Fairfax County, Virginia

Manufactured Homes Typical Deck Details

Based on the 2021 Virginia Residential Code

The design details in this document apply to single-level decks for manufactured homes only. Construction cannot deviate from the details herein unless prior approval is obtained by the county. A copy of this document must be on the job site and available during each required inspection.

Fairfax County, Virginia

Typical Deck Details

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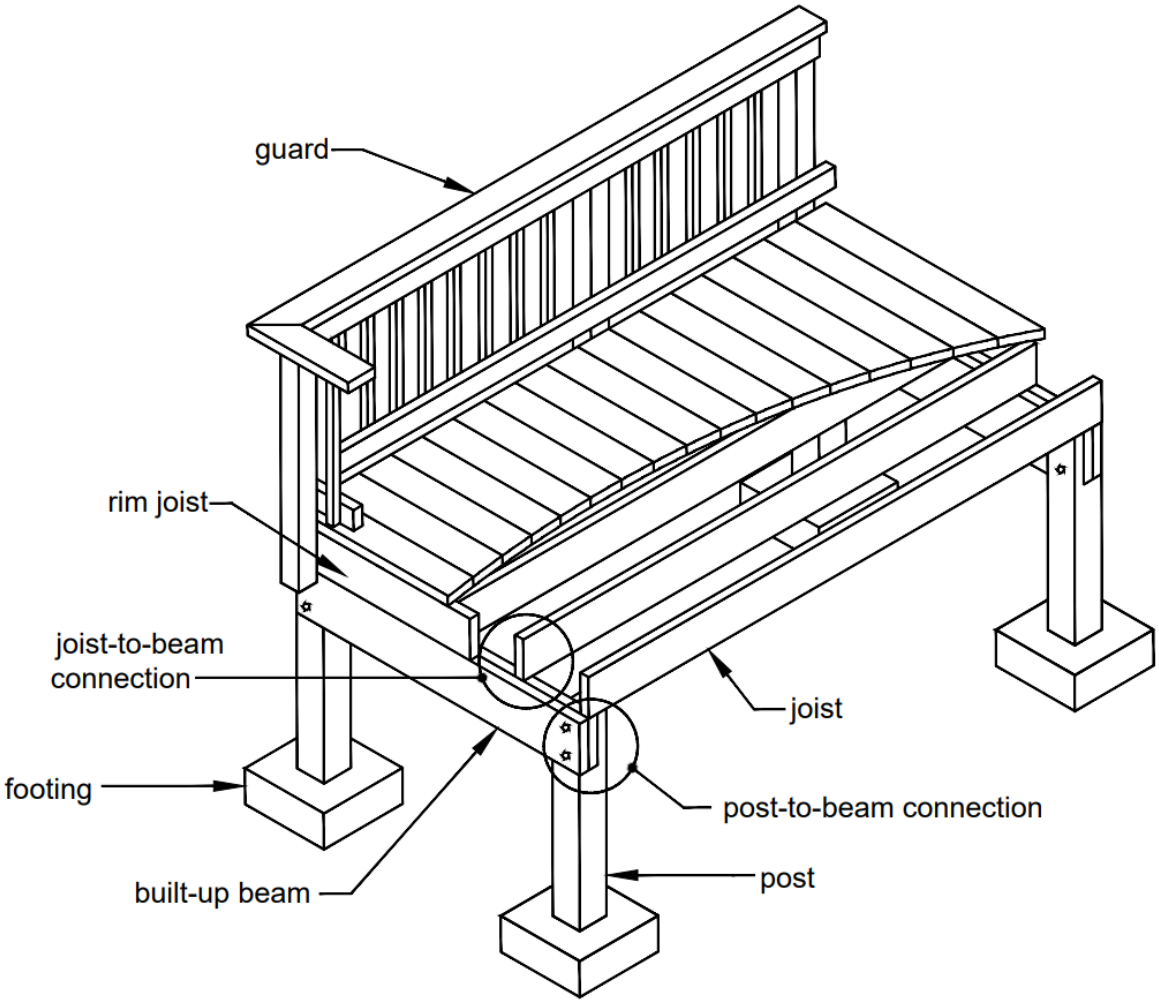

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1 ▪ General Notes

The Manufactured Homes Typical Deck Details are provided to ensure design and construction of decks in Fairfax County is consistent and code compliant. Prior to designing your deck, read this publication thoroughly and pay close attention to each applicable detail. Please note that this publication is only applicable for decks that have a maximum total width (the dimension perpendicular to the beams) of ten feet.

If you have questions, please contact the county at **703-222-0801, TTY 711** or via email at *LDSbuildinginspections@fairfaxcounty.gov*. For information regarding permit application, zoning setbacks and inspection requirements go to *fairfaxcounty.gov* and search for "decks."

Fairfax County is committed to a policy of nondiscrimination and will provide this document in alternative formats and languages upon request. Please contact the county at **703-222-0801, TTY 711** or *LDSbuildingpermits@fairfaxcounty.gov*. Allow seven working days for preparation of material.

DESIGN CONSIDERATIONS

1. These details are based on the prescriptive requirements of the 2021 Virginia Residential Code, industry best-practices and applicable referenced standards such as the National Design Specification for Wood Construction.
2. Framing members in these details are designed for a 40 PSF live load, 10 PSF dead load, normal loading duration, wet service conditions and deflections of $\ell/360$ for main spans and $\ell/180$ for overhangs with a 220-pound point load.
3. The use of these details to design and construct multi-level decks that share posts and footings is prohibited.
4. Deviation from these details requires approval by county staff prior to construction.
5. Decks constructed in accordance with these details are not approved for privacy screens, planters, built-in seating, surface mounted guardrail posts or hot tubs.
6. Decks must be designed to ensure rain and melting ice and snow flow away from the existing house.

MATERIAL SPECIFICATIONS

1. Lumber shall be preservative-treated, southern pine, grade #2.
2. Lumber in contact with the ground shall be rated as "ground-contact." Lumber that is underground or in direct contact with the earth shall be rated UC4A. Not all treated lumber is rated for ground contact.
3. Concrete in footings shall have a minimum compressive strength of 3,000 PSI.
4. Nails shall be threaded, ring-shanked or annular grooved. A ⅛-inch pilot hole shall be used at toe-nailing locations.
5. Carriage-bolts may be substituted where through-bolts are specified provided torque washers are installed at the bolt head.
6. Fasteners shall be hot-dipped galvanized, stainless steel or approved for use with preservative-treated lumber.
7. Hardware and mechanical connectors, e.g., joist hangers or post anchors, shall be stainless steel or

galvanized with 1.85 ounces of zinc per square foot (G-185 coating). Look for product lines such as “Zmax,” “Triple Zinc” or “Gold Coat.”

8. The use of other materials and products, other than those permitted herein, shall be approved by the county prior to installation.

2 ▪ Deck Surface

DECKING

- Decking shall be 2x4, 2x6, or 5/4 boards and placed perpendicularly to the joists.
- Wood decking shall be attached per FIGURE **1**. If installed wet, place decking with no gap so after drying a ⅛-inch gap is created.
- Each decking member shall bear on a minimum of three joists or blocking between joists.

