



Farabaugh Engineering and Testing LLC.

Project No. T365-25

Report Date: December 29, 2025

Total Pages: 21 (inclusive)

PERFORMANCE TEST REPORT

ASTM E330 UNIFORM LOAD STRUCTURAL TEST

ON

FL PANEL SYSTEM

**144" WIDE X 48" HIGH X 0.080"/0.063" ALUMINUM PANEL
(TESTED WEEK OF 10/22/25 & 11/20/25 – TEST #14 & 15)**

FOR

DRI-DESIGN

12480 SUPERIOR CT. SUITE #1
HOLLAND, MI. 49424

Prepared by:

Paul G. Farabaugh

Approved by:

Daniel G. Farabaugh



AAMA
ACCREDITED
LABORATORY



FLORIDA
ACCREDITED
LABORATORY
& QC ENTITY



AA-715

Purpose

The purpose of this test is to establish structural loading on the referenced test specimen in accordance with ASTM E330,

Test Completion Date 11/20/2025

Test Specimen

Manufacturer: Dri-Design
12480 Superior Court
Holland, MI 49424

Panel: FL Metal Panel, Panel perimeter length was 144" wide x 48" high. See installation drawings for panel coverage dimension. Panels consisted of 0.080" or 0.063" aluminum skin bonded with 0.080" or 0.063" aluminum "C" stiffeners spaced 16" o.c. using 3M G16 VHB tape. See panel drawing for fabrication of each panel. Note: All stiffeners and perimeter supports were shop applied. See panel layout for location of panels and location of stiffeners on each panel.

Test Apparatus

A test chamber was used with two static pressure taps located at diagonally opposite corners. A controlled blower provided a uniform pressure 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 positive and negative direction on the panel specimen mock-up. Calibrated deflectometers were attached to monitor panel deformation as shown.

Test Assembly

- The test specimen mock-up consisted of metal panel system that measured as 12'-0" wide x 8'-4" high (approximately). The mock-up support framing consisted of 16 ga. steel vertical studs spaced at 16" o.c. that attached to a top and bottom 16 ga. track. 16 ga. steel girts located at 16" o.c. were attached to the top of the stud supports that were perpendicular to the girts using (2) ¼ -14 x 1" long, hex head, self-drilling fasteners.
- 2 panels were then attached to 16ga. structural steel girt supports that were located at 16" o.c. A single extruded aluminum start track was attached to the studs with (2) ¼-14 x 1-1/2" long, hex head, self-drilling fasteners at each support. The first panel slid under the starter track leg and the opposite end was then fastened to the steel girt supports with (2) 1/4-14 x 1-1/2" long, hex head, self-drilling fasteners at each girt support. The next panel slid under the first panel and the opposite end was fastened to the steel girts located at 16" o.c. using same fasteners. See installation drawings for fastener locations and panel installation.
- 4 mil Plastic Sheeting was placed over top face of panel for the positive direction testing and then the panel had the plastic covering between the supports and the exposed back of the panel and tested in the negative direction.

Test Procedure

The tests were conducted in accordance with ASTM E330/E330M-14, "Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference "and as provided herein. Note: Panels were tested in the positive and negative pressure direction.

ASTM E330 UNIFORM LOAD TEST RESULTS

Test #14

Panel: FL Metal Panel, 144"x 48" x 0.080" "C" Stiffener- 16" o.c. ¾" wide 3M G16 VHB Tape

Condition: (1) 0.125" Start Track, (2) ¼" -14 fasteners@ 16" o.c., (2) 0.080" Top edge

POSITIVE PRESSURE

Load Pressure (in-h20)	Load Pressure (psf)	Deflection #1 (in)	Deflection #2 (in)	Deflection #3 (in)	Deflection #4 (in)	Deflection #5 (in)	Deflection #6 (in)	Deflection #7 (in)	Deflection #8 (in)
0	0.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
8.65	45.0	0.135	0.740	0.365	0.333	0.728	0.121	0.784	0.144
0	0.0	0.001	0.005	0.003	0.003	0.005	0.000	0.005	0.001
12.97	67.5	0.190	1.219	0.571	0.525	1.201	0.169	1.228	0.207
0	0.0	0.004	0.090	0.030	0.028	0.089	0.004	0.083	0.009
17.29	90.0	0.229	1.387	0.730	0.678	1.392	0.205	1.448	0.251
0	0.0	0.014	0.150	0.057	0.054	0.153	0.012	0.149	0.019
25.94	135.0	0.297	1.582	0.972	0.909	1.569	0.264	1.656	0.318
0	0.0	0.019	0.180	0.085	0.082	0.184	0.017	0.183	0.024

RESULTS

No visible signs of failure observed after all testing pressures listed above were performed.
Maximum Test Load: = 135.0 psf - No Failures.

Test #14(cont.)

Panel: FL Metal Panel, 144"x 48" x 0.080" "C" Stiffener- 16" o.c. ¾" wide 3M G16 VHB Tape

Condition: (1) 0.125" Start Track, (2) ¼" -14 fasteners@ 16" o.c., (2) 0.080" Top edge

NEGATIVE PRESSURE

Load Pressure (in-h20)	Load Pressure (psf)	Deflection #1 (in)	Deflection #2 (in)	Deflection #3 (in)	Deflection #4 (in)	Deflection #5 (in)	Deflection #6 (in)	Deflection #7 (in)	Deflection #8 (in)
0	0.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
1.92	10.0	0.070	0.170	0.043	0.051	0.179	0.073	0.193	0.103
0	0.0	0.003	0.003	0.002	0.003	0.008	0.005	0.010	0.008
3.84	20.0	0.123	0.319	0.082	0.096	0.328	0.129	0.349	0.176
0	0.0	0.004	0.009	0.004	0.006	0.014	0.007	0.016	0.011
5.76	30.0	0.183	0.493	0.122	0.140	0.499	0.193	0.522	0.263
0	0.0	0.009	0.022	0.011	0.014	0.030	0.015	0.032	0.019
7.68	40.0	0.252	0.686	0.176	0.189	0.678	0.261	0.694	0.347
0	0.0	0.025	0.058	0.027	0.027	0.065	0.031	0.065	0.035
9.61	50.0	0.331	0.875	0.243	0.244	0.857	0.345	0.859	0.430
0	0.0	0.045	0.099	0.042	0.036	0.108	0.046	0.104	0.052
11.53	60.0	0.413	1.089	0.311	0.298	1.056	0.425	1.038	0.516
0	0.0	0.069	0.158	0.053	0.044	0.162	0.070	0.152	0.077
14.41	75.0	0.530	1.405	0.403	0.373	1.349	0.541	1.297	0.640
0	0.0	0.111	0.269	0.065	0.055	0.264	0.114	0.237	0.124
15.37	80.0	0.574	1.524	0.433	0.397	1.460	0.581	1.390	0.685
0	0.0	0.130	0.325	0.070	0.060	0.311	0.133	0.277	0.144
17.29	90.0	0.650	1.753	0.483	0.436	1.669	0.660	1.576	0.772
0	0.0	0.167	0.435	0.078	0.066	0.406	0.168	0.350	0.180
19.21	100.0	0.739	2.031	0.532	0.475	1.919	0.749	1.801	0.873
0	0.0	0.214	0.579	0.073	0.063	0.528	0.213	0.441	0.233
21.13	110.0	0.825	2.284	0.578	0.512	2.159	0.839	2.004	0.980
0	0.0	0.262	0.725	0.090	0.077	0.680	0.263	0.577	0.290
23.06	120.0	0.921	2.583	0.622	0.552	2.443	0.942	2.268	1.107
0	0.0	0.312	0.922	0.102	0.089	0.872	0.321	0.748	0.357

RESULTS

Maximum Test Load: = 157.73 psf (Panel disengaged at joint, fastener pullout)

Test #15

Panel: FL Metal Panel, 144"x 48" x 0.063" "C" Stiffener- 16" o.c. ¾" wide 3M G16 VHB Tape

Condition: (1) 0.125" Start Track, (2) ¼" -14 fasteners@ 16" o.c., (2) 0.080" Top edge

POSITIVE PRESSURE

Load Pressure (in-h20)	Load Pressure (psf)	Deflection #1 (in)	Deflection #2 (in)	Deflection #3 (in)	Deflection #4 (in)	Deflection #5 (in)	Deflection #6 (in)	Deflection #7 (in)	Deflection #8 (in)
0	0.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
8.65	45.0	0.220	0.935	0.400	0.377	0.937	0.239	0.994	0.222
0	0.0	0.004	0.050	0.042	0.038	0.068	0.019	0.067	0.013
12.97	67.5	0.280	1.389	0.725	0.647	1.407	0.285	1.475	0.275
0	0.0	0.001	0.115	0.081	0.082	0.151	0.021	0.142	0.021
17.29	90.0	0.313	1.485	0.882	0.749	1.484	0.315	1.587	0.306
0	0.0	-0.001	0.142	0.100	0.098	0.181	0.027	0.175	0.027
25.94	135.0	0.396	1.663	1.114	0.907	1.634	0.387	1.792	0.381
0	0.0	0.008	0.205	0.141	0.129	0.247	0.045	0.244	0.044

RESULTS

No visible signs of failure observed after all testing pressures listed above were performed.

