**Installation guide**

**Walls**

**INSTALLATION OUTLINE**

**01 EXCAVATION**

A. Check the location of existing structures and utilities before starting the excavation.

B. Dig out a trench. Its depth should be calculated according to the thickness of the leveling pad and the burial depth of the wall.

C. Plan for a thickness of at least 6” (150 mm) for the leveling pad and consider that at least 10% of the height of the wall should be buried in the ground. In all cases, the wall must be buried no less than 6” (150 mm) deep.

D. In determining the width of the trench, allow for a space of at least 6” (150 mm) at the front of the wall and 12” (300 mm) at the back for drainage fill. Compact and level the excavation base.

**FOR GEOGRID REINFORCED RETAINING WALLS**

The excavation must also take account of the geogrid length.

**02 FOUNDATION**

A. Cover the base and back of the trench with a geotextile. Extend the geotextile towards the back of the excavation and eventually above the drainage fill once it is in place close to the top of the wall.

B. Next, spread the 0-¾” (0-20 mm) stone in the trench and compact using a vibratory plate or jumping jack, ensuring that the surface is level. The compacted leveling pad must be at least 6” (150 mm) thick.

**NOTE FOR STEPPED FOUNDATION**

A wall built on an incline requires stepped foundations. For steep inclines, several steps may be required. Construction should start at the lowest level. Each of the steps must follow a level horizontal path and the vertical distance separating the successive steps must equal the height of a block.
03 BUILDING THE FIRST COURSE
A. Using blocks of the same height, place the first course on the compacted leveling pad according to the predetermined layout. Check the alignment and leveling in all directions and make sure that all the blocks are in full contact with the leveling pad and properly supported.
B. Place the exposed surfaces of the blocks side by side. There must be no space between the exposed faces of adjacent blocks.
C. At the back of the wall and on the compacted leveling pad, lay a 4” (100 mm) diameter perforated drain. Connect this drain to the existing drainage system so that it clears the water accumulated behind the wall.

04 BACKFILLING
Backfill at the rear of the wall and the space between the back of the blocks with 3/4” (20 mm) clean stone. Level and settle the clean stone. Any cavities in the blocks must also be filled with clean stone.

05 SUBSEQUENT COURSES
A. Clean the top of each block before laying the next course. Depending on the type of block, install the connectors on the extremity of each block.
B. Lay the subsequent courses, backfilling at the rear of the wall every 8” (200 mm) maximum, using the same method outlined in step 4.
C. Make sure the subsequent courses are laid such that the vertical seams are aligned with the blocks below.

FOR GEOGRID REINFORCED RETAINING WALLS
Where geogrids are to be used, cover the clean stone with a geotextile. Select the geogrid according to the type, level and appropriate length. Position the geogrid according to the main reinforcement direction perpendicular to the wall. The geogrid must be continuous all along its embedment length. Splicing of the geogrid in the main reinforcement direction is not permitted. The geogrid must be installed horizontally over the compacted backfill and the previous course of blocks. Fix the connectors on the geogrid and lay the next course of blocks. Pull on the back of the geogrid and maintain its tension by stakes or pins. Repeat with a new section of geotextile and place the reinforced backfill directly behind the drainage fill. Fill and compact up to the level of the blocks.
Heavy equipment must not be used less than 3’ (1-m) behind the blocks. Construction equipment must not drive directly over the geogrid.
Repeat the various installation steps.

06 FINISHING
Position the course of coping stones (if applicable) or the final course of blocks to complete the wall. The coping stones or final course of blocks must be fixed to the subjacent blocks using concrete adhesive and there must be no space between the blocks.
Installation guide

Walls

WALL INSTALLATION – GRAVITY WALL
Typical cross section

WALL INSTALLATION – GEOGRID REINFORCED WALL
Typical cross section

FOR GEOGRID REINFORCED RETAINING WALLS
For more information, refer to the Wall Design Charts on pages 166-167.
Installation guide
Walls

ANCHORING SYSTEM | Installation

Techo-Bloc has designed an anchoring system that allows Escala, Mini-Creta, Quarry Stone, Semma and Suprema blocks to be installed using high-density polyethylene (HDPE) connectors. These devices ensure a mechanical connection between the blocks with the geogrid and ensure that they are aligned during laying.

Place one block on top of two other blocks. Lift up the end of the block to insert the connector into the predetermined groove. Then, lift the other end of the block to insert a second connector into the same groove. These connectors must remain partially visible in order to fit into the adjacent blocks.

