Prince George's County
Department of Permitting, Inspections
and Enforcement
BUILDING PLAN REVIEW DIVISION
BUILDING/STRUCTURAL SECTION
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Largo, Maryland 20774
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PRESCRIPTIVE RESIDENTIAL WOOD DECK CONSTRUCTION GUIDELINES AND DETAILS FOR FREE-STANDING DECK PER CURRENT BUILDING CODE

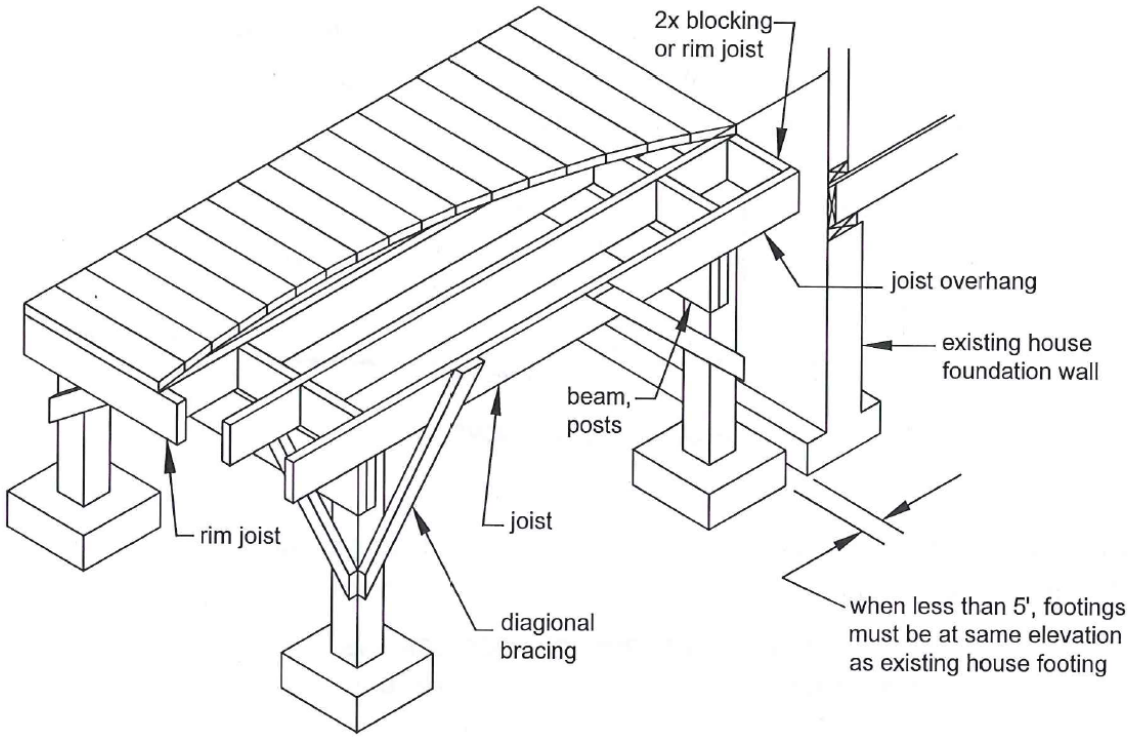


FIGURE 1 — FREE-STANDING DECK

Free-Standing Deck: A self-supporting deck structure built independently from the house that requires two support beams.

GENERAL NOTES

1. This document can be used in lieu of construction plans and it applies to single level – single span rectangular decks only. The overall deck length shall be equal to or less than the overall deck width. (Figures 1 or 2, page 4) Maximum 14 feet above grade and for Residential Use Only. Submit the proposed deck layout and framing plan if the deck has multiple spans.

2. Band joists supporting attached decks shall be capable of supporting the new deck. If the condition cannot be verified, a free-standing deck or full plan submission will be required.

3. **A copy of this document is required to be on the jobsite and available for inspection.**

4. Deviations from this handout and the conditions, which do not meet the details shown herein, shall require plan submission prior to permit issuance.

5. **Decks shall not be attached to house overhangs, bay windows, or chimneys.**

6. **Decks constructed according to these details are NOT approved for future hot tub installations and/or any future enclosures.**

7. Deck shall not be loaded with more than 50 psf (pounds per square foot) total load. Soil bearing capacity shall be minimum 1500 psf and the minimum compressive strength of concrete shall be 3000 psi (pounds per square inch).

8. All deck lumber shall be #2 Southern Pine or better. All lumber shall be pressure-treated — with an approved process and preservative in accordance with the American Wood Protection Association standard. All lumber in contact with the ground shall be approved preservative treated wood suitable for ground contact.

9. Deck post size and maximum post height shall be in accordance with Table 4, page 7.

10. All screws, bolts, washers, nuts, and nails shall be hot-dipped zinc-coated galvanized steel, stainless steel, silicon bronze or copper. Hot-dipped galvanized fasteners shall meet the requirements of ASTM A 153. Class D for fasteners 3/8” diameter and smaller or Class C for fasteners with diameters over 3/8”. Stainless steel driven fasteners shall be in accordance with the material requirements of ASTM F 1667. Fasteners other than nails and timber rivets shall be permitted to be of mechanically deposited zinc-coated steel with coatings and weights in accordance with ASTM B695, Class 55, minimum.

11. All connectors (joist hangers, cast-in-place post anchors, etc.) shall be galvanized or shall be stainless steel. Hardware to be hot-dipped galvanized prior to fabrication shall meet ASTM A653, G-185 coating. Hardware to be hot-dipped galvanized after fabrication shall meet ASTM A123.

12. Screws spirally grooved and ring shanked nails shall be used for the deck surface and only manufacturer-specified fasteners shall be used to attach the connectors. Do not mix galvanized and stainless-steel connectors.

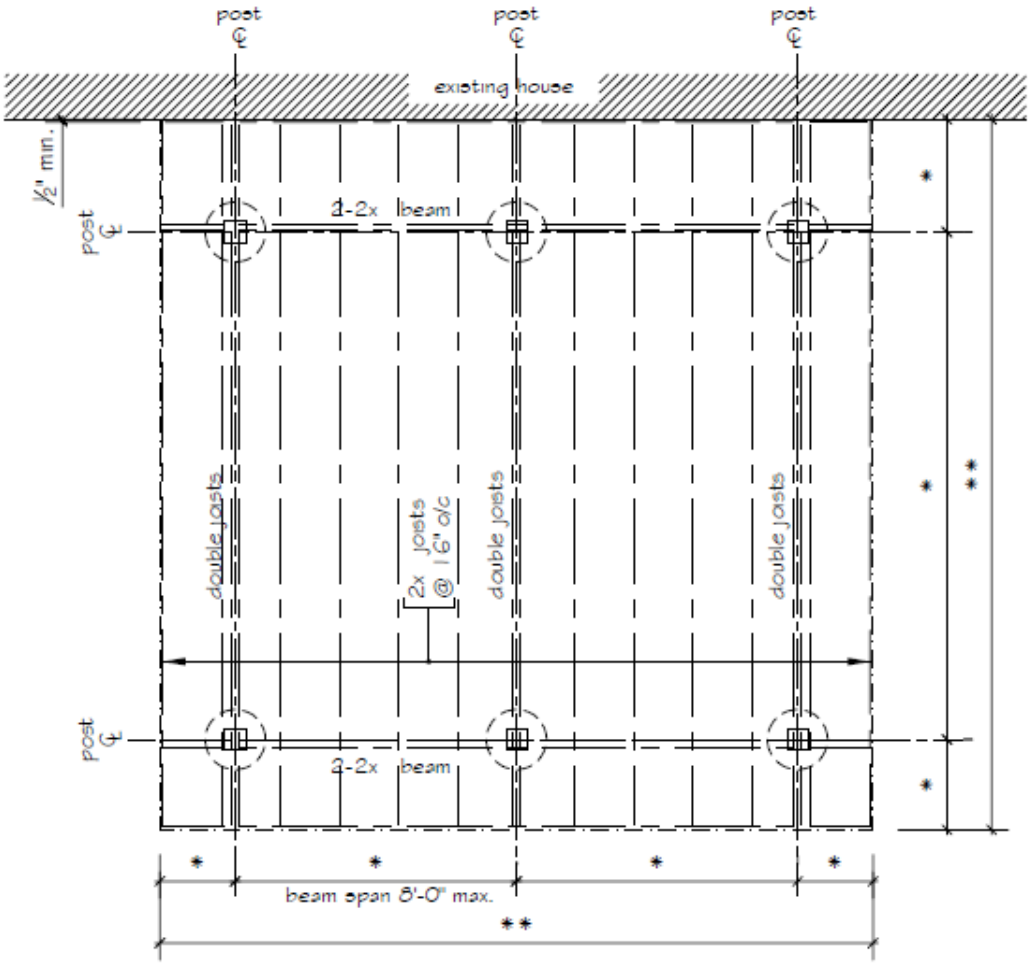
13. Decks 30 inches or less above grade are not required to have a guardrail. Grade measurement is at any point within 36” horizontally.

14. All decks that are accessible from the inside of the dwelling shall have at least one receptacle outlet accessible from the deck (NEC 210.52(e)3).

15. Before you dig, call MISS UTILITY 1-800-257-7777 (2-day notice is required). Please note that the Maryland High Voltage Line Act prohibits any person or object from getting closer than 10 feet to high voltage power lines.

