CSI 07 41 13
PRODUCT: Roof Panels
DIVISION: Thermal and Moisture Protection
SECTION: Metal Roof Panels

ACCREDITED

Report Holder
Urban Industries, Inc.
PO Box 27
Galion, OH 44833

Manufacturing Locations

Urban Industries, Inc. (NTA Plant #743)
521 S. Market St.
Galion, OH 44833

1. SUBJECT

1.1 ***Snaplock Panels*****, 8-ft to 18-ft long, 3-in. to 6-in. thick metal roof panels**

2. SCOPE

NTA, Inc. has evaluated the above product(s) for compliance with the applicable sections of the following codes:
2.1 2000, 2003, 2006, 2009, 2012, 2015 International Building Code (IBC)
2.2 2000, 2003, 2006, 2009, 2012, 2015 International Residential Code (IRC)

NTA, Inc. has evaluated the above product(s) in accordance with:
2.3 NTA IM 014 Structural Insulated Panel Evaluation
2.4 NTA IM 036 Quality System Requirements

NTA, Inc. has evaluated the following properties of the above product(s):
2.5 Structural performance under transverse load
2.6 Fire resistance
2.6.1 Surface-burning characteristics
2.6.2 Roof classification

To obtain the most current NTA Listing Report, visit www.ntainc.com/report.

3. USES

3.1 General. *Snaplock Panels* are used as structural insulated roof panels of patio covers complying with 2015 IBC Appendix I.

3.2 Construction Types. *Snaplock Panels* shall be considered combustible building elements when determining the Type of Construction in accordance with 2015 IBC Chapter 6. (IM 014 NACU1)

3.3 Fire Resistive Assemblies. *Snaplock Panels* shall not be used as part of a fire-rated assembly unless suitable evidence and details are submitted to and approved by the authority having jurisdiction. (IM 014 ACU14)

3.4 Fire Classification. *Snaplock Panels* have a Class C roof classification when tested in accordance with ASTM E108. The maximum installed roof slope for the Class C roof classification is 5:12.

4. DESCRIPTION

4.1 General. *Snaplock Panels* are factory-assembled, metal faced structural insulated panels (SIPs) with an expanded polystyrene (EPS) foam core. The product is intended for use as load-bearing or non-load bearing roof panels. *Snaplock Panels* are available in 3-in. through 6-in. overall thicknesses and are custom made to the specifications for each use. The maximum product size is 4-ft wide and up to 18-ft in length.

4.2 Materials

4.2.1 Facing. The facing consists of 3105-H254 aluminum, conforming to ASTM B209, with a base-metal thickness of 0.023-in., minimum yield strength of 19 ksi and minimum tensile strength of 23 ksi.

4.2.2 Core. The core material is EPS foam plastic insulation conforming to ASTM C578, Type II. The foam, up to 4-in. thickness, has a flame spread rating not exceeding 75 and a smoke-developed index not exceeding 450 when tested in accordance with ASTM E84.

4.3 Adhesive. Facing materials are adhered to the core material using a thin-film adhesive. The adhesive is applied during the lamination process in accordance with the in-plant quality system documentation.

5. DESIGN

5.1 Overall Structural System. The scope of this report is limited to the evaluation of the SIP product. Panel connections and other details related to incorporation of the panel into the overall structural system of a building are beyond the scope of this report. (IM 014 NACU3)

5.2 Design Approval. Where required by the authority having jurisdiction, structures using *Snaplock Panels* shall be designed by a registered design professional. Construction documents, including engineering calculations and drawings providing floor plans, window details, door details and connector details, shall be submitted to the code official when application is made for a permit. The individual preparing such documents shall possess the necessary qualifications as required by the applicable code and the professional registration laws of the state where the construction is undertaken. Approved construction documents shall be available at all times on the jobsite during installation.(IM 014 NACU4)

5.3 Design Loads. Design loads to be resisted by the product shall be as required under the applicable building code. Loads on the panels shall not exceed the loads noted in this report.

5.4 Allowable Loads. Allowable transverse loads may be calculated using the panel properties provided in Tables 1 and 2 or may be selected from Table 3. Maximum and minimum panel heights, spans and thicknesses are limited as provided in Tables 2 and 3. Unless otherwise noted, all properties and allowable loads apply to panels joined with a tongue and groove connection. Allowable loads for reinforced panel capacities shall be designed by a registered professional. Calculations demonstrating that the loads applied are less than the allowable loads described in this report shall be submitted to the code official for approval.(IM 014 NACU5) For loading conditions not specifically addressed herein, structural members designed in accordance with accepted engineering practice shall be provided to meet applicable code requirements.

