

ICC-ES Evaluation Report

ESR-1474

Reissued October 1, 2010

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**DIVISION: 06 00 00—WOOD, PLASTICS AND
COMPOSITES**
Section: 06 16 00—Sheathing

**DIVISION: 07 00 00—THERMAL AND MOISTURE
PROTECTION**
Section: 07 27 00—Air Barriers
**Section: 07 25 00—Water-resistive Barriers/Weather
Barriers**

REPORT HOLDER:

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EVALUATION SUBJECT:**ZIP SYSTEM® WALL SHEATHING****1.0 EVALUATION SCOPE****Compliance with the following codes:**

- 2009 *International Building Code*® (2009 IBC)
- 2009 *International Residential Code*® (2009 IRC)
- 2009 *International Energy Conservation Code*® (2009 IECC)
- 2006 *International Building Code*® (2006 IBC)
- 2006 *International Residential Code*® (2006 IRC)
- 2006 *International Energy Conservation Code*® (2006 IECC)

Properties evaluated:

- Weather resistance
- Air leakage

2.0 USES

ZIP System® Wall Sheathing panels are used as combination wall sheathing, air barrier, and water-resistive barrier. This report recognizes the use of the system, when installed with ZIP System™ flexible flashing seam tape, in walls of Type V construction (IBC) and dwellings under the IRC, and as an alternate to the water-resistive barrier required in Chapter 14 of the IBC and Chapter 7 of the IRC, and to the air barrier required by Sections 402.4.1 and 502.4.3 of the IECC.

3.0 DESCRIPTION**3.1 Sheathing Panel:**

The ZIP System® Wall Sheathing panel is an OSB wood structural panel having a laminated facer. The OSB substrate complies with US DOC PS 2 for wood structural panels and is overlaid on one side with a medium-density, phenolic-impregnated, kraft paper overlay. The paper overlay complies as a Grade D water-resistive barrier in accordance with the ICC-ES Acceptance Criteria for Water-resistive Barriers (AC38). The panels are nominally 4 feet (1219 mm) wide by 8, 9, 10, 11 or 12 feet (2438, 2743, 3048, 3353 or 3658 mm) long and have a square-finished-edge or machined-edge profile.

3.2 Seam Tape:

The ZIP System™ seam tape is a self-adhering membrane tape consisting of acrylic adhesive laminated to a polyolefin backing. The tape is 0.012 inch (0.30 mm) thick with a minimum width of 3³/₄ inches (95.2 mm), and comes in rolls of various lengths.

4.0 INSTALLATION**4.1 General:**

Installation of ZIP System® Wall Sheathing panels must comply with the applicable code, this report and the manufacturer's published installation instructions. The manufacturer's published installation instructions must be available at the jobsite during installation.

4.2 Application:

4.2.1 General: The ZIP System® Wall Sheathing panels must be attached to wall framing in accordance with the applicable code for wood structural panels, and in compliance with their panel span rating. The panels must be installed with the kraft paper overlay facing the exterior. In accordance with the manufacturer's published installation instructions, it is recommended that the square edges of the panels be installed with a 1/8-inch (3.2 mm) gap between adjacent panels and separating the panels from dissimilar materials. All ZIP System® Wall Sheathing panel seams must be sufficiently sealed with ZIP System™ seam tape. All overlay surfaces must be dry and free of sawdust and dirt prior to application of the ZIP System® seam tape. The ZIP System™ seam tape must extend a minimum of 1 inch (25.4 mm) past the panel edge T-joint intersections and must be centered within 1/2 inch (12.7 mm) over the middle of panel seams. The tape must be pressed firmly to adhere to the surfaces and seal the seams. No wrinkles that extend from the edge of the tape to the panel seam must be present in the applied tape.

4.2.2 Flashing: Flashing complying with the applicable code must be installed at the perimeter of door and window assemblies, penetrations and terminations of exterior wall assemblies, exterior wall intersections with roofs, chimneys, porches, decks, balconies, and similar projections, and at built-in gutters and similar locations where moisture could enter the wall. An adhesive-backed flashing tape recognized in a current ICC-ES evaluation report must be installed to seal all ZIP System® Wall Sheathing flashing joints. Penetration items must be sealed to the panels. The adhesive-backed flashing tape must comply with the ICC-ES Acceptance Criteria for Flashing Materials (AC148). See Figures 1 through 7 of this report for typical flashing, water-resistive barrier and air barrier assembly installation details.

4.2.3 Air Barrier Assembly: ZIP System® Wall Sheathing fastened to maximum 24-inch-on-center (610 mm), wood wall framing, using 6d nails spaced at 6 inches (152 mm) around panel edges and at 12 inches (305 mm) in the field, leaving a $\frac{1}{8}$ -inch (3.18 mm) gap between panels, forms an air barrier assembly when the gaps between panels and the perimeter of penetrations are sealed with ZIP System™ seam tape as required by Section 4.2.1. The assembly has demonstrated a maximum air leakage of 0.0072 cfm/ft² [0.037 L/(s•m²)] infiltration and 0.0023 cfm/ft² [0.012 L/(s•m²)] exfiltration at a pressure differential of 1.57 psf (75 Pa).

5.0 CONDITIONS OF USE

The ZIP System® Wall Sheathing panel described in this report complies with, or is a suitable alternative to what is specified in, those codes listed in Section 1.0 of this report, subject to the following conditions:

5.1 This evaluation report and the manufacturer's published installation instructions, when required by the code official, must be submitted at the time of permit application.

