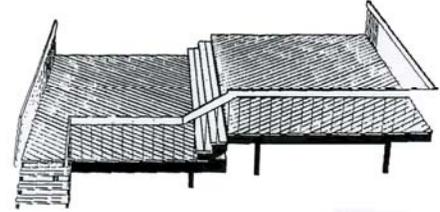




VILLAGE OF ARLINGTON HEIGHTS
DEPARTMENT OF BUILDING & HEALTH SERVICES
33 S. Arlington Heights Rd.
Arlington Heights, IL 60005
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GUIDE TO WOOD DECKS



This handout is designed to illustrate what the minimum required standards are for the design and placement of wooden decks within the Village of Arlington Heights. It is designed to assist in the application for permit by illustrating typical plans, sections, elevations and details which must accompany any permit application. Three copies of all information must be submitted with any application. Two will be returned to the applicant with their approved permit. All of the requirements for permit must be submitted with application without exception.

Contents

PLAT OF SURVEY – The proposed deck location shall be shown to scale with dimensions to all adjacent lot lines as indicated on the attached sample. The deck can be no closer than 10% of the full lot width to the side property line. It cannot be any closer than fifteen (15) feet to the rear property. It cannot be built atop any utility or drainage easement without written permission of all parties concerned. A typical plat has been included to serve as an example of what should be shown for a permit submittal.

PLAN VIEW – The deck plan is to be drawn to ¼” per foot scale. A description of the floor decking, the floor joist size, span and spacing and the beam sizes should be clearly marked. Overall and pier dimensions must be shown. The locations of any handrails and stairs are to be indicated. Any attachment to the existing structure should be shown.

SECTION – A section should be cut through the new deck. This should indicate the height above grade and the foundation pier depth, diameter and extension above grade. Handrail height and description, stair rise, run and details and anchor bolt connections should be clearly shown.

SPAN CHART AND DESIGN GUIDE – A span chart showing the required minimum joist size and spacing for various spans and a beam sizing table for various post spacing has been included. This should be utilized in your deck design.

