DECK / PORCH

A building permit is required for any deck/platform attached to a structure or is 30” or more above grade. A deck may include attached railings, stairs, seats, trellises, or other features. A deck/platform less than 30” above grade, not attached to a structure with frost footings, and not part of an accessible route, does not require a building permit.

A building permit is required for construction of any new porch, as well as for the conversion of an existing deck or space into a porch. Heated porches may need to conform to the Minnesota Energy Code.

PERMIT SUBMITTAL REQUIREMENTS

Construction Plans, illustrating:

- Plan view indicating proposed structure
- Structure height
- Joist sizes and spacing
- Beam sizes
- Post sizes and spacing
- Footing sizes and depth
- Guardrail details *(if required)*
- Ledger board and flashing
- Decking materials, including fasteners/hangers, connectors, and lumber/material size
- Size, spacing, and direction of rafter/trusses and type of roof covering *(porch)*
- Size of headers over all doors and window openings *(porch)*

Certificate of Survey / Site Plan

Drawn to scale and indicating:

- Lot dimensions
- Size and location of all existing structures
- Size and location of proposed structure
- Setbacks from all property lines of proposed and existing structures, including septic sites, wells, wetlands, etc.
  - *A site plan is acceptable if the proposed structure exceeds setback requirements by at least 2×.*

Submit Permit

- Submit application for permit online at www.corcoranmn.gov > **Building Permits**
- Permit Type: **Deck-Porch**

Any new structure must meet the setback requirements of the zoning code. Requirements for size, height, setback and architectural standards can be found in the City Zoning Ordinance, *Title X, Sec.1030.020* or by contacting Planning & Zoning.

For specific questions regarding building code requirements, refer to the applicable codes or contact the city’s contracted Building Official, **Metro West Inspection Services at 763-479-1720** or email permits@corcoranmn.gov.

REQUIRED INSPECTIONS

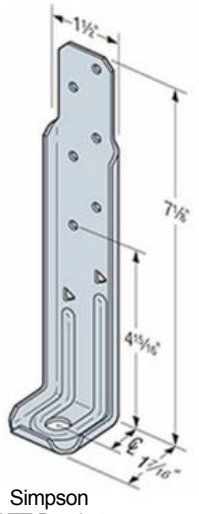
Approved construction plans must be on site for all inspections.

- **Footing:** After excavation, but PRIOR to pouring concrete.
- **Framing:** Can be completed at the time of final inspection if all parts of the framing will be visible and accessible.
- **Final:** Inspected upon project completion.

To schedule inspections contact **Metro West Inspection Services at 763-479-1720.**

This handout is intended as a guide and is based in part on the Minnesota State Building Code, City Ordinances, and established building practices. No guarantees are given regarding its completeness or correctness. The permit holder is responsible for ensuring compliance with all relevant codes and ordinances. Additional permit handouts are available online at www.corcoranmn.gov/public_services/construction_services___inspections.

DECK / PORCH



Simpson
DTT Bracket

The Simpson Deck Tension Tie (DTT) Brackets are one **example** of lateral load bracing. Four of these per deck would provide the required lateral bracing to a rim or band joist (you would need to double-check with the manufacturer's load table).

Lumber

All wood used in deck construction must be pressure-treated lumber or wood that is naturally resistant to decay such as redwood or cedar.

Wood used above ground, in contact with the ground, or below ground, requires different degrees of treatment. Check the labels of the material you are buying to determine where it can be used. ***Because some preservative treatments are very corrosive, make sure that any fasteners or metal connectors used in the construction of your deck are approved by the manufacturer for use with treated wood.***

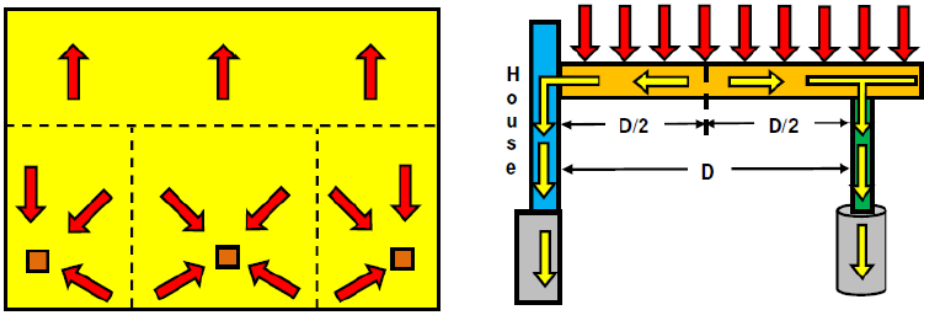
Decking

Materials commonly used for decking include standard dimension lumber (either 2x4 or 2x6), radius-edged decking or a manufactured decking product. Radius-edged Patio Decking (5/4 decking) has been specifically developed for outdoor decks.