5.2 The ZIP System® Wall Sheathing panels must be manufactured, identified and installed in accordance with this report and the manufacturer's published installation instructions. In the event of a conflict between the instructions and this report, this report must govern.

5.3 The ZIP System® Wall Sheathing panels must be covered with either a code-complying exterior wall covering, or one that is recognized in a current ICC-ES evaluation report.

5.4 The OSB sheathing must comply with US DOC PS-2.

5.5 Fire-resistance-rated construction is outside the scope of this report.

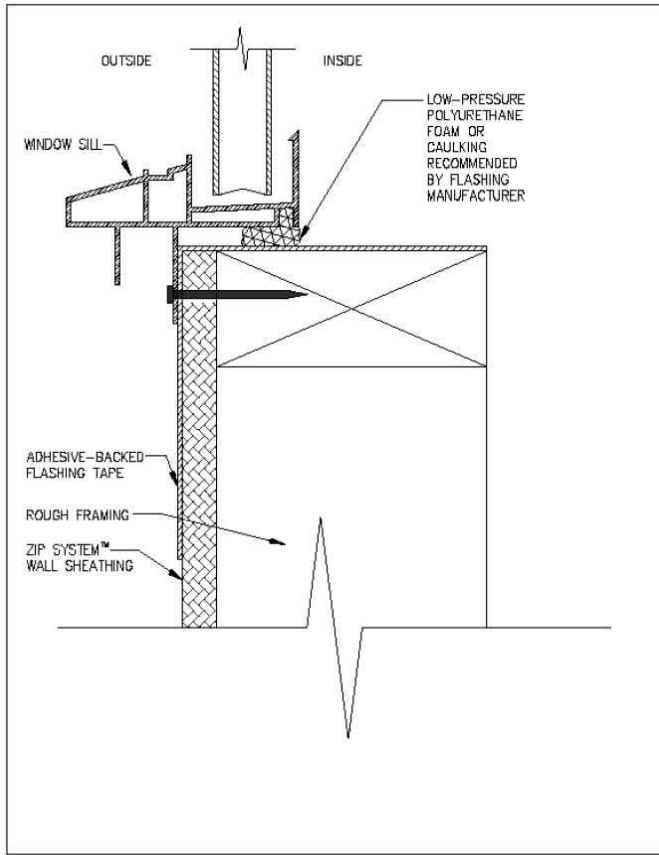
6.0 EVIDENCE SUBMITTED

6.1 Data in accordance with the ICC-ES Acceptance Criteria for Water-resistive Membranes Factory-bonded to Wood-based Structural Sheathing, Used as Water-resistive Barriers (AC310), dated May 2008 (corrected November 2008).

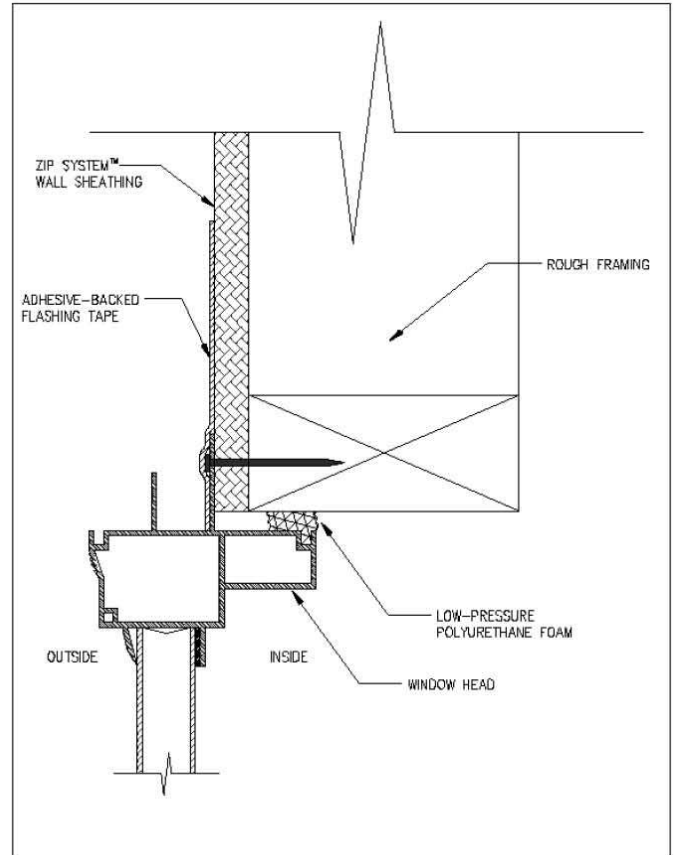
6.2 Air leakage data in accordance with ASTM E 2357.