Maximum Test Load: = 135.0 psf - No Failures.

Test #15(cont.)

Panel: FL Metal Panel, 144"x 48" x 0.063" "C" Stiffener- 16" o.c. ¾" wide 3M G16 VHB Tape

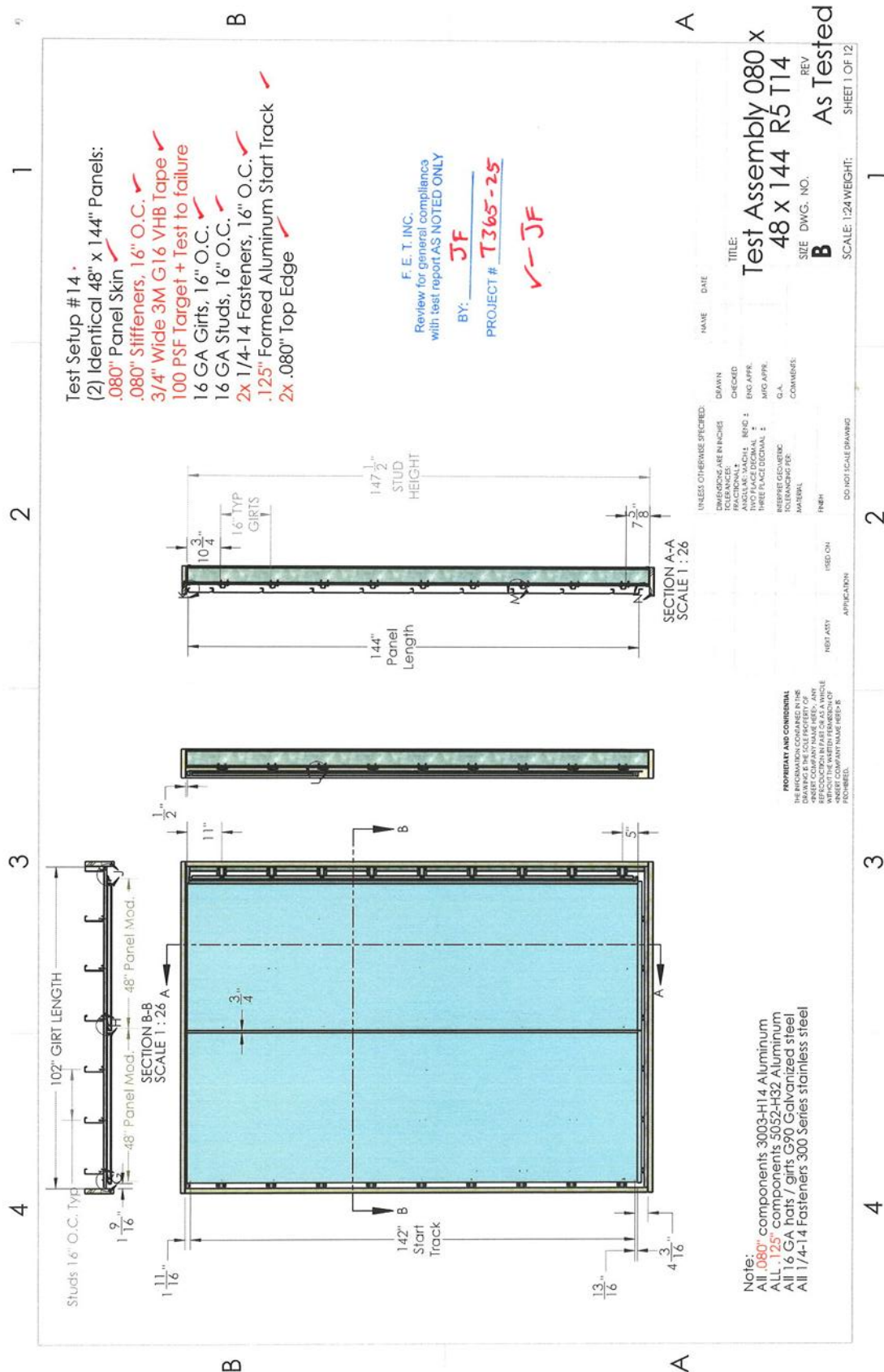
Condition: (1) 0.125" Start Track, (2) ¼" -14 fasteners@ 16" o.c., (2) 0.080" Top edge

