City of Chaska Residential Screen or 3-Season Porch Building & Zoning Requirements

(**Note**: The existing access from the house to the 3-season porch must remain in place. The size of a 3-season porch may require structural panels to be built in the corners of the porch thereby making the available window area smaller. Discuss proposed plan with the Building Inspection department.)

Required information to be submitted for a porch permit:

1. The completed building permit application, include all required information in the number spaces, signed and dated.
2. Two copies of a site plan, drawn to scale indicating the location and area of proposed porch on the house and setbacks from property lines. See example. Check if there is a Certificate of Survey for the property on file at City Hall.
3. Two copies of porch plans drawn to ¼ inch scale with the following information:
    a. Floor plan:
        - Proposed porch size
        - Location on the house
        - Size, spacing and type of lumber of floor joist and beams
        - Size of decking or sub-flooring and type of material
        - Size, type of lumber, location and spacing of posts
        - Location, diameter and depth of footings
    b. Cross-section of either a side view or a rear view indicating the following:
        - Size and depth of footings
        - Size of posts
        - Header size supporting floor joists
        - Floor joist size and spacing
        - Flooring material
        - Guard height (if required)
        - Ceiling height
        - Type of screen or windows and door
        - Insulation type and R-value (if applicable)
        - Type(s) of sheathing and siding material
        - Pitch of roof
        - Roof covering
    c. Elevations plan: (This can be eliminated if information is on the floor plan.)
        - Height of porch from established grade
        - Guard height, type of rail and spacing (if required)
        - Window & door location, header sizes
        - Stairs (location, size and stringer spacing)

Required Inspections:

1. **Footing**: after the holes have been dug, but before concrete is poured.
2. **Electrical:** Rough-in by State electrical inspector. Call Brian Luce between 7:00 a.m. and 8:30 a.m., Monday through Friday at 612-419-8393.
3. **Framing & Mechanical** inspections can be scheduled at the same time and shall take place ***after*** the rough-in electrical has been approved. Schedule a fireplace rough-in inspection and Gas line air test at this time also, if applicable. Provide truss specification documents at time of inspection, if applicable.
4. **Insulation**: If applicable.
5. **Final**: Schedule a final inspection when interior/exterior finishes, guards, stairs, landing(s), finished grade and the final electrical inspection have been completed.

General notes:

1. Call Gopher State One Call at least two full working days (48 hours) prior to digging, at 651-454-0002, (800-252-1166) or www.gopherstateonecall.org to have utilities located.
2. Electrical permits need to be obtained from the State of Minnesota at www.electricity.state.mn.us or call 651-284-5026.
3. The approved plan, survey and inspection card shall be made available at ***every inspection*** and kept on the job site until final inspection has been completed.

To schedule an inspection call 952-448-9395 or
Email: inspections@chaskamn.gov
8:00 a.m. to **4:30 p.m.,** Monday through Friday and ask for Building Inspections. Please try to give 24-hour notice.

Commonly Asked Code Questions Regarding Porch Construction

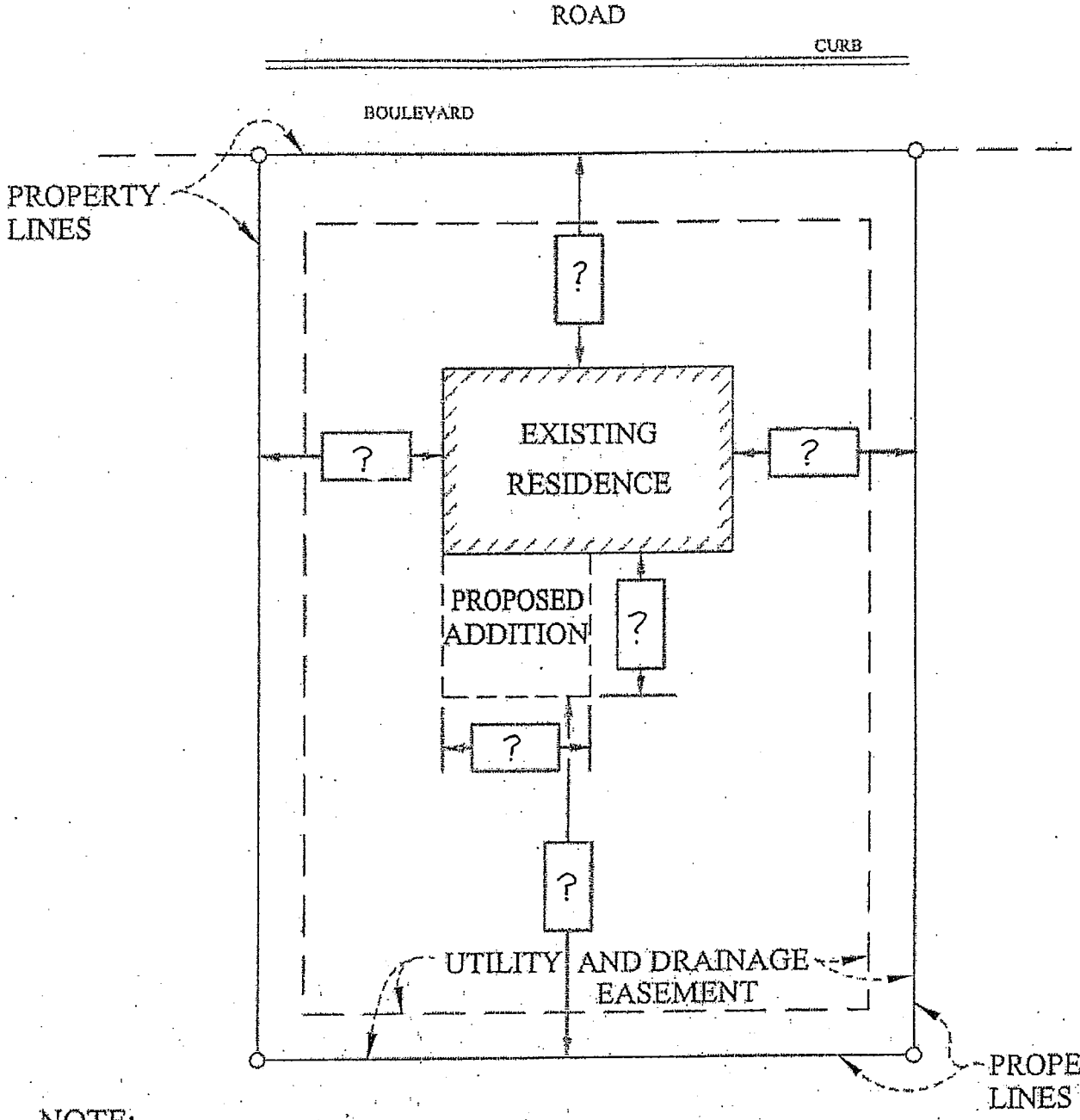
- **Frost footings**: Required for a deck attached to a structure that has frost footings. The minimum depth to the bottom of the footing is 42 inches. See handout to determine the diameter required to support the deck load. (Deck designs need to be capable of supporting 50 pounds per square foot. Any additional loads, i.e. covered porch, hot tub, etc. should be designed accordingly. Contact Building Inspections for assistance.)
- **Wood required**: All wood and wood bases products exposed to the weather are required to be of natural resistance to decay such as redwood, cedar or approved treated lumber. This includes posts, beams, joists, decking and railings on a screen porch.
  *Note: Any composite or plastic decking and railing material must be an **Approved Product**.*
- **Fasteners:** Nails and screws must be corrosion resistant. Joists that frame into ledger boards shall be supported by a joist hanger (or equal). Provide a mechanical connection between post to footing and post to beam. All holes in joist hangers and mechanical fasteners are to be filled with approved fasteners. (Roofing nails are allowed.)
- **Framing details**: Ledger board is required to be lag bolted to the structure per 2020 MN Residential Code Tables R507.9.1.3(1) and R507.9.1.3(2)
  Note: Ledger boards cannot be attached to house cantilevers unless specifically designed for the additional load and Ledgers ***shall not support concentrated loads*** from Beams or Girders.
  Floor joists and stair stringers spaced 24" or 19.2" on center require a minimum of 2" nominal decking, 16" on center may use 1" decking boards. Some composite decking products may require joist spacing to be 12" on center.
- **Splices** in multiple beam members must occur over support posts.
- **Flashing:** All connections between deck and the building shall be weatherproof. Corrosion resistant flashing over the deck ledger and under siding is required. Also seal bottom and sides of ledger.
- **Cantilevers (overhanging joists and beams)** are not allowed on porches unless "site specific" engineering is supplied to provide adequate bearing. (For specific information, contact a design professional or the Building Inspection Department.)
- **Insulation**: (For heated porches)
  1. Walls shall be insulated to a minimum of R-20.
  2. Floors shall be insulated to a minimum of R-30.
  3. Ceilings shall be insulated with a minimum of R-49.
  4. An interior poly vapor barrier shall be installed and sealed at all edges, seams and penetrations per Code.
  5. Enclosed attics and rafter spaces must be provided with ventilation equivalent to $1/300^{th}$ of the attic area, ½ in soffit vents and ½ in roof vents.

