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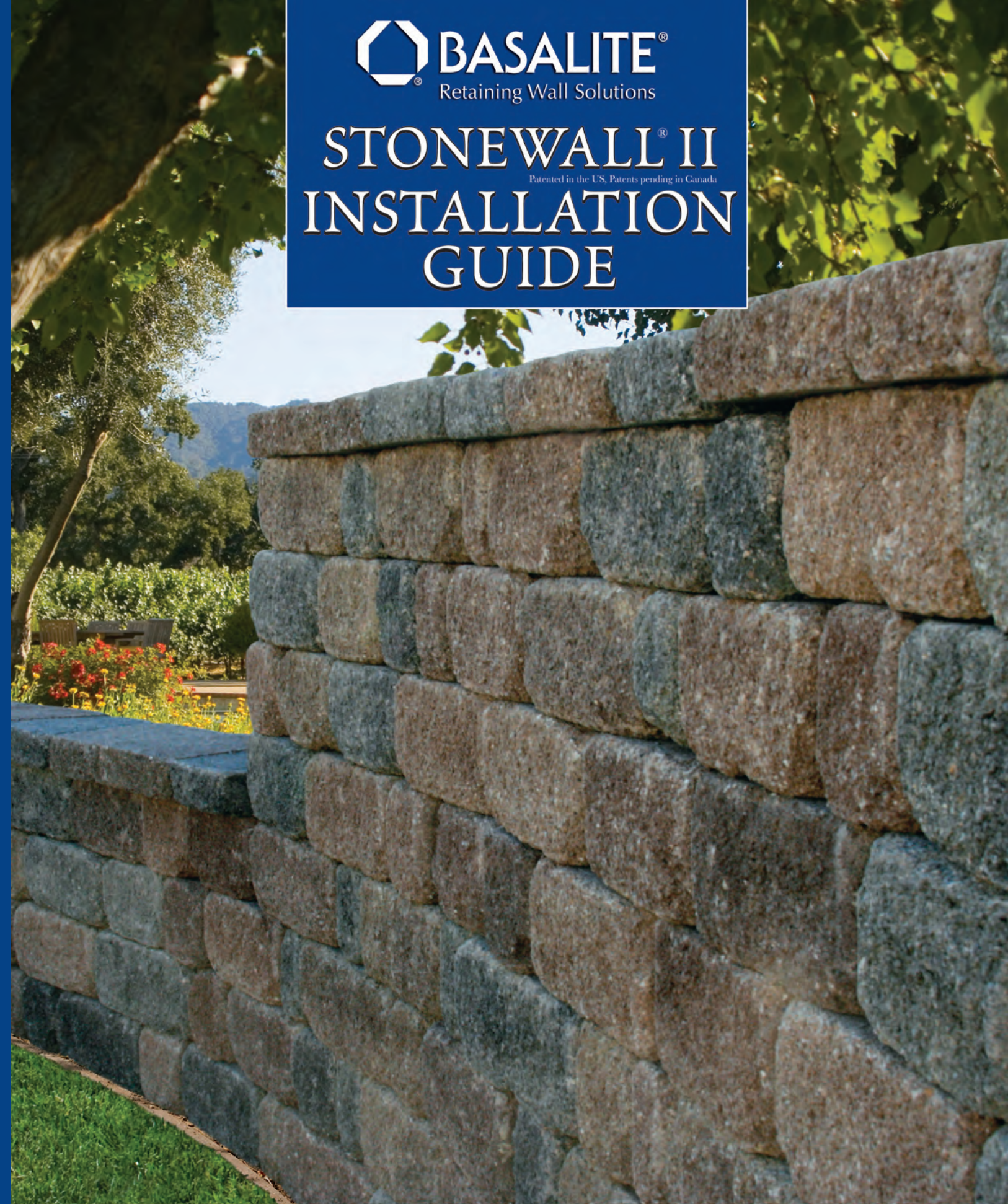


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 **BASALITE**[®]
Retaining Wall Solutions

STONEWALL[®] II Patented in the U.S. Patents pending in Canada INSTALLATION GUIDE



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HOW TO USE GUIDE

Thank you for purchasing the StoneWall® II Retaining Wall System. This manual will help make your wall installation an easy experience.

If you have any additional questions, contact the landscape sales professional at your local Basalite distributor, or visit our website www.basalite.com.

StoneWall® II is a multipurpose block system for use in retaining soil and constructing hardscape structures - freestanding and bench walls, columns, sitting areas, fire pits, BBQ's, planters, fountains, and more. When used in earth retention, StoneWall® II can be built as a gravity structure up to 3 feet tall. For taller and/or more rigorous applications, StoneWall® II should be combined with geogrid soil reinforcement, and the walls must be designed by a qualified professional engineer.

If you desire additional information about planning and building your project, contact the landscape sales professional at your local Basalite distributor, or visit our website www.basalite.com

This manual includes StoneWall® II product information, layout ideas, estimating and installation guidelines.

This manual provides general design and construction methods. Your site conditions may vary, and the actual design should always be performed by a qualified professional engineer and checked by the local building department.

Installation contractors should always refer to the construction drawings provided by a qualified professional engineer.

CONTENTS

Starting Your Project	04
Features & Benefits	05
Retaining Wall Basics	06
Installation Instructions	07
Geogrid Installation	09
Parapets	10
Terraced Walls	10
Retaining Walls Panels	11
90-Degree Corners	11
Curves	11
Freestanding Walls	12
Columns	12
Fire Pits	13
Planters/Fountains	13
Stairways	14
Sitting Areas	14



STARTING YOUR PROJECT

Advance planning, preparation and layout are important to the success of your Retaining Wall project. The following list will help to better attain your project goals.

