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COUNTY BLOCK®

TECH SHEET 1A

Construction Guidelines on County Block® Steps

Limits of Liability

This County Block Installation Guide provides general information about the product, including installation procedures, technical and engineering data, figures, tables and drawings. If your wall project falls outside the scope of this guide, additional information can be obtained by contacting your local distributor.

Every effort has been made to insure the accuracy of the information presented. However, this information should not be used or relied upon for any specific application without consulting an independent professional to examine and verify its suitability and applicability. Actual site conditions may vary significantly from those presented in the estimating tables. Anyone using this material assumes any and all liability resulting from such use. The final determination of the suitability of any information or material for the use intended is the sole responsibility of the user.

County Block units give you unlimited design flexibility to build steps into a retaining wall. With standard County Block as risers and County Block Caps as treads, you can build steps parallel or perpendicular to the wall face or free-flowing steps that are independent of a wall system. Step corners can be designed with right angles using County Block Corner units, or smooth flowing curves. The basic construction techniques listed below for pedestal and cut-in step methods allow you to build a variety of configurations that best match your site.

The drawings shown for each method help to visualize the “step-by-step” installation instructions. The examples feature steps three to five risers high, and three to five County Block units wide for illustration purposes only. Steps can be built higher and wider.

To minimize cutting and fitting of customized pieces, steps built into a retaining wall are usually located in a straight portion of the wall. For either the pedestal or cut-in method, the leveling pad and base course of the straight wall are installed as you would normally do. The actual location of the steps is determined after this first wall course is completed. The top half of this course is visible above the grade and serves as the first riser in your step assembly.

NOTE: Always install the front wall starting from the corner blocks of steps outward to the end of the wall.

Special Considerations When Building Steps

Design: Stair and step design should enhance the overall landscape project. Typically, smooth flowing curves will compliment your landscape design and are the easiest to build.

Time: Stairway construction may require extra time for spacing and fitting blocks. For a quality job, allow yourself extra time for laying out and building stairs.

Compaction: Use a plate compactor to compact material in 8" lifts. Run the compactor on top of the filled blocks to lock them in position. Compact parallel to the wall, working from the front of the wall to the back.

Codes: Consider local building codes regarding step and stair dimensions in your design.

Dimensions: To minimize cutting, design stairs to account for County Block dimensions and finishing materials.

Finishes: Choose a stair tread material to match your landscape site and intended use. Several tread options for County Block steps include: County Block Caps, landscape pavers, poured concrete, crushed rock, mulches and flagstone.

NOTE: Avoid the use of de-icing salts on County Block steps which will cause the concrete to deteriorate over time.

COUNTY BLOCK
RETAINING WALL SYSTEMS

County Block Retaining Wall Systems are made nationwide under license from: COUNTY CONCRETE CORPORATION

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Pedestal Step Method With Right-angle Corners

Preparing Foundation: Once you have established your stairway location, start by excavating the pedestal step foundation area behind the wall. Make sure the area is deep enough to receive six inches of leveling pad material/base material (3/4" crushed stone or road base) and to allow the second riser foundation blocks to be level with the top of the base wall course.

FOR EXAMPLE: The foundation space for a pedestal stairway four risers high and 36" wide [three blocks=3 County Block Caps], must allow room for four rows of base units plus one extra foot behind for drainage material. The foundation width would equal three units placed side by side plus two extra feet on each side for side walls and additional drainage material. If required, provide other provisions such as drainage fill and drain pipe. (See *Figures A' and A²*)

