

MINIMUM REQUIREMENTS FOR WOOD DECKS – IRC 2009

The following is a list of Code compliance items that are required to be submitted with the construction permit application for plan review processing and approval:

1. All proposed decks require approvals of the Zoning Officer and Code Enforcement before a Construction Permit can be issued and work allowed to begin.
2. A plot plan (survey) must show the size and location of the proposed deck, be approved by the Zoning Officer and included with the Construction Permit Application.
3. The following Must be submitted with the application:
 - a. Three (3) sets of plans indicating the size, shape and location of the proposed deck.
 - b. The plans must indicate the location and dimensions of individual footings. This information must include a cross section of the footing indicating the depth below grade as well as a detail of the bearing intersection or connection of beams and girders to individual column with elevation between wood members and grade.
 - c. The drawing must show the deck in “Plan” view showing footings, beams, girders, etc. and in an “Elevation” view showing guards, railings, baluster spacing, etc.
 - d. All joist size, free span, and direction of span(s) must be indicated on the Construction Document.
 - e. Construction Materials must be specified.
 1. Wood post and columns in contact with the ground or embedded in concrete are required to be pressure treated. Wood posts and columns **SHOULD NOT** be designed to rest on the earth at the footing bottom. The design should show a minimum of 4” of solid concrete at the footing bottom.
 2. Girders within 12 inches of any exposed earth are required to be pressure treated.
 3. All floor joists and decking material within 18 inches of exposed earth are required to be constructed with pressure treated wood.
 4. Galvanized nails or structural screws are required.
 5. Metal hangers, straps, etc. must have manufacturers galvanized nails or approved equals.
 - f. Guards shall be required for decks and stairs as follows:
 1. Deck Guards:
 - a. Deck guardrails shall be a minimum of 36 inches (914 mm) in height and constructed to withstand a concentrated load of 200 pounds (91 kg) applied at any point and in any direction along the top railing member. IRC 312.1
 - b. Open guards shall have balusters or be of solid material such that a sphere with a diameter of 4 inches (102 mm) cannot pass through any opening. IRC 312.2

- c. Guards shall not have an ornamental pattern that would provide a ladder effect.

2. Stair Guards/Handrails:

- a. Stair Guards/Handrails shall have balusters or be of solid material such that a sphere with a diameter of 4 inches (102 mm) cannot pass through any opening.
- b. The triangular openings formed by the riser, tread and bottom rail at the open side of the stairway shall be a maximum size such that a sphere 6 inches (152 mm) in diameter cannot pass through any opening. IRC 312.2
- c. All Handrail gripping surfaces shall be continuous with any wall or other surface adjacent to the handrail and shall be free of projections. The clear space between the handrail and adjacent wall or surface shall not be less than 1½ inches (38 mm). Handrails shall not project more than 3 ½ inches (89 mm) into the stair. IRC 311.5.6.2
- d. Handrails shall not be less than 30 inches (762mm) nor more than 38 inches (965 mm), measured vertically, above the leading edge of the treads or above the finished floor of the landing or walking surface. IRC 311.5.6.1. Handrails that form part of a guard shall have a height of not less than 34 inches (864 mm) and not more than 42 inches (1067mm). IRC 312.1
- e. Handrails shall be graspable with a cross-sectional area outside diameter a minimum of 1 ¼ inches (32mm) but not greater than 2 5/8 inches (51 mm). IRC 311.5.6.3. Handrails shall be continuous and returned to a newel post or safety terminal.
- f. Stair Guard/Handrails shall be constructed to withstand a concentrated load of 200 pounds (91 kg) applied at any point and in any direction.
- g. Intermediate handrails are required so that all portions of the width of stairs are within 30 inches (762 mm) of a handrail. On monumental stairs, handrails shall be located along the most direct path of travel.

3. Stairways:

- a. Stairways with fewer than four risers are not required to have handrails, when serving a single family dwelling unit.
- b. Stairways serving a residential occupancy shall not be less than 36 inches (914mm) in width.
- c. In all residential uses the MAXIMUM riser height shall be 8 ¼ inches (210mm) and the MINIMUM tread depth shall be 9 inches (229mm). A 1-inch (25mm) nosing shall be provided on stairways with solid risers. The leading edge of tread shall

