

Mike Sawka

Fortress Building Products

1720 N 1st Street, Garland, TX 75040

michaels@fortressbp.com

Project Number: 23-05-058

05.05.2023

Mike,

Per your request, Eclipse Engineering, P.C. (EEPC) has reviewed the Fortress Evolution Steel Framing system to verify it meets the requirements of the 2022 California Building Code (CBC). EEPC also compiled two post height tables for the 5.5" square x 0.108" thick post. The post height tables are for gravity loads only.

Based on our review of the documents provided to us and our calculations, we find that the Evolution Steel Framing system meets the requirements of the 2022 CBC provided the requirements noted in Intertek report CCRR-0313 are met.

EEPC reviewed the Fortress Evolution Steel Framing system to verify it meets the requirements of the 2022 CBC only. Please contact us with any questions.

Regards,



Sushil Shenoy, P.E.

Principal

sshenoy@eclipse-engineering.com



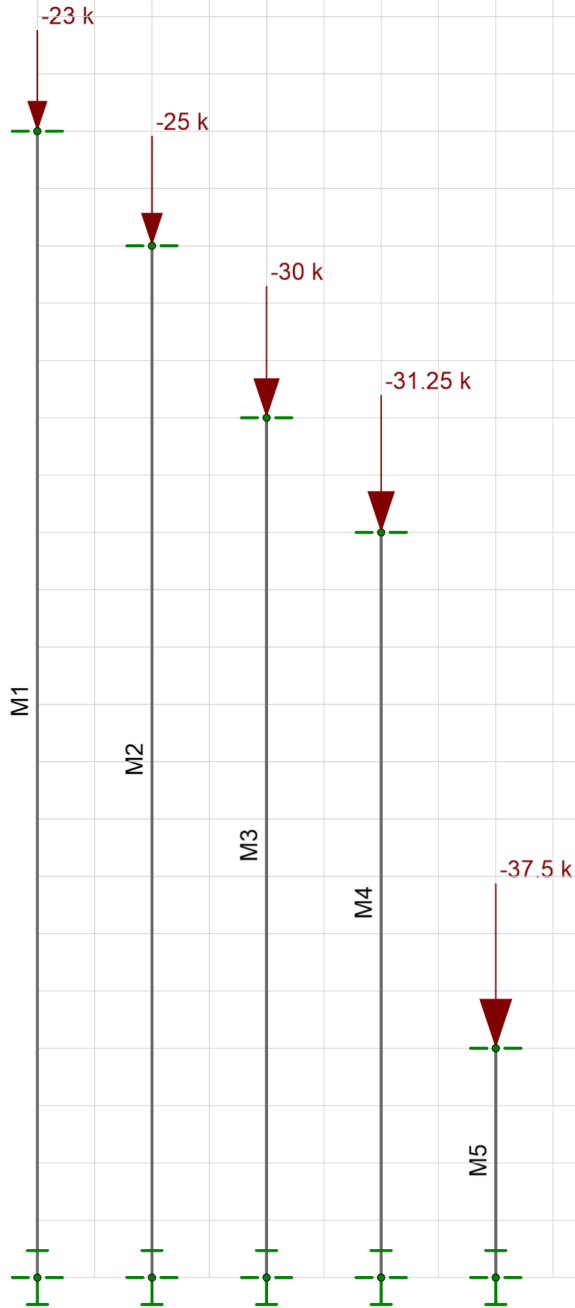
Table 1: Maximum Post Height - Concentric Loading

| Load (psf) | Tributary Area (ft ²) | | | | |
|------------|-----------------------------------|-----|-----|-----|-----|
| | 50 | 100 | 150 | 200 | 250 |
| 50 | 20' | 20' | 20' | 20' | 20' |
| 75 | 20' | 20' | 20' | 20' | 20' |
| 100 | 20' | 20' | 20' | 20' | 18' |
| 125 | 20' | 20' | 20' | 18' | 13' |
| 150 | 20' | 20' | 20' | 15' | |
| 200 | 20' | 20' | 15' | | |

Table 2: Maximum Post Height - Eccentric Loading

| Load (psf) | Tributary Area (ft ²) | | | | |
|------------|-----------------------------------|-----|-----|-----|-----|
| | 50 | 100 | 150 | 200 | 250 |
| 50 | 20' | 20' | 20' | 20' | 20' |
| 75 | 20' | 20' | 20' | 10' | |
| 100 | 20' | 20' | 10' | | |
| 125 | 20' | 20' | | | |
| 150 | 20' | 10' | | | |
| 200 | 20' | | | | |

*CONCENTRIC
LOADING*

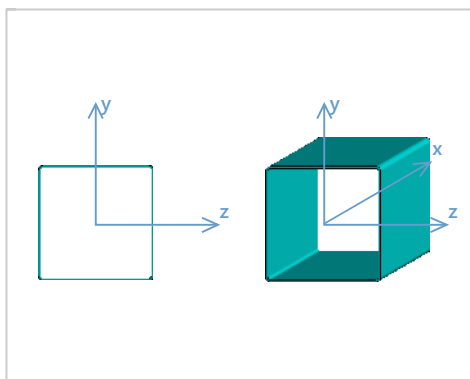


| | | |
|--------------------|--|------------------------|
| Loads: LC 1, DL | | SK-1 |
| <Licensed Company> | | Apr 13, 2023 |
| EvanWinterPE | | Concentric Columns.r3d |
| | | |

Detail Report: M1

Load Combination: LC 1: DL

Code check: 0.981 (axial/
bending)



Input Data

| | | | |
|---------------------------|-------------------|-------------------|----------|
| Shape: | CFS5.5x5.5x.108 | I Node: | N1 |
| Member Type: | Column | J Node: | N2 |
| Length (ft): | 20 | I Release: | Fixed |
| Material Type: | Cold Formed Steel | J Release: | Fixed |
| Design Rule: | Typical | I Offset: | N/A |
| Internal Sections: | 97 | J Offset: | N/A |
| Design Code: | AISI S100-16: ASD | T/C Only: | Both Way |

Material Properties

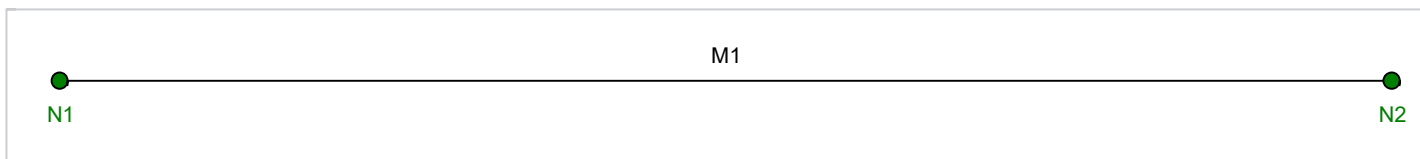
| | | | | | |
|------------------|--------------|------------------------------------|------|-----------------------------|----|
| Material: | A653 SS Gr33 | Nu: | 0.3 | F_y (ksi): | 33 |
| E (ksi): | 29500 | Therm. Coeff. (/1E5 F): | 0.65 | F_u (ksi): | 45 |
| G (ksi): | 11346 | Density (k/ft³): | 0.49 | | |

