STRUCTURAL CALCULATIONS

SS2500 PANEL

Zimmerman Metals, Inc

Over 60 Years of Quality Workmanship and Service

201 East 58th Avenue, Denver, Colorado 80216
Phone: (303) 294-0180/FAX: (303) 292-5013
TOLL FREE 1-800-247-4202

STRUCTURAL CALCULATIONS FOR:
14" WIDE
ZIMMERMAN METAL SS-2500 ROOF PANEL

Prepared For:
ZIMMERMAN METALS, INC.
201 E. 58TH Ave.
Denver, Colorado 80216

Prepared By:

YOOSEF LAVI, P.E.
Consulting Engineer
9550 Forest Lane, Suite 108
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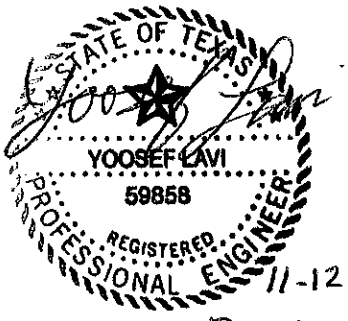

11-12-99

P. 1-10

SECTION PROPERTIES:				14" WIDE, ZIMMERMAN METALS, INC. SS-2500					
Gauge	Thickness in.	Weight psf	Yield Stress ksi	Top in Compression (Positive Bending)			Bottom in Compression (Negative Bending)		
				I_{xx} in^4/ft	S_{xx} in^3/ft	M_a in.kips/ft	I_{xx} in^4/ft	S_{xx} in^3/ft	M_a in.kips/ft
26	0.018	1.091	50.0	0.146	0.067	2.009	0.094	0.065	1.960
24	0.024	1.454	50.0	0.231	0.110	3.285	0.141	0.105	3.135
22	0.030	1.815	50.0	0.330	0.161	4.833	0.187	0.144	4.298

Notes on Section Properties and Load Table:

* Section properties and allowables are calculated in accordance with 1996 AISI Specifications.
* I +/- is for deflection determination.
* S +/- is for bending determination.
* M_a is allowable bending moment.
* All values are for one foot of panel width.
* These loads are for panel strength. Frames, purlins, clips, fasteners and all supports must be designed to resist all loads imposed on the panel,
* Allowable outward loads based on stress have been increased by 33.33 % for wind uplift.
* Allowable loads for deflection are based on deflection limitation of span/180.
* For roof panels, self weight of the panel has to be deducted from the allowable inward load to arrive at the actual 'live load' carrying capacity of the panel.
* Minimum bearing length must be checked.
* Minimum deliverable bare steel thickness should not be less than 0.95 of design thickness.

THEORETICAL ALLOWABLE LIVE AND WIND LOADS

14" WIDE, ZIMMERMAN METALS, INC. SS-2500

SINGLE SPAN CONDITION

SPAN (ft)	26 Gauge & 80 ksi LL (S) (psf)	26 Gauge & 80 ksi LL (D) (psf)	26 Gauge & 80 ksi WL (psf)	24 Gauge & 50 ksi LL (S) (psf)	24 Gauge & 50 ksi LL (D) (psf)	24 Gauge & 50 ksi WL (psf)	22 Gauge & 50 ksi LL (S) (psf)	22 Gauge & 50 ksi LL (D) (psf)	22 Gauge & 50 ksi WL (psf)
2	334.8	334.8	434.6	547.5	547.5	694.9	805.5	805.5	952.8
2.5	214.3	214.3	278.1	350.4	350.4	444.8	515.5	515.5	609.8
3	148.8	148.8	193.1	243.4	243.4	308.9	358.0	358.0	423.5
3.5	109.3	109.3	141.9	178.8	178.8	226.9	263.0	263.0	311.1
4	83.7	83.7	108.6	136.9	136.9	173.7	201.4	201.4	238.2
4.5	66.1	66.1	85.8	108.2	108.2	137.3	159.1	159.1	188.2
5	53.6	53.6	69.5	87.6	87.6	111.2	128.9	128.9	152.4
6	37.2	37.2	48.3	60.8	60.8	77.2	89.5	89.5	105.9

TWO SPAN CONDITION

SPAN (ft)	26 Gauge & 80 ksi LL (S) (psf)	26 Gauge & 80 ksi LL (D) (psf)	26 Gauge & 80 ksi WL (psf)	24 Gauge & 50 ksi LL (S) (psf)	24 Gauge & 50 ksi LL (D) (psf)	24 Gauge & 50 ksi WL (psf)	22 Gauge & 50 ksi LL (S) (psf)	22 Gauge & 50 ksi LL (D) (psf)	22 Gauge & 50 ksi WL (psf)
2	326.7	326.7	445.3	522.5	522.5	728.2	716.4	716.4	1071.4
2.5	209.1	209.1	285.0	334.4	334.4	466.1	458.5	458.5	685.7
3	145.2	145.2	197.9	232.2	232.2	323.7	318.4	318.4	476.2
3.5	106.7	106.7	145.4	170.6	170.6	237.8	233.9	233.9	349.8
4	81.7	81.7	111.3	130.6	130.6	182.1	179.1	179.1	267.8
4.5	64.5	64.5	88.0	103.2	103.2	143.8	141.5	141.5	211.6
5	52.3	52.3	71.2	83.6	83.6	116.5	114.6	114.6	171.4
6	36.3	36.3	49.5	58.1	58.1	80.9	79.6	79.6	119.0

THREE OR MORE SPAN CONDITION

SPAN (ft)	26 Gauge & 80 ksi LL (S) (psf)	26 Gauge & 80 ksi LL (D) (psf)	26 Gauge & 80 ksi WL (psf)	24 Gauge & 50 ksi LL (S) (psf)	24 Gauge & 50 ksi LL (D) (psf)	24 Gauge & 50 ksi WL (psf)	22 Gauge & 50 ksi LL (S) (psf)	22 Gauge & 50 ksi LL (D) (psf)	22 Gauge & 50 ksi WL (psf)
2	381.7	381.7	520.2	610.4	610.4	850.7	836.9	836.9	1251.6
2.5	244.3	244.3	332.9	390.7	390.7	544.5	535.6	535.6	801.0
3	169.6	169.6	231.2	271.3	271.3	378.1	372.0	372.0	556.3
3.5	124.6	124.6	169.9	199.3	199.3	277.8	273.3	273.3	408.7
4	95.4	95.4	130.0	152.6	152.6	212.7	209.2	209.2	312.9
4.5	75.4	75.4	102.8	120.6	120.6	168.0	165.3	165.3	247.2
5	61.1	61.1	83.2	97.7	97.7	136.1	133.9	133.9	200.3
6	42.4	42.4	57.8	67.8	67.8	94.5	93.0	93.0	139.1

Notes:

* Theoretical allowable loads are based on uniform span lengths.
* LL (S) is allowable live load based on stress limitation
* LL (D) is allowable live load based on deflection limitation of L/180
* WL is allowable wind load and has been increased by 33-1/3%.

CFS Version 3.04
Section: 14SS2526.sct
ZIMMERMAN MODEL SS-2500 14" X 26 GA

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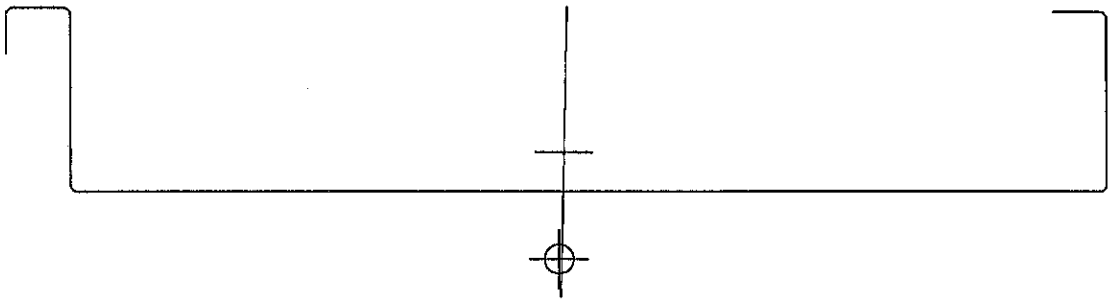

Section Inputs

Material: A653 SQ Grade 50/1
No strength increase from cold work of forming.

Modulus of Elasticity, E	29500 ksi
Yield Strength, Fy	50 ksi
Tensile Strength, Fu	65 ksi
Warping Constant Override, Cw	0 in^6
Torsion Constant Override, J	0 in^4

Part 1, Thickness 0.0179 in (26 Gage)
Placement of Part from Origin:

X to center of gravity	0 in
Y to center of gravity	0 in

Outside dimensions, Open shape

	Length (in)	Angle (deg)	Radius (in)	Web	k Coef.	Hole Size (in)	Distance (in)
1	0.625	90.000	0.080000	None	0.000	0.000	0.313
2	0.875	0.000	0.080000	Single	0.000	0.000	0.438
3	2.500	270.000	0.080000	Single	0.000	0.000	1.250
4	14.000	0.000	0.080000	Single	0.000	0.000	7.000
5	2.438	90.000	0.080000	Single	0.000	0.000	1.219
6	0.750	180.000	0.080000	None	0.000	0.000	0.375

Full Section Properties

Area	0.37424 in^2	Wt.	0.0012724 k/ft	Width	20.907 in
Ix	0.285 in^4	rx	0.8720 in	Ixy	-0.203 in^4
Sx(t)	0.1448 in^3	y(t)	1.9656 in	α	88.833 deg
Sx(b)	0.5325 in^3	y(b)	0.5344 in		
Iy	10.261 in^4	ry	5.2363 in	Xo	-0.0645 in
Sy(l)	1.3591 in^3	x(l)	7.5497 in	Yo	-1.4420 in
Sy(r)	1.4042 in^3	x(r)	7.3074 in	jx	0.1320 in
				jy	9.8113 in
I1	10.265 in^4	r1	5.2373 in		
I2	0.280 in^4	r2	0.8656 in		
Ic	10.546 in^4	rc	5.3084 in	Cw	9.2665 in^6
Io	11.325 in^4	ro	5.5011 in	J	0.0000400 in^4

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Section: 14SS2526.sct
ZIMMERMAN MODEL SS-2500 14" X 26 GA

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Fully Braced Strength - 1996 AISI Specification (ASD)

Compression		Positive Moment			Positive Moment		
Pao	1.880 k	Maxo	0.1953	k-ft	Mayo	1.0101	k-ft
Ae	0.067681 in^2	Ixe	0.1704	in^4	Iye	4.3867	in^4
		Sxe(t)	0.0783	in^3	Sye(l)	1.0906	in^3
Tension		Sxe(b)	0.5285	in^3	Sye(r)	0.4049	in^3
Ta	11.205 k						
		Negative Moment			Negative Moment		
		Maxo	0.1906	k-ft	Mayo	1.2354	k-ft
Shear		Ixe	0.1101	in^4	Iye	5.2458	in^4
Vay	0.419 k	Sxe(t)	0.1039	in^3	Sye(l)	0.4952	in^3
Vax	0.037 k	Sxe(b)	0.0764	in^3	Sye(r)	1.2306	in^3

Part 1 element 4 w/t exceeds 200.
Part 1 element 5 w/t exceeds 60.
Edge stiffener D/w exceeds 0.8.

CFS Version 3.04
Section: 14SS2524.sct
ZIMMERMAN MODEL SS-2500 14" X 24 GA

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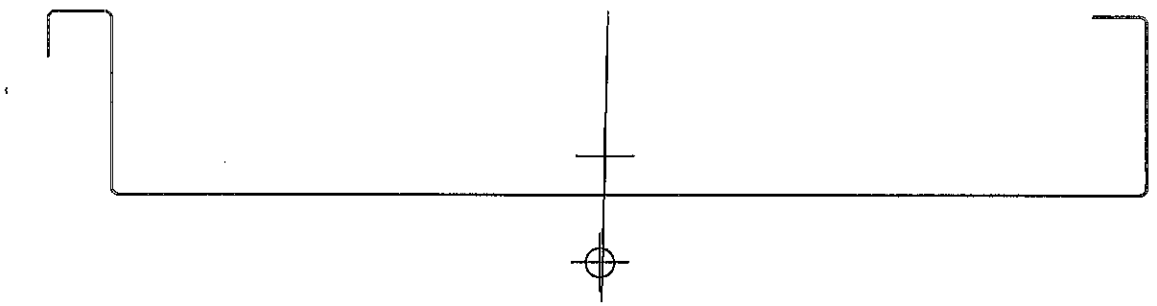

Section Inputs

Material: A653 SQ Grade 50/1
No strength increase from cold work of forming.

