the footing to the bottom of the girder or beam. When possible, the posts should extend a minimum of 36 inches above the floor for the guard rail support (see guard rail requirements, Pages 11 and 12). Notching of posts shall only be allowed for beam connectors (see beam requirements, Pages 2 and 3).

All posts are required to be supported by concrete footings. The posts shall be attached to the concrete to resist lateral movement and uplift. Drift pins or bolts placed in the concrete and thru the center of the post *will not* be approved.

BEAMS:

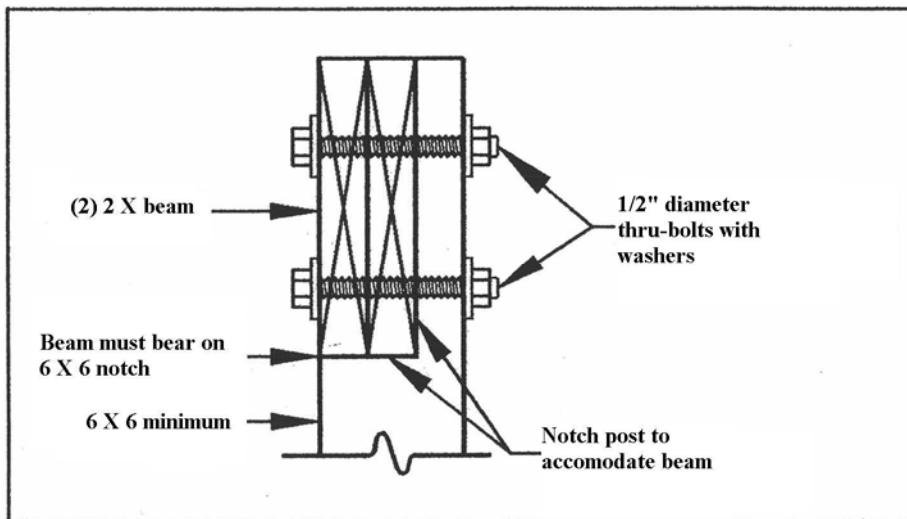
All beams shall be two (2) 2 X 12's number two (2) grade lumber spanning a maximum of eight (8) feet. The beam shall be assembled by attaching the two members together staggering every six (6) inches with either #10 ring shank nails or #10 screws. All butt joints are required to be a minimum of two (2) feet apart. Each end of the beam assembly shall be connected together with two (2) #10 ring shank nails or two (2) #10 screws. Solid beams (4 x 12) are recommended when available.



Split beams (one 2 X 12 on each side of the post) shall require solid blocking between the two members. The blocking shall be placed every two (2) feet apart and securely fastened together to make a single unit. Split beams can only be used on interior support posts or under cantilever floor joists. Floor joists must always sit on the top of a split beam and never connected to the side.

Beams cannot cantilever more than two (2) feet beyond their support post.

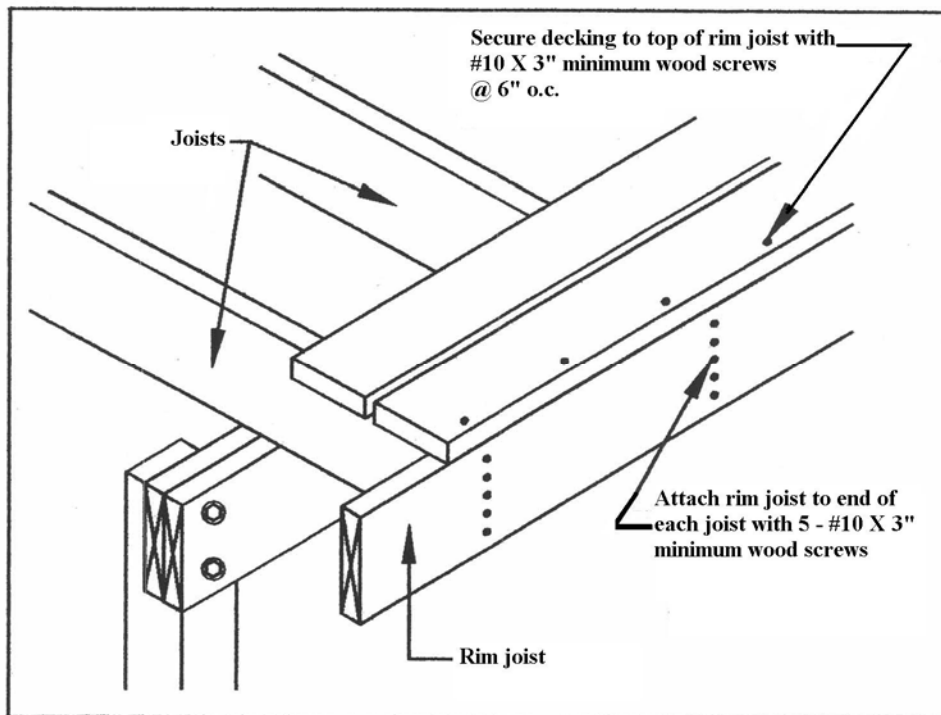
All support posts shall be notched to support the beam allowing for direct contact with the bottom of the beam and the notch in the post. The notching of the beam shall never exceed three (3) inches total depth for any beam assembly attachment. The beam shall be attached to the post with two (2) one-half (1/2) inch carriage bolts and washers.



