12/12/2024

Christie Lites Coventry
40 Sayer Dr
Coventry, CV5 9PF
Attn: Ryan Brown

RE: B Truss – Rotated 45 Degress Load Tables
CRE Project #: 24.915.09

Dear Ryan:

At your request, Clark Reder Engineering has reviewed the Christie Lites Type B aluminum box truss for allowable loading on the truss rotated 45 degrees. Load tables have been created for a 16' span per the requirements set forth in the 2020 Aluminum Design Manual as well as ANSI E1.2-2021, Entertainment Technology, Design, Manufacture, and Use of Aluminum Truss and Towers. Attached please find the allowable loading tables for your use.

We trust this information is suitable for your needs at this time. If you have any questions, please do not hesitate to contact our office.

Regards,
Clark-Reder Engineering, Inc.

STATE OF OHIO
JEFFREY M. REDER
E-67450
REGISTERED
PROFESSIONAL ENGINEER
12/12/2024

Jeffrey M. Reder, P.E.

Carson Becker

Carson Becker, E.I.

Alabama

Jeffrey M. Reder, P.E.
P.E. # 54662

Alaska

Arizona

Jeffrey M. Reder, P.E.
P.E. # 50654

Arkansas

Jeffrey M. Reder, P.E.
P.E. # 23061

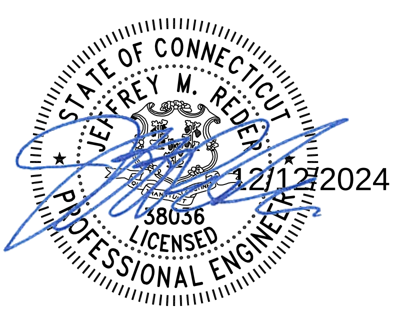
California

Jeffrey M. Reder, P.E.
P.E. # C70581

Colorado

Jeffrey M. Reder, P.E.
P.E. # PE0051394

Connecticut

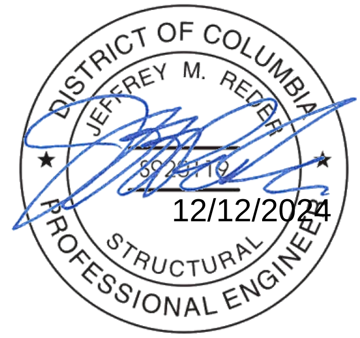


Jeffrey M. Reder, P.E.
P.E. # 38036

Delaware

Jeffrey M. Reder, P.E.
P.E. # 17438

District of Columbia



Jeffrey M. Reder, P.E.
P.E. # S920119

Project: B Truss Diagonal Load Tables
Client: Christie Lite

CRE Project #: 24.915.09
Date: 12/12/2024
Engineer: CJB

Clark Reder Engineering
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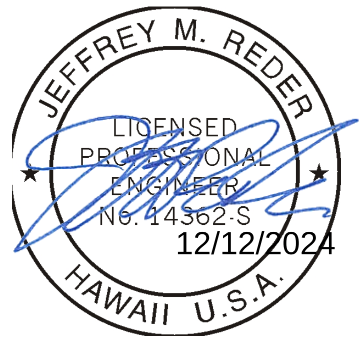
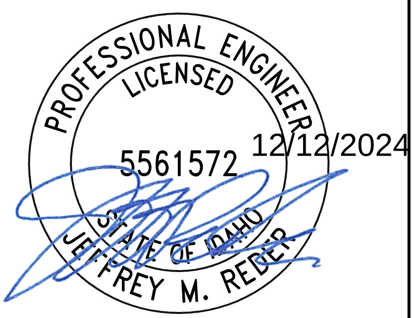
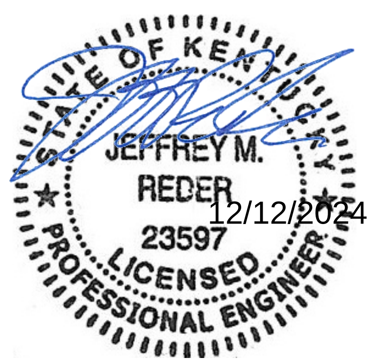
Florida	Georgia	Hawaii
 Jeffrey M. Reder, P.E. P.E. # 68622	 Jeffrey M. Reder, P.E. P.E. # PE034581	 Jeffrey M. Reder, P.E. P.E. # 14362-S
Idaho	**Illinois**	**Indiana**
 Jeffrey M. Reder, P.E. P.E. # 5561572	 Clark Reder Engineering, Inc. is a professional design firm registered in Illinois #184.006693 Jeffrey M. Reder, S.E. P.E. # 81006866	 Jeffrey M. Reder, P.E. P.E. # PE11600603
Iowa	**Kansas**	**Kentucky**
 Jeffrey M. Reder, P.E. P.E. # 19998	 Jeffrey M. Reder, P.E. P.E. # 30951	 Jeffrey M. Reder, P.E. P.E. # 23597

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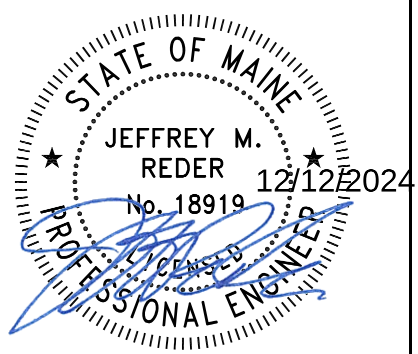
Louisiana

Jeffrey M. Reder, P.E.
P.E. # 30304

Maine



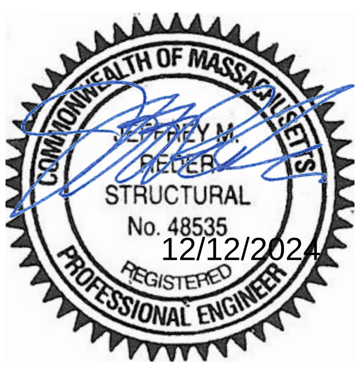
Jeffrey M. Reder, P.E.
P.E. # 18919

Maryland

Professional Certification: I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland, License # 38421, Expiration Date: 1/29/2025

Jeffrey M. Reder, P.E.
P.E. # 38421

Massachusetts



Jeffrey M. Reder, P.E.
P.E. # 48535

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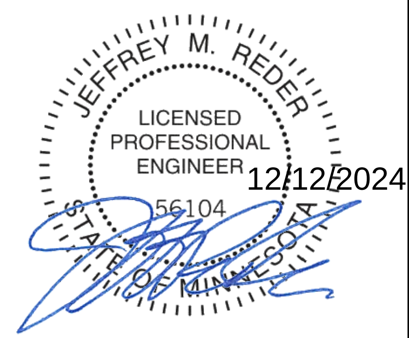
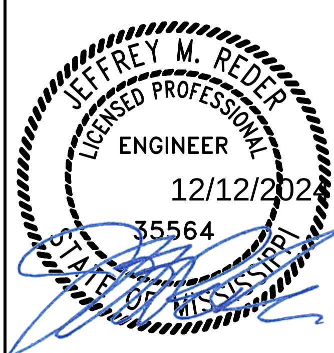
Jeffrey M. Reder, P.E.
P.E. # 6201056952

