

Department of Public Services
Building • Engineering • Planning • Water & Sewer

Address: _____

Lot# _____

DECK REQUIREMENT CHECKLIST

1. Complete Application
 - a. Signed in two (2) places (pgs. 1 & 3)
 - b. Signed Homeowner Affidavit; if needed
 - c. Total square footage
 - d. Total % of lot coverage
 - e. Total cost of improvement
2. Signed Contract With Homeowner
(needed for contractor application)
3. Two (2) Complete Construction Drawings
 - Michigan Residential Code
 - a. Stairway detail (min. of 36" width)
 - b. Handrail detail (Continuous graspable
Handrail of 1-1/4 to 2-5/8" in diameter)
 - c. Material list/size of beam & joists
 - d. Follow span chart
5. Two (2) Complete Site Plans showing placement
of deck, steps and setback dimensions to lot lines
6. Contractor's license (if needed)
7. Driver's License (if needed)

NOTE: It is the responsibility of the Applicant to comply with any and all HOA requirements.

NOTE: This packet does not include all code sections that might apply to your particular project. It is your responsibility to make sure your project complies with the Michigan Residential Code. It is also your responsibility to complete your project and have all necessary inspections that may be required.

1. Information Required for Building Permit Application

- Form is available online at www.twp.northville.mi.us or at the Building Department counter.
- Application must be filled out completely.
- A \$25.00 application fee is due at submittal.
- Two (2) plot plans are required showing existing house & proposed deck with all property lines and easements clearly marked.
- Two (2) sets of construction drawings – see “deck framing plan” in this guide.
- If work is being done by a contractor, the Builder must be licensed in accordance with the State of Michigan and registered in the Charter Township of Northville.
- Contractor must submit a copy of the signed contract by the Homeowner with the value indicated.
- It is the responsibility of the Applicant to comply with any and all HOA requirements.

2. Permit Fee Structure

- \$25.00 application fee is due upon submittal.
- \$60.00 for the 1st \$1,000.00, \$15.00 per \$1,000.00 thereafter up to \$50,000.00 (please call for increments over \$50,000.00).
- \$35.00 License/Registration Fee; if applicable.
- \$50.00 Plan Review Fee.
- \$500.00 Improvement Bond is required and is refundable upon approved final inspection.

3. Plan Review

- Construction drawings & plot plans will be reviewed for compliance with all applicable zoning ordinances and building codes.
- Plans are reviewed in the order received; any missing information will delay review.
- Plan review time averages between 7-10 business days.
- If plans do not meet applicable ordinances or codes, you will be notified to make corrections.
- Resubmittals are generally reviewed within 3-5 business days.

4. Permit Ready

- Permit applicant will be notified by email when building permit is ready to be picked up.
- All fees are due at the time of issuance.
- Fees may be paid by cash or check at the township offices or by credit card online.
- Permits with no activity for six (6) months will be cancelled unless written request for an extension is approved by Staff and the applicable fees are paid.

5. Inspections

- Inspections are done Monday-Friday between 8:30am-3:30pm.
- Inspections must be scheduled by 3:30pm the day before by going online at: <https://bsaonline.com> and signing in to Northville Township, Wayne County, MI.
- Inspections must be cancelled prior to 8:30am the day of inspection.
- A \$50.00 re-inspection fee will be assessed upon second failed re-inspection & each subsequent failed re-inspection.
- Post hole inspection must be scheduled prior to setting posts.
- Rough building inspection would need to be scheduled only if the beams will be covered by trim.
- Final building inspection.

DECK REQUIREMENTS:

- No joist angles allowed. All supports must be joist hangers.
- Deck may be placed in rear or side yard provided that the deck is not encroaching into the required rear or side yard setbacks.
- Rear and side yard setbacks vary by subdivision.
- Rear yard setback: No deck shall extend more than 16' into the required rear yard setback.
Note: House setback generally is 50' minimum.
- Footings must be 42" deep.
- Handrails are required for stairs with four (4) or more risers.
- If the height of the deck is more than 30" above the ground and the ground does not extend at least 6' beyond the edge of the deck, a guardrail is required.
- Guardrails shall have a minimum of 3.99" between the deck surface and the bottom of the lowest member of the guardrail and 3.99" maximum between vertical slats – height of rail to be minimum 36".
- If guardrail is installed and is not required, it still must meet the above specifications.
- Maximum rear yard coverage (see Ordinance).
- Decks may include a roofed gazebo (maximum size of 150 sq. ft. & 14' in height at the average of the eave line or the peak) provided the gazebo is not enclosed year round except by wood, screens or wooden railings to a maximum height of 36" above the gazebo floor. The gazebo must be a minimum 10' from primary structure.
- A maximum width of 3'6" uncovered walkway right next to the building is allowed to be installed into the required side yard setback.
- A \$500.00 bond is required at the time of permit issuance; refundable approximately ten (10) days after approved final inspection.

DETAILS THAT MUST SHOW ON PLANS:

- Post size, spacing and location
- Span on joists & beams
- Size of joists & beams
- Post hole locations & depth of holes
- Spacing between slats on guardrails
- The height of the deck & guardrails
- Grade & species of wood to be used
- Graspable handrail on stairs
- Stairway & handrail detail
- All setbacks to all lot lines to deck
- Visqueen & pea gravel under deck
- Glazing for glass adjacent to stairs
- Post to beam connection detail.

SEE PORTION OF THE CODES BELOW:

ZONING ORDINANCE- THE CHARTER TOWNSHIP OF NORTHVILLE, WAYNE COUNTY, MICHIGAN

§ 170-3.3. Residential accessory structures.

- A. Decks, uncovered, whether attached or unattached to a principal structure, shall be subject to the following:
- (1) Decks may not extend further than 16 feet into the required rear yard setback. Stairs may extend beyond the end of the deck for the minimum distance necessary to meet the established grade in the rear yard. If the deck is at the maximum projection of 16 feet, the stairs must be parallel to the rear of the deck.
 - (2) Decks shall not extend into the required side yard, except an uncovered, elevated walkway made of deck materials may be permitted as a means of accessing the deck from a side door. The width of the walkway shall not exceed three (3) feet, six (6) inches and may wrap around a bay window or other similar projection for the minimum distance necessary.
 - (3) When adjacent to a shoreline of any lake, pond, treatment basin, flowing watercourse or wetland regulated by the Michigan Department of Natural Resources or United States Environmental Protection Agency, a minimum 15 foot wide buffer shall be provided between the deck and the nearest edge of the shoreline.
 - (a) A connecting walkway, maximum five (5) feet wide, is permitted within the 15 foot buffer.
 - (b) A separate deck or patio may be permitted along the shoreline subject to the following:
 - (i) Provided that the maximum length measured along the shoreline does not exceed ten (10) feet,
 - (ii) The width does not exceed six (6) feet, and
 - (iii) The height does not exceed six (6) inches above the mean grade.
 - (4) The height of railings or walls shall not exceed three (3) feet.
 - (b) On lots over two (2) acres in size, the cumulative square footage of the accessory building(s) shall not exceed two (2) times the occipital square footage of the principal building. The Zoning Board of Appeals may modify the maximum size standard for accessory buildings related to a bona fide farming operation or raising of livestock in consideration of the size of the property, conformance with other standards and the character of adjacent uses.
 - (c) The combined square footage of all accessory buildings, structures and uses, excluding swimming pools, may occupy a maximum of 25% of a required rear yard. Swimming pools and their associated structures (decks, patios, etc.) may occupy up to 50% of the required rear yard.

ARTICLE 18

Schedule of Regulations

§ 170-18.1. Schedule of Regulations Limiting Height, Bulk, Density and Area by Land Use.

