Evaluation Report

"Double-Lock Zee-Lock Panel"

With Continous Zee-Rib Clip

Metal Roof Assembly

Manufacturer:

Berridge Manufacturing Company

1720 Maury Road

Houston, TX 77026

(800) 231-8127

for

Florida Product Approval

FL 14210.4 R6

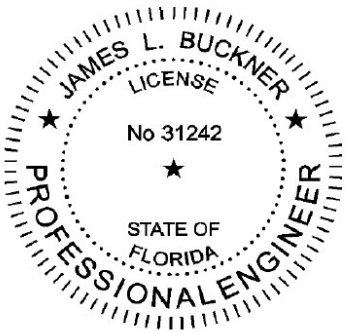
Florida Building Code 8th Edition (2023)

Method:	**1 - D**
Category:	**Structural Components**
Sub - Category:	**Roof Deck**

Product:	"Double-Lock Zee-Lock" Roof Panel
Material:	Steel
Panel Thickness:	22 gauge
Panel Width:	16"
Support:	Steel Purlins

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-ZL-S2P-ER
(Revises Report No. 20-227-ZL-S2P-ER, FL14210.4 R5)
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: **"Double Lock Double-Lock Zee-Lock"**

Product Category: Structural Components

Product Sub-Category Roof - Deck

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

Product/System Description:

"Double-Lock Zee-Lock" Standing Seam Roof Panel
2" Rib Height, 16" wide, 24 gauge Steel roof panel restrained by continuous "Zee-Rib" continuous panel clips, with 22 ga. rib reinforcement plate fastened into Steel Purlins.

Product Assembly as Evaluated:

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

1. Roof Panel
2. Panel Clip
3. Backer Plate
4. Fasteners
5. Insulation (Optional)

Support:

Type:
Steel Purlins
(Design of steel purlins and its attachment to support framing is outside the scope of this evaluation.)

Description:
- 16 Gauge minimum
- Yield Strength: 50 ksi minimum

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: - 108.75 PSF
METHOD 2: - 140 PSF

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

- TAS 125-03 – *Standard Requirements for Metal Roofing Systems*
- ASTM E 1592-05 (2017) – *Test Method for Structural Performance of Sheet Metal Roof and Siding Systems By Uniform Static Air Pressure Difference*

Standards Equivalency: The ASTM E 1592-01 standard version used to test the evaluated product assembly is equivalent with the prescribed standards in ASTM E 1592-05 (2017) 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:

- Diaphragm and axial load capacity is outside the scope of this evaluation.
- 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.
- Design of support system is outside the scope of this report. Support shall be designed by others and shall comply with the FBC Chapters 22 for steel and Chapter 16 for structural loading.
- 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:	Berridge "Double-Lock Zee-Lock"
Material:	Steel
Thickness:	22 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:	Berridge "Zee-Rib"
Type:	One-Piece, continuous fixed clip
Material:	Steel
Thickness:	24 Gauge
Yield Strength:	2"(tall) x 1-3/8"(wide) x continuous (w/panel length)
Dimensions:	40 ksi min.
Corrosion Resistance:	Per FBC Section 1506.7
Backer Plate:	Zee-Rib Backer Plate
Material:	Steel
Thickness:	22 Gauge
Yield Strength:	1" (tall) x 1-1/2" (wide) x 5" (length)
Dimensions:	40 ksi min.
Corrosion Resistance:	Per FBC Section 1506.7
Fastener:	
Type:	HWH Self-Drilling Screw with 5/8" OD Seal Washer
Size :	#12 - 14 x 1-1/4"
Corrosion Resistance:	Per FBC Section 1506.6 and 1507.4.4
Standard:	Per SAE J78-1979

Components& Materials: (by Others)

Insulation (Optional):

<u>Type 1:</u>	
Type:	Rigid Insulation Board
Thickness:	3" (max.)
Properties:	
Density:	20 psi min.
Or Compressive Strength:	2.25 pcf (lbs/ft^3) min.
<u>Type 2:</u>	Compressible Blanket Insulation
Thickness:	6" max. before compression

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 on Pages 6-8 of this report.)

