RESIDENTIAL DECKS

CITY OF NEW ULM BUILDING DEPARTMENT
100 N Broadway, New Ulm, MN 56073
Phone: 507-359-8245

REQUIRED INFORMATION WHEN APPLYING FOR A DECK PERMIT:

1. A Building permit is required to construct a deck.
2. Completing and application does not imply permission to construct.
3. A review of materials, dimensions, and setbacks must be conducted by the Inspection Department prior to a permit being issued.
4. Please allow ample time for this review process, before planning to begin work.

TO APPLY FOR A PERMIT THE FOLLOWING ITEMS MUST BE SUBMITTED

1. A completed Building Use permit
2. Two (2) copies of building plans, all structural members must be sized and properly spaced to support all loads. The following pages may be used in designing your deck.
   - All dimensions of deck drawn to scale
   - Size and depth of footings
   - Size and spacing of posts
   - Size of beams and headers
   - Size, direction and spacing of floor joists
   - Size, direction, and type of decking
   - Type and size of all materials used
   - Elevation showing approximate height of deck from grade
3. A site plan drawn to scale showing property lines, existing buildings, and proposed structure location, complete with distances to property lines and other structures. Setbacks and locations of decks are regulated by zoning laws. Please verify specific regulations for your lot.

PICKING UP THE PERMIT

Your application will be reviewed for code compliance and set back requirements. You will be notified when the permit is ready to be picked up.
It is your responsibility to contact **GOPHER STATE ONE CALL** 48 hours prior to digging to locate utilities. **1-800-252-1166**

CALLING FOR INSPECTIONS 507-359-8245

Please call at least 24 hours in advance for inspections. Be prepared to provide the address, permit number, and desired inspection time.

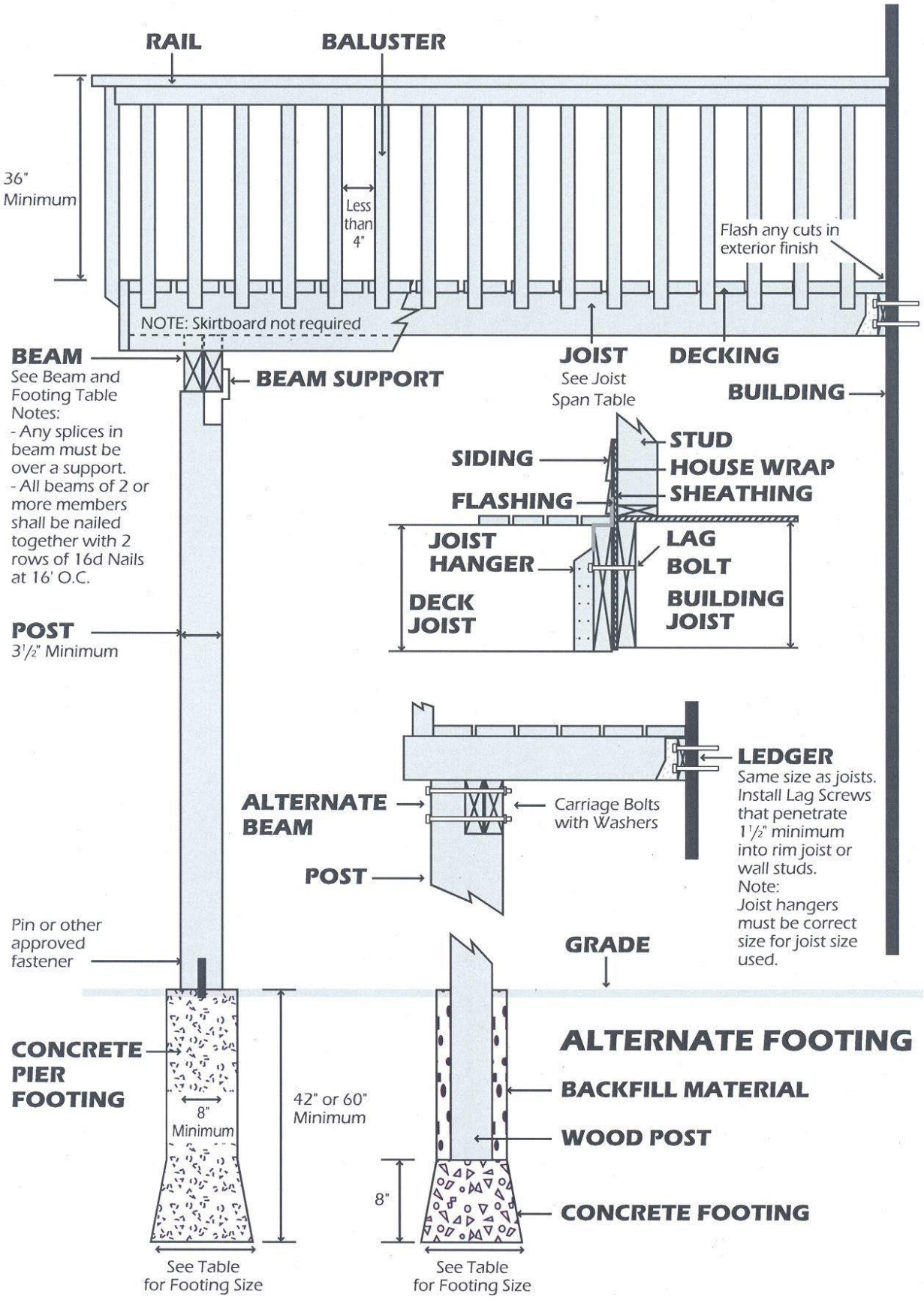
1. Call for FOOTING INSPECTIONS after holes are dug and before pouring concrete. Remove loose dirt and water.
2. Call for FRAMING INSPECTIONS if under floor framing will be concealed when complete.
3. Call for FINAL INSPECTION when deck is complete.