RIM JOIST:

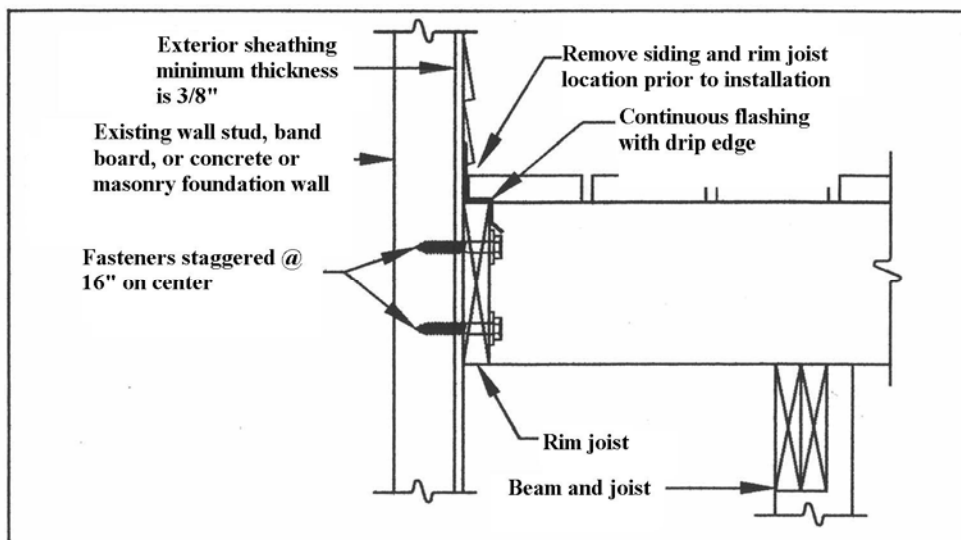
A rim joist is a single joist connecting cantilevered floor joists. The rim joist shall be connected to the floor joist with five (5) number 10 by three (3)-inch long wood screws.

SEE FOLLOWING ILLUSTRATION ON PAGE 4



FLASHING:

Flashing is required to be placed under the siding or exterior finish system prior to the installation of the ledger board. Flashing is required at any ledger board connection to a wall of wood framed construction. The flashing shall extend over the top of the ledger. Flashing material shall be copper (attached using copper nails), stainless steel, UV resistant plastic or zinc plated (1.85 oz/sf) galvanized steel.



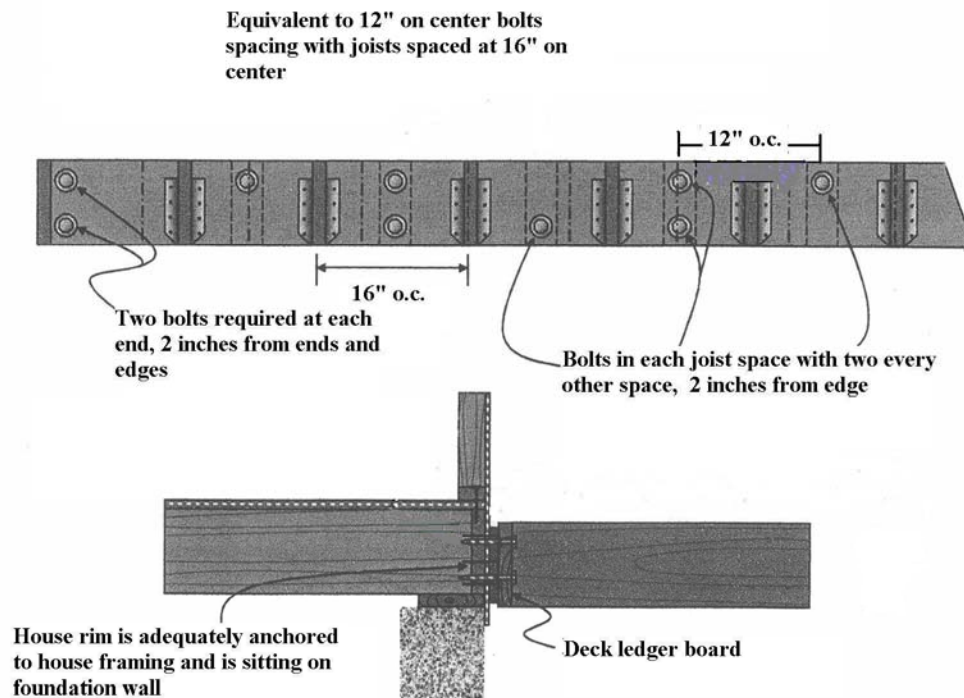
DECK LEDGER ATTACHMENT:

All deck ledgers are required to be attached to a minimum of a two (2)-inch thick dimensional lumber band board or a one and one-quarter (1 ¼)-inch manufactured solid band board. Band boards or house rim joists are required to be supported entirely by the house foundation wall.

Ledgers consisting of either a 2 X 10 or 2 X 12 dimensional lumber are required to be attached to the house band board or rim joist with one-half (1/2)-inch carriage bolts, lag screws or pre-approved fasteners in a double/single/double pattern spaced at sixteen (16) inches on center. Ledgers consisting of 2 X 8 dimensional lumber may be attached in a staggered pattern spaced at sixteen (16) inches on center using a minimum of one-half (1/2)-inch carriage bolts, lag screws or pre-approved fasteners.

