October, 2014

TESTING REPORT

Standing Seam Roof Anchor

FALL PROTECTION DISTRIBUTORS

Trinity, FL

GRAVITEC SYSTEMS INC™

Gravitec Systems Inc.
21291 Urdahl Road NW
Poulsbo, WA 98370

Testing Report Limitations

Gravitec Systems, Inc. has performed testing for Fall Protection Distributors, LLC on the "Standing Seam Roof Anchor", an anchorage connector manufactured by Action Manufacturing, LLC. It is understood that Gravitec Systems, Inc. is not endorsing the tested product and does not make any claims concerning suitability for use of the product. Gravitec was not involved in design or fabrication of the tested product and has no input on the design of the product or device.

Any photography or video of client's product testing at Gravitec's facility shall not be used for promotional purposes, advertising, or publishing in print or electronic media.

Gravitec's Testing Laboratory meets the requirements of international standard ISO/IEC 17025:2005 with accreditation through ANSI-ASQ National Accreditation Board/ACLASS. The types of tests to which this accreditation applies is contained in the Scope of Accreditation.

Gravitec Systems, Inc. is not certifying this product. Gravitec is not a certifying body.

Proper labeling of a product as compliant with the ANSI/ASSE Z359 standard is the responsibility of the manufacturer. Per ANSI/ASSE Z359.7, all products labeled as being compliant with the ANSI/ASSI Z359 standard shall meet or exceed all applicable requirements specified in the respective standard for the product. Manufacturers shall not claim compliance to portions or segments of the requirements.

The manufacturer is responsible for identifying the testing to be performed and for determining the appropriateness of the testing regiment for their needs. This includes the quantity of samples tested, the selection of representative samples from the client's product, and the scope of the project in general. A manufacturer may use positive testing results from this third party testing laboratory as supporting documentation that their product meets the testing requirements of the standard.

The results stated on test reports only apply to the exact item or product tested. This information should NOT be shared or reproduced except in full, without written approval from Gravitec Systems, Inc. No paraphrasing, excerpts, quotes, or other changes may be made that could cause misinterpretation of the final test results or of statements made by Gravitec.

Testing Overview

Description of Anchorage Connector:

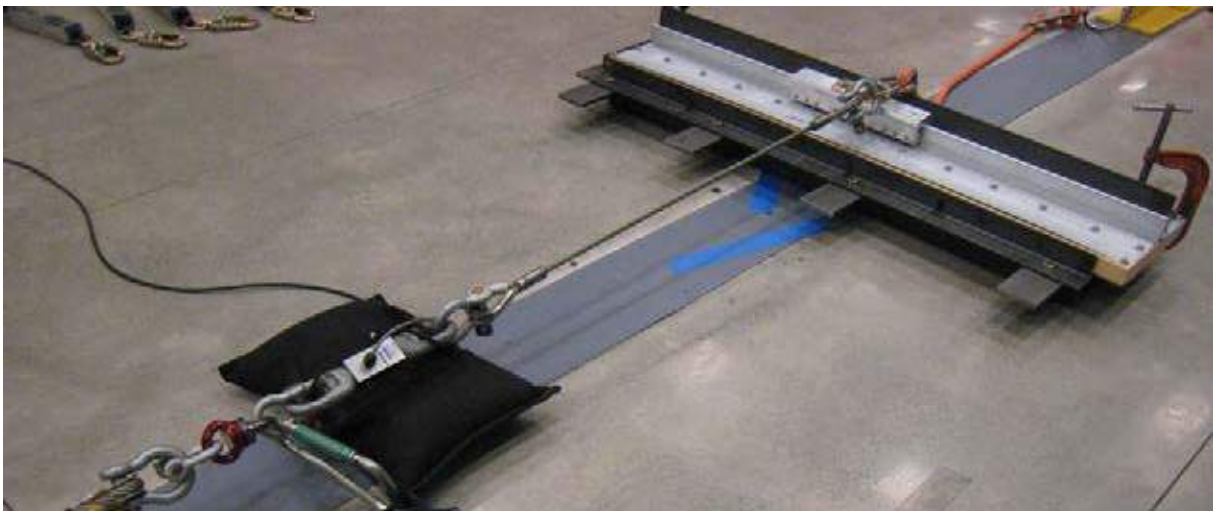
The body of the anchorage connector is made from aluminum extrusion 2.25 inches wide, by 2.0 inches tall, by 12 inches long, with a longitudinal center channel in the bottom for fitting into the vertical seams of metal roofing panels. Each end of the Metal Roof Anchor has six set type screws for gripping a metal roof seam. The top of the aluminum body is fitted with a D-ring Anchorage Plate # 7414 by FallTech, which features a two-bolt connection to the body.

Gravitec Systems Inc.
21291 Urdahl Road NW
Poulsbo, WA 98370

Overview of Testing:

The anchorage connector testing is based on the test procedure described in ANSI Z359.1-2007, Section 4.3.6 and acceptance criteria in Section 3.2.5.1. Details of the procedure are included on the individual test reports. In brief, the anchorage connector cannot display permanent deformation after being subjected to 3,600 pound static loading for one minute; and, must withstand a 5,000 pound static loading for one minute without breaking. These loadings are required for each direction of loading that is permitted, for the various materials to which the anchorage connector is intended to be connected, and for the various connection methods allowed. To comply with these requirements, the client selected the following test parameters.

In regards to direction of loading, the unit was tested with force applied parallel to (in line with) the vertical roof seam and with force applied perpendicular to the seam. In both of these orthogonal orientations, the tension forces were applied in the same plane as, or level with, the surface of the roof panel.



In regards to anchorage materials, the anchorage connector was tested on 22 gauge LokSeam by MBCI, with 1-3/4" tall vertical rib and 12" panel width. The client provided the roof panels mounted to four-foot long sections of 2x12 and attached the metal panels to the 2x12's with screws through the panels to assure the metal panel did not detach from the test jig. Gravitec mounted the 2x12 into the test apparatus. As an anchorage connector test, this is a test of the Metal Roof Anchor and its connection to a metal roof panel. The testing is not intended to represent the typical attachment of roofing panels to the roof structure.

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In regards to connection methods, the client provided two product variations for testing. The first variation gripped the vertical panel seam with 3/8" diameter, cup-tipped stainless set screws tightened to 90 inch-pounds. The second variation gripped the vertical panel seam with 3/8" diameter, nylon-tipped stainless set screws tightened to 180 inch-pounds.

The testing regiment is summarized in the table below. The twelve individual test reports, which contain the results of each test, are listed in the right column of the report.

Quantity of Tests	Product Variation	Direction of Loading	Loading	Test Report Number
3	Cup-tipped set screws	Parallel to roof panel seam	3600 / 5000 lbs	210096-ACS-01 210096-ACS-02 210096-ACS-03
3	Cup-tipped set screws	Perpendicular to roof panel seam	3600 / 5000 lbs	210096-ACS-07 210096-ACS-09 210096-ACS-10
3	Nylon-tipped set screws	Parallel to roof panel seam	3600 / 5000 lbs	210096-ACS-04 210096-ACS-05 210096-ACS-06
3	Nylon-tipped set screws	Perpendicular to roof panel seam	3600 / 5000 lbs	210096-ACS-08 210096-ACS-11 210096-ACS-12

Test Report

Gravitec Systems Inc.
21291 Urdahl Road NW
Poulsbo, WA 98370

Test Report #:	210096-ACS-01	Customer Contact:	Howie Scarboro				
Client Name:	Fall Protection Distributors, LLC						
Client Address:	1324 Seven Springs Blvd, #323	City:	Trinity	State/Province:	FL	Zip:	34655
Country:	USA						

Service Address: Gravitec Systems Inc., 21291 Urdahl Road NW, Poulsbo, WA 98370

Test Sample Information

Manufacturer: Action Manufacturing, LLC
Description: Cupped tip, 90 in-lb, Parallel to seam
Model/Part #: Standing Seam Roof Anchor
Lot/Batch #: ---
Serial #: 01 (assigned)

Sample Receipt Date: 8/15/2014

Sampling Details/Deviations and Sample Condition:
The anchorage connection was new and in good working order. The sample was not previously tested.

Test Information

Testing Method (Applicable Standard and Section): ANSI Z359.1-2007, 4.3.6 Anchorage Connector Qualification Testing

1. Secure the anchorage connector to an anchorage in the manner and by the intended means specified by the manufacturer for assembling it as part of a PFAS.
2. Connect the anchorage connector to static tensile test equipment such that the anchorage connector is loaded in the direction permitted when used as part of a PFAS.
3. The static tensile test equipment shall meet the requirements of 4.1.7.
4. A test lanyard in accordance with 4.1.4, or other equipment simulating the intended means of installing the anchorage connector in a PFAS, shall be used to couple the anchorage connector to the tensile test equipment.
5. Subject the anchorage connector to a force of 3,600 pounds (16kN), maintain the force for one minute then remove the force.
6. Repeat this test for each connector element attached to the anchorage connector.
7. Observe the condition of the connector element(s) in accordance with 3.2.5.1.
8. Subject the anchorage connector to a force of 5,000 pounds (22.2kN).
9. When more than one PFAS may be attached to the anchorage connector, the 5,000 pound force shall be multiplied by the maximum number of PFAS's that may be attached to the anchorage connector.
10. Maintain the test force for one minute. Observe the condition of the anchorage connector in accordance with 3.2.5.1.
11. Repeat the test specified above, altering the direction of anchorage connector loading, until the anchorage connector has been tested in all directions permitted when used as part of a PFAS.
12. Repeat the test specified above for the different anchorages to which the anchorage connector is intended to be connected.

Acceptance Criteria (Applicable Standard and Section): ANSI Z359.1-2007, 3.2.5.1

1. Anchorage connectors shall meet the strength requirements of the anchorages to which they are coupled as set forth in 7.2.3.
2. Satisfactory completion of the qualification testing specified in 4.3.6 shall constitute compliance with this requirement.
3. When tested in accordance with 4.3.6, anchorage connectors shall be capable of withstanding (without breaking) a 5,000-pound (22.2kN) load multiplied by the maximum number of personal fall arrest systems that may be attached to the anchorage connector.
4. Connector elements integral to or part of the anchorage connector shall be capable of withstanding a 3,600-pound (16kN) load without cracking, breaking, or permanent deformation visible to the unaided eye.

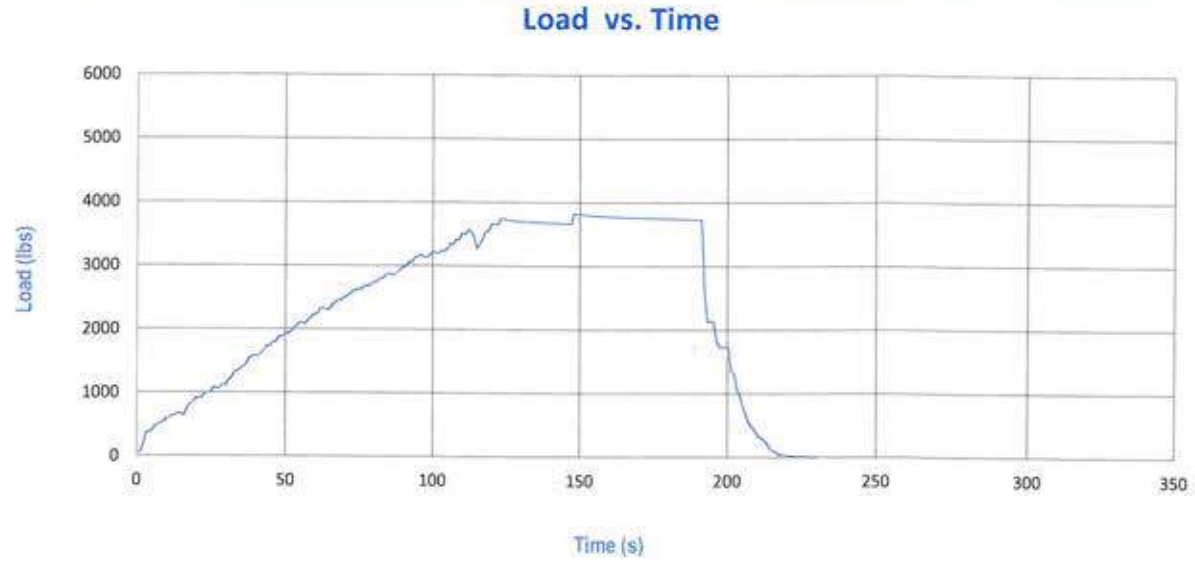
Gravitec Test Procedure ID: TP ANSI Z359.1-2007, 4.3.6 SST ANCH

Job #:	210096	**Test Date:**	10/15/2014	**Load Cell:**	B0_253073
Test Code:	ACS	**Time:**	9:58 AM	**DAQ Module:**	1521EAF
Test ID #:	1	**Temp. (°F):**	71		
File Name:	210096-ACS-01	**Humidity (%):**	54		

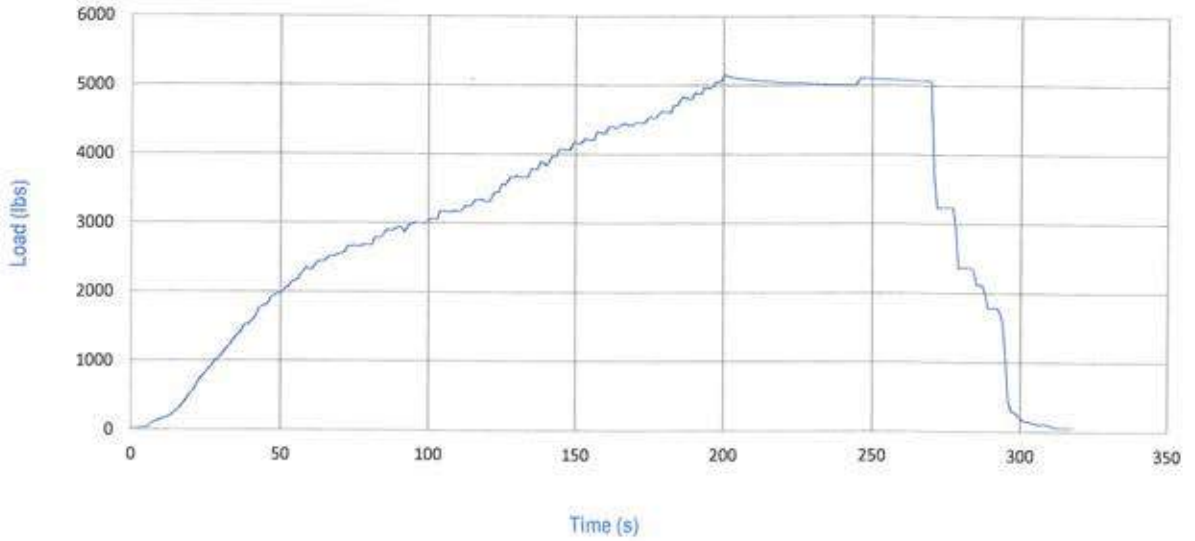
Test Instrumentation

5k Load Cell/Data Acquisition System, ANSI Compliant Test Structure, Hydraulic Ram, Digital Timer, Digital Thermometer Miscellaneous Connecting Hardware

3600 lb Test Data Graph



5000 lb Test Data Graph



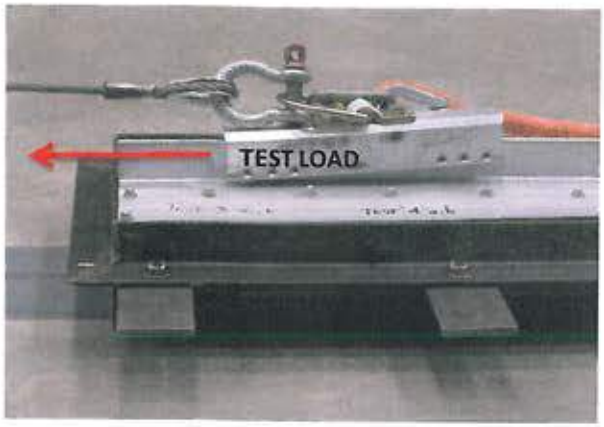
Test Results & Comments

	Acceptance Criteria	Test Results	Exp. Uncertainty	Pass/Fail
Tensile Load (lbf):	3,600 Minimum	3639.2	± 6.9	PASS
Time Requirement (sec):	60 Minimum	72	± 1	
No cracking, breaking or permanent deformation				PASS
Tensile Load (lbf):	5,000 Minimum	5011.4	± 6.9	PASS
Time Requirement (sec):	60 Minimum	74	± 1	
Withstand loading without breaking				PASS

Test Comments/Notes:

This test performed with the load applied parallel to the standing seam. The set screws gripping the roof panel were stainless cupped-tip fasteners torqued to 90 in-lbs. The client supplied test panel was 22 gauge LokSeam by MBCI, with 1-3/4" tall vertical rib and 12" width.

The sample maintained attachment to the standing seam of the roof panel. The test sample did not noticeably deform under test loading. The roof panels deformed during the test and there was localized displacement of the sample against the roof panel as the sample seized onto the standing seam. This is a test of the connection between the sample and the roof panel and is not intended to represent or test the attachment between roofing panels and the roof structure.