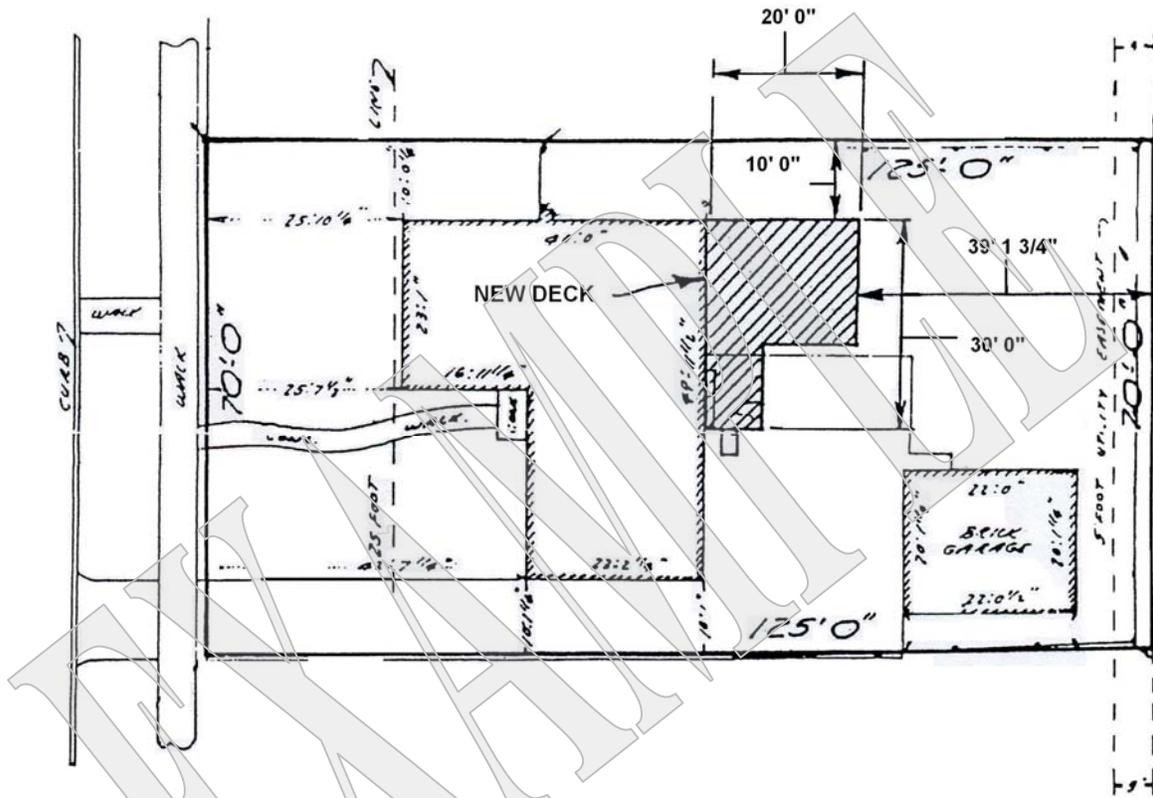
ANTON J. ADAMS
Registered Land Surveyor

PLAT OF SURVEY



DRIVE

BURKE



Scale: 1 inch = 15 FEET
Order No. 2788

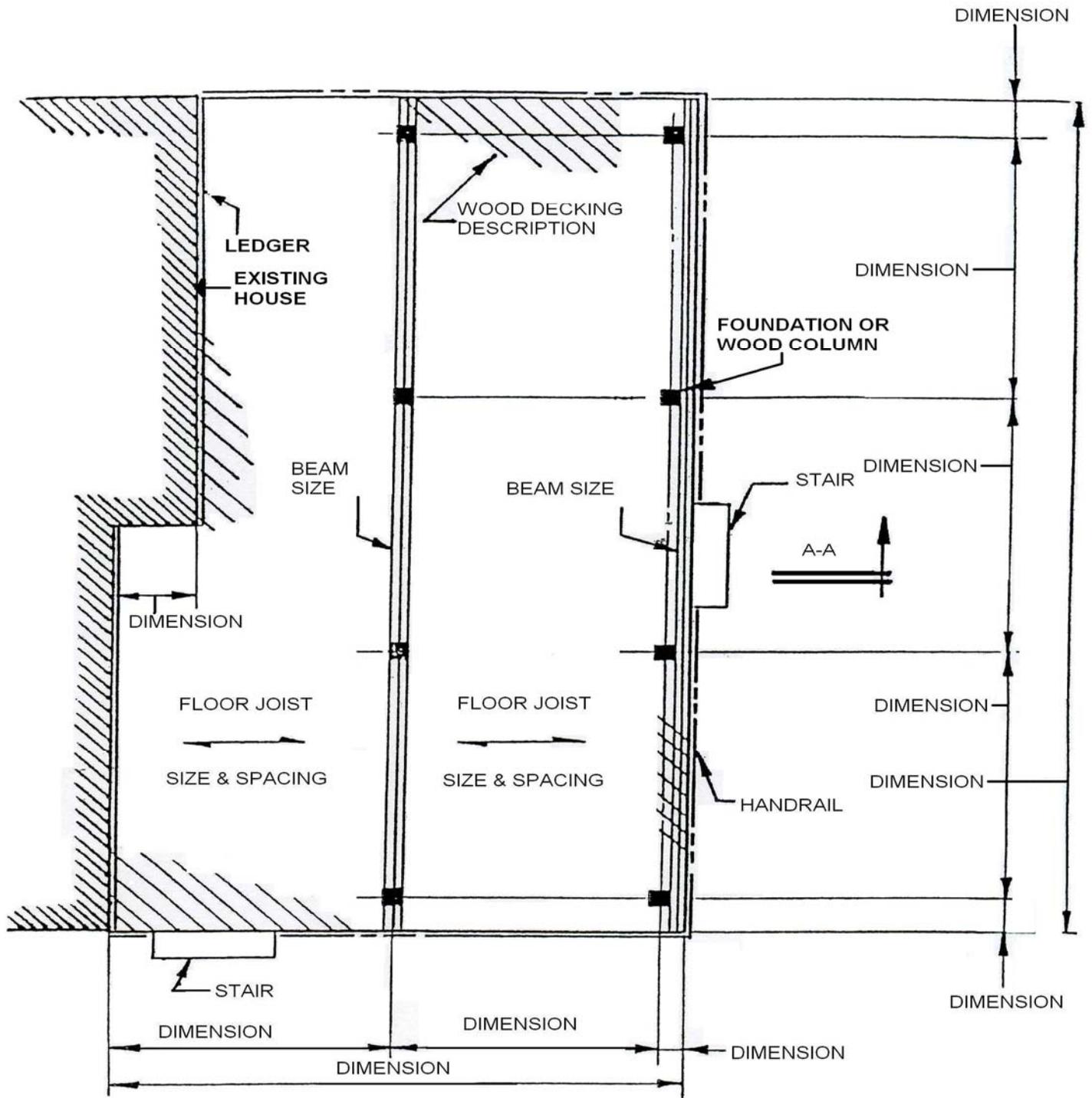
Field book 42-11-59 page 125
Ordered by: Mac DUNN & Mac DUNN

NOTICE: Compare description in this plat with your deed, abstract or certificate of title; also compare all points of reference building by same and at once report any difference. Fading lines shown only where they are so recorded in the field notes; otherwise refer to your deed, abstract, or Zoning Board.

