RedBUILT™

Sprinkler System Installation Guide



For RedBuilt™ Open-Web Trusses and Red-I™ Joists

- Multiple Details for Supporting Sprinkler Pipe
- Options to Add Carrying Capacity
- For Use with RedBuilt™ Products **Only**



TABLE OF CONTENTS

Installation Guidelines	2
Fasteners	3
Open-Web Trusses	
Descriptions	3
Sprinkler Details	4–6
Seismic Details	6
Red-I™ Joists	
Descriptions	7
Sprinkler Details	7–9
Seismic Details	10
Allowable Holes	11

Welcome to RedBuilt

RedBuilt is an exciting business offering building solutions for a broad range of commercial and custom residential applications. In addition to pioneering unique manufacturing technologies, RedBuilt provides world-class service and technical support for architects, specifiers and builders.

RedBuilt gives you access to reliable, innovative products, including RedBuilt™ open-web trusses, Red-I™ joists, and RedLam™ LVL beams and headers. And we keep things simple: You'll work with just one service-oriented supplier to get all these products—plus the support you need to build smarter.

RedBuilt: A family of brand-name building products... a source for innovative ideas and solutions... a supplier that's simpler to do business with.

SPRINKLER SYSTEM INSTALLATION GUIDELINES

Guide Assumptions

- The details in this guide are intended for use with RedBuilt™ products only.
- The connections shown in the details will support the sprinkler pipes indicated or the loads shown, provided that the required loads have been included in the original design of the RedBuilt™ open-web truss or Red-I™ joist system.
- The hangers and installation methods shown in this guide are in accordance with the following design specifications:
  - NFPA 13 requires that hangers shall be designed to support five times the weight of the water-filled pipe plus 250 lbs at each point of piping support. Standard ferrous hardware referred to in NFPA 13/13R, such as U-hooks, eye rods, and steel trapezes, or accepted proprietary hardware, are the responsibility of others.
  - NFPA 13 requires that sprinkler piping shall be substantially supported from the building structure, which must support the weight of the water-filled pipe plus a minimum 250 lb temporary load applied at the point of hanging. Fasteners, such as lag screws and machine bolts, and structural wood hanger blocks are designed to support the weight of the water-filled pipe plus a temporary 250 lb load using values from the 2012 National Design Specification® For Wood Construction (NDS®).
- Assumed loads for water-filled steel pipes **at 15' on-center spacing** are as follows:

Pipe Diameter	2"	2½"	3"	3½"	4"	5"	6"
Load (lbs)	77	118	162	202	246	352	475

- Assumed loads for water-filled CPVC pipes are as follows:

Pipe Diameter	1"	2"	3"
Load (lbs)	4	18	48
Support O.C. Spacing	6'	8'	10'

- Earthquake bracing details (EQ1–EQ6 on pages 6 and 10) require that the system designer specify the frequency of the bracing.
- All wood hanger blocks are to be minimum No. 2 grade spruce-pine-fir or equivalent, unless otherwise noted.
- For options beyond the scope of this publication, contact your RedBuilt representative.

ABOUT THIS GUIDE

This guide offers technical information and details for installing sprinkler systems in RedBuilt™ open-web trusses and Red-I™ joists. The information in this guide is intended for use with RedBuilt™ products ONLY.

Cutting or drilling oversized holes in the webs or flanges of RedBuilt™ open-web trusses and Red-I™ joists can weaken the structural integrity of the member to the point where it will need to be repaired or replaced, sometimes at great expense. Proper installation of the allowed fasteners is equally important to the structural integrity of the open-web truss and Red-I™ joist.

Allowable Holes and Fasteners

The tables at right show the largest fastener and lead hole sizes allowed in RedBuilt™ open-web trusses and Red-I™ joists. All holes and attachments made to the underside of a chord or flange shall be centered. See detail 1 on page 4 and detail 28 on page 9.

Self-Tapping Screws
Pre-drilled holes shall be used for screw systems with self-tapping or thread-cutting properties.

Drive Screws
Drive screws are not allowed in RedBuilt™ open-web trusses or Red-I™ joists.

Lag screws
Lag screws shall be installed in prebored lead holes with a wrench. **Do not** drive lag screws with a hammer.

Follow tables on this page for proper choice and installation of fasteners.
Follow tables on page 11 when cutting holes through Red-I™ joist webs.

Lead Hole Sizes

Fastener Type	Fastener Size	Approximate Lead Hole Size
Nails	0.162" diameter and larger	75% of nail diameter
Wood Screws	Larger than #8	70% of root diameter (⅛" for #18)
Machine Bolts	All	Bolt diameter + 1/32" to 1/16"
Lag Screws	¼" diameter	⅛"(1)
	⅜" diameter	3/16"(1)
	½" diameter	¼"(1)
	⅝" diameter	5/16"(1)

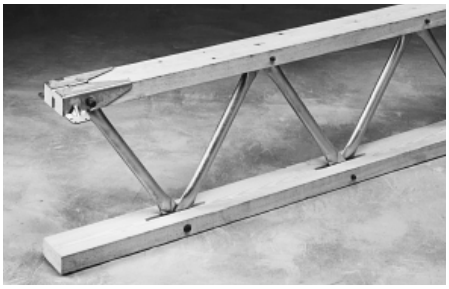
(1) Lead hole size applies to the threaded part of the lag screw. For the unthreaded length of the screw, the lead hole is equal to the shank diameter.

Largest Hole and Fastener

RedBuilt™ Product	Hole Size		Fastener Size	
	Side	Top or Bottom	Side	Top or Bottom
Red-L™, Red-W™ truss	Not allowed	¼"(1)	16d (0.162" x 3½") nail	⅜" lag(2)
Red-S™ truss	Not allowed	3/16"	16d (0.162" x 3½") nail	⅜" lag(2)
Red-M™, Red-H™ truss	¼"(1)	¼"(1)	16d (0.162" x 3½") nail, ¼" lag(2), ¼" bolt(2), #18 screw(2)	16d (0.162" x 3½") nail, ⅜" lag(2), 7/16" bolt(2)(3)
Red-I™ Joist Flange	Not allowed	3/16"	10d (0.148" x 3") nail	¼" lag(2)(4)
Red-I™ Joist Web	See table on page 11	–	–	–

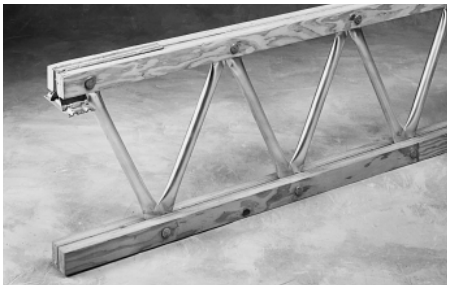
(1) May be increased to ½" if the location is a minimum of 6" away from a truss pin or any knot larger than ¼" diameter.
(2) Requires prebored lead hole—see **Lead Hole Sizes** table.
(3) May be limited by applicable hole size.
(4) ⅜" lag allowed when joist flange width is greater than 1¾".
- Only one hole may be drilled in any cross section of any chord or flange.

