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SAMPLE GUIDE FOR RESIDENTIAL DECKS

THIS GENERIC GUIDE IS NOT ALL INCLUSIVE AND DOES NOT ADDRESS ALL CONDITIONS

** Call before you dig! ** 1-800-272-1000 New Jersey One Call/Utility Mark Out

DEFINITION: DECK - An exterior floor system supported on at least two (2) opposing sides by an adjoining structure and/or post, piers or independent supports. A deck may be attached to the structure (residence) or may be freestanding.

Required Inspections:
1. Footings - prior to placement of concrete.
2. Frame - prior to installation of decking.
3. Final

SECTION A: DESIGN INFORMATION AND DOCUMENT FILING

1. Secure a zoning approval from the zoning department

2. Provide a plot plan showing the proposed deck in relationship to the home.

3. Please submit two sets of scaled drawings and documents including a plan view, elevation, sections and details. All drawings should indicate owners name, owners address block and lot number. Homeowners may prepare plans for decks located at their primary residence. Homeowners who prepare plans must sign all pages of both copies in original ink as well as check box B and sign the application jacket inside. If the proposed deck is located at other than the homeowner's primary residence the plans must be prepared by a New Jersey licensed architect. Please note: CONTRACTORS CAN NOT PREPARE PLANS.

4. The codes used for this scope of work are N.J.A.C. 5:23 Chapter 6 and 2021 IRC N.J. edition and must be listed on the plan. For further information, you can use as a reference the American Forest and Paper Association Design for Code Acceptance 6.

5. The required floor plan view should show:
   (a) The dimensions of the deck, footing, girder, frame, guard and stair locations as well as the total square foot of the new deck.
   (b) You can present a separate foundation plan and a framing plan for clarity.
   (c) The elevation plan should show framing members and the footing detail as well as the elevation from the walking surface to grade measured at a horizontal distance of 36” away from the face of the walking surface.
   (d) Any new or existing window or doors that may be affected by the new deck.

6. Include on the application the cost of labor and material for the project. If a homeowner is building the project the normal or usual cost for labor and material shall be shown in the estimated cost.
per N.J.A.C. 5:232.15 (a) 4

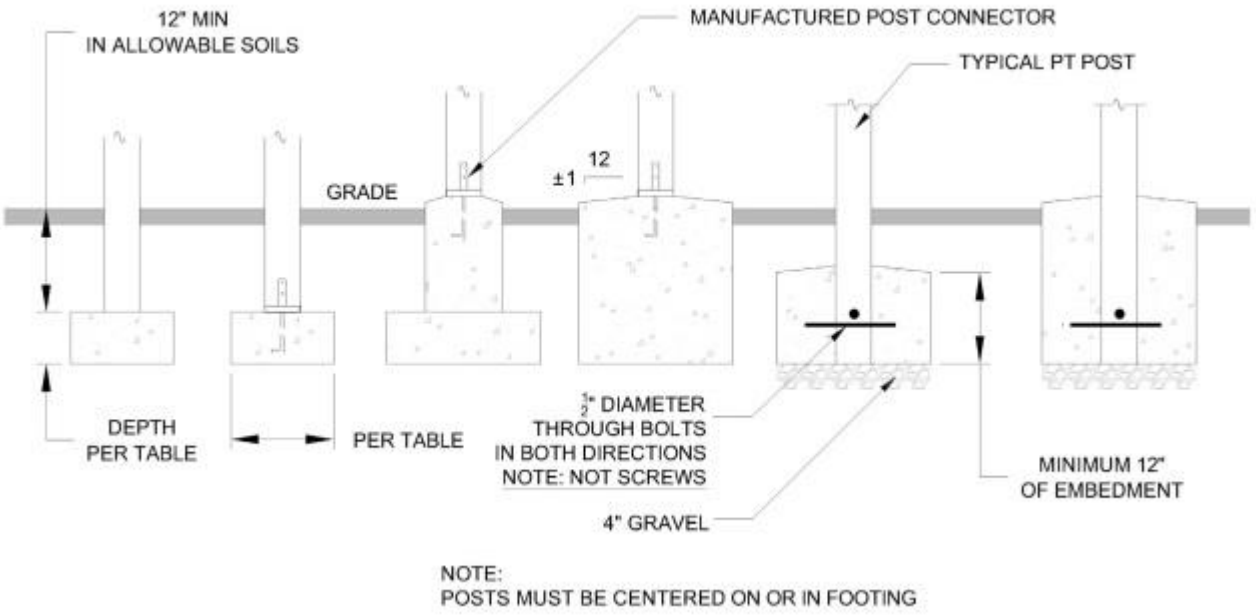
SECTION B: FOOTING AND FOUNDATION

1. **Pier footings**:
Minimum 36" below grade and must bear on undisturbed soil. Footing sizes are based on tributary loads, joist and girder spans and soil bearing capacity. Typical soil bearing capacity in this region is 3,000 lbs. per square foot, different sites may vary. The minimum footing size is 8" diameter. See chart below.