Residential Districts		Minimum Lot Size per Unit (AA, M)		Maximum Height (N,O,P)	Minimum Yard Setbacks (A, E, I, Q, R, S, T, U, V, W)			Minimum Floor Area per Unit	Maximum % of Lot Coverage by all Buildings
		Area/ Density (B,C,D)	Width (J)		Front (G,J,X)	Sides (F,H)	Rear (G)		
R-1 Single Family Residential		43,560 sf	150'	35'	40'	15'	50'	1,650 sf	15%
R-2 Single Family Residential	Without Public Utilities	43,560 sf	150'	35'	35'	15'	50'	1,350 sf	15%
	With Public Utilities	20,000 sf	125'	35'	35'	15'	50'	1,350 sf	25%
R-3 Single Family Residential	Without Public Utilities	43,560 sf	150'	30'	35'	15'	50'	1,100 sf	15%
	With Public Utilities	15,000 sf	100'	30'	35'	15'	50'	1,100 sf	25%
R-4 Single Family Residential		10,000 sf	60'	30'	30'	5' min. 20' total	50'	1,100 sf	25%
MF Multiple Residential		Up to 8 units/acre	--	40'	30'	15'	30'	(K, L)	20%
		Up to 12 units/acre	--	40'	30'	30'	30'	(K, L)	20%
SH Senior Housing				30'	30'	30'	30'	450 sf	20%

SECTION R506 CONCRETE FLOORS (ON GROUND)

R506.1 General. Concrete slab-on-ground floors shall be designed and constructed in accordance with the provisions of Section R402.2 or ACI 332. For decks with a minimum thickness of 3½ inches (89 mm) for clean soils, see Section R403.1.8). The specified strength of concrete shall be as set forth in Section R402.2.

R506.2 Site preparation. The area within the foundation walls shall have all vegetation, top soil and foreign material removed.

R506.2.1 Fill. Fill material shall be free of vegetation and foreign material. The fill shall be compacted to ensure uniform support of the slab, and except where *approved*, the fill depths shall not exceed 24 inches (610 mm) for clean sand or gravel and 8 inches (203 mm) for earth.

R506.2.2 Base. A 4-inch-thick (102 mm) base course consisting of clean graded sand, gravel, crushed stone, crushed concrete or crushed blast-furnace slag passing a 2-inch (51 mm) sieve shall be placed on the prepared subgrade where the slab is below *grade*.

Exception: A base course is not required where the concrete slab is installed on well-drained or sand-gravel mixture soils classified as Group I according to the United Soil Classification System in accordance with Table R405.1.

R506.2.3 Vapor retarder. A 6-mil (0.006 inch; 152 µm) polyethylene or *approved* vapor retarder with joints lapped not less than 6 inches (152 mm) shall be placed between the concrete floor slab and the base course or the prepared subgrade where no base course exists.

Exception: The vapor retarder is not required for the following:

1. Garages, utility buildings and other unheated *accessory structures*.
2. For unheated storage rooms having an area of less than 70 square feet (6.5 m²) and carports.
3. Driveways, walks, patios and other flatwork not likely to be enclosed and heated at a later date.
4. Where *approved* by the local authority having jurisdiction, based on local site conditions.

R506.2.4 Reinforcement support. Where provided in slabs-on-ground, reinforcement shall be supported to remain in place from the center to upper one-third of the slab for the duration of the concrete placement.

SECTION R507 EXTERIOR DECKS

R507.1 Decks. Wood-framed decks shall be in accordance with this section or Section R301 for materials and conditions not prescribed herein. Where supported by attachment to an exterior wall, decks shall be positively anchored to the primary structure and designed for both vertical and lateral loads.

Such attachment shall not be accomplished by the use of toenails or nails subject to withdrawal. Where positive connection to the primary building structure cannot be verified during inspection, decks shall be self-supporting. For decks with cantilevered framing members connections to exterior walls or other framing members shall be designed and constructed to resist uplift resulting from the full live load specified in Table R301.5 acting on the cantilevered portion of the deck.

R507.2 Deck ledger connection to band joist. Deck ledger connections to band joists shall be in accordance with this section, Tables R507.2 and R507.2.1, and Figures R507.2.1(1) and R507.2.1(2). For other grades, species, connection details and loading conditions, deck ledger connections shall be designed in accordance with Section R301.

R507.2.1 Ledger details. Deck ledgers installed in accordance with Section R507.2 shall be a minimum 2-inch by 8-inch (51 mm by 203 mm) nominal, pressure-preservative-treated southern pine, incised pressure-preservative-treated Hem-fir, or *approved*, naturally durable, No. 2 grade or better lumber. Deck ledgers installed in accordance with Section R507.2 shall not support concentrated loads from beams or girders. Deck ledgers shall not be supported on stone or masonry veneer.

R507.2.2 Band joist details. Band joists attached by a ledger in accordance with Section R507.2 shall be a minimum 2-inch-nominal (51 mm), solid-sawn, spruce-pine-fir lumber or a minimum 1-inch by 9½-inch (25 mm × 241 mm) dimensional, Douglas fir, laminated veneer lumber. Band joists attached by a ledger in accordance with Section R507.2 shall be fully supported by a wall or sill plate below.

R507.2.3 Ledger to band joist fastener details. Fasteners used in deck ledger connections in accordance with Table R507.2 shall be hot-dipped galvanized or stainless steel and shall be installed in accordance with Table R507.2.1 and Figures R507.2.1(1) and R507.2.1(2).

R507.2.4 Flashing. An *approved* corrosion-resistant flashing as required by Section R703.8 shall be installed above the attached ledger as shown in Figure R507.2.1(2) or as *approved*.

R408.30523a

R507.3 Plastic composite deck boards, stair treads, guards, or handrails. Plastic composite exterior deck boards, stair treads, guards and handrails shall comply with the requirements of ASTM D7032 and the requirements of Section 507.3.

R507.3.1 Labeling. Plastic composite deck boards and stair treads, or their packaging, shall bear a label that indicates compliance to ASTM D7032 and includes the allowable load and maximum allowable span determined in accordance with ASTM D7032. Plastic or composite handrails and guards, or their packaging, shall bear a label that indicates compliance to ASTM D7032 and includes the maximum allowable span determined in accordance with ASTM D7032.

R507.3.2 Flame spread index. Plastic composite deck boards, stair treads, guards, and handrails shall exhibit a flame spread index not exceeding 200 when tested in accor-

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dance with ASTM E84 or UL 723 with the test specimen remaining in place during the test.

Exception: Plastic composites determined to be non-combustible.

R507.3.3 Decay resistance. Plastic composite deck boards, stair treads, guards and handrails containing wood, cellulosic or other biodegradable materials shall be decay resistant in accordance with ASTM D7032.

R507.3.4 Termite resistance. Where required by Section 318, plastic composite deck boards, stair treads, guards and handrails containing wood, cellulosic or other biodegradable materials shall be termite resistant in accordance with ASTM D7032.

507.3.5 Installation of plastic composites. Plastic composite deck boards, stair treads, guards and handrails shall be installed in accordance with this code and the manufacturer's instructions.

R507.4 Decking. Maximum allowable spacing for joists supporting decking shall be in accordance with Table R507.4. Wood decking shall be attached to each supporting member with not less than (2) 8d threaded nails or (2) No. 8 wood screws.

R507.5 Deck joists. Maximum allowable spans for wood deck joists, as shown in Figure R507.5, shall be in accordance with Table R507.5. Deck joists shall be permitted to cantilever not greater than one-fourth of the actual, adjacent joist span.

R507.5.1 Lateral restraint at supports. Joist ends and bearing locations shall be provided with lateral restraint to prevent rotation. Where lateral restraint is provided by joist hangers or blocking between joists, their depth shall equal not less than 60 percent of the joist depth. Where lateral restraint is provided by rim joists, they shall be secured to the end of each joist with not less than (3) 10d (3-inch × 0.128-inch) nails or (3) No. 10 × 3-inch (76 mm) long wood screws.

R507.6 Deck Beams. Maximum allowable spans for wood deck beams, as shown in Figure R507.6, shall be in accordance with Table R507.6. Beam plies shall be fastened with two rows of 10d (3-inch × 0.128-inch) nails minimum at 16 inches (406 mm) on center along each edge. Beams shall be permitted to cantilever at each end up to one-fourth of the actual beam span. Splices of multispan beams shall be located at interior post locations.

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.

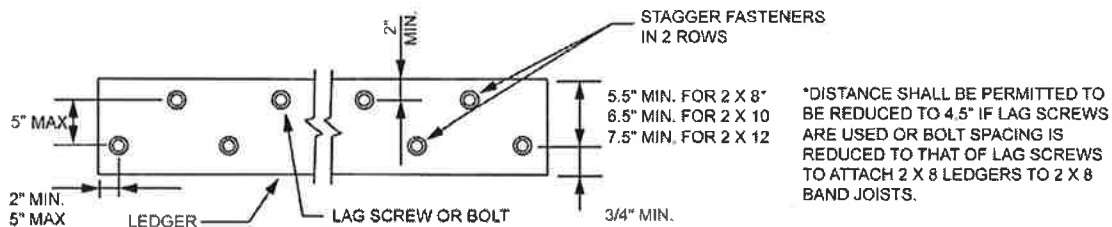
- a. Ledgers shall be flashed in accordance with Section R703.8 to prevent water from contacting the house band joist.
- b. Snow load shall not be assumed to act concurrently with live load.
- c. The tip of the lag screw shall fully extend beyond the inside face of the band joist.
- d. Sheathing shall 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.

