WESTERN STATES METAL ROOFING

(877) 787-5467 • WESTERNSTATESMETALROOFING.COM

Finishes You've Never Seen Before®

EXPOSED FASTENER METAL PANELS

7/8" CORRUGATED WESTERN RIB® (7.2 PANEL) PBR/R-PANEL

UL TESTS:

ANSI/UL 580, Uplift Resistance of Roof Assembly
ANSI/UL 790, Fire Tests of Roof Coverings
UL 2218A, Impact Resistance of Roof Systems

WSMR UL Certificate Number: R40094
Issue Date: 7/23/2020

REQUEST A FREE METAL COLOR SAMPLE
Affordable Delivery throughout USA, Canada, and Mexico

Phoenix: 901 W Watkins St., Phoenix, AZ 85007
☎ (602) 495-0048
✉ sales@westernstatesmetalroofing.com

Tucson: 4975 E. Drexel Rd., Tucson, AZ 85706
☎ (520) 574-4247
✉ tucsonsales@westernstatesmetalroofing.com

CERTIFICATE OF COMPLIANCE

Certificate Number	R40094
Report Reference	R40094-20191126
Issue Date	2020-JULY-23
Issued to:	Western States Metal Roofing 901 W. Watkins St, Phoenix AZ 85007
This certificate confirms that representative samples of	Metal Roof Deck Panels; Wind Uplift Resistance; Roofing Systems; Impact Resistance Models: “7/8” Corrugated”, “Western Rib”, “Western R-Panel”, “MS2®”, “Thin Lock®”, “Western Lock®”, and “Western Seam®”.
	Have been investigated by UL in accordance with the Standard(s) indicated on this Certificate.
Standard(s) for Safety:	ANSI/UL 580, Tests for Uplift Resistance of Roof Assemblies ANSI/UL 790, Test Methods or Fire Tests of Roof Coverings UL 2218A, Impact Resistance of Roofing Systems
Additional Information:	See the UL Online Certifications Directory at https://iq.ulprospector.com for additional information.

This *Certificate of Compliance* does not provide authorization to apply the UL Mark. Only the UL Follow-Up Services Procedure provides authorization to apply the UL Mark.

Only those products bearing the UL Mark should be considered as being UL Certified and covered under UL’s Follow-Up Services.

Look for the UL Certification Mark on the product.

Bruce Mahrenholz, Director North American Certification Program

UL LLC

Mike Rubio
Western States Metal Roofing
901 W. Watkins St
Phoenix AZ 85007

Date: 2020/07/23
Subscriber: None
PartySite: 2330146
File No: R40094
Project No: 4789493641
PD No: 20M16812
Type: R
PO Number:

Subject: **Procedure And/Or Report Material**

The following material resulting from the investigation under the above numbers is enclosed.

Issue Date	Vol	Sec	Pages	Revised Date
	1		Revised Index Page(s) 1	2020/07/21
2019/11/26	1	1	Revised Description Page(s) 1,2	2020/07/21
2019/11/26	1	1	New Illustration(s) 2,3,4	2020/07/21
2019/11/26	1	1	Revised Illustration(s) 1	2020/07/21
2019/11/26	1	191126	Cert of Compliance	
2019/11/26	1		Revised Description Page(s) 1	2020/07/21
2019/11/26	1		New Test Record 2	2020/07/21
2019/11/27	1	2	Revised Description Page(s) 1,2	2020/07/21
2019/11/27	1	2	New Illustration(s) 2,3,4	2020/07/21
2019/11/28	1	3	Revised Description Page(s) 1	2020/07/21
2019/11/28	1	3	New Illustration(s) 2,3,4	2020/07/21

Inspections at your plant will be conducted under the supervision of Ruben Sandoval Jr, UL INSPECTION CENTRAL/SOUTHERN CA-NV, HI, UL LLC, 29951 W. Avalon Dr., Buckeye AZ 85396., PHONE: 480-290-6987, FAX: 847-513-7826, EMAIL: Ruben.SandovalJr@ul.com

Please file revised pages and illustrations in place of material of like identity. New material should be filed in its proper numerical order.

NOTE: Follow-Up Service Procedure revisions DO NOT include Cover Pages, Test Records and Conclusion Pages. Report revisions DO NOT include Authorization Pages, Indices, Section General Pages and Appendixes.

Please review this material and report any inaccuracies to UL's Customer Service Professionals. Contact information for all of UL's global offices can be found at http://ul.com/aboutul/locations.

If you'd like to receive updated materials FASTER, UL offers electronic access and/or delivery of this material. For more details, contact UL's Customer Service Professionals as shown above.

This material is provided on behalf of UL LLC(UL) or any authorized licensee of UL.

NBK File

UL INSPECTION CENTER 844

ADDENDUM TO TRANSMITTAL LETTER

Mike Rubio
Western States Metal Roofing
901 W. Watkins St
Phoenix AZ 85007

Date: 2020/07/23
Subscriber: None
PartySite: 2330146
File No: R40094
Project No: 4789493641
PD No: 20M16812
Type: R
PO Number:

Subject: Procedure And/Or Report Material

The following material resulting from the investigation under the above numbers is enclosed.

Issue Date	Vol	Sec	Pages	Revised Date
2020/07/21	1	4	Add New Indep Proc Sect	
2020/07/22	1	5	Add New Indep Proc Sect	
2020/07/23	1	6	Add New Indep Proc Sect	
2020/07/24	1	7	Add New Indep Proc Sect	

INDEX

ENGINEERING CONSIDERATIONS (NOT FOR FIELD REPRESENTATIVE'S USE):

Independent Report for all CETW products report date 2019-12-20.

DESCRIPTION

PRODUCT COVERED:

This section of the Procedure covers a roof panel which is identified as "7/8" Corrugated".

The panels are roll-formed from No. 26, 24, 22, or 20 gauge coated steel to the configuration shown in ILL. 1. The panel may also have a paint finish over the coating.

The products are classified under Metal Roof Deck Panels (TJPV), Metal Roof Deck Panels (CETW), Roof-Covering Materials - Impact Resistance (TGAM) and Roofing Systems (TGFU).

SPECIFICATIONS OF FINISHED PRODUCT:

THICKNESS

* The base metal thickness of the steel used in the fabrication of the panel will be not less than **0.0187 in.** (No. 26 MSG minimum gauge), **0.0236 in.** (No. 24 MSG minimum gauge), **0.0296 in.** (No. 22 MSG minimum gauge), or **0.0356 in.** (No. 20 MSG minimum gauge) **for galvalume or galvanized steel. See ILL. 2 for further thickness dimension specifications.** This thickness will not include the coating or any paint finish.

DIMENSIONS

* The cross-sectional dimensions of the panel or panel piece will be in accordance with the cross-section shown in ILL. 1. Maximum width of the panel will not exceed **39 in out to out.**

STRENGTH

The strength records of the manufacturer of the steel will be reviewed. The steel will conform to the following specifications, depending on the thickness:

Thickness	Strength
26 MSG	ASTM A653 Grade 80 or minimum yield point of 80,000 psi
24 MSG	ASTM A653 Grade 50 or minimum yield point of 50,000 psi
22 MSG	ASTM A653 Grade 50 or minimum yield point of 50,000 psi
20 MSG	ASTM A653 Grade 40 or minimum yield point of 40,000 psi

See ILL. 3 for additional strength specifications, and see ILL. 4 for gravity and uplift loads for these panels.

CLASSIFICATION MARKING:

The finished material complying with all the specifications set forth in this section is eligible to bear the Markings shown in the Certification Marking Data Pages in the front of this Volume.

The following information will be included on all Metal Roof Deck Panel (TJPV) Certification Markings pertaining to products described in this Section:

1. Certification Marking Data for Metal Roof Deck Panels (TJPV):

*

METAL ROOF DECK PANEL
As To Uplift Resistance
Class 90
As Shown By Construction No. 649

2. Certification Marking Data for Roofing Systems (TGFU):

BUILDING UNITS FOR
ROOFING SYSTEMS
AS TO AN EXTERNAL FIRE EXPOSURE ONLY

3. Certification Marking Data for Roof-covering Materials, Impact Resistance (TGAM):

The following marking may also appear on each individual panel when the complete TGFU Certification Marking is provided on the package or bundle.

"Also Certified as to Impact Resistance; Class 4"

SEE UL ROOFING MATERIALS AND SYSTEMS DIRECTORY

4. Classification Marking Data Page for CETW (optional) – P225, P227, P230, P237, P250, P259, P265, P266, P268, P508, P510, P512, P514, P518, P701, P711, P713, P717, P719, P720, P722, P723, P726, P731, P734, P801, P815, P819, P824, P825, and P828.

MARKING INFORMATION:

In addition, the following information will appear either on the product or package or on the Certification Marking:

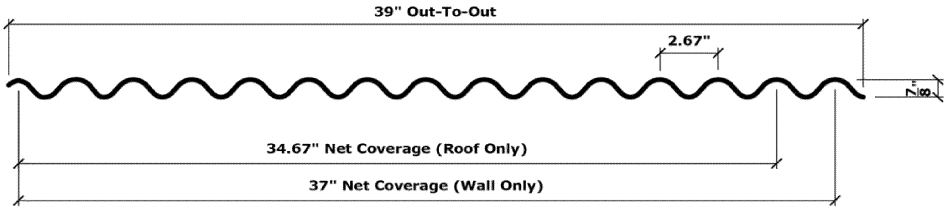
Company's name or UL file number,

Product identification

and

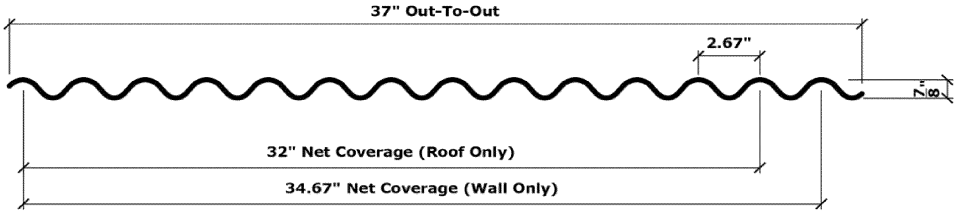
Factory identification (if applicable).

48” Master Coil



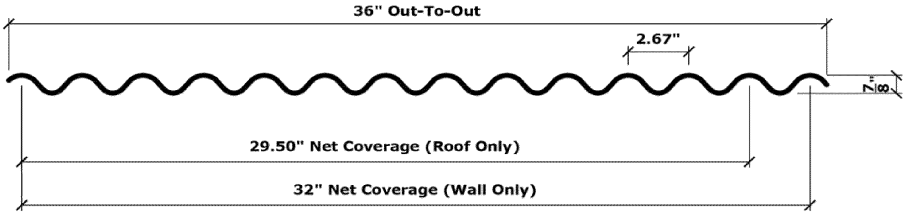
There can be variance in the overall width of up to 1". This will NOT lessen roof/wall coverage.
The width of this panel will vary with specialty/kynar finishes.
Out to out may vary depending on coil width used.

