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# BRISA® INSTALLATION GUIDE



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## HOW TO USE GUIDE

Thank you for purchasing the Brisa® 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](http://www.basalite.com).

Brisa® is a multipurpose block system for use in retaining soil and constructing hardscape structures - freestanding and bench walls, columns, sitting areas, BBQ's, planters, fountains, and more.

When used in earth retention, Brisa® can be built as a gravity structure up to 3 feet tall. For taller and/or more rigorous applications,

Brisa® 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](http://www.basalite.com)

This manual includes Brisa® 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.



## 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

## 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.

### 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.

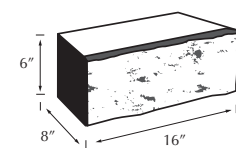
A Soil Reinforced Wall stabilizes the block face with the soil mass behind the block by integrating layers of geosynthetic reinforcement. The layers connect to the block face and extend horizontally into the soil. The large stabilized soil mass is referred to as the reinforced zone. The greater the reinforced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

## FEATURES & BENEFITS

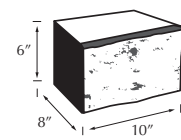
Multiple block sizes inspired by the beautiful, random look of split limestone make the Brisa® wall system ideal for a wide range of applications. Get exceptional design flexibility when building with the Brisa® retaining wall system or the Brisa® freestanding wall system with either system you can create the outdoor look others will envy.

Palletized with ? square face feet per pallet, Brisa® is designed to create conventional, terraced, reinforced retaining walls, parapets, freestanding, bench, and seat walls, columns, fire pits, BBQ's, planters, fountains, and more.

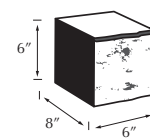
Contact a landscape sales professional at your local Basalite distributor to calculate the number of pallets and caps you will need for your project, or visit our website [www.basalite.com](http://www.basalite.com)



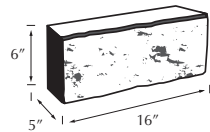
Style: Large Retaining Wall  
Weight: 52 lbs



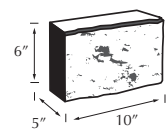
Style: Medium Retaining Wall  
Weight: 31 lbs



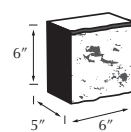
Style: Small Retaining Wall  
Weight: 20 lbs



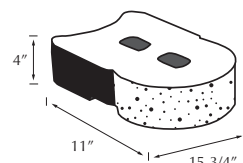
Style: Large Freestanding Wall  
Weight: 28 lbs



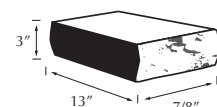
Style: Medium Freestanding Wall  
Weight: 19 lbs



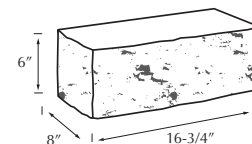
Style: Small Freestanding Wall  
Weight: 11 lbs



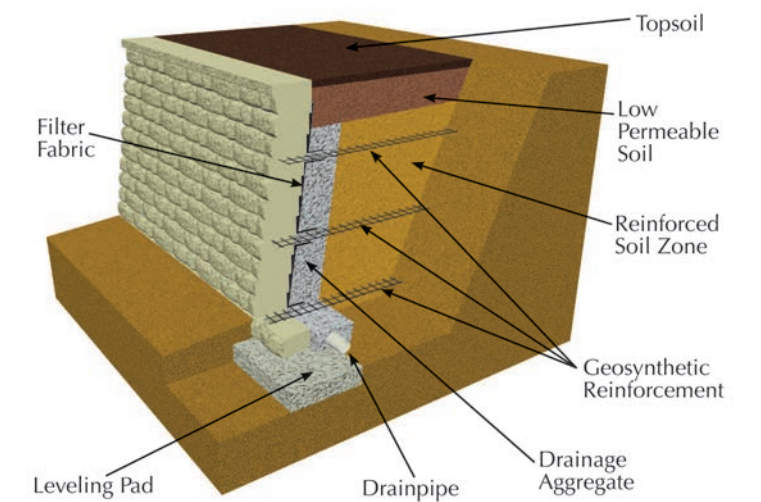
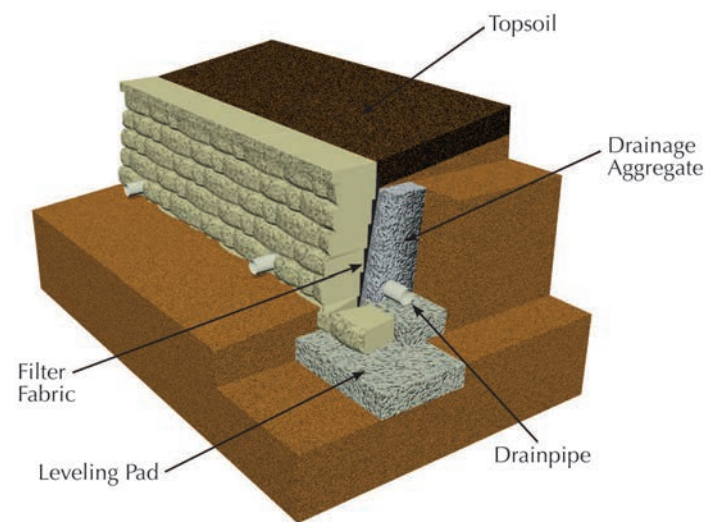
Style: Anchor™ Base Block  
Weight: 47 lbs



Style: Double Sided Cap  
Weight: 22 lbs



Style: Corner/Pedestal  
Weight: 57 lbs



# RETAINING WALL 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 three 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. The trench should be a minimum of 20 inches wide and 12 inches deep. 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 Base Block with the hand-holds down or the Brisa® blocks with the rear lip removed to ensure proper 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. 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 D)

## 6. Stacking the Wall and Compacting Soil

Once the base course, and the drainage pipe have been installed, place a clean and angular aggregate Unit fill (3/4 inch crushed aggregate) directly behind the block, adding 6 inches at a time followed by proper compaction. 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. Build the next course. (see page 9, Retaining Wall Pattern). Pull each block forward 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 E)

## 7. Installing Geogrid

Geosynthetic reinforcement is required for taller walls or walls constructed in poor soils, or where the wall is supporting critical structures. Prior to installing geogrid, you should consult a qualified professional engineer and obtain the approved set of construction plans. The first step when installing Geogrid is to sweep the blocks of any debris. Measure and cut the geogrid according to the approved plans then install the geogrid reinforcement, ensuring that the strength direction is laid perpendicular to the wall. Stack the next course of blocks to secure the geogrid reinforcement in place, then pull the geogrid reinforcement taut eliminating any wrinkles or slack. Then backfilling the blocks, place 3/4 inch clean crushed angular rock at least 12 inches from the wall." (see page 9, Geogrid Reinforcement).

