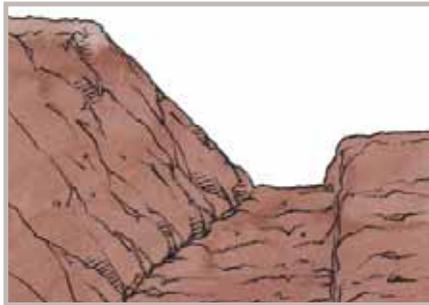


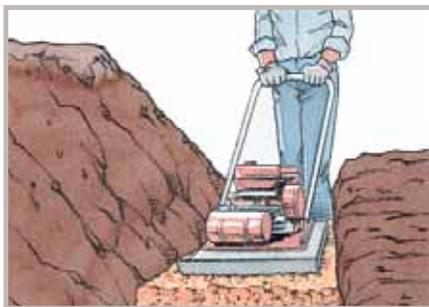
22 RETAINING WALL INSTALLATION INSTRUCTIONS

The following installation instructions apply to Anchor retaining wall products that feature a rear lip. Where there are variations, the appropriate information has been noted.



EXCAVATION

Diagram 1



LEVELING PAD COMPACTION

Diagram 2



CONSTRUCTION OF THE NEXT COURSE

Diagram 3



CORE FILL

Diagram 4

STAKE OUT THE WALL

- Have a surveyor stake out the wall's placement. Verify the locations with the project supervisor.

EXCAVATION

- Excavate for the leveling pad to the lines and grades shown on the approved plans and excavate enough soil behind the wall for the geosynthetic reinforcement material. The trench for the leveling pad should be at least 12 inches wider than the block you are installing and 6 inches deeper than the height of the block. *See Diagram 1.*

LEVELING PAD

- An aggregate leveling pad is made of compactible base material of ¾-inch minus (with fines).
- The pad must extend at least 6 inches in front of and behind the first course of block and be at least 6 inches deep after compaction.
- If the planned grade along the wall front will change elevation, the leveling pad may be stepped up in 6-inch increments to match the grade change. Start at the lowest level and work upward whenever possible. *(See page 29 for more information.)*
- Compact the aggregate and make sure it's level front to back and side to side. Mist lightly with water before compaction. *See Diagram 2.*

BASE COURSE

- This is the most important step in the installation process. Bury the base course of block.
- Begin laying block at the lowest elevation of the wall. Remove the rear lip of the block by hitting from the back so that it will lie flat on the leveling pad.
- Place first block level, front to back and side to side; lay subsequent blocks in same manner.
- Place the blocks side by side, flush against each other, and make sure the blocks are in full contact with the leveling pad.
- If the wall is on an incline, don't slope the blocks; step them up so they remain consistently level. *(See page 29 for more information.)*
- Use stringline along back edge of block to check for proper alignment.
- For multiple-piece products, use the largest unit, 18 inches wide, for the base course.

CONSTRUCTION OF THE NEXT COURSE

Diamond® and Diamond Pro™

- Clean any debris off the top of the blocks.
- Place the second course of blocks on top of the base course. Maintain running bond. Pull each block forward as far as possible to ensure the correct setback. *See Diagram 3.*
- Backfill with drainage aggregate directly behind the block, adding 6 inches at a time followed by proper compaction.
- Add soil fill behind the aggregate. Compact before the next course is laid.
- Don't drive heavy equipment near the wall. Self-propelled compaction equipment should not be used within 4 feet of the wall.
- You'll need partial units to stay on bond. A circular saw with a masonry blade is recommended for cutting partial units. Use safety glasses and other protective equipment when cutting.
- If you are using a block with cores that should be filled, fill prior to laying the next course. *See Diagram 4.*

Highland Stone® and Diamond Pro™ Stone Cut™

- Follow instructions as noted above.
- You can install these products using any combination of blocks.
- Keep the wall bond by placing units in a staggered relationship to the course beneath.
- See pages 16 and 17 for installation patterns for Highland Stone. *See page 20 for Diamond Pro™ Stone Cut™ installation pattern.*
- For best results, use a filter fabric, which should be placed directly behind the wall extending from the bottom of the base course to the middle of the top course. This will minimize material coming through the rough-hewn face texture of these products. We recommend a non-woven, 4- to 6-ounce fabric. *See Diagram 5.*

CAPPING

- See page 24 for more information about cap installation.

DRAINAGE DESIGN

- Each project is unique. The grades on your site will determine at what level to install the drain tile.
- Place the drain tile as low as possible behind the wall so water drains down and away from the wall into a storm drain or to an area lower than the wall. *See Diagram 6.*
- Fill in the area behind the blocks with drainage aggregate, at least 12 inches from the wall.
- You may need to place and backfill several courses to achieve the proper drainage level.
- Cover the drain tile with a geotextile sock which acts as a filter. The drain tile outlet pipes should be spaced not more than every 50 feet and at low points of the wall. In order for the drainage aggregate to function properly, it must keep clear of regular soil fill. *(See page 28 for more information.)*

COMPACTION

- Shovel the backfill soil behind the drainage aggregate and compact with a hand-operated compactor.
- Make sure the aggregate is level with or slightly below the top of the base course.
- Place soil in front of the base course and compact. Base course should be buried.
- Continue to fill and compact. *See Diagram 8.*

REINFORCEMENT (IF REQUIRED)

- Geosynthetic reinforcement is recommended for walls taller than 4 feet or walls situated in poor soils, supporting a driveway, etc. Consult a qualified engineer for design assistance.
- Check the wall construction plan for which courses will need reinforcement.
- Clean any debris off the top layer of blocks.
- Measure and cut the reinforcement to the design length in the plans.
- To cut grid when block heights are varied in a row, *see page 38.*
- The reinforcement has a design strength direction, which must be laid perpendicular to the wall.
- Place the front edge of the material on the top course, 2 inches from the face of the block.
- Apply the next course of blocks to secure it in place.
- To keep it from wrinkling, pull the reinforcement taut and pin the back edge in place with stakes or staples.
- Add drainage aggregate behind the blocks, then add the soil and compact it. *See Diagrams 7 and 8.*
- Remember — place the front edge of the reinforcement on top of the block, making sure it's within 2 inches of the face of the block. Correct placement ensures that you maximize the connection strength and keep the batter consistent.
- A minimum of 6 inches of backfill is required prior to operating vehicles on the reinforcement. Avoid sudden turning or braking. *See Diagram 8.*

FINISH GRADE AND SURFACE DRAINAGE

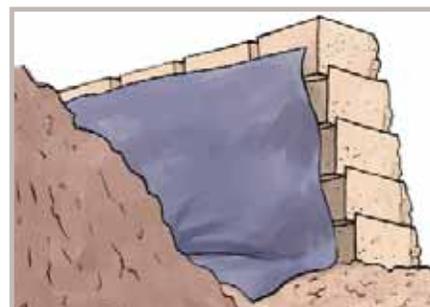
- Protect the wall with a finished grade at the top and bottom.
- To ensure proper water drainage away from the wall, use 6 inches of soil with low permeability. This will minimize water seeping into the soil and drainage aggregate behind the wall.

SITE CLEANING AND RESTORATION

- Brush off the wall and pick up any debris left from the construction process.
- Notify the job superintendent in writing of the project's completion and that it is ready for final inspection and acceptance.
- Planting vegetation in front and on top of the wall will help reduce the chance of erosion.
- Following these Best Practices for construction will ensure the successful installation of Anchor Wall Systems products.

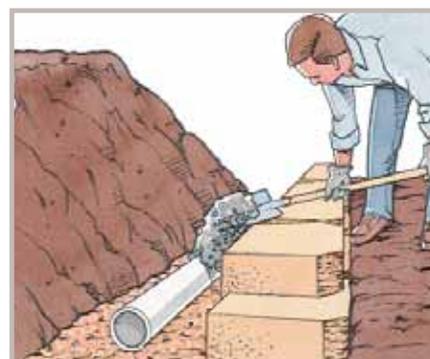
Jumper Installation Note: See page 38 for further details.

SAFETY NOTE: Always use appropriate equipment, including safety glasses or goggles and respirators, when splitting, cutting or hammering units.



