Evaluation Report

"S-Tile"

Metal Roof Assembly

Manufacturer:

Berridge Manufacturing Company

1720 Maury Road

Houston, TX 77026

(800) 231-8127

for

Florida Product Approval

FL 11422.5 R8

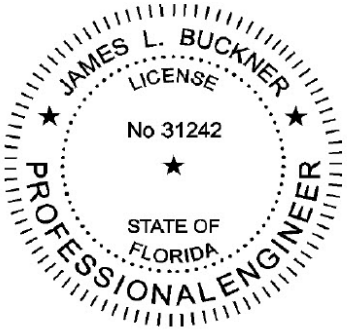
Florida Building Code 8th Edition (2023)

Method:	**1 - D**
Category:	**Roofing**
Sub - Category:	**Metal Roofing**

Product:	"S-Tile" Roof Panel
Material:	Steel
Panel Thickness:	24 gauge
Panel Width:	32-11/16"
Support:	Wood Deck

Prepared by:
James L. Buckner, P.E., S.E.C.B.
Florida Professional Engineer # 31242
Florida Evaluation ANE ID: 1916
Project Manager: Diana Galloway
Report No. 23-542-STile-S4W-ER
(Revises 20-227-STile-S4W-ER, FL11422.7 R7)
Date: 09/26/2023

This item has been digitally signed and sealed by James L. Buckner, P.E., on this date below. Printed copies of this document are not considered signed and sealed, and the signature must be verified on any electronic copies.



James L. Buckner, P.E.
FL31242
Date: 2023.09.26 15:25:27 '-04'00

Contents:

Manufacturer:
Berridge Manufacturing Company
1720 Maury Road
Houston, TX 77026
(800) 231-8127
www.berridge.com

Product Name:
"S-Tile"

Product Category:
Roofing

Product Sub-Category
Metal Roofing

Compliance Method:
State Product Approval Rule 61G20-3.005 (1) (d)

Product/System Description:
"S-Tile"
24 gauge Steel roof panel mechanically attached to Plywood Deck with screws.

Product Assembly as Evaluated:
Refer to Page 4 of this report for product assembly components/materials & standards:

1. Roof Panel
2. Fasteners
3. Underlayment
4. Insulation (Optional)

Support:
Type:
Wood Deck
(Design of support and its attachment to support framing is outside the scope of this evaluation.)

Description:
- 15/32 (min.) or 19/32" (min.) or greater plywood,
- or Wood plank (min. specific gravity of 0.42)

Slope:
Minimum slope shall be in compliance with FBC Chapter 15 based on the type of roof covering, applicable code sections and in accordance with manufacturer's recommendations.

Performance:
Wind Uplift Resistance:
- Design Uplift Pressure:
  (Refer to "Table A" attachment details herein)

METHOD 1: - 84.25 PSF
METHOD 2: - 134.75 PSF
METHOD 3: - 206 PSF

Performance Standards: The product described herein has demonstrated compliance with:

- UL580-06 – *Test for Uplift Resistance of Roof Assemblies*
- UL 1897-15 – *Uplift test for roof covering systems*

Standards Equivalency: The UL 580-94 & UL 1897-98 standard version used to test the evaluated product assembly is equivalent with the prescribed standards in UL 580-06 & UL 1897-15 adopted by the Florida Building Code 8th Edition (2023).

Code Compliance: The product described herein has demonstrated compliance with Florida Building Code 8th Edition (2023), Section 1504.3.2.

Evaluation Report Scope: This product evaluation is limited to compliance with the structural requirements of the Florida Building Code, as related to the scope section to Florida Product Approval Rule 61G20-3.001.