Shape Properties

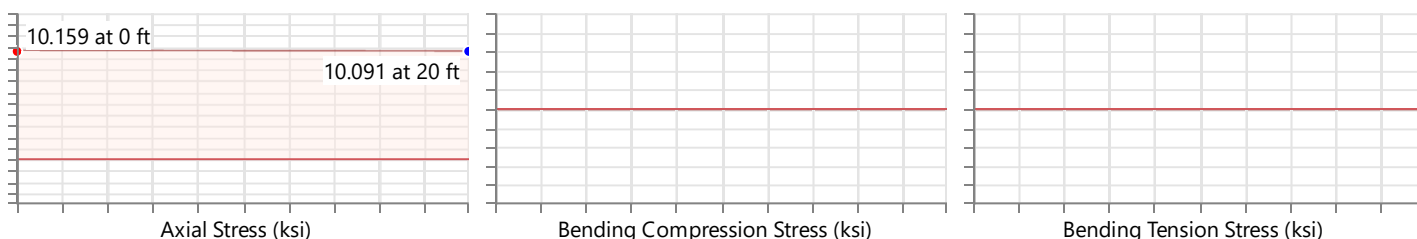
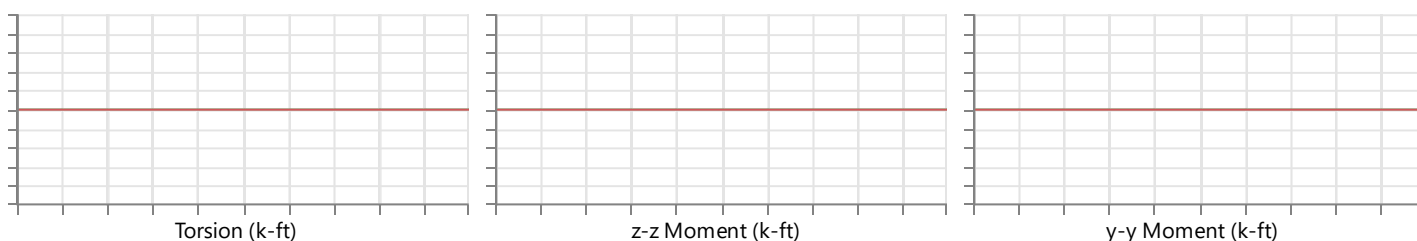
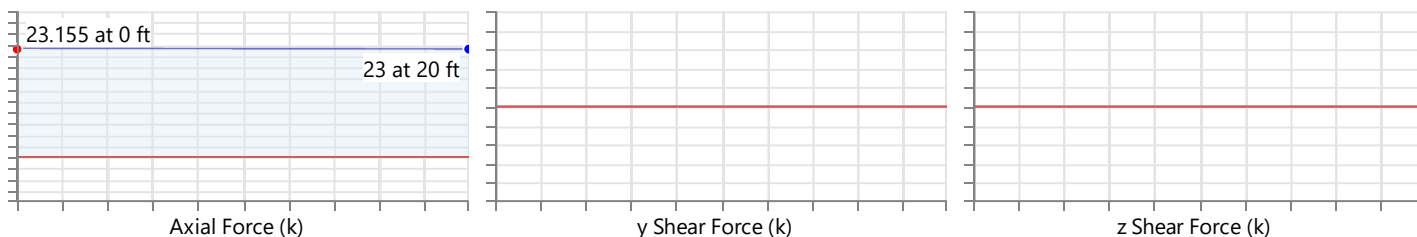
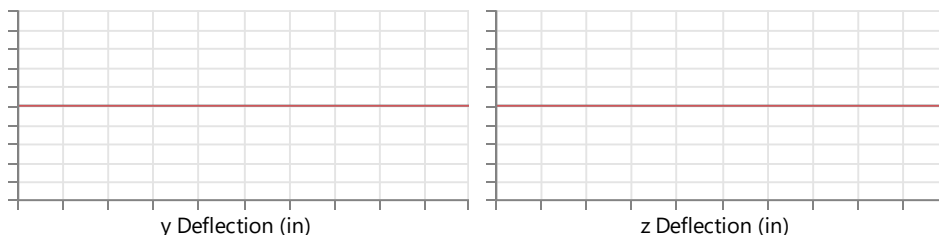
| | | | | | |
|---|--------|--|--------|---|-------|
| D (in): | 5.5 | J (in⁴): | 16.931 | S_{et,z} (in³): | 3.77 |
| B (in): | 5.5 | C_w (in⁶): | 240.99 | S_{f,z} (in³): | 3.968 |
| t (in): | 0.108 | X_c (in): | 2.696 | S_{fy,z} (in³): | 3.968 |
| R (in): | 0.216 | r_z (in): | 2.188 | S_{e,y} (in³): | 3.769 |
| I_{yy} (in⁴): | 10.911 | r_y (in): | 2.188 | S_{et,y} (in³): | 3.77 |
| I_{zz} (in⁴): | 10.912 | x₀ (in): | -0.674 | S_{fy} (in³): | 3.968 |
| Area (in²): | 2.279 | S_{e,z} (in³): | 3.769 | S_{fy,y} (in³): | 3.968 |

Design Properties

| | | | | | |
|-----------------------------------|------------------|---------------------------|-----|---------------------------|---------|
| L_{b y-y} (ft): | 20 | C_{m z-z}: | 0.6 | a: | N/A |
| L_{b z-z} (ft): | 20 | K_{y-y}: | 1 | Function: | Lateral |
| L_{comp top}: | L _{byy} | K_{z-z}: | 1 | Max Defl Ratio: | L/10000 |
| L_{comp bot} (ft): | 20 | R: | N/A | Max Defl Location: | 0 |
| C_b: | 1 | y sway: | No | Span: | N/A |
| C_{m y-y}: | 0.6 | z sway: | No | | |



Diagrams:



AISI S100-16: ASD Code Check

| Limit State | Required | Available | Unity Check | Result |
|-----------------------------------|----------|-----------|-------------|--------|
| Applied Loading - Bending/Axial | - | - | - | - |
| Applied Loading - Shear + Torsion | - | - | - | - |
| Axial Tension Analysis | 0 k | 45.04 k | - | - |
| Axial Compression Analysis | 23.155 k | 23.612 k | - | - |



Company : <Licensed Company>
Designer : EvanWinterPE
Job Number :
Model Name :

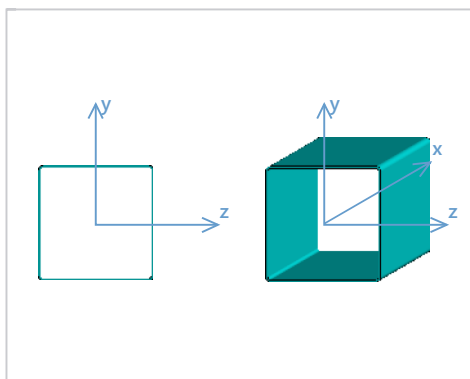
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| | | | | |
|---|--------|------------|--------------|-------------|
| Flexural Analysis (Strong Axis) | 0 k-ft | 6.207 k-ft | - | - |
| Flexural Analysis (Weak Axis) | 0 k-ft | 6.207 k-ft | - | - |
| Shear Analysis (Major Axis y) | 0 k | 12.969 k | 0 | PASS |
| Shear Analysis (Minor Axis z) | 0 k | 12.969 k | 0 | PASS |
| Bending & Axial Interaction Check (UC Bending Max) | - | - | 0.981 | PASS |

Detail Report: M2

Load Combination: LC 1: DL

Code check: 0.955 (axial/
bending)



Input Data

| | | | |
|---------------------------|-------------------|-------------------|----------|
| Shape: | CFS5.5x5.5x.108 | I Node: | N4 |
| Member Type: | Column | J Node: | N3 |
| Length (ft): | 18 | I Release: | Fixed |
| Material Type: | Cold Formed Steel | J Release: | Fixed |
| Design Rule: | Typical | I Offset: | N/A |
| Internal Sections: | 97 | J Offset: | N/A |
| Design Code: | AISI S100-16: ASD | T/C Only: | Both Way |

Material Properties

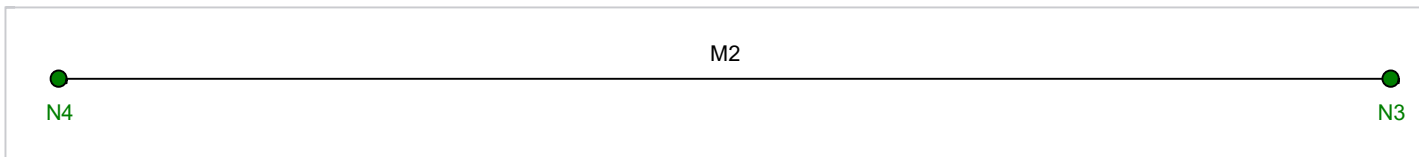
| | | | | | |
|------------------|--------------|------------------------------------|------|-----------------------------|----|
| Material: | A653 SS Gr33 | Nu: | 0.3 | F_y (ksi): | 33 |
| E (ksi): | 29500 | Therm. Coeff. (/1E5 F): | 0.65 | F_u (ksi): | 45 |
| G (ksi): | 11346 | Density (k/ft³): | 0.49 | | |

Shape Properties

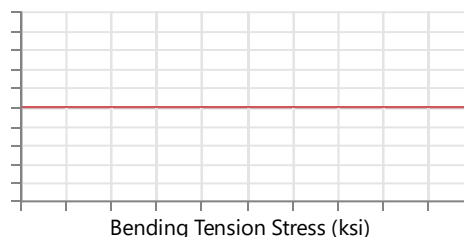
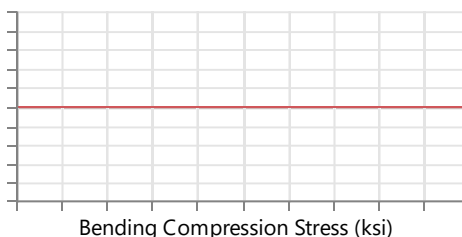
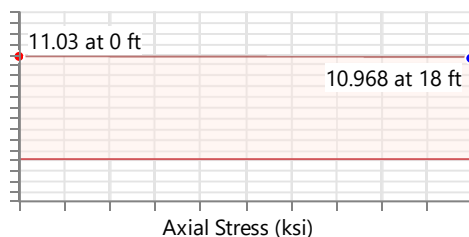
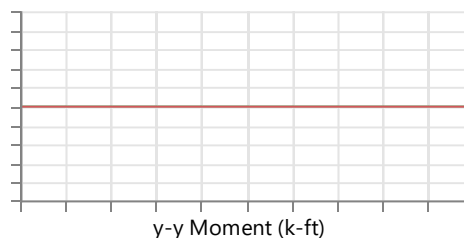
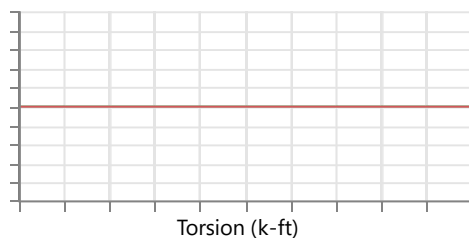
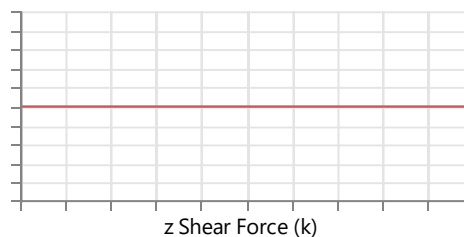
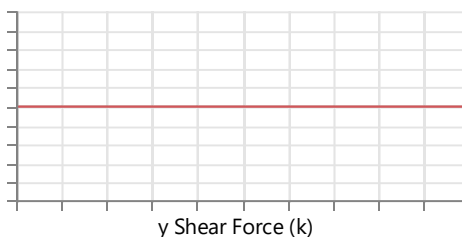
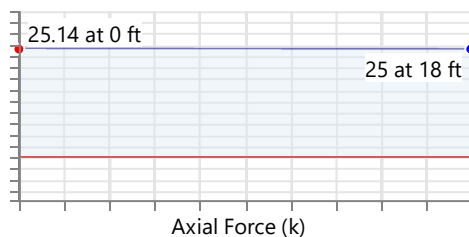
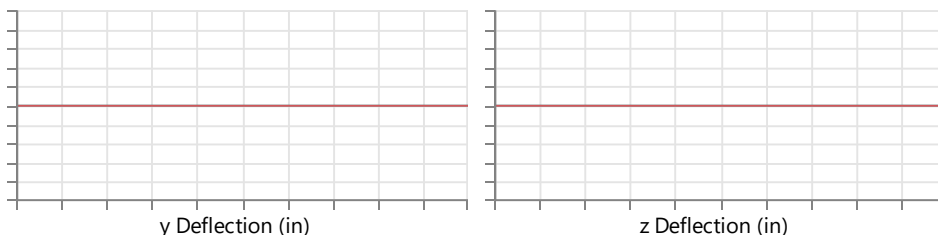
| | | | | | |
|---|--------|---|--------|---|-------|
| D (in): | 5.5 | J (in⁴): | 16.931 | S_{et,z} (in³): | 3.77 |
| B (in): | 5.5 | C_w (in⁶): | 240.99 | S_{f,z} (in³): | 3.968 |
| t (in): | 0.108 | X_c (in): | 2.696 | S_{fy,z} (in³): | 3.968 |
| R (in): | 0.216 | r_z (in): | 2.188 | S_{ey} (in³): | 3.769 |
| I_{yy} (in⁴): | 10.911 | r_y (in): | 2.188 | S_{et,y} (in³): | 3.77 |
| I_{zz} (in⁴): | 10.912 | x₀ (in): | -0.674 | S_{fy} (in³): | 3.968 |
| Area (in²): | 2.279 | S_{ez} (in³): | 3.769 | S_{fy,y} (in³): | 3.968 |

