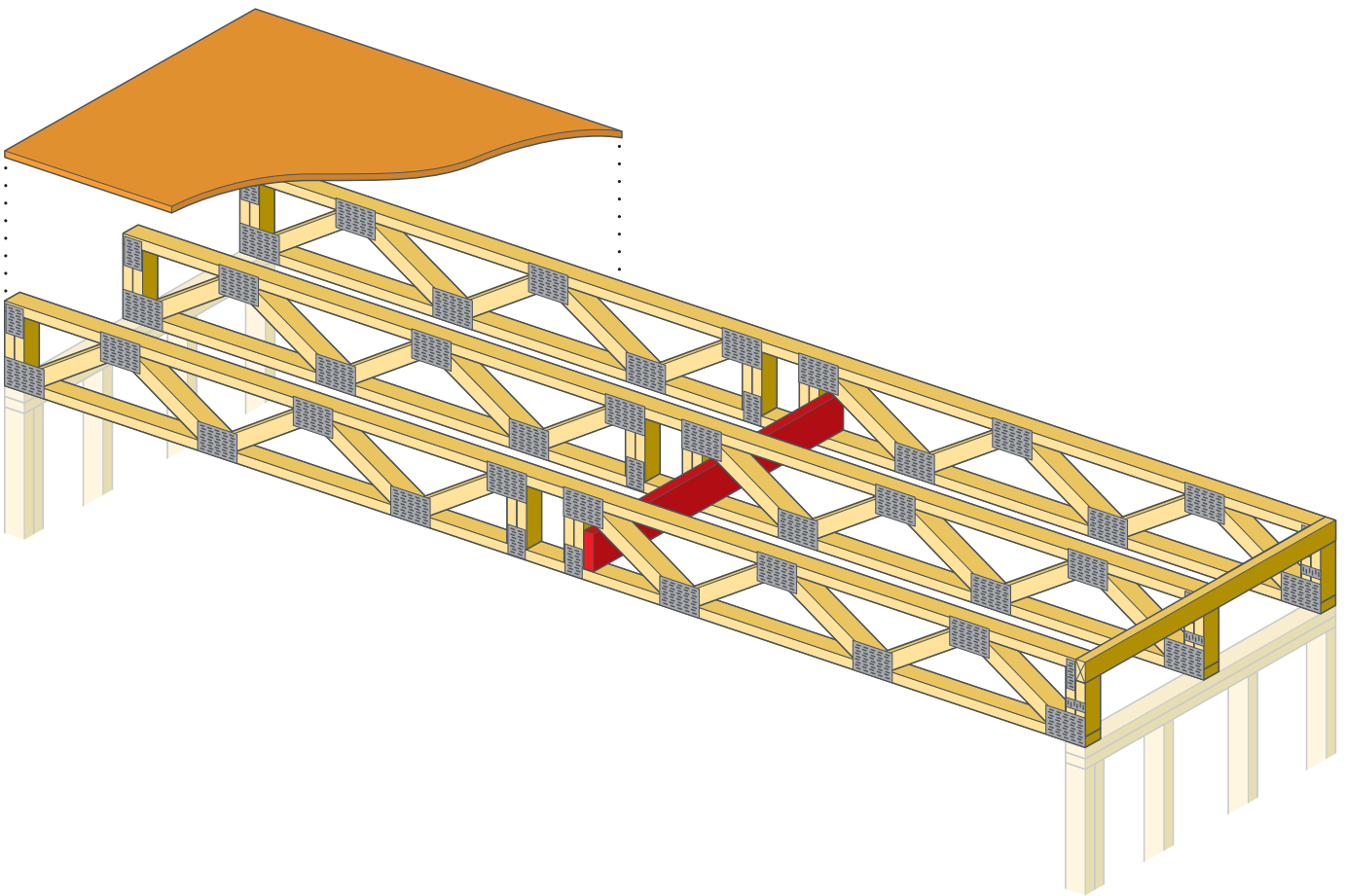


EFP Truss

The EFP (Equivalent Fire Performance) Truss is a new truss design developed and tested jointly by SBCA and TPI. It has been tested per ASTM D8391 to demonstrate fire-endurance equivalency to unprotected 2X10 dimension lumber as permitted by IRC R302.13, Exception 4.3.