OPEN-WEB TRUSS DESCRIPTIONS



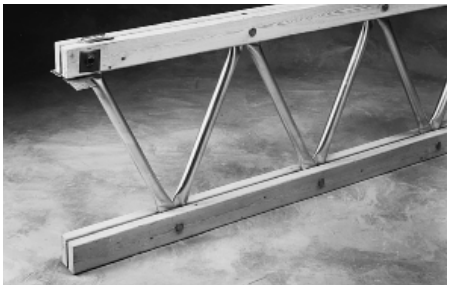
Red-L™ and Red-W™ Trusses

Top and Bottom Chords:
- Red-L™ trusses: 1½" x 3½" MSR lumber
- Red-W™ trusses: 1½" x 4¾" MSR lumber



Red-S™ Trusses

Top and Bottom Chords:
- Double 1½" x 2.3" RedLam™ LVL



Red-M™ and Red-H™ Trusses

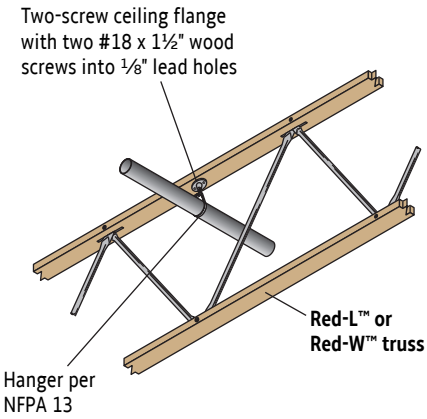
Top and Bottom Chords:
- Red-M™ trusses: Double 1½" x 3½" MSR lumber
- Red-H™ trusses: Double 1½" x 5½" MSR lumber

Preservative-treated open-web trusses are not available.

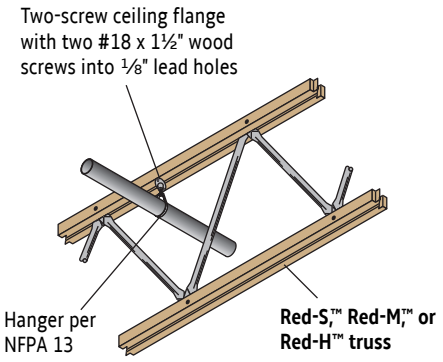
OPEN-WEB TRUSS SPRINKLER DETAILS

ALL REDBUILT™ OPEN-WEB TRUSSES

1 Ceiling Flange

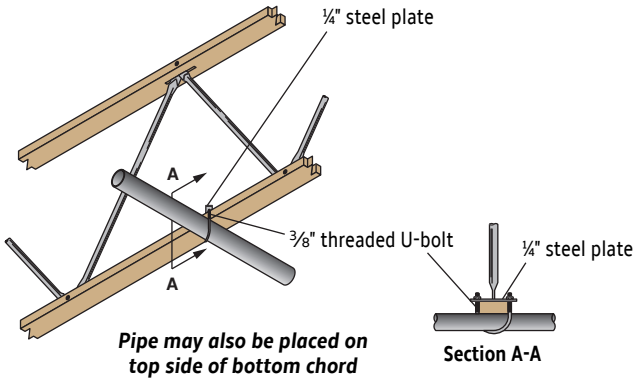


- For Red-L™ and Red-W™ trusses, screws must line up along the center of the chord, ±½" tolerance.
- For all double chord trusses, one screw must be positioned in the center of each chord, ±¼" tolerance.
- Flange may be attached to the top or bottom chord.
- If installing through a gypsum board ceiling, increase the fastener length by the gypsum board thickness.



Maximum pipe size: 2"

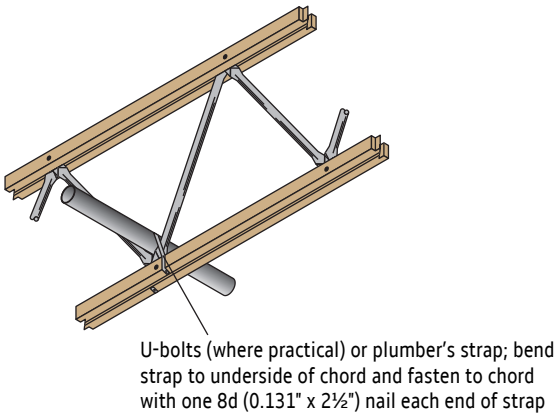
2 U-Bolt with Steel Plate



Pipe may also be placed on top side of bottom chord

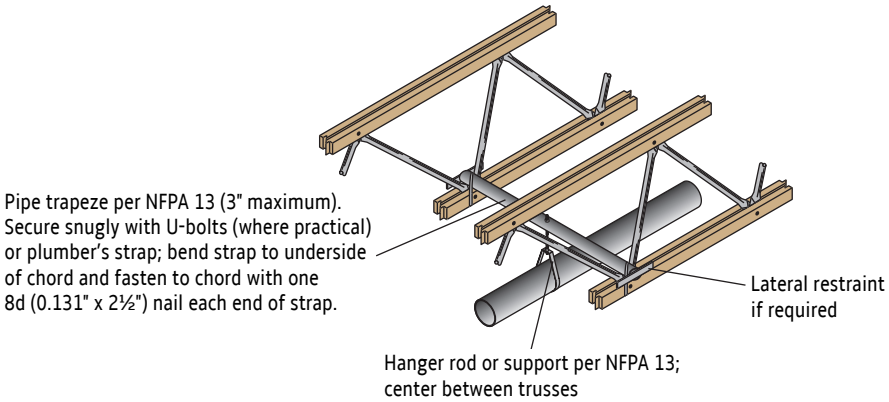
Pipe size at maximum hanger spacing: 2"

3 Strap or Inverted U-Bolt



Pipe size at maximum hanger spacing: 3" (may be increased with special truss design)

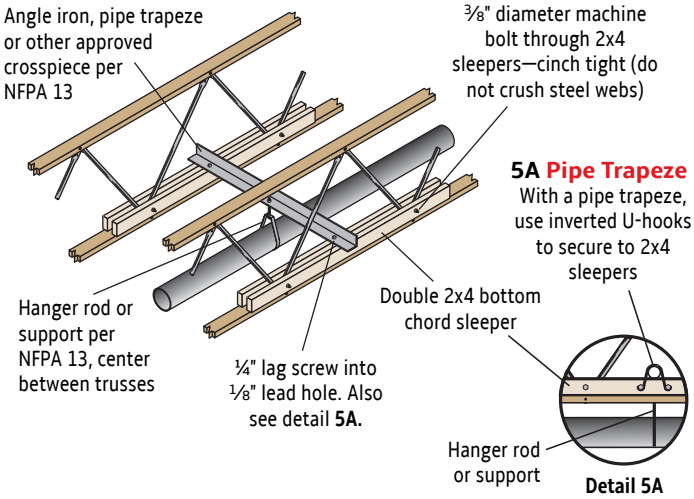
4 Pipe Trapeze with Hanger Rod



Pipe size at maximum hanger spacing: 4" (may be increased to 6" with special truss design)

RED-L,™ RED-W,™ AND RED-S™ TRUSSES

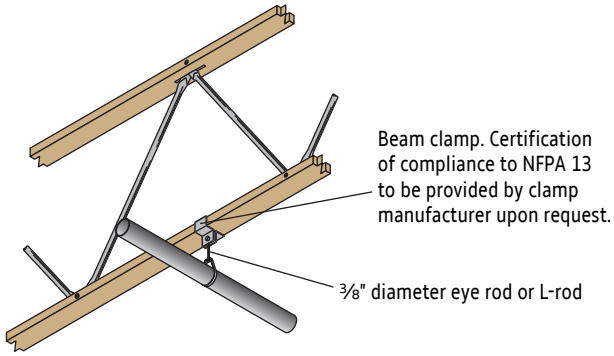
5 Trapeze on Sleepers



Pipe size at maximum hanger spacing: 6"