46” Master Coil



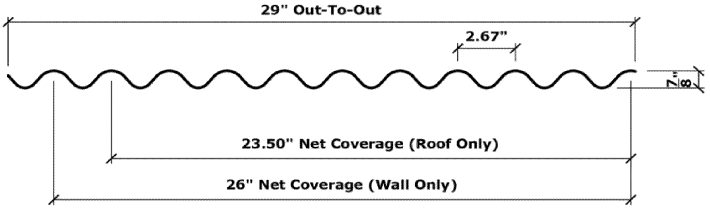
There can be variance in the overall width of up to 1". This will NOT lessen roof/wall coverage.
The width of this panel will vary with specialty/kynar finishes.
Out to out may vary depending on coil width used.

43” Master Coil



There can be variance in the overall width of up to 1". This will NOT lessen roof/wall coverage.
The width of this panel will vary with specialty/kynar finishes.
Out to out may vary depending on coil width used.

36” Master Coil



There can be variance in the overall width of up to 1". This will NOT lessen roof/wall coverage.
The width of this panel will vary with specialty/kynar finishes.
Out to out may vary depending on coil width used.

*****Panel out-to-out will be determined by the coil used to produce the panels*****

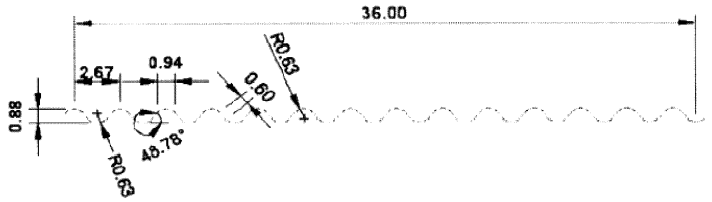
GAUGE / THICKNESS		
7/8" CORRUGATED PANEL		
GAUGE	DECIMAL THICKNESS	TYPE /FINISH / SUBSTRATE
26	0.0190	GALVALUME
24	0.0236	GALVALUME
22	0.0296	GALVALUME
20	0.0356	GALVALUME
26	0.0187	GALVANIZED
24	0.0236	GALVANIZED
22	0.0296	GALVANIZED
20	0.0356	GALVANIZED
26	0.0160	BARESTEEL
24	0.0210	BARESTEEL
22	0.0269	BARESTEEL
20	0.0329	BARESTEEL
22	0.0269	A-606 -4 (Corten ®)
20	0.0329	A-606 -4 (Corten ®)
THE GAUGE/THICKNESS WILL NOT INCLUDE THE COATING OR ANY PAINT FINISH		

STRENGTH

7/8" CORRUGATED PANEL

GAUGE	DECIMAL THICKNESS	SUBSTRATE	STRENGTH
26	0.0187	GALVALUME	ASTM A792 GRADE 80 OR MINIMUM YIELD POINT 80,000 PSI
24	0.0236	GALVALUME	ASTM A792 GRADE 50 OR MINIMUM YIELD POINT 50,000 PSI
22	0.0296	GALVALUME	ASTM A792 GRADE 50 OR MINIMUM YIELD POINT 50,000 PSI
20	0.0356	GALVALUME	ASTM A792 GRADE 40 OR MINIMUM YIELD POINT 40,000 PSI
26	0.0187	GALVANIZED	ASTM A653 GRADE 80 OR MINIMUM YIELD POINT 80,000 PSI
24	0.0236	GALVANIZED	ASTM A653 GRADE 50 OR MINIMUM YIELD POINT 50,000 PSI
22	0.0296	GALVANIZED	ASTM A653 GRADE 50 OR MINIMUM YIELD POINT 50,000 PSI
20	0.0356	GALVANIZED	ASTM A653 GRADE 40 OR MINIMUM YIELD POINT 40,000 PSI
26	0.0160	BARESTEEL	ASTM A 1008 GRADE 50 OR MINIMUM YIELD POINT 50,000 PSI
24	0.0210	BARESTEEL	ASTM A 1008 GRADE 50 OR MINIMUM YIELD POINT 50,000 PSI
22	0.0269	BARESTEEL	ASTM A 1008 GRADE 50 OR MINIMUM YIELD POINT 50,000 PSI
20	0.0329	BARESTEEL	ASTM A 1008 GRADE 50 OR MINIMUM YIELD POINT 50,000 PSI
22	0.0269	A -606 TYPE 4	ASTM A-606 TYPE 4 GRADE 50 OR MINIMUM YIELD POINT 45,000 PSI
20	0.0329	A -606 TYPE 4	ASTM A-606 TYPE 4 GRADE 50 OR MINIMUM YIELD POINT 45,000 PSI

GRAVITY LOAD, 7/8 CORRUGATED



	Span Type	Load Type	Gravity - Total Allowable Load in PSF (Span in Feet)									
			3	3.5	4	4.5	5	6	7	8	9	10
26 Gauge (Fy=80ksi)	Single Span	Stress	141.8	104.2	79.7	63.0	51.0	35.4	26.0	19.9	15.8	12.8
		Deflection	79.6	50.1	33.6	23.6	17.2	9.9	6.3	4.2	2.9	2.1
	2 Spans	Stress	139.9	102.7	78.7	62.2	50.3	35.0	25.7	19.7	15.5	12.6
		Deflection	189.4	119.2	79.9	56.1	40.9	23.7	14.9	10.0	7.0	5.1
	3 Spans or More	Stress	163.2	119.9	91.8	72.5	58.8	40.8	30.0	23.0	18.1	14.7
		Deflection	157.5	99.2	66.4	46.7	34.0	19.7	12.4	8.3	5.8	4.3
	Span Type	Load Type	Gravity - Total Allowable Load in PSF (Span in Feet)									
			3	3.5	4	4.5	5	6	7	8	9	10
24 Gauge (Fy=50ksi)	Single Span	Stress	185.7	136.5	104.5	82.5	66.9	46.4	34.1	26.1	20.6	16.7
		Deflection	103.1	64.9	43.5	30.6	22.3	12.9	8.1	5.4	3.8	2.8
	2 Spans	Stress	185.3	136.1	104.2	82.3	66.7	46.3	34.0	26.1	20.6	16.7
		Deflection	248.4	156.4	104.8	73.6	53.7	31.0	19.6	13.1	9.2	6.7
	3 Spans or More	Stress	216.2	158.8	121.6	96.1	77.8	54.1	39.7	30.4	24.0	19.5
		Deflection	206.6	130.1	87.1	61.2	44.6	25.8	16.3	10.9	7.7	5.6
	Span Type	Load Type	Gravity - Total Allowable Load in PSF (Span in Feet)									
			3	3.5	4	4.5	5	6	7	8	9	10
22 Gauge (Fy=50ksi)	Single Span	Stress	235.0	172.6	132.2	104.4	84.6	58.7	43.2	33.0	26.1	21.1
		Deflection	134.3	84.6	56.7	39.8	29.0	16.8	10.6	7.1	5.0	3.6
	2 Spans	Stress	235.0	172.6	132.2	104.4	84.6	58.7	43.2	33.0	26.1	21.1
		Deflection	323.5	203.7	136.5	95.9	69.9	40.4	25.5	17.1	12.0	8.7
	3 Spans or More	Stress	274.2	201.5	154.3	121.9	98.7	68.6	50.4	38.6	30.5	24.7
		Deflection	269.0	169.4	113.5	79.7	58.1	33.6	21.2	14.2	10.0	7.3

	Span Type	Load Type	Gravity - Total Allowable Load in PSF (Span in Feet)									
			3	3.5	4	4.5	5	6	7	8	9	10
20 Gauge (Fy=40ksi)	Single Span	Stress	189.8	139.4	106.8	84.3	68.3	47.4	34.9	26.7	21.1	17.1
		Deflection	154.7	97.4	65.3	45.8	33.4	19.3	12.2	8.2	5.7	4.2
	2 Spans	Stress	189.8	139.4	106.8	84.3	68.3	47.4	34.9	26.7	21.1	17.1
		Deflection	372.6	234.6	257.2	110.4	80.5	46.6	29.3	19.6	13.8	10.1
	3 Spans or More	Stress	221.5	162.7	124.6	98.4	79.7	55.4	40.7	31.1	24.6	19.9
		Deflection	309.8	195.1	130.7	91.8	66.9	38.7	24.4	16.3	11.5	8.4

Section Properties			Top In Compression			Bott. In Compression		
Gauge	fy	wt	ix	sx	ma	ix	sx	ma
	(ksi)	(psf)	(in^4/ft)	(in^3/ft)	(kip-in)	(in^4/ft)	(in^3/ft)	(kip-in)
26	80	0.92	0.0250	0.0533	1.9139	0.0247	0.0526	1.8880
24	50	1.17	0.0324	0.0704	2.5074	0.0324	0.0696	2.5009
22	50	1.49	0.0422	0.0891	3.1722	0.0422	0.0883	3.1722
20	40	1.75	0.0486	0.1079	2.5620	0.0486	0.1070	2.5620
Max Deflection		180						

UPLIFT LOAD, 7/8 CORRUGATED

	Span Type	Load Type	Gravity - Total Allowable Load in PSF (Span in Feet)									
			3	3.5	4	4.5	5	6	7	8	9	10
26 Gauge (Fy=80ksi)	Single Span	Stress	139.9	102.7	78.7	62.2	50.3	35.0	25.7	19.7	15.5	12.6
		Deflection	78.6	49.5	33.2	23.3	17.0	9.8	6.2	4.1	2.9	2.1
	2 Spans	Stress	141.8	104.2	79.7	63.0	51.0	35.4	26.0	19.9	15.8	12.8
		Deflection	191.7	120.7	80.9	56.8	41.4	24.0	15.1	10.1	7.1	5.2
	3 Spans or More	Stress	165.5	121.6	93.1	73.5	59.6	41.4	30.4	23.3	18.4	14.9
		Deflection	159.4	100.4	67.2	47.2	34.4	19.9	12.5	8.4	5.9	4.3
			Gravity - Total Allowable Load in PSF (Span in Feet)									
	Span Type	Load Type	3	3.5	4	4.5	5	6	7	8	9	10
24 Gauge (Fy=50ksi)	Single Span	Stress	185.3	136.1	104.2	82.3	66.7	46.3	34.0	26.1	20.6	16.7
		Deflection	103.1	64.9	43.5	30.6	22.3	12.9	8.1	5.4	3.8	2.8
	2 Spans	Stress	185.7	136.5	104.5	82.5	66.9	46.4	34.1	26.1	20.6	16.7
		Deflection	248.4	156.4	104.8	73.6	53.7	31.0	19.6	13.1	9.2	6.7
	3 Spans or More	Stress	216.8	159.3	212.9	96.3	78.0	54.2	39.8	30.5	24.1	19.5
		Deflection	206.6	130.1	87.1	61.2	44.6	25.8	16.3	10.9	7.7	5.6
			Gravity - Total Allowable Load in PSF (Span in Feet)									
	Span Type	Load Type	3	3.5	4	4.5	5	6	7	8	9	10
22 Gauge (Fy=50ksi)	Single Span	Stress	235.0	172.6	132.2	104.4	84.6	58.7	43.2	33.0	26.1	21.1
		Deflection	134.3	84.6	56.7	39.8	29.0	16.8	10.6	7.1	5.0	3.6
	2 Spans	Stress	235.0	172.6	132.2	104.4	84.6	58.7	43.2	33.0	26.1	21.1
		Deflection	323.5	203.7	136.5	95.9	69.9	40.4	25.5	17.1	12.0	8.7
	3 Spans or More	Stress	274.2	201.5	154.3	121.9	98.7	68.6	50.4	38.6	30.5	24.7
		Deflection	269.0	169.4	113.5	79.7	58.1	33.6	21.2	14.2	10.0	7.3

