

November 28, 2023

K2 Systems, LLC  
4665 North Avenue  
Suite I  
Oceanside, CA 92056



**RE: *Splice Foot XL Rafter 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 XL in Rafter Mounting scenarios. When installed per the conditions and design criteria described herein, the Splice Foot XL 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*
- National Design Specification for Wood Construction – *2018 Edition*

**Overview**

The purpose of this analysis is to provide allowable shear, compression and tensile loads for the K2 Systems Splice Foot XL in various attachment configurations including rafter mounting. K2 Systems has provided load testing data completed by Applied Materials & Engineering, Inc. (AME) of the Splice Foot XL in rafter 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 XL</u>
Sx (horizontal axis)	0.354 in <sup>3</sup>
Sy (vertical axis)	0.425 in <sup>3</sup>
A (x-Section)	1.299 in <sup>2</sup>

**K2 Systems, LLC**

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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.

Best Regards,

Shawn Kelley

Digitally signed by Shawn

Kelley

Date: 2023.11.29 10:44:12

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Shawn P. Kelley, P.E.

**Professional Engineer**

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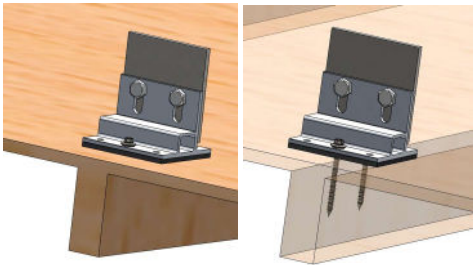
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Attachments:

1. Table 1.1: Splice Foot XL – Rafter Mounting Options

Table 1.1: Splice Foot XL - Rafter <sup>5</sup> Mounting Options	
Note: Rafter attached with (2) #14 x 3" long self-drilling wood screws through 7/16" OSB directly into the rafter (fully threaded, 2.5" of embedment into rafter)	
CONFIGURATION	ALLOWABLE LOADS <sup>3</sup>
	ALLOWABLE UPLIFT LOAD (LBS) <sup>1,4</sup> :
	1020
	ALLOWABLE COMPRESSIVE LOAD (LBS.) <sup>4</sup> :
	1020
	ALLOWABLE SHEAR (LBS) <sup>2</sup> :
	414
<p>1. Determined using NDS Eq. 12.2-2 with 2.5" minimum thread length</p> <p>2. Allowable shear based on Table 12M (NDS) with reduction factor applied for embedment &lt;10D</p> <p>3. Allowable uplift load includes a 1.6 load duration factor for wind. Allowable shear load includes a 1.15 load duration factor for snow. No additional increases are permitted.</p> <p>4. The effect of bolt slippage has not been evaluated</p> <p>5. Assumes a minimum specific gravity G=0.43</p>	