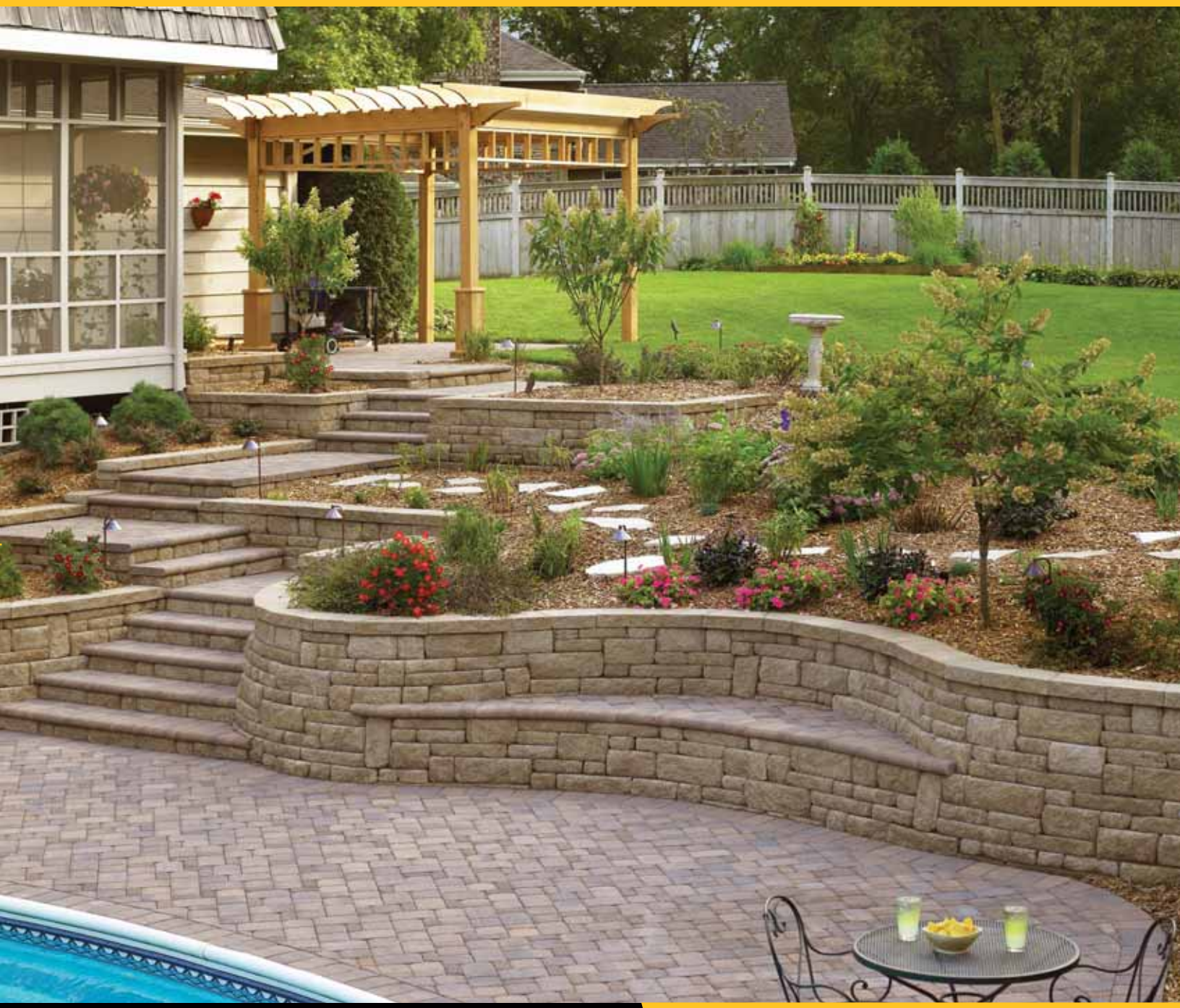
2006 ESTIMATING AND INSTALLATION MANUAL



Featuring Highland Stone®

Anchor®
RETAINING WALL SYSTEMS
anchorwall.com

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BEFORE YOU BEGIN

Landscapes with character don't just happen. Today's property owners are willing to invest in exceptional outdoor living areas and look to their landscape contractor and/or designer for ideas on how to create the perfect outdoor living environment.