- **Guards** are required on all decks and both sides of stairs over 30 inches above grade. A guard shall be 36 inches above the finished deck surface and 34 to 38 inches above the stair nosing. Open guards require intermediate rails or an ornamental pattern such that a 4-inch diameter ball will not pass through open space. ***Note**: Screening alone is not an approved guard.*
  Exceptions:
  1. The triangle formed at the stair riser, tread and bottom element of the guardrail must be sized such that a 6-inch diameter ball will not pass through. See attached handout.
  2. The openings for required guards on sides of stairs shall allow a 4 3/8 inch ball to pass through. See attached handout.
- **Safety glazing** shall be provided in hazardous locations as required by the 2020 MN Residential Building Code.
- **Handrails**: Stairways having 4 or more risers shall have at least one gripable handrail. The top shall be placed between 34 to 38 inches above the stair's nosing, starting even with the top tread nosing and bottom tread nosing. It shall be continuous with both ends returned back to a post or wall. (Use attached handout as a guide.)
- **Stairs**: If a stairway is provided, the minimum ***inside*** width is 36 inches. Maximum rise is 7 3/4 inches; the minimum tread is 10 inches, A nosing of ¾ inch to 1 ¼ inch is required. ***Treads 11inches or greater do not require a nosing***. The largest tread width or riser height and nosing depth cannot exceed the smallest by more than 3/8th inch. A 4-inch diameter ball will not pass through the riser opening on stairs greater than 30 inches above grade. Stair stringers shall be attached to the deck in a positive and secure fashion. All landings and stairways shall be illuminated. (See attached handout)
- **Landings** shall be provided at the top and bottom of the steps. They are to be level, 36 inches wide minimum (but not less than the width of the stairs), by 36 inches deep. If the porch is screen only, no landing at the top is required but in no case shall the door open over the stairs. The bottom landing does not have to be concrete, it may be grass. The rise from the landing to the first tread is the same as the other risers and shall not vary more than 3/8th inch.
- **Ice and water barrier** is required on all pitched roofs except unheated detached garages. The barrier must consist of two layers of *underlayment* cemented together or a self-adhering polymer modified bitumen sheet, according to manufacturer's installation instructions, from the roof edge to a point 24 inches inside the exterior wall line. It is also required in all valleys under the valley lining.

