



## Farabaugh Engineering and Testing Inc.

Project No. T232-15

Report Date: July 24, 2015

Total Pages (inclusive): 13

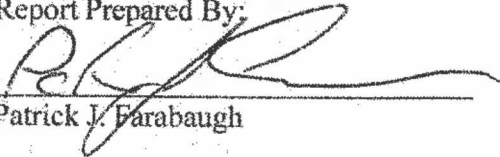
**ASTM E1592**  
**STANDARD TEST METHOD FOR**  
**STRUCTURAL PERFORMANCE OF SHEET METAL ROOF AND SIDING**  
**SYSTEMS BY UNIFORM STATIC AIR PRESSURE DIFFERENCE**

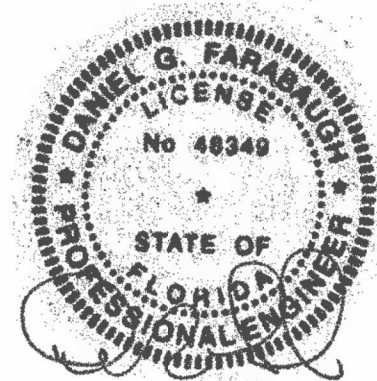
**GEORGIA RIB ROOF PANEL**  
**36" WIDE X 29 GA**

FOR

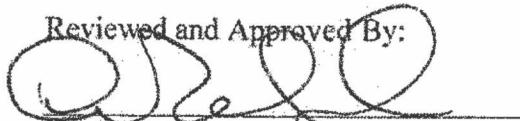
GEORGIA METALS, INC.  
60 INDUSTRIAL BLVD.  
NAHUNTA, GA 31553

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Project No. T232-15

**ASTM E1592-05**  
**STANDARD TEST METHOD FOR**  
**STRUCTURAL PERFORMANCE OF SHEET METAL ROOF AND SIDING**  
**SYSTEMS BY UNIFORM STATIC AIR PRESSURE DIFFERENCE**

**Purpose**

This test method covers the evaluation of the structural performance of Sheet Metal Panels and Anchor to Panel Attachments for roof or siding systems under uniform static air pressure difference.

**Test Date**

7/22/15.

**Test Specimen**

*Manufacturer.* Georgia Metals, Inc.  
60 Industrial Blvd.  
Nahunta, GA 31553

*Panel:* Georgia Rib Roof Panel, 36" wide, 29 ga. galv. steel

*Panel to Support Fastener:* #12-14 X 1" Self Drill Hex Head Fastener  
with 5/8" dia. Steel Seal Washer

**Testing Apparatus**

A vacuum test chamber was used with two static pressure taps located at diagonally opposite corners. A controlled blower provided a vacuum to uniformly load the specimen mock-up. Calibrated manometers were used to measure the pressure at each pressure tap. The uniform load pressure was performed in the negative direction to monitor wind uplift on the panel specimen mock-up. Calibrated deflectometers were attached to monitor panel deformation as shown.

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### **Installation**

- The panels were installed on to 16 ga supports using #12-14 X 1" hex head self drill fasteners with 5/8" steel seal washer located as shown on the attached drawings.
- Plastic (4 mil thick) was employed loosely between the panels and subgirts and in the side joints to create a vacuum seal.

### **Procedure**

- The specimen was checked for proper adjustment and all vents closed in the pressure measuring lines.
- The required deflection measuring apparatus' were installed at their specified locations.
- A nominal initial pressure was applied equal to at least four times but not more than ten times the dead weight of the specimen. This nominal pressure was used as the reference zero and initial deflection readings were recorded.
- At each load increment, pressure was maintained for a period of not less than 60 seconds and until the deflection gages indicated no further increase in deflections.
- Successive increments were achieved as above until failure or ultimate load was reached.

The test was conducted according to the procedure in ASTM E-1592-05 and as noted herein. In our opinion the tape and plastic had no influence on the results of the test.

