

# ANCHOR DIAMOND Group

*INSTALLATION GUIDE*



**FEATURING DIAMOND PRO® PS RETAINING WALL SYSTEM**

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## INTRODUCTION

This manual is provided as guidance for the construction and quality control of Anchor Diamond Pro® PS retaining wall installations for AASHTO and DOT projects. This manual is intended to be a guide only. For more information regarding construction of MSE walls on government projects refer to the AASHTO code and subsequent Interim specifications and the FHWA NHI – 10 – 024/025 documents. This manual is to be used by the contractor, engineer of record and quality control inspector.

## HOW TO USE THIS GUIDE

This guide is designed to provide you with ideas as well as information on product use and installation procedures. Because actual project conditions vary, final wall design, including the incorporation of geosynthetic reinforcement, must be performed by a qualified engineer. While this guide provides general guidelines, installation contractors should refer to construction drawings provided by a qualified local engineer for final specifications.



Additional installation information is available online at [anchordiamond.com](http://anchordiamond.com). Information includes basic wall construction as well as other applications, including:

- 90° corners
- guardrails
- curves
- fences
- cap placement

## BEFORE YOU BEGIN

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

- Review the site plan to confirm lot lines, wall location, length and elevations.
- Understand on-site soils. Ideal soils are sand and gravel. For walls built in clay or poor soils, work with a local engineer to confirm the wall design and the required soil reinforcement. Black or organic soils should not be used as backfill.
- Confirm the location of underground utilities.
- Seek all necessary building permits.
- Prepare a drawing of the site with the wall location, lengths and elevations.
- Plan drainage to prevent erosion or buildup of water behind the wall. Consider where the water will drain through the wall, where downspouts will expel water and whether there's an underground sprinkler. For walls greater than 3 feet in height, a perforated drainpipe is recommended at the base of the aggregate to quickly remove large amounts of water. See page 19 for more information on water applications.
- Check the block delivered to ensure it is the correct color. Check the geosynthetic reinforcement to confirm that it's the strength and weight specified in the engineering plans.
- 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.
- Always wear protective eyewear.

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

# INSTALLATION INSTRUCTION OVERVIEW FOR THE DIAMOND PRO® PS RETAINING WALL SYSTEM



## STAKE OUT THE WALL

- A surveyor shall locate the proposed base of wall location by offset staking. Verify the wall location with the project supervisor.

## EXCAVATION

- Excavate for the leveling pad to the lines and grades shown on the approved plans. Excavate enough soil behind the wall for the reinforcement material. In "cut" areas, the trench for the leveling pad should be a minimum width of 24" (600mm) and 18" (450 mm) deep. See Diagram 1.

## LEVELING PAD

- Place leveling pad materials as shown on the drawings upon undisturbed soils, or foundation soils prepared in accordance with the specifications.
- Foundation soil and any cut banks shall be examined by the project geotechnical engineer or technician to ensure that the actual retained and foundation soil strengths meet or exceeds the strength required, as shown on the construction drawings.
- Examine cut banks for perched water or other water seepage. Perched or other water seepage from cut banks behind the reinforced soil zone, not anticipated in the original design, may require additional drainage features in the constructed wall. Notify the wall design engineer of record for clarification.
- A concrete leveling pad shall be unreinforced and have a minimum compressive strength of 3,000 psi (28 Mpa). The concrete leveling pad should be allowed to cure for a minimum of 12 hours prior to placement of the first course of modular units. The leveling pad shall be 6 inches (150mm) thick and 24 inches (600mm) wide, centered on the modular units. Ensure the top of the leveling pad is at the proper elevation.
- A geogrid reinforced, geotextile wrapped compacted aggregate leveling pad may be used in lieu of a unreinforced concrete leveling pad. The leveling pad shall be a least 24 inches wide and 8 inches thick after compacting. Compact the aggregate leveling pad, using ordinary compaction methods, to the appropriate lines and grades. Ensure the top of the leveling pad is at the proper elevation. See Diagram 2.

## FOUNDATION COURSE

- Placing the foundation units is one of the most important steps in the construction process, both structurally and aesthetically.
- Use the right tools; a shovel, a level and a rubber mallet.
- Begin laying the foundation units at the lowest elevation of the wall.
- Place first course of Diamond Pro PS units on the prepared leveling pad. Place the units side by side. Make sure the units are in full contact with the leveling pad.
- Level each unit front to back and side to side with a torpedo level. Check adjacent units for level with a 4 ft (1.2m) level.
- When the base of wall grade steps up or down, shimming of the foundation unit may become necessary. When this occurs, a thin layer of sand is on top of the concrete leveling pad to reestablish foundation grade. A depth of no more than 1 inch of sand is allowed.
- When each block is level, check for alignment along the back of the units with a string line. See Diagram 3.
- Once the foundation course is installed, leveled and aligned, place in-fill soil in front and behind the base course. Pay careful attention to the type of fill required behind the foundation units. Reinforced zone fill or drainage aggregate may be required, refer to the project specific plans for specific details regarding material requirements. Fill all voids in and between the blocks with drainage aggregate. Carefully compact the fill placed in front and behind the base units with lightweight hand operated compaction equipment. Recheck the base unit for level and alignment. See Diagram 4.



Diagram 1—Excavation



Diagram 2—Leveling Pad

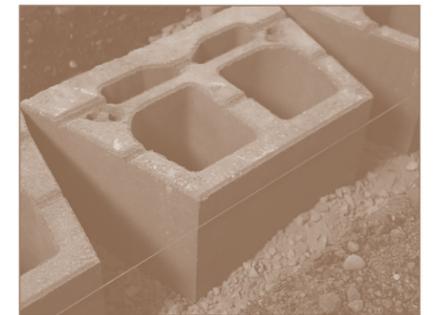


Diagram 3—Base Course and String Line



Diagram 4—Level Each Course

# INSTALLATION INSTRUCTION OVERVIEW FOR THE DIAMOND PRO® PS RETAINING WALL SYSTEM



## SUBSEQUENT LIFT CONSTRUCTION AND DRAINAGE DESIGN

- Free draining soils shall have at least 30 to 40% of the soil particles retained on the #40 sieve (425µm) and not more than 5% of the soil particles passing the #200 (75µm) sieve.
- Prior to placing the next course of units, clean any debris off the top of the existing course.
- Place two pins per block in either the forward or rear pin holes depending on the design set-back of the wall. See Diagram 5
- Place the next course of units over the units placed for the base and pull the units forward to engage the fiberglass pins.
- A maximum gap of 1/16 inch (1.6 mm) is allowed between units unless larger aggregates are used for core-fill.
- Each project is unique. The site grades will determine what elevation to install the drain pipe. Refer to the construction plans and specifications for details regarding the drain pipe type, location and drainage details.
- Place the drain pipe 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.
- Drain pipe outlets shall be placed at each low point of the wall and at intervals along the wall per the contract documents but shall not be more than 50 ft on center. See Diagram 6
- Depending on site and water conditions, a blanket drain below the reinforced soils or a chimney drain behind the reinforced soils may be necessary. Generally, it is necessary to encase chimney drains and cover blanket drains with filter fabric. This is dependent on the compatibility of the non-free draining reinforced zone soils and the drainage aggregate.
- Place a minimum of 12 inches (300mm) of drainage aggregate behind the units and around the drain pipe. Fill all voids in and between blocks with drainage aggregate. See Diagram 7
- Place a filter fabric between the drainage aggregate and the reinforced fill to prevent migration of fine-grained soils into the drainage aggregate.
- Place the next course of units. Check for alignment with a string line on each course. Align the units as necessary to maintain straight wall lines or uniform curves.
- Check the units for vertical alignment with a level. Maintain vertical alignment and horizontal setback with shims as necessary. Strips of reinforcement or asphalt shingles should be used for shim material.
- Place the reinforced fill in 6 to 8 inch (150 to 200 mm) loose lifts where lighter weight hand operated compaction equipment is used and not exceeding 12 inch (300mm) loose lifts where heavy drum type self-propelled compaction equipment is used, and compact to the specified densities.
- Heavy self-propelled compaction equipment should not be used within 3 feet (0.9 m) of the back of the modular units. Compact the backfill before the next course of units is placed. Check the units for level and alignment after compaction of the reinforced soil fill.
- Construction tolerances – Horizontal alignment of the wall face shall not vary by more than 3/4-inch when measured along 10-foot of wall length. Overall vertical tolerance (plumbness) of the wall shall not exceed 1/2-inch per 10-ft of wall height from the final wall batter. Negative (outward leaning) batter is not acceptable.