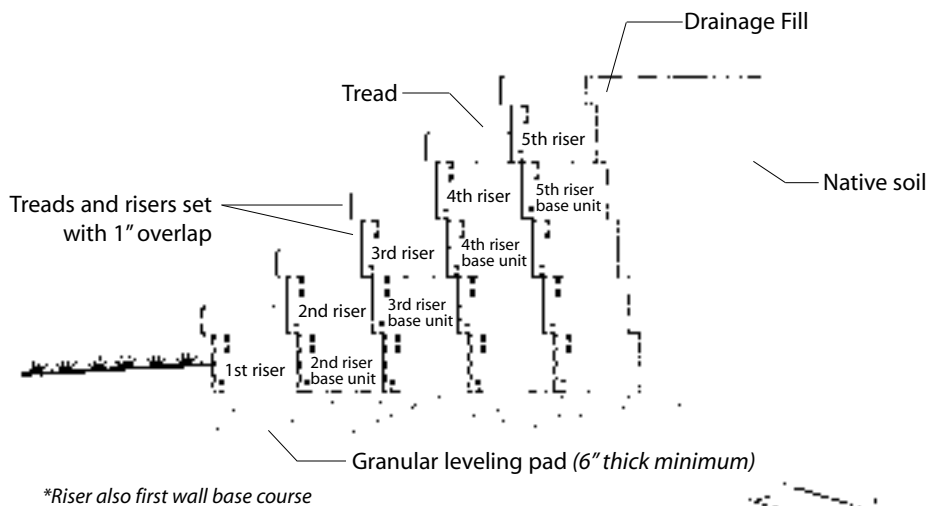


Figure A¹

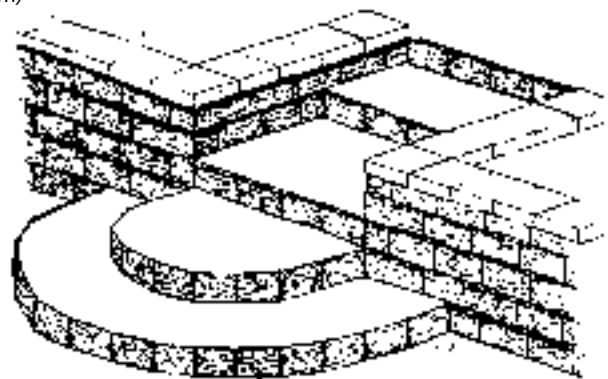


Figure A²

Before laying foundation block, place base material and compact to a level pad front to back and side to side. A thin layer of sand may be added on top to aid in final leveling. The soil under the first course of block must be well compacted and level; it determines the stability and levelness of all step and side wall units that will rest on top.

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TECH SHEET 1A

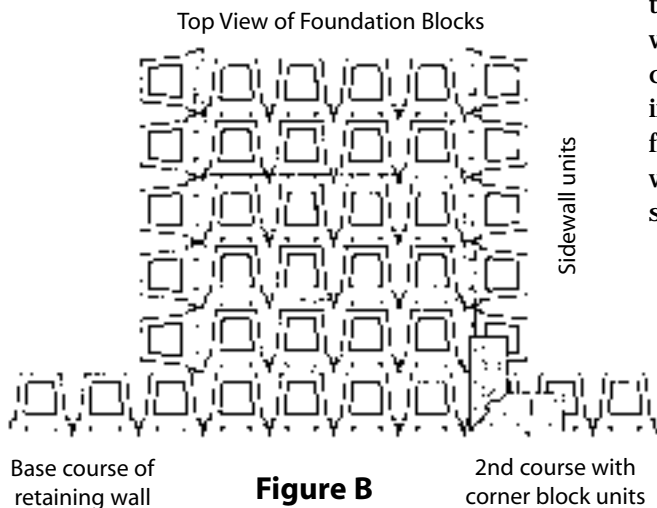


Figure B

Base Course: Based on the width and number of risers in the step assembly, place foundation course units and side-wall base units. These must be level with the wall's base course. Fill cores with drainage material and compact. Next, install and pin the first two outside corner units over the front wall and sidewall base course units. The corner units will determine the step opening and start the sidewalls of the stairway. (Use County Block Caps, kept flush with the front edge of foundation blocks, as spacer guides to establish step width.) **Remember, the front wall maintains the 1" setback. The sidewalls of the stairway are vertical—no setback—to eliminate the gap between steps and sidewalls. (See Figure B)**

Additional Courses: Install the second course/riser of pedestal foundation units (behind the County Block Caps). Position each unit to overlap one inch of the unit below. At the same time, continue installing vertical side-wall units to the rear of the foundation, keeping them flush with units below. Other than the corner units, don't pin sidewalls or step units. Most sidewall units are restrained from movement by both the step assembly and backfill. The top and front sidewall units that are not restrained should be bonded to the units below with concrete adhesive. **(See Figure C)** Install the portion of the front wall needed to support the corner units on each side of the stairway opening. Maintain a one inch setback and pin. Fill all cores and 6" behind blocks with drainage material. Backfill and compact. Continue building the step riser assembly until the remaining courses/risers are complete.



