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Testing of Exterior Siding in Accordance with SFM Standard 12-7A-1: *Fire Resistive Standards for Exterior Wall Siding and Sheathing*

WFCi Project No. 09079

Conducted for:

FLETCHER WOOD SOLUTIONS®

A TENON COMPANY

200 WESTGATE CIRCLE

SUITE 402

ANNAPOLIS, MD 21401

TESTING COMPLETED ON: OCTOBER 21, 2009

REPORT DATE: DECEMBER 28, 2009

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INTRODUCTION

This report documents the CSFM 12-7A-1 testing of solid wood siding performed by Western Fire Center, Inc. (WFCi) for the client, Fletcher Wood Solutions.

Wayne Beres of WFCi conducted the tests with the assistance of Mike White.

The test samples were assembled at WFCi prior to testing. A detailed description of the samples can be found on page 5 of this report.

The purpose of these tests was to evaluate the fire test performance characteristics of the client's solid wood siding specimens when subjected to the SFM 12-7A-1 standard fire exposure conditions in order to demonstrate conformity with the requirements of California Building Code Chapter 7A. These test results are judged to be applicable to other product patterns as described in the "Test Conclusions and Extension of Data" section of this report.

LIFESPAN® Pressure-treated radiata pine finger-jointed solid wood siding was successfully evaluated for conformity with California Building Code, Chapter 7A wildland building code requirements in this test program. These results apply to siding installed in a **horizontal orientation** only.

SUMMARY OF THE TEST METHOD

The CSFM 12-7A-1 test methodology incorporates a protocol utilizing a 4" x 39" gas diffusion burner positioned at the base of a 4' wide by 8' high wall construction with the fire exposure conducted at 150 kW for a period of 10 minutes. After fire exposure, the wall specimens are observed for a 60-minute post-exposure period for signs of progressive combustion and/or flame penetration through to the unexposed side of the assembly. The post-exposure period is terminated prior to the end of the designated 60-minute period upon the detemination that signs of combustion have ceased. Signs of flame penetration at any time during the test, or presence of glowing combustion on the unexposed surface at the end of the 60-minute post exposure period constitute a failure to meet the conditions of acceptance. Tests are conducted in triplicate for conformity with the California Building Code, Chapter 7A requirements. An infrared thermal imaging camera is used in each test to assist in determination of the progression of hidden combustion and associated temperature changes. Tests were conducted under the WFCi large combustion products collector at ambient airflow conditions. Samples were not subjected to accelerated weathering prior to the test. Specimens were tested at a moisture content of approximately 9% (as determined by the "oven-dry" method). The heat output of the burner and corresponding gas flow is checked at the outset of the test program.

SAMPLE DESCRIPTION

Product Identification: Outdoor LIFESPAN® Pressure-treated radiata pine finger-jointed solid wood siding, primer surface.

Patterns tested:

- 1 x 8 (nom.) 3 lap (round edge) ship lap drop siding (3/4" x 7-1/2" actual)
- 1 x 8 (nom.) beveled channel ship lap (3/4" x 7-1/2" actual)
- 1 x 6 (nom.) v-rustic ship lap (3/4" x 5-1/2" actual)

The 4' x 8' wall assemblies clad with solid wood finger-jointed siding were constructed at the WFCi laboratory using test specimens shipped from the client. For these tests, the siding materials were installed **horizontally** over 7/16" oriented strandboard (OSB) sheathing in accordance with client and industry specifications. A butt joint was included in every other course. Wall specimens were prepared in accordance with the test method and manufacturer installation instructions. Building paper was not used.

The client provided information describing the Lifespan® siding product as follows:

> **LIFESPAN®** is protected with the combination of a pressure treatment using carbon-based biocides to ward off insects and fungal decay, a proprietary water repellency system to maximize dimensional stability and an alkyd-based primer to provide superior durability against the elements.

Primer System
LIFESPAN's factory-applied two-coat alkyd primer system further protects against water infiltration and weathering. The first full primer coat provides deep penetration and high film build to provide water repellence and to limit cracking. The second primer coat acts as an undercoat, providing a smooth, even, defect-free surface, concealing fingerjoints.