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## TEST #1

Specimen: Georgia Rib Roof Panel 36" wide, 29 ga. steel

Support Spacing: 2'-0" o/c

### NEGATIVE (UPLIFT) TEST PRESSURE

| LOAD (PSF) | DEFLECTION DIAL READINGS (INCHES) |       |       |       |       |       |       |       | REMARKS   |
|------------|-----------------------------------|-------|-------|-------|-------|-------|-------|-------|-----------|
|            | D-1                               | D-2   | D-3   | D-4   | D-5   | D-6   | D-7   | D-8   |           |
| 0.6        | 0                                 | 0     | 0     | 0     | 0     | 0     | 0     | 0     | PANEL WT. |
| 16.2       | 0.032                             | 0.066 | 0.025 | 0.043 | 0.033 | 0.028 | 0.023 | 0.042 |           |
| 0.6        | 0.002                             | 0.003 | 0.001 | 0.001 | 0.013 | 0.01  | 0.001 | 0.001 | PANEL WT. |
| 26.7       | 0.054                             | 0.103 | 0.044 | 0.077 | 0.075 | 0.051 | 0.04  | 0.067 |           |
| 0.6        | 0.008                             | 0.009 | 0.005 | 0.005 | 0.064 | 0.026 | 0.004 | 0.003 | PANEL WT. |
| 37.1       | 0.075                             | 0.138 | 0.063 | 0.107 | 0.11  | 0.074 | 0.056 | 0.087 |           |
| 0.6        | 0.01                              | 0.012 | 0.007 | 0.006 | 0.086 | 0.031 | 0.006 | 0.005 | PANEL WT. |
| 47.5       | 0.098                             | 0.171 | 0.081 | 0.132 | 0.125 | 0.094 | 0.072 | 0.104 |           |
| 0.6        | 0.012                             | 0.014 | 0.009 | 0.008 | 0.096 | 0.041 | 0.007 | 0.006 | PANEL WT. |
| 57.9       | 0.119                             | 0.203 | 0.099 | 0.16  | 0.158 | 0.115 | 0.089 | 0.125 |           |
| 0.6        | 0.015                             | 0.018 | 0.012 | 0.01  | 0.105 | 0.05  | 0.01  | 0.008 | PANEL WT. |
| 68.3       | 0.136                             | 0.23  | 0.116 | 0.184 | 0.181 | 0.135 | 0.104 | 0.143 |           |
| 0.6        | 0.019                             | 0.023 | 0.014 | 0.013 | 0.111 | 0.056 | 0.013 | 0.01  | PANEL WT. |
| 83.9       | 0.163                             | 0.272 | 0.141 | 0.22  | 0.214 | 0.162 | 0.126 | 0.168 |           |
| 0.6        | 0.021                             | 0.027 | 0.017 | 0.016 | 0.114 | 0.063 | 0.015 | 0.012 | PANEL WT. |
| 104.7      | 0.202                             | 0.326 | 0.177 | 0.268 | 0.25  | 0.198 | 0.158 | 0.204 |           |
| 0.6        | 0.022                             | 0.031 | 0.019 | 0.021 | 0.117 | 0.075 | 0.018 | 0.016 | PANEL WT. |
| 130.7      | 0.25                              | 0.39  | 0.223 | 0.326 | 0.288 | 0.241 | 0.2   | 0.24  |           |
| 0.6        | 0.03                              | 0.042 | 0.024 | 0.031 | 0.126 | 0.089 | 0.023 | 0.024 | PANEL WT. |
| 156.8      | 0.309                             | 0.453 | 0.277 | 0.38  | 0.33  | 0.289 | 0.25  | 0.29  |           |
| 0.6        | 0.042                             | 0.069 | 0.035 | 0.05  | 0.14  | 0.111 | 0.03  | 0.036 | PANEL WT. |
| 182.8      | 0.361                             | 0.517 | 0.331 | 0.436 | 0.371 | 0.338 | 0.293 | 0.33  |           |
| 0.6        | 0.042                             | 0.076 | 0.038 | 0.059 | 0.146 | 0.134 | 0.034 | 0.045 | PANEL WT. |
| 208.8      | 0.445                             | 0.585 | 0.384 | 0.492 | 0.414 | 0.392 | 0.336 | 0.371 |           |
| 0.6        | 0.053                             | 0.105 | 0.047 | 0.082 | 0.159 | 0.169 | 0.041 | 0.064 | PANEL WT. |