Lag screws shall extend past the interior side of the house rim joist a minimum of one-half (1/2)-inch, but no greater than one (1)-inch.

Lag screws can not be driven with a hammer.



ATTACHING A DECK TO A CANTILEVER:

Floor joists extending from the dwelling shall not exceed twenty-four (24) inches in length past the exterior of the foundation wall. These joists shall be a minimum of 2 X 10 dimensional lumber or wood I-joists spaced sixteen (16) inches on center. Each 2 X 10 shall be doubled with an additional six (6) foot #3 grade 2 X 10 nailed together with 10d common nails at six (6) inches on center. Each end shall be nailed with a minimum of two (2) nails placed two (2) inches from the end.

Wood I-joist must be doubled with an additional six (6) foot wood I-joist. The voids at the doubled ends, middle and sides must be filled with six (6) foot long fillers creating a solid member. Fillers shall be nailed with four (4) 10d nails every sixteen (16) inches on center.

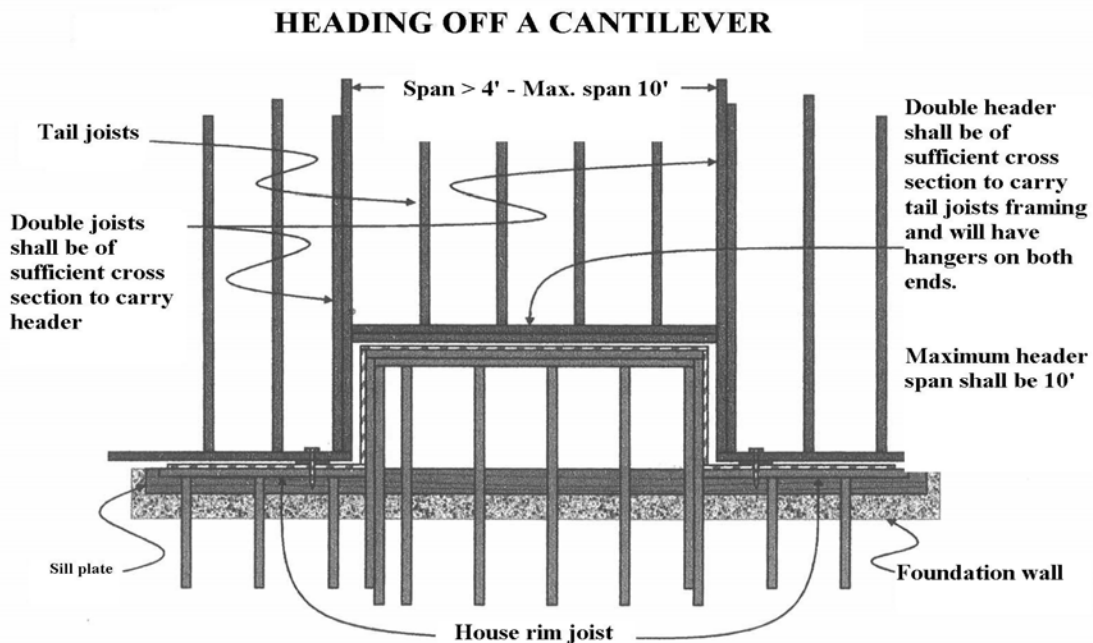
The rim joist must be attached to the doubled floor joists with Simpson LS90 gusset angles or their equivalent. Each gusset angle shall be attached with six (6) N10 nails into the rim and six (6) N10 nails into the doubled joists.

Solid blocking between the joists is required over the exterior wall.

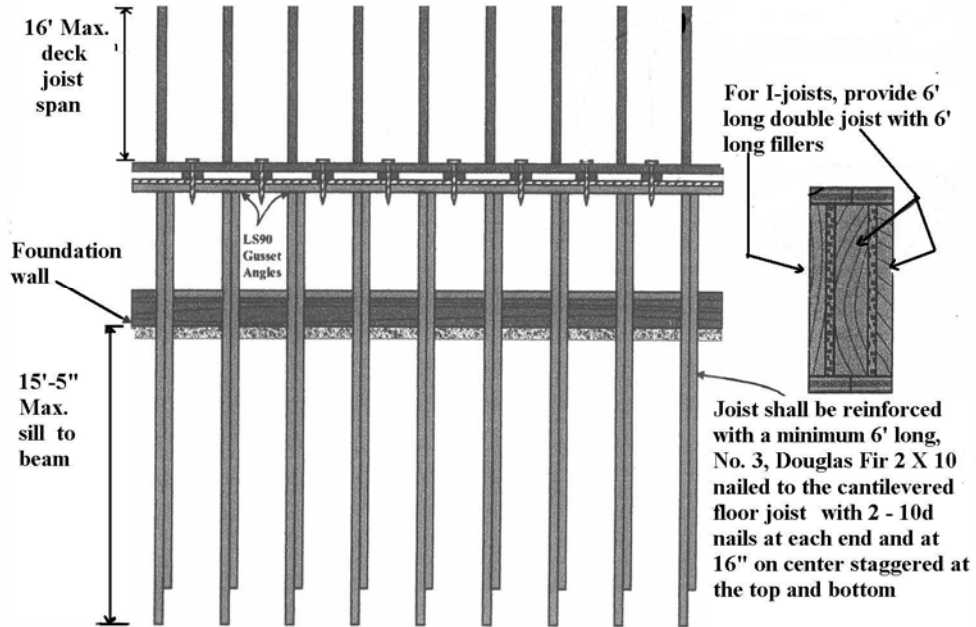
The house cantilevers may be headed off outside with an approved double joist/header system.