STATE OF ILLINOIS }
COUNTY OF COOK }

I, ANTON J. ADAMS, Illinois Land Surveyor, hereby certify that I have surveyed the property described above and that the plat hereon drawn is a correct representation of said survey. All measurements corrected to the standard at 62 degrees Fahrenheit.
MOUNT PROSPECT, ILLINOIS, Oct. 10th A.D. 1925.

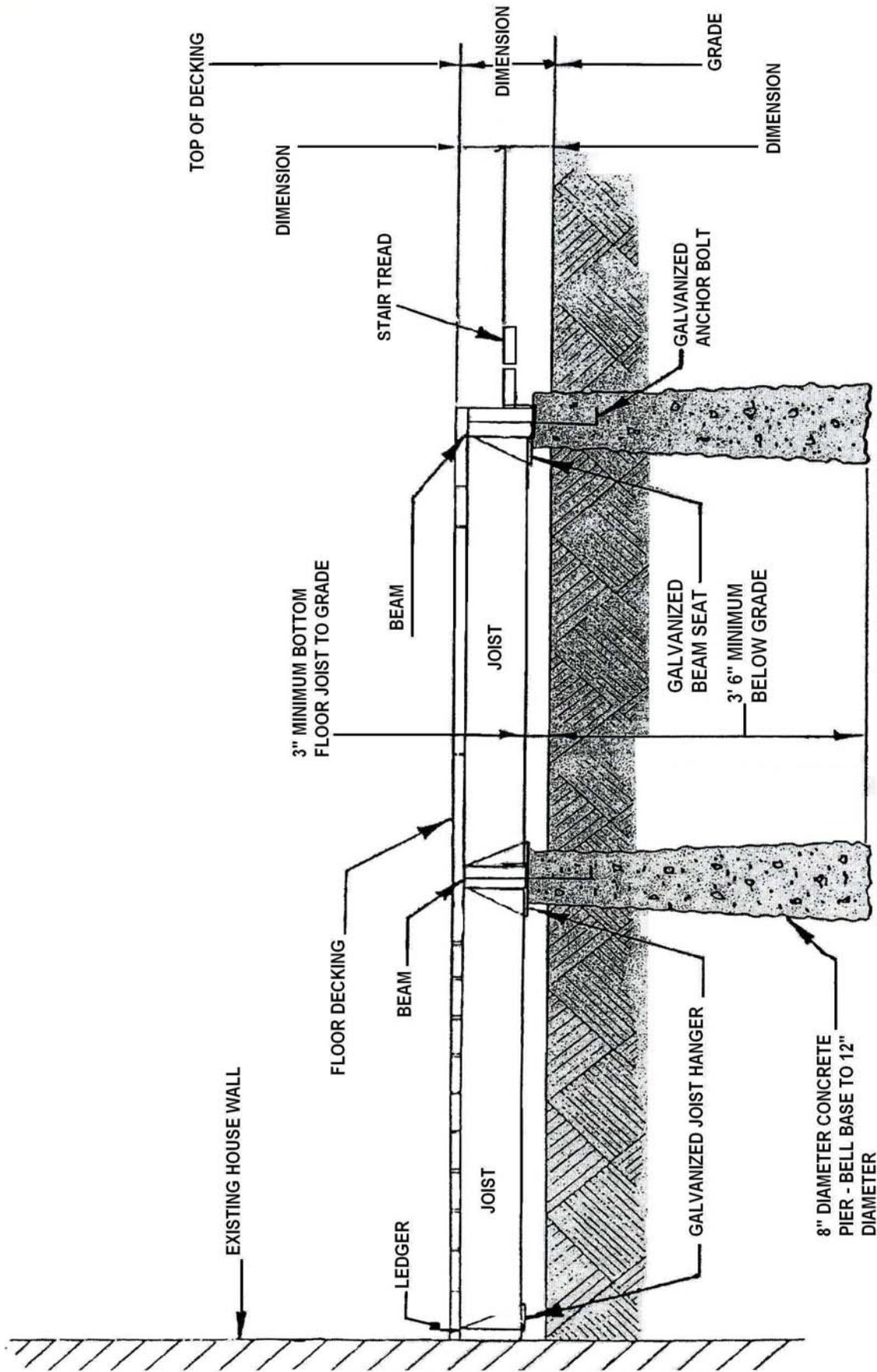
Anton J. Adams
Registered Illinois Land Surveyor 11473