BUILDING AND ZONING REQUIREMENTS

- If hiring a contractor to work on you home, the contractor must be licensed through the State of Minnesota. You may contact the City of New Ulm Building Department to verify if your contractor is licensed.
- The bottom of the footing must extend 42 inches minimum below finished grade to ensure minimum frost protection.
- Beam splices must be located over posts, with a minimum 1-1/2 inch of bearing.
- Deck ledger boards must be fastened to the structure according to the information included in this handout and shall be designed for both vertical and lateral loads. Ledger must be flashed to prohibit moisture intrusion.
- Joist hangers are required wherever joists do not have 1-1/2 inches of bearing.
- Many of the man-made decking materials available have not been tested or approved, check with manufacturer or Building Department to ensure the product you choose is approved.

- **Guards**
    1. Guards are required on all decks with any part of the walking surface located 30 inches or more above grade or lower surfaces.
    2. Guards must be 36 inches minimum in height above walking surface.
    3. Guards must have intermediate rails or an ornamental pattern that does not allow passage of a 4-inch sphere.
- **Stairs**
    1. Stairs shall not be less than 36 inches in clear width.
    2. Stairs must have a maximum rise of 7-3/4 inches and a minimum run of 10 inches.
    3. The dimension of the rise or run shall be consistent to within 3/8 of an inch. Open risers are permitted providing a 4-inch sphere cannot pass through
    4. Stairs having landings shall have landings not less in width than the stair it serves. All landings at top and bottom of stairs shall have a minimum of 36 inches measured in the direction of travel.
- **Handrails**
    1. Handrails are required on at least one side of stairs having four or more stair risers.
    2. Handrails shall not project more that 4-1/2 inches into the stairway.
    3. Handrails must have continuous graspable surface, running full length of the stairs with ends returning to or terminating at the newel posts or other sage terminal. The required size of handrails is shown in the illustrations on the following pages.
- **Additional considerations**

1. Wooden structural members of exterior decks must be cedar, redwood, treated wood or other material approved for exterior exposure.
2. If pier blocks are used in lieu of footings, deck shall be designed to prevent lateral displacement and uplift. If pier blocks are used, the deck must not be fastened to any structure with frost depth footings.
3. Special design consideration may be required if a future 3 or 4 season porch, screen porch, spa or whirlpool tub will be placed on deck.
4. All fasteners must be approved for exterior use and be compatible with deck material.
5. Positive connections are required at all joint locations.