Redwood and cedar patio decking is intended to be used flat-wise in load-bearing applications where spans do not exceed 16" o.c. (12" o.c. when installed diagonally to joists). Southern pine decking may span 24" o.c. or 16" o.c. when installed diagonally to joists.

Manufactured decking (composite) may be used when approved by the building department.

UNDERSTANDING LOAD PATHS

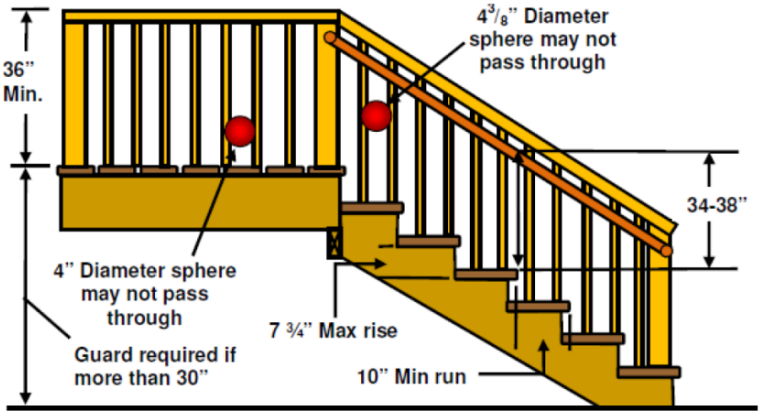


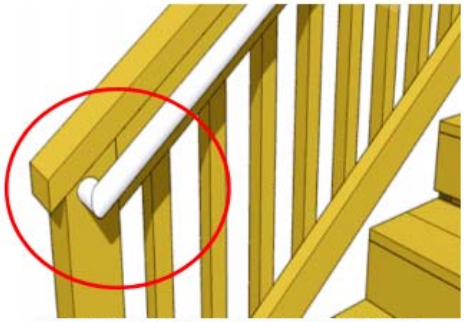
DECK FOOTING SIZES (1500 PSF SOILS) - **NOT FOR USE WITH HOT TUBS

Max. Area of Deck Supported (*Square Feet*)	Footing Diameter Required (*Inches*)	Max. Area of Deck Supported (*Square Feet*)	Footing Diameter Required (*Inches*)	Max. Area of Deck Supported (*Square Feet*)	Footing Diameter Required (*Inches*)	Max. Area of Deck Supported (Square Feet)	Footing Diameter Required (*Inches*)
10	8	23	12	41	16	65	20
13	9	27	13	47	17	72	21
16	10	32	14	53	18	79	22
19	11	36	15	59	19	86	23

