MYERS ENGINEERING

Addendum to Structural Calculations



Digitally signed by Mark Myers, PE Date: 2023.02.07 18:44:00 -08'00'

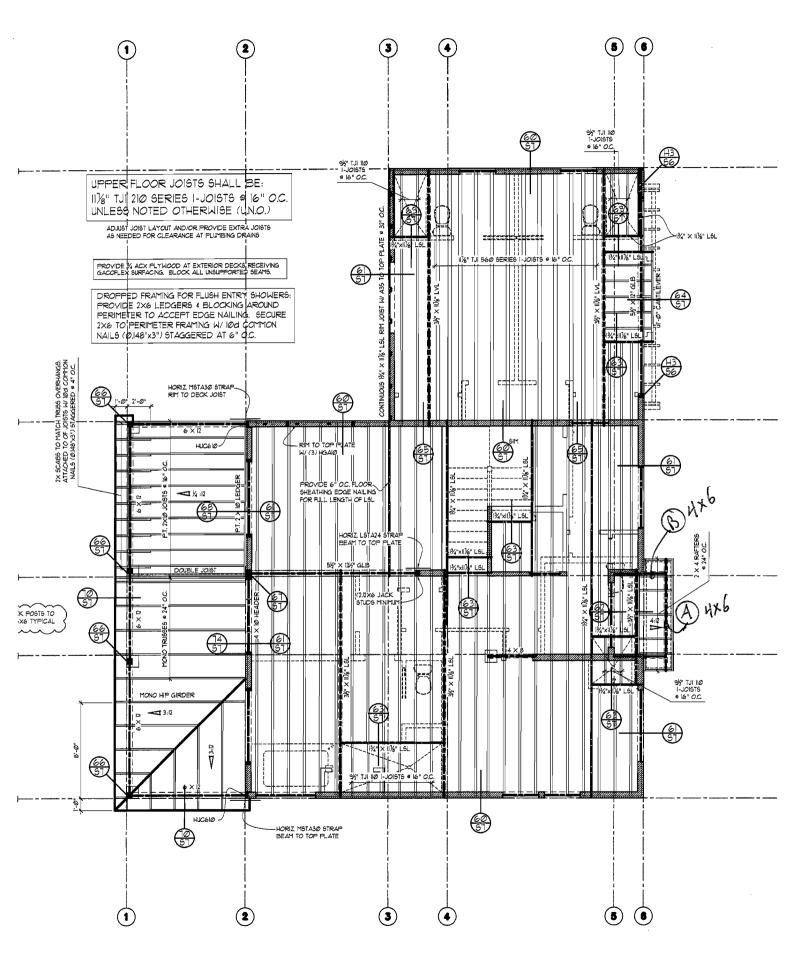
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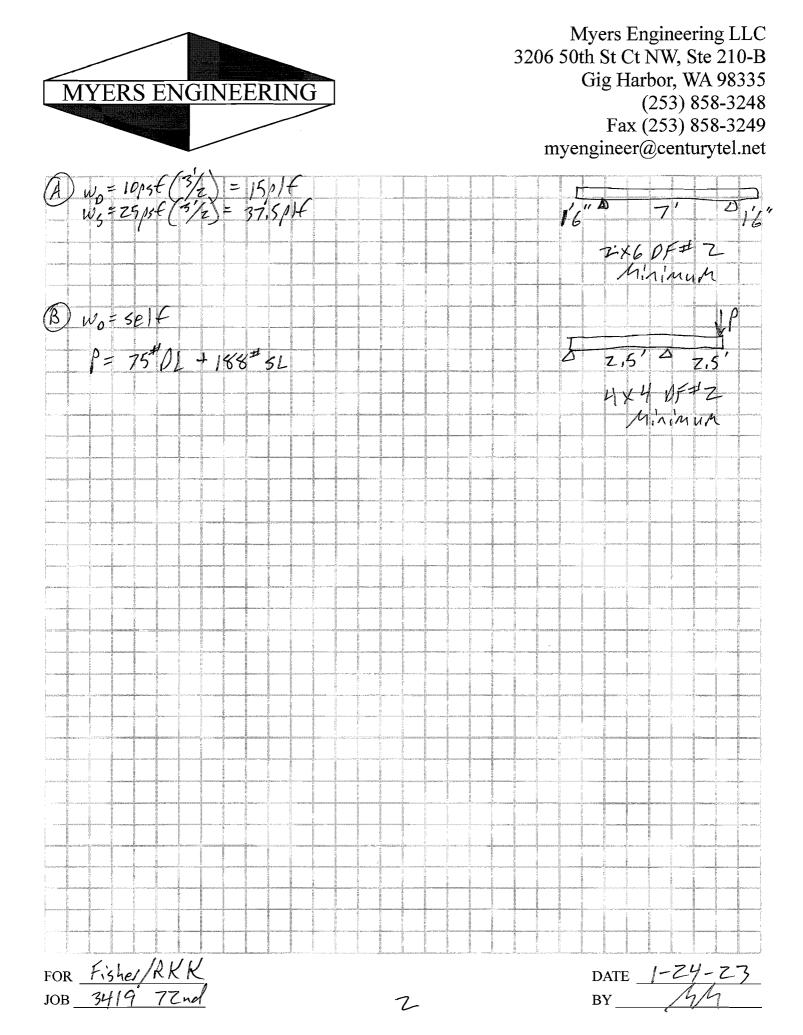
Project: SFR of RKK Construction 3419 72nd Place Southeast Mercer Island, WA

February 7, 2023

2018 INTERNATIONAL BUILDING CODE 100 MPH BASIC WIND, EXPOSURE B, $K_{zt} = 1.00$ RISK CATEGORY II - SOIL SITE CLASS D SEISMIC DESIGN CATEGORY D (IBC)

3206 50th Street Court, Suite 210-B Gig Harbor, WA 98335 Phone: 253-858-3248 Email: myengineer@centurytel.net