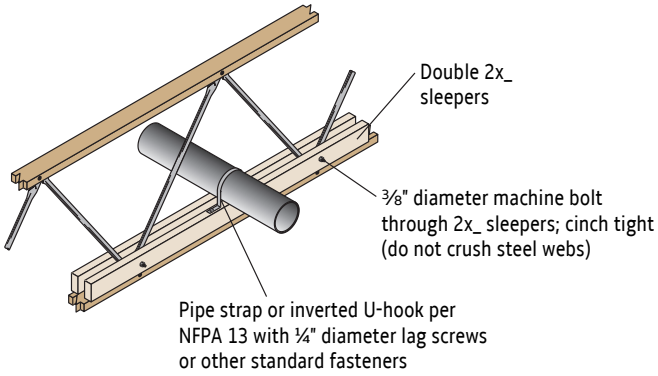
6 Beam Clamp

(For Red-L™ trusses only)



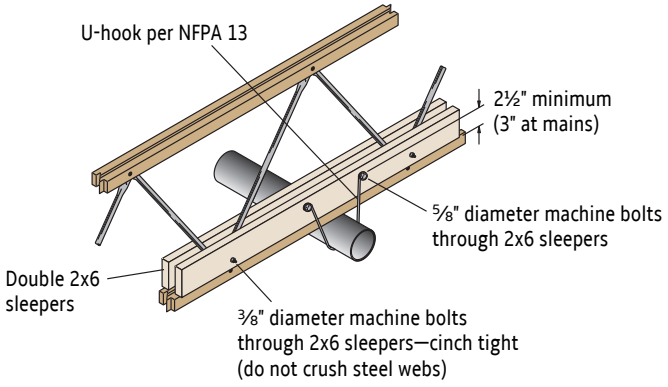
Pipe size at maximum hanger spacing: 2" (may be increased to 4" with special truss design)

7 Strap or Inverted U-Hook on Sleepers



Pipe size at maximum hanger spacing is 3". With special truss design, may be increased to 4" with 2x4 sleeper and 6" with 2x6 sleeper.

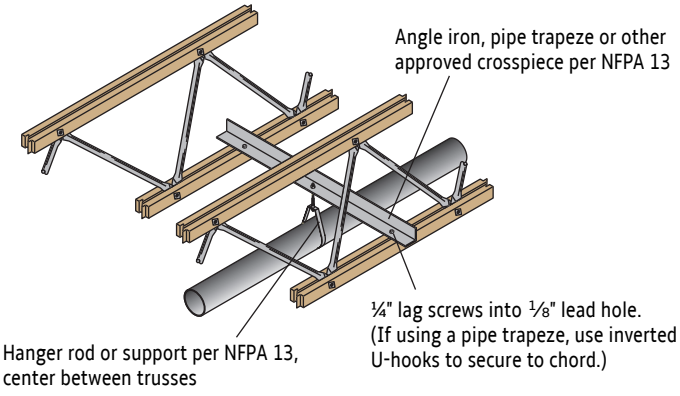
8 U-Hook on Sleepers



Pipe size at maximum hanger spacing is 3". With special truss design, may be increased to 6".

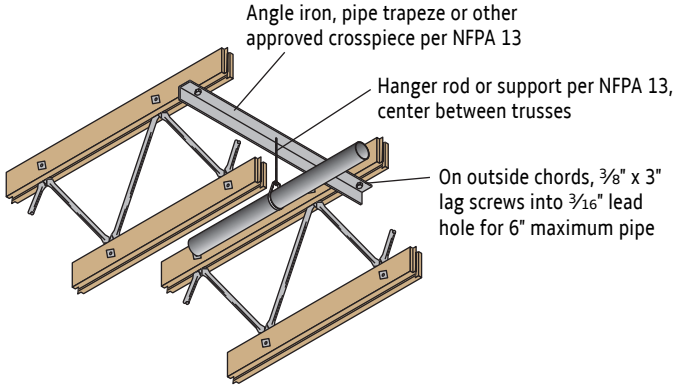
RED-M™ AND RED-H™ TRUSSES

9 Trapeze with Hanger Rod—Bottom Chord



Pipe size at maximum hanger spacing: 2½" (may be increased to 6" with special truss design)

10 Trapeze with Hanger Rod—Top Chord

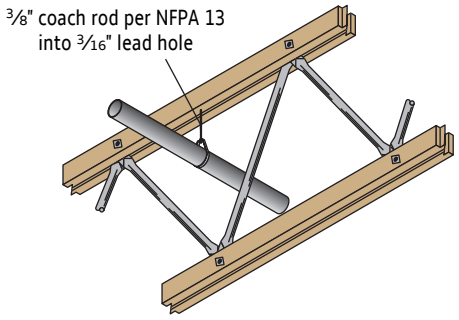


Pipe size at maximum hanger spacing: 2½" (may be increased to 6" with special truss design)

OPEN-WEB TRUSS SPRINKLER DETAILS

RED-M™ AND RED-H™ TRUSSES, *continued*

11 Coach Screw into Chord



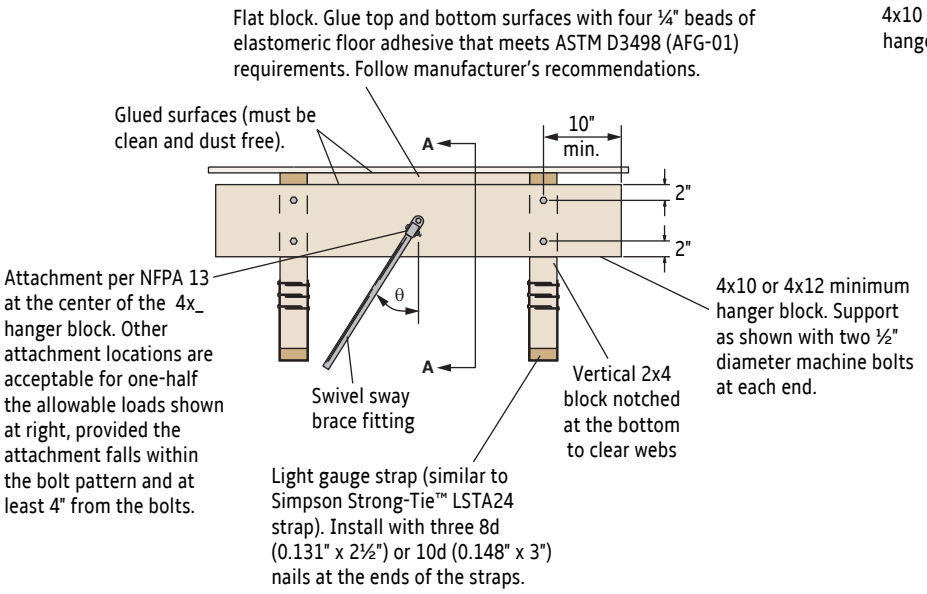
General Notes

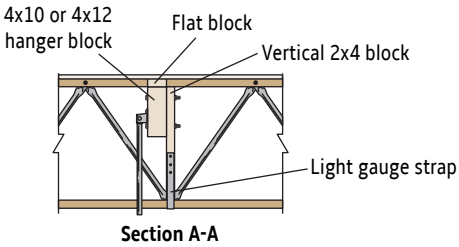
- May be attached to top or bottom chord.
- Minimum coach rod penetration is 3".
- Rods shall be centered in the chords; ±¼" tolerance on double chord trusses.
- If installing through a gypsum board ceiling, increase the fastener length by the gypsum board thickness.