CONSTRUCTION PLANNING

SAMPLE DECK FRAMING/FOUNDATION PLAN, ELEVATIONS AND SECTIONS

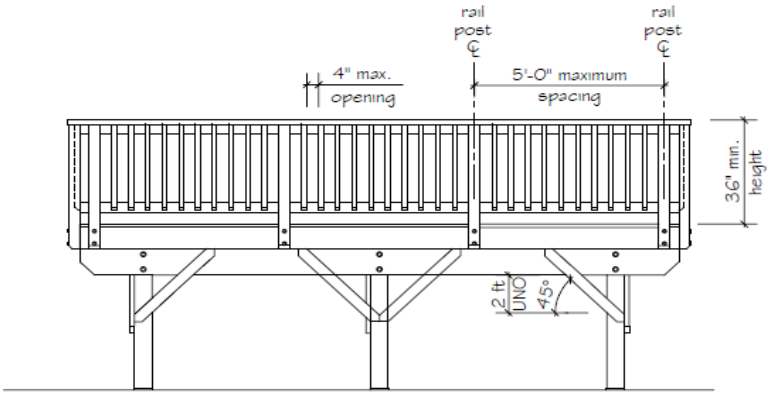


FRAMING / FOUNDATION PLAN

SCALE: 1/4"= 1'-0"

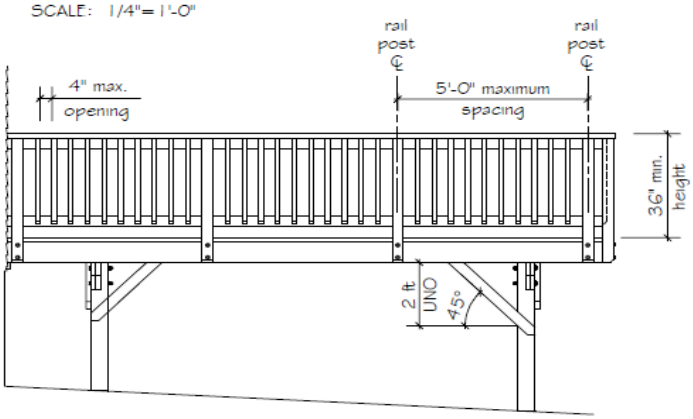
General Notes:

1. All lumber shall be ground contact preservative treated wood UC4A or higher.
2. All connectors, anchors and fasteners shall be either Zmax or post batch hot-dip galvanized steel.
3. Provide double joists at center of the post or where 1 side of joist flush with face of post below to facilitate diagonal bracing connection.
4. Where the 1500 psf soil bearing pressure capacity of the footing is not obtained; usually near the house basement wall, extend the footing down until reach the bearing capacity.
5. A 3x3 wood placed under beam or double joists may be used in lieu of 2x4 diagonal bracing shown.
6. Beam splice at interior posts only.



FRONT ELEVATION

SCALE: 1/4"= 1'-0"

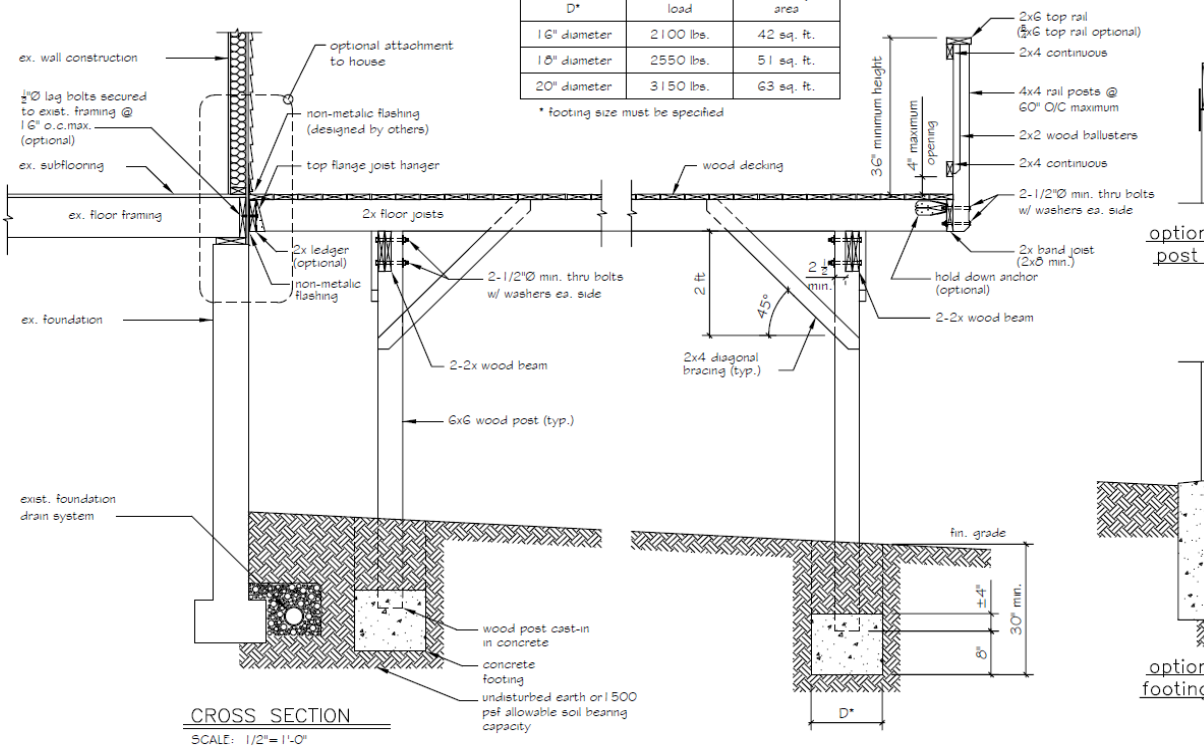


LEFT SIDE ELEVATION

FOOTING DESIGN TABLE		
size D*	allowable load	tributary area
16" diameter	2100 lbs.	42 sq. ft.
18" diameter	2550 lbs.	51 sq. ft.
20" diameter	3150 lbs.	63 sq. ft.

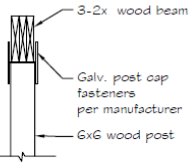
* footing size must be specified

Note: notching of 4x4 rail posts is not permitted

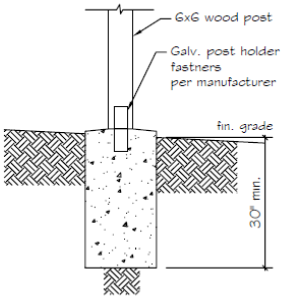


CROSS SECTION

SCALE: 1/2"= 1'-0"



optional beam to post connection



optional post to footing connection

JOIST SIZING

Maximum allowable span for deck joists shall be as per Table 1. The maximum cantilever shall be limited to one-fourth of the actual adjacent joist span or the maximum cantilevered length shown on Table 1, whichever is less. The ends of joists shall have not less than 1½" bearing on wood or metal. Joist framing into the side of a beam or ledger shall be supported by approved joist hangers. Joist ends and bearings shall be provided with lateral resistance to prevent rotation by joist hangers or blocking, and their depth shall not be less than 60% of the joist depth. Rim joists shall be secured to the end of each joist with no less than three 10d (3 in x 0.128 in) nails or three No. 10 x 3 in long wood screws.

SPECIES	SIZE	ALLOWABLE JOIST SPAN SPACING OF DECK JOISTS (INCHES)		
		12	16	24
Southern Pine No. 2	2x6	9'-11"	9'-0"	7'-7"
	2x8	13'-1"	11'-10"	9'-8"
	2x10	16'-2"	14'-0"	11'-5"
	2x12	18'-0"	16'-6"	13'-6"

** The Cantilever Length for Deck Floor Joists shall be **2'-0" Maximum**.

TABLE 1 — MAXIMUM JOIST SPANS & SIZES

BEAM SIZING

Maximum allowable span for deck beams shall be as per Table 2. Beam plies shall be fastened with two rows of 10d (3 in x 0.128 in) nails minimum at 16" on center (o.c.) along each edge. Beams shall be permitted to cantilever up to 2 feet or up to one-fourth of the beam span, whichever is less. The ends of beams shall have a minimum of 1½" inches of bearing. Beams may overhang a maximum of 2'-0" beyond the centerline of the outside post. Beams must span continuously between posts and shall be spliced at interior post locations only.

DECK BEAM SPANS [a,b,]

	Size	DECK JOIST SPAN LESS THAN OR EQUAL TO: (feet)						
		6	8	10	12	14	16	18
Southern Pine No. 2	(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"
	(2) 2x12	12'-2"	10'-7"	9'-5"	8'-7"	8'-0"	7'-6"	7'-0"
	(3) 2x6	8'-2"	7'-5"	6'-8"	6'-1"	5'-8"	5'-3"	5'-0"
	(3) 2x8	10'-10"	9'-6"	8'-6"	7'-9"	7'-2"	6'-8"	6'-4"
	(3) 2x10	13'-0"	11'-3"	10-0"	9'-2"	8'-6"	7'-11"	7'-6"
	(3) 2x12	15'-3"	13'-3"	11'-10"	10'-9"	10'-0"	9'-4"	8'-10"

a. Beam depth shall be greater than or equal to the depth of the floor joist with a flush beam condition.
b. Beams shall be permitted to cantilever at each end 2 feet or up to one-fourth of the actual beam span, whichever is less.