The top of each block is identified by a notch near its front. There are two grooves on the top and underside of each block. The connectors are inserted into these grooves. Before fitting the connectors, check whether the blocks are to be installed with a setback or vertically. If the connector is fitted into the front groove, the wall will be vertical. If the connector is fitted into the back groove, the wall will be recessed and at an angle. When using the Semma units, the positioning of the connector is reversed. When the connector is placed in the front groove, the wall will be at an angle, and if it is in the back groove, the wall will be vertical.

ESCALA, MINI-CRETA, QUARRY STONE AND SUPREMA

The setback is determined by the placement of the connector.

ANCHORING SYSTEM | Connectors in curved wall application

When creating internal curves and the connectors are in the back groove, two connectors must be installed on each block as illustrated.
Installation guide

Walls

ANCHORING SYSTEM | Connectors in geogrid reinforced wall application

When using a geogrid, it must be placed above the connectors. The connectors will therefore be placed before the geogrid. After positioning the geogrid, move the block (from the above course) forward until it touches the connectors and ensures that the system is locked.

INTERNAL CORNER | Installation outline

When building a wall with an internal corner, it is recommended to start constructing the wall at the corner and build out from this point in both directions. To form the corner, use the longer modules as illustrated. Build wall B by extending it out from wall A such that the end of wall B is aligned with the back of wall A. For subsequent courses, simply alternate the extension of walls A and B.

When using geogrid, it must be extended beyond the internal corner by at least 25% of the total height of the wall. Alternate the extension of the geogrid for subsequent layers (as illustrated in green).
Installation guide

Walls

EXTERNAL CORNER | Installation outline

For walls with an external corner, start building the wall from the corner and continue from this point in both directions. Each pallet contains units that can be used to make a corner. On-site, these units (except the Suprema blocks) must be split down the side using a hammer and chisel in order to obtain a corner unit. For each subsequent course, alternate the direction of the corner unit and secure the corner unit to the block below using concrete adhesive.

OBLIQUE CORNER | Installation outline

The longer modules should be used to build an oblique external corner. Cut the non-exposed part of the block using a saw. Use a chisel or splitter to give the exposed face of the block a textured look. Alternate the cutting of the blocks for each subsequent course.
The Techo-Bloc retaining wall system allows walls to be built with internal and external curves. These curves can be achieved without cutting the blocks. You will need to angle the curves according to the minimum radius specified by Techo-Bloc. When building a wall with an internal curve, it is recommended to start building the wall at the center of the curve and place blocks alternately to the left and right of the central block. If the wall to be constructed requires a setback (inclined wall), each course should be offset to the back and the curve will then become bigger. The minimum radius is therefore that of the first course.

When using geogrid, it must cover 100% of the surface around the curve. To do this, additional layers of geogrid are placed on the next course of blocks to fill voids created from previous course (as illustrated in green).
Installation guide
Walls

EXTERNAL CURVE | Installation outline

When building a wall with an external curve, it is recommended to start building the wall at the center of the curve and place blocks alternately to the left and right of the central block. Unlike for internal curves, the external curve gets smaller as courses are added. The minimum radius is therefore that of the last course.

When using geogrid, it must cover 100% of the surface around the curve. To achieve this, additional layers of geogrid are placed on the same course of blocks to fill voids (as illustrated in green). In this case, we recommend at least 3” (75 mm) of backfill in between the overlapping sections.
FENCING | Installation outline

Fencing can be erected behind the blocks. The fence posts must be placed in formwork tubes positioned during construction of the wall, and then filled with concrete. The geogrid may be cut to accommodate installation of the tubes. Cut the geogrid in alignment with the center of the formwork tube and perpendicular to the wall, thus creating two geogrid panels. Connect the two geogrid panels at the front and back of the formwork tube and bend the geogrid to fit around the formwork.

GARDRAIL | Installation outline

As with fencing, a guardrail can be incorporated behind the blocks. The guardrail posts must be installed during construction of the wall. The geogrid is cut perpendicular to the wall and in alignment with the center of the post, thus creating two geogrid panels. These two panels are connected at the front and back of the post. The geogrid can be bent to fit around the post.
**TIERED WALL | Installation outline**

Although tiered walls look appealing, it is important to take into account the additional load the upper wall applies on the lower wall. If the distance between the walls is at least twice the height of the lower wall, the walls are generally independent of each other. However, if this distance is less, the lower wall must be built to take account of the load of the upper wall and geogrids may be required.

If $H_1 > H_2$ and $D > (H_1 \times 2)$

The walls are generally independent of each other. Otherwise, the construction of the lower wall must take into account the load of the upper wall (as shown below).
Installation guide
Walls - Mini-Creta 3" and 6"

MINI-CRETA 3" AND 6" | Wall pattern

Techo-Bloc has created a series of installation patterns to be used for any projects using the Mini Creta wall system. The patterns are largely based on three designs: The 1-, 3- and 5-row patterns. Each pattern contains different combinations of units, which can be used several times or combined with other combinations. Depending on the wall height, or whether a geogrid is used, different combinations from different patterns can be combined for the same wall.