Modulus of Elasticity, E	29500 ksi
Yield Strength, Fy	50 ksi
Tensile Strength, Fu	65 ksi
Warping Constant Override, Cw	0 in^6
Torsion Constant Override, J	0 in^4

Part 1, Thickness 0.0239 in (24 Gage)
Placement of Part from Origin:

X to center of gravity	0 in
Y to center of gravity	0 in

Outside dimensions, Open shape

	Length (in)	Angle (deg)	Radius (in)	Web	k Coef.	Hole Size (in)	Distance (in)
1	0.625	90.000	0.080000	None	0.000	0.000	0.313
2	0.875	0.000	0.080000	Single	0.000	0.000	0.438
3	2.500	270.000	0.080000	Single	0.000	0.000	1.250
4	14.000	0.000	0.080000	Single	0.000	0.000	7.000
5	2.438	90.000	0.080000	Single	0.000	0.000	1.219
6	0.750	180.000	0.080000	None	0.000	0.000	0.375

Full Section Properties

Area	0.49881 in^2	Wt.	0.0016960 k/ft	Width	20.871 in
Ix	0.376 in^4	rx	0.8687 in	Ixy	-0.268 in^4
Sx(t)	0.1915 in^3	y(t)	1.9655 in	α	88.843 deg
Sx(b)	0.7043 in^3	y(b)	0.5345 in		
Iy	13.648 in^4	ry	5.2308 in	Xo	-0.0674 in
Sy(l)	1.8086 in^3	x(l)	7.5464 in	Yo	-1.4354 in
Sy(r)	1.8684 in^3	x(r)	7.3047 in	jx	0.1341 in
				jy	9.8207 in
I1	13.654 in^4	r1	5.2319 in		
I2	0.371 in^4	r2	0.8624 in		
Ic	14.025 in^4	rc	5.3025 in	Cw	12.260 in^6
Io	15.054 in^4	ro	5.4937 in	J	0.0000950 in^4

CFS Version 3.04
Section: 14SS2524.sct
ZIMMERMAN MODEL SS-2500 14" X 24 GA

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Fully Braced Strength - 1996 AISI Specification (ASD)

Compression				Positive Moment			
Pao	3.127	k		Maxo	0.3194	k-ft	
Ae	0.11258	in^2		Ixe	0.2697	in^4	
				Sxe(t)	0.1280	in^3	
Tension				Sxe(b)	0.6858	in^3	
Ta	14.934	k					
				Negative Moment			
				Maxo	0.3048	k-ft	
Shear				Ixe	0.1646	in^4	
Vay	1.002	k		Sxe(t)	0.1428	in^3	
Vax	0.088	k		Sxe(b)	0.1222	in^3	

Positive Moment							
Mayo	1.6846	k-ft					
Iye	6.9616	in^4					
Sye(l)	1.5333	in^3					
Sye(r)	0.6752	in^3					
Negative Moment							
Mayo	2.0210	k-ft					
Iye	8.1446	in^4					
Sye(l)	0.8100	in^3					
Sye(r)	1.6981	in^3					

Part 1 element 4 w/t exceeds 200.
Part 1 element 5 w/t exceeds 60.
Edge stiffener D/w exceeds 0.8.

CFS Version 3.04
Section: 14SS2522.sct
ZIMMERMAN MODEL SS-2500 14" X 22 GA

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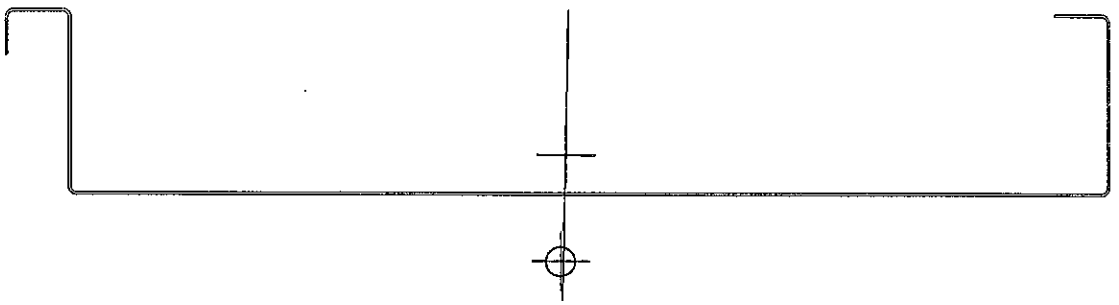

Section Inputs

Material: A653 SQ Grade 50/1
No strength increase from cold work of forming.

Modulus of Elasticity, E	29500 ksi
Yield Strength, Fy	50 ksi
Tensile Strength, Fu	65 ksi
Warping Constant Override, Cw	0 in^6
Torsion Constant Override, J	0 in^4

Part 1, Thickness 0.0299 in (22 Gage)
Placement of Part from Origin:

X to center of gravity	0 in
Y to center of gravity	0 in

Outside dimensions, Open shape

	Length (in)	Angle (deg)	Radius (in)	Web	k Coef.	Hole Size (in)	Distance (in)
1	0.625	90.000	0.080000	None	0.000	0.000	0.313
2	0.875	0.000	0.080000	Single	0.000	0.000	0.438
3	2.500	270.000	0.080000	Single	0.000	0.000	1.250
4	14.000	0.000	0.080000	Single	0.000	0.000	7.000
5	2.438	90.000	0.080000	Single	0.000	0.000	1.219
6	0.750	180.000	0.080000	None	0.000	0.000	0.375

Full Section Properties

Area	0.62294 in^2	Wt.	0.0021180 k/ft	Width	20.834 in
Ix	0.467 in^4	rx	0.8654 in	Ixy	-0.331 in^4
Sx(t)	0.2374 in^3	y(t)	1.9654 in	α	88.853 deg
Sx(b)	0.8727 in^3	y(b)	0.5346 in		
Iy	17.009 in^4	ry	5.2254 in	Xo	-0.0702 in
Sy(l)	2.2549 in^3	x(l)	7.5432 in	Yo	-1.4287 in
Sy(r)	2.3294 in^3	x(r)	7.3019 in	jx	0.1362 in
				jy	9.8302 in
I1	17.016 in^4	r1	5.2264 in		
I2	0.460 in^4	r2	0.8593 in		
Ic	17.476 in^4	rc	5.2965 in	Cw	15.197 in^6
Io	18.750 in^4	ro	5.4863 in	J	0.0001856 in^4

CFS Version 3.04
Section: 14SS2522.sct
ZIMMERMAN MODEL SS-2500 14" X 22 GA

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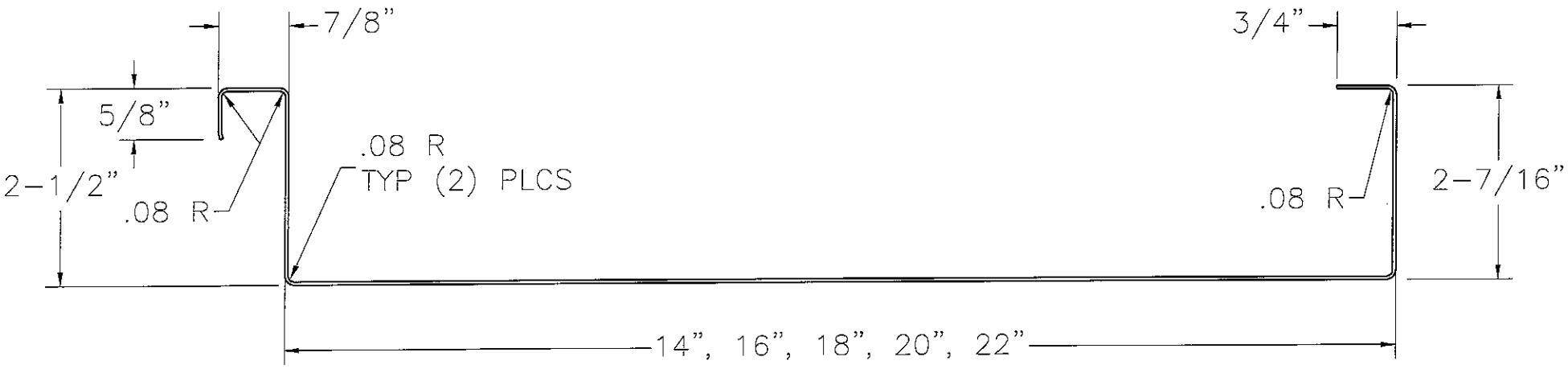
Fully Braced Strength - 1996 AISI Specification (ASD)

Compression			Positive Moment			Positive Moment	
Pao	4.631	k	Maxo	0.4699	k-ft	Mayo	2.5026 k-ft
Ae	0.16672	in^2	Ixe	0.385	in^4	Iye	9.898 in^4
			Sxe(t)	0.1883	in^3	Sye(l)	1.9885 in^3
Tension			Sxe(b)	0.8437	in^3	Sye(r)	1.0031 in^3
Ta	18.651	k					
			Negative Moment			Negative Moment	
			Maxo	0.4179	k-ft	Mayo	2.9503 k-ft
Shear			Ixe	0.218	in^4	Iye	11.366 in^4
Vay	1.897	k	Sxe(t)	0.1821	in^3	Sye(l)	1.1825 in^3
Vax	0.173	k	Sxe(b)	0.1675	in^3	Sye(r)	2.1720 in^3

Part 1 element 4 w/t exceeds 200.
Part 1 element 5 w/t exceeds 60.
Edge stiffener D/w exceeds 0.8.

MODEL SS-2500

24 & 22 Ga, GRADE "D", 50 KSI MIN. YIELD
NOTE: ±10% ON ALL DIMENSIONS



ZIMMERMAN METALS, INC
201 E 58TH AVE
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STRUCTURAL CALCULATIONS FOR:
16" WIDE
ZIMMERMAN METAL SS-2500 ROOF PANEL

Prepared For:
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Prepared By:

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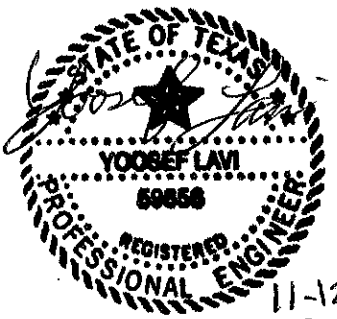

11-12-99
P.1-10

SECTION PROPERTIES:				16" WIDE, ZIMMERMAN METALS, INC. SS-2500					
Gauge	Thickness in.	Weight psf	Yield Stress ksi	Top in Compression (Positive Bending)			Bottom in Compression (Negative Bending)		
				I_{xx} in^4/ft	S_{xx} in^3/ft	M_a in.kips/ft	I_{xx} in^4/ft	S_{xx} in^3/ft	M_a in.kips/ft
26	0.018	1.046	50.0	0.129	0.059	1.751	0.083	0.057	1.717
24	0.024	1.394	50.0	0.205	0.095	2.855	0.124	0.092	2.746
22	0.030	1.741	50.0	0.293	0.140	4.181	0.164	0.126	3.767

Notes on Section Properties and Load Table:

* Section properties and allowables are calculated in accordance with 1996 AISI Specifications.
* I +/- is for deflection determination.
* S +/- is for bending determination.
* M_a is allowable bending moment.
* All values are for one foot of panel width.
* These loads are for panel strength. Frames, purlins, clips, fasteners and all supports must be designed to resist all loads imposed on the panel,
* Allowable outward loads based on stress have been increased by 33.33 % for wind uplift.
* Allowable loads for deflection are based on deflection limitation of span/180.
* For roof panels, self weight of the panel has to be deducted from the allowable inward load to arrive at the actual 'live load' carrying capacity of the panel.
* Minimum bearing length must be checked.
* Minimum deliverable bare steel thickness should not be less than 0.95 of design thickness.

THEORETICAL ALLOWABLE LIVE AND WIND LOADS

16" WIDE, ZIMMERMAN METALS, INC. SS-2500

SINGLE SPAN CONDITION

SPAN (ft)	26 Gauge & 80 ksi LL (S) (psf)	26 Gauge & 80 ksi LL (D) (psf)	26 Gauge & 80 ksi WL (psf)	24 Gauge & 50 ksi LL (S) (psf)	24 Gauge & 50 ksi LL (D) (psf)	24 Gauge & 50 ksi WL (psf)	22 Gauge & 50 ksi LL (S) (psf)	22 Gauge & 50 ksi LL (D) (psf)	22 Gauge & 50 ksi WL (psf)
2	291.9	291.9	380.6	475.8	475.8	608.7	696.9	696.9	834.9
2.5	186.8	186.8	243.6	304.5	304.5	389.6	446.0	446.0	534.3
3	129.7	129.7	169.2	211.5	211.5	270.5	309.7	309.7	371.1
3.5	95.3	95.3	124.3	155.4	155.4	198.8	227.6	227.6	272.6
4	73.0	73.0	95.2	119.0	119.0	152.2	174.2	174.2	208.7
4.5	57.7	57.7	75.2	94.0	94.0	120.2	137.7	137.7	164.9
5	46.7	46.7	60.9	76.1	76.1	97.4	111.5	111.5	133.6
6	32.4	32.4	42.3	52.9	52.9	67.6	77.4	77.4	92.8

TWO SPAN CONDITION

SPAN (ft)	26 Gauge & 80 ksi LL (S) (psf)	26 Gauge & 80 ksi LL (D) (psf)	26 Gauge & 80 ksi WL (psf)	24 Gauge & 50 ksi LL (S) (psf)	24 Gauge & 50 ksi LL (D) (psf)	24 Gauge & 50 ksi WL (psf)	22 Gauge & 50 ksi LL (S) (psf)	22 Gauge & 50 ksi LL (D) (psf)	22 Gauge & 50 ksi WL (psf)
2	286.2	286.2	388.2	457.7	457.7	632.8	627.8	627.8	926.9
2.5	183.2	183.2	248.5	292.9	292.9	405.0	401.8	401.8	593.2
3	127.2	127.2	172.5	203.4	203.4	281.3	279.0	279.0	411.9
3.5	93.5	93.5	126.8	149.4	149.4	206.6	205.0	205.0	302.7
4	71.6	71.6	97.1	114.4	114.4	158.2	156.9	156.9	231.7
4.5	56.5	56.5	76.7	90.4	90.4	125.0	124.0	124.0	183.1
5	45.8	45.8	62.1	73.2	73.2	101.3	100.4	100.4	148.3
6	31.8	31.8	43.1	50.9	50.9	70.3	69.8	69.8	103.0

THREE OR MORE SPAN CONDITION

SPAN (ft)	26 Gauge & 80 ksi LL (S) (psf)	26 Gauge & 80 ksi LL (D) (psf)	26 Gauge & 80 ksi WL (psf)	24 Gauge & 50 ksi LL (S) (psf)	24 Gauge & 50 ksi LL (D) (psf)	24 Gauge & 50 ksi WL (psf)	22 Gauge & 50 ksi LL (S) (psf)	22 Gauge & 50 ksi LL (D) (psf)	22 Gauge & 50 ksi WL (psf)
2	334.3	334.3	453.5	534.6	534.6	739.3	733.4	733.4	1082.8
2.5	214.0	214.0	290.3	342.2	342.2	473.1	469.3	469.3	693.0
3	148.6	148.6	201.6	237.6	237.6	328.6	325.9	325.9	481.2
3.5	109.2	109.2	148.1	174.6	174.6	241.4	239.5	239.5	353.6
4	83.6	83.6	113.4	133.7	133.7	184.8	183.3	183.3	270.7
4.5	66.0	66.0	89.6	105.6	105.6	146.0	144.9	144.9	213.9
5	53.5	53.5	72.6	85.5	85.5	118.3	117.3	117.3	173.2
6	37.1	37.1	50.4	59.4	59.4	82.1	81.5	81.5	120.3

Notes:

* Theoretical allowable loads are based on uniform span lengths.
* LL (S) is allowable live load based on stress limitation
* LL (D) is allowable live load based on deflection limitation of L/180
* WL is allowable wind load and has been increased by 33-1/3%.