The EFP Truss possesses unique design, configuration, fabrication and quality requirements which enable it to perform as required. These required characteristics are provided in this document.



Design Requirements

Following are a list of design requirements for the EFP Truss.

Criteria

- The EFP Truss shall be designed and manufactured in accordance with ANSI/TPI 1.

Design Load

- Total design load increased 8% with the increase added to the live load.
- This can be accomplished by using 45/10/5 loading instead of 40/10/5 loading (TCLL/TCDL/BCDL). Even though a higher live load is being used for the design the truss will only be rated for a 40 psf top chord live load.

Connector Plates

- Minimum dimensions of 3-inches in width and
- 3-inches in length with the exception of plates on end verticals with ribbon boards.
- Manufactured from galvanized steel with a minimum total thickness of 0.0356 inches (20 gauge) and shall have a minimum tooth length of 0.375 inches.
- Connector plates shall have a minimum tensile efficiency of 0.499 at 0 degrees and a minimum steel tensile strength of 873 pli per pair of plates at 0 degrees. Connector plates currently known to meet these requirements include:

Alpine/ITW Building Components

- Wave Plate
- Hand SS for chord splices only

Eagle Metal Products

- Eagle 20
- Eagle 20HS for chord splices only

MiTek

- MT20
- MT20HS for chord splices only

Simpson Strong-Tie

- AS 20
- AS 20HS for chord splices only

Fabrication Tolerance

- Use a fabrication tolerance of 20 percent, with a corresponding quality control factor, Cq of 0.80.

Lumber

- Members must be 2x4 nominal dimension, #2 grade or better.

Spacing

- Maximum truss spacing is 24 inches.

Truss Design Drawing Requirements

- The EFP Truss design drawing must be signed by a registered design professional.
- Each EFP Truss shall be uniquely identified by a truss design drawing.
- The EFP Truss design drawing shall include the following note:

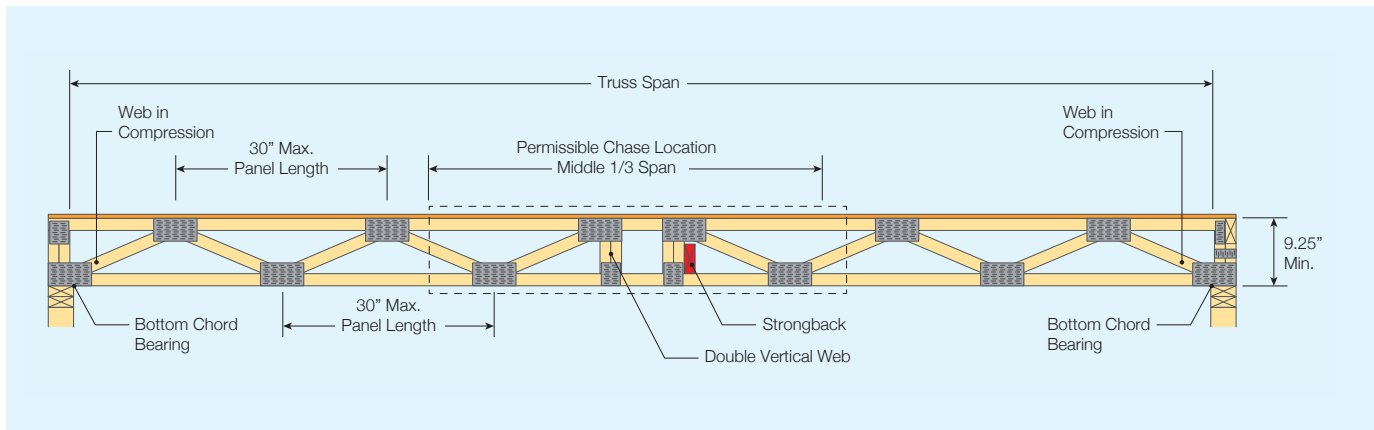
This truss is a special SBCA/TPI EFP Truss designed in accordance with IAPMO Report No. UES ER-999, including overdesigning wood members and metal connector plates by 8 percent, to achieve fire-endurance equivalency to unprotected 2x10 dimension lumber as permitted by IRC R302.13, Exception 4. See also the SBCA/TPI EFP Truss Design and Fabrication document for complete design and manufacturing requirements.