## REINFORCED SOIL PLACEMENT AND COMPACTION

- Place the reinforced soil fill in loose lifts such that the maximum lift thickness after compaction does not exceed 6 inches. Compact to the specified densities.
- Only hand operated compaction equipment is allowed within 3 feet (1 m) of the back of the units.
- All fill placed in the reinforced zone must be compacted to a minimum of 95 percent of the soil's standard Proctor dry density (ASTM D 698) or as recommended by the project geotechnical engineer. Walls in excess of 15 to 20 feet (5 to 6 m) will require more stringent compaction and moisture control criteria. Refer to the construction specifications for specific details regarding compaction.



Diagram 5—Pin Placement



Diagram 6—Drain Pipe Placement



Diagram 7—Backfill and Fill Cores

# INSTALLATION INSTRUCTION OVERVIEW FOR THE DIAMOND PRO® PS RETAINING WALL SYSTEM

- The moisture content of the fill during placement and compaction operations shall meet the requirements of the project specifications.
- Compaction tests shall be taken in the reinforced soil zone. Frequency shall meet the requirements of the project specifications.
- Prior to periods of construction inactivity, the reinforced backfill should be graded to drain away from the wall face. Trenches or berms may be needed to control surface drainage in the vicinity of the retained cut slope, reinforced backfill or wall toe area.
- Backfill must be placed flush with the top of the cap.

## REINFORCEMENT PLACEMENT

- Refer to the wall construction plans for the reinforcement type, strength and placement location. Measure and cut the reinforcement to the lengths shown on the wall construction plans.
- Ensure the backfill is placed flush with the top of the units at each reinforcement elevation, prior to reinforcement placement.
- Clean any debris off the top of the units and from prior to reinforcement placement.
- Ensure the backfill is graded reasonably flat prior to reinforcement placement.
- The reinforcement has a primary strength direction, which must be laid perpendicular to the wall face. See Diagram 8.
- Maintain the reinforcement within 1 inch (25mm) of the front of the units. See Diagram 9.
- Place the next course of units. Place the reinforcement in tension and place staples, stakes or fill at the back of the reinforcement to maintain reinforcement tension during backfill placement.
- Place a minimum of 6 inches (150mm) of backfill prior to operating equipment above the reinforcement. Avoid sudden braking or turning on fill placed over the reinforcement.
- Maximum reinforcement spacing is 16 inches.

## CAPPING A WALL

- Brush clean the top of the upper course of units. Lay out the Diamond Pro cap units for the entire length of the wall starting at the lowest elevation. Trapezoidal caps must be laid by alternating the long and short faces on a straight section of wall. Cut cap units as required to obtain proper fit on radius curves and angled corners. At steps in wall elevation, stack two caps.
- Apply exterior-grade concrete construction adhesive to the top surface of the upper course of units, and place the cap unit into desired position.
- Use a string line to maintain proper cap alignment.
- Backfill and compact to finish grade. See Diagram 10.

## FINISH GRADE AND SURFACE DRAINAGE

- Prepare the finish grade behind the top and in front of the wall to prevent the concentration of overland flow of water.
- The upper 6" (150mm) of soil placed should be a low permeability fill to reduce infiltration into the reinforced soil and drainage aggregate.
- Depending on wall geometry, lined drainage swales can be placed behind the wall to facilitate drainage.
- Establish erosion control measures and plant vegetation.

## SITE CLEANING AND RESTORATION

- Brush off the wall and remove any debris left from the construction process.
- Notify the appropriate project authority in writing that the construction of the wall is complete and project is ready for final inspection and acceptance.



Diagram 8—Tensile Strength



Diagram 9—Reinforcement



Diagram 10—Capping

## STRAIGHT WALL

Proper installation of an 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 the wall aesthetically beautiful.

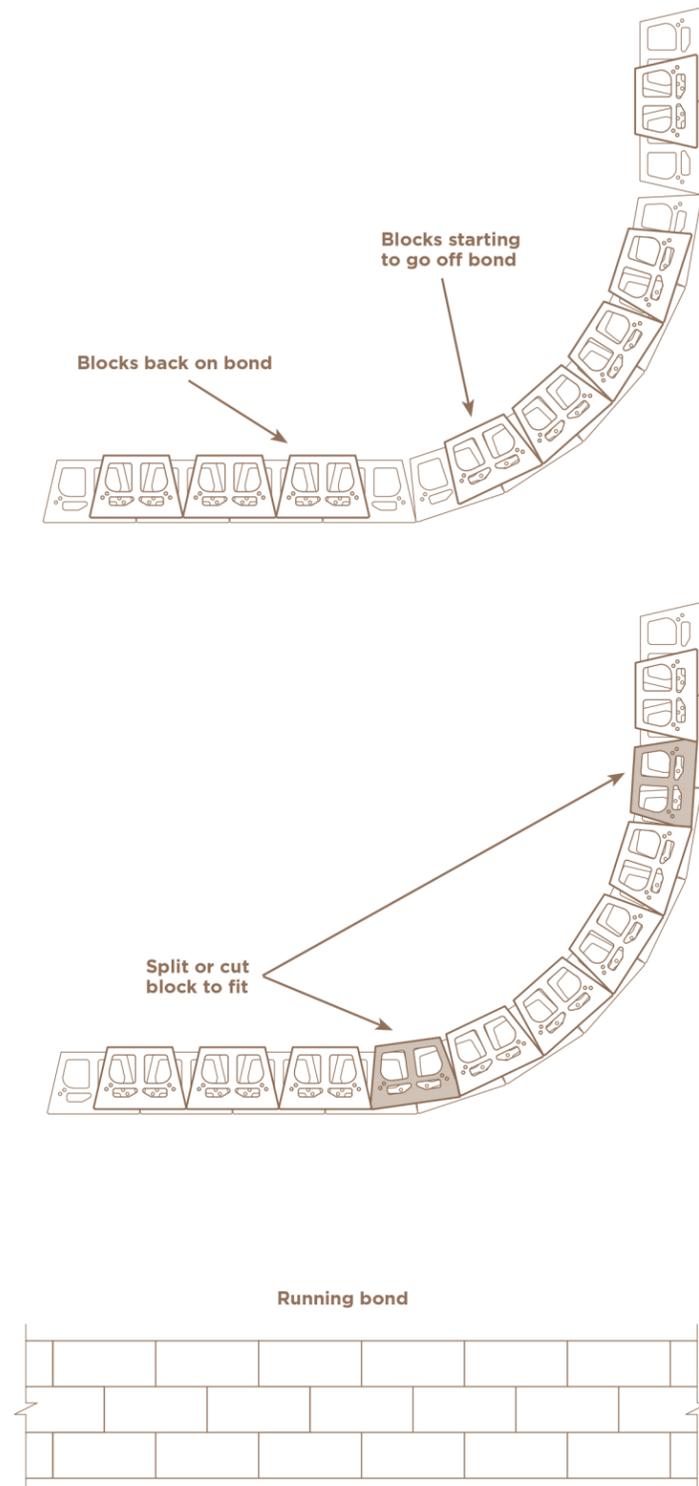
## OUTSIDE CURVED WALL

Any wall that is not perfectly straight will eventually run off bond. 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 or split\* a block to fit.

