MWPS-60' Truss

60' span, 6-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.

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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

60' Truss

Title Page

MIDWEST PLAN NO. 60' Truss

8x8 10x8 12x8 14x10 8x8 10x8 12x8 14x10 8x8 10x8 12x8 14x8 8x8 10x8 12x8 14x8 8x8 × = : 8x8 ± ت 8x8 ა ≩ 8x8 10x8 12x8 14x8 8x8 10x8 12x8 14x8 8x8 10x8 12x8 14x8 8×8 %:: 8×8 8x10 8x12 8x14 8x8 8x10 8x12 8x8 8×8 3x8 . : 8x 8x:::: Ľ.Ž **.** } 8x8 8x8 8×8 8x10 12x10 14x12 18x12 10x10 14x12 16x14 18x14 8x8 12x10 14x14 18x14 8x8 12x10 14x10 16x10 8x10 12x10 14x10 18x12 8×10 10×10 14×10 16×10 10x8 w ≩ % = = 8×8 8×8 8×8 8x8 8x8 8×8 8x8 8x12 8x10 8x12 8x12 10x10 8x10 10x12 10x14 8x8 8x10 8x12 10x12 8x8 8x12 10x12 8x14 8x8 8x10 8x12 8x10 8x12 8x10 8x12 8x10 8x12 8x8 8x8 8x8 8x12 8x12 8×8 8x8 8x8 10x10 12x10 10x10 14x12 18x14 20x14 10×10 8x10 8x12 10x8 10x8 12x10 16x12 18x12 10×10 8x8 8x10 10x12 10x14 14x12 16x12 20x12 12x10 16x14 18x14 10x10 12x14 14x10 18x12 10x8 10×10 8×8 8×8 8×8 8x8 12x16 16x16 18x16 18x20 8x12 10x12 10x16 12x20 16x16 18x20 12x16 14x20 18x20 8x12 10x12 10x16 12x16 14x20 16x20 16x20 8x12 10x12 10x16 8x12 10x12 10x16 12x16 14x20 18x16 18x20 12x12 14x16 16x16 16x20 12x16 14x16 16x16 18x16 8x12 10x12 3/8x3½x22 ½x4x16 ½x4x22 3/8x3kx21 3/8x4x22 3/8x4x33 3/8x35x19 3/8x4x22 3/8×4×34 5×4×28 5×4×36 5×4×44 3/8×34×17 3/8×4×22 5×4×18 3x4x16 3x4x24 13x4x25 13x4x34 13x4x40 13x4x45 ½x4x25 2-½x6x18 2-½x6x22 2-½x6x28 \(\frac{1}{2}\times \frac{1}{2}\times \frac{1}{2 \$x4x30 \$x4x47 \$x4x47 61×4×3 \$x4x20 \$x4x26 \$x4x32 \$x4x37 \$x4x20 \$x4x26 \$x4x32 \$x4x37 2x4 2×4 2x4 2x4 2×4 2×4 ¥ 2×4 2×4 2×4 2x:::: 2×4 2×4 2×4 2x4 E 2×4 2×4 2×4 2x4 .. 464 484 79::: 94 94 :: 797 2x4 484 404 797 45::: 2x8 454 464 664 :: 2×4 2x4 2x6 797: : 7×7 2x4 :: 2x6 2x4 2x6 2x6 2x8 464 484 2×4 2×4 2×4 2x4 2x4 7 × 5 : : 2x-2×4 2×4 7x: : 57 2x4 2×5 2×4 2×4 2x6 2x8 2×4 2x4 2x6 2x8 2×4 2×4 2×4 ×:::: 2x4 2×4 2×4 2×4 2×4 2×4 2×4 X:: 2x4 3 2×4 2×. X:::: 2×4 2×4 2×4 2×4 × : : : 7×2 2×5 2x2 0000 000 0000 0 0 16 22 22 0000 16 18 40 43 004 22222 32 32 35 0 9 9 0029 43 60 77 81 20 28 43 35 78 00 22 33 45 57 79 100 45 63 80 85 60 92 92 98 98 98 98 83 400 400 35 50 71 48 94 93 24 39 48 45 63 80 93 Bottom 600f Lumber Bottom 1400f Lumber 2x4 2x4 2x6 2x4 2x6 2x6 2x8 2x6 2x10 4+4 2x12 6+4 2x12 6+6 1100f Lumber 2x4 2x4 2x6 2x5 2x6 2x6 2x6 2x6 2x8 2x6 2x10 4+4 2x12 6+4 2x12 6+4 2x6 4+4 6+4 6+6 2x6 4+4 6+4 6+6 2x4 2x4 2x6 2x6 4+4 6+4 6+6 2x4 2x4 2x6 2x4 2x4 2x6 2x4 2x4 2x6 2x6 4+4 6+4 6+6 2x4 2x4 2x5 2x4 2x6 2x6 2x6 2x8 2x10 2x12 2x12 2x6 2x6 2x6 2x6 2x8 2x10 2x12 2x12 2x4 2x6 2x6 2x6 2x8 2x10 2x12 2x12 2x6 2x6 2x6 2x6 2x10 2x10 2x8 2x10 2x12 2x12 Top Top Hord 2x4 2x6 2x6 3/15 Slope 2/15 2lobe 4/15 Slobe 2/15 Slope 3/15 Slobe 3/15 Slope 4/15 Slobe -20' + 20' + 20' -18' + 10' + 14' + 18' 8. 10' 13'+12' Bottom Chard: 20° + 20° + 20° Bottom Chard: \$ Top 12'+11' 14'+13' 9,0 <u>__</u> Braces Gussets B, C, D, E, F, and G are 3/8" thick plywood. ·9--1 8' +7' 10' +9' **₹** .9 Ö 11'+10' ٧ 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. ð determine appropriate snow load coof dead load plus snow load = roof design load, psf load, select a truss to carry at least the total roof load select a truss to carry at least the total roof load $4+4,\,4+6,\,6+6$ indicate stacked lower chord. $484,\,684,\,684,\,$ indicate double web: a 2x4 is attached to the web member to increase its stiffness Splice 6. 5; 6. 5; 6. 5; W3 60' span, 6-web trusses 9' +8' 10' +9' ۸ œ **∮** ₹ က်က်က 1,-6" estimate roof dead load with plywood gussets 20'+12" 20'+12' 20'+13' Chord Top Chord → -10 Table of lengths 9 To select a truss:

7.-6" 10'-0" 12'-6" Rise

Slope 3/12 4/12 5/12

(a)

8x8 10x8 12x10 14x10

8x8 8x10 8x14

10x10 14x12 16x16 18x16

2-5x6x15 2-5x6x21 2-5x6x26 2-5x6x28

2×4

30::::

2x4 2x6 2x8

2×4 46.4

29 41 52 56

67 96 1004 36

69 95 1004

72

2x8 2x10 2x12 2x12

2x4 2x4 2x5 2x6 2x6 4+4 6+4 6+6

215 Slobe

30 = 564

8x8 10x10 12x10 16x10

8×8

0x10 12x10 16x12 18x12

10x12 14x16 18x12 20x12

12x16 16x16 18x20 20x20

½x4x30 -½x6x22 -½x6x28 -½x6x34

×::::

797

2×::::

*:::

7×::::

22 32 41 46

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

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

4/15 Slobe

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

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gluing, joints, splices, and fabrication. See Thesigns for Glued Trusses," MWPS-9. If you buy metal-plate trusses, use their designer's data.

2×4

8x10

8x8

8x9:::

8x10

8x8 .. 8x10 8x12 8x16 10x12

8x8 10x8 10x12

9x12 10x12 10x16

½x3½x16 ½x4x19 ½x4x28

2x4

2×4 484

2x4 2x6 2x6 2x8 4&4

0 61

8×8

× : :

8x8

10x8

8x8 " " 8x10 8x12 10x14

8x8 10x8 10x10 12x10 16x12 16x12 18x14 20x14

8x12 10x16 10x20

½x3½x14 ½x4×19 ½x4×26

2×4

797

484

2×4

2×4

2x7 2×4

> 77 526.65

22

27 41 55

2x4 2x6 2x6

2×4 2×4 ::

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 sueper roof allows higher roof loads 3/12 slope—used in low snow load areas or for short spans and narrow spacings.

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

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 build-

ings without ceilings such as machinery storages, un-insulated 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).
- & 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, roofing, and roof insulation to get the dead load on the

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.