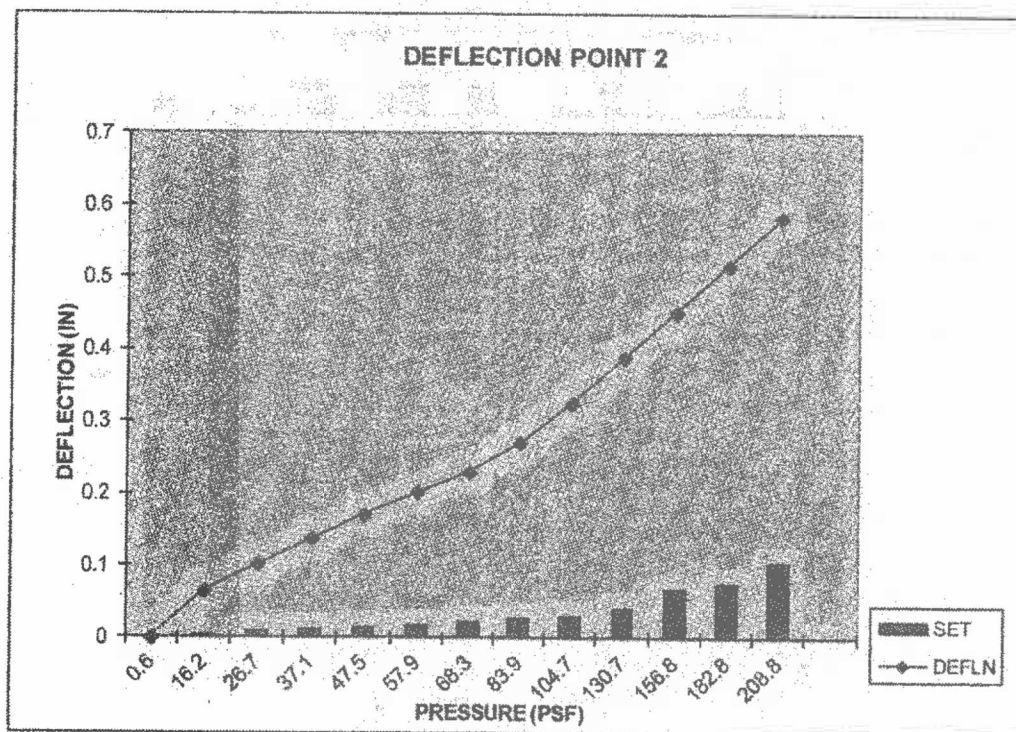
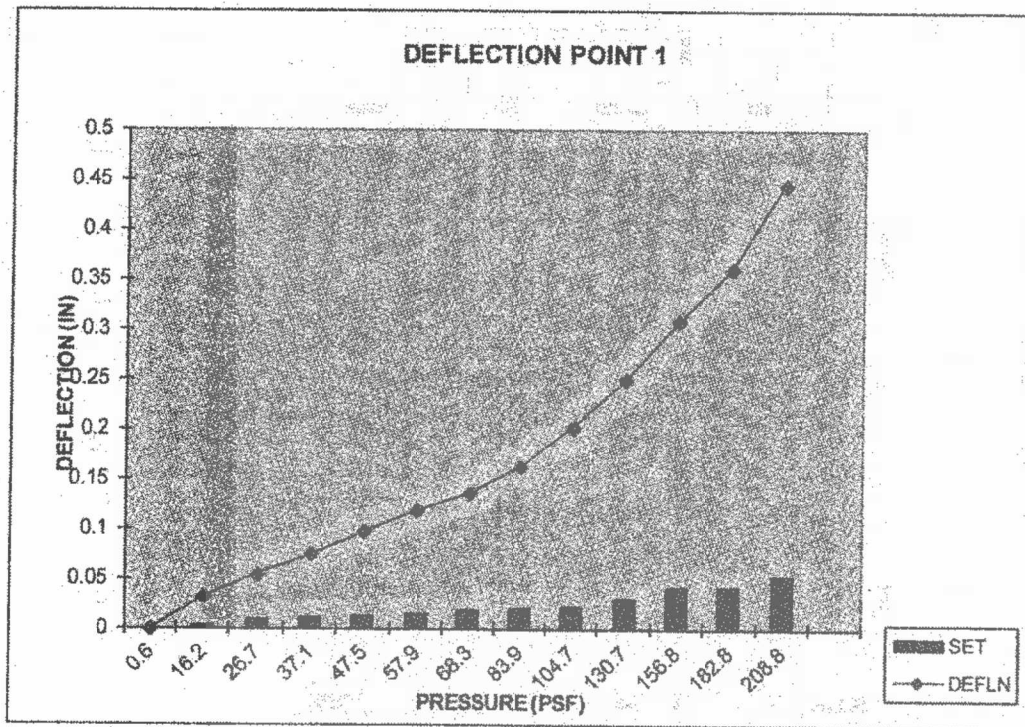
### RESULTS:

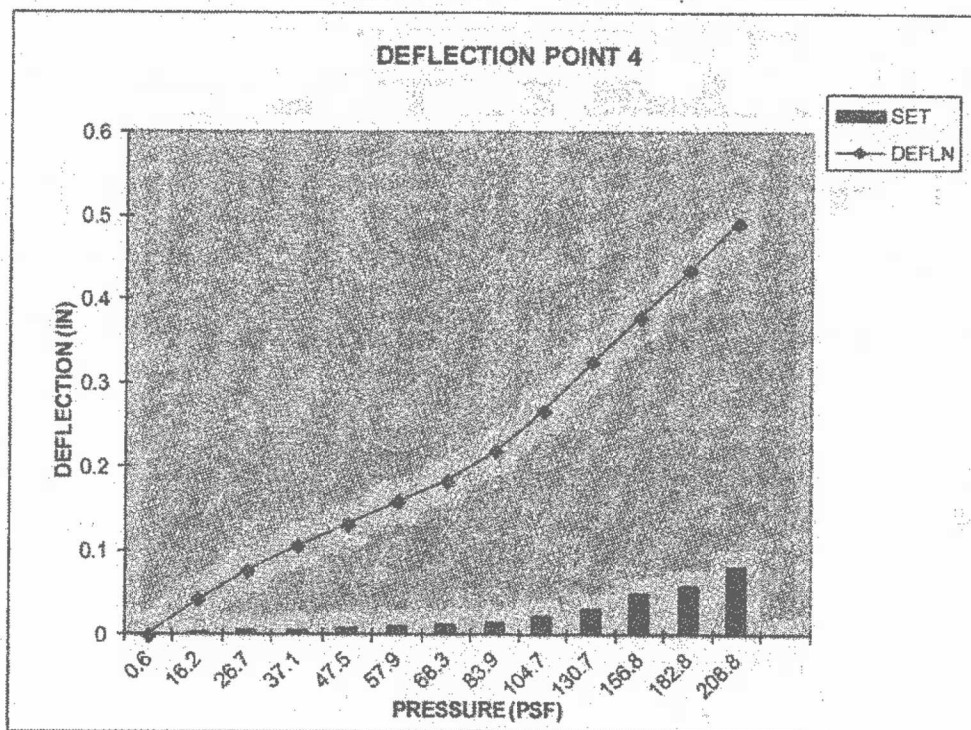
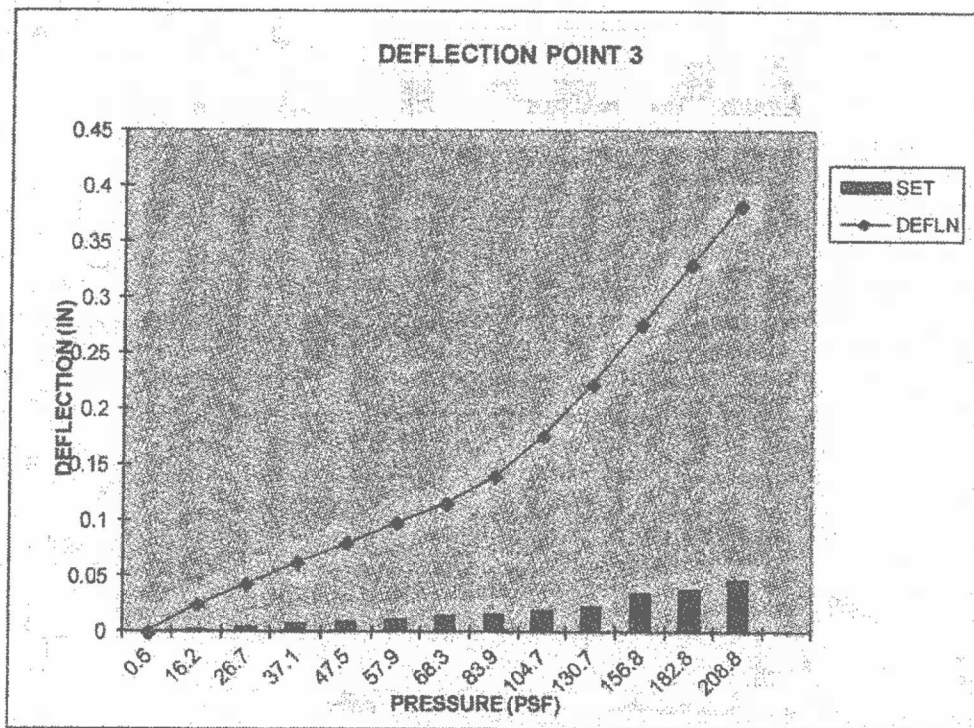
Maximum Test Load ( held for 1 min. without failure) = 250.2\* psf

Ultimate Test Load (at failure) = 253.8 psf\* (Panel Buckling)

