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Project Number : 13-0328T-06B

Test Report Date : December 12, 2006

Test Material: Top Panel: 26 Ga. PBR over 16 Ga. TopHats over 26 Ga. PBR Panel with Hats running on top of Bottom Panel @ 2'-0" O.C.

Test Protocol : TAS 125-03
PER ASTM E 1592-01
STANDARD TEST METHOD FOR THE STRUCTURAL PERFORMANCE OF SHEET METAL ROOF AND SIDING SYSTEM BY UNIFORM STATIC AIR PRESSURE DIFFERENCE

Test Location : Force Engineering & Testing, Inc.
2405A South Houston Avenue, Suite 500
Humble, TX 77396

Dade County Lab Certification No: 05-1122.13

TOPHAT SYSTEM

(PURLINS @ 5'-0" O.C., TOPHAT @ 2'-6" O.C., HATS @ 2'-0" O.C.)

Report by:

Brandon Jasek, P.E.

Reviewed by:

Terrence E. Wolfe, P.E.

Project Number: 13-0328T-06B

PURPOSE:

This test method covers the evaluation of the structural performance of sheet metal panels and anchor-to-panel attachments for roof systems under uniform static air pressure difference using a test chamber.

TEST DATES:

November 28, 2006

TEST SPECIMEN:

Manufacturer:	TopHat Framing Systems 8660 Lambright Houston, Texas 77075
Top/Bot Panels:	26 Ga. PBR Panels, .019" Coated Thickness
Panel Fasteners:	¼-14 x 1-1/4" HWH SD @ 7"-5"-7"-5"-7" Fastener Pattern
Roof Runner:	16 Ga. inverted Hats, with pre-punched holes Spaced @ 2'-6"
RR Fasteners:	Into 16 Ga. Purlin Supports: (2) ¼--14 x 1-1/4" HWH SD @ each low PBR Rib Into 16 Ga. Hats: (2) ¼-14 x 1-1/4" HWH SD @ 2'-0" O.C.
Hats:	16 Ga. Hat @ 2'-0" O.C.
Hat Fasteners:	Into Purlin Supports (2) ¼-14 x 1-1/4" HWH SD @ 5'-0" O.C.
Support Purlins:	16 Ga. @ 4 Spans @ 5'-0" O.C.

TESTING APPARATUS:

High Pressure Blower:	New York Blower, 15 hp, 900 cfm.
Test Chamber:	20' x 10' steel chamber.
Mounting Frame:	16-ga. cee/ I-beam composite section
Pressure Indicator:	Heise Digital Pressure Indicator Model #901B, (+/-) 300-psf range, with max./min. hold features.
Deflection Indicators:	aluminum rulers calibrated to 1/64".

PANEL INSTALLATION:

1. The panels were installed per manufactured.

2. Plastic was draped loosely on top of the TopHat/beneath the top panels to create a seal.

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TEST PROCEDURE:

1. Initially the system was preloaded to a pressure of 5-psf to insure proper seating of the panels and plastic film.

2. With the preloading process complete, initial deflection measurements were taken at the (8) deflection indicator locations. These initial deflection readings represented the zero position/zero load specimen status from which all readings were referenced.

3. Pressure was applied in the intervals shown on the data sheet (see appendix) for 60 seconds at a time. After each interval of loading, the system was allowed to return to atmospheric pressure.

4. Deflection readings were taken during each cycle of applied pressure. Also, a "zero" reading was taken after each cycle to record any permanent deformation produced by the load interval.

5. The test proceeded as stated above until the system reached ultimate failure.

RESULTS/CONCLUSIONS:

The panel assembly reached a maximum sustained test pressure of –200.0 psf and a ultimate test pressure of –220.0 psf. The failure mode was the roof runner fasteners pulled out of the 16 ga. support.

Graphs plotting deflection and permanent set versus pressure are found in the appendix of this report along with the raw data sheet.

Note: During this test, tape and plastic were used to seal against air leakage. The tape and plastic had no restrictive influence on the test.

2-27-09

Appendix

E-1592 Raw Test Data

Project: 13-0328T-06B
Description: 26 Ga. PBR over TopHat over Hats over 26 Ga. PBR
Date: 11/28/2006

LOAD	DEFLECTION (IN.)							
	1	2	3	4	5	6	7	8
0.00	28.9375	8.4063	29.0938	28.9688	8.2656	8.3594	29.2188	8.2344
20.00	28.7813	8.4844	28.9688	28.8750	8.3594	8.4531	29.2188	8.2500
0.00	28.9063	8.4063	29.0938	28.9688	8.2656	8.3594	29.2188	8.2344
54.00	28.5625	8.6563	28.7500	28.6250	8.5313	8.6250	29.1563	8.3125
0.00	28.9063	8.4375	29.0625	28.9688	8.2813	8.3750	29.2188	8.2344
70.00	28.5000	8.7344	28.6563	28.5313	8.6094	8.7031	29.1250	8.3281
0.00	28.9063	8.4219	29.0625	28.9688	8.2813	8.3750	29.2188	8.2344
100.00	28.3438	8.8750	28.4688	28.3438	8.7656	8.8594	29.0625	8.3750
0.00	28.8750	8.4375	29.0625	28.9375	8.2969	8.3906	29.2188	8.2500
140.00	28.1563	9.0625	28.2188	28.0938	9.0156	9.0938	28.9688	8.4688
0.00	28.8438	8.4531	29.0313	28.9063	8.3281	8.4219	29.2188	8.2500
180.00	27.9688	9.2500	27.9375	27.8125	9.2656	9.3750	28.8750	8.5156
0.00	28.7813	8.5156	28.9375	28.8125	8.4063	8.5000	29.2188	8.2500
200.00	27.8438	9.3594	27.7500	27.6250	9.4063	9.5313	28.8438	8.5625
0.00	28.7500	8.5625	28.9063	28.7500	8.4531	8.5469	29.2188	8.2656

Ultimate Test Pressure: 200- psf
Mode of Failure: TopHats Fasteners Pulled out over support at 220 psf

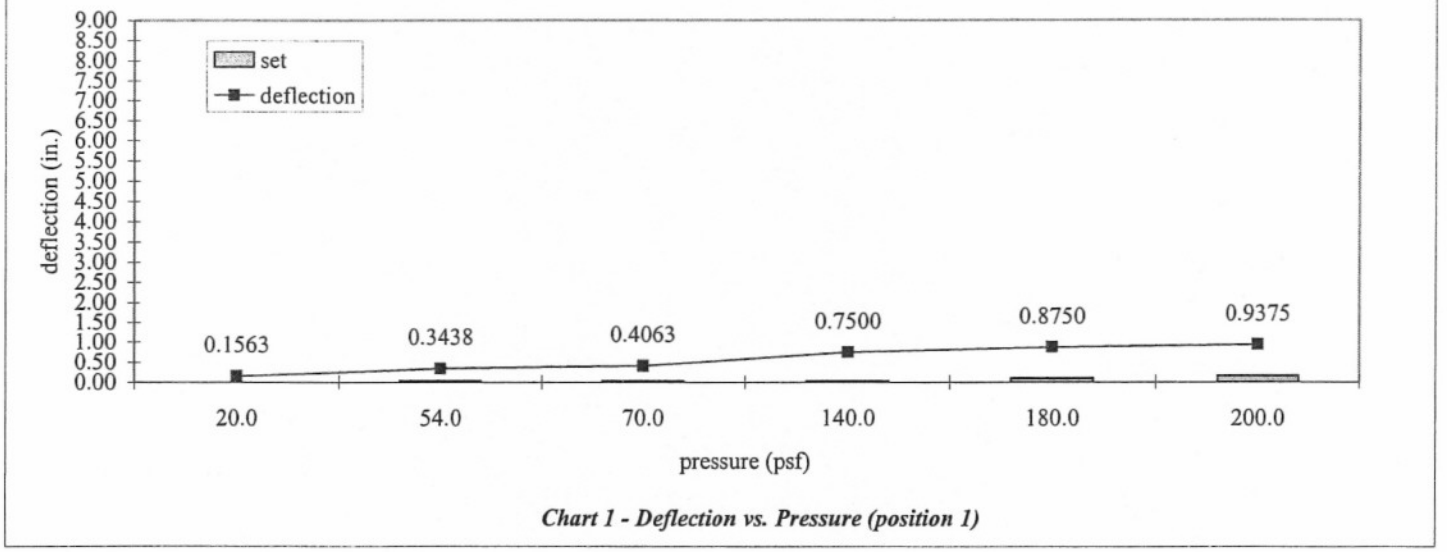


Chart 1 - Deflection vs. Pressure (position 1)

