7/21/2025	Submission Number 2	Revision Number

(ONTARIO POLICE DEPARTMENT) - REMODEL (E) GALLERY SPACE INTO A MEDIA ROOM AND SUPPORTING OFFICES (1,595 SF) AND IMPROVEMENTS TO ADA PARKING. (CIP)

2500 S ARCHIBALD AV

B202506606

STRUCTURAL CALCULATIONS

FOR

ONTARIO POLICE DEPARTMENT MEDIA ROOM

ONTARIO, CA

September 16, 2025

Client: Holt
Buehler SEOR: David S. Pomerleau
Buehler Project Engineer: Dhamar Lopez
Buehler Job No.: 2024-0438

REVIEWED
FOR
CODE COMPLIANCE
Sep 23, 2025
BPR CONSULTING GROUP

CITY OF ONTARIO
City of Ontario | Building Department
APPROVED & REVIEWED
FOR CODE COMPLIANCE
The issuance of a permit and approval of these plans shall not be construed to permit or approve any violation of the applicable codes or ordinances.
Date: 09/29/2025 4:09:16 PM

REGISTERED PROFESSIONAL ENGINEER
DAVID S. POMERLEAU
No. 4537
STRUCTURAL
STATE OF CALIFORNIA

www.buehlerengineering.com

ONTARIO POLICE DEPARTMENT MEDIA ROOM
STRUCTURAL CALCULATIONS
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Project Description:

This project involves interior alterations of an existing Ontario Police Department Headquarters Building. The primary structure is a single-story CMU building with bare metal deck roof diaphragm and an interior steel framed mezzanine structure. A separate single-story steel braced frame structure was added at the front of the building and is seismically separated from the primary structure by a 4 inch seismic gap.

The scope of work of the project is within the secondary structure and this structural calculation package includes design of the addition of interior partitions and ceiling, support of new mechanical ducts and equipment. It also includes verification of existing gravity members and non-structural infill of existing door openings for construction of a display case near the first floor entry if the primary structure.

Project Location: 2500 S. Archibald Ave. Ontario, CA 91761

Design Criteria:

Building Type: Risk Category: II

Design Codes: 2022 California Building Code (2021 IBC)

ASCE 7-16:	Minimum Design Loads for Buildings and Other Structures
AISC 360-16:	Specification for Structural Steel Buildings
AISI S100-16 w/ S2-20:	North American Specification for the Design of Cold-Formed Steel Structural Members
AISI S240-20:	North American Standard for Cold-Formed Steel Structural Framing
ACI 318-19:	Building Code Requirements for Structural Concrete

Wind Criteria: 95 mph, Exposure C GC_{pi} = ±0.18 (Enclosed Structure)

Seismic Criteria: Site Class: D S_S = 1.599 S_1 = 0.581 S_{DS} = 1.279 S_{D1} = 1.046

Seismic Design Category: D I = 1.00 I_p = 1.00

Existing Lateral Force-Resisting System: Building Frame System: Steel Concentrically Braced Frames

R = 6.5 Ω_o = 3.0 C_d = 4.0

Foundation Criteria:

Allowable Bearing Pressures:	D	1500 psf
	D + L	1500 psf
Coefficient of Friction		0.30
Passive Pressure		100 pcf

Reduce friction 50% when used in combination with passive pressure

Material Specifications:

Concrete: (Cement ASTM C-150)		W/C Ratio
Footings:	f'_c = 3000 psi	0.58
Slab-on-grade:	f'_c = 3500 psi	0.45

Structural Steel:	
WF shapes:	ASTM A992 (50 ksi)
HSS (rectangular):	ASTM A500-C (50 ksi)
HSS (round):	ASTM A500-C (46 ksi)
Pipe:	ASTM A53 (35 ksi)
Angle:	ASTM A572 (50 ksi)
Anchor Rods (non-frame):	ASTM F1554 Gr 36

PROJECT	Ontario PD Media Room				
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CLIENT	Holt	BY	DL	SHEET NO.	02.1

Design Loads

C: Roof Loads – Steel Framing w/ Bare Metal Deck

	deck	joists	girders	columns	seismic
Roll Roofing	3.0	3.0	3.0	3.0	3.0
Insulation	0.5	0.5	0.5	0.5	0.5
1 1/2"x16ga 'B' deck	3.5	3.5	3.5	3.5	3.5
W14 beams @ 8' cc		6.0	6.0	6.0	6.0
susp gyp ceilings	3.0	3.0	3.0	3.0	3.0
Suspended Sofit	4.5	4.5	4.5	4.5	4.5
Ductwork/Mech	3.0	3.0	3.0	3.0	3.0
misc	2.5	2.5	2.5	2.5	2.5
Dead Load	20.0 psf	26.0 psf	26.0 psf	26.0 psf	26.0 psf
Live Load (reducible roof)	20.0 psf	20.0 psf	20.0 psf	20.0 psf	0.0 psf
Live Load (partition)	0.0 psf	0.0 psf	0.0 psf	0.0 psf	5.0 psf
Total Load	40.0 psf	46.0 psf	46.0 psf	46.0 psf	31.0 psf

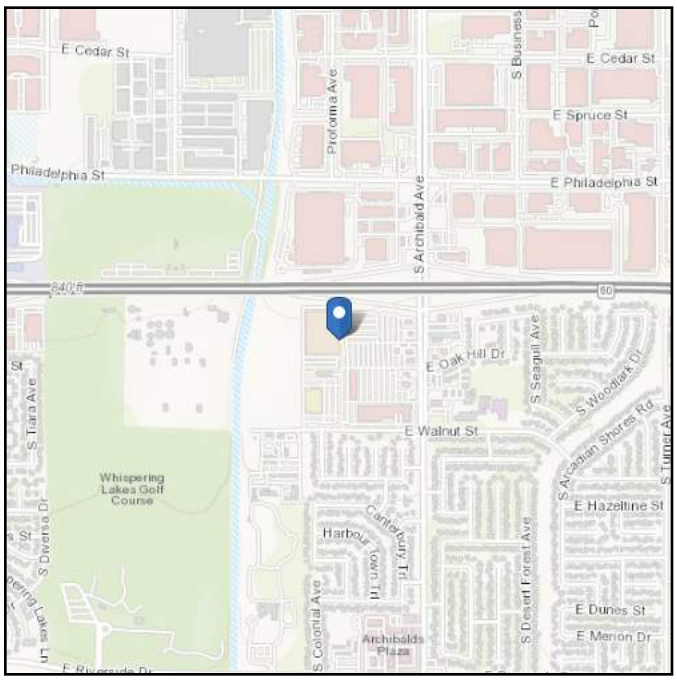
ASCE Hazards Report

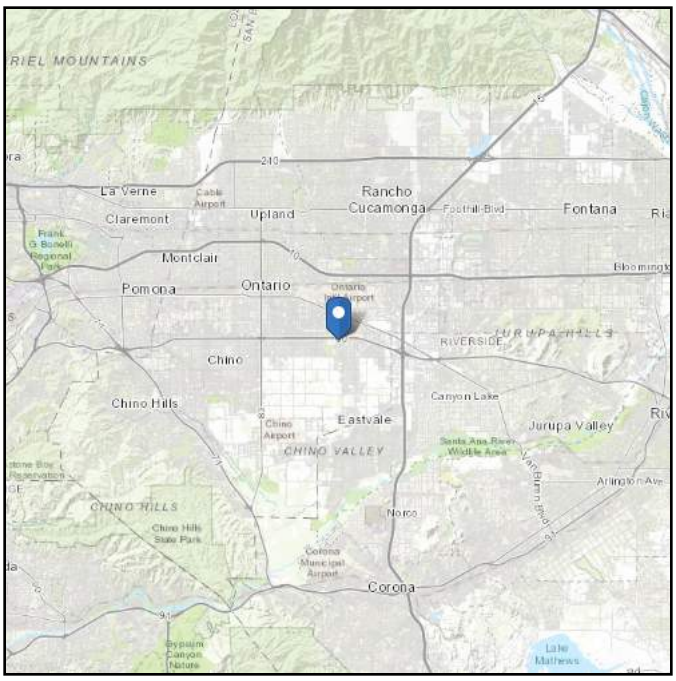
02.2

Address:
2500 S Archibald Av
Ontario, California
91761

Standard: ASCE/SEI 7-16
Risk Category: II
Soil Class: D - Default (see Section 11.4.3)

Latitude: 34.029042
Longitude: -117.596216
Elevation: 819.4434060220569 ft (NAVD 88)





Wind

Results:

Wind Speed	95 Vmph
10-year MRI	66 Vmph
25-year MRI	72 Vmph
50-year MRI	77 Vmph
100-year MRI	82 Vmph

Data Source: ASCE/SEI 7-16, Fig. 26.5-1B and Figs. CC.2-1–CC.2-4, and Section 26.5.2
Date Accessed: Thu Apr 17 2025

Value provided is 3-second gust wind speeds at 33 ft above ground for Exposure C Category, based on linear interpolation between contours. Wind speeds are interpolated in accordance with the 7-16 Standard. Wind speeds correspond to approximately a 7% probability of exceedance in 50 years (annual exceedance probability = 0.00143, MRI = 700 years).

Site is not in a hurricane-prone region as defined in ASCE/SEI 7-16 Section 26.2.

Seismic

Site Soil Class: D - Default (see Section 11.4.3)

Results:

S_S :	1.599	S_{D1} :	N/A
S_1 :	0.581	T_L :	12
F_a :	1.2	PGA :	0.667
F_v :	N/A	PGA_M :	0.8
S_{MS} :	1.919	F_{PGA} :	1.2
S_{M1} :	N/A	I_e :	1
S_{DS} :	1.279	C_v :	1.42

Ground motion hazard analysis may be required. See ASCE/SEI 7-16 Section 11.4.8.

Data Accessed: Thu Apr 17 2025

Date Source: USGS Seismic Design Maps

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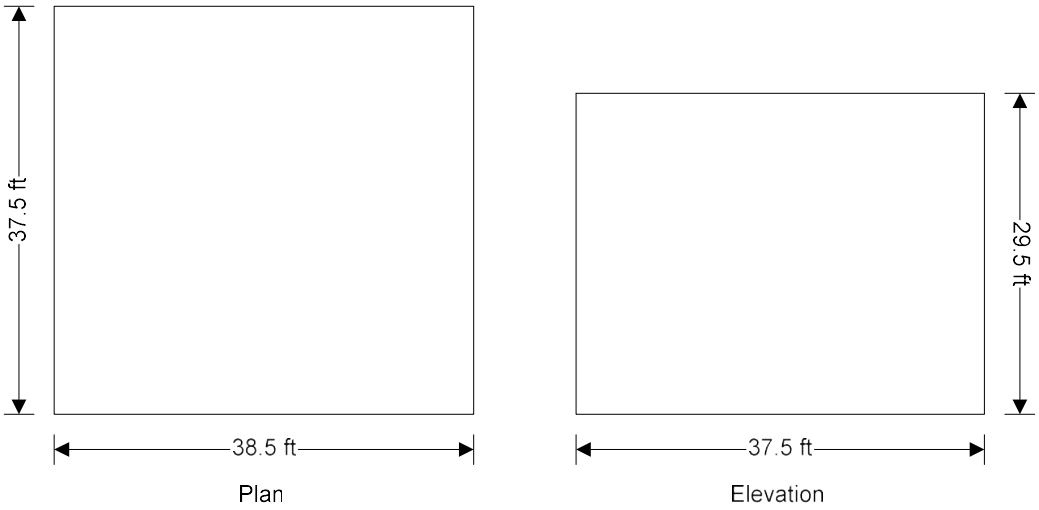
COMPONENTS AND CLADDING - MONOSLOPE ROOF EXAMPLE

WIND LOADING

In accordance with ASCE7-16

Using the components and cladding design method

Tedds calculation version 2.1.17



Building data

Type of roof	Flat
Length of building	b = **38.50** ft
Width of building	d = **37.50** ft
Height to eaves	H = **29.50** ft
Mean height	h = **29.50** ft
End zone width	a = max(min(0.1×min(b, d), 0.4×h), 0.04×min(b, d), 3ft) = **3.75** ft

General wind load requirements

Basic wind speed	V = **95.0** mph
Risk category	II
Velocity pressure exponent coef (Table 26.6-1)	K_d = **0.85**
Ground elevation above sea level	z_{gl} = **819** ft
Ground elevation factor	$K_e = \exp(-0.0000362 \times z_{gl}/1ft)$ = **0.97**
Exposure category (cl 26.7.3)	C
Enclosure classification (cl.26.12)	Enclosed buildings
Internal pressure coef +ve (Table 26.13-1)	GC_{pi_p} = **0.18**
Internal pressure coef –ve (Table 26.13-1)	GC_{pi_n} = **-0.18**
Gust effect factor	G_f = **0.85**

Topography

Topography factor not significant	K_{zt} = 1.0

Velocity pressure

Velocity pressure coefficient (Table 26.10-1)	K_z = **0.98**
Velocity pressure	$q_h = 0.00256 \times K_z \times K_{zt} \times K_d \times K_e \times V^2 \times 1psf/mph^2$ = **18.6** psf

Peak velocity pressure for internal pressure

Peak velocity pressure – internal (as roof press.)	q_i = **18.61** psf

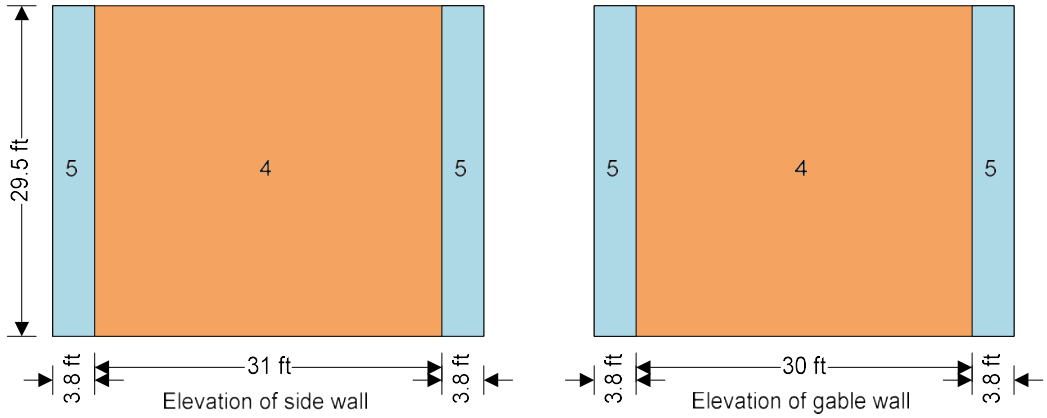
Equations used in tables

Net pressure $p = q_h \times (GC_p - GC_{pi})$

Components and cladding pressures - Wall (Table 30.3-1)

Component	Zone	Length (ft)	Width (ft)	Eff. area (ft^2)	$+GC_p$	$-GC_p$	Pres (+ve) (psf)	Pres (-ve) (psf)
<=10 sf	4	-	-	10.0	0.90	-0.99	20.1	-21.8
50 sf	4	-	-	50.0	0.79	-0.88	18.0	-19.7
200 sf	4	-	-	200.0	0.69	-0.78	16.2	-17.9
>500 sf	4	-	-	500.1	0.63	-0.72	15.1 #	-16.7
<=10 sf	5	-	-	10.0	0.90	-1.26	20.1	-26.8
50 sf	5	-	-	50.0	0.79	-1.04	18.0	-22.7
200 sf	5	-	-	200.0	0.69	-0.85	16.2	-19.1
>500 sf	5	-	-	500.1	0.63	-0.72	15.1 #	-16.7

The final net design wind pressure, including all permitted reductions, used in the design shall not be less than 16psf acting in either direction



Components and cladding pressures - Roof (Figure 30.3-2A)

Component	Zone	Length (ft)	Width (ft)	Eff. area (ft^2)	$+GC_p$	$-GC_p$	Pres (+ve) (psf)	Pres (-ve) (psf)
<=10 sf	1	-	-	10.0	0.30	-1.70	8.9 #	-35.0
100 sf	1	-	-	100.0	0.20	-1.29	7.1 #	-27.3
200 sf	1	-	-	200.0	0.20	-1.16	7.1 #	-25.0
>500 sf	1	-	-	500.1	0.20	-1.00	7.1 #	-22.0
<=10 sf	2	-	-	10.0	0.30	-2.30	8.9 #	-46.1
100 sf	2	-	-	100.0	0.20	-1.77	7.1 #	-36.3
200 sf	2	-	-	200.0	0.20	-1.61	7.1 #	-33.3
>500 sf	2	-	-	500.1	0.20	-1.40	7.1 #	-29.4
<=10 sf	3	-	-	10.0	0.30	-3.20	8.9 #	-62.9
100 sf	3	-	-	100.0	0.20	-2.14	7.1 #	-43.2
200 sf	3	-	-	200.0	0.20	-1.82	7.1 #	-37.2
>500 sf	3	-	-	500.1	0.20	-1.40	7.1 #	-29.4

