

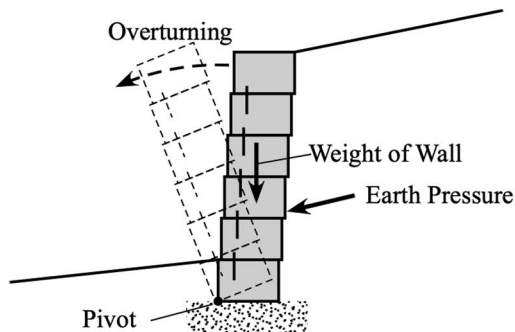
# Gravity Walls

Gravity walls are any coherent structure that rely solely on its mass and geometry to resist the earth pressure forces acting on it. All Keystone landscaping wall products and structural wall units not utilizing soil reinforcement are considered gravity walls by definition.

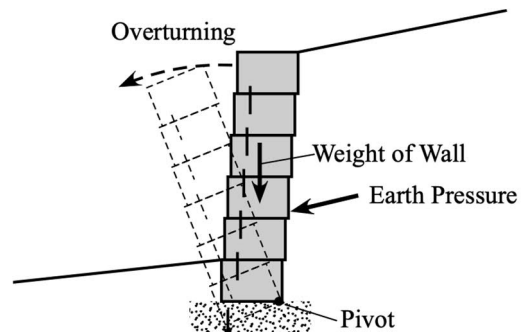
Modular gravity walls rely on weight, depth, wall batter, and inter-unit shear strength to achieve stability. Larger units with more depth provide greater stability and can achieve greater gravity wall heights as indicated in the gravity wall design charts in Keystone design and construction documents.

The principal mode of failure observed in a modular gravity wall is overturning assuming that there is a positive shear connection between units from pins or lips. Overturning failure occurs for a few simple and obvious reasons:

- 1) A gravity wall is constructed taller than it should be for the size of unit utilized and the design conditions at the wall location.
- 2) A gravity wall is constructed over poor foundation soils or a poor leveling pad and post construction settlement causes the wall to lean and eventually overturn.
- 3) Additional surcharge from parking or a structure is placed directly behind the wall.
- 4) Combinations of the above items.



**Simple Overturning**



**Settlement and Overturning**

Special attention must be given to the foundation soils and leveling pad construction when constructing gravity walls since the foundation provides much of the wall's resistance to overturning. Simple overturning failure can be avoided by limiting wall heights to safe working heights for the size of Keystone unit selected and avoiding additional surcharge conditions. A simple "rule of thumb" is to restrict wall heights to no greater than three times the unit depth unless referring to design charts or calculations for site specific design recommendations. This "rule of thumb" leads to the following rough guidelines for no surcharge landscaping situations:

Unit	Height	Depth	Max Height	Approx. Courses
Country Manor	6"	10"	27"	4 courses + cap
Regal Stone Pro	8"	12"	36"	4 courses + cap
Compac III	8"	12"	36"	4 courses + cap
Standard III	8"	18"	52"	6 courses + cap
Standard III	8"	21"	60"	7 courses + cap