7.0 IDENTIFICATION

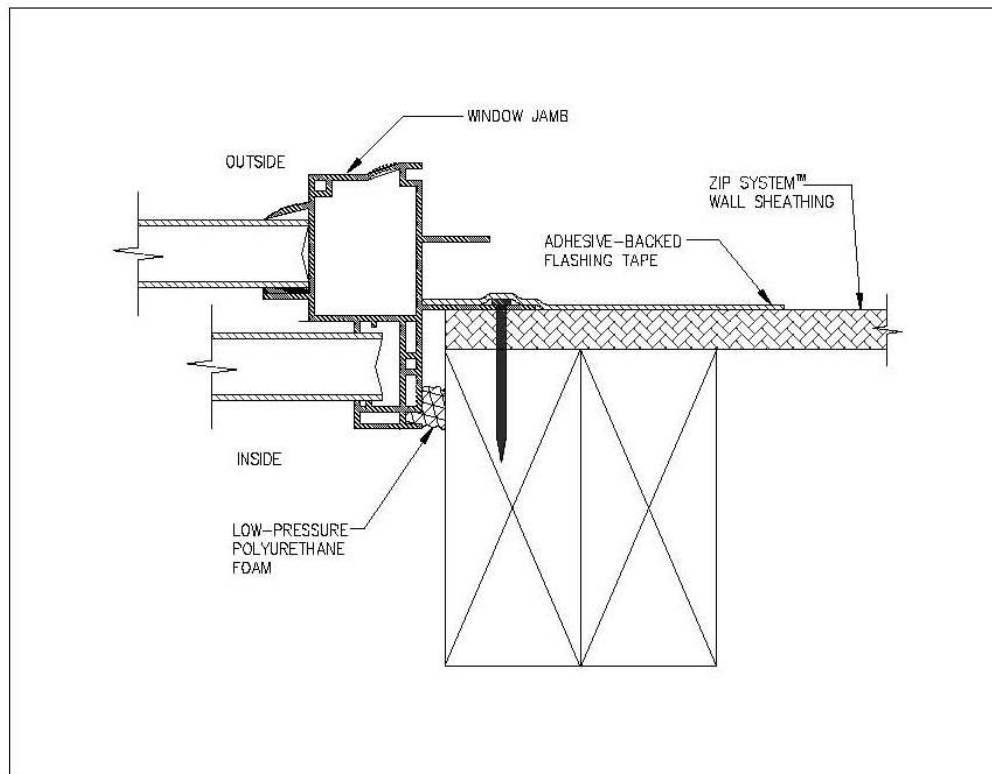
Each ZIP System® Wall Sheathing panel described in this report must bear a label on the back face of the panel that includes the manufacturer's name (Huber Engineered Woods LLC), the product name, nominal panel thickness, the evaluation report number (ESR-1474), and the words "Mill 229, Crystal Hill, Virginia"; "Mill 228, Easton, Maine"; "Mill 230, Spring City, Tennessee"; "Mill 227, Commerce, Georgia"; or "Mill 290, Broken Bow, Oklahoma." The OSB sheathing must also bear a label demonstrating compliance with US DOC PS 2 from an approved inspection agency. The ZIP System™ seam tape roll must be labeled with the ZIP System Wall logo and the evaluation report number ESR-1474 (see Figure 8).



