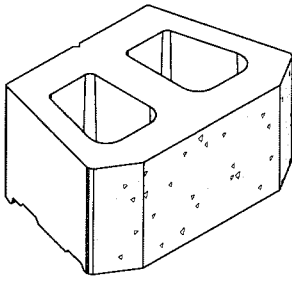
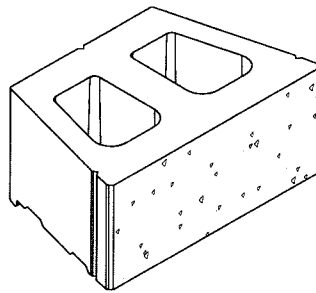


KEYSTONE HARDSCAPES® WALL DESIGN/ESTIMATING

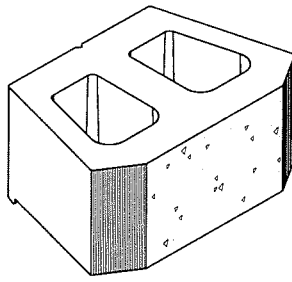
Regal Stone™ Pro Series Retaining Wall Units



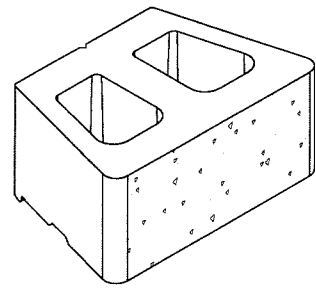
Tri-Plane Face Unit



Straight Face Unit



Deco Face Unit



Rock Face Unit

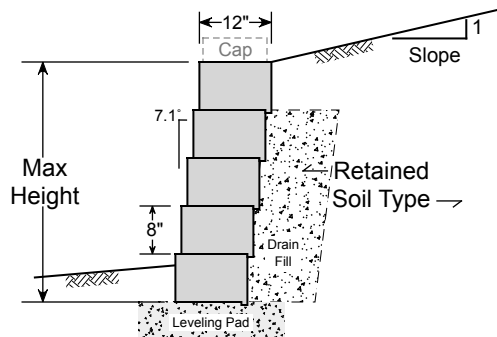
Note: Product availability, face finish, and dimensions vary by manufacturer. Please contact local Keystone product representative for availability.

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Project: REGAL STONE PRO		Title: DESIGN CHARTS	
Designed By: cm	Date: 12/20/17	Scale: none	
Checked By: cm	Revision:	Drawing No: Cover	

KEYSTONE HARDSCAPES® GRAVITY WALL DESIGN/ESTIMATING CHART REGAL STONE™ PRO SERIES



TYPICAL GRAVITY WALL SECTION
7.1° Batter

SOIL TYPE	BACKSLOPE			
	Level	4H:1V	3H:1V	2H:1V
Sand/Gravel <small>($\phi=34^\circ$ & $\gamma=120$ PCF)</small>	3.33'	3.33'	2.67'	2.00'
Silty Sand <small>($\phi=30^\circ$ & $\gamma=120$ PCF)</small>	2.67'	2.67'	2.00'	1.33'
Silt/Lean Clay <small>($\phi=26^\circ$ & $\gamma=120$ PCF)</small>	2.67'	2.00'	1.33'	<1.0'
MAXIMUM TOTAL HEIGHT				

GRAVITY WALL HEIGHT LIMITS

Regal Stone Pro Wall Units

NOTES:

- Wall design height is total top to bottom height excluding caps.
- Minimum wall embedment is 6 inches for reasonably level toe slope condition.
- Leveling pad is 6" thick crushed stone base.
- Analysis based on Coulomb earth pressure analysis per NCMA Design Manual, 3rd Ed.
- Assumed soil design properties shown in chart.
- No additional surcharges considered in design charts other than slopes listed.
- All backfill material to be compacted to 95% Standard Proctor Density.
- See wall construction manual and specifications for all details pertaining to wall design, drainage, and installation.