Chord		2.	41	100
Top	Bottom	Truss	Truss dead weight,	eight, psf
2×4	2×4	1.6	0	0.8
2×6	2×4	2.0	_	1.0
2×6	2×6	2.4		. 2
2 x 8	2×6	2.7	;£-7;	w.
2×10	2x4+2x4	ب ب	_	.6
2x12	2×4+2×6	4.0	N	2.0
2×12	2x6+2x6	4.4	b)	2.2
Add the	following	for:	:	
2-64-Web	Web Truss	1.4	-	0.4
6 Web	6 Web Truss	2.1	_	.2 0.6

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.

Recommended by the MAPS and NRAES Committees for roots up to about "I stope for buildings observe the pursuitation of a building code Fairt buildings. Sup in regional of 9 for 55 yr. O 8 for sow, or not Other buildings. Sup in regional to 9 for 55 yr. O 8 for sow, or not sow, on root 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

110 120	88	70 80	6 6 50	4 30	15 20	Map load
79.2 86.4	64.8 72.0	50.4 57.6	36.0 43.2	21.6 28.8	12.0	Roof snow load Farm Oth
98 88 88	72 80	64 56 44 66	5 &	24 32	16	w load Other

Weights of roofing and ceiling materials.

Hoof framing	
2x4 purlins, 2' o.c.	0.7 psf
2x6 purlins, 2 o.c.	
Ceiling traming	
1x3furring, 16 'o.c.	0.4 psf
2x4 furring, 2' o.c	07
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 80 mph on a building less than 30' high.

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%) = moisture content at time of milling.	time of milli	θ
1600 Group Species	Grade	Size
Douglas Fir—Larch	No. 1	2x4
	SS	2×6-
Douglas Fir—Larch (North)	No. 1	2x4
	SS	e.

	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	No. 2	2x4
	No. 1	2x6.
Douglas Fir—Larch (North)	No. 2	2x4
	No. 1	2x6'
Hem—Fir	No. 1	2x4
	SS	2×6·
Southern Pine (15%)	No. 2	2x4
Southern Pine (19%)	No. 2	2x4
	No. 1	2x6*
Spruce—Pine—Fir	SS	2x4
1100 Group		
Douglas Fir—Larch	No. 2	2x6.
Douglas Fir (North)	No. 2	2×4
	No. 2	2x6
Douglas Fir (South)	No. 2	2x4
	No. 2	2x6
Hem—Fir	No. 2	2×4
	No. 1	2x6*
	No. 1	2×4
Hem—Fir (North)	SS	2×6*
Hem—Fir (North)	No. 1	2x6*
Southern Pine (15%)	No. 2	2x6*
Southern Pine (19%)	No. 2	2×6
Spruce Pine Fir	No. 1	2x4
	SS	2x6*
!		

Plywood

Use exterior, C-C grade '/," or '/½" plywood with outer plies of Group 1 species wood, Identification Indexes, 2400 and 521/6 respectively.

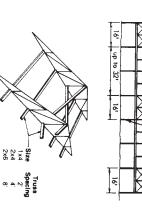
Use 3-ply '/," plywood and 5-ply '//" plywood or use Structural I, 4-ply, '/½" plywood.

BUILDING CONSTRUCTION

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.

Cross bracing

Wall Framing

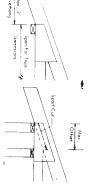


Wind Anchorage

of each truss. Minimum fasteners for wind anchorage, both ends

	Truss S	Truss Spacing	
Truss Span	Ŋ	4	œ
20'-24	1A or 1B	1A or 1B	2A or 1B
26:-30	1A or 1B	1A or 1B	2A or 2B
32'-46'	1A or 1B	2A or 1B	3A or 2B
48:-50	1A or 1B	2A or 1B	4A or 2B
52'-60'	1A or 1B	2A or 2B	4A or 3B
A = metal framing anchor 4-30d ring-shank nails = 1	A = metal framing anchor 4-30d ring-shank nails = 1/2" bolt	ool+	B = 1/2" bolt

For a 2' to 4' overhang, use the top chord and heel gusset design for a 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 butt 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 16' and 18' lengths with staggered and lapped end joints if pairs of trusses are mounted on alternate sides of the poles

