



SURRY & SUSSEX COUNTY, VIRGINIA

DECKS, PORCHES, STAIRS AND RAMPS

2018 Virginia Residential Code

- I agree to design and build the proposed deck in accordance with the Sussex County Deck Guide, which incorporates the 2018 Virginia Residential Code Section R507. Any structural element not prescribed in R507 shall be designed in accordance with an accepted engineering practice and sealed by a Registered Design Professional, licensed in Virginia.
- In accordance with the USBC 112.2, I agree to design and build the proposed deck with the American Wood Council DCA-6 (2018) Deck Guide and full compliance with the document is required.

Signature _____

DIRECTIONS

SUSSEX COUNTY DEPARTMENT OF BUILDING SAFETY HAS PREPARED THIS GUIDE FOR THE DESIGN OF BASIC DECKS, PORCHES, STAIRS AND RAMPS. IF A SPA, HOT TUB OR OTHER SPECIAL USE IS INTENDED, SEEK THE HELP OF A REGISTERED DESIGN PROFESSIONAL.

THIS DECK GUIDE IS BASED ON THE PRESCRIPTIVE REQUIREMENTS OF THE 2018 VIRGINIA RESIDENTIAL CODE.

THE FOLLOWING CONSTRUCTION DRAWINGS ARE REQUIRED **AND SHOULD BE UPLOADED**

1. **1 COPY OF THE PLAT PLAN, SHOWING THE PROPOSED DECK LOCATION W/ DIMENSIONS. THE PLAT SHOULD ALSO SHOW THE EXISTING LOCATION OF YOUR HOME, ALL ACCESSORY STRUCTURES AND/OR DRAIN FIELDS & WELLS. PROVIDE APPROXIMATE DISTANCES FROM THE DECK TO THE PROPERTY LINES.**

2. **1 COPY OF THE DECK PLANS, SPECIFICATION SHEETS AND DETAILS. THE COVER SHEET SHOULD BE SIGNED AND DATED.**

THE FOLLOWING INSPECTIONS WILL BE REQUIRED:

1. FOOTING INSPECTION PRIOR TO THE PLACEMENT OF CONCRETE.
2. FRAMING INSPECTION
3. FINAL INSPECTION

NOTE: THE FRAMING AND THE FINAL CAN BE COMBINED IF THE INSPECTOR IS ABLE TO ACCESS THE UNDERSIDE OF THE DECK.

102.2.2 RECONSTRUCTION, ALTERATION, OR REPAIR IN GROUP R-5 OCCUPANCIES

RECONSTRUCTED DECKS, BALCONIES, PORCHES, AND SIMILAR STRUCTURES LOCATED 30 INCHES OR MORE ABOVE GRADE SHALL MEET THE CURRENT CODE PROVISIONS FOR STRUCTURAL LOADING CAPACITY, CONNECTIONS, AND STRUCTURAL ATTACHMENT. THIS REQUIREMENT EXCLUDES THE CONFIGURATION AND HEIGHT OF HANDRAILS AND GUARDRAILS.

DEFINITION OF REPAIR: **THE RECONSTRUCTION**, REPLACEMENT OR RENEWAL OF ANY PART OF AN EXISTING BUILDING FOR THE PURPOSE OF ITS MAINTENANCE OR TO CORRECT DAMAGE.

GENERAL REQUIREMENTS

1. DECK FRAMING IS BASED ON 40 LBS PER SQ FT LIVE LOAD AND 10 LBS PER SQUARE FOOT DEAD LOAD.
2. ALL DECK MATERIALS SHALL BE PRESERVATIVE TREATED (P.T.) LUMBER OR A COMPOSITE MATERIAL DESIGNED FOR DECKS, OUTSIDE USE AND SUITABLE FOR CONTACT WITH THE GROUND. ALL CUT MATERIALS SHALL HAVE THEIR ENDS TREATED WITH AN APPROVED PRESERVATIVE, SUCH AS COPPER NAPHTHENATE.
3. TO RESIST CORROSION, THE FOLLOWING IS REQUIRED:
ALL SCREWS, BOLTS, NAILS AND FASTENERS SHALL BE HOT-DIPPED GALVANIZED (ASTMA-153 OR B-695, CLASS 55) OR STAINLESS STEEL.
4. FLASHING SHALL BE A MINIMUM 19 MIL THICK CORROSION-RESISTANT METAL OR AN APPROVED NON-METALIC MATERIAL.
5. DO NOT ATTACH A LEDGER **DECK** THROUGH BRICK VENEER, **CANTILEVER HOUSE JOISTS**, OR TO A MANUFACTURED HOME OR INDUSTRIALIZED BUILDING .
6. DO NOT CONSTRUCT THE FOOTINGS OVER UTILITY LINES. CALL MISS UTILITY AT 811 BEFORE YOU START.
7. JCC DOES NOT ALLOW "ON-GRADE DECK BLOCKS" TO BE USED. (TAPERED CONCRETE BLOCKS WITH RECESSES FOR STRUCTURAL MEMBERS, THAT ARE TO BE USED ON TOP OF THE SOIL)

HOW TO USE THIS GUIDE

1. DECIDE ON THE APPROXIMATE DIMENSIONS AND LOCATION OF THE DECK OR PORCH.
2. DECIDE ON THE FRAMING STYLE: NON-LEDGER OR LEDGER. (DEFINITIONS FOR BOTH ON PAGE 2)
3. COMPLETE THE LIST OF COMPONENTS TO BE USED ON THE DECK SPECIFICATION SHEET.
4. DRAW THE PROPOSED DECK LOCATION ON YOUR PLAT PLAN WITH ALL REQUIRED INFORMATION NOTE ABOVE.
5. USE THE ATTACHED DETAILS FOR OTHER ASPECTS OF THE CONSTRUCTION.

STANDARD ABBREVIATIONS

HDG – HOT DIPPED GALVANIZED (ASTM A-153 OR B695, CLASS 55)

O.C. – ON CENTER

P.T. – PRESERVATIVE TREATED

DECK SPECIFICATION SHEET

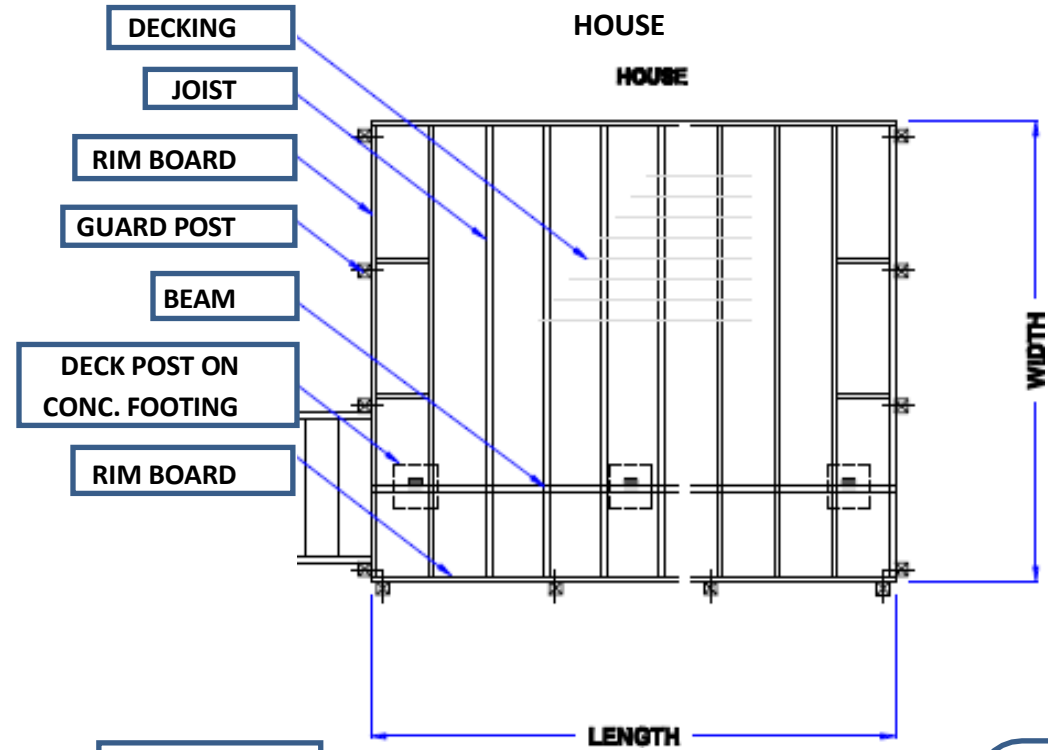
(Please fill out and attach a drawing of the proposed deck.)

