

ANCHOR DIAMOND Group

STERLING™ WALL SYSTEM INSTALLATION GUIDE



ANCHOR
DIAMOND™



STERLING™ WALL SYSTEMS

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HOW TO USE THIS GUIDE

This guide is designed to provide you with ideas as well as information on product use and installation procedures. While this guide provides general guidelines, installation contractors should refer to construction drawings for final specifications.

BEFORE YOU BEGIN

Advance planning and careful layout at the job site help ensure a successful wall project.

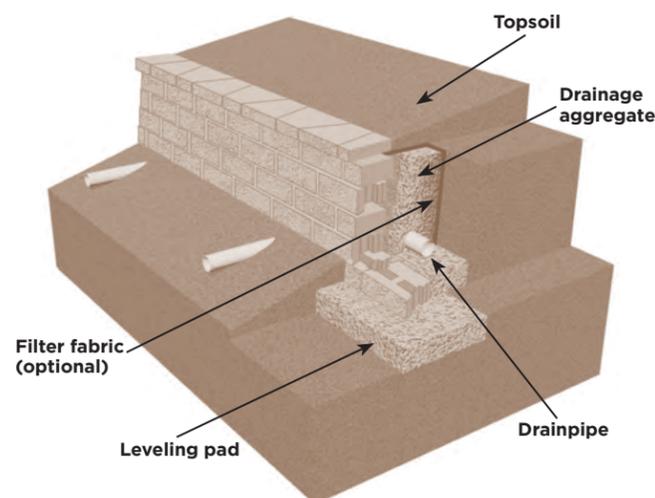
- Consult a professional engineer to design walls over 4 feet high, and have compaction tested by a qualified geotechnical engineer.
- Review the site plan to confirm lot lines, wall location, length and elevations.
- Confirm the location of underground utilities.
- Seek all necessary building permits.
- Prepare a drawing of the site with the wall location, lengths and elevations.
- Check the block delivered to ensure it is the correct color.
- Be sure to use the right tools. Hand tools include a shovel, 4-foot level, dead-blow hammer, 2- or 3-pound hammer, chisel, hand tamper, hydraulic splitter and string line. Power tools include a circular saw with a masonry blade and a compactor.
- Be sure to use an exterior grade concrete adhesive to glue units in place where noted.
- Always wear protective eyewear.

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

RETAINING WALL BASICS

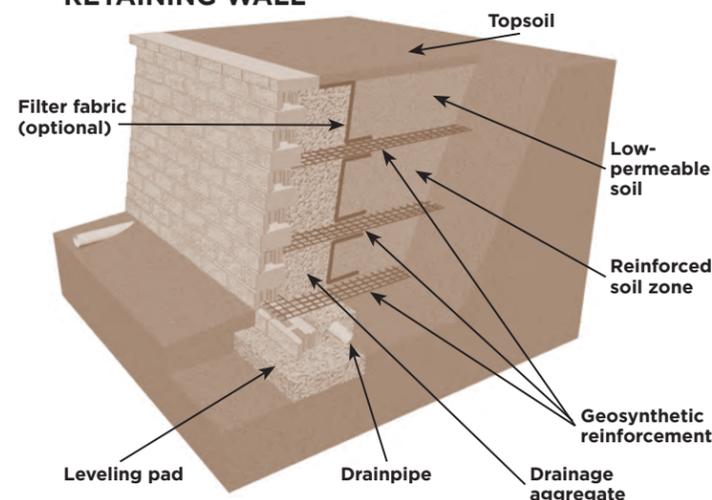
Segmental retaining walls typically fall into one of three categories.

GRAVITY RETAINING WALL



The first category - a gravity wall - is a retaining wall that does not use soil reinforcement. A gravity wall has height limitations specific to each product. An advantage of this type of retaining wall is that it requires a smaller work area behind the wall. A gravity wall relies on the weight and setback of the block to resist the soil forces being exerted on the wall.

GEOSYNTHETIC-REINFORCED RETAINING WALL

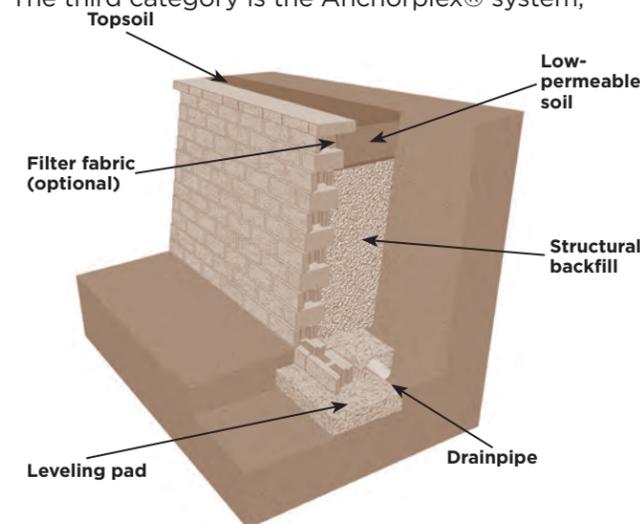


The second category is a geosynthetic-reinforced wall, which needs to be designed by a qualified engineer. There are (theoretically) no height

limitations with reinforced retaining walls, and they are used in larger applications. They require more work area behind the structure. The block of soil is stabilized by introducing reinforcement layers into the soil mass behind the facing units. The larger the stabilized soil mass, the more soil can be retained or held back. The geosynthetic reinforcement in the soil extends past the theoretical failure plane and serves to create a large, rectangular mass of block and soil, restraining the retained soil.