Opinions and Interpretations:

None

Manager Name: Dave Lough **Signature:** _____ Date: 11/3/14

Engineer Name: Larry Cimino, PE **Signature:** _____ Date: 11-13-14

The results of this test only apply to the item tested.

All instrumentation used in testing is traceable to NIST.

Reported uncertainties represent expanded uncertainties expressed at approximately the 95% level of confidence using a coverage factor of k=2. Where limits of acceptability are applicable, false accept risk is limited to 2% or less by guard-banding the limit of acceptability with the expanded uncertainty value.

This laboratory is accredited to ISO 17025 by ACLASS ANSI-ASQ National Accreditation Board for tests conducted under its scope of accreditation.

Testing to the clauses referenced in this report does not infer compliance to the ANSI Z359 standard in its entirety.

GRAVITEC SYSTEMS INC

ACLASS ACCREDITED TESTING

Test Report

Gravitec Systems Inc.
21291 Urdahl Road NW
Poulsbo, WA 98370

Test Report #:	210096-ACS-02	Customer Contact:	Howie Scarboro				
Client Name:	Fall Protection Distributors, LLC						
Client Address:	1324 Seven Springs Blvd, #323	City:	Trinity	State/Province:	FL	Zip:	34655
Country:	USA						

Service Address: Gravitec Systems Inc., 21291 Urdahl Road NW, Poulsbo, WA 98370

Test Sample Information

Manufacturer: Action Manufacturing, LLC
Description: Cupped tip, 90 in-lb, Parallel to seam
Model/Part #: Standing Seam Roof Anchor
Lot/Batch #: ---
Serial #: 02 (assigned)

Sample Receipt Date: 8/15/2014

Sampling Details/Deviations and Sample Condition:
The anchorage connection was new and in good working order. The sample was not previously tested.

Test Information

Testing Method (Applicable Standard and Section): ANSI Z359.1-2007, 4.3.6 Anchorage Connector Qualification Testing

1. Secure the anchorage connector to an anchorage in the manner and by the intended means specified by the manufacturer for assembling it as part of a PFAS.
2. Connect the anchorage connector to static tensile test equipment such that the anchorage connector is loaded in the direction permitted when used as part of a PFAS.
3. The static tensile test equipment shall meet the requirements of 4.1.7.
4. A test lanyard in accordance with 4.1.4, or other equipment simulating the intended means of installing the anchorage connector in a PFAS, shall be used to couple the anchorage connector to the tensile test equipment.
5. Subject the anchorage connector to a force of 3,600 pounds (16kN), maintain the force for one minute then remove the force.
6. Repeat this test for each connector element attached to the anchorage connector.
7. Observe the condition of the connector element(s) in accordance with 3.2.5.1.
8. Subject the anchorage connector to a force of 5,000 pounds (22.2kN).
9. When more than one PFAS may be attached to the anchorage connector, the 5,000 pound force shall be multiplied by the maximum number of PFAS's that may be attached to the anchorage connector.
10. Maintain the test force for one minute. Observe the condition of the anchorage connector in accordance with 3.2.5.1.
11. Repeat the test specified above, altering the direction of anchorage connector loading, until the anchorage connector has been tested in all directions permitted when used as part of a PFAS.
12. Repeat the test specified above for the different anchorages to which the anchorage connector is intended to be connected.

Acceptance Criteria (Applicable Standard and Section): ANSI Z359.1-2007, 3.2.5.1

1. Anchorage connectors shall meet the strength requirements of the anchorages to which they are coupled as set forth in 7.2.3.
2. Satisfactory completion of the qualification testing specified in 4.3.6 shall constitute compliance with this requirement.
3. When tested in accordance with 4.3.6, anchorage connectors shall be capable of withstanding (without breaking) a 5,000-pound (22.2kN) load multiplied by the maximum number of personal fall arrest systems that may be attached to the anchorage connector.
4. Connector elements integral to or part of the anchorage connector shall be capable of withstanding a 3,600-pound (16kN) load without cracking, breaking, or permanent deformation visible to the unaided eye.

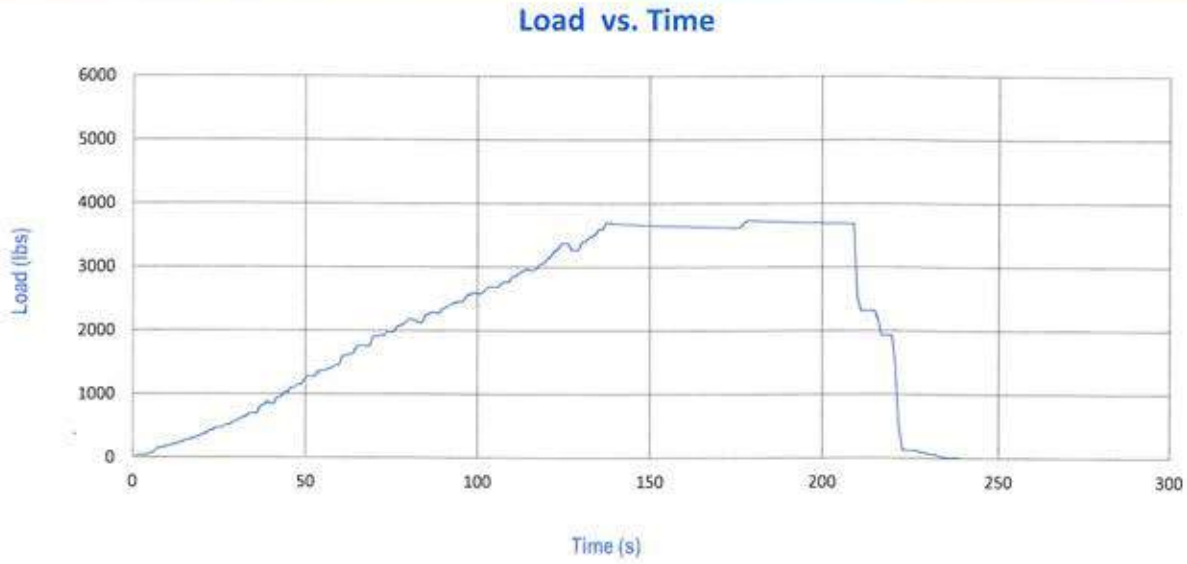
Gravitec Test Procedure ID: TP ANSI Z359.1-2007, 4.3.6 SST ANCH

Job #:	210096	**Test Date:**	10/15/2014	**Load Cell:**	B0_253073
Test Code:	ACS	**Time:**	10:31 AM	**DAQ Module:**	1521EAF
Test ID #:	2	**Temp. (°F):**	71		
File Name:	210096-ACS-02	**Humidity (%):**	54		

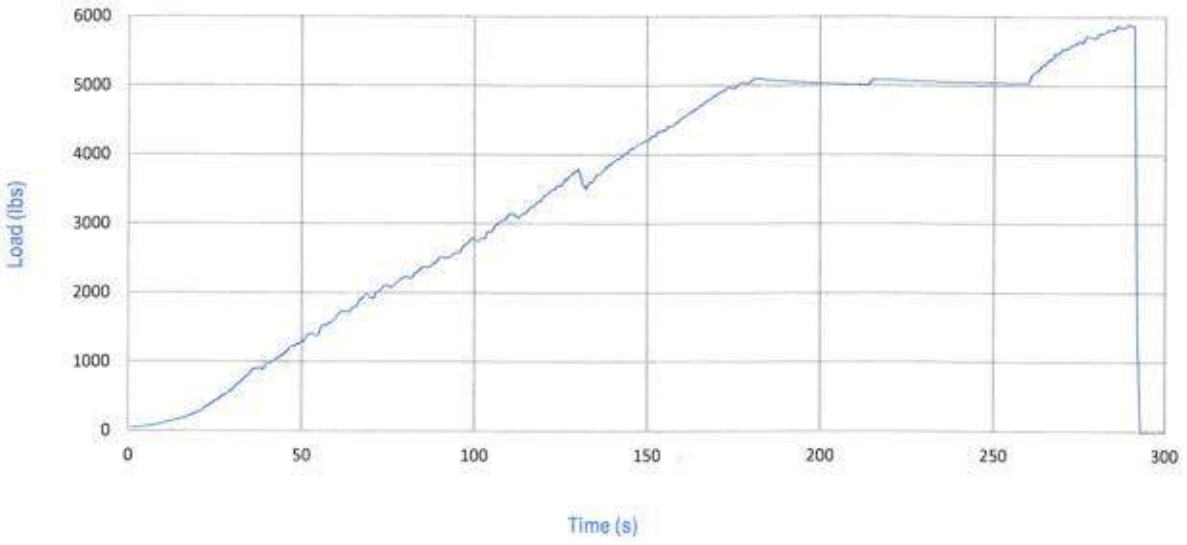
Test Instrumentation

5k Load Cell/Data Acquisition System, ANSI Compliant Test Structure, Hydraulic Ram, Digital Timer, Digital Thermometer Miscellaneous Connecting Hardware

3600 lb Test Data Graph



5000 lb Test Data Graph

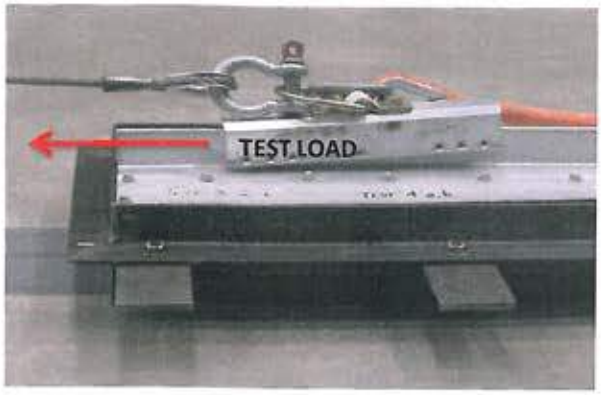


Test Results & Comments

	Acceptance Criteria	Test Results	Exp. Uncertainty	Pass/Fail
Tensile Load (lbf):	3,600 Minimum	3618.8	± 6.9	PASS
Time Requirement (sec):	60 Minimum	73	± 1	
No cracking, breaking or permanent deformation				PASS
Tensile Load (lbf):	5,000 Minimum	5018.4	± 6.9	PASS
Time Requirement (sec):	60 Minimum	115	± 1	
Withstand force without breaking				PASS

Test Comments/Notes:
This test performed with the load applied parallel to the standing seam. The set screws gripping the roof panel were stainless cupped-tip fasteners torqued to 90 in-lbs. The client supplied test panel was 22 gauge LokSeam by MBCI, with 1-3/4" tall vertical rib and 12" width.

The sample maintained attachment to the standing seam of the roof panel. The test sample did not noticeably deform under test loading. The roof panels deformed during the test and there was localized displacement of the sample against the roof panel as the sample seized onto the standing seam. This is a test of the connection between the sample and the roof panel and is not intended to represent or test the attachment between roofing panels and the roof structure.



Opinions and Interpretations:
None

Manager Name: Dave Lough **Signature:** _____ Date: 11/13/14

Engineer Name: Larry Cimino, PE **Signature:** _____ Date: 11-13-14

The results of this test only apply to the item tested.

All instrumentation used in testing is traceable to NIST.

Reported uncertainties represent expanded uncertainties expressed at approximately the 95% level of confidence using a coverage factor of k=2. Where limits of acceptability are applicable, false accept risk is limited to 2% or less by guard-banding the limit of acceptability with the expanded uncertainty value.

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Testing to the clauses referenced in this report does not infer compliance to the ANSI Z359 standard in its entirety.

GRAVITEC SYSTEMS INC

ACLASS ACCREDITED TESTING

Test Report

Gravitec Systems Inc.
21291 Urdahl Road NW
Poulsbo, WA 98370

Test Report #:	210096-ACS-03	Customer Contact:	Howie Scarboro				
Client Name:	Fall Protection Distributors, LLC						
Client Address:	1324 Seven Springs Blvd, #323	City:	Trinity	State/Province:	FL	Zip:	34655
Country:	USA						

Service Address: Gravitec Systems Inc., 21291 Urdahl Road NW, Poulsbo, WA 98370

Test Sample Information

Manufacturer: Action Manufacturing, LLC
Description: Cupped Tip, 90 in-lb, Parallel to seam
Model/Part #: Standing Seam Roof Anchor
Lot/Batch #: ---
Serial #: 03 (assigned)

Sample Receipt Date: 8/15/2014

Sampling Details/Deviations and Sample Condition:
The anchorage connection was new and in good working order. The sample was not previously tested.

Test Information

Testing Method (Applicable Standard and Section): ANSI Z359.1-2007, 4.3.6 Anchorage Connector Qualification Testing

1. Secure the anchorage connector to an anchorage in the manner and by the intended means specified by the manufacturer for assembling it as part of a PFAS.
2. Connect the anchorage connector to static tensile test equipment such that the anchorage connector is loaded in the direction permitted when used as part of a PFAS.
3. The static tensile test equipment shall meet the requirements of 4.1.7.
4. A test lanyard in accordance with 4.1.4, or other equipment simulating the intended means of installing the anchorage connector in a PFAS, shall be used to couple the anchorage connector to the tensile test equipment.
5. Subject the anchorage connector to a force of 3,600 pounds (16kN), maintain the force for one minute then remove the force.
6. Repeat this test for each connector element attached to the anchorage connector.
7. Observe the condition of the connector element(s) in accordance with 3.2.5.1.
8. Subject the anchorage connector to a force of 5,000 pounds (22.2kN).
9. When more than one PFAS may be attached to the anchorage connector, the 5,000 pound force shall be multiplied by the maximum number of PFAS's that may be attached to the anchorage connector.
10. Maintain the test force for one minute. Observe the condition of the anchorage connector in accordance with 3.2.5.1.
11. Repeat the test specified above, altering the direction of anchorage connector loading, until the anchorage connector has been tested in all directions permitted when used as part of a PFAS.
12. Repeat the test specified above for the different anchorages to which the anchorage connector is intended to be connected.

Acceptance Criteria (Applicable Standard and Section): ANSI Z359.1-2007, 3.2.5.1

1. Anchorage connectors shall meet the strength requirements of the anchorages to which they are coupled as set forth in 7.2.3.
2. Satisfactory completion of the qualification testing specified in 4.3.6 shall constitute compliance with this requirement.
3. When tested in accordance with 4.3.6, anchorage connectors shall be capable of withstanding (without breaking) a 5,000-pound (22.2kN) load multiplied by the maximum number of personal fall arrest systems that may be attached to the anchorage connector.
4. Connector elements integral to or part of the anchorage connector shall be capable of withstanding a 3,600-pound (16kN) load without cracking, breaking, or permanent deformation visible to the unaided eye.

