Test Report
OSHA Verification

6305 S 231st Street
Kent, WA 98032
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Test Report Number: 2018092100482
Job Number: Qualification 491, 135887
Product SKU#: 00482
Product Type: Anchorage Connector
Product Description: Halo Anchor / 1/4" thick steel roof anchor
Testing Standard: OSHA 1910.140(c)(13)(i), OSHA 1926.502(d)(15)
Dates of Manufacture: 1/01/2017, 12/01/2017
Date(s) of Testing: 4/13/2018, 5/24/2018, 8/10/2018

CALIBRATION TESTING

Test Description	Test Date	Clause/Section	Result
Force Calibration Tests	5/24/2018	Internal Calibration	Meets or Exceeds

VERIFICATION TESTING

Test Description	Test Date	Clause/Section	Result
Dynamic Performance (Metal, Perpendicular)	8/10/2018	OSHA 1910.140(c)(13)(i) OSHA 1926.502(d)(15)	Pass
Dynamic Performance (Metal, Intended)	8/10/2018	OSHA 1910.140(c)(13)(i) OSHA 1926.502(d)(15)	Pass
Static Strength (A) (3/4" Wood Roof, (8) 1/4"x3" Lag Screws into Truss)	4/12/2018	4.2.1.1 Static Strength Testing of Type A Anchorage Connectors	Pass
Dynamic Strength (A) (3/4" Wood Roof, (8) 1/4"x3" Lag Screws into Truss)	4/12/2018	4.2.2.1 Dynamic Strength Testing of Type A Anchorage Connectors	Pass
Residual Strength (A) (3/4" Wood Roof, (8) 1/4"x3" Lag Screws into Truss)	4/12/2018	4.2.3.1 Residual Strength Testing of Type A, T, & D Anchorage Connectors	Pass
Static Strength (A) (3/4" Wood Roof, (8) 1/4"x3" Lag Screws into Field)	4/12/2018	4.2.1.1 Static Strength Testing of Type A Anchorage Connectors	Pass
Dynamic Strength (A) (3/4" Wood Roof, (8) 1/4"x3" Lag Screws into Field)	4/12/2018	4.2.2.1 Dynamic Strength Testing of Type A Anchorage Connectors	Pass
Residual Strength (A) (3/4" Wood Roof, (8) 1/4"x3" Lag Screws into Field)	4/12/2018	4.2.3.1 Residual Strength Testing of Type A, T, & D Anchorage Connectors	Pass

VERIFICATION TESTING

Test Description	Test Date	Clause/Section	Result
Static Strength (A) (3/4" Wood Roof, (16) 16d Nails into Field)	4/12/2018	4.2.1.1 Static Strength Testing of Type A Anchorage Connectors	Pass
Dynamic Strength (A) (3/4" Wood Roof, (16) 16d Nails into Field)	4/12/2018	4.2.2.1 Dynamic Strength Testing of Type A Anchorage Connectors	Pass
Residual Strength (A) (3/4" Wood Roof, (16) 16d Nails into Field)	4/12/2018	4.2.3.1 Residual Strength Testing of Type A, T, & D Anchorage Connectors	Pass
Static Strength (A) (3/4" Wood Roof, (16) 16d Nails into Truss)	4/12/2018	4.2.1.1 Static Strength Testing of Type A Anchorage Connectors	Pass
Dynamic Strength (A) (3/4" Wood Roof, (16) 16d Nails into Truss)	4/12/2018	4.2.2.1 Dynamic Strength Testing of Type A Anchorage Connectors	Pass
Residual Strength (A) (3/4" Wood Roof, (16) 16d Nails into Truss)	4/12/2018	4.2.3.1 Residual Strength Testing of Type A, T, & D Anchorage Connectors	Pass

Test Equipment		
Equipment	**Model**	**Serial**
Load Cell	1210AF-10K-B	444522A
Test Weight	122 lb	7HMV
Test Weight	282 lb	GFP007

This test report covers these additional products:

Please contact quality@guardianfall.com for signed report.