- Purlin Spacing: **Refer to "TABLE A" Below**
- # fasteners (at each purlin intersection): **Refer to "TABLE A" Below**
- Rib Interlock: Mechanically seamed 180° (DOUBLE-LOCK)
- Minimum fastener penetration thru bottom of support, 3 /4".

TABLE "A"
"Double-Lock Zee-Lock" (22 gauge Steel) Roof Panel attached to Steel Purlins
ALLOWABLE LOADS

	METHOD 1	METHOD 2
Design Pressure:	**- 108.75 PSF**	**- 140 PSF**
# of Fasteners per Purlin Intersection:	4	3
Fastener:	#12	#12
Panel Seam:	Double Lock	Double Lock
Max. Purlin Spacing:	60"	30"
Span Condition:	3 or more	3 or more

Notes:
- Allowable design pressure(s) for allowable stress design (ASD).
- Fastener Attachment to Steel Supports May Be Designed By A Qualified Design Professional As Required By The Florida Building Code For Site Specific Projects.
- Diaphragm and axial load capacity are not included in this evaluation.

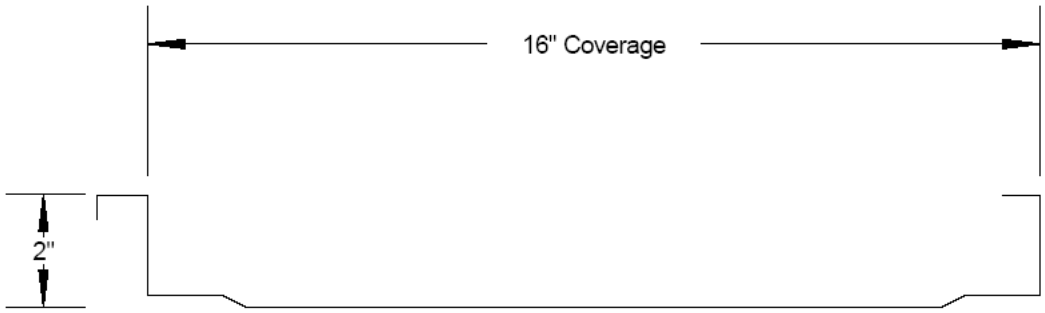
Install the "Double-Lock Zee-Lock" roof panel assembly in compliance with the installation method listed in this report and applicable code sections of FBC 8th Edition (2023). The installation method described herein is in accordance with the scope of this evaluation report. Refer to manufacturer's installation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

Referenced Data:

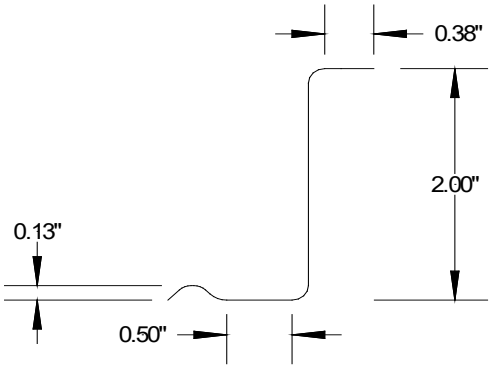
1. TAS 125-03 Uplift Test (Per ASTM E 1592-01)
   By Force Engineering & Testing Inc. (FBC Organization ID# TST 5328)
   Report # 49-0088T-09A-C, Dated 7/29/10
2. Equivalency of Test Standard Certification
   By James L. Buckner, P.E. @ CBUCK Engineering
3. Quality Assurance
   UL, LLC (FBC Organization #: QUA 9625)
4. Certification of Independence
   By James L. Buckner, P.E. @ CBUCK Engineering
   (FBC Organization # ANE 1916)

Installation Method
Berridge Manufacturing Company
"Double-Lock Zee-Lock" (22 gauge Steel) Roof Panel attached to Steel Purlins