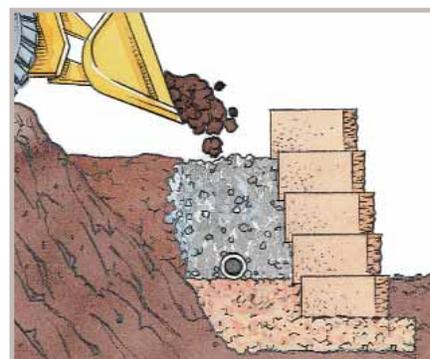
FILTER FABRIC

Diagram 5



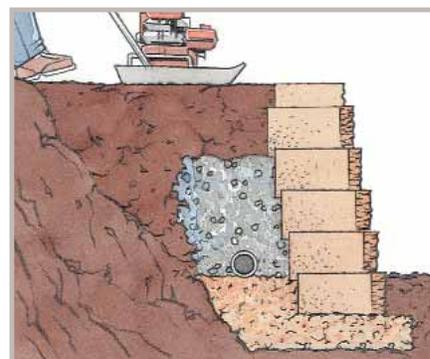
DRAIN TILE

Diagram 6



DRAINAGE AGGREGATE

Diagram 7



COMPACTION

Diagram 8



RUNNING BOND

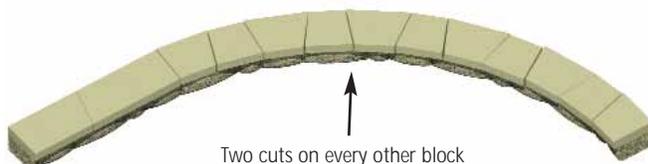
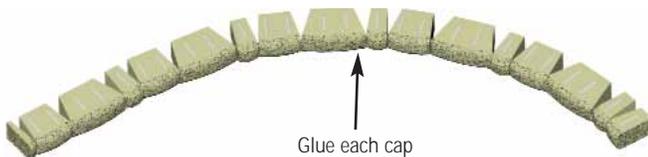
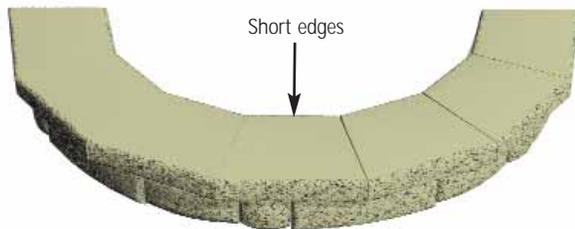
STRAIGHT WALL

Proper installation of any Anchor retaining wall requires that running bond be maintained. Running bond occurs when the blocks are centered over the vertical joints of the previous course. This adds to wall stability and makes your wall system aesthetically beautiful.

CURVED WALL

Any wall that is not perfectly straight will eventually run off bond when using Diamond® and Diamond Pro™. When this happens, skip a block position and place the next block into the next place where it is back on bond. Measure the remaining gap and cut a block to fit.

Once the partial unit is in place, glue with a concrete adhesive. Partial units should not be less than 5 inches and should not be placed directly on top of each other. If the gap is larger than the length of one block, divide the measurement by two and put two partial units in place.



CAPPING A WALL

STRAIGHT WALL

Caps are trapezoidal and must be laid alternatively short and long cap faces for a straight line. Always start capping from the lowest elevation.

OUTSIDE CURVES

Lay out the cap units side by side and cut at least every other cap to produce a uniform look. Start with the long side of the cap facing out and adjust to the radius.

INSIDE CURVES

Lay cap units side by side with the short side facing out. In most circumstances, making two cuts on one cap and then not cutting the cap on either side produces the most pleasing look.

CORNERS

On a 90° corner wall, the corner caps need to be saw-cut to achieve a 45° mitered corner.

STEPPING UP CAPS

If a wall elevation changes, caps can be stacked where the wall steps up. Begin laying caps at the lowest elevation change and work your way back toward the previous step up. Split a cap unit to create a rough face on the exposed side. Place the half unit directly on top of the capped portion of the wall with all three split faces exposed.

FINISHING

After layout is complete and caps are saw-cut or split to size, carefully glue with a concrete adhesive.

STANDARD STEP

These construction drawings feature step units. Caps or pavers can be used for treads. Check local building codes for any tread depth standards.

BASE COURSE

Thoroughly compact the leveling pad. Lay out the base course according to the wall design. Place step units first, working from the center to each side. Remember, it is very important to backfill and compact behind and along the sides of each course of step units.

FIRST STEP COURSE

Place the first course of step units directly on top of the base course so there is no setback. Stagger them from the previous course and glue in place.

SECOND STEP COURSE

Add the second course of steps, staggering them from the previous course to maintain running bond. Overlap the previous course by 2 inches and glue to lower course.

SECOND WALL COURSE

Build the second course of the wall.

THIRD STEP COURSE

Beginning in the center, add the third course of steps, lining up the units with the first course. Overlap 2 inches and glue in place.

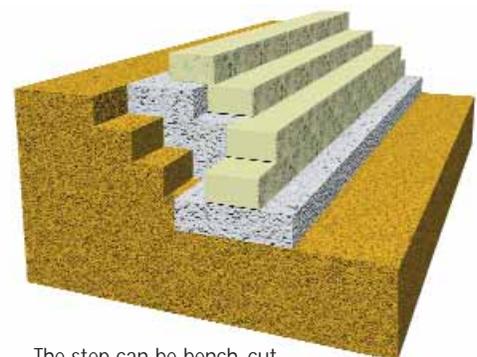
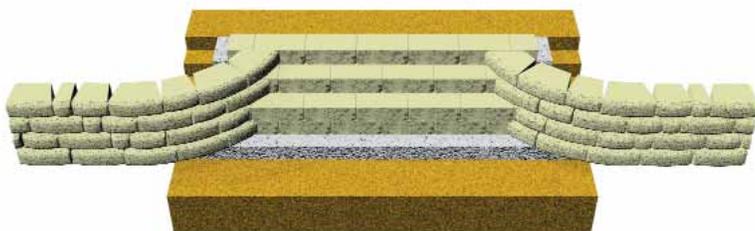
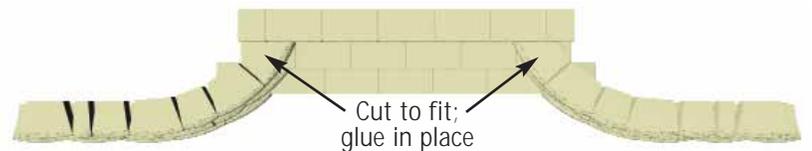
THIRD WALL COURSE

Build the third course of the wall. Repeat these steps until the wall is finished.

ELEVATION



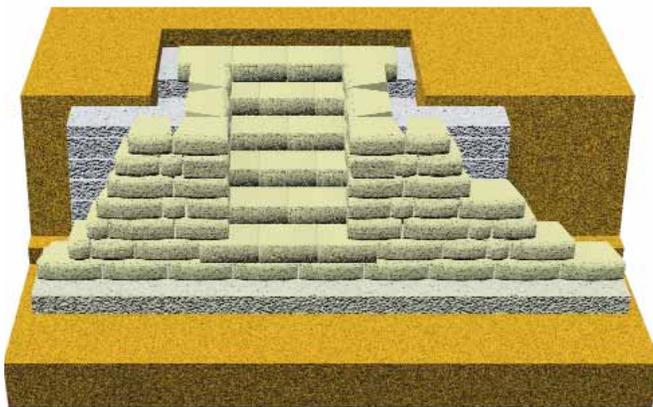
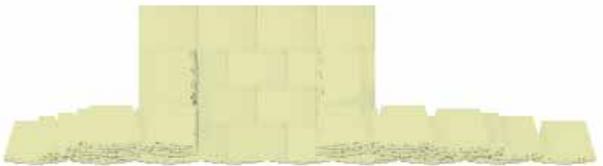
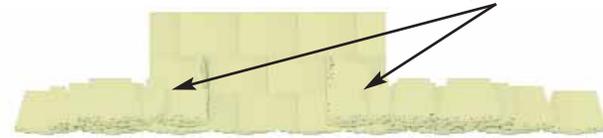
Graceful curves enhance the appearance of a step area when Highland Stone® wall units and step units are combined.



Drainage Tip: Drain pipe can be placed behind the lowest step units at grade or behind each wall adjacent to the steps.



Remove lips so walls stack vertically. Glue all units.



STEP

These construction drawings feature step units. Caps or pavers can be used for treads. Check local building codes for any tread depth standards.

BASE COURSE

Thoroughly compact the leveling pad. Lay out the base course according to the wall design. Place step units first, working from the center to each side. Remember, it is very important to backfill and compact behind and along the sides of each course of step units.

FIRST STEP COURSE

Place the first course of step units directly on top of the base course so there is no setback. Stagger them from the previous course and glue in place.

SECOND STEP COURSE

Add the second course of steps, staggering them from the previous course to maintain running bond. Overlap the previous course by 2 inches and glue to lower course.

SECOND WALL COURSE

Build the second course of the wall.

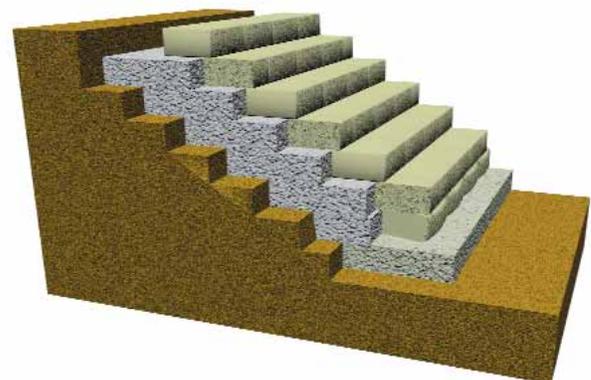
THIRD STEP COURSE

Beginning in the center, add the third course of steps, lining up the units with the first course. Overlap 2 inches and glue in place.

THIRD WALL COURSE

Build the third course of the wall. Repeat these steps until the wall is finished.

Drainage Tip: Drain pipe can be placed behind the lowest step units at grade or behind each wall adjacent to the steps.



