

Structural Calculations For CFD #1 Training Center Remodel

15990 SE 130th Ave
Clackamas, OR 97015

Project Number: 24253
December 20, 2024



Design Parameters: 2022 Oregon Structural Specialty Code

Live Load

Interior Pressure5 psf

Seismic

Mapped Response $S_s = 0.829, S_1 = 0.366$

Seismic Design Category.....D

Site ClassD

Importance Factor $I_E = 1.00$

Contents:

Design Loads.....1

Partition Calculations.....6

DESIGN LOADS

Seismic Nonstructural Components

Per ASCE 7-16 Ch. 13: Section 13.3

Component : Interior Partition Wall

Design Parameters

$S_{DS} =$	0.663	From Figure 22-1
$a_p =$	1.00	From Table 13.6-1
$R_p =$	2.50	From Table 13.6-1
$W_p =$	3,840.00 lb	Weight
$I_p =$	1.00	From Sec. 13.1.3
$z =$	10.00 ft	For base anchorage $z = 0$
$h =$	10.00 ft	Ave. height w/ respect to base
$z/h =$	1.00	z/h max = 1.0; Sec 13.3.1.1

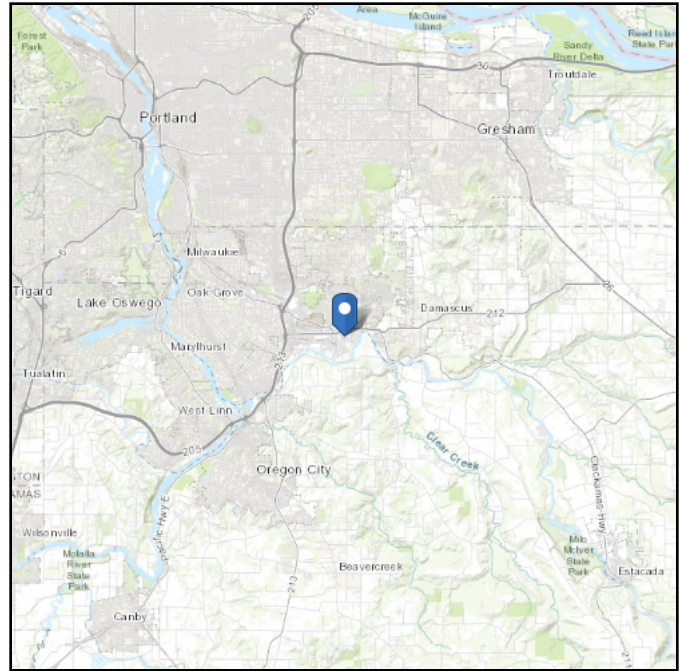
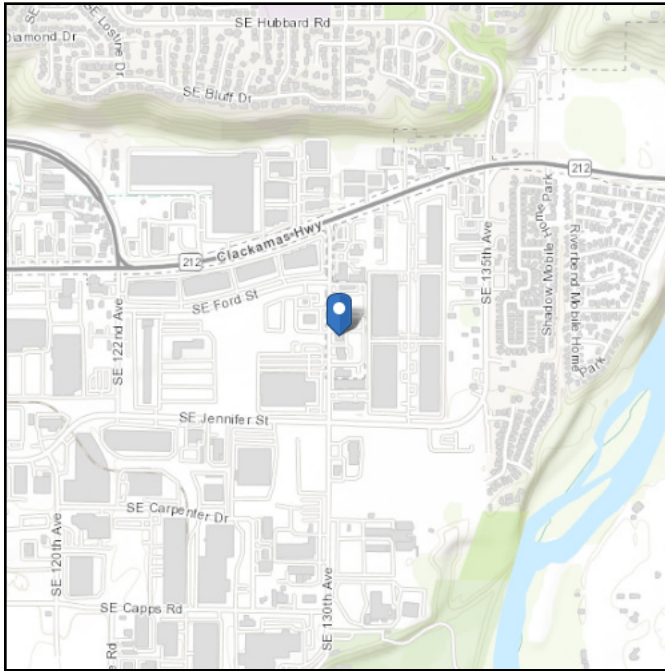
Resulting Horizontal Seismic Force

