

Evaluation Report “Zee-Lock Panel or Curved Zee-Lock Panel with Optional Batten Cap” Metal Roof Assembly

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

for

Florida Product Approval

FL 37158.1 R1

Florida Building Code 8th Edition (2023)

Category: Roofing

Sub - Category: Metal Roofing

Product:	“Zee-Lock with Optional Batten Cap”
Material:	Steel
Panel Thickness:	24 gauge
Panel Width:	16”
Support:	Steel Deck

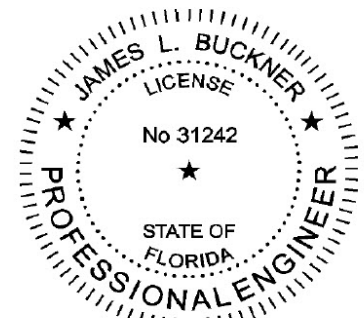
This item has been digitally signed and sealed by James L. Buckner, P.E., on this date below. Printed copies of this document are not considered signed and sealed, and the signature must be verified on any electronic copies.

Prepared by:

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Florida Evaluation ANE ID: 1916
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Report No.23-42-ZLBC-SS-ER
(Revises 20-227-ZLBC-SS-ER, FL 37158.1 R0)
Date: 09/26/2023

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James L. Buckner, P.E.
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Date: 2023.09.26 15:25:27
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Manufacturer:	Berridge Manufacturing Company 1720 Maury Road Houston, TX 77026 (800) 231-8127 www.berridge.com												
Product Name:	“Zee-Lock” or “Curved Zee-Lock” with Optional Batten Cap												
Product Category:	Roofing												
Product Sub-Category	Metal Roofing												
Product/System Description:	“Zee-Lock” or “Curved Zee-Lock” with Optional Batten Cap Standing Seam Roof Panel, 2” Rib Height, 16” wide, 24 or 22 gauge Steel roof panel restrained by panel clips, fastened through optional rigid insulation into Steel Deck.												
Product Assembly as Evaluated:	Refer to Page 4 of this report for product assembly components/materials & standards: <table><tr><td>1. Roof Panel:</td><td>“Zee-Lock with Optional Batten Cap”</td></tr><tr><td>2. Panel Clip:</td><td>Continuous “Zee-Rib”</td></tr><tr><td>3. Fasteners:</td><td>Per Page 5</td></tr><tr><td>4. Bearing Plate</td><td>Per Page 5</td></tr><tr><td>5. Underlayment:</td><td>Per Page 5</td></tr><tr><td>6. Insulation (Optional):</td><td>Per Page 5</td></tr></table>	1. Roof Panel:	“Zee-Lock with Optional Batten Cap”	2. Panel Clip:	Continuous “Zee-Rib”	3. Fasteners:	Per Page 5	4. Bearing Plate	Per Page 5	5. Underlayment:	Per Page 5	6. Insulation (Optional):	Per Page 5
1. Roof Panel:	“Zee-Lock with Optional Batten Cap”												
2. Panel Clip:	Continuous “Zee-Rib”												
3. Fasteners:	Per Page 5												
4. Bearing Plate	Per Page 5												
5. Underlayment:	Per Page 5												
6. Insulation (Optional):	Per Page 5												
Support:	Type: Steel Deck (Design of steel deck and its attachment to support framing is outside the scope of this evaluation.) Description: <ul style="list-style-type: none">• 22 gauge (min.) or 24 Gauge (min.)- Refer to Table “A”• Yield Strength: 40 ksi minimum												
Slope:	Minimum slope shall be in compliance with FBC Chapter 15 Section 1507.4.2 applicable code sections and in accordance with manufacturer’s recommendations.												
Arched Min. Radius for Curved Panel:	20 Feet												
Performance:	Wind Uplift Resistance: Refer to Table “A” <ul style="list-style-type: none">• Design Uplift Pressure: (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 1897-15 – *Uplift test for roof covering systems*
 - TAS 125-03 – *Standard Requirements for Metal Roofing 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(s) described herein have demonstrated compliance with the performance standards listed above as referenced in the Florida Building Code 8th Edition (2023).
- 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.