These patterns have been designed to maximize the natural blend between the different units. Each pattern also comes with a specific distribution ratio for the Mini Creta 3" and 6", which is proven to be a great tool when estimating the quantity of material needed for a specific project.

NOTE: Only units “A”, “B” and “C” have been used to illustrate the different length units.

Units

The Mini-Creta system is comprised of blocks known as units. These units come in two heights: 2\(\frac{15}{16}\)" (75 mm) and 5\(\frac{7}{8}\)" (150 mm).

The Mini-Creta 3" and Mini-Creta 6" units are also divided into three lengths. Units “A” are 9\(\frac{1}{16}\)" (230 mm) long, units “B” are 11\(\frac{13}{16}\)" (300 mm) long and units “C” and “D” are 14\(\frac{3}{4}\)" (375 mm) long.
1-ROW PATTERN | Installation outline

The 1-row pattern provides five different combinations. Each combination is 8.9' (2.7 m) long and 5 7/8" (150 mm) high. This pattern can be used to lay the last course of units or when the other models cannot be used.

### NUMBER OF BLOCKS REQUIRED

<table>
<thead>
<tr>
<th>MINI-CRETA</th>
<th>UNITS LENGTH (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>230 (A)</td>
</tr>
<tr>
<td>66.7% of surface - Mini-Creta 3&quot;</td>
<td>4</td>
</tr>
<tr>
<td>33.3% of surface - Mini-Creta 6&quot;</td>
<td>1</td>
</tr>
</tbody>
</table>
Installation guide
Walls - Mini-Creta 3" and 6"

3-ROW PATTERN | Installation outline

The 3-row pattern provides four different combinations. Each combination is 8.9' (2.7 m) long and $17\frac{11}{16}$" (450 mm) high. This pattern gives a leveled surface every $17\frac{11}{16}$" (450 mm), which is the recommended spacing between two layers of geogrid in a Mini-Creta wall. This pattern is recommended when using geogrid.

Geogrids (When applicable)

NUMBER OF BLOCKS REQUIRED

<table>
<thead>
<tr>
<th>MINI-CRETA</th>
<th>230 (A)</th>
<th>300 (B)</th>
<th>375 (C)</th>
</tr>
</thead>
<tbody>
<tr>
<td>77.8% of surface - Mini-Creta 3&quot;</td>
<td>14</td>
<td>14</td>
<td>14</td>
</tr>
<tr>
<td>22.2% of surface - Mini-Creta 6&quot;</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
</tbody>
</table>
5-ROW PATTERN | Installation outline

The 5-row pattern provides three different combinations. Each combination is 8.9’ (2.7 m) long and 29 1/2” (750 mm) high. This pattern should only be used when geogrid is not required.

<table>
<thead>
<tr>
<th>NUMBER OF BLOCKS REQUIRED</th>
<th>UNITS LENGTH (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>MINI-CRETA</td>
<td>230 (A)</td>
</tr>
<tr>
<td>73.3% of surface - Mini-Creta 3”</td>
<td>22</td>
</tr>
<tr>
<td>26.7% of surface - Mini-Creta 6”</td>
<td>4</td>
</tr>
</tbody>
</table>
Techo-Bloc has created a series of installation patterns to be used for any projects using the Quarry Stone Wall system. The patterns are largely based on three designs: The 1-, 2- and 3-row patterns. Each pattern contains different combinations of units, which can be used several times or combined with other combinations. Depending on the wall height, or whether a geogrid is used, different combinations from different patterns can be combined for the same wall.

These patterns have been designed to maximize the natural blend between the different units. Each pattern comes also with a specific distribution ratio for the Quarry Stone 100 and 200, which is proven to be a great tool when estimating the quantity of material needed for a specific project.

NOTE: Only units “A”, “B” and “C” have been used to illustrate the different length units.

The Quarry Stone system is comprised of blocks known as units. These units come in two heights: 3 15/16” (100 mm) and 7 7/8” (200 mm).

The Quarry Stone 100 and 200 units are also divided into three lengths. Units “A” are 7 7/8” (200 mm) long, units “B” are 11 13/16” (300 mm) long, and units “C” and “D” are 15 3/4” (400 mm) long.
Installation guide
Walls - Quarry Stone 100 mm and 200 mm

1-ROW PATTERN | Installation outline

The 1-row pattern provides six different combinations. Each combination is 8.9’ (2.7 m) long and 7 7⁄8’ (200 mm) high. This pattern can be used to lay the last course of units or when the other patterns cannot be used.

