

STACBOND TEST REPORT

SCOPE OF WORK

AC 25 TESTING ON A2, FR, AND PE, ACM PANELS

REPORT NUMBER

I6239.07-109-44

TEST DATE(S)

02/18/19 - 04/04/19

ISSUE DATE

04/24/19

RECORD RETENTION END DATE

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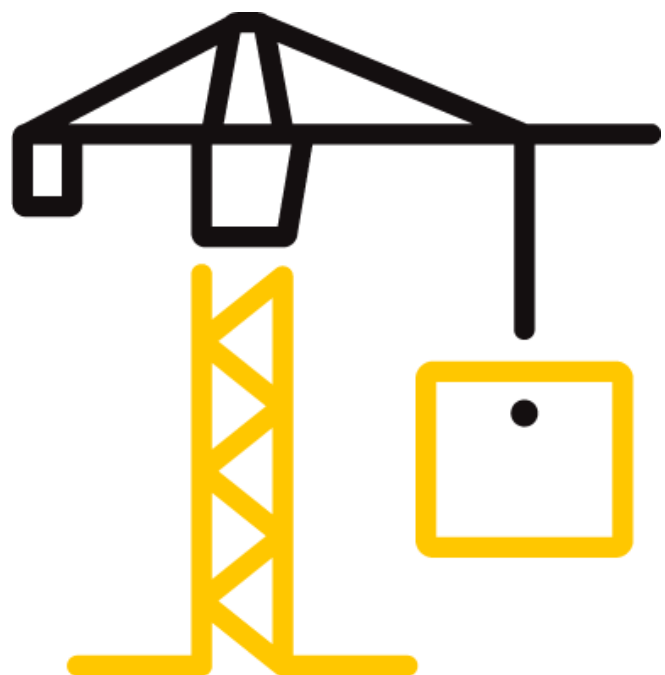
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TEST REPORT FOR STACBOND

Report No.: I6239.07-109-44

Date: 04/24/19

REPORT ISSUED TO

STACBOND

Poligono Industrial Picusa,
La Matanza s/n
15900 Padrón
SPAIN

SECTION 1

SCOPE

Intertek Building & Construction (B&C) was contracted by STACBOND to perform testing in accordance with AC25, on their A2, FR, and PE, ACM Panels. Results obtained are tested values and were secured by using the designated test method(s). Testing was conducted at Intertek B&C test facility in York, Pennsylvania.

This report does not constitute certification of this product nor an opinion or endorsement by this laboratory.

For INTERTEK B&C:

COMPLETED BY:	Andrew P. Mehalick
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DATE:	04/24/19

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APM:wnl

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SECTION 2

TEST METHOD(S)

The specimens were evaluated in general accordance with the following:

AC25, *Acceptance Criteria for Metal Composite Material (MCM)*

ASTM E72-15, *Standard Test Methods of Conducting Strength Test of Panels for Building Construction*

SECTION 3

MATERIAL SOURCE/INSTALLATION

The specimens were selected by QAI Laboratories personnel. The specimens were witnessed during production and tagged prior to shipment on 09/13/18, (Reference QAI Laboratories Test Specimen Selection Report No. VJ3053, dated 09/13/18). Representative samples of the test specimen(s) will be retained by Intertek B&C for a minimum of four years from the test completion date.

SECTION 4

EQUIPMENT

Control Panels: 005406, 005644

Linear Transducers: 65989, INT00151, INT00147, 65990, INT00141, INT00142, INT00140, INT00136, 65991, 65988, INT00139, 65987

Weather Station: 63316

SECTION 5

LIST OF OFFICIAL OBSERVERS

NAME	COMPANY
Marcos Garcia	STACBOND
Robert Beatty	Intertek B&C
Richard Hartman III	Intertek B&C
John A. Shanabrook	Intertek B&C
Ken R. Stough	Intertek B&C
Timothy J. McGill	Intertek B&C
Andrew P. Mehalick	Intertek B&C

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SECTION 6

TEST SPECIMEN DESCRIPTION

Product Type: ACM Panels

Series/Model: A2, FR, PE

Product Size(s):

Test Specimens #1 - #6 (Adhered):

OVERALL AREA:	WIDTH		HEIGHT	
	millimeters	inches	millimeters	inches
1.4 m ² (14.8 ft ²)				
Overall size	1502	59-1/8	914	36

Test Specimen #7 - #12 (Non-adhered):

OVERALL AREA:	WIDTH		HEIGHT	
	millimeters	inches	millimeters	inches
1.4 m ² (14.8 ft ²)				
Overall size	1502	59-1/8	914	36

Test Specimens #1 - #6 (Adhered):

A2 Test Specimen Construction: The ACM panels measured 0.158" thick and were comprised of an exterior 19-gauge nominal thick aluminum skin and an interior 19-gauge nominal thick aluminum skin with a mineral fillers and binder material core. Each side of the panel utilized a 90-degree leg. The leg on each side of the panel was 29/32" wide and ran the length of each side of the panel. The panel was attached to four custom extruded aluminum installation rails with #8 x 3/4" long self-drilling flat head screw 3" from each corner, spaced 13-1/2" on center on the horizontal legs, and one in 15" on center on the vertical legs. Two custom extruded aluminum "H" shaped aluminum stiffeners were located 6" from the top and bottom of the panel on the interior side. The stiffeners were attached using Dow 795 structural silicone and one #8 x 3/4" long self-drilling flat head screw at each end of the stiffener and into the vertical installation rails. The test buck had 3/16" thick 2" by 2" angle on the jambs. The vertical installation rails were fastened to the steel angles with #12-24 x 1-1/4" hex head self-tapping screws 8" above and below the midspan of the panel. The horizontal installation rails were removed to facilitate testing.

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FR Test Specimen Construction: The ACM panels measured 0.162" thick and were comprised of an exterior 19-gauge nominal thick aluminum skin and an interior 19-gauge nominal thick aluminum skin with a polyethylene mineral filled core. Each side of the panel utilized a 90-degree leg. The leg on each side of the panel was 29/32" wide and ran the length of each side of the panel. The panel was attached to four custom extruded aluminum installation rails with #8 x 3/4" long self-drilling flat head screw 3" from each corner, spaced 13-1/2" on center on the horizontal legs, and one in 15" on center on the vertical legs. Two custom extruded aluminum "H" shaped aluminum stiffeners were located 6" from the top and bottom of the panel on the interior side. The stiffeners were attached using Dow 795 structural silicone and one #8 x 3/4" long self-drilling flat head screw at each end of the stiffener and into the vertical installation rails. The test buck had 3/16" thick 2" by 2" angle on the jambs. The vertical installation rails were fastened to the steel angles with #12-24 x 1-1/4" hex head self-tapping screws 8" above and below the midspan of the panel. The horizontal installation rails were removed to facilitate testing.

PE Test Specimen Construction: The ACM panels measured 0.158" thick and were comprised of an exterior 19-gauge nominal thick aluminum skin and an interior 19-gauge nominal thick aluminum skin with a polyethylene plastic core. Each side of the panel utilized a 90-degree leg. The leg on each side of the panel was 29/32" wide and ran the length of each side of the panel. The panel was attached to four custom extruded aluminum installation rails with #8 x 3/4" long self-drilling flat head screw 3" from each corner, spaced 13-1/2" on center on the horizontal legs, and one in 15" on center on the vertical legs. Two custom extruded aluminum "H" shaped aluminum stiffeners were located 6" from the top and bottom of the panel on the interior side. The stiffeners were attached using Dow 795 structural silicone and one #8 x 3/4" long self-drilling flat head screw at each end of the stiffener and into the vertical installation rails. The test buck had 3/16" thick 2" by 2" angle on the jambs. The vertical installation rails were fastened to the steel angles with #12-24 x 1-1/4" hex head self-tapping screws 8" above and below the midspan of the panel. The horizontal installation rails were removed to facilitate testing.

Test Specimens #7 - #12 (Non-Adhered):

A2 Test Specimen Construction: The ACM panels measured 0.158" thick and were comprised of an exterior 19-gauge nominal thick aluminum skin and an interior 19-gauge nominal thick aluminum skin with a mineral fillers and binder material core. Each side of the panel utilized a 90-degree leg. The leg on each side of the panel was 29/32" wide and ran the length of each side of the panel. The panel was attached to four custom extruded aluminum installation rails with #8 x 3/4" long self-drilling flat head screw 3" from each corner, spaced 13-1/2" on center on the horizontal legs, and one in 15" on center on the vertical legs. The test buck had 3/16" thick 2" by 2" angle on the jambs. The vertical installation rails were fastened to the steel angles with #12-24 x 1-1/4" hex head self-drilling screws 8" above and below the midspan of the panel. The horizontal installation rails were removed to facilitate testing.

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FR Test Specimen Construction: The ACM panels measured 0.162" thick and were comprised of an exterior 19-gauge nominal thick aluminum skin and an interior 19-gauge nominal thick aluminum skin with a polyethylene mineral filled core. Each side of the panel utilized a 90-degree leg. The leg on each side of the panel was 29/32" wide and ran the length of each side of the panel. The panel was attached to four custom extruded aluminum installation rails with #8 x 3/4" long self-drilling flat head screw 3" from each corner, spaced 13-1/2" on center on the horizontal legs, and one in 15" on center on the vertical legs. The test buck had 3/16" thick 2" by 2" angle on the jambs. The vertical installation rails were fastened to the steel angles with #12-24 x 1-1/4" hex head self-drilling screws 8" above and below the midspan of the panel. The horizontal installation rails were removed to facilitate testing.

PE Test Specimen Construction: The ACM panels measured 0.158" thick and were comprised of an exterior 19-gauge nominal thick aluminum skin and an interior 19-gauge nominal thick aluminum skin with a polyethylene plastic core. Each side of the panel utilized a 90-degree leg. The leg on each side of the panel was 29/32" wide and ran the length of each side of the panel. The panel was attached to four custom extruded aluminum installation rails with #8 x 3/4" long self-drilling flat head screw 3" from each corner, spaced 13-1/2" on center on the horizontal legs, and one in 15" on center on the vertical legs. The test buck had 3/16" thick 2" by 2" angle on the jambs. The vertical installation rails were fastened to the steel angles with #12-24 x 1-1/4" hex head self-drilling screws 8" above and below the midspan of the panel. The horizontal installation rails were removed to facilitate testing.

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A2 PANELS SERVICEABILITY TEST RESULTS

TEST PROCEDURE: All test loads were applied in accordance with Section 4.1.2 of ICC-ES AC25.

TEST SPECIMENS #1 - #6: The specimens were loaded in increments of 5.0 psf until the design load was reached. The design load is the load at which the panel had a maximum deflection of 0.99" or less. Deflection and permanent set were recorded at each load. All loads were held for a duration of 60 seconds.

BAGGING PROCEDURE: A 4 mil thick plastic bag was utilized to enable the attainment of all the test loads.

POSITIVE BAGGING PROCEDURE: The bag was applied to the exterior of the specimen and sealed with tape to the exterior of the steel frame used for installation of the specimen. The exterior bag was a full bag with pleats to allow for movement of the specimen.

NEGATIVE BAGGING PROCEDURE: The bag was applied to the interior of the specimen and sealed with tape to the interior of the steel frame used for installation of the specimen. The interior bag was a full bag with pleats to allow for movement of the specimen. The bag covered all parts of the specimen including the installation bars and reinforcement.

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TEST RESULTS

The temperature range during testing was 16°C - 19°C (61°F - 67°F). The results are tabulated as follows:

Test Specimen #1:

DESIGN PRESSURE +85.0 psf	INDICATOR READINGS (INCHES)							
	#1	#2	#3	NET	#4	#5	#6	NET
MAXIMUM DEFLECTION	0.04	0.74	0.05	0.70	0.05	1.04	0.08	0.98
PERMANENT SET	0.01	0.04	0.03	0.02	0.02	0.06	0.03	0.04

Test Specimen #2:

DESIGN PRESSURE +85.0 psf	INDICATOR READINGS (INCHES)							
	#1	#2	#3	NET	#4	#5	#6	NET
MAXIMUM DEFLECTION	0.04	0.70	0.02	0.67	0.05	1.02	0.04	0.98
PERMANENT SET	0.01	0.02	0.01	0.01	0.01	0.02	0.01	0.01

Test Specimen #3:

DESIGN PRESSURE +85.0 psf	INDICATOR READINGS (INCHES)							
	#1	#2	#3	NET	#4	#5	#6	NET
MAXIMUM DEFLECTION	0.03	0.71	0.05	0.67	0.03	1.02	0.05	0.98
PERMANENT SET	0.01	0.02	0.03	<0.01	<0.01	0.03	0.01	0.03

Average Design Load: +85.0 psf

Notes:

1. Reference Section 16 for load-deflection charts as required in ASTM E72.
2. Reference Sketch #1 for indicator locations.

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Test Specimen #4:

DESIGN PRESSURE -90.0 psf	INDICATOR READINGS (INCHES)							
	#1	#2	#3	NET	#4	#5	#6	NET
MAXIMUM DEFLECTION	0.13	0.74	0.09	0.63	0.13	1.07	0.08	0.97
PERMANENT SET	0.07	0.13	0.02	0.09	0.03	0.07	0.03	0.04

Test Specimen #5:

DESIGN PRESSURE -80.0 psf	INDICATOR READINGS (INCHES)							
	#1	#2	#3	NET	#4	#5	#6	NET
MAXIMUM DEFLECTION	0.11	0.75	0.08	0.66	0.09	1.04	0.06	0.97
PERMANENT SET	0.03	0.12	0.02	0.10	0.02	0.06	0.03	0.04

Test Specimen #6:

DESIGN PRESSURE -90.0 psf	INDICATOR READINGS (INCHES)							
	#1	#2	#3	NET	#4	#5	#6	NET
MAXIMUM DEFLECTION	0.09	0.69	0.14	0.58	0.10	1.04	0.12	0.93
PERMANENT SET	0.02	0.04	0.04	0.01	0.04	0.07	0.03	0.04

Average Design Load: -86.7 psf

Notes:

3. Reference Section 16 for load-deflection charts as required in ASTM E72.
4. Reference Sketch #1 for indicator locations.