Minnesota



Jeffrey M. Reder, P.E.
P.E. # 56104

Mississippi



"I have reviewed this document in sufficient depth to accept full responsibility for its contents and to assure code compliance and coordination"

Jeffrey M. Reder, P.E.
P.E. # 35564

Missouri

Jeffrey M. Reder, P.E.
P.E. # PE-2010003345

Montana

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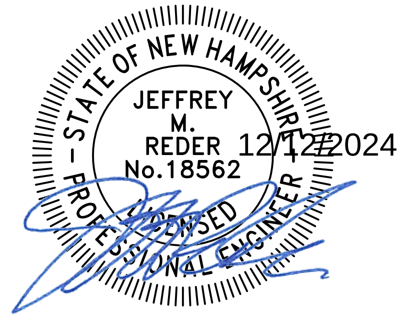
Jeffrey M. Reder, P.E.
P.E. # E-20901

Nevada

Jeffrey M. Reder, P.E.
P.E. # 020117

New Hampshire



Jeffrey M. Reder, P.E.
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Jeffrey M. Reder, P.E.
P.E. # 24GE05300600

New Mexico

Jeffrey M. Reder, P.E.
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North Dakota

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Jeffrey M. Reder, P.E.
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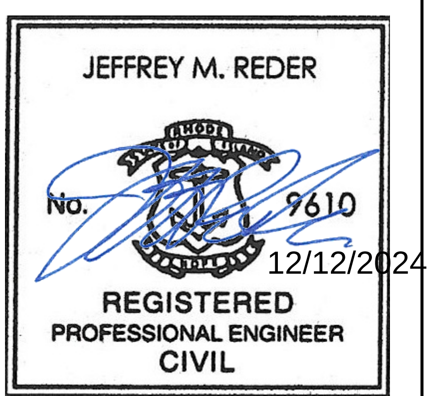
Oregon

Jeffrey M. Reder, P.E.
P.E. # 93904PE

Pennsylvania

Jeffrey M. Reder, P.E.
P.E. # PE77455

Rhode Island



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P.E. # 9610

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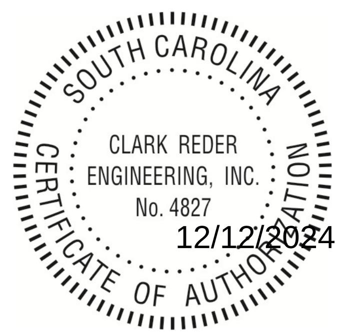
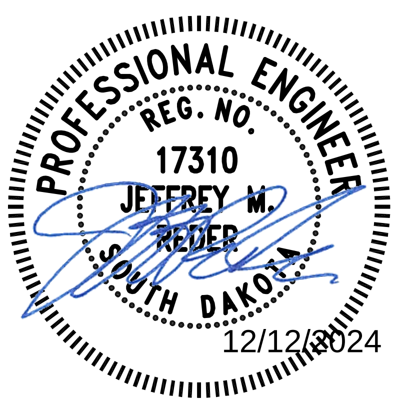
Jeffrey M. Reder, P.E.
P.E. # 35797

South Carolina



Clark Reder Engineering
4827

South Dakota



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Jeffrey M. Reder, P.E.
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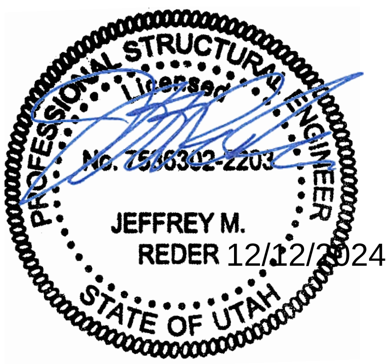
Utah



Jeffrey M. Reder, P.E.
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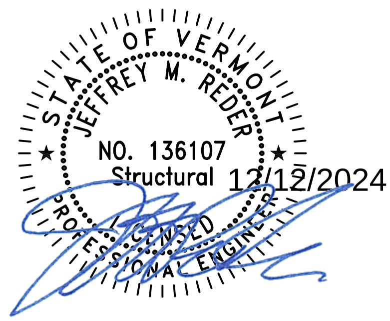
Vermont



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Jeffrey M. Reder, P.E.
P.E. # 402061022