<table>
<thead>
<tr>
<th>NUMBER OF BLOCKS REQUIRED</th>
<th>UNITS LENGTH (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>QUARRY STONE</td>
<td>200 (A)</td>
</tr>
<tr>
<td>66.7% of surface</td>
<td>Quarry Stone 100 mm</td>
</tr>
<tr>
<td>33.3% of surface</td>
<td>Quarry Stone 200 mm</td>
</tr>
</tbody>
</table>
Installation guide
Walls - Quarry Stone 100 mm and 200 mm

2-ROW PATTERN | Installation outline

The 2-row pattern provides four different combinations. Each combination is 5.9’ (1.8 m) long and 15 3/4” (400 mm) high. This pattern gives a leveled surface every 15 3/4” (400 mm), which is the recommended spacing between two layers of geogrid in a Quarry Stone wall. **This pattern is recommended when using geogrid.**

---

**NUMBER OF BLOCKS REQUIRED**

<table>
<thead>
<tr>
<th>QUARRY STONE</th>
<th>UNITS LENGTH (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>200 (A)</td>
</tr>
<tr>
<td>75% of surface - Quarry Stone 100 mm</td>
<td>6</td>
</tr>
<tr>
<td>25% of surface - Quarry Stone 200 mm</td>
<td>1</td>
</tr>
</tbody>
</table>

---
The 3-row pattern provides four different combinations. Each combination is 9.8’ (3-m) long and 23 5⁄8” (600 mm) high. This model should only be used when geogrid is not required.

**NUMBER OF BLOCKS REQUIRED**

<table>
<thead>
<tr>
<th>QUARRY STONE</th>
<th>UNITS LENGTH (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>200 (A)</td>
</tr>
<tr>
<td>60% of surface - Quarry Stone 100 mm</td>
<td>12</td>
</tr>
<tr>
<td>40% of surface - Quarry Stone 200 mm</td>
<td>4</td>
</tr>
</tbody>
</table>
Installation guide
Walls

EXTRA WALL PATTERNS FOR MINI-CRETA 3” AND 6”

Mini-Creta 3” – Linear pattern
Mini-Creta 3” – with vertical units
Mini-Creta 3” and 6” – with vertical units

Mini-Creta 6” – Linear pattern
Mini-Creta 6” – with vertical units

As shown on pages 130 to 133 (Mini-Creta 3” and 6”)

EXTRA WALL PATTERNS FOR QUARRY STONE 100 mm AND 200 mm

Quarry Stone 100 mm
Quarry Stone 100 mm – with vertical units

Quarry Stone 100 and 200 mm – with vertical units

Quarry Stone 200 mm – with vertical units

As shown on pages 134 to 137 (Quarry Stone 100 and 200 mm)
Installation guide
Monumental wall

GENERAL NOTE

Segmental retaining wall blocks are enormously popular today, so much so that a 24’ (7-m) high wall supporting a 1,000 psf (48 kPa) load is no longer considered to be a reinforced concrete application. Techo-Bloc’s Monumental is granite-like in appearance and suits high wall applications very well. The base block and regular unit allow versatile applications and offer superior structural strength. The units have tapered sidewalls, allowing interior and exterior curves. When incorporating the built-in 11-degree batter under the right soil conditions, walls as high as 10’ (3-m) can be achieved without the use of geogrid. The appearance of the Monumental will enhance any environment and soften the image of an industrial facility.

Monumental requires mechanical installation, greatly reducing installation time and avoiding manual labor. Lifting the Monumental units with excavation equipment already on-site for earthwork reduces crew downtime. With its large profile when placed in a running bond stacking pattern, the Monumental brings back the natural carved beauty of a quarried stone.

IMPORTANT

The technical guidelines provided by Techo-Bloc are consistent with industry standards in general and NCMA design methodology and guidelines. Global stability of the wall being built should be addressed by the site designer or project geotechnical engineer. The correct application of any design is the responsibility of the user and should be verified by an engineer. A local wall designer should engineer all retaining walls for site-specific conditions.

For safety during construction a safety rail or net must be installed securely onto the Monumental wall for the fall protection of the wall installers. When building a Monumental wall over five feet all persons working around the perimeter of the wall must be securely harnessed.

It should be noted that all suggestions and recommendations by Techo-Bloc are based on general industry instructions, and should not be interpreted as constituting an engineer’s specifications.