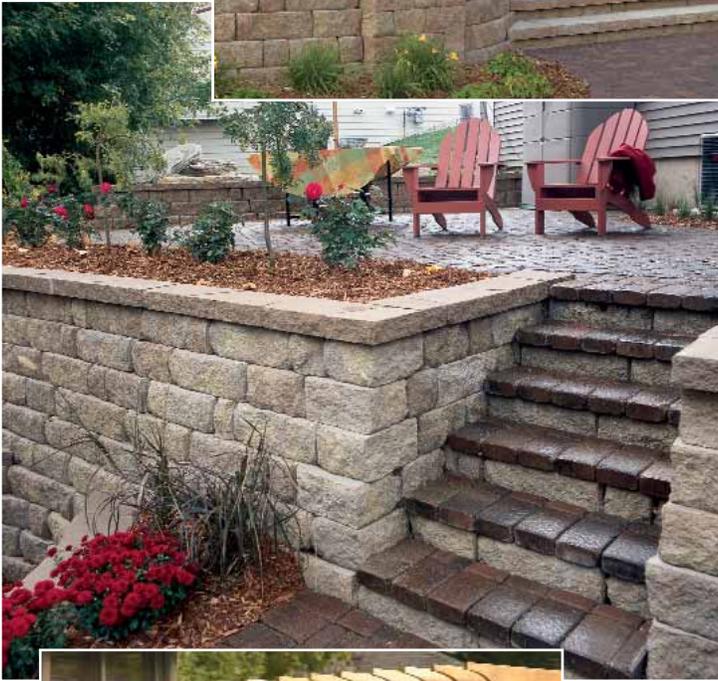
Squaring off the wall next to steps gives a tailored look.

STEP INSPIRATION

Cap units finish steps built with Highland Stone® wall units. Use the Standard Step Construction Details on page 25 but substitute 6-inch wall units for step units.



Bull-nosed pavers complete this step installation with Highland Stone step units. Use the Standard Step Construction Details on page 25.



Pavers complete this set of steps built with Highland Stone wall units. Follow the Step Construction Details on page 26 but substitute wall units for step units.



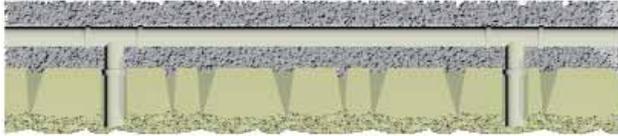
Sweeping steps stimulate interest in hardscapes. Use the Standard Step Construction Details on page 25 but substitute 6-inch Highland Stone wall units for step units.

Turn up the interest and explore steps that aren't straight from bottom to top. Use the Standard Step Construction Details on page 25 but substitute 6-inch Highland Stone wall units for step units. Continue the pattern established in the wall as the steps are incorporated.

DAYLIGHTING DRAINAGE

FIRST COURSE

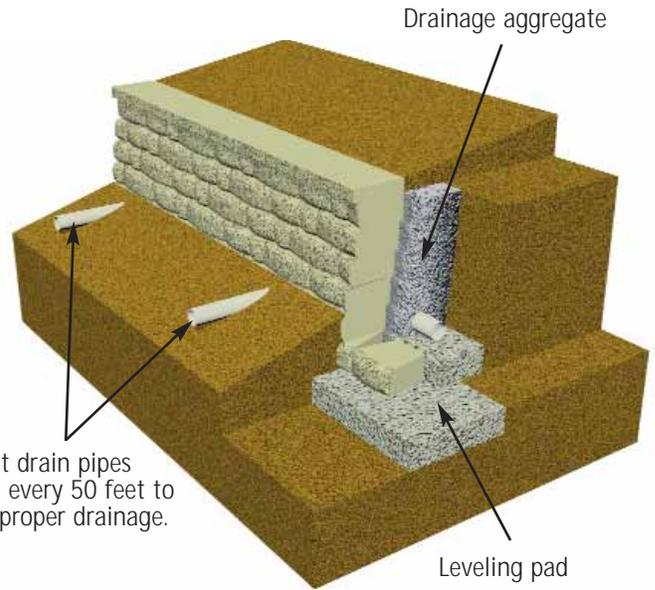
To daylight drain pipes through a wall face, place the drain pipes on compacted leveling pad aggregate placed behind the first course. Space these drains not more than 50 feet apart. Split 2 inches off the front of two adjacent large units to provide space for the drain pipe to exit through the face.



NEXT COURSE

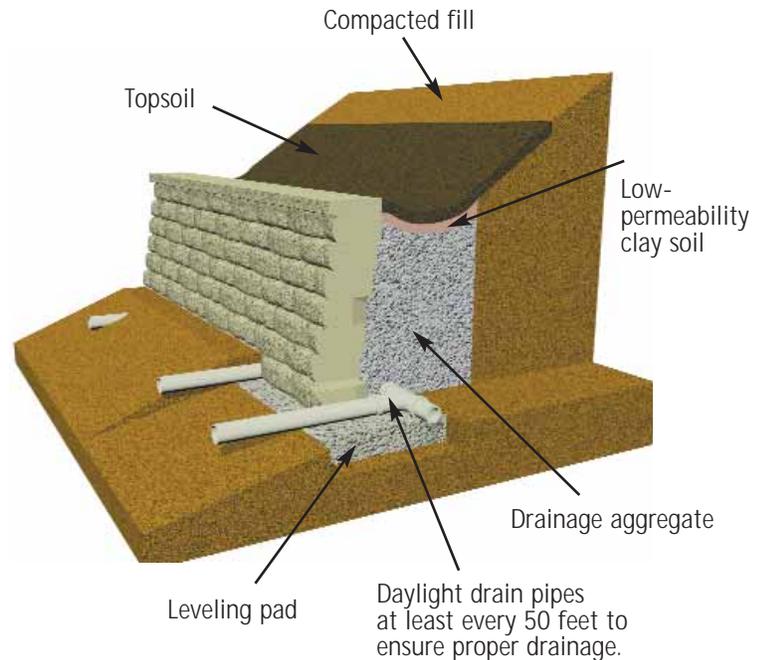
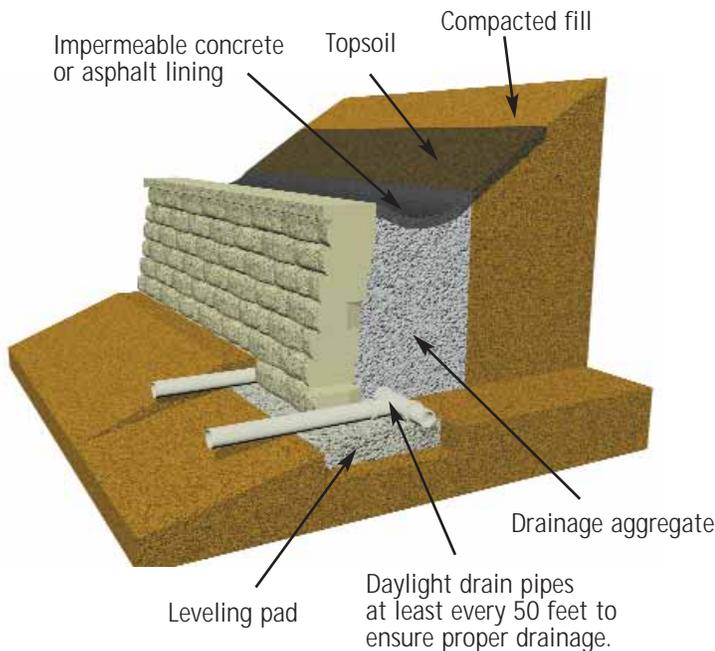
Build this and remaining courses using standard construction techniques.

Tip: To daylight through slope, see Drainage Swales.



DRAINAGE SWALES

The design and performance of most retaining walls are based on keeping the reinforced zone relatively dry. Appropriate drainage swales to help control water should be designed in the wall construction plan.



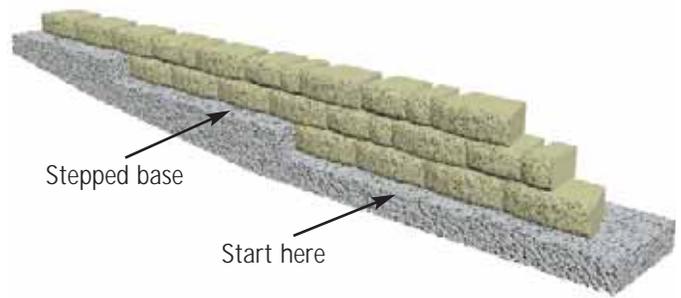
STEPPING UP THE BASE

LOWEST POINT

Walls built on a sloping grade require a stepped base. Begin excavation at the lowest point and dig a level trench into the slope until it is deep enough to accommodate the base material and one entire block.

STEP UP

At this point, step up the height of one block and begin a new section of base trench. Continue to step up as needed to top of slope. Always bury at least one full unit at each step.



