

DESIGN CHART

TABLE 1: CONSTRUCTION PROPERTIES OF SOIL TYPES BASE ON THE UNIFIED SOIL CLASSIFICATION SYSTEM

	Soil Type	Soil Particle Diameter (mm)	Permeability when compacted	Workability as a construction material
Fine Grained Soil	Silt/Clay	Less than 0.075 (particles are not visible by un-aided eyes)	Semi-pervious to impervious (additional drainage in retained fill may be required)	Clay and silt are typically not recommended for use as a backfill material. If granular material is not available, silt or clay may be used but must be placed in thin lifts (150mm to 200mm thick) with suitable (optimum) moisture content (not too wet or too dry) for compaction.
Coarse Grained Soil	Sand	0.075 to 4.75	Semi-pervious to pervious	Gap-graded or poorly graded-Fair. Well-graded-Excellent.
	Gravel	4.75 to 75	Pervious to very pervious	Place in thin lifts (150mm to 200mm thick) and compact with vibratory plate tampers. (Uniformly-graded material such as pea gravel is not recommended as retained material)
	Cobbles	75 to 300	Not recommended to be used as retained material	
	Boulders	Greater than 300		

ALLOWABLE EXPOSED WALL HEIGHT WITH NO SURCHARGE

Retained Soil		Backslope Angle					
Material Type	Level of Compaction	0°	5°	10°	15°	20°	25°
Silt / Clay *	Well Compacted	0.75m	0.70m	0.65m	0.60m	0.45m	
	Fairly Compacted	1.20m	1.10m	1.05m	1.00m	0.90m	0.80m
Coarse Grained Soil	Moderately Compacted	1.50m	1.40m	1.35m	1.25m	1.15m	1.05m
	Well Compacted	1.85m	1.80m	1.70m	1.60m	1.50m	1.40m

ALLOWABLE EXPOSED WALL HEIGHT WITH A SURCHARGE OF 5 KPA 0.5m FROM THE BACK OF THE WALL

Retained Soil		Backslope Angle					
Material Type	Level of Compaction	0°	5°	10°	15°	20°	25°
Silt / Clay *	Well Compacted	0.30m	0.30m	0.25m	0.25m	0.20m	0.20m
	Fairly Compacted	0.40m	0.40m	0.35m	0.35m	0.35m	0.30m
Coarse Grained Soil	Moderately Compacted	0.50m	0.45m	0.45m	0.40m	0.40m	0.40m
	Well Compacted	0.55m	0.50m	0.50m	0.50m	0.45m	0.45m

* The first row must be backfilled on both sides of the wall before the next row of retained soil is placed

BEST PRACTICES (THE DO'S)

- Retained soil should be granular (low or no silt or clay content), not too dry or wet, placed in thin layers [typically 20cm (8in) loose thickness] and compacted using a suitable vibratory compaction equipment.
- Compaction should be carried out sequentially from the back of the wall and then work away from the wall to reduce the potential for compaction pressures to affect the wall.
- The compactor or other construction equipment should not be allowed to hit the wall.
- The free draining gravel placed behind the wall should create a continuous layer between the wall and retained soil.
- Water should not be allowed to collect on the exposed base soil prior to wall construction.
- The exposed soil at the proposed retaining wall should not have any loosened, softened, disturbed, organic, or otherwise deleterious materials.
- The ground should be kept from freezing
- The bottom of the wall should be buried below the local frost depth.
- The maximum soil particle size should be no greater than half of the lift thickness of the placed soil to be compacted.

Manufactured & Distributed by: Rocky Mountain Stoneworks Ltd.

Tel: (604) 857-9000 Fax: (604) 357-3797 Email: info@rockymountainstoneworks.ca



Determination of the suitability of the information or material provided in this document for the contemplated use and manner of use is the sole responsibility of the user. It is also the user's responsibility to ensure that all local building codes and regulatory requirements are complied with.

