BLD19-2145 PC1

THESE ATTACHMENTS ARE PART OF THE APPROVED PLANS
DO NOT REMOVE THEM
APR 18 2019
PRMD
RESILIENCY PERMIT CENTER
PERMIT #

Reviewed for Code Compliance
County of Sonoma
PRMD
APR 18 2019
Resiliency Permit Center

RPS design
ARCHITECTS
PO Box 111
Lagunitas, CA 94938
(415) 314-0525
rpsuttman@rpsdesign.net

STRUCTURAL CALCULATIONS

Project:
New House

Address:
91 & 93 Ursuline Road
Santa Rosa, CA

Prepared for:
Salvador Jauregui

Job Number:
2018-0036

Date:
4-12-2019

OFFICE

LICENSED ARCHITECT
ROBERT PATRICK SUTTMAN
No. C-36187
12-31-19
STATE OF CALIFORNIA

RPS design
ARCHITECTS

STRUCTURAL CALCULATIONS

Project
Mrs. Hoban

Address
81 & 93 Ursuline Road
Santa Rosa, CA

Prepared for
Salvador Jauregui

Job Number
2018-0039

Date
4-12-2019

RPS design
ARCHITECTS

Project Title: 91 & 93 Ursuline Road
Architect: Robert P. Suttman C-36187
Project ID: 2018-0036
Project Descr: New House

Building Code Information

Lic. # : KW-06009141 — Licensee : HCL Engineering & Surveying, LLC

Governing Code : IBC 2015, ASCE 7-10, CBC 2016, AISC 360-10, NDS 2015, ACI 318-14, ACI
City Jurisdiction : Sonoma County
Contact Name :
Alternate Contact :
Building Official :
Address : , ,
Phone : Fax : eMail :
Notes :

RPS design
ARCHITECTS

Project Title: 91 & 93 Ursuline Road
Architect: Robert P. Suttman C-36187
Project ID: 2018-0036
Project Descr: New House

Project Information

Lic. # : KW-06009141

Licensee : HCL Engineering & Surveying, LLC

Project Title : Ursuline Duplex
Description : New Duplex

I.D. :
Address : 91 & 93 Ursuline, Santa Rosa, CA

Project Leader : Robert P. Suttman
Phone : 415 314-0525 Fax : eMail : rpsuttman@rpsdesign.net

Project Notes

RPS design ARCHITECTS

Project Title: 91 & 93 Ursuline Road
Architect: Robert P. Suttman C-36187
Project ID: 2018-0036
Project Descr: New House

Wall Footing

File = \\HCLSVR\Folder Redirection\cslaughter\Documents\ENERCALC Data Files\Ursuline.ec6

Lic. # : KW-06009141 — Licensee : HCL Engineering & Surveying, LLC

Description : Interior Grids Worse Case

Code References

Calculations per ACI 318-14, IBC 2015, CBC 2016, ASCE 7-10
Load Combinations Used : ASCE 7-10

General Information

Material Properties

f'c : Concrete 28 day strength	=	3.0 ksi
fy : Rebar Yield	=	60.0 ksi
Ec : Concrete Elastic Modulus	=	3,122.0 ksi
Concrete Density	=	145.0 pcf
φ Values Flexure	=	0.90
Shear	=	0.750

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
AutoCalc Footing Weight as DL	:	Yes

Soil Design Values

Allowable Soil Bearing	=	2.0 ksf
Increase Bearing By Footing Weight	=	No
Soil Passive Resistance (for Sliding)	=	250.0 pcf
Soil/Concrete Friction Coeff.	=	0.30

Increases based on footing Depth

Reference Depth below Surface	=	ft
Allow. Pressure Increase per foot of depth	=	ksf
when base footing is below	=	ft

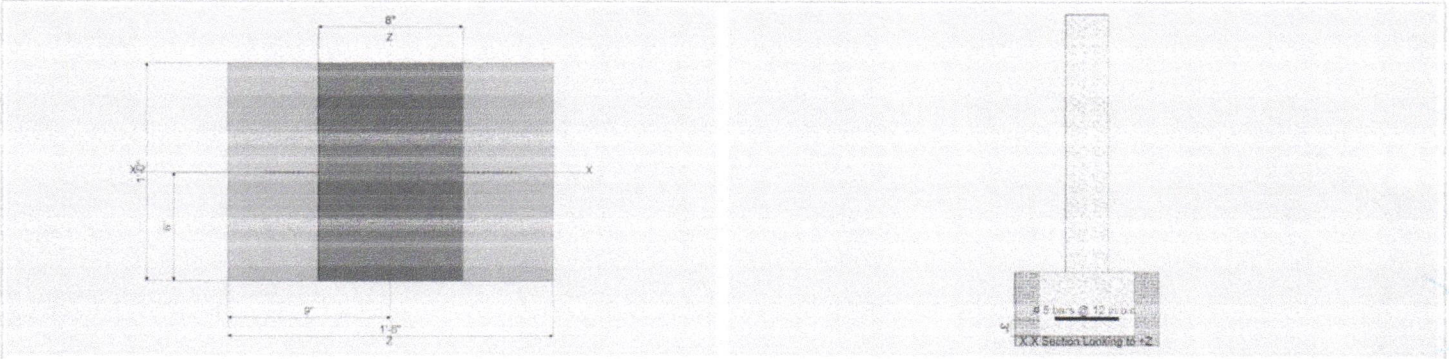
Increases based on footing Width

Allow. Pressure Increase per foot of width	=	ksf
when footing is wider than	=	ft
Adjusted Allowable Bearing Pressure	=	2.0 ksf

Dimensions

Footing Width	=	1.50 ft	Footing Thickness	=	12.0 in	Bars along X-X Axis	
Wall Thickness	=	8.0 in	Rebar Centerline to Edge of Concrete...			Bar spacing	= 12.00
Wall center offset from center of footing	=	0 in	at Bottom of footing	=	3.0 in	Reinforcing Bar Size	= # 5

Reinforcing



Applied Loads

		D	Lr	L	S	W	E	H	
P : Column Load	=	2		0.750					k
OB : Overburden	=								ksf
V-x	=								k
M-zz	=								k-ft

Vx applied = in above top of footing

RPS design ARCHITECTS

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Description : Interior Grids Worse Case

DESIGN SUMMARY

Design OK

	Factor of Safety	Item	Applied	Capacity	Governing Load Combination
PASS	n/a	Overturning - Z-Z	0.0 k-ft	0.0 k-ft	No Overturning
PASS	n/a	Sliding - X-X	0.0 k	0.0 k	No Sliding
PASS	n/a	Uplift	0.0 k	0.0 k	No Uplift

	Utilization Ratio	Item	Applied	Capacity	Governing Load Combination
PASS	0.9892	Soil Bearing	1.978 ksf	2.0 ksf	+D+L+H
PASS	0.01842	Z Flexure (+X)	0.2234 k-ft	12.131 k-ft	+1.20D+0.50Lr+1.60L+
PASS	0.009520	Z Flexure (-X)	0.1155 k-ft	12.131 k-ft	+0.90D+E+0.90H
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

