<u>Section A</u> Roof Truss









Truss Quote & Ordering Guide





Truss Quote & Ordering Guide

Office: (715)239-6465 or 723-8817 Toll Free: (800)826-6975 Fax: (715)239-6731, Toll Free: (800)826-6974 E-mail: wistruss@discover-net.net

The terms below are typically used to describe the various parts of a truss. The profile (shape), heel, and web pattern will vary with the specific design conditions.



Top Chord:

An inclined or horizontal member that establishes the top of a truss, forming the roof line(s).

Bottom Chord:

An inclined or horizontal member that establishes the bottom of a truss, forming the ceiling line(s). An example of an inclined bottom chord member is the bottom chord of a scissors truss.

Web:

Members that join the top and bottom chords to form the triangular patterns typical of trusses. These members transfer loads and forces in the truss.

Peak:

Point on the truss where the top chords meet, forming a ridge line.

Joint:

The location on a truss where the web members intersect the top and/or bottom chord.

Heel:

The point on the truss where the top and bottom chord intersect.

Splice:

Location at which two chord members are joined together to form a single member. It may occur at a joint or between joint points.

Overhang:

The extension of the top chord of a truss beyond the outside of the bearing support.

Pitch/ Slope:

Inches of vertical rise for each twelve inches of horizontal run.

<u>Span:</u>

Term generally used to communicate out-to-out span or overall bottom chord length.



Truss Quote & Ordering Guide

Estimating Trusses

To estimate truss quantities and type for basic rectangular building such as a garage, follow the example below. For complex buildings forward the plans to a truss designer.



When estimating the truss quantity for a building, take the building length divided by the truss spacing factor (shown below) and then add 1 which gives you the total number of trusses required.

Truss Spacing Factor





Example:

If the building is 40' in length and 26' in width and the truss spacing was 24" o.c., then you would take 40' divided by 2 equals 20 . Always remember to add 1 (20 + 1 = 21). For the building as described you would need order 19, 26' common trusses and 2, 26' end frames.



Toll Free: (800)826-6975 Fax: (715)239-6731, Toll Free: (800)826-6974 E-mail: wistruss@discover-net.net

Truss Quote & Ordering Guide

End Frames Studded ends or end frames are used on the end of a building to provide nailing for exterior sheathing. An end frame is a nonstructural framing member and must be fully supported by a bearing wall. There are two types of studded ends, which are described below. Standard End Ladder System Common Truss Standard End Common Truss Standard End Ladder Framing System Section Detail The standard end uses that same profile (outside shape) as the common truss it is used with. If a rake, or gable overhang is to be added, a ladder frame is usually attached to the top chord of the end. When using this method the overhang usually does not exceed 12". Lowered End Ladder System М Common Truss



desired. The amount the truss is dropped can be specified by the building designer.



Truss Quote & Ordering Guide

Office: (715)239-6465 or 723-8817 Toll Free: (800)826-6975 Fax: (715)239-6731, Toll Free: (800)826-6974 E-mail: wistruss@discover-net.net



Please note:

Each valley member decreases in size by 4' when used on equal sloped roofs. Example, a 20' valley set (used with 20' common truss) would consist of the following valley members16', 12', 8', and 4'.

Please inform designer if the valley set will connect roofs with differing pitches/slopes.



Truss Quote & Ordering Guide

<u>Hipsets</u>

A hip roof is a roof which slopes from three sides. A hipset is used to achieve this roof design.



A hipset consists of: step-down hip trusses, the same span as the common trusses, gradually decreasing in height to form the sloping hip line between the common truss and the hip girder.

The hip girder location is determined by the length of the end jacks, generally 8'. The remaining components of the hipset are end jacks, a corner set including a corner girder and corner jacks. The quantities of each component will vary with the span of the hipset. On equal pitch/slope hip roofs, the hip will peak at a horizontal distance that is equal to 1/2 of the span.

