



RESIDENTIAL DECKS

CITY OF HUTCHINSON BUILDING DEPARTMENT

111 Hassan Street SE, Hutchinson, MN 55350

Phone: 320-234-4216 web site with forms www.ci.hutchinson.mn.us/bldg.htm

REQUIRED INFORMATION WHEN APPLYING FOR A DECK PERMIT:

1. A Building/Land Use permit is required to construct a deck.
2. Completing an application does not imply permission to construct.
3. A review of materials, dimensions and setbacks must be conducted by the Building and Zoning Departments 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/Land Use permit application.
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 copy of a Certificate of Survey or site plan drawn to scale showing property lines, existing building and the 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 320-234-4216

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 INSPECTION if under-floor framing will be concealed when complete.
3. Call for FINAL INSPECTION when deck is complete.

BUILDING & ZONING CODE REQUIREMENTS

- If hiring a contractor to work on your home, the contractor must be licensed through the state of Minnesota. You may contact the Hutchinson Building Department to verify if your contractor is licensed.
- The bottom of the footing must extend a minimum of 42 inches below finished grade to ensure minimum frost protection.
- Beam splices must be located over posts, with minimum 1½ inches of bearing.
- Deck ledger boards must be bolted to the structure using a minimum of two (2) 3/8-inch lag bolts or equal every 16 inches, 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 1½ inches of bearing.
- Many of the man made decking materials available have not been tested or approved, check with the 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.
 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 stairs it serves. All landings at top and bottom of stairs shall have a minimum dimension of 36 inches measured in the direction of travel.
- Handrails
 1. A handrail is required on at least one side of stairs having four or more risers.
 2. Handrails shall not project more than 4-1/2 inches into the stairway.
 3. Handrails must have a continuous grippable surface, running the full length of the stairs, with ends returning to or terminating at newel posts or other safe terminals. The required size of handrails is shown in the illustrations on the following pages.
- Wooden structural members of exterior decks must be cedar, redwood, preservative treated wood, or other material approved for exterior exposure.
- If pier blocks are used in lieu 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.
- Special design considerations may be required if a future 3 or 4 season porch, screen porch, spas or whirlpool tub will be placed on deck.
- All fasteners must be approved for exterior use.
- Positive connections are required at all joint locations.

Joist Span

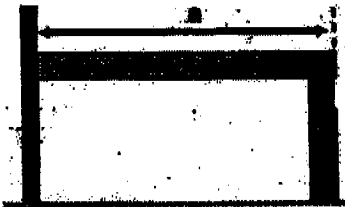
Based on No. 2 or better wood grades.

(Design Load = 40#LL + 10#DL, Deflection = L/360)

| | POSTING 8'-0" | | | POSTING 10'-0" | | | POSTING 12'-0" | | |
|------|---------------|-------|-------|----------------|-------|-------|----------------|-------|------|
| | 12"OC | 16"OC | 24"OC | 12"OC | 16"OC | 24"OC | 12"OC | 16"OC | 24" |
| 2x6 | 9-2 | 8-4 | 7-0 | 10-9 | 9-0 | 8-6 | 9-2 | 8-4 | 7-3 |
| 2x8 | 12-1 | 10-10 | 8-10 | 14-2 | 12-10 | 11-0 | 12-1 | 11-0 | 9-2 |
| 2x10 | 15-4 | 13-3 | 10-10 | 18-0 | 16-1 | 13-5 | 15-5 | 13-9 | 11-3 |
| 2x12 | 17-9 | 15-5 | 12-7 | 21-9 | 19-0 | 15-4 | 18-5 | 16-0 | 13-0 |

Sample Calculations for Using Joist Span, Beam Size and Footing Size Tables

CASE I SOLUTION:



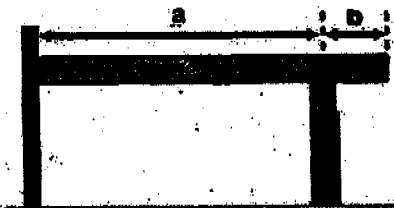
Refer to tables for joist, beam and footing size requirements.