The final net design wind pressure, including all permitted reductions, used in the design shall not be less than 16psf acting in either direction

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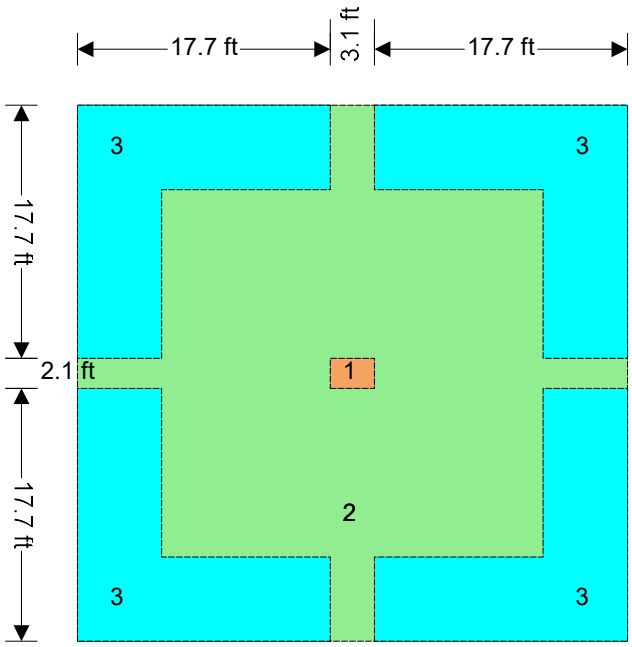
		PAGE NO.	02.7



Plan on roof

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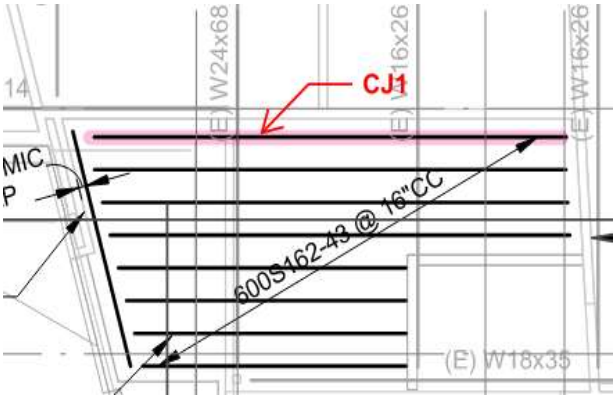
PROJECT NO.	2024-0438			DATE	5/1/2025
CLIENT	Holt	BY	DL	PAGE NO.	03.1

Design Narrative

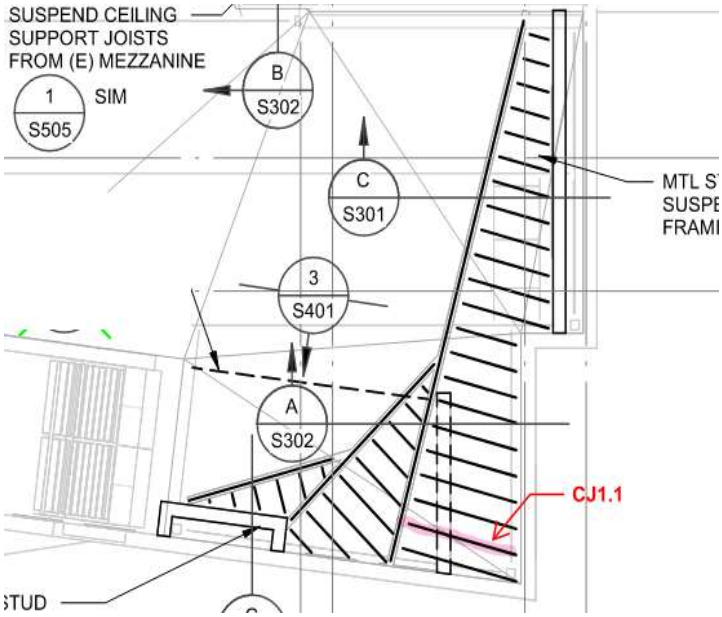
This structural calculation package includes ceiling joists & supporting beam design calculations for the secondary structure of the existing Ontario Police Department Headquarters. The interior alterations and tentant improvements additionally include addition of interior partitions and ceiling, support of new mechanical ducts & equipment and verification of existing gravity members.

The new ceiling joists to be designed support the mechanical equipment and are cantilevered with two supports, one at an (E) W24x66 steel beam around midpoint of beam and a second support at the end. Framing for mechcanical duct openings is considered & included.



PLAN VIEW

Design and connections to existing framing of the added 3-tier suspended soffit are included in this calculation package and are based on the governing highlighed beam below. The vertical component is checked for the vertical rections of the ceiling joists framing into it at the same spacing of 16" oc. The bracing of the vertical members to the top of ceiling steel beam framing are also determined as well as the vertical members attachment to ceiling framing.



PLAN VIEW

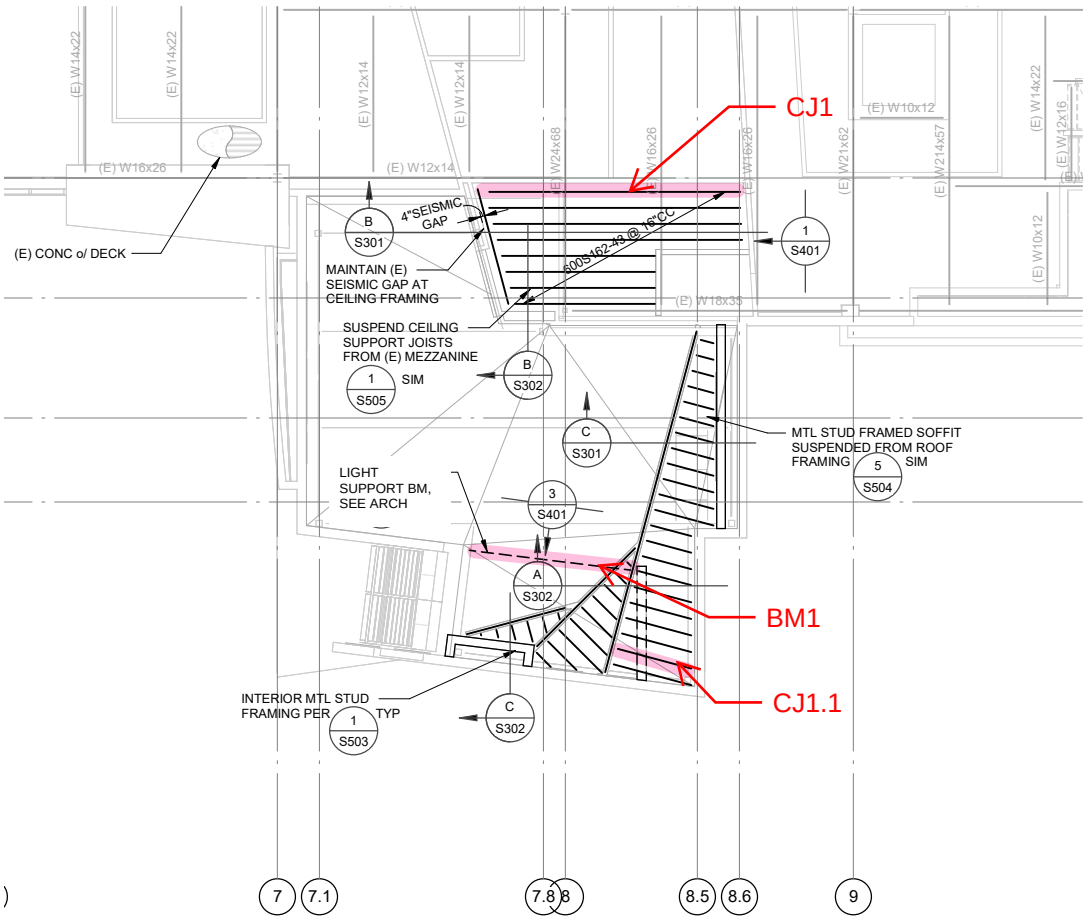
The design of a new stage platform and supporting beam for stage lights are also included in this calculation package as well.

PROJECT Ontario PD Media Room

PROJECT NO. 2024-0438 DATE 09/12/2025

CLIENT Holt BY DL SHEET NO. 03.2

FRAMING DESIGN KEY PLAN



CEILING FRAMING PLAN 1/8" = 1'-0"

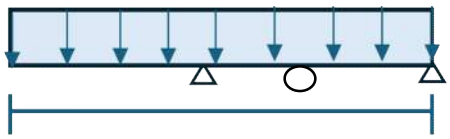
PROJECT Ontario PD Media Room

PROJECT NO. 2024-0438 DATE 5/1/2025

CLIENT Holt BY DL PAGE N 03.3

Gravity Design, Existing Framing Check

Ceiling Joists Design, CJ1



L_{beam} = 23 ft

Trib Width, w = 1.3 ft (joists @ 16" oc)

Support 1 @ 7 ft DL = 3 psf

Support 2 @ 15 ft DL gyp = 2.5 psf

Support 3 @ 23 Mech Ductwork = 3 psf

Input for Simpson CFS Designer **Dead Load, DL+DL_{gyp}= 10 psf**

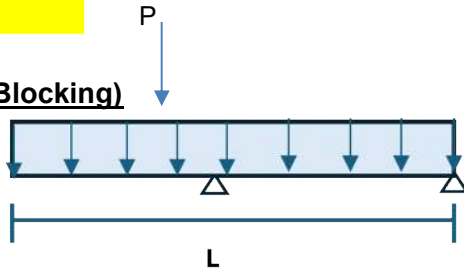
ASD Loading - 1.0D + 1.0L

DCR: 0.24 OK

- See Simpson CFS Designer Output Report -

USE: 600S162-43 Ceiling Joists @ 16" oc

Ceiling Joists Design, CJ1.1 (With Reaction of Mech Duct Framing Blocking)



L_{beam} = 13 ft

Trib Width, w = 1.3 ft (joists @ 16" oc)

P Load for Shiortened Beam due to Mech Duct Framing:

L_{short_beam} = 10.5 ft

P = V = DL x w x L_{short_beam} /2 = 70 lb

Location of P load, x = 2.5 ft

Support 1 @ 5.5 ft DL = 3 psf

Support 2 @ 13 ft DL gyp = 2.5 psf

Mech Ductwork = 3 psf

Input for Simpson CFS Designer **Dead Load, DL+DL_{gyp}= 10 psf**

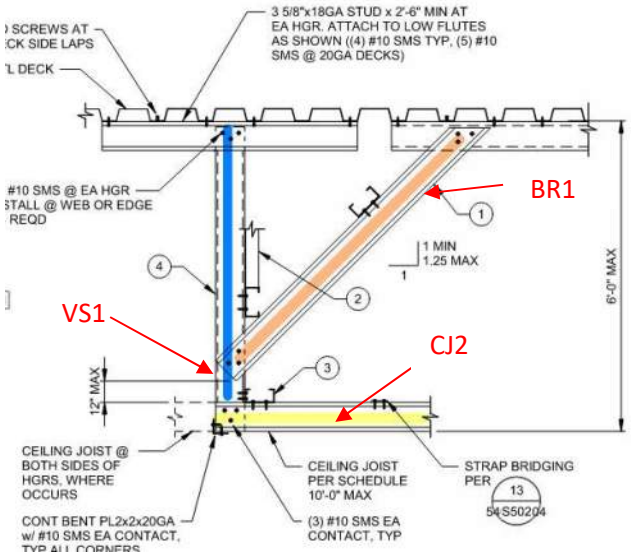
ASD Loading - 1.0D + 1.0L

DCR: 0.4 OK

- See Simpson CFS Designer Output Report -

USE: 600S162-43 Ceiling Joists @ 16" oc

Soffit Suspended from Roof Beam Design, CJ2



L_{beam}= **(Yellow Highlight)** 7.5 ft

Trib Width, w = 1.3 ft (joists @ 16" oc)

Loading:

DL = 4.5 psf

DL vertical Studs = 0.67 psf

Input for Simpson CFS Designer

ASD Loading - 1.0D + 1.0L

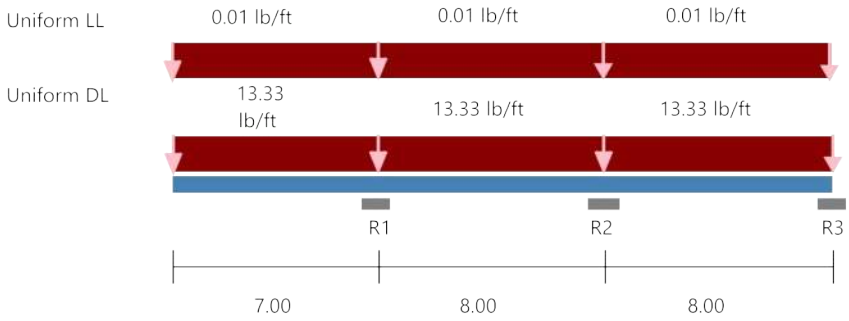
Dead Load, DL +DL_{vert}= 5 psf

DCR: 0.08 OK

- See Simpson CFS Designer Output Report -

USE: 350S162-43 Ceiling Joists @ 16" oc, OK

DETAIL 5/S504



Section : 600S200-43 (33 ksi) @ 16 in" o.c. Single C Stud (punched)
Maxo = 1436.9 ft-lb **Va =** 1415.7 lb **I =** 2.683 in^4

Deflection Limits: Total Load - 240 Live Load - 360

Load Comb:
1. DL + LL All spans
2. DL + LL Even spans
3. DL + LL Odd spans
4. LL All spans
5. LL Even spans
6. LL Odd spans

Joist Flexural and Deflection

	Mmax (ft-lb)	K-phi (lb-in/in)	Lm (in)	Ma-dist (ft-lb)	Mmax/ Ma min	Load Comb.	TL Defl	Load Comb.	LL Defl	Load Comb.
Left Cantilever	327	0.0	84.0	1243.9	0.263	1	L/921	2	L/782310	5
Left Span	327	0.0	96.0	1243.9	0.263	1	L/5813	2	L/3553916	5
Right Span	95	0.0	96.0	1243.9	0.076	2	L/7180	2	L/5330415	5

Joist Bending and Web Crippling

Support	Load (lb)	Load Comb.	Bearing (in)	Pa (lb)	Pn (lb)	Max Intr.	Load Comb.	Stiffeners Required
R1	184.6	1	1.00	553.3	913.0	0.32	1	NO
R2	72.2	1	1.00	553.3	913.0	0.08	3	NO
R3	50.3	2	1.00	259.1	453.4	0.10	2	NO

Joist Bending and Shear

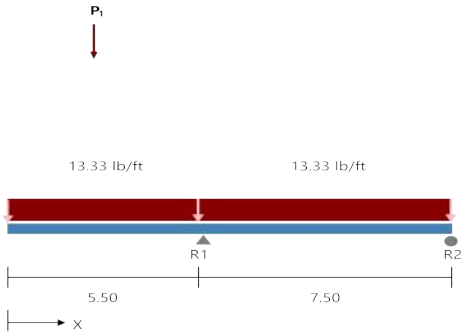
Support	Vmax (lb)	Load Comb.	Va Factor	V/Va	M/Ma	Intr. Unstiffened	Load Comb.	Intr. Stiffened	Load Comb.
R1	93.4	1	1.000	0.07	0.23	0.24	1	N/A	N/A
R2	56.5	1	1.000	0.04	0.02	0.04	1	N/A	N/A
R3	50.3	2	1.000	0.04	0.00	0.04	2	N/A	N/A

Joist Reaction and Connections

Support	Rx(lb)	Ry(lb)	Simpson Strong-Tie Connector	Connector Interaction	Anchor Interaction
R1	0.0	184.6	By Others & Anchorage Designed by Engineer	NA	NA
R2	0.0	72.2	By Others & Anchorage Designed by Engineer	NA	NA

