MNSPECT LLC
HELPING YOU COMPLY WITH THE CODE

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DECKS

- This handout is intended only as a guide. It shall not be considered a complete set of requirements.
- Materials and installation must comply with the current Minnesota Residential Building Code (MRC) and the manufacturers' installation specifications for each product.
- A building permit is required for any deck/platform that is attached to a structure or is 30" or more above grade. A deck/platform that is less than 30" above grade, is not attached to a structure with frost footings, and is not part of an accessible route, does not require a building permit. Landings must be attached to structures or be engineered to resist both lateral and vertical forces. **Most municipalities require a zoning review. Please check with your municipality regarding requirements.**

Building Permit Submittal shall include (please upload the following):

- **SUPPLEMENTAL WORKSHEET FOR DECKS** (included in this handout).
- **One set of plans** (drawn to scale) showing the proposed design, and including:
  - Type of decking and decking dimensions
  - Type of lumber being used
  - Joist size, location, spacing, span, overhangs, if any, fasteners, and connecters
  - Beam size, location, span(s), overhangs, if any, fasteners, and connecters
  - Footing depths, diameters, and locations
  - Rim material for ledger attachment
  - Ledger size, location, fasteners and fastener spacing
  - Deck height
  - Post size and anchor/connecter
  - All window locations adjacent to deck
  - Stair and landing location and size/height
- **A site plan** (or Certificate of Survey if required by municipality) drawn to scale and dimensioned, identifying proposed deck dimensions with measurements from the adjacent lot lines; as well as all lot lines, setbacks, easements, adjacent street names, and all structures on the property**.**

Check with your municipality to determine setback requirements for the property.

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PERMIT CARD AND APPROVED PLANS SHALL BE:

- **POSTED** prior to start of work
- **REMAIN** throughout project
- **VISIBLE** from street or driveway
- **ACCESSIBLE** to the inspector.

INSPECTION REQUIREMENTS:

Inspections **MUST** be scheduled during office hours **AT LEAST** one business day prior to inspection. If a specific date and time is required, additional notice may be needed. Failure to cancel a scheduled inspection may result in a reinspection fee.

- **Office Hours:** Monday - Friday • 8:00 a.m. - 4:30 p.m.
- **Phone:** (952) 442-7520 or (888) 446-1801

Inspections: (Refer to your permit card regarding project-specific inspections)

- **Footings**: After holes are dug, but **PRIOR TO POURING CONCRETE**.
- **Framing**: Before decking is installed (if deck is less than 4 feet above grade).
  - **Interior access will need to be provided to inspect the ledger/rim connection. The inside surface of the rim joist must be visible and accessible for inspection.** Where positive connection to the primary building structure cannot be verified, **decks shall be self-supporting. (MRC R507.8)**
- **Final**: After deck is complete with stairs, handrails, and guardrails installed.

NOTICE: Construction or work for which a permit is required shall be subject to inspection by the Building Official, and such **construction or work shall remain accessible and exposed for inspection purposes until approved**. It is the responsibility of the permit applicant to be in attendance on site and provide access to the Building Official for all required inspections. If work is concealed and/or work is not complete at time of inspection, an additional inspection is required, and a **reinspection fee may apply.**

- **Note:** The State of Minnesota requires all residential building contractors, remodelers, roofers, plumbers, and electricians to obtain a state license, unless they qualify for a specific exemption. Any person claiming an exemption must provide a copy of a Certificate of Exemption from the Department of Labor & Industry to the Municipality before a permit will be issued.
- **Note:** To determine contractor requirements, or to check the licensing status of a contractor, please call the Minnesota Department of Labor & Industry at 651-284-5065 or toll free 1-800-342-5354.
- **Note:** For specific code requirements, contact the Building Inspection Department at 952-442-7520 or 888-446-1801 or e-mail: info@mnspect.com.

