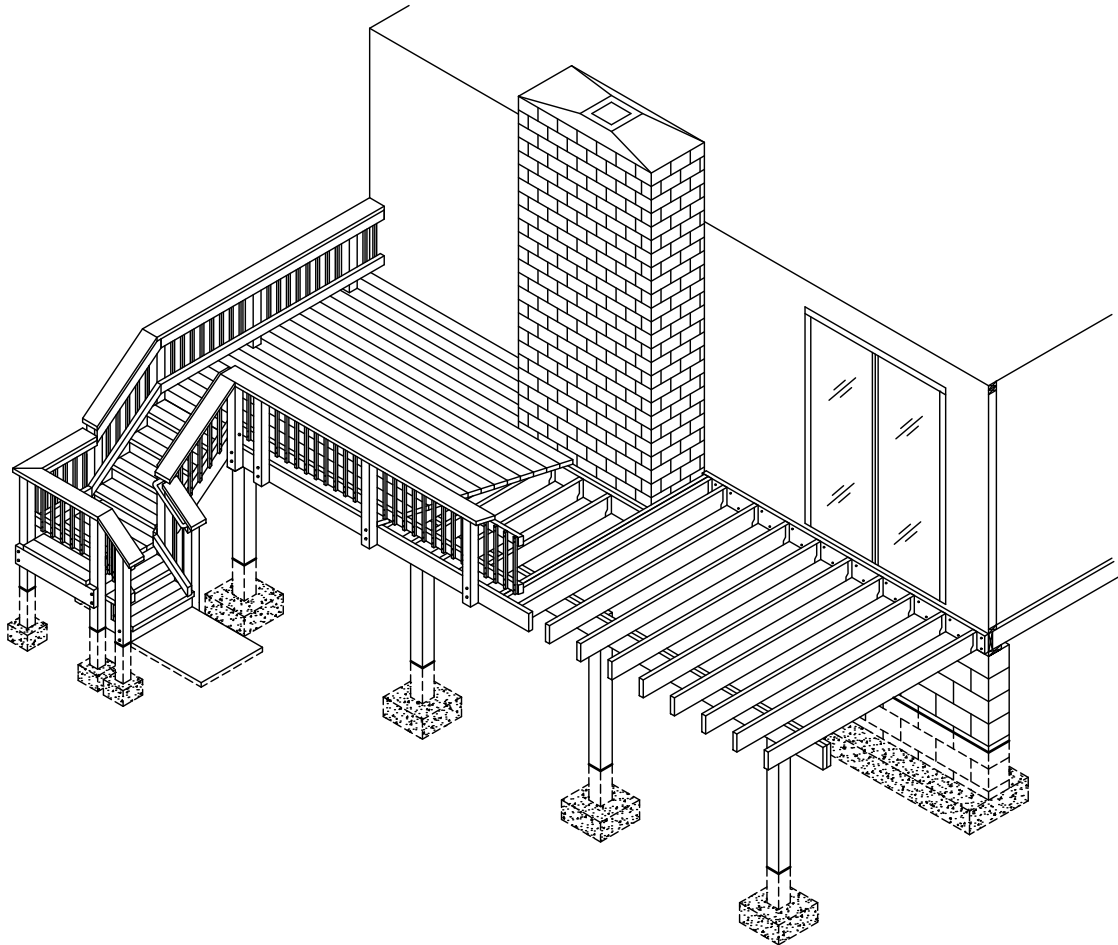


Prince William County Typical Residential Deck Design

Based on Virginia Uniform Statewide Building Code ~ Version 2020-03-01



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TYPICAL RESIDENTIAL DECK DESIGN

PRINCE WILLIAM COUNTY, VIRGINIA

Department of Development Services
Building Development Division
5 County Complex Court
Prince William, VA 22192-9201
703-792-6930

SHEET 1 OF 17

GENERAL NOTES

THINGS TO BRING FOR PERMIT

Important! Zoning Permit. You must bring a copy of your house location plan that shows the proposed location of the deck, drawn to the same scale as the plan. Show the side yard and rear yard distances (setbacks from property lines) on the plan.

NOTES ON DESIGN

- No changes shall be made to approved plans without prior approval from the Building Construction Review Branch.
- Approved deck plans shall not be used for supporting hot-tub installation, without re-submission for review.
- All metal connections, bolts, joist hangers, etc. shall be galvanized or corrosion resistant.
- All lumber shall be pressure treated Southern Pine, grade #2 or better.
- Building permit is not required if all portions of the top of the deck's flooring is within 16.5 inches from the finished grade unless it carries structural load, e.g. hot-tub. All decks require zoning permit.
- **Setback and Permit Standards for At-Grade Structures**
Provisions in the Prince William County Zoning Ordinance for at-grade decks and patios differ from those in the Building Code. In the Zoning Ordinance, the standards are as follows: "Patios, decks, walkways, steps and driveways constructed no higher than eight (8) inches above existing grade of the contour of the land where located may encroach within any setback provided that no permanent above-grade affixed structures such as railing, planters, benches, roofs or other appurtenances are installed."
- Column spacing and joist spans shown are maximum. Smaller decks may be constructed utilizing the same structural members.
- The typical residential deck design shall be strictly adhered to. All deviations from these drawings shall require an independent set of design documents to be prepared and submitted to the Building Construction Plans Review Branch for review.
- If a proposed deck does not conform to these typical design details, a custom design can be submitted to the Building Construction Review Branch. Submit two (2) copies of the design, including framing plans, cross sections, and stringer details for review.
- Material requirements are as follows:

Component	Requirement
Nails, screws, lag screws, and bolts shall be	hot-dipped zinc galvanized, stainless steel, or approved for use with ACQ, CA, or CA-B ¹
Hardware (joist hangers, anchors, clips and angles) shall be installed using manufacturers specified fasteners and	<ul style="list-style-type: none"> • hot-dipped galvanized with a 1.85 oz/sf of zinc (G-185 coating)¹ or • Stainless Steel (type 304 or better) • Examples "Zmax" from Simpson Strong-Tie "Triple Zinc" from USP
Flashing shall be	copper, stainless steel, silicon, bronze, or UV-resistant plastic ² , and hot-dipped galvanized steel with a G30 zinc coating
Notes: ¹ In all cases, electroplated galvanizing is NOT acceptable. ² ICC Evaluation Report and testing data are required to substantiate decay resistance of plastic.	

- Please go to <https://www.southernpine.com/fasteners-connectors/> for more detailed information on the use of fasteners and connectors with preservative treated wood.
- Decking composed of foreign lumber, plastic or manufactured materials may be substituted only when the product has an approved evaluation report from ICC-ES or from an accredited testing laboratory and is labeled indicating compliance with ASTM D7032.





FIGURE 1: DECK FRAMING PLAN

Exterior house condition shall not contain any of the following: prefabricated floor joist system (without at least 1/4" solid band board), brick veneer, stone, EIFS or cultured stone on the wall, or cantilever.
 (refer to sheet 5 for free standing deck)

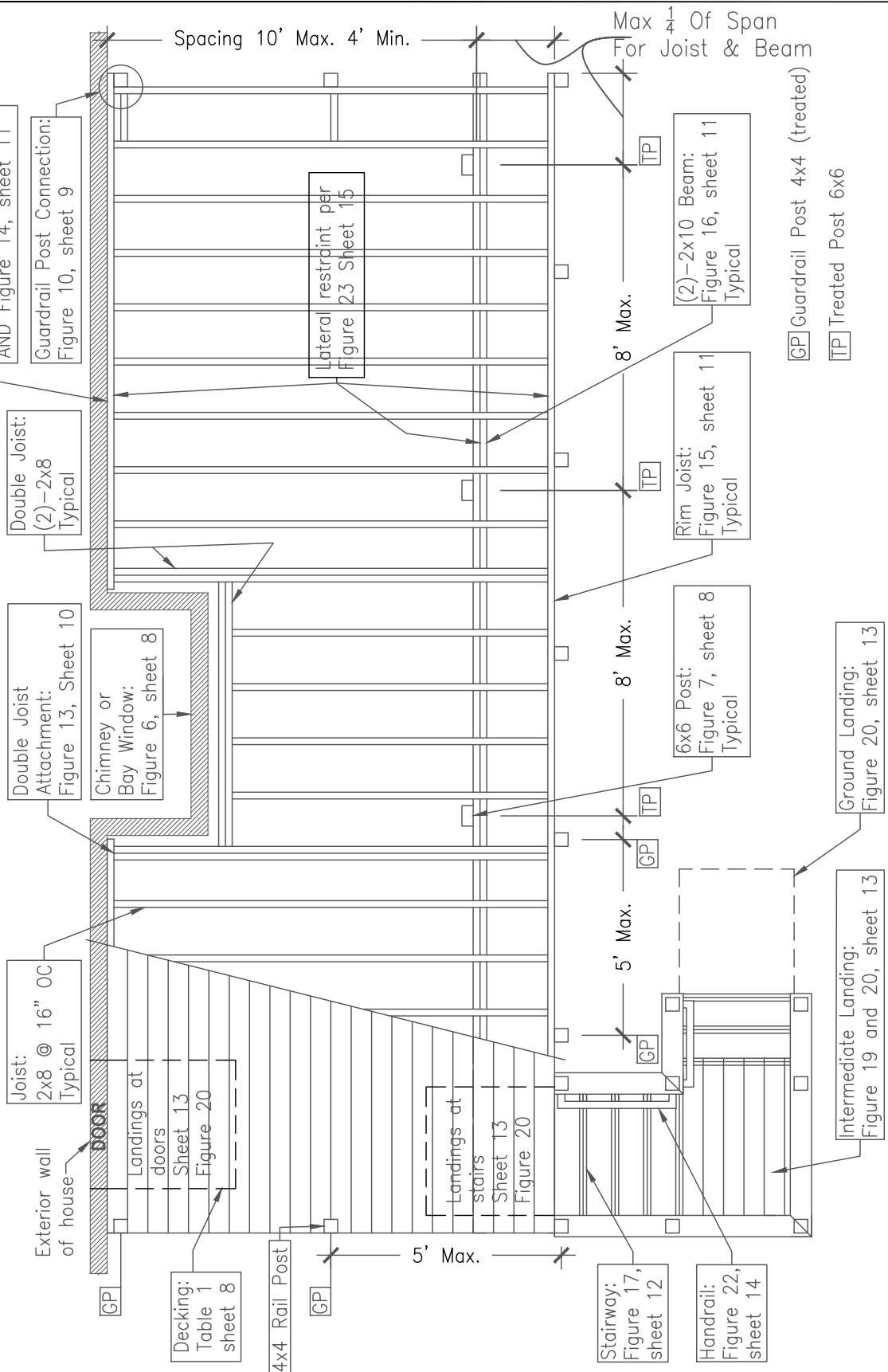


FIGURE 2A: CROSS SECTION OF DECK CONNECTED TO HOUSE

(refer to sheet 6 for free standing deck)