1. **Non-Ledger** / Ledger Deck / (please circle) **Deck ledger to be a min. 2x8**
2. Deck Dimensions (L x W): _____ x _____, _____ (Height)
3. Lumber Species: Southern Pine or Alt. _____
4. Footing Dimensions (L x W): _____ x _____, _____ (Thick), _____ (Deep)
Total #: _____ (Incl. Stairs)
5. Post Size (L x W): _____ x _____ Post Spacing : _____
6. Post Base/Cap Connectors: **Y** **N**
Model number _____
No- 12" Embedment in Concrete or Soil & Post Must be Notched (6x6 Only)
7. Ledger _____ x _____ w/ ½" dia. Bolts/Lag Screws **2X8 MINIMUM**
8. Beams _____ **PLY** _____ x _____
9. Joist _____ x _____ @ _____ o.c. **Joists cantilever** **Y** **N**
10. Wood plastic/Composites: ICC Report and Manufacturers Installation Instructions provided. **Y** **N**

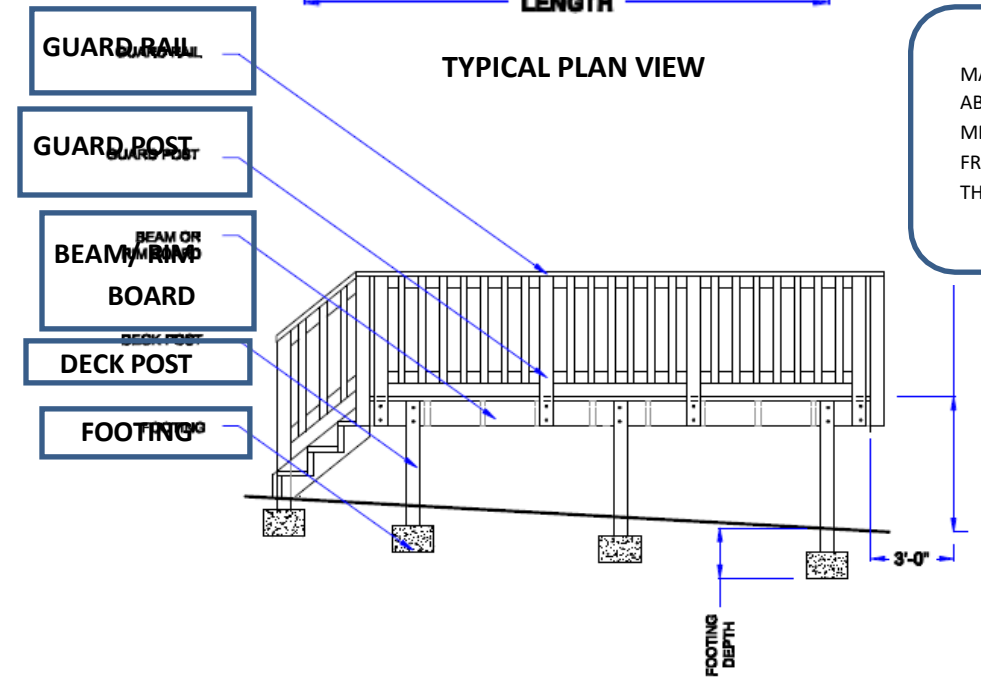
DECK TYPES

Non-Ledger Deck: Uses the house to resist lateral loads but doesn't use the house exterior wall to resist vertical loads. Attachment to house to resist lateral loads still required.

Ledger Deck: a deck structure that is physically attached to the house with a ledger board, eliminating the need for a beam or footings adjacent to the house.



TYPICAL PLAN VIEW

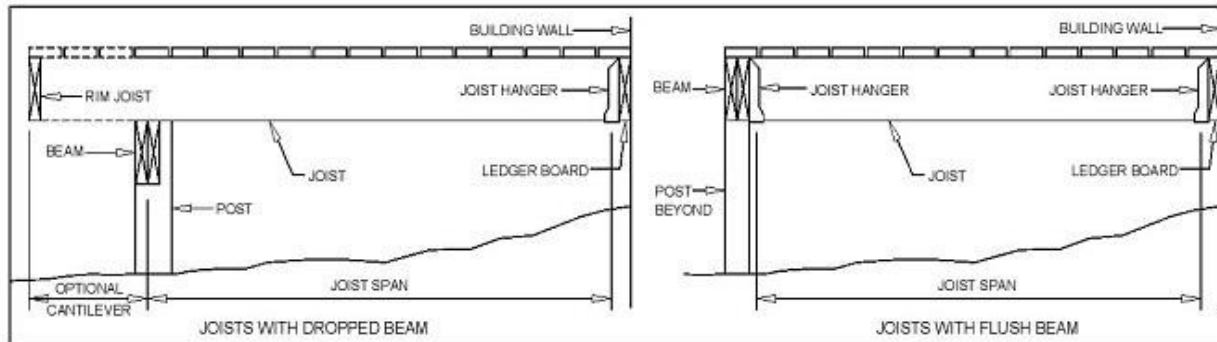


TYPICAL FRONT VIEW

MEMBER SIZING

JOISTS

THE SPAN OF THE JOIST IS MEASURED FROM THE CENTERLINE OF BEARING AT ONE END OF THE JOIST TO THE CENTERLINE OF BEARING AT THE OTHER END OF THE JOIST AND DOES NOT INCLUDE THE LENGTH OF THE OVERHANGS (CANTILEVERS).



MAXIMUM DECK JOIST SPANS

SPECIES ^b	SIZE	ALLOWABLE JOIST SPAN ^c			ALLOWABLE CANTILEVER ^{d,e}		
		Spacing of deck joists (inches)			Spacing of deck joists (inches)		
		12	16	24	12	16	24
Southern pine	2 x 6	9-11	9-0	7-7	1-3	1-4	1-6
	2 x 8	13-1	11-10	9-8	2-1	2-3	2-5
	2 x 10	16-2	14-0	11-5	3-4	3-6	2-10
	2 x 12	18-0	16-6	13-6	4-6	4-2	3-4

- a. No. 2 grade with wet service factor.
- b. Ground snow load, live load = 40 psf, dead load = 10 psf, L/Δ = 360
- c. Ground snow load, live load = 40 psf, dead load = 10 psf, L/Δ = 360 at main span, L/Δ = 180 at cantilever with a 220 pound point load applied to end
- d. Includes incising factor.
- e. Northern species with no incising factor.
- f. Cantilever spans not exceeding the nominal depth of the joist are permitted.

DECKING BOARDS ARE TYPICALLY 2X6, 5/4 P.T. BOARDS OR A COMPOSITE MATERIAL. COMPOSITE DECKING SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS. ****MUST BE PROVIDED****

1. ATTACH DECKING BOARDS TO DECK JOISTS WITH 2-8d HDG NAILS, (2) #8 SCREWS

DECKING BOARDS

OR PROPRIETARY FASTENERS INTENDED FOR P.T. WOOD.

2. DECK BOARDS SHALL BE SPACED APPROXIMATELY 1/8" APART (EDGE TO EDGE)
3. EACH PIECE OF DECKING MUST BEAR ON AT LEAST 3 JOISTS.

MATERIAL TYPE AND NOMINAL SIZE	MAXIMUM JOIST SPACING	
	PERPENDICULAR TO JOIST	DIAGONAL TO JOIST ^a
5/4-inch thick wood	16	12
2-inch thick wood	24	16
Wood/plastic composite	Per R507.3	Per R507.3

DECK POSTS

1. DECK POSTS OVER 2' IN HEIGHT SHALL BE DIAGONALLY BRACED.
2. DECK POSTS MAY BE EITHER P.T WOOD OR MASONRY.

TABLE R507.4 DECK POST HEIGHT^a

DECK POST SIZE	MAXIMUM HEIGHT ^{a, b} (feet-inches)
4 × 4	6 -9 ^c
4 × 6	8
6 × 6	14
8 × 8	14

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 pound per square foot = 0.0479 kPa.

a. Measured to the underside of the beam.

b. Based on 40 psf live load.

c. The maximum permitted height is 8 feet for one-ply and two-ply beams. The maximum permitted height for three-ply beams on post cap is 6 feet 9 inches.

1. BEAMS SUPPORT THE DECK JOISTS. THE JOISTS EITHER BEAR ON TOP OF THE BEAM FOR A CANTILEVER DESIGN OR ARE HUNG FLUSH ALONG SIDE OF IT WITH MECHANICAL HANGERS.
2. TWO OR THREE MEMBERS MAY BE CONNECTED TOGETHER TO FORM THE BEAM USING 10d HDG NAILS OR #10 SHDG SCREWS, STAGGERED IN TWO ROWS, AT 16" O.C. **3 ply beams to be nailed from both sides of beam. 4 ply beams require a beam calculation and fastening detail submitted at plan review.**
3. THE ENDS OF EACH JOIST AND BEAM SHALL HAVE NOT LESS THAN 1.5 INCHES OF BEARING ON WOOD OR METAL AND NOT LESS THAN 3 INCHES 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 ATTACHED TO THE BEAM TO RESIST LATERAL DISPLACEMENT. **CANTILEVER JOISTS REQUIRE AN UPLIFT CONNECTOR AT BEAM.**