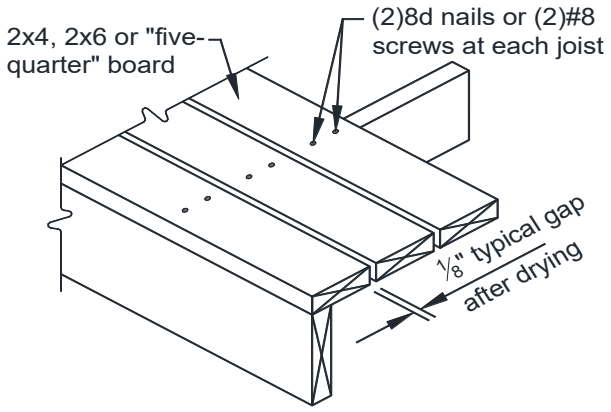


FIGURE 1: TYPICAL DECKING

SAFETY GLAZING

To reduce injury due to an accidental impact, safety glazing in window glass is required when the existing house wall encloses any portion of the deck surface or acts as a barrier to stairs, landings, and areas at the top and bottom of the stairs.

Windows adjacent to the deck surface. As shown in FIGURE , single panes of glass meeting all the requirements listed below must be safety glazed.

- Glass area is greater than 9 square feet,
- The bottom edge of the pane is less than 18 inches above the walking surface of the deck, and
- The top edge of the pane is greater than 36 inches above the walking surface of the deck.

In the absence of safety glazing, a horizontal rail across the window must be installed. The rail must meet the requirements of a stair handrail per Page 13.

Windows adjacent stairways and landings. Single panes, partially or wholly located in the hatched area shown in FIGURE , must be safety glazed. In the absence of safety glazing, a stair guard per Page 13 or handrail per Page 13, must be constructed to separate the window from the stairway.

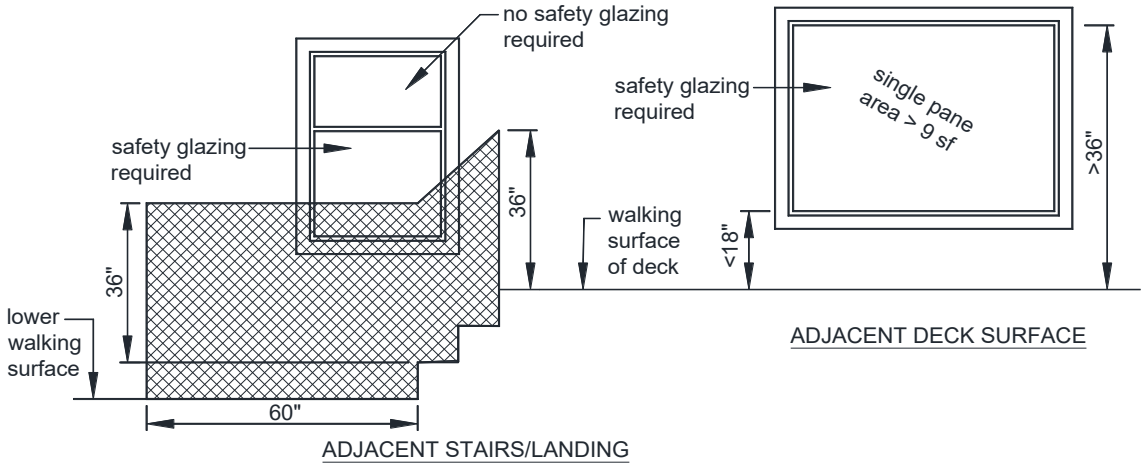


FIGURE 2: SAFETY GLAZING REQUIREMENTS

ELECTRICAL

Receptacles. Decks shall have a minimum of one electrical receptacle along the perimeter of the deck and within 6.5 feet of the floor.

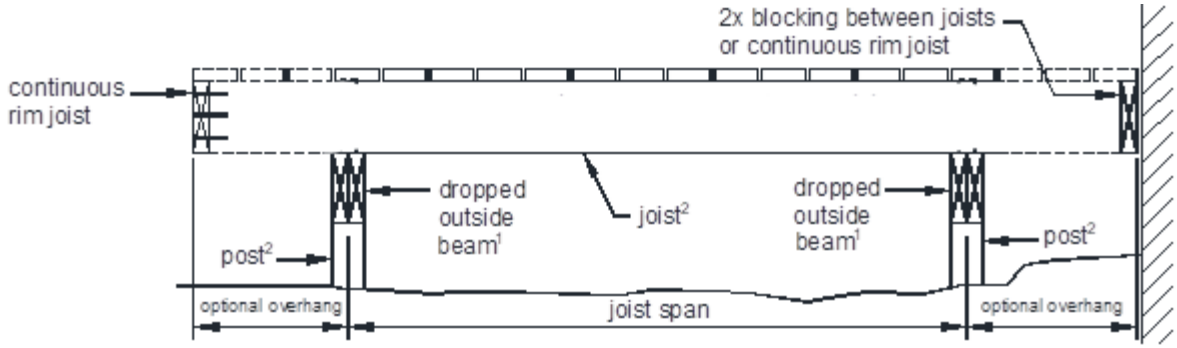
Stair lighting. Each stairway section shall have a light source that illuminates all stairs and landings. Lights shall be operated from interior switches, motion detectors or timed switches. Lighting shall be automatically shut off when daylight is present and satisfies the lightning needs. Low voltage lighting at each stair tread is permissible.

3 ▪ Joists

- Joists are repetitively placed framing members spaced at 16 inches on center which are supported at each end by a beam.
- Joists on a free-standing deck do not connect to the house; instead bearing is provided by an additional beam located at or near the house wall as shown in FIGURE .

JOIST SIZE

- Joists shall be 2x8 members with a maximum joist span length of 10’
- Joist span length is measured from the centerlines of the supporting beams at each end.
- Joists are permitted to overhang past a dropped beam a maximum of 2’. **Note: the overhang dimension shall never exceed one-fourth of the actual joist span.**
- Attach a continuous rim joist or blocking at the joist ends as shown in FIGURE 3. Attach a rim joist to the end of each joist with (3)10d nails or (3) #10 by 3-inch wood screws.



[1] Flush beams are permitted with freestanding decks when joists do not overhang.
[2] Align joists to be located at post locations in order to accommodate lateral bracing per **Error! Reference source not found.**.

FIGURE 3: JOISTS WITH FREESTANDING DECKS

JOIST HANGERS

- Joist hanger depth, **d**, as shown in FIGURE 4, shall be greater than or equal to 60 percent of the joist depth.
- The manufactured width of the joist hanger shall accommodate the number of plies being carried.
- Do not bend hanger flanges to accommodate field conditions.
- Joist hangers shall be fastened to the flush beam using its manufacturer's recommended screws. All other fasteners are permitted to be nails.
- Use joist hangers with inside flanges when clearances to the edge of the beam dictate.
- **Clip angles or brackets used to support framing members in lieu of joist hangers are prohibited**.