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PROJECT CHECKLIST:

The following is a guideline to assist in compliance with the requirements of the MN State Building Code.

- ☐ Buildings shall be provided with approved address identification. The address identification shall be legible and placed in a position visible from the street or road fronting the property. These numbers shall contrast with their background. Address numbers shall be Arabic numbers or alphabetical letters. Numbers shall not be spelled out. Numbers shall be a minimum of 4 inches high with a minimum stroke width of 1/2 inch. Where required by the fire code official, address identification shall be provided in additional approved locations to facilitate emergency response. Where access is by means of a private road and the building address cannot be viewed from the public way, a monument, pole or other sign or means shall be used to identify the structure. Address identification shall be maintained. (MRC R319.1)
- ☐ BEFORE YOU DIG, contact Gopher State One Call to locate buried utilities: (651) 454-0002 or (800) 252-1166. www.gopherstateonecall.org.
- ☐ **Where positive connection to the primary building structure cannot be verified during inspection, decks shall be self-supporting**. (MRC 507.8)
- ☐ The minimum live load for an exterior deck is 40 pounds per square foot.
- ☐ A minimum of 36" clear space is required above emergency escape and rescue openings. (MRC R310.2.4)
- ☐ Decks shall not be hung from the cantilever of a house unless joists/trusses are designed/engineered to carry additional deck loads, and documentation to that effect is provided with plan submittal.
- ☐ All connections between deck and dwelling shall be weatherproof. Any cuts in exterior finish shall be flashed.

Materials

- ☐ All exposed wood used in the construction of decks is required to be a type with natural resistance to decay (redwood, cedar, etc.) or approved treated wood. This includes posts, beams, joists, decking and railings. If wood is to be used below or in contact with grade, it must be approved for ground contact. (MRC 507.2.1)
- ☐ Field-cut ends, notches, and drilled holes of preservative-treated wood shall be treated in the field in accordance with AWPA M4. (MRC 507.2.1)
- ☐ All fasteners (nails, bolts, screws, hangers, etc.) must meet the requirements set forth in Table R507.2.3.

Footing

- ☐ Frost footings are required for any deck attached to a structure that has frost footings. Frost footings are required for all detached decks unless:
  - The joists bear directly on a precast concrete pier block at grade without support by beams or posts.
  - The area of the deck does not exceed 200 SF.
  - The walking surface is not more than 20" above grade at any point within 36" measured horizontally from the edge. (MRC R507.3.2)
- ☐ Deck footings shall be sized to carry the imposed loads from the deck structure to the ground as shown in Figure R507.3. The minimum depth to the base of the footing is 42" in Zone 1. (MRC R507.3)

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Beam

- Cantilevers (overhanging joists and beams) – Refer to MRC Table R507.6 and Table R507.5 (footnote g) for joist and beam cantilever requirements. Cantilevers greater than that listed in the tables will require engineering to be provided.
- The ends of beams shall have not less than 1-1/2 inches of bearing on wood or metal and not less than 3 inches of bearing on concrete or masonry for the entire width of the beam. Where multiple-span beams bear on intermediate posts, each ply must have full bearing on the post in accordance with Figures R507.5.1(1) and R507.5.1(2). (MRC R507.5.1).
- Deck beams shall be attached to supports in a manner capable of transferring vertical loads and resisting horizontal displacement. Deck beam connections to wood posts shall be in accordance with Figures R507.5.1(1) and R507.5.1(2). Manufactured post-to-beam connectors shall be sized for the post and beam sizes. Bolts shall have washers under the head and nut. (MRC R507.5.2).