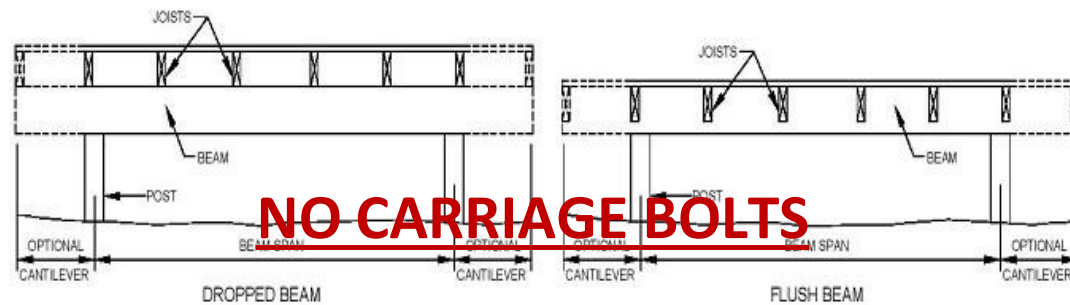
DECK BEAM SPAN^a LENGTHS^{b,c}

SPECIES ^d	SIZE ^e	DECK JOIST SPAN (feet) LESS THAN OR EQUAL TO:						
		6	8	10	12	14	16	18
Southern pine	1-2x6	4-11	4-0	3-7	3-3	3-0	2-10	2-8
	1-2x8	5-11	5-1	4-7	4-2	2-10	3-7	3-5
	1-2x10	7-0	6-0	5-5	4-11	4-7	4-3	4-0
	1-2x12	8-3	7-1	6-4	5-10	5-5	5-0	4-9
	2-2x6	6-11	5-11	5-4	4-10	4-6	4-3	4-0
	2-2x8	8-9	7-7	6-9	6-2	5-9	5-4	5-0
	2-2x10	10-4	9-0	8-0	7-4	6-9	6-4	6-0
Southern pine	2-2x12	12-2	10-7	9-5	8-7	8-0	7-6	7-0
Southern pine	3-2x6	8-2	7-5	6-8	6-1	5-8	5-3	5-0
Southern pine	3-2x8	10-10	9-6	8-6	7-9	7-2	6-8	6-4
Southern pine	3-2x10	13-0	11-3	10-0	9-2	8-6	7-11	7-6
Southern pine	3-2x12	15-3	13-3	11-10	10-9	10-0	9-4	8-10

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm.

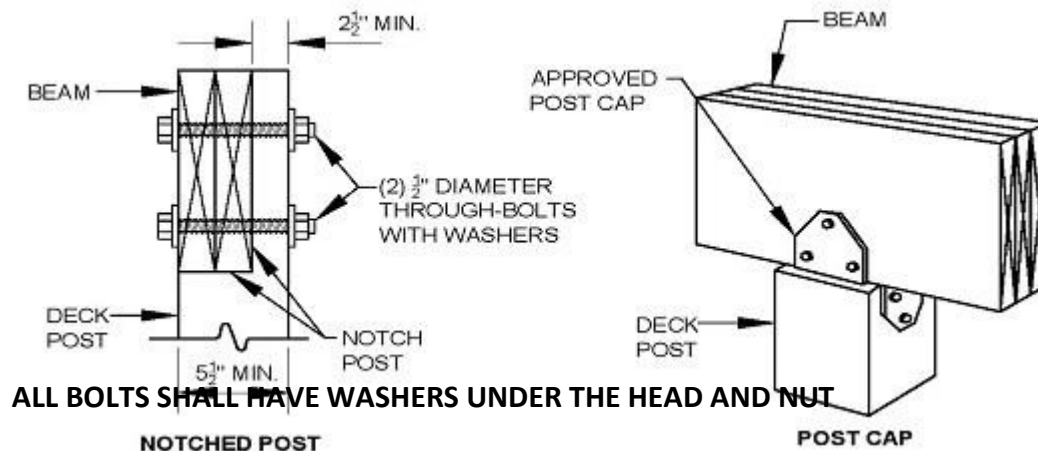
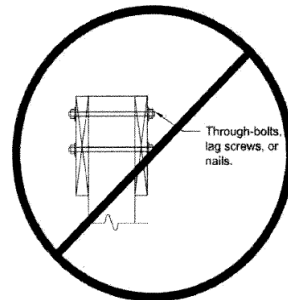
- Ground snow load, live load = 40 psf, dead load = 10 psf, $L/\Delta = 360$ at main span, $L/\Delta = 180$ at cantilever with a 220 pound point load applied at the end.
- Beams supporting deck joists from one side only.
- No. 2 grade, wet service factor.
- Beam depth shall be greater than or equal to depth of joists with a flush beam condition.
- Includes incising factor.
- Northern species. Incising factor not included.
- Beam cantilevers are limited to the adjacent beam's span divided by 4.

TYPICAL DECK BEAM SPANS



OPTIONAL CANTILEVER, MAX LENGTH EQUALS BEAM SPAN L/4.

NOTCHING A 4X4 POST NOT PERMITTED. POST CAP REQUIRED.



ALL BOLTS SHALL HAVE WASHERS UNDER THE HEAD AND NUT

FOOTINGS

1. ALL FOOTINGS SHOULD BEAR ON UNDISTURBED SOIL AT LEAST 12" BELOW THE FINISHED GRADE.
2. IF THE FOOTING IS WITHIN 5' OF THE EXISTING HOUSE FOOTING, IT SHALL BE AT THE SAME DEPTH AS THE HOUSE FOOTING.
3. SPREAD FOOTINGS SHALL BE AT LEAST 6 INCHES IN THICKNESS.
4. MINIMUM SIZES FOR CONCRETE AND MASONRY FOOTINGS IS 12".
5. FOOTING PROJECTIONS SHALL BE AT LEAST 2 INCHES AND SHALL NOT EXCEED THE THICKNESS OF THE FOOTING.
6. THE LOAD-BEARING VALUE OF THE SOIL IS ASSUMED AT 1,500 PSF
7. THE FOOTING SIZES IN THIS TABLE ASSUME NO ROOF LOAD
8. INTERPOLATION IS PERMITTED.

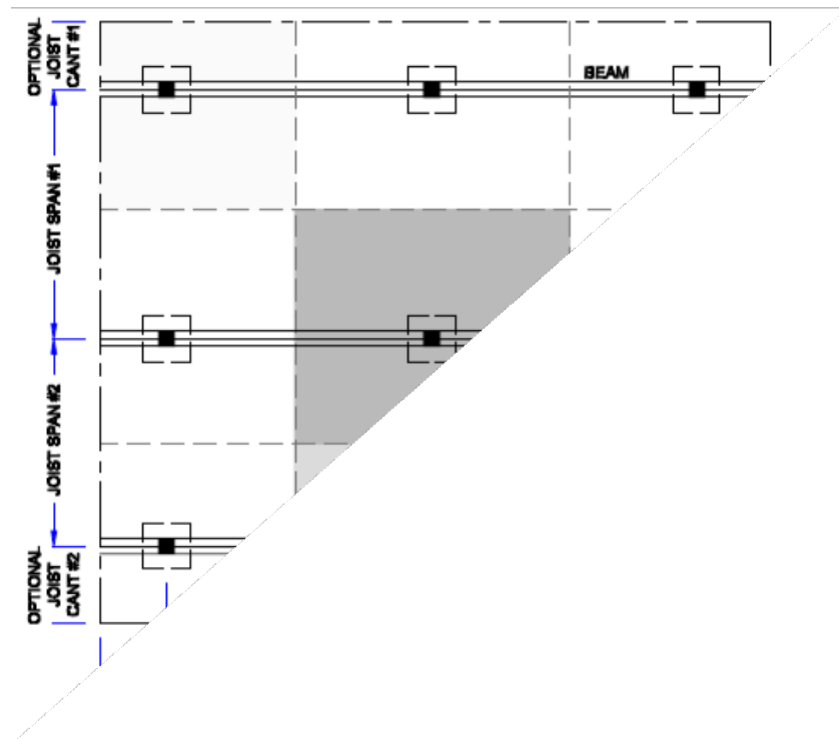


TABLE R403.1

****MATHEMATICAL EXAMPLE:**

90 SQ. FT. (TRIBUTARY AREA) X 50 PSF (TOTAL DESIGN LOAD) = 4,500 LBS.

4,500 LBS. /1,500 PSF (SOIL) = 3 SQ.FT. 3SQ.FT. X 144" = 432"

432" SQUARED = 20.78" (FOOTING SIZE)

MINIMUM FOOTING SIZE FOR DECKS

LIVE OR GROUND SNOW LOAD ^b (psf)	TRIBUTARY AREA (sq. ft.)	LOAD BEARING VALUE OF SOILS ^{a, c, d} (psf)							
		1500 ^e			2000 ^e			2500 ^e	
		Side of a square footing (Inches)	Diameter of a round footing (Inches)	Thickness (Inches)	Side of a square footing (Inches)	Diameter of a round footing (Inches)	Thickness (inches)	Side of a square footing (inches)	Diameter of a round footing (inches)
40	20	12	14	6	12	14	6	12	14
	40	14	16	6	12	14	6	12	14
	60	17	19	6	15	17	6	13	15
	80	20	22	7	17	19	6	15	17
	100	22	25	8	19	21	6	17	19
	120	24	27	9	21	23	7	19	21

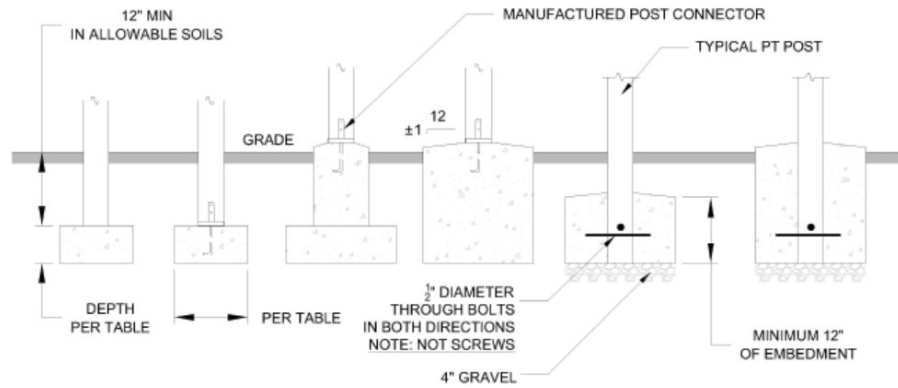
R507.3.1 Minimum size.

