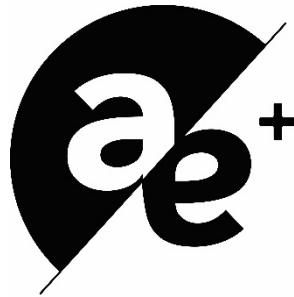


STRUCTURAL CALCULATIONS



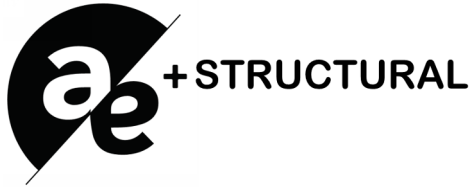
CHOP SUEY – TENANT IMPROVEMENT



2877 UNIVERSITY AVE.

SAN DIEGO, CA 92104





PROJECT NAME CHOP SUEY RESTAURANT – TI
 SUBJECT CODE AND LOADING

SHEET NO. No.
 PROJECT NO. No.
 DATE 06/16/2021
 COMPUTED BY FA
 CHECKED BY FA

CODE & LOADING

Applicable Code 'California Building Code 2019'

Building Risk Category I
 Snow Importance Factor $I_s = 1.0$
 Seismic Importance Factor $I_g = 1.0$

Design Parameters

Roof Dead Load $D = 15$ psf
 Roof Live Load $L = 20$ psf
 Mezzanine Storage Load $D = 40$ psf
 Ultimate Wind Speed $V = 96$ MPH
 Nominal Wind Speed $V = 85$ MPH
 Exposure Category C
 Seismic Site Class D
 $S_s = 1.247$ g
 $S_1 = 0.428$ g

Materials

Concrete
 28 Day Compressive Strength $F'_c = 3000$ psi
 Reinforcing Steel ASTM A615 $F_y = 60$ ksi
 Welded Wire Fabric ASTM A185

Search Information

Address: 2877 University Ave, San Diego, CA 92104, USA
Coordinates: 32.7481912, -117.1315537
Elevation: 360 ft
Timestamp: 2021-06-29T01:01:44.480Z
Hazard Type: Wind



ASCE 7-16

MRI 10-Year 67 mph
 MRI 25-Year 72 mph
 MRI 50-Year 77 mph
 MRI 100-Year 82 mph
 Risk Category I 90 mph
 Risk Category II 96 mph
 Risk Category III 103 mph
 Risk Category IV 107 mph

ASCE 7-10

MRI 10-Year 72 mph
 MRI 25-Year 79 mph
 MRI 50-Year 85 mph
 MRI 100-Year 91 mph
 Risk Category I 100 mph
 Risk Category II 110 mph
 Risk Category III-IV 115 mph

ASCE 7-05

ASCE 7-05 Wind Speed 85 mph

The results indicated here DO NOT reflect any state or local amendments to the values or any delineation lines made during the building code adoption process. Users should confirm any output obtained from this tool with the local Authority Having Jurisdiction before proceeding with design.

Disclaimer

Hazard loads are interpolated from data provided in ASCE 7 and rounded up to the nearest whole integer. Per ASCE 7, islands and coastal areas outside the last contour should use the last wind speed contour of the coastal area – in some cases, this website will extrapolate past the last wind speed contour and therefore, provide a wind speed that is slightly higher.

NOTE: For queries near wind-borne debris region boundaries, the resulting determination is sensitive to rounding which may affect whether or not it is considered to be within a wind-borne debris region.

Mountainous terrain, gorges, ocean promontories, and special wind regions shall be examined for unusual wind conditions.

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Search Information

Address: 2877 University Ave, San Diego, CA 92104, USA
Coordinates: 32.7481912, -117.1315537
Elevation: 360 ft
Timestamp: 2021-06-29T01:02:42.794Z
Hazard Type: Snow



ASCE 7-16

Ground Snow Load ⚠ 0 lb/sqft

The reported ground snow load applies at the query location of 360 feet up to a maximum elevation of 1800 feet.

ASCE 7-10

Ground Snow Load ⚠ 0 lb/sqft

The reported ground snow load applies at the query location of 360 feet up to a maximum elevation of 1800 feet.

ASCE 7-05

Ground Snow Load ⚠ 0 lb/sqft

The reported ground snow load applies at the query location of 360 feet up to a maximum elevation of 1800 feet.

The results indicated here DO NOT reflect any state or local amendments to the values or any delineation lines made during the building code adoption process. Users should confirm any output obtained from this tool with the local Authority Having Jurisdiction before proceeding with design.

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Search Information

Address:	2877 University Ave, San Diego, CA 92104, USA
Coordinates:	32.7481912, -117.1315537
Elevation:	360 ft
Timestamp:	2021-06-29T01:03:00.354Z
Hazard Type:	Seismic
Reference Document:	ASCE7-16
Risk Category:	II
Site Class:	D-default



Basic Parameters

Name	Value	Description
S _S	1.247	MCE _R ground motion (period=0.2s)
S ₁	0.428	MCE _R ground motion (period=1.0s)
S _{MS}	1.496	Site-modified spectral acceleration value
S _{M1}	* null	Site-modified spectral acceleration value
S _{DS}	0.997	Numeric seismic design value at 0.2s SA
S _{D1}	* null	Numeric seismic design value at 1.0s SA

* See Section 11.4.8

Additional Information

Name	Value	Description
SDC	* null	Seismic design category
F _a	1.2	Site amplification factor at 0.2s
F _v	* null	Site amplification factor at 1.0s
CR _S	0.868	Coefficient of risk (0.2s)
CR ₁	0.887	Coefficient of risk (1.0s)
PGA	0.561	MCE _G peak ground acceleration
F _{PGA}	1.2	Site amplification factor at PGA
PGA _M	0.673	Site modified peak ground acceleration
T _L	8	Long-period transition period (s)
S _{sRT}	1.247	Probabilistic risk-targeted ground motion (0.2s)
S _{sUH}	1.437	Factored uniform-hazard spectral acceleration (2% probability of exceedance in 50 years)
S _{sD}	1.767	Factored deterministic acceleration value (0.2s)
S _{1RT}	0.428	Probabilistic risk-targeted ground motion (1.0s)
S _{1UH}	0.482	Factored uniform-hazard spectral acceleration (2% probability of exceedance in 50 years)
S _{1D}	0.613	Factored deterministic acceleration value (1.0s)
PGA _d	0.728	Factored deterministic acceleration value (PGA)

* See Section 11.4.8

any expert estimates from the user with the local authority having jurisdiction before proceeding with design.

Disclaimer

Hazard loads are provided by the U.S. Geological Survey [Seismic Design Web Services](#).

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 Title Block Line 6

Project Title: **Chop Suey Restaurant**
 Engineer: **FA**
 Project ID: **20211030.0**
 Project Descr: **TI**

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ASCE Seismic Base Shear

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Greenberg Farrow Architecture, Inc

DESCRIPTION: 20211030.0 RL Chop Suey TI (San Diego, CA)

20211030.0 RL Chop Suey TI (San Diego, CA)

Risk Category

Calculations per ASCE 7-16

Risk Category of Building or Other Structure : "II" : All Buildings and other structures except those listed as Category I, III, and IV ASCE 7-16, Page 4, Table 1.5-1

Seismic Importance Factor = 1 ASCE 7-16, Page 5, Table 1.5-2

USER DEFINED Ground Motion

ASCE 7-16 11.4.2

Max. Ground Motions, 5% Damping :

$S_S = 1.247$ g, 0.2 sec response
 $S_1 = 0.4280$ g, 1.0 sec response

Site Class, Site Coeff. and Design Category

Site Classification "D" : Shear Wave Velocity 600 to 1,200 ft/sec = D ASCE 7-16 Table 20.3-1

Site Coefficients F_a & F_v ASCE 7-16 Table 11.4-1 & 11.4-2
 (using straight-line interpolation from table values) $F_a = 1.00$
 $F_v = 1.57$

Maximum Considered Earthquake Acceleration $S_{MS} = F_a * S_s = 1.248$ ASCE 7-16 Eq. 11.4-1
 $S_{M1} = F_v * S_1 = 0.673$ ASCE 7-16 Eq. 11.4-2

Design Spectral Acceleration $S_{DS} = S_{MS}^{2/3} = 0.832$ ASCE 7-16 Eq. 11.4-3
 $S_{D1} = S_{M1}^{2/3} = 0.449$ ASCE 7-16 Eq. 11.4-4

Seismic Design Category = D ASCE 7-16 Table 11.6-1 & -2

Resisting System

ASCE 7-16 Table 12.2-1

Basic Seismic Force Resisting System . . . Bearing Wall Systems
 15.Light-frame (wood) walls sheathed w/wood structural panels rated for shear resistance.

Response Modification Coefficient "R" = 6.50 Building height Limits :
 System Overstrength Factor "Wo" = 3.00 Category "A & B" Limit: No Limit
 Deflection Amplification Factor "Cd" = 4.00 Category "C" Limit: No Limit
Category "D" Limit: Limit = 65
Category "E" Limit: Limit = 65
Category "F" Limit: Limit = 65

NOTE! See ASCE 7-16 for all applicable footnotes.

Lateral Force Procedure

ASCE 7-16 Section 12.8.2

Equivalent Lateral Force Procedure

The "Equivalent Lateral Force Procedure" is being used according to the provisions of ASCE 7-16 12.8

Determine Building Period

Use ASCE 12.8-7

Structure Type for Building Period Calculation : All Other Structural Systems

"Ct" value = 0.020 "hn" : Height from base to highest level = 25.0 ft

"x" value = 0.75

"Ta" Approximate fundamental period using Eq. 12.8-7 : $T_a = C_t * (h_n^x) = 0.224$ sec

"TL" : Long-period transition period per ASCE 7-16 Maps 22-14 -> 22-17 8.000 sec

Building Period "Ta" Calculated from Approximate Method selected = 0.224 sec

"Cs" Response Coefficient

ASCE 7-16 Section 12.8.1.1

S_{DS} : Short Period Design Spectral Response = 0.832 From Eq. 12.8-2, Preliminary Cs = 0.128

"R" : Response Modification Factor = 6.50 From Eq. 12.8-3 & 12.8-4, Cs need not exceed = 0.309

"I" : Seismic Importance Factor = 1 From Eq. 12.8-5 & 12.8-6, Cs not be less than = 0.037

Cs : Seismic Response Coefficient = 0.1281

Seismic Base Shear

ASCE 7-16 Section 12.8.1

Cs = 0.1281 from 12.8.1.1 W (see Sum Wi below) = 0.00 k

Seismic Base Shear $V = Cs * W = 0.00$ k

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ASCE Seismic Base Shear

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Greenberg Farrow Architecture, Inc

DESCRIPTION: **20211030.0 RL Chop Suey TI (San Diego, CA)**

Vertical Distribution of Seismic Forces

ASCE 7-16 Section 12.8.3

"k" : hx exponent based on Ta = 1.00

Table of building Weights by Floor Level...

