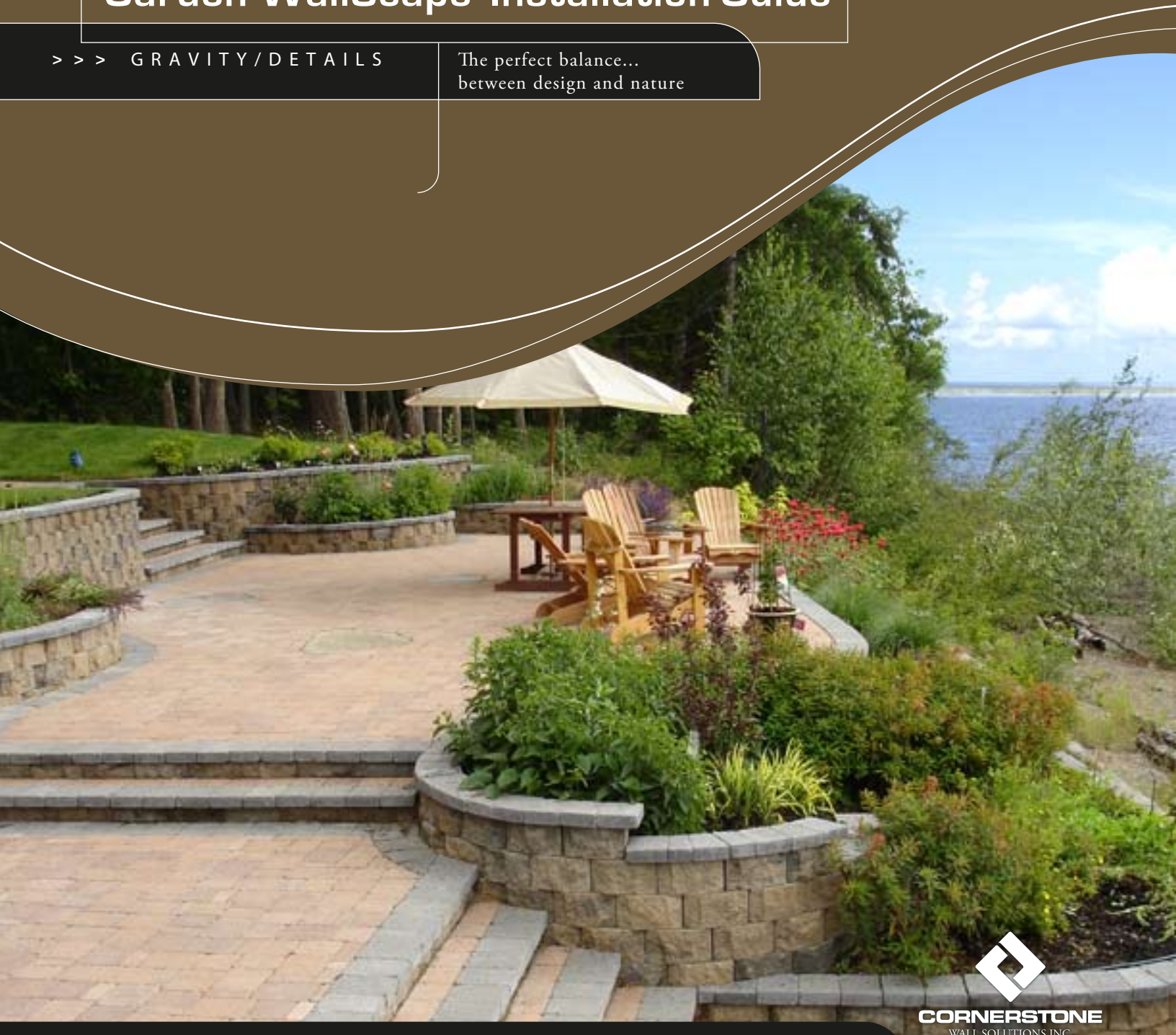
GARDEN WALLSCAPE™

By CornerStone Wall Solutions Inc.

Garden WallScape™ Installation Guide

> > > GRAVITY/DETAILS

The perfect balance...
between design and nature



CORNERSTONE
WALL SOLUTIONS INC.
cornerstonewallsolutions.com

> > > GARDEN WALLSCAPE™ OVERVIEW

NOTE: BOLDED TERMS ARE DEFINED IN OUR ONLINE GLOSSARY AT WWW.CORNERSTONEWALLSOLUTIONS.COM

The **Garden WallScape**™ retaining wall system was developed with the installer in mind. Garden WallScape's™ durable, high shear strength concrete SecureLugs fit into lower units' hollow cores, allowing significant lateral movement without losing unit to unit interlock. Tapered sides with removable wings make it easy to build tight curves and straight walls with complete accuracy. Garden WallScape's™ large hollow core, filled with gravel, provides a superb block-to-block connection.

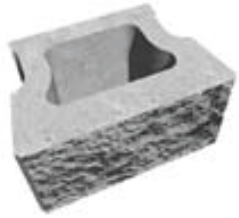
Garden WallScape™ is committed to providing complete technical and construction information to installers and engineers to ensure the successful completion of any retaining wall project. Your best choice is Garden WallScape™ for value, beauty, durability, ease of construction, and complete retaining wall excellence.

*CAP

3" Height x 12" Width x 10" Depth
(76 H x 305 W x 254 mm D)
Weight: 23 lbs (10 kgs)

*90 DEGREE CORNER

6" Height x 12" Width x 6" Depth
(152 H x 305 W x 152 mm D)
Weight: 23 lbs (10 kgs)



*STRAIGHT FACE

6" Height x 12" Width x 8" Depth
(152 H x 305 W x 203 mm D)
Weight: 24 lbs (11 kgs)

*RADIUS FACE

6" Height x 12" Width x 8" Depth
(152 H x 305 W x 203 mm D)
Weight: 24 lbs (11 kgs)

Design Advantage

- **Garden WallScape**™ units are made from high compression and low-absorption concrete, providing durability and resistance to weathering.
- **Garden WallScape**™ large hollow core reduces efflorescence problems and the use of costly pigments.
- **Garden WallScape**™ units provide excellent solutions for gravity, plantable and other types of wall structures.
- **Garden WallScape**™ provides superior environmental advantages both by using less concrete in manufacturing and by the resulting efficiency of transportation.
- **Garden WallScape**™ provides superior flexibility in creating curves, corners, steps and terraced walls.

Installation Advantage

- A small crew can easily install 200 to 600 square feet of wall units a day
- One person can easily handle the light weight hollow core **Garden WallScape**™ unit.
- The one-step **SecureLug** system outperforms the pins or clip method, speeding up installation time considerably.
- The hollow core makes it easy to saw cut, add special lighting or place fence posts into when adding creative details.

Economic Advantage

- **Garden WallScape**™ system will save time, labor, and material costs.
- **Garden WallScape**™ walls can cost considerably less than conventional cast in place concrete walls or traditional masonry systems.
- **Garden WallScape**™ light-weight, hollow core units are less expensive to ship and handle.
- **Garden WallScape**™ labor and equipment costs are low because no special equipment is required and semi-skilled workers will find the units easy to assemble.

Dimensions	6" Height x 12" Width x 8" Depth (152 H x 305 W x 203 mm D)		Faces	Varies	
Face Area	.5 sq ft	(0.047 m^2)	Gravel Filled Weight	45 lbs	(20 kgs)
Volume of Voids	.174 ft^3	(0.0047 m^3)	Concrete Filled Weight	50 lbs	(22 kgs)
Weight	24 lbs	(11 kgs)	Batter/Setback	6°	3/4"/Unit

*all dimensions vary between manufacturers. Verify with local producer for correct measurements

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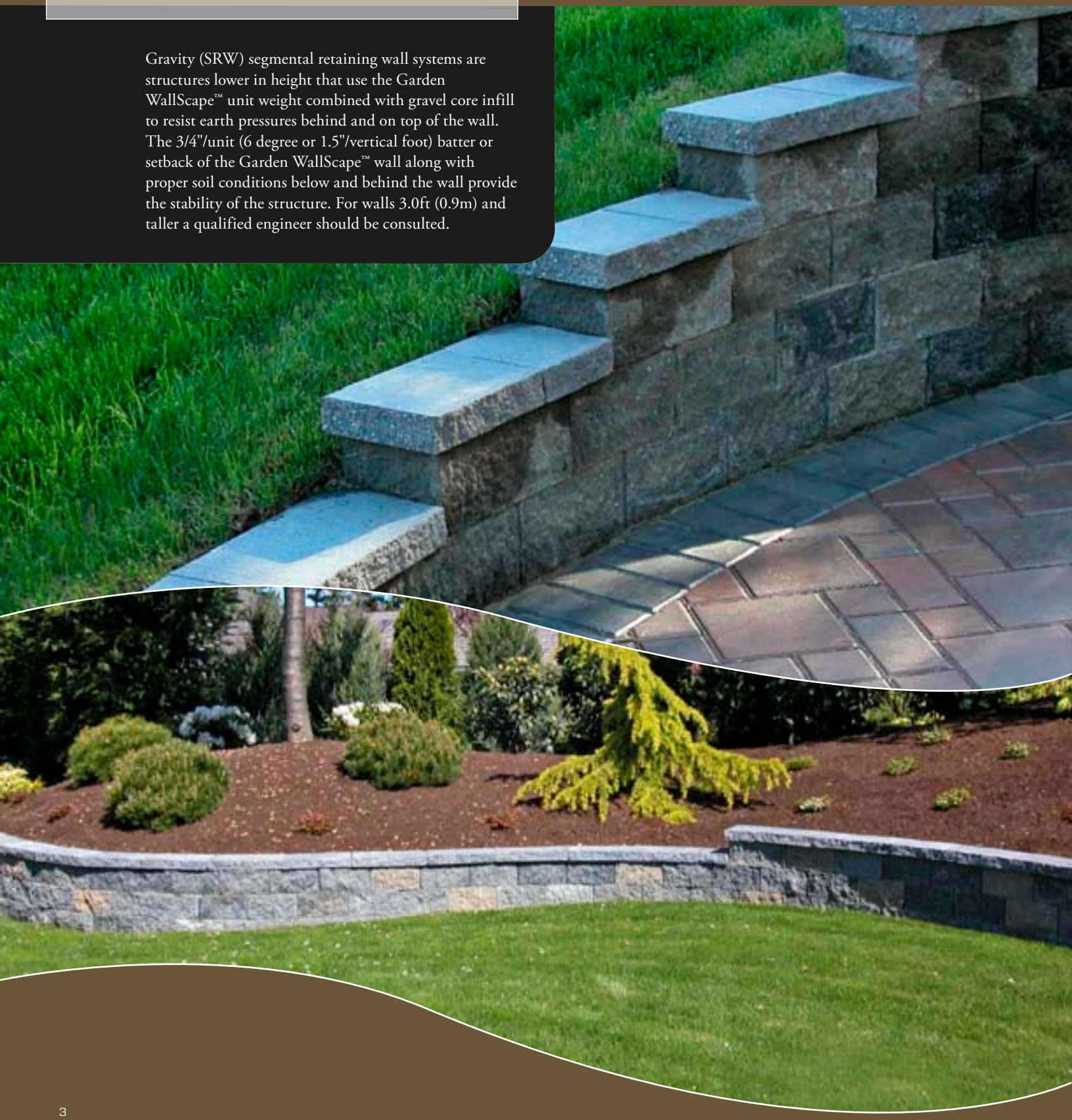
Installation Step by Step

> > > GRAVITY GARDEN WALLSCAPE™ WALL

Gravity (SRW) segmental retaining wall systems are structures lower in height that use the Garden WallScape™ unit weight combined with gravel core infill to resist earth pressures behind and on top of the wall. The 3/4"/unit (6 degree or 1.5"/vertical foot) batter or setback of the Garden WallScape™ wall along with proper soil conditions below and behind the wall provide the stability of the structure. For walls 3.0ft (0.9m) and taller a qualified engineer should be consulted.