Any deviation from this design or attaching to existing cantilever shall require additional outside support. The deck may be self-supporting.

The under side of the cantilever cannot be covered until the cantilever is inspected and approved. This inspection will occur at the rough-in inspection. When the cantilever is one floor or more above grade, a ladder must be provided at the time of the inspection.



ATTACHING DECK TO CANTILEVERED FLOOR JOISTS



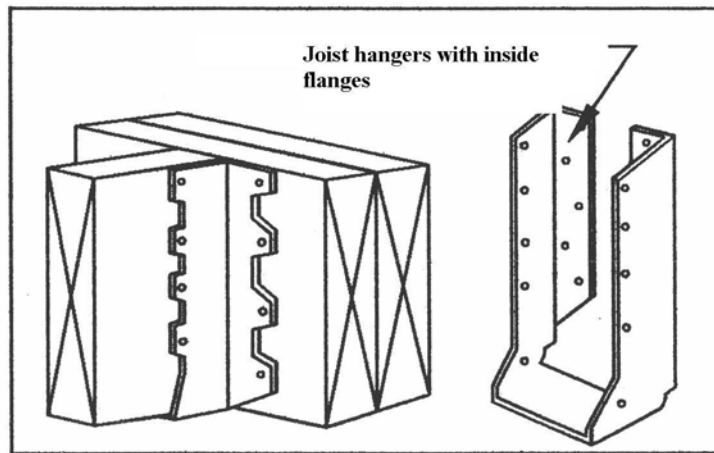
FLOOR JOISTS:

The following floor joist span table is based on using #2 Southern Pine with a live load of 40 pounds per square foot and a dead load of 10 pounds per square foot.

MAXIMUM FLOOR JOIST SPANS

JOIST SIZE	JOIST SPACING ON CENTER	JOIST SPAN
2 X 6	16"	9' - 9"
2 X 6	24"	8' - 6"
2 X 8	16"	12' - 10"
2 X 8	24"	11' - 0"
2 X 10	16"	16' - 1"
2 X 10	24"	13' - 1"
2 X 12	16"	18' - 10"
2 X 12	24"	15' - 5"

Joist hangers are required for the attachment of floor joists to the ledger and beam supports. When clearances do not allow for the conventional joist hangers with outside flanges, then joist hangers with inside flanges are allowed. Joist hangers must be installed with approved fasteners. *Pressure blocks between the joists are not allowed.*



Floor joists cannot cantilever more than three (3) feet. The cantilevered joist must back span two (2) times the cantilever distance. Example: A cantilever from a supporting beam three (3) feet in length must span in the opposite direction a minimum of six (6) feet.

FLOORING:

Flooring must be naturally decay-resistant lumber or pressure treated lumber. The attachment to the floor joists for a 2 X 6 or 5/4 (five-quarter) board shall be with two (2) 8d ring shank nails or two (2) #8 hot-dipped galvanized or stainless steel screws.

GUARD RAIL REQUIREMENTS:

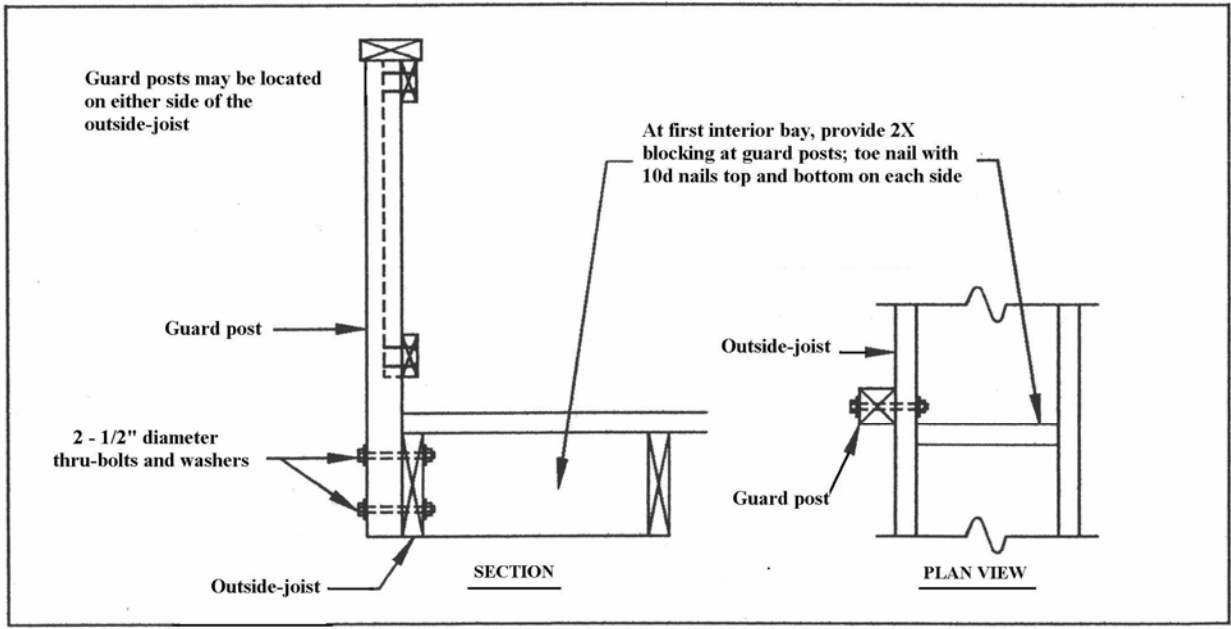
All decks with a floor height greater than thirty (30) inches above finish yard grade are required to have a guard rail. Guard rails shall be a minimum thirty-six (36) inches in height.

