



EVERLOC™
RETAINING WALLS

Segmental Retaining Walls

Installation Guide



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INTRODUCTION

This document is provided as a guide to contractors and owners specifically for the installation of EverLoc™ Segmental Retaining Wall Systems.

It addresses the specific installation steps for engineered and non-engineered EverLoc™ systems. These are the general installation methods for EverLoc™. Contractors should also reference the product specific information provided by the geogrid and geotextile manufacturers.

The EverLoc™ system is a gravity retaining wall system that relies primarily on its mass (weight) for stability. The system consists of concrete masonry units which are placed without the use of mortar (dry stacked). The system then relies on the proven combination of a *mechanical interlock and mass* to prevent both sliding at the base of the wall and overturning about the toe of the structure.

The units may also be used in combination with horizontal layers of soil reinforcement (geogrid). The geogrid extends into the earthen backfill to increase the effective width and weight of the gravity mass. The use of geogrid allows EverLoc™ walls to be built to virtually any height.

The EverLoc™ system is considered a flexible structure, so the base course does not need to be placed below the frost line—provided there is sufficient foundation bearing capacity to support the wall.

TIP

Check local building codes to determine if the project needs engineering or not. If so, follow design drawings EXACTLY. Get approval from the wall designer before making any changes.

GRAVITY WALLS

EverLoc™ gravity walls are constructed with either single (typical) or multiple depths of units.

For stability, the EverLoc™ gravity structure must have sufficient mass to prevent both sliding at the base and overturning about the toe of the structure. Since the system consists of individual units, dry stacked one atop another, shear capacity is an important component to assure that the units act together as a coherent mass.

Shear capacity provides a means of transferring lateral forces from each course to the succeeding course. This is provided:

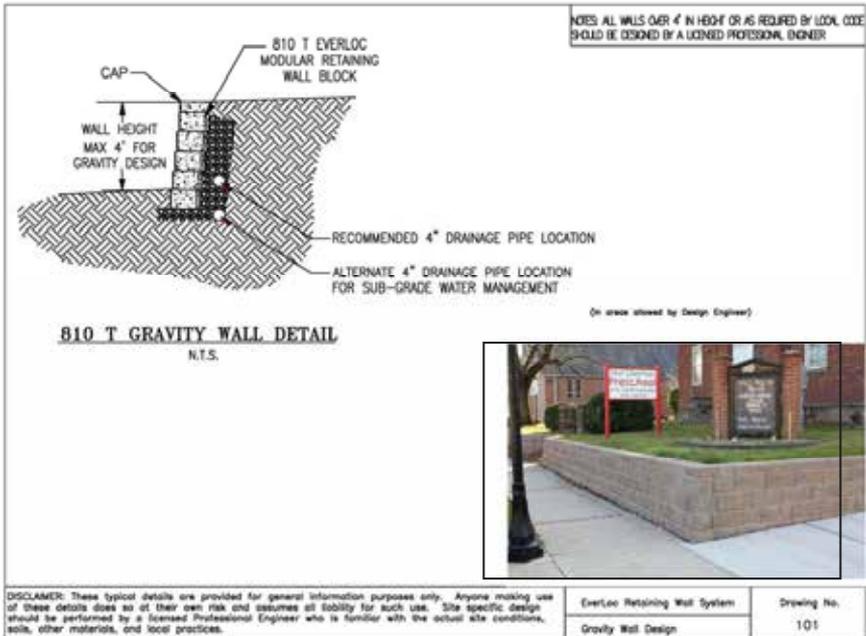
- 1) by the frictional resistance between the EverLoc™ units,**
- 2) by the interlock action provided by lugs and grooves which are an integral part of the units, and**
- 3) by the compacted columns of aggregate placed in the open cores of the EverLoc™ units.**

The batter (or inclination) of the wall contributes to the stability of the finished wall. This batter is achieved through the setback between EverLoc™ units from one course to the next. The batter is controlled by the location of lugs and grooves on each unit.

Gravity walls should not be erected over four (4) feet in height (or as governed by state or local building codes) without first having been designed by a qualified licensed engineer. See Drawing 101 as an example of an EverLoc™ gravity retaining wall:

TIP

Gravity wall heights may be reduced if steep top slopes, poor foundation soils, or ground water is encountered. Consult a design professional if any of these conditions are present.



Example of a Gravity Wall

SOIL-REINFORCED WALLS

Soil-reinforced walls should be specified 1) when the maximum height (typically four feet) for conventional gravity walls is exceeded or 2) when lower walls are surcharged by sloping backfills, live loads and/or have poor foundations.

A soil-reinforced EverLoc™ wall is designed and constructed with multiple layers of soil reinforcement placed between the EverLoc™ courses and extending back into the soil behind the wall at designated elevations and lengths.