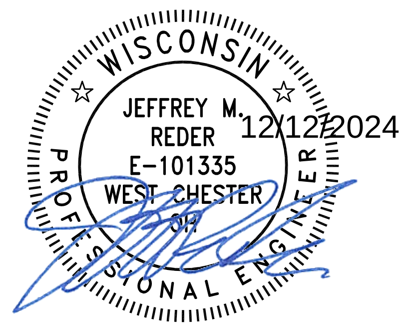
Washington

Jeffrey M. Reder, P.E.
P.E. # 56469

West Virginia

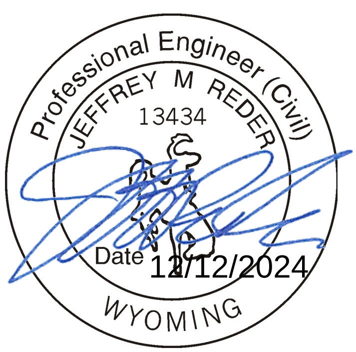
Jeffrey M. Reder, P.E.
P.E. # 18628

Wisconsin

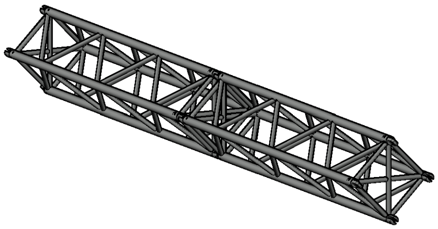


Jeffrey M. Reder, P.E.
P.E. # E-101335

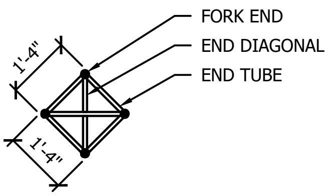
Wyoming



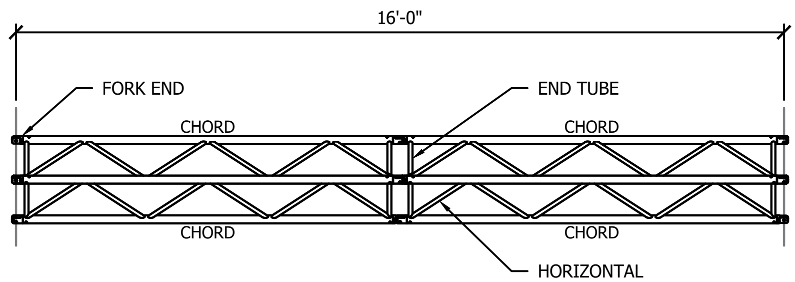
Jeffrey M. Reder, P.E.
P.E. # 13434



ISOMETRIC VIEW



END VIEW



TOP VIEW

CHRISTIE LITES B TRUSS DIAGONAL TRUSS TABLE

TRUSS SPAN	UNIFORMLY DISTRIBUTED LOAD		CENTER POINT LOAD		THIRD POINT LOAD		QUARTER POINT LOAD		2'-0" INCREMENT POINT LOAD	
	LOAD	DEFLECTION	LOAD	DEFLECTION	LOAD	DEFLECTION	LOAD	DEFLECTION	LOAD	DEFLECTION
16'-0"	245 lb/ft	0.343 in	1,450 lbs	0.226 in	540 lbs	0.139 in	470 lbs	0.171 in	425 lbs	0.309 in

PARTS LIST

CHORDS	2"Øx1/8" TUBE
DIAGONALS	1"Øx1/8" TUBE
END TUBES	1"Øx1/8" TUBE
FORK ENDS	ALUMINUM

NOTES:
1. ALL ALUMINUM IS 6082-T6 OR 6061-T6
2. ALL WELD FILLER IS 4043

TABLE USAGE NOTES:
1. THE TRUSS IS ROTATED 45 DEGREES AND IS SUPPORTING VERTICAL LOADS ONLY. NO LATERAL LOADS WERE APPLIED TO THE TRUSS.
2. THE TRUSS WAS ANALYZED AS A SIMPLE SPAN BEAM WITH SUPPORTS AT TRUSS ENDS ONLY.
3. THE TRUSS HAS BEEN ANALYZED FOR STATIC LOADS ONLY.
4. ALL LOADS ARE APPLIED TO THE BOTTOM CHORD OF THE TRUSS.
5. ALL SUPPORTS ARE TO BE LOCATED AT THE PANEL POINTS OF THE TRUSS ONLY.
6. SELF WEIGHT HAS BEEN CONSIDERED IN THE ANALYSIS OF THE TRUSS.
7. MAXIMUM DEFLECTION LIMITED TO SPAN/180.
8. ALLOWABLE LOADS BASED ON 2020 ALUMINUM DESIGN MANUAL.

CHRISTIE LIGHTS B TRUSS DIAGONAL

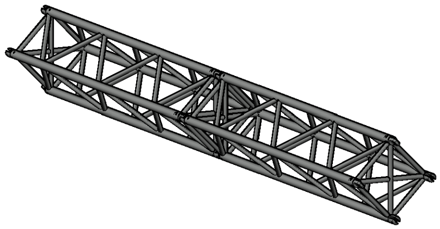
SINGLE USE

CLARK REDER ENGINEERING
10091 Mosteller Lane
West Chester, OH 45069
513 851 1223

TRUSS TABLE

DATE: 12/12/2024
CRE PROJECT NO: 24.915.09
DRAWN BY: CJB/MAL

ST1.1



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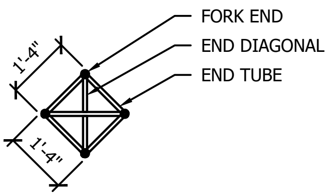

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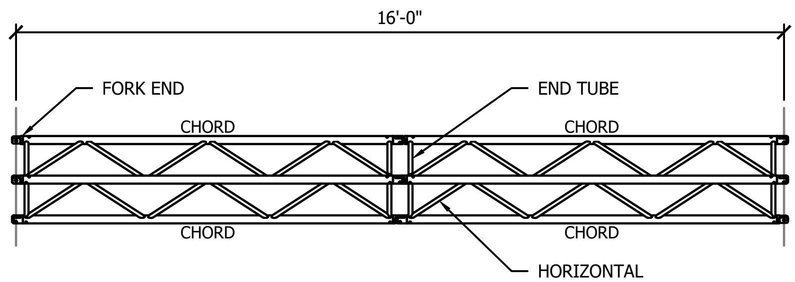

TOP VIEW

CHRISTIE LITES B TRUSS DIAGONAL TRUSS TABLE

TRUSS SPAN	UNIFORMLY DISTRIBUTED LOAD		CENTER POINT LOAD		THIRD POINT LOAD		QUARTER POINT LOAD		2'-0" INCREMENT POINT LOAD	
	LOAD	DEFLECTION	LOAD	DEFLECTION	LOAD	DEFLECTION	LOAD	DEFLECTION	LOAD	DEFLECTION
16'-0"	209 lb/ft	0.292 in	1,233 lbs	0.193 in	459 lbs	0.119 in	400 lbs	0.146 in	361 lbs	0.263 in

PARTS LIST

CHORDS	2"Øx1/8" TUBE
DIAGONALS	1"Øx1/8" TUBE
END TUBES	1"Øx1/8" TUBE
FORK ENDS	ALUMINUM

NOTES:
1. ALL ALUMINUM IS 6082-T6 OR 6061-T6
2. ALL WELD FILLER IS 4043

TABLE USAGE NOTES:
1. THE TRUSS IS ROTATED 45 DEGREES AND IS SUPPORTING VERTICAL LOADS ONLY. NO LATERAL LOADS WERE APPLIED TO THE TRUSS.
2. THE TRUSS WAS ANALYZED AS A SIMPLE SPAN BEAM WITH SUPPORTS AT TRUSS ENDS ONLY.
3. THE TRUSS HAS BEEN ANALYZED FOR STATIC LOADS ONLY.
4. ALL LOADS ARE APPLIED TO THE BOTTOM CHORD OF THE TRUSS.
5. ALL SUPPORTS ARE TO BE LOCATED AT THE PANEL POINTS OF THE TRUSS ONLY.
6. SELF WEIGHT HAS BEEN CONSIDERED IN THE ANALYSIS OF THE TRUSS.
7. MAXIMUM DEFLECTION LIMITED TO SPAN/180.
8. ALLOWABLE LOADS BASED ON 2020 ALUMINUM DESIGN MANUAL.
9. ALLOWABLE LOADS BASED ON 2020 ALUMINUM DESIGN MANUAL. ALL CAPACITIES ARE REDUCED TO 0.85 PER ANSI E1.2-2012 FOR REPETITIVE USE MEMBERS

CHRISTIE LIGHTS
B TRUSS DIAGONAL

REPETITIVE USE

CLARK REDER ENGINEERING
10091 Mosteller Lane
West Chester, OH 45069
513 851 1223

TRUSS TABLE

DATE: 12/12/2024
CRE PROJECT NO: 24.915.09
DRAWN BY: CJB/MAL

ST1.2

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B Diagonal Truss Truss Load Span Tables - Rotated 45 Degrees

Codes and Referenced Standards

- Aluminum Design Manual, 2020 ed.
- ANSI E 1.2-2021 *"Manufacture and Use of Aluminum Trusses and Towers"*

Project Description

- This standard truss is a box truss fabricated from 6061-T6
- The truss is 16" deep x 16" wide.
- The chords will be composed of 2" diameter x 1/8" thick round tubes.
- The diagonals will be composed of 1" diameter x 1/8" thick round tubes.