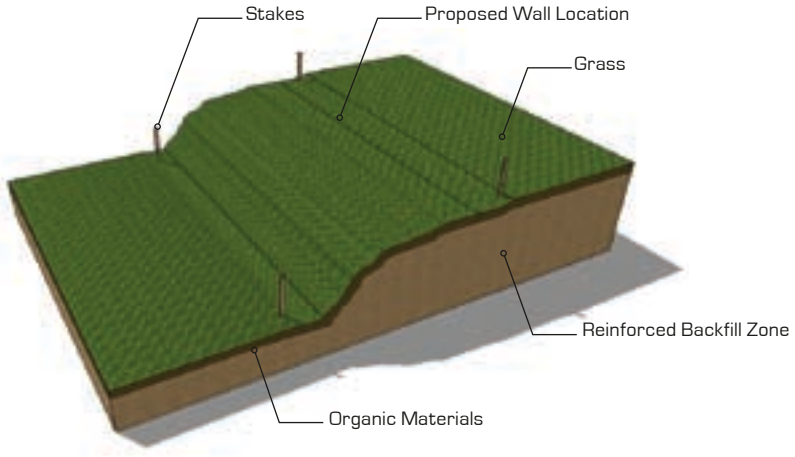
> > > STEP 1
PLANNING

· Mark the bottom and top of the wall excavation location with spray paint or stakes

· Establish proper elevation bottom and top of wall before excavating

· **Organic Materials** should not be used in **Structural Backfill Zone**

· Store and protect **Structural Backfill Materials** from inclement weather during construction



> > > STEP 2
EXCAVATION

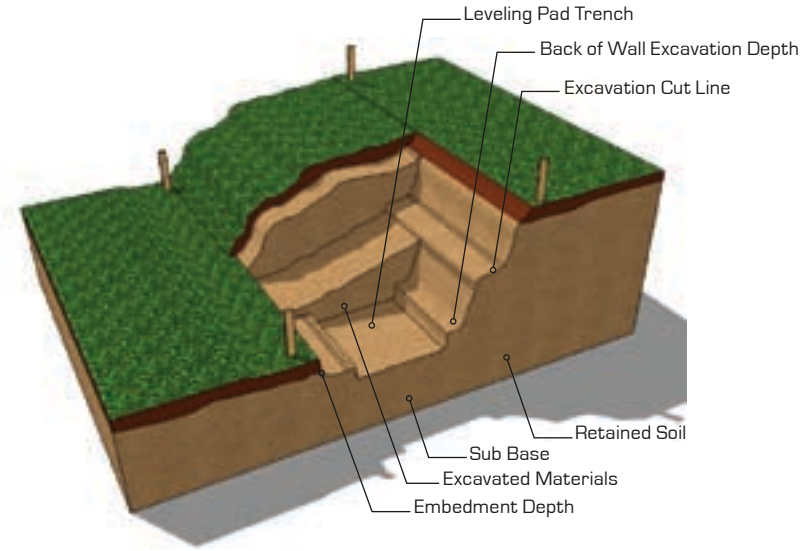
· Excavate and prepare **Sub Base Leveling Pad Trench** 6" below first course

· **Leveling Pad** trench is approximately 2.5' to 3' wide

· Normal wall **Burial Depth** or **Embedment Depth** is 6" to 12" or one block (for more information refer to design manual)

· Excavate cut line to a 2 to 1 slope or greater

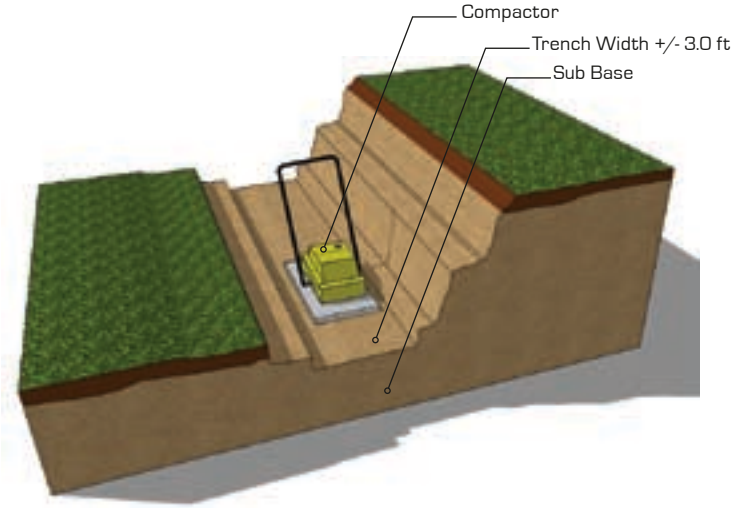
· Back of wall excavation depth into the bank should be 12" beyond the back of the **Sub Base Leveling Trench**



> > > STEP 3
SUB BASE COMPACTION

· Compact **Sub Base to 95% Standard Proctor Density** or greater

· Remove any **Organic** or poor soils in the **Sub Base** and replace with proper **Structural Fill Materials** before compacting

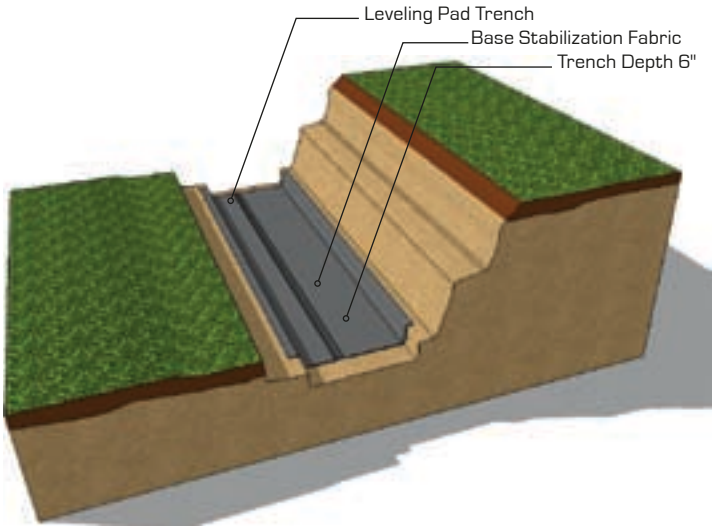


> > > STEP 4
BASE STABILIZATION

· (Optional) place 5' to 6' wide **Base Stabilization Fabric** on top of leveling pad trench

· **Base Stabilization Fabrics** will help prevent sub base materials from mixing with the gravel base leveling pad during compaction

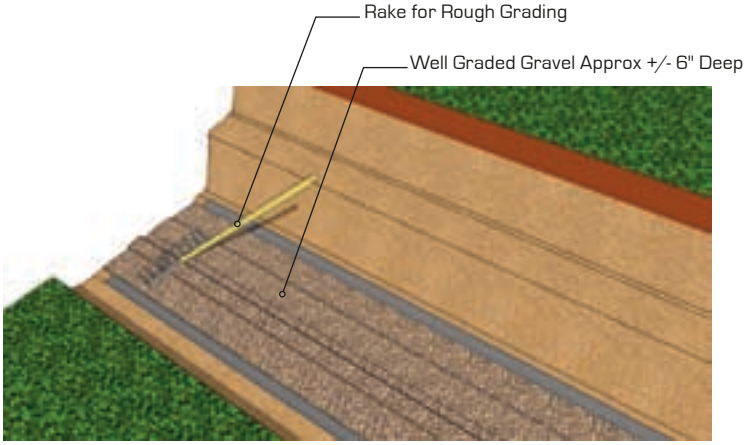
· Fabric also provides extra **Structural Bearing Stability** to the base leveling pad



> > > STEP 5
ROUGH LEVELING PAD

· Place **Well Graded Gravel** (also known as Road Base Aggregates) on top of fabric in the leveling pad trench approximately 6" deep

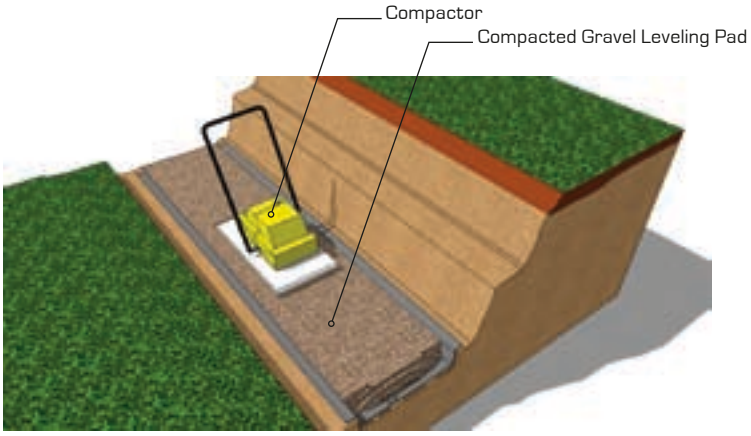
· Rough grade gravel with a rake close to finish base elevation



> > > STEP 6
COMPACT LEVELING PAD

· **Compact** the **Gravel Leveling Pad** to **95% Standard Proctor Density** or greater

· Correct **Moisture Content** in the gravel will help in reaching proper compaction



> > > STEP 7
LEVEL SCREED PIPES

· Place first 3' long **Screed Pipe** across the trench at one end of the wall or at the lowest elevation

· Scratch a trench for the pipe in the compacted gravel with a chipping hammer

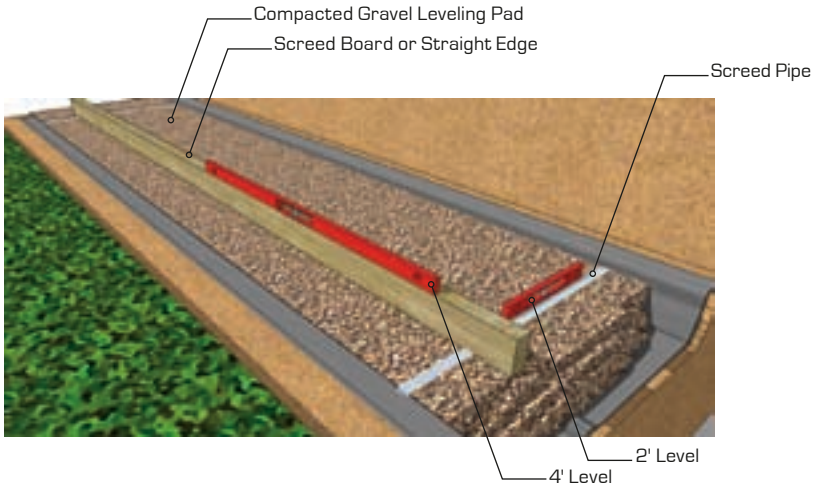
· Use a 2' level or **Laser Level** to set the screed pipe to the proper level