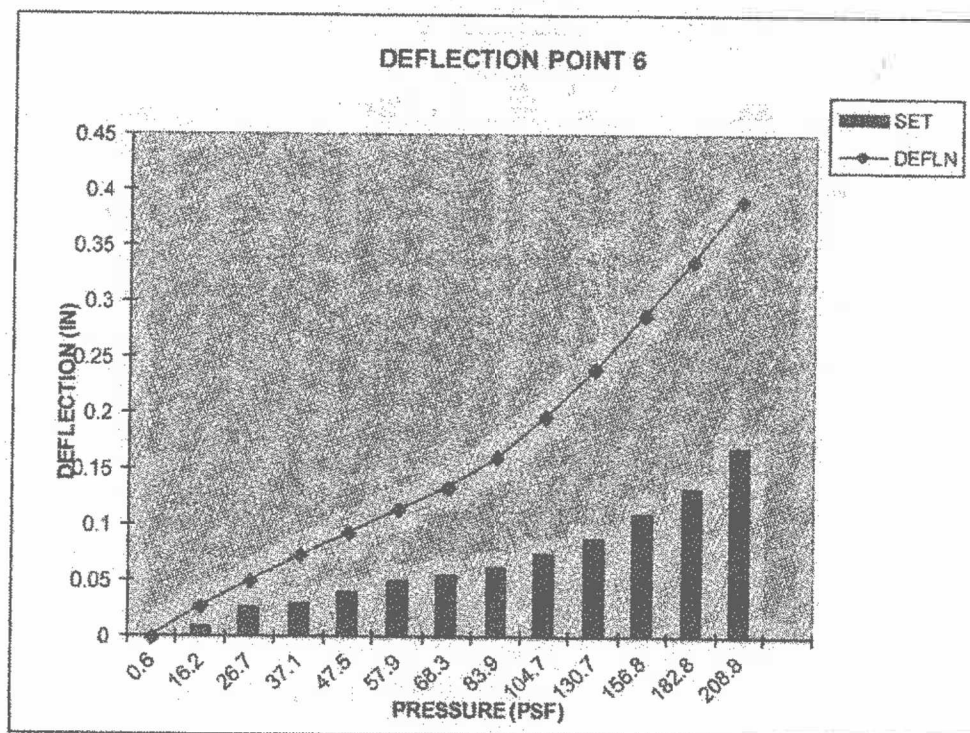
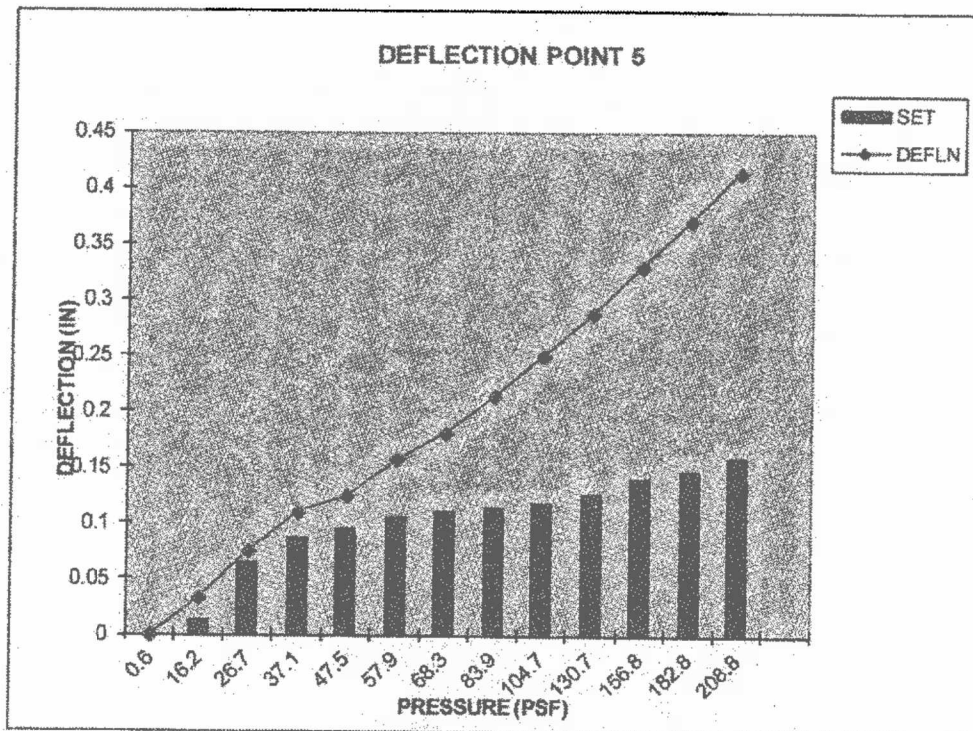
\* Includes panel dead load.

