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ESR-2386

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This report is subject to renewal 04/2018.

DIVISION: 07 00 00—THERMAL AND MOISTURE PROTECTION

SECTION: 07 46 00—SIDING

REPORT HOLDER:

SHAKERTOWN 1992, INC.

POST OFFICE BOX 400
1200 KERRON STREET
WINLOCK, WASHINGTON 98596

EVALUATION SUBJECT:

SHAKERTOWN CEDAR SIDING



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POST OFFICE BOX 400
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(360) 785-3501**
EVALUATION SUBJECT:
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1.0 EVALUATION SCOPE

Compliance with the following codes:

- 2006 *International Building Code*® (IBC)
- 2006 *International Residential Code*® (IRC)
- 1997 *Uniform Building Code*™ (UBC)
- 1999 *Standard Building Code*® (SBC)

Properties evaluated:

- Durability
- Exterior veneer
- Wind resistance
- Fire-resistance-rated construction

2.0 USES

Shakertown Cedar Siding panels are exterior wall coverings for use in Type V (IBC, UBC) or Type VI (SBC) construction, and structures constructed under the IRC.

3.0 DESCRIPTION

3.1 General:

Shakertown cedar siding panels are exterior wall coverings consisting of Western red cedar boards placed side by side and adhered to a three-ply, C-C exterior grade (or better) plywood backing. The plywood backing is located to act as a self-aligning guide for the corresponding 1-inch (25.4 mm), 1¹/₄-inch (31.7 mm) and 2¹/₂-inch (63.5 mm) overlap. The panels have 4¹/₂-, 7- or 14-inch (114, 178, or 356 mm) exposures. See Figure 1 for further details.

The panels are available in single (Craftsman) or multiple (Colonial) courses with or without keyways or vertical spacing between the cedar face material. Panels with

keyways have a ⁵/₃₂-inch-wide-by-¹/₈-inch-deep (4 mm by 3.2 mm) keyway cut between each cedar board and have a minimum overall siding thickness of ³/₈ inch (9.5 mm) at the thinnest point of the keyway.

Panels are available in either even-butt or staggered-butt styles.

3.2 Materials:

3.2.1 Cedar Boards: Red cedar shingles and boards are all clear vertical grain.

3.2.2 Plywood: Plywood is nominally ⁵/₁₆-inch-thick (7.9 mm), exterior grade, touch-sanded (on both sides), C-C Douglas fir plywood of the specified widths bonded with exterior-type glue and complying with U.S. DOC PS-1 (UBC Standard 23-2). The plywood face plies are parallel to the long dimension of the panel.

3.2.3 Adhesive: The adhesive used to bond shingles or cedar boards to plywood backing is an exterior-type adhesive providing a glue line that meets U.S. DOC PS-1-95 test requirements for exterior-type plywood.

4.0 INSTALLATION

4.1 General:

The panels are installed over spaced or solid sheathing complying with the applicable code, or over studs without sheathing. The panels are limited to use on vertical walls or on mansard roof surfaces sloping 60 degrees or more from horizontal. A water-resistive barrier complying with IBC Section 1404.2, IRC Section 703.2, SBC Section 2303.3 or UBC Section 1402.1 is required. Each panel course is attached with corrosion-resistant nails described in Tables 1, 2 and 3 of this report. Nails must be of sufficient length to penetrate the framing a minimum of 1.5 inches (38.1 mm). The first course of panels is installed over a level ¹/₂-inch-thick-by-1-inch-wide (12.7 by 25.4 mm) wood starter strip. Subsequent courses are installed by fitting the recessed self-aligning edge over the top of the previous panel. For face-nailing, the nails are placed at distances of 3, 4, and 7 inches (76, 102, and 178 mm) from the bottom edge of the panel for, respectively, the 4¹/₂-, 7- and 14-inch (114, 178 or 356 mm) panels. The nails are fastened through the end of each panel into the stud at end joints and to each intermediate stud.

Craftsman 4¹/₂- and 7-inch (114 and 178 mm) and Colonial 4¹/₂-inch (114 mm) single course panels may be attached using concealed nailing. The nails are fastened along the top of each course no less than ³/₄ inch (19.1 mm) down from the top edge for 4¹/₂-inch (114 mm) panels and 1 inch (25.4 mm) down from the top edge for 7-inch (178 mm) panels. The lap of the next higher course

conceals the nails on the lower course. The nails are fastened through the end of each panel into the stud at end joints and to each intermediate stud. Panels are installed with the panel-end joints butted together, allowing $\frac{1}{16}$ inch (1.6 mm) of space between end joints.