R3	0.0	50.3	SSC4.25 (4#10) & (3) #10 to A36 steel (Joist Bearing on Support)	0.00 %	0.00 %

* Reference catalog for connector and anchor requirement notes as well as screw placement requirements



Section: 600S162-43 (33 ksi) @ 16" o.c. Single C Stud (punched)
Maxo = 1271.1 ft-lb **Va =** 1415.7 lb **I =** 2.32 in^4

Loads have not been modified for strength checks
Loads have not been modified for deflection calculations

Bridging Connectors - Design Method =AISI S100

Span	Axial KyLy, KtLt	Flexual, Distortional	Connector	Stress Ratio
Left Cant.	NA	None, 66.0"	N/A	-
Span	NA	None, 90.0"	N/A	-

Web Crippling

Support	Load (lb)	Bearing (in)	Pa (lb)	M (ft-lbs)	Max Int.	Stiffener?
R1*	248.22	1.00	491.2	411.7	0.47	NO
R2*	-4.89	1.00	239.8	0.0	0.01	NO
P1*	70.00	1.50	602.8	41.9	0.08	NO

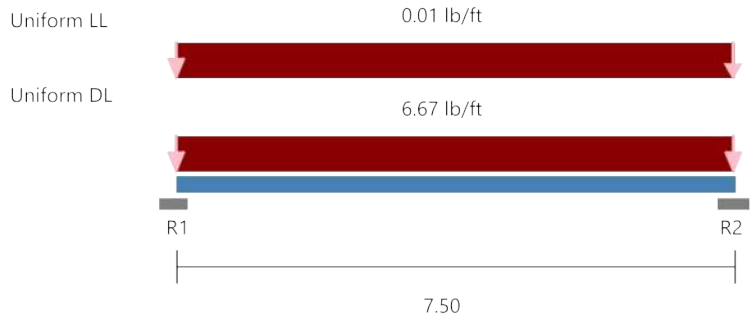
"*" after support means punched near support

Point Loads	**P1**
Load(lb)	70.00
X-Dist.(ft)	2.50

	Code Check	Required	Allowed	Interaction	Notes
Left Cant.	Max. Axial, lbs	0.0(t)	-	0%	KΦ=0.00 lb-in/in Max KL/r = N/A
	Max. Shear, lbs	143.3	1240.3	12%	Shear (Punched)
	Max. Moment (MaFy, Ma-dist), ft-lbs	411.7	1087.9	38%	Ma-dist (control),KΦ=0.00 lb-in/in
	Moment Stability, ft-lbs	261.4	1229.9	21%	
	Shear/Moment	0.34	1.00	34%	Shear 143.3, Moment 411.7
	Axial/Moment	0.38	1.00	38%	Axial 0.0(c), Moment 411.7
	Deflection Cant., in	0.185	--meets L/714--		2 x Cantilever
Span	Max. Axial, lbs	0.0(t)	-	0%	KΦ=0.00 lb-in/in Max KL/r = N/A
	Max. Shear, lbs	104.9	1240.3	8%	Shear (Punched)
	Max. Moment (MaFy, Ma-dist), ft-lbs	411.7	1087.9	38%	Ma-dist (control),KΦ=0.00 lb-in/in
	Moment Stability, ft-lbs	268.7	1031.6	26%	
	Shear/Moment	0.33	1.00	33%	Shear 104.9, Moment 411.7
	Axial/Moment	0.38	1.00	38%	Axial 0.0(c), Moment 411.7
	Deflection Span, in	0.024	--meets L/3701--		

Support	Rx(lb)	Ry(lb)	Simpson Strong-Tie Connector	Connector Interaction	Anchor Interaction
R1	0.0	248.2	By Others & Anchorage Designed by Engineer	NA	NA
R2	0.0	-4.9	By Others & Anchorage Designed by Engineer	NA	NA

* Reference catalog for connector and anchor requirement notes as well as screw placement requirements



Section : 362S162-43 (33 ksi) @ 16 in" o.c. Single C Stud (punched)
Maxo = 612.0 ft-lb **Va =** 1739.1 lb **I =** 0.710 in^4

Deflection Limits: Total Load - 240 Live Load - 360

Load Comb:
1. DL + LL All spans
2. DL + LL Even spans
3. DL + LL Odd spans
4. LL All spans
5. LL Even spans
6. LL Odd spans

Joist Flexural and Deflection

	Mmax (ft-lb)	K-phi (lb-in/in)	Lm (in)	Ma-dist (ft-lb)	Mmax/ Ma min	Load Comb.	TL Defl	Load Comb.	LL Defl	Load Comb.
Span	47	0.0	90.0	609.6	0.077	1	L/3963	1	L/1985 292	4

Joist Bending and Web Crippling

Support	Load (lb)	Load Comb.	Bearing (in)	Pa (lb)	Pn (lb)	Max Intr.	Load Comb.	Stiffeners Required
R1	25.1	1	1.00	276.7	484.3	0.05	1	NO
R2	25.1	1	1.00	276.7	484.3	0.05	1	NO

Joist Bending and Shear

Support	Vmax (lb)	Load Comb.	Va Factor	V/Va	M/Ma	Intr. Unstiffened	Load Comb.	Intr. Stiffened	Load Comb.
R1	25.1	1	1.000	0.01	0.00	0.01	1	N/A	N/A
R2	25.1	1	1.000	0.01	0.00	0.01	1	N/A	N/A

Joist Reaction and Connections

Support	Rx(lb)	Ry(lb)	Simpson Strong-Tie Connector	Connector Interaction	Anchor Interaction
R1	0.0	25.1	By Others & Anchorage Designed by Engineer	NA	NA
R2	0.0	25.1	By Others & Anchorage Designed by Engineer	NA	NA

* Reference catalog for connector and anchor requirement notes as well as screw placement requirements

BUEHLER

PROJECT Ontario PD Media Room

PROJECT NO. 2024-0438 DATE 5/1/2025

CLIENT Holt BY DL PAGE NO. 03.8

Vertical Suspended Metal Stud Framing Design, VS1

$H_{Vertical}$= **(Blue Highlight)** 13.75 ft (max)

Trib Width, w = 1.3 ft @ 16" oc

Reactions from Ceiling Joists - Suspended Soffit:

R1, max = 25 lb (ASD)

Input for Simpson CFS Designer

Axial Loads:

Axial Load, P = R1 = 25 lb (ASD) **DCR: 0.01 OK**

- See Simpson CFS Designer Output Report -

USE: 350S162-43 Vertical Studs @ 16" oc, OK

Metal Stud Brace Framing Design, BR1

L_{brace}=**(Orange Highlight)** 10 ft (max) for allowed KL/r <200

Trib Width, w = 4.0 ft @ 48" oc

DCR: 0.15 OK

- See Simpson CFS Designer Output Report -

USE: 350S162-33 Braces @ 48" oc, OK

Reactions from Ceiling Joists - Suspended Soffit:

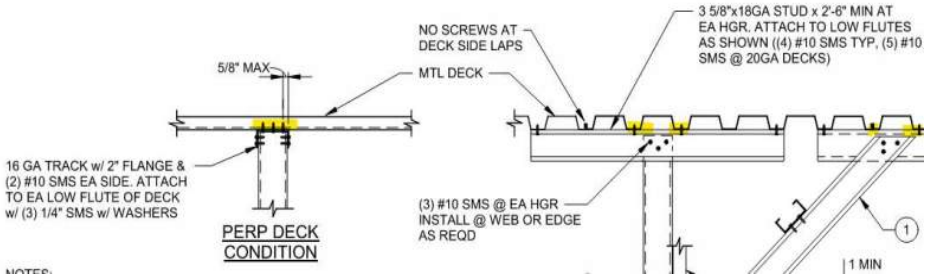
R1, max = 25 lb (ASD)

(1) Brace is at every 3rd vertical, P_{brace} = R1 x 3 =

P, Horizontal Contribution = R1 x 3 x (1.6 /1.25) =

P = 96.00 lb

Connection of Vertical to WT @ Roof



$T_{max} = P_{max}$ = 25 lb

No. of Screws = 3 screws

Check:

DCR: T_{max}/T_{allow} = 0.10 OK

Per SSMA Catalog, Capacity Table Page 70

T_{allow} = 84 lb (into 20ga - min)

T_{tot_allow} = 252 lb

USE: (3) #10 SMS min into 20ga min deck, OK

Connection of Brace to WT @ Roof

$T_{max} = P_{brace}$ x 1.25 /1.6 = 75 lb

No. of Screws = 5 screws

Check:

DCR: T_{max}/T_{allow} = 0.18 OK

Per SSMA Catalog, Capacity Table Page 70

T_{allow} = 84 lb (into 20ga - min)

T_{tot_allow} = 420 lb

USE: (5) #12 SMS min into 20ga min deck, OK

Connection of Brace to Vertical

$V_{max} = P_{brace}$ x 1 /1.6 = 60 lb

No. of Screws = 3 screws

Check:

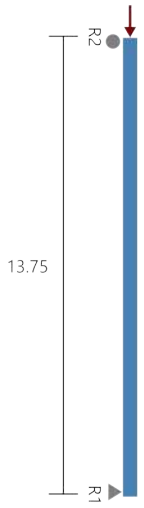
DCR: T_{max}/T_{allow} = 0.11 OK

Per SSMA Catalog, Capacity Table Page 70

V_{allow} = 177 lb (into 18ga - min)

V_{tot_allow} = 531 lb

USE: (3) #10 SMS min into 18ga min studs, OK



Section : 362S162-43 (33 ksi) @ 16" o.c. Single C Stud (punched)
Maxo = 612.0 ft-lb **Va =** 1739.1 lb **I =** 0.71 in^4

Loads have not been modified for strength checks
Loads have not been modified for deflection calculations

Bridging Connectors - Design Method =AISI S100

Span	Axial KyLy, KtLt	Flexual, Distortional	Connector	Stress Ratio
Span	60.0", 60.0"	60.0", 165.0"	LSUBH3.25 (Min)	0.00

Web Crippling

Support	Load (lb)	Bearing (in)	Pa (lb)	M (ft-lbs)	Max Int.	Stiffener?
R2	0.00	1.00	276.7	0.0	0.00	NO
R1	0.00	1.00	276.7	0.0	0.00	NO

"*" after support means punched near support

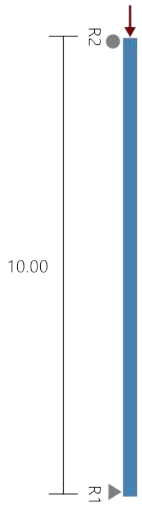
Gravity Load

Type	Load (lb)
Uniform	0.00plf
P1y	25.00lb @ 13.75ft

	Code Check	Required	Allowed	Interaction	Notes
Span	Max. Axial, lbs	25.0(c)	1847.0(c)	1%	KΦ=0.00 lb-in/in Max KL/r = 114
	Max. Shear, lbs	0.0	675.7	0%	Shear (Punched)
	Max. Moment (MaFy, Ma-dist), ft-lbs	0.0	609.6	0%	Ma-dist (control),KΦ=0.00 lb-in/in
	Moment Stability, ft-lbs	0.0	549.9	0%	
	Shear/Moment	0.00	1.00	0%	Shear 0.0, Moment 0.0
	Axial/Moment	0.01	1.00	1%	Axial 25.0(c), Moment 0.0
	Deflection Span, in	0.000	--meets L/0--		

Support	Rx(lb)	Ry(lb)	Simpson Strong-Tie Connector	Connector Interaction	Anchor Interaction
R2	0.0	0.0	By Others & Anchorage Designed by Engineer	NA	NA
R1	0.0	25.0	By Others & Anchorage Designed by Engineer	NA	NA

* Reference catalog for connector and anchor requirement notes as well as screw placement requirements



Section : 362S162-33 (33 ksi) @ 48" o.c. Single C Stud (punched)
Maxo = 440.9 ft-lb **Va =** 1023.6 lb **I =** 0.55 in^4

Loads have not been modified for strength checks
Loads have not been modified for deflection calculations

Bridging Connectors - Design Method =AISI S100

Span	Axial KyLy, KtLt	Flexual, Distortional	Connector	Stress Ratio
Span	None, None	None, 120.0"	N/A	-

Web Crippling

Support	Load (lb)	Bearing (in)	Pa (lb)	M (ft-lbs)	Max Int.	Stiffener?
R2	0.00	1.00	165.2	0.0	0.00	NO
R1	0.00	1.00	165.2	0.0	0.00	NO

"*" after support means punched near support

Gravity Load

Type	Load (lb)
Uniform	0.00plf
P1y	96.00lb @ 10.00ft

	Code Check	Required	Allowed	Interaction	Notes
Span	Max. Axial, lbs	96.0(c)	626.5(c)	15%	KΦ=0.00 lb-in/in Max KL/r = 195
	Max. Shear, lbs	0.0	521.2	0%	Shear (Punched)
	Max. Moment (MaFy, Ma-dist), ft-lbs	0.0	434.5	0%	Ma-dist (control),KΦ=0.00 lb-in/in
	Moment Stability, ft-lbs	0.0	183.1	0%	
	Shear/Moment	0.00	1.00	0%	Shear 0.0, Moment 0.0
	Axial/Moment	0.15	1.00	15%	Axial 96.0(c), Moment 0.0
	Deflection Span, in	0.000	--meets L/0--		

Support	Rx(lb)	Ry(lb)	Simpson Strong-Tie Connector	Connector Interaction	Anchor Interaction
R2	0.0	0.0	By Others & Anchorage Designed by Engineer	NA	NA
R1	0.0	96.0	By Others & Anchorage Designed by Engineer	NA	NA

* Reference catalog for connector and anchor requirement notes as well as screw placement requirements

BUEHLER

PROJECT	Ontario PD Media Room		
PROJECTNO.	2024-0438	DATE	9/11/2025
CLIENT	Holt	BY DL	PAGENO. 03.11

Out-of-Plane Forces due to Light Fixtures

Seismic Design Force

W_p = 56 lb

Site Class D S_{DS} = 1.280 (ASCE Hazards Report) Risk Category = II

I_p = 1.00 (ASCE 7-16 13.1.3)

z/h = (1/1) = 1

a_p = 2.5 (Appendages & Oranmentations) (ASCE 7-16 Table 13.5-1)

R_p = 2.5 (ASCE 7-16 Table 13.5-1)

Ω_o = 2

$$F_p = \frac{0.4 a_p S_{DS} W_p}{\left(\frac{R_p}{I_p}\right)}\left(1 + 2\frac{z}{h}\right)$$ (ASCE 7-16 Eqn. 13.3-1)

F_p =	1.536 W_p	← **Governs**
F_p max = $1.6 S_{DS} I_p W_p$ =	2.048 W_p	(ASCE 7-16 Eqn 13.3-2)
F_p min = $0.3 S_{DS} I_p W_p$ =	0.384 W_p	(ASCE 7-16 Eqn 13.3-3)

Fp = 1.536Wp = 1.536*56 psf = 86.02 psf **F_p = 86.0 lb**

Beam Design for Light Support, BM1

L_{beam} = 20 ft

DL, P_{lights} = 56 lb (5) 28# Stage Lights will be hung from Beam. onAir Panel 1 IP Stage Light

* To be conservative, loads have been multiplied by a factor of 2.

