

**PERFORMANCE TEST REPORT**

**Rendered to:**

**EXXEL PACIFIC GC**

**For:**

**Cyclic Shear Load Evaluation of FastCap Fasteners**

**Report No: A3106.01-106-31**  
**Report Date: 09/15/10**  
**Expiration Date: 09/06/14**  
**Revision 1: 02/04/11**

**PERFORMANCE TEST REPORT**

Rendered to:

EXXEL PACIFIC GC  
323 Telegraph Road  
Bellingham, Washington 98226

Report No: A3106.01-106-31  
Test Dates: 08/27/10  
Through: 09/06/10  
Report Date: 09/15/10  
Expiration Date: 09/06/14  
Revision 1: 02/04/11

**Product:** Cyclic Shear Load Evaluation of FastCap Fasteners

**Project Summary:** Architectural Testing, Inc. was contracted by Exxel Pacific GC to perform a cyclic shear load evaluation on four designs of FastCap screws. Testing was performed according to a client-derived test criteria. The average results of testing are contained in the following table:

Sample Identification	Peak Load (lb <sub>f</sub> )	Peak Deformation (inch)	Permanent Set (inch)
Deflector SP - Orange w/ Chrome #10 screw at 3/4" Spacing	443.3	0.67	0.38
Deflector - Red w/ Aluminum #10 screw at 3/4" Spacing	1269.1	1.50	1.09
Deflector Max - Black w/ Black #14 screw at 3/4" Spacing	1261.8	1.93	1.41
Deflector Max - Black w/ Black #14 screw at 2" Spacing	768.1	1.98	1.36

**Product Description:** The test specimens were screws fastened through 12" long constructions of Douglas fir in various configurations. All fastener samples were submitted to Architectural Testing by Exxel Pacific GC. (See photographs in Appendix A for product detail.)

**Test Description:** An INSTRON Model 3367 Universal Testing Machine (ICN 005740) was utilized to perform the evaluations. The wall header section of the test assembly was restrained to the base of the test machine, while the joist section of the test assembly was attached to the moveable crosshead of the test machine. Each test assembly was cycled incrementally until the fastener failed or pulled out of the Douglas fir joist. (See photos in Appendix A for more detail).

**Test Results:** The results are reported in the following tables.

**Cyclic Shear Load Evaluation**

Deflector SP - Orange w/ Chrome #10 screw at 3/4" Spacing  
(20 pound incremental loading, 0.25" per minute)

Sample	Peak Load (lbf)	Peak Deformation (inch)	Permanent Set (inch)	Failure Mode
1	450.1	0.40	0.16	Screw Pullout
2	416.1	0.64	0.35	Screw Failure
3	535.4	1.00	0.75	Screw Pullout
4	555.9	0.71	0.42	Screw Pullout
5	366.5	0.65	0.36	Screw Failure
6	462.8	0.75	0.42	Screw Pullout
7	447.4	0.65	0.33	Screw Failure
8	567.4	0.67	0.41	Screw Failure
9	311.0	0.61	0.32	Screw Failure
10	319.9	0.58	0.25	Screw Pullout
<b>Average</b>	<b>443.3</b>	<b>0.67</b>	<b>0.38</b>	

**Cyclic Shear Load Evaluation**

Deflector - Red w/ Aluminum #10 screw at 3/4" Spacing  
(50 pound incremental loading, 0.50" per minute)

Sample	Peak Load (lbf)	Peak Deformation (inch)	Permanent Set (inch)	Failure Mode
1	1272.4	0.82	0.53	Screw Failure
2	1114.3	1.92	1.56	Screw Pullout
3	1380.3	0.70	0.50	Screw Pullout
4	1297.7	1.99	1.30	Screw Pullout
5	1145.3	1.45	1.10	Screw Pullout
6	1333.8	1.45	1.00	Screw Pullout
7	1300.0	1.40	1.10	Screw Pullout
8	1399.3	1.95	1.50	Screw Pullout
9	1358.3	2.00	1.50	Screw Pullout
10	1089.4	1.30	0.80	Screw Pullout
<b>Average</b>	<b>1269.1</b>	<b>1.50</b>	<b>1.09</b>	