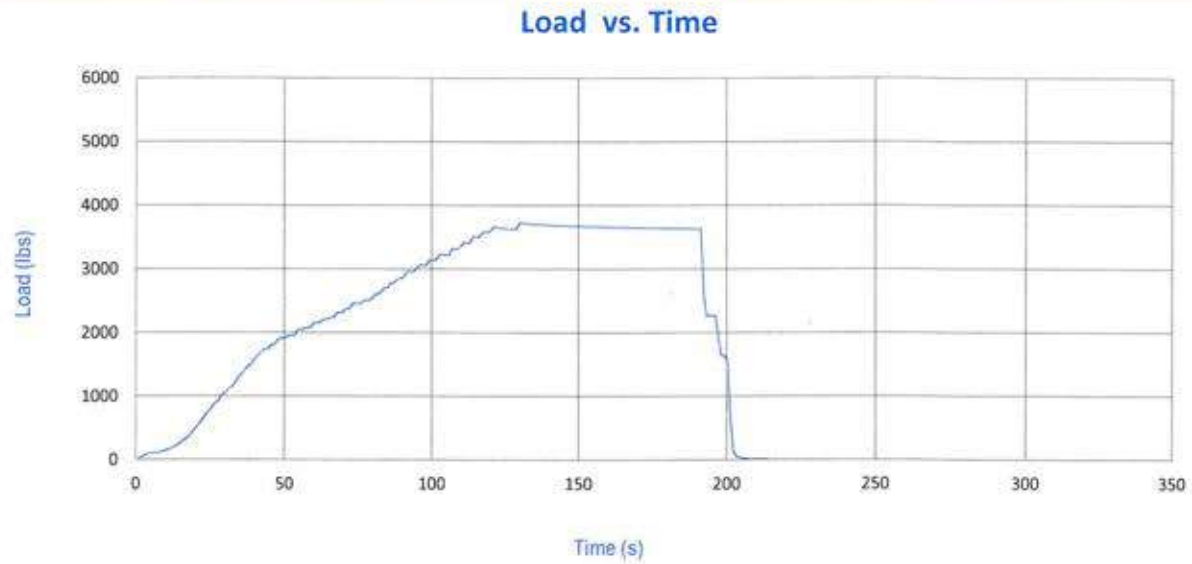
Gravitec Test Procedure ID: TP ANSI Z359.1-2007, 4.3.6 SST ANCH

Job #:	210096	**Test Date:**	10/15/2014	**Load Cell:**	B0_253073
Test Code:	ACS	**Time:**	11:43 AM	**DAQ Module:**	1521EAF
Test ID #:	3	**Temp. (°F):**	72		
File Name:	210096-ACS-03	**Humidity (%):**	53		

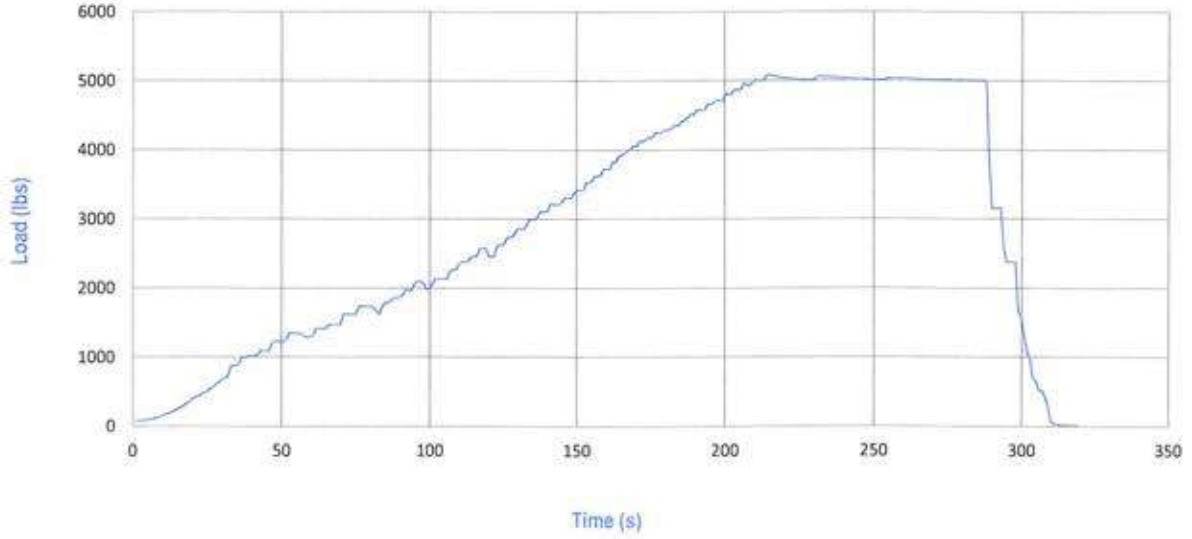
Test Instrumentation

5k Load Cell/Data Acquisition System, ANSI Compliant Test Structure, Hydraulic Ram, Digital Timer, Digital Thermometer Miscellaneous Connecting Hardware

3600 lb Test Data Graph



5000 lb Test Data Graph



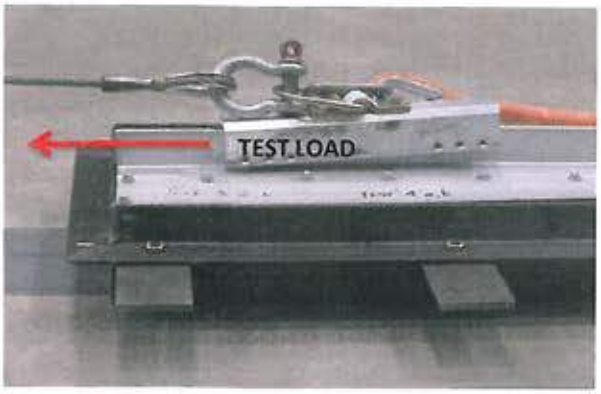
Test Results & Comments

	Acceptance Criteria	Test Results	Exp. Uncertainty	Pass/Fail
Tensile Load (lbf):	3,600 Minimum	3619.2	± 6.9	PASS
Time Requirement (sec):	60 Minimum	71	± 1	
No cracking, breaking or permanent deformation				PASS
Tensile Load (lbf):	5,000 Minimum	5008.7	± 6.9	PASS
Time Requirement (sec):	60 Minimum	76	± 1	
Withstand force without breaking				PASS

Test Comments/Notes:

This test performed with the load applied parallel to the standing seam. The set screws gripping the roof panel were stainless cupped-tip fasteners torqued to 90 in-lbs. The client supplied test panel was 22 gauge LokSeam by MBCI, with 1-3/4" tall vertical rib and 12" width.

The sample maintained attachment to the standing seam of the roof panel. The test sample did not noticeably deform under test loading. The roof panels deformed during the test and there was localized displacement of the sample against the roof panel as the sample seized onto the standing seam. This is a test of the connection between the sample and the roof panel and is not intended to represent or test the attachment between roofing panels and the roof structure.



Opinions and Interpretations:

None

Manager Name: Dave Lough **Signature:** _____ Date: 11/13/14

Engineer Name: Larry Cimino, PE **Signature:** _____ Date: 11-13-14

The results of this test only apply to the item tested.

All instrumentation used in testing is traceable to NIST.

Reported uncertainties represent expanded uncertainties expressed at approximately the 95% level of confidence using a coverage factor of k=2. Where limits of acceptability are applicable, false accept risk is limited to 2% or less by guard-banding the limit of acceptability with the expanded uncertainty value.

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Testing to the clauses referenced in this report does not infer compliance to the ANSI Z359 standard in its entirety.

GRAVITEC SYSTEMS INC

ACLASS ACCREDITED TESTING

Test Report

Gravitec Systems Inc.
21291 Urdahl Road NW
Poulsbo, WA 98370

Test Report #:	210096-ACS-07	Customer Contact:	Howie Scarboro				
Client Name:	Fall Protection Distributors, LLC						
Client Address:	1324 Seven Springs Blvd, #323	City:	Trinity	State/Province:	FL	Zip:	34655
Country:	USA						

Service Address: Gravitec Systems Inc., 21291 Urdahl Road NW, Poulsbo, WA 98370

Test Sample Information

Manufacturer: Action Manufacturing, LLC
Description: Cupped tip, 90 in-lb, Perpendicular to seam
Model/Part #: Standing Seam Roof Anchor
Lot/Batch #: ---
Serial #: 07 (assigned)

Sample Receipt Date: 8/15/2014

Sampling Details/Deviations and Sample Condition:
The anchorage connection was new and in good working order. The sample was not previously tested.

Test Information

Testing Method (Applicable Standard and Section): ANSI Z359.1-2007, 4.3.6 Anchorage Connector Qualification Testing

1. Secure the anchorage connector to an anchorage in the manner and by the intended means specified by the manufacturer for assembling it as part of a PFAS.
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7. Observe the condition of the connector element(s) in accordance with 3.2.5.1.
8. Subject the anchorage connector to a force of 5,000 pounds (22.2kN).
9. When more than one PFAS may be attached to the anchorage connector, the 5,000 pound force shall be multiplied by the maximum number of PFAS's that may be attached to the anchorage connector.
10. Maintain the test force for one minute. Observe the condition of the anchorage connector in accordance with 3.2.5.1.
11. Repeat the test specified above, altering the direction of anchorage connector loading, until the anchorage connector has been tested in all directions permitted when used as part of a PFAS.
12. Repeat the test specified above for the different anchorages to which the anchorage connector is intended to be connected.

Acceptance Criteria (Applicable Standard and Section): ANSI Z359.1-2007, 3.2.5.1

1. Anchorage connectors shall meet the strength requirements of the anchorages to which they are coupled as set forth in 7.2.3.
2. Satisfactory completion of the qualification testing specified in 4.3.6 shall constitute compliance with this requirement.
3. When tested in accordance with 4.3.6, anchorage connectors shall be capable of withstanding (without breaking) a 5,000-pound (22.2kN) load multiplied by the maximum number of personal fall arrest systems that may be attached to the anchorage connector.
4. Connector elements integral to or part of the anchorage connector shall be capable of withstanding a 3,600-pound (16kN) load without cracking, breaking, or permanent deformation visible to the unaided eye.

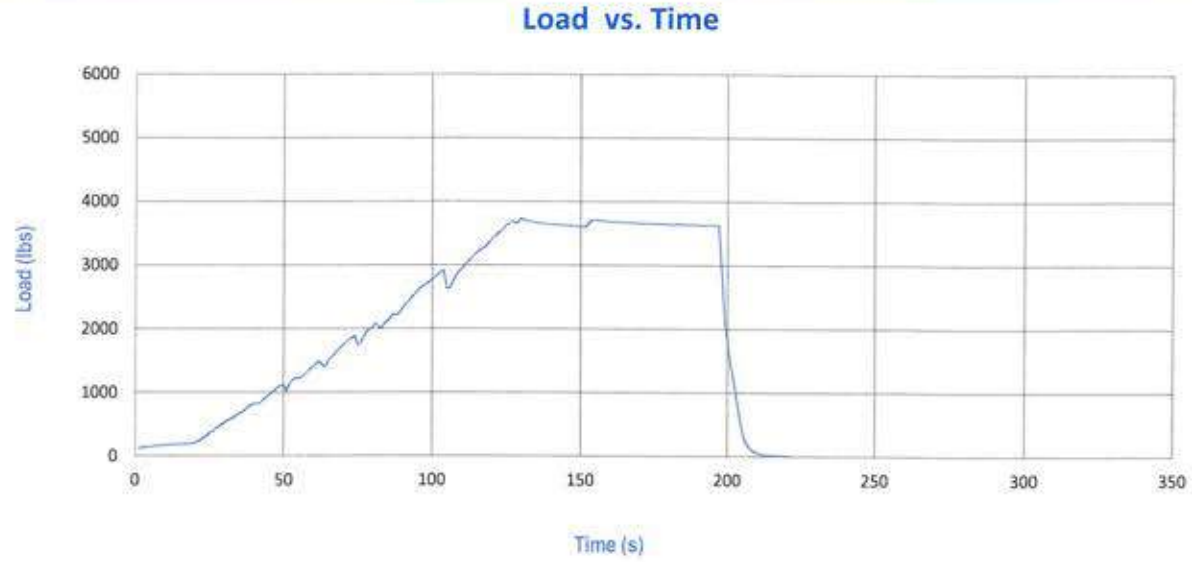
Gravitec Test Procedure ID: TP ANSI Z359.1-2007, 4.3.6 SST ANCH

Job #:	210096	**Test Date:**	10/15/2014	**Load Cell:**	B0_253073
Test Code:	ACS	**Time:**	3:42 PM	**DAQ Module:**	1521EAF
Test ID #:	7	**Temp. (°F):**	72.5		
File Name:	210096-ACS-07	**Humidity (%):**	52		

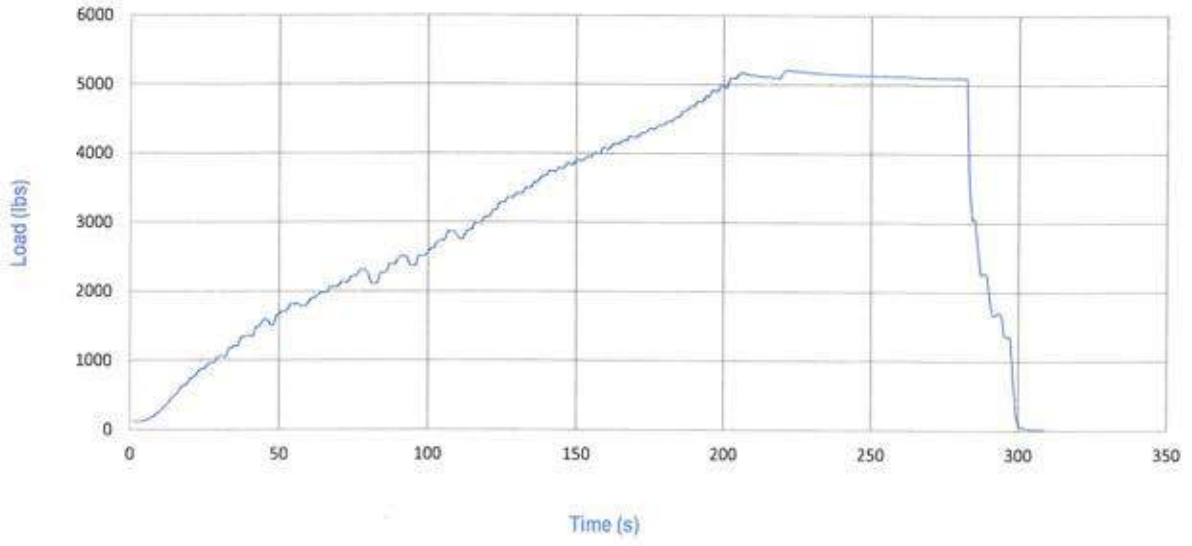
Test Instrumentation

5k Load Cell/Data Acquisition System, ANSI Compliant Test Structure, Hydraulic Ram, Digital Timer, Digital Thermometer Miscellaneous Connecting Hardware

3600 lb Test Data Graph



5000 lb Test Data Graph



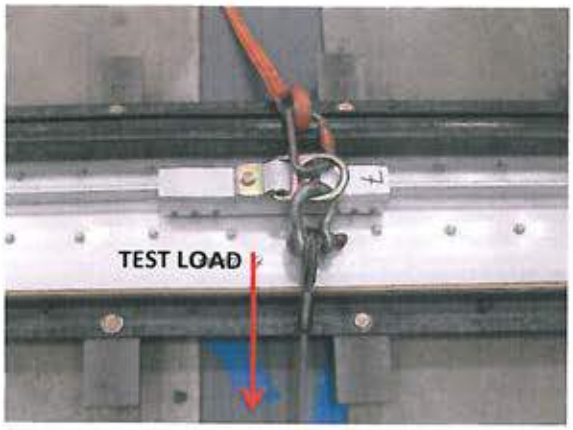
Test Results & Comments

	Acceptance Criteria	Test Results	Exp. Uncertainty	Pass/Fail
Tensile Load (lbf):	3,600 Minimum	3614.7	± 6.9	PASS
Time Requirement (sec):	60 Minimum	73	± 1	
No cracking, breaking or permanent deformation				PASS
Tensile Load (lbf):	5,000 Minimum	5083.8	± 6.9	PASS
Time Requirement (sec):	60 Minimum	81	± 1	
Withstand force without breaking				PASS

Test Comments/Notes:

This test performed with the load applied perpendicular to the standing seam. The set screws gripping the roof panel were stainless cupped-tip fasteners torqued to 90 in-lbs. The client supplied test panel was 22 gauge LokSeam by MBCI, with 1-3/4" tall vertical rib and 12" width.

The sample maintained attachment to the standing seam of the roof panel. The test sample did not noticeably deform under test loading. The roof panels deformed during the test and there was localized displacement of the sample against the roof panel as the sample seized onto the standing seam. This is a test of the connection between the sample and the roof panel and is not intended to represent or test the attachment between roofing panels and the roof structure.



Opinions and Interpretations:

None

Manager Name: Dave Lough **Signature:** _____ Date: 11/13/14

Engineer Name: Larry Cimino, PE **Signature:** _____ Date: 11-13-14

The results of this test only apply to the item tested.

All instrumentation used in testing is traceable to NIST.

Reported uncertainties represent expanded uncertainties expressed at approximately the 95% level of confidence using a coverage factor of k=2. Where limits of acceptability are applicable, false accept risk is limited to 2% or less by guard-banding the limit of acceptability with the expanded uncertainty value.

This laboratory is accredited to ISO 17025 by ACLASS ANSI-ASQ National Accreditation Board for tests conducted under its scope of accreditation.

Testing to the clauses referenced in this report does not infer compliance to the ANSI Z359 standard in its entirety.

GRAVITEC SYSTEMS INC

ACLASS ACCREDITED TESTING

Test Report

Gravitec Systems Inc.
21291 Urdahl Road NW
Poulsbo, WA 98370

Test Report #:	210096-ACS-9	Customer Contact:	Howie Scarboro				
Client Name:	Fall Protection Distributors, LLC						
Client Address:	1324 Seven Springs Blvd, #323	City:	Trinity	State/Province:	FL	Zip:	34655
Country:	USA						

Service Address: Gravitec Systems Inc., 21291 Urdahl Road NW, Poulsbo, WA 98370

Test Sample Information

Manufacturer: Action Manufacturing, LLC
Description: Cupped tip, 90 in-lb, Perpendicular to seam
Model/Part #: Standing Seam Roof Anchor
Lot/Batch #: ---
Serial #: 09 (assigned)

Sample Receipt Date: 8/15/2014

Sampling Details/Deviations and Sample Condition:
The anchorage connection was new and in good working order. The sample was not previously tested.