$F_p =$	1,222.04 lb	$(0.4 \cdot a_p \cdot S_{DS} \cdot W_p) / (R_p / I_p) \cdot (1 + 2 \cdot (z/h))$
$F_{pmax} =$	4,073.47 lb	$1.6 \cdot S_{DS} \cdot I_p \cdot W_p$
$F_{pmin} =$	763.78 lb	$0.3 \cdot S_{DS} \cdot I_p \cdot W_p$
Use $F_p =$	1,222 lb	LRFD
	855 lb	ASD

Address:
15990 SE 130th Ave
Clackamas, Oregon
97015

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

Latitude: 45.40618
Longitude: -122.529929
Elevation: 136.0904556934771 ft
(NAVD 88)



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

Results:

S_s :	0.829	S_{D1} :	N/A
S_1 :	0.366	T_L :	16
F_a :	1.2	PGA :	0.374
F_v :	N/A	PGA _M :	0.459
S_{MS} :	0.995	F _{PGA} :	1.226
S_{M1} :	N/A	I_e :	1
S_{DS} :	0.663	C_v :	1.215

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

Data Accessed: Fri Nov 15 2024

Date Source: [USGS Seismic Design Maps](#)

The ASCE Hazard Tool is provided for your convenience, for informational purposes only, and is provided “as is” and without warranties of any kind. The location data included herein has been obtained from information developed, produced, and maintained by third party providers; or has been extrapolated from maps incorporated in the ASCE standard. While ASCE has made every effort to use data obtained from reliable sources or methodologies, ASCE does not make any representations or warranties as to the accuracy, completeness, reliability, currency, or quality of any data provided herein. Any third-party links provided by this Tool should not be construed as an endorsement, affiliation, relationship, or sponsorship of such third-party content by or from ASCE.

ASCE does not intend, nor should anyone interpret, the results provided by this Tool to replace the sound judgment of a competent professional, having knowledge and experience in the appropriate field(s) of practice, nor to substitute for the standard of care required of such professionals in interpreting and applying the contents of this Tool or the ASCE standard.

In using this Tool, you expressly assume all risks associated with your use. Under no circumstances shall ASCE or its officers, directors, employees, members, affiliates, or agents be liable to you or any other person for any direct, indirect, special, incidental, or consequential damages arising from or related to your use of, or reliance on, the Tool or any information obtained therein. To the fullest extent permitted by law, you agree to release and hold harmless ASCE from any and all liability of any nature arising out of or resulting from any use of data provided by the ASCE Hazard Tool.

PARTITION CALCULATIONS

Steel Beam

Project File: 24253 - Steel Beam.ec6

LIC# : KW-06014428, Build:20.24.10.30

WDY, Inc.

(c) ENERCALC, LLC 1982-2024

DESCRIPTION: Partition Beam

CODE REFERENCES

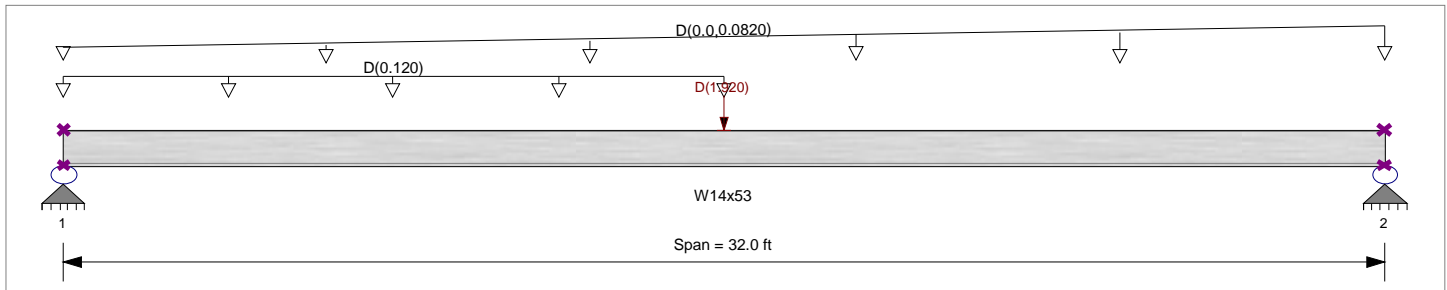
Calculations per AISC 360-16, IBC 2021

Load Combination Set : ASCE 7-22 / IBC 2024 (L<=100psf)

Material Properties

Analysis Method : Allowable Strength Design
 Beam Bracing : Completely Unbraced
 Bending Axis : Major Axis Bending

Fy : Steel Yield : 50.0 ksi
 E : Modulus : 29,000.0 ksi



Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Beam self weight calculated and added to loading