The minimum size of concrete footings shall be in accordance with Table R507.3.1, based on the tributary area and allowable soil-bearing pressure in accordance with Table R401.4.1.

R507.3 Footings.

Decks shall be supported on concrete footings or other approved structural systems designed to accommodate all load in accordance with Section R301. Deck footings shall be sized to carry the imposed loads from the deck structure to the ground as shown in Figure R507.3. The footing depth shall be in accordance with Section R403.1.4.

Exception:Free-standing decks consisting of joists directly supported on grade over their entire length.



R507.3.2 Minimum depth.

Deck footings shall extend below the frost line specified in Table R301.2(1) in accordance with Section R403.1.4.1.

Exceptions:

1. Free-standing decks that meet all of the following criteria:
 - 1.1. The joists bear directly on precast concrete pier blocks at grade without support by beams or posts.
 - 1.2. The area of the deck does not exceed 200 square feet (18.9 m²).
 - 1.3. The walking surface is not more than 20 inches (616 mm) above grade at any point within 36 inches (914 mm) measured horizontally from the edge.
2. Free-standing decks need not be provided with footings that extend below the frost line.

R507.2.3 Fasteners and connectors.

Metal fasteners and connectors used for all decks shall be in accordance with Section R317.3 and Table R507.2.3.

TABLE R507.2.3 FASTENER AND CONNECTOR SPECIFICATIONS FOR DECKS^{a, b}

ITEM	MATERIAL	MINIMUM FINISH/COATING	ALTERNATE FINISH/COATING ^e
Nails and timber rivets	In accordance with ASTM F1667	Hot-dipped galvanized per ASTM A153	Stainless steel, silicon bronze or copper
Bolts ^c Lag screws ^d (including nuts and washers)	In accordance with ASTM A307 (bolts), ASTM A563 (nuts), ASTM F844 (washers)	Hot-dipped galvanized per ASTM A153, Class C (Class D for 3/8-inch diameter and less) or mechanically galvanized per ASTM B695, Class 55 or 410 stainless steel	Stainless steel, silicon bronze or copper
Metal connectors	Per manufacturer's specification	ASTM A653 type G185 zinc coated galvanized steel or post hot-dipped galvanized per ASTM A123 providing a minimum average coating weight of 2.0 oz./ft ² (total both sides)	Stainless steel

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm.

- a. Equivalent materials, coatings and finishes shall be permitted.
- b. Fasteners and connectors exposed to salt water or located within 300 feet of a salt water shoreline shall be stainless steel.
- c. Holes for bolts shall be drilled a minimum 1/32 inch and a maximum 1/16 inch larger than the bolt.
- d. Lag screws 1/2 inch and larger shall be predrilled to avoid wood splitting per the National Design Specification (NDS) for Wood Construction.
- e. Stainless-steel-driven fasteners shall be in accordance with ASTM F1667.

ON-CENTER SPACING FOR FASTENERS ATTACHING DECK TO HOUSE

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'
Connection details	On-center spacing of fasteners						
1/2 inch diameter lag screw with 15/32 inch maximum sheathing	30	23	18	15	13	11	10
1/2 inch diameter bolt with 15/32 inch maximum sheathing	36	36	34	29	24	21	19
1/2 inch diameter bolt with 15/32 inch maximum sheathing and 1/2 inch stacked washers	36	36	29	24	21	18	16

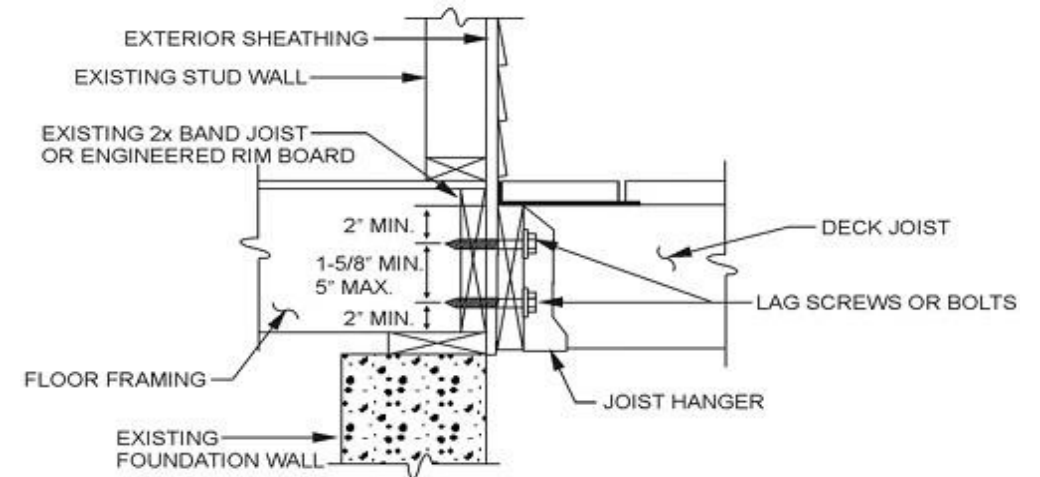
(SEE TABLE FOR FASTENER SPACING)

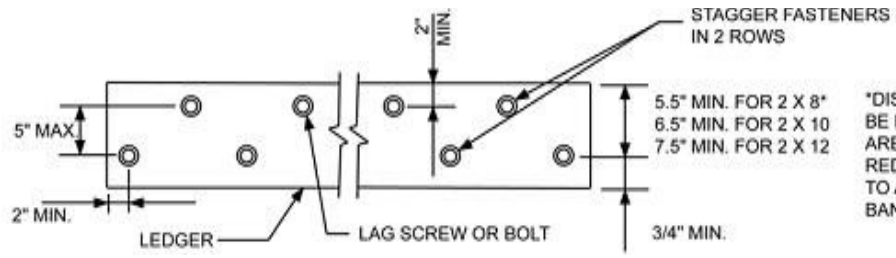
NO CARRIAGE BOLTS

LAG SCREWS MUST PROJECT AT LEAST 1/2" BEYOND THE INTERIOR SIDE OF THE

19 GA. MIN. FLASHING BETWEEN HOUSE RIM BOARD AND DECK LEDGER BOARD. (ALUMINUM FLASHING IS NOT PERMITTED)

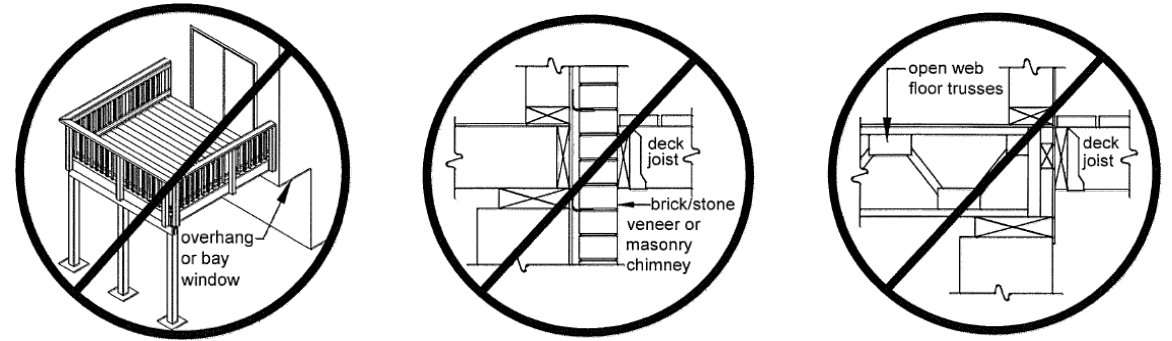
LEDGER BOARD CONNECTION TO HOUSE





*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.