Limitations and Conditions of Use:

- Scope of "Limitations and Conditions of Use" for this evaluation:
  This evaluation report for "Optional Statewide Approval" contains technical documentation, specifications and installation method(s) which include "Limitations and Conditions of Use" throughout the report in accordance with Rule 61G20-3.005. Per Rule 61G20-3.004, the Florida Building Commission is the authority to approve products under "Optional Statewide Approval".
- Option for application outside "Limitations and Conditions of Use"
  Rule 61G20-3.005(1)(e) allows engineering analysis for "project specific approval by the local authorities having jurisdiction in accordance with the alternate methods and materials authorized in the Code". Any modification of the product as evaluated in this report and approved by the Florida Building Commission is outside the scope of this evaluation and will be the responsibility of others.
- This report is a building code product evaluation per FLPE rule (FAC) 61G15-36 to comply with Florida product approval rule (FAC) 61G20-3. This evaluation report is part of the Florida Building Commission approval for the listed code related criteria. This report by James Buckner, P.E. and CBUCK Engineering is not a design certification of code compliance construction submittal documentation, per FBC section 107, for any individual structure, site specific or permit design.
- All metal components and fasteners shall be corrosion resistant in accordance with applicable sections of FBC, including but limited to Sections 1504.3.2, 1506.6 and 1507.4.4.
- Design of support system is outside the scope of this report.
- Fire Classification is outside the scope of Rule 61G20-3, and is therefore not included in this evaluation.
- This evaluation report does not evaluate the use of this product for use in the High Velocity Hurricane Zone code section. (Dade & Broward Counties)

Quality Assurance: The manufacturer has demonstrated compliance of roof panel products in accordance with the Florida Building Code and Rule 61G20-3.0005 (3) for manufacturing under a quality assurance program audited by an approved quality assurance entity through **UL, LLC (FBC Organization #: QUA 9625)**.

Components/Materials (by Manufacturer):

Roof Panel: "S-Tile"

Material:	Steel
Thickness:	24 gauge (min.)
Panel Width:	32-11/16" (max.) Coverage
Rib Height:	1-1/2"
Tile Step:	14"
Yield Strength:	40 ksi min.
Steel Grade:	40
Corrosion Resistance:	In compliance with FBC Section 1507.4.3: • ASTM A792 coated, or • ASTM A653 G90 galvanized steel

Fasteners:

FASTENER 1-A:	Panel to Deck Fastener
Type:	Hex-Head Screw with WSW
Size :	#9 – 15 x 1"
Corrosion Resistance:	Per FBC Section 1506.6 and 1507.4.4
Standard:	Per ANSI/ASME B18.6.1
FASTENER 1-B:	Panel to Panel, Stitch Fastener
Type:	Hex-Head Screw with WSW
Size :	#12 - 14 x 3/4"
Corrosion Resistance:	Per FBC Section 1506.6 and 1507.4.4
Standard:	Per ANSI/ASME B18.6.1
FASTENER 2-A:	Panel to Deck Fastener
Type:	Hex-Head Screw with WSW
Size :	#14 – 10 x 1"
Corrosion Resistance:	Per FBC Section 1506.6 and 1507.4.4
Standard:	Per ANSI/ASME B18.6.1
FASTENER 2-B:	Panel to Panel, Stitch Fastener
Type:	Hex-Head Screw with WSW
Size :	1/4" – 14 x 7/8"
Corrosion Resistance:	Per FBC Section 1506.6 and 1507.4.4
Standard:	Per ANSI/ASME B18.6.1

Underlayment:
Material and application shall be in compliance with FBC Section 1507.1.1 and in accordance with applicable code sections and manufacturer's recommendations.

Components& Materials: (by Others)

Insulation (Optional):

Type:	Rigid Insulation Board
Thickness:	3" (max.)
Properties:	
Density:	2.25 pcf (lbs/ft^3) min.
Or Compressive Strength:	20 psi min.

Insulation shall comply with FBC Section 1508. When insulation is incorporated, fastener length shall conform to penetrate thru bottom of support a minimum of 3/16".

Installation:

Installation Method:
(Refer to **"TABLE A"** below and drawings at the end of this report.)

Panel to Deck:

- **Row spacing: 14" o.c.**
  (at every tile step, along the length)
- **Fastener spacing along the row:** Refer to **"TABLE A"**
  (along the row, across panel profile)
- Minimum fastener penetration thru bottom of support, 3/16".

Panel to Panel, Stitching:

- **Sidelap spacing 14" o.c. min**
  (at every tile step, along the length of the side laps)
- Rib Interlock: Lapped
- For panel construction at the end of panels, refer to manufacturer's instructions and any site specific design.

