STRUCTURAL CALCULATIONS

SS1000 PANEL

Zimmerman Metals, Inc.
Over 60 years of Quality Workmanship and Service

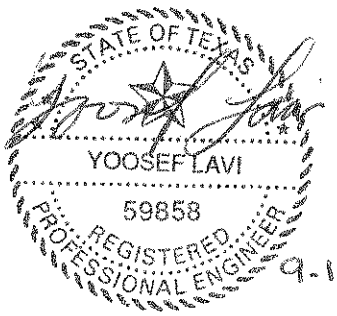
201 East 58th Avenue, Denver CO 80216
303/294-0180 fax:303/292-5013 800/247-4202

STRUCTURAL CALCULATIONS FOR:
12" WIDE X 1" HIGH X 24 GA STEEL
ZIMMERMAN METAL SS1000 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 313
Dallas, Texas 75243



9-12-95

Pages 1-11

ALLOWABLE LOAD TABLES FOR : ZIMMERMAN METAL SS1000 ROOF PANEL

ALLOWABLE LIVE LOAD (PSF)

PANEL GAUGE	PANEL WIDTH	# OF EQUAL SPANS	SPAN (FT.)					
			1.5	2.0	2.5	3.0	3.5	4.0
24 GA STEEL	12"	1	240	135	86	60	44	33
		2	185	113	73	51	37	28
		3	210	131	85	59	43	33

NOTES:

1. All calculations for panel properties have been made in accordance with the 1986 edition of "Specification for Cold-Formed Steel Design Manual" published by American Iron and steel institute.

2. Values for 3 or more spans are based on 4 equal spans.

3. These load capacities are for the panel itself. Frames purlins, clips, fasteners, and all supports must be designed to resist load imposed by the panel.

4. Materials:
   FY = 40 ksi for steel panels

5. All loads are in PSF.

6. For full panel capacity, bearing must be checked using actual loads and bearing length.

7. Loads shown are limited by L/180 deflection.

ALLOWABLE LOAD TABLES FOR : ZIMMERMAN METAL SS1000 ROOF PANEL

ALLOWABLE UPLIFT LOAD (PSF)

PANEL GAUGE	PANEL WIDTH	# OF EQUAL SPANS	SPAN (FT.)					
			1.5	2.0	2.5	3.0	3.5	4.0
24 GA STEEL	12"	1	275	155	99	68	50	38
		2	268	169	112	78	58	44
		3	304	193	130	91	67	52

NOTES:

1. All calculations for panel properties have been made in accordance with the 1986 edition of "Specification for Cold-Formed Steel Design Manual"published by American Iron and steel institute.

2. Values for 3 or more spans are based on 4 equal spans.

3. These load capacities are for the panel itself. Frames purlins, clips, fasteners, and all supports must be designed to resist load imposed by the panel.

4. Materials:
   FY = 40 ksi for steel panels

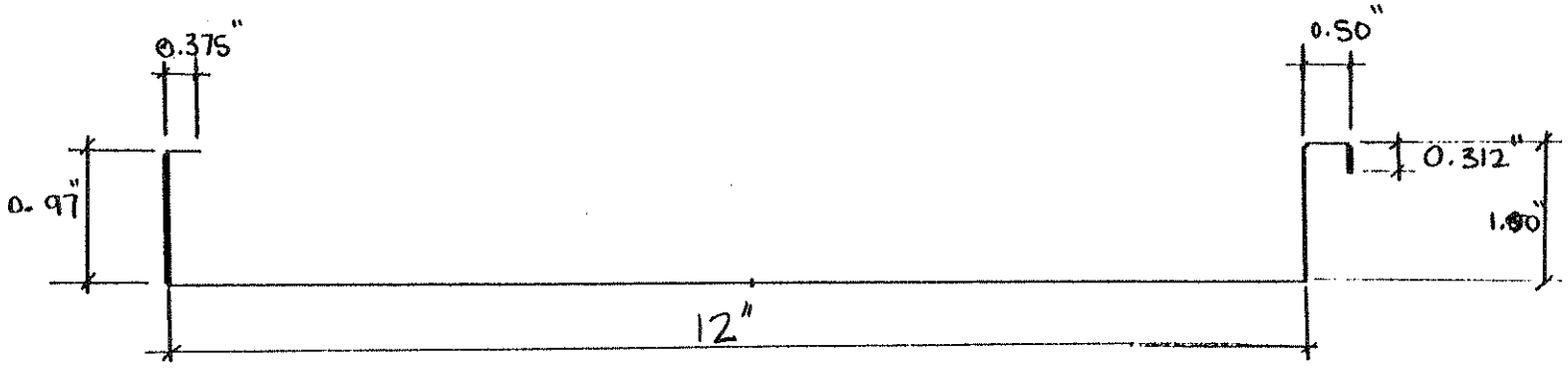
5. All loads are in PSF.

6. Above capacities have been increased by 33-1/3% as per AISI sec. A4.4.

7. For full panel capacity, bearing must be checked using actual loads and bearing length.

8. Loads shown are limited to L/180 deflection.

ZIMMERMAN METAL SS1000 ROOF PANEL



Thickness: 24 ga.

FY = 40 KSI

CFS Version 2.10

SECTION: 12SS1000
Rev. Date 09-12-1995
Rev. Time 08:42:58

Section Input

Yield (Fy)	40.000	One Inch =	1.0000
Modulus (E)	29500.000	Cw Override	0.0000
Unit Weight	3.4000	J Override	0.0000

Part 1 Thickness 0.0239 24 Gage

Length	Angle	Radius	Web	k
0.375	180.000	0.0600	No	0.00
0.970	270.000	0.0600	Sgl	0.00
12.000	0.000	0.0600	No	0.00
1.000	90.000	0.0600	Sgl	0.00
0.500	0.000	0.0600	No	0.00
0.312	270.000	0.0600	No	0.00

	X	Y
CG Placement	0.000	0.000
from Lower-Left	6.187	0.139
from Upper-Right	-6.290	-0.861

Full Section Properties

Area	0.35571	Wt.	1.20940	Width	14.88310
Ix	0.02988	rx	0.28982	Ixy	0.05065
Sx(t)	0.03470	y(t)	0.86105	Alpha	-89.5101
Sx(b)	0.21502	y(b)	0.13895		
Iy	5.95261	ry	4.09080	Xo	0.53868
Sy(l)	0.96219	x(l)	6.18653	Yo	-0.38991
Sy(r)	0.94642	x(r)	6.28958	jx	-0.56868
				jy	15.57258
I1	5.95304	r1	4.09095		
I2	0.02944	r2	0.28771		
Ic	5.98248	rc	4.10105	Cw	0.77874
Io	6.13978	ro	4.15462	J	0.00006773

Fully Braced Allowables

Compression		Positive Moment		Positive Moment	
Pao	2.07304	Maxo	0.81102	Mayo	14.11018
Ae	0.09933	Ixe	0.02918	Iye	4.48237
		Sxe(t)	0.03379	Sye(l)	0.92381
Tension		Sxe(b)	0.21356	Sye(r)	0.58792
Ta	8.53694				
		Negative Moment		Negative Moment	
		Maxo	0.69810	Mayo	11.99224
Shear		Ixe	0.01633	Iye	3.95980
Vay	0.62499	Sxe(t)	0.02909	Sye(l)	0.49968
Vax	0.00000	Sxe(b)	0.03723	Sye(r)	0.87002

MAXIMUM ALLOW. LIVE LOAD IN PSF FOR ZIMMERMAN SS1000 (12" WIDE X 24 GA)

WIDTH:	12 IN.
CONDITION:	SINGLE SPAN
LOADING:	LIVE LOAD
FILE NAME	L1S12S24

SPAN FEET	THICKNESS GA	DEFL. (L/180)	DEFL. (L/240)	STRESS
1	24	540.67	540.67	540.67
1.5	24	240.30	240.30	240.30
2	24	135.17	135.17	135.17
2.5	24	86.51	86.51	86.51
3	24	60.07	60.07	60.07
3.5	24	44.14	44.14	44.14
4	24	33.79	30.28	33.79
4.5	24	26.70	21.27	26.70

MAXIMUM ALLOW. LIVE LOAD IN PSF FOR ZIMMERMAN SS1000 (12" WIDE X 24 GA)

WIDTH: 12 IN.
CONDITION: TWO SPAN
LOADING: LIVE LOAD
FILE NAME: L2S12S24

SPAN FEET	THICKNESS GA	DEFL. (L/180)	DEFL. (L/240)	STRESS
1	24	346.48	346.48	346.48
1.5	24	185.06	185.06	185.06
2	24	113.31	113.31	113.31
2.5	24	73.20	73.20	73.20
3	24	51.09	51.09	51.09
3.5	24	37.66	37.66	37.66
4	24	28.89	28.89	28.89
4.5	24	22.86	22.86	22.86

MAXIMUM ALLOW. LIVE LOAD IN PSF FOR ZIMMERMAN SS100 (12" WIDE X 24 GA)

WIDTH: 12 IN.
CONDITION: THREE SPAN
LOADING: LIVE LOAD
FILE NAME: L3S12S24

SPAN FEET	THICKNESS GA	DEFL. (L/180)	DEFL. (L/240)	STRESS
1	24	391.86	391.86	391.86
1.5	24	210.63	210.63	210.63
2	24	131.40	131.40	131.40
2.5	24	85.10	85.10	85.10
3	24	59.49	59.49	59.49
3.5	24	43.88	43.88	43.88
4	24	33.68	33.68	33.68
4.5	24	26.66	26.66	26.66

MAXIMUM ALLOW. WIND LOAD IN PSF FOR ZIMMERMAN SS1000 (12" WIDE X 24 GA)

WIDTH:	12 IN.
CONDITION:	SINGLE SPAN
LOADING:	WIND LOAD
FILE NAME	W1S12S24

SPAN FEET	THICKNESS GA	DEFL. (L/180)	DEFL. (L/240)	STRESS
1	24	620.29	620.29	620.29
1.5	24	275.68	275.68	275.68
2	24	155.07	155.07	155.07
2.5	24	99.25	99.25	99.25
3	24	68.92	68.92	68.92
3.5	24	50.64	45.20	50.64
4	24	38.77	30.28	38.77
4.5	24	28.36	21.27	30.63

MAXIMUM ALLOW. WIND LOAD IN PSF FOR ZIMMERMAN SS1000 (12" WIDE X 24 GA)

WIDTH: 12 IN.
CONDITION: TWO SPAN
LOADING: WIND LOAD
FILE NAME: W2S12S24

SPAN FEET	THICKNESS GA	DEFL. (L/180)	DEFL. (L/240)	STRESS
1	24	495.06	495.06	495.06
1.5	24	268.44	268.44	268.44
2	24	169.66	169.66	169.66
2.5	24	112.71	112.71	112.71
3	24	78.81	78.81	78.81
3.5	24	58.14	58.14	58.14
4	24	44.64	44.64	44.64

MAXIMUM ALLOW. WIND LOAD IN PSF FOR ZIMMERMAN SS1000 (12"WIDE X 24 GA)

WIDTH: 12 IN.
CONDITION: THREE SPAN
LOADING: WIND LOAD
FILE NAME: W3S12S24

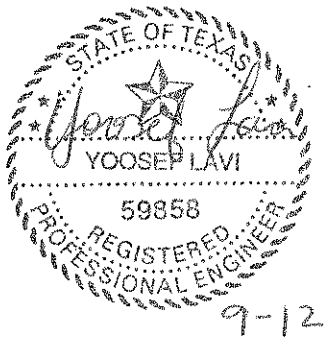
SPAN FEET	THICKNESS GA	DEFL. (L/180)	DEFL. (L/240)	STRESS
1	24	558.57	558.57	558.57
1.5	24	304.82	304.82	304.82
2	24	193.51	193.51	193.51
2.5	24	130.83	130.83	130.83
3	24	91.65	91.65	91.65
3.5	24	67.70	67.70	67.70
4	24	52.01	52.01	52.01

STRUCTURAL CALCULATIONS FOR:
16" WIDE X 1" HIGH X 24 GA STEEL
ZIMMERMAN METAL SS1000 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 313
Dallas, Texas 75243



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pages 1-11

ALLOWABLE LOAD TABLES FOR : ZIMMERMAN METAL SS1000 ROOF PANEL

ALLOWABLE LIVE LOAD (PSF)

PANEL GAUGE	PANEL WIDTH	# OF EQUAL SPANS	SPAN (FT.)					
			1.5	2.0	2.5	3.0	3.5	4.0
24 GA STEEL	16"	1	181	102	65	45	33	22
		2	138	85	54	38	28	21
		3	158	98	63	44	32	25

NOTES:

1. All calculations for panel properties have been made in accordance with the 1986 edition of "Specification for Cold-Formed Steel Design Manual" published by American Iron and steel institute.

