

**Force Engineering & Testing, Inc.**

19530 Ramblewood Drive  
Humble, Texas 77338  
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www.forceengineeringtesting.com

Project Number : 410-0277T-10

Test Report Date : August 23, 2010

Test Material : 26 Ga. R-LOC 36" Wide

Test Specification: FM 4471 Section 5.4 Foot Traffic Resistance 1995

Test Location : Force Engineering & Testing, Inc.  
19530 Ramblewood  
Humble, TX 77338

## **Foot Traffic Resistance Test**

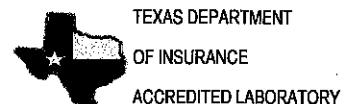
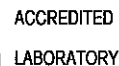
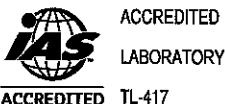
*200 lbs. on 3" X 3" Area*

Report by:

Brandon Jasek, P.E.

Reviewed by:

Terrence E. Wolfe P.E.



Project Number: 410-0277T-10

**PURPOSE:**

The purpose of this test is to evaluate the structural performance of the metal panel when a concentrated load is placed on the panel at mid span.

**TEST DATE:**

August 18, 2010

**TEST SPECIMEN:**

Manufacturer: Central States Manufacturing, Inc.  
302 Jane Place  
Lowell, AR 72745

Roof Panel: R-LOC Panel w/ the purlin bearing leg, 26 Ga., 36" wide, 1-1/4" tall major rib at 12" O.C.

Panel Properties:  $F_y = 97.6$  ksi, 0.018" thickness per Tensile Test (See Appendix)

Panel Rollformer: Bradbury Rollformer

Panel Fastener: #12-14 x 1-1/4" HWH w/ washer at 12"-12"-12" pattern,  
1/4-14 x 7/8" lap fastener in side lap at 20" O.C.

Fastener Spacing: 5'-0" O.C.

Panel Span: 3 at 5'-0"

Panel Laps: (2) side laps, no end laps

Panel Length: 15'-6"

Concentrated Load: 200 lbs. on a 3"x 3" area

**TESTING APPARATUS:**

Mounting Frame: 16 Ga. purlins spaced @ 5'-0" O.C.

Deflection Indicators: Aluminum ruler calibrated to 1/64".

Loading Device: 5 Ton Hydraulic Ram w/ Load Cell.

**PROCEDURE:**

1. Three panels were attached to purlins with fasteners @ 5'-0" O.C.
2. The woodblocking was placed @ midspan in the pan of one panel and a aluminum ruler was attached to the panel to obtain deflection readings. A zero reading was taken.

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3. The hydraulic ram was pushed against the panel to obtain a load of 200 lbs. This was repeated (4) times for a total of (5) times.
4. Deflection reading were taken before any load was placed on panel, with 200 lbs, and then after the weight was taken off.

**RESULTS/CONCLUSIONS:**

**Test #1**

Test Load	Load Area	Load Location	DEFLECTION READINGS			TEST DEFLECTIO N	PERMANENT DEFLECTIO N
			Zero	Test Load	Zero		
200 lbs	3"x3" square	Mid Span of panel	2.500 0	3.1875	2.5000	0.6875	0.000

**Test #2**

Test Load	Load Area	Load Location	DEFLECTION READINGS			TEST DEFLECTIO N	PERMANENT DEFLECTIO N
			Zero	Test Load	Zero		
200 lbs	3"x3" square	Mid Span of panel	2.500 0	3.1875	2.5000	0.6875	0.000

**Test #3**

Test Load	Load Area	Load Location	DEFLECTION READINGS			TEST DEFLECTIO N	PERMANENT DEFLECTIO N
			Zero	Test Load	Zero		
200 lbs	3"x3" square	Mid Span of panel	2.500 0	3.1875	2.5000	0.6875	0.000

**Test #4**

Test Load	Load Area	Load Location	DEFLECTION READINGS			TEST DEFLECTIO N	PERMANENT DEFLECTIO N
			Zero	Test Load	Zero		
200 lbs	3"x3" square	Mid Span of panel	2.500 0	3.1250	2.5000	0.6250	0.000