TABLE "A"			
	METHOD 1:	**METHOD 1:**	**METHOD 2:**
Design Pressure:	**- 84.25 PSF**	**- 134.75 PSF**	**- 206 PSF**
Deck Thickness:	15/32" (min.) or 19/32"	19/32" (min.)	19/32" (min.)
Fastener Spacing along Row:	Refer to Drawing A-1 on Pg 7 "Pattern 1"	Refer to Drawing A-2 on Pg 8 "Pattern 1"	Refer to Drawing A-3 on Pg 8 "Pattern 2"
Row Spacing:	14" o.c. (every tile step)	14" o.c. (every tile step)	14" o.c. (every tile step)
SideLap Spacing:	14" o.c. (every tile step)	14" o.c. (every tile step)	14" o.c. (every tile step)
Panel to Deck Fastener:	#9 – 15 x 1"	#14 – 10 x 1"	#14 – 10 x 1"
Sidelap Fastener:	#12 - 14 x 3/4"	¼" – 14 x 7/8"	¼" – 14 x 7/8"
• Allowable design pressure(s) for allowable stress design (ASD).			

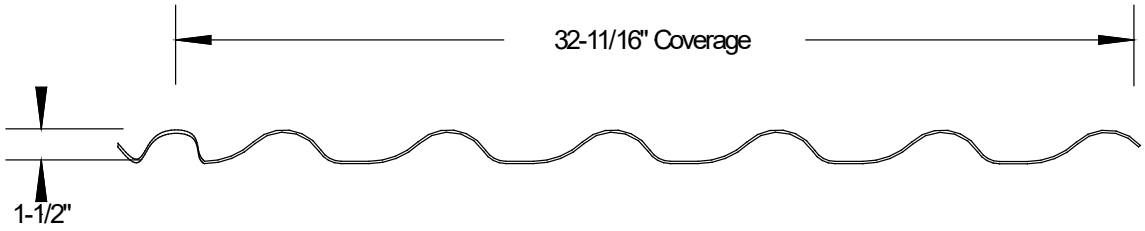
Install the "S-Tile" roof panel assembly in compliance with the installation method listed in this report and applicable code sections of FBC 8th Edition (2023). The installation method described herein is in accordance with the scope of this evaluation report. Refer to manufacturer's installation instructions as a supplemental guide for attachment.

Referenced Data:

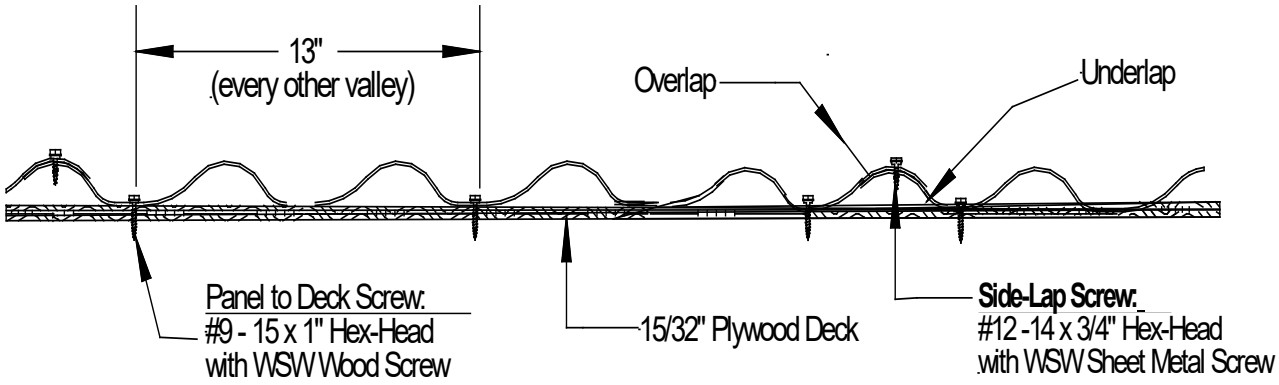
1. UL580 Uplift Test
   By Hurricane Test Laboratory, LLC (TST 1527)
   Report #0307-0115-06, Report Test Date: 2/24/06-4/21/06
2. TAS 125-03 Uplift Test
   By Force Engineering & Testing Inc. (FBC Organization ID# TST 5328)
   Report # 49-0297T-10A-C, Dated 9/30/10
3. Quality Assurance
   UL, LLC (FBC Organization #: QUA 9625)
4. Equivalency of Test Standard Certification
   By James L. Buckner, P.E. @ CBUCK Engineering
   (FBC Organization # ANE 1916)
5. Engineering Analysis
   By CBUCK Engineering
6. Certification of Independence
   By James L. Buckner, P.E. @ CBUCK Engineering
   (FBC Organization # ANE 1916)