Level #	Wi : Weight	Hi : Height	(Wi * Hi^k)	Cvx	Fx=Cvx * V	Sum Story Shear	Sum Story Moment
Sum Wi =	0.00 k	Sum Wi * Hi =	0.00 k-ft		Total Base Shear =	0.00 k	
						Base Moment =	0.0 k-ft

Diaphragm Forces : Seismic Design Category "B" to "F"

ASCE 7-16 12.10.1.1

Level #	Wi	Fi	Sum Fi	Sum Wi	Fpx : Calcd	Fpx : Min	Fpx : Max	Fpx	Dsgn. Force
Wpx	Weight at level of diaphragm and other structure elements attached to it.								
Fi	Design Lateral Force applied at the level.								
Sum Fi	Sum of "Lat. Force" of current level plus all levels above								
MIN Req'd Force @ Level	0.20 * S _D	I * Wpx							
MAX Req'd Force @ Level	0.40 * S _D	I * Wpx							
Fpx : Design Force @ Level	Wpx * SUM(x->n) Fi / SUM(x->n) wi, x = Current level, n = Top Level								

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Wood Beam

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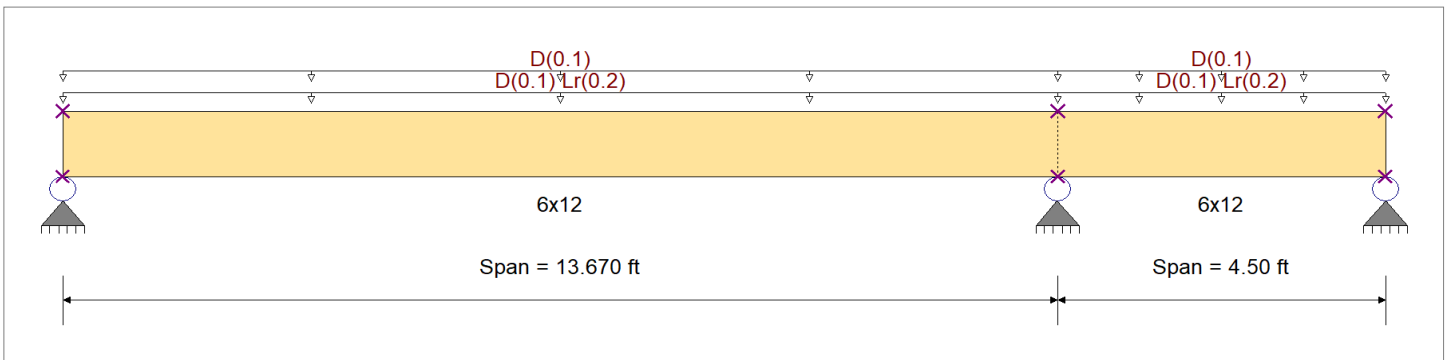
DESCRIPTION: (N) 6x12 (DF#1 or Better) Beam - Dining Room Overhead

CODE REFERENCES

Calculations per NDS 2018, IBC 2018, CBC 2019, ASCE 7-16
 Load Combination Set : ASCE 7-16

Material Properties

Analysis Method : Allowable Stress Design	Fb +	900 psi	E : Modulus of Elasticity	
Load Combination ASCE 7-16	Fb -	900 psi	Ebend- xx	1600 ksi
	Fc - Prll	1350 psi	Eminbend - xx	580 ksi
Wood Species : Douglas Fir-Larch	Fc - Perp	625 psi		
Wood Grade : No.2	Fv	180 psi		
	Ft	575 psi	Density	31.21 pcf
Beam Bracing : Completely Unbraced				



Applied Loads

Service loads entered. Load Factors will be applied for calculations

Load for Span Number 1
 Uniform Load : D = 0.020, Lr = 0.040 ksf, Tributary Width = 5.0 ft, (Mezzanine Storage Loading)
 Uniform Load : D = 0.010 ksf, Tributary Width = 10.0 ft, (Wall Loading)
 Load for Span Number 2
 Uniform Load : D = 0.020, Lr = 0.040 ksf, Tributary Width = 5.0 ft, (Mezzanine Storage Loading)
 Uniform Load : D = 0.010 ksf, Tributary Width = 10.0 ft, (Wall Loading)

DESIGN SUMMARY

Design OK

Maximum Bending Stress Ratio	=	0.648 : 1	Maximum Shear Stress Ratio	=	0.306 : 1
Section used for this span		6x12	Section used for this span		6x12
fb : Actual	=	720.64 psi	fv : Actual	=	68.77 psi
FB : Allowable	=	1,112.50 psi	Fv : Allowable	=	225.00 psi
Load Combination		+D+Lr+H	Load Combination		+D+Lr+H
Location of maximum on span	=	13.670ft	Location of maximum on span	=	12.754 ft
Span # where maximum occurs	=	Span # 1	Span # where maximum occurs	=	Span # 1
Maximum Deflection					
Max Downward Transient Deflection		0.077 in	Ratio =		2131 >=360
Max Upward Transient Deflection		-0.006 in	Ratio =		9269 >=360
Max Downward Total Deflection		0.154 in	Ratio =		1065 >=180
Max Upward Total Deflection		-0.012 in	Ratio =		4634 >=180

Vertical Reactions

Support notation : Far left is #1

Values in KIPS

Load Combination	Support 1	Support 2	Support 3
Overall MAXimum	2.201	5.784	-0.718
Overall MINimum	1.101	2.892	-0.359
+D+H	1.101	2.892	-0.359
+D+L+H	1.101	2.892	-0.359
+D+Lr+H	2.201	5.784	-0.718
+D+S+H	1.101	2.892	-0.359
+D+0.750Lr+0.750L+H	1.926	5.061	-0.628

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Wood Beam

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Greenberg Farrow Architecture, Inc

DESCRIPTION: (N) 6x12 (DF#1 or Better) Beam - Dining Room Overhead

Vertical Reactions

Support notation : Far left is #1

Values in KIPS

Load Combination	Support 1	Support 2	Support 3
+D+0.750L+0.750S+H	1.101	2.892	-0.359
+D+0.60W+H	1.101	2.892	-0.359
+D+0.750Lr+0.450W+H	1.926	5.061	-0.628
+D+0.750S+0.450W+H	1.101	2.892	-0.359
+0.60D+0.60W+0.60H	0.660	1.735	-0.215
+D+0.70E+0.60H	1.101	2.892	-0.359
+D+0.750L+0.750S+0.5250E+H	1.101	2.892	-0.359
+0.60D+0.70E+H	0.660	1.735	-0.215
D Only	1.101	2.892	-0.359
Lr Only	1.101	2.892	-0.359
L Only			
S Only			
W Only			
E Only			
H Only			

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Wood Column

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Greenberg Farrow Architecture, Inc

DESCRIPTION: (N) 6x4 Wood Post - Dining Room Opening

Code References

Calculations per NDS 2018, IBC 2018, CBC 2019, ASCE 7-16

Load Combinations Used : ASCE 7-16

General Information

Analysis Method :	Allowable Stress Design			Wood Section Name	4x6
End Fixities	Top & Bottom Pinned			Wood Grading/Manuf.	Graded Lumber
Overall Column Height	10.0 ft			Wood Member Type	Sawn
<i>(Used for non-slender calculations)</i>					
Wood Species	Douglas Fir-Larch			Exact Width	3.50 in Allow Stress Modification Factors
Wood Grade	No.2			Exact Depth	5.250 in Cf or Cv for Bending 1.0
Fb +	900 psi	Fv	180 psi	Area	19.25 in^2 Cf or Cv for Compression 1.0
Fb -	900 psi	Ft	575 psi	Ix	266.93 in^4 Cf or Cv for Tension 1.0
Fc - Prll	1350 psi	Density	31.21 pcf	Iy	68.78 in^4 Cm : Wet Use Factor 1.0
Fc - Perp	625 psi				Ct : Temperature Factor 1.0
E : Modulus of Elasticity . . .	x-x Bending	y-y Bending	Axial		Cfu : Flat Use Factor 1.0
	Basic	1600	1600	1600 ksi	Kf : Built-up columns 1.0 <i>NDS 15.3.2</i>
	Minimum	580	580		Use Cr : Repetitive ? No
Brace condition for deflection (buckling) along columns :					
X-X (width) axis : Fully braced against buckling ABOUT Y-Y Axis					
Y-Y (depth) axis : Fully braced against buckling ABOUT X-X Axis					

Applied Loads

Service loads entered. Load Factors will be applied for calculations

Column self weight included : 41.722 lbs * Dead Load Factor

AXIAL LOADS . . .

Uniform Loading: Axial Load at 10.0 ft, D = 1.50, Lr = 3.0 k

DESIGN SUMMARY

Bending & Shear Check Results

PASS Max. Axial+Bending Stress Ratio =	0.1465 : 1	Maximum SERVICE Lateral Load Reactions . .	
Load Combination	+D+Lr+H	Top along Y-Y	0.0 k Bottom along Y-Y 0.0 k
Governing NDS Formula	Comp Only, fc/Fc'	Top along X-X	0.0 k Bottom along X-X 0.0 k
Location of max. above base	0.0 ft	Maximum SERVICE Load Lateral Deflections . . .	
At maximum location values are . . .		Along Y-Y	0.0 in at 0.0 ft above base
Applied Axial	4.542 k	for load combination :	n/a
Applied Mx	0.0 k-ft	Along X-X	0.0 in at 0.0 ft above base
Applied My	0.0 k-ft	for load combination :	n/a
Fc : Allowable	1,687.50 psi	Other Factors used to calculate allowable stresses . . .	
PASS Maximum Shear Stress Ratio =	0.0 : 1	Bending	Compression Tension
Load Combination	+0.60D+0.70E+H		
Location of max. above base	10.0 ft		
Applied Design Shear	0.0 psi		
Allowable Shear	288.0 psi		

Maximum Reactions

Note: Only non-zero reactions are listed.

Load Combination	X-X Axis Reaction		k	Y-Y Axis Reaction		Axial Reaction	My - End Moments		Mx - End Moments	
	@ Base	@ Top		@ Base	@ Top		@ Base	@ Top	@ Base	@ Top
+D+H						1.542				
+D+L+H						1.542				
+D+Lr+H						4.542				
+D+S+H						1.542				
+D+0.750Lr+0.750L+H						3.792				
+D+0.750L+0.750S+H						1.542				
+D+0.60W+H						1.542				
+D+0.750Lr+0.450W+H						3.792				
+D+0.750S+0.450W+H						1.542				
+0.60D+0.60W+0.60H						0.925				
+D+0.70E+0.60H						1.542				

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 Engineer: **FA**
 Project ID: **20211030.0**
 Project Descr: **TI**

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Wood Column

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Greenberg Farrow Architecture, Inc

DESCRIPTION: (N) 6x4 Wood Post - Dining Room Opening

Maximum Reactions

Note: Only non-zero reactions are listed.