5.5 Openings. Openings in panels shall be reinforced with wood or steel designed in accordance with accepted engineering practice to resist all loads applied to the opening as required by the adopted code. Details for door and window openings shall be provided to clarify the manner of supporting loads at openings. Such details shall be shown on approved design documents and subject to approval by the local authority having jurisdiction. (IM 014 ACU8)

6. INSTALLATION

6.1 General. *Snaplock Panels* shall be fabricated, identified and erected in accordance with this report, the approved construction documents and the applicable code. In the event of a conflict between the manufacturer's published installation instructions and this report, this report shall govern. Approved construction documents shall be available at all times on the jobsite during installation. (IM 014 NACU7)

6.2 Channels. Exposed edges of the SIPs shall be flashed with not less than 10 gauge (0.1019-in.) aluminum. The channels shall be secured using not less than #10 x 1-in. self-drilling tapping screws (ASTM C1513) spaced 12-in. on center on both sides of the SIP (minimum ¾-in. edge distance), or an approved equivalent fastener.

6.3 Cutting and Notching. No field cutting or routing of the panels shall be permitted except as shown on approved drawings. (IM 014 NACU6)

6.4 Protection from Decay. SIPs that rest on exterior foundation walls shall not be located within 8-in. of exposed earth. SIPs supported by concrete or masonry that is in direct contact with earth shall be protected from the concrete or masonry by a moisture barrier. (IM 014 ACU6)

6.5 Protection from Termites. In areas subject to damage from termites, SIPs shall be protected from termites using an approved method. Panels shall not be installed below grade or in contact with earth. (IM 014 ACU7)

6.6 Heat-Producing Fixtures. Heat-producing fixtures shall not be installed in the panels unless protected by a method approved by the code official or documented in test reports. This limitation shall not be interpreted to prohibit heat-producing elements with suitable protection. (IM 014 NACU9)

6.7 Voids and Holes

6.7.1 Voids in Core. Voids through the core may be placed in predetermined locations only when designed in accordance with Section 5.5. (IM 014 ACU11)

6.7.2 Holes in Panels. Holes may be placed in panels during fabrication at predetermined locations only when designed in accordance with Section 5.5. (IM 014 ACU15)

6.8 Panel Cladding

6.8.1 Roof Covering. The roof covering, underlayment and flashing shall comply with the applicable codes. All roofing materials must be installed in accordance with the manufacturer's installation instructions. The use of roof coverings requiring the application of heat during installation shall be reviewed and approved by a registered design professional.

6.8.2 Interior Finish. A thermal barrier, as required by the applicable code, is not required on the interior side of the roof panels.

7. CONDITIONS OF USE

7.1 *Snaplock Panels* as described in this report comply with the codes listed in Section 2 above, subject to the following conditions:
7.2 Installation complies with this report and the approved construction documents.
7.3 The panels are limited to use in patio covers regulated under IBC Appendix I and IRC Appendix H.
7.4 This report applies only to the panel thicknesses specifically listed herein. (IM 014 ACU3)
7.5 In-use panel heights/spans shall not exceed the values listed herein. Extrapolation beyond the values listed herein is not permitted. (IM 014 ACU2)
7.6 The panels are manufactured in the production facilities noted in this report. (IM 014 NACU8)

8. EVIDENCE SUBMITTED

NTA, Inc. has examined the following evidence to evaluate this product:
8.1 Review of plant quality assurance manual in accordance with NTA IM 036.
8.2 Plant certification inspection of manufacturer's production facilities, test procedures, frequency and quality control sampling methods, test equipment and equipment calibration procedures, test records, dates and causes of failures when applicable in accordance with NTA IM 014.
8.3 Qualification test data in accordance with NTA IM 014 Standard Evaluation Plan 01 (IM 014 SEP 01).
8.4 Periodic quality assurance audits of the production facility.
8.5 Periodic verification testing in accordance with NTA, Inc. NTA IM 014.

Evaluation evidence and data are on file with NTA, Inc. NTA, Inc. is accredited by the International Accreditation Service (IAS) as follows:

ISO 17020 Inspection Agency (AA-682)
ISO 17025 Testing Laboratory (TL-259)
ISO 17065 Product Certification Agency (PCA-102)

The scope of accreditation related to testing, inspection or product certification pertain only to the test methods and/or standard referenced therein. Design parameters and the application of building code requirements, such as special inspection, have not been reviewed by IAS and are not covered in the accreditation. Product evaluations are performed under the direct supervision of Professional Engineers licensed in all jurisdictions within the United States as required by the building code and state engineering board rules.