ild:20.22.12.28						. (0) -		INC 1983-202
gn: A.P	orch Roof	beam		Calo	culations per ND	S 2018, IBC 2018		19, ASCE 7-
6. Sawn, Ful	lv Unbrace	d					-	
ing Allowable S	tress Design	with IBC 2018	Load Comb	inations, Majo	or Axis Bending			
900.0 psi 900.0 psi 900.0 psi	Fc - Prll Fc - Perp	1,350.0 psi 625.0 psi	Fv Ft	180.0 psi 575.0 psi	Ebend- xx Eminbend - xx	1,600.0 ksi 580.0 ksi	Density	31.210 pc
150, S = 0.037	50 k/ft, Trib= ⁻	1.0 ft						
		Γ						
			-		D(0.0150)	S(0.03750)		Y
	at 3.500 ft	in Span # 2	276	0	2	-6		2x6
+D+S				A			,	1.50 ft
29.40 psi		in Span # 2			· · ·			+
+D+S								0.007 ·
		<u>W</u> <u>E</u>	<u>н</u>				ward	0.067 in
0.08	0.19			Ratio			10	1251 : +D+S
				Transient Ur	•			-0.041 in
								886
							LC	: +D+S
gn: B.S	upport Bea	am for Porch	Roof	Calc	culations per ND	S 2018, IBC 2018	3, CBC 20	19, ASCE 7
4, Sawn, Ful	ly Unbrace	d						
na Allowable St	tress Design	with IBC 2018	Load Comb	inations, Majo	or Axis Bending			
					e·No2			
uglasFir-Larch 900.0 psi	Fc - Prll	1,350.0 psi	Fν	Wood Grad 180.0 psi	Ebend- xx	1,600.0 ksi	Density	31.210 pc
uglasFir-Larch	Fc - Prll Fc - Perp	1,350.0 psi 625.0 psi	Fv Ft	Wood Grad		1,600.0 ksi 580.0 ksi	Density	31.210 pc
uglasFir-Larch 900.0 psi 900.0 psi	Fc - Perp	625.0 psi		Wood Grad 180.0 psi	Ebend- xx		Density	31.210 pc
uglasFir-Larch 900.0 psi	Fc - Perp	625.0 psi		Wood Grad 180.0 psi	Ebend- xx		Density	31.210 pc
uglasFir-Larch 900.0 psi 900.0 psi alculated and ad , S = 0.1880 k	Fc - Perp dded to loads @ 5.0 ft	625.0 psi		Wood Grad 180.0 psi	Ebend- xx		Density	31.210 pc
uglasFir-Larch 900.0 psi 900.0 psi alculated and ad , S = 0.1880 k 0.720 1,118.04 psi 1,552.50 psi	Fc - Perp dded to loads @ 5.0 ft 1	625.0 psi		Wood Grad 180.0 psi 575.0 psi	Ebend- xx	580.0 ksi		31.210 pc
uglasFir-Larch 900.0 psi 900.0 psi alculated and ad , S = 0.1880 k 0.720 1,118.04 psi 1,552.50 psi +D+S	Fc - Perp dded to loads @ 5.0 ft 1 at 2.500 ft	625.0 psi		Wood Grad 180.0 psi 575.0 psi 4x4	Ebend- xx Eminbend - xx	580.0 ksi	 4x4	31.210 pc
uglasFir-Larch 900.0 psi 900.0 psi alculated and ad , S = 0.1880 k 1,118.04 psi 1,552.50 psi +D+S 0,159 : 32.92 psi 207.00 psi	Fc - Perp dded to loads @ 5.0 ft 1 at 2.500 ft	625.0 psi	Ft	Wood Grad 180.0 psi 575.0 psi 4x4 2.50 f	Ebend- xx Eminbend - xx	580.0 ksi		31.210 pc
uglasFir-Larch 900.0 psi 900.0 psi alculated and ad , S = 0.1880 k 0.720 ; 1,118.04 psi 1,552.50 psi +D+S 0.159 ; 32.92 psi 207.00 psi +D+S D Lr	Fc - Perp dded to loads @ 5.0 ft 1 at 2.500 ft 1 at 2.500 ft $\frac{1}{at}$ $\frac{5.000 \text{ ft}}{2.500 \text{ ft}}$	625.0 psi	Ft	Wood Grad 180.0 psi 575.0 psi 4x4	Ebend- xx Eminbend - xx	580.0 ksi	4x4 .50 ft	31.210 pc
uglasFir-Larch 900.0 psi 900.0 psi alculated and ad , S = 0.1880 k 1,118.04 psi 1,552.50 psi +D+S 0.159 : 32.92 psi 207.00 psi +D+S D ⊥r	Fc - Perp dded to loads @ 5.0 ft 1 at 2.500 ft 1 at 2.500 ft <u>L</u> <u>S</u>	625.0 psi in Span # 1 in Span # 1	Ft	Wood Grad 180.0 psi 575.0 psi 4x4 2.50 f ax Deflections Transient Do Ratio	Ebend- xx Eminbend - xx	580.0 ksi 2 in Total Down Ratio	4x4 .50 ft ward	250 +D+S
uglasFir-Larch 900.0 psi 900.0 psi alculated and ad , S = 0.1880 k 0.720 ; 1,118.04 psi 1,552.50 psi +D+S 0.159 ; 32.92 psi 207.00 psi +D+S D Lr	Fc - Perp dded to loads @ 5.0 ft 1 at 2.500 ft 1 at 2.500 ft $\frac{1}{at}$ $\frac{5.000 \text{ ft}}{2.500 \text{ ft}}$	625.0 psi in Span # 1 in Span # 1	Ft	Wood Grad 180.0 psi 575.0 psi 4x4 2.50 f ax Deflections Transient Do	Ebend- xx Eminbend - xx	580.0 ksi 2 in Total Down Ratio	4x4 .50 ft ward	0.238 in 250
	6, Sawn, Ful ng Allowable Si uglasFir-Larch 900.0 psi 900.0 psi 150, S = 0.0375 0.340 416.53 psi 1,224.23 psi +D+S 0,142: 29.40 psi 207.00 psi +D+S D Con 207.00 psi 1,224.23 psi +D+S 0,142: 29.40 psi 207.00 psi 1,224.23 psi 1,224.23 psi 207.00 psi 1,224.23 psi 207.00 psi 1,224.23 psi 207.00 psi 207.00 psi 1,224.23 psi 207.00 psi 1,224.23 psi 1,224.23 psi 207.00 psi 1,224.23 psi 1,224.23 psi 1,224.23 psi 1,224.23 psi 1,224.23 psi 207.00 psi 1,224.23 psi 1,225.25	6, Sawn, Fully Unbrace ng Allowable Stress Design uglasFir-Larch 900.0 psi Fc - Prll 900.0 psi Fc - Perp 150, S = 0.03750 k/ft, Trib= 416.53 psi at 3.500 ft 1,224.23 psi +D+S 0.142:1 29.40 psi 207.00 psi +D+S 0.19 0.08 0.19	6, Sawn, Fully Unbraced ng Allowable Stress Design with IBC 2018 uglasFir-Larch 900.0 psi Fc - Prll 1,350.0 psi 900.0 psi Fc - Perp 6, Sawn, Fully Unbraced 900.0 psi Fc - Perp 900.0 psi at 3.500 ft in Span #2 1,224.23 psi +D+S 0.142:1 29.40 psi at 6.580 ft in Span #2 207.00 psi +D+S 90.08 0.19 90.08 0.19	6, Sawn, Fully Unbraced ng Allowable Stress Design with IBC 2018 Load CombuglasFir-Larch 900.0 psi Fc - Prll 1,350.0 psi Fv 900.0 psi Fc - Perp 625.0 psi Ft 150, S = 0.03750 k/ft, Trib= 1.0 ft 416.53 psi at 3.500 ft in Span # 2 1,224.23 psi +D+S 0.142 : 1 29.40 psi at 6.580 ft in Span # 2 207.00 psi +D+S M 0.142 : 1 207.00 psi +D 207.00 psi at 6.580 ft in Span # 2 0.142 : 1 207.00 psi +D+S 0.08 0.19 M Dord 0.19 M Dord 0.19 M Dord B. Support Beam for Porch Roof 4, Sawn, Fully Unbraced Sawn, Fully Unbraced	CalcCalc6, Sawn, Fully Unbracedng Allowable Stress Design with IBC 2018 Load Combinations, MajouglasFir-LarchWood Grad900.0 psiFc - PrII1,350.0 psiFv180.0 psi900.0 psiFc - Perp625.0 psiFt575.0 psi150, S = 0.03750 k/ft, Trib= 1.0 ft1.0 ft1.224.23 psi2x6+D+S0.142:12.240 psi at 6.580 ft in Span # 21.50 ft207.00 psi+D+SMax DeflectionsDLrLSWEHTransient Do0.080.19Transient Do0.080.19Transient UpRatioQn :B. Support Beam for Porch RoofCalc4, Sawn, Fully UnbracedCalc	Calculations per ND6, Sawn, Fully Unbraced ing Allowable Stress Design with IBC 2018 Load Combinations, Major Axis Bending Wood Grade : No.2 900.0 psi900.0 psiFc - PrII1,350.0 psiFv180.0 psiEbend- xx900.0 psiFc - Perp625.0 psiFt575.0 psiEminbend - xx150, S = 0.03750 k/ft, Trib= 1.0 ft $D(0.0150)$ $D(0.0150)$ 416.53 psiat3.500 ft in Span # 2 $D(0.0150)$ 416.53 psiat3.500 ft in Span # 2 $D(0.0150)$ 416.53 psiat3.500 ft in Span # 2 $D(0.0150)$ 410.53 psiat6.580 ft in Span # 2 $D(0.0150)$ 50.080.19EHTransient Downward 0.04850.080.19LC: S OnlyTransient Upward -0.02960.70.19LC: S Only124050.80.19LC: S Only50.9Transient Upward -0.029124050.9Calculations per ND	Calculations per NDS 2018, IBC 2018Galculations per NDS 2018, IBC 2018Calculations per NDS 2018, IBC 2018Model Combinations, Major Axis Bending Wood Grade : No.2Wood Grade : No.2900.0 psiFc - Pril1,350.0 psiFv180.0 psiEbend-xx1,600.0 ksi900.0 psiFc - Perp625.0 psiFt575.0 psiEminbend - xx580.0 ksi150, S = 0.03750 k/ft, Trib= 1.0 ft $D(0.0150) S(0.03750)$ $D(0.0150) S(0.03750)$ $D(0.0152) S(0.03750)$ 1224.23 psi $+D+S$ $D(0.142: 1)$ $2x6$ $2x6$ 207.00 psi $+D+S$ $D(0.142: 1)$ $2x6$ 1.50 ft207.00 psi $+D+S$ $D(0.19)$ $D(0.0150) S(0.03750)$ D_{017} 0.19 $D(0.19)$ $D(0.0150) S(0.03750)$ D_{019} $D(0.0150) S(0.03750)$ $D(0.0150) S(0.017$	Calculations per NDS 2018, IBC 2018, CBC 206, Sawn, Fully Unbraceding Allowable Stress Design with IBC 2018 Load Combinations, Major Axis Bending Wood Grade : No.2y00.0 psiFc - PrII1,350.0 psiFv180.0 psiEbend-xx1,600.0 ksiDensityy00.0 psiFc - Perp625.0 psiFt575.0 psiEminbend - xx580.0 ksiDensityy00.0 psiFc - Perp625.0 psiFt575.0 psiEminbend - xx580.0 ksiDensityy00.142 : 10.340 : 112x62x62x6y1224.23 psi+D+S0.142 : 129.40 psi at6.580 ft in Span # 22x61.50 ft7.0 fty00.0 psiLrLSWEHMax Deflections Transient Downward0.048 in RatioTotal Downward0.070.190.19LC: S OnlyLCLC: S OnlyLCy00.80.19LC: S OnlyLCC: S OnlyLCy00.080.19LC: S OnlyLCLC: S OnlyLCy00.080.19 <td< td=""></td<>