- 1 Review all plans and diagrams to confirm the location of property lines, wall locations, wall length and wall height.
- 2 Understand the soils; refer to the soils report and engineering to verify that the soils used for construction are the same soils required by the engineer designing the wall. *Black-Peat Moss or Organics cannot be used as a backfill.*
- 3 Confirm the location of all underground utilities. You may call Underground Service Alert North at 811 or 1-800-227-2600.
- 4 Verify that all necessary and proper building permits are obtained.
- 5 Check all materials delivered to the job site, verifying proper block type, color and that the geosynthetic (geogrid) is from the correct manufacturer and the correct strength.
- 6 Be sure to use the correct tools for the job.
- 7 Always wear proper protective equipment and use all tools as prescribed by the manufacturer.

TOOL CHECKLIST

- Hammer - Rubber Mallet
- 4-Foot Level
- Torpedo Level
- Shovel
- Vibratory Plate Compactor
- Hand Tamper
- String-Line
- Broom
- Tape Measure
- Caulking Gun
- Layout/Survey Stakes
- Ear Plugs
- Dust Mask
- Protective Boots
- Gloves
- Glasses/Goggles

Optional Tools:

- Electric Circular Saw and Masonry Blade
- Respirator



RETAINING WALL BASICS

Segmental Retaining Walls are classified as: Conventional or Gravity, Soil Reinforced.

Conventional or Gravity Walls

A Conventional or Gravity Wall does not require soil reinforcement; rather, it relies on the mass weight of the block, batter, setback and proper soils to resist the earth's applied pressures. The primary advantages of a Gravity Wall is that the wall structure is narrow, providing for minimal excavation requirements.

The maximum height of a Gravity Wall is unique to the block system. Typical design heights are 2.5 to 3.0 times the depth of the units being used.

Soil Reinforced Walls

A Soil Reinforced, or Mechanically Stabilized Embankment (MSE), wall is a durable and cost-effective method of constructing taller walls. Soil Reinforced Walls are typically utilized on "Fill" sites and require increased work area behind the wall, soils capable of proper utilization with reinforcement, and a design by a qualified professional engineer.

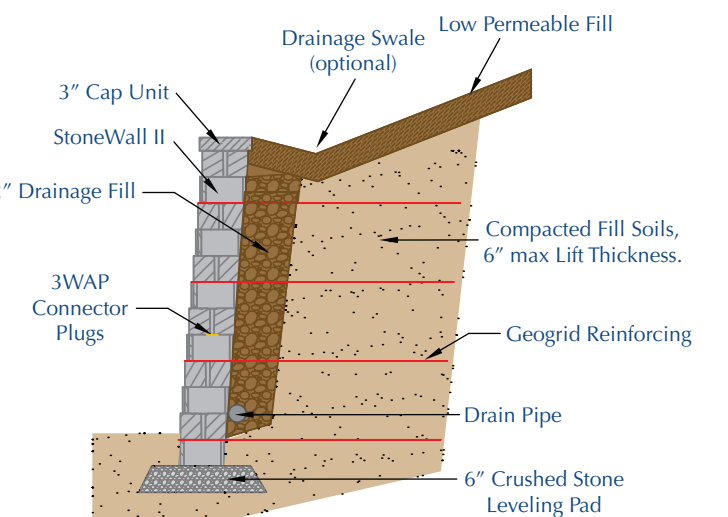
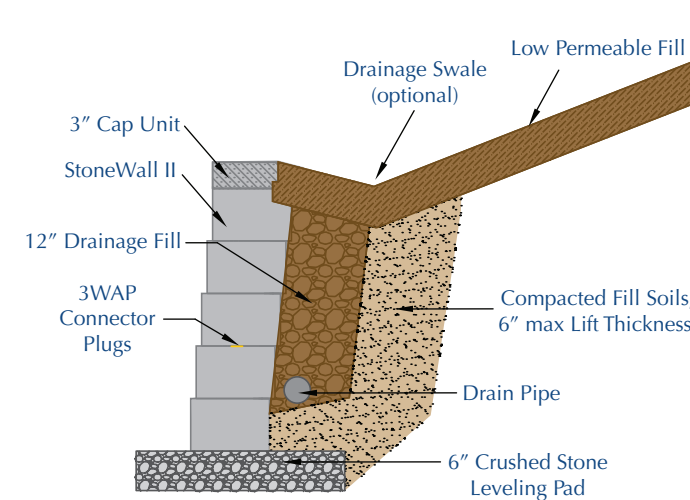
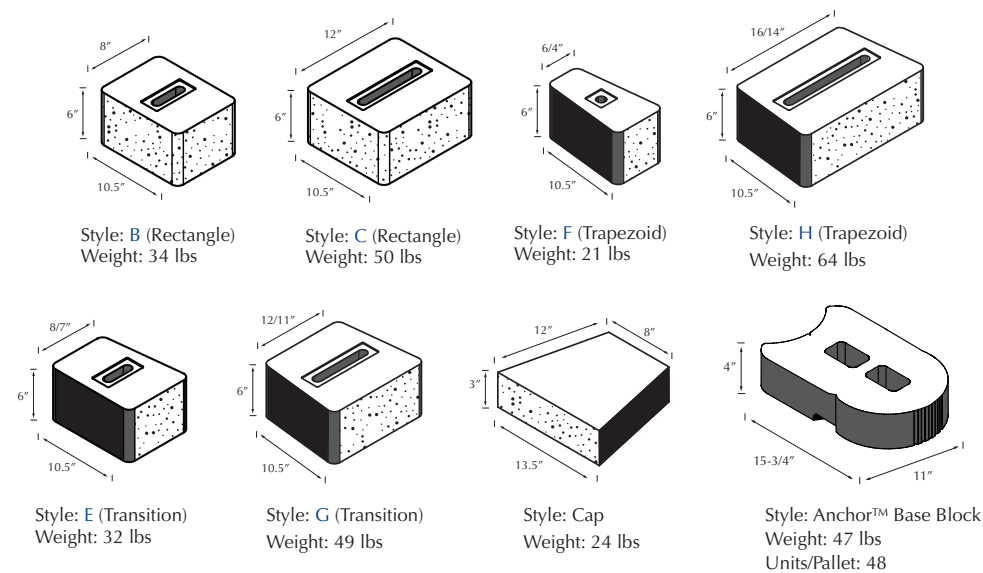
A Soil Reinforced Wall stabilizes the block face with the soil mass behind the block by integrating layers of geosynthetic reinforcement. The layers connect to the block face and extend horizontally into the soil. The large stabilized soil mass is referred to as the reinforced zone. The greater the reinforced soil mass, the larger or taller the soil embankment that can be retained or held back.