SILL SECTION

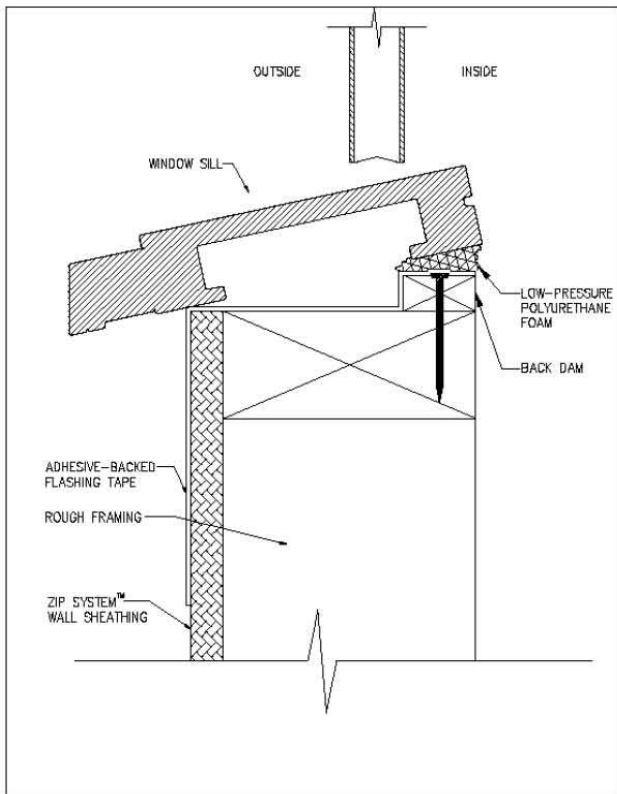


HEADER SECTION

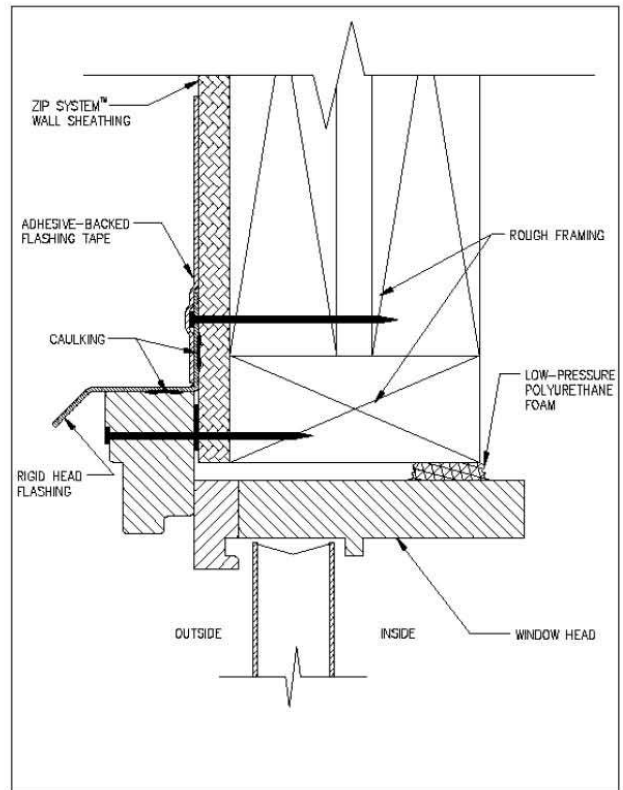


JAMB SECTION

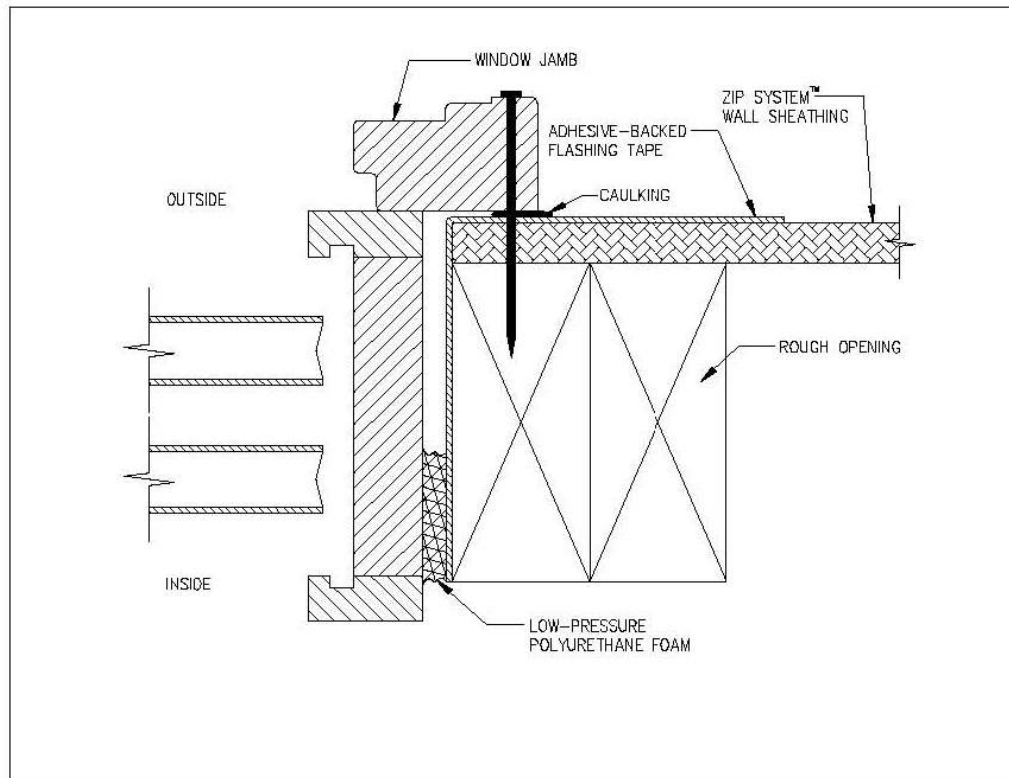
FIGURE 1—TYPICAL CROSS SECTIONS OF FLANGED WINDOW



SILL SECTION



HEADER SECTION



JAMB SECTION

FIGURE 2—TYPICAL CROSS SECTIONS OF INSTALLED BRICK MOLD WINDOW

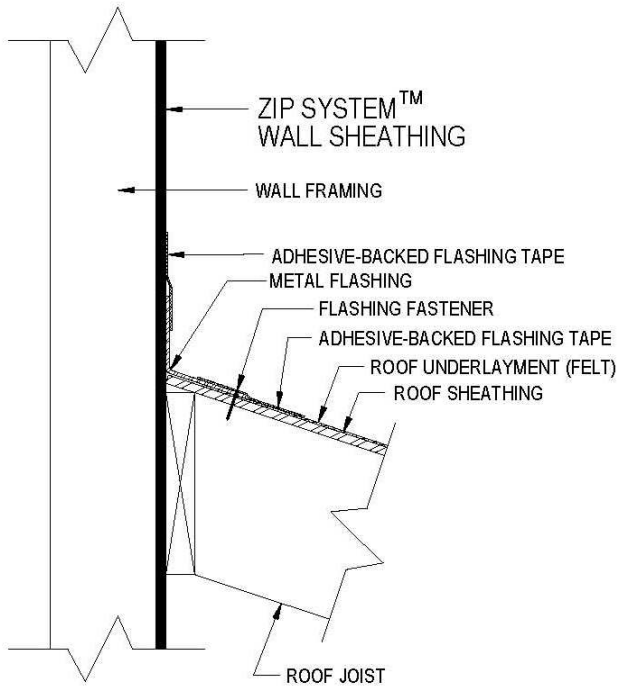


FIGURE 3—ROOF-WALL INTERSECTION (OPTION 1)

