

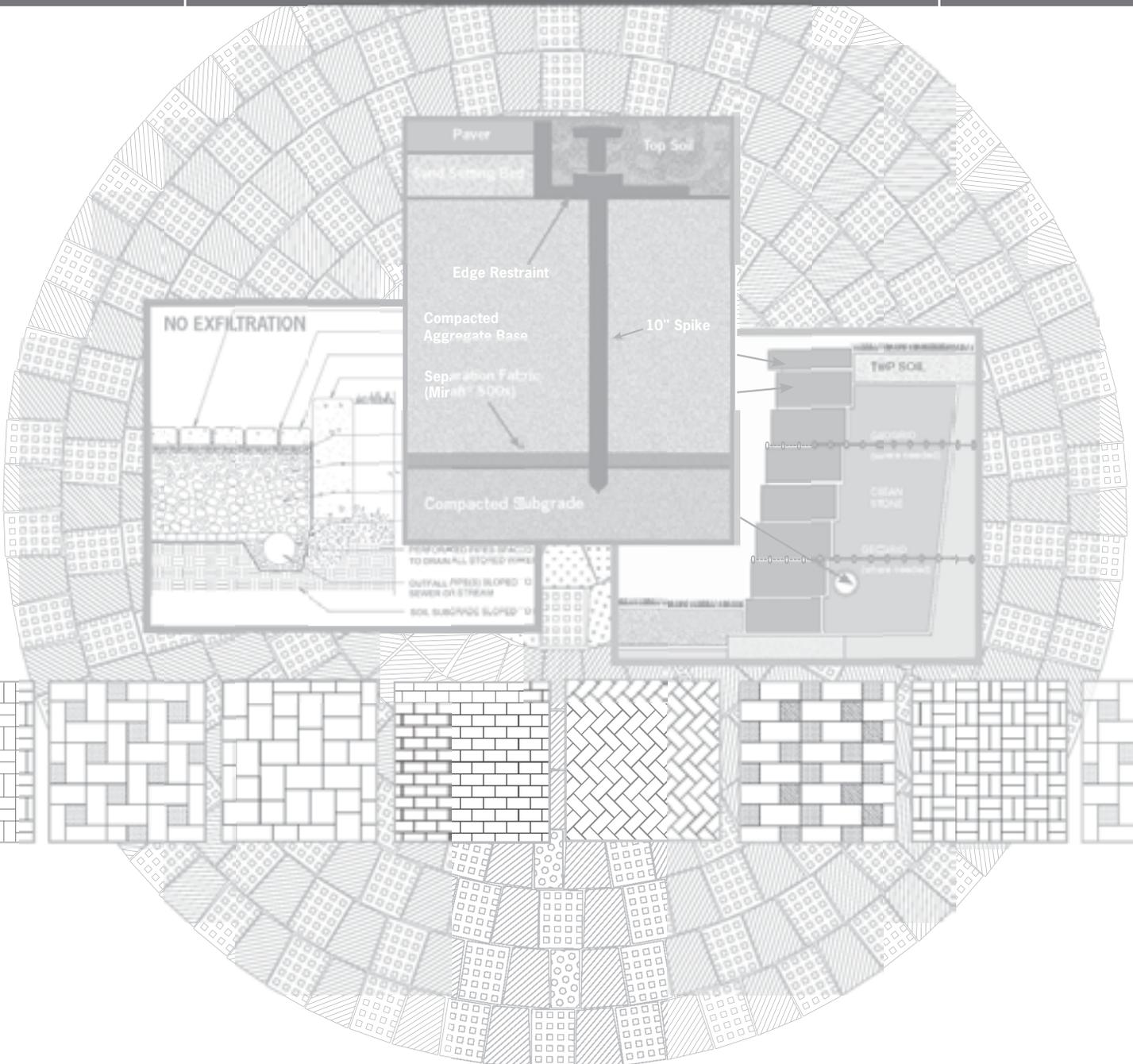
1903-2013

**EP HENRY**®

*Values that Endure™*

# CONTRACTOR

## Technical Installation Guide





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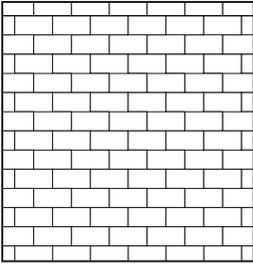
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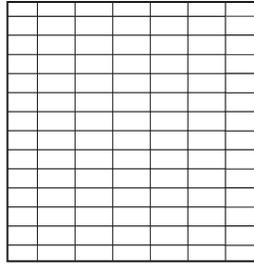
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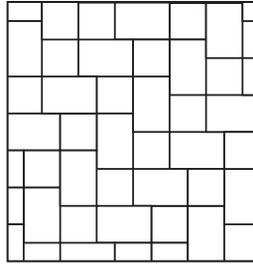
## RUNNING BOND

**100% All Styles**  
 Coventry® Stone I and Old Towne Cobble™  
 Any combination of sizes, same direction  
 Coventry® Stone II (4 sizes in cube)  
 Coventry® Stone III (3 sizes in cube)  
 Coventry® Stone IV  
 ECO Cobble® and Coventry ECO Cobble®  
 Village Square® 6"x6" or 12"x12"  
 6"x12" Half Village Square  
 Brick Stone, Coventry® Brick Stone, Historic  
 Brick Stone 4"x8"  
 ECO™ Paver  
 Coventry® Estate Cobble



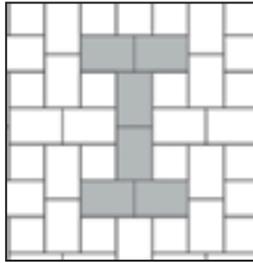
## STACKED BOND

**100% All Styles**  
 Coventry Stone I and  
 Old Towne Cobble 6"x6" or 6"x9"  
 Village Square® 6"x6" or 12"x12"  
 6"x12" Half Village Square  
 Brick Stone, Coventry Brick Stone,  
 Historic Brick Stone 4"x8"  
 Coventry Stone IV  
 Coventry Estate Cobble

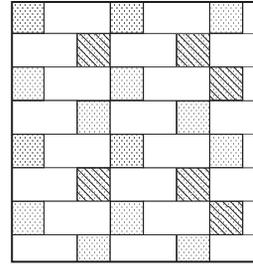


## MODIFIED HERRINGBONE

Coventry Stone I and  
 Old Towne Cobble 60% 6"x9", 40% 6"x6"  
 ECO Cobble and Coventry ECO Cobble

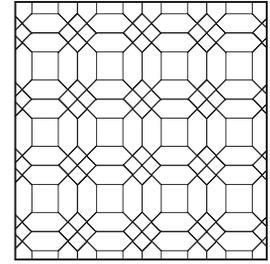


**"1"**  
 Coventry® Stone I and Old Towne Cobble™  
 70% 6"x9", 30% 6"x6"  
 ECO Cobble® and Coventry ECO Cobble®



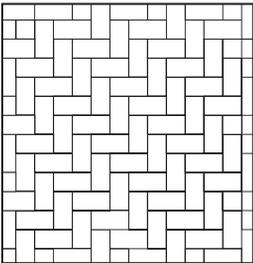
## SIDEWINDER

Village Square  
 69% 6"x12" HVS, 31% 6"x6" VS



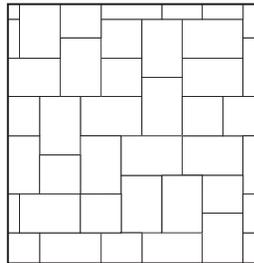
## VENETIAN PARQUET

Symetry  
 83% Symetry, 17% Symetry Squares



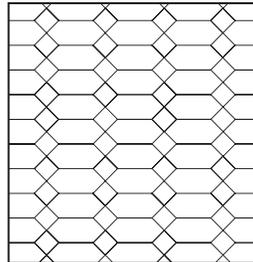
## 90° HERRINGBONE

**100% All Styles**  
 Coventry Stone II (4 sizes in cube)  
 Coventry Stone III (3 sizes in cube)  
 Coventry Stone IV  
 ECO Cobble® and Coventry ECO Cobble®  
 Village Square® 6"x6" or 12"x12"  
 6"x12" Half Village Square  
 Brick Stone, Coventry Brick Stone,  
 Historic Brick Stone 4"x8"  
 ECO™ Paver



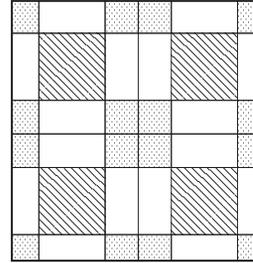
## RANDOM

Coventry Stone I and  
 Old Towne Cobble  
 60% 6"x9", 40% 6"x6"  
 Coventry Stone III  
 100% Coventry Stone III  
 Coventry Cobble  
 100% Coventry Cobble  
 Bristol Stone  
 ECO Cobble and Coventry ECO Cobble



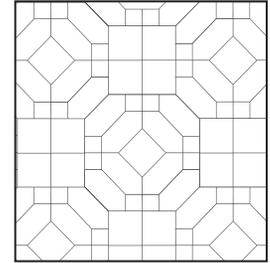
## DIAMOND RUN

100% Symetry®



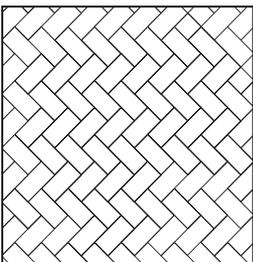
## CHECKERS

Village Square  
 25% 12"x12" VS, 50% 6"x12" HVS,  
 25% 6"x6" VS



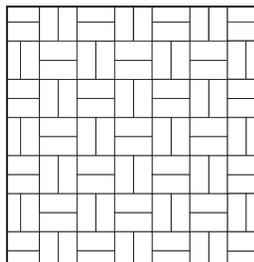
## GRAND PARQUET

Symetry  
 66% Symetry, 34% Symetry Squares



## 45° HERRINGBONE

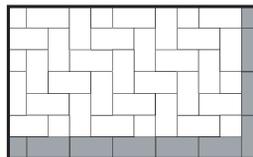
**100% All Styles**  
 Coventry Stone I and Old Towne Cobble™  
 Coventry Stone IV  
 Brick Stone, Coventry Brick Stone,  
 Historic Brick Stone 4"x8"  
 6"x12" Half Village Square  
 ECO Cobble® and Coventry ECO Cobble®



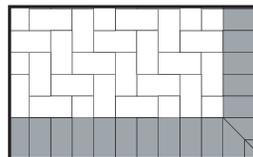
## BASKETWEAVE

**100% All Styles**  
 6"x12" Half Village Square®  
 Brick Stone, Coventry Brick Stone,  
 Historic Brick Stone 4"x8"

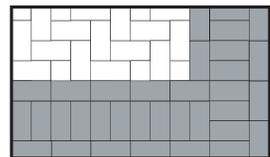
## Border Patterns



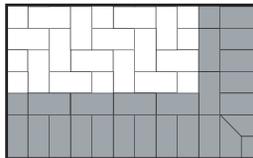
## SAILOR BORDER



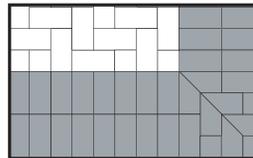
## SOLDIER MITRED CORNER



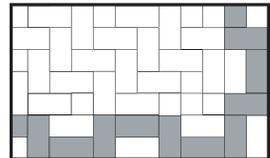
## SAILOR/SOLDIER/SAILOR



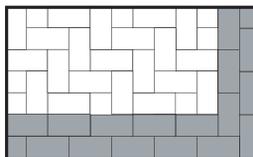
## SOLDIER MITRED CORNER/SAILOR



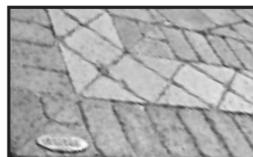
## DOUBLE SOLDIER MITRED CORNER



## ZIG ZAG



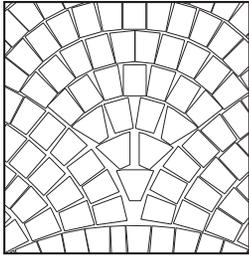
## DOUBLE SAILOR HALF RUNNING BOND



## CREATE YOUR OWN



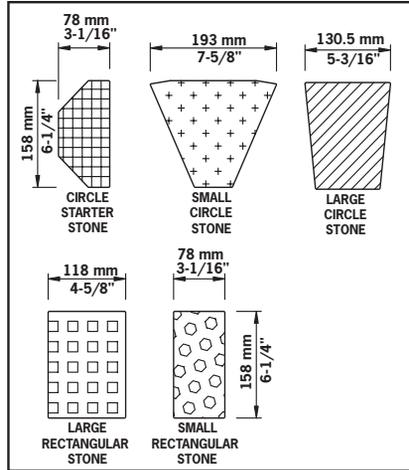
## CREATE YOUR OWN



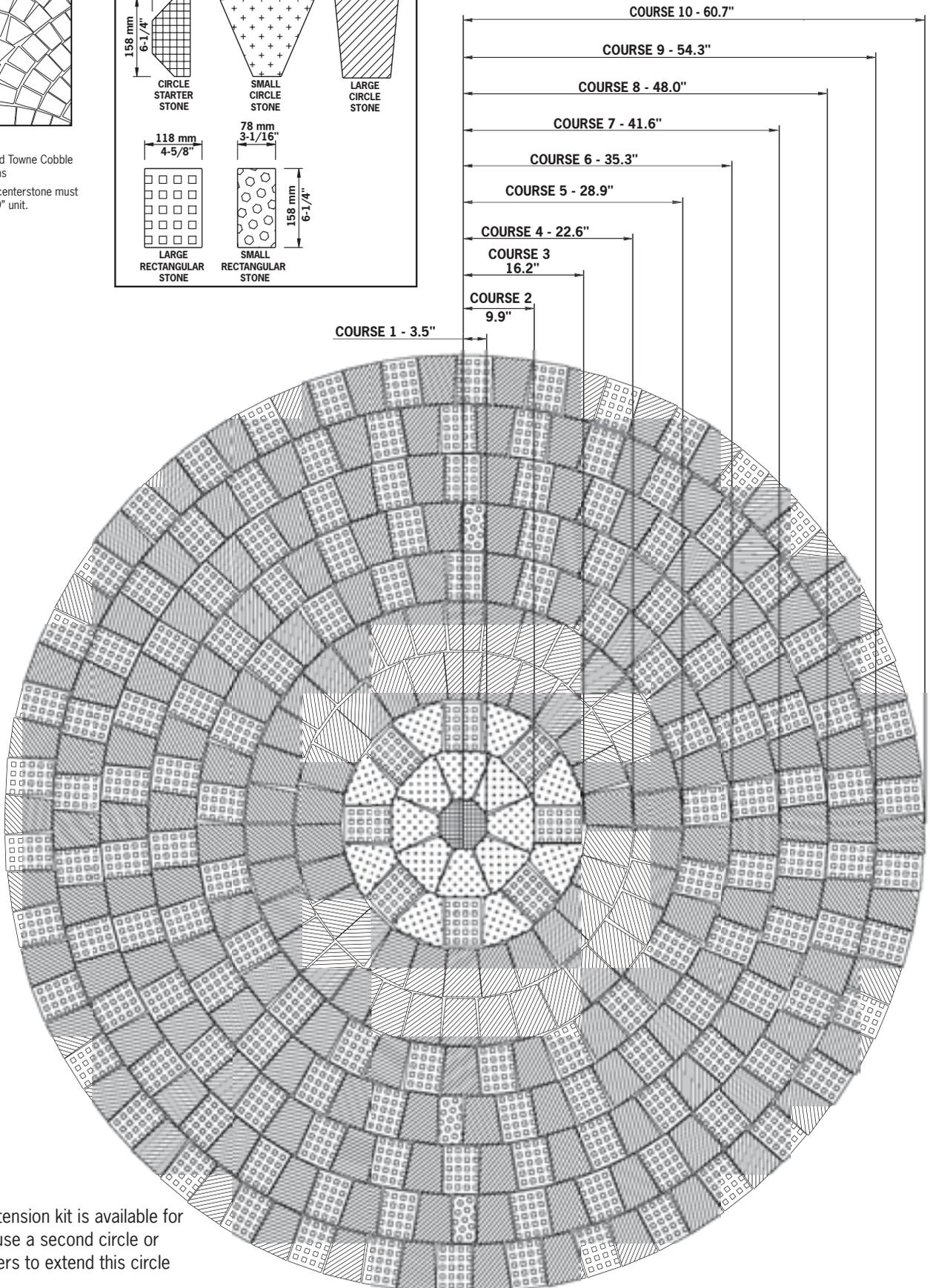
### FANS

Coventry Stone I and Old Towne Cobble  
One circle pallet = 3 fans

Note: The first course centerstone must be hand-cut from a 6"x9" unit.



### Old Towne Cobble™ & Coventry® Stone I Circle Kit



**Note:** No extension kit is available for this pattern; use a second circle or standard pavers to extend this circle



## GENERAL INSTALLATION

1. Draft a lay-out of your project. Identify the location of your outdoor power source and where you would like your Paver Light fixtures to be placed.
2. Pre-assemble Paver Light fixtures with bulbs in and lead wire coming out.
3. Connect your transformer and run the cable from transformer around the perimeter of your project. Make sure your transformer is strong enough for the number of lights you are using.
4. Attach Paver Lights to the cable using the included solderless connectors.
5. Test the system to make sure that all of the lamps light when power is turned on.
6. Cover the cable with soil, landscape, and enjoy.

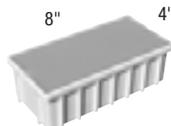
These installation instructions are intended to describe the general procedure for installing landscape lighting. To ensure proper safety, please refer to the manufacturer's instructions accompanying any lighting system you select for more specific installation guidelines.

Let your EP Henry Hardscaping™ project shine day or night with Paver Lights. Durable, safe, and easy to install. Paver Lights provide beauty and safety in your driveway or walkway, on your steps, or around your patio or pool deck.

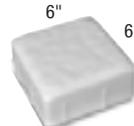
Strong enough for most vehicular applications, the Paver Light is a 12-volt system based upon the same principle as similar outdoor systems. It comes with a seven watt bulb.



Paver Lights are available in:



BRICK STONE



COVENTRY® STONE I/  
OLD TOWNE COBBLE™/  
VILLAGE SQUARE® (6"x6")



COVENTRY STONE I/  
OLD TOWNE COBBLE (6"x9")



### WHY DO EP HENRY PAVERS MAKE THE IDEAL PAVEMENT?

Our pavers are the ideal product for freeze-thaw environments. Proper installation of the product results in a pavement that is rigid, yet flexible. The joints between pavers allow the walkway, driveway, and patio to move without cracking. In addition, they can be “unzipped” to allow for repairs or access to utilities. Unlike asphalt, pavers are virtually maintenance-free. By definition, concrete pavers have a minimum compressive strength of 8,000 PSI (about three times stronger than regular poured concrete) and a maximum water absorption rate of 5 percent.