Load for Span Number 1

Uniform Load : D = 0.120 k/ft, Extent = 0.0 --> 16.0 ft, Tributary Width = 1.0 ft

Point Load : D = 1.920 k @ 16.0 ft

Varying Uniform Load : D= 0.0->0.0820 k/ft, Extent = 0.0 --> 32.0 ft, Trib Width = 1.0 ft

DESIGN SUMMARY

Design OK

Maximum Bending Stress Ratio =	0.337 : 1	Maximum Shear Stress Ratio =	0.036 : 1
Section used for this span	W14x53	Section used for this span	W14x53
Ma : Applied	35.072 k-ft	Va : Applied	3.685 k
Mn / Omega : Allowable	104.196 k-ft	Vn/Omega : Allowable	102.860 k
Load Combination	D Only	Load Combination	D Only
Span # where maximum occurs	Span # 1	Location of maximum on span	0.000 ft
Span # where maximum occurs	Span # 1	Span # where maximum occurs	Span # 1
Maximum Deflection			
Max Downward Transient Deflection	0 in Ratio = 0	<360	n/a
Max Upward Transient Deflection	0 in Ratio = 0	<360	n/a
Max Downward Total Deflection	0.378 in Ratio = 1017	>=180	Span: 1 : D Only
Max Upward Total Deflection	0 in Ratio = 0	<180	n/a

Maximum Forces & Stresses for Load Combinations

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
			M	V	Mmax +	Mmax -	Ma Max	Mnx	Mnx/Omega	Cb	Rm	Va Max	Vnx/Vnx/Omega	
D Only														
Dsgn. L =	32.00 ft	1	0.337	0.036	35.07		35.07	174.01	104.20	1.21	1.00	3.69	154.29	102.86
+0.60D														
Dsgn. L =	32.00 ft	1	0.202	0.021	21.04		21.04	174.01	104.20	1.21	1.00	2.21	154.29	102.86

Overall Maximum Deflections

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
D Only	1	0.3777	15.817		0.0000	0.000

Vertical Reactions

Support notation : Far left is #'

Values in KIPS

Load Combination	Support 1	Support 2
Max Upward from all Load Conditions	3.685	3.163
Max Upward from Load Combinations	2.211	1.898
Max Upward from Load Cases	3.685	3.163
D Only	3.685	3.163
+0.60D	2.211	1.898

Steel Beam

Project File: 24253 - Steel Beam.ec6

LIC# : KW-06014428, Build:20.24.12.02

WDY, Inc.

(c) ENERCALC, LLC 1982-2024

DESCRIPTION: Partition Beam Load At One Side

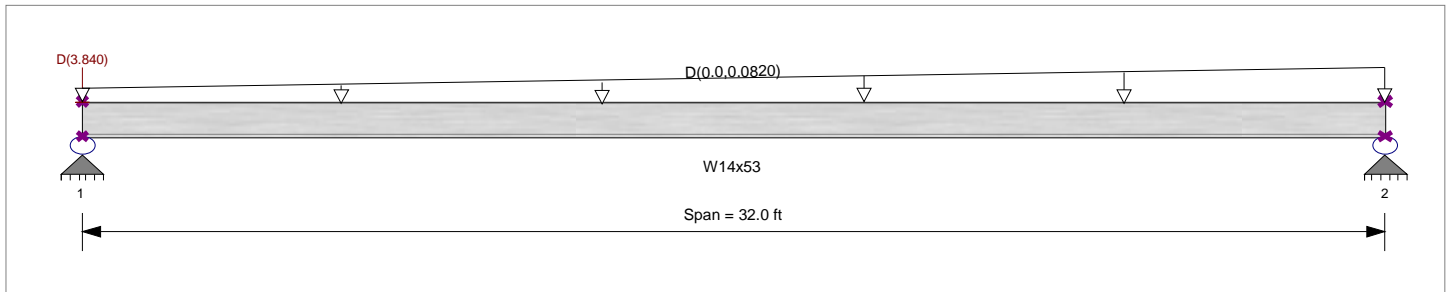
CODE REFERENCES

Calculations per AISC 360-16, IBC 2021
 Load Combination Set : ASCE 7-22 / IBC 2024 (L<=100psf)

Material Properties

Analysis Method : Allowable Strength Design
 Beam Bracing : Completely Unbraced
 Bending Axis : Major Axis Bending