1. The maximum gap between the face of the ledger board and the face of the house band joist shall be ½”.
2. THE TIP OF THE LAG SCREW SHALL FULLY EXTEND BEYOND THE INSIDE OF THE BAND JOIST (BOARD).
3. LEDGERS SHALL BE FLASHED TO PREVENT WATER FROM CONTACTING THE HOUSE BAND JOIST (BOARD).
4. LAG SCREWS AND BOLTS SHALL BE STAGGERED AND SHALL NOT BE CLOSER THAN 2” TO THE TOP AND BOTTOM OF THE LEDGER.
5. DECK LEDGERS SHALL BE 2X8 PRESERVATIVE TREATED SOUTHER PINE (MIN) OR OTHER APPROVED METHOD AND MATERIAL AS ESTABLISHED BY STANDARD ENGINEERING PRACTICE.
6. LAG SCREWS, BOLTS AND WASHERS SHALL BE HOT-DIPPED GALVANIZED OR STAINLESS STEEL.
7. GIRDERS SUPPORTING DECK JOISTS SHALL NOT BE SUPPORTED ON DECK LEDGERS OR BAND JOISTS. DECK LEDGERS SHALL NOT BE SUPPORTED ON STONE OR MASONRY VENEER.
8. THE MAXIMUM GAP BETWEEN THE FACE OF THE LEDGER BOARD AND THE FACE OF THE HOUSE BAND JOIST SHALL BE ½”.
9. THE TIP OF THE LAG SCREW SHALL FULLY EXTEND BEYOND THE INSIDE OF THE BAND JOIST (BOARD).
10. LEDGERS SHALL BE FLASHED TO PREVENT WATER FROM CONTACTING THE HOUSE BAND JOIST (BOARD).
11. LAG SCREWS AND BOLTS SHALL BE STAGGERED AND SHALL NOT BE CLOSER THAN 2” TO THE TOP AND BOTTOM OF THE LEDGER.
12. DECK LEDGERS SHALL BE 2X8 PRESERVATIVE TREATED SOUTHER PINE (MIN) OR OTHER APPROVED METHOD AND MATERIAL AS ESTABLISHED BY STANDARD ENGINEERING PRACTICE.
13. LAG SCREWS, BOLTS AND WASHERS SHALL BE HOT-DIPPED GALVANIZED OR STAINLESS STEEL.
14. GIRDERS SUPPORTING DECK JOISTS SHALL NOT BE SUPPORTED ON DECK LEDGERS OR BAND JOISTS. DECK LEDGERS SHALL NOT BE SUPPORTED ON STONE OR MASONRY VENEER.



DECK ATTACHMENT FOR LATERAL LOADS

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 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 a minimum of (3)10d nails or (3)#10x3 inch long wood screws.

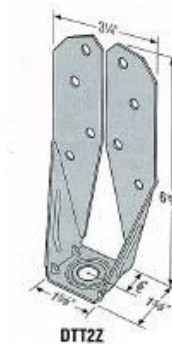
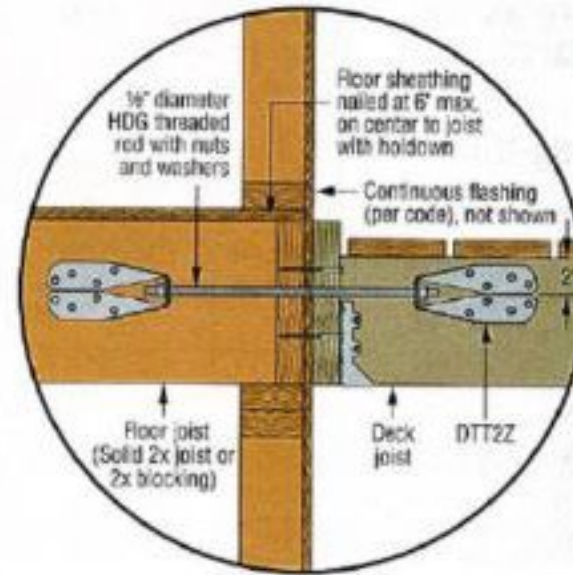
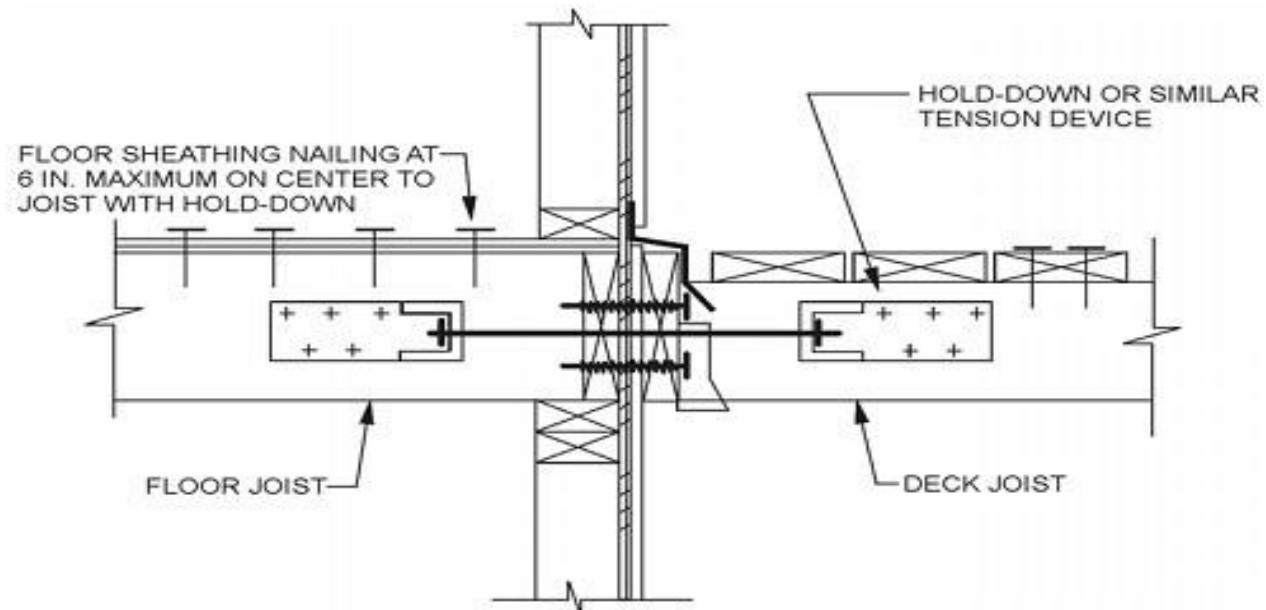
LATERAL LOAD RESTRAINT:

ALL DECKS SHALL RESIST LATERAL LOADS BY USING ONE OF THE METHODS OUTLINED ON PAGE 8.

OPTION 1: LEDGER DECKS/**NON-LEDGER DECKS** INTERIOR/EXTERIOR HOLD DOWN TENSION DEVICE

(Approved tension-tie: Simpson DTT2Z)

1. HOLD-DOWN TENSION DEVICES SHALL BE INSTALLED IN NOT LESS THAN TWO LOCATIONS PER DECK.
2. EACH DEVICE SHALL HAVE AN ALLOWABLE STRESS DESIGN CAPACITY OF NOT LESS THAN 1500 POUNDS.

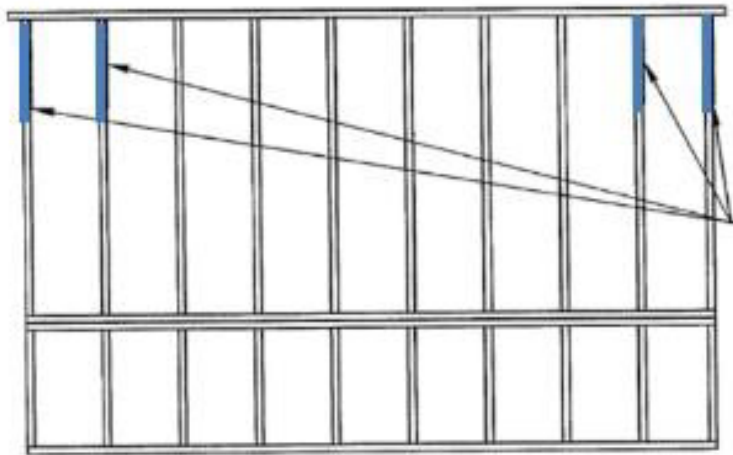


OPTION #2: LEDGER DECKS/**NON-LEDGER DECKS** EXTERIOR HOLD DOWN TENSION DEVICE

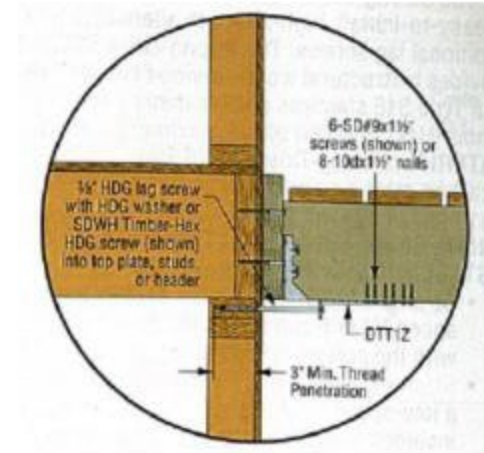
(Approved tension-tie: Simpson DTT1Z)

1. HOLD-DOWN TENSION DEVICES SHALL BE INSTALLED IN NOT LESS THAN FOUR LOCATIONS PER DECK, AS SHOWN BELOW.
2. TENSION DEVICE CAN BE CONNECTED TO TOP PLATES, STUDS OR HEADERS WITHIN THE SUPPORTING STRUCTURE. (PER MANUFACTURERS INSTALLATION INSTRUCTIONS)
3. EACH DEVICE SHALL HAVE AN ALLOWABLE STRESS DESIGN CAPACITY OF NOT LESS THAN 750 POUNDS.