CFS Version 3.04
Section: 16SS2526.sct
ZIMMERMAN MODEL SS-2500 16" X 26 GA

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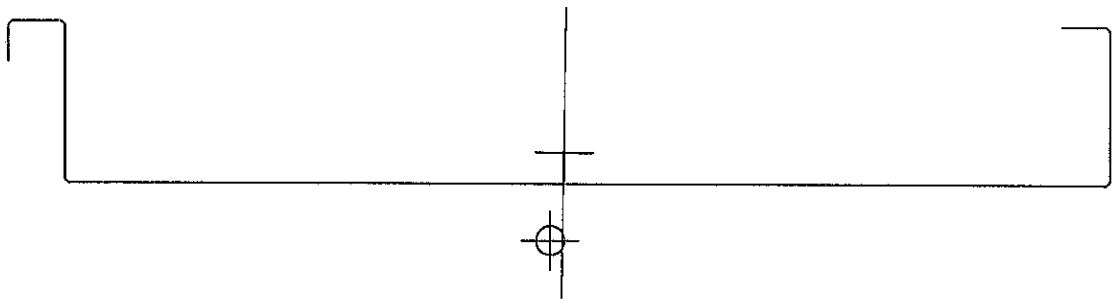

Section Inputs

Material: A653 SQ Grade 50/1
No strength increase from cold work of forming.

Modulus of Elasticity, E	29500 ksi
Yield Strength, Fy	50 ksi
Tensile Strength, Fu	65 ksi
Warping Constant Override, Cw	0 in^6
Torsion Constant Override, J	0 in^4

Part 1, Thickness 0.0179 in (26 Gage)
Placement of Part from Origin:

X to center of gravity	0 in
Y to center of gravity	0 in

Outside dimensions, Open shape

	Length (in)	Angle (deg)	Radius (in)	Web	k Coef.	Hole Size (in)	Distance (in)
1	0.625	90.000	0.080000	None	0.000	0.000	0.313
2	0.875	0.000	0.080000	Single	0.000	0.000	0.438
3	2.500	270.000	0.080000	Single	0.000	0.000	1.250
4	16.000	0.000	0.080000	Single	0.000	0.000	8.000
5	2.438	90.000	0.080000	Single	0.000	0.000	1.219
6	0.750	180.000	0.080000	None	0.000	0.000	0.375

Full Section Properties

Area	0.41004 in^2	Wt.	0.0013941 k/ft	Width	22.907 in
Ix	0.294 in^4	rx	0.846 in	Ixy	-0.233 in^4
Sx(t)	0.1459 in^3	y(t)	2.012 in	α	89.037 deg
Sx(b)	0.6010 in^3	y(b)	0.488 in		
Iy	14.146 in^4	ry	5.874 in	Xo	-0.211 in
Sy(l)	1.6558 in^3	x(l)	8.544 in	Yo	-1.348 in
Sy(r)	1.7016 in^3	x(r)	8.314 in	jx	0.280 in
				jy	12.209 in
I1	14.150 in^4	r1	5.874 in		
I2	0.290 in^4	r2	0.840 in		
Ic	14.440 in^4	rc	5.934 in	Cw	12.758 in^6
Io	15.203 in^4	ro	6.089 in	J	0.0000438 in^4

CFS Version 3.04
Section: 16SS2526.sct
ZIMMERMAN MODEL SS-2500 16" X 26 GA

Rev. Date: 11/5/99
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Fully Braced Strength - 1996 AISI Specification (ASD)

Compression		Positive Moment		Positive Moment	
Pao	1.881 k	Maxo	0.1946 k-ft	Mayo	1.1526 k-ft
Ae	0.067705 in^2	Ixe	0.1726 in^4	Iye	5.7561 in^4
		Sxe(t)	0.0780 in^3	Sye(l)	1.3092 in^3
Tension		Sxe(b)	0.6002 in^3	Sye(r)	0.4620 in^3
Ta	12.277 k				
		Negative Moment		Negative Moment	
		Maxo	0.1908 k-ft	Mayo	1.4166 k-ft
Shear		Ixe	0.1101 in^4	Iye	6.9012 in^4
Vay	0.419 k	Sxe(t)	0.1039 in^3	Sye(l)	0.5678 in^3
Vax	0.032 k	Sxe(b)	0.0765 in^3	Sye(r)	1.4676 in^3

Part 1 element 4 w/t exceeds 200.
Part 1 element 5 w/t exceeds 60.
Edge stiffener D/w exceeds 0.8.

CFS Version 3.04
Section: 16SS2524.sct
ZIMMERMAN MODEL SS-2500 16" X 24 GA

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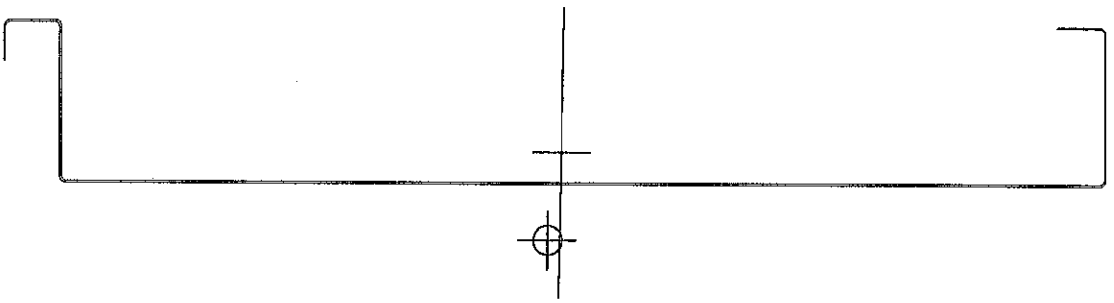

Section Inputs

Material: A653 SQ Grade 50/1
No strength increase from cold work of forming.

Modulus of Elasticity, E	29500 ksi
Yield Strength, Fy	50 ksi
Tensile Strength, Fu	65 ksi
Warping Constant Override, Cw	0 in^6
Torsion Constant Override, J	0 in^4

Part 1, Thickness 0.0239 in (24 Gage)
Placement of Part from Origin:

X to center of gravity	0 in
Y to center of gravity	0 in

Outside dimensions, Open shape

	Length (in)	Angle (deg)	Radius (in)	Web	k Coef.	Hole Size (in)	Distance (in)
1	0.625	90.000	0.080000	None	0.000	0.000	0.313
2	0.875	0.000	0.080000	Single	0.000	0.000	0.438
3	2.500	270.000	0.080000	Single	0.000	0.000	1.250
4	16.000	0.000	0.080000	Single	0.000	0.000	8.000
5	2.438	90.000	0.080000	Single	0.000	0.000	1.219
6	0.750	180.000	0.080000	None	0.000	0.000	0.375

Full Section Properties

Area	0.54661 in^2	Wt.	0.0018585 k/ft	Width	22.871 in
Ix	0.388 in^4	rx	0.843 in	Ixy	-0.307 in^4
Sx(t)	0.1931 in^3	y(t)	2.011 in	α	89.045 deg
Sx(b)	0.7945 in^3	y(b)	0.489 in		
Iy	18.821 in^4	ry	5.868 in	Xo	-0.213 in
Sy(l)	2.2038 in^3	x(l)	8.540 in	Yo	-1.342 in
Sy(r)	2.2647 in^3	x(r)	8.311 in	jx	0.281 in
				jy	12.225 in
I1	18.826 in^4	r1	5.869 in		
I2	0.383 in^4	r2	0.837 in		
Ic	19.209 in^4	rc	5.928 in	Cw	16.880 in^6
Io	20.218 in^4	ro	6.082 in	J	0.0001041 in^4

CFS Version 3.04
Section: 16SS2524.sct
ZIMMERMAN MODEL SS-2500 16" X 24 GA

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Fully Braced Strength - 1996 AISI Specification (ASD)

Compression		Positive Moment		Positive Moment	
Pao	3.129 k	Maxo	0.3172 k-ft	Mayo	1.9227 k-ft
Ae	0.11264 in^2	Ixe	0.273 in^4	Iye	9.158 in^4
		Sxe(t)	0.1271 in^3	Sye(l)	1.8439 in^3
Tension		Sxe(b)	0.7774 in^3	Sye(r)	0.7706 in^3
Ta	16.366 k				
		Negative Moment		Negative Moment	
		Maxo	0.3051 k-ft	Mayo	2.3180 k-ft
Shear		Ixe	0.165 in^4	Iye	10.744 in^4
Vay	1.002 k	Sxe(t)	0.1428 in^3	Sye(l)	0.9291 in^3
Vax	0.077 k	Sxe(b)	0.1223 in^3	Sye(r)	2.0321 in^3

Part 1 element 4 w/t exceeds 200.
Part 1 element 5 w/t exceeds 60.
Edge stiffener D/w exceeds 0.8.

CFS Version 3.04
Section: 16SS2522.sct
ZIMMERMAN MODEL SS-2500 16" X 22 GA

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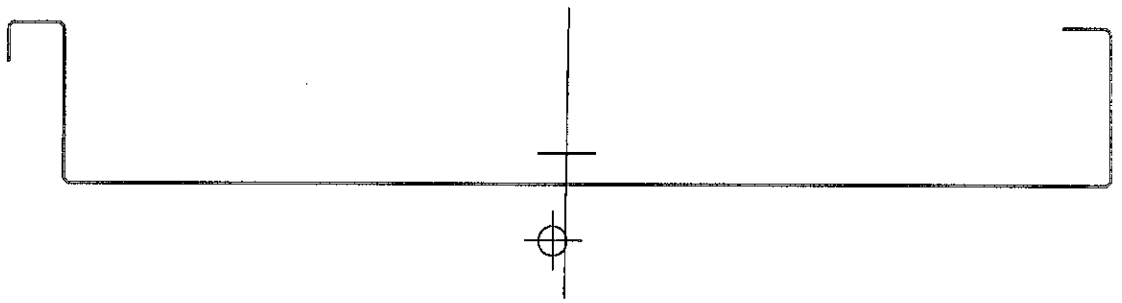

Section Inputs

Material: A653 SQ Grade 50/1
No strength increase from cold work of forming.

Modulus of Elasticity, E	29500 ksi
Yield Strength, Fy	50 ksi
Tensile Strength, Fu	65 ksi
Warping Constant Override, Cw	0 in^6
Torsion Constant Override, J	0 in^4

Part 1, Thickness 0.0299 in (22 Gage)
Placement of Part from Origin:

X to center of gravity	0 in
Y to center of gravity	0 in

Outside dimensions, Open shape

	Length (in)	Angle (deg)	Radius (in)	Web	k Coef.	Hole Size (in)	Distance (in)
1	0.625	90.000	0.080000	None	0.000	0.000	0.313
2	0.875	0.000	0.080000	Single	0.000	0.000	0.438
3	2.500	270.000	0.080000	Single	0.000	0.000	1.250
4	16.000	0.000	0.080000	Single	0.000	0.000	8.000
5	2.438	90.000	0.080000	Single	0.000	0.000	1.219
6	0.750	180.000	0.080000	None	0.000	0.000	0.375

Full Section Properties

Area	0.68274 in^2	Wt.	0.0023213 k/ft	Width	22.834 in
Ix	0.481 in^4	rx	0.840 in	Ixy	-0.380 in^4
Sx(t)	0.2393 in^3	y(t)	2.011 in	α	89.053 deg
Sx(b)	0.9841 in^3	y(b)	0.489 in		
Iy	23.463 in^4	ry	5.862 in	Xo	-0.216 in
Sy(l)	2.7483 in^3	x(l)	8.537 in	Yo	-1.335 in
Sy(r)	2.8241 in^3	x(r)	8.308 in	jx	0.283 in
				jy	12.241 in
I1	23.469 in^4	r1	5.863 in		
I2	0.475 in^4	r2	0.834 in		
Ic	23.944 in^4	rc	5.922 in	Cw	20.926 in^6
Io	25.193 in^4	ro	6.075 in	J	0.0002035 in^4