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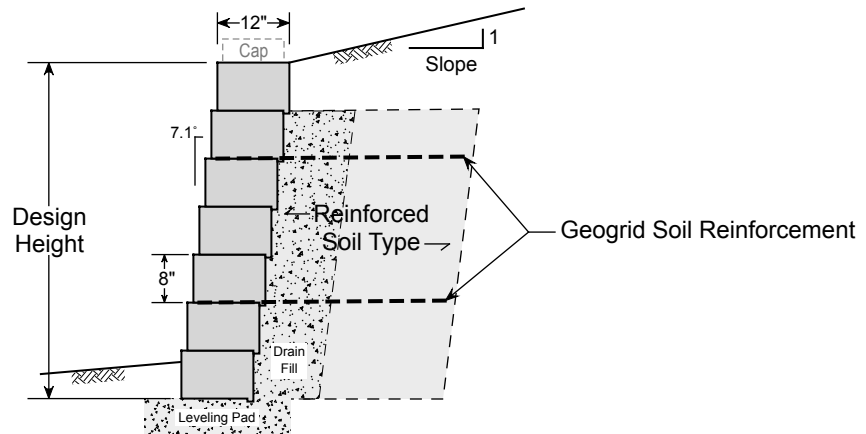
4444 West 78th St, Minneapolis, MN 55127
www.keystonewalls.com

Project: REGAL STONE PRO		Title: DESIGN CHARTS	
Designed By: cm	Date: 12/20/17	Scale: none	
Checked By: cm	Revision:	Drawing No: 1 of 5	

KEYSTONE HARDSCAPES®

REINFORCED WALL DESIGN/ESTIMATING CHARTS

REGAL STONE™ PRO SERIES



TYPICAL REINFORCED WALL SECTION
7.1° Batter

NOTES:

- Wall design height is total top to bottom height excluding caps.
- Minimum wall embedment is 6 inches or 10% Height for reasonably level toe slope condition.
- Leveling pad is 6" thick crushed stone base.
- Analysis based on Coulomb earth pressure analysis per NCMA Design Manual, 3rd Ed.
- Assumed soil design properties shown in reinforcement charts.
Soil properties assumed the same for reinforced, retained, and foundation zones.
- No surcharge (landscaping), 100 psf live load, and 3H:1V backslope conditions considered.
- Geogrid soil reinforcement long term design strength, LTDS = 1800 plf minimum.
- Reinforcement lengths provided are the full length of reinforcement in principal strength direction placed perpendicular to wall face.
- All backfill material to be compacted to 95% Standard Proctor Density.
- See wall construction manual and specifications for all details pertaining to wall design, drainage, and installation.
- Perform site specific engineering as required for any permit requirements.

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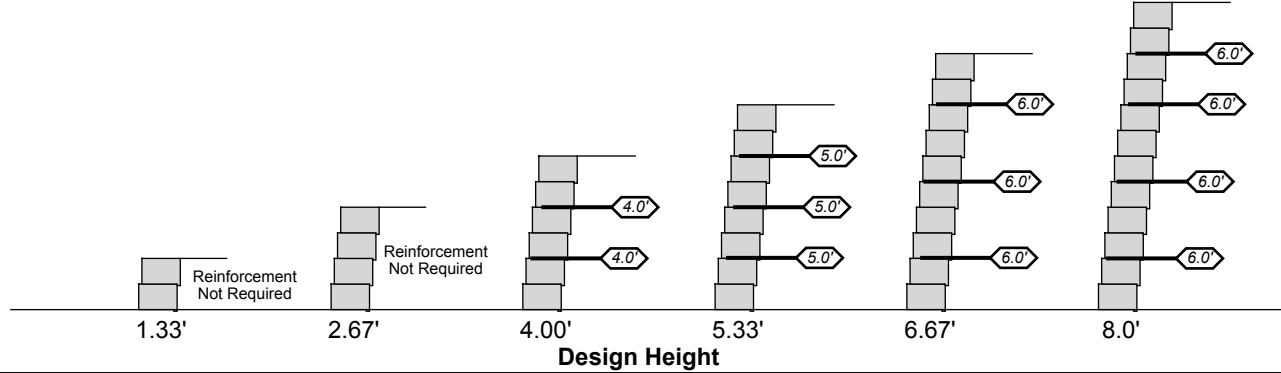
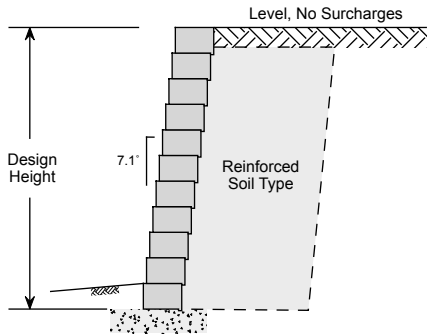
4444 West 78th St, Minneapolis, MN 55127
www.keystonewalls.com