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SECTION 8

A2 PANELS STRENGTH TEST RESULTS

TEST PROCEDURE: All test loads were applied in accordance with Section 4.1.2 of ICC-ES AC25.

TEST SPECIMENS #7 - #12: A preload of 5.0 psf was applied. Loading was started at 10.0 psf and was increased by increments of 5.0 psf. All loads were held for a duration of 60 seconds. The test results presented are the maximum loads that successfully passed the test.

BAGGING PROCEDURE: A 4 mil thick plastic bag was utilized to enable the attainment of all the test loads.

POSITIVE BAGGING PROCEDURE: The bag was applied to the exterior of the specimen and sealed with tape to the exterior of the steel frame used for installation of the specimen. The exterior bag was a full bag with pleats to allow for movement of the specimen.

NEGATIVE BAGGING PROCEDURE: The bag was applied to the interior of the specimen and sealed with tape to the interior of the steel frame used for installation of the specimen. The interior bag was a full bag with pleats to allow for movement of the specimen. The bag covered all parts of the specimen including the installation bar. The panels did not have reinforcement bars.

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TEST RESULTS

The temperature range during testing was 14°C - 19°C (58°F - 66°F). The results are tabulated as follows:

Positive Strength Testing Results

TEST SPECIMEN	RESULTS	ALLOWED
Test Unit #7 A2 Core Non-Adhered +4070 Pa (+85.0 psf) (Positive)	Pass	Fasteners held
NOTE: Strength test was stopped due to right panel leg breaking at 84.9 psf, while trying to achieve 90 psf test load.		
Test Unit #8 A2 Core Non-Adhered +2394 Pa (+50.0 psf) (Positive)	Pass	Fasteners held
NOTE: Strength test was stopped due to right installation anchors pulling out at 55 psf. Load was held for 35 seconds.		
Test Unit #9 A2 Core Non-Adhered +3830 Pa (+80.0 psf) (Positive)	Pass	Fasteners held
NOTE: Strength test was stopped due to left panel leg breaking and anchors pulling out at 77.9 psf, while trying to achieve 85 psf test load.		

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Negative Strength Testing Results

TEST SPECIMEN	RESULTS	ALLOWED
Test Unit #10 A2 Core Non-Adhered -4070 Pa (-85.0 psf) (Negative)	Pass	Fasteners held
NOTE: Strength test was stopped due to left panel leg breaking at 80.9 psf, while trying to achieve 90 psf test load.		
Test Unit #11 A2 Core Non-Adhered -3591 Pa (-75.0 psf) (Negative)	Pass	Fasteners held
NOTE: Strength test was stopped due to Right panel leg breaking at 74.7 psf, while trying to achieve 80.0 psf test load.		
Test Unit #12 A2 Core Non-Adhered -3112 Pa (-65.0 psf) (Negative)	Pass	Fasteners held
NOTE: Strength test was stopped due to left panel leg fastener pullout at 70.0 psf.		

Average Ultimate Strength Pressure: +71.7 psf / -75.0 psf

General Notes: All testing was performed in accordance with the bag method specified in Section 11.3 and 12.3 of ASTM E72 as required in Section 4.1.2.1 of AC25.

Loads were held for 60 seconds.

Tape and film were used to seal against air leakage during structural testing. In our opinion, the tape and film did not influence the results of the test.

A 4-mil thick plastic bag was utilized to enable the attainment of all the test loads.

SECTION 9

CONCLUSION A2 PANELS

SERVICEABILITY TESTING: The average design pressure, as defined by Section 4.1.2 of ICC-ES AC25, was +85.0 psf / -86.7 psf. This average design pressure is based on an allowable deflection of 0.99".

STRENGTH TESTING: The average design pressure, as defined by Section 4.1.4 of ICC-ES AC25, was +35.9 psf / -37.5 psf. This average design pressure is based on the average ultimate strength of the three specimens tested with an applied factor of safety of 2.0.

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SECTION 10

FR PANEL SERVICEABILITY TEST RESULTS

TEST PROCEDURE: All test loads were applied in accordance with Section 4.1.2 of ICC-ES AC25.

TEST SPECIMENS #1 - #6: The specimens were loaded in increments of 5.0 psf until the design load was reached. The design load is the load at which the panel had a maximum deflection of 0.99" or less. Deflection and permanent set were recorded at each load. All loads were held for a duration of 60 seconds.

BAGGING PROCEDURE: A 4 mil thick plastic bag was utilized to enable the attainment of all the test loads.

POSITIVE BAGGING PROCEDURE: The bag was applied to the exterior of the specimen and sealed with tape to the exterior of the steel frame used for installation of the specimen. The exterior bag was a full bag with pleats to allow for movement of the specimen.

NEGATIVE BAGGING PROCEDURE: The bag was applied to the interior of the specimen and sealed with tape to the interior of the steel frame used for installation of the specimen. The interior bag was a full bag with pleats to allow for movement of the specimen. The bag covered all parts of the specimen including the installation bars and reinforcement.

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TEST RESULTS

The temperature range during testing was 17°C - 19°C (62°F - 67°F). The results are tabulated as follows:

Test Specimen #1:

DESIGN PRESSURE +80.0 psf	INDICATOR READINGS (INCHES)							
	#1	#2	#3	NET	#4	#5	#6	NET
MAXIMUM DEFLECTION	0.07	0.70	0.03	0.65	0.07	1.02	0.05	0.96
PERMANENT SET	0.01	0.01	0.01	<0.01	0.02	0.04	<0.01	0.03

Test Specimen #2:

DESIGN PRESSURE +85.0 psf	INDICATOR READINGS (INCHES)							
	#1	#2	#3	NET	#4	#5	#6	NET
MAXIMUM DEFLECTION	0.03	0.73	0.03	0.70	0.05	1.04	0.06	0.99
PERMANENT SET	0.01	0.02	0.01	0.01	0.01	0.02	0.01	0.01

Test Specimen #3:

DESIGN PRESSURE +80.0 psf	INDICATOR READINGS (INCHES)							
	#1	#2	#3	NET	#4	#5	#6	NET
MAXIMUM DEFLECTION	0.05	0.66	0.02	0.63	0.05	1.03	0.04	0.99
PERMANENT SET	0.02	0.02	0.01	0.01	0.02	0.05	0.01	0.04

Average Design Load: +81.7 psf

Notes:

5. Reference Section 17 for load-deflection charts as required in ASTM E72.
6. Reference Sketch #1 for indicator locations.

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Test Specimen #4:

DESIGN PRESSURE -80.0 psf	INDICATOR READINGS (INCHES)							
	#1	#2	#3	NET	#4	#5	#6	NET
MAXIMUM DEFLECTION	0.14	0.63	0.09	0.52	0.13	1.11	0.13	0.98
PERMANENT SET	0.08	0.06	0.03	0.01	0.08	0.20	0.08	0.12

Test Specimen #5:

DESIGN PRESSURE -80.0 psf	INDICATOR READINGS (INCHES)							
	#1	#2	#3	NET	#4	#5	#6	NET
MAXIMUM DEFLECTION	0.10	0.64	0.12	0.53	0.15	1.00	0.08	0.89
PERMANENT SET	0.02	0.05	0.03	0.03	0.03	0.06	0.02	0.04

Test Specimen #6:

DESIGN PRESSURE -75.0 psf	INDICATOR READINGS (INCHES)							
	#1	#2	#3	NET	#4	#5	#6	NET
MAXIMUM DEFLECTION	0.27	0.75	0.07	0.58	0.16	1.09	0.07	0.98
PERMANENT SET	0.06	0.09	0.02	0.05	0.03	0.10	0.01	0.08

Average Design Load: -78.3 psf

Notes:

7. Reference Section 17 for load-deflection charts as required in ASTM E72.
8. Reference Sketch #1 for indicator locations.

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SECTION 11

FR PANEL STRENGTH TEST RESULTS

TEST PROCEDURE: All test loads were applied in accordance with Section 4.1.2 of ICC-ES AC25.

TEST SPECIMENS #7 - #12: A preload of 5.0 psf was applied. Loading was started at 10.0 psf and was increased by increments of 5.0 psf. All loads were held for a duration of 60 seconds. The test results presented are the maximum loads that successfully passed the test.

BAGGING PROCEDURE: A 4 mil thick plastic bag was utilized to enable the attainment of all the test loads.

POSITIVE BAGGING PROCEDURE: The bag was applied to the exterior of the specimen and sealed with tape to the exterior of the steel frame used for installation of the specimen. The exterior bag was a full bag with pleats to allow for movement of the specimen.

NEGATIVE BAGGING PROCEDURE: The bag was applied to the interior of the specimen and sealed with tape to the interior of the steel frame used for installation of the specimen. The interior bag was a full bag with pleats to allow for movement of the specimen. The bag covered all parts of the specimen including the installation bar. The panels did not have reinforcement bars.

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TEST RESULTS

The temperature range during testing was 11°C - 19°C (52°F - 67°F). The results are tabulated as follows:

Negative Strength Testing Results

TEST SPECIMEN	RESULTS	ALLOWED
Test Unit #7 FR Core Non-Adhered -4549 Pa (-95.0 psf) (Negative)	Pass	Fasteners held
NOTE: Strength test was stopped due to left panel leg breaking at 100.0 psf.		
Test Unit #8 FR Core Non-Adhered -4549 Pa (-95.0 psf) (Negative)	Pass	Fasteners held
NOTE: Strength test was stopped due to left panel leg breaking at 40.8 psf while trying to achieve 100.0 psf.		
Test Unit #9 FR Core Non-Adhered -3830 Pa (-80.0 psf) (Negative)	Pass	Fasteners held
NOTE: Strength test was stopped due to right panel leg breaking at 85.0 psf.		

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Positive Strength Testing Results

TEST SPECIMEN	RESULTS	ALLOWED
Test Unit #10 FR Core Non-Adhered +4549 Pa (+95.0 psf) (Positive)	Pass	Fasteners held
NOTE: Strength test was stopped due to left installation anchors pulling out of the buck at 98.3 psf.		
Test Unit #11 FR Core Non-Adhered +2394 Pa (+50.0 psf) (Positive)	Pass	Fasteners held
NOTE: Strength test was stopped due to left aluminum extrusion rail breaking at 54.6 psf.		
Test Unit #12 FR Core Non-Adhered +2394 Pa (+50.0 psf) (Positive)	Pass	Fasteners held
NOTE: Strength test was stopped due to left aluminum extrusion rail breaking at 54.9 psf.		

Average Ultimate Strength Pressure: +65.0 psf / -90.0 psf

General Notes: All testing was performed in accordance with the bag method specified in Section 11.3 and 12.3 of ASTM E72 as required in Section 4.1.2.1 of AC25.

Loads were held for 60 seconds.

Tape and film were used to seal against air leakage during structural testing. In our opinion, the tape and film did not influence the results of the test.

A 4 mil thick plastic bag was utilized to enable the attainment of all the test loads.

SECTION 12

CONCLUSION FR PANELS

SERVICEABILITY TESTING: The average design pressure, as defined by Section 4.1.2 of ICC-ES AC25, was +81.7 psf / -78.3 psf. This average design pressure is based on an allowable deflection of 0.99".

STRENGTH TESTING: The average design pressure, as defined by Section 4.1.4 of ICC-ES AC25, was +32.5 psf / -45.0 psf. This average design pressure is based on the average ultimate strength of the three specimens tested with an applied factor of safety of 2.0.

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SECTION 13

PE PANEL SERVICEABILITY TEST RESULTS

TEST PROCEDURE: All test loads were applied in accordance with Section 4.1.2 of ICC-ES AC25.

TEST SPECIMENS #1 - #6: The specimens were loaded in increments of 5.0 psf until the design load was reached. The design load is the load at which the panel had a maximum deflection of 0.99" or less. Deflection and permanent set were recorded at each load. All loads were held for a duration of 60 seconds.

BAGGING PROCEDURE: A 4 mil thick plastic bag was utilized to enable the attainment of all the test loads.

POSITIVE BAGGING PROCEDURE: The bag was applied to the exterior of the specimen and sealed with tape to the exterior of the steel frame used for installation of the specimen. The exterior bag was a full bag with pleats to allow for movement of the specimen.

NEGATIVE BAGGING PROCEDURE: The bag was applied to the interior of the specimen and sealed with tape to the interior of the steel frame used for installation of the specimen. The interior bag was a full bag with pleats to allow for movement of the specimen. The bag covered all parts of the specimen including the installation bars and reinforcement.

