

<p align="center">U. S. DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT Housing - Federal Housing Commissioner</p> <p>TO: DIRECTORS, SINGLE FAMILY HOCs DIRECTORS, MULTIFAMILY HUBs</p>	<p>STRUCTURAL ENGINEERING BULLETIN NO. 1104 Rev. 7 Supersedes issue dated August 14, 2018)</p>							
	<p>ISSUE DATE December 2, 2021</p>							
	<p>REVIEW DATE December 2, 2024</p>							
<p>SUBJECT:</p> <table border="0"> <tr> <td style="width: 10%;">1. Item Description</td> <td colspan="2">R-Control® Structural Insulated Panels (SIPs)</td> </tr> <tr> <td>2. Name and address of Manufacturer</td> <td>Big Sky Insulations, Inc. 15 Arden Drive Belgrade, MT 59714</td> <td>ThermaFoam R-Control, LLC 203 South Redmond Road Jacksonville, AR 72076</td> </tr> </table>			1. Item Description	R-Control® Structural Insulated Panels (SIPs)		2. Name and address of Manufacturer	Big Sky Insulations, Inc. 15 Arden Drive Belgrade, MT 59714	ThermaFoam R-Control, LLC 203 South Redmond Road Jacksonville, AR 72076
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This Structural Engineering Bulletin (SEB) should be filed with other SEBs and related Bulletins on materials or products as required by prescribed procedures.

The technical description, requirements and limitations expressed herein do not constitute an endorsement or approval by the Department of Housing and Urban Development (HUD) of the subject matter, and any statement or representation, however made, indicating approval or endorsement by HUD is unauthorized and false, and will be considered a violation of the United States Criminal Code, 18 U.S.C. 709.

NOTICE: THIS BULLETIN APPLIES TO DWELLING UNITS BUILT UNDER HUD HOUSING PROGRAMS. NON-HUD-INSURED UNITS MAY OR MAY NOT BE IN CONFORMINTY WITH THE REQUIREMENTS OF THE HUD MINIMUM PROPERTY STANDARDS.

Any reproduction of this Bulletin must be in its entirety and any use of all or any part of this Bulletin in sales promotion or advertising is prohibited.

1. General:

This Bulletin sets forth specific requirements under the Technical Suitability of Products program for determining the eligibility of housing to be constructed under HUD mortgage insurance, or other HUD housing programs.

2. Scope:

This bulletin applies only to the structural features of this method of construction. Final determination of eligibility is made by the appropriate HUD Field Office or Homeownership Center. Other factors considered by the Field Office or Homeownership Center will be valuation, location, architectural planning and appeal, mechanical equipment, thermal characteristics, and market acceptance. Consideration is also necessary to determine whether a specific property will qualify under the specific HUD program, when constructed according to the method outlined in this bulletin, and where the structure is to be located.

In geographical areas subject to hurricanes, earthquakes, or other severe conditions affecting dwelling structures, the HUD Field Office or Homeownership Center shall require additional safeguards in proposed designs, when necessary.

3. Minimum Property Standards:

Compliance with HUD Minimum Property Standards (MPS) will be determined by the HUD Field Office or Homeownership Center on the same basis as submissions involving conventional construction, except for the special features described in this Bulletin.

4. Inspection:

Field compliance inspections covering conventional items of construction and any special features covered in this Bulletin shall be made in accordance with prescribed procedures.

The appropriate HUD Field Office or Homeownership Center shall furnish a copy of a HUD field inspection report to headquarters, Office of Manufactured Housing Programs, when there is:

- a. Evidence of noncompliance with portions of the system of construction described in this bulletin.
- b. Faulty shop fabricated, including significant surface defects.
- c. Damage to shop fabricated items or materials due to improper transportation, storage, handling, or assembly.
- d. Unsatisfactory field workmanship or performance of the product or system.
- e. Any significant degradation or deterioration of the product or evidence of lack of durability or performance.

Periodic plant inspections may be made by HUD designated representatives in accordance with their prescribed procedures. Factory inspection reports shall be submitted to HUD Headquarters, upon request.