All exposed chord splice plates shall be protected with 2x4 wood scabs centered over the splice plates with a length extending 3-inches beyond each end of each splice plate and fastened with a minimum of (2) 0.120 x 3-inch nails on each side of the splice. Strongbacks shall be installed per standard industry details at 10 ft oc maximum.

If random representative sampling of trusses as part of the manufacturers quality program does not include at least one EFP Truss per week per operational set-up location per shift when manufacturing for the week includes an EFP Truss, then an additional inspection shall be performed to include an EFP Truss.

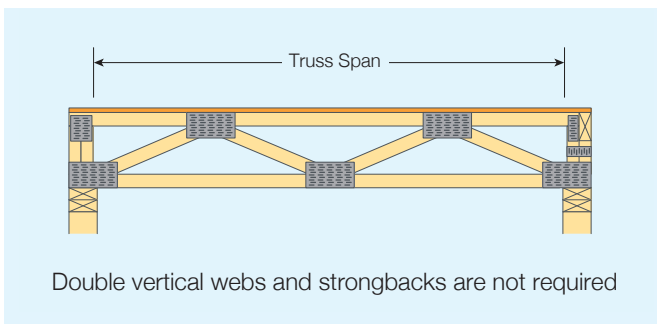
Truss Configuration Requirements

There are basic configuration requirements for all EFP trusses that are highlighted in the graphic below.



Geometry

- The EFP Truss must be a Warren truss configuration with 30-inch maximum top chord and bottom chord panel lengths.
- The first web member adjacent to the truss support location must be in compression
- Bottom chord bearing truss only.
- Minimum floor truss depth of 9.25 inches.
- The chase must be located in the middle 1/3 of the truss span.
- Truss geometry shall allow for installation of a minimum 2x6 strongback



Double Vertical Webs

For trusses with a span greater than 10 ft, double vertical webs must be installed at 10 ft on center.

When a chase is present, double vertical webs must be installed on each side of the chase.

The double vertical webs on each side of the chase can be used to help satisfy the 10 ft on center requirement.

Strongbacks

A strongback is required at the required 10 ft on double vertical web member or at the chase double vertical web member when present. Only one strongback is required at chase locations.