Figure C

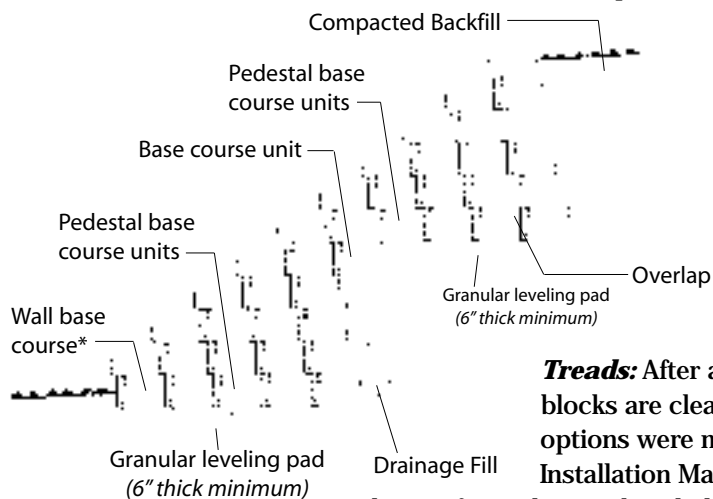


Figure D

*Also first riser in wall assembly

If plans call for steps with more than six risers, we recommend starting a new pedestal every fifth riser. Note that an extra base course unit must be added under the first riser of the second pedestal for added support. Otherwise, the preparation for the leveling pad, the building of pedestal and side walls, and installation of treads are identical to procedures used for the lower step assembly. **(See Figure D)**

Treads: After all sidewalls and front retaining wall are completed and blocks are cleaned, you are ready to install treads. Several tread options were mentioned earlier. Or, refer to the County Block Installation Manual for installing and gluing County Block Caps. Note that surfaces that are bonded with a concrete adhesive must be clean and dry. After cutting and fitting the caps to be used as treads, remove them one at a time, apply adhesive to the riser and replace the tread, pressing firmly in place. Start at the top step and work down. Allow 48 hours for maximum adhesion before use.

OTHER PEDESTAL STEP METHODS

Free-Flowing Pedestal Steps With Right Angle Corners

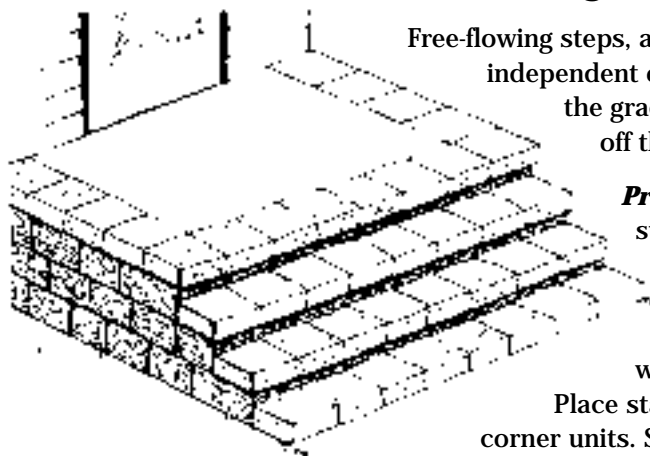


Figure E

Free-flowing steps, a variation of the pedestal method, are built independent of a wall system and follow the natural contour of the grade. (See **Figure E**) County Block Corner units finish off the ends of each step.

Preparing Foundation: Prepare the foundation of your step area as you would for the pedestal method.

The illustration shown is for a 4' wide stairway.

(See **Figure F¹**) For the foundation of your steps, place two full County Block Corner units, with the splitface out, to establish the step width.

Place standard County Block units between and behind the corner units. Sidewall units will have their split face facing out.

Sidewalls are vertical, no setback. Don't pin any step or sidewall units in freeflowing steps. Units should be placed tightly together, side by side. Make sure all blocks are level. Fill all cores with drainage material and compact. Backfill and thoroughly compact, making sure this material is level with the top of the base block; it will support the second riser units.