### WHY ARE THEY CALLED INTERLOCKING CONCRETE PAVERS?

It is the system that makes them interlocking concrete pavers, not necessarily the shape. When installed properly, the combination of the pavers, bedding sand, edge restraint, and joint sand causes them to interlock, allowing them to work as a unified, flexible pavement.

### TELL ME MORE ABOUT THE DURAFACING™ PROCESS.

Durafacing is the trade name EP Henry uses for our process of creating what is known in the industry as a “face mix” paver. Durafacing is a sophisticated process, requiring a higher level of manufacturing equipment and skill, which produces an enhanced surface texture with exceptional strength. This technique came from Europe which is where most paver technology originated. Non-“face mix” manufacturers, who classify their products as “mono” or “one piece” pavers, counter with claims that “two piece” or “face mix” pavers will delaminate. This is simply not true and EP Henry supports this with our Lifetime Warranty. For more information on EP Henry's Durafacing process, visit [ephenry.com](http://ephenry.com).

### HOW DO I DETERMINE HOW MUCH MODIFIED STONE BASE MATERIAL AND SAND I'LL NEED?

As a rule of thumb, use a minimum of 6" of base material for walkways, 6"-8" for patios, and 10"-12" for driveways. The sand setting bed should be 1" thick. One ton of modified stone or sand will cover 100 sf at 2" thick. Using a 10'x10' (100 sf) patio as an example, you would need ½ ton of sand for the setting bed (1" thick) and three tons of modified stone for the base (6" thick). You'll need some additional sand (about 5 percent) or about two bags of Polymeric Sand for the joints between the pavers.

### SOMEONE RECOMMENDED THAT I USE A FABRIC UNDER MY INSTALLATION. WHEN AND WHERE IS IT USED?

EP Henry recommends a geotextile separation fabric (e.g., Mirafi® 500x) under all paver installations. The fabric is laid on top of the compacted soil in the excavated area and keeps the aggregate base material from working its way into the soil subgrade. This is especially important where the soil contains a lot of clay. At a cost of pennies per square foot, the separation fabric provides an insurance policy against base failure.

### CAN EP HENRY PAVERS BE USED FOR MY DRIVEWAY?

Absolutely! For residential driveways, 10"-12" of compacted dense graded aggregated base material is recommended. A standard 2-3/8"

thick paver can be used for light vehicular (cars and pickup trucks) applications. A Herringbone pattern is most suitable in these situations. Contact your local EP Henry Authorized Distributor® or EP Henry's Technical Manager for questions on choosing the appropriate paver.

### TELL ME ABOUT THE SAND SETTING BED.

The material for the bedding layer should be coarse concrete sand. **Do not use stone dust or screenings; they do not allow the pavers to “seat” properly and do not allow for drainage.** The sand should be an even 1" thick layer. Do not compact the sand setting bed. Do not mix portland cement into the sand used for the setting bed or the joints between pavers. It defeats the flexibility of the system, and it cannot be cleaned off the surface of the pavers.

### HOW DO PAVERS COMPARE WITH PATTERNED OR STAMPED CONCRETE?

Patterned concrete pavements are merely slabs of concrete that are embossed with a pattern. Therefore, they are prone to the same problems with freeze-thaw cycles, namely cracking. We guarantee that EP Henry Pavers won't crack; you cannot obtain a similar guarantee for stamped concrete. Stamped concrete requires expansion joints every 10 feet or so, which are very distracting in some patterns. Also, unlike EP Henry Pavers, patterned concrete pavements don't allow access to underground utilities or the ability to make repairs. At virtually the same price per square foot installed, EP Henry Pavers are clearly a superior choice.

### WHAT ARE THE ADVANTAGES OF SEALING MY PAVERS?

Depending upon the sealers, they can offer three advantages: they help resist stains, enhance the color, and bind the sand in the joints to make it difficult for weeds to germinate. Sealers, however, are topical products and must be reapplied regularly (generally every 3-5 years). Sealers may be water-based or solvent-based as long as they are low VOC and compliant with government regulations.

### WILL WEEDS GROW BETWEEN MY PAVERS?

Weeds and grass result from seeds or spores blowing into, and lodging in, the joint sand. This can be minimized by using a Techni-Seal polymeric sand or by sealing the pavers with a joint stabilizing sealer or mixing a pre emergent granular weedkiller in the joint sand. If weeds do appear, a spot vegetation killer (such as Round-Up™) can be used and will not damage the pavers.

### WHAT CAN I DO IF MY PAVERS ARE STAINED OR DAMAGED?

One of the advantages of pavers is that individual units can be removed and replaced in these situations. Remove the sand around the paver and then use two flat head screwdrivers to lift the paver out. Rocking the paver gently in a back-and-forth motion will facilitate removal.

### HOW ABOUT USING EP HENRY PAVERS ON MY POOL DECK?

Not only do EP Henry Pavers make an attractive pool deck, but they also provide a slip-resistant walking surface. Pavers actually are better than poured concrete around pools from the standpoint that the joints will take on moisture and leave the pavement cooler under foot. Like all products that are used outdoors, lighter colors will tend to stay cooler as they reflect the sunlight. Furthermore,

our Bullnose Pavers make a nice pool coping. Make sure the base material around the pool is well compacted before installing pavers. Safety covers can also be installed over pavers with the use of special anchors.

### CAN I USE DE-ICING SALTS ON MY PAVERS?

Yes, you can. EP Henry Pavers have a greater resistance to de-icing salts than conventional paving materials due to their high cement content, strength, density, and low absorption. By definition, paving stones meeting ASTM C-936 — the standard specification for unit concrete pavers — are considered de-icing salt resistant. EP Henry Pavers exceed the requirements of ASTM C-936. Do not be misled by claims of pavers being guaranteed against de-icing salts. **There is no concrete product that is immune to the long term effects of de-icing salts.**

### I HAVE AN EXISTING CONCRETE WALKWAY THAT'S IN PRETTY GOOD SHAPE. CAN I LAY PAVERS OVER IT?

While not the preferred method, pavers can be laid on top of existing concrete walkways. Two issues must be addressed. First, the grade will be raised by about 3" (the thickness of the pavers plus the bedding sand). This is particularly critical if any doorways are involved. Second, if the existing concrete slab should raise or drop with freeze/thaw conditions, then the pavers will do the same.

### HOW CAN I REMOVE MOSS OR MOLD FROM MY PAVERS?

Try Clorox® diluted in water (10 parts water to one part Clorox). Be careful not to get it on other plant material. Keep in mind that there is nothing that will keep it from growing back if it's in a shady, damp area. For a more permanent solution, you will need to correct the moisture and shade problems that are encouraging the moss or mold.

### WHAT IS THE WHITISH DEPOSIT I SEE ON SOME PAVEMENT INSTALLATIONS?

You are probably referring to efflorescence, a natural and common occurrence in concrete and brick products. Efflorescence is the result of natural salts in the materials used in production migrating to the surface of the pavers. This is not a defect nor harmful to the pavers, and will usually weather away with time. Although it is best to allow a year or more for efflorescence to weather away, if you don't want to wait for it to weather away, Techni-Seal® offers an excellent cleaning product to remove it. Do not use efflorescence cleaners repeatedly. Once the pavers are cleaned, it is recommended that they be sealed.



PAVERS WITH EFFLORESCENCE



CLEANED PAVERS

EP Henry offers an extensive library of technical and construction information at [ephenry.com/technical](http://ephenry.com/technical)



## Cleaning Products

EP Henry offers a complete line of cleaners from Techni-Seal to maintain the beauty of your pavers.

### PROFESSIONAL GRADE OIL & GREASE REMOVER

- Removes motor oil and other greasy stains
- Dissolves, dislodges, and encapsulates grease

### PAVER PRIMER

- Dislodges efflorescence and ground-in dirt
- Ensures even cleaning and brightens the color
- Concentrated — one gallon cleans up to 200 sf
- Automatic dilution with adaptable sprayer\*
- Recommended PRIOR TO PROTECTOR application

\*Sprayer available through EP Henry Authorized Hardscaping Distributor®



CLEANED PAVERS



PAVERS WITH EFFLORESCENCE

### HC HARDSCAPE CLEANER

- Multi-surface cleaner
- Dislodges ground-in dirt
- Ensures even cleaning and brightens color
- Concentrated — one gallon cleans up to 800 sf
- Recommended PRIOR TO PROTECTOR application

### PTR PAINT, TAR, AND RUBBER REMOVER

- Effectively dissolves paint, tar or bitumen, rubber, and chewing gum
- Also available in five gallon containers to remove sealers

### RR RUST REMOVER

- Effectively removes stains caused by steel, rusted metal objects, fertilizer, etc.
- Won't discolor pavers



## Dual Performance Sealers

Seal 'n Lock offers the following products which both seal pavers and bond joints in one application. Benefits include improved structural integrity, decreased weed and insect infestation in sand joints, added protection against stains, and a beautiful finish to pavers.

### SUPER WET

Super Wet is a high solids, two-part water based pure urethane sealer that penetrates the pavers to provide a longer lasting protective barrier with superior joint stabilization (no need for polymeric sand) resulting in a wet look. Super Wet is user friendly and environmentally safe. The high solids content pure urethane wears evenly and lasts longer than solvent based sealers.

### NATURAL LUSTER

Natural Luster is a high solids, urethane modified acrylic sealer (with an algae and mold inhibitor) that penetrates the pavers to provide a protective barrier with superior joint stabilization (no need for polymeric sand) resulting in a natural luster. Natural Luster is user friendly and environmentally safe.

## Sealers

Sealing is recommended to preserve the original beauty of EP Henry Pavers and to resist stains. EP Henry is pleased to carry the Techni-Seal® line of high performance sealers, offering several options for protecting and maintaining the beauty of your EP Henry Pavers. Dirt, stains, and efflorescence must be treated with the appropriate Techni-Seal cleaning product prior to sealing.

## Polymeric Sand for Pavement Joints

### BENEFITS

- For pavers made of concrete, natural stone, etc.
- Applied dry — hardens after being sprayed
- Inhibits weed growth
- Resists ants and other insects
- Resists erosion — water, frost, wind, street sweepers, etc.
- Stabilizes pavers

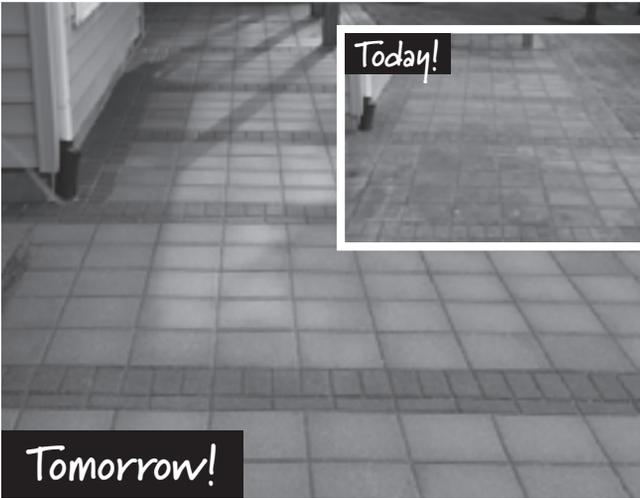


**TECHNI-SEAL  
POLYMERIC SAND  
DISCLAIMER**



Polymeric Sand must be installed per the manufacturer's guidelines. The user should have an up-to-date Techni-Seal technical product data sheet and should view the video of the RG+ installation procedure at: [www.techniseal.com](http://www.techniseal.com). The misapplication of Techni-Seal Polymeric Sand could generate a polymeric haze on the surface.

Techni-Seal Polymeric Sand must NOT be applied to wet or damp surfaces. Do NOT mix Techni-Seal Polymeric Sand with cement, sand or any other chemicals. Do NOT use on submerged or constantly wet surfaces. Use on pavers or slabs installed over a free draining sand-setting bed and compacted dense aggregate base as ICPI recommends. It is not recommended for use on concrete overlay construction or stone dust.



**THE Seal 'n Lock Advantage**  
THE ONLY 'ALL IN ONE DAY' PROCESS

We've recognized the need for change in the interlocking paver sealing industry – not just in sealing products, but in the overall application process. The increased demand for water-based products with low VOC content, as an alternative to solvent-based products, has generated a new technology – **The Seal 'n Lock System**

**The Seal 'n Lock System**

- The only 'ALL IN ONE DAY' process
- No paver whitening from trapped moisture
- Superior joint stabilization
- No toxic odor
- Not harmful to vegetation
- Low VOC content - all 50 states

**Ordinary Method**

- Application can take two to five days
- Turns pavers white from trapped moisture
- Additional costly polymeric sand application
- Toxic odor from solvents
- Harmful to vegetation
- High VOC content

(Go to [www.ephenry.com/sealnlock](http://www.ephenry.com/sealnlock) for complete details)

**Adhesives**

**PAVER BOND POWERSEAL® ADHESIVE**

An easy to apply, quick curing, and flexible high strength adhesive for paving stones, retaining walls, and other hard surface applications.

**TECHNI-SEAL® CONCRETE ADHESIVE**

Perfectly resist the elements including frost and rain:

"RG" — Super-adherent on dry, wet, or frozen surfaces; ideal for retaining walls.

**Paver Edge Restraint**

The purpose of Edge Restraint products is to restrain paver's lateral motion. Without a proper Edge Restraint System, pavers are prone to shifting. EP Henry offers the Snap Edge Paver Restraint System.

**Note:** See diagram of typical installation on page 10.

**ADVANTAGES OF THE SNAP EDGE RESTRAINT SYSTEM:**

- One piece system does it all; straight, curves, or even a complete radius, without waste
- An 8' piece transports easily and requires no extra connectors
- Open base design allows for grass growth along paver edge creating a strong yet invisible edge
- Patented snap and spike together ends for a secure connection and extra support
- Rugged injection molded plastic ensures the strongest edge designed for vehicular and patio/walkway applications
- Can be installed before or after the pavers have been laid
- Easy to install with common 8"-12" landscape spike
- Convenient and efficient packaging, easy to handle



**Sand Stabilizers**

**TECHNI-SEAL POLYMERIC SANDS**

Techni-Seal offers two high quality Polymeric Sand products for pavement joints. Both resist erosion of joints, inhibit weed growth, and resist insect penetration. They are available in two colors: Tan and Granite Gray.

"RG Plus" — Ideal for normal traffic areas including driveways, patios, and walkways.

"HP" — Specially formulated for wider joints and heavier traffic areas, such as sloped driveways, pool decks, and public areas. Also performs better in colder weather.

Additional features:

- Premixed with sand so it's ready for immediate use
- Bonding commences upon spraying with fine mist of water
- "RG Plus" can be installed at 55°F or above
- "HP" can be installed at 40°F or above
- Will not stain pavers
- Complete installation instructions are on the back of the bag

**Note:** Please see Polymeric Sand disclaimer on page 8.

**Separation Fabric**

Mirafi® 500x geotextile fabric is recommended for use with all paver installations. Its primary purpose is to keep the base material from working its way into the soil underneath, thus reducing the possibility of settling.

The material should be flat over the excavated area, with as few wrinkles as possible, and turned up on the sides to cover the sides of the stone base material. It will also prevent migration of the bedding sand into cracks, joints, and weep holes in or next to the pavement.

This product, which costs only pennies per square foot, is an inexpensive insurance policy for your pavement.

**Note:** See diagram of typical installation on page 10.

**A NOTE ABOUT PAVER ACCESSORIES**

EP Henry has researched many lines of accessory products for use with our pavers and wall systems. While there may be other similar products on the market, please note that EP Henry approves and recommends using only those accessory products shown in our catalog.

**Note to Homeowners:** Prior to undertaking an installation yourself, it is recommended that you read these guidelines thoroughly and attend a DIY seminar at your local EP Henry Authorized Hardscaping Distributor®. A schedule of seminars and more detailed installation information can be found at ephentry.com.

Interlocking concrete pavers are installed successfully by professionals and do-it-yourselfers alike. These instructions are designed to be a basic guide. Detailed instructions can be obtained from EP Henry or your EP Henry Authorized Hardscaping Distributor.

## MATERIALS NEEDED

**Stone Base:** Should be ¾" modified stone, also known as 2A, or ¾" quarry blend. A 1" depth of compacted base weighs approximately 1,000 lbs. per 100 sf. Always add 5 to 10 percent for edges and miscellaneous areas.

**Bedding Sand:** Coarse concrete sand is recommended. At a depth of 1", this weighs approximately 1000 lbs. per 100 sq. ft. Figure an extra 5 percent for jointing sand.

**Pavers:** Are typically sold by the square foot. Calculate the square footage needed for your project and add 5 to 10 percent for overage, cuts, waste, etc.

**Edge Restraint:** All exposed edges must be restrained.

**Separation Fabric/Geotextiles:** Recommended for all installations and critical where clay type soils are present. This will help maintain the integrity of the base.

## TOOLS:

- Wooden stakes
- Wide blade mason's chisel
- 6'-8' 2"x4" or 2"x6"
- Mason's string (twine)
- Stiff bristle street broom
- Small pry bar
- 3-5 pound hammer
- Hard tooth garden rake
- 4' level
- 25' tape measure
- Flat shovel
- Wheelbarrow
- Diamond blade wet saw
- Chalkline
- 3-5 HP vibrating plate compactor
- Wire cutters (for cutting bands on pavers)
- 1" diameter sand screed guides (galvanized steel or PVC)

## LAYOUT & PREPARATION

Measure the area you intend to pave. Determine square footage (length x width = square feet) adding 5 to 10 percent for cuts and extra pavers that might be needed later. Measure the linear feet of all edges not up against a permanent structure, such as a house, etc., to determine the amount of edge restraint needed. Draw a plan on a piece of paper showing all important dimensions. Mark the outline of your project with stakes every 4'-6' and at each corner. These stakes should be 8" outside of the planned edge of the finished pavement.

## EXCAVATION

**Note:** Before digging, always call your local utility companies to locate any underground lines.

In general terms, a minimum of 6" of compacted aggregate base is recommended for patios and walkways, and 10" for residential driveways where freeze-thaw conditions exist. Add 3" for the depth of the bedding sand and the thickness of a standard 2 3/8" paver to determine the total depth to excavate. Excavation should be 6" wider than the finished pavement's dimensions on sides where edge restraint is to be used.

Slope and grade are important to ensure proper runoff. It is best to plan at least a 1/4" per foot drop, but try not to exceed 3/8" per foot.

## BASE PREPARATION

As with any building project, the finished pavement will only be as good as the construction of the base. For this reason, this is the most important part of the installation process.