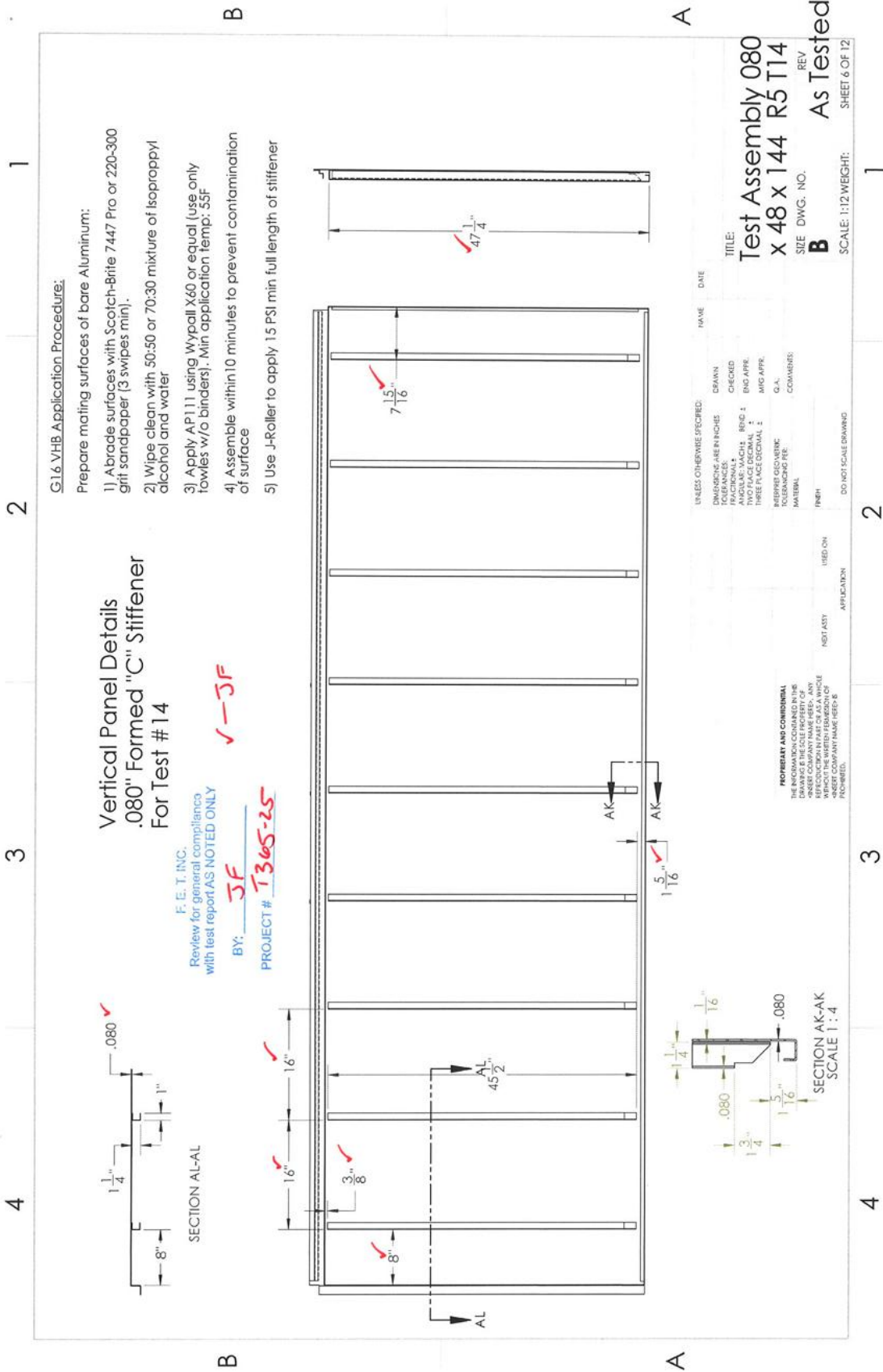
NEGATIVE PRESSURE

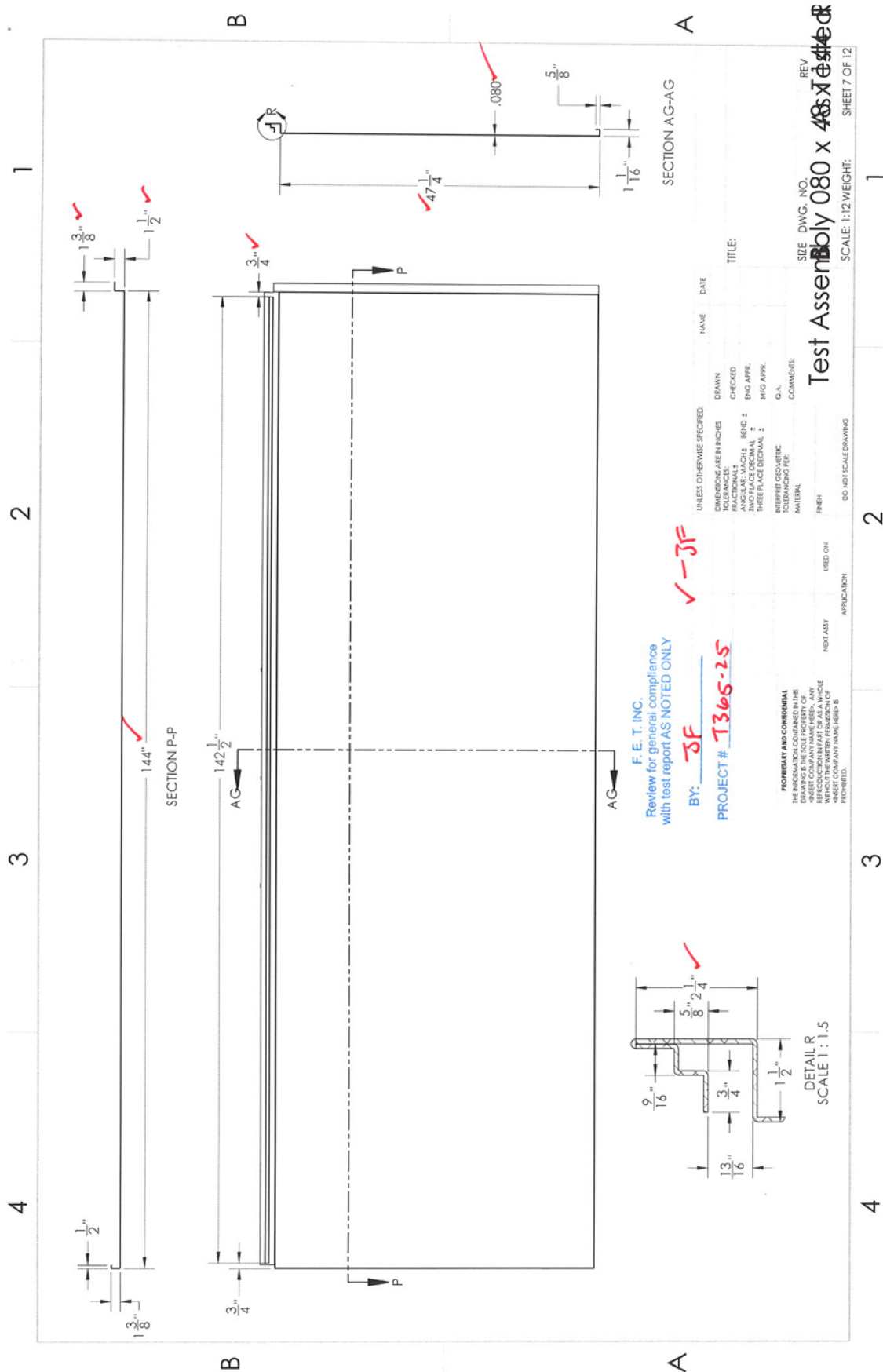
Load Pressure (in-h20)	Load Pressure (psf)	Deflection #1 (in)	Deflection #2 (in)	Deflection #3 (in)	Deflection #4 (in)	Deflection #5 (in)	Deflection #6 (in)	Deflection #7 (in)	Deflection #8 (in)
0	0.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
1.92	10.0	0.010	0.207	0.115	0.107	0.198	0.005	0.227	0.005
0	0.0	0.000	0.003	0.001	0.001	0.003	0.000	0.003	0.000
3.84	20.0	0.026	0.419	0.234	0.218	0.399	0.014	0.436	0.014
0	0.0	0.000	0.007	0.003	0.003	0.007	0.000	0.007	0.001
5.76	30.0	0.041	0.623	0.343	0.321	0.594	0.023	0.630	0.024
0	0.0	0.000	0.015	0.006	0.007	0.014	0.001	0.014	0.001
7.68	40.0	0.054	0.825	0.456	0.427	0.784	0.032	0.814	0.032
0	0.0	0.000	0.062	0.031	0.032	0.054	0.002	0.053	0.001
9.61	50.0	0.066	1.074	0.582	0.544	1.008	0.042	1.027	0.041
0	0.0	0.001	0.131	0.070	0.069	0.111	0.002	0.106	0.002
11.53	60.0	0.074	1.221	0.693	0.648	1.206	0.050	1.214	0.049
0	0.0	0.001	0.220	0.118	0.113	0.183	0.003	0.173	0.002
14.41	75.0	0.080	1.377	0.907	0.851	1.625	0.055	1.633	0.056
0	0.0	0.005	0.252	0.264	0.247	0.436	0.006	0.407	0.005
15.37	80.0	0.082	1.476	0.944	0.880	1.707	0.057	1.716	0.059
0	0.0	0.006	0.283	0.275	0.258	0.461	0.006	0.432	0.004
17.29	90.0	0.082	1.751	1.058	0.982	1.937	0.061	1.936	0.065
0	0.0	0.001	0.427	0.343	0.320	0.577	0.006	0.541	0.003