Example: $a = 12'$; Post Spacing = 8'

Use the Joist Span table to find the acceptable joist sizes for a 12' span, 2x8s at 12" O.C., 2x10s at 16" O.C. or 2x12s at 24" O.C.

Use the Beam and Footing Sizes table and find the 8' post spacing column. With a 12' deck span, the beam may be either two 2x8s or two 2x10s, depending on wood used. Depending on the type of soil, the footing diameter at the base must be a minimum of 12", 10" or 9" for the corner post and 17", 14" or 12" for all intermediate posts.

CASE II SOLUTION:



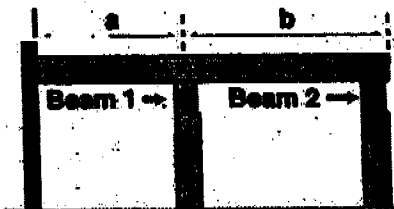
Use "a" to determine joist size and "a" + "b" to determine beam and footing sizes. The length of "b" is restricted by both the length of "a" and the size of the joists.

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

Refer to the Joist Span table. For an 8' joist span, either 2x8s at 24" O.C. or 2x6s at 16" O.C. are acceptable.

For sizing the beam, use a joist length of 12' ($8' + 4'$) and a post spacing of 10'. The Beam and Footing Sizes table indicates that the beam may be either two 2x10s or two 2x12s, depending on wood used. Depending on the type of soil, the footing diameter at the base must be a minimum of 15", 12" or 11" for the corner post and 20", 17" or 15" for all intermediate posts. Note that because of the 2' cantilever all footing sizes were increased by 1" as required by footnote 2 at the end of the table.

CASE III SOLUTION:



Use "a" or "b"; whichever is greater, to determine joist size. Use "a" + "b" to determine the size of Beam 1 and the post footing size for the posts supporting Beam 1. Use joist length "b" to determine both the size of Beam 2 and the post footing size for the posts supporting Beam 2.

Example: $a = 6'$, $b = T$, Post Spacing = 9'

Joist size is determined by using the longest span joist (T). The Joist Span table indicates that 2x6s at 24" O.C. would be adequate for this span.

For Beam 1 and footings, use a joist length of 13' ($6' + T$) and a post spacing of 9'. The Beam and Footing Sizes table indicates that the beam may be two 2x10s or two 2x12s, depending on the wood used. Depending on the type of soil, the footing diameters for Beam 1 posts shall be 13", 11" or 9" for the corner (outside) post and 19", 15" or 13" for all intermediate posts. For Beam 2 and footings use a joist length of T and post spacing of 9'. The beam may be two 2x8s or two 2x10s, depending on wood used. Depending on the type of soil, the footing diameters for Beam 2 shall be 10", 8" or 7" for the corner posts, and 14", 11" or 10" for all intermediate posts.

Beam and Footing Sizes

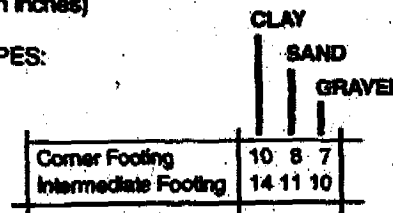
Based on No. 2 or better Ponderosa Pine and Southern Pine
(Treated for weather and/or ground exposure)