Once the partial unit is in place, glue with a concrete adhesive. Partial units must not be less than 8 inches long, 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.

**Tip:** It may be possible to run the off-bond block into the soil bank to avoid cutting of partial units.

*\*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.*



## STRAIGHT WALL

Always start capping from the lowest elevation. Caps are trapezoidal and must be laid alternately short and long cap faces for a straight line. Cap units are supplied with a recess to the bottom of the unit to accommodate the locator, and should always be laid with the recess facing downwards.

## 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

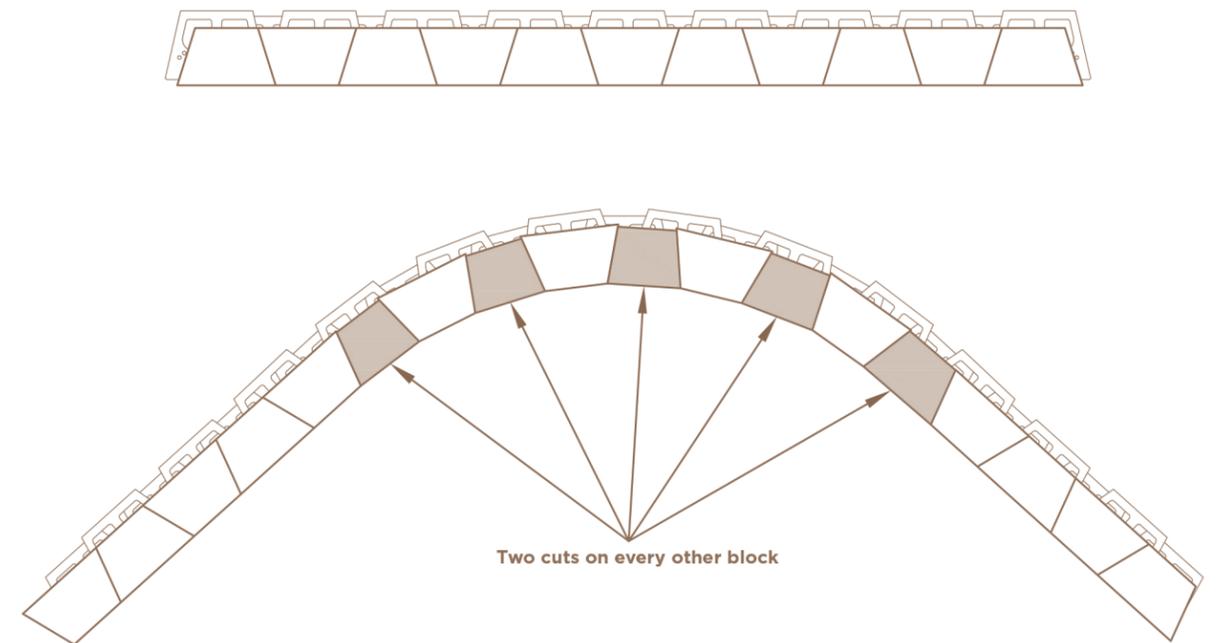
Lay cap units side by side with the short side facing out. In most circumstances, making two cuts on one cap and then not cutting the cap on either side produces the most pleasing look.

## CORNERS

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

## FINISHING

After layout is complete and caps are saw-cut to size, carefully glue the caps in place using a concrete adhesive.



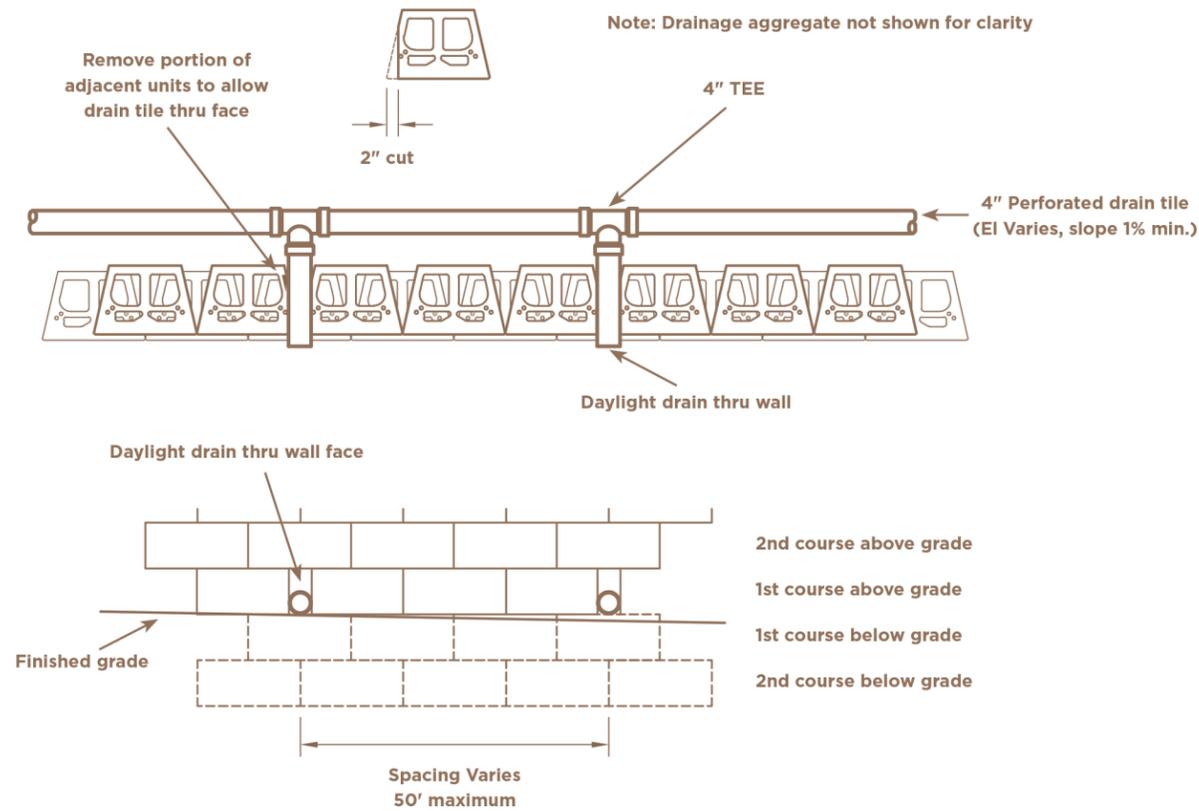
Good drainage is critical to ensuring the long-term performance of Anchor™ products. Water collected from the drainage fill behind the wall must be able to drain down and away from the wall into storm drains or an area lower than the wall, either at the end of the wall, via a carrier drain or through drainage weep holes.