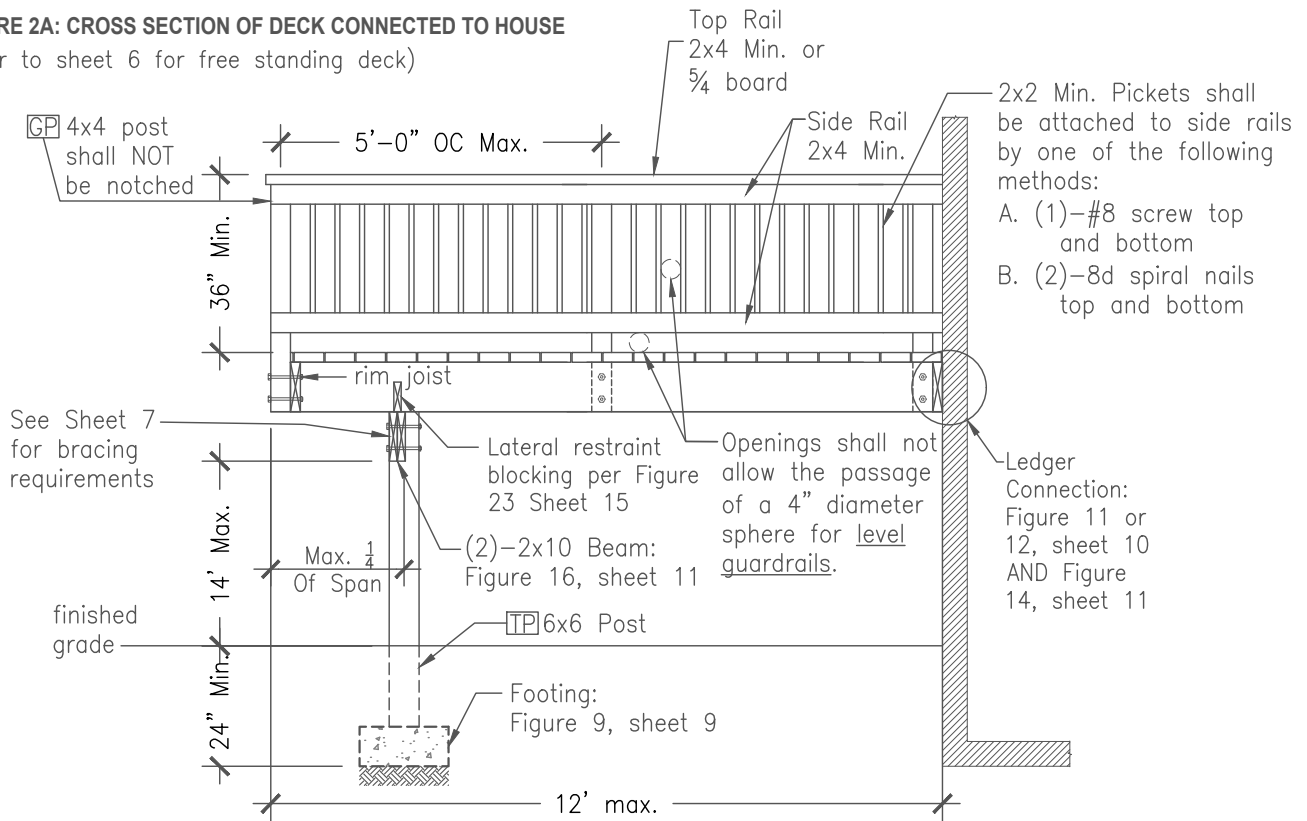


FIGURE 2B: CROSS SECTION OF DECK CONNECTED TO HOUSE

(refer to sheet 6 for free standing deck)

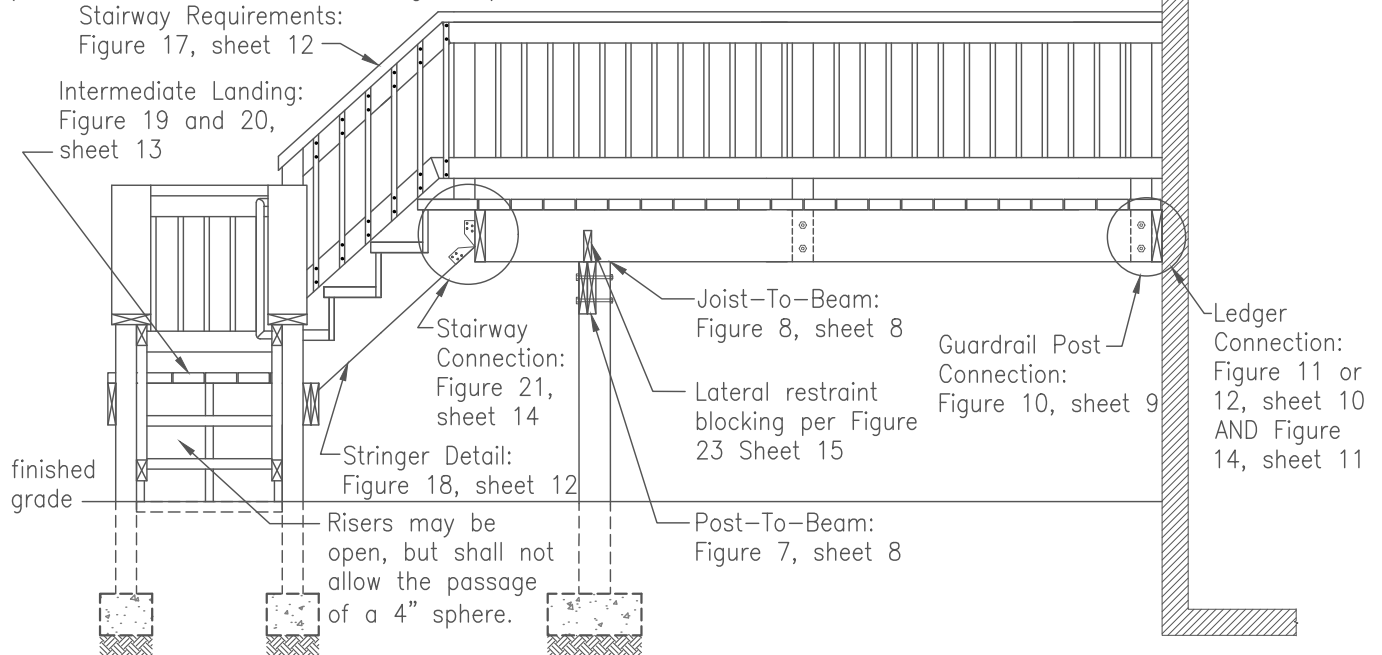




FIGURE 3: FREE STANDING DECK FRAMING PLAN

Deck shall be free standing when adjacent house condition contains any of the following: prefabricated floor joist system (without at least 1/4" solid band board), brick veneer, stone, EIFS or cultured stone on the wall, or cantilever.