FEATURES & BENEFITS

StoneWall® II is a system of concrete units used to create elegant, naturally beautiful, and durable walls and hardscape features reminiscent of handcrafted stone. StoneWall® II provides a large variety of design and build options, allowing one to create a backyard retreat that will be the envy of the neighborhood.

Palletized with 33 square face feet per pallet, StoneWall® II is designed to create conventional, terraced, reinforced retaining walls, parapets, freestanding, bench, and seat walls, columns, firepits, BBQ's, planters, fountains, and more.

Contact a landscape sales professional at your local Basalite distributor to calculate the number of pallets and caps you will need for your project, or visit our website www.basalite.com



INSTALLATION INSTRUCTIONS

Successful installation begins with proper site evaluation and planning. Site soil, groundwater, horizontal and vertical layout, structural design, wall loadings, observation, testing and construction assurance are all vital to building a quality wall. If your wall is taller than four feet, has a steep slope at the top or in front, and/or will support heavy foot traffic or vehicle loads, consult an engineer BEFORE installation as a part of project planning.

1. Lay Out The Wall

Verify placement of the wall with the homeowner or project superintendent. When necessary, utilize a qualified surveyor.

2. Excavation

Excavate a trench for the leveling pad to the lines and grades shown on the approved plans. Assure trench is at least 12 inches wider than the depth of the block and 6 inches deeper than the height of the block. Should the grade along the wall change elevation, step the trench up in equal block height increments so as to match the change of grade. Always start at the lowest point and work upwards. (see figure A)

3. Leveling Pad

Place a 3/4 minus crushed aggregate into the excavated trench; assure aggregate depth is at least 6 inches, and extends to the front and back of the block by a minimum of 6 inches. After placing the aggregate into the excavated trench, level the material and compact to 95% standard proctor. (see figure B)

4. Base Course

The base or first course is buried and is the most important course in the wall. Place a level string line along the length of a wall and to the back top edge of the desired location of the blocks. Assure that the string is level and at the desired height of the first course of blocks. Begin stacking the blocks at the lowest point in the wall, work upwards by placing the NEW Base Block or StoneWall® II blocks side by side and in full contact with the leveling pad. As the blocks are stacked, use a Torpedo level to assure that the blocks are level front to back and side to side. Utilize a 4-foot level to assure that a group of blocks are level side to side. If the wall is located on an incline, step the footing and the blocks in increments equal to the height of the block, assuring the blocks remain level. (see figure C)

5. Placing the 3-Way Alignment Plug (3WAP)

After stacking each course of StoneWall® II, place a 3WAP into the center core of every block, assure the "Top" label on the Plug points up and that the flange of the Plug rests within the recess that surrounds the center core of the blocks. Wall batter is established by the orientation of the Plug within the center core. (see figure D)

NOTE: The small trapezoid unit only receives a 3WAP on top. If the unit is in a critical part of the wall, then use construction adhesive to secure the unit to the course above and below.

6. Wall Drainage

After stacking the base course, place a 4 inch (or larger) perforated drainpipe directly behind the wall. Outlet the pipe at each end of the wall and connect it to a storm drain pipe, so that it drains to a collection area away from the wall. On long walls, assure that the drainpipe outlets through the face of the wall every 50 feet and at both ends of the wall. (see figure E)

7. Stacking the Wall and Compacting Soil

Once the base course, the 3WAP's, and the drainage pipe have been installed, place a clean and angular aggregate Unit fill (3/4 inch crushed aggregate) between the blocks core holes and also 12 inches behind them. Place native soil as backfill behind the aggregate unit fill, and compact the soil in 6-inch lifts. When constructing and compacting the wall, assure that heavy equipment remains at least 3 feet away from the back of the wall. After the soil backfill is compacted, sweep all debris from the top of the blocks and place the 3WAP's into the center cores of the block. Place the next course of block onto the course below and over the 3WAP's. Maintain a running bond pattern; avoid placing blocks in a "stack bond" pattern which will create a structurally weak wall. Pull each block forward to engage the 3WAP's to ensure proper setback, and confirm the blocks are level side to side and front to back. Repeat these construction steps up to the top of the wall. (see figure F)

GEOGRID REINFORCEMENT: If utilizing geogrid reinforcement with the Stonewall® II blocks, follow the specifications and installation steps as outlined by your engineer.