Design Properties

| | | | | | |
|-----------------------------------|------|---------------------------|-----|---------------------------|---------|
| L_{b y-y} (ft): | 18 | C_{m z-z}: | 0.6 | a: | N/A |
| L_{b z-z} (ft): | 18 | K_{y-y}: | 1 | Function: | Lateral |
| L_{comp top}: | Lbyy | K_{z-z}: | 1 | Max Defl Ratio: | L/10000 |
| L_{comp bot} (ft): | 18 | R: | N/A | Max Defl Location: | 0 |
| C_b: | 1 | y sway: | No | Span: | N/A |
| C_{m y-y}: | 0.6 | z sway: | No | | |



Diagrams:



AISI S100-16: ASD Code Check

| Limit State | Required | Available | Unity Check | Result |
|-----------------------------------|----------|-----------|-------------|--------|
| Applied Loading - Bending/Axial | - | - | - | - |
| Applied Loading - Shear + Torsion | - | - | - | - |
| Axial Tension Analysis | 0 k | 45.04 k | - | - |
| Axial Compression Analysis | 25.14 k | 26.317 k | - | - |



Company : <Licensed Company>
Designer : EvanWinterPE
Job Number :
Model Name :

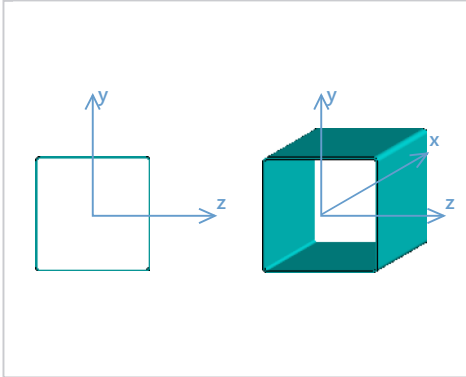
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| | | | | |
|---|--------|------------|--------------|-------------|
| Flexural Analysis (Strong Axis) | 0 k-ft | 6.207 k-ft | - | - |
| Flexural Analysis (Weak Axis) | 0 k-ft | 6.207 k-ft | - | - |
| Shear Analysis (Major Axis y) | 0 k | 12.969 k | 0 | PASS |
| Shear Analysis (Minor Axis z) | 0 k | 12.969 k | 0 | PASS |
| Bending & Axial Interaction Check (UC Bending Max) | - | - | 0.955 | PASS |

Detail Report: M3

Load Combination: LC 1: DL

Code check: 0.994 (axial/
bending)

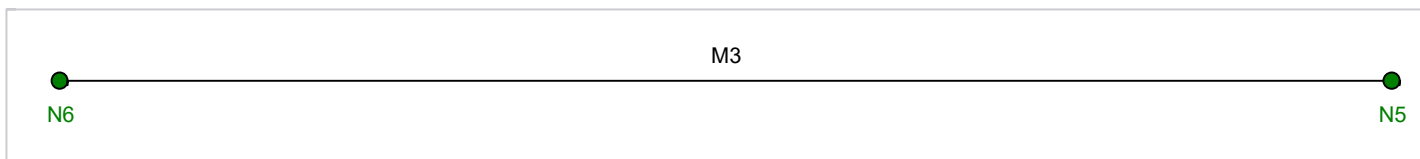


| Input Data | | | |
|---------------------------|-------------------|-------------------|----------|
| Shape: | CFS5.5x5.5x.108 | I Node: | N6 |
| Member Type: | Column | J Node: | N5 |
| Length (ft): | 15 | I Release: | Fixed |
| Material Type: | Cold Formed Steel | J Release: | Fixed |
| Design Rule: | Typical | I Offset: | N/A |
| Internal Sections: | 97 | J Offset: | N/A |
| Design Code: | AISI S100-16: ASD | T/C Only: | Both Way |

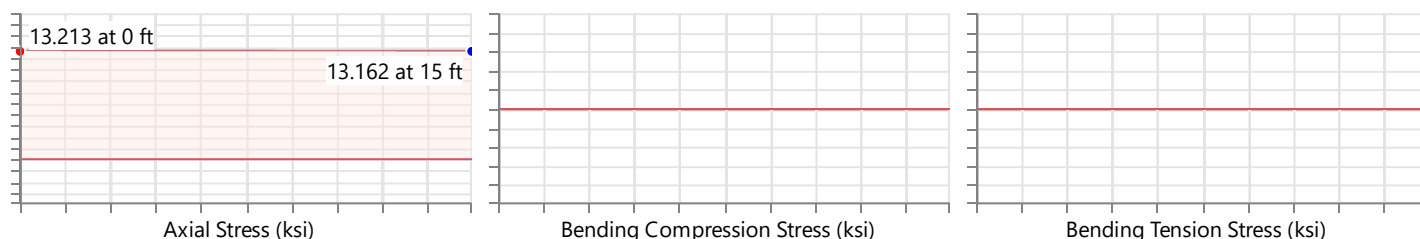
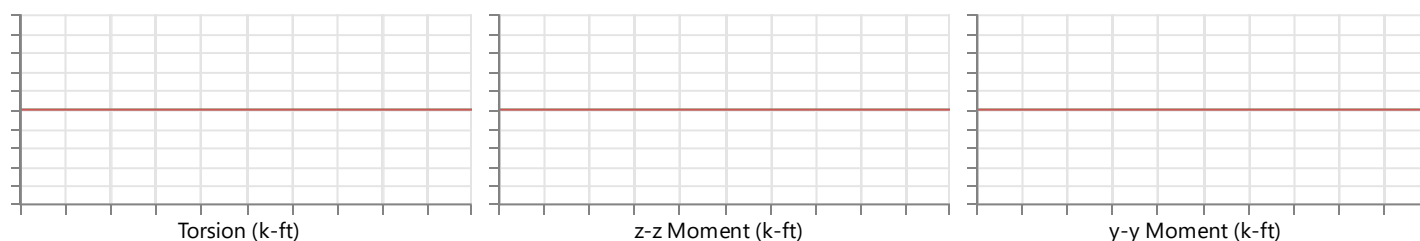
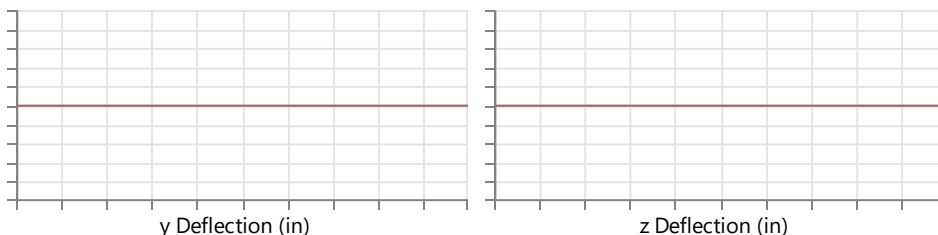
| Material Properties | | | |
|---------------------|--------------|------------------------------------|------|
| Material: | A653 SS Gr33 | Nu: | 0.3 |
| E (ksi): | 29500 | Therm. Coeff. (/1E5 F): | 0.65 |
| G (ksi): | 11346 | Density (k/ft³): | 0.49 |
| | | F_y (ksi): | 33 |
| | | F_u (ksi): | 45 |

| Shape Properties | | | |
|---|--------|---|--------|
| D (in): | 5.5 | J (in⁴): | 16.931 |
| B (in): | 5.5 | C_w (in⁶): | 240.99 |
| t (in): | 0.108 | X_c (in): | 2.696 |
| R (in): | 0.216 | r_z (in): | 2.188 |
| I_{yy} (in⁴): | 10.911 | r_y (in): | 2.188 |
| I_{zz} (in⁴): | 10.912 | x₀ (in): | -0.674 |
| Area (in²): | 2.279 | S_{e,z} (in³): | 3.769 |
| | | S_{et,z} (in³): | 3.77 |
| | | S_{f,z} (in³): | 3.968 |
| | | S_{fy,z} (in³): | 3.968 |
| | | S_{e,y} (in³): | 3.769 |
| | | S_{et,y} (in³): | 3.77 |
| | | S_{fy} (in³): | 3.968 |
| | | S_{fy,y} (in³): | 3.968 |

| Design Properties | | | |
|-----------------------------------|------------------|---------------------------|---------|
| L_{b y-y} (ft): | 15 | C_{m z-z}: | 0.6 |
| L_{b z-z} (ft): | 15 | K_{y-y}: | 1 |
| L_{comp top}: | L _{byy} | K_{z-z}: | 1 |
| L_{comp bot} (ft): | 15 | R: | N/A |
| C_b: | 1 | y sway: | No |
| C_{m y-y}: | 0.6 | z sway: | No |
| | | a: | N/A |
| | | Function: | Lateral |
| | | Max Defl Ratio: | L/10000 |
| | | Max Defl Location: | 0 |
| | | Span: | N/A |