TABLE 507.2.1
PLACEMENT OF LAG SCREWS AND BOLTS IN DECK LEDGERS AND BAND JOISTS

MINIMUM END AND EDGE DISTANCES AND SPACING BETWEEN ROWS				
	TOP EDGE	BOTTOM EDGE	ENDS	ROW SPACING
Ledger ^a	2 inches ^d	3/4 inch	2 inches ^b	1 5/8 inches ^b
Band Joist ^c	3/4 inch	2 inches	2 inches ^b	1 5/8 inches ^b

For SI: 1 inch = 25.4 mm.

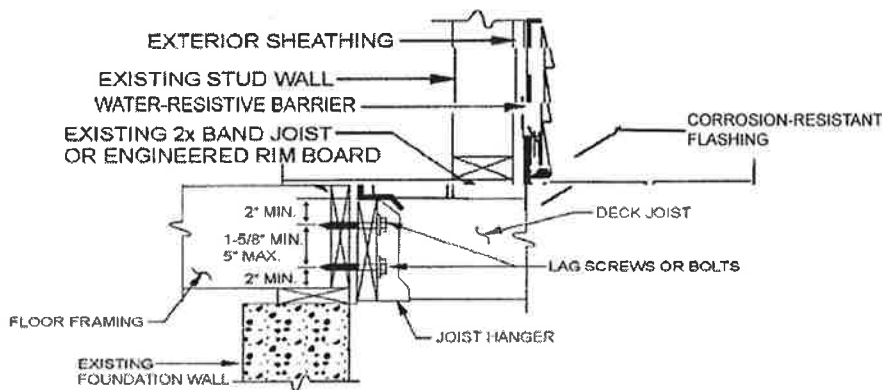
- a. Lag screws or bolts shall be staggered from the top to the bottom along the horizontal run of the deck ledger in accordance with Figure R507.2.1(1).
- b. Maximum 5 inches.
- c. For engineered rim joists, the manufacturer's recommendations shall govern.
- d. The minimum distance from bottom row of lag screws or bolts to the top edge of the ledger shall be in accordance with Figure R507.2.1(1).



For SI: 1 inch = 25.4 mm.

FIGURE R507.2.1(1)
PLACEMENT OF LAG SCREWS AND BOLTS IN LEDGERS

R 408.30523



For SI: 1 inch = 25.4 mm.

FIGURE R507.2.1(2)
PLACEMENT OF LAG SCREWS AND BOLTS IN BAND JOISTS

R 408.30523a

R507.7 Deck joist and deck beam bearing. The ends of each joist and beam shall have not less than 1½ inches (38 mm) of bearing on wood or metal and not less than 3 inches (76 mm) on concrete or masonry for the entire width of the beam. Joist framing into the side of a ledger board or beam shall be supported by approved joist hangers. Joists bearing on a beam shall be connected to the beam to resist lateral displacement.

R507.7.1 Deck post to deck beam. Deck beams shall be attached to deck posts in accordance with Figure R507.7.1 or by other equivalent means capable to resist lateral displacement. Manufactured post-to-beam connectors shall be sized for the post and beam sizes. All bolts shall have washers under the head and nut.

Exception: Where deck beams bear directly on footings in accordance with Section R507.8.1.

R507.8 Deck posts. For single-level wood-framed decks with beams sized in accordance with Table R507.6, deck post size shall be in accordance with Table R507.8.

TABLE R507.8
DECK POST HEIGHT^a

DECK POST SIZE	MAXIMUM HEIGHT ^a
4 × 4	8'
4 × 6	8'
6 × 6	14'

For SI: 1 foot = 304.8 mm.

a. Measured to the underside of the beam.

R507.8.1 Deck post to deck footing. Posts shall bear on footings in accordance with Section R403 and Figure R507.8.1. Posts shall be restrained to prevent lateral displacement at the bottom support. Such lateral restraint

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shall be provided by manufactured connectors installed in accordance with Section R507 and the manufacturers' instructions or a minimum post embedment of 12 inches (305 mm) in surrounding soils or concrete piers.

**TABLE R507.4
MAXIMUM JOIST SPACING**

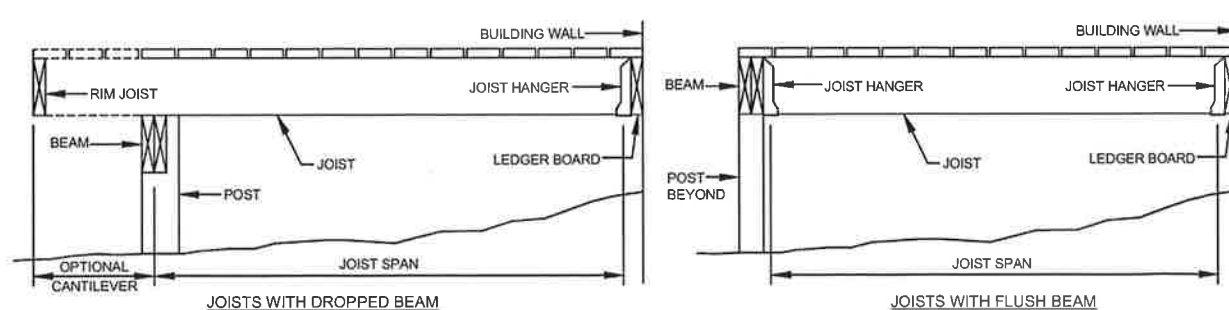
MATERIAL TYPE AND NOMINAL SIZE	MAXIMUM ON-CENTER JOIST SPACING	
	Perpendicular to joist	Diagonal to joist ^a
1 1/4-inch-thick wood	16 inches	12 inches
2-inch-thick wood	24 inches	16 inches
Plastic composite	In accordance with Section R507.3	In accordance with Section R507.3

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 degree = 0.01745 rad.
a. Maximum angle of 45 degrees from perpendicular for wood deck boards

**TABLE R507.5
DECK JOIST SPANS FOR COMMON LUMBER SPECIES^f (ft. - in.)**

SPECIES ^a	SIZE	SPACING OF DECK JOISTS WITH NO CANTILEVER ^b (inches)			SPACING OF DECK JOISTS WITH CANTILEVERS ^c (inches)		
		12	16	24	12	16	24
Southern pine	2 x 6	9-11	9-0	7-7	6-8	6-8	6-8
	2 x 8	13-1	11-10	9-8	10-1	10-1	9-8
	2 x 10	16-2	14-0	11-5	14-6	14-0	11-5
	2 x 12	18-0	16-6	13-6	18-0	16-6	13-6
Douglas fir-larch ^d , hem-fir ^d , spruce-pine-fir ^d	2 x 6	9-6	8-8	7-2	6-3	6-3	6-3
	2 x 8	12-6	11-1	9-1	9-5	9-5	9-1
	2 x 10	15-8	13-7	11-1	13-7	13-7	11-1
	2 x 12	18-0	15-9	12-10	18-0	15-9	12-10
Redwood, western cedars, ponderosa pine ^e , red pine ^e	2 x 6	8-10	8-0	7-0	5-7	5-7	5-7
	2 x 8	11-8	10-7	8-8	8-6	8-6	8-6
	2 x 10	14-11	13-0	10-7	12-3	12-3	10-7
	2 x 12	17-5	15-1	12-4	16-5	15-1	12-4

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 pound per square foot = 0.0479 kPa, 1 pound = 0.454 kg.
a. No. 2 grade with wet service factor.
b. Ground snow load, live load = 40 psf, dead load = 10 psf, L/Δ = 360.
c. Ground snow load, live load = 40 psf, dead load = 10 psf, L/Δ = 360 at main span, L/Δ = 180 at cantilever with a 220-pound point load applied to end.
d. Includes incising factor.
e. Northern species with no incising factor
f. Cantilevered spans not exceeding the nominal depth of the joist are permitted.



**FIGURE R507.5
TYPICAL DECK JOIST SPANS**

TABLE R507.6
DECK BEAM SPAN LENGTHS^{a, b} (ft. - in.)