RAIL
BALUSTER
36" Minimum
Less than 4"
Flash any cuts in exterior finish
NOTE: Skirtboard not required
BEAM
See Beam and Footing Table
Notes:
- Any splices in beam must be over a support.
- All beams of 2 or more members shall be nailed together with 2 rows of 16d Nails at 16' O.C.
BEAM SUPPORT
JOIST
See Joist Span Table
DECKING
BUILDING
STUD
SIDING
HOUSE WRAP
FLASHING
SHEATHING
JOIST HANGER
LAG BOLT
DECK JOIST
BUILDING JOIST
POST
3½" Minimum
LEDGER
Same size as joists. Install Lag Screws that penetrate 1½" minimum into rim joist or wall studs.
Note:
Joist hangers must be correct size for joist size used.
ALTERNATE BEAM
Carriage Bolts with Washers
POST
Pin or other approved fastener
GRADE
CONCRETE PIER FOOTING
8" Minimum
42" or 60" Minimum
See Table for Footing Size
ALTERNATE FOOTING
BACKFILL MATERIAL
WOOD POST
8"
CONCRETE FOOTING
See Table for Footing Size

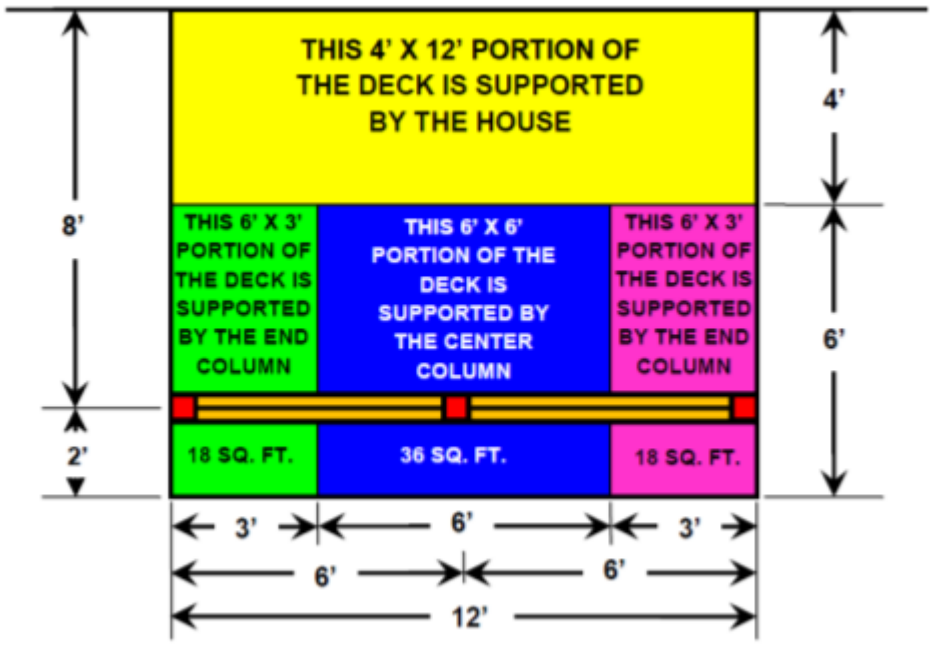
Joist Span table

Based on No. 2 stress grade and wet service conditions.

(design load = 40 psf live load, 10 psf dead load)

	Ponderosa Pine			Southern Pine			Western Cedar		
	12” OC	16” OC	24” OC	12” OC	16” OC	24” OC	12” OC	16” OC	24” OC
2x6	8’-10”	8’-0”	6’-10”	9’-11”	9’-0”	7’-7”	8’-10”	8’-0”	6’-10”
2x8	11’-8”	10’-7”	8’-8”	13’-1”	11’-10”	9’-8”	11’-8”	10’-7”	8’-8”
2x10	14’-11”	13’-0”	10’-7”	16’-2”	14’-0”	11’-5”	14’-11”	13’-0”	10’-7”
2x12	17’-5”	15’-1”	12’-4”	18’-0”	16’-0”	13’-6”	17’-5”	15’-1”	12’-4”

UNDERSTANDING LOAD PATHS AND CALCULATING FOOTINGS



See chart on next page for proper footing sizing.