CFS Version 3.04
Section: 16SS2522.sct
ZIMMERMAN MODEL SS-2500 16" X 22 GA

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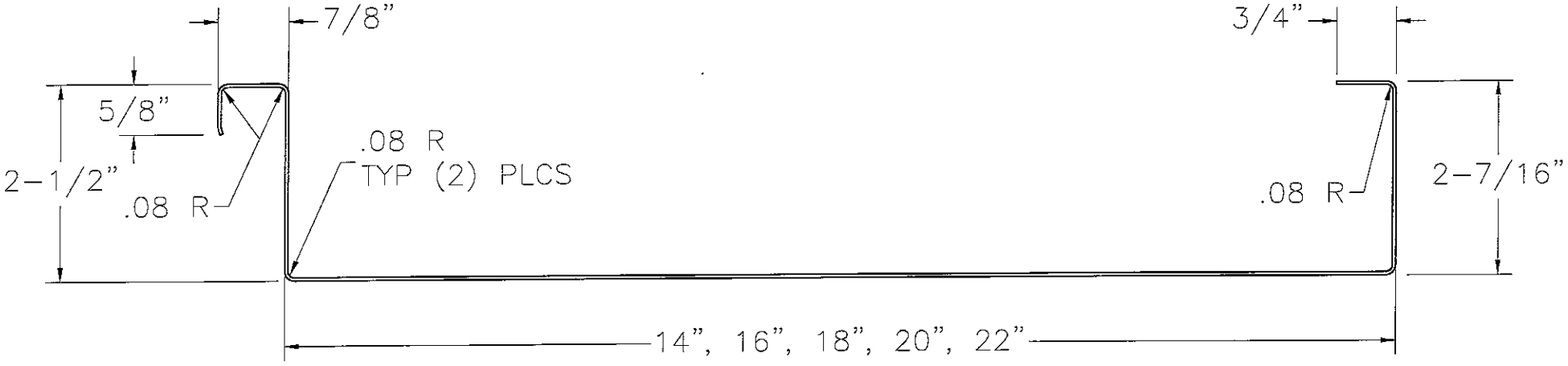
Fully Braced Strength - 1996 AISI Specification (ASD)

Compression			Positive Moment			Positive Moment	
Pao	4.634	k	Maxo	0.4646	k-ft	Mayo	2.8569 k-ft
Ae	0.16684	in^2	Ixe	0.390	in^4	Iye	13.051 in^4
			Sxe(t)	0.1862	in^3	Sye(l)	2.3956 in^3
Tension			Sxe(b)	0.9541	in^3	Sye(r)	1.1450 in^3
Ta	20.441	k					
			Negative Moment			Negative Moment	
			Maxo	0.4185	k-ft	Mayo	3.3840 k-ft
Shear			Ixe	0.218	in^4	Iye	15.028 in^4
Vay	1.897	k	Sxe(t)	0.1821	in^3	Sye(l)	1.3563 in^3
Vax	0.150	k	Sxe(b)	0.1677	in^3	Sye(r)	2.6067 in^3

Part 1 element 4 w/t exceeds 200.
Part 1 element 5 w/t exceeds 60.
Edge stiffener D/w exceeds 0.8.

MODEL SS-2500

24 & 22 Ga, GRADE "D", 50 KSI MIN. YIELD
NOTE: ±10% ON ALL DIMENSIONS



ZIMMERMAN METALS, INC
201 E 58TH AVE
DENVER, CO 80216

STRUCTURAL CALCULATIONS FOR:
18" WIDE
ZIMMERMAN METAL SS-2500 ROOF PANEL

Prepared For:
ZIMMERMAN METALS, INC.
201 E. 58TH Ave.
Denver, Colorado 80216

Prepared By:

YOOSEF LAVI, P.E.
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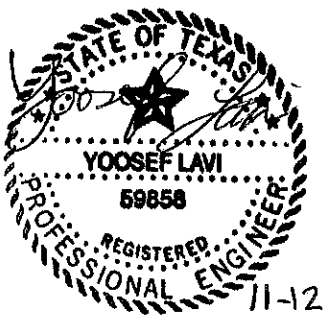

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P. 1-10

SECTION PROPERTIES:				18" WIDE, ZIMMERMAN METALS, INC. SS-2500					
Gauge	Thickness in.	Weight psf	Yield Stress ksi	Top in Compression (Positive Bending)			Bottom in Compression (Negative Bending)		
				I_{xx} in^4/ft	S_{xx} in^3/ft	M_a in.kips/ft	I_{xx} in^4/ft	S_{xx} in^3/ft	M_a in.kips/ft
26	0.018	1.011	50.0	0.116	0.052	1.553	0.069	0.051	1.527
24	0.024	1.347	50.0	0.184	0.084	2.524	0.110	0.082	2.442
22	0.030	1.683	50.0	0.262	0.123	3.686	0.145	0.112	0.335

Notes on Section Properties and Load Table:

* Section properties and allowables are calculated in accordance with 1996 AISI Specifications.
* I +/- is for deflection determination.
* S +/- is for bending determination.
* M_a is allowable bending moment.
* All values are for one foot of panel width.
* These loads are for panel strength. Frames, purlins, clips, fasteners and all supports must be designed to resist all loads imposed on the panel,
* Allowable outward loads based on stress have been increased by 33.33 % for wind uplift.
* Allowable loads for deflection are based on deflection limitation of span/180.
* For roof panels, self weight of the panel has to be deducted from the allowable inward load to arrive at the actual 'live load' carrying capacity of the panel.
* Minimum bearing length must be checked.
* Minimum deliverable bare steel thickness should not be less than 0.95 of design thickness.

THEORETICAL ALLOWABLE LIVE AND WIND LOADS

18" WIDE, ZIMMERMAN METALS, INC. SS-2500

SINGLE SPAN CONDITION

SPAN (ft)	26 Gauge & 80 ksi LL (S) (psf)	26 Gauge & 80 ksi LL (D) (psf)	26 Gauge & 80 ksi WL (psf)	24 Gauge & 50 ksi LL (S) (psf)	24 Gauge & 50 ksi LL (D) (psf)	24 Gauge & 50 ksi WL (psf)	22 Gauge & 50 ksi LL (S) (psf)	22 Gauge & 50 ksi LL (D) (psf)	22 Gauge & 50 ksi WL (psf)
2	258.8	258.8	338.5	420.7	420.7	541.4	614.3	614.3	74.3
2.5	165.6	165.6	216.7	269.2	269.2	346.5	393.1	393.1	47.5
3	115.0	115.0	150.5	187.0	187.0	240.6	273.0	273.0	33.0
3.5	84.5	84.5	110.5	137.4	137.4	176.8	200.6	200.6	24.3
4	64.7	64.7	84.6	105.2	105.2	135.3	153.6	153.6	18.6
4.5	51.1	51.1	66.9	83.1	83.1	106.9	121.3	121.3	14.7
5	41.4	41.4	54.2	67.3	67.3	86.6	98.3	98.3	11.9
6	28.8	28.8	37.6	46.7	46.7	60.2	68.3	68.3	8.3

TWO SPAN CONDITION

SPAN (ft)	26 Gauge & 80 ksi LL (S) (psf)	26 Gauge & 80 ksi LL (D) (psf)	26 Gauge & 80 ksi WL (psf)	24 Gauge & 50 ksi LL (S) (psf)	24 Gauge & 50 ksi LL (D) (psf)	24 Gauge & 50 ksi WL (psf)	22 Gauge & 50 ksi LL (S) (psf)	22 Gauge & 50 ksi LL (D) (psf)	22 Gauge & 50 ksi WL (psf)
2	254.5	254.5	344.2	407.1	407.1	559.5	55.9	55.9	132.7
2.5	162.9	162.9	220.3	260.5	260.5	358.1	35.7	35.7	84.9
3	113.1	113.1	153.0	180.9	180.9	248.7	24.8	24.8	59.0
3.5	83.1	83.1	112.4	132.9	132.9	182.7	18.2	18.2	43.3
4	63.6	63.6	86.1	101.8	101.8	139.9	14.0	14.0	33.2
4.5	50.3	50.3	68.0	80.4	80.4	110.5	11.0	11.0	26.2
5	40.7	40.7	55.1	65.1	65.1	89.5	8.9	8.9	21.2
6	28.3	28.3	38.2	45.2	45.2	62.2	6.2	6.2	14.7

THREE OR MORE SPAN CONDITION

SPAN (ft)	26 Gauge & 80 ksi LL (S) (psf)	26 Gauge & 80 ksi LL (D) (psf)	26 Gauge & 80 ksi WL (psf)	24 Gauge & 50 ksi LL (S) (psf)	24 Gauge & 50 ksi LL (D) (psf)	24 Gauge & 50 ksi WL (psf)	22 Gauge & 50 ksi LL (S) (psf)	22 Gauge & 50 ksi LL (D) (psf)	22 Gauge & 50 ksi WL (psf)
2	297.4	297.4	402.1	475.5	475.5	653.6	65.2	65.2	119.0
2.5	190.3	190.3	257.3	304.3	304.3	418.3	41.8	41.8	76.2
3	132.2	132.2	178.7	211.4	211.4	290.5	29.0	29.0	52.9
3.5	97.1	97.1	131.3	155.3	155.3	213.4	21.3	21.3	38.9
4	74.3	74.3	100.5	118.9	118.9	163.4	16.3	16.3	29.8
4.5	58.7	58.7	79.4	93.9	93.9	129.1	12.9	12.9	23.5
5	47.6	47.6	64.3	76.1	76.1	104.6	10.4	10.4	19.0
6	33.0	33.0	44.7	52.8	52.8	72.6	7.2	7.2	13.2

Notes:

* Theoretical allowable loads are based on uniform span lengths.
* LL (S) is allowable live load based on stress limitation
* LL (D) is allowable live load based on deflection limitation of L/180
* WL is allowable wind load and has been increased by 33-1/3%.

CFS Version 3.04
Section: 18SS2526.sct
ZIMMERMAN MODEL SS-2500 18" X 26 GA

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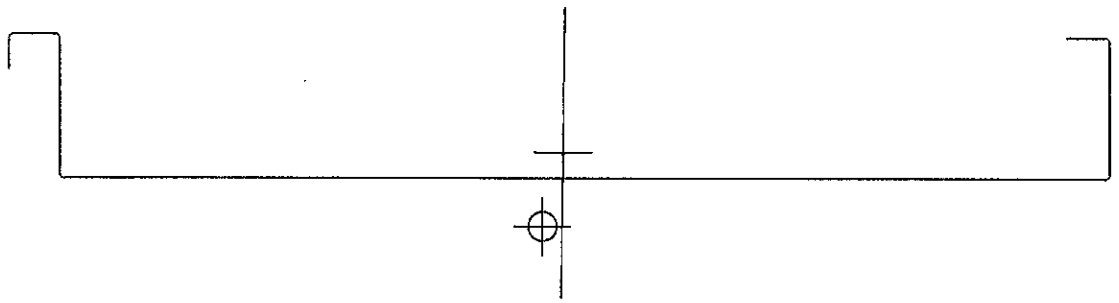

Section Inputs

Material: A653 SQ Grade 50/1
No strength increase from cold work of forming.

Modulus of Elasticity, E	29500 ksi
Yield Strength, Fy	50 ksi
Tensile Strength, Fu	65 ksi
Warping Constant Override, Cw	0 in^6
Torsion Constant Override, J	0 in^4

Part 1, Thickness 0.0179 in (26 Gage)
Placement of Part from Origin:

X to center of gravity	0 in
Y to center of gravity	0 in

Outside dimensions, Open shape

	Length (in)	Angle (deg)	Radius (in)	Web	k Coef.	Hole Size (in)	Distance (in)
1	0.625	90.000	0.080000	None	0.000	0.000	0.313
2	0.875	0.000	0.080000	Single	0.000	0.000	0.438
3	2.500	270.000	0.080000	Single	0.000	0.000	1.250
4	18.000	0.000	0.080000	Single	0.000	0.000	9.000
5	2.438	90.000	0.080000	Single	0.000	0.000	1.219
6	0.750	180.000	0.080000	None	0.000	0.000	0.375

Full Section Properties

Area	0.44584 in^2	Wt.	0.0015158 k/ft	Width	24.907 in
Ix	0.301 in^4	rx	0.822 in	Ixy	-0.263 in^4
Sx(t)	0.1469 in^3	y(t)	2.050 in	α	89.188 deg
Sx(b)	0.6692 in^3	y(b)	0.450 in		
Iy	18.851 in^4	ry	6.503 in	Xo	-0.362 in
Sy(l)	1.9764 in^3	x(l)	9.538 in	Yo	-1.266 in
Sy(r)	2.0229 in^3	x(r)	9.319 in	jx	0.431 in
				jy	14.950 in
I1	18.855 in^4	r1	6.503 in		
I2	0.297 in^4	r2	0.817 in		
Ic	19.152 in^4	rc	6.554 in	Cw	16.891 in^6
Io	19.925 in^4	ro	6.685 in	J	0.0000476 in^4

CFS Version 3.04
Section: 18SS2526.sct
ZIMMERMAN MODEL SS-2500 18" X 26 GA

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Fully Braced Strength - 1996 AISI Specification (ASD)

Compression		Positive Moment		Positive Moment	
Pao	1.881 k	Maxo	0.1941 k-ft	Mayo	1.2949 k-ft
Ae	0.067725 in^2	Ixe	0.1743 in^4	Iye	7.3186 in^4
		Sxe(t)	0.0778 in^3	Sye(l)	1.5388 in^3
Tension		Sxe(b)	0.6715 in^3	Sye(r)	0.5190 in^3
Ta	13.348 k				
		Negative Moment		Negative Moment	
		Maxo	0.1909 k-ft	Mayo	1.5978 k-ft
Shear		Ixe	0.1102 in^4	Iye	8.7952 in^4
Vay	0.419 k	Sxe(t)	0.1039 in^3	Sye(l)	0.6404 in^3
Vax	0.029 k	Sxe(b)	0.0765 in^3	Sye(r)	1.7169 in^3

Part 1 element 4 w/t exceeds 200.
Part 1 element 5 w/t exceeds 60.
Edge stiffener D/w exceeds 0.8.

