



BUILDING DEPARTMENT

Midwest Inspection Services
16553 37th St SE
Mapleton, ND 58059
Phone: 701-532-1078
Fax: 701-532-1608

Please email completed applications to: midwestinspectionsservicesnd@gmail.com

GUIDELINE FOR BUILDING RESIDENTIAL DECKS

This handout is a **guide** only and does not cover all Valley City Building Code requirements.

Building Permits are required for all decks regardless of size or if the deck is attached or unattached to a dwelling.

Building Permit Fees are based on the valuation of the construction project; this includes the materials and labor. If you will be doing the work yourself an estimate of labor cost shall be determined and included with the cost of materials.

Plan submittals shall be drawn to scale, neat and legible on suitable material (min. 11x17). The plan submittal shall be of sufficient clarity to indicate the location and extent of the work proposed.

Information required to be submitted along with your application for a building permit:

SITE PLAN – Drawing to scale shown lot dimensions, deck location and distances from property lines.

PLAN VIEW – Proposed deck size and location of stairs.

- Size, type and spacing of floor joists.

- Size and type of decking. (Plastic/composite decking must be approved before installing.)

ELEVATIONS – Size, type, location and spacing of posts, beams and headers.

- Height of structure from grade.

- Diameter and depth of footings.

- Joist hangers, flashing and fasteners.

- Guard height (if any) and spacing intermediate rails.

- Stair and handrail details.

