MWPS-38' Truss

38' span, 4-web trusses

with plywood gussets.

CAUTION!

Additional professional services will be required to tailor this plan to your situation, including but not limited to: assurance of compliance with codes and regulations; review of specifications for materials and equipment; supervision of site selection, bid letting and construction; and provision for utilities, waste management, roads or other access. Furthermore, any deviation from the given specifications may result in structural failure, property damage, and personal injury including loss of life.

WARRANTY DISCLAIMER

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MIDWEST PLAN SERVICE

Cooperative Extension Work in Agriculture and Home Economics and Agricultural Experiment Stations of North Central Region - USDA Cooperating

38' Truss

Title Page

MIDWEST PLAN NO. 38' Truss

38' span, 4-web trusses

with plywood gussets

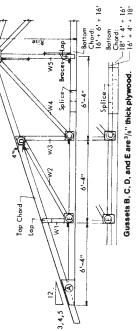


Table of lengths

WS	ίn	9	œ
W4	500	.6	10.+9.
W3	'n	.4	ò
W2	7.	œ	œ
W	5.	'n	'n
Top Chord	8	16'+5'	16'+5'
Rise	49	.4.9	7-11"
Roof Slope	3/12	4/12	5/12

4+4, 4+6, 6+6 indicate stacked lower chord. 4&4, 6&4, indicate double web; a 2x4 is attached to the web member to increase its stiffness.

This sheet is to help you SELECT and ERECT trusses. DO NOT try to BUILD trusses from it, because it does not include enough information on gluing, joints, splices, and fabrication. See "Designs for Glued Trusses," MWFS-9. If you buy metal-plate trusses, use their designer's data.

To select a truss:

estimate roof dead load
 determine appropriate s
 roof dead load plus sno

2. determine appropriate snow load
3. roof dead load plus snow load = roof design load.
4. select a truss to carry at least the total roof load for the lumber quality, slope, spacing, and ceiling dead load you will use.

For more information see back page and MWPS-9, Designs for Glued Trusses, 4th Edition, 1981.

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d	5x6	2×4	36	36	34	0	0	0	С	c	c	z	=	=	:		1-1-1	2170	0 10	oxo:	828
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L/1	7×10	7++7	78	. 78		36	33	56	0	0	0	2	z	:	:	:	3x4x31	14.16	12×10	=	10.0
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а	2×4	2×4	34	32	31	14	13	0	0	0	0	2×4	2×4	2×4	2×4	2×6	3/8435×22	8~12	0.0	0.70	9
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10×8	1/8	2x10		100+	56		77	41	35	22	14	0	=	=	=	=	=	5x4x37	14×20	12x12	0 Y 0	
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	d	5x6	2×4	78	7.2	70	34	27	0	0	0	0	=	=	:		z	4x4x19	10×16	30×10	2	
=	ol	2×6	5x6	93	88	87	70	39	37	50	18	0	÷	=	z	=	z	2x4x24	10×20	12×10	\$	
8×8	5 2	2x8	5x6	100+	100+	100+	5.1	00 √7	95	25	20	0	2×4	2×4	2×4	2×4	2×4 2	2-3x6x15	14x16	12×10	8×10	
10×8	Į/	2×10	7+7	ı	ı	ı	71	89	24	35	54	0	=	=	2×6	:	2	-3x6x18	16×20	14×14	8x12	
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14×10		2×12	9+9			ı	92	85	81	97	42	39	=	:	=	E	2	2-12x6x28	Ξ	20×16	10×12	
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8×12 10×12 12×12

3/8×3½x19 3/8×4×22 ½x4×18

2×4

: : X

2x4

2x4

8x8

8 : :

8x10 12x10 14x10 18x12 8×10 8 : 8 :

14x12 14x16 16x20 18x16

½x4x18 ½x4x25 ½x4x30 ½x4x35

2×4

2x4 464

2×4

2×4

61 84 100 +

2x4 2x4 2x6 2x4 2x6 2x6 2x8 2x6 2x10 4+4 2x12 4+6 2x12 4+6 2x12 6+6

4/12 Slope

8x8 .. 10x8

8x12 10x12 10x16

3/8x3½x17 3/8x4x22 ½x4x17

2x4

2×4 :: 2×4 464 ::

2×4

8×8

3/8x3\frac{4}{8}x21 3/8x4x22 3/8x4x32

2×4 2×4

2×4

8x10 12x10 14x10 16x10

3/8×4×32 ½×4×28 ½×4×36 ½×4×44

2×4.