1 October, 2010

DESIGN ASSUMPTIONS

INTRODUCTION

The Rocky Wall retaining wall is a proprietary system that allows for the construction of a segmental retaining wall that has comparable mechanical behavior to a cast-in-place retaining wall. Design charts are provided for recommended maximum, non-reinforced, gravity wall heights using the Rocky Wall retaining wall under specific site, soil, and loading conditions. Details of the Rocky Wall system (including installation and construction) are provided on the product website at www.rockymountainstoneworks.ca

HOW TO USE THESE DESIGN CHARTS

These design charts provide the maximum wall height for a specific soil type, slope angle and surcharge load. Therefore, one must be able to determine base and retained soil type, slope angle of the retained soil, and the surcharge pressure that will be placed on the soil behind the wall in order to use the charts.

SITE CONDITIONS SUITABLE FOR USING DESIGN CHARTS

These design charts should only be used for projects that match the following site, soil, and loading conditions:

- the wall will be located on flat or level ground and the slope behind the wall is uniform,
- the base soil has strength properties equal to or better than the retained soil (refer to Table 1),
- the wall has only one tier (i.e. not terraced),
- loads supported on the retained soil are placed no closer than 0.5 metres (20 inches) from the back of the wall, and
- no structure is supported on the retained soil within a horizontal distance of at least twice the wall height.

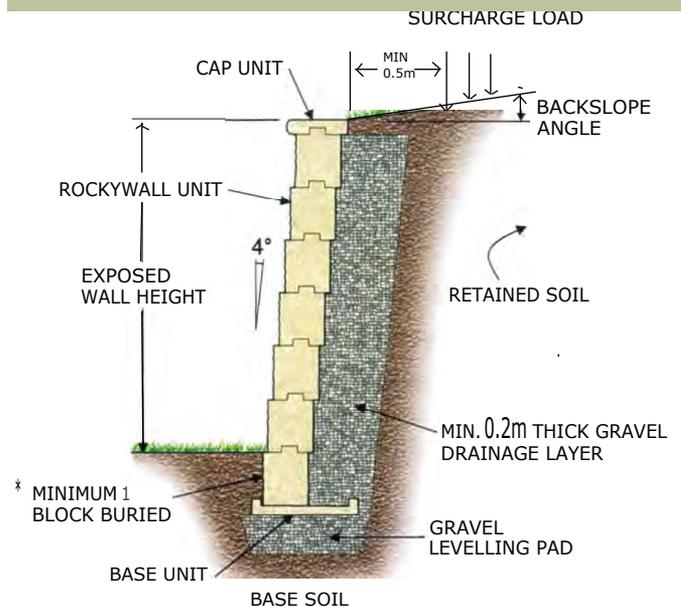
These design charts do not consider seismic design requirements and have been calculated based on assumed soil properties under effective stress conditions (i.e. no hydrostatic pressures).

SITE CONDITIONS NOT SUITABLE FOR USING DESIGN CHARTS

If the project site has any of the following conditions, a site specific evaluation/design by a qualified professional designer would be required and these design charts may NOT be applicable:

- the site is sloping or there is existing or potential soil stability problems in the area (e.g. landslides or soil liquefaction)
- there are special soil conditions present on the site including loose / soft, compressible (e.g. soft silt/clay), expansive (e.g. swelling clays), collapsible (e.g. loess deposit), or organic (e.g. peat) soil types,
- the wall or retained soil will be located below the water table,
- the wall footprint transitions from rigid to non-rigid supporting materials (e.g. bedrock to soil),
- the retained soil has excessive water runoff or groundwater discharge/seepage,
- the wall will be located in an area of potential erosion including shorelines and creek banks, or
- the site is terraced.

WALL DETAIL



*** REQUIRED FOR DESIGN CHART WALL HEIGHTS. BURIED DEPTHS MAY BE DECREASED PROPORTIONATELY FOR LOWER WALL HEIGHTS.**

Rocky Mountain Stoneworks Ltd.
26076-31B Avenue, Alderrove, British Columbia, V4W 2Z6
Tel: (604) 857-9000 Fax: (604) 857-3797
Email: info@rockymountainstoneworks.ca
Web: www.rockymountainstoneworks.ca

rocky WALL
RETAINING WALLS

Determination of the suitability of the information or material provided in this document for the contemplated use and manner of use is the sole responsibility of the user. It is also the user's responsibility to ensure that all local building codes and regulatory requirements are complied with.

1 October, 2010