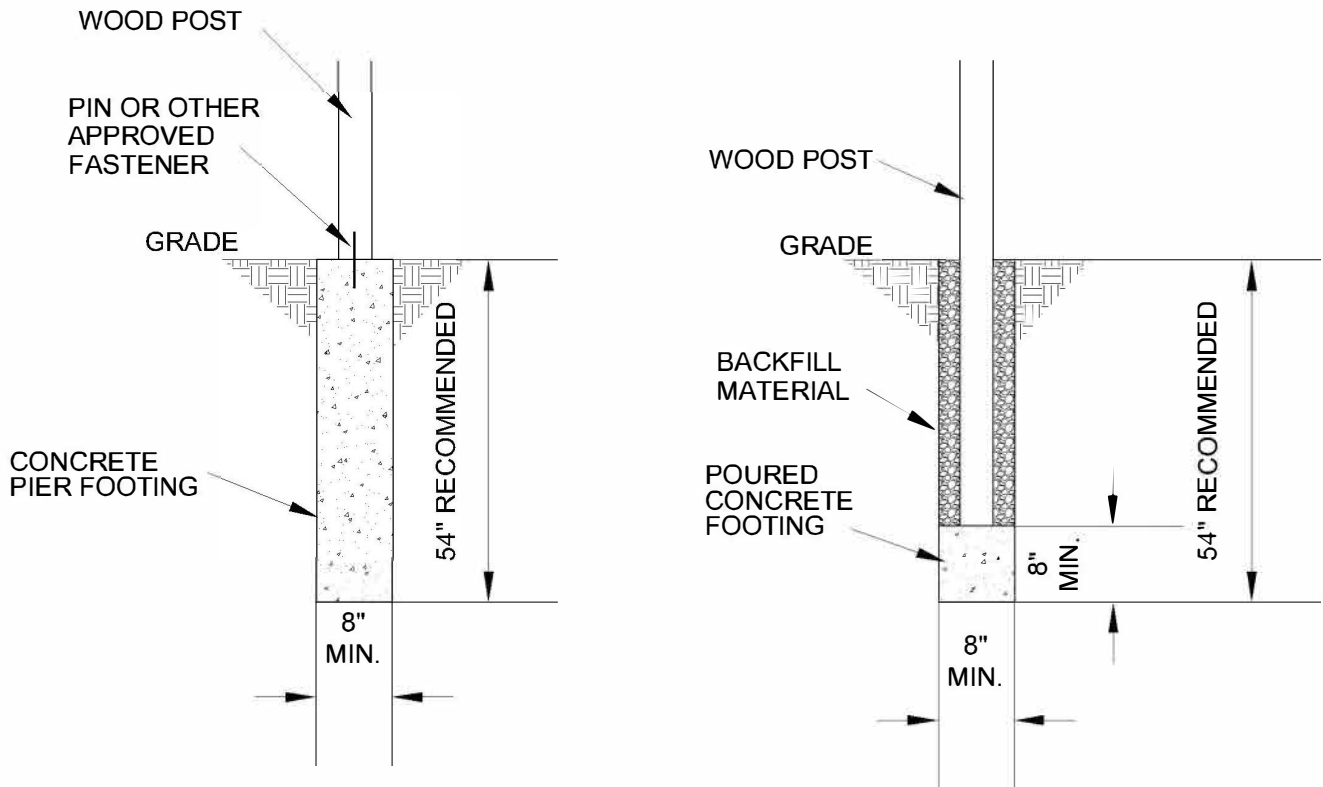
DECK CONSTRUCTION GUIDELINES

1. **Setbacks** – Decks may not extend past the required 25' front and rear yard setbacks and 8' into the required side yard setbacks. In no case shall a deck be constructed over any easement.
2. **Live Loads** – All deck floor systems must be designed to support a live load of 40 pounds per square foot.
3. **Footings** – Frost protected footings are not required but are recommended. Frost depth for the City of Valley City is 54 inches. Consideration should be made if the deck is intended to be enclosed in the future, if so then a frost protected footings will be required and may need to be designed by a Registered Professional Structural Engineer.
4. **Wood Required** – All exposed wood used in the construction of decks are required of natural resistance to decay (heartwood of redwood, cedar or black locust) or approved treated wood. This includes posts, beams, joists, decking, guards, stairs and rails. All lumber must bear the quality mark of an approved inspection agency. Plastic/composite decking must be installed and supports spaced on center per manufactures specifications. A copy of these specs report must be made available for the installer and inspector.
5. **Flashing** – All connections between deck and dwelling must be flashed and weatherproof.

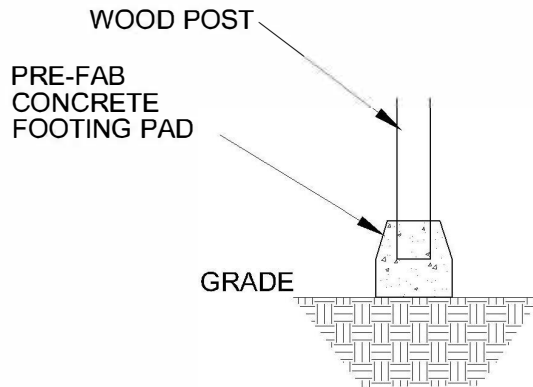
6. **Ledger Board** – Siding must be removed to allow this member to be properly fastened. Where supported by attachment to an exterior wall, decks shall be anchored to the structure and designed for both vertical and lateral loads. Toenails or nails are not to be used for this purpose because they are subject to withdrawal. Where positive connection to the primary building structure cannot be verified during inspection, deck must be self supporting. Fasteners must be long enough to penetrate framing members. Decks shall not be supported by cantilevered floor framing without specific engineering.
7. **Joist/beams** – Attached are design guideline to assist in determining the minimum size and spacing for floor joists and supporting beams. Joist with cantilevers which exceed 3 times the nominal depth of the joist will require structural engineering. Beams cannot overhang posts by more than 12 inches unless designed by a structural engineer. Built-up beams (two or more members) are to be nailed, screwed or bolted together.