Joist

- All (round) joist hanger holes must be filled with nails/screws approved for joist hanger structural connections.
- The ends of joists shall have not less than 1-1/2 inches of bearing on wood or metal and not less than 3 inches of bearing on concrete or masonry over its entire width. Joists bearing on top of a multiple-ply beam or ledger shall be fastened in accordance with Table R602.3(1). Joists bearing on top of a single-ply beam or ledger shall be attached by a mechanical connector. Joist framing into the side of a beam or ledger board shall be supported by approved joist hangers. (MRC R507.6.1)
- Joist ends and bearing locations shall be provided with lateral resistance 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 no fewer than three 10d (3-inch by 0.128-inch) (76 mm by 3.3 mm) nails or three No. 10 x 3 inch long, wood screws. (MRC R507.6.2)

Decking

- If decking is installed perpendicular to the joists, joist spacing of 24” on center requires 2” minimum (nominal) decking, and joist spacing of 16” on center requires 5/4” minimum decking. For diagonally installed decking, joist spacing of 16” on center requires 2” minimum (nominal) decking, and joist spacing of 12” on center requires 5/4” minimum decking. Decking may not be installed diagonally if joist spacing is greater than 16” on center. Maximum angle of 45 degrees from perpendicular for wood deck boards. Composite decking shall be installed according to the manufacturer’s instructions as well as R507.2.2 and ASTM D7032. (MRC R507.7)
- Composite decking has different joist span requirements. Joist spacing for direction of decking installation shall be to the manufacturer’s specifications. All composite materials shall be marked with its maximum allowable load and span.

Vertical and Lateral Supports

- Where supported by attachment to an exterior wall, decks shall be positively anchored to the primary structure and designed to resist both vertical and lateral loads. Such attachment shall not be accomplished by the use of toenails or nails subject to withdrawal. For decks with cantilevered framing members, connection 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. **Where positive connection to the primary building structure cannot be verified during inspection, decks shall be self-supporting**. (MRC R507.8)

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Ledger

- Deck ledgers shall be a minimum 2-inch by 8-inch nominal, pressure-preservative-treated Southern pine, incised pressure-preservative-treated hem-fir, or approved, naturally durable, No. 2 grade or better lumber. Deck ledgers shall not support concentrated loads from beams or girders. Deck ledgers shall not be supported on stone or masonry veneer. (MRC R507.9.1.1)
- Band joists supporting a ledger shall be a minimum 2-inch-nominal, solid-sawn, spruce-pine-fir or better lumber or a minimum 1-inch by 9-1/2-inch (25 mm □ 241 mm) dimensional, Douglas fir or better, laminated veneer lumber. Band joists shall bear fully on the primary structure capable of supporting all required loads. (MRC R507.9.1.2)
- Fasteners used in deck ledger connections in accordance with Table R507.9.1.3(1) shall be hot-dipped galvanized or stainless steel and shall be installed in accordance with Table R507.9.1.3(2) and Figures R507.9.1.3(1) and R507.9.1.3(2). (MRC R507.9.1.3)
- Alternate framing configurations supporting a ledger constructed to meet the load requirements of Section R301.5 shall be permitted. (MRC R507.9.1.4)
- Lateral loads shall be transferred to the ground or to a structure capable of transmitting them to the ground. Where the lateral load connection is provided in accordance with Figure R507.9.2(1), hold-down tension devices shall be installed in not less than two locations per deck, within 24 inches of each end of the deck. Each device shall have an allowable stress design capacity of not less than 1,500 pounds. Where the lateral load connections are provided in accordance with Figure R507.9.2(2), the hold-down tension devices shall be installed in not less than four locations per deck, and each device shall have an allowable stress design capacity of not less than 750 pounds. (MRC R507.9.2)

Guards

- Guards shall be located along the open sides of floors, stairs, ramps, and landings that are located more than 30 inches measured vertically to the floor or grade below. Insect screening shall not be considered as a guard. (MRC R312.1.1)
- Required guards at open-sided walking 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 edges of the treads. (MRC R312.1.2)
    - Exceptions:
        - Guards on the open sides of stairs shall have a height not less than 34 inches measured vertically from a line connecting the leading edges of the treads.
        - 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.
- 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. (MRC R312.1.3)
    - Exceptions:
        - The triangular openings at the open side of stair, formed by the riser, tread and bottom rail of a guard, shall not allow passage of a sphere 6 inches in diameter.
        - Guards on the open side of stairs shall not have openings which allow passage of a sphere 4 3/8 inches in diameter.
- Plastic composite exterior guards shall comply with the requirements of Section R317.4. (MRC R312.1.4)