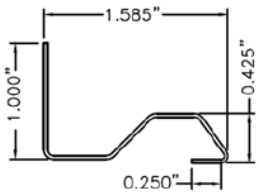
Drawings



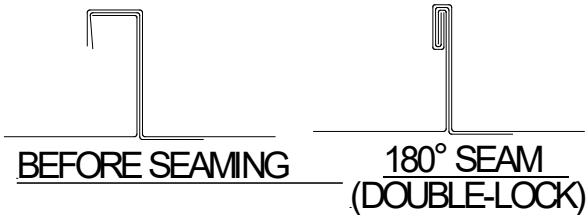
Typical Panel Profile



Continuous "Zee-Rib" Panel Clip Profile Side View

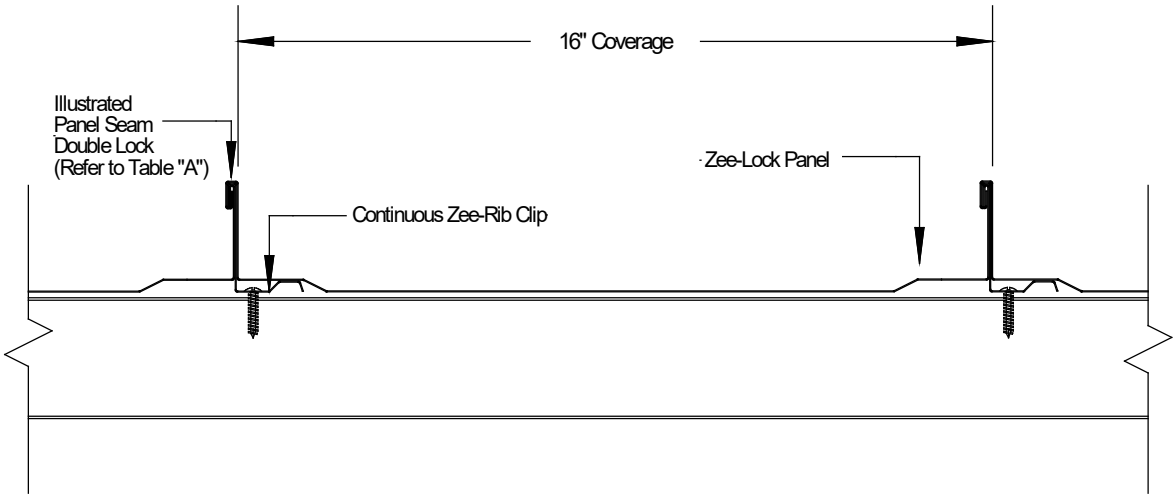


Zee-Rib Backer Plate Profile Side View

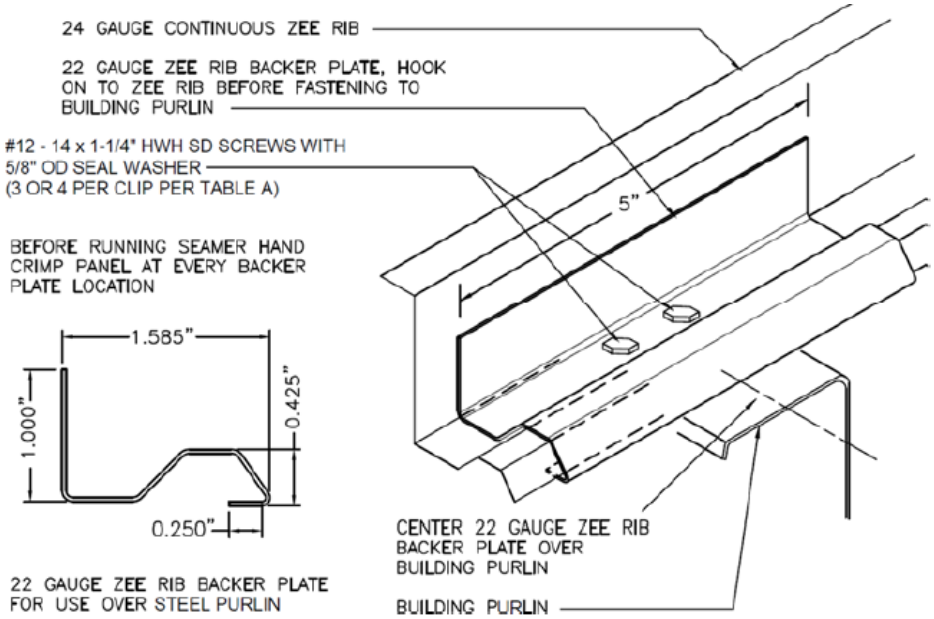


Typical Panel Seam

Installation Method
Berridge Manufacturing Company
"Double-Lock Zee-Lock" (22 gauge Steel) Roof Panel attached to Steel Purlins