Maximum pipe size: 2" (may be increased to 2½" with special truss design)

OPEN-WEB TRUSS SEISMIC DETAILS

EQ1 For Loads Perpendicular To Open-Web Trusses





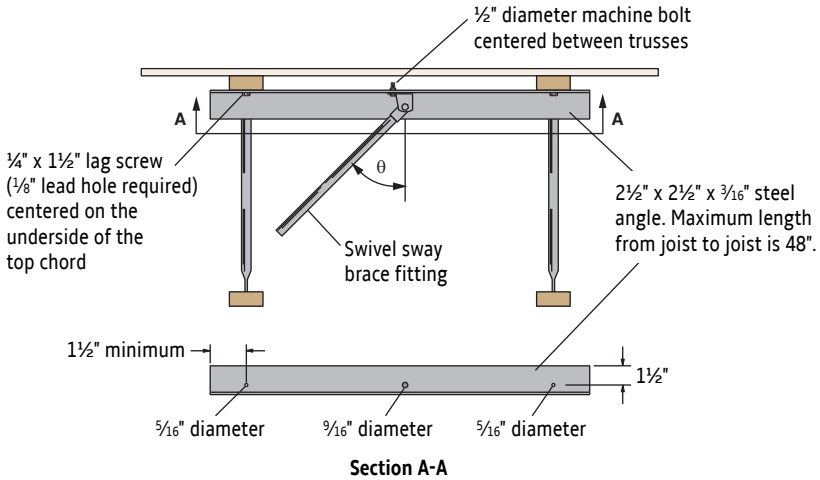
Section A-A

Allowable Horizontal Seismic Loads (lbs)

Angle to Vertical (θ)		
30°	45°	60°
675	1,170	2,030

- Loads are based on the controlling connection to the truss.
- The capacity of the brace fastener to the wood block may limit the capacity of the detail (see NFPA 13).
- Loads include a 1.60 duration factor adjustment.

EQ2 For Loads Parallel or Perpendicular to Open-Web Trusses



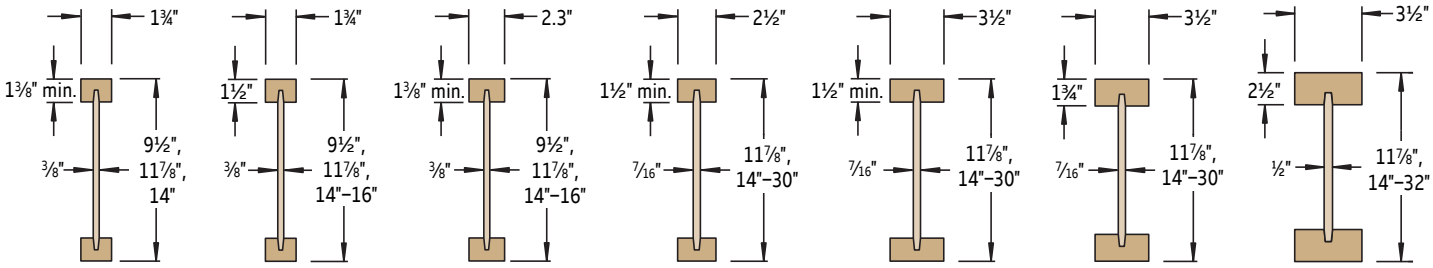
Section A-A

Allowable Horizontal Seismic Loads (lbs)

Angle to Vertical (θ)		
30°	45°	60°
305	390	430

- Loads are based on the controlling connection to the truss.
- Loads include a 1.60 duration factor adjustment.

RED-I™ JOIST DESCRIPTIONS



Red-I45L™
1⅜" (min.) x 1¾" RedLam™ LVL flanges with ⅜" OSB web

Red-I45™
1½" x 1¾" RedLam™ LVL flanges with ⅜" OSB web

Red-I58™
1⅜" (min.) x 2.3" RedLam™ LVL flanges with ⅜" OSB web

Red-I65™
1½" (min.) x 2½" RedLam™ LVL flanges with 7⁄16" OSB web

Red-I90™
1½" (min.) x 3½" RedLam™ LVL flanges with 7⁄16" OSB web

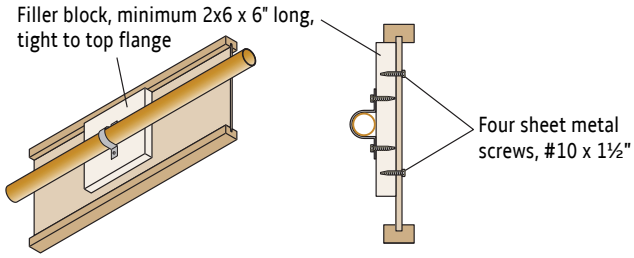
Red-I90H™
1¾" x 3½" RedLam™ LVL flanges with 7⁄16" OSB web

Red-I90HS™
2½" x 3½" RedLam™ LVL flanges with ½" OSB web

For load capacities, bearing details, and other information, contact your RedBuilt representative

RED-I™ JOIST SPRINKLER DETAILS (CPVC PIPE)

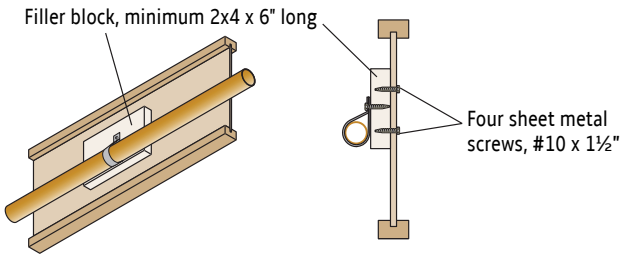
12 Surface-Mount Hanger with Double Fastener



Maximum Pipe Diameter	3"
Filler Block Material	DF or SPF

Install per NFPA 13 and manufacturer's instructions

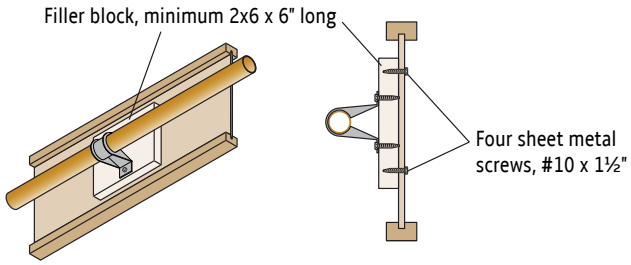
13 Surface-Mount Hanger with Single Fastener