Pressure Treatment
Unlike traditional dip treatments and newer spray-on treatments that only reach outside surfaces, **LIFESPAN** is pressure treated, ensuring that the organic biocide penetrates and protects the entire sapwood substrate with precise quantities of preservative. This process avoids the surface roughness and grain-raising often associated with water-borne preservatives.
During pressure treatment, the wood is also impregnated with waxes and resins, which bond with the wood. These resist moisture uptake, enhancing **LIFESPAN's** dimensional stability even when exposed to harsh environments of high humidity and precipitation. After treatment, the solvent is allowed to evaporate sufficiently to permit subsequent priming, packaging and shipping.

The narrowest dimension was selected as the 'worst case', due to the greater degree of joint exposure per unit area. Previous test experience has indicated that greater joint exposure (narrowest width) would be considered the most severe test condition.

The siding patterns selected for testing under this project are intended to cover the following Lifespan profiles and widths:

Sidings - All ship-lap - 4 different profiles			
1x8x16	**3/4"**	**7-1/2**	**3 lap**
1x10x16	**3/4"**	**9-1/2**	**3 lap**
1x8x16	**3/4"**	**7-1/2**	**channel**
1x10x16	**3/4"**	**9-1/2**	**channel**
1x8x16	**3/4"**	**7-1/2**	**cove**
1x10x16	**3/4"**	**9-1/2**	**cove**
1x6x16	**3/4"**	**5-1/2**	**v-rustic**
1x8x16	**3/4"**	**7-1/2**	**v-rustic**
1x10x16	**3/4"**	**9-1/2**	**v-rustic**

TEST RESULTS

TEST #1: 1X8 BEVELED CHANNEL

Time	Observation
0:00:00	Start Test, Ignite Burner
0:00:26	Ignition of panel
0:00:40	Flaming at soffit
0:10:00	Burner out- flaming continues at base of specimen
0:11:00	Flames out, some light glowing bottom right side on face
0:17:00	All glowing combustion ceased
0:20:00	Temperatures diminishing, No evidence of continuing combustion, stop test
Post Fire Exposure:	All signs of flaming and/or glowing combustion ceased at point of test termination; **no flaming or glowing combustion on unexposed side, test pass**
Date	10/20/09
Burner Exposure	150 kW
Laboratory Temp/Humidity	63°F / 62%
Sample Moisture Content	Siding 9%, sheathing 6-7%; studs 10%

TEST #2: 1X8 BEVELED CHANNEL

Time	Observation
0:00:00	Start Test, Ignite Burner
0:00:41	Ignition of face
0:00:50	Flaming to soffit
0:10:00	Burner out- flaming on face continues
0:11:30	Flames out, some glowing combustion on face
0:18:00	All glowing combustion ceases
0:20:00	Temperatures diminishing, Stop test, no evidence of continuing combustion
Post Fire Exposure:	All signs of flaming and/or glowing combustion ceased prior to test termination; **no flaming or glowing combustion on unexposed side, test pass**
Date	10/21/09
Burner Exposure	150 kW
Laboratory Temp/Humidity	61°F / 68%
Sample Moisture Content	Siding 9%, sheathing 6-7%; studs 10%

TEST #3: 1 X 8 BEVELED CHANNEL

Time	Observation
0:00:00	Start Test, Ignite Burner
0:00:45	Ignition face
0:00:55	Flaming to soffit
0:10:00	Burner out- light flaming continues
0:11:00	Flames out, some glowing combustion on face
0:15:00	Glow ceases, no signs continuing combustion
0:21:00	Temperatures diminishing, Stop test,
Post Fire Exposure:	All signs of flaming and/or glowing combustion ceased prior to test termination; **no flaming or glowing combustion on unexposed side, test pass**
Date	1/28/08
Slot Burner Exposure	150 kW
Laboratory Temp/Humidity	61F / 68%
Sample Moisture Content	Siding 9%, sheathing 6-7%; studs 9%

TEST #4: 1 X 6 V-RUSTIC

Time	Observation
0:00:00	Start Test, Ignite Burner
0:00:31	Ignition face
0:01:00	Flaming to soffit
0:10:00	Burner out- light flaming continues
0:11:45	Flames out, some glowing combustion on face
0:22:00	Glowing ceases, no signs continuing combustion
0:26:00	Temperatures diminishing, Stop test
Post Fire Exposure:	All signs of flaming and/or glowing combustion ceased prior to test termination; **no flaming or glowing combustion on unexposed side, test pass**
Date	10/21/09
Slot Burner Exposure	150 kW
Laboratory Temp/Humidity	62F / 66%
Sample Moisture Content	Siding 9%, sheathing 6-7%; studs 9%