Test Information

Testing Method (Applicable Standard and Section): ANSI Z359.1-2007, 4.3.6 Anchorage Connector Qualification Testing

1. Secure the anchorage connector to an anchorage in the manner and by the intended means specified by the manufacturer for assembling it as part of a PFAS.
2. Connect the anchorage connector to static tensile test equipment such that the anchorage connector is loaded in the direction permitted when used as part of a PFAS.
3. The static tensile test equipment shall meet the requirements of 4.1.7.
4. A test lanyard in accordance with 4.1.4, or other equipment simulating the intended means of installing the anchorage connector in a PFAS, shall be used to couple the anchorage connector to the tensile test equipment.
5. Subject the anchorage connector to a force of 3,600 pounds (16kN), maintain the force for one minute then remove the force.
6. Repeat this test for each connector element attached to the anchorage connector.
7. Observe the condition of the connector element(s) in accordance with 3.2.5.1.
8. Subject the anchorage connector to a force of 5,000 pounds (22.2kN).
9. When more than one PFAS may be attached to the anchorage connector, the 5,000 pound force shall be multiplied by the maximum number of PFAS's that may be attached to the anchorage connector.
10. Maintain the test force for one minute. Observe the condition of the anchorage connector in accordance with 3.2.5.1.
11. Repeat the test specified above, altering the direction of anchorage connector loading, until the anchorage connector has been tested in all directions permitted when used as part of a PFAS.
12. Repeat the test specified above for the different anchorages to which the anchorage connector is intended to be connected.

Acceptance Criteria (Applicable Standard and Section): ANSI Z359.1-2007, 3.2.5.1

1. Anchorage connectors shall meet the strength requirements of the anchorages to which they are coupled as set forth in 7.2.3.
2. Satisfactory completion of the qualification testing specified in 4.3.6 shall constitute compliance with this requirement.
3. When tested in accordance with 4.3.6, anchorage connectors shall be capable of withstanding (without breaking) a 5,000-pound (22.2kN) load multiplied by the maximum number of personal fall arrest systems that may be attached to the anchorage connector.
4. Connector elements integral to or part of the anchorage connector shall be capable of withstanding a 3,600-pound (16kN) load without cracking, breaking, or permanent deformation visible to the unaided eye.

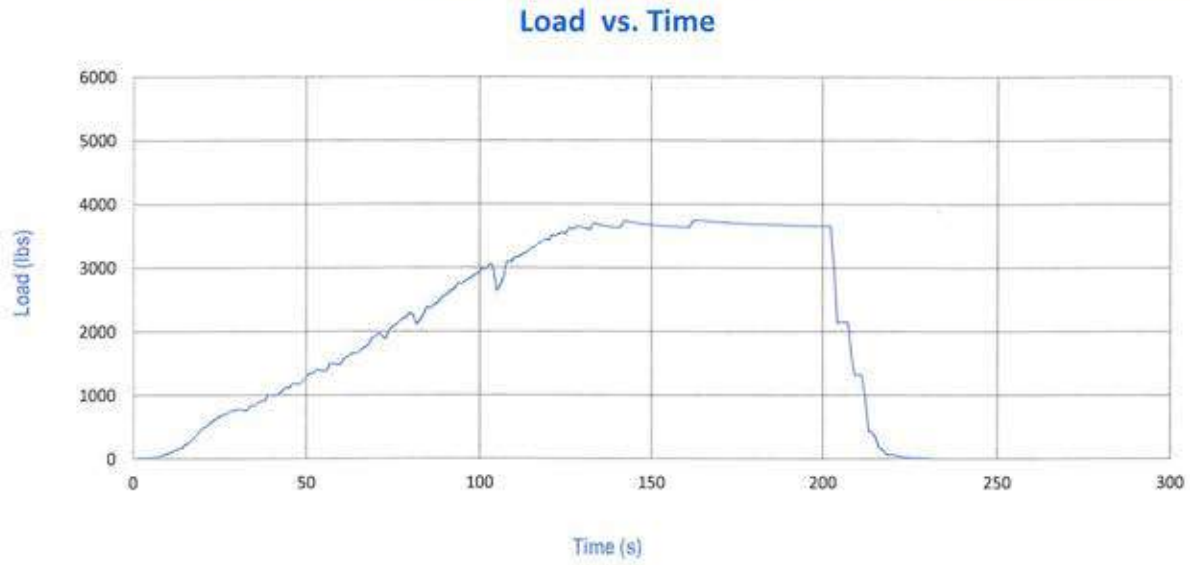
Gravitec Test Procedure ID: TP ANSI Z359.1-2007, 4.3.6 SST ANCH

Job #:	210096	**Test Date:**	10/16/2014	**Load Cell:**	B0_253073
Test Code:	ACS	**Time:**	9:56 AM	**DAQ Module:**	1521EAF
Test ID #:	9	**Temp. (°F):**	72		
File Name:	210096-ACS-9	**Humidity (%):**	52		

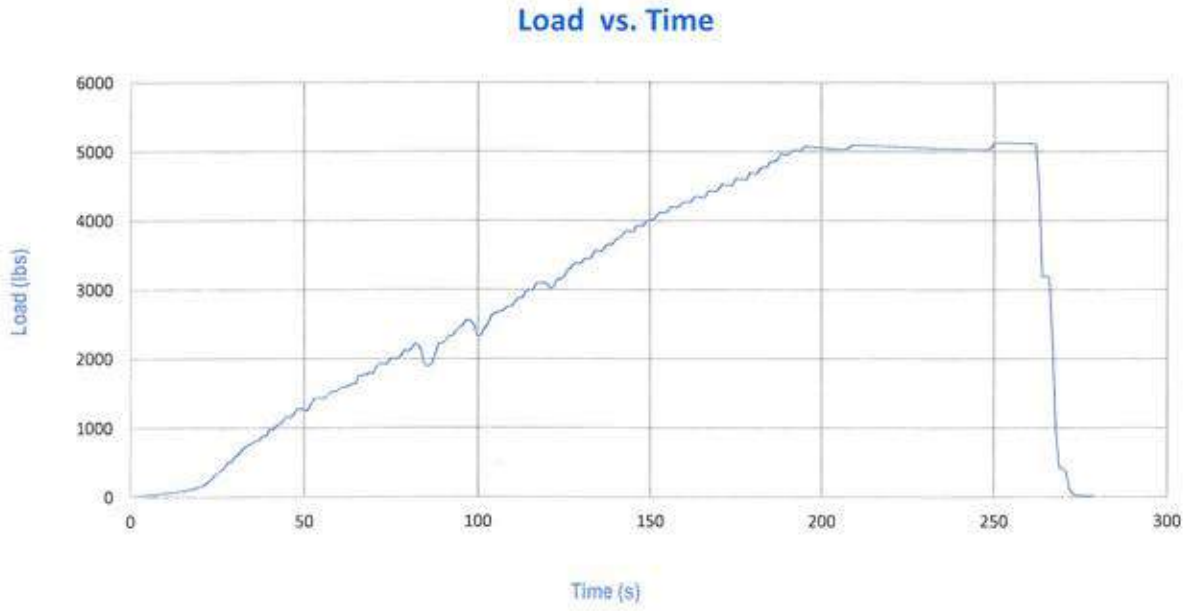
Test Instrumentation

5k Load Cell/Data Acquisition System, ANSI Compliant Test Structure, Hydraulic Ram, Digital Timer, Digital Thermometer Miscellaneous Connecting Hardware

3600 lb Test Data Graph



5000 lb Test Data Graph



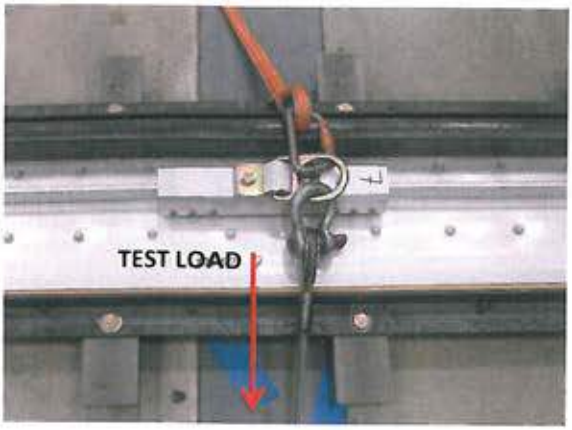
Test Results & Comments

	Acceptance Criteria	Test Results	Exp. Uncertainty	Pass/Fail
Tensile Load (lbf):	3,600 Minimum	3608.4	± 6.9	PASS
Time Requirement (sec):	60 Minimum	76	± 1	PASS
No cracking, breaking or permanent deformation				
Tensile Load (lbf):	5,000 Minimum	5011.6	± 6.9	PASS
Time Requirement (sec):	60 Minimum	71	± 1	PASS
Withstand force without breaking				

Test Comments/Notes:

This test performed with the load applied perpendicular to the standing seam. The set screws gripping the roof panel were stainless cupped-tip fasteners torqued to 90 in-lbs. The client supplied test panel was 22 gauge LokSeam by MBCI, with 1-3/4" tall vertical rib and 12" width.

The sample maintained attachment to the standing seam of the roof panel. The test sample did not noticeably deform under test loading. The roof panels deformed during the test and there was localized displacement of the sample against the roof panel as the sample seized onto the standing seam. This is a test of the connection between the sample and the roof panel and is not intended to represent or test the attachment between roofing panels and the roof structure.



Opinions and Interpretations:

None

Manager Name: Dave Lough **Signature:** _____ Date: 11/13/14

Engineer Name: Larry Cimino, PE **Signature:** _____ Date: 11-13-14

The results of this test only apply to the item tested.

All instrumentation used in testing is traceable to NIST.

Reported uncertainties represent expanded uncertainties expressed at approximately the 95% level of confidence using a coverage factor of k=2. Where limits of acceptability are applicable, false accept risk is limited to 2% or less by guard-banding the limit of acceptability with the expanded uncertainty value.

This laboratory is accredited to ISO 17025 by ACLASS ANSI-ASQ National Accreditation Board for tests conducted under its scope of accreditation.

Testing to the clauses referenced in this report does not infer compliance to the ANSI Z359 standard in its entirety.

GRAVITEC SYSTEMS INC

ACLASS ACCREDITED TESTING

Test Report

Gravitec Systems Inc.
21291 Urdahl Road NW
Poulsbo, WA 98370

Test Report #:	210096-ACS-10	Customer Contact:	Howie Scarboro				
Client Name:	Fall Protection Distributors, LLC						
Client Address:	1324 Seven Springs Blvd, #323	City:	Trinity	State/Province:	FL	Zip:	34655
Country:	USA						

Service Address: Gravitec Systems Inc., 21291 Urdahl Road NW, Poulsbo, WA 98370

Test Sample Information

Manufacturer: Action Manufacturing, LLC
Description: Cup tip, 90 in-lb, Perpendicular to seam
Model/Part #: Standing Seam Roof Anchor
Lot/Batch #: ---
Serial #: 01 (assigned)

Sample Receipt Date: 8/15/2014

Sampling Details/Deviations and Sample Condition:
The sample was previously tested in the parallel to seam configuration. The 12 set screws were replaced with new screws prior to test.

Test Information

Testing Method (Applicable Standard and Section): ANSI Z359.1-2007, 4.3.6 Anchorage Connector Qualification Testing

1. Secure the anchorage connector to an anchorage in the manner and by the intended means specified by the manufacturer for assembling it as part of a PFAS.
2. Connect the anchorage connector to static tensile test equipment such that the anchorage connector is loaded in the direction permitted when used as part of a PFAS.
3. The static tensile test equipment shall meet the requirements of 4.1.7.
4. A test lanyard in accordance with 4.1.4, or other equipment simulating the intended means of installing the anchorage connector in a PFAS, shall be used to couple the anchorage connector to the tensile test equipment.
5. Subject the anchorage connector to a force of 3,600 pounds (16kN), maintain the force for one minute then remove the force.
6. Repeat this test for each connector element attached to the anchorage connector.
7. Observe the condition of the connector element(s) in accordance with 3.2.5.1.
8. Subject the anchorage connector to a force of 5,000 pounds (22.2kN).
9. When more than one PFAS may be attached to the anchorage connector, the 5,000 pound force shall be multiplied by the maximum number of PFAS's that may be attached to the anchorage connector.
10. Maintain the test force for one minute. Observe the condition of the anchorage connector in accordance with 3.2.5.1.
11. Repeat the test specified above, altering the direction of anchorage connector loading, until the anchorage connector has been tested in all directions permitted when used as part of a PFAS.
12. Repeat the test specified above for the different anchorages to which the anchorage connector is intended to be connected.

Acceptance Criteria (Applicable Standard and Section): ANSI Z359.1-2007, 3.2.5.1

1. Anchorage connectors shall meet the strength requirements of the anchorages to which they are coupled as set forth in 7.2.3.
2. Satisfactory completion of the qualification testing specified in 4.3.6 shall constitute compliance with this requirement.
3. When tested in accordance with 4.3.6, anchorage connectors shall be capable of withstanding (without breaking) a 5,000-pound (22.2kN) load multiplied by the maximum number of personal fall arrest systems that may be attached to the anchorage connector.
4. Connector elements integral to or part of the anchorage connector shall be capable of withstanding a 3,600-pound (16kN) load without cracking, breaking, or permanent deformation visible to the unaided eye.

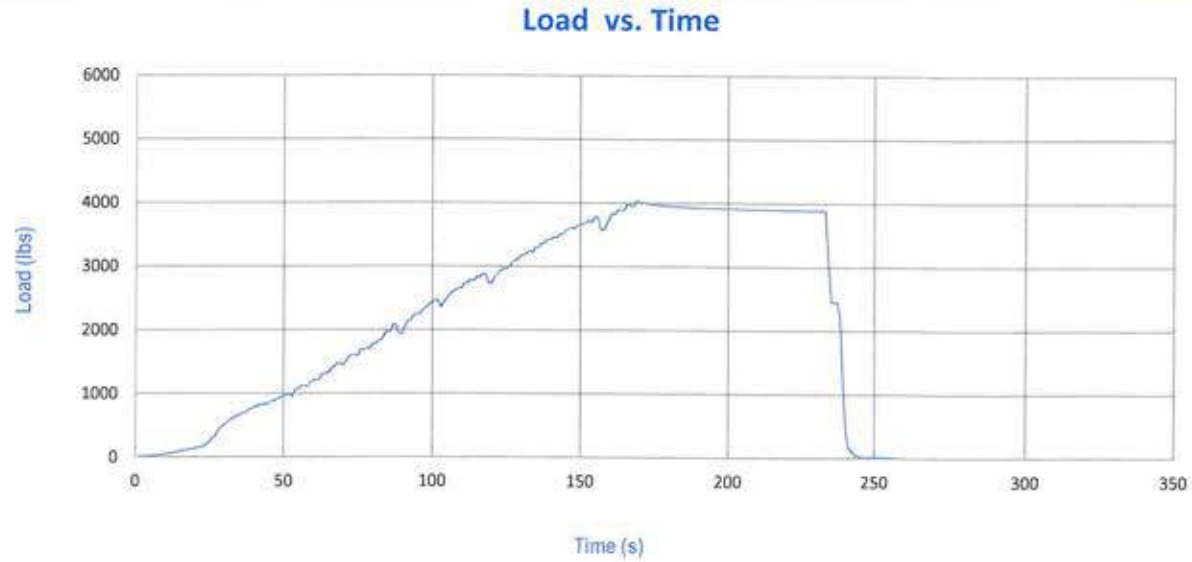
Gravitec Test Procedure ID: TP ANSI Z359.1-2007, 4.3.6 SST ANCH

Job #:	210096	**Test Date:**	10/16/2014	**Load Cell:**	B0_253073
Test Code:	ACS	**Time:**	11:08 AM	**DAQ Module:**	1521EAF
Test ID #:	10	**Temp. (°F):**	72		
File Name:	210096-ACS-10	**Humidity (%):**	52		

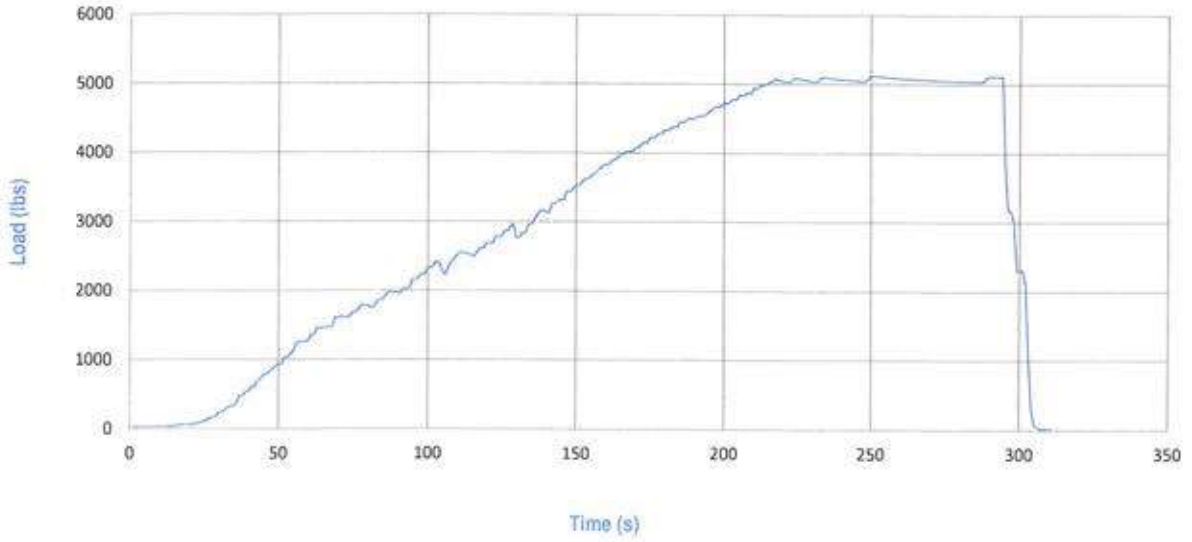
Test Instrumentation

5k Load Cell/Data Acquisition System, ANSI Compliant Test Structure, Hydraulic Ram, Digital Timer, Digital Thermometer Miscellaneous Connecting Hardware

3600 lb Test Data Graph



5000 lb Test Data Graph

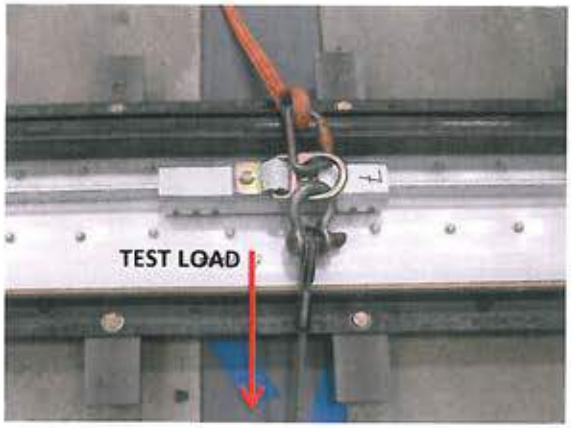


Test Results & Comments

	Acceptance Criteria	Test Results	Exp. Uncertainty	Pass/Fail
Tensile Load (lbf):	3,600 Minimum	3622.6	± 6.9	PASS
Time Requirement (sec):	60 Minimum	84	± 1	
No cracking, breaking or permanent deformation				PASS
Tensile Load (lbf):	5,000 Minimum	5022.0	± 6.9	PASS
Time Requirement (sec):	60 Minimum	80	± 1	
Withstand force without breaking				PASS

Test Comments/Notes:
This test performed with the load applied perpendicular to the standing seam. The set screws gripping the roof panel were stainless cupped-tip fasteners torqued to 90 in-lbs. The client supplied test panel was 22 gauge LokSeam by MBCI, with 1-3/4" tall vertical rib and 12" width.