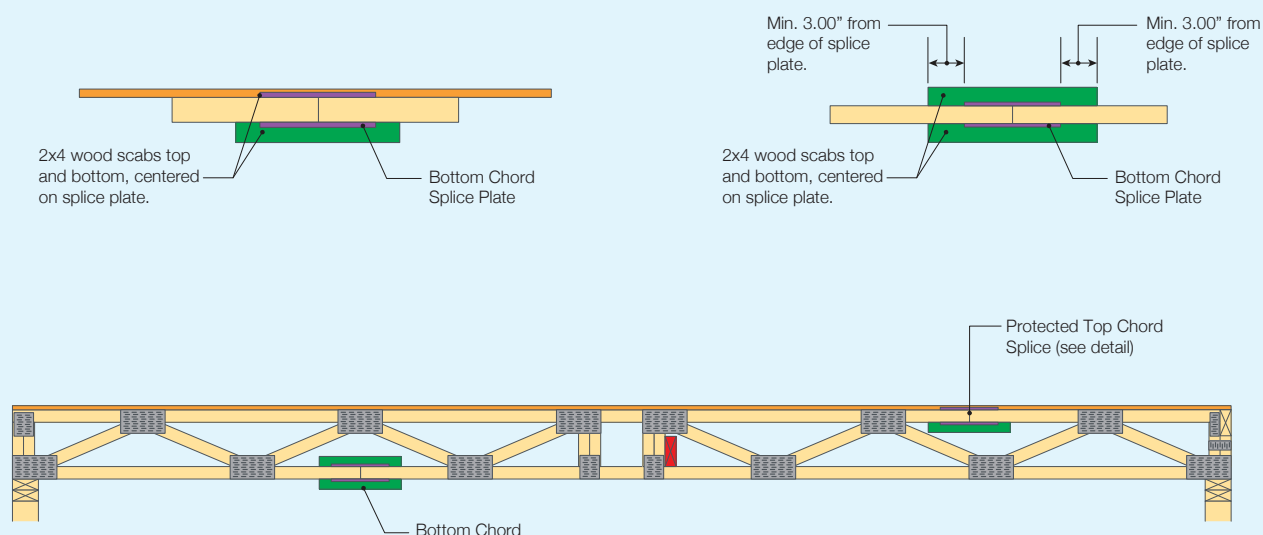
Strongbacks are not required for trusses with a span of 10 ft or less.

For trusses less than 11.25 in deep with span greater than 10 ft the strongback will need to be located within the chase to provide proper clearance. Chase dimensions should be sized appropriately.

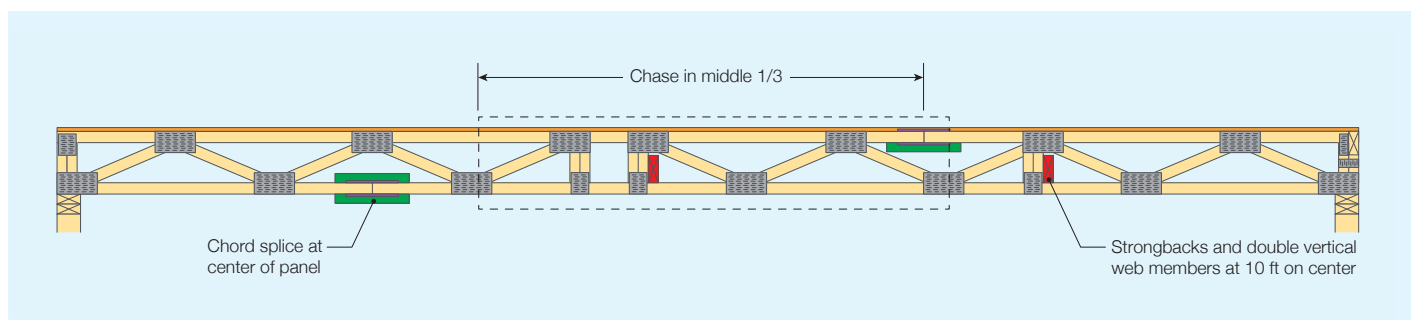
When required, truss geometry shall allow for installation of a minimum 2x6 strongback.

When top and/or bottom chord splices are used, 2x4 wood scab member (#3 or better) must be installed to protect the splice plate.

With Labels



The figure below is an example of a longer span EFP Truss with an offset chase that requires an addition double vertical web other than the ones adjacent to the chase, and splice plates.