Calibration to 5,000 lb of Dynamic Force		
Sample # 01A		
Drop Height	24	in
Test Weight	122	lb
Maximum Arresting Force	5096.79	lb
Result/Assessment	Pass	

Calibration to 5,000 lb of Dynamic Force		
Sample # 03A		
Drop Height	24	in
Test Weight	122	lb
Maximum Arresting Force	5302.85	lb
Result/Assessment	Pass	

Calibration to 5,000 lb of Dynamic Force		
Sample # 02A		
Drop Height	24	in
Test Weight	122	lb
Maximum Arresting Force	5072.40	lb
Result/Assessment	Pass	

Calibration to 5,000 lb of Dynamic Force		
Sample # 04A		
Drop Height	24	in
Test Weight	122	lb
Maximum Arresting Force	5239.67	lb
Result/Assessment	Pass	

Notes

Mandatory/Non-Mandatory Regulatory Requirements		
1910.140(c)(13)(i)	Capable of supporting at least 5,000 pounds (22.2 kN) for each employee attached	Meets or Exceeds
1926.502(d)(15)	Anchorages used for attachment of personal fall arrest equipment shall be independent of any anchorage being used to support or suspend platforms and capable of supporting at least 5,000 pounds (22.2 kN) per employee attached, or shall be designed, installed, and used as follows:	Meets or Exceeds

Dynamic Performance Perpendicular to Intended Use 20G Metal Roof, (8) 1/4"x2" Screws into Field *requirements per 1910.140(c)(13)(i) & 1926.502(d)(15)*		
Sample # 01B		
Drop Height	24	in
Test Weight	122	lb
Result/Assessment	Pass	

Dynamic Performance Intended Use 20G Metal Roof, (8) 1/4"x2" Screws into Field *requirements per 1910.140(c)(13)(i) & 1926.502(d)(15)*		
Sample # 04B		
Drop Height	24	in
Test Weight	122	lb
Result/Assessment	Pass	

Dynamic Performance Perpendicular to Intended Use 20G Metal Roof, (8) 1/4"x2" Screws into Field *requirements per 1910.140(c)(13)(i) & 1926.502(d)(15)*		
Sample # 02B		
Drop Height	24	in
Test Weight	122	lb
Result/Assessment	Pass	

Dynamic Performance Intended Use 20G Metal Roof, (8) 1/4"x2" Screws into Field *requirements per 1910.140(c)(13)(i) & 1926.502(d)(15)*		
Sample # 05A		
Drop Height	24	in
Test Weight	122	lb
Result/Assessment	Pass	

Dynamic Performance Perpendicular to Intended Use 20G Metal Roof, (8) 1/4"x2" Screws into Field *requirements per 1910.140(c)(13)(i) & 1926.502(d)(15)*		
Sample # 03B		
Drop Height	24	in
Test Weight	122	lb
Result/Assessment	Pass	

Dynamic Performance Intended Use 20G Metal Roof, (8) 1/4"x2" Screws into Field *requirements per 1910.140(c)(13)(i) & 1926.502(d)(15)*		
Sample # 06A		
Drop Height	24	in
Test Weight	122	lb
Result/Assessment	Pass	

Notes

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4.2.1.1 Static Strength Testing of Type A Anchorage Connectors
3/4” Wood Roof, (8) 1/4”x3” Lag Screws into Truss
requirements per 3.2.1.1

a) A new anchorage connector may be used for each test

b) The test force shall be 5,000 pounds (22.2kN) +50/-0 pounds (+0.22/-0kN). Apply these forces in accordance with the requirements of 4.1.2.

c) Install the anchorage connector on the test anchorage in accordance with the requirements of 4.1.2

d) Apply the load to the anchorage connector in the direction(s) of loading specified in 4.1.2.5

e) Apply the load at a rate not greater than 2 inches (51mm) per minute. Maintain the load above 5,000 pounds (22.2kN) for at least 3 minutes

f) Release the load

g) Evaluate the test results per 3.2.1.1

4.2.1.1 Static Strength Testing of Type A Anchorage Connectors
3/4” Wood Roof, (8) 1/4”x3” Lag Screws into Truss
requirements per 3.2.1.1

Samples	Sample # 01C	Sample # 02C	Sample # 03C
Anchorage Connector Withstands Applied Load	Yes	Yes	Yes
Actual load applied (lb)	5023	5025	5065
If gates are present, no seperation more than 1/8”	NA	NA	NA
Result/Assessment	Pass	Pass	Pass

4.2.2.1 Dynamic Strength Testing of Type A Anchorage Connectors
3/4” Wood Roof, (8) 1/4”x3” Lag Screws into Truss
requirements per 3.2.2.1

a) Install the anchorage conenctor, conditioned according to the applicable requirements of this section, on the test anchorage in accordance with the requirements of 4.1.2.