First, run your plate compactor over the excavated area, making sure that soil does not get stuck to the bottom of the plate tamper. Each pass should overlap the previous one by about 4". Compaction should be performed in one direction (North-South), then a second time at a right angle (East-West) to the first compaction. It is recommended that a separation fabric, such as Mirafi® 500x, be laid down over the compacted subgrade and returned up the sides of the excavation.

Now spread your stone base material out evenly in a 2" layer. If the material is dry and dusty, use a garden hose to evenly moisten it down. This helps make the gravel easier to rake and faster to compact. Starting around the outer perimeter, use the plate compactor to pack together the base, again overlapping each pass about 4", and working towards the center. You should make at least two complete passes for each layer. Repeat this process for each subsequent layer of base material until the final thickness is achieved.

When finished with the base, it should be very smooth and flat, and reflect the final grade of your pavers. If the surface deviation is greater than 3/8", then it should be filled in with base material. A deviation that is less than that should be filled in with the screed material, which is always coarse washed concrete sand for paver installations.

## SAND SETTING BED

**Note:** It is important to keep your sand dry. Always keep your sand covered in case of rain. It is suggested that you only screed sand for areas where you will be laying pavers that same day.

Do not attempt to level any area or surface irregularities with the sand. This will result in an uneven surface and unwanted settling. Lay the screed guides (1" outside diameter electrical conduit, strips of wood or other suitable rigid material) on top of the compacted base material 4'-6' apart and parallel.

Evenly distribute a quantity of bedding sand between the guides and drag the 6'-8' 2"x4" or 2"x6" over the guides to create a smooth, even layer of sand, striking off any excess. When the pavers are set on the sand and compacted, the 1" of sand will compress to 3/8" to 1/2" thickness. Do not walk on or work from your sand. Fill voids left by the screed guides with sand and trowel them smooth as you are laying the pavers.

## CONCRETE SAND VS. SCREENINGS FOR THE SETTING BED

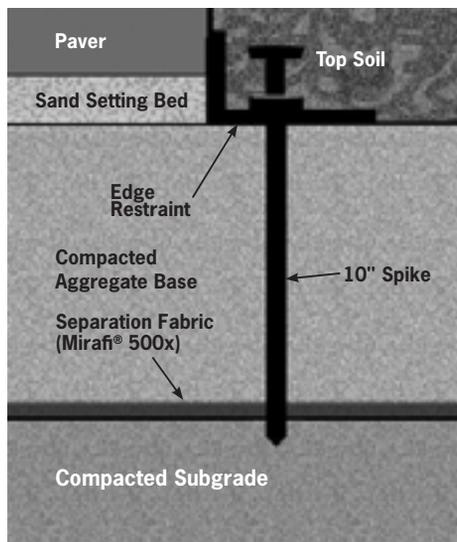
According to the Interlocking Concrete Pavement Institute (ICPI), coarse concrete sand, i.e., sand used to make ready-mixed concrete, is recommended for the setting bed. Do not use stone dust or screenings for the setting bed. These materials do not drain water and become soft over time. Pavers will not seat properly in them when compacted. This will prevent interlock.

For the best results in all applications, ICPI recommends mason's sand to fill the joints. This sand is finer than concrete sand. It is the type of sand used to make mortar for masonry wall construction. Polymeric Sands for the joints are also acceptable as long as they are comparable to mason's sand in particle size.

**Note:** All projects must start at a perfect 90° angle. Use the 3-4-5 triangle method to establish this. For an even mix of pavers, draw from several cubes at a time when installing them.

## LAYING THE PAVERS

Starting from a permanent edge such as a house, driveway, or even a piece of rigid PVC edge restraint, lay your first paver starting from either side. As you start laying pavers, work from right to left, then left to right, and so on, one row of pavers at a time. Set the pavers lightly onto the sand; never press or hammer them in. Every 4' or so, run a string across the front of the laying edge to maintain straight lines. If you are doing the project over a couple of days, cover the entire area with plastic overnight if rain is expected.



Typical Installation Cross Section

## CUTTING THE PAVERS

Mark any stones to be cut with a wax crayon and use either a diamond blade wet saw (recommended) or a dry saw, a paver splitter, or a hammer and chisel may be used, but the edge they produce will be rough and uneven. Try to keep cut pieces along the edges to a size at least that of one half paver. Always wear safety glasses.

## INSTALLATION OF EDGE RESTRAINT

Restrain all edges that are not up against a permanent structure with an appropriate product. Any restraint material should rest entirely on the compacted aggregate base.

## SEAT THE INSTALLED PAVERS IN THE BEDDING SAND

Sweep the pavers clean prior to compacting. Cut a length of Mirafi® 500x or similar fabric to be used as a medium between the tamper and the pavers. Start tamping around the perimeter and, working inward, keep the fabric between the tamper and pavers. Make at least two passes over the pavers, overlapping each pass 2"-4". Make the second pass at a 90° angle to the first. This step will level the pavers and compact them into the bedding sand, filling the joints with sand from below.

## FINISH FILLING JOINTS WITH SAND

Spread joint sand over pavers. Use a stiff bristle street broom and sweep back and forth over the entire paver surface until all joints are filled to the top with sand. Sweep off all excess sand. Again, use Mirafi 500x or a similar medium between the tamper and the pavers. Start tamping around the perimeter and, working inward, keep the fabric between the tamper and the pavers. Make at least two passes over the pavers, overlapping each pass 2"-4". Make the second pass at a 90° angle to the first. This final step will force the sand into the joints of the pavers creating an interlocking pavement. After compacting the pavers, sweep with sand again if needed.

## BULLNOSE PAVERS INSTALLATION

Bullnose Pavers are typically used as stair treads, wall capping, and pool coping. The two recommended options for installation are: mortared-in-place using standard masonry procedures or glued down with a high strength flexible concrete adhesive.

### Mortared-in-Place Installation:

Lay out the Bullnose Pavers in the area where they are to be installed, leaving a  $\frac{3}{8}$ " gap for the mortar between the pavers. Bullnose Pavers are traditionally installed with a  $\frac{1}{2}$ "-1" overhang. Remove the pavers and place an appropriate thickness of mortar on the material to which they are being affixed. Carefully return the pavers to their appropriate places and press into the mortar. Fill joints between the Bullnose Pavers with mortar.

**Note:** Be careful not to get any mortar on the paver surface, as it is very difficult to remove. If you do get mortar on the pavers, allow it to dry, then carefully remove using a stiff bristle brush or, for chunks, a putty knife.

### Installation Using High Strength Flexible Concrete Adhesive:

Lay out the Bullnose Pavers in the area where they are to be installed, abutting one to another. Bullnose Pavers are traditionally installed with a  $\frac{1}{2}$ "-1" overhang. Following the directions of the adhesive manufacturer, remove the pavers and run a continuous bead of adhesive on the material to which they are being affixed, from the front of the Bullnose Paver towards the rear. Carefully return the pavers to their appropriate place and press into the adhesive, being careful not to get any on the paver surface.

**Note:** See adhesive manufacturer's instructions for handling, clean-up, and cure time.



### DON'T SCUFF THOSE PAVERS!

Manufacturers of plate compactors recommend the use of mats or membranes between the compactor and pavers to protect the pavers from surface damage. Most sell accessories for this purpose.

Pavers with profiled tops — Old Towne Cobble™, Coventry® Stone II, Coventry Stone III, Coventry Stone IV, Coventry Cobble, Coventry Estate Cobble, and Bristol Stone™ are most susceptible to damage from plate compactors. These pavers have high and low points molded into the surface, preventing the equipment from riding flat and subjecting the high points to potential scuffs. However, even smooth, flat surfaces can be damaged with improper usage or the existence of debris on the plate.

EP Henry recommends that you ALWAYS protect profiled top pavers prior to tamping by placing a medium between the plate compactor and the pavers. Recommended products include:

- Mirafi 500x (BEST)
- Luan plywood
- Rubber Mat
- Thin carpeting
- Cardboard

**Caution:** Dry sawing or grinding of concrete products may result in the release of respirable crystalline quartz. Prolonged exposure to respirable crystalline quartz may cause delayed (chronic) lung injury (silicosis). The use of a NIOSH-Approved respirator and tight-fitting goggles are recommended when sawing or grinding operations are in progress.

## CALL 811 BEFORE YOU DIG!

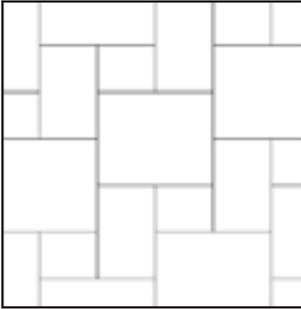
Whether it's a paver job or a retaining wall, contractors are legally required to provide utility notification before ANY excavation. You'll need to give at least two to three business days notice, but typically not more than 10 days. Be prepared to describe your work and then plan on staying 2' away from any markings near your project.

## JUST DIAL 811 NATIONWIDE.

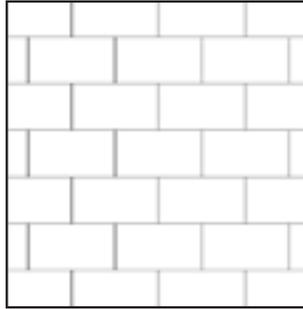
Remember, you are liable for all damage and repair costs if you do not call!



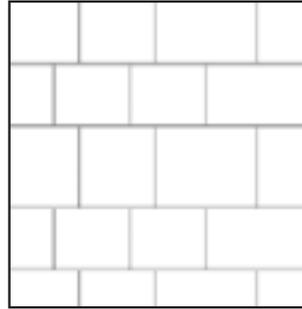
**Note about DevonStone® Installation:** Our DevonStone line of cast stone slabs is created using a different manufacturing process than our non-wet cast pavers. Please go to ephenry.com for complete installation instructions for DevonStone including differences in base prep, unit spacing, cleaning and sealing and other important considerations.



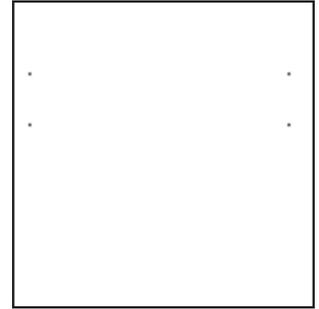
**TUDOR**  
**Tennyson®**  
 14% 12"x12", 29% 12"x24",  
 57% 24"x24"



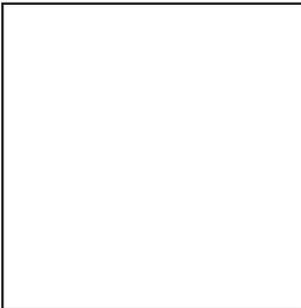
**RUNNING BOND**  
**Tennyson**  
 100% 12"x18", 12"x24"  
 or 18"x24"



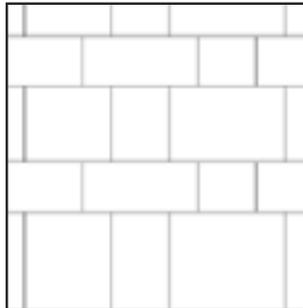
**RUNNING BOND WITH 3 SIZES**  
**Tennyson & Gaelic®**  
 30% 18"x18", 34% 18"x24",  
 36% 24"x24"



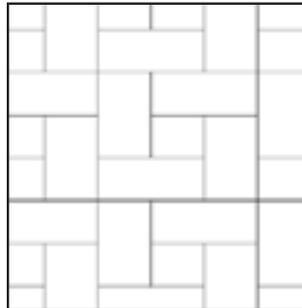
**RUNNING BOND WITH 3 SIZES**  
**Tennyson**  
 28% 12"x12", 34% 12"x18",  
 38% 12"x24"



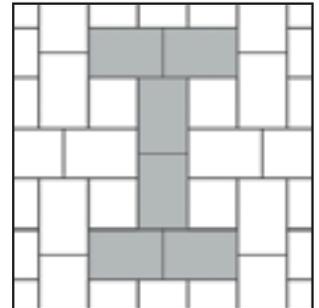
**TARTAN PLAID**  
**Tennyson**  
 17% 12"x12", 49% 12"x24",  
 34% 24"x24"



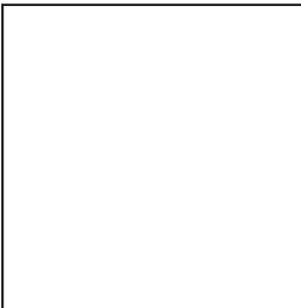
**RUNNING BOND**  
**Tennyson**  
 100% 12"x18", 18"x24" or 12"x24"



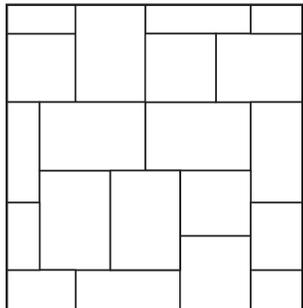
**TILE**  
**Tennyson**  
 12% 12"x12", 88% 12"x24"



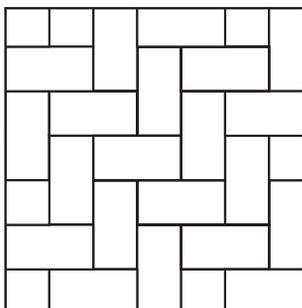
**"I" PATTERN**  
**Tennyson**  
 31% 12"x12", 69% 12"x18"



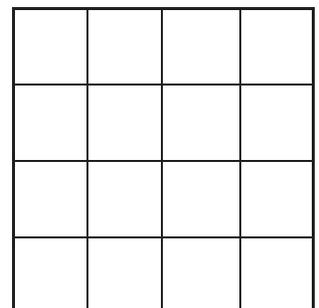
**HOLLAND DUTCH**  
**Tennyson**  
 21% 12"x12", 79% 24"x24"



**RANDOM**  
**Tennyson**  
 10% 12"x12", 21% 12"x18",  
 14% 18"x18", 10% 12"x24",  
 30% 18"x24", 15% 24"x24"



**90° HERRINGBONE**  
**Tennyson**  
 100% 12"x18"



**STACKED BOND**  
**Tennyson & Gaelic**  
 100% 18"x18" or 100% 24"x24"

**WHAT ARE THE ADVANTAGES OF DEVONSTONE OVER NATURAL STONE?**

Many natural stones have inherent fractures, making them susceptible to cracking and spalling in freeze/thaw conditions.

**MY DEVONSTONE SLABS HAVE A WHITE HAZE ON THEM. WHAT IS IT?**

You are probably referring to efflorescence, a natural and common occurrence in concrete and brick products. Efflorescence is the result of natural salts in the materials used in product migrating to the surface of the slabs. This is not a defect nor harmful to the slabs and will usually weather away with time.

**CAN I PUT DEVONSTONE ON TOP OF MY EXISTING CONCRETE PATIO OR WALKWAY?**

Yes, you can, provided it's in good shape. Use a high strength, flexible concrete adhesive or a thin set bed (1/3" – 3/8") of mortar to adhere them to the concrete slab. All joints must be mortared (polymeric sand is not acceptable in these applications). Make sure you immediately clean any mortar residue off the slabs, using a damp cloth.

**HOW DO I CUT DEVONSTONE?**

DevonStone can be easily cut with any power saw with a diamond blade. Always wear protective glasses and a mask when cutting with a power saw. If using water during the cutting process, be sure to immediately clean and residue that may be left on the stone or staining may result. Do not use a hammer or chisel to cut DevonStone

**CAN I USE DEVONSTONE ON MY DRIVEWAY?**

No. DevonStone is not suitable for any vehicular traffic.

**CAN I USE DEVONSTONE INSIDE?**

Absolutely, just install it the same way you would tile, with a thinset adhesive.

**CAN I USE DEVONSTONE WITH MY EP HENRY PAVERS?**

Yes you can, but you must account for the difference in thickness. Most pavers are 2 3/8" or 3 1/8" thick; DevonStone is 1 5/8" thick. Do not attempt to compensate for the variability in thickness with the bedding material.

**Important Note:** DO NOT use a plate compactor on DevonStone and it is not recommended that you seal DevonStone.





## Retaining Wall Lights

Your EP Henry Wall looks beautiful during the day. Now you can “show it off” and night with landscape lighting, which adds safety and security too!

Walter & Cornelius Premium Hardscape Lights by Kerr Lighting are designed to blend in with your hardscape design. They provide an unrivaled combination of energy efficiency, durability, and brilliant light quality. Featuring the latest developments in LED technology, these lights offer an evenly distributed warm-white color, long life for low maintenance costs, and continuous performance under all weather conditions.

The sleek compact fixtures minimize their impact on your hardscape design. Made from a durable polycarbonate plastic, they will not corrode or weather like other materials. Because the fixtures are seamless, the light beam is controlled with no seepage around the edges.

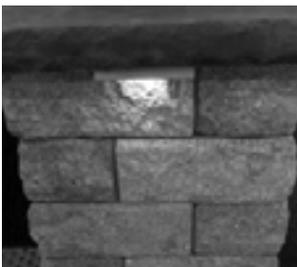
### COLOR OPTIONS

Tan, Gray, Bronze

### LIGHTING & LED FEATURES

- Energy Efficient LED Lights
- Uses less than 1 Watt per fixture
- Beautifully balances brightness
- Low voltage 12 V DC System
- Long Life – Over 30,000 hours
- Excellent performance in all temperatures & weather conditions

▲ Surface Mounted Wall Lights



▲ Walter - use under walls caps, pillar caps, and steps



▲ Cornelius - use on outside corners underneath pillar caps



▼ Integral Wall Lights; Visit [ephenry.com](http://ephenry.com) for additional details



▼ Surface Mounted Wall Lights





▲ Geogrid

# THE Seal 'n Lock Advantage

THE ONLY 'ALL IN ONE DAY' PROCESS

We've recognized the need for change in the interlocking paver sealing industry – not just in sealing products, but in the overall application process. The increased demand for water-based products with low VOC content, as an alternative to solvent-based products, has generated a new technology – **The Seal 'n Lock System**

## The Seal 'n Lock System

- The only 'ALL IN ONE DAY' process
- No wall whitening from trapped moisture
- No toxic odor
- Not harmful to vegetation
- Low VOC content - all 50 states

## Ordinary Method

- Application can take two to five days
- Turns pavers/walls white from trapped moisture
- Additional costly polymeric sand application
- Toxic odor from solvents
- Harmful to vegetation
- High VOC content

(Go to [www.ephenry.com/sealnlock](http://www.ephenry.com/sealnlock) for complete details)

### Adhesives

EP Henry offers a variety of adhesives for wall applications:

#### SUREBOND PAVER BOND

- High strength structural grade adhesive
- Durable formula withstands extreme wear and tear, including heavy vehicular traffic
- Sets quickly in only 10 minutes
- Freeze-thaw stable
- Naturally shims

### Sealers

EP Henry offers these sealing products for walls from Techni-Seal:

#### WL4 PROTECTOR

- Enhances original color
- Provides a luxurious wet look
- Forms a long-lasting protective film

#### WLP PROTECTOR

- Enhances original color
- Provides an elegant matte finish
- Non-film-forming — won't make surface slippery
- Same-day application
- Also recommended for natural stones and retaining walls

#### TECHNI-SEAL® RG

- Strong, durable bond
- Flexible, ideal for concrete retaining wall applications
- Can be used on wet or frozen surfaces (allow longer curing time)
- Economical

### Product Information

MIRAFI® GEOGRID	SOLD BY	UX MESA GRID	SOLD BY
1XL 20 SQUARE YARD ROLL (4'x45')	ROLL	UX1100 121 SQUARE YARD ROLL (4.36'x250')	ROLL
3XT 200 SQUARE YARD ROLL (12'x150')	ROLL	UX1400 121 SQUARE YARD ROLL (4.36'x250')	ROLL
5XT 200 SQUARE YARD ROLL (12'x150')	ROLL	UX1500 96.9 SQUARE YARD ROLL (4.36'x200')	ROLL
8XT 267 SQUARE YARD ROLL (12'x200')	ROLL	UX1600 96.9 SQUARE YARD ROLL (4.36'x200')	ROLL
		UX1700 96.9 SQUARE YARD ROLL (4.36'x200')	ROLL

## Coventry® Wall and Tudor Wall™

**Tools:** Shovel, wheelbarrow, level, string line, hammer, tape measure, wooden stakes, dead blow hammer, plate compactor, and splitter for splitting block.