Diagrams:



AISI S100-16: ASD Code Check

| Limit State | Required | Available | Unity Check | Result |
|-----------------------------------|----------|-----------|-------------|--------|
| Applied Loading - Bending/Axial | - | - | - | - |
| Applied Loading - Shear + Torsion | - | - | - | - |
| Axial Tension Analysis | 0 k | 45.04 k | - | - |
| Axial Compression Analysis | 30.116 k | 30.31 k | - | - |



Company : <Licensed Company>
Designer : EvanWinterPE
Job Number :
Model Name :

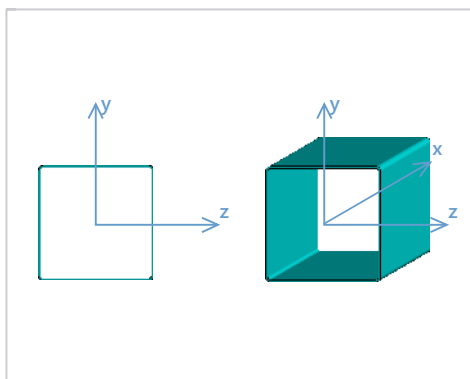
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| | | | | |
|---|--------|------------|--------------|-------------|
| Flexural Analysis (Strong Axis) | 0 k-ft | 6.207 k-ft | - | - |
| Flexural Analysis (Weak Axis) | 0 k-ft | 6.207 k-ft | - | - |
| Shear Analysis (Major Axis y) | 0 k | 12.969 k | 0 | PASS |
| Shear Analysis (Minor Axis z) | 0 k | 12.969 k | 0 | PASS |
| Bending & Axial Interaction Check (UC Bending Max) | - | - | 0.994 | PASS |

Detail Report: M4

Load Combination: LC 1: DL

Code check: 0.990 (axial/
bending)



Input Data

| | | | |
|---------------------------|-------------------|-------------------|----------|
| Shape: | CFS5.5x5.5x.108 | I Node: | N8 |
| Member Type: | Column | J Node: | N7 |
| Length (ft): | 13 | I Release: | Fixed |
| Material Type: | Cold Formed Steel | J Release: | Fixed |
| Design Rule: | Typical | I Offset: | N/A |
| Internal Sections: | 97 | J Offset: | N/A |
| Design Code: | AISI S100-16: ASD | T/C Only: | Both Way |

Material Properties

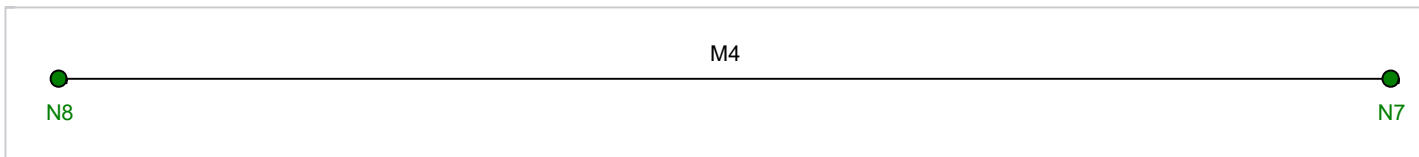
| | | | | | |
|------------------|--------------|------------------------------------|------|-----------------------------|----|
| Material: | A653 SS Gr33 | Nu: | 0.3 | F_y (ksi): | 33 |
| E (ksi): | 29500 | Therm. Coeff. (/1E5 F): | 0.65 | F_u (ksi): | 45 |
| G (ksi): | 11346 | Density (k/ft³): | 0.49 | | |

Shape Properties

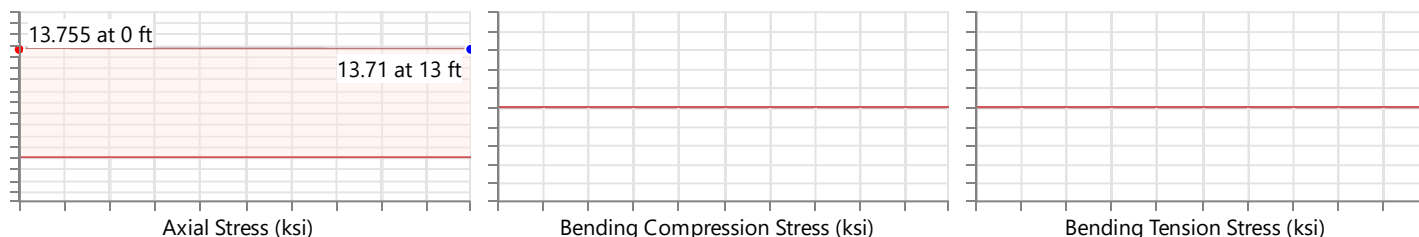
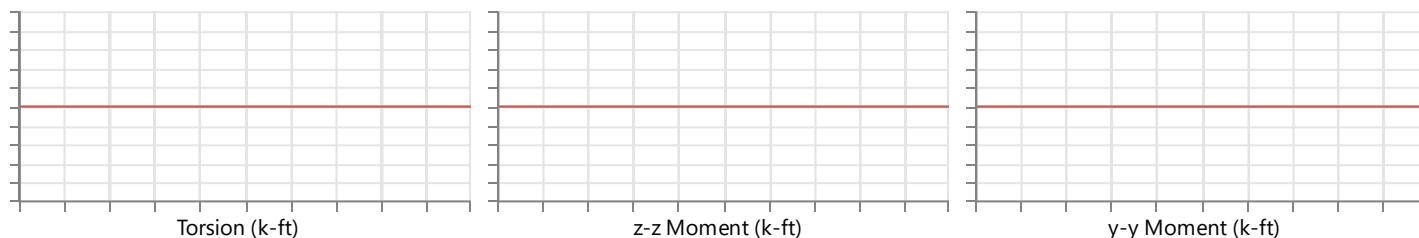
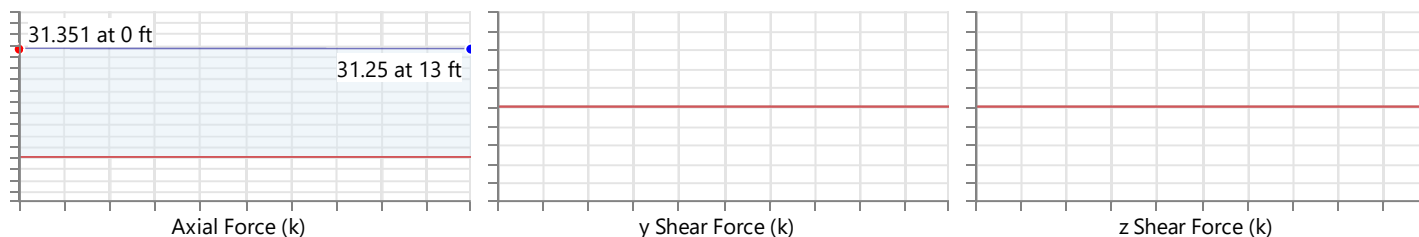
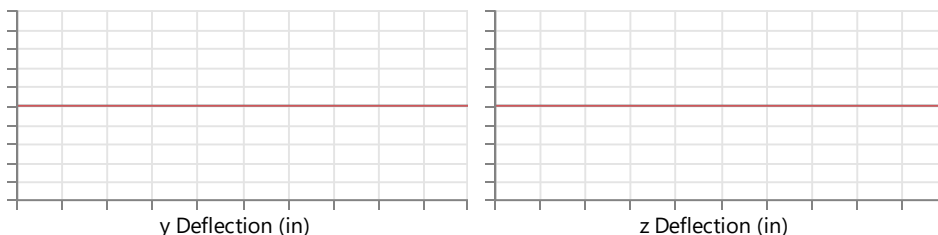
| | | | | | |
|---|--------|--|--------|---|-------|
| D (in): | 5.5 | J (in⁴): | 16.931 | S_{et,z} (in³): | 3.77 |
| B (in): | 5.5 | C_w (in⁶): | 240.99 | S_{f,z} (in³): | 3.968 |
| t (in): | 0.108 | X_c (in): | 2.696 | S_{fy,z} (in³): | 3.968 |
| R (in): | 0.216 | r_z (in): | 2.188 | S_{e,y} (in³): | 3.769 |
| I_{yy} (in⁴): | 10.911 | r_y (in): | 2.188 | S_{et,y} (in³): | 3.77 |
| I_{zz} (in⁴): | 10.912 | x₀ (in): | -0.674 | S_{fy} (in³): | 3.968 |
| Area (in²): | 2.279 | S_{e,z} (in³): | 3.769 | S_{fy,y} (in³): | 3.968 |

