**Installation**

**PATTERN & APPEARANCE**

“Rule of Thumb” for bond pattern between courses: Construct the wall using the units as they come off each shipping pallet. Randomly utilize the various unit shapes trying to avoid a repetition of same unit size frequency along a horizontal line (some unit repetition is unavoidable). Avoid stack bonding of unit joints (vertical joint line between adjoining units) for more than two courses vertically. If some units seem to have a blemish or too much texturing in a specific area, orient them so the blemish faces the soil side of the wall to hide imperfections or use these units along the wall base.

**EMBEDMENT**

Unit embedment below the grade line shall be a minimum of one unit buried, under all conditions, along with a general provision of H/20 (wall height divided by 20) for total wall embedment of taller walls. Note H=total height of wall from top of base leveling pad to top of wall. Consult a qualified engineer for sloping grade conditions in front of wall or steep slopes and surcharge loads on top of wall. Deeper embedment may be required in areas prone to surface scouring where base erosion is possible, or in areas where freestanding walls are desired and frost depths require deeper foundations.

1. **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 desired width and depth (min. 20” W x 12” D) (500mm x 300mm). Start the leveling pad at the lowest elevation along wall alignment. Step up in 6” (150mm) increments with the base as required at elevation changes in the foundation. Level the prepared base with 6” (150mm) of well-compacted granular fill (gravel), road base, or ½” to 3/4” (10 - 20 mm) crushed stone. Compact to 95% Standard Proctor or greater. Do not use PEA GRAVEL or SAND for leveling pad.

2. **INSTALL THE BASE COURSE**
   - Place the first course of Country Manor units end to end (with front corners touching) on the prepared base. The long groove (receiving channel) on the unit should be placed down and the three pin holes should face up, 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. For alignment of straight walls, use a string line aligned on the unit pin holes for accuracy. Minimum embedment of base course is 6” below grade.

3. **INSERT THE FIBERGLASS PINS**
   - Place the shouldered fiberglass pins into the holes of the Country Manor Units (note: place one pin only per each grouping of three holes). Place pins in the middle hole for near vertical alignment or the holes nearest the embankment for a 9.5° +/- setback per course. According to wall requirements and design, the front pin hole (towards the face of the wall) can be used randomly to allow a forward projection of a specific unit for accent and variation in the wall appearance.

4. **INSTALL FILL & COMPACTION**
   - Once the pins have been installed, provide ½” - ¾” (10 - 20mm) crushed stone drainage fill behind the units to a minimum depth of 12” (300mm). Fill open spaces between units and open cavities/cores with the same drainage material. Proceed to place backfill in maximum 6” (150mm) layers (lifts) and compact to 95% Standard Proctor with the appropriate compaction equipment. Do not use heavy ride-on compaction equipment within 3’ (1m) from back of wall. Do not use jumping or ramming type compaction.

5. **INSTALL ADDITIONAL COURSES**
   - Place the next course of Country Manor units over the fiberglass pins, fitting the pins into the long receiving channel recess of the units above (Note: Some removal of debris in the pin holes and channel may be necessary prior to placement). Push the Country Manor units toward the face of the wall until they make full contact with the pins. If pins do not connect with channel but align in open core of upper unit, place drainage fill in core to provide unit interlock with pin. For near vertical alignment, center the unit above over the center placed pins below.

6. **CAPping THE WALL**
   - Continue all steps until ready to place the wall cap. Clean off the last course of Country Manor in preparation for the cap or coping to finalize the wall. With units dry and clean, use construction adhesive (Keystone KapSeal) for a mechanical bond. Install the Country Manor 3” (75mm) capping unit, architectural precast concrete or cut stone as a coping element. Cap may be flush or overhanging as required by aesthetics and design. Note: For taller, more critical walls, refer to geogrid soil reinforcement instructions on the following page.
GEOGRID SOIL REINFORCEMENT

Taller walls or walls supporting surcharge loads require the use of geogrid reinforcement material to reinforce a cohesive soil mass directly behind the retaining wall and provide connection to the concrete facing units. Geogrid properties and wall design require knowledge of wall heights, soil properties (Phi angle and moist unit weight), surcharge loads and manufacturer’s requirements for specific geogrid types and strength capabilities. For general design of limited height walls, refer to the “Design Charts” in the back of this brochure. For conditions beyond these basic charts, consult a qualified engineer. To install geogrid into your wall, continue the installation process with the following steps:

Excavate Reinforced Soil Area: Remove existing soil in the reinforced soil zone to the maximum embedment length of the geogrid design. Level and compact soil behind the wall prior to placement of each geogrid layer.

Cut Geogrid: Cut sections from the geogrid roll to the specified length (embedment length) by design charts or engineers design analysis. Check manufacturer’s criteria for biaxial or uniaxial geogrids. In most cases, the correct orientation is to roll the geogrid perpendicular to the wall face.

Install Geogrid: Place geogrid over the Country Manor shouldered pins already in place. NOTE: Allow approximately 3" (75mm) of geogrid material to rest on the unit top surface ahead of the pin (from pin to face of wall). This will ensure that the next course above will be fully supported on geogrid. Place all sections of geogrid, abutting each other side-to-side as per manufacturers instructions.

Secure Geogrid: Pull the pinned geogrid taut to eliminate loose folds. Stake or secure the back edge of geogrid before backfill and compaction. As possible, compact from back of wall area towards embankment to avoid loosening geogrid or putting compaction pressure on wall. Remove stakes, as required, once backfill is placed.

Install next course of Country Manor units. Follow steps 3-5 (on page 5) until next geogrid layer or completion of wall.

STEPPEFOOTING (Leveling Pad)

Leveling pad options:
- Compacted free draining granular fill (inorganic)
- Crushed stone road base
- ⅜” - ¾” crushed stone
- Non-reinforced concrete (2000 psi)

Leveling pad thickness:
- 6" (150mm) ± granular materials
- 3" (75mm) ± concrete option

Always start wall at lowest elevation of site location where wall is to be constructed. Build step-ups in leveling pad to match 6" Country Manor unit thickness. When using non-reinforced concrete for the leveling pad option, it is critical that the step-ups exactly match the Country Manor unit thickness! With a concrete leveling pad, there are few options for correction if the step-up is built higher than the unit height.

GENERAL NOTES:

- Units may vary due to texturing processes and unit sizes by region. Verify unit type, size, weight availability by region. Units may vary up to 1" ± (25mm) due to texture variations.
- Clean out pin holes and receiving channel as required to assemble wall. During manufacturing, some concrete crumbs may deposit in these areas and should be removed to permit pins to be placed in the appropriate holes and receiving channel.
- Cut or split units as required (with a mason saw, hydraulic break or chisel and hammer) for corners, caps or wherever units need to be altered to allow construction to be finalized. (Cuts produce smooth finish; splits produce textured finish.)
- When cutting concrete units, always wear safety goggles, gloves and filter mask per manufacturer’s recommendations.
- Use Keystone KapSeal™ construction adhesive for all units in parapet walls, columns, etc. where wall is built freestanding (not retaining soil). Use vertical bead of adhesive between units in freestanding wall to avoid daylight view through wall units. Use adhesive as required at 90° corners or where pins do not interconnect units.