8. **Joist Hangers** – floor joists are to be supported by approved framing anchors and joist hangers.
9. **Fasteners** – All fasteners shall be non-corrosive. Joist hangers and other framing anchors are to be installed according to product manufacturer's instructions and their recommended fasteners.
10. **Guards** – All open side of decks which are more than 30 inches above the grade or floor below, must be protected by a guard rail not less 36 inches in height. Open side of stairs with a total rise of more than 30 inches above the grade or floor below shall have guards not less than 34 inches in height measured vertical from the nose of the tread. Required guards shall have intermediate rails or ornamental closures that do not allow passage of a sphere 4 inches in diameter. The triangular openings formed by the riser and the bottom rail of a guard at the open side of a stairway may be of such size that a sphere of 6 inches in diameter cannot pass through.
11. **Stairs** – Stairways shall be a minimum of 36 inches in width. The maximum riser height shall be 8" inches (3/8 inch maximum variation in riser height) and the minimum tread depth shall be 9" inches (3/8 inch maximum variation in tread depths). Open risers are permitted, provided that the opening between treads does not permit the passage of a 4 inch diameter sphere. For minimum width stairs, a minimum of three stringers is required. If 5/8 inch decking material is used for treads, stringers shall be spaced a maximum of 16 inches on center.
12. **Handrails** – A handrail shall be provided on at least one side of all stairways having 4 or more risers. Handrails shall be placed not less than 34 inches or more than 38 inches above the nosing of the treads and be continuous the full length of the stairs. Handrails projecting from a wall or guardrail must have space of not less than 1 1/2 inches between the wall or guardrail and the handrail. The handgrip portion of handrails shall have a cross section of 1 1/4 inches minimum to 2 5/8 inches maximum in cross-sectional dimension and must have a smooth surface with no sharp corners.