9. FINDINGS

All products referenced herein are manufactured under an in-plant Quality Assurance program to ensure that the production quality meets or exceeds the requirements of the codes noted herein and the criteria as established by NTA, Inc. Furthermore, product must comply with the conditions of this report.

This report is subject to annual review.

10. IDENTIFICATION

Each eligible product shall be permanently marked to provide the following information:
10.1 The NTA, Inc. listing mark, shown below
10.2 NTA's Listing No. URII020413-16
10.3 In-plant quality assurance stamp
10.4 Identifier for production facility
10.5 Project or batch number

LISTED
URII020413-16

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Table 1: Basic Properties[1, 2]

Property	Strong Axis Bending
Allowable Facing Tensile Stress, F_t (psi)	11,500
Allowable Facing Compressive Stress, F_c (psi)	5760
Elastic Modulus (Bending), E_b (psi)	10,000,000
Shear Modulus, G (psi)	689
Allowable Core Shear Stress, F_v (psi)	7.3
Core Compressive Modulus, E_c (psi)	400
Reference Depth, h_o (in.)	3.0
Shear Depth Factor Exponent, m	0.040

[1] All properties are based on a maximum panel width of 48-in.
[2] Refer to *NTA IM 014 TIP 01 SIP Design Guide* for details on engineered design using basic panel properties.

Table 2: Section Properties

Panel Thickness, h (in.)	Core Thickness, c (in.)	Dead Weight, w_d (psf)	Facing Area, A_f (in.^{2}/ft)	Shear Area, A_v (in.^{2}/ft)	Moment of Inertia, I (in.^{4}/ft)	Section Modulus, S (in.^{3}/ft)	Radius of Gyration, r (in.)	Centroid-to-Facing Dist., y_c (in.)
3	2.95	1.8	0.58	35.7	1.2	0.8	1.46	1.50
4	3.95	1.9	0.58	47.7	2.2	1.1	1.96	2.00
6	5.95	2.1	0.58	71.7	5.1	1.7	2.96	3.00

Table 3: Allowable Uniform Transverse Loads (psf) [1, 3]

Panel Length (ft)	3-inch Thick SIP				4-inch Thick SIP			
	Deflection Limit[2]				Deflection Limit[2]			
	L/120	L/180	L/240	L/360	L/120	L/180	L/240	L/360
8	48.9	46.6	35.0	23.3	65.5	65.5	56.0	37.3
9	38.7	35.3	26.5	17.6	51.7	51.7	43.0	28.7
10	31.3	27.2	20.4	13.6	41.9	41.9	33.6	22.4
11	25.9	21.4	16.0	10.7	34.6	34.6	26.7	17.8
12	21.7	17.0	12.8	8.5	29.1	28.6	21.5	14.3
13	18.5	13.8	10.3	6.9	24.8	23.3	17.5	11.7
14	16.0	11.3	8.5	5.6	21.4	19.2	14.4	9.6
15	13.9	9.4	7.0	4.7	18.6	16.0	12.0	8.0
16	12.2	7.8	5.9	3.9	16.4	13.5	10.1	6.7
17	10.8	6.6	5.0	3.3	14.5	11.4	8.6	5.7
18	9.7	5.6	4.2	2.8	12.9	9.8	7.3	4.9

See notes at end of table.

Table 3: Allowable Uniform Transverse Loads (psf) (Continued) [1, 3]

Panel Length (ft)	6-inch Thick SIP			
	Deflection Limit[2]			
	L/120	L/180	L/240	L/360
8	98.6	98.6	98.6	70.0
9	77.9	77.9	77.9	55.0
10	63.1	63.1	63.1	43.9
11	52.2	52.2	52.2	35.4
12	43.8	43.8	43.4	28.9
13	37.3	37.3	35.8	23.9
14	32.2	32.2	29.8	19.9
15	28.0	28.0	25.1	16.7
16	24.6	24.6	21.2	14.2
17	21.8	21.8	18.1	12.1
18	19.5	19.5	15.6	10.4

Table 3 Notes:
[1] Table values assume a simply supported panel with 1-1/2-in. of continuous bearing on facing at supports (C_v = 1.0). Values do not include the dead weight of the panel.
[2] Deflection limit shall be selected by building designer based on the serviceability requirements of the structure and the requirements of adopted building code. Values are based on loads of short duration only and do not consider the effects of creep.
[3] Permanent loads, such as dead load, shall not exceed 0.50 times the tabulated load.