



WALL CALCULATIONS

For

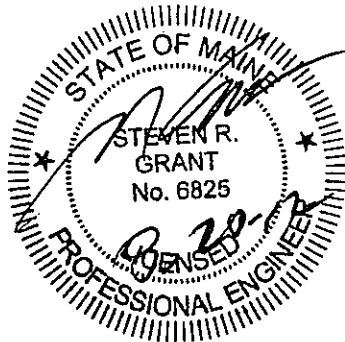
55 Sherman Street

Portland, Maine
Cumberland County

Submitted: August 20, 2012

by

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SRG JOB No. 12-052

CALCULATIONS

The enclosed wall calculations are for the “worst case” locations along the retaining wall(s). The analysis provided requires review by the project Geotechnical Engineer of Record (GER) to confirm design approach, limitations, loads used, and adequacy of all subsurface soils (local and global) to support the intended design loads. The attached calculations are based upon the site/civil and utility documents/plans prepared by others. Should any variations or discrepancies in those documents exist, our calculations and submittal may change accordingly. SRG Engineering, Inc. makes no warrantee (expressed or implied) to the accuracy or completeness of contract documents provided by others. Presentation of this submittal in no way implies acceptability or adequacy other than that which is specifically represented herein.

These calculations are “final” even though some calculation sheets may indicate they are “...preliminary design only and should not be used for construction...”. This statement is standard for wall design software since the engineer of record is ultimately responsible for the final design and plan preparation. This reference cannot be changed electronically since the software developer has determined it must be presented on calculations. Therefore, all references to “...preliminary design only and should not be used for construction...” is not to be taken into account, and therefore neglected by all parties reviewing calculations.

Keystone Compac: Wall A

(Seismic Included)



RETAINING WALL DESIGN

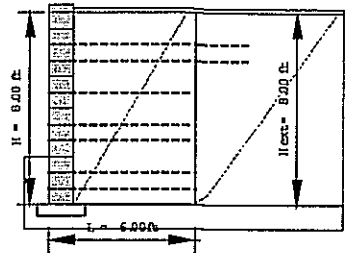
KeyW all_2012 Version 3.7.2 Build 10

Project: 55 Sherman Street, Portland, ME
 Project No: 12-052
 Case: Case 1
 Design Method: NCM A 3rd Edition (parallelogram soil interface)

Date: 8/16/2012
 Designer: SRG

Design Parameters

Soil Parameters:	ϕ deg	c psf	γ pcf
Reinforced Fill	36	0	115
Retained Zone	30	0	130
Foundation Soil	30	0	130
Reinforced Fill Type:	0.75" minus Crushed Stone or Gravel		
Unit Fill:	Crushed Stone, 1 inch minus		



Seismic Design: $A=0.14$ g, $K_h(Ext)=0.070$, $K_h(Int)=0.183$, $K_v=0.000$

Minimum Design Factors of Safety (seismic are 75% of static)

sliding:	1.50/1.13	pullout:	1.50/1.13	uncertainties:	1.50/1.13
overturning:	2.00/1.50	shear:	1.50/1.13	connection:	1.50/1.13
bearing:	2.00/1.50	bending:	1.50/1.13		

Design Preferences

RFcn-d=1.10 Pk Conn RFcn-cr=2.00 Pk Conn

Reinforcing Parameters: MirafixT Geogrids (Min RFcr, RFd, RFid Defaults)

	Tult	RFcr	RFd	RFid	LTDS	FS	Tal	Cl	Cds
3XT	3500	2.00	1.10	1.25	1273	1.50	848/2263	0.90	0.90

Analysis:

Case: Case 1
 Worstcase
 Unit Type: Compac / 120.00 pcf Wall Batter: 0.00 deg (Hinge H tN/A)
 Leveling Pad: Crushed Stone
 Wall Ht: 8.00 ft embedment: 2.00 ft
 Level Backfill Offset: 0.00 ft
 Surcharge: LL: 100 psf uniform surcharge DL: 0 psf uniform surcharge
 Load Width: 100.00 ft Load Width: 100.00 ft

Results:

Factors of Safety:	<u>Sliding</u>	<u>Overturning</u>	<u>Bearing</u>	<u>Shear</u>	<u>Bending</u>
	2.51/2.26	4.51/3.89	9.44/8.96	9.91/7.66	2.78/3.72

Calculated Bearing Pressure: 1253 / 1198 / 1255 psf

Eccentricity at base: 0.58 ft / 0.78 ft

Reinforcing: (ft & lbs/ft)

Layer	Height	Length	Calc. Tension	Reinf. Type	Allow Ten Tal	Pk Conn Tc1	Pullout FS
7	6.67	8.0	70 / 157	3XT	848/2263 ok	204/544 ok	8.81/3.15 ok
6	6.00	8.0	75 / 127	3XT	848/2263 ok	226/604 ok	> 10/6.57 ok
5	4.67	6.0	138 / 208	3XT	848/2263 ok	271/724 ok	8.17/4.35 ok
4	3.33	6.0	133 / 185	3XT	848/2263 ok	316/843 ok	> 10/9.24 ok
3	2.67	6.0	157 / 209	3XT	848/2263 ok	339/903 ok	> 10/> 10 ok
2	1.33	6.0	182 / 234	3XT	848/2263 ok	384/1023 ok	> 10/> 10 ok
1	0.67	6.0	207 / 259	3XT	848/2263 ok	406/1083 ok	> 10/> 10 ok