Multiple Simple Beam	<u> </u>	IYERS EN	GINEERING	Project File: 3419 7 (c) ENERC	ALC INC 1983-2022
escription : Vood Beam Design : 13. Be	am in Crawl East of	Grid 3	Calculations per l		2019 ASCE 7-1
BEAM Size : 5.5x10.5, GLB, Fu	Illy Unbraced				
Wood Species : DF/DF Fb - Tension 2,400.0 psi F	ss Design with IBC 2018 Fc - Prll 1,650.0 psi Fc - Perp 650.0 psi	Load Col Fv Ft	nbinations, Major Axis Bending Wood Grade : 24F-V4 265.0 psi Ebend- xx 1,100.0 psi Eminbend - >	1,800.0 ksi Dens	sity 31.210 pcf
A <u>pplied Loads</u> Unif Load: D = 0.30, L = 0.80 k/ft, Tri 1Point: D = 1.780, L = 4.730 k @ 0.5					
Design Summary	ſ		7,111 P 10 10.		
Max fb/Fb Ratio = 0.640 · 1 fb : Actual : 1,522.76 psi at Fb : Allowable : 2,378.95 psi Load Comb : +D+L	4.170 ft in Span # 1			<u>30) L(0.80)</u>	
Max fv/FvRatio = 0.427 : 1 fv : Actual : 113.11 psi at Fv : Allowable : 265.00 psi Load Comb : +D+L	8.130 ft in Span # 1		A1176	5x10.5 9.0 ft	i
Max Reactions (k) <u>L</u> r <u>L</u> Left Support 3.03 8.07 Right Support 1.45 3.86		Н	Transient Downward 0.14	46 in Total Downward 38 Ratio Iv	0.201 in 537 LC: +D+L
			Transient Upward 0.00 Ratio 999	0 in Total Upward	0.000 in 9999 LC:
Vood Beam Design : 14. Ma	in Floor Deck Beam		_		
BEAM Size : 6x12, Sawn, Fully	Unbraced		Calculations per l	NDS 2018, IBC 2018, CBC	2019, ASCE 7-
	s Design with IBC 2018 I	Load Cor	nbinations, Major Axis Bending Wood Grade : No.1		
Fb - Tension 1050 psi F	Fc - Prll 750 psi Fc - Perp 405 psi	Fv Ft	140 psi Ebend- xx 525 psi Eminbend - >	1300 ksi Dens x 470 ksi	sity 26.84 pcf
A <u>pplied Loads</u> Unif Load: D = 0.050, L = 0.30 k/ft, Ti	rib= 1.0 ft				
Design Summary	ſ		D(0.0	50) L(0.30)	
	6.250 ft in Span # 1				
Fb : Allowable : 832.28 psi Load Comb : +D+L		2		6x12	, and the second se
Max fv/FvRatio = 0.395 : 1 fv : Actual : 44.27 psi at Fv : Allowable : 112.00 psi	11.583 ft_in Span # 1	<u> </u>	1	2.50 ft	
Load Comb : +D+L	<u>s w e</u>	H	Max Deflections Transient Downward 0.18		
Left Support 0.31 1.88	3		Ratio 82		703
	3		Ratio 82 LC: L On Transient Upward 0.00 Ratio 999	ly 10 in Total Upward	LC: +D+L 0.000 in 9999

Cantilevered Retaining Wall

LIC# : KW-06015659, Build:20.22.12.28 DESCRIPTION: 8ft Stem MYERS ENGINEERING

Project File: 3419 72nd PL SE.ec6

(c) ENERCALC INC 1983-2022

DESCRIPTION: OILS

Code Reference:

Calculations per IBC 2018 1807.3, CBC 2019, ASCE 7-16

Criteria

Retained Height=7.50 ftWall height above soil=0.50 ftSlope Behind Wall=0.00Height of Soil over Toe=6.00 inWater height over heel=0.0 ft

Surcharge Loads

Surcharge Over Heel = 0.0 psf Used To Resist Sliding & Overturning
Surcharge Over Toe = 0.0 psf
Used for Sliding & Overturning
Avial Load Applied to Stem

Axial Load Applied to Stem

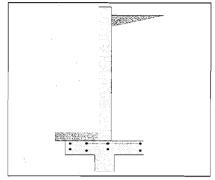
Axial Dead Load	=	200.0 lbs
Axial Live Load	=	0.0 lbs
Axial Load Eccentricity	=	0.0 in

= /letho =		psf psf/ft
=		psf/ft
=		
=	300.0	psf/ft
=	125.00	pcf
=	125.00	pcf
=	0.350	
=	12.00	in
	=	= 125.00 = 125.00 = 0.350

Soil Data

Lateral Load Applied to Stem

Lateral Load Height to Top Height to Bottom Load Type		0.0 #/ft 0.00 ft 0.00 ft Wind (W)
Load Type	_	(Service Level)
Wind on Exposed Stem (Strength Level)	¹ =	0.0 psf



Adjacent Footing Load

Adjacent Footing Load	=	0.0 lbs
Footing Width	=	0.00 ft
Eccentricity	=	0.00 in
Wall to Ftg CL Dist	=	0.00 ft
Footing Type		Spread Footing
Base Above/Below Soil at Back of Wall	=	0.0 ft
Poisson's Ratio	=	0.300

Cantilevered Retaining Wall LIC# : KW-06015659, Build:20.22.12.28

MYERS ENGINEERING

Project File: 3419 72nd PL SE.ec6 (c) ENERCALC INC 1983-2022

DESCRIPTION: 8ft Stem

Design	Summary

Wall Stability Ratios						
Overturning	=			2.47	Oł	<
Sliding	=			1.50) Öł	Ś
Global Stability	=			1.75		
Total Bearing Load	=		3	3.317	lbs	
resultant ecc.	=			6.06	in	
Eccentricity within	n m	nido	lle t	hird		
Soil Pressure @ Toe	Ξ		1	,457	psf	OK
Soil Pressure @ Heel	=			201	psf	ОК
Allowable	=		1	,500	psf	
Soil Pressure Less	Th	an /				
ACI Factored @ Toe	=		2	2,040	psf	
ACI Factored @ Heel	=			282		
Footing Shear @ Toe	=			22.2	psi	ок
Footing Shear @ Heel	=			11.6	psi	OK
Allowable	=			75.0	-	
Sliding Calcs Lateral Sliding Force less 100% Passive Force less 100% Friction Force		-	6	15.3 66.7 60.8	lbs	
Added Force Reg'd	=			0.0	lbs	OK
for 1.5 Stability	=			0.0	lbs	ок

