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VERSA-LOK®
Retaining Wall Systems
Solid Solutions.™



VERSA-Green™ *Plantable Retaining Wall System*



VERSA-GREEN INSTALLATION

The VERSA-Green Plantable Wall System from VERSA-LOK is truly the greenest retaining wall available. It combines the durability and strength of a VERSA-LOK segmental retaining wall with the lush beauty of a hanging garden. The result is a functional wall that becomes a living part of your landscape.

Each VERSA-Green concrete unit weighs 70 lbs. and covers nearly a full square foot of wall face. Inside each unit is a plantable core 6 inches deep for planting and a groove across the top to accommodate irrigation tubing. The cores are filled with planting medium and suitable plants of your choice; a drip irrigation nozzle can be placed in each unit to keep the plants watered. VERSA-Green CG Containment Grid, a geosynthetic grid material, is placed directly against the back of VERSA-Green units to contain drainage aggregate behind the units.

A significant amount of your time installing a VERSA-Green wall will be spent on the leveling pad and the base course. If the wall base is level and properly aligned, the rest of the installation will go much more smoothly. Take your time on these critical steps.

1. EXCAVATION



Excavate a trench the length of the wall, 24 inches wide and deep enough to accommodate 6 inches of crushed rock base material and the embedded courses. If your wall requires geogrid soil reinforcement, the area behind the wall where geogrid is placed also must be excavated (see Step 5).

Required unit embedment varies with wall height and soil conditions. As a minimum, walls should have 1/10 of the exposed height or 6 inches (whichever is greater) embedded below grade. Embedment should be increased for special conditions, such as a slope at the base or soft foundation soils. If the grade in front of the wall is greater than a 3:1 slope (horizontal:vertical), the embedment should be at least 1/7 of the exposed wall height.

If the planned grade along the front of the wall changes elevation, the leveling pad may be stepped in increments of 7.625 inches to match the grade change.

Always start at the lowest level and work upward. Step the leveling pad often enough to avoid burying extra units while maintaining required unit embedment.

VERSA-Green walls should be built on a leveling pad of well-compacted gravel or crushed stone approximately 6 inches thick and 24 inches wide. Place and compact leveling pad material. It may be helpful to add a thin layer of sand on top to create a uniform, level pad.

2. BASE COURSE

Begin placing base course units on the leveling pad, typically with an 8-inch planting space between each unit. If the leveling pad is stepped, begin at the lowest course before proceeding to the next course. Align units using their backs or slots rather than their irregularly textured front faces. A stringline may be helpful when aligning straight walls. Front faces on adjacent units should be spaced accordingly and unit bottoms should contact the leveling pad completely.



Using a 4-foot level, level units front-to-back and side-to-side with adjacent units. Tap high points with a mallet or hand tamper until level. After positioning the base course, fill the cores of all completely buried units with the same crushed gravel, as was used for the leveling pad. Partially exposed units should be filled with planting medium to promote plant growth.



Anchor VERSA-Green CG behind bottom units with 6 inches of CG placed horizontally on top of the leveling pad. Then wrap CG vertically behind embedded units. Place soil backfill behind embedded units and VERSA-Green CG. Also replace and compact over-excavated soil in front of the units. Remember—the backfill behind and in front of embedded units should consist of soil. Do not use drainage aggregate.

3. ADDITIONAL COURSES

Succeeding courses are set back behind the ridge on the wall face, typically with an 8-inch planting space between each unit. (Spacing will vary slightly to accommodate curves. See Step 4.) Sweep off tops of installed units to remove any debris that may interfere with additional courses. Each succeeding course is installed so that each unit bridges the gap between the units below. Fill the plantable cores with appropriate planting medium after every other course is laid. Holes in the bottom of the plantable cores allow for drainage. If installing a dripline irrigation system, install a dripline along the top of each course before laying the next course (see Step 6.)

As you build the wall, continue to place VERSA-Green CG and then drainage aggregate behind above-grade units (3/4-inch clear, free-draining, angular gravel) at a minimum thickness of 12 inches (figure 1.) Drainage aggregate keeps water pressure from building up behind the face of the wall. Extend the VERSA-Green CG to the top of the wall to separate the drainage aggregate from the planting medium. If the wall requires soil reinforcement, place VERSA-Green CG in sections between geogrid layers. Provide 6 inches of horizontal overlap at top and bottom of each section of CG (figure 2.)