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TEST RESULTS

The temperature range during testing was 18°C - 19°C (65°F - 67°F). The results are tabulated as follows:

Test Specimen #1:

DESIGN PRESSURE +75.0 psf	INDICATOR READINGS (INCHES)							
	#1	#2	#3	NET	#4	#5	#6	NET
MAXIMUM DEFLECTION	0.07	0.66	0.03	0.61	0.09	1.01	0.02	0.96
PERMANENT SET	0.02	0.01	<0.01	<0.01	0.01	0.03	<0.01	0.03

Test Specimen #2:

DESIGN PRESSURE +75.0 psf	INDICATOR READINGS (INCHES)							
	#1	#2	#3	NET	#4	#5	#6	NET
MAXIMUM DEFLECTION	0.08	0.64	0.06	0.57	0.06	1.03	0.06	0.97
PERMANENT SET	<0.01	<0.01	0.02	0.01	0.01	0.04	0.02	0.03

Test Specimen #3:

DESIGN PRESSURE +80.0 psf	INDICATOR READINGS (INCHES)							
	#1	#2	#3	NET	#4	#5	#6	NET
MAXIMUM DEFLECTION	0.05	0.71	0.07	0.65	0.09	1.06	0.07	0.98
PERMANENT SET	0.02	0.02	0.01	0.01	0.01	0.03	0.01	0.02

Average Design Load: +76.7 psf

Notes:

9. Reference Section 18 for load-deflection charts as required in ASTM E72.
10. Reference Sketch #1 for indicator locations.

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Test Specimen #4:

DESIGN PRESSURE -100.0 psf	INDICATOR READINGS (INCHES)							
	#1	#2	#3	NET	#4	#5	#6	NET
MAXIMUM DEFLECTION	0.13	0.76	0.16	0.62	0.11	1.11	0.14	0.99
PERMANENT SET	0.03	0.05	0.06	0.01	0.02	0.08	0.03	0.06

Test Specimen #5:

DESIGN PRESSURE -100.0 psf	INDICATOR READINGS (INCHES)							
	#1	#2	#3	NET	#4	#5	#6	NET
MAXIMUM DEFLECTION	0.13	0.76	0.12	0.64	0.10	1.10	0.13	0.99
PERMANENT SET	0.03	0.04	0.02	0.02	0.02	0.09	0.02	0.07

Test Specimen #6:

DESIGN PRESSURE -100.0 psf	INDICATOR READINGS (INCHES)							
	#1	#2	#3	NET	#4	#5	#6	NET
MAXIMUM DEFLECTION	0.12	0.75	0.15	0.62	0.09	1.07	0.13	0.96
PERMANENT SET	0.01	0.04	0.04	0.02	0.01	0.06	0.02	0.05

Average Design Load: -100.0 psf

Notes:

11. Reference Section 18 for load-deflection charts as required in ASTM E72.
12. Reference Sketch #1 for indicator locations.

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SECTION 14

PE PANEL STRENGTH TEST RESULTS

TEST PROCEDURE: All test loads were applied in accordance with Section 4.1.2 of ICC-ES AC25.

TEST SPECIMENS #7 - #12: A preload of 5.0 psf was applied. Loading was started at 10.0 psf and was increased by increments of 5.0 psf. All loads were held for a duration of 60 seconds. The test results presented are the maximum loads that successfully passed the test.

BAGGING PROCEDURE: A 4 mil thick plastic bag was utilized to enable the attainment of all the test loads.

POSITIVE BAGGING PROCEDURE: The bag was applied to the exterior of the specimen and sealed with tape to the exterior of the steel frame used for installation of the specimen. The exterior bag was a full bag with pleats to allow for movement of the specimen.

NEGATIVE BAGGING PROCEDURE: The bag was applied to the interior of the specimen and sealed with tape to the interior of the steel frame used for installation of the specimen. The interior bag was a full bag with pleats to allow for movement of the specimen. The bag covered all parts of the specimen including the installation bar. The panels did not have reinforcement bars.

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TEST RESULTS

The temperature range during testing was 17°C - 19°C (62°F - 67°F). The results are tabulated as follows:

Positive Strength Testing Results

TEST SPECIMEN	RESULTS	ALLOWED
Test Unit #7 PE Core Non-Adhered +4309 Pa (+90.0 psf) (Positive)	Pass	Fasteners held
NOTE: Strength test was stopped due to fastener pullout at 95 psf.		
Test Unit #8 PE Core Non-Adhered +3112 Pa (+65.0 psf) (Positive)	Pass	Fasteners held
NOTE: Strength test was stopped due to right vertical rail breaking at 70.0 psf. The load was held for 5 seconds.		
Test Unit #9 PE Core Non-Adhered +2873 Pa (+60.0 psf) (Positive)	Pass	Fasteners held
NOTE: Strength test was stopped due to left panel leg breaking at 65.0 psf. The load was held for 5 seconds.		

TEST REPORT FOR STACBOND

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Negative Strength Testing Results

TEST SPECIMEN	RESULTS	ALLOWED
Test Unit #10 PE Core Non-Adhered -4309 Pa (-90.0 psf) (Negative)	Pass	Fasteners held
NOTE: Strength test was stopped due to left panel leg breaking at 95.0 psf. The load was held for 4 seconds.		
Test Unit #11 PE Core Non-Adhered -4788 Pa (-100.0 psf) (Negative)	Pass	Fasteners held
NOTE: Strength test was stopped due to right panel leg breaking at 102.0 psf.		
Test Unit #12 PE Core Non-Adhered -5027 Pa (-105.0 psf) (Negative)	Pass	Fasteners held
NOTE: Strength test was stopped due to left panel leg breaking at 110.0 psf. The load was held for 35 seconds.		

Average Ultimate Strength Pressure: +71.7 / -98.3 psf

General Notes: All testing was performed in accordance with the bag method specified in Section 11.3 and 12.3 of ASTM E72 as required in Section 4.1.2.1 of AC25.

Loads were held for 60 seconds.

Tape and film were used to seal against air leakage during structural testing. In our opinion, the tape and film did not influence the results of the test.

A 4-mil thick plastic bag was utilized to enable the attainment of all the test loads.

SECTION 15

CONCLUSION PE PANELS

SERVICEABILITY TESTING: The average design pressure, as defined by Section 4.1.2 of ICC-ES AC25, was +76.7 psf / -100.0 psf. This average design pressure is based on an allowable deflection of 0.99".

STRENGTH TESTING: The average design pressure, as defined by Section 4.1.4 of ICC-ES AC25, was +35.9 psf / -49.2 psf. This average design pressure is based on the average ultimate strength of the three specimens tested with an applied factor of safety of 2.0.



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TEST REPORT FOR STACBOND

Report No.: I6239.07-109-44

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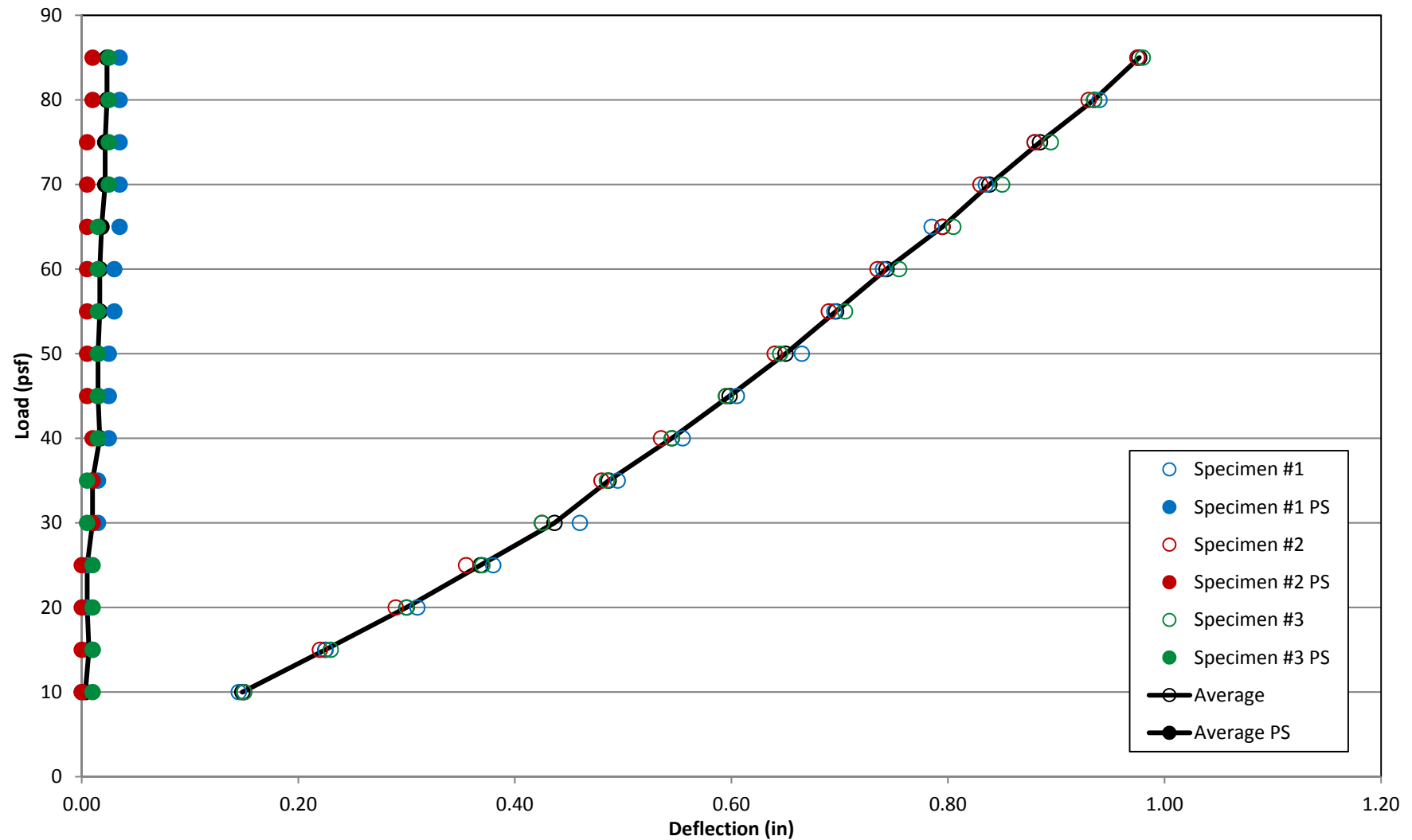
SECTION 16