Test Results: (Continued)

**Cyclic Shear Load Evaluation**

Deflector Max - Black w/ Black #14 screw at 3/4" Spacing  
(50 pound incremental loading, 0.50" per minute)

Sample	Peak Load (lb <sub>f</sub> )	Peak Deformation (inch)	Permanent Set (inch)	Failure Mode
1	1171.8	1.60	1.10	Screw Pullout
2	1600.0	2.30	1.85	Screw Pullout
3	1021.8	1.75	1.21	Screw Pullout
4	1200.0	1.50	1.00	Screw Pullout
5	1224.3	2.70	2.10	Screw Pullout
6	1186.1	1.72	1.15	Screw Failure
7	1550.0	2.15	1.75	Screw Failure
8	1450.0	1.90	1.40	Screw Pullout
9	1413.7	2.50	1.80	Screw Pullout
10	800.0	1.15	0.70	Screw Pullout
<b>Average</b>	<b>1261.8</b>	<b>1.93</b>	<b>1.41</b>	

**Cyclic Shear Load Evaluation**

Deflector Max - Black w/ Black #14 screw at 2" Spacing  
(50 pound incremental loading, 0.50" per minute)

Sample	Peak Load (lb <sub>f</sub> )	Peak Deformation (inch)	Permanent Set (inch)	Failure Mode
1	1135.1	3.00	1.95	Screw Pullout
2	565.9	1.90	1.25	Screw Pullout
3	713.4	1.50	1.00	Screw Pullout
4	652.2	1.45	0.75	Screw Pullout
5	750.0	2.15	1.70	Screw Pullout
6	908.9	2.70	2.10	Screw Pullout
7	673.3	1.60	0.95	Screw Pullout
8	813.3	1.95	1.40	Screw Pullout
9	800.0	1.95	1.50	Screw Pullout
10	668.4	1.60	1.00	Screw Pullout
<b>Average</b>	<b>768.1</b>	<b>1.98</b>	<b>1.36</b>	

Data sheets, representative samples of test specimens, and a copy of this test report will be retained by Architectural Testing, Inc. for a period of four years from the original test date. At the end of this retention period such materials shall be discarded without notice and the service life of this report by Architectural Testing will expire. Results obtained are tested values and were secured using the designated test methods. This report does not constitute certification of this product nor an opinion or endorsement by this laboratory. It is the exclusive property of the client so named herein and relates only to the specimens tested. This report may not be reproduced, except in full, without the written approval of Architectural Testing, Inc.

For ARCHITECTURAL TESTING, INC.:

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Joseph M. Brickner - Laboratory Supervisor  
Components / Materials Testing

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Gary Hartman, P.E. - Director  
Components / Materials Testing

JMB:jmb/nlb

Attachments (pages) This report is complete only when all attachments listed are included.  
Appendix A - Photographs (7)

### Revision Log

<u>Rev. #</u>	<u>Date</u>	<u>Page(s)</u>	<u>Revision(s)</u>
0	09/15/10	N/A	Original report issue.
1	02/04/11	All	Changes reflect fourth sample set being evaluated with a 2" spacing.

**APPENDIX A**

**Photographs**



**Photo No. 1**  
**Deflector SP Fastener 3/4" Spacing - Pull-Out Setup**



**Photo No. 2**  
**Deflector Fastener 3/4" Spacing - Pull-Out Setup**





**Photo No. 3**  
**Deflector Max Fastener 3/4" Spacing - Pull-Out Setup**



**Photo No. 4**  
**Deflector Max Fastener 2" Spacing - Pull-Out Setup**



**Photo No. 5**  
**Fastener Pull-Out - Setup Detail**



**Photo No. 6**  
**Fastener Pull-Out - Setup Detail**



**Photo No. 7**  
**Deflector SP Fastener Pull-Out - Failure Detail**



**Photo No. 8**  
**Deflector Fastener Pull-Out - Failure Detail**



**Photo No. 9**  
**Deflector Max Fastener Pull-Out - Failure Detail**