ANCHORPLEX® SYSTEM

The third category is the Anchorplex® system,

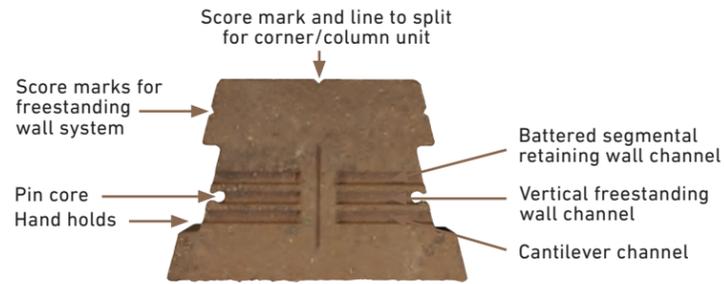


which offers a unique, nonconventional solution to problematic wall construction sites. It is a retaining wall built with Ancho products and self-compacting structural backfill specified by Anchor Wall Systems, and backed by engineering support tools developed by Anchor.

Use of the Anchorplex system completely eliminates the need for the construction of a mechanically stabilized earth zone behind the wall facing and requires substantially less excavation than is usually necessary in grid-reinforced wall construction.

For more information about the Anchorplex system, go to anchorwall.com.

INSTALLATION INSTRUCTION OVERVIEW FOR SEGMENTAL RETAINING WALL



STAKE OUT THE WALL

- A surveyor shall locate the proposed base of wall location. Verify the wall location 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 (if required).
- The trench for the leveling pad should be at least 2 feet wide and a minimum of 1 foot deep, enough to bury the first course below grade, plus 6 inches for the leveling pad. See *diagram 1*.

LEVELING PAD

- An aggregate leveling pad is made of compactible base material of ¾-inch minus with fines.
- If the planned grade along the wall front will change elevation, the leveling pad may be stepped up by the height of the block to match the grade change. Always start at the lowest level and work upward.
- Compact the 6 inch (minimum thickness) aggregate leveling pad, using ordinary compaction methods, to provide a level hard surface on which to place the base course. Mist lightly with water before compaction, if needed. See *Diagram 2*.
- For walls with step-up in the base course, extra care should be given to properly compact the aggregate leveling pad at the step-up locations.

BASE COURSE

- This is the most important step in the installation process.
- Begin laying block at the lowest elevation of the wall, whenever possible.
- Place first block and level, front to back and side to side; lay subsequent blocks in the same manner.
- Use string along back edge of the block to check for proper alignment. See *Diagram 3*.
- Place the blocks side by side, flush against each other, and make sure the blocks are in full contact with the leveling pad. Level front to back and side to side. See *Diagram 4*.
- If the wall is on an incline, don't slope the blocks. Step them up so they remain consistently level. See page 7 for more information about stepping up the base.
- Place soil in front of the base course and compact. Base course should be buried. Continue to fill and compact after each course is laid.
- Clean any debris off the top of the blocks.



Diagram 1—Excavation



Diagram 2—Leveling Pad



Diagram 3—Base Course and String Line



Diagram 4—level each unit

INSTALLATION INSTRUCTION OVERVIEW FOR SEGMENTAL RETAINING WALL



CONSTRUCTION OF NEXT COURSE AND PIN PLACEMENT

- For a battered wall, place the next course of blocks and align the pin hole with the battered channel of the block on the course below. See *Diagram 5*.
- For a cantilever wall, place the next course of blocks and align with the cantilever channel of the block on the below course. See *Diagram 6*.
- Insert pins into the pin core of the block, allowing the pin to drop down into the desired channel of the block below.
- Maintain running bond with the course below.
- Place 12 inches (minimum) of drainage aggregate behind the wall units and fill voids between the wall units. Place backfill soil and compact. Only lightweight hand operated compaction equipment is allowed within 3 feet from the back of the wall.
- Clean any debris off the top of the blocks before placement of the next course.
- On curves, use partial units to stay on bond if needed. A circular saw with a masonry blade is recommended for cutting partial units. Use safety glasses and other protective equipment when cutting.



Diagram 5—Pin Placement (Battered Channel)

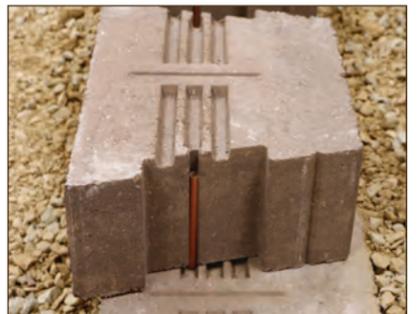


Diagram 6—Pin Placement (Cantilever Channel)

DRAINAGE DESIGN (PER DESIGN)

- Each project is unique. The grades on the site will determine at what level to install the drainpipe. Place the drainpipe (4-inch perforated piping) so water drains down and away from the wall into a storm drain, or daylight just above grade.
- Fill in the area behind the blocks with clean drainage aggregate, at least 1 foot from the back of the wall. You may need to place and backfill several courses to achieve the proper drainage level. See *Diagram 7*.
- The 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.



Diagram 7—Drain Pipe Placement

REINFORCED BACKFILL PLACEMENT AND COMPACTION (PER PLAN)

- Place reinforced backfill in 6 to 8 inch loose lifts and compact to the densities specified on the approved wall construction plans.
- Only hand operated compaction equipment is allowed within 3 feet from the back of the wall.
- If the compaction equipment is too small to achieve the required compaction, thinner lifts should be used.
- Install each subsequent course in a similar manner. Repeat procedure to the extent of the wall height. See *Diagram 8*.