A2 CHARTS

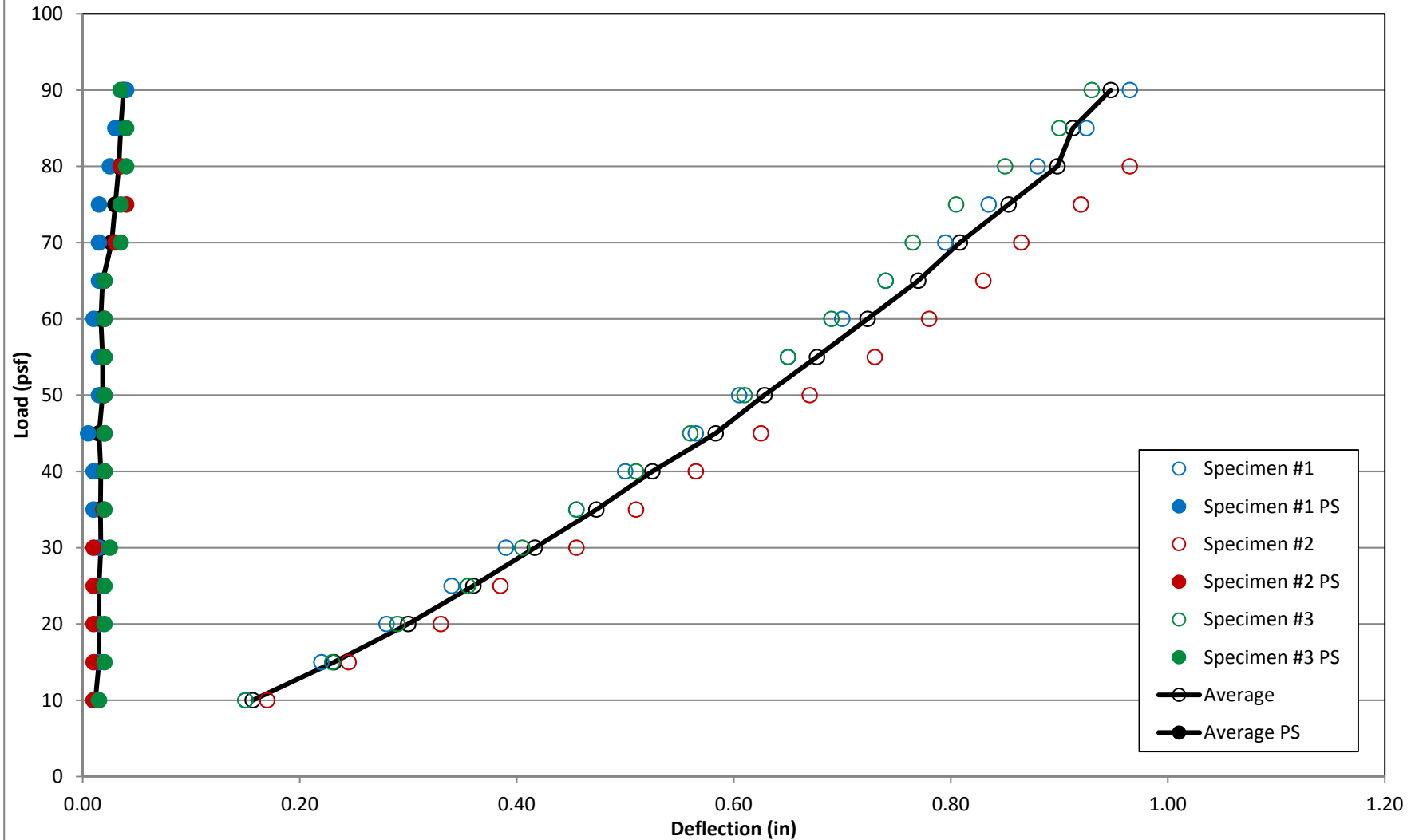
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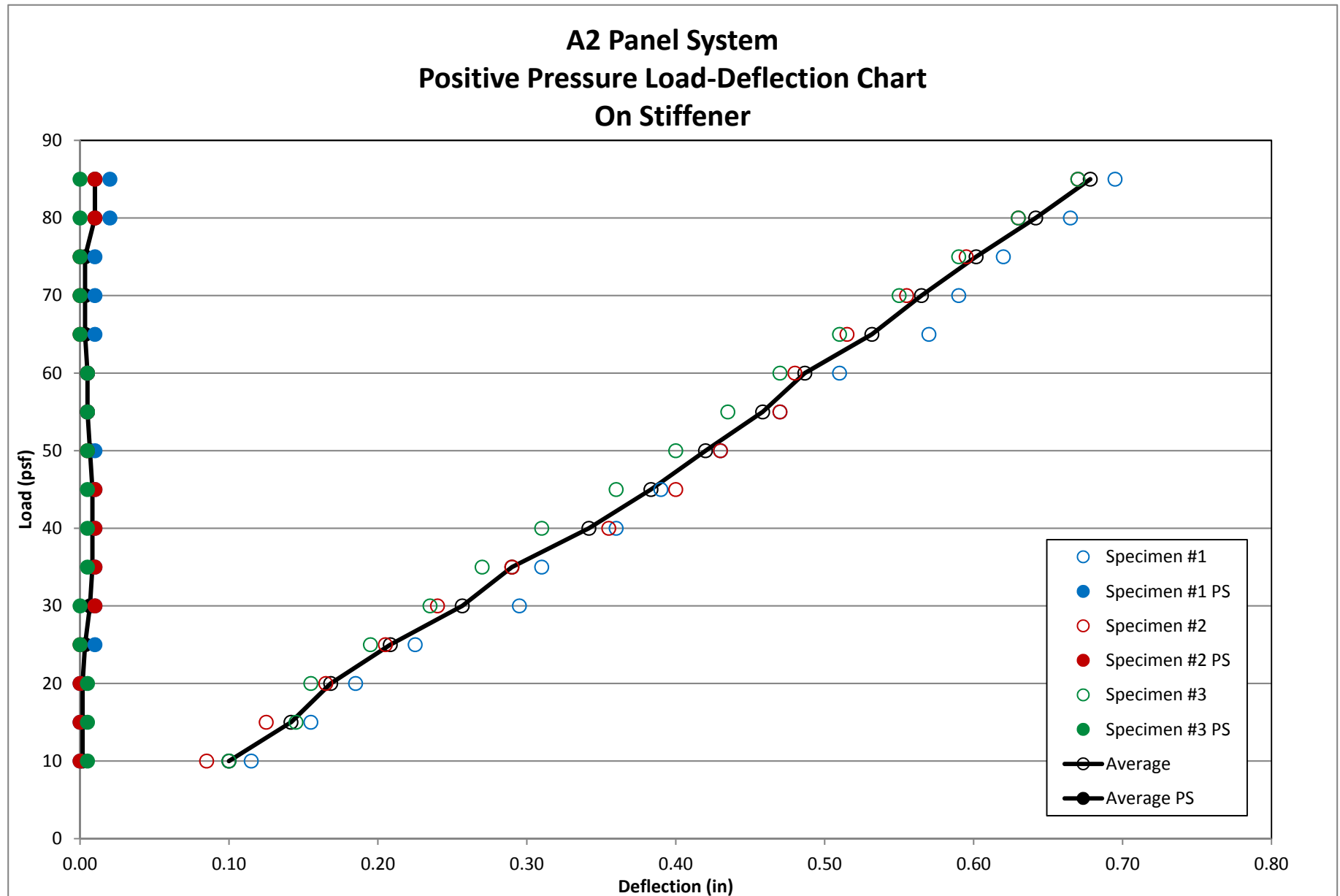
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A2 Panel System Positive Pressure Load-Deflection Chart Between Stiffeners

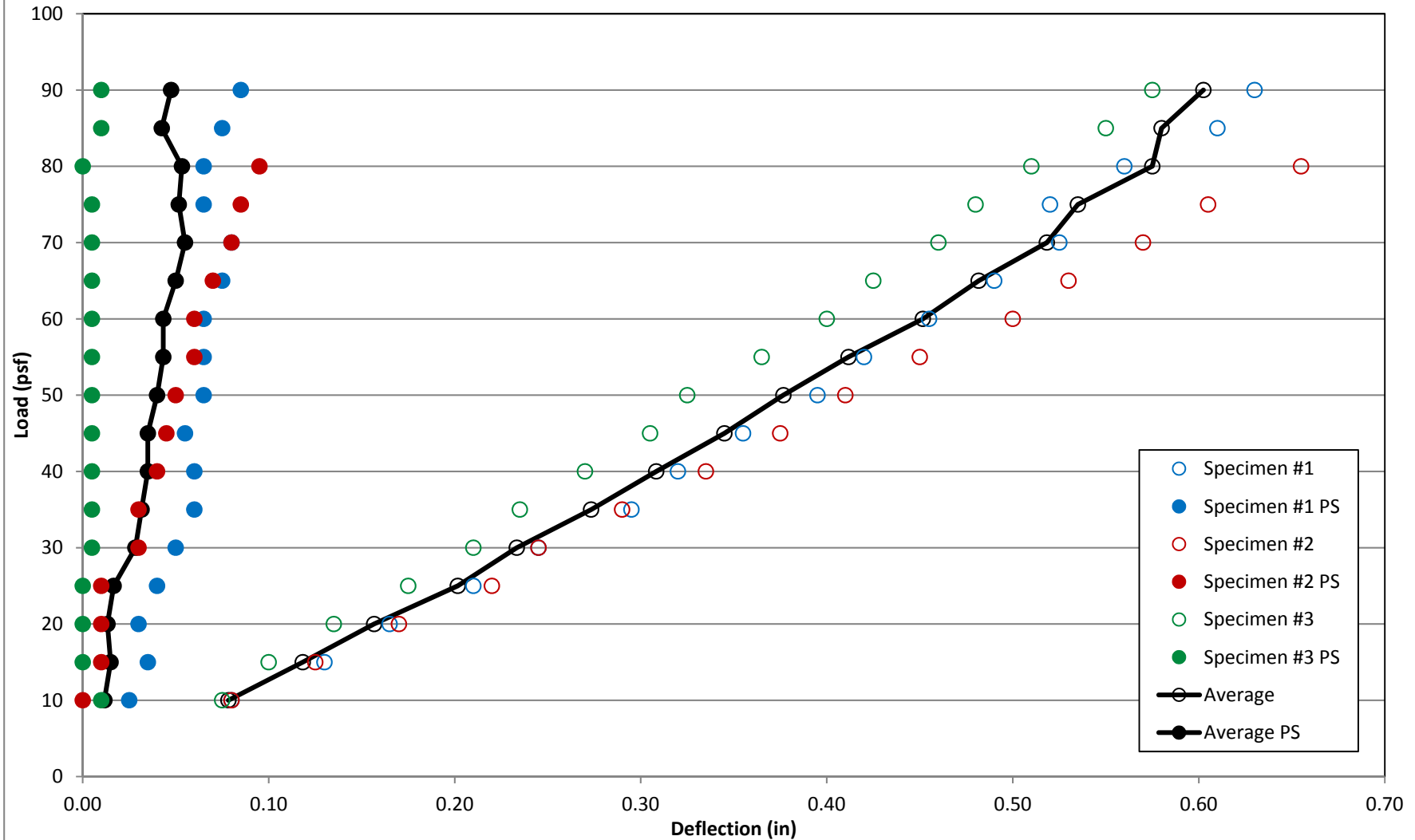


A2 Panel System Negative Pressure Load-Deflection Chart Between Stiffeners





A2 Panel System Negative Pressure Load-Deflection Chart On Stiffener





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TEST REPORT FOR STACBOND

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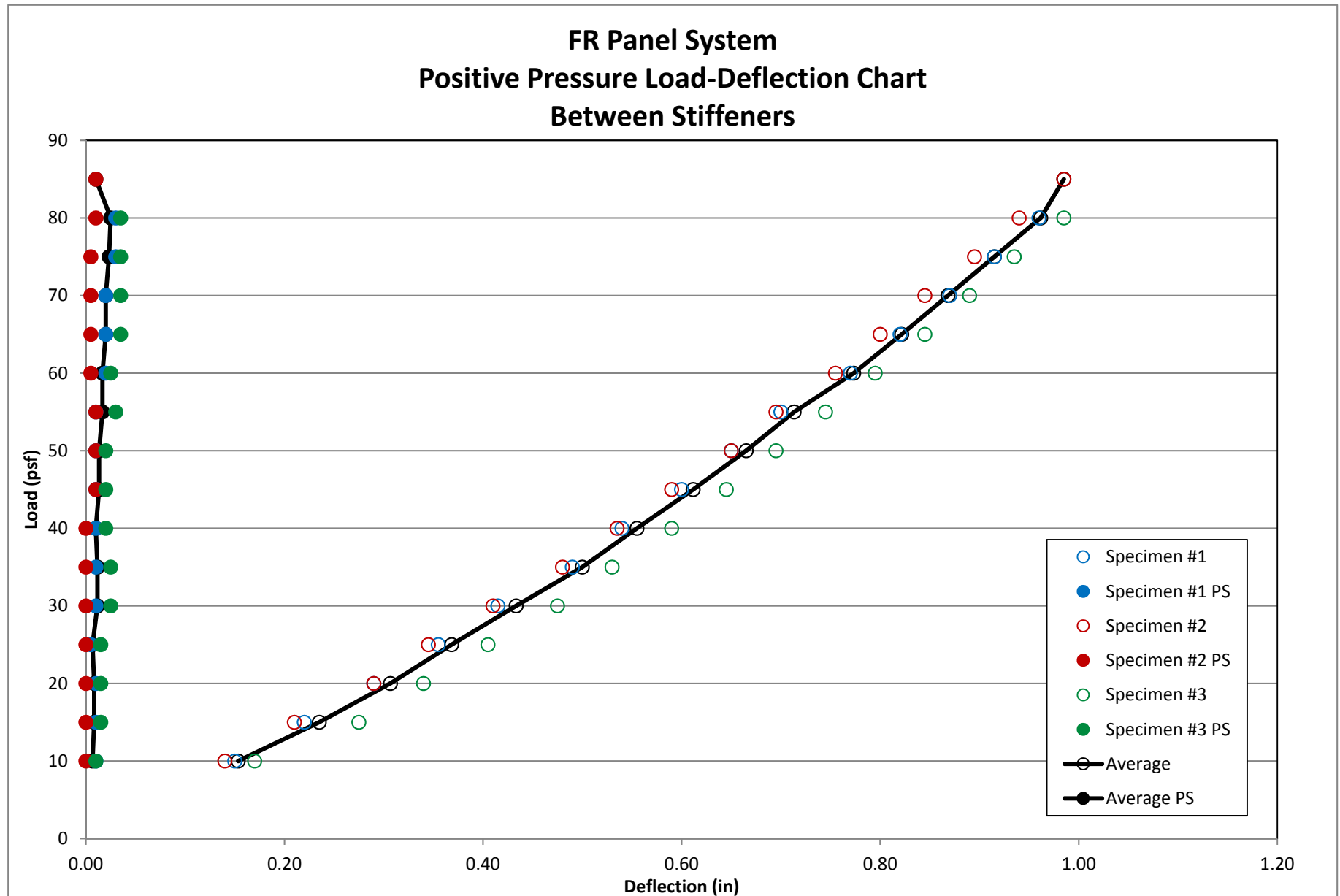
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SECTION 17