EXTERIOR TENSION-TIE LOCATION (4 total)



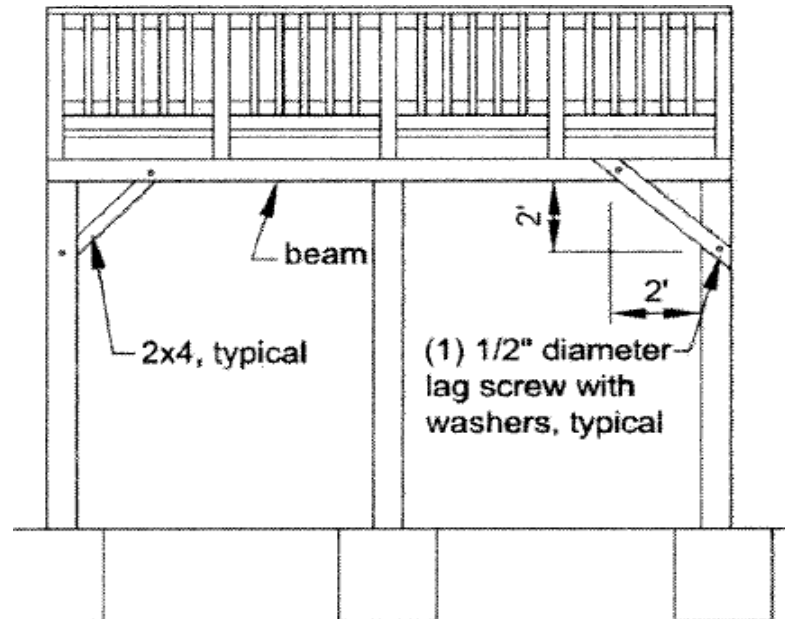
**INSTALL
TENSION-TIE
TO
UNDERSIDE OF
OUTSIDE AND
FIRST INSIDE
JOISTS ON
EACH SIDE OF
DECK**



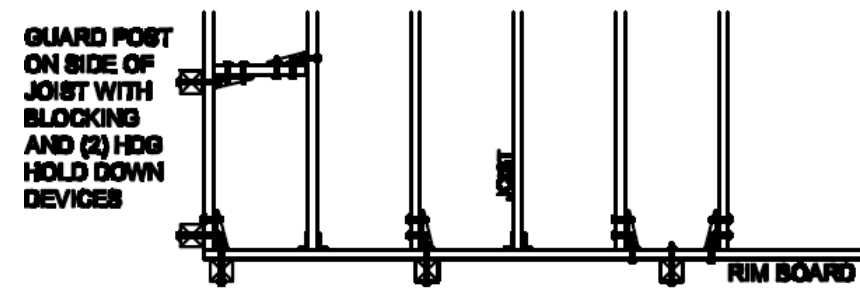
DIAGONAL BRACING

1. DIAGONAL BRACING IS REQUIRED PARALLEL TO THE BEAM AT EACH CORNER POST.
2. DIAGONAL BRACING IS PROHIBITED ON CENTER POSTS.
3. BRACING SHALL BE FASTENED TO THE POST AT ONE END AND THE BEAM AT THE OTHER WITH 1/2" DIAMETER LAG SCREWS.
4. DIAGONAL BRACING IS REQUIRED ON ALL DECKS GREATER THAN 2' ABOVE GRADE.
5. PROVIDE BLOCKING WHEN BRACING DOES NOT ALIGN WITH JOIST.

DIAGONAL BRACING



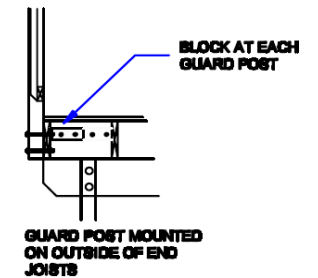
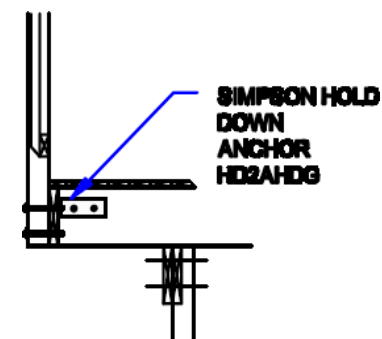
GUARD POST CONNECTION TO RIM BOARD



GUARD POST AT CORNER

GUARD POST AT JOIST

GUARD POST BETWEEN JOISTS ATTACHED TO RIM BOARD WITH (2) 1/2" DIA (HDG) THRU BOLTS



SECTION @ SIDE ENLARGED

STAIR AND RAMP REQUIREMENTS

STAIR RISERS

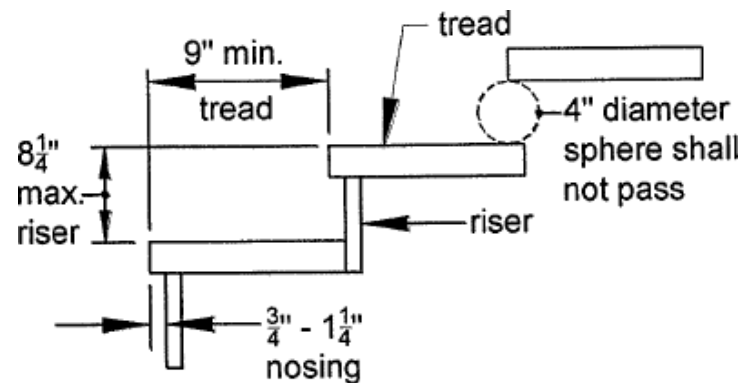
THE MAXIMUM RISER HEIGHT SHALL BE 8¹/₄ INCHES. THE RISER SHALL BE MEASURED VERTICALLY BETWEEN THE LEADING EDGES OF THE ADJACENT TREADS. THE GREATEST RISER HEIGHT WITHIN ANY FLIGHT OF STAIRS SHALL NOT EXCEED THE SMALLEST BY MORE THAN ³/₈ INCH.

OPEN RISERS ARE PERMITTED PROVIDED THAT THE OPENING BETWEEN TREADS DOES NOT PERMIT THE PASSAGE OF A 4-INCH-DIAMETER SPHERE.

STAIR TREADS

THE MINIMUM TREAD DEPTH SHALL BE 9 INCHES. THE GREATEST TREAD DEPTH WITHIN ANY FLIGHT OF STAIRS SHALL NOT EXCEED THE SMALLEST BY MORE THAN ³/₈ INCH.

STAIR RISERS AND TREADS



STRINGERS

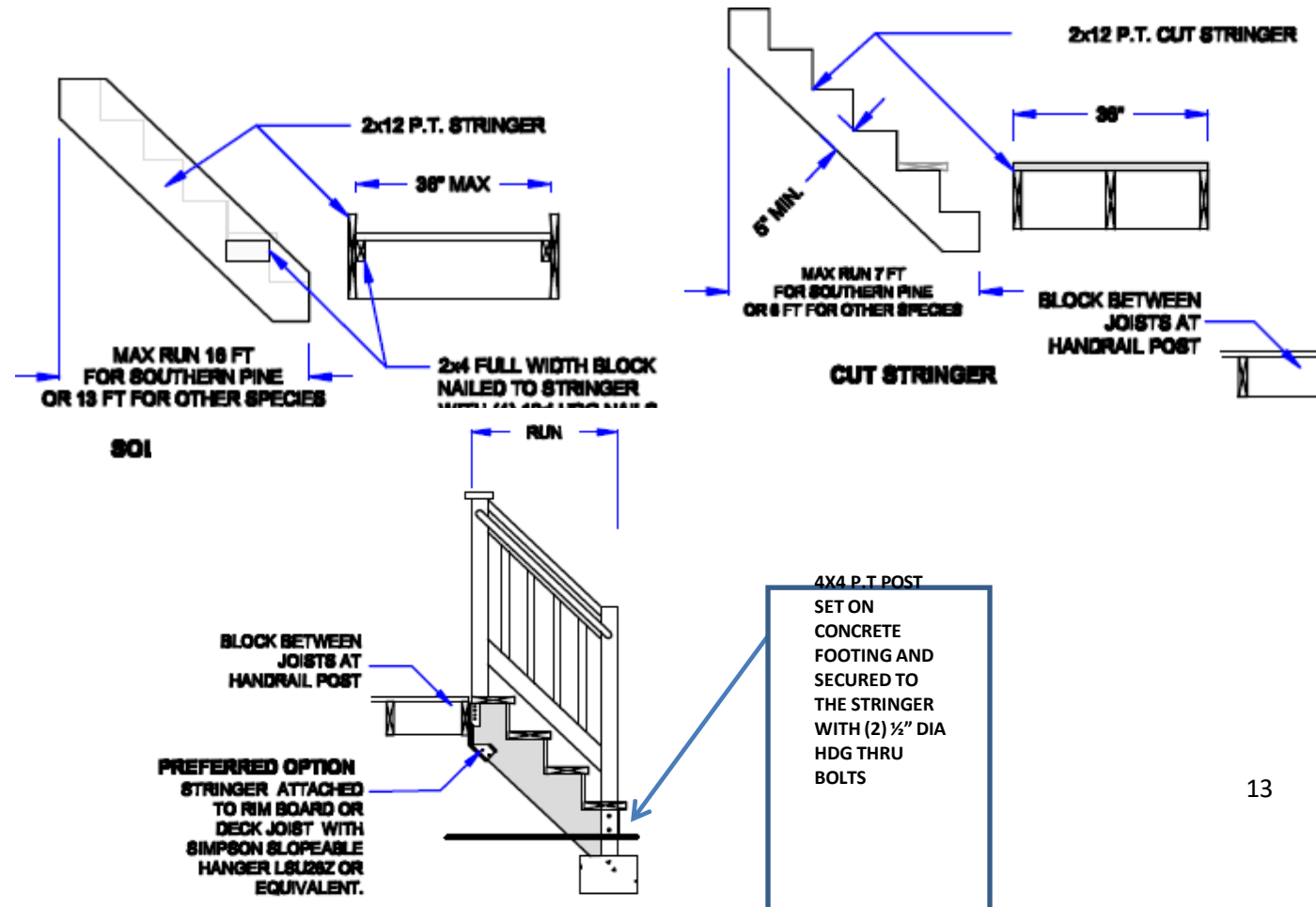
ALL STRINGERS SHALL BE A MINIMUM OF 2X12 P.T. MATERIAL.