Diagram 8—Backfill and Fill Voids

INSTALLATION INSTRUCTION OVERVIEW FOR SEGMENTAL RETAINING WALL

REINFORCEMENT PLACEMENT (PER PLAN)

- Refer to the approved wall construction plans for the reinforcement type, strength, and placement location. Measure and cut the reinforcement to the lengths shown on the plans.
- Ensure the reinforced backfill is placed and compacted flush with the top of the units and is graded reasonably flat prior to reinforcement placement. Clean any debris off the top layer of blocks prior to reinforcement placement.
- The reinforcement has a primary strength direction, which must be laid perpendicular to the wall face.
- Place the reinforcement within 1 inch of the front of the units. See *Diagram 9*.
- Apply the next course of blocks to secure the reinforcement in place. Insert pins through the pin core. Pull the reinforcement hand taut and place staples, stakes, or fill at the back of the reinforcement to maintain tension during placement of drainage aggregate and reinforced backfill.
- Place a minimum of 6 inches of reinforced backfill prior to operating equipment above the reinforcement. Avoid sudden braking or turning on fill placed over the reinforcement.



Diagram 9—Reinforcement

CAPPING A WALL

- See page 7 for more information about capping a wall.

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 and seed or plant to stabilize the surface.
- Consult the wall design engineer if water may be directed behind the wall. If needed, create a swale to divert water away from the wall. 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 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 success of your retaining wall system. These instructions are meant as general guidelines. Site-specific conditions may warrant additional installation requirements.

CAPPING A WALL & STEPPING UP THE BASE

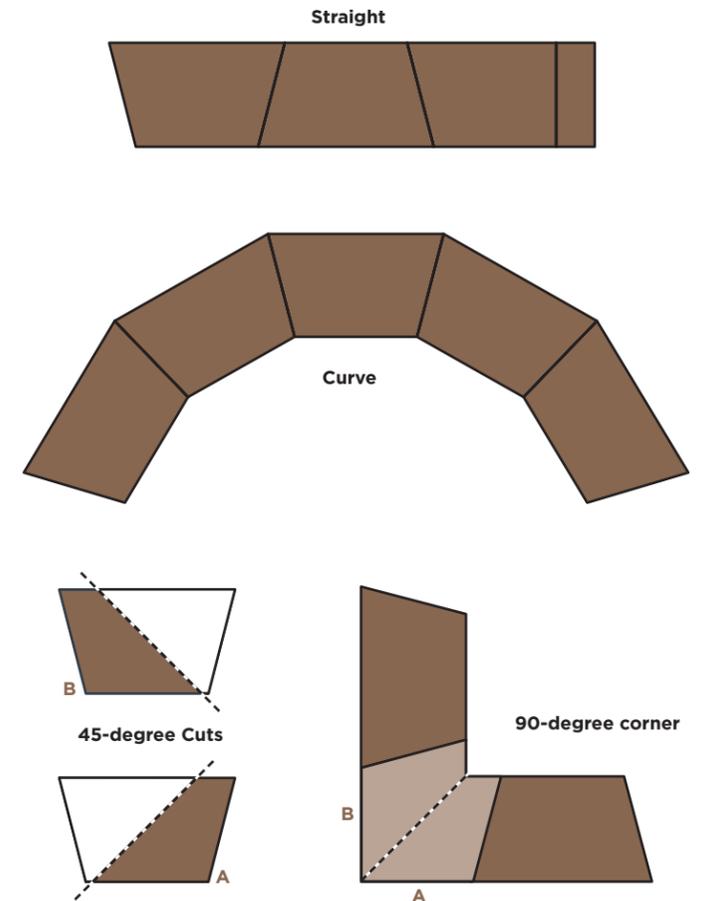
STRAIGHT WALL

The XL™ cap must be laid alternately, short and long faces for a straight line. Always start capping from the lowest elevation. Once caps are aligned, caps should be glued in place using a concrete adhesive.

CURVES

Lay out the cap units side by side with the same face facing out (long faces for outside curves; short face to inside curves). If there's a need to adjust for project's radius, make cuts at least every other cap as needed for the most pleasing aesthetic.

- Minimum radius with XL™ cap: 2 feet 2 inches



90-DEGREE CORNERS

Saw-cut two caps to achieve a 45-degree mitered corner.

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.

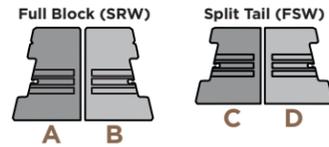


STEPS IN A 90-DEGREE WALL

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

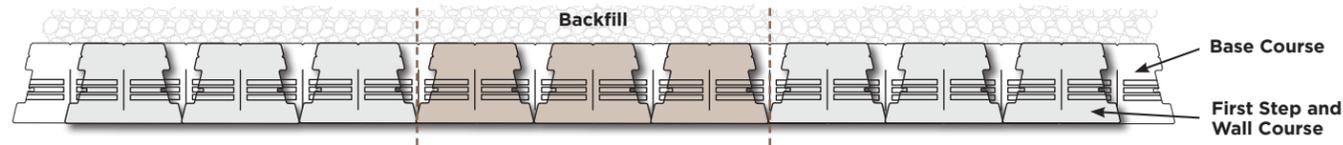
BASE COURSE

Thoroughly compact the leveling pad. Lay out the base course according to the wall design. It is very important to backfill and compact behind and along the sides of each course of units.