SPECIES ^c	SIZE ^d	DECK JOIST SPAN LESS THAN OR EQUAL TO: (feet)						
		6	8	10	12	14	16	18
Southern pine	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	7-6	7-0
	3 - 2 × 6	8-2	7-5	6-8	6-1	5-8	5-3	5-0
	3 - 2 × 8	10-10	9-6	8-6	7-9	7-2	6-8	6-4
	3 - 2 × 10	13-0	11-3	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
Douglas fir-larch ^e , hem-fir ^e , spruce-pine-fir ^e , redwood, western cedars, ponderosa pine ^f , red pine ^f	3 × 6 or 2 - 2 × 6	5-5	4-8	4-2	3-10	3-6	3-1	2-9
	3 × 8 or 2 - 2 × 8	6-10	5-11	5-4	4-10	4-6	4-1	3-8
	3 × 10 or 2 - 2 × 10	8-4	7-3	6-6	5-11	5-6	5-1	4-8
	3 × 12 or 2 - 2 × 12	9-8	8-5	7-6	6-10	6-4	5-11	5-7
	4 × 6	6-5	5-6	4-11	4-6	4-2	3-11	3-8
	4 × 8	8-5	7-3	6-6	5-11	5-6	5-2	4-10
	4 × 10	9-11	8-7	7-8	7-0	6-6	6-1	5-8
	4 × 12	11-5	9-11	8-10	8-1	7-6	7-0	6-7
	3 - 2 × 6	7-4	6-8	6-0	5-6	5-1	4-9	4-6
	3 - 2 × 8	9-8	8-6	7-7	6-11	6-5	6-0	5-8
	3 - 2 × 10	12-0	10-5	9-4	8-6	7-10	7-4	6-11
	3 - 2 × 12	13-11	12-1	10-9	9-10	9-1	8-6	8-1

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 pound per square foot = 0.0479 kPa, 1 pound = 0.454 kg.

- a. Ground snow load, live load = 40 psf, dead load = 10 psf, L/Δ = 360 at main span, L/Δ = 180 at cantilever with a 220-pound point load applied at the end.
- b. Beams supporting deck joists from one side only.
- c. No. 2 grade, wet service factor.
- d. Beam depth shall be greater than or equal to depth of joists with a flush beam condition.
- e. Includes incising factor.
- f. Northern species. Incising factor not included.

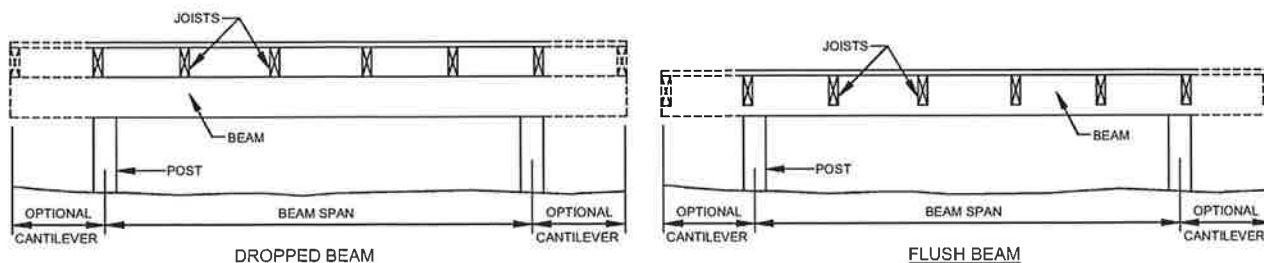
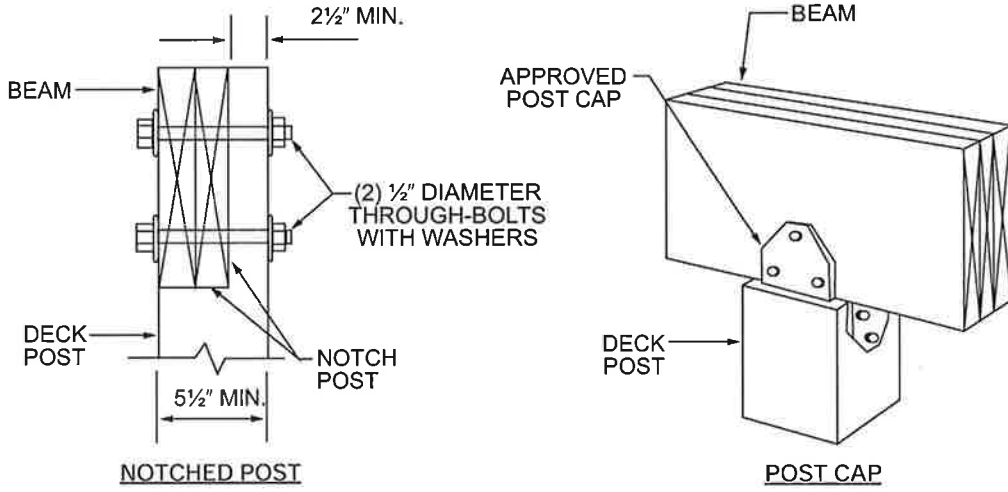


FIGURE R507.6
TYPICAL DECK BEAM SPANS



For SI: 1 inch = 25.4 mm.

FIGURE R507.7.1
DECK BEAM TO DECK POST

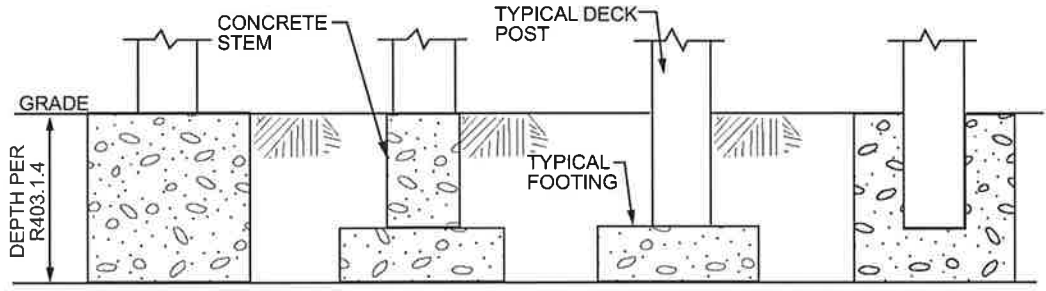


FIGURE R507.8.1
TYPICAL DECK POSTS TO DECK FOOTINGS

Show compliance with **R311.7.1 Width**. Stairways shall not be less than 36 inches in clear width at all points above the permitted handrail height and below the required headroom height. Handrails shall not project more than 4 ½ inches on either side of the stairway and the clear width of the stairway at and below the handrail height, including treads and landings, shall not be less than 31 ½ inches where a handrail is installed on one side and 27 inches where handrails are provided on both sides.

Exception: The width of spiral stairways shall be in accordance with Section R311.7.10.1.

R311.7.2 Headroom. The headroom in stairways shall not be less than 6 feet 8 inches measured vertically from the sloped line adjoining the tread nosing or from the floor surface of the landing or platform on that portion of the stairway.

Exception:

1. Where the nosings of treads at the side of a flight extend under the edge of a floor opening through which the stair passes, the floor opening shall be allowed to project horizontally into the required headroom a maximum of 4 ¾ inches.
2. The headroom for spiral stairway shall be in accordance with Section R311.7.10.1.

R311.7.3 Vertical rise. The flight of stairs shall not have a vertical rise more than 147 inches between floor level or landings.

R311.7.4 Walkline. The walkline across winder treads shall be concentric to the curved direction of travel through the turn and located 12 inches from the side where the winders are narrower. The 12-inch dimension shall be measured from the widest point of the clear stair width at the walking surface of the winder. If winders are adjacent within the flight, the point of the widest clear stair width do the adjacent winders shall be used.

R311.7.4.1 Riser height. The maximum riser height shall be 8 ¼ inches. The riser shall be measured vertically between leading edges of the adjacent treads. The greatest riser height within any flight of stairs shall not exceed the smallest by more than 3/8 inch.

R311.7.4.2 Tread depth. The minimum tread depth shall be 9 inches. The tread depth shall be measured horizontally between the vertical planes of the foremost projection of adjacent treads and at a right angle to the tread's leading edge. The greatest tread depth within any flight of stairs shall not exceed the smallest by more than 3/8 of an inch. Winder treads shall have a minimum tread depth of 10 inches measures as above at a point 12 inches from the side where the treads are narrower. Winder treads shall have a minimum tread depth of 6 inches at any point. Within any flight of stairs, the greatest winder tread depth at 12 inches walk line shall not exceed the smallest by more than 3/8 inch.