INSTALLATION OUTLINE

01 INSPECTION AND PREPARATION

A. Plan and execute the project according to the drawings and specifications prepared by the engineer.
B. Notify the engineer of site conditions that may affect wall performance, soil conditions observed other than those assumed, or other conditions that may require a reevaluation of the wall design.
C. Verify the location of existing structures and utilities prior to excavation.
D. Ensure surrounding structures and buried utilities are protected from the effects of wall excavation. Embankment support, if required, including stability of the excavation area, are the responsibility of the contractor.
02 EXCAVATION AND FOUNDATION PREPARATION
A. Excavate the native soil to the lines and grades specified on the site grading plans. After the excavation, the native soil must be inspected by an engineer in order to ensure that the soil’s bearing capacity is in keeping with specifications. Use care in excavating to prevent disturbance of the sub-grade beyond the lines specified by the engineer.
B. Beginning at the lowest elevation point of the Monumental wall, excavate a trench at least 40” (1-m) wide for the regular Monumental unit or 54” (1.35 m) wide for the Monumental Base unit down the length of the wall that will accommodate at least all of the leveling pad and 8” minimum (200 mm) of block embedment. Fill over excavated areas with suitable compacted backfill, as recommended by the engineer.

03 LEVELING PAD PREPARATION
A. Before laying the leveling pad material, it is recommended that you install a geotextile membrane along the bottom and banks of the trench to prevent the contamination of soil and leveling pad.
B. Place leveling pad material to the depths and widths shown on specifications.
C. Extend the leveling pad laterally at least 7” (175 mm) in front and 12” (300 mm) behind the lowermost Monumental retaining wall unit.
D. The leveling pad should have a minimum thickness of 8” (200 mm) and should be installed in 6” (150 mm) thick layers and compacted to 98 percent Standard Proctor or according to project specifications. The leveling pad should be composed of 0-1/4” (0-20 mm) granular material.
E. Compact granular leveling pad material to provide a level, hard surface on which to place the first course of Monumental units.
F. Prepare leveling pad material to ensure complete contact with bottom of all Monumental retaining wall base units installed. Gaps are not tolerated.

04 WALL CONSTRUCTION
A. The Monumental Wall unit has a unique lifting system. Techo-Bloc has developed a driving anchor for lifting and positioning Monumental. Attach a chain or sling securely to the Monumental-lifting anchor provided by Techo-Bloc and insert the Monumental-lifting anchor into the opening on the top of the block. Turn the Monumental-lifting anchor 90-degrees to lock the Monumental into place. Lift the Monumental up securely and place into the desired area. Stand clear of the Monumental while it is suspended in the air for safety reasons.
Installation guide
Monumental wall

B. Select the “U” insert for building an 11˚ batter wall, or the “Z” insert to build a near vertical wall. Make sure you inform your local dealer when building a vertical wall, since only the “U” insert is standard.

C. Install the first course of base block on the prepared leveling pad. Make sure all units are level and aligned correctly. Use a string line measured from the back of the block to set your alignment.

D. Place the drainage aggregate in 8” (200 mm) lift and a minimum 12” (300 mm) directly behind and in the Monumental wall units. Fill in the voids of the Monumental units with drainage aggregate. Cap the backfill and drainage aggregate zone with 8” (200 mm) of impervious material.

E. Install a perforated PVC drainage pipe 4” (100 mm) in diameter. Slope the main collection drainage pipe, located just behind the Monumental units 1⁄4” per ft. (6 mm per 300 mm), this will give you a 2% slope and provide gravity flow to the daylighted areas. You can also connect the drainage pipe to a storm sewer system at 50’ (15-m) maximum interval.

F. For inclined (11˚) walls, you will use the “U” connector and a “Z” connector for near vertical walls. Place the connectors as recommended by the manufacturer. When geogrid is required, the insert must be installed above the geogrid so that it gets wedged into the slots.

G. Check each course for level and alignment. Prior to adding successive courses, the top of each Monumental needs to be cleaned free of foreign material.

H. Repeat this process for each successive course. Large compaction or construction equipment should be kept more than 3’ (1-m) away from the back of the wall. This 3’ (1-m) area should be compacted with a vibrating plate compactor.

05 MULTI-LEVEL OR STEPPED BASE WALL
When building a multi-level Monumental wall, each level must be constructed according to rigorous standards.

A. Separate the elevation into individual landings as per engineer’s specifications and consistent with the height of Monumental.

B. When calculating the landing, take into account the drop value of the height of the Monumental wall.

C. Step the units accordingly in order to maintain the required embedment.

D. Maintain running bond joint pattern so that vertical joints are staggered between courses.

E. Use the Monumental regular to maximize bridging between steps.
06 INSTALLATION OF GEOGRID (IF REQUIRED)
Geogrids should be installed according to manufacturers’ recommendations.