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Decking Type
☐ Wood
☐ Composite

Size
☐ 5/4 (1 1/4")
☐ 2x4 / 2x6

Species: _____

Manufacturer / Series: _____

	Platform1	Platform 2
Joist Spacing		
Joist Span		
Joist Material		
Beam Span		
Beam Material & Number of plies		

Ledger Material
Bolt Type
Bolt Pattern

Post Height/Size/ Material

Footings	A	B	C	D
Area Dimensions				
Total Sq Ft				
Total Weight				
Footing Diameter				

Footings	E	F	G	H
Area Dimensions				
Total Sq Ft				
Total Weight				
Footing Diameter				

House Rim Material: _____

Will house rim be accessible at framing inspection?
☐ Yes
☐ No, deck will be self-supporting

Guardrail ☐ Not Required ☐ Required

Stairs ☐ No ☐ Yes

Handrail ☐ No ☐ Required

TABLE R507.4
DECK POST HEIGHT[a]

DECK POST SIZE	MAXIMUM HEIGHT[a, b] (feet-inches)
4 × 4	6-9[c]
4 × 6	8
6 × 6	14
8 × 8	14

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

a. Measured to the underside of the beam.

b. Based on 40 psf live load.

c. The maximum permitted height is 8 feet for one-ply and two-ply beams. The maximum permitted height for three-ply beams on post cap is 6 feet 9 inches.

TABLE R507.3.1
MINIMUM FOOTING SIZE FOR DECKS

LIVE LOAD[b] (psf)	TRIBUTARY AREA (sq. ft.)	LOAD BEARING VALUE OF SOILS [a, c, d] (psf)											
		1500[e]			2000[e]			2500[e]			≥ 3000[e]		
		Side of a square footing (inches)	Diameter of a round footing (inches)	Thickness (inches)	Side of a square footing (inches)	Diameter of a round footing (inches)	Thickness (inches)	Side of a square footing (inches)	Diameter of a round footing (inches)	Thickness (inches)	Side of a square footing (inches)	Diameter of a round footing (inches)	Thickness (inches)
40	20	12	14	6	12	14	6	12	14	6	12	14	6
	40	14	16	6	12	14	6	12	14	6	12	14	6
	60	17	19	6	15	17	6	13	15	6	12	14	6
	80	20	22	7	17	19	6	15	17	6	14	16	6
	100	22	25	8	19	21	6	17	19	6	15	17	6
	120	24	27	9	21	23	7	19	21	6	17	19	6
	140	26	29	10	22	25	8	20	23	7	18	21	6
	160	28	31	11	24	27	9	21	24	8	20	22	7

For SI: 1 inch = 25.4 mm, 1 square foot = 0.0929 m^2, 1 pound per square foot = 0.0479 kPa.

a. Interpolation permitted, extrapolation not permitted.

b. Live load = 40 psf, dead load = 10 psf.

c. Assumes minimum square footing to be 12 inches x 12 inches x 6 inches for 6 x 6 post.

d. If the support is a brick or CMU pier, the footing shall have a minimum 2-inch projection on all sides.

e. Area, in square feet, of deck surface supported by post and footings.

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 × 6	4-11	4-0	3-7	3-3	3-0	2-10	2-8
	1 – 2 × 8	5-11	5-1	4-7	4-2	2-10	3-7	3-5
	1 – 2 × 10	7-0	6-0	5-5	4-11	4-7	4-3	4-0
	1 – 2 × 12	8-3	7-1	6-4	5-10	5-5	5-0	4-9
	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 x 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. 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.