| | | Post Spacing | | | | | | | | | | |
|-----|---------------------|--------------|--------|---------|---------|----------|----------|----------|----------|----------|----------|----------|
| | | 4' | 5' | 6' | 7' | 8' | 9' | 10' | 11' | 12' | 13' | 14' |
| 6' | Southern Pine Beam | 1-2x6 | 1-2x6 | 1-2x6 | 2-2x6 | 2-2x6 | 2-2x6 | 2-2x6 | 2-2x6 | 2-2x10 | 2-2x10 | 2-2x10 |
| | Ponderosa Pine Beam | 1-2x6 | 1-2x6 | 1-2x6 | 2-2x6 | 2-2x6 | 2-2x6 | 2-2x6 | 2-2x10 | 2-2x10 | 2-2x10 | 2-2x10 |
| | Corner Footing | 6 5 4 | 7 5 5 | 7 5 5 | 8 7 5 | 9 7 6 | 9 7 6 | 10 8 7 | 10 8 7 | 10 9 7 | 11 9 8 | 11 9 8 |
| 7' | Southern Pine Beam | 1-2x6 | 1-2x6 | 1-2x6 | 2-2x6 | 2-2x6 | 2-2x6 | 2-2x6 | 2-2x10 | 2-2x10 | 2-2x10 | 2-2x12 |
| | Ponderosa Pine Beam | 1-2x6 | 1-2x6 | 1-2x6 | 2-2x6 | 2-2x6 | 2-2x6 | 2-2x10 | 2-2x10 | 2-2x10 | 2-2x12 | 2-2x10 |
| | Corner Footing | 7 5 5 | 7 6 6 | 8 7 6 | 9 7 6 | 9 8 7 | 10 8 7 | 10 8 7 | 11 9 8 | 11 9 8 | 12 10 9 | 12 10 9 |
| 8' | Southern Pine Beam | 1-2x6 | 1-2x6 | 2-2x6 | 2-2x6 | 2-2x6 | 2-2x6 | 2-2x6 | 2-2x10 | 2-2x10 | 2-2x12 | 2-2x12 |
| | Ponderosa Pine Beam | 1-2x6 | 2-2x6 | 2-2x6 | 2-2x6 | 2-2x6 | 2-2x6 | 2-2x10 | 2-2x10 | 2-2x10 | 2-2x12 | 2-2x12 |
| | Corner Footing | 7 8 5 | 8 6 6 | 9 7 6 | 9 8 7 | 10 8 7 | 10 8 7 | 11 8 8 | 11 9 8 | 12 10 9 | 13 10 9 | 13 11 9 |
| 9' | Southern Pine Beam | 1-2x6 | 1-2x6 | 2-2x6 | 2-2x6 | 2-2x6 | 2-2x6 | 2-2x10 | 2-2x10 | 2-2x12 | 2-2x12 | 2-2x10 |
| | Ponderosa Pine Beam | 1-2x6 | 2-2x6 | 2-2x6 | 2-2x6 | 2-2x10 | 2-2x10 | 2-2x10 | 2-2x10 | 2-2x10 | 2-2x12 | 2-2x12 |
| | Corner Footing | 7 8 5 | 8 7 6 | 9 7 6 | 10 8 7 | 10 9 7 | 11 9 8 | 12 10 8 | 12 10 9 | 13 10 9 | 13 11 9 | 14 11 10 |
| 10' | Southern Pine Beam | 1-2x6 | 1-2x6 | 2-2x6 | 2-2x6 | 2-2x6 | 2-2x6 | 2-2x10 | 2-2x12 | 2-2x12 | 2-2x10 | 2-2x10 |
| | Ponderosa Pine Beam | 1-2x6 | 1-2x6 | 2-2x6 | 2-2x6 | 2-2x10 | 2-2x10 | 2-2x12 | 2-2x10 | 2-2x12 | 2-2x12 | Eng Bm |
| | Corner Footing | 8 6 6 | 9 7 6 | 10 8 7 | 10 8 7 | 11 9 8 | 12 10 8 | 12 10 9 | 13 11 9 | 14 11 10 | 14 12 10 | 15 12 10 |
| 11' | Southern Pine Beam | 1-2x6 | 2-2x6 | 2-2x6 | 2-2x6 | 2-2x6 | 2-2x10 | 2-2x10 | 2-2x12 | 2-2x12 | 2-2x10 | 2-2x12 |