Project: REGAL STONE PRO		Title: DESIGN CHARTS	
Designed By: cm	Date: 12/20/17	Scale: none	
Checked By: cm	Revision:	Drawing No: 2 of 5	

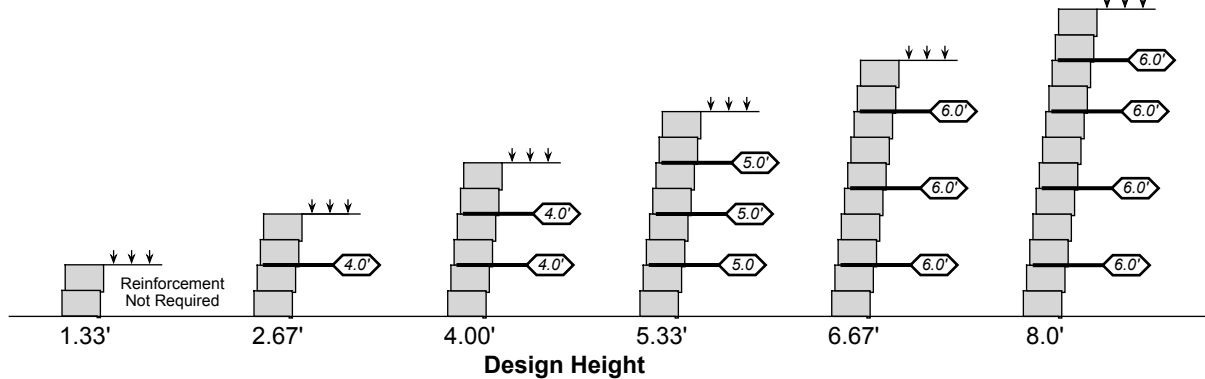
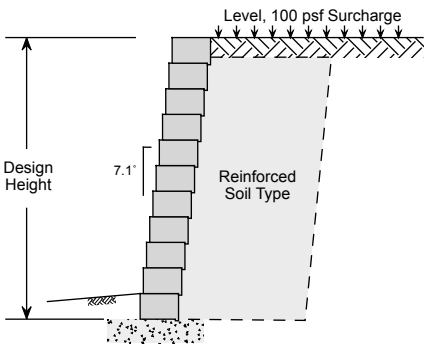
Preliminary Design/Estimating Charts