**Components/Materials
(by Manufacturer):**

Roof Panel:	Berridge "Zee-Lock"
Material:	Steel
Thickness:	24 gauge (min.) or 24 gauge (min.) per Table A
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: <ul style="list-style-type: none">• ASTM A792 coated, or• ASTM A653 G90 galvanized steel
Batten Cap (Optional):	Berridge "Batten Cap"
Material:	Steel
Thickness:	24 Gauge
Yield Strength:	40 ksi min.
Corrosion Resistance:	Per FBC Section 1506.7
Type:	One-Piece, continuous fixed
Dimensions:	2"(tall) x 1-3/8"(wide) x continuous (w/panel length)
Batten Clip (Used with Batten Cap):	Berridge "Batten Clip"
Material:	Steel
Thickness:	24 Gauge
Yield Strength:	40 ksi min.
Corrosion Resistance:	Per FBC Section 1506.7
Roof Panel Clip:	Berridge "Zee-Rib"
Material:	Steel
Thickness:	24 Gauge
Yield Strength:	40 ksi min.
Corrosion Resistance:	Per FBC Section 1506.7
Type:	One-Piece, continuous fixed clip
Dimensions:	2"(tall) x 1-3/8"(wide) x continuous (w/panel length)
Fastener:	PICK ONE OF THE FOLLOWING:
<u>FASTENER 1:</u>	Low Profile Self-Tapping Screw
Size :	#12 - 11 x 1" (or length to meet min. penetration) w/3" steel disk per sheet when used w/insulation
Corrosion Resistance:	Per FBC Section 1506.6 and 1507.4.4
Standard:	Per FBC Section 1506.6

FASTENER 2:

Size : Low Profile Self-Tapping Screw w/3" steel disk per sheet
#14 – 13 x 7", 9" (or length to meet min. penetration)
Corrosion Resistance: w/3" steel disk per sheet when used
Standard: w/insulation
Per FBC Section 1506.6 and 1507.4.4
Per FBC Section 1506.6

Bearing Plate:

Material: Galvanized Steel
Size: 6" x 6"
Thickness: 24 gauge
Yield Strength: 40 ksi min.

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: Insulation (Optional):
(by Others)

Type: Rigid Insulation Board
Thickness: 4-6" (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 3/4"

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**
- # fasteners per Clip or attachment point: **Refer to "TABLE A" Below**
- Rib Interlock: **Refer to "TABLE A" Below**
Mechanically seamed 90° (SINGLE-LOCK)
- Assemblies with insulation include 3" steel disk per sheet.
- Minimum fastener penetration thru bottom of support, 3/4".
(through bottom flute of steel deck)
- For panel construction at the end of panels, refer to manufacturer's instructions and any site specific design.

TABLE "A" "Single-Lock Zee-Lock with Optional Batten Cap, 22 or 24 ga. Steel attached to Steel Deck" ALLOWABLE LOADS					
	Panel Thickness	Deck Thickness	Clip or Fastener Spacing	Fastener	Design Pressure
1	24 ga. (min.)	24 ga. (min.)	18"	#12 or #14	- 52.5 PSF
2	22 ga. (min.)	22 ga. (min.)	16"	#14	- 116 PSF
<ul style="list-style-type: none"> • Allowable design pressure(s) for allowable stress design (ASD). 					