8. Capping the Wall

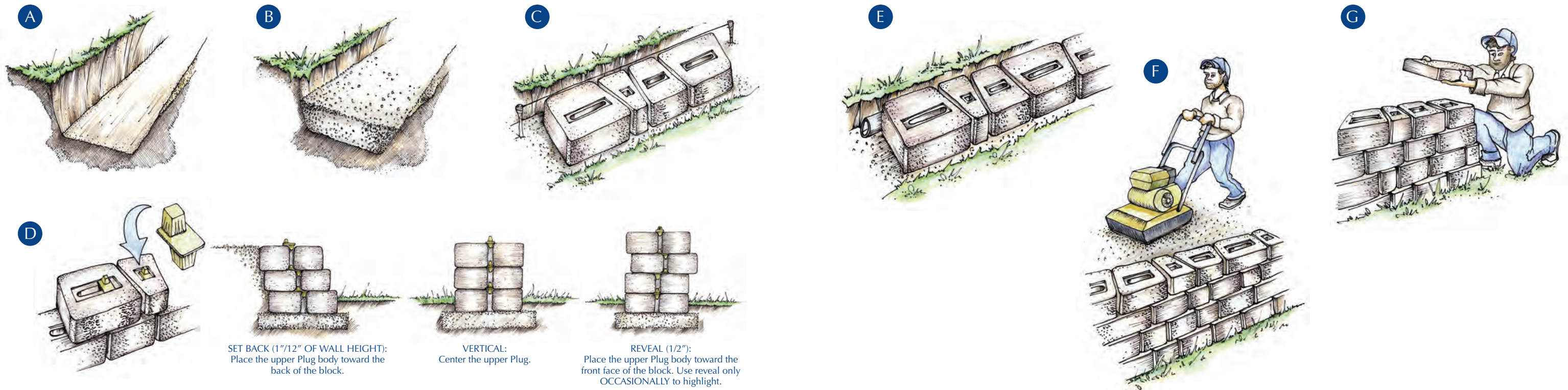
Always cap a wall by starting from the lowest point. Sweep all debris from the top course of the StoneWall® II units. Lay out all the caps onto the wall prior to gluing them to the blocks. Place the caps either vertically aligned with the face of the wall, or with a slight 1" - 2" overhang to create a shadow effect. Confirming the block are properly dry, place a bead of silicone concrete construction adhesive onto the top course of block, at the front and back of the block and along the entire length of the wall. Place the caps onto the adhesive and into the desired position. (see figure G)

9. Final Grade

It is important to minimize the infiltration of water into the Backfill soil located behind the wall, especially when Geogrid reinforcement is utilized. The final lift should consist of a minimum of 6 inches of a low permeability soil. Slope the soil away from the wall face and reinforced zone, directing it to the back of the reinforced fill zone and sloping to the sides of the wall.

10. Finishing the Project

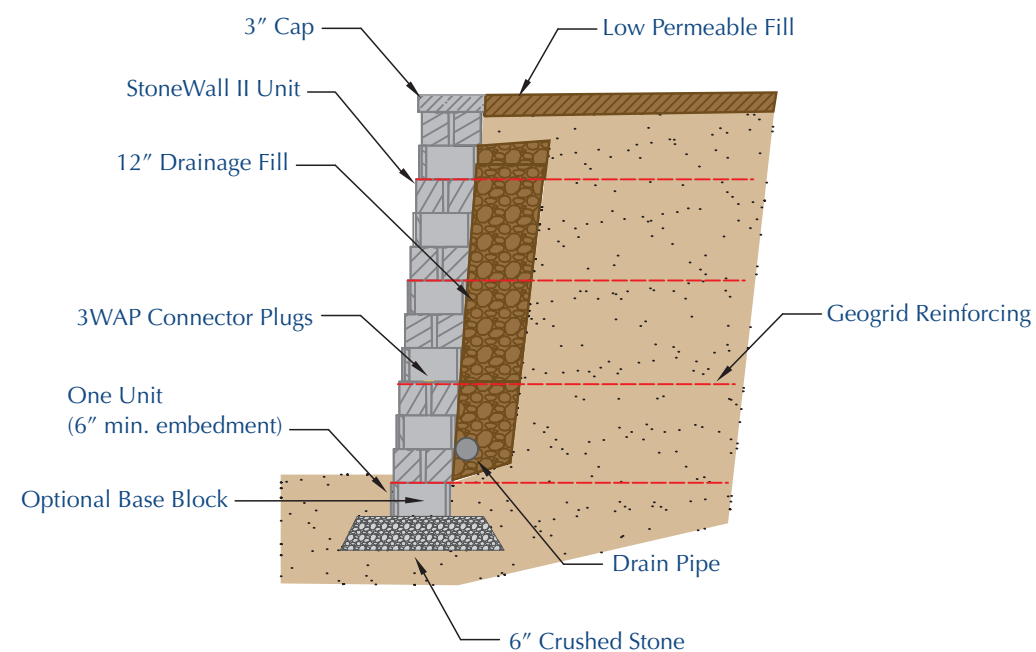
Sweep the top of the caps and clean up the construction area of debris. Notify the project superintendent or homeowner that the project is ready for final inspection.



GEOGRID REINFORCEMENT INSTALLATION

Geogrid reinforcement is required within walls designed for heights greater than the Gravity Wall capabilities of the block system. Consult a qualified professional engineer and obtain an approved design when geogrid reinforcement is required. The final approved design must be followed exactly by the installation contractor; any changes in the installation must be reviewed and authorized by the engineer prior to commencing.