b) Connect one end of the test lanyard to the connection point of the anchorage connector to be loaded or to the arrest force measuring instrumentation, as applicable

c) Connect the other end of the test lanyard to the test weight specified in 4.1.3

d) Raise the test weight to achieve a free-fall distance of 3, +0.1/-0, ft (0.9, +0.03/-0m)

e) Release the test weight by means of the quick-release mechanism

f) Evaluate the test results per 3.2.2.1

4.2.2.1 Dynamic Strength Testing of Type A Anchorage Connectors
3/4” Wood Roof, (8) 1/4”x3” Lag Screws into Truss
requirements per 3.2.2.1

Samples	Sample # 04C	Sample # 05B	Sample # 06B
Anchorage Connector arrests test weight	Yes	Yes	Yes
If gates are present, no seperation more than 1/8”	NA	NA	NA
Result/Assessment	Pass	Pass	Pass

Notes

4.2.3.1 Residual Strength Testing for Type A Anchorage Connectors
3/4" Wood Roof, (8) 1/4"x3" Lag Screws into Truss
requirements per 3.2.2.1

a) Install the anchorage conenctor, conditioned according to the applicable requirements of this section, on the test anchorage in accordance with the requirements of 4.1.2.

b) Connect one end of the test lanyard to the connection point of the anchorage connector to be loaded or to the arrest force measuring instrumentation, as applicable

c) Connect the other end of the test lanyard to the test weight specified in 4.1.3

d) Raise the test weight to achieve a free-fall distance of 3, +0.1/-0, ft (0.9, +0.03/-0m)

e) Release the test weight by means of the quick-release mechanism

f) Evaluate the test results per 3.2.2.1

4.2.3.1 Residual Strength Testing for Type A Anchorage Connectors
3/4" Wood Roof, (8) 1/4"x3" Lag Screws into Truss
requirements per 3.2.2.1

Samples	Sample # 04C	Sample # 05B	Sample # 06B
Anchorage connector arrests test weight	Yes	Yes	Yes
Anchorage connector supports test weight for minimum one minute	Pass	Pass	Pass
If gates are present, no separation more than 1/8"	NA	NA	NA
Result/Assessment	Pass	Pass	Pass

Notes

4.2.1.1 Static Strength Testing of Type A Anchorage Connectors 3/4" Wood Roof, (8) 1/4"x3" Lag Screws into Field

requirements per 3.2.1.1

a) A new anchorage connector may be used for each test

b) The test force shall be 5,000 pounds (22.2kN) +50/-0 pounds (+0.22/-0kN). Apply these forces in accordance with the requirements of 4.1.2.

c) Install the anchorage connector on the test anchorage in accordance with the requirements of 4.1.2

d) Apply the load to the anchorage connector in the direction(s) of loading specified in 4.1.2.5

e) Apply the load at a rate not greater than 2 inches (51mm) per minute. Maintain the load above 5,000 pounds (22.2kN) for at least 3 minutes

f) Release the load

g) Evaluate the test results per 3.2.1.1

4.2.1.1 Static Strength Testing of Type A Anchorage Connectors 3/4" Wood Roof, (8) 1/4"x3" Lag Screws into Field

requirements per 3.2.1.1

Samples	Sample # 07	Sample # 08	Sample # 09
Anchorage Connector Withstands Applied Load	Yes	Yes	Yes
Actual load applied (lb)	5063.19	5059.23	5064.81
If gates are present, no seperation more than 1/8"	NA	NA	NA
Result/Assessment	Pass	Pass	Pass

4.2.2.1 Dynamic Strength Testing of Type A Anchorage Connectors 3/4" Wood Roof, (8) 1/4"x3" Lag Screws into Field

requirements per 3.2.2.1

a) Install the anchorage conenctor, conditioned according to the applicable requirements of this section, on the test anchorage in accordance with the requirements of 4.1.2.

b) Connect one end of the test lanyard to the connection point of the anchorage connector to be loaded or to the arrest force measuring instrumentation, as applicable

c) Connect the other end of the test lanyard to the test weight specified in 4.1.3

d) Raise the test weight to achieve a free-fall distance of 3, +0.1/-0, ft (0.9, +0.03/-0m)

e) Release the test weight by means of the quick-release mechanism

f) Evaluate the test results per 3.2.2.1

4.2.2.1 Dynamic Strength Testing of Type A Anchorage Connectors 3/4" Wood Roof, (8) 1/4"x3" Lag Screws into Field

requirements per 3.2.2.1

Samples	Sample # 10	Sample # 11	Sample # 12
Anchorage Connector arrests test weight	Yes	Yes	Yes
If gates are present, no seperation more than 1/8"	NA	NA	NA
Result/Assessment	Pass	Pass	Pass