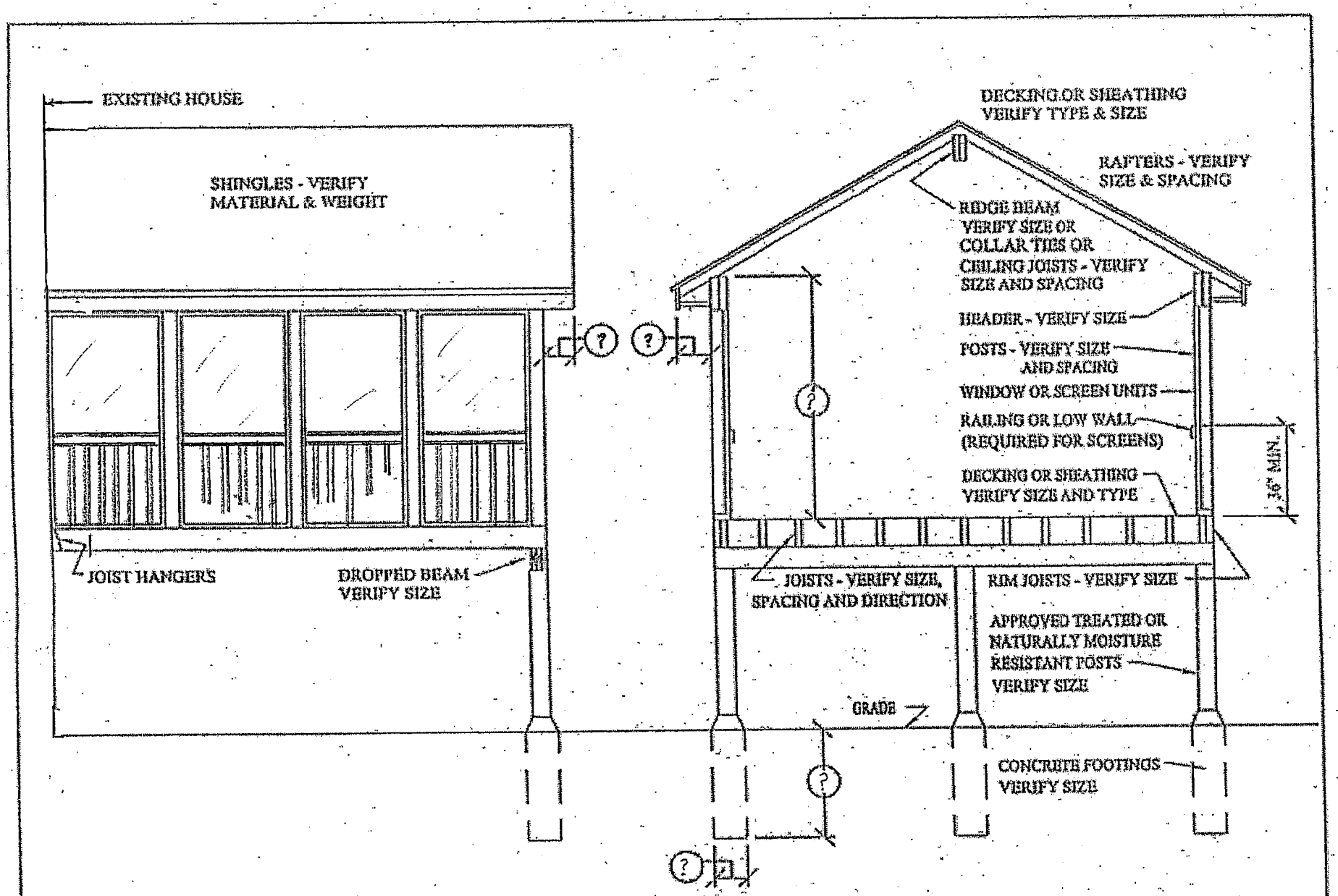
Special design note: Some existing deck designs may not be appropriate for the placement of a porch. Discuss with the Building Inspection Department about the design. Porch and deck setbacks are not the same.

**THIS INFORMATION IS A GUIDE TO THE MOST COMMON QUESTIONS.
IT IS NOT INTENDED, NOR SHALL IT BE CONSIDERED,
A COMPLETE SET OF REQUIREMENTS.**