DECK FLOOR PLAN

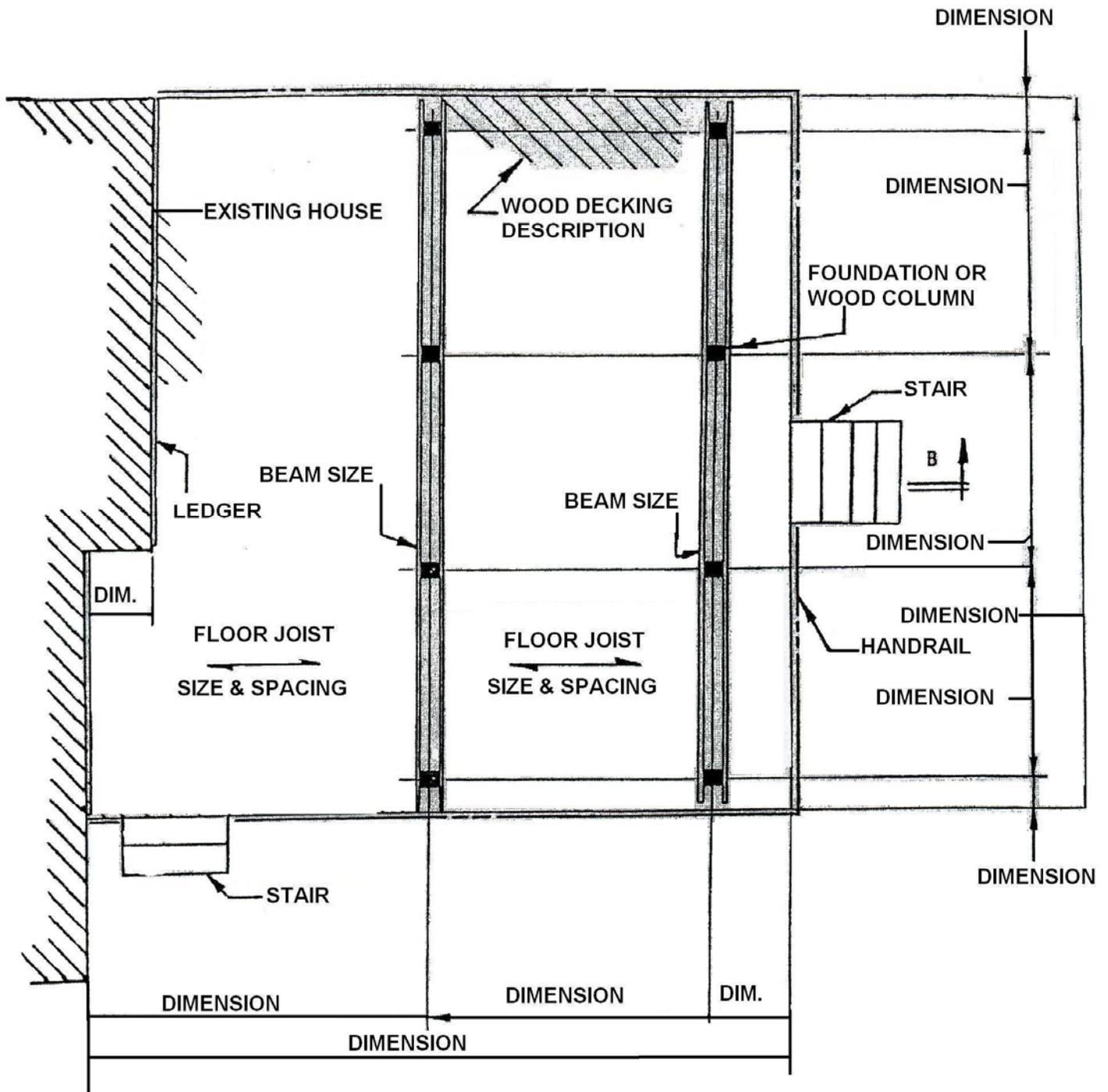
SCALE: 1/4" = 1'0"