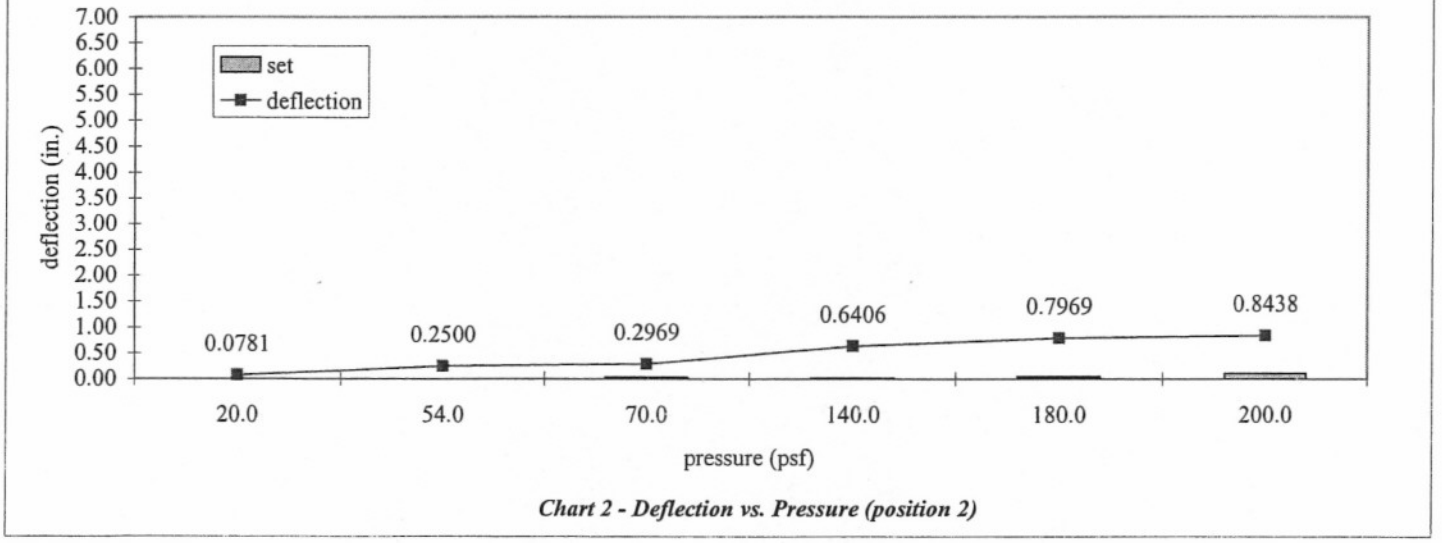


Chart 2 - Deflection vs. Pressure (position 2)

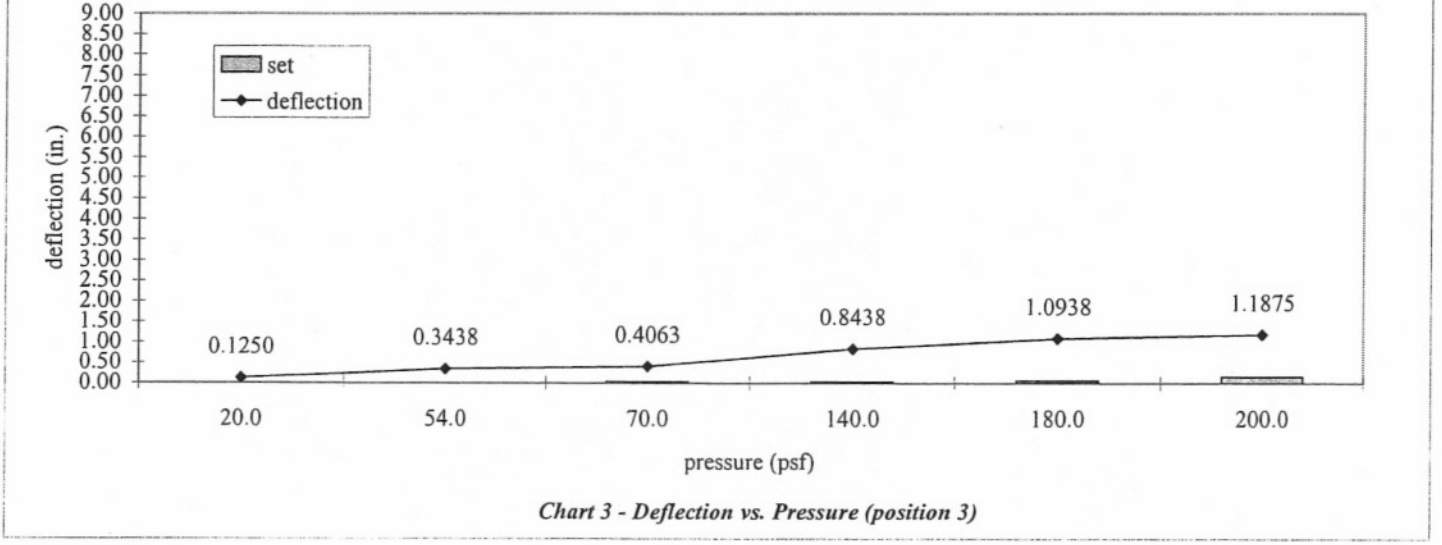


Chart 3 - Deflection vs. Pressure (position 3)

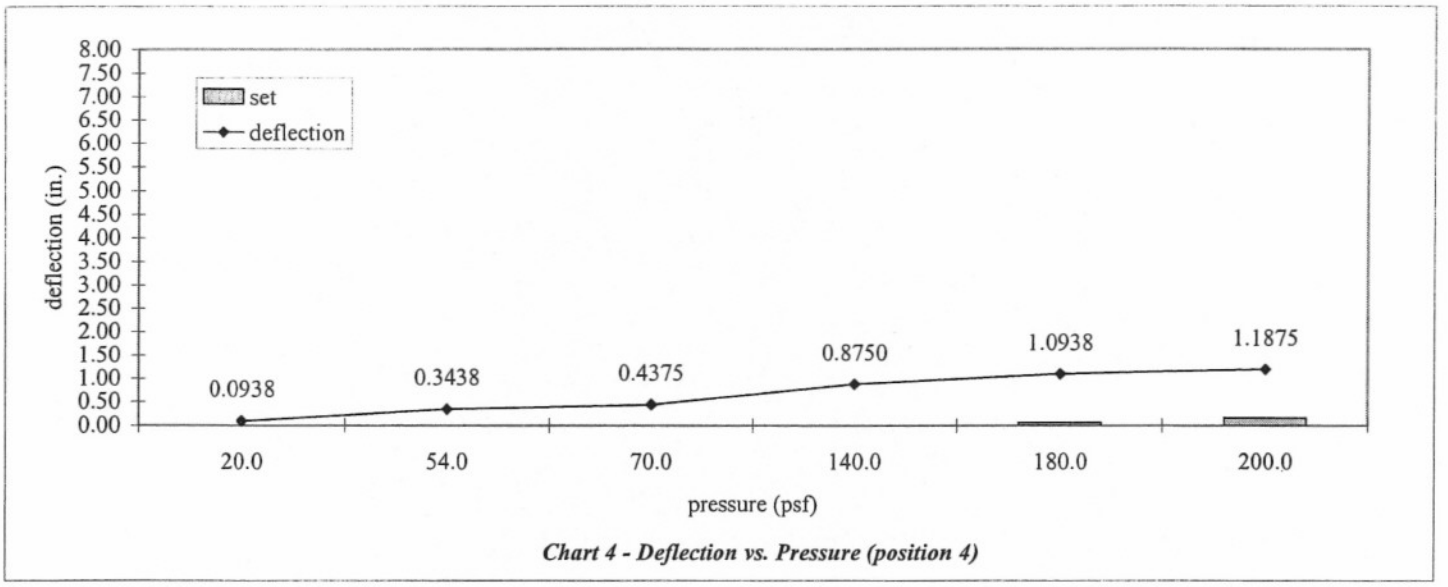


Chart 4 - Deflection vs. Pressure (position 4)