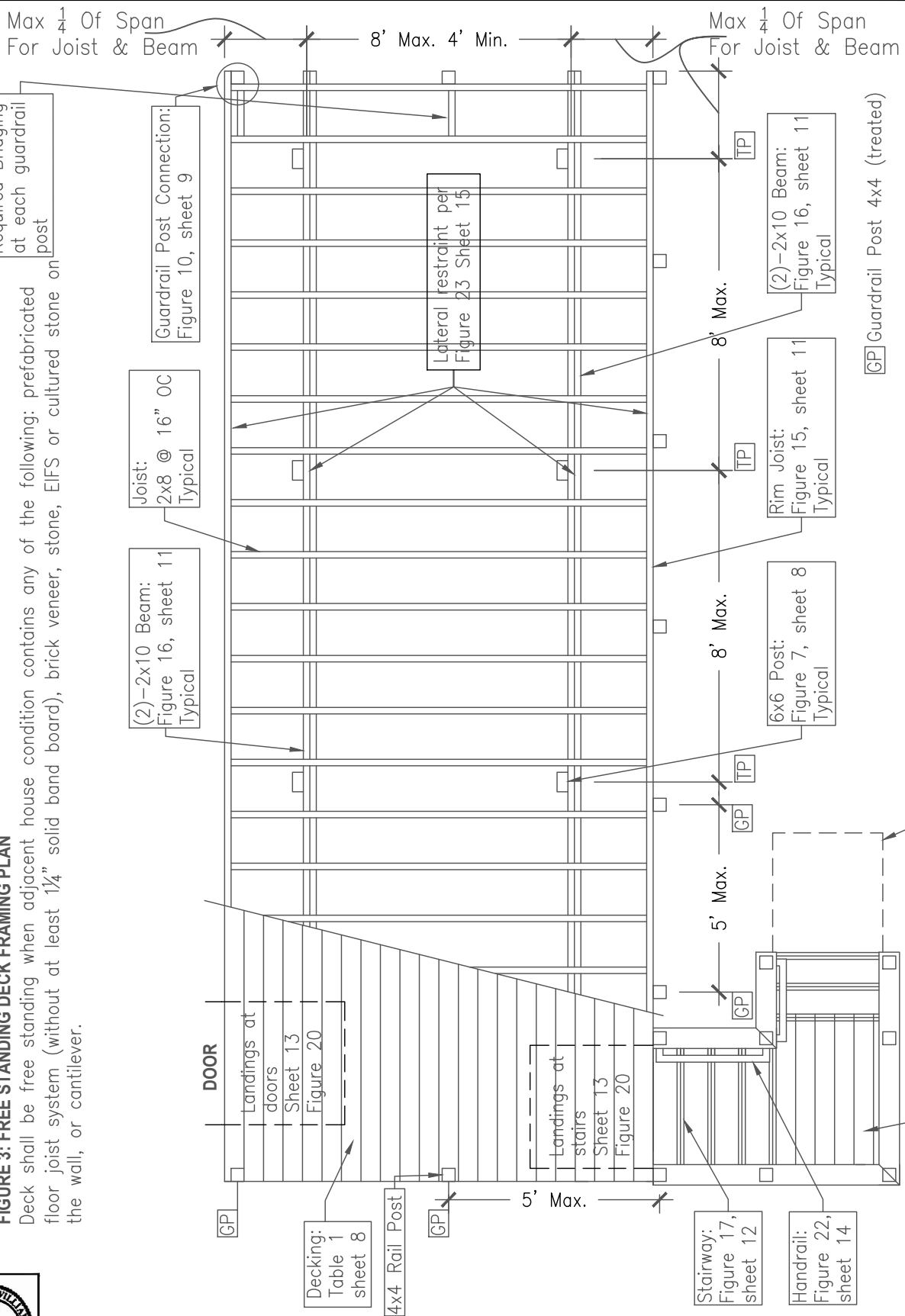


FIGURE 4A: CROSS SECTION OF FREE STANDING DECK

Deck shall not be anchored to face of house

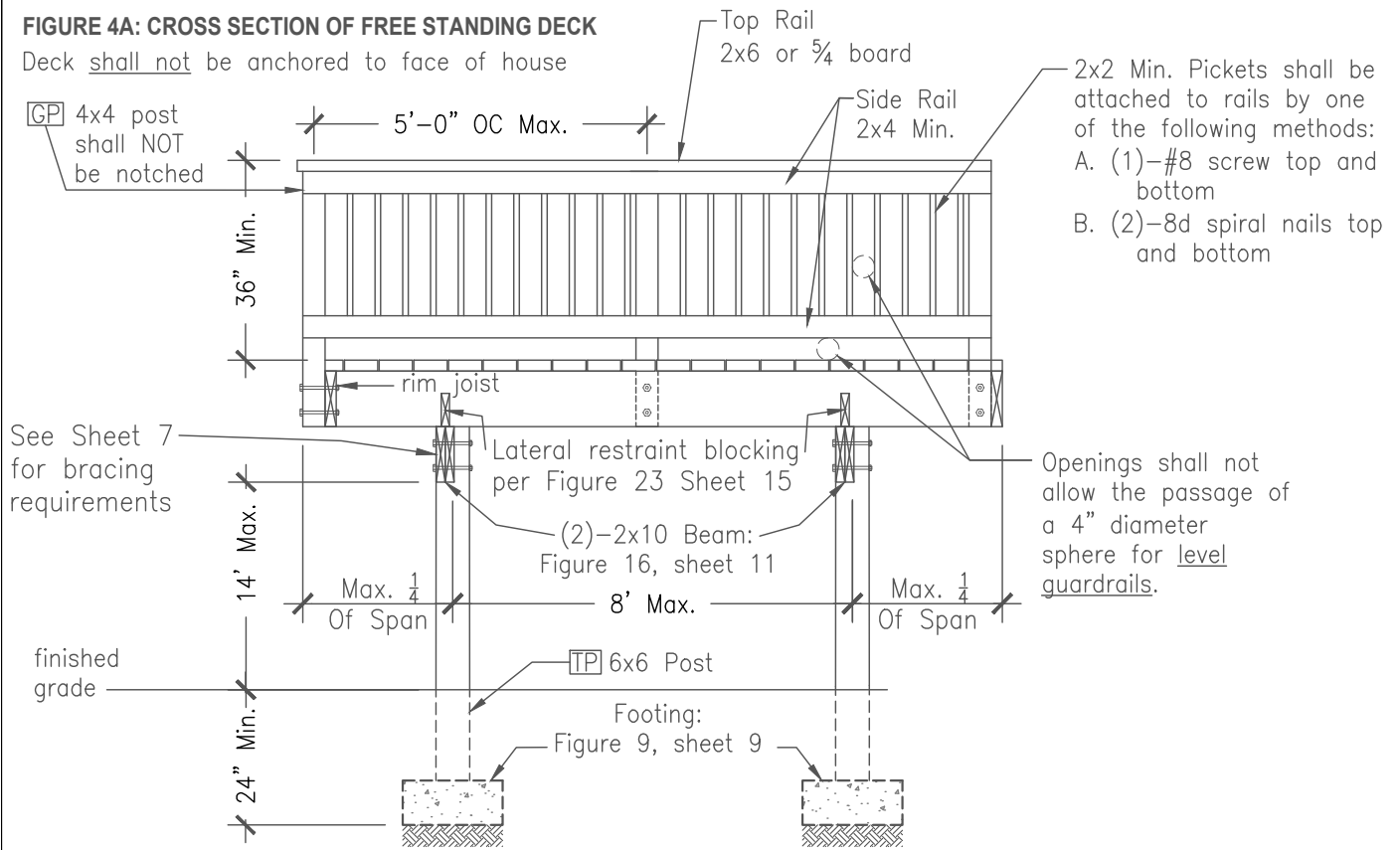


FIGURE 4B: CROSS SECTION OF FREE STANDING DECK

Deck shall not be anchored to face of house

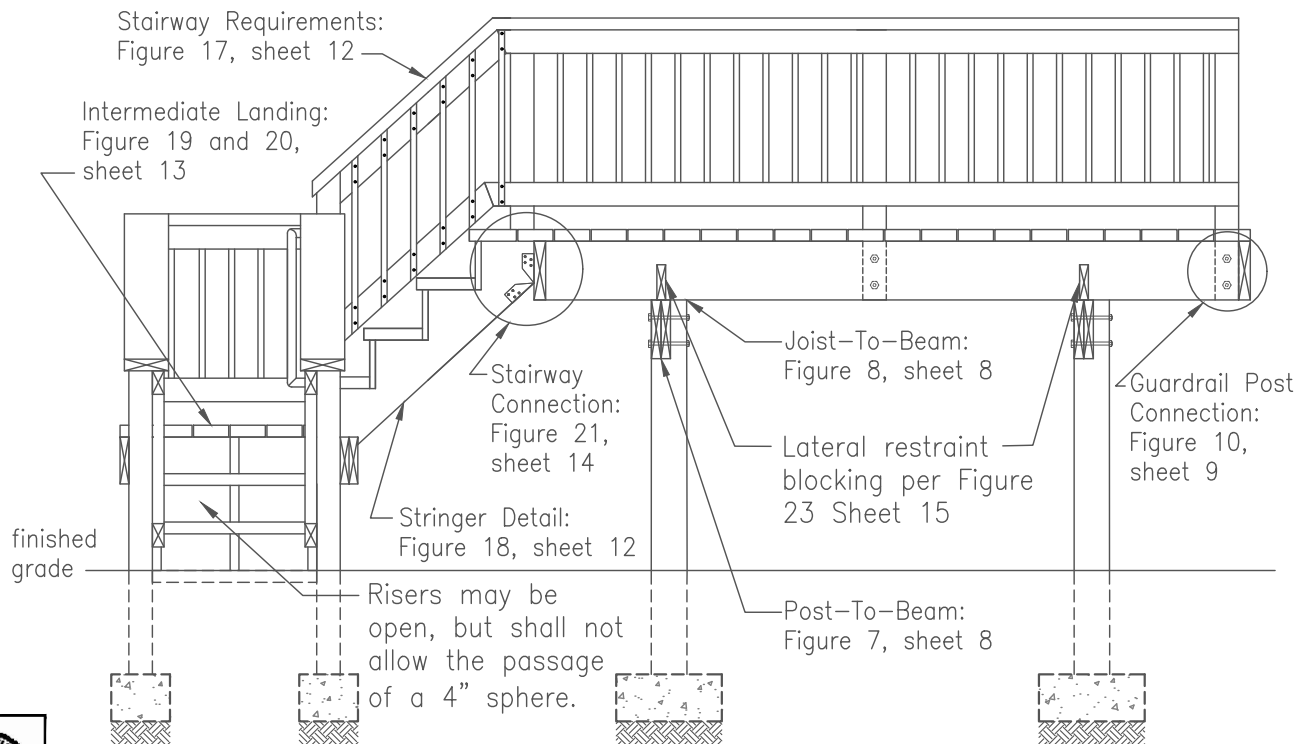
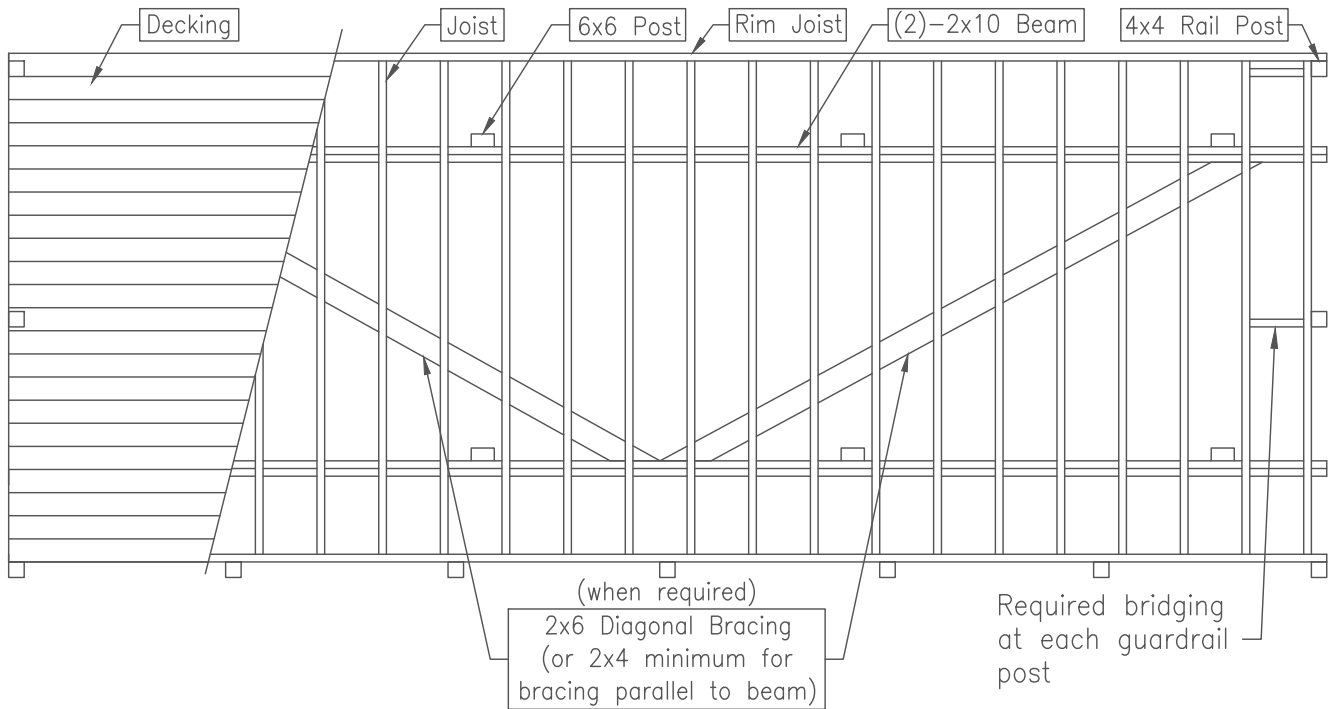


FIGURE 5A: LATERAL SUPPORT OF FREE STANDING DECK

Diagonal bracing shall be provided when free standing deck height is greater than 8'-0" above grade.



Free standing decks shall be braced with 2x6 diagonal bracing corner to corner at the underside of floor joists using an 8d nail at each joist, or by installing 2x6 wood decking diagonally.

FIGURE 5B: LATERAL SUPPORT FOR ALL DECKS

Knee bracing shall be provided when deck floor height is greater than 8'-0" above grade. Alternative bracing methods must be county reviewed and indicated on approved plans to be installed in lieu of required knee bracing.

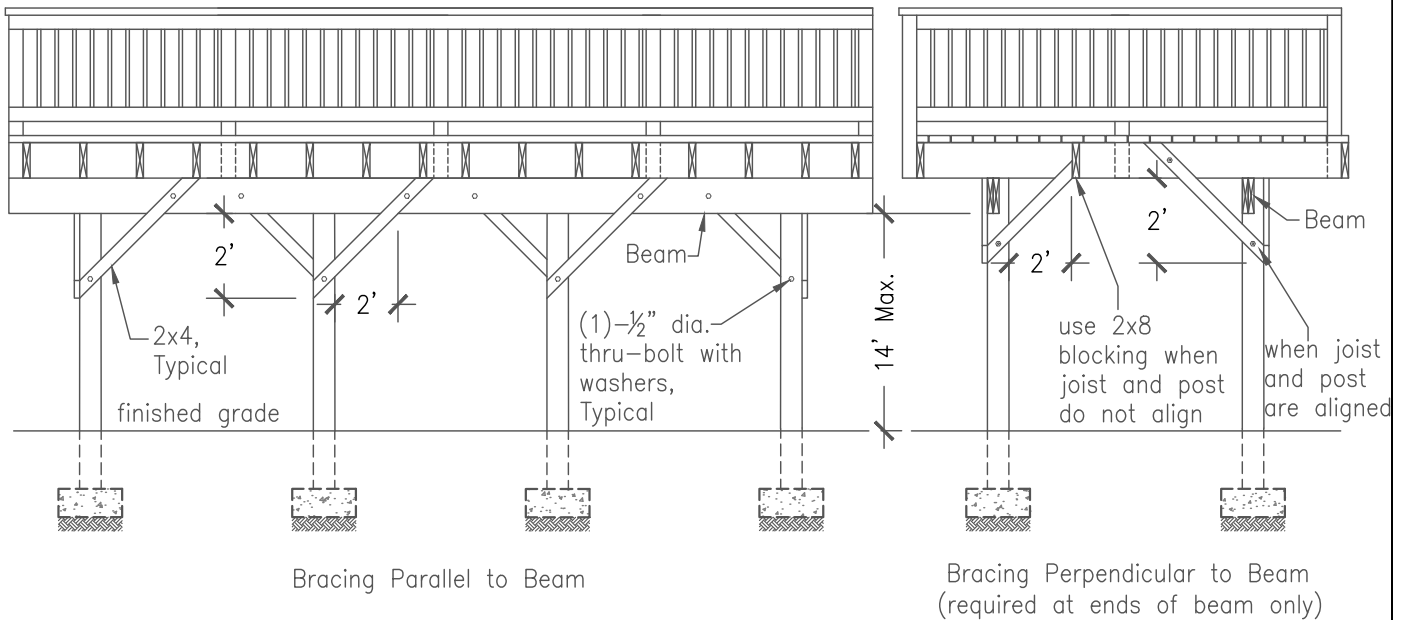


FIGURE 6: FRAMING PLAN AT CHIMNEY OR BAY WINDOW

Exterior house condition shall not contain any of the following: prefabricated floor joist system (without at least 1¼" solid band board), brick veneer, stone, EIFS or cultured stone on the wall, or cantilever. (refer to sheet 5 for free standing deck)