	Span Type	Load Type	Gravity - Total Allowable Load in PSF (Span in Feet)									
			3	3.5	4	4.5	5	6	7	8	9	10
20 Gauge (Fy=40ksi)	Single Span	Stress	189.8	139.4	106.8	84.3	68.3	47.4	34.9	26.7	21.1	17.1
		Deflection	154.7	97.4	65.3	45.8	33.4	19.3	12.2	8.2	5.7	4.2
	2 Spans	Stress	189.8	139.4	106.8	84.3	68.3	47.4	34.9	26.7	21.1	17.1
		Deflection	372.6	234.6	257.2	110.4	80.5	46.6	29.3	19.6	13.8	10.1
	3 Spans or More	Stress	221.5	162.7	124.6	98.4	79.7	55.4	40.7	31.1	24.6	19.9
		Deflection	309.8	195.1	130.7	91.8	66.9	38.7	24.4	16.3	11.5	8.4

Section Properties			Top In Compression			Bott. In Compression		
Gauge	fy	wt	ix	sx	ma	ix	sx	ma
	(ksi)	(psf)	(in^4/ft)	(in^3/ft)	(kip-in)	(in^4/ft)	(in^3/ft)	(kip-in)
26	80	0.92	0.0250	0.0533	1.9139	0.0247	0.0526	1.8880
24	50	1.17	0.0324	0.0704	2.5074	0.0324	0.0696	2.5009
22	50	1.49	0.0422	0.0891	3.1722	0.0422	0.0883	3.1722
20	40	1.75	0.0486	0.1079	2.5620	0.0486	0.1070	2.5620
Max Deflection		180						

DESCRIPTION

PRODUCT COVERED:

This section of the Procedure covers a roof panel which is identified as "Western Rib".

The panels are roll-formed from No. 26, 24, or 22 gauge coated steel to the configuration shown in ILL. 1. The panel may also have a paint finish over the coating.

The products are classified under Metal Roof Deck Panels (TJPV), Metal Roof Deck Panels (CETW), Roof-Covering Materials - Impact Resistance (TGAM) and Roofing Systems (TGFU).

SPECIFICATIONS OF FINISHED PRODUCT:

THICKNESS

* The base metal thickness of the steel used in the fabrication of the panel will be not less than **0.0187 in.** (No. 26 MSG minimum gauge), **0.0236 in.** (No. 24 MSG minimum gauge), or **0.0296 in.** (No. 22 MSG minimum gauge) **for galvalume or galvanized steel. See ILL. 2 for further thickness dimension specifications.** This thickness will not include the coating or any paint finish.

DIMENSIONS

The cross-sectional dimensions of the panel or panel piece will be in accordance with the cross-section shown in ILL. 1. The maximum width of the panel will be 36 inches.

STRENGTH

The strength records of the manufacturer of the steel will be reviewed. The 26 MSG steel will conform to Grade 80 Specifications (ASTM A792 designation) or the minimum yield point will be 80,000 psi. The 24 and 22 MSG steel shall conform to Grade 50 Specifications (ASTM A792 designation) or have a minimum yield strength of 50,000 psi.

See ILL. 3 for additional strength specifications, and see ILL. 4 for gravity and uplift loads for these panels.

CLASSIFICATION MARKING:

The finished material complying with all the specifications set forth in this section is eligible to bear the Markings shown in the Certification Marking Data Pages in the front of this Volume.

*

The following information will be included on all Metal Roof Deck Panel (TJPV) Certification Markings pertaining to products described in this Section:

1. Certification Marking Data for Metal Roof Deck Panels (TJPV):

*
24 or 22 MSG ONLY
METAL ROOF DECK PANEL
As To Uplift Resistance
Class 90
As Shown By Construction No. 137

And/Or

*
METAL ROOF DECK PANEL
As To Uplift Resistance
Class 30 or 90
As Shown By Construction No. 244

2. Certification Marking Data for Roofing Systems (TGFU):

BUILDING UNITS FOR
ROOFING SYSTEMS
AS TO AN EXTERNAL FIRE EXPOSURE ONLY

3. Certification Marking Data for Roof-covering Materials, Impact Resistance (TGAM):

The following marking may also appear on each individual panel when the complete TGFU Certification Marking is provided on the package or bundle.

"Also Certified as to Impact Resistance; Class 4"

SEE UL ROOFING MATERIALS AND SYSTEMS DIRECTORY

4. Classification Marking Data Page for CETW (optional) – P225, P227, P230, P237, P250, P259, P265, P266, P268, P508, P510, P512, P514, P518, P701, P711, P713, P717, P719, P720, P722, P723, P726, P731, P734, P801, P815, P819, P824, P825, and P828.

MARKING INFORMATION:

In addition, the following information will appear either on the product or package or on the Certification Marking:

Company's name or UL file number,

Product identification

And

Factory identification (if applicable).

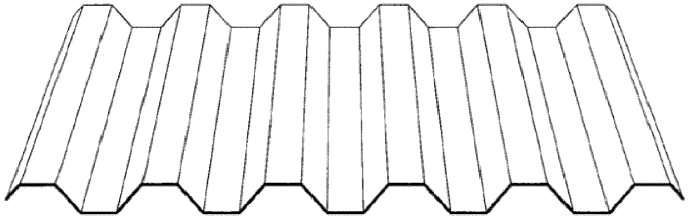
GAUGE / THICKNESS		
WESTERN RIB PANEL		
GAUGE	**DECIMAL THICKNESS**	**TYPE /FINISH / SUBSTRATE**
26	0.0190	GALVALUME
24	0.0236	GALVALUME
22	0.0296	GALVALUME
20	0.0356	GALVALUME
26	0.0187	GALVANIZED
24	0.0236	GALVANIZED
22	0.0296	GALVANIZED
20	0.0356	GALVANIZED
26	0.0160	BARESTEEL
24	0.0210	BARESTEEL
22	0.0269	BARESTEEL
20	0.0329	BARESTEEL
22	0.0269	A-606 -4 (Corten ®)
20	0.0329	A-606 -4 (Corten ®)
THE GAUGE/THICKNESS WILL NOT INCLUDE THE COATING OR ANY PAINT FINISH		

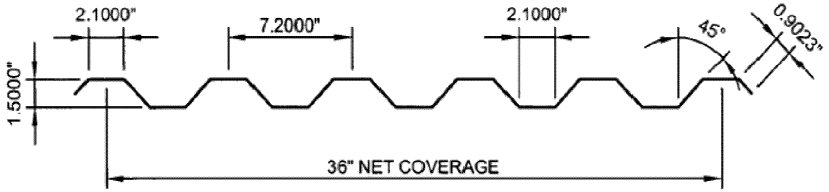
STRENGTH

WESTERN RIB PANEL

GAUGE	DECIMAL THICKNESS	SUBSTRATE	STRENGTH
26	0.0187	GALVALUME	ASTM A792 GRADE 80 OR MINIMUM YIELD POINT 80,000 PSI
24	0.0236	GALVALUME	ASTM A792 GRADE 50 OR MINIMUM YIELD POINT 50,000 PSI
22	0.0296	GALVALUME	ASTM A792 GRADE 50 OR MINIMUM YIELD POINT 50,000 PSI
20	0.0356	GALVALUME	ASTM A792 GRADE 40 OR MINIMUM YIELD POINT 40,000 PSI
26	0.0187	GALVANIZED	ASTM A653 GRADE 80 OR MINIMUM YIELD POINT 80,000 PSI
24	0.0236	GALVANIZED	ASTM A653 GRADE 50 OR MINIMUM YIELD POINT 50,000 PSI
22	0.0296	GALVANIZED	ASTM A653 GRADE 50 OR MINIMUM YIELD POINT 50,000 PSI
20	0.0356	GALVANIZED	ASTM A653 GRADE 40 OR MINIMUM YIELD POINT 40,000 PSI
26	0.0160	BARESTEEL	ASTM A 1008 GRADE 50 OR MINIMUM YIELD POINT 50,000 PSI
24	0.0210	BARESTEEL	ASTM A 1008 GRADE 50 OR MINIMUM YIELD POINT 50,000 PSI
22	0.0269	BARESTEEL	ASTM A 1008 GRADE 50 OR MINIMUM YIELD POINT 50,000 PSI
20	0.0329	BARESTEEL	ASTM A 1008 GRADE 50 OR MINIMUM YIELD POINT 50,000 PSI
22	0.0269	A -606 TYPE 4	ASTM A-606 TYPE 4 GRADE 50 OR MINIMUM YIELD POINT 45,000 PSI
20	0.0329	A -606 TYPE 4	ASTM A-606 TYPE 4 GRADE 50 OR MINIMUM YIELD POINT 45,000 PSI

WESTERN RIB





NOTES:

1 Effective section properties are calculated in accordance with the 2004 North American Specifications for the design of Cold-Formed Steel Structural Members.

2 Ix is for the determination of deflection.

3 Sx and Ma are for the stress determination.

GRAVITY LOAD, WESTERN RIB

	Span Type	Load Type	Gravity - Total Allowable Load in PSF (Span in Feet)									
			3	3.5	4	4.5	5	6	7	8	9	10
26 Gauge (Fy=80ksi)	Single Span	Stress	197.4	145.1	111.1	87.7	71.1	49.4	36.3	27.8	21.9	17.8
		Deflection	209.4	131.9	88.3	62.0	45.2	26.2	16.5	11.0	7.8	5.7
	2 Spans	Stress	166.1	122.0	93.4	73.8	59.8	41.5	30.5	23.4	18.5	14.9
		Deflection	476.1	299.8	200.8	141.1	102.8	59.5	37.5	25.1	17.6	12.9
	3 Spans or More	Stress	193.8	142.4	109.0	86.1	69.8	48.5	35.6	27.3	21.5	17.4
		Deflection	395.9	249.3	167.0	117.3	85.5	49.5	31.2	20.9	14.7	10.7
			Gravity - Total Allowable Load in PSF (Span in Feet)									
	Span Type	Load Type	3	3.5	4	4.5	5	6	7	8	9	10
24 Gauge (Fy=50ksi)	Single Span	Stress	290.1	213.2	163.2	128.9	104.4	72.5	53.3	40.8	32.2	26.1
		Deflection	291.8	183.8	123.1	86.5	63.0	36.5	23.0	15.4	10.8	7.9
	2 Spans	Stress	260.8	191.6	146.7	115.9	93.9	65.2	47.9	36.7	29.0	23.5
		Deflection	698.4	439.8	294.6	206.9	150.8	87.3	55.0	36.8	25.9	18.9
	3 Spans or More	Stress	304.4	223.6	171.2	135.3	109.6	76.1	55.9	42.8	33.8	27.4
		Deflection	580.8	365.7	245.0	172.1	125.4	72.6	45.7	30.6	21.5	15.7
			Gravity - Total Allowable Load in PSF (Span in Feet)									
	Span Type	Load Type	3	3.5	4	4.5	5	6	7	8	9	10
22 Gauge (Fy=50ksi)	Single Span	Stress	404.7	297.3	227.6	179.9	145.7	101.2	74.3	56.9	45.0	36.4
		Deflection	397.5	250.3	167.7	117.8	85.9	49.7	31.3	21.0	14.7	10.7
	2 Spans	Stress	365.9	268.8	208.8	162.6	131.7	91.5	67.2	51.5	40.7	32.9
		Deflection	957.5	603.0	403.9	283.7	206.8	119.7	75.4	50.5	35.5	25.9
	3 Spans or More	Stress	427.0	313.7	240.2	189.8	153.7	106.8	78.4	60.0	47.4	38.4
		Deflection	796.3	501.4	335.9	235.9	172.0	99.5	62.7	42.0	29.5	21.5
			Gravity - Total Allowable Load in PSF (Span in Feet)									
	Span Type	Load Type	3	3.5	4	4.5	5	6	7	8	9	10
20 Gauge (Fy=50ksi)	Single Span	Stress	366.5	269.2	206.1	162.9	131.9	91.6	67.3	51.5	40.7	33.0
		Deflection	514.0	323.7	216.8	152.3	111.0	64.2	40.5	27.1	19.0	13.9
	2 Spans	Stress	328.3	241.2	184.7	145.9	118.2	82.1	60.3	46.2	36.5	29.5
		Deflection	1238.1	779.7	522.3	366.8	267.4	154.8	97.5	65.3	45.9	33.4
	3 Spans or More	Stress	383.2	281.5	215.5	170.3	138.0	95.8	70.4	53.9	42.6	34.5
		Deflection	1029.6	648.4	434.4	305.1	222.4	128.7	81.0	54.3	38.1	27.8

