DIY Retaining Wall Installation

Call 811, Common Ground Alliance, to have utilities marked before starting your project.

Read all instructions prior to installation. Refer to last page for reference images of installation materials and tools.

Fig. 1

1. **Stake Out Wall and Create Trench.** Begin by using stakes with a string line (or a garden hose for curved walls) to mark the location of the wall, using the desired location of the back of blocks as the guide. Use the information below to determine the size of the trench needed, and then dig the trench.

   The width of the trench should be twice the depth (front to back) of the block.
   Example: For block that is 6 inches deep make the trench 12 inches wide.

   The depth of the trench should be equal to the height of the block plus compacted base depth (Table 1).

   Example: For an exposed wall height of 1'6" and using a 6" high block, dig the trench a total of 9 inches in depth.

Table 1 — Trench Depth Reference Chart

	Exposed Wall Height*					
	≤ 1'6"		2'		≥ 3'	
Block Height	Compacted Base Depth	Total Trench Depth	Compacted Base Depth	Total Trench Depth	Compacted Base Depth	Total Trench Depth
6"	3"	9"	4"	10"	6"	12"
5"	3"	8"	4"	9"	N/A	N/A
4"	3"	7"	N/A	N/A	N/A	N/A
3"	3"	6"	N/A	N/A	N/A	N/A

* For exposed wall height limits, follow product's total wall height (reference product page) and subtract height of block to account for buried base course.

Fig. 2

2. **Add and Compact Base.** Remove loose soil and firmly compact the soil in the bottom of the trench with the tamper. Base material can be paver base or an equivalent to ¾-inch minus (with fines) aggregate. Add a 2-inch layer of base material in the bottom of the trench; rake out and firmly compact (Fig. 1). Repeat as needed for recommended compacted base depth (reference Table 1).

3. **Level Base.** *Tip: The more level the base material the easier it is to level the block when building the wall.* Use a carpenter's level to level base material along the trench; check the level every few feet. Add more base material and repeat the process as needed until appropriate compacted base depth is achieved (reference Table 1).

4. **Base Course.** *Tip: This is the most important step in the installation process.* Bury the base course block. Use a hammer and chisel to remove the rear lips from all base course blocks (if applicable). Starting at the lowest elevation, place the first block, making sure the block is level front to back and side to side; lay subsequent blocks in the same manner (Fig. 2). Adjust blocks with a rubber mallet if necessary. For a straight wall, use string line along the back edge of block to check for proper alignment. Fill cores of blocks (if applicable) and backfill trench behind base course with base material. Compact backfill with hand tamper. Fill trench in front of wall with soil and compact. Clean any debris off the top of the blocks before beginning next course.

Fig. 3

For slopes, you may need to step up the base (Fig. 3). Make sure the base block is below grade at step-up with adequate base material below block.

Fig. 4

5. **Lay and Level Wall Blocks.** Begin next course by laying a block with the rear lip (if applicable) facing down, in a staggered relationship (running bond) to the course beneath. Pull each block forward until the lip is securely in contact with the blocks below (Fig. 4). Check each course for levelness and make adjustments with a rubber mallet before continuing. Incorporate drain tile, if required, per building code or site conditions. After each course, fill cores of blocks (if applicable) and backfill behind blocks with drainage aggregate (such as ¾-inch angular/crushed free draining aggregate), extending 12 inches behind the wall. Compact backfill with hand tamper. Repeat until wall height is reached. The last course of blocks can be backfilled with soil to allow for plants or sod.

6. **Split/Cut Block.** Cutting or splitting blocks may be required for your project.
   - To split a block: Use a hammer and chisel to score the block on all sides of the split. Continue to pound the chisel on all score lines until the block splits (Fig. 5).
   - To cut a block: Use a circular saw or tub saw with a diamond blade designed for cutting concrete wall blocks.
   - To create a 90-degree mitered corner: Cut a 45-degree angle on two blocks. Glue cut sides together with exterior-grade concrete adhesive so the two faces form the finished outside corner.

Fig. 5

Always wear eye protection when sawing blocks.

Read and understand the operating manual before using a saw.