TABLE R507.3.1
MINIMUM FOOTING SIZE FOR DECKS

LIVE OR GROUND SNOW LOAD[b] (psf)	**TRIBUTARY AREA (ft^2)**	**LOAD-BEARING VALUE OF SOILS[a, c, d] (psf)**		
		≥ 3,000[e]		
		Side of a square footing (inches)	**Diameter of a round footing (inches)**	**Thickness (inches)[f]**
40	5	7	8	6
	20	7	8	6
	40	10	12	6
	60	12	14	6
	80	14	16	6
	100	15	17	6
	120	17	19	6
	140	18	21	6
	160	20	22	7

Dependent on all the design spans the footings may need to be increased beyond the minimum footing size. The minimum P.S.I. strength of vertical concrete exposed to weathering shall be 3,000 psi. & shall bear on undisturbed natural soils or engineered fill.



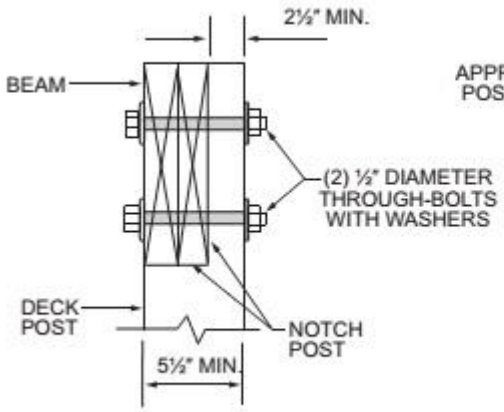
2. **Anchor bolts**:
Minimum ½" diameter anchor bolts with minimum 7" embedment in the center of footings. Positive attachment to post base with fully tightened nuts and washers. Other approved post bases with specified model numbers are acceptable.

SECTION C: MAIN FRAME

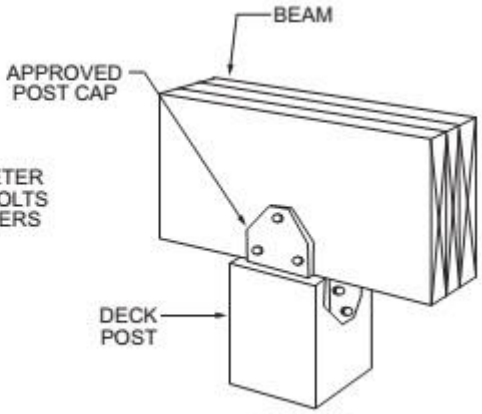
1. **Framing material**:
Shall be pressure treated or other approved naturally durable wood. Material in contact with earth or embedded in concrete must be approved as "In ground contact" check with the manufacturer for specifications. All framing members shall be placed with the camber side up. Framing connections shall comply with table R 602.3(1)

2. **Hardware and fasteners**:
Shall be corrosion resistant and compatible with material. All mechanical connections shall be made in accordance with the manufactures specifications.

3. **Post/Columns**:
Minimum 4" x 4" post shall bear on footings and be secured to girders with positive connections to prevent lateral displacement and uplift. 6" x 6" inch post can be notched for the full bearing of the beam with bolts for attachment. Beams CAN NOT be mounted to the sides of post. For single story decks the maximum height for a 4" x 4" or 4" x 6" post is 8 feet and 6" x 6" post maximum of 14 feet.