Whenever possible the guard rail supports should be the posts that support the deck. These supports should extend above the deck floor a minimum of thirty-six (36) inches and a maximum of eight (8) feet apart.

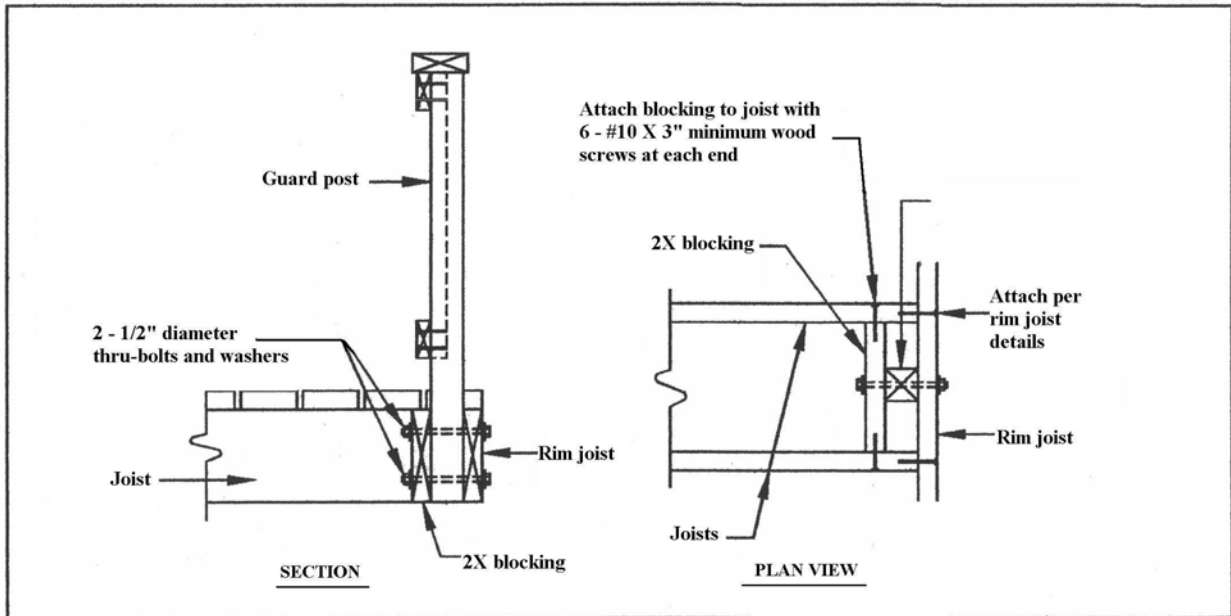
INDEPENDENT GUARD RAIL POST:

Independent guard rail posts shall be a minimum of 4" X 4". Guard rail posts shall be placed at all corners of the deck and a maximum of six (6) feet on center. Guard rail posts shall not be notched. All corner guard rail posts shall be secured to the rim joist or outside joist with four (4) one-half (1/2) inch carriage bolts two (2) bolts on each side of the corner. All other guard rail posts shall be secured to the rim joist or outside joist with two (2) one-half (1/2) inch carriage bolts.

