ICC-ES Evaluation Report
ESR-2273

DIVISION: 06 00 00—WOOD, PLASTICS AND COMPOSITES
Section: 06 12 13—Cementitious Reinforced Panels

DIVISION: 07 00 00—THERMAL AND MOISTURE PROTECTION
Section: 07 45 00—Fiber-Reinforced Cementitious Panels

REPORT HOLDER:
JAMES HARDIE BUILDING PRODUCTS, INC.

EVALUATION SUBJECT:
HARDIE® SOFFIT (CEMSOFFIT®), AND HARDIE® SOFFIT VENTEDPLUS™ (PREVAIL® SOFFIT VENTEDPLUS™), EXTERIOR SOFFIT PANELS

1.0 EVALUATION SCOPE
Compliance with the following codes:

Properties evaluated:
- Physical Properties
- Structural
- Noncombustible Construction
- Surface-burning characteristics
- Thermal Resistance
- Weather Protection

2.0 USES
Hardie®Soffit (Cemsoffit®) and Hardie®Soffit VentedPlus™ (Prevail® Soffit VentedPlus™) panels are used as exterior soffit covering of buildings of non-fire-resistance-rated construction.

3.0 DESCRIPTION
Hardie®Soffit (Cemsoffit®) and Hardie®Soffit VentedPlus™ (Prevail® Soffit VentedPlus™) panels are single-faced, cellulose fiber-reinforced cement (fiber-cement) sheets manufactured by the Hatschek process and cured by high-pressure steam autoclaving. The exterior soffit panels are identified as Hardie®Soffit (Cemsoffit®) or Hardie®Soffit VentedPlus™ (Prevail® Soffit VentedPlus™) panels. The Hardie®Soffit (Cemsoffit®) panels may be vented or unvented.

The fiber-cement sheets comply with ASTM C1186 as Type A, Grade II, and have a flame-spread index of 0 and a smoke developed index of 5 when tested in accordance with ASTM E84. The sheets are classified as noncombustible when tested in accordance with ASTM E136.

Thermal conductivity (K) and thermal resistance (R) values for the unvented products are shown in Table 2 based on ASTM C177 tests. When tested in accordance with ASTM E96, unvented products with a thickness of ¼ inch (6.4 mm) have demonstrated the permeance value given in Table 3 of this report.

Soffit panels are available with either a woodgrain texture or a smooth unsanded surface. The exterior soffit products may be supplied unprimed or primed for subsequent application of a compatible primer and/or exterior-grade topcoat(s). Nominal soffit dimensions are noted in Table 1.

4.0 DESIGN AND INSTALLATION

4.1 Design:
The maximum wind speeds, building heights and exposure categories applicable for Hardie®Soffit (Cemsoffit®) and Hardie®Soffit VentedPlus™ (Prevail® Soffit VentedPlus™) panels are noted in Table 5. Vented and VentedPlus™ soffit panels provide net free ventilation area as presented in Table 4 of this report.

4.2 Installation:
Installation shall comply with this report and the manufacturer’s published installation instructions. A copy of the manufacturer’s published installation instructions this report must be available at the job site during installation.

All panel edges must be supported by framing members. Panels must be attached with corrosion-resistant fasteners installed with a minimum ¼ inch (6.4 mm) edge distance and minimum 2-inch (51 mm) clearance from corners. The panels must be installed with the long edge of the panel perpendicular to the joist framing and must be attached with fastener types, lengths, and spacings described in Table 5. Framing must include a subfascia, blocking, and/or ledger board to provide a nailing base along the dimension of the soffit.

5.0 CONDITIONS OF USE
The Hardie®Soffit (Cemsoffit®) and Hardie®Soffit VentedPlus™ (Prevail® Soffit VentedPlus™) exterior soffit panels described in this report comply with, or are suitable
alternatives to what is specified in those codes listed in Section 1.0 of his report, subject to the following conditions:

5.1 The Hardie®Soffit (Cemsoffit®) and Hardie®Soffit VentedPlus™ (Prevail® Soffit VentedPlus™) panels must be installed in accordance with this report and the manufacturer's published installation instructions. In the event of a conflict between this report and the manufacturer's published installation instructions, this report governs.