· Gravel is added underneath and around the screed pipe to support while leveling

· Place the second screed pipe across the trench approximately 9' from the first screed pipe

· Level the second screed pipe to the same elevation as the first screed pipe by using a 4' level on top of a **Screed Board, Straight Edge** or with a **Laser Level**

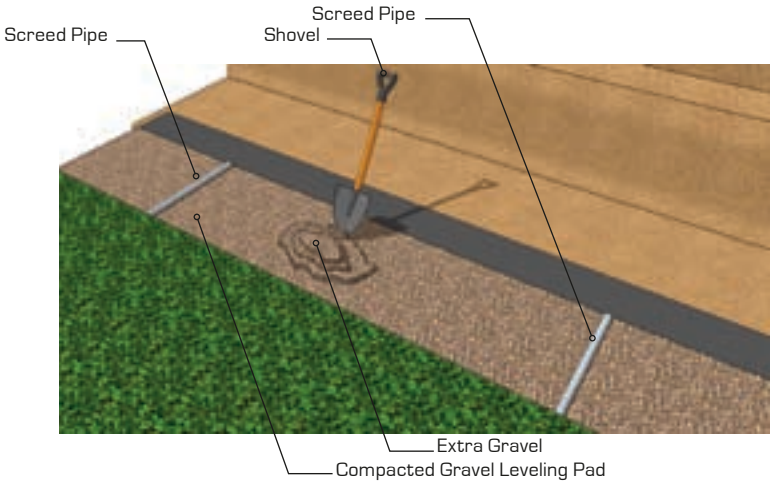
· Continue to place and level screed pipes the full length of the trench leveling pad or until reaching a base elevation change



> > > STEP 8
EXTRA GRAVEL

· Place or remove extra **Well Graded Gravel** (also known as Road Base Aggregates) level to the top of the screed pipes as needed

· (If more than 1 ½ inches of loose gravel is added, repeat the compaction steps again before screeding)



> > > STEP 9
SCREEDING LEVELING PAD

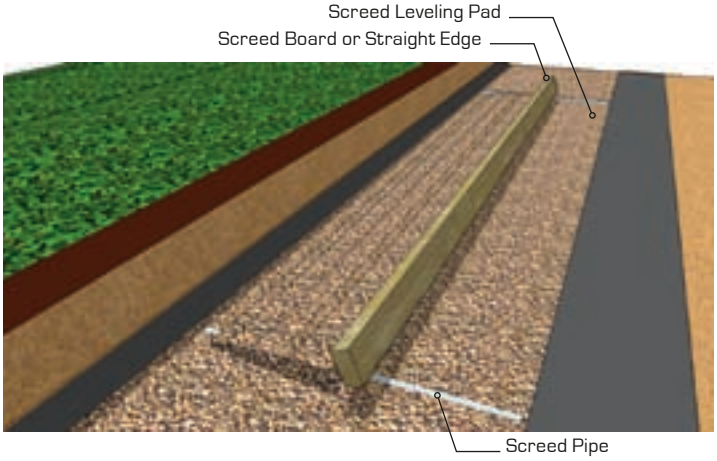
· **Screed** the gravel leveling pad with a **Screed Board** or **Straight Edge** across the trench on top of two screed pipes

· The coarser the gravel the more back and forth the screeding action when drawing the **Screed** across the leveling pad

· Too much pressure on the screed straight edge may dislodge the level of the screed pipes while screeding

· A second screed pass may be needed to insure an accurate level has been achieved

· Continue to screed the leveling pad until completing the full length of the trench or up to the first elevation change

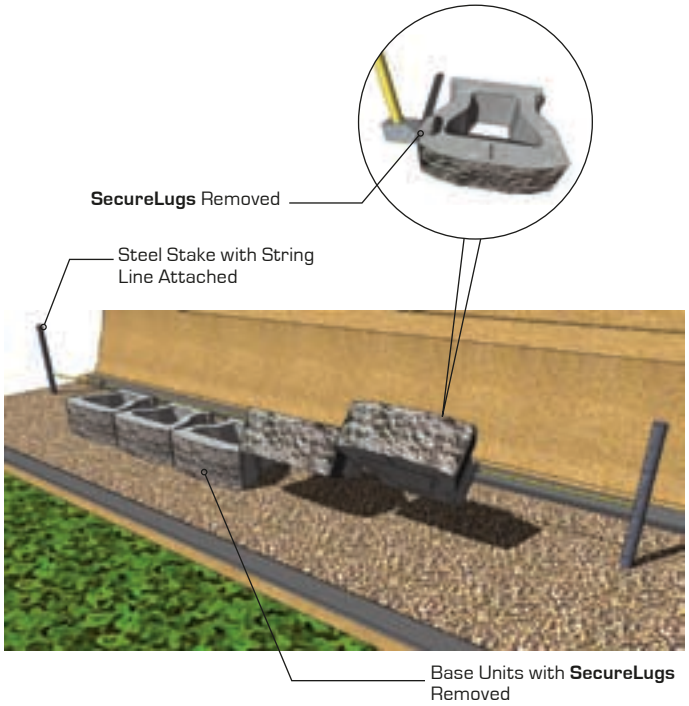


> > > STEP 10

REMOVE SECURELUGS

· **Garden WallScape™** base units will have the **SecureLugs** removed before placing on the leveling pad

· Place each unit on top of the leveling pad in such a way as not to disturb the level gravel



> > > STEP 11

LAY FIRST COURSE

· Remove the screed pipes from the leveling pad

· Place a steel stake or a **Garden WallScape™** unit at either end of the leveling pad to establish the back of the first course of units

· Secure tightly a string line to the stakes or **Garden WallScape™** units at either end which will provide the guide to line up the back of each **Garden WallScape™** base unit

· The distance of the string line between the steel stakes or **Garden WallScape™** units may vary due to heavy winds

> > > STEP 12

LEVEL UNITS

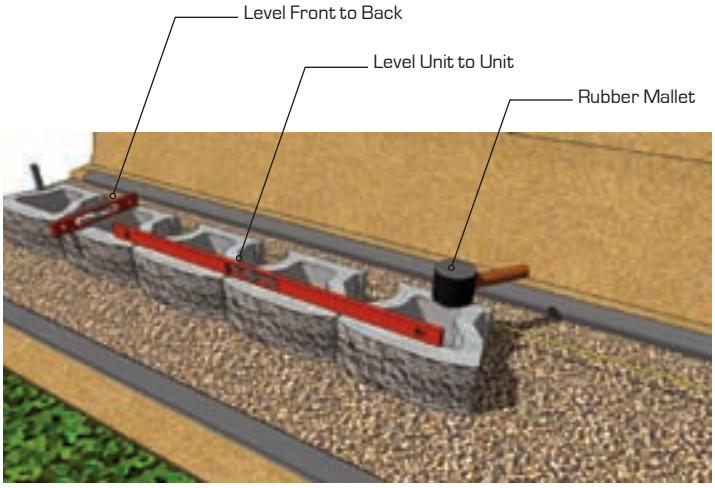
· Units are laid snug together and parallel to the straight or curved line

· A rubber mallet should be used if unit height and alignment adjustment is needed

· Use a short 2' level to make sure the units are level front to back

· Use a 4' level to make sure the units are level unit to unit along the length of the wall

· Correct batter and straight horizontal lines in the completed **Garden WallScape™** wall depend on the accuracy of the base leveling pad and units



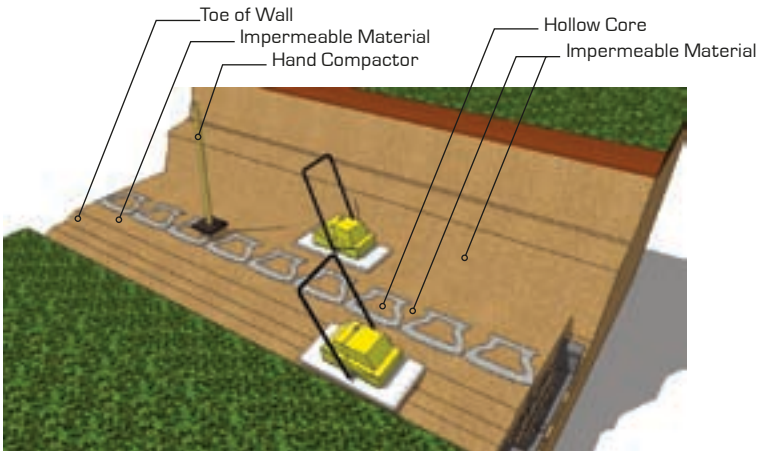
> > > STEP 13
IMPERMEABLE FILL

· Backfill behind, in front **(toe of wall)** and in the hollow cores of the units with **Impermeable Materials** up to the desired level of the **Perforated Drain Pipe** or to the top of the first course

· Compact the impermeable materials behind, in front and in the hollow cores of the units

· Sweep the top of the units clean of all rock and dirt before placing the next course of units

· Sweeping should create a 1/2" void in the core to accommodate the **SecureLug**'s interlock

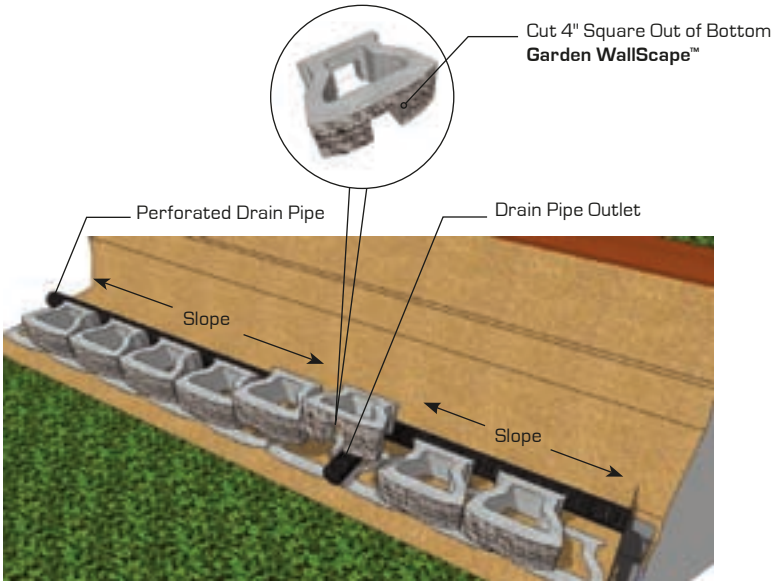


> > > STEP 14
DRAIN PIPE OUTLET

· **Perforated Drain Pipe** should have adequate slope to drain water in the right direction towards each **Drain Pipe Outlet**