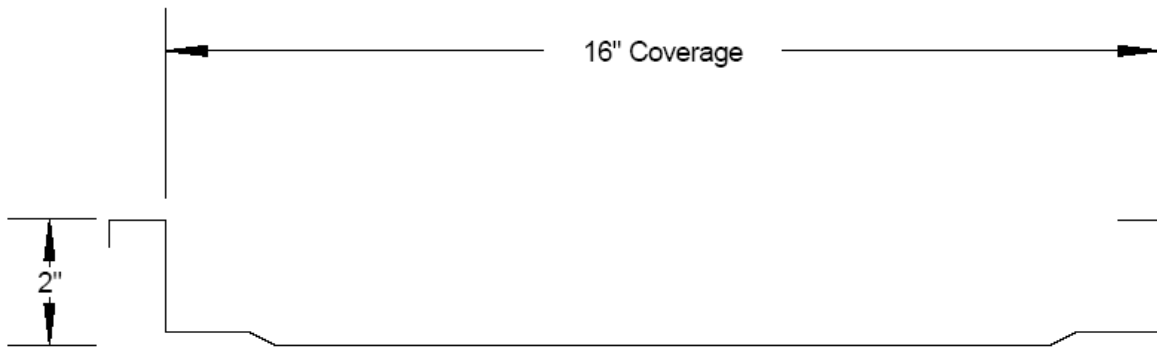
Install the "Zee-Lock with Optional Batten Cap" roof panel assembly in compliance with the installation method listed in this report and applicable code sections of FBC 8th Edition (2023). The installation method described herein is in accordance with the scope of this evaluation report. Refer to manufacturer's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

Referenced Data:

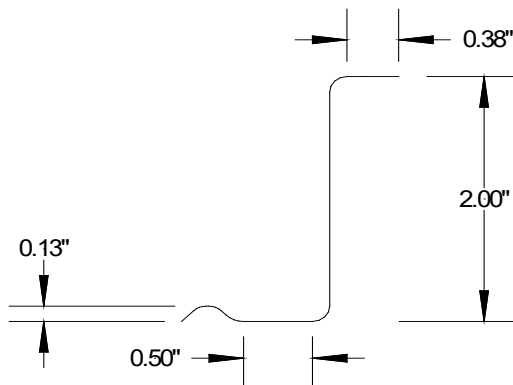
1. UL580-94 (with 1998 Revisions) Uplift Class 90
 By Underwriter's Laboratories, Inc.
 UL File #TGKX.335
 File R12005, Project 02RT7504, Test Assembly #1, Dated: 5/1/02
2. UL580-94 (with 1998 Revisions) Uplift Class 90
 By Underwriter's Laboratories, Inc.
 UL File #TGKX.262
1. TAS 125-03 Uplift Test (Per UL580-06 and UL 1897-12)
 By Force Engineering & Testing Inc., Inc. (TST ID: 5328)
 Report # 49-0104T-19A, Report Date: 7/24/19
2. Quality Assurance
 UL, LLC (FBC Organization #: QUA 9625)
3. Equivalency of Test Standard Certification
 By James L. Buckner, P.E. @ CBUCK Engineering
 (FBC Organization # ANE 1916)
4. Certification of Independence
 By James L. Buckner, P.E. @ CBUCK Engineering
 (FBC Organization # ANE 1916)
5. Engineering Analysis
 By CBUCK Engineering

**Installation Method
Berridge Manufacturing Company
“Zee-Lock with Optional Batten Cap” Roof Panel attached to Steel Deck**