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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 × 6	9-11	9-0	7-7	1-3	1-4	1-6
	2 × 8	13-1	11-10	9-8	2-1	2-3	2-5
	2 × 10	16-2	14-0	11-5	3-4	3-6	2-10
	2 × 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 × 6	9-6	8-8	7-2	1-2	1-3	1-5
	2 × 8	12-6	11-1	9-1	1-11	2-1	2-3
	2 × 10	15-8	13-7	11-1	3-1	3-5	2-9
	2 × 12	18-0	15-9	12-10	4-6	3-11	3-3
Redwood, western cedars, ponderosa pine[e], red pine[e]	2 × 6	8-10	8-0	7-0	1-0	1-1	1-2
	2 × 8	11-8	10-7	8-8	1-8	1-10	2-0
	2 × 10	14-11	13-0	10-7	2-8	2-10	2-8
	2 × 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. Live load = 40 psf, dead load = 10 psf, L/Δ = 360.

c. 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.

TABLE R507.7
MAXIMUM JOIST SPACING FOR DECKING

DECKING MATERIAL TYPE AND NOMINAL SIZE	MAXIMUM ON-CENTER JOIST SPACING	
	Decking perpendicular to joist	Decking 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 R507.2	In accordance with Section R507.2

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.

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SUPPLEMENTAL WORKSHEET FOR DECKS

(This sheet MUST be included with your permit submittal)

The following information is required to be included with a Deck permit application:

1. Footing Diameter: _____ Depth: _____
2. Size of posts: _____
3. Size of beams: _____ Number of plies: _____
4. Cantilever on beams: _____
5. Size of joists: _____ Spacing: _____
6. Cantilever on joists: _____
7. Species of lumber (please check one): ☐ Southern Yellow Pine ☐ Ponderosa Pine ☐ Spruce Pine Fir ☐ Hemlock Fir ☐ Douglas Fir ☐ Cedar ☐ Composite ☐ Unknown
8. Dimensions of floor boards: _____ Type: _____
   If using composite decking materials please indicate the manufacturer. _____
9. Height of deck from ground: _____
10. Height of guardrail: _____
11. Spacing of spindles: _____
12. Height of handrail: _____
13. Dimensions of deck: _____
14. Distance to property lines (also identify on site plan):
    a. Side 1: _____
    b. Side 2: _____
    c. Rear: _____
    d. Other: _____

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MNSPECT LLC
HELPING YOU COMPLY WITH THE CODE

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RESIDENTIAL DECK STAIRS INFORMATION

- This handout is intended only as a guide. It shall not be considered a complete set of requirements.
- Materials and installation must comply with the current Minnesota State Building Code and the manufacturers' installation specifications for each product.

- Approved corrosion-resistant flashing shall be applied shingle-fashion in such a manner as to prevent entry of water into the wall cavity or penetration of water to the building structural framing components. Self-adhered membranes used as flashing shall comply with AAMA 711. The flashing shall extend to the surface of the exterior wall finish. Approved corrosion-resistant flashing shall be installed at all of the following locations: (MRC R703.4)
  - Continuously above all projecting ledger boards.
  - Where exterior porches, decks, or stairs attach to a wall or floor assembly of wood-frame construction.
- Exterior stairways shall be provided with an artificial light source located in the immediate vicinity of the top landing of the stairway. Exterior stairways providing access to a basement from the outdoor grade level shall be provided with an artificial light source located at the bottom of the landing or stairway. (MRC 303.8)
- There shall be a landing or floor on each side of each exterior door. The width of each landing shall not be less than the door served. Every landing shall have a minimum dimension of 36 inches measured in the direction of travel. Exterior landings shall be permitted to have a slope not to exceed 1/4 unit vertical in 12 units horizontal (2-percent). (MRC R311.3)
- Exterior landings, decks, balconies, stairs and similar facilities shall be positively anchored to the primary structure to resist both vertical and lateral forces or be designed to be self-supporting. Attachment shall not be accomplished by use of toenails or nails subject to withdrawal. (MRC R311.5)