Figure F¹
Step 1 Base Assembly

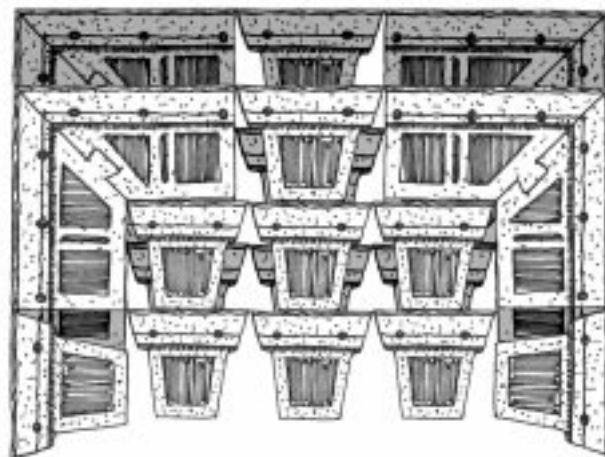


Figure F²
Step 2 Riser Assembly

Additional Courses: (**Figure F²**) Place the second riser blocks on top of the base course assembly. The front edge of each riser will overlap the back one inch of the course below it. Allow room for treads with a one inch overhang in front. Repeat above procedures for additional courses. Once all steps are placed, finish with County Block Caps for treads. Split the caps on all exposed sides for a natural texture. Place caps with a one inch overhang on front and sides of steps to create a shadow effect.

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Inset steps adjacent to 90° corners

(recommended for a project with 3-4 steps, such as a raised patio)

Preparing Inset Step Foundation and Base Course:

Prepare the foundation of your step area as you would for the pedestal method. The illustration shown is for a 3' wide stairway. (See Figure G') When

you reach the 90° corner at the end of the wall's first course, place a corner unit parallel with the wall.

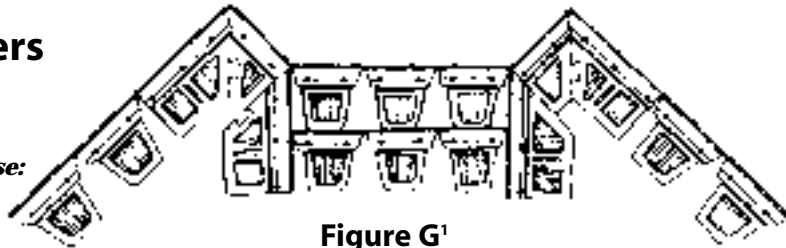


Figure G¹

NOTE: Cut the inside (female piece) of the corner unit at the splittable joint.

Beginning inset steps: Place a female piece (half of a corner unit) tight to the cut end of the installed corner block with its splitface facing the inside of the steps. Place standard units adjacent to the female piece and one another, making sure they are straight and level. Finish the opening and establish the step width by installing a male piece of a corner unit with the notch removed adjacent to the standard units. These half corner pieces will serve as sidewalls. Sidewall units will have their splitface facing in. Sidewalls are vertical, no setback, to eliminate the gap between steps and sidewalls. Don't pin any step or sidewall units. Units should be placed tightly together, side by side. Make sure all blocks are level.

Begin the other leg of the wall off the 90° corner by cutting a male piece of a corner unit at the splittable joint. Place the corner unit with its cut male end tight against the right sidewall (male piece) and perpendicular to the other wall course. Finish the length of the wall by placing standard units side by side for the base course.

To complete the steps, place standard County Block units between the sidewalls and behind the standard units used in the steps base course. Fill all cores and 12 behind blocks with drainage material. Backfill and compact. (Use County Block Caps, kept flush with the front edge of foundation blocks, as spacer guides to establish step depth.)

Additional Courses: (Figure G²) Install the second course of wall blocks and the second riser of pedestal foundation units (behind the County Block Caps). Position each unit to overlap one inch of the units below. At the same time, continue installing vertical sidewall units to the rear of the foundation, keeping them flush with units below. Continue building the step riser assembly until the remaining courses/risers are complete.