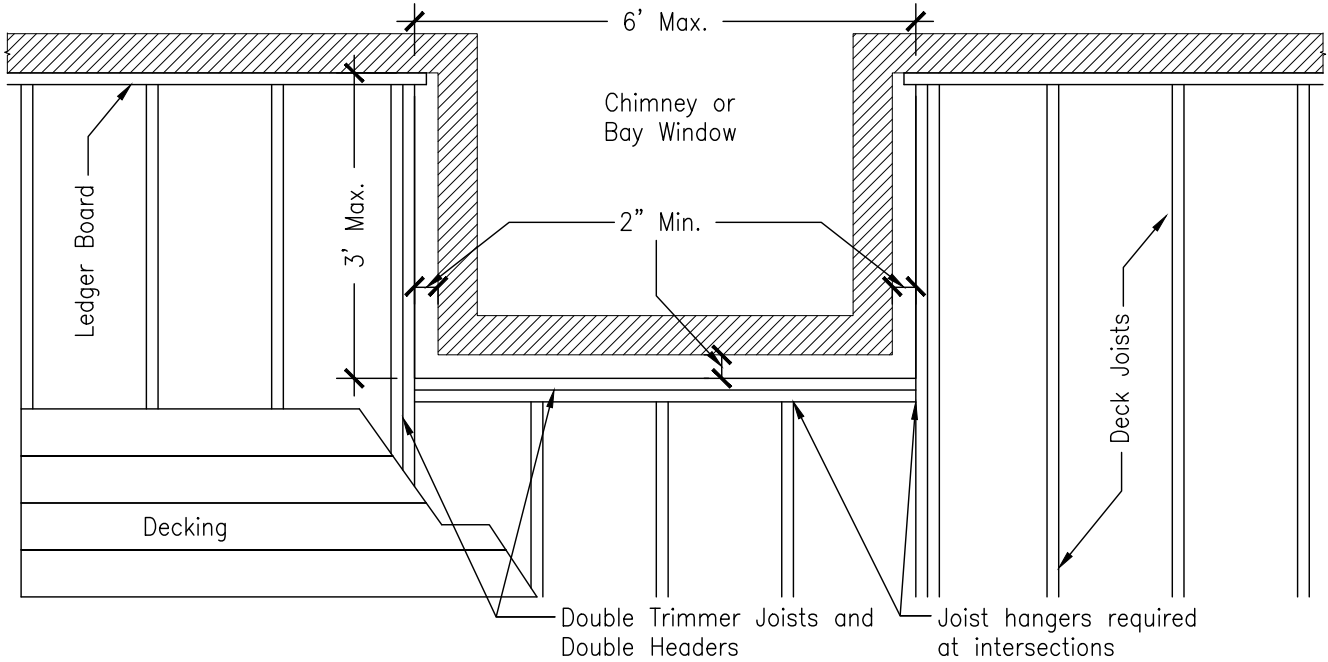
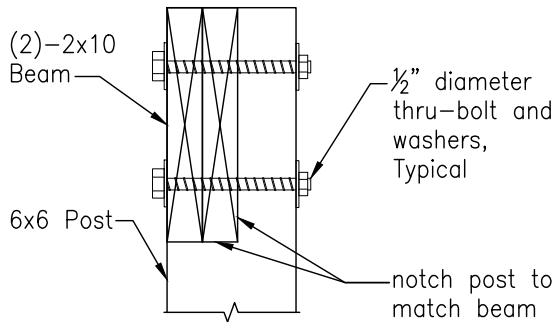


FIGURE 7: POST-TO-BEAM CONNECTION



Joist Spacing	Thickness of Diagonal Decking ¹		Composite Material ²
	2x	5/4x	
16" OC	YES	NO	Per manufacturer listing and in accordance with ASTM D7032
12" OC	YES	YES	

¹Treated Southern Yellow Pine #2 or better
²Trex® or similar, must be rated to support 40 PSF or 200 pound concentrated load

FIGURE 8: JOIST-TO-BEAM CONNECTIONS

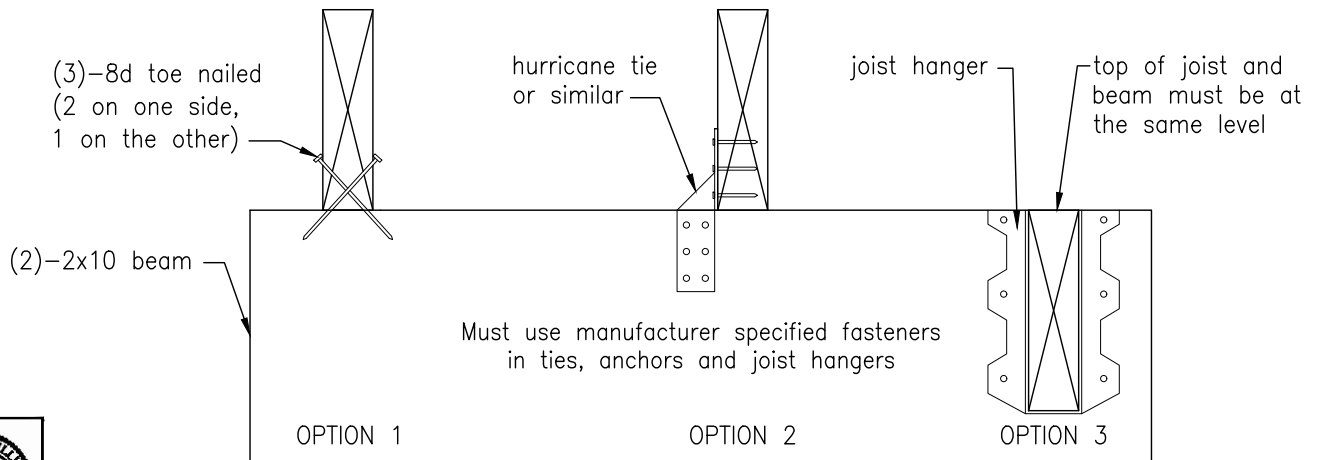


FIGURE 9: FOOTING DETAILS

- All footings shall bear on solid ground; bearing conditions shall be verified in the field by an approved Third Party Inspector or by County Inspectors prior to placement of concrete. The bottom of all footings closer than 5'-0" to any exterior foundation wall of the existing house must be extended down to undisturbed soil.
- Pre-manufactured post anchors shall be galvanized with 1.85 oz/sf of zinc (G-185 coating) or shall be stainless steel.
- All concrete must be properly mixed per specifications.

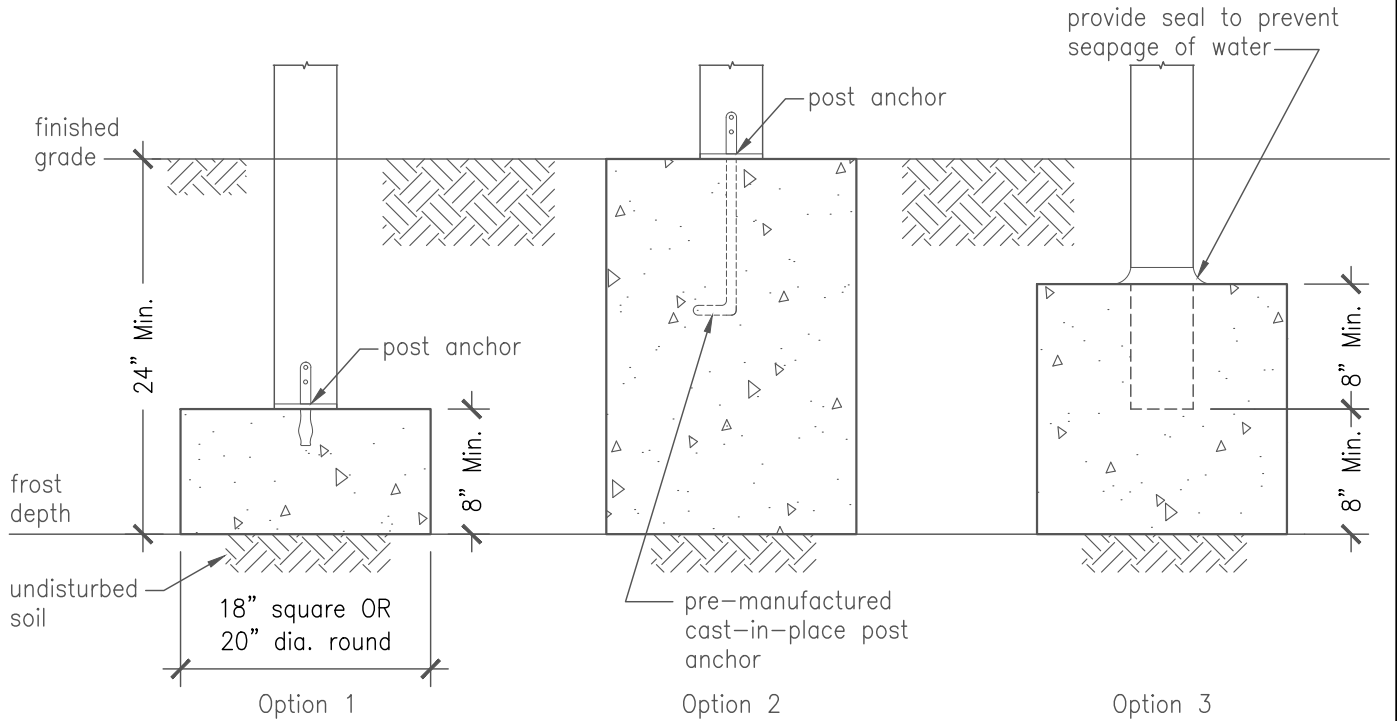
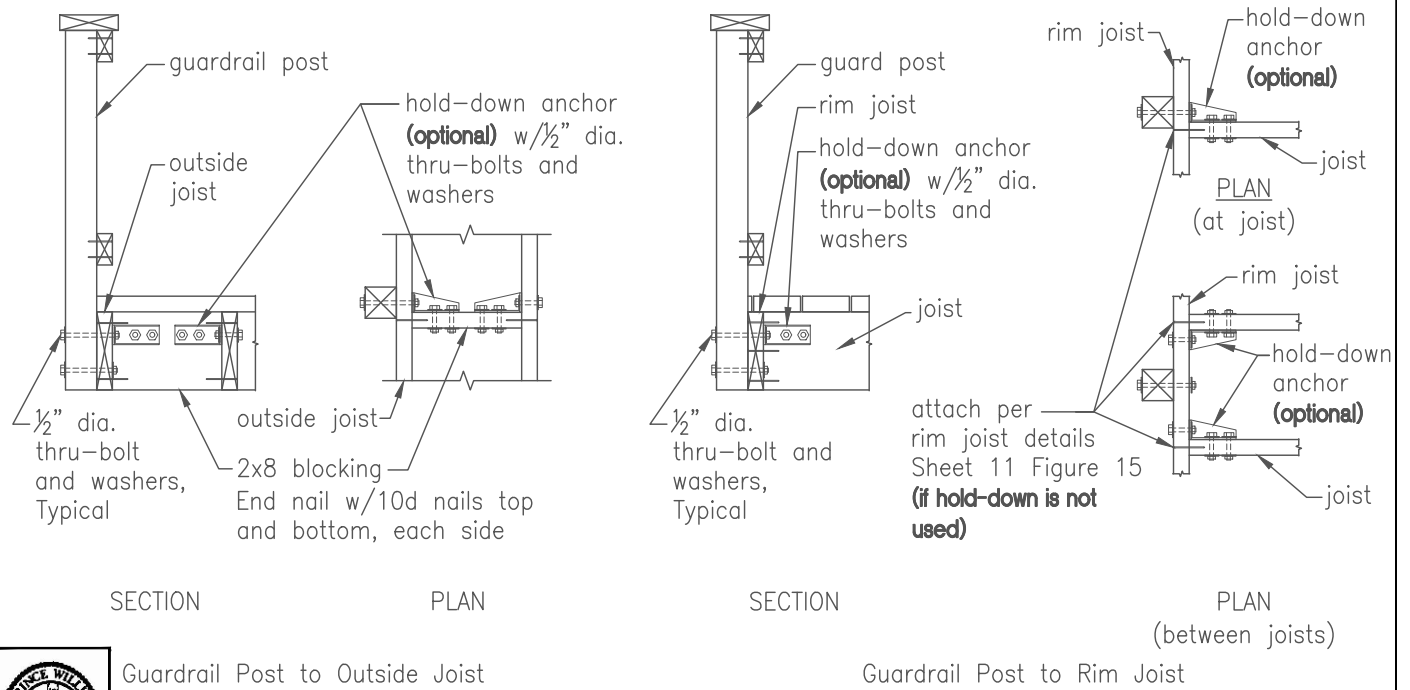