not project more than 1 ½ inches (38mm) beyond the tread below. IRC 311.5.3.2

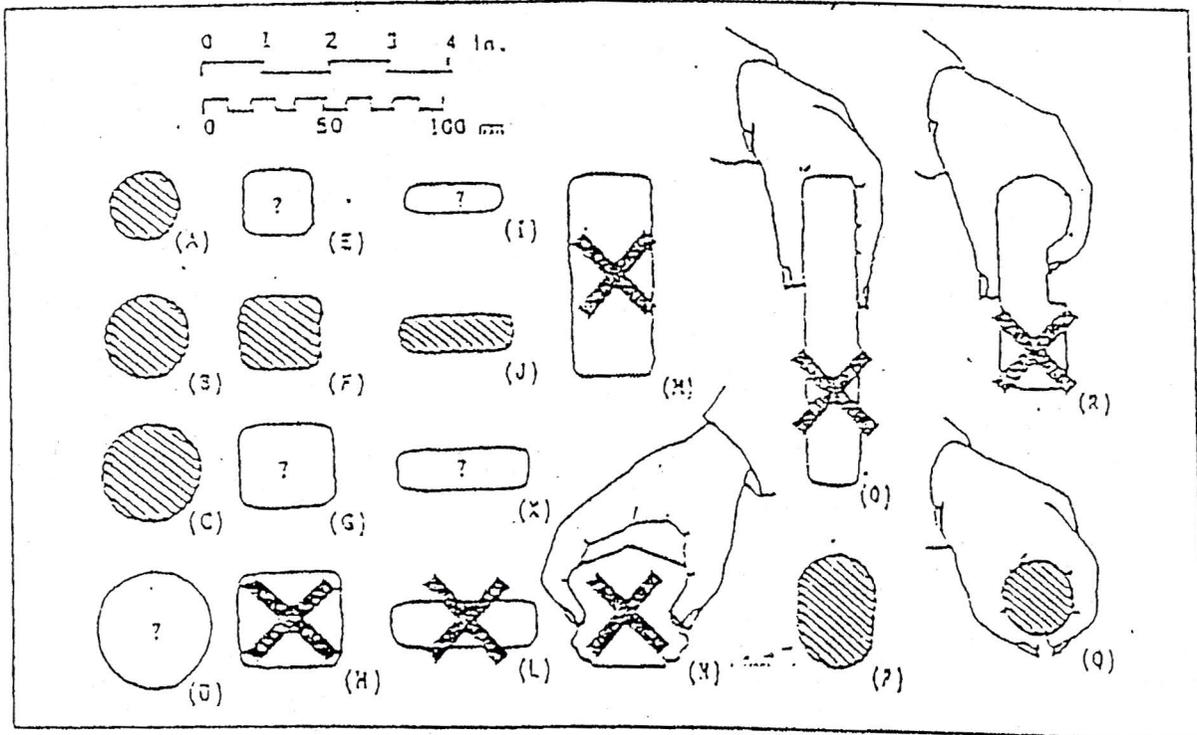
- d. Riser Height – The maximum riser height shall be 8 ¼ inches (210 mm). The riser shall be measured vertically between leading edges of the adjacent treads. The greatest riser height within any flight of stairs shall not exceed the smallest by more than 3/8 inch (9.5 mm). IRC 311.5.3.1
 - e. Stairway footings are to be supported by a minimum 4 inch (102mm) by 4 inch (102mm) wood post with a footing in conformance with IRC 2009 or the steps are to terminate on a minimum 4 inch (102mm) thick concrete slab which extends the width of the stairway and 3 feet (916mm) out from the bottom step nosing. Footings are to be concrete, in this area the footing depth required is 3 feet (916mm) minimum. The width of most footing in this area are a minimum 12 inches (102mm) square or round in order to carry the required dead load of 40 lbs.
 - f. All stairs with more than two (2) risers shall have approved footings under both stringers and a level and stable pad of 4 inch (102 mm) minimum thick x (the width of the stair) x 36 inch (916mm) concrete or equal. All stairs less than two (2) risers shall have a level and a stable concrete pad a minimum 4 inch (102mm) x (width of stair) x 36 inch (916mm) beyond the bottom riser.
4. Framing can be in progress prior to pouring of concrete foundation and piers when deck is temporarily blocked up with cinder blocks.
 5. Inspection is required for concrete foundation and piers prior to Pouring; decks with full skirting, lattice or less than 30” above finish grade need to call for a framing inspection when posts, girders and joists are in place; and a **final inspection is required upon completion of project.**

Handrails

All handrails must meet the graspability requirements. BOCA 905.2.4 requires a circular cross section with an outside diameter of at least 1 1/4" and not greater than 2".