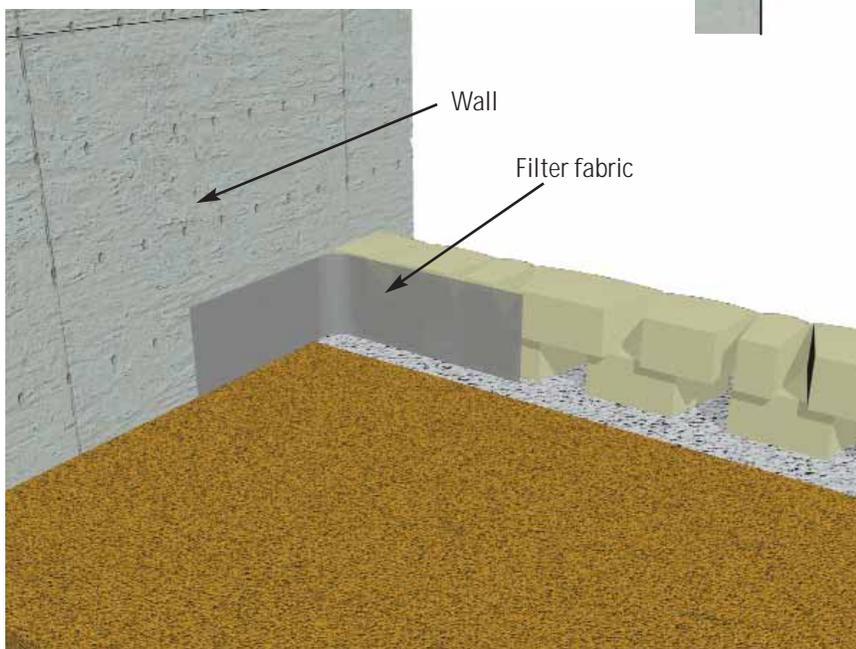
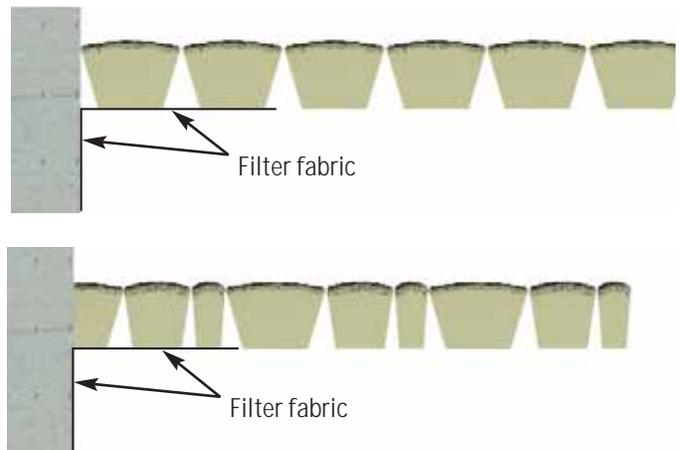
ABUTTING EXISTING STRUCTURE

FIRST COURSE

Begin with first block next to the wall and place first course. Place filter fabric behind the first two large units and extend it 2 feet along the existing structure.

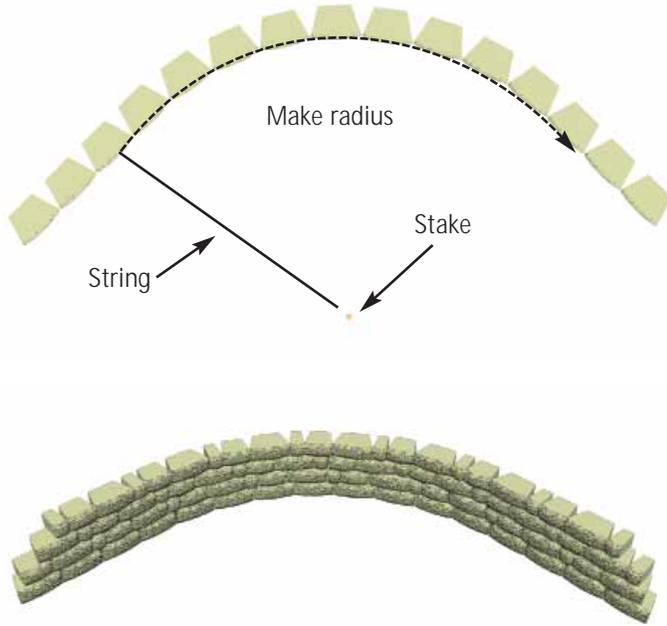
SECOND COURSE

Build second course with standard installation techniques. A split unit is shown, but may not be necessary in every installation. Extend filter fabric to the top edge of the final course. A rubber membrane can be placed between the units and a non-concrete wall to prevent moisture damage to the structure.



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INSIDE CURVES



CALCULATE THE RADIUS

Check the wall plan to determine the radius of the base course. This will be the smallest radius in the wall and must not be less than the minimum for the block system used.

BASE COURSE

Begin by driving a stake into the ground at the desired center of the curve. Attach a string and rotate it in a circle around the stake to mark the radius in the soil. Align each block face with the radius curve and ensure level placement from side to side and front to back.

ADDITIONAL COURSES

On each course, the lip of each block must be in contact with the back of the units below to ensure structural stability. The setback of the block will cause the radius of each course to gradually increase and eventually affect the running bond of the wall. To maintain proper running bond, use partial units as needed when installing Diamond® and Diamond Pro™. Once a split unit is cut to size, glue in place with a concrete adhesive.

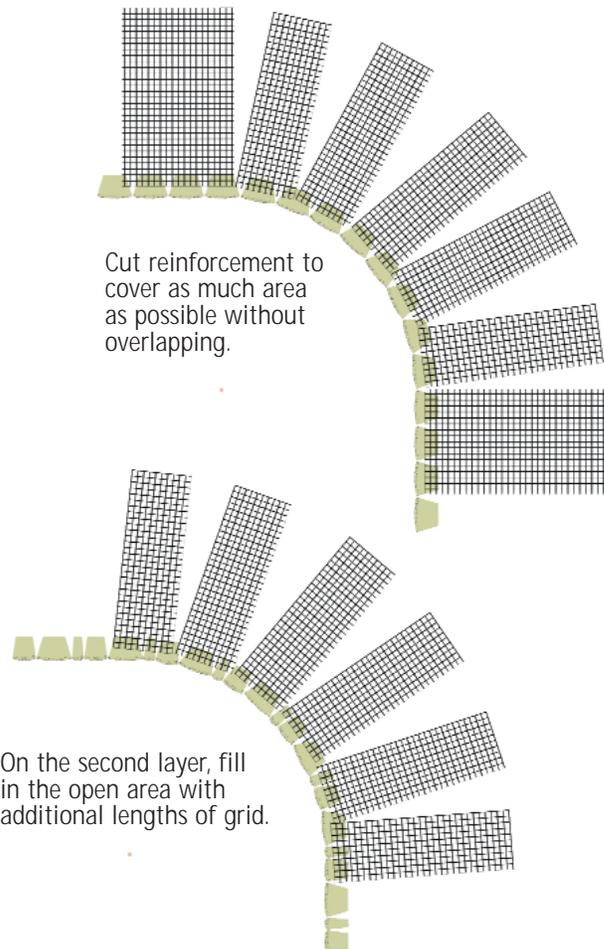
INSIDE CURVES WITH REINFORCEMENT

FIRST COURSE WITH REINFORCEMENT

Most retaining walls are designed assuming 100% coverage of the reinforcement. When building an inside curve, the back edges of the reinforcement will fan out slightly producing gaps. In order to ensure 100% coverage, additional lengths of reinforcement are used to fill those gaps on the next course of blocks. Don't overlap the grid on one course to avoid slippage.

Cut reinforcement to the lengths specified in the wall plan. Lay segments of reinforcement within 2 inches of the face of the wall, making sure that the strength direction of each section is perpendicular to the wall face.

Place the next course of blocks, marking the backs of blocks to identify the middle of unreinforced areas. Backfill and compact. Center subsequent sections of reinforcement on the marked blocks to ensure full reinforcement coverage. Repeat this procedure throughout the construction of the radius curve when reinforcement is required.



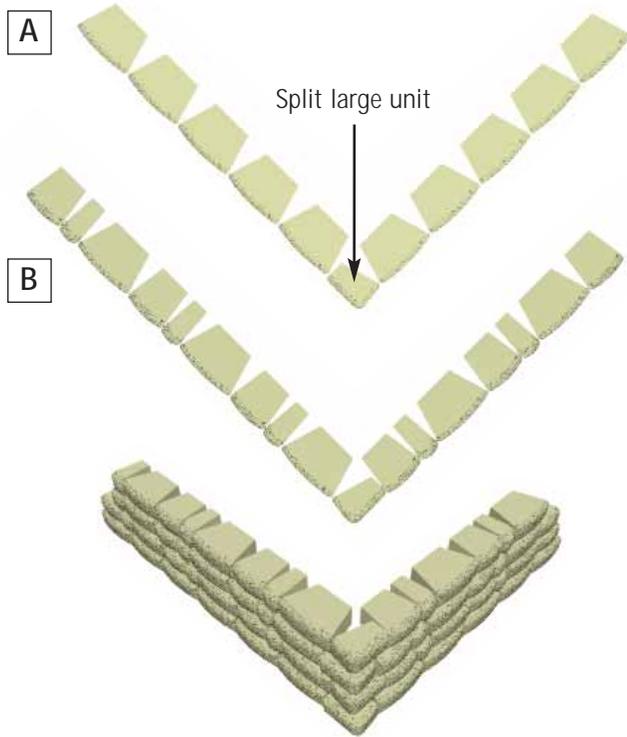
Cut reinforcement to cover as much area as possible without overlapping.