· **Drain Pipe Outlet** can be every 30 or 50 feet

· **Perforated Drain Pipe** can be a **Sock Wrapped** system to help prevent fines from migrating into the pipe



> > > STEP 15
BACKFILL

· Place and compact **Backfill Materials** in maximum **Lifts** of 6"

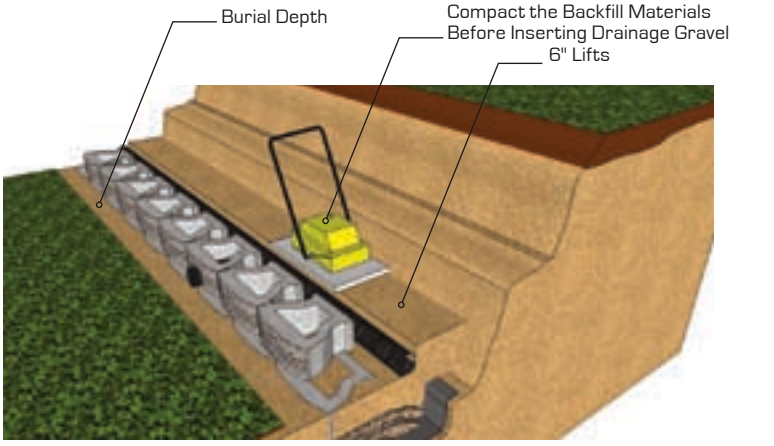
· Lifts may be less than 6" depending on the type of soil or size of equipment

· Backfill materials will be placed 6" to 12" behind the units allowing for **Clear Crush Drain Gravel** (Angular Aggregates free of fines) between the **Garden WallScape™** units and compacted backfill materials

By adding **Clear Crush Drain Gravel** (Angular aggregate free of fines) after compaction of the backfills materials, this will prevent undue pressure against the wall which can cause the units to move out of alignment

· Each lift should be compacted to **95% Standard Proctor** or greater

· The correct **Moisture Content** in the **Backfill Materials** will help in reaching proper **Compaction Density**



> > > STEP 16

DRAINAGE GRAVEL

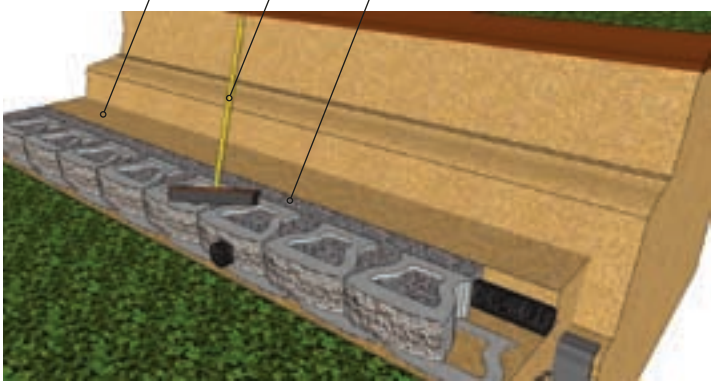
· **Clear Crush Drain Gravel** (Angular Aggregates free of fines) is placed in the hollow cores and 6" to 12" behind the wall units after compaction of the **Backfill Materials**. This will prevent undue pressure against the wall which can cause the units to move out of alignment

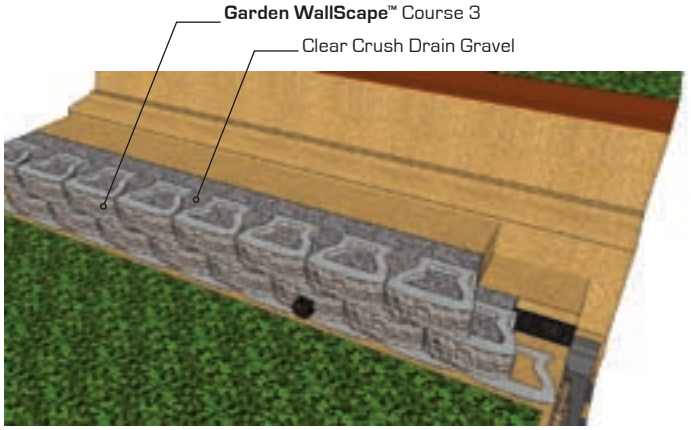
· **Clear Crush Drain Gravel** does not need to be compacted

· Sweep the top of the **Garden WallScape™** units clean of all rock and dirt before placing the next courses

· Make sure the **Clear Crush Drain Gravel** directly behind the wall units is placed flush to the top of the units

· Make sure the **Backfill Materials** are as well compacted and level as possible





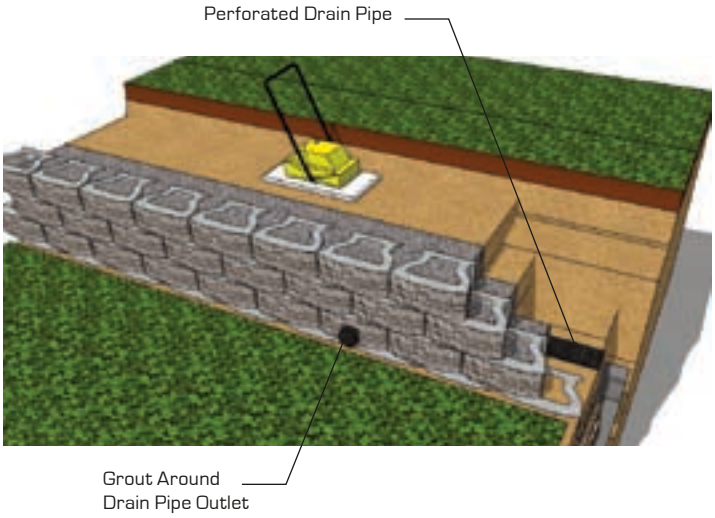
> > > STEP 17

CONTINUE INSTALLATION

· Continue to install each course of units following the same steps as above

· Install and compact **Backfill Materials** in 6" lifts until wall is complete

· Grout around **Drain Pipe Outlet** to prevent **Clear Crush Drain Gravel** or **Drainage Aggregates** (Angular Aggregates free of fines) from migrating



> > > STEP 18

CAPPING

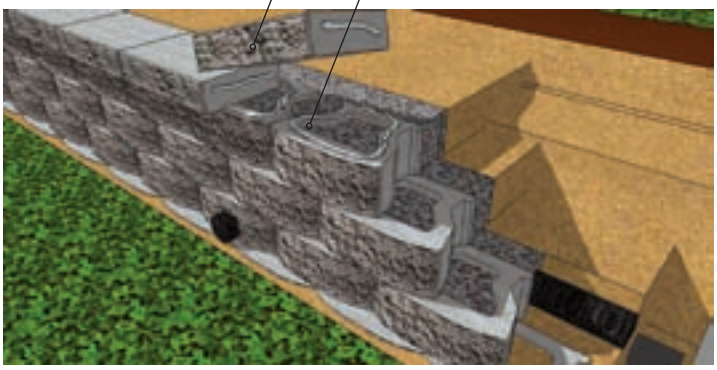
· Complete the top of the wall with **Garden WallScape™** cap units

· Properly secure the cap units using a **Concrete Adhesive**

· Make sure all units are free of dirt and stones before installing the caps

· Place a solid bead of **Concrete Adhesive** around the top of each **Garden WallScape™** unit

· Place a bead of adhesive between each joint of the cap units

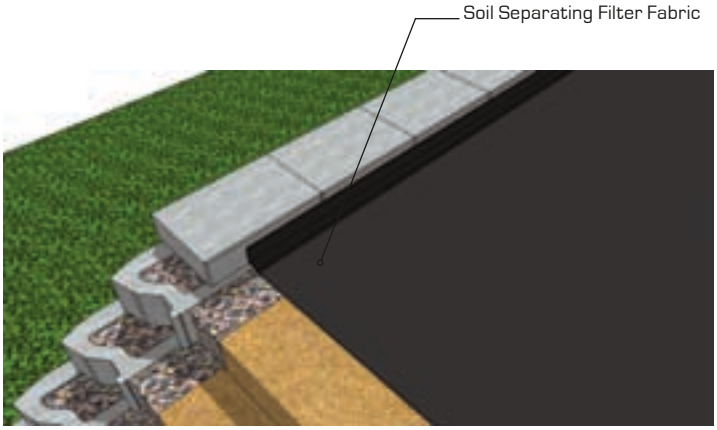


> > > STEP 19

SOIL SEPARATION FABRIC

· Place a 6 ft wide **Soil Separating Filter Fabric** on top of the backfill and drainage gravel and against the back of the last units before placing the planting soils

· The fabric will prevent planting soil fines from staining the face of the wall and migrating into the **Clear Crush Drain Gravel** (Angular Aggregate free of fines)

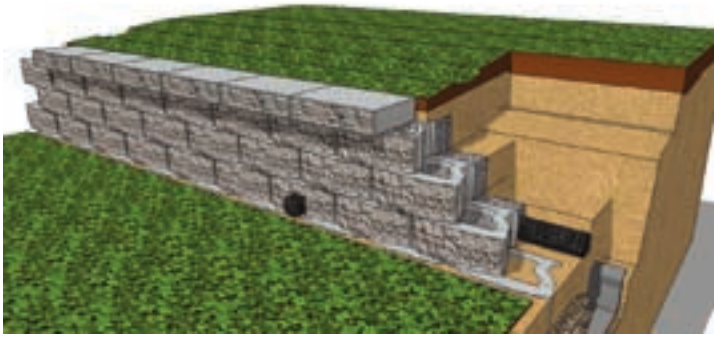


> > > STEP 20

FINAL GRADING

· Insure that final grading is done on top and bottom of the wall

· Make sure to protect newly placed planting soil from erosion during heavy rains or surface runoff