The sample maintained attachment to the standing seam of the roof panel. The sample body did not noticeably deform under test loading; some set screws appeared have bent slightly at loads above 3600 lbs, as indicated by a resistance or tightness during removal of the screws after the test . The roof panels deformed during the test and there was localized displacement of the sample against the roof panel as the sample seized onto the standing seam. This is a test of the connection between the sample and the roof panel and is not intended to represent or test the attachment between roofing panels and the roof structure.



Opinions and Interpretations:
None

Manager Name: Dave Lough **Signature:** _____ Date: 11/13/14

Engineer Name: Larry Cimino, PE **Signature:** _____ Date: 11-13-14

The results of this test only apply to the item tested.

All instrumentation used in testing is traceable to NIST.

Reported uncertainties represent expanded uncertainties expressed at approximately the 95% level of confidence using a coverage factor of k=2. Where limits of acceptability are applicable, false accept risk is limited to 2% or less by guard-banding the limit of acceptability with the expanded uncertainty value.

This laboratory is accredited to ISO 17025 by ACLASS ANSI-ASQ National Accreditation Board for tests conducted under its scope of accreditation.

Testing to the clauses referenced in this report does not infer compliance to the ANSI Z359 standard in its entirety.

GRAVITEC SYSTEMS INC

ACLASS ACCREDITED TESTING

Test Report

Gravitec Systems Inc.
21291 Urdahl Road NW
Poulsbo, WA 98370

Test Report #:	210096-ACS-04	Customer Contact:	Howie Scarboro				
Client Name:	Fall Protection Distributors, LLC						
Client Address:	1324 Seven Springs Blvd, #323	City:	Trinity	State/Province:	FL	Zip:	34655
Country:	USA						

Service Address: Gravitec Systems Inc., 21291 Urdahl Road NW, Poulsbo, WA 98370

Test Sample Information

Manufacturer: Action Manufacturing, LLC
Description: Nylon tip, 180 in-lb, Parallel to seam
Model/Part #: Standing Seam Roof Anchor
Lot/Batch #: ---
Serial #: 04 (assigned)

Sample Receipt Date: 8/15/2014

Sampling Details/Deviations and Sample Condition:
The anchorage connection was new and in good working order. The sample was not previously tested.

Test Information

Testing Method (Applicable Standard and Section): ANSI Z359.1-2007, 4.3.6 Anchorage Connector Qualification Testing

1. Secure the anchorage connector to an anchorage in the manner and by the intended means specified by the manufacturer for assembling it as part of a PFAS.
2. Connect the anchorage connector to static tensile test equipment such that the anchorage connector is loaded in the direction permitted when used as part of a PFAS.
3. The static tensile test equipment shall meet the requirements of 4.1.7.
4. A test lanyard in accordance with 4.1.4, or other equipment simulating the intended means of installing the anchorage connector in a PFAS, shall be used to couple the anchorage connector to the tensile test equipment.
5. Subject the anchorage connector to a force of 3,600 pounds (16kN), maintain the force for one minute then remove the force.
6. Repeat this test for each connector element attached to the anchorage connector.
7. Observe the condition of the connector element(s) in accordance with 3.2.5.1.
8. Subject the anchorage connector to a force of 5,000 pounds (22.2kN).
9. When more than one PFAS may be attached to the anchorage connector, the 5,000 pound force shall be multiplied by the maximum number of PFAS's that may be attached to the anchorage connector.
10. Maintain the test force for one minute. Observe the condition of the anchorage connector in accordance with 3.2.5.1.
11. Repeat the test specified above, altering the direction of anchorage connector loading, until the anchorage connector has been tested in all directions permitted when used as part of a PFAS.
12. Repeat the test specified above for the different anchorages to which the anchorage connector is intended to be connected.

Acceptance Criteria (Applicable Standard and Section): ANSI Z359.1-2007, 3.2.5.1

1. Anchorage connectors shall meet the strength requirements of the anchorages to which they are coupled as set forth in 7.2.3.
2. Satisfactory completion of the qualification testing specified in 4.3.6 shall constitute compliance with this requirement.
3. When tested in accordance with 4.3.6, anchorage connectors shall be capable of withstanding (without breaking) a 5,000-pound (22.2kN) load multiplied by the maximum number of personal fall arrest systems that may be attached to the anchorage connector.
4. Connector elements integral to or part of the anchorage connector shall be capable of withstanding a 3,600-pound (16kN) load without cracking, breaking, or permanent deformation visible to the unaided eye.

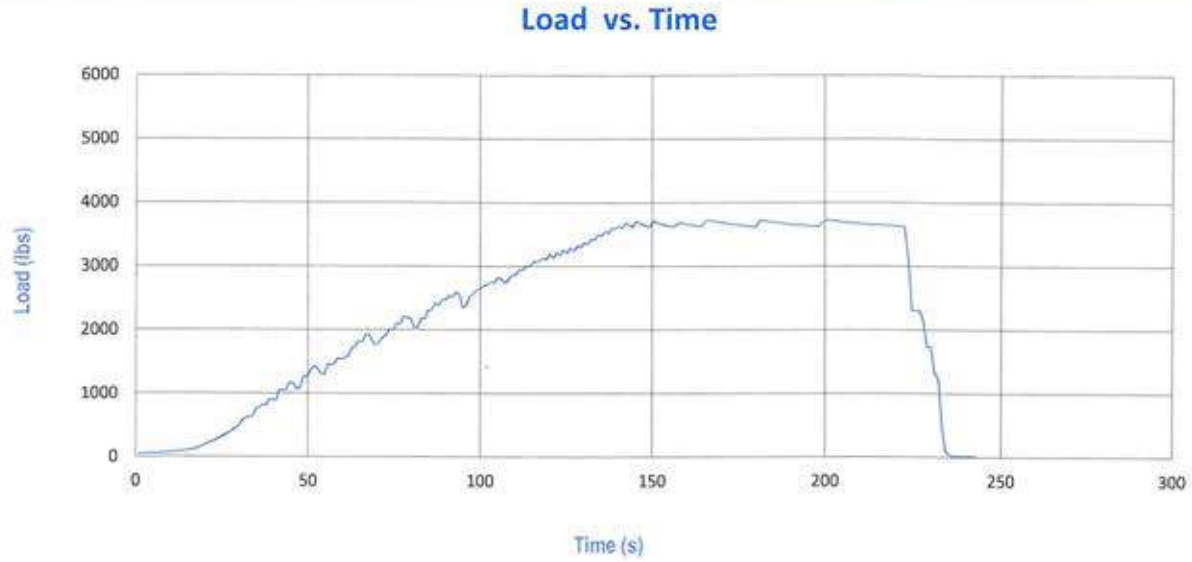
Gravitec Test Procedure ID: TP ANSI Z359.1-2007, 4.3.6 SST ANCH

Job #:	210096	**Test Date:**	10/15/2014	**Load Cell:**	B0_253073
Test Code:	ACS	**Time:**	2:00 PM	**DAQ Module:**	1521EAF
Test ID #:	4	**Temp. (°F):**	72.5		
File Name:	210096-ACS-04	**Humidity (%):**	52		

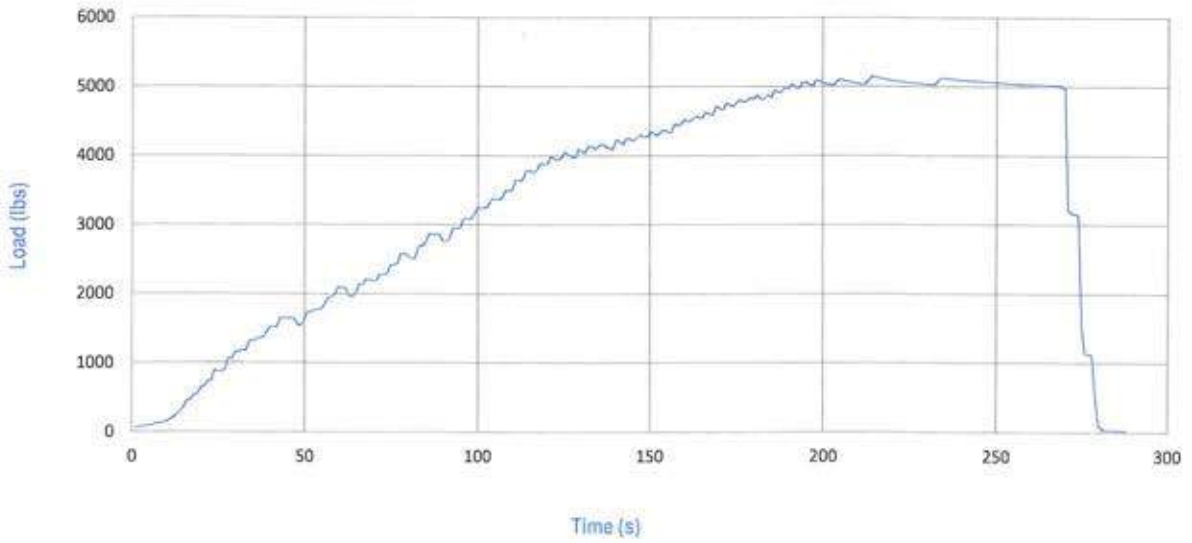
Test Instrumentation

5k Load Cell/Data Acquisition System, ANSI Compliant Test Structure, Hydraulic Ram, Digital Timer, Digital Thermometer Miscellaneous Connecting Hardware

3600 lb Test Data Graph



5000 lb Test Data Graph

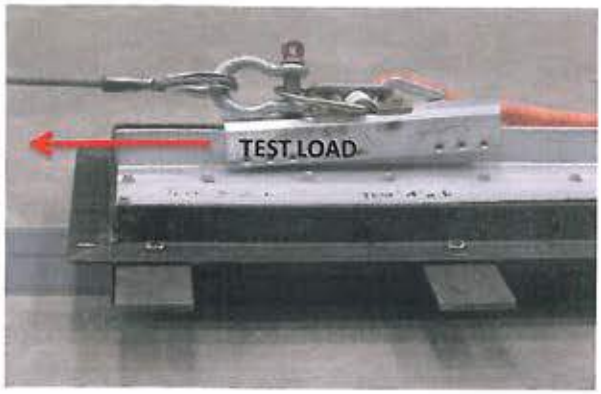


Test Results & Comments

	Acceptance Criteria	Test Results	Exp. Uncertainty	Pass/Fail
Tensile Load (lbf):	3,600 Minimum	3612.2	± 6.9	PASS
Time Requirement (sec):	60 Minimum	83	± 1	
No cracking, breaking or permanent deformation				PASS
Tensile Load (lbf):	5,000 Minimum	5008.4	± 6.9	PASS
Time Requirement (sec):	60 Minimum	77	± 1	
Withstand force without breaking				PASS

Test Comments/Notes:
This test performed with the load applied parallel to the standing seam. The set screws gripping the roof panel were stainless nylon-tip fasteners torqued to 180 in-lbs. The client supplied test panel was 22 gauge LokSeam by MBCI, with 1-3/4" tall vertical rib and 12" width.

The sample maintained attachment to the standing seam of the roof panel. The test sample did not noticeably deform under test loading. The roof panels deformed during the test and there was localized displacement of the sample against the roof panel as the sample seized onto the standing seam. This is a test of the connection between the sample and the roof panel and is not intended to represent or test the attachment between roofing panels and the roof structure.



Opinions and Interpretations:
None

Manager Name: Dave Lough **Signature:** _____ Date: 11/13/14

Engineer Name: Larry Cimino, PE **Signature:** _____ Date: 11-13-14

The results of this test only apply to the item tested.

All instrumentation used in testing is traceable to NIST.

Reported uncertainties represent expanded uncertainties expressed at approximately the 95% level of confidence using a coverage factor of k=2. Where limits of acceptability are applicable, false accept risk is limited to 2% or less by guard-banding the limit of acceptability with the expanded uncertainty value.

This laboratory is accredited to ISO 17025 by ACLASS ANSI-ASQ National Accreditation Board for tests conducted under its scope of accreditation.

Testing to the clauses referenced in this report does not infer compliance to the ANSI Z359 standard in its entirety.

GRAVITEC SYSTEMS INC

ACLASS ACCREDITED TESTING

Test Report

Gravitec Systems Inc.
21291 Urdahl Road NW
Poulsbo, WA 98370

Test Report #:	210096-ACS-05	Customer Contact:	Howie Scarboro				
Client Name:	Fall Protection Distributors, LLC						
Client Address:	1324 Seven Springs Blvd, #323	City:	Trinity	State/Province:	FL	Zip:	34655
Country:	USA						

Service Address: Gravitec Systems Inc., 21291 Urdahl Road NW, Poulsbo, WA 98370

Test Sample Information

Manufacturer: Action Manufacturing, LLC
Description: Nylon tip, 180 in-lb, Parallel to seam
Model/Part #: Standing Seam Roof Anchor
Lot/Batch #: ---
Serial #: 05 (assigned)

Sample Receipt Date: 8/15/2014

Sampling Details/Deviations and Sample Condition:
The anchorage connection was new and in good working order. The sample was not previously tested.

Test Information

Testing Method (Applicable Standard and Section): ANSI Z359.1-2007, 4.3.6 Anchorage Connector Qualification Testing

1. Secure the anchorage connector to an anchorage in the manner and by the intended means specified by the manufacturer for assembling it as part of a PFAS.
2. Connect the anchorage connector to static tensile test equipment such that the anchorage connector is loaded in the direction permitted when used as part of a PFAS.
3. The static tensile test equipment shall meet the requirements of 4.1.7.
4. A test lanyard in accordance with 4.1.4, or other equipment simulating the intended means of installing the anchorage connector in a PFAS, shall be used to couple the anchorage connector to the tensile test equipment.
5. Subject the anchorage connector to a force of 3,600 pounds (16kN), maintain the force for one minute then remove the force.
6. Repeat this test for each connector element attached to the anchorage connector.
7. Observe the condition of the connector element(s) in accordance with 3.2.5.1.
8. Subject the anchorage connector to a force of 5,000 pounds (22.2kN).
9. When more than one PFAS may be attached to the anchorage connector, the 5,000 pound force shall be multiplied by the maximum number of PFAS's that may be attached to the anchorage connector.
10. Maintain the test force for one minute. Observe the condition of the anchorage connector in accordance with 3.2.5.1.
11. Repeat the test specified above, altering the direction of anchorage connector loading, until the anchorage connector has been tested in all directions permitted when used as part of a PFAS.
12. Repeat the test specified above for the different anchorages to which the anchorage connector is intended to be connected.

Acceptance Criteria (Applicable Standard and Section): ANSI Z359.1-2007, 3.2.5.1

1. Anchorage connectors shall meet the strength requirements of the anchorages to which they are coupled as set forth in 7.2.3.
2. Satisfactory completion of the qualification testing specified in 4.3.6 shall constitute compliance with this requirement.
3. When tested in accordance with 4.3.6, anchorage connectors shall be capable of withstanding (without breaking) a 5,000-pound (22.2kN) load multiplied by the maximum number of personal fall arrest systems that may be attached to the anchorage connector.
4. Connector elements integral to or part of the anchorage connector shall be capable of withstanding a 3,600-pound (16kN) load without cracking, breaking, or permanent deformation visible to the unaided eye.