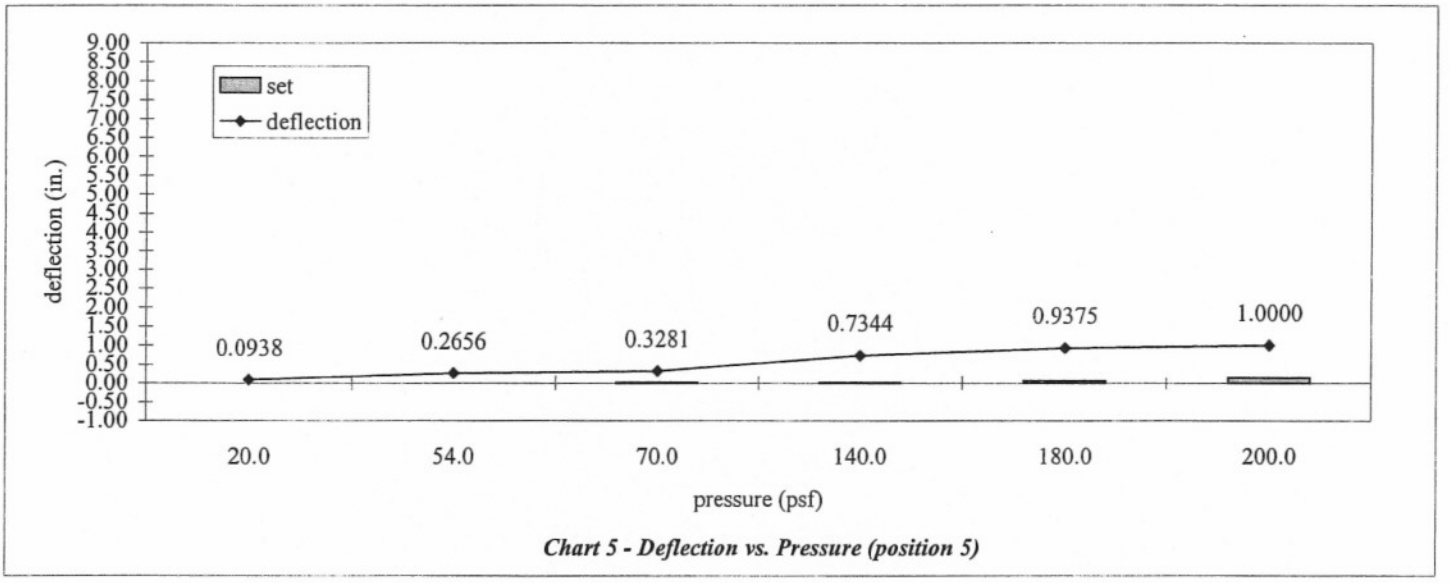


Chart 5 - Deflection vs. Pressure (position 5)

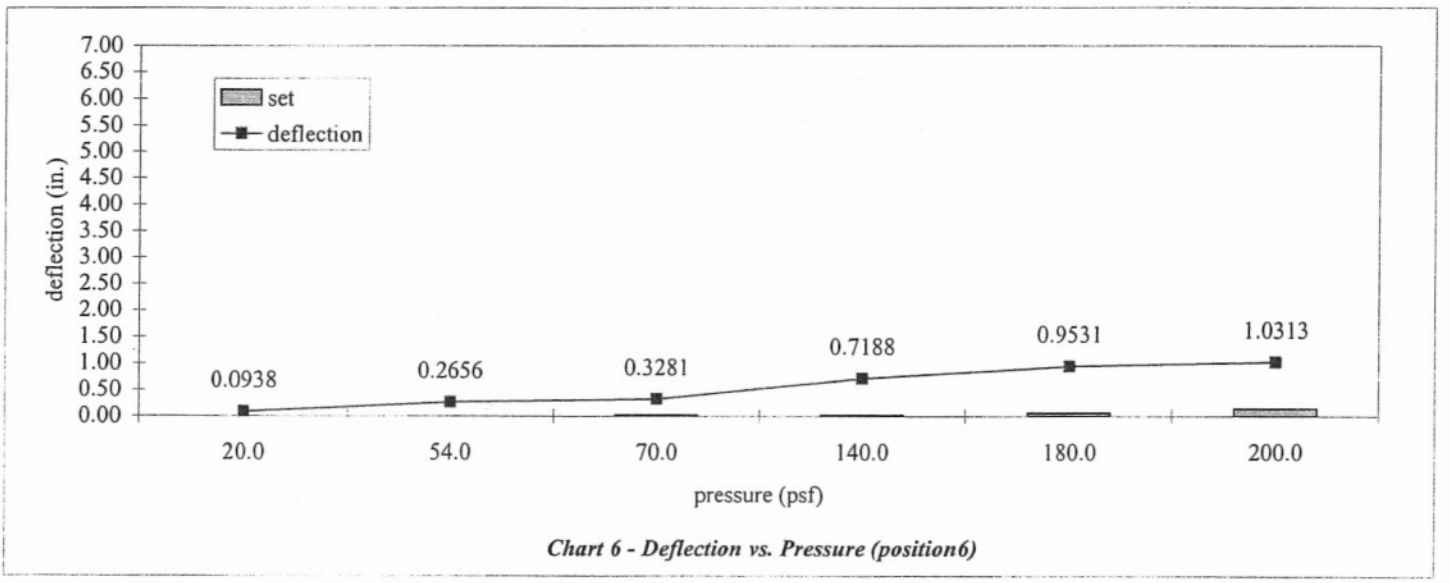


Chart 6 - Deflection vs. Pressure (position6)

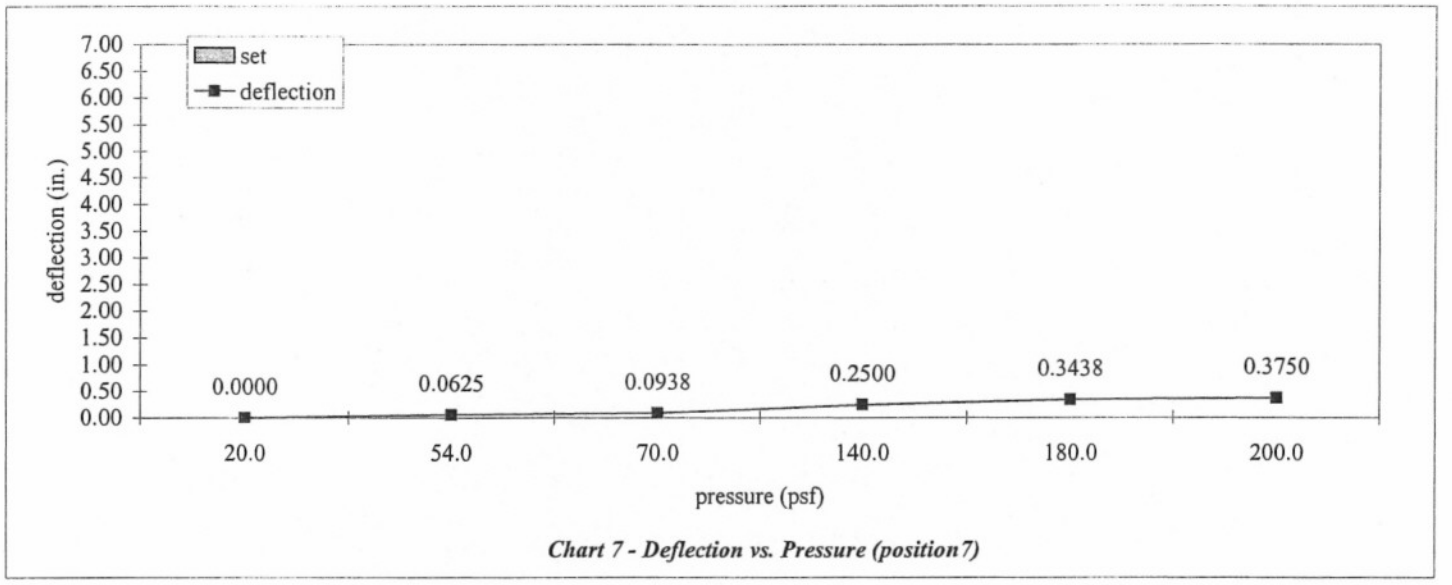


Chart 7 - Deflection vs. Pressure (position7)