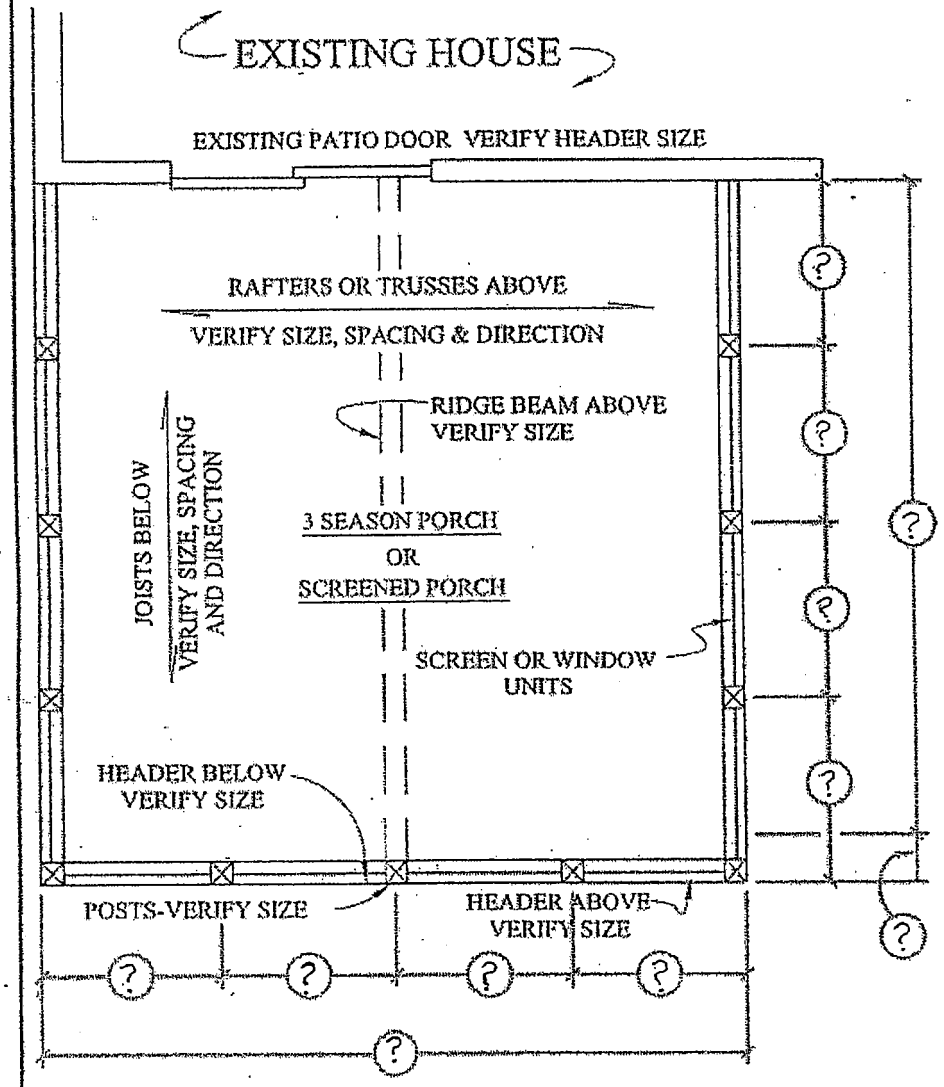
EXAMPLE SURVEY



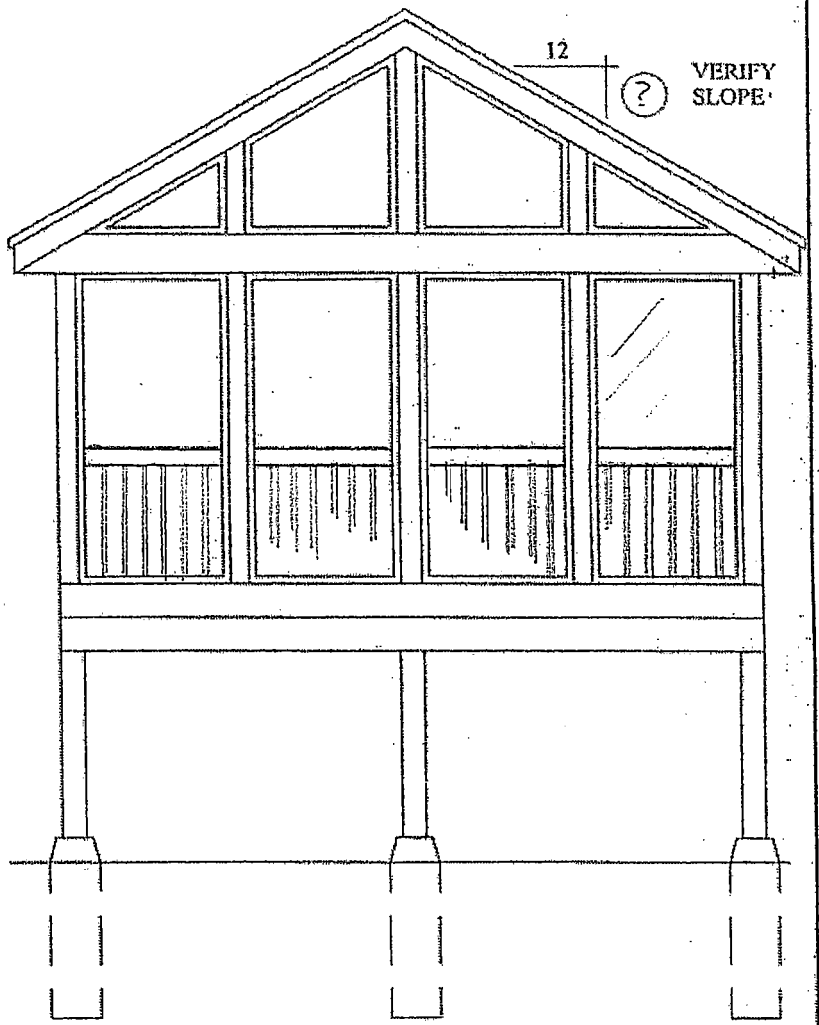
NOTE:
SHOW ANY ADDITIONAL STRUCTURES THAT EXIST ON THE PROPERTY (I.E. POOL, SHED, ETC.)