## FIRST COURSE

If the wall is longer than 50 feet, drainage weep holes must be installed through the wall face, no more than 50 feet apart. Remove 2 inches off the front of two adjacent blocks to provide sufficient space for the drainpipe to exit through the face to form the weep hole.

## NEXT COURSE

Build this and remaining courses using standard construction techniques.



## 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.

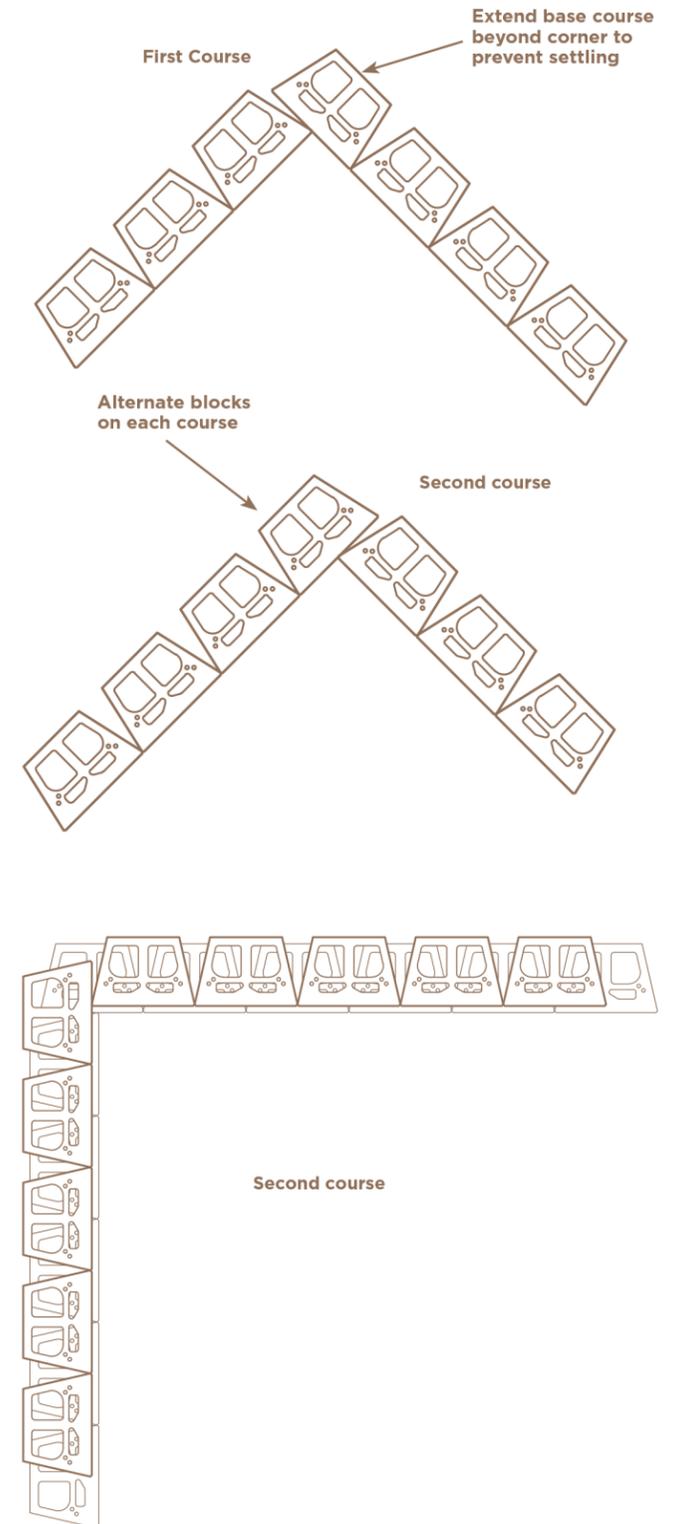
## ADDITIONAL COURSES

On the second course, place all blocks in a running bond along one side of the corner. Once the second course of one wall is established, begin the second course of the adjacent wall. Several blocks away from the corner, position full blocks in a running bond. Continue the running bond back towards the corner, until the gap becomes less than a full unit. Split\* units may be required on this wall to maintain a running bond.

## SUBSEQUENT COURSES

Block placement in the corner must alternate in direction with each succeeding course. The locator of the block being overlaid within the corner should be removed using a hammer and chisel, and these units should be glued in place using a concrete adhesive.

\*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.



# CORNERS – INSIDE 90° WITH REINFORCEMENT

## FIRST COURSE WITH REINFORCEMENT

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.

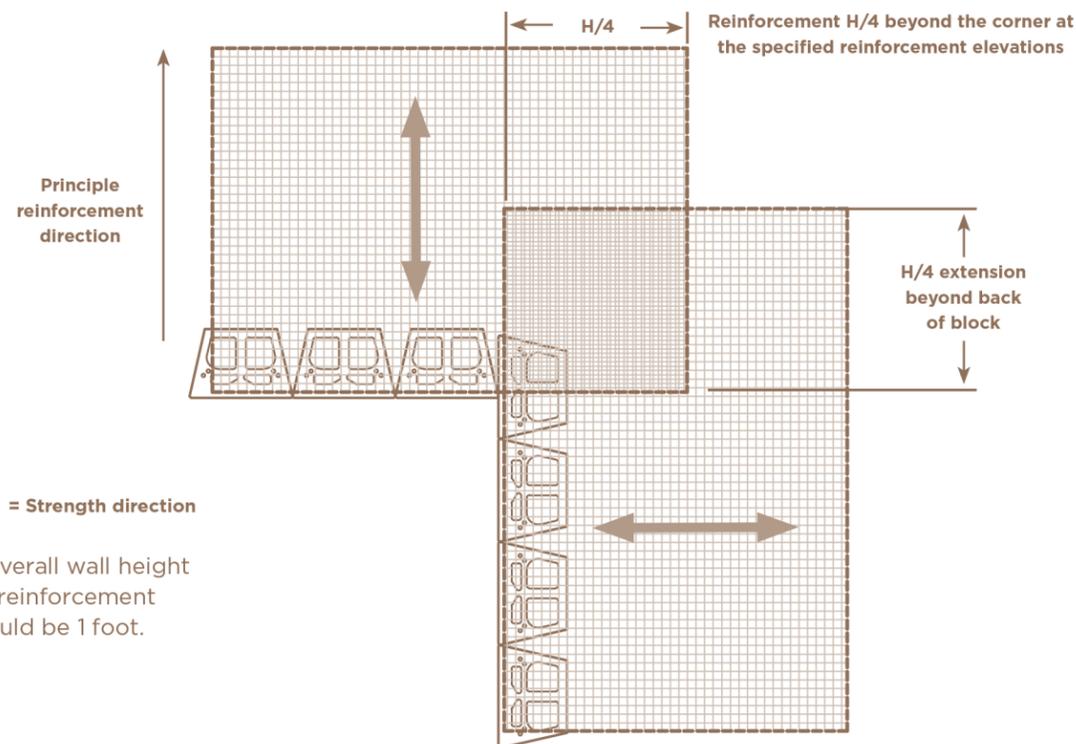
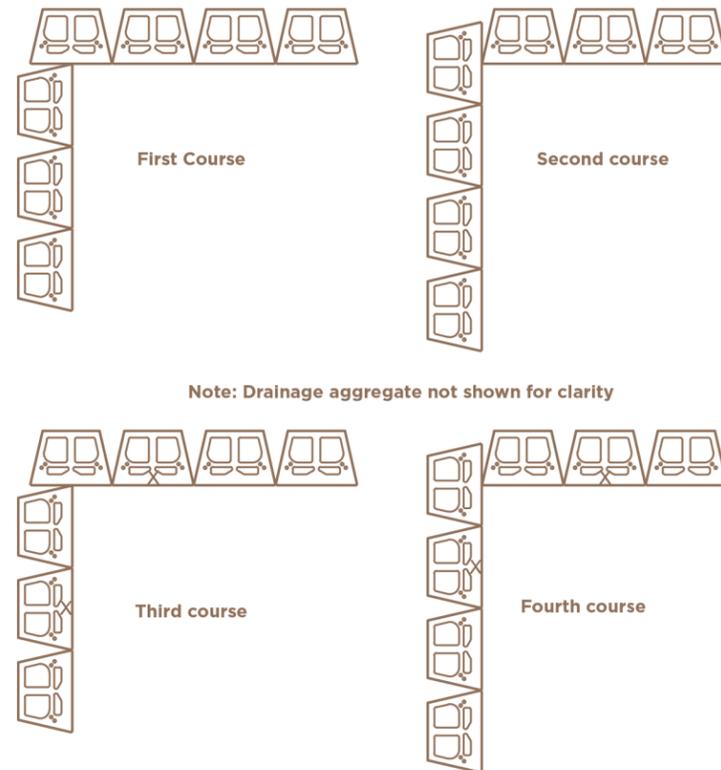
Next, determine the proper placement of the reinforcement by dividing the proposed height of the wall by four. This represents the distance that reinforcement must extend beyond the front of the adjoining wall. Measure this distance from the front of the adjoining wall and begin the grid placement here. Make sure the grid is placed 1 inch back from the face of the block below and runs along the back of the adjoining wall.