Exceptions include any other shape with a perimeter dimension of at least 4 inches but not greater than 6 1/4" with the largest cross-sectional dimension not exceeding 2 1/4"

To help understand the intent of this section of the code see the drawing below. Recommended types are shown with diagonal lines. The unacceptable ones are shown crossed out.



SOUTHERN PINE SPAN TABLES

Maximum spans given in feet and inches
inside to inside of bearings

TABLE 14 WET-SERVICE FLOOR JOISTS – 40 PSF LIVE LOAD, 10 PSF DEAD LOAD, 360 DEFLECTION

DECKS; MOISTURE CONTENT EXCEEDS 19%

Size inches	Spacing inches on center	Grade									
		Visually Graded				Machine Stress Rated (MSR)			Machine Evaluated Lumber (MEL)		
		SS	No.1	No.2	No.3	2400f - 2.0E	2250f - 1.9E	1950f - 1.7E	M23	M14	M29
2 x 6	12.0	10-9	10-7	10-4	9-4	11-2	11-0	10-7	10-9	10-7	10-7
	16.0	9-9	9-7	9-5	8-1	10-2	10-0	9-7	9-9	9-7	9-7
	19.2	9-2	9-0	8-9	7-4	9-6	9-4	9-0	9-2	9-0	9-0
	24.0	8-7	8-5	7-10	6-7	8-10	8-8	8-5	8-7	8-5	8-5
2 x 8	12.0	14-2	13-11	13-8	11-11	14-8	14-5	13-11	14-2	13-11	13-11
	16.0	12-11	12-8	12-5	10-3	13-4	13-2	12-8	12-11	12-8	12-8
	19.2	12-2	11-11	11-4	9-5	12-7	12-4	11-11	12-2	11-11	11-11
	24.0	11-3	11-1	10-2	8-5	11-8	11-6	11-1	11-3	11-1	11-1
2 x 10	12.0	18-1	17-9	17-5	14-0	18-9	18-5	17-9	18-1	17-9	17-9
	16.0	16-5	16-2	15-10	12-2	17-0	16-9	16-2	16-5	16-2	16-2
	19.2	15-6	15-1	14-8	11-1	16-0	15-9	15-2	15-6	15-2	15-2
	24.0	14-4	13-6	13-1	9-11	14-11	14-8	14-1	14-4	14-1	14-1
2 x 12	12.0	22-0	21-7	21-2	16-8	22-10	22-5	21-7	22-0	21-7	21-7
	16.0	20-0	19-8	18-10	14-6	20-9	20-4	19-8	20-0	19-8	19-8
	19.2	18-10	17-11	17-2	13-2	19-6	19-2	18-6	18-10	18-6	18-6
	24.0	17-6	16-1	15-5	11-10	18-1	17-10	17-2	17-6	17-2	17-2

These spans are intended for use in enclosed structures or where the moisture content in use does not exceed 19 percent for an extended period of time unless the table is labeled Wet-Service. Applied loads are given in psf (pounds per square foot). Deflection is limited to the span in inches divided by 360, 240, or 180 and is based on live load only. The load duration factor, C_D , is 1.0 unless shown as 1.15 or 1.25. An asterisk (*) indicates the listed span has been limited to 26'0" based on availability; check sources of supply for lumber longer than 20'. Highlighted sizes/grades are NOT commonly produced.

The Southern Pine Council does not grade or test lumber, and accordingly, does not assign design values to Southern Pine lumber. The design values contained herein are based on the 2002 SPIB Standard Grading Rules for Southern Pine Lumber, published by the Southern Pine Inspection Bureau, and modified as required by the 2001 National Design Specification® (NDS®) for Wood Construction published by the American Forest & Paper Association (AF&PA).

The primary purpose of this publication is to provide a convenient reference for joist and rafter spans for specific grades of Southern Pine lumber. The maximum spans provided herein were determined on the same basis as those in *Span Tables for Joists and Rafters*, published by AF&PA. Accordingly, the Southern Pine Council, its principals and/or members, do not warrant in any way that the design values on which the span tables for Southern Pine lumber contained herein are based are correct, and specifically disclaim any liability for injury or damage resulting from the use of such span tables.

The conditions under which lumber is used in construction may vary widely, as does the quality of the lumber and workmanship. Neither the Southern Pine Council, nor its principals and/or members, have any knowledge of the construction methods, quality of materials and workmanship used on any construction project; and accordingly, cannot and do not, warrant the performance of the lumber used in completed structures.