5.2 The Hardie®Soffit (Cemsoffit®) and Hardie®Soffit VentedPlus™ (Prevail® Soffit VentedPlus™) soffit panels are manufactured under a quality control program with inspections by ICC-ES at the following locations:

5.2.1 Pulaski, Virginia
5.2.2 Tacoma, Washington
5.2.3 Waxahachie, Texas
5.2.4 Peru, Illinois
5.2.5 Plant City, Florida
5.2.6 Prattville, Alabama

6.0 EVIDENCE SUBMITTED
Data in accordance with the ICC-ES Acceptance Criteria for Fiber Cement Siding Used as Exterior Wall Siding (AC90), dated October 2018 (editorially revised December 2020).

7.0 IDENTIFICATION
7.1 Hardie®Soffit (Cemsoffit®) and Hardie®Soffit VentedPlus™ (Prevail® Soffit VentedPlus™) panels shall be identified by a stamp or label on the board bearing the name and address of the report holder (James Hardie Building Products), the product name (Hardie®Soffit, Hardie®Soffit VentedPlus®, or Cemsoffit®), and the evaluation report number (ESR-2273).

7.2 The report holder’s contact information is the following:
JAMES HARDIE BUILDING PRODUCTS, INC.
10901 ELM AVENUE
FONTANA, CALIFORNIA 92337
(800) 942-7343
www.jameshardie.com
info@jameshardie.com

### Table 1—Standard Nominal Soffit Dimensions

<table>
<thead>
<tr>
<th>PRODUCT TYPE</th>
<th>WIDTH (inches)</th>
<th>LENGTH (feet)</th>
<th>THICKNESS (inches)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hardie®Soffit Smooth (unvented)</td>
<td>4, 5, 6, 10, 12, 16, 24, 36 &amp; 48</td>
<td>8, 9, 10 &amp; 12</td>
<td>1/4</td>
</tr>
<tr>
<td>Hardie®Soffit Woodgrain (unvented)</td>
<td>4, 5 1/4, 5 5/8, 6, 6 1/2, 7 1/4, 8, 8 1/4, 9 1/2, 10, 11 1/4, 11 5/8, 12, 15 1/4, 16, 24, 36 &amp; 48</td>
<td>8, 9, 10 &amp; 12</td>
<td>1/4</td>
</tr>
<tr>
<td>Hardie®Soffit Smooth (vented)</td>
<td>4, 6, 9 1/4, 10, 11 1/4, 12, 16 &amp; 24</td>
<td>8 &amp; 12</td>
<td>1/4</td>
</tr>
<tr>
<td>Hardie®Soffit Woodgrain (vented)</td>
<td>4, 5 1/4, 5 5/8, 6, 6 1/2, 7 1/4, 8, 8 1/4, 9 1/2, 11 1/4, 12, 16 &amp; 24</td>
<td>8 &amp; 12</td>
<td>1/4</td>
</tr>
<tr>
<td>Hardie®Soffit VentedPlus™ Smooth (Vented)</td>
<td>12, 16 &amp; 24</td>
<td>8 &amp; 12</td>
<td>1/4</td>
</tr>
<tr>
<td>Hardie®Soffit VentedPlus™ Woodgrain (Vented)</td>
<td>12, 16 &amp; 24</td>
<td>8 &amp; 12</td>
<td>1/4</td>
</tr>
<tr>
<td>Cemsoffit® Woodgrain (unvented)</td>
<td>4, 5, 6, 10, 12, 16, 24, 36 &amp; 48</td>
<td>8, 9, 10 &amp; 12</td>
<td>1/4</td>
</tr>
<tr>
<td>Cemsoffit® Woodgrain (vented)</td>
<td>4, 5 1/2, 5 3/4, 6, 6 1/2, 7 1/4, 8, 8 1/4, 9 1/2, 11 1/4, 12, 16 &amp; 24</td>
<td>8 &amp; 12</td>
<td>1/4</td>
</tr>
<tr>
<td>Prevail® Soffit VentedPlus™ (Vented)</td>
<td>16</td>
<td>12</td>
<td>1/4</td>
</tr>
</tbody>
</table>

For SI: 1 inch = 25.4 mm, 1 ft = 304.8 mm

### Table 2—K and R Values for Unvented Soffit Products

<table>
<thead>
<tr>
<th>PRODUCT THICKNESS (inch)</th>
<th>ACTUAL THERMAL CONDUCTIVITY (Km)</th>
<th>ACTUAL THERMAL RESISTANCE (Btu/h-ft²-°F)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/4</td>
<td>7.80</td>
<td>0.13</td>
</tr>
</tbody>
</table>