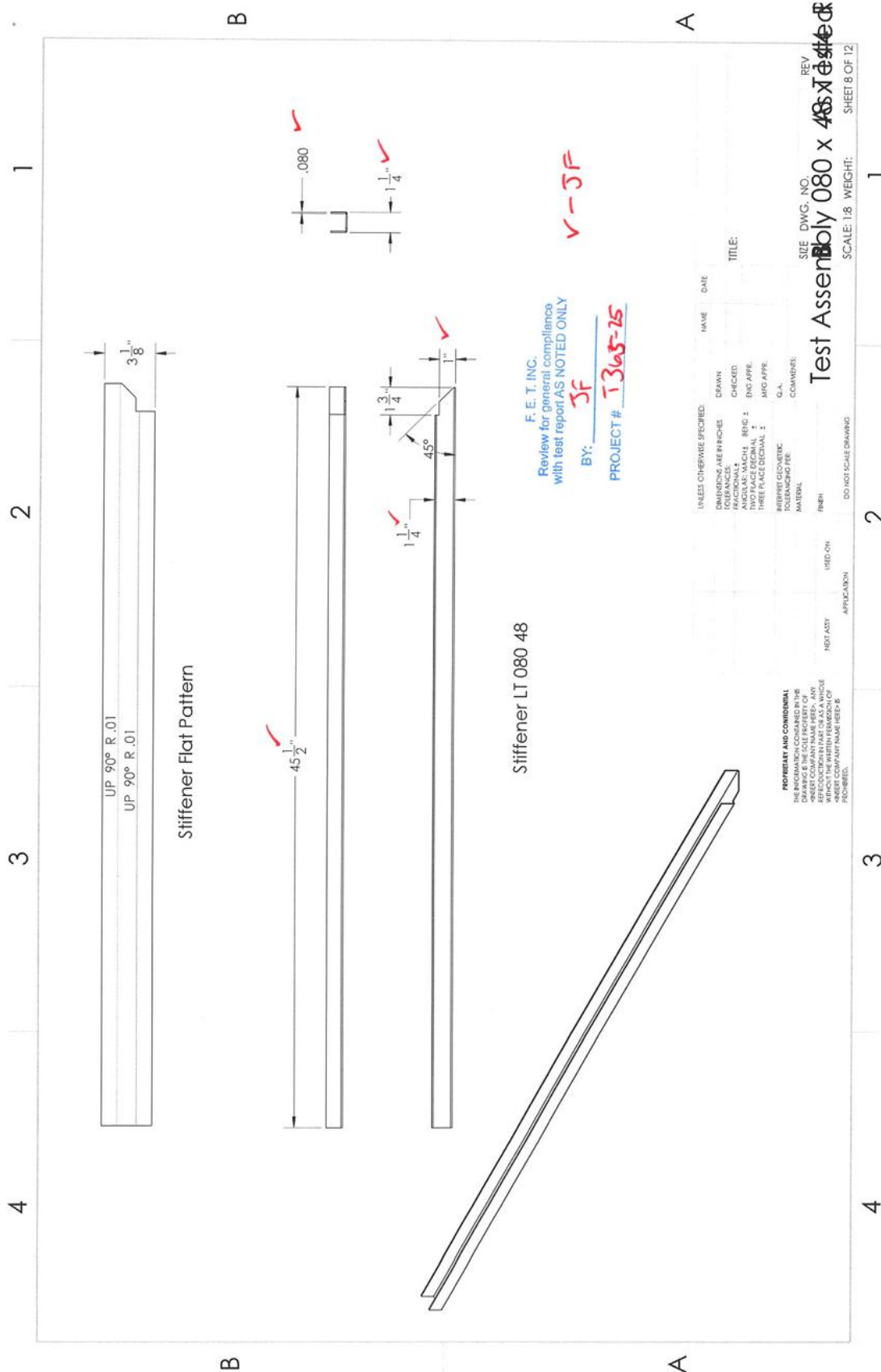
RESULTS

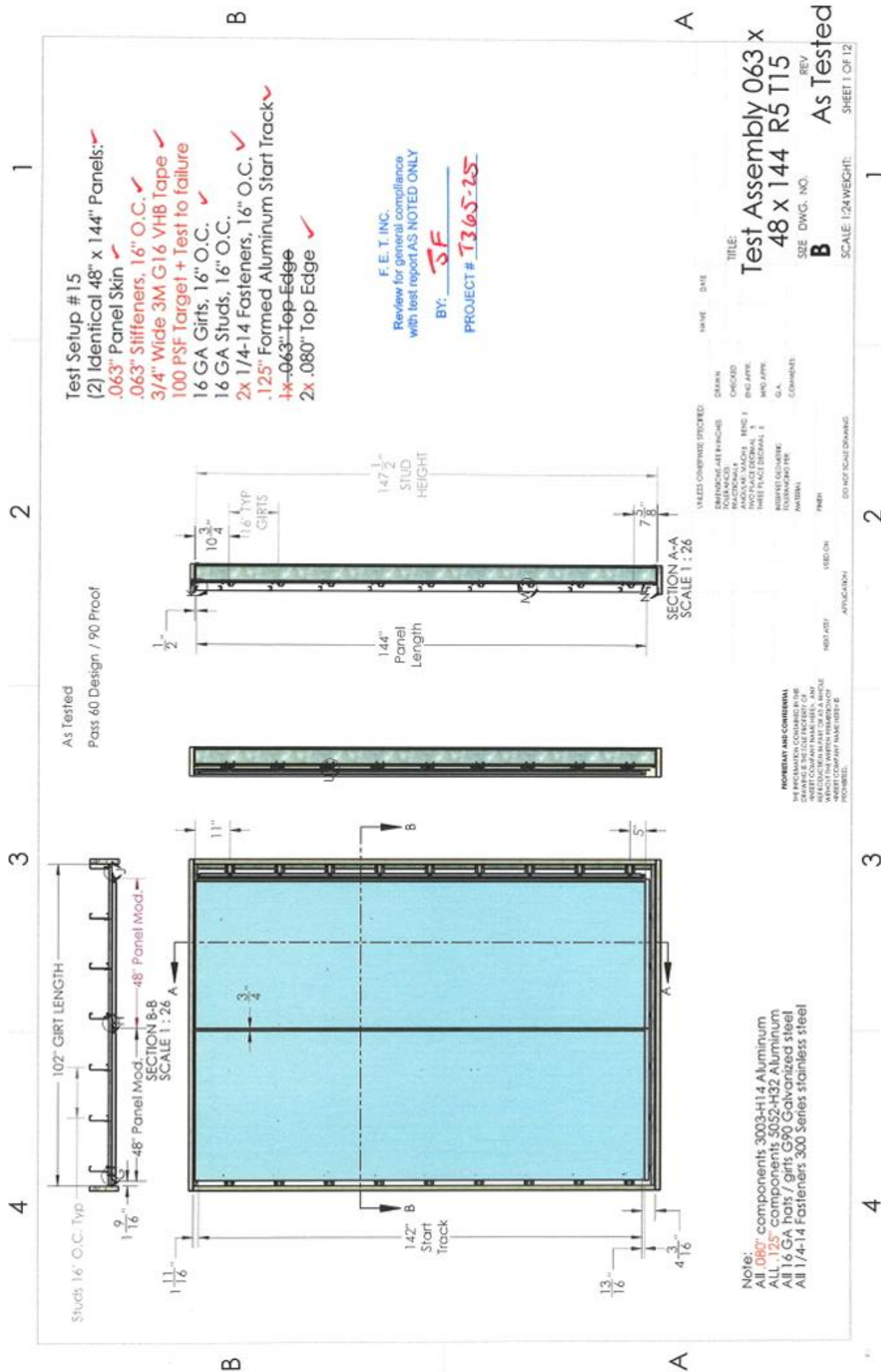
Maximum Test Load: = 99.29 psf (Panel disengaged at joint)







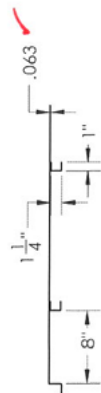




4 3 2 1

Vertical Panel Details
.063" Formed "C" Stiffener
For Test # 15

SECTION AL-AL



F. E. T. INC.
Review for general compliance
with test report AS NOTED ONLY
BY: JE
PROJECT # T365-25

V-3F

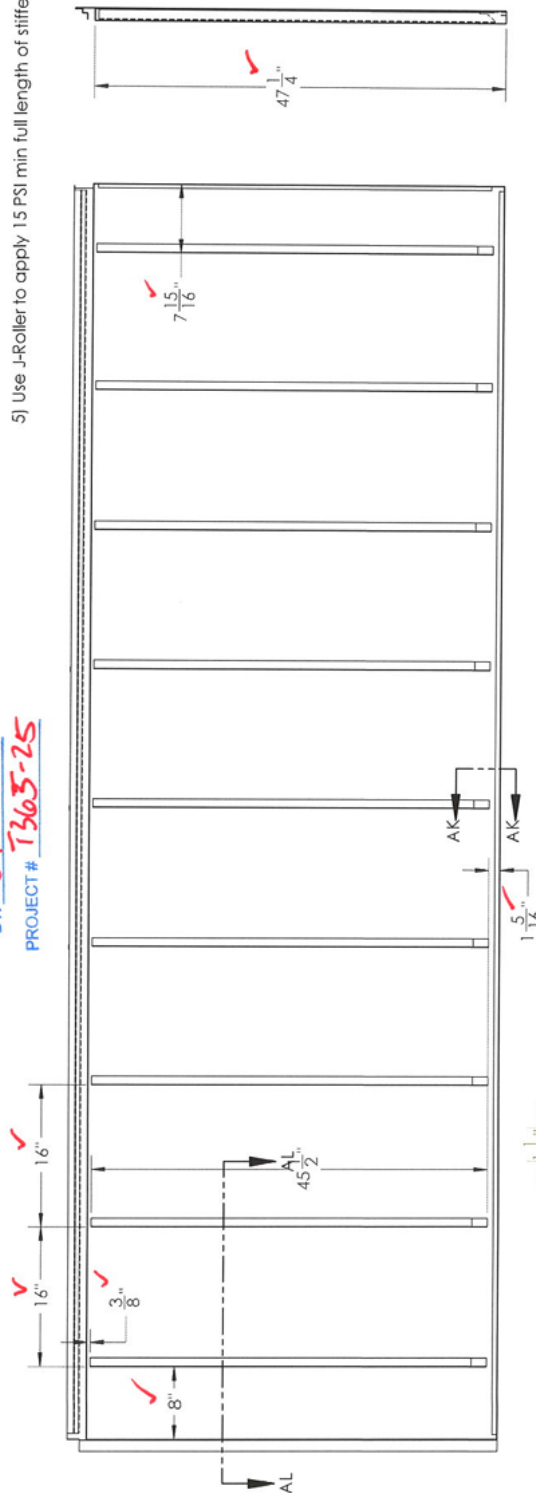
G16 VHB Application Procedure:

Prepare mating surfaces of bare Aluminum:

- 1) Abrade surfaces with Scotch-Brite 7447 Pro or 220-300 grit sandpaper (3 swipes min).
- 2) Wipe clean with 50:50 or 70:30 mixture of Isopropyl alcohol and water
- 3) Apply AP111 using Wypall X60 or equal (use only towels w/o binders). Min application temp: 55F
- 4) Assemble within 10 minutes to prevent contamination of surface
- 5) Use J-Roller to apply 15 PSI min full length of stiffener

B

B



A

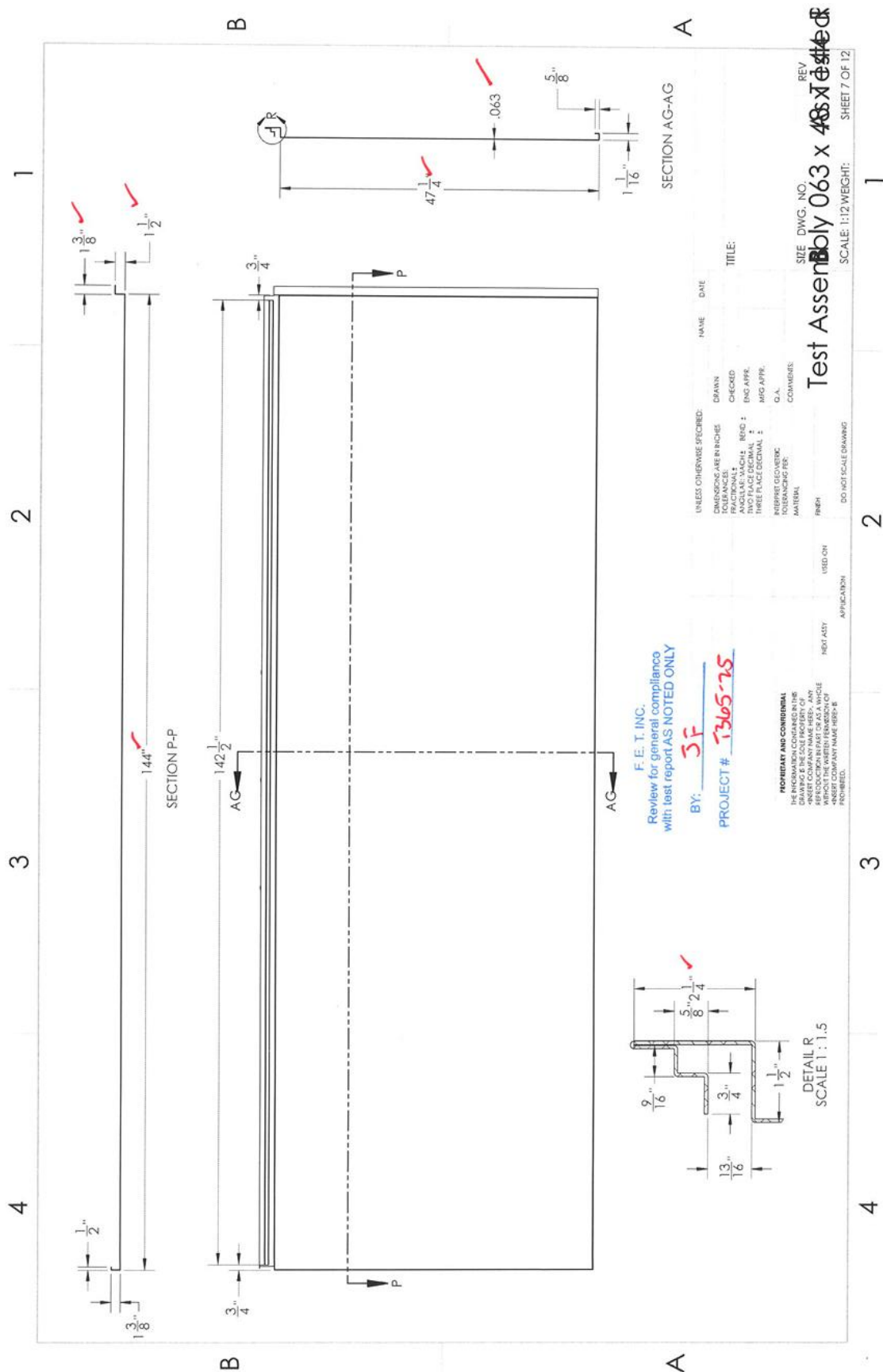
A

UNLESS OTHERWISE SPECIFIED:				NAME	DATE
DIMENSIONS ARE IN INCHES				DRAWN	
TOLERANCES:				CHECKED	
FRACTIONAL	±	DECIMAL	±	ENG APPR.	
ONE PLACE DECIMAL	±	TWO PLACE DECIMAL	±	ARG APPR.	
TWO PLACE DECIMAL	±	THREE PLACE DECIMAL	±	G.A.	
INTERPRET GEOMETRIC TOLERANCING PER:				COMMENTS:	
MATERIAL:					
FINISH:					
USED ON:					
INDEX ASY:					
APPLICATION:					
DO NOT SCALE DRAWING					

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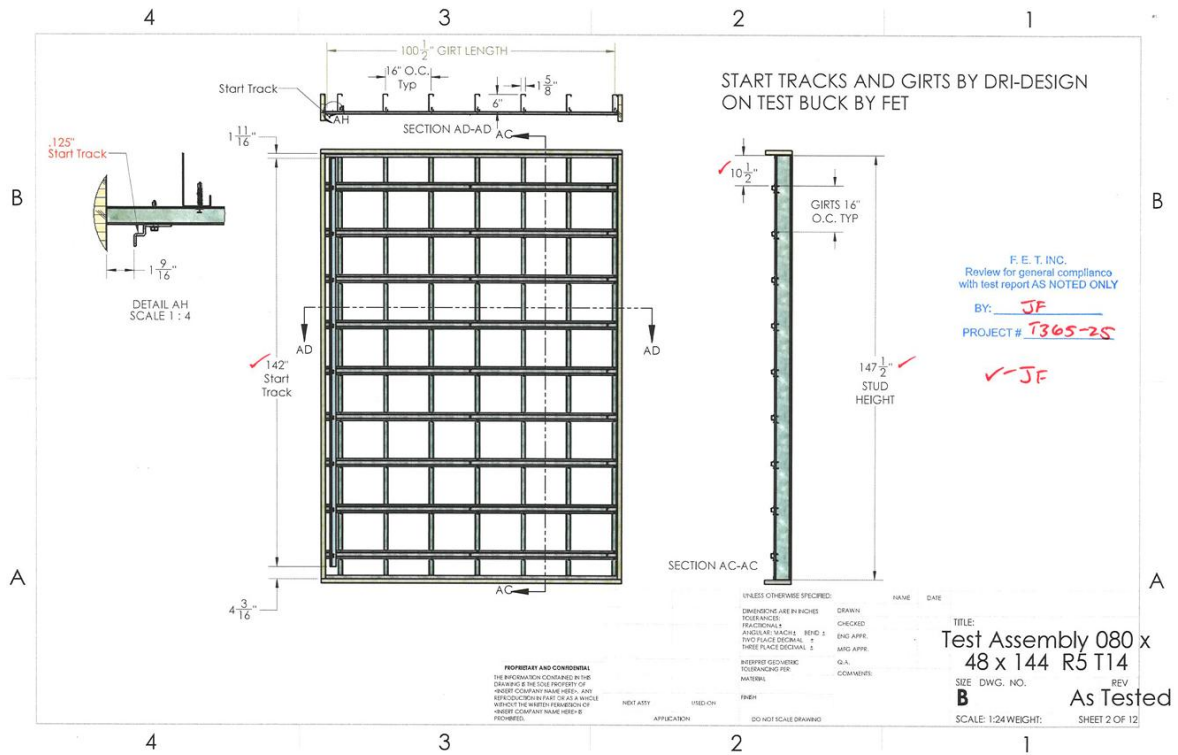
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x 48 x 144 R5 T15
SIZE DWG. NO. **B** REV
As Tested
SCALE: 1:12 WEIGHT: SHEET 6 OF 12

