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DECK/PORCH/STAIR/GUARDRAIL
For One and Two Family Residences & Townhomes

Requirements for Permit Submittal based on the 2019 California Residential Code:

Before approval and issuance of a building permit for deck, porch, balcony, stair, handrails or guardrails applicant shall submit three sets of plans, which are drawn to scale (or at the very minimum fully dimensioned), readable, legible, and include the following information:

Include a statement about obtaining HOA approval prior to submitting for permit. This will not apply to all projects so an "if applicable" should be incorporated too.

(Plan information listed in the items below could be combined if clarity is maintained)

PLAN SUBMITTAL REQUIREMENTS

1. **Plans** shall include the following information: (a) project address; (b) owner's name, address, phone number; (c) name, address and phone number of the person preparing the plans, (d) scope of work statement; (e) sheet index indicating each sheet title and number, (f) legend for symbols, abbreviations and notations used in the drawings.
2. **Site Plan** showing all structures on the property, including location of existing and proposed deck(s)/stair(s)/porch(s) with distances to property lines, etc.

   Note: Decks/stairs/porches/etc. are considered projecting elements and are subject to the following requirements based on the proximity to property lines:

   A. Projecting elements are not allowed less than 2 feet from property lines. (CRC Table R302.1*(1)*).

   B. Projecting elements located 2 or more feet to 5 feet from property lines must be protected on the underside by one-hour fire-resistance rated construction. (CRC Table R302.1*(1)*).
3. **Framing/Foundation Plan** showing the following:

   A. Size, type, spacing and span of deck joists and supporting beams
   Note: Deck framing (e.g., girders, joists, beams, decking, post, poles and columns etc.) shall be of approved naturally durable or pressure-preservative-treated wood. (CRC Sec. R317.1.3, R202).

   B. Size and location of piers and footings.
4. **Construction Sections/Details** showing the following:

   A. Framing details, showing typical framing, connections, ledger attachment, connection hardware for beams to posts and to footings, etc. See *CRC PRESCRIPTIVE SUMMARY* below included for guidance.

   B. Pier/Footing detail(s) sized to accommodate tributary point loads and limit the soil bearing pressure to 1500 pounds per sq. ft. as set forth in CRC Section R403.1.1 and Table R401.4.1.
   Note: Piers/footings shall extend a minimum of 12 inches below grade(CRC Sec. R403.1.4) , shall be a minimum of 12" in any plan dimension, and shall have #4 bar reinforcing. (CRC Sec. R403.1.3.1)

   C. Stair section and/or detail(s) specifying: (a) maximum riser height; (b) minimum tread depth; (c) minimum width of 36 inches; (d) minimum headroom of 6'-8"; (e) framing (stringer) size, bracing, connections, footing. See *CRC PRESCRIPTIVE SUMMARY* below included for guidance.

D. Handrail/Guardrail detailing to enable verifying compliance with the requirements of CRC Sections R311.7.8 and R312. See *CRC PRESCRIPTIVE SUMMARY* below included for guidance.

E. Landing details. See *CRC PRESCRIPTIVE SUMMARY* below included for guidance.

CRC PRESCRIPTIVE SUMMARY REQUIREMENTS (For Reference Purposes)

5. **Deck Framing Requirements:**

A. Deck framing shall be positively anchored to the primary structure for both vertical and lateral loads. Such attachment shall not be accomplished by the use of toenails or nails subject to withdrawal. Where the positive connection to the primary structure cannot be provided, decks shall be self-supporting. (CRC Sec.R311.5.1 and R507.1).

B. Ledger shall be attached as set forth in CRC Table R507.2 with 1/2-inch minimum lag screws or bolts with washers, all hot-dip galvanized or stainless steel. Lag screws or bolts shall be placed 2" in from bottom and top of deck ledger and shall be staggered. (CRC Table R507.2.1 footnote a).