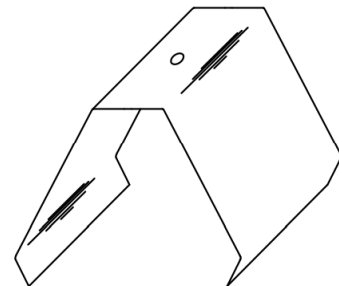
Drawings



**Berridge Zee-Lock
Typical Panel Profile**

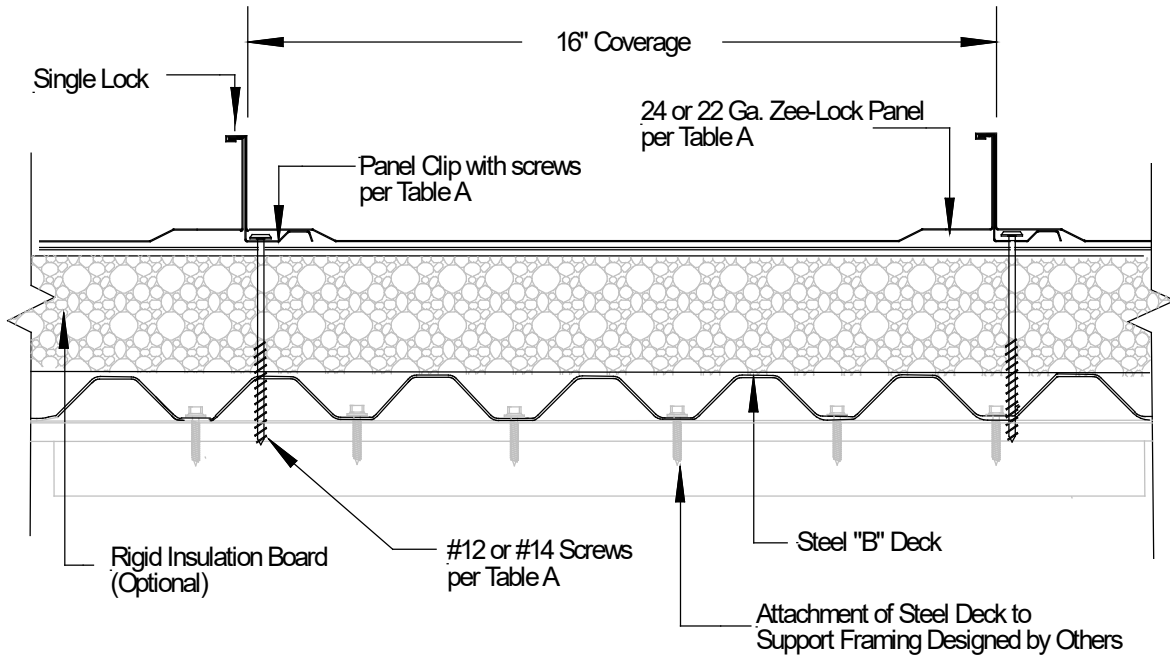


**Continuous “Zee-Rib” Panel Clip
Profile Side View**

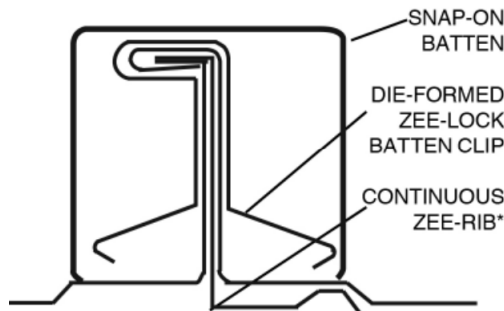


**Typical Batten Clip Profile
(Required with Optional Batten Cap)**

Installation Method Berridge Manufacturing Company "Zee-Lock with Optional Batten Cap" Roof Panel attached to Steel Deck