Fy : Steel Yield : 50.0 ksi
 E: Modulus : 29,000.0 ksi



Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Beam self weight calculated and added to loading
 Load(s) for Span Number 1
 Point Load : D = 3.840 k @ 0.0 ft
 Varying Uniform Load : D= 0.0->0.0820 k/ft, Extent = 0.0 -->> 32.0 ft, Trib Width = 1.0 ft

DESIGN SUMMARY

Design OK

Maximum Bending Stress Ratio =	0.123 : 1	Maximum Shear Stress Ratio =	0.017 : 1
Section used for this span	W14x53	Section used for this span	W14x53
Ma : Applied	12.095 k-ft	Va : Applied	1.723 k
Mn / Omega : Allowable	98.336 k-ft	Vn/Omega : Allowable	102.860 k
Load Combination		Load Combination	
	D Only		D Only
Span # where maximum occurs	Span # 1	Location of maximum on span	32.000 ft
		Span # where maximum occurs	Span # 1
Maximum Deflection			
Max Downward Transient Deflection	0 in	Ratio =	0 <360 n/a
Max Upward Transient Deflection	0 in	Ratio =	0 <360 n/a
Max Downward Total Deflection	0.142 in	Ratio =	2704 >=180 Span: 1 : D Only
Max Upward Total Deflection	0 in	Ratio =	0 <180 n/a

Maximum Forces & Stresses for Load Combinations

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
			M	V	Mmax +	Mmax -	Ma Max	Mnx	Mnx/Omega	Cb	Rm	Va Max	Vnx/Vnx/Omega	
D Only	Dsgn. L = 32.00 ft	1	0.123	0.017	12.09		12.09	164.22	98.34	1.14	1.00	1.72	154.29	102.86
+0.60D	Dsgn. L = 32.00 ft	1	0.074	0.010	7.26		7.26	164.22	98.34	1.14	1.00	1.03	154.29	102.86

Overall Maximum Deflections

Span	Load Combination	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
1	D Only	0.1420	16.274		0.0000	0.000

Vertical Reactions

Support notation : Far left is #'

Values in KIPS

Load Combination	Support 1	Support 2
Max Upward from all Load Conditions	5.125	1.723
Max Upward from Load Combinations	3.075	1.034
Max Upward from Load Cases	5.125	1.723
D Only	5.125	1.723
+0.60D	3.075	1.034

Steel Beam

Project File: 24253 - Steel Beam.ec6

LIC# : KW-06014428, Build:20.24.10.30

WDY, Inc.

(c) ENERCALC, LLC 1982-2024

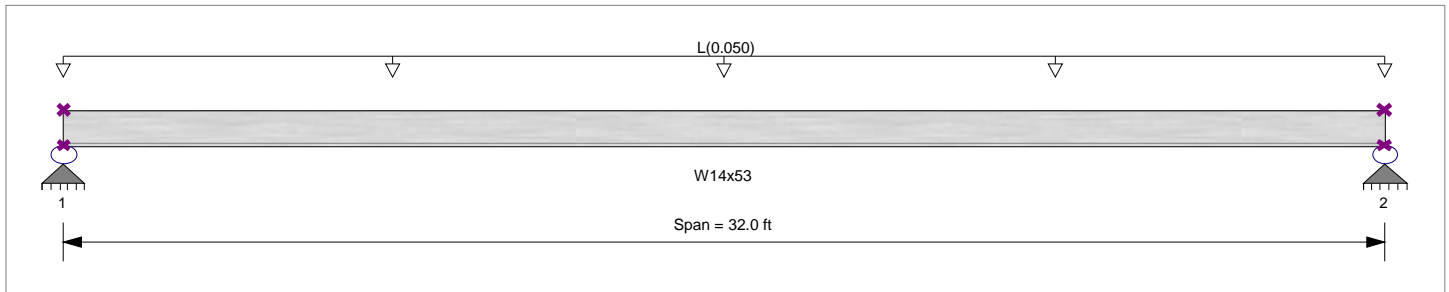
DESCRIPTION: Partition Beam Lateral Load

CODE REFERENCES

Calculations per AISC 360-16, IBC 2021
 Load Combination Set : ASCE 7-22 / IBC 2024 (L<=100psf)

Material Properties

Analysis Method : Allowable Strength Design	Fy : Steel Yield :	50.0 ksi
Beam Bracing : Completely Unbraced	E : Modulus :	29,000.0 ksi
Bending Axis : Minor Axis Bending		



Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Beam self weight NOT internally calculated and added
 Uniform Load : L = 0.050 k/ft, Tributary Width = 1.0 ft

DESIGN SUMMARY

Design OK

<p>Maximum Bending Stress Ratio = 0.117 : 1</p> <p>Section used for this span W14x53</p> <p>Ma : Applied 6.400 k-ft</p> <p>Mn / Omega : Allowable 54.890 k-ft</p> <p>Load Combination L Only</p> <p>Span # where maximum occurs Span # 1</p> <p>Maximum Deflection</p> <p>Max Downward Transient Deflection 0 in Ratio = 0 <360 n/a</p> <p>Max Upward Transient Deflection 0 in Ratio = 0 <360 n/a</p> <p>Max Downward Total Deflection 0.708 in Ratio = 542 >=180 Span: 1 : L Only</p> <p>Max Upward Total Deflection 0 in Ratio = 0 <180 n/a</p>	<p>Maximum Shear Stress Ratio = 0.004 : 1</p> <p>Section used for this span W14x53</p> <p>Va : Applied 0.80 k</p> <p>Vn/Omega : Allowable 212.784 k</p> <p>Load Combination L Only</p> <p>Location of maximum on span 0.000 ft</p> <p>Span # where maximum occurs Span # 1</p>
---	--

Maximum Forces & Stresses for Load Combinations

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values					Summary of Shear Values				
			M	V	Mmax +	Mmax -	Ma Max	Mny	Mny/Omega	Cb	Rm	Va Max	Vny/Vny/Omega	
Dsgn. L =	32.00 ft	1		0.000				91.67	54.89	1.00	1.00	-0.00	319.18	212.78
L Only														
Dsgn. L =	32.00 ft	1	0.117	0.004	6.40		6.40	91.67	54.89	1.14	1.00	0.80	319.18	212.78
+0.750L														
Dsgn. L =	32.00 ft	1	0.087	0.003	4.80		4.80	91.67	54.89	1.14	1.00	0.60	319.18	212.78

Overall Maximum Deflections

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
L Only	1	0.7082	16.091		0.0000	0.000

Vertical Reactions

Support notation : Far left is # Values in KIPS

Load Combination	Support 1	Support 2
Max Upward from all Load Conditions	0.800	0.800
Max Upward from Load Combinations	0.600	0.600
Max Upward from Load Cases	0.800	0.800
L Only	0.800	0.800
+0.750L	0.600	0.600

Steel Beam with Torsional Loads

Project File: 24253 - Steel Beam.ec6

LIC# : KW-06014428, Build:20.24.10.30

WDY, Inc.

(c) ENERCALC, LLC 1982-2024

DESCRIPTION: Half Partition Beam Torsion

CODE REFERENCES

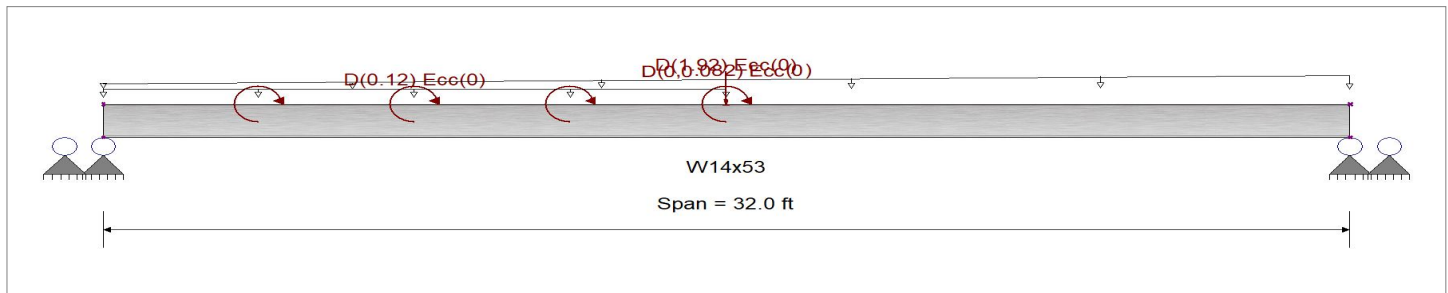
Calculations per AISC 360-16, IBC 2021

Load Combination Set : ASCE 7-22 / IBC 2024 (L<=100psf)