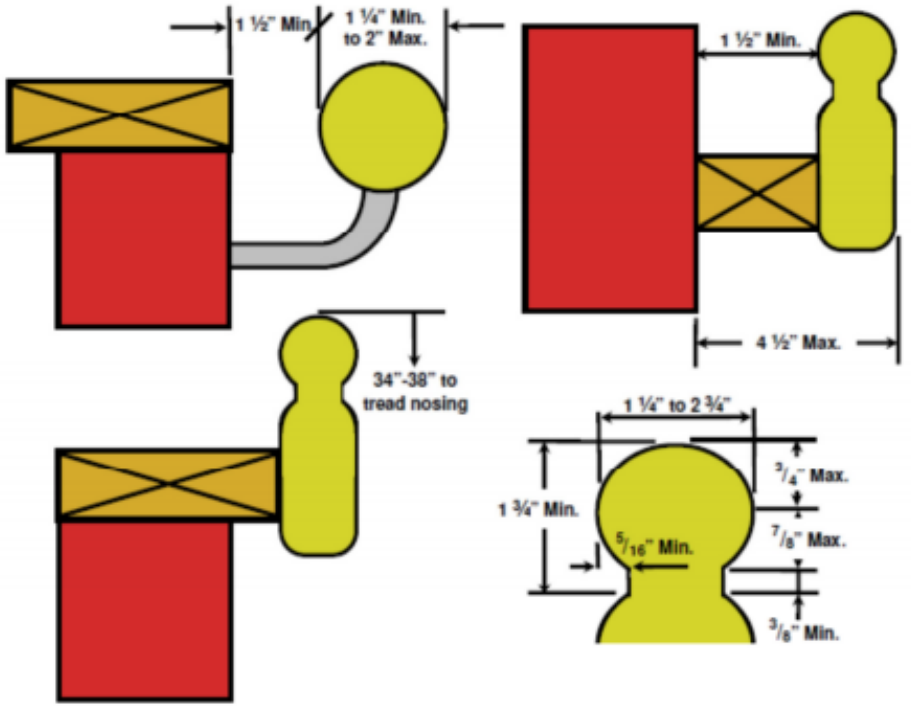
DECK / PORCH

HANDRAILS, STAIRS AND GUARDRAILS





HANDRAILS MUST RETURN TO A NEWEL POST AND BE CONTINUOUS WITHOUT INTERUPTION FOR THE LENGTH OF THE FLIGHT



DECK / PORCH

GENERAL BUILDING CODE REQUIREMENTS

1. **Footings** must extend to frost depth (if attached to the house).
2. **Decks** need to be designed for a 40-pound per square foot live load and balconies to a 60 pound per square foot live load. Decks exposed to the weather must be constructed of approved wood with natural resistance to decay such as redwood, cedar or treated wood, or other material (composite plastics, etc.) WITH PRIOR APPROVAL OF THE BUILDING INSPECTOR.
3. **Pressure-Treated Wood** - Recent changes have been made in the chemicals used in the manufacture of pressure-treated wood. Chromated copper arsenate, also known as CCA, is being phased out and the most common new treatments approved for outdoor use are Alkaline Copper Quaternary (ACQ) and Copper Azole. According to the lumber and fastener industry, the newer chemicals being used to treat the wood approved for outdoor use are considerably more corrosive than those previously treated with CCA and therefore require special fasteners, hangers, and greater care in the selection of materials that may come in contact with the wood. The fastener industry has indicated that some of the hangers and fasteners currently on the market may not perform with some of the new treatments. Designers, builders, and homeowners will need to pay particular attention to the grade marks on the lumber, and verify that proper hardware (hangers, nails, brackets) are appropriate with the particular treatment of the lumber. This not only applies to decks utilizing these products but sill plates and posts as well. The code references the American Wood Preservers Association (AWPA), which has published information on this issue. Particular attention should also be made to the manufacturer's installation instructions for the hardware. Questions should be directed to your wood and fastener supplier or your local Building Official.
4. **Columns and posts** in contact with the ground or embedded in concrete, earth or masonry must be of special pressure treated wood approved for ground contact. Cedar or redwood posts need an 8 inch separation from the ground.
5. **All decks**, balconies or porches, open sides of landings and stairs which are more than 30” above grade or a floor below must be protected by a guard not less than 36 inches in height. Open guard and stair railings require intermediate rails of an ornamental pattern such that a sphere 4 inches in diameter cannot pass through.
6. **If a stairway** is to be provided, it must be not less than 36 inches in width. Stairways may be constructed having an 8-inch maximum rise (height) and a 9-inch minimum run (length). The largest tread rise and tread run may not exceed the smallest corresponding tread rise or run by more than 3/8 inch. Stairway illumination is required by the code.

Handrails are required on all stairways having 4 or more risers. Handrails may not be less than 1 1/4” nor more than 2 5/8” in cross sectional area. The handrails must be graspable, continuous and uninterrupted. Top of handrail must be not less than 34 inches nor more than 38 inches above the nosing (front edge) of treads and they must be returned to a wall or post.

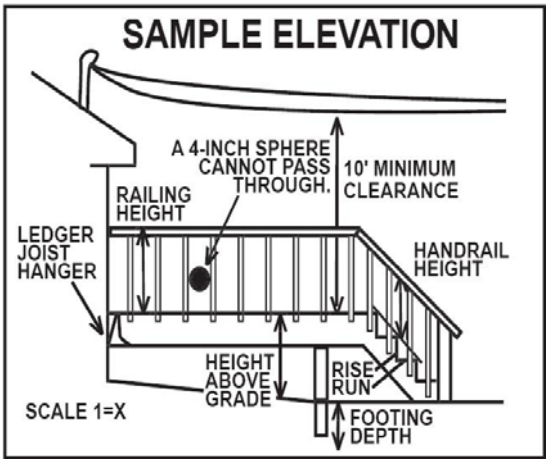
The electrical code requires overhead power lines to be located a minimum 10 feet above decks and platforms. Existing lines may need to be raised if a new deck is to be installed beneath them. Outside meters, wells, and septic systems. When locating a deck care must be given to the location of existing gas and electric meters, wells, and septic systems. These may need to be relocated to allow for construction of the deck. Septic systems and wells may be difficult to relocate, requiring an alternative location for the deck. Prior to placement of any deck that will interfere with these devices, contact the Building Inspector.

Outside water meter readers. Prior to placement of any deck that will interfere with the operation or accessibility of the reader, contact the Building Inspector or Public Works Department to obtain information and procedures on relocating these devices.

DECK / PORCH

PLANS: SITE, FLOOR and ELEVATION

The following shows the minimum detail expected so the permit process can proceed smoothly. Plans do not need to be professionally drawn.