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

## SECOND COURSE WITH REINFORCEMENT

The first section of grid on this course is placed using the same formula that determines placement in front of the adjoining wall. Alternate the reinforcement extension on each course where reinforcement is required.

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



# CORNERS – OUTSIDE 90° AND CORNERS – OUTSIDE 90° WITH REINFORCEMENT



## BASE COURSE

To build an outside 90° corner, begin by placing a corner unit and working from the corner unit outward.

## NEXT COURSE

Lay a corner block perpendicular to the one below and glue the block in place with concrete adhesive. Two or three blocks away from the corner lay full blocks, maintaining running bond with the course below. Lay blocks back towards the corner block, leaving space for the final split units\* required to complete the course.

Use split units immediately adjacent to the corner block to complete the course. Continue to alternate the corner unit orientation with each course and always use a concrete adhesive on all corner units and split units.

## RUNNING BOND

Use split units\* as necessary to maintain running bond.

*\*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.*

## FIRST COURSE 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 is placed within 1 inch of the face of the block and running along the back of the adjacent wall.

## ADDITIONAL COURSES

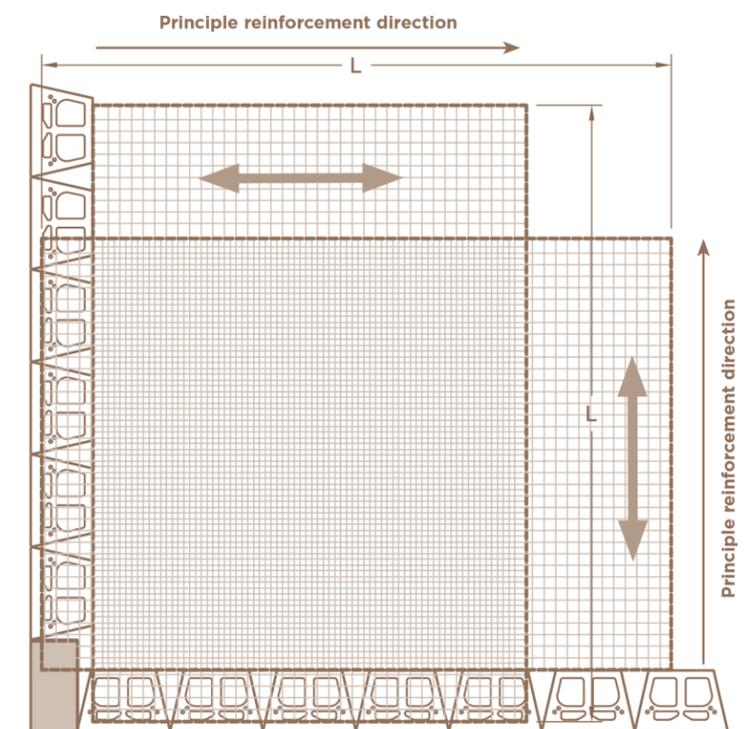
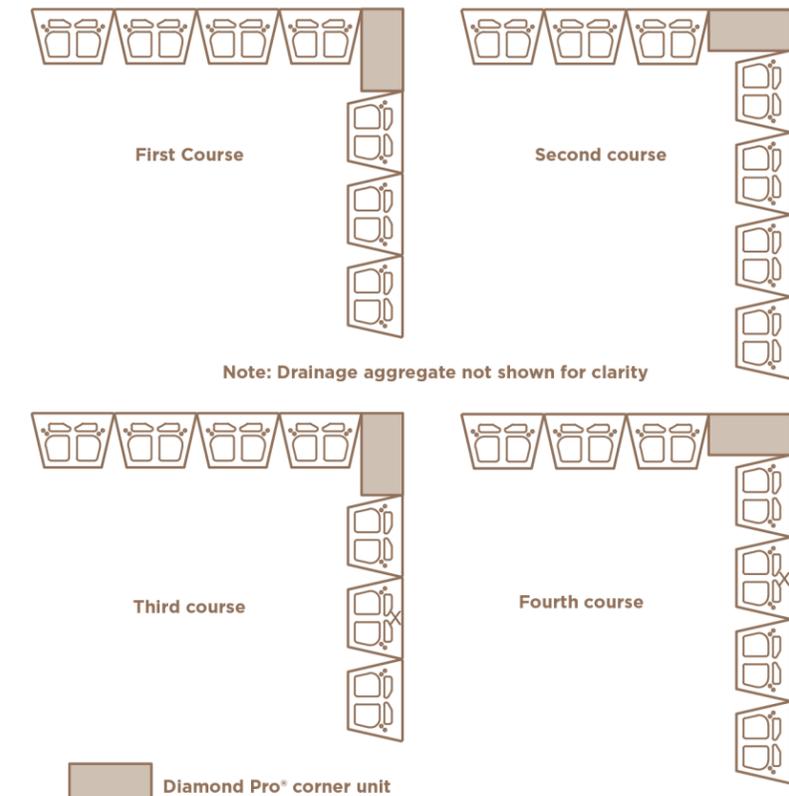
Lay the next course of blocks and before backfilling, mark the portion of the wall without reinforcement. This is important, because once the backfill is in place this cannot be seen.

Backfill and compact behind the course of blocks. Cut an additional length of grid to correspond to the marked section of blocks. This grid should be cut to the length shown in the drawings and laid so that it is placed 12 inches back from the wall face, while running along the back, but not overlapping the adjacent wall.

Repeat this procedure at each reinforced layer within the wall, alternating the alignment of the additional layer of reinforcement at each elevation



**Example:** If overall wall height is 4 feet, the reinforcement extension would be 1 foot.



## 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.

A quick way to determine the base course radius:

- 1) Add 1/4 inch to the setback of the block used. Multiply that by the number of courses in the finished wall.
- 2) Subtract the result of step 1 from the radius of the top course. This number equals the approximate radius length of the base course.
- 3) To determine the radius for the front edge of the trench, subtract 6 inches from the approximate radius length of the base course.

