MWPS-44' Truss

44' 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

This plan provides conceptual information only. Neither midwest plan service nor any of the cooperating land-grant universities, or their respective agents or employees, have made, and do not hereby make, any representation, warranty or covenant with respect to the specifications in this plan. 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.

MIDWEST PLAN SERVICE

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

44' Truss

Title Page

MIDWEST PLAN NO. 44' Truss

with plywood gussets 44' span, 4-web trusses 3,4,5 7'-4" Gussets B, C, D, and E are 3/8" thick plywood. Lap-Top Chord -7'-4" ¥2 ₩3-Splice Splice7 7'-4" Braces ₩5 Bottom Chord: 20' + 4' + 20' 18' + 8' + 18' Chord: 18' + 8' + 18'

Table of lengths

Rise	Top Chord	¥.	W2	1		
5:-6: 7:-4:	18°+5 20°+4	ωŅ	nó có		oj 😝	4' 9'+8' 5' 10'+9'
9'-2	20'+4'	ω	ģ			

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," MWPS-9. If you buy metal-plate trusses, use their designer's data.

1100f Lumber

top Bottom

Ceiling dead load, par

Web member sizes W2 W3 W4

W/5

To select a truss:

- estimate roof dead load
- determine appropriate snow load
 roof dead load plus snow load = roof design
- load psf
 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.

5/12 Slope	4/12 Slope	3/12 Slope	6 6	5/12 Slope	4/12 Slope	3/12 Slope	
2x4 2x6 2x6 2x6 2x10	2x4 2x6 2x6 2x6 2x8 2x10 2x12 2x12	2x4 2x6 2x6 2x6 2x8 2x10 2x12 2x12	Grand Top China	2x4 2x6 2x6 2x6 2x10 2x10 2x12 2x12	2x4 2x6 2x6 2x8 2x10 2x12 2x12	2x4 2x6 2x6 2x8 2x10 2x12 2x12	Chord
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35 62 71 97 100+	30 52 63 79 100+	26 38 53 56 81 100+	ر م ا	28 52 58 81 100+	25 42 52 64 88 100+	21 31 44 47 67 84 89	s
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14 13 30 42 53	112 118 226 33 47 60	4 12	1 0 1	0 24 34 43 59	0 0 21 26 35 48 50	16 17 26 35 37	Ceiling dead load, ps
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5/12 Slope

2x4 2x6 2x6 2x6 2x8 2x10 2x12 2x12

2x4 2x4 2x6 4+6 4+6

61 86 100 23 48

58 75 100+ 16 17 47

0 21 28 28 39 49

0 19 23 28 45 49

200000

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= ± 2x4

2x4

: : 2x4

2x4

3/8x3½x15 3/8x4x22 ½x4x16

8x12 10x12 10x16

8x8

- 8x

: : XS

0 0 12 21

::: x4

2x6 2x8

: :: 484 484 2x4

\x4x19 \x4x26 \xx4x31 \xx4x31 \xx4x31

12×16 14×20 18×16 18×20

10×12 14×14 16×14 18×14 10x8

8x8 10x8 12x10 14x10

4/12 Slope

20 42 49 67 84

0 41 47 61 84 95

0 0 16 18 18 22 22 35

000

: : x4

2 x4

: : x4

: : x4

2×4

8×12 10×12 12×12

- 8×8

: 2 %

8x10

: : : x4

2×6

2×4

\x4x19 \x4x25 3/8x3½x17 3/8x4x22 ½x4x18

14x12 14x16 16x20 18x20

10x10 12x10 14x14 18x14

8x8 10x10 12x10 16x10

8 × 8 2 × 8

: : : ² ⁴

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

3/12 Slope

37 37 70 79

17 22 32 34 51 51 72

0 61 69

16 26 30

0000

2x4 : : X4

2x4 2x4

: : : x4

2x4

3/8×4×33 ½×4×28 ½×4×36 3/8x3\5x20 3/8x4x23 3/8x4x32

12x12 14x16 16x16 18x16

8x10 12x10 14x10 16x12

8x8 10x8 12x8 14x8

44X4X44

000

: : 2x4

8×12 10×12

8×10 = 8x8

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)

Roof slope significantly affects the forces in the truss members. A steeper roof allows higher roof loads. 312 slope—used in low snow load areas or for short spans and narrow spacings.
4/12 slope—used in high snow load areas or for 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

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

storage buildings.

8' spacing uses least material and labor for buildings without ceilings such as machinery storages, uninsulated 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
- 8 psf ceiling dead load allows for a gypsum board ceiling with insulation (residential or light commercial buildings).

ROOF DEAD LOAD

Add the weights of the truss, purlins or decking, roofing, and roof 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 weighs about 13 + 0.7 = 2.0 psf. Dashed lines in table indicate example.