## 8. Capping the Wall

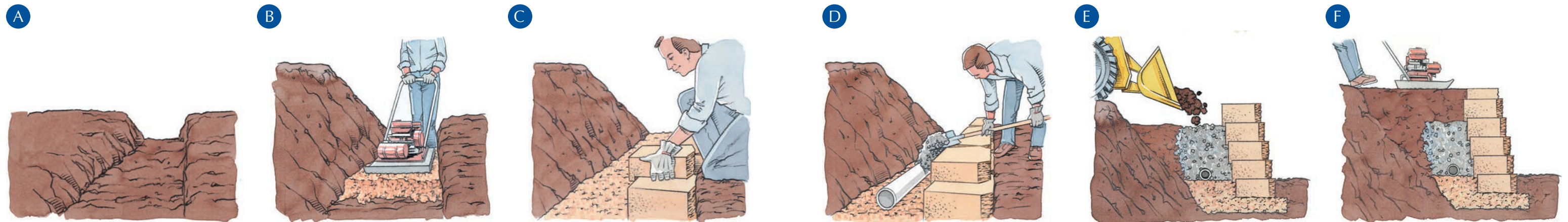
Always cap a wall by starting from the lowest point. Sweep all debris from the top course of the Brisa® units. Lay out all the caps onto the wall prior to gluing them to the blocks. Place the caps either vertically aligned with the face of the wall, or with a slight 1" - 2" overhang to create a shadow 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.

## 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.



# FREESTANDING WALL 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 three 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. The trench should be a minimum of 24 inches wide and 10 inches deep. 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.

## 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 Base Block with the hand-holds down or the Brisa® blocks with the rear lip removed to ensure proper 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. *(see figure B)*

## 5. Stepping Up The Base Course

Walls built on a sloping grade require a stepped base. Begin excavation at the lowest point and dig a level trench, 24 inches wide, into the slope until it is deep enough to accommodate the base material and one entire base block. At this point, begin a new section of base trench. Continue to step up as needed to top of slope. Always bury at least one full base block at each step up. *(see figure C)*

## 6. Stacking the Wall and Compacting Soil

Once the base course has been installed, build the next course. *(see page 18, Freestanding Wall Pattern)* and glue to the base blocks. Work from the appropriate side of the pattern as you face the wall. Masonry adhesives are recommended for optimum performance, and are widely available. Use 1/2-inch-diameter bead of glue 3 inches apart in the front half of the block to help keep the wall level and prevent oozing through the face. Build a separate wall on each side of the base unit. Maintain a consistent gap of roughly 1 inch between the parallel walls. The width of a level can be a guide. Continue to build one layer of the pattern on each side of the wall, maintaining a uniform distance between the two walls. Check horizontal and vertical levels of each wall. Periodically check the distance between the wall faces to ensure consistent spacing. Gaps will vary on curves. Flip blocks over on curves as needed. This reduces the need to cut blocks. *(see figures D, E and F)*

## 7. Capping the Wall

Always cap a wall by starting from the lowest point. Sweep all debris from the top course of the Brisa® 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.

## 8. 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.



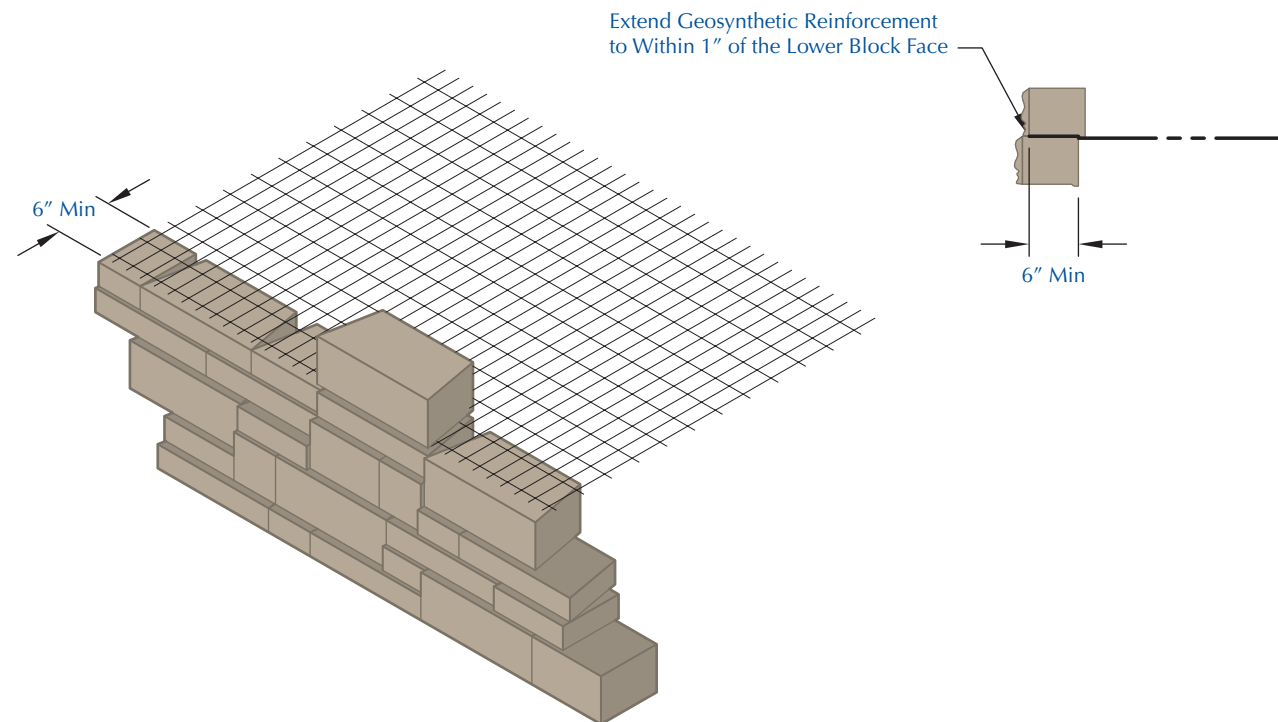
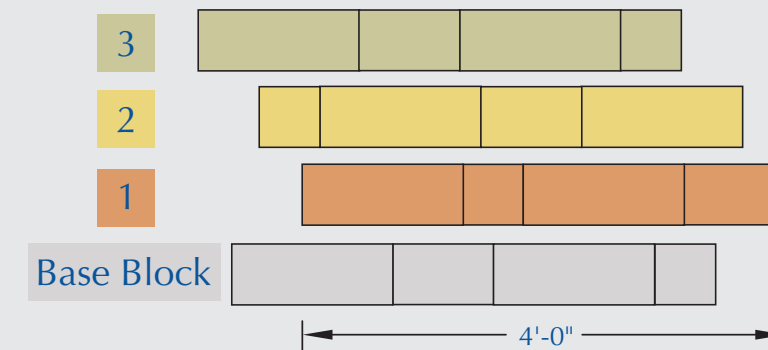
# RETAINING WALL GEOGRID REINFORCEMENT INSTALLATION

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.