SOUTHERN PINE SPAN TABLES

Maximum spans given in feet and inches
inside to inside of bearings

TABLE 15 WET-SERVICE FLOOR JOISTS – 60 PSF LIVE LOAD, 10 PSF DEAD LOAD, 360 DEFLECTION

DECKS; MOISTURE CONTENT EXCEEDS 19%

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	19.2	8-0	7-11	7-5	6-3	8-4	8-2	7-11	8-0	7-11	7-11
	24.0	7-6	7-4	6-8	5-7	7-9	7-7	7-4	7-6	7-4	7-4
2 x 8	12.0	12-5	12-2	11-11	10-0	12-10	12-7	12-2	12-5	12-2	12-2
	16.0	11-3	11-1	10-6	8-8	11-8	11-6	11-1	11-3	11-1	11-1
	19.2	10-7	10-5	9-7	7-11	11-0	10-10	10-5	10-7	10-5	10-5
	24.0	9-10	9-7	8-7	7-1	10-2	10-0	9-8	9-10	9-8	9-8
2 x 10	12.0	15-10	15-6	15-2	11-10	16-5	16-1	15-6	15-10	15-6	15-6
	16.0	14-4	13-11	13-7	10-3	14-11	14-8	14-1	14-4	14-1	14-1
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	24.0	12-7	11-5	11-1	8-5	13-0	12-9	12-4	12-7	12-4	12-4
2 x 12	12.0	19-3	18-10	18-5	14-1	19-11	19-7	18-10	19-3	18-10	18-10
	16.0	17-6	16-7	15-11	12-3	18-1	17-10	17-2	17-6	17-2	17-2
	19.2	16-5	15-2	14-6	11-2	17-0	16-9	16-2	16-5	16-2	16-2
	24.0	15-3	13-7	13-0	10-0	15-10	15-7	15-0	15-3	15-0	15-0

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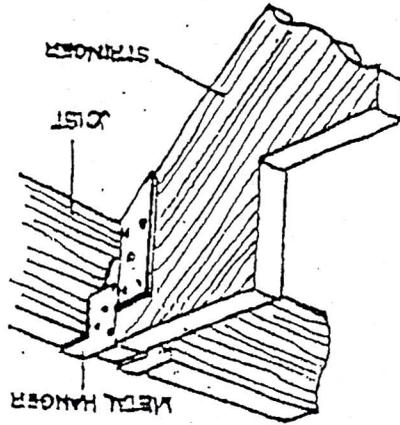
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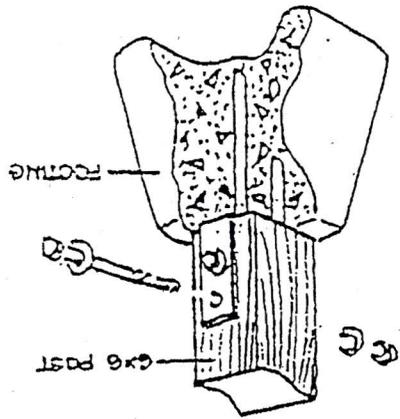
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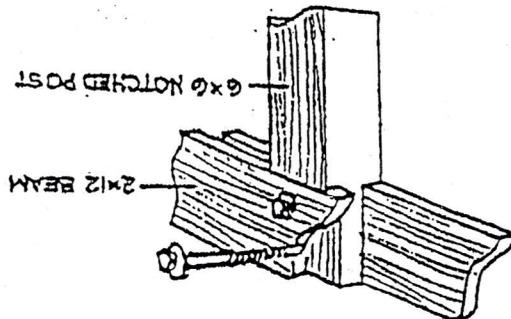
STRINGER DETAIL