Outdoor areas of any size or shape can be transformed with Anchor Wall Systems products. Colors, shapes, patterns and textures of Anchor products blend with the environment and create attractive, usable landscape features where steep hillsides, gentle slopes or simply ordinary space had been. No matter what the project, Anchor retaining wall systems and free standing wall systems enhance landscapes and increase property value. According to an Anchor Wall Systems survey, 75 percent of consumers think retaining walls increase their property values as much as 15 percent.

Owners of commercial property often add purely aesthetic features to functional landscaping. Retaining walls are frequently necessary to develop buildable land space (e.g., eliminating a slope to create space for a building or parking). Free standing walls can be used for traffic separation or to create additional public seating. Landscaping is also used to create leisure and recreational space for hotels, schools and parks. A well-designed landscape also elevates the prestige of a commercial property.

HOW TO USE THIS MANUAL

This manual is designed to provide you with ideas as well as information on product use, estimating and installation procedures. Because actual project conditions vary, final wall design, including the incorporation of geosynthetic reinforcement, must be performed by a qualified engineer. While this manual provides general guidelines, installation contractors should refer to construction drawings provided by a qualified local engineer for final specifications.

Additional installation information is available online at www.anchorwall.com. Installation instructions are also available in video or DVD format for Diamond, Highland Stone and Diamond Pro. Information includes basic wall construction as well as other applications, including:

- inside and outside 90° corners
- inside and outside radii
- various steps
- cap placement
- terraced walls
- water applications
- fences
- guard rails

To obtain a copy of the installation video or DVD, contact your local Anchor Wall Systems dealer or manufacturer or contact Anchor Wall Systems at 1-877-295-5415.

ESTIMATING FORMULAS

In the Product Details section for each product, there are formulas for estimating the wall and cap units as well as other materials needed to install a wall. Abbreviations for the information used in each formula are explained with the formula. There is also an example provided showing how each formula is used.

Abbreviations are explained in their first use.

Example: The total wall is 50 feet long and 4 feet high.
Length (L) of the wall x height (H) = square feet (SF).
50' x 4' = 200 SF.

To make the results of the formulas more obvious in each example, they have been underlined.

BEFORE INSTALLATION BEGINS

Advance planning and careful layout at the job site help ensure a successful retaining wall project.

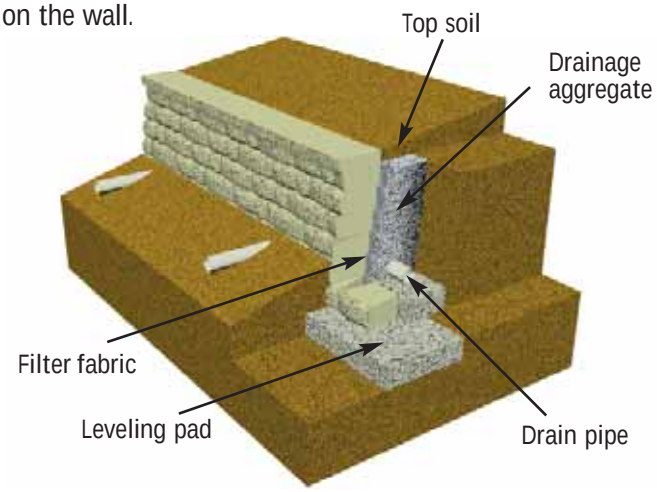
- Review the site plan to confirm lot lines, wall location, length and elevations.
- Understand on-site soils. Ideal soils are sand and gravel. For walls built in clay or poor soils, work with a local engineer to confirm the wall design and the required soil reinforcement. Black or organic soils should not be used as infill.
- Confirm the location of underground utilities.
- Seek all necessary building permits.
- Prepare a drawing of the site with the wall location, lengths and elevations.
- Plan drainage to avoid erosion or buildup of water behind the wall. Consider where the water will drain through the wall, where downspouts will expel and whether there's an underground sprinkler. For walls greater than three feet in height, a perforated drain pipe is recommended at the base of the aggregate to quickly remove large amounts of water. See page 28 for more information on water management.
- Check the block delivered to ensure it is the correct color. Check the geogrid to confirm that it's the strength and weight specified in the engineering plans.
- Be sure to use the right tools. Hand tools include a shovel, 4-foot level, dead blow hammer, 2- or 3-pound hammer, chisel, hand tamper, hydraulic splitter and string line. Power tools include a circular saw with a masonry blade and a compactor.
- Always wear protective eyewear.