EXAMPLE ONLY



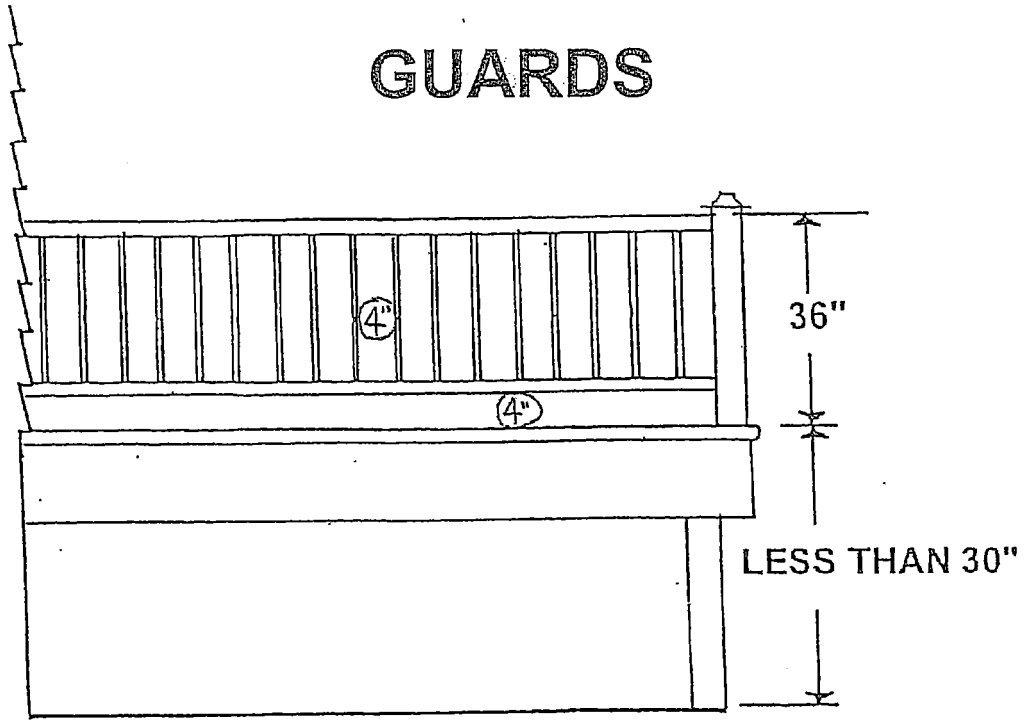
FLOOR PLAN



FRONT ELEVATION

EXAMPLE ONLY

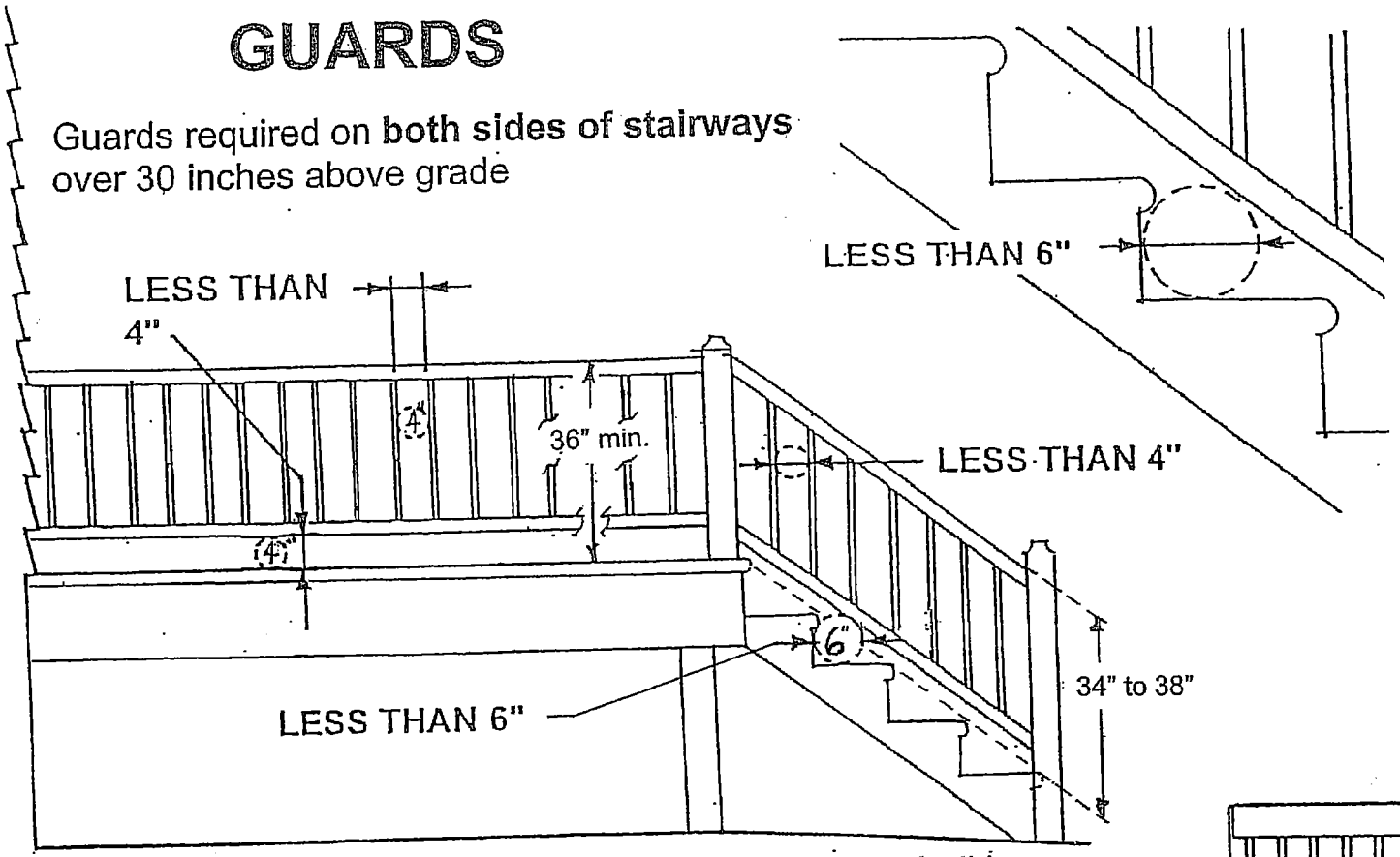
GUARDS



A 36 inch high guard is required for residential porches, balconies or raised floor (decks) surfaces that are located more than 30 inches above a floor or grade. Guards shall have intermediate rails or ornamental closures that do not allow the passage of a sphere 4 inch in diameter.

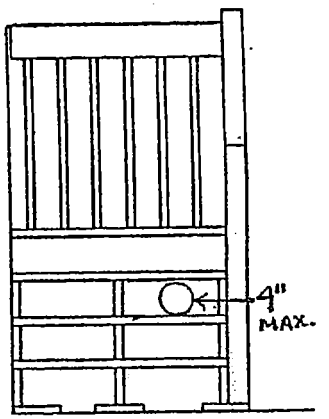
GUARDS

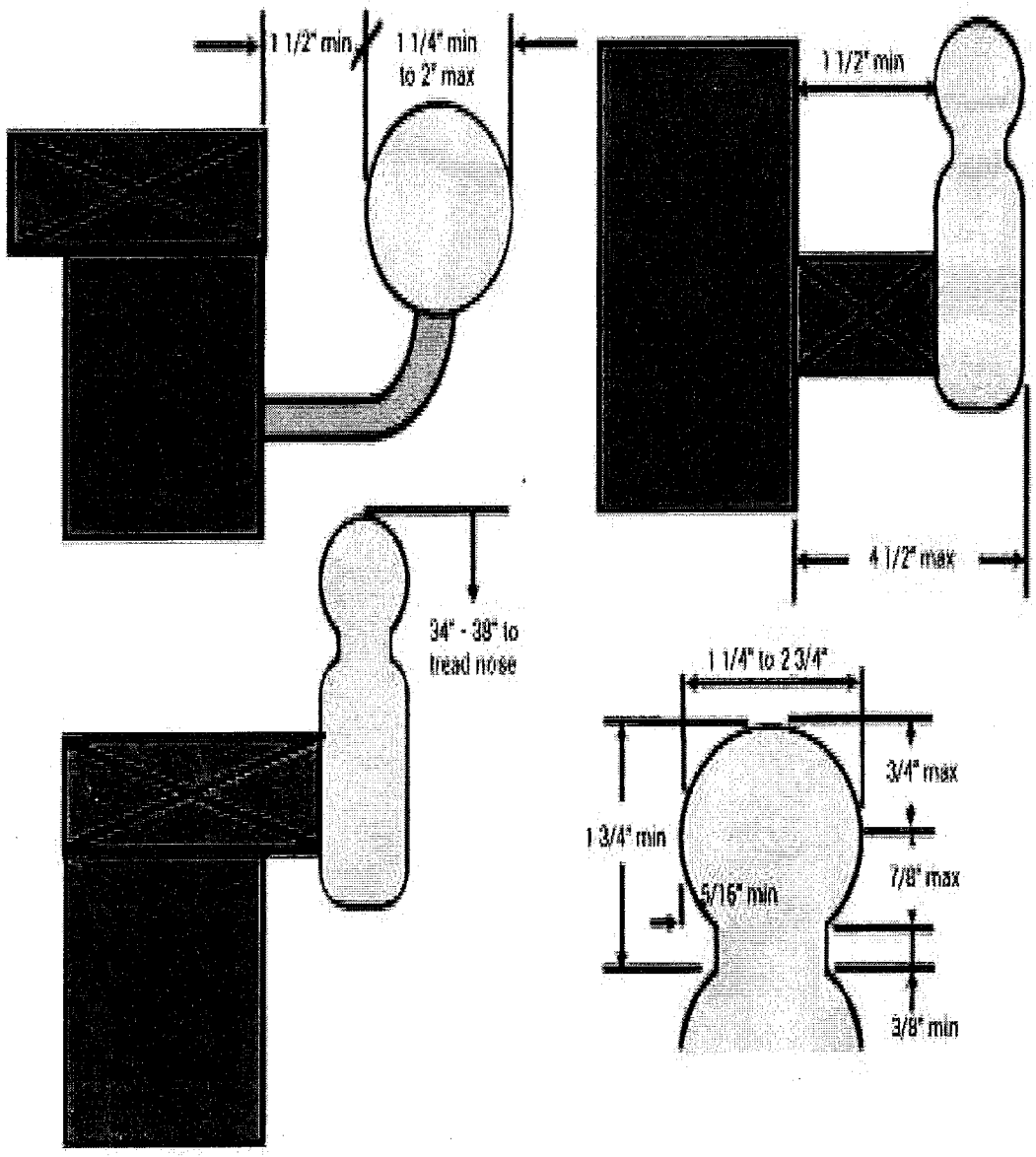
Guards required on **both sides of stairways** over 30 inches above grade