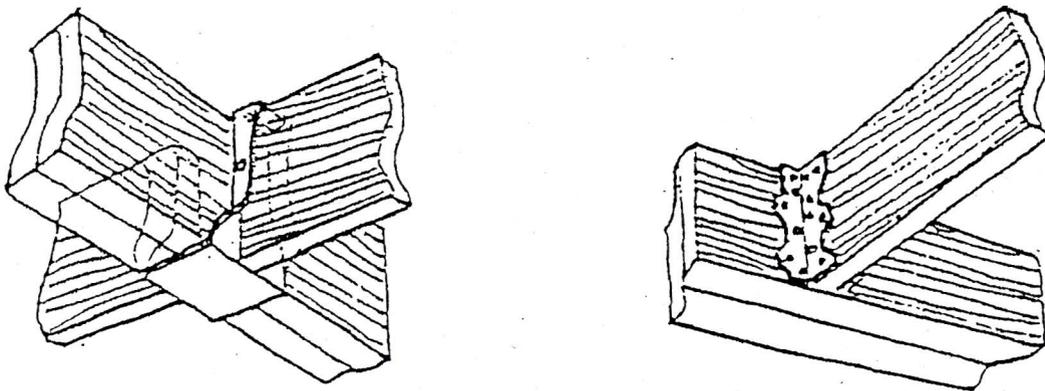
POST AND FOOTING DETAIL



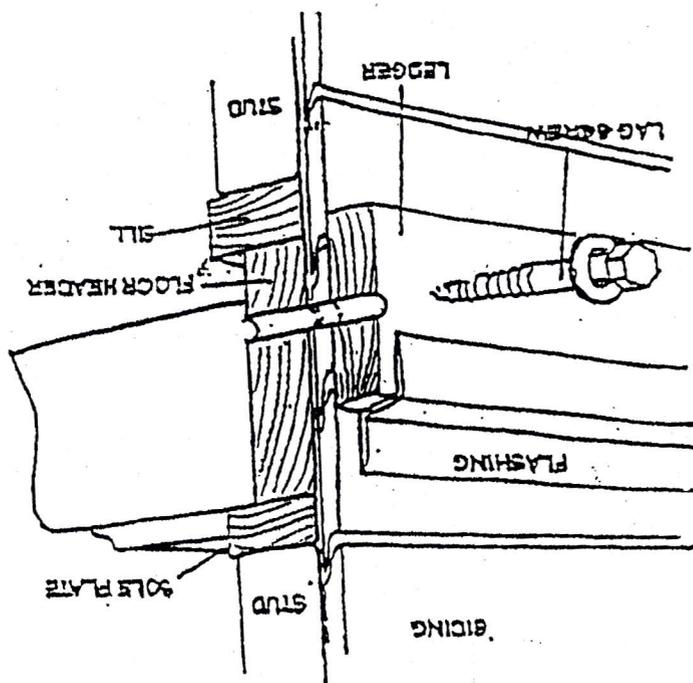
DOUBLE BEAM AND POST DETAIL