2. Values for 3 or more spans are based on 4 equal spans.

3. These load capacities are for the panel itself. Frames purlins, clips, fasteners, and all supports must be designed to resist load imposed by the panel.

4. Materials:
   FY = 40 ksi for steel panels

5. All loads are in PSF.

6. For full panel capacity, bearing must be checked using actual loads and bearing length.

7. Loads shown are limited by L/180 deflection.

ALLOWABLE LOAD TABLES FOR : ZIMMERMAN METAL SS1000 ROOF PANEL

ALLOWABLE UPLIFT LOAD (PSF)

PANEL GAUGE	PANEL WIDTH	# OF EQUAL SPANS	SPAN (FT.)					
			1.5	2.0	2.5	3.0	3.5	4.0
24 GA STEEL	16"	1	207	116	74	51	33	22
		2	202	128	85	59	44	33
		3	230	146	99	69	51	39

NOTES:

1. All calculations for panel properties have been made in accordance with the 1986 edition of "Specification for Cold-Formed Steel Design Manual"published by American Iron and steel institute.

2. Values for 3 or more spans are based on 4 equal spans.

3. These load capacities are for the panel itself. Frames purlins, clips, fasteners, and all supports must be designed to resist load imposed by the panel.

4. Materials:
   FY = 40 ksi for steel panels

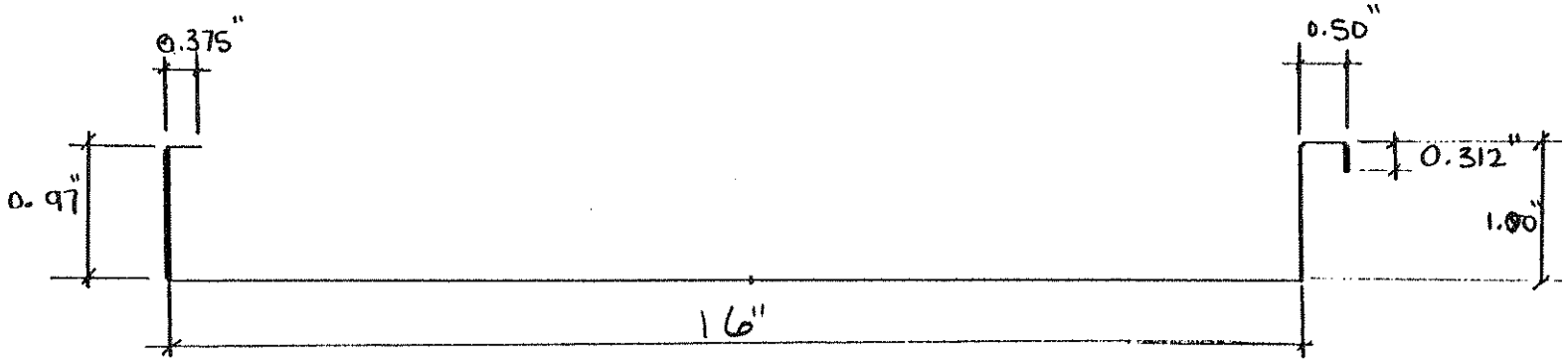
5. All loads are in PSF.

6. Above capacities have been increased by 33-1/3% as per AISI sec. A4.4.

7. For full panel capacity, bearing must be checked using actual loads and bearing length.

8. Loads shown are limited to L/180 deflection.

ZIMMERMAN METAL SS1000 ROOF PANEL



Thickness: 24 ga.

FY = 40 KSI

CFS Version 2.10

SECTION: 16SS1000
Rev. Date 09-12-1995
Rev. Time 08:43:26

Section Input

Yield (Fy)	40.000	One Inch =	1.0000
Modulus (E)	29500.000	Cw Override	0.0000
Unit Weight	3.4000	J Override	0.0000

Part 1 Thickness 0.0239 24 Gage

Length	Angle	Radius	Web	k
0.375	180.000	0.0600	No	0.00
0.970	270.000	0.0600	Sgl	0.00
16.000	0.000	0.0600	No	0.00
1.000	90.000	0.0600	Sgl	0.00
0.500	0.000	0.0600	No	0.00
0.312	270.000	0.0600	No	0.00

CG Placement	X	Y
from Lower-Left	8.191	0.112
from Upper-Right	-8.285	-0.888

Full Section Properties

Area	0.4513	Wt.	1.5344	Width	18.8831
Ix	0.0311	rx	0.2625	Ixy	0.0680
Sx(t)	0.0350	y(t)	0.8880	Alpha	-89.6903
Sx(b)	0.2775	y(b)	0.1120		
Iy	12.6076	ry	5.2854	Xo	0.9443
Sy(l)	1.5393	x(l)	8.1907	Yo	-0.3207
Sy(r)	1.5217	x(r)	8.2854	jx	-0.9717
				jy	27.2306
I1	12.6080	r1	5.2855		
I2	0.0307	r2	0.2609		
Ic	12.6387	rc	5.2919	Cw	1.5133
Io	13.0876	ro	5.3851	J	0.0000859

Fully Braced Allowables

Compression		Positive Moment		Positive Moment	
Pao	2.0766	Maxo	0.8185	Mayo	18.9913
Ae	0.0995	Ixe	0.0303	Iye	8.3807
		Sxe(t)	0.0341	Sye(l)	1.4240
Tension		Sxe(b)	0.2755	Sye(r)	0.7913
Ta	10.8313				
		Negative Moment		Negative Moment	
		Maxo	0.6990	Mayo	15.9822
Shear		Ixe	0.0164	Iye	7.3235
Vay	0.6250	Sxe(t)	0.0291	Sye(l)	0.6659
Vax	0.0000	Sxe(b)	0.0375	Sye(r)	1.3367

MAXIMUM ALLOW. LIVE LOAD IN PSF FOR ZIMMERMAN SS1000 (16" WIDE X 24 GA)

WIDTH:	16 IN.
CONDITION:	SINGLE SPAN
LOADING:	LIVE LOAD
FILE NAME	L1S16S24

SPAN FEET	THICKNESS GA	DEFL. (L/180)	DEFL. (L/240)	STRESS
1	24	409.01	409.01	409.01
1.5	24	181.78	181.78	181.78
2	24	102.25	102.25	102.25
2.5	24	65.44	65.44	65.44
3	24	45.45	45.45	45.45
3.5	24	33.39	33.39	33.39
4	24	25.56	22.71	25.56
4.5	24	20.20	15.95	20.20

MAXIMUM ALLOW. LIVE LOAD IN PSF FOR ZIMMERMAN SS1000 (16" WIDE X 24 GA)

WIDTH: 16 IN.
CONDITION: TWO SPAN
LOADING: LIVE LOAD
FILE NAME: L2S16S24

SPAN FEET	THICKNESS GA	DEFL. (L/180)	DEFL. (L/240)	STRESS
1	24	260.11	260.11	260.11
1.5	24	138.95	138.95	138.95
2	24	85.12	85.12	85.12
2.5	24	54.99	54.99	54.99
3	24	38.38	38.38	38.38
3.5	24	28.29	28.29	28.29
4	24	21.70	21.70	21.70
4.5	24	17.17	17.17	17.17

MAXIMUM ALLOW. LIVE LOAD IN PSF FOR ZIMMERMAN SS100 (16" WIDE X 24 GA)

WIDTH: 16 IN.
CONDITION: THREE SPAN
LOADING: LIVE LOAD
FILE NAME: L3S16S24

SPAN FEET	THICKNESS GA	DEFL. (L/180)	DEFL. (L/240)	STRESS
1	24	294.17	294.17	294.17
1.5	24	158.14	158.14	158.14
2	24	98.71	98.71	98.71
2.5	24	63.93	63.93	63.93
3	24	44.69	44.69	44.69
3.5	24	32.96	32.96	32.96
4	24	25.30	25.30	25.30
4.5	24	20.03	20.03	20.03

MAXIMUM ALLOW. WIND LOAD IN PSF FOR ZIMMERMAN SS1000 (16" WIDE X 24 GA)

WIDTH:	16 IN.
CONDITION:	SINGLE SPAN
LOADING:	WIND LOAD
FILE NAME	W1S16S24

SPAN FEET	THICKNESS GA	DEFL. (L/180)	DEFL. (L/240)	STRESS
1	24	467.05	467.05	467.05
1.5	24	207.58	207.58	207.58
2	24	116.76	116.76	116.76
2.5	24	74.73	74.73	74.73
3	24	51.89	51.89	51.89
3.5	24	38.13	33.99	38.13
4	24	29.19	22.77	29.19
4.5	24	21.32	15.99	23.06

MAXIMUM ALLOW. WIND LOAD IN PSF FOR ZIMMERMAN SS1000 (16" WIDE X 24 GA)

WIDTH: 16 IN.
CONDITION: TWO SPAN
LOADING: WIND LOAD
FILE NAME: W2S16S24

SPAN FEET	THICKNESS GA	DEFL. (L/180)	DEFL. (L/240)	STRESS
1	24	373.80	373.80	373.80
1.5	24	202.87	202.87	202.87
2	24	128.30	128.30	128.30
2.5	24	85.49	85.49	85.49
3	24	59.79	59.79	59.79
3.5	24	44.11	44.11	44.11
4	24	33.87	33.87	33.87

MAXIMUM ALLOW. WIND LOAD IN PSF FOR ZIMMERMAN SS1000 (16"WIDE X 24 GA)

WIDTH: 16 IN.
CONDITION: THREE SPAN
LOADING: WIND LOAD
FILE NAME: W3S16S24

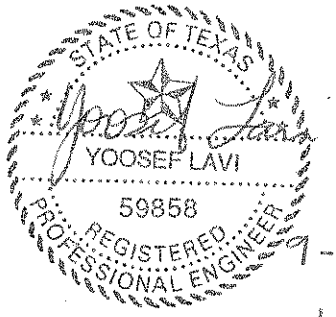
SPAN FEET	THICKNESS GA	DEFL. (L/180)	DEFL. (L/240)	STRESS
1	24	421.58	421.58	421.58
1.5	24	230.26	230.26	230.26
2	24	146.26	146.26	146.26
2.5	24	99.17	99.17	99.17
3	24	69.48	69.48	69.48
3.5	24	51.33	51.33	51.33
4	24	39.44	39.44	39.44

STRUCTURAL CALCULATIONS FOR:
18" WIDE X 1" HIGH X 24 GA STEEL
ZIMMERMAN METAL SS1000 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 313
Dallas, Texas 75243



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Pages 1-11

ALLOWABLE LOAD TABLES FOR : ZIMMERMAN METAL SS1000 ROOF PANEL

ALLOWABLE LIVE LOAD (PSF)

PANEL GAUGE	PANEL WIDTH	# OF EQUAL SPANS	SPAN (FT.)					
			1.5	2.0	2.5	3.0	3.5	4.0
24 GA STEEL	18"	1	162	91	58	40	29	22
		2	123	75	48	34	25	19
		3	140	87	56	39	29	22

NOTES:

1. All calculations for panel properties have been made in accordance with the 1986 edition of "Specification for Cold-Formed Steel Design Manual" published by American Iron and steel institute.