A. Orient the geogrid with the highest strength axis perpendicular to the wall face.

B. Prior to geogrid placement, pour the backfill and compact to the elevation of the top of the wall units according to the degree of compacting specified by the engineer. For compacting immediately behind the wall face, see section 4-H.

C. Install appropriate geogrid strength at the proper elevations and to the lengths specified on the wall design.

D. Lay the geogrid horizontally on top of the Monumental wall units and the compacted backfill soils. Place the geogrid within two inches of the face of the Monumental wall units. Install the inserts and lay the next course of Monumental wall units on top of the geogrid.

E. The geogrid must be pulled taut and free of wrinkles before backfilling the retaining wall. In order to do so, pull the geogrid hand-taut and secure the ends with staples, stakes, or by hand tensioning the geogrid until it is covered by 6” (150 mm) of loose fill.

F. The geogrid must be continuous throughout its embedment lengths. Splices in the geogrid strength direction are not tolerated.

07 BACKFILL PLACEMENT

A. Pour backfill at the back of the wall and compact to minimize any geogrid relaxation.

B. Place fill within the reinforced zone and compact in lifts not exceeding 6” (150 mm) (loose thickness) where hand-operated compaction equipment is used, and not exceeding 10” (250 mm) (loose thickness) where heavy, self-propelled compaction equipment is used.

   Note: Only lightweight hand-operated compaction equipment is permitted to operate within less than 3’ (1-m) of the back of the Monumental wall units. If the specified compaction level cannot be achieved within 3’ (1-m) of the back of the Monumental wall units, replace the reinforced soil in this zone with drainage aggregate material.

C. Minimum compaction requirements for fill placed in the reinforced zone:

   Walls less than 15’ (4.5 m) high – Compact to 95% of the soil’s Standard Proctor maximum dry density (ASTM D698) or modified Proctor (ASTM D1557) for the entire wall height, as indicated by the engineer.

   Walls over 15’ (4.5 m) high but not more than 30’ (9-m) high – Change compaction requirements to 98% of the soil’s Standard Proctor or modified Proctor (ASTM D1557) maximum dry density (ASTM D698) for the entire height up to 30’ (9-m), as indicated by the engineer.

   Walls over 30’ (9-m) high – Change compaction requirements to 100% of the soil’s Standard Proctor maximum dry density (ASTM D698) or modified Proctor (ASTM D1557) for the entire wall height, as indicated by the engineer.

D. Utility trench backfill: Compact utility trench backfill in or below the reinforced soil zone to the same requirements as the wall height, as indicated by the engineer.

   Note: Utilities must be properly designed (engineered) to withstand all forces from the Monumental wall units, reinforced soil mass, and surcharge load, if any.

E. Moisture content: Soil shall be moisture conditioned before placement to within two percentage points of the optimum moisture content for all wall heights.

F. These specifications may be changed based on recommendations by the engineer.

G. At the end of each day’s operation, slope the last level of compacted backfill to direct surface water runoff away from the wall face. The general/earthwork contractor is responsible for ensuring that the site drainage during construction is directed away from the Monumental wall until permanent site drainage features are operational.
Installation guide
Monumental wall

08 CAP UNIT INSTALLATION
A. Apply a concrete adhesive to the top of the cleaned surface of the unit below and place the Monumental cap unit into the desired position.
B. If necessary, cut the Monumental cap units to obtain the proper fit.
C. Backfill and compact to top of the Monumental cap unit.

09 CURVE / CORNER INSTALLATION

CONVEX AND CONCAVE CURVES
A. Place the Monumental units on the leveling pad such that there are no gaps between the two faces of the Monumental Units used.
B. When building multiple courses on a curve, begin installation by placing a Monumental in the middle of the curve, centering on two Monumental blocks directly below it.
C. Place the Monumental units side by side from the center block outward along the curve.
D. Place the Monumental caps and measure the distance of the gap between the caps. Using this measurement, cut the Monumental cap so it is parallel with the adjacent Monumental cap unit.
E. Slide the Monumental cap in its place so that it is flush with the adjacent Monumental cap unit.
F. The minimal radius obtained with the Monumental is 17’ (5.2 m).

OUTSIDE 90-DEGREE CORNER
A. When building a Monumental wall with an outside 90-degree corner, it is recommended that the construction of the Monumental wall start at the corner desired and continue working away from this point in both directions. The placement of the Monumental corner blocks will allow a normal batter consistency in both wall directions.
B. One standard Monumental corner block will be used at the corner of each course of the wall. The Monumental corner blocks will overlap each other at the corner, coming together in a “zipper fashion”. The Monumental corner blocks should be glued at the corner where they overlap with a concrete adhesive.

