Century Wall™

Design Assumptions

For low (non-structural) landscape retaining walls, Keystone Century Wall can be constructed as an unreinforced gravity wall as shown in the chart below.

- Friction angle (PHI) for use in earth pressure calculations of geogrid reinforced walls is evaluated at 26°, 30°, and 34° only. For other soil type analysis, refer to Keywall software program or consult with a qualified engineer.
- Moist unit weight for the three soil types used is 120 lbs./ft.^{3} (19kN/m^3).
- Sliding calculations use 8 inch (200mm) crushed-stone leveling pad as the compacted foundation material.
- All backfill soils are calculated as compacted to 95% Standard Proctor density.
- The term "vertical" is a wall built to a near vertical alignment having a slight positive setback (1° ±).
- The information provided herein is for preliminary design use only. A qualified engineer should be consulted for design and analysis of structures. Keystone Retaining Wall Systems, Inc., assumes no liability for the improper use of this information.

GRAVITY WALLS (maximum unreinforced wall height)

MAXIMUM HEIGHT	NEAR VERTICAL		8.8° +/- BATTER	
	Level	3H:1V	Level	3H:1V
SAND/GRAVEL PHI = 34°	2'-4" (0.7m)	2'-4" (0.7m)	3'-8" (1.1m)	3'-0" (0.9m)
SILTY SAND PHI = 30°	2'-4" (0.7m)	1'-8" (0.5m)	3'-0" (0.9m)	3'-0" (0.9m)
SILT/LEAN CLAY PHI = 26°	2'-4" (0.7m)	1'-8" (0.5m)	3'-0" (0.9m)	2'-4" (0.7m)

Geogrid Chart Notes

The Keystone geogrid charts are graphically presented to show the proper orientation and lengths of geogrids used with Keystone Century Wall Units at the near vertical and 8.8° setback batter.

Design Chart Wall sections are shown to increase in 16-inch (400mm) increments beginning at 3 feet (0.9m) and ending 11 feet (3.4m). Engineering judgement should be used when interpolating between heights. Heights under 3 feet (0.9m) in height may require geogrid reinforcement depending upon the units used, soil types, and surcharge loadings. (see *Gravity Walls* chart).

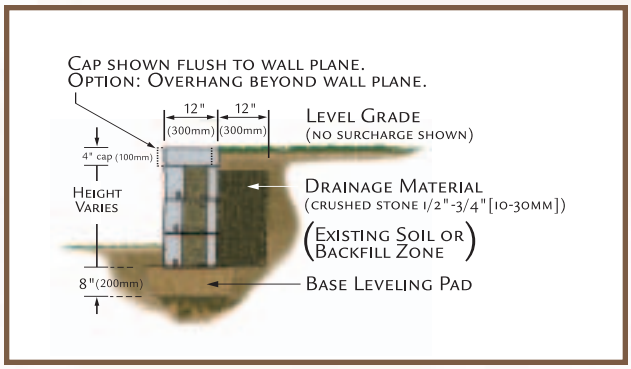
Soil ranges are selected to approximate good (34°), medium (30°), and poor (26°), soil conditions which span the typical design range. Wall height is the total height of the wall from top of leveling pad to top of wall.

All geogrid lengths shown are the actual lengths of geogrid required as measured from the connection pins to the end of the geogrid.

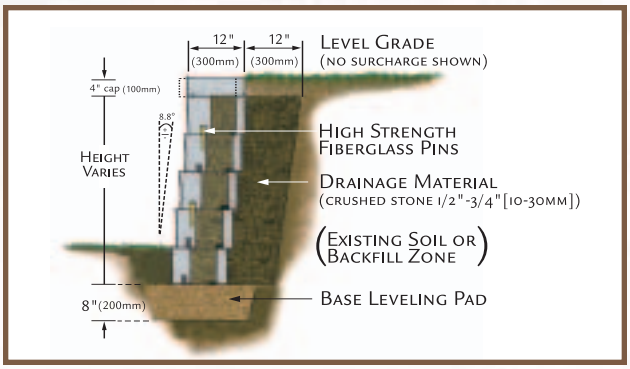
The Design Charts assume that the walls are constructed in accordance with Keystone specifications and good construction practice. All soils should be compacted in maximum 8-inch (200mm) lifts to 95% Standard Proctor density as determined by laboratory testing.