Openings in required guards **and in stair risers**, shall have intermediate rails or ornamental closures such that a 4 inch diameter sphere cannot pass through.

Exception: The triangle openings formed by the riser, tread, and bottom rail of the guard at the open side of a stairway are permitted to be of a size such that a sphere 6 inches in diameter cannot pass through.

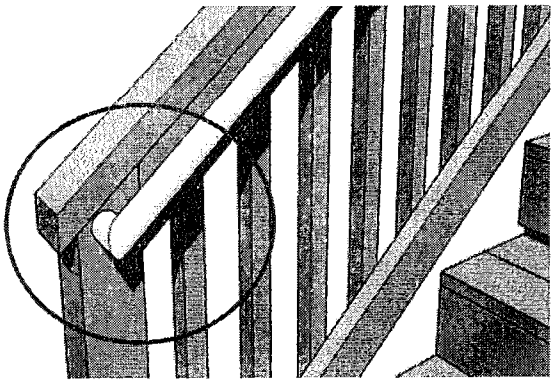




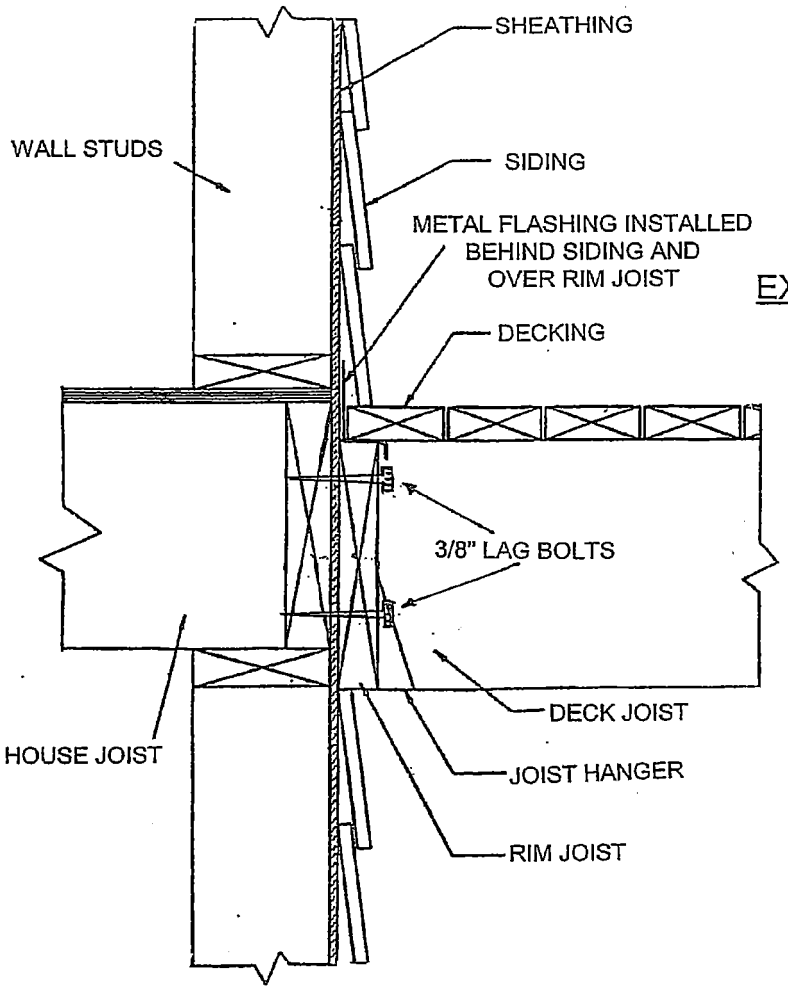
Handrails are required on stairs with four or more risers.

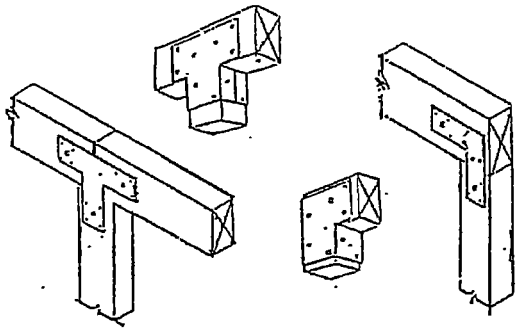
Handrails shall have a space of not less than 1½" between the handrail and the wall or guard. The handrails shall be not less than 1¼" or more than 2" in diameter

Handrails must have a continuous graspable surface and be 34" to 38" above the tread nosing and run the full length of the stairs with ends returned.