Additional Loading to Consider:

Metal Stud Framing Above: 800S162-43 @ 16" o.c. DL_{stud} = 1.83 psf (SSMA Catalog)

RISA 3D Analysis (LRFD)

ASD - 1.0D +1.0L for Reactions for Simpson CFS

Node 2 RISA 3D Node Reactions (ASD- LC6) GOVERNS :

R_{BM1_X} = 0 lb R_{BM1_Mx} = 210 lb-ft

R_{BM1_Y} = 333 lb

Node 2 RISA 3D Node Reactions (ASD- LC14) :

R_{BM1_X} = 116 lb R_{BM1_Mx} = 100 lb-ft

R_{BM1_Y} = 333 lb

For HSS Steel Beam:

DCR: 0.13 OK **Max Deflection, Δ_{max} = 0.21 in**

For HSS Steel Pipe:

DCR: 0.27 OK **Max Deflection, Δ_{max} = 0.22 in**

- See RISA 3D Analysis Output Report -

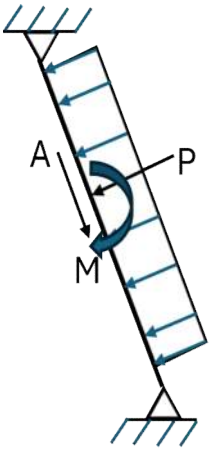
USE: HSS4x4x1/4, Stage Lights Support Beam

USE: HSS 1.5 Pipe for Secondary Beam

PROJECT	Ontario PD Media Room		
PROJECTNO.	2024-0438	DATE	9/11/2025
CLIENT	Holt	BY	DL
		PAGENO.	03.12

VS4, Stud Check of Stud Supporting BM1

H_{stud} =	27.1	ft	Eccentricity, e = b/3	1	ft			
Partition LL =	5	psf	b =	3	ft	θ =	76	deg
$M_{dead\_ecc} = R_{BM1}$ x e =	333	lb-ft @	a =	11.75	ft			
		12.33'	c =	12.25	ft			

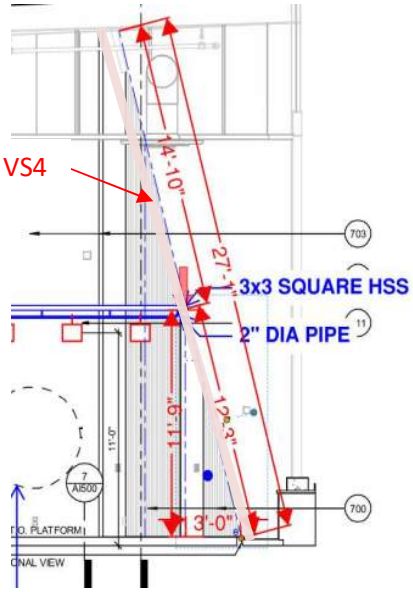


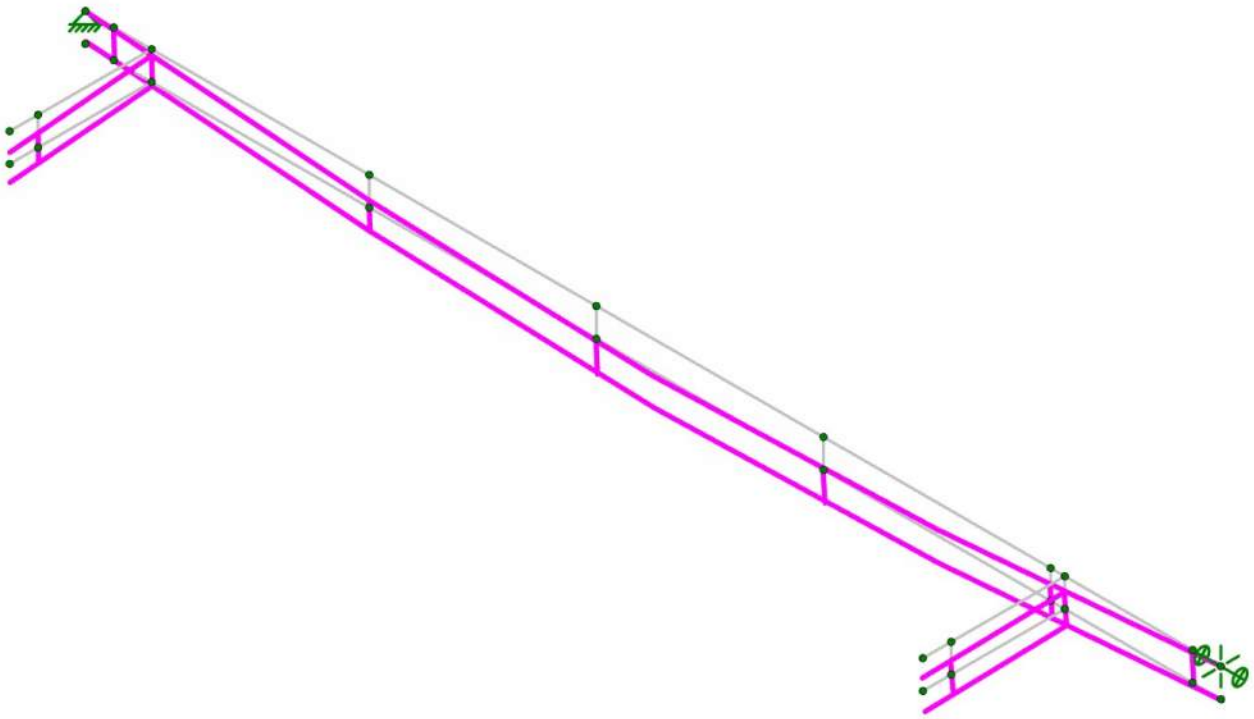
Loads for Stud:

$P = R_{BM1}$ x cos θ =	82	lb	Lateral LL =	5	psf
$A = R_{BM1}$ x sin θ =	323	lb	Wall Weight = 10 psf + DL_{stud} =	12	psf
$Mx = R_{BM1\_Mx} + M_{dead\_ecc}$ =	543	lb-ft			
DCR:	**0.33**	**OK**	**Max Deflection, Δ_{max} =**	**0.75**	**in**

- See Simpson CFS Designer Output Report -

USE: J4 w/ 600S200-54s for Interior Stud Lighting Support, OK

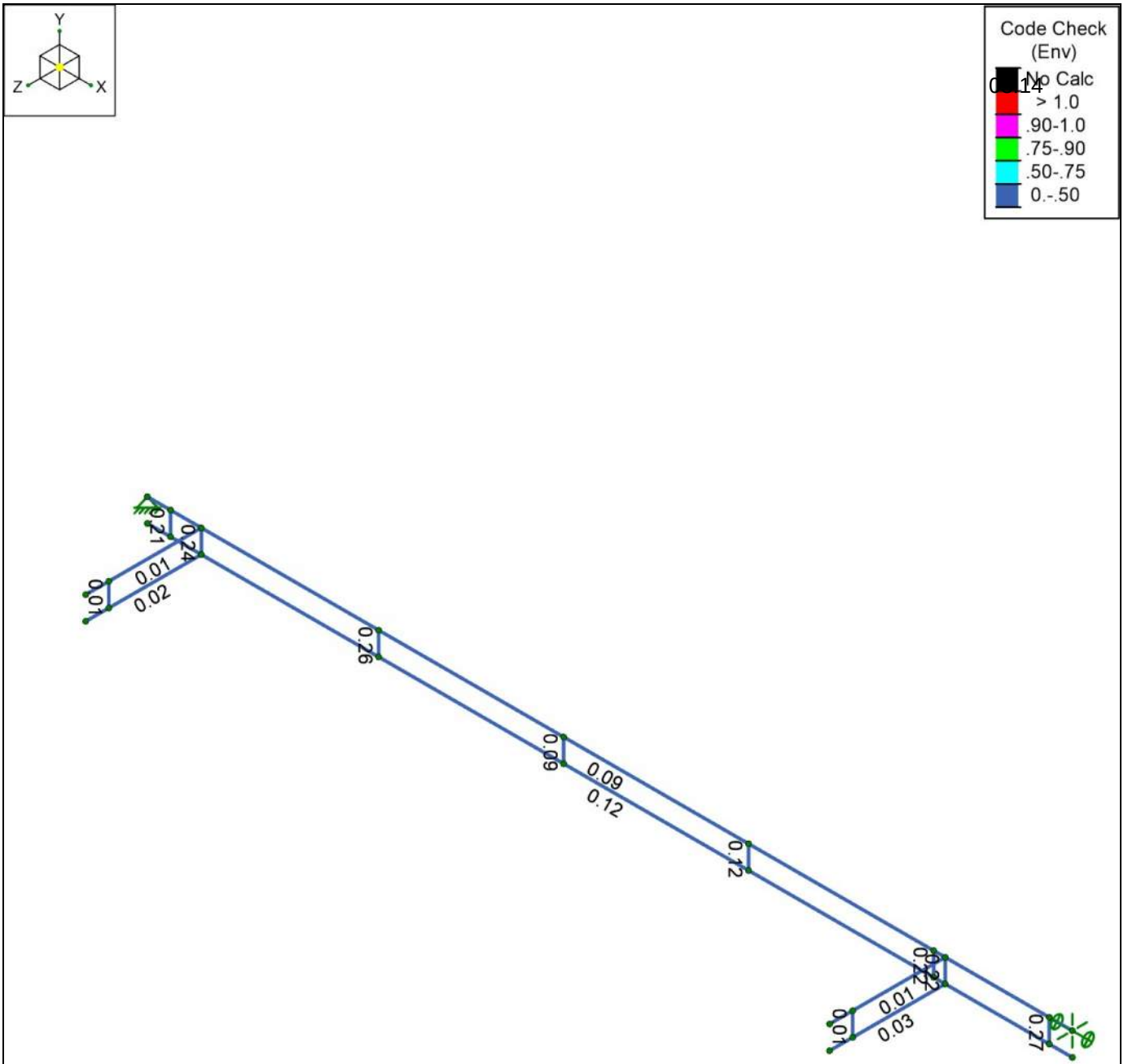




Max Deflection, M1 = 0.21 in
Max Deflection, M4 = 0.22 in

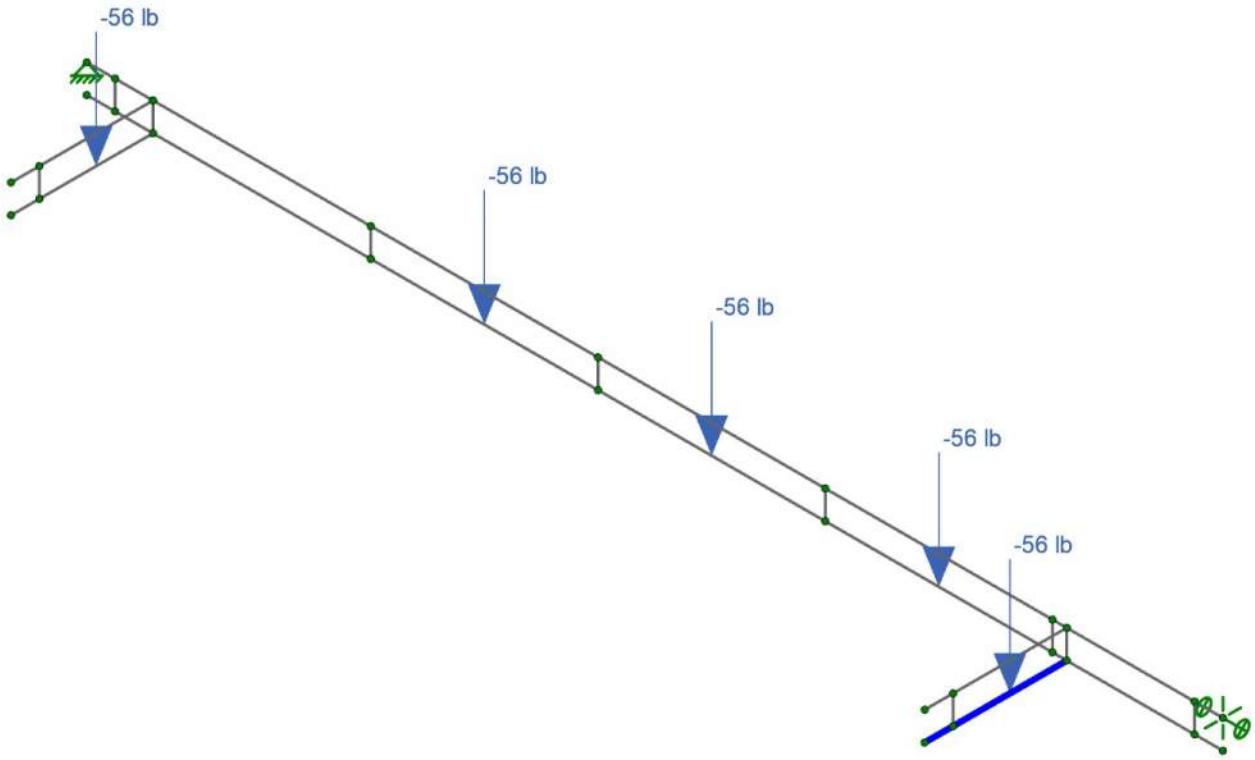
Results for LC 3, Deflection 3

IRISA	Buehler Engineering	Ontario PD Media Room	SK-4
	DL		Aug 15, 2025 at 08:34 AM
	2024-0438		Ontario PD Media Room_Lig…



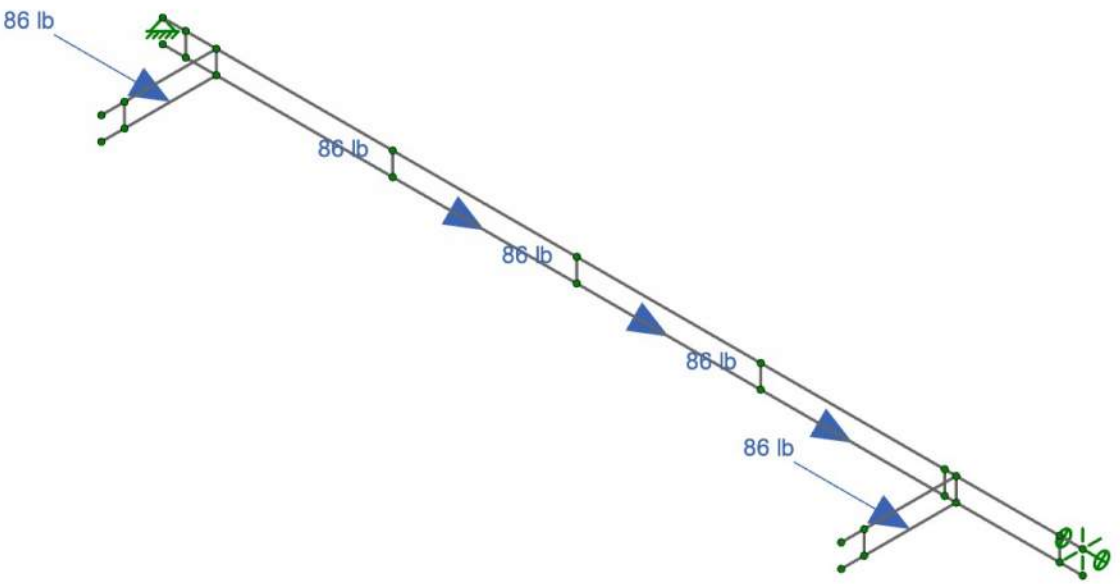
Member Code Checks Displayed (Enveloped)

RISA	Buehler Engineering	Ontario PD Media Room	SK-2
	DL		Sep 12, 2025 at 10:20 AM
	2024-0438		Ontario PD Media Room_Li…



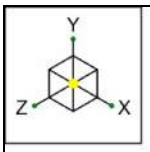
Loads: BLC 1, Dead Load

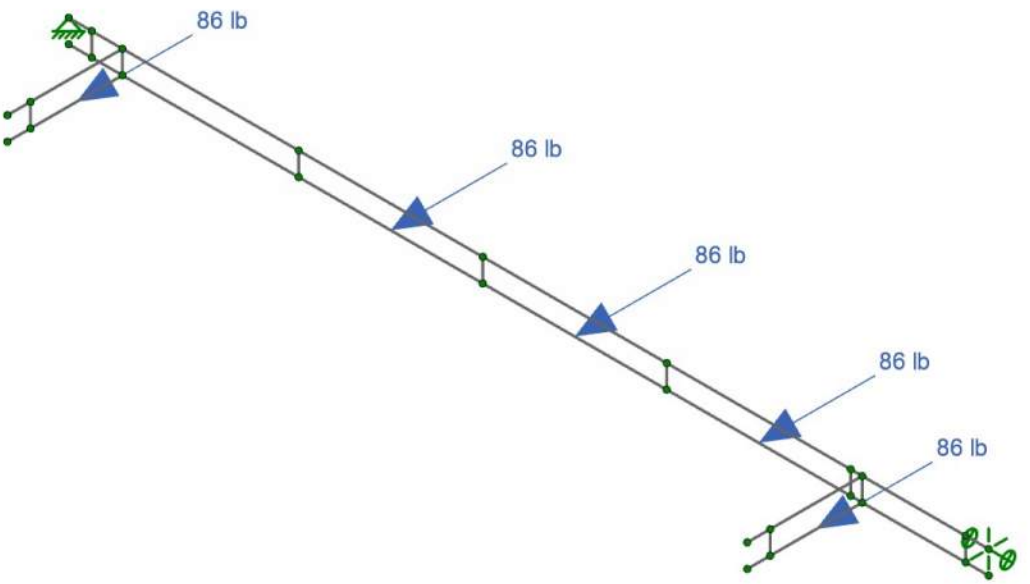
RISA A NEMETSCHEK COMPANY	Buehler Engineering	Ontario PD Media Room	SK-1
	DL		Sep 12, 2025 at 10:18 AM
	2024-0438		Ontario PD Media Room_Lig…