The information contained in the Design Charts is for preliminary design use only. A qualified engineer should be consulted for final design assistance. Keystone Retaining Wall Systems, Inc. accepts no liability for the improper use of these charts.

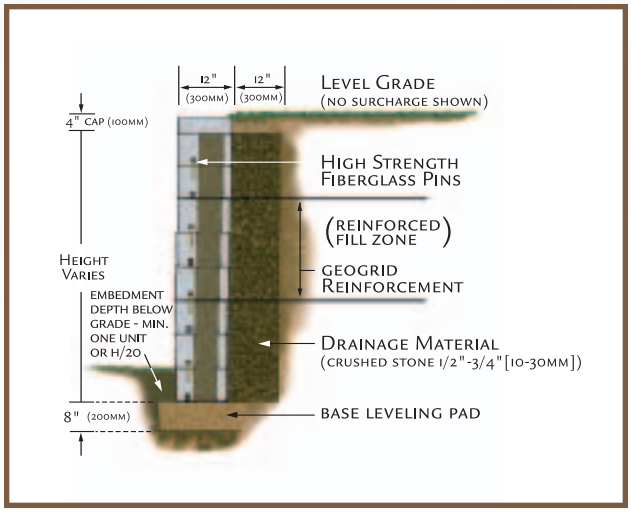
Gravity Wall - Near Vertical Detail (1.0°± batter)



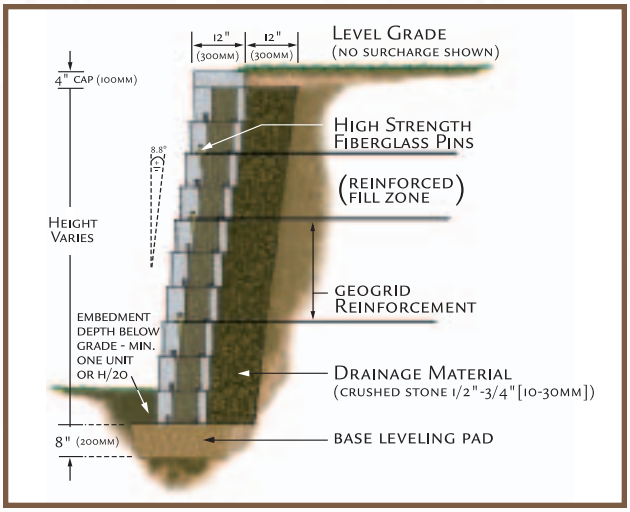
Gravity Wall - Setback Detail (8.8°± batter)



Reinforced Wall - Near Vertical Detail (1.0°± batter)



Reinforced Wall - Setback Detail (8.8°± batter)

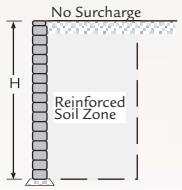


Century Wall™

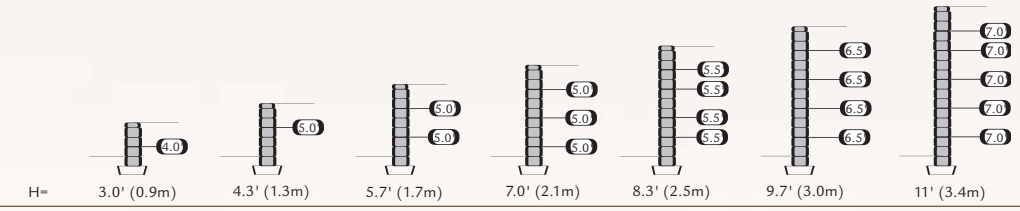
Design Charts

The following charts assume the use of a coated polyester geogrid with a minimum allowable design strength of LTDS = 1350 plf (10.9 kN/m) or Tal = 900 plf (7.3 kN/m). Information on specific geogrids is available from the geogrid manufacturer.