CFS Version 3.04
Section: 18SS2524.sct
ZIMMERMAN MODEL SS-2500 18" X 24 GA

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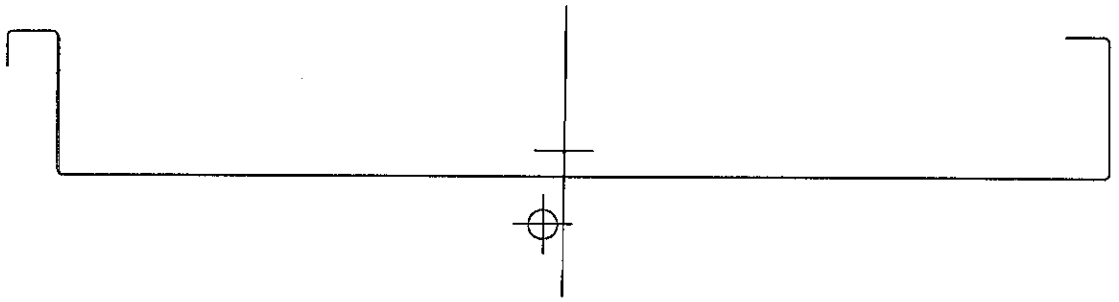

Section Inputs

Material: A653 SQ Grade 50/1
No strength increase from cold work of forming.

Modulus of Elasticity, E	29500 ksi
Yield Strength, Fy	50 ksi
Tensile Strength, Fu	65 ksi
Warping Constant Override, Cw	0 in^6
Torsion Constant Override, J	0 in^4

Part 1, Thickness 0.0239 in (24 Gage)
Placement of Part from Origin:

X to center of gravity	0 in
Y to center of gravity	0 in

Outside dimensions, Open shape

	Length (in)	Angle (deg)	Radius (in)	Web	k Coef.	Hole Size (in)	Distance (in)
1	0.625	90.000	0.080000	None	0.000	0.000	0.313
2	0.875	0.000	0.080000	Single	0.000	0.000	0.438
3	2.500	270.000	0.080000	Single	0.000	0.000	1.250
4	18.000	0.000	0.080000	Single	0.000	0.000	9.000
5	2.438	90.000	0.080000	Single	0.000	0.000	1.219
6	0.750	180.000	0.080000	None	0.000	0.000	0.375

Full Section Properties

Area	0.59441 in^2	Wt.	0.0020210 k/ft	Width	24.871 in
Ix	0.398 in^4	rx	0.819 in	Ixy	-0.347 in^4
Sx(t)	0.1943 in^3	y(t)	2.050 in	α	89.195 deg
Sx(b)	0.8843 in^3	y(b)	0.450 in		
Iy	25.087 in^4	ry	6.497 in	Xo	-0.363 in
Sy(l)	2.6310 in^3	x(l)	9.535 in	Yo	-1.260 in
Sy(r)	2.6930 in^3	x(r)	9.316 in	jx	0.432 in
				jy	14.973 in
I1	25.092 in^4	r1	6.497 in		
I2	0.393 in^4	r2	0.814 in		
Ic	25.486 in^4	rc	6.548 in	Cw	22.350 in^6
Io	26.508 in^4	ro	6.678 in	J	0.0001132 in^4

CFS Version 3.04
Section: 18SS2524.sct
ZIMMERMAN MODEL SS-2500 18" X 24 GA

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Fully Braced Strength - 1996 AISI Specification (ASD)

Compression				Positive Moment			
Pao	3.130	k		Maxo	0.3155	k-ft	
Ae	0.11269	in^2		Ixe	0.276	in^4	
				Sxe(t)	0.1265	in^3	
Tension				Sxe(b)	0.8687	in^3	
Ta	17.797	k					
				Negative Moment			
				Maxo	0.3053	k-ft	
Shear				Ixe	0.165	in^4	
Vay	1.002	k		Sxe(t)	0.1428	in^3	
Vax	0.068	k		Sxe(b)	0.1224	in^3	

Positive Moment							
Mayo	2.1607	k-ft					
Iye	11.670	in^4					
Sye(l)	2.1710	in^3					
Sye(r)	0.8660	in^3					
Negative Moment							
Mayo	2.6150	k-ft					
Iye	13.725	in^4					
Sye(l)	1.0481	in^3					
Sye(r)	2.3842	in^3					

Part 1 element 4 w/t exceeds 200.
Part 1 element 5 w/t exceeds 60.
Edge stiffener D/w exceeds 0.8.

CFS Version 3.04
Section: 18SS2522.sct
ZIMMERMAN MODEL SS-2500 18" X 22 GA

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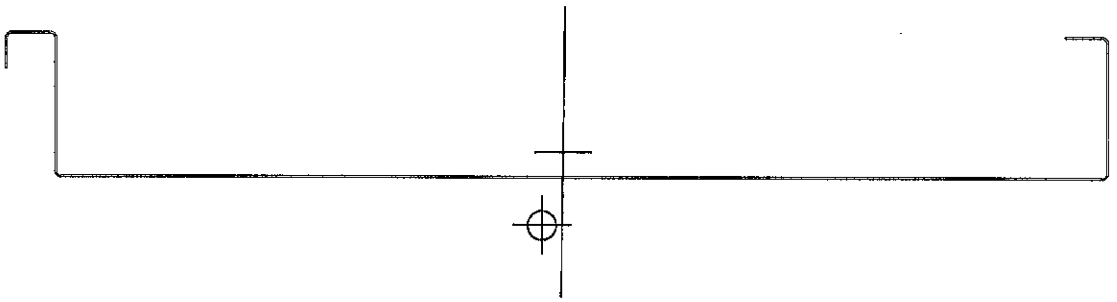

Section Inputs

Material: A653 SQ Grade 50/1
No strength increase from cold work of forming.

Modulus of Elasticity, E	29500 ksi
Yield Strength, Fy	50 ksi
Tensile Strength, Fu	65 ksi
Warping Constant Override, Cw	0 in^6
Torsion Constant Override, J	0 in^4

Part 1, Thickness 0.0299 in (22 Gage)
Placement of Part from Origin:

X to center of gravity	0 in
Y to center of gravity	0 in

Outside dimensions, Open shape

	Length (in)	Angle (deg)	Radius (in)	Web	k Coef.	Hole Size (in)	Distance (in)
1	0.625	90.000	0.080000	None	0.000	0.000	0.313
2	0.875	0.000	0.080000	Single	0.000	0.000	0.438
3	2.500	270.000	0.080000	Single	0.000	0.000	1.250
4	18.000	0.000	0.080000	Single	0.000	0.000	9.000
5	2.438	90.000	0.080000	Single	0.000	0.000	1.219
6	0.750	180.000	0.080000	None	0.000	0.000	0.375

Full Section Properties

Area	0.74254 in^2	Wt.	0.0025246 k/ft	Width	24.834 in
Ix	0.494 in^4	rx	0.815 in	Ixy	-0.429 in^4
Sx(t)	0.2409 in^3	y(t)	2.049 in	α	89.203 deg
Sx(b)	1.0948 in^3	y(b)	0.451 in		
Iy	31.282 in^4	ry	6.491 in	Xo	-0.365 in
Sy(l)	3.2818 in^3	x(l)	9.532 in	Yo	-1.254 in
Sy(r)	3.3589 in^3	x(r)	9.313 in	jx	0.433 in
				jy	14.996 in
I1	31.288 in^4	r1	6.491 in		
I2	0.488 in^4	r2	0.810 in		
Ic	31.776 in^4	rc	6.542 in	Cw	27.708 in^6
Io	33.042 in^4	ro	6.671 in	J	0.0002213 in^4

CFS Version 3.04
Section: 18SS2522.sct
ZIMMERMAN MODEL SS-2500 18" X 22 GA

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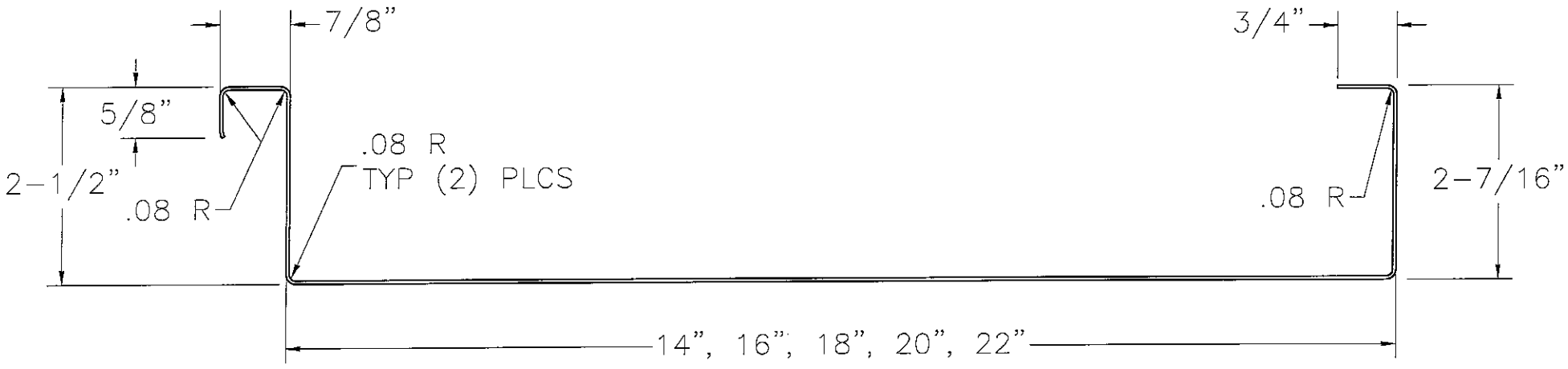
Fully Braced Strength - 1996 AISI Specification (ASD)

Compression			Positive Moment			Positive Moment	
Pao	4.637	k	Maxo	0.4607	k-ft	Mayo	3.2111 k-ft
Ae	0.16693	in^2	Ixe	0.393	in^4	Iye	16.663 in^4
			Sxe(t)	0.1846	in^3	Sye(l)	2.8252 in^3
Tension			Sxe(b)	1.0642	in^3	Sye(r)	1.2870 in^3
Ta	22.232	k					
			Negative Moment			Negative Moment	
			Maxo	0.4189	k-ft	Mayo	3.8180 k-ft
Shear			Ixe	0.218	in^4	Iye	19.236 in^4
Vay	1.897	k	Sxe(t)	0.1822	in^3	Sye(l)	1.5302 in^3
Vax	0.133	k	Sxe(b)	0.1679	in^3	Sye(r)	3.0659 in^3

Part 1 element 4 w/t exceeds 200.
Part 1 element 5 w/t exceeds 60.
Edge stiffener D/w exceeds 0.8.

MODEL SS-2500

24 & 22 Ga, GRADE "D", 50 KSI MIN. YIELD
NOTE: ±10% ON ALL DIMENSIONS



ZIMMERMAN METALS, INC
201 E 58TH AVE
DENVER, CO 80216

STRUCTURAL CALCULATIONS FOR:
20" WIDE
ZIMMERMAN METAL SS-2500 ROOF PANEL

Prepared For:
ZIMMERMAN METALS, INC.
201 E. 58TH Ave.
Denver, Colorado 80216

Prepared By:

YOOSEF LAVI, P.E.
Consulting Engineer
9550 Forest Lane, Suite 108
Dallas, Texas 75243
(214)-340-0049

11-12-99

P. 1-10

SECTION PROPERTIES:				20" WIDE, ZIMMERMAN METALS, INC. SS-2500					
Gauge	Thickness in.	Weight psf	Yield Stress ksi	Top in Compression (Positive Bending)			Bottom in Compression (Negative Bending)		
				I_{xx}	S_{xx}	M_a	I_{xx}	S_{xx}	M_a
				in^4/ft	in^3/ft	in.kips/ft	in^4/ft	in^3/ft	in.kips/ft
26	0.018	0.983	50.0	0.106	0.047	1.395	0.066	0.046	1.375
24	0.024	1.310	50.0	0.167	0.076	2.263	0.099	0.073	2.200
22	0.030	1.637	50.0	0.238	0.110	3.295	0.131	0.101	3.019

Notes on Section Properties and Load Table:

* Section properties and allowables are calculated in accordance with 1996 AISI Specifications.
* I +/- is for deflection determination.
* S +/- is for bending determination.
* M_a is allowable bending moment.
* All values are for one foot of panel width.
* These loads are for panel strength. Frames, purlins, clips, fasteners and all supports must be designed to resist all loads imposed on the panel,
* Allowable outward loads based on stress have been increased by 33.33 % for wind uplift.
* Allowable loads for deflection are based on deflection limitation of span/180.
* For roof panels, self weight of the panel has to be deducted from the allowable inward load to arrive at the actual 'live load' carrying capacity of the panel.
* Minimum bearing length must be checked.
* Minimum deliverable bare steel thickness should not be less than 0.95 of design thickness.