TABLE 2 — MAXIMUM BEAM SPANS & SIZES

JOIST-TO-BEAM CONNECTION

Each joist shall be attached to the beam as shown on Figure 2. Joist may bear on an overhang beyond the beam face when Option 1 or Option 2 is used, and blocking is provided between joists at beam bearing. Option 2 mechanical fasteners of hurricane clips must have a minimum uplift and lateral load capacity of 100 lbs. in both uplift and lateral load directions. Joists may also be attached to the side of the beam with joist hangers per Option 3. Joists shall not frame in from opposite sides of the beam. Joist hangers shall be at least 60% of the ledger of beam depth. See Table 3 for minimum joist hanger capacity. Inside flange hangers can be used at edge conditions. Clip angles or brackets to support deck joists are prohibited.

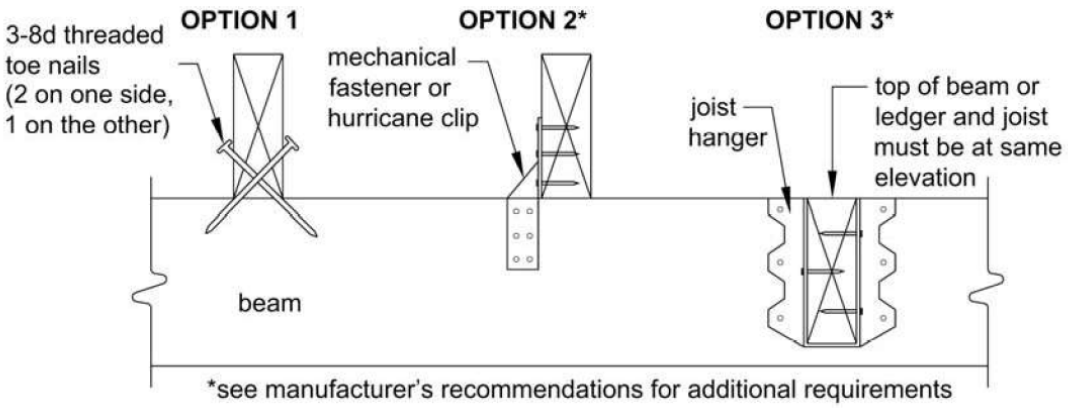


FIGURE 2 — JOIST-TO-BEAM CONNECTION

JOIST SIZE	MIN. CAPACITY
2x6	400 lbs
2x8	500 lbs
2x10	600 lbs
2x12	700 lbs

TABLE 3 — JOIST HANGER VERTICAL CAPACITY

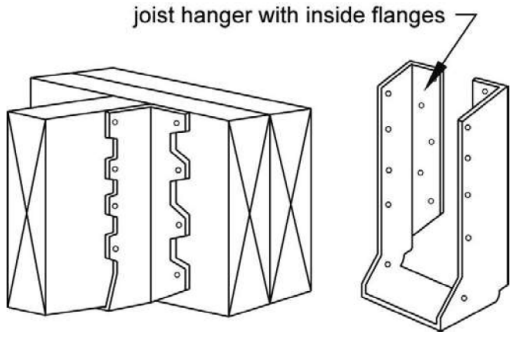


FIGURE 3 — JOIST-TO-BEAM CONNECTION

RIM JOIST REQUIREMENTS

Attach a continuous rim joist to both ends of joists as shown in FIGURE 4. Minimum rim joist dimension shall be equal to those of the joists.

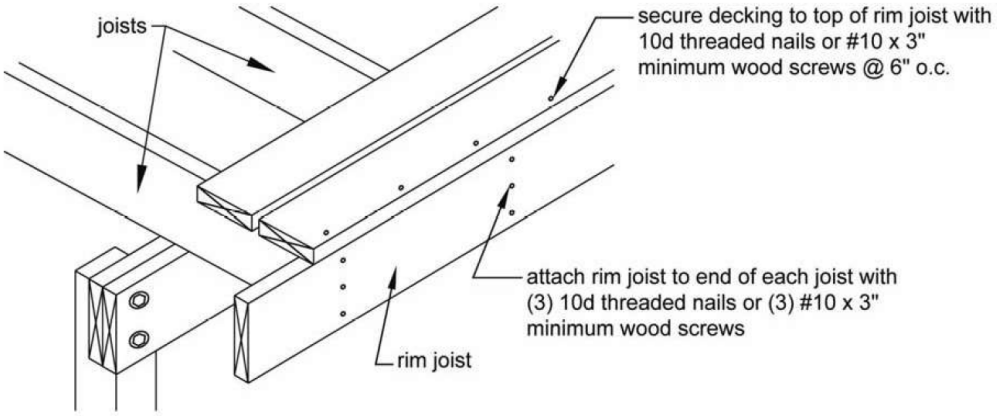


FIGURE 4 — RIM JOIST REQUIREMENT

POST REQUIREMENTS

Deck post size shall be in accordance with Table 4. The height of the post is measured from grade or top of foundation (whichever is higher) to the underside of the beam. Post shall be centered on the footing. Cut ends and notches of post shall be field treated with an approved preservative. The post shall be attached to the beam by notching as shown in Figure 5 or by providing an approved post cap to connect the post to the beam as shown in Figure 5. Where post bears on concrete footings, lateral restrain shall be provided by manufactured connectors or a minimum post embedment of 12 inches in surrounding soils of concrete piers.

Provide diagonal bracing at each post greater than 2 feet in height (grade to bottom of beam) as shown in Figure 6. Diagonal bracing is prohibited on center posts. Bracing shall be fastened to the post at one end with ½" diameter lag screws. One set of diagonal bracings shall be located between posts and beams or parallel to the house. Another set of diagonal bracings shall be located perpendicular to beams and house in the end spans. This bracing shall be bolted to the post and joist above the post location. If the joist spacing is such that a joist does not align over a post location, an extra joist shall be added to facilitate connection of the diagonal bracing.

DECK POST SIZE	MAXIMUM HIEHGT [a, b] (feet and inches)
6x6	14'-0"

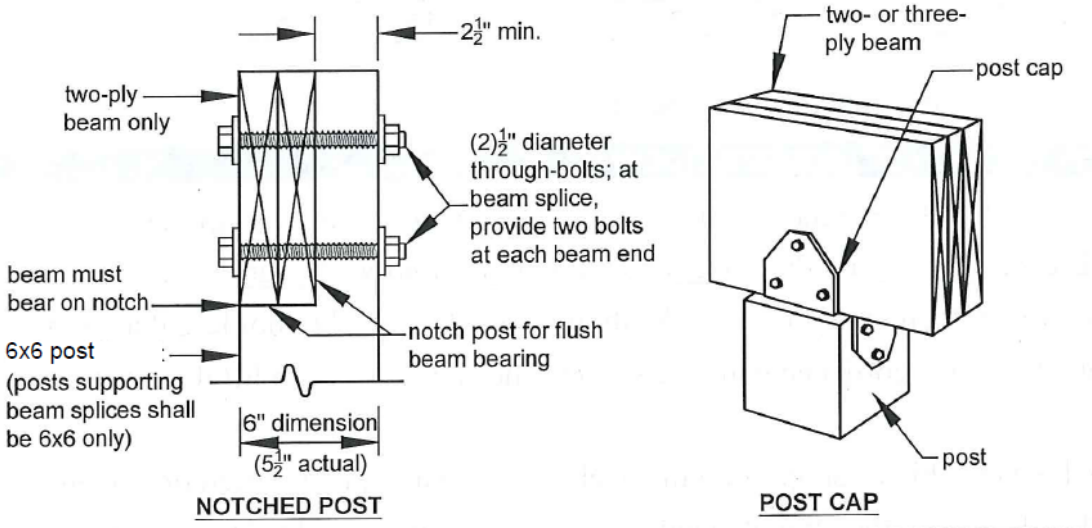
a. Measured to the underside of the beam
b. Based on 40 psf live loads

TABLE 4 — MAXIMUM POST HEIGHT AND SIZES

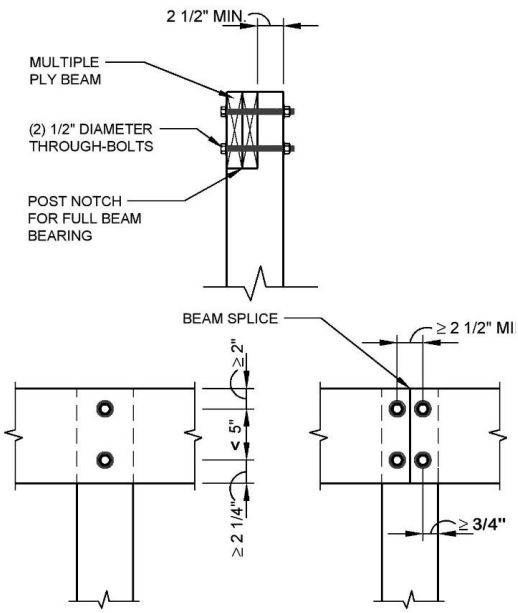
POST-TO-BEAM REQUIREMENTS

Deck beams shall be attached to deck posts in a manner capable of transferring vertical loads and resisting horizontal displacement. Where multiple span beams bear on intermediate posts, each ply must have full bearing on the post as shown in Figure 5. Connections shall be per Figure 5. Manufactured post-to-beam connectors shall be sized for the post and beam sizes. Bolts shall have washers under the head and nut.