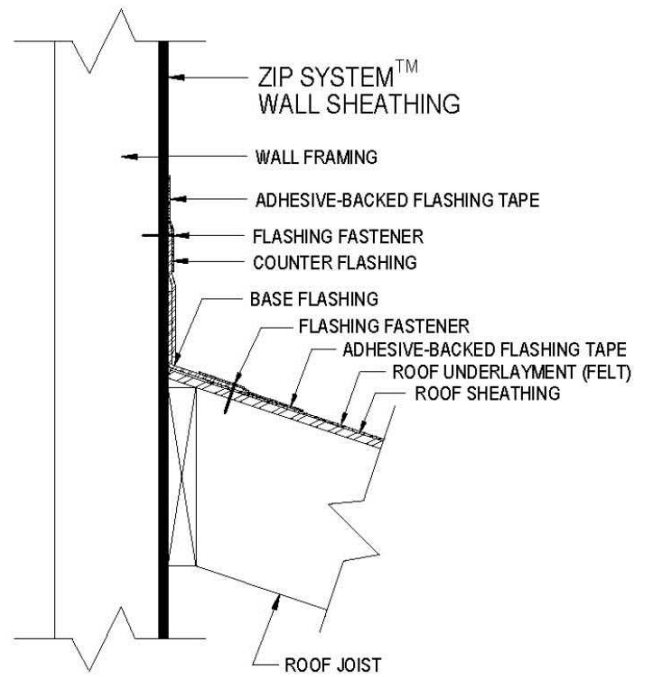


FIGURE 4—ROOF-WALL INTERSECTION (OPTION 2)

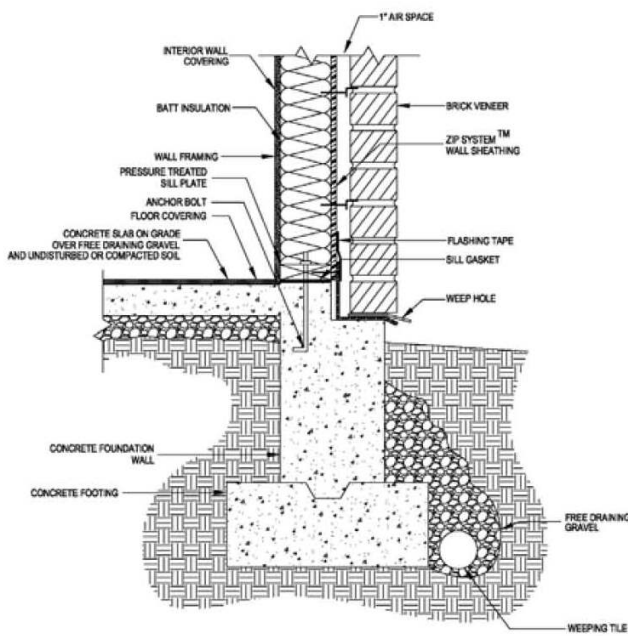


FIGURE 5—TYPICAL WALL-SILL INTERSECTION AND FLASHING DETAILS FOR BRICK SIDING

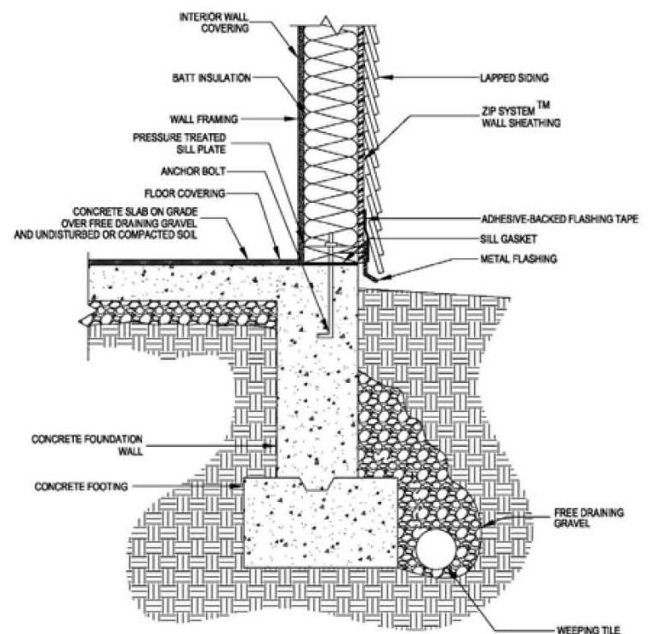


FIGURE 6—TYPICAL WALL-SILL INTERSECTION AND FLASHING DETAILS FOR LAPPED SIDING

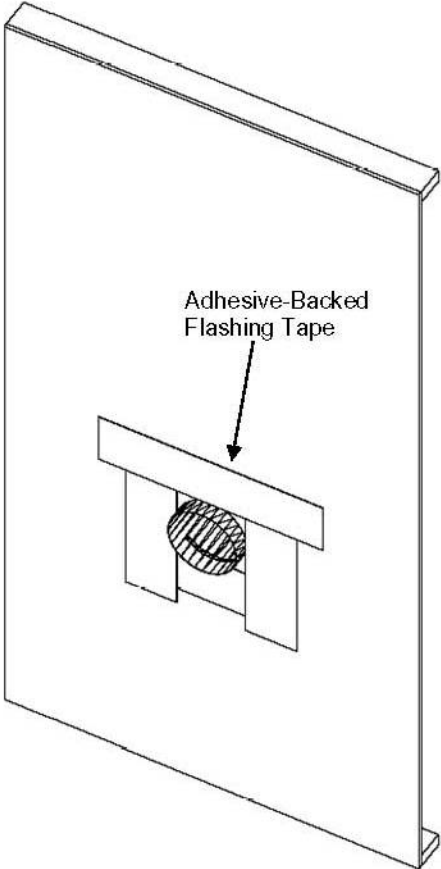


FIGURE 7—INSTALLATION AT PENETRATION OPENING (NON-FIRE-RESISTANCE RATED)