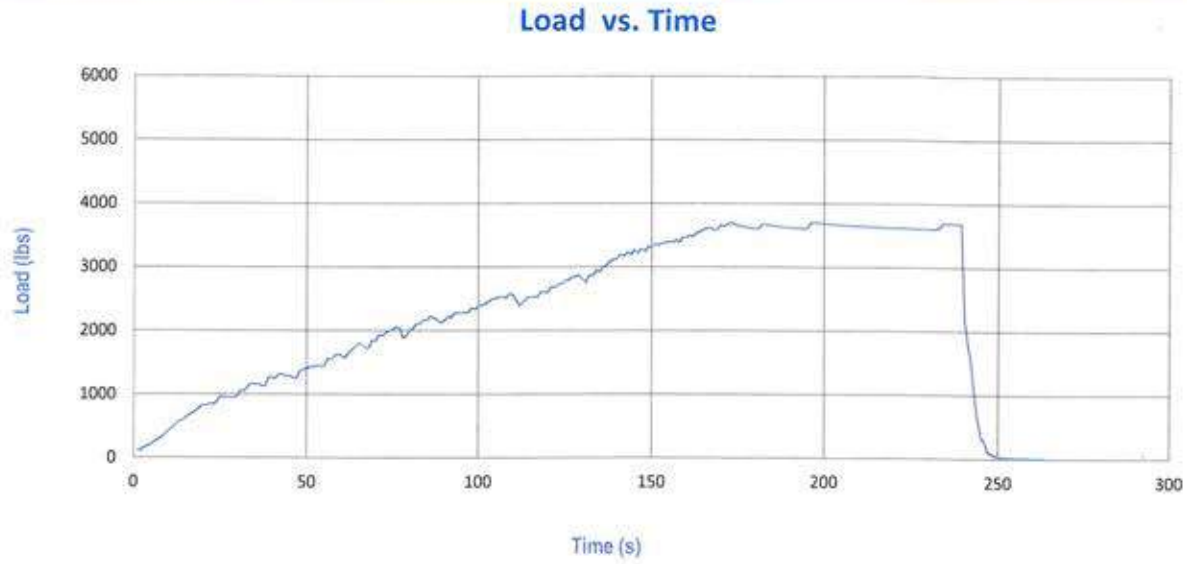
Gravitec Test Procedure ID: TP ANSI Z359.1-2007, 4.3.6 SST ANCH

Job #:	210096	**Test Date:**	10/15/2014	**Load Cell:**	B0_253073
Test Code:	ACS	**Time:**	12:46 PM	**DAQ Module:**	1521EAF
Test ID #:	5	**Temp. (°F):**	72.5		
File Name:	210096-ACS-05	**Humidity (%):**	53.2		

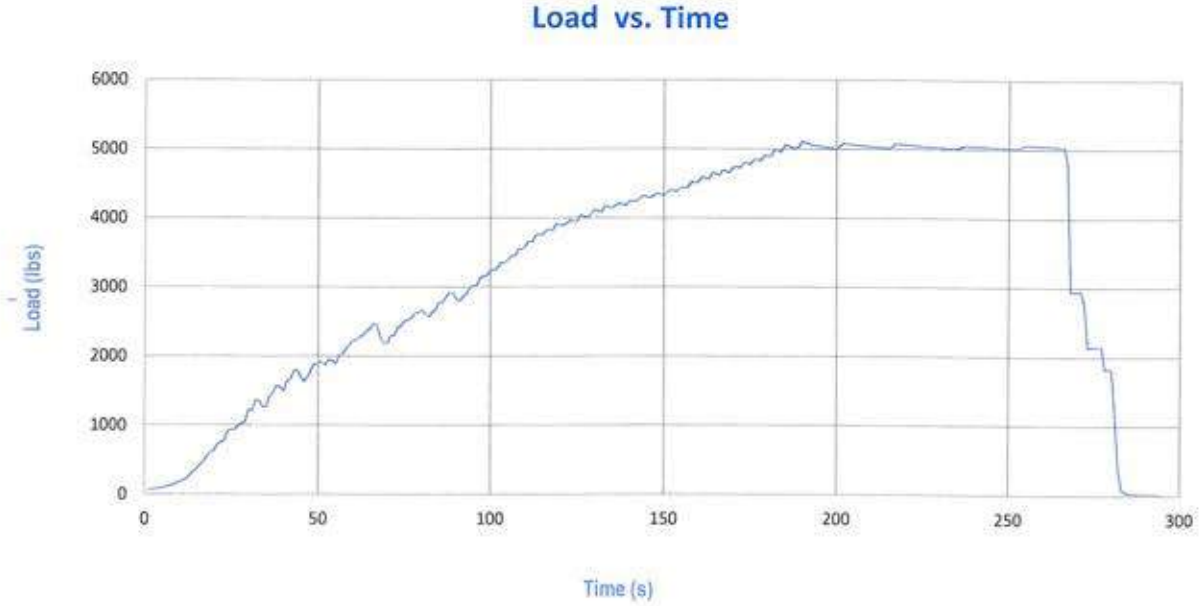
Test Instrumentation

5k Load Cell/Data Acquisition System, ANSI Compliant Test Structure, Hydraulic Ram, Digital Timer, Digital Thermometer Miscellaneous Connecting Hardware

3600 lb Test Data Graph



5000 lb Test Data Graph

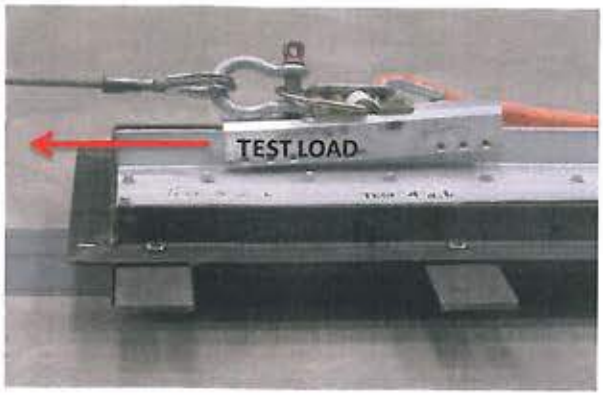


Test Results & Comments

	Acceptance Criteria	Test Results	Exp. Uncertainty	Pass/Fail
Tensile Load (lbf):	3,600 Minimum	3608.7	± 6.9	PASS
Time Requirement (sec):	60 Minimum	72	± 1	
No cracking, breaking or permanent deformation				PASS
Tensile Load (lbf):	5,000 Minimum	5008.1	± 6.9	PASS
Time Requirement (sec):	60 Minimum	83	± 1	
Withstand force without breaking				PASS

Test Comments/Notes:
This test performed with the load applied parallel to the standing seam. The set screws gripping the roof panel were stainless nylon-tip fasteners torqued to 180 in-lbs. The client supplied test panel was 22 gauge LokSeam by MBCI, with 1-3/4" tall vertical rib and 12" width.

The sample maintained attachment to the standing seam of the roof panel. The test sample did not noticeably deform under test loading. The roof panels deformed during the test and there was localized displacement of the sample against the roof panel as the sample seized onto the standing seam. This is a test of the connection between the sample and the roof panel and is not intended to represent or test the attachment between roofing panels and the roof structure.



Opinions and Interpretations:
None

Manager Name: Dave Lough **Signature:** _____ Date: 11/13/14

Engineer Name: Larry Cimino, PE **Signature:** _____ Date: 11-13-14

The results of this test only apply to the item tested.

All instrumentation used in testing is traceable to NIST.

Reported uncertainties represent expanded uncertainties expressed at approximately the 95% level of confidence using a coverage factor of k=2. Where limits of acceptability are applicable, false accept risk is limited to 2% or less by guard-banding the limit of acceptability with the expanded uncertainty value.

This laboratory is accredited to ISO 17025 by ACLASS ANSI-ASQ National Accreditation Board for tests conducted under its scope of accreditation.

Testing to the clauses referenced in this report does not infer compliance to the ANSI Z359 standard in its entirety.

GRAVITEC SYSTEMS INC

ACLASS ACCREDITED TESTING

Test Report

Gravitec Systems Inc.
21291 Urdahl Road NW
Poulsbo, WA 98370

Test Report #:	210096-ACS-06	Customer Contact:	Howie Scarboro				
Client Name:	Fall Protection Distributors, LLC						
Client Address:	1324 Seven Springs Blvd, #323	City:	Trinity	State/Province:	FL	Zip:	34655
Country:	USA						

Service Address: Gravitec Systems Inc., 21291 Urdahl Road NW, Poulsbo, WA 98370

Test Sample Information

Manufacturer: Action Manufacturing, LLC
Description: Nylon tip, 180 in-lb, Parallel to seam
Model/Part #: Standing Seam Roof Anchor
Lot/Batch #: ---
Serial #: 06 (assigned)

Sample Receipt Date: 8/15/2014

Sampling Details/Deviations and Sample Condition:
The anchorage connection was new and in good working order. The sample was not previously tested.

Test Information

Testing Method (Applicable Standard and Section): ANSI Z359.1-2007, 4.3.6 Anchorage Connector Qualification Testing

1. Secure the anchorage connector to an anchorage in the manner and by the intended means specified by the manufacturer for assembling it as part of a PFAS.
2. Connect the anchorage connector to static tensile test equipment such that the anchorage connector is loaded in the direction permitted when used as part of a PFAS.
3. The static tensile test equipment shall meet the requirements of 4.1.7.
4. A test lanyard in accordance with 4.1.4, or other equipment simulating the intended means of installing the anchorage connector in a PFAS, shall be used to couple the anchorage connector to the tensile test equipment.
5. Subject the anchorage connector to a force of 3,600 pounds (16kN), maintain the force for one minute then remove the force.
6. Repeat this test for each connector element attached to the anchorage connector.
7. Observe the condition of the connector element(s) in accordance with 3.2.5.1.
8. Subject the anchorage connector to a force of 5,000 pounds (22.2kN).
9. When more than one PFAS may be attached to the anchorage connector, the 5,000 pound force shall be multiplied by the maximum number of PFAS's that may be attached to the anchorage connector.
10. Maintain the test force for one minute. Observe the condition of the anchorage connector in accordance with 3.2.5.1.
11. Repeat the test specified above, altering the direction of anchorage connector loading, until the anchorage connector has been tested in all directions permitted when used as part of a PFAS.
12. Repeat the test specified above for the different anchorages to which the anchorage connector is intended to be connected.

Acceptance Criteria (Applicable Standard and Section): ANSI Z359.1-2007, 3.2.5.1

1. Anchorage connectors shall meet the strength requirements of the anchorages to which they are coupled as set forth in 7.2.3.
2. Satisfactory completion of the qualification testing specified in 4.3.6 shall constitute compliance with this requirement.
3. When tested in accordance with 4.3.6, anchorage connectors shall be capable of withstanding (without breaking) a 5,000-pound (22.2kN) load multiplied by the maximum number of personal fall arrest systems that may be attached to the anchorage connector.
4. Connector elements integral to or part of the anchorage connector shall be capable of withstanding a 3,600-pound (16kN) load without cracking, breaking, or permanent deformation visible to the unaided eye.

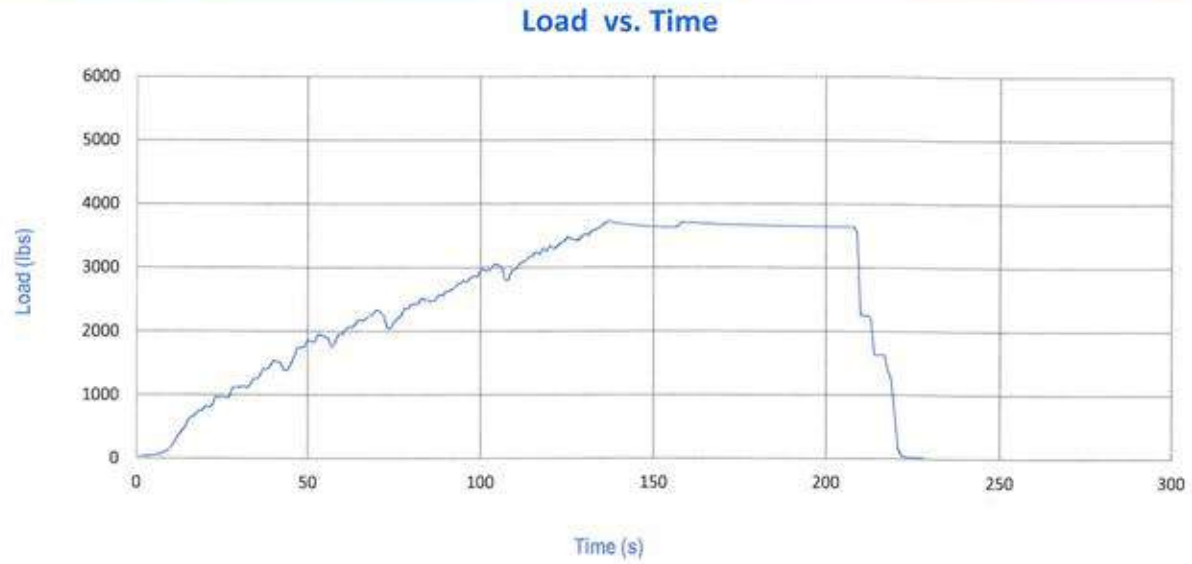
Gravitec Test Procedure ID: TP ANSI Z359.1-2007, 4.3.6 SST ANCH

Job #:	210096	**Test Date:**	10/15/2014	**Load Cell:**	B0_253073
Test Code:	ACS	**Time:**	2:39 PM	**DAQ Module:**	1521EAF
Test ID #:	6	**Temp. (°F):**	72.5		
File Name:	210096-ACS-06	**Humidity (%):**	52		

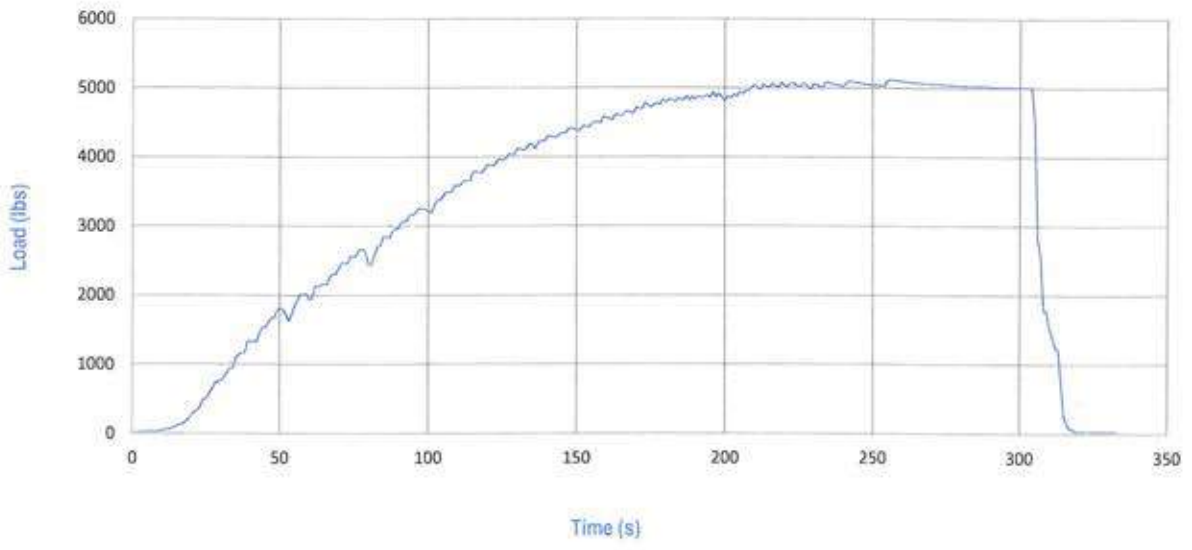
Test Instrumentation

5k Load Cell/Data Acquisition System, ANSI Compliant Test Structure, Hydraulic Ram, Digital Timer, Digital Thermometer Miscellaneous Connecting Hardware

3600 lb Test Data Graph



5000 lb Test Data Graph



Test Results & Comments

	Acceptance Criteria	Test Results	Exp. Uncertainty	Pass/Fail
Tensile Load (lbf):	3,600 Minimum	3619.8	± 6.9	PASS
Time Requirement (sec):	60 Minimum	75	± 1	
No cracking, breaking or permanent deformation				PASS
Tensile Load (lbf):	5,000 Minimum	5008.0	± 6.9	PASS
Time Requirement (sec):	60 Minimum	88	± 1	
Withstand force without breaking				PASS

Test Comments/Notes:
This test performed with the load applied parallel to the standing seam. The set screws gripping the roof panel were stainless nylon-tip fasteners torqued to 180 in-lbs. The client supplied test panel was 22 gauge LokSeam by MBCI, with 1-3/4" tall vertical rib and 12" width.