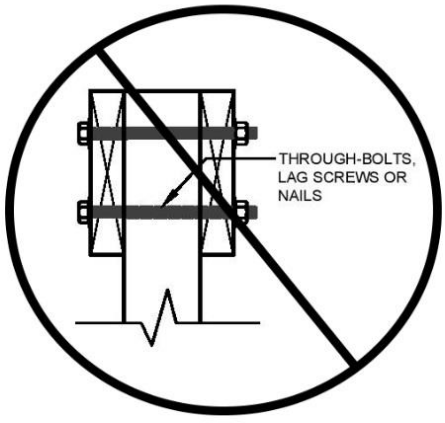
Beam-to-post connection with fasteners only is prohibited (see Figure 5). Built-up beams shall be assembled in accordance with Figure 6. For triple member beams, provide the nailing pattern shown to the outside member on each side; however staggered rows shall be offset so as not to occur in the same location.



POST-TO-BEAM REQUIREMENT



NOTCHED POST-TO-BEAM CONNECTION



POST-TO-BEAM PROHIBITED CONNECTION

Note: a. Beams must span continuously between posts and shall **be spliced at interior post locations only.**
b. Spans are measured between the centerline of bearings or supports.

FIGURE 5 — POST-TO-BEAM REQUIREMENT

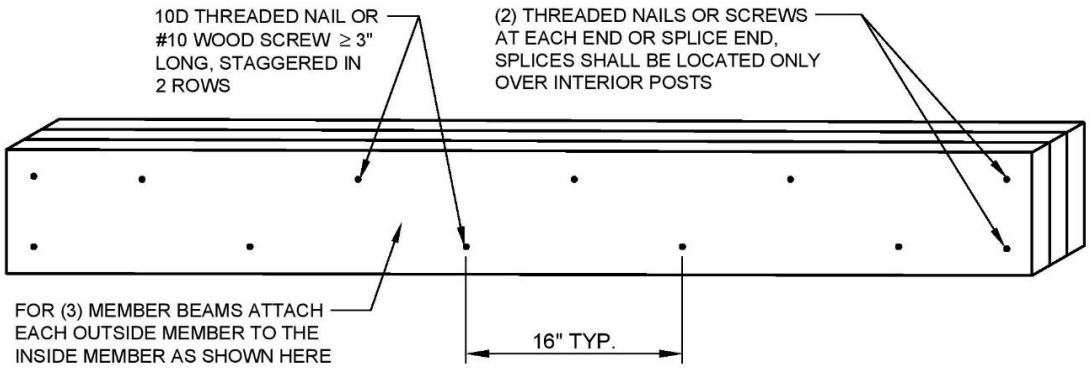


FIGURE 6 — BUILT-UP BEAM CONNECTION

FOOTINGS REQUIREMENTS

Footings shall be min. 18" square or min. 20" diameter in size. Footing sizes can be found by using Table 5. All footings shall be a minimum of 30" below grade and shall bear on solid ground; footing sizes shall be consistent for each beam and designed for its maximum span. Footings closer than 5'-0" to the existing exterior house wall shall be installed at the same elevation as the existing wall footing. Bearing conditions will be verified in the field. Thickness and post attachments shall be per Figure 7. (Concrete min. compressive strength is 3,000 psi.) Do not construct footings over utility lines or service pipes. Call Miss Utility at 811 before you dig.

Beam Span Less than or equal to:	Joist Span Less than or equal to	Size of Square Footing	Size of Round Footing	Minimum Thickness
8'	8'	18"	20"	10"
	10'	20"	22"	10"
	12'	22"	24	10"
10'	8'	20"	22"	10"
	10'	22"	24"	10"
	12'	24"	26"	10"

TABLE 5 — FOOTING SIZES

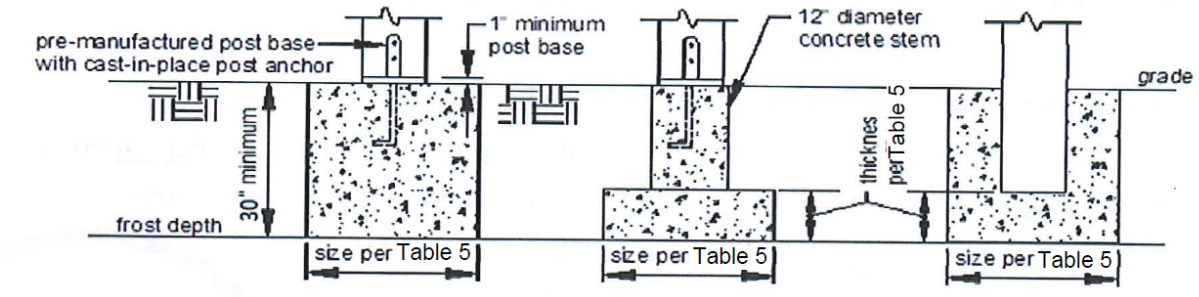


FIGURE 7 — TYPICAL FOOTING DETAILS

a. Posts shall be restrained to prevent lateral displacement at the bottom support by manufacturer connectors or by a minimum of 12" in surrounding soils or concrete piers. Where expansive, compressible, shifting, or other questionable soils are present, soils shall not be relied on for lateral support.

b. Cut ends of posts shall be field treated with an approved preservative containing copper naphthenate.

LATERAL SUPPORT OF FREE-STANDING DECKS

Free standing decks shall resist lateral loading and sway by one of the following methods:

1) DIAGONAL BRACING: Provide diagonal bracing per Figure 8. Bracing shall be located between posts parallel to beams and bolted to the beam and posts. Diagonal bracing shall also be located perpendicular to beam and in such cases, bracing shall be bolted to the post and joist above the post location. If the joist spacing is such that the joist does not align over a post location, an extra joist shall be added to facilitate connection of the diagonal bracing.

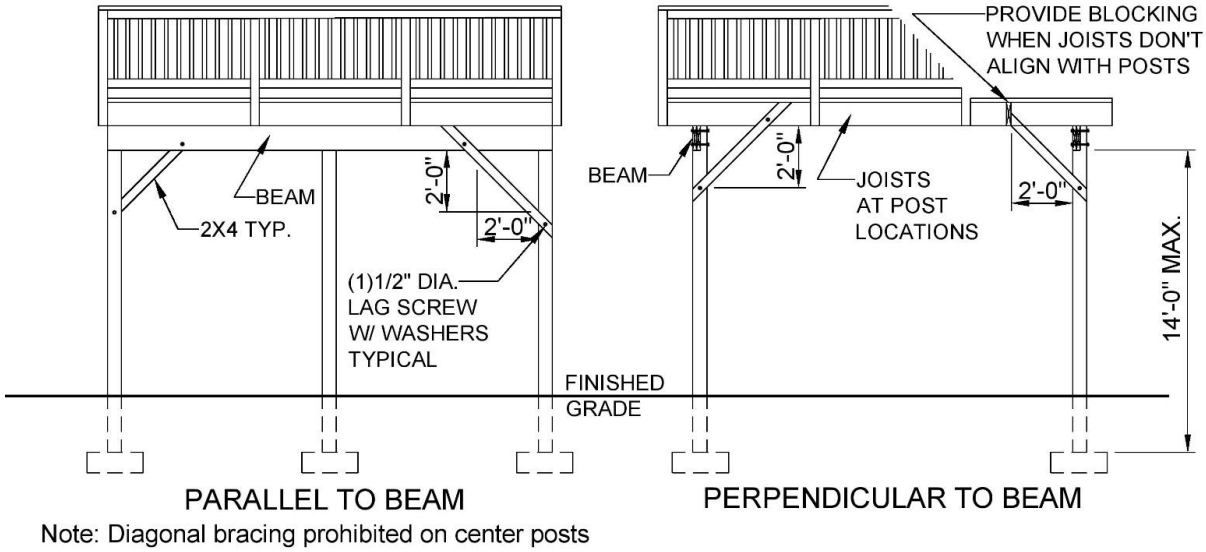


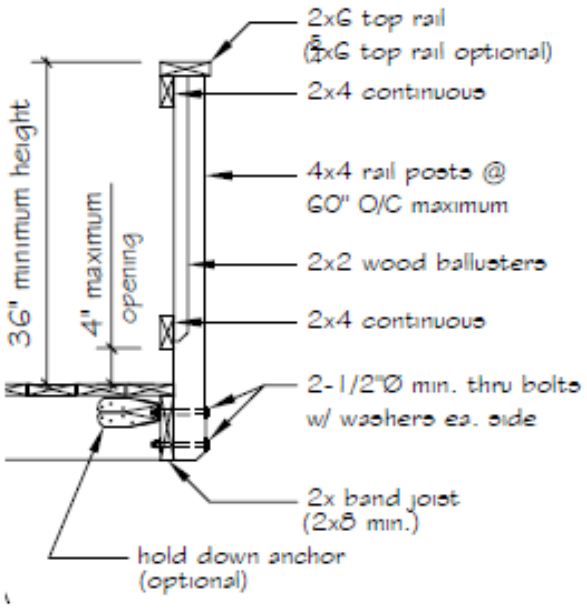
FIGURE 8 — DIAGONAL BRACING FOR LATERAL SUPPORT

