



SGS U.S. Testing Company Inc.

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CLIENT: Gutter Bolt, Inc.
22 Second Avenue
Port Washington, New York 11050

Test Report No: 164669

Date: January 28, 2002

The following samples were submitted by the Client as:

Hex Head Aluminum Gutter Bolts, P/N 010557, 7" Long, 1/4" Thick

DATE OF RECEIPT: January 7, 2002

TESTING PERIOD: January 24, 2002

AUTHORIZATION: Pre-payment via Check Numbers 1907 and 1908.

TESTS REQUESTED: Testing of aluminum gutter bolts for load capacity, pull-out and pull-through loads.

PREPARED BY:

Piyush Shah, Manager
Products Evaluation

lv

**SIGNED FOR AND ON BEHALF OF
SGS U.S. TESTING COMPANY INC.**

Gabriel Falla, Vice President
Operations

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TEST PROCEDURE AND RESULTS:

The following test program was conducted in a laboratory environment maintained at 70°F and 50% Relative Humidity. Each sample was individually tested after conditioning in the test environment for at least 48 hours prior to conducting the test.

GENERAL PROCEDURE:

Two (2) thicknesses of the gutters (0.027" and 0.032") were tested using the gutter bolts and gutters, which were randomly selected by SGS U.S. Testing Company Field Services Representative Leon Venech, on January 4, 2002 and is detailed in our Cross-Referenced Report Number 164550 dated January 8, 2002.

Testing was performed as indicated, on 5" aluminum gutters mounted to a #2 pine 3/4" thick facer board using 5" aluminum furrows and gutter bolts.

A total of five (5) tests were performed for each of the six (6) test set-ups as follows:

- 1) Horizontal pull-out force of gutter bolt installed in #2 pine 3/4" thick facer board.
- 2) Vertical capacity test on gutter bolt installed in #2 pine 3/4" thick facer board.
- 3) Horizontal pull-through force on gutter bolt with furrow and 0.027" gutter mounted on a #2 pine 3/4" thick facer board.
- 4) Horizontal pull-through force on gutter bolt with furrow and 0.032" gutter mounted on a #2 pine 3/4" thick facer board.
- 5) Vertical capacity test on gutter bolt with furrow, and 0.027" gutter mounted on a #2 pine 3/4" thick facer board.
- 6) Vertical capacity test on gutter bolt with furrow, and 0.032" gutter mounted on a #2 pine 3/4" thick facer board.



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TEST PROCEDURE AND RESULTS: ContinuedSet-up #1: Horizontal Pull-out Force of Gutter Bolts.Procedure:

Five (5) gutter bolts were fastened two inches into a #2 pine 3/4" thick facer board. The gutter bolts were placed 1-1/2" down from the top edge of the facer board. Using a pneumatic fixturing and a load cell, the pull-out force of each of the gutter bolts was measured as follows

Results:

| <u>Bolt Number</u> | <u>Pull-out Force in lbf.</u> |
|--------------------|-------------------------------|
| 1 | 410 |
| 2 | 450 |
| 3 | 460 |
| 4 | 500 |
| 5 | 480 |
| Average | 460 |



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CLIENT: Gutter Bolt, Inc.

TEST PROCEDURE AND RESULTS: Continued**Set-up #2: Vertical Capacity Test on Gutter Bolts.****Procedure:**

Five (5) gutter bolts were fastened two inches into a #2 pine 3/4" thick facer board. The gutter bolts were placed 1-1/2" down from the top edge of the facer board. Using a pneumatic fixturing a force perpendicular to the gutter bolt was applied to each bolt and its vertical load capacity was measured by a load cell.