FIGURE 10: GUARDRAIL POST CONNECTION DETAIL

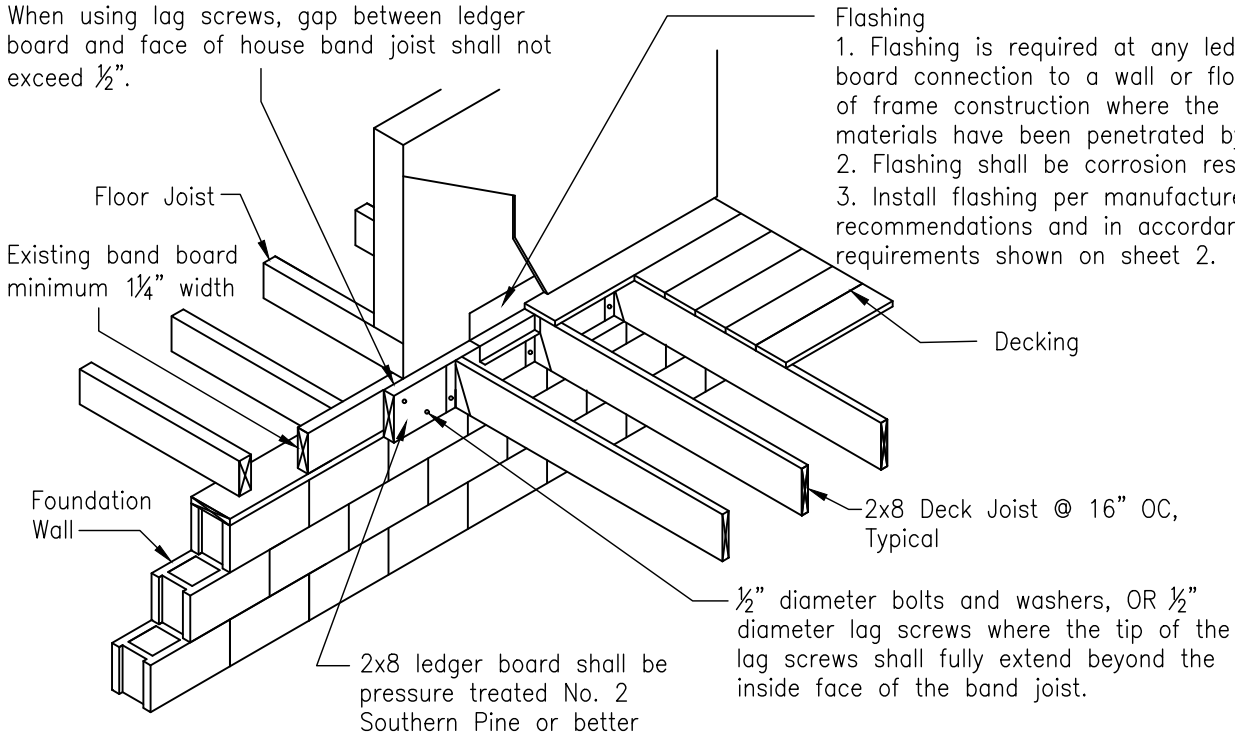


Guardrail Post to Outside Joist

Guardrail Post to Rim Joist

FIGURE 11: LEDGER BOARD CONNECTION TO DIMENSIONAL BAND BOARD

When using lag screws, gap between ledger board and face of house band joist shall not exceed $\frac{1}{2}$ ".



- Flashing
1. Flashing is required at any ledger or rim board connection to a wall or floor assembly of frame construction where the finish materials have been penetrated by fasteners.
 2. Flashing shall be corrosion resistant.
 3. Install flashing per manufacturer's recommendations and in accordance with the requirements shown on sheet 2.

FIGURE 12: LEDGER BOARD CONNECTION TO FOUNDATION WALL

Gap between ledger board and face of house band joist shall not exceed $\frac{1}{2}$ ".

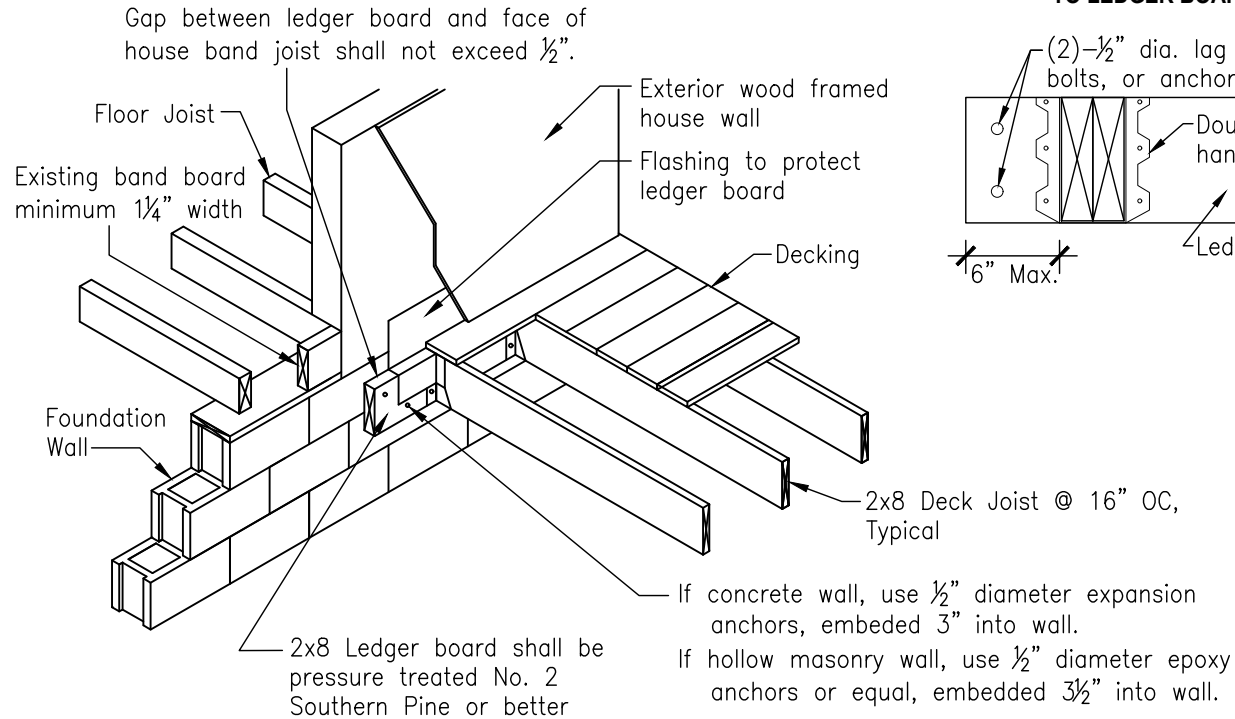


FIGURE 13: DOUBLE JOIST ATTACHMENT TO LEDGER BOARD

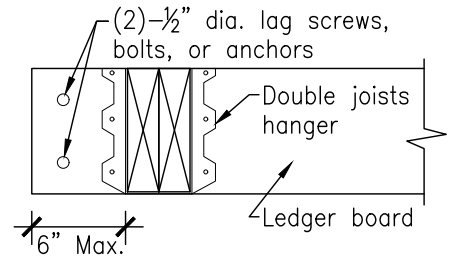


FIGURE 14: FASTENER SPACING AND CLEARANCES AT LEDGER BOARD

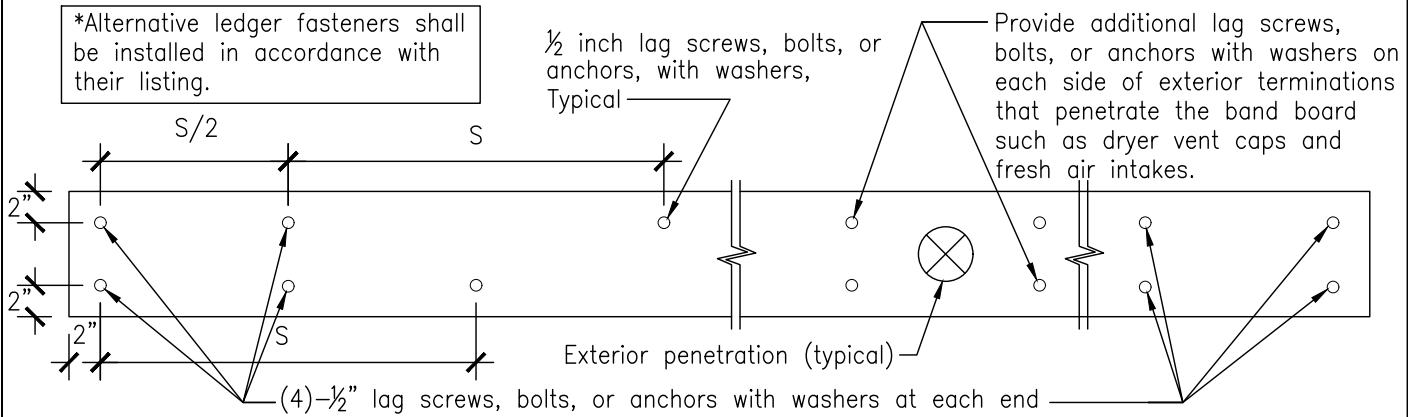


TABLE 2: FASTENER SPACING (S) FOR A RESIDENTIAL SOUTHERN PINE DECK LEDGER AND A 2-INCH NOMINAL SOLID-SAWN BAND JOIST [50 PSF TOTAL LOAD]^c

Joist Span (ft)	6' and less	6'-1" to 8'	8'-1" to 10'	10'-1" to 12'
	On-Center Spacing of Fasteners ^{d,e}			
1/2" x 4" Lag Screw ^{a,b}	30	23	18	15
1/2" Bolt with washers	36	36	34	29

^aThe maximum gap between the face of the ledger board and face of the house band joist shall be 1/2".