1. Prior to commencing the project, obtain a set of plans approved for construction. Assure that the plans are complete. Consult with the design engineer for clarification on any issues.
2. In reviewing the plans, evaluate the placement of geogrid layers, assuring lengths and strengths match the specified design.
3. Cut the geogrid to length as noted on the plans.
4. Understand how geogrid works; assure that the specified strength direction is oriented correctly and is perpendicular to the wall.
5. Sweep the top of the blocks of any debris. Set the geogrid 1 inch from the face of the block, placing it over the 3-Way Alignment Plugs. Do NOT overlap the geogrid courses.
6. Install the next course of blocks, pulling blocks forward to engage the 3-Way Alignment Plugs and securing the geogrid reinforcement between the two courses of block.
7. Pull the geogrid toward the back of the reinforced soil zone until it is taut; secure it with stakes, staples, or Unails.
8. Place the aggregate unit fill between the blocks and 12 inches directly behind them.
9. Place the native soil Backfill in 6 inch vertical lifts, confirming that the material is placed to the end of the reinforced zone.
10. Compact the backfill material to 95% standard proctor.
11. Keep heavy equipment 3 feet away from the back of the wall. Do not drive on the geogrid until a minimum of 6 inches of backfill soil has been placed over it.
12. Avoid turning equipment wheels or sudden braking directly upon the geogrid, as this will move and/or damage the geogrid. Consult geogrid reinforcement manufacturer recommendations for additional information.



PARAPETS

- A Parapet is a wall section rising above grade and stacked upon the retaining wall.
- A Parapet is constructed by continuing the block courses above grade rather than terminating at the top of the retaining wall with a cap block.
- Parapet heights are typically 27" (4 courses plus a cap).
- Parapets serve as a barrier or bench.
- Once the desired height of the Parapet is reached, place a cap onto the top course.

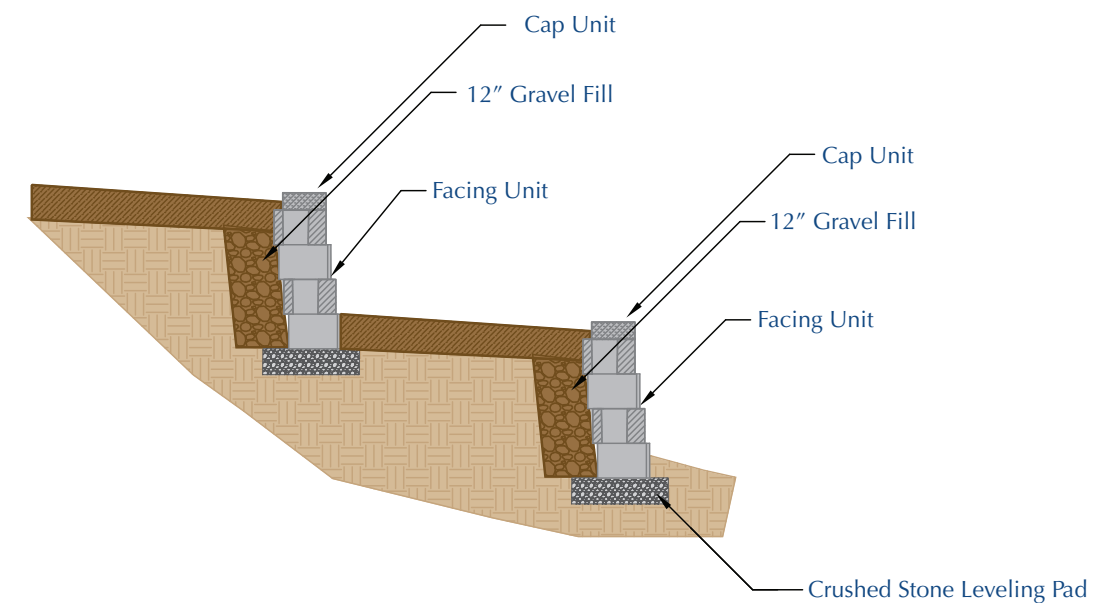
TERRACED WALLS

Independent Terraced Walls

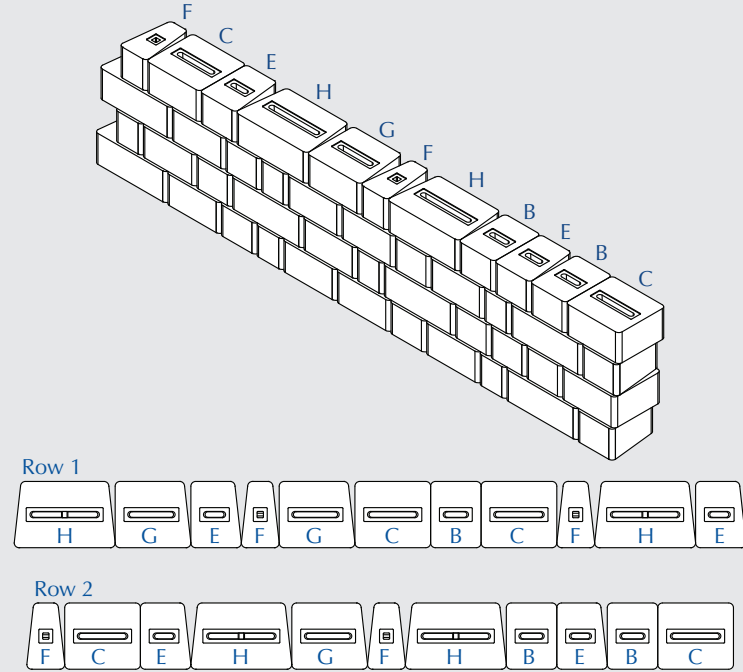
When the upper wall does not place a surcharge load onto the lower wall, the walls are considered to be Independent Terraced Walls. For walls to be independent of each other, they must be built with a setback to height ratio of 2:1 or greater. This means the upper wall must be located behind the lower wall by a minimum distance of twice the height of the lower wall. The lower wall must also be the same height or taller than the upper wall. For proper drainage, it is important that the upper wall's drain pipe does not outlet onto the lower wall.