Analysis Settings

Analysis Method : Allowable Strength Design
 Beam Bracing : Completely Unbraced
 Bending Axis : Major Axis Bending
 Load Combination ASCE 7-22 / IBC 2024 (L<=100psf)

Fy : Steel Yield : 50.0 ksi
 E: Modulus : 29,000.0 ksi



Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Beam self weight calculated and added to loads

Load for Span Number 0

Uniform Load : D = 0.120 k/ft, Extent = 0.0 --> 16.0 ft, Tributary Width = 1.0 ft

Varying Uniform Load : D(S,E) = 0.0->0.0820 k/ft, Extent = 0.0 --> 32.0 ft, Trib Width = 1.0 ft

Point Load : D = 1.920 k @ 16.0 ft

Moment : L = 0.2290 k-ft, Loc = 4.0 ft in span, Torsional Load

Moment : L = 0.2290 k-ft, Loc = 8.0 ft in span, Torsional Load

Moment : L = 0.2270 k-ft, Loc = 12.0 ft in span, Torsional Load

Moment : L = 0.2290 k-ft, Loc = 16.0 ft in span, Torsional Load

DESIGN SUMMARY

Design OK

Max. Flange Normal Stress Ratio =	0.424 : 1	Maximum Shear Stress Ratio =	0.104 : 1
Flange Normal Stress	6.82 ksi	Flange Shear Stress	2.08 ksi
Phi vn : Flange Normal Stress (Phi Mn/Sxx)	16.11 ksi	Web Shear Stress	1.83 ksi
Max Mu : Applied	35.07 k-ft	Vn/Omega : Allowable	20.00 ksi
Section used for this span	W14x53	Section used for this span	W14x53
Load Combination	+D+L	Load Combination	+D+L
Maximum Deflection		Maximum Rotation =	1.4213 deg at 13.70 ft
Max Download Transient Load Deflection	0.000 in	Max Downward Total Deflection	0.378 in
Ratio =	0 <360	Ratio =	1014
Max Upward Transient Load Deflection	0.000 in	Max Upward Total Deflection	0.000 in
Ratio =	0 <360	Ratio =	0 <180

Maximum Forces & Stresses for Load Combinations

Load Combination	Max Stress		Bending Max		Flange Normal (ksi)			Flange Shear (ksi)			Web Shear (ksi)		
	Ratio	Mu	(kft)	Vu (k)	Total	Allow	Ratio	Total	Allow	Ratio	Total	Allow	Ratio
D Only	0.336	35.07	3.69	3.69	5.410	16.111	0.336	0.173	20.000	0.009	0.782	20.000	0.039
+D+L	0.424	35.07	3.69	3.69	6.823	16.111	0.424	2.081	20.000	0.104	1.827	20.000	0.091
+D+0.750L	0.402	35.07	3.69	3.69	6.470	16.111	0.402	1.604	20.000	0.080	1.566	20.000	0.078
+0.60D	0.201	21.04	2.21	2.21	3.246	16.111	0.201	0.104	20.000	0.005	0.469	20.000	0.023

Maximum Upward Deflections - Unfactored Loads

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
span_1	1	0.3784	15.872		0.0000	0.000

Steel Beam with Torsional Loads

Project File: 24253 - Steel Beam.ec6

LIC# : KW-06014428, Build:20.24.10.30

WDY, Inc.

(c) ENERCALC, LLC 1982-2024

DESCRIPTION: Half Partition Beam Torsion

Vertical Reactions - Unfactored

Values in KIPS

Load Combination	Support 1	Support 2
Max Upward from all Load Condi	3.685	3.163
Max Upward from Load Combinat	3.685	3.163
Max Upward from Load Cases	3.685	3.163
D Only	3.685	3.163
+D+L	3.685	3.163
+D+0.750L	3.685	3.163
+0.60D	2.211	1.898
L Only		

Steel Beam with Torsional Loads

Project File: 24253 - Steel Beam.ec6

LIC# : KW-06014428, Build:20.24.10.30

WDY, Inc.