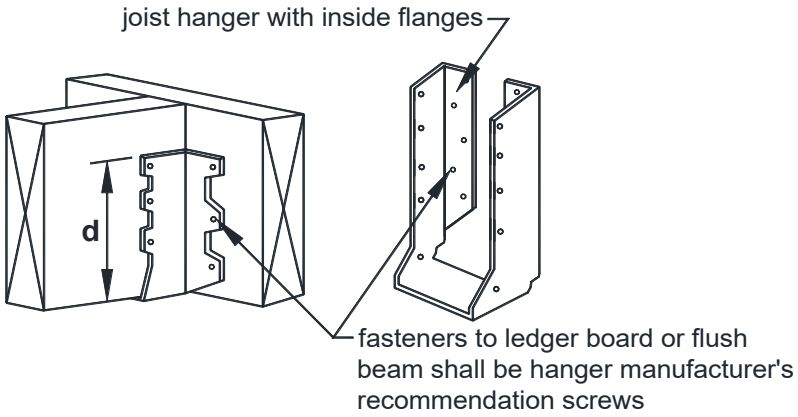


FIGURE 4: JOIST HANGERS

JOIST-TO-BEAM CONNECTION

- Each joist shall be attached to the beam in accordance with FIGURE 5.
- Mechanical connectors or hurricane clips shall have a minimum capacity of 100 pounds in both uplift and lateral directions. Installation shall be per manufacturer's instructions.
- As shown in FIGURE 5, multi-span joists are permitted to span continuously over a dropped interior beam with one mechanical connector or overlap with a mechanical connector at each joist.

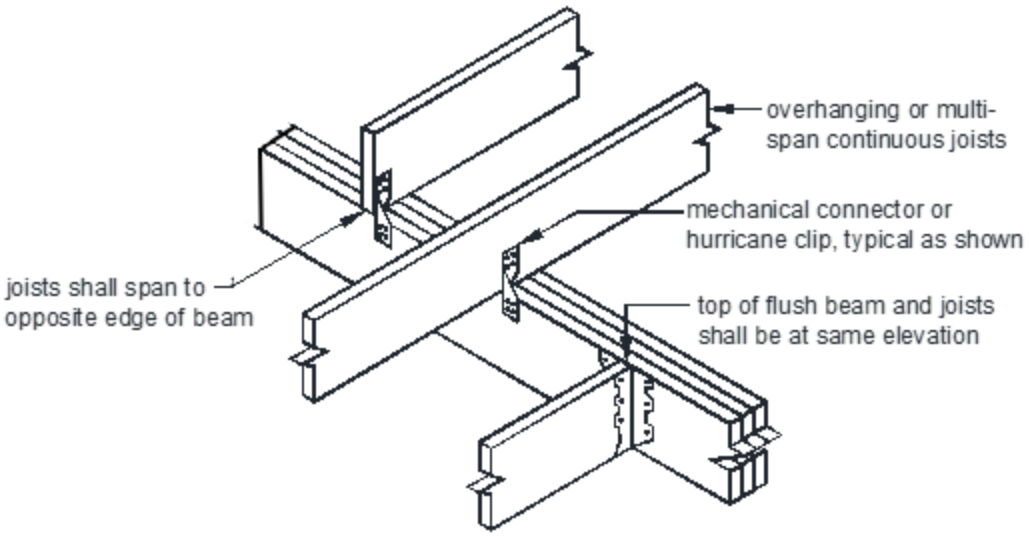


FIGURE 5: JOIST-TO-BEAM CONNECTION

4 ▪ Beams

- Beams are assembled, multi-ply framing members which span between supporting posts.
- Beams have joists, with or without an overhang, bearing from one side.
- Dropped beams have joists bearing above; flush beams have joists with hangers bearing on their sides; see FIGURE 6.

BEAM SIZE

- Beam size shall be two ply 2x10 member that spans no more than 8’ between the centerline of support posts.
- Beams may overhang past the center of the post up to one-fourth of the actual beam span.

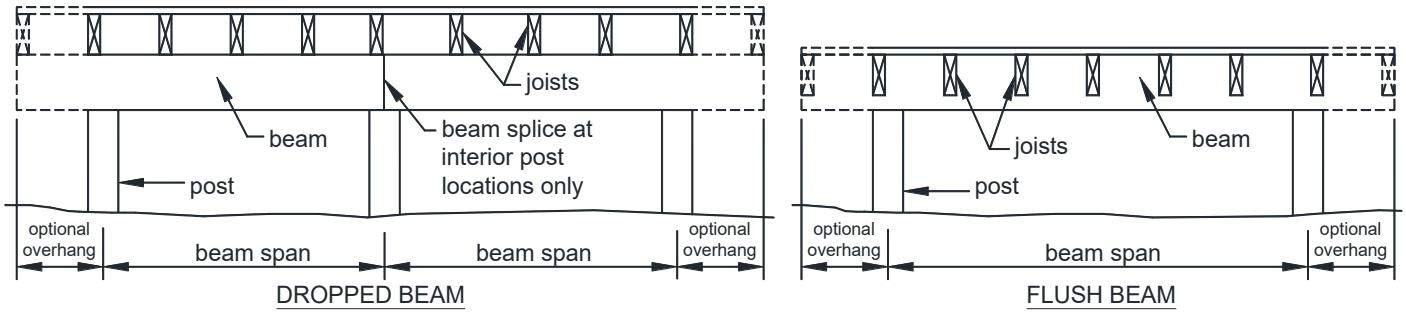


FIGURE 6: BEAM TYPES

BEAM ASSEMBLY

- The plies of the beam shall be fastened in accordance with FIGURE.
- The distance from the centerline of the fastener to the top or bottom edge of the beam shall be ½-inch minimum.
- The distance from the centerline of the fastener to the ends of the beam shall be 1-inch minimum.
- Beam plies are permitted to have splices. However, splices shall be located at inside post connections as shown in FIGURE.

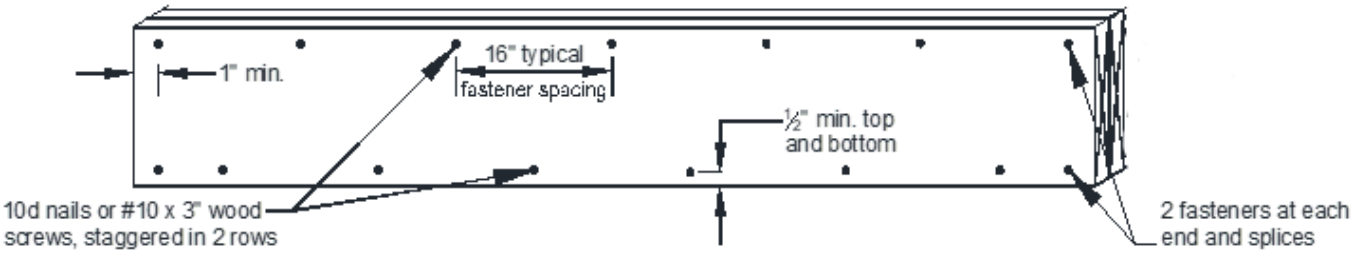


FIGURE 7: BEAM PLY FASTENING

5 ▪ Footings & Posts

FOOTING SIZE

- Footings size shall be 16” round and 6” thick.
- Footings shall bear on solid ground 24 inches below grade; footings shall be deeper if solid ground is not found. Bearing conditions must be verified by county inspectors prior to placement of concrete.