R311.7.5 Stair tread and risers. Stair tread and risers shall meet the requirements of this section. For the purposes of this section, dimensions and dimensioned surfaces shall be exclusive of carpet, rugs or runners.

R311.7.5.3 Nosings. The radius of curvature at the nosing shall be no greater than 9/16 inch. A nosing projecting not less than ¾ inch but not more than 1¼ inches shall be provided on stairways

R311.7.5.3 Nosings. The radius of curvature at the nosing shall be no greater than 9/16 inch. A nosing projecting not less than 3/4 inch but not more than 1 1/4 inches shall be provided on stairways with solid risers. The greatest nosing projection shall not exceed the smallest nosing projection by more than 3/8 inch between two stories, including the nosing at the level of floors and landings. Beveling of nosing shall not exceed 1/2 inch.

Exception: A nosing projection is not required where the tread depth is not less than 11 inches.

R311.7.6 Landings for stairways. There shall be a floor or landing at the top and bottom of each stairway. The width perpendicular to the direction of travel shall be not less than the width of the flight served. Landings of shapes other than square or rectangular shall be permitted provided that the depth of the walk line and the total area is not less than a quarter circle with a radius equal to the required landing width. Where the stairway has a straight run, the depth of the direction of travel shall be not less than 36 inches.

Exception: A floor or landing is not required at the top of an interior flight of stairs, including stairs in an enclosed garage, provided a door does not swing over the stairs.

R311.7.7 Stairway walking surface. The walking surface of treads and landings of stairways shall be sloped no steeper than one unit vertical in 48 inches horizontal (2-percent slope).

R311.7.10.1 Spiral stairways. Spiral stairways are permitted, provided the minimum clear width at and below the handrail shall be 26 inches and the walk line radius is not greater than 24 1/2 inches. Each tread shall have a depth of not less than 6 3/4 inches at the walkline. All treads shall be identical and the rise shall be no more than 9 1/2 inches. Headroom shall be not less than 6 feet 6 inches.

R311.7.9 Illumination. All stairs shall be provided with illumination in accordance with Section R303.7.

R303.7 Interior stairway illumination. Interior stairways shall be provided with an artificial light source to illuminate the landing and treads. The light source shall be capable to illuminating treads and landings of not less than 1 foot candle as measured at the center of treads and landings. There shall be a wall switch at each floor level to control the light source where the stairway has six or more risers.

Exception: A switch is not required where remote, central or automatic control of lighting is provided.

R303.8 Exterior stairway illumination. Exterior stairway shall be provided with an artificial light source located at the top of the landings of a stairway. Stairways provide access to a basement from the outdoor grade level shall be provided with an artificial light source located at the bottom landing of the stairway.

Show compliance with **R311.7.8 Handrails**. Handrails shall be provided on not less than one side of each continuous run of treads or flight with four or more risers.

R311.7.8.1 Height. Handrail height, measured vertically from the sloped plane adjoining the tread nosing, or finish surface of ramp slope, shall be not less than 34 inches and not more than 38 inches.

Exceptions:

1. The use of a volute, turnout or starting easing shall be allowed over the lowest tread.
2. When handrail fittings or bendings are used to provide continuous transition between flights,
the transition from handrail to guardrail, or used at the start of a flight, the handrail height at
the fittings or bendings shall be permitted to exceed 38 inches.

R311.7.8.2 Continuity. Handrails for stairways shall be continuous for the full length of the flight, from a point directly above the top riser of the flight to a point directly above lowest riser of the flight. Handrail 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 ½ inches between the wall and the handrails.

Exceptions:

1. Handrails shall be permitted to be interrupted by a newel post at the turn.
2. The use of a volute, turnout, starting easing or starting newel shall be allowed over the lowest tread.

R311.7.8.3 Handrail grip size. All required handrails shall be of one of the following types or provide equivalent graspability.

1. Type I. Handrails with a circular cross section shall have an outside diameter of at least 1 ¼ inches and not greater than 2 inches. If the handrail is not circular it shall have a perimeter dimension of at least 4 inches and not greater than 6 ¼ inches with a maximum cross section of dimension of 2 ¼ inches. Edges shall have a minimum radius or 0.01 inches.
2. Type II. Handrails with a perimeter greater than 6 ¼ inches shall provide 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 within 7/8

R311.7.10 Special stairways. Spiral stairways and bulkhead enclosure stairways shall comply with all requirements of section R311.7 except as specified sections R311.7.10.1 and R311.7.10.2.

R311.7.10.1 Spiral stairways. Spiral stairways are permitted, provided the minimum clear width at and below the handrail shall be 26 inches and the walk line radius is not greater than 24 ½ inches. Each tread shall have a depth of not less than 6 ¾ inches at the walkline. All treads shall be identical and the rise shall be no more than 9 ½ inches. Headroom shall be not less than 6 feet 6 inches

R311.7.10.2 Bulkhead enclosure stairways. Stairways serving bulkhead enclosures, not part of the required building egress, providing access from the outside grade level to the basement shall be exempt from the requirements of Sections R311.3 and R311.7 where the height from the basement finished floor level to grade adjacent to the stairway is not more than 8 feet and the grade level opening to the stairway is covered by a bulkhead enclosure with hinged doors or other approved means.

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Show compliance with **R602.3.1 Stud size, height and spacing.** The size, height and spacing of studs shall be in accordance with Table R602.3.(5).

Exceptions:

1. Utility grade studs shall not be spaced more than 16 inches on center, shall not support more than a roof and ceiling, and shall not exceed 8 feet in height for exterior walls and load-bearing walls or 10 feet for interior nonload-bearing walls.
2. Where snow loads are less than or equal to 25 pounds per square foot and the ultimate design wind speed is less than or equal to 130mph, 2 inches by 6 inches studs supporting a roof load with not more than 6 feet of tributary length shall have a maximum height of 18 feet where spaced at 12 inches on center. Studs shall be a minimum No. 2 grade lumber.

inch 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 maximum of 2 3/4 inches. Edges shall have a minimum radius of 0.01 inches.

R311.7.8.4 Exterior plastic composite handrails. Plastic composite exterior handrails shall comply with the requirements of Section R507.3

R317.4 Plastic composites. Plastic composites exterior deck boards, stair treads, guard rails and hand rails containing wood cellulosic or other biodegradable material shall comply with the requirements of Section R507.3.

Show compliance with **R312.1 Where required.** Guards shall be located along open-sided waling surfaces, including stairs, ramps, and landings, 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. Insect screening shall not be considered as a *guard*.

R312.1.2 Height. Required guards at open-sided waling surfaces, including stairs, porches, balconies or landings, shall be not less than 36 inches high measured vertically above the adjacent walking surface or the line connecting the leading, adjacent fixed seating or the line connecting the edges of the treads.

Exceptions:

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

R312.1.3 Opening limitations. Required *guards* shall not have openings from the walking surface to the required *guard* height which allow passage of a sphere 4 inches in diameter.

Exceptions:

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

R312.1.4 Exterior plastic composite guards. Plastic composite exterior guards shall comply with the provisions of Section R317.4.

R317.4 Wood/plastic composites. Plastic composites exterior deck boards, stair treads, guards and hand rails containing wood cellulosic or other biodegradable materials shall comply with the requirements of Section R507.3.

BUILDING PLANNING

* **R308.4.6 Glazing adjacent to stairs and ramps.** Glazing where the bottom exposed edge of the glazing is less than 36 inches (914 mm) above the plane of the adjacent walking surface of stairways, landings between flights of stairs and ramps shall be considered to be a hazardous location.

Exceptions:

1. Where a rail is installed on the accessible side(s) of the glazing 34 to 38 inches (864 to 965 mm) above the walking surface. The rail shall be capable of withstanding a horizontal load of 50 pounds per linear foot (730 N/m) without contacting the glass and have a cross-sectional height of not less than 1½ inches (38 mm).
2. Glazing 36 inches (914 mm) or more measured horizontally from the walking surface.

R308.4.7 Glazing adjacent to the bottom stair landing. Glazing adjacent to the landing at the bottom of a stairway where the glazing is less than 36 inches (914 mm) above the landing and within a 60-inch (1524 mm) horizontal arc less than 180 degrees from the bottom tread nosing shall be considered to be a hazardous location.