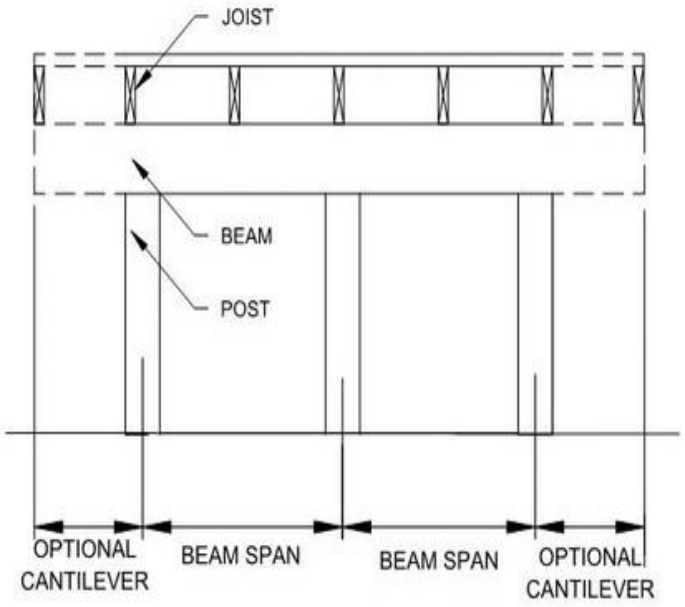


NOTCHED POST

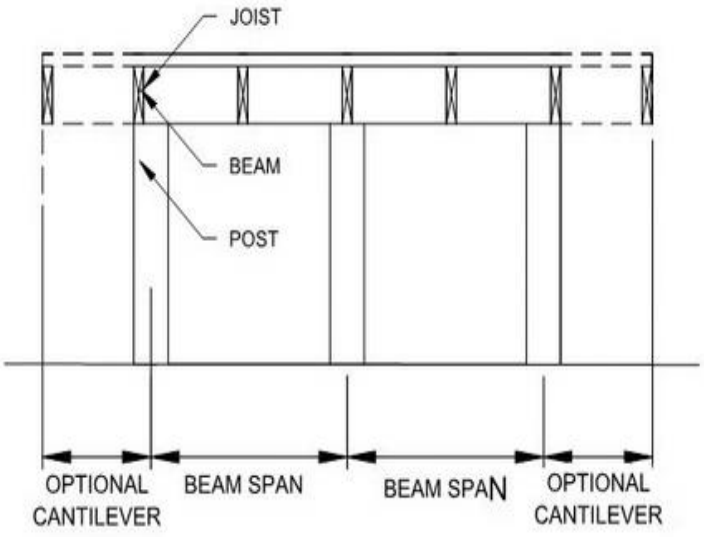


POST CAP

4. **Beams**:
Beams shall be positively bolted or nailed together with a minimum of (2) rows of 10d nails 16" O.C. along each edge. All laps in beams shall fully bear on post. Beam laps shall be staggered or connected by an approved engineering design. Ledgers or rim joist shall not support beams. All beams must have bearing the entire width of the member.



DROPPED BEAM



FLUSH BEAM

SPAN TABLES

Spans based on Pressure Treated Southern Yellow Pine #2
Live Load 40 LB - Dead load 10 LB L/360

The tables below are based on single level decks. For multi-stacked decks provide adjusted beam spans for lower deck. For longer joist spans and increased loading (i.e. hot tubs), spans to be designed.

TABLE R507.5(1)

MAXIMUM DECK BEAM SPAN—40 PSF LIVE LOAD[c]

BEAM SPECIES[d]	**BEAM SIZE[e]**	**EFFECTIVE DECK JOIST SPAN LENGTH[a, i, j] (feet)**						
		6	**8**	**10**	**12**	**14**	**16**	**18**
		MAXIMUM DECK BEAM SPAN LENGTH (feet-inches)[a, b, f]						
Southern pine	1 — 2 × 6	4-7	4-0	3-7	3-3	3-0	2-10	2-8
	1 — 2 × 8	5-11	5-1	4-7	4-2	3-10	3-7	3-5
	1 — 2 × 10	7-0	6-0	5-5	4-11	4-7	4-3	4-0
	1 — 2 × 12	8-3	7-1	6-4	5-10	5-5	5-0	4-9
	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	7-5	7-0
	3 — 2 × 6	8-6	7-5	6-8	6-1	5-8	5-3	4-11
	3 — 2 × 8	10-11	9-6	8-6	7-9	7-2	6-8	6-4
	3 — 2 × 10	13-0	11-2	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

e. Beam depth shall be equal to or greater than the depth of intersecting joist for a flush beam connection.
f. Beam cantilevers are limited to the adjacent beam's span divided by 4

Floor Joist:
Floor joist shall be secured to ledger with the correct load bearing capacity joist hanger with correct double shear nailing per manufacture. Joist shall be installed with camber up. All ends of joist shall have lateral restraint and must be secured to girders to prevent rotation and uplift.
f