Dependent Terraced Walls

When the upper wall does place a surcharge on the lower wall, the front and back walls are "Dependent Terraced Walls." For walls to be dependent upon each other they must be built with a setback to height ratio less than 2:1. This means that the upper wall is located behind the lower wall by a distance less than twice the height of the lower wall. In this case, it is important to seek out the help of a qualified professional engineer, so that a detailed engineering analysis, including a Global Stability Analysis, is performed.



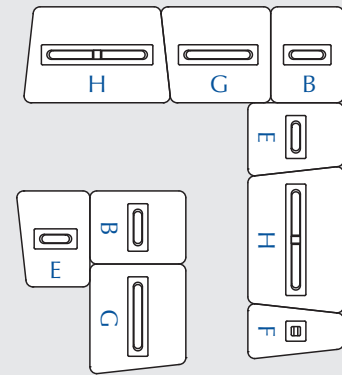
RETAINING WALL PANELS



90 DEGREE CORNERS

Outside and Inside Corners:

- Place the square-sided unit at the tip of the corner.
- Build the wall panel section in either direction from that corner point.
- Alternate the square-sided units on each course to assure lines are created.



FREESTANDING WALLS & COLUMNS

Planning Your Project

- Successful installation begins with proper site evaluation: site soil, groundwater, horizontal/vertical layout, and structural design are all vital to quality design and construction. Consider the use of columns, as they affect product used and wall footprint.
- Freestanding walls are typically three feet tall or less.
- Columns are typically three feet tall or less.
- Curves must be carefully considered.

Planning Column and Wall Panels

- When planning a freestanding wall that utilizes columns, utilize a column kit, sold separately.
- Column Kits contain 15" and 6" square sided units. These units form a 21" square column.
- In planning a freestanding wall, first determine the desired wall panel length.
- Wall panels are optimized when the different shapes - Trapezoid, Transition and Square Sided blocks - are used equally and in lengths of 60'.
- Wall panels are optimized at multiples of 60" lengths. This dimension is derived from the small and large Trapezoid = 20" total, small and large Transition = 19" total and the small and large Rectangles = 20" total. By combining the 3 shapes into a wall panel and allowing for 1" of expansion room, the blocks comfortably form a 60" panel section.
- Two or more panel sections typically are used between columns.

RADIUS & SERPENTINE CURVES

Basalite's StoneWall® II Wedge Kit is designed for easy building of tight curves. Kit is sold separately and contains 144 "F" units.