Sand/Gravel Soil - $\phi = 34^\circ$, $\gamma = 120$ pcf

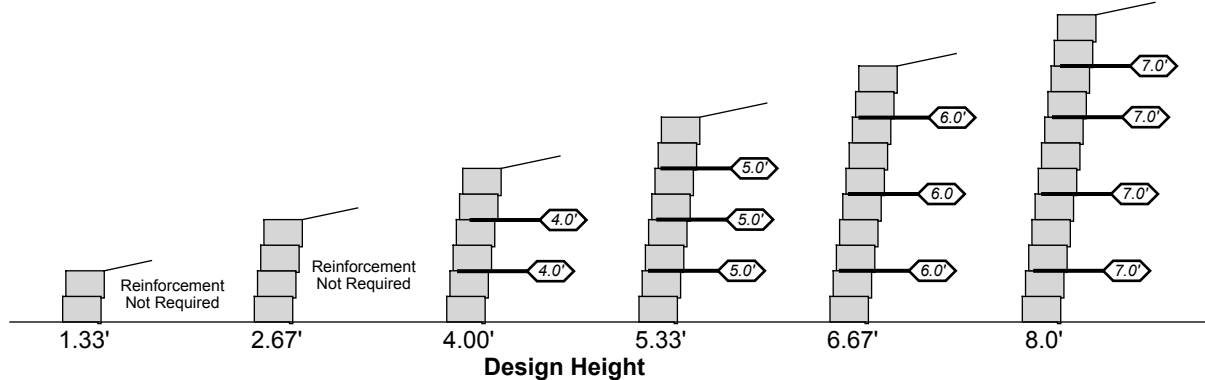
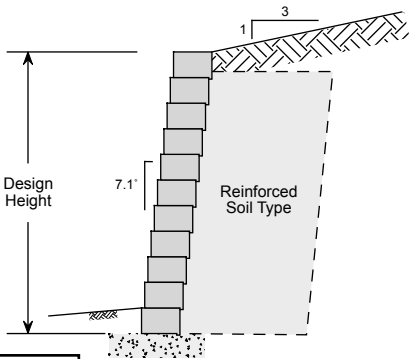
KEY
Soil Reinforcement Level & Length
Min. Reinforcement LTDS = 1800 pif



CASE I



CASE II



CASE III

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Project:

REGAL STONE PRO UNITS

Designed By:
cm

Checked By:
cm

Scale:
none

Title:

DESIGN / ESTIMATING CHARTS

Revision:

Date:

12/20/17

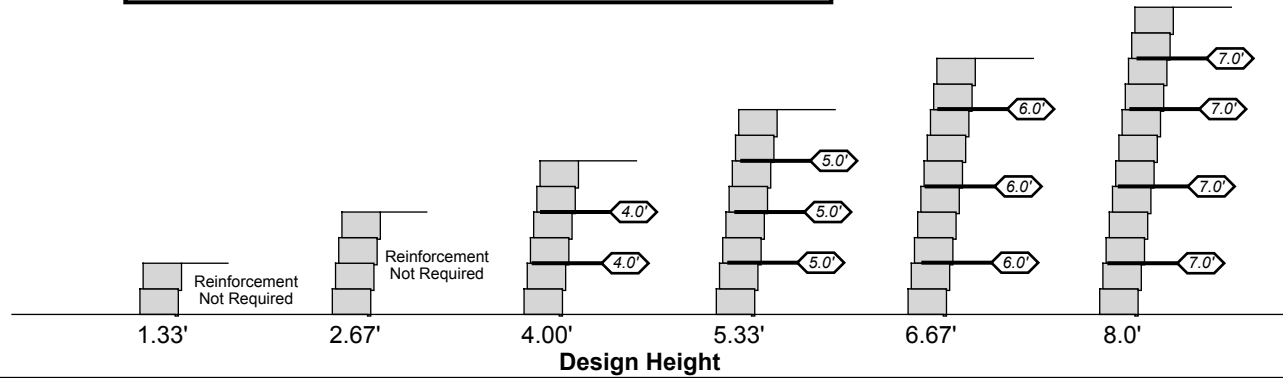
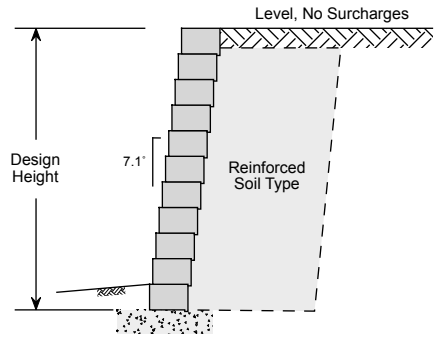
Drawing No:

3 of 5

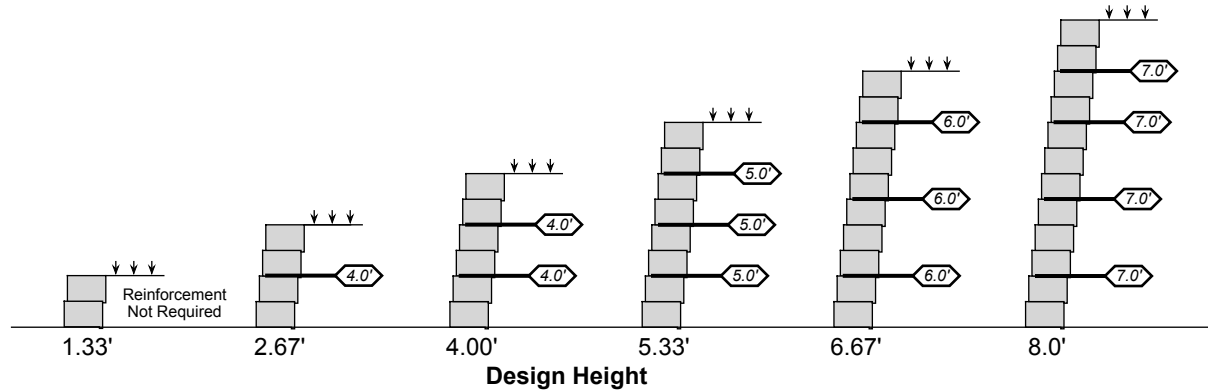
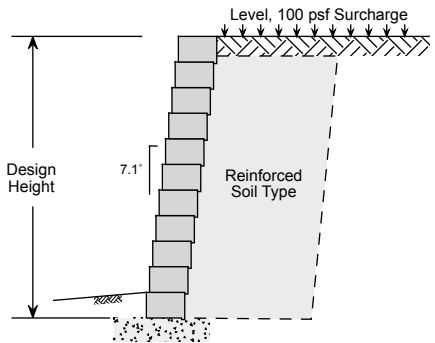
Preliminary Design/Estimating Charts

Silty Sand Soil - $\phi = 30^\circ$, $\gamma = 120$ pcf

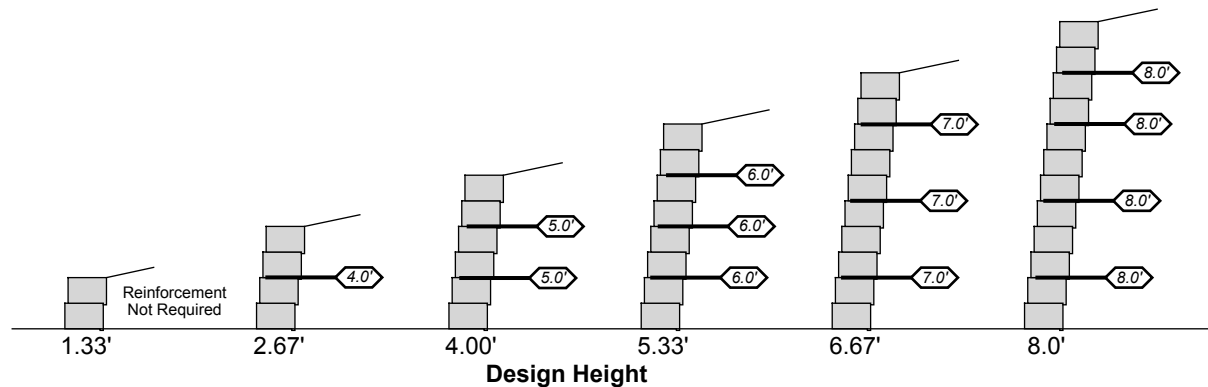
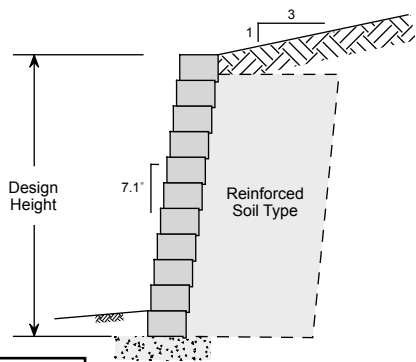
KEY
Soil Reinforcement Level & Length
Min. Reinforcement LTDS = 1800 pif