Chard Size 2. 4. 4. 4. 4. 4. 4. 4. 4. 4. 4. 4. 4. 4.
2: 4: ITruss dead weight, Itruss dead weight, 1:0.8 2.0 1.0.3 1.6 3.3 1.6 4.4 2.2 2.7 [1.7]
4 dead weight, 0.8 1.0 1.2 2.2 2.2 2.2 1.7 1.2 2.2 2.2 2.2 2.2 2.2 2.2 2.2 2.2 2.2
8* 0.4 0.5 0.5 0.7 0.7 0.8 1.0

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

SNOW LOAD

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

Recommended snow loads

Minimum recommenced load is 12 psf
In a reas where all of the maximum snow load results from a single storm
without significant wind, the maximum root load may equal the ground snow
load. Recommended by the MAYS and NRAES Committees for roofs up to about 7: \$10pt for buildings culsives the jurisdiction of a building code Fairth buildings. 50-y in applicad x 0 flor (25 ya 0.8 flor sow on roof Offine buildings. 50-y in map licad x 0 flor convent from snow on ground to

		Roof snow load	w load
	Map load	Farm	Other
		psf	1
	15	12 0	12
	20	14.4	16
	30	21.6	24

120	110	1 00	98	80	70	80	50	40	30	20	15		Map load	
86.4	79.2	72.0	64.8	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.

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

Wind Loads

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

LUMBER

Three lumber groups are indicated in the tables. Example of species in each group are listed below. 2x6 + = 2x6, 2x8, 2x10, 2x12
SS = Select structural (15%) = mosture content at time of milling. moisture content at time of milling

1600 Group Species	Grade	Size
Douglas Fir—Larch	No. 1	2x4
	SS	2x6-
Douglas Fir—Larch (North)	No. 1	2x4
	SS	2x6*
Southern Pine (15%)	No. 2 dense	2x4
	No 1	2x6:
Southern Pine (19%)	No. 1	2x4
	No. 2 dense	2x6.
1400 Group Douglas Fir—Larch	N N) 4
	5	3
	5	×

Division		Spruce Pine Fir	Southern Pine (19%)	Southern Pine (15%)	Hem—Fir (North)	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 Group	
	SS	No. 1	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. 1	No. 2	No.1	No. 2		
	2x6*	2x4	2×6	2x6.	2x6*	2×6⁺	2x4	2x6*	2×4	2x6.	2x4	2x6:	2×4	2x6.		2x4	2x6*	2×4	2x4	2×6·	2×4	2x6*	2x4	2x6:	2x4		

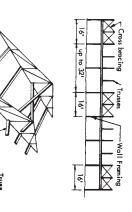
Use exterior, C-C grade '/_a" or '/₂" plywood with outer pites of Group 1 species wood, Identification Indexes, 24/0 and 32/16 respectively.

Use 3-ply '/_a" plywood and 5-ply '/₂" plywood or use Structural 1, 4-ply, '/₂" plywood.

BUILDING CONSTRUCTION

Windbracing

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.

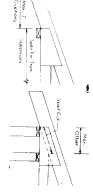


Wind Anchorage

1x4 2x4 2x6

			•		
	χI	4-30d ring-shank nails = 1/2" bolt	4-30d ring-sha	2x6·	ñSe
B = 1/2" bolt		ing anchor	A = metal framing anchor	2x4	
4A or 3B	2A or 2B	1A or 18	52-60	2x6:	8
4A or 2B	2A or 1B	1A or 1B	48-50	244	Ĝ
3A or 2B	2A or 1B	1A or 1B	22-46	2x6*	
2A or 2B	1A or 18	1A or 1B	26-30	2x4	
2A or 1B	1A or 1B	1A or 1B	20-24	2x6-	
œ	4	Ŋ	Iruss Span	2×4	
	Truss Spacing	Truss S			
				Size	
			of each truss.		
Minimum fasteners for wind anchorage, both ends	wind anchor.	fasteners for	Minimum	_	illing

For a 2' to 4' overhang, use the top chord and heel gusset design for a $\frac{1}{3}$ larger snow load.



Roof Purlins

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

Alternating purlin lengths may be used in pole buildings where the poles are spaced evenity and the trusses are not. For poles 8 oc. they may be of alternating 16 and 18 lengths with staggered and lapped end joints if pairs of trusses are mounted on alternate sides of the poles.

1,10	-	m		_	16'
Transfer .	rop John	-	8 Purlin		16' Purlin (2x4 on edge)-
Wal		\			x4 on ed
-			6.	1)
			l6' Purlin	-	181
0		+		1	18' Purlin-
	_	_	-	-	