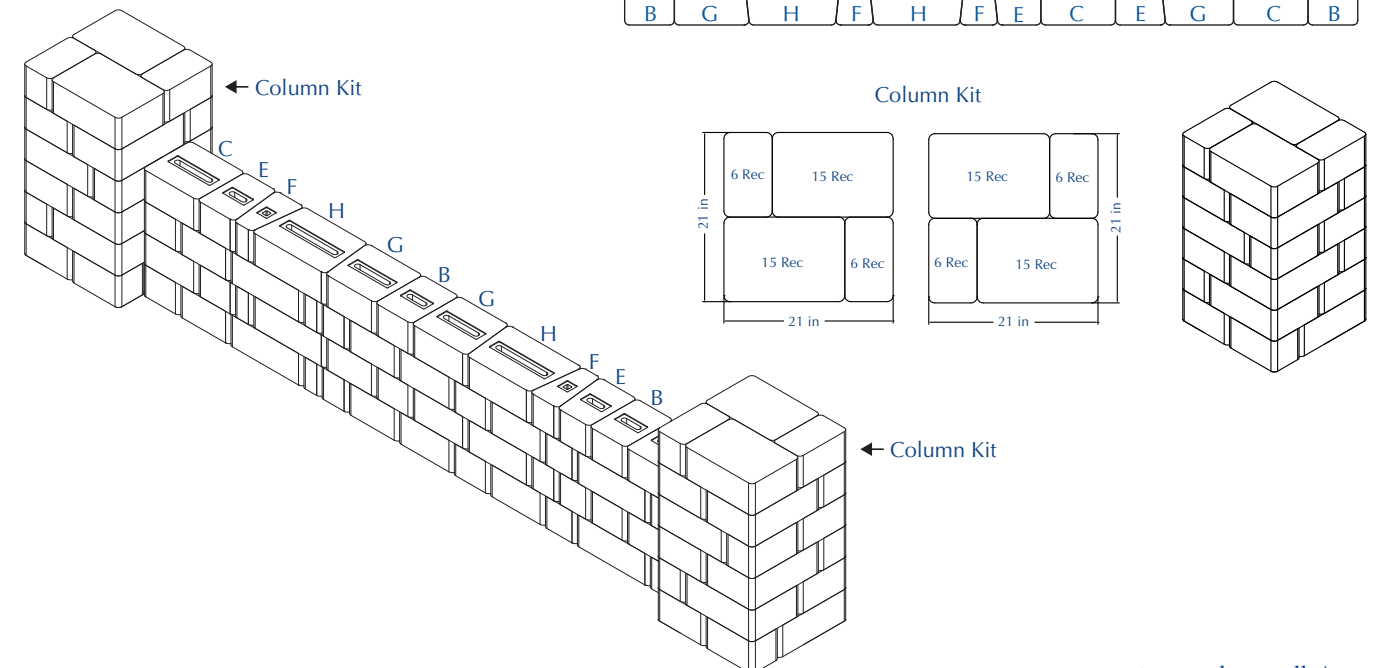
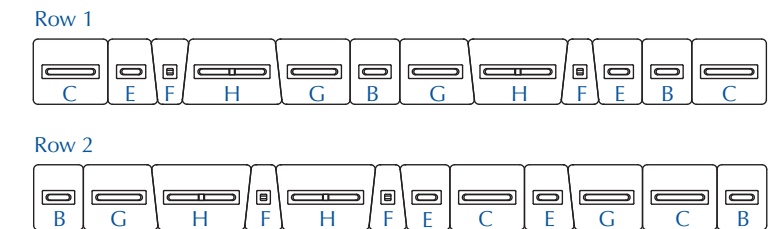
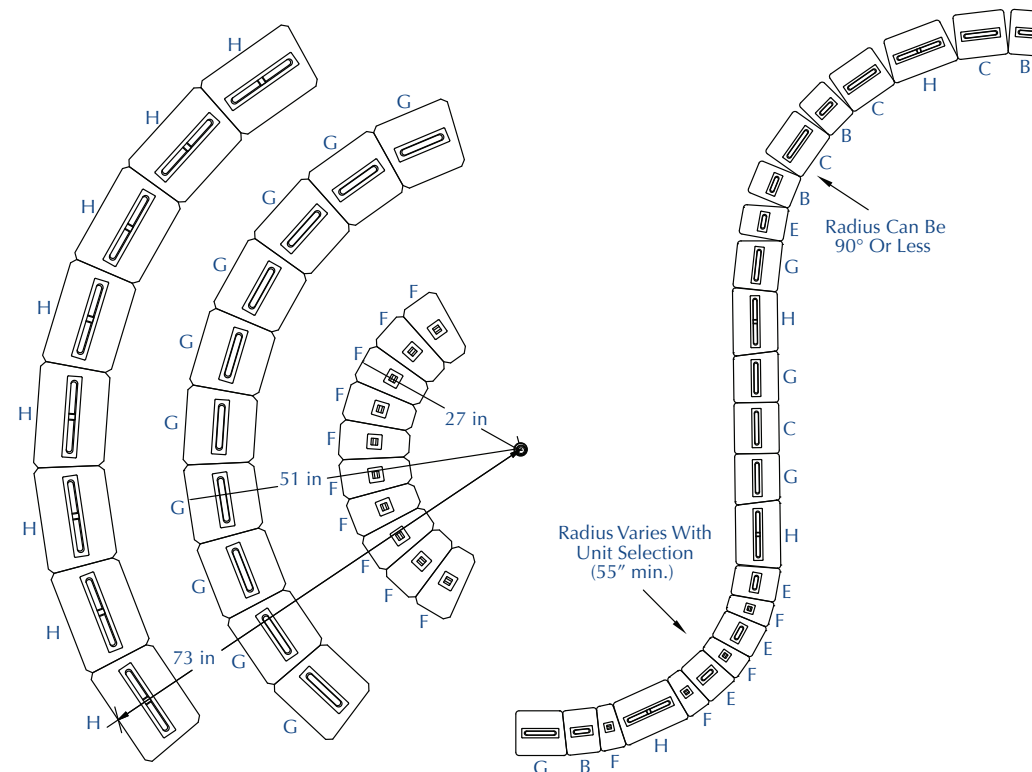
Planning the Curve

- Determine the desired radius and then select the corner block combination that matches this radius.
- Convex curves show the wide face, concave show the small face.
- A 50" radius maintains equal use of the two trapezoid shapes.

Building the Radius Curve

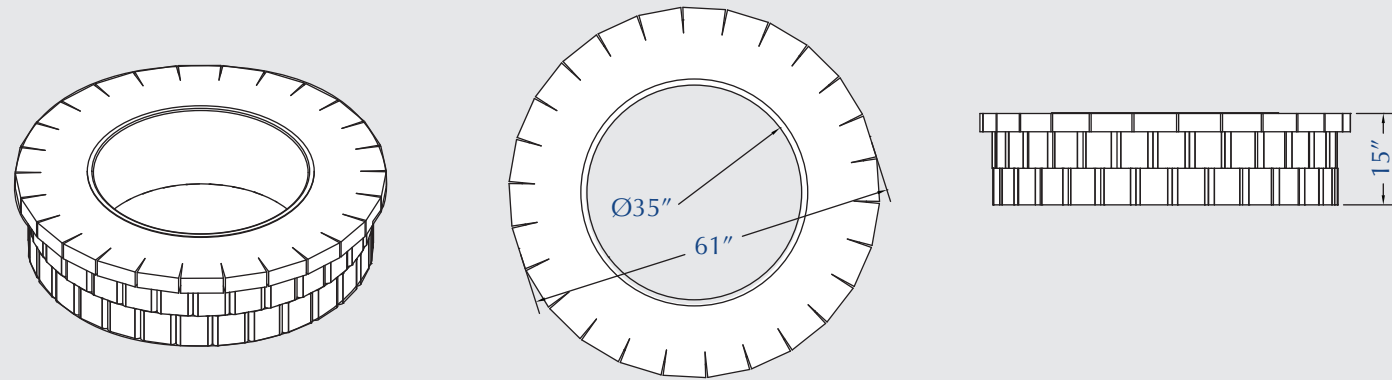
- When possible, start at the mid-point of the radius curve and stack the block toward each leg of the wall.
- After completing the radius curve, return to the beginning of the desired wall pattern.

NOTE: If building a wall with the 3WAP in the setback position, the radius of the corner will decrease 1" per vertical foot of the wall, creating a lateral shift of the blocks on each course.

