

# DEVONSTONE INSTALLATION GUIDELINES

## TOOLS >

- Vibratory Plate Compactor  
1" OD screed rails
- Screed board
- String line
- Grade stakes
- 2' and/or 4' level
- Dead blow hammer
- 2 lb hand sledge
- 12" – 16" long block of wood  
(2"x 4" or 4"x 4")
- Hand trowel
- Paver broom

## LAYOUT AND EXCAVATION >

Mark out the perimeter of the patio or walkway using spray paint increasing the size by 6" in all dimensions for the over dig.

*The over dig is necessary to make sure that the outside edges of DevonStone remain stable during and after installation.*

Using a transit, establish the finished elevation of the patio or walkway.

**Remember that all flatwork must have a slope, or pitch, away from any fixed object (house foundation, existing steps, pool, etc.).**

The slope should be 1/4" over one foot (2%). The minimum slope needed to get water to run is 1.5" over 10'.

Excavate to a depth of 9" removing all grass and vegetation, top soil, debris, etc.

If the top soil or any unsuitable material is deeper than 9", it must all be removed and replaced with modified stone.

Compact and stabilize the sub-grade. Two passes with a plate compactor should suffice.

If "pumping" is exhibited in the sub-grade, excavate the affected area to a depth of 6" and replace the poor sub grade soils with modified stone and compact.

## BASE MATERIAL AND INSTALLATION >

*Traditional DevonStone installations will have a compacted base of modified stone (2A modified stone, crusher run, 2RC or similar material). The proper installation of this base material is what will give the DevonStone project its support and strength. The minimum requirement for the modified base depth is 6".*

**NOTE: Never install frozen or saturated modified stone. Never install base material over a frozen or saturated sub-grade. Do not install modified in a layer or 'lift' exceeding 4" in depth. A 4,000 lb centrifugal force plate tamper or small vibratory roller cannot achieve maximum compaction at a depth greater than 4".**

Begin installing the modified stone into the excavated area. The first layer or "lift" should be no more than 4" in depth. Rake flat and compact with a plate tamper (3 passes at various angles). Keep the surface of the modified stone flat to ensure proper compaction and to stop the plate tamper riding from high spot to high spot.

*Moisture is a key element of compaction, so make sure that the modified stone is dampened prior to compaction. If water appears on the modified surface during compaction, allow the material to dry before attempting any more compaction. Make sure that compaction takes place over the entire area, paying particular attention to edges, corners and along existing structures.*

## SETTING BED MATERIALS AND INSTALLATION >

DevonStone's uniform thickness of 1 5/8", unlike the random thickness of most natural stones, will greatly increase the speed of installation by utilizing the screed-and-lay application similar to paver installations.

DevonStone can be installed using either concrete sand (ASTM C33) or EP Henry's new ProPak SB.\*

Use screed rails and a screed board to install the setting bed over the modified stone base. The diameter of the screed rails will determine the thickness of the bed. Ideally DevonStone should be installed on a 1" thick setting bed. The setting bed should not exceed 1 1/2" in thickness.

*Try not to disturb the modified base when installing the setting bed. Planks or pieces of plywood can be laid for wheelbarrow or equipment access to work area.*

A mason's trowel can be used to remove or blend in excess bedding material along fixed edges.

As screed rails are removed from the work area, their depressions must be filled in. This can be done by filling the void with bedding material and smoothing it out with a hand trowel or by using a tool with a flat edge, like a shovel or broom, and lightly dragging it across the material added to the voids.

After the setting bed has been screeded, do not walk on it. These depressions when filled will cause uneven compaction as you set the DevonStone.

**Install no more setting base than you can install with DevonStone on that day.**

\*EP Henry's new ProPak SB is a specially designed and blended product recommended for the setting bed used in DevonStone, slab and stone installations. A precise ratio of Type I Portland cement and ASTM C33 sand, ProPak SB ensures a solid setting bed every time while still having the flexibility needed to withstand freeze/thaw conditions and the permeability needed to ensure proper drainage and polymeric sand performance. One bag of ProPak SB covers approximately 8 sf @ 1" deep.

- DEVONSTONE IS NOT INTENDED FOR ANY VEHICULAR APPLICATIONS
- DO NOT USE A PLATE COMPACTOR ON DEVONSTONE

## GEOTEXTILE FABRIC >

*Geotextile fabric should be used in all DevonStone installations and is essential to use when existing sub-grade soils are clay or poorly draining. The fabric is placed between the sub-grade and installed base material acting as a separator between the two layers. The fabric will stop the mixing of these layers during compaction and provide a degree of stability to the installation.*

- 1) Install only a certified geotextile fabric (Mirafi 500X or 160N) on all excavated areas. Fabrics intended for landscape use are not suitable for DevonStone installations.
- 2) Be sure that fabric extends up the sides of excavation. If working against a house, extend the fabric at least 6" up the side of the foundation.
- 3) Where more than one piece of fabric is used, make sure pieces overlap by at least 12".
- 4) Try and keep fabric flat and taut during backfill. Place the modified stone material on geotextile fabric carefully to avoid damage and movement of fabric. Sod staples can be used as a cheap fabric anchor system.



