

# Cantilevered Retaining Wall

Licensee : DAN GREEN ENGINEERING

Lic. # : KW-06002943  
 Description : Screen wall

Calculations per ACI 318-11, ACI 530-11, IBC 2012, CBC 2013, ASCE 7-10

## Criteria

Retained Height	=	3.33 ft
Wall height above soil	=	8.00 ft
Slope Behind Wall	=	0.00 : 1
Height of Soil over Toe	=	40.00 in
Water height over heel	=	0.0 ft
Vertical component of active Lateral soil pressure options:		
NOT USED for Soil Pressure.		
NOT USED for Sliding Resistance.		
NOT USED for Overturning Resistance.		

## Soil Data

Allow Soil Bearing	=	3,000.0 psf
Equivalent Fluid Pressure Method		
Heel Active Pressure	=	65.0 psf/ft
Toe Active Pressure	=	65.0 psf/ft
Passive Pressure	=	250.0 psf/ft
Soil Density, Heel	=	130.00 pcf
Soil Density, Toe	=	130.00 pcf
Friction Coeff btwn Ftg & Soil	=	0.400
Soil height to ignore for passive pressure	=	53.00 in

## Surcharge Loads

Surcharge Over Heel	=	0.0 psf
Used To Resist Sliding & Overturning		
Surcharge Over Toe	=	0.0 psf
Used for Sliding & Overturning		

## Lateral Load Applied to Stem

Lateral Load	=	0.0 plf
...Height to Top	=	0.00 ft
...Height to Bottom	=	0.00 ft

## 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		Line Load
Base Above/Below Soil at Back of Wall	=	0.0 ft
Poisson's Ratio	=	0.300

## Axial Load Applied to Stem

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

## Wind on Exposed Stem

Wind on Exposed Stem	=	16.9 psf
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## Design Summary

<b>Wall Stability Ratios</b>	
Overturning	= 1.81 OK
Sliding	= 5.63 OK
Total Bearing Load = 1,887 lbs	
...resultant ecc.	= 7.21 in
Soil Pressure @ Toe	= 2,600 psf OK
Soil Pressure @ Heel	= 0 psf OK
Allowable	= 3,000 psf
Soil Pressure Less Than Allowable	
ACI Factored @ Toe	= 3,120 psf
ACI Factored @ Heel	= 0 psf
Footing Shear @ Toe	= 9.4 psi OK
Footing Shear @ Heel	= 4.3 psi OK
Allowable	= 82.2 psi
<b>Sliding Calcs (Vertical Component NOT Used)</b>	
Lateral Sliding Force	= 134.0 lbs
less 100% Passive Force	= - 0.0 lbs
less 100% Friction Force	= - 756.0 lbs
Added Force Req'd	= 0.0 lbs OK
....for 1.5 : 1 Stability	= 0.0 lbs OK
<b>Load Factors</b>	
Dead Load	1.200
Live Load	1.600
Earth, H	1.600
Wind, W	1.600
Seismic, E	1.000

## Stem Construction

	Top Stem	2nd
<b>Design Height Above Ftg</b>		
Design Height Above Ftg	ft = 2.00	Stem OK 0.00
Wall Material Above "Ht"	= Masonry	Masonry
Thickness	in = 8.00	8.00
Rebar Size	= # 5	# 5
Rebar Spacing	in = 24.00	24.00
Rebar Placed at	= Center	Center
<b>Design Data</b>		
fb/FB + fa/Fa	= 0.727	0.999
Total Force @ Section	lbs = 134.7	134.2
Moment....Actual	ft-l = 719.1	988.1
Moment.....Allowable	ft-l = 988.8	988.8
Shear.....Actual	psi = 3.0	3.0
Shear.....Allowable	psi = 38.7	38.7
Wall Weight	psf = 78.0	78.0
Rebar Depth 'd'	in = 3.75	3.75
Lap splice if above	in = 30.00	45.00
Lap splice if below	in = 30.00	9.11
Hook embed into footing	in = 30.00	9.11
<b>Masonry Data</b>		
f'm	psi = 1,500	1,500
Fs	psi = 24,000	24,000
Solid Grouting	= Yes	Yes
Modular Ratio 'n'	= 21.48	21.48
Short Term Factor	= 1.000	1.000
Equiv. Solid Thick.	in = 7.60	7.60
Masonry Block Type	= 2	
Masonry Design Method	= ASD	