TEST #5: 1 X 6 V-RUSTIC

Time	Observation
0:00:00	Start Test, Ignite Burner
0:00:30	Ignition face
0:00:59	Flaming to soffit
0:10:00	Burner out- light flaming continues
0:11:00	Flames out, some glowing combustion on face
0:15:00	Some glowing combustion on face
0:24:00	Temperatures diminishing, Stop test,
Post Fire Exposure:	All signs of flaming and/or glowing combustion ceased prior to test termination; **no flaming or glowing combustion on unexposed side, test pass**
Date	10/21/09
Burner Exposure	150 kW
Laboratory Temp/Humidity	62F / 68%
Sample Moisture Content	Siding 9%, sheathing 6-7%; studs 9%

TEST #6: 1 X 6 V-RUSTIC

Time	Observation
0:00:00	Start Test, Ignite Burner
0:00:35	Ignition face
0:00:45	Flaming to soffit
0:10:00	Burner out- light flaming continues
0:13:00	Flames out, some glowing combustion on face
0:16:00	Glowing ceases
0:28:00	Temperatures diminishing, Stop test
Post Fire Exposure:	All signs of flaming and/or glowing combustion ceased prior to test termination; **no flaming or glowing combustion on unexposed side, test pass**
Date	10/21/09
Burner Exposure	150 kW
Laboratory Temp/Humidity	63F / 69%
Sample Moisture Content	Siding 9%, sheathing 6-7%; studs 9%

TEST #7: 1 X 8 3 LAP

Time	Observation
0:00:00	Start Test, Ignite Burner
0:00:20	Ignition face
0:00:45	Flaming to soffit
0:10:00	Burner out- light flaming continues
0:11:00	Flames out, some glowing combustion on face
0:27:00	Glowing ceases
0:30:00	Temperatures diminishing, Stop test
Post Fire Exposure:	All signs of flaming and/or glowing combustion ceased prior to test termination; **no flaming or glowing combustion on unexposed side, test pass**
Date	10/21/09
Burner Exposure	150 kW
Laboratory Temp/Humidity	63F / 69%
Sample Moisture Content	Siding 9%, sheathing 6-7%; studs 9%

TEST #8: 1 X 8 3 LAP

Time	Observation
0:00:00	Start Test, Ignite Burner
0:00:35	Ignition face
0:00:45	Flaming to soffit
0:10:00	Burner out- light flaming continues
0:13:00	Flames out, some glowing combustion on face
0:16:00	Glowing ceases
0:28:00	Temperatures diminishing, Stop test
Post Fire Exposure:	All signs of flaming and/or glowing combustion ceased prior to test termination; **no flaming or glowing combustion on unexposed side, test pass**
Date	10/21/09
Burner Exposure	150 kW
Laboratory Temp/Humidity	63F / 69%
Sample Moisture Content	Siding 9%, sheathing 6-7%; studs 9%

TEST # 9: 1 X 8 3 LAP

Time	Observation
0:00:00	Start Test, Ignite Burner
0:00:42	Ignition face
0:00:48	Flaming to soffit
0:10:00	Burner out- light flaming continues
0:14:00	Flames out, some glowing combustion on face
0:28:00	Glowing on face ceases
0:30:00	Temperatures diminishing, Stop test
Post Fire Exposure:	All signs of flaming and/or glowing combustion ceased prior to test termination; **no flaming or glowing combustion on unexposed side, test pass**
Date	10/21/09
Burner Exposure	150 kW
Laboratory Temp/Humidity	63F / 69%
Sample Moisture Content	Siding 9%, sheathing 6-7%; studs 9%

CONCLUSIONS AND EXTENSION OF DATA

The Lifespan® preservative treated pine siding profiles described in this report successfully met the conditions of acceptance specified in SFM 12-7A-1, and therefore conform to the requirements of Section 704A, Paragraph 704A.3.1 of the 2007 California Building Code.

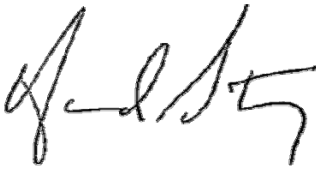
These results are applicable to HORIZONTAL INSTALLATIONS ONLY.