| | Ponderosa Pine Beam | 2-2x6 | 2-2x6 | 2-2x6 | 2-2x6 | 2-2x10 | 2-2x12 | 2-2x12 | 2-2x10 | 2-2x12 | 2-2x12 | Eng Bm |
| | Corner Footing | 8 7 6 | 9 7 6 | 10 8 7 | 11 9 8 | 12 9 8 | 12 10 9 | 13 11 9 | 14 11 10 | 14 12 10 | 15 12 10 | 15 13 11 |
| 12' | Southern Pine Beam | 1-2x6 | 2-2x6 | 2-2x6 | 2-2x6 | 2-2x6 | 2-2x10 | 2-2x10 | 2-2x12 | 2-2x12 | 2-2x10 | 2-2x12 |
| | Ponderosa Pine Beam | 2-2x6 | 2-2x6 | 2-2x6 | 2-2x10 | 2-2x10 | 2-2x12 | 2-2x12 | 2-2x12 | 2-2x12 | Eng Bm | Eng Bm |
| | Corner Footing | 9 7 6 | 10 8 7 | 10 9 7 | 11 9 8 | 12 10 9 | 13 10 9 | 14 11 10 | 14 12 10 | 15 12 10 | 15 13 11 | 16 13 11 |
| 13' | Southern Pine Beam | 1-2x6 | 2-2x6 | 2-2x6 | 2-2x6 | 2-2x6 | 2-2x10 | 2-2x10 | 2-2x12 | 2-2x12 | 2-2x10 | 2-2x12 |
| | Ponderosa Pine Beam | 2-2x6 | 2-2x6 | 2-2x6 | 2-2x10 | 2-2x12 | 2-2x12 | 2-2x12 | 2-2x12 | 2-2x12 | Eng Bm | Eng Bm |
| | Corner Footing | 9 7 6 | 10 8 7 | 11 9 8 | 12 10 8 | 13 10 9 | 13 11 9 | 14 12 10 | 15 12 10 | 15 13 11 | 16 13 11 | 17 14 12 |
| 14' | Southern Pine Beam | 1-2x6 | 2-2x6 | 2-2x6 | 2-2x6 | 2-2x10 | 2-2x10 | 2-2x12 | 2-2x12 | 2-2x12 | 2-2x12 | 2-2x12 |
| | Ponderosa Pine Beam | 2-2x6 | 2-2x6 | 2-2x6 | 2-2x10 | 2-2x12 | 2-2x10 | 2-2x12 | 2-2x12 | 2-2x12 | Eng Bm | Eng Bm |
| | Corner Footing | 9 8 7 | 10 8 7 | 11 9 8 | 12 10 9 | 13 11 9 | 14 11 10 | 15 12 10 | 15 13 11 | 16 13 11 | 17 14 12 | 17 14 12 |
| 15' | Southern Pine Beam | 2-2x6 | 2-2x6 | 2-2x6 | 2-2x6 | 2-2x10 | 2-2x12 | 2-2x12 | 2-2x12 | 2-2x12 | 2-2x12 | Eng Bm |
| | Ponderosa Pine Beam | 2-2x6 | 2-2x6 | 2-2x6 | 2-2x10 | 2-2x10 | 2-2x10 | 2-2x12 | 2-2x12 | 2-2x12 | Eng Bm | Eng Bm |
| | Corner Footing | 10 8 7 | 11 9 8 | 12 10 8 | 13 10 9 | 14 11 10 | 14 12 10 | 15 12 11 | 16 13 11 | 17 14 12 | 17 14 12 | 18 15 13 |
| 16' | Southern Pine Beam | 2-2x6 | 2-2x6 | 2-2x6 | 2-2x6 | 2-2x10 | 2-2x12 | 2-2x12 | 2-2x12 | 2-2x12 | 2-2x12 | Eng Bm |
| | Ponderosa Pine Beam | 2-2x6 | 2-2x6 | 2-2x10 | 2-2x10 | 2-2x10 | 2-2x10 | 2-2x12 | 2-2x12 | 2-2x12 | Eng Bm | Eng Bm |
| | Corner Footing | 10 8 7 | 11 9 8 | 12 10 9 | 13 11 9 | 14 11 10 | 15 12 10 | 16 13 11 | 16 13 12 | 17 14 12 | 18 15 13 | 18 15 13 |