On the second layer, fill in the open area with additional lengths of grid.

MINIMUM INSIDE RADIUS

Diamond® Beveled Face	.....	4 feet
Diamond® Straight Face	.....	8 feet
Diamond Pro™	.....	6 feet
Diamond Pro™ Stone Cut™ Face		
(using all units)	.....	6 feet
Highland Stone®		
(using all units)	.....	8 feet

OUTSIDE 90° CORNERS



BASE COURSE

A To build an outside 90° corner, begin by splitting a large unit in half. Place this unit with both split faces out at the corner. Remove the lip so that the block lies flat. Then lay the rest of the base course working from the corner block out.

SECOND COURSE

B Begin the second course with the other half of the large unit. Place the second and third blocks on either side of the corner unit. Once the corner unit is in position, glue block in place with a concrete adhesive. Continue to alternate the corner unit orientation with each course and always use a concrete adhesive.

Use split units* as necessary to maintain running bond on Diamond® and Diamond Pro.™

*To split a block, use a hydraulic splitter or split manually by using a hammer and chisel to score the block on all sides. Pound the chisel on the same line until the block splits. If partial unit sides are not exposed, use a circular cut-off saw with a masonry blade to achieve a tighter fit.

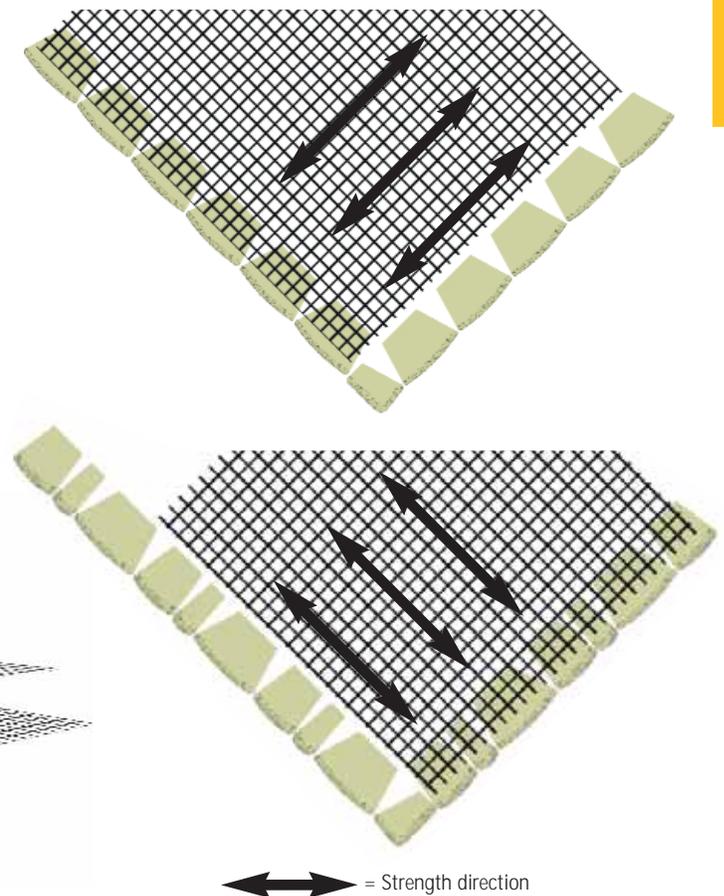
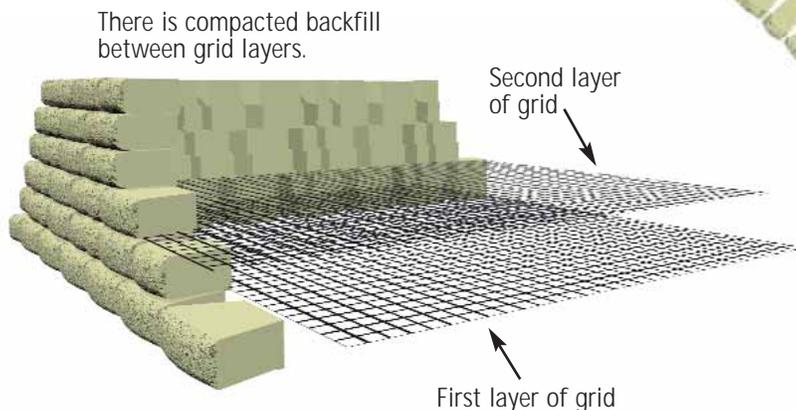


OUTSIDE 90° CORNERS WITH REINFORCEMENT

Begin by checking the wall plan to determine reinforcement lengths and elevations. Lay a section of reinforcement near the corner of the wall, ensuring that it's placed within 2 inches of the face of the block and running along the back of the adjoining wall.

Lay the next course of block, backfill and compact. When installing the next section of reinforcement, place within 2 inches of the face of the block and running along the back of the adjacent wall.

Tip: Use Diamond Pro™ corner units or Highland Stone® column units for the corners.



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OUTSIDE CURVES

CALCULATE THE RADIUS

When building an outside radius curve, begin by calculating the radius of the top course. This will be the smallest radius in the wall and must not be less than the minimum radius for the block system used.

Here is a rule of thumb used to calculate the approximate radius of the top course: add $\frac{1}{4}$ inch to the setback of the block used. Multiply that amount by the number of courses in the finished wall. Then subtract the result from the radius of the base course. This number equals the calculated radius of the top course.

Example: The setback of Highland Stone® is $1\frac{1}{8}$ ". The wall is 8 courses high. The radius of the base course is 6 feet.

$1\frac{1}{8}" + \frac{1}{4}" = 1\frac{3}{8}" \times 8 \text{ courses} = 11"$. $6' - 11" = \underline{5'11"}$ calculated radius of the top course.

BASE COURSE

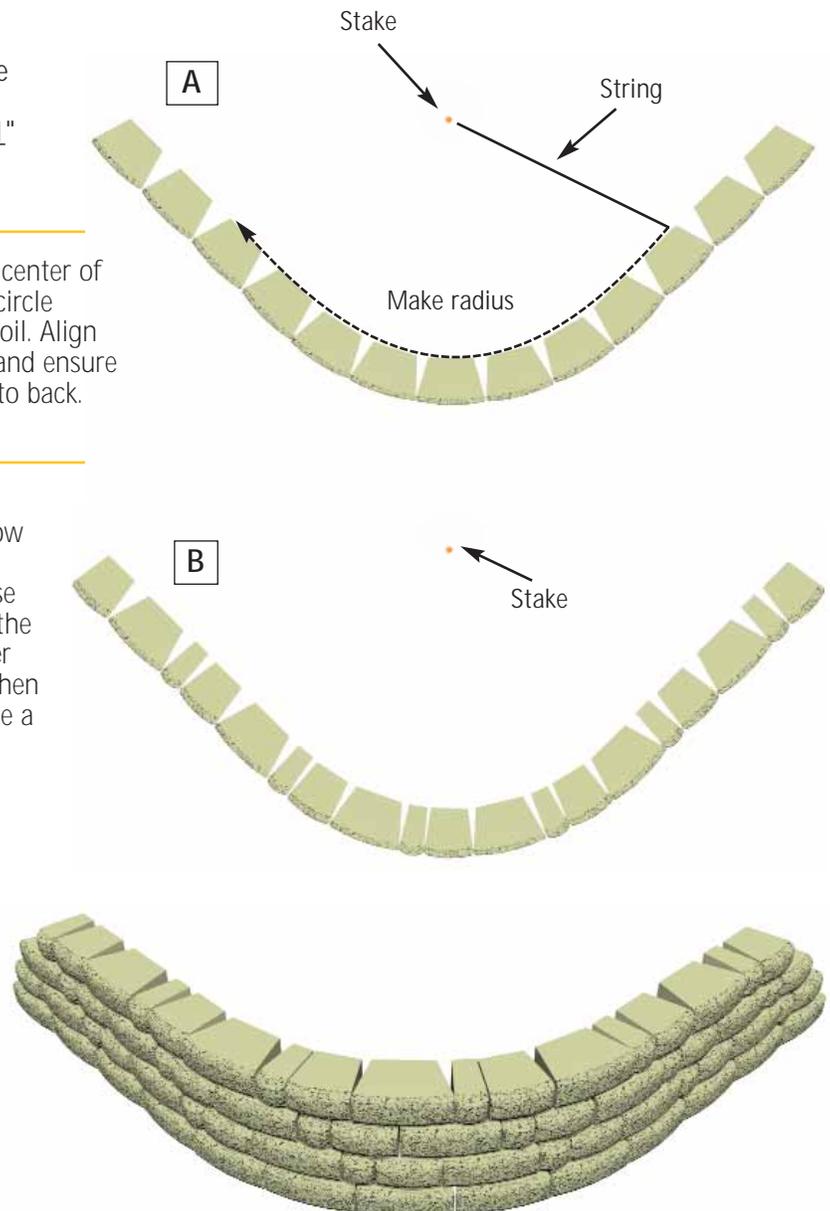
- A** Drive a stake into the ground at the desired center of the curve. Attach a string and rotate it in a circle around the stake to mark the radius in the soil. Align the back of the block with the radius curve and ensure level placement from side to side and front to back.