5. Certification:

The manufacturer named in this bulletin shall furnish the builder with a written certification stating that the product has been manufactured in compliance with the HUD MPS, except as modified by this bulletin. The builder shall endorse the certification with a statement that the product has been erected in compliance with HUD MPS except as modified by this bulletin, and that the manufacturer's certification does not relieve the builder, in any way, of the responsibility under the terms of the Builder's Warranty required by the National Housing Act, or under any provisions applicable to any other housing program. This certification shall be furnished to the HUD Field Office or Homeownership Center upon completion of the property.

OUTLINE DESCRIPTION, CATEGORY II CONSTRUCTION: GENERAL:

Structural Insulated Panels (SIPs) are used as load-bearing wall, floor, and roof panels for one-, two-, and three-story dwellings. SIPs are factory-laminated sandwich panels consisting of oriented strand board (OSB) facings with a molded expanded polystyrene (EPS) foam core.

Conventional construction may include various types of interior and exterior finish materials. All materials and methods of installation shall be in accordance with the manufacturers published installation instructions, HUD MPS, Use of Materials Bulletin (UM), and Materials Releases (MR), except as may be specifically noted herein. Plumbing, heating, and electrical systems are shop-installed and field-connected.

This Bulletin is based on a structural review of R-Control SIPs for one-, two-, and three-story dwellings. Foundation design and nonstructural items (such as architectural, plumbing, heating, and electrical features) are not covered by this Bulletin.

SPECIFICATIONS:

Form HUD-92005, "Description of Materials" specifying only the structurally related items (Nos. 1 to 12, 14, 26 and 27), as originally submitted for determination of technical suitability, describes the materials that shall be used in construction of housing units under this system of construction.

DRAWINGS:

The R-Control SIP Construction Manual, available at www.bigskyrcontrol.com dated January 2015 or at www.thermafoamrcontrol.com dated June 2020, provides construction details that shall be considered an integral part of this Bulletin. The manual is to be furnished with each project.

The Builder shall submit construction drawings to the HUD Field Office or Homeownership Center with each application under HUD housing programs, which shall include the same or similar structural features to the R-Control SIP Construction Manual. Copies of these listed drawings shall also be furnished to the HUD Field Office or Homeownership Center by the Builder upon request.

SPECIAL CONSTRUCTION FEATURES:

General: The R-Control SIPs vary in width from 4' to 8' and in length from 8' to 24'. Panel thicknesses range from 4 ½" through 12 ¼". The OSB facing thickness is 7/16" nominal. SIPs can be used individually or may be connected to form larger sections and assemblies.

Facings, Foam Core and Adhesive: SIPs consist of facing material that is nominally 7/16" thick OSB, Exposure 1 rated sheathing with a span index of 24/16. The OSB facings must bear a stamp indicating compliance with U.S. DOC PS2 (Performance Standard for Wood-Based Structural-Use Panels) and meet the requirements of the R-Control SIP Quality Control Manual. The molded expanded polystyrene core is in accordance with ASTM C 578 Type I and UL certified. Facings are bonded to the foam cores with a structural adhesive meeting ICC-ES AC04 as listed in the R-Control SIP Quality Control Manual.

Field Assembly: Each structure built using R-Control SIPs shall be designed by a registered design professional. Drawings shall be provided that bear the design professional's registered stamp or seal who is licensed in the project location. Such drawings shall contain specific instructions with regard to connections, erection, and installation of the panels, and shall be available at all times during installation.

The R-Control SIPs are connected to each other at the panel edges through the use of splines. The splines are installed with Do-All-Ply sealant and fastened with 8d box nails per R-Control SIP Construction Manual.

The top and bottom plates of the panel are dimensional wood plates sized to match the core thickness and installed with Do-All-Ply sealant and fastened with 8d box nails per R-Control SIP Construction Manual.

DESIGN AND CONSTRUCTION REQUIREMENTS:

Allowable Structural Loads for Panels: Allowable axial, transverse, racking, header, and diaphragm loads are noted in ICC ESR-4780 (Issued February 2021) and ICC ESR-4782 (Issued March 2021). For loads greater than those specified in ICC ESR-4780 and ICC ESR-4782, the specific condition shall be framed by other methods to meet applicable code requirements.

