“Stack n’ Fill”

A Wall System Ideal for Cuts, Short and Tall, and Fills up to Eight Feet.
**COMPONENTS**

**FACE BLOCK**
The standard Face Block is available in straight and curved split faced texture and a variety of colors. Cast into each Face Block are the plug, cores and female Gridloc.

**TRUNK BLOCK**
The Trunk Block contains the male Gridloc to connect Face and Anchor/Junctions together creating structural depth for each cell.

**ANCHOR/JUNCTION BLOCK**
The Anchor/Junction Block creates passive resistance to aid the cell from moving outward, and allows extension of additional cells. It contains both Gridloc connecters.

**CORNER BLOCK**
The Face Block doubles as a Corner when altered providing continuity in color & texture.

**CAP BLOCK**
The Cap Block is available in colors and textures to match or highlight the face.

**CELLULAR ASSEMBLIES**

**MINI CELL**
20” Deep  
Face,  
A/J,  
A/J

**SINGLE CELL**
32” Deep  
Face,  
Trunk,  
A/J

**MULTI CELL**
27” additional depth with each cell  
Face,  
Trunk,  
A/J,  
Trunk,  
A/J

**BARRIER WALLS**
20” Deep.  
Need a short fence, safety barrier, pillar or planter? Extend GravityStone® above grade and fill with aggregate.

**GRIDLOC DETAIL**
The components assemble into cells by sliding the male and female Gridloc connectors together.

**ALIGNMENT PLUG**
The plugs align the GravityStone® face units and establish wall batter.
Special Applications

Every GravityStone® wall installation requires one or more unique details to fit the wall to the site and ensure long-term performance of the system. This section provides many of the standard installation details routinely executed on most projects. A knowledge of the GravityStone components helps in understanding these installation details.
**Installation:**

**LEVELING PAD**
Prepare a foundation by excavating, placing a drainage pipe, filling in, and compacting the specified aggregate to the desired grade. A small amount of bedding sand can be placed over the compacted aggregate to assist in final leveling.

**PLACE FIRST COURSE OF FACE BLOCKS**
Install the first course starting at the lowest elevation. After placing the string line, position each Face Block to the line, level side to side, and front to back. Use a rubber mallet to seat the block. To raise the block, if needed, use additional leveling pad material.

**PLACE THE ANCHOR/JUNCTIONS**
Mark the precise location for the Anchor/Junctions with a string line. Position block to string and level front to back and side to side. The elevation of the Anchor/Junction should never be higher than the face block.

**PLACE ADDITIONAL ANCHOR/JUNCTIONS**
Continue by laying out the full length of Faces, and Anchor/Junctions to the required depth of the base course.

**PLACE TRUNKS**
Once the Anchor/Junctions and Faces are in position, simply fill in by sliding the Trunk blocks into each Face and Anchor/Junction.

**PLACE PLUGS**
After completing each course place a GravityStone® reversible Alignment Plug into the two "T"-shaped Plug cores cast into the top of each Face Block. Placing the GravityStone alignment plug in the forward position will create a vertical wall while reversing the Plug will create a 1/12 [4.5 degree] batter.

**STACK THE CELLS**
Stack Faces, Anchor/Junctions, and Trunks until the desired height is attained.

**BACKFILL**
After reaching a maximum of three courses, backfill and compact the GravityStone® units with the specified aggregate. Clean the tops of the Faces, and Anchor Junctions and then continue stacking.

**STACK ADDITIONAL COURSES**
Continue stacking the wall to the appropriate depth and height, backfill and compact with the specified aggregate. Mini-cell may be used in the top courses to maximize efficiency.

**CAP THE WALL**
Once the body of the wall is complete and backfilled, permanently affix a solid GravityStone® cap to the Face Block using an approved concrete adhesive. Ensure blocks are clean and dry. Place 1/4" bead of adhesive parallel to the wall face on both sides of the plug holes. Place the Cap Block onto the adhesive, making sure of its proper position.