Loads: BLC 3, EQ X

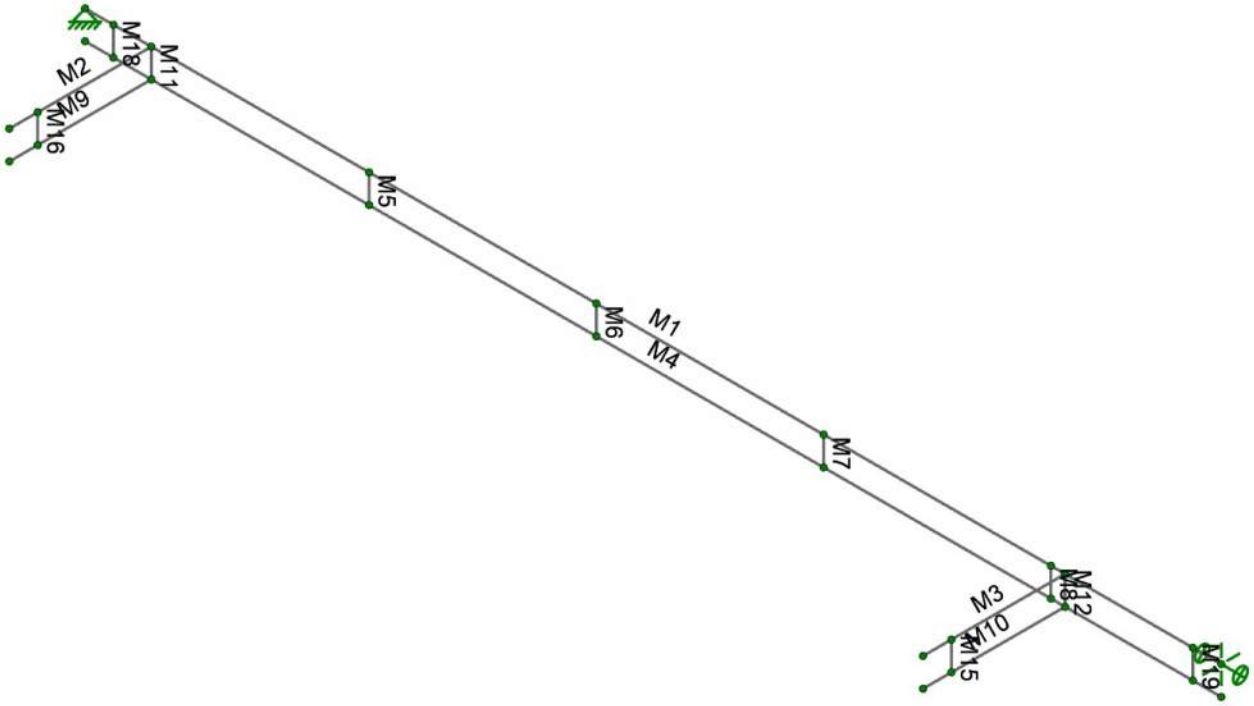
IRISA	Buehler Engineering	Ontario PD Media Room	SK-6
	DL		Sep 12, 2025 at 01:41 PM
	2024-0438		Ontario PD Media Room_Li…

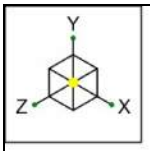


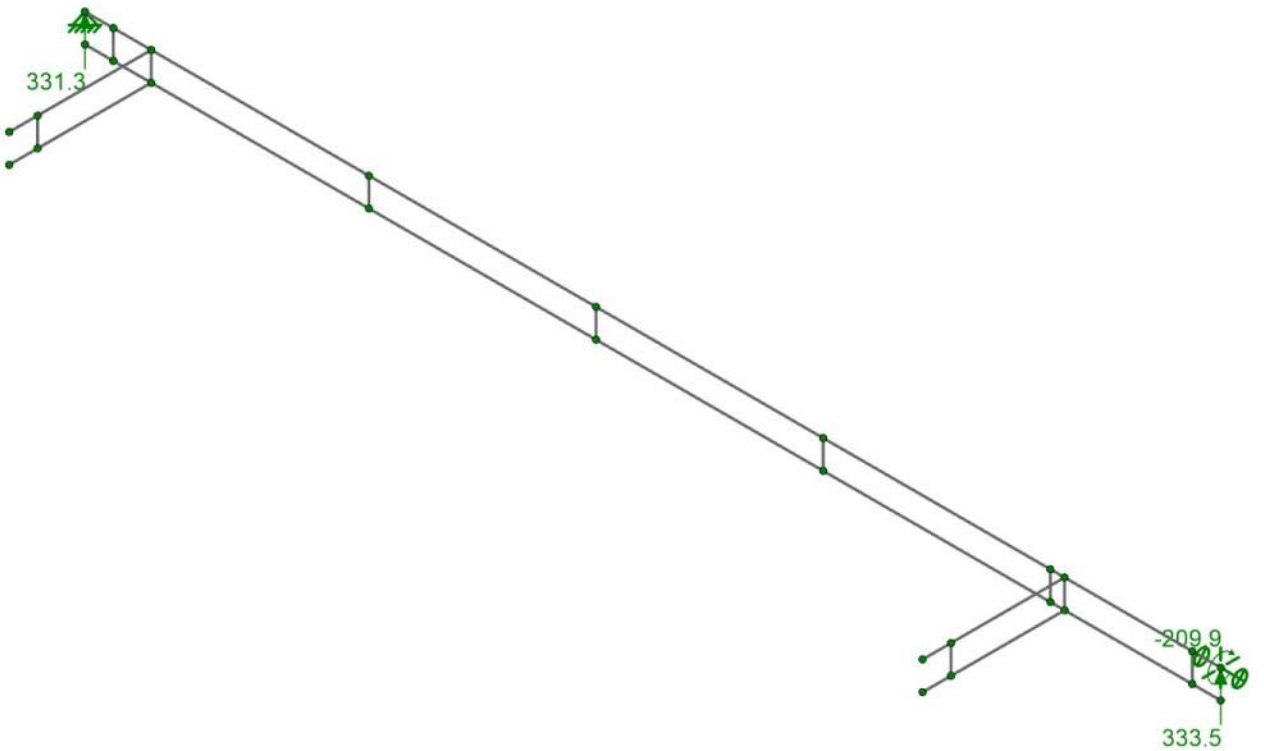


Loads: BLC 4, EQ Z

IRISA	Buehler Engineering	Ontario PD Media Room	SK-7
	DL		Sep 12, 2025 at 01:42 PM
	2024-0438		Ontario PD Media Room_Li…


Y
Z
X
M18
M11
M2
M9
M16
M5
M6
M1
M4
M7
M3
M8
M12
M10
M15
M19





Node Reactions (By Combination)

	LC	Node Label	X [lb]	Y [lb]	Z [lb]	MX [lb-ft]	MY [lb-ft]	MZ [lb-ft]
1	6	N1	0	331.319	-0.073	0	0	0
2	6	N2	0	333.473	0.073	-209.895	0	0
3	6	Totals:	0	664.792	0			
4	6	COG (ft):	X: 10.032	Y: -0.263	Z: 0.316			

Member Code Checks Displayed
Results for LC 6, IBC 21/ASCE ASD 2 (For Simpson Load Input)

Results for LC 6, IBC 21/ASCE ASD 2 (For Simpson Load Input)
Reaction and Moment Units are lbs and lb-ft

Node Coordinates

	Label	X [ft]	Y [ft]	Z [ft]	Detach From Diaphragm
1	N1	0	0	0	
2	N2	20	0	0	
3	N3	1.167	0	2.5	
4	N4	17.25	0	2.5	
5	N5	1.167	0	0	
6	N6	17.25	0	0	
7	N7	0	-0.5	0	
8	N8	20	-0.5	0	
9	N9	5	0	0	
10	N10	9	0	0	
11	N11	13	0	0	
12	N12	17	0	0	
13	N13	5	-0.5	0	
14	N14	9	-0.5	0	
15	N15	13	-0.5	0	
16	N16	17	-0.5	0	
17	N17	1.167	-0.5	2.5	
18	N18	1.167	-0.5	0	
19	N19	17.25	-0.5	2.5	
20	N20	17.25	-0.5	0	
21	N21	17.25	0	2	
22	N22	17.25	-0.5	2	
23	N23	1.167	0	2	
24	N24	1.167	-0.5	2	
25	N25	0.5	0	0	
26	N26	0.5	-0.5	0	
27	N27	19.5	0	0	
28	N28	19.5	-0.5	0	

Node Boundary Conditions

	Node Label	X [k/in]	Y [k/in]	Z [k/in]	X Rot [k-ft/rad]
1	N1	Reaction	Reaction	Reaction	
2	N2		Reaction	Reaction	Reaction

Hot Rolled Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm. Coeff. [1e^{5}°F^{-1}]	Density [k/ft^{3}]	Yield [ksi]	Ry	Fu [ksi]	Rt
1	A992	29000	11154	0.3	0.65	0.49	50	1.1	65	1.1
2	A36 Gr.36	29000	11154	0.3	0.65	0.49	36	1.5	58	1.2
3	A572 Gr.50	29000	11154	0.3	0.65	0.49	50	1.1	65	1.1
4	A500 Gr.B RND	29000	11154	0.3	0.65	0.527	42	1.4	58	1.3
5	A500 Gr.B RECT	29000	11154	0.3	0.65	0.527	46	1.4	58	1.3
6	A500 Gr.C RND	29000	11154	0.3	0.65	0.527	46	1.4	62	1.3
7	A500 Gr.C RECT	29000	11154	0.3	0.65	0.527	50	1.4	62	1.3
8	A53 Gr.B	29000	11154	0.3	0.65	0.49	35	1.6	60	1.2
9	A1085	29000	11154	0.3	0.65	0.49	50	1.4	65	1.3
10	A913 Gr.65	29000	11154	0.3	0.65	0.49	65	1.1	80	1.1

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design Rule	Area [in^{2}]	Iyy [in^{4}]	Izz [in^{4}]	J [in^{4}]
1	HSS Beam	HSS4X4X4	Beam	Tube	A500 Gr.C RECT	Typical	3.37	7.8	7.8	12.8
2	Pipe	PIPE_1.5	Beam	HSS Pipe	A53 Gr.B	Typical	0.749	0.293	0.293	0.586

Hot Rolled Steel Section Sets (Continued)

	Label	Shape	Type	Design List	Material	Design Rule	Area [in²]	Iyy [in⁴]	Izz [in⁴]	J [in⁴]
3	Pipe Vertical	PIPE_1.5	Column	HSS Pipe	A53 Gr.B	Typical	0.749	0.293	0.293	0.586

Member Primary Data

	Label	I Node	J Node	Section/Shape	Type	Design List	Material	Design Rule
1	M1	N1	N2	HSS Beam	Beam	Tube	A500 Gr.C RECT	Typical
2	M2	N3	N5	HSS Beam	Beam	Tube	A500 Gr.C RECT	Typical
3	M3	N4	N6	HSS Beam	Beam	Tube	A500 Gr.C RECT	Typical
4	M4	N7	N8	Pipe	Beam	HSS Pipe	A53 Gr.B	Typical
5	M5	N9	N13	Pipe Vertical	Column	HSS Pipe	A53 Gr.B	Typical
6	M6	N10	N14	Pipe Vertical	Column	HSS Pipe	A53 Gr.B	Typical
7	M7	N11	N15	Pipe Vertical	Column	HSS Pipe	A53 Gr.B	Typical
8	M8	N12	N16	Pipe Vertical	Column	HSS Pipe	A53 Gr.B	Typical
9	M9	N17	N18	Pipe	Beam	HSS Pipe	A53 Gr.B	Typical
10	M10	N19	N20	Pipe	Beam	HSS Pipe	A53 Gr.B	Typical
11	M11	N5	N18	Pipe Vertical	Column	HSS Pipe	A53 Gr.B	Typical
12	M12	N6	N20	Pipe Vertical	Column	HSS Pipe	A53 Gr.B	Typical
13	M15	N21	N22	Pipe Vertical	Column	HSS Pipe	A53 Gr.B	Typical
14	M16	N23	N24	Pipe Vertical	Column	HSS Pipe	A53 Gr.B	Typical
15	M18	N25	N26	Pipe Vertical	Column	HSS Pipe	A53 Gr.B	Typical
16	M19	N27	N28	Pipe Vertical	Column	HSS Pipe	A53 Gr.B	Typical

Hot Rolled Steel Design Parameters

	Label	Shape	Length [ft]	Lcomp top [ft]	Channel Conn.	a [ft]	Function
1	M1	HSS Beam	20	Lbyy	N/A	N/A	Lateral
2	M2	HSS Beam	2.5	Lbyy	N/A	N/A	Lateral
3	M3	HSS Beam	2.5	Lbyy	N/A	N/A	Lateral
4	M4	Pipe	20	Lbyy	N/A	N/A	Lateral
5	M5	Pipe Vertical	0.5	Lbyy	N/A	N/A	Lateral
6	M6	Pipe Vertical	0.5	Lbyy	N/A	N/A	Lateral
7	M7	Pipe Vertical	0.5	Lbyy	N/A	N/A	Lateral
8	M8	Pipe Vertical	0.5	Lbyy	N/A	N/A	Lateral
9	M9	Pipe	2.5	Lbyy	N/A	N/A	Lateral
10	M10	Pipe	2.5	Lbyy	N/A	N/A	Lateral
11	M11	Pipe Vertical	0.5	Lbyy	N/A	N/A	Lateral
12	M12	Pipe Vertical	0.5	Lbyy	N/A	N/A	Lateral
13	M15	Pipe Vertical	0.5	Lbyy	N/A	N/A	Lateral
14	M16	Pipe Vertical	0.5	Lbyy	N/A	N/A	Lateral
15	M18	Pipe Vertical	0.5	Lbyy	N/A	N/A	Lateral
16	M19	Pipe Vertical	0.5	Lbyy	N/A	N/A	Lateral

Basic Load Cases

	BLC Description	Category	Y Gravity	Point
1	Dead Load	DL	-1	5
2	Live Load	LL		
3	EQ X	ELX		5
4	EQ Z	ELZ		5

Load Combinations

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
1	Deflection 1	Yes	Y	DL	1						
2	Deflection 2	Yes	Y	LL	1						
3	Deflection 3	Yes	Y	DL	1	LL	1				
4	IBC 21/ASCE Strength 1	Yes	Y	DL	1.4						
5	IBC 21/ASCE Strength 2 (a)	Yes	Y	DL	1.2	LL	1.6	LLS	1.6		
6	IBC 21/ASCE ASD 2 (For Simpson Load Input)		Y	DL	1	LL	1				
7	IBC 21/ASCE Strength 6 (a)	Yes	Y	DL	1.2	ELX	1	LL	0.5	LLS	1
8	IBC 21/ASCE Strength 6 (b)	Yes	Y	DL	1.2	ELZ	1	LL	0.5	LLS	1
9	IBC 21/ASCE Strength 7 (a)	Yes	Y	DL	0.9	ELX	1				
10	IBC 21/ASCE Strength 7 (b)	Yes	Y	DL	0.9	ELZ	1				
11	IBC 21/ASCE ASD 8 (a)		Y	DL	1	ELX	0.7				
12	IBC 21/ASCE ASD 8 (b)		Y	DL	1	ELZ	0.7				
13	IBC 21/ASCE ASD 9 (a)		Y	DL	1	ELX	0.525	LL	0.75	LLS	0.75
14	IBC 21/ASCE ASD 9 (b)		Y	DL	1	ELZ	0.525	LL	0.75	LLS	0.75
15	IBC 21/ASCE ASD 10 (a)		Y	DL	0.6	ELX	0.7				
16	IBC 21/ASCE ASD 10 (b)		Y	DL	0.6	ELZ	0.7				