### CALCULATE WALL MATERIALS NEEDED

Coventry Wall and Tudor Wall are sold by the square foot. Determine the square footage of wall block needed by multiplying the wall's length by its height (don't forget that you'll need to bury a portion of the wall — see "Prepare the Footing"). Both the 3" high and 6" high pallets contain 50 sf wall block. Due to the walls' modular height, both heights can be combined within the same wall. To calculate the number of pins needed, subtract one from the number of non-cap courses and multiply that result by the total lineal feet of wall. For example, for a 20' long wall, five courses high plus a cap, you would need  $(5-1) \times 20 = 80$  pins. To calculate the number of caps needed, divide the total lineal feet of wall by 1.33 ( $20' \text{ long wall} = (20 \div 1.33) = 15$  caps) for the 16" long rectangular cap.

### PREPARE THE FOOTING

Dig a trench 24" wide and a minimum of 12" below grade depending on the overall height of the wall. As a rule of thumb, you will bury 10 percent of the wall height or a minimum of 6", whichever is greater. Make sure the soil at the bottom of the trench is well compacted to prevent settling. In heavy or clay soils for best results, wrap the footer trench in a "U" shape configuration with geotextile. This will preserve the stone base over time and keep it from migrating into the clay soil. Using a vibratory plate compactor, install 6" of modified stone in two 3" layers making sure the surface of the last layer is smooth and level.

**Tip:** Add a 1" layer of sand or stone screenings on top of the footing to make the base course easier to level.

### INSTALL THE BASE COURSE\*

Install the first layer of the walls by placing the units, narrowest slot ( $\frac{1}{2}$ " wide) on the top of the block and towards the back, on the prepared base. For a battered wall (where each course sets back), level the units with a carpenter's level from front to back and side-to-side. For non-battered walls, level the units from side-to-side, but tilt the bottom block slightly back so that the entire wall, when constructed, leans slightly towards the soil being retained. Check for straightness by using a string line on top of the block, using the slot as a guide. Each pallet of the walls comes with five different length stones; use a combination of sizes.

**Note:** EP Henry offers Base Course Block, which facilitates ease of installation and provides improved structural stability.

**Note:** Structurally, battered walls are superior to non-battered walls.

### INSERT THE PINS

Insert one pin, as shown, in each block except the 4" long unit. Adhesive should be used to hold the 4" units in place. The 16" units may require the use of two pins. Note that pin placement for battered walls is different than that for non-battered walls (see diagram at far right).

### BACKFILL THE WALL

Backfill 12" behind each layer of the wall with well-draining granular fill (i.e.,  $\frac{3}{4}$ " clean stone). All soil behind the wall must be compacted. Use only lightweight mechanical compaction equipment within 3' of the back of the units.

**Tip:** Consider using a geotextile landscape fabric directly behind the wall block to prevent fine soil particles from washing through to the front. Also consider overlaying the drainage stone behind the wall with geotextile to prevent covering soil or mulch from clogging the drainage stone.

### INSTALLING ADDITIONAL COURSES

Place the next and additional courses of the wall in a staggered or half bond fashion, randomly using all sizes. Avoid having a vertical line span more than two layers of block. Insert pins in each course as you build the wall, making sure that every pin is oriented the same way. Backfill each course as the wall is being built. For building combination walls that use both the 3" and 6" high units, the ratio depends on your personal taste. Generally, a combination wall will be 70 percent 6" units and 30 percent 3" units. Special note on 3'-6" combination walls with a set-back: When laying two courses of 3" block, it is important that you only batter one of them; this will help keep the set-back in line with your 6" courses. Maximum unreinforced height for the walls is 24" for non-battered walls and 36" for walls built with a set-back, under ideal conditions.

### CAP THE WALL

Attach the wall cap blocks with a high strength, flexible concrete adhesive. An overhang of 1" in the front looks best. Some cutting may be necessary; consult your EP Henry Authorized Hardscaping Distributor® for cutting equipment suggestions.

### ADDITIONAL TIPS:

#### BUILDING 90° CORNERS

Special units are available to construct true 90° corners. They are 14" long and available in both 3" and 6" heights. To build 90° corners, begin construction at the corner of the wall and work outward. Alternate the long dimension of corner units to maintain a running bond pattern. Use a high strength flexible adhesive to bond the corner blocks together, as there are no slots for pins. Also, any single battered wall with a 90° corner on each end requires cutting the corner units to accommodate the wall batter as the wall rises to maintain the running bond pattern.

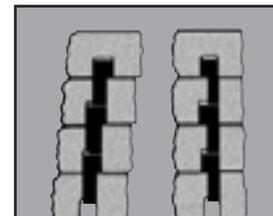
### STEPS

The installation of steps requires careful layout and planning. It is critical that the base be properly installed; see "Prepare the Footing" for details. A minimum of 6" of modified stone base is required under all risers. Check local construction codes for minimum riser height and tread depth. Use the wall blocks to create the riser and the 12"x3"x16" or Universal Caps for the tread. Bullnose Pavers may also be used for the tread.

When constructing steps, bury a block behind the visible riser. In other words, each step should be at least two blocks deep. This will give the tread (cap) more stability by allowing the front block of the upper step to bear on the back block of the lower step. Use a high strength concrete adhesive to attach the treads to the risers.



▲ This wall has been engineered due to its height



#### BATTER

For walls with a set-back, insert pin as shown above.

#### NO BATTER

For walls without a set-back, insert pin as shown above.

#### PIN



**Note:** These instructions are meant as a general guideline for walls under ideal conditions, and assuming no slopes or surcharges. Site-specific conditions may warrant additional installation requirements.

**Caution:** Dry sawing or grinding of concrete products may result in the release of respirable crystalline quartz. Prolonged exposure to respirable crystalline quartz may cause delayed (chronic) lung injury (silicosis). The use of a NIOSH-Approved respirator and tight-fitting goggles are recommended when sawing or grinding operations are in progress.

## Coventry® Wall III

**Tools:** Shovel, wheelbarrow, level, string line, hammer, tape measure, wooden stakes, dead blow hammer, plate compactor, and splitter for splitting block.

### GENERAL GUIDELINES

- Maximum height for Coventry Wall III in freestanding applications without engineering assistance is 33" (exposed height including cap)
- Seek a qualified professional engineer where a taller wall may be required.
- Curves in the wall, corners, and piers will all help with the stability of your Double Sided Coventry Wall.
- Both pins and adhesive are required for proper installation of a Free Standing Coventry Wall III construction.
- Seat walls are typically 18"- 24" high, parapet walls are typically 30"- 33" high.

### CALCULATE MATERIAL NEEDED

Coventry Wall III is sold by the square foot. Determine the total square feet of wall needed by multiplying the length times the height (don't forget the block that will be below grade). Both the 3" high pallet and 6" high pallet contains 40 square feet of wall block. Due to the modular sizes of Coventry Wall III, both heights can be combined within the same wall. Use the following formula to calculate the number of pins needed:

(Number of non-cap courses – 4) x linear feet of the wall x number of pins per linear foot (2.3) = total number of pins.

A 20' long wall, 5 courses high (without caps)  $5-1 = 4 \times 20 = 80$ ,  $80 \times 2.3 = 184$  pins needed.

Use the following formula to calculate the number of Universal Caps needed:

$$\text{Total lineal feet} \div 1.25$$

$$= \text{total number of Universal Caps needed}$$

Example: A 20' long wall =  $20' \div 1.25$

$$= 16 \text{ Universal Caps needed}$$

**Note:** Coventry Wall III pins are required for this wall system and cannot be substituted by standard Coventry Wall pins which are significantly smaller.

## Wall Installation

### PREPARE THE FOOTING

Dig a trench 24" wide and a minimum of 12" below grade depending on the overall height of the wall. As a rule of thumb, you will bury 10 percent of the wall height or a minimum of 6", whichever is greater. Make sure the soil at the bottom of the trench is well compacted to prevent settling. In heavy or clay soils for best results, wrap the footer trench in a "U" shape configuration with geotextile. This will preserve the stone base over time and keep it from migrating into the clay soil. Using a vibratory plate compactor install 6" of modified stone in two 3" layers making sure the surface of last layer is smooth and level.

**Tip:** Add a 1" layer of sand or stone screenings on top of the compacted stone in the footing to make the base course easier to level.

### INSTALL THE BASE COURSE\*

Install the first layer of Coventry Wall III by placing the units with the parallel channel groves facing up and the flat side on the prepared base. Screenings or coarse concrete sand may be used as a leveling agent, but should not exceed 1" in depth. It is recommended that EP Henry Base Course Block\* or 6" units be used for the first course to help ensure the wall's stability. Level the units from

front to back and side-to-side using a dead blow hammer and level. Coventry Wall III blocks come in 3 different lengths. Align the base course with a string line to assure a straight wall where applicable.

**Note:** EP Henry offers Base Course Block which facilitates ease of installation and provides improved structural stability. When using the Base Course Block glue the first course of Coventry Wall III to the Base Course Block to maintain structural stability.

### INSTALLING ADDITIONAL COURSES

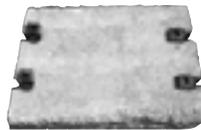
Place the next and additional courses of Coventry Wall III in such a fashion that each block bridges two units below in a running bond pattern, wherever possible. Avoid having a vertical line span more than two layers, or 6" of block. Lay additional courses starting at the corner and working toward the center. Insert two pins in the bottom of each block in each course as you build the wall, making sure that the square portion of every pin is seated in the receiving channel of the block below. The pins may be placed diagonally or so they seat into only one channel keeping the other channel clear for electrical wiring. Marry the angles of the blocks to avoid gaps and to keep the continuity of the rock face on both sides of the wall. The tightest radius possible using only the 10" and 6" long units is 33.5" to the back of the blocks. By using the 16" long blocks and with the smaller units you can achieve a larger radius. It is necessary to run a bead of high strength, flexible concrete adhesive on the outside edge of both channels about 1"- 2" from both of the faces of the block, between each course for structural stability.

### INSERT THE PINS

Insert pins so the cylindrical end is placed into the round opening on the flat side of the Coventry Wall III block. The square end of the pin should protrude from the flat side of the block to allow it to fit into the receiving channel in the blocks below. Note: the pin placement for battered walls is different than that for non-battered walls. For free standing and non-battered walls the pins should be placed with the square end oriented toward the center of the block. For battered retaining wall construction the square end of the pins should be placed oriented toward the front of the block. When properly seated, this will result in a 1/2" batter (set back) of the block.

\*See photo for both orientation alignment positions.

Battered Alignment



Non Battered Alignment

### BUILDING 90° CORNERS

Please note one 16" long unit on every layer of block per pallet is solid on one side with no channels to allow that unit to be split in the field as a corner. Standard Double Sided Coventry Wall corners are available in both 3" and 6" high units to readily create 90° corners as well. To build 90° corners, begin construction at the corner of the wall and work outward. Alternate corner units with the long dimension running perpendicular to that of the unit below it to maintain a running bond pattern. After splitting the corner, take a piece of block and rake the face of the fresh split to create the aged look. Start by laying the corner unit first and work your base course away from the corner unit. After installing and leveling your base course, start the second course again at the corner. All courses of block in free standing wall construction must be glued using only high strength, flexible concrete adhesive. When building a corner, make sure that the corner unit overlaps two blocks beneath.

### CAP THE WALL

After installing your last course of wall block, attach the Universal Coventry Wall Caps with a high strength, flexible concrete adhesive. The cap units should be installed following the contour of the wall and with a 1/2" - 1" overhang on both sides. Universal Coventry Wall Caps will fit a 6' 6" inside radius with no cuts.

(A) Alternate the orientation of the or the long and short sides of the Coventry Universal Caps for a straight wall.

(B) For a curved wall, marry the angles of the cap to conform to the radius. Some cutting may be necessary.

### RETAINING WALLS AND BATTERED WALL CONSTRUCTION

**Note:** Structurally, battered walls are superior to non-battered walls.

### BACKFILL THE WALL

Backfill 12" behind each layer of Coventry Wall III with well-draining granular fill (i.e., 3/4" clean stone). All soil behind the wall must be compacted. Use only lightweight mechanical compaction equipment within 3' of the back of the units.

**Tip:** consider overlaying the top surface of the drainage stone behind the wall with geotextile to prevent covering soil or mulch from clogging the drainage stone.

### INSTALLING ADDITIONAL COURSES

Place the next and additional courses of Coventry Wall III in a staggered or half bond fashion, randomly using all sizes. Avoid having a vertical line span more than two layers of block. Insert pins in each course as you build the wall, making sure that every pin is oriented the same way. Only two pins per block are necessary. Backfill each course as the wall is being built. For building combination walls that use both the 3" and 6" high units, the ratio depends on your personal taste. Generally, a combination wall will be 70 percent 6" units and 30 percent 3" units. Special note on 3"-6" combination walls with a set-back: When laying two courses of 3" block, it is important that you only batter one of them; this will help keep the set-back in line with your 6" courses. Maximum unreinforced height for Coventry Wall III is 24" for non-battered walls and 36" for walls built with a set-back, under ideal conditions.

### STEPS

The installation of steps requires careful layout and planning. It is critical that the base be properly installed; see "Prepare the Footing and Install the Base Course\*" for details. A minimum of 6" of modified stone base is required under all risers. Check local construction codes for minimum riser height and tread depth. Use the wall blocks to create the riser and the 12"x3"x16" or Universal Caps for the tread. Bullnose Pavers may also be used for the tread. When constructing steps, bury a block behind the visible riser\*. In other words, each step should be at least two blocks deep. This will give the tread (cap) more stability by allowing the front block of the upper step to bear on the back block of the lower step. Use a high strength concrete adhesive to attach the treads to the risers.

\***Tip:** for the most stable construction use of the EP Henry Filler Block to core fill steps will provide strength and stability to the step construction. The filler block is compatible with all 6" and 8" tall units. For more details visit ephenry.com/technical.

## Double Sided Coventry® Wall and Double Sided Tudor Wall™

**Tools:** Shovel, wheelbarrow, level, string line, hammer, tape measure, wooden stakes, dead blow hammer, plate compactor, and splitter for splitting block.

### GENERAL GUIDELINES

- Maximum height for the walls in freestanding applications without engineering assistance is 33" (exposed height including cap). Seek a qualified professional engineer where a taller wall may be required.
- Curves in the wall, corners, and piers will all help with the stability of the walls.
- Both pins and adhesive are required for proper installation of the walls.
- Seat walls are typically 18"-24" high, parapet walls are typically 30"-33" high.

### CALCULATE MATERIAL NEEDED

Double Sided Coventry Wall and Double Sided Tudor Wall are sold by the square foot. Determine the total square feet of wall needed by multiplying the length times the height (don't forget the block that will be below grade). Both the 3" high pallet and 6" high pallet contain 40 square feet of wall block. Due to the walls' modularity, both heights can be combined within the same wall.

Use the following formula to calculate the number of pins needed:

$$(\text{Number of non-cap courses} - 1) \times \text{linear feet of wall} = \text{total number of pins.}$$

Example: A 20' long wall, 5 courses high (without cap)  $5-1 = 4 \times 20' = 80$  pins needed

Use the following formula to calculate the number of Universal Caps needed:

$$\text{Total lineal feet} \div 1.25 = \text{total number of Universal Caps needed}$$

Example: A 20' long wall =  $20' \div 1.25 = 16$  Universal Caps needed

### PREPARE THE FOOTING

Dig a trench 24" wide and a minimum of 12" below grade depending on the overall height of the wall. As a rule of thumb, you will bury 10 percent of the wall height or a minimum of 6", whichever is greater. Make sure the soil at the bottom of the trench is well compacted to prevent settling. In heavy or clay soils for best results, wrap the footer trench in a "U" shape configuration with geotextile. This will preserve the stone base over time and keep it from migrating into the clay soil. Using a vibratory plate compactor install 6" of modified stone in two 3" layers making sure the surface of last layer is smooth and level.

**Tip:** Add a 1" layer of sand or stone screenings on top of the footing to make the base course easier to level.

### INSTALL THE BASE COURSE\*

Install the first layer of the walls by placing the units, narrowest slot ( $\frac{1}{2}$ " wide) on the top, on the prepared base. Depending on the radius you are trying to achieve, you may need to turn a block upside down to ease installation. Screenings or coarse concrete sand may be used as a leveling agent, but should not exceed 1" in depth. It is recommended that 6" units be used for the first course to help ensure the wall's stability. Level the units from front to back and side-to-side using a dead blow hammer and level.

The walls blocks come in five different sizes. Use 6"x16" for setting the first course. Align the base course to a string line to assure a straight wall where applicable.

**Note:** EP Henry offers Base Course Block which facilitates ease of installation and provides improved structural stability.

### INSTALLING ADDITIONAL COURSES

Place the next and additional courses of the wall in such a fashion that each block bridges two units below in a running bond pattern, wherever possible. Avoid having a vertical line span more than two layers, or 6" of block. Lay additional courses starting at the corner and working toward the center.

**Insert pins in each course as you build the wall, making sure that the flag of every pin is oriented toward the wider part of the block.**

Marry the angles of the blocks to avoid gaps and to keep the continuity of the rock face on both sides of the wall. The tightest radius possible using all sized units is 42". By using more of the smaller block and less of the larger units you can achieve a tighter radius.