Analysis Assumptions/Design Criteria

- The truss is supporting vertical loads only
- Truss is rotated 45 degrees so the loads are applied to the bottom chord only.
- The truss is analyzed as a simple span beam. Truss support points are located at truss panel points.
- The truss will be analyzed for static loads only.
- All loads are applied at the panel points of the truss as to not induce local bending stresses in the chords.

General Design - Applies To All Assemblies

Steel/Aluminum Factors of Safety

Note: The following factors/design criteria applies to all assemblies and will be used throughout design package (U.N.O).

AISC Typical Factors of Safety (U.N.O.): $\Omega_{y.AISC} := 1.67$ $\Omega_{r.AISC} := 2.0$

ADM Typical Factors of Safety (U.N.O.): $\Omega_{y.ADM} := 1.65$ $\Omega_{r.ADM} := 1.95$

6061-T6 Mechanical Properties	Unwelded	Welded
Tension Ultimate Stress:	$F_{tu.6061} := 38 \cdot ksi$	$F_{tuw.6061} := 24 \cdot ksi$
Tension Yield Stress:	$F_{ty.6061} := 35 \cdot ksi$	$F_{tyw.6061} := 15 \cdot ksi$
Compression Yield Stress:	$F_{cy.6061} := 35 \cdot ksi$	$F_{cyw.6061} := 15 \cdot ksi$
Shear yield stress:	$F_{sy.6061} := 0.6 \cdot F_{ty.6061} = 21.00\ ksi$	$F_{syw.6061} := 0.6 \cdot F_{tyw.6061} = 9.00\ ksi$
Ultimate shear stress:	$F_{su.6061} := 24 \cdot ksi$	$F_{suw.6061} := 15 \cdot ksi$
Tension coefficient:	$k_{t.6061} := 1.0$	$k_{tw.6061} := 1.0$

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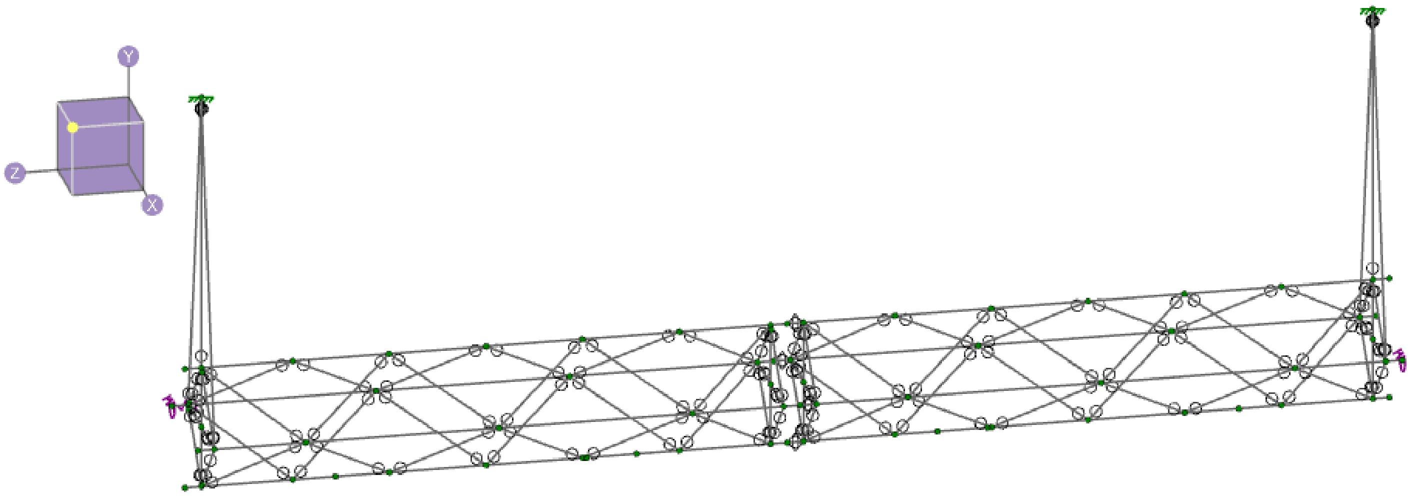
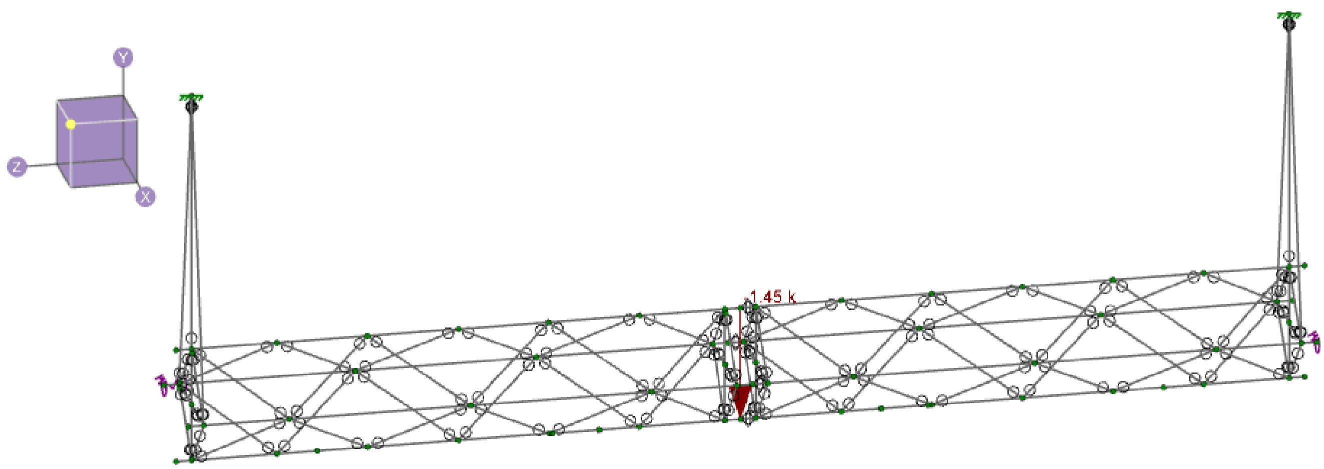
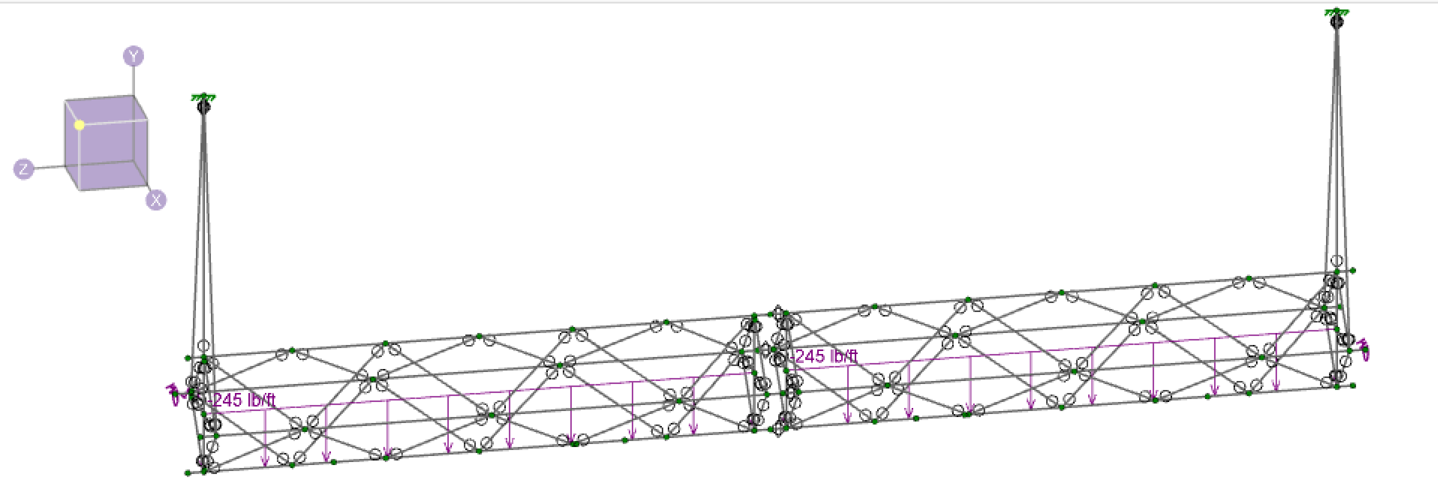
Risa Model & Framing Review