REQUIRED INSPECTIONS

1. **Framing/Final** – In most instances the framing can be inspected at the final inspection. If your deck is less than 3 feet above the ground, a separate framing inspection may be required. Please contact the Building Department to verify if a framing inspection is needed.

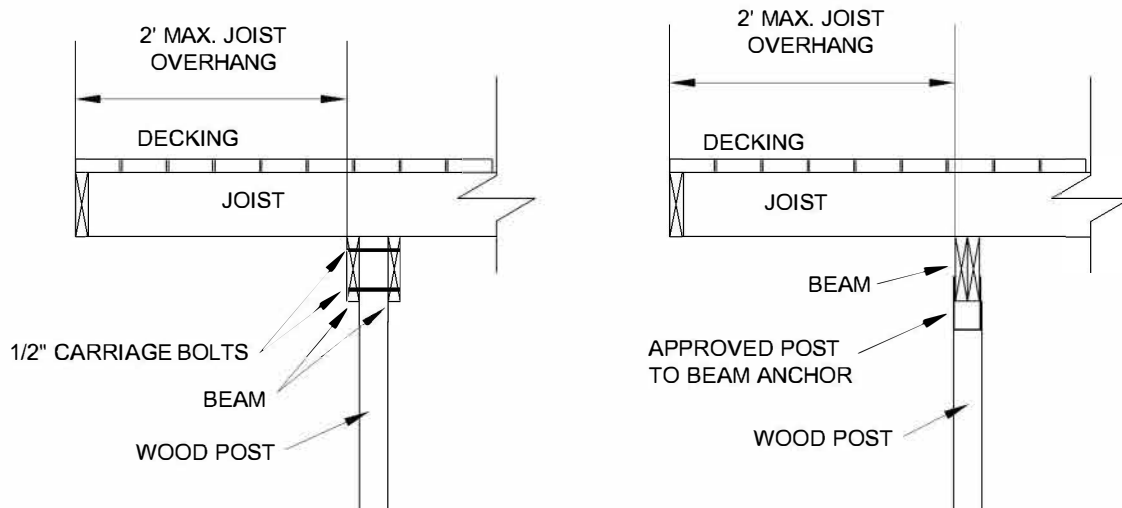


FROST PROTECTED

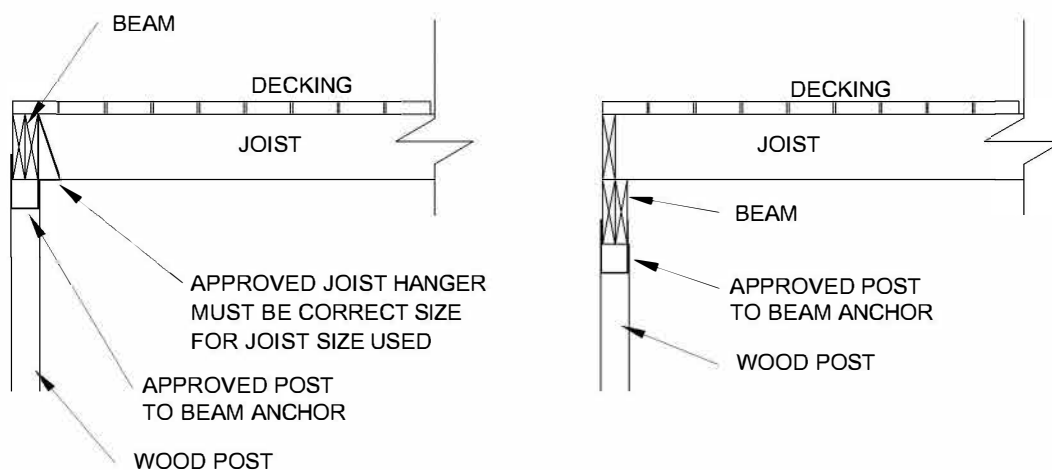


NON-FROST PROTECTED

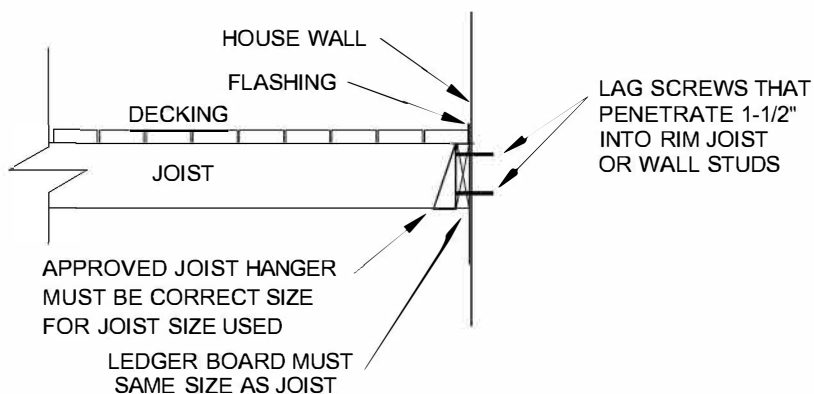
	TYPICAL DECK FOUNDATION PLAN			DATE	REVISED	CHD BY	DRAWING
				AUG. 2020			1
				DRAWN BY	PROJ. NO.	SCALE	OF
				MAH		N.T.S.	1