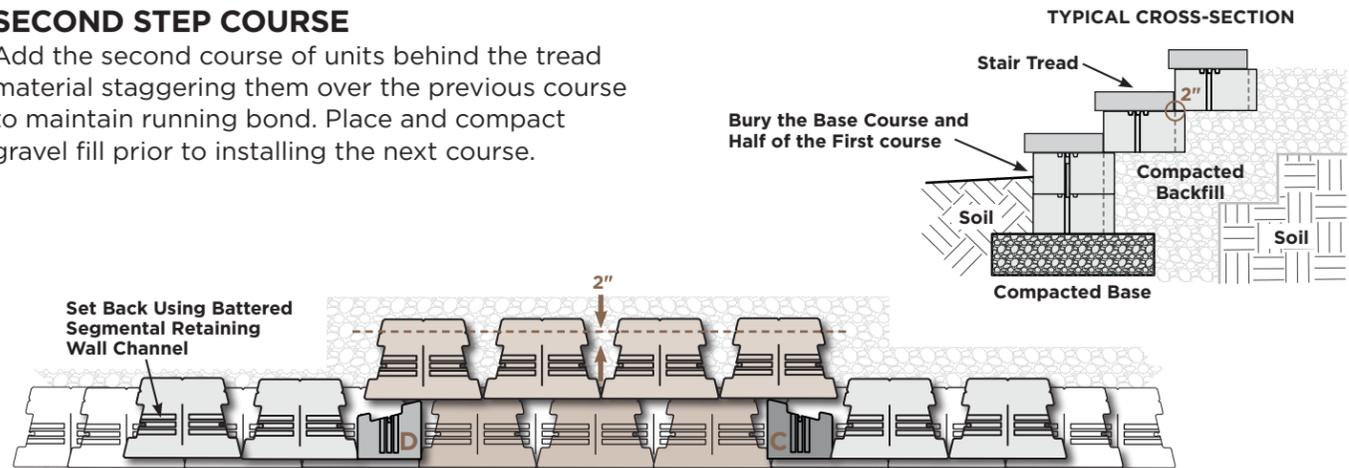
FIRST STEP AND WALL COURSE

Place the first course of units directly on top of the base course. Stagger them from the previous course, backfill and compact. Place the chosen stair tread material onto the first step and glue into place. Make sure to allow at least 2 inches for the second riser to rest on the first step. Wall caps make a good tread option.



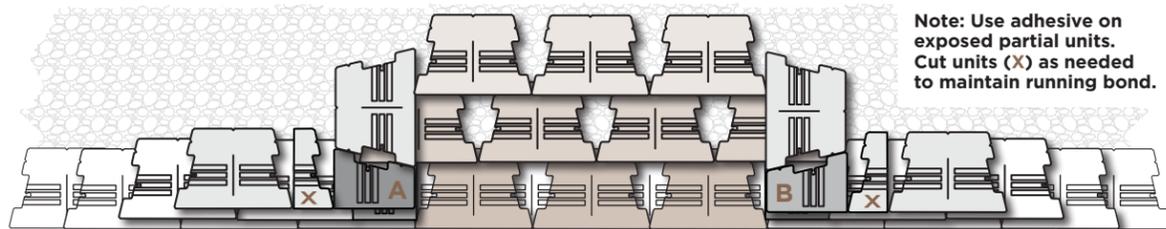
SECOND STEP COURSE

Add the second course of units behind the tread material staggering them over the previous course to maintain running bond. Place and compact gravel fill prior to installing the next course.



SECOND WALL COURSE

Build the second course of the wall. Corner units are used at the end of the stair treads tied into the wall and glued into place. See *building an outside 90-degree corner* on page 11.



ADDITIONAL COURSES

Build the additional courses in the same manner. Repeat wall and step courses until the wall is finished.

STEPS IN A CURVED WALL

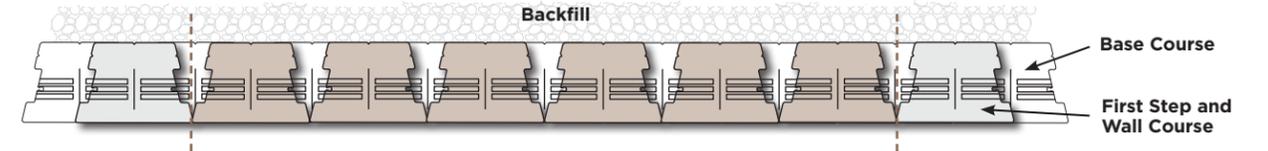


BASE COURSE

Thoroughly compact the leveling pad. Lay out the base course according to the wall design. It is very important to backfill and compact behind and along the sides of each course of units.

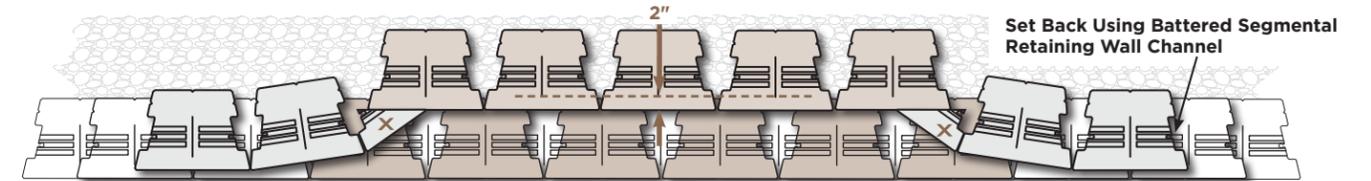
FIRST STEP AND WALL COURSE

Place the first course of units directly on top of the base course. Stagger them from the previous course, backfill and compact.



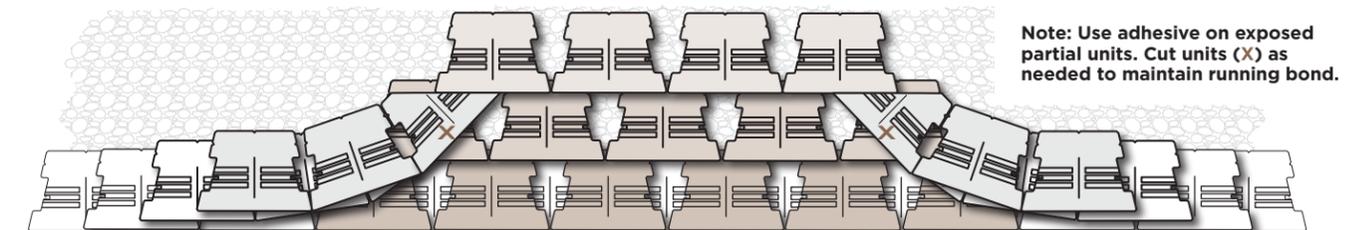
SECOND STEP COURSE

Start the second step course in the center of the step placing the unit staggered to the bond below. Place it 2" from the rear of the 1st row of the steps - level and glue into place. Continue to cover the entire length of the stairs.