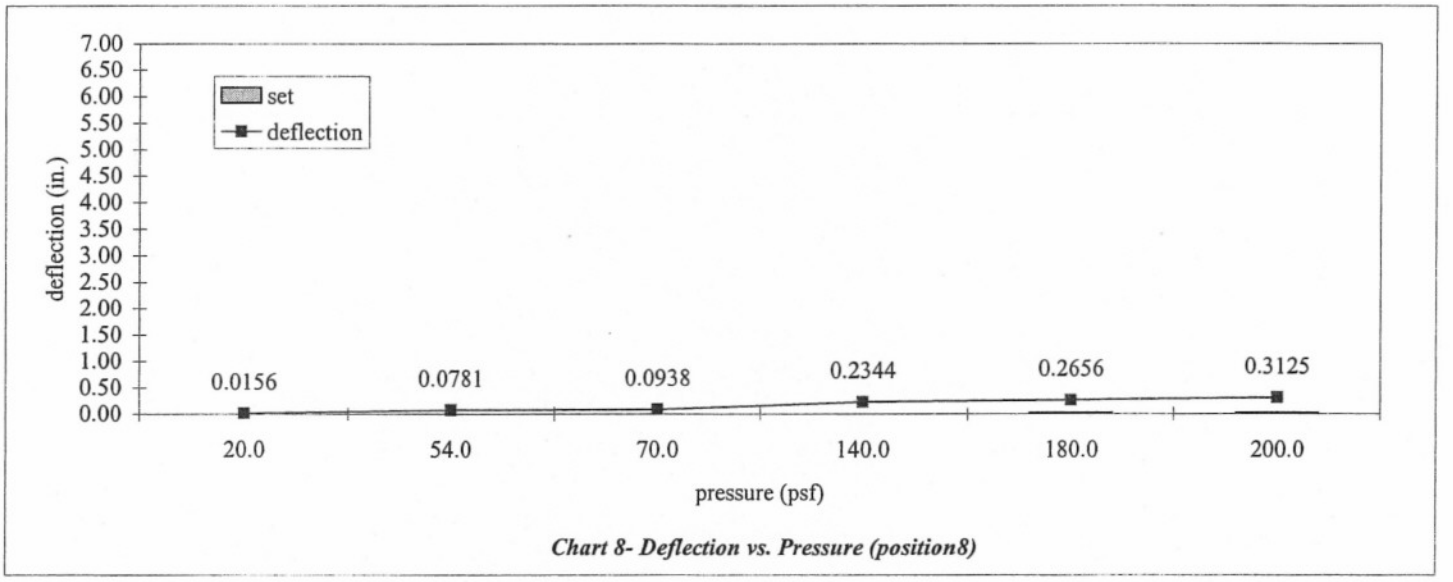
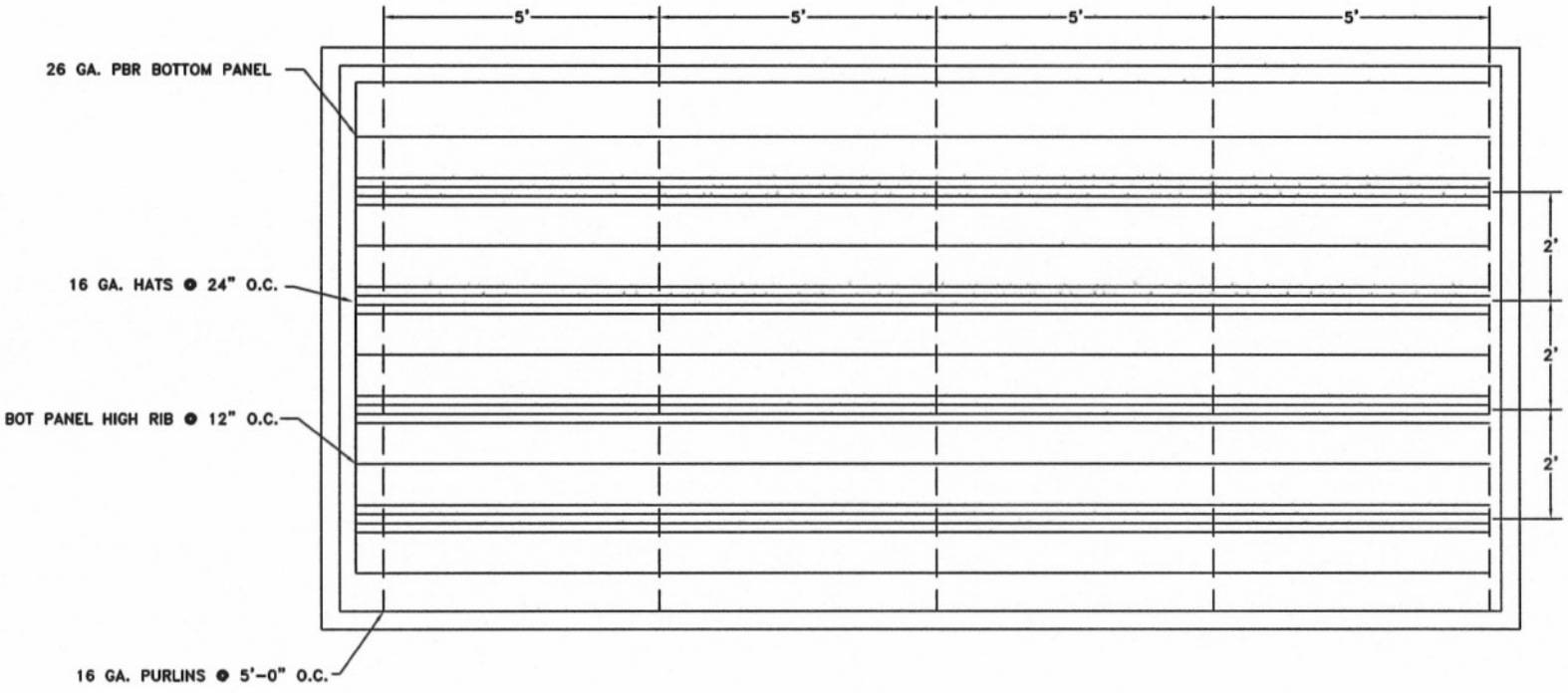
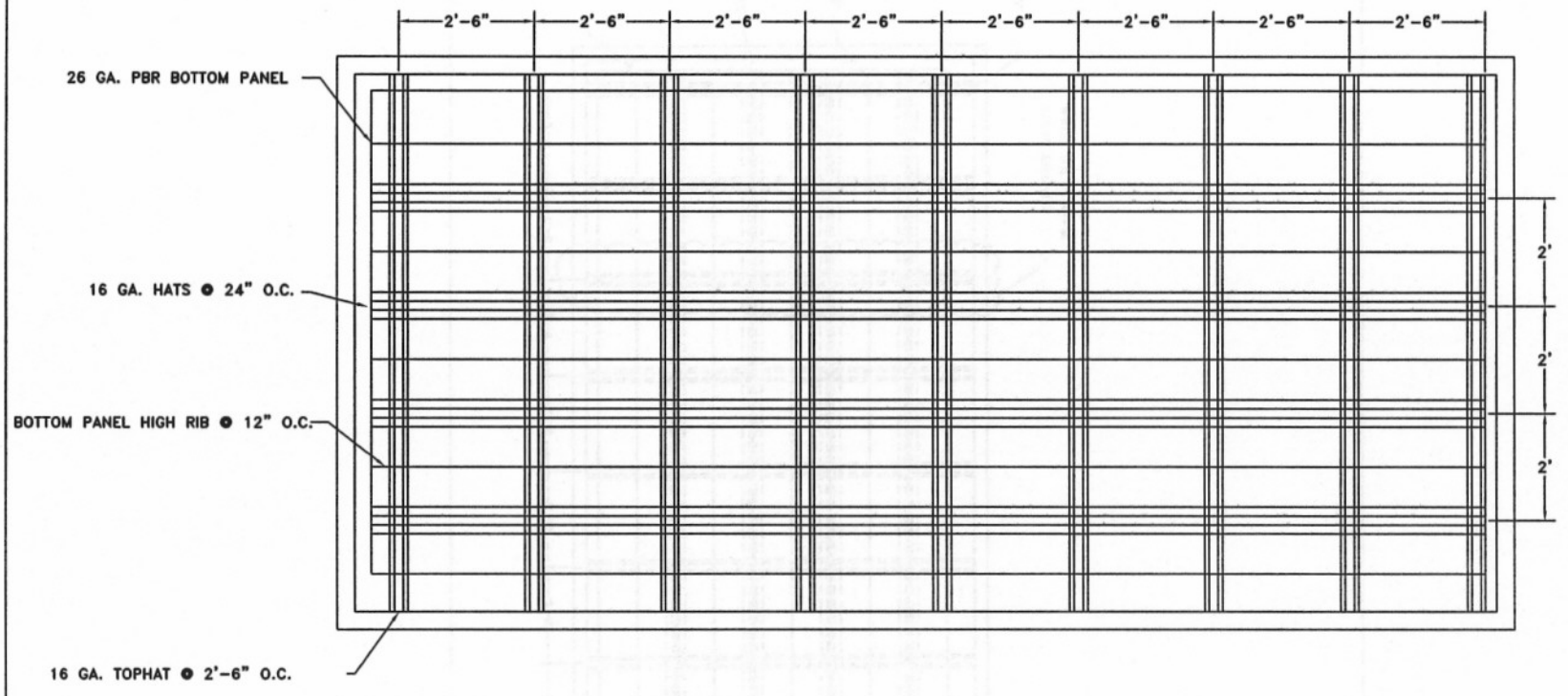