**DRAINAGE SWALE**
To minimize water infiltration, place a drainage swale at the top of the wall. This diverts surface water from infiltrating into the face drain or infill volume, and from flowing over the top of the wall. Use a low permeability soil layer above a filter fabric for best protection of the retaining wall.

**FINISH GRADING**
Finish grading consists of properly placing and compacting fill above the top of the wall and at the toe of the wall. When landscaping behind or in front of the wall, the finish grade should be at least 4'1 low to provide for topsoil, seed, sod, or other landscaping treatments as specified in the wall design.
GravityStone® is a wall system that provides solutions to a variety of site needs and project requirements. The multi-component system interlocks into modular cells with the use of Gridlock, a patented dovetail connector that is cast into each block. GravityStone Modular Retaining Walls are cost effective for all site conditions up to 8 feet tall, and for Cut embankments up to 15 feet tall. The Modular System minimizes excavation, simplifies construction, and enables open and deep cavity area immediately behind the wall, eliminating structural, and construction challenges Geosynthetic designs experience. In dense land use areas, the narrow structure and large cavity area provides great benefit in placing utilities and making penetrations, thereby minimizing cost. Above grade, GravityStone enables fast, cost effective solutions for short barrier needs. Barrier walls, fences, or planters may be free standing or stacked directly upon the retaining wall. Providing the system with shear strength and alignment, is a unique reversible plug. In the forward position the plug aligns the wall vertically, whereby reversing it creates wall batter of 4.5 degrees. The ¼ point positioning of the plug enables GravityStone to form concave and convex curves with minimal alignment troubles. For the engineer GravityStone utilizes structural design concepts and AASHTO bridge manual designs, combining structural standards with ease and economy of construction. In comparison to mass walls, such as pre-cast, cast-in-place, and cribbing, GravityStone is more rapidly and economically constructed, not requiring forms, cranes, and other heavy equipment, while offering industry leading structural and design flexibility. In comparison to Geogrid walls, GravityStone modular minimizes excavation, construction steps, and is more fail-safe. Simply Stack N’ Fill.

GravityStone® Specifications at a Glance

<table>
<thead>
<tr>
<th>Block Type</th>
<th>Dimensions</th>
<th>Weight</th>
<th>Face Area</th>
<th>Dimensions</th>
<th>Weight</th>
<th>Face Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>FACE BLOCK</td>
<td>5.8’ x 8’ x 18”</td>
<td>60 pounds</td>
<td>1.0 sq. ft/unit</td>
<td>3.6’ x 8’ x 23.6”</td>
<td>60 pounds</td>
<td>1.0 sq. ft/unit</td>
</tr>
<tr>
<td>TRUNK BLOCK</td>
<td>4.5’ x 8’ x 11.6”</td>
<td>30 pounds</td>
<td></td>
<td>11’ x 4” x 18”</td>
<td>60 pounds</td>
<td></td>
</tr>
<tr>
<td>ANCHOR/JUNCTION BLOCK</td>
<td>5.8’ x 8’ x 15”</td>
<td>45 pounds</td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

**GENERAL INFORMATION**
- Compressive strength 4,000 p.s.i
- Absorption rate 7.0% max
- Dimensional tolerance +/- 1/8”
- Check with manufacturer

**COLOR**
- Actual unit dimensions, weight, and availability may vary or change without notice. Contact the manufacturer for details.
2.04 Common Backfill
A. Soil placed behind the Unit Fill can be any inorganic soil with a liquid limit (LL) less than 50 and plasticity index (PI) less than 10, or as directed by the Architect/Engineer and project specifications. The common backfill soil shall be free of debris and consist of any inorganic type according to its UCS designation.
B. The site geotechnical engineer shall evaluate the borrow area for the common backfill and ensure that properly compacted common backfill soil shall possess an angle of internal friction greater than 27 degrees, and if required shall be done according to ASTM D 3050.
C. The common backfill soil shall be compacted in maximum eight-inch lift thickness to the minimum densities (percentage of the maximum standard proctor ASTM D 698). If the graded (<0.5%, 0.5%, 5% soil) is to a minimum of 95%, and roof grade (0% grade, 0%, 5% soil) is to a minimum of 98%.