SECOND WALL COURSE

Place a block near the second course of steps, maintaining running bond with the base course. Measure and cut a block to fit the space remaining between the unit used for the step tread and the next course of the wall. Place the unit in the wall, making sure that both vertical edges fit tightly against both the step tread and the wall. Angle the blocks flush with the face of the previous course and glue in place with a concrete adhesive. Pins may need to be left out to fit units in place near the stairs.



ADDITIONAL COURSES

Build the additional courses in the same manner. Repeat wall and step courses until the wall is finished.

OUTSIDE CURVES & INSIDE CURVES

CALCULATE THE RADIUS

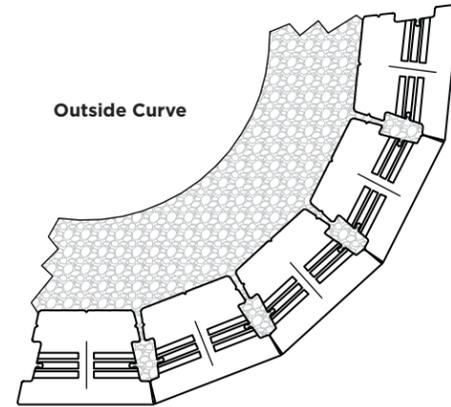
When building an outside curve, begin by calculating the radius of the top course. This will be the smallest radius in the wall and must not be less than the minimum outside radius for the system, 4 feet. To calculate the radius of the base course, multiply the number of courses by 1.5 inches and add that number to the radius of the top of the wall. This will be the radius of the base course.

BASE COURSE

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 curve and ensure level placement from side to side and front to back.

ADDITIONAL COURSES

On each course, the pin must be in contact with the appropriate channel of the block on the course 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. Once a block is cut to size, glue it in place with a concrete adhesive.



CALCULATE THE RADIUS

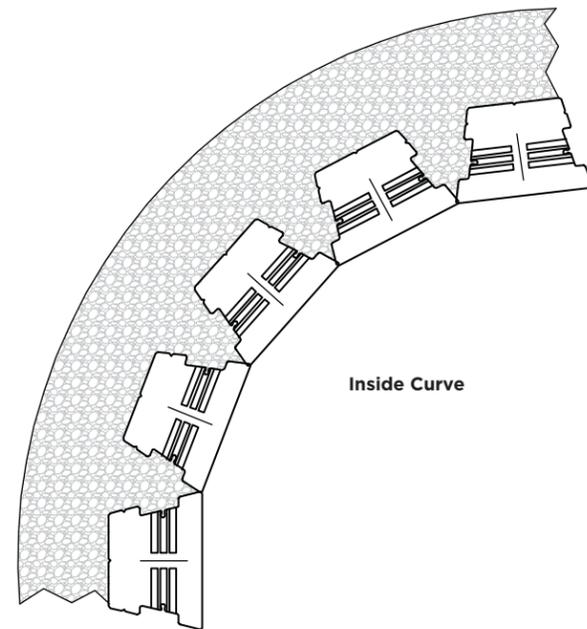
When building an inside curve, begin by calculating the radius of the top course. This will be the largest radius in the wall. To calculate the radius of the base course, multiply the number of courses by 1.5 inches and subtract that number from the radius of the top of the wall. This will be the radius of the base course and should not be less than the minimum inside radius, 6 feet.

BASE COURSE

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 curve and ensure level placement from side to side and front to back.

ADDITIONAL COURSES

On each course, the pin must be in contact with the appropriate channel of the block on the course 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. Once a block is cut to size, glue it in place with a concrete adhesive.