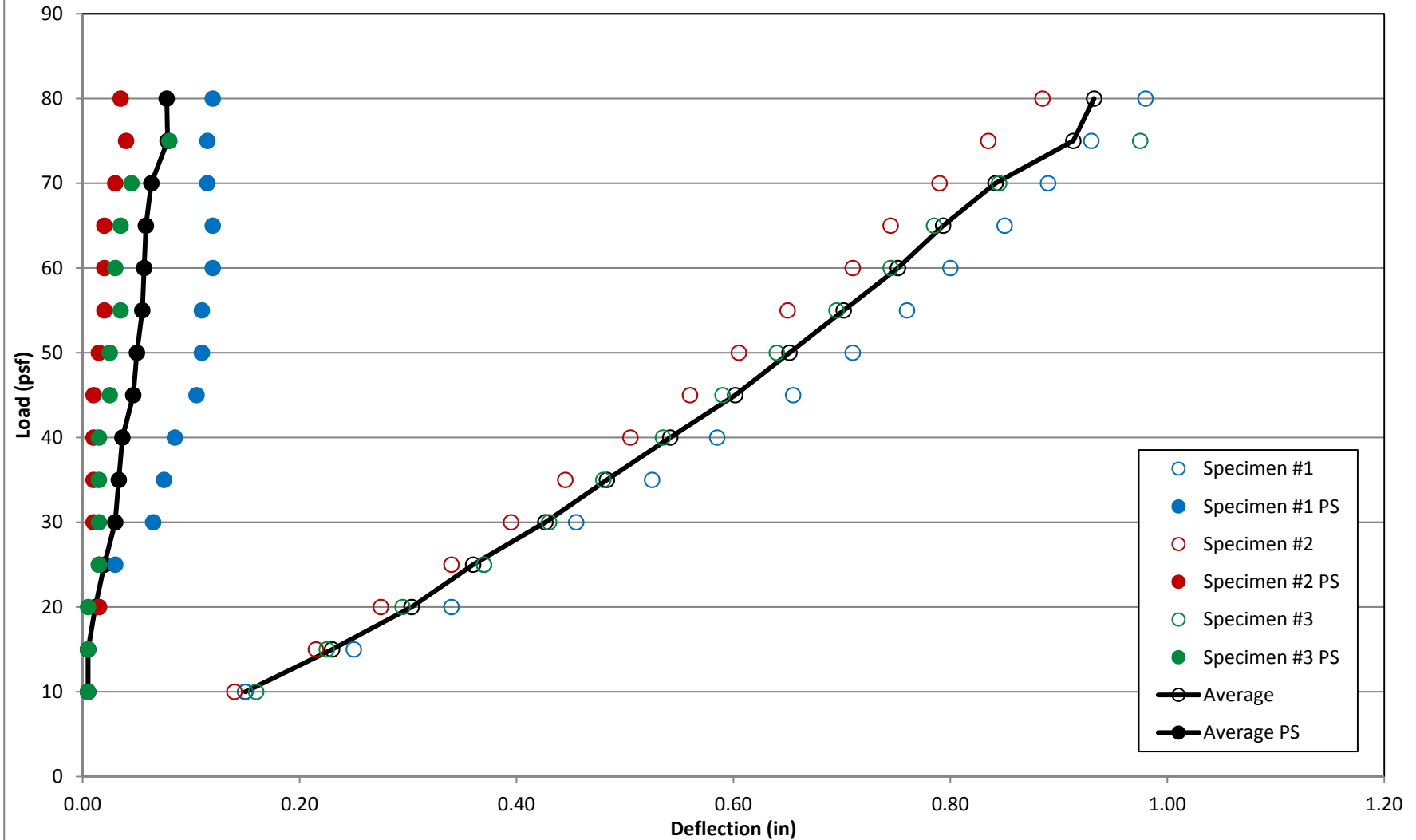
FR CHARTS

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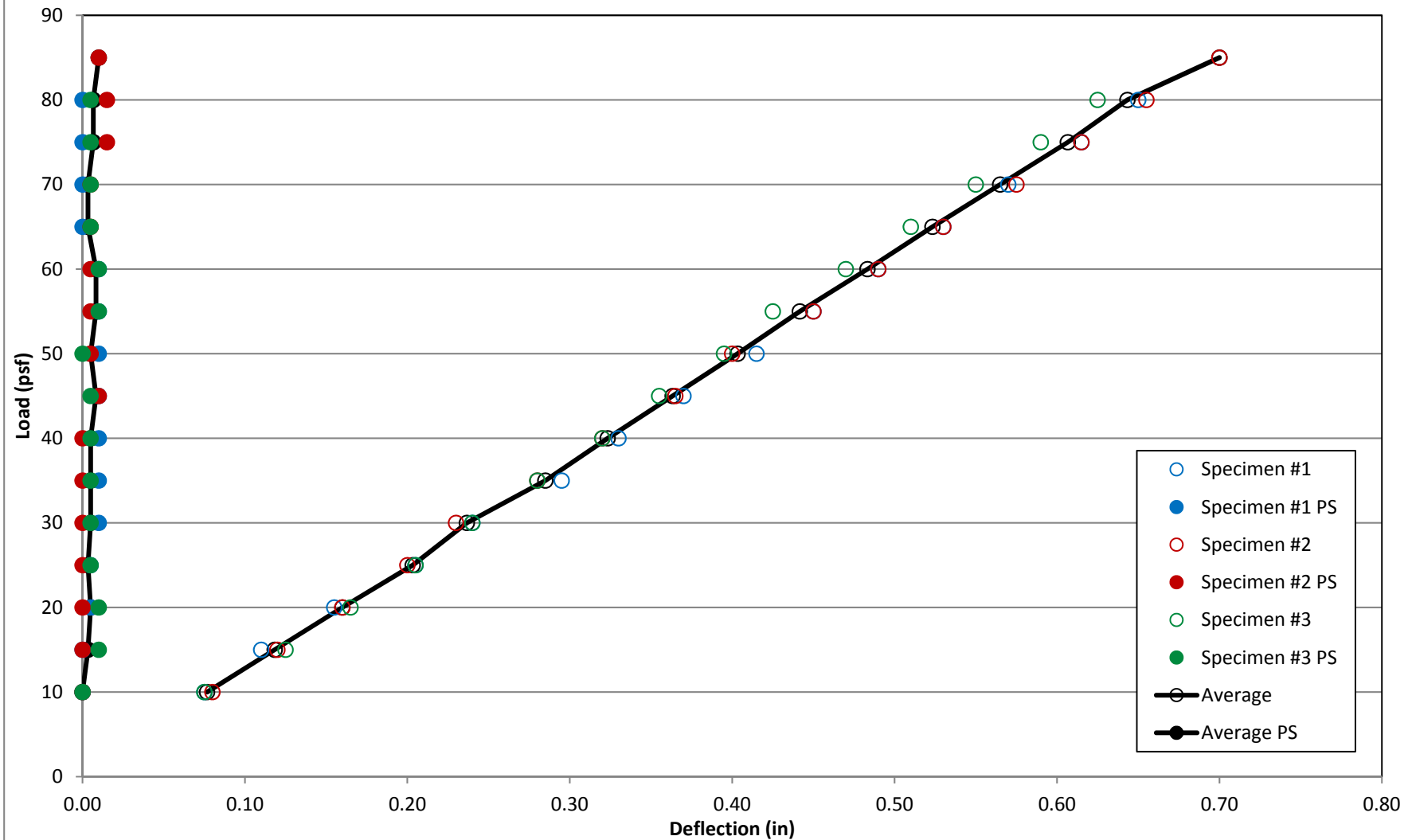
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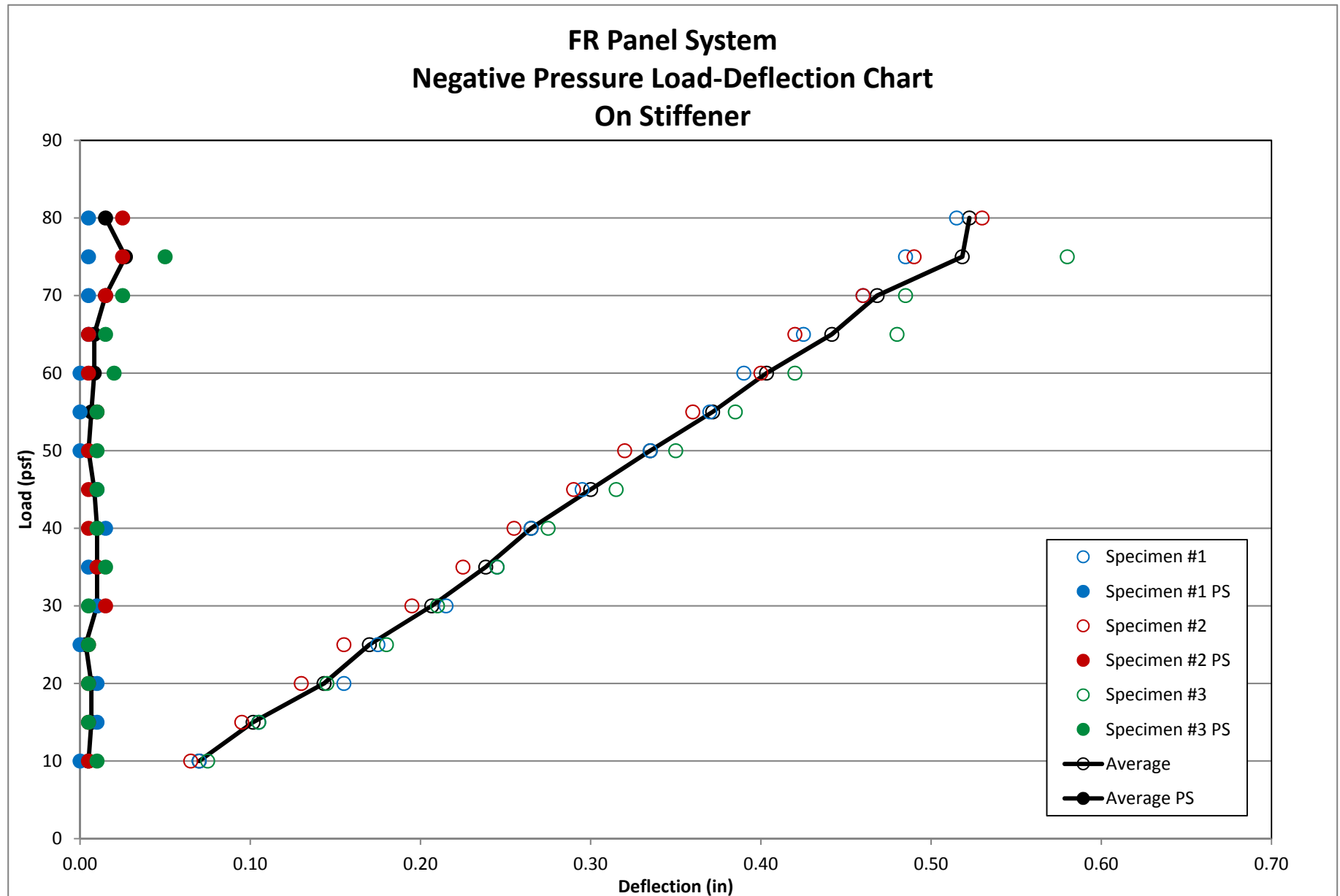


FR Panel System Negative Pressure Load-Deflection Chart Between Stiffeners



FR Panel System Positive Pressure Load-Deflection Chart On Stiffener







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TEST REPORT FOR STACBOND

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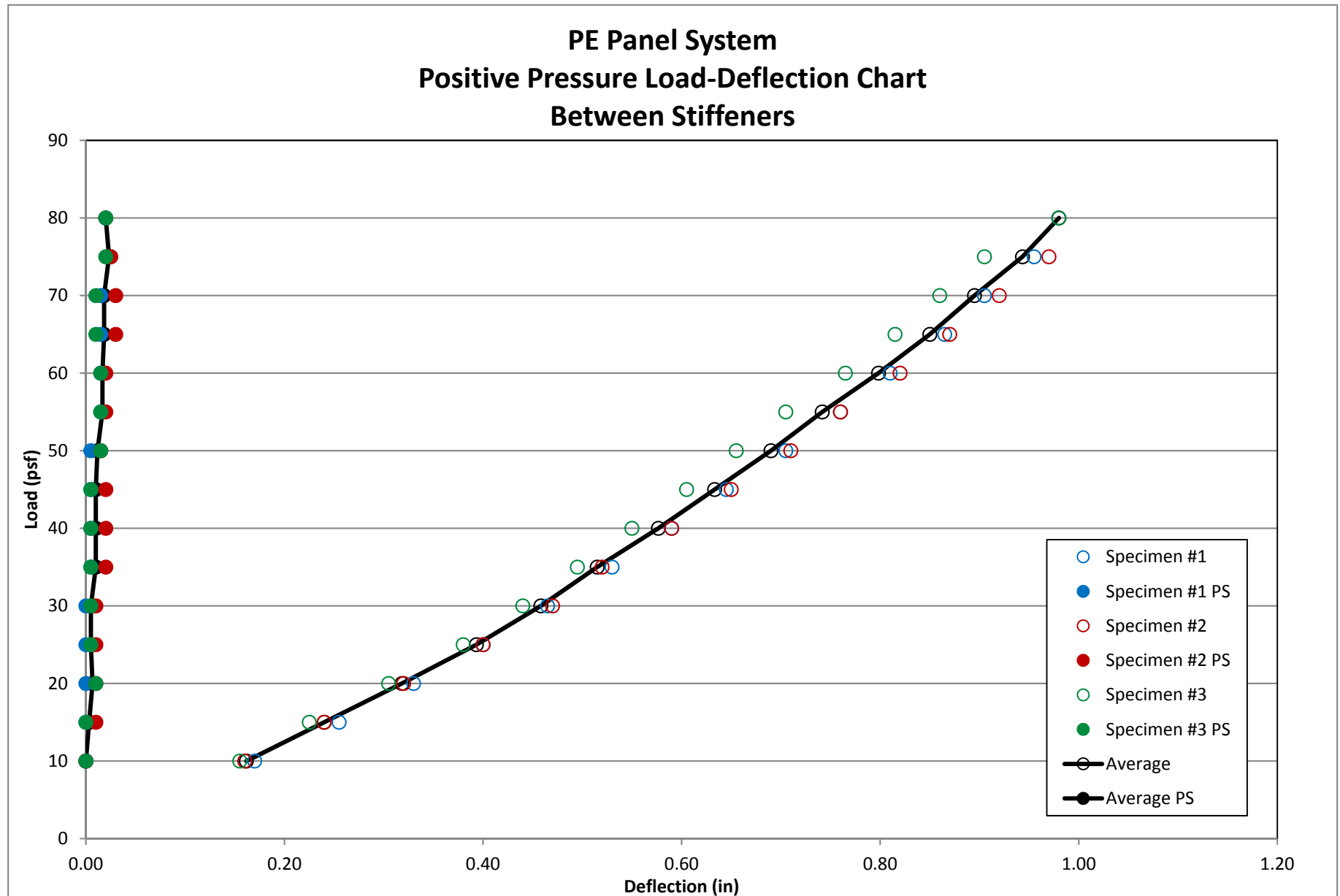
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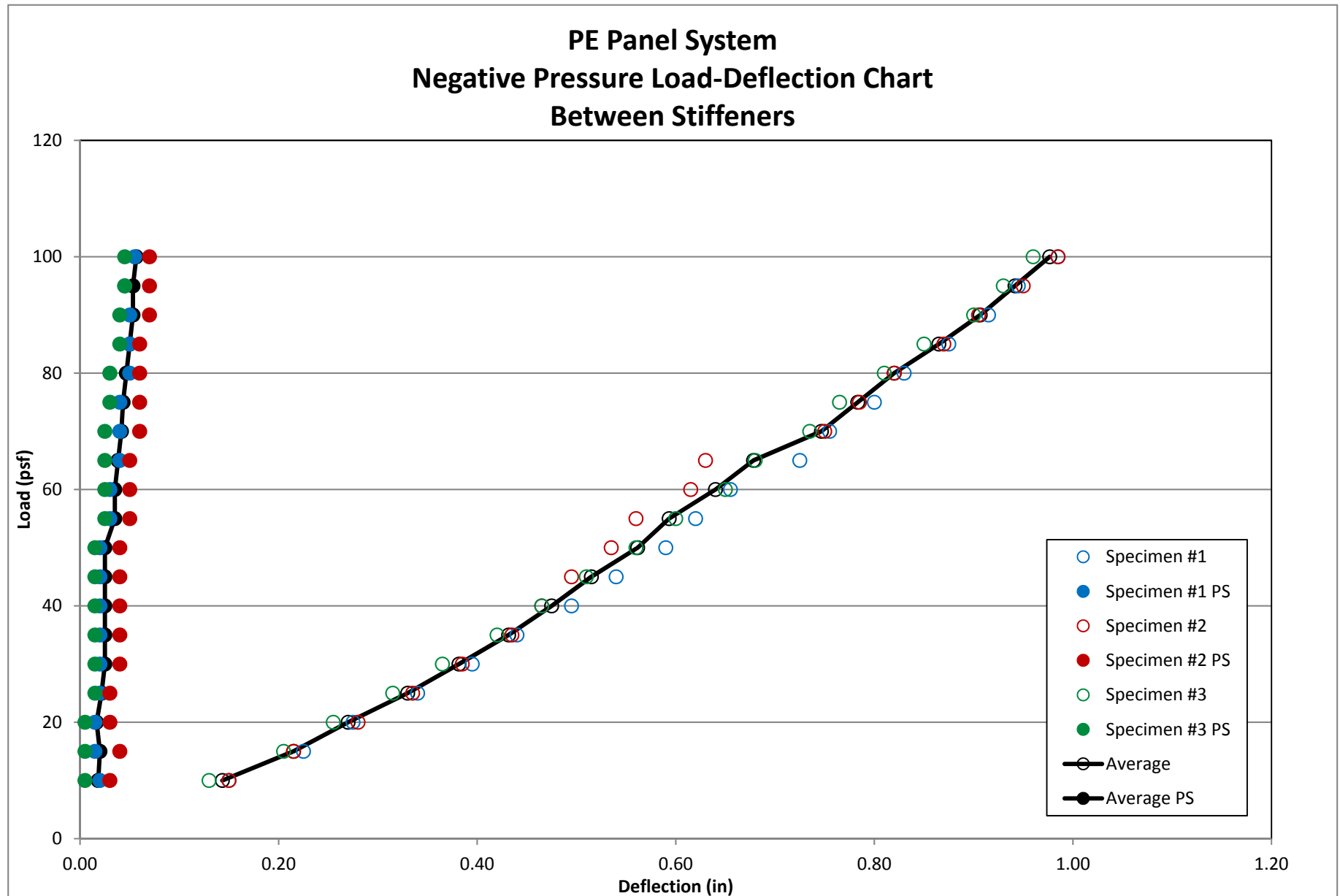
SECTION 18