RETAINING WALL BASICS

Segmental retaining walls typically fall into one of two categories.

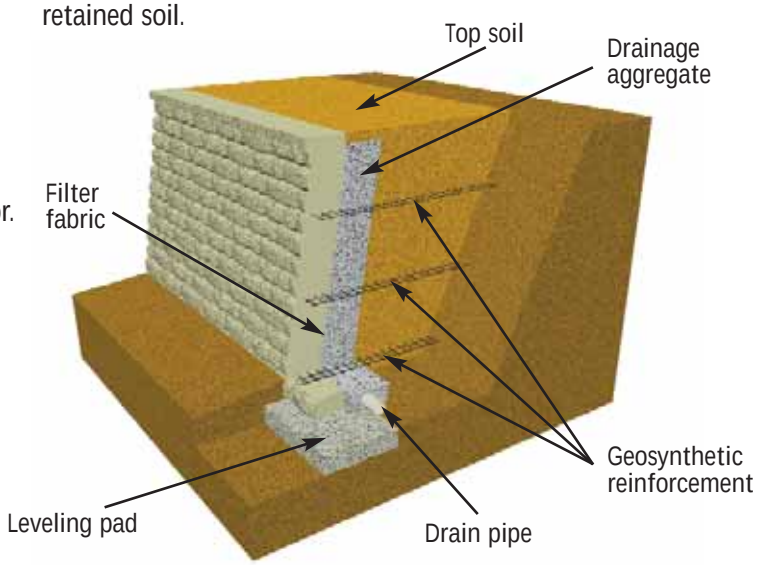
GRAVITY RETAINING WALL

The first category – a gravity wall – is a retaining wall that does not use soil reinforcement. A gravity wall has height limitations specific to each product. An advantage of this type of retaining wall is that it requires a smaller work area behind the wall. A gravity wall relies on the weight and setback of the block to resist the soil forces being exerted on the wall.



GEOSYNTHETIC-REINFORCED RETAINING WALL

The second category is a geosynthetic-reinforced wall, which needs to be designed by a qualified engineer. With a reinforced retaining wall there are (theoretically) no height limitations, and they are used in larger applications. They require more work area behind the structure. The block of soil is stabilized by introducing reinforcement layers into the soil mass behind the facing units. The larger the stabilized soil mass, the more soil can be retained or held back. The geosynthetic reinforcement in the soil extends past the theoretical failure plane and serves to create a large, rectangular mass of block and soil, restraining the retained soil.



4 TERMS USED IN THIS MANUAL

ACTIVE SOILS
The soil behind the wall that will theoretically move.

AT-REST SOILS
The soil behind the wall that will theoretically not move.

BACKFILL
The soil used to fill the excavated area behind the wall.

BASE COURSE
A full course of blocks which are buried so that the top is level with grade.

BATTER
The facing angle created by segmental retaining wall (SRW) unit setback, measured from a vertical line drawn from the toe of the wall, expressed in degrees. The batter on both Diamond® and Highland Stone® is 10.6°. The batter on Diamond Pro™ is 7.3°.

BENCH CUT
A horizontal cut across a slope. Commonly used when building steps into an existing slope.

COLUMN
A vertical pillar, generally used as a support for a wall or other structure. Columns made of Highland Stone® Free Standing Wall units can be used independently or as a support for a free standing wall. In this manual, columns surround or end walls. See page 10 for construction details about columns.

COMPACTION
Compressing or densifying the soil material used for base and backfill. Use a manual or self-propelled compactor. See examples below.

CONNECTION STRENGTH TESTING
Testing establishing the relationship between a specific SRW unit and a specific type of geosynthetic reinforcement.

COURSE
The horizontal layers of blocks used to build a wall.

CREST SLOPE
Angle of the soil above the wall usually expressed as a ratio such as 3:1 (3 feet horizontal to 1 foot vertical).