Section Properties			Top In Compression			Bott. In Compression		
Gauge	fy	wt	ix	sx	ma	ix	sx	ma
	(ksi)	(psf)	(in^4/ft)	(in^3/ft)	(kip-in)	(in^4/ft)	(in^3/ft)	(kip-in)
26	80	0.86	0.0658	0.0743	2.6653	0.0621	0.0624	2.2419
24	50	1.10	0.0917	0.1090	3.9168	0.0911	0.0979	3.5208
22	50	1.40	0.1249	0.1521	5.4630	0.1249	0.1375	4.9392
20	40	1.65	0.1615	0.2065	4.9472	0.1615	0.1850	4.4324
Max Deflection		180						

UPLIFT LOAD, WESTERN RIB

	Span Type	Load Type	Gravity - Total Allowable Load in PSF (Span in Feet)									
			3	3.5	4	4.5	5	6	7	8	9	10
26 Gauge (Fy=80ksi)	Single Span	Stress	166.1	122.0	93.4	73.8	59.8	41.5	30.5	23.4	18.5	14.9
		Deflection	197.6	124.5	83.4	58.6	42.7	24.7	15.6	10.4	7.3	5.3
	2 Spans	Stress	197.4	145.1	111.1	87.7	71.1	49.4	36.3	27.8	21.9	17.8
		Deflection	504.4	317.7	212.8	149.5	109.0	63.1	39.7	26.6	18.7	13.6
	3 Spans or More	Stress	230.4	169.3	129.6	102.4	83.0	57.6	42.3	32.4	25.6	20.7
		Deflection	419.5	264.2	177.0	124.3	90.6	52.4	33.0	22.1	15.5	11.3
	Span Type	Load Type	Gravity - Total Allowable Load in PSF (Span in Feet)									
			3	3.5	4	4.5	5	6	7	8	9	10
24 Gauge (Fy=50ksi)	Single Span	Stress	260.8	191.6	146.7	115.9	93.9	65.2	47.9	36.7	29.0	23.5
		Deflection	289.9	182.6	122.3	85.9	62.6	36.2	22.8	15.3	10.7	7.8
	2 Spans	Stress	290.1	213.2	163.2	128.9	104.4	72.5	53.3	40.8	32.2	26.1
		Deflection	703.0	442.7	296.6	208.3	151.8	87.9	55.3	37.1	26.0	19.0
	3 Spans or More	Stress	338.6	248.8	190.5	150.5	121.9	84.7	62.2	47.6	37.6	30.5
		Deflection	584.6	368.2	246.6	173.2	126.3	73.1	46.0	30.8	21.7	15.8

	Span Type	Load Type	Gravity - Total Allowable Load in PSF (Span in Feet)									
			3	3.5	4	4.5	5	6	7	8	9	10
22 Gauge (Fy=50ksi)	Single Span	Stress	365.9	268.8	205.8	162.6	131.7	91.5	67.2	51.5	40.7	32.9
		Deflection	397.5	250.3	167.7	117.8	85.9	49.7	31.3	21.0	14.7	10.7
	2 Spans	Stress	404.7	297.3	227.6	179.9	145.7	101.2	74.3	56.9	45.0	36.4
		Deflection	957.5	603.0	403.9	283.7	206.8	119.7	75.4	50.5	35.5	25.9
	3 Spans or More	Stress	472.3	347.0	265.7	209.9	170.0	118.1	86.7	66.4	52.5	42.5
		Deflection	796.3	501.4	335.9	235.9	172.0	99.5	62.7	42.0	29.5	21.5
	Span Type	Load Type	Uplift - Total Allowable Load in PSF (Span in Feet)									
			3	3.5	4	4.5	5	6	7	8	9	10
20 Gauge (Fy=50ksi)	Single Span	Stress	328.3	241.2	184.7	145.9	118.2	82.1	60.3	46.2	36.5	29.5
		Deflection	514.0	323.7	216.8	152.3	111.0	64.2	40.5	27.1	19.0	13.9
	2 Spans	Stress	366.5	269.2	206.1	162.9	131.9	91.6	67.3	51.5	40.7	33.0
		Deflection	1238.1	779.7	522.3	366.8	267.4	154.8	97.5	65.3	45.9	33.4
	3 Spans or More	Stress	427.7	314.2	240.6	190.1	154.0	106.9	78.6	60.1	47.5	38.5
		Deflection	1029.6	648.4	434.4	305.1	222.4	128.7	81.0	54.3	38.1	27.8

Section Properties			Top In Compression			Bott. In Compression			
Gauge	fy	wt	ix	sx	ma	ix	sx	ma	
	(ksi)	(psf)	(in^4/ft)	(in^3/ft)	(kip-in)	(in^4/ft)	(in^3/ft)	(kip-in)	
26	80	0.86	0.0658	0.0743	2.6653	0.0621	0.0624	2.2419	
24	50	1.1	0.0917	0.1090	3.9168	0.0911	0.0979	3.5208	
22	50	1.40	0.1249	0.1521	5.4630	0.1249	0.1375	4.9392	
20	40	1.65	0.1615	0.2065	4.9472	0.1615	0.185	4.4324	
Max Deflection		180							

DESCRIPTION

PRODUCT COVERED:

This section of the Procedure covers a roof panel which is identified as "Western R-Panel". The panels are roll-formed from No. 29, 26, 24, or 22 minimum gauge coated steel to the configuration shown in ILL. 1. The panel may also have a paint finish over the coating. The products are classified under Metal Roof Deck Panels (TJPV), Metal Roof Deck Panels (CETW), Roof-Covering Materials - Impact Resistance (TGAM) and Roofing Systems (TGFU).

SPECIFICATIONS OF FINISHED PRODUCT:

THICKNESS

* The base metal thickness of the steel used in the fabrication of the panel will be not less than 0.0135 in. (No. 29 MSG minimum gauge), **0.0187 in.** (No. 26 MSG minimum gauge), **0.0236 in.** (No. 24 MSG minimum gauge), or **0.0296 in.** (No. 22 MSG minimum gauge) **for galvalume or galvanized steel. See ILL. 2 for further thickness dimension specifications.** This thickness will not include the coating or any paint finish. The 29 MSG panel is not eligible for wind uplift Certification under the product category Metal Roof Deck Panels (TJPV).

DIMENSIONS

The cross-sectional dimensions of the panel or panel piece will be in accordance with the cross-section shown in ILL. 1.

STRENGTH

The strength records of the manufacturer of the steel will be reviewed. The 26 MSG steel will conform to ASTM A653 Grade 80 specs, or the minimum yield point will be 80,000 psi. The 24 or 22 MSG steel will conform to ASTM A653 Grade 50 specifications or the minimum yield point will be 50,000 psi. **See ILL. 3 for additional strength specifications, and see ILL. 4 for gravity and uplift loads for these panels.**

CLASSIFICATION MARKING:

The finished material complying with all the specifications set forth in this section is eligible to bear the Markings shown in the Certification Marking Data Pages in the front of this Volume.

The following information will be included on all Metal Roof Deck Panel (TJPV) Certification Markings pertaining to products described in this Section:

1. Certification Marking Data for Metal Roof Deck Panels (TJPV):

*

METAL ROOF DECK PANEL
As To Uplift Resistance
Class 90
As Shown By Construction Nos. 79, 104, 112, 161, 167, 184 and 542

GAUGE / THICKNESS		
PBR PANEL		
GAUGE	DECIMAL THICKNESS	TYPE /FINISH / SUBSTRATE
26	0.0190	GALVALUME
24	0.0236	GALVALUME
22	0.0296	GALVALUME
26	0.0187	GALVANIZED
24	0.0236	GALVANIZED
22	0.0296	GALVANIZED
26	0.0160	BARESTEEL
24	0.0210	BARESTEEL
22	0.0269	BARESTEEL
22	0.0269	A-606 -4 (Corten ®)
THE GAUGE/THICKNESS WILL NOT INCLUDE THE COATING OR ANY PAINT FINISH		

STRENGTH			
PBR PANEL			
GAUGE	DECIMAL THICKNESS	SUBSTRATE	STRENGTH
26	0.0187	GALVALUME	ASTM A792 GRADE 80 OR MINIMUM YIELD POINT 80,000 PSI
24	0.0236	GALVALUME	ASTM A792 GRADE 50 OR MINIMUM YIELD POINT 50,000 PSI
22	0.0296	GALVALUME	ASTM A792 GRADE 50 OR MINIMUM YIELD POINT 50,000 PSI
26	0.0187	GALVANIZED	ASTM A653 GRADE 80 OR MINIMUM YIELD POINT 80,000 PSI
24	0.0236	GALVANIZED	ASTM A653 GRADE 50 OR MINIMUM YIELD POINT 50,000 PSI
22	0.0296	GALVANIZED	ASTM A653 GRADE 50 OR MINIMUM YIELD POINT 50,000 PSI
26	0.0160	BARESTEEL	ASTM A 1008 GRADE 50 OR MINIMUM YIELD POINT 50,000 PSI
24	0.0210	BARESTEEL	ASTM A 1008 GRADE 50 OR MINIMUM YIELD POINT 50,000 PSI
22	0.0269	BARESTEEL	ASTM A 1008 GRADE 50 OR MINIMUM YIELD POINT 50,000 PSI
22	0.0269	A -606 TYPE 4	ASTM A-606 TYPE 4 GRADE 50 OR MINIMUM YIELD POINT 45,000 PSI