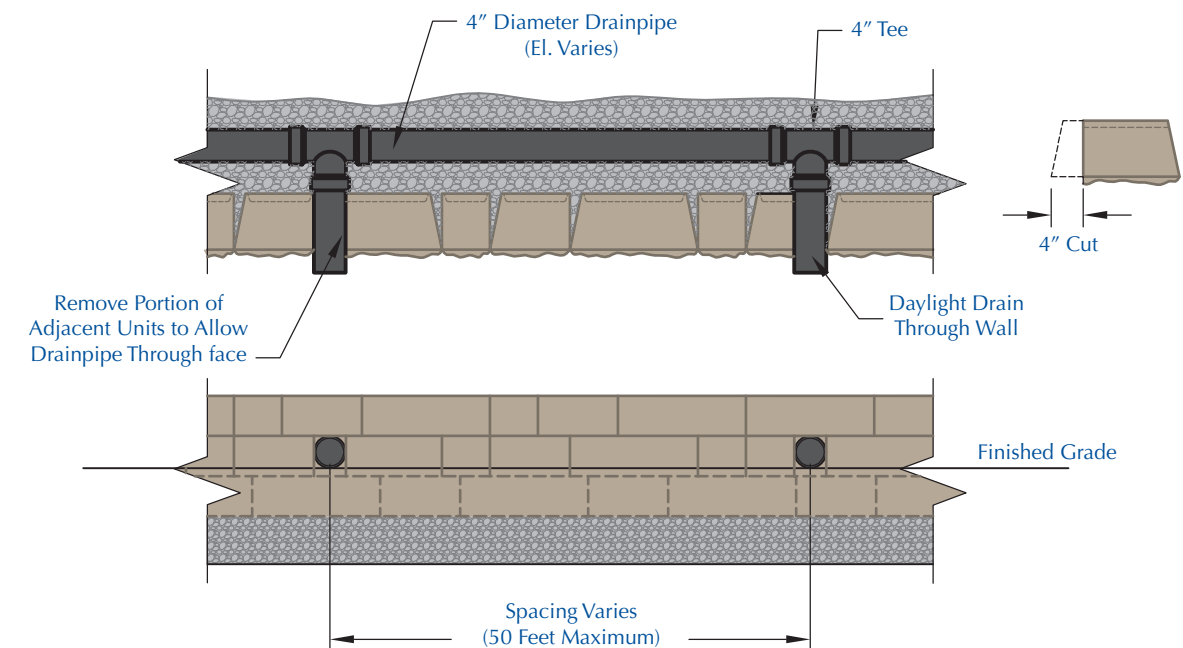
1. Prior to commencing the project, obtain a set of plans approved for construction. Assure that the plans are complete. Consult with the design engineer for clarification on any issues.
2. In reviewing the plans, evaluate the placement of geogrid layers, assuring lengths and strengths match the specified 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. Do NOT overlap the geogrid courses.
6. Install the next course of blocks, pulling blocks forward to secure 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.

# RETAINING WALL PATTERN

18-inch by 4-foot pattern.



# RETAINING WALL DRAIN PIPE



# RETAINING WALL CURVES

## Step One

Place reinforcement to within 1 inch of wall face so little or no overlap occurs in the radius area. If overlap occurs, place 2 to 3 inches of sand between the reinforcement layers.

## Step Two

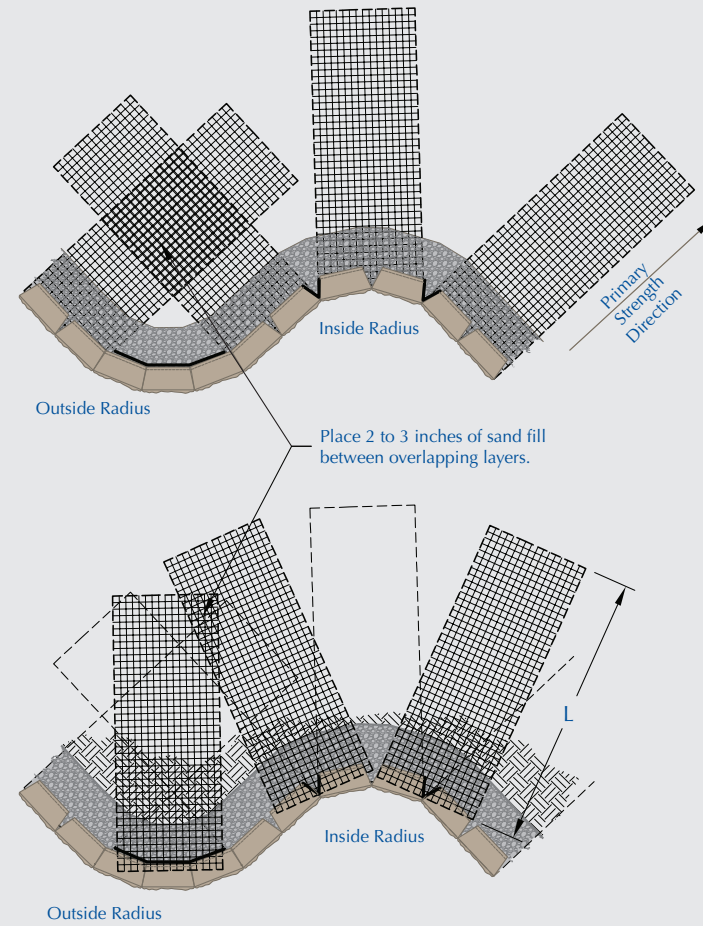
Lay the next course of block. Make a mark on the back of the blocks in the areas that are not reinforced. Backfill and compact that course.