^bThe tip of the lag screw shall be fully extended beyond the inside face of the band joist.

^cLedgers shall be flashed to prevent water from contacting the house band joist.

^dLag screws and bolts shall be staggered as shown.

^eDeck ledger shall be 2x8 No. 2 Southern Pine (minimum), or other approved method and material as established by standard engineering practice.

*Ledgers shall not support concentrated loads from beams, girders or point loads.

FIGURE 15: RIM JOIST SUPPORTING GUARDRAIL ATTACHMENT DETAIL

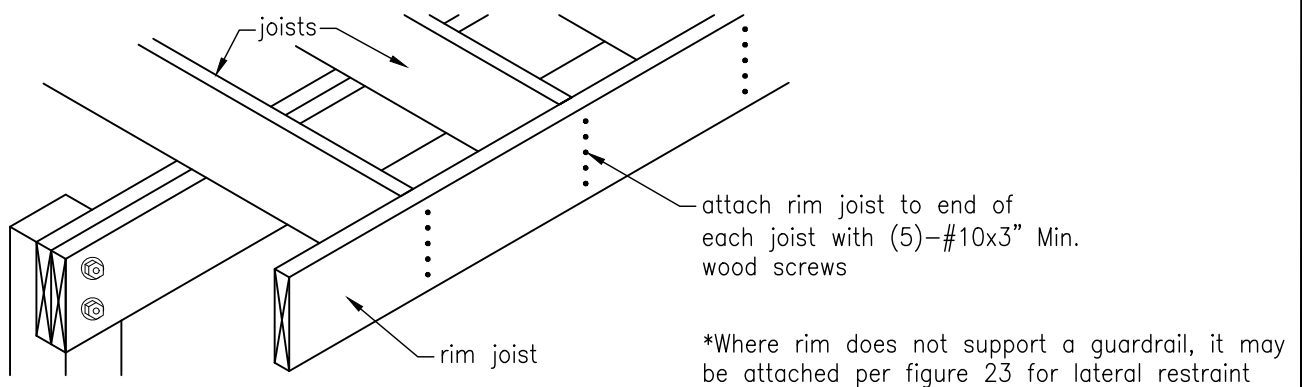


FIGURE 16: BUILT-UP BEAM DETAIL

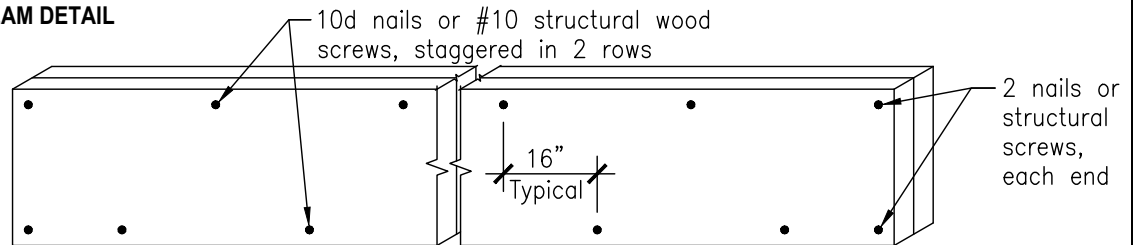


FIGURE 17: STAIRWAY REQUIREMENTS

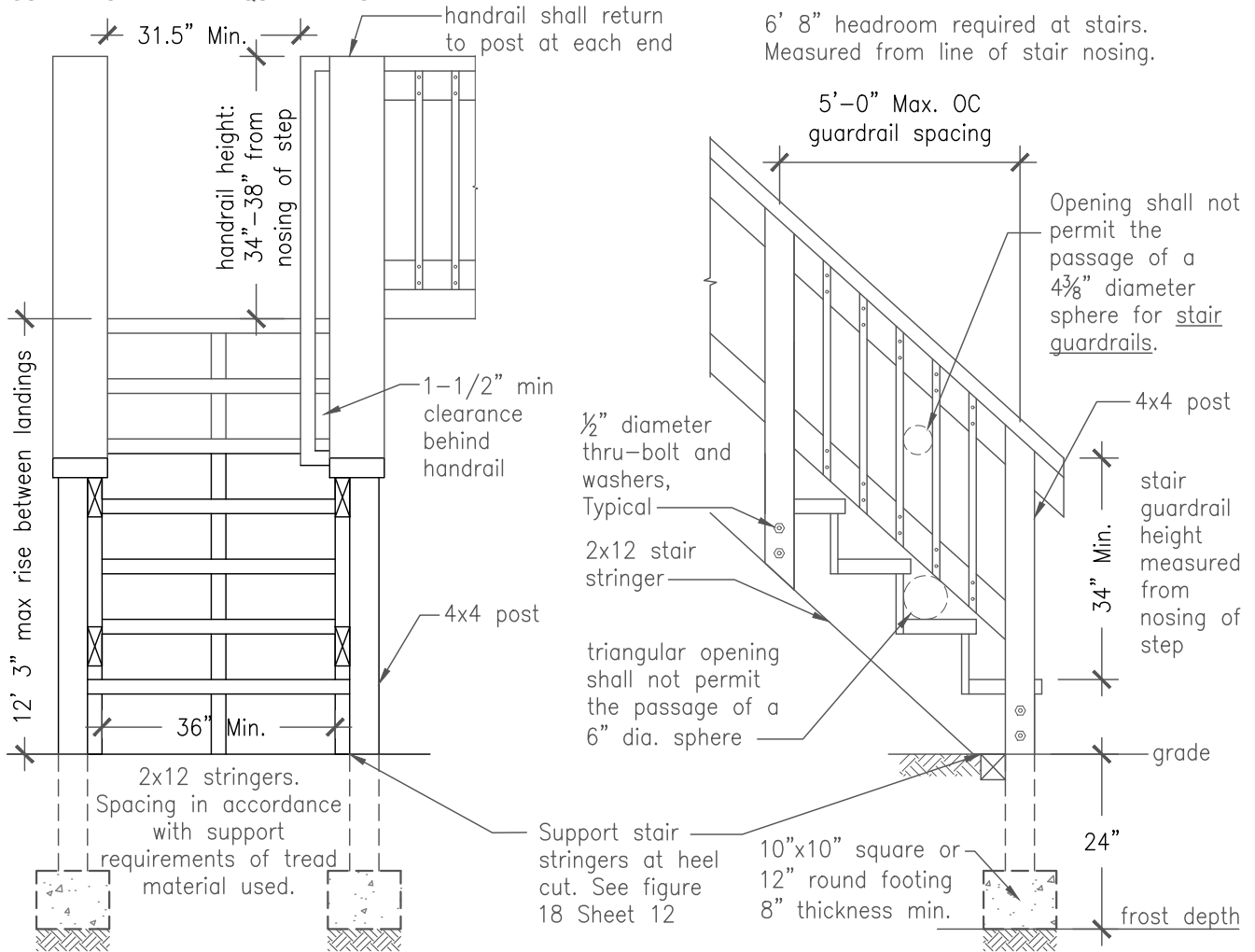


FIGURE 18: TREAD, RISER, AND STRINGER DETAIL

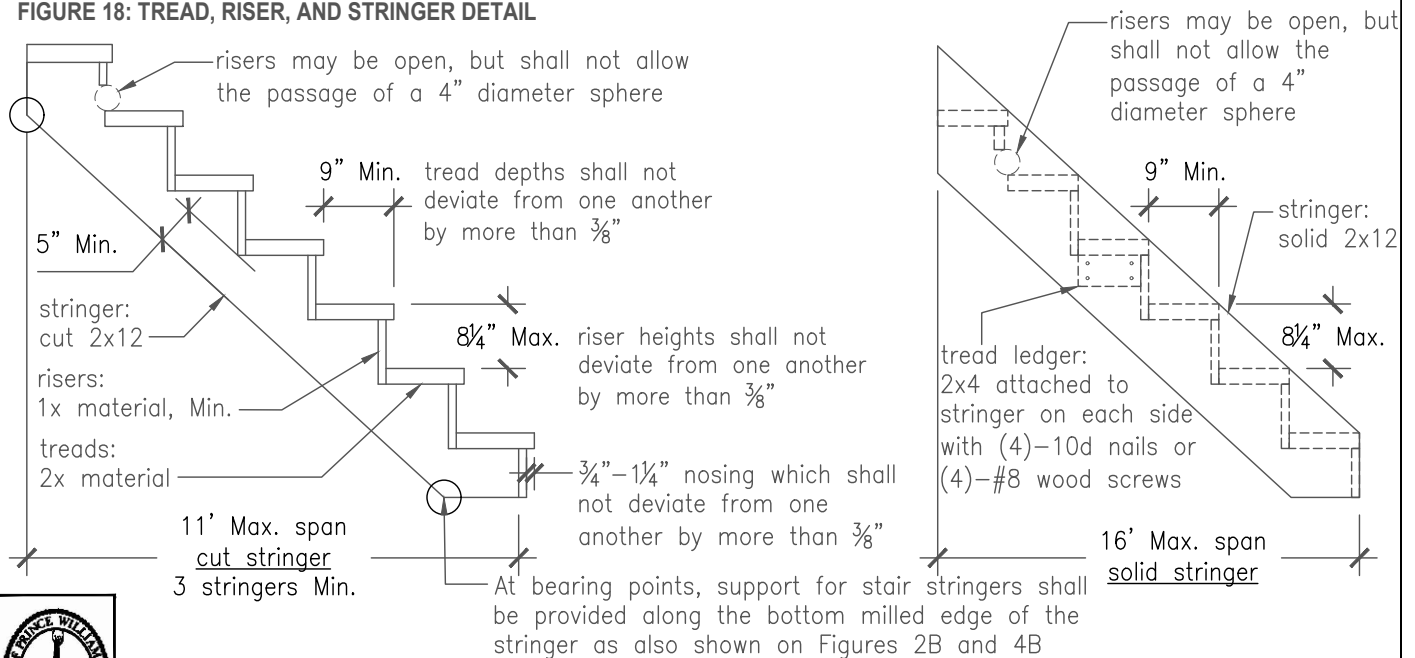


FIGURE 19: INTERMEDIATE STAIRWAY LANDING FRAMING DETAILS