PE CHARTS

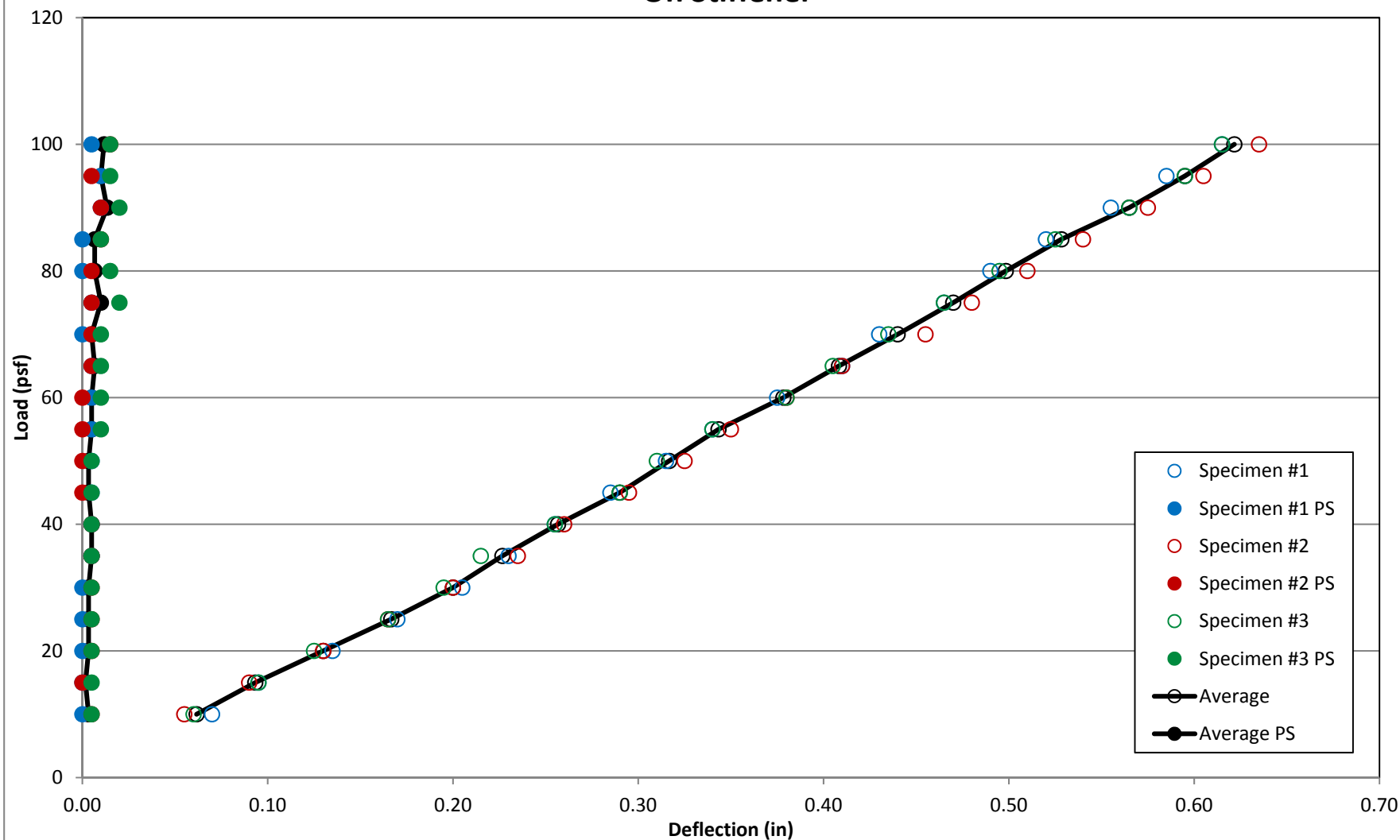
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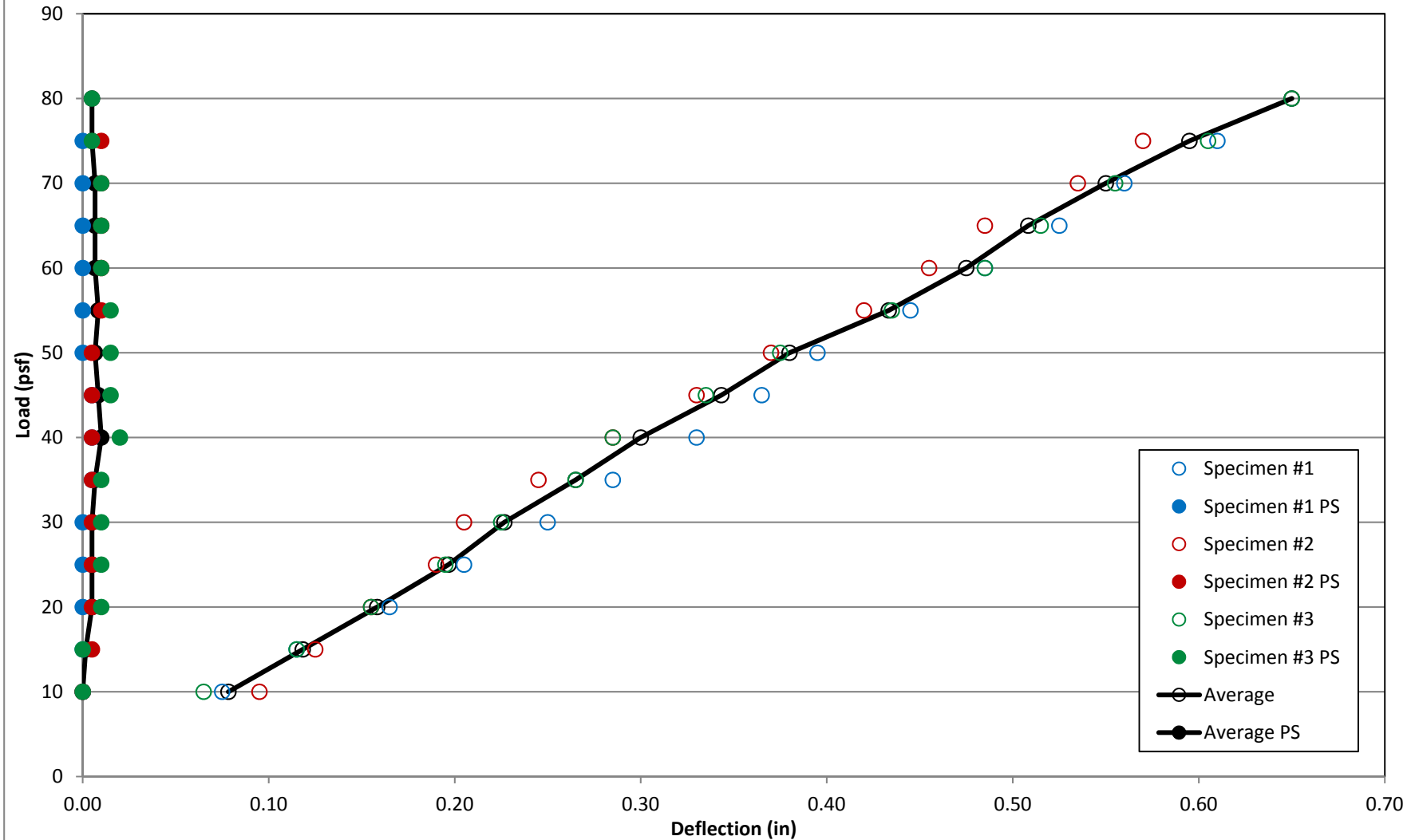




PE Panel System
Negative Pressure Load-Deflection Chart
On Stiffener



**PE Panel System
Positive Pressure Load-Deflection Chart
On Stiffener**



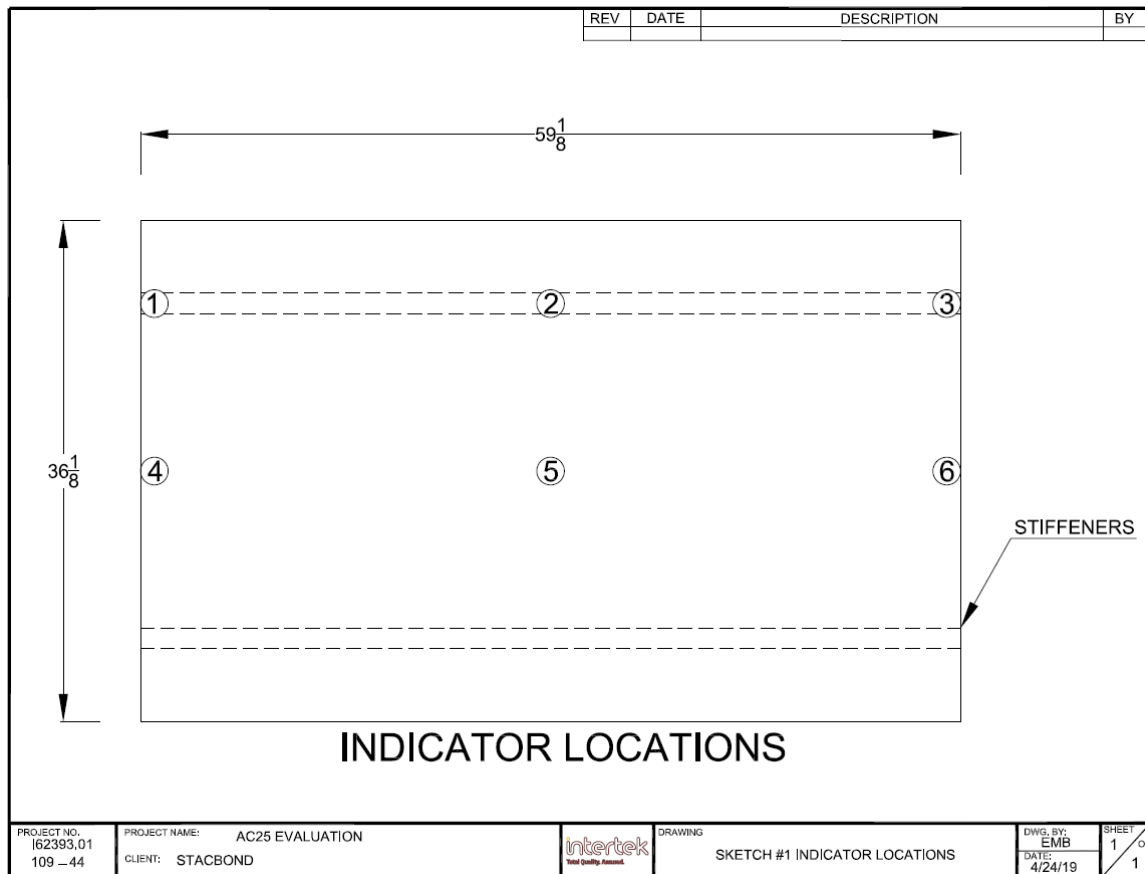
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SECTION 19