Load Combination	X-X Axis Reaction		k	Y-Y Axis Reaction		Axial Reaction	My - End Moments		k-ft	Mx - End Moments	
	@ Base	@ Top		@ Base	@ Top		@ Base	@ Top		@ Base	@ Top
+D+0.750L+0.750S+0.5250E+H						1.542					
+0.60D+0.70E+H						0.925					
D Only						1.542					
Lr Only						3.000					
L Only											
S Only											
W Only											
E Only											
H Only											

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 Title Block Line 6

Project Title: **Chop Suey Restaurant**
 Engineer: **FA**
 Project ID: **20211030.0**
 Project Descr: **TI**

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General Footing

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Lic. #: KW-06011204

Greenberg Farrow Architecture, Inc

DESCRIPTION: (N) 2'-6" SQ Footing - New Dining Room Opening

Code References

Calculations per ACI 318-14, IBC 2018, CBC 2019, ASCE 7-16
 Load Combinations Used : ASCE 7-16

General Information

Material Properties

f _c : Concrete 28 day strength	=	3.0 ksi
f _y : Rebar Yield	=	60.0 ksi
E _c : Concrete Elastic Modulus	=	3,122.0 ksi
Concrete Density	=	145.0 pcf
φ Values Flexure	=	0.90
Shear	=	0.750

Soil Design Values

Allowable Soil Bearing	=	1.50 ksf
Increase Bearing By Footing Weight	=	No
Soil Passive Resistance (for Sliding)	=	100.0 pcf
Soil/Concrete Friction Coeff.	=	0.30

Analysis Settings

Min Steel % Bending Reinf.	=	
Min Allow % Temp Reinf.	=	0.00180
Min. Overturning Safety Factor	=	1.0 : 1
Min. Sliding Safety Factor	=	1.0 : 1
Add Ftg Wt for Soil Pressure	:	Yes
Use ftg wt for stability, moments & shears	:	Yes
Add Pedestal Wt for Soil Pressure	:	No
Use Pedestal wt for stability, mom & shear	:	No

Increases based on footing Depth

Footing base depth below soil surface	=	1.0 ft
Allow press. increase per foot of depth when footing base is below	=	ksf ft

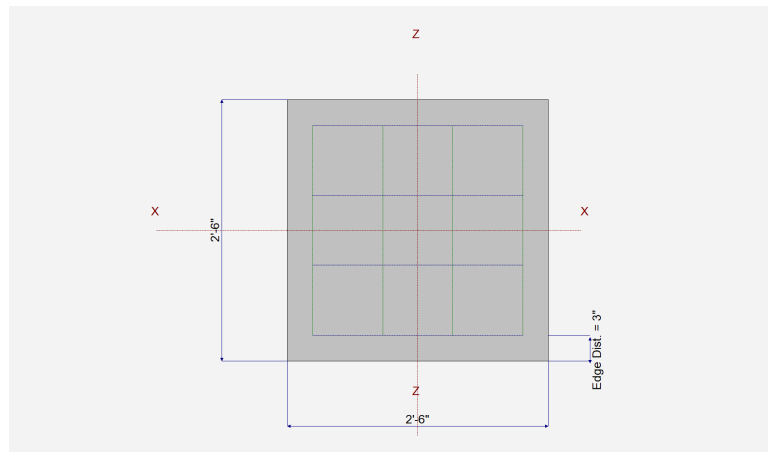
Increases based on footing plan dimension

Allowable pressure increase per foot of depth when max. length or width is greater than	=	ksf ft
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Dimensions

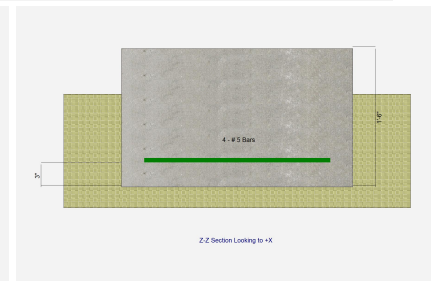
Width parallel to X-X Axis	=	2.5 ft
Length parallel to Z-Z Axis	=	2.50 ft
Footing Thickness	=	18.0 in

Pedestal dimensions...	=	
px : parallel to X-X Axis	=	in
pz : parallel to Z-Z Axis	=	in
Height	=	in
Rebar Centerline to Edge of Concrete... at Bottom of footing	=	3.0 in



Reinforcing

Bars parallel to X-X Axis	=	
Number of Bars	=	4
Reinforcing Bar Size	=	# 5
Bars parallel to Z-Z Axis	=	
Number of Bars	=	4
Reinforcing Bar Size	=	# 5
Bandwidth Distribution Check (ACI 15.4.4.2)		
Direction Requiring Closer Separation		n/a
# Bars required within zone		n/a
# Bars required on each side of zone		n/a



Applied Loads

	D	L _r	L	S	W	E	H	
P : Column Load	=	1.50	3.0					k
OB : Overburden	=							ksf
M-xx	=							k-ft
M-zz	=							k-ft
V-x	=							k
V-z	=							k

Title Block Line 1
 You can change this area
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Project Title: **Chop Suey Restaurant**
 Engineer: **FA**
 Project ID: **20211030.0**
 Project Descr: **TI**

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General Footing

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Lic. # : KW-06011204

Greenberg Farrow Architecture, Inc

DESCRIPTION: (N) 2'-6" SQ Footing - New Dining Room Opening

DESIGN SUMMARY

Design OK

	Min. Ratio	Item	Applied	Capacity	Governing Load Combination
PASS	0.6250	Soil Bearing	0.9375 ksf	1.50 ksf	+D+Lr+H about Z-Z axis
PASS	n/a	Overturing - X-X	0.0 k-ft	0.0 k-ft	No Overturing
PASS	n/a	Overturing - Z-Z	0.0 k-ft	0.0 k-ft	No Overturing
PASS	n/a	Sliding - X-X	0.0 k	0.0 k	No Sliding
PASS	n/a	Sliding - Z-Z	0.0 k	0.0 k	No Sliding
PASS	n/a	Uplift	0.0 k	0.0 k	No Uplift
PASS	0.02547	Z Flexure (+X)	0.8250 k-ft/ft	32.395 k-ft/ft	+1.20D+1.60Lr+L+1.60H
PASS	0.02547	Z Flexure (-X)	0.8250 k-ft/ft	32.395 k-ft/ft	+1.20D+1.60Lr+L+1.60H
PASS	0.02547	X Flexure (+Z)	0.8250 k-ft/ft	32.395 k-ft/ft	+1.20D+1.60Lr+L+1.60H
PASS	0.02547	X Flexure (-Z)	0.8250 k-ft/ft	32.395 k-ft/ft	+1.20D+1.60Lr+L+1.60H
PASS	n/a	1-way Shear (+X)	0.0 psi	82.158 psi	n/a
PASS	0.0	1-way Shear (-X)	0.0 psi	0.0 psi	n/a
PASS	n/a	1-way Shear (+Z)	0.0 psi	82.158 psi	n/a
PASS	n/a	1-way Shear (-Z)	0.0 psi	82.158 psi	n/a
PASS	n/a	2-way Punching	5.50 psi	82.158 psi	+1.20D+1.60Lr+L+1.60H

Detailed Results

Soil Bearing

Rotation Axis & Load Combination...	Gross Allowable	Xecc	Zecc (in)	Actual Soil Bearing Stress @ Location		Left, -X	Right, +X	Actual / Allow Ratio
				Bottom, -Z	Top, +Z			
X-X, +D+H	1.50	n/a	0.0	0.4575	0.4575	n/a	n/a	0.305
X-X, +D+L+H	1.50	n/a	0.0	0.4575	0.4575	n/a	n/a	0.305
X-X, +D+Lr+H	1.50	n/a	0.0	0.9375	0.9375	n/a	n/a	0.625
X-X, +D+S+H	1.50	n/a	0.0	0.4575	0.4575	n/a	n/a	0.305
X-X, +D+0.750Lr+0.750L+H	1.50	n/a	0.0	0.8175	0.8175	n/a	n/a	0.545
X-X, +D+0.750L+0.750S+H	1.50	n/a	0.0	0.4575	0.4575	n/a	n/a	0.305
X-X, +D+0.60W+H	1.50	n/a	0.0	0.4575	0.4575	n/a	n/a	0.305
X-X, +D+0.750Lr+0.450W+H	1.50	n/a	0.0	0.8175	0.8175	n/a	n/a	0.545
X-X, +D+0.750S+0.450W+H	1.50	n/a	0.0	0.4575	0.4575	n/a	n/a	0.305
X-X, +0.60D+0.60W+0.60H	1.50	n/a	0.0	0.2745	0.2745	n/a	n/a	0.183
X-X, +D+0.70E+0.60H	1.50	n/a	0.0	0.4575	0.4575	n/a	n/a	0.305
X-X, +D+0.750L+0.750S+0.5250E+H	1.50	n/a	0.0	0.4575	0.4575	n/a	n/a	0.305
X-X, +0.60D+0.70E+H	1.50	n/a	0.0	0.2745	0.2745	n/a	n/a	0.183
Z-Z, +D+H	1.50	0.0	n/a	n/a	n/a	0.4575	0.4575	0.305
Z-Z, +D+L+H	1.50	0.0	n/a	n/a	n/a	0.4575	0.4575	0.305
Z-Z, +D+Lr+H	1.50	0.0	n/a	n/a	n/a	0.9375	0.9375	0.625
Z-Z, +D+S+H	1.50	0.0	n/a	n/a	n/a	0.4575	0.4575	0.305
Z-Z, +D+0.750Lr+0.750L+H	1.50	0.0	n/a	n/a	n/a	0.8175	0.8175	0.545
Z-Z, +D+0.750L+0.750S+H	1.50	0.0	n/a	n/a	n/a	0.4575	0.4575	0.305
Z-Z, +D+0.60W+H	1.50	0.0	n/a	n/a	n/a	0.4575	0.4575	0.305
Z-Z, +D+0.750Lr+0.450W+H	1.50	0.0	n/a	n/a	n/a	0.8175	0.8175	0.545
Z-Z, +D+0.750S+0.450W+H	1.50	0.0	n/a	n/a	n/a	0.4575	0.4575	0.305
Z-Z, +0.60D+0.60W+0.60H	1.50	0.0	n/a	n/a	n/a	0.2745	0.2745	0.183
Z-Z, +D+0.70E+0.60H	1.50	0.0	n/a	n/a	n/a	0.4575	0.4575	0.305
Z-Z, +D+0.750L+0.750S+0.5250E+H	1.50	0.0	n/a	n/a	n/a	0.4575	0.4575	0.305
Z-Z, +0.60D+0.70E+H	1.50	0.0	n/a	n/a	n/a	0.2745	0.2745	0.183