Detailed Results

Soil Bearing

Rotation Axis & Load Combination...	Gross Allowable	Xecc	Actual Soil Bearing Stress -X	Actual Soil Bearing Stress +X	Actual / Allowable Ratio
, +D+H	2.0 ksf	0.0 in	1.478 ksf	1.478 ksf	0.739
, +D+L+H	2.0 ksf	0.0 in	1.978 ksf	1.978 ksf	0.989
, +D+Lr+H	2.0 ksf	0.0 in	1.478 ksf	1.478 ksf	0.739
, +D+S+H	2.0 ksf	0.0 in	1.478 ksf	1.478 ksf	0.739
, +D+0.750Lr+0.750L+H	2.0 ksf	0.0 in	1.853 ksf	1.853 ksf	0.927
, +D+0.750L+0.750S+H	2.0 ksf	0.0 in	1.853 ksf	1.853 ksf	0.927
, +D+0.60W+H	2.0 ksf	0.0 in	1.478 ksf	1.478 ksf	0.739
, +D+0.70E+H	2.0 ksf	0.0 in	1.478 ksf	1.478 ksf	0.739
, +D+0.750Lr+0.750L+0.450W+H	2.0 ksf	0.0 in	1.853 ksf	1.853 ksf	0.927
, +D+0.750L+0.750S+0.450W+H	2.0 ksf	0.0 in	1.853 ksf	1.853 ksf	0.927
, +D+0.750L+0.750S+0.5250E+H	2.0 ksf	0.0 in	1.853 ksf	1.853 ksf	0.927
, +0.60D+0.60W+0.60H	2.0 ksf	0.0 in	0.8870 ksf	0.8870 ksf	0.444
, +0.60D+0.70E+0.60H	2.0 ksf	0.0 in	0.8870 ksf	0.8870 ksf	0.444

Overturning Stability

Units : k-ft

Rotation Axis & Load Combination...	Overturning Moment	Resisting Moment	Stability Ratio	Status

Footing Has NO Overturning

Sliding Stability

Force Application Axis Load Combination...	Sliding Force	Resisting Force	Sliding SafetyRatio	Status

Footing Has NO Sliding

Footing Flexure

Flexure Axis & Load Combination	Mu k-ft	Which Side ?	Tension @ Bot. or Top ?	As Req'd in^2	Gvrn. As in^2	Actual As in^2	Phi*Mn k-ft	Status
, +1.40D+1.60H	0.1796	-X	Bottom	0.2592	Min Temp %	0.31	12.131	OK
, +1.40D+1.60H	0.1796	+X	Bottom	0.2592	Min Temp %	0.31	12.131	OK
, +1.20D+0.50Lr+1.60L+1.60H	0.2234	-X	Bottom	0.2592	Min Temp %	0.31	12.131	OK
, +1.20D+0.50Lr+1.60L+1.60H	0.2234	+X	Bottom	0.2592	Min Temp %	0.31	12.131	OK
, +1.20D+1.60L+0.50S+1.60H	0.2234	-X	Bottom	0.2592	Min Temp %	0.31	12.131	OK
, +1.20D+1.60L+0.50S+1.60H	0.2234	+X	Bottom	0.2592	Min Temp %	0.31	12.131	OK
, +1.20D+1.60Lr+0.50L+1.60H	0.1757	-X	Bottom	0.2592	Min Temp %	0.31	12.131	OK
, +1.20D+1.60Lr+0.50L+1.60H	0.1757	+X	Bottom	0.2592	Min Temp %	0.31	12.131	OK
, +1.20D+1.60Lr+0.50W+1.60H	0.154	-X	Bottom	0.2592	Min Temp %	0.31	12.131	OK
, +1.20D+1.60Lr+0.50W+1.60H	0.154	+X	Bottom	0.2592	Min Temp %	0.31	12.131	OK
, +1.20D+0.50L+1.60S+1.60H	0.1757	-X	Bottom	0.2592	Min Temp %	0.31	12.131	OK
, +1.20D+0.50L+1.60S+1.60H	0.1757	+X	Bottom	0.2592	Min Temp %	0.31	12.131	OK
, +1.20D+1.60S+0.50W+1.60H	0.154	-X	Bottom	0.2592	Min Temp %	0.31	12.131	OK
, +1.20D+1.60S+0.50W+1.60H	0.154	+X	Bottom	0.2592	Min Temp %	0.31	12.131	OK
, +1.20D+0.50Lr+0.50L+W+1.60H	0.1757	-X	Bottom	0.2592	Min Temp %	0.31	12.131	OK
, +1.20D+0.50Lr+0.50L+W+1.60H	0.1757	+X	Bottom	0.2592	Min Temp %	0.31	12.131	OK
, +1.20D+0.50L+0.50S+W+1.60H	0.1757	-X	Bottom	0.2592	Min Temp %	0.31	12.131	OK
, +1.20D+0.50L+0.50S+W+1.60H	0.1757	+X	Bottom	0.2592	Min Temp %	0.31	12.131	OK

RPS design
ARCHITECTS

Project Title: 91 & 93 Ursuline Road
Architect: Robert P. Suttman C-36187
Project ID: 2018-0036
Project Descr: New House

Wall Footing

File = \\HCLSVR\Folder Redirection\cslaughter\Documents\ENERCALC Data Files\Ursuline.ec6

Lic. # : KW-06009141 — Licensee : HCL Engineering & Surveying, LLC

Description : Interior Grids Worse Case

.+1.20D+0.50L+0.20S+E+1.60H	0.1757	-X	Bottom	0.2592	Min Temp %	0.31	12.131	OK
.+1.20D+0.50L+0.20S+E+1.60H	0.1757	+X	Bottom	0.2592	Min Temp %	0.31	12.131	OK

RPS design
ARCHITECTS

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Description : Interior Grids Worse Case

Footing Flexure

Flexure Axis & Load Combination	Mu k-ft	Which Side ?	Tension @ Bot. or Top ?	As Req'd in^2	Gvrn. As in^2	Actual As in^2	Phi*Mn k-ft	Status
, +0.90D+W+0.90H	0.1155	-X	Bottom	0.2592	Min Temp %	0.31	12.131	OK
, +0.90D+W+0.90H	0.1155	+X	Bottom	0.2592	Min Temp %	0.31	12.131	OK
, +0.90D+E+0.90H	0.1155	-X	Bottom	0.2592	Min Temp %	0.31	12.131	OK
, +0.90D+E+0.90H	0.1155	+X	Bottom	0.2592	Min Temp %	0.31	12.131	OK

One Way Shear

Units : k

Load Combination...	Vu @ -X	Vu @ +X	Vu:Max	Phi Vn	Vu / Phi*Vn	Status
+1.40D+1.60H	0 psi	0 psi	0 psi	82.158 psi	0	OK
+1.20D+0.50Lr+1.60L+1.60H	0 psi	0 psi	0 psi	82.158 psi	0	OK
+1.20D+1.60L+0.50S+1.60H	0 psi	0 psi	0 psi	82.158 psi	0	OK
+1.20D+1.60Lr+0.50L+1.60H	0 psi	0 psi	0 psi	82.158 psi	0	OK
+1.20D+1.60Lr+0.50W+1.60H	0 psi	0 psi	0 psi	82.158 psi	0	OK
+1.20D+0.50L+1.60S+1.60H	0 psi	0 psi	0 psi	82.158 psi	0	OK
+1.20D+1.60S+0.50W+1.60H	0 psi	0 psi	0 psi	82.158 psi	0	OK
+1.20D+0.50Lr+0.50L+W+1.60H	0 psi	0 psi	0 psi	82.158 psi	0	OK
+1.20D+0.50L+0.50S+W+1.60H	0 psi	0 psi	0 psi	82.158 psi	0	OK
+1.20D+0.50L+0.20S+E+1.60H	0 psi	0 psi	0 psi	82.158 psi	0	OK
+0.90D+W+0.90H	0 psi	0 psi	0 psi	82.158 psi	0	OK
+0.90D+E+0.90H	0 psi	0 psi	0 psi	82.158 psi	0	OK

RBS design

ARCHITECTS

Wall Footing

Project Title: 91 A St Urban, Texas

Architect: Ronald R Sanchez

Project ID: 2018-Urb

Project Desc: New Plans

Footing Design

Reviewed for code compliance by City of Bonney, TX

RPS design ARCHITECTS

Project Title: 91 & 93 Ursuline Road
Architect: Robert P. Suttman C-36187
Project ID: 2018-0036
Project Descr: New House

Concrete Slender Wall

File = \\HCLSVR\Folder Redirection\cslaughter\Documents\ENERCALC Data Files\Ursuline.ec6

Lic. # : KW-06009141 — Licensee : HCL Engineering & Surveying, LLC

Description : 12" Wall

Code References

Calculations per ACI 318-14 Sec 11.8, IBC 2015, CBC 2016, ASCE 7-10
Load Combinations Used : ASCE 7-10