**Test #5**

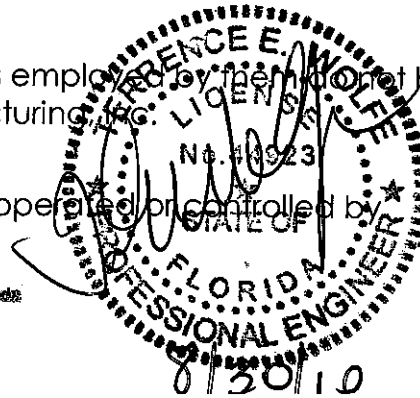
Test Load	Load Area	Load Location	DEFLECTION READINGS			TEST DEFLECTIO N	PERMANENT DEFLECTIO N
			Zero	Test Load	Zero		
200 lbs	3"x3" square	Mid Span of panel	2.500 0	3.1875	2.5000	0.6875	0.000

The maximum deflection of the panel at mid span was 0.6875". The panels were inspected during and after the test and no failures were found.

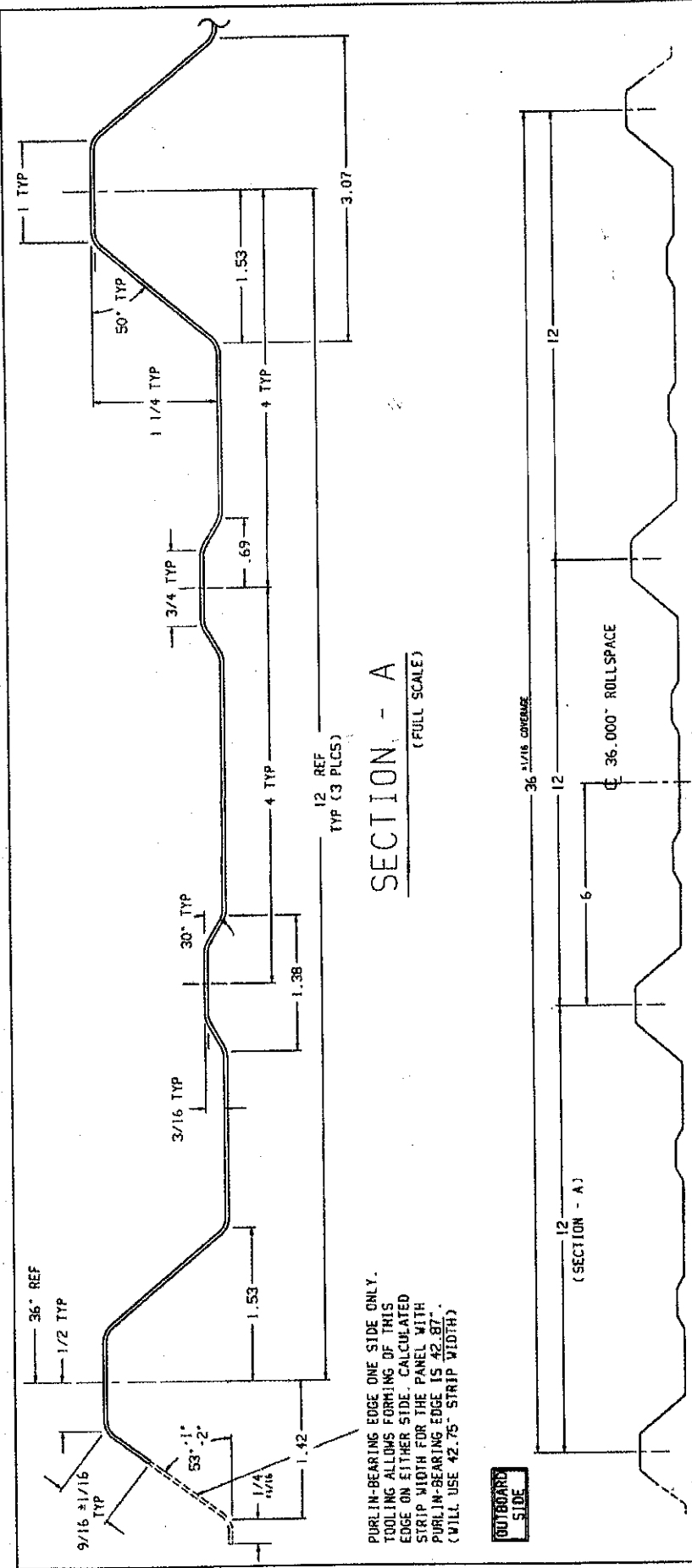
**STATEMENT OF INDEPENDENCE:**

Force Engineering & Testing, Inc. or any persons employed by them do not have any financial interest in Central States Manufacturing, Inc.