It is necessary to run a bead of high strength, flexible concrete adhesive on both sides of the slot about 1"-2" from both of the faces of the block, between each course for structural stability.

### BUILDING 90° CORNERS

Double sided corners are available in both 3" and 6" high units to readily create 90° corners. To build 90° corners, begin construction at the corner of the wall and work outward. Alternate corner units to maintain a running bond pattern. Use a high strength flexible adhesive to bond the corners together, as there are no slots for pins.

After splitting the corner, take a piece of block and rake the face of the fresh split to create the aged look.

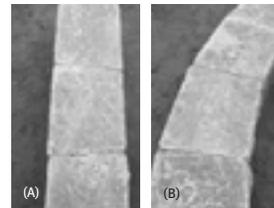
Start by laying the corner unit first and work your base course away from the corner unit. After installing and leveling your base course, start the second course again at the corner. No pins will be used in the corner; use high strength, flexible concrete adhesive only. When building a corner, make sure that the corner unit overlaps two blocks beneath.

### CAP THE WALL

After installing your last course of wall block, attach the Universal Coventry Wall Caps with a high strength, flexible concrete adhesive. The cap units should be installed following the contour

of the wall and with a  $\frac{1}{2}$ " - 1" overhang on both sides. Universal Coventry Wall Caps will fit a 6' 6" inside radius with no cuts.

- (A) Alternate Coventry Universal Caps for a straight wall.
- (B) For a curved wall, marry the angles of the cap to conform to the radius. Some cutting may be necessary.



## Coventry® Garden Wall

**Tools:** Shovel, wheelbarrow, level, string line, hammer, tape measure, wooden stakes, dead blow hammer, plate compactor, and splitter for splitting block.

### CALCULATE WALL MATERIALS NEEDED

Determine the square footage of wall by multiplying length x height. Multiply the result by three to determine the number of the wall units necessary to complete the project. See the wall calculator below.

**Note:** This wall system is best suited for construction of straight and curved walls.

### PREPARE THE FOOTING

Dig a trench 24" wide and a minimum of 10" below grade depending on the overall height of the wall. As a rule of thumb, you will bury 10 percent of the wall height or a minimum of 4", whichever is greater. Make sure the soil at the bottom of the trench is well compacted to prevent settling. In heavy or clay soils for best results, wrap the footer trench in a "U" shape configuration with geotextile. This will preserve the stone base over time and keep it from migrating into the clay soil. Using a vibratory plate compactor install 6" of modified stone in two 3" layers making sure the surface of last layer is smooth and level.

**Tip:** Add a 1" layer of sand or stone screenings on top of the footing to make the base course easier to level.

### INSTALL THE BASE COURSE

Use rectangular wall units for straight walls and tapered units for curved walls. For straight walls you may use tapered units underneath the top course, as the "V" gaps will not be visible. Position the walls side-by-side on the prepared base. Level the units from front to back and side-to-side with a dead blow hammer and level. Use a string line along the back of the block to verify straightness.

### BACKFILL THE UNITS

Backfill 12" behind each layer of the walls with  $\frac{1}{2}$ " -  $\frac{3}{4}$ " clean stone.

### Coventry Garden Wall Calculator

		WALL LENGTH					
		5'	10'	15'	20'	25'	30'
WALL HEIGHT	4" (1 COURSE)	5	10	15	21	26	31
	8" (2 COURSES)	10	21	31	41	51	62
	12" (3 COURSES)	15	31	46	62	77	92
	16" (4 COURSES)	21	41	62	82	103	123

Straight Unit Size:  
8"Dx4"Hx11½"W  
Weight: Approx. 29 lbs.

Tapered Unit Size:  
8"Dx4"Hx11½"W,  
tapering to 9" in back  
weight: Approx. 25 lbs.

**Note:** These instructions are meant as a general guideline for walls under ideal conditions, and assuming no slopes or surcharges. Site-specific conditions may warrant additional installation requirements.

**Caution:** Dry sawing or grinding of concrete products may result in the release of respirable crystalline quartz. Prolonged exposure to respirable crystalline quartz may cause delayed (chronic) lung injury (silicosis). The use of a NIOSH-Approved respirator and tight-fitting goggles are recommended when sawing or grinding operations are in progress.

## INSTALLING ADDITIONAL COURSES

Place the next course and additional courses of Coventry Garden Wall in such a fashion that each block bridges two units below (running bond pattern). For best results, set each course back  $\frac{3}{4}$ ". Backfill each course as the wall is being built. Maximum wall height for Coventry Garden Wall is 16", or four courses, under ideal conditions. Surcharges, soil that does not drain well, a slope behind the wall, or a nearby structure are all conditions that might reduce the maximum wall height.

## CREATING CIRCLES

The minimum radius for the top course of Coventry Garden Wall is 22" (measured from the back of the block). Add 1" per course of block below the top layer to compensate for the setback. For example, with four layers of block, the radius at the bottom would be 25".

## BUILDING WALLS WITH BOTH STRAIGHT & CURVED SECTIONS

It's easy to build beautiful Coventry Garden Walls combining both curved and straight sections of wall. Since the layers below the top course won't be visible, you may use all tapered blocks.

Due to its 8" depth, Coventry Garden Wall does not accommodate creating steps as readily as some of our wall systems.

## English Garden Wall™

**Tools:** Shovel, wheelbarrow, level, string line, hammer, tape measure, wooden stakes, dead blow hammer, plate compactor, and splitter for splitting block.

## CALCULATE WALL MATERIALS NEEDED

Determine the square footage of wall by multiplying length x height. Multiply the result by three to determine the number of English Garden Wall units necessary to complete the project.

**Note:** This wall system is best suited for construction of straight and curved walls.

## PREPARE THE FOOTING

Dig a trench 24" wide and a minimum of 10" below grade depending on the overall height of the wall. As a rule of thumb, you will bury 10 percent of the wall height or a minimum of 4", whichever is greater. Make sure the soil at the bottom of the trench is well compacted to prevent settling. In heavy or clay soils for best results, wrap the footer trench in a "U" shape configuration with geotextile. This will preserve the stone base over time and keep it from migrating into the clay soil. Using a vibratory plate compactor install 6" of modified stone in two 3" layers making sure the surface of last layer is smooth and level.

**Tip:** Add a 1" layer of sand or stone screenings on top of the footing to make the base course easier to level.

## INSTALL THE BASE COURSE

Use rectangular English Garden Wall units for straight walls and tapered units for curved walls. For straight walls you may use tapered units underneath the top course, as the "V" gaps will not be visible. Chip off the lip with a hammer to make it easier to level the first course. Set the English Garden Wall units with the lip down. Position units side-by-side on the prepared base. Level the units from front to back and side-to-side using a dead blow hammer and level. Use a string line along the back of the block to verify straightness.

## BACKFILL THE UNITS

Backfill 12" behind each layer of English Garden Wall with  $\frac{1}{2}$ "- $\frac{3}{4}$ " clean stone.

## INSTALLING ADDITIONAL COURSES

Place the next course and additional courses in such a fashion that each block bridges two units below (running bond pattern). Pull the units forward so that the lip rests against the back edge of the course underneath (your wall will step back  $\frac{3}{4}$ " for every layer) to engage the lip. Backfill each course as the wall is being built. Maximum wall height for English Garden Wall is 24", or six courses, under ideal conditions. Surcharges, soil that does not drain well, a slope behind the wall, or a nearby structure are all conditions that might reduce the maximum wall height.

## CREATING CIRCLES

The minimum radius for the top course of English Garden Wall is 22" (measured from the back of the block). Add 1" per course of block below the top layer to compensate for the setback. For example, with four layers of block, the radius at the bottom would be 25".

## BUILDING WALLS WITH BOTH STRAIGHT & CURVED SECTIONS

It's easy to build beautiful walls combining both curved and straight sections of wall. Since the layers below the top course won't be visible, you may use all tapered blocks\*.

## Terrace Wall™

**Tools:** Shovel, wheelbarrow, level, string line, wooden stakes, dead blow hammer, and splitter for splitting block.

## CALCULATE MATERIALS NEEDED

Refer to the Wall Calculator below.

## PREPARE THE FOOTING

Dig a trench 24" wide and a minimum of 12" below grade depending on the overall height of the wall. As a rule of thumb, you will bury 10 percent of the wall height or a minimum of 6", whichever is greater. Make sure the soil at the bottom of the trench is well compacted to prevent settling. In heavy or clay soils for best results, wrap the footer trench in a "U" shape configuration with geotextile. This will preserve the stone base over time and keep it from migrating into the clay soil. Using a vibratory plate compactor install 6" of modified

stone in two 3" layers making sure the surface of last layer is smooth and level.

**Tip:** Add a 1" layer of sand or stone screenings on top of the footing to make the base course easier to level.

## INSTALL THE BASE COURSE

Install the first layer of Terrace Wall by placing the units, lip side down, on the prepared base (remove the lip with a hammer to make leveling easier). Level the units from front to back and side-to-side using a dead blow hammer and level. Use a string line along the back of the block to verify straightness.

**Note:** Core fill all units with  $\frac{3}{4}$ " clean stone. Crushed or recycled concrete is NOT suitable for this purpose.

## BACKFILL THE UNITS

Backfill at least 12" behind each layer of Terrace Wall with  $\frac{1}{2}$ "- $\frac{3}{4}$ " clean stone (for drainage) with soil behind it. All areas behind the units must be filled and compacted.

**Tip:** One ton of  $\frac{3}{4}$ " clean stone will core fill and back fill about 21 Terrace Wall blocks.

## INSTALLING ADDITIONAL COURSES

Place the next and additional courses of Terrace Wall in such a fashion that each block bridges two units below in a running bond pattern. Pull the units forward so that the lip rests against the back edge of the course underneath (your wall will step back  $\frac{7}{8}$ " for every layer). Backfill each course as the wall is being built and fill the block cores with  $\frac{3}{4}$ " clean stone.

**Note:** Core fill all units with  $\frac{3}{4}$ " clean stone. Crushed or recycled concrete is NOT suitable for this purpose.

## CAP THE WALL

Cut caps with a diamond blade saw to fit, as needed. Attach the wall cap block with a high strength, flexible concrete adhesive.

## ADDITIONAL TIPS:

### BUILDING 90° CORNERS

8"x6"x16" units with a finished end are available for 90° corners.

### CONSTRUCTING CURVED OR SERPENTINE WALLS

The tapered shape of Terrace Wall makes it easy to create curved walls without any additional work.

### CONSTRUCTING STEPS

Attractive steps, in either straight or semi-circular designs, are easy to build with Terrace Wall units. The block units themselves are used for the risers, with the cap block or another material, such as Bullnose Pavers, used for the tread.

**Note:** All hollow core retaining wall block should be core filled with  $\frac{3}{4}$ " clean stone. Crushed or recycled concrete is NOT suitable for this purpose.

## Terrace Wall Calculator

		WALL LENGTH															
		1'4"	2'8"	4'0"	5'4"	6'8"	8'0"	9'4"	10'8"	12'0"	13'4"	14'8"	16'0"	17'4"	18'8"	20'0"	
WALL HEIGHT	6"	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
	1'0"	2	4	6	8	10	12	14	16	18	20	22	24	26	28	30	
	1'6"	3	6	9	12	15	18	21	24	27	30	33	36	39	42	45	
	2'0"	4	8	12	16	20	24	28	32	36	40	44	48	52	56	60	
	2'6"	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	
	3'0"	6	12	18	24	30	36	42	48	54	60	66	72	78	84	90	
	CAPS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	

\* Due to their 8" depth, English Garden Wall does not accommodate creating steps as readily as some of our wall systems. Maximum unreinforced wall height is 36" (6 courses). Standard Unit Size: 12"Dx6"Hx16"W Weight: Approx. 51 lbs. Corner: 8"Dx6"Hx16"W Weight: Approx. 45 lbs.

Cap Unit Size: 12"Dx3"Hx16"W Weight: Approx. 47 lbs. Universal Cap: 11 $\frac{3}{8}$ "Dx3"Hx14" or 16"W Weight: Approx. 44 lbs.

## StoneWall® Select®, Mesa®, Diamond Pro® & Vertica®

Before you begin, call your local utilities companies to check your yard for buried electrical lines, cables, etc. This step is essential for your safety and is required by law. This service is free in most areas. Also, check with your local municipality to see if you'll need a construction permit and/or a fence behind your segmental retaining wall.

**Tools:** Shovel, wheelbarrow, level, string line, tape measure, wooden stakes, dead blow hammer or splitter for splitting block.

### CALCULATE MATERIALS NEEDED

One block equals one square foot of wall face area. Each 4" thick cap is 18" in length, so divide the linear length of the wall by 1.5 to determine the number of cap units.

Mesa and StoneWall Select each require two clips/connectors per unit, except for the course below the cap. Diamond Pro and Vertica do not require clips or connectors.

### LAY OUT THE PROJECT AND PREPARE THE FOOTING (LEVELING PAD)

Begin your project by staking out the layout of the wall you are going to build. Excavate a 24" wide trench centered along this line. Make the trench a minimum of 14" deep, enough to bury the first course of block (8") plus 6" for the footer. Ensure that a minimum of 8" or 10 percent of the total wall height (which ever is greater) will be below grade. Compact the soil in the bottom of the trench with a mechanical plate compactor before installing the footer material. The footing material should be ¾" minus with fines (2A modified stone), compacted to 95 percent standard proctor density before proceeding to install the base course. Remember: Construct the wall level, NOT following the grade.

### INSTALL THE BASE COURSE

Spreading a uniform 1" layer of concrete sand over your base will make it easier to level your first course of block. Ensure that the base course is level. Level the unit side-to-side and from front-

to-back using a dead blow hammer and level. Use a string line along the back of the block to verify straightness.

**Mesa** Lay the unit so that the slots are face up.

**StoneWall Select** Lay the unit so that the clip groove is face up.

**Diamond Pro** Remove the rear lip of each base course unit and level.

**Vertica** Lay the unit so that the center locator lug is face up.

### NEXT COURSE CONSTRUCTION

**Mesa** Place two connectors into the receiving slots on the top of each Mesa unit. The teeth of the Mesa connector must penetrate the Tensar® geogrid apertures on courses that require geogrid. The transverse bar should be snug against the connector teeth before final seating of the connector. Seat the connector by lightly tapping it with a hammer. Flags on top of the Mesa connector must be oriented in the proper direction for a "battered" or "near vertical" wall, as per the project requirements. Placement of the connector with flags forward pointing toward the face of the wall will render a near vertical wall batter, while flags pointed away from the wall face will provide a 5/8" setback.

**StoneWall Select** Place two interlocking clips onto the back of each unit. The sides of the clips indicate the up and front direction to create the ¾" setback.

**Diamond Pro** No connectors/clips are needed. Pull each block forward as far as possible to engage the rear lip and ensure the correct 1" setback.

**Vertica** No connectors/clips are needed. Pull each block forward as far as possible to ensure the correct ½" setback. Clean any debris off the top of the units. Place the next and additional courses in such a fashion that each unit bridges two units below in a running bond pattern.

### BACKFILL AND COMPACT

After each course of block is laid, backfill your wall. First, shovel drainage stone (¾" clean aggregate with no fines) directly behind the new course of blocks, extending back a minimum of 12". Fill the

cores and surrounding voids with ¾" clean stone. Crushed or recycled concrete is NOT suitable for this purpose. Include a 4" perforated pipe (drain tile) with a minimum one percent pitch behind the units and route the pipe through the face of the wall at grade level, or alongside if possible. Compact the area behind the wall to 95 percent proctor density. Using suitable compaction equipment appropriate for your soil type and lift thickness. Compact no more than 4" of soil at a time. Always run equipment parallel to wall.

### GEOGRID REINFORCEMENT

Where applicable, install geogrid to the specified length (block surface should be clean and free of debris, and backfill should be level with the top of the wall block). Make sure that the strength direction of the grid is perpendicular to the wall. Install the interlocking clips or connectors after the geogrid is in position. Place additional geogrid lengths as required by the engineer's plans. Place the front edge of the geogrid 1" from the face of the block. Always pull the reinforcement taut and pin or stake the grid so it lies completely flat with its back edge in place. Remember: Use only Tensar geogrid with the Mesa Wall System.

### CAP THE WALL

Cut caps with a diamond blade saw to fit, as needed. Attach the wall cap block with a high strength, flexible concrete adhesive.

**Note:** These instructions are meant as general guidelines for walls less than 40' (five courses). Walls higher than 40' generally require geogrid reinforcement to stabilize the soil behind the wall. Site-specific conditions may warrant additional installation requirements. EP Henry recommends you consult a Professional Engineer for all walls over 48'.

**Caution:** Dry sawing or grinding of concrete products may result in the release of respirable crystalline quartz. Prolonged exposure to respirable crystalline quartz may cause delayed (chronic) lung injury (silicosis). The use of a NIOSH-Approved respirator and tight-fitting goggles is recommended when sawing or grinding operations are in progress.



## Brisa™ Wall

### Tools:

- Shovels
- Rakes
- Broom
- Tape measure
- 4-foot level
- Speed square
- Torpedo level
- Dead-blow hammer
- 2- or 3-pound sledge hammer
- Chisel
- Hand tamper
- String line
- Site level or laser level
- Power Tools**
- Cut-off or chop saw with diamond blade
- Handheld grinder
- Compactor

Brisa® retaining wall blocks are palletized in sets by height.

### 6-inch-high set

- Two 6" x 16" units
- One 6" x 10" unit
- One 6" x 6" unit

### 3-inch-high set

- Two 3" x 16" units
- One 3" x 10" unit
- One 3" x 6" unit

Installation instructions and estimating are based on using sets.

### PREPARE LEVELING PAD

Excavate for the leveling pad. The trench should be a minimum of 20 inches wide and should be 12 inches deep.

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 leveling pad should be at least 6 inches deep after compaction.

### BASE COURSE

Use either the EP Henry Base Block or the Anchor Torpedo Base Block as the base course block for Brisa Wall. This will use up sets and eliminate the need to pick through the smaller blocks on the pallet, thus saving time. Remove the rear lip from the blocks to be used for the base course to ensure proper contact with the aggregate base. Pitch the base course back 1/16 inch for each foot of wall height to keep the wall level on higher courses.

### COMPACTION

Keep heavy compaction equipment 4 feet away from the face of the wall and make sure you are compacting in lifts based on the capacity of your equipment. After compaction, tap the top of the blocks near the back with a rubber mallet or dead-blow hammer to ensure each lip has remained seated against the block below.

### INSTALLATION PATTERN

A variety of patterns are available on page 22.

### 90° CORNERS

Corners are built by alternating corner/column/pedestal units so the long side is on different sides of the wall. Build the pattern from the corner unit when possible. Depending on the wall layout, there may be a need to go off the pattern and randomly place wall blocks near the corner. Set back corner units to reflect the batter of the wall block units and glue from bottom to top.