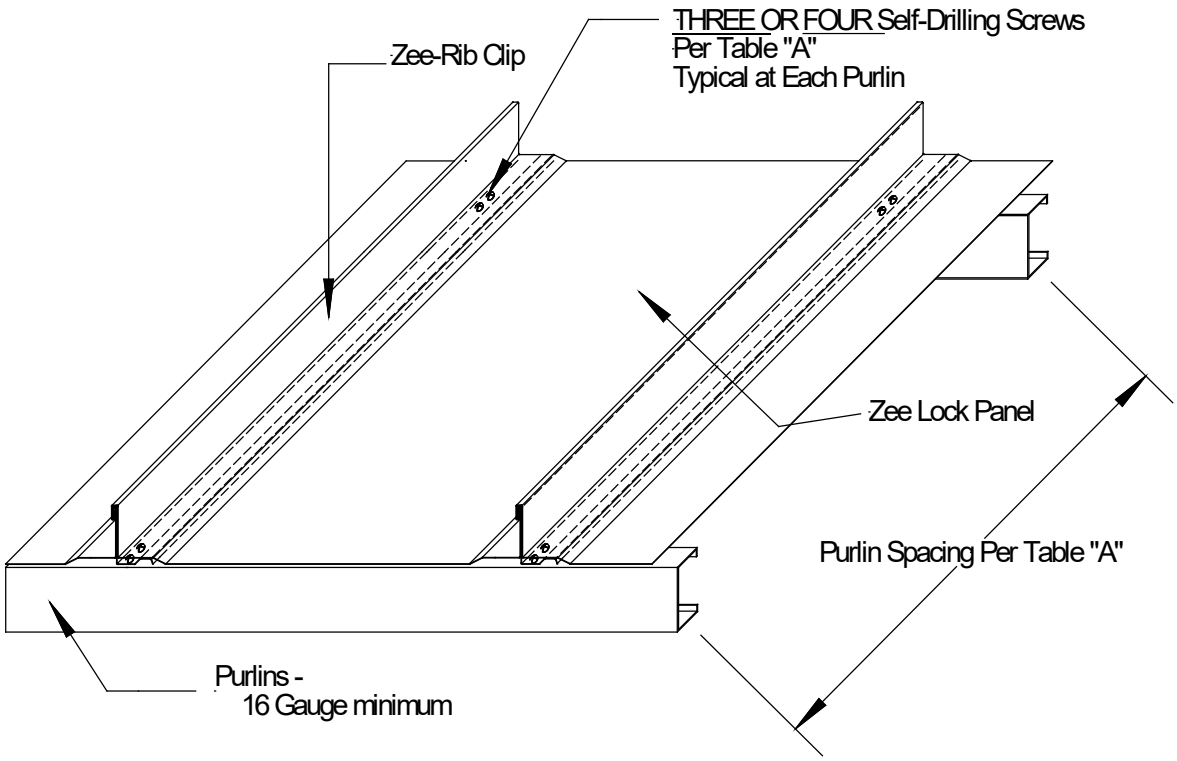


Typical Assembly Profile View
(Typical Fastening Pattern Across Width)



Typical Panel Clip Assembly
with Backer Plate

Installation Method
Berridge Manufacturing Company
"Double-Lock Zee-Lock" (22 gauge Steel) Roof Panel attached to Steel Purlins



Typical Roof Assembly
Isometric View

TABLE "A" **"Double-Lock Zee-Lock" (22 gauge Steel) Roof Panel attached to Steel Purlins** **ALLOWABLE LOADS**		
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