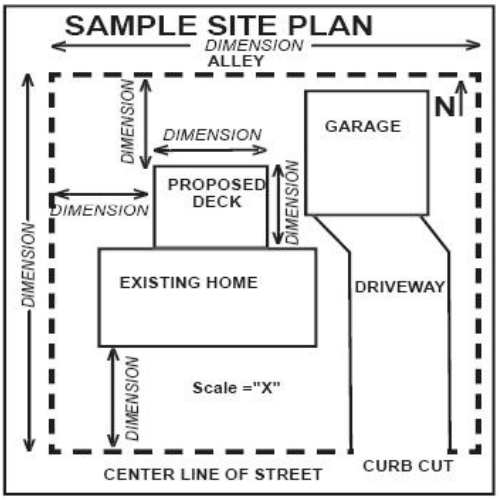


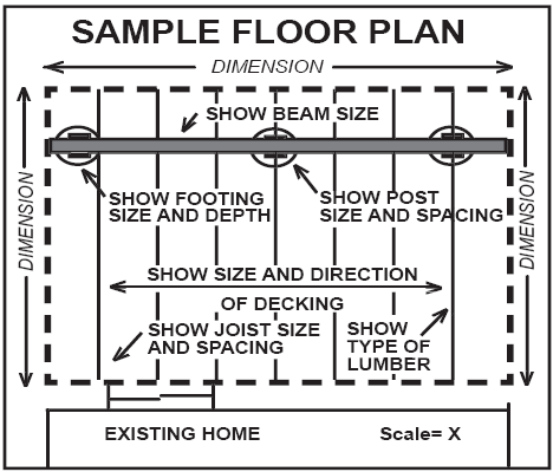
ELEVATION PLAN:

1. Height of structure from grade.
2. Size and depth of footings.
3. Guard height and spacing (if any).
4. Stairway rise/run and handrail height (if any).
5. Clearance of overhead wires (if applicable)

SURVEY OR SITE PLAN:

1. A Certificate of Survey or Site Plan drawn to scale indicating the lot dimensions, the location and size of the existing structure(s), and the location and a size of the proposed structure.
2. Indicate the setbacks from property lines of the existing and proposed structure(s). Include septic system area and wells if applicable.





FLOOR PLAN:

1. Proposed deck size.
2. Size and spacing of floor joists.
3. Size and type of decking material.
4. Size, type, location, and spacing of posts.
5. Size and type of beams.
6. Beam splices must be centered over the columns.

RESIDENTIAL DECKS AND THE 2020 MINNESOTA RESIDENTIAL CODE

Minnesota Department of Labor and Industry

General requirements and building permits

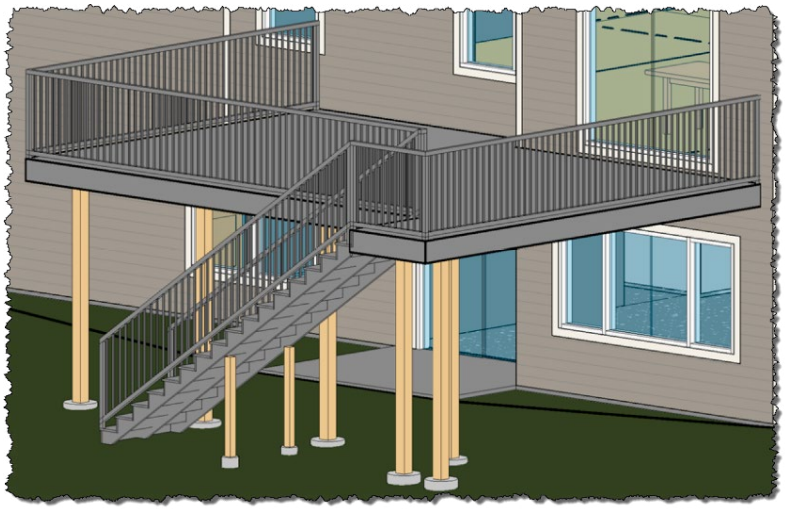
Effective March 31, 2020, residential exterior decks must be designed and constructed using the 2020 Minnesota Residential Code (MRC), related standards, manufacturer installation instructions, best practices and local jurisdiction zoning codes and ordinances.

Building permits are required:

- When a deck or a platform is more than 30 inches above adjacent grade.
- When a deck or platform is attached to a structure with frost footings.
- When a deck or platform is part of an accessible route.

Deck materials

All wood used in deck construction must meet requirements of MRC R507.2.1. This includes the grade of the wood (No. 2 or better), preservative treated or naturally durable lumber that has approval by the local jurisdiction. Preservative-treated wood must be appropriate for the installation and meet the American Wood Protection Association's (AWPA) UC3 (above ground) or UC4 (ground contact) use categories. All cuts, notches and holes in preservative-treated wood requires field treatment (MRC R317.1.1). All engineered wood products must meet the requirements in MRC R502.