FIGURE 8—LABELING FOR THE ZIP SYSTEM SEAM TAPE ROLL

ICC-ES SAVE: Verification of Attributes Report™**VAR-1012***

Issued September 1, 2010

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(800) 933-9220
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EVALUATION SUBJECT:

**ADVANTECH® (AT-SERIES) SHEATHING SPAN;
ADVANTECH® (AT-SERIES) FLOOR SPAN; ZIP SYSTEM®
ROOF SHEATHING; ZIP SYSTEM® WALL SHEATHING**

1.0 EVALUATION SCOPE**Compliance with the following evaluation guidelines:**

- ICC-ES Evaluation Guideline for Determination of Biobased Material Content (EG102), dated October 1, 2008 (editorially revised July 2009).
- ICC-ES Evaluation Guideline for Determination of Regionally Extracted, Harvested or Manufactured Materials or Products (EG104), dated October 1, 2008
- ICC-ES Evaluation Guideline for Determination of Formaldehyde Emissions of Composite Wood and Engineered Wood Products (EG108), dated October 1, 2008 (editorially revised July 2009).
- ICC-ES Evaluation Guideline for Determination of Certified Wood and Certified Wood Content in Products (EG109), dated October 1, 2008.

Compliance eligibility with the applicable sections of the following green building rating systems, standards and codes:

- National Green Building Standard (ICC 700-2008) (see Table 2 for details)
- LEED for Homes 2008 (see Table 3 for details)
- LEED 2009 for New Construction and Major Renovations (see Table 4 for details)

- LEED 2009 for Schools New Construction and Major Renovations (see Table 5 for details)
- 2010 California Green Building Standards Code (CALGreen), Title 24, Part 11 (see Table 6 for details)
- International Green Construction Code – Public Version 2.0 (IGCC PV2.0) (see Table 7 for details)
- ANSI/GBI 01-2010 – Green Building Assessment Protocol for Commercial Buildings (see Table 8 for details)

2.0 USES

AdvanTech® (AT-Series) Sheathing Span, AdvanTech® (AT-Series) Floor Span, ZIP System® Roof Sheathing and ZIP System® Wall Sheathing are used for a variety of interior and exterior framing and sheathing applications.

3.0 DESCRIPTION

AdvanTech® (AT-Series) Sheathing Span and AdvanTech® (AT-Series) Floor Span wood structural panels are Exposure 1 oriented strand board (OSB) panels manufactured with strands from a single wood species or a combination of wood species blended with an exterior-type adhesive system to comply with U.S. Voluntary Product Standard PS-2 and the applicable ICC-ES report as indicated in Table 1.

ZIP System® Roof Sheathing and ZIP System® Wall Sheathing wood structural panels are OSB panels with laminated resin-impregnated Kraft paper facers manufactured to comply with U.S. Voluntary Product Standard PS-2 and the applicable ICC-ES reports as indicated in Table 1. The panels are installed with ZIP System® self-adhering membrane tape. The tape is outside the scope of this evaluation report.

4.0 CONDITIONS**4.1 Code Compliance:**

AdvanTech® (AT-Series) Sheathing Span, AdvanTech® (AT-Series) Floor Span, ZIP System® Roof Sheathing and ZIP System® Wall Sheathing have been evaluated for compliance with the requirements of the International Codes as listed in Table 1 of this report.

4.2 Green Rating Systems, Standards and Code Eligibility:

The information presented in Tables 2 through 8 of this report provides a matrix of areas of evaluation and corresponding limitations and/or additional project-specific requirements, and offer benefit to individuals who are assessing eligibility for credits or points.

***Revised April 2011**

The final interpretation of the specific requirements of the respective green building rating system, standard and/or code rests with the developer of that specific rating system or standard or the Authority Having Jurisdiction, as applicable.

Compliance with items noted as “Verified Attribute” is subject to any conditions noted in the tables. Decisions on compliance with those items noted as “Eligible for Points” in Tables 2 through 8 rests with the user of this report, and those items are subject to the conditions noted. The user is advised of the project-specific provisions that may be contingent upon meeting specific conditions, and the verification of those conditions is outside the scope of this report. Rating systems or standards often provide supplemental information as guidance.

5.0 BASIS OF EVALUATION

The information in this report, including the “Verified Attribute,” is based upon the following supporting documentation:

- 5.1 ICC-ES EG102 [evaluation applies to ICC 700 Section 606.1(2); CALGreen Section A5.405.2; IGCC PV2.0 Section 503.2.4; ANSI/GBI 01-2010 Section 10.1.2.2].
- 5.2 ICC-ES EG104. [evaluation applies to ICC 700 Section 608.1; LEED Homes MR 2.2(c); LEED NC MR 5; LEED Schools MR 5; CALGreen Section A5.405.1; IGCC PV2.0 Section 503.2.5; ANSI/GBI 01-2010 Section 10.1.4.1].
- 5.3 ICC-ES EG108 [evaluation applies to ICC 700 Section 901.4(6); LEED NC IEQ 4.4; LEED Schools IEQ 4.4; IGCC PV2.0 Section 806.1].