Design Properties

| | | | | | |
|-----------------------------------|------|---------------------------|-----|---------------------------|---------|
| L_{b y-y} (ft): | 13 | C_{m z-z}: | 0.6 | a: | N/A |
| L_{b z-z} (ft): | 13 | K_{y-y}: | 1 | Function: | Lateral |
| L_{comp top}: | Lbyy | K_{z-z}: | 1 | Max Defl Ratio: | L/10000 |
| L_{comp bot} (ft): | 13 | R: | N/A | Max Defl Location: | 0 |
| C_b: | 1 | y sway: | No | Span: | N/A |
| C_{m y-y}: | 0.6 | z sway: | No | | |



Diagrams:



AISI S100-16: ASD Code Check

| Limit State | Required | Available | Unity Check | Result |
|-----------------------------------|----------|-----------|-------------|--------|
| Applied Loading - Bending/Axial | - | - | - | - |
| Applied Loading - Shear + Torsion | - | - | - | - |
| Axial Tension Analysis | 0 k | 45.04 k | - | - |
| Axial Compression Analysis | 31.351 k | 31.654 k | - | - |



Company : <Licensed Company>
Designer : EvanWinterPE
Job Number :
Model Name :

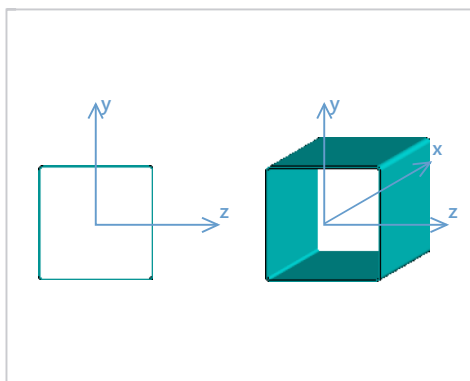
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| | | | | |
|---|--------|------------|-------------|-------------|
| Flexural Analysis (Strong Axis) | 0 k-ft | 6.207 k-ft | - | - |
| Flexural Analysis (Weak Axis) | 0 k-ft | 6.207 k-ft | - | - |
| Shear Analysis (Major Axis y) | 0 k | 12.969 k | 0 | PASS |
| Shear Analysis (Minor Axis z) | 0 k | 12.969 k | 0 | PASS |
| Bending & Axial Interaction Check (UC Bending Max) | - | - | 0.99 | PASS |

Detail Report: M5

Load Combination: LC 1: DL

Code check: 1.006 (axial/
bending)



Input Data

| | | | |
|---------------------------|-------------------|-------------------|----------|
| Shape: | CFS5.5x5.5x.108 | I Node: | N10 |
| Member Type: | Column | J Node: | N9 |
| Length (ft): | 4 | I Release: | Fixed |
| Material Type: | Cold Formed Steel | J Release: | Fixed |
| Design Rule: | Typical | I Offset: | N/A |
| Internal Sections: | 97 | J Offset: | N/A |
| Design Code: | AISI S100-16: ASD | T/C Only: | Both Way |

Material Properties

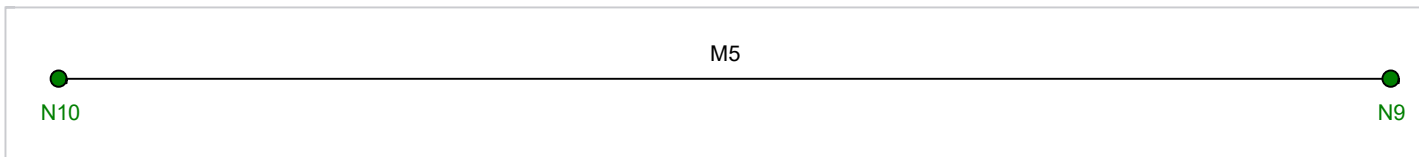
| | | | | | |
|------------------|--------------|------------------------------------|------|-----------------------------|----|
| Material: | A653 SS Gr33 | Nu: | 0.3 | F_y (ksi): | 33 |
| E (ksi): | 29500 | Therm. Coeff. (/1E5 F): | 0.65 | F_u (ksi): | 45 |
| G (ksi): | 11346 | Density (k/ft³): | 0.49 | | |

Shape Properties

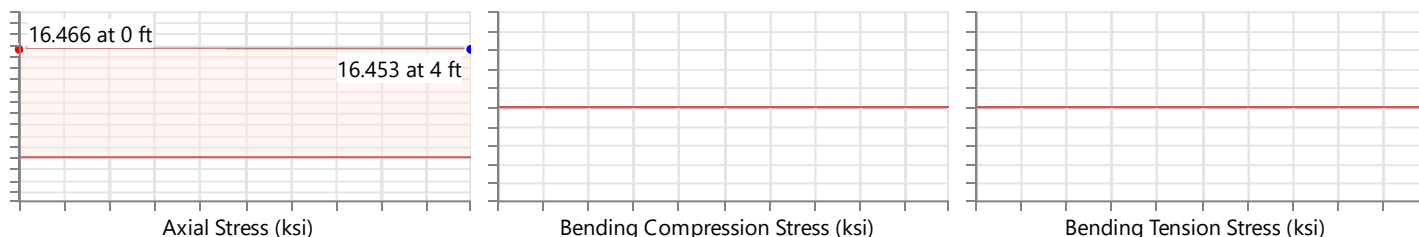
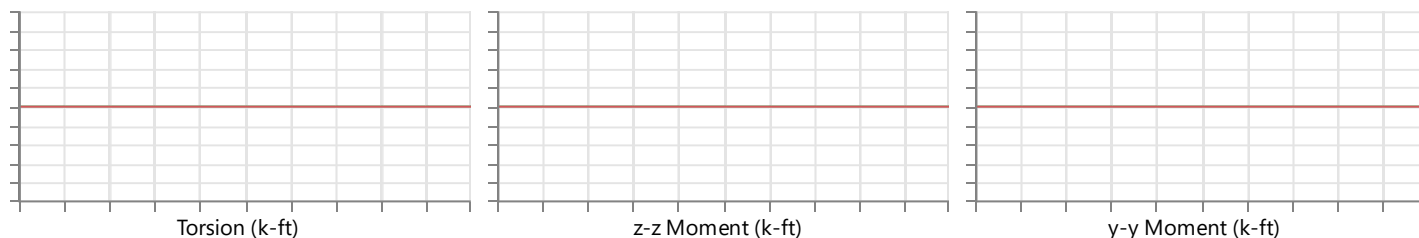
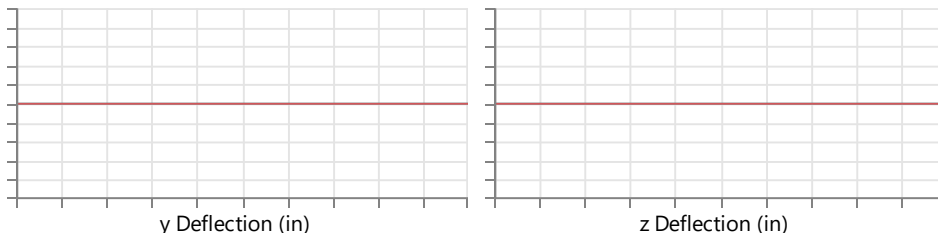
| | | | | | |
|---|--------|---|--------|---|-------|
| D (in): | 5.5 | J (in⁴): | 16.931 | S_{et,z} (in³): | 3.77 |
| B (in): | 5.5 | C_w (in⁶): | 240.99 | S_{f,z} (in³): | 3.968 |
| t (in): | 0.108 | X_c (in): | 2.696 | S_{fy,z} (in³): | 3.968 |
| R (in): | 0.216 | r_z (in): | 2.188 | S_{ey} (in³): | 3.769 |
| I_{yy} (in⁴): | 10.911 | r_y (in): | 2.188 | S_{et,y} (in³): | 3.77 |
| I_{zz} (in⁴): | 10.912 | x₀ (in): | -0.674 | S_{fy} (in³): | 3.968 |
| Area (in²): | 2.279 | S_{ez} (in³): | 3.769 | S_{fy,y} (in³): | 3.968 |

Design Properties

| | | | | | |
|-----------------------------------|------|---------------------------|-----|---------------------------|---------|
| L_{b y-y} (ft): | 4 | C_{m z-z}: | 0.6 | a: | N/A |
| L_{b z-z} (ft): | 4 | K_{y-y}: | 1 | Function: | Lateral |
| L_{comp top}: | Lbyy | K_{z-z}: | 1 | Max Defl Ratio: | L/10000 |
| L_{comp bot} (ft): | 4 | R: | N/A | Max Defl Location: | 0 |
| C_b: | 1 | y sway: | No | Span: | N/A |
| C_{m y-y}: | 0.6 | z sway: | No | | |



Diagrams:



AISI S100-16: ASD Code Check

| Limit State | Required | Available | Unity Check | Result |
|-----------------------------------|----------|-----------|-------------|--------|
| Applied Loading - Bending/Axial | - | - | - | - |
| Applied Loading - Shear + Torsion | - | - | - | - |
| Axial Tension Analysis | 0 k | 45.04 k | - | - |
| Axial Compression Analysis | 37.531 k | 37.32 k | - | - |



Company : <Licensed Company>
Designer : EvanWinterPE
Job Number :
Model Name :