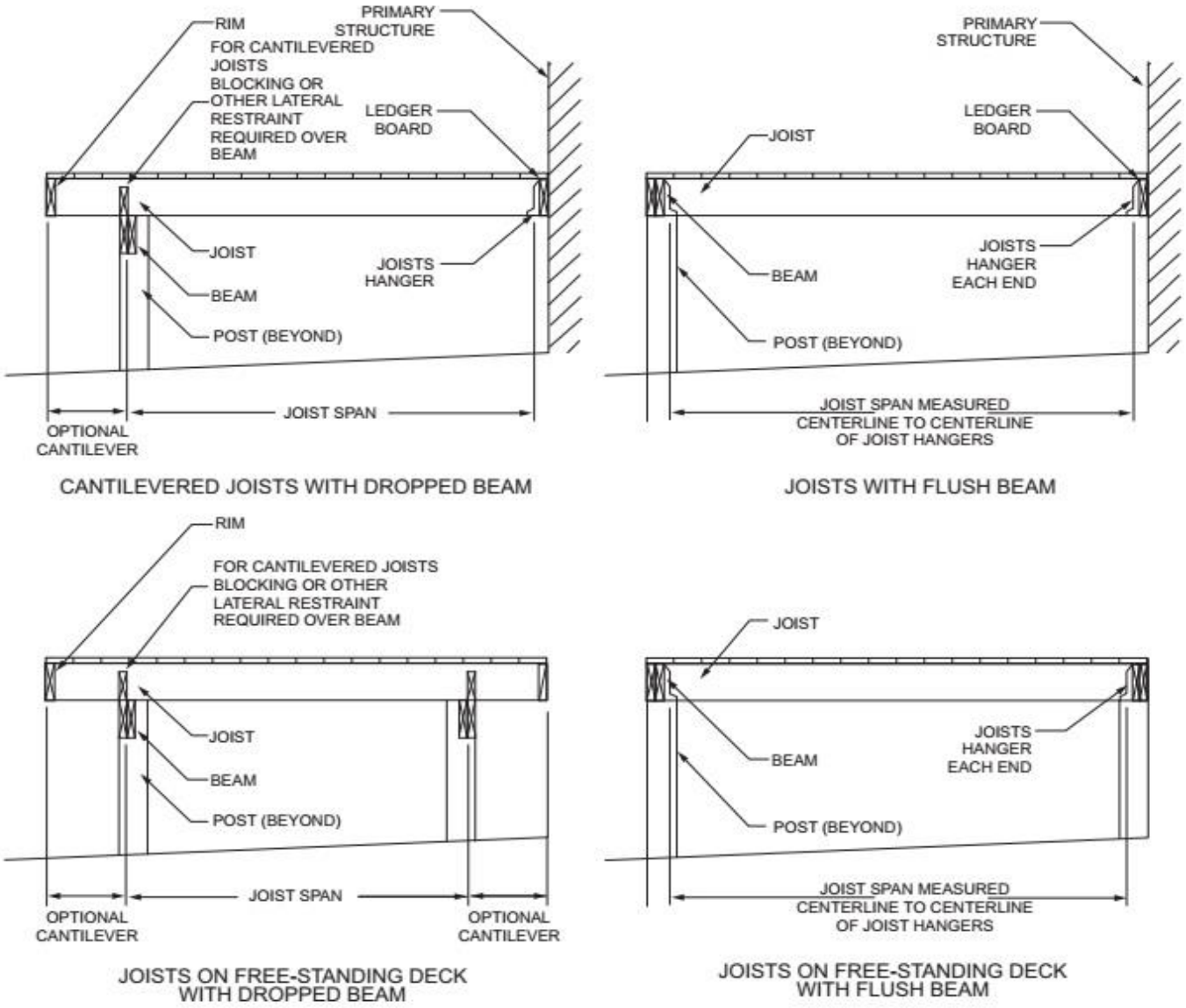


FIGURE R507.6

TYPICAL DECK JOIST SPANS
TABLE R507.6

MAXIMUM DECK JOIST SPANS

LOAD[a] (psf)	JOIST SPECIES[b]	JOIST SIZE	ALLOWABLE JOIST SPAN [b, c] (feet-inches)			MAXIMUM CANTILEVER[d,f] (feet-inches)							
			Joist spacing (inches)			Joist back span[g] (feet)							
			12	16	24	4	6	8	10	12	14	16	18
40 live load	Southern pine	2 × 6	9-11	9-0	7-7	1-0	1-6	1-5	NP	NP	NP	NP	NP
		2 × 8	13-1	11-10	9-8	1-0	1-6	2-0	2-6	2-3	NP	NP	NP
		2 × 10	16-2	14-0	11-5	1-0	1-6	2-0	2-6	3-0	3-4	3-4	NP
		2 × 12	18-0	16-6	13-6	1-0	1-6	2-0	2-6	3-0	3-6	4-0	4-1