Results:

The vertical load capacity of each of the five (5) gutter bolts was measured. The force was removed after the bolts started to bend.

| <u>Bolt Number</u> | <u>Vertical Force in lbf.</u> |
|--------------------|-------------------------------|
| 1 | 20 |
| 2 | 20 |
| 3 | 20 |
| 4 | 20 |
| 5 | 20 |
| Average | 20 |

Set-up #3: Horizontal Pull-through Force from 0.027" Gutter.**Procedure:**

A section of the 0.027" gutter was mounted to a #2 pine 3/4" thick facer board using five (5) gutter bolts along with 5" aluminum furrows. The gutter bolts were placed 1-1/2" down from the top edge of the facer board. Using pneumatic fixturing a pull force was applied to the gutter. The force required to pull the 0.027" gutter over the head of the gutter bolt was measured using a load cell.



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TEST PROCEDURE AND RESULTS: ContinuedSet-up #3: Horizontal Pull-through Force from 0.027" Gutter. Continued**Results:**

The pull-through force for each of the five (5) sections of the 0.027" gutter is:

| <u>Bolt Number</u> | <u>Pull-through Force in lbf.</u> |
|--------------------|-----------------------------------|
| 1 | 430 |
| 2 | 370 |
| 3 | 310 |
| 4 | 380 |
| 5 | 290 |
| Average | 356 |

Set-up #4: Horizontal Pull-through Force from 0.032" Gutter.**Procedure:**

A section of the 0.032" gutter was mounted to a #2 pine 3/4" thick facer board using five (5) gutter bolts along with 5" aluminum furrows. The gutter bolts were placed 1-1/2" down from the top edge of the facer board. Using pneumatic fixturing a pull force was applied to the gutter. The force required to pull the 0.032" gutter over the head of the gutter bolt was measured using a load cell.

Results:

The pull-through force for each of the five (5) sections of the 0.032" gutter is:

| <u>Bolt Number</u> | <u>Pull-through Force in lbf.</u> |
|--------------------|-----------------------------------|
| 1 | 330 |
| 2 | 290 |
| 3 | 370 |
| 4 | 320 |
| 5 | 360 |
| Average | 334 |



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TEST PROCEDURE AND RESULTS: ContinuedSet-up #5: Vertical Load Capacity Test on 0.027" Gutter.Procedure:

A section of the 0.027" gutter was mounted to a #2 pine 3/4" thick facer board using five (5) gutter bolts along with 5" aluminum furrows. The gutter bolts were placed 1-1/2" down from the top edge of the facer board. Using pneumatic fixturing a force perpendicular to the bolt was applied to the gutter. The force required to bend the bolts and ultimately to pull the 0.027" gutter over the head of the gutter bolt was measured using a load cell.

Results:

The pull-down force or the vertical load capacity of the gutter and bolt for the five (5) sections of the 0.027" gutter is":

| <u>Bolt Number</u> | <u>Vertical Load Capacity of Gutter and Bolt in lbf.</u> |
|--------------------|--|
| 1 | 290 |
| 2 | 250 |
| 3 | 260 |
| 4 | 300 |
| 5 | 320 |
| Average | 284 |



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CLIENT: Gutter Bolt, Inc.

TEST PROCEDURE AND RESULTS: ContinuedSet-up #6: Vertical Load Capacity Test on 0.032" Gutter.Procedure:

A section of the 0.032" gutter was mounted to a #2 pine 3/4" thick facer board using five (5) gutter bolts along with 5" aluminum furrows. The gutter bolts were placed 1-1/2" down from the top edge of the facer board. Using pneumatic fixturing a force perpendicular to the bolt was applied to the gutter. The force required to bend the bolts and ultimately to pull the 0.032" gutter over the head of the gutter bolt was measured using a load cell.

Results:

The pull-down force or the vertical load capacity of the gutter and bolt for the five (5) sections of the 0.032" gutter is"

| <u>Bolt Number</u> | <u>Vertical Load Capacity of Gutter and Bolt in lbf.</u> |
|--------------------|--|
| 1 | 310 |
| 2 | 300 |
| 3 | 280 |
| 4 | 300 |
| 5 | 270 |
| Average | 292 |

End of Report



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A P P E N D I X