THEORETICAL ALLOWABLE LIVE AND WIND LOADS

20" WIDE, ZIMMERMAN METALS, INC. SS-2500

SINGLE SPAN CONDITION

SPAN (ft)	26 Gauge & 80 ksi LL (S) (psf)	26 Gauge & 80 ksi LL (D) (psf)	26 Gauge & 80 ksi WL (psf)	24 Gauge & 50 ksi LL (S) (psf)	24 Gauge & 50 ksi LL (D) (psf)	24 Gauge & 50 ksi WL (psf)	22 Gauge & 50 ksi LL (S) (psf)	22 Gauge & 50 ksi LL (D) (psf)	22 Gauge & 50 ksi WL (psf)
2	232.4	232.4	304.8	377.2	377.2	487.6	549.2	549.2	669.2
2.5	148.8	148.8	195.1	241.4	241.4	312.0	351.5	351.5	428.3
3	103.3	103.3	135.5	167.6	167.6	216.7	244.1	244.1	297.4
3.5	75.9	75.9	99.5	123.2	123.2	159.2	179.3	179.3	218.5
4	58.1	58.1	76.2	94.3	94.3	121.9	137.3	137.3	167.3
4.5	45.9	45.9	60.2	74.5	74.5	96.3	108.5	108.5	132.2
5	37.2	37.2	48.8	60.3	60.3	78.0	87.9	87.9	107.1
6	25.8	25.8	33.9	41.9	41.9	54.2	61.0	61.0	74.4

TWO SPAN CONDITION

SPAN (ft)	26 Gauge & 80 ksi LL (S) (psf)	26 Gauge & 80 ksi LL (D) (psf)	26 Gauge & 80 ksi WL (psf)	24 Gauge & 50 ksi LL (S) (psf)	24 Gauge & 50 ksi LL (D) (psf)	24 Gauge & 50 ksi WL (psf)	22 Gauge & 50 ksi LL (S) (psf)	22 Gauge & 50 ksi LL (D) (psf)	22 Gauge & 50 ksi WL (psf)
2	229.2	229.2	309.1	366.6	366.6	501.6	503.2	503.2	730.5
2.5	146.7	146.7	197.9	234.6	234.6	321.0	322.0	322.0	467.5
3	101.9	101.9	137.4	162.9	162.9	222.9	223.6	223.6	324.7
3.5	74.8	74.8	100.9	119.7	119.7	163.8	164.3	164.3	238.5
4	57.3	57.3	77.3	91.7	91.7	125.4	125.8	125.8	182.6
4.5	45.3	45.3	61.1	72.4	72.4	99.1	99.4	99.4	144.3
5	36.7	36.7	49.5	58.7	58.7	80.3	80.5	80.5	116.9
6	25.5	25.5	34.3	40.7	40.7	55.7	55.9	55.9	81.2

THREE OR MORE SPAN CONDITION

SPAN (ft)	26 Gauge & 80 ksi LL (S) (psf)	26 Gauge & 80 ksi LL (D) (psf)	26 Gauge & 80 ksi WL (psf)	24 Gauge & 50 ksi LL (S) (psf)	24 Gauge & 50 ksi LL (D) (psf)	24 Gauge & 50 ksi WL (psf)	22 Gauge & 50 ksi LL (S) (psf)	22 Gauge & 50 ksi LL (D) (psf)	22 Gauge & 50 ksi WL (psf)
2	267.8	267.8	361.2	428.3	428.3	586.0	587.8	587.8	853.4
2.5	171.4	171.4	231.1	274.1	274.1	375.0	376.2	376.2	546.2
3	119.0	119.0	160.5	190.3	190.3	260.4	261.2	261.2	379.3
3.5	87.4	87.4	117.9	139.8	139.8	191.3	191.9	191.9	278.7
4	66.9	66.9	90.3	107.1	107.1	146.5	147.0	147.0	213.3
4.5	52.9	52.9	71.3	84.6	84.6	115.8	116.1	116.1	168.6
5	42.8	42.8	57.8	68.5	68.5	93.8	94.0	94.0	136.5
6	29.8	29.8	40.1	47.6	47.6	65.1	65.3	65.3	94.8

Notes:

* Theoretical allowable loads are based on uniform span lengths.
* LL (S) is allowable live load based on stress limitation
* LL (D) is allowable live load based on deflection limitation of L/180
* WL is allowable wind load and has been increased by 33-1/3%.

CFS Version 3.04
Section: 20SS2526.sct
ZIMMERMAN MODEL SS-2500 20" X 26 GA

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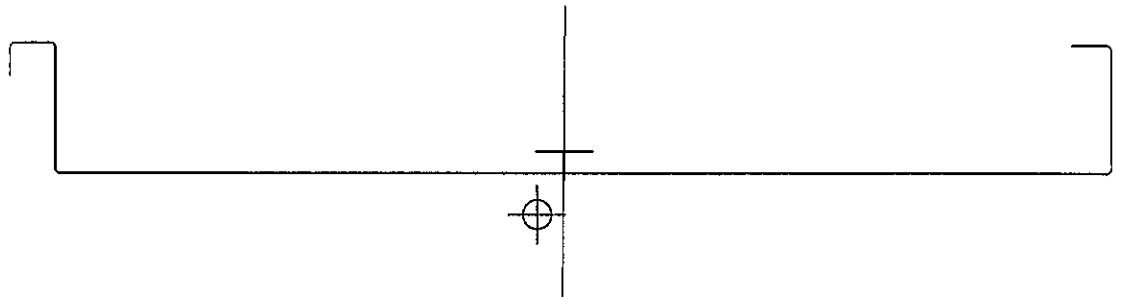

Section Inputs

Material: A653 SQ Grade 50/1
No strength increase from cold work of forming.

Modulus of Elasticity, E	29500 ksi
Yield Strength, Fy	50 ksi
Tensile Strength, Fu	65 ksi
Warping Constant Override, Cw	0 in^6
Torsion Constant Override, J	0 in^4

Part 1, Thickness 0.0179 in (26 Gage)
Placement of Part from Origin:

X to center of gravity	0 in
Y to center of gravity	0 in

Outside dimensions, Open shape

	Length (in)	Angle (deg)	Radius (in)	Web	k Coef.	Hole Size (in)	Distance (in)
1	0.625	90.000	0.080000	None	0.000	0.000	0.313
2	0.875	0.000	0.080000	Single	0.000	0.000	0.438
3	2.500	270.000	0.080000	Single	0.000	0.000	1.250
4	20.000	0.000	0.080000	Single	0.000	0.000	10.000
5	2.438	90.000	0.080000	Single	0.000	0.000	1.219
6	0.750	180.000	0.080000	None	0.000	0.000	0.375

Full Section Properties

Area	0.48164 in^2	Wt.	0.0016376 k/ft	Width	26.907 in
Ix	0.308 in^4	rx	0.799 in	Ixy	-0.293 in^4
Sx(t)	0.1477 in^3	y(t)	2.083 in	α	89.305 deg
Sx(b)	0.7372 in^3	y(b)	0.417 in		
Iy	24.448 in^4	ry	7.125 in	Xo	-0.516 in
Sy(l)	2.3209 in^3	x(l)	10.534 in	Yo	-1.194 in
Sy(r)	2.3683 in^3	x(r)	10.323 in	jx	0.585 in
				jy	18.032 in
I1	24.452 in^4	r1	7.125 in		
I2	0.304 in^4	r2	0.795 in		
Ic	24.756 in^4	rc	7.169 in	Cw	21.682 in^6
Io	25.570 in^4	ro	7.286 in	J	0.0000514 in^4

CFS Version 3.04
Section: 20SS2526.sct
ZIMMERMAN MODEL SS-2500 20" X 26 GA

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Fully Braced Strength - 1996 AISI Specification (ASD)

Compression				Positive Moment			
Pao	1.882	k		Maxo	0.1937	k-ft	
Ae	0.067740	in^2		Ixe	0.176	in^4	
				Sxe(t)	0.0776	in^3	
Tension				Sxe(b)	0.7426	in^3	
Ta	14.420	k					
				Negative Moment			
				Maxo	0.1910	k-ft	
Shear				Ixe	0.110	in^4	
Vay	0.419	k		Sxe(t)	0.1040	in^3	
Vax	0.026	k		Sxe(b)	0.0766	in^3	

Positive Moment							
Mayo	1.4372	k-ft					
Iye	9.076	in^4					
Sye(l)	1.7789	in^3					
Sye(r)	0.5760	in^3					
Negative Moment							
Mayo	1.7789	k-ft					
Iye	10.930	in^4					
Sye(l)	0.7130	in^3					
Sye(r)	1.9778	in^3					

Part 1 element 4 w/t exceeds 200.
Part 1 element 5 w/t exceeds 60.
Edge stiffener D/w exceeds 0.8.

CFS Version 3.04
Section: 20SS2524.sct
ZIMMERMAN MODEL SS-2500 20" X 24 GA

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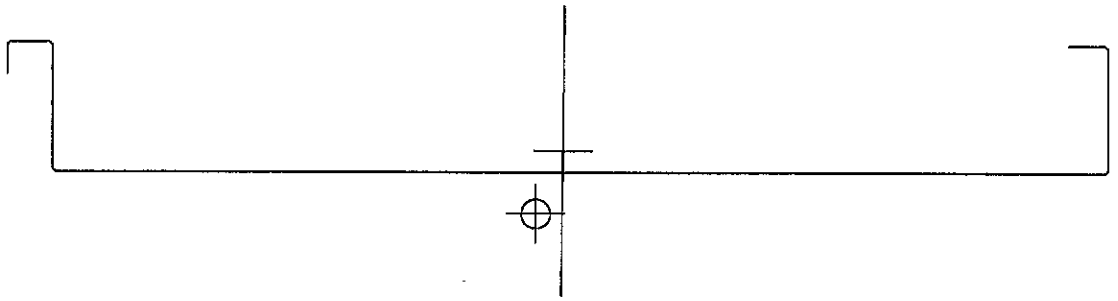

Section Inputs

Material: A653 SQ Grade 50/1
No strength increase from cold work of forming.

Modulus of Elasticity, E	29500 ksi
Yield Strength, Fy	50 ksi
Tensile Strength, Fu	65 ksi
Warping Constant Override, Cw	0 in^6
Torsion Constant Override, J	0 in^4

Part 1, Thickness 0.0239 in (24 Gage)
Placement of Part from Origin:

X to center of gravity	0 in
Y to center of gravity	0 in

Outside dimensions, Open shape

	Length (in)	Angle (deg)	Radius (in)	Web	k Coef.	Hole Size (in)	Distance (in)
1	0.625	90.000	0.080000	None	0.000	0.000	0.313
2	0.875	0.000	0.080000	Single	0.000	0.000	0.438
3	2.500	270.000	0.080000	Single	0.000	0.000	1.250
4	20.000	0.000	0.080000	Single	0.000	0.000	10.000
5	2.438	90.000	0.080000	Single	0.000	0.000	1.219
6	0.750	180.000	0.080000	None	0.000	0.000	0.375

Full Section Properties

Area	0.64221 in^2	Wt.	0.0021835 k/ft	Width	26.871 in
Ix	0.407 in^4	rx	0.796 in	Ixy	-0.387 in^4
Sx(t)	0.1954 in^3	y(t)	2.082 in	α	89.311 deg
Sx(b)	0.9737 in^3	y(b)	0.418 in		
Iy	32.542 in^4	ry	7.118 in	Xo	-0.517 in
Sy(l)	3.0902 in^3	x(l)	10.531 in	Yo	-1.188 in
Sy(r)	3.1532 in^3	x(r)	10.320 in	jx	0.585 in
				jy	18.064 in
I1	32.547 in^4	r1	7.119 in		
I2	0.402 in^4	r2	0.791 in		
Ic	32.949 in^4	rc	7.163 in	Cw	28.690 in^6
Io	34.027 in^4	ro	7.279 in	J	0.0001223 in^4

CFS Version 3.04
Section: 20SS2524.sct
ZIMMERMAN MODEL SS-2500 20" X 24 GA

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Fully Braced Strength - 1996 AISI Specification (ASD)

Compression			Positive Moment			Positive Moment	
Pao	3.131	k	Maxo	0.3143	k-ft	Mayo	2.3986 k-ft
Ae	0.11272	in^2	Ixe	0.278	in^4	Iye	14.500 in^4
			Sxe(t)	0.1260	in^3	Sye(l)	2.5136 in^3
Tension			Sxe(b)	0.9597	in^3	Sye(r)	0.9614 in^3
Ta	19.228	k					
			Negative Moment			Negative Moment	
			Maxo	0.3055	k-ft	Mayo	2.9121 k-ft
Shear			Ixe	0.165	in^4	Iye	17.092 in^4
Vay	1.002	k	Sxe(t)	0.1429	in^3	Sye(l)	1.1672 in^3
Vax	0.061	k	Sxe(b)	0.1224	in^3	Sye(r)	2.7535 in^3

Part 1 element 4 w/t exceeds 200.
Part 1 element 5 w/t exceeds 60.
Edge stiffener D/w exceeds 0.8.

CFS Version 3.04
Section: 20SS2522.sct
ZIMMERMAN MODEL SS-2500 20" X 22 GA

Rev. Date: 11/5/99
Rev. Time: 6:24:38 PM
Rev. By: YL

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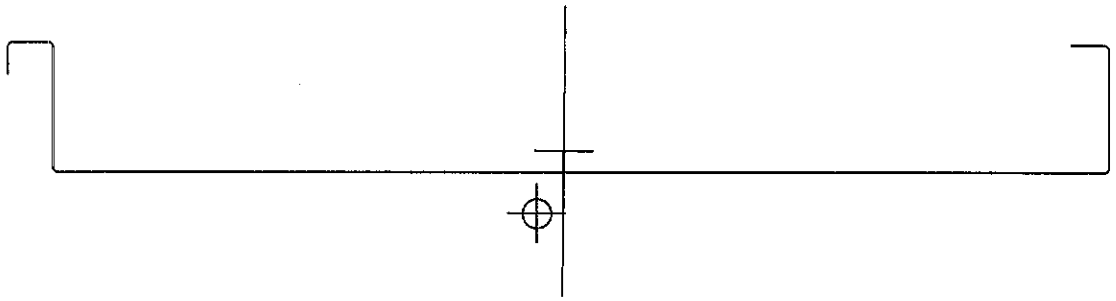

Section Inputs

Material: A653 SQ Grade 50/1
No strength increase from cold work of forming.