When the edge of a deck footing is closer than 5 feet to an existing exterior house wall, the footing must bear at the same elevation as the existing house footings as shown in

- FIGURE.
- Do not construct footings over utility lines or service pipe. Call Miss Utility at 811, TTY 711 before you dig.

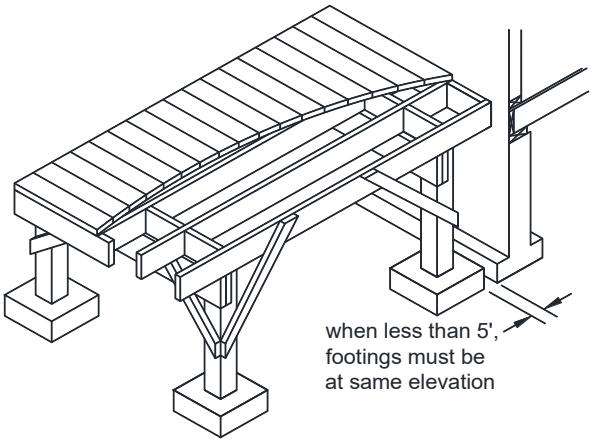
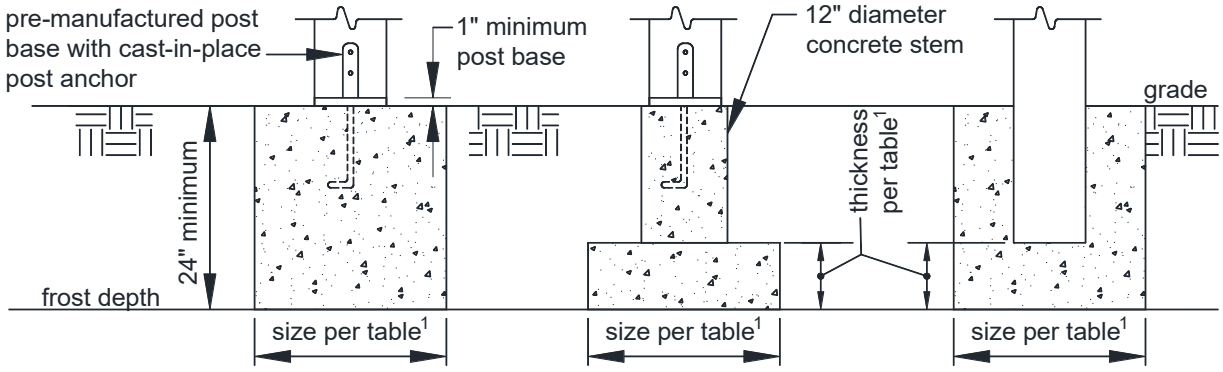


FIGURE 8: FOOTINGS ADJACENT EXISTING HOUSE

POST-TO-FOOTING CONNECTION

- Post attachment requirements shall be in accordance with FIGURE 9.
- Post anchors shall have a 1-inch minimum base.
- Posts shall be centered on the footing.



1 See **Error! Reference source not found.** for footing dimensions.

FIGURE 9: FOOTINGS

POST SIZE & MAXIMUM HEIGHT

- Post size shall be 6x6 with a maximum height of 2.5 feet.
- Post height is measured from the top of the grade to the underside of the beam.
- The cut ends of posts shall be field treated with a wood preservative containing copper naphthenate which can be found in the paint department of most hardware or home center stores.

BEAM-TO-POST CONNECTION

- Beams shall be attached to 6x6 posts using the method shown in FIGURE 2.
- 4x4 posts are prohibited from supporting three-ply beams.
- Beams shall not be attached to the sides of an unnotched post as shown in FIGURE 11.

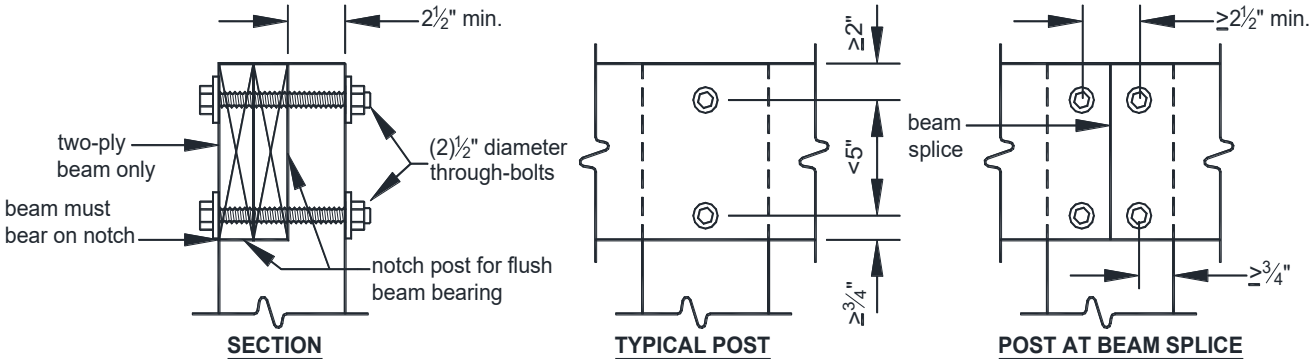


FIGURE 2: NOTCHED 6x6 POST-TO-BEAM CONNECTION

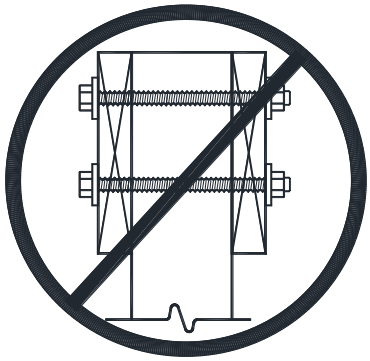


FIGURE 11: PROHIBITED CONNECTION

GUARD CONSTRUCTION

A guard is required when a deck is greater than 30 inches above grade at a point 36 inches from the edge of the deck, as shown in FIGURE 12. Guards shall be constructed in accordance with the requirements herein; deviations are prohibited. Guards which are not required, but are nevertheless provided, must also comply with these requirements.