NP=Not Permitted

Cantilevers: **SEE CHART ABOVE**
Typical cantilevers are 2'. However, longer length cantilevers are permissible. Provide design calculations for uplift, deflection, spans and spacing, back span ratios and required blocking. Attachment to the home's cantilever is not permitted without design calculations.

SECTION D: LEDGER BOARD AND ATTACHMENT

Ledger Board:
Framing member of equal size or greater than floor joist (minimum ledger shall be 2" x 8" positively secured to the house with minimum ½" diameter corrosion resistant lag screw or bolt of sufficient length to bolt firmly through the rim joist. All fasteners shall follow the tables below for spacing and edge distance.

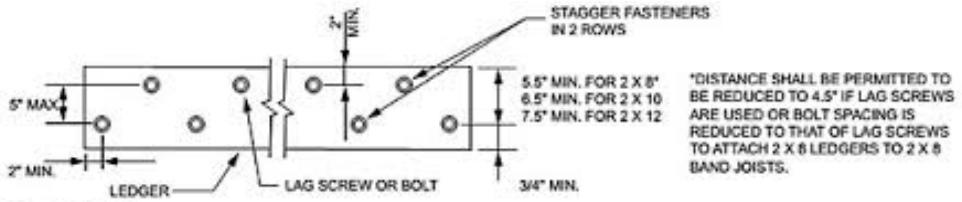
For homes with engineered floor systems, provide solid blocking with through bolting. For masonry walls, provide solid blocking with through bolting or manufacturer's specifications of fastening i.e. bolt/epoxy application. For alternate attachment to the tables, provide manufacturer's specifications for bolt spacing, sheer, withdrawal, pull through i.e. ledger locks etc.

TABLE R507.9.1.3(1)
DECK LEDGER CONNECTION TO BAND JOIST

LOAD[c] (psf)	JOIST SPAN[a] (feet)	ON-CENTER SPACING OF FASTENERS[b] (inches)		
		1/2-inch diameter lag screw with 1/2-inch maximum sheathing[d, e]	1/2-inch diameter bolt with 1/2-inch maximum sheathing[e]	1/2-inch diameter bolt with 1-inch maximum sheathing[f]
40 live load	6	30	36	36
	8	23	36	36
	10	18	34	29
	12	15	29	24
	14	13	24	21
	16	11	21	18
	18	10	19	16

MINIMUM END AND EDGE DISTANCE FOR LEDGERS

Ledgers	Top Edge	Bottom Edge	Ends
Staggered	2”	¾”	2”



For SI: 1 inch = 25.4 mm.

SECTION E: FLASHING

Flashing:
Provide continuous corrosion-resistant flashing listed for this use along the ledger in such a manner as to prevent the passage of moisture into the wall cavity of any untreated wood or wood siding. Self-adhered flashing membranes shall comply with AAMA711. Mechanically attached flexible flashing shall comply with AAMA712.

*Exception: Flashing is not required if against vinyl or metal siding. Shims shall be installed as to not

crush siding when bolts are tightened. At masonry walls provide water tightness at bolting penetrations.

SECTION F: SURFACE MATERIAL

Decking:
Specify the decking surface material to be used. Indicate the type of fasteners to be used. Indicate the installation orientation to the floor joist. Angle installations require closer O.C. joist spacing. Composite decking material has a full range of O.C. spacing, please provide the 1-page cut sheet showing the O.C. joist spacing for the material selected for the deck surface as well as the stair tread OC stringer spacing. Plastic composite deck boards must comply with ASTM D7032. All material must meet the standards for flame spread and smoke development.