Title Block Line 1
 You can change this area
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 Title Block Line 6

Project Title: **Chop Suey Restaurant**
 Engineer: **FA**
 Project ID: **20211030.0**
 Project Descr: **TI**

Printed: 30 JUN 2021, 7:15AM

General Footing

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Greenberg Farrow Architecture, Inc

DESCRIPTION: (E) 24" Continous Footing - New Post Loading

Code References

Calculations per ACI 318-14, IBC 2018, CBC 2019, ASCE 7-16
 Load Combinations Used : ASCE 7-16

General Information

Material Properties

f _c : Concrete 28 day strength	=	3.0 ksi
f _y : Rebar Yield	=	60.0 ksi
E _c : Concrete Elastic Modulus	=	3,122.0 ksi
Concrete Density	=	145.0 pcf
φ Values Flexure	=	0.90
Shear	=	0.750

Soil Design Values

Allowable Soil Bearing	=	1.50 ksf
Increase Bearing By Footing Weight	=	No
Soil Passive Resistance (for Sliding)	=	100.0 pcf
Soil/Concrete Friction Coeff.	=	0.30

Analysis Settings

Min Steel % Bending Reinf.	=	
Min Allow % Temp Reinf.	=	0.00180
Min. Overturning Safety Factor	=	1.0 : 1
Min. Sliding Safety Factor	=	1.0 : 1
Add Ftg Wt for Soil Pressure	:	Yes
Use ftg wt for stability, moments & shears	:	Yes
Add Pedestal Wt for Soil Pressure	:	No
Use Pedestal wt for stability, mom & shear	:	No

Increases based on footing Depth

Footing base depth below soil surface	=	1 ft
Allow press. increase per foot of depth when footing base is below	=	ksf ft

Increases based on footing plan dimension

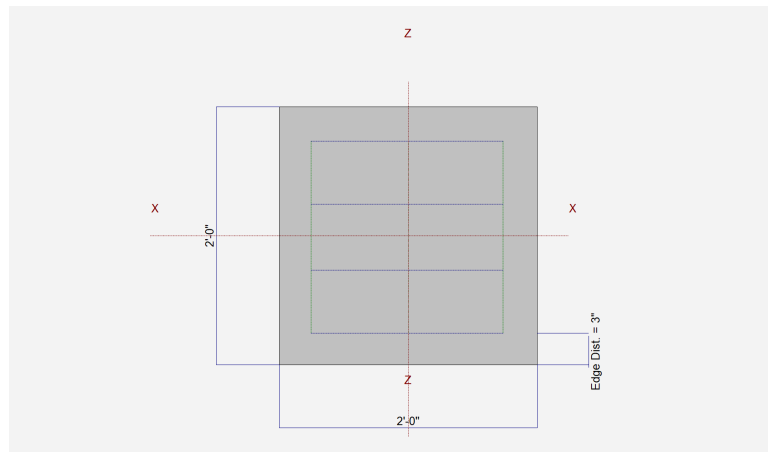
Allowable pressure increase per foot of depth when max. length or width is greater than	=	ksf ft
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Dimensions

Width parallel to X-X Axis	=	2.0 ft
Length parallel to Z-Z Axis	=	2.0 ft
Footing Thickness	=	12.0 in

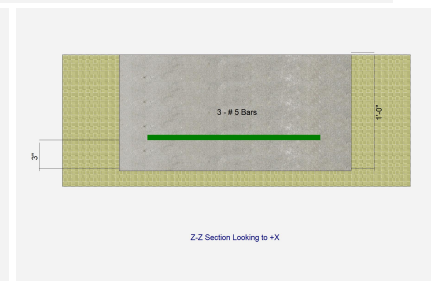
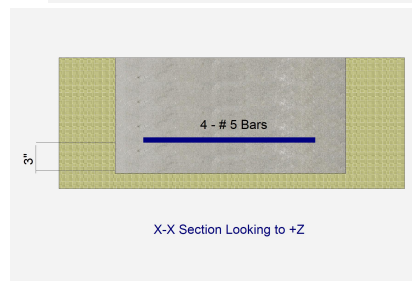
Pedestal dimensions...

px : parallel to X-X Axis	=	in
pz : parallel to Z-Z Axis	=	in
Height	=	in
Rebar Centerline to Edge of Concrete... at Bottom of footing	=	3.0 in



Reinforcing

Bars parallel to X-X Axis	=	
Number of Bars	=	4
Reinforcing Bar Size	=	# 5
Bars parallel to Z-Z Axis	=	
Number of Bars	=	3
Reinforcing Bar Size	=	# 5
Bandwidth Distribution Check (ACI 15.4.4.2)		
Direction Requiring Closer Separation		n/a
# Bars required within zone		n/a
# Bars required on each side of zone		n/a



Applied Loads

	D	L _r	L	S	W	E	H
P : Column Load	=	1.50	3.0				k
OB : Overburden	=						ksf
M-xx	=						k-ft
M-zz	=						k-ft
V-x	=						k
V-z	=						k

Title Block Line 1
 You can change this area
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Project Title: **Chop Suey Restaurant**
 Engineer: **FA**
 Project ID: **20211030.0**
 Project Descr: **TI**

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General Footing

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Lic. # : KW-06011204

Greenberg Farrow Architecture, Inc

DESCRIPTION: (E) 24" Continous Footing - New Post Loading

DESIGN SUMMARY

Design OK

Min. Ratio	Item	Applied	Capacity	Governing Load Combination	
PASS	0.8467	Soil Bearing	1.270 ksf	1.50 ksf	+D+Lr+H about Z-Z axis
PASS	n/a	Overturing - X-X	0.0 k-ft	0.0 k-ft	No Overturing
PASS	n/a	Overturing - Z-Z	0.0 k-ft	0.0 k-ft	No Overturing
PASS	n/a	Sliding - X-X	0.0 k	0.0 k	No Sliding
PASS	n/a	Sliding - Z-Z	0.0 k	0.0 k	No Sliding
PASS	n/a	Uplift	0.0 k	0.0 k	No Uplift
PASS	0.03524	Z Flexure (+X)	0.8250 k-ft/ft	23.414 k-ft/ft	+1.20D+1.60Lr+L+1.60H
PASS	0.03524	Z Flexure (-X)	0.8250 k-ft/ft	23.414 k-ft/ft	+1.20D+1.60Lr+L+1.60H
PASS	0.04615	X Flexure (+Z)	0.8250 k-ft/ft	17.879 k-ft/ft	+1.20D+1.60Lr+L+1.60H
PASS	0.04615	X Flexure (-Z)	0.8250 k-ft/ft	17.879 k-ft/ft	+1.20D+1.60Lr+L+1.60H
PASS	0.04463	1-way Shear (+X)	3.667 psi	82.158 psi	+1.20D+1.60Lr+L+1.60H
PASS	0.04463	1-way Shear (-X)	3.667 psi	82.158 psi	+1.20D+1.60Lr+L+1.60H
PASS	0.04463	1-way Shear (+Z)	3.667 psi	82.158 psi	+1.20D+1.60Lr+L+1.60H
PASS	0.04463	1-way Shear (-Z)	3.667 psi	82.158 psi	+1.20D+1.60Lr+L+1.60H
PASS	0.1061	2-way Punching	17.429 psi	164.317 psi	+1.20D+1.60Lr+L+1.60H

Detailed Results

Soil Bearing

Rotation Axis & Load Combination...	Gross Allowable	Xecc	Zecc (in)	Actual Soil Bearing Stress @ Location				Actual / Allow Ratio
				Bottom, -Z	Top, +Z	Left, -X	Right, +X	
X-X, +D+H	1.50	n/a	0.0	0.520	0.520	n/a	n/a	0.347
X-X, +D+L+H	1.50	n/a	0.0	0.520	0.520	n/a	n/a	0.347
X-X, +D+Lr+H	1.50	n/a	0.0	1.270	1.270	n/a	n/a	0.847
X-X, +D+S+H	1.50	n/a	0.0	0.520	0.520	n/a	n/a	0.347
X-X, +D+0.750Lr+0.750L+H	1.50	n/a	0.0	1.083	1.083	n/a	n/a	0.722
X-X, +D+0.750L+0.750S+H	1.50	n/a	0.0	0.520	0.520	n/a	n/a	0.347
X-X, +D+0.60W+H	1.50	n/a	0.0	0.520	0.520	n/a	n/a	0.347
X-X, +D+0.750Lr+0.450W+H	1.50	n/a	0.0	1.083	1.083	n/a	n/a	0.722
X-X, +D+0.750S+0.450W+H	1.50	n/a	0.0	0.520	0.520	n/a	n/a	0.347
X-X, +0.60D+0.60W+0.60H	1.50	n/a	0.0	0.3120	0.3120	n/a	n/a	0.208
X-X, +D+0.70E+0.60H	1.50	n/a	0.0	0.520	0.520	n/a	n/a	0.347
X-X, +D+0.750L+0.750S+0.5250E+H	1.50	n/a	0.0	0.520	0.520	n/a	n/a	0.347
X-X, +0.60D+0.70E+H	1.50	n/a	0.0	0.3120	0.3120	n/a	n/a	0.208
Z-Z, +D+H	1.50	0.0	n/a	n/a	n/a	0.520	0.520	0.347
Z-Z, +D+L+H	1.50	0.0	n/a	n/a	n/a	0.520	0.520	0.347
Z-Z, +D+Lr+H	1.50	0.0	n/a	n/a	n/a	1.270	1.270	0.847
Z-Z, +D+S+H	1.50	0.0	n/a	n/a	n/a	0.520	0.520	0.347
Z-Z, +D+0.750Lr+0.750L+H	1.50	0.0	n/a	n/a	n/a	1.083	1.083	0.722
Z-Z, +D+0.750L+0.750S+H	1.50	0.0	n/a	n/a	n/a	0.520	0.520	0.347
Z-Z, +D+0.60W+H	1.50	0.0	n/a	n/a	n/a	0.520	0.520	0.347
Z-Z, +D+0.750Lr+0.450W+H	1.50	0.0	n/a	n/a	n/a	1.083	1.083	0.722
Z-Z, +D+0.750S+0.450W+H	1.50	0.0	n/a	n/a	n/a	0.520	0.520	0.347
Z-Z, +0.60D+0.60W+0.60H	1.50	0.0	n/a	n/a	n/a	0.3120	0.3120	0.208
Z-Z, +D+0.70E+0.60H	1.50	0.0	n/a	n/a	n/a	0.520	0.520	0.347
Z-Z, +D+0.750L+0.750S+0.5250E+H	1.50	0.0	n/a	n/a	n/a	0.520	0.520	0.347
Z-Z, +0.60D+0.70E+H	1.50	0.0	n/a	n/a	n/a	0.3120	0.3120	0.208