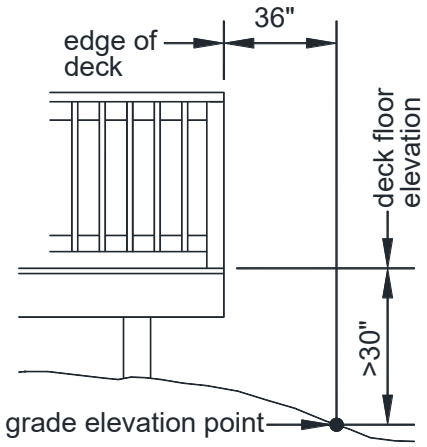


FIGURE 12: WHEN A GUARD IS REQUIRED

Openings. Guards shall be constructed to restrict the passage of a 4-inch diameter sphere through any opening. Wet lumber shall be spaced such that when shrinkage occurs, a compliant opening is maintained.

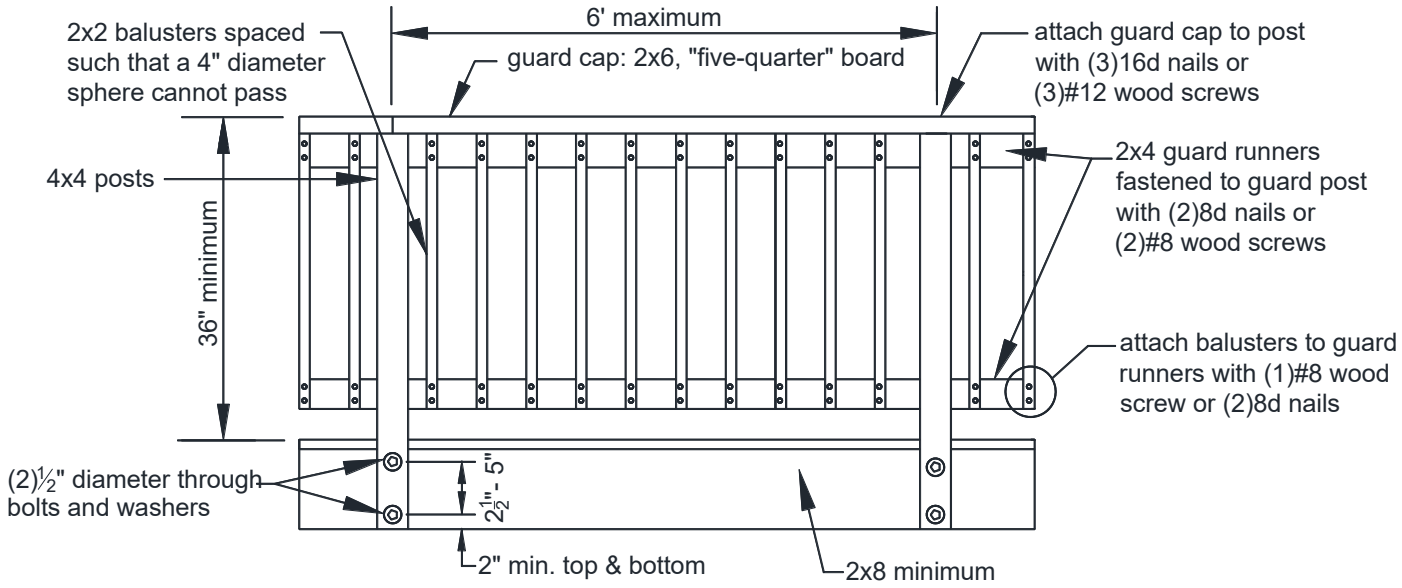


FIGURE 13: GUARD CONSTRUCTION

GUARD POST CONNECTION

Guard posts shall be attached to the deck structure in accordance with the requirements below in order to ensure resistance to imposed loads.

- Notching guard posts, as shown in FIGURE 14, is prohibited.
- Hold-down anchors, as shown in FIGURE 15 and FIGURE 16, shall be used to attach the guard post to the end joist and rim joist, respectively.
- Hold-down anchors shall have a minimum capacity of 1,800 pounds.
- Guards may be attached to either side of the rim joist or end joist.

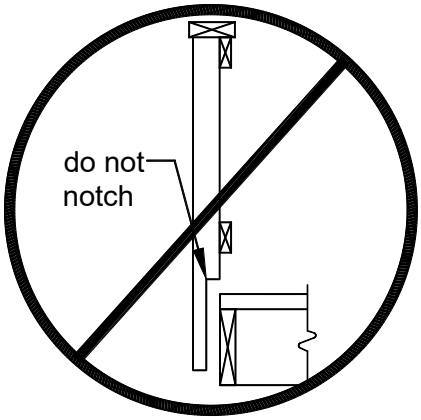
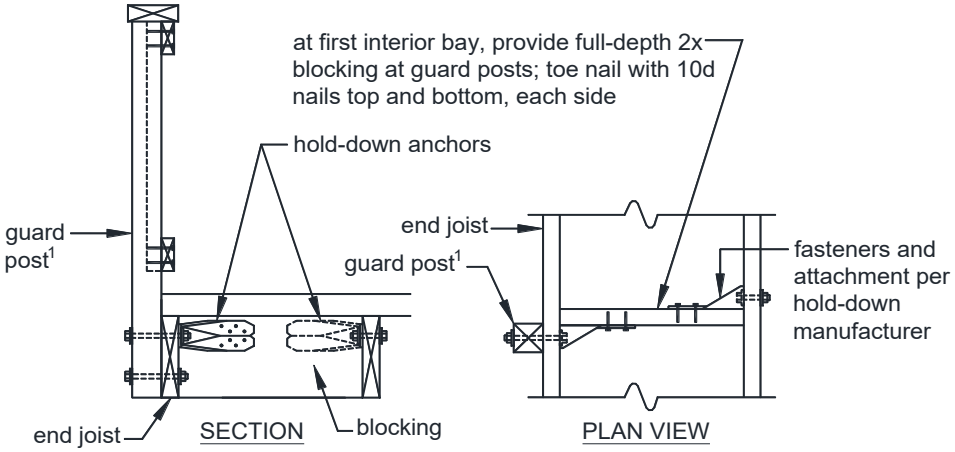
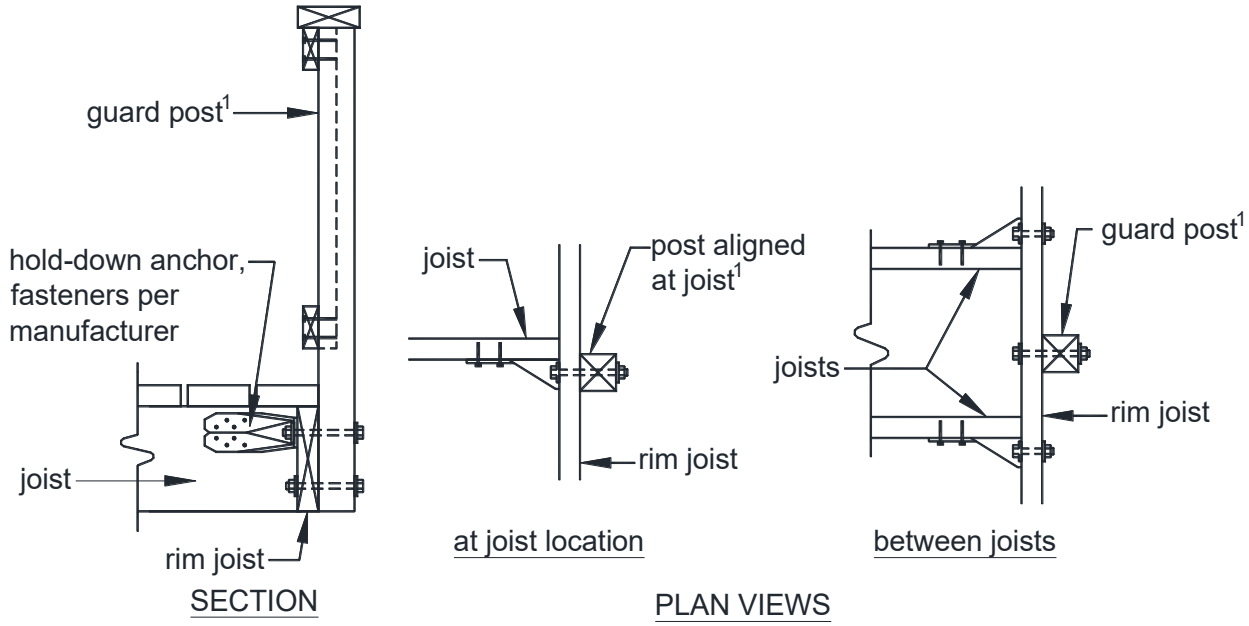