Notes:

- Joist length is total length of joist, including any cantilevers.
- When joist extends (cantilevers) beyond support beam by 18" or more, add 1" to footing dimensions shown.
- Requirements for future 3-season porches or screen porches:
 - Increase corner footing size shown by 90%.
 - Increase center footing size shown by 55%.
 - Locate all footings at extremities of deck (no cantilevers).
 - Beam sizes indicated need not be altered.

4. All footing sizes above are base diameters (in inches) and are listed for THREE SOIL TYPES:



RAIL
BALUSTER

36"
Minimum

Less
than 4"

Flash any cuts in
exterior finish

**BEAM
(BEST)**
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.

POST
3 1/2" Minimum

Pin or other
approved
fastener

**MANUFACTURED
BEAM SUPPORT**

JOIST
See Joist
Span Table

DECKING
16" or less Spac: 1" and 3/4"
Over 16" Spac: 2"

**ALTERNATE
BEAM (BETTER)**

POST
5 1/2" Minimum
(4X6 or 6X6)

Two
1/2" Carriage
Bolts with
Washers

LEDGER
Same size as joists.
Install Lag Screws
that penetrate
1 1/2" minimum into
rim joist or wall
studs. (Minimum
two 3/4" Lag Screws
every 16")
NOTE:
Joist hangers must
be correct size for
joist size used.

**ALTERNATE
BEAM (GOOD)**

POST
3 1/2" Minimum

One 1/2" Carriage
Bolt with Washer
2"x8" or
larger beam.
Two 3/4" Bolts
with Washers
through Manufactured
Beam Support.

BUILDING →

GRADE
↓

**CONCRETE
PIER
FOOTING**

Minimum

42"
Minimum

ALTERNATE FOOTING

BACKFILL MATERIAL

WOOD POST

POURED CONCRETE FOOTING

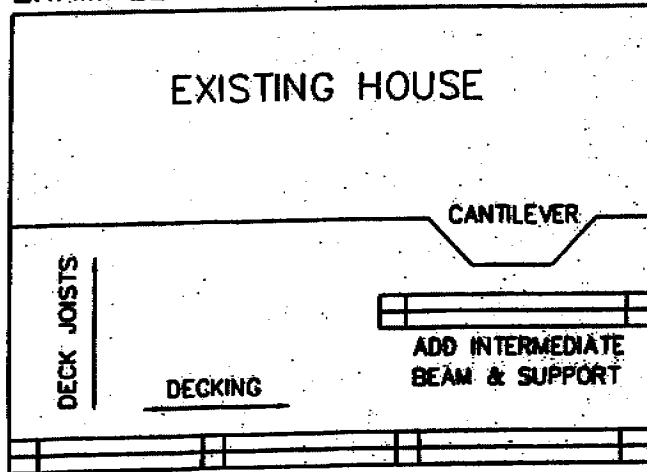
6"