Title Block Line 1
 You can change this area
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 Title Block" selection.
 Title Block Line 6

Project Title: **Chop Suey Restaurant**
 Engineer: **FA**
 Project ID: **20211030.0**
 Project Descr: **TI**

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Wood Beam

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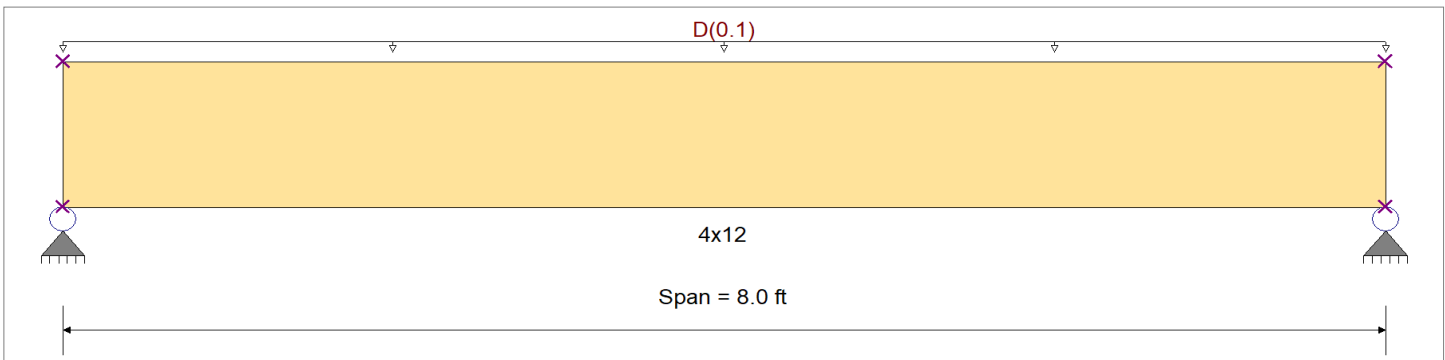
DESCRIPTION: (N) 4x12 Beam - Private Dining Room

CODE REFERENCES

Calculations per NDS 2018, IBC 2018, CBC 2019, ASCE 7-16
 Load Combination Set : ASCE 7-16

Material Properties

Analysis Method : Allowable Stress Design	Fb +	900 psi	E : Modulus of Elasticity	
Load Combination ASCE 7-16	Fb -	900 psi	Ebend- xx	1600 ksi
	Fc - Prll	1350 psi	Eminbend - xx	580 ksi
Wood Species : Douglas Fir-Larch	Fc - Perp	625 psi		
Wood Grade : No.2	Fv	180 psi		
	Ft	575 psi	Density	31.21 pcf
Beam Bracing : Completely Unbraced				



Applied Loads

Service loads entered. Load Factors will be applied for calculations

Beam self weight calculated and added to loads
 Uniform Load : D = 0.010 ksf, Tributary Width = 10.0 ft, (Uniform Wall Loading)

DESIGN SUMMARY

Design OK

Maximum Bending Stress Ratio	=	0.161 : 1	Maximum Shear Stress Ratio	=	0.078 : 1
Section used for this span		4x12	Section used for this span		4x12
fb : Actual	=	141.13 psi	fv : Actual	=	12.68 psi
FB : Allowable	=	878.57 psi	Fv : Allowable	=	162.00 psi
Load Combination		+D+H	Load Combination		+D+H
Location of maximum on span	=	4.000ft	Location of maximum on span	=	7.066 ft
Span # where maximum occurs	=	Span # 1	Span # where maximum occurs	=	Span # 1
Maximum Deflection					
Max Downward Transient Deflection		0.000 in Ratio =	0 < 360		
Max Upward Transient Deflection		0.000 in Ratio =	0 < 360		
Max Downward Total Deflection		0.015 in Ratio =	6340 >= 180		
Max Upward Total Deflection		0.000 in Ratio =	0 < 180		

Vertical Reactions

Support notation : Far left is #1

Values in KIPS

Load Combination	Support 1	Support 2
Overall MAXimum	0.434	0.434
Overall MINimum	0.434	0.434
+D+H	0.434	0.434
+D+L+H	0.434	0.434
+D+Lr+H	0.434	0.434
+D+S+H	0.434	0.434
+D+0.750Lr+0.750L+H	0.434	0.434
+D+0.750L+0.750S+H	0.434	0.434
+D+0.60W+H	0.434	0.434
+D+0.750Lr+0.450W+H	0.434	0.434
+D+0.750S+0.450W+H	0.434	0.434
+0.60D+0.60W+0.60H	0.260	0.260

Title Block Line 1
 You can change this area
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 Title Block" selection.

Project Title: **Chop Suey Restaurant**
 Engineer: **FA**
 Project ID: **20211030.0**
 Project Descr: **TI**

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Wood Beam

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Greenberg Farrow Architecture, Inc

DESCRIPTION: (N) 4x12 Beam - Private Dining Room

Vertical Reactions

Support notation : Far left is #1

Values in KIPS

Load Combination	Support 1	Support 2
+D+0.70E+0.60H	0.434	0.434
+D+0.750L+0.750S+0.5250E+H	0.434	0.434
+0.60D+0.70E+H	0.260	0.260
D Only	0.434	0.434
Lr Only		
L Only		
S Only		
W Only		
E Only		
H Only		

Title Block Line 1
 You can change this area
 using the "Settings" menu item
 and then using the "Printing &
 Title Block" selection.
 Title Block Line 6

Project Title: **Chop Suey Restaurant**
 Engineer: **FA**
 Project ID: **20211030.0**
 Project Descr: **TI**

Printed: 30 JUN 2021, 7:19AM

Wood Column

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Greenberg Farrow Architecture, Inc

DESCRIPTION: (N) 4x4 Post - Private Dining Room

Code References

Calculations per NDS 2018, IBC 2018, CBC 2019, ASCE 7-16

Load Combinations Used : ASCE 7-16

General Information

Analysis Method :	Allowable Stress Design			Wood Section Name	4x4
End Fixities	Top & Bottom Pinned			Wood Grading/Manuf.	Graded Lumber
Overall Column Height	10.0 ft			Wood Member Type	Sawn
<i>(Used for non-slender calculations)</i>					
Wood Species	Douglas Fir-Larch			Exact Width	3.50 in
Wood Grade	No.2			Exact Depth	3.50 in
Fb +	900 psi	Fv	180 psi	Area	12.250 in^2
Fb -	900 psi	Ft	575 psi	Ix	12.505 in^4
Fc - Prll	1350 psi	Density	31.21 pcf	Iy	12.505 in^4
Fc - Perp	625 psi				
E : Modulus of Elasticity . . .	x-x Bending	y-y Bending	Axial		Allow Stress Modification Factors
	Basic	1600	1600	1600 ksi	Cf or Cv for Bending
	Minimum	580	580		Cf or Cv for Compression
					Cf or Cv for Tension
					Cm : Wet Use Factor
					Ct : Temperature Factor
					Cfu : Flat Use Factor
					Kf : Built-up columns
					Use Cr : Repetitive ?
					1.50
					1.150
					1.50
					1.0
					1.0
					1.0
					1.0
					1.0
					No
					<i>NDS 15.3.2</i>

Brace condition for deflection (buckling) along columns :
 X-X (width) axis : **Fully braced against buckling ABOUT Y-Y Axis**
 Y-Y (depth) axis : **Fully braced against buckling ABOUT X-X Axis**

Applied Loads

Service loads entered. Load Factors will be applied for calculations

Column self weight included : 26.550 lbs * Dead Load Factor

AXIAL LOADS . . .

Uniform Loading: Axial Load at 10.0 ft, D = 2.0, Lr = 2.0 k

DESIGN SUMMARY

Bending & Shear Check Results

PASS Max. Axial+Bending Stress Ratio = **0.1694 : 1**
 Load Combination **+D+Lr+H**
 Governing NDS Formula **Comp Only, fc/Fc'**
 Location of max. above base **0.0 ft**
 At maximum location values are . . .
 Applied Axial **4.027 k**
 Applied Mx **0.0 k-ft**
 Applied My **0.0 k-ft**
 Fc : Allowable **1,940.63 psi**

Maximum SERVICE Lateral Load Reactions . .
 Top along Y-Y **0.0 k** Bottom along Y-Y **0.0 k**
 Top along X-X **0.0 k** Bottom along X-X **0.0 k**
Maximum SERVICE Load Lateral Deflections . . .
 Along Y-Y **0.0 in** at **0.0 ft** above base
 for load combination : **n/a**
 Along X-X **0.0 in** at **0.0 ft** above base
 for load combination : **n/a**

PASS Maximum Shear Stress Ratio = **0.0 : 1**
 Load Combination **+0.60D+0.70E+H**
 Location of max. above base **10.0 ft**
 Applied Design Shear **0.0 psi**
 Allowable Shear **288.0 psi**

Other Factors used to calculate allowable stresses . . .
Bending **Compression** **Tension**

Maximum Reactions

Note: Only non-zero reactions are listed.

Load Combination	X-X Axis Reaction		k	Y-Y Axis Reaction		Axial Reaction	My - End Moments		Mx - End Moments	
	@ Base	@ Top		@ Base	@ Top		@ Base	@ Top	@ Base	@ Top
+D+H						2.027				
+D+L+H						2.027				
+D+Lr+H						4.027				
+D+S+H						2.027				
+D+0.750Lr+0.750L+H						3.527				
+D+0.750L+0.750S+H						2.027				
+D+0.60W+H						2.027				
+D+0.750Lr+0.450W+H						3.527				
+D+0.750S+0.450W+H						2.027				
+0.60D+0.60W+0.60H						1.216				
+D+0.70E+0.60H						2.027				

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 Project Descr: **TI**

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Wood Column

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Greenberg Farrow Architecture, Inc

DESCRIPTION: (N) 4x4 Post - Private Dining Room

Maximum Reactions

Note: Only non-zero reactions are listed.