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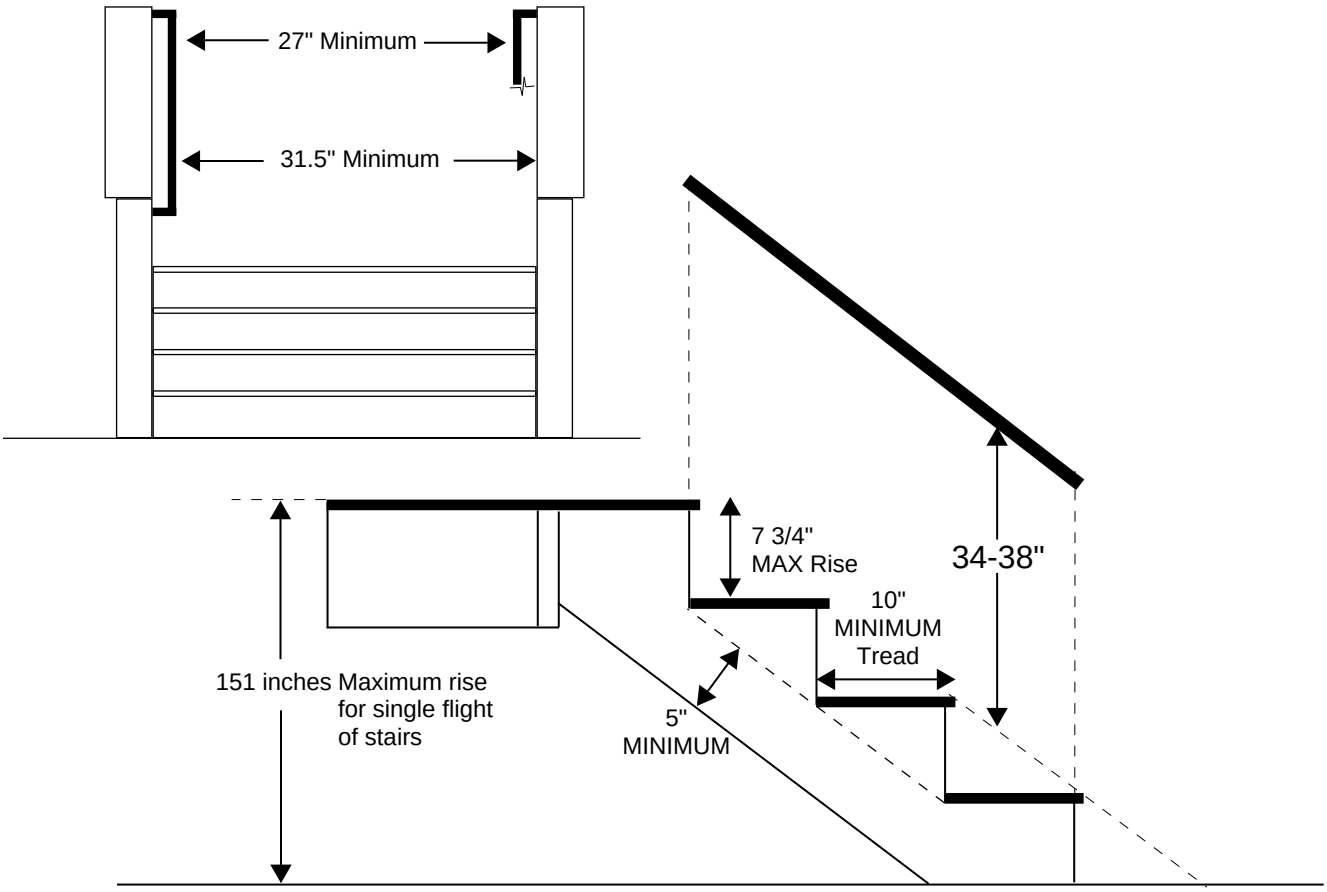
- Stairways shall not be less than 36 inches in clear width at all points above the permitted hand-rail height and below the required headroom height. Handrails shall not project more than 4.5 inches on either side of the stairway and the minimum clear width of the stairway at and below the handrail height, including treads and landings, shall not be less than 31-1/2 inches where a handrail is installed on one side and 27 inches where handrails are provided on both sides. (MRC R311.7.1.2)
  Exception: The width of spiral stairways shall be in accordance with Section MRC R311.7.10.1.