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

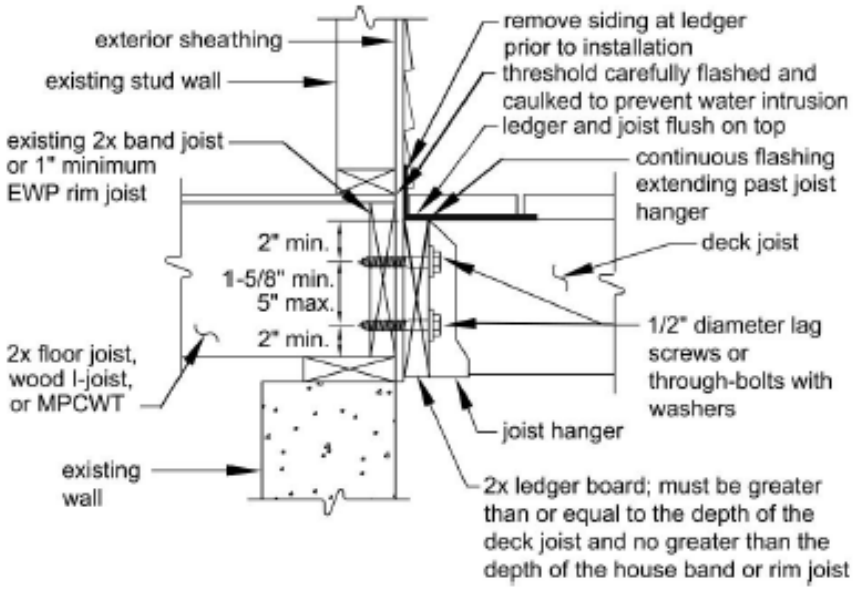
a. Ledgers shall be flashed in accordance with Section R703.4 to prevent water from contacting the house band joist.

b. Snow load shall not be assumed to act concurrently with live load.

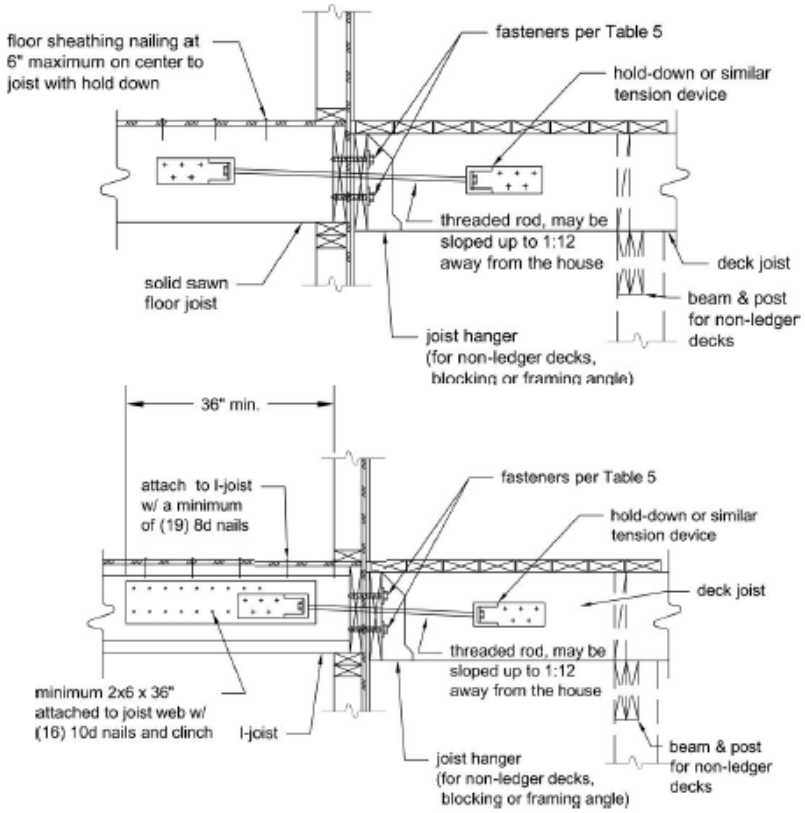
c. The tip of the lag screw shall fully extend beyond the inside face of the band joist.

d. Sheathing shall be wood structural panel or solid sawn lumber.

e. 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.



C. Deck framing shall have positive tension tie connections with floor framing. Hold-down tension devices shall be installed in not less than 2 locations per deck, and each device shall have an allowable design capacity of not less than 1500 pounds. (CRC Sec. R507.2.4, Figure R507.2.3(2)).



D. Deck ledger shall be flashed to prevent water from contacting the house band/rim joist. (CRC Table R507.2 *footnote a*, Figure R507.2.3(1)).

E. Deck ledger shall be minimum 2x8 pressure treated No 2 (or better) grade lumber. (CRC R507.2.1).

F. The maximum distance between the face of the ledger and the face of the band joist shall not exceed 1 inch. (CRC Table R507.2).

G. Ledger connections not conforming to the above requirements shall be designed in accordance with accepted engineering practice.

H. Deck framing (e.g., girders, joists, beams, decking, post, poles and columns etc.) shall be of approved naturally durable or pressure-preservative-treated wood. (CRC Sec. R317.1.3, R202).