(DECK JOISTS FRAME INTO BEAM SIDES)
40 PSF LIVE LOAD



SECTION A-A

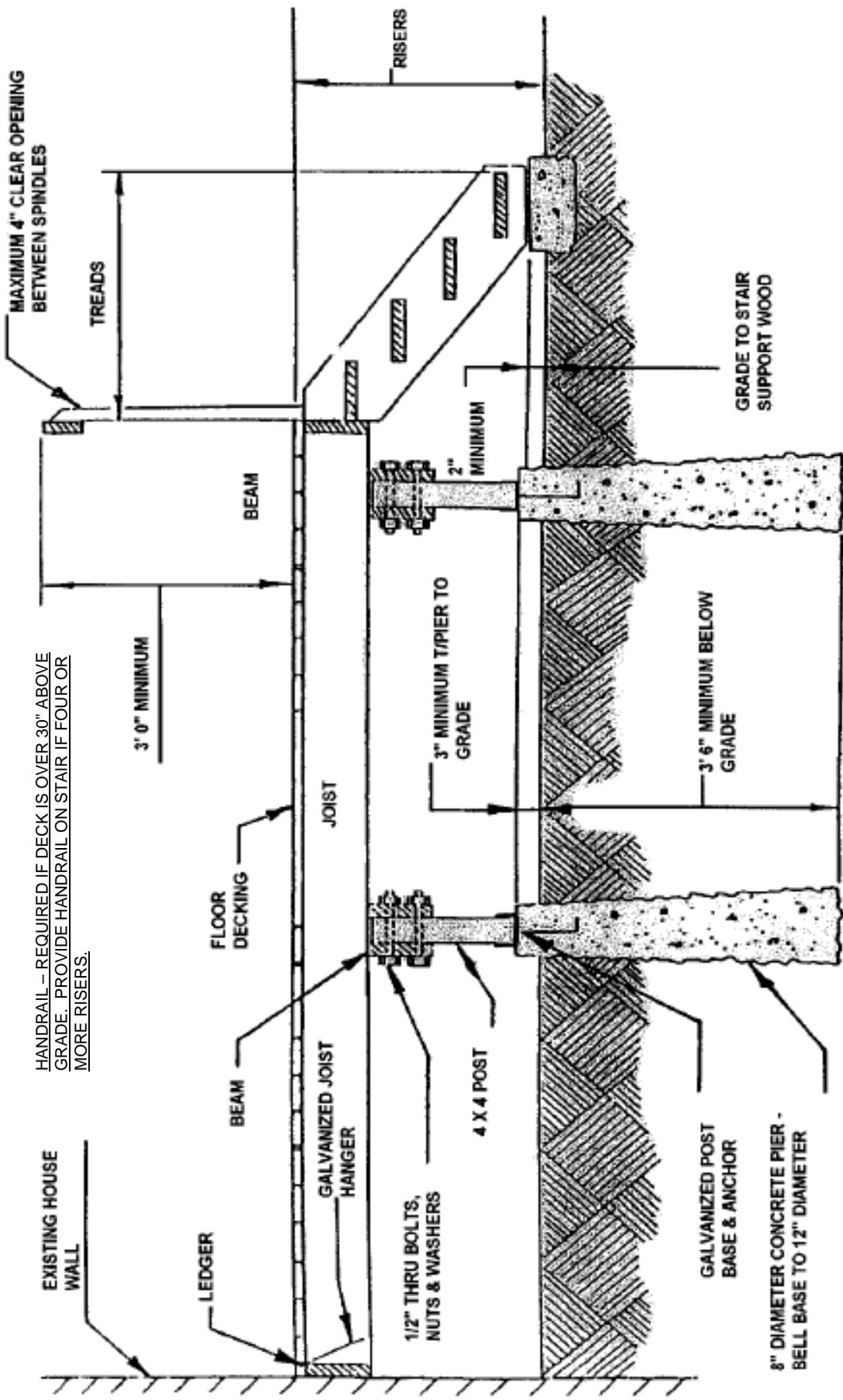
SCALE: 1/2" = 1'0"



DECK FLOOR PLAN

SCALE: 1/4" = 1'0"

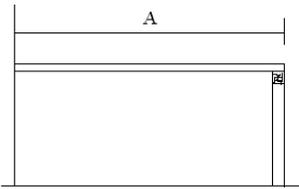
(DECK JOISTS SPAN OVER BEAMS)
40 PSF LIVE LOAD



SECTION B-B

SCALE 1/2" = 1' 0"

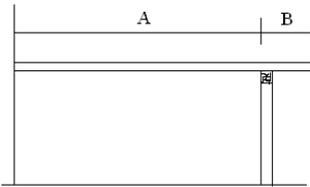
WOOD DECKS - SAMPLE CALCULATIONS FOR USING THE SPAN TABLE



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

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

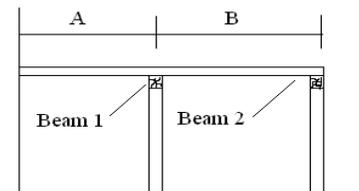
Refer to the span table. Joist size may be either 2x8's 12" o.c. or 2x10's 16" o.c. Beam size may be either 3-2x8's or 2-2x10's.



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 = $10'$

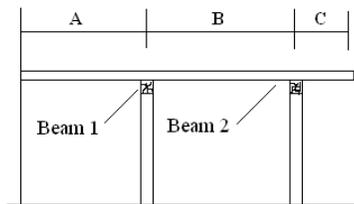
Find the joist size required by looking under 8' on the table. Joist length is indicated as 2x6's 16" o.c. or 2x8's 24" o.c. For sizing the beam, use a joist length of 10' ($8' + 2' = 10'$) and a post spacing of 10'. The table indicates that 4-2x8's or 3-2x10's are required for the beam.



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: $a=7'$, $b=8'$, $c=2'$, 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 joists length of 15' ($7' + 8' = 15'$) and post spacing of 12'. The table indicates the 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.