2. Values for 3 or more spans are based on 4 equal spans.

3. These load capacities are for the panel itself. Frames purlins, clips, fasteners, and all supports must be designed to resist load imposed by the panel.

4. Materials:
   FY = 40 ksi for steel panels

5. All loads are in PSF.

6. For full panel capacity, bearing must be checked using actual loads and bearing length.

7. Loads shown are limited by L/180 deflection.

ALLOWABLE LOAD TABLES FOR : ZIMMERMAN METAL SS1000 ROOF PANEL

ALLOWABLE UPLIFT LOAD (PSF)

PANEL GAUGE	PANEL WIDTH	# OF EQUAL SPANS	SPAN (FT.)					
			1.5	2.0	2.5	3.0	3.5	4.0
24 GA STEEL	18"	1	184	103	66	46	33	25
		2	180	113	76	53	39	30
		3	204	129	88	61	45	35

NOTES:

1. All calculations for panel properties have been made in accordance with the 1986 edition of "Specification for Cold-Formed Steel Design Manual"published by American Iron and steel institute.

2. Values for 3 or more spans are based on 4 equal spans.

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4. Materials:
   FY = 40 ksi for steel panels

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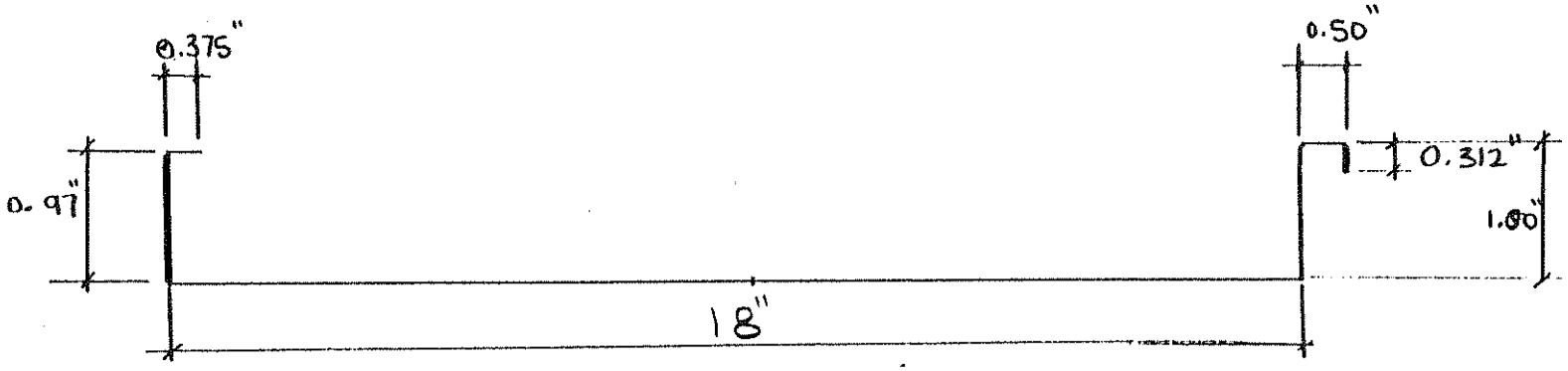
6. Above capacities have been increased by 33-1/3% as per AISI sec. A4.4.

7. For full panel capacity, bearing must be checked using actual loads and bearing length.

8. Loads shown are limited to L/180 deflection.

ZIMMERMAN METAL SS1000 ROOF PANEL



Thickness: 24 ga.

FY = 40 KSI

CFS Version 2.10

SECTION: 18SS1000
Rev. Date 09-12-1995
Rev. Time 08:43:57

Section Input

Yield (Fy)	40.000	One Inch =	1.0000
Modulus (E)	29500.000	Cw Override	0.0000
Unit Weight	3.4000	J Override	0.0000

Part 1 Thickness 0.0239 24 Gage

Length	Angle	Radius	Web	k
0.375	180.000	0.0600	No	0.00
0.970	270.000	0.0600	Sgl	0.00
18.000	0.000	0.0600	No	0.00
1.000	90.000	0.0600	Sgl	0.00
0.500	0.000	0.0600	No	0.00
0.312	270.000	0.0600	No	0.00

CG Placement	X	Y
from Lower-Left	9.192	0.102
from Upper-Right	-9.284	-0.898

Full Section Properties

Area	0.4991	Wt.	1.6970	Width	20.8831
Ix	0.0315	rx	0.2514	Ixy	0.0767
Sx(t)	0.0351	y(t)	0.8975	Alpha	-89.7447
Sx(b)	0.3078	y(b)	0.1025		
Iy	17.2412	ry	5.8774	Xo	1.1517
Sy(l)	1.8756	x(l)	9.1922	Yo	-0.2946
Sy(r)	1.8571	x(r)	9.2839	jx	-1.1777
				jy	34.3315
I1	17.2415	r1	5.8775		
I2	0.0312	r2	0.2500		
Ic	17.2727	rc	5.8828	Cw	1.9782
Io	17.9781	ro	6.0017	J	0.0000950

Fully Braced Allowables

Compression		Positive Moment		Positive Moment	
Pao	2.0778	Maxo	0.8211	Mayo	21.4452
Ae	0.0996	Ixe	0.0308	Iye	10.8250
		Sxe(t)	0.0342	Sye(l)	1.7016
Tension		Sxe(b)	0.3055	Sye(r)	0.8936
Ta	11.9785				
		Negative Moment		Negative Moment	
		Maxo	0.6993	Mayo	17.9840
Shear		Ixe	0.0164	Iye	9.4194
Vay	0.6250	Sxe(t)	0.0291	Sye(l)	0.7493
Vax	0.0000	Sxe(b)	0.0376	Sye(r)	1.5949

MAXIMUM ALLOW. LIVE LOAD IN PSF FOR ZIMMERMAN SS1000 (18" WIDE X 24 GA)

WIDTH:	18 IN.
CONDITION:	SINGLE SPAN
LOADING:	LIVE LOAD
FILE NAME	L1S18S24

SPAN FEET	THICKNESS GA	DEFL. (L/180)	DEFL. (L/240)	STRESS
1	24	364.93	364.93	364.93
1.5	24	162.19	162.19	162.19
2	24	91.23	91.23	91.23
2.5	24	58.39	58.39	58.39
3	24	40.55	40.55	40.55
3.5	24	29.79	29.79	29.79
4	24	22.81	20.19	22.81
4.5	24	18.02	14.18	18.02

MAXIMUM ALLOW. LIVE LOAD IN PSF FOR ZIMMERMAN SS1000 (18" WIDE X 24 GA)

WIDTH: 18 IN.
CONDITION: TWO SPAN
LOADING: LIVE LOAD
FILE NAME: L2S18S24

SPAN FEET	THICKNESS GA	DEFL. (L/180)	DEFL. (L/240)	STRESS
1	24	231.20	231.20	231.20
1.5	24	123.51	123.51	123.51
2	24	75.67	75.67	75.67
2.5	24	48.89	48.89	48.89
3	24	34.12	34.12	34.12
3.5	24	25.15	25.15	25.15
4	24	19.29	19.29	19.29
4.5	24	15.27	15.27	15.27

MAXIMUM ALLOW. LIVE LOAD IN PSF FOR ZIMMERMAN SS100 (18" WIDE X 24 GA)

WIDTH:	18 IN.
CONDITION:	THREE SPAN
LOADING:	LIVE LOAD
FILE NAME:	L3S18S24

SPAN FEET	THICKNESS GA	DEFL. (L/180)	DEFL. (L/240)	STRESS
1	24	261.42	261.42	261.42
1.5	24	140.54	140.54	140.54
2	24	87.72	87.72	87.72
2.5	24	56.81	56.81	56.81
3	24	39.71	39.71	39.71
3.5	24	29.29	29.29	29.29
4	24	22.49	22.49	22.49
4.5	24	17.80	17.80	17.80

MAXIMUM ALLOW. WIND LOAD IN PSF FOR ZIMMERMAN SS1000 (18" WIDE X 24 GA)

WIDTH:	18 IN.
CONDITION:	SINGLE SPAN
LOADING:	WIND LOAD
FILE NAME	W1S18S24

SPAN FEET	THICKNESS GA	DEFL. (L/180)	DEFL. (L/240)	STRESS
1	24	414.12	414.12	414.12
1.5	24	184.05	184.05	184.05
2	24	103.53	103.53	103.53
2.5	24	66.26	66.26	66.26
3	24	46.01	46.01	46.01
3.5	24	33.81	30.13	33.81
4	24	25.88	20.19	25.88
4.5	24	18.90	14.18	20.45

MAXIMUM ALLOW. WIND LOAD IN PSF FOR ZIMMERMAN SS1000 (18" WIDE X 24 GA)

WIDTH: 18 IN.
CONDITION: TWO SPAN
LOADING: WIND LOAD
FILE NAME: W2S18S24

SPAN FEET	THICKNESS GA	DEFL. (L/180)	DEFL. (L/240)	STRESS
1	24	331.91	331.91	331.91
1.5	24	180.20	180.20	180.20
2	24	113.99	113.99	113.99
2.5	24	76.03	76.03	76.03
3	24	53.17	53.17	53.17
3.5	24	39.23	39.23	39.23
4	24	30.12	30.12	30.12

MAXIMUM ALLOW. WIND LOAD IN PSF FOR ZIMMERMAN SS1000 (18"WIDE X 24 GA)

WIDTH: 18 IN.
CONDITION: THREE SPAN
LOADING: WIND LOAD
FILE NAME: W3S18S24

SPAN FEET	THICKNESS GA	DEFL. (L/180)	DEFL. (L/240)	STRESS
1	24	374.42	374.42	374.42
1.5	24	204.58	204.58	204.58
2	24	129.99	129.99	129.99
2.5	24	88.24	88.24	88.24
3	24	61.83	61.83	61.83
3.5	24	45.68	45.68	45.68
4	24	35.10	35.10	35.10

STRUCTURAL CALCULATIONS FOR:
20" WIDE X 1" HIGH X 24 GA STEEL
ZIMMERMAN METAL SS1000 ROOF PANEL

Prepared For:
ZIMMERMAN METALS, INC.
201 E. 58TH Ave.
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Prepared By:

YOOSEF LAVI, P.E.
Consulting Engineer
9550 Forest Lane, Suite 313
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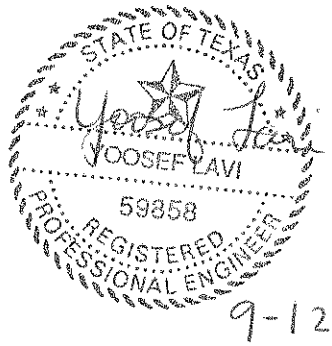

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ALLOWABLE LOAD TABLES FOR : ZIMMERMAN METAL SS1000 ROOF PANEL

ALLOWABLE LIVE LOAD (PSF)

PANEL GAUGE	PANEL WIDTH	# OF EQUAL SPANS	SPAN (FT.)					
			1.5	2.0	2.5	3.0	3.5	4.0
24 GA STEEL	20"	1	146	82	52	36	26	20
		2	111	68	43	30	22	17
		3	126	78	51	35	26	20

NOTES:

1. All calculations for panel properties have been made in accordance with the 1986 edition of "Specification for Cold-Formed Steel Design Manual" published by American Iron and steel institute.