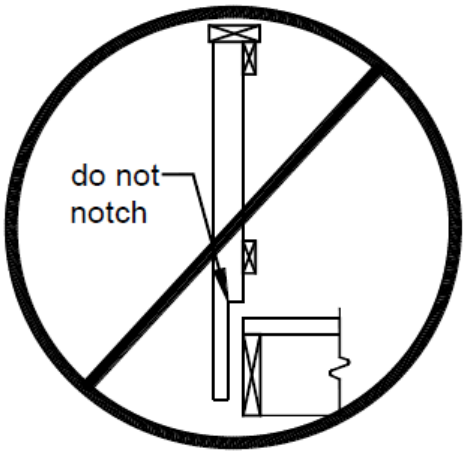
GUARDRAIL REQUIREMENTS

All decks greater than 30" above grade are required to have a guard constructed as shown in Figure 9. Deck guard posts shall be a minimum 4x4 (nominal). Joists and rim joists to which guards post are attached shall be a minimum of 2x8 (nominal). Guard posts which run parallel to the deck joists shall be attached to the outside joists as per Figure 9. Guard posts that run perpendicular to the deck joists shall be attached to the rim joists in accordance with Figure 4. Hold down anchors shall have a minimum allowable tension load of 1,800 lbs. for a 36" maximum guard height and shall be installed in accordance with manufacturer's instructions.

Manufactured railing systems will be accepted only if they are labeled to indicate compliance with ASTM D7032 and listed by an approved code agency in a current code evaluation report. A complete current code evaluation report for the manufactured railing system to be installed must be provided to the building inspector at the time of framing inspection. Manufactured railing systems must be installed in accordance with the report and manufacturer's specifications. Wood posts spacing and connections, if used for supporting manufactured rails, balusters, or pickets, must follow the conditions specified by the code evaluation **(ICC-ES)** report. The ICC-ES reports shall be submitted at the time of review for approval.

Note: notching of 4x4 rail posts is not permitted





Notching of rail posts is not permitted.

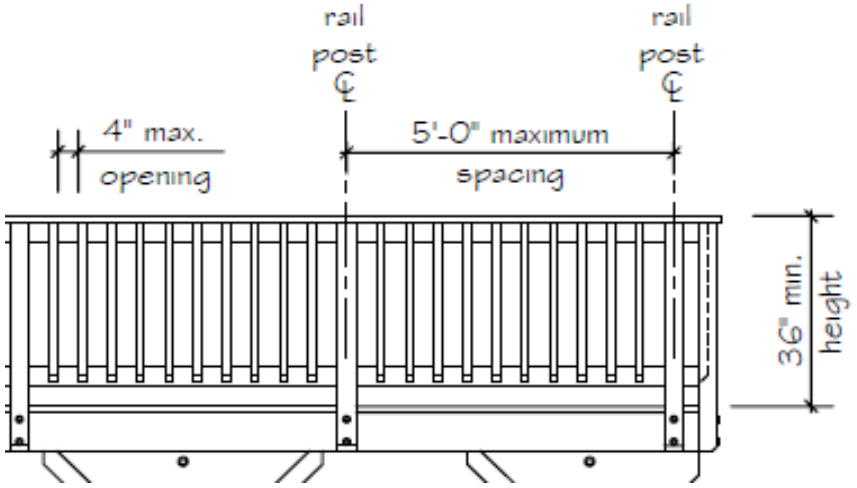


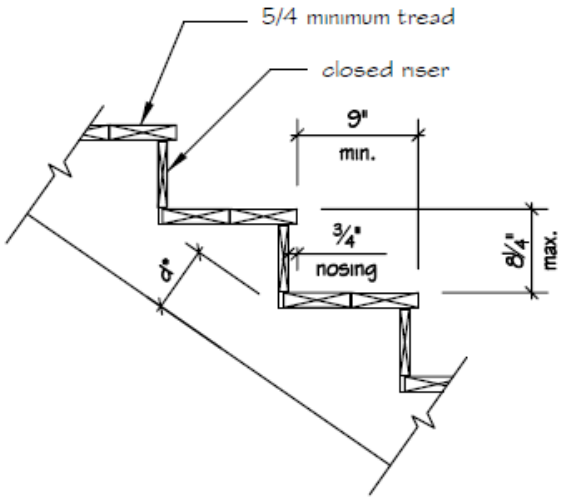
FIGURE 9 — TYPICAL GUARDRAIL DETAIL

STAIR REQUIREMENTS

Stairs Minimum width is 3’-0”. Stairs and stair guardrails shall meet the details shown in Figure 10 thru 12-1. Wider stairs require additional stringers not to exceed 18” apart.

Stair, stair stringers, and guards shall meet the requirements shown in Figure 10 through Figure 12. All stringers shall be a minimum of 2x12. Stair stringers shall not span more than the dimensions shown on Figure 10. An intermediate landing may also be provided to shorten the stringer span. If the total vertical height for a stairway exceeds 12’-0” for any given run, an intermediate landing will be required.

All **intermediate stair landings** must be constructed as a non-ledger deck using the details in this document. Stairs shall be a minimum of 36” in width. If only cut stringers are used, a minimum of 3 stringers are required. For stairs greater than 36” in width, a combination of cut and solid stringers can be used but shall be placed at a maximum spacing of 18” on center (see Figure 11). Stair stringers must be fully supported or connected to the deck structure (see Figures 12). The width of each landing shall not be less than the width of the stairway served. Every rectangular landing shall have a minimum dimension of 36” measured in the direction of travel and not less than the width of the stair served.



ALLOWABLE STRINGER SPANS			
riser height	tread width	depth d*	maximum span*
8¼"	9"	5⅛"	6'-6"
7"	11"	5⅜"	7'-0"
7"	10"	5½"	7'-0"
6"	12"	5⅞"	7'-6"

* stringer span is determined by depth (d)