REMEMBER

- ▶ Existing basement windows and window wells cannot be covered by any deck. The openings must be framed out and grated. Removable covers will be permitted at the deck level covering the opening.
- ▶ Guards shall be located along open-sided deck surfaces, including stairways, ramps and landings, that are located more than 30" above grade [R312.1]. This includes a change in elevation between any deck levels on multi-level decks.
- ▶ All stairs shall be a minimum of 3'0" wide [R311.7.1].
- ▶ All stairs with four or more risers shall have handrails [R311.7.7]. Handrail height, measured vertically from the sloped plane adjoining the tread nosing shall be not less than 34" and not more than 38" [R311.7.7.1].
- ▶ Stairways shall be designed and constructed in accordance with R311.7.1 through R311.7.9.2 [R311.7 as amended]. All stair risers shall be of equal heights. The maximum riser height is to be 7¾" [R311.7.4.1]. The minimum tread depth shall be 10" [R311.7.4.2].
- ▶ Wood support posts are not permitted in below grade applications [R407.1 as amended] or to be encased in concrete.
- ▶ Exterior stairways of wood shall be supported at least 2" above the finish grade on a concrete slab or piers. The maximum length of unsupported wood treads shall be limited to 3 feet. For stairways greater than 3' in width, additional stringer supports shall be provided such that no span exceeds 3 feet [R311.7 as amended].
- ▶ When joists frame into beams and hangers are used for support, the support beams shall bear directly atop the posts and not be framed in to the sides. Galvanized metal post cap connectors are to be utilized at all joints.
- ▶ A lift-off access panel shall be installed in front of all underground electric troughs. It shall be at least 14½" wide and 18" in depth.
- ▶ Deck framing must be supported on concrete pier-type foundations. Utilizing a patio/concrete slab for support is not permitted. Cast in place piers shall be allowed in the construction of exterior decks the elevation of which is not more than 5 feet above grade. The minimum diameter shall be 8" with the bottom belled to a diameter of 12" [R403.1.1 as amended].
- ▶ Solid blocking is to be installed at a maximum of 8'-0" on center and behind all railing support post locations.
- ▶ All materials used shall be of approved wood of natural resistance to decay or approved treated wood [R317.1 as amended].
- ▶ All hardware (joist hangers, cast-in-place post anchors, lag screws, nails, etc.) shall be hot-dipped galvanized or stainless steel.
- ▶ 24 hours notice is required for all inspections.

APPENDIX

Refer to “*Prescriptive Residential Wood Deck Construction Guide – DCA No. 6*”, updated to the 2009 International Residential Code (IRC), and prepared by American Forest & Paper Association, Inc., © 2010 (<http://www.awc.org/Publications/DCA/DCA6/DCA6-09.pdf>).

It remains the permit applicant’s responsibility to comply with the requirements of the Village of Arlington Heights’ Building Regulations and Standards for One- and Two-Family Dwellings and Modification by Amendment and Deletion of Various Sections of the International Residential Code per Article III of Chapter 23 of the Municipal Code.

SAFETY GLAZING REQUIREMENTS

Section R308.4 of the 2009 IRC states that safety glazing in window glass is required when the existing house wall acts as a barrier to adjacent stairs, landings, and areas at the top and bottom of stairs. If a window or portion thereof falls within the area shown in Figure A1, glass panes within that area should be safety glazed. Safety glazing should reduce injury due to accidental impact when ascending or descending stairs. Application of safety glazing film to glass that was not originally treated is acceptable to meet this requirement.

Exceptions to this requirement include:

- ▶ When a protective bar is installed on the accessible side(s) of the glazing 36” ± 2” above the deck surface. The bar shall be capable of withstanding a horizontal load of 50 plf without contacting the glass and be a minimum of 1½” in height.
- ▶ The side of a stairway, landing, or ramp has a guardrail or handrail, including balusters or in-fill panels, complying with the provisions of Sections R311.7.6 and R312 and the pane of the glass is more than 18” from the railing.
- ▶ When a solid wall or panel extends from the plane of the adjacent walking surface to 34” – 36” above the floor and the construction at the top of that wall or panel is capable of withstanding the same horizontal load as the protective bar.

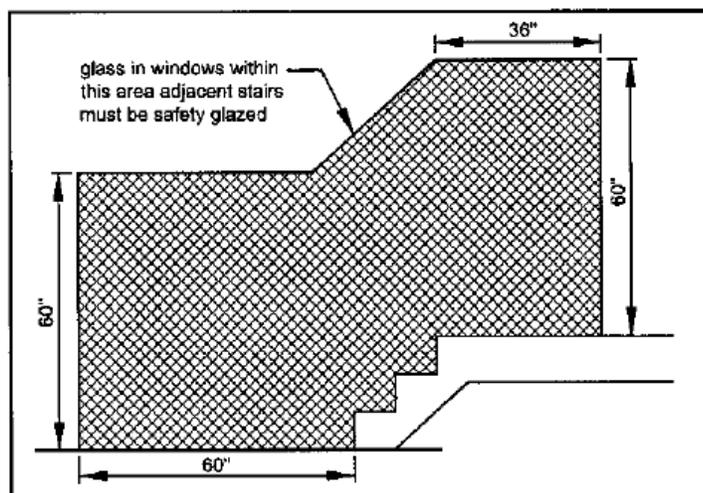


Figure A1. Safety glazing requirements.