MINIMUM FOOTING SIZE FOR DECKS

LIVE LOAD[b] (psf)	TRIBUTARY AREA (sq.ft.)	LOAD-BEARING VALUE OF SOILS[a,c,d] (psf) 1500[e] Side of a square footing (inches)	1500[e] Diameter of a round footing (inches)	1500[e] Thickness (inches)	2000[e] Side of a square footing (inches)	2000[e] Diameter of a round footing (inches)	2000[e] Thickness (inches)	2500[e] Side of a square footing (inches)	2500[e] Diameter of a round footing (inches)	2500[e] Thickness (inches)	>3000[e] Side of a square footing (inches)	>3000[e] Diameter of a round footing (inches)	>3000[e] 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

Center Post Tributary Area = (1/2 Joist span + Joist overhang of beam) x (Distance between posts)

**** Center Post Tributa Area shall be multi lied b 1.25 at center sts with beams not s liced continuous ****

Corner Post Tributary Area = (1/2 Joist span + Joist overhang of beam) x (1/2 Distance between posts + Distance beam cantilevers past post)

[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 a 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.

DECK BEAM SPAN LENGTHS (feet - inches)

Species	SIZE	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	3-10	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 - 2x 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

DECK POST HEIGHT[a]

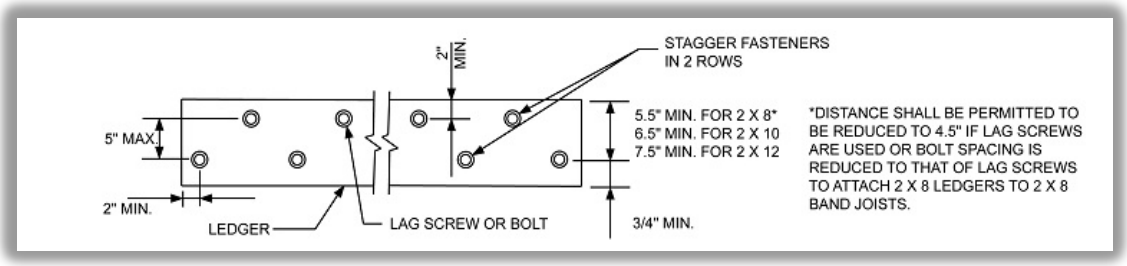
DECK POST SIZE	MAXIMUM HEIGHT (feet-inches)[a, b]
4 x 4	6-9[c]
4 x 6	8
6 x 6	14
8 x 8	14

[a.] Measured to underside of beam

[b.] Based on 40 psf live load

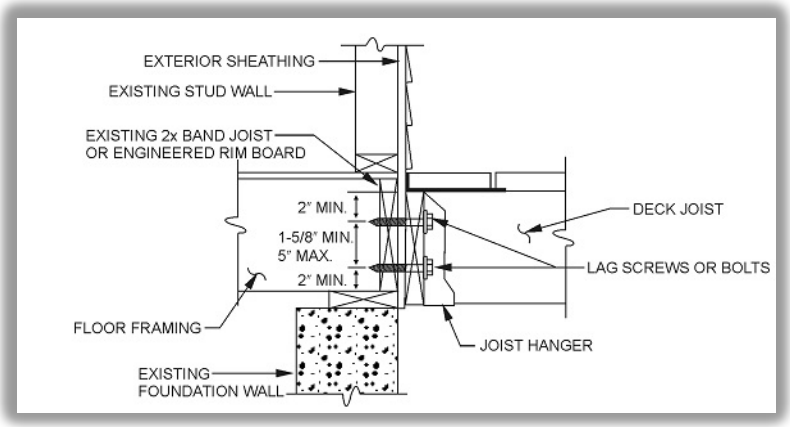
[c.] Maximum permitted height is 8 feet for on-ply and two-ply beams. The maximum permitted height for three-ply beams on past cap is 6 feet 9 inches.