Exterior deck boards, stair treads, guards or handrails made of plastic composite materials must meet certain performance standards in American Society for Testing and Materials (ASTM) D7302. Labels on materials or packaging will indicate compliance. Follow manufacturer's installation instructions for plastic composite materials.

Fasteners and connectors

Requirements for fasteners are in MRC Table R507.2.3 and R317.3. Fasteners (including nuts and washers) used in preservative-treated wood must be hot-dipped, zinc-coated galvanized steel, stainless steel, silicon bronze or copper. Staples used in preservative-treated wood must be stainless steel. Metal connectors in contact with preservative-treated wood should follow manufacturers recommendations and MRC Table R507.2.3.

Holes for bolts must be drilled between 1/32 and 1/16 of an inch larger than the bolt. Lag screws 1/2 inch or larger should be predrilled to avoid wood splitting.

Footings

Decks are required to be supported on concrete footings or other approved structural systems designed to accommodate all loads in accordance with the MRC. The use of alternative footings must be reviewed for approval by the local building safety department. Footings must be sized to bear loads and suitable for allowable soil-bearing

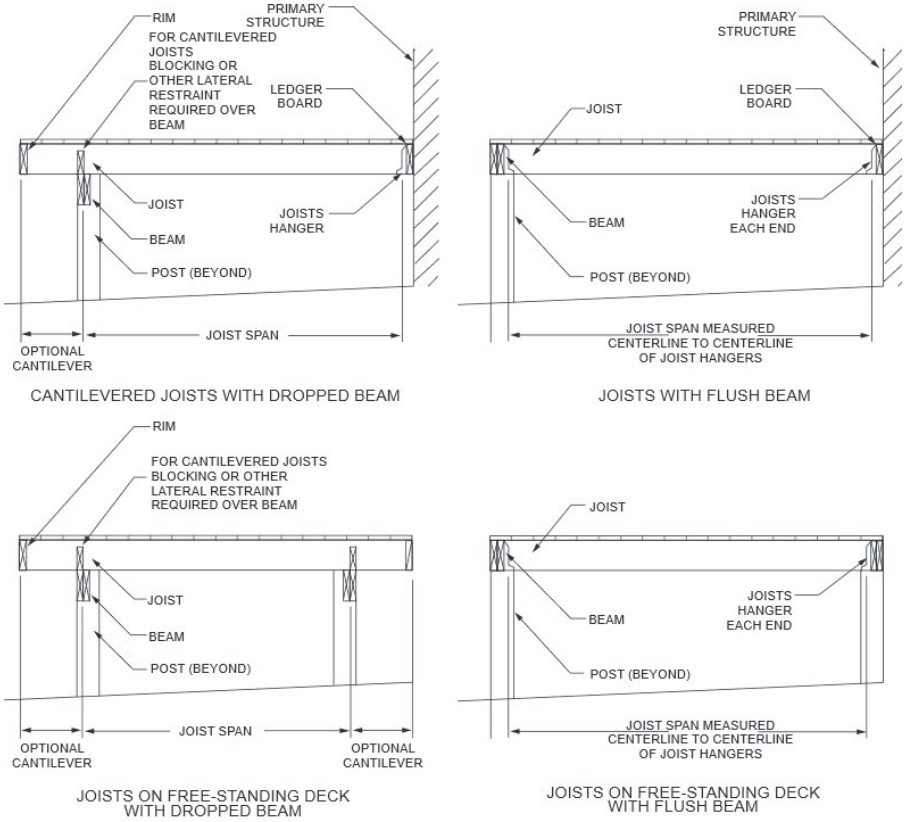
pressure (MRC Table R401.4.1). The minimum depths of footings must be either 5’-0” (Zone 1) or 3’-6” (Zone 2). Refer to Minnesota Rules 1303.1600 for the counties included in each zone.

Deck posts

Deck post sizing requirements are in MRC Table R507.4 and are limited to single-level wood-framed decks when sizing the decks other structural components with MRC Table R507.5. The height of the post shown in MRC Table R507.4 is measured from the underside of the beam to the top of the footing. Deck posts are based on using a 40 psf live load for structural member size calculations. Metal connectors must be provided at the top and bottom of posts for lateral restraint.

Beams

Allowable deck beam span lengths can be determined in MRC Table R507.5. Examples of the flush beams and dropped beams can be seen in the examples shown. Measurements of deck beam lengths need to be from center of post to center of post. The spans used in the table are based on a live load of 40 psf, a dead load of 10 psf, supporting deck joists from one side only and the beam depth must be greater than or equal to the joist depth when using a flush beam configuration. Beam plies shall be fastened with two rows of 10d (3-inch x 0.128-inch) nails or approved fasteners a minimum of 16 inches on center. Beams are allowed to cantilever up to one-fourth of their allowable span at each end.



