

January 25, 2023

K2 Systems, LLC
2835 La Mirada Drive
Suite A
Vista, CA 92081



RE: *Splice Foot X Rafter and Deck Mounting Evaluation*

To whom it may concern:

Per your request, Moment Engineering + Design has performed a comprehensive structural review of the K2 Systems Splice Foot X in Rafter and Deck Mounting scenarios. When installed per the conditions and design criteria described herein, the Splice Foot X specified is compliant with the applicable sections of the design reference documents noted below.

Design Reference Documents

- ASCE/SEI 7-16 & 7-10 – *Minimum Design Loads for Buildings and Other Structures*
- AA ADM - *2015 Aluminum Design Manual*, by the Aluminum Association
- AAMA TIR A9-91 – *Metal Curtain Wall Fasteners*

Overview

The purpose of this analysis is to provide allowable shear, compression and tensile loads for the K2 Systems Splice Foot X in various attachment configurations including rafter and deck mounting. K2 Systems has provided load testing data completed by Applied Materials & Engineering, Inc. (AME) of the Splice Foot X in rafter and deck mounting configurations.

Moment Engineering + Design has reviewed the testing materials and reports provided by K2 Systems and has derived allowable shear, compression and tensile loads per mounting configuration based on the results.

Methods & Design Parameters

Calculated allowable loads were based on the following data:

- *Section and materials data provided by K2 Systems*
- *Load/deflection test data provided by K2 Systems*

Section Properties

Tested assembly was based the following:

<u>Property</u>	<u>Splice Foot X</u>
Sx (horizontal axis)	0.201. in ³
Sy (vertical axis)	0.302 in ³
A (x-Section)	0.981 in ²

We appreciate the opportunity to have assisted you with this project. Should you have any further questions regarding this analysis, please feel free to contact us by phone or email.

K2 Systems, LLC

2835 La Mirada Drive, Suite A • Vista, CA 92081 • Phone: 760-301-5300 • Web: www.k2-systems.com

Best Regards,



Shawn
Kelley

Digitally signed
by Shawn Kelley
Date: 2023.01.25
14:16:20 -05'00'

Expires: 03/31/2025

Shawn P. Kelley, P.E.

Professional Engineer

moment ENGINEERING + DESIGN

8229 Boone Boulevard, Suite #410

Vienna, VA 22180

spkelley@msegllc.com

Attachments:

1. Table 1.1: Splice Foot X – Rafter Mounting Options
2. Table 1.2: Splice Foot X – Deck Mounting Options

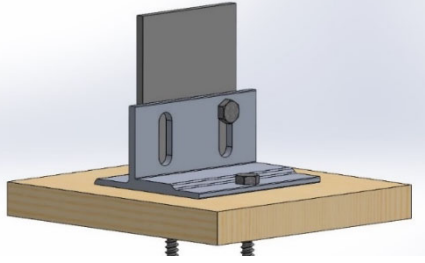
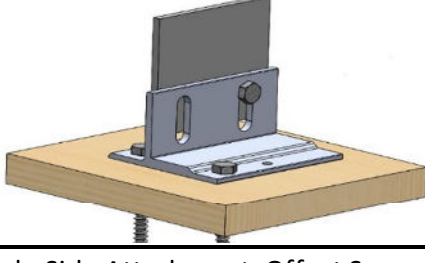
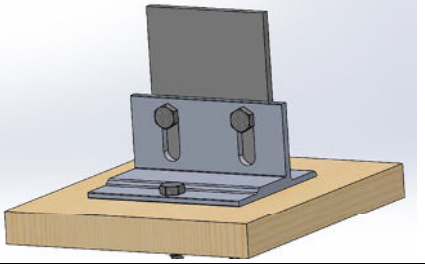
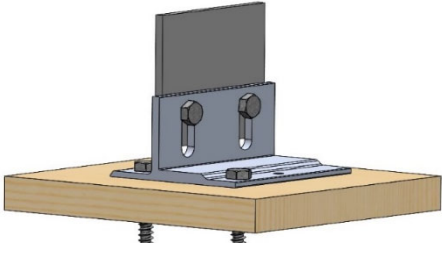
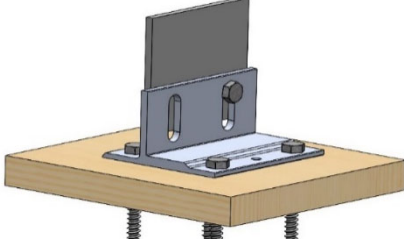
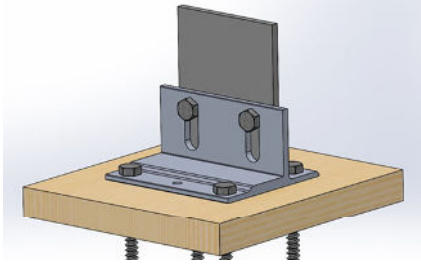
Table 1.1: Splice Foot X - Rafter Mounting Options	
Note: Rafter attached with M5X60 self-drilling wood screws through 7/16" OSB directly into the rafter (fully threaded, 1-5/8" of embedment into rafter)	
CONFIGURATION	ALLOWABLE LOADS
	ALLOWABLE TENSILE LOAD (LBS): 700
	ALLOWABLE COMPRESSIVE LOAD (LBS.): 700
	ALLOWABLE SHEAR (LBS.): 700
Single Side Attachment, Center Screw Mount (Rafter Attached)	Note: Allowable loads determined from AME Test Reports; Project No. 1200575C & 1200487C. Safety factor of 2 applied to Ultimate values
CONFIGURATION	ALLOWABLE LOADS
	ALLOWABLE TENSILE LOAD (LBS): 700
	ALLOWABLE COMPRESSIVE LOAD (LBS.): 700
	ALLOWABLE SHEAR (LBS.): 700
Single Side Attachment, Offset Screw Mount (Rafter Attached)	Note: Allowable loads determined from AME Test Reports; Project No. 1200575C & 1200487C. Safety factor of 2 applied to Ultimate values
CONFIGURATION	ALLOWABLE LOADS
	ALLOWABLE TENSILE LOAD (LBS): 700
	ALLOWABLE COMPRESSIVE LOAD (LBS.): 700
	ALLOWABLE SHEAR (LBS.): 700
Spliced Connection, Center Screw Mount (Rafter Attached)	Note: Allowable loads determined from AME Test Reports; Project No. 1200575C & 1200487C. Safety factor of 2 applied to Ultimate values
CONFIGURATION	ALLOWABLE LOADS
	ALLOWABLE TENSILE LOAD (LBS): 700
	ALLOWABLE COMPRESSIVE LOAD (LBS.): 700
	ALLOWABLE SHEAR (LBS.): 700
Spliced Connection, Offset Screw Mount (Rafter Attached)	Note: Allowable loads determined from AME Test Reports; Project No. 1200575C & 1200487C. Safety factor of 2 applied to Ultimate values

Table 1.2: Splice Foot X - Deck Mounting Options	
<p>Note: Deck attachment assumes min. 8" distance from all OSB panel edges, 24" maximum O.C. rafter spacing, and attached with M5X60 self-drilling wood screws through 7/16" OSB.</p>	
CONFIGURATION	ALLOWABLE LOADS
	<p>ALLOWABLE TENSILE LOAD (LBS):</p> <p>250</p>
	<p>ALLOWABLE COMPRESSIVE LOAD (LBS.):</p> <p>300</p>
	<p>ALLOWABLE SHEAR (LBS.):</p> <p>250</p>
	<p>Single Side Attachment, 4 Screw Mount (Deck Attached)</p>
CONFIGURATION	ALLOWABLE LOADS
	<p>ALLOWABLE TENSILE LOAD (LBS):</p> <p>250</p>
	<p>ALLOWABLE COMPRESSIVE LOAD (LBS.):</p> <p>300</p>
	<p>ALLOWABLE SHEAR (LBS.):</p> <p>250</p>
	<p>Spliced Connection, 4 Screw Mount (Deck Attached)</p>