FIGURE 10 — TREAD AND RISER DETAIL

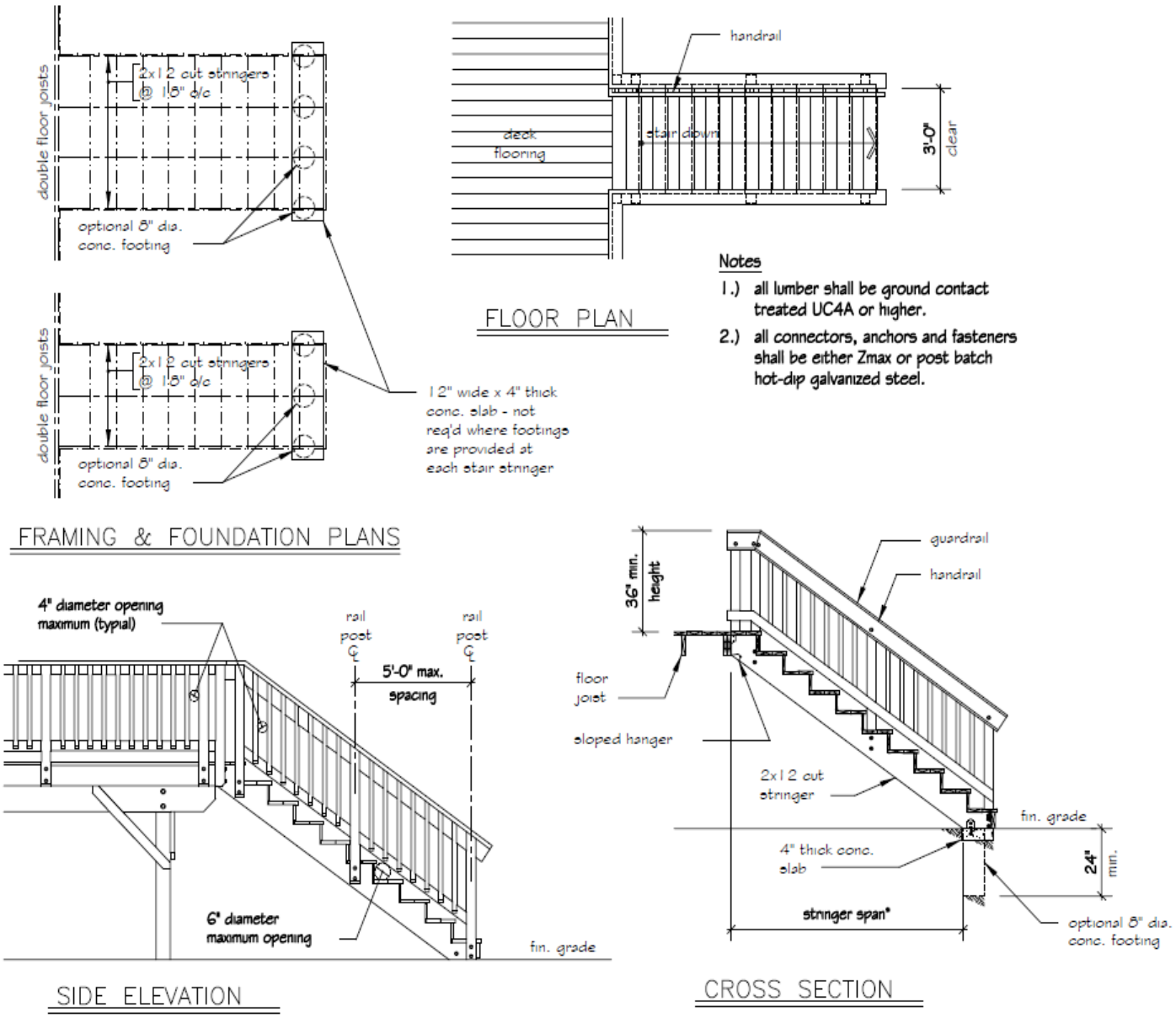


FIGURE 11 — STAIR FLOOR/FRAMING/FOUNDATION PLAN, ELEVATION AND CROSS-SECTION

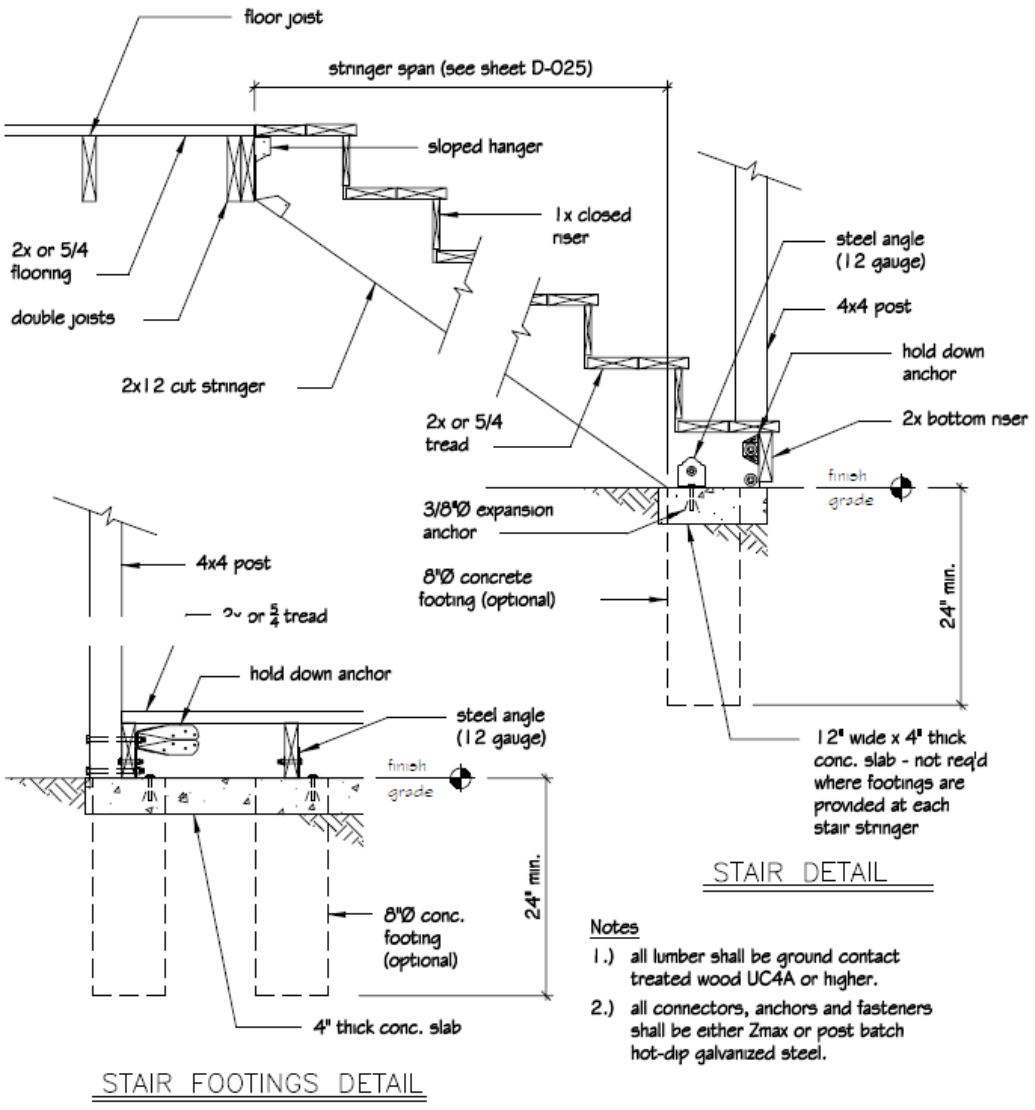


FIGURE 12 — STAIR STRINGER AND FOOTING DETAIL

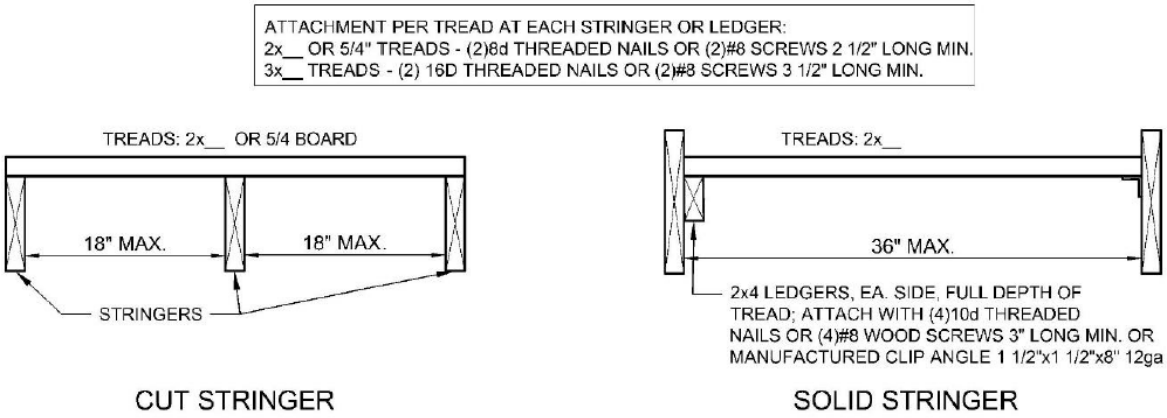


FIGURE 12-1 — TREAD CONNECTION REQUIREMENTS DETAIL

STAIR HANDRAIL REQUIREMENTS

All stairs with three (3) or more risers shall have a handrail on at least one side. Handrails shall be graspable and shall be composed of decay-resistant and/or corrosion-resistant material. The handgrip portion shall not be more than 2 5/8" in cross section, or the shape shall provide an equivalent gripping surface and shall have a smooth surface with no sharp corners.

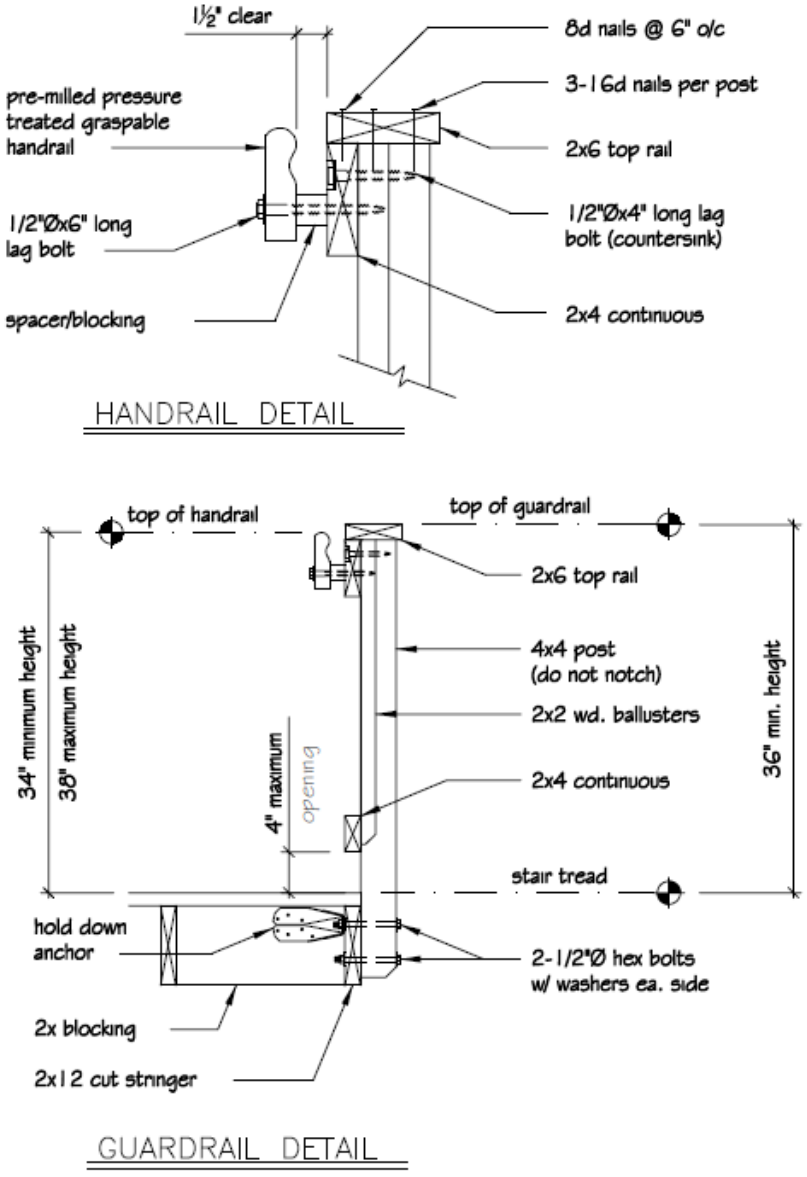
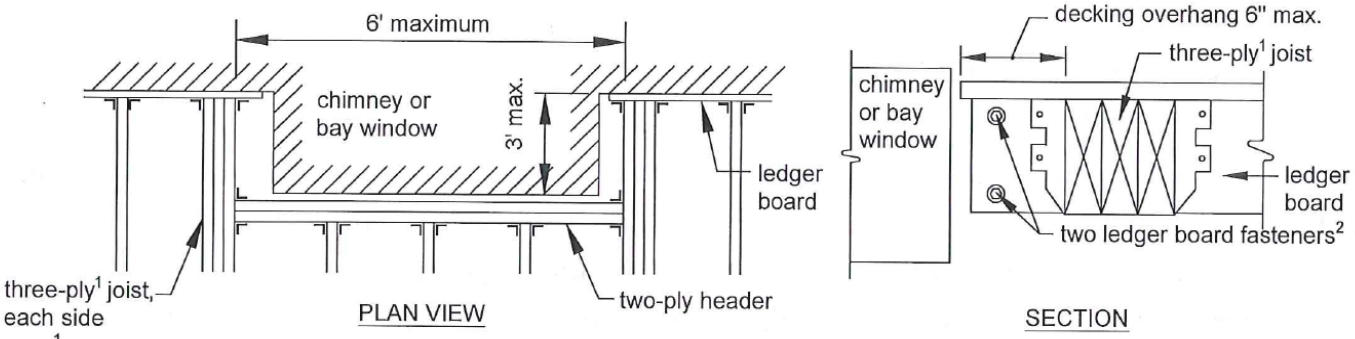