Force Engineering & Testing, Inc. is not owned, operated or controlled by Central States Manufacturing, Inc.



## Appendix



**SECTION - A**  
(FULL SCALE)

**"R" PANEL**  
(3/8 SCALE)

PURLIN-BEARING EDGE ONE SIDE ONLY. TOOLING ALLOWS FORMING OF THIS EDGE ON EITHER SIDE. CALCULATED STRIP WIDTH FOR THE PANEL WITH PURLIN-BEARING EDGE IS 42.87" (WILL USE 42.75" STRIP WIDTH)

**OUTBOARD SIDE**

**NOTES:**

1. ALL INSIDE BEND RADI ARE .172"
2. MATERIAL: 29-22 GA. GALV. & PAINTED STL (.035 MAX. J).
3. GRADES "D" AND "E" (50 KSI AND 80 KSI MINIMUM YIELDS).
4. CALCULATED STRIP WIDTH - 41.64 (WILL USE 41.56 STRIP WIDTH).
5. MAJOR AND MINOR RIB HEIGHT TOLERANCE: ±1/32".
6. COVERAGE TOLERANCE END TO END: ±1/16".

REV.	DATE	BY	CHKD.	APP'D.
1	12-10-98	A. HOOK		
THE BRADBURY CO., INC. BRADBURY, MISSOURI TITLE: "R" PANEL CROSS SECTION SHEET: 3 OF 3 PROJECT: BCO-2791 M.O. - SHRITZ CUSTOMER - HIRSCHFELD STEEL CO., INC.				



# METALLURGICAL ENGINEERING SERVICES, INC.

Consulting • Failure Analysis • Laboratory Testing

August 26, 2010

REPORT OF: Tensile Testing

REPORT TO: Force Engineering & Testing, Inc.  
Mr. Brandon Jasek  
19530 Ramblewood Drive  
Humble, Texas 77338

DATE APPROVED: August 25, 2010

IDENTIFICATION: 1 ea. Metal Roof Panel identified as:  
2) Job #410-0277T-10; 26 ga. PBR Central State Mfg. Inc.

PROCEDURES: Tensile testing was performed per ASTM A 370-09a1 on the metal panel using a Satec Systems Model Apex 22EMF, S/N: 1017, calibration due 6/14/11. The temperature at the time of testing was 76°F, with relative humidity at 48%.


RESULTS: *Tensile Tests* - 0.2% Offset Yield; 2" Gage Length

ID	Dimensions, Inches			Ultimate Strength		Yield Strength		Elong. %
	Width	Thickness	Area, In <sup>2</sup>	Load, Lbs	PSI	Load, Lbs	PSI	
2	0.4990	0.0180	0.0090	887	98,600	879	97,600	1.4

*These results are based on the tests performed and are subject to change upon the receipt of new or additional information.*

Respectfully submitted,

METALLURGICAL ENGINEERING SERVICES, INC.  
Firm Registration No. F-2674

  
Daniel A. Stolk, P.E.  
President

  
Karen Goldstein  
Q.A. Manager

P.O. No. 410-0277T-10

NOTE: Any interpretations and/or opinions made in our reports are not subject to the accreditation.

Lab No. 25244-2, Rev.1 (8/27/10)

Page 1 of 1 NOTE: Submitted material will be retained for 30 days unless otherwise notified in writing. Our letters and reports are for the exclusive use of the client to whom they are addressed. The use of our name must receive our prior written approval. Our letters and reports apply to the sample tested and/or inspected, and are not necessarily indicative of the qualities of apparently identical or similar materials.

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