Vertical component of active lateral soil pressure IS NOT considered in the calculation of soil bearing

Load Factors Building Code	
Dead Load	1.200
Live Load	1.600
Earth, H	1.600
Wind, W	1.600
Seismic, E	1.000

Stem Construction		2nd	Bottom	
Design Height Above Ftg		Stem OK 2.50	Stem OK 0.00	
Wall Material Above "Ht"		Concrete	Concrete	
Design Method	=	SD	SD	SD
Thickness	=	8.00	8.00	
Rebar Size	=	# 4	# 4	
Rebar Spacing	=	12.00	8.00	
Rebar Placed at	=	6 in	6 in	
Design Data				
fb/FB + fa/Fa	=	0.224	0.516	
Total Force @ Section				
Service Level	lbs =			
Strength Level	lbs =	700.0	1,575.0	
MomentActual				
Service Level	ft-#=			
Strength Level	ft-# =	1,166.7	3,937.5	
MomentAllowable	ft-# =	5,187.6	7,622.1	
ShearActual				
Service Level	psi =			
Strength Level	psi =	9.7	21.9	
ShearAllowable	psi =	75.0	75.0	
Anet (Masonry)	in2 =			
Wall Weight	psf=	100.0	100.0	
Rebar Depth 'd'	in =	6.00	6.00	
		0.00	0.00	
Masonry Data ———				
fm	psi =			
Fs	psi =			
Solid Grouting	=			
Modular Ratio 'n'	÷			
Equiv. Solid Thick.	=			
Masonry Block Type	=			
Masonry Design Method	=	ASD		
Concrete Data			0.500.5	
fc	psi =	2,500.0	2,500.0	
Fy	psi =	60,000.0	60,000.0	

Cantilevered Retaining Wall

LIC# : KW-06015659, Build:20.22.12.28 DESCRIPTION: 8ft Stem

MYERS ENGINEERING

Project File: 3419 72nd PL SE.ec6

(c) ENERCALC INC 1983-2022

Concrete Stem Rebar Area Details 2nd Stem Vertical Reinforcing Horizontal Reinforcing As (based on applied moment) : 0.0456 in2/ft (4/3) * As : 0.0608 in2/ft Min Stem T&S Reinf Area 1.056 in2 200bd/fy: 200(12)(6)/60000: 0.24 in2/ft Min Stem T&S Reinf Area per ft of stem Height : 0.192 in2/ft 0.0018bh : 0.0018(12)(8) : 0.1728 in2/ft Horizontal Reinforcing Options : ______ One layer of : Two layers of : Required Area : 0.1728 in2/ft #4@ 12.50 in #4@ 25.00 in Provided Area : 0.2 in2/ft #5@ 19.38 in #5@ 38.75 in Maximum Area : 0.8128 in2/ft #6@ 27.50 in #6@ 55.00 in Bottom Stem Vertical Reinforcing Horizontal Reinforcing As (based on applied moment) : 0.154 in2/ft (4/3) * As : 0.2054 in2/ft Min Stem T&S Reinf Area 0.480 in2 200bd/fy: 200(12)(6)/60000: 0.24 in2/ft Min Stem T&S Reinf Area per ft of stem Height : 0.192 in2/ft 0.0018bh : 0.0018(12)(8) : 0.1728 in2/ft Horizontal Reinforcing Options : _______ Two layers of : One layer of : Required Area : 0.2054 in2/ft #4@ 12.50 in #4@ 25.00 in Provided Area : 0.3 in2/ft #5@ 19.38 in #5@ 38.75 in Maximum Area : 0.8128 in2/ft #6@ 27.50 in #6@ 55.00 in **Footing Data** Footing Design Results 1.67 ft Toe Width = Toe Heel Heel Width 2.33 = Factored Pressure 2.040 = 282 psf **Total Footing Width** = 4.00 2,494 Mu': Upward 731 ft-# = Mu': Downward = 313 1,771 ft-# Footing Thickness = 10.00 in Mu: Design = 2,182 OK 1,040 ft-# OK Key Width 12.00 in = phiMn = 6,376 7,358 ft-# Key Depth 12.00 in = Actual 1-Way Shear 22.25 = 11.61 psi Key Distance from Toe 1.50 ft = Allow 1-Way Shear 75.00 = 75.00 psi 60,000 psi Toe Reinforcing fc = 2,500 psi = #4@11.00 in Fy =Footing Concrete Density 150.00 pcf Heel Reinforcing = # 4 @ 11.00 in Key Reinforcing Min. As % 0.0018 None Spec'd Cover @ Top 2.00 @ Btm .= 3.00 in Footing Torsion, Tu 0.00 ft-lbs Footing Allow. Torsion, phi Tu = 0.00 ft-lbs

If torsion exceeds allowable, provide

supplemental design for footing torsion.

Other Acceptable Sizes & Spacings

Toe: #4@ 11.11 in, #5@ 17.22 in, #6@ 24.44 in, #7@ 33.33 in, #8@ 43.88 in, #9@ 55.55 in, #10@ 70.55 in

Heel: #4@ 11.11 in, #5@ 17.22 in, #6@ 24.44 in, #7@ 33.33 in, #8@ 43.88 in, #9@ 55.55 in, #10@ 70.55 in

Key: phiMn = phi'5'lambda'sqrt(fc)'Sm

Min footing T&S reinf Area	0.86 in2
Min footing T&S reinf Area per foot	0.22 in2 /ft
If one layer of horizontal bars:	If two layers of horizontal bars:
#4@ 11.11 in	#4@ 22.22 in
#5@ 17.22 in	#5@ 34.44 in
#6@ 24.44 in	#6@ 48.89 in

Cantilevered Retaining Wall

MYERS ENGINEERING

(c) ENERCALC INC 1983-2022

Project File: 3419 72nd PL SE.ec6

LIC# : KW-06015659, Build:20.22.12.28 DESCRIPTION: 8ft Stem

Summary of Overturning & Resisting Forces & Moments

	0\	ERTURNING			RE	SISTING	
ltem	Force lbs	Distance ft	Moment ft-#		Force Ibs	Distance ft	Moment ft-#
HL Act Pres (ab water tbl) HL Act Pres (be water tbl)	1,215.3	2.78	3,375.8	Soil Over HL (ab. water tbl) Soil Over HL (bel. water tbl)	1,562.5	3.17 3.17	4,947.9 4,947.9
lydrostatic Force				Water Table			
Buoyant Force =				Sloped Soil Over Heel =			
Surcharge over Heel =				Surcharge Over Heel =			
Surcharge Over Toe =				Adjacent Footing Load =			
Adjacent Footing Load =				Axial Dead Load on Stem =	200.0	2.00	400.0
Added Lateral Load =				* Axial Live Load on Stem =			
.oad @ Stem Above Soil =				Soil Over Toe =	104.2	0.83	86.8
=				Surcharge Over Toe =			
_				Stem Weight(s) =	800.0	2.00	1,600.0
				Earth @ Stem Transitions =			
Total =	1,215.3	0.T.M. =	3,375.8	Footing Weight =	500.0	2.00	1,000.0
				Key Weight =	150.0	2.00	300.0
Resisting/Overturning Ra	tio	=	2.47	Vert. Component =			
Vertical Loads used for Se	oil Pressure	= 3,316.7	7 Ibs	Total =	3.316.7		8,334.7

resistance, but is included for soil pressure calculation.