- 5.4 ICC-ES EG109 (evaluation applies to ICC 700 Section 606.2; LEED Homes MR 2.1; LEED NC MR 7; LEED Schools MR 7; CALGreen Section A5.405.2.1; ANSI/GBI 01-2010 Section 10.3.2.1).
- 5.5 Documentation establishing and documenting all major sources of primary manufacturing energy (evaluation applies to ICC 700 Section 606.3).
- 5.6 ICC-ES [ESR-1474](#) documenting that ZIP System Wall Sheathing is equivalent to a code-prescribed water-resistive barrier (evaluation applies to ICC 700 Section 602.9).
- 5.7 Refer to ICC-ES [ESR-1474](#) for evaluation of the ZIP System Wall Sheathing as an air barrier assembly (evaluation applies to ICC 700 Section 703.2.1; LEED Homes EA 3).
- 5.8 ICC-ES reports listed in Table 1 [evaluation applies to ICC 700 Section 901.4(1); IGCC Section 806.1].

6.0 IDENTIFICATION

AdvanTech® (AT-Series) Sheathing Span, AdvanTech® (AT-Series) Floor Span, ZIP System® Roof Sheathing and ZIP System® Wall Sheathing products are identified with a stamp noting the manufacturer’s name (Huber Engineered Woods LLC) and address, the product name the manufacturing location, the ICC-ES evaluation report number (if applicable), and the name or logo of the inspection or grading agency. The report subjects are also identified on the product and/or packaging with the VAR number (VAR-1012) and the ICC-ES SAVE Mark, as applicable.

TABLE 1—REFERENCE STANDARD OR EVALUATION REPORT NUMBER FOR HUBER ENGINEERED WOODS LLC PRODUCTS

PRODUCT	REPORT NUMBER/ REFERENCE STANDARD
AdvanTech® (AT-Series) Sheathing Span AdvanTech® (AT-Series) Floor Span	ESR-1785
ZIP System® Roof Sheathing	ESR-1473 ESR-2227
ZIP System® Wall Sheathing	ESR-1474 ESR-2227

TABLES 2 THROUGH 8

Section Number	Section Intent	Possible Points	Conditions of Use to Qualify	AdvanTech Sheathing	AdvanTech Flooring	ZIP System Roof Sheathing	ZIP System Wall Sheathing
TABLE 2—SUMMARY OF AREAS OF ELEGIBILITY WITH THE NATIONAL GREEN BUILDING STANDARD (ICC 700-2008)							
602.9	Water-resistive barrier	Mandatory	Install a water-resistive barrier and/or drainage plan system behind exterior veneer and/or siding				●
606.1(2)	Two types of biobased materials are used, each for more than 1 percent of the project's projected building material cost	6	To earn 6 points products must be at least 1% of the construction material cost AND another bio-based product at 1% of material cost must be used. 1 or 3 points are available for greater than 0.5%	●	●	●	●
606.2(1)	Two certified wood-based products are used for minor elements of the building, such as all walls, floors or roof	3	To earn 3 points a second certified wood product must also be used as a minor element ¹	●	●	●	●
606.2(2)	Two certified wood-based products are used for major elements of the building, such as all walls, floors or roof	4	To earn 4 points a second certified wood product must also be used as a major element ¹	●	●	●	●
606.3	Materials are used for major components of the building that are manufactured using a minimum of 33 percent of the primary manufacturing process energy derived from renewable sources, combustible waste sources, or renewable energy credits	2 each 6 max	To earn 6 points the products must be used for at least 3 major components of the building. 2 points may be earned when used for each major component.	●	●	●	●
608.1	Indigenous materials	2 each 10 max	To earn 2 points verify local products are originated, produced, grow naturally or occur naturally within 500 miles (805 km) of job site. Regional material calculations based on project location provided by Huber upon request.	○	○	○	○
703.2.1	Insulation and air sealing	3 15 max	Insulation and air sealing is installed in accordance with all the following, as applicable: (1) third-party verification performed 15 pts, no third-party verification performed 3 pts (2)				○
901.4(1)	Structural plywood used for floor, wall, and/or roof sheathing complies with DOC PS 1 and/or DOC PS 2. OSB used for floor, wall, and/or roof sheathing complies with DOC PS 2. The panels are made with moisture-resistant adhesives and the trademark indicates the adhesives are Exposure 1 or Exterior (plywood) and Exposure 1 (OSB)	Mandatory	To meet this a minimum of 85% of OSB or plywood in the building must consist of Huber products	●	●	●	●
901.4(6)	Non-emitting products, which can include structural wood framing	4	A minimum of 85% of product in the building are the identified Huber products	●	●	●	●

- = Eligible for points
- = Verified attribute
-
 = This provision does not apply to this product

Note: Footnotes are located after Table 8.

TABLES 2 THROUGH 8 (Continued)