FIGURE 13 — STAIR HANDRAIL DETAIL

FRAMING AT CHIMNEY OR BAY WINDOW

All members at chimneys or bay windows shall be framed in accordance with Figure 14. Header may span a maximum of 6'-0". When a chimney or bay window is wider than 6'-0", one or more 6x6 post may be added to reduce header spans to less than 6'-0". In such cases, the post footing must meet the requirements in the footings section. Headers shall be located no more than 3'-0" from the end of the trimmer joist. Triple trimmer joists are required on each side of the header. Joist hangers shall each have a minimum vertical capacity in accordance with Table 4. Bolts, screws, or lag screws used to attach the hanger to the ledger shall fully extend through the ledger into the 2-inch nominal lumber band joist (1-1/2" actual) or LVL rim joist. Otherwise, a free-standing deck is required.



[1] May be reduce to two-plies if joist span is ≤ 8'-6".
[2] Fasteners adjacent chimney/bay window are considered interior to the ledger board. See FIGURE 16 for fasteners requirements at the end of the ledger board.

FIGURE 14 — FRAMING PLAN/SECTION AT CHIMNEY OR BAY WINDOW

DECKING

Decking laid perpendicular to joists may consist of 2x6 structural lumber supported by joists spaced at 24" o.c. maximum or 1¼ inch thick wood decking supported by joists spaced 16" o.c. maximum. Attach decking to each joist with 2-8d threated nails of 2-#10 screws. Space decking boards approximately 1/8" apart. See Figures 4 and 15 for decking connection requirements to rim joist. Decking placement may range from an angle perpendicular to the joist to an angle of 45 degrees to the joist. Each segment of decking must bear on a minimum of 3 joist.

Plastic composite deck boards and stair treads will be accepted if they are labeled to indicate compliance with ASTM D7032. A complete current code evaluation report for the manufactured decking system that includes the maximum allowable load and span must be provided to the building inspector at the time of framing inspection. Manufactured decking systems must be installed in accordance with the code evaluation **(ICC-ES)** report and manufacturer's specifications. The ICC-ES reports shall be submitted at the time of review for approval.

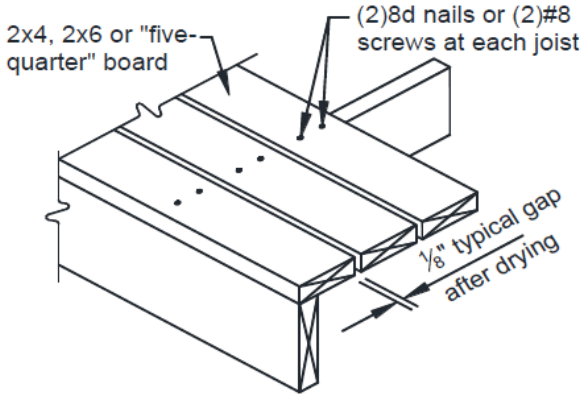


FIGURE 15 — TYPICAL DECKING

FLASHING

Flashing is required at any rim joist connection to a wall of wood frame construction. Flashing shall be corrosion resistant and shall be installed per manufacturer's recommendations. See Figure 16 for detail.

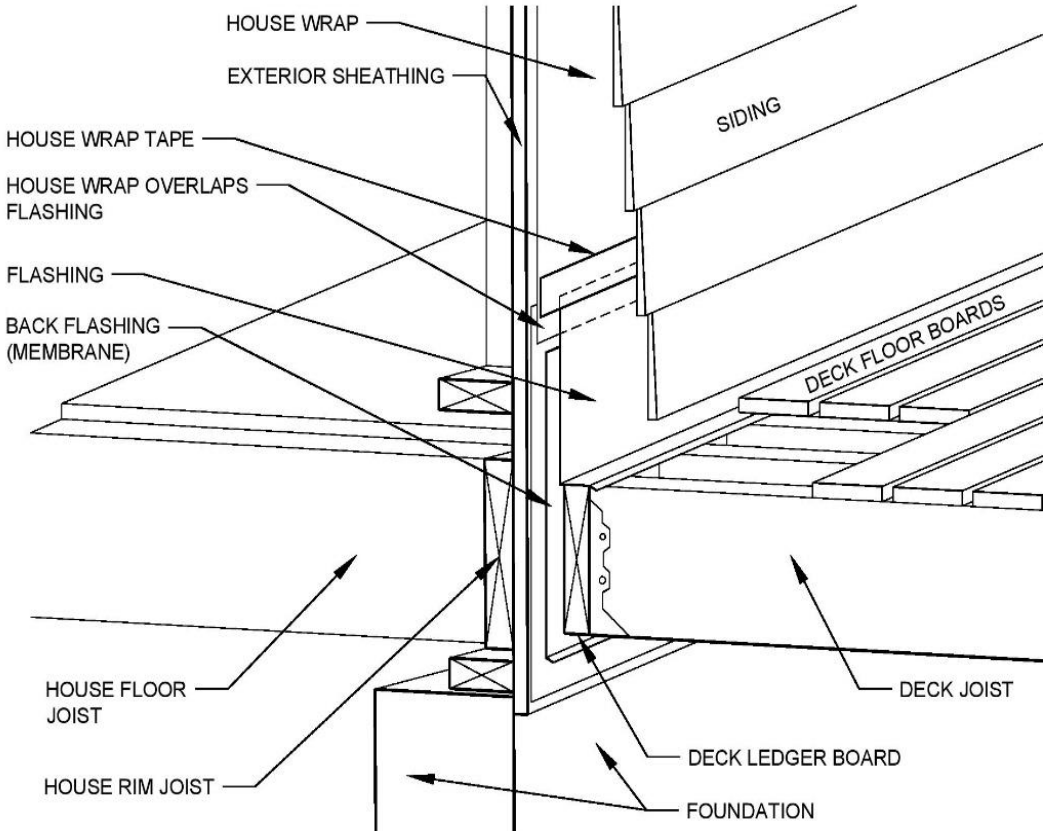


FIGURE 16 — FLASHING REQUIREMENTS

SAFETY GLAZING

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

Windows adjacent to any surface of a deck. Individual 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 at a height between 34 and 38 inches. The rail must meet the requirements of a stair handrail.

Windows adjacent stairway. Individual panes, partially or wholly located in the hatched area shown in Figure 17, shows where safety-glazing is required. In the absence of safety glazing in a window adjacent a stairway, a stair guard must be constructed to separate the window from the stairway. In the absence of safety glazing in a window adjacent the 36-inch horizontal areas at the top or bottom of the stairs, a guard or horizontal rail must be installed at a height between 34 and 38 inches. The rail must meet the requirements of a stair handrail.