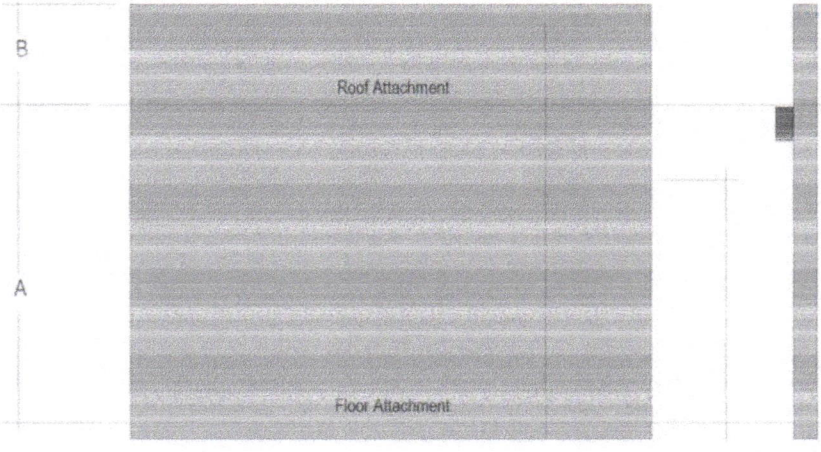
General Information

f'c : Concrete 28 day strength	=	3.5 ksi	Wall Thickness		12 in	Temp Diff across thickness	=	deg F
Fy : Rebar Yield	=	60.0 ksi	Rebar at each face			Min Allow Out-of-Plane Defl Ratio	=	L/ 0.0
Ec : Concrete Elastic Modulus	=	3,122.0 ksi	Rebar "d" distance		1.250 in			
λ : Lt Wt Conc Factor	=	1.0	Lower Level Rebar . . .			Min allow As/bd	=	0.0020
Fr : Rupture Modulus	=	295.804 psi	Bar Size	#	5	Using Stiff. Reduction Factor per ACI R.10.12.3		
Max Allow As/bd	=	0.01581	Bar Spacing		16.0 in			
Max Pu/Ag = f'c *	=	0.060						
Concrete Density	=	144.0 pcf						
Width of Design Strip	=	12.0 in						

One-Story Wall Dimensions

A Clear Height	=	4 ft
B Parapet height	=	0.0 ft

Wall Support Condition Top & Bottom Pinned



Vertical Loads

Vertical Uniform Loads . . . (Applied per foot of Strip Width)			DL : Dead	Lr : Roof Live	Lf : Floor Live	S : Snow	W : Wind
Ledger Load	Eccentricity	0 in	2	2	2	0.0	0.0 k/ft
Concentric Load			0.0	0.0	0.0	0.0	0.0 k/ft

Lateral Loads

Wind Loads :
Full area WIND load 15.0 psf

Seismic Loads :
Wall Weight Seismic Load Input Method : Direct entry of Lateral Wall Weight
Seismic Wall Lateral Load 25.0 psf

Fp 1.0 = 25.0 psf

RPS design
ARCHITECTS

Concrete Slender Wall

Concrete Slender Wall

Description : 12" Wall

DESIGN SUMMARY

Results reported for "Strip Width" of 12.0 in

	Governing Load Combination . . .	Actual Values . . .		Allowable Values . . .	
PASS	Moment Capacity Check +0.90D+E+0.90H	Maximum Bending Stress Ratio =	0.004028		
		Max Mu	0.04990 k-ft	Phi * Mn	12.387 k-ft
PASS	Service Deflection Check E Only	Actual Defl. Ratio L/	#####	Allowable Defl. Ratio	150.0
		Max. Deflection	.0000360 in		
PASS	Axial Load Check +1.20D+0.50L+0.20S+E+1.60H	Max Pu / Ag	26.171 psi	Max. Allow. Defl.	0.320 in
		Location	1.933 ft	0.06 * f'c	210.0 psi
PASS	Reinforcing Limit Check	Actual As/bd	0.001802	Max Allow As/bd	0.01581

Maximum Reactions . . .	*for Load Combination....*	
Top Horizontal	E Only	0.050 k
Base Horizontal	E Only	0.050 k
Vertical Reaction	+D+0.750Lr+0.750L+0.450W+H	5.576 k

Design Maximum Combinations - Moments

Results reported for "Strip Width" = 12 in.

Load Combination	Axial Load Pu (k)	Axial Load 0.06*f'c*b*t (k)	Mcr (k-ft)	Mu (k-ft)	Phi	Moment Values Phi Mn (k-ft)	As (in^2)	As Ratio	0.6 * rho bal
	0.000	0.000	0.00	0.00	0.00	0.00	0.000	0.0000	0.0000
	0.000	0.000	0.00	0.00	0.00	0.00	0.000	0.0000	0.0000
	0.000	0.000	0.00	0.00	0.00	0.00	0.000	0.0000	0.0000
	0.000	0.000	0.00	0.00	0.00	0.00	0.000	0.0000	0.0000
+1.20D+1.60Lr+0.50W+1.60H at 1.87 to 2.00	5.969	30.240	7.10	0.01	0.90	13.85	0.233	0.0018	0.0158
	0.000	0.000	0.00	0.00	0.00	0.00	0.000	0.0000	0.0000
+1.20D+1.60S+0.50W+1.60H at 1.87 to 2.00	2.769	30.240	7.10	0.01	0.90	12.65	0.233	0.0018	0.0158
+1.20D+0.50Lr+0.50L+W+1.60H at 1.87 to 2.	4.769	30.240	7.10	0.03	0.90	13.40	0.233	0.0018	0.0158
+1.20D+0.50L+0.50S+W+1.60H at 1.87 to 2.0	3.769	30.240	7.10	0.03	0.90	13.03	0.233	0.0018	0.0158
+1.20D+0.50L+0.20S+E+1.60H at 1.87 to 2.0	3.769	30.240	7.10	0.05	0.90	13.03	0.233	0.0018	0.0158
+0.90D+W+0.90H at 1.87 to 2.00	2.076	30.240	7.10	0.03	0.90	12.39	0.233	0.0018	0.0158
+0.90D+E+0.90H at 1.87 to 2.00	2.076	30.240	7.10	0.05	0.90	12.39	0.233	0.0018	0.0158

Design Maximum Combinations - Deflections

Results reported for "Strip Width" = 12 in.

Load Combination	Axial Load Pu (k)	Moment Values Mcr (k-ft)	Moment Values Mactual (k-ft)	Stiffness I gross (in^4)	Stiffness I cracked (in^4)	Stiffness I effective (in^4)	Deflections Deflection (in)	Deflections Defl. Ratio
	0.000	0.00	0.00	0.00	0.00	0.000	0.000	0.0
	0.000	0.00	0.00	0.00	0.00	0.000	0.000	0.0
	0.000	0.00	0.00	0.00	0.00	0.000	0.000	0.0
	0.000	0.00	0.00	0.00	0.00	0.000	0.000	0.0
	0.000	0.00	0.00	0.00	0.00	0.000	0.000	0.0
	0.000	0.00	0.00	0.00	0.00	0.000	0.000	0.0
+D+0.60W+H at 1.87 to 2.00	2.307	7.10	0.02	1,728.00	222.70	1296.000	0.000	######.#
+D+0.70E+H at 1.87 to 2.00	2.307	7.10	0.03	1,728.00	222.70	1296.000	0.000	######.#
+D+0.750Lr+0.750L+0.450W+H at 1.87 to 2.0	5.307	7.10	0.01	1,728.00	244.58	1296.000	0.000	######.#
+D+0.750L+0.750S+0.450W+H at 1.87 to 2.00	3.807	7.10	0.01	1,728.00	233.69	1296.000	0.000	######.#
+D+0.750L+0.750S+0.5250E+H at 1.87 to 2.0	3.807	7.10	0.03	1,728.00	233.69	1296.000	0.000	######.#
+0.60D+0.60W+0.60H at 1.87 to 2.00	1.384	7.10	0.02	1,728.00	215.90	1296.000	0.000	######.#
+0.60D+0.70E+0.60H at 1.87 to 2.00	1.384	7.10	0.03	1,728.00	215.90	1296.000	0.000	######.#
	0.000	0.00	0.00	0.00	0.00	0.000	0.000	0.0
	0.000	0.00	0.00	0.00	0.00	0.000	0.000	0.0

