Cascadia Structural
TIMBER SOLUTIONS

Pavilion

DESIGN GUIDE

PRE-ENGINEERED

STANDARDIZED
PARTS + PROCESS

info@cascadiastructural.com | (971) 895-3574

Truss Guide

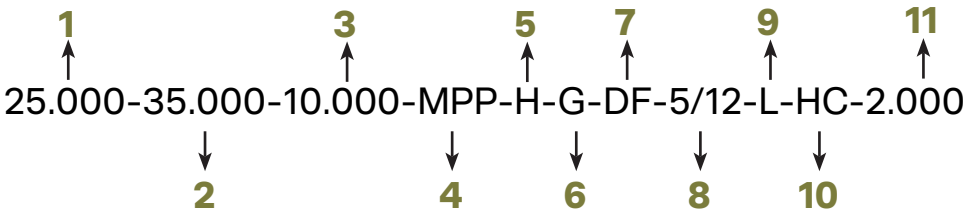
This guide provides specifiers with technical information about the Glulam and Timber* Truss product lines. We have done the analysis on the trusses in the tables below, but any truss can be specified within the limits of these tables. All trusses are assumed to have distributed loading. For trusses that fall in between depths and lengths, a linear interpolation can be used to get a general idea of possible loading. **These tables are intended to be used to assist in preliminary design. All values are approximate and intended as a guide for the specifying professional.**

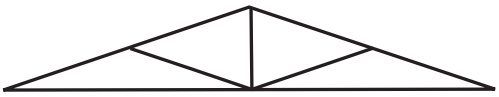
Pavilion Selection

Pavilions can be specified by using the following part number designation:

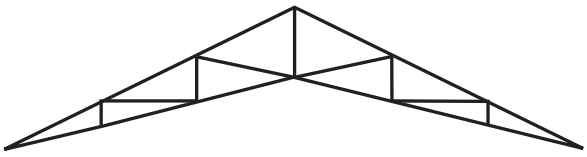
1. **Pavilion Width**
2. **Pavilion Length**
3. **Pavilion Height**
4. **Decking:** "MPP" for Mass Plywood Panel, "LD" for Lock Deck, and "TG" for Tongue and Groove
5. **Truss Type:** Kingpost, Double Howe, Howe, Fink or Scissor
6. **Material:** Glulam, Timber with Countersinks and Plugs
7. **Species:** Douglas Fir
8. **Pitch:** Pitch of the Top Chord of the Truss
9. **Truss Style:** Ultra-Light, Light, Medium or Heavy
10. **Connection Style:** "HP" for Hidden Plate, "SP" for Side Plate, and "HC" for Hidden Plate with Countersinks and Plugs
11. **Overhang:** Horizontal length of the top chord overhang**

**To three decimal places

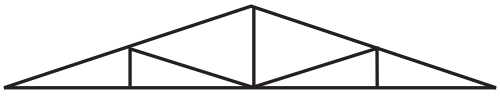




KP-Kingpost
Available in Glulam & Timber



SC-Scissor
Available in Glulam & Timber



H-Howe
Available in Glulam & Timber

F-Fink
Available in Glulam & Timber

Truss Type Specifications

Glulam

Ultra-Light

Bottom Chords - 3 1/2" x 6"

Top Chords - 3 1/2" x 6"

Webs - 3 1/2" x 6"

Light

Bottom Chords - 5 1/8" x 13 1/2"

Top Chords -5 1/8" x 13 1/2"

Webs - 5 1/8" x 7 1/2"

Medium

Bottom Chords - 6 3/4" x 18"

Top Chords - 6 3/4" x 18"

Webs - 6 3/4" x 7 1/2"

Heavy

Bottom Chords - 8 3/4" x 22 1/2"

Top Chords - 8 3/4" x 22 1/2"

Webs -8 3/4" x 9"

Timber

Ultra-Light

Bottom Chords - 4" x 6"

Top Chords - 4" x 6"

Webs - 4" x 6"

Light

Bottom Chords - 6" x 12"

Top Chords -6" x 12"

Webs - 6" x 6"

Medium

Bottom Chords - 8" x 18"

Top Chords - 8" x 18"

Webs - 8" x 8"

Engineering Responsibility Position Statement

Cascadia is a manufacturer of glulam and timber trusses. Cascadia does not replace or accept the responsibility of the design professional of record for any structure.