Installation Method
Berridge Manufacturing Company
"S-Tile" (24 Gauge) Roof Panel Attached to Wood Deck

Profile Drawings

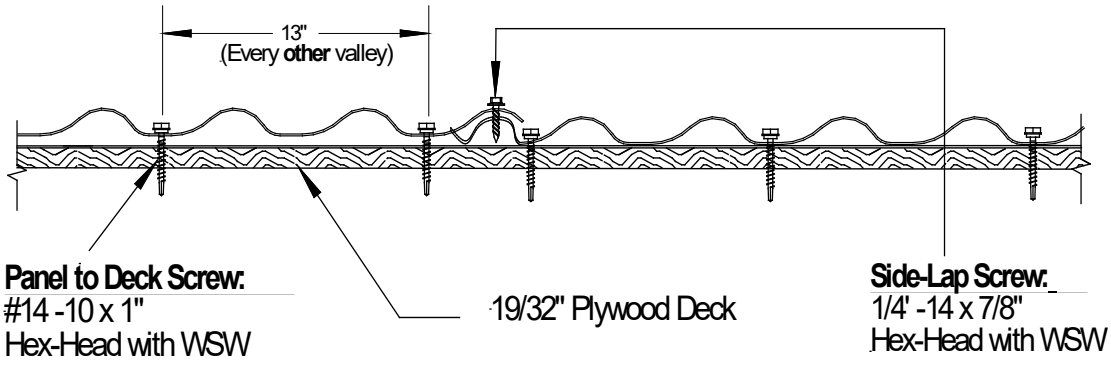


Typical "S-Tile" Panel
Panel Profile View

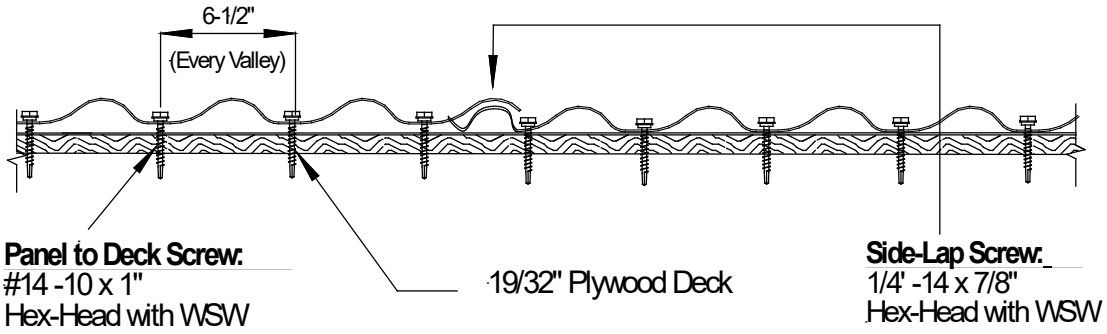


Drawing A-1
Assembly Side View - Typical Fastening Pattern Across Panel Profile
Pattern "1"

Installation Method
Berridge Manufacturing Company
"S-Tile" (24 Gauge) Roof Panel Attached to Wood Deck