6. **Stairway Requirements:**

A. Stairways shall not be less than 36 inches in clear width above the handrails. Handrail projections are limited to not more than 4.5 inches on either side of the stairway. (CRC Sec. R311.7.1).

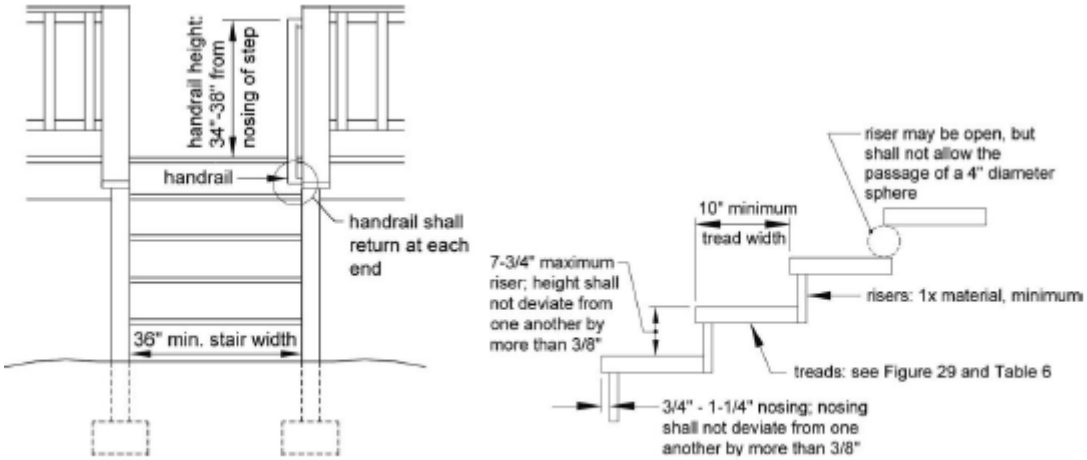
B. Headroom shall not be less than 6 feet 8 inches measured vertically from the sloped line adjoining the tread nosing. (CRC R311.7.2).

C. Riser height shall not exceed 7¾ inches. The greatest riser height within any flight of stairs shall not exceed the smallest by more than 3/8". (CRC Sec. R311.7.5.1).

D. Tread depth (measured between the nosing) shall be at least 10 inches. The largest tread depth within any flight of stairs shall not exceed the smallest by more than 3/8". (CRC Sec. R311.7.5.2).

E. Nosing not less than 0.75" but not more than 1.25" shall be provided on stairways with solid risers if the tread depth is less than 11". The radius of curvature at the nosing shall be no greater than 9/16 inch. (CRC Sec. R311.7.5.3).

F. Open risers are permitted, provided that the opening between treads does not permit the passage of a 4-inch diameter sphere. The opening between adjacent treads is not limited on stairs with a total rise of 30 inches or less. (CRC Sec.R311.7.5.1).



7. **Handrail Requirements:**

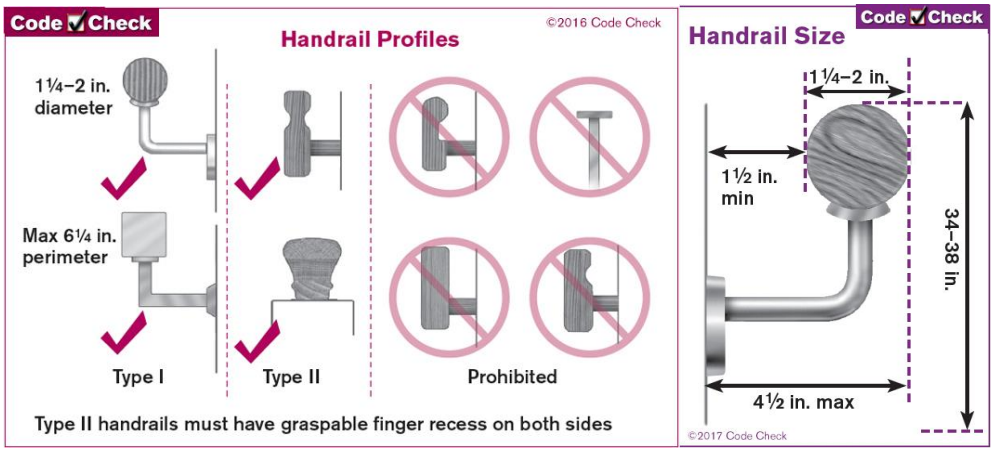
A. Handrails shall be provided on at least one side of each continuous flight of stair with four or more risers. (CRC Sec.R311.7.8).

