MWPS-40' Truss 40' 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
40' Truss
Title Page
midwest plan no. 40' Truss

40' span, 4-web trusses with plywood gussets

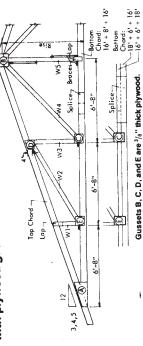


Table of lengths

W5	in i~ io
W4	8: 9:+8' 11'+10'
W3	ຜ່ານອ
W2	i∖ico ôn
Ŵ	ю́ и́ и́
Top Chord	16: +5: 18: +4: 18: +4:
Rise	8, 9, 0, 8, 9, 0,
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," MWF3-9. If you buy metal-plate trusses, use their designer's data.

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	·]		Cel	Ing dea	Celling dead load, psf	lag		6	1.M	Web W2	Web member sizes W2 W3 W4	r sizes	WS	A H H	°₹	S H N	•≹	× ×
chord chord		-			- 100 + #	snow + roof dead load, pst-	oad, ps	1											
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				Ċ	14	0	0	0	0	2×4	2x4	2×4	2×4	2×4	3/8×4×33	12×12	8×10	8×8	8×8
0X7 0X7	3 4 9 4		22	5		0	0	0	0	ž	:		z	Ŧ	¹ 2×4×28	14x16	12×10	-	10×8
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2x12 6+6	6 87 5	18	76				0	14	0	-	-	:	-	:	¹ 2×4×44	18×16	16×10	:	14x8
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				00	0 0	0 0	C	0	C	÷			:	:	3/8x4x22	10×12	:	÷	:
2×6 2×6	2x4 38 2x6 51	5 57 5 1	3.5	22) 81	12 0	0	0	0	:	=	5	:	;	¹ 2×4×18	12×12	8×10	-	-
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-+ 01XZ			5		9.5	19	27	1	0	÷	÷	2×8	484	:	¹ 2×4×31	18×16	16×14	8×14	
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	dead load
a truss:	mate roof
To select a	1. esti

- determine appropriate snow load
 determine appropriate snow load = roof design load, psf
 select a trues to carry at least the total roof load for the lumber quality. slope, spacing, and ceiling dead load you will use.

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

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				Max.		+ rool d	snow + root dead load, psf	d. psf												
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		u u	5	07	76	91	16	C	C	0	2×4	2×4	2×4	2x4	2×4	¹ 5×4×24	12×16	10×10	8×8	8x8
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										-	100	100	244	2×4	7×6	1/8×35×22	8×12	8×8	8×8	8x8
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Top	Bottom				Ceiling	dead l	Ceiling dead load, psf	-	• •		Ŵ	Web II	Web member sizes W2 W3 W4	sizes W4	W5	× H ⊢	® 1 ×	¥ د	°₹	u ¥ ≊
cuord	cuora		-		- MOUS	+ rool d	snow + roof dead load, psf	d. pst-		1										
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2×6		79	58	32	27	23	20	0	0	0	=	÷	-	z	:	l ₂ x4x27	-	10×10	=	-
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¢ 1981 Midwest Plan Service, Ames, Iowa 50011