Load Combination	X-X Axis Reaction		k	Y-Y Axis Reaction		Axial Reaction	My - End Moments		k-ft	Mx - End Moments	
	@ Base	@ Top		@ Base	@ Top		@ Base	@ Top		@ Base	@ Top
+D+0.750L+0.750S+0.5250E+H						2.027					
+0.60D+0.70E+H						1.216					
D Only						2.027					
Lr Only						2.000					
L Only											
S Only											
W Only											
E Only											
H Only											

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General Footing

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Greenberg Farrow Architecture, Inc

DESCRIPTION: (N) 2'-0" SQ Footing - Private Dining Room Opening

Code References

Calculations per ACI 318-14, IBC 2018, CBC 2019, ASCE 7-16
 Load Combinations Used : ASCE 7-16

General Information

Material Properties

f _c : Concrete 28 day strength	=	3.0 ksi
f _y : Rebar Yield	=	60.0 ksi
E _c : Concrete Elastic Modulus	=	3,122.0 ksi
Concrete Density	=	145.0 pcf
φ Values Flexure	=	0.90
Shear	=	0.750

Soil Design Values

Allowable Soil Bearing	=	1.50 ksf
Increase Bearing By Footing Weight	=	No
Soil Passive Resistance (for Sliding)	=	100.0 pcf
Soil/Concrete Friction Coeff.	=	0.30

Analysis Settings

Min Steel % Bending Reinf.	=	
Min Allow % Temp Reinf.	=	0.00180
Min. Overturning Safety Factor	=	1.0 : 1
Min. Sliding Safety Factor	=	1.0 : 1
Add Ftg Wt for Soil Pressure	:	Yes
Use ftg wt for stability, moments & shears	:	Yes
Add Pedestal Wt for Soil Pressure	:	No
Use Pedestal wt for stability, mom & shear	:	No

Increases based on footing Depth

Footing base depth below soil surface	=	1.0 ft
Allow press. increase per foot of depth when footing base is below	=	ksf ft

Increases based on footing plan dimension

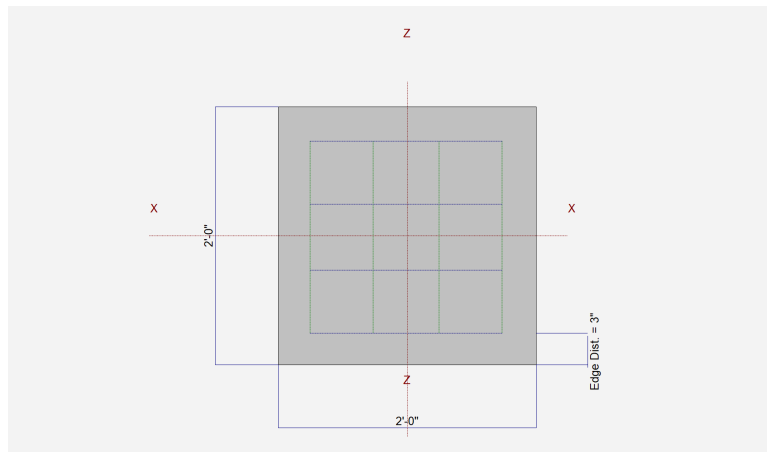
Allowable pressure increase per foot of depth when max. length or width is greater than	=	ksf ft
---	---	-----------

Dimensions

Width parallel to X-X Axis	=	2.0 ft
Length parallel to Z-Z Axis	=	2.0 ft
Footing Thickness	=	12.0 in

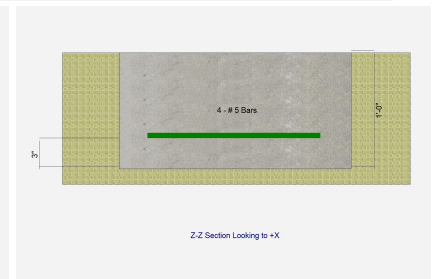
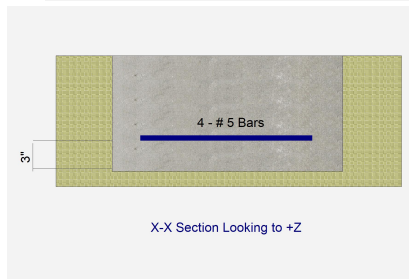
Pedestal dimensions...

px : parallel to X-X Axis	=	in
pz : parallel to Z-Z Axis	=	in
Height	=	in
Rebar Centerline to Edge of Concrete... at Bottom of footing	=	3.0 in



Reinforcing

Bars parallel to X-X Axis	=	
Number of Bars	=	4.0
Reinforcing Bar Size	=	# 5
Bars parallel to Z-Z Axis	=	
Number of Bars	=	4.0
Reinforcing Bar Size	=	# 5
Bandwidth Distribution Check (ACI 15.4.4.2)		
Direction Requiring Closer Separation		n/a
# Bars required within zone		n/a
# Bars required on each side of zone		n/a



Applied Loads

	D	L _r	L	S	W	E	H	
P : Column Load	=	1.0	1.0					k
OB : Overburden	=							ksf
M-xx	=							k-ft
M-zz	=							k-ft
V-x	=							k
V-z	=							k

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General Footing

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Greenberg Farrow Architecture, Inc

DESCRIPTION: (N) 2'-0" SQ Footing - Private Dining Room Opening

DESIGN SUMMARY

Design OK

	Min. Ratio	Item	Applied	Capacity	Governing Load Combination
PASS	0.430	Soil Bearing	0.6450 ksf	1.50 ksf	+D+Lr+H about Z-Z axis
PASS	n/a	Overturing - X-X	0.0 k-ft	0.0 k-ft	No Overturing
PASS	n/a	Overturing - Z-Z	0.0 k-ft	0.0 k-ft	No Overturing
PASS	n/a	Sliding - X-X	0.0 k	0.0 k	No Sliding
PASS	n/a	Sliding - Z-Z	0.0 k	0.0 k	No Sliding
PASS	n/a	Uplift	0.0 k	0.0 k	No Uplift
PASS	0.01495	Z Flexure (+X)	0.350 k-ft/ft	23.414 k-ft/ft	+1.20D+1.60Lr+L+1.60H
PASS	0.01495	Z Flexure (-X)	0.350 k-ft/ft	23.414 k-ft/ft	+1.20D+1.60Lr+L+1.60H
PASS	0.01495	X Flexure (+Z)	0.350 k-ft/ft	23.414 k-ft/ft	+1.20D+1.60Lr+L+1.60H
PASS	0.01495	X Flexure (-Z)	0.350 k-ft/ft	23.414 k-ft/ft	+1.20D+1.60Lr+L+1.60H
PASS	0.01893	1-way Shear (+X)	1.556 psi	82.158 psi	+1.20D+1.60Lr+L+1.60H
PASS	0.01893	1-way Shear (-X)	1.556 psi	82.158 psi	+1.20D+1.60Lr+L+1.60H
PASS	0.01893	1-way Shear (+Z)	1.556 psi	82.158 psi	+1.20D+1.60Lr+L+1.60H
PASS	0.01893	1-way Shear (-Z)	1.556 psi	82.158 psi	+1.20D+1.60Lr+L+1.60H
PASS	0.0450	2-way Punching	7.394 psi	164.317 psi	+1.20D+1.60Lr+L+1.60H

Detailed Results

Soil Bearing

Rotation Axis & Load Combination...	Gross Allowable	Xecc	Zecc (in)	Actual Soil Bearing Stress @ Location		Stress @ Location		Actual / Allow Ratio
				Bottom, -Z	Top, +Z	Left, -X	Right, +X	
X-X, +D+H	1.50	n/a	0.0	0.3950	0.3950	n/a	n/a	0.263
X-X, +D+L+H	1.50	n/a	0.0	0.3950	0.3950	n/a	n/a	0.263
X-X, +D+Lr+H	1.50	n/a	0.0	0.6450	0.6450	n/a	n/a	0.430
X-X, +D+S+H	1.50	n/a	0.0	0.3950	0.3950	n/a	n/a	0.263
X-X, +D+0.750Lr+0.750L+H	1.50	n/a	0.0	0.5825	0.5825	n/a	n/a	0.388
X-X, +D+0.750L+0.750S+H	1.50	n/a	0.0	0.3950	0.3950	n/a	n/a	0.263
X-X, +D+0.60W+H	1.50	n/a	0.0	0.3950	0.3950	n/a	n/a	0.263
X-X, +D+0.750Lr+0.450W+H	1.50	n/a	0.0	0.5825	0.5825	n/a	n/a	0.388
X-X, +D+0.750S+0.450W+H	1.50	n/a	0.0	0.3950	0.3950	n/a	n/a	0.263
X-X, +0.60D+0.60W+0.60H	1.50	n/a	0.0	0.2370	0.2370	n/a	n/a	0.158
X-X, +D+0.70E+0.60H	1.50	n/a	0.0	0.3950	0.3950	n/a	n/a	0.263
X-X, +D+0.750L+0.750S+0.5250E+H	1.50	n/a	0.0	0.3950	0.3950	n/a	n/a	0.263
X-X, +0.60D+0.70E+H	1.50	n/a	0.0	0.2370	0.2370	n/a	n/a	0.158
Z-Z, +D+H	1.50	0.0	n/a	n/a	n/a	0.3950	0.3950	0.263
Z-Z, +D+L+H	1.50	0.0	n/a	n/a	n/a	0.3950	0.3950	0.263
Z-Z, +D+Lr+H	1.50	0.0	n/a	n/a	n/a	0.6450	0.6450	0.430
Z-Z, +D+S+H	1.50	0.0	n/a	n/a	n/a	0.3950	0.3950	0.263
Z-Z, +D+0.750Lr+0.750L+H	1.50	0.0	n/a	n/a	n/a	0.5825	0.5825	0.388
Z-Z, +D+0.750L+0.750S+H	1.50	0.0	n/a	n/a	n/a	0.3950	0.3950	0.263
Z-Z, +D+0.60W+H	1.50	0.0	n/a	n/a	n/a	0.3950	0.3950	0.263
Z-Z, +D+0.750Lr+0.450W+H	1.50	0.0	n/a	n/a	n/a	0.5825	0.5825	0.388
Z-Z, +D+0.750S+0.450W+H	1.50	0.0	n/a	n/a	n/a	0.3950	0.3950	0.263
Z-Z, +0.60D+0.60W+0.60H	1.50	0.0	n/a	n/a	n/a	0.2370	0.2370	0.158
Z-Z, +D+0.70E+0.60H	1.50	0.0	n/a	n/a	n/a	0.3950	0.3950	0.263
Z-Z, +D+0.750L+0.750S+0.5250E+H	1.50	0.0	n/a	n/a	n/a	0.3950	0.3950	0.263
Z-Z, +0.60D+0.70E+H	1.50	0.0	n/a	n/a	n/a	0.2370	0.2370	0.158