Modulus of Elasticity, E	29500 ksi
Yield Strength, Fy	50 ksi
Tensile Strength, Fu	65 ksi
Warping Constant Override, Cw	0 in^6
Torsion Constant Override, J	0 in^4

Part 1, Thickness 0.0299 in (22 Gage)
Placement of Part from Origin:

X to center of gravity	0 in
Y to center of gravity	0 in

Outside dimensions, Open shape

	Length (in)	Angle (deg)	Radius (in)	Web	k Coef.	Hole Size (in)	Distance (in)
1	0.625	90.000	0.080000	None	0.000	0.000	0.313
2	0.875	0.000	0.080000	Single	0.000	0.000	0.438
3	2.500	270.000	0.080000	Single	0.000	0.000	1.250
4	20.000	0.000	0.080000	Single	0.000	0.000	10.000
5	2.438	90.000	0.080000	Single	0.000	0.000	1.219
6	0.750	180.000	0.080000	None	0.000	0.000	0.375

Full Section Properties

Area	0.80234 in^2	Wt.	0.0027280 k/ft	Width	26.834 in
Ix	0.504 in^4	rx	0.793 in	Ixy	-0.478 in^4
Sx(t)	0.2422 in^3	y(t)	2.082 in	α	89.317 deg
Sx(b)	1.2050 in^3	y(b)	0.418 in		
Iy	40.586 in^4	ry	7.112 in	Xo	-0.518 in
Sy(l)	3.8551 in^3	x(l)	10.528 in	Yo	-1.182 in
Sy(r)	3.9338 in^3	x(r)	10.317 in	jx	0.586 in
				jy	18.096 in
I1	40.592 in^4	r1	7.113 in		
I2	0.499 in^4	r2	0.788 in		
Ic	41.090 in^4	rc	7.156 in	Cw	35.570 in^6
Io	42.426 in^4	ro	7.272 in	J	0.0002391 in^4

CFS Version 3.04
Section: 20SS2522.sct
ZIMMERMAN MODEL SS-2500 20" X 22 GA

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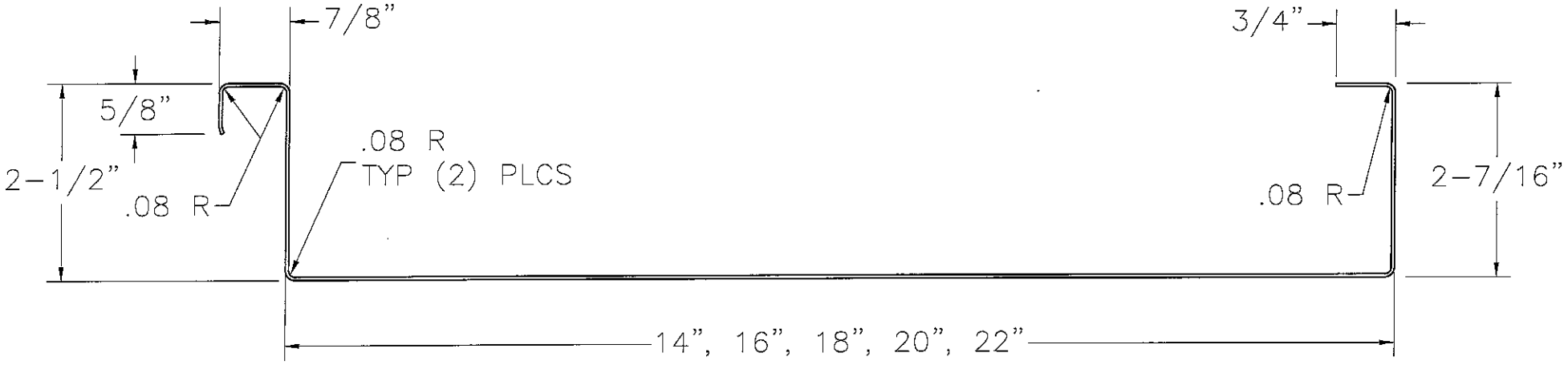
Fully Braced Strength - 1996 AISI Specification (ASD)

Compression		Positive Moment			Positive Moment		
Pao	4.639	k	Maxo	0.4577	k-ft	Mayo	3.5652 k-ft
Ae	0.16700	in^2	Ixe	0.397	in^4	Iye	20.740 in^4
			Sxe(t)	0.1834	in^3	Sye(l)	3.2761 in^3
Tension			Sxe(b)	1.1739	in^3	Sye(r)	1.4289 in^3
Ta	24.022	k					
			Negative Moment			Negative Moment	
			Maxo	0.4193	k-ft	Mayo	4.2523 k-ft
Shear			Ixe	0.219	in^4	Iye	24.000 in^4
Vay	1.897	k	Sxe(t)	0.1822	in^3	Sye(l)	1.7043 in^3
Vax	0.119	k	Sxe(b)	0.1681	in^3	Sye(r)	3.5485 in^3

Part 1 element 4 w/t exceeds 200.
Part 1 element 5 w/t exceeds 60.
Edge stiffener D/w exceeds 0.8.

MODEL SS-2500

24 & 22 Ga, GRADE "D", 50 KSI MIN. YIELD
NOTE: ±10% ON ALL DIMENSIONS



ZIMMERMAN METALS, INC
201 E 58TH AVE
DENVER, CO 80216

STRUCTURAL CALCULATIONS FOR:
22" WIDE
ZIMMERMAN METAL SS-2500 ROOF PANEL

Prepared For:
ZIMMERMAN METALS, INC.
201 E. 58TH Ave.
Denver, Colorado 80216

Prepared By:

YOOSEF LAVI, P.E.
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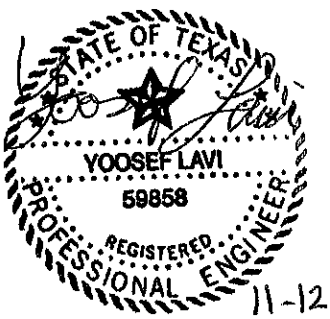

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SECTION PROPERTIES:				22" WIDE, ZIMMERMAN METALS, INC. SS-2500					
Gauge	Thickness in.	Weight psf	Yield Stress ksi	Top in Compression (Positive Bending)			Bottom in Compression (Negative Bending)		
				I_{xx}	S_{xx}	M_a	I_{xx}	S_{xx}	M_a
				in^4/ft	in^3/ft	in.kips/ft	in^4/ft	in^3/ft	in.kips/ft
26	0.018	0.959	50.0	0.097	0.042	1.265	0.060	0.042	1.251
24	0.024	1.280	50.0	0.153	0.069	2.051	0.090	0.067	2.000
22	0.030	1.599	50.0	0.218	0.100	2.980	0.119	0.092	2.746

Notes on Section Properties and Load Table:

* Section properties and allowables are calculated in accordance with 1996 AISI Specifications.
* I +/- is for deflection determination.
* S +/- is for bending determination.
* M_a is allowable bending moment.
* All values are for one foot of panel width.
* These loads are for panel strength. Frames, purlins, clips, fasteners and all supports must be designed to resist all loads imposed on the panel,
* Allowable outward loads based on stress have been increased by 33.33 % for wind uplift.
* Allowable loads for deflection are based on deflection limitation of span/180.
* For roof panels, self weight of the panel has to be deducted from the allowable inward load to arrive at the actual 'live load' carrying capacity of the panel.
* Minimum bearing length must be checked.
* Minimum deliverable bare steel thickness should not be less than 0.95 of design thickness.

THEORETICAL ALLOWABLE LIVE AND WIND LOADS

22" WIDE, ZIMMERMAN METALS, INC. SS-2500

SINGLE SPAN CONDITION

SPAN (ft)	26 Gauge & 80 ksi LL (S) (psf)	26 Gauge & 80 ksi LL (D) (psf)	26 Gauge & 80 ksi WL (psf)	24 Gauge & 50 ksi LL (S) (psf)	24 Gauge & 50 ksi LL (D) (psf)	24 Gauge & 50 ksi WL (psf)	22 Gauge & 50 ksi LL (S) (psf)	22 Gauge & 50 ksi LL (D) (psf)	22 Gauge & 50 ksi WL (psf)
2	210.9	210.9	277.2	341.8	341.8	443.4	496.7	496.7	608.8
2.5	135.0	135.0	177.4	218.7	218.7	283.8	317.9	317.9	389.6
3	93.7	93.7	123.2	151.9	151.9	197.1	220.8	220.8	270.6
3.5	68.9	68.9	90.5	111.6	111.6	144.8	162.2	162.2	198.8
4	52.7	52.7	69.3	85.4	85.4	110.8	124.2	124.2	152.2
4.5	41.7	41.7	54.8	67.5	67.5	87.6	98.1	98.1	120.3
5	33.7	33.7	44.4	54.7	54.7	70.9	79.5	79.5	97.4
6	23.4	23.4	30.8	38.0	38.0	49.3	55.2	55.2	67.6

TWO SPAN CONDITION

SPAN (ft)	26 Gauge & 80 ksi LL (S) (psf)	26 Gauge & 80 ksi LL (D) (psf)	26 Gauge & 80 ksi WL (psf)	24 Gauge & 50 ksi LL (S) (psf)	24 Gauge & 50 ksi LL (D) (psf)	24 Gauge & 50 ksi WL (psf)	22 Gauge & 50 ksi LL (S) (psf)	22 Gauge & 50 ksi LL (D) (psf)	22 Gauge & 50 ksi WL (psf)
2	208.5	208.5	280.5	333.4	333.4	454.6	457.7	457.7	660.6
2.5	133.4	133.4	179.5	213.4	213.4	290.9	293.0	293.0	422.8
3	92.6	92.6	124.6	148.2	148.2	202.0	203.4	203.4	293.6
3.5	68.1	68.1	91.6	108.9	108.9	148.4	149.5	149.5	215.7
4	52.1	52.1	70.1	83.3	83.3	113.6	114.4	114.4	165.1
4.5	41.2	41.2	55.4	65.8	65.8	89.8	90.4	90.4	130.5
5	33.4	33.4	44.9	53.3	53.3	72.7	73.2	73.2	105.7
6	23.2	23.2	31.2	37.0	37.0	50.5	50.9	50.9	73.4

THREE OR MORE SPAN CONDITION

SPAN (ft)	26 Gauge & 80 ksi LL (S) (psf)	26 Gauge & 80 ksi LL (D) (psf)	26 Gauge & 80 ksi WL (psf)	24 Gauge & 50 ksi LL (S) (psf)	24 Gauge & 50 ksi LL (D) (psf)	24 Gauge & 50 ksi WL (psf)	22 Gauge & 50 ksi LL (S) (psf)	22 Gauge & 50 ksi LL (D) (psf)	22 Gauge & 50 ksi WL (psf)
2	243.5	243.5	327.6	389.4	389.4	531.0	534.7	534.7	771.7
2.5	155.9	155.9	209.7	249.2	249.2	339.9	342.2	342.2	493.9
3	108.2	108.2	145.6	173.1	173.1	236.0	237.7	237.7	343.0
3.5	79.5	79.5	107.0	127.2	127.2	173.4	174.6	174.6	252.0
4	60.9	60.9	81.9	97.4	97.4	132.8	133.7	133.7	192.9
4.5	48.1	48.1	64.7	76.9	76.9	104.9	105.6	105.6	152.4
5	39.0	39.0	52.4	62.3	62.3	85.0	85.6	85.6	123.5
6	27.1	27.1	36.4	43.3	43.3	59.0	59.4	59.4	85.7

Notes:

* Theoretical allowable loads are based on uniform span lengths.
* LL (S) is allowable live load based on stress limitation
* LL (D) is allowable live load based on deflection limitation of L/180
* WL is allowable wind load and has been increased by 33-1/3%.

