DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT Housing - Federal Housing Commissioner	STRUCTURAL ENGINEERING BULLETIN NO. 1072 Rev. 7 (Supersedes issue dated December 7, 2017)
TO: DIRECTORS, SINGLE FAMILY HOCs DIRECTORS, MULTIFAMILY HUBs	ISSUE DATE April 25, 2024
	REVIEW DATE April 25, 2027

SUBJECT: **1. Item Description** THERMASTEEL™ ADVANCED PANEL SYSTEMS (Light Gauge Galvanized Steel Members, Foam Core, Wall, and Roof Panels)

2. Name and address of Manufacturer THERMASTEEL, Inc.
609 West Rock Road
Radford, VA 24141

This Structural Engineering Bulletin (SEB) should be filed with other SEBs and related Bulletins on materials or products as required by prescribed procedures.

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, 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 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:

Shop fabricated foam core with light gauge galvanized steel, load bearing wall, and roof panels for multi-story dwellings are furnished in this method of construction.

Panels are transported to the building site where they are assembled with conventional construction and may include various types of interior and exterior finish materials. All materials and methods of installation shall be in accordance with the approved installation instructions, HUD Minimum Property Standards (MPS), Use of Materials Bulletin (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 two structural reviews but may be considered applicable to all structurally similar units of this company. The Messier Residence (Job Number 21-196R) is a one-story structure with a 28’ x 46’ footprint and the Townsend Lakehouse (Job Number 21-451R) is a split-level structure with an approximate overall footprint of 50’ x 80’. 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 technical suitability determination, describes the materials that shall be used in the 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 shall be considered an integral part of this Bulletin:

Drawing No.	Date	Description
One-Story Resident (Messier Residence)		
FP-1	9/2/21	Floor Plan (Perimeter walls)
RP-2	9/2/21	Roof Plan
EV-1	9/2/21	Front Elevation
EV-2	9/2/21	Right Side Elevation
EV-3	9/2/21	Rear Elevation
EV-4	9/2/21	Left Side Elevation
CD-1	1/1/17 Revised	Typical Wall Panel Connection Details
CD-2	9/2/21	Suggested Roof Panel Connection Detail
CD-3	9/2/21	Suggested Roof Panel Connection Detail
CD-4	9/2/21	Suggested Roof Panel Connection Detail
1	9/2/21	Wall A Elevation
2	9/2/21	Wall B Elevation
3	9/2/21	Wall C Elevation
4	9/2/21	Wall D Elevation
5	9/2/21	Roof Panel Layout
Split-Level Structure (Townsend Lakehouse)		
FP-1	1/13/22	Floor Plan (1st Level)
FP-2	1/13/22	Floor Plan (2nd Level)
RP-1	1/13/22	Roof Plan (2nd Level)
RP-2	1/13/22	Roof Plan (1st Level)
RP-3	1/13/22	Roof Plan (1st Level)
EV-1	1/13/22	Front Elevation
EV-2	1/13/22	Right Side Elevation
EV-3	1/13/22	Rear Elevation
EV-4	1/13/22	Left Side Elevation
CD-1	1/13/22	Typical Wall Panel Connection Details
CD-2	1/13/22	Suggested Wall Panel Connection Detail
CD-3	1/13/22	Suggested Roof to Wall Panel Connection Detail
CD-4	1/13/22	Suggested Roof to Wall Panel Connection Detail
1	1/13/22	Walls A – C Elevations
2	1/13/22	Walls D – H Elevations
3	1/13/22	Walls J – L Elevations

4	1/13/22	Wall M Elevation
5	1/13/22	Walls 2A and 2B Elevations
6	1/13/22	Walls 2C and 2D Elevations
7	1/13/22	Wall 1 Elevation
8	1/13/22	Roofs 1 and 2
9	1/13/22	Roofs 3 – 5

The Builder shall submit construction drawings to the HUD Homeownership Center 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 Homeownership Center by the Builder upon request.