Vertical component of active lateral soil pressure IS NOT considered in the calculation of Sliding Resistance.

Vertical component of active lateral soil pressure IS NOT considered in the calculation of Overturning Resistance.

Tilt

Horizontal Deflection at Top of Wall due to settlement of soil

(Deflection due to wall bending not considered)

Soil Spring Reaction Modulus	250.0	pci
Horizontal Defl @ Top of Wall (approximate only)	0.081	in

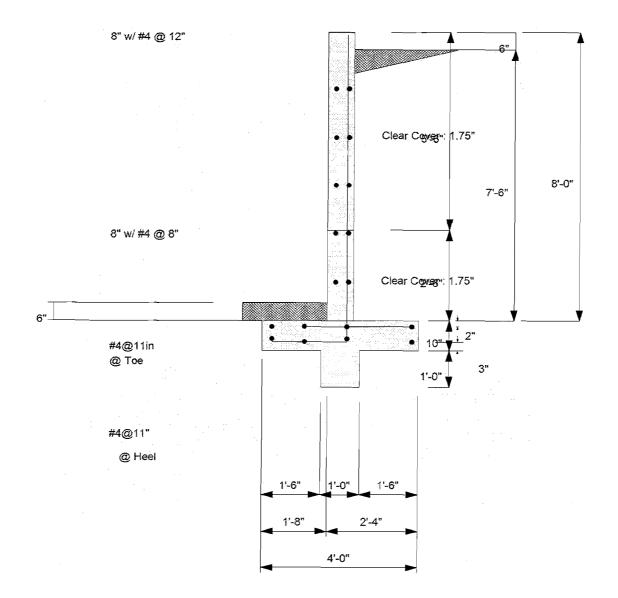
The above calculation is not valid if the heel soil bearing pressure exceeds that of the toe,

because the wall would then tend to rotate into the retained soil.

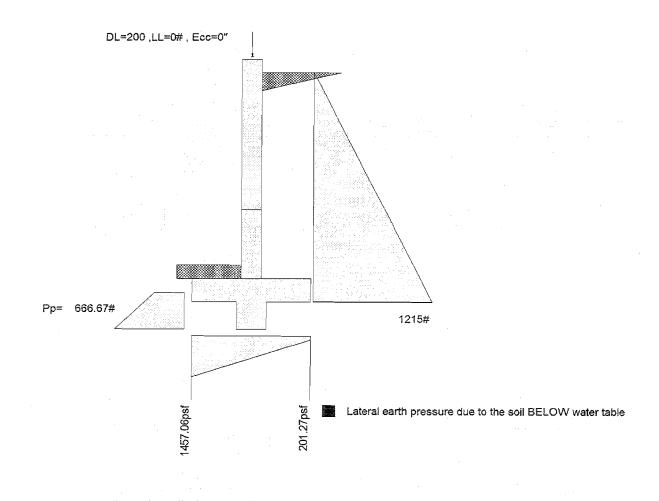
Cantilevered	Retaining Wall		Project File: 3419 72nd PL SE	ec6
LIC# : KW-06015659, Bi		MYERS ENGINEERING	(c) ENERCALC INC 1983	3-2022
Rebar Lap & Eml	bedment Lengths Inform	nation		
Stem Design Segme	<u>nt: 2nd</u>			
Stem Design Height:	2.50 ft above top of footing			
Lap Splice length for	#4 bar specified in this stem de	sign segment (25.4.2.3a) =	18.72 in	
Development length	for #4 bar specified in this stem	design segment =	14.40 in	
 Stem Design Segme				
Stem Design Height:				
Lap Splice length for	#4 bar specified in this stem de	sign segment (25.4.2.3a) =	18.72 in	
• • •	#4 bar specified in this stem de for #4 bar specified in this stem		18.72 in 14.40 in	
Development length t	for #4 bar specified in this stem			
Development length t	for #4 bar specified in this stem	design segment =	14.40 in	

9

Cantilevered Retaining Wall		Project File: 3419 72nd PL SE.ec6
LIC# : KW-06015659, Build:20.22.12.28	MYERS ENGINEERING	(c) ENÉRCALC INC 1983-2022
DESCRIPTION: 8ft Stem		



Cantilevered Retaining Wall Project File: 3419 72nd PL SE.ec6 LIC# : KW-06015659, Build:20.22.12.28 MYERS ENGINEERING (c) ENERCALC INC 1983-2022 DESCRIPTION: 8ft Stem (c) ENERCALC INC 1983-2022



Cantilevered Retaining Wall LIC# : KW-06015659, Build:20.22.12.28

MYERS ENGINEERING

Project File: 3419 72nd PL SE ec6 (c) ENERCALC INC 1983-2022

DESCRIPTION: 6ft Stem

Code Reference:

Calculations per IBC 2018 1807.3, CBC 2019, ASCE 7-16

Criteria

Soil Data

Criteria		Soil Data			
Wall height above soil	= 5.50 ft = 0.50 ft = 0.00	Allow Soil Bearing Equivalent Fluid Pressur Active Heel Pressure	= 1,500.0 psf e Method = 35.0 psf/ft		
	= 6.00 in = 0.0 ft	Passive Pressure Soil Density, Heel Soil Density, Toe Footing Soil Friction Soil height to ignore for passive pressure	= = 300.0 psf/ft = 125.00 pcf = 125.00 pcf = 0.350 = 12.00 in		
Surcharge Loads		Lateral Load Appli	ed to Stem	Adjacent Footing I	Load
Used To Resist Sliding	= 0.0 psf	Lateral Load Height to Top Height to Bottom	= 0.0 #/ft = 0.00 ft = 0.00 ft	Adjacent Footing Load Footing Width Eccentricity Wall to Ftg CL Dist	= 0.0 lbs = 0.00 ft = 0.00 in = 0.00 ft
Axial Load Applied	to Stem	Load Type	= Wind (W) (Service Level)	Footing Type	Spread Footing
Axial Live Load	= 200.0 lbs = 0.0 lbs = 0.0 in	Wind on Exposed Stem (Strength Level)	= 0.0 psf	Base Above/Below Soil at Back of Wall Poisson's Ratio	= 0.0 ft = 0.300

Cantilevered Retaining Wall LIC# : KW-06015659, Build:20.22.12.28

MYERS ENGINEERING

Project File: 3419 72nd PL SE.ec6 (c) ENERCALC INC 1983-2022

DESCRIPTION: 6ft Stem

Design	Summary
--------	---------

Wall Stability Ratios		
Overturning	=	2.35 OK
Sliding	=	1.52 OK
Global Stability	=	2.00
Total Bearing Load	=	2,041 lbs
resultant ecc.	=	5.24 in
Eccentricity within		
Soil Pressure @ Toe	=	1,389 psf OK
Soil Pressure @ Heel	=	53 psf OK
Allowable	=	1,500 psf
Soil Pressure Less	I han Al	
ACI Factored @ Toe	=	1,945 psf
ACI Factored @ Heel	=	74 psf
Footing Shear @ Toe	=	8.5 psi OK
Footing Shear @ Hee	=	6.1 psi OK
Allowable	=	75.0 psi
Sliding Calcs		
Lateral Sliding Force	=	701.9 lbs
less 100% Passive Force	-	354.2 lbs
less 100% Friction Force	= -	714.4 lbs
Added Force Reg'd	=	0.0 lbs OK
for 1.5 Stability	=	0.0 lbs OK
ior 1.0 Otability		0.0 103 010

Vertical component of active lateral soil pressure IS NOT considered in the calculation of soil bearing

Load Factors	
Dead Load	1.200
Live Load	1.600
Earth, H	1.600
Wind, W	1.600
Seismic, E	1.000