DECK RIM (AT HOUSE) DETAIL





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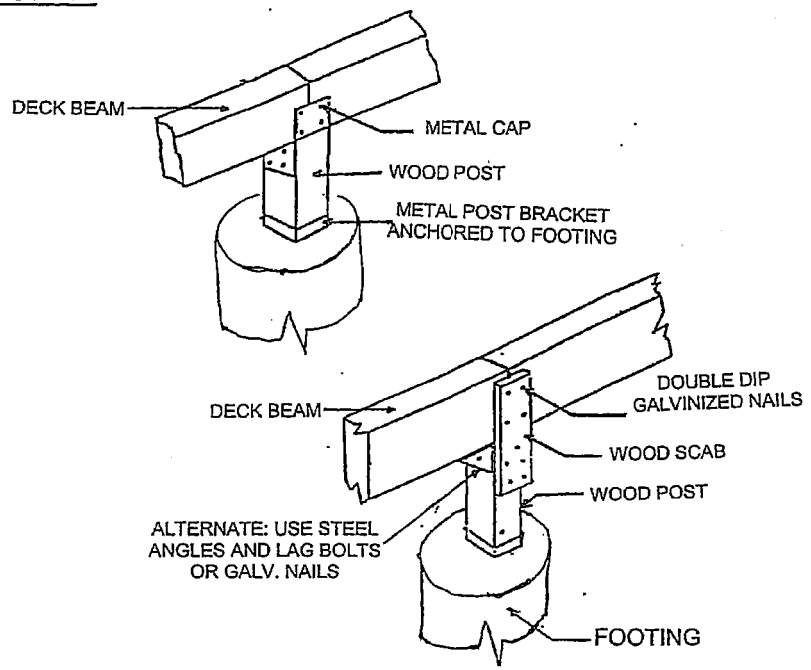


POST TO BEAM CONNECTIONS

DECK LEDGER – VERTICAL AND LATERAL LOAD REQUIREMENTS

Important notice: If positive connection cannot be met and verified by inspection – the deck shall be self-supporting (see this handout for self-supporting deck details).

R507.1 Decks.

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.

R507.9 Deck ledger connection to band joist.

For decks supporting a total design load of 50 pounds per square foot (2394 Pa) [40 pounds per square foot (1915 Pa) live load plus 10 pounds per square foot (479 Pa) dead load], the connection between a deck ledger of pressure- preservative-treated Southern Pine, incised pressure-preservative-treated Hem-Fir or approved decay-resistant species, and a 2-inch (51 mm) nominal lumber band joist bearing on a sill plate or wall plate shall be constructed with ½ -inch (12.7 mm) lag screws or bolts with washers in accordance with Table R507.9.1.3(1). Lag screws, bolts and washers shall be hot-dipped galvanized or stainless steel.

TABLE R507.9.1.3(1)
FASTENER SPACING FOR A SOUTHERN PINE OR HEM-FIR DECK LEDGER AND A 2-INCH-NOMINAL SOLID-SAWN SPRUCE-PINE-FIR BAND JOIST[c, f, and g]
(Deck live load = 40 psf, deck dead load = 10 psf)

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'
Connection details	On-center spacing of fasteners[d and e]						
½ inch diameter lag screw with 15/32 inch maximum sheathing[a]	30	23	18	15	13	11	10
½ inch diameter bolt with 15/32 inch maximum sheathing	36	36	34	29	24	21	19
½ inch diameter bolt with 15/32 inch maximum sheathing and ½ inch stacked washers[b, h]	36	36	29	24	21	18	16

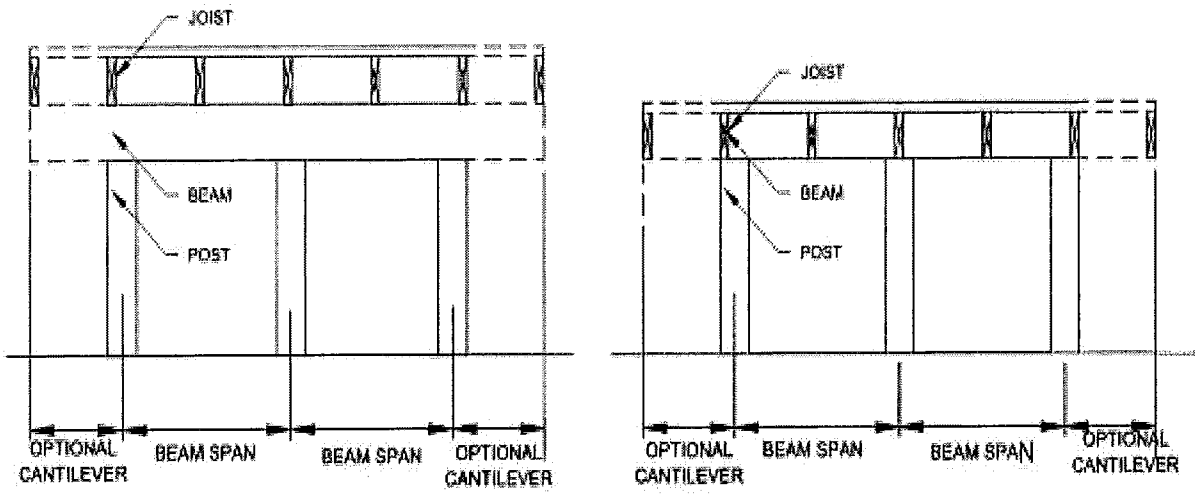
a Ledgers shall be flashed in accordance with Section R703.4 to prevent water from contacting the house band joist.
b The tip of the lag screw shall fully extend beyond the inside face of the band joist.
c Sheathing shall be wood structural panel or solid sawn lumber.
d Sheathing shall be permitted to 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 507.9.1.3(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]	¼ inch	2 inches[b]	1 ⅝ inches[b]
Band Joist[c]	¾ inches	2 inches	2 inches[b]	1 ⅝ inches[b]

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 R507.9.1(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 R507.9.1(1).

R507.9.1 Placement of lag screws or bolts in deck ledgers and band joists. The lag screws or bolts in deck ledgers and band joists shall be placed in accordance with Table R507.9.1 and Figures R507.9.1(1) and R507.9.1(2)



DROPPED BEAM FLUSH BEAM

FIGURE R507.5
TYPICAL DECK JOIST SPANS

POSTS

MAXIMUM POST HEIGHT IN FEET															
SPECIES	SIZE	SQUARE FEET OF DECK SUPPORTED													
		36	48	60	72	84	96	108	120	132	144	156	165	180	192
SOUTHERN PINE	4X4	10	10	10	9	9	8	8	7	7	6	6	6	6	6
	4X6	14	14	13	12	11	10	10	9	9	8	8	8	7	7
	6X6	17	17	17	17	17	17	17	17	16	16	15	14	13	13
REDWOOD CEDAR	4X4	10	10	9	8	7	7	6	6	5	4				
	4X6	14	13	12	11	10	9	8	8	7	7	7	6	6	5
	6X6	17	17	17	17	17	16	13	7						

Posts shall be rated for ground contact.