SPECIAL CONSTRUCTION FEATURES:

Wall and Roof Panels: Panels consist of an expanded polystyrene foam (with minimum densities of 0.9 pcf for 5½" and 7½" panels; and 1.25 pcf for 3½" panels) with embedded vertical steel members on the interior and exterior faces of the core, are combined in a low-pressure molding process into a load bearing panel. Horizontal steel shiplap strips on both sides, at the top and bottom of the panels are shop fastened onto the vertical members. Sizes and details of the roof, standard wall panels, corner, door and window panels, headers, and interior partition panels are as shown on the reference drawings.

Connector plates shall be at least 24 ga., or more than 37,000 psi minimum yield, Grade 37 in accordance with ASTM A486 Grade B. Protective coating shall be G-60 (galvanized) conforming to ASTM A 924. The steel strips are bent to shape embedded or fastened to the panel during the manufacturing process. Sizes and locations of channels are shown on reference drawings. Horizontal strips may be added for securing accessories, fixtures, etc.

The expanded polystyrene foam core shall be manufactured in accordance ASTM C578.

Wall panels are connected in the field by fastening together overlapping steel strips with No. 8 x 1/2" self-tapping metal screws. The panels are connected to a 24-gauge galvanized steel cap and bottom tracks.

Roof panels are connected to truss systems by 9" light gauge self-drilling screws that go to the metal channels of the roof panel.

DESIGN AND CONSTRUCTION REQUIREMENTS:

Design Loads: The construction for the structures described in this Bulletin must be designed in accordance to the following load tables. The tables were developed based on calculations to resist yielding, local buckling, and lateral buckling in accordance with the 2007 through S100-16/S1-18 2016 North American for the Design of Cold-Formed Steel Structural Members (AISI), 2009, 2012, 2015, and 2018 International Building Code (IBC), 2009, 2012, 2015, and 2018 International Residential Code, ASCE 7-16 and ASCE 7-10 and verified with ASTM E72 test data.

The panels are to be identified by a label that notes the manufacturer's name, product name, International Association of Plumbing and Mechanical Officials (IAPMO) Uniform Evaluation Services' (UES) Mark of Conformity, the Uniform Evaluation Report number (ER-128) and Thermasteel Load Tables.

Load Table 1 for 3.5" Thick Panels with Stiffeners (350T75-Mils) at 16" o.c.; No Gypsum or Siding

		Axial Distributed loads (plf)		1.5 pcf (EPS): Transverse Loads (psf)				
		Strength	Service	Strength	Service loads			
Gauge	L(ft)	LRFD: (φp_n)	ASD (p_a)	LRFD: (φw_n)	ASD (w_a)	L/180	L/240	L/360
24	8	2,432	1,520	56	35	47	35	24
24	9	2,432	1,520	45	28	45	34	23
24	10	2,432	1,520	36	23	34	25	17
24	12	2,432	1,520	25	16	20	15	10
20	8	4,612	2,882	56	35	89	67	44
20	9	4,612	2,882	50	31	66	49	33
20	10	4,612	2,882	45	28	50	37	25
20	12	4,612	2,882	36	22	30	23	15
18	8	9,729	6,081	56	35	107	80	54
18	9	9,729	6,081	50	31	80	49	33
18	10	9,729	6,081	45	28	61	46	30
18	12	8,630	5,394	37	23	37	28	19
16	8	13,568	8,480	56	35	125	93	62
16	9	12,907	8,067	50	31	94	70	47
16	10	12,207	7,629	45	28	72	54	36
16	12	10,727	6,704	37	23	45	34	22

*Length (L) represents the panel height.

Load Table 2 for 3.5" Thick Panels with Stiffeners (350T75-Mils) at 24" o.c.; No Gypsum or Siding

		Axial Distributed loads (plf)		1.5 pcf (EPS): Transverse Loads (psf)				
		Strength	Service	Strength	Service loads			
Gauge	Ht (ft)	LRFD:(φ p_n)	ASD (p_a)	LRFD: (φ w_n)	ASD (w_a)	L/180	L/240	L/360
24	8	1,841	1,151	43	27	44	33	22
24	9	1,841	1,151	34	21	31	24	16
24	10	1,841	1,151	27	17	23	17	12
24	12	1,841	1,151	19	12	14	10	7
20	8	3,459	2,162	56	35	64	48	32
20	9	3,459	2,162	48	30	47	35	23
20	10	3,459	2,162	39	24	35	26	17
20	12	3,459	2,162	27	17	21	16	10
18	8	7,297	4,560	56	35	79	59	39
18	9	7,297	4,560	50	31	58	35	23
18	10	7,297	4,560	45	28	43	33	22
18	12	6,472	4,045	35	22	26	20	13
16	8	10,176	6,360	56	35	93	70	46
16	9	9,680	6,050	50	31	69	51	34
16	10	9,155	5,722	45	28	52	39	26
16	12	8,045	5,028	37	23	32	24	16

*Length (L) represents the panel height.