ADDITIONAL COURSES

- B** On each course, the lip of each block must be in contact with the back of the units below to ensure structural stability. The setback of the block will cause the radius of each course to gradually decrease and eventually affect the running bond of the wall. To maintain proper running bond, use partial units as needed when installing Diamond® and Diamond Pro™. Once a split unit is cut to size, glue in place with a concrete adhesive.



Curving lines add grace and style to any project using Highland Stone.® See page 24 for information about capping a curve.



OUTSIDE CURVES WITH REINFORCEMENT

FIRST COURSE WITH REINFORCEMENT

Most retaining walls are designed assuming 100% coverage of the reinforcement. When building an outside curve, the block edges of the reinforcement will have gaps so that the back edges don't overlap. In order to ensure 100% coverage, additional lengths of reinforcement are used to fill those gaps on the next course of blocks. Don't overlap the grid on one course to avoid slippage.

Cut reinforcement to the lengths specified in the wall plan. Lay sections of the reinforcement within 2 inches of the face of the wall with the strength direction perpendicular to the wall face. Avoid overlapping the reinforcement by separating each section. Place the next course of blocks, marking the backs of blocks to identify unreinforced areas. This step is important because when this course is back-filled, it's impossible to locate the unreinforced areas.

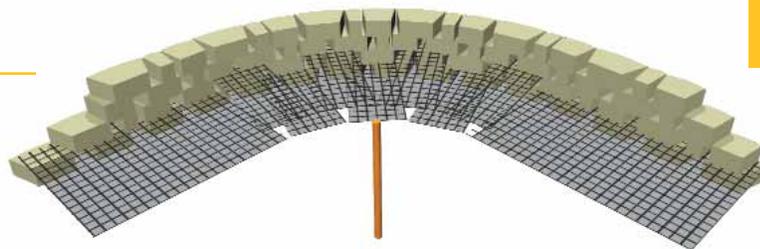
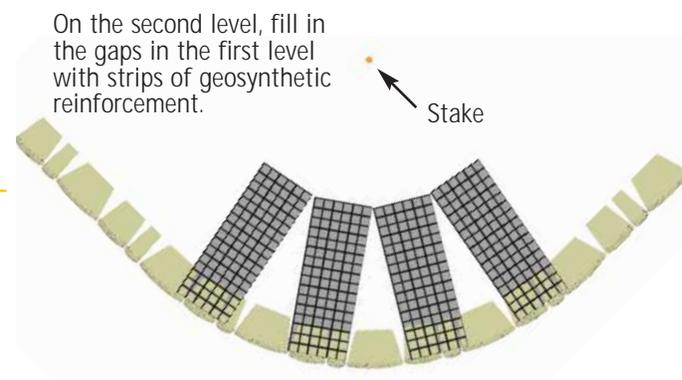
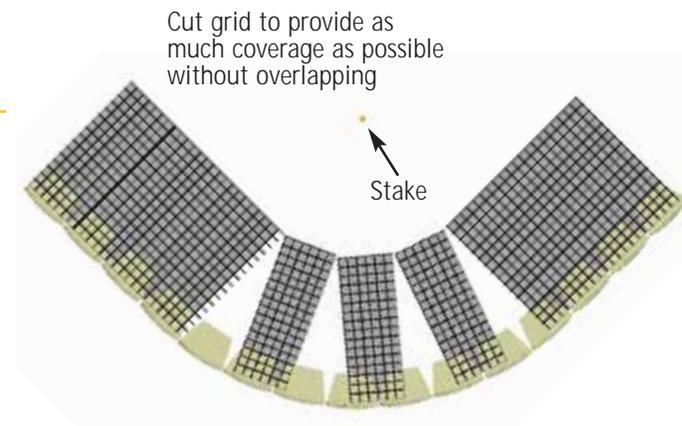
NEXT COURSE

Place the next course of blocks, marking the backs of blocks to identify unreinforced areas. This step is important because when this course is backfilled, it's impossible to locate the unreinforced areas. Use the marked blocks as a guide, placing subsequent sections of reinforcement to overlap the gaps left on the previous course. This will ensure total reinforcement coverage. Repeat this procedure throughout the construction of the radius curve when reinforcement is required.

MINIMUM OUTSIDE RADIUS

Diamond® Beveled Face	.....	2 feet
Diamond® Straight Face	.....	4 feet
Diamond Pro™	.....	4 feet
Diamond Pro™ Stone Cut™ Face	.....	4 feet
(using all units)	.....	4 feet
Highland Stone®	.....	4 feet
(using all units)	.....	4 feet

Highland Stone® units shown



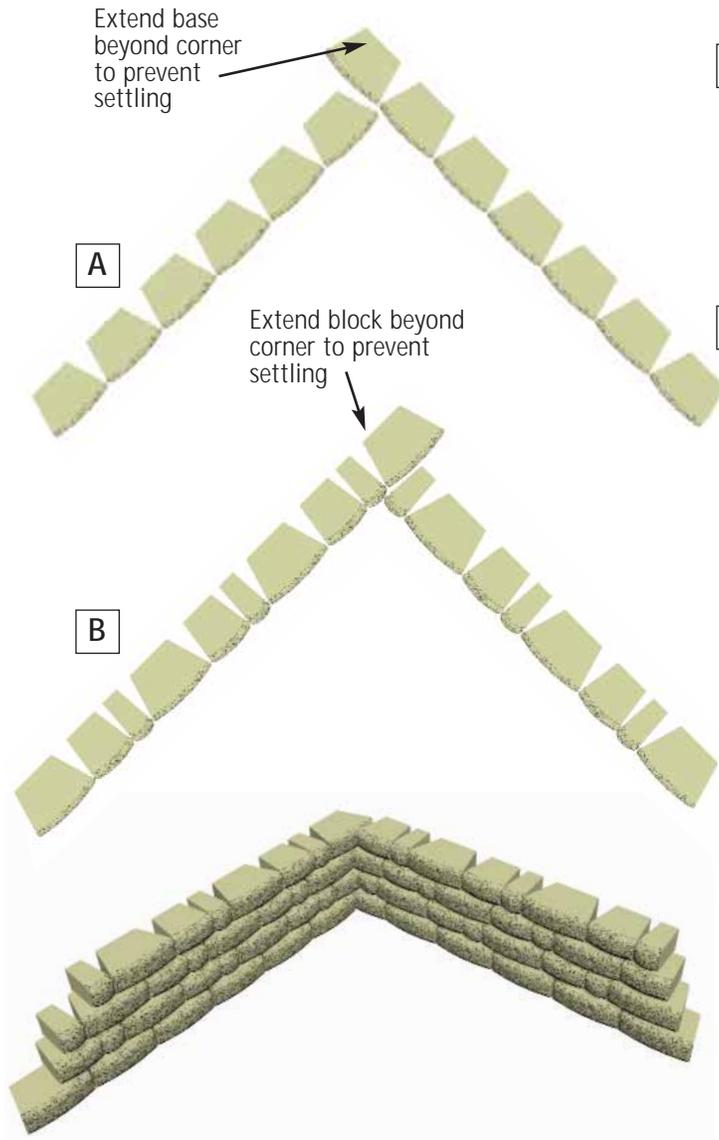
From this viewpoint, it is possible to see the complete grid coverage between the two layers of grid.



Turn an open patio into a cozy corner with curved Highland Stone® walls. Wall curves are repeated in the steps.

34

INSIDE 90° CORNERS

**BASE COURSE**

- A** To create an inside 90° corner, begin by placing a block at the corner. Then lay a second block perpendicular to the first and continue laying out the rest of the base course working from the corner out. Make sure to construct the base course according to standard site prep and installation procedures described earlier.

NEXT COURSE

- B** On the second course, place all blocks on bond along one side of the corner. Once the second course of one wall is established, begin the second course of the adjacent wall. Split units* may be required on this wall to maintain running bond when using Diamond® and Diamond Pro™

*To split a block, use a hydraulic splitter or split manually by using a hammer and chisel to score the block on all sides. Pound the chisel on the same line until the block splits. If partial unit sides are not exposed, use a circular cut-off saw with a masonry blade to achieve a tighter fit.

Block placement in the corner should alternate direction with each succeeding course.



A quiet corner is sheltered with an inside 90° corner built with Highland Stone.® Step up the caps in 3-inch increments for a finished look. See page 24 for more information about stepping up caps.