RPS design
ARCHITECTS

Project Title: 91 & 93 Ursuline Road
Architect: Robert P. Suttman C-36187
Project ID: 2018-0036
Project Descr: New House

Concrete Slender Wall

File = \\HCLSVR\Folder Redirection\cslaughter\Documents\ENERCALC Data Files\Ursuline.ec6

Lic. # : KW-06009141 — Licensee : HCL Engineering & Surveying, LLC

Description : 12" Wall

	0.000	0.00	0.00	0.00	0.00	0.000	0.000	0.0
	0.000	0.00	0.00	0.00	0.00	0.000	0.000	0.0
W Only at 2.00 to 2.13	0.000	7.10	0.03	1,728.00	205.63	1296.000	0.000	######.#
E Only at 1.87 to 2.00	0.000	7.10	0.05	1,728.00	205.63	1296.000	0.000	######.#
	0.000	0.00	0.00	0.00	0.00	0.000	0.000	0.0

Reactions - Vertical & Horizontal

Load Combination	Base Horizontal	Top Horizontal	Vertical @ Wall Base
+D+H	0.0 k	0.00 k	2.576 k
+D+L+H	0.0 k	0.00 k	4.576 k
+D+Lr+H	0.0 k	0.00 k	4.576 k
+D+S+H	0.0 k	0.00 k	2.576 k
+D+0.750Lr+0.750L+H	0.0 k	0.00 k	5.576 k
+D+0.750L+0.750S+H	0.0 k	0.00 k	4.076 k
+D+0.60W+H	0.0 k	0.02 k	2.576 k

RPS design
ARCHITECTS

Project Title: 91 & 93 Ursuline Road
Architect: Robert P. Suttman C-36187
Project ID: 2018-0036
Project Descr: New House

Concrete Slender Wall

File = \\HCLSVR\Folder Redirection\cslaughter\Documents\ENERCALC Data Files\Ursuline.ec6

Lic. # : KW-06009141
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Description : 12" Wall

Reactions - Vertical & Horizontal

Load Combination	Base Horizontal	Top Horizontal	Vertical @ Wall Base
+D+0.70E+H	0.0 k	0.04 k	2.576 k
+D+0.750Lr+0.750L+0.450W+H	0.0 k	0.01 k	5.576 k
+D+0.750L+0.750S+0.450W+H	0.0 k	0.01 k	4.076 k
+D+0.750L+0.750S+0.5250E+H	0.0 k	0.03 k	4.076 k
+0.60D+0.60W+0.60H	0.0 k	0.02 k	1.546 k
+0.60D+0.70E+0.60H	0.0 k	0.04 k	1.546 k
D Only	0.0 k	0.00 k	2.576 k
Lr Only	0.0 k	0.00 k	2.000 k
L Only	0.0 k	0.00 k	2.000 k
S Only	0.0 k	0.00 k	0.000 k
W Only	0.0 k	0.03 k	0.000 k
E Only	0.0 k	0.05 k	0.000 k
H Only	0.0 k	0.00 k	0.000 k

Resiliency

RPS design ARCHITECTS

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Wall Footing

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Description : Exterior Walls Only

Code References

Calculations per ACI 318-14, IBC 2015, CBC 2016, ASCE 7-10
Load Combinations Used : ASCE 7-10

General Information

Material Properties

f'c : Concrete 28 day strength	=	3.0 ksi
fy : Rebar Yield	=	60.0 ksi
Ec : Concrete Elastic Modulus	=	3,122.0 ksi
Concrete Density	=	145.0 pcf
φ Values Flexure	=	0.90
Shear	=	0.750

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
AutoCalc Footing Weight as DL	:	Yes

Soil Design Values

Allowable Soil Bearing	=	2.0 ksf
Increase Bearing By Footing Weight	=	No
Soil Passive Resistance (for Sliding)	=	250.0 pcf
Soil/Concrete Friction Coeff.	=	0.30

Increases based on footing Depth

Reference Depth below Surface	=	ft
Allow. Pressure Increase per foot of depth	=	ksf
when base footing is below	=	ft

Increases based on footing Width

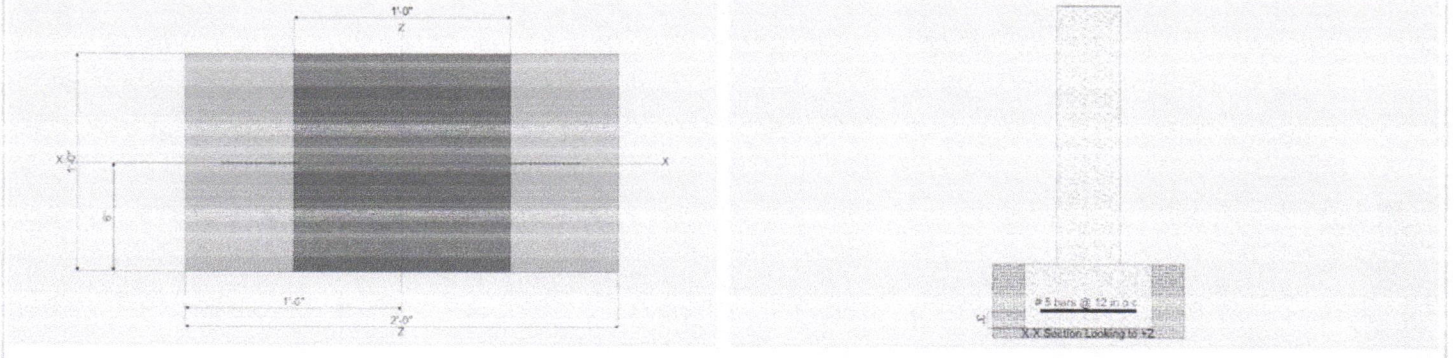
Allow. Pressure Increase per foot of width	=	ksf
when footing is wider than	=	ft

Adjusted Allowable Bearing Pressure = 2.0 ksf

Dimensions

Footing Width	=	2 ft	Footing Thickness	=	12.0 in	Bars along X-X Axis	
Wall Thickness	=	12.0 in	Rebar Centerline to Edge of Concrete...			Bar spacing	= 12.00
Wall center offset from center of footing	=	0 in	at Bottom of footing	=	3.0 in	Reinforcing Bar Size	= # 5

Reinforcing



Applied Loads

		D	Lr	L	S	W	E	H
P : Column Load	=	2.0	0.70	0.70	0.0	0.0	0.0	0.0 k
OB : Overburden	=	0.0	0.0	0.0	0.0	0.0	0.0	0.0 ksf
V-x	=							k
M-zz	=							k-ft

Vx applied = in above top of footing

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DESIGN SUMMARY

Design OK

Factor of Safety		Item	Applied	Capacity	Governing Load Combination
PASS	n/a	Overturning - Z-Z	0.0 k-ft	0.0 k-ft	No Overturning
PASS	n/a	Sliding - X-X	0.0 k	0.0 k	No Sliding
PASS	n/a	Uplift	0.0 k	0.0 k	No Uplift

Utilization Ratio		Item	Applied	Capacity	Governing Load Combination
PASS	0.8350	Soil Bearing	1.670 ksf	2.0 ksf	+D+0.750Lr+0.750L+0.
PASS	0.02173	Z Flexure (+X)	0.2636 k-ft	12.131 k-ft	+1.20D+0.50Lr+1.60L+
PASS	0.01062	Z Flexure (-X)	0.1288 k-ft	12.131 k-ft	+0.90D+E+0.90H
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