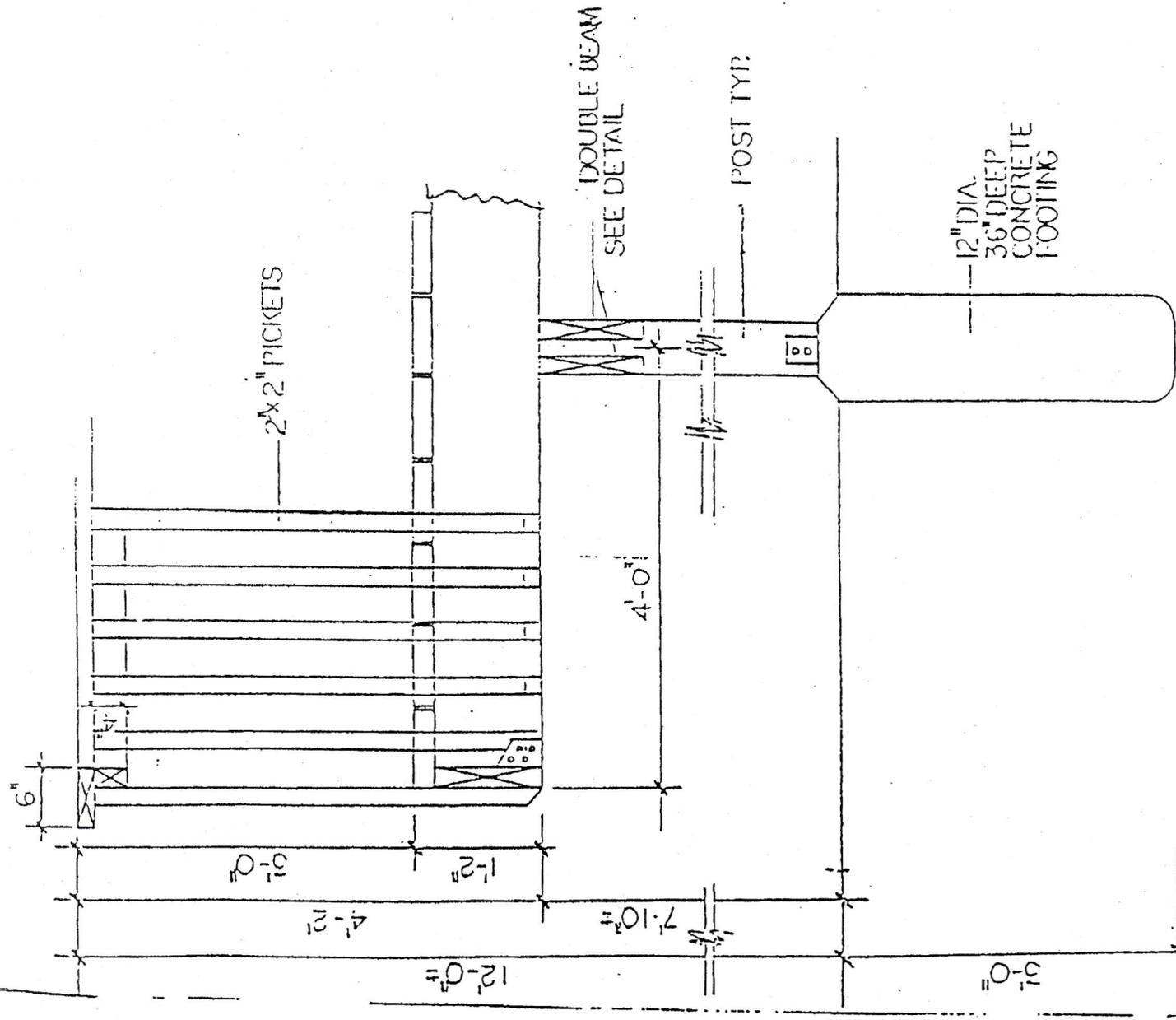
JOIST HANGER DETAIL



LEDGER DETAIL



The following details are required at each end of the type of plans