Stem Construction		2nd	Bottom	
Design Height Above Ftg	ft =	Stern OK 2.50	Stem OK 0.00	
Wall Material Above "Ht"	=	Concrete	Concrete	
Design Method	=	SD	SD	SD
Thickness	=	8.00	8.00	
Rebar Size	=	# 4	# 4	
Rebar Spacing	=	12.00	10.00	
Rebar Placed at	=	6 in	6 in	
Design Data fb/FB + fa/Fa	=	0.048	0.251	
Total Force @ Section	-	0.040	0.201	
Service Level	lbs =			
Strength Level	lbs =	252.0	847.0	
MomentActual	103 ~	252.0	047.0	
Service Level	ft-# =			
Strength Level	ft-# =	252.0	1,552.8	
MomentAllowable	ft-# =	5.187.6	6,174.1	
ShearActual		,		
Service Level	psi=			
Strength Level	psi =	3.5	11.8	
ShearAllowable	psi=	75.0	75.0	
Anet (Masonry)	in2 =			
Wall Weight	psf=	100.0	100.0	
Rebar Depth 'd'	in =	6.00	6.00	
Masonry Data				
fm	psi =			
Fs	psi=			
Solid Grouting	p31 =			
Modular Ratio 'n'	=			
Equiv. Solid Thick.	=			
Masonry Block Type	=			
Masonry Design Method	=	ASD		
Concrete Data		••••••••••••••••••••••••••••••••••••••		
fc	psi =	2,500.0	2,500.0	
Fy	psi =	60,000.0	60,000.0	

Key: phiMn = phi'5'lambda'sqrt(fc)'Sm

Min footing T&S reinf Area 0.61 in2 Min footing T&S reinf Area per foot 0.22 in2 /ft If one layer of horizontal bars: If two layers of horizontal bars: #4@ 11.11 in #4@ 22.22 in #5@ 17.22 in #5@ 34.44 in #6@ 24.44 in #6@ 48.89 in

Heel: phiMn = phi'5'lambda'sqrt(fc)'Sm

Toe: phiMn = phi'5'lambda'sqrt(fc)'Sm

Other Acceptable Sizes & Spacings

supplemental design for footing torsion.

If torsion exceeds allowable, provide

		U ,
==	One layer of :	Two layers of :
	#4@ 12.50 in	#4@ 25.00 in
	#5@ 19.38 in	#5@ 38.75 in
	#6@ 27.50 in	#6@ 55.00 in
Footing D	esign Results	

Vertical Reinforcing 0.0099 in2/ft 0.0131 in2/ft

=

=

=

=

=

=

=

Fy =

0.24 in2/ft 0.1728 in2/ft

0.2 in2/ft

0.1728 in2/ft

0.8128 in2/ft

0.0607 in2/ft

0.1728 in2/ft

0.1728 in2/ft

0.8128 in2/ft

0.24 in2/ft

1.08 ft

1.75

2.83

10.00 in

12.00 in

6.00 in

0.92 ft

60,000 psi

150.00 pcf

0.0018

@ Btm .= 3.00 in

0.081 in2/ft

0.24 in2/ft

Vertical Reinforcing

=====

Cantilevered Retaining Wall

Concrete Stem Rebar Area Details 2nd Stem As (based on applied moment) : (4/3) * As : 200bd/fy: 200(12)(6)/60000:

LIC# : KW-06015659, Build:20.22.12.28

DESCRIPTION: 6ft Stem

0.0018bh : 0.0018(12)(8) :

As (based on applied moment) :

200bd/fy: 200(12)(6)/60000:

0.0018bh : 0.0018(12)(8) :

Provided Area : Maximum Area :

Bottom Stem

Required Area :

Provided Area :

Maximum Area :

Heel Width

Key Width

Key Depth

Min. As %

Cover @ Top

fc =

Footing Data Toe Width

Total Footing Width

Key Distance from Toe

Footing Concrete Density

2,500 psi

2.00

Footing Thickness

(4/3) * As :

Required Area :

Project Title: Engineer: Project ID: Project Descr:

Horizontal Reinforcing

Min Stem T&S Reinf Area 0.672 in2 Min Stem T&S Reinf Area per ft of stem Height : 0.192 in2/ft Horizontal Reinforcing Options : Two layers of :

One layer of : #4@ 12.50 in #4@ 25.00 in #5@ 19.38 in #5@ 38.75 in #6@ 55.00 in

#6@ 27.50 in

Horizontal Reinforcing

Min Stem T&S Reinf Area 0.480 in2 Min Stem T&S Reinf Area per ft of stem Height : 0.192 in2/ft Horizontal Reinforcing Options :

MYERS ENGINEERING

rooting Desig				
		Toe	Heel	
Factored Pressure	=	1,945	74 psf	
Mu' : Upward	=	996	184 ft-#	
Mu' : Downward	=	131	572 ft-#	
Mu: Design	=	864 OK	388 ft-#	ОК
phiMn	=	1,600	1,600 ft-#	
Actual 1-Way Shear	=	8.51	6.12 psi	
Allow 1-Way Shear	=	40.00	40.00 psi	
Toe Reinforcing	=	None Spec'd		
Heel Reinforcing	=	None Spec'd		
Key Reinforcing	=	None Spec'd		
Footing Torsion, Tu		=	0.00 ft-lbs	
Footing Allow. Torsion	п, р	ohiTu ≕	0.00 ft-lbs	

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Project File: 3419 72nd PL SE.ec6

(c) ENERCALC INC 1983-2022

Cantilevered Retaining Wall LIC# : KW-06015659, Build:20.22.12.28

MYERS ENGINEERING

Project File: 3419 72nd PL SE.ec6 (c) ENERCALC INC 1983-2022

DESCRIPTION: 6ft Stem

Summary of Overturning & Resisting Forces & Moments

	0\	/ERTURNING			RE	SISTING	
Item	Force lbs	Distance ft	Moment ft-#		Force lbs	Distance ft	Moment ft-#
HL Act Pres (ab water tbl)	701.9	2.11	1,481.9	Soil Over HL (ab. water tbl)	744.8	2.29	1,704.3
HL Act Pres (be water tbl) Hydrostatic Force				Soil Over HL (bel. water tbl) Water Table		2.29	1,704.3
	=			Sloped Soil Over Heel =			
	=			Surcharge Over Heel =			
- · · · -	=			Adjacent Footing Load =			
· · · · · · · · · · · · · · · · · · ·	=			Axial Dead Load on Stem =	200.0	1.41	282.7
	=			* Axial Live Load on Stem =			
_oad @ Stem Above Soil =	=			Soil Over Toe =	67.5	0.54	36.5
-	=			Surcharge Over Toe =			
				Stem Weight(s) =	600.0	1.41	848.0
_				Earth @ Stem Transitions =			
Total :	= 701.9	O.T.M. =	1,481.9	Footing Weight =	353.8	1.42	500.6
				Key Weight =	75.0	1.42	106.3
Resisting/Overturning	Ratio	=	2.35	Vert. Component =			
Vertical Loads used for	Soil Pressure	= 2,041.0) ibs	Total =	2,041.0	os R.M.=	3.478.3
				* Axial live load NOT included in			

resistance, but is included for soil pressure calculation.

Vertical component of active lateral soil pressure IS NOT considered in the calculation of Sliding Resistance.

Vertical component of active lateral soil pressure IS NOT considered in the calculation of Overturning Resistance.

Tilt

Horizontal Deflection at Top of Wall due to settlement of soil

(Deflection due to wall bending not considered)

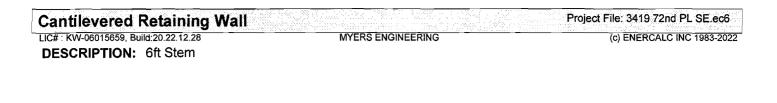
Soil Spring Reaction Modulus	250.0	рсі
Horizontal Defl @ Top of Wall (approximate only)	0.082	in

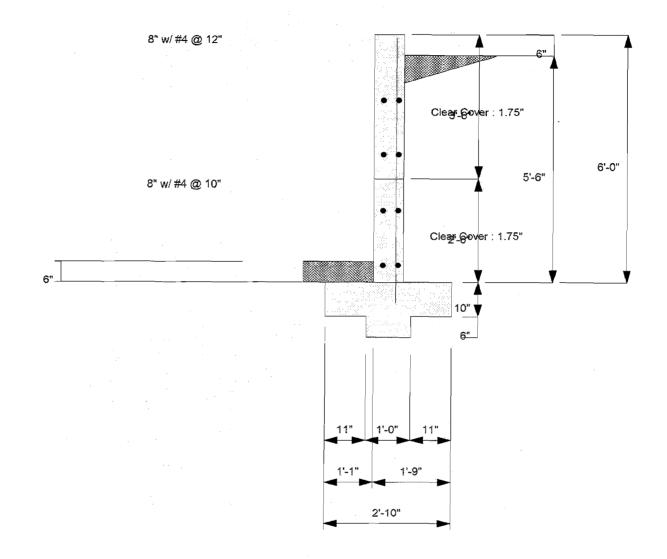
The above calculation is not valid if the heel soil bearing pressure exceeds that of the toe,

because the wall would then tend to rotate into the retained soil.