GRAVITY LOAD / R-PANEL

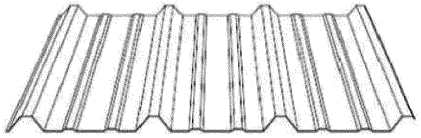
	Span Type	Load Type	Gravity - Total Allowable Load in PSF (Span in Feet)									
			3	3.5	4	4.5	5	6	7	8	9	10
26 Gauge (Fy=80ksi)	Single Span	Stress	95.8	70.4	53.9	42.6	34.5	23.9	17.6	13.5	10.6	8.6
		Deflection	119.7	75.4	50.5	35.5	25.8	15.0	9.4	6.3	4.4	3.2
	2 Spans	Stress	120.4	88.5	67.7	53.5	43.3	30.1	22.1	16.9	13.4	10.8
		Deflection	243.0	153.0	102.5	72.0	52.5	30.4	19.1	12.8	9.0	6.6
	3 Spans or More	Stress	140.5	103.3	79.1	62.5	50.6	35.1	25.8	19.8	15.6	12.6
		Deflection	202.1	127.3	85.3	59.9	43.7	25.3	15.9	10.7	7.5	5.5
	Span Type	Load Type	Gravity - Total Allowable Load in PSF (Span in Feet)									
			3	3.5	4	4.5	5	6	7	8	9	10
24 Gauge (Fy=50ksi)	Single Span	Stress	123.8	91.0	69.7	55.0	44.6	31.0	22.7	17.4	13.8	11.1
		Deflection	171.2	107.8	72.2	50.7	37.0	21.4	13.5	9.0	6.3	4.6
	2 Spans	Stress	130.5	95.9	73.4	58.0	47.0	32.6	24.0	18.4	14.5	11.7
		Deflection	335.8	211.4	141.7	99.5	72.5	42.0	26.4	17.7	12.4	9.1
	3 Spans or More	Stress	152.3	111.9	85.7	67.7	54.8	38.1	28.0	21.4	16.9	13.7
		Deflection	279.2	175.8	117.8	82.7	60.3	34.9	22.0	14.7	10.3	7.5
	Span Type	Load Type	Gravity - Total Allowable Load in PSF (Span in Feet)									
			3	3.5	4	4.5	5	6	7	8	9	10
22 Gauge (Fy=50ksi)	Single Span	Stress	174.9	128.5	98.4	77.7	63.0	43.7	32.1	24.6	19.4	15.7
		Deflection	237.4	149.5	100.2	70.3	51.3	29.7	18.7	12.5	8.8	6.4
	2 Spans	Stress	168.0	123.4	94.5	74.7	60.5	42.0	30.9	23.6	18.7	15.1
		Deflection	452.3	284.8	190.8	134.0	97.7	56.5	35.6	23.9	16.8	12.2
	3 Spans or More	Stress	196.1	144.1	110.3	87.1	70.6	49.0	36.0	27.6	21.8	17.6
		Deflection	376.1	236.9	158.7	111.4	81.2	47.0	29.6	19.8	13.9	10.2

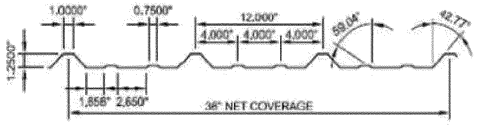
Section Properties			Top In Compression			Bott. In Compression			
Gauge	fy	wt	ix	sx	ma	ix	sx	ma	
	(ksi)	(psf)	(in^4/ft)	(in^3/ft)	(kip-in)	(in^4/ft)	(in^3/ft)	(kip-in)	
26	80	0.88	0.0376	0.0379	1.2928	0.0317	0.0452	1.6256	
24	50	1.12	0.0538	0.0558	1.6717	0.0438	0.0588	1.7618	
22	50	1.42	0.0746	0.0789	2.3612	0.0590	0.0758	2.2680	
Max Deflection		180							

UPLIFT LOAD / R-PANEL

	Span Type	Load Type	Gravity - Total Allowable Load in PSF (Span in Feet)									
			3	3.5	4	4.5	5	6	7	8	9	10
26 Gauge (Fy=80ksi)	Single Span	Stress	120.4	88.5	67.7	53.5	43.3	30.1	22.1	16.9	13.4	10.8
		Deflection	100.9	63.5	42.6	29.9	21.8	12.6	7.9	5.3	3.7	2.7
	2 Spans	Stress	95.8	70.4	53.9	42.6	34.5	23.9	17.6	13.5	10.6	8.6
		Deflection	288.2	181.5	121.6	85.4	62.3	36.0	22.7	15.2	10.7	7.8
	3 Spans or More	Stress	111.8	82.1	62.9	49.7	40.2	27.9	20.5	15.7	12.4	10.1
		Deflection	239.7	151.0	101.1	71.0	51.8	30.0	18.9	12.6	8.9	6.5
	Span Type	Load Type	Gravity - Total Allowable Load in PSF (Span in Feet)									
			3	3.5	4	4.5	5	6	7	8	9	10
24 Gauge (Fy=50ksi)	Single Span	Stress	120.4	88.5	67.7	53.5	43.3	30.1	22.1	16.9	13.4	10.8
		Deflection	100.9	63.5	42.6	29.9	21.8	12.6	7.9	5.3	3.7	2.7
	2 Spans	Stress	123.8	91.0	69.7	55.0	44.6	31.0	22.7	17.4	13.8	11.1
		Deflection	412.4	259.7	174.0	122.2	89.1	51.6	32.5	21.7	15.3	11.1
	3 Spans or More	Stress	144.5	106.2	81.3	64.2	52.0	36.1	26.5	20.3	16.1	13.0
		Deflection	343.0	216.0	144.7	101.6	74.1	42.9	27.0	18.1	12.7	9.3
	Span Type	Load Type	Gravity - Total Allowable Load in PSF (Span in Feet)									
			3	3.5	4	4.5	5	6	7	8	9	10
22 Gauge (Fy=50ksi)	Single Span	Stress	168.0	123.4	94.5	74.7	60.5	42.0	30.9	23.6	18.7	15.1
		Deflection	187.8	118.2	79.2	55.6	40.6	23.5	14.8	9.9	7.0	5.1
	2 Spans	Stress	174.9	128.5	98.4	77.7	63.0	43.7	32.1	24.6	19.4	15.7
		Deflection	571.9	360.1	241.3	169.4	123.5	71.5	45.0	30.2	21.2	15.4
	3 Spans or More	Stress	204.1	150.0	114.8	90.7	73.5	51.0	37.5	28.7	22.7	18.4
		Deflection	475.6	299.5	200.6	140.9	102.7	59.4	37.4	25.1	17.6	12.8

WESTERN R-PANEL





Section Properties			Top In Compression			Bott. In Compression		
Gauge	fy	wt	ix	sx	ma	ix	sx	ma
	(ksi)	(psf)	(in^4/ft)	(in^3/ft)	(kip-in)	(in^4/ft)	(in^3/ft)	(kip-in)
26	80	0.88	0.0376	0.0379	1.2928	0.0317	0.0452	1.6256
24	50	1.12	0.0538	0.0558	1.6717	0.0317	0.0452	1.6256
22	50	1.42	0.0746	0.0789	2.3612	0.0590	0.0758	2.2680
Max Deflection		180						

NOTES:

1 Effective section properties are calculated in accordance with the 2004 North American Specifications for the design of Cold-Formed Steel Structural Members.

2 Ix is for the determination of deflection.

3 Sx and Ma are for the stress determination.

DESCRIPTION

PRODUCT COVERED:

This section of the Procedure covers a roof panel which is identified as "MS2®".

The panels are roll-formed from No. 24 gauge coated steel to the configuration shown in ILL. 1. The panel may also have a paint finish over the coating.

The products are classified under Metal Roof Deck Panels (TJPV), Roof-Covering Materials - Impact Resistance (TGAM) and Roofing Systems (TGFU).

SPECIFICATIONS OF FINISHED PRODUCT:

THICKNESS

The base metal thickness of the steel used in the fabrication of the panel will be not less than 0.0239 in. (No. 24 MSG minimum gauge). This thickness will not include the coating or any paint finish.

DIMENSIONS

The cross-sectional dimensions of the panel or panel piece will be in accordance with the cross-section shown in ILL. 1. The maximum width of the panel will be 16 inches.

STRENGTH

The strength records of the manufacturer of the steel will be reviewed. The 24 MSG or thicker steel shall conform to Grade 50 Specifications (ASTM A792 designation) or have a minimum yield strength of 50,000 psi.

CERTIFICATION MARKING:

The finished material complying with all the specifications set forth in this section is eligible to bear the Markings shown in the Certification Marking Data Pages in the front of this Volume.

The following information will be included on all Metal Roof Deck Panel (TJPV) Certification Markings pertaining to products described in this Section:

1. Certification Marking Data for Metal Roof Deck Panels (TJPV):

METAL ROOF DECK PANEL
As To Uplift Resistance
Class 90
As Shown By Construction No. 90, 176, 180, 238, and 238A

2. Certification Marking Data for Roofing Systems (TGFU):

BUILDING UNITS FOR
ROOFING SYSTEMS
AS TO AN EXTERNAL FIRE EXPOSURE ONLY

3. Certification Marking Data for Roof-covering Materials, Impact Resistance (TGAM):

The following marking may also appear on each individual panel when the complete TGFU Certification Marking is provided on the package or bundle.

“Also Certified as to Impact Resistance; Class 4”

SEE UL ROOFING MATERIALS AND SYSTEMS DIRECTORY

MARKING INFORMATION:

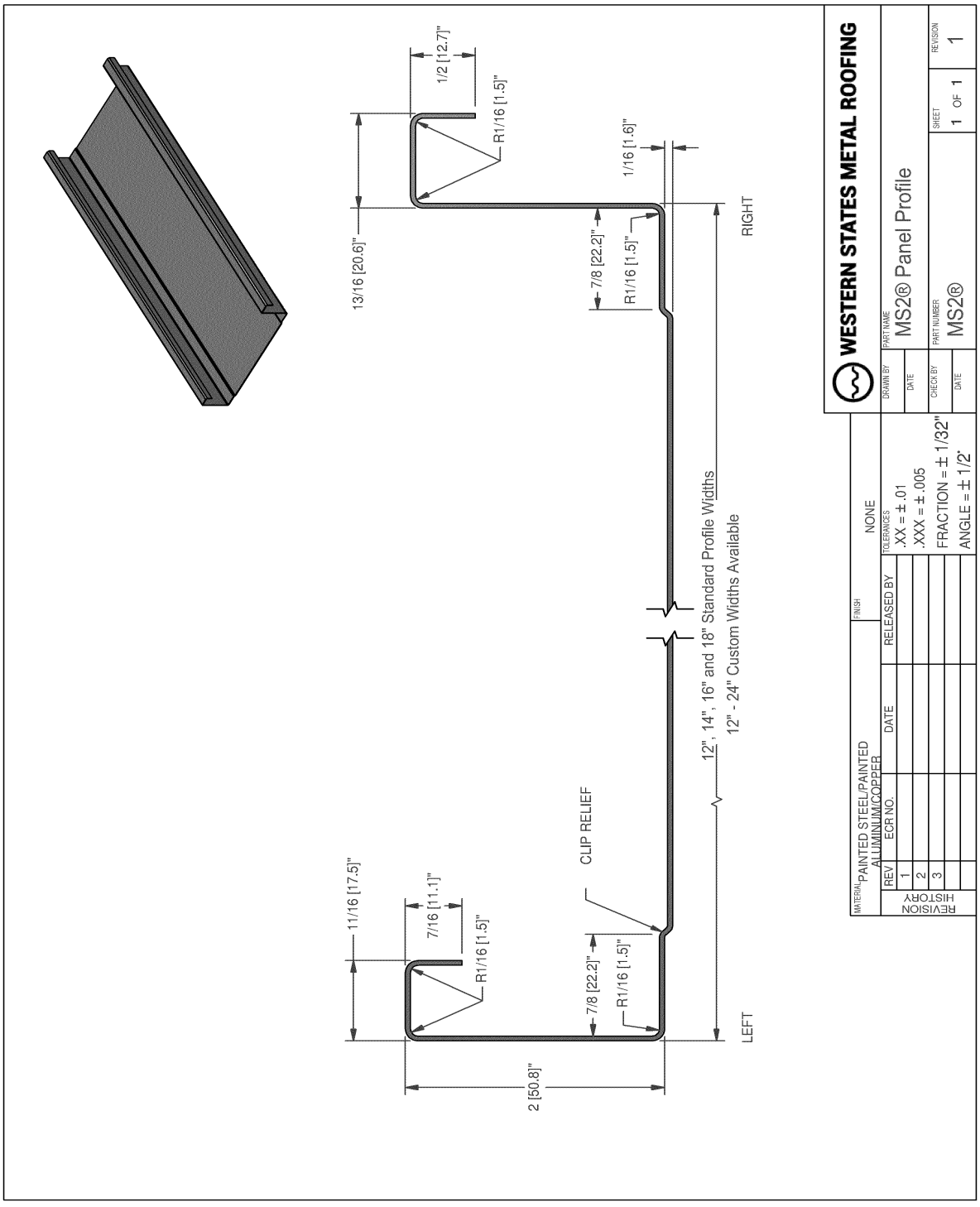
In addition, the following information will appear either on the product or package or on the Certification Marking:

Company's name or UL file number,

Product identification

and

Factory identification (if applicable).


1/2 [12.7]"
R1/16 [1.5]"
13/16 [20.6]"
1/16 [1.6]"
7/8 [22.2]"
R1/16 [1.5]"
RIGHT
12" , 14", 16" and 18" Standard Profile Widths
12" - 24" Custom Widths Available
CLIP RELIEF
11/16 [17.5]"
7/16 [11.1]"
R1/16 [1.5]"
7/8 [22.2]"
R1/16 [1.5]"
LEFT
2 [50.8]"
WESTERN STATES METAL ROOFING
MATERIAL PAINTED STEEL/PAINTED ALUMINUM/COPPER
FINISH NONE
REVISION HISTORY
REV ECR NO. DATE RELEASED BY
1
2
3
TOLERANCES
.XX = ± .01
.XXX = ± .005
FRACTION = ± 1/32"
ANGLE = ± 1/2'
DRAWN BY DATE
CHECK BY DATE
PART NAME MS2® Panel Profile
PART NUMBER MS2®
SHEET 1 OF 1
REVISION 1

DESCRIPTION

PRODUCT COVERED:

This section of the Procedure covers a roof panel which is identified as "Thin Lock®".

The panels are roll-formed from minimum No. 24 gauge coated steel to the configuration shown in ILL. 1. The panel may also have a paint finish over the coating.

The products are classified under Metal Roof Deck Panels (TJPV), Roof-Covering Materials - Impact Resistance (TGAM) and Roofing Systems (TGFU).

SPECIFICATIONS OF FINISHED PRODUCT:

THICKNESS

The base metal thickness of the steel used in the fabrication of the panel will be not less than 0.0239 in. (No. 24 MSG minimum gauge). This thickness will not include the coating or any paint finish.

DIMENSIONS

The cross-sectional dimensions of the panel or panel piece will be in accordance with the cross-section shown in ILL. 1. The maximum width of the panel will be 20 inches.

STRENGTH

The strength records of the manufacturer of the steel will be reviewed. The 24 MSG or thicker steel shall conform to Grade 50 Specifications (ASTM A792) or have a minimum yield strength of 50,000 psi.

CERTIFICATION MARKING:

The finished material complying with all the specifications set forth in this section is eligible to bear the Markings shown in the Certification Marking Data Pages in the front of this Volume.

The following information will be included on all Metal Roof Deck Panel (TJPV) Certification Markings pertaining to products described in this Section:

1. Certification Marking Data for Metal Roof Deck Panels (TJPV):

METAL ROOF DECK PANEL
As To Uplift Resistance
Class 90
As Shown By Construction No. 370

2. Certification Marking Data for Roofing Systems (TGFU):

BUILDING UNITS FOR
ROOFING SYSTEMS
AS TO AN EXTERNAL FIRE EXPOSURE ONLY

3. Certification Marking Data for Roof-covering Materials, Impact Resistance (TGAM):

The following marking may also appear on each individual panel when the complete TGFU Certification Marking is provided on the package or bundle.

"Also Certified as to Impact Resistance; Class 4"

SEE UL ROOFING MATERIALS AND SYSTEMS DIRECTORY

MARKING INFORMATION:

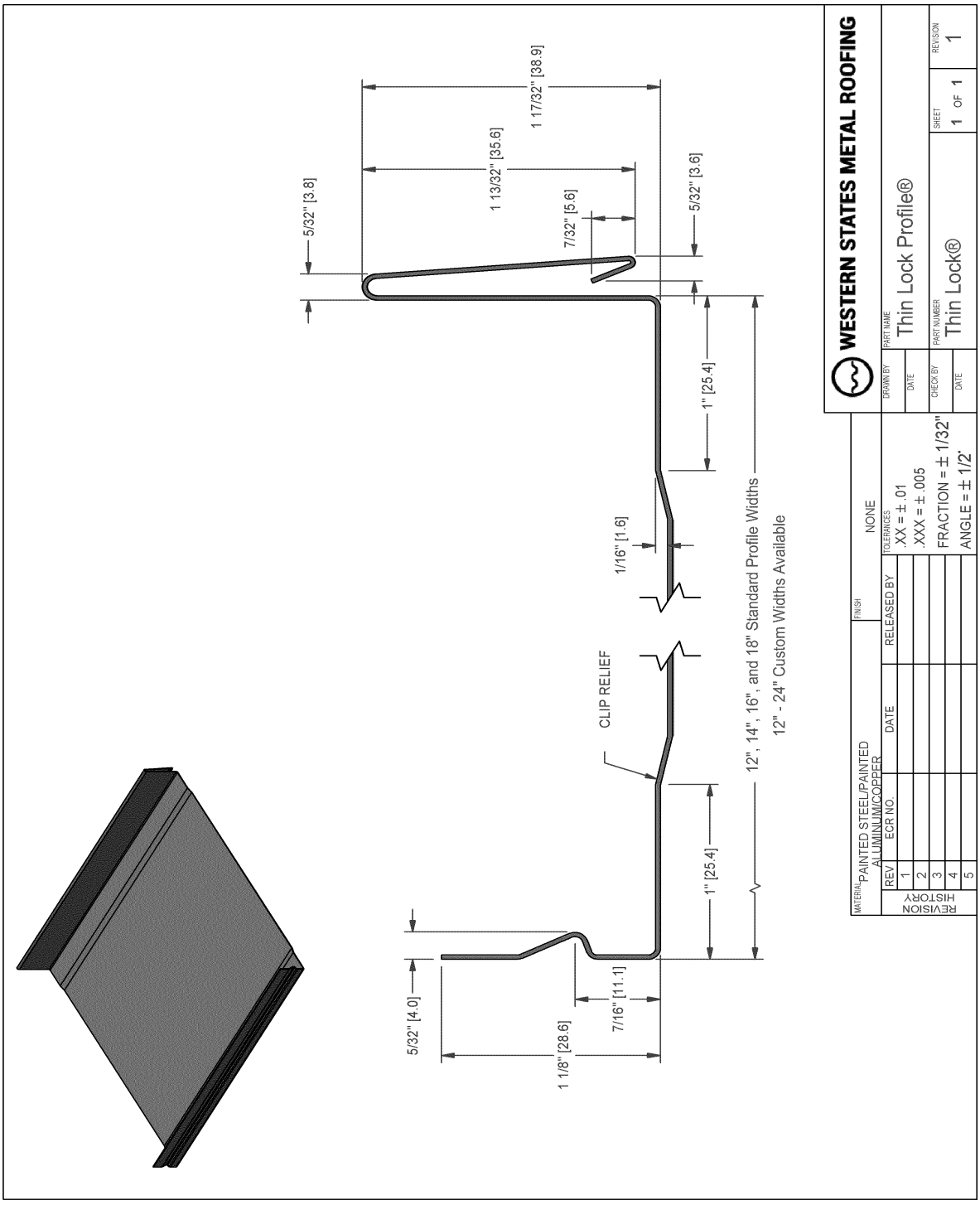
In addition, the following information will appear either on the product or package or on the Certification Marking:

Company's name or UL file number,

Product identification

and

Factory identification (if applicable).


5/32" [3.8]
1 17/32" [38.9]
1 13/32" [35.6]
7/32" [5.6]
5/32" [3.6]
1" [25.4]
1/16" [1.6]
CLIP RELIEF
12", 14", 16", and 18" Standard Profile Widths
12" - 24" Custom Widths Available
1" [25.4]
5/32" [4.0]
7/16" [11.1]
1 1/8" [28.6]
WESTERN STATES METAL ROOFING
MATERIAL PAINTED STEEL/PAINTED ALUMINUM/COPPER
FINISH NONE
REVISION HISTORY
REV ECR NO. DATE RELEASED BY
1
2
3
4
5
TOLERANCES
.XX = ± .01
.XXX = ± .005
FRACTION = ± 1/32"
ANGLE = ± 1/2°
DRAWN BY DATE
CHECK BY DATE
PART NAME Thin Lock Profile®
PART NUMBER Thin Lock®
SHEET 1 OF 1
REVISION 1

DESCRIPTION

PRODUCT COVERED:

This section of the Procedure covers a roof panel which is identified as "Western Lock®".

The panels are roll-formed from minimum No. 24 gauge coated steel or minimum 0.032 in. thick aluminum to the configuration shown in ILL. 1. The panel may also have a paint finish over the coating.

The products are classified under Metal Roof Deck Panels (TJPV), Roof-Covering Materials - Impact Resistance (TGAM) and Roofing Systems (TGFU).

SPECIFICATIONS OF FINISHED PRODUCT:

THICKNESS

The base metal thickness of the steel used in the fabrication of the panel will be not less than 0.0239 in. (No. 24 MSG minimum gauge). This thickness will not include the coating or any paint finish.

The base metal thickness of the aluminum will not be less than 0.032 in. This thickness will not include any coating or paint finish.

DIMENSIONS

The cross-sectional dimensions of the panel or panel piece will be in accordance with the cross-section shown in ILL. 1. The maximum width of the panel will be 18 inches.

STRENGTH

The strength records of the manufacturer of the steel will be reviewed. The 24 MSG and thicker steel shall conform to Grade 50 Specifications (ASTM A792 designation) or have a minimum yield strength of 50,000 psi.

CERTIFICATION MARKING:

The finished material complying with all the specifications set forth in this section is eligible to bear the Markings shown in the Certification Marking Data Pages in the front of this Volume.