4/13/2023
9:08:41 AM
Checked By : _____

| | | | | |
|---|--------|------------|--------------|-------------|
| Flexural Analysis (Strong Axis) | 0 k-ft | 6.207 k-ft | - | - |
| Flexural Analysis (Weak Axis) | 0 k-ft | 6.207 k-ft | - | - |
| Shear Analysis (Major Axis y) | 0 k | 12.969 k | 0 | PASS |
| Shear Analysis (Minor Axis z) | 0 k | 12.969 k | 0 | PASS |
| Bending & Axial Interaction Check (UC Bending Max) | - | - | 1.006 | FAIL |

*ECCENTRIC
LOADING*



Loads: BLC 1, DL

<Licensed Company>

EvanWinterPE

SK-2

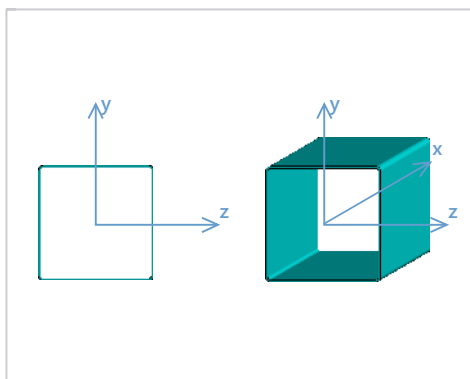
Apr 13, 2023

Eccentric Columns.r3d

Detail Report: M1

Load Combination: LC 1: DL

Code check: 0.991 (axial/
bending)



Input Data

| | | | |
|---------------------------|-------------------|-------------------|----------|
| Shape: | CFS5.5x5.5x.108 | I Node: | N1 |
| Member Type: | Column | J Node: | N2 |
| Length (ft): | 20 | I Release: | Fixed |
| Material Type: | Cold Formed Steel | J Release: | Fixed |
| Design Rule: | Typical | I Offset: | N/A |
| Internal Sections: | 97 | J Offset: | N/A |
| Design Code: | AISI S100-16: ASD | T/C Only: | Both Way |

Material Properties

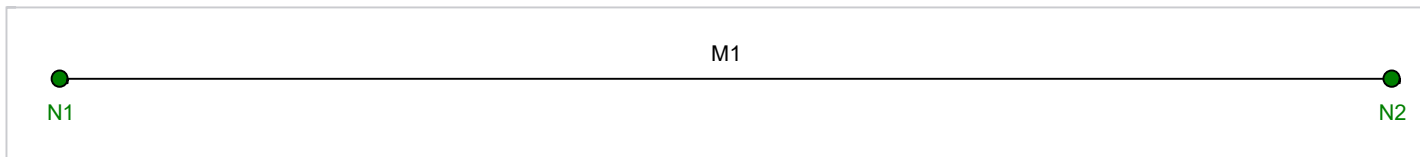
| | | | | | |
|------------------|--------------|------------------------------------|------|-----------------------------|----|
| Material: | A653 SS Gr33 | Nu: | 0.3 | F_y (ksi): | 33 |
| E (ksi): | 29500 | Therm. Coeff. (/1E5 F): | 0.65 | F_u (ksi): | 45 |
| G (ksi): | 11346 | Density (k/ft³): | 0.49 | | |

Shape Properties

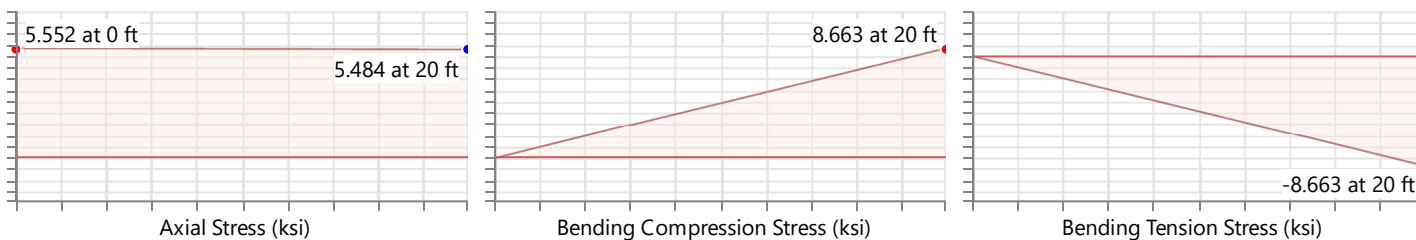
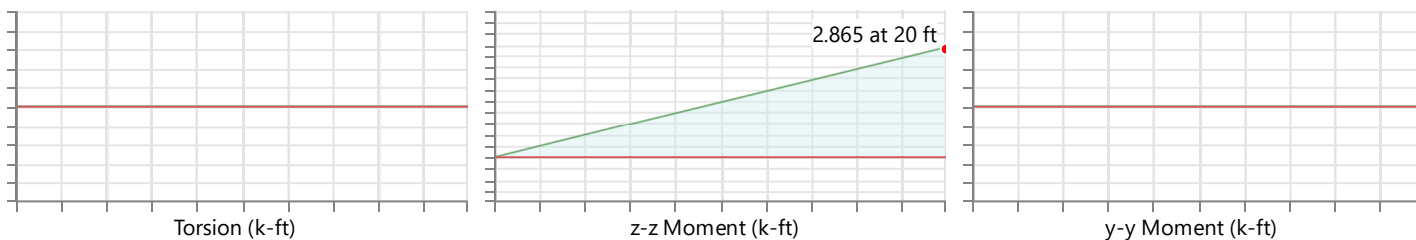
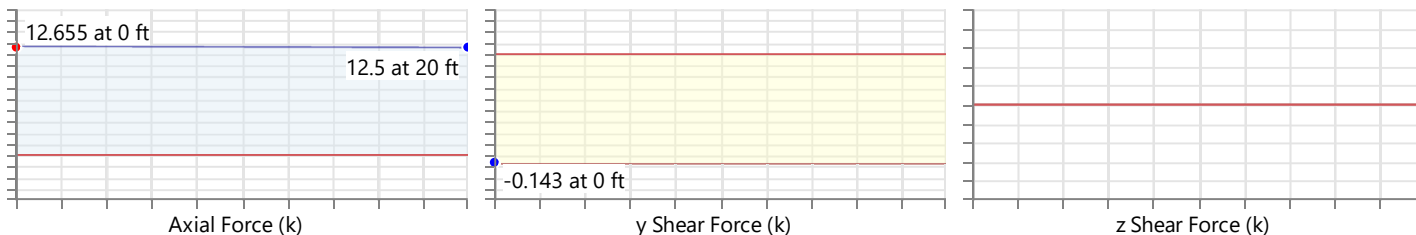
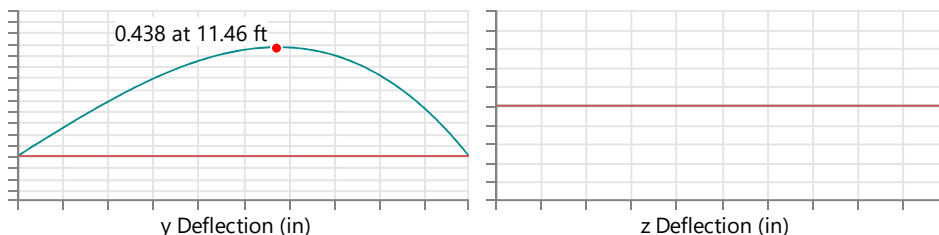
| | | | | | |
|---|--------|---|--------|---|-------|
| D (in): | 5.5 | J (in⁴): | 16.931 | S_{et,z} (in³): | 3.77 |
| B (in): | 5.5 | C_w (in⁶): | 240.99 | S_{f,z} (in³): | 3.968 |
| t (in): | 0.108 | X_c (in): | 2.696 | S_{fy,z} (in³): | 3.968 |
| R (in): | 0.216 | r_z (in): | 2.188 | S_{ey} (in³): | 3.769 |
| I_{yy} (in⁴): | 10.911 | r_y (in): | 2.188 | S_{et,y} (in³): | 3.77 |
| I_{zz} (in⁴): | 10.912 | x₀ (in): | -0.674 | S_{fy} (in³): | 3.968 |
| Area (in²): | 2.279 | S_{ez} (in³): | 3.769 | S_{fy,y} (in³): | 3.968 |

Design Properties

| | | | | | |
|-----------------------------------|------------------|---------------------------|-----|---------------------------|---------|
| L_{b y-y} (ft): | 20 | C_{m z-z}: | 0.6 | a: | N/A |
| L_{b z-z} (ft): | 20 | K_{y-y}: | 1 | Function: | Lateral |
| L_{comp top}: | L _{byy} | K_{z-z}: | 1 | Max Defl Ratio: | L/547 |
| L_{comp bot} (ft): | 20 | R: | N/A | Max Defl Location: | 11.458 |
| C_b: | 1.667 | y sway: | No | Span: | N/A |
| C_{m y-y}: | 0.6 | z sway: | No | | |



Diagrams:



AISI S100-16: ASD Code Check

| Limit State | Required | Available | Unity Check | Result |
|-----------------------------------|----------|-----------|-------------|--------|
| Applied Loading - Bending/Axial | - | - | - | - |
| Applied Loading - Shear + Torsion | - | - | - | - |
| Axial Tension Analysis | 0 k | 45.04 k | - | - |
| Axial Compression Analysis | 12.5 k | 23.612 k | - | - |



Company : <Licensed Company>
Designer : EvanWinterPE
Job Number :
Model Name :