Maximum Pipe Diameter	2"
Filler Block Material	DF or SPF

Install per NFPA 13 and manufacturer's instructions

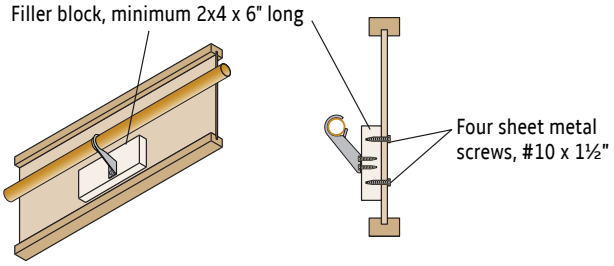
14 Offset Hanger



Maximum Pipe Diameter	2"
Filler Block Material	DF or SPF

Install per NFPA 13 and manufacturer's instructions

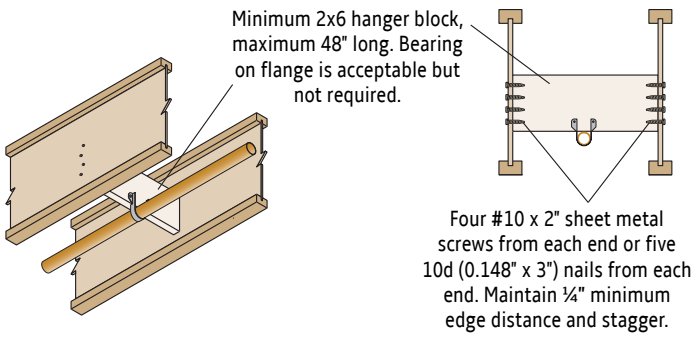
15 Double Offset Hanger



Maximum Pipe Diameter	1"
Filler Block Material	DF or SPF

Install per NFPA 13 and manufacturer's instructions

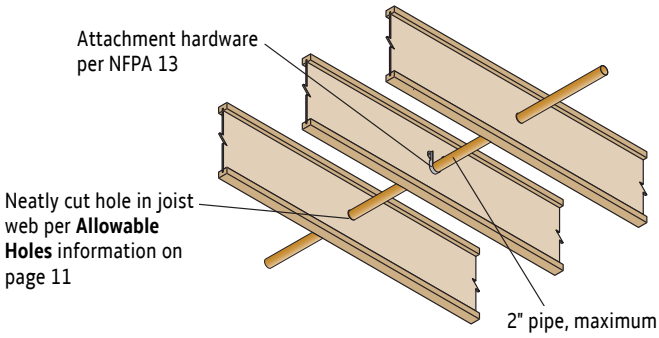
16 Face-Mount Hanger



Maximum Pipe Diameter	2"
Filler Block Material	DF or SPF

Install per NFPA 13 and manufacturer's instructions

17 Hanger at Web Hole

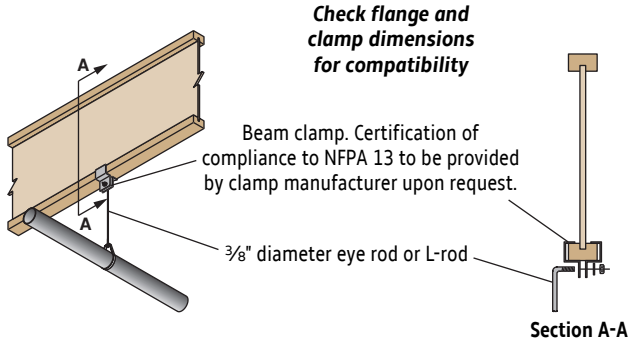


Maximum pipe diameter is 2". Install per NFPA 13 and manufacturer's instructions.

RED-I™ JOIST SPRINKLER DETAILS

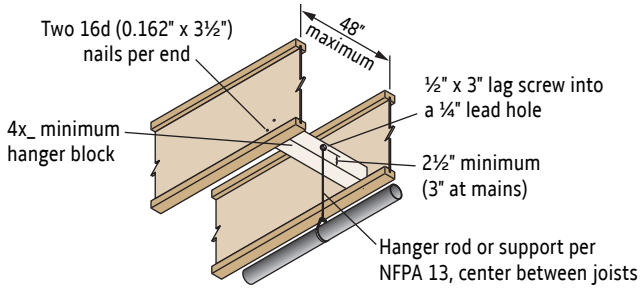
ALL RED-I™ JOISTS

18 Beam Clamp



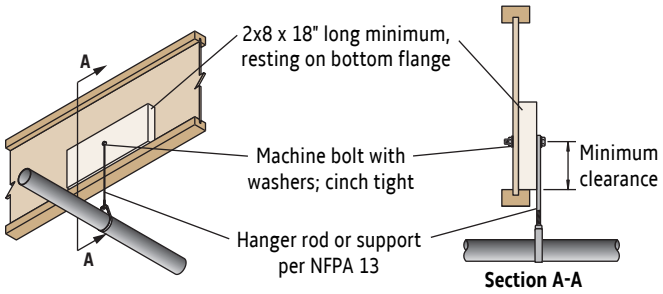
Maximum pipe size: 4"

19 Rod with Hanger Block



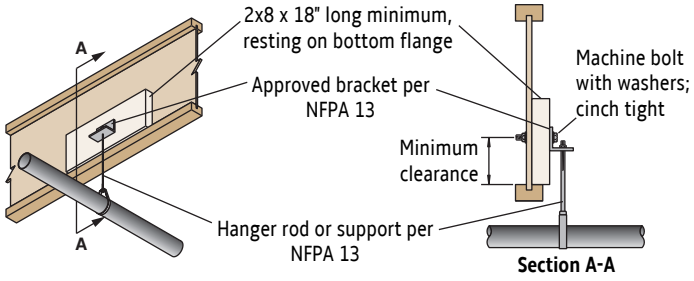
Maximum pipe size: 3" with ½" x 3" lag screw

20 Rod with Side Bolt



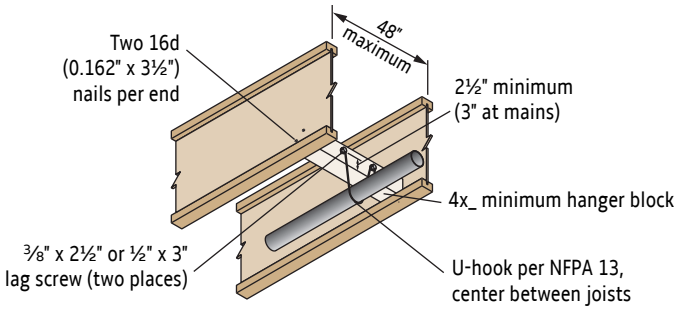
Pipe Size	Machine Bolt Diameter	Minimum Clearance
Up to 2"	⅜"	2½"
2½" to 3"	½"	3"

21 Rod with Side Bracket



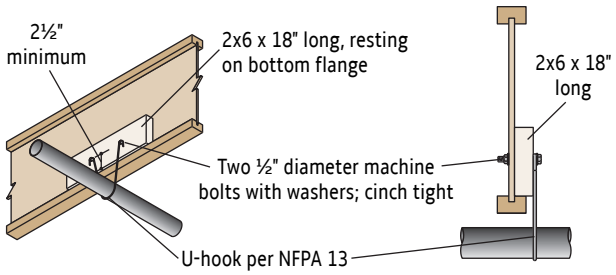
Pipe Size	Machine Bolt Diameter	Minimum Clearance
Up to 2"	½"	3"

22 U-Hook with Hanger Block



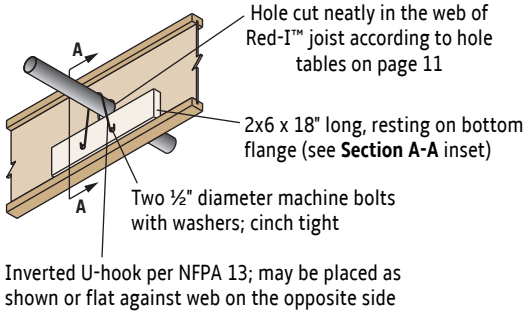
Maximum pipe size: 3½" with ⅜" x 2½" lag screw; 4" with ½" x 3" lag screw

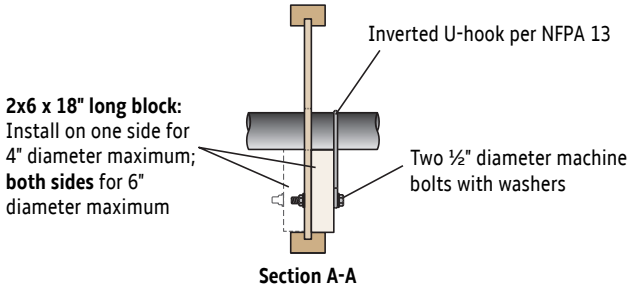
23 U-Hook with Filler Block



Pipe size at maximum hanger spacing: 4"

24 Pipe Through Joist





Pipe size at maximum hanger spacing: 4" with block on one side; 6" with blocks on both sides.