B. The top of handrails shall be 34 to 38 inches above the tread nosing. (CRC Sec.R311.7.8.1).

C. Handrails shall be graspable and shall be of one of the following types:

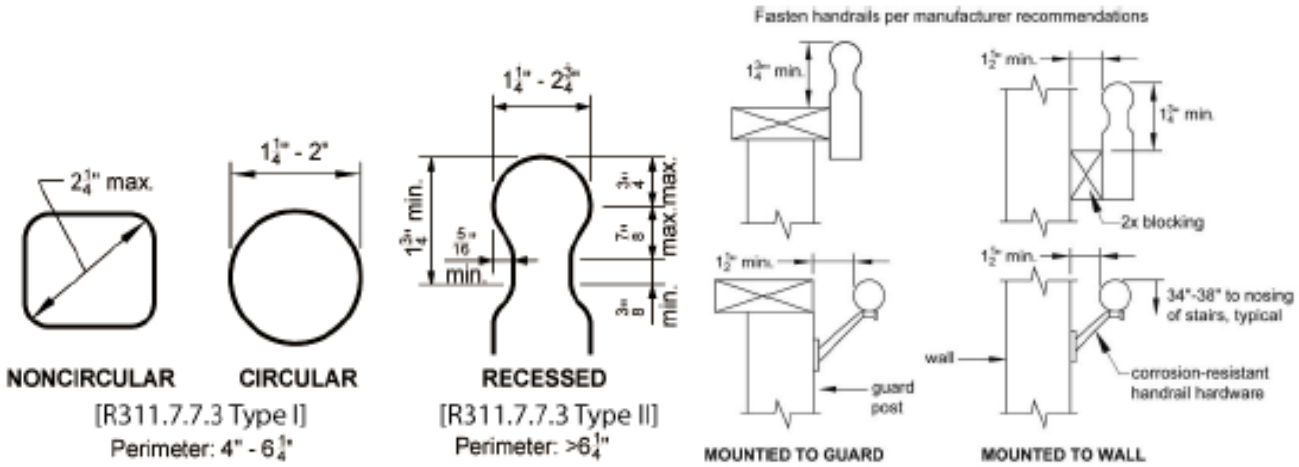
7.C.1.Type I. Handrails with a circular cross-section of not less than 1-1/4" nor greater that 2" in diameter. If the handrail is not circular, it shall have a perimeter dimension of at least 4 inches and not greater than 6¼ inches with a maximum cross section dimension of 2¼ inches. Edges shall have a minimum radius of 0.01 inch. (CRC Sec.R311.7.8.3).

7.C.2.Type II. Handrails with a perimeter greater than 6¼ inches shall have a graspable finger recess area on both sides of the profile. The finger recess shall begin within a distance of ¾ inch measured vertically from the tallest portion of the profile and achieve a depth of at least 5/16 inch withing7/8/ inches below the widest portion of the profile. This required depth shall continue for at least 3/8 inch to a level that is not less than 1-3/4 inches below the tallest portion of the profile. The minimum width of the handrail above the recess shall be 1-1/4 inches to a maximum of 2-3/4 inches. Edges shall have a minimum radius of 0.01 inch. (CRC R311.7.8.3).



D.

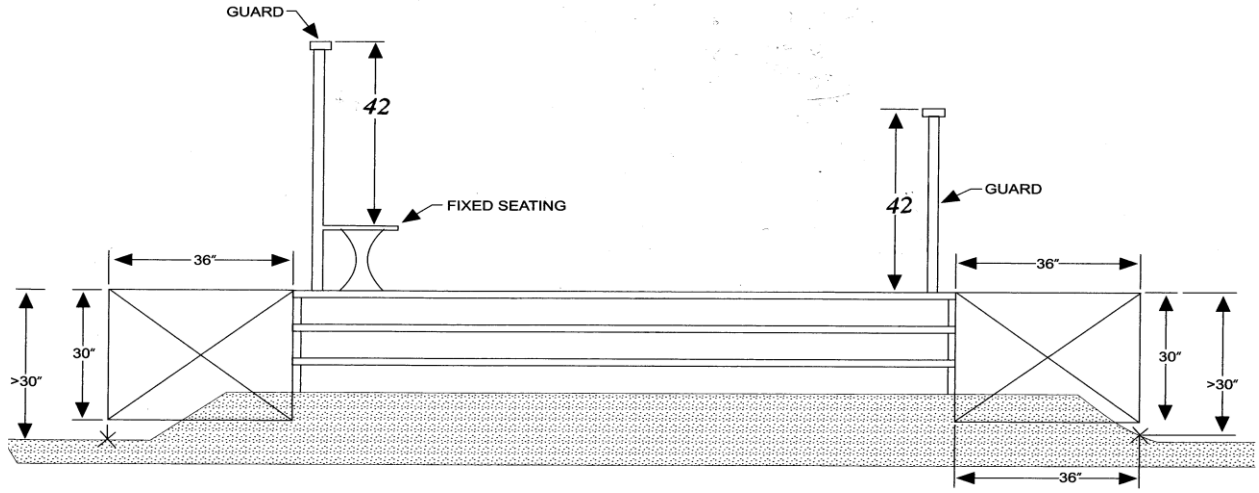
D. Handrails ends shall be returned or shall terminate in newel posts or safety terminals. Handrails adjacent to a wall shall have a space of not less than 1-1/2 inch between the wall and the handrails. (CRC Sec. R311.7.8.2).