Vertical panel joints must be staggered to avoid direct alignment with panel joints of adjacent courses. Roof drainage is not permitted over mansard panels.

4.2 Wind Resistance:

Wind resistance is as noted in Tables 1, 2 and 3 of this report. As an alternative, when installed as described in Section 4.1 of this report with corrosion-resistant threaded nails having a minimum 0.200-inch-diameter (5.1 mm) head, a 0.100-inch-diameter (25.4 mm) shank and a length sufficient to penetrate framing a minimum of 1.5 inches (38 mm), the siding panels have a minimum positive or negative wind resistance of 20.6 psf (986 Pa).

4.3 One-hour Fire-resistance-rated Wall Assembly:

The siding panels may be used as an alternate to the wall covering required for the one-hour fire-resistance-rated wall assembly specified in Item 15-1.1 of Table 720.1(2) of the IBC, or Item 18-1.1 of Table 7-B of the UBC, provided the thickness of wood at the thinnest point of the panel assembly is a minimum of $\frac{3}{8}$ inch (9.5 mm). The siding panels must be installed in accordance with Section 4.1 of this report. See Figure 2 for additional details.

5.0 CONDITIONS OF USE

The Shakertown cedar siding panels described in this report comply with, or are suitable alternatives to what is specified in, those codes listed in Section 1.0 of this report, subject to the following conditions:

- 5.1 The products must be installed as set forth in this report and the manufacturer's instructions. If there is a conflict between this report and the manufacturer's instructions, this report governs.

- 5.2 Walls must be braced in accordance with the applicable code to resist shear forces acting parallel to the wall.
- 5.3 All windows, doors and other exterior openings must be flashed in accordance with the applicable code.
- 5.4 The siding panels must be installed over a water-resistive barrier complying with the applicable code.
- 5.5 Fire-resistance-rated construction must be in accordance with Section 4.3.
- 5.6 The products are manufactured at the Shakertown 1992, Inc., facility in Winlock, Washington, under a quality control program with inspections by ICC-ES.

6.0 EVIDENCE SUBMITTED

- 6.1 Reports of wind-driven rain tests in accordance with ASTM E331.
- 6.2 Reports of transverse load tests in accordance with ASTM E72.
- 6.3 Reports of nail withdrawal and nail-head pull-through tests in accordance with ASTM D1037.
- 6.4 Reports of fire-resistance tests in accordance with ASTM E119.
- 6.5 Engineering calculations for allowable wind loads.
- 6.6 Quality documentation.

7.0 IDENTIFICATION

Each bundle of panels is labeled with the Shakertown 1992, Inc., name, the plant location, the product name, and the evaluation report number (ICC-ES ESR-2386).

INSTRUCTIONS FOR USING TABLES 1, 2 AND 3 TO DETERMINE WIND NAILING REQUIREMENTS

- Step 1. Utilizing applicable wind speed and coefficients according to the local codes, determine the DESIGN WIND PRESSURE.
- Step 2. From TABLE 1, verify ALLOWABLE PANEL WIND PRESSURE that equals or exceeds the DESIGN WIND PRESSURE. Select MAXIMUM NAIL LOAD corresponding to the ALLOWABLE PANEL WIND PRESSURE.
- Step 3. The MAXIMUM NAIL LOAD (TABLE 1) may be reduced by multiplying it by the ratio of DESIGN WIND PRESSURE to ALLOWABLE PANEL WIND PRESSURE (TABLE 1).

$$\text{REDUCED NAIL LOAD} = \text{MAXIMUM NAIL LOAD} \times (\text{DESIGN WIND PRESSURE} / \text{ALLOWABLE PANEL WIND PRESSURE}).$$
- Step 4. From TABLE 2, select a nail or nails providing a NAIL WITHDRAWAL RESISTANCE equaling or exceeding the required MAXIMUM NAIL LOAD.
- Step 5. From TABLE 3, check to ensure that the NAIL-HEAD PULL-THROUGH RESISTANCE equals or exceeds the NAIL LOAD.

TABLE 1—SHAKERTOWN CEDAR SIDING PANELS

STYLE AND EXPOSURE	NAIL LOCATION	MAXIMUM NAIL VERTICAL SPACING (inches)	ALLOWABLE PANEL WIND PRESSURE (psf)	NAIL LOAD AT ALLOWABLE PANEL WIND PRESSURE (lbf)
Stud @ 16 inches on center				
Craftsman/Colonial 4 ¹ / ₂	Face or concealed	4.5	67	34
Craftsman/Colonial 7	Face	7	78	61
Craftsman/Colonial 7	Concealed	7	59	46
Craftsman/Colonial 14	Face	14	81	126
Stud @ 24 inches on center				
Craftsman/Colonial 4 ¹ / ₂	Face or concealed	4.5	78	59
Craftsman/Colonial 7	Face or concealed	7	78	91
Craftsman/Colonial 14	Face	14	81	189

For SI: 1 inch = 25.4 mm, 1 psf = 0.0479 kPa.