Geotextile fabric and sides wrapped

Install the last lift (2") of base material. Using either a screed board or a rake and transit, establish the finished elevation of the modified stone 2 1/2" below the finished height of the DevonStone. Compact this lift the same as the previous one, ensuring proper moisture content in the modified stone.

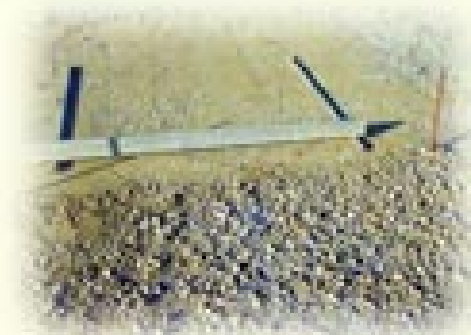
The finished base should be smooth with proper pitch following the established finished height. Check the finish of the base installation with a 10' straight edge. Any deviation of more than 3/8" should be corrected using the modified stone or setting bed material and then compacted.

If coarse stones are showing on top of the base, choke these areas with the setting bed material and compact to avoid migration of the setting bed after the patio has been installed.

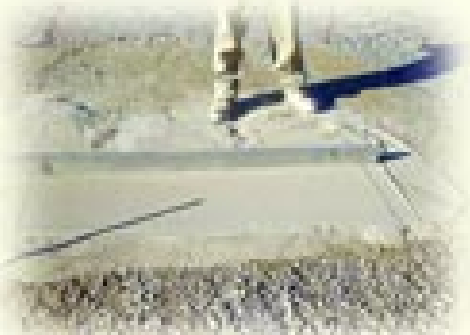
**Remember that the smoother and more even the base, the easier and quicker the screeding will be, so it is vital that this stage of the installation be done properly.**



Smooth and even base prep



Screed rails (poles) and screed board



Screeding the dry pack



Filling the trough w/ a trowel

# DEVONSTONE INSTALLATION GUIDELINES

## INSTALLING THE DEVONSTONE >

Start installing the DevonStone from a predetermined square corner. If two sides of an existing structure meet and are not a true 90 degrees, you must establish a 90-degree starting point from which to lay the DevonStone. If installing a walkway or patio between two fixed points, work toward the end where the finish cuts will be least noticeable. If a circle kit is part of the job, install it first and then run the body of the DevonStone out from it. Make sure to run string lines or chalk lines in two directions to keep the pattern straight. If the pattern starts to wander from these lines, fix immediately.

*Design and installation tip: Try to make the dimensions of your job work out to full DevonStone pieces. Generally full foot measurements (10' x 15' for example) are the easiest to achieve with the random sized units.*

**If using more than one pallet of DevonStone for a job, remember to draw from all pallets to ensure the consistency of the color blends.**

Lay the first DevonStone unit flat on the setting bed. Using a dead blow hammer, lightly tap the unit in the center and then about 4"-6" in from each corner. This will seat the stone uniformly in the setting bed. The other method is to use a block of wood (2" x 4" or 4" x 4") approximately 12" long and span the unit across the middle from side to side. Using a 2-pound hand sledge, lightly tap the wood in the center seating the unit in the setting bed. The wood can then be pivoted to span the unit at a 90° angle and tapped lightly again. If the base prep has been done correctly this should seat the DevonStone evenly and securely into the setting bed at an approximate depth of 1/8". If the unit can move or "wobble" you need to remove it and apply more bedding material under the low side. Do not try to correct base imperfections by repeatedly striking or hitting the unit harder. You may damage or break the DevonStone.

Lay the next DevonStone unit alongside the previously installed piece with the bottoms of the stones touching. This will create on top a nominal 3/8" joint between the pieces. Repeat the hammer set used on the first unit. If using the "hammer and wood" method, you can span from unit to unit to ensure they are level in relation to one another. Otherwise use a 2' or 4' level to span the units to check their level. Continue installing the DevonStone units according to the desired pattern. Once a piece has been properly set you can work from that piece, however try to not step directly on the edges which can cause the piece to "nosedive" into the bedding material.