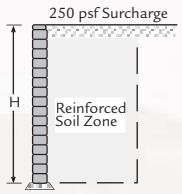
CASE 1



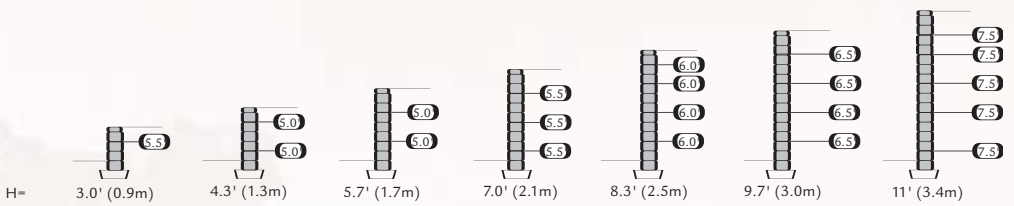
REINFORCED WALLS - (NEAR VERTICAL)



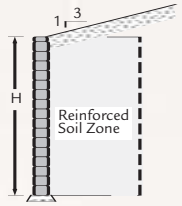
CASE 2



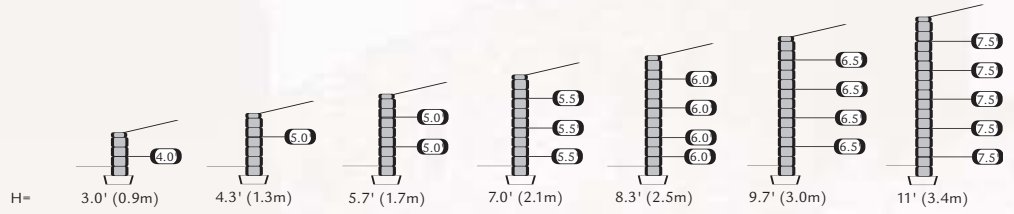
REINFORCED WALLS - (NEAR VERTICAL)



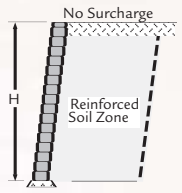
case 3



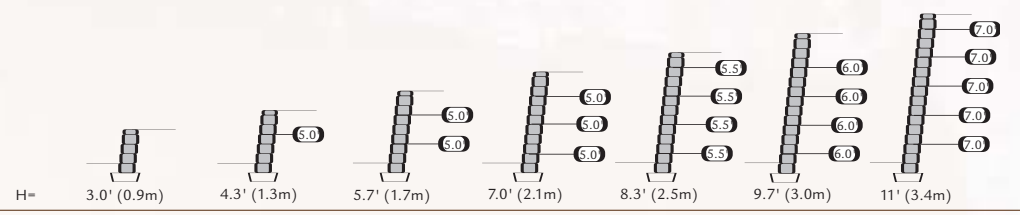
REINFORCED WALLS - (NEAR VERTICAL)



CASE 1



REINFORCED WALLS - (8.8° ± SETBACK)



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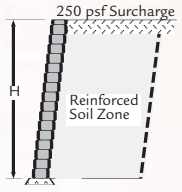
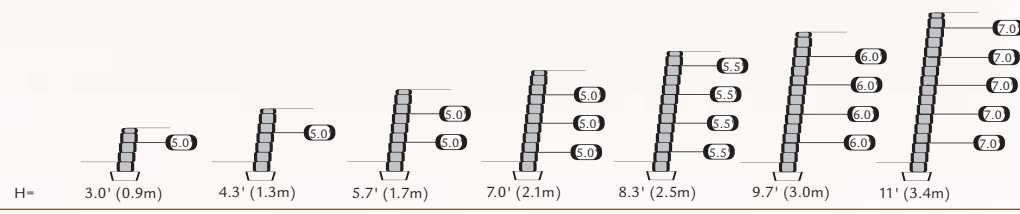


REINFORCED WALLS - (8.8° ± SETBACK)