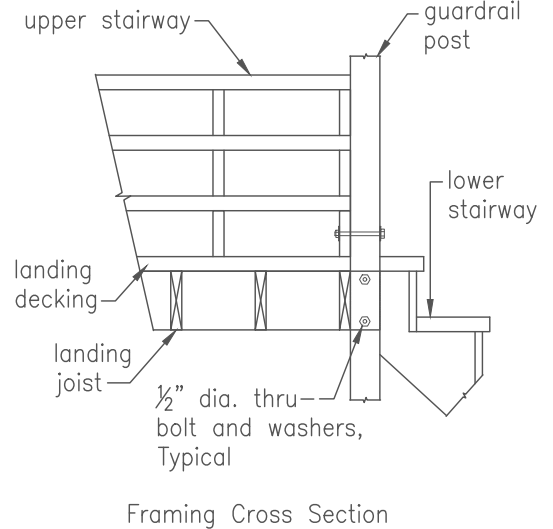
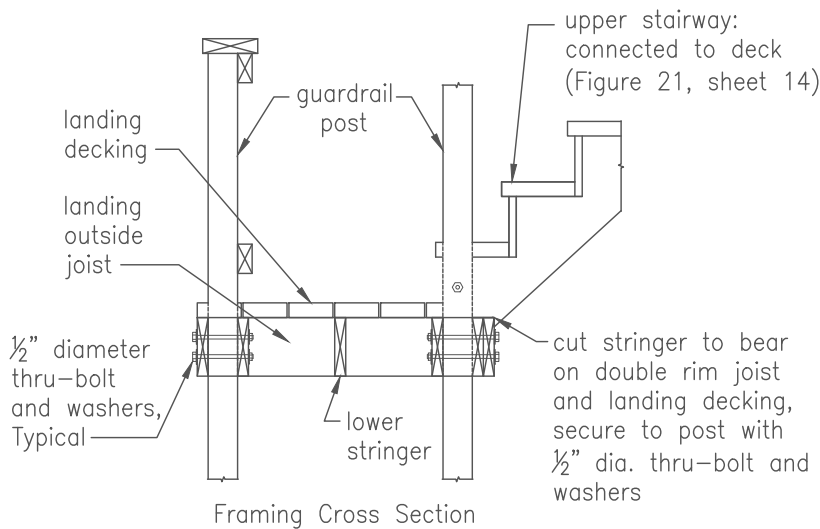
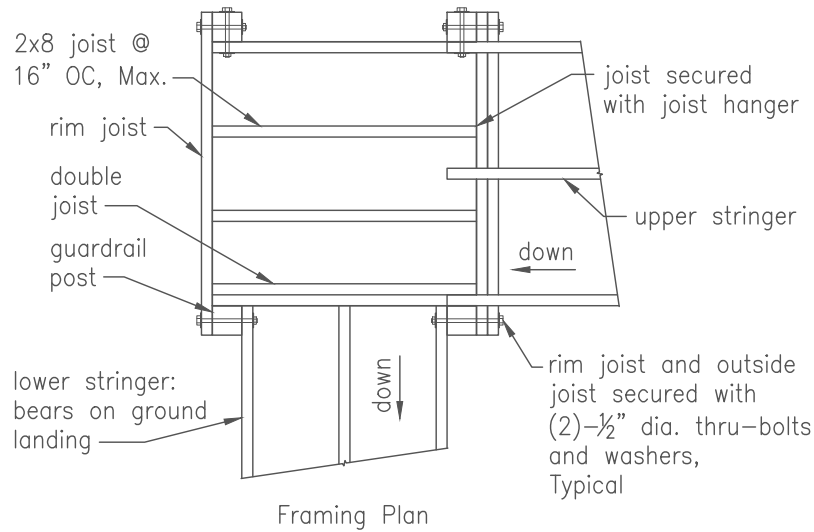


FIGURE 20: LANDING DIMENSION DETAILS

Dimensions shown are for upper stairway, intermediate stairway, ground level and doorway landings. All landings or areas serving as landings shall be 36" in the direction of travel and at least the width of the door or stairway being served.

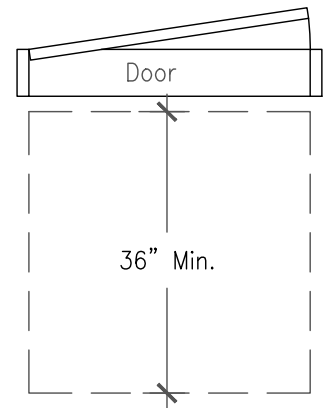
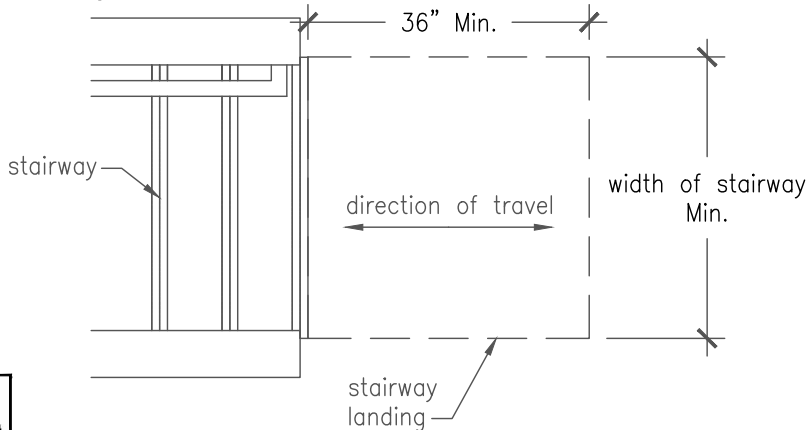


FIGURE 21: STAIRWAY CONNECTION TO DECK DETAILS

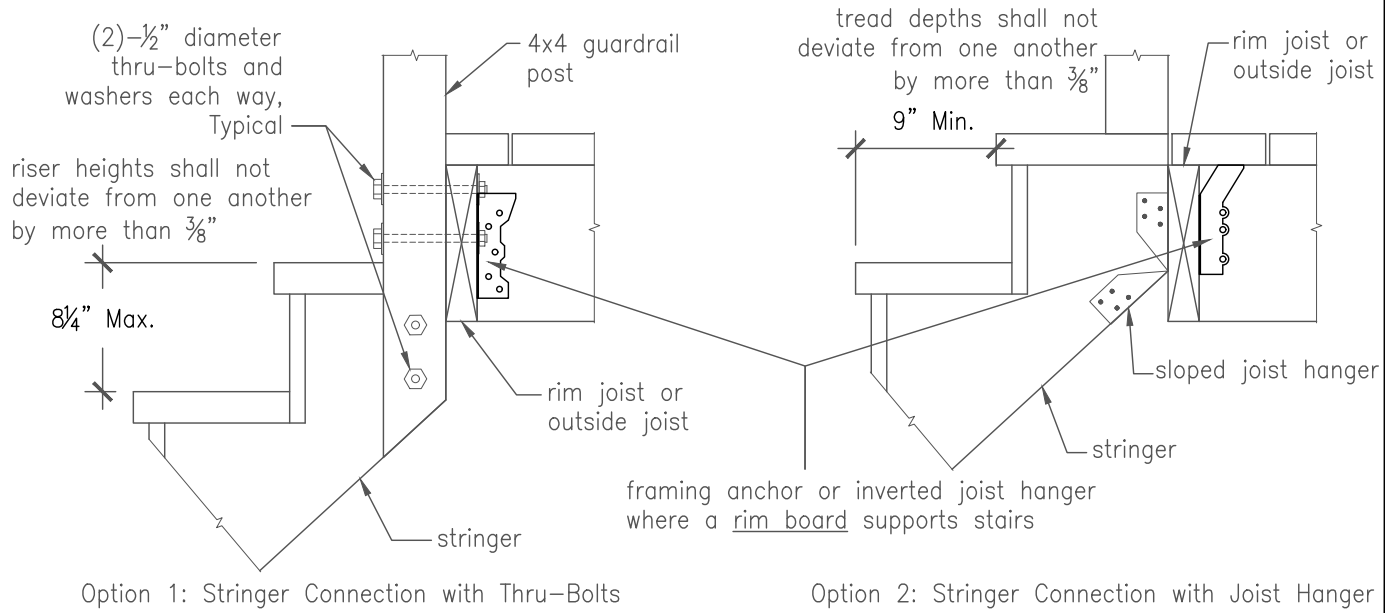
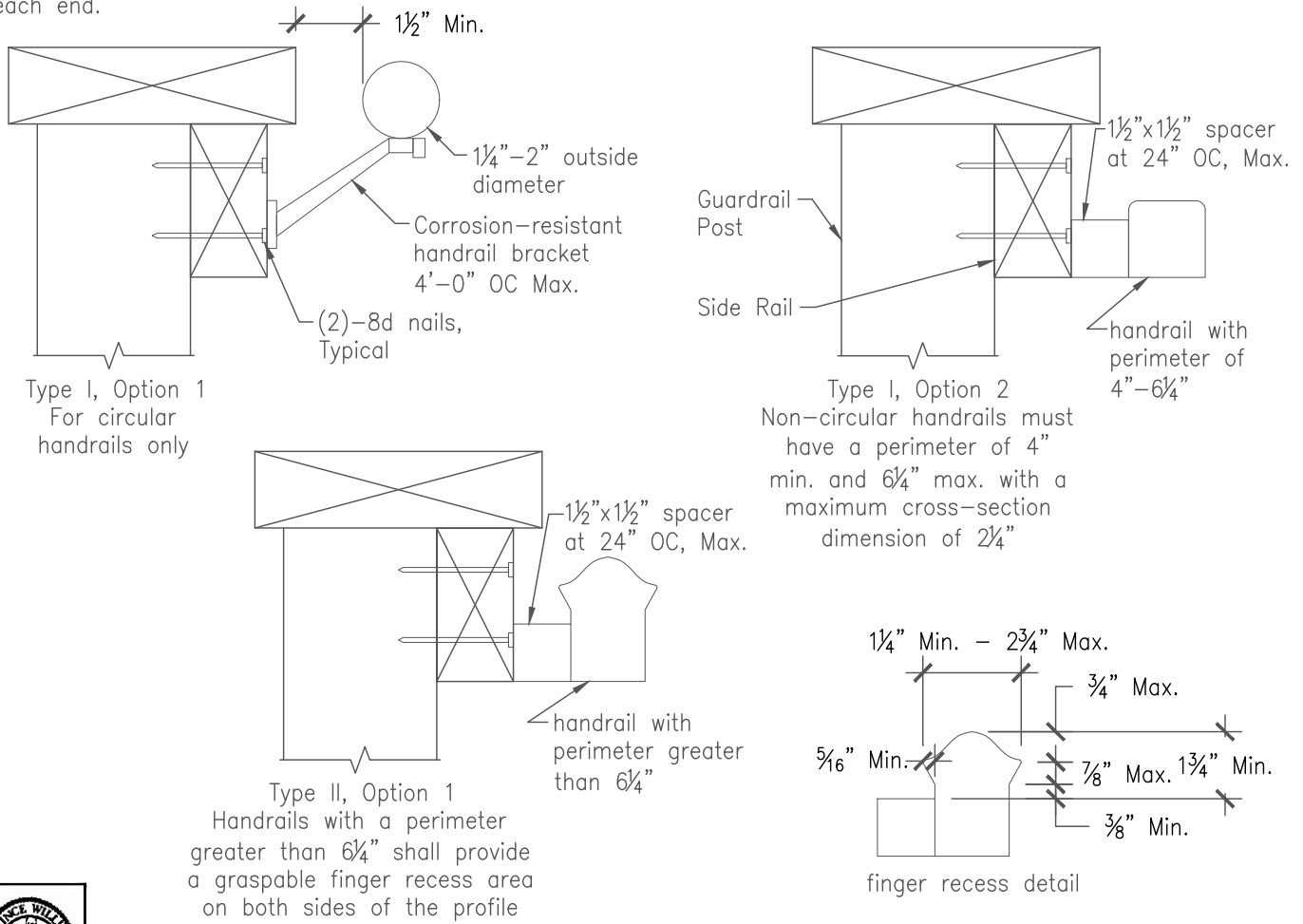
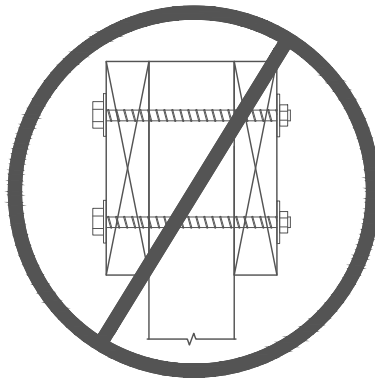


FIGURE 22: HANDRAIL DETAILS

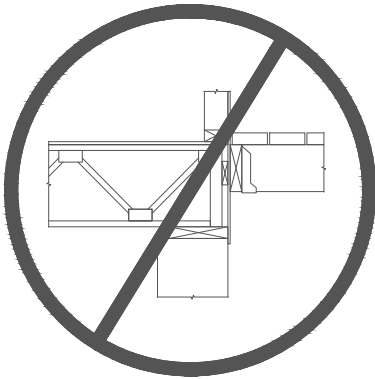
Handrails should be continuous from top riser to bottom riser and shall return to post or mounting surface at each end.