Exception: The glazing is protected by a *guard* complying with Section R312 and the plane of the glass is more than 18 inches (457 mm) from the *guard*.

R308.5 Site-built windows. Site-built windows shall comply with Section 2404 of the *International Building Code*.

R308.6 Skylights and sloped glazing. Skylights and sloped glazing shall comply with the following sections.

R308.6.1 Definitions. The following terms are defined in Chapter 2:

SKYLIGHT, UNIT.

SKYLIGHTS AND SLOPED GLAZING.

TUBULAR DAYLIGHTING DEVICE (TDD).

R308.6.2 Materials. The following types of glazing shall be permitted to be used:

1. Laminated glass with not less than a 0.015-inch (0.38 mm) polyvinyl butyral interlayer for glass panes 16 square feet (1.5 m²) or less in area located such that the highest point of the glass is not more than 12 feet (3658 mm) above a walking surface or other accessible area; for higher or larger sizes, the interlayer thickness shall be not less than 0.030 inch (0.76 mm).
2. Fully tempered glass.
3. Heat-strengthened glass.
4. Wired glass.
5. *Approved* rigid plastics.

R308.6.3 Screens, general. For fully tempered or heat-strengthened glass, a retaining screen meeting the requirements of Section R308.6.7 shall be installed below the glass, except for fully tempered glass that meets either condition listed in Section R308.6.5.

R308.6.4 Screens with multiple glazing. Where the inboard pane is fully tempered, heat-strengthened or wired glass, a retaining screen meeting the requirements of Section R308.6.7 shall be installed below the glass, except for either condition listed in Section R308.6.5. Other panes in the multiple glazing shall be of any type listed in Section R308.6.2.

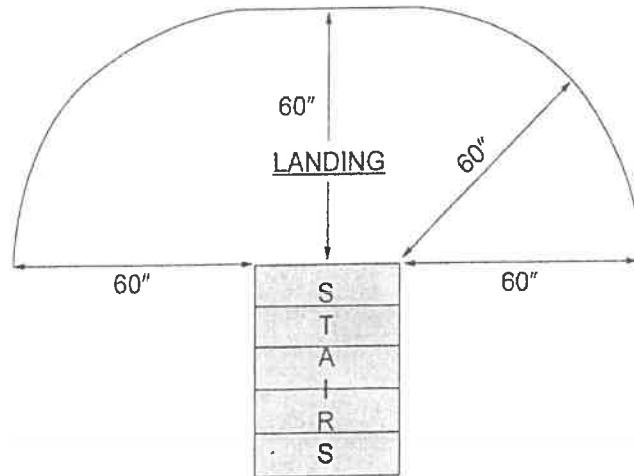
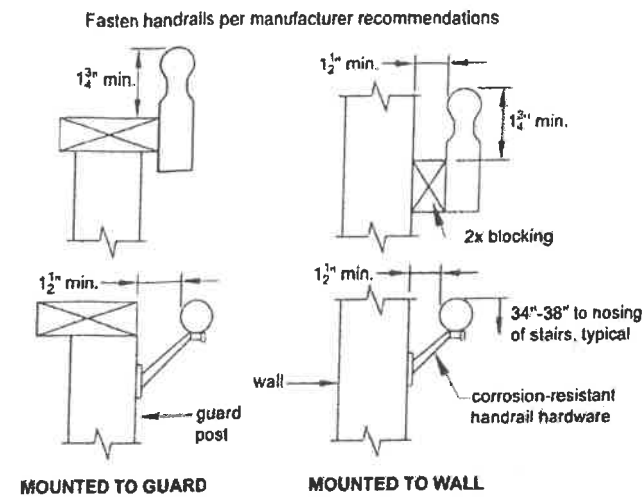


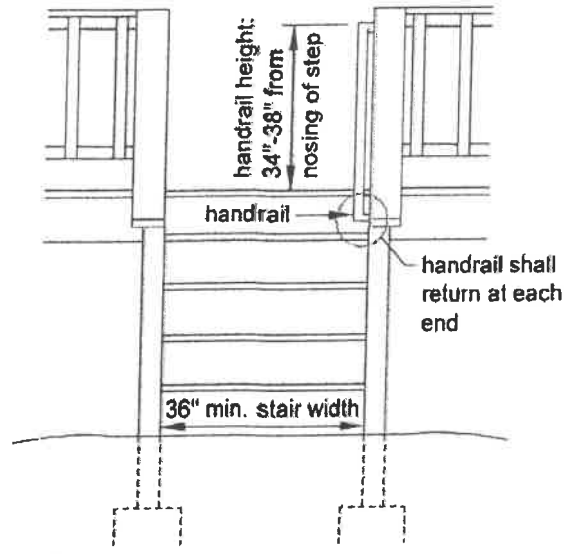
FIGURE R308.4.7
PROHIBITED GLAZING LOCATIONS AT BOTTOM STAIR LANDINGS

Figure 28. Handrail Mounting Examples



Courtesy of American Wood Council - Leesburg, VA

Figure 29. Miscellaneous Stair Requirements

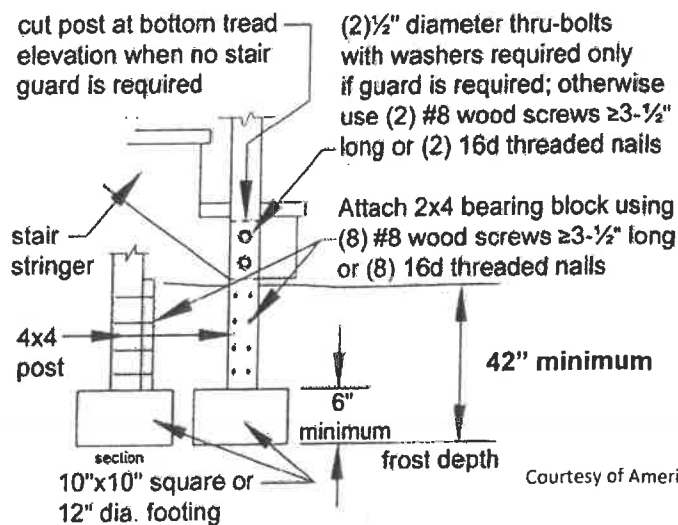


Courtesy of American Wood Council - Leesburg, VA

STAIR FOOTING

- Stair stringers shall be attached to the stair guard posts as shown in **Figure 30**.
- Stair guard posts footing shall bear on solid, undisturbed soil 42" below grade minimum.
- Stringers shall rest on 2x4 bearing block as shown in **Figure 30**.