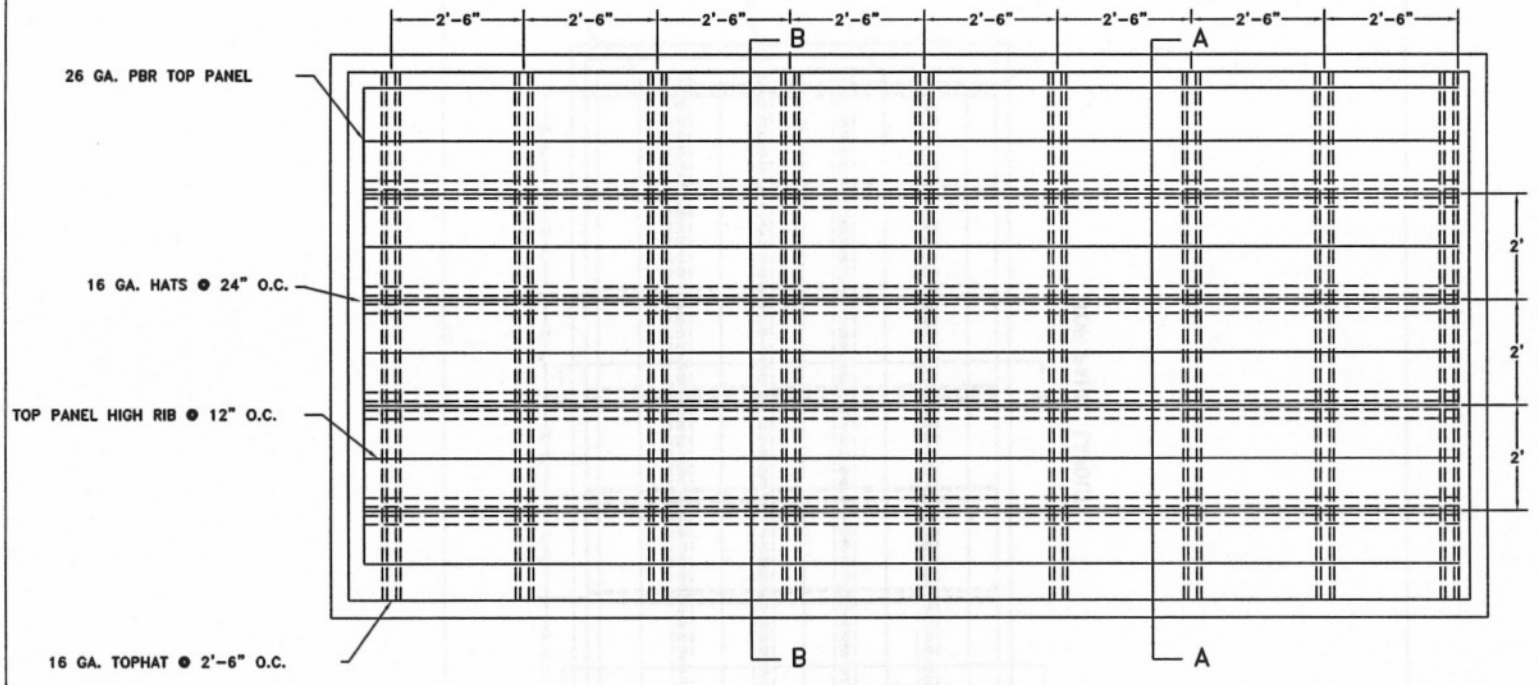
Chart 8- Deflection vs. Pressure (position8)