The following information will be included on all Metal Roof Deck Panel (TJPV) Certification Markings pertaining to products described in this Section:

1. Certification Marking Data for Metal Roof Deck Panels (TJPV):

METAL ROOF DECK PANEL
As To Uplift Resistance
Class 90
As Shown By Construction No. 261, 508, 508A

2. Certification Marking Data for Roofing Systems (TGFU):

BUILDING UNITS FOR
ROOFING SYSTEMS
AS TO AN EXTERNAL FIRE EXPOSURE ONLY

3. Certification Marking Data for Roof-covering Materials, Impact Resistance (TGAM):

The following marking may also appear on each individual panel when the complete TGFU Certification Marking is provided on the package or bundle.

“Also Certified as to Impact Resistance; Class 4”

SEE UL ROOFING MATERIALS AND SYSTEMS DIRECTORY

MARKING INFORMATION:

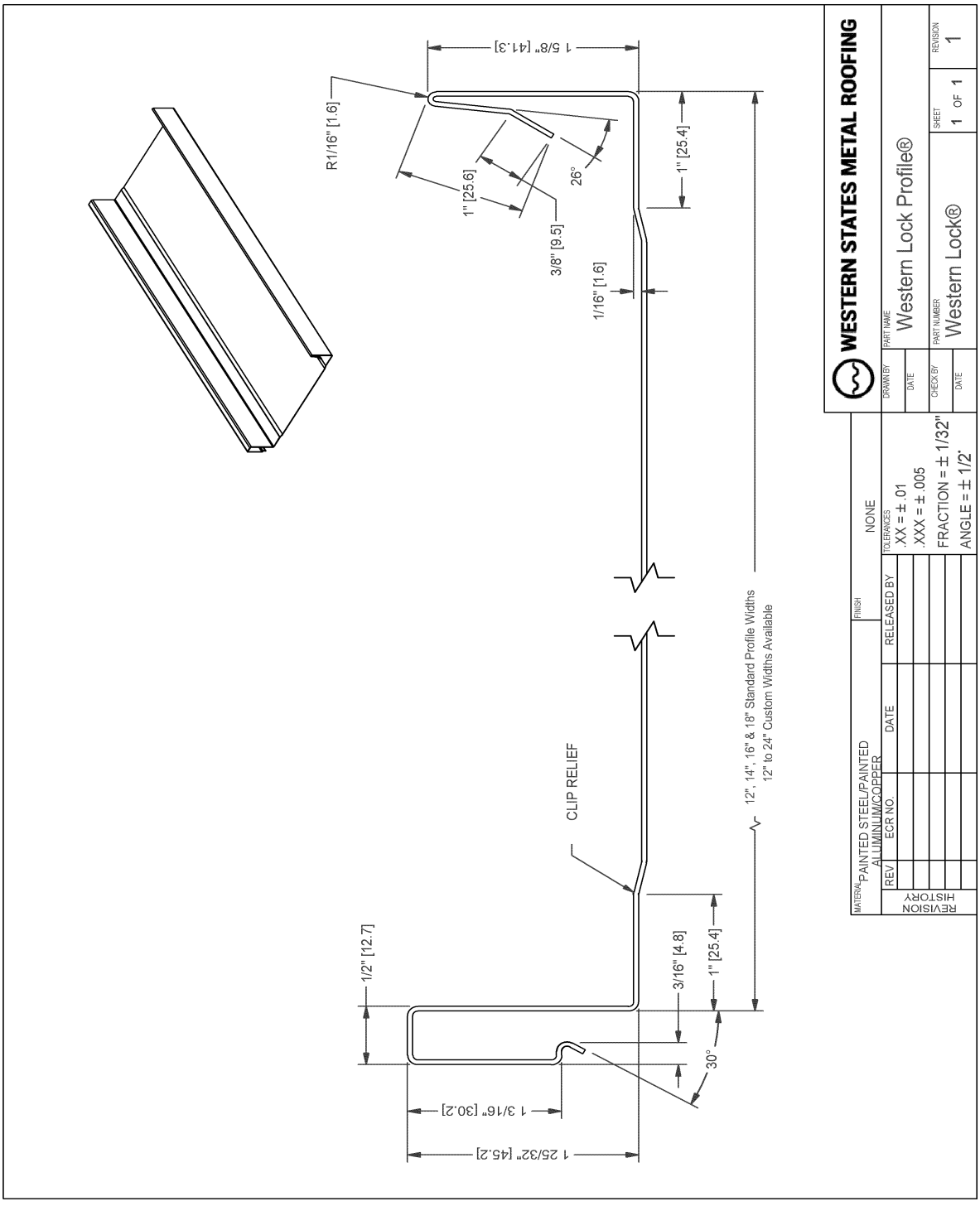
In addition, the following information will appear either on the product or package or on the Certification Marking:

Company's name or UL file number,

Product identification

and

Factory identification (if applicable).


1 5/8" [41.3]
R1/16" [1.6]
1" [25.6]
26°
3/8" [9.5]
1" [25.4]
1/16" [1.6]
CLIP RELIEF
12", 14", 16" & 18" Standard Profile Widths
12" to 24" Custom Widths Available
1/2" [12.7]
3/16" [4.8]
1" [25.4]
30°
1 3/16" [30.2]
1 25/32" [45.2]
WESTERN STATES METAL ROOFING
PART NAME Western Lock Profile®
PART NUMBER Western Lock®
SHEET 1 OF 1
REVISION 1
DRAWN BY
DATE
CHECK BY
DATE
MATERIAL PAINTED STEEL/PAINTED ALUMINUM/COPPER
FINISH NONE
REVISION HISTORY
REV ECR NO. DATE RELEASED BY
TOLERANCES .XX = ± .01 .XXX = ± .005 FRACTION = ± 1/32" ANGLE = ± 1/2°

DESCRIPTION

PRODUCT COVERED:

This section of the Procedure covers a roof panel which is identified as "Western Seam®".

The panels are roll-formed from minimum No. 29 gauge coated steel to the configuration shown in ILL. 1. The panel may also have a paint finish over the coating.

The products are classified under Metal Roof Deck Panels (TJPV), Roof-Covering Materials - Impact Resistance (TGAM) and Roofing Systems (TGFU).

SPECIFICATIONS OF FINISHED PRODUCT:

THICKNESS

The base metal thickness of the steel used in the fabrication of the panel will be not less than 0.0128 in. (No. 29 MSG minimum gauge). This thickness will not include the coating or any paint finish.

DIMENSIONS

The cross-sectional dimensions of the panel or panel piece will be in accordance with the cross-section shown in ILL. 1. The maximum width of the panel will be 24 inches.

STRENGTH

The strength records of the manufacturer of the steel will be reviewed. The 29 MSG steel will conform to Grade 80 Specifications (ASTM A653 designation) or the minimum yield point will be 80,000 psi. The 24 MSG and thicker steel shall conform to Grade 50 Specifications (ASTM A653 designation) or have a minimum yield strength of 50,000 psi.

CERTIFICATION MARKING:

The finished material complying with all the specifications set forth in this section is eligible to bear the Markings shown in the Certification Marking Data Pages in the front of this Volume.

The following information will be included on all Metal Roof Deck Panel (TJPV) Certification Markings pertaining to products described in this Section:

1. Certification Marking Data for Metal Roof Deck Panels (TJPV):

METAL ROOF DECK PANEL
As To Uplift Resistance
Class 90
As Shown By Construction No. 529

2. Certification Marking Data for Roofing Systems (TGFU):

BUILDING UNITS FOR
ROOFING SYSTEMS
AS TO AN EXTERNAL FIRE EXPOSURE ONLY

3. Certification Marking Data for Roof-covering Materials, Impact Resistance (TGAM):

The following marking may also appear on each individual panel when the complete TGFU Certification Marking is provided on the package or bundle.

“Also Certified as to Impact Resistance; Class 4”

SEE UL ROOFING MATERIALS AND SYSTEMS DIRECTORY

MARKING INFORMATION:

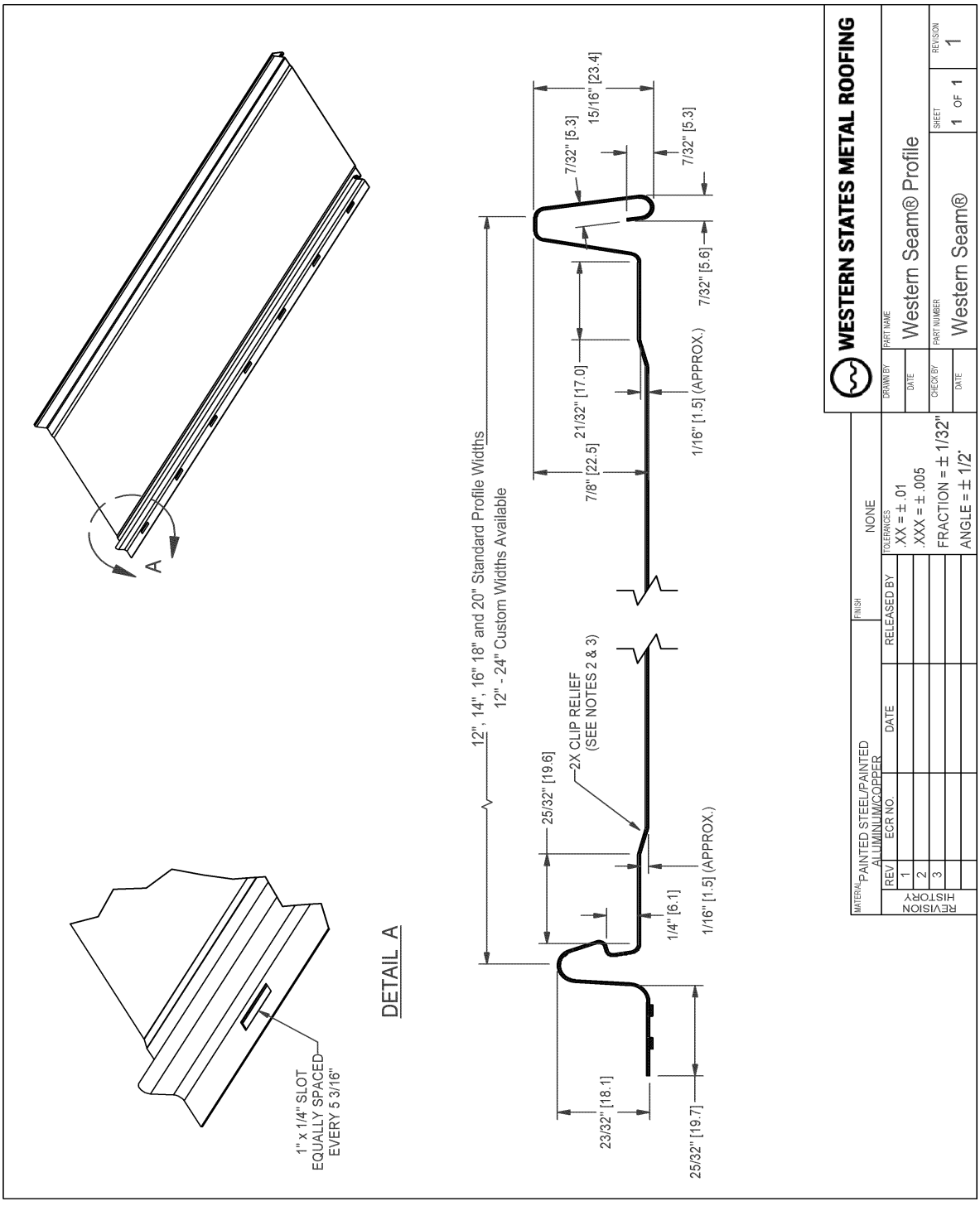
In addition, the following information will appear either on the product or package or on the Certification Marking:

Company's name or UL file number,

Product identification

and

Factory identification (if applicable).