Envelope Node Reactions

	Node Label		X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [lb-ft]	LC	MY [lb-ft]	LC	MZ [lb-ft]	LC
1	N1	max	0	10	463.845	4	0	2	0	10	0	10	0	10
2		min	-430	7	0	2	-208.931	8	0	1	0	1	0	1
3	N2	max	0	10	466.863	4	8.704	7	25.88	10	0	10	0	10
4		min	0	1	0	2	-221.094	10	-293.733	4	0	1	0	1
5	Totals:	max	0	10	930.709	4	0	7						
6		min	-430	7	0	2	-430	10						

Material Take-Off

	Material	Size	Pieces	Length[ft]	Weight[K]
1	Hot Rolled Steel				
2	A500 Gr.C RECT	HSS4X4X4	3	25	0.308
3	A53 Gr.B	PIPE_1.5	13	30	0.076
4	Total HR Steel		16	55	0.385

Member Point Loads (BLC 1 : Dead Load)

	Member Label	Direction	Magnitude [lb, lb-ft]	Location [(ft, %)]
1	M4	Y	-56	7
2	M4	Y	-56	11
3	M4	Y	-56	15
4	M9	Y	-56	1.5
5	M10	Y	-56	1.5

Member Point Loads (BLC 3 : EQ X)

	Member Label	Direction	Magnitude [lb, lb-ft]	Location [(ft, %)]
1	M4	X	86	7
2	M4	X	86	11
3	M4	X	86	15
4	M9	X	86	1.5
5	M10	X	86	1.5

Member Point Loads (BLC 4 : EQ Z)

	Member Label	Direction	Magnitude [lb, lb-ft]	Location [(ft, %)]
1	M4	Z	86	7
2	M4	Z	86	11
3	M4	Z	86	15
4	M9	Z	86	1.5
5	M10	Z	86	1.5

Envelope AISC 15TH (360-16): LRFD Member Steel Code Checks

	Member	Shape	Code Check	Loc[ft]	LC	Shear Check	Loc[ft]	Dir	LC	phi*Pnc [lb]	phi*Pnt [lb]	phi*Mn y-y [lb-ft]	phi*Mn z-z [lb-ft]	Cb	Eqn
1	M1	HSS4X4X4	0.135	8.958	8	0.031	20	y	4	30592.288	151650	17587.5	17587.5	1.22	H1-1b
2	M2	HSS4X4X4	0.01	2.5	7	0.004	2.5	y	7	147399.099	151650	17587.5	17587.5	2.275	H1-1b
3	M3	HSS4X4X4	0.009	2.5	7	0.003	2.5	y	4	147399.099	151650	17587.5	17587.5	2.253	H1-1b
4	M4	PIPE_1.5	0.135	11.042	8	0.089	17.083		8	1149.172	23593.5	1105.125	1105.125	1	H1-1b
5	M5	PIPE_1.5	0.258	0	4	0.127	0.5		8	23482.632	23593.5	1105.125	1105.125	1	H1-1b
6	M6	PIPE_1.5	0.098	0	7	0.046	0.5		7	23482.632	23593.5	1105.125	1105.125	1	H1-1b
7	M7	PIPE_1.5	0.12	0	4	0.055	0.5		4	23482.632	23593.5	1105.125	1105.125	1	H1-1b
8	M8	PIPE_1.5	0.216	0	4	0.111	0.5		8	23482.632	23593.5	1105.125	1105.125	1	H1-1b
9	M9	PIPE_1.5	0.029	1.51	7	0.013	2.5		4	20972.614	23593.5	1105.125	1105.125	1	H1-1b
10	M10	PIPE_1.5	0.039	2.5	7	0.017	2.5		7	20972.614	23593.5	1105.125	1105.125	1	H1-1b
11	M11	PIPE_1.5	0.239	0	4	0.13	0.5		4	23482.632	23593.5	1105.125	1105.125	1	H1-1b
12	M12	PIPE_1.5	0.225	0	4	0.114	0.5		4	23482.632	23593.5	1105.125	1105.125	1	H1-1b
13	M15	PIPE_1.5	0.018	0	8	0.013	0.5		4	23482.632	23593.5	1105.125	1105.125	1	H1-1b
14	M16	PIPE_1.5	0.025	0	7	0.027	0.5		7	23482.632	23593.5	1105.125	1105.125	1	H1-1b
15	M18	PIPE_1.5	0.214	0	4	0.104	0.5		4	23482.632	23593.5	1105.125	1105.125	1	H1-1b
16	M19	PIPE_1.5	0.271	0	4	0.122	0.5		4	23482.632	23593.5	1105.125	1105.125	1	H1-1b

Envelope Member Section Deflections - Strength

	Member	Sec		x [in]	LC	y [in]	LC	z [in]	LC	x Rotate [rad]	LC	(n) L/y' Ratio	LC	(n) L/z' Ratio	LC
1	M1	1	max	0	10	0	10	0	10	0.003	4	NC	10	NC	10
2			min	0	4	0	4	0	4	0	10	NC	4	NC	4
3		2	max	0	9	-0.125	9	0.287	10	0.003	4	1918.865	9	NC	9
4			min	-0.001	4	-0.199	4	-0.005	9	0	10	1208.66	4	836.611	10
5		3	max	-0.001	9	-0.185	9	0.413	10	0.002	4	1299.975	9	NC	9
6			min	-0.003	4	-0.29	4	-0.001	9	0	10	827.952	4	581.415	10
7		4	max	-0.003	9	-0.133	9	0.302	10	0.001	4	1802.924	9	NC	9
8			min	-0.005	4	-0.207	4	0	5	0	10	1158.629	4	795.968	10
9		5	max	-0.003	9	0	10	0	10	0	10	NC	10	NC	10
10			min	-0.006	4	0	4	0	4	0	4	NC	4	NC	4
11	M2	1	max	0.002	9	-0.03	10	0.006	7	0.003	4	NC	10	NC	5
12			min	-0.074	8	-0.141	4	-0.156	10	0.002	9	321.247	4	192.159	10
13		2	max	0.002	9	-0.031	10	0.004	9	0.003	4	NC	10	NC	5
14			min	-0.074	8	-0.118	4	-0.117	10	0.002	9	429.16	4	256.23	10
15		3	max	0.002	9	-0.031	10	0.003	9	0.003	4	NC	10	NC	9
16			min	-0.074	8	-0.094	4	-0.078	8	0.002	9	646.296	4	384.329	10
17		4	max	0.002	9	-0.031	10	0.001	9	0.003	4	NC	10	NC	9
18			min	-0.074	8	-0.071	4	-0.039	8	0.002	9	1300.723	4	768.503	10
19		5	max	0.002	9	-0.03	9	0	9	0.003	4	NC	10	NC	10
20			min	-0.074	8	-0.048	4	0	4	0.002	9	NC	4	NC	4
21	M3	1	max	0	5	-0.079	10	0.148	10	-0.002	10	NC	10	NC	9
22			min	-0.182	8	-0.15	4	-0.006	4	-0.003	4	1177.101	4	197.683	10
23		2	max	0	5	-0.079	10	0.11	10	-0.002	10	NC	10	NC	9
24			min	-0.182	8	-0.144	4	-0.006	4	-0.003	4	1581.377	4	263.604	10
25		3	max	0	5	-0.08	10	0.072	10	-0.002	10	NC	10	NC	9

Envelope Member Section Deflections - Strength (Continued)

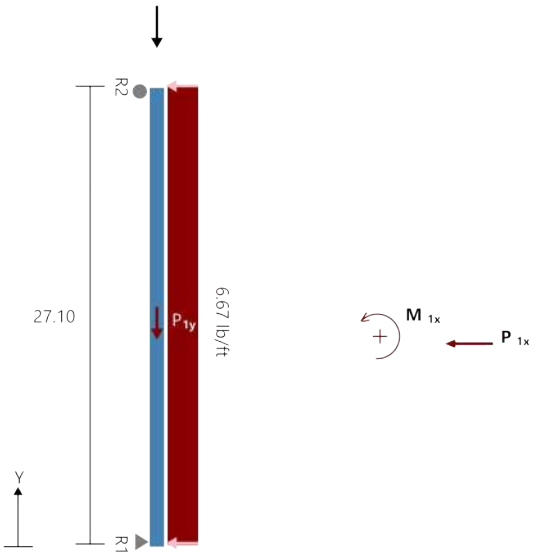
	Member	Sec		x [in]	LC	y [in]	LC	z [in]	LC	x Rotate [rad]	LC	(n) L/y' Ratio	LC	(n) L/z' Ratio	LC
26			min	-0.182	8	-0.137	4	-0.006	4	-0.003	4	2408.723	4	395.428	10
27		4	max	0	5	-0.08	10	0.034	10	-0.002	10	NC	10	NC	9
28			min	-0.182	8	-0.131	4	-0.006	4	-0.003	4	4936.385	4	790.843	10
29		5	max	0	5	-0.08	10	-0.003	9	-0.002	10	NC	10	NC	10
30			min	-0.182	8	-0.125	4	-0.006	4	-0.003	4	NC	4	9634.434	9
31	M4	1	max	-0.01	9	-0.002	10	0.001	10	0.003	4	NC	10	NC	10
32			min	-0.016	4	-0.003	4	-0.018	4	0	10	NC	4	NC	4
33		2	max	-0.007	9	-0.125	9	0.289	10	0.003	4	1961.003	9	NC	9
34			min	-0.011	4	-0.199	4	-0.018	7	0	10	1234.105	4	833.081	10
35		3	max	-0.001	9	-0.185	9	0.419	10	0.002	4	1321.945	9	NC	9
36			min	-0.003	4	-0.29	4	-0.011	4	0	10	840.372	4	573.548	10
37		4	max	0.006	4	-0.138	9	0.312	10	0.001	4	1789.652	9	NC	9
38			min	0.004	10	-0.215	4	-0.006	4	0	10	1148.438	4	771.272	10
39		5	max	0.011	4	-0.004	9	0.001	10	0	4	NC	10	NC	10
40			min	0.007	10	-0.006	4	-0.001	4	0	10	NC	4	NC	4
41	M5	1	max	0.199	4	0.001	4	0.005	9	0.004	8	NC	10	NC	10
42			min	0.125	9	0	9	-0.287	10	0	5	NC	4	4042.824	8
43		2	max	0.199	4	0.004	4	0.008	7	0.004	8	NC	10	NC	10
44			min	0.125	9	0.002	9	-0.287	10	0	5	9386.268	4	1595.057	4
45		3	max	0.199	4	0.007	4	0.012	7	0.004	8	NC	10	8940.556	8
46			min	0.125	9	0.004	9	-0.288	10	0	5	NC	4	797.201	4
47		4	max	0.199	4	0.009	4	0.015	7	0.004	8	NC	10	NC	8
48			min	0.125	9	0.005	9	-0.288	10	0	5	NC	4	531.244	4
49		5	max	0.199	4	0.011	4	0.018	7	0.004	8	NC	10	NC	8
50			min	0.125	9	0.007	9	-0.289	10	0	5	NC	4	398.261	4
51	M6	1	max	0.285	4	0.003	4	0.002	9	0.001	8	NC	10	NC	10
52			min	0.181	9	0.001	9	-0.406	10	0	5	NC	4	NC	4
53		2	max	0.285	4	0.003	4	0.005	7	0.001	8	NC	10	NC	10
54			min	0.181	9	0.002	9	-0.406	10	0	5	NC	4	NC	4
55		3	max	0.285	4	0.004	4	0.007	7	0.001	8	NC	10	NC	9
56			min	0.181	9	0.002	9	-0.407	10	0	5	NC	4	4743.003	10
57		4	max	0.285	4	0.004	4	0.01	7	0.001	8	NC	10	NC	9
58			min	0.181	9	0.002	9	-0.408	10	0	5	NC	4	2968.334	10
59		5	max	0.285	4	0.005	4	0.012	7	0.001	8	NC	10	NC	9
60			min	0.181	9	0.002	9	-0.409	10	0	5	NC	4	2137.681	10
61	M7	1	max	0.261	4	0.004	4	0	5	0	7	NC	9	NC	10
62			min	0.167	9	0.002	9	-0.375	10	-0.002	10	832.485	4	NC	4
63		2	max	0.261	4	0.002	4	0.002	4	0	7	NC	9	NC	10
64			min	0.167	9	0.001	9	-0.375	10	-0.002	10	1183.39	4	2900.442	4
65		3	max	0.261	4	0	4	0.004	4	0	7	NC	9	NC	9
66			min	0.167	9	0	9	-0.376	10	-0.002	10	1831.908	4	1449.86	4
67		4	max	0.261	4	-0.001	10	0.006	4	0	7	NC	9	NC	9
68			min	0.167	9	-0.002	7	-0.376	10	-0.002	10	3648.383	4	966.3	4
69		5	max	0.261	4	-0.002	10	0.008	4	0	7	NC	10	NC	9
70			min	0.167	9	-0.003	7	-0.377	10	-0.002	10	NC	4	724.496	4
71	M8	1	max	0.134	4	0.006	4	0	5	0	4	NC	10	NC	10
72			min	0.086	10	0.003	9	-0.197	8	-0.005	10	NC	4	NC	4
73		2	max	0.134	4	0.001	4	0.001	4	0	4	NC	10	NC	10
74			min	0.086	10	0	9	-0.197	10	-0.005	10	NC	4	4920.352	4
75		3	max	0.134	4	-0.001	10	0.002	4	0	4	NC	10	NC	10
76			min	0.086	10	-0.003	7	-0.197	10	-0.005	10	NC	4	2450.314	4
77		4	max	0.134	4	-0.004	10	0.004	4	0	4	NC	10	NC	9
78			min	0.086	10	-0.006	4	-0.197	10	-0.005	10	NC	4	1624.205	4
79		5	max	0.134	4	-0.006	10	0.005	4	0	4	NC	10	NC	9
80			min	0.086	10	-0.01	4	-0.198	10	-0.005	10	NC	4	1209.15	4

Envelope Member Section Deflections - Strength (Continued)