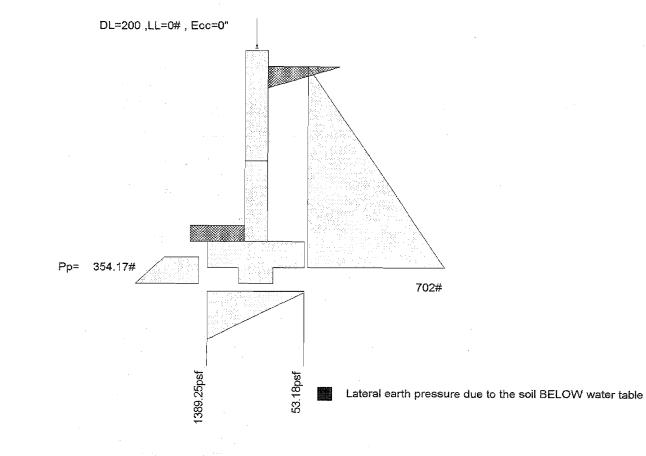
Ualitieveleu int	etaining Wall	Project File: 3419 72nd PL SE.ec6
LIC# : KW-06015659, Build: DESCRIPTION: 6	20.22 12.28 MYERS ENGINEERING	(c) ENERCALC INC 1983-2022
Rebar Lap & Embe	dment Lengths Information	
Stem Design Segment:	<u>2nd</u>	
Stem Design Height:	2.50 ft above top of footing	
Lap Splice length for #4	bar specified in this stem design segment (25.4.2.3a) =	18.72 in
Development length for	#4 bar specified in this stem design segment =	14.40 in
Stem Design Segment:		
Stem Design Segment: Stem Design Height:	Bottom 0.00 ft above top of footing	
Stem Design Height:		 18.72 in
Stem Design Height: Lap Splice length for #4	0.00 ft above top of footing	18.72 in 14.40 in
Stem Design Height: Lap Splice length for #4 Development length for	0.00 ft above top of footing bar specified in this stem design segment (25.4.2.3a) =	
Stem Design Height: Lap Splice length for #4 Development length for	0.00 ft above top of footing bar specified in this stem design segment (25.4.2.3a) = #4 bar specified in this stem design segment =	14.40 in

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Cantilevered Retaining W	na kana sa na na na kana sa kana na kana na kana na kana na kana na kana na sa s	Project File: 3419 72nd PL SE ec6
LIC# : KW-06015659, Build:20.22.12.28	MYERS ENGINEERING	(c) ENERCALC INC 1983-2022
DESCRIPTION: 6ft Stem		



MYERS ENGINEERING

Project Title: Engineer: Project ID: Project Descr:

Project File: 3419 72nd PL SE.ec6

(c) ENERCALC INC 1983-2022

Cantilevered Retaining Wall LIC# : KW-06015659, Build:20.22.12.28 DESCRIPTION: 4ft Stem

Code Reference:

Calculations per IBC 2018 1807.3, CBC 2019, ASCE 7-16

Criteria

Retained Height	=	3.50 ft
Wall height above soil	=	0.50 ft
Slope Behind Wall	=	0.00
Height of Soil over Toe	=	6.00 in
Water height over heel	=	0.0 ft

Surcharge Loads

Surcharge Over Heel = 0.0 psf Used To Resist Sliding & Overturning		
Surcharge Over Toe = 0.0		
Used for Sliding & Overturning		
Axial Load Applied to Stem		

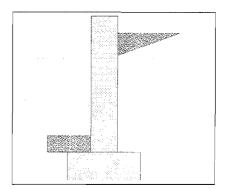
Axial Dead Load	=	200.0 lbs
Axial Live Load	. =	0.0 lbs

Axial Live Load	=	0.0 lbs
Axial Load Eccentricity	=	0.0 in

Soil Data		
Allow Soil Bearing	=	1,500.0 psf
Equivalent Fluid Pressure	Meth	hod
Active Heel Pressure	=	35.0 psf/ft
	=	
Passive Pressure	=	300.0 psf/ft
Soil Density, Heel	=	125.00 pcf
Soil Density, Toe	=	125.00 pcf
Footing Soil Friction	=	0.350
Soil height to ignore for passive pressure	=	12.00 in

Lateral Load Applied to Stem

Lateral Load Height to Top Height to Bottom Load Type	= =	0.0 #/ft 0.00 ft 0.00 ft Wind (W) (Service Level)
Wind on Exposed Stem (Strength Level)	=	0.0 psf



Adjacent Footing Load

Adjacent Footing Load	=	0.0 lbs
Footing Width	=	0.00 ft
Eccentricity	=	0.00 in
Wall to Ftg CL Dist	=	0.00 ft
Footing Type		Spread Footing
Base Above/Below Soil at Back of Wall	=	0.0 ft
Poisson's Ratio	=	0.300

Cantilevered Retaining Wall LIC# : KW-06015659, Build:20.22.12.28

MYERS ENGINEERING

Project File: 3419 72nd PL SE.ec6

(c) ENERCALC INC 1983-2022

DESCRIPTION: 4ft Stem

Design S	Summary
----------	---------

Wall Stability Ratios		
Overturning	=	2.45 OK
Sliding	=	1.55 OK
Global Stability	=	2.62
Total Bearing Load	=	1,121 lbs
resultant ecc.	=	3.62 in
Eccentricity within	n middle	
Soil Pressure @ Toe	=	1,215 psf OK
Soil Pressure @ Heel	=	8 psf OK
Allowable	=	1,500 psf
Soil Pressure Less	Than A	llowable
ACI Factored @ Toe	=	1,701 psf
ACI Factored @ Heel	=	11 psf
Footing Shear @ Toe	=	0.6 psi OK
Footing Shear @ Heel	=	2.4 psi OK
Allowable	=	75.0 psi
Sliding Calcs		
Lateral Sliding Force	=	328.6 lbs
less 100% Passive Force		116.7 lbs
less 100% Friction Force	≡ -	392.2 lbs
Added Force Reg'd	=	0.0 lbs OK
	=	0.0 lbs OK
for 1.5 Stability	-	NU IDS UK

Vertical component of active lateral soil pressure IS NOT considered in the calculation of soil bearing

Load Factors Building Code	
Dead Load	1.200
Live Load	1.600
Earth, H	1.600
Wind, W	1.600
Seismic, E	1.000 [.]