2. Values for 3 or more spans are based on 4 equal spans.

3. These load capacities are for the panel itself. Frames purlins, clips, fasteners, and all supports must be designed to resist load imposed by the panel.

4. Materials:
   FY = 40 ksi for steel panels

5. All loads are in PSF.

6. For full panel capacity, bearing must be checked using actual loads and bearing length.

7. Loads shown are limited by L/180 deflection.

ALLOWABLE LOAD TABLES FOR :
ZIMMERMAN METAL SS1000 ROOF PANEL

ALLOWABLE UPLIFT LOAD (PSF)

PANEL GAUGE	PANEL WIDTH	# OF EQUAL SPANS	SPAN (FT.)					
			1.5	2.0	2.5	3.0	3.5	4.0
24 GA STEEL	20"	1	165	93	59	41	30	23
		2	162	102	68	47	35	27
		3	184	117	79	55	41	31

NOTES:

1. All calculations for panel properties have been made in accordance with the 1986 edition of "Specification for Cold-Formed Steel Design Manual"published by American Iron and steel institute.

2. Values for 3 or more spans are based on 4 equal spans.

3. These load capacities are for the panel itself. Frames purlins, clips, fasteners, and all supports must be designed to resist load imposed by the panel.

4. Materials:
   FY = 40 ksi for steel panels

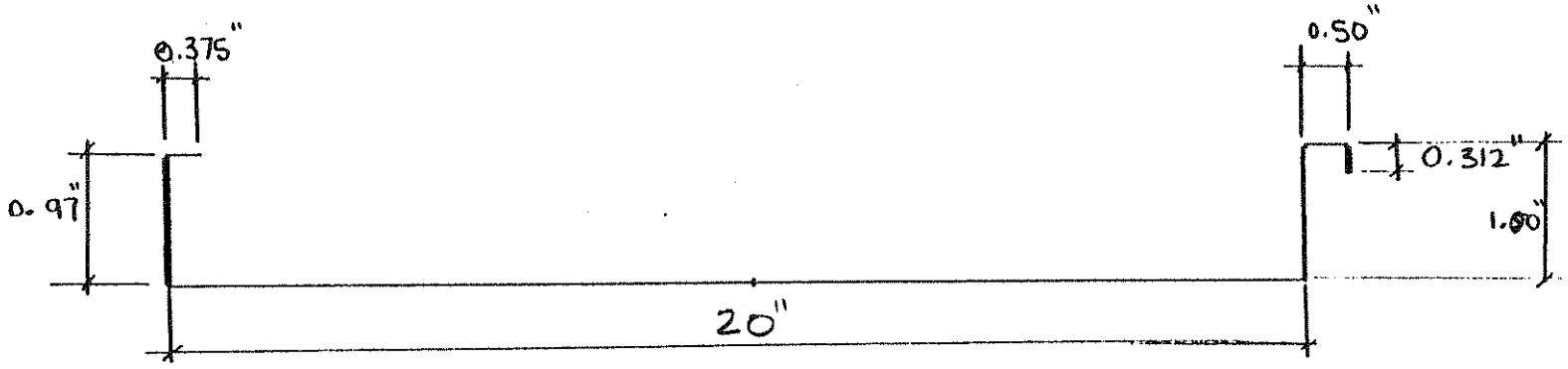
5. All loads are in PSF.

6. Above capacities have been increased by 33-1/3% as per AISI sec. A4.4.

7. For full panel capacity, bearing must be checked using actual loads and bearing length.

8. Loads shown are limited to L/180 deflection.

ZIMMERMAN METAL SS1000 ROOF PANEL



Thickness: 24 ga.

FY = 40 KSI

CFS Version 2.10

SECTION: 20SS1000
Rev. Date 09-12-1995
Rev. Time 08:44:22

Section Input

Yield (Fy)	40.000	One Inch =	1.0000
Modulus (E)	29500.000	Cw Override	0.0000
Unit Weight	3.4000	J Override	0.0000

Part 1 Thickness 0.0239 24 Gage

Length	Angle	Radius	Web	k
0.375	180.000	0.0600	No	0.00
0.970	270.000	0.0600	Sgl	0.00
20.000	0.000	0.0600	No	0.00
1.000	90.000	0.0600	Sgl	0.00
0.500	0.000	0.0600	No	0.00
0.312	270.000	0.0600	No	0.00

	X	Y
CG Placement	0.000	0.000
from Lower-Left	10.193	0.095
from Upper-Right	-10.283	-0.905

Fully Braced Allowables

Compression		Positive Moment		Positive Moment	
Pao	2.0787	Maxo	0.8232	Mayo	23.9056
Ae	0.0996	Ixe	0.0311	Iye	13.6065
		Sxe(t)	0.0343	Sye(l)	1.9963
Tension		Sxe(b)	0.3347	Sye(r)	0.9961
Ta	13.1257				
		Negative Moment		Negative Moment	
		Maxo	0.6995	Mayo	19.9896
Shear		Ixe	0.0164	Iye	11.7963
Vay	0.6250	Sxe(t)	0.0291	Sye(l)	0.8329
Vax	0.0000	Sxe(b)	0.0376	Sye(r)	1.8685

Fully Braced Allowables

Compression		Positive Moment		Positive Moment	
Pao	2.0787	Maxo	0.8232	Mayo	23.9056
Ae	0.0996	Ixe	0.0311	Iye	13.6065
		Sxe(t)	0.0343	Sye(l)	1.9963
Tension		Sxe(b)	0.3347	Sye(r)	0.9961
Ta	13.1257				
		Negative Moment		Negative Moment	
		Maxo	0.6995	Mayo	19.9896
Shear		Ixe	0.0164	Iye	11.7963
Vay	0.6250	Sxe(t)	0.0291	Sye(l)	0.8329
Vax	0.0000	Sxe(b)	0.0376	Sye(r)	1.8685

MAXIMUM ALLOW. LIVE LOAD IN PSF FOR ZIMMERMAN SS1000 (20" WIDE X 24 GA)

WIDTH:	20 IN.
CONDITION:	SINGLE SPAN
LOADING:	LIVE LOAD
FILE NAME	L1S20S24

SPAN FEET	THICKNESS GA	DEFL. (L/180)	DEFL. (L/240)	STRESS
1	24	329.13	329.13	329.13
1.5	24	146.28	146.28	146.28
2	24	82.28	82.28	82.28
2.5	24	52.66	52.66	52.66
3	24	36.57	36.57	36.57
3.5	24	26.87	26.87	26.87
4	24	20.57	18.17	20.57
4.5	24	16.25	12.76	16.25

MAXIMUM ALLOW. LIVE LOAD IN PSF FOR ZIMMERMAN SS1000 (20" WIDE X 24 GA)

WIDTH:	20 IN.
CONDITION:	TWO SPAN
LOADING:	LIVE LOAD
FILE NAME:	L2S20S24

SPAN FEET	THICKNESS GA	DEFL. (L/180)	DEFL. (L/240)	STRESS
1	24	208.00	208.00	208.00
1.5	24	111.11	111.11	111.11
2	24	68.06	68.06	68.06
2.5	24	43.97	43.97	43.97
3	24	30.69	30.69	30.69
3.5	24	22.62	22.62	22.62
4	24	17.35	17.35	17.35
4.5	24	13.73	13.73	13.73

MAXIMUM ALLOW. LIVE LOAD IN PSF FOR ZIMMERMAN SS1000 (20" WIDE X 24 GA)

WIDTH:	20 IN.
CONDITION:	THREE SPAN
LOADING:	LIVE LOAD
FILE NAME:	L3S20S24

SPAN FEET	THICKNESS GA	DEFL. (L/180)	DEFL. (L/240)	STRESS
1	24	235.23	235.23	235.23
1.5	24	126.46	126.46	126.46
2	24	78.93	78.93	78.93
2.5	24	51.12	51.12	51.12
3	24	35.73	35.73	35.73
3.5	24	26.36	26.36	26.36
4	24	20.23	20.23	20.23
4.5	24	16.02	16.02	16.02

MAXIMUM ALLOW. WIND LOAD IN PSF FOR ZIMMERMAN SS1000 (20" WIDE X 24 GA)

WIDTH:	20 IN.
CONDITION:	SINGLE SPAN
LOADING:	WIND LOAD
FILE NAME	W1S20S24

SPAN FEET	THICKNESS GA	DEFL. (L/180)	DEFL. (L/240)	STRESS
1	24	372.70	372.70	372.70
1.5	24	165.64	165.64	165.64
2	24	93.17	93.17	93.17
2.5	24	59.63	59.63	59.63
3	24	41.41	41.41	41.41
3.5	24	30.42	27.12	30.42
4	24	23.29	18.17	23.29
4.5	24	17.01	12.76	18.40

MAXIMUM ALLOW. WIND LOAD IN PSF FOR ZIMMERMAN SS1000 (20" WIDE X 24 GA)

WIDTH: 20 IN.
CONDITION: TWO SPAN
LOADING: WIND LOAD
FILE NAME: W2S20S24

SPAN FEET	THICKNESS GA	DEFL. (L/180)	DEFL. (L/240)	STRESS
1	24	299.01	299.01	299.01
1.5	24	162.38	162.38	162.38
2	24	102.73	102.73	102.73
2.5	24	68.58	68.58	68.58
3	24	47.96	47.96	47.96
3.5	24	35.39	35.39	35.39
4	24	27.17	27.17	27.17

MAXIMUM ALLOW. WIND LOAD IN PSF FOR ZIMMERMAN SS1000 (20"WIDE X 24 GA)

WIDTH: 20 IN.
CONDITION: THREE SPAN
LOADING: WIND LOAD
FILE NAME: W3S20S24

SPAN FEET	THICKNESS GA	DEFL. (L/180)	DEFL. (L/240)	STRESS
1	24	337.29	337.29	337.29
1.5	24	184.34	184.34	184.34
2	24	117.15	117.15	117.15
2.5	24	79.60	79.60	79.60
3	24	55.77	55.77	55.77
3.5	24	41.20	41.20	41.20
4	24	31.66	31.66	31.66

STRUCTURAL CALCULATIONS FOR:
12" WIDE X 1" HIGH X 26 GA STEEL
ZIMMERMAN METAL SS1000 ROOF PANEL

Prepared For:
ZIMMERMAN METALS, INC.
201 E. 58TH Ave.
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Prepared By:

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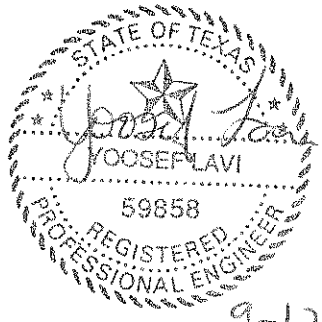

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pages 1-11

ALLOWABLE LOAD TABLES FOR : ZIMMERMAN METAL SS1000 ROOF PANEL

ALLOWABLE LIVE LOAD (PSF)

PANEL GAUGE	PANEL WIDTH	# OF EQUAL SPANS	SPAN (FT.)					
			1.5	2.0	2.5	3.0	3.5	4.0
26 GA STEEL	12"	1	169	95	61	42	31	23
		2	127	80	53	37	27	21
		3	144	91	62	43	31	24

NOTES:

1. All calculations for panel properties have been made in accordance with the 1986 edition of "Specification for Cold-Formed Steel Design Manual" published by American Iron and steel institute.