2.05 Excavation
A. Contractor shall excavate to the lines and grades shown on the project grading plans and SWH plan and profile drawing. Contractor shall take precautions to minimize over-excavation. Over-excavation shall be filled with compacted material (as directed by the Architect/Engineer, at the Contractor's expense.
B. Architect/Engineer will inspect the excavation and approve prior to placement of backfill material.
C. Excavation of abutments and replacement with compacted fill material as directed by the Architect/Engineer, will be paid for at the contract unit prices for excavation and replacement.
D. Over-excavated areas in front of wall face shall be filled with compacted fill material at the Contractor's expense, as directed by the Architect/Engineer.
E. Contractor shall verify location of existing structures and utilities prior to excavation. Contractor shall ensure all surrounding structures are protected from the effects of wall excavation. Excavation support, if required, shall be designed and installed by the Contractor at his own additional expense to the Owner.

2.06 Leveling Pad Construction
A. Foundation soil shall be profiled and compacted to 95% of standard proctor and inspected by the Architect/Engineer prior to placement of leveling pad material.
B. The geotextile filter shall be installed across the entire width of the foundation excavation, in accordance with plans.
C. The drainage collection and conveyance system shall be installed in accordance with plans.
D. Leveling pad shall be placed as shown on the construction drawings with a minimum thickness of 8 inches. Unit Fill shall be utilized to construct the leveling pad.
E. Soil leveling pad material shall be compacted to provide a level hard surface on which to place the first course of units. Compaction will be with mechanical vibrating plate compactors to 95% of maximum proctor density.
F. Levelling pad shall be prepared to ensure intimate contact of retaining wall unit with pad.

2.07 Segmental Unit Installation
A. The first course of SWH units shall be placed directly on the leveling pad.
B. All units shall be checked for level in two directions, parallel and perpendicular to wall face and horizontal alignment is correct.
C. Ensure that base course SWH units are in full contact with the leveling pad.
D. Place remaining cells(s) depths to achieve the base width of the structure required on the project drawings for that course and horizontal wall plan location, and aligned. Ensure these successive cells are properly leveled, properly aligned with the front cell and that the base course of these additional cells are in full contact with the levelling pad.
E. Install shear connectors (if applicable). Shear connectors always functionally as the automatic horizontal setback mechanism.
F. SWH units are to be placed side by side for full length of straight wall alignment.
G. Place Unit Fill within and behind SWH units to create drain.
H. Compact Unit Fill behind and within units (A finish of fill).
I. Ensure each course is completely filled prior to proceeding to next course. Clean all excess Unit Fill from top of SWH units and install next course.
J. Each successive course of SWH Units shall be placed directly on previous course in running bond and the unit pushed forward to engage the shear connectors of the lower unit.
K. Repeat procedures B through I to attain the specified wall height.

2.08 Vertical Grouting
A. The uppermost rows of SWH units and any caps or coping units shall be glued to underlying units with an adhesive as recommended by the manufacturer.
B. Tolerances: The SWH Units shall be erected such that the completed location is within the following tolerances relative to the plan location and project drawings:
   1. Vertical Control +2.0% inches from plan elevation, +1.25% inches over a horizontal distance of 10’, +1.25% inches over a horizontal distance of 10 ft, Corner locations: ±1.0 ft. Curves & Radius: ±0.01 ft or a 2 ft, whichever is less.
   2. Wall Relation: Wall Elevation +2.0% degrees of horizontal setback 10% of Plan setback
   3. Wall Bulging: +2.0% inches over a horizontal distance of 10’.

2.09 Contractor Quality Control
A. The contractor will perform quality control activities on their work. As a minimum, the contractor shall perform a daily report of the quality control activities undertaken that day, summarizing all test data, measurements and observations gathered as part of that effort.
B. The contractor will provide the Architect/Engineer a copy of each quality control daily report.

Note: Consult GravityStone Engineering Manual for complete specifications.