**Example:** The setback of Diamond® Pro PS products with a 1.7-degree system batter is 1/4 inch. The wall is 6 courses high. The desired radius of the wall measured to the front of the block on the top course is 10 feet.

- 1) Setback multiplied by number of courses  
 $1/4" + 1/4" = 1/2" \times 6 \text{ courses} = 3"$
- 2) Desired radius minus setback  
 $10' - 3" = 9' 9"$
- 3) Distance to front of trench  
 $9' 9" - 6" = 9' 3"$

**Tip:** Add the depth of the block if you prefer to mark the curve from the back of the block.

## LAY OUT THE TRENCH

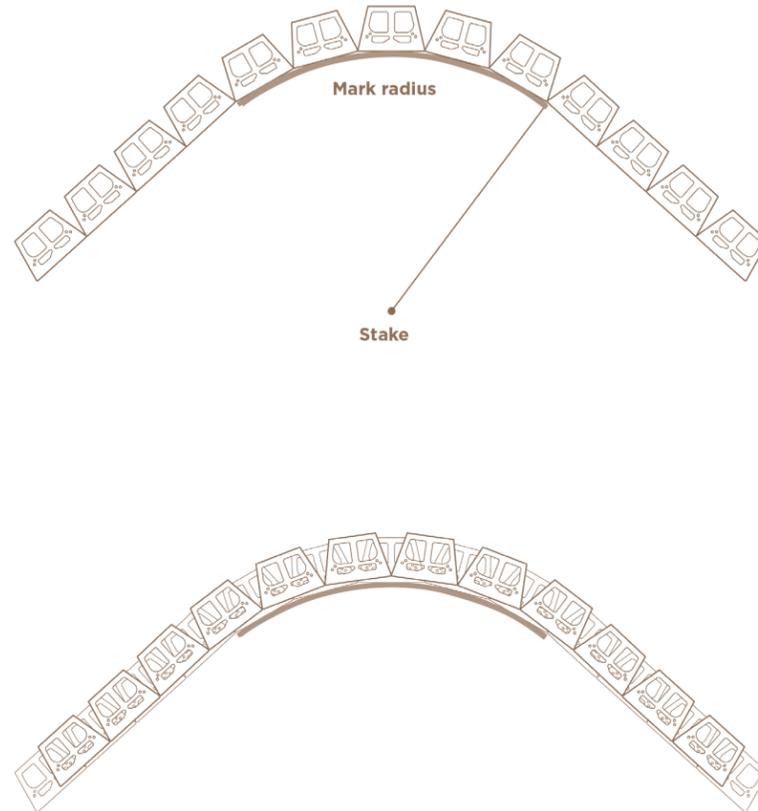
Drive a stake into the ground at the desired radius point of the curve. Attach a string and rotate it in an arc at the desired length to mark the curve in the soil. Dig the trench.

## BASE COURSE

Using existing radius point stake and string, mark the base course curve on the leveling pad. Align the front of the block with the marked 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.



Most retaining walls are designed assuming 100 percent coverage of the reinforcement. When building an inside curve the reinforcement will fan out, producing slight gaps. In order to ensure 100 percent coverage, additional lengths of reinforcement are used to fill those gaps on the next course of blocks. Don't overlap the grid on any given course.

## FIRST COURSE WITH REINFORCEMENT

Cut reinforcement to the lengths specified in the wall plan. Lay segments of reinforcement within 1 inch of the face of the wall, making sure that the strength direction of each section is perpendicular to the wall face. Avoid overlapping the reinforcement by separating each section.

## NEXT COURSE

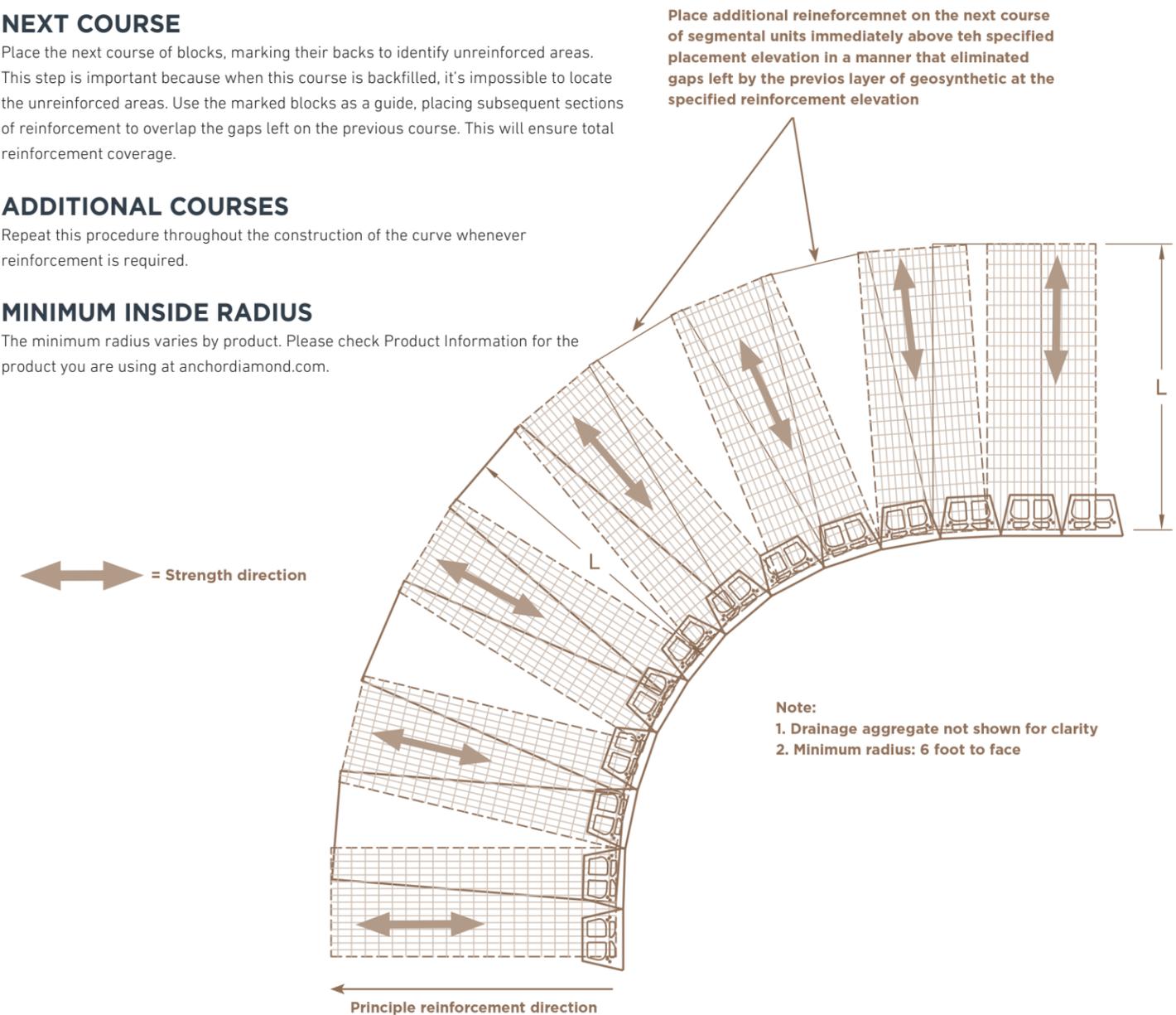
Place the next course of blocks, marking their backs to identify unreinforced areas. This step is important because when this course is backfilled, it's impossible to locate the unreinforced areas. Use the marked blocks as a guide, placing subsequent sections of reinforcement to overlap the gaps left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

## ADDITIONAL COURSES

Repeat this procedure throughout the construction of the curve whenever reinforcement is required.