Detailed Results

Soil Bearing

Rotation Axis & Load Combination...	Gross Allowable	Xecc	Actual Soil Bearing Stress -X	Actual Soil Bearing Stress +X	Actual / Allowable Ratio
+D+H	2.0 ksf	0.0 in	1.145 ksf	1.145 ksf	0.573
+D+L+H	2.0 ksf	0.0 in	1.495 ksf	1.495 ksf	0.748
+D+Lr+H	2.0 ksf	0.0 in	1.495 ksf	1.495 ksf	0.748
+D+S+H	2.0 ksf	0.0 in	1.145 ksf	1.145 ksf	0.573
+D+0.750Lr+0.750L+H	2.0 ksf	0.0 in	1.670 ksf	1.670 ksf	0.835
+D+0.750L+0.750S+H	2.0 ksf	0.0 in	1.408 ksf	1.408 ksf	0.704
+D+0.60W+H	2.0 ksf	0.0 in	1.145 ksf	1.145 ksf	0.573
+D+0.70E+H	2.0 ksf	0.0 in	1.145 ksf	1.145 ksf	0.573
+D+0.750Lr+0.750L+0.450W+H	2.0 ksf	0.0 in	1.670 ksf	1.670 ksf	0.835
+D+0.750L+0.750S+0.450W+H	2.0 ksf	0.0 in	1.408 ksf	1.408 ksf	0.704
+D+0.750L+0.750S+0.5250E+H	2.0 ksf	0.0 in	1.408 ksf	1.408 ksf	0.704
+0.60D+0.60W+0.60H	2.0 ksf	0.0 in	0.6870 ksf	0.6870 ksf	0.344
+0.60D+0.70E+0.60H	2.0 ksf	0.0 in	0.6870 ksf	0.6870 ksf	0.344

Units : k-ft

Overturning Stability

Rotation Axis & Load Combination...	Overturning Moment	Resisting Moment	Stability Ratio	Status

Footing Has NO Overturning

Sliding Stability

Force Application Axis Load Combination...	Sliding Force	Resisting Force	Sliding SafetyRatio	Status

Footing Has NO Sliding

Footing Flexure

Flexure Axis & Load Combination	Mu k-ft	Which Side ?	Tension @ Bot. or Top ?	As Req'd in^2	Gvrn. As in^2	Actual As in^2	Phi*Mn k-ft	Status
+1.40D+1.60H	0.2003	-X	Bottom	0.2592	Min Temp %	0.31	12.131	OK
+1.40D+1.60H	0.2003	+X	Bottom	0.2592	Min Temp %	0.31	12.131	OK
+1.20D+0.50Lr+1.60L+1.60H	0.2636	-X	Bottom	0.2592	Min Temp %	0.31	12.131	OK
+1.20D+0.50Lr+1.60L+1.60H	0.2636	+X	Bottom	0.2592	Min Temp %	0.31	12.131	OK
+1.20D+1.60L+0.50S+1.60H	0.2417	-X	Bottom	0.2592	Min Temp %	0.31	12.131	OK
+1.20D+1.60L+0.50S+1.60H	0.2417	+X	Bottom	0.2592	Min Temp %	0.31	12.131	OK
+1.20D+1.60Lr+0.50L+1.60H	0.2636	-X	Bottom	0.2592	Min Temp %	0.31	12.131	OK
+1.20D+1.60Lr+0.50L+1.60H	0.2636	+X	Bottom	0.2592	Min Temp %	0.31	12.131	OK
+1.20D+1.60Lr+0.50W+1.60H	0.2417	-X	Bottom	0.2592	Min Temp %	0.31	12.131	OK
+1.20D+1.60Lr+0.50W+1.60H	0.2417	+X	Bottom	0.2592	Min Temp %	0.31	12.131	OK
+1.20D+0.50L+1.60S+1.60H	0.1936	-X	Bottom	0.2592	Min Temp %	0.31	12.131	OK
+1.20D+0.50L+1.60S+1.60H	0.1936	+X	Bottom	0.2592	Min Temp %	0.31	12.131	OK
+1.20D+1.60S+0.50W+1.60H	0.1717	-X	Bottom	0.2592	Min Temp %	0.31	12.131	OK
+1.20D+1.60S+0.50W+1.60H	0.1717	+X	Bottom	0.2592	Min Temp %	0.31	12.131	OK
+1.20D+0.50Lr+0.50L+W+1.60H	0.2155	-X	Bottom	0.2592	Min Temp %	0.31	12.131	OK
+1.20D+0.50Lr+0.50L+W+1.60H	0.2155	+X	Bottom	0.2592	Min Temp %	0.31	12.131	OK
+1.20D+0.50L+0.50S+W+1.60H	0.1936	-X	Bottom	0.2592	Min Temp %	0.31	12.131	OK
+1.20D+0.50L+0.50S+W+1.60H	0.1936	+X	Bottom	0.2592	Min Temp %	0.31	12.131	OK

RPS design
ARCHITECTS

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. +1.20D+0.50L+0.20S+E+1.60H	0.1936	-X	Bottom	0.2592	Min Temp %	0.31	12.131	OK
. +1.20D+0.50L+0.20S+E+1.60H	0.1936	+X	Bottom	0.2592	Min Temp %	0.31	12.131	OK

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Footing Flexure

Flexure Axis & Load Combination	Mu k-ft	Which Side ?	Tension @ Bot. or Top ?	As Req'd in^2	Gvrn. As in^2	Actual As in^2	Phi*Mn k-ft	Status
, +0.90D+W+0.90H	0.1288	-X	Bottom	0.2592	Min Temp %	0.31	12.131	OK
, +0.90D+W+0.90H	0.1288	+X	Bottom	0.2592	Min Temp %	0.31	12.131	OK
, +0.90D+E+0.90H	0.1288	-X	Bottom	0.2592	Min Temp %	0.31	12.131	OK
, +0.90D+E+0.90H	0.1288	+X	Bottom	0.2592	Min Temp %	0.31	12.131	OK

One Way Shear

Units : k

Load Combination...	Vu @ -X	Vu @ +X	Vu:Max	Phi Vn	Vu / Phi*Vn	Status
+1.40D+1.60H	0 psi	0 psi	0 psi	82.158 psi	0	OK
+1.20D+0.50Lr+1.60L+1.60H	0 psi	0 psi	0 psi	82.158 psi	0	OK
+1.20D+1.60L+0.50S+1.60H	0 psi	0 psi	0 psi	82.158 psi	0	OK
+1.20D+1.60Lr+0.50L+1.60H	0 psi	0 psi	0 psi	82.158 psi	0	OK
+1.20D+1.60Lr+0.50W+1.60H	0 psi	0 psi	0 psi	82.158 psi	0	OK
+1.20D+0.50L+1.60S+1.60H	0 psi	0 psi	0 psi	82.158 psi	0	OK
+1.20D+1.60S+0.50W+1.60H	0 psi	0 psi	0 psi	82.158 psi	0	OK
+1.20D+0.50Lr+0.50L+W+1.60H	0 psi	0 psi	0 psi	82.158 psi	0	OK
+1.20D+0.50L+0.50S+W+1.60H	0 psi	0 psi	0 psi	82.158 psi	0	OK
+1.20D+0.50L+0.20S+E+1.60H	0 psi	0 psi	0 psi	82.158 psi	0	OK
+0.90D+W+0.90H	0 psi	0 psi	0 psi	82.158 psi	0	OK
+0.90D+E+0.90H	0 psi	0 psi	0 psi	82.158 psi	0	OK

RBS design
ARCHITECTS

Resiliency Perm

Rev

AP

e

RPS design
ARCHITECTS

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Description : 8" Grid Walls

Code References

Calculations per ACI 318-14 Sec 11.8, IBC 2015, CBC 2016, ASCE 7-10
Load Combinations Used : ASCE 7-10