FIGURE 14: POST NOTCHES PROHIBITED



1 Guards can be attached to either side of the end joist.

FIGURE 15: GUARD POST-TO-END JOIST



1 Guards can be attached to either side of the rim joist.

FIGURE 16: GUARD POST-TO-RIM JOIST

7 ▪ Stairs

STAIR GEOMETRY

Stairs shall be constructed with the dimensions listed below.

- The minimum width of a stairway is 36 inches.
- Stair geometry and opening limitations shall meet the requirements shown in FIGURE 17. Treads, risers and nosing dimensions shall not deviate at each step by more than ⅜ inches.

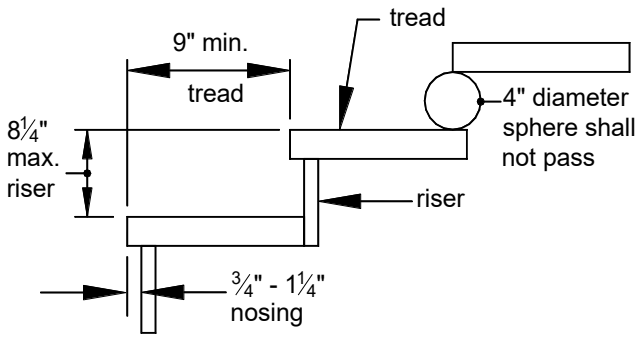


FIGURE 17: TREADS AND RISERS

STAIR CONSTRUCTION

Stair stringers:

- Stringers shall be sawn or solid 2x12s complying with the tread and riser geometry requirements.
- Stringers shall be spaced at a maximum of 18 inches on center.
- Each Stringer shall bear on footings and attach to the deck or landing per FIGURE 18.

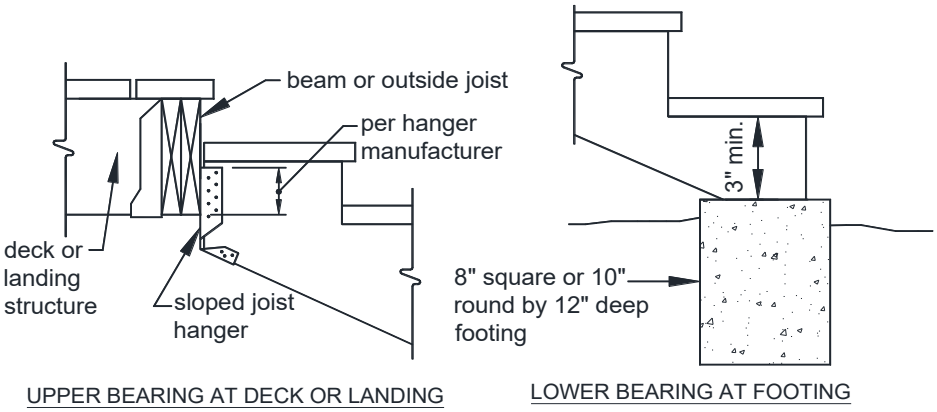
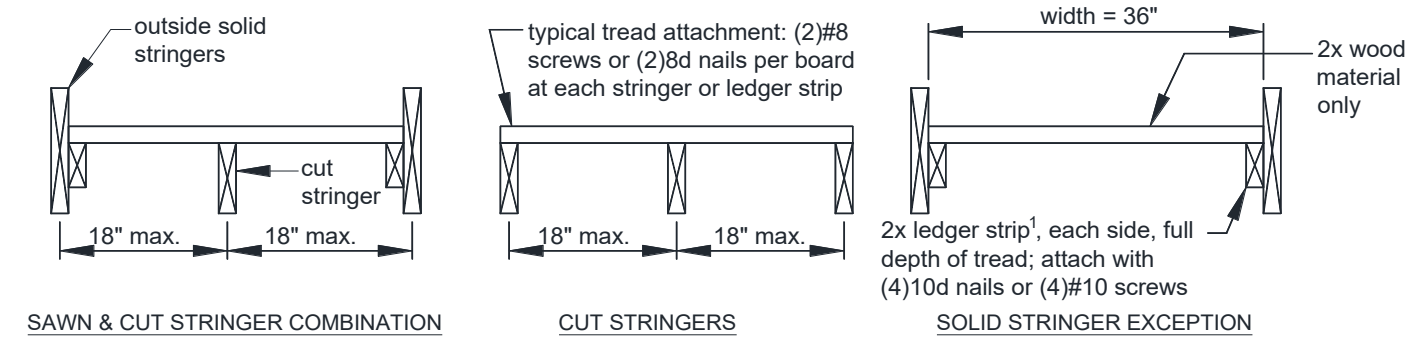


FIGURE 18: STRINGER BEARING

Tread and riser material:

- Tread material shall be equivalent to the decking specified on Page 4 and attached in accordance with FIGURE 19. The span of plastic composites shall be per manufacturer and in some cases may be less than 18 inches specified in FIGURE 19.
- Stairs constructed using the solid stringer exception shall have treads constructed of 2x wood material only; see FIGURE 19.
- Risers may be framed with 1x lumber minimum or equivalent plastic composite. Open risers are permitted provided the opening does not allow the passage of a 4-inch diameter sphere.



[1] A galvanized staircase clip angle, installed per manufacturer's instructions, is permitted to substitute for the 2x ledger strip.

FIGURE 19: STRINGER TREADS

Stair guards. Stair guards are required when the total rise of the stair is greater than 30 inches at a point 36 inches from the edge of the stair. Stair guards shall be constructed in accordance with Section 6 and FIGURE 20.