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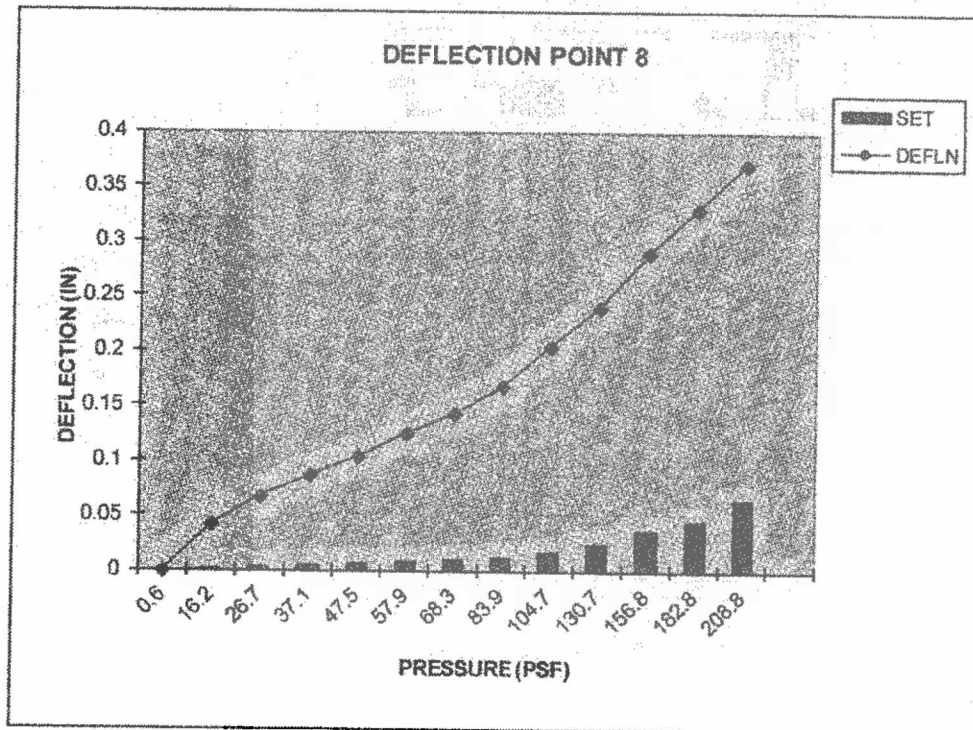
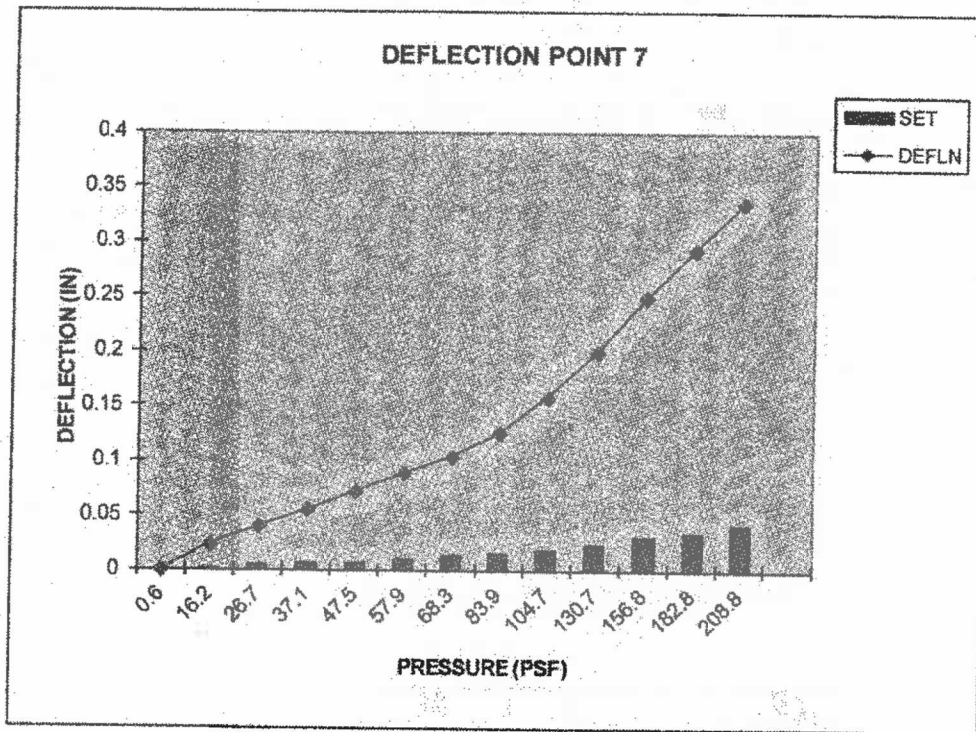