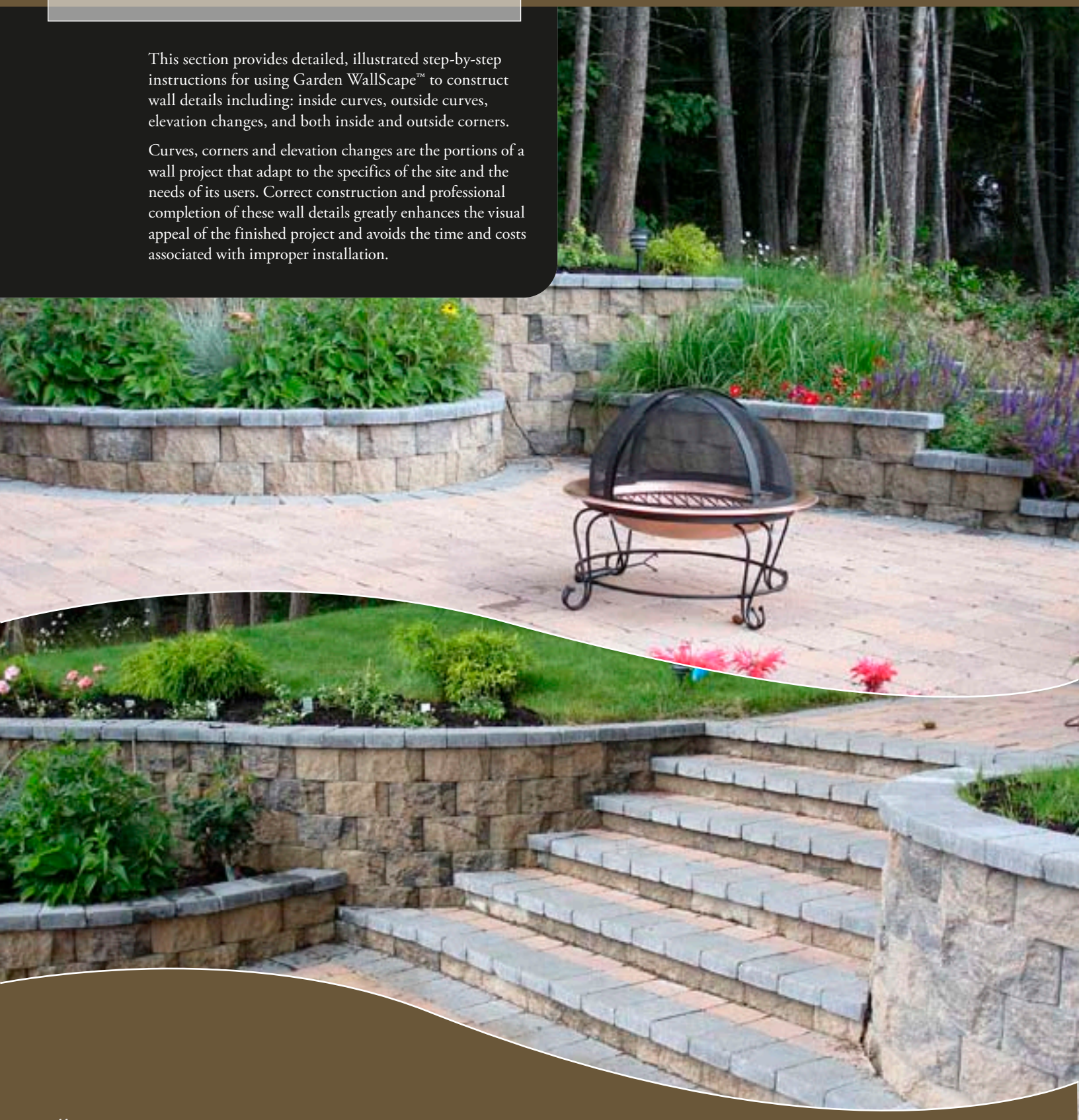


*Final determination of the suitability of the contemplated use, and its manner of use are the sole responsibility of the user

> > > GARDEN WALLSCAPE™ WALL DETAILS

This section provides detailed, illustrated step-by-step instructions for using Garden WallScape™ to construct wall details including: inside curves, outside curves, elevation changes, and both inside and outside corners.

Curves, corners and elevation changes are the portions of a wall project that adapt to the specifics of the site and the needs of its users. Correct construction and professional completion of these wall details greatly enhances the visual appeal of the finished project and avoids the time and costs associated with improper installation.



> > > STEP 1

BASE ELEVATION CHANGES

· The top of the installed base unit will be used to establish the step up gravel leveling pad elevation

· Make sure to backfill and compact the gravel in and around the last unit of the first course

· Finished grade of the leveling pad should be an 1/8" to 1/4" above top of first course units to allow for a small amount of settlement

· Repeat the above screeding steps on the second elevation gravel leveling pad

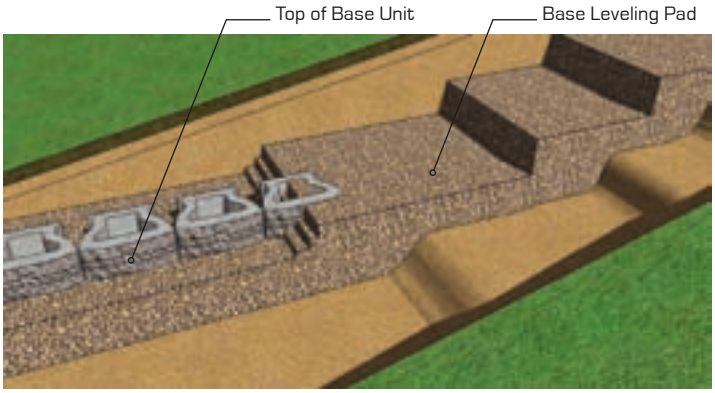
· Place the first unit on the second course at a half bond on top of last & second last of the first course units

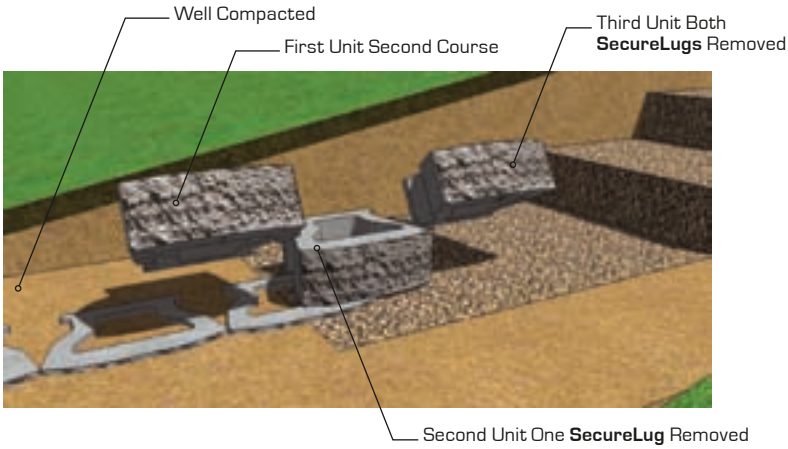
· The two **SecureLugs** will fit into the hollow cores of the two units below. To align the wall, place a string line at the back of the units for a straight wall or place a PVC pipe for a curved wall

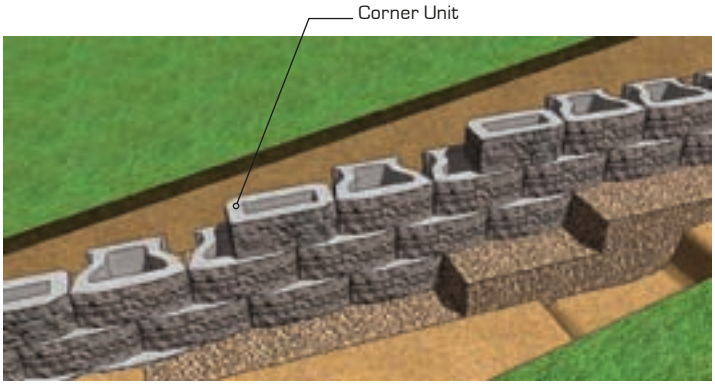
· Pull upper unit forward to engage and align units

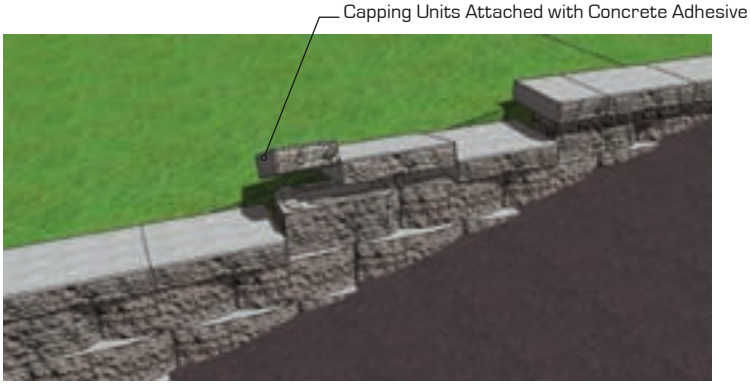
· The batter or set back will be 3/4"/unit (6 degree or 1.5"/vertical foot)

· Place the second unit half on the last unit and half on the second gravel leveling pad. Ensure that the **SecureLug** is removed on the leveling pad side of the unit









Convex/Outside Curves

> > > STEP 1

CONVEX FIRST COURSE

· If possible, start building a curve from the center and work left and right through the curve

· Use **PVC Flex Pipes** to create smooth and accurate **Convex** curves

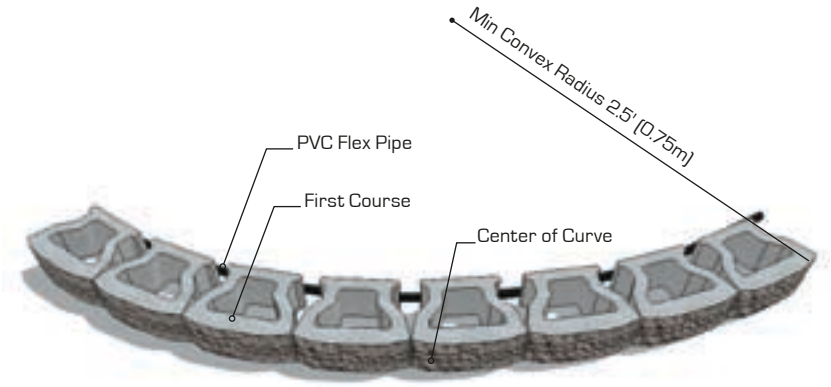
· Use the back of the unit for alignment

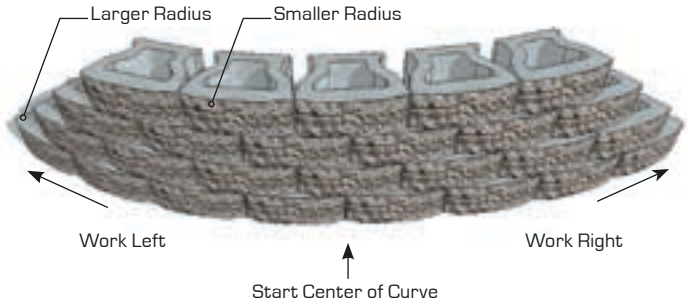
· Build each course of units by starting at the same place and the same bond as the last course

· **Convex** curves have a slight increase in batter or setback to the standard 3/4"

· The taller the wall the larger the **Convex** first course needs to be. The radius of each additional course will be slightly smaller than the lower course

· **Garden WallScape™** minimum **Convex** curve is approximately 2.5 foot radius





Concave/Inside Curves

> > > STEP 1

CONCAVE FIRST COURSE

· If possible, start building a curve from the center and work left and right through the curve

· Use **PVC Flex Pipes** to create smooth and accurate **Concave** curves

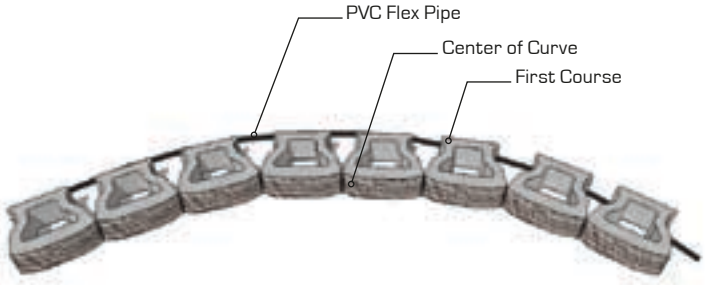
· Use the back of the unit for alignment

