Provided By:

CMHA

WHAT HEIGHT RESTRICTIONS SHOULD I BE AWARE OF WITH SEGMENTAL RETAINING WALL CONSTRUCTION?

SEGMENTAL RETAINING WALL HEIGHT

The height of a segmental retaining wall is measured from the top of the leveling pad to the top of the uppermost SRW unit (not including the cap). This includes the bottom portion of the wall that extends below the finished grade. The following discussion provides general guidance and recommendations to consider when planning a SRW project. As always, consult with a qualified SRW designer for project-specific considerations.

MAXIMUM SEGMENTAL RETAINING WALL HEIGHT

1) **Gravity Walls** - The height of unreinforced segmental retaining walls (gravity walls) depends on the SRW unit depth (front to back), weight of the individual unit, face batter, soil properties, and loading conditions. Unreinforced SRWs typically can be built up to 3 to 4 ft (1.0 - 1.2 m) high, or less if poor soil conditions or surcharges loads are present. When the maximum height of the gravity SRW system is not sufficient, the design engineer should consider using a reinforced structure and incorporate geosynthetics.

2) **Reinforced Walls** - Reinforced segmental retaining walls have no theoretical maximum height when properly designed. Reinforced SRWs in excess of 50 ft (15.2 m) have become more common and terraced and single-height retaining walls in excess of this height have also been constructed.

WHEN TO ENGINEER SRW PROJECTS

Segmental retaining walls fall under the requirement of the International Building Code, Section 105.2, which requires a building permit for earth retaining structures which are over 4 ft (1.2 m) in total height. Building permits may be required for shorter walls if they support a surcharge load. In addition, local building codes may require a design prepared by a design professional. Where there is no specific requirement, CMHA recommends the following guidelines:

Design Method	Wall Height	Allowable Soil & Foundation Conditions	Recommended Engineering Required
Method 1: Non-engineered	Less than or equal to 4 ft (1.2 m) from leveling pad to top of wall	Sand/gravel, silty sands, silt/ lean clays	Use design chart provided by SRW system provider.
Method 2: Engineered	Greater than 4 ft (1.2 m) from leveling pad to top of wall	Sand/gravel, silty sands, silt/ lean clays	Have the design section reviewed/prepared by a registered professional.

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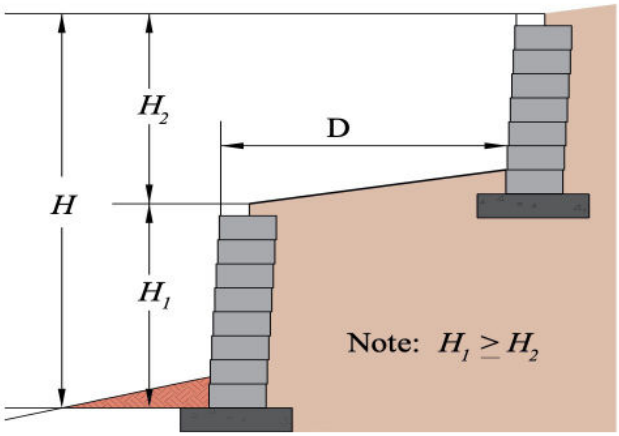
TERRACED (TIERED) SRW WALLS

Terraced or tiered retaining walls consist of two or more walls whereby the upper wall is set back from the underlying wall. As a rule of thumb, the minimum distance between segmental retaining wall terraces (D) for each wall to act independently must be at least equal to twice the height of the lower wall ($D > 2H_1$). When the terraces do not meet this condition, the design analysis models the structure as a single taller wall to account for the added dead and live loads from the upper terrace wall on the lower wall(s). As with all designs, global stability must be checked in the design process.



ABOUT CMHA

The Concrete Masonry & Hardscapes Association (CMHA) represents a unification of the Interlocking Concrete Pavement Institute (ICPI) and National Concrete Masonry Association (NCMA). CMHA is a trade association representing US and Canadian producers and suppliers in the concrete masonry and hardscape industry, as well as contractors of interlocking concrete pavement and segmental retaining walls. CMHA is the authority for segmental concrete products and systems, which are the best value and preferred choice for resilient pavement, structures, and living spaces. CMHA is dedicated to the advancement of these building systems through research, promotion, education, and the development of manufacturing guides, design codes and resources, testing standards, and construction practices.