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Add the weights of the truss, purlins or decking, roofing, and roof insulation to get the dead load on the top chord. ROOF DEAD LOAD tables 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 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. greater if a ceiling is needed. ings without ceilings such as machinery storages, un-insulated livestock buildings, etc. Total cost may be storage buildings. 8' spacing uses least material and labor for build-4' spacing is common in insulated invest buildings with ceilings and metal roofs, and in s 4/12 slope—most common for farm buildings. 5/12 slope—used in high snow load areas or for long spans and wide spacings. Roof slope significantly affects the forces in the truss members. A steeper roof allows higher roof loads. 3/12 slope—used in low snow load areas or for This page is a summary of the information in "Designs for Glued Trusses," MWPS-9. Refer to this publication before building trusses CEILING DEAD LOAD decks Approximate weights of trusses, psf. TRUSS SPACING short spans and narrow spacings. ROOF SLOPE (inches of rise/Inches of run) 0 psf allows for no materials in addition to the Add the following 1 2-64-Web Truss 6 Web Truss & psf ceiling dead load allows for a gypsum board ceiling with insulation (residential or light comtruss bracing and stiffeners.
5 psf ceiling dead load allows for a metal 2×10 2×12 2×12 Top Three ceiling dead load cases are included in the 2x4 2x6 2x6 2x8 2x8 mercial buildings). buildings). plywood ceiling with insulation (warm livestock Botton 2x4+2x4 2x4+2x6 2x6+2x6 2x4 2x4 2x6 2x6 for 1.4 2.1 3.3 4.0 4.4 1.6 2.0 2.4 2.7 Truss 2 Truss spacing in insulated livestock dead weight 0.7 0.8 1.62.0 2.2 £, 0.4 0.8 0.4 psf 8 some q 0.024 aluminum 28 ga steel Asphalt shingles Insulation, per inch of thickness Trusses are designed to withstand mph on a building less than 30' high. Wind Loads Sheathing, etc. 1 Jumber, solid Ceiling framing Weights of roofing and ceiling materials. 1x31urring, 16 ' o.c 2x41urring, 2' o.c 2x4 purtins, 2' o.c. 2x6 purtins, 2' o.c. Roof framing spok on cold Minimum recommercies(editad) s 12 get In areas where all of the maximum show load results from a single storm whout significant wind the maximum roof load may equal the ground sinow load. Recommended snow loads Use the map above and the table below for termining snow load for your building. SNOW LOAD Uther commended by the MMPS and NFAES Committees for roots up to about restope for buildings outside the jurisduction of a building code term buildings. Soly in policida of 9 for 25/yr x 08 ters solw on root the buildings. Soly in rago load x 0.8 to convert from snow on ground to the buildings. plywood plywood Snow load on the ground, 50-yr recurrence interval. See table below for conversion to root snow design load Map load 8282 4385 64.8 72.0 79.2 36.0 50.4 57.6 Farm 12.0 14.4 21.6 28.8 Roof snow load σ E E 1.4 0.4 0.9 2.6 0.1-0.4 2.2 pst 1 1 04psf 07 07psf Other 25888 8887 32 16 32 16 winds ŝ, ő de-C R چ^ې 1750 Ś

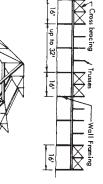
Use exterior, C-C grade '/_a" or '/_a" plywood with outer plies of Group 1 species wood. Identification In-dexes, 24/0 and 22/16 respectively. Use 3-ply '/_a" plywood and 5-ply '/_a" plywood or use Structural I, 4-ply, '/_a" plywood. Plywood Spruce Pine Fir Southern Pine (15% Southern Pine (19%) Hem—Fir (North) Hem—Fir (North) Douglas Fir (South) Douglas Fir (North) 1100 Group Douglas Fir—Larch Spruce—Pine—Fir Hem-Hi Douglas Fir—Larch (North) 1400 Group Douglas Fir—Larch Southern Pine (19%) Southern Pine (15%) Douglas Fir—Larch (North) (15%) =Example of species in each group are listed below 2x6 + = 2x6, 2x8, 2x10, 2x12 SS = Select structural Hem-Fir Southern Pine (19%) Southern Pine (15%) Douglas Fir—Larch Secies tem-Fir (North) 600 Group moisture content at time of milling. No. 2 dense No. 1 No. 1 No. 2 dense No. 2 No. 1 No. 2 No. 2 No. 2 SS SN SS NO Grade 2x4 2x6 2x6 2x4 2x6 2x6 2x4 2x4 2x4 2x4 2x6 2x6 2x6 2x4 2x6 2x6 Size

Truss Span 201-24 261-30 321-46 481-50 521-60 buildings where the poles are spaced eveny and the trusses are not. For poles 8 oc. they may be alternating 16 and 18 lengths with staggered and lapped end joints if pairs of trusses are mounted on 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 For a 2' to 4' overhang, use the top chord and heel gusset design for a 1/s larger snow load. Minimum fasteners for wind anchorage, both ends of each truss. Roof Purlins Overhang alternate sides of the poles A = metal framing anchor 4-30d ring-shank nails = V_2^{-1} bolt Wind Anchorage Brace and anchor the trusses as they are placed. Bottom chord stiffeners are required at panel points unless a right ceiling is to be installed. Use king post crossbracing in all buildings. 16' Purlin (2x4 on Stagger purlin joints for Lap Join 18" Purlin 6 Cross bracing Ł R up to 32 Dimension Span For Truss 1A or 1B aßna Truss Spacing TUSSE 16' ÷ 1A or 1A or 2A or 2A or 2A or Scarf Cul 28 8 8 8 8 18' Purlin Wall Framing Offset -Size 1x4 2x4 2x6 $\mathbf{B} = V_2$ " bolt 2A or 18 2A or 28 3A or 28 4A or 28 4A or 38 1 Ř Truss Spacing 2[:] 4[:] 8[:] 16'

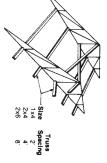
BUILDING CONSTRUCTION Windbracing

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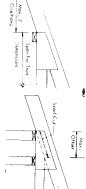


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Three lumber groups are indicated in the tables.

LUMBER



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