### BUILDING AN OUTSIDE CURVE

A function of geometry with battered blocks is that an outside radius gets smaller as the wall gets taller. As a result, the spaces between the blocks also shrink, which requires some shaving or trimming of the blocks to fit. In a multi-height system, shave 3-inch blocks as you build. This will save time and saw blades. When removing a 1/2 inch or less, a small handheld grinder will be easier and quicker to use than a large saw.

### BUILDING AN INSIDE CURVE

When building an inside curve, the radius gets bigger as the wall gets taller. Gapping is a function of geometry and batter and will happen

with any multi-height system. If there are small gaps, distribute them over several blocks to minimize the openings. Otherwise, fill the opening with a longer block cut to fit. This will require going off pattern for awhile. For the best appearance, do not use pieces narrower than 4 inches. For example, a space that would be 6 inches in the pattern might be 7 inches on an inside curve. This would require cutting a 10-inch-long unit to 7 inches instead of using a 6-inch-long unit and a 1-inch sliver.

### USING GEOSYNTHETIC REINFORCEMENT

For reinforced walls that are less than 4 feet high, use a lightweight grid such as Miragrid 2XT. It is thin and can be used in either direction for a strong wall. Use best practices for installing geosynthetic reinforcement. Lay grid perpendicular to the wall face, bringing it to within 1 inch from the wall face. Pull the grid tight before backfilling. Cut off the selvage on grid to eliminate any unevenness.

### WALL ABUTTING A COLUMN/PEDESTAL

When abutting the wall in the middle of the column/pedestal face, some sculpting of the blocks will give a clean, finished look to a project. To eliminate gapping between the wall block and the column/pedestal unit, mark or scribe the retaining wall block to fit the face of the column/pedestal unit into the side of the wall unit. This is easily achieved with a small handheld grinder with a diamond blade

### ANCHORPLEX™ WALL SYSTEM

**Setting out the wall and excavation** – This step is no different for Anchorplex™ system construction than for conventional construction, except that the amount of excavation will probably differ.

**Leveling pad and base course** – These steps are no different for Anchorplex system construction than for conventional construction.

**Construction of subsequent courses** – This step is no different for Anchorplex system construction than for conventional construction. Do not exceed 2 feet vertical stacking of block before placing a lift of structural backfill.

**Drainage design** – This step is no different for Anchorplex system construction than for conventional construction.

**Installation of structural backfill** – After completion of the leveling pad, base course, drainpipe installation and stacking block 2 feet above grade, the first lift of structural backfill that meets Anchor Wall Systems, Inc.'s specifications can be installed.

The structural backfill can be placed directly from delivery vehicle or with skid-type loader or other equipment. It should be placed behind the blocks and worked into all voids and cores of the blocks. When properly formulated, the structural backfill will not leak through the face of the wall.

After installation of the first lift of structural backfill, install additional courses and repeat the process. Place additional lifts from 8 to 24" depending on site conditions and project scale. Subsequent pours can be made as soon as the structural backfill in the previous lift has set – usually not longer than 2 to 3 hours.

**Installation of filter fabric** – Place a layer of filter fabric over the structural backfill and up the back of the top course and the cap. Then fill behind the top course and cap with low-permeability soil.

**Capping** – Follow standard practice when capping the wall. **Finishing** – Protect the wall with a finish grade at the top and bottom.

### STEPS

When constructing steps, you must consider whether it is a fill or a cut-grade situation. Construction is similar but varies in the amount of dummy units required.

A fill step will have a base course of dummy units in the entire footprint of the steps. For each additional step, add dummy units behind the facing units for stability. There are two methods for creating the step facing. Use complete sets of either 6-inch-high or 3-inch-high units. A cut-grade set of steps will use one layer of dummy blocks under each step, effectively stepping up the grade.

See diagrams on page 22 for more details.

All applications will require some sort of tread to cover the facing units. The double-sided cap is a great option.

### WHEN TO USE A PATTERN FOR MULTI-HEIGHT RETAINING WALLS

Brisa walls can be built using a combination of 6- and 3-inch high units, or with either 6- or 3-inch-high units alone. Install the Brisa multi-height retaining wall system in a random pattern using any combination of units. Avoid vertical lines that span more than 12 inches in height.

If you are building a wall without geosynthetic reinforcement, use a pattern for inspiration or follow a pattern exactly. Pleasing random patterns can be built using an equal number of square feet of 6- and 3-inch-high sets. Estimating formulas are based on using an equal number of square feet of each size in each height.

When building a wall that includes geosynthetic reinforcement, using a pattern at the appropriate spacing eliminates the need to cut the grid. When using a pattern, begin at one edge, laying the units as indicated. Install at least one repeat of the pattern to establish the pattern before proceeding to the next course. Stagger the patterns as shown to avoid vertical bonds.

### USING A PATTERN FOR SINGLE-HEIGHT RETAINING WALLS

If you are using either 6- or 3-inch-high units alone, you can use the patterns to produce a more random look with fewer stacked bonds. Estimating formulas are based on using all of the pieces of each set.

When using a pattern, begin at one edge, laying the units as indicated. Install at least one repeat of the pattern to establish the pattern before proceeding to the next course. Stagger the patterns as shown to avoid vertical bonds.

### CAPPING A RETAINING WALL

- Always start capping a wall from the lowest elevation.
- Lay out caps prior to using adhesive.
- Use exterior-grade construction adhesive to glue caps.

The double-sided cap has a right-angle side and an offset-angle side. The caps can be used in any of four directions since there is no specific top or bottom. There is an arrow on the side to guide capping straight walls. Just place the arrows in the same direction and touch them together as the caps are laid.

Because the cap can be turned any of four ways dramatically reduces the amount of cutting required on curves. For example, on an arc of about 25 feet, a standard trapezoidal or rectangular cap would require cutting every other cap or about 10 caps. With the Brisa® product, only four caps need to be cut. This saves time, saw wear and tear, and diamond blades.

(continued on page 22)

## STRAIGHT WALLS

Alternate short and long cap faces every other cap in order to achieve a straight row of caps. Place stamped arrows (1) on the side of caps in the same direction, either up or down, and touch them together as caps are laid to minimize the appearance of the joints. Always start capping from the lowest elevation.

Straight wall



## CURVED WALLS

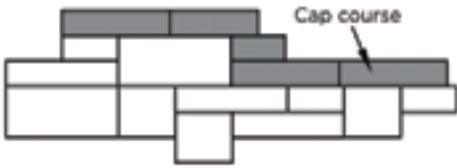
The double-sided cap has a right-angle side and an off-set-angle side. The caps can be used in any of four directions since there is no specific top or bottom. Lay out caps and cut to fit. Occasional cutting will be necessary for radii other than approximately 7 feet 6 inches.

Curved wall



## STEPPING UP CAPS

If a wall elevation changes, caps can be stacked where the wall steps up. Begin laying caps at the lowest elevation and work your way back toward the previous step up. Cut a cap unit to fit. Place the cut unit directly on top of the capped portion of the wall with the cut side hidden from view.

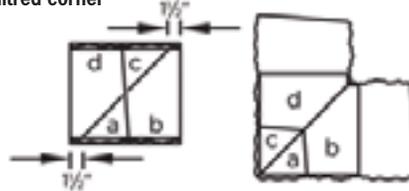


## 90° CORNERS

### Mitred Corner

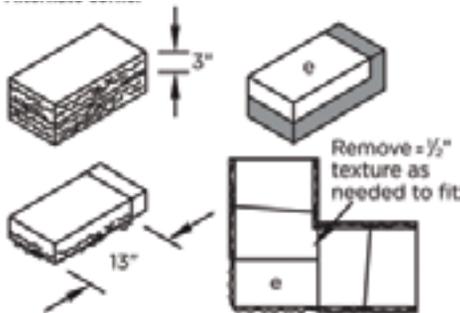
Place two caps together, arrows touching and facing in the same direction. Measure 1½ inches from corners as shown. Use a straightedge to connect measurements and a draw line. Carefully cut along the line to preserve both sides of the cut. Flip pieces "c" and "d" over to create corner.

Mitred corner



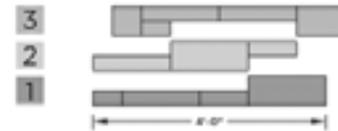
### Alternate Corner

Cut 3-inch-high piece from column unit. Cut 3-inch-high piece to 13-inch length.

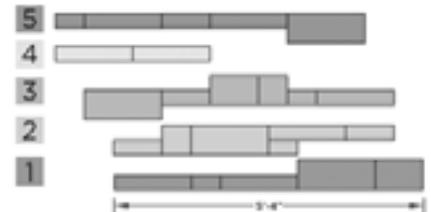


## MULTI-HEIGHT INSTALLATION PATTERNS

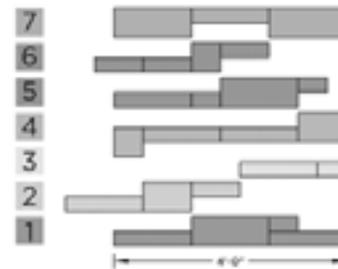
6"/3" Multiheight Wall System, 12-inch by 4-Foot Pattern



6"/3" Multiheight Wall System, 18-inch by 5-Foot 4-Inch Pattern

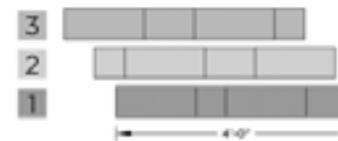


6"/3" Multiheight Wall System, 24-inch by 4-Foot Pattern

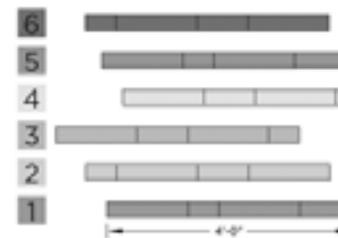


## SINGLE-HEIGHT INSTALLATION PATTERNS

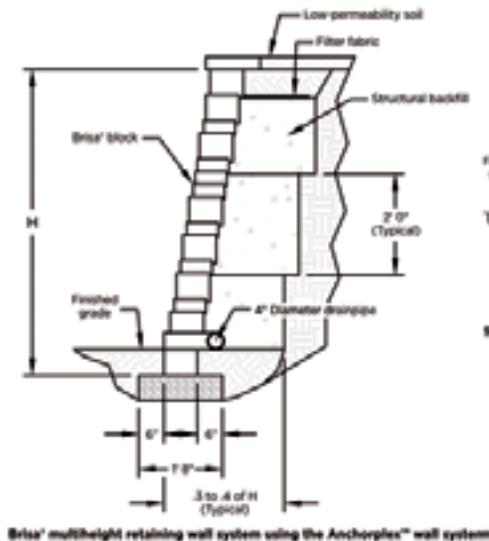
6" Multipiece Wall System, 18-inch by 4-Foot Pattern



3" Multipiece Wall System, 18-inch by 4-Foot Pattern

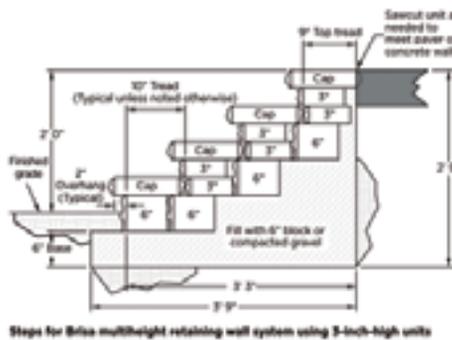


## BRISA® RETAINING WALL SYSTEM



Brisa® multiheight retaining wall system using the Anchorplex™ wall system

## BRISA® STEPS



Steps for Brisa multiheight retaining wall system using 3-inch-high units



**Note:** These instructions are meant as a general guideline for walls under ideal conditions, and assuming no slopes or surcharges. Site-specific conditions may warrant additional installation requirements.

**Caution:** Dry sawing or grinding of concrete products may result in the release of respirable crystalline quartz. Prolonged exposure to respirable crystalline quartz may cause delayed (chronic) lung injury (silicosis). The use of a NIOSH-Approved respirator and tight-fitting goggles are recommended when sawing or grinding operations are in progress.

## Rustic Double Face Wall

These installation instructions are for free-standing wall applications. For standard wall construction, utilizing Rustic Wall, please refer to page 16.

### Tools:

- Shovel
- Wheelbarrow
- Level
- String line
- Hammer
- Tape measure
- Wooden stakes
- Dead blow hammer
- Chisel or splitter for splitting block
- Diamond blade cut off saw for cutting caps

### GENERAL GUIDELINES

Rustic Double Face Wall comes in 1 shape: tapered units that may be used for constructing radius or straight walls.

Maximum height for Rustic Double Face Wall in freestanding applications without engineering assistance is 33" (exposed height including cap). Seek a qualified professional engineer where a taller wall may be required.

Curves in the wall, corners and piers that are joined into the wall will all help with the stability of your Rustic Double Face Wall.

Seat walls are typically 18"-24" high, parapet walls are typically 30"-33" high.

### STEP 1: CALCULATE MATERIAL NEEDED

Rustic Double Face Wall is sold by the square foot. Determine the total square feet of wall needed by multiplying the length times the height (don't forget the block that will be below grade). Both the 3" high pallet and 6 high pallet contain 40 square feet of wall block. Due to Rustic Double Face Wall's modularity, both heights can be combined with the same wall.

Use the following formula to calculate the number of pins needed:

(Number of non-cap courses – 1) x lineal feet of wall = total number of pins.

Example: A wall 5 courses high (without cap), 20 feet long 5 (courses) – 1 (course) = 4 x 20 (feet) = 80 pins needed.

To calculate the number of universal caps needed: Total lineal feet divided by 1.25 = total number of Universal Caps needed

Example: 20-foot long wall 20 (feet) divided by 1.25 = 16 Universal Caps needed

### STEP 2: PREPARE THE FOOTING

Dig a trench at least 20" wide (make sure it's wide enough to accommodate your plate compactor). The trench should be a minimum of 12" deep, enough to bury the first course of block (6") plus (6") for the depth of footer material (3/4" modified stone).

Make sure the soil in the bottom of the trench is well compacted to prevent settling. Add a level, even 6" thick layer of 3/4" modified stone as a footing. Do this in two 3" layers, compacting each with a vibratory plate compactor. Make sure the surface of the second layer is smooth and level. Screenings or coarse concrete sand may be used as a leveling agent, but should not exceed 1" in depth. This should be applied using a 1" high screed rail and leveling the screenings or coarse concrete sand uniformly on the surface.

### STEP 3: Install the Base Course

Install the first layer of Rustic Double Face Wall by placing the units, narrowest slot (1/2" wide) on the top, on the prepared base. Depending on the radius you are trying to achieve you may need to turn a block upside down for ease of installation. It is recommended that 6 units be used for the first course to help ensure the wall's stability.

Level the units from front to back and side-to-side using a dead blow hammer and level.

Rustic Double Face Wall blocks come in three different sizes. Use 6" x 16" for setting the first course. Align the base course to a string line to assure a straight wall where applicable.

**Note:** EP Henry now offers Base Course Block, which facilitates ease of installation and provides improved structural stability.

### STEP 4: INSTALLING ADDITIONAL COURSES

Place the next and additional courses of Rustic Double Face Wall in such a fashion that each block bridges two units below in a running bond pattern, wherever possible. Avoid having a vertical line span more than two layers, or 6" of block. Lay additional courses starting at the corner and working toward the center.

Insert pins in each course as you build the wall, making sure that the flag of every pin is oriented toward the wider part of the block. Marry the angles of the blocks to avoid gaps and to keep the continuity of the rockface on both sides of the wall. The tightest radius possible using all unit sizes is 48 inches. By using more of the smaller blocks and less of the larger units you can achieve a tighter radius.

Run a bead of high strength, flexible concrete adhesive on either side of the slot about 1"-2" from both of the faces of the block.

### STEP 5: BUILDING 90° CORNERS

Double sided corners are available in both 3" and 6" high units to readily create 90° corners. To build 90° corners, begin construction at the corner of the wall and work out. Alternate corner units in the opposing direction to maintain a running bond pattern.

Start by laying the corner unit first and work your base course away from the corner unit. After installing and leveling your base course, start the second course again at the corner. No pins will be used in the corner; use high strength, flexible concrete adhesive only. When building a corner, make sure that the corner unit overlaps two blocks beneath.

After splitting the corner, take a piece of block and rake the face of the fresh split to create a distress look.

### STEP 6: CAP THE WALL

After installing your last course of wall block, attach the Universal Wall Caps with a high-strength, flexible concrete adhesive. The cap units should be installed following the contour of the wall and with a 3/4"-1" overhang on both sides. Universal Wall Caps will fit a 6' 6" inside radius with no cuts.

Alternate Universal Caps for a straight wall.

For a curved wall, marry the angles of the cap to conform to the radius. Some cutting may be necessary.

**Note:** These instructions are meant as a general guideline for walls under ideal conditions, and assuming no slopes or surcharges. Site-specific conditions may warrant additional installation requirements and an engineer's review.

### ADDITIONAL TIPS: BUILDING 90° CORNERS

Special units are available to construct true 90° corners. They are 14" long and available in both 3" and 6" heights, and right and left versions. To build 90° corners, begin construction at the corner of the wall and work out. Alternate the long dimension of corner units to maintain a running bond pattern. Use a high strength flexible adhesive to bond the corner block together as there are no slots for pins. Also, any single battered wall with a 90° corner on each end requires cutting the corner units to accommodate the wall batter as the wall rises to maintain the running bond pattern.

### STEPS

The installation of steps requires careful layout and planning. It is critical that the base be properly installed; see Step 2 for details. A minimum of 6" of modified stone base is required under all risers. Check local construction codes for minimum riser height and tread depth. Use the wall blocks to create the riser and the Universal Caps for the tread. Bullnose Pavers may also be used for the tread. When constructing steps, bury a block behind the visible riser. In other words, each step should be at least two blocks deep. This will give the tread (cap) more stability by allowing the front block of the upper step to bear on the back block of the lower step. Use a high strength concrete adhesive to attach the treads to the risers.

See page 25 for Typical Wall Installation diagram and page 26 for Inset and Exposed Steps diagrams.

**CAUTION:** Dry sawing or grinding of concrete products may result in the release of respirable crystalline quartz.

Prolonged exposure to respirable crystalline quartz may cause delayed (chronic) lung injury (silicosis). The use of a NIOSH-Approved respirator, tight fitting goggles and hearing protection is recommended when sawing or grinding operations are in progress.