Ends of beams used in splices must have a minimum of 1-1/2 inches of bearing on wood and 3 inches on concrete. Multiple-span beams must have full bearing on posts (MRC Figures R507.5.1(1) and R507.5.1(2)). Those figures also show beam-to-post connections with metal connector plates and bolts and nuts configurations that are required by MRC R507.5.2.

Joists

Allowable spans for joists are in MRC Table 507.6. The live load used in the table is 40 psf and a dead load of 10 psf. The maximum cantilever length is determined by the lesser of one-fourth of the joist span or the maximum cantilever length shown in MRC Table 507.6. Joist spacing is limited by the span rating of the decking being used, see MRC Table R507.7.

Deck joists require a minimum of 1-1/2 inches of bearing on wood and 3 inches on concrete. Joist bearing on top of a single-ply beam or ledger shall be attached by a mechanical connector. Use the fastener schedule (MRC Table R602.3(1)) for fastening joists to a multiple-ply beam. Use an approved joist hanger for joist framing into the side of a beam or ledger board.

Where joist hangers or blocking are used, 60-percent of the joist depth must be restrained. If a rim joist is being used, not fewer than three 10d (3-inch x 0.128-inch) nails or three No. 10x 3-inch-long wood screws are required.

Decking

Use at least two 8d threaded nails or two No. 8 wood screws to attach wood decking to the joist. Other approved decking or fastener systems shall be installed in accordance with the manufacturer's installation requirements.

Ledger and band joist

A ledger board attached to the exterior wall of the primary structure must be at least 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 must not support concentrated loads from beams or girders and cannot be supported on stone or masonry veneer.

Band joists supporting a ledger must bear fully on the primary structure and be capable of supporting all required loads. Fasteners used in deck ledger connections in accordance with MRC Tables 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). Where connections to the primary structure cannot be verified during inspection, decks must be self-supporting.

Lateral support

Lateral-load connection devices must be installed to transmit the lateral loads imposed on the deck to the ground. The lateral-load connection device shown in MRC Figure R507.9.2(1), with the threaded rod and connection points on the deck joist and the primary structure floor system, must be installed in two locations on the deck a minimum of 24 inches from the ends. Each device must have an allowable stress design capacity of at least 1,500 pounds.

Where the lateral load connections are provided in accordance with Figure R507.9.2(2), the hold-down tension devices must be installed in at least four locations per deck, and each device must have an allowable stress design capacity of at least 750 pounds. Hold-down tension devices are required to be installed per the manufacturer's instructions.

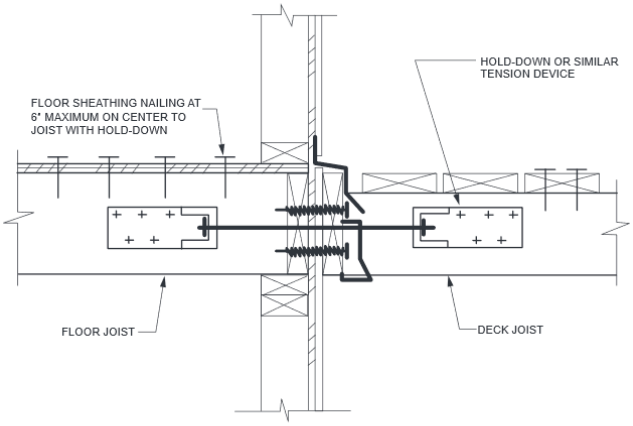


FIGURE R507.9.2(1)
DECK ATTACHMENT FOR LATERAL LOADS

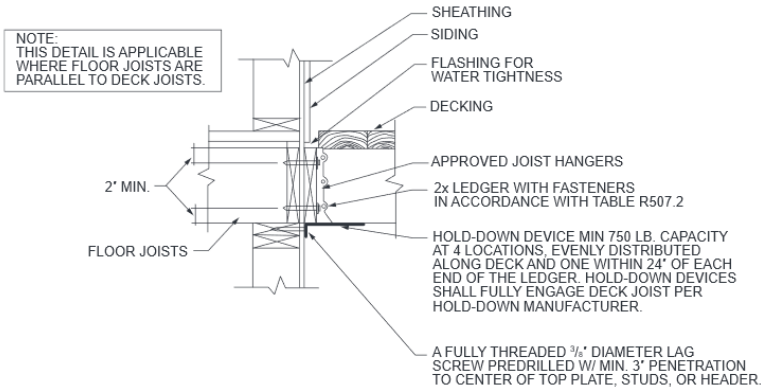


FIGURE R507.9.2(2)
DECK ATTACHMENT FOR LATERAL LOADS

DEPARTMENT OF LABOR AND INDUSTRY

Construction Codes and Licensing
Web: www.dli.mn.gov
Phone: 651-284-5005 or 1-800-657-3944

PORCHES AND THE 2020 MINNESOTA RESIDENTIAL CODE

Minnesota Department of Labor and Industry

PERMITS

Building permits are required for construction of all porches. Heated porches may need to conform to the Minnesota Energy Code. All porches must comply with the land-use requirements of the community's zoning code. Direct questions about setbacks from property lines to the local planning and zoning department.