Section Number	Section Intent	Possible Points	Conditions of Use to Qualify for Points	AdvanTech Sheathing	AdvanTech Flooring	ZIP System Roof Sheathing	ZIP System Wall Sheathing
TABLE 3—SUMMARY OF AREAS OF ELEGIBILITY WITH USGBC'S LEED FOR HOMES 2008							
EA 3	Air Infiltration	3 max	To earn 2 or 3 points meet the air leakage requirements shown in Table 17 of the standard, as applicable	○	○	○	○
MR 2.1	FSC certified tropical wood	0.5 each 8 max	To earn 0.5 point per component use FSC-certified tropical wood ²	2	2	2	2
MR 2.2(c)	Environmentally preferable products for roof, wall and floors; interior and exterior framing and sheathing	0.5 each 8 max	To earn points use products that are extracted, processed and manufactured within 500 miles (805 km) of the site for a minimum of 90% (by weight or volume of the component. Regional material calculations based on project location provided by Huber upon request.	○	○	○	○
TABLE 4—SUMMARY OF AREAS OF ELEGIBILITY WITH USGBC'S LEED 2009 FOR NEW CONSTRUCTION AND MAJOR RENOVATION							
MR 5 (MR 5.1)	Regional materials (10% of content)	1	To earn 1 point use products that are extracted, processed and manufactured within 500 miles (805 km) of the site for a minimum of 10% (by cost) of total materials value. To earn 2 points use a minimum of 20%. Regional material calculations based on project location provided by Huber upon request.	○	○	○	○
MR 5 (MR 5.2)	Regional materials (20% of content)	2		○	○	○	○
MR 7	Certified wood	1	To earn 1 point use a minimum 50% (based on cost) of wood-based materials/products certified to FSC requirements ²	2	2	2	2
IEQ 4.4	Low emitting materials	1	To earn 1 point use wood composite wood products containing no-added urea-formaldehyde resins	●	●	●	●
TABLE 5—SUMMARY OF AREAS OF ELEGIBILITY WITH USGBC'S LEED 2009 FOR SCHOOLS NEW CONSTRUCTION AND MAJOR RENOVATION							
MR 5 (MR 5.1)	Regional materials (10% of content)	1	To earn 1 point use products that are extracted, processed and manufactured within 500 miles (805 km) of the site for a minimum of 10% (by cost) of total materials value. To earn 2 points use a minimum of 20%. Regional material calculations based on project location provided by Huber upon request.	○	○	○	○
MR 5 (MR 5.2)	Regional materials (20% of content)	2		○	○	○	○
MR 7	Certified wood	1	To earn 1 point use a minimum 50% (based on cost) of wood-based materials/products certified to FSC requirements ²	2	2	2	2
IEQ 4.4	Low emitting materials	1	To earn 1 point use wood composite wood products containing no-added urea-formaldehyde resins	●	●	●	●
○	= Eligible for points						
●	= Verified attribute						
	= This provision does not apply to this product						

Note: Footnotes are located after Table 8.

TABLES 2 THROUGH 8 (Continued)

Section Number	Section Intent	Possible Points	Conditions of Use to Qualify for Points	AdvanTech Sheathing	AdvanTech Flooring	ZIP System Roof Sheathing	ZIP System Wall Sheathing
TABLE 6—SUMMARY OF AREAS OF ELEGIBILITY WITH 2010 CALIFORNIA GREEN BUILDING STANDARDS CODE							
705.1	Regional materials	N/A	Verify local products that are extracted, processed and manufactured within California or 500 miles (805 km) of the job site. Regional material calculations based on project location provided by Huber upon request.	○	○	○	○
705.2	Bio-based materials	N/A	All Huber wood products are qualified as biobased	●	●	●	●
705.2.1	Certified Wood	N/A	Under review by California Building Standards Commission ³	N/A	N/A	N/A	N/A
707.1	Water-resistant exterior wall assembly	N/A	Huber products provide a water-resistant exterior wall envelope				○
804.4.4	Composite wood product emissions	N/A	EWP products do not apply to the composite wood product definition ⁴				
TABLE 7—SUMMARY OF AREAS OF ELEGIBILITY WITH INTERNATIONAL GREEN CONSTRUCTION CODE – PUBLIC VERSION 2.0 (IGCC PV2.0)							
503.2.4(2)	Biobased products	N/A	All Huber wood products are qualified as biobased	●	●	●	●
503.2.5	Indigenous materials	N/A	To earn credits use products that are extracted, processed and manufactured within 500 miles (805 km) of the site for a minimum of 90% (by weight or volume of the component. Regional material calculations based on project location provided by Huber upon request.	○	○	○	○
606.1.2.1.1	Air barrier installation		Install the system in accordance with the manufacturer's installation instructions and ICC-ES evaluation report ESR-1474				●
806.1	Formaldehyde emissions	N/A	Huber wood structural panels comply with US DOC PS 2 (See Table 1 of this report) and meet the requirements of Table 806.1	●	●	●	●
TABLE 8—SUMMARY OF AREAS OF ELEGIBILITY WITH ANSI/GBI 01-2010 – GREEN BUILDING ASSESSMENT PROTOCOL FOR COMMERCIAL BUILDINGS							
10.1.2.2	Biobased Products - building assemblies	7 max	All Huber wood products are qualified as biobased	●	●	●	●
10.1.4.1	Regional Materials - building assemblies	5 max	To earn credits use products that are extracted, processed and manufactured within 500 miles (805 km) of the site for a minimum of 90% (by weight or volume of the component. Regional material calculations based on project location provided by Huber upon request.	○	○	○	○
10.3.2.1	Certified wood	6	Between 10% and 60% or more of wood-based products used in the building are third party certified	●	●	●	●
○	= Eligible for points						
●	= Verified attribute						
	= This provision does not apply to this product						

¹Certification is required of the manufacturer only. Vendor Chain of Custody is not required to qualify for this point.

²Forest certification credit currently resources FSC exclusively. Credit of other certification schemes may be at the discretion of the verifier.

³CGBSC recognizes importance of use of certified forest products however the specific requirements are currently under development.

⁴This area is not to be confused with the provisions of EQ 4.4 in LEED (Table 4) because the California Air Resources Board (CARB) does not regulate engineered wood product emissions.

N/A = Not applicable