Truss Technology IN BUILDING

Floor Truss Fact Sheet

Floor trusses are ***the solution*** to many floor framing problems. Architects, engineers and contractors are using floor trusses to create high quality, squeak-free construction with the added benefits of reduced framing time, waste, pilferage and callbacks. Design versatility and the open space provided between the chords and webs of floor trusses for mechanical and plumbing runs offer tremendous advantages for today's complex and sophisticated building designs.

Several benefits of using floor trusses include:

- Trusses are built with 2x4 or 2x3 lumber oriented 'flatwise,' providing a wide, stable bearing surface that is easier to work on and around.
- Wide nailing surface provides for easy gluing and ensures more accurate fastening of the sheathing, reducing squeaks and improving floor performance for the life of the structure.
- Spacing floor trusses at 19.2" or 24" on center maximizes structural efficiency and speed of installation.
- Typical depths for floor trusses are 12" to 24", but shallower or deeper depths are possible.
- Open web configuration leaves plenty of room for plumbing, electrical and mechanical runs.
- Floor trusses are manufactured with high-quality lumber, which minimizes shrinkage, warping or twisting, reducing the potential for call backs to the jobsite.
- Floor trusses can be designed to bear on the top chord or at intermediate depth, allowing the trusses to be supported on raised beams without requiring hangers, thereby reducing the potential for floor squeaks and call-backs.
- Stiffness and strength can be designed into floor trusses to create a more solid floor, and special bearing, cantilever and balcony details can easily be built into the design.
- Long spans and girder truss options reduce the need for intermediate bearing walls, beams, columns and footings – saving time and construction costs.

Visit the SBCA website – sbcindustry.com – to find floor truss manufacturers in your area.

FLOOR TRUSSES ARE THE FUTURE OF FRAMING

Overall, floor trusses are the economical choice, saving money due to reduced installation time and material waste. The Framing the American Dream® (FAD) project showed how efficiently a trussed floor could be installed on a 2,600 sq. ft. house. The following table provides a comparison of manhours and lumber useage between the 'stick frame' and 'component frame' houses built in the FAD project. For more information on FAD, visit sbcindustry.com/fad.php.

	HOURS TO FRAME	QUANTITY OF LUMBER
Stick Frame	38 hours	4,256 board ft
Floor Truss	12 hours	3,147 board ft
FLOOR TRUSS SAVINGS	**26 HOURS**	**1,109 BOARD FT**