(c) ENERCALC, LLC 1982-2024

DESCRIPTION: Full Partition Beam Torsion

CODE REFERENCES

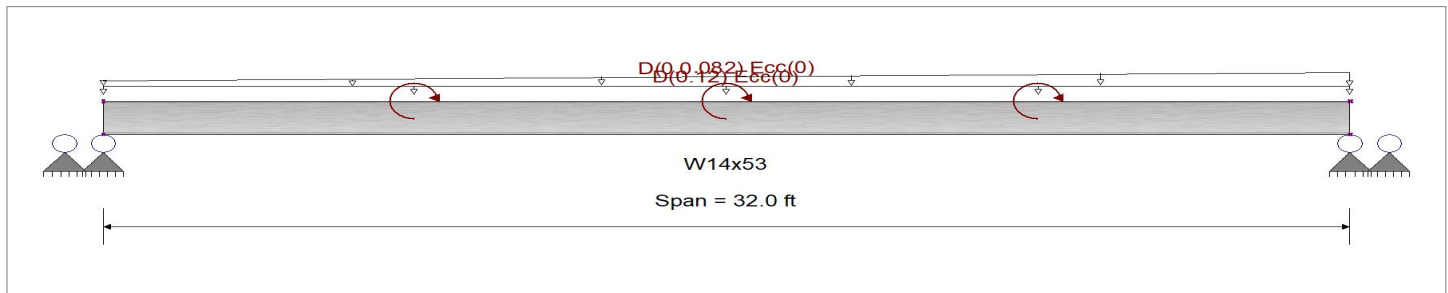
Calculations per AISC 360-16, IBC 2021

Load Combination Set : ASCE 7-22 / IBC 2024 (L<=100psf)

Analysis Settings

Analysis Method : Allowable Strength Design
 Beam Bracing : Completely Unbraced
 Bending Axis : Major Axis Bending
 Load Combination ASCE 7-22 / IBC 2024 (L<=100psf)

Fy : Steel Yield : 50.0 ksi
 E: Modulus : 29,000.0 ksi



Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Beam self weight calculated and added to loads

Load for Span Number 0

Uniform Load : D = 0.120 k/ft, Extent = 0.0 --> 32.0 ft, Tributary Width = 1.0 ft

Varying Uniform Load : D(S,E) = 0.0->0.0820 k/ft, Extent = 0.0 --> 32.0 ft, Trib Width = 1.0 ft

Moment : L = 0.5330 k-ft, Loc = 8.0 ft in span, Torsional Load

Moment : L = 0.5330 k-ft, Loc = 16.0 ft in span, Torsional Load

Moment : L = 0.5330 k-ft, Loc = 24.0 ft in span, Torsional Load

DESIGN SUMMARY

Design OK

Max. Flange Normal Stress Ratio =	0.455 : 1	Maximum Shear Stress Ratio =	0.148 : 1
Flange Normal Stress	6.90 ksi	Flange Shear Stress	2.95 ksi
Phi vn : Flange Normal Stress (Phi Mn/Sxx)	15.15 ksi	Web Shear Stress	2.32 ksi
		Vn/Omega : Allowable	20.00 ksi
Max Mu : Applied	27.42 k-ft		
Section used for this span	W14x53	Section used for this span	W14x53
Load Combination	+D+L	Load Combination	+D+L
		Maximum Rotation =	2.5670 deg at 16.00 ft
Maximum Deflection		Max Downward Total Deflection	0.324 in
Max Download Transient Load Deflection	0.000 in	Ratio =	1185
Ratio =	0 <360	Max Upward Total Deflection	0.000 in
Max Upward Transient Load Deflection	0.000 in	Ratio =	0 <180
Ratio =	0 <360		

Maximum Forces & Stresses for Load Combinations

Load Combination	Max Stress		Bending Max		Flange Normal (ksi)			Flange Shear (ksi)			Web Shear (ksi)		
	Ratio	Mu (kft)	Mu (kft)	Vu (k)	Total	Allow	Ratio	Total	Allow	Ratio	Total	Allow	Ratio
D Only	0.279	27.42	3.64	3.64	4.229	15.154	0.279	0.171	20.000	0.009	0.773	20.000	0.039
+D+L	0.455	27.42	3.64	3.64	6.901	15.154	0.455	2.954	20.000	0.148	2.315	20.000	0.116
+D+0.750L	0.411	27.42	3.64	3.64	6.232	15.154	0.411	2.258	20.000	0.113	1.930	20.000	0.096
+0.60D	0.167	16.45	2.19	2.19	2.538	15.154	0.167	0.103	20.000	0.005	0.464	20.000	0.023

Maximum Upward Deflections - Unfactored Loads

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
span_1	1	0.3239	16.128		0.0000	0.000

Vertical Reactions - Unfactored

Values in KIPS

Load Combination	Support 1	Support 2
Max Upward from all Load Conditio	3.205	3.643
Max Upward from Load Combinat	3.205	3.643

Steel Beam with Torsional Loads

Project File: 24253 - Steel Beam.ec6

LIC# : KW-06014428, Build:20.24.10.30

WDY, Inc.