See Table
for Footing Size

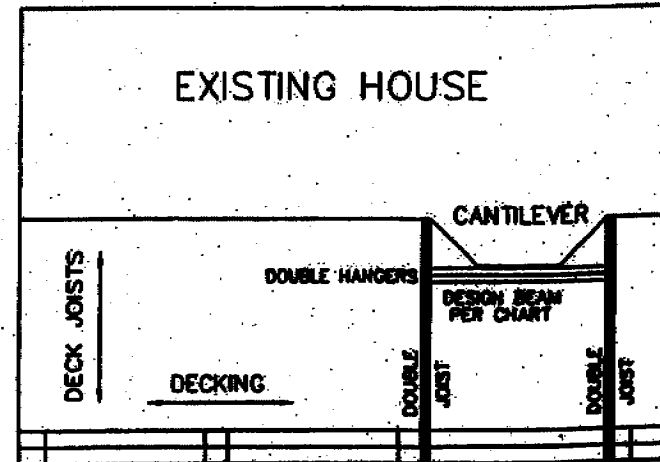
See Table
for Footing Size

CANTILEVER REINFORCEMENT GUIDELINES

EXAMPLE 1



EXAMPLE 2

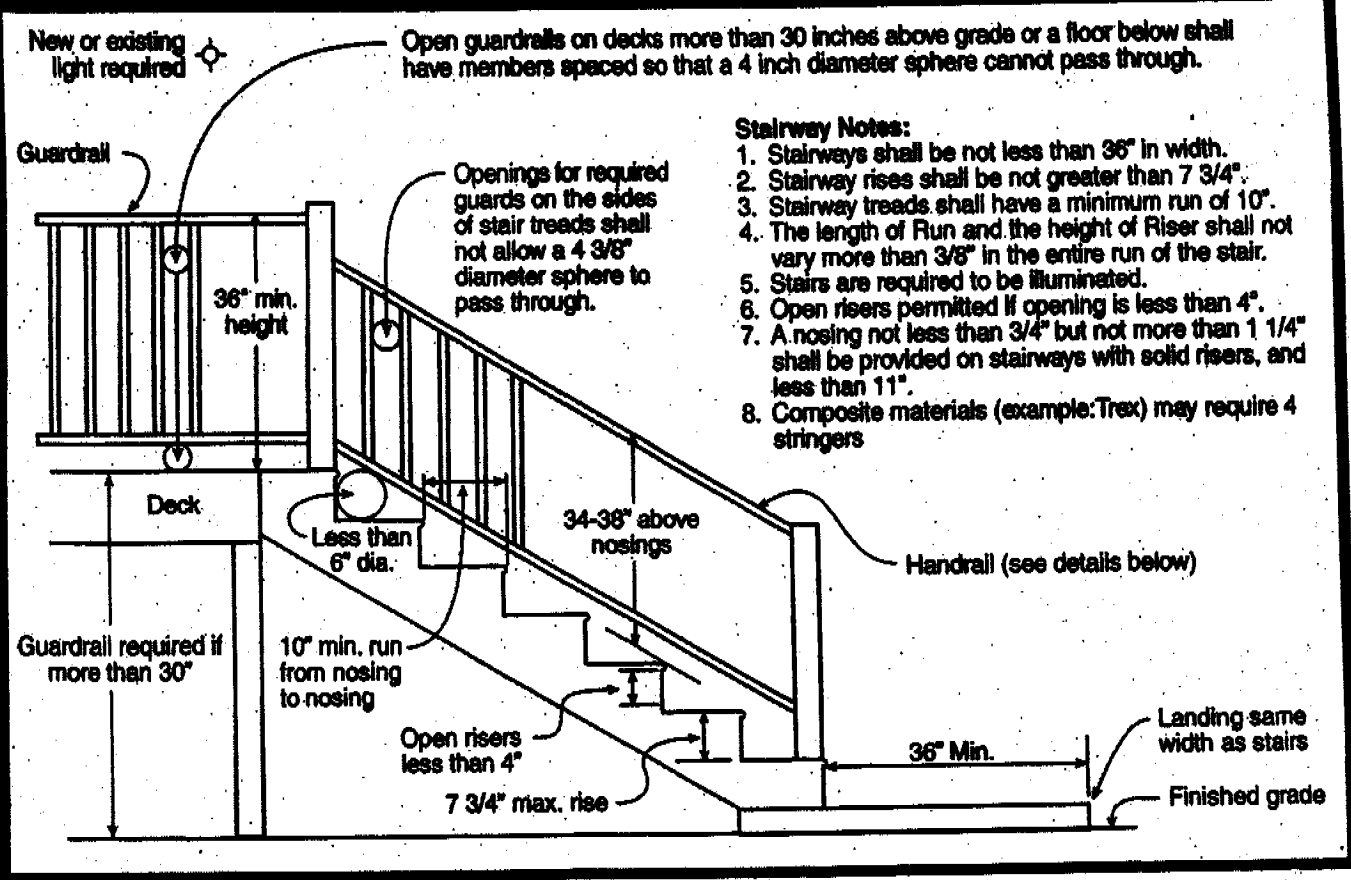


MANY HOUSE DESIGNS HAVE CANTILEVERED (EXTENSIONS) FROM THE MAIN STRUCTURE AND WHICH TYPICALLY CONTAIN PATIO DOORS FOR FUTURE DECK ADDITIONS. THE REINFORCEMENT SELECTED WILL BE BASED ON THE TYPE OF FLOOR FRAMING MEMBER PRESENTLY IN THE HOUSE. WE HAVE DIAGRAMMED TWO POSSIBLE SOLUTIONS FOR PROVIDING SUCH REINFORCEMENT.

EXAMPLE #1: ADD AN INTERMEDIATE BEAM, SUPPORTS AND FOOTINGS. SIZE BEAM AND FOOTINGS IN THE DECK HANDOUT.

EXAMPLE #2: ADD DOUBLE JOIST OUTSIDE OF CANTILEVER. PROVIDE ADEQUATE HANGERS FOR ALL CONNECTIONS. DESIGN CENTER BEAM PER CHART. ALSO LAG BOLT BEAM TO CANTILEVER LEDGER BOARD.