CFS Version 3.04
Section: 22SS2526.sct
ZIMMERMAN MODEL SS-2500 22" X 26 GA

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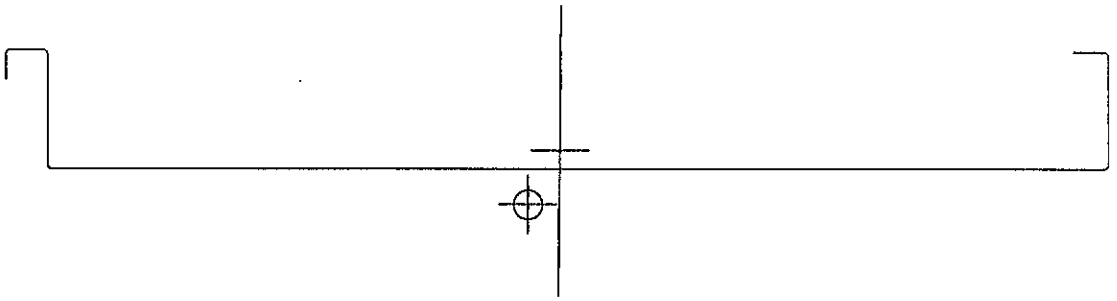

Section Inputs

```
Material: A653 SQ Grade 50/1
No strength increase from cold work of forming.
Modulus of Elasticity, E          29500 ksi
Yield Strength, Fy                   50 ksi
Tensile Strength, Fu                 65 ksi
Warping Constant Override, Cw         0 in^6
Torsion Constant Override, J          0 in^4

Part 1, Thickness 0.0179 in (26 Gage)
Placement of Part from Origin:
X to center of gravity            0 in
Y to center of gravity            0 in
Outside dimensions, Open shape
```

	Length (in)	Angle (deg)	Radius (in)	Web	k Coef.	Hole Size (in)	Distance (in)
1	0.625	90.000	0.080000	None	0.000	0.000	0.313
2	0.875	0.000	0.080000	Single	0.000	0.000	0.438
3	2.500	270.000	0.080000	Single	0.000	0.000	1.250
4	22.000	0.000	0.080000	Single	0.000	0.000	11.000
5	2.438	90.000	0.080000	Single	0.000	0.000	1.219
6	0.750	180.000	0.080000	None	0.000	0.000	0.375

Full Section Properties

Area	0.51744 in^2	Wt.	0.0017593 k/ft	Width	28.907 in
Ix	0.313 in^4	rx	0.778 in	Ixy	-0.323 in^4
Sx(t)	0.1483 in^3	y(t)	2.111 in	α	89.397 deg
Sx(b)	0.8051 in^3	y(b)	0.389 in		
Iy	31.008 in^4	ry	7.741 in	Xo	-0.673 in
Sy(l)	2.6893 in^3	x(l)	11.530 in	Yo	-1.129 in
Sy(r)	2.7376 in^3	x(r)	11.327 in	jx	0.741 in
				jy	21.457 in
I1	31.012 in^4	r1	7.742 in		
I2	0.310 in^4	r2	0.774 in		
Ic	31.321 in^4	rc	7.780 in	Cw	27.145 in^6
Io	32.215 in^4	ro	7.890 in	J	0.0000553 in^4

CFS Version 3.04
Section: 22SS2526.sct
ZIMMERMAN MODEL SS-2500 22" X 26 GA

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Fully Braced Strength - 1996 AISI Specification (ASD)

Compression			Positive Moment			Positive Moment	
Pao	1.882	k	Maxo	0.1933	k-ft	Mayo	1.5795 k-ft
Ae	0.067752	in^2	Ixe	0.177	in^4	Iye	11.029 in^4
			Sxe(t)	0.0775	in^3	Sye(l)	2.0289 in^3
Tension			Sxe(b)	0.8133	in^3	Sye(r)	0.6331 in^3
Ta	15.492	k					
			Negative Moment			Negative Moment	
			Maxo	0.1911	k-ft	Mayo	1.9601 k-ft
Shear			Ixe	0.110	in^4	Iye	13.309 in^4
Vay	0.419	k	Sxe(t)	0.1040	in^3	Sye(l)	0.7856 in^3
Vax	0.023	k	Sxe(b)	0.0766	in^3	Sye(r)	2.2498 in^3

Part 1 element 4 w/t exceeds 200.
Part 1 element 5 w/t exceeds 60.
Edge stiffener D/w exceeds 0.8.

CFS Version 3.04
Section: 22SS2524.sct
ZIMMERMAN MODEL SS-2500 22" X 24 GA

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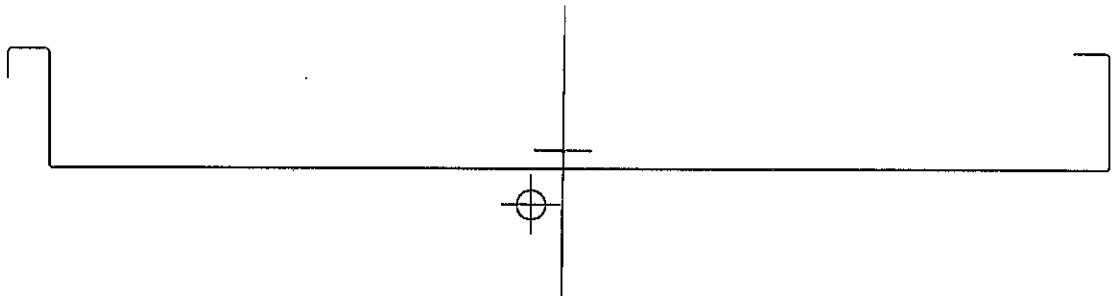

Section Inputs

Material: A653 SQ Grade 50/1
No strength increase from cold work of forming.

Modulus of Elasticity, E	29500 ksi
Yield Strength, Fy	50 ksi
Tensile Strength, Fu	65 ksi
Warping Constant Override, Cw	0 in^6
Torsion Constant Override, J	0 in^4

Part 1, Thickness 0.0239 in (24 Gage)
Placement of Part from Origin:

X to center of gravity	0 in
Y to center of gravity	0 in

Outside dimensions, Open shape

	Length (in)	Angle (deg)	Radius (in)	Web	k Coef.	Hole Size (in)	Distance (in)
1	0.625	90.000	0.080000	None	0.000	0.000	0.313
2	0.875	0.000	0.080000	Single	0.000	0.000	0.438
3	2.500	270.000	0.080000	Single	0.000	0.000	1.250
4	22.000	0.000	0.080000	Single	0.000	0.000	11.000
5	2.438	90.000	0.080000	Single	0.000	0.000	1.219
6	0.750	180.000	0.080000	None	0.000	0.000	0.375

Full Section Properties

Area	0.69001 in^2	Wt.	0.0023460 k/ft	Width	28.871 in
Ix	0.414 in^4	rx	0.775 in	Ixy	-0.426 in^4
Sx(t)	0.1963 in^3	y(t)	2.110 in	α	89.402 deg
Sx(b)	1.0628 in^3	y(b)	0.390 in		
Iy	41.282 in^4	ry	7.735 in	Xo	-0.673 in
Sy(l)	3.5813 in^3	x(l)	11.527 in	Yo	-1.123 in
Sy(r)	3.6455 in^3	x(r)	11.324 in	jx	0.741 in
				jy	21.498 in
I1	41.286 in^4	r1	7.735 in		
I2	0.410 in^4	r2	0.771 in		
Ic	41.696 in^4	rc	7.774 in	Cw	35.919 in^6
Io	42.880 in^4	ro	7.883 in	J	0.0001314 in^4

CFS Version 3.04
Section: 22SS2524.sct
ZIMMERMAN MODEL SS-2500 22" X 24 GA

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Fully Braced Strength - 1996 AISI Specification (ASD)

Compression		Positive Moment		Positive Moment	
Pao	3.132 k	Maxo	0.3133 k-ft	Mayo	2.6365 k-ft
Ae	0.11275 in^2	Ixe	0.280 in^4	Iye	17.651 in^4
		Sxe(t)	0.1256 in^3	Sye(l)	2.8712 in^3
Tension		Sxe(b)	1.0501 in^3	Sye(r)	1.0567 in^3
Ta	20.659 k				
		Negative Moment		Negative Moment	
		Maxo	0.3056 k-ft	Mayo	3.2093 k-ft
Shear		Ixe	0.165 in^4	Iye	20.850 in^4
Vay	1.002 k	Sxe(t)	0.1429 in^3	Sye(l)	1.2863 in^3
Vax	0.055 k	Sxe(b)	0.1225 in^3	Sye(r)	3.1394 in^3

Part 1 element 4 w/t exceeds 200.
Part 1 element 5 w/t exceeds 60.
Edge stiffener D/w exceeds 0.8.

CFS Version 3.04
Section: 22SS2522.sct
ZIMMERMAN MODEL SS-2500 22" X 22 GA

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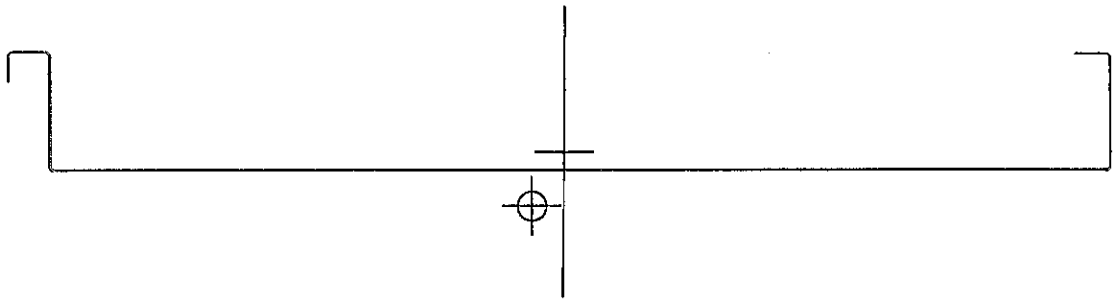

Section Inputs

Material: A653 SQ Grade 50/1
No strength increase from cold work of forming.

Modulus of Elasticity, E	29500 ksi
Yield Strength, Fy	50 ksi
Tensile Strength, Fu	65 ksi
Warping Constant Override, Cw	0 in^6
Torsion Constant Override, J	0 in^4

Part 1, Thickness 0.0299 in (22 Gage)
Placement of Part from Origin:

X to center of gravity	0 in
Y to center of gravity	0 in

Outside dimensions, Open shape

	Length (in)	Angle (deg)	Radius (in)	Web	k Coef.	Hole Size (in)	Distance (in)
1	0.625	90.000	0.080000	None	0.000	0.000	0.313
2	0.875	0.000	0.080000	Single	0.000	0.000	0.438
3	2.500	270.000	0.080000	Single	0.000	0.000	1.250
4	22.000	0.000	0.080000	Single	0.000	0.000	11.000
5	2.438	90.000	0.080000	Single	0.000	0.000	1.219
6	0.750	180.000	0.080000	None	0.000	0.000	0.375

Full Section Properties

Area	0.86214 in^2	Wt.	0.0029313 k/ft	Width	28.834 in
Ix	0.513 in^4	rx	0.772 in	Ixy	-0.527 in^4
Sx(t)	0.2433 in^3	y(t)	2.110 in	α	89.408 deg
Sx(b)	1.3146 in^3	y(b)	0.390 in		
Iy	51.495 in^4	ry	7.728 in	Xo	-0.674 in
Sy(l)	4.4685 in^3	x(l)	11.524 in	Yo	-1.118 in
Sy(r)	4.5486 in^3	x(r)	11.321 in	jx	0.741 in
				jy	21.539 in
I1	51.500 in^4	r1	7.729 in		
I2	0.508 in^4	r2	0.767 in		
Ic	52.008 in^4	rc	7.767 in	Cw	44.532 in^6
Io	53.477 in^4	ro	7.876 in	J	0.0002569 in^4

CFS Version 3.04
Section: 22SS2522.sct
ZIMMERMAN MODEL SS-2500 22" X 22 GA

Rev. Date: 11/5/99
Rev. Time: 6:28:56 PM
Rev. By: YL

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Fully Braced Strength - 1996 AISI Specification (ASD)

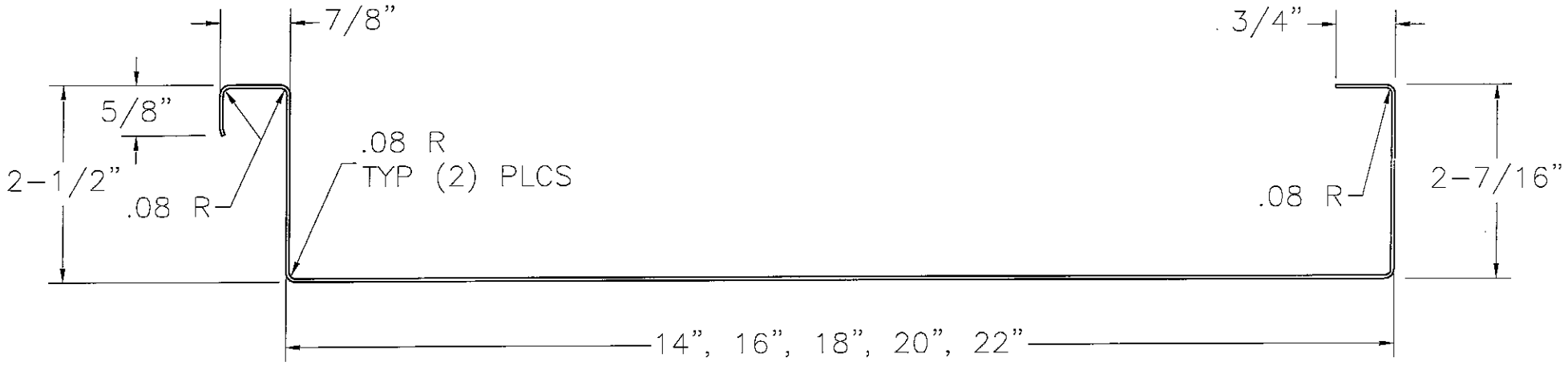
Compression				Positive Moment			
Pao	4.641	k		Maxo	0.4553	k-ft	
Ae	0.16706	in^2		Ixe	0.399	in^4	
				Sxe(t)	0.1825	in^3	
Tension				Sxe(b)	1.2831	in^3	
Ta	25.813	k					
				Negative Moment			
				Maxo	0.4196	k-ft	
Shear				Ixe	0.219	in^4	
Vay	1.897	k		Sxe(t)	0.1823	in^3	
Vax	0.108	k		Sxe(b)	0.1682	in^3	

Positive Moment			
Mayo	3.9193	k-ft	
Iye	25.286	in^4	
Sye(l)	3.7474	in^3	
Sye(r)	1.5708	in^3	
Negative Moment			
Mayo	4.6868	k-ft	
Iye	29.324	in^4	
Sye(l)	1.8785	in^3	
Sye(r)	4.0534	in^3	

Part 1 element 4 w/t exceeds 200.
Part 1 element 5 w/t exceeds 60.
Edge stiffener D/w exceeds 0.8.

MODEL SS-2500

24 & 22 Ga, GRADE "D", 50 KSI MIN. YIELD
NOTE: ±10% ON ALL DIMENSIONS



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