(c) ENERCALC, LLC 1982-2024

DESCRIPTION: Full Partition Beam Torsion

Vertical Reactions - Unfactored

Values in KIPS

Load Combination	Support 1	Support 2
Max Upward from Load Cases	3.205	3.643
D Only	3.205	3.643
+D+L	3.205	3.643
+D+0.750L	3.205	3.643
+0.60D	1.923	2.186
L Only		

Concrete Pad Footing Design

Design Information

Bending Strength Factor	0.9	t - Footing Thickness
Shear Strength Factor	0.75	b - Width of Footing (square)
Concrete Comp. Stress, Fc	2500 psi	CLR - Bottom Clear Cover to Rebar
Concrete Load Factor	1	bc - Width of Column
Steel Modulus of Elasticity	29000000 psi	Wf - weight of footing
Conc Modulus of Elasticity	2850000 psi	Pa - Allowable Point Load
Steel Yield Stress, Fy	60000 psi	Pu - Ultimate Point Load
Soil Bearing Capacity, qt	1500 psf	d - depth to ftg reinforcement
Ultimate Soil Bearing	1500 psf	bo - two way shear width
Standard Clear Dist	3 in	V-2 - Two way shear loads
Weight of Concrete	150 pcf	V-1 - One way shear loads
concrete constant, m	32	

Soil Bearing Capacity

Label	bc, in	t, in	d, in	b, ft	Wf, lbs	Pa, lbs	Pu	Capacity, k
F2.0	3.50	12.00	8.75	2.00	600	6000	6000	6.000
F2.5	3.50	12.00	8.75	2.50	938	9375	9375	9.375
F3.0	3.50	12.00	8.75	3.00	1350	13500	13500	13.500
F3.5	3.50	12.00	8.75	3.50	1838	18375	18375	18.375
F4.0	3.50	12.00	8.75	4.00	2400	24000	24000	24.000
F4.5	3.50	12.00	8.75	4.50	3038	30375	30375	30.375
F5.0	3.50	12.00	8.75	5.00	3750	37500	37500	37.500
F5.5	3.50	14.00	10.75	5.50	5294	45375	45375	45.375
F6.0	3.50	12.00	8.75	6.00	5400	54000	54000	54.000

Concrete Shear Capacity

Label	Qu, psf	Mu, k*ft	V-2, k	V-1, k	bo, in	Vc-2, k	Vc-1, k	two-way	one-way
F2.0	1500	1.09	4.4	0.4	49	64	16	OK	OK
F2.5	1500	2.29	7.8	1.4	49	64	20	OK	OK
F3.0	1500	4.13	11.9	2.8	49	64	24	OK	OK
F3.5	1500	6.76	16.8	4.6	49	64	28	OK	OK
F4.0	1500	10.31	22.4	6.8	49	64	32	OK	OK
F4.5	1500	14.94	28.8	9.3	49	64	35	OK	OK
F5.0	1500	20.78	35.9	12.2	49	64	39	OK	OK
F5.5	1500	27.97	43.3	14.1	57	92	53	OK	OK
F6.0	1500	36.66	52.4	19.1	49	64	47	OK	OK

Concrete Moment Capacity

Label	Rn, psi	p	Bar Size	Bar Area	# of Bars	As, in ²	p-act	a, in	Mn, k*ft	Bending
F2.0	7.9412	0.0001	4	0.196	2	0.39	0.00187	0.524	15	OK
F2.5	13.27	0.0002	4	0.196	2	0.39	0.0015	0.419	15	OK
F3.0	19.959	0.0003	4	0.196	3	0.59	0.00187	0.524	22	OK
F3.5	28.009	0.0005	4	0.196	4	0.79	0.00214	0.598	30	OK
F4.0	37.42	0.0006	4	0.196	4	0.79	0.00187	0.524	30	OK
F4.5	48.191	0.0008	4	0.196	4	0.79	0.00166	0.465	30	OK
F5.0	60.322	0.001	4	0.196	5	0.98	0.00187	0.524	37	OK
F5.5	48.903	0.0008	4	0.196	6	1.18	0.00166	0.571	55	OK
F6.0	88.667	0.0015	4	0.196	7	1.37	0.00218	0.611	52	OK