Load Table 3 for 5.5" Thick Panels with Stiffeners (350T75-Mils) at 16" o.c.; No Gypsum or Siding

		Axial Distributed loads (plf)		1 pcf (EPS): Transverse Loads (psf)				
		Strength	Service	Strength	Service loads			
Gauge	L(ft)	LRFD: (φ p_n)	ASD (p_a)	LRFD: (φ w_n)	ASD (w_a)	L/180	L/240	L/360
24	8	2,821	1,763	88	55	80	60	40
24	9	2,821	1,763	74	46	64	48	32
24	10	2,821	1,763	60	38	52	39	26
24	12	2,821	1,763	42	26	35	26	17
20	8	5,000	3,125	88	55	94	70	47
20	9	5,000	3,125	78	49	77	58	39
20	10	5,000	3,125	70	44	64	48	32
20	12	5,000	3,125	59	37	45	34	22
18	8	9,977	6,236	88	55	101	76	51
18	9	9,977	6,236	78	49	84	58	39
18	10	9,977	6,236	70	44	71	53	35
18	12	9,938	6,211	59	37	51	38	25
16	8	13,583	8,489	88	55	107	80	53
16	9	13,324	8,327	78	49	90	67	45
16	10	13,040	8,150	70	44	76	57	38
16	12	12,406	7,754	59	37	56	42	28

*Length (L) represents the panel height.

Load Table 4 for 5.5" Thick Panels with Stiffeners (350T75-Mils) at 24" o.c.; No Gypsum or Siding

		Axial Distributed loads (plf)		1 pcf (EPS): Transverse Loads (psf)				
		Strength	Service	Strength	Service loads			
Gauge	L(ft)	LRFD: (φp_n)	ASD (p_a)	LRFD: (φw_n)	ASD (w_a)	L/180	L/240	L/360
24	8	2,116	1,322	63	39	66	50	33
24	9	2,116	1,322	49	31	52	39	26
24	10	2,116	1,322	40	25	41	31	20
24	12	2,116	1,322	28	17	27	20	13
20	8	3,750	2,344	88	55	81	61	41
20	9	3,750	2,344	78	49	65	49	33
20	10	3,750	2,344	70	44	53	40	26
20	12	3,750	2,344	59	37	36	27	18
18	8	7,483	4,677	88	55	90	67	45
18	9	7,483	4,677	78	49	73	49	33
18	10	7,483	4,677	70	44	60	45	30
18	12	7,453	4,658	59	37	42	31	21
16	8	10,187	6,367	88	55	96	72	48
16	9	9,993	6,246	78	49	79	59	40
16	10	9,780	6,113	70	44	66	49	33
16	12	9,305	5,816	59	37	47	35	23

*Length (L) represents the panel height.

Load Table 5 for 7.5" Thick Panels with Stiffeners (350T75-Mils) at 16" o.c.; No Gypsum or Siding

		Axial Distributed loads (plf)		1 pcf (EPS): Transverse Loads (psf)				
		Strength	Service	Strength	Service Loads			
Gauge	L(ft)	LRFD: (φp_n)	ASD (p_a)	LRFD: (φw_n)	ASD (w_a)	L/180	L/240	L/360
24	8	3,311	2,069	115	72	65	49	33
24	9	3,311	2,069	91	57	56	42	28
24	10	3,311	2,069	74	46	48	36	24
24	12	3,311	2,069	51	32	36	27	18
20	8	6,205	3,878	120	75	70	52	35
20	9	6,205	3,878	107	67	60	45	30
20	10	6,205	3,878	96	60	52	39	26
20	12	6,205	3,878	80	50	40	30	20
18	8	11,233	7,020	120	75	72	54	36
18	9	11,143	6,965	107	67	62	45	30
18	10	11,019	6,887	96	60	55	41	27
18	12	10,735	6,709	80	50	43	32	21
16	8	14,059	8,787	120	75	73	55	37
16	9	13,917	8,698	107	67	64	48	32
16	10	13,761	8,601	96	60	56	42	28
16	12	13,405	8,378	80	50	44	33	22

*Length (L) represents the panel height.