## Step Three

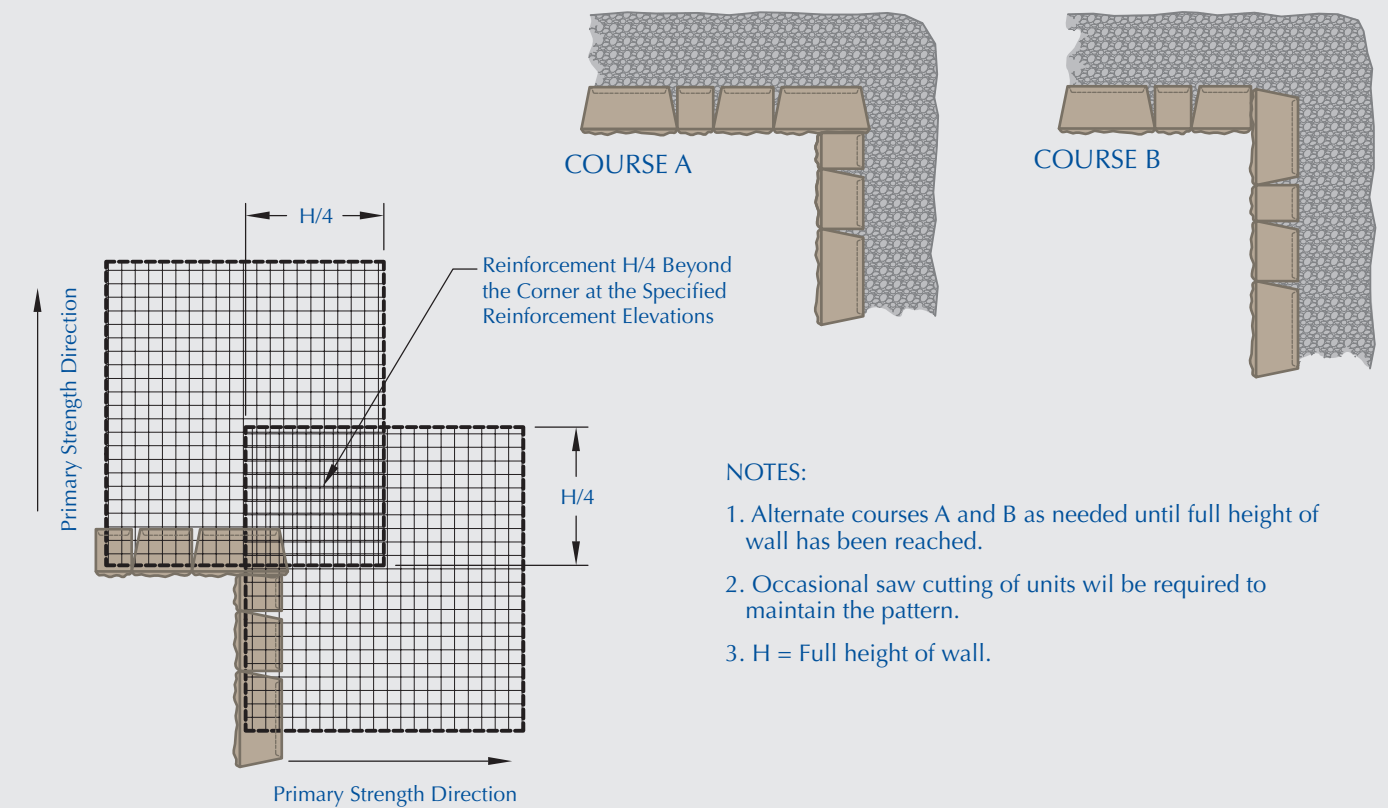
Place reinforcement in the areas where the marks show gaps in the lower reinforcement pattern. Continue normal wall construction, repeating these steps as needed.

NOTES: Minimum radius information:

- A. Inside radius: 8 feet to face (at base of wall).
- B. Outside radius: 4 feet to back (at top of wall).
- A. Grid length (L) per design.
- A. Repeat steps as needed to full height of wall.