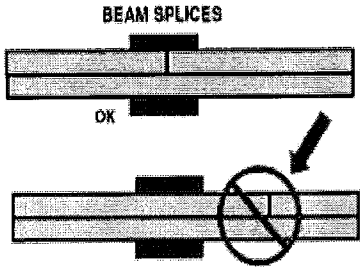
2018 MINNESOTA STATE RESIDIENTIAL BUILDING CODE REQUIREMENTS

The bottom of the footing must bear on undisturbed soils – a minimum of 42" below grade or greater; measured either vertically and horizontally. Augured footings shall have smooth forms installed prior to the footing inspection.

Deck ledger board must be greater than or equal to the deck joists and not greater than the depth of the existing rim/band joist it will be fastened to. The ledger must be secured and attached to the structure per table R507.2 and R507.2.1 within this handout.

Beam splices must be directly over posts, minimum of 1½" bearing.

Joist hangers are required wherever joists do not have at least 1½" of bearing. (Exceptions: cantilevered ends.)



JOIST DETAILS

Joists shall be the same size or smaller than the ledger. Joists must bear on a beam, ledger strip, or joist hangers. Joist hangers must be installed in accordance with the manufacturer's recommendations. Fill all nail holes in joist hangers. Joist spacing is determined by the type of decking used. The floor decking shall determine the spans for joists and stair stringers.
Note: Maximum spans for decking on stairs is often less than the span permitted on the deck.

MAXIMUM WOOD DECK BOARD SPANS (NOT ON STAIRS)	
DECKING MATERIAL	**JOIST SPACING**
2x6 OR 5/4 SOUTHERN PINE PERPENDICULAR TO JOIST	24" O.C.
5/4 CEDAR OR REDWOOD AND 2X4 PERPENDICULAR TO JOIST OR 5/4 SOUTHERN PINE OR 2X6 AT 45 DEGREES TO JOIST	16" O.C.
5/4 AND 2X4 CEDAR OR REDWOOD AT 45 DEGRESS TO JOIST	12" O.C.
MANUFACTURED OR COMPOSITE DECKING	PER MANUFACTURER'S REQUIREMENTS

TABLE R507.6
DECK JOIST SPANS FOR COMMON LUMBER SPECIES (ft. - in.)

SPECIES[a]	SIZE	ALLOWABLE JOIST SPAN[b]			MAXIMUM CANTILEVER[c, f]		
		SPACING OF DECK JOISTS (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	1-3	1-4	1-6
	2 x 8	13-1	11-10	9-8	2-1	2-3	2-5
	2 x 10	16-2	14-0	11-5	3-4	3-6	2-10
	2 x 12	18-0	16-6	13-6	4-6	4-2	3-4
Douglas fir-larch[d], hem-fir[d] spruce-pine-fir[d],	2 x 6	9-6	8-8	7-2	1-2	1-3	1-5
	2 x 8	12-6	11-1	9-1	1-11	2-1	2-3
	2 x 10	15-8	13-7	11-1	3-1	3-5	2-9
	2 x 12	18-0	15-9	12-10	4-6	3-11	3-3
Redwood, western cedars, ponderosa pine[e], red pine[e]	2 x 6	8-10	8-0	7-0	1-0	1-1	1-2
	2 x 8	11-8	10-7	8-8	1-8	1-10	2-0
	2 x 10	14-11	13-0	10-7	2-8	2-10	2-8
	2 x 12	17-5	15-1	12-4	3-10	3-9	3-1

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. No. 2 grade with wet service factor.
b. Ground snow load, live load = 40 psf, dead load = 10 psf, $L/\Delta = 360$.
c. Ground snow load, live load = 40 psf, dead load = 10 psf, $L/\Delta = 360$ at main span, $L/\Delta = 180$ 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.

TABLE R507.5

DECK BEAM SPAN LENGTHS[a, b, g] (feet - inches)

SPECIES[c]	SIZE[d]	DECK JOIST SPAN LESS THAN OR EQUAL TO: (feet)						
		6	8	10	12	14	16	18
Southern pine	1 – 2 x 6	4-11	4-0	3-7	3-3	3-0	2-10	2-8
	1 – 2 x 8	5-11	5-1	4-7	4-2	2-10	3-7	3-5
	1 – 2 x 10	7-0	6-0	5-5	4-11	4-7	4-3	4-0
	1 – 2 x 12	8-3	7-1	6-4	5-10	5-5	5-0	4-9
	2 – 2 x 6	6-11	5-11	5-4	4-10	4-6	4-3	4-0
	2 – 2 x 8	8-9	7-7	6-9	6-2	5-9	5-4	5-0
	2 – 2 x 10	10-4	9-0	8-0	7-4	6-9	6-4	6-0
	2 – 2 x 12	12-2	10-7	9-5	8-7	8-0	7-6	7-0
	3 – 2 x 6	8-2	7-5	6-8	6-1	5-8	5-3	5-0
	3 – 2 x 8	10-10	9-6	8-6	7-9	7-2	6-8	6-4
	3 – 2 x 10	13-0	11-3	10-0	9-2	8-6	7-11	7-6
	3 – 2 x 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 x 6 or 2 – 2 x 6	5-5	4-8	4-2	3-10	3-5	3-1	2-9
	3 x 8 or 2 – 2 x 8	6-10	5-11	5-4	4-10	4-6	4-1	3-8
	3 x 10 or 2 – 2 x 10	8-4	7-3	6-6	5-11	5-6	5-1	4-8
	3 x 12 or 2 – 2 x 12	9-8	8-5	7-6	6-10	6-4	5-11	5-7
	4 x 6	6-5	5-6	4-11	4-6	4-2	3-11	3-8
	4 x 8	8-5	7-3	6-6	5-11	5-6	5-2	4-10
	4 x 10	9-11	8-7	7-8	7-0	6-6	6-1	5-8
	4 x 12	11-5	9-11	8-10	8-1	7-6	7-0	6-7
	3 – 2 x 6	7-4	6-8	6-0	5-6	5-1	4-9	4-6
	3 – 2 x 8	9-8	8-6	7-7	6-11	6-5	6-0	5-8
	3 – 2 x 10	12-0	10-5	9-4	8-6	7-10	7-4	6-11
	3 – 2 x 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.

g. Beam cantilevers are limited to the adjacent beam's span divided by 4.