PLACEMENT OF LAG SCREWS AND BOLTS IN LEDGERS

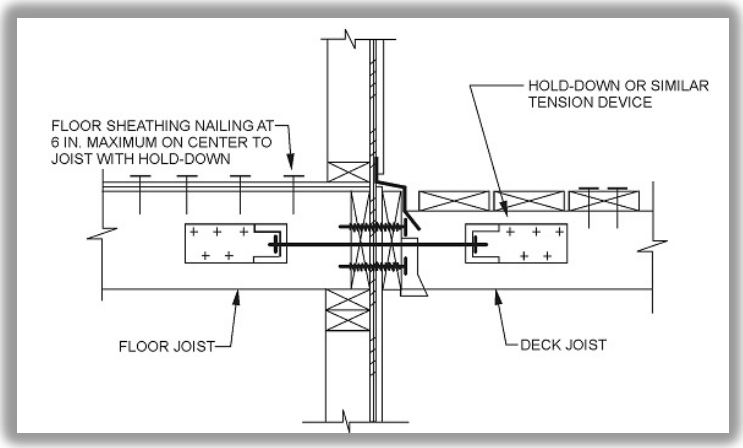


JOIST SPAN	6' and less	6'1" to 8'	8'1" to 10'	10'1" to 12'	12'1" to 14'	14'1" to 16'	16'1" to 18'
Connection details	On-center spacing of fasteners[d, e]						
1/2 inch diameter lag screw with 15/32 inch maximum sheathing[a]	30	23	18	15	13	11	10
1/2 inch diameter bolt with 15/32 inch maximum sheathing	36	36	34	29	24	21	19
1/2 inch diameter bolt with 15/32 inch maximum sheathing and 1/2 inch stacked washers[b, h]	36	36	29	24	21	18	16

PLACEMENT OF LAG SCREWS AND BOLTS IN BAND JOISTS



DECK ATTACHMENT FOR LATERAL LOADS

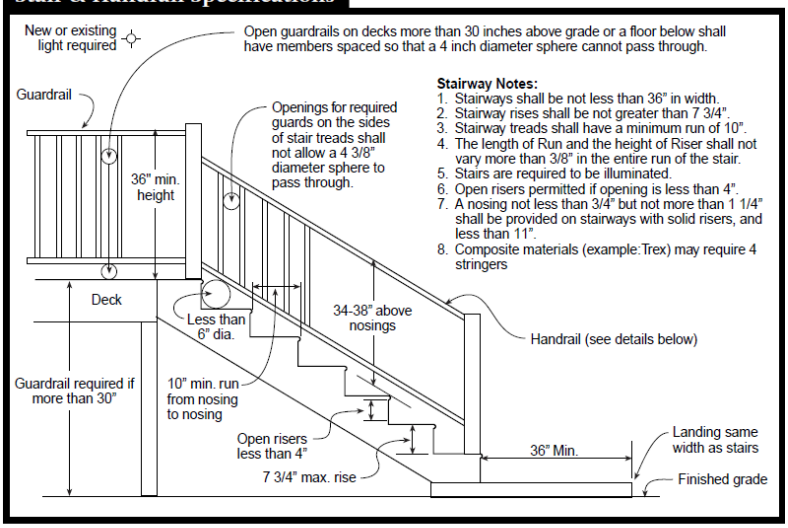


CANTILEVER REINFORCEMENT GUIDELINES

Many houses have cantilevers from the main structure of the home. Ledgers may not be attached to any cantilever as use for support. It is possible to build decks in these locations, using intermediate beams on individual posts, or using a beam supported by doubled joists and using the beam charts for design. If you have a cantilevered section of your home and wish to construct a deck in that location, consult either with the City of New Ulm Building Department or a design professional for options. The City of New Ulm Building Department may require a design professionals approval for you to be able to continue with the project.

Single Family Residential Uncovered Decks and Porches

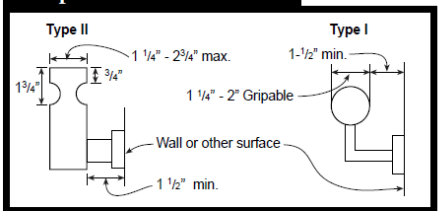
Stair & Handrail Specifications



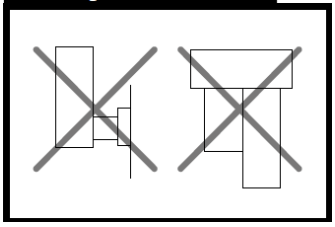
Stairway Notes:
1. Stairways shall be not less than 36" in width.
2. Stairway rises shall be not greater than 7 3/4".
3. Stairway treads shall have a minimum run of 10".
4. The length of Run and the height of Riser shall not vary more than 3/8" in the entire run of the stair.
5. Stairs are required to be illuminated.
6. Open risers permitted if opening is less than 4".
7. A nosing not less than 3/4" but not more than 1 1/4" shall be provided on stairways with solid risers, and less than 11".
8. Composite materials (example:Trex) may require 4 stringers