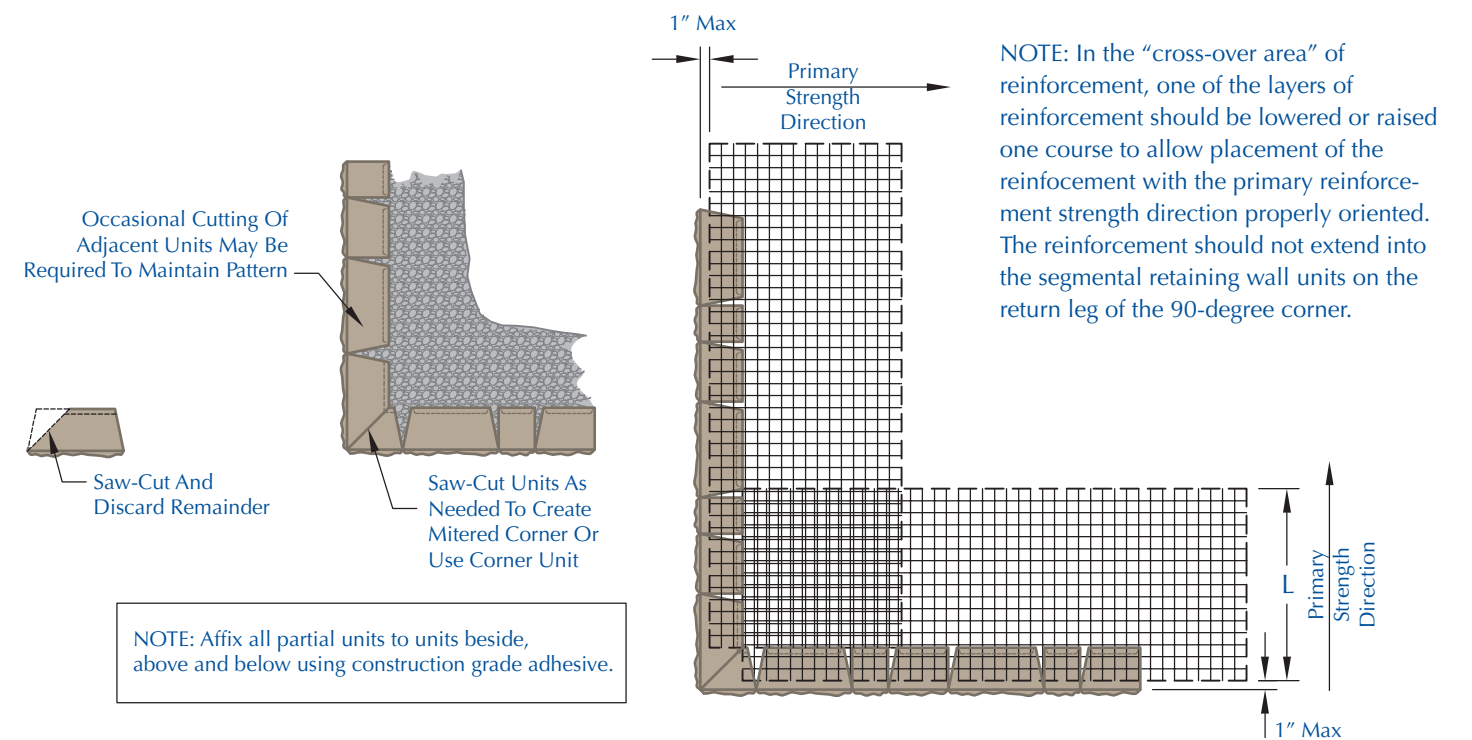
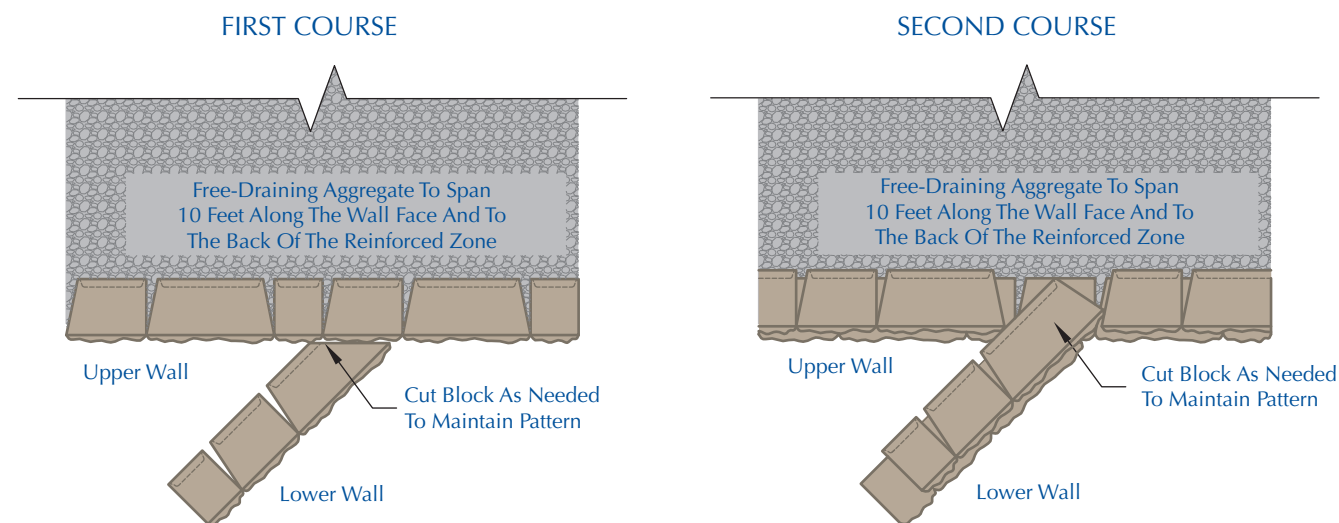
# RETAINING WALL 90 DEGREE CORNERS



NOTES:

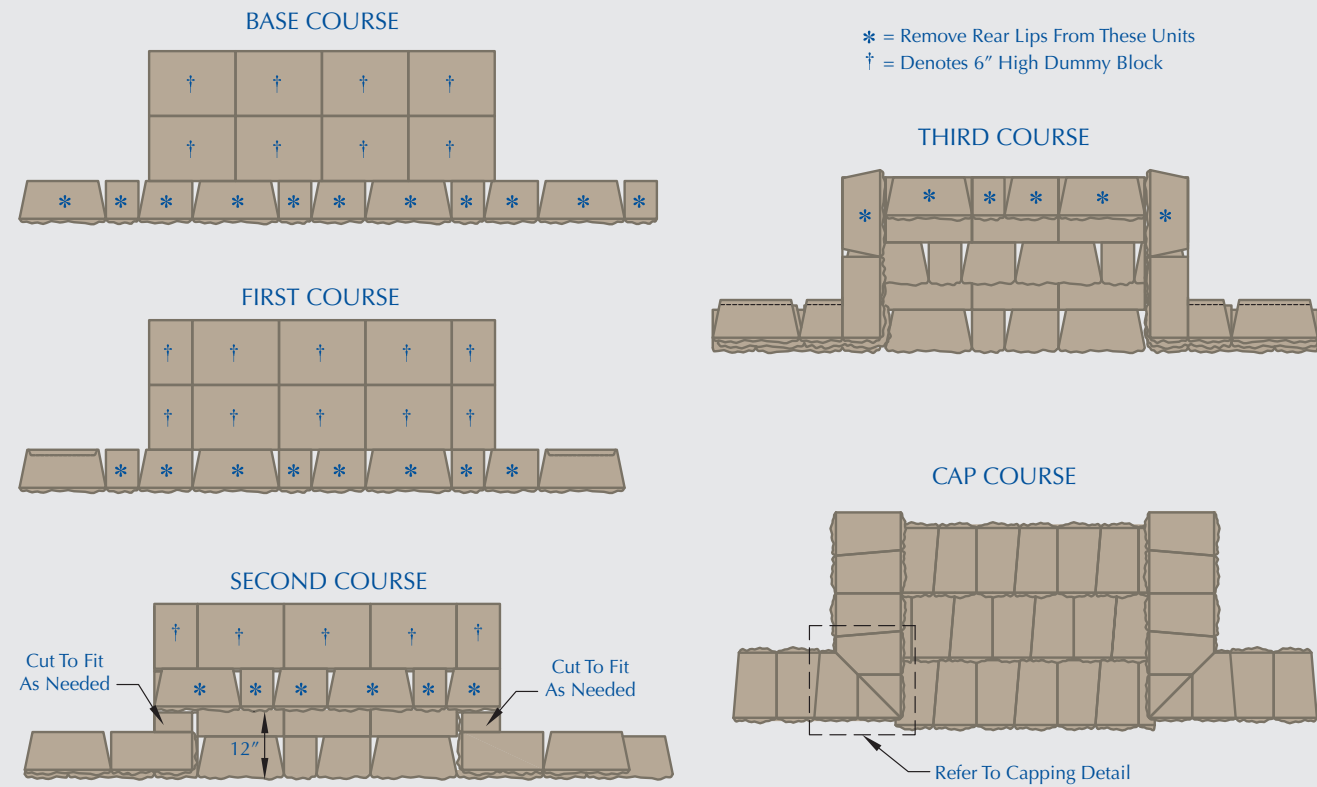
1. Alternate courses A and B as needed until full height of wall has been reached.
2. Occasional saw cutting of units will be required to maintain the pattern.
3. H = Full height of wall.