	Member	Sec		x [in]	LC	y [in]	LC	z [in]	LC	x Rotate [rad]	LC	(n) L/y' Ratio	LC	(n) L/z' Ratio	LC
81	M9	1	max	0.018	4	-0.03	10	-0.007	9	0.003	4	NC	10	NC	9
82			min	-0.075	10	-0.141	4	-0.174	8	0.002	9	323.215	4	187.173	8
83		2	max	0.018	4	-0.031	10	-0.007	9	0.003	4	NC	10	NC	10
84			min	-0.075	10	-0.118	4	-0.134	8	0.002	9	NC	4	NC	4
85		3	max	0.018	4	-0.031	10	-0.007	9	0.003	4	NC	10	NC	10
86			min	-0.075	10	-0.096	4	-0.094	8	0.002	9	NC	4	NC	4
87		4	max	0.018	4	-0.031	10	-0.008	9	0.003	4	NC	10	NC	10
88			min	-0.075	10	-0.072	4	-0.053	8	0.002	9	NC	4	NC	4
89		5	max	0.018	4	-0.03	9	-0.009	9	0.003	4	NC	10	NC	10
90			min	-0.075	10	-0.048	4	-0.016	4	0.002	9	NC	4	NC	4
91	M10	1	max	0.005	4	-0.079	10	0.164	8	-0.002	10	NC	10	8250.57	5
92			min	-0.182	10	-0.149	4	0.012	5	-0.003	4	1219.474	4	192.926	8
93		2	max	0.005	4	-0.08	10	0.125	8	-0.002	10	NC	10	NC	10
94			min	-0.182	10	-0.144	4	0.011	5	-0.003	4	NC	4	NC	4
95		3	max	0.005	4	-0.08	10	0.087	8	-0.002	10	NC	10	NC	10
96			min	-0.182	10	-0.139	4	0.01	5	-0.003	4	NC	4	NC	4
97		4	max	0.005	4	-0.08	10	0.047	8	-0.002	10	NC	10	NC	10
98			min	-0.182	10	-0.132	4	0.009	5	-0.003	4	NC	4	NC	4
99		5	max	0.005	4	-0.08	10	0.01	4	-0.002	10	NC	10	NC	10
100			min	-0.182	10	-0.125	4	0.006	10	-0.003	4	NC	4	NC	4
101	M11	1	max	0.048	4	0	4	0.002	9	0.005	10	NC	10	NC	10
102			min	0.03	9	0	9	-0.074	8	0	9	NC	4	NC	4
103		2	max	0.048	4	0.004	4	0.006	7	0.005	8	NC	10	NC	10
104			min	0.03	9	0.003	9	-0.074	10	0	9	NC	4	1313.379	4
105		3	max	0.048	4	0.008	4	0.01	7	0.005	8	NC	10	NC	10
106			min	0.03	9	0.005	9	-0.074	10	0	9	NC	4	654.932	4
107		4	max	0.048	4	0.012	4	0.014	7	0.005	8	NC	10	NC	10
108			min	0.03	9	0.007	9	-0.074	10	0	9	NC	4	435.136	4
109		5	max	0.048	4	0.016	4	0.018	4	0.005	8	NC	10	NC	10
110			min	0.03	9	0.009	9	-0.075	10	0	9	NC	4	325.008	4
111	M12	1	max	0.125	4	0.006	4	0	5	0	4	NC	10	NC	10
112			min	0.08	10	0.003	9	-0.182	8	-0.005	10	NC	4	NC	4
113		2	max	0.125	4	0.001	4	0.001	4	0	4	NC	10	NC	10
114			min	0.08	10	0	9	-0.182	10	-0.005	10	NC	4	5083.441	4
115		3	max	0.125	4	-0.001	10	0.002	4	0	4	NC	10	NC	10
116			min	0.08	10	-0.003	7	-0.182	10	-0.005	10	NC	4	2509.861	4
117		4	max	0.125	4	-0.004	10	0.004	4	0	4	NC	10	NC	10
118			min	0.08	10	-0.006	4	-0.182	10	-0.005	10	NC	4	1651.464	4
119		5	max	0.125	4	-0.006	10	0.005	4	0	4	NC	10	NC	10
120			min	0.08	10	-0.01	4	-0.182	10	-0.005	10	NC	4	1221.91	4
121	M15	1	max	0.145	4	0.006	4	0	5	0	4	NC	10	NC	10
122			min	0.079	10	-0.118	10	-0.182	8	-0.005	10	NC	4	1896.278	9
123		2	max	0.145	4	0.001	4	0.001	4	0	5	NC	10	NC	10
124			min	0.079	10	-0.121	10	-0.182	10	-0.005	8	1838.763	9	2569.287	9
125		3	max	0.145	4	-0.003	5	0.002	4	0	5	NC	10	NC	10
126			min	0.079	10	-0.125	8	-0.182	10	-0.005	8	916.703	9	3925.325	9
127		4	max	0.145	4	-0.007	5	0.004	4	0	5	NC	10	NC	10
128			min	0.079	10	-0.129	8	-0.182	10	-0.005	8	610.207	9	8015.51	9
129		5	max	0.145	4	-0.012	5	0.005	4	0	9	NC	10	NC	10
130			min	0.079	10	-0.133	8	-0.182	10	-0.005	8	457.596	9	NC	4
131	M16	1	max	0.123	4	0.125	10	0.002	9	0.005	10	NC	10	NC	10
132			min	0.031	10	-0.005	9	-0.074	8	0	7	NC	4	1715.389	8
133		2	max	0.123	4	0.129	8	0.006	7	0.005	8	NC	10	NC	10
134			min	0.031	10	-0.002	9	-0.074	10	0	9	NC	4	2354.896	8
135		3	max	0.123	4	0.133	8	0.01	7	0.005	8	NC	10	NC	10

Envelope Member Section Deflections - Strength (Continued)

	Member	Sec		x [in]	LC	y [in]	LC	z [in]	LC	x Rotate [rad]	LC	(n) L/y' Ratio	LC	(n) L/z' Ratio	LC
136			min	0.031	10	0.001	9	-0.074	10	0	9	NC	4	3622.732	8
137		4	max	0.123	4	0.138	8	0.014	7	0.005	8	NC	10	NC	10
138			min	0.031	10	0.004	9	-0.074	10	0	9	NC	4	7399.484	8
139		5	max	0.123	4	0.142	8	0.018	4	0.005	8	NC	10	NC	10
140			min	0.031	10	0.007	9	-0.075	10	0	9	NC	4	NC	4
141	M18	1	max	0.021	4	0	10	0.001	9	0.005	8	NC	10	NC	10
142			min	0.013	9	0	7	-0.032	8	0	9	NC	4	1670.945	8
143		2	max	0.021	4	0.004	4	0.005	7	0.005	8	NC	10	NC	10
144			min	0.013	9	0.003	9	-0.032	10	0	9	NC	4	1305.384	4
145		3	max	0.021	4	0.008	4	0.009	4	0.005	10	NC	10	NC	10
146			min	0.013	9	0.005	9	-0.032	10	0	9	NC	4	650.683	4
147		4	max	0.021	4	0.012	4	0.014	4	0.005	10	NC	10	NC	10
148			min	0.013	9	0.007	9	-0.032	10	0	7	NC	4	432.672	4
149		5	max	0.021	4	0.016	4	0.019	4	0.005	10	NC	10	NC	10
150			min	0.013	9	0.01	9	-0.032	10	0	7	NC	4	323.829	4
151	M19	1	max	0.024	4	0.006	4	0	5	0	5	NC	10	NC	10
152			min	0.015	10	0.003	9	-0.034	10	-0.006	10	NC	4	NC	4
153		2	max	0.024	4	0.001	4	0	4	0	4	NC	10	NC	10
154			min	0.015	10	0	9	-0.034	10	-0.006	10	7773.362	4	NC	4
155		3	max	0.024	4	-0.002	10	0.001	4	0	4	NC	10	NC	10
156			min	0.015	10	-0.004	7	-0.034	10	-0.006	10	7857.504	4	NC	4
157		4	max	0.024	4	-0.005	10	0.001	4	0	4	NC	10	NC	10
158			min	0.015	10	-0.007	4	-0.034	10	-0.006	10	NC	4	6374.413	4
159		5	max	0.024	4	-0.007	10	0.001	4	0	4	NC	10	NC	10
160			min	0.015	10	-0.011	4	-0.034	10	-0.006	10	NC	4	4407.619	4



Section : (2) 600S200-54 (50 ksi) @ 16" o.c. Boxed C Stud (punched)
Maxo = 5065.9 ft-lb **Va =** 5645.8 lb **I =** 6.64 in^4

Loads have not been modified for strength checks
Loads have not been modified for deflection calculations

Bridging Connectors - Design Method =AISI S100

Span	Axial KyLy, KtLt	Flexual, Distortional	Connector	Stress Ratio
Span	96.0", 96.0"	96.0", N/A	N/A	-

Web Crippling

Support	Load (lb)	Bearing (in)	Pa (lb)	M (ft-lbs)	Max Int.	Stiffener?
P1x	82.00	1.50	2806.2	911.3	0.12	NO
R2	147.44	1.00	1197.9	0.0	0.06	NO
R1	115.23	1.00	1197.9	0.0	0.05	NO

"*" after support means punched near support

Gravity Load

Type	Load (lb)
Uniform	16.00plf
P1y	323.00lb @ 12.25ft

Point Loads	**P1x**
Load(lb)	82.00
Y-Dist.(ft)	12.25

Moments	**M1**
Load(ft-lb)	543.00
Y-Dist.(ft)	12.25

	Code Check	Required	Allowed	Interaction	Notes
Span	Max. Axial, lbs	756.6(c)	6477.9(c)	12%	KΦ=0.00 lb-in/in Max KL/r = 140
	Max. Shear, lbs	147.4	3894.8	4%	Shear (Punched)
	Max. Moment (MaFy, Ma-dist), ft-lbs	1453.1	5065.9	29%	
	Moment Stability, ft-lbs	1453.1	5065.9	29%	
	Shear/Moment	0.29	1.00	29%	Shear 48.6, Moment 1453.1
	Axial/Moment	0.33	1.00	33%	Axial 237.2(c), Moment 1453.1
	Deflection Span, in	0.750	--meets L/433--		

Support	Rx(lb)	Ry(lb)	Simpson Strong-Tie Connector	Connector Interaction	Anchor Interaction
R2	147.4	0.0	By Others & Anchorage Designed by Engineer	NA	NA
R1	115.2	756.6	By Others & Anchorage Designed by Engineer	NA	NA

* Reference catalog for connector and anchor requirement notes as well as screw placement requirements

Connection Design @ Lighting Beam Support

Connection to Metal Stud Wall

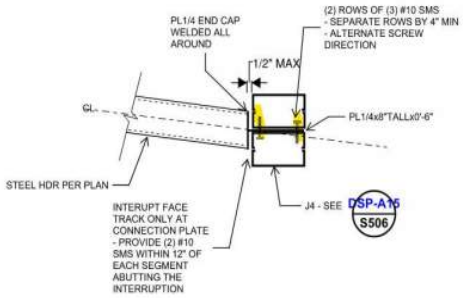
Shear in Connetion:

$V_{max} = R_{BM1\_Y}$ (ASD) =	333	lb	Per SSMA Catalog, Capacity Table Page 70	
No. of Screws =	6	screws	V_{allow} =	543 lb (into 16ga - min)
Check:			V_{tot_allow} =	3258 lb

DCR: T_{max}/T_{allow} = 0.10 OK

USE: (6) #10 SMS, (2) Rows of (3) Scews into 16ga min

* Torsion due to Eccentricity of Dead Load is applied to Jamb and checked in VS4 Stud Design



Connecton to J4 Slanted Metal Stud

Shear in Connetion:

$V_{max} = R_{BM1\_Y}$ (ASD) =	333	lb	Per SSMA Catalog, Capacity Table Page 70	
No. of Screws =	6	screws	V_{allow} =	543 lb (into 16ga - min)
Check:			V_{tot_allow} =	3258 lb

DCR: T_{max}/T_{allow} = 0.10 OK

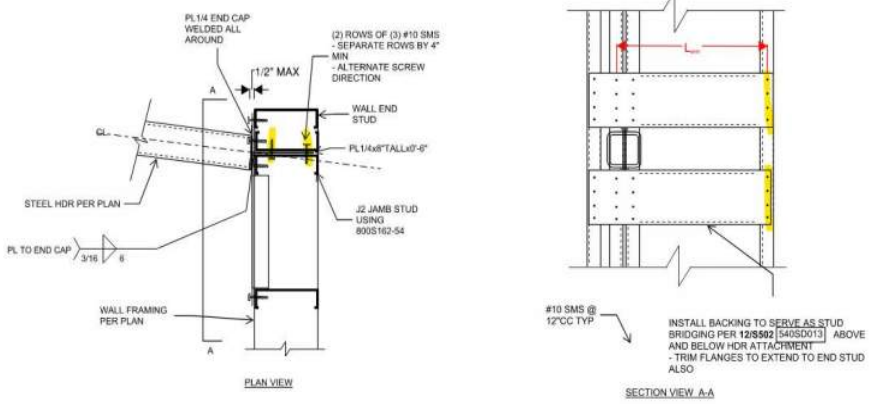
USE: (6) #10 SMS, (2) Rows of (3) Scews into 16ga min

Torsion in Connection:	L_{arm_X} =	1.5	ft	L_{arm_Y} =	1	ft
$T_{max\_1} = Mx \times L_{arm\_X}$ =	315	lb	Per SSMA Catalog, Capacity Table Page 70			
$T_{max\_2} = Mx \times L_{arm\_Y}$ =	210	lb	T_{allow} =	198	lb (into 16ga - min)	
No. of Screws = (2) x 4 screws =	8	screws	T_{tot_allow} =	1584	lb (8 screws). T_{max_2} =	792 lb (4 screw
No. of Screws = 4 screws =	4	screws				

Check:

DCR: T_{max_1}/T_{allow} = 0.40 T_{max_2}/T_{allow} = 0.13 DCR: $T_{max} = \sqrt{R_1^2 + R_2^2}$ = 0.42 OK

USE: #10 SMS Typ for Stud Bridging Screws into 20ga min stud, OK



PROJECT Ontario PD Media Room

PROJECT NO. 2024-0438 DATE 9/16/2025

CLIENT Holt BY DL PAGE NO. 03.29

Out-of-Plane Forces on Soffit Framing

Seismic Design Force

W_p = 10 psf

Site Class D S_{DS} = 1.280 (ASCE Hazards Report) Risk Category = II

I_p = 1.00 (ASCE 7-16 13.1.3)

z/h = (1/1) = 1

a_p = 1.0 (Interior nonstructural walls and partitions) (ASCE 7-16 Table 13.5-1)

R_p = 2.5 (ASCE 7-16 Table 13.5-1)

Ω_o = 2

$$F_p = \frac{0.4\, a_p\, S_{DS}\, W_p}{\left(\frac{R_p}{I_p}\right)}\left(1 + 2\frac{z}{h}\right)$$ (ASCE 7-16 Eqn. 13.3-1)

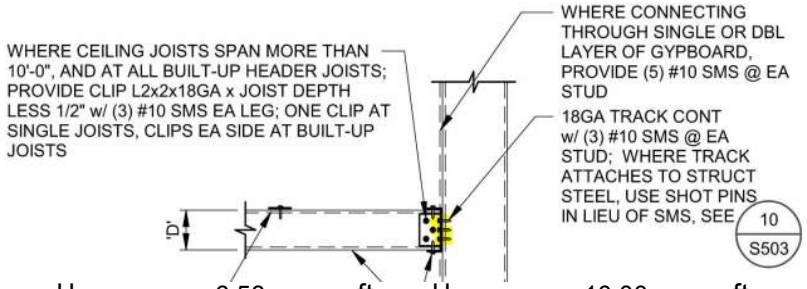
F_p = 0.614 W_p ← **Governs**

F_p max = $1.6 S_{DS} I_p W_p$ = 2.048 W_p (ASCE 7-16 Eqn 13.3-2)

F_p min = $0.3 S_{DS} I_p W_p$ = 0.384 W_p (ASCE 7-16 Eqn 13.3-3)

Fp = 0.614Wp = 0.614*10 psf = 6.14 psf **F_p = 6.14 psf**

Check Tension on Screws of Track Ledger attaching to Metal Stud



` H_{p1} = 6.58 ft H_{p2} = 10.00 ft

Stud spacing, s = **16** **in o.c.**

$w_p = F_p$ x s = **8.192** **plf**

Parapet 1

$V_1 = w \times H_{p1}/2$ = **26.96533** **lb**

Parapet 2

$V_2 = w \times H_{p2}/2$ = **40.96** **lb**

Tension on Screws, $T_{max} = V_1 + V_2$ = **68** **lb**

Capacity of Screws per SSMA Screw Capacity Table from Product Technical Guide, page 70

T_{allow} = 109 lb No. of screws in connection = 3

T_{allow_tot} = 327 lb **DCR = 0.208** **OK**

Check Connection to Conc Slab w/ Shot Pins

Anchor spacing, s = 16 in o.c. H_{stud} = 28 ft

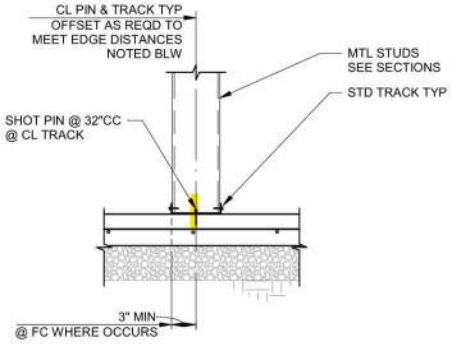
$w_p = 0.7\ F_p$ x s = 5.7 plf (ASD)

$V_1 = w \times H_{p1}/2$ = **80** lb

Capacity of Shot Pins non-structural walls steel track to concrete, per ICC-ES ESR 2269:

V_{allow} = 90 lb No. of screws in connection = 1

V_{allow_tot} = 90 lb **DCR = 0.89** **OK**



TYPICAL CONDITION

USE: Shot Pins @ 16" cc

Check Connection to Conc Slab (Alternative Anchor)

Anchor spacing, s = 32 in o.c. H_{stud} = 28 ft

$w_p = F_p \times s$ = 16.4 plf

$V_1 = w \times H_{p1}/2$ = **229** lb

HILTI Screw Anchor Analysis:

$V_{max} = \Omega V_1$ = 459 lb **DCR = 0.390** **OK**

USE: 1/2" DIA. HILTI KB TZ2 Anchors w/ 2" Eff embedment. Min edge distance = 3". Installation per ICC- ESR-42

Exterior Jambs Infill Bottom Anchorage

Trib Area A_{trib}, = $H_{stud} \times w_{trib}$ = 33.25 ft^2

Wind Load, WL = 20.1 psf (Wind Loading-Components & Cladding, Zone 5 [Worst Case])