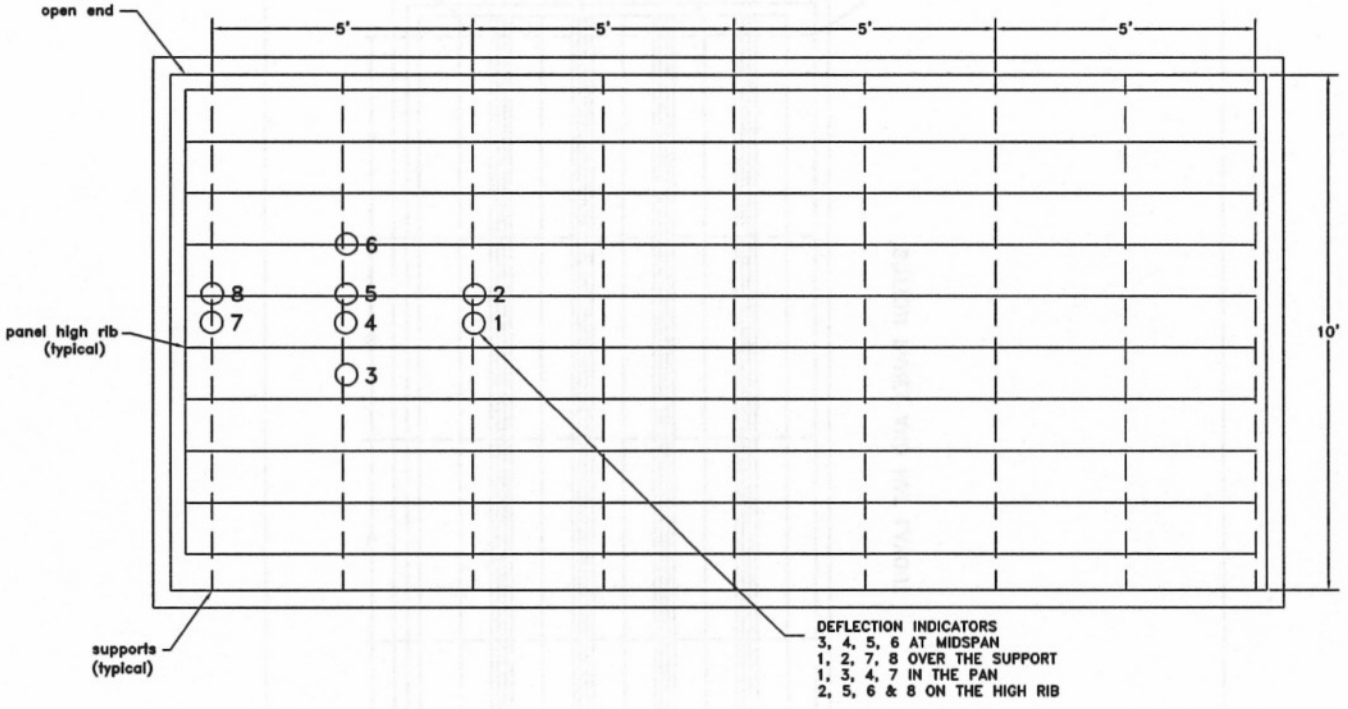
BOTTOM PANEL AND HAT LAYOUT



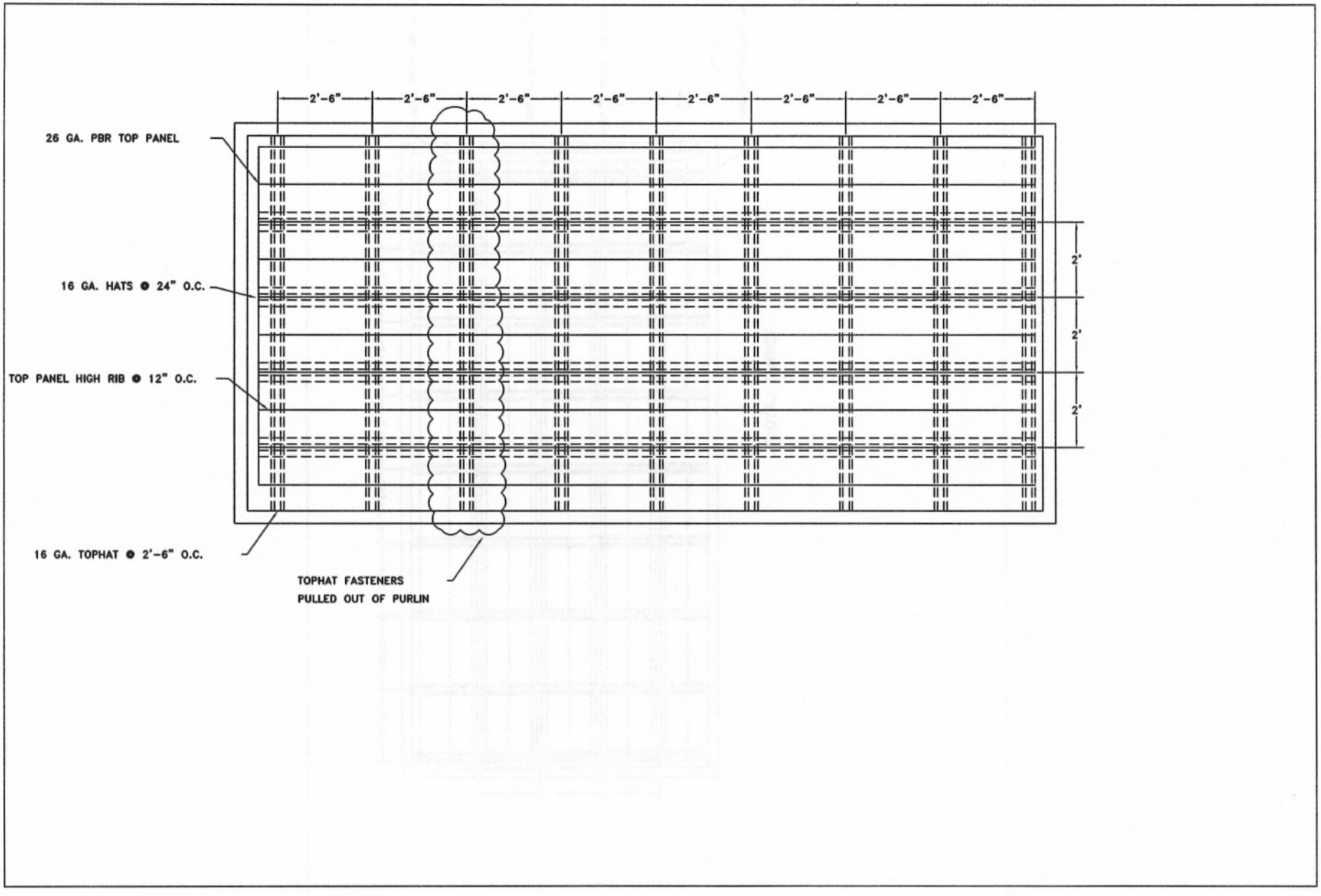
TOPHAT LAYOUT



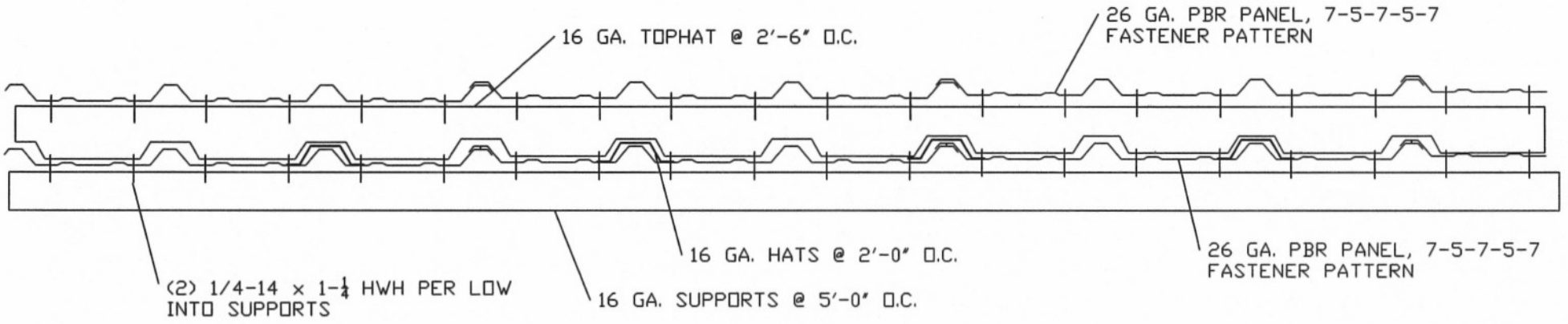
TOP PANEL LAYOUT



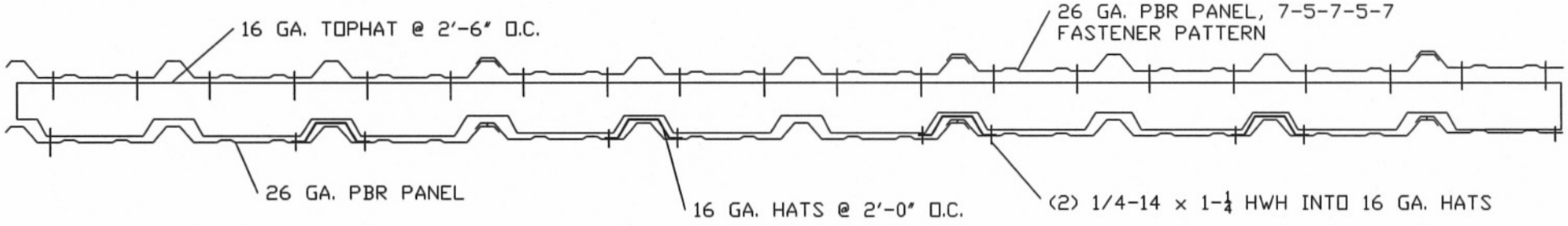
DEFLECTION RULER SETUP

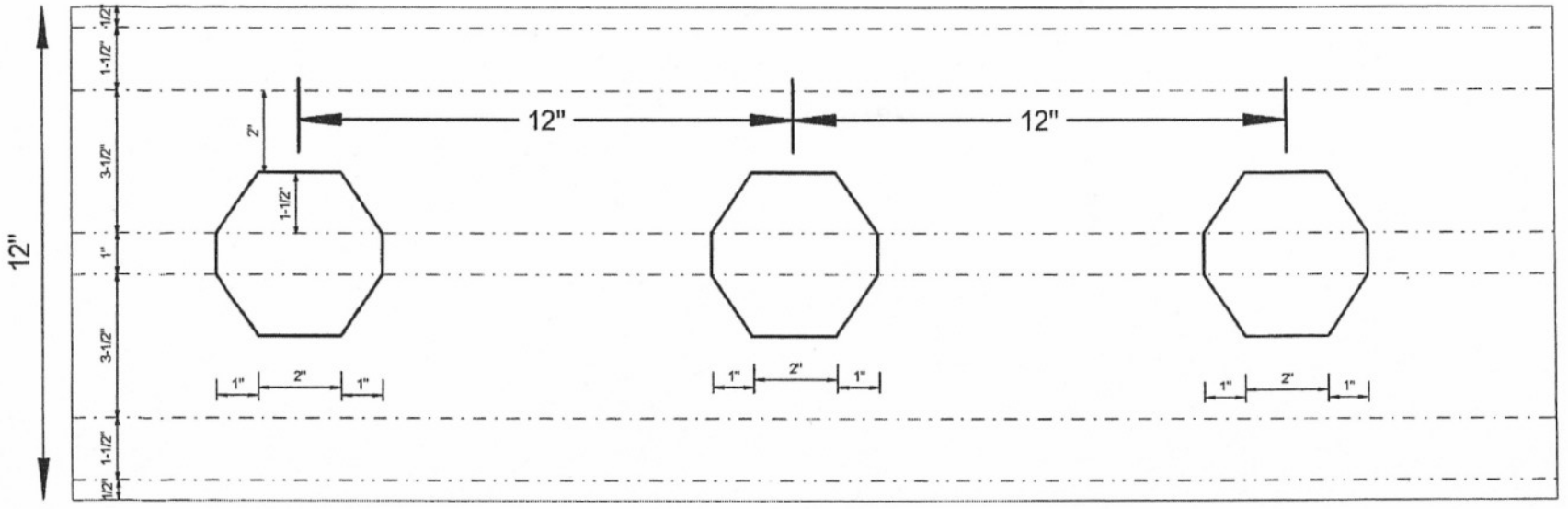

2'-6"
2'-6"
2'-6"
2'-6"
2'-6"
2'-6"
2'-6"
2'-6"
26 GA. PBR TOP PANEL
16 GA. HATS @ 24" O.C.