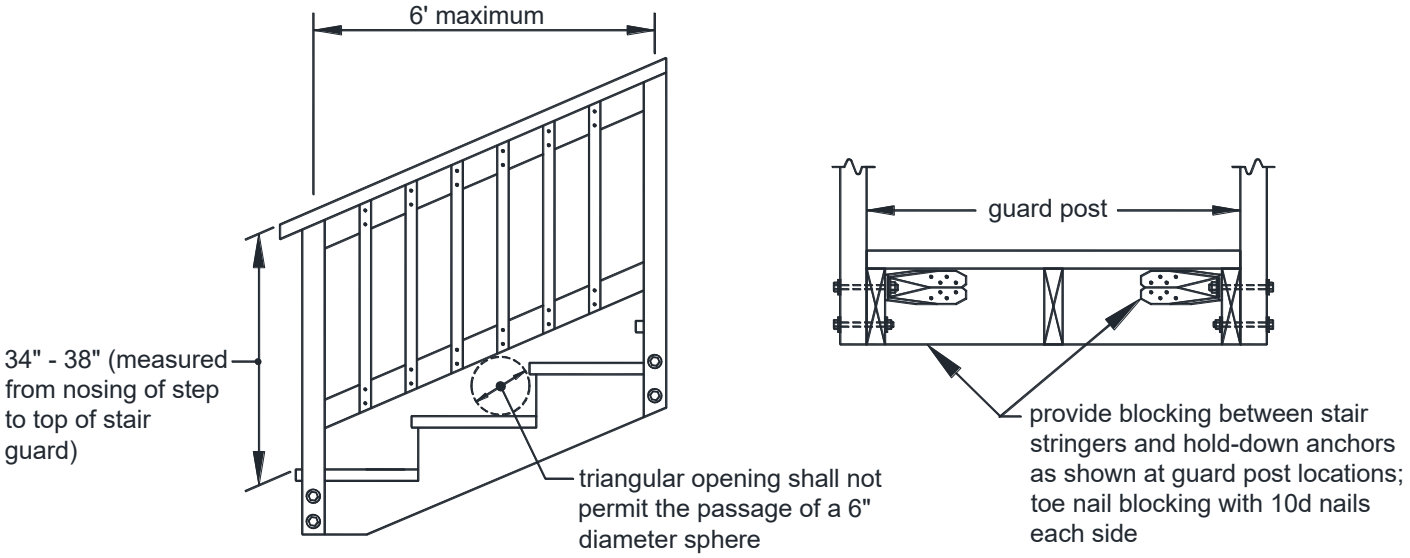


FIGURE 20: STAIR GUARD

Handrails:

- Stairs with four or more risers shall have a handrail on one side at a height between 34 to 38 inches above the nosing of the step.
- Handrails shall be attached to a stair guard or exterior wall acting as a barrier as shown in see FIGURE 21.
- Handrail and connecting hardware material shall be decay and corrosion resistant.
- Handrails shall have a smooth surface with no sharp corners and shall be graspable. Recessed sections may be shaped from a 2x6 or five-quarter board as shown in FIGURE 22.
- Handrails shall run continuously from a point directly over the lowest riser to a point directly over the highest riser and shall return to the guard or wall at each end.
- Handrails installed in lieu of window safety glazing, as required on Page 4, shall be supported at appropriate intervals to ensure that when a 50-pound load is applied, the rail does not deflect into the glass.