Anchor spacing, s = 48 in o.c. H_{stud} = 9.5 ft w_{trib} = 3.5 ft

$w_p = F_p \times s$ = 80.4 plf

$V_1 = w \times H_{p1}/2$ = **382** lb

HILTI Screw Anchor Analysis:

$V_{max} = \Omega V_1$ = 764 lb **DCR = 0.650** **OK**

USE: 1/2" DIA. HILTI KB TZ2 Anchors w/ 2" Eff embedment. Min edge distance = 3". Installation per ICC- ESR-42

Full Height Wall Studs, VS2

H = 28 ft
Live Load = 5 psf
Stud spacing, s = 16 in o.c.
DCR: 0.776 OK
Max Deflection, Δ_{max} = 1.09 in

- See Simpson CFS Designer Output Report -

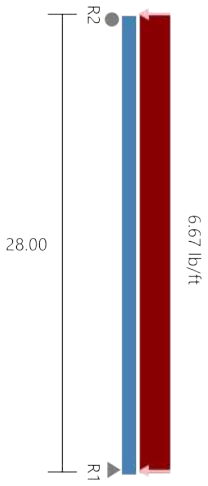
USE: (2) 600S162-43 Back-to-Back Interior Partition Stud, OK

Full Height Wall Studs, VS3

H = 28 ft
Parapet H_{parp} = 2 ft
Stud spacing, s = 16 in o.c.
Parapet Reaction:
$w_p = F_p \times s$ = 0.00 plf
$T_1 = w \times H_{p1}/2$ = 0 lb
DCR: 0.788 OK
Max Deflection, Δ_{max} = 0.64 in

- See Simpson CFS Designer Output Report -

USE: (2) 600S162-43 Back-to-Back Interior Partition Stud, OK



Section : 600S162-54 (50 ksi) @ 16" o.c. Single C Stud (punched)
Maxo = 2313.4 ft-lb **Va =** 2822.9 lb **I =** 2.86 in^4

Loads have not been modified for strength checks
Loads have not been modified for deflection calculations

Bridging Connectors - Design Method =AISI S100

Span	Axial KyLy, KtLt	Flexual, Distortional	Connector	Stress Ratio
Span	NA	96.0", 336.0"	LSUBH3.25 (Min)	0.19

Web Crippling

Support	Load (lb)	Bearing (in)	Pa (lb)	M (ft-lbs)	Max Int.	Stiffener?
R2	93.33	1.00	598.9	0.0	0.08	NO
R1	93.33	1.00	598.9	0.0	0.08	NO

"*" after support means punched near support

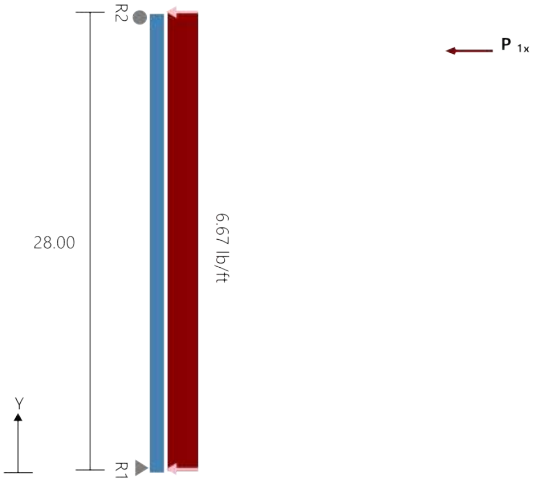
Gravity Load

Type	Load (lb)
Uniform	0.00plf
P1y	0.00lb @ 13.75ft

	Code Check	Required	Allowed	Interaction	Notes
Span	Max. Axial, lbs	0.0(t)	-	0%	KΦ=0.00 lb-in/in Max KL/r = N/A
	Max. Shear, lbs	93.3	1947.4	5%	Shear (Punched)
	Max. Moment (MaFy, Ma-dist), ft-lbs	653.3	1930.2	34%	Ma-dist (control),KΦ=0.00 lb-in/in
	Moment Stability, ft-lbs	653.3	842.0	78%	
	Shear/Moment	0.28	1.00	28%	Shear 0.0, Moment 653.3
	Axial/Moment	0.78	1.00	78%	Axial 0.0(c), Moment 653.3
	Deflection Span, in	1.093	--meets L/308--		

Support	Rx(lb)	Ry(lb)	Simpson Strong-Tie Connector	Connector Interaction	Anchor Interaction
R2	93.3	0.0	By Others & Anchorage Designed by Engineer	NA	NA
R1	93.3	0.0	By Others & Anchorage Designed by Engineer	NA	NA

* Reference catalog for connector and anchor requirement notes as well as screw placement requirements



Section : 600S162-54 (50 ksi) @ 16" o.c. Single C Stud (punched)
Maxo = 2313.4 ft-lb **Va =** 2822.9 lb **I =** 2.86 in^4

Loads have not been modified for strength checks
Loads have not been modified for deflection calculations

Bridging Connectors - Design Method =AISI S100

Span	Axial KyLy, KtLt	Flexual, Distortional	Connector	Stress Ratio
Span	NA	96.0", 336.0"	LSUBH3.25 (Min)	0.20

Web Crippling

Support	Load (lb)	Bearing (in)	Pa (lb)	M (ft-lbs)	Max Int.	Stiffener?
P1x	10.00	1.50	1403.1	190.8	0.05	NO
R2	102.62	1.00	598.9	0.0	0.09	NO
R1	94.05	1.00	598.9	0.0	0.08	NO

"*" after support means punched near support

Gravity Load

Type	Load (lb)
Uniform	0.00plf
P1y	0.00lb @ 13.75ft

Point Loads	P1x
Load(lb)	10.00
Y-Dist.(ft)	26.00

	Code Check	Required	Allowed	Interaction	Notes
Span	Max. Axial, lbs	0.0(t)	-	0%	KΦ=0.00 lb-in/in Max KL/r = N/A
	Max. Shear, lbs	102.6	1947.4	5%	Shear (Punched)
	Max. Moment (MaFy, Ma-dist), ft-lbs	663.4	1930.2	34%	Ma-dist (control),KΦ=0.00 lb-in/in
	Moment Stability, ft-lbs	663.4	841.9	79%	
	Shear/Moment	0.29	1.00	29%	Shear 0.0, Moment 663.4
	Axial/Moment	0.79	1.00	79%	Axial 0.0(c), Moment 663.4
	Deflection Span, in	1.113	--meets L/302--		

Support	Rx(lb)	Ry(lb)	Simpson Strong-Tie Connector	Connector Interaction	Anchor Interaction
R2	102.6	0.0	By Others & Anchorage Designed by Engineer	NA	NA
R1	94.1	0.0	By Others & Anchorage Designed by Engineer	NA	NA

* Reference catalog for connector and anchor requirement notes as well as screw placement requirements

BUEHLER

PROJECT Ontario PD Media Room

PROJECT NO. 2024-0438 DATE 5/1/2025

CLIENT Holt BY DL PAGE NO 03.34

Existing Steel W-Shape Beam Supporting Suspended Soffit

W10x12

L_{beam} = 12.25 ft w_{trib} = 7.08 ft

Unbraced Length, L_b: 12.3 ft

$W_u = 1.2D+1.6L$ = 447.67 plf (LRFD) Dead Load = 26 psf

$M_u = W_uL^2/8$ = 8397 lb-ft Live Load = 20 psf

$V_u = W_uL/2$ = 2742 lb D = 184.17 plf

L = 141.67 plf

M_u = 8.40 kip-ft **ΦM_n = 14.40 kip-ft** (See Steel WF Design Calcs)

V_u = 2.74 kip

Bending DCR: 0.58 OK

Existing Steel Deck Check

Dead Load, DL = 20 psf ASD Uniform Load, 1.0D +1.0L

Live Load, LL = 20 psf w_{ASD} = 40 psf

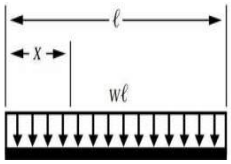
Per Verco Deck Capacity Calculator:

w_{allow} = 66 psf **DCR = 0.61 OK**

Existing Steel Beams W14x22

Steel WF Demand

Length of Beam, L = 18.7 ft (Worst Span) Trib Length, L_{trib} = 9.125 ft



Unbraced Length, L_b: 18.7 ft

$W_u = 1.2D+1.6L$ = 576.7 plf (LRFD) Dead Load = 26 psf

$M_u = W_uL^2/8$ = 25118 lb-ft Live Load = 20 psf

$V_u = W_uL/2$ = 5383 lb D = 237.25 plf

L = 182.5 plf

M_u = 25.12 kip-ft **ΦM_n = 30.30 kip-ft** (See Steel WF Design Calcs)

V_u = 5.38 kip

Bending DCR: 0.83 OK

Deflection Check

For uniform distributed load:

$$\delta_{max} = \frac{5wL^4}{384EI}$$

W18x40 Properties

E = 29000 ksi

Ix = 199 in^4

D+L

δmax = 0.199 in δallow = L/240 = 0.93333 in

L

δmax = 0.086 in δallow = L/360 = 0.62 in

Existing W14x22, OK

BUEHLER

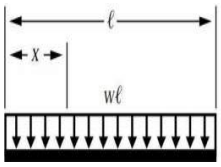
PROJECT: Ontario PD Media Room
PROJECT NO.: 2024-0438 DATE: 5/1/2025
CLIENT: Holt BY: DL PAGE NO.: 03.35

Existing Steel Beams W18x40, Case 1

Steel WF Demand

Length of Beam, L = 35.0 ft (Worst Span)
Unbraced Length, L_b: 21.0 ft
W_u = 1.2D+1.6L = 521.4 plf (LRFD)
$M_u = W_uL^2/8$ = 79839 lb-ft
$V_u = W_uL/2$ = 9125 lb

Trib Length, L_{trib} = 8.25 ft
Dead Load = 26 psf
Live Load = 20 psf
D = 214.5 plf
L = 165 plf



M_u = 79.84 kip-ft **ΦM_n = 86.70 kip-ft** (See Steel WF Design Calcs)

V_u = 9.12 kip

Bending DCR: 0.92 OK

W18x40 Properties
E = 29000 ksi
Ix = 612 in^4

Deflection Check

For uniform distributed load:

$$\delta_{max} = \frac{5wL^4}{384EI}$$

D+L
δmax = 0.722 in δallow = L/240 = 1.75 in
L
δmax = 0.314 in δallow = L/360 = 1.17 in

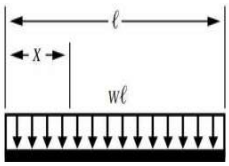
Existing W18x40, OK

Existing Steel Beams W18x40, Case 2

Steel WF Demand

Length of Beam, L = 22.5 ft
Unbraced Length, L_b: 21.0 ft
W_u = 1.2D+1.6L = 1053.33 plf (LRFD)
$M_u = W_uL^2/8$ = 66656 lb-ft
$V_u = W_uL/2$ = 11850 lb

Trib Length, L_{trib} = 16.6667 ft
Dead Load = 26 psf
Live Load = 20 psf
D = 433.333 plf
L = 333.333 plf



M_u = 66.66 kip-ft **ΦM_n = 86.70 kip-ft** (See Steel WF Design Calcs)

V_u = 11.85 kip

Bending DCR: 0.77 OK

W18x40 Properties
E = 29000 ksi
Ix = 612 in^4

Deflection Check

For uniform distributed load:

$$\delta_{max} = \frac{5wL^4}{384EI}$$

D+L
δmax = 0.189 in δallow = L/240 = 1.125 in
L
δmax = 0.082 in δallow = L/360 = 0.75 in

Existing W18x40, OK

onAir Panel 1 IP

FEATURES

03.36

- Full-spectrum LED 1x1 format soft light panel style fixture for broadcast, film, and special events
- IP65 rating for all weather use indoors or out.
- Linear color temperature presets from 2800 K to 8000 K with high CRI and CQS
- Virtual color wheel with color matched to popular gel colors
- +/- Green adjustment and emulated red-shift via DMX or on-board control
- RDM (Remote Device Management) and CRMX Wireless Control for added flexibility
- Adjustable PWM (Pulse Width Modulation) to avoid flickering on camera
- Virtually silent operation for use in studio applications
- Ultra-smooth 16-bit dimming curves and speeds to complement any lighting scheme.
- Easily switch mounting options from Jr Pin to Omega Bracket
- Drop-in slot for diffusers and intensifier filter (sold separately)
- Rugged design for years of rough use in the most extreme conditions.
- Easy to use on-board control with full access to all the features of the fixture without the need for a dedicated controller.
- USB port for fixture software updates
- 28 VDC power input via 3-pin XLR to power the fixture from an external battery pack

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SPECIFICATIONS

OPTICAL

- Light Source: 224 LEDs (tri-color RGB) 1.4 W, (150 mA), 50,000 hours life expectancy.
- Light Source: 224 LEDs (WW) 0.50 W, (150 mA), 50,000 hours life expectancy.
- Color Temperature (range): 2800 to 8000 K
- Color Temperature (at full): 7566 K
- CRI: 95
- Beam Angle: 99.3°
- Field Angle: 154°
- Lumens: 10,092
- Illuminance: 165 lux @ 5 m
- Selectable PWM: 600 Hz, 1200 Hz, 2000 Hz, 4000 Hz, 6000 Hz, 25,000 Hz

DYNAMIC EFFECTS

- Dimmer: Electronic
- Shutter/Strobe: Electronic
- Strobe Rate: 0 to 28 Hz
- Standalone Color Mixing: Yes
- Color Temperature Presets: Yes
- Dim Modes: 4
- Dim Curves: 4
- Built-in Automated Programs: Yes

CONSTRUCTION / PHYSICAL

- Dimensions: 22 x 5.74 x 21.81 in (559 x 146 x 554 mm)
- Weight: 28 lb (12.7 kg)
- Exterior Color: Black
- Housing Material: Aluminum alloy

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CONNECTIONS

- Power Connection: Edison (Local) plug to Seetronic Powerkon IP65
- Power Input: Seetronic Powerkon IP65
- Power Output: Seetronic Powerkon IP65
- Power Input: 28 VDC, 3-pin IP65 XLR
- Data Connectors: 5-pin IP65 XLR, Seetronic etherCON® Compatible
- Cable Length (power): 5 ft (1.5 m)
- Software Connection: USB

CONTROL

- Control Protocol: Art-Net, sACN, DMX, CRMX, RDM
- DMX Channels: 1, 3, 4, 5, 6, 8, 10, 11, 15, 16
- Art-Net Channels: 1, 3, 4, 5, 6, 8, 10, 11, 15, 16
- Modes/Personalities: 12 personalities (1, 3, 4, 5, 6, 8Ch1, 8Ch2, 10, 11, 15Ch1, 15Ch2, 16)

ELECTRICAL

- Input Voltage: 100 to 240 VAC, 50/60 Hz (auto-ranging)
- Power Linking: 7 units @ 100 V; 8 units @ 120 V; 15 units @ 208 V; 16 units @ 230 V, 17 units @ 240 V
- Power and Current: 184 W, 1.524 A @ 120 V, 60 Hz
- Power and Current: 187 W, .891 A @ 208 V, 60 Hz
- Power and Current: 180 W, .824 A @ 230 V, 50 Hz

CERTIFICATIONS / QUALIFICATIONS

- CE, MET, FCC,
- IP Rating: IP65, temporary outdoor use, with pressure equalizing M12 GORE valve
- Temperature (Ambient): -4 °F to 113 °F (-20 °C to 45 °C)

WHAT'S INCLUDED

- onAir Panel 1 IP
- Seetronic Powerkon IP65
- Omega bracket with mounting hardware
- onAir Panel 1 IP Medium Diffusion Filter
- TV Junior Spigot

OPTIONAL ACCESSORIES

- onAir Panel 1 IP Barndoor
- onAir Panel 1 IP 60° Honeycomb
- onAir Panel 1 IP 30° Honeycomb
- onAir Panel 1 IP Light Diffusion Filter
- onAir Panel 1 IP Medium Diffusion Filter
- onAir Panel 1 IP Heavy Diffusion Filter
- onAir Panel 1 IP Intensifier
- onAir Panel 1 IP Pole Yoke
- Professional Clamps: CTC-50HC, CTC-50HCN
- Seetronic Powerkon power linking cables
- 5-pin DMX Cables
- Ethernet Cables