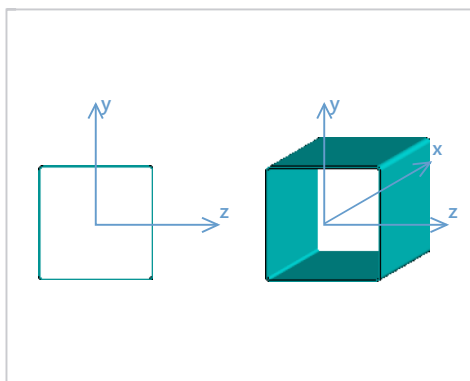
4/13/2023
9:06:29 AM
Checked By : _____

| | | | | |
|---|------------|------------|--------------|-------------|
| Flexural Analysis (Strong Axis) | 2.865 k-ft | 6.207 k-ft | - | - |
| Flexural Analysis (Weak Axis) | 0 k-ft | 6.207 k-ft | - | - |
| Shear Analysis (Major Axis y) | 0.143 k | 12.969 k | 0.011 | PASS |
| Shear Analysis (Minor Axis z) | 0 k | 12.969 k | 0 | PASS |
| Bending & Axial Interaction Check (UC Bending Max) | - | - | 0.991 | PASS |

Detail Report: M2

Load Combination: LC 1: DL

Code check: 0.999 (axial/
bending)



Input Data

| | | | |
|---------------------------|-------------------|-------------------|----------|
| Shape: | CFS5.5x5.5x.108 | I Node: | N4 |
| Member Type: | Column | J Node: | N3 |
| Length (ft): | 10 | I Release: | Fixed |
| Material Type: | Cold Formed Steel | J Release: | Fixed |
| Design Rule: | Typical | I Offset: | N/A |
| Internal Sections: | 97 | J Offset: | N/A |
| Design Code: | AISI S100-16: ASD | T/C Only: | Both Way |

Material Properties

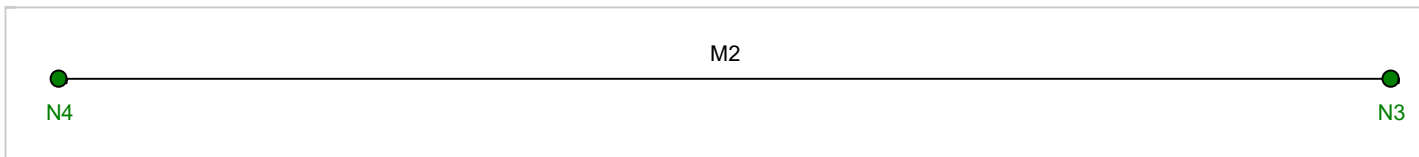
| | | | | | |
|------------------|--------------|------------------------------------|------|-----------------------------|----|
| Material: | A653 SS Gr33 | Nu: | 0.3 | F_y (ksi): | 33 |
| E (ksi): | 29500 | Therm. Coeff. (/1E5 F): | 0.65 | F_u (ksi): | 45 |
| G (ksi): | 11346 | Density (k/ft³): | 0.49 | | |

Shape Properties

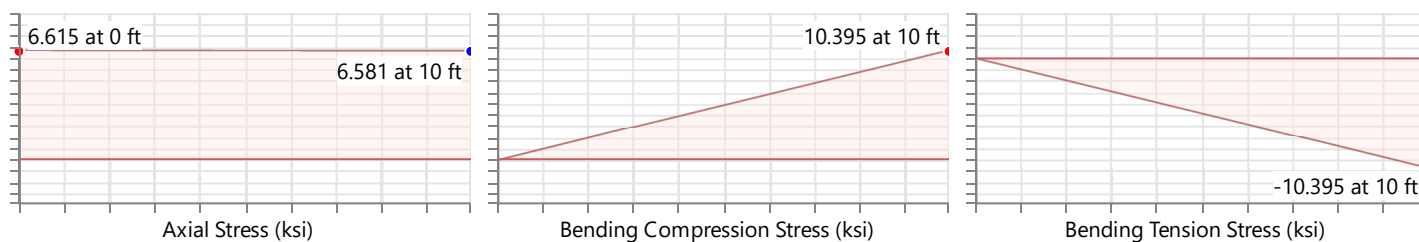
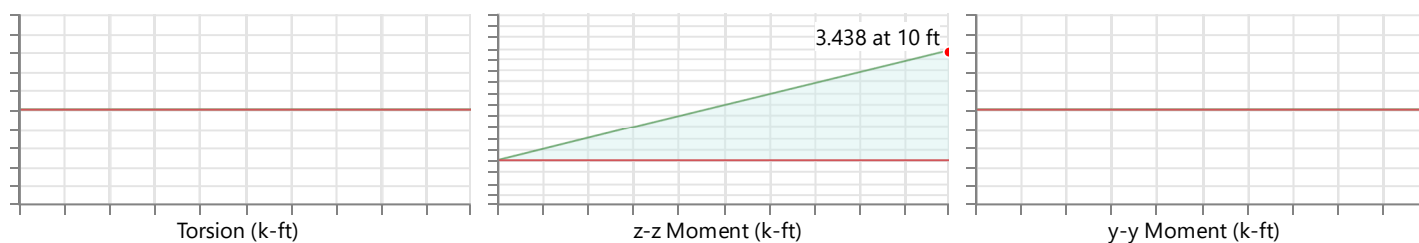
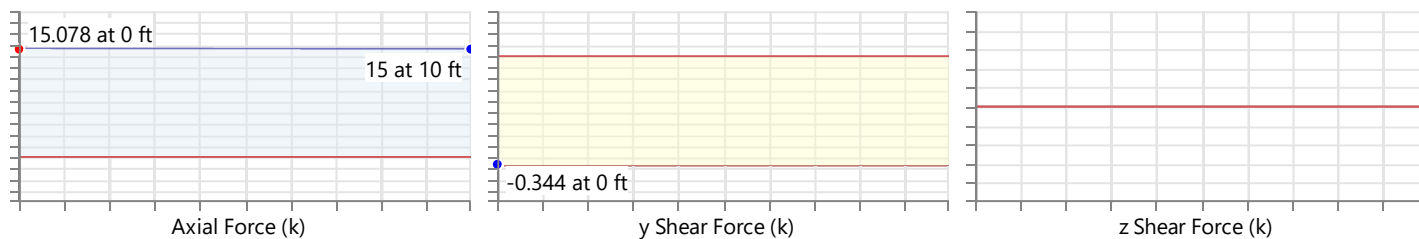
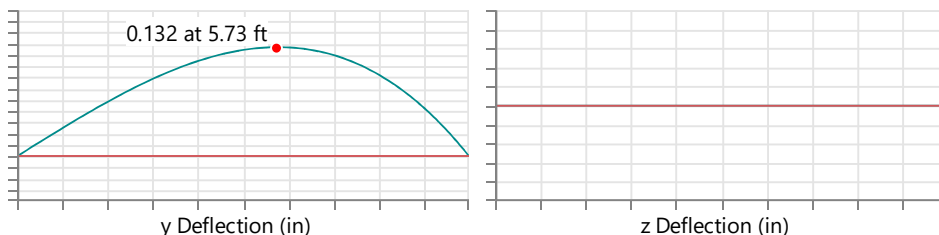
| | | | | | |
|---|--------|---|--------|---|-------|
| D (in): | 5.5 | J (in⁴): | 16.931 | S_{et,z} (in³): | 3.77 |
| B (in): | 5.5 | C_w (in⁶): | 240.99 | S_{f,z} (in³): | 3.968 |
| t (in): | 0.108 | X_c (in): | 2.696 | S_{fy,z} (in³): | 3.968 |
| R (in): | 0.216 | r_z (in): | 2.188 | S_{ey} (in³): | 3.769 |
| I_{yy} (in⁴): | 10.911 | r_y (in): | 2.188 | S_{et,y} (in³): | 3.77 |
| I_{zz} (in⁴): | 10.912 | x₀ (in): | -0.674 | S_{fy} (in³): | 3.968 |
| Area (in²): | 2.279 | S_{ez} (in³): | 3.769 | S_{fy,y} (in³): | 3.968 |

Design Properties

| | | | | | |
|-----------------------------------|------------------|---------------------------|-----|---------------------------|---------|
| L_{b y-y} (ft): | 10 | C_{m z-z}: | 0.6 | a: | N/A |
| L_{b z-z} (ft): | 10 | K_{y-y}: | 1 | Function: | Lateral |
| L_{comp top}: | L _{byy} | K_{z-z}: | 1 | Max Defl Ratio: | L/912 |
| L_{comp bot} (ft): | 10 | R: | N/A | Max Defl Location: | 5.729 |
| C_b: | 1.667 | y sway: | No | Span: | N/A |
| C_{m y-y}: | 0.6 | z sway: | No | | |



Diagrams:



AISI S100-16: ASD Code Check

| Limit State | Required | Available | Unity Check | Result |
|-----------------------------------|----------|-----------|-------------|--------|
| Applied Loading - Bending/Axial | - | - | - | - |
| Applied Loading - Shear + Torsion | - | - | - | - |
| Axial Tension Analysis | 0 k | 45.04 k | - | - |
| Axial Compression Analysis | 15 k | 33.656 k | - | - |



Company : <Licensed Company>
Designer : EvanWinterPE
Job Number :
Model Name :