SKETCH



SKETCH NO. 1
INDICATOR LOCATIONS

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SECTION 20

PHOTOGRAPHS



Photo No. 1
A2 Test Panel Prior to Testing

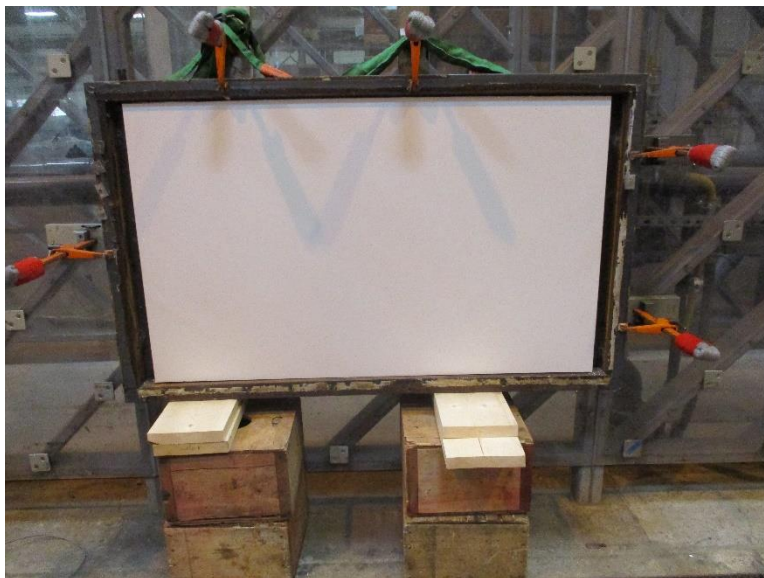


Photo No. 2
FR Test Panel Prior to Testing

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Photo No. 3
PE Test Panel Prior to Testing



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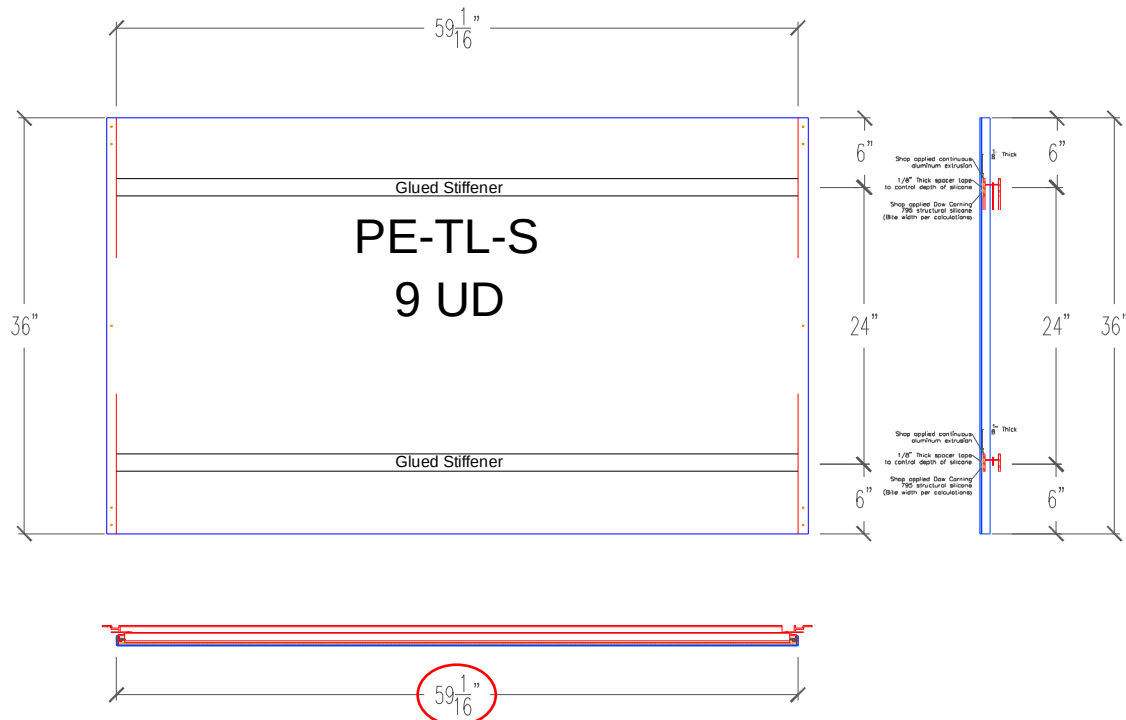
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DRAWINGS

The test specimen drawings have been reviewed by Intertek B&C and are representative of the test specimen(s) reported herein. Test specimen construction was verified by Intertek B&C per the drawings included in this report. Any deviations are documented herein or on the drawings.



With Stiffeners



STAC BOND

PANEL
STACBOND® 4 mm
CORE
PE
COLOUR
STB - XXX

DRAWN BY
Marcos García

DATE
04/03/2019

Polígono Industrial Picusa s/n 15900 Padrón (A Coruña) Spain
Telephone 981 817 036
Fax 981 817 037
stacbond@stac.es
www.stac.es

PROJECT
ASTM E72 TRANSVERSED LAOD
CUSTOMER
STAC
DRAWING
ASTM E72 - PE

SCALE A4
NS

REFERENCE
ICC-ESR

APPROVED

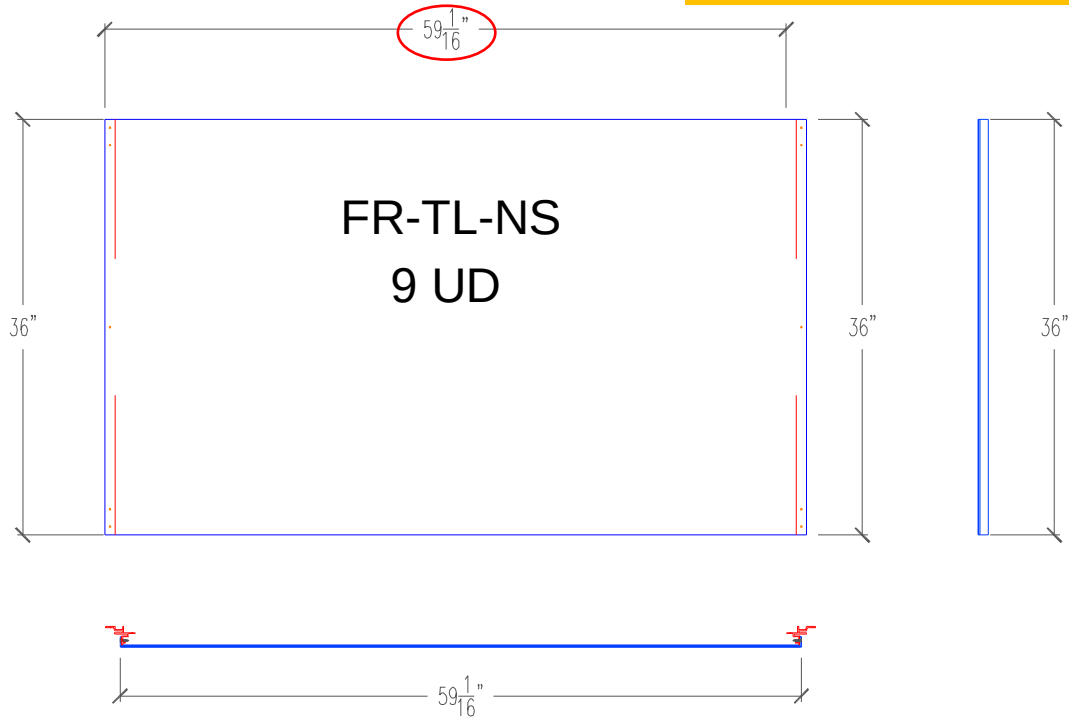
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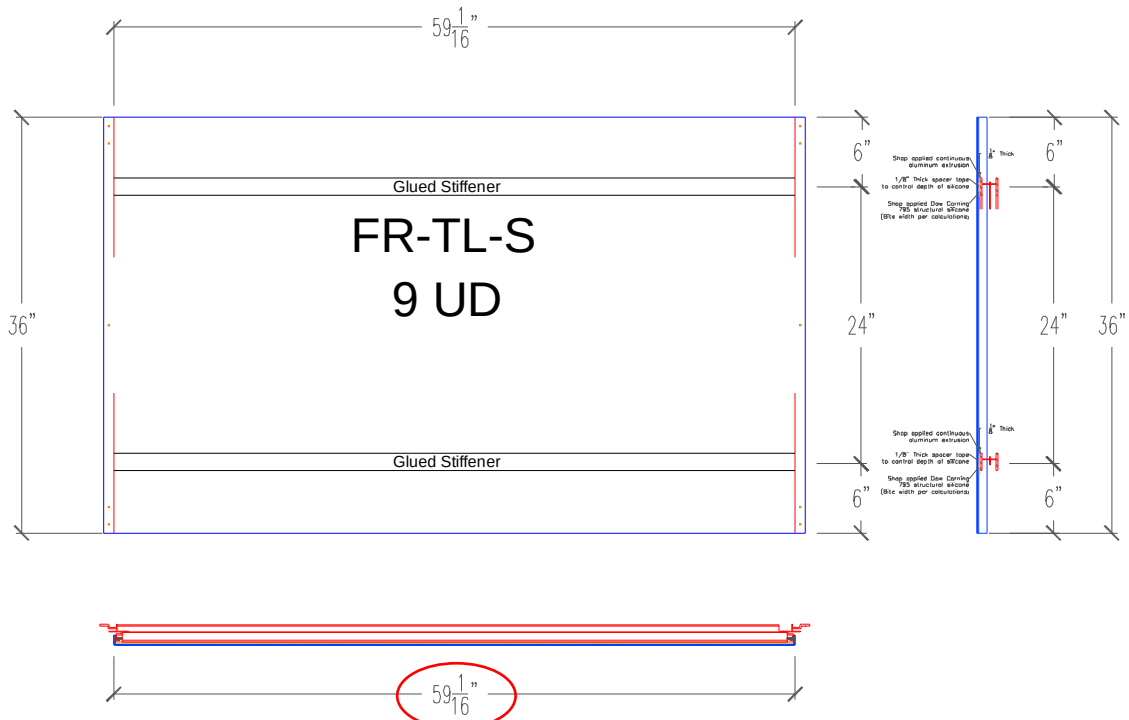
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No Stiffeners



With Stiffeners



STAC BOND

PANEL
STACBOND® 4 mm
CORE
PE
COLOUR
STB - XXX

DRAWN BY
Marcos García

DATE
04/03/2019

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PROJECT
ASTM E72 TRANVERSED LAOD
CUSTOMER
STAC
DRAWING
ASTM E72 - FR