INSIDE 90-DEGREE CORNER
When building a Monumental wall with an inside 90-degree corner, it is recommended that you start each subsequent course at the corner and lay out block from that corner.

FENCING / GUARDRAILS
Guardrails and handrails should be installed behind the Monumental in the soil. It is possible to install fencing at the top of the Monumental wall by core drilling into the top of the Monumental. Follow the instructions of the railing manufacturer and wall design engineer. It is, however, recommended that if the fencing is to be installed at the top of the wall, the top two rows of Monumental should be glued to the rows of Monumental Blok beneath it with a concrete adhesive.
Installation guide
Monumental wall

10 GEOGRID INSTALLATION IN A CURVE / CORNER APPLICATION

CONVEX CURVE
A. Place geogrid perpendicular to wall face at center of geogrid. Trim the geogrid to fit onto the curved face of the wall and place the geogrid with the curve to follow its contour.
B. Overlapping layers of geogrid on a convex curve requires a minimum of 3” (75 mm) of soil between them for proper anchoring. Repeat for successive specified geogrid layers.
C. Install the geogrid to the length specified by the wall designer.

CONCAVE CURVE
A. The strength direction of the geogrid must be placed perpendicular to the wall face. Align the cut geogrid sections so that they follow the contour of the concave curve. Geogrid layers should not overlap. A wall designer should specify the desired length of geogrid.
B. The next successive geogrid layer must be placed to cover the area of reinforced soil below. This will maximize lapping. Repeat these steps for successive specified geogrid layers.

OUTSIDE 90-DEGREE CORNER
To insure proper anchorage, it is important that geogrid layers that overlap on an outside 90-degree corner are covered by 3” (75 mm) of soil. Repeat for successive specified geogrid layers.

11 FINAL TOUCH
When prelaying the last course of Monumental and capstones, overlap the geotextile towards the wall, totally covering the 0-3/4” (0-20 mm) clear crushed stone (drainage material). Use impervious soil to cover the drainage stone and remainder of the back fill. The soil cap must be manually compacted and it is recommended that a swale be created in order to channel water off the top of the wall. For all other applications, such as concrete or asphalt situated behind the wall, it is a requirement that you compact the 2’ (600 mm) behind the Monumental wall with a lightweight compacting plate at 6” (150 mm) intervals.
GENERAL NOTE

For a result that limits joint alignment while adding solidity, it is important to follow the illustrated instructions below. It is also important to adequately glue each row with a concrete adhesive in order to obtain a stable pillar.

If you are planning to install a light on top of the pillar, make sure you run the electrical wires prior to installing the blocks.

If you are planning to build a pillar with a planter, make sure to install a geotextile membrane inside the pillar before filling the cavity with planting soil.

INSTALLATION OUTLINE

01 EXCAVATION
A. Before excavating, call all the local utility companies (e.g., phone, gas, electrical) to ensure that the area in which you plan to dig is clear of underground cables or wires. If any are found, please notify the appropriate companies before starting the works.
B. Excavate an area of 40" × 40" (1 m × 1 m) by 8" (200 mm) deep and fill in with 0-3/4" (0-20 mm) crushed stone compacted at 95% of the Proctor.
C. With the help of a rake, grade the bottom of the excavated area. If the natural soil is granular or sandy, we recommend that you compact the soil with a vibrating plate. If the soil is clay-like, change the soil with a blend of lime and crushed stone prior to compaction. Next, cover it with a layer of geotextile fabric to prevent the contamination of the base (clay and 0-3/4" [0-20 mm] crushed stone).

02 FOUNDATION
A. Install the 0-3/4" (0-20 mm) crushed stone base, in 4" (100 mm) lifts with a (minimum 5,000 lbf [22 kN] vibrating plate) compactor.
B. To facilitate compacting, wet the base material thoroughly and compact with a vibrating plate proceeding in all directions. This process should give you the desired height. At this stage, you can verify the final height with the help of a paver.

03 SETTING BED
A. On the compacted crushed base, install two pipes with an outside diameter of 1" (25 mm). Grade the concrete sand with the help of a straight edge (or Quick-E leveler). If the base is not properly graded and smooth, imperfections will be evident in the finishing grade of the pavement.
B. Bedding sand should not be compacted until all paving stones have been laid down. Passing the vibrating plate over the paving stones causes them to settle approximately 3/8" (10 mm) into the bedding sand.

04 STARTER ROW
Place the first four units as illustrated, while making sure that all units are leveled in all directions.

