Evaluation Report
“Zee-Lock Panel or Curved Zee-Lock Panel”
Metal Roof Assembly

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

for
Florida Product Approval
# FL 11159.1 R5
Method: 1 - D
Category: Roofing
Sub - Category: Metal Roofing

Product: Zee-Lock” Roof Panel
Material: Steel
Panel Thickness: 24 gauge
Panel Width: 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. 17-128-ZL-S4W-ER
(Revises 14-136-ZL-S4W-ER, FL11159.1 R4)
Date: 07/09/17

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Houston, TX 77026
(800) 231-8127
www.berridge.com

Product Name: “Zee-Lock” or “Curved Zee-Lock”

Product Category: Roofing

Product Sub-Category: Metal Roofing

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

Product/System Description: “Zee-Lock” or “Curved Zee-Lock” Double Lock Standing Seam Roof Panel
2” Rib Height, 16” wide, 24 gauge Steel roof panel restrained by panel clips, fastened into Plywood Deck.

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

1. Roof Panel  “Zee-Lock”
2. Panel Clip  “Zee-Clip” Or “Zee-Rib”
3. Fasteners  #12
4. Underlayment: Per Page 5
5. Insulation (Optional): Rigid Insulation Board (4” - 6” thick)

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

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

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

Arched Min. Radius for Curved Panel: 20 Feet

Performance: Wind Uplift Resistance:
• Design Uplift Pressure: Refer to Table A
(Refer to “Table A” attachment details herein)
Performance Standards: The product described herein has demonstrated compliance with:

- UL580-06 – Test for Uplift Resistance of Roof Assemblies
- UL 1897-12 – Uplift test for roof covering systems


Code Compliance: The product described herein has demonstrated compliance with Florida Building Code 6th Edition (2017), 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:**
- **Material:** Steel
- **Thickness:** 24 gauge (min.)
- **Panel Width:** 16" (max.) Coverage
- **Rib Height:** 2"
- **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

**Roof Panel Clips:**
- **PICK ONE OF THE FOLLOWING:**
  - **Material:** Steel
  - **Thickness:** 24 Gauge
  - **Yield Strength:** 40 ksi min.
  - **Corrosion Resistance:** Per FBC Section 1506.7
  - **CLIP TYPE 1:**
    - **Type:** One-Piece, continuous fixed clip
    - **Dimensions:** 2"(tall) x 1-3/8"(wide) x continuous (w/panel length)
  - **CLIP TYPE 2:**
    - **Type:** One-Piece, fixed clip
    - **Dimensions:** 2"(tall) x 1-3/8"(wide) x 3-1/2" (long)

**Fastener:**
- **Type:** Pancake-Head Wood Screw
- **Size:** #12 - 11 x 1"
- **Corrosion Resistance:** Per FBC Section 1506.6 and 1507.4.4
- **Standard:** Per FBC Section 1506.6 and 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/ft³) min.
  - **Or Compressive Strength:** 20 psi min.

**Insulation Notes:**
- Rigid Insulation shall meet minimum density OR compressive strength.
- 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.)

- Clip Spacing or Fastener Spacing Along Continuous Clip
  (along the length of the panel): Refer to “TABLE A” Below
- Rib Interlock: Mechanically seamed 180° (DOUBLE-LOCK)
- Minimum fastener penetration thru bottom of support, 3/16”.
- For panel construction at the end of panels, refer to manufacturer’s instructions and any site specific design.

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<th>TABLE “A” ALLOWABLE LOADS</th>
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<td>Panel Clip Type</td>
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<td>METHOD 1</td>
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- Allowable design pressure(s) for allowable stress design (ASD).

Install the “Zee-Lock” roof panel assembly in compliance with the installation method listed in this report and applicable code sections of FBC 6th Edition (2017). 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. TAS 125-03 Uplift Test (Per UL580-94 and UL 1897-98)
   By Force Engineering & Testing Inc., Inc. (TST ID: 5328)
   • Report # 49-0008T07A-C, Report Date: 2/16/07,
     Test Specimen(s) # A-B (Method 1), #C (Method 2)
2. TAS 125-03 Uplift Test (Per UL580-94 and UL 1897-98)
   By Force Engineering & Testing Inc., Inc. (TST ID: 5328)
   Report # 49-0275T-13A,B, Report Date: 1/13/14
   Test Specimen(s) # A (Method 1), #B (Method 3)
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. Certification of Independence
   By James L. Buckner, P.E. @ CBUCK Engineering
   (FBC Organization # ANE 1916)
6. Engineering Analysis
By James L. Buckner, P.E. @ CBUCK Engineering

Installation Method
Berridge Manufacturing Company
“Zee-Lock” (24 gauge Steel) Roof Panel attached to Wood Deck

Drawings

Typical Panel Profile

Continuous “Zee-Rib” Panel Clip
Profile Side View

“Zee-Clip” Panel Clip
Profile Side View

Installation Method
Berridge Manufacturing Company
“Zee-Lock” (24 gauge Steel) Roof Panel attached to Wood Deck

16 in. Maximum

Before Seaming

Mechanically Seamed
180° (DOUBLE-LOCK)

Fastener:
ONE #12 Wood Screw

Typical Assembly Profile View
(Typical Fastening Pattern Across Width)

BEFORE SEAMING

180° SEAM (DOUBLE-LOCK)

Typical Panel Seams
Installation Method
Berridge Manufacturing Company
“Zee-Lock” (24 gauge Steel) Roof Panel attached to Wood Deck

Typical Roof Assembly with Continuous Zee-Rib Clip
Isometric View

Typical Roof Assembly with Zee-Clips
Isometric View
Installation Method
Berridge Manufacturing Company
“Zee-Lock” (24 gauge Steel) Roof Panel attached to Wood Deck

Typical Curved Roof Assembly
Isometric View
(Optional) Rigid Insulation Board per Page 4 of this report.

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Deck: 15/32” or greater Plywood or Wood Deck