4 3 2 1

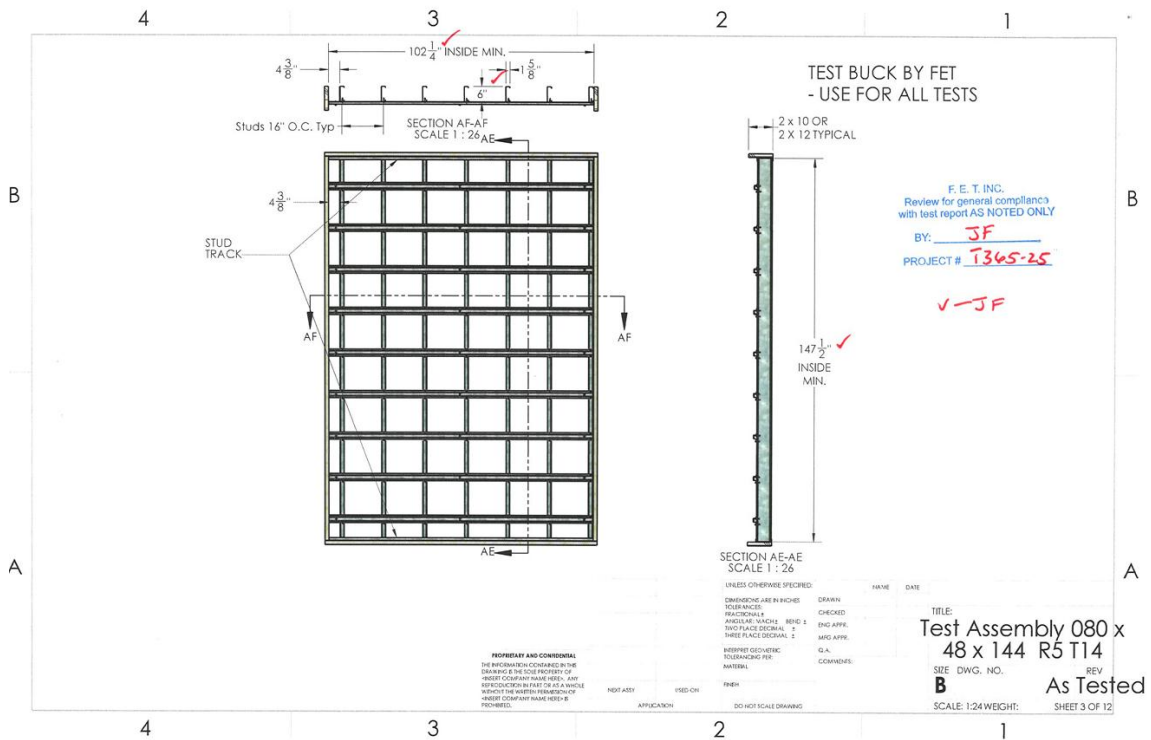




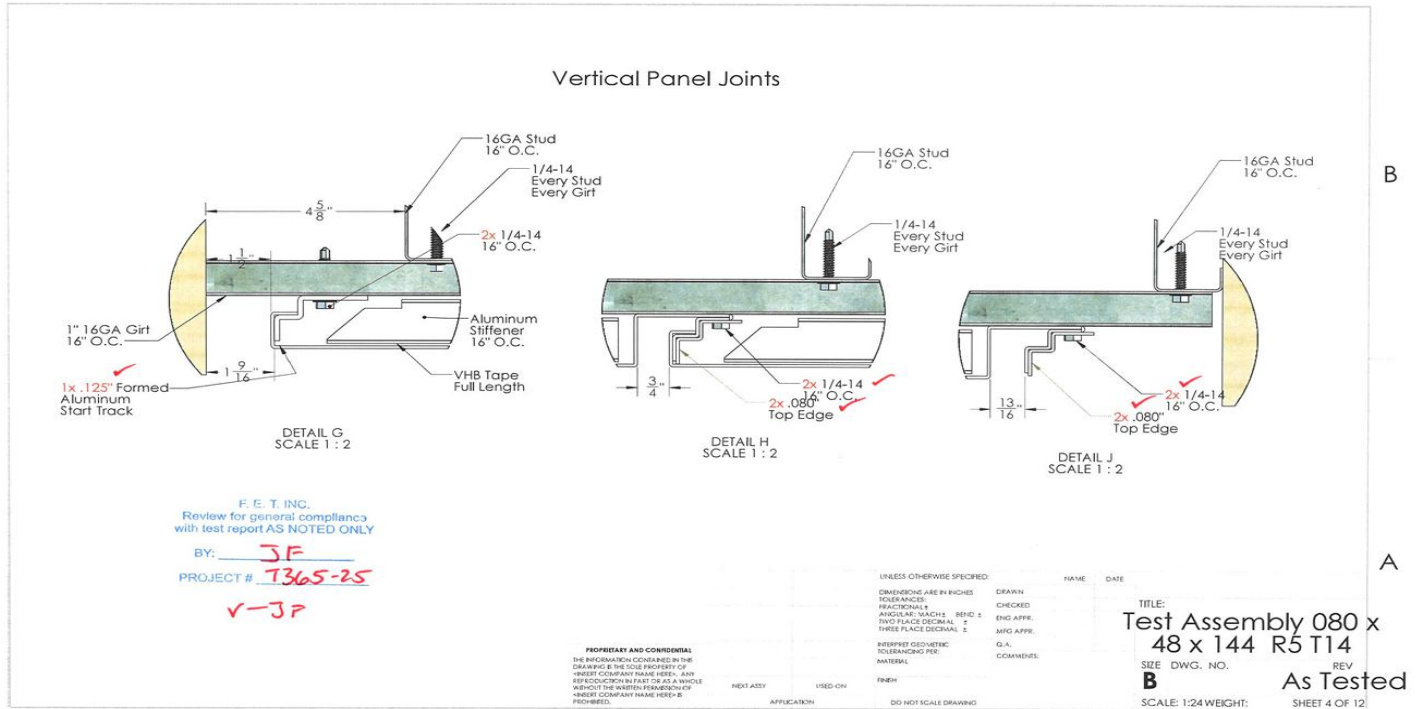
TESTS #14 & #15 - START TRACK AND GIRTS ON TEST BUCK