Cascadia accepts delegation of engineering responsibility only for the products Cascadia manufactures, provided that the application conditions are specified by the design professional of record, or other responsible party when a design professional is not engaged. Cascadia provides engineering in the design of its products and does not displace the need on any project for a design professional of record.

Pavilion Configurator

Our Pavilion Configurator can be found at cascadiastructural.com.

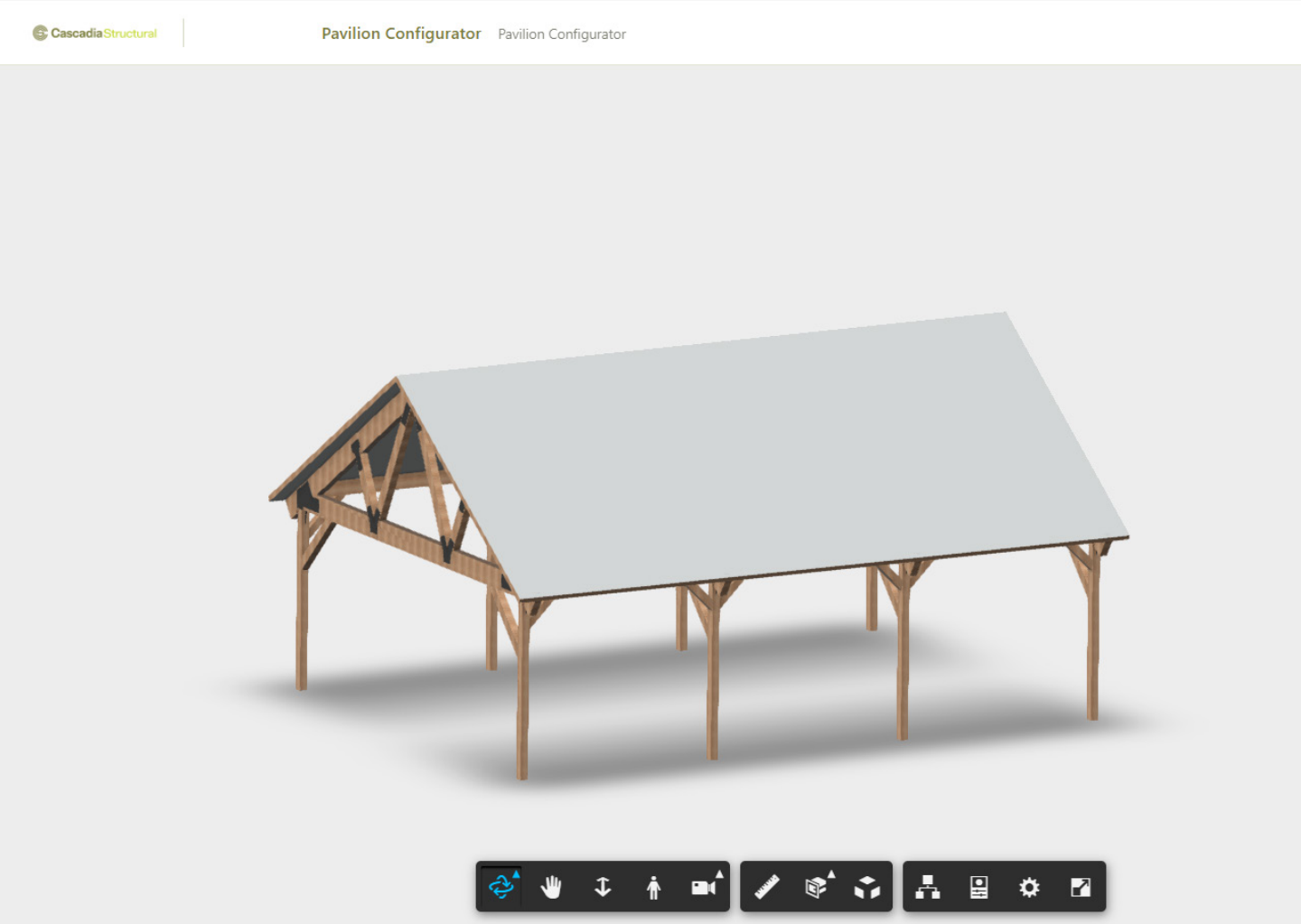
By working with Autodesk, we are offering additional BIM models through Autodesk Informed Design, allowing for MEP Integration with clash detection at the early stages of your project.