JOIST LENGTH

POST SPACING

		6'	7'	8'	9'	10'	11'	12'	13'	14'	15'	16'
4'	JOIST SIZE	2x6 24" OC	2x6 16"OC 2x8 24" OC	2x6 16" OC 2x8 24" OC	2x8 16"OC 2x10 24"OC	2x8 16" OC 2x10 24"OC	2x8 16" OC 2x10 24"OC	2x8 12"OC 2x10 16" OC	2x10 16"OC 2x12 24"OC	2x10 16" OC	2x10 12" OC 2x12 16" OC	2x12 16"OC
	BEAM SIZE	1-2x6	1-2x6 1-2x8	1-2x6 1-2x8	1-2x8 1-2x10	1-2x8 1-2x10	1-2x8 1-2x10	1-2x8 1-2x10	1-2x8 1-2x10	1-2x10 1-2x12	1-2x10	1-2x10 1-2x12
5'	JOIST SIZE	2x6 24"OC	2x6 16"OC 2x8 24"OC	2x6 16"OC 2x8 24"OC	2x8 16"OC 2x10 24"OC	2x8 16"OC 2x10 24"OC	2x8 16" OC 2x10 24"OC	2x8 12"OC 2x10 16"OC	2x10 16"OC 2x12 24"OC	2x10 16"OC	2x10 12"OC 2x12 16"OC	2x12 16"OC
	BEAM SIZE	1-2x6	2-2x6 1-2x8	2-2x6 1-2x8	1-2x8 1-2x10	1-2x8 1-2x10	1-2x8 1-2x10	1-2x8 1-2x10	1-2x8 1-2x10	1-2x10 1-2x12	1-2x10	1-2x10 1-2x12
6'	JOIST SIZE	2x6 24"OC	2x6 16"OC 2x8 24"OC	2x6 16"OC 2x8 24"OC	2x8 16"OC 2x10 24"OC	2x8 16"OC 2x10 24"OC	2x8 16"OC 2x10 24"OC	2x8 12"OC 2x10 16"OC	2x10 16"OC 2x12 24"OC	2x10 16"OC	2x10 12"OC 2x12 16"OC	2x12 16"OC
	BEAM SIZE	2-2x6	2-2x6 1-2x8	2-2x6 2-2x8	2-2x8 1-2x10	2-2x8 1-2x10	2-2x8 1-2x10	2-2x8 1-2x10	2-2x8 1-2x10	2-2x10 1-2x12	2-2x10 1-2x12	2-2x10 1-2x12
7'	JOIST SIZE	2x6 24"OC	2x6 16"OC 2x8 24"OC	2x6 16"OC 2x8 24"OC	2x8 16"OC 2x10 24"OC	2x8 16"OC 2x10 24"OC	2x8 16"OC 2x10 24"OC	2x8 12"OC 2x10 16"OC	2x10 16"OC 2x12 24"OC	2x10 16"OC	2x10 12"OC 2x12 16"OC	2x12 16"OC
	BEAM SIZE	2-2x6	3-2x6 2-2x8	3-2x6 2-2x8	2-2x8 2-2x10	2-2x8 2-2x10	2-2x8 2-2x10	3-2x8 2-2x10	2-2x10 1-2x12	2-2x10 2-2x12	2-2x10 2-2x12	2-2x10 2-2x12
8'	JOIST SIZE	2x6 24" OC	2x6 16"OC 2x8 24"OC	2x6 16"OC 2x8 24"OC	2x8 16"OC 2x10 24"OC	2x8 16"OC 2x10 24"OC	2x8 16"OC 2x10 24"OC	2x8 12"OC 2x10 16"OC	2x10 16"OC 2x12 24"OC	2x10 16"OC	2x10 12"OC 2x12 16"OC	2x12 16"OC
	BEAM SIZE	3-2x6 2-2x8	3-2x6 2-2x8	3-2x6 2-2x8	3-2x8 2-2x10	3-2x8 2-2x10	3-2x8 2-2x10	3-2x8 2-2x10	2-2x10 2-2x12	3-2x10 2-2x12	3-2x10 2-2x12	3-2x10 2-2x12
9'	JOIST SIZE	2x6 24"OC	2x6 16"OC 2x8 24"OC	2x6 16"OC 2x8 24"OC	2x8 16"OC 2x10 24"OC	2x8 16"OC 2x10 24"OC	2x8 16"OC 2x10 24"OC	2x8 12"OC 2x10 16"OC	2x10 16"OC 2x12 24"OC	2x10 16"OC	2x10 12"OC 2x12 16"OC	2x12 16"OC