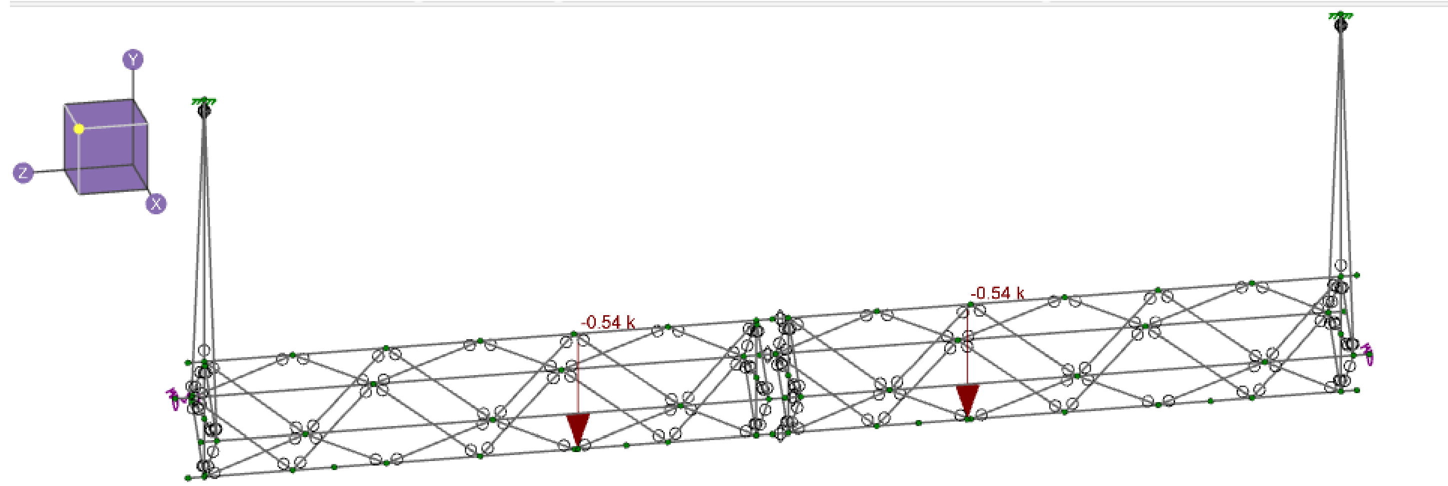
Risa 3D Model



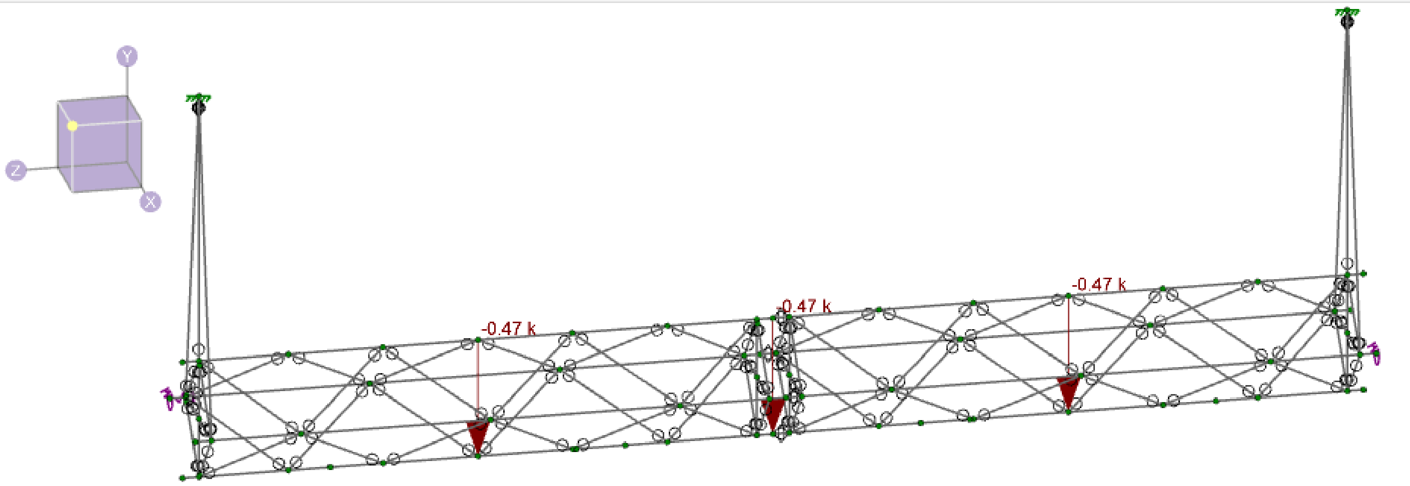
Center Point Loads



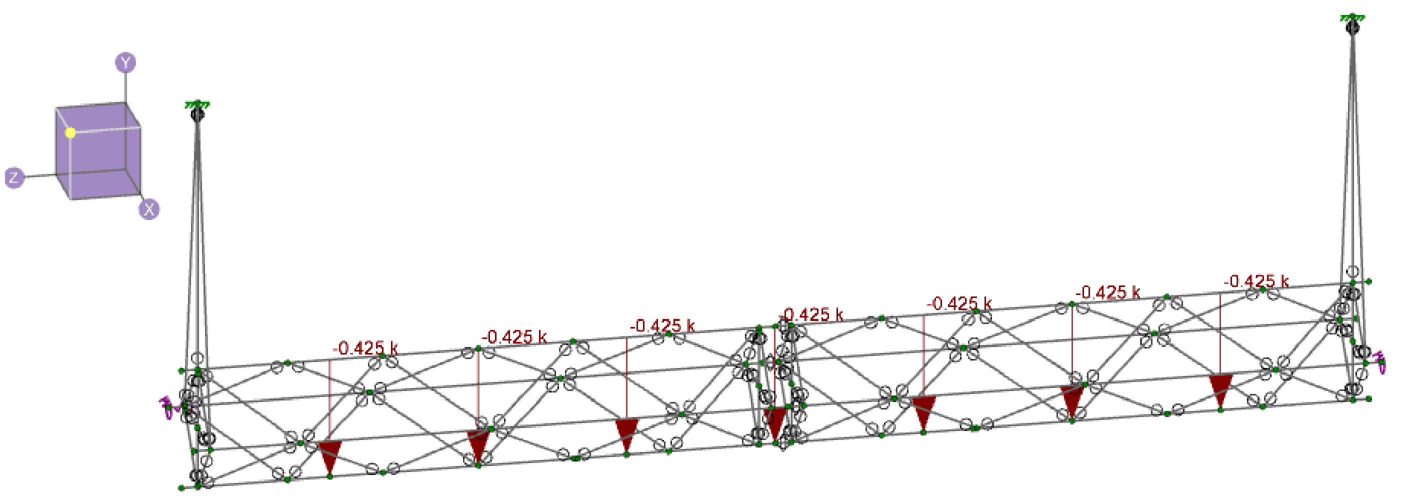
Uniformly Distributed Loads



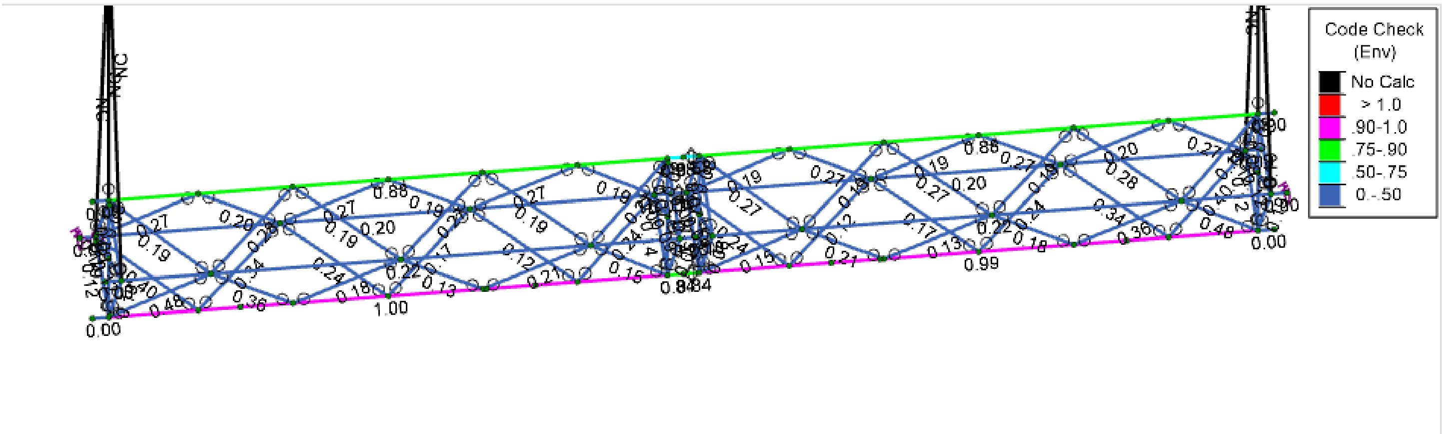
3rd Point Loads



4rd Point Loads



2' Increments



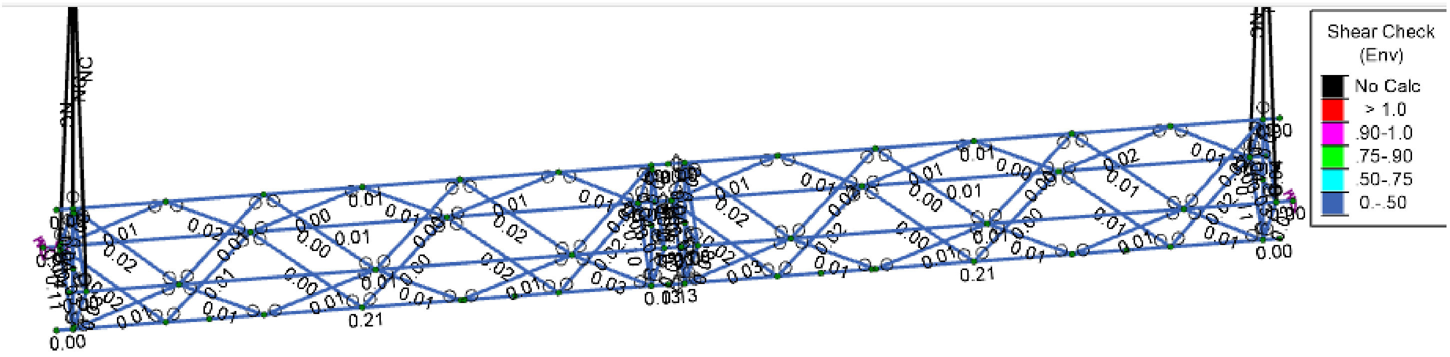
Envelope AA ADM1-20: ASD - Building Aluminum Code Checks

Hot Rolled Steel | Cold Formed Steel | Wood | Concrete Beams | Concrete Columns | **Aluminum**

	Member	Shape	Code Check	Loc[in]	LC	Shear Check	Loc[in]	Dir	L(
1	M109	2.000ODX0.125	0.996	61.137	3	0.206	61.137		5
2	M103	2.000ODX0.125	0.993	29.613	3	0.206	29.613		5
3	M101	2.000ODX0.125	0.879	14.329	3	0.005	0		3
4	M107	2.000ODX0.125	0.879	76.421	3	0.005	90.75		3

Enveloped Member Utilizations

Note: All aluminum member checks are less than 1.0, therefore they meet minimum factors of safety.