Truss Technician/Truss Designer Checklist

DESIGN REQUIREMENTS

Loading

Total design load increased 8%, with the increase added to the live load. (ex 45/10/5 for 40/10/5 truss)

Maximum Duration of Load, DL = 1.0

Spacing - Maximum 24 inches oc

Connector Plates

Plate size - Minimum 3x3 plates (except plates on end verticals with ribbon boards)

Plate thickness - Minimum 0.0356 thick (20 gauge)

Tooth Length - Minimum 0.375 inches long

Strength - Minimum tensile efficiency of 0.499 and minimum tensile strength of 873 pli per pair at 0 degrees

Tolerance

Fabrication tolerance - 20%, Use Cq = 0.80

Members

Size - 2x4

Grade - Minimum #2

Configuration Requirements

Minimum depth - 9.25 inches

Configuration - Warren Truss

Panel lengths - Maximum 30 inches

Forces - First web member in compression

Bearing - Bottom chord bearing only

Verticals - Double verticals at 10 feet oc max

Chase - Located in the middle 1/3 of the span

Strongbacks - Strongbacks are mandatory and geometry shall accommodate 2x6 strongbacks at double vertical locations

Fabrication Requirements

Splices - Provide 2x4 scab member detail if splices are present

Truss Design Drawing Requirements

Seal - Drawing signed and sealed by a Registered Design Professional

Note - Include EFP Truss note

Fabrication Requirements

Chord Splice

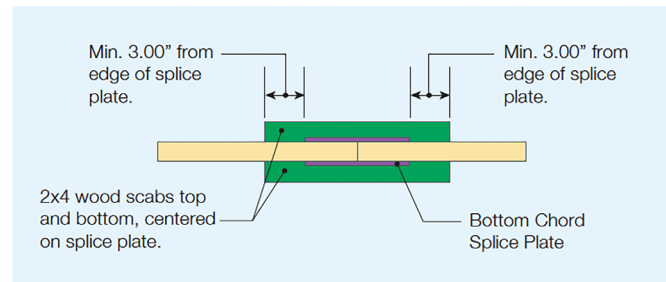
A chord splice is a critical part of the truss and any exposed splice plates must be protected. This is accomplished by adding 2x4 scab members to the exposed face of the splice plates.

A bottom chord splice plate will require a scab member over the plate on the top of the chord and a scab member over the plate on the bottom of the chord. A top chord splice plate will only require a scab member over the plate on the bottom of the chord.

The scab member shall be at least 6-inches longer than the length of the splice plate and installed so that it extends at least 3-inches past the end of the plate. See the figure and scab plate detail below. Splices shall be located sufficiently away from joint locations to allow for installation of the scab members.

Labeling

Each EFP Truss shall be identified with a marking, or affixed label or tag that coordinates the truss with the truss' unique truss design drawing and identifies the truss as an EFP Truss. Identification shall be readily visible to the installer, builder, owner, and building official during installation and once installed.



EFP Truss Tags Available from SBCA

SBCA offers EFP Truss Tags designed to help manufacturers clearly identify each EFP Truss and coordinate it with its unique truss design drawing.

Visit www.pubs.sbcacomponents.com to learn more and purchase tags.

Jobsite Package

A copy of IAPMO Report No. UES ER-999 must be included in jobsite package along with the sealed truss design drawings.



Quality Requirements

Following is a list of quality requirements for the EFP Truss.

- Each EFP Truss shall be manufactured in a truss manufacturing facility operating under a documented in-plant quality assurance program that meets the requirements of ANSI/TPI 1.
- The in-plant quality assurance program shall be verified and monitored through ongoing third-party inspections by an approved inspection agency.
- Metal connector plates shall be recognized as complying with ANSI/TPI 1 in an evaluation report issued by an approved and accredited agency.
- At a minimum, one (1) EFP Truss shall be inspected for each EFP Truss job manufactured.
- Plate embedment gaps shall be no greater than 1/32 inch as determined by ANSI/TPI 1. Toothholding reductions are not allowed for embedment gaps that exceed 1/32"
- EFP Truss shall be identified with a marking, or affixed label or tag that coordinates the truss with the truss' unique truss design drawing and identifies the truss as an EFP Truss. See Fabrication Requirements for more information.

This document is effective until December 31, 2027. After that date, this dated version of the document should not be relied upon. See SBCA's website at sbcacomponents.com for current documents.