¹Allowable withdrawal loads are dependent upon fasteners designed in accordance with recognized codes.

²Two or more nails may be designed for face nailed or combination face/concealed nailed configuration to satisfy nail loading provided nail spacing along stud is approximately equidistant.

³Use of concealed nailing is limited to single course panels.

TABLE 2—ALLOWABLE NAIL WITHDRAWAL RESISTANCE (lbf)^{1,2,3}

WOOD	SPECIFIC GRAVITY	2 ¹ / ₄ -INCH 7D COMMON ⁴ MIN. DIA. = 0.104 in. (lbf)	3-INCH 10D COMMON ⁵ MIN. DIA. = 0.147 in. (lbf)	3-INCH ROOFING ⁵ MIN. DIA. = 0.127 in. (lbf)
Spruce-pine-fir	0.42	38	77	66
Hem-fir	0.46	48	97	83
Douglas fir-larch	0.50	56	113	98
Southern pine	0.55	75	151	131

For SI: 1 inch = 25.4 mm, 1 lbf = 4.45 N.

¹Based on $W = 1380 G^{5/2} D$, where W = allowable load per inch of penetration in the member holding the nail point, G = Specific gravity, D = diameter of the nail in inches.

²Values assume a panel thickness of ¹/₂ inch. Where nonstructural or spaced sheathing is located under the siding, the length of the nail must be increased an equivalent length so as to provide required penetrations.

³Includes 1.33 load duration factor; no further increases are permitted.

⁴Typical, corrosion-resistant, manufacturer-supplied.

⁵Typical, corrosion-resistant.

TABLE 3—NAIL HEAD PULL-THROUGH RESISTANCE (lbf per nail)^{1,2,3}

NAIL	RESISTANCE (lbf/nail)
7d, 2 ¹ / ₄ -inch common	30
10d, 3-inch common	57
3-inch roofing	69

¹Nails located 1 inch from top edge of panel.

²7d common nail: 0.105-inch-diameter shank, 0.194-inch-diameter head, refer to ASTM F 1667.

10d common nail: 0.148-inch-diameter shank, 0.315-inch-diameter head, refer to ASTM F 1667.

Roofing nail: 0.128-inch-diameter shank, 0.410-inch-diameter head, refer to ASTM F 1667.

³Nails must be corrosion-resistant.