8. **Guard Requirements:**

A. Guards shall be located along open sides of decks, porches, landings, stairs that are located more than 30 inches measured vertically to the floor or grade below at any point within 36 inches horizontally to the edge of the open side. (CRC Sec. R312.1.1).

B. Guards shall be not less than 42 inches high measured vertically above the walking surface, adjacent fixed seating or the line connecting the leading edges of the treads. (CRC Sec. R312.1.2).



Exceptions:

8.B.1. Guards on the open sides of stairs shall have a height not less than 34 inches measured vertically from a line connecting the leading edges of the treads.

8.B.2. Where the top of the guard also serves as a handrail on the open sides of stairs, the top of the guard shall not be less than 34 inches and not more than 38 inches measured vertically from a line connecting the leading edges of the treads.

C. Guards shall not have openings from the walking surface to the required guard height which allow passage of a sphere 4 inches in diameter. (CRC Sec. R312.1.3).

Exceptions:

8.C.1. The triangular openings at the open side of a stair, formed by the riser, tread and bottom rail of a guard, shall not allow passage of a sphere 6 inches in diameter.

8.C.2. Guards on the open sides of stairs shall not have openings which allow passage of a sphere 4-3/8 inches in diameter.

D. Guardrails and handrails shall be capable to withstand a single concentrated load of 200 lbs applied in any direction at any point along the top of the rail. (CRC Table R301.5 footnote d).

E. Guardrail in-fill components, balusters and panel fillers shall be capable to withstand a horizontally applied normal load of 50 lbs on an area equal to 1 sq. ft. This load need not be assumed to act concurrently with any other live load requirement. (CRC Table R301.5 footnotes f and h).

9. **Landing Requirements:**

A. Exterior doors onto decks/porches shall be provided with landings. The width of each landing shall be not less than the door served. Every landing shall have a minimum dimension of 36 inches measured in the direction of travel. Exterior landings are permitted to have a slope not exceeding ¼ unit vertical in 12 units horizontal (2%). (CRC Sec. R311.3).

B. Exterior landings at the required egress door shall not be more than 1½ inches lower than the top of the threshold for an out-swinging door and not more than 7¾ inches below the top of the threshold for an in-swinging door. (CRC Sec. R311.3.1).

C. Doors *other* than the required egress door shall be provided with landings not more than 7¾ inches below the top of the threshold. (CRC Sec. R311.3.2).
Exception: A landing is not required where a stairway of two or fewer risers is located on the exterior side of the door, provided the door does not swing over the stairway.

D. Exterior stairways shall be provided with an artificial light source located in the immediate vicinity of the top landing of the stairway. Lighting shall be controlled from inside the dwelling unit, unless the lighting is continuously illuminated or automatically controlled. (CRC Sec. R311.7.9, R303.7).

10. **Smoke Alarms:** When a deck, porch or balcony is constructed and a permit is required, battery operated smoke detectors shall be installed: (a) in each sleeping room, (b) outside each separate sleeping area in the immediate vicinity of the bedrooms, (c) on each story of the dwelling, including basements and habitable attics but not including crawl spaces and uninhabitable attics. (CRC Sec. R314).

11. **Carbon Monoxide Alarms**: When a permit is required for alterations, repairs or additions and the construction cost exceeds $1,000, existing dwellings that have attached garages or fuel burning appliances shall be provided with a battery operated or plug-in with battery back-up carbon monoxide alarm in the following locations: (a) outside of the dwelling unit's sleeping area in the immediate vicinity of the bedroom(s); (b) on every level of a dwelling unit including basements. (CRC Sec. R315).