PERMIT FEES, PLAN REVIEW, INSPECTIONS

Building permit fees are established by the municipality for plan review and inspection. The building official completes the plan review to spot potential problems and may make notes on the plan for your use. Inspections are performed at various stages of construction to verify code compliance. Permit costs can be obtained by calling your local building inspection department with your estimated construction value.

Note: Setbacks from property lines vary depending on the city and zoning districts. Other zoning provisions may include lot coverage or screening.

The building inspector will need:

- application for permit
- site plan or survey
- foundation plan
- floor plan
- section
- elevation
- energy calculation worksheet if required

REQUIRED INSPECTIONS

- **Footings:** After excavation, but prior to the pouring of concrete.
- **Framing:** Inspected after framing is complete and construction is accessible for building inspection. The framing inspection is scheduled after other required rough-in inspections are completed and approved.
- **Energy:** Energy efficiency inspection.
- **Final:** The project is inspected upon completion.
- **Other:** The inspector may require other inspections to ensure code compliance or to assist with any questions.

GENERAL BUILDING CODE REQUIREMENTS

The Minnesota State Building Code is the standard of construction for the entire state (Minnesota Statute 326B.121). The 2020 Minnesota Residential Code adopts the 2018 International Residential Code (2018 IRC). The 2020 Minnesota Residential Code can be viewed at https://codes.iccsafe.org/content/document/1581.

- Footings must be extended to frost depth and located at extremities of the porch, or engineering may be required.
- Treated wood or wood with natural resistance to decay (cedar heartwood or redwood) must be used for joists 18 inches or closer to grade, beams 12 inches or closer to grade and their supports as well as all exterior members.
- Columns and posts in contact with the ground or embedded in concrete or masonry must be of pressure-treated wood.
- A guard of at least 36 inches in height must protect all porches, decks and open sides of landings and stairs that are more than 30 inches above grade or the floor below. Guards on open sides of stairways, raised floor areas and porches must have intermediate rails or ornamental closures that do not allow the passage of a 4-inch diameter sphere.

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

- Openings for required guards on the sides of stair treads must not allow the passage of a 4-3/8-inch diameter sphere.

- Stairways must not be less than 36 inches in width with a 7-3/4-inch maximum riser (height) and a 10-inch minimum run (depth). The greatest riser height and greatest tread depth must not exceed the smallest corresponding riser height or tread depth by more than 3/8 inch. Stairway illumination is required.

- Open risers are permitted, provided the opening between the treads does not permit the passage of a 4-inch diameter sphere.

- Handrails are required on all stairways having four or more risers. Handrails must be graspable and be one of the following types:

  Type I handrails with a circular cross section must have an outside diameter of at least 1-1/4 inches but not greater than 2 inches. If the handrail is not circular its perimeter dimension must be at least 4 inches but not greater than 6- 1/4 inches with a maximum cross section of dimension of 2- 1/4 inches.

  Type II handrails with a perimeter greater than 6-1/4 inches must provide a graspable finger recess area on both sides of the profile. The finger recess must begin within 3/4 inch measured vertically from the tallest portion of the profile and achieve a depth of at least 5/16 inch within 7/8 inch below the widest portion of the profile. This required depth must 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 must be 1 1/4 inches to a maximum of 2 3/4 inches. Edges must have a minimum radius of 0.01 inch.

  Handrail height is measured vertically from the sloped plane adjoining the tread nosing or finished surface of ramp slope and must be at least 34 inches and not more than 38 inches.

- Hand-framed roofs require a ridge board at least 1-inch (nominal) thickness and not less in depth than the (plumb) cut end of the rafter.

- Valley or hip rafters must be not less than two inches (nominal) thickness and not less in depth than the cut of the rafter. Hip and valley rafters must be supported at the ridge by a brace to a bearing partition or designed to carry and distribute the specific load at that point.

- Wall framing studs must be placed with their wide dimension perpendicular to the wall and at least three studs must be installed at each corner of an exterior wall. Studs must be at least 2 inches by 4 inches and spaced not more than 24 inches on center.