ALL RED-I™ JOISTS

25 Rod with Hanger and Filler Block

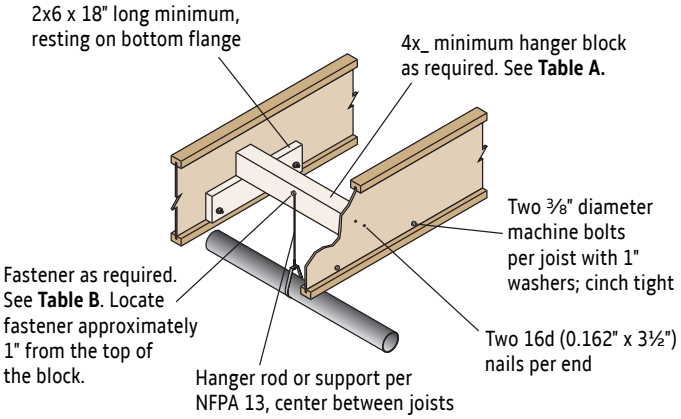


Table A

Distance Between Red-I™ Joists	Wood Hanger Block Size
32" or less	4x4 (1)
48"	4x6
96"	4x8

(1) For sprinkler main lines, wood hanger block size is 4x6 for 32" or less spacing.

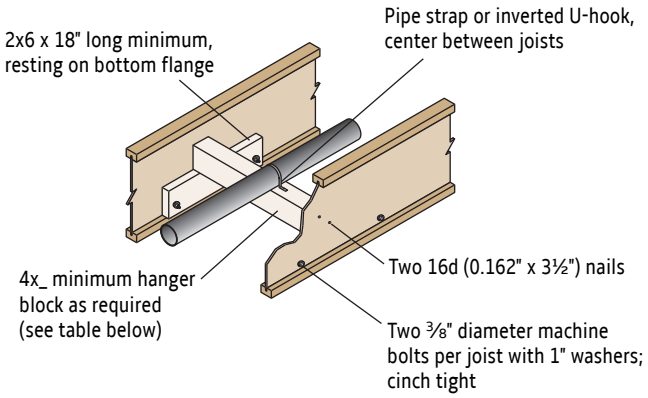
Table B

Pipe Size	Fastener
3"	½" x 3" lag
5"	½" machine bolt
6"(1)	⅝" machine bolt

(1) Requires minimum No. 2 grade Douglas fir or southern pine hanger block.

Pipe size at maximum hanger spacing: See Table B

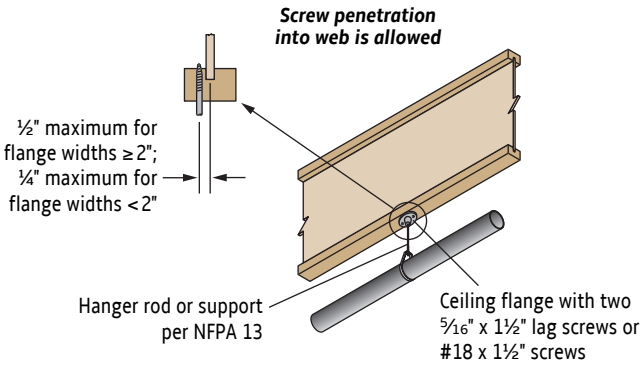
26 Pipe on Support Member



Distance Between Red-I™ Joists	Wood Hanger Block Size
32" or less	4x4
48"	4x6
96"	4x8

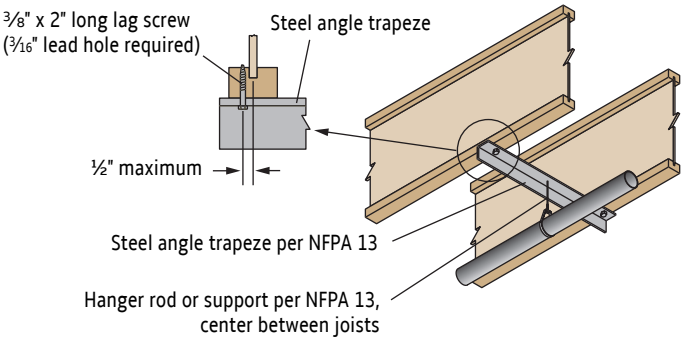
Pipe size at maximum hanger spacing: 6"

27 Ceiling Flange



Maximum pipe size: 2"

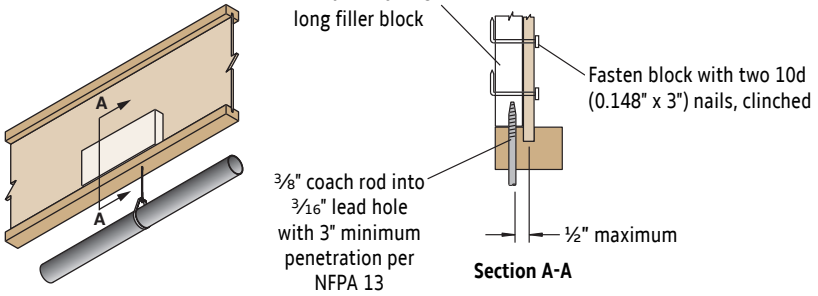
28 Rod with Steel Angle Trapeze



Pipe size at maximum hanger spacing is 4". Center pipe support between joists.

29 Coach Screw Into Flange

Screw penetration into web is allowed

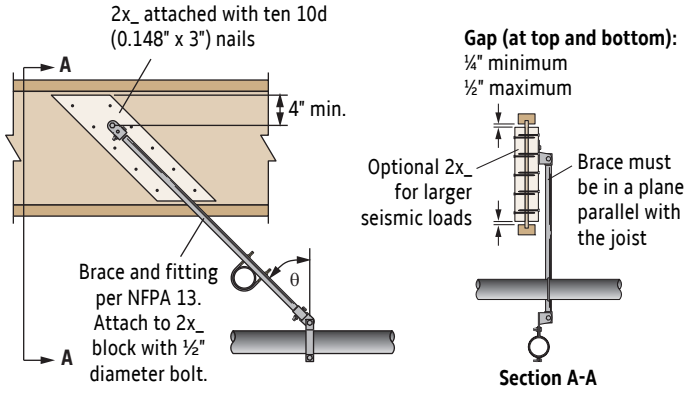


Maximum pipe size: 2"

RED-I™ JOIST SEISMIC DETAILS

FOR LOADS PARALLEL OR PERPENDICULAR TO JOISTS

EQ3 Swivel Sway Brace (Parallel Loads Only)

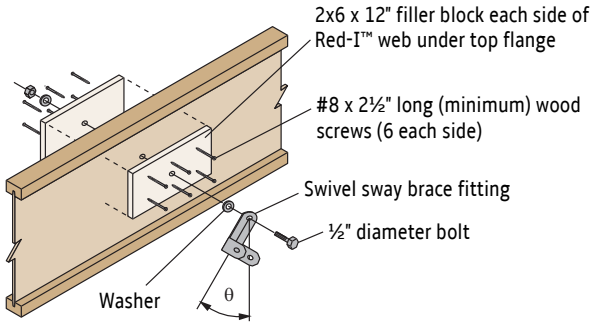


Allowable Horizontal Seismic Loads (lbs)

Blocking Condition	Angle to Vertical (θ)		
	30°	45°	60°
2x_ on one side	440	505	595
2x_ on both sides	730	830	960

- Loads are based on the controlling connection to the joist.
- Loads include a 1.60 duration factor adjustment.
- Loads may be increased when using Douglas fir blocking.
- Bolt threads must not start before passing through joist web.

EQ4 Swivel Sway Brace with Filler Blocks

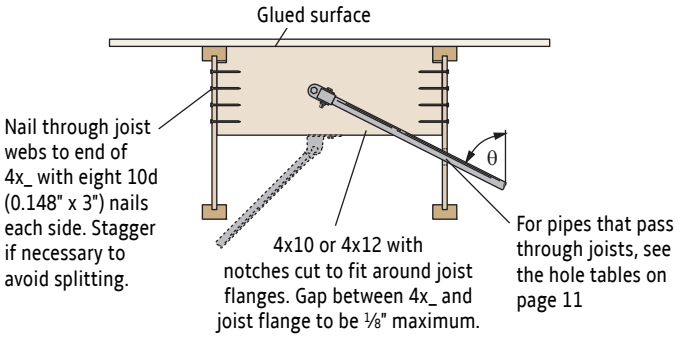


Allowable Horizontal Seismic Loads (lbs)

Angle to Vertical (θ)		
30°	45°	60°
555	620	690

- Loads are based on the controlling connection to the joist.
- Loads include a 1.60 duration factor adjustment.