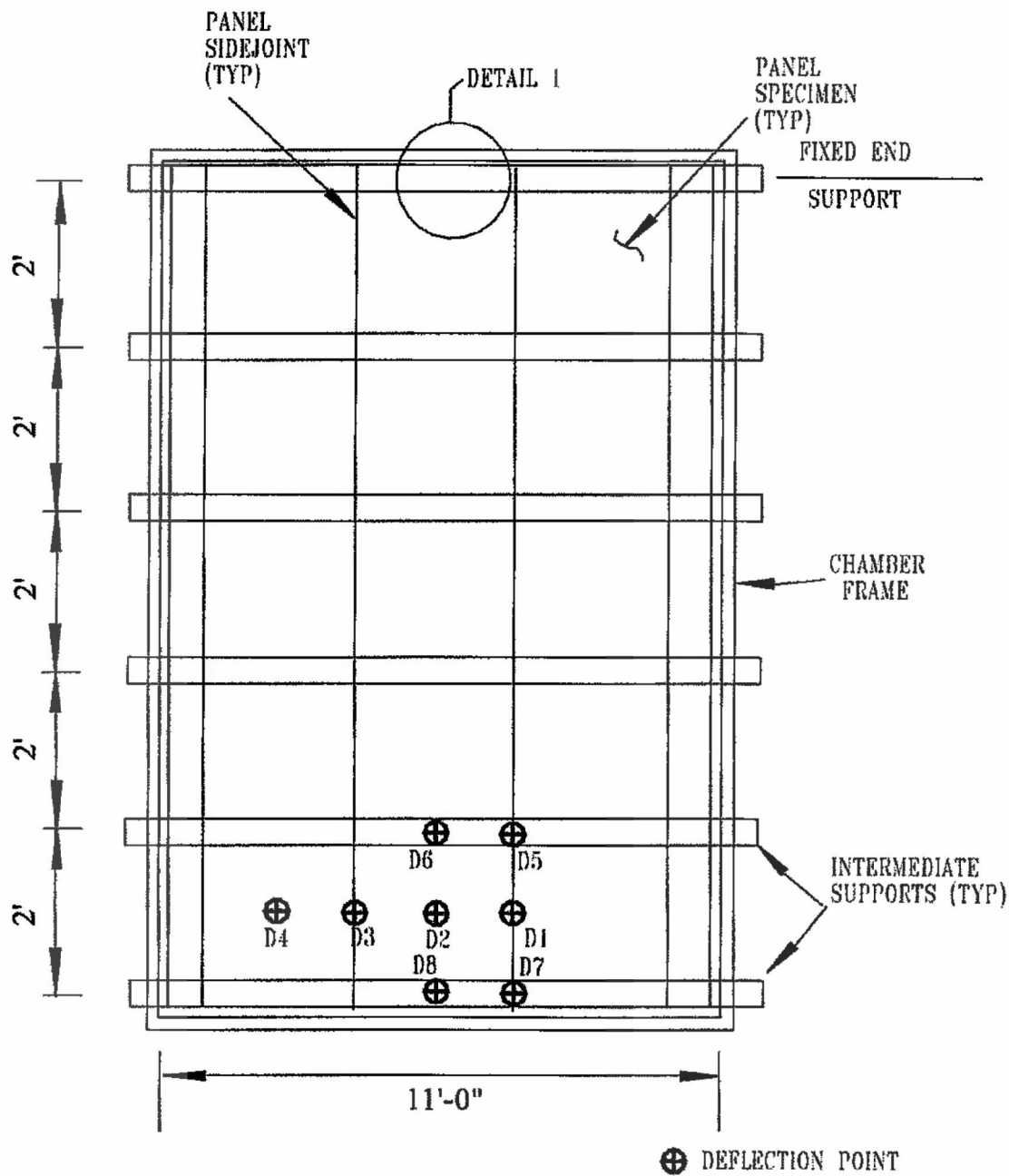


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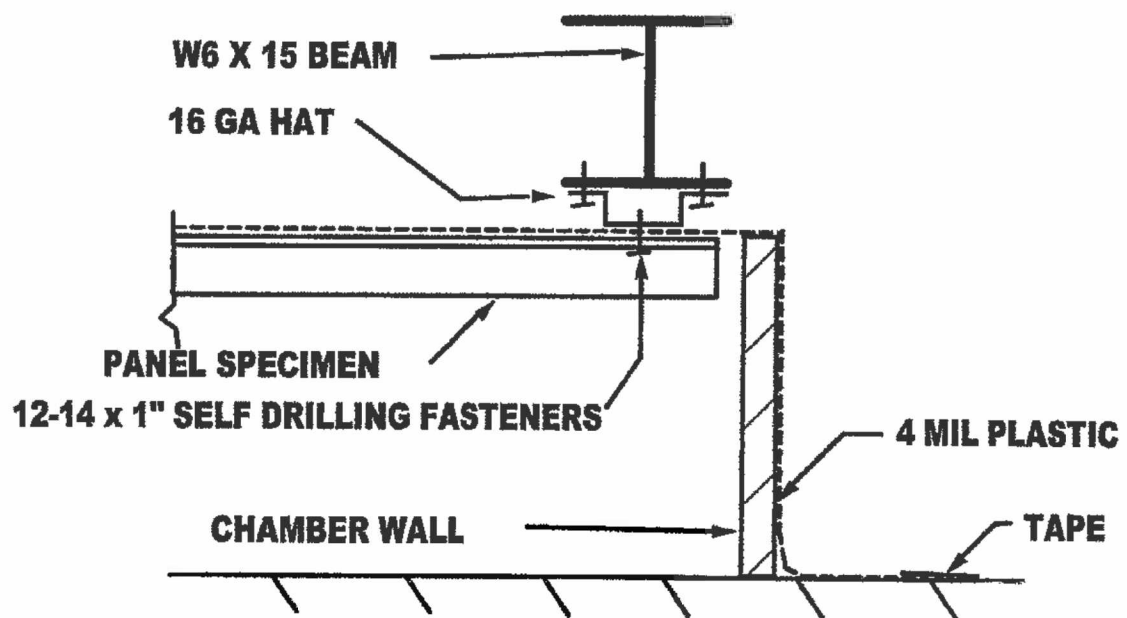