INSIDE 90° CORNERS WITH REINFORCEMENT

FIRST COURSE WITH GEOGRID

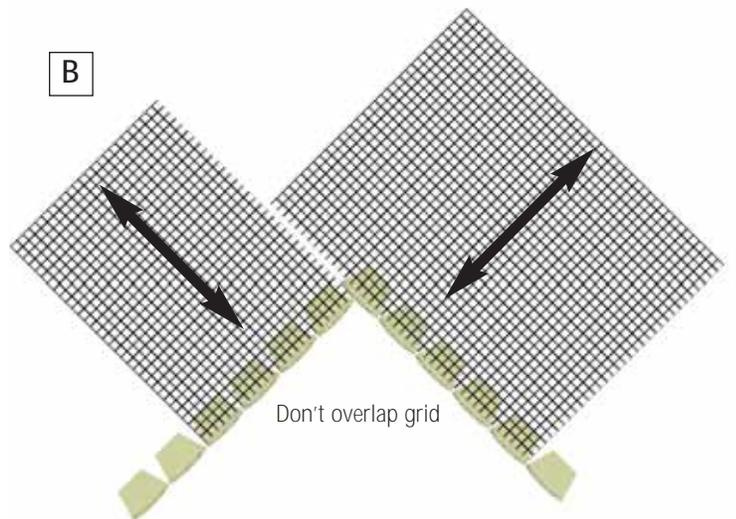
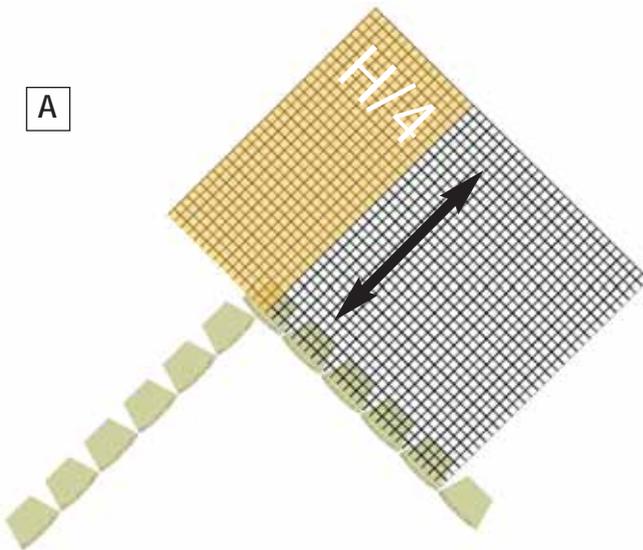
A To install reinforcement on an inside 90° corner, begin by checking the wall plan to determine reinforcement lengths and elevations. Cut reinforcement to the lengths shown in the wall plan, paying attention to the reinforcement strength direction.

Next, determine the proper placement of the reinforcement by dividing the proposed height of the wall by four. This represents the distance that reinforcement should extend beyond the front of the adjoining wall.

Measure this distance from the front of the adjoining wall, begin the grid placement here. Make sure the grid is placed within 2 inches of the face of the wall and runs along the back of the adjoining wall.

Example: If overall wall height is 8 feet, the reinforcement extension would be 2 feet.

B Place the next section of reinforcement on the adjoining wall. The reinforcement should not overlap and should lie flush with previously placed sections. Once reinforcement is in place, the next courses of block can be installed.

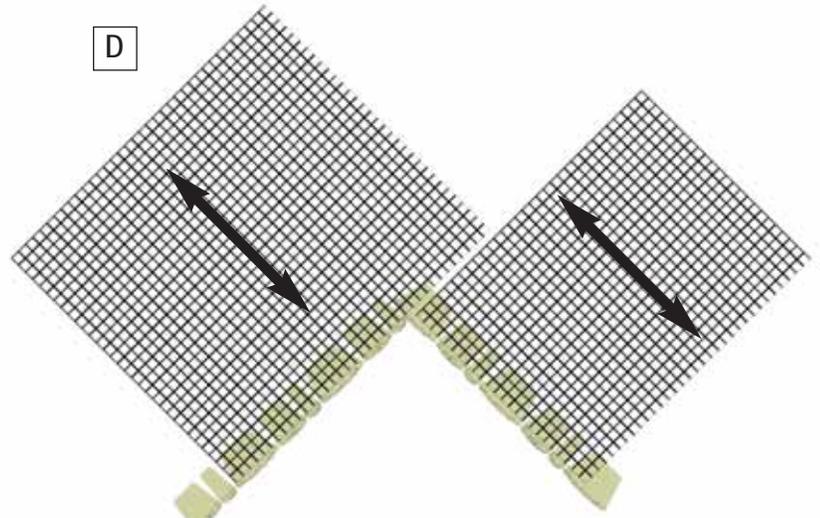
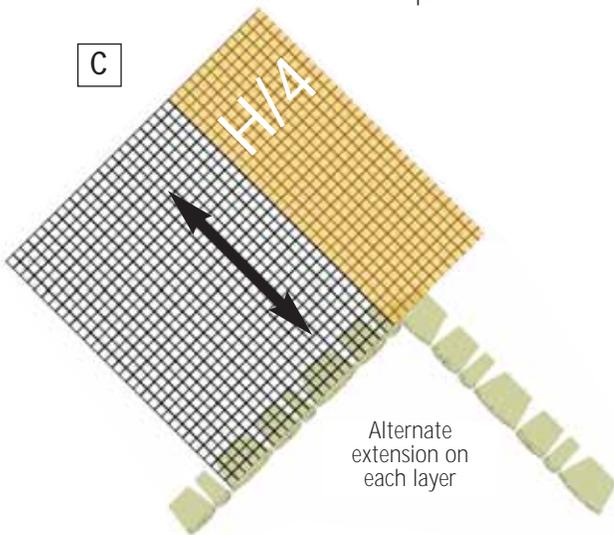


SECOND COURSE WITH GEOGRID

C The first section of grid on this course is placed using the same formula that determines placement in front of adjoining wall.

Alternate the reinforcement extension on each course where reinforcement is required.

D Place the next section of reinforcement on the adjoining wall. The reinforcement should not overlap and should lie flush with previously placed sections. Once reinforcement is in place, the next courses of block can be installed.



← → = Strength direction

TERRACES

INDEPENDENT TERRACED WALLS

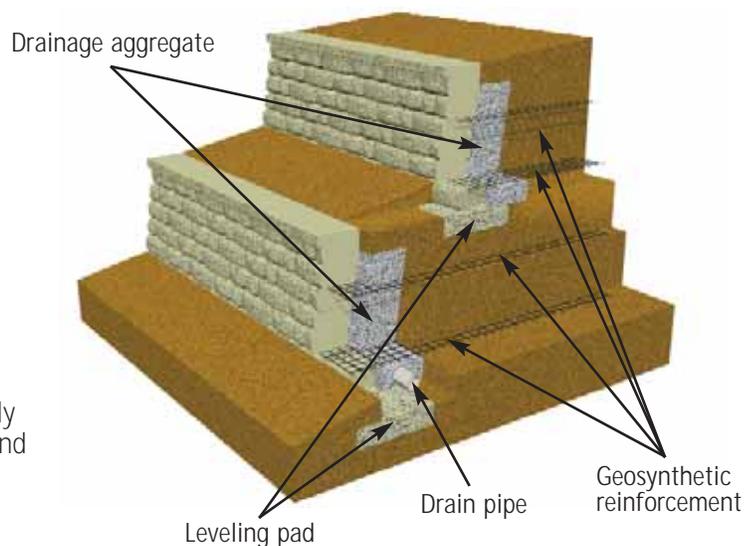
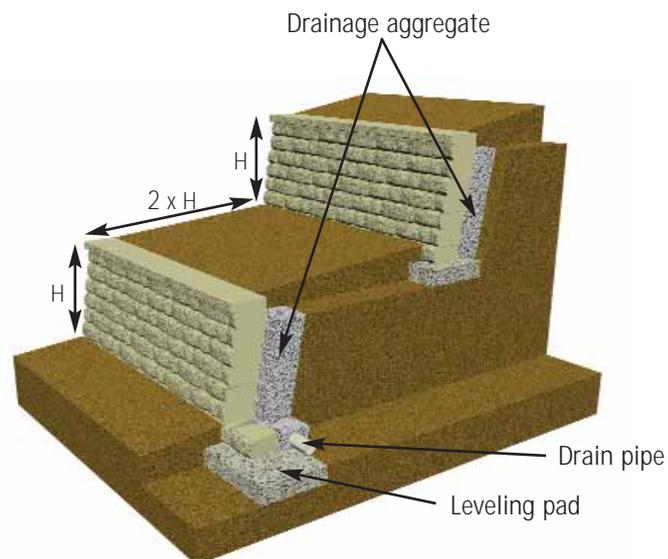
For each wall to be independent of others, it must be built using a 2:1 ratio — the upper wall must be built a distance away from the lower wall of at least twice the height of the lower wall. In addition, the upper wall must also be equal to or less than the height of the lower wall. Exceptions to this general rule include weak soil conditions or where slopes exist above, below or between wall locations. For example, if the lower terrace is 4 feet tall, the distance between the terraces must be at least 8 feet and the upper wall must not be higher than 4 feet.

Drainage is vital to maintaining stable, long-lasting terraced walls. Drain tile must be installed so that the water is directed around or under the lower wall (never place the drain tile outlet for the upper wall above or behind the lower wall).

For more detailed information about drainage, see Daylighting and Drainage Swales on page 28.

DEPENDENT TERRACED WALLS

When the distance between the lower and upper walls is less than twice the height of the lower wall, the walls become structurally dependent on each other. In this situation, it is important to take global stability into account, incorporating additional reinforcement — and longer layers — into the wall plan. In addition, structurally dependent walls require even more excavation, backfill and time. So plan ahead. Be sure to check the wall plan for specific requirements. For structurally dependent walls, consult with a qualified engineer.