## Stacked Stone

EP Henry Stacked Stone® retaining wall blocks are palletized with all of the shapes and sizes together. Stacked Stone wall is designed for low ornamental garden walls that are aesthetically pleasing but not burdened by significant soil retention pressure or surcharges resulting from loads placed on top of the retained soil behind the wall, such as tool sheds, vehicles, or above ground pools. The maximum recommended height of Stacked Stone Wall is 18"– 21" from the top of the base course block including the cap.

### PREPARE FOOTER AND LEVELING PAD

Excavate for the leveling pad. The trench should be a minimum of 20 inches wide and should be 12-14 inches deep depending upon the base course block used in the footing. Excavate the footer trench so the bottom is smooth and level. Use a vibratory plate compactor to make sure the soil in the bottom of the trench is well compacted prevent settling. Create a base of compacted dense graded aggregate (3/4" modified stone) that extends a minimum of 6 inches in front of and 6 inches behind the wall units.

The stone base needs to be level and an even 6" thick layer of 3/4" modified stone. Install the stone base in two 3" layers; compacting each layer with a vibratory plate compactor. Make sure the surface of the second layer is smooth and level. Use 1" diameter screed rails apply an even 1" layer of course washed concrete sand or stone screenings as a leveling pad on top of the compacted base stone.

### INSTALLING BASE COURSE BLOCK

Use either the EP Henry Base Block or the Anchor Torpedo Base Block as the base course block for Stacked Stone. The footer base course of block needs to be completely buried below grade in the footer trench. Be sure account for the height difference of those base block systems when you excavate the footer trench. Level the units from side-to-side using a dead blow hammer and level. Pitch the base course back 1/16 inch for each foot of wall height to keep the wall level on top. Tap the top of the base course blocks with a rubber mallet or dead-blow hammer to ensure the units are seated in the leveling pad below.

### INSTALLING THE FIRST COURSE OF STACKED STONE

Stacked Stone is a nominal 8" deep and comes in four widths of 6", 8", 10" and 16". When laying Stacked Stone use material from as many pallets as possible to blend color, profile, and texture variations across the entire wall. Make sure to mix all of the sizes in a random fashion as the wall is built. When setting the first course for a straight wall construction, align the back of the blocks to a string line or strike a chalk line on the top of the base block to assure the wall is straight. For walls with curvature measure in from the back edge of the base block at a fixed position and mark the top of the base block as the rear wall alignment point.

Install the first layer of Stacked Stone Wall by placing the units on top of the base course block. Make sure the units are centered on the base course block. On the flat under surface of each unit place two or more dabs of high strength concrete adhesive toward the front of the flat under surface no more than 5" apart. When pressed into place each dab of adhesive should spread out to about 1.5" in diameter or more. The adhesive will also serve to keep the wall plumb by slightly lifting the front of each block.

Stacked Stone has an uneven natural looking face profile that creates a varied and distinctive shadow effect on the face of the wall. Stacked Stone units do not have a top and bottom side. They may be placed with either flat side facing up.

### INSTALLING ADDITIONAL COURSES

Set the next course and all additional courses of blocks positioning each unit so the blocks cross over the joint between blocks beneath it. This will stagger the joints of the blocks providing a stronger, more stable construction, as well as a more pleasing appearance. On the flat under surface of each unit place two or more dabs of high strength concrete adhesive toward the front of the flat under surface no more than 5" apart. When pressed into place each dab of adhesive should spread out to about 1.5" in diameter or more. Continue to lay block in this manner as the wall is built taller gluing each additional course to the one below it. Use a level to vertically align the back of Stacked Stone block to insure that the wall is vertical or set slightly back from vertical in its construction.

Stacked Stone is not designed for battered wall construction or recommended for use with geogrid. It is recommended that Stacked Stone Wall not be built more than 18" to 21" tall including the cap.

### BUILDING 90° CORNERS

Stacked Stone corners are the same depth as the rest of the units and are 15 1/2" long. These units readily create 90° corners. To build 90° corners, begin construction at the corners of the wall and work out. To maintain a running bond pattern alternate corner units in each course with the long dimension going in the opposing direction of the one below it. Start the second course again at the corner placing the corner so it overlaps two blocks beneath it. Use high strength, flexible concrete adhesive to glue each corner to the blocks below it in the manner previously described.

**Special note:** To minimize cutting if possible design your wall so that the space between corners works out to dimensions that allows the placement of full size Stacked Stone blocks. Stacked Stone Corners may be trimmed with a diamond blade cut off saw or diamond blade table saw to less than 14" to create more variation in the appearance and unit sizes of the corners.

### BUILDING AN OUTSIDE CURVE

Because of the shapes of the Stacked Stone blocks it is possible to build an outside radius wall without cutting individual units. Simply stack the units tightly against each other to form the tightest radius the shape of the blocks will allow. To expand that radius spread the units apart at the back end of each block while maintaining tight contact at the front of the units. As a result, the spaces between the blocks will be wedge shaped with the back of the blocks separated by open space. To construct a radius tighter than the shape of the Stacked Stone allows, a diamond blade cut off saw or a diamond blade table saw is needed to trim the block.

### BUILDING A STRAIGHT WALL OR INSIDE CURVE

Gapping the Stacked Stone further apart as needed at the back of units will allow a straight wall or inside curved wall to be built. Odd shaped gaps in the layout of the wall will require that a longer block be cut to fit that space. For the best appearance, do not use pieces narrower than 6 inches. For example, a space that would be 7 inches in the wall would require cutting an

8-inch-long unit to 7 inches instead of using a 6-inch-long unit and a 1-inch sliver.

### COLUMN CONSTRUCTION

Use the stacked Stone corner units aligning them in a perpendicular fashion with the long dimension protruding away from the back side of the adjoining unit at right angle. The outside front edge and side edge that are to be seen should face out and the smooth end should butt against the smooth back side of the adjoining corner block. Glue the corner units of the column to the base course block in a manner consistent with that previously described. Add additional courses but staggering the placement of the block so the each unit crosses over on the joint between blocks beneath it. This will stagger the joints of the blocks providing a stronger, more stable construction, as well as a more pleasing appearance. Use high strength, flexible concrete adhesive to glue each corner to the blocks below it by placing two or more dabs of high strength concrete adhesive toward the outside edge of that flat under surface no more than 5" apart. To neatly cap a Stacked Stone column use a DevonStone 24" x 24" unit to cover the top surface.

### WALL ABUTTING A COLUMN

When abutting the wall in the middle of the column face, some sculpting of the blocks will give a clean, finished look to a project. To eliminate gapping between the wall block and the column construction, mark or scribe the face of the column construction to fit the ends of the retaining wall block butted against the column. This can be done with a small handheld grinder with a diamond blade.

### CAPPING THE WALL

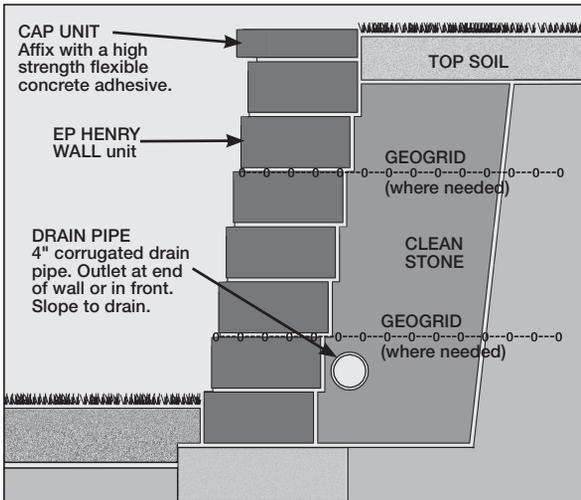
After installing your last course of Stacked Stone wall block, dry lay out the cap units across the top of the wall without using adhesive. Stacked Stone caps have a slight angle on the front and back edge of the units that taper toward the top of the cap. Place the cap units with the slightly smaller surface exposed as the top of the wall cap. Corner caps will need to be placed first and the standard caps will have to be fit between them. Over hang the caps so the amount of the each cap protruding beyond the face and back of the wall is about 2". Mark any caps that need to be cut and cut those units with diamond blade cut off saw or a diamond blade table saw.

For a curved wall that exceeds maximum curvature allowed by the caps, mark the angles of the required cuts on each cap to conform to the radius of the wall. Starting at one end of the curve position the caps to accommodate the curvature of the wall. Mark cuts by overlaying a double sided straight edge over the gap between caps to mark the angle of the cuts each cap needs. Continue to align, mark, and cut caps as needed to maintain the continuity of the capping course.

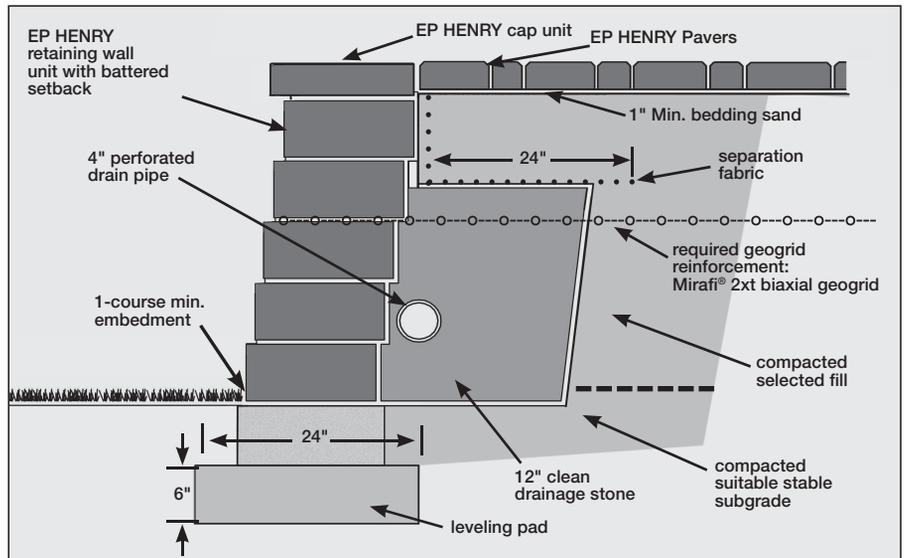
**Note:** These instructions are meant as a general guideline for walls under ideal conditions, and assuming no slopes or surcharges. Site-specific conditions may warrant additional installation requirements.

**Caution:** Dry sawing or grinding of concrete products may result in the release of respirable crystalline quartz. Prolonged exposure to respirable crystalline quartz may cause delayed (chronic) lung injury (silicosis). The use of a NIOSH-Approved Respirator, tight fitting goggles and hearing protection is recommended when sawing or grinding operations are in progress.

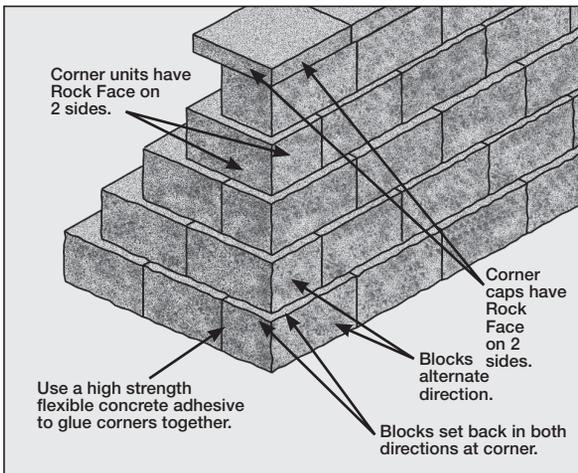
## TYPICAL WALL



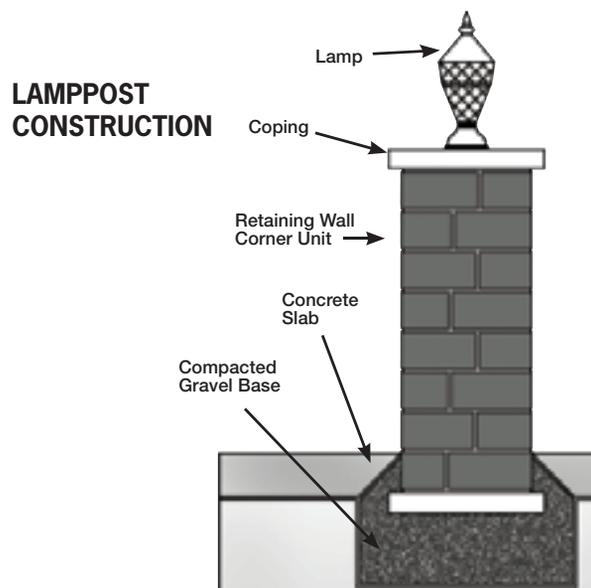
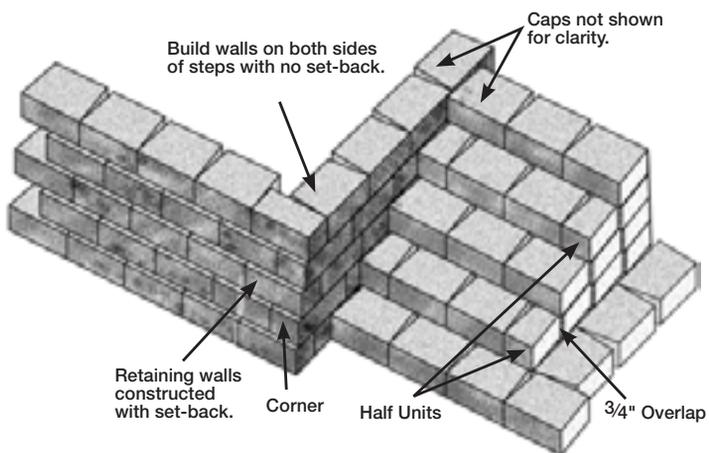
## RAISED PATIO CONSTRUCTION



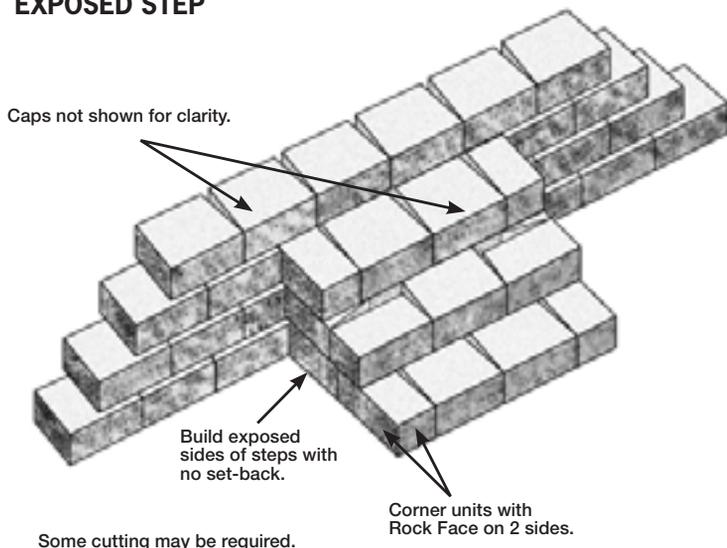
## 90° CORNERS



## INSET STEP



## EXPOSED STEP



## Geogrid Reinforcement for Retaining Walls

A gravity wall is one in which the size and mass of the block alone is sufficient to hold back the soil. Geogrid may be required to reinforce your retaining wall if any of the following conditions exist:

- The wall exceeds a certain height, normally 3' to 4' (depending upon the system used)
- Excessive surcharges or loading (e.g., parking lots, driveways, structures) will be applied to the wall
- Poor quality soils are on-site
- The ground is sloped at either the top or bottom of the wall
- The wall will be used in water applications

### WHAT IS GEOGRID?

Geogrid is flexible synthetic mesh with high tensile strength, typically comprised of High Density Polyethylene (HDPE) or woven polyester with a coating. These products are flexible, very durable, and have long-term design strength that creates a reinforced soil mass.

For applications requiring geogrid, EP Henry recommends the Mirafi® "XT" line, except for the Mesa® Retaining Wall System, which has its own specialized geogrid, Tensar®.

### HOW DOES IT WORK?

Geogrid is designed to create a reinforced coherent mass behind the wall. In other words, it acts to connect the block, drainage stone, and retained soil.

### HOW IS IT INSTALLED?

Geogrid is installed between the layers of block, perpendicular to the wall face and back into the retained soil (see photo below). Proper installation and compaction of the soil in the reinforced zone is critical.

Most geogrids are directional fabrics and must be oriented a certain way to perform properly. Follow the manufacturer's directions accordingly.

Geogrid installation procedures may vary for each wall system. Specific information is available for each.

### HOW MUCH GEOGRID IS NECESSARY?

Many factors come into play when determining how many layers of geogrid are necessary, their positioning, and length. Soil type, wall height and location, and any surcharges all contribute to these calculations. A licensed, geotechnical engineer will be able to provide this as part of a design package. Charts are also available for most wall systems, which give conservative quantity estimates.

For more detailed information on geogrid design, engineering, and installation, please contact your local EP Henry Authorized Hardscaping Distributor®.

## Torpedo™ Base Block

Save time and money with improved jobsite efficiency by using the new Torpedo™ base block. This strong, lightweight block is a great foundation for retaining walls built up to gravity wall height with rear-lipped Anchor™ retaining wall products and for Anchor freestanding wall systems.

Integral hand-holds make this new product easy to place and to lift when repositioning, and the hollows under the block absorb base aggregates for better leveling. And, no core-fill is needed.

The Torpedo base blocks are shaped to fit together to hold their position as they are placed. Ready to use, there are no lips to remove or pins to place. The blocks level and install quickly, are very maneuverable and can be used for curves, corners, columns and straight walls.