For walls with soil reinforcement, place soil backfill directly behind drainage aggregate in layers no thicker than 6 inches. Compact the backfill, making sure it is neither too wet nor too dry. Generally, hand-operated vibratory-plate compactors can be used to achieve adequate compaction of granular soils—even on larger projects. Place and compact soil backfill behind the drainage aggregate.

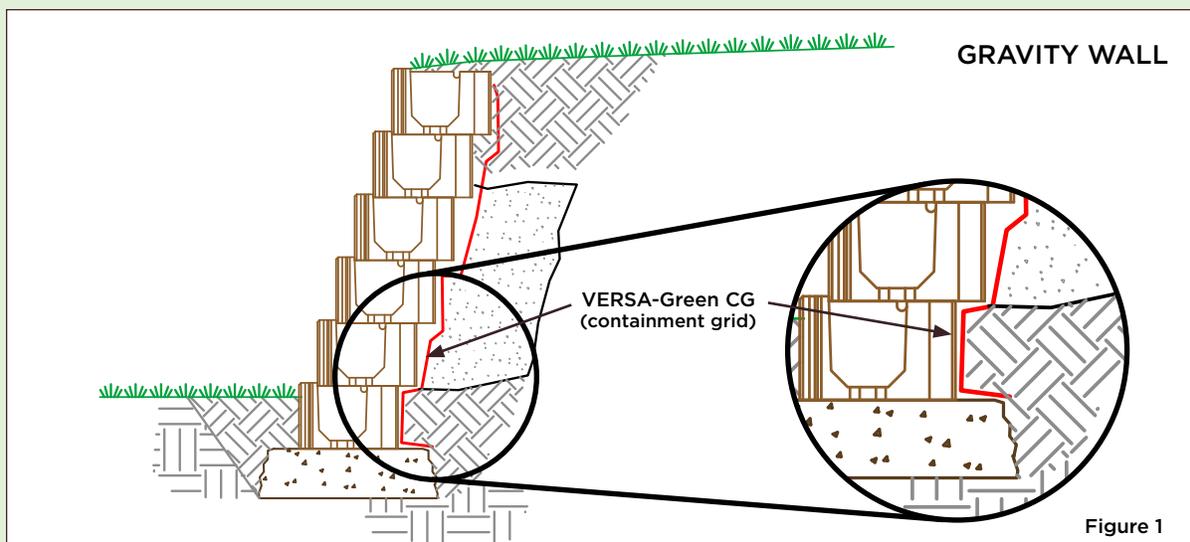


Figure 1

4. CURVES

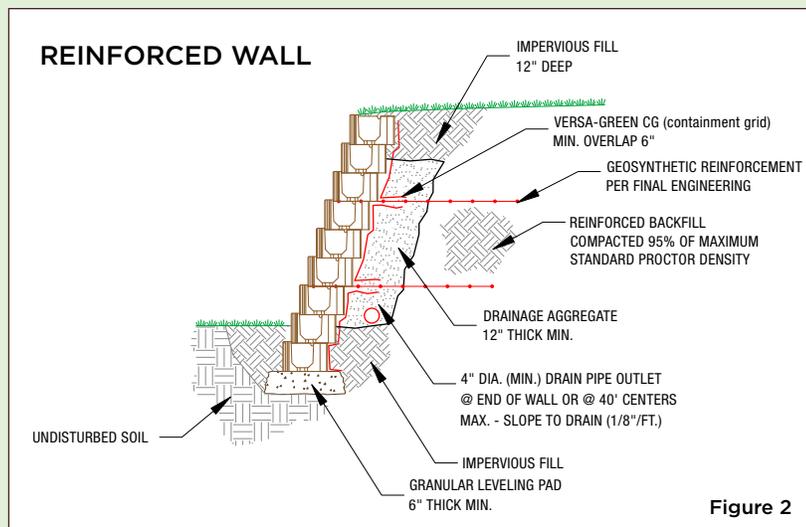
The recommended minimum radius for inside and outside curves is 10 feet. Due to the setback of each course, the space between units on inside curves will increase with each successive course, and the space between units on outside curves will decrease with each successive course.

When building an inside curve, start with a 5-inch space between each unit. On subsequent courses, center each unit over the space between the units in the course below. When building an outside curve, start with an 11-inch space between each unit, and on subsequent courses, center each unit over the space between the units in the course below. A curved wall with a 10-foot radius will reach approximately 11 courses tall before the spacing between units becomes either too wide to support additional units (inside curve) or too narrow for planting (outside curve). A curved wall with a 20-foot radius will reach approximately 21 courses tall before spacing between units becomes either too wide or too narrow. To build taller curved walls, either increase the radius of the curve or build tiered walls. By building tiered walls, the second tier is started with a new base and unit spacing when the first tier reaches a height at which unit spacing becomes too wide or too narrow.