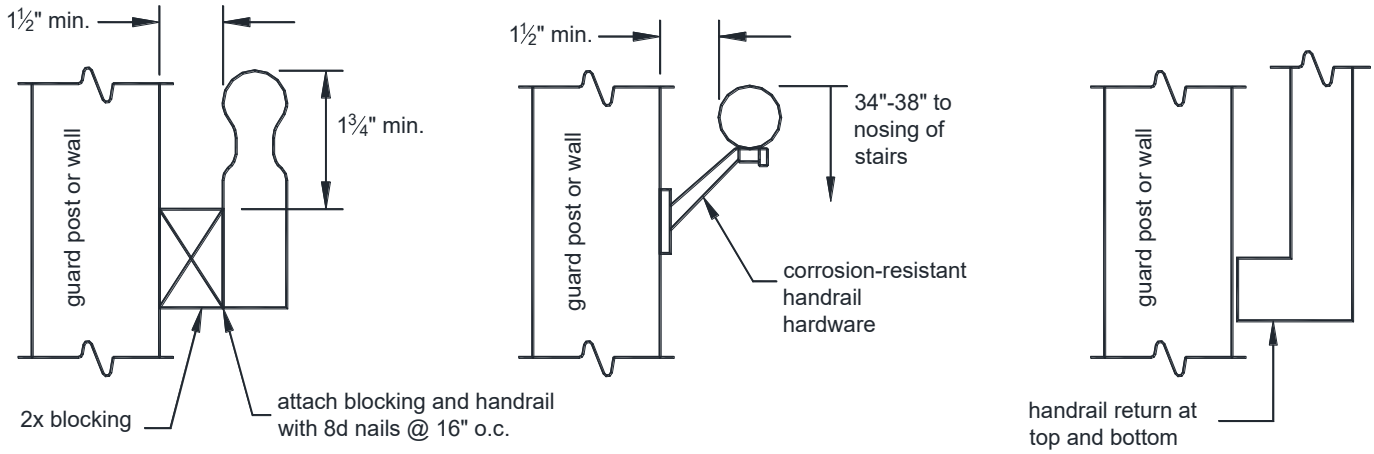


FIGURE 21: HANDRAILS

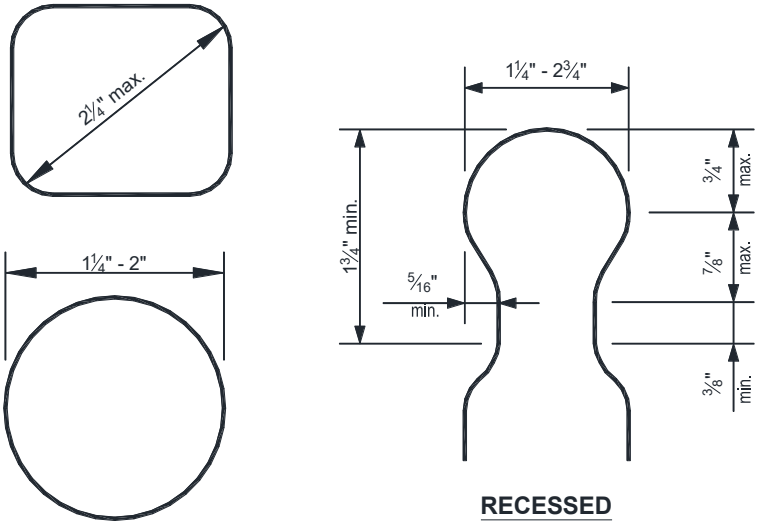
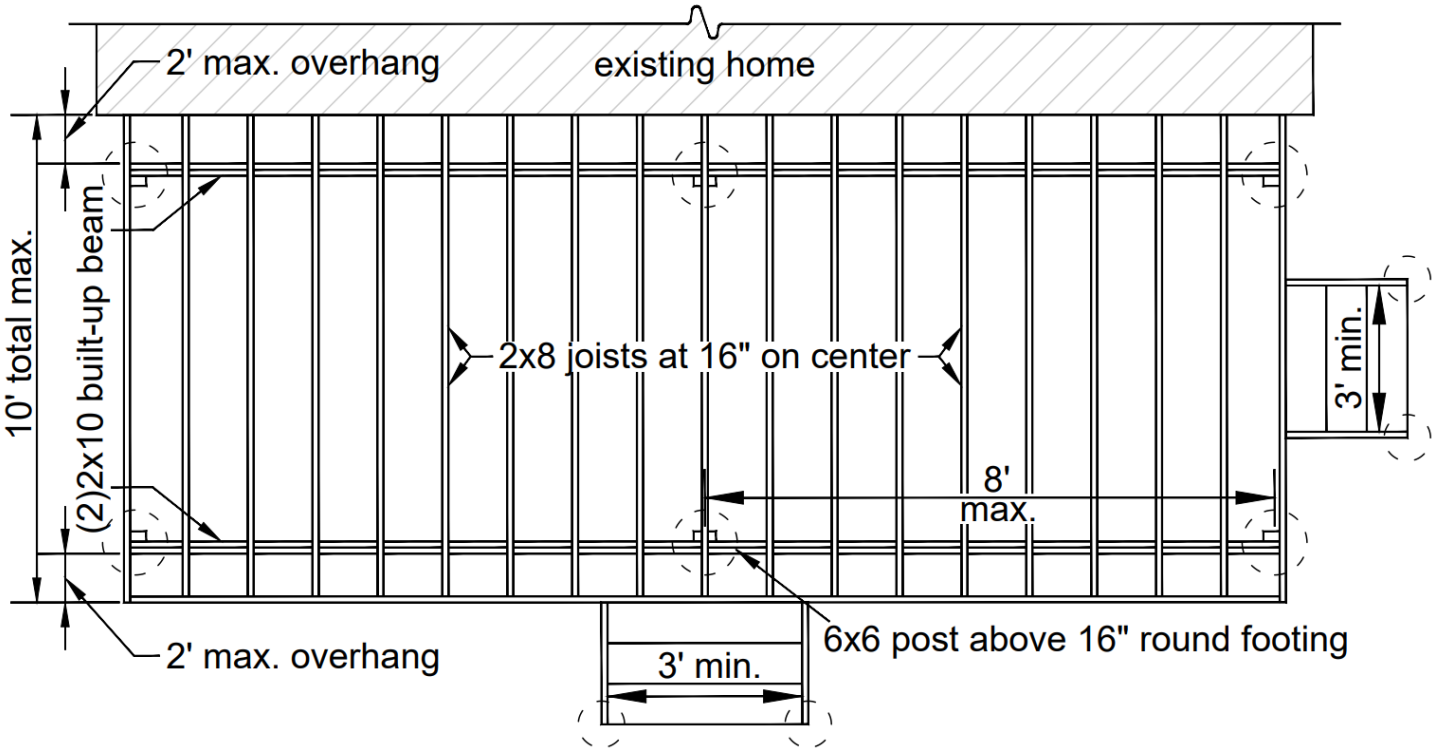
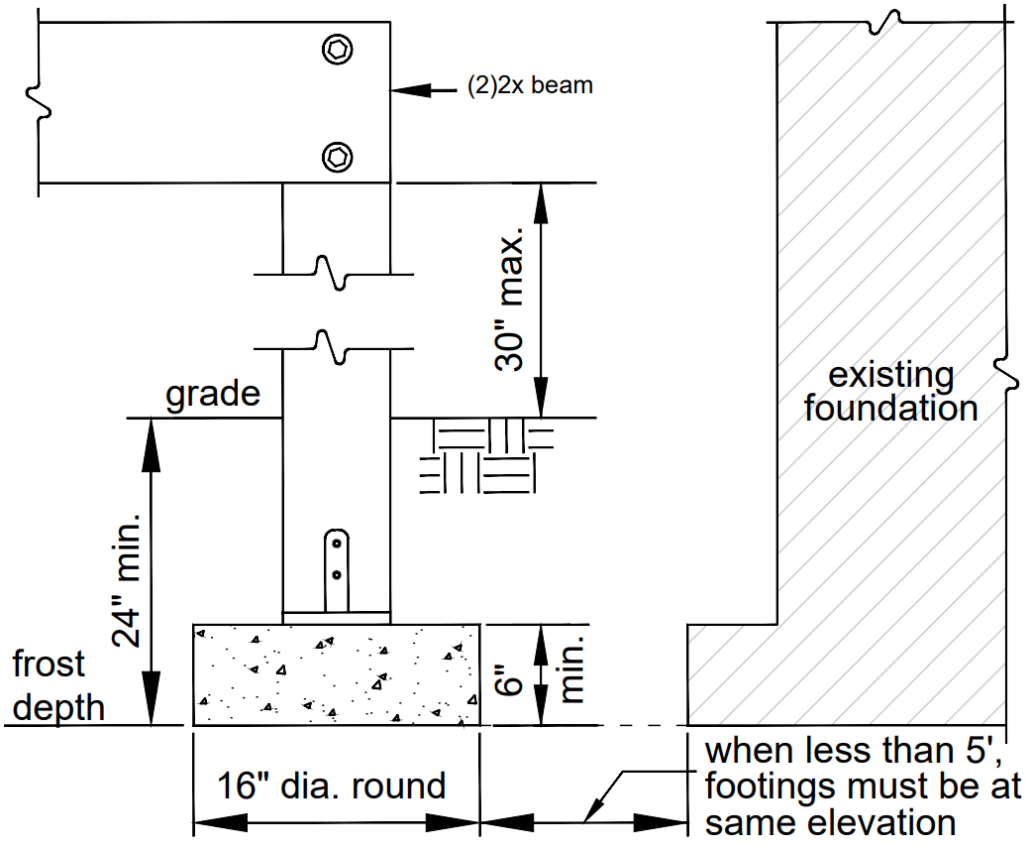


FIGURE 22: HANDRAIL GRASPABILITY

6 ▪ Sample Deck Plan





INSPECTIONS

You are required to obtain inspections from the county for your deck. Please review the following when requesting an inspection. The approved plat and building plans must be on the jobsite.

- **Required inspections:**
  - ✓ Footing: footing holes are dug and prior to placing the concrete.
  - ✓ Framing: posts, beams and joists are installed (before the decking is installed).
  - ✓ Final: All remaining items are installed.
- **If required, ladders must be provided to the inspector.**
- **Before you dig, call Miss Utility at 811, TTY 711.**
- **Schedule your inspection using the following options:**
  - ✓ In-person during hours of operation, Herrity Building, 3rd Floor Suite 324.
  - ✓ Staff assisted via telephone during hours of operation at 703-222-0801, TTY 711.
  - ✓ Online at https://plus.fairfaxcounty.gov/CitizenAccess/Default.aspx
  - ✓ On the Fairfax County smartphone app. Go to your app store to download.