## MINIMUM INSIDE RADIUS

The minimum radius varies by product. Please check Product Information for the product you are using at [anchordiamond.com](http://anchordiamond.com).



# CURVES – OUTSIDE

## LAY OUT THE RADIUS

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

To determine the approximate base course radius:

- 1) Add 1/4 inch to the setback of the block used. Multiply that by the number of courses in the finished wall.
- 2) Add desired radius length of the top course to the result of step 1.  
This number equals the approximate radius length of the base course.
- 3) To determine the radius for the front edge of the trench, add 6 inches to the approximate radius length of the base course.

**Example:** The setback of the Diamond® Pro PS product with a 1.7-degree system setback is 1/4 inch. The wall is 8 courses high. The desired radius of the wall measured to the front of the block on the top course is 6 feet.

1) Setback multiplied by number of courses

$$1/4" + 1/4" = 1/2" \times 8 \text{ courses} = 4"$$

2) Desired radius plus setback

$$6' + 4" = 6' 4"$$

3) Distance to front of trench

$$6' 4" + 6" = 6' 10"$$

**Tip:** Subtract the depth of the block if you prefer to mark the curve from the back of the block.

## LAY OUT THE TRENCH

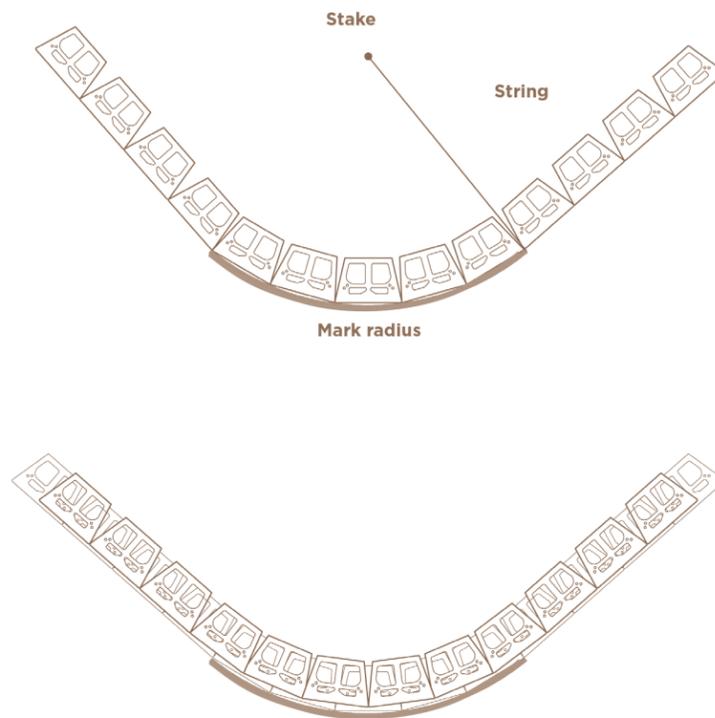
Drive a stake into the ground at the desired radius point of the curve. Attach a string and rotate it in an arc at the desired length to mark the curve in the soil. Dig the trench.

## 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 front of the block with the curve and ensure level placement from side to side and front to back.

## ADDITIONAL COURSES

On each course, the block should be pushed forward until the rear of the pin in the receiving channel is in contact with the pin on the unit below to ensure proper alignment.



# CURVES – OUTSIDE WITH REINFORCEMENT

Most retaining walls are designed assuming 100 percent coverage of the reinforcement. When building an outside curve the reinforcement will have gaps, and the back edges don't overlap. To ensure 100 percent 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.

## FIRST COURSE WITH REINFORCEMENT

Cut reinforcement to the lengths specified in the wall plan. Lay sections of the reinforcement within 1 inch of the face of the wall with the strength direction perpendicular to the wall face. Avoid overlapping the reinforcement by separating each section.

## NEXT COURSE

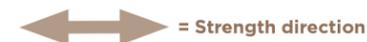
Place the next course of blocks, marking their backs to identify unreinforced areas. This step is important because when this course is backfilled, it's impossible to locate the unreinforced areas. Use the marked blocks as a guide, placing subsequent sections of reinforcement to overlap the gaps left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

## ADDITIONAL COURSES

Repeat this procedure throughout the construction of the curve whenever reinforcement is required.

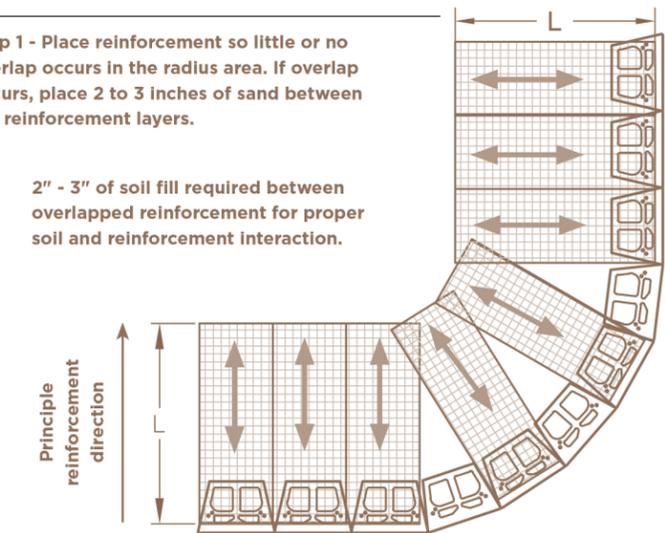
## MINIMUM RADIUS

Each product has a unique radius. Check the Product Information on [anchordiamond.com](http://anchordiamond.com).

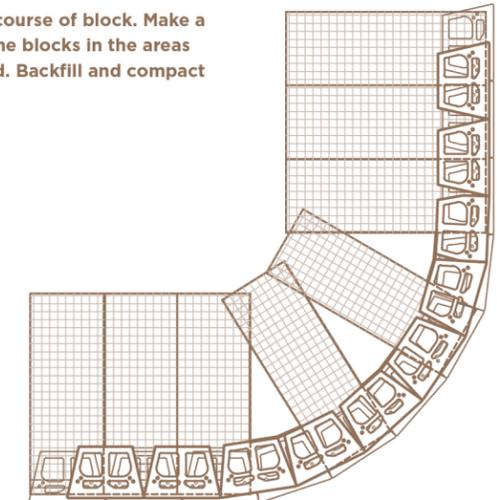


**Step 1 - Place reinforcement so little or no overlap occurs in the radius area. If overlap occurs, place 2 to 3 inches of sand between the reinforcement layers.**

**2" - 3" of soil fill required between overlapped reinforcement for proper soil and reinforcement interaction.**

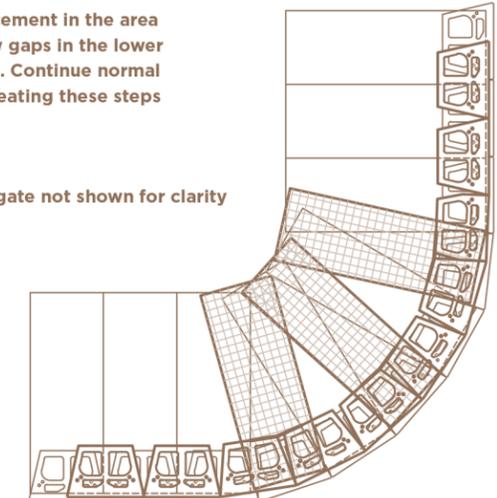


**Step 2 - Lay the next course of block. Make a mark on the back of the blocks in the areas that are not reinforced. Backfill and compact that course.**



**Step 3 - Place reinforcement in the area where the marks show gaps in the lower reinforcement pattern. Continue normal wall construction, repeating these steps as needed.**

**Note: Drainage aggregate not shown for clarity**



# GUARDRAILS

Impact on a guardrail system will transfer additional loads to the top of the wall. These additional loads must be accounted for in the design and construction of the wall.