Envelope AA ADM1-20: ASD - Building Aluminum Code Checks

Hot Rolled Steel | Cold Formed Steel | Wood | Concrete Beams | Concrete Columns | **Aluminum**

	Member	Shape	Code Check	Loc[in]	LC	Shear Check	Loc[in]	Dir	LC
1	M109	2.000ODX0.125	0.996	61.137	3	0.206	61.137		5
2	M103	2.000ODX0.125	0.993	29.613	3	0.206	29.613		5
3	M110	2X.5	0.842	0	4	0.133	0	y	4

Enveloped Member Shear Utilizations

Note: All aluminum member checks are less than 1.0, therefore they meet minimum factors of safety.

Aluminum Forked End

6061-T6 Extrusion Mechanical Properties

	Unwelded	Welded
Tension Yield Stress:	$F_{ty} := 35 \cdot ksi$	$F_{tyw} := 15 \cdot ksi$
Ultimate Tensile Stress:	$F_{tu} := 38 \cdot ksi$	$F_{tuw} := 24 \cdot ksi$
Compression Yield Stress:	$F_{cy} := 35 \cdot ksi$	$F_{cyw} := 15 \cdot ksi$
Shear yield stress:	$F_{sy} := 0.6 \cdot F_{ty} = 21.00\ ksi$	$F_{syw} := 0.6 \cdot F_{tyw} = 9.00\ ksi$
Ultimate shear stress:	$F_{su} := 24 \cdot ksi$	$F_{suw} := 15 \cdot ksi$
Tension coefficient:	$k_t := 1.0$	
Thickness of fork:	$t_m := .69 \cdot in$	
Center of hole to edge:	$L_m := 1 \cdot in$	
Center of hole to end:	$L_{m\_end} := 1.732 \cdot in$	
Height of plate:	$h_m := 2 \cdot in$	
Diameter of hole:	$d_{m\_hole} := .625 \cdot in$	

Axial tension - D.2a/b

Allowable stress gross section: $F_{t\_D.2\_a} := 21.2 \cdot ksi$

Allowable gross tension: $P_{m\_gross} := F_{t\_D.2\_a} \cdot t_m \cdot h_m$ $\qquad P_{m\_gross} = 29.26\ kip$

Allowable stress net section: $F_{t\_D.2\_b} := 19.5 \cdot ksi$

Allowable net tension: $P_{m\_net} := F_{t\_D.2\_b} \cdot t_m \cdot \left(h_m - d_{m\_hole} + \frac{1}{32} \cdot in\right)$ $\qquad P_{m\_net} = 18.92\ kip$

Bearing - J.6.5

Allowable stress bearing:

$F_{t\_J.3.7} := 25.9 \cdot ksi$

Allowable bearing:

$P_{m\_brg} := \dfrac{L_m \cdot t_m \cdot F_{tu}}{1.5} = 17480.00\ lbf$

$P_{m\_brg} = 17.48\ kip$

Allowable Bearing Check

$Limit := 1.33 \cdot d_{m\_hole} \cdot t_m \cdot F_{tu} = 21795.38\ lbf$

Check to see if J.6.5 Conditions are met

```
Check := || if P_m_brg < Limit     ||  = "VALID"
         ||   || "VALID"           ||
         || else                   ||
         ||   || "NOT VALID"       ||
```

Compression - E.3:

Unbraced length: $L_c := L_{m\_end}$

Plate moment of inertia: $Iy_m := \frac{1}{12} \cdot h_m \cdot t_m^{\ 3}$ $\qquad Iy_m = 0.05\ in^4$

Area of plate: $A_m := t_m \cdot h_m$ $\qquad A_m = 1.38\ in^2$

Radius of gyration: $ry_m := \sqrt{\frac{Iy_m}{A_m}}$ $\qquad ry_m = 0.20\ in$

Slenderness: $S_{E.3} := \frac{2.1 \cdot L_{m\_end}}{ry_m}$ $\qquad S_{E.3} = 18.26$

Allowable stress:

$$F_{vert\_E.3} := \begin{cases} (21.2 \cdot ksi) & \text{if } S_{E.3} \le 17.8 \\ \left(0.00047 \cdot S_{E.3}^{\ 2} - 0.232 \cdot S_{E.3} + 25.2\right) \cdot ksi & \text{if } (0 < S_{E.3}) \wedge (66 > S_{E.3}) \\ \left(\frac{51352}{S_{E.3}^{\ 2}}\right) \cdot ksi & \text{if } 66 < S_{E.3} \end{cases}$$

$F_{vert\_E.3} = 21.1\ ksi$

Allowable compression:

$P_{m\_comp} := F_{vert\_E.3} \cdot t_m \cdot h_m$ $\qquad P_{m\_comp} = 29.15\ kip$

Allowable axial force in fork:

$P_{allow\_fork} := min\left(P_{m\_gross}, P_{m\_net}, P_{m\_brg}, P_{m\_comp}\right)$

$P_{allow\_fork} = 17.48\ kip$

Diameter of pin: $d_{pin} := .625 \cdot in$

Pin yield strength: $Fy_{pin} := 50 \cdot ksi$

Pin tensile strength: $Fu_{pin} := 65 \cdot ksi$

Pin shear capacity:

The pin will be in double shear. Use Table J3.2 for nominal stress of fasteners.

Nominal shear stress: $F_{nv\_pin} := 0.5 \cdot Fu_{pin}$ $\quad F_{nv\_pin} = 32.50\ ksi$

Area of pin: $A_{pin} := \dfrac{\pi \cdot d_{pin}^{\ 2}}{4}$ $\quad A_{pin} = 0.31\ in^2$

Available double shear capacity of pin: $V_{a\_pin} := \dfrac{F_{nv\_pin} \cdot A_{pin}}{2} \cdot 2$ $\quad \boxed{V_{a\_pin} = 9.97\ kip}$

Split Pins

The forks are connected to the aluminum with Split Pins. The Spirol pins are coiled 3/8" diameter pins Use a factor of safety of 2 on the coil pins.

Capacity of coiled spirol pin in double shear: $P_{allow\_split\_pin} := 16 \cdot kip$

There are two pins therefore allowable load is: $P_{allow\_split} := \dfrac{\left(2 \cdot P_{allow\_split\_pin}\right)}{2}$ $\quad \boxed{P_{allow\_split} = 16.00\ kip}$

Aluminum Bearing

The aluminum chord to split pin bearing shall be checked. There are (4) bearing surfaces.