Stair & Handrail Specifications



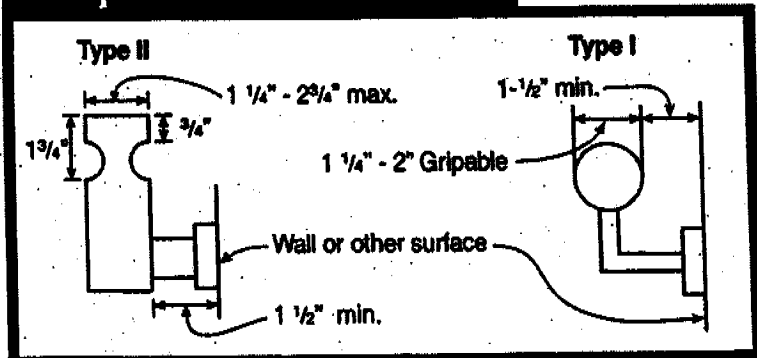
Stairway Notes:

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

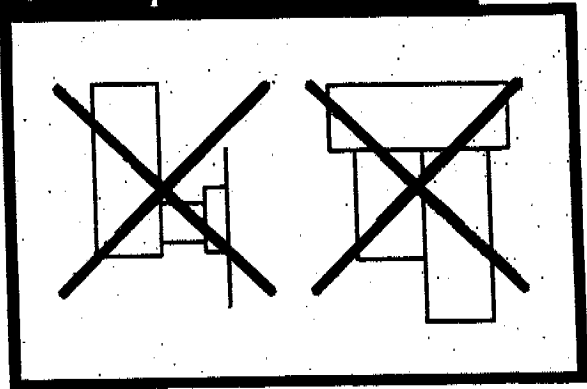
Handrail Notes:

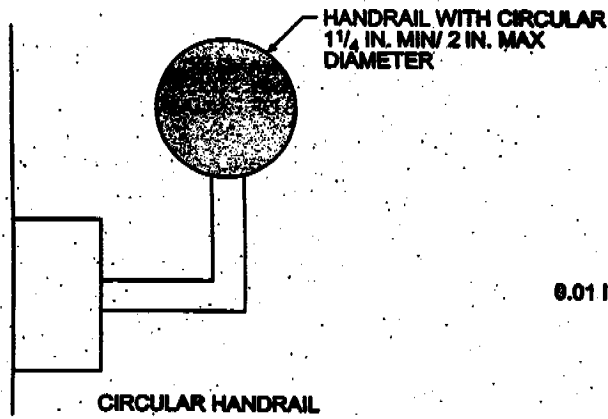
1. Handrails shall be continuous on at least one side of stairs with 4 or more risers.
2. Top of the handrails shall be placed not less than 34 inches nor more than 38 inches above stair nosings.
3. The handgrip portion of handrails shall be not less than 1-1/4 inches nor more than 2 1/4 inches in cross 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

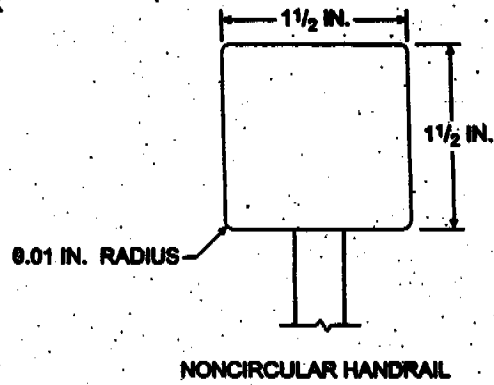


Unacceptable Handrails





HANDRAIL THAT IS NOT CIRCULAR
MUST HAVE A PERIMETER OF 4 IN.
MIN/ 6 1/4 IN. MAX WITH A MAXIMUM
CROSS SECTION DIMENSION OF
2 1/4 INCHES



For St: 1 inch = 25.4 mm.

Figure R311.5.6.3(1)
TYPE I HANDRAIL

HANDRAIL PERIMETER > 6 1/4 IN.