TYPICAL CANTILEVERED SUPPORT



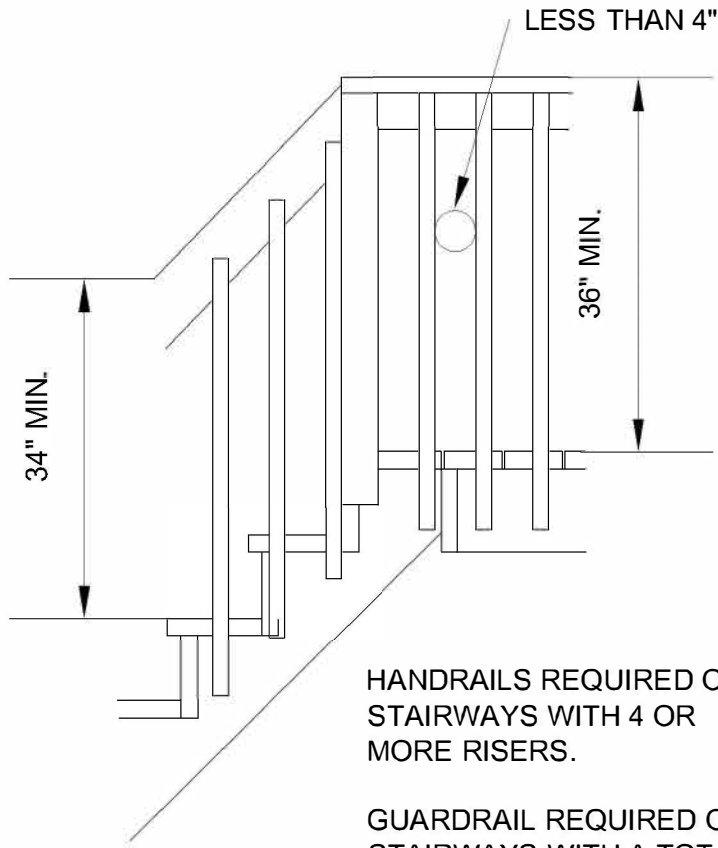
TYPICAL END SUPPORT



TYPICAL HOUSE SUPPORT

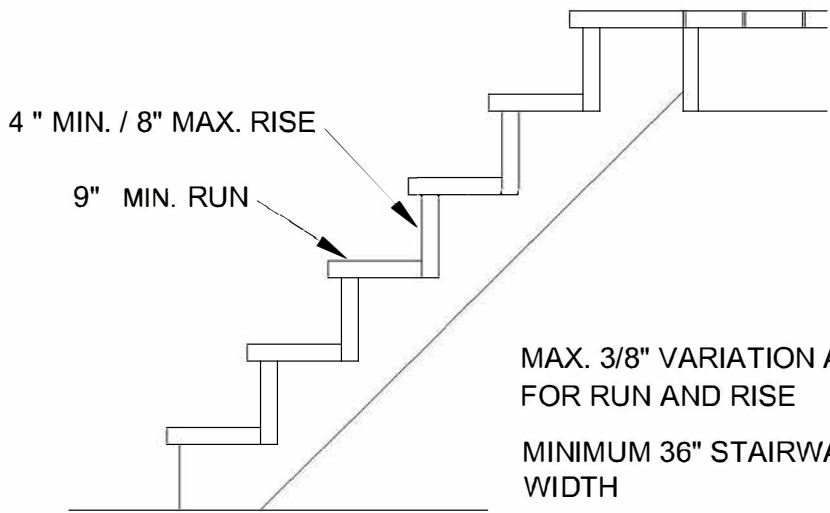
TYPICAL DECK SUPPORT AND CONNECTION DETAILS

DATE	REVISED	CHD BY	DRAWING
AUG. 2020			1
DRAWN BY	PROJ. NO.	SCALE	OF
MAH		N.T.S.	1



HANDRAILS REQUIRED ON STAIRWAYS WITH 4 OR MORE RISERS.

GUARDRAIL REQUIRED ON STAIRWAYS WITH A TOTAL RISE OF 30" OR MORE.



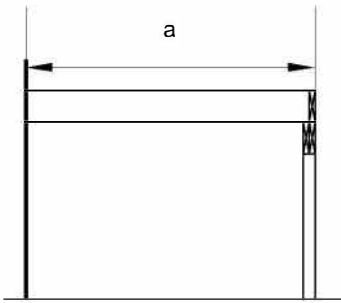
MAX. 3/8" VARIATION ALLOWED FOR RUN AND RISE

MINIMUM 36" STAIRWAY WIDTH



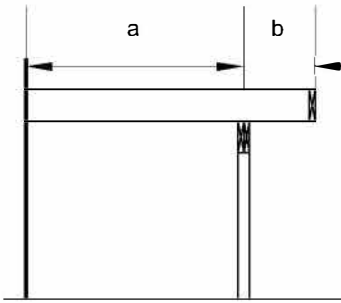
TYPICAL DECK STAIR AND GUARDRAIL DETAILS