Figure 30. Stair Footing Detail

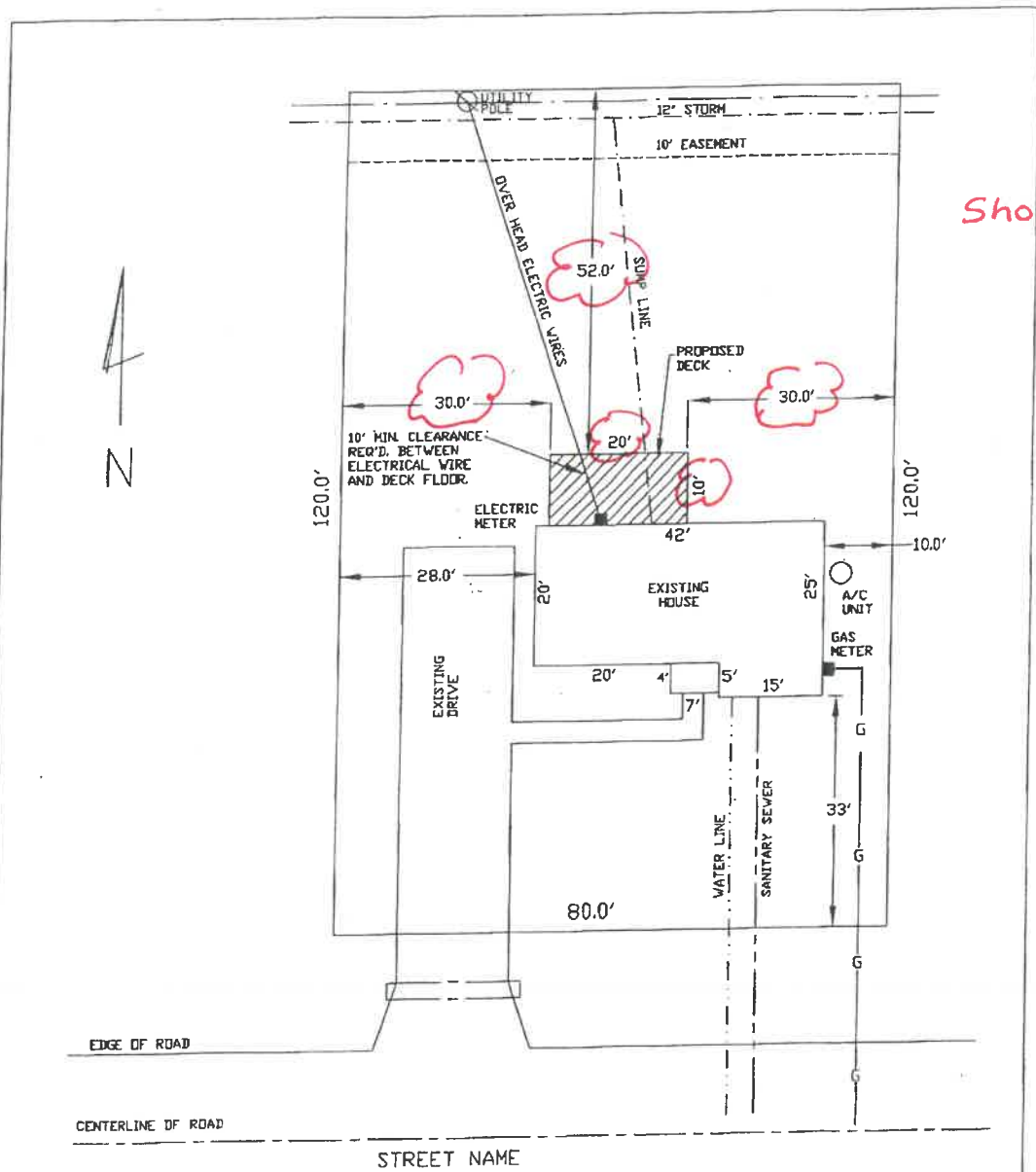


Courtesy of American Wood Council - Leesburg, VA

STAIR LIGHTING

- Stairways shall have a light source at the top landing that provides light to the stairs and landings.
- The light switch shall be controlled from the inside of the house. Motion detectors or timed switches are acceptable.

COMMUNITY SPECIFIC DETAILS



SAMPLE PLOT PLAN

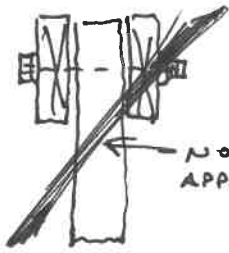
BUILDER: XYZ CONST.	
ADDRESS XXX	PHONE XXX
OWNER: RESIDENT	
ADDRESS XXX	PHONE XXX

SHOW THE UTILITY LOCATIONS BOTH ABOVE AND BELOW GROUND.
 SHOW THE LOCATION OF THE ELECTRIC METER, GAS METER AND A/C UNIT.
 SHOW THE LOCATION OF WATER, SANITARY, AND SUMP LINES

EXAMPLE DECK PLAN

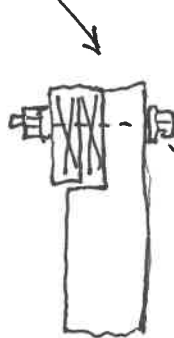
PROVIDE

Post to Beam connection



Not Approved

Approved



PROVIDE SIZE OF Tread

MIN $\frac{1}{2}$ " GAL. BOLT

PROVIDE How high the rise

PROVIDE SIZE of Post

PROVIDE SPAN of Beams

PROVIDE SPAN of cantilever.

PROVIDE

PROVIDE SPAN of Joists

PROVIDE SIZE of Joists

PROVIDE How wide the stairs

PROVIDE SPACING of Joists

PROVIDE How wide

Space of stringers Provide

PROVIDE size of Post and How high Deck is off grade



Department of Public Services

JOB _____

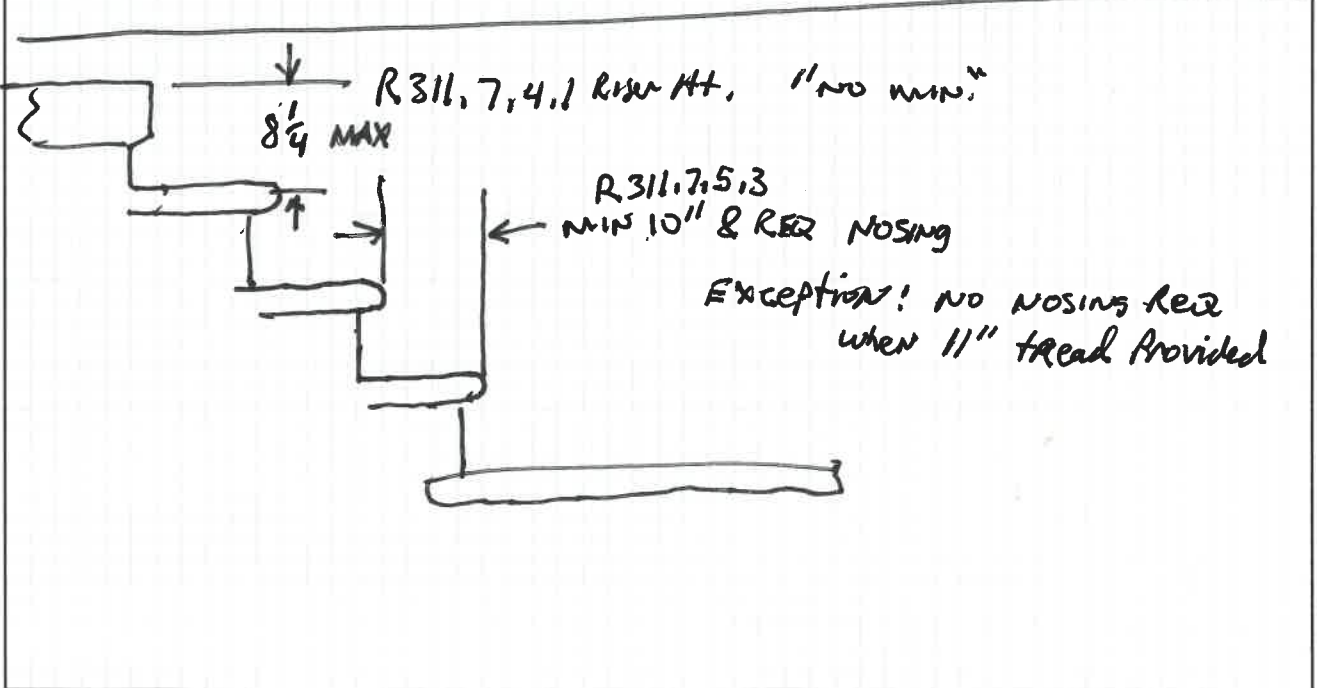
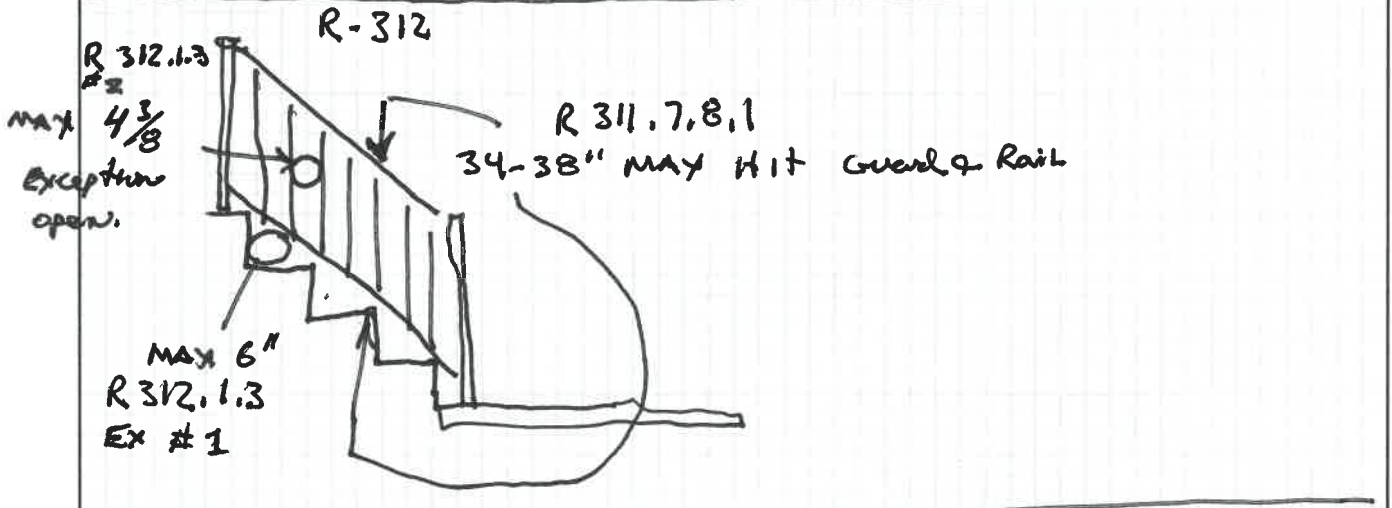
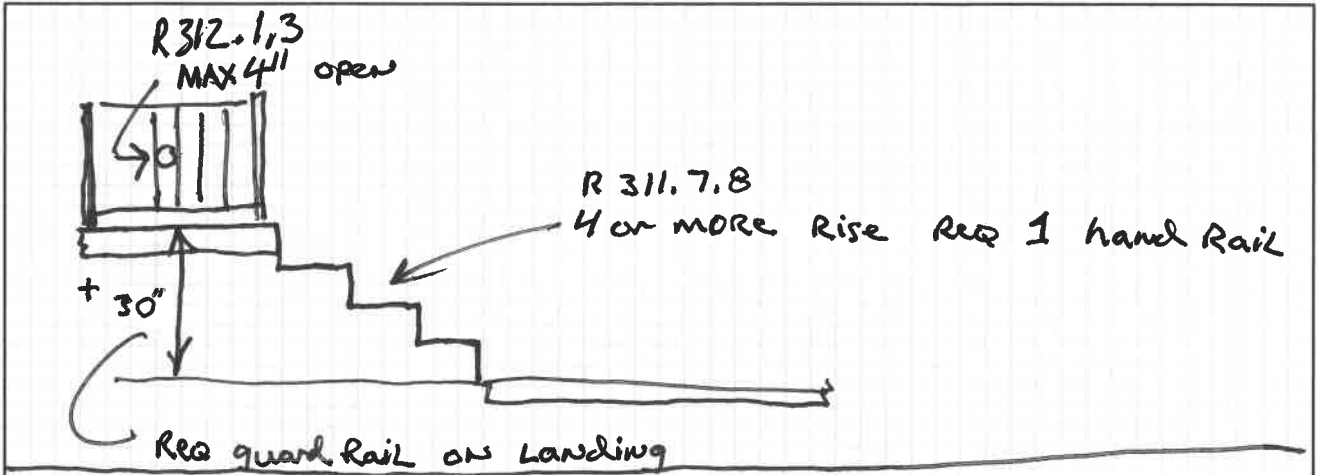
SHEET NO. _____ OF _____