CASE I



CASE II



CASE III

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Project: **REGAL STONE PRO UNITS**

Designed By: cm

Checked By: cm

Scale: none

Title: **DESIGN / ESTIMATING CHARTS**

Revision:

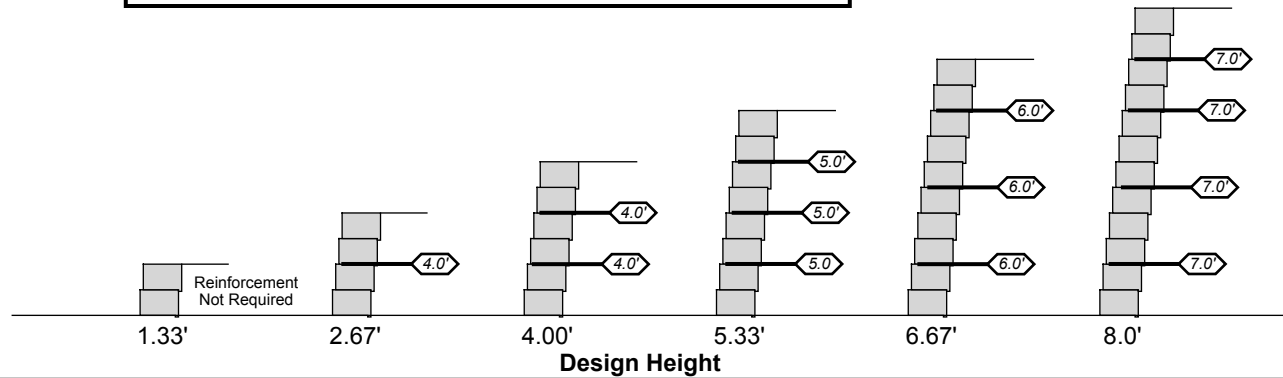
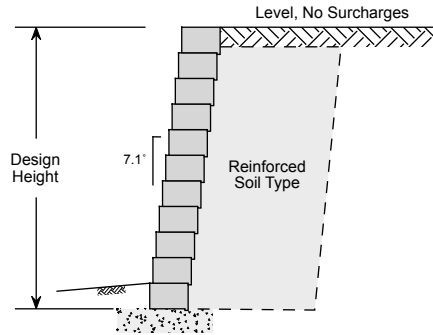
Date: 12/20/17