2. Values for 3 or more spans are based on 4 equal spans.

3. These load capacities are for the panel itself. Frames purlins, clips, fasteners, and all supports must be designed to resist load imposed by the panel.

4. Materials:
   FY = 40 ksi for steel panels

5. All loads are in PSF.

6. For full panel capacity, bearing must be checked using actual loads and bearing length.

7. Loads shown are limited by L/180 deflection.

ALLOWABLE LOAD TABLES FOR : ZIMMERMAN METAL SS1000 ROOF PANEL

ALLOWABLE UPLIFT LOAD (PSF)

PANEL GAUGE	PANEL WIDTH	# OF EQUAL SPANS	SPAN (FT.)					
			1.5	2.0	2.5	3.0	3.5	4.0
26 GA STEEL	12"	1	200	112	72	50	36	28
		2	181	115	79	55	41	31
		3	205	131	91	64	47	36

NOTES:

1. All calculations for panel properties have been made in accordance with the 1986 edition of "Specification for Cold-Formed Steel Design Manual"published by American Iron and steel institute.

2. Values for 3 or more spans are based on 4 equal spans.

3. These load capacities are for the panel itself. Frames purlins, clips, fasteners, and all supports must be designed to resist load imposed by the panel.

4. Materials:
   FY = 40 ksi for steel panels

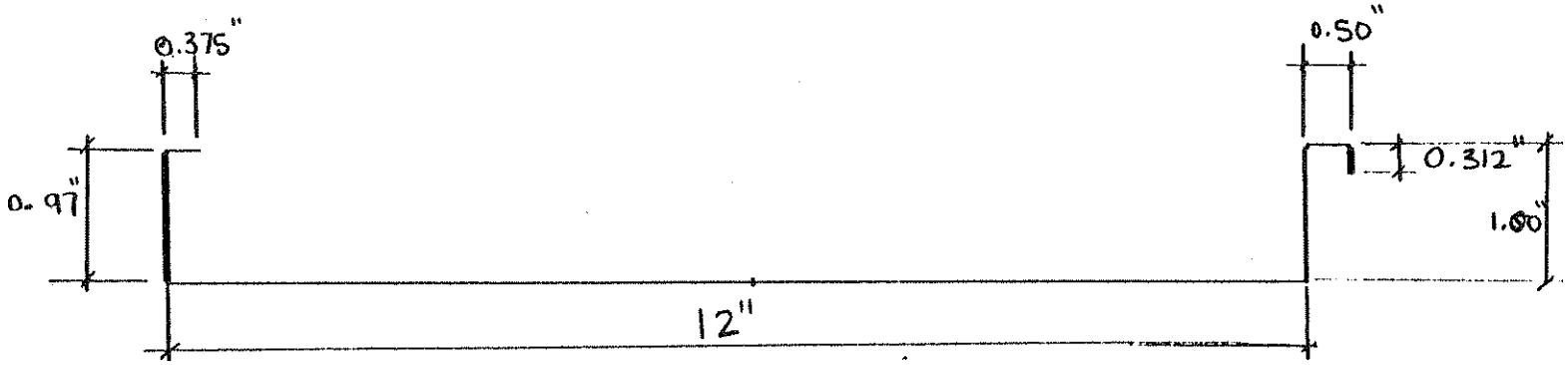
5. All loads are in PSF.

6. Above capacities have been increased by 33-1/3% as per AISI sec. A4.4.

7. For full panel capacity, bearing must be checked using actual loads and bearing length.

8. Loads shown are limited to L/180 deflection.

ZIMMERMAN METAL SS1000 ROOF PANEL



Thickness: 26 ga.

FY = 40 KSI

CFS Version 2.10

SECTION: 12SS1026
Rev. Date 09-12-1995
Rev. Time 08:47:09

Section Input

Yield (Fy)	40.000	One Inch =	1.0000
Modulus (E)	29500.000	Cw Override	0.0000
Unit Weight	3.4000	J Override	0.0000

Part 1 Thickness 0.0179 26 Gage

Length	Angle	Radius	Web	k
0.375	180.000	0.0600	No	0.00
0.970	270.000	0.0600	Sgl	0.00
12.000	0.000	0.0600	No	0.00
1.000	90.000	0.0600	Sgl	0.00
0.500	0.000	0.0600	No	0.00
0.312	270.000	0.0600	No	0.00

	X	Y
CG Placement	0.000	0.000
from Lower-Left	6.190	0.138
from Upper-Right	-6.293	-0.862

Full Section Properties

Area	0.26706	Wt.	0.90800	Width	14.91953
Ix	0.02289	rx	0.29274	Ixy	0.03884
Sx(t)	0.02654	y(t)	0.86219	Alpha	-89.5012
Sx(b)	0.16606	y(b)	0.13781		
Iy	4.48445	ry	4.09780	Xo	0.53667
Sy(l)	0.72451	x(l)	6.18959	Yo	-0.39489
Sy(r)	0.71266	x(r)	6.29251	jx	-0.56742
				jy	15.48939
I1	4.48478	r1	4.09795		
I2	0.02255	r2	0.29057		
Ic	4.50733	rc	4.10824	Cw	0.59598
Io	4.62589	ro	4.16192	J	0.00002852

Fully Braced Allowables

Compression		Positive Moment		Positive Moment	
Pao	1.29654	Maxo	0.57286	Mayo	9.05564
Ae	0.06213	Ixe	0.02080	Iye	3.02057
		Sxe(t)	0.02387	Sye(l)	0.67472
Tension		Sxe(b)	0.16201	Sye(r)	0.37732
Ta	6.40943				
		Negative Moment		Negative Moment	
		Maxo	0.50771	Mayo	7.44791
Shear		Ixe	0.01083	Iye	2.59024
Vay	0.47497	Sxe(t)	0.02115	Sye(l)	0.31033
Vax	0.00000	Sxe(b)	0.02221	Sye(r)	0.62636

MAXIMUM ALLOW. LIVE LOAD IN PSF FOR ZIMMERMAN SS1000 (12" WIDE X 26 GA)

WIDTH:	12 IN.
CONDITION:	SINGLE SPAN
LOADING:	LIVE LOAD
FILE NAME	L1S12S26

SPAN FEET	THICKNESS GA	DEFL. (L/180)	DEFL. (L/240)	STRESS
1	26	382.00	382.00	382.00
1.5	26	169.78	169.78	169.78
2	26	95.50	95.50	95.50
2.5	26	61.12	61.12	61.12
3	26	42.44	42.44	42.44
3.5	26	31.18	31.18	31.18
4	26	23.87	22.21	23.87
4.5	26	18.86	15.60	18.86

MAXIMUM ALLOW. LIVE LOAD IN PSF FOR ZIMMERMAN SS1000 (12" WIDE X 26 GA)

WIDTH: 12 IN.
CONDITION: TWO SPAN
LOADING: LIVE LOAD
FILE NAME: L2S12S26

SPAN FEET	THICKNESS GA	DEFL. (L/180)	DEFL. (L/240)	STRESS
1	26	235.43	235.43	235.43
1.5	26	127.41	127.41	127.41
2	26	80.42	80.42	80.42
2.5	26	53.32	53.32	53.32
3	26	37.20	37.20	37.20
3.5	26	27.41	27.41	27.41
4	26	21.02	21.02	21.02
4.5	26	16.63	16.63	16.63

MAXIMUM ALLOW. LIVE LOAD IN PSF FOR ZIMMERMAN SS100 (12" WIDE X 26 GA)

WIDTH: 12 IN.
CONDITION: THREE SPAN
LOADING: LIVE LOAD
FILE NAME: L3S12S26

SPAN FEET	THICKNESS GA	DEFL. (L/180)	DEFL. (L/240)	STRESS
1	26	265.71	265.71	265.71
1.5	26	144.72	144.72	144.72
2	26	91.75	91.75	91.75
2.5	26	62.01	62.01	62.01
3	26	43.32	43.32	43.32
3.5	26	31.95	31.95	31.95
4	26	24.52	24.52	24.52
4.5	26	19.40	19.40	19.40

MAXIMUM ALLOW. WIND LOAD IN PSF FOR ZIMMERMAN SS1000 (12" WIDE X 26 GA)

WIDTH:	12 IN.
CONDITION:	SINGLE SPAN
LOADING:	WIND LOAD
FILE NAME	W1S12S26

SPAN FEET	THICKNESS GA	DEFL. (L/180)	DEFL. (L/240)	STRESS
1	26	451.18	451.18	451.18
1.5	26	200.52	200.52	200.52
2	26	112.79	112.79	112.79
2.5	26	72.19	72.19	72.19
3	26	50.13	50.13	50.13
3.5	26	36.83	33.15	36.83
4	26	28.20	22.21	28.20
4.5	26	20.79	15.60	22.28

MAXIMUM ALLOW. WIND LOAD IN PSF FOR ZIMMERMAN SS1000 (12" WIDE X 26 GA)

WIDTH: 12 IN.
CONDITION: TWO SPAN
LOADING: WIND LOAD
FILE NAME: W2S12S26

SPAN FEET	THICKNESS GA	DEFL. (L/180)	DEFL. (L/240)	STRESS
1	26	330.54	330.54	330.54
1.5	26	181.08	181.08	181.08
2	26	115.26	115.26	115.26
2.5	26	79.85	79.85	79.85
3	26	55.78	55.78	55.78
3.5	26	41.13	41.13	41.13
4	26	31.57	31.57	31.57

MAXIMUM ALLOW. WIND LOAD IN PSF FOR ZIMMERMAN SS1000 (12"WIDE X 26 GA)

WIDTH: 12 IN.
CONDITION: THREE SPAN
LOADING: WIND LOAD
FILE NAME: W3S12S26

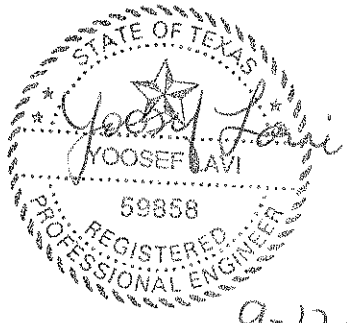
SPAN FEET	THICKNESS GA	DEFL. (L/180)	DEFL. (L/240)	STRESS
1	26	372.35	372.35	372.35
1.5	26	205.29	205.29	205.29
2	26	131.26	131.26	131.26
2.5	26	91.51	91.51	91.51
3	26	64.91	64.91	64.91
3.5	26	47.91	47.91	47.91
4	26	36.79	36.79	36.79

STRUCTURAL CALCULATIONS FOR:
16" WIDE X 1" HIGH X 26 GA STEEL
ZIMMERMAN METAL SS1000 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 313
Dallas, Texas 75243



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ALLOWABLE LOAD TABLES FOR :
ZIMMERMAN METAL SS1000 ROOF PANEL

ALLOWABLE LIVE LOAD (PSF)

PANEL GAUGE	PANEL WIDTH	# OF EQUAL SPANS	SPAN (FT.)					
			1.5	2.0	2.5	3.0	3.5	4.0
26 GA STEEL	16"	1	128	72	46	32	23	18
		2	95	60	40	27	20	15
		3	108	68	46	32	23	18

NOTES:

1. All calculations for panel properties have been made in accordance with the 1986 edition of "Specification for Cold-Formed Steel Design Manual" published by American Iron and steel institute.