Fire Protection and Interior Finish:

The polystyrene foam core has a flame spread rating of not more than 25, and a smoke development rating of not more than 450 when tested in accordance with ASTM E-84. SIPs shall be covered on the interior of the building by an approved thermal barrier in accordance with the applicable building code.

Exterior Finish:

The exterior of the wall panels shall be covered with an exterior wall covering in compliance with the Minimum Property Standards and in accordance with the applicable code.

MANUFACTURING PLANTS:

Structural Insulated Panels used as load-bearing wall, floor, and roof panels covered under this Bulletin will be produced in the following plants:

Big Sky Insulations, Inc.
15 Arden Drive
Belgrade, MT 59714

ThermaFoam Arkansas, LLC
203 South Redmond Road
Jacksonville, AR 72076

Branch River Foam Plastics, Inc.
15 Thurber Boulevard
Smithfield, RI 02917

The contact person for all matters concerning this bulletin shall be:

Bryan Walsh General Manager
Phone: 501-945-1114
Email: bwalsh@thermafoamrcontrol.com

The appropriate HUD Field Offices or Homeownership Centers in whose jurisdiction the manufacturing plants are located, or HUD designated representative may inspect respective these plants in accordance with prescribed procedures.

QUALITY CONTROL:

The appropriate HUD Field Offices or Homeownership Centers in whose jurisdiction the manufacturing plants are located, shall review and approve plant fabrication procedures and quality control program, to ensure compliance with approved plans and specifications. The quality control program shall include supervision by Big Sky Insulation, Inc. and ThermaFoam R-Control, LLC or their representative.

RECORD OF PROPERTIES:

When requested, provide the Office of Manufactured Housing Programs, HUD Headquarters, with a representative list of properties in which the material, product or system has been used, including complete addresses or descriptions of locations and dates of installation.

NOTICE OF CHANGES:

The manufacturer shall inform HUD in advance of changes in production facilities, transportation, field erection procedures, design, or of materials used in this product. Further, the manufacturer must inform HUD of any revision to corporate structure, change of address, or change in name or affiliation of the prime manufacturer. Failure of the manufacturer to notify HUD of any of the above changes may result in cancellation of this Bulletin.

EVALUATION:

This SEB shall be valid for a period of three years from the date of initial issuance or most recent renewal or revision, whichever is later. The holder of this bulletin shall apply for a renewal or revision 90 days prior to the Review Date printed on this SEB. Submittals for renewal or revision shall be sent to:

U.S. Department of Housing and Urban Development
Office of Manufactured Housing Programs
451 7th Street, SW, Room 9170
Washington, DC 20410-8000

Appropriate User Fee(s) for the TSP program can be submitted through the Pay.gov website at <https://pay.gov/public/form/start/73881741>.

The holder of this Bulletin may apply for revision at any time prior to the Review Date. Minor revisions may be in the form of a supplement.

If HUD determines that a proposed renewal or supplement constitutes a revision, the appropriate User Fee for a revision will need to be submitted in accordance with 24 Code of Federal Regulations § 200.934, User Fee System for the Technical Suitability of Products program, and current User Fee Schedule.

CANCELLATION:

Failure to apply for a renewal or revision shall constitute a basis for cancellation of this Bulletin. HUD will notify the manufacturer that this Bulletin may be canceled when:

1. conditions under which the document was issued have changed so as to affect production of, or to compromise the integrity of the accepted material, product, or system,
2. the manufacturer has changed its organizational form without notifying HUD, or
3. the manufacturer has not complied with responsibilities it assumed as a condition of HUD's acceptance.

However, before cancellation, HUD will give the manufacturer a written notice of the specific reasons for cancellation, and the opportunity to present views on why the bulletin should not be canceled. No refund of fees will be made on a canceled document.

This Structural Engineering Bulletin is issued solely for the captioned firm and is non-transferable.