7. **Mark, Cut and Glue Cap.** To cap the wall, slide the cap forward so the face of the cap overhangs the face of the wall approximately 1 inch or as desired.
   - *For capping straight walls,* use a string line as a guide to keep alignment.
   - *For capping curved walls,* cut the caps to follow the radius of the wall. Place a cap at the beginning of the curve, skip a space and place the next cap in the third position. Rest a cap on top of the original two, aligning the face with the adjacent caps. Mark the bottom of the cap along the edges (Fig. 6). Use a circular saw or tub saw with a diamond blade to cut the marked cap.

Fig. 6

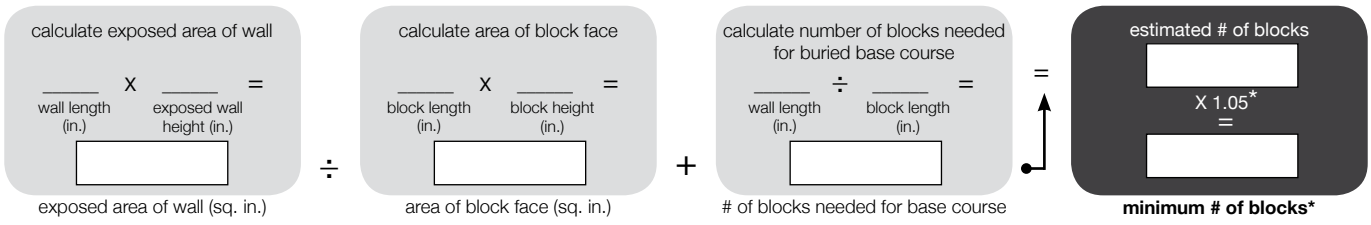
On a 90-degree corner, two caps need to be saw-cut at a 45-degree angle. At the end of the wall, cut and place the cap so the manufactured edge is exposed. Use an exterior-grade concrete adhesive to secure the caps. If not finishing with caps, glue the top wall course with exterior-grade concrete adhesive. *Tip: Planting grass or other vegetation in front of the wall and behind the top of wall will help to reduce the chance of erosion.*

Maximum gravity wall heights assume no slope below or above the wall; no surcharge loads (e.g., driveway, parking pad, pool, etc.); block cores (if applicable) are filled; and all replaced soil is well compacted.

Retaining Wall Project Materials Calculators

1. **Plan the length and height of the wall, accurate to nearest inch.**

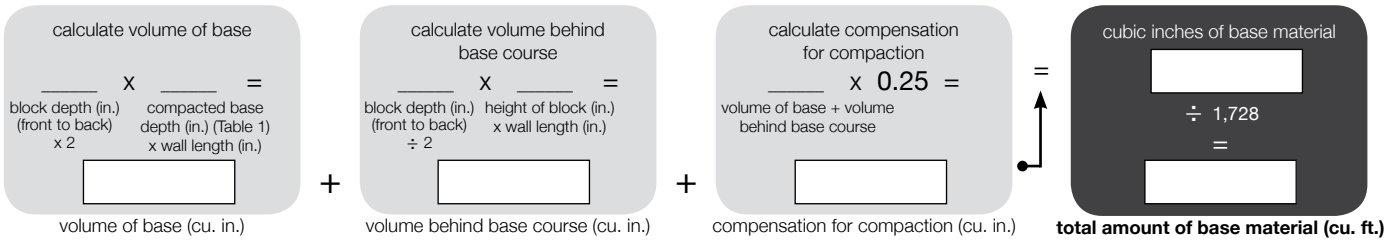
2. **Select retaining wall product, then calculate number of blocks needed for project.**



exposed area of wall (sq. in.) | area of block face (sq. in.) | # of blocks needed for base course | **minimum # of blocks***