	BEAM SIZE	3-2x6 2-2x8	4-2x6 3-2x8	4-2x6 3-2x8	3-2x8 2-2x10	3-2x8 2-2x10	3-2x8 2-2x10	3-2x8 2-2x10	4-2x8 3-2x10	3-2x10 2-2x12	3-2x10 2-2x12	3-2x10 2-2x12
10'	JOIST SIZE	2x6 24"OC	2x6 16"OC 2x8 24"OC	2x6 16"OC 2x8 24"OC	2x8 16"OC 2x10 24"OC	2x8 16"OC 2x10 24"OC	2x8 16"OC 2x10 24"OC	2x8 12"OC 2x10 16"OC	2x10 16"OC 2x12 24"OC	2x10 16"OC	2x10 12"OC 2x12 16"OC	2x12 16"OC
	BEAM SIZE	4-2x6 3-2x8	3-2x8 2-2x10	3-2x8 2-2x10	3-2x8 3-2x10	4-2x8 3-2x10	4-2x8 3-2x10	4-2x8 3-2x10	3-2x10 2-2x12	3-2x10 3-2x12	4-2x10 3-2x12	4-2x10 3-2x12
11'	JOIST SIZE	2x6 24"OC	2x6 16"OC 2x8 24"OC	2x6 16"OC 2x8 24"OC	2x8 16"OC 2x10 24"OC	2x8 16"OC 2x10 24"OC	2x8 16"OC 2x10 24"OC	2x8 12"OC 2x10 16"OC	2x10 16"OC 2x12 24"OC	2x10 16"OC	2x10 12"OC 2x12 16"OC	2x12 16"OC
	BEAM SIZE	3-2x8 2-2x10	3-2x8 2-2x10	4-2x8 3-2x10	4-2x8 3-2x10	3-2x10 2-2x12	3-2x10 3-2x12	3-2x10 3-2x12	4-2x10 3-2x12	4-2x10 3-2x12	4-2x10 3-2x12	4-2x10 3-2x12
12'	JOIST SIZE	2x6 24"OC	2x6 16"OC 2x8 24"OC	2x6 16"OC 2x8 24"OC	2x8 16"OC 2x10 24"OC	2x8 16"OC 2x10 24"OC	2x8 16"OC 2x10 24"OC	2x8 12"OC 2x10 16"OC	2x10 16"OC 2x12 24"OC	2x10 16"OC	2x10 12"OC 2x12 16"OC	2x12 16"OC
	BEAM SIZE	3-2x8 2-2x10	4-2x8 3-2x10	4-2x8 3-2x10	3-2x10 2-2x12	3-2x10 3-2x12	4-2x10 3-2x12	4-2x10 3-2x12	4-2x10 3-2x12	3-2x12	3-2x12	3-2x12
13'	JOIST SIZE	2x6 24"OC	2x6 16"OC 2x8 24"OC	2x6 16"OC 2x8 24"OC	2x8 16"OC 2x10 24"OC	2x8 16"OC 2x10 24"OC	2x8 16"OC 2x10 24"OC	2x8 12"OC 2x10 16"OC	2x10 16"OC 2x12 24"OC	2x10 16"OC	2x10 12"OC 2x12 16"OC	2x12 16"OC
	BEAM SIZE	3-2x8 3-2x10	4-2x8 3-2x10	3-2x10 3-2x12	4-2x10 3-2x12	4-2x10 3-2x12	4-2x10 3-2x12	3-2x10	3-2x12	4-2x12	4-2x12	4-2x12
14'	JOIST SIZE	2x6 24"OC	2x6 16"OC 2x8 24"OC	2x6 16"OC 2x8 24"OC	2x8 16"OC 2x10 24"OC	2x8 16"OC 2x10 24"OC	2x8 16"OC 2x10 24"OC	2x8 12"OC 2x10 16"OC	2x10 16"OC 2x12 24"OC	2x10 16"OC	2x10 12"OC 2x12 16"OC	2x12 16"OC
	BEAM SIZE	4-2x8 3-2x10	3-2x10 3-2x12	4-2x10 3-2x12	4-2x10 3-2x12	4-2x10 3-2x12	3-2x12	4-2x12	4-2x12	4-2x12	ENG. BEAM REQUIRED	ENG. BEAM REQUIRED

(This table is based on the use of Ponderosa Pine No. 2 or better (treated for weather and/or ground exposure).)