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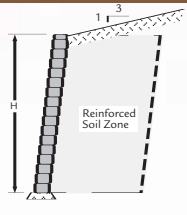
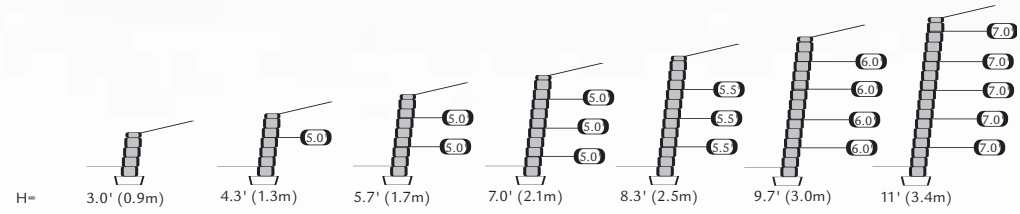


REINFORCED WALLS - (8.8° ± SETBACK)



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SILTY SAND: ϕ=30°, γ=120PCF (19kN/m^3)

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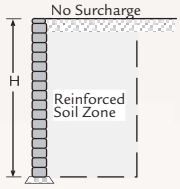
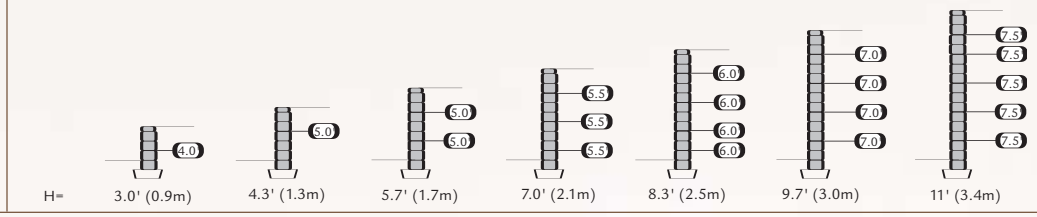
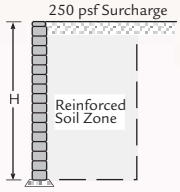
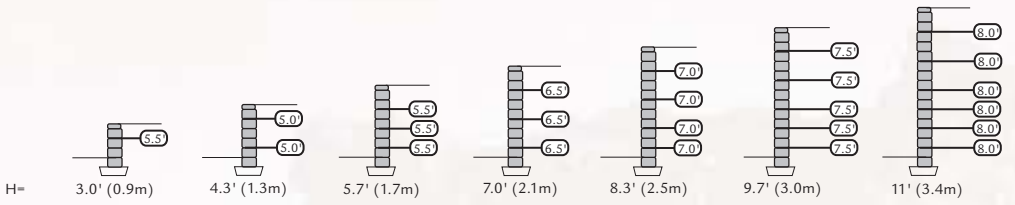
CASE 1 — REINFORCED WALLS - (NEAR VERTICAL)



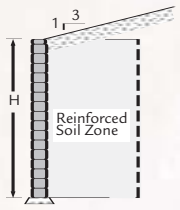


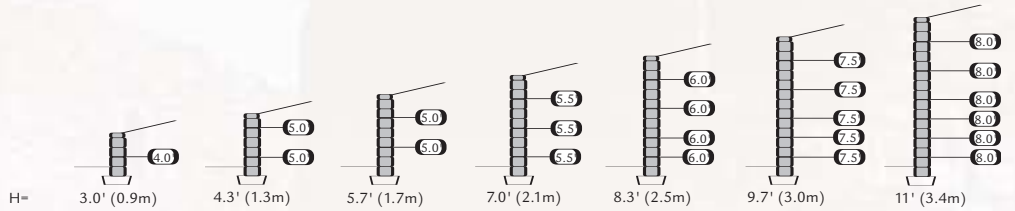
CASE 2 — REINFORCED WALLS - (NEAR VERTICAL)



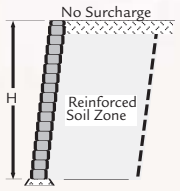


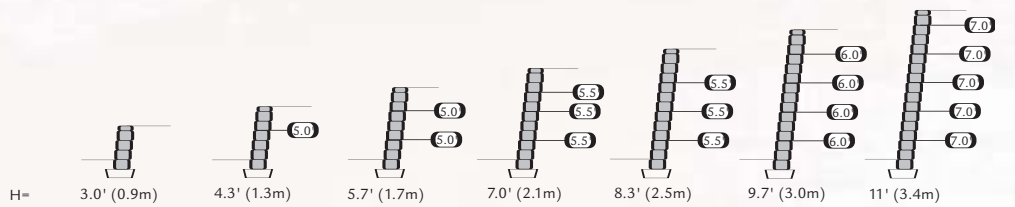
CASE 3 — REINFORCED WALLS - (NEAR VERTICAL)