A qualified engineer should always be consulted to determine the likely loads the guardrail will transfer to the wall and to produce a wall design that takes these into account.

Consult a qualified engineer before design, construction and installation take place.

The final location of the posts and guardrail in relation to the wall should be positioned according to the design from the engineer, as should any additional reinforcement required in the design.

Install any sleeves according to the wall plan. Sleeves should be at least 1 inch larger than the posts to allow for concrete and grouting.

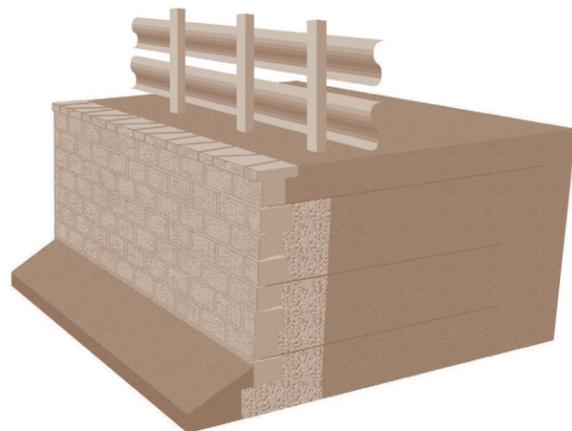
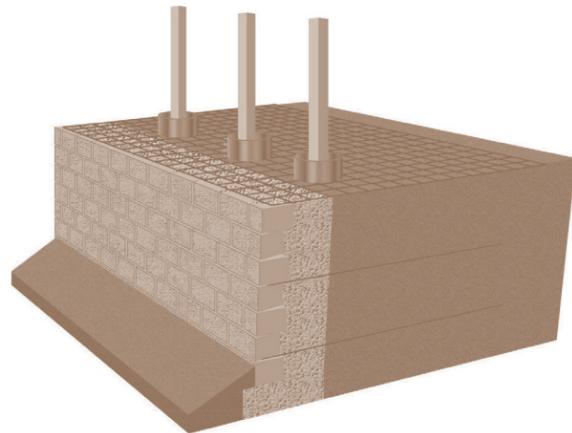
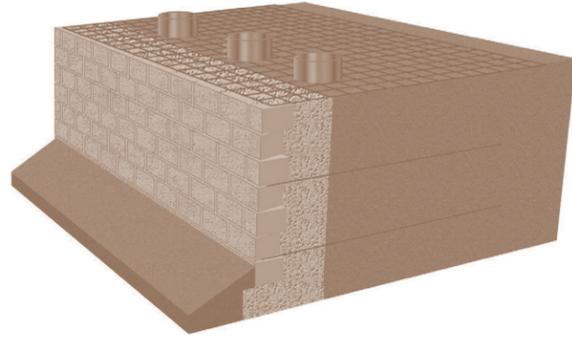
Walls should not be completed and sleeves then 'punched' through the already installed backfill and reinforcement layers after construction is complete. This may result in damage to the reinforcement grids and lead to subsequent failure of the wall.

Sleeves should be installed and held in place before any reinforcement the sleeve passes through is positioned, with the wall blocks, drainage material and backfill being installed and constructed in accordance with the instructions found elsewhere on [anchordiamond.com](http://anchordiamond.com).

Carefully cut the reinforcement cross straps to allow the reinforcement to fit around the sleeve without distortion or additional tension being introduced to the grid when in its final location.

Ensure the reinforcement grid is installed in accordance with the instructions found elsewhere on [anchordiamond.com](http://anchordiamond.com).

Grout the guardrail posts into each sleeve after the wall is built.



# FENCES

The specific dimensions of the fence and fence post spacing are required to accurately determine the placement of the sleeves.

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

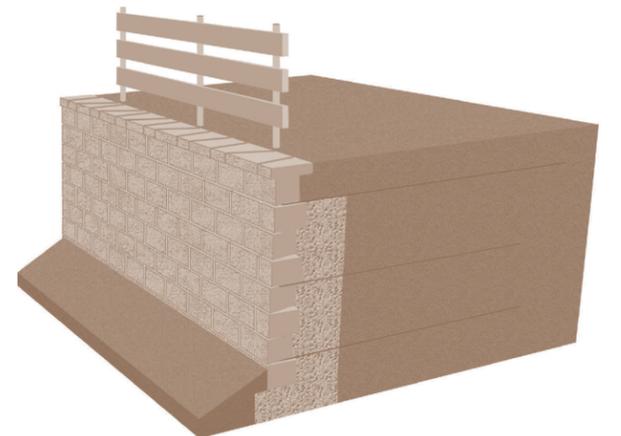
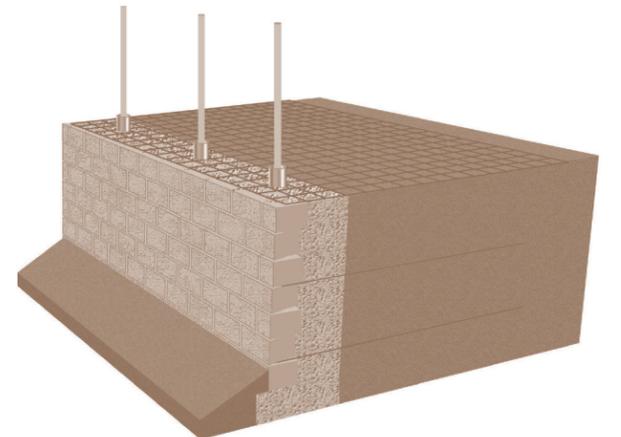
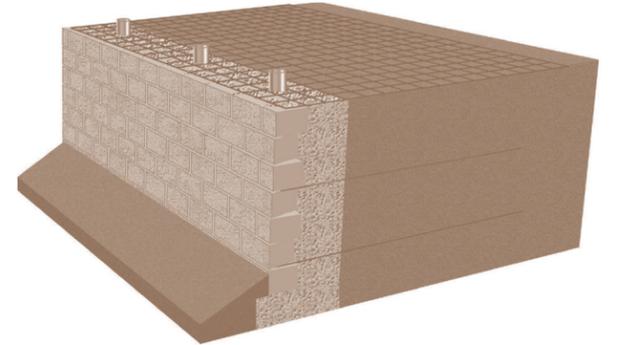
If the fence is at least 3 feet back from the wall face, generally no additional reinforcement is required.

If the fence is installed within 3 feet from the face of the wall, there may be some load transferred to the wall from wind, snow or pedestrians. Additional reinforcement around the fence sleeves may be needed. Consult a suitably qualified engineer before installation takes place.

Walls should not be completed and sleeves then 'punched' through the already installed backfill and reinforcement layers after construction is complete. This may result in damage to the reinforcement grids and lead to subsequent failure of the wall.

Carefully cut the reinforcement cross straps to allow the reinforcement to fit around the sleeve without distortion or additional tension being introduced to the grid when in its final location.

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







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