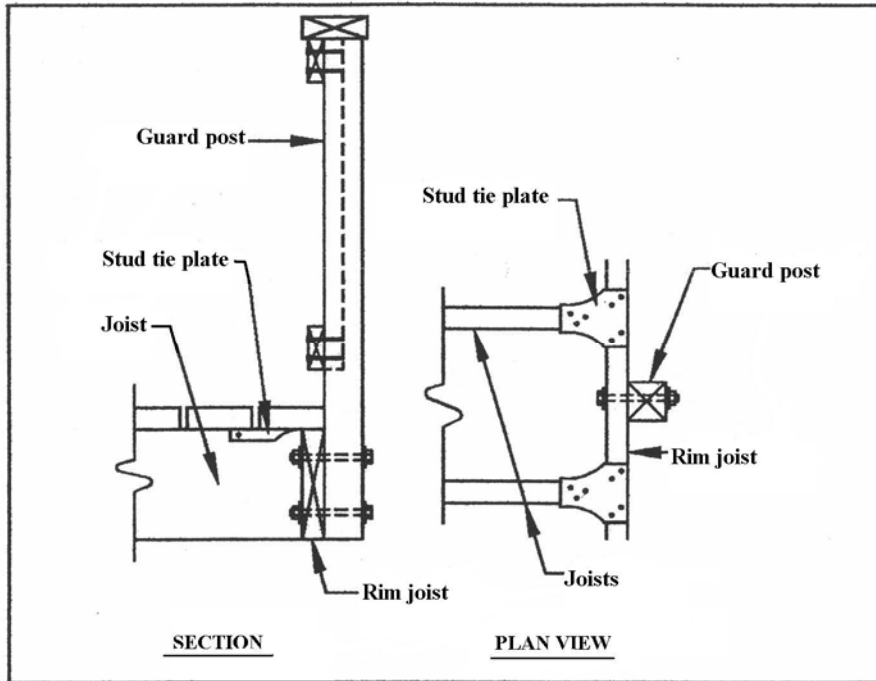
SEE FOLLOWING ILLUSTRATIONS FOR GUARD RAIL INSTALLATIONS



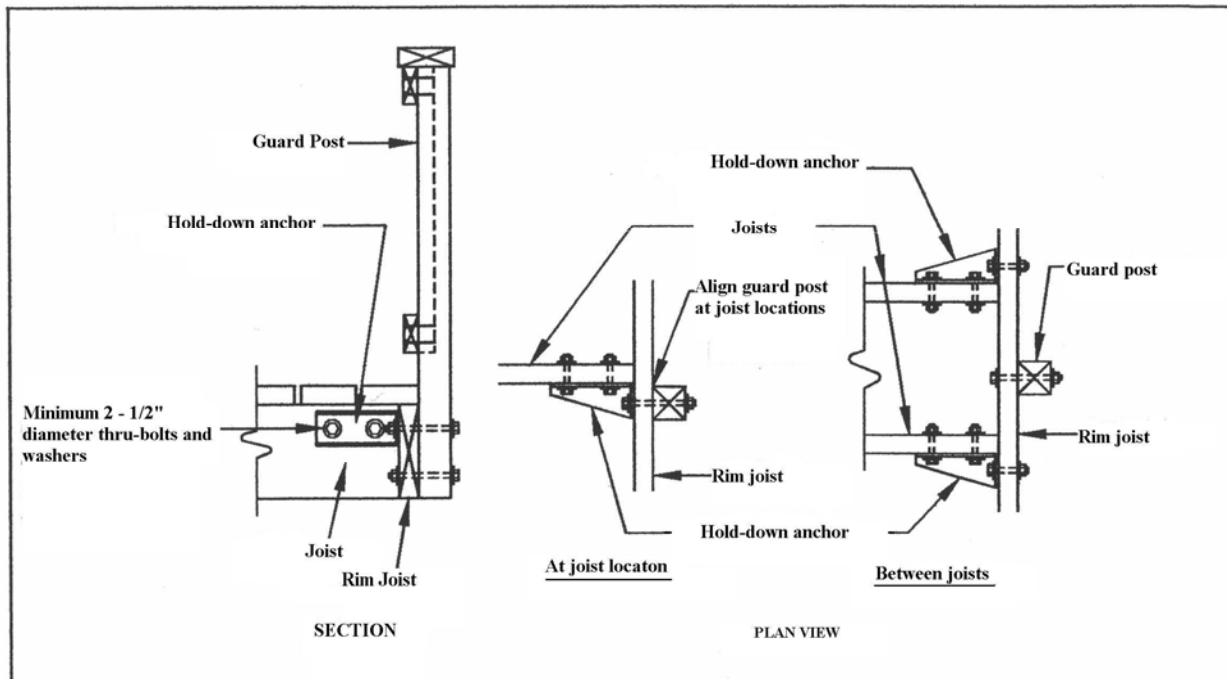
**GUARD POST TO OUTSIDE JOIST
GUARD POST TO RIM JOIST, OPTION 1**



GUARD POST TO RIM JOIST, OPTION 2



GUARD POST TO RIM JOIST, OPTION 3



STAIRWAYS:

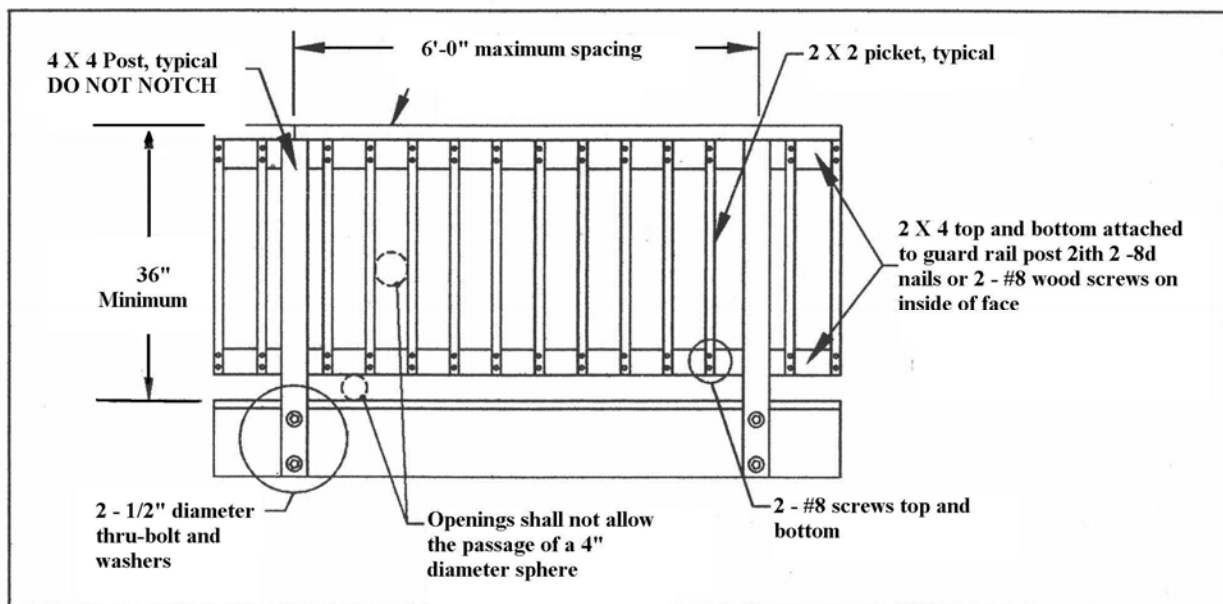
Stairways shall require three (3) stringers with a maximum span of nine (9) feet between supports. All stringers shall be 2 X 12's, #2 or better lumber. The tops of all stringers shall be seated entirely on the rim joist. The stringers can be attached to the rim joist by placing pressure blocks between stringers and attaching the stringers to the rim joist and the pressure blocks. The stringers may also be secured by using sloped joist hangers or Simpson LS70 or similar approved gusset angles.

