

Evaluation Report

"Arched Roof Deck Panel"

Manufacturer

Aztec Steel Building, Inc.

200 Bradley Street
McKees Rock, PA 15136
(800) 349-0150

for

Florida Product Approval

FL 13036.1 R4

Florida Building Code 7th Edition (2020)

Per Rule 61G20-3

Method: 2 – B

Category: Structural Components

Sub - Category: Roof Deck

Product Description: *Arched Panel for Quonset Hut Structures*

Material: *Steel*

Prepared by:

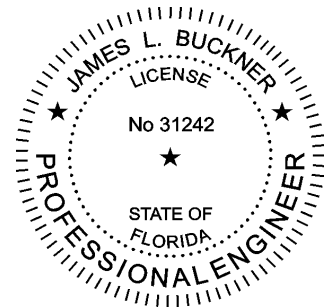
James L. Buckner, P.E., SECB
Florida Professional Engineer # 31242
Florida Evaluation ANE ID: 1916
Report No. 21-414.1_ArchRoof-Stl-ER.2
Date: 5 / 16 / 2021

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



A handwritten signature in blue ink, appearing to read "James L. Buckner".

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CBUCK Engineering

Phone: (561) 491-9927 · Email: cbuck@cbuckinc.net · Website: www.cbuckinc.net

Main Office: 1374 Community Dr., Jupiter, FL 33458

1.0 Product

- 1.1 **Manufacturer:** Aztec Steel Building, Inc.
1.2 **Product Name:** Arched Roof Deck Panel

2.0 Evaluation Scope:

2.1 Evaluation Report Purpose:

This report includes design data for a covering "Component Part" of a pre-engineered arched-style building as addressed in the Florida Statute FS 553-842-10 and Florida Product approval Rule 61G20-3.003 (1)(c). This data is intended to be used as engineering data in the overall design of a custom pre-engineered building.

2.2 Compliance Code:

Florida Building Code 7th Edition (2020)

2.3 Evaluation Method:

Florida Product Approval Rule 61G20-3.005 (2) (b)

2.4 Evaluation Classification:

Category: Structural Components
Sub Category: Roof Deck

2.5 Properties Evaluated

Structural Properties

3.0 Uses:

The Aztec Arched Roof Deck Panel is used in pre-engineered, arch-style steel buildings.

4.0 Product Evaluated Properties Description:

4.1 General:

Steel Roof Deck Panels form the envelope for pre-engineered, arch-style steel buildings. Roof deck panels are used in P-model, S-model, Q-model, and A-model buildings.

5.0 Product Structural Data:

PANEL SECTION PROPERTIES											
GAGE	ASTM STEEL GRADE	DESIGN THICKNESS (in)	Fy (ksi)	POSITIVE MOMENT				NEGATIVE MOMENT			
				Ixe (in ⁴)	Sxe (top) (in ³)	Sxe (bot) (in ³)	Maxo (in-k)	Ixe (in ⁴)	Sxe (top) (in ³)	Sxe (bot) (in ³)	Maxo (in-k)
23	A792, 50	0.027	50	3.650	0.7185	1.7943	21.512	2.072	1.1732	0.3876	11.604
22	A792, 50	0.030	50	4.309	0.8667	2.0089	25.950	2.479	1.3216	0.4731	14.166
20	A792, 50	0.038	50	6.187	1.3157	2.5574	39.391	3.700	1.7236	0.7438	22.269
18	A792, 50	0.046	50	8.239	1.8205	3.1662	54.51	5.063	2.1392	1.0635	31.84
16	A653, 50	0.061	50	11.862	2.7567	4.1832	82.53	8.035	2.8970	1.8404	55.11
14	A653, 50	0.071	50	14.338	3.4294	4.8354	102.68	10.464	3.4730	2.5318	75.80
12	A653, 50	0.099	50	21.37	5.297	6.824	158.61	16.34	4.671	4.452	133.29

Note:

1. All calculations for section properties are executed in accordance to AISI specification for the design of cold formed steel.
2. Section property values are per panel.
3. Design thickness listed in the table is for the base metal and excluding any coatings

6.0 Structural Performance Data

Based on Wind Uplift Test (UL 580-94) with the following test parameter:

Arched Panel Support Span:	115" (Single Span)
Arched Panel Length:	120"
Arched Panel Thickness:	23 Ga.
Fixed Ends Condition:	Panel attachment to steel supports at ends of panels designed by others.
Span Condition:	per pre-engineered building design. Not within scope of this report

Test Sample held a Negative Test Pressure of - 105 psf without failure

Allowable Design Pressure (ASD) of - 52.5 psf with a 2 : 1 Margin of Safety applied to the test load

7.0 Performance Standard:

- 7.1 The following test protocol was performed to demonstrate compliance with the intent of the code:
UL580-06 – Test for Uplift Resistance of Roof Assemblies—with Revisions through February 1998

8.0 Standards Equivalency:

The UL 580-94 standard version used to test the evaluated product assembly is equivalent with the prescribed standards in UL 580-06 adopted by the Florida Building Code 7th Edition (2020).