- A flight of stairs shall not have a vertical rise larger than 151 inches between floor levels or landings. (MRC R311.7.3)
- The maximum riser height shall be 7-3/4 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. Risers shall be vertical or sloped from the underside of the nosing of the tread above at an angle not more than 30 degrees from the vertical.
  Open risers are permitted provided that the opening between treads on risers located more than 30” above the floor do not permit the passage of a 4-inch-diameter sphere. (MRC R311.7.5.1)
  Exception:
  - The opening between adjacent treads is not limited on spiral staircases.
  - The riser height of spiral stairways shall be in accordance with Section R311.7.10.1.
- The minimum tread depth shall be 10 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 inch. (MRC R311.7.5.2)

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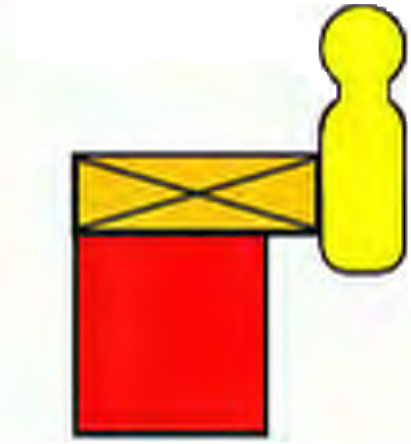
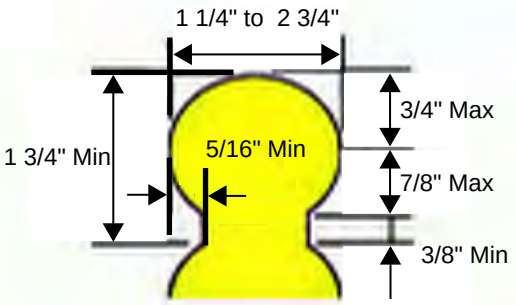
- Handrails shall be provided on at least one side of each continuous run of treads or flight with four or more risers. Handrails to comply with MRC R311.7.8 for mounting height, continuity and grip-size. (MRC R311.7.8)

- 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. (MRC R311.7.8.1)

- Handrails adjacent to a wall shall have a space of not less than 1-1/2 inch between the wall and the handrails. (MRC R311.7.8.3)

- 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 the lowest riser of the flight. Handrail ends shall be returned or shall terminate in newel posts or safety terminals. (MRC R311.7.8.4)