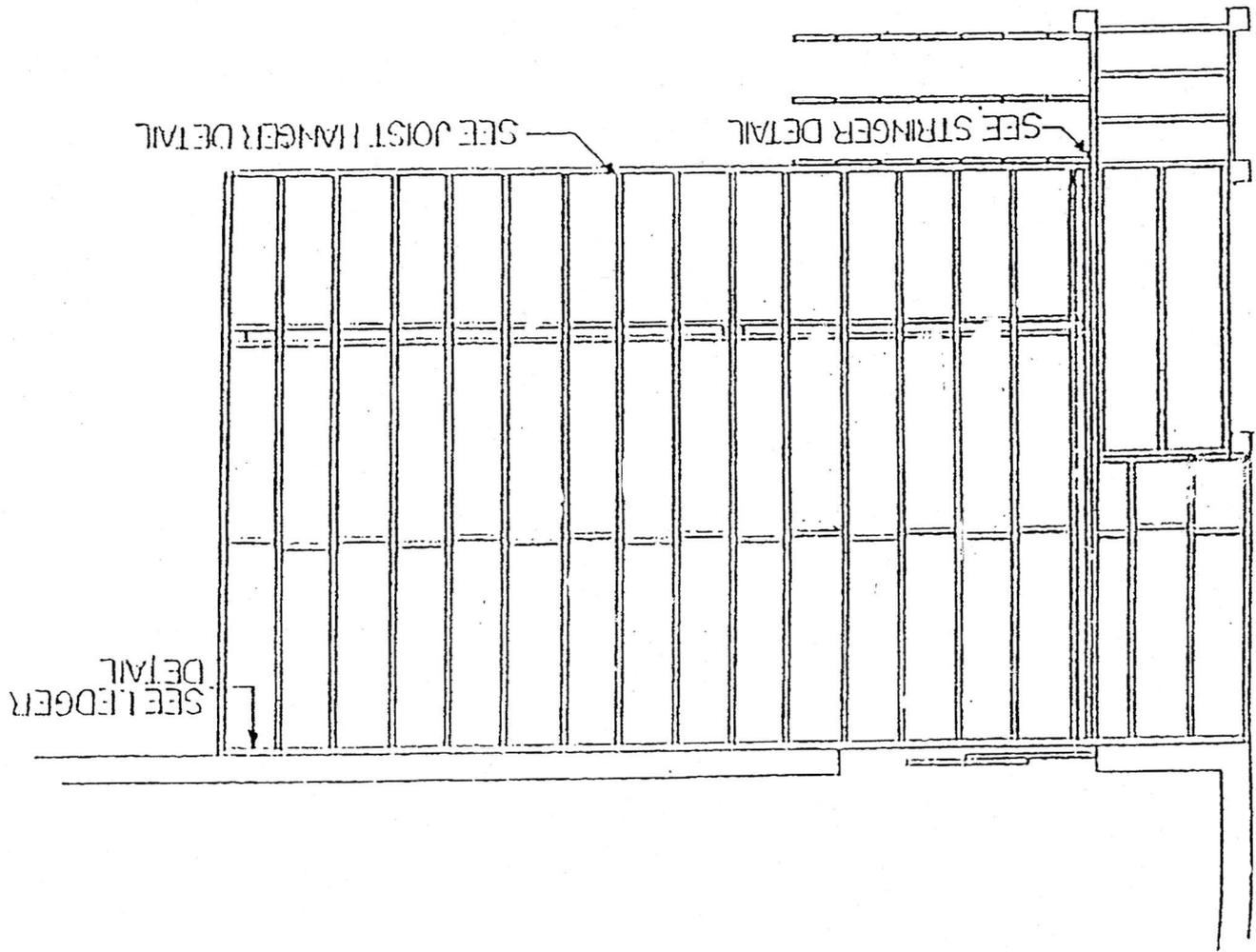


SECTION / ELEVATION

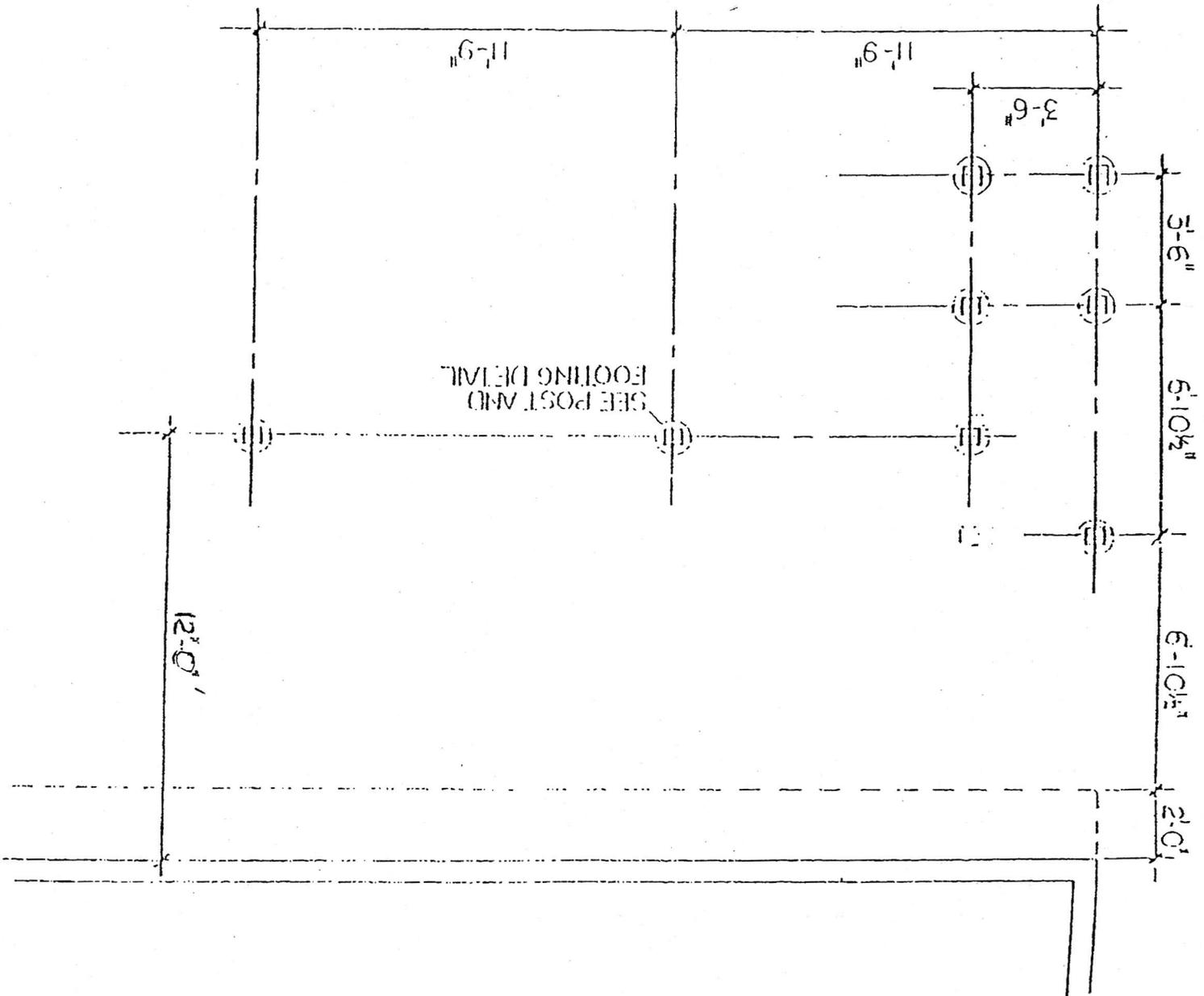
SCALE 1/4"=1'-0"