2. Values for 3 or more spans are based on 4 equal spans.

3. These load capacities are for the panel itself. Frames purlins, clips, fasteners, and all supports must be designed to resist load imposed by the panel.

4. Materials:
   FY = 40 ksi for steel panels

5. All loads are in PSF.

6. For full panel capacity, bearing must be checked using actual loads and bearing length.

7. Loads shown are limited by L/180 deflection.

ALLOWABLE LOAD TABLES FOR : ZIMMERMAN METAL SS1000 ROOF PANEL

ALLOWABLE UPLIFT LOAD (PSF)

PANEL GAUGE	PANEL WIDTH	# OF EQUAL SPANS	SPAN (FT.)					
			1.5	2.0	2.5	3.0	3.5	4.0
26 GA STEEL	16"	1	150	84	54	37	27	21
		2	136	86	60	42	31	23
		3	155	99	69	49	36	27

NOTES:

1. All calculations for panel properties have been made in accordance with the 1986 edition of "Specification for Cold-Formed Steel Design Manual"published by American Iron and steel institute.

2. Values for 3 or more spans are based on 4 equal spans.

3. These load capacities are for the panel itself. Frames purlins, clips, fasteners, and all supports must be designed to resist load imposed by the panel.

4. Materials:
   FY = 40 ksi for steel panels

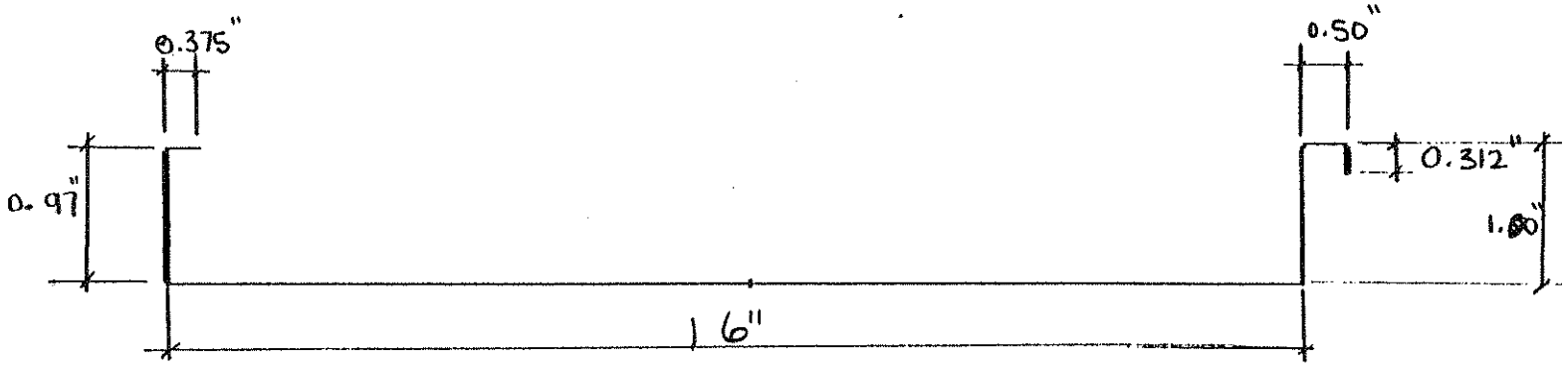
5. All loads are in PSF.

6. Above capacities have been increased by 33-1/3% as per AISI sec. A4.4.

7. For full panel capacity, bearing must be checked using actual loads and bearing length.

8. Loads shown are limited to L/180 deflection.

ZIMMERMAN METAL SS1000 ROOF PANEL



Thickness: 26 ga.

FY = 40 KSI

CFS Version 2.10

SECTION: 16SS1026
Rev. Date 09-12-1995
Rev. Time 08:47:33

Section Input

Yield (Fy)	40.000	One Inch =	1.0000
Modulus (E)	29500.000	Cw Override	0.0000
Unit Weight	3.4000	J Override	0.0000

Part 1 Thickness 0.0179 26 Gage

Length	Angle	Radius	Web	k
0.375	180.000	0.0600	No	0.00
0.970	270.000	0.0600	Sgl	0.00
16.000	0.000	0.0600	No	0.00
1.000	90.000	0.0600	Sgl	0.00
0.500	0.000	0.0600	No	0.00
0.312	270.000	0.0600	No	0.00

	X	Y
CG Placement	0.000	0.000
from Lower-Left	8.194	0.111
from Upper-Right	-8.288	-0.889

Full Section Properties

Area	0.33866	Wt.	1.15144	Width	18.91953
Ix	0.02383	rx	0.26524	Ixy	0.05214
Sx(t)	0.02679	y(t)	0.88943	Alpha	-89.6844
Sx(b)	0.21548	y(b)	0.11057		
Iy	9.48787	ry	5.29301	Xo	0.94423
Sy(l)	1.15793	x(l)	8.19386	Yo	-0.32503
Sy(r)	1.14474	x(r)	8.28824	jx	-0.97228
				jy	27.07207
I1	9.48816	r1	5.29309		
I2	0.02354	r2	0.26364		
Ic	9.51170	rc	5.29965	Cw	1.15829
Io	9.84941	ro	5.39291	J	0.00003617

Fully Braced Allowables

Compression		Positive Moment		Positive Moment	
Pao	1.29804	Maxo	0.57806	Mayo	12.16762
Ae	0.06220	Ixe	0.02161	Iye	5.60300
		Sxe(t)	0.02409	Sye(l)	1.03177
Tension		Sxe(b)	0.20994	Sye(r)	0.50698
Ta	8.12783				
		Negative Moment		Negative Moment	
		Maxo	0.50814	Mayo	9.92336
Shear		Ixe	0.01086	Iye	4.75693
Vay	0.47497	Sxe(t)	0.02117	Sye(l)	0.41347
Vax	0.00000	Sxe(b)	0.02229	Sye(r)	0.95573

MAXIMUM ALLOW. LIVE LOAD IN PSF FOR ZIMMERMAN SS1000 (16" WIDE X 26 GA)

WIDTH:	16 IN.
CONDITION:	SINGLE SPAN
LOADING:	LIVE LOAD
FILE NAME	L1S16S26

SPAN FEET	THICKNESS GA	DEFL. (L/180)	DEFL. (L/240)	STRESS
1	26	289.72	289.72	289.72
1.5	26	128.77	128.77	128.77
2	26	72.43	72.43	72.43
2.5	26	46.36	46.36	46.36
3	26	32.19	32.19	32.19
3.5	26	23.65	23.65	23.65
4	26	18.11	18.11	18.11
4.5	26	14.31	12.79	14.31

MAXIMUM ALLOW. LIVE LOAD IN PSF FOR ZIMMERMAN SS1000 (16" WIDE X 26 GA)

WIDTH:	16 IN.
CONDITION:	TWO SPAN
LOADING:	LIVE LOAD
FILE NAME:	L2S16S26

SPAN FEET	THICKNESS GA	DEFL. (L/180)	DEFL. (L/240)	STRESS
1	26	177.06	177.06	177.06
1.5	26	95.83	95.83	95.83
2	26	60.49	60.49	60.49
2.5	26	40.11	40.11	40.11
3	26	27.99	27.99	27.99
3.5	26	20.62	20.62	20.62
4	26	15.82	15.82	15.82
4.5	26	12.51	12.51	12.51

MAXIMUM ALLOW. LIVE LOAD IN PSF FOR ZIMMERMAN SS100 (16" WIDE X 26 GA)

WIDTH: 16 IN.
CONDITION: THREE SPAN
LOADING: LIVE LOAD
FILE NAME: L3S16S26

SPAN FEET	THICKNESS GA	DEFL. (L/180)	DEFL. (L/240)	STRESS
1	26	199.39	199.39	199.39
1.5	26	108.60	108.60	108.60
2	26	68.86	68.86	68.86
2.5	26	46.55	46.55	46.55
3	26	32.52	32.52	32.52
3.5	26	23.98	23.98	23.98
4	26	18.40	18.40	18.40
4.5	26	14.57	14.57	14.57

MAXIMUM ALLOW. WIND LOAD IN PSF FOR ZIMMERMAN SS1000 (16" WIDE X 26 GA)

WIDTH:	16 IN.
CONDITION:	SINGLE SPAN
LOADING:	WIND LOAD
FILE NAME	W1S16S26

SPAN FEET	THICKNESS GA	DEFL. (L/180)	DEFL. (L/240)	STRESS
1	26	339.43	339.43	339.43
1.5	26	150.86	150.86	150.86
2	26	84.86	84.86	84.86
2.5	26	54.31	54.31	54.31
3	26	37.71	37.71	37.71
3.5	26	27.71	27.19	27.71
4	26	21.21	18.21	21.21
4.5	26	16.76	12.79	16.76

MAXIMUM ALLOW. WIND LOAD IN PSF FOR ZIMMERMAN SS1000 (16" WIDE X 26 GA)

WIDTH:	16 IN.
CONDITION:	TWO SPAN
LOADING:	WIND LOAD
FILE NAME:	W2S16S26

SPAN FEET	THICKNESS GA	DEFL. (L/180)	DEFL. (L/240)	STRESS
1	26	248.94	248.94	248.94
1.5	26	136.50	136.50	136.50
2	26	86.94	86.94	86.94
2.5	26	60.42	60.42	60.42
3	26	42.22	42.22	42.22
3.5	26	31.13	31.13	31.13
4	26	23.89	23.89	23.89

MAXIMUM ALLOW. WIND LOAD IN PSF FOR ZIMMERMAN SS1000 (16"WIDE X 26 GA)

WIDTH: 16 IN.
CONDITION: THREE SPAN
LOADING: WIND LOAD
FILE NAME: W3S16S26

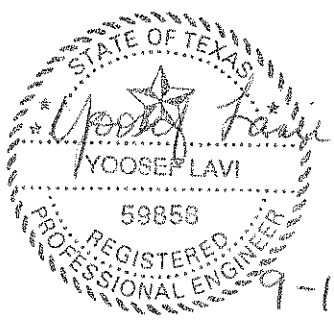
SPAN FEET	THICKNESS GA	DEFL. (L/180)	DEFL. (L/240)	STRESS
1	26	281.02	281.02	281.02
1.5	26	155.08	155.08	155.08
2	26	99.22	99.22	99.22
2.5	26	69.21	69.21	69.21
3	26	49.23	49.23	49.23
3.5	26	36.34	36.34	36.34
4	26	27.91	27.91	27.91

STRUCTURAL CALCULATIONS FOR:
18" WIDE X 1" HIGH X 26 GA STEEL
ZIMMERMAN METAL SS1000 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 313
Dallas, Texas 75243



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ALLOWABLE LOAD TABLES FOR : ZIMMERMAN METAL SS1000 ROOF PANEL

ALLOWABLE LIVE LOAD (PSF)

PANEL GAUGE	PANEL WIDTH	# OF EQUAL SPANS	SPAN (FT.)					
			1.5	2.0	2.5	3.0	3.5	4.0
26 GA STEEL	18"	1	114	64	41	28	21	16
		2	84	53	35	24	18	14
		3	96	61	41	28	21	16

NOTES:

1. All calculations for panel properties have been made in accordance with the 1986 edition of "Specification for Cold-Formed Steel Design Manual" published by American Iron and steel institute.
2. Values for 3 or more spans are based on 4 equal spans.
3. These load capacities are for the panel itself. Frames purlins, clips, fasteners, and all supports must be designed to resist load imposed by the panel.
4. Materials:
   FY = 40 ksi for steel panels
5. All loads are in PSF.
6. For full panel capacity, bearing must be checked using actual loads and bearing length.
7. Loads shown are limited by L/180 deflection.