OUTSIDE 90-DEGREE CORNERS



BASE COURSE

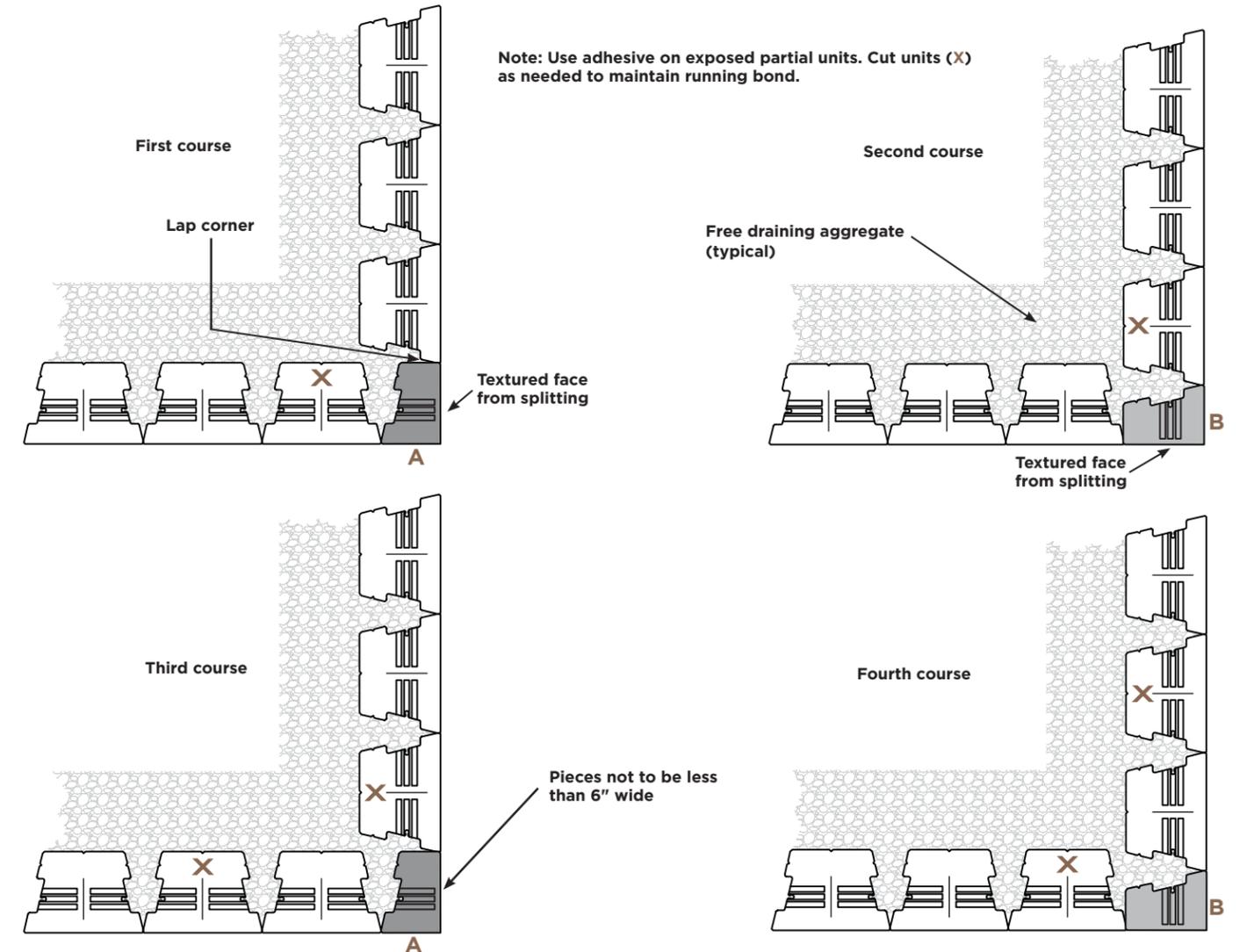
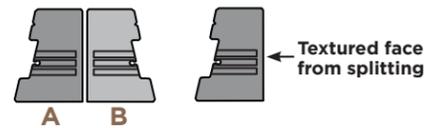
To build an outside 90° corner, begin by splitting a block in half. See *Diagram 10*. Place this block with both split faces outward at the corner. Then lay the rest of the base course working from the corner block out.

ADDITIONAL COURSES

Begin the second course with the other half of the split block. Alternate the corner block orientation with each course and always use a concrete adhesive to glue in place. Set in place the second and third blocks on either side of the corner block. Once the corner block is in position, glue it in place with a concrete adhesive.