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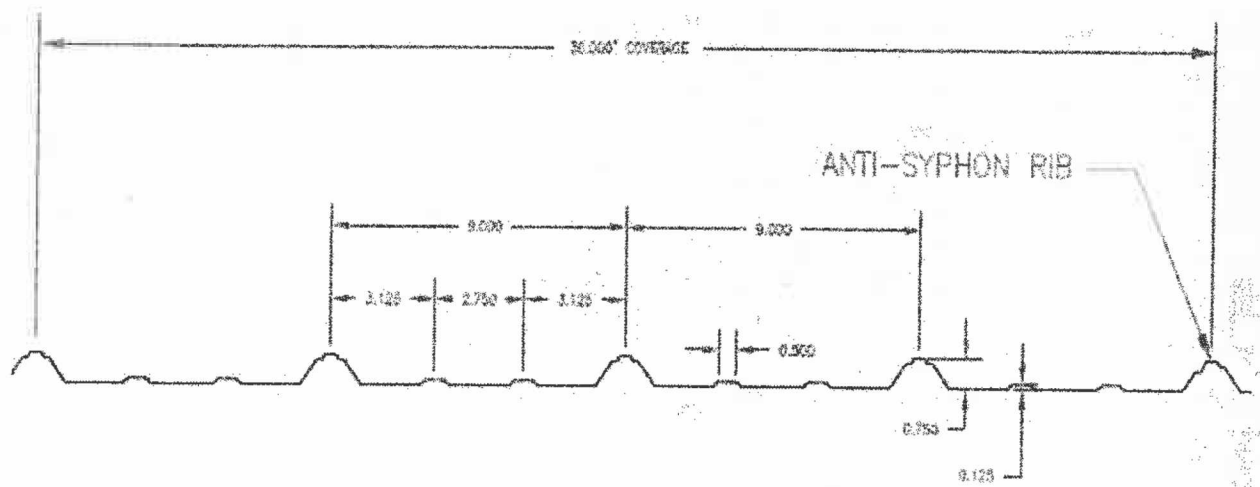


PLAN VIEW



**DETAIL 1**

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## PANEL DETAIL

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FASTENING DETAIL AT  
FIXED END SUPPORT



FASTENING DETAIL AT  
INTERIOR SUPPORTS

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## TENSILE TEST REPORT

Client: Georgia Metals, Inc.  
60 Industrial Blvd.  
Nahunta, GA 31553

Test Date: July 24, 2015

Test Method: ASTM A370-10

Material Description: Georgia Rib Roof Panel, 36" wide, 29 ga. steel

| Sample No. | Width (in) | Thickness (in) | Yield Load (lb) | Max. Load (lb) | 0.2% Offset Yield Strength (psi) | Tensile Strength (psi) | Elongation (% in 2 inches) |
|------------|------------|----------------|-----------------|----------------|----------------------------------|------------------------|----------------------------|
| 0065-15    | 0.506      | 0.015          | 671.9           | 671.9          | 88,525                           | 88,525                 | 0.604                      |

Equipment Used: Tensile Machine #QT7-061196-020  
Caliper #1074379  
Extensometer #10311744D  
Micrometer #110596927

# GEORGIA METALS, INC

## GEORGIA RIB ROOF PANEL 36" WIDE X 29 GA STEEL

### NEGATIVE DESIGN LOADS

| PANEL       | GAUGE | SPAN  | TEST LOAD<br>(psf) | NEGATIVE<br>DESIGN LOAD<br>(psf) |
|-------------|-------|-------|--------------------|----------------------------------|
| GEORGIA RIB | 29    | 2'-0" | 250.2              | 125.1 psf                        |

Notes:

- 1) The Test Load was derived from uplift tests done in accordance with ASTM E1592 per **Farabaugh Engineering and Testing, Inc.** Test Report T232-15. (See test report for specific assembly details and test data.)
- 2) Negative Design Load contains a 2.0 Factor of Safety.
- 3) These values do not consider fastener pullout or pullover which must be evaluated by the Design Engineer.