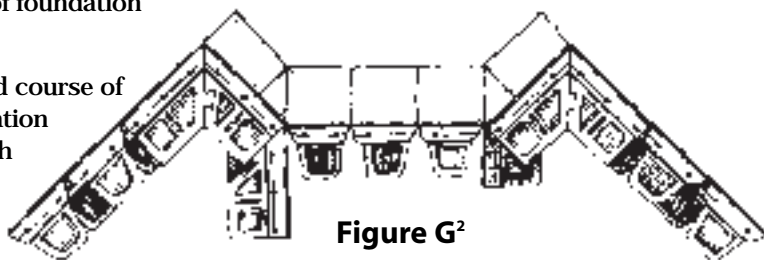
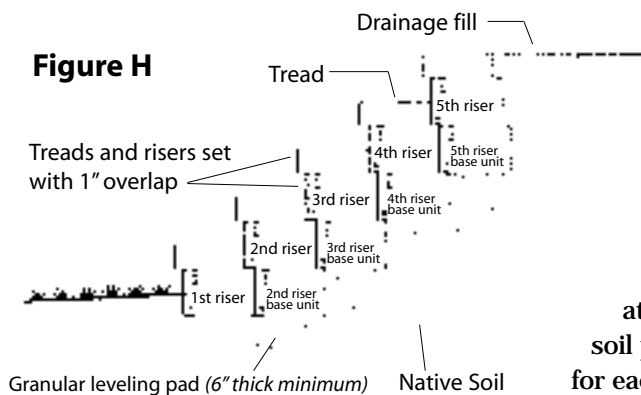


Figure G²

Figure H



Cut-In Step Method with Right Angle Corners

The cut-in method of building County Block steps is accomplished by cutting into the hillside for each step as opposed to the solid foundation or base of blocks described in the pedestal method. Although this design requires fewer riser units, considerably more time and attention to accuracy is required to build and compact a level soil platform for each set of risers. A thin leveling pad is needed for each riser. (See Figure H)

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As with the pedestal method, the stair sidewalls are independent from the steps and are vertical (no setback). Both sidewalls will be built as construction progresses from riser to riser. However, in larger steps with four or more risers, it is recommended to create vertical sidewalls from the ground up similar to the pedestal method. This gives the steps greater stability.

Preparing Foundation: At the stair location, excavate back 18" behind the wall's base course to make room for the second riser base assembly. Place 6" of base material (3/4" crushed stone or road base) and compact (95% of Standard Proctor Density). The preparation of this foundation course is the most critical phase of the stair construction.

Place the second riser base units side by side behind the wall and level with the top of the front wall's base course units. Fill all cores and 6" behind with drainage material. Backfill, compact and level material behind this riser assembly and behind the front wall on either side of the stairway. The backfill should be thoroughly compacted and level with the top of the second riser base units; it will support the third riser.

Additional Courses: Excavate back another 18" behind the top of the second riser assembly for the third riser. Backfill and compact area until level with the second riser. Install the third riser assembly. The front edge of each riser will overlap the back 1" of the course below it. Start the sidewalls by placing County Block Corner units at the outside corners of the stairway opening. Fill all cores and 6" behind with drainage material. Use adhesive to bond corner units. Build the front wall to the right and left of the outside corners at least two full units.

Remember the front wall will be pinned as usual and maintain a 1" setback for each course. The sidewalls are vertical and have no setback. Backfill and compact up to the top of what you have completed.

Repeat steps for each additional riser. Continue the sidewalls by placing and adhering corner units. Extend the sidewalls back past the exposed riser assemblies with standard County Block wall units. Set them flush with the risers. Extend the front wall outward to receive the next course of units. Add backfill material and compact behind each course as it's completed. At this point, the cut-in installation should look like **Figure I**. Finish the entire step assembly and wall by installing a tread option.