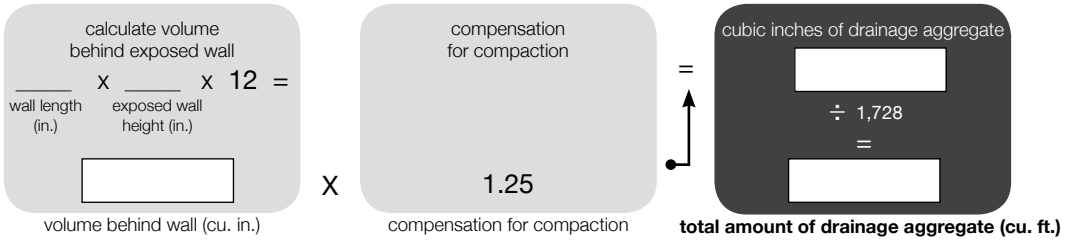
* It is recommended that you purchase 5 percent more product than estimated to account for cutting and breakage.

3. **Calculate base material (paver base or ¾-inch minus [with fines] aggregate) needed for project. For blocks with through-cores, add 15 percent to the volume of base calculation to account for filling the cores.**



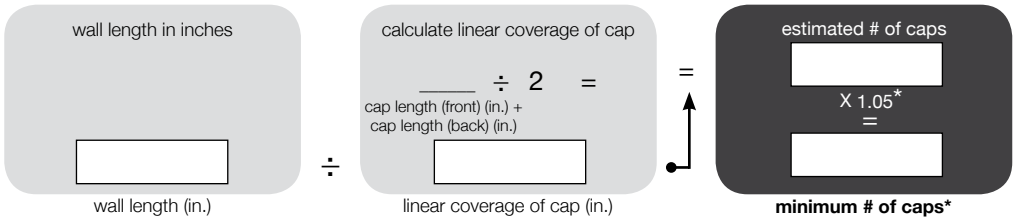
volume of base (cu. in.) | volume behind base course (cu. in.) | compensation for compaction (cu. in.) | **total amount of base material (cu. ft.)**

4. **Calculate drainage aggregate (¾-inch angular/crushed free-draining aggregate) needed for project. For blocks with through-cores, add 15 percent to the volume of drainage aggregate calculation to account for filling the cores.**



volume behind wall (cu. in.) | compensation for compaction | **total amount of drainage aggregate (cu. ft.)**

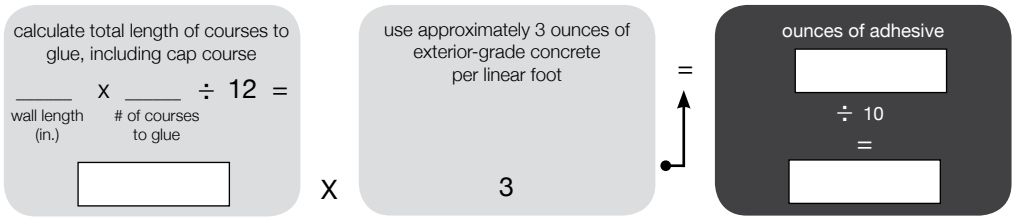
5. **Select wall cap product, then calculate number of caps needed for project.**



wall length (in.) | linear coverage of cap (in.) | **minimum # of caps***

* It is recommended that you purchase 5 percent more product than estimated to account for cutting and breakage. Add an extra 10 percent for curved walls.

6. **Calculate exterior-grade concrete adhesive needed.**



length of courses to glue (lin. ft.) | ounces per linear foot | **minimum # of 10-oz. exterior -grade concrete adhesive tubes**

Complete installation materials and tools reference images:

Retaining wall installation materials and tools needed:

- ☐ Gloves
- ☐ Stakes
- ☐ String line
- ☐ Garden hose
- ☐ Tape measure
- ☐ Shovel
- ☐ Tamper
- ☐ Paver base or an equivalent to ¾-inch minus (with fines) aggregate
- ☐ Carpenter's level
- ☐ Hammer
- ☐ Chisel
- ☐ Level
- ☐ Rubber mallet
- ☐ Drainage aggregate (such as ¾-inch angular/crushed free-draining aggregate)
- ☐ Circular saw or tub saw
- ☐ Diamond blade designed for cutting concrete wall blocks
- ☐ Safety glasses
- ☐ Exterior-grade concrete adhesive
- ☐ Carpenter's pencil