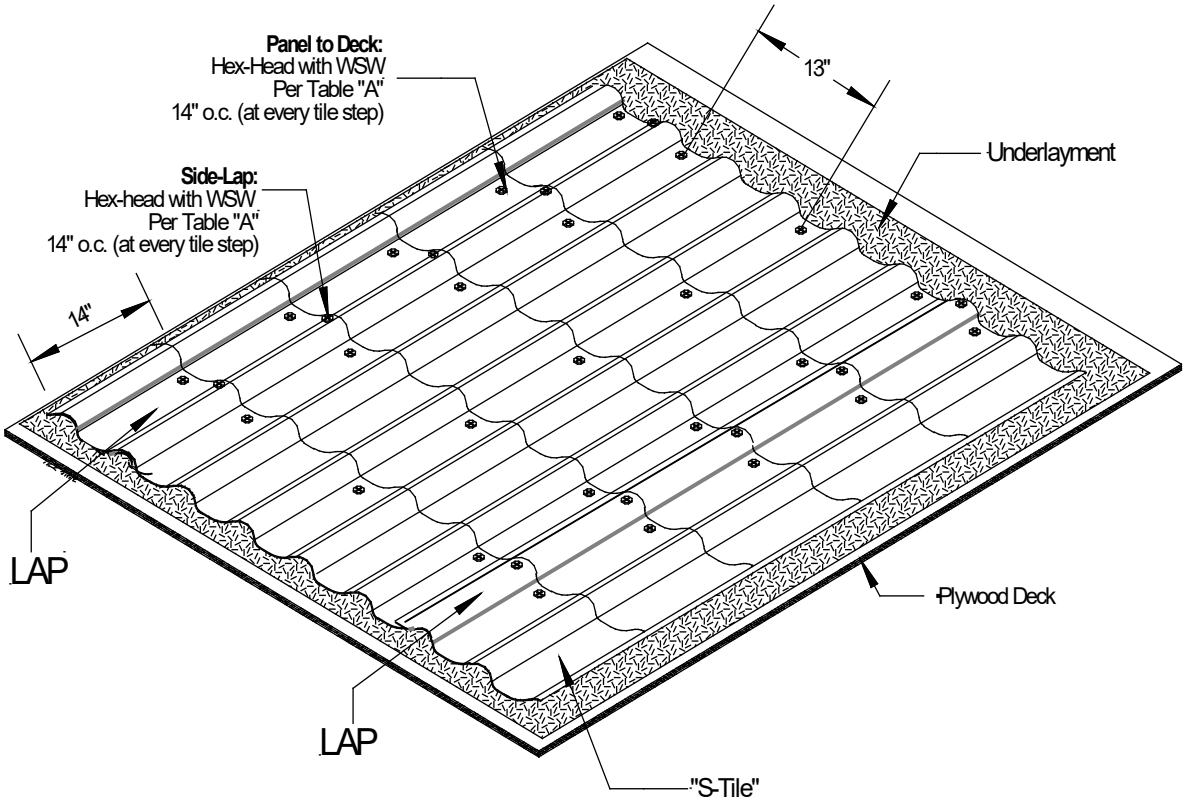


Drawing A-2
Assembly Side View - Typical Fastening Pattern Across Panel Profile
Pattern "1"



Drawing A-3
Assembly Side View - Typical Fastening Pattern Across Panel Profile
Pattern "2"