The test results presented in this report are judged to be applicable to the following Lifespan® patterns installed horizontally over oriented strand board (OSB) or plywood with a 7/16" minimum thickness:

Sidings - All ship-lap - 4 different profiles			
1x8	**3/4"**	**7-1/2**	**3 lap**
1x10	**3/4"**	**9-1/2**	**3 lap**
1x8	**3/4"**	**7-1/2**	**channel**
1x10	**3/4"**	**9-1/2**	**channel**
1x8	**3/4"**	**7-1/2**	**cove**
1x10	**3/4"**	**9-1/2**	**cove**
1x6	**3/4"**	**5-1/2**	**v-rustic**
1x8	**3/4"**	**7-1/2**	**v-rustic**
1x10	**3/4"**	**9-1/2**	**v-rustic**

SIGNATURE PAGE

Reviewed and approved,



Howard Stacy

Director, Testing Services

WESTERN FIRE CENTER AUTHORIZES THE CLIENT NAMED HEREIN TO REPRODUCE THIS REPORT ONLY IF REPRODUCED IN ITS ENTIRETY

The test specimen identification is as provided by the client and WFCi accepts no responsibilities for any inaccuracies therein. WFCi did not select the specimen and has not verified the composition, manufacturing techniques or quality assurance procedures.

APPENDIX A:
TEST PICTURES

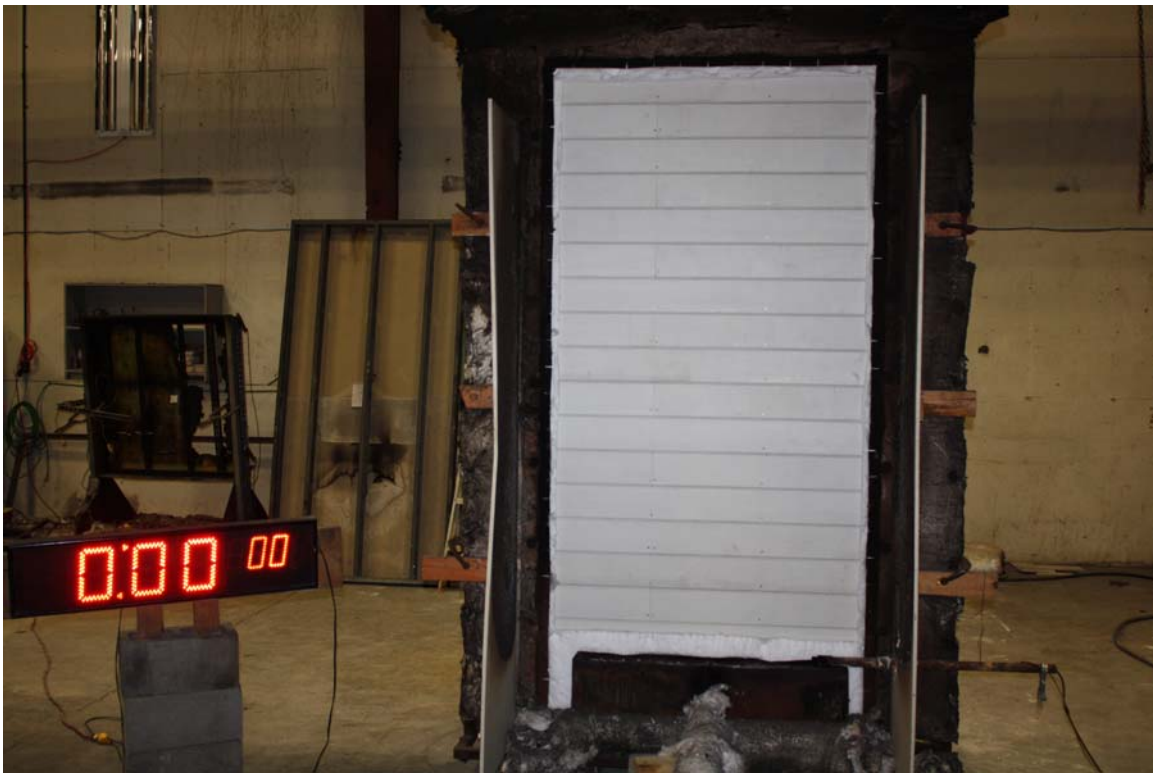
Test 1, Beveled channel under construction

Test 1, prior to test

Test 1, early in test

Test 1, at test termination

Test 1, beveled channel, unexposed side at test termination



Test 4, v-rustic prior to test

Test 4, v-rustic early in test

Test 4, v-rustic at test termination

Test 4, v-rustic unexposed side at test termination

Test 7, 3 lap prior to test

Test 7, 3 lap during burn exposure

Test 7, 3 lap at test termination

3 lap, unexposed side at test termination