Drawing No: 4 of 5

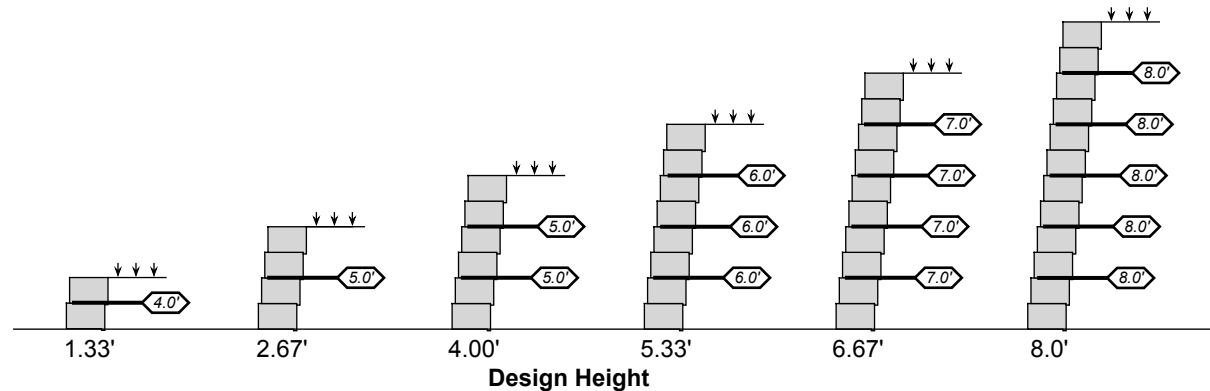
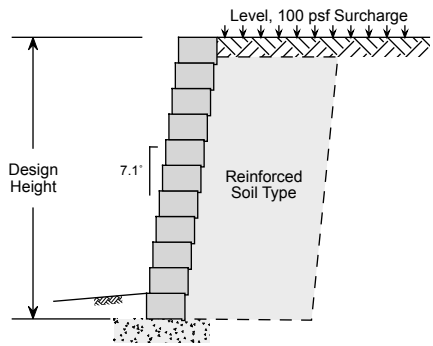
Preliminary Design/Estimating Charts

Silt/Lean Clay Soil - $\phi = 26^\circ$, $\gamma = 120$ pcf

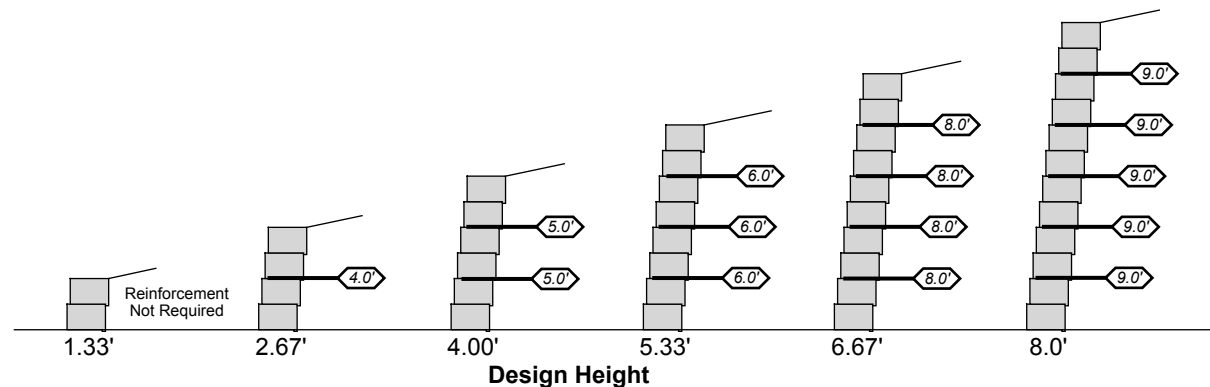
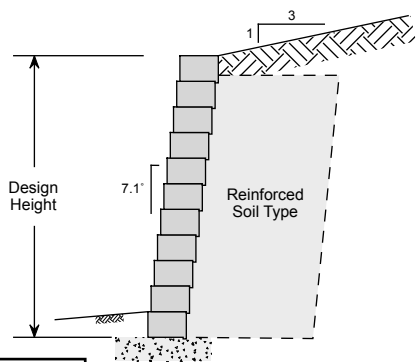
KEY
Soil Reinforcement Level & Length
Min. Reinforcement LTDS = 1800 pif 5.0'



CASE I



CASE II



CASE III

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Project: **REGAL STONE PRO UNITS**

Designed By: cm
Checked By: cm
Scale: none

Title: **DESIGN / ESTIMATING CHARTS**

Revision: Date: 12/20/17 Drawing No: 5 of 5