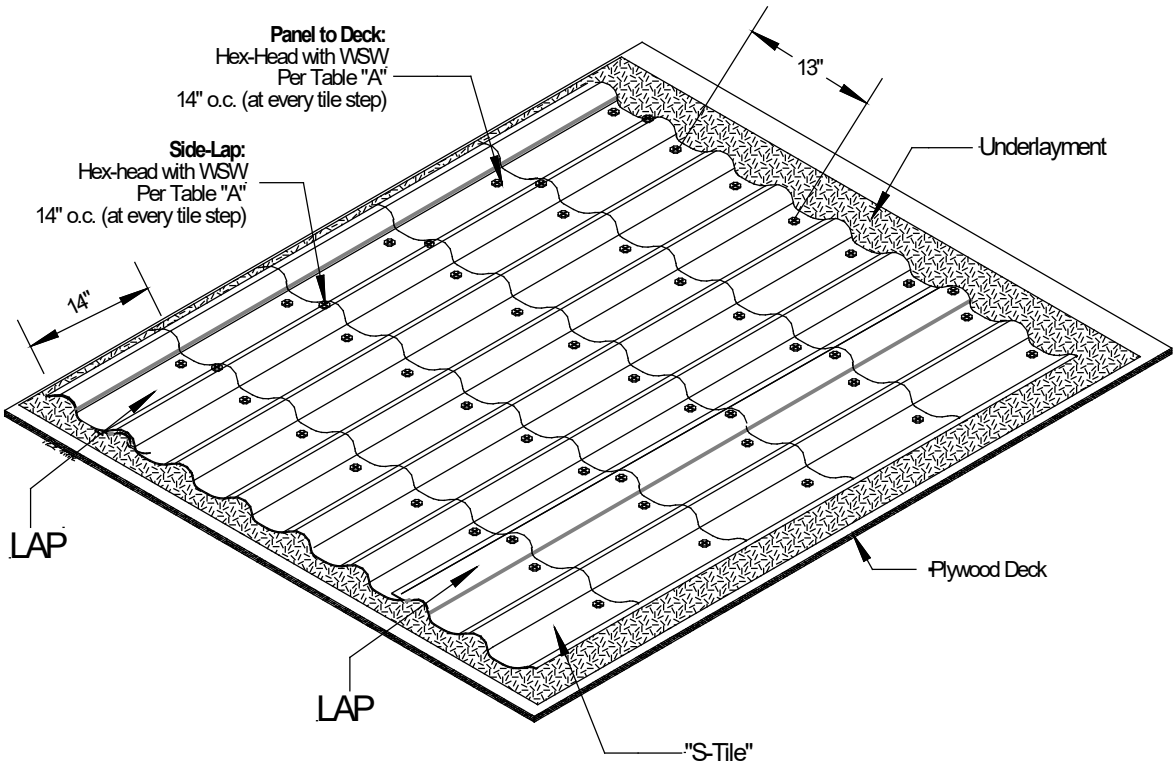
Installation Method
Berridge Manufacturing Company
"S-Tile" (24 Gauge) Roof Panel Attached to Wood Deck



Typical Roof Assembly Isometric View
Pattern "1"

TABLE "A"			
	METHOD 1:	**METHOD 1:**	**METHOD 2:**
Design Pressure:	**- 84.25 PSF**	**- 134.75 PSF**	**- 206 PSF**
Deck Thickness:	15/32" (min.) or 19/32"	19/32" (min.)	19/32" (min.)
Fastener Spacing along Row:	Refer to Drawing A-1 on Pg 7 "Pattern 1"	Refer to Drawing A-2 on Pg 8 "Pattern 1"	Refer to Drawing A-3 on Pg 8 "Pattern 2"
Row Spacing:	14" o.c. (every tile step)	14" o.c. (every tile step)	14" o.c. (every tile step)
SideLap Spacing:	14" o.c. (every tile step)	14" o.c. (every tile step)	14" o.c. (every tile step)
Panel to Deck Fastener:	#9 – 15 x 1"	#14 – 10 x 1"	#14 – 10 x 1"
Sidelap Fastener:	#12 - 14 x 3/4"	¼" – 14 x 7/8"	¼" – 14 x 7/8"

Installation Method
Berridge Manufacturing Company
"S-Tile" (24 Gauge) Roof Panel Attached to Wood Deck



Typical Roof Assembly Isometric View
Pattern "2"

TABLE "A"			
	METHOD 1:	**METHOD 1:**	**METHOD 2:**
Design Pressure:	**- 84.25 PSF**	**- 134.75 PSF**	**- 206 PSF**
Deck Thickness:	15/32" (min.) or 19/32"	19/32" (min.)	19/32" (min.)
Fastener Spacing along Row:	Refer to Drawing A-1 on Pg 7 "Pattern 1"	Refer to Drawing A-2 on Pg 8 "Pattern 1"	Refer to Drawing A-3 on Pg 8 "Pattern 2"
Row Spacing:	14" o.c. (every tile step)	14" o.c. (every tile step)	14" o.c. (every tile step)
SideLap Spacing:	14" o.c. (every tile step)	14" o.c. (every tile step)	14" o.c. (every tile step)
Panel to Deck Fastener:	#9 – 15 x 1"	#14 – 10 x 1"	#14 – 10 x 1"
Sidelap Fastener:	#12 - 14 x 3/4"	¼" – 14 x 7/8"	¼" – 14 x 7/8"