Stairways and their landings shall be supported by 6" X 6" posts. Posts are to be placed on sixteen (16) inch diameter footing pads. Footing pads shall be a minimum of eight (8) inches thick and eighteen (18) inches below finished grade. Footings placed closer than five (5) feet from the exterior wall of the house shall be dug to the same depth of the house footing.

The risers for the stairways shall have a maximum rise of 7 ¾ inches. The tread depth shall be a minimum of 10 inches.

Guard rails shall be placed on stairways that are more than thirty (30) inches above the grade or floor. Guard rails are required on both sides of stairways. The guard rails are required to be a minimum of thirty (36) inches in height, measured from the toe of the steps.

Balusters are required to be placed where a four (4) inch diameter sphere will not pass through. Example: 2 X 2 inch balusters placed 5 ¾ inches on center will give you a spacing between balusters of 3 ¾ inches. The balusters are required to be attached to the guard rail with two (2) # 8 screws top and bottom.



The opening between the bottom of the guard rail and the top of the stair tread shall not allow the passage of a six (6) inch diameter sphere.

All stairs with four (4) or more risers shall have a handrail. The handrail material must be composed of decay-resistant and/or corrosion resistant material. The handrail shall be graspable. The hand grip portion of the handrail shall be between 1 ¼” and 2 ¼” in diameter. The handrail is required to run from the top landing to the bottom landing of the stairway. The handrail is required to return to the guard rail at each end.

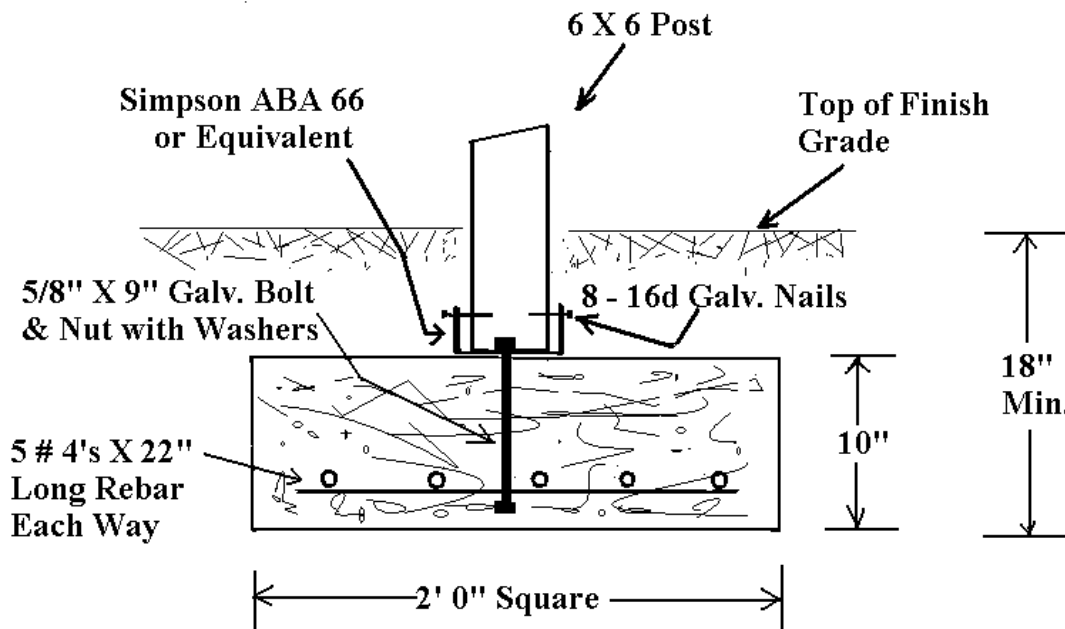
ROOF COVERED SINGLE LEVEL DECK:

These requirements are based on a normal rectangle or square single level roof covered deck. The depth of the deck from the dwelling has a maximum depth of fourteen (14) feet. Decks exceeding fourteen (14) feet in depth, unusual deck designs, multilevel decks with or without roofs and decks with other concentrated loads will require an engineer design to be submitted to Greene County Building Regulations before the decks are constructed.

The footings are required to be a minimum of twenty-four (24) inches by twenty-four (24) inches and a minimum of ten (10) inches thick with five (5) #4 steel reinforcement rebars placed both ways. The rebars are required to be twenty-two (22) inches long and elevated four (4) inches from the bottom of the footing. The required footings are to be placed eight (8) feet on center.