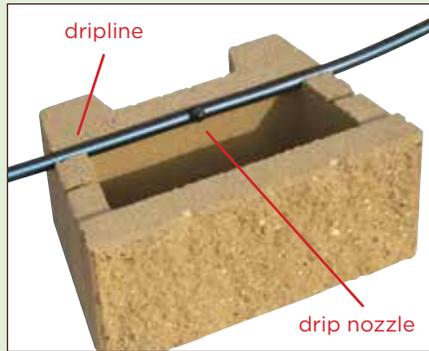


5. GEOSYNTHETIC SOIL REINFORCEMENT

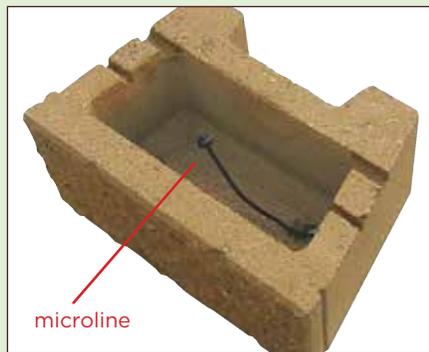
The maximum stable, unreinforced VERSA-Green wall height in best conditions is 3.5 feet, but may be lower depending on soil, site and loading conditions. Taller walls need geogrid soil reinforcement, designed by a qualified engineer. Geogrid should be placed behind the front ridge of the units. The length and vertical spacing of grid will vary by project and should be specified by a qualified engineer. Placing soil reinforcement behind curves and corners requires special layout and overlapping procedures. Never overlap geogrid layers directly on top of one another. Always provide at least 3 inches of soil fill between overlapping layers. Geogrid is usually stronger in one direction and should be laid with the stronger direction perpendicular to the wall face. For correct orientation, follow the geogrid manufacturer's directions carefully.



6. IRRIGATION (optional)



Each course of units is irrigated with a separate dripline that runs off of a water supply line. The location of the water supply line will vary depending on the size and design of your wall. After the first course is completed, install a “T” connection in the supply line for the first dripline. Place the dripline into the preformed grooves on the top of each unit. Continue pressing it into place across each unit for the entire length of the course. Install a drip nozzle in the dripline above the plantable core of each unit.



Use an elbow or “T” connection to run driplines to other courses. All driplines connect back to the main water supply line in a closed system.

Do not install dripline across the top course. Instead, irrigate the top course by extending microline tubing up through the drainage holes in the bottoms of the top-course units from the dripline in the course below.

A flushing valve and an air/vacuum relief valve may be required. Check with your local irrigation supplier for recommendations.

7. FINISHING THE WALL

After the top course is installed, fill the plantable cores with planting medium, place plants in each unit and finish backfilling to the top of the wall.

Express yourself. Mix and match shapes, colors and textures of plants to create a vertical garden that complements any surrounding.



VERSA-Green Unit Specifications

(Actual unit color, size and weight may vary slightly by region.)

Height Unit:	7.625"
Height Face:	8"
Width (face):	18"
Width (rear):	14"
Depth:	12"
Face Area:	.95 sq. ft.
Core Volume:	.27 cu. ft.*
Weight:	70 lbs.
Batter:	16.4°

* Because the planting medium will be higher than the core, estimate about 0.5 c.f. of planting medium per unit.

VERSA-Green™ Plantable Retaining Wall System



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Products shown may be covered by one or more of the following:

U.S. Patent D319,885, U.S. Patent D321,060, U.S. Patent D341,215, U.S. Patent D346,667, U.S. Patent D378,702, U.S. Patent D391,376, U.S. Patent D430,680, U.S. Patent D435,302, U.S. Patent D439,678, U.S. Patent D452,332, U.S. Patent D458,387, U.S. Patent 6,488,448, U.S. Patent 6,960,048, U.S. Patent 7,229,235, U.S. Patent 7,244,079, U.S. Patent D552,258, U.S. Patent D555,810 and other U.S. patents pending; Canadian Industrial Design Registration No. 63929, No. 71472, No. 73910, No. 73911, No. 73912, No. 77816, No. 79058, No. 82288, and No. 89084. I.C.B.O. No. 4625

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6348 Hwy. 36 Blvd., Suite 1, Oakdale, MN 55128

(800) 770-4525 (651) 770-3166 office (651) 770-4089 fax www.versa-lok.com