Diagram 10—Split a full size block in half

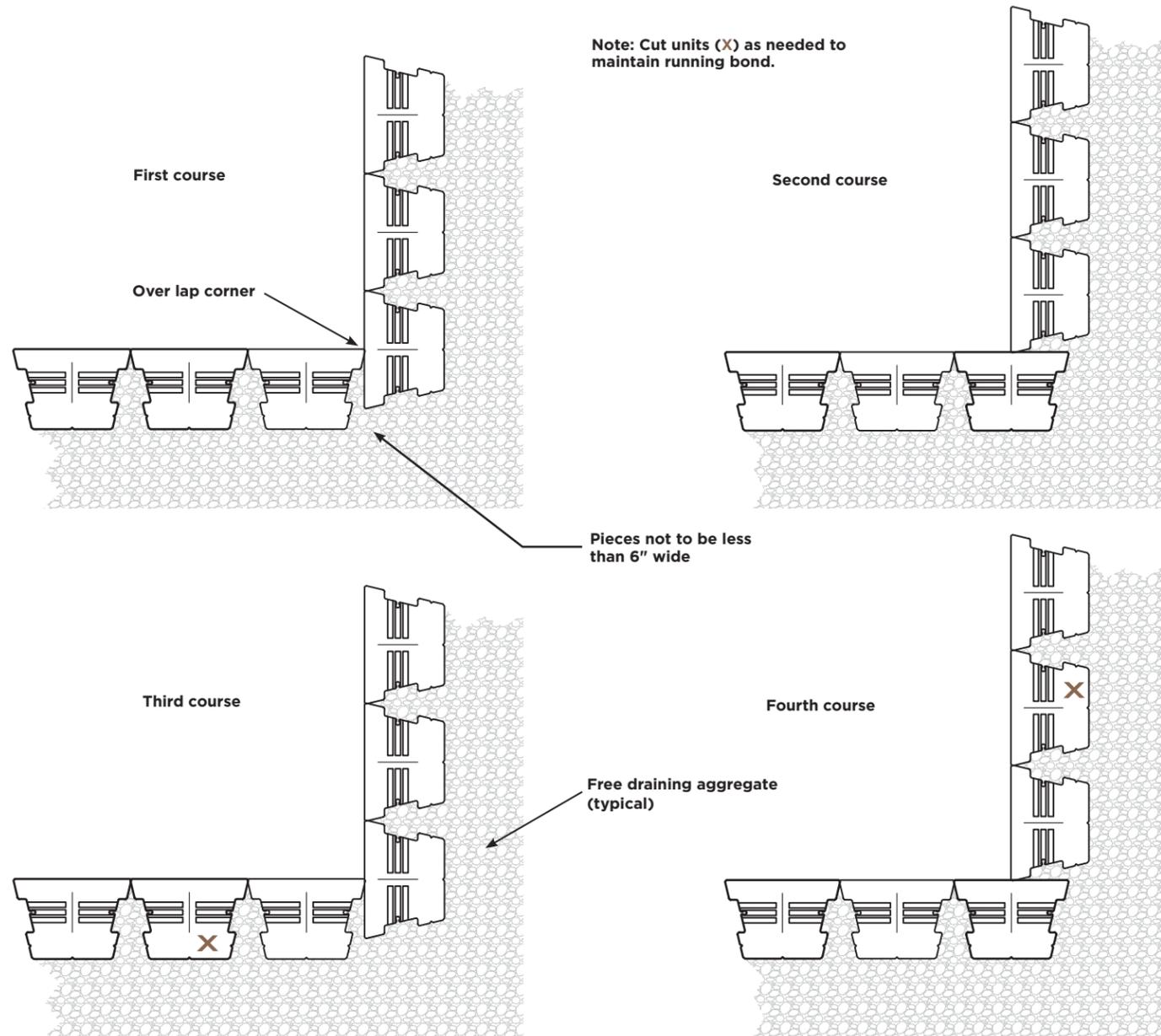


BASE COURSE

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.

ADDITIONAL COURSES

On the second course, place all blocks on bond along one side of the corner. Block placement in the corner should alternate direction with each succeeding course. Once the second course of one wall is established, begin the second course of the adjacent wall. Once the corner block is in position, glue it in place with a concrete adhesive.



SPLITTING UNITS FOR FREESTANDING WALLS

To create texture on both sides of the block for a freestanding wall, split 2-inches of the back of the block off, using the score marks as a guide. See Diagram 12.

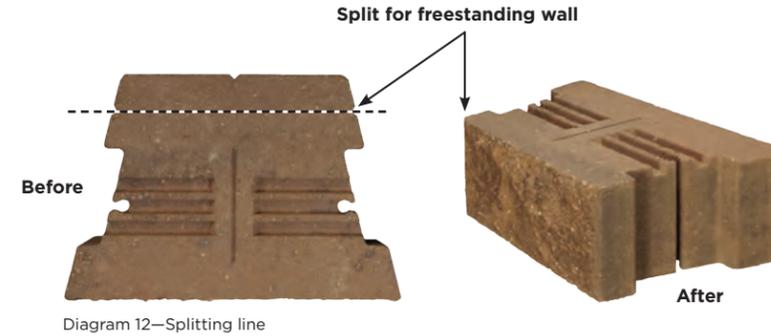


Diagram 13—Excavation

EXCAVATION

Excavate for the leveling pad. The trench should be 22" wide and 12" deep. See Diagram 13.



Diagram 14—Leveling Pad

LEVELING PAD

Create a leveling pad of compacted base material that extends a minimum of 6 inches in front of and 6 inches behind the wall units. This pad should be at least 6 inches deep after compaction. See Diagram 14.

BASE COURSE

Once the pad is compact and level, begin placing the units. For a straight wall, center the units on the pad and alternate the long and short sides. The ends of the units should be in contact. Level the blocks front to back and side to side. Lay subsequent blocks in the same manner. The base course must be buried below grade and should be included when calculating total wall height. See Diagram 15.



Diagram 15—Base Course

CONSTRUCTION OF THE NEXT COURSE AND PIN PLACEMENT

- Clean any debris off the top of the blocks
- Place the next course of blocks and align the pin core with the center channel of the block on the course below and maintain running bond. See Diagram 16.
- Insert pins through the pin cores
- Repeat this process to complete the wall. Glue top two courses and caps in place with a concrete adhesive.



Diagram 16—Pin Placement

STRUCTURAL DESIGN ELEMENTS

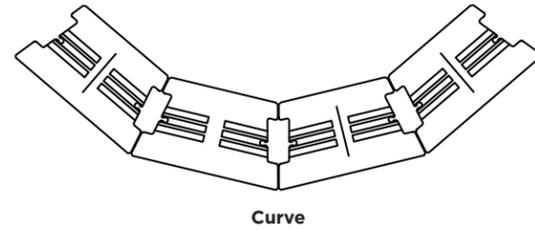
Structural design elements must be used if a freestanding wall is more than 10 feet long. Structural design elements include

- Curves
- 90-Degree Corners
- Columns

CURVES, 90-DEGREE CORNER & ENDING A WALL WITHOUT A COLUMN

CURVES

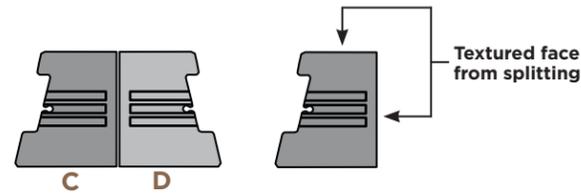
Add stability and natural flow to walls with curves. While units can be turned somewhat, it may be necessary to make cuts with a concrete saw or splitter. The approximate minimum radius the system can turn, is 4 feet measured to the outside face of the wall.



Curve

90-DEGREE CORNERS

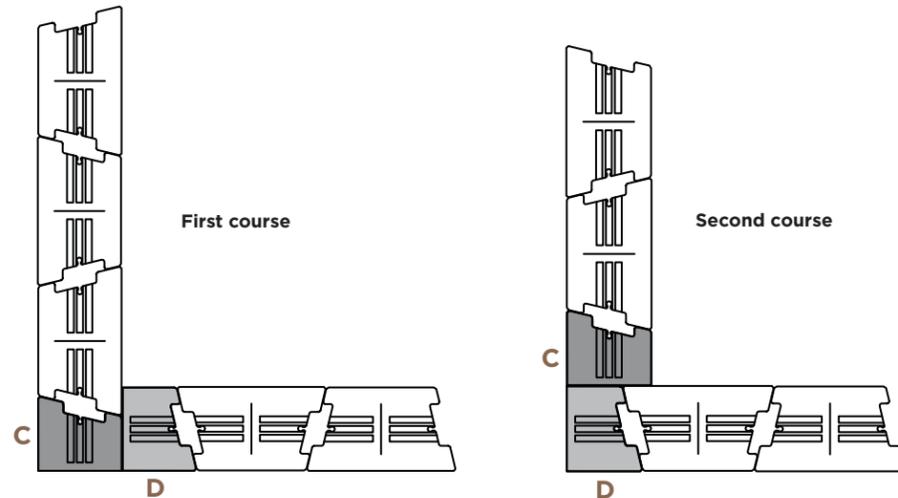
To create a 90° corner in a straight wall, split the block down the middle using the split line as a guide. See Diagram 17. Alternate the position of the corner units on each course until the desired height is reached. Glue all corner units with a concrete adhesive.