2x4

2×4

464

Gusset Sizes, in B C H W

Web member sizes

Truss spacing, ft.

Top Bottom chord chord 1100f Lumber

2x4 2x4 2x6 2x4 2x6 2x4 2x8 2x6 2x8 2x6 2x10 4+4 2x12 4+6 2x12 4+6 2x12 6+6

3/12 Slope

8x8 110x8 112x8 112x8 114x8 8x8 8x8 8x8 8x10 112x10 112x10 114x10 114x10 114x10

8x8 : :

lowa 50011
Armes,
Service,
Plan
Midwest
© 1981

8x8 8x10 ... 8x12

2×4

2x4 2x6 2x4 ::

2×4

2×4

0000

33 45 57

2x6 4+4 4+6 6+6 2x4 2x6 2x6 2x8 2x10 2x12 2x12 2x12 2x12

29 46 60 70 100+

30 49 63 75 100+

2/15 Slobe

2x4 2x4 2x6

This page is a summary of the information in "Designs for Glued Trusses," MWPS-9. Refer to this publication before building trusses.

ROOF SLOPE (inches of rise/inches of run)

short spans and narrow spacings. Roof slope significantly affects the forces in the uss members. A steeper roof allows higher roof loads 3/12 slope—used in low snow load areas or for

4/12 slope—most common for farm buildings. 5/12 slope—used in high snow load areas or for long spans and wide spacings.

TRUSS SPACING

Roof and ceiling materials and wall framing in-fluence truss spacing selection. In pole buildings it is desirable to support each truss on a pole. 2' spacing uses more material and labor. It is common for buildings with ceilings and plywood roof

storage buildings. 4' spacing is common in insulated livestock buildings with ceilings and metal roofs, and in some

8' spacing uses least material and labor for build-ings without ceilings such as machinery storages, un-nsulated livestock buildings, etc. Total cost may be greater if a ceiling is needed.

CEILING DEAD LOAD

Three ceiling dead load cases are included in the

- · 0 psf allows for no materials in addition to the
- truss, bracing, and stiffeners.

 5 psf ceiling dead load allows for a metal or plywood ceiling with insulation (warm livestock buildings).
- 8 psf ceiling dead load allows for a gypsum board ceiling with insulation (residential or light com-mercial buildings).

ROOF DEAD LOAD

Add the weights of the truss, purlins or decking, rooling, and rool insulation to get the dead load on the top chord.

Approximate weights of trusses, psf.

Example: a 4-web truss for 4 spacing with 2x8 top chord and 2x6 bottom chord weights about 13 + 0.7 = 2.0 psf.

Dashed lines in table indicate example.

2' Iruss 1.6 2.0 2.4 2.7 2.4 2.7 2.8 4.0 2.4 4.0 2.7 2.8 6.4 2.7 2.8 6.4 2.7 2.8 6.4 2.1 0.8 8.1 0.8 1.1	2x4 2x6 2x6 2x6 1owing	Add the follow 2-64-Web Truss 6 Web Truss	2×12 2	2x12 2	2×10 2	2x8 2			2x4 2	Top Bor	d
33	8	following Truss uss	2x6+2x6	2×4+2×6	2x4+2x4	2×6	2×6	2×4	2×4	Bottom	20
	4' weight, 0.8 1.0 1.2 1.2 1.6 2.2 2.2	for: 1.4 2.1	4.4	4.0	ى. سا		2.4	2.0	1.6		2.

Snow load on the ground, 50-yr recurrence interval. See table below for conversion to roof snow design load.

Brace and anchor the trusses as they are placed. Bottom chord stiffeners are required at panel points unless a rigid ceiling is to be installed. Use king post crossbracing in all buildings.

Wall Framing

up to 321

16'

16'

BUILDING CONSTRUCTION

Windbracing

SNOW LOAD

Use the map above and the table below for determining snow load for your building.

Recommended snow loads

Recommended by the MMPS and NRAES Committees for roots up to about "x slope for buildings codes me jurisdiction of a building code fam buildings. Sup map load x 6 19 rd. Says to 8 this stown on roof offine buildings. Sup yi map load x 9 th stowner from snow on ground to

Minimum recommended load is 12 pst In areas, where all of the maximum snow load results from a single storm without significant wind, the maximum roof load may equal the ground snow

120	110	1 00	98	80	70	8	50	40	30	20	15		Map load	
 86.4	79.2	72.0	64.80	57.6	50.4	43.2	36.0	28.8	21.6	14.4	12.0	psf	Farm	Roof snow load
8	88	80	72	2	56	48	\$	32	24	16	12		Other	w load

Weights of roofing and ceiling materials.