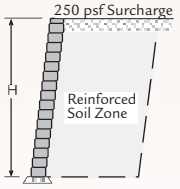


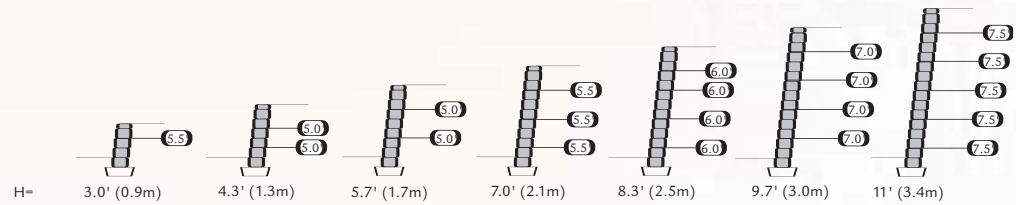
CASE 1 — REINFORCED WALLS - (8.8° ± SETBACK)





CASE 2 — REINFORCED WALLS - (8.8° ± SETBACK)





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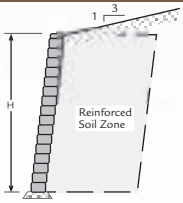

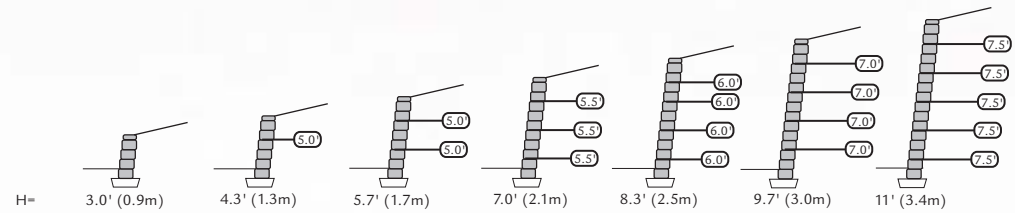

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Century Wall™ Design Charts

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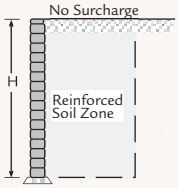
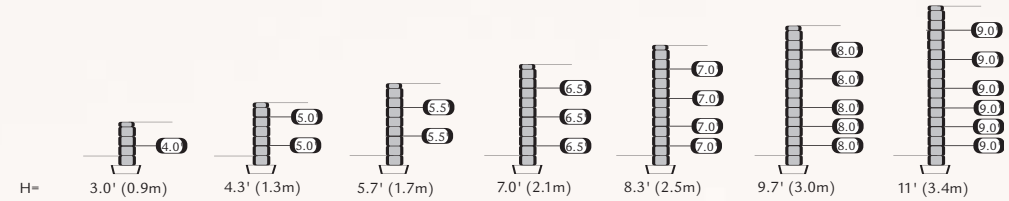
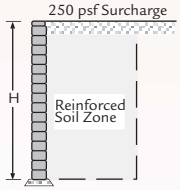
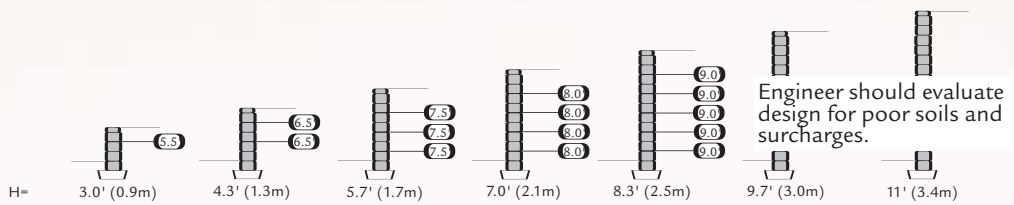