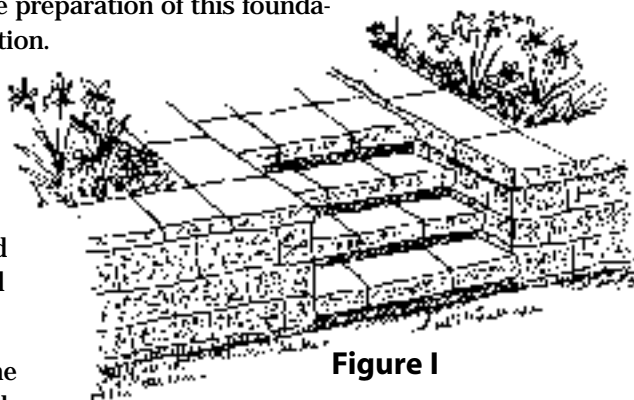


Figure I

OTHER CUT-IN STEP DESIGN OPTIONS

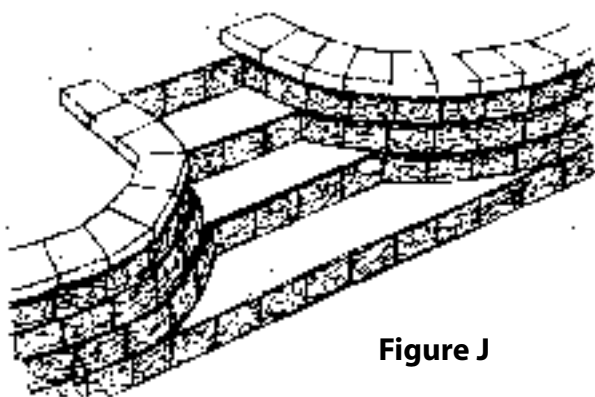


Figure J

PERPENDICULAR STEPS WITH ROUND CORNERS

Perpendicular steps set into the wall face with rounded corners require no special cutting and are easy to do. (See **Figure J**)

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NOTE: In step designs with rounded corners, the depth of treads is determined by the step project, site considerations and personal preference.* County Block Caps may not be the best option for step with round corners because of the extra time and effort required for cutting and fitting. Instead, choose a tread finish you can easily size and adjust to fit the application, such as landscape pavers, poured concrete, crushed rock, mulch and flagstone.

**Treads can be anywhere from one to six feet deep*

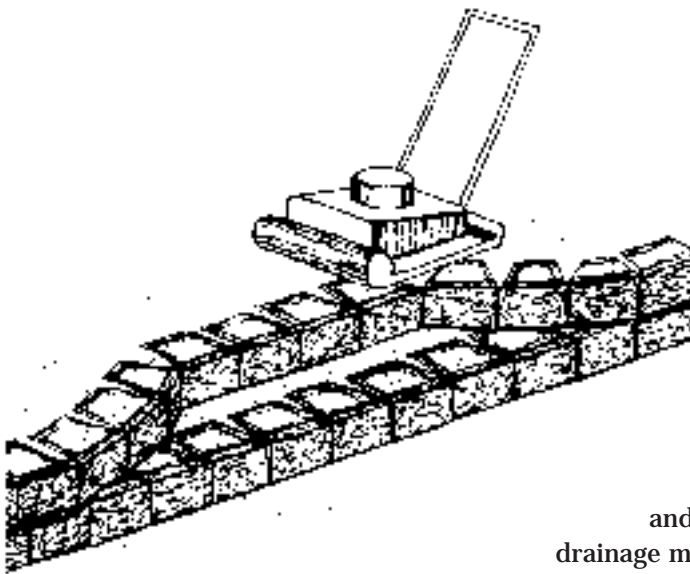


Figure K

Preparing Foundation: Prepare the base course of your wall as usual. Fill all cores and 6" behind with drainage material. Backfill behind the blocks and compact. *The height of this backfill material will be level with the top of the base row blocks. The next step's riser blocks will be placed on top of this material.*

Additional Courses: Place the second course of riser blocks on top of the compacted backfill material. Place them at angles around the step location as shown so no cutting of block is necessary. *(See Figure K)* Allow room for the tread finish of your choice. Level the blocks. Place a small amount of gravel in front of the second course to hold them in place when filling cores, backfilling

and compacting. Fill cores and 6" behind block with drainage material. Carefully compact blocks and backfill material. The height of the compacted backfill should be level with the top of the blocks in front of it.

Repeat the steps above for each course of the stairs up to the top of the wall.

NOTE: The width of the stairs decreases by full block increments on each side with each of the first three steps. You can eliminate the need to cut blocks on subsequent steps by adjusting the stair width to meet the curves of the sidewalls. Finish with a tread option.

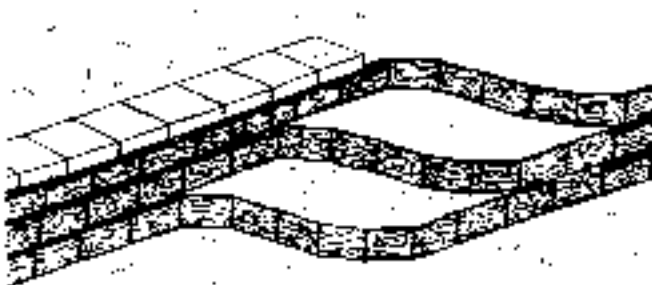


Figure L

PARALLEL STEPS WITH ROUND CORNERS

One of the easiest methods of building cut-in steps with County Block units is to use smooth flowing curved walls that follow the natural set back of the wall. *(See Figure L)* The benefits of this method include no cutting of blocks, no corner units (see the next design option on Parallel Steps with Right Angle Inside Corners), less time and expense to construct, and soft curves compliment most landscape designs.