## JOINT FINISHING >

Once all the DevonStone units have been installed, sweep the joints using Techni-Seal HP Polymeric sand. Install the sand to approximately 1/8" below the top of the stone. Make sure to sweep the DevonStone clean before applying water. Any polymeric sand or dust that is left on the units will activate with the water and create a haze that will need to be removed. Apply the water as per Techni-Seal's recommendations.

## EDGE RESTRAINTS >

DevonStone, like slabs, relies on its mass and weight to stay in place. Using DevonStone ProPak SB eliminates the need for an edge restraint because it binds the stone to the setting bed. Edge restraints should be used with all DevonStone installations when using concrete sand as the setting bed medium. Make sure to choose an edge restraint which is specially designed for DevonStone installations, such as Snap Edge's Low Profile edge restraint.

Installing the edge restraint is done by cutting away the excess sand around the perimeter of the DevonStone with a trowel, exposing the compacted base material. Install the edge restraint on the aggregate base and tight to the stone. Install 10" or 12" spikes at a maximum of 24" intervals to anchor the edge restraint. If installing the restraint system around a curve, place the spikes 12" apart to provide greater stability.

## CUTTING AND CLEANING DEVONSTONE >

### CUTTING DEVONSTONE

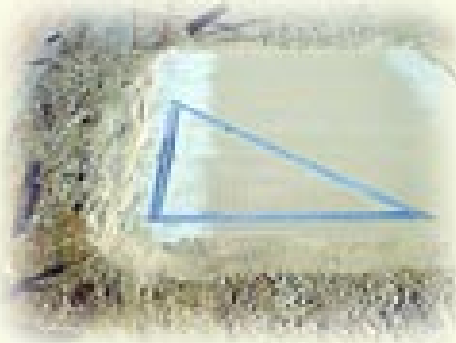
DevonStone cuts easily without any chipping of the cut edge. Heavy duty power saws, cut off saws, and block saws with diamond blades, can be used. If using water during the cutting process, be sure to immediately clean any residue that may be left on the stone or staining will result. **DO NOT USE A HAMMER AND CHISEL TO CUT DEVONSTONE.**

### CLEANING DEVONSTONE

Because of DevonStone's non-porous finish, dirt, grime, hazing and minor efflorescence can be removed with a non-abrasive and environmentally friendly household cleaner, such as Simple Green™ or CLT™. Apply the product according to the manufacturer's specifications and scrub rigorously, rinsing well when finished. Periodic maintenance will keep the DevonStone looking new for years to come. The cleaners will not harm

the polymeric sand and are safe and easily applied.

For more stubborn stains, such as oil or leaf stains, or if significant efflorescence should occur, EP Henry recommends the use of Techni-Seal's Efflorescence Cleaner for Pavers and Slabs. Be sure to follow the manufacturer's recommended dosage and application instructions. Once the DevonStone has been cleaned with an acid based cleaner, it must be sealed. As with pavers, acid based



Starting from a square corner



Laying the first stone



Dead blow hammer set



Wood and hammer set

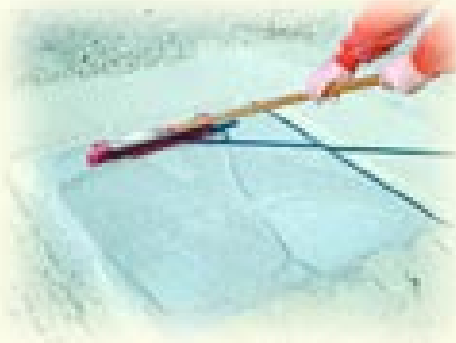


Checking for straight lines



Checking for level and/or pitch

*Installation tip: To help stabilize the DevonStone installation, create a “wash” around the perimeter using the EP Henry ProPak SB. This is done by creating a 4” wide build up of material around the edge. Using a trowel, pull the material at a 45° angle toward the stones creating a triangular band of ProPak. Sweep any excess material off the DevonStone. As the ProPak hardens, this “wash” will provide an excellent edge restraint for the DevonStone.*



Sweeping the joint sand



Applying water to the polymeric sand



Creating the “wash”

## MATERIAL QUANTITIES

cleaners can etch the surface of the stone, so a sealer must be applied to ensure the long term wear and finish of the product. EP Henry’s recommendations for sealers are Techni-Seal’s Protective Sealant for Pavers and Slabs WL or EV.

**THE FOLLOWING QUANTITIES ARE BASED ON A 100 SQUARE FOOT INSTALLATION OF DEVONSTONE:**

Geotextile fabric (including sides)	120 SF (13.33 SY)
Modified stone @ 6” deep	3 tons
Concrete sand setting bed @ 1” deep	1/2 ton
EP Henry ProPak SB (80# bags)	13 bags
Techni-Seal Polymeric sand HB	1 bag