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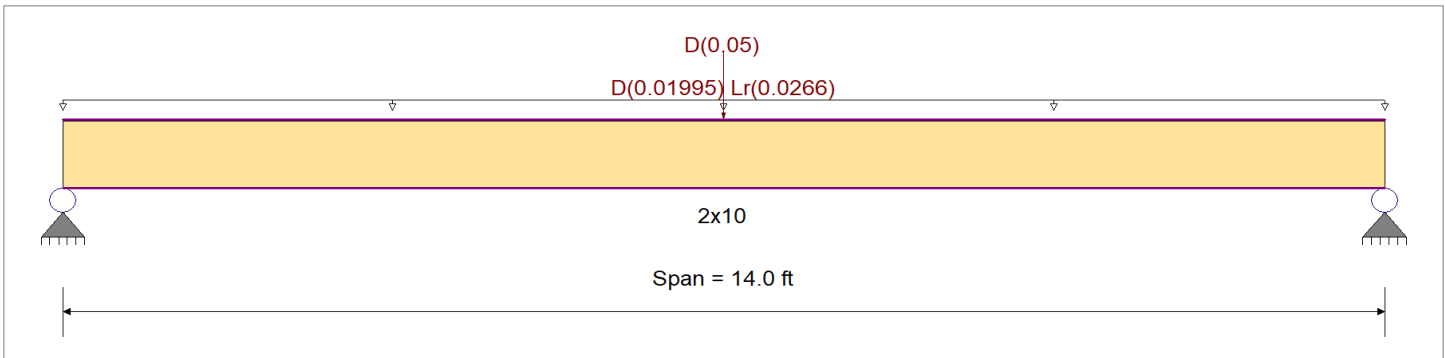
DESCRIPTION: (E) 2x10 Roof Joists w/ Exhaust Fan Loading (100# MAX) - 50LB EA Joist

CODE REFERENCES

Calculations per NDS 2018, IBC 2018, CBC 2019, ASCE 7-16
 Load Combination Set : ASCE 7-16

Material Properties

Analysis Method : Allowable Stress Design	Fb +	900 psi	E : Modulus of Elasticity	
Load Combination ASCE 7-16	Fb -	900 psi	Ebend- xx	1600ksi
	Fc - Prll	1350 psi	Eminbend - xx	580ksi
Wood Species : Douglas Fir-Larch	Fc - Perp	625 psi		
Wood Grade : No.2	Fv	180 psi		
	Ft	575 psi	Density	31.21 pcf
Beam Bracing : Beam is Fully Braced against lateral-torsional buckling				



Applied Loads

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

Beam self weight calculated and added to loads

Uniform Load : D = 0.0150, Lr = 0.020 ksf, Tributary Width = 1.330 ft, (Uniform Roof Loading)

Point Load : D = 0.050 k @ 7.0 ft, ((N) Exhaust Fan Loading (50#))

DESIGN SUMMARY

Design OK

Maximum Bending Stress Ratio	=	0.630 : 1	Maximum Shear Stress Ratio	=	0.160 : 1
Section used for this span		2x10	Section used for this span		2x10
fb : Actual	=	779.30psi	fv : Actual	=	36.10 psi
FB : Allowable	=	1,237.50psi	Fv : Allowable	=	225.00 psi
Load Combination		+D+Lr+H	Load Combination		+D+Lr+H
Location of maximum on span	=	7.000ft	Location of maximum on span	=	13.234 ft
Span # where maximum occurs	=	Span # 1	Span # where maximum occurs	=	Span # 1
Maximum Deflection					
Max Downward Transient Deflection		0.146 in	Ratio =		1149 >=360
Max Upward Transient Deflection		0.000 in	Ratio =		0 <360
Max Downward Total Deflection		0.304 in	Ratio =		553 >=180
Max Upward Total Deflection		0.000 in	Ratio =		0 <180

Vertical Reactions

Support notation : Far left is #1

Values in KIPS

Load Combination	Support 1	Support 2
Overall MAXimum	0.372	0.372
Overall MINimum	0.186	0.186
+D+H	0.186	0.186
+D+L+H	0.186	0.186
+D+Lr+H	0.372	0.372
+D+S+H	0.186	0.186
+D+0.750Lr+0.750L+H	0.325	0.325
+D+0.750L+0.750S+H	0.186	0.186
+D+0.60W+H	0.186	0.186
+D+0.750Lr+0.450W+H	0.325	0.325
+D+0.750S+0.450W+H	0.186	0.186

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DESCRIPTION: (E) 2x10 Roof Joists w/ Exhaust Fan Loading (100# MAX) - 50LB EA Joist

Load Combination	Support notation : Far left is #1		Values in KIPS
	Support 1	Support 2	
+0.60D+0.60W+0.60H	0.111	0.111	
+D+0.70E+0.60H	0.186	0.186	
+D+0.750L+0.750S+0.5250E+H	0.186	0.186	
+0.60D+0.70E+H	0.111	0.111	
D Only	0.186	0.186	
Lr Only	0.186	0.186	
L Only			
S Only			
W Only			
E Only			
H Only			

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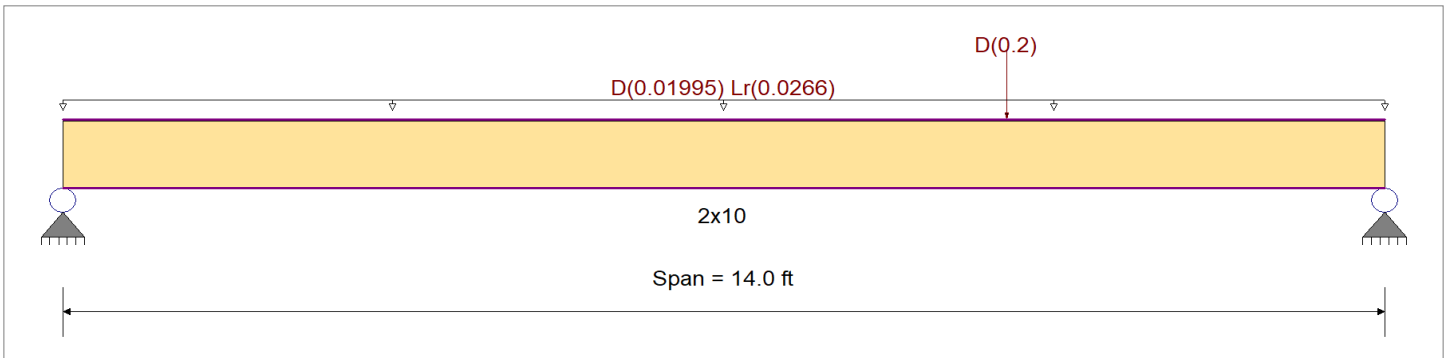
DESCRIPTION: (E) 2x10 Roof Joists w/ MAU Hood Loading (400# MAX) - 200LB EA Joist

CODE REFERENCES

Calculations per NDS 2018, IBC 2018, CBC 2019, ASCE 7-16
 Load Combination Set : ASCE 7-16

Material Properties

Analysis Method : Allowable Stress Design	Fb +	900.0 psi	E : Modulus of Elasticity	
Load Combination ASCE 7-16	Fb -	900.0 psi	Ebend- xx	1,600.0 ksi
	Fc - Prll	1,350.0 psi	Eminbend - xx	580.0 ksi
Wood Species : Douglas Fir-Larch	Fc - Perp	625.0 psi		
Wood Grade : No.2	Fv	180.0 psi		
	Ft	575.0 psi	Density	31.210pcf
Beam Bracing : Beam is Fully Braced against lateral-torsional buckling				



Applied Loads

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

Beam self weight calculated and added to loads

Uniform Load : D = 0.0150, Lr = 0.020 ksf, Tributary Width = 1.330 ft, (Uniform Roof Loading)

Point Load : D = 0.20 k @ 10.0 ft, ((N) MAU Hood Loading (200#))

DESIGN SUMMARY

Design OK

Maximum Bending Stress Ratio	=	0.747 : 1	Maximum Shear Stress Ratio	=	0.217 : 1
Section used for this span		2x10	Section used for this span		2x10
fb : Actual	=	924.00psi	fv : Actual	=	48.84 psi
FB : Allowable	=	1,237.50psi	Fv : Allowable	=	225.00 psi
Load Combination		+D+Lr+H	Load Combination		+D+Lr+H
Location of maximum on span	=	8.175ft	Location of maximum on span	=	13.234 ft
Span # where maximum occurs	=	Span # 1	Span # where maximum occurs	=	Span # 1
Maximum Deflection					
Max Downward Transient Deflection		0.146 in	Ratio =		1149 >=360
Max Upward Transient Deflection		0.000 in	Ratio =		0 <360
Max Downward Total Deflection		0.368 in	Ratio =		456 >=180
Max Upward Total Deflection		0.000 in	Ratio =		0 <180

Vertical Reactions

Support notation : Far left is #1

Values in KIPS

Load Combination	Support 1	Support 2
Overall MAXimum	0.404	0.490
Overall MINimum	0.186	0.186
+D+H	0.218	0.304
+D+L+H	0.218	0.304
+D+Lr+H	0.404	0.490
+D+S+H	0.218	0.304
+D+0.750Lr+0.750L+H	0.357	0.443
+D+0.750L+0.750S+H	0.218	0.304
+D+0.60W+H	0.218	0.304
+D+0.750Lr+0.450W+H	0.357	0.443
+D+0.750S+0.450W+H	0.218	0.304

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DESCRIPTION: (E) 2x10 Roof Joists w/ MAU Hood Loading (400# MAX) - 200LB EA Joist

Vertical Reactions

Support notation : Far left is #1

Values in KIPS

Load Combination	Support 1	Support 2
+0.60D+0.60W+0.60H	0.131	0.182
+D+0.70E+0.60H	0.218	0.304
+D+0.750L+0.750S+0.5250E+H	0.218	0.304
+0.60D+0.70E+H	0.131	0.182
D Only	0.218	0.304
Lr Only	0.186	0.186
L Only		
S Only		
W Only		
E Only		
H Only		

Title Block Line 1
 You can change this area
 using the "Settings" menu item
 and then using the "Printing &
 Title Block" selection.
 Title Block Line 6

Project Title: **Chop Suey Restaurant**
 Engineer: **FA**
 Project ID: **20211030.0**
 Project Descr: **TI**

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Wood Beam

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Greenberg Farrow Architecture, Inc.