Textured face from splitting



Diagram 17—Split block in half

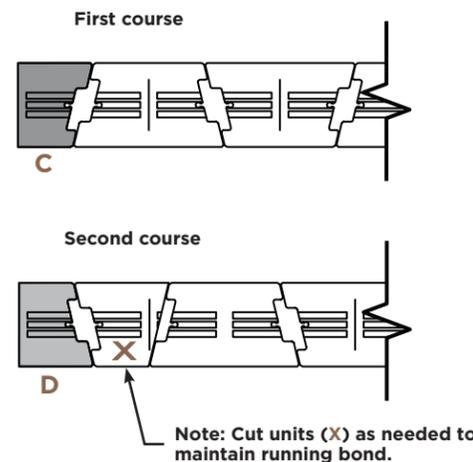


ENDING A WALL WITHOUT A COLUMN

To end a wall without a column, split the unit down the center, using the split line as a guide. Alternate courses as shown until the desired height of wall is reached. Cut wall units to maintain running bond. Glue all corner pieces with a concrete adhesive. See Diagram 18.



Diagram 18—Wall End Example

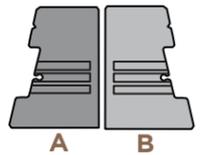


ABOUT THE ANCHORPLEX™ SYSTEM

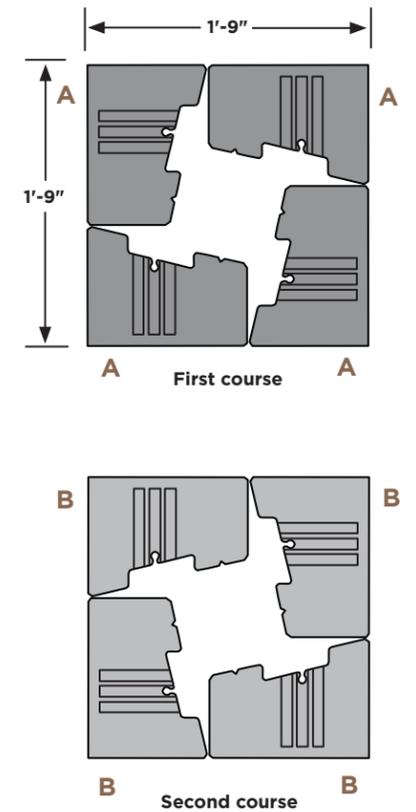
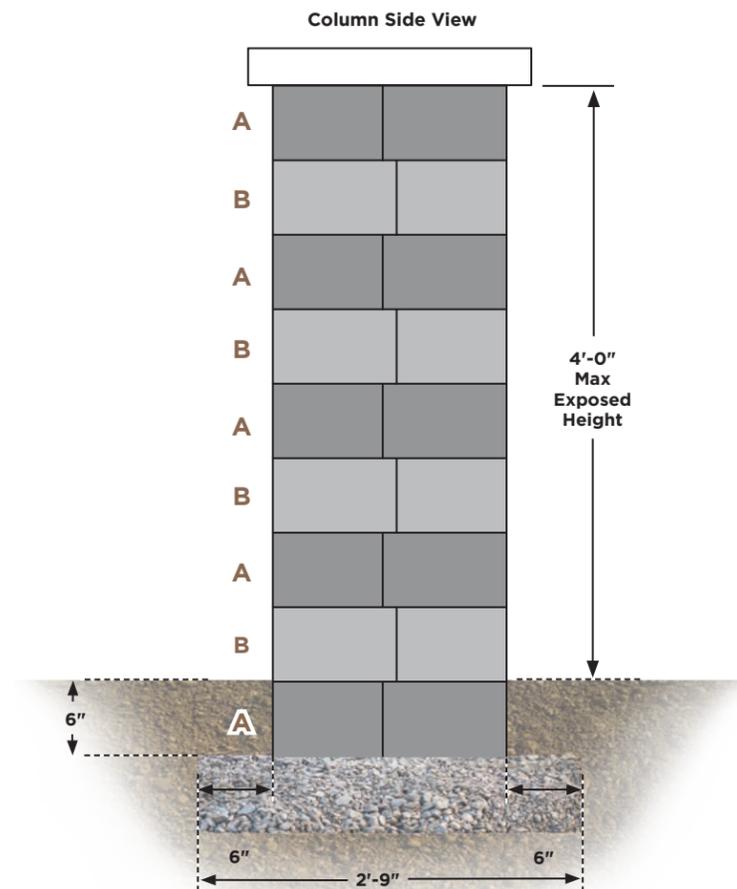
COLUMNS

To create a column unit, split the unit down the center, using the split line as a guide.

The column leveling pad should extend 6 inches beyond each column edge and be at least 6 inches deep after compaction. To build a column, place the first column unit and level front to back and side to side. Place the second perpendicular to the first. Use a square as a guide. Place the third and fourth units in a similar fashion. Make sure all units are level with each other.



Alternate the position of the column units on each course and continue placing units in this manner. Glue every course. Continue building until you've reached the desired height. Cap the column with a cap unit of your choice and glue in place.





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