05 SECOND ROW
Proceed with each layer/row as per adjacent illustration.

06 THIRD ROW AND SUBSEQUENT ROWS
Repeat procedure from steps 1 and 2 until you reach the desired height.

07 CROWNING
Crown the pillar using Pillar Caps (Stonedge Pillar Cap and York Pillar Caps).
• For the 24" Pillars, use the 28" × 28" caps.
• For the 28" Pillars, use the 32" × 32" caps.
Pillars

**Selection**

**PILLAR 24" × 3" MINI-CRETA**

- A. STONEDGE PILLAR CAP 28" OR YORK 28" PILLAR CAP
- B. PILLAR 24" × 3" (MINI-CRETA) UNIT SECURE EACH ROW WITH CONCRETE ADHESIVE
- C. EMBEDMENT 6" (150 mm) MIN.
- D. 35 7/16" (900 mm), HEIGHT PER PALLET 47 1/4" (1200 mm), MAXIMUM HEIGHT
- E. GEOTEXTILE
- F. COMPACTED AGGREGATE BASE 0-3/4" (0-20 mm)

**PILLAR 24" × 6" MINI-CRETA**

- A. STONEDGE PILLAR CAP 28" OR YORK 28" PILLAR CAP
- B. PILLAR 24" × 6" (MINI-CRETA) UNIT SECURE EACH ROW WITH CONCRETE ADHESIVE
- C. EMBEDMENT 6" (150 mm) MIN.
- D. 35 7/16" (900 mm), HEIGHT PER PALLET 47 1/4" (1200 mm), MAXIMUM HEIGHT
- E. GEOTEXTILE
- F. COMPACTED AGGREGATE BASE 0-3/4" (0-20 mm)

**PILLAR 24" × 3" & 24" × 6" MINI-CRETA - OPTION A**

- A. STONEDGE PILLAR CAP 28" OR YORK 28" PILLAR CAP
- B. PILLAR 24" × 6" (MINI-CRETA) UNIT SECURE EACH ROW WITH CONCRETE ADHESIVE
- C. PILLAR 24" × 3" (MINI-CRETA) UNIT SECURE EACH ROW WITH CONCRETE ADHESIVE
- D. EMBEDMENT 6" (150 mm) MIN.
- E. 35 7/16" (900 mm)
- 47 1/4" (1200 mm), MAXIMUM HEIGHT
- F. GEOTEXTILE
- G. COMPACTED AGGREGATE BASE 0-3/4" (0-20 mm)
Installation guide

Pillars

**PILLAR 24" × 3" & 24" × 6" MINI-CRETA - OPTION B**

A. STONEDGE PILLAR CAP 28" OR YORK 28" PILLAR CAP
B. PILLAR 24" × 3" (MINI-CRETA) UNIT SECURE EACH ROW WITH CONCRETE ADHESIVE
C. PILLAR 24" × 6" (MINI-CRETA) UNIT SECURE EACH ROW WITH CONCRETE ADHESIVE
D. EMBEDMENT 6" (150 mm) MIN.
E. 35 7/16" (900 mm), 47 1/4" (1200 mm), MAXIMUM HEIGHT
F. GEOTEXILE
G. COMPACTED AGGREGATE BASE 0-3/4" (0-20 mm)

**PILLAR 28" × 6" MINI-CRETA**

A. YORK 32" PILLAR CAP
B. PILLAR 28"X6" (MINI-CRETA) UNIT SECURE EACH ROW WITH CONCRETE ADHESIVE
C. EMBEDMENT 6' (150 mm) MIN.
D. 23 3/8" (600 mm), HEIGHT PER PALLET 47 1/4" (1200 mm), MAXIMUM HEIGHT
E. GEOTEXILE
F. COMPACTED AGGREGATE BASE 0-3/4" (0-20 mm)

**MANCHESTER PILLAR**

A. STONEDGE PILLAR CAP 28" OR YORK 28" PILLAR CAP
B. MANCHESTER UNIT SECURE EACH ROW WITH CONCRETE ADHESIVE
C. EMBEDMENT 6" (150 mm) MIN.
D. 35 7/16" (900 mm), HEIGHT PER PALLET 47 1/4" (1200 mm), MAXIMUM HEIGHT
E. GEOTEXILE
F. COMPACTED AGGREGATE BASE 0-3/4" (0-20 mm)
Pillars

A. YORK 32" PILLAR CAP
B. SEMMA PILLAR UNIT SECURE EACH ROW WITH CONCRETE ADHESIVE
C. EMBEDMENT 6" (150 mm) MIN.
D. 35 7/16" (900 mm), HEIGHT PER PALLET 47 1/4" (1200 mm), MAXIMUM HEIGHT
E. GEOTEXTILE
F. COMPACTED AGGREGATE BASE 0-3/4" (0-20 mm)