▲ Geogrid Installation

### Cubing Information

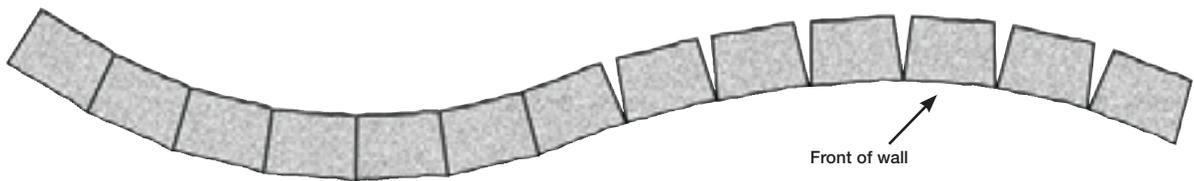
TORPEDO BASE BLOCK	
LBS EACH	48
PIECES PER CUBE	48
LBS PER CUBE	2,385



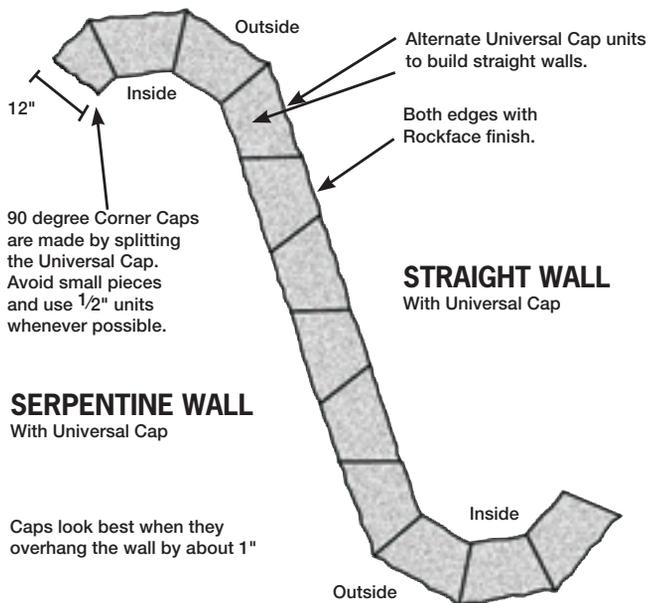
TORPEDO BASE BLOCK



## TYPICAL CURVES



## WALL WITH UNIVERSAL CAPS

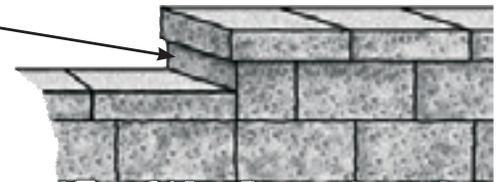


90 degree Corner Caps are made by splitting the Universal Cap. Avoid small pieces and use 1/2" units whenever possible.

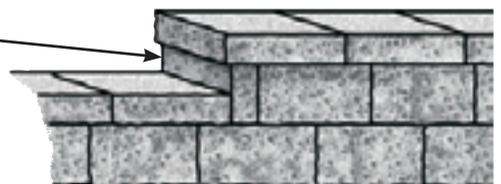
## STRAIGHT WALL With Universal Cap

## WALL TRANSITIONS

Corner unit with Rockface on two sides. Cut to match depth of block.



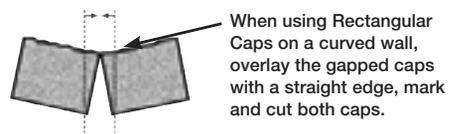
Cap unit cut down and stood on end.



## SERPENTINE WALL With Universal Cap

Caps look best when they overhang the wall by about 1"

## CUTTING CAPS



When using Rectangular Caps on a curved wall, overlay the gapped caps with a straight edge, mark and cut both caps.

### WHAT TYPE OF FOOTING IS REQUIRED FOR EP HENRY WALL SYSTEMS?

A compacted stone base is required for all segmental retaining walls. EP Henry recommends 6" of dense graded aggregate for this purpose. Generally, the higher the wall, the thicker the base. You do not have to dig down below the frost line.

### HOW TALL CAN I BUILD MY SEGMENTAL RETAINING WALL?

Height limitations without geogrid for all of our retaining wall products are listed within the catalog on the corresponding product pages. Designed and installed properly, segmental retaining walls can be built in excess of 50' high.

### WHAT IS GEOGRID?

Similar in concept to a "dead man" used in the construction of railroad tie walls, geogrid stabilizes the soil mass behind the retaining wall and ties the wall face to the earth being retained. Typically made of polyester or HDPE, geogrids — such as Miraf® 3XT — are open-celled, directional fabrics that are placed between the layers of block at different intervals. Geogrids are then laid out perpendicular to the wall face in the compacted soil behind the wall. The height of the wall being constructed, the soil properties, and any pressure on the wall (e.g., slopes, structures, paved areas) all affect the length and placement of the geogrid. Additional information is available from EP Henry or a professional engineer.

### WHAT DO I USE TO BACKFILL MY WALL?

The first 12" behind the wall should be backfilled with ¾" clean stone to help relieve any hydrostatic pressure that might build up. The area directly behind the stone should be compacted soil. Use the same stone to fill the cores of Terrace Wall™, StoneWall® Select®, Diamond Pro®, Vertica® Wall, Coventry® Wall Plus, and Mesa® Wall.

### I NEED STEPS IN MY RETAINING WALL. WHAT CAN I DO?

All EP Henry retaining wall products can be used to build steps. The wall units are used for the riser and the caps for the treads (Bullnose

Pavers can also be used for treads). Make sure you pay attention to local codes that dictate the minimum step height, tread depth, and hand rail requirements.

**Note:** Use of the EP Henry Filler Block to core fill steps will provide strength and stability to the step construction. The filler block is compatible with all 6" and 8" tall units.

### SHOULD I USE A CORRUGATED PLASTIC PIPE (DRAIN TILE) BEHIND MY WALL TO DRAIN WATER AWAY?

Due to their mortarless construction, segmental retaining walls will naturally "weep" to relieve any hydrostatic pressure that builds up behind the wall.

As a rule of thumb, however, it's a good idea to use a drain tile directly behind the wall units at grade level for all wall applications.

### HOW DO I MAKE 90 DEGREE CORNERS WITH EP HENRY SEGMENTAL WALL SYSTEMS?

Corner blocks with the rockface on two sides are available for the Terrace Wall, Coventry Wall, Tudor Wall, Double Sided Tudor Wall, Coventry Wall III, Stacked Stone, Double Sided Coventry Wall, Rustic Double Face Wall, Diamond Pro, Mesa Wall, Vertica Wall, and StoneWall SELECT systems. They are used for either left- or right-hand corners and are set in place with concrete adhesive.

### CAN I MAKE A CURVED WALL WITH EP HENRY WALL SYSTEMS?

One of the many advantages over a railroad tie wall is that walls, with either inside or outside curves, can be built with all EP Henry wall systems. Blocks with tapered sides are used for outside curves, and inside curves can be created by placing the front corners together and gapping the units in the back.

### WHAT DO I USE TO ADHERE THE CAPS ON MY RETAINING WALL?

Use a high strength, flexible concrete adhesive, such as Paver Bond®, to affix your wall cap.

### WHAT IF I WANT TO BUILD A FREESTANDING WALL?

No Problem! EP Henry offers three creative options for walls that are functional and look great: Double Sided Coventry® Wall, Double Sided Tudor Wall™, and Rustic Double Face Wall. Available in various heights and lengths, they are perfect for wing walls, knee walls, sitting areas, and more.

### WHEN SHOULD I INVOLVE AN ENGINEER IN THE DESIGN OF MY WALL?

Use of a Professional Engineer is recommended on projects with taller walls (above 4') or with unusual site conditions (steep slopes, parking lot, structure behind the wall, or tiered wall). Local building codes may also necessitate the use of a professional engineer for walls above a certain height. Check with the local code officials before starting construction.

We can provide design charts and tables with generalized engineering solutions for some of our retaining wall systems. Each situation is unique, however, and specific evaluation will provide the most accurate solution.

### WHAT ARE TIERED WALLS AND HOW DO I PLAN FOR THEM?

Tiered walls are two or more walls placed in a multi-level arrangement. The second wall should be located behind the first wall at a distance of at least twice the height of the first wall under ideal soil conditions (e.g., if the front wall is 3' high, the second wall should be at least 6' behind it).

**Note:** Consult a Professional Engineer.

EP Henry offers an extensive library of technical and construction information at [ephenry.com/technical](http://ephenry.com/technical).





## Installation Details

**Before undertaking a permeable pavement installation, it's important to choose the construction detail that's appropriate for your soil type and design requirements.**

Determining the on-site underlying soil type (clay, silt, sand) is the first step in choosing the construction detail that's appropriate for your project. Although the surface infiltration rates of EP Henry's ECO Line of permeable pavers are extremely high, the infiltration rates of the underlying soils determine how quickly captured water will infiltrate into the ground.

Ideally, the quantity of water that enters a permeable paver system should infiltrate/exfiltrate your permeable paver system within 24-48 hours. However, it's possible that your underlying soils can not absorb water rapidly enough due to the composition of the soil. In cases where your soil cannot absorb the water received in a given precipitation event within 24-48 hours, conveyance movement via drainage pipes to additional storage or infiltration areas may be appropriate.

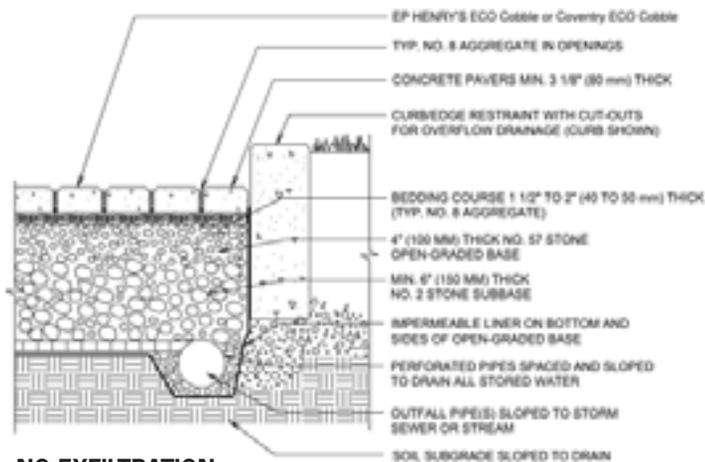
In basic terms, clay can absorb the least amount of water, and sand can absorb the most. It is important to note that when using the Partial or No Exfiltration construction details, a drainage pipe is specified which must have positive flow away from the aggregate base. This drainage pipe can be directed to auxiliary on-site infiltration trenches, rain gardens, bio-swales, detention basins, or nearby storm pipes. Municipal approval is required for any stormwater "tie-ins."

### Definitions

**Infiltration:** The penetration of water through the ground surface into the subsoil

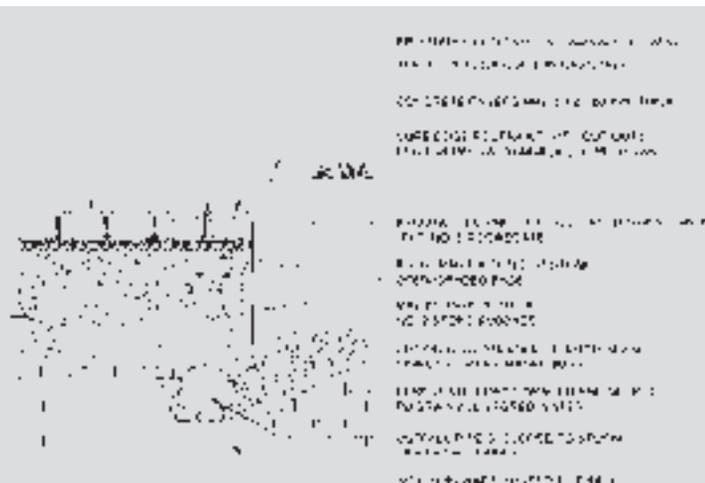
**Exfiltration:** Loss of water from a drainage/permeable pavement system into the surrounding soil

**Note:** The following represent several common details for EP Henry's line of permeable pavers.



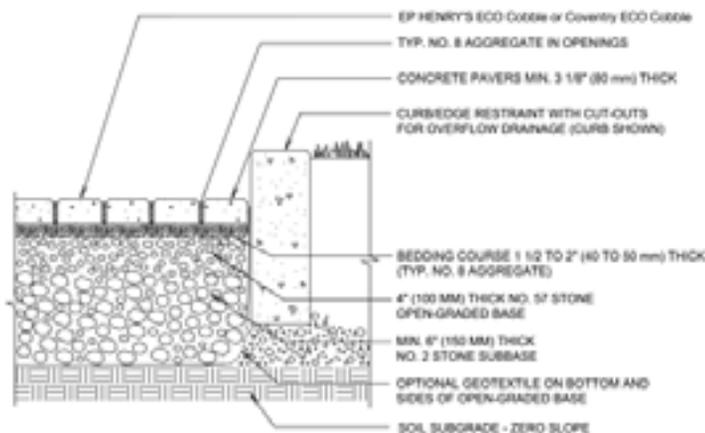
### NO EXFILTRATION

If your soils have high clay content, you are constructing over bedrock, a high water table, or environmental hot spots, the No Exfiltration option is appropriate.



### PARTIAL EXFILTRATION

If your soils are of medium texture, with roughly equal portions of sand, silt, and a little less clay, the Partial Exfiltration construction detail would be appropriate.



### FULL EXFILTRATION

If your soils are very sandy, with no clay and very few fine particles, the Full Exfiltration construction detail would be appropriate.

Note: 2<sup>3</sup>/<sub>8</sub>" (60MM) thick pavers may be used in pedestrian applications. No. 2 stone subbase thickness varies with design. Consult ICPI's permeable interlocking concrete pavement manual for charts.

For more information, details, and LEED information, please visit [ephenryecocenter.com](http://ephenryecocenter.com).

# Product Line Overview

Our extensive product line offers a variety of shapes, sizes, finishes and price points to make any EP Henry Hardscaping™ installation the best performing and most appealing on the market today. Other manufacturers claim that they have an exclusive process, but consider how that SINGLE process stacks up against EP Henry's distinct manufacturing processes. Here is a brief overview of some of our most popular processes:

## STANDARD PAVERS WITH DURAFACING TECHNOLOGY

If you are looking for an ultra-smooth surface texture with a rich color blend – EP Henry's Standard Pavers are the right choice. Our unique Durafacing manufacturing process provides a richly colored paving stone with unrivaled beauty and durability. EP Henry's Durafacing technology was the first in the market and has been imitated, but never equaled. This unique and sophisticated manufacturing technique concentrates an extra layer of cement and pigment on the surface of the paver, resulting in a visibly smoother and richer color appearance.



**For over 20 years EP Henry has used exclusive Durafacing technology which provides rich color and increased durability.**

## COVENTRY® PAVERS—AGING PROCESS

If you prefer a warmer color with a weathered appearance – our Coventry line offers this patina finish. Coventry pavers go through a deliberate secondary manufacturing process that softens the edges and “ages” the surface. EP Henry uses a distinct distressing technology that results in pavers with soft, through body color. Most of our “aged” or Coventry pavers are also made with a blend of several colors to simulate the gentle nuances found in nature, not unsightly blotches of color.



**Our aging process gives the texture of a weathered paver.**

## DEVONSTONE® CAST STONE SLABS

Sometimes taste and home style lend themselves to a large scale or a more stone-like surface texture and EP Henry's DevonStone line of Cast Stone Pavers achieves just the right look. In sizes ranging from 12"x12" to 24"x24", and colors that evoke nature's bluestone, brownstone, sandstone and more, Devonstone truly captures the beauty of quarried stone. EP Henry has painstakingly created the molds from actual pieces of natural stone and developed a separate dedicated manufacturing facility to craft DevonStone's authentic look.



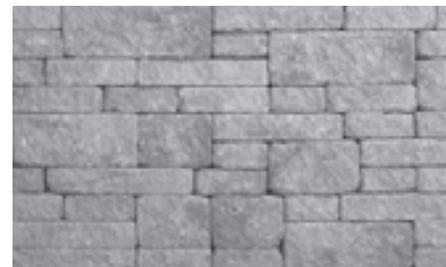
## CAST VENEER STONE

Cast Veneer Stone by EP Henry achieves its authenticity honestly. We crafted a product so close to natural stone in appearance, color and texture, that the two are virtually indistinguishable. Using a multitude of molds cast from a variety of natural stones, we have perfected a number of the most popular natural stone profiles from Pennsylvania Field Stone to LedgeStone and even the beauty and tradition of clay with our Cast Veneer Brick and more. Cast Veneer Stone complements your home's exterior and interior walls as well as offering a range of applications such as fireplaces, kitchens, patio walls, and more – the possibilities are endless!



## WALLS: SPLIT FACED & AGED

Adding form and function to an outdoor living space is a must. EP Henry's extensive wall collection allows you to create everything from a garden wall to a retaining wall and everything in between like a free-standing wall, raised patio, columns, and more. Offered in a wide range of colors, sizes, textures, and styles they complement any of our paving products perfectly and create a seamless and beautiful look.



## IMPERIAL

EP Henry's Imperial Pavers and Wall System make it possible to create the project of your dreams without sacrificing quality for value. Pavers are offered in two different finishes that enable you to choose a clean, crisp and smooth look or a more weathered appearance that uses our sophisticated texturing process and provides a time-tested aged finish. Engineered with simplicity in mind, Imperial Pavers and Walls offer the most popular shapes and sizes, versatile colors, and design options that make a cost conscious choice perfect for any home.



Offering your customers financing  
is another competitive advantage  
for your business that just simply works!

## EP HENRY. Project Funding

FINANCING MADE EASY.

### Did You Know...

that in 2012 over 75% of home improvement projects over \$10,000 were paid utilizing financing programs? Or that the average financed project is 38% higher than the average cash transaction?

### EP Henry Makes It Easier.

EP Henry makes it easier than ever to make financing a "hands free", no cost option for your business. Our program is not a second mortgage or equity loan; it is an unsecured financing option for your customers to add value to their home without taking away from it.

### Call or Email for More Information.

Call or email our Director of Consumer Finance, Rob Torrissi, at 1-800-44-HENRY or [financing@ephenry.com](mailto:financing@ephenry.com) for more information, or, to setup a face to face meeting. You can also talk to your preferred Distributor about holding a Project Funding seminar at their location.

### "Same as Cash".

Have you always wanted to offer "Same as Cash" financing to your customers to further your competitive advantage? Now you can, with the EP Henry Project Funding "For My Business Plan"! By making a few small adjustments in your quotes, you can set your business apart from the rest, ask us how today!

*At a time when  
reducing your business  
costs is more important  
than ever, there is no  
better time than now  
to take advantage of the  
EP Henry Contractor  
Rewards program.*

## EP HENRY<sup>®</sup> CONTRACTOR REWARDS

*The Industry's Most Rewarding Program.*

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**EP Henry Contractor Rewards** is the industry's most rewarding program for you and your business. By simply submitting your invoices by Mail, Fax, E-mail or Text you will automatically receive a certificate in the mail for 2% of your total purchases submitted towards your next purchase with your preferred Distributor. All you have to do is show us what you bought and we will handle the rest. There are no forms for you to fill out with each submission, no contracts to send, no proof of installation needed and no year long delay in getting paid. EP Henry will pay you within weeks of your invoices being submitted. If you are already a participant in the program, and you are looking for more, we have that as well. Submit more total sales in 2013 than you did in 2012 and we will double your rewards to 4% for every dollar over that 2012 total.

**If that isn't enough, 2012 participants earned chances to take home great prizes at MAHTS 2013** in Atlantic City, NJ like a 2 year Dodge Ram 1500 SLT lease, Vacations, TVs and more! We like giving back so much we are going to do it again for MAHTS 2014 in Atlantic City, NJ. Don't miss your chance to be more profitable in 2013 and win some great prizes in 2014.

Call 215-635-1000, ext. 213 for more information on how to sign up, or, call you local EP Henry Sales Rep.