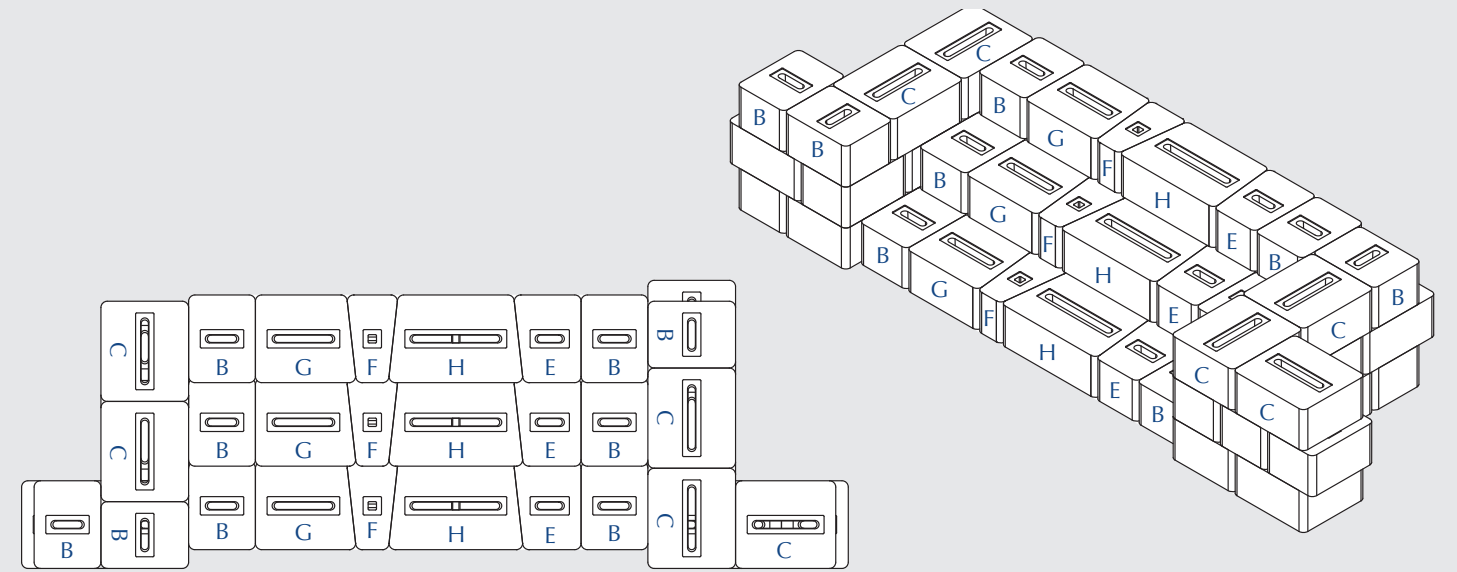


FIRE PITS

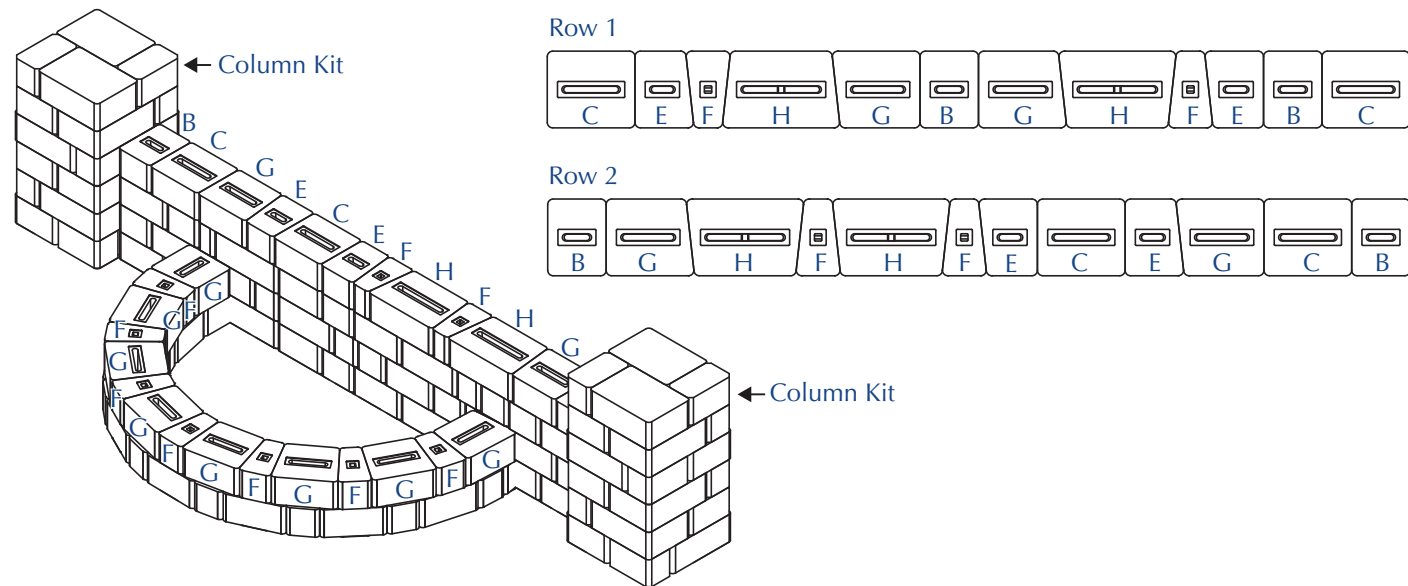
Fire Pit Kits are sold separately. Available as a 15" tall kit (two courses plus cap) or a 21" tall kit (three courses plus cap).



STAIRWAYS



PLANTERS/FOUNTAINS



SITTING AREAS