This tools allows our customers to access the following:

1. Design - explore and select from our infinite truss options (using design guide, RFAs and Informed Design).

2. Estimate - use our estimating utility for instant pricing and truss capacity.

3. Order - place an order and track progress on our customer portal.



Pavilion Configurator

Pavilion Configurator

Latest

SHELTER WIDTH (ft)

25

Min: 10 Max: 40

SHELTER LENGTH (ft)

35

Min: 10 Max: 60

DECKING OVERHANG (ft)

1

Min: 0 Max: 3

SHELTER HEIGHT (ft)

10

ESTIMATED PRICE **$67,898**

Structural	4 trusses · 12 ft spacing	$50,176
Tongue & Groove	4x T&G · 1,201 sqft · ...	$17,722

Includes trusses, columns, braces, eave beams, engineering, and decking. Excludes foundation, install, and permits.

Optimize 4 Checked Options

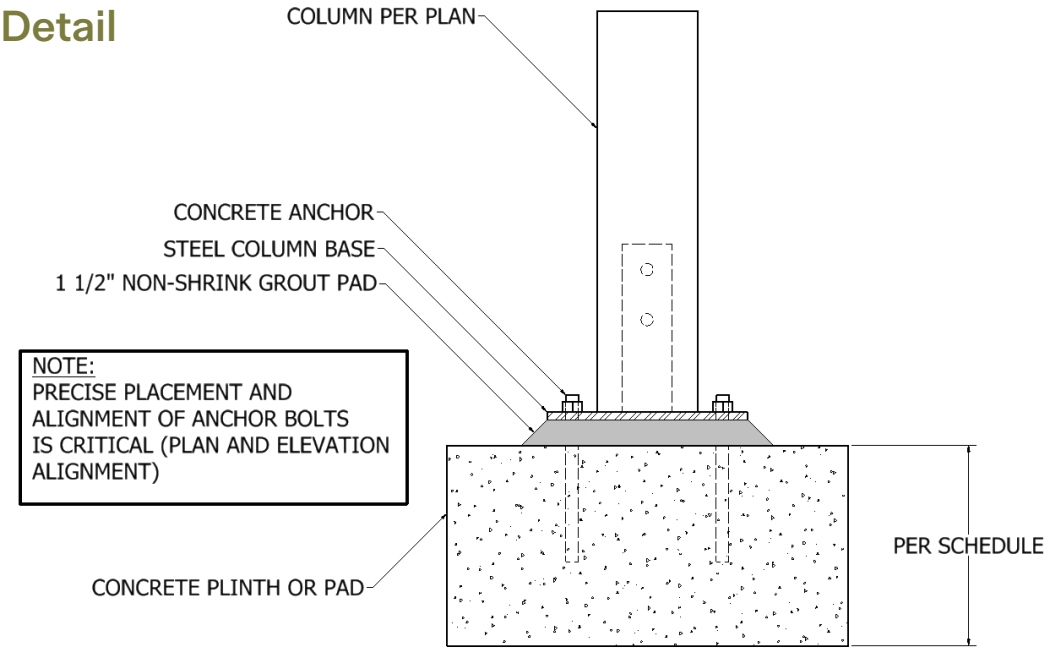
⚙ Generate Model

Model generated!

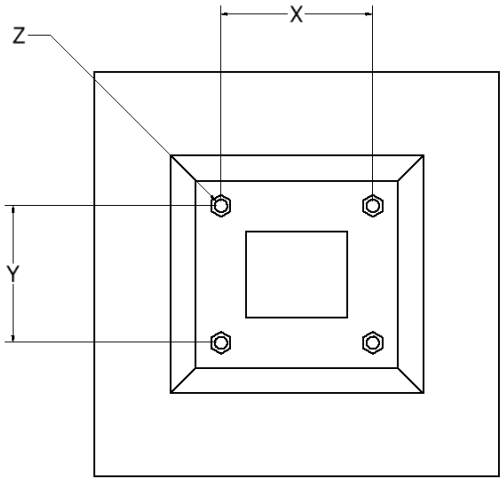
↓ Revit Family

Column Connection

Detail



Plan



GLULAM		All Truss Sizes
	X	9″
	Y	8.125″
	Z	0.75″ anchor bolts

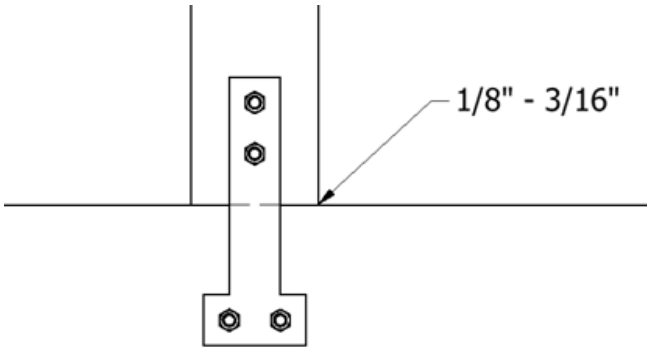
TIMBER		All Truss Sizes
	X	8.5″
	Y	8.5″
	Z	0.75″ anchor bolts