The sample maintained attachment to the standing seam of the roof panel. The sample body did not noticeably deform under test loading; some set screws bent at loads above 3600 lbs. The roof panels deformed during the test and there was localized displacement of the sample against the roof panel as the sample seized onto the standing seam. This is a test of the connection between the sample and the roof panel and is not intended to represent or test the attachment between roofing panels and the roof structure.

Opinions and Interpretations:
None

Manager Name: Dave Lough **Signature:** _____ Date: 11/13/14

Engineer Name: Larry Cimino, PE **Signature:** _____ Date: 11-13-14

The results of this test only apply to the item tested.

All instrumentation used in testing is traceable to NIST.

Reported uncertainties represent expanded uncertainties expressed at approximately the 95% level of confidence using a coverage factor of k=2. Where limits of acceptability are applicable, false accept risk is limited to 2% or less by guard-banding the limit of acceptability with the expanded uncertainty value.

This laboratory is accredited to ISO 17025 by ACLASS ANSI-ASQ National Accreditation Board for tests conducted under its scope of accreditation.

Testing to the clauses referenced in this report does not infer compliance to the ANSI Z359 standard in its entirety.

GRAVITEC SYSTEMS INC

ACLASS ACCREDITED TESTING

Test Report

Gravitec Systems Inc.
21291 Urdahl Road NW
Poulsbo, WA 98370

Test Report #:	210096-ACS-08	Customer Contact:	Howie Scarboro				
Client Name:	Fall Protection Distributors, LLC						
Client Address:	1324 Seven Springs Blvd, #323	City:	Trinity	State/Province:	FL	Zip:	34655
Country:	USA						

Service Address: Gravitec Systems Inc., 21291 Urdahl Road NW, Poulsbo, WA 98370

Test Sample Information

Manufacturer: Action Manufacturing, LLC
Description: Nylon tip, 180 in-lb, Perpendicular to seam
Model/Part #: Standing Seam Roof Anchor
Lot/Batch #: ---
Serial #: 08 (assigned)

Sample Receipt Date: 8/15/2014

Sampling Details/Deviations and Sample Condition:
The anchorage connection was new and in good working order. The sample was not previously tested.

Test Information

Testing Method (Applicable Standard and Section): ANSI Z359.1-2007, 4.3.6 Anchorage Connector Qualification Testing

1. Secure the anchorage connector to an anchorage in the manner and by the intended means specified by the manufacturer for assembling it as part of a PFAS.
2. Connect the anchorage connector to static tensile test equipment such that the anchorage connector is loaded in the direction permitted when used as part of a PFAS.
3. The static tensile test equipment shall meet the requirements of 4.1.7.
4. A test lanyard in accordance with 4.1.4, or other equipment simulating the intended means of installing the anchorage connector in a PFAS, shall be used to couple the anchorage connector to the tensile test equipment.
5. Subject the anchorage connector to a force of 3,600 pounds (16kN), maintain the force for one minute then remove the force.
6. Repeat this test for each connector element attached to the anchorage connector.
7. Observe the condition of the connector element(s) in accordance with 3.2.5.1.
8. Subject the anchorage connector to a force of 5,000 pounds (22.2kN).
9. When more than one PFAS may be attached to the anchorage connector, the 5,000 pound force shall be multiplied by the maximum number of PFAS's that may be attached to the anchorage connector.
10. Maintain the test force for one minute. Observe the condition of the anchorage connector in accordance with 3.2.5.1.
11. Repeat the test specified above, altering the direction of anchorage connector loading, until the anchorage connector has been tested in all directions permitted when used as part of a PFAS.
12. Repeat the test specified above for the different anchorages to which the anchorage connector is intended to be connected.

Acceptance Criteria (Applicable Standard and Section): ANSI Z359.1-2007, 3.2.5.1

1. Anchorage connectors shall meet the strength requirements of the anchorages to which they are coupled as set forth in 7.2.3.
2. Satisfactory completion of the qualification testing specified in 4.3.6 shall constitute compliance with this requirement.
3. When tested in accordance with 4.3.6, anchorage connectors shall be capable of withstanding (without breaking) a 5,000-pound (22.2kN) load multiplied by the maximum number of personal fall arrest systems that may be attached to the anchorage connector.
4. Connector elements integral to or part of the anchorage connector shall be capable of withstanding a 3,600-pound (16kN) load without cracking, breaking, or permanent deformation visible to the unaided eye.

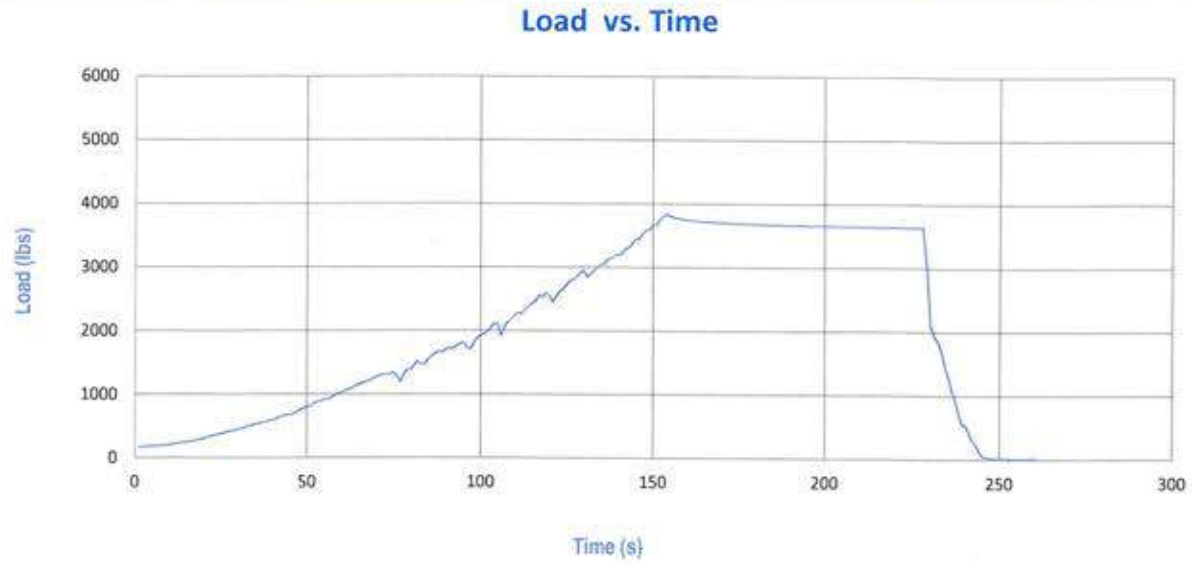
Gravitec Test Procedure ID: TP ANSI Z359.1-2007, 4.3.6 SST ANCH

Job #:	210096	**Test Date:**	10/15/2014	**Load Cell:**	B0_253073
Test Code:	ACS	**Time:**	4:28 PM	**DAQ Module:**	1521EAF
Test ID #:	8	**Temp. (°F):**	72.5		
File Name:	210096-ACS-08	**Humidity (%):**	52		

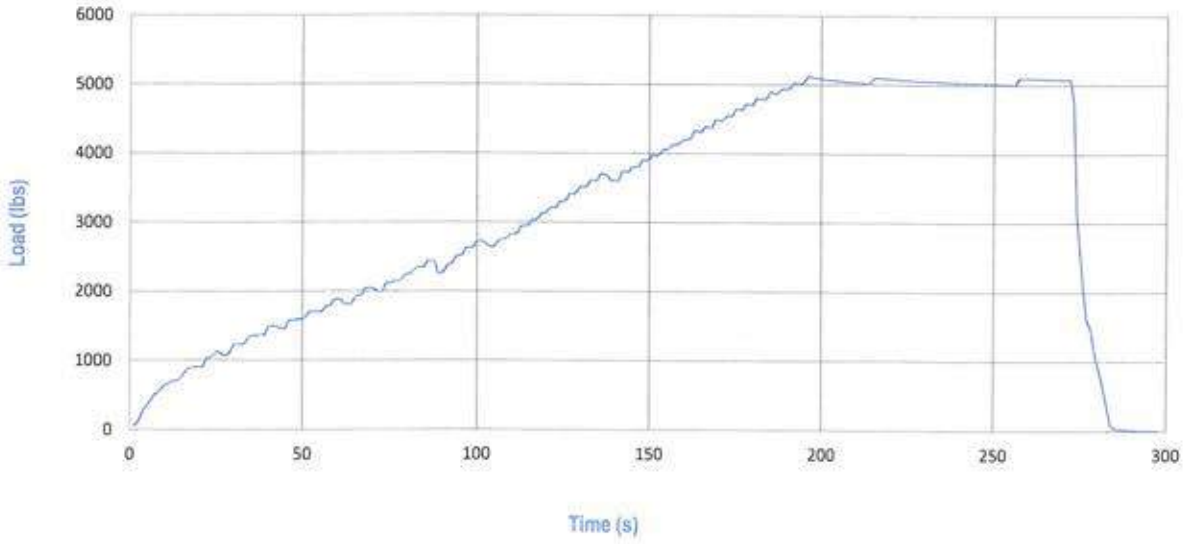
Test Instrumentation

5k Load Cell/Data Acquisition System, ANSI Compliant Test Structure, Hydraulic Ram, Digital Timer, Digital Thermometer Miscellaneous Connecting Hardware

3600 lb Test Data Graph



5000 lb Test Data Graph

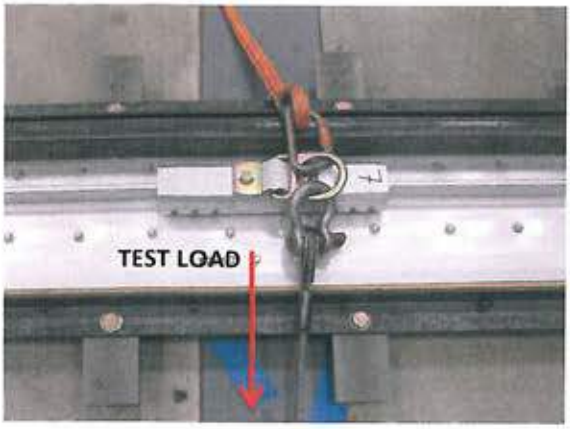


5000 lb Test Results

	Acceptance Criteria	Test Results	Exp. Uncertainty	Pass/Fail
Tensile Load (lbf):	3,600 Minimum	3632.9	± 6.9	PASS
Time Requirement (sec):	60 Minimum	79	± 1	
No cracking, breaking or permanent deformation				PASS
Tensile Load (lbf):	5,000 Minimum	5010.5	± 6.9	PASS
Time Requirement (sec):	60 Minimum	80	± 1	
Withstand force without breaking				PASS

Test Comments/Notes:
This test performed with the load applied perpendicular to the standing seam. The set screws gripping the roof panel were stainless nylon-tip fasteners torqued to 180 in-lbs. The client supplied test panel was 22 gauge LokSeam by MBCI, with 1-3/4" tall vertical rib and 12" width.

The sample maintained attachment to the standing seam of the roof panel. The sample body did not noticeably deform under test loading; some set screws exhibited slight bending at loads above 3600 lbs. The roof panels deformed during the test and there was localized displacement of the sample against the roof panel as the sample seized onto the standing seam. This is a test of the connection between the sample and the roof panel and is not intended to represent or test the attachment between roofing panels and the roof structure.



Opinions and Interpretations:
None

Manager Name: Dave Lough **Signature:** _____ Date: 11/13/14

Engineer Name: Larry Cimino, PE **Signature:** _____ Date: 11-13-14

The results of this test only apply to the item tested.

All instrumentation used in testing is traceable to NIST.

Reported uncertainties represent expanded uncertainties expressed at approximately the 95% level of confidence using a coverage factor of k=2. Where limits of acceptability are applicable, false accept risk is limited to 2% or less by guard-banding the limit of acceptability with the expanded uncertainty value.

This laboratory is accredited to ISO 17025 by ACLASS ANSI-ASQ National Accreditation Board for tests conducted under its scope of accreditation.

Testing to the clauses referenced in this report does not infer compliance to the ANSI Z359 standard in its entirety.

GRAVITEC SYSTEMS INC

ACLASS ACCREDITED TESTING

Test Report

Gravitec Systems Inc.
21291 Urdahl Road NW
Poulsbo, WA 98370

Test Report #:	210096-ACS-11	Customer Contact:	Howie Scarboro				
Client Name:	Fall Protection Distributors, LLC						
Client Address:	1324 Seven Springs Blvd, #323	City:	Trinity	State/Province:	FL	Zip:	34655
Country:	USA						

Service Address: Gravitec Systems Inc., 21291 Urdahl Road NW, Poulsbo, WA 98370

Test Sample Information

Manufacturer: Action Manufacturing, LLC
Description: Nylon tip, 180 in-lb, Perpendicular to seam
Model/Part #: Standing Seam Roof Anchor
Lot/Batch #: ---
Serial #: 11 (assigned)

Sample Receipt Date: 8/15/2014

Sampling Details/Deviations and Sample Condition:
The anchorage connection was new and in good working order. The sample was not previously tested.

Test Information

Testing Method (Applicable Standard and Section): ANSI Z359.1-2007, 4.3.6 Anchorage Connector Qualification Testing

1. Secure the anchorage connector to an anchorage in the manner and by the intended means specified by the manufacturer for assembling it as part of a PFAS.
2. Connect the anchorage connector to static tensile test equipment such that the anchorage connector is loaded in the direction permitted when used as part of a PFAS.
3. The static tensile test equipment shall meet the requirements of 4.1.7.
4. A test lanyard in accordance with 4.1.4, or other equipment simulating the intended means of installing the anchorage connector in a PFAS, shall be used to couple the anchorage connector to the tensile test equipment.
5. Subject the anchorage connector to a force of 3,600 pounds (16kN), maintain the force for one minute then remove the force.
6. Repeat this test for each connector element attached to the anchorage connector.
7. Observe the condition of the connector element(s) in accordance with 3.2.5.1.
8. Subject the anchorage connector to a force of 5,000 pounds (22.2kN).
9. When more than one PFAS may be attached to the anchorage connector, the 5,000 pound force shall be multiplied by the maximum number of PFAS's that may be attached to the anchorage connector.
10. Maintain the test force for one minute. Observe the condition of the anchorage connector in accordance with 3.2.5.1.
11. Repeat the test specified above, altering the direction of anchorage connector loading, until the anchorage connector has been tested in all directions permitted when used as part of a PFAS.
12. Repeat the test specified above for the different anchorages to which the anchorage connector is intended to be connected.

Acceptance Criteria (Applicable Standard and Section): ANSI Z359.1-2007, 3.2.5.1

1. Anchorage connectors shall meet the strength requirements of the anchorages to which they are coupled as set forth in 7.2.3.
2. Satisfactory completion of the qualification testing specified in 4.3.6 shall constitute compliance with this requirement.
3. When tested in accordance with 4.3.6, anchorage connectors shall be capable of withstanding (without breaking) a 5,000-pound (22.2kN) load multiplied by the maximum number of personal fall arrest systems that may be attached to the anchorage connector.
4. Connector elements integral to or part of the anchorage connector shall be capable of withstanding a 3,600-pound (16kN) load without cracking, breaking, or permanent deformation visible to the unaided eye.