DATE	REVISED	CH'D BY	DRAWING
AUG. 2020			1
DRAWN BY	PROJ. NO.	SCALE	OF
MAH		N.T.S.	1



Case I Solution: Refer to table for joist and beam sizes

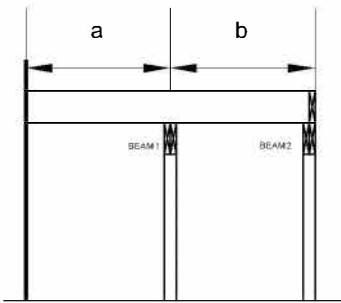
EXAMPLE: $a = 12'$, Post Spacing = $8'$ Refer to the span table. Joist size may be either 2x8's 12" O.C. or 2x10's 16" O.C. Beam size may be either 3 - 2x8's or 2 - 2x 10's



Case II Solution: Use "a" for joist size and "a" + "b" to determine beam size (The length of "b" is restricted by both the length of "a" and the size of the joists).

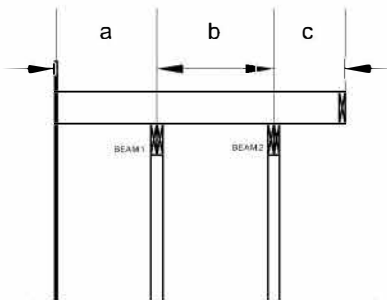
EXAMPLE: $a = 8'$, $b = 2'$, Post Spacing = $10'$

Find the joist size required by looking under 8' on the table. Joist length is indicated as 2x6's 16" O.C. or 2x8's 24" O.C. For sizing the beam, use a joist length of 10' ($8' + 2' = 10'$) and a post spacing of 10'. The table indicates that 4 - 2x8's or 3 - 2x10's are required for the beam.



Case III Solution: Use "a" or "b", whichever is greater, to determine joist size. Use "a" + "b" to determine the size of Beam No. 1 and use joist length "b" to determine the size of Beam No. 2

EXAMPLE: $a = 6'$, $b = 7'$, Post Spacing = $9'$ The joist length (7') is determined by the longest span joist, ("b"). The table indicates that 2x6's 16" O.C., or 2x8's 24" O.C. are required for a 7' span. For Beam No. 1, use joist length of 13' ($6' + 7' = 13'$) and post spacing of 9'. The table indicates that 3 - 2x10's or 2 - 2x12's are required for Beam No. 1. For Beam No. 2 use joist length of 7' with a post spacing of 9'. The table indicates that 4 - 2x6's or 3 - 2x8's are required for Beam No. 2.



Case IV Solution: Use "a" or "b", whichever is greater, to determine joist size. Use "a" + "b" to determine the size of Beam No. 1 and "b" + "c" to determine the size of Beam No. 2. (The length of "c" is restricted by both the length of "b" and the size of the joist).

EXAMPLE: $a = 7'$, $b = 8'$, Post Spacing = $12'$

The longest joist span is 8'; therefore, the table indicates that 2x6's 16" O.C. or 2x8's 24" O.C. are required. For Beam No. 1, use joist length of 15' ($7' + 8' = 15'$) and post spacing of 12'. The table indicates that 3 - 2x12's are required for Beam No. 1. For Beam No. 2 use joist length of 10' ($8' + 2' = 10'$) and post spacing of 12'. The table indicates that 3 - 2x10's or 3 - 2x12's are required for Beam No. 2.

NOTES: Post size must be adequate to provide full beam bearing, i.e., one-member and two-member beams must be placed on a 4x4 post, three-member beams must be placed on 4x6 or 6x6 posts, and four-member beams must be placed on 8x8 posts.

Most of the boxes in this table contain two optional means of support. Wood members may be increased above those indicated in the table, but in no event may lesser members be used .

DECK DESIGN EXAMPLES FOR DETERMINING JOIST AND BEAM SIZE

DATE	REVISED	CHD BY	DRAWING
AUG. 2020			1
DRAWN BY	PROJ. NO.	SCALE	OF
MAH		N.T.S.	1