FLOOR JOIST PLAN

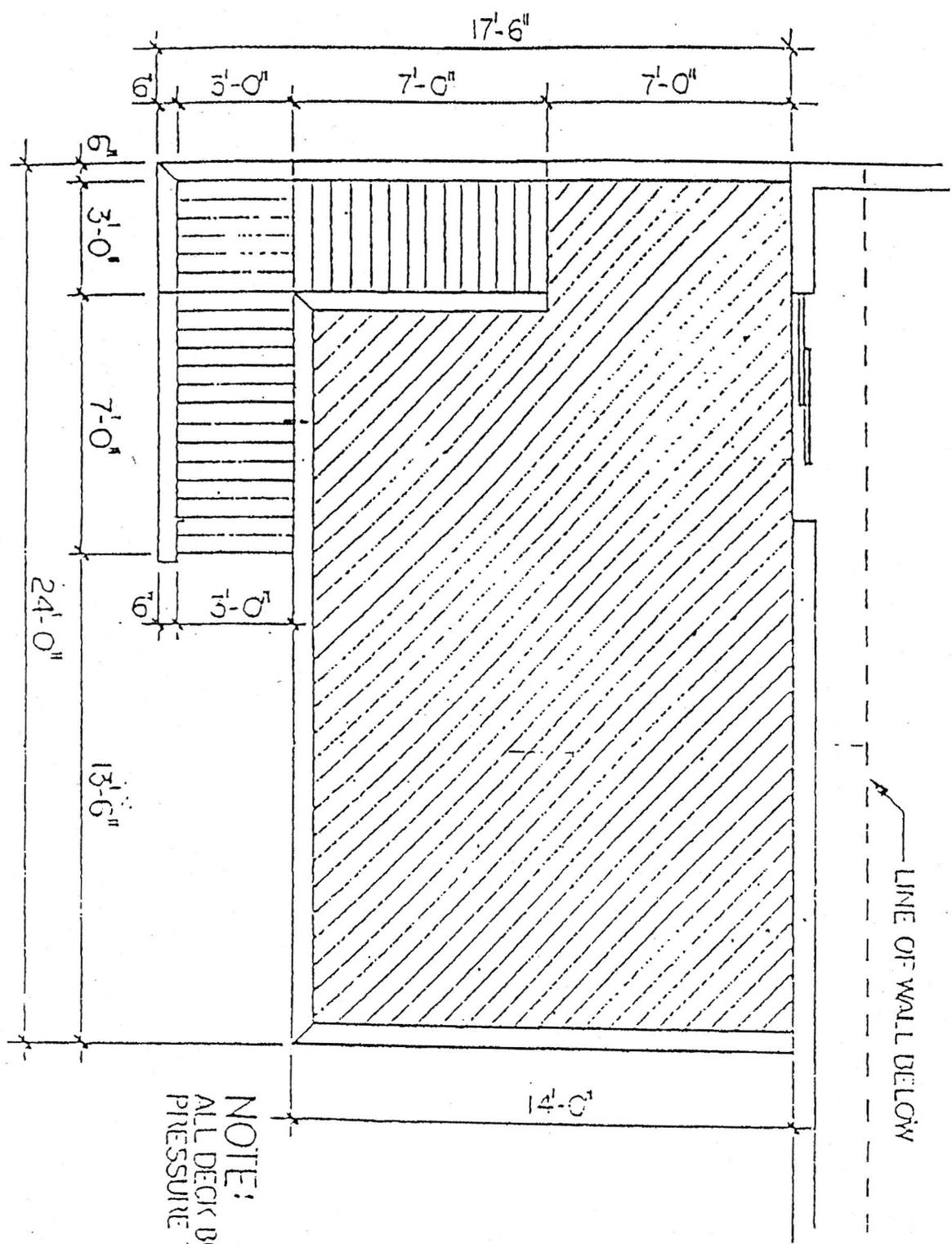
NOTE:
ALL FLOOR JOISTS AND STRINGERS .40 CCA PRESSURE TREATED LUMBER
ALL FLOOR JOISTS TO BE 16" O.C.



POST AND FOOTING PLAN
SCALE 1/4"=1'-0"



FLOOR PLAN



NOTE:
ALL DECK BOARDS TO BE NO. 1 .4
PRESSURE TREATED LUMBER