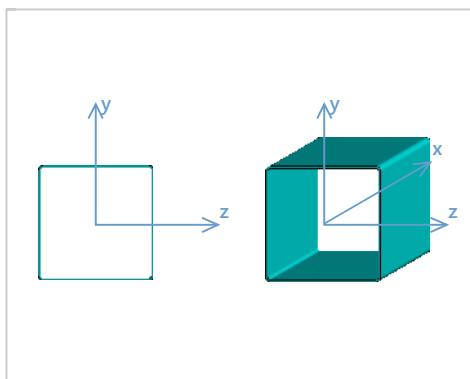
4/13/2023
9:06:30 AM
Checked By : _____

| | | | | |
|---|------------|------------|--------------|-------------|
| Flexural Analysis (Strong Axis) | 3.438 k-ft | 6.207 k-ft | - | - |
| Flexural Analysis (Weak Axis) | 0 k-ft | 6.207 k-ft | - | - |
| Shear Analysis (Major Axis y) | 0.344 k | 12.969 k | 0.027 | PASS |
| Shear Analysis (Minor Axis z) | 0 k | 12.969 k | 0 | PASS |
| Bending & Axial Interaction Check (UC Bending Max) | - | - | 0.999 | PASS |

Detail Report: M3

Load Combination: LC 1: DL

Code check: 1.195 (axial/
bending)



Input Data

| | | | |
|---------------------------|-------------------|-------------------|----------|
| Shape: | CFS5.5x5.5x.108 | I Node: | N6 |
| Member Type: | Column | J Node: | N5 |
| Length (ft): | 4 | I Release: | Fixed |
| Material Type: | Cold Formed Steel | J Release: | Fixed |
| Design Rule: | Typical | I Offset: | N/A |
| Internal Sections: | 97 | J Offset: | N/A |
| Design Code: | AISI S100-16: ASD | T/C Only: | Both Way |

Material Properties

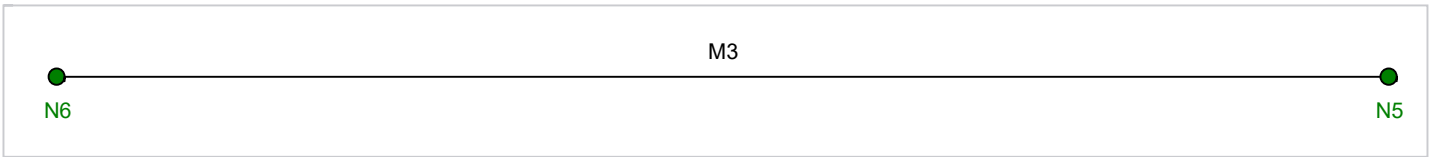
| | | | | | |
|------------------|--------------|------------------------------------|------|-----------------------------|----|
| Material: | A653 SS Gr33 | Nu: | 0.3 | F_y (ksi): | 33 |
| E (ksi): | 29500 | Therm. Coeff. (/1E5 F): | 0.65 | F_u (ksi): | 45 |
| G (ksi): | 11346 | Density (k/ft³): | 0.49 | | |

Shape Properties

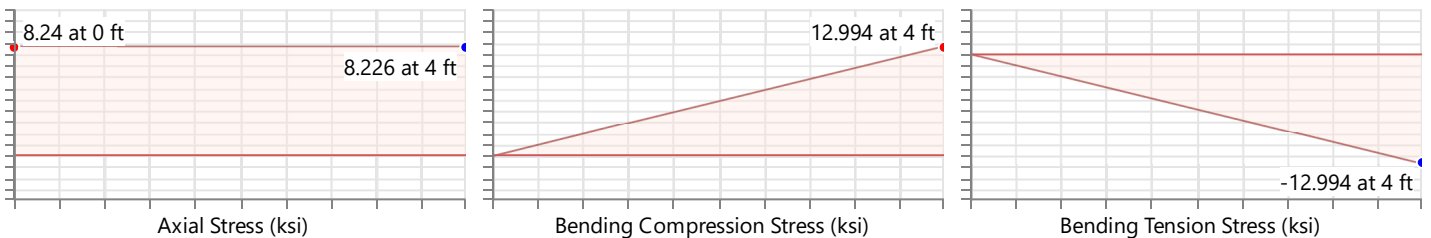
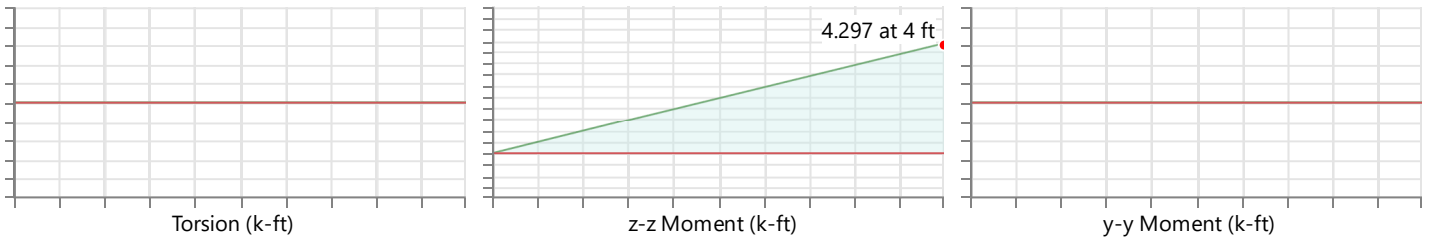
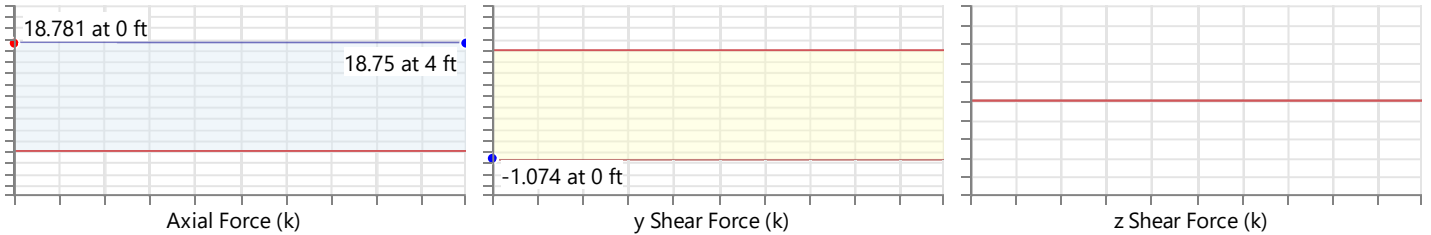
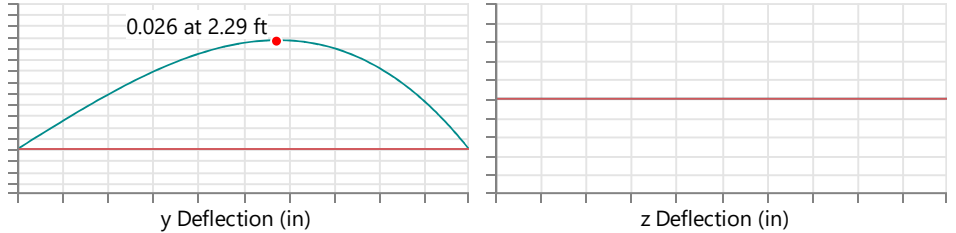
| | | | | | |
|---|--------|---|--------|---|-------|
| D (in): | 5.5 | J (in⁴): | 16.931 | S_{et,z} (in³): | 3.77 |
| B (in): | 5.5 | C_w (in⁶): | 240.99 | S_{f,z} (in³): | 3.968 |
| t (in): | 0.108 | X_c (in): | 2.696 | S_{fy,z} (in³): | 3.968 |
| R (in): | 0.216 | r_z (in): | 2.188 | S_{ey} (in³): | 3.769 |
| I_{yy} (in⁴): | 10.911 | r_y (in): | 2.188 | S_{et,y} (in³): | 3.77 |
| I_{zz} (in⁴): | 10.912 | x₀ (in): | -0.674 | S_{fy} (in³): | 3.968 |
| Area (in²): | 2.279 | S_{ez} (in³): | 3.769 | S_{fy,y} (in³): | 3.968 |

Design Properties

| | | | | | |
|-----------------------------------|------------------|---------------------------|-----|---------------------------|---------|
| L_{b y-y} (ft): | 4 | C_{m z-z}: | 0.6 | a: | N/A |
| L_{b z-z} (ft): | 4 | K_{y-y}: | 1 | Function: | Lateral |
| L_{comp top}: | L _{byy} | K_{z-z}: | 1 | Max Defl Ratio: | L/1825 |
| L_{comp bot} (ft): | 4 | R: | N/A | Max Defl Location: | 2.292 |
| C_b: | 1.667 | y sway: | No | Span: | N/A |
| C_{m y-y}: | 0.6 | z sway: | No | | |



Diagrams:



AISI S100-16: ASD Code Check

| Limit State | Required | Available | Unity Check | Result |
|-----------------------------------|----------|-----------|-------------|--------|
| Applied Loading - Bending/Axial | - | - | - | - |
| Applied Loading - Shear + Torsion | - | - | - | - |
| Axial Tension Analysis | 0 k | 45.04 k | - | - |
| Axial Compression Analysis | 18.75 k | 37.32 k | - | - |



Company : <Licensed Company>
Designer : EvanWinterPE
Job Number :
Model Name :

4/13/2023
9:06:31 AM
Checked By : _____

| | | | | |
|---|------------|------------|--------------|-------------|
| Flexural Analysis (Strong Axis) | 4.297 k-ft | 6.207 k-ft | - | - |
| Flexural Analysis (Weak Axis) | 0 k-ft | 6.207 k-ft | - | - |
| Shear Analysis (Major Axis y) | 1.074 k | 12.969 k | 0.083 | PASS |
| Shear Analysis (Minor Axis z) | 0 k | 12.969 k | 0 | PASS |
| Bending & Axial Interaction Check (UC Bending Max) | - | - | 1.195 | FAIL |