Notes

4.2.3.1 Residual Strength Testing for Type A Anchorage Connectors
3/4” Wood Roof, (8) 1/4”x3” Lag Screws into Field
requirements per 3.2.2.1

a) Install the anchorage conenctor, conditioned according to the applicable requirements of this section, on the test anchorage in accordance with the requirements of 4.1.2.

b) Connect one end of the test lanyard to the connection point of the anchorage connector to be loaded or to the arrest force measuring instrumentation, as applicable

c) Connect the other end of the test lanyard to the test weight specified in 4.1.3

d) Raise the test weight to achieve a free-fall distance of 3, +0.1/-0, ft (0.9, +0.03/-0m)

e) Release the test weight by means of the quick-release mechanism

f) Evaluate the test results per 3.2.2.1

4.2.3.1 Residual Strength Testing for Type A Anchorage Connectors
3/4” Wood Roof, (8) 1/4”x3” Lag Screws into Field
requirements per 3.2.2.1

Samples	Sample # 10	Sample # 11	Sample # 12
Anchorage connector arrests test weight	Yes	Yes	Yes
Anchorage connector supports test weight for minimum one minute	Pass	Pass	Pass
If gates are present, no separation more than 1/8”	NA	NA	NA
Result/Assessment	Pass	Pass	Pass

Notes

4.2.1.1 Static Strength Testing of Type A Anchorage Connectors 3/4" Wood Roof, (16) 16d Nails into Field

requirements per 3.2.1.1

a) A new anchorage connector may be used for each test

b) The test force shall be 5,000 pounds (22.2kN) +50/-0 pounds (+0.22/-0kN). Apply these forces in accordance with the requirements of 4.1.2.

c) Install the anchorage connector on the test anchorage in accordance with the requirements of 4.1.2

d) Apply the load to the anchorage connector in the direction(s) of loading specified in 4.1.2.5

e) Apply the load at a rate not greater than 2 inches (51mm) per minute. Maintain the load above 5,000 pounds (22.2kN) for at least 3 minutes

f) Release the load

g) Evaluate the test results per 3.2.1.1

4.2.1.1 Static Strength Testing of Type A Anchorage Connectors 3/4" Wood Roof, (16) 16d Nails into Field

requirements per 3.2.1.1

Samples	Sample # 13	Sample # 14	Sample # 15
Anchorage Connector Withstands Applied Load	Yes	Yes	Yes
Actual load applied (lb)	5078.13	5083.04	5059.88
If gates are present, no seperation more than 1/8"	NA	NA	NA
Result/Assessment	Pass	Pass	Pass

4.2.2.1 Dynamic Strength Testing of Type A Anchorage Connectors 3/4" Wood Roof, (16) 16d Nails into Field

requirements per 3.2.2.1

a) Install the anchorage conenctor, conditioned according to the applicable requirements of this section, on the test anchorage in accordance with the requirements of 4.1.2.

b) Connect one end of the test lanyard to the connection point of the anchorage connector to be loaded or to the arrest force measuring instrumentation, as applicable

c) Connect the other end of the test lanyard to the test weight specified in 4.1.3

d) Raise the test weight to achieve a free-fall distance of 3, +0.1/-0, ft (0.9, +0.03/-0m)

e) Release the test weight by means of the quick-release mechanism

f) Evaluate the test results per 3.2.2.1

4.2.2.1 Dynamic Strength Testing of Type A Anchorage Connectors 3/4" Wood Roof, (16) 16d Nails into Field

requirements per 3.2.2.1

Samples	Sample # 16	Sample # 17	Sample # 18
Anchorage Connector arrests test weight	Yes	Yes	Yes
If gates are present, no seperation more than 1/8"	NA	NA	NA
Result/Assessment	Pass	Pass	Pass

Notes

4.2.3.1 Residual Strength Testing for Type A Anchorage Connectors
3/4” Wood Roof, (16) 16d Nails into Field
requirements per 3.2.2.1

a) Install the anchorage conenctor, conditioned according to the applicable requirements of this section, on the test anchorage in accordance with the requirements of 4.1.2.