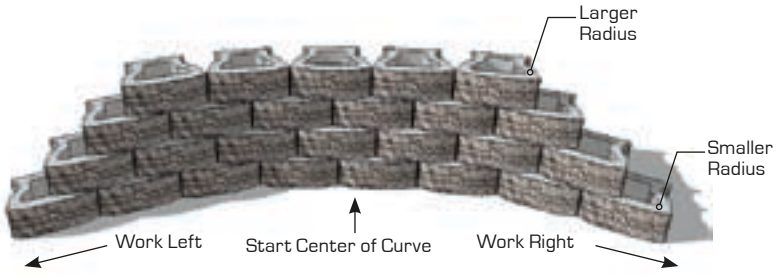
· Build each course of units by starting at the same place and the same bond as the last course

· **Concave** curves have a slight decrease in batter or setback to the standard 3/4"

· The taller the wall the smaller the **Concave** first course needs to be. The radius of each additional course will be slightly larger than the lower course

· **Garden WallScape™** minimum **Concave** curve is approximately 2.5 foot radius





Outside Corner

> > > STEP 1

OUTSIDE FIRST COURSE

· Use a **90° Corner** unit to build an outside corner

· Place the first **90° Corner** unit on the base leveling pad to start the outside corner

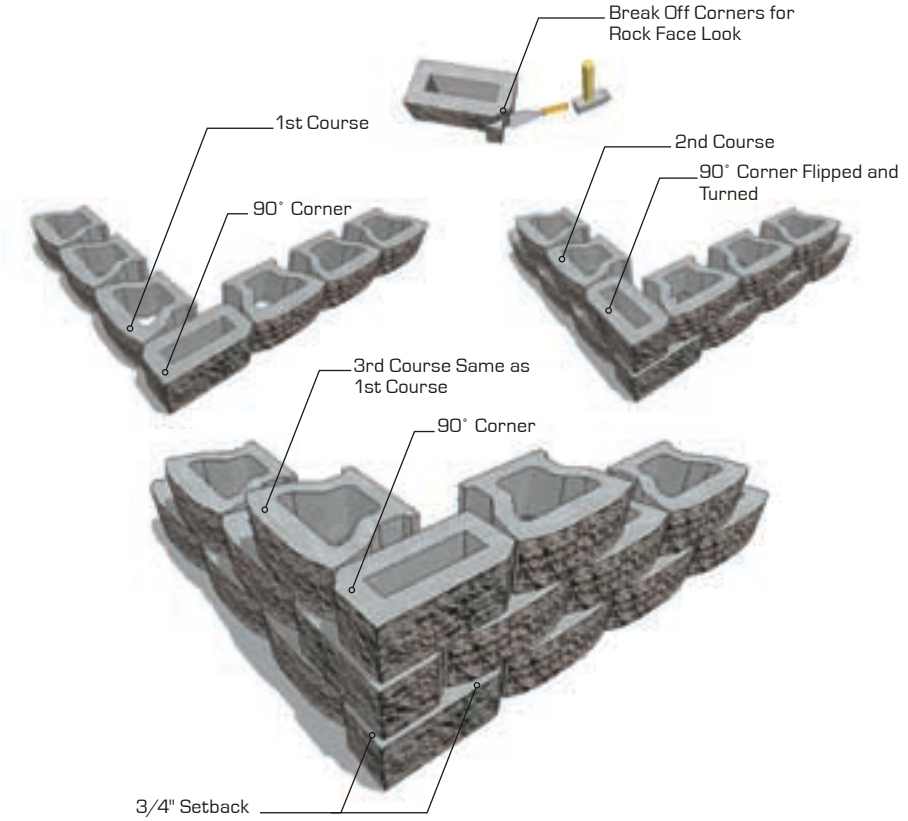
· Place a **Garden WallScape™** unit on either side against the **90° Corner** unit

· Continue to lay the **Garden WallScape™** base course on either side of the corner until first course is completed

· Flip and turn the second course **90° Corner** overlapping the short side and half of the **Garden WallScape™** base unit. This unit should be pushed back 3/4" to achieve proper setback

· Continue to lay the **Garden WallScape™** second course on either side of the corner until second course is completed

· The **90° Corner**s can be glued or concrete core filled to ensure a proper course to course outside corner interlock



Inside Corner

> > > STEP 1

INSIDE FIRST COURSE

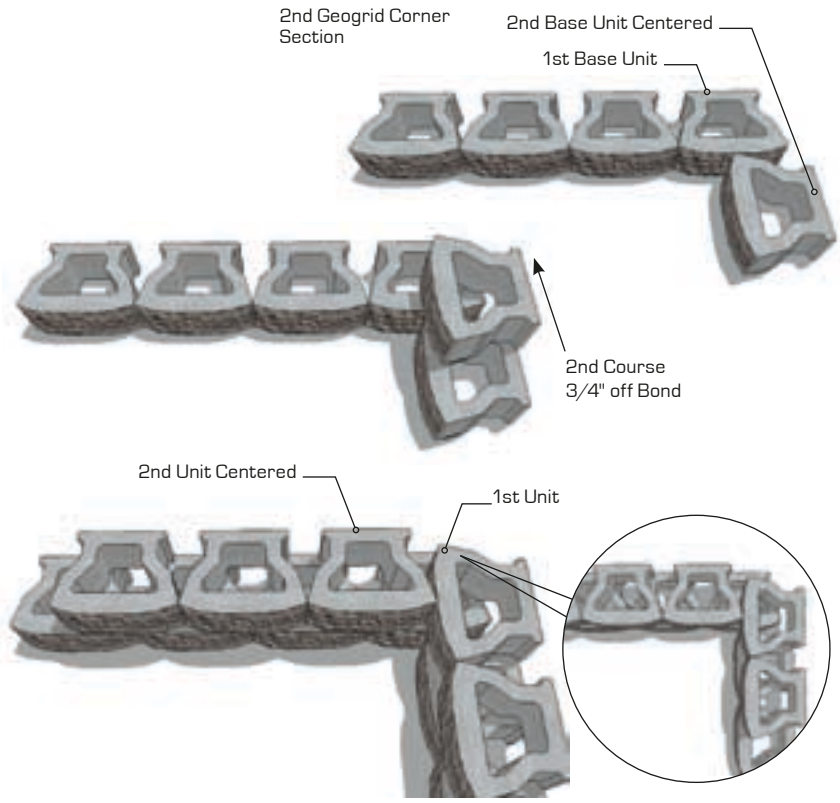
· Place the second unit at right angle and centered to the first **Garden WallScape™** base unit. Continue to install the **Garden WallScape™** base units right and left of the first inside corner units

· Place the second unit at right angle and centered to the 1st unit on the second course

· Make sure second course units are placed at a 3/4" setback to the lower inside corner

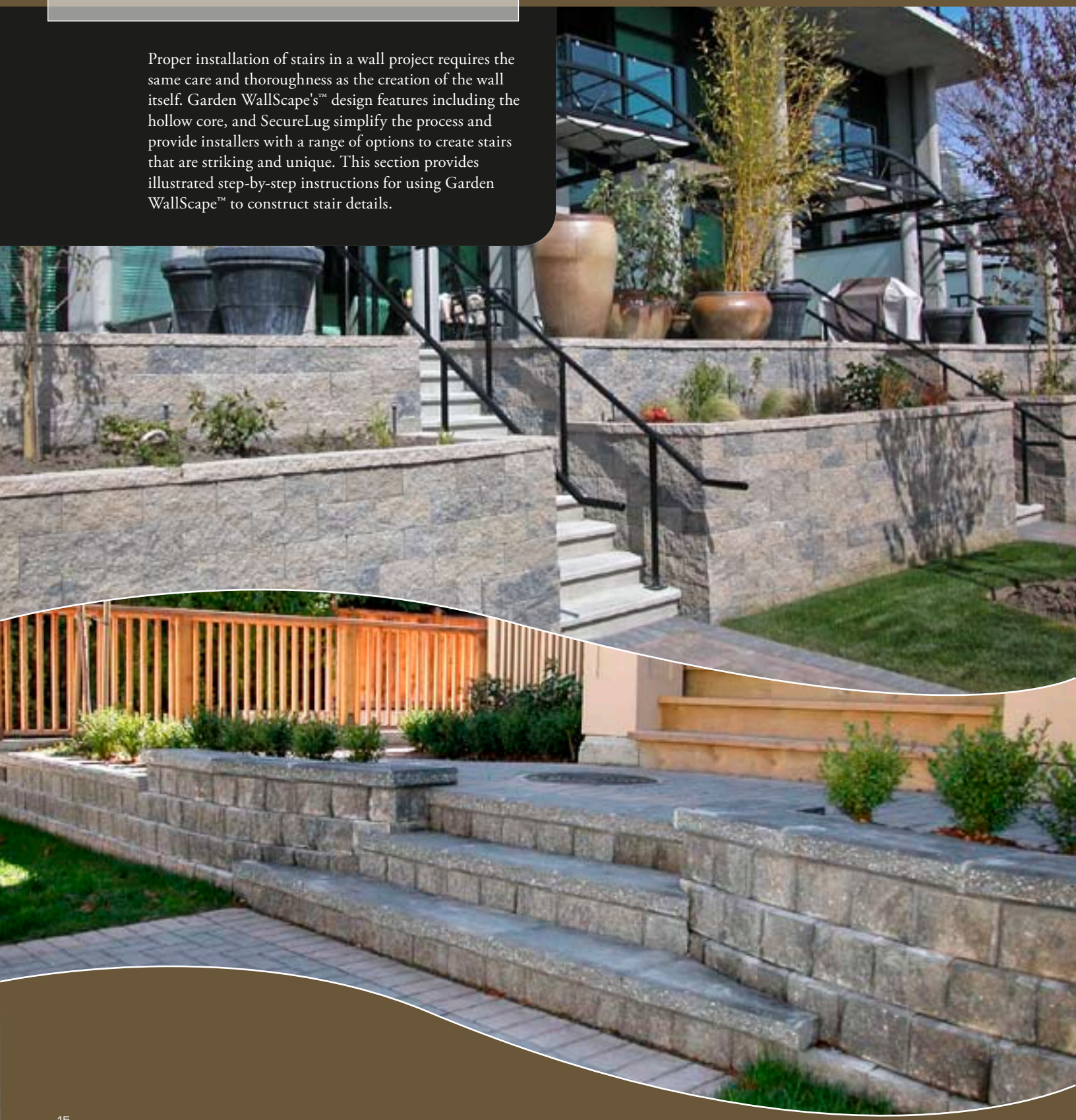
· Continue to install the units left and right of the inside corner to complete the second course of the wall

· Repeat the above step by step installation until the wall height is completed or until reaching the first geogrid layer



> > > GARDEN WALLSCAPE™ STAIR DETAILS

Proper installation of stairs in a wall project requires the same care and thoroughness as the creation of the wall itself. Garden WallScape's™ design features including the hollow core, and SecureLug simplify the process and provide installers with a range of options to create stairs that are striking and unique. This section provides illustrated step-by-step instructions for using Garden WallScape™ to construct stair details.