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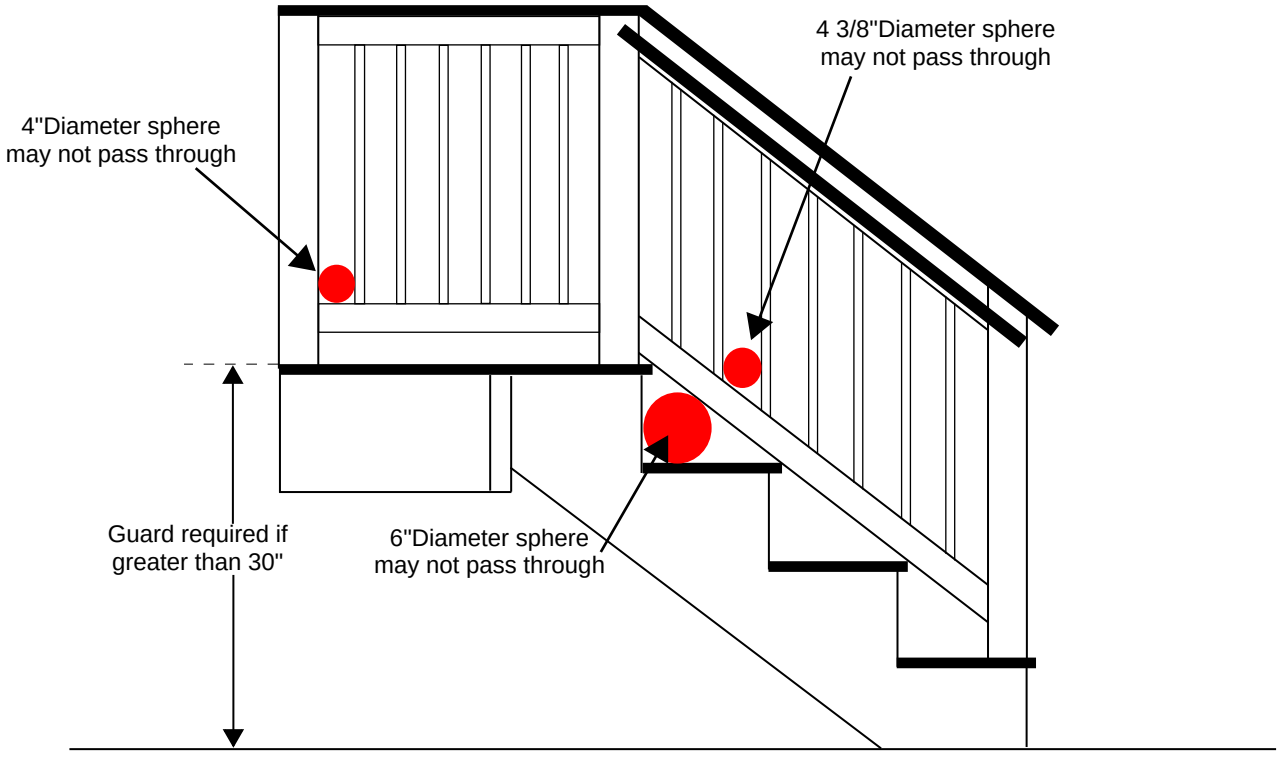
- Guards shall be located along the open sides of floors, stairs, ramps, and landings that are located more than 30 inches measured vertically to the floor or grade below. Insect screening shall not be considered as a guard. (MRC R312.1.1)

- Required guards at open-sided walking 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 edges of the treads. (MRC R312.1.2)
  Exceptions:
  - Guards on the open sides of stairs shall have a height not less than 34 inches measured vertically from a line connecting the leading edges of the treads.
  - 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.

- 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. (MRC R312.1.3)
  Exceptions:
  - The triangular openings at the open side of stair, formed by the riser, tread and bottom rail of a guard, shall not allow passage of a sphere 6 inches in diameter.
  - Guards on the open side of stairs shall not have openings which allow passage of a sphere 4 3/8 inches in diameter.

- Plastic composite exterior guards shall comply with the requirements of Section R317.4. (MRC R312.1.4)



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Supplemental Information for Building Permits
Indigenous Mounds and Earthwork Sites

Indigenous burial mounds and/or earthwork sites have been discovered in and around the City of Mound. While many of the sites have been severely impacted by development over the years, they do receive protection under state law. ***Penalties will be imposed for the unauthorized disturbance of indigenous sites****. Additional information may be obtained through the Minnesota State Archeologist.*

Any formal investigation of a site, including a determination of whether a mound or burial area exists on a subject site, is the responsibility of the property owner or developer. The issuance of permits by the City of Mound to do work on a site does not relieve the owner or developer of that responsibility.