b) Connect one end of the test lanyard to the connection point of the anchorage connector to be loaded or to the arrest force measuring instrumentation, as applicable

c) Connect the other end of the test lanyard to the test weight specified in 4.1.3

d) Raise the test weight to achieve a free-fall distance of 3, +0.1/-0, ft (0.9, +0.03/-0m)

e) Release the test weight by means of the quick-release mechanism

f) Evaluate the test results per 3.2.2.1

4.2.3.1 Residual Strength Testing for Type A Anchorage Connectors
3/4” Wood Roof, (16) 16d Nails into Field
requirements per 3.2.2.1

Samples	Sample # 16	Sample # 17	Sample # 18
Anchorage connector arrests test weight	Yes	Yes	Yes
Anchorage connector supports test weight for minimum one minute	Pass	Pass	Pass
If gates are present, no separation more than 1/8”	NA	NA	NA
Result/Assessment	Pass	Pass	Pass

Notes

4.2.1.1 Static Strength Testing of Type A Anchorage Connectors
3/4" Wood Roof, (16) 16d Nails into Truss
requirements per 3.2.1.1

a) A new anchorage connector may be used for each test

b) The test force shall be 5,000 pounds (22.2kN) +50/-0 pounds (+0.22/-0kN). Apply these forces in accordance with the requirements of 4.1.2.

c) Install the anchorage connector on the test anchorage in accordance with the requirements of 4.1.2

d) Apply the load to the anchorage connector in the direction(s) of loading specified in 4.1.2.5

e) Apply the load at a rate not greater than 2 inches (51mm) per minute. Maintain the load above 5,000 pounds (22.2kN) for at least 3 minutes

f) Release the load

g) Evaluate the test results per 3.2.1.1

4.2.1.1 Static Strength Testing of Type A Anchorage Connectors
3/4" Wood Roof, (16) 16d Nails into Truss
requirements per 3.2.1.1

Samples	Sample # 19	Sample # 20	Sample # 21
Anchorage Connector Withstands Applied Load	Yes	Yes	Yes
Actual load applied (lb)	5057.90	5053.91	5066.72
If gates are present, no seperation more than 1/8"	NA	NA	NA
Result/Assessment	Pass	Pass	Pass

4.2.2.1 Dynamic Strength Testing of Type A Anchorage Connectors
3/4" Wood Roof, (16) 16d Nails into Truss
requirements per 3.2.2.1

a) Install the anchorage conenctor, conditioned according to the applicable requirements of this section, on the test anchorage in accordance with the requirements of 4.1.2.

b) Connect one end of the test lanyard to the connection point of the anchorage connector to be loaded or to the arrest force measuring instrumentation, as applicable

c) Connect the other end of the test lanyard to the test weight specified in 4.1.3

d) Raise the test weight to achieve a free-fall distance of 3, +0.1/-0, ft (0.9, +0.03/-0m)

e) Release the test weight by means of the quick-release mechanism

f) Evaluate the test results per 3.2.2.1

4.2.2.1 Dynamic Strength Testing of Type A Anchorage Connectors
3/4" Wood Roof, (16) 16d Nails into Truss
requirements per 3.2.2.1

Samples	Sample # 22	Sample # 23	Sample # 24
Anchorage Connector arrests test weight	Yes	Yes	Yes
If gates are present, no seperation more than 1/8"	NA	NA	NA
Result/Assessment	Pass	Pass	Pass

Notes

4.2.3.1 Residual Strength Testing for Type A Anchorage Connectors
3/4" Wood Roof, (16) 16d Nails into Truss
requirements per 3.2.2.1

a) Install the anchorage conenctor, conditioned according to the applicable requirements of this section, on the test anchorage in accordance with the requirements of 4.1.2.

b) Connect one end of the test lanyard to the connection point of the anchorage connector to be loaded or to the arrest force measuring instrumentation, as applicable

c) Connect the other end of the test lanyard to the test weight specified in 4.1.3

d) Raise the test weight to achieve a free-fall distance of 3, +0.1/-0, ft (0.9, +0.03/-0m)

e) Release the test weight by means of the quick-release mechanism

f) Evaluate the test results per 3.2.2.1

4.2.3.1 Residual Strength Testing for Type A Anchorage Connectors
3/4" Wood Roof, (16) 16d Nails into Truss
requirements per 3.2.2.1

Samples	Sample # 22	Sample # 23	Sample # 24
Anchorage connector arrests test weight	Yes	Yes	Yes
Anchorage connector supports test weight for minimum one minute	Pass	Pass	Pass
If gates are present, no separation more than 1/8"	NA	NA	NA
Result/Assessment	Pass	Pass	Pass

Notes