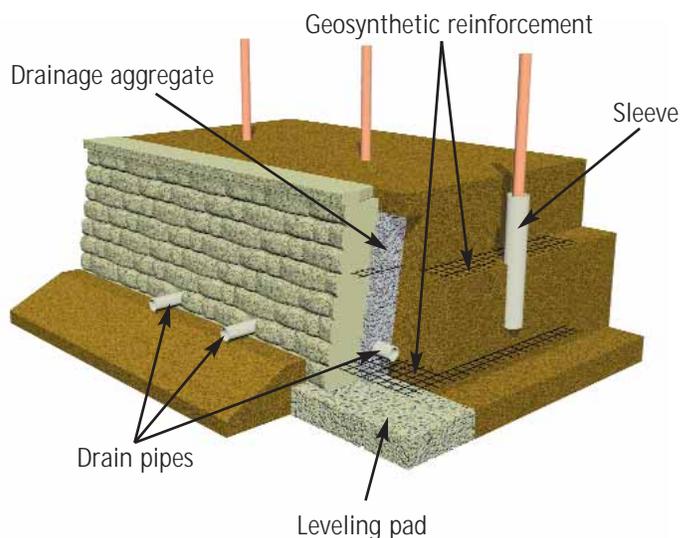
FENCES

Know the dimensions of the fence to determine the placement of the sleeves. Provide at least 1 inch clearance between the inside of the sleeve and the outside of the post, and allow for mortar and grout. Install the sleeves according to the wall plan during the construction of the wall.

If the fence is at least 3 feet behind the wall, generally no additional reinforcement is required. If the fence is installed within 3 feet, there may be some load transferred to the wall from wind, snow or pedestrians. Additional reinforcement around the fence sleeves may be needed.

Grout the fence post into the sleeve after the wall is built.

Tip: Visit www.fencesleeve.com for information about sleeves.



WATER APPLICATIONS

BASE COURSE

Place a filter fabric with extra length in front of the wall.

Install leveling pad and the base course of block, including drain tile and drainage aggregate. Wrap the extended filter fabric up along the face of the base course. Place soil fill in front of the wall and compact. Install another section of filter fabric in front of the wall to protect against erosion. Cover the fabric with a minimum of 3 inches of sand. Install larger stones such as riprap to hold it in place.

NEXT COURSE

Continue constructing the wall. Drainage is vital. To prevent clogging of the drainage aggregate and drain tile by fine-grained soils, a geosynthetic filter fabric is installed to separate the drainage aggregate from the reinforced soils.

ADDITIONAL COURSES

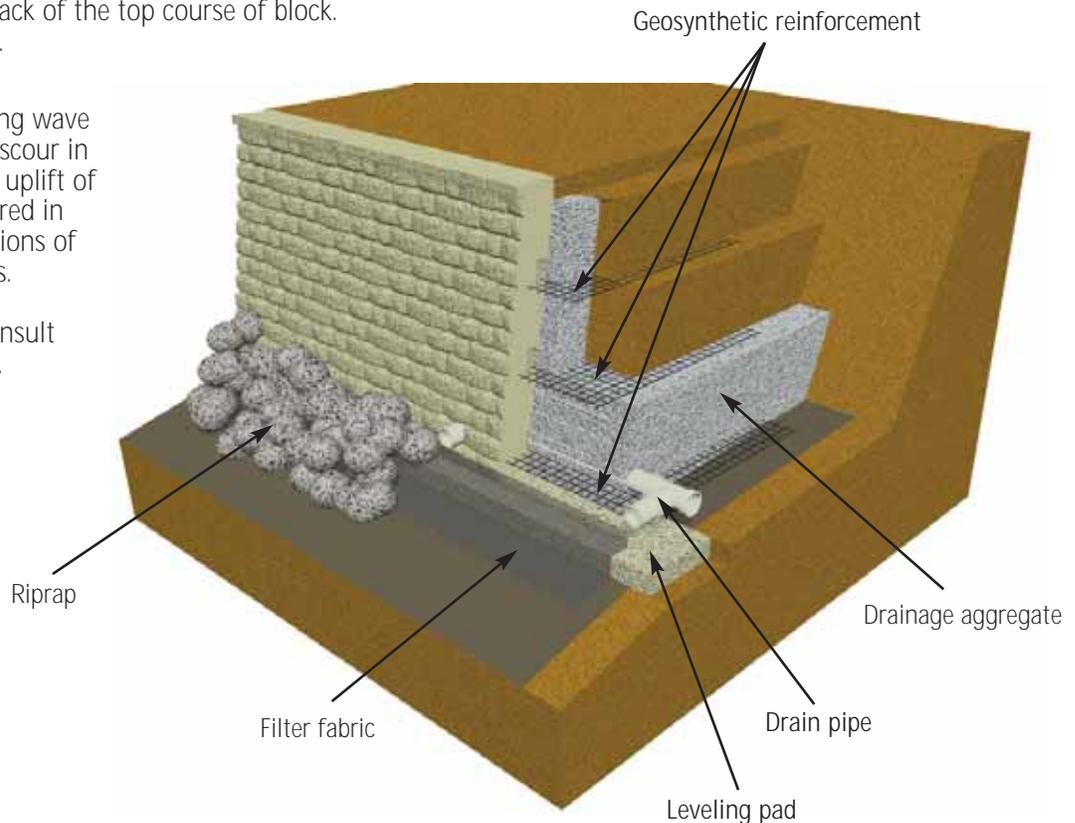
Continue these steps until the wall is complete. The last section of filter fabric should cover the drainage aggregate and run up against the back of the top course of block. Add fill soil and compact.

Numerous issues, including wave or ice impact, erosion or scour in front of the wall, and ice uplift of the wall must be considered in the use of water applications of segmental retaining walls.

For more information, consult with a qualified engineer.



Water applications are a great way to get more use from a property.



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JUMPER UNIT INSTALLATION

Install jumper units on top of an 18-inch-wide Highland Stone® unit.

Set the jumper unit approximately 1 inch back from the face of the 18-inch-wide block on the lower course.

Apply a concrete adhesive to secure the jumper unit.

Place an 18-inch-wide Highland Stone® unit on top of the jumper unit.

A JUMPER UNIT ESTIMATING

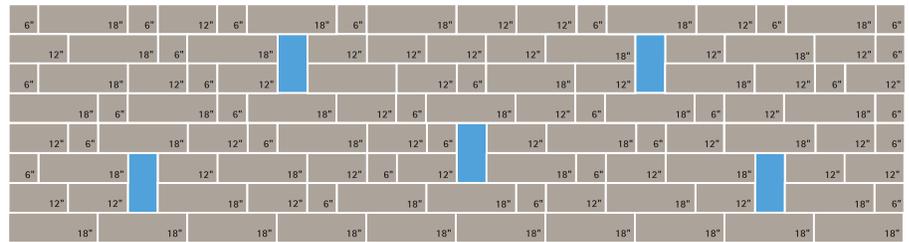
Circle the desired density of jumper units in the wall.

Every 3 square feet (SF) Every 6 SF Every 9 SF Every 12 SF

B SF of wall (without jumper units or base course) ÷
 $\frac{\quad}{3 \quad 6 \quad 9 \quad 12}$ jumper units per SF = # jumper units

PLACEMENT

There is no required pattern for the Highland Stone jumper unit. You can achieve different looks by increasing or decreasing the number of jumper units. At right is a helpful pattern.



Jumper unit every 12 square feet.



Jumper units break up the horizontal lines in this Highland Stone® installation. Use the estimating formula on the left to determine how many units are needed in a project.

INSTALLATION OF HIGHLAND STONE® WITH GEOSYNTHETIC REINFORCEMENT

USING HIGHLAND STONE® 6-INCH BLOCKS

Check the wall construction plan for which courses will need reinforcement.

The first layer of geogrid should be placed at ground level between base course and first exposed wall course.

Clean any debris off the top layer of blocks. Measure and cut the reinforcement to the design length in the plan. The reinforcement has a design strength direction, which must be laid perpendicular to the wall.

Place the front edge of the reinforcement on the block, 2 inches from the face of the block.

Install the next course of block to secure the reinforcement in place.

When a jumper unit intercepts the reinforcement, cut the reinforcement and position it around the jumper unit. See *Diagram 1*.

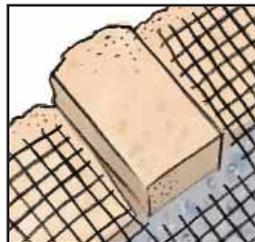


Diagram 1

USING HIGHLAND STONE® 3-INCH AND 6-INCH BLOCK COMBINATION

Follow the instructions for Highland Stone 6-inch block at left for the first layer of geogrid.

If walls are constructed using a random pattern, check the appropriate Geosynthetic Reinforcement Estimating Charts on pages 39 through 41 to help estimate the number of grid layers needed. The charts are for estimating purposes and should not be used for construction. Consult with a qualified engineer to design walls.

Cut around blocks extending into the next-higher course. See *Diagram 1*. To ensure reinforcement integrity, place grid on the horizontal plane that requires cutting around as few blocks as possible.

For specific information on reinforcement, refer to the *Geosynthetic Reinforcement Estimating Charts* on pages 39 to 41.