Handrail Notes:
1. Handrails shall be continuous on at least one side of stairs with 4 or more risers.
2. Top of the handrails shall be placed not less than 34 inches nor more than 38 inches above stair nosings.
3. The handgrip portion of handrails shall be not less than 1-1/4 inches nor more than 2 1/4 inches in cross section for non circular handrails
4. Handrails shall be placed not less than 1-1/2 inches from any wall or other surface.
5. Handrails to be returned to wall, post or safety terminal (per 311.5.6.2 IRC)

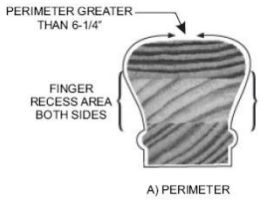
Acceptable Handrail Details



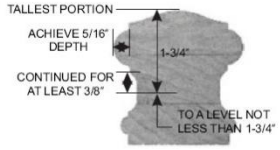
Unacceptable Handrails



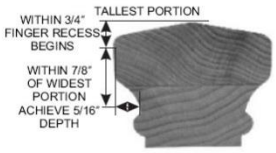
Examples of handrail profile requirements



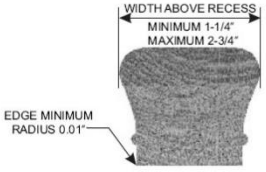
A) PERIMETER



B) FINGER RECESS

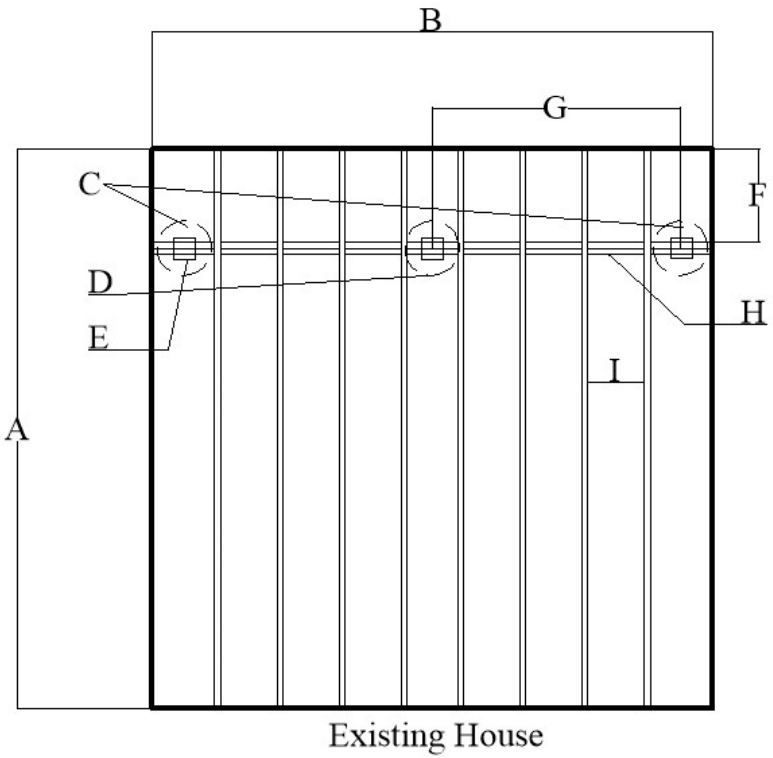


C) FINGER RECESS



D) WIDTH

Sample Deck Plan



A. Deck Size 1: _____

B. Deck Size 2: _____

C. Corner footing size: _____

D. Intermediate footing size: _____

E. Post size (4x4,6x6 Etc.): _____

F. Joist overhang (Cantilever): _____

G. Post Spacing: _____

H. Beam size: _____

I. Joist spacing: _____

J. Type of Material: _____

K. Height above ground: _____

L. Dimension of Decking: _____

Special note:

A complete and detailed deck plan will result in a complete and detailed plan review.