A
1" x 1/4" SLOT
EQUALLY SPACED
EVERY 5 3/16"
DETAIL A
12", 14", 16" 18" and 20" Standard Profile Widths
12" - 24" Custom Widths Available
2X CLIP RELIEF
(SEE NOTES 2 & 3)
25/32" [19.6]
1/4" [6.1]
1/16" [1.5] (APPROX.)
23/32" [18.1]
25/32" [19.7]
7/8" [22.5]
21/32" [17.0]
7/32" [5.3]
15/16" [23.4]
7/32" [5.3]
7/32" [5.6]
1/16" [1.5] (APPROX.)
MATERIAL PAINTED STEEL/PAINTED ALUMINUM/COPPER
FINISH NONE
REVISION HISTORY
REV ECR NO. DATE RELEASED BY
1
2
3
TOLERANCES
.XX = ± .01
.XXX = ± .005
FRACTION = ± 1/32"
ANGLE = ± 1/2°
WESTERN STATES METAL ROOFING
DRAWN BY DATE
CHECK BY DATE
PART NAME Western Seam® Profile
PART NUMBER Western Seam®
SHEET 1 OF 1
REVISION 1

DESCRIPTION

PRODUCT COVERED:

* The product covered by this Report are metal roof deck panels designated “7/8” Corrugated”, “Western Rib”, **“Western R-Panel”, “MS2®”, “Thin Lock®”, “Western Lock®”, and “Western Seam®”.**

The products in this Report are Certified as to uplift resistance, external fire exposure and impact resistance.

USE:

The products are intended for use as building materials as permitted by authorities having jurisdiction.

TEST RECORD NO. 2

GENERAL:

Results relate only to the items evaluated.

INVESTIGATION:

The scope of the investigation sponsored under Project 4789493641 was to establish Follow Up Service and Certification of four new metal roof deck panels, designated "MS2®", "Thin Lock®", "Western Lock®", and "Western Seam®". These panels were under investigation for Certification under the product categories Metal Roof Deck Panels (TJPV), Roofing Systems (TGFU), and Roof-covering Materials, Impact Resistance (TGAM).

STUDY FOR CERTIFICATION:

ANSI/UL 580 wind uplift, ANSI/UL 790 fire, and UL 2218A testing was not considered necessary based on the profile design and strength characteristics of the panels in combination with UL's general wind uplift, fire, and impact test experience and a review of UL's Online Product iQ™ Database for the Certifications published for Constructions 90, 176, 180, 238, 238A, 261, 370, 508, 508A, and 529 under the product category Metal Roof Deck Panels (TJPV).

CERTIFICATION:

The following represents the judgment of UL based on the results of the examination and data analysis presented in this Test Record, as they relate to established principles and previously recorded data.

Under the Follow Up Service program of UL, the manufacturer is authorized to continue to apply UL's Certification Mark on such products that comply with the Follow Up Service Procedure and any other applicable requirements of UL. Only those products that properly bear UL's Certification Mark are considered to be Certified by UL.

Revisions to the listing published for Western States Metal Roofing under the product category Metal Roof Deck Panels (TJPV) were made as indicated below (revisions in italics):

Metal Roof Deck Panels

Coated steel panels, identified as "MS2®" for use in Construction Nos. 90, 176, 180, 238, 238A

Coated steel panels identified as "Thin Lock®" for use in Construction No. 370

Coated steel panels identified as "Western Lock®" for use in Construction Nos. 261, 508, 508A

Coated steel panels, identified as "Western Seam®" for use in Construction No. 529

Revisions to the listing published for Western States Metal Roofing under the product category Roofing Systems (TGFU) were made as indicated below (revisions in italics):

Roofing Systems

OTHER SYSTEMS

CLASS A

1. Deck: C-15/32		Incline: Unlimited	Impact: Class 4

Barrier Board: — 1/4 in. min. G-P Gypsum DensDeck®, United States Gypsum Co, SECUROCK® Glass-Mat Roof Board (Type SGMRX), National Gypsum "DEXcell Glass Mat Roof Board" or "DEXcell FV glass Mat Roof Board", mechanically fastened with all joints staggered a min of 6 in. from the plywood joints.
Ply Sheet (Optional): — Any UL Classified Type G1, G2 or G3 base/ply sheet; Type 15, 20 or 30 felt; or UL Classified prepared roofing accessory.
Surfacing: — "7/8" Corrugated", "Western Rib", "Western R-Panel" , *"MS2®", "Thin Lock®", "Western Lock®", or "Western Seam®"* coated steel roofing panels, mechanically fastened.

2. Deck: NC	Incline: Unlimited	Impact: Class 4

Barrier Board (Optional): — 1/4 in. min. G-P Gypsum DensDeck®, United States Gypsum Co, SECUROCK® Glass-Mat Roof Board (Type SGMRX), National Gypsum "DEXcell Glass Mat Roof Board" or "DEXcell FV glass Mat Roof Board".
Ply Sheet (Optional): — Any UL Classified Type G1, G2 or G3 base/ply sheet; Type 15, 20 or 30 felt; or UL Classified prepared roofing accessory.
Surfacing: — "7/8" Corrugated", "Western Rib", "Western R-Panel", *"MS2®", "Thin Lock®", "Western Lock®", or "Western Seam®"* coated steel roofing panels, mechanically fastened.

3. Deck: NC	Incline: Unlimited	Impact: Class 4

Barrier Board: — 7/16 OBS or 5/8 in. plywood over UL Classified polyisocyanurate insulation board or UL Classified polyisocyanurate composite board, any thickness.
Ply Sheet (Optional): — Any UL Classified Type G1, G2 or G3 base/ply sheet; Type 15, 20 or 30 felt; or UL Classified prepared roofing accessory.
Surfacing: — "7/8" Corrugated", "Western Rib", "Western R-Panel", *"MS2®", "Thin Lock®", "Western Lock®", or "Western Seam®"* coated steel roofing panels, mechanically fastened.

4. Deck: NC	Incline: Unlimited	Impact: Class 4

Barrier Board: — UL Classified polyisocyanurate, glass fiber, perlite or wood fiber, any thickness.
Ply Sheet (Optional): — Any UL Classified Type G1, G2 or G3 base/ply sheet; Type 15, 20 or 30 felt; or UL Classified prepared roofing accessory.
Surfacing: — "7/8" Corrugated", "Western Rib", "Western R-Panel", *"MS2®", "Thin Lock®", "Western Lock®", or "Western Seam®"* coated steel roofing panels, mechanically fastened.

5. Deck: NC	Incline: Unlimited	Impact: Class 4

Surfacing: — "7/8" Corrugated", "Western Rib", "Western R-Panel", *"MS2®", "Thin Lock®", "Western Lock®", or "Western Seam®"* coated steel roofing panels, mechanically fastened.

6. Deck: C-15/32	Incline: Unlimited	Impact: Class 4

Underlayment: — One or more plies GAF "VersaShield® Fire-Resistant Roof Deck Protection" or GAF "VersaShield® Solo™ Fire Resistant Slip Sheet", mechanically fastened.
Ply Sheet: — One layer Type 30 base sheet or GAF "VersaShield", mechanically fastened.
Surfacing: — "7/8" Corrugated", "Western Rib", "Western R-Panel", *"MS2®", "Thin Lock®", "Western Lock®", or "Western Seam®"* coated steel roofing panels, mechanically fastened.

7. Deck: C-15/32	Incline: Unlimited	Impact: Class 4

Underlayment: — One or more plies GAF "VersaShield® Fire-Resistant Roof Deck Protection" or GAF "VersaShield® Solo™ Fire Resistant Slip Sheet", mechanically fastened.
Surfacing: — "7/8" Corrugated", "Western Rib", "Western R-Panel", *"MS2®", "Thin Lock®", "Western Lock®", or "Western Seam®"* coated steel roofing panels, mechanically fastened.

Revisions to the listing published for Western States Metal Roofing under the product category Roofing Systems, Impact Resistance (TGAM) were made as indicated below (revisions in italics):

Roof-covering Materials, Impact Resistance

Class 4 formed coated steel panels, Model(s) 7/8" Corrugated (*Report Date: 2019-11-26*), Western Rib (*Report Date: 2019-11-26*), and Western R-Panel (*Report Date: 2019-11-26*) "MS2®" (Report Date: 2019-11-28), "Thin Lock®" (Report Date: 2019-11-28), "Western Lock®" (Report Date: 2019-11-28), or "Western Seam®" (Report Date: 2019-11-28)

CERTIFICATION MARKING:

US CERTIFICATION (TJPV):

The Certification Marking to be used with the product designated "MS2®" is described below:

CLASSIFIED UL	METAL ROOF DECK PANELS AS TO UPLIFT RESISTANCE CLASS 90 AS SHOWN BY CONSTRUCTION NOS. 90, 176, 180, 238, and 238A

The Certification Marking to be used with the product designated "Thin Lock®" is described below:

	METAL ROOF DECK PANELS AS TO UPLIFT RESISTANCE CLASS 90 AS SHOWN BY CONSTRUCTION NO. 370

The Certification Marking to be used with the product designated "Western Lock®" is described below:

	METAL ROOF DECK PANELS AS TO UPLIFT RESISTANCE CLASS 90 AS SHOWN BY CONSTRUCTION NOS. 261, 508, and 508A

The Certification Marking to be used with the product designated "Western Seam®" is described below:

	METAL ROOF DECK PANELS AS TO UPLIFT RESISTANCE CLASS 90 AS SHOWN BY CONSTRUCTION NO. 529

US CERTIFICATION (TGFU):

The Certification Marking for the Roofing Systems (TGFU) category to be used on the products designated "MS2®", "Thin Lock®", "Western Lock®", and "Western Seam®" is illustrated below:

BUILDING UNITS
FOR ROOFING SYSTEMS
AS TO EXTERNAL FIRE EXPOSURE

The Certification Marking for the Roof-covering Materials, Impact Resistance (TGAM) category to be used on the products designated "MS2®", "Thin Lock®", "Western Lock®", and "Western Seam®" is illustrated below:

"Also Certified as to Impact Resistance: Class 4"

TEST RECORD SUMMARY:

The results of this investigation, including construction review, indicate that the products evaluated comply with the applicable requirements of the standards listed below, and, therefore, the products are judged eligible to bear UL's Mark as described in the conclusion page of this report.

Any information and documentation provided to you involving UL Mark services are provided on behalf of UL LLC or any authorized licensee of UL.

Standard	Title	Edition or Publication Date	Latest Revision Date
ANSI/UL 580	Standard for Tests for Uplift Resistance of Roof Assemblies	5th	29 March 2019
ANSI/UL 790	Standard Test Methods or Fire Tests of Roof Coverings	8th	19 October 2018
UL 2218A	Standard for Impact Resistance of Roofing Systems	1st	2 August 2019

TEST RECORD by:

TIMOTHY PAWLICKI
Engineer
Building Materials & Systems

Reviewed by:

ALPESH PATEL
Staff Engineer
Building Materials & Systems