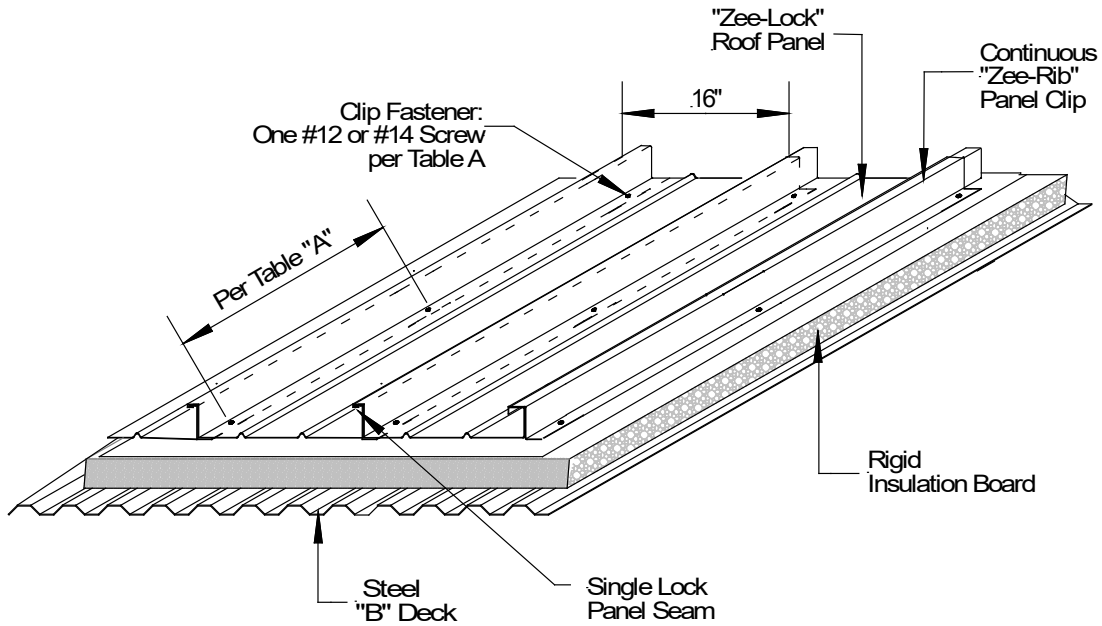


Typical Assembly Profile View
(Typical Fastening Pattern Across Width)

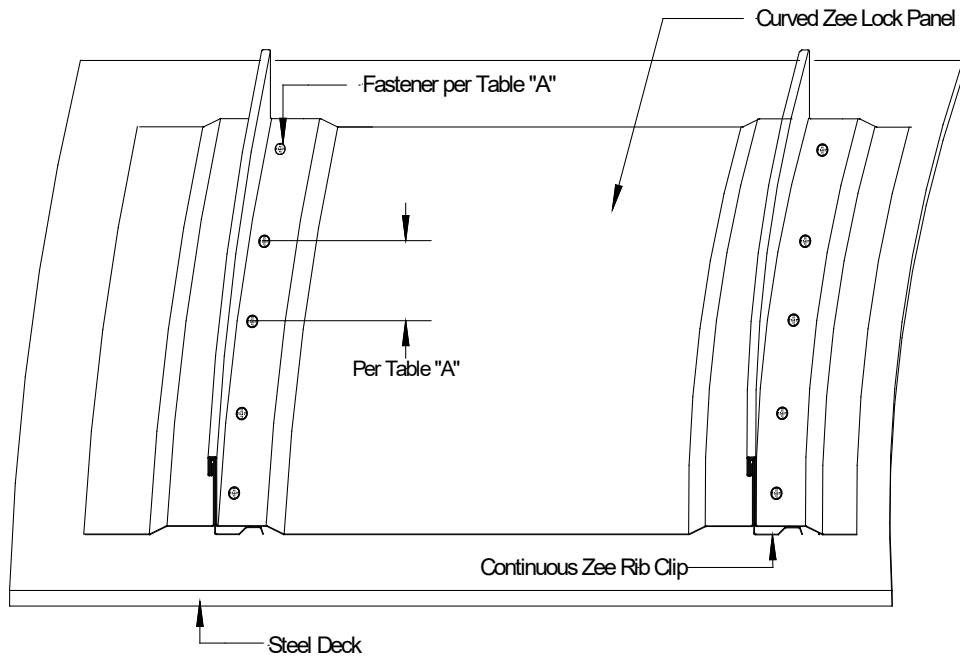


Typical Assembly Profile View
With Optional Batten Cap

Installation Method Berridge Manufacturing Company "Zee-Lock with Optional Batten Cap" Roof Panel attached to Steel Deck



"Zee-Lock" Panel attached to Steel Deck with Continuous Zee-Rib Typical Assembly Isometric View



Curved "Zee-Lock" Panel attached to Steel Deck with Continuous Zee-Rib Typical Assembly Top View