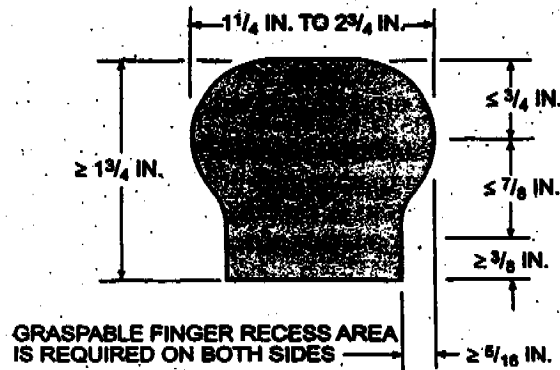
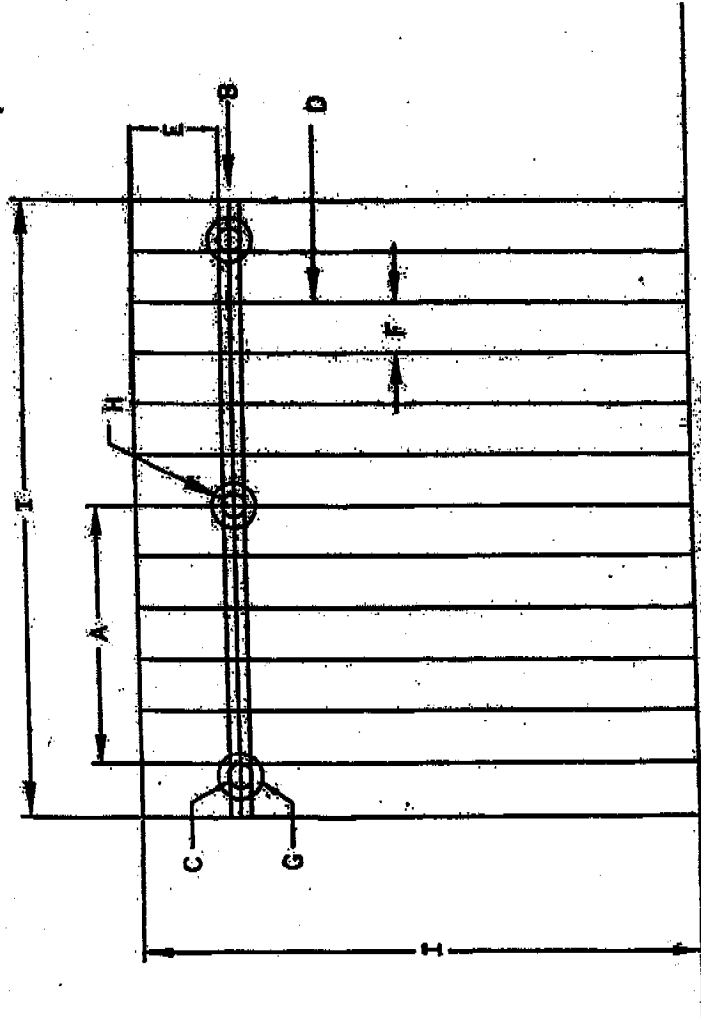


Figure R311.5.6.3(2)
TYPE II HANDRAIL

SAMPLE DECK PLAN

FILL IN THE BLANKS:

- A. SPACING BETWEEN POSTS _____
 - B. BEAM SIZE (2-2x10, ETC.) _____
 - C. POST SIZE (4x4 - 6x6, ETC.) _____
 - D. JOIST LENGTH AND SIZE _____
 - E. JOIST OVERHANG (2" MAX.) _____
 - F. SPACING BETWEEN JOISTS
(16" & 24" O.C.) _____
 - G. CORNER FOOTING SIZE _____
 - H. INTERMEDIATE FOOTING SIZE _____
 - I. OVERALL DECK SIZE _____
- TYPE OF MATERIAL
(CEDAR, TREATED, ETC.) _____
- HEIGHT ABOVE GROUND _____
- TYPE OF DECKING
(5/8x6-2x6, ETC.) _____



EXISTING HOUSE

SPECIAL NOTE:
A COMPLETE AND DETAILED DECK
PLAN WILL RESULT IN A COMPLETE
AND DETAILED PLAN REVIEW.