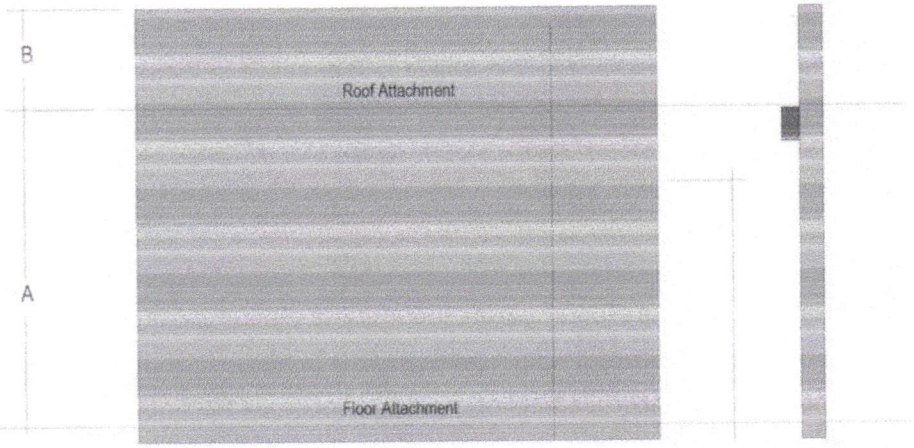
General Information

f'c : Concrete 28 day strength	=	3.0 ksi	Wall Thickness		8.0 in	Temp Diff across thickness	= deg F
Fy : Rebar Yield	=	60.0 ksi	Rebar at wall center			Min Allow Out-of-Plane Defl Ratio	= L/ 0.0
Ec : Concrete Elastic Modulus	=	3,122.0 ksi	Rebar "d" distance		4.0 in		
λ : Lt Wt Conc Factor	=	1.0	Lower Level Rebar . . .			Min allow As/bd	= 0.0020
Fr : Rupture Modulus	=	273.861 psi	Bar Size	#	5	Using Stiff. Reduction Factor per ACI R.10.12.3	
Max Allow As/bd	=	0.01355	Bar Spacing		16.0 in		
Max Pu/Ag = f'c *	=	0.060					
Concrete Density	=	144.0 pcf					
Width of Design Strip	=	12.0 in					

One-Story Wall Dimensions

A Clear Height = 4.0 ft
B Parapet height = ft

Wall Support Condition Top & Bottom Pinned



Vertical Loads

Vertical Uniform Loads . . . (Applied per foot of Strip Width)		DL : Dead	Lr : Roof Live	Lf : Floor Live	S : Snow	W : Wind
Ledger Load	Eccentricity 6.750 in	2.0		1.5		k/ft
Concentric Load						k/ft

Lateral Loads

Wind Loads :
Full area WIND load 15.0 psf

Seismic Loads :
Wall Weight Seismic Load Input Method : Direct entry of Lateral Wall Weight
Seismic Wall Lateral Load 25.0 psf

Fp 1.0 = 25.0 psf

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Description : 8" Grid Walls

DESIGN SUMMARY

Results reported for "Strip Width" of 12.0 in

	Governing Load Combination . . .	Actual Values . . .		Allowable Values . . .	
PASS	Moment Capacity Check +1.20D+0.50Lr+1.60L+1.60H	Maximum Bending Stress Ratio = 0.6841 Max Mu 2.70 k-ft		Phi * Mn	3.947 k-ft
PASS	Service Deflection Check +D+L+H	Actual Defl. Ratio L/ 16492 Max. Deflection 0.002910 in		Allowable Defl. Ratio	150.0
PASS	Axial Load Check +1.20D+0.50Lr+1.60L+1.60H	Max Pu / Ag 50.323 psi Location 3.933 ft		Max. Allow. Defl. 0.06 * f'c	0.320 in 180.0 psi
PASS	Reinforcing Limit Check	Actual As/bd 0.004844		Max Allow As/bd	0.01355

Maximum Reactions . . . *for Load Combination....*

Top Horizontal	+D+L+H	0.4922 k
Base Horizontal	+D+L+H	0.4922 k
Vertical Reaction	+D+L+H	3.884 k

Design Maximum Combinations - Moments

Results reported for "Strip Width" = 12 in.

Load Combination	Axial Load Pu k	0.06*f'c*b*t k	Mcr k-ft	Moment Values Mu k-ft	Phi	Phi Mn k-ft	As in^2	As Ratio	0.6 * rho bal
+1.40D+1.60H at 3.87 to 4.00	0.000	17.280	2.92	1.58	0.90	3.95	0.233	0.0048	0.0135
+1.20D+0.50Lr+1.60L+1.60H at 3.87 to 4.00	0.000	17.280	2.92	2.70	0.90	3.95	0.233	0.0048	0.0135
+1.20D+1.60L+0.50S+1.60H at 3.87 to 4.00	0.000	17.280	2.92	2.70	0.90	3.95	0.233	0.0048	0.0135
+1.20D+1.60Lr+0.50L+1.60H at 3.87 to 4.00	0.000	17.280	2.92	1.77	0.90	3.95	0.233	0.0048	0.0135
+1.20D+1.60Lr+0.50W+1.60H at 3.87 to 4.00	0.000	17.280	2.92	1.35	0.90	3.95	0.233	0.0048	0.0135
+1.20D+0.50L+1.60S+1.60H at 3.87 to 4.00	0.000	17.280	2.92	1.77	0.90	3.95	0.233	0.0048	0.0135
+1.20D+1.60S+0.50W+1.60H at 3.87 to 4.00	0.000	17.280	2.92	1.35	0.90	3.95	0.233	0.0048	0.0135
+1.20D+0.50Lr+0.50L+W+1.60H at 3.87 to 4.	0.000	17.280	2.92	1.77	0.90	3.95	0.233	0.0048	0.0135
+1.20D+0.50L+0.50S+W+1.60H at 3.87 to 4.0	0.000	17.280	2.92	1.77	0.90	3.95	0.233	0.0048	0.0135
+1.20D+0.50L+0.20S+E+1.60H at 3.87 to 4.0	0.000	17.280	2.92	1.77	0.90	3.95	0.233	0.0048	0.0135
+0.90D+W+0.90H at 3.87 to 4.00	0.000	17.280	2.92	1.01	0.90	3.95	0.233	0.0048	0.0135
+0.90D+E+0.90H at 3.87 to 4.00	0.000	17.280	2.92	1.01	0.90	3.95	0.233	0.0048	0.0135

Design Maximum Combinations - Deflections

Results reported for "Strip Width" = 12 in.

Load Combination	Axial Load Pu k	Moment Values Mcr k-ft	Mactual k-ft	Stiffness I gross in^4	I cracked in^4	I effective in^4	Deflections Deflection in	Defl. Ratio
+D+H at 2.27 to 2.40	2.166	2.92	0.66	512.00	28.48	384.000	0.002	28,869.2
+D+L+H at 2.27 to 2.40	3.666	2.92	1.15	512.00	30.63	384.000	0.003	16,492.0
+D+Lr+H at 2.27 to 2.40	2.166	2.92	0.66	512.00	28.48	384.000	0.002	28,869.2
+D+S+H at 2.27 to 2.40	2.166	2.92	0.66	512.00	28.48	384.000	0.002	28,869.2
+D+0.750Lr+0.750L+H at 2.27 to 2.40	3.291	2.92	1.03	512.00	30.10	384.000	0.003	18,472.4
+D+0.750L+0.750S+H at 2.27 to 2.40	3.291	2.92	1.03	512.00	30.10	384.000	0.003	18,472.4
+D+0.60W+H at 2.27 to 2.40	2.166	2.92	0.67	512.00	28.48	384.000	0.002	28,161.4
+D+0.70E+H at 2.27 to 2.40	2.166	2.92	0.69	512.00	28.48	384.000	0.002	27,524.1
+D+0.750Lr+0.750L+0.450W+H at 2.27 to 2.4	3.291	2.92	1.04	512.00	30.10	384.000	0.003	18,252.2
+D+0.750L+0.750S+0.450W+H at 2.27 to 2.40	3.291	2.92	1.04	512.00	30.10	384.000	0.003	18,252.2
+D+0.750L+0.750S+0.5250E+H at 2.27 to 2.4	3.291	2.92	1.05	512.00	30.10	384.000	0.003	18,049.0
+0.60D+0.60W+0.60H at 2.27 to 2.40	1.300	2.92	0.41	512.00	27.22	384.000	0.001	46,188.5
+0.60D+0.70E+0.60H at 2.27 to 2.40	1.300	2.92	0.43	512.00	27.22	384.000	0.001	44,498.8
D Only at 2.27 to 2.40	2.166	2.92	0.66	512.00	28.48	384.000	0.002	28,869.2
	0.000	0.00	0.00	0.00	0.00	0.000	0.000	0.0