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Preparing Foundation: Excavate a 6" deep and 18" wide base trench to form a smooth curve at the location of your steps in the wall. Place 6" of crushed stone in the trench and compact. Position the base course of County Block units for steps as shown. Fill cores and 6" behind block with drainage material. Backfill and compact to lock blocks in position. The height of this backfill material should be level with the back of the base row of blocks. *(See Figure M)*

Additional Courses: Place County Block units on the second course as shown. *(See Figure N)* Make sure to level each block and keep the step level as it curves back to join up with the front of the wall. Repeat these procedures for each course of the stairs. Maintain an even spacing on each stair tread. Finish with a tread option.

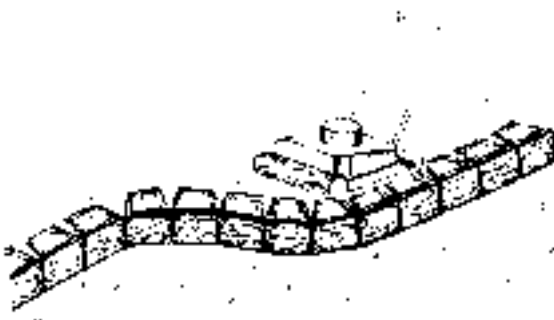


Figure M

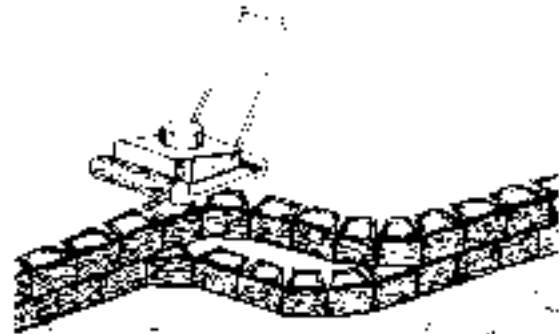


Figure N

PARALLEL STEPS WITH RIGHT ANGLE INSIDE CORNERS

Parallel steps with right angle inside corners and rounded or square outside corners are easily created. *(See Figures O and P)*

Preparing Foundation: Begin by placing one standard County Block unit at the location of steps in your wall so that it sits perpendicular to the wall and is 4 inches past the face of the wall. Continue placing standard County Block units side by side to continue the steps around the curve or corner to join up with the front of the wall.

Additional Courses: Repeat steps for each course of the stairs. Maintain an even spacing on each stair tread.

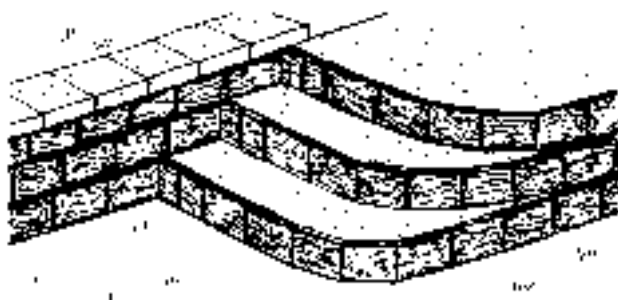


Figure O

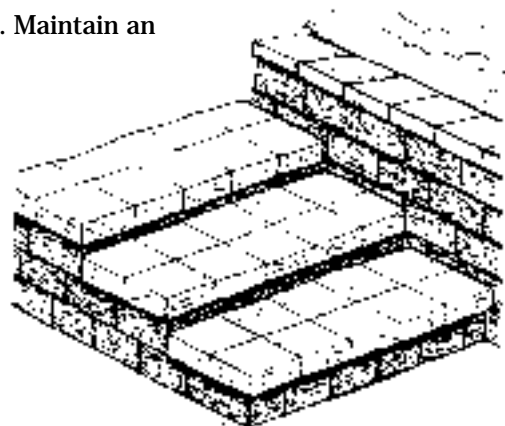


Figure P