01-0.4	Insulation, per inch of thickness
2.6	Asphalt shingles
09	28 ga steel
0.4	0.024 aluminum
1.4	, plywood
	.⊬ plywood
2.2 pst	1 lumber solid
	Sheathing, etc.
0.7	2x4 furring, 2' o.c
0.4 psf	1x3furring 16 o.c.
	Ceiling framing
	2x6 purlins, 2 o.c.
0.7 psf	2x4 purlins, 2' o.c.
	Roof framing

Trusses are designed to withstand winds of 80 mph on a building less than 30' high.

1

LUMBER

Wind Anchorage

SS = Select structural (15%) = moisture content at time of milling		Size 2x4
	No. 1	2 X A

!		Spring Pine Fir	Southern Pine (19%)	Southern Pine (15%)	Hem—Fir (North)	Hem—Fir (North)			Hem—Fir		Douglas Fir (South)		Douglas Fir (North)	Douglas Fir—Larch	1100 Group	Spruce—Pine—Fir		Southern Pine (19%)	Southern Pine (15%)		Hem—Fir		Douglas Fir—Larch (North)		Douglas Fir—Larch	1400 C	Southern Pine (19%)		Southern Pine (15%)		Douglas Fir—Larch (North)		Douglas Fir—Larch
	SS	201	No. 2	No. 2	No. 1	SS	No. 1	No. 1	No. 2	No. 2	No. 2	No 2	No. 2	No. 2		SS	No. 1	No.2	No. 2	SS	No. 1		No. 2	No. 1	No. 2	No. 2 dense	No. 1	No. 1	No. 2 dense	SS	No. 1	SS	No. 1
	2x6.	3	2x6	2x6·	2x6*	2×6+	2x4	2x6*	2×4	2x6:	2x4	2x6	2×4	2x6.		2x4	2x6	2x4	2x4	2×6·	2x4	2x6'	2x4	2x6.	2x4	2x6	2×4	2x6	2x4	2x6*	2x4	2x6-	2x4

Use exterior, C-C grade '/," or '/2' plywood with outer plies of Group 1 species wood, Identification Indexes, 24/0 and 29/16 respectively.

Use 3-ply '/," plywood and 5-ply '/2" plywood or use Structural I, 4-ply, '/2" plywood.

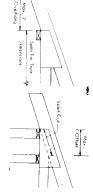
Three lumber groups are indicated in the tables. Example of species in each group are listed below 2x6 + 2x6, 2x8, 2x10, 2x12.

= Select structural %) = moisture content at time of milling %0 Group Grade		Size
uglas Fir—Larch No.	_	2x4

me of milling.	Ψ.	Minimum of each truss	1 fasteners for	wind anchora	Minimum fasteners for wind anchorage, both ends ach truss.
irade	Size				
			Truss S	Truss Spacing	
ō.1	2x4	Truss Span	Ŋ	<u>ب</u> ط	œ
Š	2x6-	20'-24	1A or 1B	1A or 1B	2A or 1B
0	2x4	26:-30	1A or 1B	1A or 18	2A or 2B
š	2x6.	32-46	1A or 1B	2A or 1B	3A or 2B
o dense	3	48:-50	1A or 1B	2A or 1B	4A or 2B
0.1	2x6	52-60	1A or 1B	2A or 2B	4A or 3B
ō.1	2x4	A = metal framing anchor	ning anchor		$\mathbf{B} = \frac{1}{2}$ bolt
lo. 2 dense	2x6·	4-30d ring-sha	4-30d ring-shank nails = 1/2" bolt	×	
		Overhang			

ρng

gusset design for a 1/3 larger snow load. For a 2' to 4' overhang, use the top chord and heel



Roof Purlins

Stagger purlin joints for continuity across the trusses. Purlins may be laid flat with 2' and 4' truss spacings and but joints used.

Alternating purlin lengths may be used in pole buildings where the poles are spaced evenly and the trusses are not. For poles 8' oc. they may be of alternating 10' and 18' lengths with staggered and lapped end joints if pairs of trusses are mounted on alternate sides of the poles.