Load Table 6 for 7.5" Thick Panels with Stiffeners (350T75-Mils) at 24" o.c.; No Gypsum or Siding

		Axial Distributed loads (plf)		1 pcf (EPS): Transverse Loads (psf)				
		Strength	Service	Strength	Stress	Service Deflection		
Gauge	L(ft)	LRFD: (φp_n)	ASD (p_a)	LRFD: (φw_n)	ASD (w_a)	L/180	L/240	L/360
24	8	2,483	1,552	77	48	60	45	30
24	9	2,483	1,552	61	38	50	38	25
24	10	2,483	1,552	49	31	42	32	21
24	12	2,483	1,552	34	21	31	23	15
20	8	4,654	2,909	120	75	66	49	33
20	9	4,654	2,909	107	67	56	42	28
20	10	4,654	2,909	96	60	48	36	24
20	12	4,654	2,909	80	50	36	27	18
18	8	8,424	5,265	120	75	69	51	34
18	9	8,358	5,223	107	67	59	42	28
18	10	8,264	5,165	96	60	51	38	25
18	12	8,051	5,032	80	50	39	29	19
16	8	10,544	6,590	120	75	71	53	35
16	9	10,438	6,524	107	67	61	46	30
16	10	10,321	6,450	96	60	53	40	27
16	12	10,054	6,284	80	50	41	31	21

*Length (L) represents the panel height.

FIRE PROTECTION:

The polystyrene foam core shall have 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. All interior surfaces are covered with an approved interior wall covering in accordance with the IBC and IRC.

NOTE: Caution shall be exercised in the use of foam plastics. If foam plastics are allowed to remain exposed or unprotected, they may, under some circumstances produce rapid flame spread, quick flashover, intense heat, dense smoke, toxic, and flammable gases and may present a serious fire hazard. The manufacturer of the foam plastic, an approved and accredited certification agency, or other nationally recognized certification program accepted by IAPMO Uniform Evaluation Services shall be consulted for instructions to minimize the risk in the use of these products in manufacture and in construction.

Roof Construction: Trussed rafters shall be designed and constructed in accordance with ANSI/TPI 1-1995 Standard (American National Standards Institute and Truss Plate Institute), "National Design Standard for Metal Plate Connected Wood Truss Construction."

MANUFACTURING PLANT:

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

ThermaSteel, Inc.
609 West Rock Road
Radford, VA 24141
(540) 633-5000

The appropriate HUD Field Office or Homeownership Center in whose jurisdiction the manufacturing plant is located, or HUD designated representative will inspect this (these) plant(s) in accordance with prescribed procedures.

QUALITY CONTROL:

The appropriate HUD Field Office or Homeownership Center in whose jurisdiction the manufacturing plant is located, or the State Agency (in Category III States) shall review and approve plant fabrication procedures and quality control program, to ensure compliance with approved plans and specifications. In addition, the manufacturing process and the quality control program shall be periodically reviewed by a third-party inspection agency. The quality control program shall include field erection or supervision by ThermaSteel, 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 the 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 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 SEB shall apply for a renewal or revision 90 days prior to the Review Date printed on this SEB. Submittals for renewal or revisions must be sent electronically to HSGmps@hud.gov.

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 SEB may apply for revision at any time prior to the Review Date. Minor revision may be in the form of a supplement to the SEB.

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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This Structural Engineering Bulletin is issued solely for the captioned firm and is not transferable to any person or successor entity.

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WE CONCUR IN THE WORDING OF THIS PROPOSED STRUCTURAL ENGINEERING BULLETIN

Manufacturer's representative Name: _____
Manufacturer's representative Signature: _____
Date: _____
Third party certification representative's Name: _____
Third party certification representative's Signature: _____
Date: _____