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L Only at 2.27 to 2.40	1.500	2.92	0.49	512.00	27.52	384.000	0.001	38,497.1
	0.000	0.00	0.00	0.00	0.00	0.000	0.000	0.0
W Only at 1.87 to 2.00	0.000	2.92	0.03	512.00	25.28	384.000	0.000	667509.4
E Only at 2.00 to 2.13	0.000	2.92	0.05	512.00	25.28	384.000	0.000	400505.6
	0.000	0.00	0.00	0.00	0.00	0.000	0.000	0.0

Reactions - Vertical & Horizontal

Load Combination	Base Horizontal	Top Horizontal	Vertical @ Wall Base
+D+H	0.3 k	0.28 k	2.384 k
+D+L+H	0.5 k	0.49 k	3.884 k
+D+Lr+H	0.3 k	0.28 k	2.384 k
+D+S+H	0.3 k	0.28 k	2.384 k
+D+0.750Lr+0.750L+H	0.4 k	0.44 k	3.509 k
+D+0.750L+0.750S+H	0.4 k	0.44 k	3.509 k
+D+0.60W+H	0.3 k	0.26 k	2.384 k

RPS design
ARCHITECTS

Project Title: 91 & 93 Ursuline Road
Architect: Robert P. Suttman C-36187
Project ID: 2018-0036
Project Descr: New House

Concrete Slender Wall

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Description : 8" Grid Walls

Reactions - Vertical & Horizontal

Load Combination	Base Horizontal	Top Horizontal	Vertical @ Wall Base
+D+0.70E+H	0.3 k	0.25 k	2.384 k
+D+0.750Lr+0.750L+0.450W+H	0.5 k	0.43 k	3.509 k
+D+0.750L+0.750S+0.450W+H	0.5 k	0.43 k	3.509 k
+D+0.750L+0.750S+0.5250E+H	0.5 k	0.41 k	3.509 k
+0.60D+0.60W+0.60H	0.2 k	0.15 k	1.430 k
+0.60D+0.70E+0.60H	0.2 k	0.13 k	1.430 k
D Only	0.3 k	0.28 k	2.384 k
Lr Only	0.0 k	0.00 k	0.000 k
L Only	0.2 k	0.21 k	1.500 k
S Only	0.0 k	0.00 k	0.000 k
W Only	0.0 k	0.03 k	0.000 k
E Only	0.1 k	0.05 k	0.000 k
H Only	0.0 k	0.00 k	0.000 k

RPS design
ARCHITECTS

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Wall Footing

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Description : Garage Wall

Code References

Calculations per ACI 318-14, IBC 2015, CBC 2016, ASCE 7-10
Load Combinations Used : ASCE 7-10

General Information

Material Properties

f'c : Concrete 28 day strength	=	3.0 ksi
fy : Rebar Yield	=	60.0 ksi
Ec : Concrete Elastic Modulus	=	3,122.0 ksi
Concrete Density	=	145.0 pcf
φ Values Flexure	=	0.90
Shear	=	0.750

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
AutoCalc Footing Weight as DL	:	Yes

Soil Design Values

Allowable Soil Bearing	=	2.0 ksf
Increase Bearing By Footing Weight	=	No
Soil Passive Resistance (for Sliding)	=	250.0 pcf
Soil/Concrete Friction Coeff.	=	0.30

Increases based on footing Depth

Reference Depth below Surface	=	ft
Allow. Pressure Increase per foot of depth	=	ksf
when base footing is below	=	ft

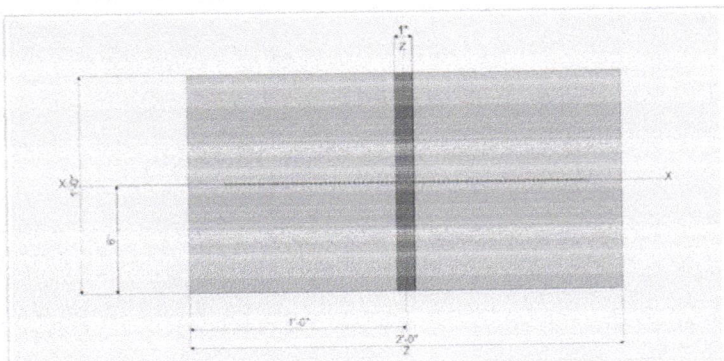
Increases based on footing Width

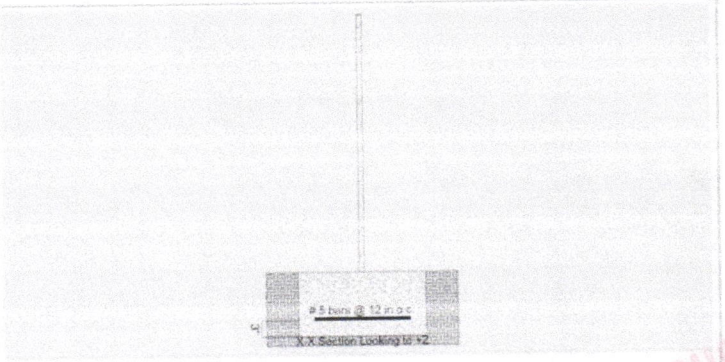
Allow. Pressure Increase per foot of width	=	ksf
when footing is wider than	=	ft

Adjusted Allowable Bearing Pressure = 2.0 ksf

Dimensions

Footing Width	=	2 ft	Footing Thickness	=	12.0 in	Bars along X-X Axis	
Wall Thickness	=	1.0 in	Rebar Centerline to Edge of Concrete...			Bar spacing	= 12.00
Wall center offset from center of footing	=	0 in	at Bottom of footing	=	3.0 in	Reinforcing Bar Size	= # 5





Applied Loads

		D	Lr	L	S	W	E	H	
P : Column Load	=	2.750	0.50	0.50					k
OB : Overburden	=								ksf
V-x	=								k
M-zz	=								k-ft
Vx applied	=								in above top of footing

RPS design ARCHITECTS

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Description : Garage Wall

DESIGN SUMMARY

Design OK

	Factor of Safety	Item	Applied	Capacity	Governing Load Combination
PASS	n/a	Overturning - Z-Z	0.0 k-ft	0.0 k-ft	No Overturning
PASS	n/a	Sliding - X-X	0.0 k	0.0 k	No Sliding
PASS	n/a	Uplift	0.0 k	0.0 k	No Uplift

	Utilization Ratio	Item	Applied	Capacity	Governing Load Combination
PASS	0.9475	Soil Bearing	1.895 ksf	2.0 ksf	+D+0.750Lr+0.750L+0.
PASS	0.08892	Z Flexure (+X)	1.079 k-ft	12.131 k-ft	+1.20D+0.50Lr+1.60L+
PASS	0.05178	Z Flexure (-X)	0.6282 k-ft	12.131 k-ft	+0.90D+E+0.90H
PASS	0.05648	1-way Shear (+X)	4.640 psi	82.158 psi	+1.20D+0.50Lr+1.60L+
PASS	0.05648	1-way Shear (-X)	4.640 psi	82.158 psi	+1.20D+0.50Lr+1.60L+