CALCULATED BY _____ DATE _____

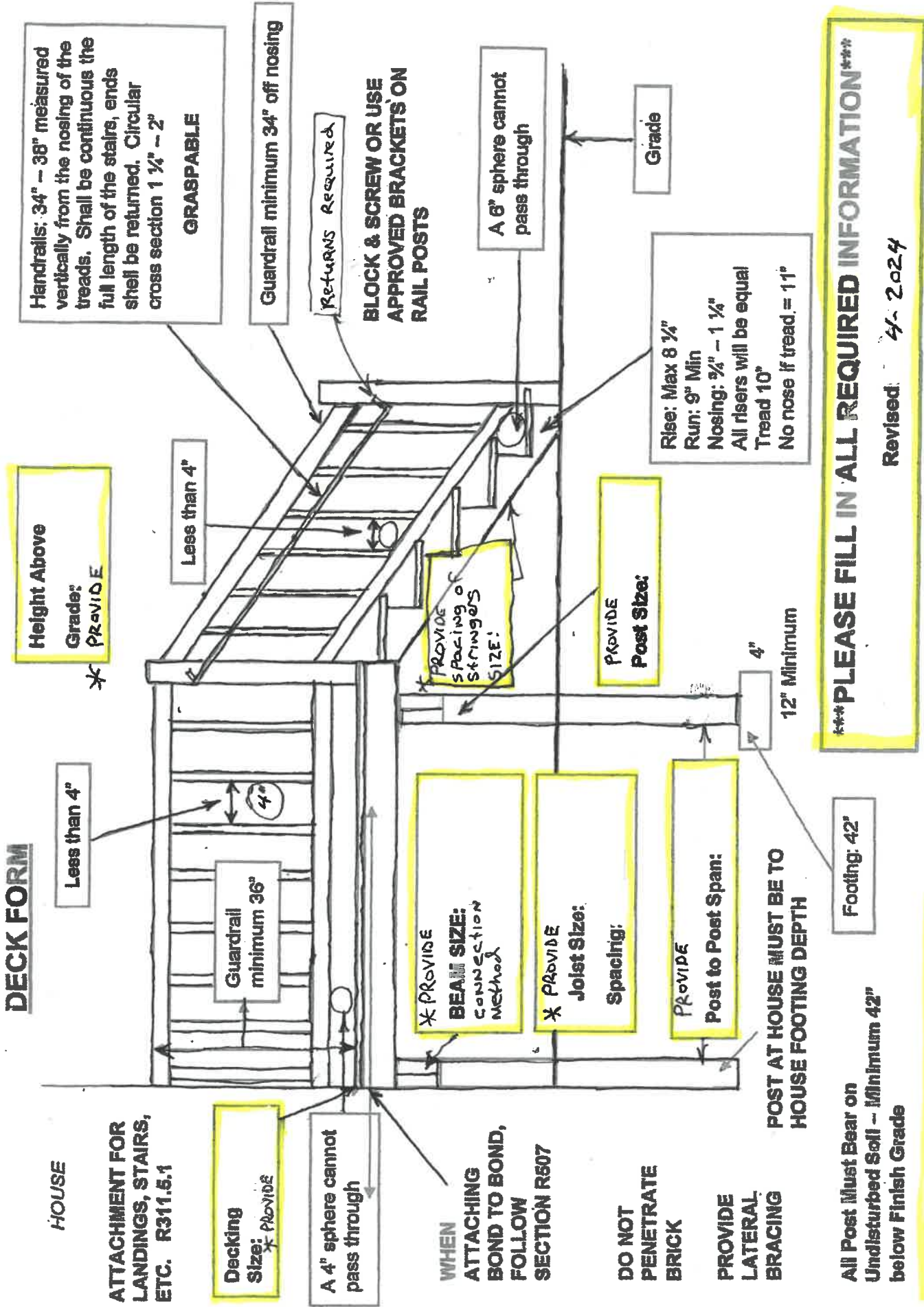
CHECKED BY _____ DATE _____

SCALE _____

EXAMPLE



DECK FORM



Height Above Grade: **PROVIDE**

Less than 4"

Less than 4"

Decking Size: **PROVIDE**

A 4" sphere cannot pass through

WHEN ATTACHING BOND TO BOND, FOLLOW SECTION R507

DO NOT PENETRATE BRICK

PROVIDE LATERAL BRACING

All Post Must Bear on Undisturbed Soil - Minimum 42" below Finish Grade

PROVIDE Beam/Post Connection Method and Hardware to be Used:

PROVIDE BEAM SIZE: CONNECTION METHOD

PROVIDE Joist Size: Spacing:

PROVIDE Post to Post Span:

POST AT HOUSE MUST BE TO HOUSE FOOTING DEPTH

Footing: 42"

PROVIDE Spacing of Stringers SIZE:

PROVIDE Post Size:

Rise: Max 8 1/4"
Run: 9" Min
Nosing: 3/4" - 1 1/4"
All risers will be equal
Tread 10"
No nose if tread = 11"

Grade

A 6" sphere cannot pass through

Returns Required

BLOCK & SCREW OR USE APPROVED BRACKETS ON RAIL POSTS

Guardrail minimum 34" off nosing

GRASPABLE

Handrails: 34" - 38" measured vertically from the nosing of the treads. Shall be continuous the full length of the stairs, ends shall be returned. Circular cross section 1 1/4" - 2"

***** PLEASE FILL IN ALL REQUIRED INFORMATION *****
Revised: 4-2024