# RETAINING WALL TERRACE CONNECTION

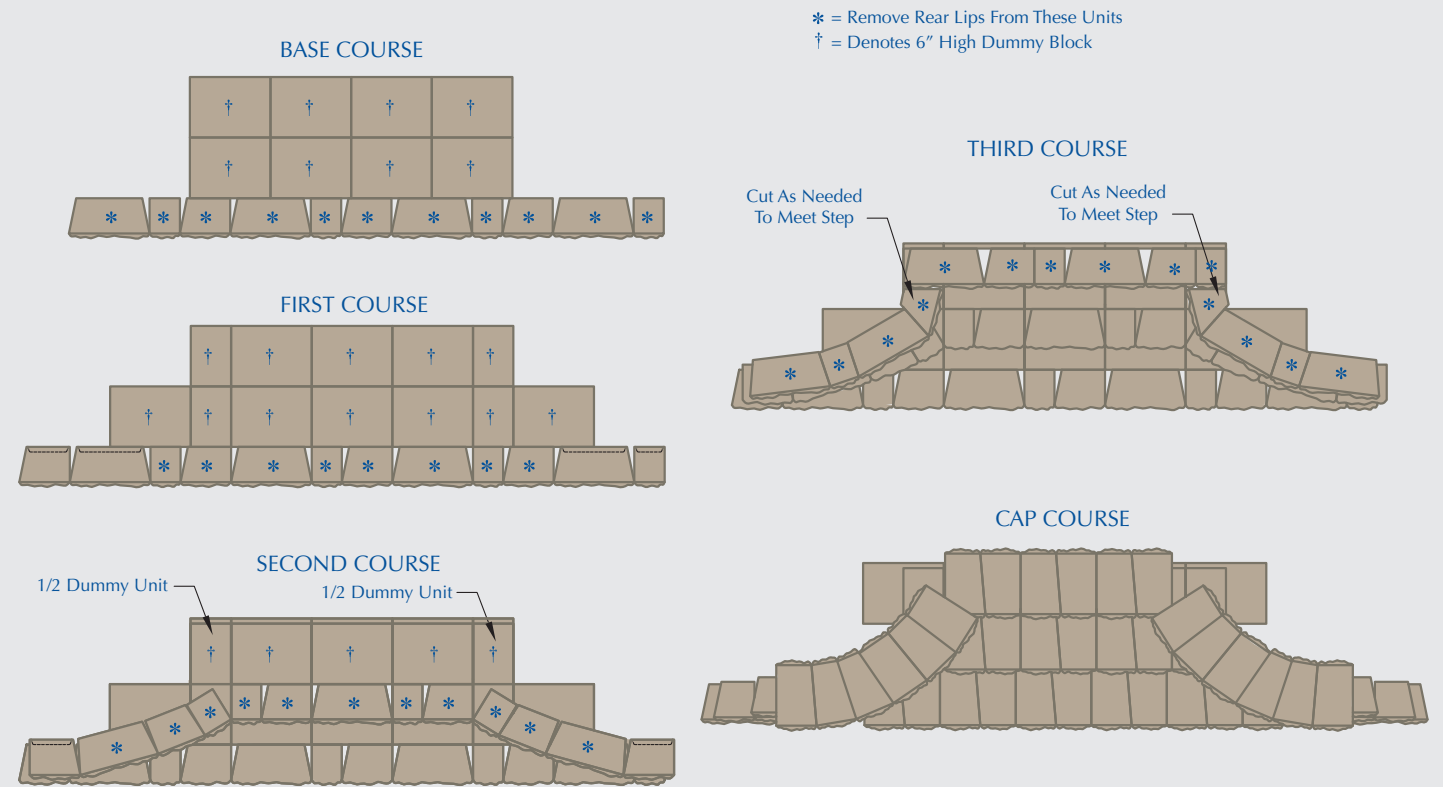




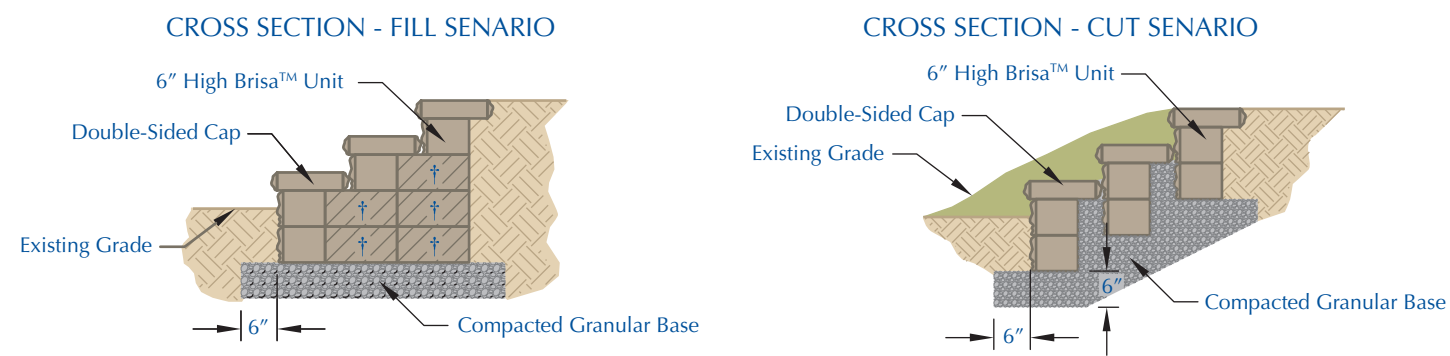
# RETAINING WALL CORNERED STAIRS



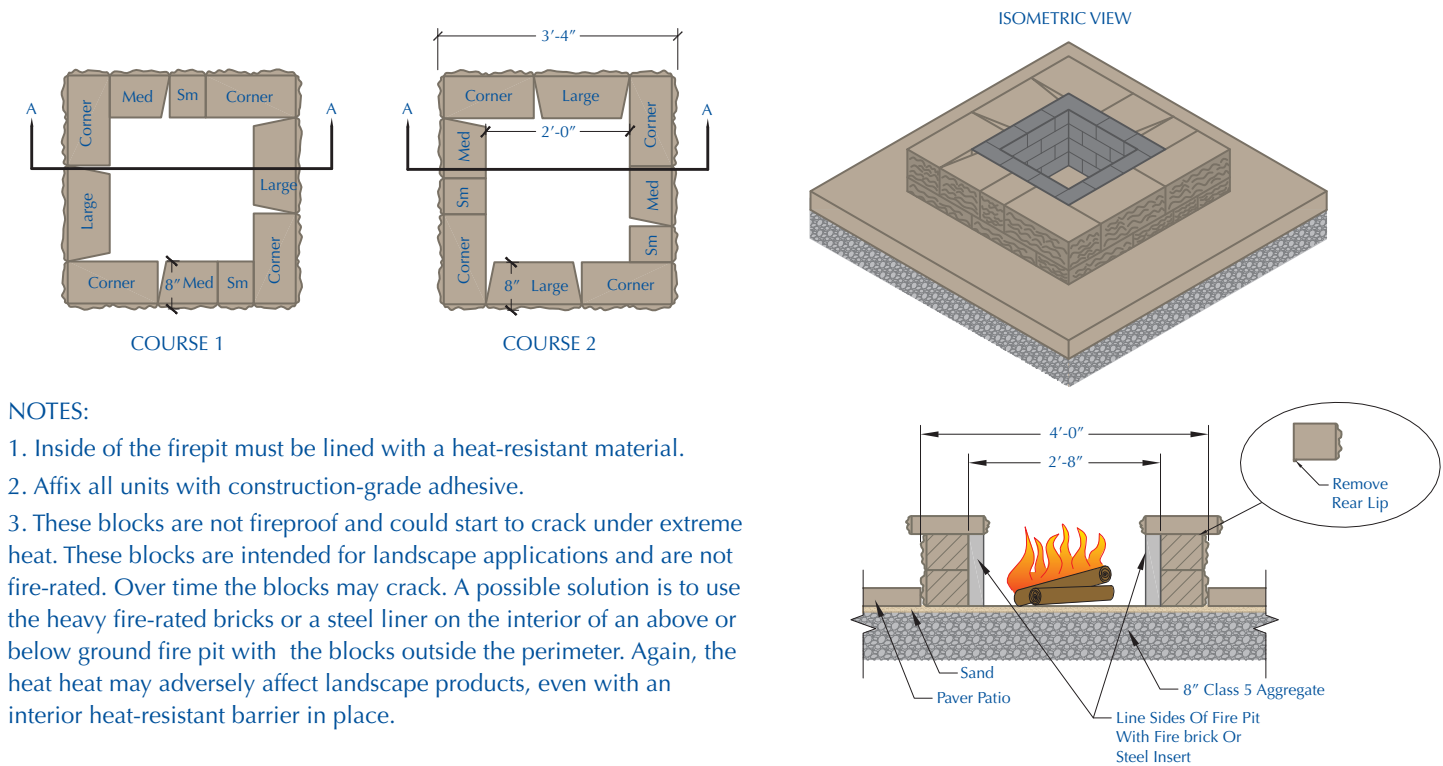
# RETAINING WALL CURVED STAIRS



# RETAINING WALL STAIRS

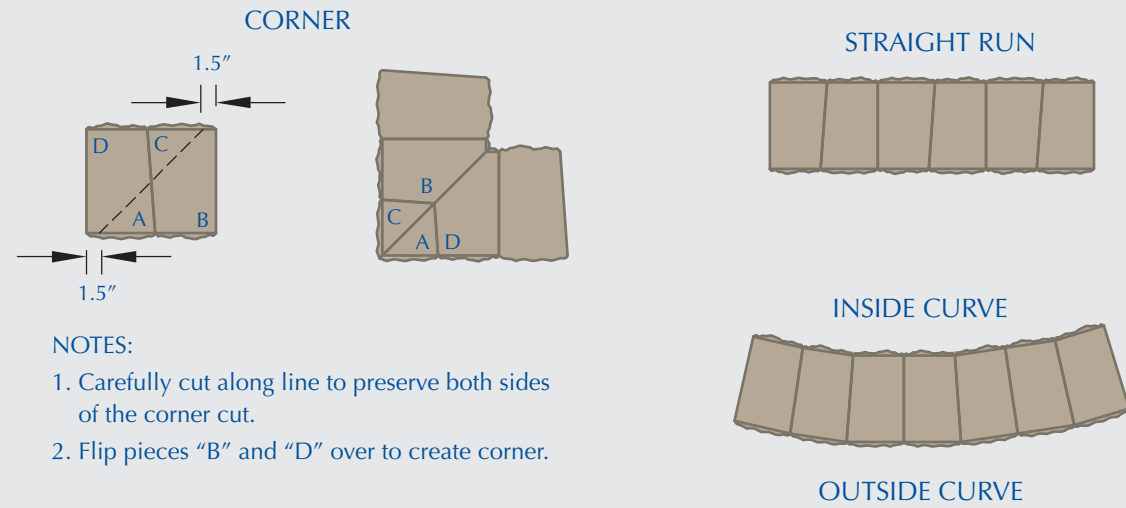


# RETAINING WALL FIRE PIT



- NOTES:
1. Inside of the firepit must be lined with a heat-resistant material.
  2. Affix all units with construction-grade adhesive.
  3. These blocks are not fireproof and could start to crack under extreme heat. These blocks are intended for landscape applications and are not fire-rated. Over time the blocks may crack. A possible solution is to use the heavy fire-rated bricks or a steel liner on the interior of an above or below ground fire pit with the blocks outside the perimeter. Again, the heat may adversely affect landscape products, even with an interior heat-resistant barrier in place.

## CAPS



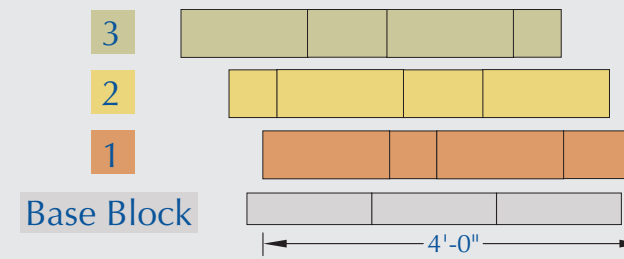
**NOTES:**

- Carefully cut along line to preserve both sides of the corner cut.
- Flip pieces "B" and "D" over to create corner.