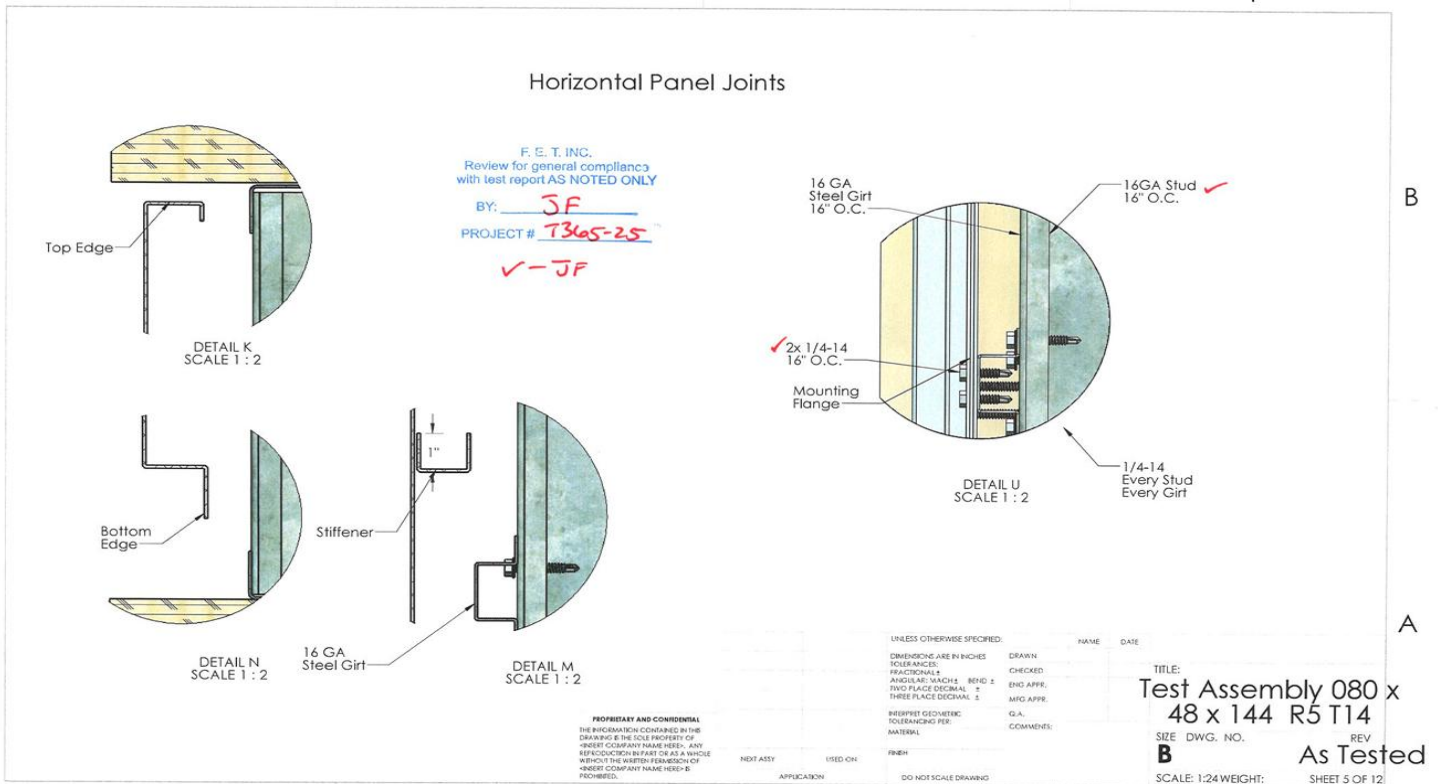
TESTS #14 & #15 - TEST BUCK



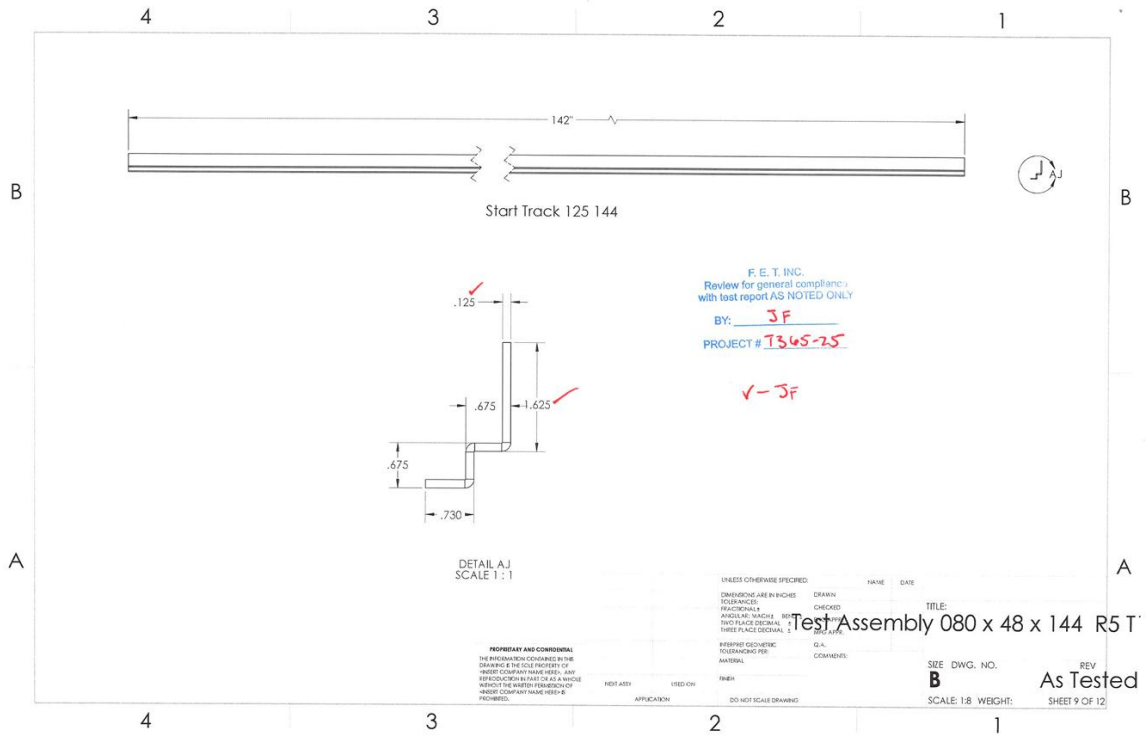
TEST #14 & #15- VERTICAL PANEL JOINTS



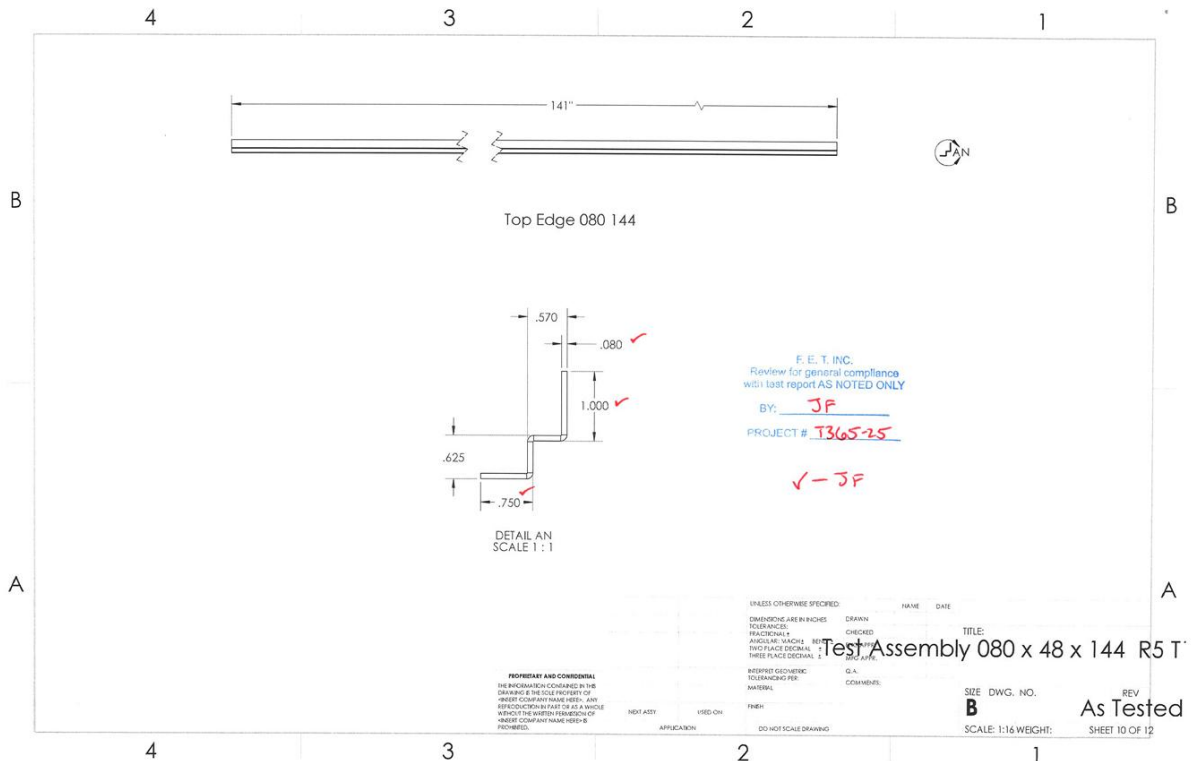
TEST #14 & #15- HORIZONTAL PANEL JOINTS



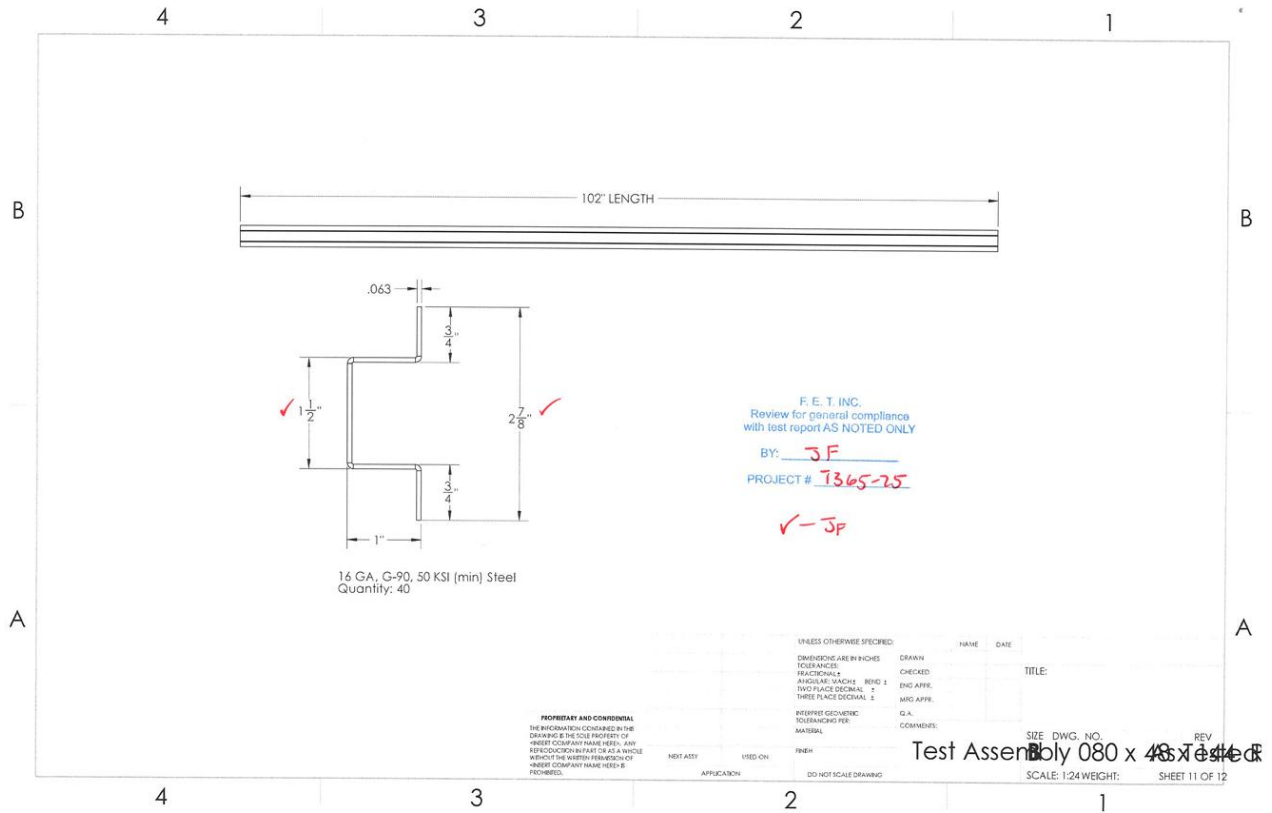
TESTS #14 & #15 "0.125" START TRACK

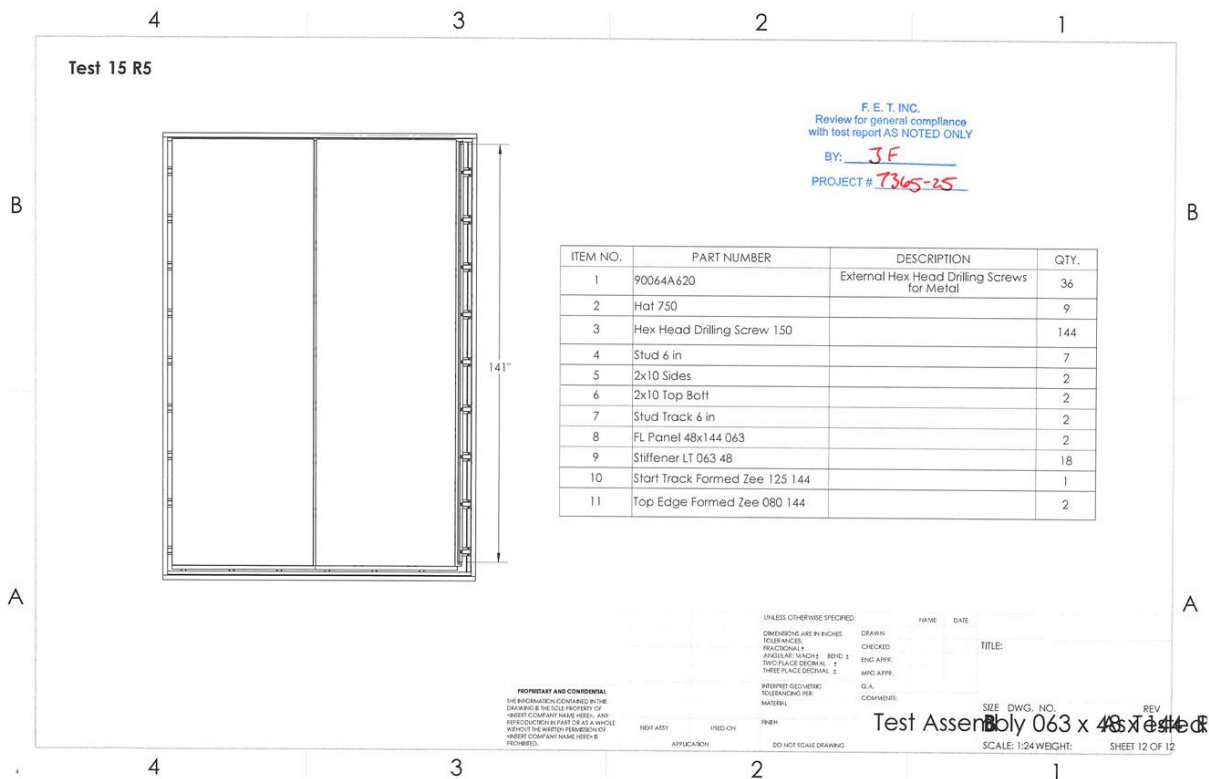
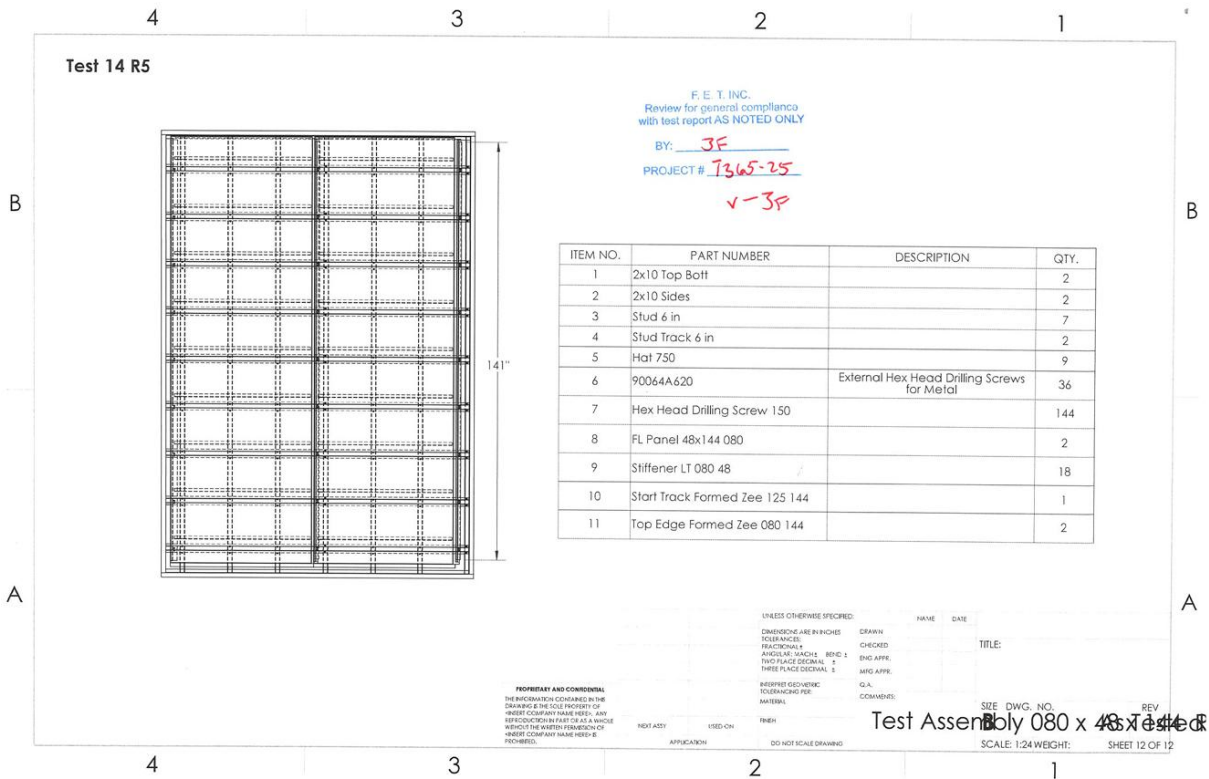


TESTS #14 & #15 "0.080" TOP EDGE



TESTS #14 & #15 STEEL GIRTS





TENSILE TEST REPORT

Client: Dri-Design
12480 Superior Court, Suite #1
Holland, MI 49424

Specimen: FL Panel, 144" long x 48" wide X 0.080" aluminum panel.
FL Panel, 144" long x 48" wide X 0.063" aluminum panel.

Test Date: December 23, 2025

Test Method: ASTM B557-10 (aluminum)

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)
25260 48" x 0.080" Panel	0.504	0.076	837.96	920.71	21,877	24,037	6.6
25258 48" x 0.063" Panel	0.494	0.060	604.47	657.44	20,394	22,181	2.8

Equipment Used: Tensile Machine #QT7-061196-020
Extensometer #10311744D

Caliper #1074379
Micrometer #110596927

Revision Log

<u>Rev. #</u>	<u>Date</u>	<u>Page(s)</u>	<u>Revision(s)</u>
0	12/29/25	NA	Original report issue

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