

<p style="text-align: center;">DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT Housing—Federal Housing Commissioner</p> <p>TO: DIRECTORS, HOUSING DEVELOPMENT DIVISION</p>	<p>STRUCTURAL ENGINEERING BULLETIN NO. 1105 Rev. 2 (Supersedes issue dated February 11, 1992)</p>
	<p>ISSUE DATE June 28, 1995</p>
	<p>REVIEW DATE June 28, 1998</p>
<p>SUBJECT: 1. Item Description Post and Beam, and Foam Core Sandwich Panels</p> <p>2. Name and Address of Manufacturer Fischer Sips, Inc. 1843 Northwestern Parkway Louisville, KY 40203</p>	

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 CONFORMITY 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. Other factors considered by the Field Office 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 shall require additional safeguards in proposed designs, when necessary.

3. Minimum Property Standards (MPS):

Compliance with HUD MPS will be determined by the HUD Field Office 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 shall furnish a copy of a HUD field inspection report to Headquarters, Manufactured Housing and Construction Standards Division, Office of Manufactured Housing and Regulatory Functions, when there is:

- a. Evidence of noncompliance with any portion of the system of construction described in this Bulletin.
- b. Faulty shop fabrication, 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 will be made by HUD Field Office or State Agency personnel 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 Minimum Property Standards (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 upon completion of the property.

### OUTLINE DESCRIPTION, CATEGORY II CONSTRUCTION

#### GENERAL:

Post and beam and shop fabricated foam core sandwich, roof, exterior wall, and floor panels for one- and two-story dwellings are furnished in this method of construction. Panels consist of oriented strand board (OSB), plywood or drywall skins and polystyrene foam cores. Panels are transported to the building site where they are assembled together with post and beam conventional construction.

Panels are basically of wood framing which may include various types of interior and exterior finish materials. All materials and methods of installation shall be in accordance with HUD Minimum Property Standards (MPS), Use of Materials Bulletins (UM), and Materials Releases (MR), except as may be specifically noted herein. Plumbing, heating and electrical systems are field installed.

This Bulletin is based on a structural review of the Covenant Model and panels for other one- and two-story dwellings of Fischer Sips, Inc. (the manufacturer), may be considered applicable to all structurally similar units of this company. 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 submitted for review for technical suitability determination, describes the materials that shall be used in construction of housing units under this system of construction. Form HUD-92005, furnished with each application for use under HUD housing programs, shall include as a minimum the same structural materials.

DRAWINGS:

The following drawings by Fischer Sips, Inc., shall be considered an integral part of this Bulletin:

<u>Drawing No.</u>	<u>Date</u>	<u>Description</u>
A	8/26/88 Revised	Framing Sections & Details
B	8/26/88 Revised	Framing Sections & Details
1	1/2/88	Plans & Elevations
2	1/2/88	Section
3	5/13/88	Panel Layout and Details

The Builder shall submit construction drawings to the HUD Field Office with each application under HUD housing programs, which shall include the same or similar structural features as shown on the drawings listed above. Copies of these listed drawings shall also be furnished to the HUD Field Office by the Builder upon request.

SPECIAL CONSTRUCTION FEATURES:

Sandwich panels, nominal 4", 6" and 8" thick, and 4'x8', 4'x9', 4'x12' and 4'x16' in size are shop manufactured from oriented strand board (OSB), plywood or drywall skins glued to foam cores. OSB shall conform to PS 2-92 (Performance Standard for Wood-Based Structural - Use Panels). Plywood shall be APA or TECO T1-11 fir, cedar or pine. Foam cores shall be nominal 1.0 pcf density expanded polystyrene made from BASF or ARCO beads meeting ASTM C-578-85. Skins shall be bonded to the foam cores with Ashland Chemical Isoaset or Morad 336 or 366.

4' x 8' Exterior Wall Panels (non-loadbearing) w/interior drywall skins):

5/8" T1-11 fir, cedar or pine, or equivalent, or 3/8" or 7/16" OSB (Structurewood)--exterior, 3 5/8" EPS--core, 1/2" Drywall or 3/8" or 7/16" Structurewood--interior. Wall panels contain a double 2 x 4 @ 4'-0" on center.