For SI: 1 inch = 25.4 mm, 1 Btu/h-ft²-°F = 5.678 W/m²-K

### Table 3—Water Vapor Permeance Values for Unvented Soffit Products

<table>
<thead>
<tr>
<th>PRODUCT THICKNESS (inch)</th>
<th>PERMEANCE (perms)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/4</td>
<td>1.75</td>
</tr>
</tbody>
</table>

For SI: 1 inch = 25.4 mm, 1 perm = 57 mg/(s·m²·Pa)

### Table 4—Ventilation Rates for Vented Soffit Products
<table>
<thead>
<tr>
<th>PRODUCT LINE</th>
<th>PANEL WIDTH (inch)</th>
<th>NET FREE VENTILATION (in² / linear ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hardie® Soffit and Cemsoffit®</td>
<td>5½ and over</td>
<td>5.0 (105 cm²/m)</td>
</tr>
<tr>
<td>Hardie® Soffit and Cemsoffit®</td>
<td>5¹/₄</td>
<td>4.0 (84 cm²/m)</td>
</tr>
<tr>
<td>Hardie® Soffit and Cemsoffit®</td>
<td>4</td>
<td>3.0 (64 cm²/m)</td>
</tr>
<tr>
<td>Hardie® Soffit VentedPlus™ and Prevail® Soffit VentedPlus™</td>
<td>12, 16 &amp; 24</td>
<td>12.6 (266 cm²/m)</td>
</tr>
</tbody>
</table>

For SI: 1 inch = 25.4 mm

### TABLE 5—MAXIMUM WIND SPEEDS FOR EXPOSURE CATEGORY (mph)

<table>
<thead>
<tr>
<th>Product</th>
<th>Product Dimensions (in.)</th>
<th>Fastener Type</th>
<th>Fastener Spacing (in.)</th>
<th>Frame Type</th>
<th>Stud Spacing (in.)</th>
<th>Stud Type</th>
<th>Buildin g Height (ft.)</th>
<th>Exposure Category</th>
<th>Exposure Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hardie® Soffit</td>
<td>¼ 48</td>
<td>4d common, 1½-in long</td>
<td>8</td>
<td>2 x 4 wood³</td>
<td>16</td>
<td>0-15</td>
<td>111 100 91</td>
<td>143 130 118</td>
<td></td>
</tr>
<tr>
<td>Hardie® Soffit</td>
<td>¼ 48</td>
<td>4d common, 1½-in long</td>
<td>8</td>
<td>2 x 4 wood³</td>
<td>24</td>
<td>0-15</td>
<td>94 86 67</td>
<td>122 110 92</td>
<td></td>
</tr>
<tr>
<td>Hardie® Soffit</td>
<td>¼ 48</td>
<td>6d siding nail 0.092-in shank x 2-in long x 0.235-in HD</td>
<td>4</td>
<td>2 x 4 wood³</td>
<td>24</td>
<td>0-15</td>
<td>139 126 114</td>
<td>179 162 147</td>
<td></td>
</tr>
<tr>
<td>Hardie® Soffit</td>
<td>¼ 16</td>
<td>0.083-in shank x 0.187” HD x 1½-in long ring shank nail</td>
<td>8</td>
<td>2 x 4 wood³</td>
<td>16</td>
<td>0-15</td>
<td>185 168 152</td>
<td>239 217 197</td>
<td></td>
</tr>
<tr>
<td>Hardie® Soffit</td>
<td>¼ 16</td>
<td>0.083-in shank x 0.187” HD x 1½-in long ring shank nail</td>
<td>8</td>
<td>2 x 4 wood³</td>
<td>24</td>
<td>0-15</td>
<td>186 169 153</td>
<td>240 218 198</td>
<td></td>
</tr>
<tr>
<td>Hardie® Soffit</td>
<td>¼ 24</td>
<td>0.083 shank x 0.187” HD x 1½-in long ring shank nail</td>
<td>8</td>
<td>2 x 4 wood³</td>
<td>22.5 max</td>
<td>0-15</td>
<td>106 96 87</td>
<td>137 124 113</td>
<td></td>
</tr>
<tr>
<td>Hardie® Soffit</td>
<td>¼ 24</td>
<td>6d siding nail 0.092-in shank x 2-in long x 0.235-in HD</td>
<td>4</td>
<td>2 x 4 wood³</td>
<td>24</td>
<td>0-15</td>
<td>144 131 119</td>
<td>186 169 153</td>
<td></td>
</tr>
<tr>
<td>Hardie® Soffit</td>
<td>¼ 24</td>
<td>6d common nail 0.113-in shank x 2-in long x 0.266-in HD</td>
<td>4</td>
<td>2 x 4 wood³</td>
<td>24</td>
<td>0-15</td>
<td>150 136 123</td>
<td>193 175 159</td>
<td></td>
</tr>
<tr>
<td>Hardie® Soffit</td>
<td>¼ 48</td>
<td>No 8 x 1-in long x 0.323-in HD ribbed bugle head screw</td>
<td>6</td>
<td>20 ga Min</td>
<td>3½-in x 1½-in metal C-stud</td>
<td>16</td>
<td>0-15</td>
<td>116 106 96</td>
<td>150 136 124</td>
</tr>
</tbody>
</table>