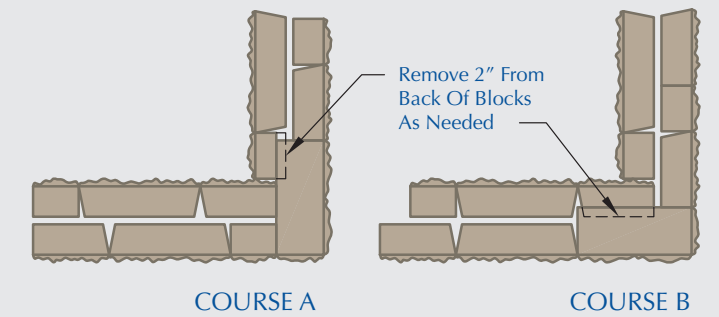
- Always start capping wall from the lowest elevation.
- Lay out caps prior to using adhesive.
- Cut caps to fit. Occasional cutting will be necessary for Radii other than approximately 7.5 feet.
- Alternate short and long cap faces every other cap to achieve a straight row of caps.
- Use exterior-grade construction adhesive to secure caps.

## FREESTANDING WALL PATTERN

18-inch by 4-foot pattern.



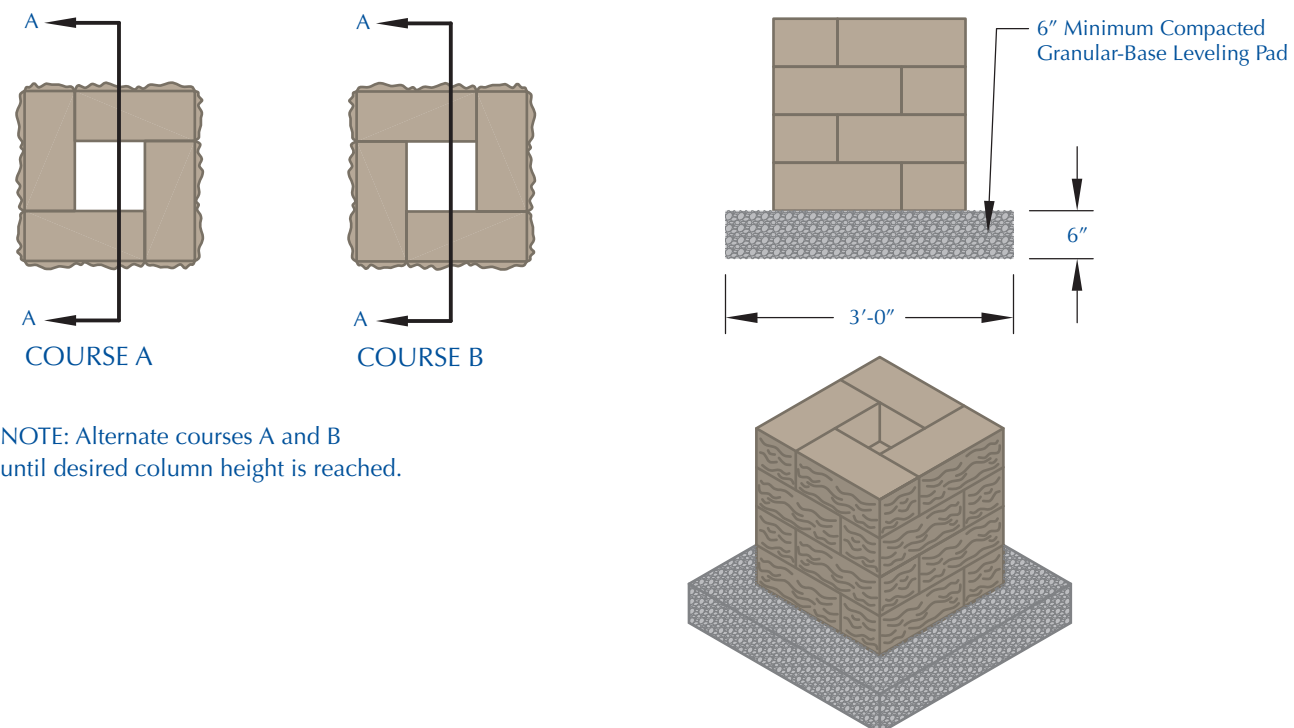
## FREESTANDING WALL 90 DEGREE CORNERS



**NOTES:**

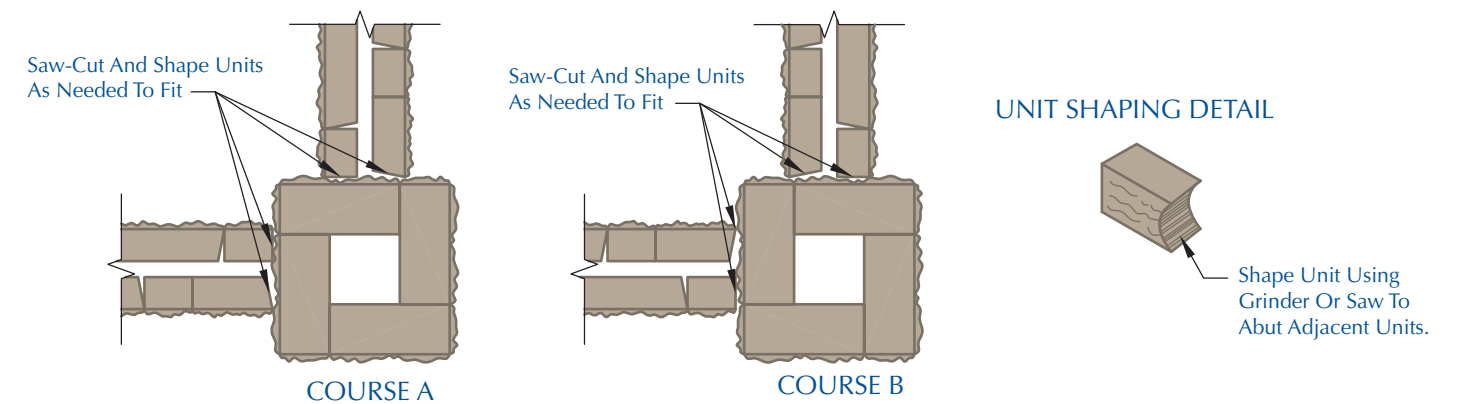
- Repeat courses A and B to full height of wall.
- Affix all units with construction-grade adhesive.
- Refer to capping detail for corner cap installation.
- Where possible, begin construction at corner and work outward.

## WALL COLUMNS



NOTE: Alternate courses A and B until desired column height is reached.

## FREESTANDING WALL COLUMNS



**NOTES:**

- Alternate courses A and B until desired column height is reached.
- Walls do not tie into column.
- Affix all units with construction-grade adhesive.