If 3/8" or 7/16" Structurewood is used as an interior surface, 1/2" drywall will be field applied to it.

4'x8' or 4'x9' Roof or Floor Panels (Max. Floor Clear Span 8 feet):

3/8" or 7/16" Structurewood--top skin,  
5 5/8" or 7 3/8" EPS--core,  
1/2" Structurewood or 5/8" T1-11 fir or cedar--bottom skin.  
Roof or Floor panels contain 2 x 6 splines @ 8'-0" on center.

If span is across 4' dimension, T1-11 will be cut in half. If span is along 8' or 9' dimension, full T1-11 sheet is used.

4'x12' or 4'x16' Roof or Floor Panels (Max. Floor Clear Span 8 feet):

3/8" or 7/16" Structurewood--top skin

5 5/8" or 7 3/8" EPS--core

1/2" Structurewood-bottom skin

Panels shall be field connected to wood plates, posts, splines and headers w/6d nails @ 6" o.c.

DESIGN AND CONSTRUCTION REQUIREMENTS:

Design Loads: The method described in this Bulletin is based on design loads of 20 psf for snow, Seismic Zone 2 and a Basic Wind Speed of 100 mph and Exposure C (ASCE 7-88) for the Covenant Model. For other models and load variation see Allowable Superimposed Load Tables of June 29, 1988 by Lockett & Associates, Architects and Engineers. The Manufacturer shall submit structural calculations to the local HUD Field Office if housing units are to be located in geographical areas where these conditions are exceeded.

FIRE PROTECTION:

The polystyrene foam core shall have a flame spread rating of not more than 75, and a smoke development rating of not more than 450 when tested in accordance with ASTM E-84. All interior wall surfaces are covered with 1/2" thick gypsum wallboard or equivalent material with a 15 minute finish (fire) rating. Floor finish used over foam core shall be a minimum of 5/8" (5/16" + 5/16") OSB or plywood. All interior roof or ceiling panel skins shall be 1/2" plywood or OSB (Structurewood) minimum or have 1/2" drywall applied to them.

Framing of Loadbearing Walls: Wood-to-wood connections shall be provided between bearing walls and roof/ceiling or floor construction. Floor covering, including carpeting and vinyl tile, shall not be continued under loadbearing walls.

Roof Construction: Trussed rafters shall be designed and constructed in accordance with Truss Plate Institute, "Design Specification for Metal Plate Connected Wood Trusses", and the appropriate HUD Truss Connector Bulletin.

MANUFACTURING PLANT:

Housing units covered under this Bulletin will be produced in the following plant:

Fischer Sips, Inc.  
1843 Northwestern Parkway  
Louisville, KY 40203  
Telephone: (502) 778-5577

The Louisville HUD Office will inspect this plant in accordance with prescribed procedures.

QUALITY CONTROL:

The appropriate HUD Field Office in whose jurisdiction the manufacturing plant is located shall review and approve plant fabrication procedures and quality control program, and shall report to Headquarters in accordance with outstanding instructions. The quality control program shall include field erection or supervision by Fischer Sips, Inc.

RECORD OF PROPERTIES:

The manufacturer shall provide a list of the first ten properties in which the component or system described in this Bulletin is used. The list shall include the complete address, or description of location, and approximate date of installation or erection. Failure of the manufacturer to provide HUD with the above information may result in cancellation of this Bulletin.

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, HUD must be informed 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 SEB 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 HUD Headquarters. Appropriate User Fees shall be sent to:

U. S. Department of Housing and Urban Development  
Technical Suitability of Products Fees  
P. O. Box 954199  
St. Louis, MO 63195-4199

The holder of this SEB may apply for revision at any time prior to the Review Date. Amendments or minor revisions may be in the form of a supplement.

If the Department 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 Code of Federal Regulations 24 CFR 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 the SEB. HUD will notify the manufacturer that the SEB 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 SEB should not be canceled. No refund of fees will be made on a canceled document.

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