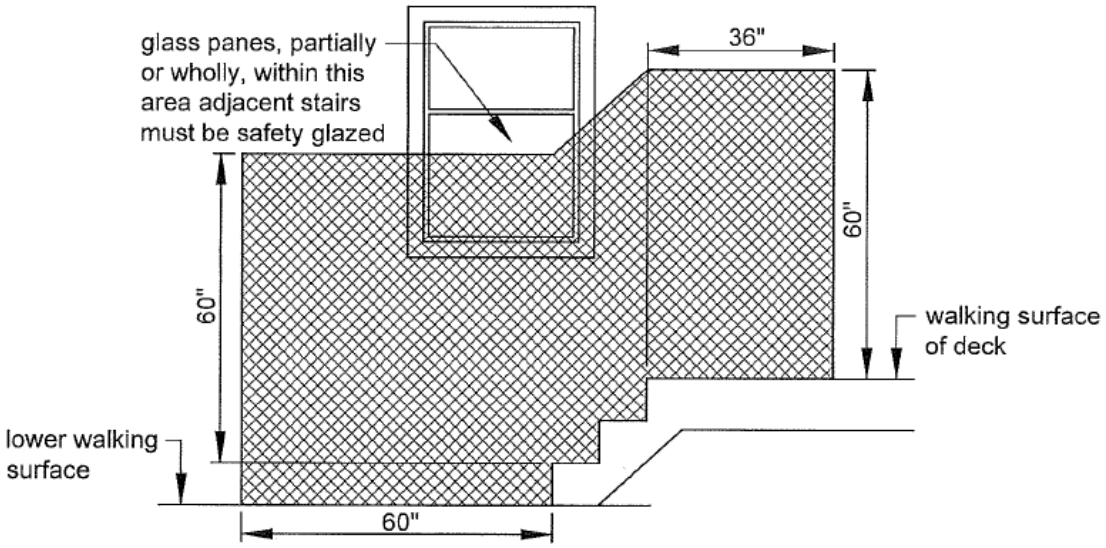
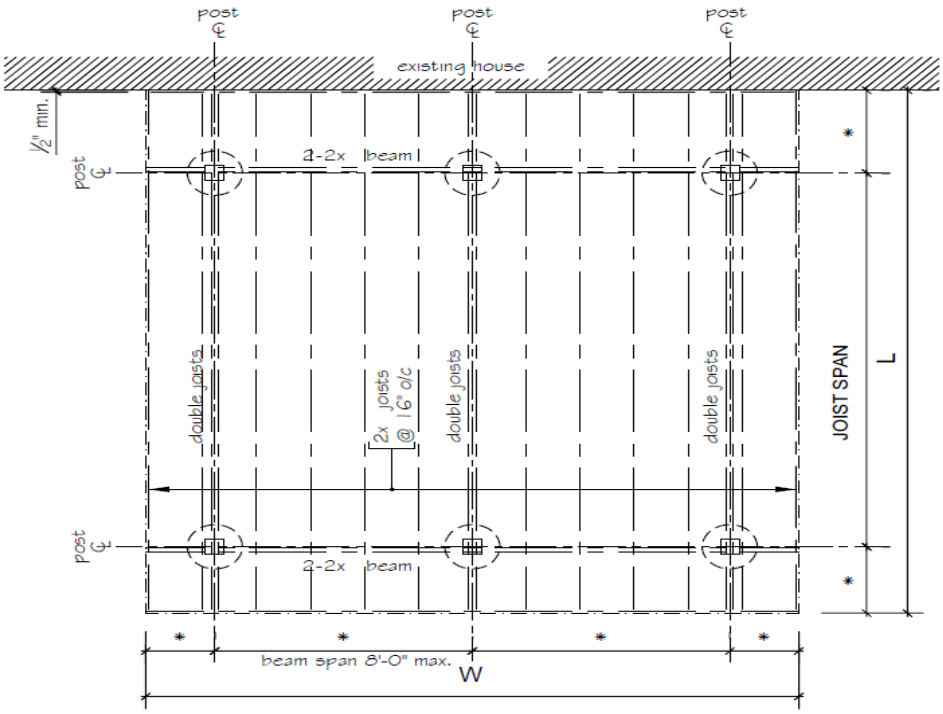


FIGURE 17 — SAFETY GLAZING AT STAIR

DECK WORK SHEET — ALL DECKS SHALL BE FREESTANDING

Complete Your Deck: A framing plan shows a bird's-eye view of the joist and beam layout, the location of the diagonal bracing, posts, and footings. Use the sample typical deck framing plan shown below and the requirements of this document to complete your deck.



INSPECTIONS REQUIRED:

1. Footing Inspection before placement of Concrete.
2. Framing Inspection after all Structural Members are in Place.
3. A Final Inspection when the Deck is Complete.

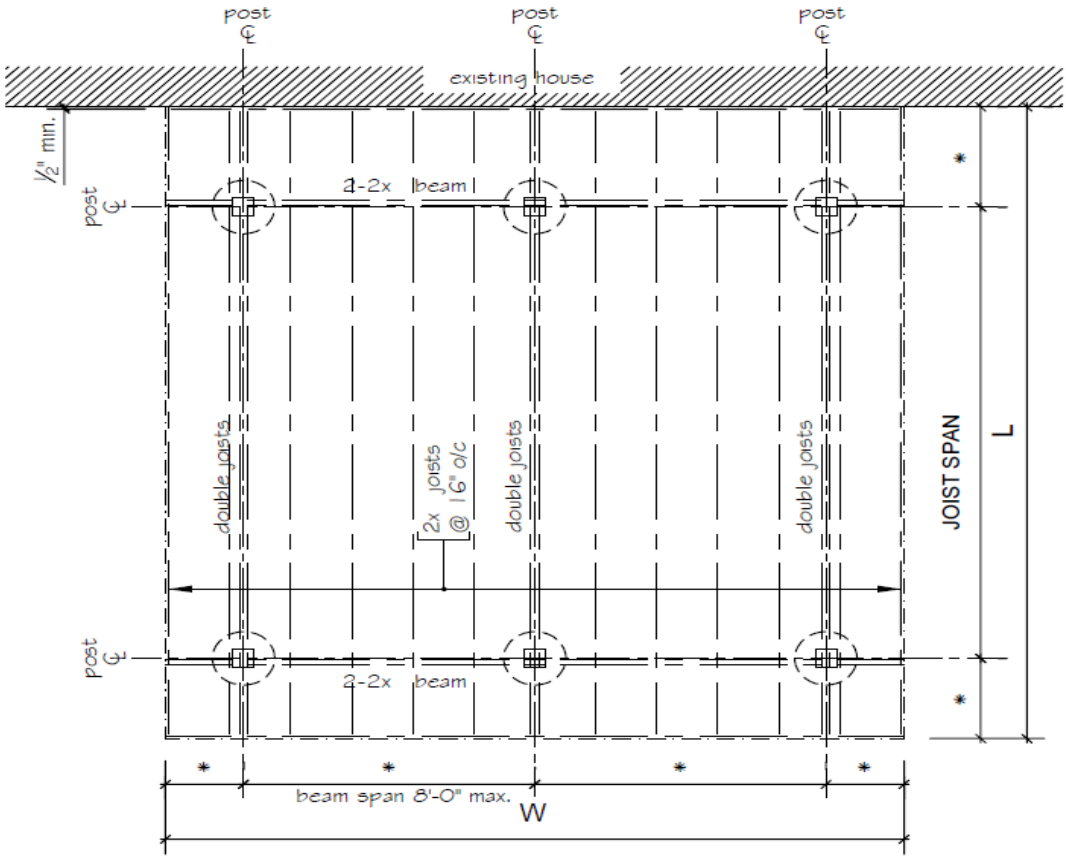
TYPICAL DECK FRAMING PLAN

1. **Free-Standing Deck _____ (yes or no)**
2. **Deck Dimensions (L): _____ x (W): _____ x Height: _____**
3. **Footing Size: _____ Total # of footings: _____ (including stairs)**
4. **Post Spacing: _____**
5. **Beam Size: ( ) _____ x _____**
6. **Post Base/Cap Connectors: YES _____ NO _____**
7. **Joists _____ x _____ @ _____ o.c.**
8. **Deck Boards: Wood _____ Composite* _____**
9. **Guardrails: Wood _____ Composite/Vinyl* _____**

(*The ICC-ES reports shall be submitted at the time of review for approval.)

I, _____ certify that I have read and will adhere to all the information in this guide to the best of my knowledge. I attest that above information filled out by me is accurate and complete. I agree to comply with all applicable Maryland and Prince George's County laws and regulations. I hereby declare and affirm under penalty of perjury, that I understand Section 4-117 and that penalties of $1,000 per day can be assessed for working outside the scope of this permit. The making of false statements on this application is punishable by civil or criminal penalties.

SAMPLE



INSPECTIONS REQUIRED:

4. Footing Inspection before placement of Concrete.
5. Framing Inspection after all Structural Members are in Place.
6. A Final Inspection when the Deck is Complete.

TYPICAL DECK FRAMING PLAN

1. **Free-Standing Deck ___yes____**
2. **Deck Dimensions (L): _16 ft._ (W):___16 ft.___ x Height __5 ft__**
3. **Footing Size: ____24 in X 24 in_____ Total # of footings: ___6_____ (including stairs)**
4. **Post Spacing: ___8 ft -0 in.___**
5. **Beam Size (2) __2__ x __12____**
6. **Post Base/Cap Connectors: {SEE SKETCH ABOVE}**
7. **Joists ___2___x ___10____ @ ___16 in___ o.c. {SEE TABLE IN DOCUMENT}**
8. **Deck Boards: Wood _____ Composite* _yes - ICC report attached _____**
9. **Guardrails: Wood _____ Composite/Vinyl* __ yes – ICC report attached ___**

Sample **ICC-ES**: ESR-3168 - ICC Evaluation Service, LLC (ICC-ES). Must be provided with document (link not acceptable).