Example: -X2**----**X **---**X2---Width (Span) 30' (Width, Span) $\frac{+2}{15}$ (Half of width, which will be the measurement of X2) 40' (Length) -15 (X2) -15' (X2) (Will be the horizontal distance of flat peak, X) 10 (o.c. Truss Spacing Factor) Lenath = 6 (Common Trusses)

If a building were 30' wide and 40' long, each hip would peak at 15' from the end of the building. To estimate the flat ridge length and the number of common trusses required, subtract the hip ends from the building length, which equals 10'. This building would require 2-30' hipsets and 6 common trusses.



Toll Free: (800)826-6975 Fax: (715)239-6731, Toll Free: (800)826-6974 E-mail: wistruss@discover-net.net

Truss Quote & Ordering Guide

Storage Room Openings

The charts below show the inside dimension of our standard storage trusses.



	4/12					
Span	W1	H1	Pattern			
20'	8-0-0	2-9-4	A			
22'	10-0-0	3-0-11	A			
24'	11-0-0	3-4-11	A			
26'	12-0-0	3-8-11	A			
28'	13-0-0	4-0-11	A			
30'	12-6-0	4-4-10	A			
32'	12-0-0	4-8-8	A			
34'	12-0-0	5-1-2	A			

	6/	12	
Span	W1	H1	Pattern
20'	10-0-0	4-4-7	A
22'	12-0-0	4-10-8	A
24'	13-0-0	5-4-8	A
26'	13-0-0	5-3-0	В
28'	13-0-0	5-6-0	В
30'	13-0-0	6-0-0	В
32'	13-0-0	6-6-0	В
34'	13-0-0	7-0-0	В

	5/12				
Span	W1	H1	Pattern		
20'	9-0-0	3-7-2	A		
22'	11-0-0	3-11-9	A		
24'	12-0-0	4-4-9	A		
26'	13-0-0	4-9-9	A		
28'	13-0-0	5-2-8	A		
30'	13-0-0	5-7-7	A		
32'	13-0-0	5-3-0	В		
34'	13-0-0	5-9-0	В		

8/12				
Span	W1	H1	Pattern	
20'	10-0-0	5-3-0	В	
22'	12-0-0	5-6-0	В	
24'	12-6-0	6-6-0	В	
26'	13-0-0	7-0-0	В	
28'	13-0-0	7-6-0	В	
30'	13-0-0	8-1-2	В	
32'	13-0-0	8-1-2	В	
34'	13-0-0	8-1-2	В	

Note: Web patterns may vary with pitch/slope and span. Dimensions are approximate and are measured in feet, inches and 16th's.



Truss Quote & Ordering Guide

Gambrel Room Openings

The chart below shows the inside room dimensions of our standard gambrel attic trusses. Remember flooring, ceiling and wall treatments will decrease these dimensions.



Span	W1	H1
12'	7-0-0	4-10-0
14'	9-0-0	4-10-0
16'	10-0-0	6-0-0
18'	11-0-0	7-0-0
20'	12-0-0	8-1-2
22'	13-0-0	8-1-2
24"	14-0-0	8-1-2
26"	14-0-0	8-1-2
28'	14-0-0	8-1-2
30'	16-0-0	8-1-2
32'	17-0-0	8-1-2
34'	18-0-0	8-1-2
36'	18-0-0	8-1-2

Dimensions are approximate and are measured in feet, inches and 16th's.



Toll Free: (800)826-6975 Fax: (715)239-6731, Toll Free: (800)826-6974 E-mail: wistruss@discover-net.net Truss Quote & Ordering Guide

Attic Room Openings

The charts below show the inside room dimensions of our standard attic trusses, remember flooring, ceiling and wall treatments will decrease these dimensions.



8/12 Pitch				
Span	W1	H1	H2	
20'	10-0-0	5-6-0	3-2-6	
22'	11-0-0	6-0-0	3-4-5	
24'	14-0-0	6-3-0	2-10-9	
26'	14-0-0	6-6-0	3-6-9	
28'	14-0-0	6-11-0	4-2-9	
30'	14-0-0	7-3-0	4-10-9	
32'	14-6-0	7-6-0	5-4-0	
34'	15-0-0	7-11-0	5-8-9	