EQ5 Nailed Blocking Panel



Allowable Horizontal Seismic Loads (lbs)

Angle to Vertical (θ)		
30°	45°	60°
340(1)	590(2)	600

(1) 400 if connection is centered on the 4x_.

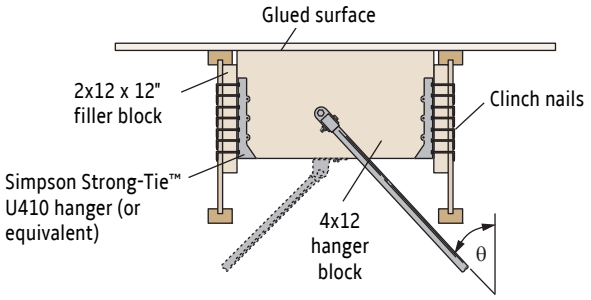
(2) 600 if connection is centered on the 4x_.

- Loads are based on the controlling connection to the joist.
- The capacity of the brace fastener to the wood block may limit the capacity of the detail (see NFPA 13).
- Loads include a 1.60 duration factor adjustment.

General Notes

- For loads parallel to the joists, make attachment to the hanger block in the upper half of the block.
- Glue surfaces with elastomeric floor adhesive that meets ASTM D3498 (AFG-01) requirements. Follow manufacturer's recommendations. Glued surfaces must be clean and dust free.
- Make attachment per NFPA 13 near the center of the 4x block. Fastener must be at least 7 diameters from the end of the block and 4 diameters from all other edges.

EQ6 Blocking Panel in Hangers



Allowable Horizontal Seismic Loads (lbs)

Angle to Vertical (θ)		
30°	45°	60°
400	690	1,195

- Loads are based on the controlling connection to the joist.
- The capacity of the brace fastener to the wood block may limit the capacity of the detail (see NFPA 13).
- Loads include a 1.60 duration factor adjustment.

General Notes

- Before installing in hangers, glue the top face with four ¼" beads of approved elastomeric floor adhesive that meets ASTM D3498 (AFG-01) requirements. Follow manufacturer's recommendations. Glued surfaces must be clean and dust free.
- Attach hanger and filler block by nailing through the hanger, block and Red-I™ joist web with ten 10d (0.148" x 3") nails and clinch.
- For loads parallel to the joists, make attachment to the hanger block in the upper half of the block.
- Make attachment per NFPA 13 near the center of the 4x block. Fastener must be at least 7 diameters from the end of the block and 4 diameters from all other edges.

RED-I JOIST ALLOWABLE HOLES

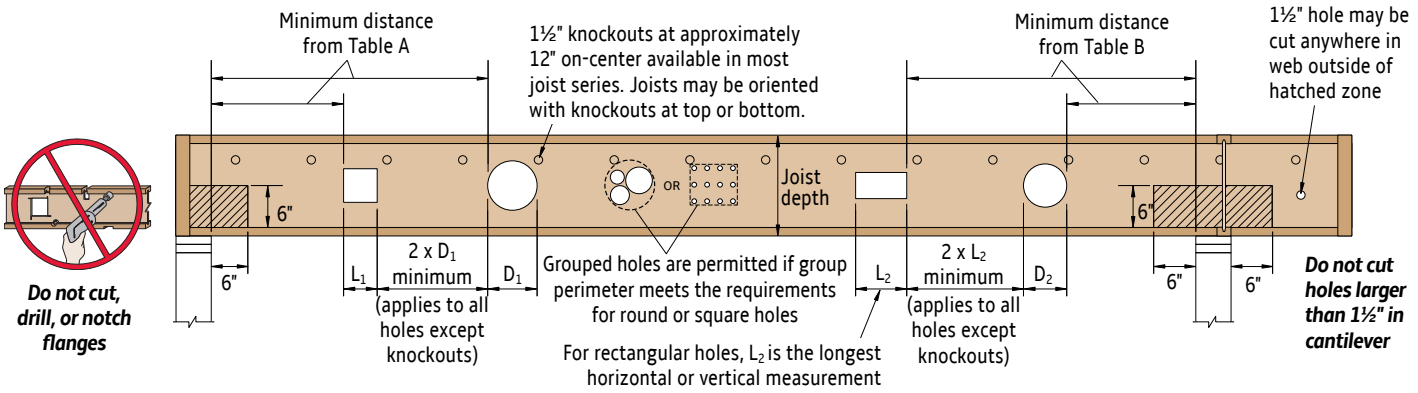


TABLE A: End Support or Simple Span

Minimum distance from edge of hole to inside face of nearest support

TABLE B: Intermediate or Cantilever Support

Minimum distance from edge of hole to inside face of nearest intermediate or cantilever support

Joist Depth	Joist Series	Table A: Round Hole Size 2"	4"	6"	8"	10"	12"	14"	16"	18"	20"
		Table A: Square or Rectangular Hole Size 1.25"	2.5"	4"	5"	6"	7"	8.5"	9.5"	10.5"	13"
9½"	I45L / I45	1'-0"	***2'-6"***	***4'-0"***	–	–	–	–	–	–	–
	I58 / I65	1'-6"	***3'-0"***	***5'-0"***	–	–	–	–	–	–	–
	I90	2'-0"	3'-6"	***5'-6"***	–	–	–	–	–	–	–
11⅞"	I45L / I45	1'-0"	2'-0"	***3'-6"***	***5'-0"***	–	–	–	–	–	–
	I58 / I65	1'-6"	3'-0"	***4'-6"***	***6'-6"***	–	–	–	–	–	–
	I90 / I90H	1'-6"	3'-6"	5'-6"	***7'-0"***	–	–	–	–	–	–
	I90HS	2'-0"	4'-0"	6'-6"	–	–	–	–	–	–	–
14"	I45L / I45	1'-0"	2'-0"	3'-0"	***4'-0"***	***6'-0"***	–	–	–	–	–
	I58 / I65	1'-0"	2'-6"	4'-0"	***5'-6"***	***8'-0"***	–	–	–	–	–
	I90 / I90H	1'-0"	3'-0"	5'-0"	6'-6"	***9'-0"***	–	–	–	–	–
	I90HS	2'-0"	4'-0"	6'-0"	8'-0"	–	–	–	–	–	–
16"	I45 / I65	1'-0"	1'-6"	3'-0"	4'-0"	***5'-0"***	***8'-0"***	–	–	–	–
	I58	1'-0"	1"-6"	3'-0"	4'-6"	***6'-6"***	***9'-6"***	–	–	–	–
	I90 / I90H	1'-0"	2'-0"	4'-0"	6'-0"	8'-6"	***10'-6"***	–	–	–	–
	I90HS	2'-0"	4'-0"	6'-0"	8'-0"	10'-0"	–	–	–	–	–
18"	I45 / I65	1'-0"	1'-0"	2'-6"	3'-6"	4'-6"	***6'-0"***	***9'-0"***	–	–	–
	I90 / I90H	1'-0"	1'-0"	2'-6"	5'-0"	7'-0"	9'-6"	***12'-6"***	–	–	–
	I90HS	2'-0"	4'-0"	6'-0"	8'-0"	10'-0"	12'-0"	–	–	–	–
20"	I45 / I65	1'-0"	1'-0"	2'-0"	3'-0"	4'-0"	5'-0"	***7'-0"***	***10'-6"***	–	–
	I90 / I90H	1'-0"	1'-0"	2'-0"	4'-0"	6'-0"	8'-0"	11'-0"	***14'-0"***	–	–
	I90HS	2'-0"	4'-0"	6'-0"	8'-0"	9'-6"	11'-6"	14'-0"	–	–	–
22"	I65	1'-0"	1'-0"	1'-6"	2'-6"	3'-6"	4'-6"	5'-6"	7'-6"	***11'-6"***	–
	I90 / I90H	1'-0"	1'-0"	1'-0"	3'-0"	5'-0"	7'-0"	9'-0"	12'-6"	***16'-0"***	–
	I90HS	2'-0"	4'-0"	6'-0"	8'-0"	9'-6"	11'-6"	13'-6"	16'-0"	–	–
24"–26"	I65	1'-0"	1'-6"	2'-6"	3'-6"	4'-0"	5'-0"	6'-0"	7'-6"	***10'-0"***	–
	I90 / I90H	1'-0"	1'-0"	2'-0"	3'-6"	5'-0"	6'-6"	8'-6"	10'-6"	14'-6"	***18'-6"***
	I90HS	2'-0"	4'-0"	6'-0"	7'-6"	9'-6"	11'-6"	13'-6"	15'-0"	18'-0"	–
28"–32"	I65	1'-0"	2'-0"	2'-6"	3'-6"	4'-0"	5'-0"	6'-0"	7'-0"	8'-0"	10'-6"
	I90 / I90H	1'-0"	1'-6"	2'-6"	4'-0"	5'-6"	6'-6"	8'-0"	9'-6"	11'-6"	14'-6"
	I90HS	2'-0"	3'-6"	5'-0"	7'-0"	8'-6"	10'-0"	12'-0"	13'-6"	16'-0"	18'-6"