TOP PANEL HIGH RIB @ 12" O.C.
16 GA. TOPHAT @ 2'-6" O.C.
TOPHAT FASTENERS
PULLED OUT OF PURLIN
2'
2'
2'

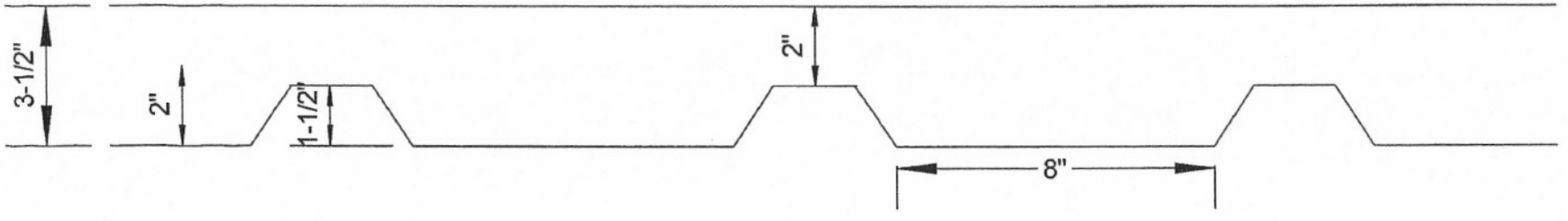
SECTION A-A @ SUPPORT

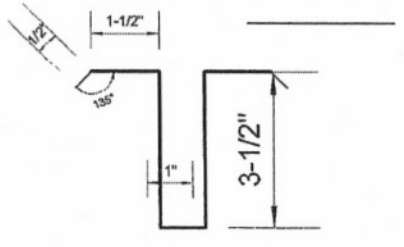


SECTION B-B @ MIDSPAN



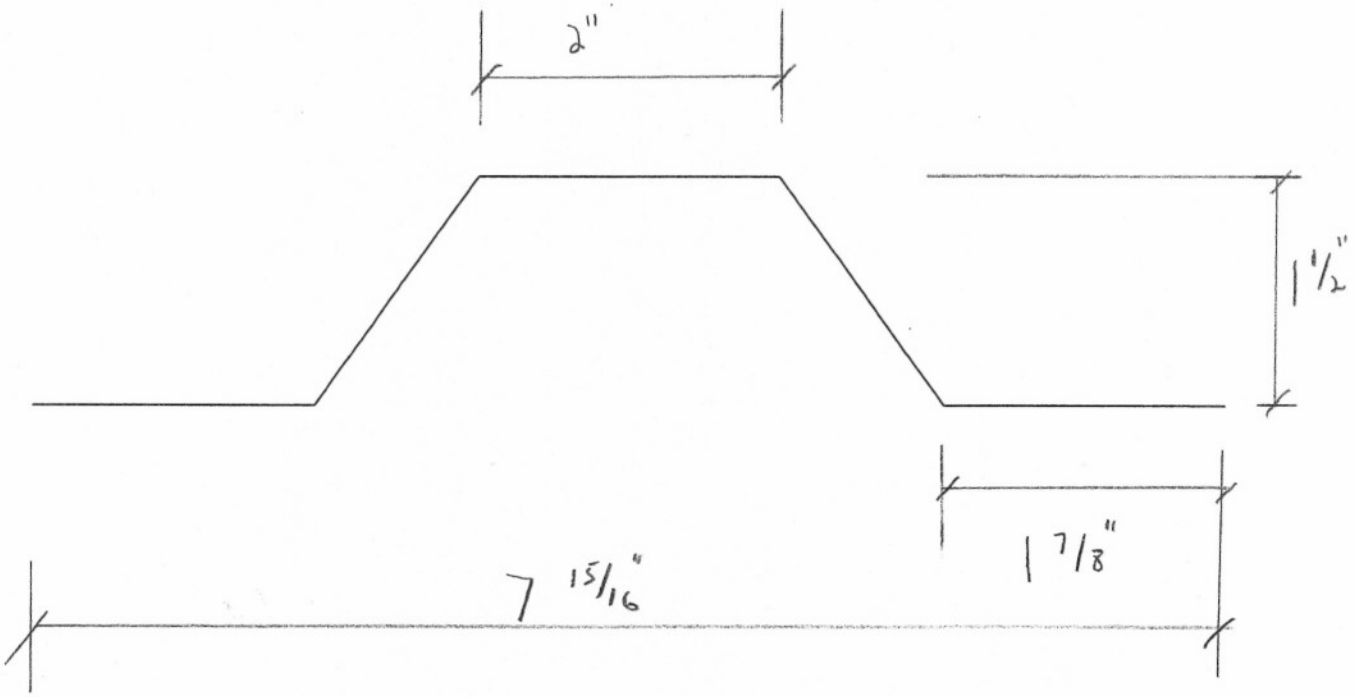

12"
1/2"
1-1/2"
3-1/2"
1"
3-1/2"
1-1/2"
1/2"
2"
12"
12"
1-1/2"
1"
2"
1"
1"
2"
1"
1"
2"
1"