	10/12 Pitch					
	Span	W1	H1	H2		
	20'	11-0-0	6-6-0	3-6-13		
	22'	11-6-0	7-0-0	4-0-1		
	24'	14-0-0	8-1-2	7-7-13		
	26'	14-5-0	8-1-2	4-3-12		
	28'	14-6-0	8-1-2	5-1-5		
۲	30'	14-6-0	8-1-2	5-11-5		
٢	32'	14-6-0	8-1-2	6-9-5		
٢	34'	16-0-0	8-1-2	6-9-13		

9/12 Pitch				
Span	W1	H1	H2	
20'	10-0-0	6-0-0	3-7-2	
22'	11-6-0	6-6-0	3-7-3	
24'	14-0-0	7-0-0	3-3-3	
26'	14-0-0	7-6-0	4-0-3	
28'	14-0-0	7-9-0	4-9-3	
30'	14-6-0	8-0-0	5-3-15	
32'	14-6-0	8-1-2	6-0-15	
34'	16-0-0	8-1-2	6-1-3	
	Span 20' 22' 24' 26' 28' 30' 32' 34'	9/12 Span W1 20' 10-0-0 22' 11-6-0 24' 14-0-0 26' 14-0-0 28' 14-0-0 30' 14-6-0 32' 14-6-0 34' 16-0-0	9/12 Pitch Span W1 H1 20' 10-0-0 6-0-0 22' 11-6-0 6-6-0 24' 14-0-0 7-0-0 26' 14-0-0 7-6-0 28' 14-0-0 7-9-0 30' 14-6-0 8-0-0 32' 14-6-0 8-1-2 34' 16-0-0 8-1-2	

	12/12 Pitch					
	Span	W1	H1	H2		
	20'	11-0-0	7-6-0	4-3-4		
	22'	11-0-0	8-1-2	4-9-12		
★	24'	14-6-0	8-1-2	4-2-0		
★	26'	14-6-0	8-1-2	5-2-0		
★	28'	14-6-0	8-1-2	6-2-0		
★	30'	14-6-0	8-1-2	7-2-0		
★	32'	16-0-0	8-1-2	7-3-0		
★	34'	16-0-0	8-1-2	8-1-2		

★ = Piggy Back (top included) Dimensions are approximate and are measured in feet, inches and 16th's.



Truss Quote & Ordering Guide

Special Conditions



Energy Heel

The energy heel is used when building an energy efficient building. The heel height is designed higher so that more insulation may be placed over the bearing wall. This helps prevent the hot air from escaping out, where the exterior wall and ceiling meet.



Cantilever

The part of the truss that extends beyond it's support, exclusive of the overhang. When ordering a truss with a cantilever, please give the total bottom chord length as the span.

<u>Section B</u> Floor Truss









Truss Quote &

Office: (715)239-6465 or 723-8817 Toll Free: (800)826-6975 Fax: (715)239-6731, Toll Free: (800)826-6974 E-mail: wistruss@discover-net.net

Ordering Guide



Strongbacks

Strongbacks run between trusses to help transfer loads, minimize vibrations and stiffen the floor system.

Central Chase Opening

2'-0" Max

3-16d Nails

2-16d Nails @ Top & Bottom of 2x4 Vertical Block



2x6 Strongbacks

Strongback spacing should not exceed 10' intervals across span of the truss. Strongbacks are always required and should be lapped a minimum of one truss spacing for continuity. They should extend to and be attached to bearing walls at their ends.



Truss Quote & **Ordering Guide**

Floor Truss Span Charts

Use the span charts below to determine floor truss depth and spacing required. Maximum spans shown are from outside to outside of bearings.

40-10-0-5 loading, L/480 max live load deflection

12" 14" 16" 18" 20" 22" 24"

3x2 Floor Trusses

Spacing					
Depth	12"	16"	19.2"	24"	Depth
12"		18'	17'	15'	12"
14"		20'	19'	17'	14"
16"		22'	21'	19'	16"
18"		24'	23'	20'	18"
20"		26'	25'	22'	20"

4x2 Floor Trusses

	Spacing				
1	12"	16"	19.2"	24"	
	21'	20'	19'	18'	
	23'	22'	21'	20'	
	26'	25'	24'	22'	
	30'	28'	25'	23'	
	32'	30'	28'	25'	
	34'	32'	30'	28'	
	36'	34'	32'	30'	

Shown below are the three most common types of floor end conditions.