Joist Depth	Joist Series	Table B: Round Hole Size 2"	4"	6"	8"	10"	12"	14"	16"	18"	20"
		Table B: Square or Rectangular Hole Size 1.25"	2.5"	4"	5"	6"	7"	8.5"	9.5"	10.5"	13"
9½"	I45L / I45	1'-0"	***2'-6"***	***5'-0"***	–	–	–	–	–	–	–
	I58 / I65	1'-6"	***4'-0"***	***6'-6"***	–	–	–	–	–	–	–
	I90	3'-0"	5'-6"	***8'-0"***	–	–	–	–	–	–	–
11⅞"	I45L / I45	1'-0"	***2'-0"***	***4'-0"***	***6'-6"***	–	–	–	–	–	–
	I58 / I65	1'-0"	3'-0"	***5'-6"***	***8'-6"***	–	–	–	–	–	–
	I90 / I90H	2'-0"	4'-6"	7'-6"	***10'-0"***	–	–	–	–	–	–
	I90HS	3'-6"	6'-0"	9'-0"	–	–	–	–	–	–	–
14"	I45L / I45	1'-0"	1'-0"	3'-0"	***5'-0"***	***7'-6"***	–	–	–	–	–
	I58 / I65	1'-0"	1'-6"	4'-0"	***7'-0"***	***10'-6"***	–	–	–	–	–
	I90 / I90H	1'-0"	3'-6"	6'-0"	9'-0"	***12'-6"***	–	–	–	–	–
	I90HS	4'-0"	6'-6"	9'-0"	11'-6"	–	–	–	–	–	–
16"	I45 / I65	1'-0"	1'-0"	2'-0"	***4'-0"***	***6'-6"***	***10'-0"***	–	–	–	–
	I58	1'-0"	1'-0"	2'-0"	***4'-0"***	***6'-6"***	***10'-0"***	–	–	–	–
	I90 / I90H	1'-0"	1'-6"	4'-6"	8'-0"	11'-0"	***14'-6"***	–	–	–	–
	I90HS	3'-0"	6'-0"	8'-6"	11'-6"	14'-0"	–	–	–	–	–
18"	I45 / I65	1'-0"	1'-0"	1'-0"	2'-6"	***5'-0"***	***8'-0"***	***12'-0"***	–	–	–
	I90 / I90H	1'-0"	1'-0"	2'-6"	5'-6"	9'-0"	12'-6"	***17'-0"***	–	–	–
	I90HS	2'-6"	5'-6"	8'-0"	11'-0"	13'-6"	16'-6"	–	–	–	–
20"	I45 / I65	1'-0"	1'-0"	1'-0"	1'-0"	3'-6"	***6'-0"***	***9'-0"***	***13'-6"***	–	–
	I90 / I90H	1'-0"	1'-0"	1'-0"	3'-6"	7'-0"	10'-6"	14'-6"	***19'-6"***	–	–
	I90HS	2'-0"	5'-0"	7'-6"	10'-6"	13'-6"	16'-0"	19'-6"	–	–	–
22"	I65	1'-0"	1'-0"	1'-0"	1'-0"	2'-0"	4'-6"	7'-0"	10'-0"	***15'-0"***	–
	I90 / I90H	1'-0"	1'-0"	1'-6"	4'-0"	6'-6"	9'-6"	12'-0"	16'-0"	–	–
	I90HS	1'-0"	3'-0"	6'-0"	9'-0"	12'-6"	15'-6"	18'-6"	22'-0"	–	–
24"–26"	I65	1'-0"	1'-0"	1'-6"	3'-0"	4'-6"	6'-0"	7'-6"	10'-0"	***13'-6"***	–
	I90 / I90H	1'-6"	3'-0"	4'-6"	6'-0"	7'-6"	9'-0"	11'-0"	14'-0"	***18'-6"***	–
	I90HS	1'-6"	4'-0"	6'-6"	9'-0"	11'-6"	14'-0"	17'-0"	20'-0"	23'-0"	–
28"–32"	I65	1'-0"	1'-0"	1'-6"	3'-0"	4'-6"	6'-0"	7'-6"	9'-0"	11'-0"	***13'-6"***
	I90 / I90H	1'-6"	3'-0"	4'-6"	6'-0"	7'-6"	9'-0"	11'-0"	12'-6"	15'-6"	18'-6"
	I90HS	1'-0"	2'-6"	4'-6"	7'-0"	9'-6"	12'-0"	14'-6"	17'-0"	19'-6"	21'-6"

General Notes

- Tables are based on maximum allowable uniform loads. ***Bold italic*** cells indicate 2000 lb concentrated load spread over two joists has not been considered. Use RedSpec™ software or contact your RedBuilt technical representative if concentrated load check is required.
- Holes may be located vertically anywhere in the web. Leave ⅛" of web (minimum) at top and bottom of hole. **DO NOT cut joist flanges.**
- **Do not cut holes in cantilever without consulting your RedBuilt representative.**
- Knockouts are located in web at approximately 12" on-center; they do not affect hole placement.
- Interpolation between holes sizes shown in the tables is allowed.

***WARNING:** Drilling, sawing, sanding or machining wood products generates wood dust, a substance known to the State of California to cause cancer.*

How to Use Tables A and B

1. Determine the hole shape and size. For rectangular holes, use the largest dimension. Sizes shown in the tables are hole sizes, not duct sizes.
2. Determine the Red-I™ joist series and depth.
3. Determine the type of support on each side of the hole. If the Red-I™ joist is continuous over a support, use both tables.
4. Find the table cell at the intersection of the Red-I™ joist and the hole.
5. The measurement shown is the minimum distance from the edge of the hole to the inside face of the support.
6. Maintain the minimum required distance from **both** supports.

For other hole sizes, hole locations, or loads, use RedSpec™ software or contact your RedBuilt technical representative.

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Ted Osterberger, CEO

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