FLOOR TRUSS MAXIMUM DUCT SIZES

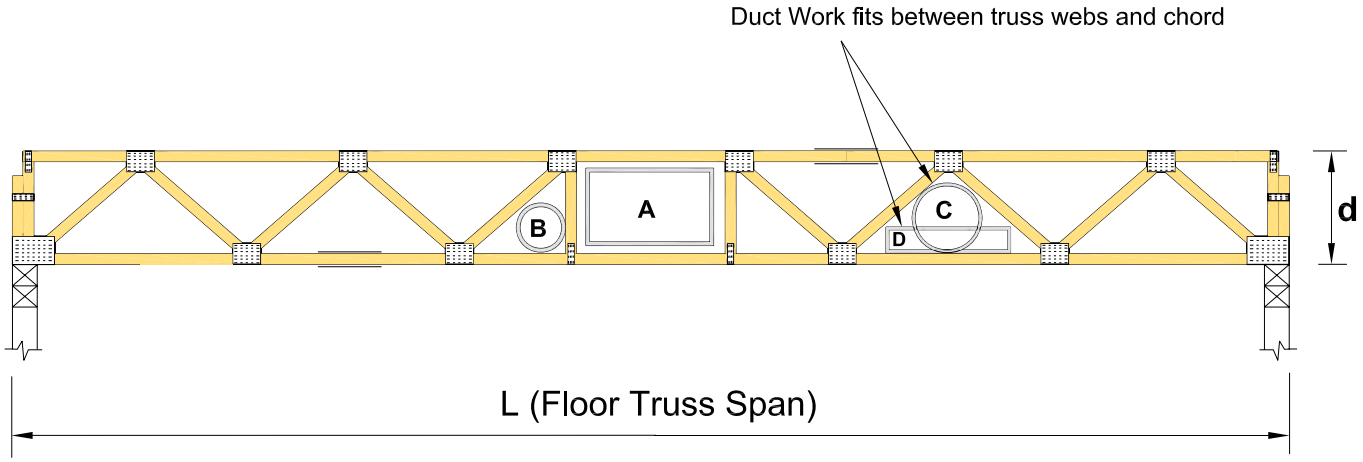


Figure 1. Typical 4 x 2 floor truss configuration with mechanical chase opening located near truss mid-span.

Table 1. Typical allowable duct sizes for a 4 x 2 floor truss.

TRUSS DEPTH (d)	A* Depth Width	B	C	D Depth Width	Depth Width	Depth Width
10"	6½" x 22"	5½"	5"	3" x 25"	4" x 15"	5" x 9"
12"	8½" x 22"	6½"	7"	5" x 20"	6" x 14"	7" x 7"
14"	10½" x 22"	7½"	9"	6" x 23"	7" x 16"	8" x 11"
16"	12½" x 22"	9"	11"	7" x 22"	8" x 18"	9" x 14"
18"	14½" x 22"	10"	12"	8" x 24"	9" x 20"	10" x 16"
20"	16½" x 22"	11"	14½"	8" x 28"	9" x 24"	10" x 21"
22"	18½" x 22"	12"	16"	8" x 30"	10" x 25"	12" x 19"
24"	20½" x 22"	13"	17"	8" x 32"	10" x 27"	12" x 22"

*Duct A is the maximum rectangular duct through a chase

REPRESENTATIVE SPAN TABLES

The following tables provide representative spans that are possible with 4x2 floor trusses at various truss depths, on-center spacing and deflection limitations.

MAXIMUM ALLOWABLE SPANS (Δ_{LL} = Span/360, Δ_{TL} = Span/240) [1, 2]							
Truss On-Center Spacing	4 x 2 Floor Truss Depth (d)						
	12"	14"	16"	18"	20"	22"	24"
16"	23' 11"	27' 5"	30' 5"	32' 4"	34' 1"	35' 10"	37' 6"
19.2"	22' 9"	25' 10"	28' 5"	31' 3"	32' 6"	33' 5"	35' 10"
24"	21' 5"	23' 8"	26' 5"	28' 4"	29' 3"	29' 10"	32' 6"

MAXIMUM ALLOWABLE SPANS (Δ_{LL} = Span/480, Δ_{TL} = Span/360) [1, 2]							
Truss On-Center Spacing	4 x 2 Floor Truss Depth (d)						
	12"	14"	16"	18"	20"	22"	24"
16"	21' 5"	24' 0"	26' 7"	29' 0"	31' 2"	32' 7"	34' 10"
19.2"	20' 1"	22' 7"	24' 10"	27' 2"	29' 4"	31' 6"	33' 5"
24"	18' 7"	20' 11"	23' 0"	25' 1"	27' 1"	28' 10"	30' 0"