For 2012 IRC, 2009 IBC/IRC, 2006 IBC/IRC (Basic Wind Speed, V_{bc} (mph), 2012 IBC/IRC (Ultimate Design Wind Speed, V_{ult} (mph), 2015 IBC/IRC and 2018 IBC/IRC (Basic Design Wind Speed, V_{bd} (mph)).

For SI: 1 inch = 25.4 mm
<table>
<thead>
<tr>
<th>Product</th>
<th>Dimensions (in.)</th>
<th>Fastener Type</th>
<th>Fastener Spacing (in.)</th>
<th>Frame Type</th>
<th>Stud Spacing (in.)</th>
<th>Building Height (ft.)</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>B</th>
<th>C</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hardie® Soffit VentedPlus™</td>
<td>1/4 24</td>
<td>ET&amp;F shot pin .100&quot; Shank x 1.5&quot; long x .250&quot; HD</td>
<td>6</td>
<td>20 ga Min 3/4&quot; x 1 1/2&quot; in metal C-stud</td>
<td></td>
<td>24</td>
<td>0-15</td>
<td>104</td>
<td>95</td>
<td>86</td>
<td>134</td>
<td>122</td>
</tr>
<tr>
<td>Hardie® Soffit VentedPlus™</td>
<td>1/4 24</td>
<td>6d siding nail .092&quot; Shank x 2.0&quot; long x .222&quot; HD</td>
<td>4</td>
<td>2 x 4 Wood</td>
<td></td>
<td>24</td>
<td>0-15</td>
<td>148</td>
<td>135</td>
<td>122</td>
<td>192</td>
<td>174</td>
</tr>
<tr>
<td>Hardie® Soffit VentedPlus™</td>
<td>1/4 24</td>
<td>6d common nail .113&quot; Shank x 2.0&quot; long x .266&quot; HD</td>
<td>4</td>
<td>2 x 4 Wood</td>
<td></td>
<td>24</td>
<td>0-15</td>
<td>162</td>
<td>147</td>
<td>134</td>
<td>209</td>
<td>190</td>
</tr>
<tr>
<td>Hardie® Soffit VentedPlus™</td>
<td>1/4 16</td>
<td>4d ring Shank siding nail (.090-inch Shank x .215 in. HD x 1-1/2 in. long)</td>
<td>8</td>
<td>2 x 4 Wood</td>
<td></td>
<td>24</td>
<td>0-15</td>
<td>126</td>
<td>114</td>
<td>104</td>
<td>163</td>
<td>148</td>
</tr>
<tr>
<td>Hardie® Soffit VentedPlus™</td>
<td>1/4 16</td>
<td>4d ring Shank siding nail (.090-inch Shank x .215 in. HD x 1-1/2 in. long)</td>
<td>8</td>
<td>2 x 4 Wood</td>
<td></td>
<td>16</td>
<td>0-15</td>
<td>141</td>
<td>128</td>
<td>116</td>
<td>182</td>
<td>165</td>
</tr>
<tr>
<td>Hardie® Soffit VentedPlus™</td>
<td>1/4 16</td>
<td>4d ring Shank siding nail (.090-inch Shank x .215 in. HD x 1-1/2 in. long)</td>
<td>8</td>
<td>2 x 4 Wood</td>
<td></td>
<td>16</td>
<td>0-15</td>
<td>108</td>
<td>98</td>
<td>89</td>
<td>140</td>
<td>127</td>
</tr>
</tbody>
</table>

For SI: 1 ft = 305 mm, 1 inch = 25.4 mm, 1 mph = 0.44 m/s.