IF THE STRINGER IS FABRICATED BY CUTTING NOTCHES FOR THE RISERS AND TREADS, THREE STRINGERS SHALL BE REQUIRED FOR A 36" WIDE STAIR. NOTE: DO NOT OVER CUT NOTCHES.

IF THE STRINGER IS FABRICATED FROM AN UNCUT 2X12, TWO STRINGERS ARE REQUIRED FOR A 36" WIDE STAIR.

STRINGERS SHALL NOT SPAN MORE THAN THE DIMENSIONS SHOWN, OTHERWISE AN INTERMEDIATE POST IS REQUIRED.

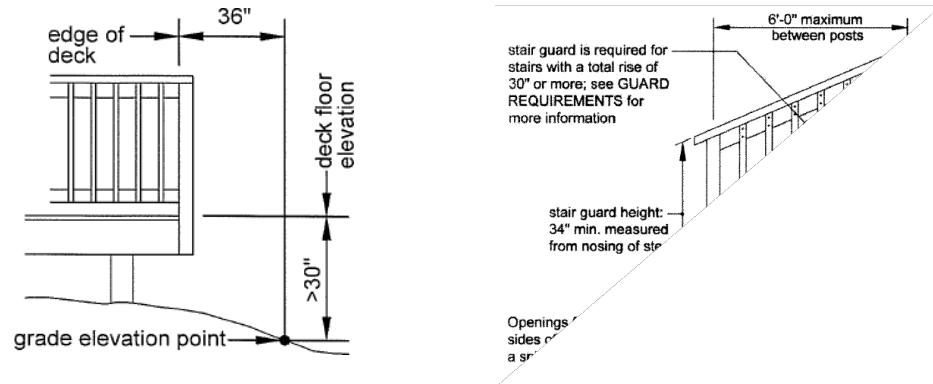
ALL POSTS SHALL BE SUPPORTED ON A CONCRETE FOOTING AT LEAST 12" DEEP. THE STRINGER SHALL BE ATTACHED TO THE POST WITH (2) 1/2" DIA HDG THRU BOLTS.



GUARD REQUIREMENTS

GUARDRAILS ARE REQUIRED WHERE THE DISTANCE FROM THE WALKING SURFACE TO GRADE IS MORE THAN 30" MEASURED OUT 36" FROM THE FACE OF THE DECK.

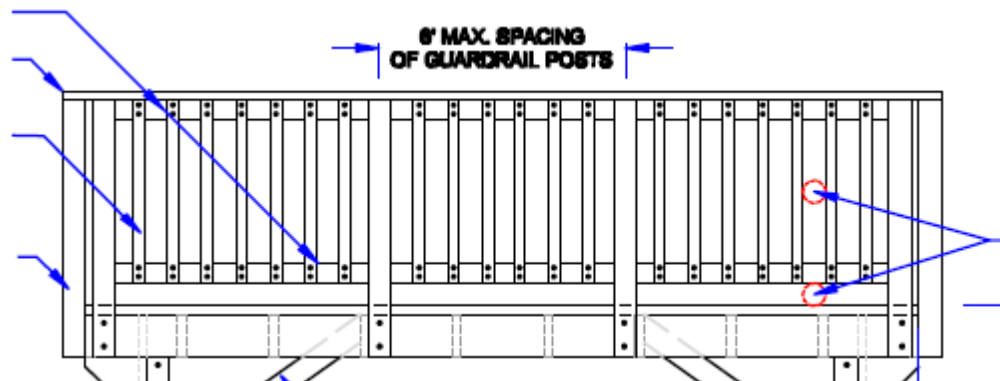
THE MINIMUM HEIGHT OF THE GUARDRAIL MUST BE 36".



THE TOP OF THE GUARDRAIL CAP MUST BE BETWEEN 34" AND 38" WHERE MEASURED FROM THE NOSING OF THE STAIR TREAD.

THE BOTTOM RAIL MUST BE LOCATED SO THAT A 6" SPHERE CANNOT PASS BETWEEN THE TRIANGLE FORMED BY THE RISER, TREAD AND BOTTOM RAIL.

ALL GUARDS SHALL BE ABLE TO WITHSTAND A LOADING OF 200 LBS IN ANY DIRECTION.



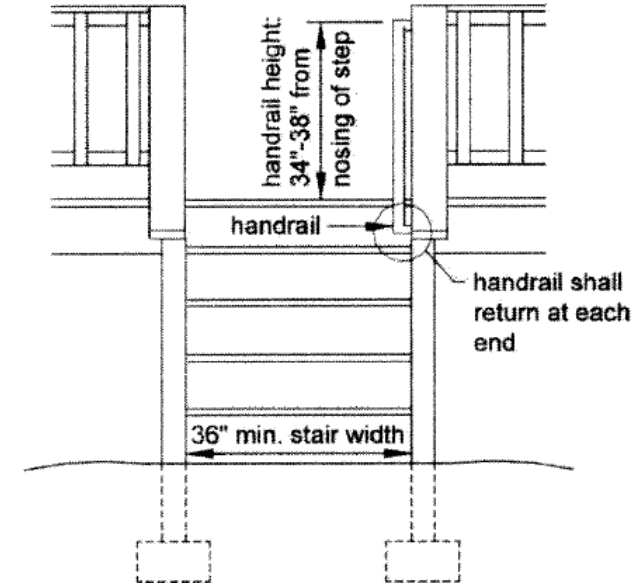
4" MAX. SPACING FASTENED WITH GALV. SCREWS OR 2 8D GALV. NAILS

HANDRAIL REQUIREMENTS

HANDRAILS SHALL BE PROVIDED ON AT LEAST ONE SIDE OF EACH CONTINUOUS RUN OF TREADS OR FLIGHT WITH FOUR OR MORE RISERS.

HANDRAIL HEIGHT SHALL BE NOT LESS THAN 34 INCHES AND NOT MORE THAN 38 INCHES.

HANDRAILS MUST RETURN TO THE WALL OR POST.

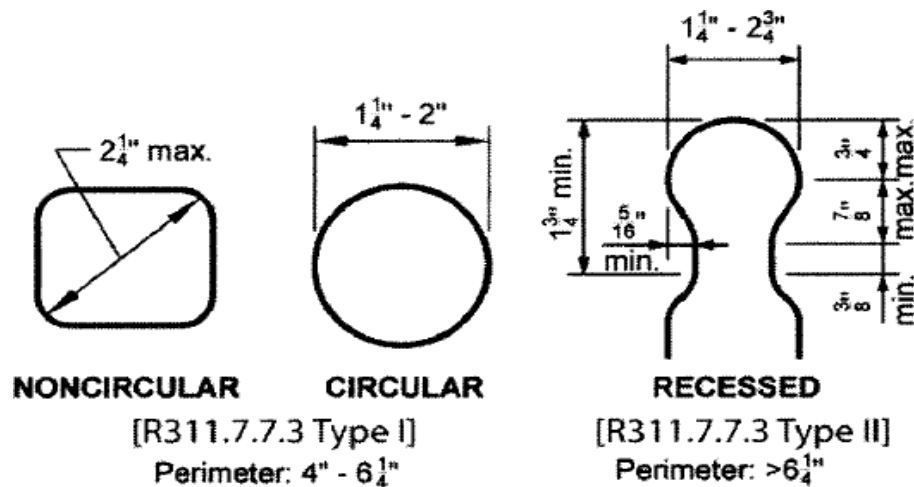


HANDRAIL PROFILES AND GRIP SIZES

A HANDRAIL (TYPE 1 OR TYPE 2 PROFILE) IS REQUIRED ON AT LEAST ONE SIDE OF THE STAIR WHEN THERE ARE MORE THAN FOUR RISERS.

