



Prepare Base Leveling Pad

Remove all surface vegetation and debris. Do not use this material as backfill. After selecting the location and length of the wall, excavate the base trench to the designed width and depth. Start the leveling pad at the lowest elevation of the wall. Level the prepared base with 6" of well compacted granular fill (class II road base or 3/4" [20 mm] crushed stone). Compact to 95% Standard Proctor or greater. Keystone recommends additional trench depth for below grade placement of Keystone units on a ratio of 1" (25 mm) below grade for each 8" (200 mm) of wall height above grade (to a maximum of 3 units buried). This lowers the base course below grade locking the wall in place and also helps prevent erosion and scouring at the base of the wall. The base trench should be wide enough to allow for the Keystone unit and drainage zone. An option to a compacted, granular material leveling pad is to use a non-reinforced concrete leveling pad. In some cases, contractors find this is a time-saving approach. Walls built to a level condition on a sloping grade require a stepped base. It is best to work out the stepped base as the wall steps up in elevation. If a concrete leveling pad is used, the step-up height needs to exactly match the Keystone unit height. **Do not use PEA GRAVEL for leveling pad.**



Install and level the base course

Place the first course of Keystone units end to end (with face of wall corners touching) on the prepared base. The receiving pin hole or kidneys on the unit should be placed downward and the pin holes should face upward, as shown. Make sure each unit is level - side to side and front to back. Leveling the first course is critical for accurate and acceptable results. Keystone recommends minimum embedment depth for below grade placement of Keystone units on a ratio of 1" (25 mm) below grade for each 8" (200 mm) of wall height above grade or one unit, whichever is greater. For alignment of straight walls, use the pins or the straight back edge of the unit. Using the front face will give irregular alignment due to the rough split texture. For constructing curved walls, use the front pin position for best results. Minimum radius for convex and concave curves is 3'-6" (1 m).



Install the interlocking pins

Place the reinforced fiberglass pins into the paired holes (2) of each Keystone unit. (Pins of adjoining units should be 12" [305 mm] on center.) Once placed, the pins create an automatic setback for the additional courses. According to wall requirements and design, place pins in the front holes for near vertical (1/8" or [3 mm]) setback and the rear holes for 1 1/4" (32 mm) setback per course.



Install and compact backfill

Fill in all voids — in and between Keystone units — 3/4" (20 mm) crushed stone or clean, well-draining granular fill. Place drain zone behind the units as required to achieve total 2 ft. (0.6 m) depth of drainage zone from unit face. Pea gravel should not be used. Compact material in unit cavities appropriately to eliminate settling. Next, if economical, use existing soils for backfill behind the gravel drainage zone. (Heavy clays or organic soils are not recommended due to water-holding properties.) In some situations poor site soils will cause higher reinforcement costs, so economics of using import soils should be reviewed. Compact soils to a minimum of 95% Standard Proctor compaction, placing fill in 8" (200 mm) lifts on a course-by-course basis or as specified by a Professional Engineer. (Use only walk-behind mechanical compaction equipment within 3' [1 m] behind the units to avoid localized overstress.) Sweep off any pebbles or debris so the next. Keystone units rest evenly upon the layer below.



Install additional courses

Place the next course of Keystone units over the fiberglass pins, fitting the pins into the kidney shaped recesses of the units above. Push the Keystone units toward the face of the wall until they make full contact with the pins. Repeat for each remaining course.



Install Keystone cap units

Complete your wall with the appropriate Keystone capping units. In areas of high public usage, apply Keystone KapSea™ (a construction adhesive for masonry units) on the top surface of the last course before applying cap units. Place the Keystone Cap unit over the pins on the underlying unit. Pull the Cap unit forward to the automatic setback position. Backfill and compact soils behind wall to finish grade. Finish grade with appropriate plastic soil cap or drainage swale to minimize surface water flow into wall/soil structure.



Installing Geogrid Reinforcement

Excavate Reinforced Soil Area.

Remove existing soils in the reinforced soil area to the maximum embedment length of the geogrid design. Provide a generally level soil condition behind the wall units for the placement of each geogrid layer.

Cut Geogrid.

Cut sections from geogrid roll to the specified length (embedment depth). Geogrid roll direction is from the wall toward the embankment. Check manufacturer's criteria for biaxial or uniaxial geogrids. In most cases correct orientation is to roll the geogrid perpendicular to the wall face.

Install Geogrid.

Hook geogrid over the Keystone fiberglass pins to ensure a positive mechanical connection between the unit and geogrid. Make sure geogrid is placed within 1 inch of wall face.

Secure Geogrid.

Pull the pinned geogrid taut to eliminate loose folds. Stake or secure back edge of geogrid before and during backfill and compaction. Remove stakes, if desired, once backfill is placed. Place additional sections of geogrid, abutting each other, for continuous coverage at each layer.

Install Next Course of Keystone Units.

Place Compacted Backfill Over Geogrid In 8" Lifts.

Provide a minimum of 6" (150 mm) reinforced fill coverage prior to driving equipment over the geogrid with tired equipment. Avoid driving or turning vehicles directly on geogrid to avoid excessive damage.