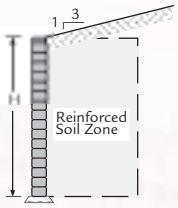


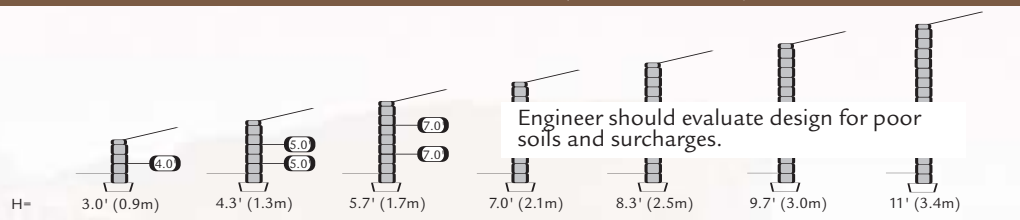
CASE 2 — REINFORCED WALLS - (NEAR VERTICAL)



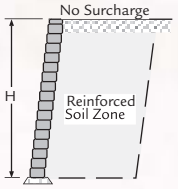


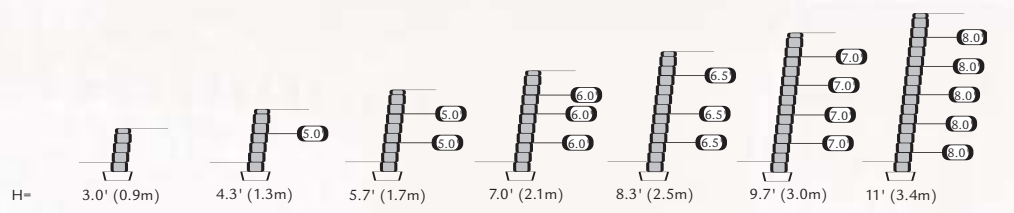
CASE 3 — REINFORCED WALLS - (NEAR VERTICAL)



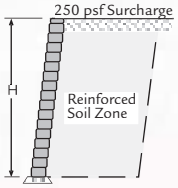


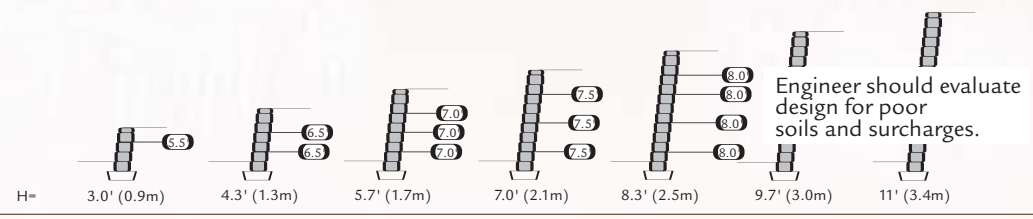
CASE 1 — REINFORCED WALLS - (8.8° ± SETBACK)



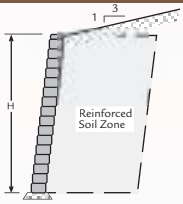


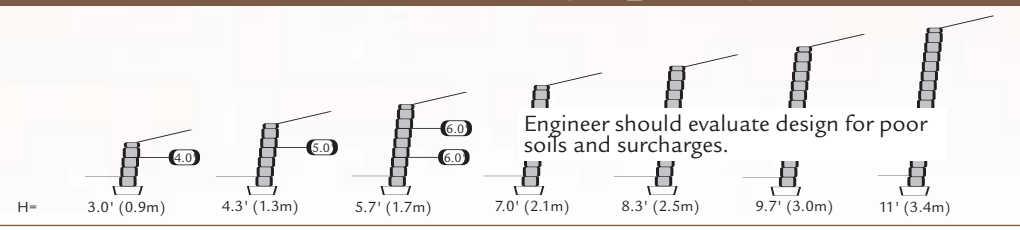
CASE 2 — REINFORCED WALLS - (8.8° ± SETBACK)





CASE 3 — REINFORCED WALLS - (8.8° ± SETBACK)





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