TYPE 1 HANDRAILS WITH A CIRCULAR CROSS SECTION SHALL HAVE AN OUTSIDE DIAMETER OF AT LEAST $1\frac{1}{4}$ INCHES AND NOT GREATER THAN 2 INCHES. IF THE HANDRAIL IS NOT CIRCULAR, IT SHALL HAVE A PERIMETER DIMENSION OF AT LEAST 4 INCHES AND NOT GREATER THAN $6\frac{1}{4}$ INCHES WITH A MAXIMUM CROSS SECTION OF DIMENSION OF $2\frac{1}{4}$ INCHES.

TYPE 2 HANDRAILS WITH A PERIMETER GREATER THAN $6\frac{1}{4}$ INCHES SHALL HAVE A GRASPABLE FINGER RECESS AREA ON BOTH SIDES OF THE PROFILE. THE FINGER RECESS SHALL: BEGIN WITHIN A DISTANCE OF $\frac{3}{4}$ INCH MEASURED VERTICALLY FROM THE TALLEST PORTION OF THE PROFILE AND ACHIEVE A DEPTH OF AT LEAST $\frac{5}{16}$ INCH WITHIN $\frac{7}{8}$ INCH BELOW THE WIDEST PORTION OF THE PROFILE. THIS REQUIRED DEPTH SHALL CONTINUE FOR AT LEAST $\frac{3}{8}$ INCH TO A LEVEL THAT IS NOT LESS THAN $1\frac{3}{4}$ INCHES BELOW THE TALLEST PORTION OF THE PROFILE. THE MINIMUM WIDTH OF THE HANDRAIL ABOVE THE RECESS SHALL BE $1\frac{1}{4}$ INCHES TO A MAXIMUM OF $2\frac{3}{4}$ INCHES. EDGES SHALL HAVE A MINIMUM RADIUS OF 0.01 INCH.



LANDINGS

WHEN A STAIRWAY EXCEEDS A VERTICLE HEIGHT OF **12'7"**, AN INTERMEDIATE LANDING SHALL BE PROVIDED.

LANDINGS SHALL BE AS WIDE AS THE STAIR WIDTH IT SERVICES (MIN 36").

RAMPS

RAMPS MAY BE STARIGHT RUNS OR "L" OR "U" SHAPED.

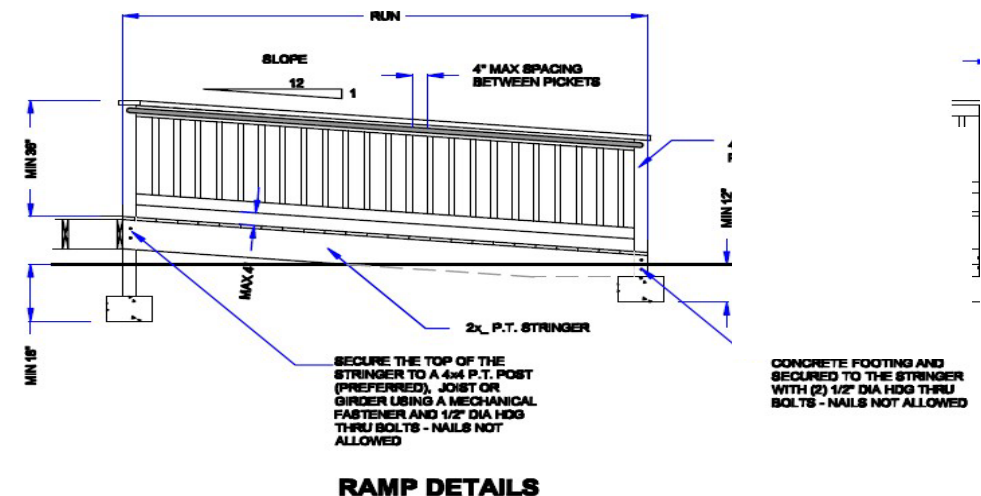
RAMPS SHALL HAVE A MAXIMUM SLOPE OF 1:12 (THAT MEANS THAT FOR EVERY INCH IN HEIGHT THE RAMP HAS TO CLIMB, IT SHALL BE ONE FOOT LONG).

WHERE IT IS TECHNICALLY INFEASIBLE BECAUSE OF SITE CONSTRAINTS THE MAXIMUM SLOPE MAY BE 1:8.

WHERE RAMPS CHANGE DIRECTIONS, A LEVEL LANDING THE WIDTH OF THE RAMP IS REQUIRED.

HANDRAILS ARE REQUIRED ON AT LEAST ONE SIDE OF THE RAMP AND MAY BE ATTACHED TO THE HOUSE.

GUARDRAILS ARE REQUIRED WHERE THE HEIGHT OF THE RAMP ABOVE GRADE EXCEEDS 30".



STAIRWAY ILLUMINATION

ALL EXTERIOR STAIRWAYS SHALL BE PROVIDED WITH A MEANS TO ILLUMINATE THE STAIRS, INCLUDING THE LANDINGS AND TREADS.

EXTERIOR STAIRWAYS SHALL BE PROVIDED WITH AN ARTIFICIAL LIGHT SOURCE LOCATED IN THE IMMEDIATE VICINITY OF THE TOP LANDING OF THE STAIRWAY.

GLAZING

WINDOWS

GLAZING IN AN INDIVIDUAL FIXED OR OPERABLE PANEL THAT MEETS ALL OF THE FOLLOWING CONDITIONS SHALL BE CONSIDERED A HAZARDOUS LOCATION:

1. THE EXPOSED AREA OF AN INDIVIDUAL PANE IS LARGER THAN 9 SQUARE FEET
2. THE BOTTOM EDGE OF THE GLAZING IS LESS THAN 18 INCHES ABOVE THE FLOOR
3. THE TOP EDGE OF THE GLAZING IS MORE THAN 36 INCHES ABOVE THE FLOOR; AND
4. ONE OR MORE WALKING SURFACES ARE WITHIN 36 INCHES, MEASURED HORIZONTALLY AND IN A STRAIGHT LINE, OF THE GLAZING.

EXCEPTIONS:

1. DECORATIVE GLAZING.
2. WHEN A HORIZONTAL RAIL IS INSTALLED ON THE ACCESSIBLE SIDE(S) OF THE GLAZING 34 TO 38 INCHES ABOVE THE WALKING SURFACE. THE RAIL SHALL BE CAPABLE OF WITHSTANDING A HORIZONTAL LOAD OF 50 POUNDS PER LINEAR FOOT WITHOUT CONTACTING THE GLASS AND BE A MINIMUM OF 1½ INCHES IN CROSS SECTIONAL HEIGHT.
3. OUTBOARD PANES IN INSULATING GLASS UNITS AND OTHER MULTIPLE GLAZED PANELS WHEN THE BOTTOM EDGE OF THE GLASS IS 25 FEET OR MORE ABOVE GRADE, A ROOF, WALKING SURFACES OR OTHER HORIZONTAL [WITHIN 45 DEGREES (0.79 RAD) OF HORIZONTAL] SURFACE ADJACENT TO THE GLASS EXTERIOR.

GUARDS AND RAILINGS

GLAZING IN GUARDS AND RAILINGS, INCLUDING STRUCTURAL BALUSTER PANELS AND NONSTRUCTURAL IN-FILL PANELS, REGARDLESS OF AREA OR HEIGHT ABOVE A WALKING SURFACE SHALL BE CONSIDERED A HAZARDOUS LOCATION.

ADJACENT STAIRS AND RAMPS

GLAZING WHERE THE BOTTOM EXPOSED EDGE OF THE GLAZING IS LESS THAN 36 INCHES ABOVE THE PLANE OF THE ADJACENT WALKING SURFACE OF STAIRWAYS, LANDINGS BETWEEN FLIGHTS OF STAIRS AND RAMPS SHALL BE CONSIDERED A HAZARDOUS LOCATION.

EXCEPTIONS:

1. WHEN A RAIL IS INSTALLED ON THE ACCESSIBLE SIDE(S) OF THE GLAZING 34 TO 38 INCHES ABOVE THE WALKING SURFACE. THE RAIL SHALL BE CAPABLE OF WITHSTANDING A HORIZONTAL LOAD OF 50 POUNDS PER LINEAR FOOT WITHOUT CONTACTING THE GLASS AND BE A MINIMUM OF 1½ INCHES IN CROSS SECTIONAL HEIGHT.
2. GLAZING 36 INCHES OR MORE MEASURED HORIZONTALLY FROM THE WALKING SURFACE.

ADJACENT TO THE BOTTOM STAIR LANDING

GLAZING ADJACENT TO THE LANDING AT THE BOTTOM OF A STAIRWAY WHERE THE GLAZING IS LESS THAN 36 INCHES ABOVE THE LANDING AND WITHIN 60 INCHES HORIZONTALLY OF THE BOTTOM TREAD SHALL BE CONSIDERED A HAZARDOUS LOCATION.

EXCEPTION: THE GLAZING IS PROTECTED BY A GUARD COMPLYING WITH SECTION R312 AND THE PLANE OF THE GLASS IS MORE THAN 18 INCHES FROM THE GUARDS.