Bottom Chord Bearing (Standard)



Top Chord Bearing





Truss Quote & Ordering Guide

I-Joist Span Charts

40 PSF live load, 10 PSF dead load, L/480 live load deflection

I-20



9 1/2"			
Spacing	Span		
12" o.c.	16'-7"		
16" o.c.	15'-2"		
19.2" o.c.	14'-4"		
24" o.c.	13'-4"		

11 7/8"		
Spacing	Span	
12" o.c.	19'-11"	
16" o.c.	18'-2"	
19.2" o.c.	17'-2"	
24" o.c.	15'-5"	

<u>I-40</u>



14"		
Spacing	Span	
12" o.c.	24'-4"	
16" o.c.	22'-1"	
19.2" o.c.	20'-2"	
24" o.c.	18'-0"	

Maximum spans shown above are clear distances between supports, and are based on composite action gluednailed sheathing of 23/32" nominal APA rated OSB or plywood.



Truss Quote & Ordering Guide



Filler block Backer block required both sides for face-mounted hangers)

Section C Engineering Infomation







<u>How to Read Engineering Drawings</u>

Lateral



Truss Quote & Ordering Guide

Office: (715)239-6465 or 723-8817 Toll Free: (800)826-6975 Fax: (715)239-6731, Toll Free: (800)826-6974 E-mail: wistruss@discover-net.net

Engineering Terminology

The terms below are typically used in describing the proper use and engineering of trusses.

Bearing:

A structural support, usually a beam or wall that is designed by the building designer to carry the truss reaction loads to the foundation.

Cantilever:

The part of the truss that extends beyond its support, exclusive of overhang.

Deflection:

The amount a member sags or displaces under influence of forces.

Design Loads:

The dead and live loads which a truss is designed to support.

Live Load:

Any loading which is not of permanent nature, such as snow, wind and temporary construction loads.

Dead Load:

Any permanent load such as the weight of the truss itself, purlins, sheathing, roofing and ceiling materials.

Lateral Bracing:

A member placed and connected at right angles to a chord or web member of a truss.

Plate:

A connector plate manufactured from structural quality steel of various sizes.

Reaction:

The total load transferred from the truss to the bearing.

Total Rise:

Vertical distance from the bottom of the bottom chord to truss peak or highest point.

Span:

The horizontal distance between the outside edges of the exterior walls.

Truss Spacing:

The on-center distance between trusses.

3D View of Truss Layout



<u>Section D</u> <u>Forms</u>





Office: (715) 239-6465 or 723-8817 Toll Free: (800) 826-6975

Fax: (715) 239-6731, Toll Free: (800) 826-6974

E-mail: wistruss@discover-net.net

Quote Request Form

Store Location: _____

Associate's Name: _____

Customer Name: _____

Date: _____



Special Conditions or Comments



Please circle the loading and spacing.



Special Conditions or Comments



Office: (715) 239-6465 or 723-8817 Toll Free: (800) 826-6975

Fax: (715) 239-6731, Toll Free: (800) 826-6974 E-mail: wistruss@discover-net.net



Store Location:

Associate's Name: ____

Customer Name:

Date: _____

Matching to Existing Buildings

If a truss is to match an existing truss or rafter on a building, the dimensions shown below are critical. Please make sure that you give all of these measurements accurately.



- H= (Height from Bottom Chord to Peak)
- S= _____ (Span from Outside Bearings)
- HO= (Heel Height, measure vertical at end of bottom chord or outside edge of bearing wall)
- P= _____ (Peak Location)
- LO= _____(Left Overhang)
- RO= _____(Right Overhang)

<u>Section E</u> Ordering Process





Truss Quote & Ordering Guide

Office: (715)239-6465 or 723-8817 Toll Free: (800)826-6975 Fax: (715)239-6731, Toll Free: (800)826-6974 E-mail: wistruss@discover-net.net

Ordering Information

Purchase Order Information: (Please Include)

- --- Name and Address of Lumber Yard
- --- Name and Address of Delivery Site, Directions are Required
- --- Home and/or Work phone number of customer
- --- Purchase Order Properly Costed

Lead Time:

--- Lead Time is Determined From Date of Purchase Order

Delivery:

- --- Directions
- --- Time of Delivery (can only be estimated)
 - a. Mid morning, late afternoon, etc...
 - b. Don't schedule workers, crane for that day
 - c. Leave daytime phone number for customer
- --- Curbside Delivery
 - a. No carrying trusses up hills, down behind house, etc...
- --- Flag Drop Area
- --- Trucks will Leave Tire Tracks
 - a. Lawns
 - b. New concrete or blacktops
- --- Site Must Be Accessible
 - a. Snow plowed
 - b. Hard surface
 - i. No loose sand
 - i. No mud

NOMINAL LUMBER SIZE	2"	2X4	2X6	2X8	2X10	2X12
ACTUAL SIZE	1 1/2"	3 1/2"	5 1/2"	7 1/4"	9 1/4"	11 1/4"
SLOPE	1 .					a
2/12	1 8/16"	3 9/16"	5 9/16"	7 5/16"	9 6/16"	11 6/16"
3/12	1 9/16"	3 10/16"	5 10/16"	7 7/16"	9 8/16"	11 9/16"
4/12	1 9/16"	3 11/16"	5 13/16"	7 10/16'	9 12/16"	11 13/16'
5/12	1 10/16"	3 13/16"	5 15/16"	7 13/16"	10 1/16"	12 3/16"
6/12	1 11/16"	3 15/16"	6 2/16"	8 1/16"	10 5/16"	12 9/16"
7/12	1 12/16"	4 1/16"	6 6/16"	8 6/16"	10 11/16"	13 1/16"
8/12	1 13/16"	4 3/16"	6 10/16"	8 11/16"	11 2/16"	13 8/16"
9/12	1 14/16"	4 6/16"	6 14/16"	9 1/16"	11 9/16"	14 1/16"
10/12	1 15/16"	4 9/16"	7 2/16"	9 7/16"	12 1/16"	14 10/16"
11/12	2"	4 12/16"	7 7/16"	9 13/16"	12 9/16"	15 4/16"
12/12	2 2/16"	4 15/16"	7 12/16"	10 4/16"	13 1/16"	15 15/16"

and a second water a second fit of second and second second second second second second second second second s

HOW	TO CALCULATE PLUMB	CUT
	USE FOR ODD SLOPES	

TAKE SLOPE, 2ND (OR SHIFT) TANGENT =18.4 DEGREESES THICKNESS (3.5) DIVIDED BY THE ANGLE COSINE (18.4 COS) = PLUMB CUT

EXAMPLE: 4/12 2ND TAN=18.4 3.5 DIVIDE 18.4 COS=3.69" (3 11/16")

THE SECOND





DROPPED HIPS SLOPE USED TO MAKE HIP BLOCKING FRAME FOR SAME SLOPE HIPSETS

	SLOPE	
		TO MAKE FRAME (UNIT LINE LENGTH)
and and the second s	2/12	12.17 / 12
	3/12	12.37 / 12
Line	4/12	12.65 / 12
unit ushr A	5/12	13 / 12
12.65 74	6/12	13.42 /12
4	7/12	13.89 / 12
- 12" ->	8/12	14.42 / 12
Unit Run	9/12	15 / 12
(Jhit	10/12	15.62 / 12
Rise	11/12	16.29 / 12
	12/12	16.97 / 12

HOW TO CALCULATE DROPPED HIP BLOCKING FRAME SLOPE FOR ODD SLOPES

USE THE PATHAGOREON THEOREM TO DETERMINE THE UNIT LINE LENGHT

EXAMPLE $4^2 + 12^2 \sqrt{-12.65}$

HOW TO CALCULATE DROPPED HIP BLOCKING FRAME FOR DUAL SLOPE HIPSETS		
12 SIDE SLOPE	END SLOPE	$\frac{\text{UNIT LINE LENGHT END}}{\text{LENGHT (X)}} = \frac{Y}{12}$ $Y = \text{SLOPE OF BLOCKING FRAME}$
EXAMPLE: <u>12</u> 7.5 (X= 12 TIM	<u>X</u> 8 IES 8 DIVIDE BY 7.5)	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$