Non-Standard Loading

All trusses are assumed to be loaded as a distributive load, meaning purlins must be 4′ on center or less. If this is not the case, please reach out to Cascadia to check that the proposed loading for your specific application will work with the truss you are working with.

Allowable Gaps in Truss Members

Cascadia Trusses will have a gap between members of 1/8″ to 3/16″



Architectural Truss Specification

1.0 GENERAL REQUIREMENTS

1.1 Description: This section includes the design, fabrication and supply of the heavy timber trusses as shown and described on the contract drawings. The trusses are to be of glulam construction and the supplier shall furnish all materials including connecting steel and hardware for a complete installation.

1.2 Design Criteria:
Dead Load: _____ psf (specify ASD or LRFD)
Roof Live Load: _____ psf (specify ASD or LRFD)
Roof Snow Load: _____ psf (specify ASD or LRFD)
Wind and seismic loads by EOR.

1.3 Qualifications: The heavy timber truss manufacturer must be a company specializing in the design and fabrication of timber trusses with a minimum of five (5) years documented experience. Approved manufacturers include:

Cascadia Structural Timber Solutions
10117 SE Sunnyside Rd Ste F #103
Clackamas, OR 97015
(971) 895-3574

1.4 Submittals:

1.4.1 Submit shop drawings and product data under the provisions of section AIA A207-2017. Shop drawings shall include: general framing plan, truss profiles, loads, and fabrication details for all wood members and steel assemblies. Also indicate dimensions, wood grades, drilled holes, fasteners and cambers. Shop drawings to be stamped by a registered engineer, licensed to practice in the state where the building is being constructed.

1.4.2 Submit design calculations stamped by a registered engineer, licensed to practice in the state where the building is being constructed.

1.4.3 Furnish an APA-EWS Certificate of Conformance stating that the glulams conform to ANSI/APA A190.1.

1.4.4 Provide a written warranty against defects in material and workmanship for a period of five (5) years.

2.0 PRODUCTS

2.1 Materials:

2.1.1 Glulam shall be Douglas Fir. Combination 3 per ANSI/APA 117. The appearance shall be Architectural per AITC 110 or other (select one). Adhesive shall be 100% waterproof phenolic resin glue per ANSI. Surfaces of truss members shall be S4S.

2.1.2 Sawn Lumber shall conform to the latest edition of "Grading and Dressing Rules" by PLIB or "Western Lumber Grading Rules by WWPA. Lumber shall be seasoned dry with a maximum moisture content of 19% and be Douglas Fir #1 or Better.

2.1.3 Manufacturer to supply all necessary steel and hardware required to assemble trusses. Steel to be ASTM A-36 and hardware to be ASTM A-307. Welding by certified welders per AWS specifications D1.1. All steel and hardware shall be prime coated / epoxy powder coated / galvanized (select one).

2.2 Fabrication:

2.2.1 Heavy timber trusses shall be fabricated and assembled in a plant with facilities for performing work specified to the fullest extent possible. Factory drill all holes using CNC Machine. Holes for timber connections shall be 1/16" larger than the bolt diameter. Where trusses cannot be shipped fully assembled due to their configuration, fabricate and trial assemble to ensure proper fit. Individually wrap trusses after assembly. Field fabrication of heavy timber trusses is not permitted.

2.2.2 Concealed connector locations shall be fabricated to within 1/8" of true position. Fabricate length of members to be within 1/8" of required length to achieve tight connections. Make end cuts flat and true to ensure consistent load transfer.

3.0 EXECUTION

3.1 Delivery, storage and handling per AITC 111-2005 Transit, Storage and Erection:

3.1.1 The purchaser or installer is responsible for handling and protection of heavy timber trusses after arrival at destination. All trusses shall be unloaded and handled with a forklift or crane using nylon slings.

3.1.2 If the trusses are to be stored at the site, they must be placed on a level surface and stickered to prevent warpage and twisting.