SCALE A4
NS

REFERENCE
ICC-ESR

APPROVED

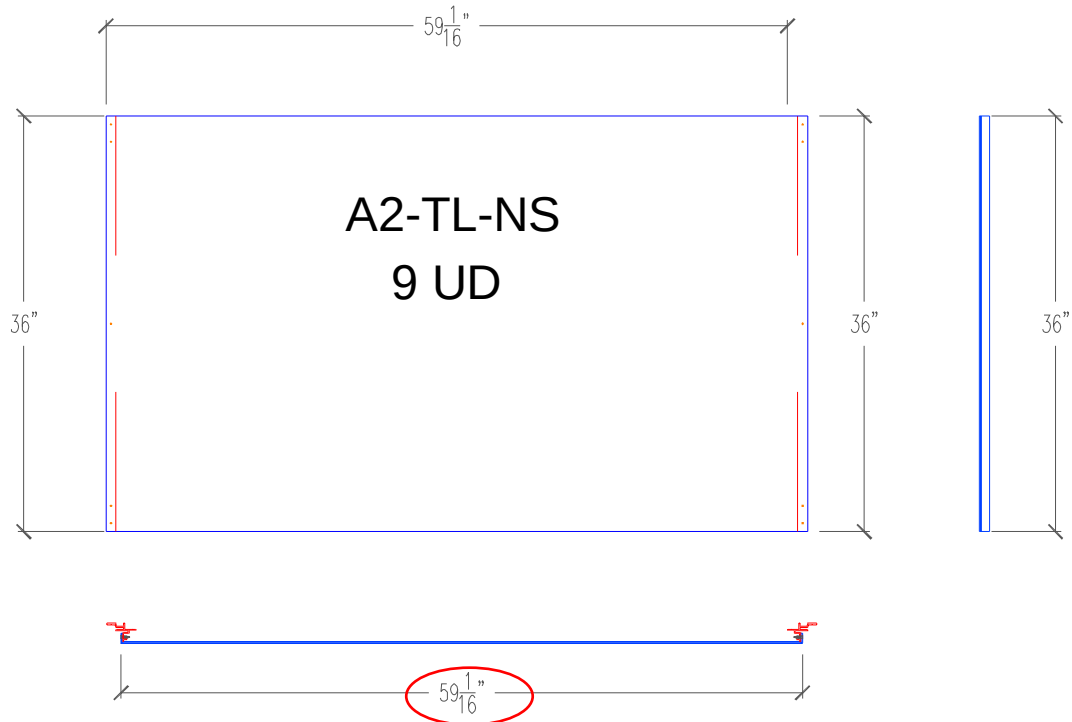
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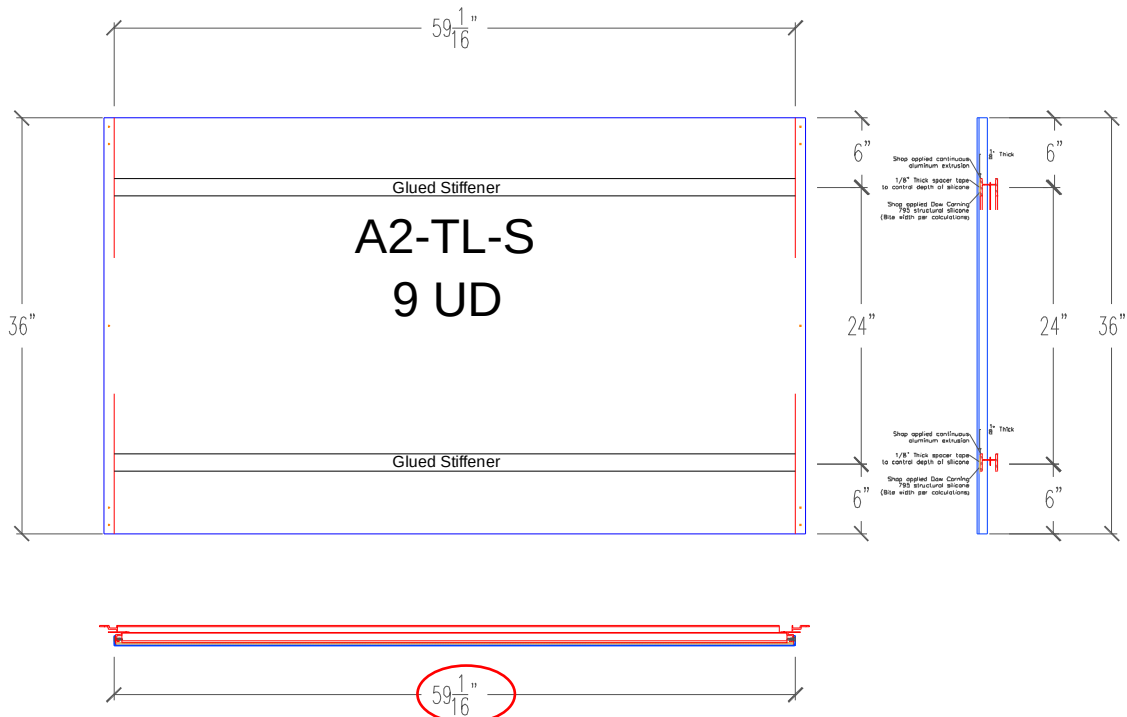
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No Stiffeners



With Stiffeners



STAC BOND

PANEL
STACBOND® 4 mm
CORE
PE
COLOUR
STB - XXX

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PROJECT
ASTM E72 TRANVERSED LAOD
CUSTOMER
STAC
DRAWING
ASTM E72 - A2

SCALE A4
NS

REFERENCE
ICC-ESR

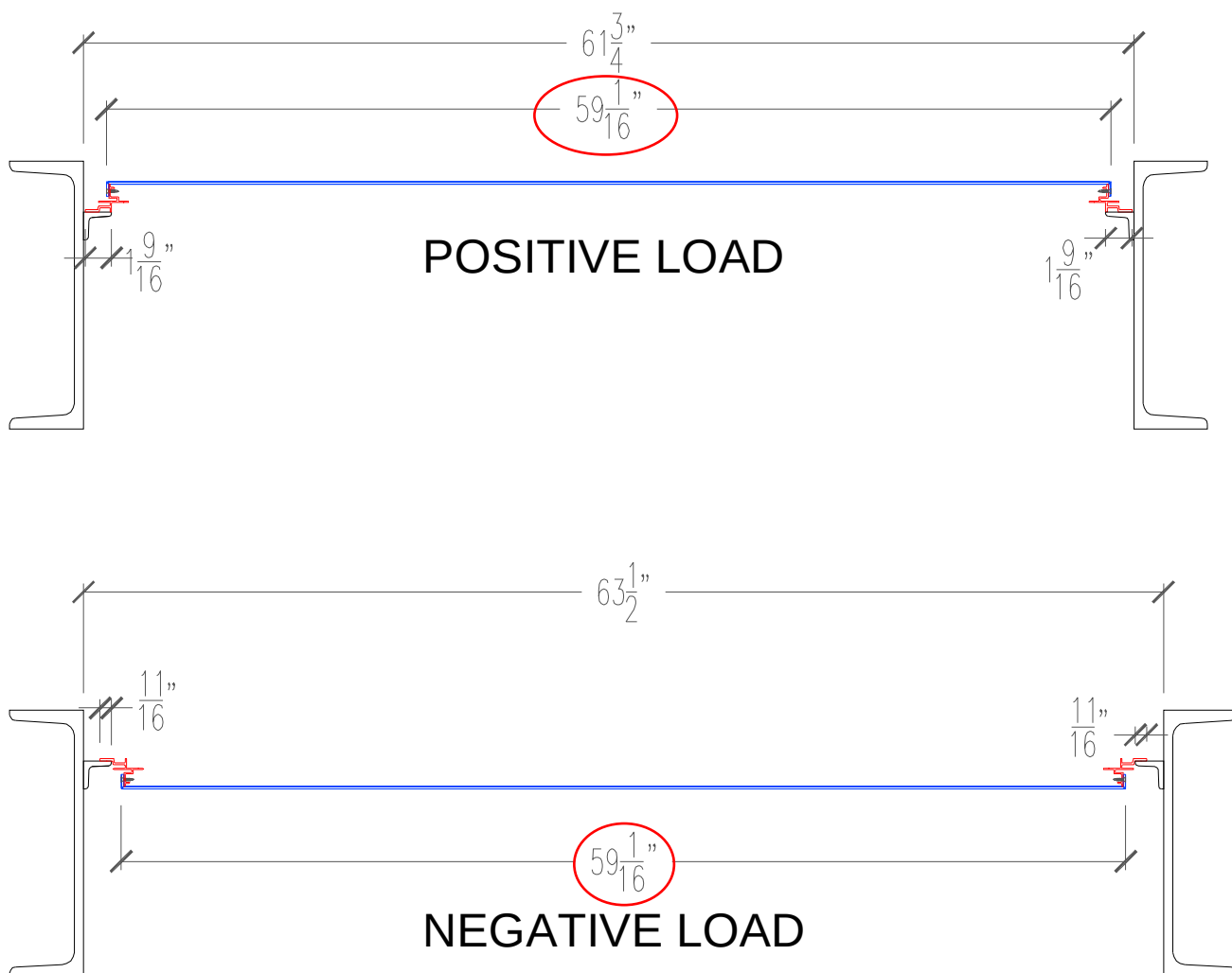
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ASTM E-74 TRANVERSED LOAD

STACBOND

PANEL
STACBOND® 4 mm
CORE
PE
COLOUR
STB - XXX

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PROJECT
ASTM E72 TRANSVERSED LAOD
CUSTOMER
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ASTM E72 - PE

SCALE A4
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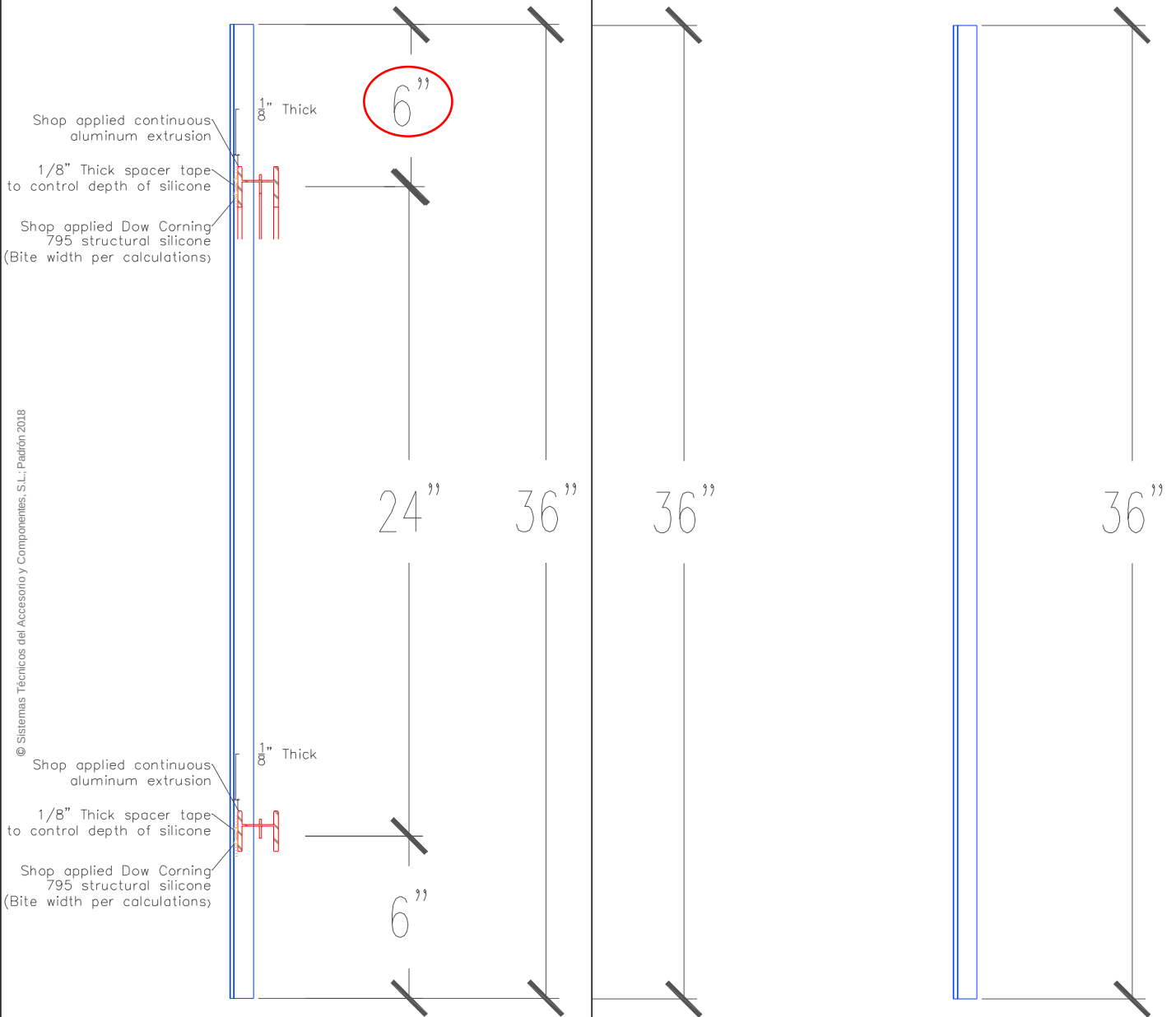
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ASTM E-72 TRANVERSED LOAD

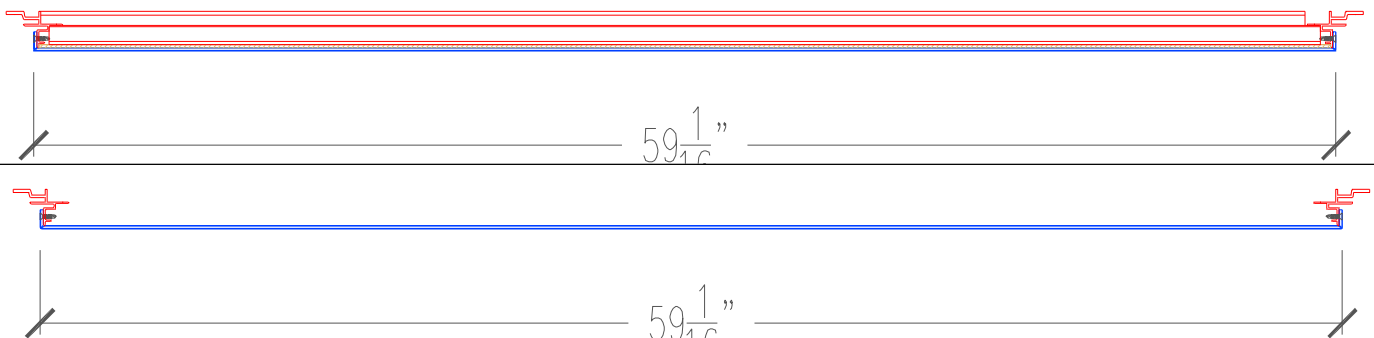
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Date: 4/9/2019
Verified by: *Antonio P. Mohedano*



PANELS WITH STIFFENERS

PANEL WITHOUT STIFFENERS



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PANEL
STACBOND® 4 mm
CORE
PE
COLOUR
STB - XXX

PROJECT
ASTM E72 TRANSVERSED LAOD
CUSTOMER
STAC
DRAWING
ASTM E72

APPROVED DATE

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SECTION 22

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