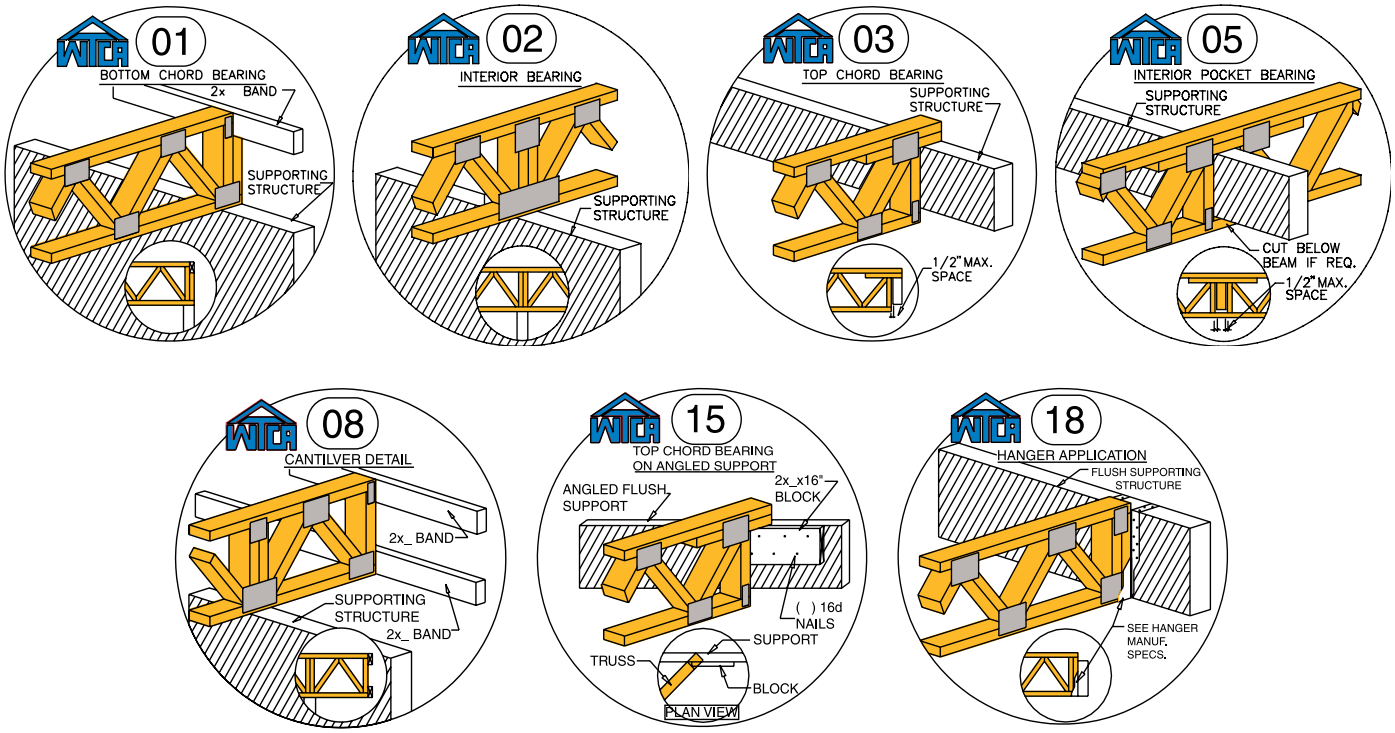
MAXIMUM ALLOWABLE SPANS (Δ_{LL} = Span/720, Δ_{TL} = Span/360) [1, 2]							
Truss On-Center Spacing	4 x 2 Floor Truss Depth (d)						
	12"	14"	16"	18"	20"	22"	24"
16"	16' 9"	19' 0"	20' 11"	22' 8"	24' 6"	26' 3"	27' 7"
19.2"	15' 10"	17' 7"	19' 7"	21' 4"	22' 11"	24' 6"	26' 1"
24"	14' 8"	16' 5"	18' 0"	19' 8"	21' 3"	22' 7"	24' 1"

[1] Maximum allowable spans are presented only as a guide. Allowable spans will vary due to design requirements and lumber availability.

[2] The spans in these tables represent the average spans for floor trusses manufactured with top and bottom chords of SPF 2400Fb-2.0E, SYP DSS or DF SS, and webs of SPF No.3, SYP No.3 or DF No.3. Spans assume a standard floor loading of 40psf TCLL, 15psf TCDL and 10psf BCDL and the deflection (serviceability) limits shown. All spans include a 2' long chase centered at mid-span.

STANDARD STRUCTURAL DETAILS

The details shown below depict several common floor truss bearing applications. These and additional details are available for download at www.sbcindustry.com/structuraldetails.php.



Some products can be end-trimmed on site in case bearing conditions are not perfect. Contact your local truss manufacturer for availability of these products.

To view a non-printing PDF of this document, visit sbcindustry.com/ttbfloor.

Truss Technology in Building

An informational series designed to address the issues and questions faced by professionals in the building construction process.

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