A galvanized bolt measuring nine (9) inches long and 5/8” in diameter is to be embedded in the center of each footing. The bolt with a washer is to be embedded in the concrete and the end of the bolt shall be connected with a nut and washer to a Simpson ABA 66 or equivalent post base anchor. The base anchor shall be attached to the treated posts with eight (8) number 16d galvanized nails.

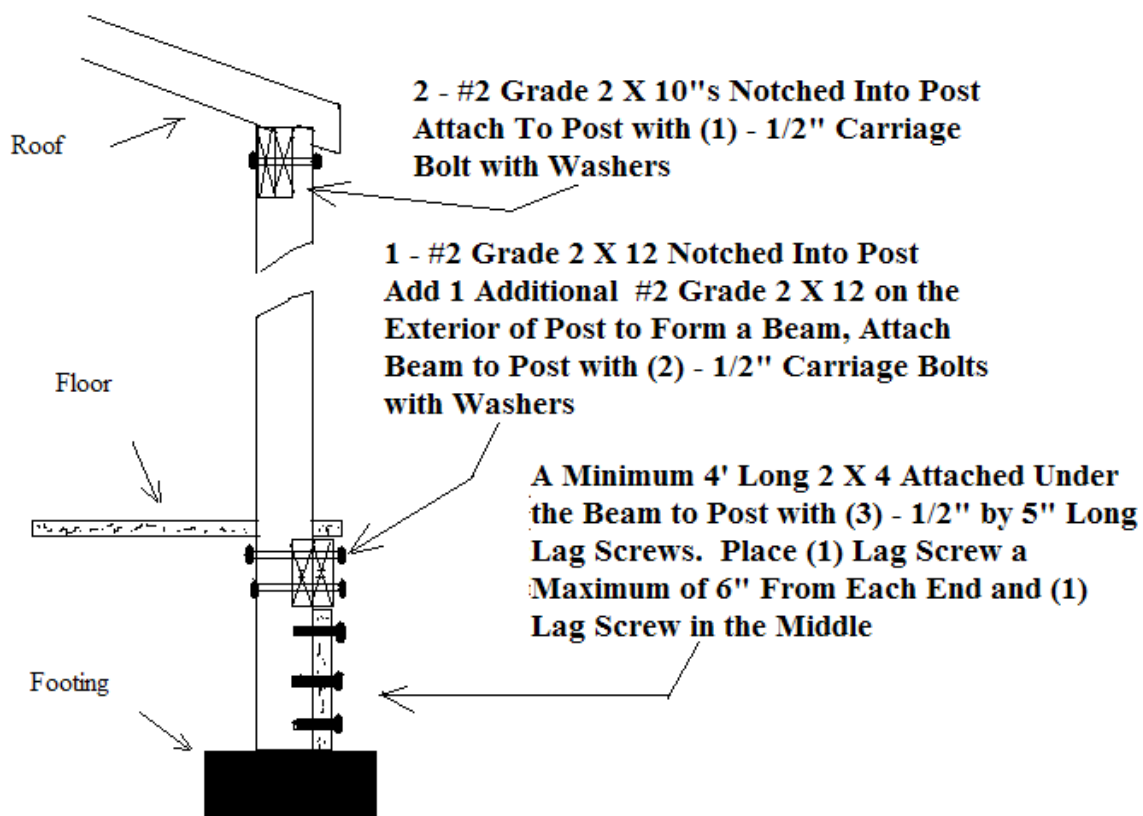
The treated post shall measure a minimum of a 6” X 6” in thickness. The post from the footing to the bottom of the deck shall be twelve (12) feet or less in length and from the top of the deck to the roof structure shall be twelve (12) feet or less in length. The girders between the posts shall be a minimum of a double 2” X 12”.



EXCEPTION: A continuous trench footing or formed footing may be approved. Footing required to be a minimum width of sixteen (16) inches, minimum thickness of ten (10) inches, with two (2) rows of one-half (1/2) inch rebar placed 3 inches from the sides and 4 inches from the bottom of footing.

The roof header or beam spanning between the 6" X 6" posts are required to be a minimum of two (2) #2 grade, 2 X 10's. The double 2 X 10's are allowed to be notched into post a maximum of two-thirds (2/3) of the thickness of the post. The beam is attached to the post with one (1) one, one-half (1/2) inch carriage bolt and washers.

The beam supporting the floor is required to be a minimum of two (2) #2 Grade 2 X 12's between the posts. One (1) 2 X 12 is to be notched into the post a maximum of one-third the thickness of the post. The second 2 X 12 is placed on the exterior of the post and attached to the first 2 X 12 and post to form a beam. The beam is required to be attached to the post with two (2) one-half (1/2) inch carriage bolts and washers. A minimum of a four (4) foot long 2 X 4 is to be attached to the post under the beam. The 2 X 4 is to be attached to the post with three (3), five (5) inch long one-half (1/2) inch lag screws. One (1) lag screw is to be placed a maximum of six (6) inches from each end and one (1) lag screw placed in the middle of the 2 X 4.



ALL OTHER DECK REQUIRMENTS ARE ADDRESSED IN THIS DOCUMENT.

THE ROOF STRUCTURE WILL HAVE TO COMPLY WITH THE REQUIREMENTS OF THE INTERNATIONAL ONE-TWO FAMILY DWELLING CODE