3.1.3 Any damage must be reported immediately to the truss manufacturer's professional engineer.

3.2 Installation:

3.2.1 Install the trusses according to manufacturer's shop details and installation drawings. Do not field cut, drill, or alter structural members without written approval from the timber truss manufacturer's professional engineer. Set trusses in locations and to elevations indicated. Make provisions for erection loads and provide temporary bracing to maintain trusses true and plumb, and in true alignment until completion of erection.

3.2.2 Maintain factory-applied wrapping until roof structure is enclosed. Touch up primed surfaces of steel assemblies with primer coat compatible with shop coat.

General Structural Note

1. THE MANUFACTURE OF STRUCTURAL GLUED-LAMINATED TIMBER SHALL COMPLY WITH REQUIREMENTS OF ANSI/APA A190.1. ALL BEAMS SHALL BEAR THE APA/EWS TRADEMARK INDICATING CONFORMANCE.

2. ALL GLUED-LAMINATED MEMBERS SHALL BE DOUGLAS FIR/LARCH COMBINATION 3 WITH WATERPROOF RESORCINOL OR PHENOL RESORCINOL GLUE CONFORMING TO ANSI/APA 405-2023. ALLOWABLE STRESS REQUIREMENTS SHALL COMPLY WITH TABLE 4A OR 4D IN THE NDS.

3. ALL SAWN LUMBER SHALL BE DOUGLAS FIR #1 OR BETTER PER "GRADING AND DRESSING RULES" BY PLIB OR "WESTERN LUMBER GRADING RULES" BY WWPA. ALLOWABLE STRESS REQUIREMENTS SHALL COMPLY WITH TABLE 4A OR 4D IN THE NDS.

4. ALL EXPOSED GLULAM MEMBERS SHALL BE ARCHITECTURAL APPEARANCE GRADE IN CONFORMANCE WITH THE STANDARD APPEARANCE GRADES OF ANSI A190.1.

5. THE MANUFACTURER SHALL SUBMIT COMPLETE SHOP DRAWINGS TO THE ARCHITECT/ ENGINEER FOR REVIEW PRIOR TO ANY FABRICATION.

6. PROVIDE CAMBERS AS NOTED ON DRAWINGS.

7. GLUED-LAMINATED MEMBERS SHOWN ON THESE PLANS ARE FOR DRY SERVICE CONDITIONS OF USE, DEFINED BY MOISTURE CONTENT OF MEMBER REMAINING BELOW 16%.

8. WOOD MEMBERS MUST BE PROTECTED FROM MOISTURE DURING CONSTRUCTION.

9. THE STEEL USED SHALL CONFORM TO THE FOLLOWING ASTM SPECIFICATION OF LATEST ADOPTION: ASTM A36/A36M.

10. ALL HARDWARE TO CONFORM TO ANSI A307.

11. STEEL AND HARDWARE TO BE PRIME PAINTED.

12. GLUED-LAMATED AND SAWN LUMBER TRUSS TO BE DESIGNED AS A DEFERRED SUBMITTAL BY CASCADIA STRUCTURAL.

CASCADIA STRUCTURAL CONTACT INFO:

971-895-3574

INFO@CASCADIASTRUCTURAL.COM

FAQ

What if the pavilion size I want is outside the parameters of the configurator (bigger than 40x60)?
Pavilions whose size is outside our configurator are considered custom pavilions. Cascadia can still help you with designing and pricing, simply contact Cascadia Structural (info@cascadiastructural.com) for a custom pavilion quote.

What species and finish of glulam and timber is available?
For glulam we use Architectural Combination 3 and for timber we use #1 or better, both are made from Douglas Fir.

What is the standard lead time?
For most projects lead times are 6-9 weeks after receiving your approved engineering drawings.

How do you purchase this pavilion?
To learn more about purchasing a pavilion reach out to us at info@cascadiastructural.com

Is this a deferred submittal?
Yes, this product is a deferred submittal, drawings can be produced within 2 weeks of receiving approved engineering drawings.

Do you have EPDs for your product?
We do not currently have a specific EPD for these pavilions.

Do this pavilion come pre-stained?
They absolutley can, our standard offering does not include stain but it is an option we can add before the pavilion ship to the job site. Reach out to our sales team to learn what options we have.

Can I change the color of the steel?
Absolutely, our standard offering is a black primer but we can accomodate any color you specify.

How can I add this to my BIM Model?
You can download an RFA for the Pavilion you have configured from our configurator shown on page 3.