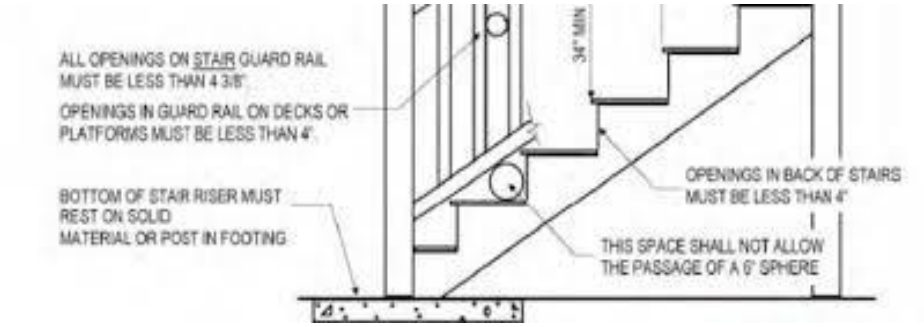
Material	Perpendicular to joist	Diagonal to joist
1 ¼" wood	16" on center	12" on center
2" thick wood	24" on center	16" on center
composites	By manufacturer	By manufacturer

SECTION G: GUARDS, HANDRAILS AND STAIRS

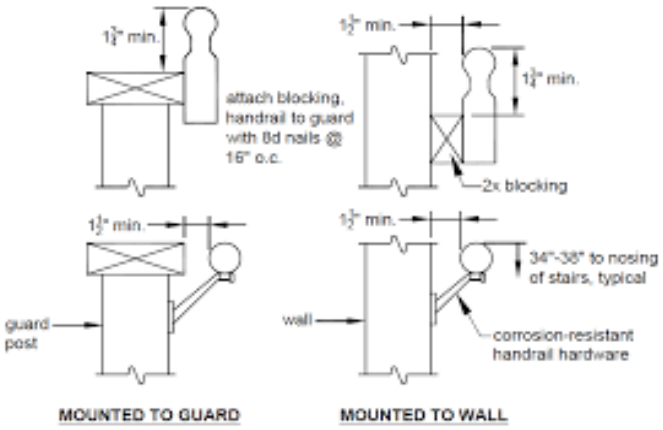
Guards:
All walking surfaces that are 30" or more above grade measured at 36" horizontally from the face edge of the walking surface shall have a guard 36" minimum in height, and have balusters or other construction such that a sphere of 4" cannot pass through any opening.

*Exception: Opening in required guards on the sloped sides of stairs shall not allow a sphere of 4 3/8" to pass through. All stairways with a vertical rise of 30" or more are required to have guards on open sides measuring 34" or more above the leading edge of the tread. The triangular openings formed by the riser, tread and bottom rail of a guard at the open side of a stairway are permitted to be of such size that a 6" sphere can not pass through. Guards shall be designed and constructed such for a concentrated load of 200lbs. applied at any point and in any direction along the top railing member. The infill area of a guard shall be designed and constructed for a horizontal concentrated load of 50lbs. applied on a 1 foot area in any point of the system, including intermittent rails or other elements serving this purpose

Stairways:
Minimum 36" clear width required. Stairway stringer framing to be positively connected to deck frame. Maximum rise is 8 ¼" and minimum tread depth is 9". When a tread depth is less than 11" a minimum ¾" and maximum 1¼" nosing shall be provided. The largest rise and tread shall not exceed the smallest rise and tread by 3/8". Open risers are permitted to a maximum of 4". Stairways with 4 or more rises are required to have at least 1 graspable handrail with closed/returned ends. Graspable handrails may project into clear opening a maximum of 4 ½". All stairways are required to have a landing the full width of the staircase and minimum 36" in the direction of travel. Landing shall be firm and level (concrete, pavers, slate, crushed compacted clean stone, etc.).



Handrails:
At least one graspable handrail shall be provided on any stairway with (4) four or more rises. Handrails shall be minimum 30” to maximum 38” measured vertically from the sloped plane of the adjacent tread. Handrails shall be continuous from a point above the top riser to the lowest riser. Ends shall be returned to a post or wall. Minimum space from handrail to wall surface is 1 ½”. Handrails shall be smooth and splinter free and have a minimum 1 ¼” to a maximum 2” circular cross section. Other handrail shapes that comply with section 2018 IRC 311.7.8.3 are permissible, please submit details. Please note not all composite rail tops meet the standards for handrails.



Windows:
Windows adjacent to newly created walking surfaces may be subject to the requirements of safety glazing. Please consider this in your planning.

Information based on the 2021 International Residential Code N.J. edition