3-1/2"
2"
1-1/2"
2"
8"

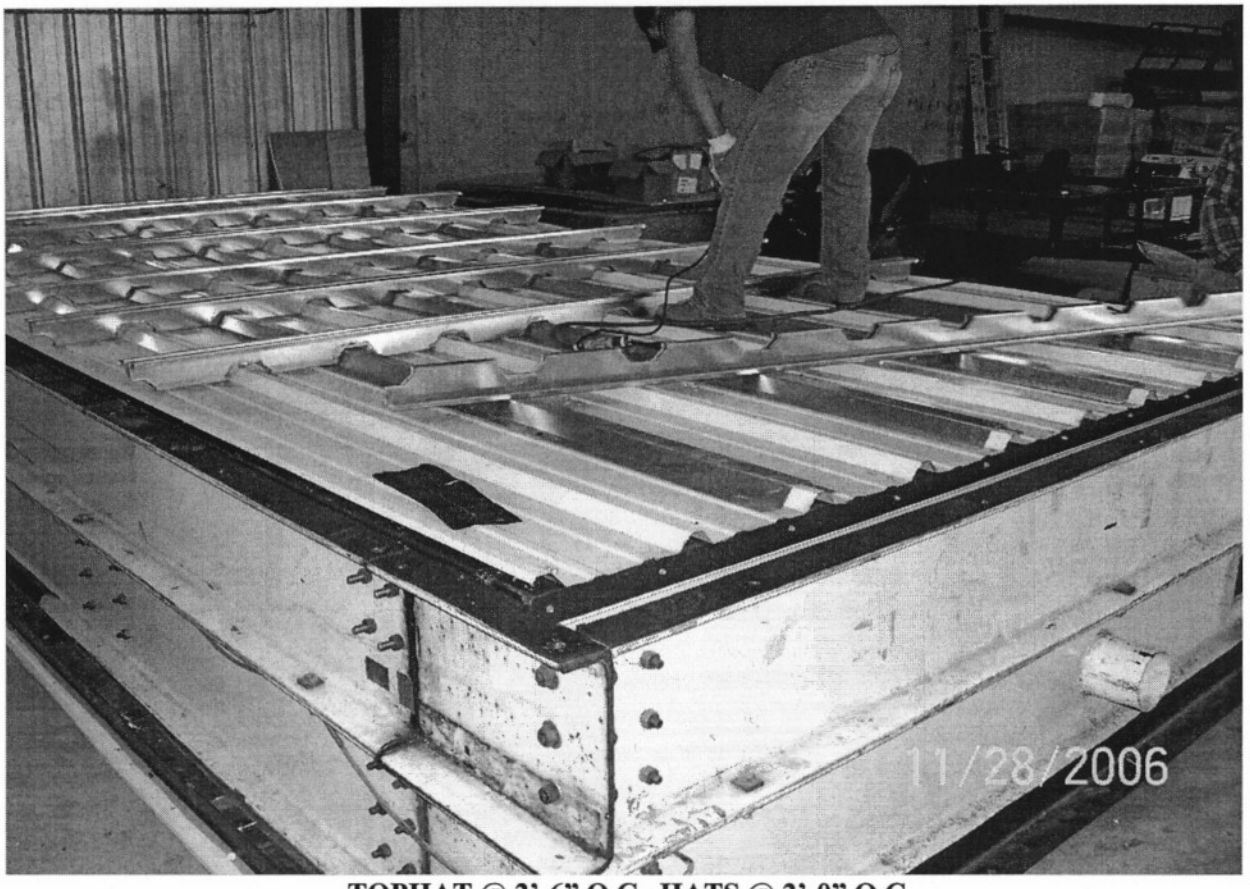

1/2"
1-1/2"
135°
1"
3-1/2"

16 GA. HAT

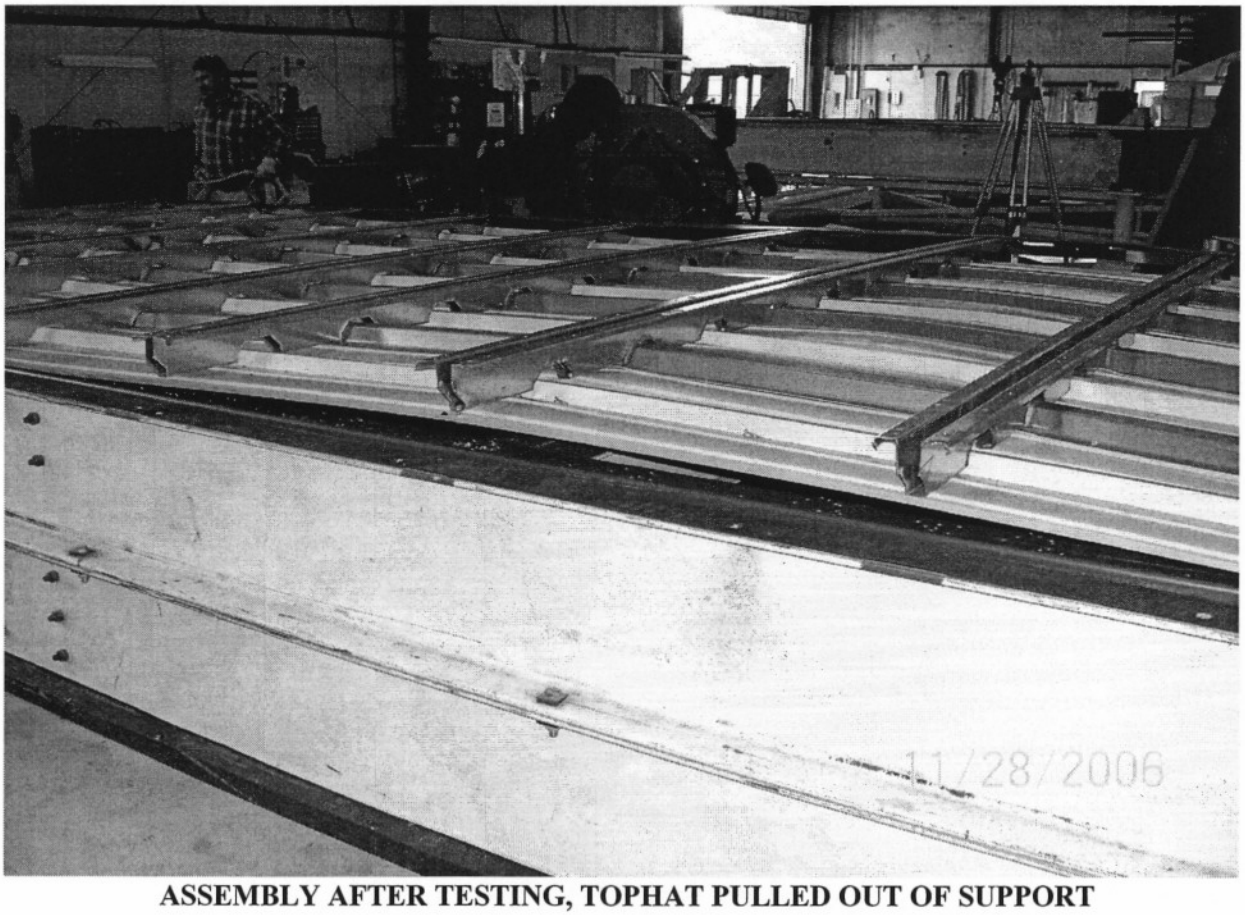
@ 24" O.C.



Photos



TOPHAT @ 2'-6" O.C., HATS @ 2'-0" O.C.



ASSEMBLY AFTER TESTING, TOPHAT PULLED OUT OF SUPPORT