Thickness of truss chord: $t_{chord} := .125 \cdot in$

Diameter of coil pin: $d_{split\_pin} := 0.375 \cdot in$

Allowable pin bearing strength in aluminum: $P_{brg\_al} := 4 \cdot t_{chord} \cdot d_{split\_pin} \cdot 39 \cdot ksi$ $\quad \boxed{P_{brg\_al} = 7.31\ kip}$

assumes non-weld affected areas

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Envelope Member End Reactions

Sections | Maximums | **End Reactions** | 2nd/1st Moment Ratios

	Member	Member End		Axial[k]	LC	y Shear[k]	LC
1	M2	I	max	5.233	3	0	5
2			min	2.17	5	0	4
3		J	max	5.233	3	0	5
4			min	2.17	5	0	4

Max Fork Ends Axial Reference

Max allowable axial in fork ends: $P_{max.allow} := min\left(P_{allow\_split}, P_{brg\_al}, V_{a\_pin}\right) = 7312.50\ \boldsymbol{lbf}$

Max required axial in fork ends: $P_{max.req} := 5.3\ \boldsymbol{kip}$

Note: The required axial is less than the allowable axial in the fork ends so they are ok to handle the intended loads.

Weld Checks

Safety Factors/Weld & Base Metal Properties

Safety Factors

ADM building factor of safety: $\Omega_{ADM} := 1.95$ Section J.2

ADM factor of safety, shear yielding: $\Omega_{vy.ADM} := 1.50$ Section J.7.2

ADM factor of safety, shear rupture: $\Omega_{vr.ADM} := 1.95$ Section J.7.2

Material Properties

Filler metal ultimate tensile strength: $F_{tuw.wm} := 24\ ksi$ 4043

Base metal welded yield tensile strength: $F_{tyw.BM} := 15\ ksi$ 6061-T6

Base metal welded ultimate tensile strength: $F_{tuw.BM} := 24\ ksi$

Member metal welded yield tensile strength: $F_{tyw.MM} := 15\ ksi$ 6061-T6

Member metal welded ultimate tensile strength: $F_{tuw.MM} := 24\ ksi$

Weld Geometry

Member wall thickness: $t := \frac{1}{8}\ in$

Thickness of base metal: $t_{base} := \frac{1}{8}\ in$

Weld thickness: $t_{weld} := \frac{3}{16}\ in = 0.19\ in$

Weld effective throat: $t_{we} := \frac{\sqrt{2}}{2} \cdot t_{weld} = 0.13\ in$

Weld Strength

Filler metal ultimate tensile strength:	$F_{tuw.wm} = 24.00\ \mathbf{ksi}$	
Base metal welded yield tensile strength:	$F_{tyw.BM} = 15.00\ \mathbf{ksi}$	
Base metal welded ultimate tensile strength:	$F_{tuw.BM} = 24.00\ \mathbf{ksi}$	
Member metal welded yield tensile strength:	$F_{tyw.MM} = 15.00\ \mathbf{ksi}$	
Member metal welded ultimate tensile strength:	$F_{tuw.MM} = 24.00\ \mathbf{ksi}$	
Nominal stress of the base metal (yield):	$F_{nBM.y} := 0.6\ F_{tyw.BM} = 9.00\ \mathbf{ksi}$	Table J.2.2
Nominal stress of the base metal (rupture):	$F_{nBM.r} := 0.60 \cdot F_{tuw.BM} = 14.40\ \mathbf{ksi}$	Table J.2.2
Nominal stress of the member metal (yield):	$F_{nMM.y} := 0.6\ F_{tyw.BM} = 9.00\ \mathbf{ksi}$	Table J.2.2
Nominal stress of the member metal (rupture):	$F_{nMM.r} := 0.60 \cdot F_{tuw.BM} = 14.40\ \mathbf{ksi}$	Table J.2.2
Nominal stress of the weld metal (shear):	$F_{nw} := 0.60 \cdot \left(0.85 \cdot F_{tuw.wm}\right) = 12.24\ \mathbf{ksi}$	Table J.2.2
Shear of weld metal - (per inch):	$R_{a.weld} := \dfrac{F_{nw} \cdot t_{we}}{\Omega_{ADM}} = 0.83\ \dfrac{\mathbf{kip}}{\mathbf{in}}$	eqn. J.2-2
Shear of base metal - YIELD (per inch):	$R_{a.BM.vy} := \dfrac{F_{nBM.y} \cdot t_{base}}{\Omega_{vy.ADM}} = 0.75\ \dfrac{\mathbf{kip}}{\mathbf{in}}$	eqn. J.2-1
Shear of base metal - RUPTURE (per inch):	$R_{a.BM.vr} := \dfrac{F_{nBM.r} \cdot t_{base}}{\Omega_{vr.ADM}} = 0.92\ \dfrac{\mathbf{kip}}{\mathbf{in}}$	eqn. J.2-1
Shear of member metal - YIELD (per inch):	$R_{a.MM.vy} := \dfrac{F_{nMM.y} \cdot t}{\Omega_{vy.ADM}} = 0.75\ \dfrac{\mathbf{kip}}{\mathbf{in}}$	eqn. J.2-1
Shear of member metal - RUPTURE (per inch):	$R_{a.MM.vr} := \dfrac{F_{nMM.r} \cdot t}{\Omega_{vr.ADM}} = 0.92\ \dfrac{\mathbf{kip}}{\mathbf{in}}$	eqn. J/2-1
Min. Governing Weld Strength:	$R_{a.fillet.weld.ADM} := min\left(R_{a.weld}, R_{a.BM.vy}, R_{a.BM.vr}, R_{a.MM.vy}, R_{a.MM.vr}\right) = 0.75\ \dfrac{\mathbf{kip}}{\mathbf{in}}$	

Diags

1" ø x 0.125" thick

Member Section Properties

Area	0.344	in^2
I	0.034	in^4
S	0.172	in^3
r	0.488	in
J	0.255	in^4
D	1	in
Sw	0.785	in^3/in
Ew	0.133	in
Lw	3.142	in

Allowable Weld Stress

weld	0.75	kip/in

# of member sections from RIS	2
# of first load combo in col A	1
# of total lines of (1) load comb	760

Weld	LC	Start	Stop
0.53	1	18	777
0.00	2	778	1537
0.00	3	1538	2297
0.00	4	2298	3057
0.00	5	3058	3817

RISA 3D Results

LC	Member	Section	Axial (kip)	Shear Y (kip)	Shear Z (kip)	Torque (k-in)	MYY (kip-in)	MZZ (kip-in)	Tension	Weld
1	M5	1	-0.576	0	0	-0.005	0	0	-0.58	0.24
1	M5	1	-0.576	0	0	-0.005	0	0	-0.58	0.24
1	M6	1	0.594	0	0	-0.007	0	0	0.00	0.01
1	M6	1	0.594	0	0	-0.007	0	0	0.00	0.01
1	M7	1	-0.593	0	0	-0.004	0	0	-0.59	0.25

1" Round Tube Weld Checks

Note: All weld checks are less than the allowable of 1.0, therefore all welds meet the minimum allowable factors of safety.