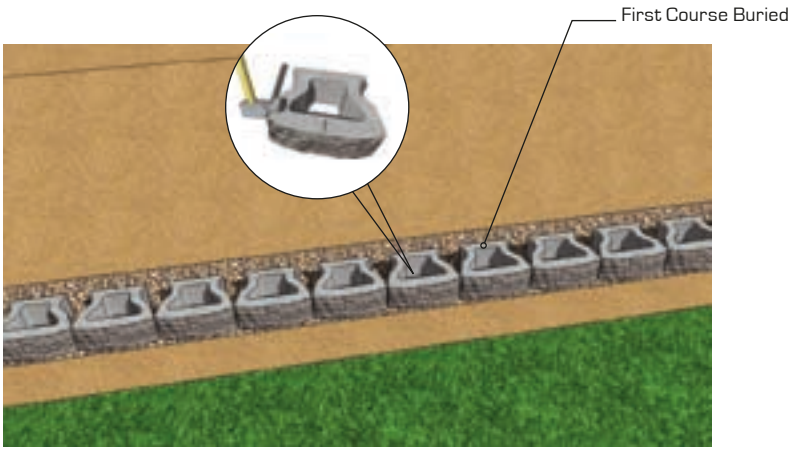
> > > STEP 1

BASE LEVELING PAD

· When building steps, exercise the same care used in typical wall construction

· Prepare the sub-base and base leveling pad by following Gravity **Garden WallScape™** Installation Steps 1 to 9

· Build each step in sequence with each course of the regular wall units for best results of wall to step interlock



> > > STEP 2

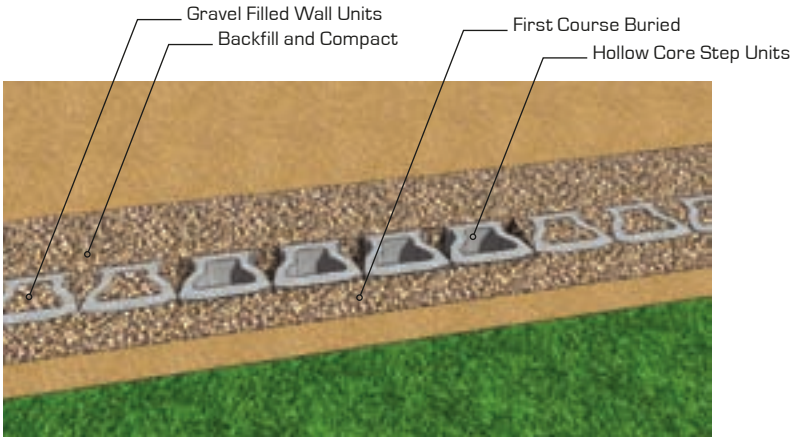
LAY FIRST COURSE

· **Garden WallScape™** first base units will have the **SecureLugs** removed before placing on the leveling pad

· First course of step units will be totally buried

· Backfill behind the first course units with gravel, then compact and level flush to the top of the first course

· Do not fill the step units' hollow cores with gravel if you plan to use concrete



> > > STEP 3

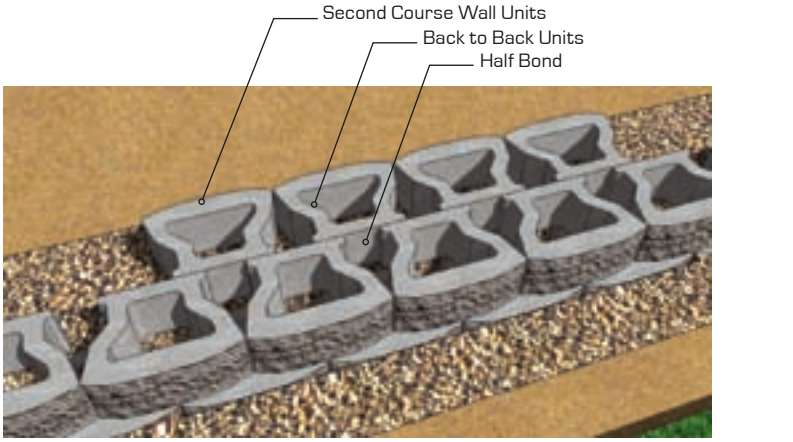
LAY SECOND COURSE

· Place the second course of units on top of the base units

· Place a second row of units back to back behind the second course of units on half bond

· Backfill behind the second course of units with gravel, then compact and level flush to the top of the second course

· Do not fill the step units' hollow cores with gravel if you plan to use concrete



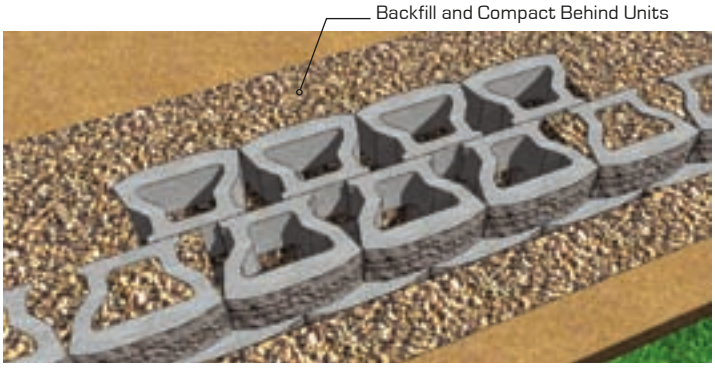
> > > STEP 4
LAY THIRD COURSE

· Place the third course of units on the lower backward facing units with the **SecureLugs** placed into the 2 hollow cores of the lower units on half bond

· Pull the units forward to lock the **SecureLugs** into the lower backward units

· The third course units will be in a forward batter approximately 1.5 inch leaving 8 inches exposed on the front first step

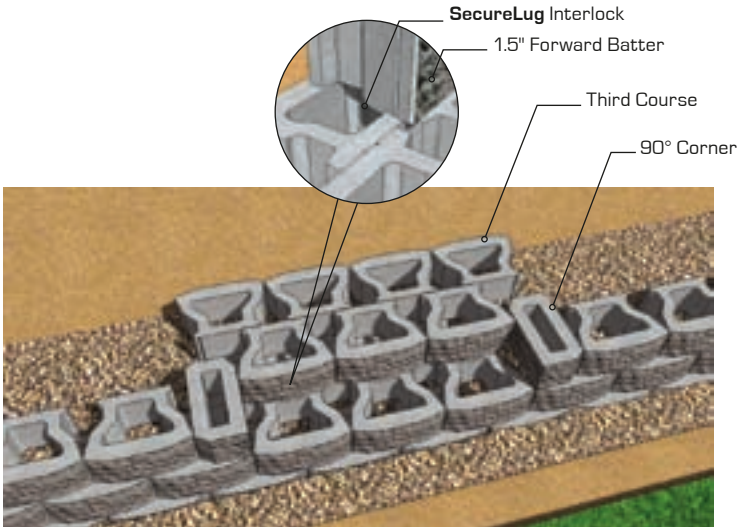
· Place a second row of units back to back behind the third course of units on half bond



> > > STEP 5
CONTINUE INSTALLATION

· Continue to install each course of step units following the same steps as above

· The top and final step does not need backward units



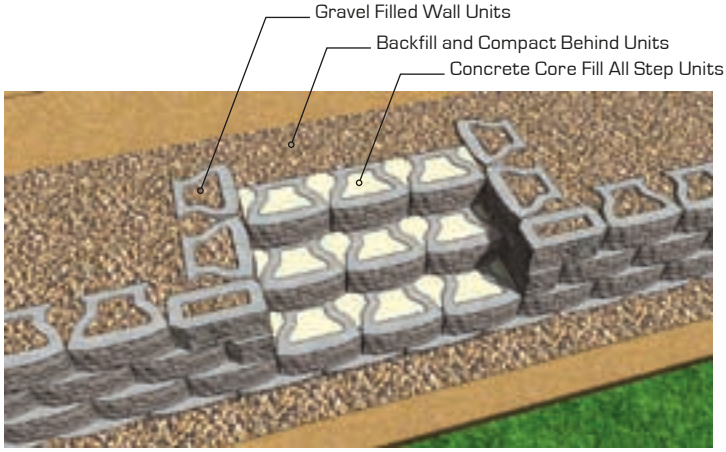
> > > STEP 6
CONCRETE CORE STEPS

· Concrete filling the cores of all the step units will provide for greater stair stability

· Concrete core fill flush to the top of the units

· Use a steel bar to hand vibrate the cores to insure proper filling

· Option: Unit cores can be filled with gravel but must be well compacted

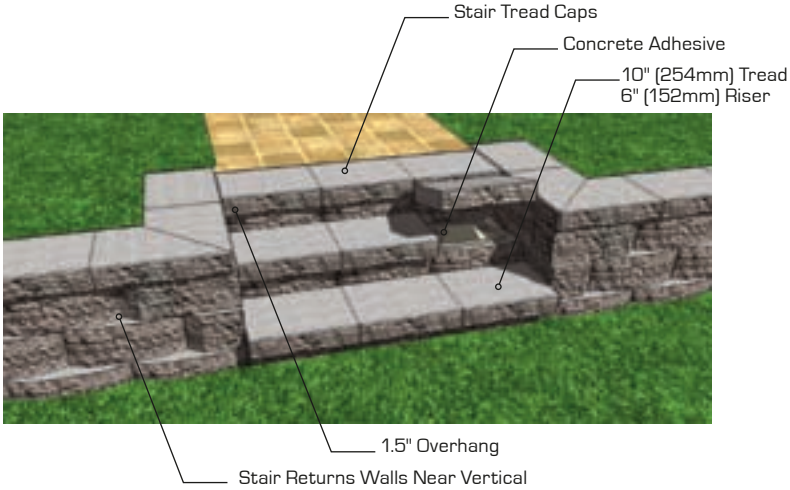


> > > STEP 7

STAIR TREADS

· **Garden WallScape™** 10 inch deep cap units can be used as a stair tread

· Option: Pavers, Patio Slabs or Natural Stone can also be used as a stair tread



> > > STEP 8

6" RISER CROSS SECTION

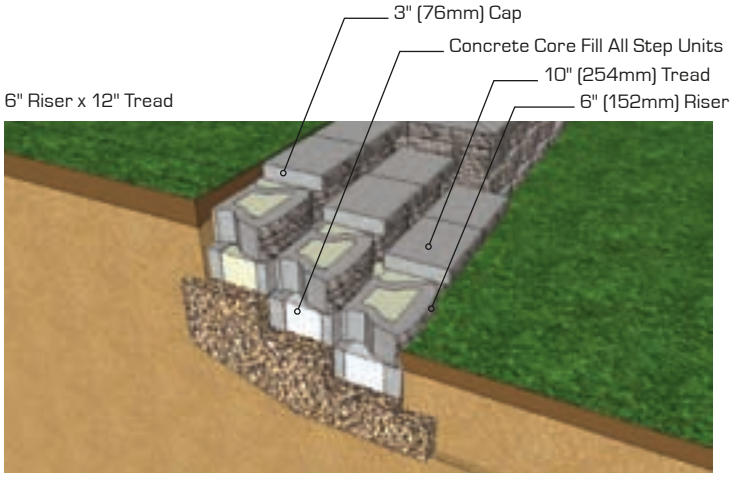
· The 10 inch cap will overhang the step units by approximately 1.5 inches on each step