Shakertown Colonial Shingle Panel

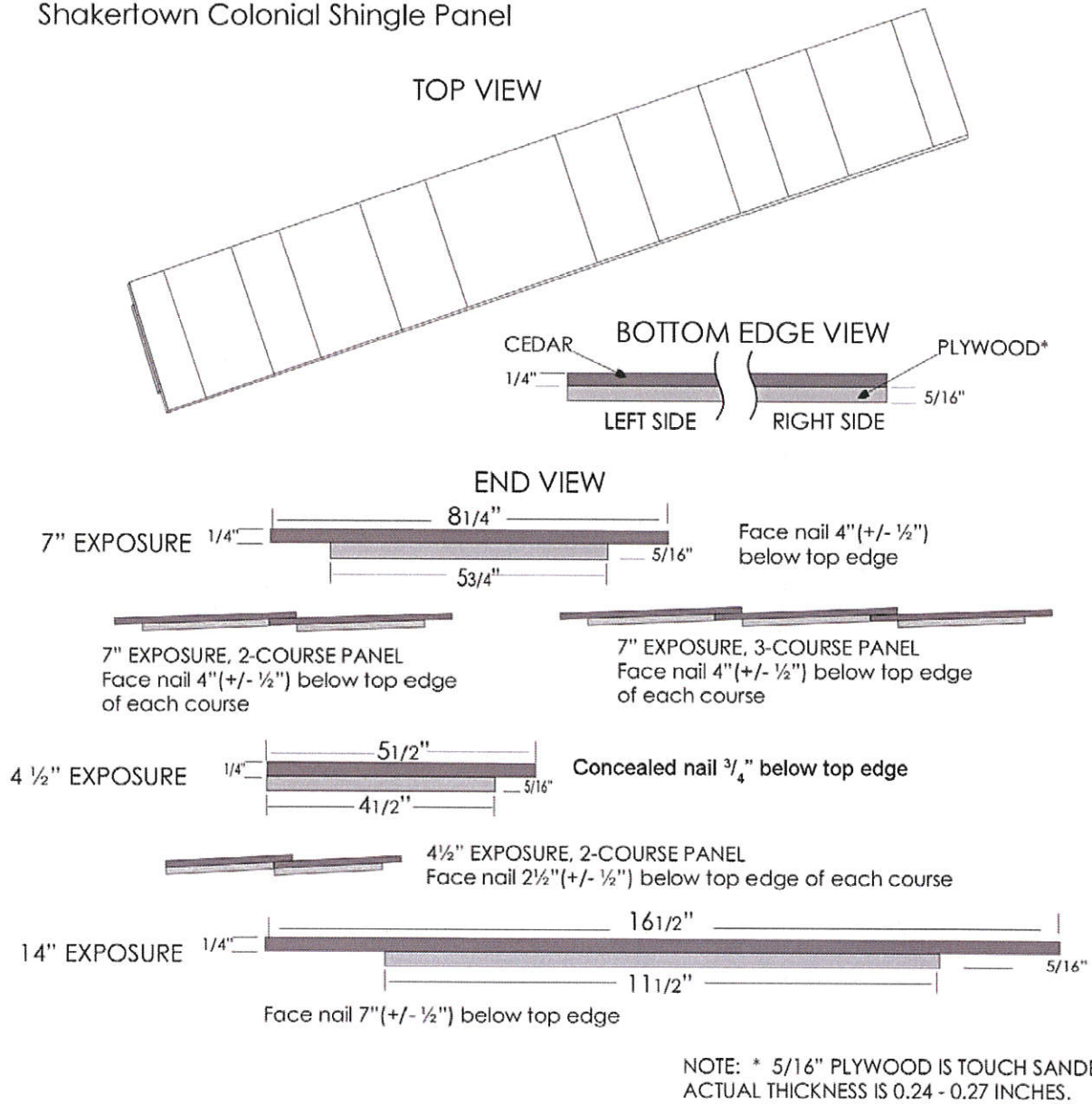


FIGURE 1

Shakertown Craftsman Shingle Panel®