Detailed Results

Soil Bearing

Rotation Axis & Load Combination...	Gross Allowable	Xecc	Actual Soil Bearing Stress -X	Actual Soil Bearing Stress +X	Actual / Allowable Ratio
. +D+H	2.0 ksf	0.0 in	1.520 ksf	1.520 ksf	0.760
. +D+L+H	2.0 ksf	0.0 in	1.770 ksf	1.770 ksf	0.885
. +D+Lr+H	2.0 ksf	0.0 in	1.770 ksf	1.770 ksf	0.885
. +D+S+H	2.0 ksf	0.0 in	1.520 ksf	1.520 ksf	0.760
. +D+0.750Lr+0.750L+H	2.0 ksf	0.0 in	1.895 ksf	1.895 ksf	0.948
. +D+0.750L+0.750S+H	2.0 ksf	0.0 in	1.708 ksf	1.708 ksf	0.854
. +D+0.60W+H	2.0 ksf	0.0 in	1.520 ksf	1.520 ksf	0.760
. +D+0.70E+H	2.0 ksf	0.0 in	1.520 ksf	1.520 ksf	0.760
. +D+0.750Lr+0.750L+0.450W+H	2.0 ksf	0.0 in	1.895 ksf	1.895 ksf	0.948
. +D+0.750L+0.750S+0.450W+H	2.0 ksf	0.0 in	1.708 ksf	1.708 ksf	0.854
. +D+0.750L+0.750S+0.5250E+H	2.0 ksf	0.0 in	1.708 ksf	1.708 ksf	0.854
. +0.60D+0.60W+0.60H	2.0 ksf	0.0 in	0.9120 ksf	0.9120 ksf	0.456
. +0.60D+0.70E+0.60H	2.0 ksf	0.0 in	0.9120 ksf	0.9120 ksf	0.456

Overturning Stability

Units : k-ft

Rotation Axis & Load Combination...	Overturning Moment	Resisting Moment	Stability Ratio	Status
Footing Has NO Overturning				

Sliding Stability

Force Application Axis Load Combination...	Sliding Force	Resisting Force	Sliding SafetyRatio	Status
Footing Has NO Sliding				

Footing Flexure

Flexure Axis & Load Combination	Mu k-ft	Which Side ?	Tension @ Bot. or Top ?	As Req'd in^2	Gvrn. As in^2	Actual As in^2	Phi*Mn k-ft	Status
. +1.40D+1.60H	0.9772	-X	Bottom	0.2592	Min Temp %	0.31	12.131	OK
. +1.40D+1.60H	0.9772	+X	Bottom	0.2592	Min Temp %	0.31	12.131	OK
. +1.20D+0.50Lr+1.60L+1.60H	1.079	-X	Bottom	0.2592	Min Temp %	0.31	12.131	OK
. +1.20D+0.50Lr+1.60L+1.60H	1.079	+X	Bottom	0.2592	Min Temp %	0.31	12.131	OK
. +1.20D+1.60L+0.50S+1.60H	1.021	-X	Bottom	0.2592	Min Temp %	0.31	12.131	OK
. +1.20D+1.60L+0.50S+1.60H	1.021	+X	Bottom	0.2592	Min Temp %	0.31	12.131	OK
. +1.20D+1.60Lr+0.50L+1.60H	1.079	-X	Bottom	0.2592	Min Temp %	0.31	12.131	OK
. +1.20D+1.60Lr+0.50L+1.60H	1.079	+X	Bottom	0.2592	Min Temp %	0.31	12.131	OK
. +1.20D+1.60Lr+0.50W+1.60H	1.021	-X	Bottom	0.2592	Min Temp %	0.31	12.131	OK
. +1.20D+1.60Lr+0.50W+1.60H	1.021	+X	Bottom	0.2592	Min Temp %	0.31	12.131	OK
. +1.20D+0.50L+1.60S+1.60H	0.895	-X	Bottom	0.2592	Min Temp %	0.31	12.131	OK
. +1.20D+0.50L+1.60S+1.60H	0.895	+X	Bottom	0.2592	Min Temp %	0.31	12.131	OK
. +1.20D+1.60S+0.50W+1.60H	0.8376	-X	Bottom	0.2592	Min Temp %	0.31	12.131	OK
. +1.20D+1.60S+0.50W+1.60H	0.8376	+X	Bottom	0.2592	Min Temp %	0.31	12.131	OK
. +1.20D+0.50Lr+0.50L+W+1.60H	0.9524	-X	Bottom	0.2592	Min Temp %	0.31	12.131	OK
. +1.20D+0.50Lr+0.50L+W+1.60H	0.9524	+X	Bottom	0.2592	Min Temp %	0.31	12.131	OK
. +1.20D+0.50L+0.50S+W+1.60H	0.895	-X	Bottom	0.2592	Min Temp %	0.31	12.131	OK
. +1.20D+0.50L+0.50S+W+1.60H	0.895	+X	Bottom	0.2592	Min Temp %	0.31	12.131	OK

RPS design
ARCHITECTS

Project Title: 91 & 93 Ursuline Road
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Description : Garage Wall

. +1.20D+0.50L+0.20S+E+1.60H	0.895	-X	Bottom	0.2592	Min Temp %	0.31	12.131	OK
. +1.20D+0.50L+0.20S+E+1.60H	0.895	+X	Bottom	0.2592	Min Temp %	0.31	12.131	OK

RPS design
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Description : Garage Wall

Footing Flexure

Flexure Axis & Load Combination	Mu k-ft	Which Side ?	Tension @ Bot. or Top ?	As Req'd in^2	Gvrn. As in^2	Actual As in^2	Phi*Mn k-ft	Status
, +0.90D+W+0.90H	0.6282	-X	Bottom	0.2592	Min Temp %	0.31	12.131	OK
, +0.90D+W+0.90H	0.6282	+X	Bottom	0.2592	Min Temp %	0.31	12.131	OK
, +0.90D+E+0.90H	0.6282	-X	Bottom	0.2592	Min Temp %	0.31	12.131	OK
, +0.90D+E+0.90H	0.6282	+X	Bottom	0.2592	Min Temp %	0.31	12.131	OK

One Way Shear

Units : k

Load Combination...	Vu @ -X	Vu @ +X	Vu:Max	Phi Vn	Vu / Phi*Vn	Status
+1.40D+1.60H	4.203 psi	4.203 psi	4.203 psi	82.158 psi	0.05116	OK
+1.20D+0.50Lr+1.60L+1.60H	4.64 psi	4.64 psi	4.64 psi	82.158 psi	0.05648	OK
+1.20D+1.60L+0.50S+1.60H	4.393 psi	4.393 psi	4.393 psi	82.158 psi	0.05347	OK
+1.20D+1.60Lr+0.50L+1.60H	4.64 psi	4.64 psi	4.64 psi	82.158 psi	0.05648	OK
+1.20D+1.60Lr+0.50W+1.60H	4.393 psi	4.393 psi	4.393 psi	82.158 psi	0.05347	OK
+1.20D+0.50L+1.60S+1.60H	3.85 psi	3.85 psi	3.85 psi	82.158 psi	0.04686	OK
+1.20D+1.60S+0.50W+1.60H	3.603 psi	3.603 psi	3.603 psi	82.158 psi	0.04385	OK
+1.20D+0.50Lr+0.50L+W+1.60H	4.097 psi	4.097 psi	4.097 psi	82.158 psi	0.04987	OK
+1.20D+0.50L+0.50S+W+1.60H	3.85 psi	3.85 psi	3.85 psi	82.158 psi	0.04686	OK
+1.20D+0.50L+0.20S+E+1.60H	3.85 psi	3.85 psi	3.85 psi	82.158 psi	0.04686	OK
+0.90D+W+0.90H	2.702 psi	2.702 psi	2.702 psi	82.158 psi	0.03289	OK
+0.90D+E+0.90H	2.702 psi	2.702 psi	2.702 psi	82.158 psi	0.03289	OK