· The riser will be a full 6 inches using the above installation

· Properly secure the cap units using a concrete adhesive

· Make sure all units are free of dirt and stones before installing

· Place a bead of adhesive between each joint of the caps



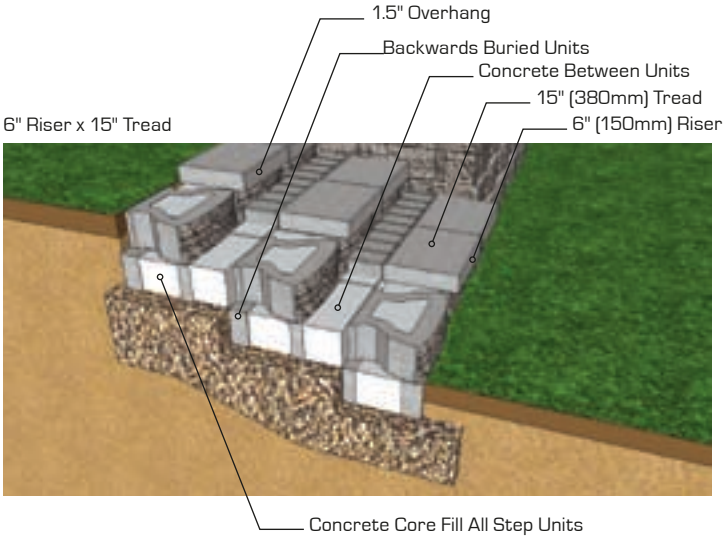
> > > STEP 9

LOWER STEP RISERS

· Lower risers can be made such as 5" or 4" by lowering the buried units 1 to 2 inches below the top of the backward buried unit

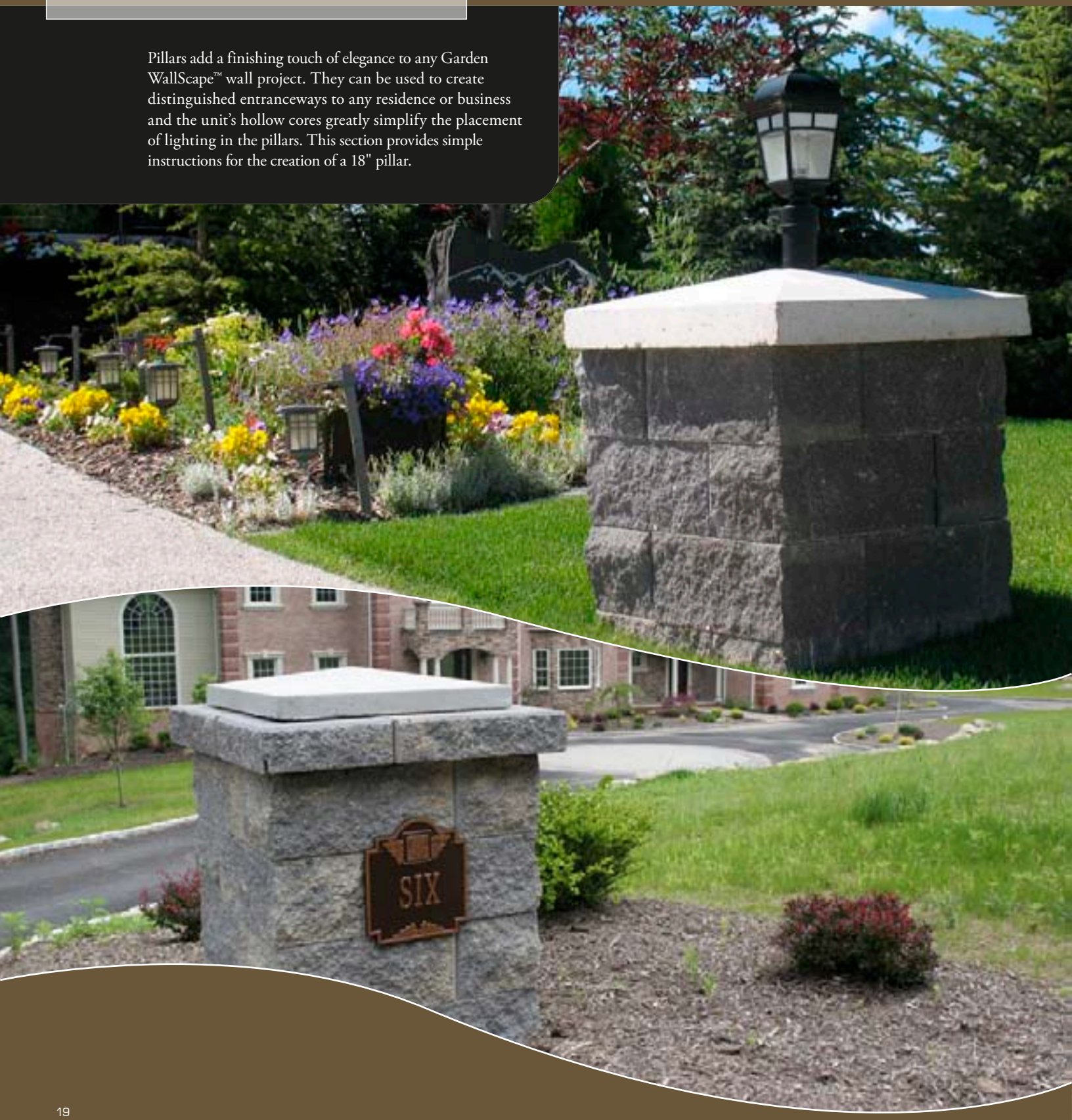
· Larger treads can be created by moving the buried units back off the forward step course 5 to 6 inches to create a 15 to 16 inch tread

· A variety of riser heights and tread lengths can be created to suit your project



> > > GARDEN WALLSCAPE™ PILLAR

Pillars add a finishing touch of elegance to any Garden WallScape™ wall project. They can be used to create distinguished entranceways to any residence or business and the unit's hollow cores greatly simplify the placement of lighting in the pillars. This section provides simple instructions for the creation of a 18" pillar.



18" Pillar

> > > STEP 1
LEVELING PAD

· Excavate and prepare your **Sub Base Leveling Pad**

· Install leveling pad of well graded gravel (also known as road base aggregates) a minimum of 8" (200 mm) thick and 30" (750 mm) square. Compact to 95% standard proctor density

· Install the first 4 corner units perpendicular and square to each other

· Ensure first base course is level and square to the center of the pad

· Bury the first course completely for stability

> > > STEP 2
SECOND COURSE

· Place second course of the **Garden WallScape™ 90° Corner** units directly on top of the first course

· Flip and turn the second course corner units upside down to create an overlapping bond

· **Clear Crush Drain Gravel** (Angular Aggregates free of fines) should be placed in the cores and middle of pillar

· (concrete core filling optional) use a dry concrete mix to prevent leaching of cement

· **Concrete Adhesive** should be applied to all units to ensure course to course interlock

> > > STEP 3
ADDITIONAL COURSES

· Repeat Step 1 and Step 2 until desired height of pillar has been reached

> > > STEP 4
COMPLETION

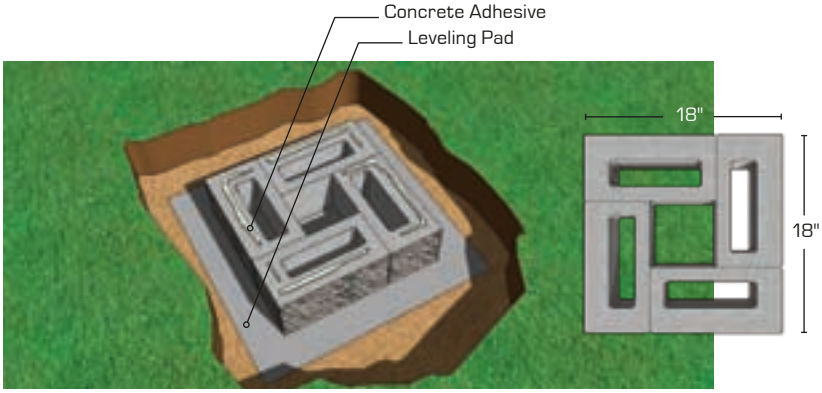
· Complete the pillar with a **Pillar Cap**

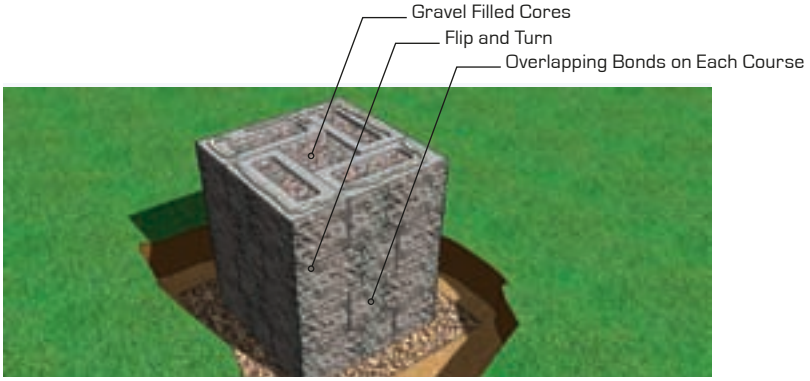
· Secure the **Pillar Cap** with a concrete adhesive

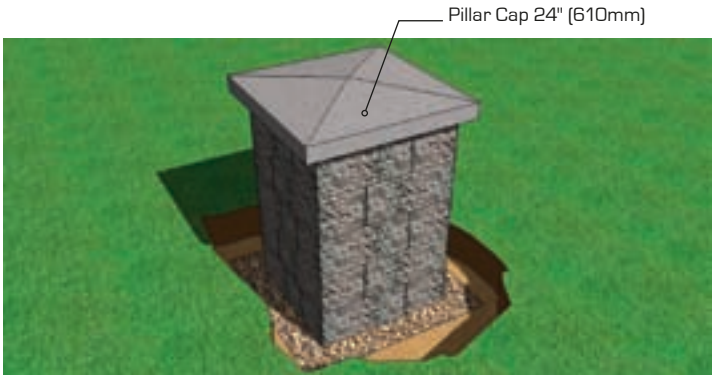
**Pillar cap approximately 24" (610mm)*

90 DEGREE CORNER

6" Height x 12" Width x 8" Depth (152 H x 305 W x 152 mm D)
Weight: 23 lbs (10 kgs)







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