Stem Construction	_	Bottom			
Design Height Above Ftg	 ; ft=	Stem OK 0.00			
Wall Material Above "Ht"		Concrete			
Design Method	=	SD	SD	SD	
Thickness	=	8.00	00	00	
Rebar Size	=	# 4			
Rebar Spacing	=	10.00			
Rebar Placed at	=	6 in			
Design Data					
fb/FB + fa/Fa	=	0.064			
Total Force @ Section					
Service Level	lbs =				
Strength Level	lbs =	343.0			
MomentActual					
Service Level	ft-# =				
Strength Level	ft-# =	400.2			
MomentAllowable	=	6,174.1			
ShearActual					
Service Level	psi =				
Strength Level	psi =	4.8			
ShearAllowable	psi =	75.0			
Anet (Masonry)	in2 =				
Wall Weight	psf=	100.0			
Rebar Depth 'd'	in =	6.00			
Masonry Data fm	· _				
Fs	psi =				
Solid Grouting	psi= =				
- Modular Ratio 'n'	=				
Equiv. Solid Thick.	=				
Masonry Block Type	=				
Masonry Design Method	=	ASD			
Concrete Data					
fc	psi =	2,500.0			
Fy	psi =	60,000.0			

Cantilevered Retaining Wall

Vertical Reinforcing

0.0157 in2/ft 0.0209 in2/ft

0.1728 in2/ft

0.8128 in2/ft

0.24 in2/ft

0.24 in2/ft 0.1728 in2/ft

LIC# : KW-06015659, Build:20.22.12.28 DESCRIPTION: 4ft Stem

Concrete Stem Rebar Area Details

Bottom Stem
As (based on applied moment) :
(4/3) * As :
200bd/fy : 200(12)(6)/60000 :
0.0018bh : 0.0018(12)(8) :

Required Area : Provided Area : Maximum Area :

Footing Data

Toe Width		=	0.58 ft
Heel Width		=	1.25
Total Footing Wid	lth	=	1.83
Footing Thicknes	s	=	10.00 in
Key Width		=	12.00 in
Key Depth		=	0.00 in
Key Distance from	n Toe	=	0.50 ft
fc = 2,500		- y =	60,000 psi
Footing Concrete	Density	=	150.00 pcf
Min. As %		=	0.0018
Cover @ Top	2.00	@ B	tm.= 3.00 in

Horizontal Reinforcing

 Min Stem T&S Reinf Area 0.768 in2

 Min Stem T&S Reinf Area per ft of stem Height : 0.192 in2/ft

 Horizontal Reinforcing Options :

 One layer of :
 Two layers of :

 #4@ 12.50 in
 #4@ 25.00 in

 #5@ 19.38 in
 #5@ 38.75 in

 #6@ 27.50 in
 #6@ 55.00 in

Project File: 3419 72nd PL SE.ec6

(c) ENERCALC INC 1983-2022

Footing Design Results

MYERS ENGINEERING

		Toe	<u>Heel</u>	
Factored Pressure	=	1,701	11 psf	
Mu' : Upward	=	259	32 ft-#	
Mu': Downward	=	38	115 ft-#	
Mu: Design	=	221 OK	82 ft-#	ОK
phiMn	=	1,600	1,600 ft-#	
Actual 1-Way Shear	=	0.62	2.40 psi	
Allow 1-Way Shear	=	40.00	40.00 psi	
Toe Reinforcing	=	None Spec'd		
Heel Reinforcing	=	None Spec'd		
Key Reinforcing	=	None Spec'd		
Footing Torsion, Tu		=	0.00 ft-lbs	
Footing Allow. Torsio	n, p	ohiTu =	0.00 ft-lbs	

If torsion exceeds allowable, provide supplemental design for footing torsion.

supplemental design for rooting torsion.

Other Acceptable Sizes & Spacings

Toe: phiMn = phi'5'lambda'sqrt(fc)'Sm

Heel: phiMn = phi'5'lambda'sqrt(fc)'Sm

Key: No key defined

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Min footing T&S reinf Area0.40in2Min footing T&S reinf Area per foot0.22in2 /tIf one layer of horizontal bars:If two layers of horizontal bars:#4@ 11.11 in#4@ 22.22 in#5@ 17.22 in#5@ 34.44 in#6@ 24.44 in#6@ 48.89 in

Cantilevered Retaining Wall

MYERS ENGINEERING

Project File: 3419 72nd PL SE.ec6 (c) ENERCALC INC 1983-2022

DESCRIPTION: 4ft Stem

Summary of Overturning & Resisting Forces & Moments

	C	VERTURNING			RE	SISTING	
Item	Force lbs	Distance ft	Moment ft-#		Force lbs	Distance ft	Moment ft-#
HL Act Pres (ab water tbl)	328.6	5 1.44	474.7	Soil Over HL (ab. water tbl)	255.1	1.54	393.3
HL Act Pres (be water tbl) Hydrostatic Force				Soil Over HL (bel. water tbl) Water Table		1.54	393.3
Buoyant Force	=			Sloped Soil Over Hee =			
Surcharge over Heel	=			Surcharge Over Heel =			
Surcharge Over Toe	=			Adjacent Footing Load =			
Adjacent Footing Load	=			Axial Dead Load on Stem =	200.0	0.92	183.3
Added Lateral Load	=			* Axial Live Load on Stem =			
Load @ Stem Above Soil	=			Soil Over Toe =	36.4	0.29	10.6
	=			Surcharge Over Toe =			
				Stem Weight(s) =	400.0	0.92	366.6
				Earth @ Stem Transitions =			
Total	= 328.6	6 O.T.M. =	474.7	Footing Weight =	229.1	0.92	210.0
				Key Weight =		1.00	
Resisting/Overturning	Ratio	=	2.45	Vert. Component =			
Vertical Loads used fo	r Soil Pressure	e = 1,120.	7 lbs	Total =	1,120.7	he DM =	1.163.8

resistance, but is included for soil pressure calculation.

Vertical component of active lateral soil pressure IS NOT considered in the calculation of Sliding Resistance.

Vertical component of active lateral soil pressure IS NOT considered in the calculation of Overturning Resistance.

Tilt

Horizontal Deflection at Top of Wall due to settlement of soil

(Deflection due to wall bending not considered)

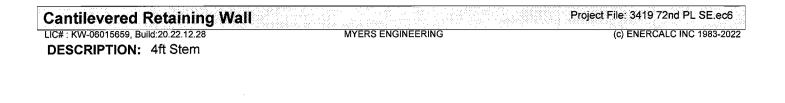
Soil Spring Reaction Modulus 250.0 pci

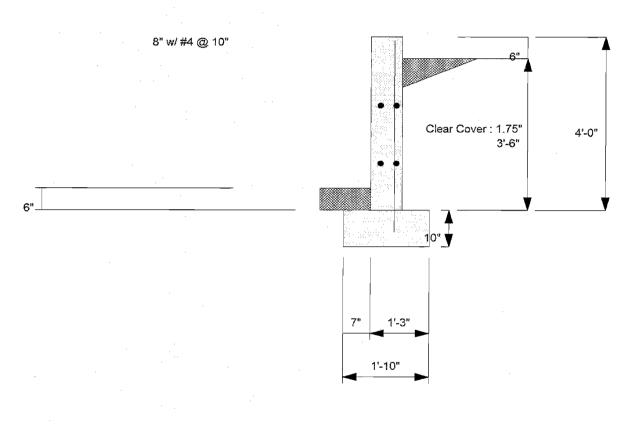
Horizontal Defl @ Top of Wall (approximate only) 0.074 in

The above calculation is not valid if the heel soil bearing pressure exceeds that of the toe,

because the wall would then tend to rotate into the retained soil.

Cantilevered Retaining Wall		Project File: 3419 72nd PL SE.ec6	
LIC# : KW-06015659, Build:20.22.12.28	MYERS ENGINEERING	(c) ENERCALC INC 1983-2022	
DESCRIPTION: 4ft Stem			
Rebar Lap & Embedment Lengths Info	rmation		
Stem Design Segment: Bottom			
Stem Design Height: 0.00 ft above top of footi	ng		
Lap Splice length for #4 bar specified in this stem	design segment (25.4.2.3a) =	18.72 in	
Development length for #4 bar specified in this ste	14.40 in		
Hooked embedment length into footing for #4 bar	specified in this stem design segment =	6.05 in	
As Provided =	0.2400 in2/ft		
As Required =	0.1728 in2/ft		





Cantilevered Retaining Wa	l	Project File: 3419 72nd PL SE.ec6
LIC# : KW-06015659, Build:20.22.12.28	MYERS ENGINEERING	(c) ENERCALC INC 1983-2022
DESCRIPTION: 4ft Stem		