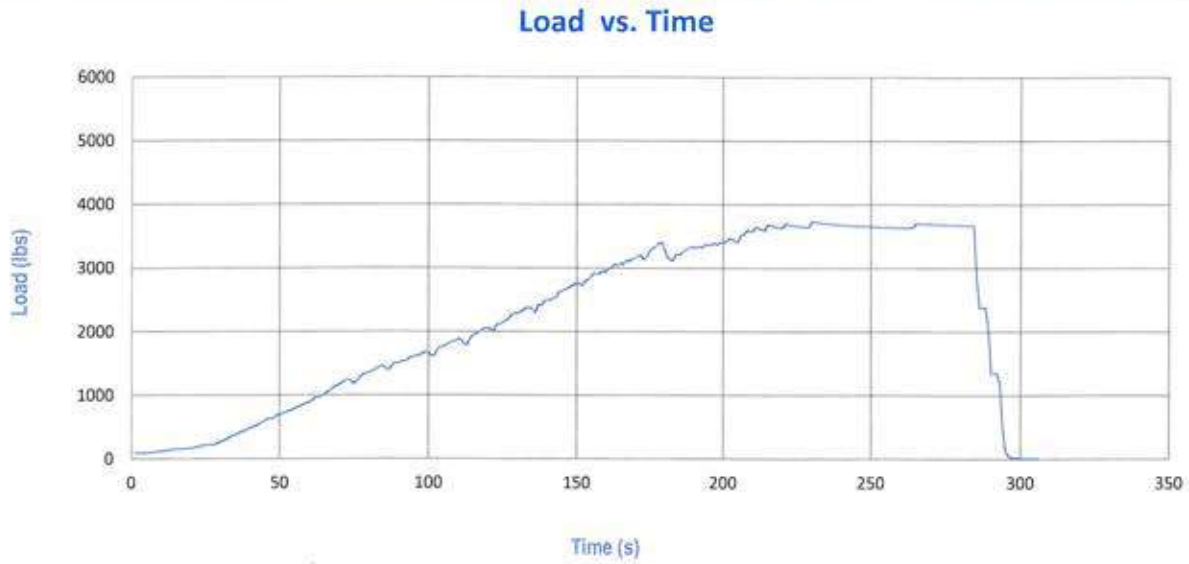
Gravitec Test Procedure ID: TP ANSI Z359.1-2007, 4.3.6 SST ANCH

Job #:	210096	**Test Date:**	10/16/2014	**Load Cell:**	B0_253073
Test Code:	ACS	**Time:**	12:05 PM	**DAQ Module:**	1521EAF
Test ID #:	11	**Temp. (°F):**	72		
File Name:	210096-ACS-11	**Humidity (%):**	52		

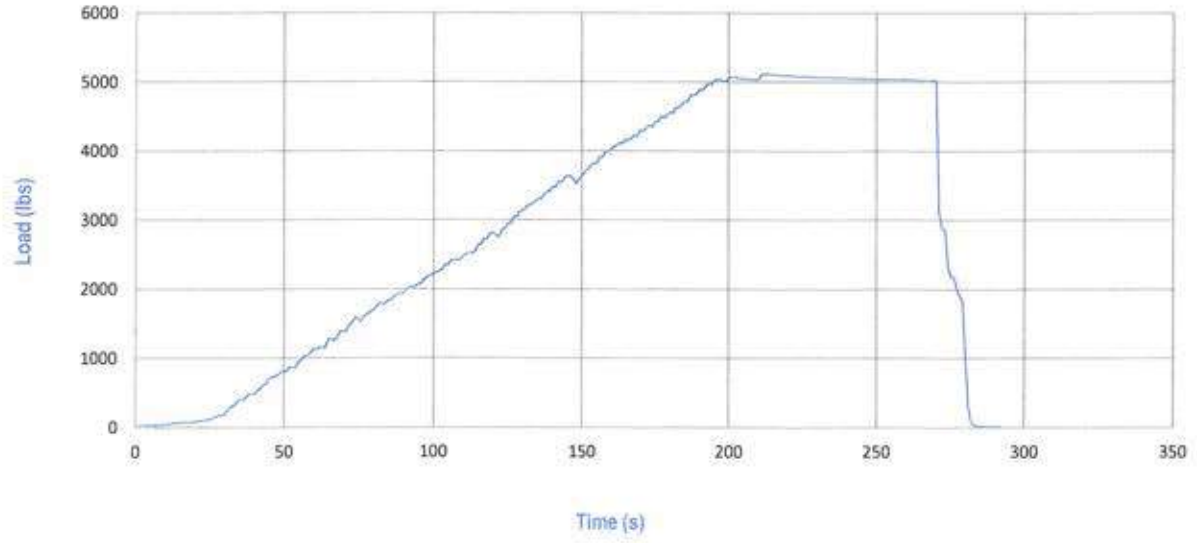
Test Instrumentation

5k Load Cell/Data Acquisition System, ANSI Compliant Test Structure, Hydraulic Ram, Digital Timer, Digital Thermometer Miscellaneous Connecting Hardware

3600 lb Test Data Graph



5000 lb Test Data Graph



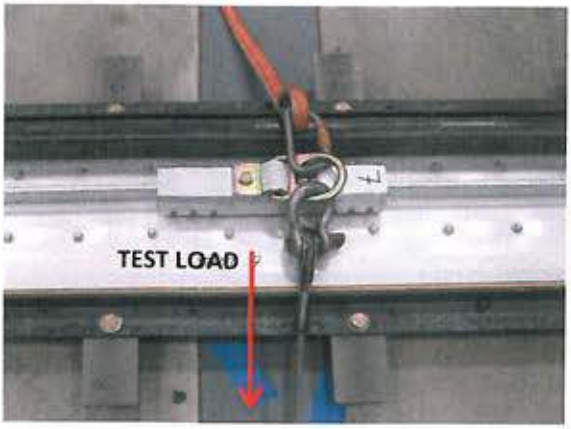
5000 lb Test Results

	Acceptance Criteria	Test Results	Exp. Uncertainty	Pass/Fail
Tensile Load (lbf):	3,600 Minimum	3619.4	± 6.9	PASS
Time Requirement (sec):	60 Minimum	72	± 1	
Withstand force without breaking				PASS
Tensile Load (lbf):	5,000 Minimum	5007.8	± 6.9	PASS
Time Requirement (sec):	60 Minimum	76	± 1	
Withstand loading without breaking				PASS

Test Comments/Notes:

This test performed with the load applied perpendicular to the standing seam. The set screws gripping the roof panel were stainless nylon-tip fasteners torqued to 180 in-lbs. The client supplied test panel was 22 gauge LokSeam by MBCI, with 1-3/4" tall vertical rib and 12" width.

The sample maintained attachment to the standing seam of the roof panel. The sample body did not noticeably deform under test loading; some set screws exhibited slight bending at loads above 3600 lbs. The roof panels deformed during the test and there was localized displacement of the sample against the roof panel as the sample seized onto the standing seam. This is a test of the connection between the sample and the roof panel and is not intended to represent or test the attachment between roofing panels and the roof structure.



Opinions and Interpretations:

None

Manager Name: Dave Lough **Signature:** _____ Date: 11/13/14

Engineer Name: Larry Cimino, PE **Signature:** _____ Date: 11-13-14

The results of this test only apply to the item tested.

All instrumentation used in testing is traceable to NIST.

Reported uncertainties represent expanded uncertainties expressed at approximately the 95% level of confidence using a coverage factor of k=2. Where limits of acceptability are applicable, false accept risk is limited to 2% or less by guard-banding the limit of acceptability with the expanded uncertainty value.

This laboratory is accredited to ISO 17025 by ACLASS ANSI-ASQ National Accreditation Board for tests conducted under its scope of accreditation.

Testing to the clauses referenced in this report does not infer compliance to the ANSI Z359 standard in its entirety.

GRAVITEC SYSTEMS INC

ACLASS ACCREDITED TESTING

Test Report

Gravitec Systems Inc.
21291 Urdahl Road NW
Poulsbo, WA 98370

Test Report #:	210096-ACS-12	Customer Contact:	Howie Scarboro				
Client Name:	Fall Protection Distributors, LLC						
Client Address:	1324 Seven Springs Blvd, #323	City:	Trinity	State/Province:	FL	Zip:	34655
Country:	USA						

Service Address: Gravitec Systems Inc., 21291 Urdahl Road NW, Poulsbo, WA 98370

Test Sample Information

Manufacturer: Action Manufacturing, LLC
Description: Nylon Tip, 180 in-lb, Perpendicular to seam
Model/Part #: Standing Seam Roof Anchor
Lot/Batch #: ---
Serial #: 02 (assigned)

Sample Receipt Date: 8/15/2014

Sampling Details/Deviations and Sample Condition:
The sample was previously tested in the parallel to seam configuration. The 12 set screws were replaced with new screws prior to test.

Test Information

Testing Method (Applicable Standard and Section): ANSI Z359.1-2007, 4.3.6 Anchorage Connector Qualification Testing

1. Secure the anchorage connector to an anchorage in the manner and by the intended means specified by the manufacturer for assembling it as part of a PFAS.
2. Connect the anchorage connector to static tensile test equipment such that the anchorage connector is loaded in the direction permitted when used as part of a PFAS.
3. The static tensile test equipment shall meet the requirements of 4.1.7.
4. A test lanyard in accordance with 4.1.4, or other equipment simulating the intended means of installing the anchorage connector in a PFAS, shall be used to couple the anchorage connector to the tensile test equipment.
5. Subject the anchorage connector to a force of 3,600 pounds (16kN), maintain the force for one minute then remove the force.
6. Repeat this test for each connector element attached to the anchorage connector.
7. Observe the condition of the connector element(s) in accordance with 3.2.5.1.
8. Subject the anchorage connector to a force of 5,000 pounds (22.2kN).
9. When more than one PFAS may be attached to the anchorage connector, the 5,000 pound force shall be multiplied by the maximum number of PFAS's that may be attached to the anchorage connector.
10. Maintain the test force for one minute. Observe the condition of the anchorage connector in accordance with 3.2.5.1.
11. Repeat the test specified above, altering the direction of anchorage connector loading, until the anchorage connector has been tested in all directions permitted when used as part of a PFAS.
12. Repeat the test specified above for the different anchorages to which the anchorage connector is intended to be connected.

Acceptance Criteria (Applicable Standard and Section): ANSI Z359.1-2007, 3.2.5.1

1. Anchorage connectors shall meet the strength requirements of the anchorages to which they are coupled as set forth in 7.2.3.
2. Satisfactory completion of the qualification testing specified in 4.3.6 shall constitute compliance with this requirement.
3. When tested in accordance with 4.3.6, anchorage connectors shall be capable of withstanding (without breaking) a 5,000-pound (22.2kN) load multiplied by the maximum number of personal fall arrest systems that may be attached to the anchorage connector.
4. Connector elements integral to or part of the anchorage connector shall be capable of withstanding a 3,600-pound (16kN) load without cracking, breaking, or permanent deformation visible to the unaided eye.

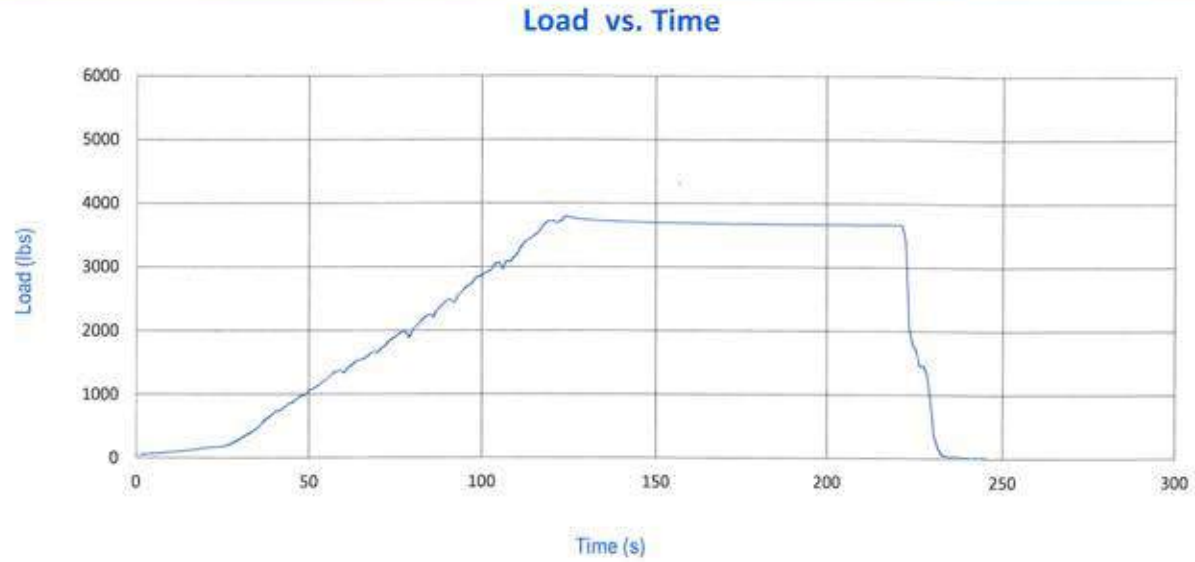
Gravitec Test Procedure ID: TP ANSI Z359.1-2007, 4.3.6 SST ANCH

Job #:	210096	**Test Date:**	10/16/2014	**Load Cell:**	B0_253073
Test Code:	ACS	**Time:**	1:57 PM	**DAQ Module:**	1521EAF
Test ID #:	12	**Temp. (°F):**	72		
File Name:	210096-ACS-12	**Humidity (%):**	50		

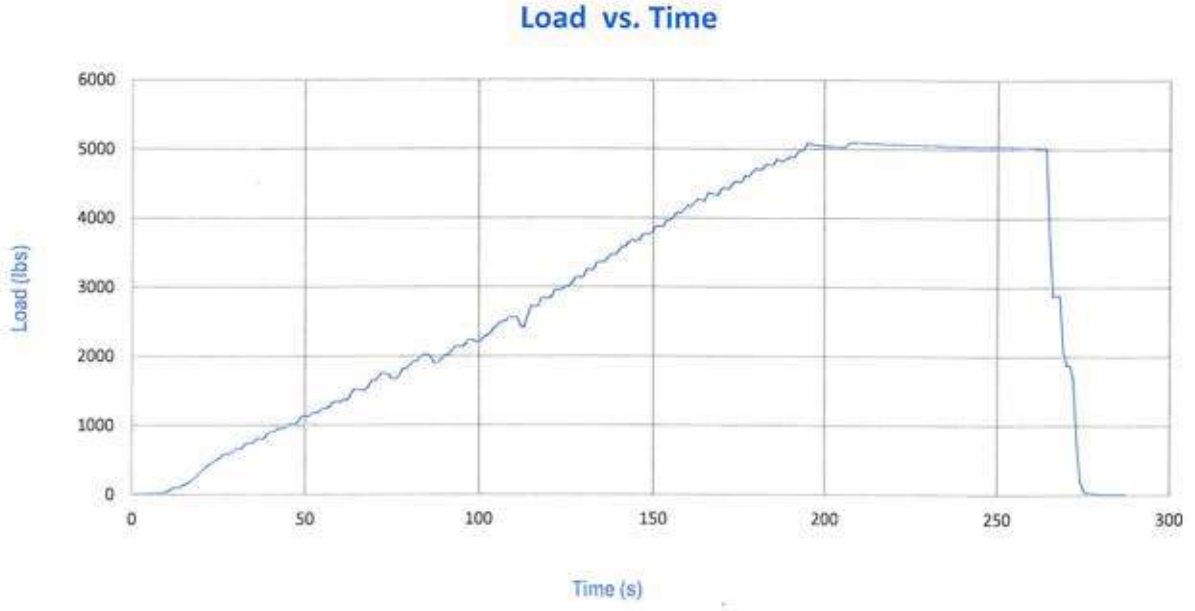
Test Instrumentation

5k Load Cell/Data Acquisition System, ANSI Compliant Test Structure, Hydraulic Ram, Digital Timer, Digital Thermometer Miscellaneous Connecting Hardware

3600 lb Test Data Graph



Test Data & Comments



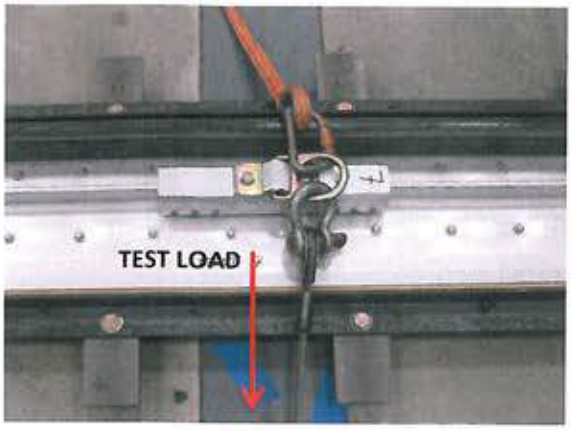
Test Results & Comments

	Acceptance Criteria	Test Results	Exp. Uncertainty	Pass/Fail
Tensile Load (lbf):	3,600 Minimum	3660.6	± 6.9	PASS
Time Requirement (sec):	60 Minimum	105	± 1	
No cracking, breaking or permanent deformation				PASS
Tensile Load (lbf):	5,000 Minimum	5020.6	± 6.9	PASS
Time Requirement (sec):	60 Minimum	70	± 1	
Withstand force without breaking				PASS

Test Comments/Notes:

This test performed with the load applied perpendicular to the standing seam. The set screws gripping the roof panel were stainless nylon-tip fasteners torqued to 180 in-lbs. The client supplied test panel was 22 gauge LokSeam by MBCI, with 1-3/4" tall vertical rib and 12" width.

The sample maintained attachment to the standing seam of the roof panel. The sample body did not noticeably deform under test loading; some set screws bent at loads above 3600 lbs. The roof panels deformed during the test and there was localized displacement of the sample against the roof panel as the sample seized onto the standing seam. This is a test of the connection between the sample and the roof panel and is not intended to represent or test the attachment between roofing panels and the roof structure.



Opinions and Interpretations:

None

Manager Name: Dave Lough **Signature:** _____ Date: 11/13/14

Engineer Name: Larry Cimino, PE **Signature:** _____ Date: 11-13-14

The results of this test only apply to the item tested.

All instrumentation used in testing is traceable to NIST.

Reported uncertainties represent expanded uncertainties expressed at approximately the 95% level of confidence using a coverage factor of k=2. Where limits of acceptability are applicable, false accept risk is limited to 2% or less by guard-banding the limit of acceptability with the expanded uncertainty value.

This laboratory is accredited to ISO 17025 by ACLASS ANSI-ASQ National Accreditation Board for tests conducted under its scope of accreditation.

Testing to the clauses referenced in this report does not infer compliance to the ANSI Z359 standard in its entirety.

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