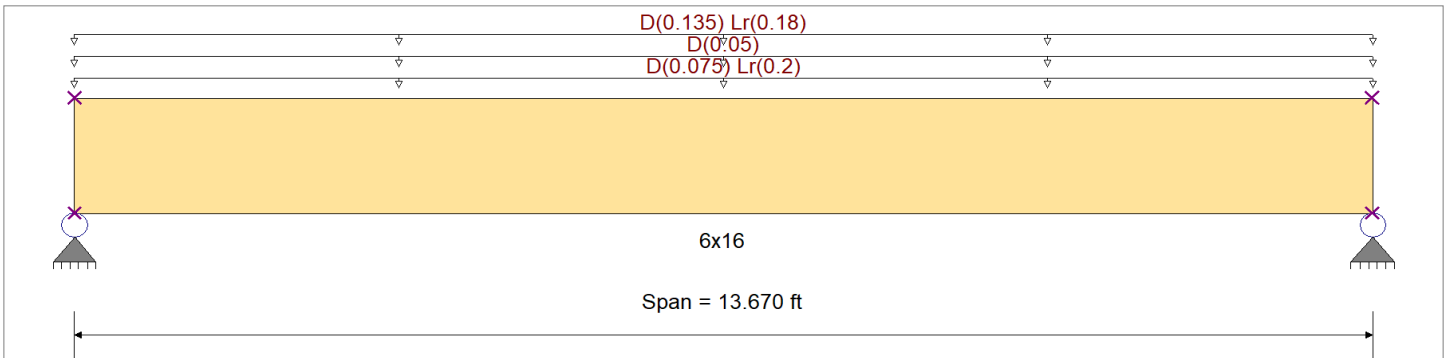
DESCRIPTION: (N) 6x12 (DF#1 or Better) Beam - Restroom Overhead

CODE REFERENCES

Calculations per NDS 2018, IBC 2018, CBC 2019, ASCE 7-16
 Load Combination Set : ASCE 7-16

Material Properties

Analysis Method : Allowable Stress Design	Fb +	1000 psi	E : Modulus of Elasticity	
Load Combination ASCE 7-16	Fb -	1000 psi	Ebend- xx	1700ksi
	Fc - Prll	1500 psi	Eminbend - xx	620ksi
Wood Species : Douglas Fir-Larch	Fc - Perp	625 psi		
Wood Grade : No.1	Fv	180 psi		
	Ft	675 psi	Density	31.21 pcf
Beam Bracing : Completely Unbraced				



Applied Loads

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

- Uniform Load : D = 0.0150, Lr = 0.040 ksf, Tributary Width = 5.0 ft, (Mezzanine Storage Loading)
- Uniform Load : D = 0.010 ksf, Tributary Width = 5.0 ft, (Wall Loading)
- Uniform Load : D = 0.0150, Lr = 0.020 ksf, Tributary Width = 9.0 ft, (Back of House Roff Loading)

DESIGN SUMMARY

Design OK

Maximum Bending Stress Ratio	=	0.663	1	Maximum Shear Stress Ratio	=	0.280	: 1
Section used for this span		6x16		Section used for this span		6x16	
fb : Actual	=	814.58psi		fv : Actual	=	62.92 psi	
FB : Allowable	=	1,227.82psi		Fv : Allowable	=	225.00 psi	
Load Combination		+D+Lr+H		Load Combination		+D+Lr+H	
Location of maximum on span	=	6.835ft		Location of maximum on span	=	0.000ft	
Span # where maximum occurs	=	Span # 1		Span # where maximum occurs	=	Span # 1	
Maximum Deflection							
Max Downward Transient Deflection		0.104 in	Ratio = 1584			>=360	
Max Upward Transient Deflection		0.000 in	Ratio = 0			<360	
Max Downward Total Deflection		0.174 in	Ratio = 941			>=180	
Max Upward Total Deflection		0.000 in	Ratio = 0			<180	

Vertical Reactions

Support notation : Far left is #1

Values in KIPS

Load Combination	Support 1	Support 2
Overall MAXimum	4.374	4.374
Overall MINimum	2.597	2.597
+D+H	1.777	1.777
+D+L+H	1.777	1.777
+D+Lr+H	4.374	4.374
+D+S+H	1.777	1.777
+D+0.750Lr+0.750L+H	3.725	3.725
+D+0.750L+0.750S+H	1.777	1.777
+D+0.60W+H	1.777	1.777
+D+0.750Lr+0.450W+H	3.725	3.725
+D+0.750S+0.450W+H	1.777	1.777

Title Block Line 1
 You can change this area
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Project Title: **Chop Suey Restaurant**
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Printed: 13 AUG 2021, 1:42PM

Wood Beam

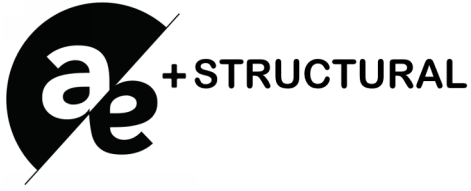
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Greenberg Farrow Architecture, Inc.

DESCRIPTION: (N) 6x12 (DF#1 or Better) Beam - Restroom Overhead

Load Combination	Support notation : Far left is #1		Values in KIPS
	Support 1	Support 2	
+0.60D+0.60W+0.60H	1.066	1.066	
+D+0.70E+0.60H	1.777	1.777	
+D+0.750L+0.750S+0.5250E+H	1.777	1.777	
+0.60D+0.70E+H	1.066	1.066	
D Only	1.777	1.777	
Lr Only	2.597	2.597	
L Only			
S Only			
W Only			
E Only			
H Only			



SHEET NO. _____

PROJECT NO. _____

DATE _____

PROJECT NAME RL CHOP SUEY (SAN DIEGO, CA)

COMPUTED BY _____

SUBJECT Wind on Mechanical Equipment

CHECKED BY _____

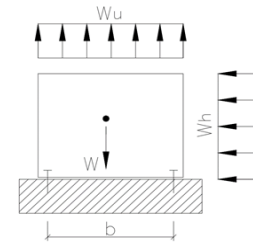
ASCE 7-16 WIND LOADING ON MECHANICAL EQUIPMENT

Wind Design Criteria

$F_v = q_h GC_r A_r$ (Eq. 29.4-3)

$q_h = 0.00256 K_h K_{zt} K_d K_e V^2$ (Equation 26.10-1)			
$K_h = 0.90$	(Table 26.10-1)	$K_d = 0.85$	(Table 26.6-1)
$K_{zt} = 1.00$	(Section 26.8.2)	$K_e = 1.00$	(Table 26.9-1)
		$V = 96$	mph
$q_z = 18.05$ psf			

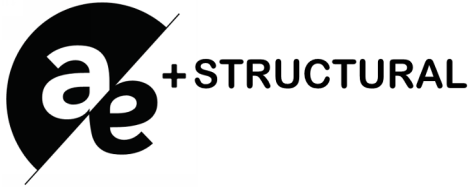
Uplift on Mechanical Unit	
$F_v = q_h GC_r A_r$	
$GC_r = 1.5$	(Eq 29.4-3)
$W_r = 27.07 \times A_r$	



Uplift on Mechanical Units									
Unit(s)	Weight D (lbs)	Ar (ft ²)	Ah (ft ²)	X (ft)	Curb Length (ft)	Curb Width (ft)	Fv (lbs)	Net Uplift 0.6W-0.6D (lbs)	Curb Uplift (plf)
MUA-Hood	400	4	4	3.5	2	2	108	-175	-22
Exhaust Fan	100	2	2	1	1	2	54	-28	-5
							0	0	#DIV/0!
							0	0	#DIV/0!
							0	0	#DIV/0!

Connection Notes:

Connect MEP to Framing with Simpson ST2122 Strap @ each corner
Tallow = 1415# (Cold-Formed Connection)



SHEET NO. _____

PROJECT NO. _____

DATE _____

PROJECT NAME RL CHOP SUEY (SAN DIEGO, CA)

COMPUTED BY _____

SUBJECT Wind on Mechanical Equipment

CHECKED BY _____

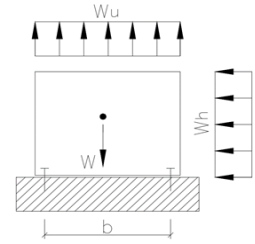
ASCE 7-16 WIND LOADING ON MECHANICAL EQUIPMENT

Wind Design Criteria

$F_h = q_h GC_r Af$ (Eq. 29.4-2)

$q_h = 0.00256 K_h K_{zt} K_d K_e V^2$ (Equation 26.10-1)			
$K_h = 0.90$	(Table 26.10-1)	$K_d = 0.85$	(Table 26.6-1)
$K_{zt} = 1.00$	(Section 26.8.2)	$K_e = 1.00$	(Table 26.9-1)
		$V = 96$	mph
$q_z = 18.05$		psf	

Lateral on Mechanical Unit	
$F_h = q_h GC_r A_f$	
$GC_r = 1.9$	(Eq 29.4-2)
$F_h = 34.29 \times A_f$	



Combined Lateral & Uplift on Mechanical Units											
Unit(s)	Weight D (lbs)	A _h (ft ²)	X (ft)	Curb Length (ft)	Curb Width (ft)	F _v (lbs)	F _h (lbs)	M _{OT} (0.6W) (lb-ft)	M _R (0.6D) (lb-ft)	Tension (0.6W-0.6D) (lbs)	T (plf)
MUA-Hood	400	4	3.5	2	2	108	137	353	240	57	28
Exhaust Fan	100	2	1	1	2	54	69	74	60	7	7
0	0	0	0	0	0	0	0	0	0	#DIV/0!	#####
0	0	0	0	0	0	0	0	0	0	#DIV/0!	#####
0	0	0	0	0	0	0	0	0	0	#DIV/0!	#####
0	0	0	0	0	0	0	0	0	0	#DIV/0!	#####
0	0	0	0	0	0	0	0	0	0	#DIV/0!	#####
0	0	0	0	0	0	0	0	0	0	#DIV/0!	#####
0	0	0	0	0	0	0	0	0	0	#DIV/0!	#####
0	0	0	0	0	0	0	0	0	0	#DIV/0!	#####
0	0	0	0	0	0	0	0	0	0	#DIV/0!	#####

Connection Notes:

Connect RTU Curb to Framing with Simpson ST2122 Strap @ each corner
Tallow = 1415# (Cold-Formed Connection)

EXHAUST HOOD ATTACHMENT ANALYSIS (SEISMIC LOADING)

Seismic on non-structural components (MEP)

$$A_P := 2.5 \quad S_{DS} := 0.832$$

$$R_P := 6.0 \quad I_P := 1.0$$

$$z := 1.0 \quad h := 1.0$$

$$W_{Hood} := 400 \text{ lbf}$$

$$F_P := \frac{0.4 \cdot A_P \cdot S_{DS}}{\frac{R_P}{I_P}} \left(1 + 2 \left(\frac{z}{h} \right) \right) = 0.416$$

$$FP_{HoodHoriz} := F_P \cdot W_{Hood} = 166.4 \text{ lbf}$$

$$FP_{HoodVert} := W_{Hood} \cdot \frac{(0.2 \cdot S_{DS})}{4} = 16.64 \text{ lbf}$$

$$FP_{HoodHoriz} = 166.4 \text{ lbf} \quad @ \text{ Ea Unit (Horizontal Force)}$$

$$FP_{HoodVert} = 16.64 \text{ lbf} \quad @ \text{ Ea Unit (Vertical Force)}$$

See Detail 8/S2.0 for connection. USE SIMP 'ST2122' STRAP EA EACH END (4 LOCATIONS)