1Wind speed design assumptions per Section 6.5, Method 2, of ASCE 7-05: I = 1.0, Kd = 1.0, GCp = 0.85, GCp = 0.18, GCp = -1.4.
2Installation must be in accordance with Section 4.2 of this report.
3Values are for species of wood having a specific gravity of 0.42 or greater.
4Vasd = Nominal design wind speed.
5Wind speed design assumptions per Section 30.4, of ASCE 7-10: Kd = 1, Kd = 0.85, GCp = 0.18, GCp = -1.4.
6Building height equals the mean roof height (in feet) of a building, except that eave height shall be used for roof angle Θ less than or equal to 10° (2-12 roof slope).
7Smooth-shank stainless steel nails are outside of the scope of this report.
8Ultimate design wind speed
9Wind speed design assumptions per Section 30.3, of ASCE 7-10: Kd = 1, Kd = 0.85, GCp = 0.18, GCp = -1.4.
10Basic design wind speed
11Vult = Ultimate design wind speed

TABLE 5—MAXIMUM WIND SPEEDS FOR EXPOSURE CATEGORY (mph)² (CONTINUED)
DIVISION: 06 00 00—WOOD, PLASTICS AND COMPOSITES
Section: 06 12 13—Cementitious Reinforced Panels

DIVISION: 07 00 00—THERMAL AND MOISTURE PROTECTION
Section: 07 45 00—Fiber-Reinforced Cementitious Panels

REPORT HOLDER:
JAMES HARDIE BUILDING PRODUCTS, INC.

EVALUATION SUBJECT:
HARDIE® SOFFIT (CEMSOFFIT®) AND HARDIE® SOFFIT VENTEDPLUS™ (PREVAIL® SOFFIT VENTEDPLUS™) EXTERIOR SOFFIT PANELS

1.0 REPORT PURPOSE AND SCOPE

Purpose:
The purpose of this evaluation report supplement is to indicate that Hardie® Soffit (Cemsoffit®) and Hardie® Soffit VentedPlus™ (Prevail® Soffit VentedPlus™) exterior soffit panels, described in ICC-ES evaluation report ESR-2273, have also been evaluated for compliance with the codes noted below.

Applicable code editions:
- 2022 California Building Code® (CBC)
- For evaluation of applicable chapters adopted by the California Office of Statewide Health Planning and Development (OSHPD) AKA: California Department of Health Care Access and Information (HCAI) and the Division of State Architect (DSA), see Sections 2.1.1 and 2.1.2 below.
- 2022 California Residential Code® (CRC)

2.0 CONCLUSIONS

2.1 CBC:
The Hardie® Soffit (Cemsoffit®) and Hardie® Soffit VentedPlus™ (Prevail® Soffit VentedPlus™) exterior soffit panels described in Sections 2.0 through 7.0 of the evaluation report ESR-2273, comply with CBC Chapter 14, provided the design and installation are in accordance with the 2021 International Building Code® (IBC) provisions noted in the evaluation report and the additional requirements of CBC Chapters 16 and 17, as applicable.

2.1.1 OSHPD: The applicable OSHPD Sections and Chapters of the CBC are beyond the scope of this supplement.

2.1.2 DSA: The applicable DSA Sections and Chapters of the CBC are beyond the scope of this supplement.

2.2 CRC:
The Hardie® Soffit (Cemsoffit®) and Hardie® Soffit VentedPlus™ (Prevail® Soffit VentedPlus™) exterior soffit panels, described in Sections 2.0 through 7.0 of the evaluation report ESR-2290, comply with CRC Chapter 7, provided the design and installation are in accordance with the 2021 International Residential Code® (IRC) provisions noted in the evaluation report.

This supplement expires concurrently with the evaluation report, reissued June 2023 and revised June 20, 2023.