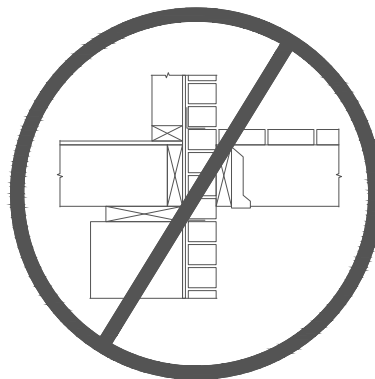
PROHIBITED ATTACHMENTS



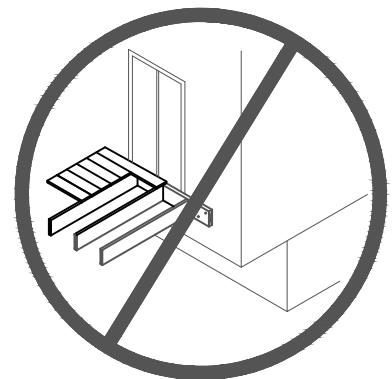
Prohibited Post-to-Beam Connection



Prohibited Ledger Attachment:
to open web trusses



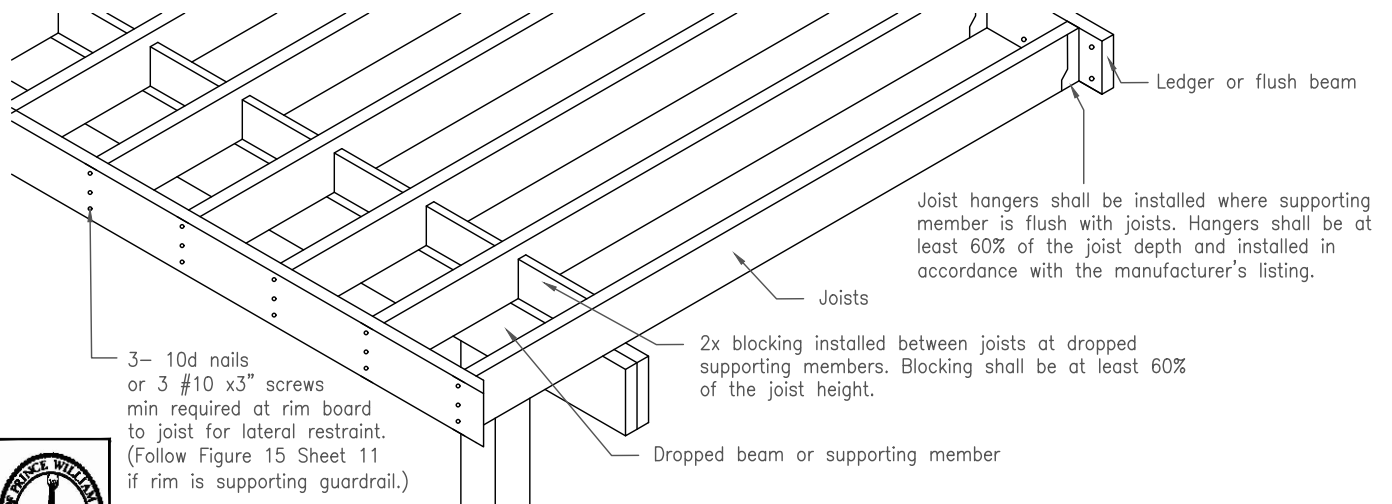
Prohibited Ledger Attachment:
to or thru brick veneer, stone veneer
or EIFS



Prohibited Ledger Attachment:
to house overhang

FIGURE 23: LATERAL RESTRAINT.

Joist ends and bearing locations shall be provided with lateral restraint to prevent rotation.



STAIRWAY ILLUMINATION FOR DECKS

The International Residential code (IRC) establishes the requirements for stairway illumination. This section includes stairways associated with decks. The following are a few of the ways to comply with the stairway illumination requirements:

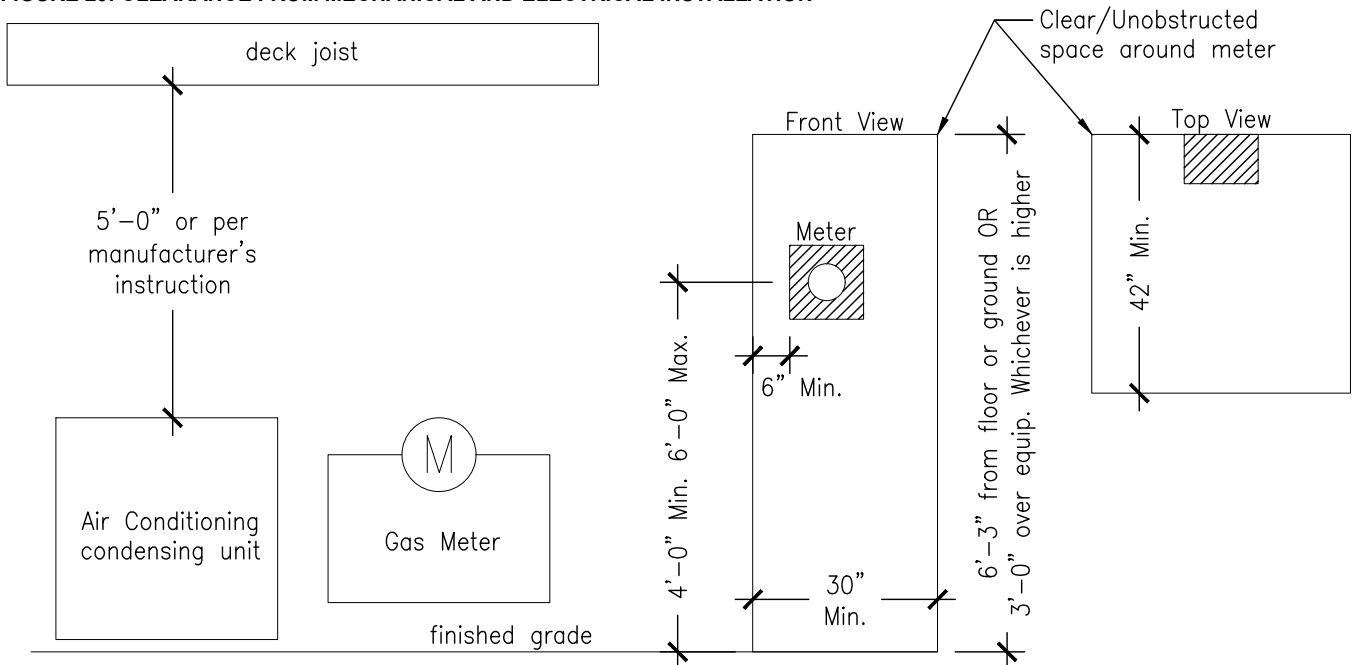
- Install an exterior light fixture within 5 feet of horizontal distance from the top landing of the stairway. The light fixture must be positioned to illuminate both the top landing and the stairway.
- Install an exterior 150 watt flood light fixture within 30 feet of horizontal distance from the top landing of the stairway. The light fixture must be positioned to illuminate both the top landing and the stairway.
- Install low voltage light fixtures that are approved for exterior use. A low voltage fixture must be installed at each step. Also, one fixture must be installed on the walkway within 3 feet of the bottom step. Any wiring must be installed and secured in a safe manner. The low voltage lights may be plugged into an exterior GFI electrical outlet with an In-Use Weatherproof Cover (NEMA 3R Rated) or hard wired into the electrical panel box in the house.
- Other methods of complying with the illumination requirements, including justification and analysis shall be submitted to the Building Construction Review Branch for approval prior to installation.
- SOLAR LIGHTING IS NOT PERMITTED TO SERVE AS THE REQUIRED STAIRWAY LIGHTING.

An electrical permit and inspection is required for the installation of new 120v lighting fixtures or receptacles for stairway lighting. Cord and plug connected low voltage lighting may be installed without a permit if utilizing an existing weather resistant receptacle with an in-use cover installed.

GLAZING ADJACENT TO STAIRWAYS

Glazing adjacent to the landing at the bottom of a stairway where the glazing is less than 36" above the landing and within 60" horizontally and glazing where the bottom edge of the glazing is less than 36" above the plane of the adjacent walking surface and within 36" horizontally for stairways, landings between flights of stairs and ramps shall be considered hazardous locations and shall meet safety glazing requirements of the IRC Code.

FIGURE 23: CLEARANCE FROM MECHANICAL AND ELECTRICAL INSTALLATION



- Contact the gas company for a courtesy inspection if: the distance from finished grade to bottom of joist is less than 5'-0", a roof will be above the deck, or the deck will have a floor covering.
- Normally the power company will not approve a meter location on or under a balcony, porch, carport, deck catwalk, or stairs. Contact power company for more information.
- Gas fireplace terminations shall be 18" from the top of the outside termination to combustible materials and overhangs or per manufacturer's specifications.
- Clearances for furnace and water heater (PVC) terminations shall comply with manufactures specifications.



REQUIRED INSPECTION AND SCHEDULING

1. Before you dig, call Miss Utility at 1-800-552-7001.
2. Call for a footing inspection before placing concrete.
3. Schedule a concealment inspection if the underside of the deck is less than 42" above grade.
4. If required, call for electrical permit and inspection.
5. DO NOT conceal structural members and connections with trim or coverings prior to obtaining a concealment inspection or until AFTER a final inspection approval has been issued.

- To schedule inspections, go online to www.pwcgov.org/eportal or call the Automated Phone System at 1-866-457-5280.
- No inspections shall be made unless the approved drawing set is on site.
- ESR for manufactured decking, railing or fasteners and hardware outside the scope of this document is required to be on site for inspection.

IMPORTANT PHONE NUMBERS:

Residential Plan Review	703-792-6939
Construction Services (Plan Intake)	703-792-4040
Construction Services (Plan Review)	703-792-6930
Construction Services (Permits and Records)	703-792-6924
Construction Inspections	703-792-7006
Zoning Office	703-792-6830

To Schedule Inspection call 1-866-457-5280 or visit: www.pwcgov.org/eportal

Hours

The Building Development Division reviews Deck plans, Mon. Thru Fri. from 8:00 A.M to 11:00 A.M, on a walk through basis.

OTHER NOTES:

- Emergency windows under decks and porches shall be fully openable and provide a path not less than 36 inches in height to a yard or court.
- For decks without stairs, provide access through the house to the top of the deck for final inspection.
- All decks requiring guard rails shall maintain 36 inches height above all walking surfaces.
- All wood that is in contact with the ground, embedded in concrete in contact with the ground or embedded in concrete exposed to the weather shall be preservative treated wood suitable for ground contact.

OUTDOOR RECEPTACLE REQUIREMENTS FOR DECKS

Each balcony deck or porch that is accessible from the inside of the dwelling shall have at least one receptacle outlet installed within the perimeter of each balcony, deck or porch or portions thereof that are separated by a door. The receptacle shall be located not more than 6 feet, 6 inches above the balcony, deck, or porch surface.