- Bearing- and exterior-wall studs must be capped with double-top plates installed to provide overlapping at corners and at intersections with other partitions. End joints in double top plates must be offset at least 24 inches.

- Approved wall sheathing, siding, roof sheathing and roof coverings must be installed according to the manufacturer's instructions.

- Roofs over porches must have an ice and water barrier consisting of two layers of 15-pound roofing felt solidly mopped together or of approved ice and water shield underlayment materials.

- Size and spacing of conventional lumber used for roof framing depends on the roof pitch, span, type of material used, and the loading characteristics imposed.

- Porches must be designed for local snow load requirements. Contact your local inspection department for details.

- Rafters must be framed directly opposite each other at the ridge.

- A properly sized and supported ridge beam may be used as an alternative to a ridge board with ties for a vaulted ceiling (see sample). If manufactured trusses are used, submit one copy of truss plans signed by a registered engineer.

- Porch design should take into consideration the existing location of outside meters, wells and septic systems.

PLANS: SITE, FLOOR AND ELEVATION SECTION

The text and sample drawings display the minimum detail expected to ensure the permit process can proceed smoothly.

Plans do not need to be professionally drawn. However, plans should be drawn to scale and include all the information requested.

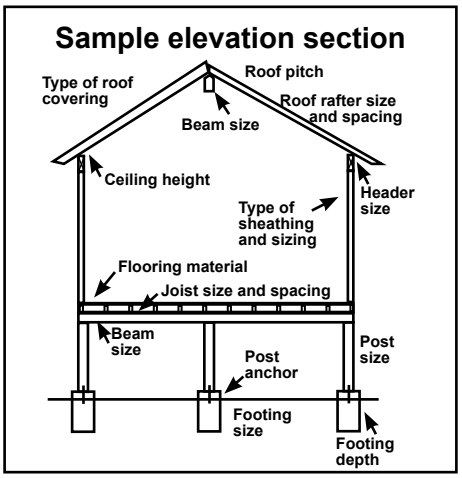
The application for permit can be filled out at the time you drop off your plans or make electronic submittals where permitted.

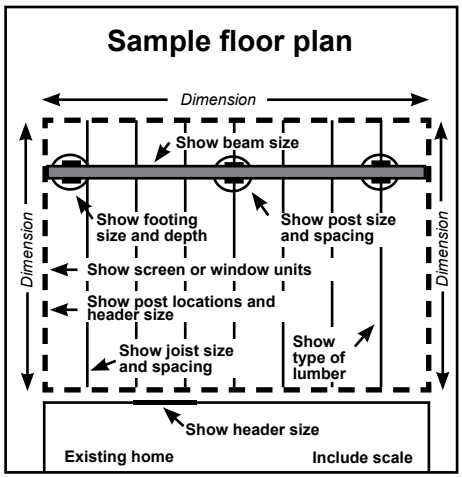
Submit two copies of a certificate of survey or site plan. The building plan must be drawn to scale indicating the lot dimensions, the location and size of the existing structure(s), and the location and a size of the proposed structure. Indicate the setbacks from property lines of the existing and proposed structure(s). Include the septic-system location and wells if applicable.

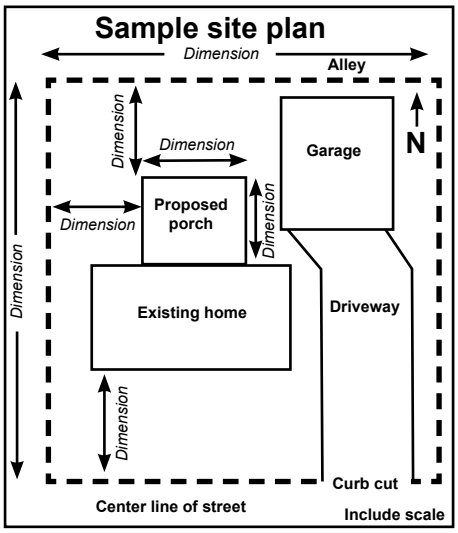
FLOOR PLANS SHOWING PROPOSED DESIGN, MATERIALS

At minimum, plans submitted for permits should include:

- Proposed size of porch.
- Location and size of windows. Safety glazing may be required due to size and location.
- Size of headers over all doors and window openings.
- Size, spacing, and direction of rafter (roof) materials.
- Size and spacing of floor joists.
- Size, location, and spacing of posts or applicable foundation details.
- Type (grade and species) of lumber to be used.
- Additional information, such as a sectional drawing or elevations, may be required.







Note: Illustrations are examples only.

Be sure your scale site plan includes:

- lot dimensions
- location and size of existing structures
- location and size of the proposed structure
- setbacks from property lines of proposed and existing structures
- septic-system area and wells if applicable

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This handout is an overview of guidelines for planning the construction of a porch and can be provided in different forms.