DRAINAGE AGGREGATE
Drainage fill placed within and immediately behind the SRW units, and in other areas, for drainage.

FINES
The smaller particles of aggregate.

FOUNDATION SOIL
The soil that supports the leveling pad and the reinforced soil zone of a soil-reinforced SRW system.

FREE STANDING WALL (FSW)
A free standing wall, also called a double-sided wall, is a vertical wall which does not retain soil.

SINGLE-DIRECTION PLATE COMPACTOR

Suitable for compaction of mixed-granular soils in a very small area.

TAMPERS OR JUMPING JACKS

Designed for the compaction of granular and mixed soils. Their light-weight and compact design allows these machines to work in confined areas. They can only compact very small lifts of soil (3 to 4 inches).

REMOTE-CONTROL TRENCH COMPACTOR

Designed for the compaction of a wide range of soil types. This multipurpose compactor can be used for tasks like base preparation.

GEOGRID
A synthetic material formed into a grid-like structure for use in soil reinforcement. Usually comprised of polypropylene, polyester or polyethylene.

GEOSYNTHETIC
A generic term used to describe synthetic or plastic materials used in soil, such as fabrics, geogrids, drainage composites or erosion-control mats.

GEOTEXTILE
A textile-like material used in soil drainage and reinforcement applications. Usually comprised of polypropylene or polyester, it can be woven or non-woven.

GLOBAL STABILITY
Resistance to overall mass movement of the SRW system in a circular or sliding mode. May be a problem with tiered walls, walls with weak foundation soils, and walls with a slope at the top or bottom.

GRADE
Ground level.

GRAVITY WALL
A retaining wall that does not use soil reinforcement. A gravity wall relies on the weight and setback of the block to resist the soil forces that are being exerted on the wall.

LEVELING PAD AGGREGATE
A compactible, free-draining granular soil to facilitate compaction and drainage. We suggest using ¾-inch minus aggregate (with fines) as the pad or base material.

LEVELING PAD OR BASE
The level surface (gravel or concrete) used to distribute the weight of the dry-stacked column of SRW units over a wider foundation area and to provide a working surface during construction.

LOAD, DEAD
A permanent surcharge on a wall that can provide lateral pressure against the wall as well as vertical force downward on the wall mass.

LOAD, LIVE
A transient surcharge that can vary during the life of the structure. A live load is assumed to provide lateral pressure but not vertical pressure.

OVERTURNING
An external stability failure mechanism of a SRW whereby lateral external forces cause the entire reinforced soil mass to rotate about the base.

PERMEABLE SOIL
A soil that allows water to move through it at an appreciable rate.

PILLAR
A firm upright support for a superstructure.

PILASTER
An upright architectural member that projects from the wall. See page 11 for construction details about pilasters.

PROCTOR (DENSITY)
A method for determining the moisture-density relationship in soils subjected to compaction.

REINFORCED SOIL ZONE
The area of a soil-reinforced SRW which contains the soil reinforcement.

RETAINED SOIL ZONE
The area of a soil-reinforced SRW which is immediately behind the reinforced zone.

RUNNING BOND
A staggered vertical alignment used to create a consistent pattern. It may be necessary to use split or partial units to maintain a running bond.

SEGMENTAL RETAINING WALL (SRW)
A wall system built with modular blocks to retain soil.

SLIDING
An external and internal stability failure mechanism of an SRW whereby lateral external forces cause the entire soil mass to slide forward along its base or internally along a particular layer of soil reinforcement.

STEPPING UP THE WALL BASE
Method used to maintain a level wall on a slope. See page 29 for more information.

SURCHARGE
External load, usually applied at the top of a SRW. A roadway or building foundation can be a surcharge.

SWALE
A small ditch or depression formed on top and behind the SRW system to collect water and carry it away.

TERRACED WALLS
There are independent and dependent terraces. See page 36 for more information about building terraces.

THEORETICAL INTERNAL FAILURE PLANE
The line that separates active soils from the at-rest soils.

TOE SLOPE
Angle of the soil in front of the wall usually expressed as a ratio such as 3:1 (3 feet horizontal to 1 foot vertical).