9.0 Code Compliance:

- 9.1 The product assembly described herein has demonstrated compliance with the Florida Building Code 7th Edition (2020), Section 1708.2.

10.0 Limitations and Conditions of Use:

- 10.1 Design of these component panels for pre-engineered arch-style building is the responsibility of others.
- 10.2 The designer of record shall submit to the building code official, for approval, the applied loads, including all applicable load combinations, for the structure.
- 10.3 Scope of "Limitations and Conditions of Use" for this evaluation:
This evaluation report for "State 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 "State Approval".
- 10.4 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.
- 10.5 Design of support system is outside the scope of this report. Support shall be designed by others and shall comply with the FBC Chapter 19 for concrete, Chapter 21 for Masonry (Grout), Chapter 22 for steel and Chapter 16 for structural loading.
- 10.6 Diaphragm and axial load capacity is outside the scope of this evaluation.
- 10.7 Fire Classification is outside the scope of Rule 61G20-3, and is therefore not included in this evaluation.

10.8 This report does not evaluate the use of this product for use in the High Velocity Hurricane Zone code section. (Dade & Broward Counties)

Specialty Structural Engineering

CBUCK, Inc. Certificate of Authorization #8064

11.0 Quality Assurance:

The manufacturer has demonstrated compliance of products in accordance with the Florida Building Code and Rule 61G20-3.005 (3) for manufacturing under a quality assurance program audited by an approved quality assurance entity through Keystone Certifications, Inc. (FBC Organization ID# QUA 1824).

12.0 Components

Panel

Identification: "Arched Roof Deck Panel"
Typical Panel Shape: Curved Roof, Curved Ridge, Curved Eave, Curved "J", Straight Panels
Material: Steel
Thicknesses: Refer to Section Properties Table
Yield Strength: 50 ksi minimum
Corrosion Resistance: Per FBC Section 1507.4.3

Fastener

Identification: Hex Head (HH) Machine Flanged Bolt
Location: Panel to Panel Lap connection
Style: Flanged Bolt with Weather Sealed Washer and Square Nut
Size: 5/16 in - 18 x 3/4 in Minimum
Material: Steel
Corrosion Resistance: Plated per ASTM B 112

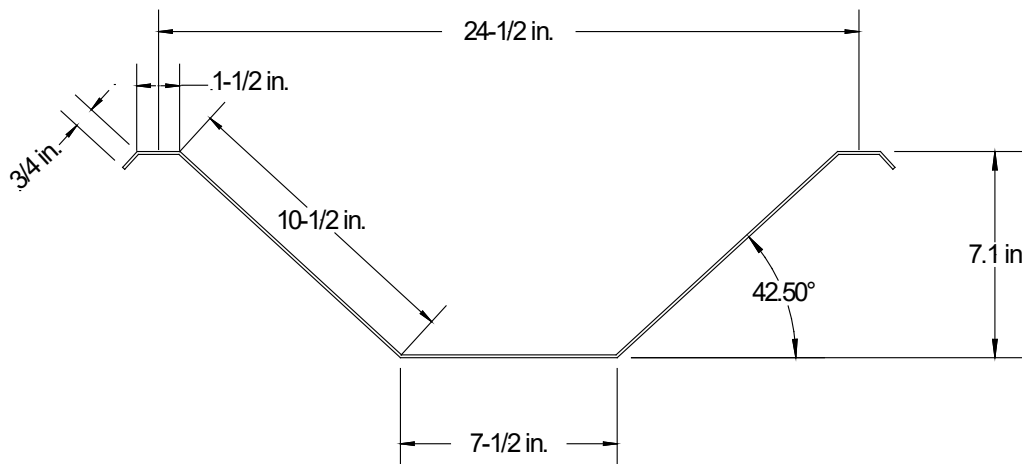
13.0 Installation Method:

The installation method shall be per the approved building design and per the manufacturer's installation instruction.

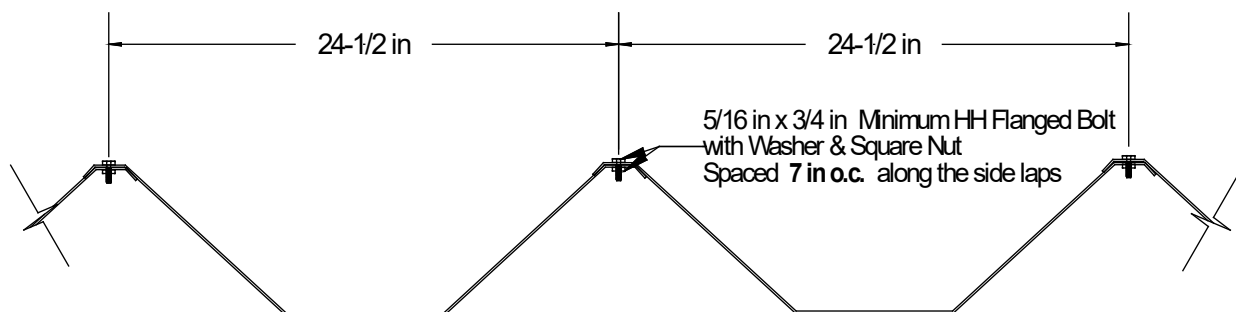
14.0 Evaluation Reference Data:

- 14.1 UL580-94, Test for Uplift
By American Test Lab, Inc. ATL North, (FBC Organization #TST ID: 1555)
Report #: ATLNC #0729.01-05, Dated: 9 / 21 / 05
- 14.2 Quality Assurance
Keystone Certifications, Inc. (FBC Organization ID# QUA 1824)
Aztec Steel Building, Inc. Licensee # 879
- 14.3 Certification of Independence
By James L. Buckner, P.E. @ CBUCK Engineering
(FBC Organization # ANE 1916)

Installation Method Aztec Steel Building, Inc. Steel Roof Deck Panels for Pre-Engineered, Arch-Style Steel Buildings

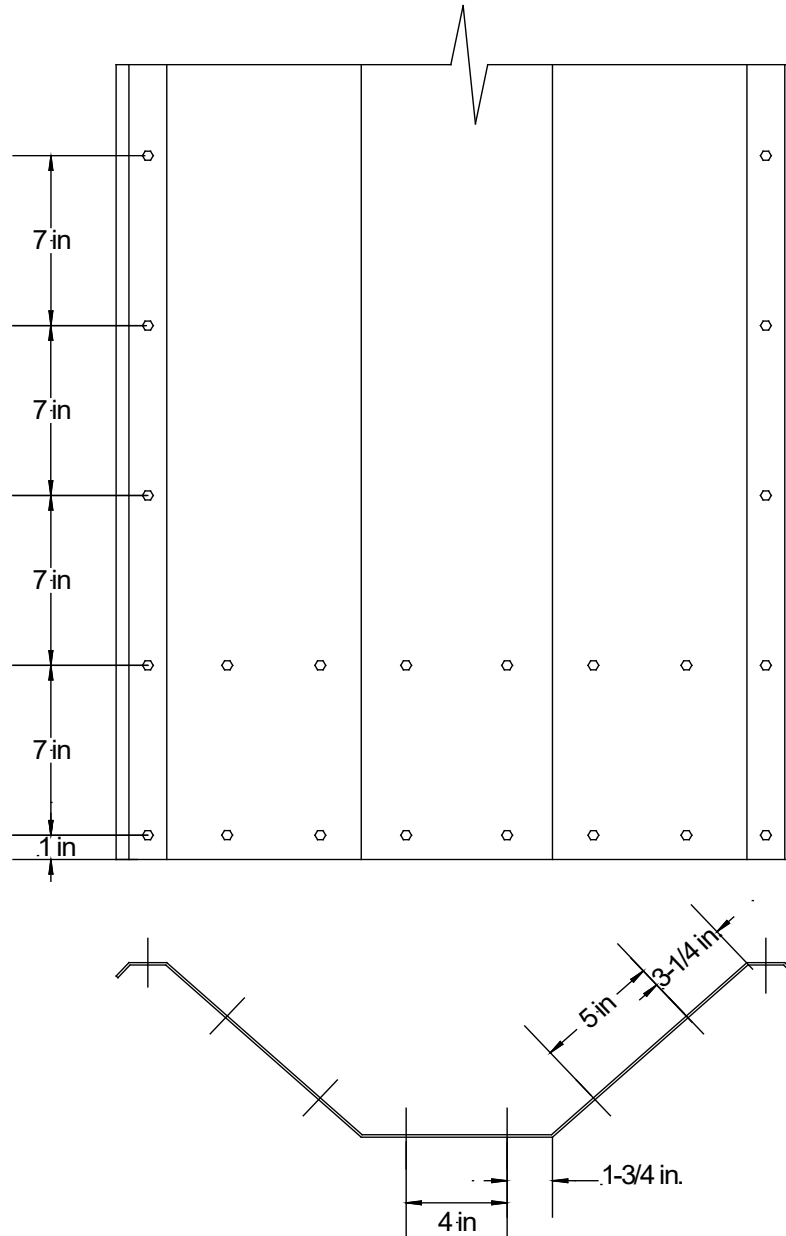


**Section View
Typical Panel Profile**



**Section View
Typical Longitudinal Panel Overlap**

Installation Method Aztec Steel Building, Inc. Steel Roof Deck Panels for Pre-Engineered, Arch-Style Steel Buildings



Typical Panel Hole Pattern Layout