ALLOWABLE LOAD TABLES FOR : ZIMMERMAN METAL SS1000 ROOF PANEL

ALLOWABLE UPLIFT LOAD (PSF)

PANEL GAUGE	PANEL WIDTH	# OF EQUAL SPANS	SPAN (FT.)					
			1.5	2.0	2.5	3.0	3.5	4.0
26 GA STEEL	18"	1	133	75	48	33	24	18
		2	121	77	53	37	27	21
		3	137	88	61	43	32	24

NOTES:

1. All calculations for panel properties have been made in accordance with the 1986 edition of "Specification for Cold-Formed Steel Design Manual"published by American Iron and steel institute.

2. Values for 3 or more spans are based on 4 equal spans.

3. These load capacities are for the panel itself. Frames purlins, clips, fasteners, and all supports must be designed to resist load imposed by the panel.

4. Materials:
   FY = 40 ksi for steel panels

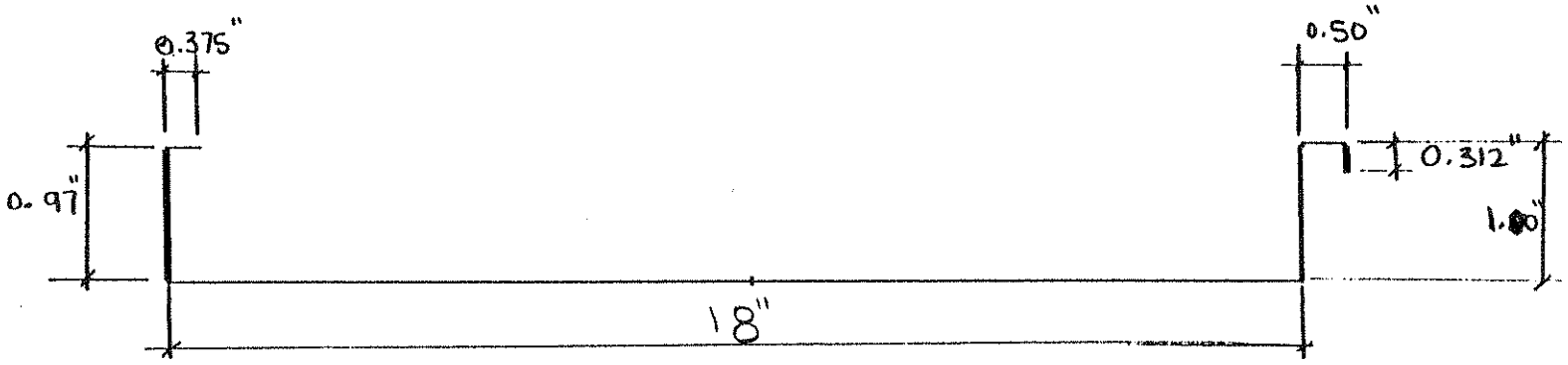
5. All loads are in PSF.

6. Above capacities have been increased by 33-1/3% as per AISI sec. A4.4.

7. For full panel capacity, bearing must be checked using actual loads and bearing length.

8. Loads shown are limited to L/180 deflection.

ZIMMERMAN METAL SS1000 ROOF PANEL



Thickness: 26 ga.

FY = 40 KSI

CFS Version 2.10

SECTION: 18SS1026
Rev. Date 09-12-1995
Rev. Time 08:47:59

Section Input

Yield (Fy)	40.000	One Inch =	1.0000
Modulus (E)	29500.000	Cw Override	0.0000
Unit Weight	3.4000	J Override	0.0000

Part 1 Thickness 0.0179 26 Gage

Length	Angle	Radius	Web	k
0.375	180.000	0.0600	No	0.00
0.970	270.000	0.0600	Sgl	0.00
18.000	0.000	0.0600	No	0.00
1.000	90.000	0.0600	Sgl	0.00
0.500	0.000	0.0600	No	0.00
0.312	270.000	0.0600	No	0.00

	X	Y
CG Placement	0.000	0.000
from Lower-Left	9.195	0.101
from Upper-Right	-9.287	-0.899

Full Section Properties

Area	0.3745	Wt.	1.2732	Width	20.9195
Ix	0.0242	rx	0.2540	Ixy	0.0588
Sx(t)	0.0269	y(t)	0.8991	Alpha	-89.7397
Sx(b)	0.2396	y(b)	0.1009		
Iy	12.9698	ry	5.8852	Xo	1.1527
Sy(l)	1.4105	x(l)	9.1954	Yo	-0.2987
Sy(r)	1.3966	x(r)	9.2867	jx	-1.1794
				jy	34.1270
I1	12.9700	r1	5.8853		
I2	0.0239	r2	0.2526		
Ic	12.9939	rc	5.8907	Cw	1.5143
Io	13.5249	ro	6.0099	J	0.0000400

Fully Braced Allowables

Compression		Positive Moment		Positive Moment	
Pao	1.29853	Maxo	0.57984	Mayo	13.72916
Ae	0.0622	Ixe	0.0219	Iye	7.2149
		Sxe(t)	0.0242	Sye(l)	1.2292
Tension		Sxe(b)	0.2333	Sye(r)	0.5720
Ta	8.98703				
		Negative Moment		Negative Moment	
		Maxo	0.50828	Mayo	11.16372
Shear		Ixe	0.0109	Iye	6.1015
Vay	0.47497	Sxe(t)	0.0212	Sye(l)	0.4652
Vax	0.00000	Sxe(b)	0.0223	Sye(r)	1.1373

MAXIMUM ALLOW. LIVE LOAD IN PSF FOR ZIMMERMAN SS1000 (18" WIDE X 26 GA)

WIDTH:	18 IN.
CONDITION:	SINGLE SPAN
LOADING:	LIVE LOAD
FILE NAME	L1S18S26

SPAN FEET	THICKNESS GA	DEFL. (L/180)	DEFL. (L/240)	STRESS
1	26	257.33	257.33	257.33
1.5	26	114.37	114.37	114.37
2	26	64.33	64.33	64.33
2.5	26	41.17	41.17	41.17
3	26	28.59	28.59	28.59
3.5	26	21.01	21.01	21.01
4	26	16.08	16.08	16.08
4.5	26	12.71	11.34	12.71

MAXIMUM ALLOW. LIVE LOAD IN PSF FOR ZIMMERMAN SS1000 (18" WIDE X 26 GA)

WIDTH:	18 IN.
CONDITION:	TWO SPAN
LOADING:	LIVE LOAD
FILE NAME:	L2S18S26

SPAN FEET	THICKNESS GA	DEFL. (L/180)	DEFL. (L/240)	STRESS
1	26	157.00	157.00	157.00
1.5	26	84.97	84.97	84.97
2	26	53.63	53.63	53.63
2.5	26	35.56	35.56	35.56
3	26	24.81	24.81	24.81
3.5	26	18.28	18.28	18.28
4	26	14.02	14.02	14.02
4.5	26	11.10	11.10	11.10

MAXIMUM ALLOW. LIVE LOAD IN PSF FOR ZIMMERMAN SS100 (18" WIDE X 26 GA)

WIDTH: 18 IN.
CONDITION: THREE SPAN
LOADING: LIVE LOAD
FILE NAME: L3S18S26

SPAN FEET	THICKNESS GA	DEFL. (L/180)	DEFL. (L/240)	STRESS
1	26	177.19	177.19	177.19
1.5	26	96.51	96.51	96.51
2	26	61.19	61.19	61.19
2.5	26	41.36	41.36	41.36
3	26	28.90	28.90	28.90
3.5	26	21.31	21.31	21.31
4	26	16.35	16.35	16.35
4.5	26	12.94	12.94	12.94

MAXIMUM ALLOW. WIND LOAD IN PSF FOR ZIMMERMAN SS1000 (18" WIDE X 26 GA)

WIDTH:	18 IN.
CONDITION:	SINGLE SPAN
LOADING:	WIND LOAD
FILE NAME	W1S18S26

SPAN FEET	THICKNESS GA	DEFL. (L/180)	DEFL. (L/240)	STRESS
1	26	300.96	300.96	300.96
1.5	26	133.76	133.76	133.76
2	26	75.24	75.24	75.24
2.5	26	48.15	48.15	48.15
3	26	33.44	33.44	33.44
3.5	26	24.57	24.11	24.57
4	26	18.81	16.15	18.81
4.5	26	14.86	11.34	14.86

MAXIMUM ALLOW. WIND LOAD IN PSF FOR ZIMMERMAN SS1000 (18" WIDE X 26 GA)

WIDTH: 18 IN.
CONDITION: TWO SPAN
LOADING: WIND LOAD
FILE NAME: W2S18S26

SPAN FEET	THICKNESS GA	DEFL. (L/180)	DEFL. (L/240)	STRESS
1	26	221.39	221.39	221.39
1.5	26	121.41	121.41	121.41
2	26	77.34	77.34	77.34
2.5	26	53.77	53.77	53.77
3	26	37.58	37.58	37.58
3.5	26	27.71	27.71	27.71
4	26	21.27	21.27	21.27

MAXIMUM ALLOW. WIND LOAD IN PSF FOR ZIMMERMAN SS1000 (18"WIDE X 26 GA)

WIDTH: 18 IN.
CONDITION: THREE SPAN
LOADING: WIND LOAD
FILE NAME: W3S18S26

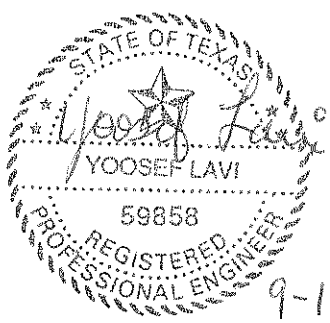
SPAN FEET	THICKNESS GA	DEFL. (L/180)	DEFL. (L/240)	STRESS
1	26	249.35	249.35	249.35
1.5	26	137.63	137.63	137.63
2	26	88.06	88.06	88.06
2.5	26	61.43	61.43	61.43
3	26	43.73	43.73	43.73
3.5	26	32.28	32.28	32.28
4	26	24.79	24.79	24.79

STRUCTURAL CALCULATIONS FOR:
20" WIDE X 1" HIGH X 26 GA STEEL
ZIMMERMAN METAL SS1000 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 313
Dallas, Texas 75243



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pages 1-11

ALLOWABLE LOAD TABLES FOR : ZIMMERMAN METAL SS1000 ROOF PANEL

ALLOWABLE LIVE LOAD (PSF)

PANEL GAUGE	PANEL WIDTH	# OF EQUAL SPANS	SPAN (FT.)					
			1.5	2.0	2.5	3.0	3.5	4.0
26 GA STEEL	20"	1	103	58	37	25	18	14
		2	76	48	32	22	16	12
		3	86	55	37	26	19	14

NOTES:

1. All calculations for panel properties have been made in accordance with the 1986 edition of "Specification for Cold-Formed Steel Design Manual" published by American Iron and steel institute.