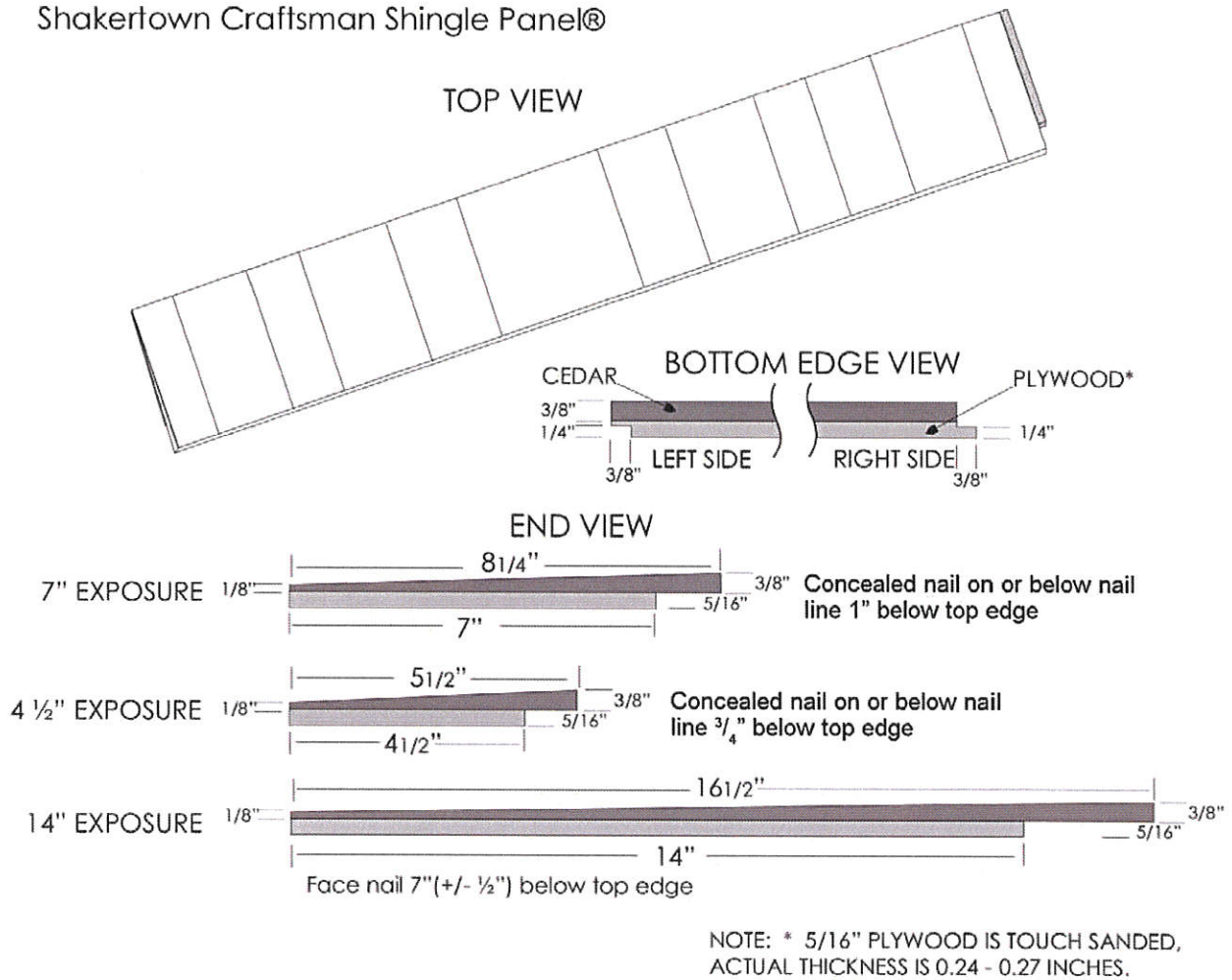


FIGURE 1 (Continued)

TYPICAL ONE-HOUR WALL -- ISOMETRIC

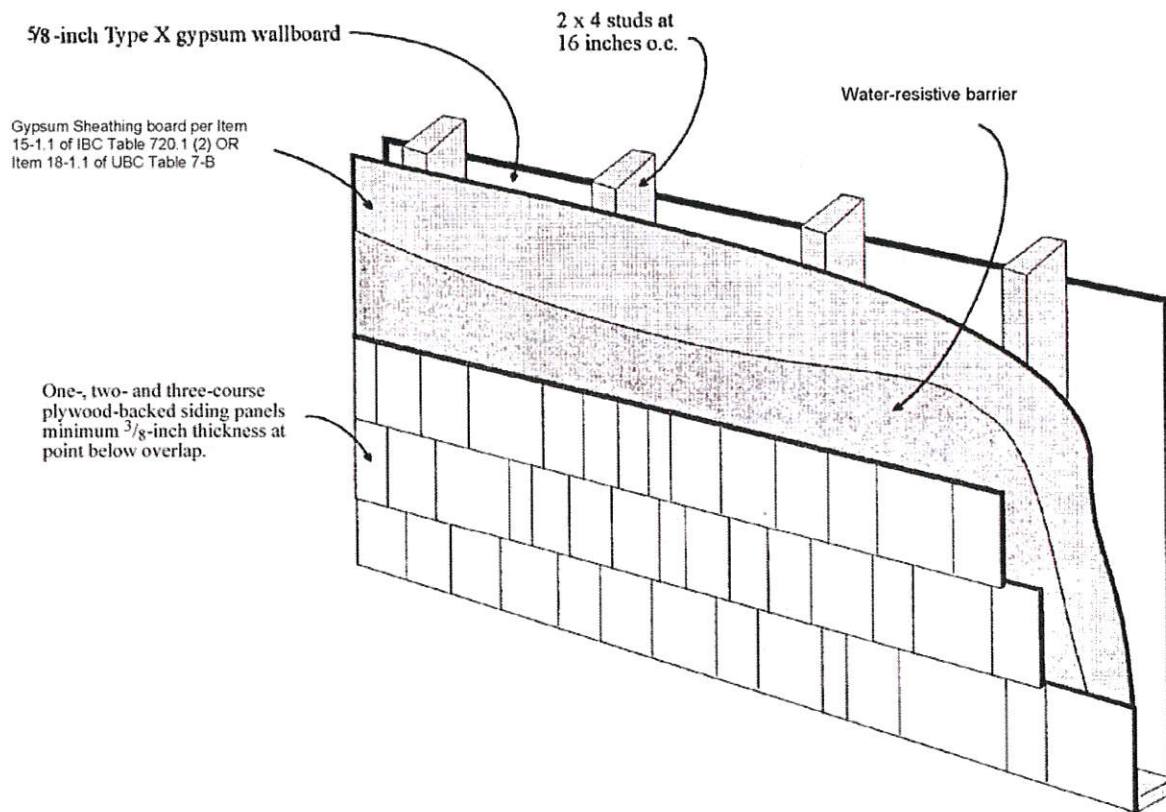


FIGURE 2