2. Values for 3 or more spans are based on 4 equal spans.

3. These load capacities are for the panel itself. Frames purlins, clips, fasteners, and all supports must be designed to resist load imposed by the panel.

4. Materials:
   FY = 40 ksi for steel panels

5. All loads are in PSF.

6. For full panel capacity, bearing must be checked using actual loads and bearing length.

7. Loads shown are limited by L/180 deflection.

ALLOWABLE LOAD TABLES FOR : ZIMMERMAN METAL SS1000 ROOF PANEL

ALLOWABLE UPLIFT LOAD (PSF)

PANEL GAUGE	PANEL WIDTH	# OF EQUAL SPANS	SPAN (FT.)					
			1.5	2.0	2.5	3.0	3.5	4.0
26 GA STEEL	20"	1	120	67	43	30	22	16
		2	109	69	48	33	24	19
		3	123	79	55	39	29	22

NOTES:

1. All calculations for panel properties have been made in accordance with the 1986 edition of "Specification for Cold-Formed Steel Design Manual"published by American Iron and steel institute.

2. Values for 3 or more spans are based on 4 equal spans.

3. These load capacities are for the panel itself. Frames purlins, clips, fasteners, and all supports must be designed to resist load imposed by the panel.

4. Materials:
   FY = 40 ksi for steel panels

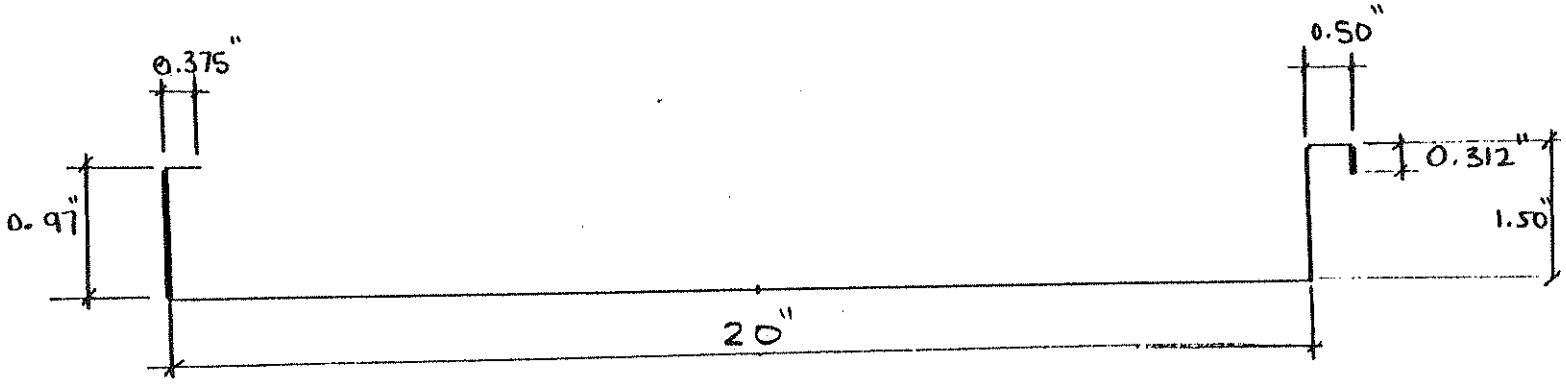
5. All loads are in PSF.

6. Above capacities have been increased by 33-1/3% as per AISI sec. A4.4.

7. For full panel capacity, bearing must be checked using actual loads and bearing length.

8. Loads shown are limited to L/180 deflection.

ZIMMERMAN METAL SS1000 ROOF PANEL



Thickness: 26 ga.

FY = 40 KSI

CFS Version 2.10

SECTION: 20SS1026
Rev. Date 09-12-1995
Rev. Time 08:54:32

Section Input

Yield (Fy)	40.000	One Inch =	1.0000
Modulus (E)	29500.000	Cw Override	0.0000
Unit Weight	3.4000	J Override	0.0000

Part 1 Thickness 0.0179 26 Gage

Length	Angle	Radius	Web	k
0.375	180.000	0.0600	No	0.00
0.970	270.000	0.0600	Sgl	0.00
20.000	0.000	0.0600	No	0.00
1.000	90.000	0.0600	Sgl	0.00
0.500	0.000	0.0600	No	0.00
0.312	270.000	0.0600	No	0.00

	X	Y
CG Placement	0.000	0.000
from Lower-Left	10.197	0.093
from Upper-Right	-10.285	-0.907

Full Section Properties

Area	0.4103	Wt.	1.3949	Width	22.9195
Ix	0.0244	rx	0.2441	Ixy	0.0655
Sx(t)	0.0269	y(t)	0.9072	Alpha	-89.7816
Sx(b)	0.2632	y(b)	0.0928		
Iy	17.2006	ry	6.4750	Xo	1.3634
Sy(l)	1.6869	x(l)	10.1966	Yo	-0.2763
Sy(r)	1.6723	x(r)	10.2855	jx	-1.3888
				jy	42.0238
I1	17.2008	r1	6.4751		
I2	0.0242	r2	0.2428		
Ic	17.2250	rc	6.4796	Cw	1.9207
Io	18.0189	ro	6.6273	J	0.0000438

Fully Braced Allowables

Compression		Positive Moment		Positive Moment	
Pao	1.29893	Maxo	0.58129	Mayo	15.29377
Ae	0.0622	Ixe	0.0221	Iye	9.0448
		Sxe(t)	0.0242	Sye(l)	1.4383
Tension		Sxe(b)	0.2561	Sye(r)	0.6372
Ta	9.84623				
		Negative Moment		Negative Moment	
		Maxo	0.50839	Mayo	12.40567
Shear		Ixe	0.0109	Iye	7.6230
Vay	0.47497	Sxe(t)	0.0212	Sye(l)	0.5169
Vax	0.00000	Sxe(b)	0.0223	Sye(r)	1.3293

MAXIMUM ALLOW. LIVE LOAD IN PSF FOR ZIMMERMAN SS1000 (20" WIDE X 26 GA)

WIDTH:	20 IN.
CONDITION:	SINGLE SPAN
LOADING:	LIVE LOAD
FILE NAME	L1S20S26

SPAN FEET	THICKNESS GA	DEFL. (L/180)	DEFL. (L/240)	STRESS
1	26	232.35	232.35	232.35
1.5	26	103.27	103.27	103.27
2	26	58.09	58.09	58.09
2.5	26	37.18	37.18	37.18
3	26	25.82	25.82	25.82
3.5	26	18.97	18.97	18.97
4	26	14.52	14.52	14.52
4.5	26	11.47	10.21	11.47

MAXIMUM ALLOW. LIVE LOAD IN PSF FOR ZIMMERMAN SS1000 (20" WIDE X 26 GA)

WIDTH:	20 IN.
CONDITION:	TWO SPAN
LOADING:	LIVE LOAD
FILE NAME:	L2S20S26

SPAN FEET	THICKNESS GA	DEFL. (L/180)	DEFL. (L/240)	STRESS
1	26	141.27	141.27	141.27
1.5	26	76.46	76.46	76.46
2	26	48.26	48.26	48.26
2.5	26	32.00	32.00	32.00
3	26	22.33	22.33	22.33
3.5	26	16.45	16.45	16.45
4	26	12.62	12.62	12.62
4.5	26	9.98	9.98	9.98

MAXIMUM ALLOW. LIVE LOAD IN PSF FOR ZIMMERMAN SS100 (20" WIDE X 26 GA)

WIDTH:	20 IN.
CONDITION:	THREE SPAN
LOADING:	LIVE LOAD
FILE NAME:	L3S20S26

SPAN FEET	THICKNESS GA	DEFL. (L/180)	DEFL. (L/240)	STRESS
1	26	159.44	159.44	159.44
1.5	26	86.84	86.84	86.84
2	26	55.06	55.06	55.06
2.5	26	37.22	37.22	37.22
3	26	26.00	26.00	26.00
3.5	26	19.18	19.18	19.18
4	26	14.72	14.72	14.72
4.5	26	11.65	11.65	11.65

MAXIMUM ALLOW. WIND LOAD IN PSF FOR ZIMMERMAN SS1000 (20" WIDE X 26 GA)

WIDTH: 20 IN.
CONDITION: SINGLE SPAN
LOADING: WIND LOAD
FILE NAME W1S20S26

SPAN FEET	THICKNESS GA	DEFL. (L/180)	DEFL. (L/240)	STRESS
1	26	270.86	270.86	270.86
1.5	26	120.38	120.38	120.38
2	26	67.72	67.72	67.72
2.5	26	43.34	43.34	43.34
3	26	30.10	30.10	30.10
3.5	26	22.11	21.70	22.11
4	26	16.93	14.54	16.93
4.5	26	13.38	10.21	13.38

MAXIMUM ALLOW. WIND LOAD IN PSF FOR ZIMMERMAN SS1000 (20" WIDE X 26 GA)

WIDTH:	20 IN.
CONDITION:	TWO SPAN
LOADING:	WIND LOAD
FILE NAME:	W2S20S26

SPAN FEET	THICKNESS GA	DEFL. (L/180)	DEFL. (L/240)	STRESS
1	26	199.51	199.51	199.51
1.5	26	109.45	109.45	109.45
2	26	69.74	69.74	69.74
2.5	26	48.39	48.39	48.39
3	26	33.85	33.85	33.85
3.5	26	24.98	24.98	24.98
4	26	19.18	19.18	19.18

MAXIMUM ALLOW. WIND LOAD IN PSF FOR ZIMMERMAN SS1000 (20"WIDE X 26 GA)

WIDTH: 20 IN.
CONDITION: THREE SPAN
LOADING: WIND LOAD
FILE NAME: W3S20S26

SPAN FEET	THICKNESS GA	DEFL. (L/180)	DEFL. (L/240)	STRESS
1	26	224.29	224.29	224.29
1.5	26	123.84	123.84	123.84
2	26	79.26	79.26	79.26
2.5	26	55.30	55.30	55.30
3	26	39.41	39.41	39.41
3.5	26	29.09	29.09	29.09
4	26	22.34	22.34	22.34