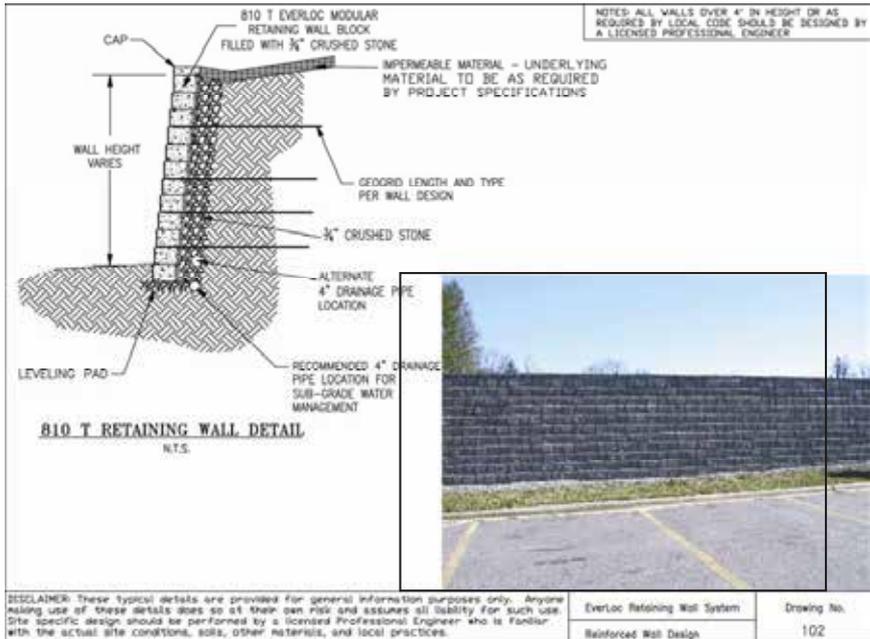
The soil reinforcement makes the soil in the reinforced zone a cohesive mass, increasing the size and weight of the gravity wall system. The most common types of soil reinforcement are geogrids and geotextiles.

Typical soil-reinforced wall designs, for estimating purposes and determining geogrid requirements, are shown for static, non-seismic conditions (Estimating chart #1, page 57) and seismic conditions (Ground Acceleration, $A = 0.15g$), (Estimating chart #2, page 58). See Drawing 102 as an example of an EverLoc™ soil-reinforced retaining wall.

Rule of Thumb:

Unless otherwise noted in design drawings, geogrid should extend into the reinforced zone to a depth of 60% of the height of the wall being constructed. Grid length should never be less than four feet.

Example: Wall height of 10 feet $10 \times .60 = 6$ feet grid depth



Geogrid Placement

RETAINING WALL COMPONENTS

The basic elements of the EverLoc™ segmental retaining wall system are 1) foundation soil, 2) leveling pad, 3) EverLoc™ retaining wall units, 4) drainage pipe, 5) drainage fill, 6) infill soil, 7) retained soil, and 8) soil reinforcement (geogrid). But the first step is excavation.

Excavation:

The contractor shall excavate to the lines and grades shown on the approved plans.

There are two basic topographical conditions in which EverLoc™ walls may be constructed: "cut" and "fill".

Cut conditions are when the area is excavated and the wall is installed within the cut area. The fill condition occurs when material is required to be brought onto, or relocated, on-site to meet the proposed grades.

1) Foundation Soil:

The foundation soil is the native underlying soil which supports the leveling pad and the reinforced soil zone of a reinforced EverLoc™ Wall System.

The foundation soil should be prepared in accordance with local ordinances or recommendations of the engineer. Foundation soil shall be excavated as required to meet the base course leveling dimensions and to meet the outer limits of the reinforced soil zone—as shown on the construction drawings or as directed by the designer.

The native foundation soil must be analyzed to verify that the soil load bearing capacity meets or exceeds the required design conditions.

Foundation soils that do not meet the required strength shall be removed and replaced with soil specified by the design engineer and then compacted to at least 95% of the Maximum Standard Proctor Density as specified in ASTM D698-07e1.

TIP

Always consult a qualified professional when moisture is encountered in the foundation soil.

2) Leveling pad:

The leveling pad is a level surface, consisting of crushed stone or unreinforced concrete, which distributes the weight of the EverLoc™ units over a wider area and provides a working surface during construction.

The leveling pad is typically placed atop a properly prepared foundation soil and is typically at least six (6) inches wider in front of and behind the first course of EverLoc™ units. The leveling pad should be a minimum of six (6) inches deep.

The compacted soil leveling pad should be constructed using material specified by the project engineer or wall designer. It typically consists of soil types normally used for optimum stress distribution and drainage.

Soil types that can provide optimum stress distribution and drainage include:

- 1) GP (Poorly graded gravel),**
- 2) GW (Well-graded gravel),**
- 3) SP (Poorly graded sand), or**
- 4) SW (Well-graded sand).**

The leveling pad should be densely compacted. Compaction shall be with a plate compactor to 95% of Maximum Standard Proctor Density (ASTM D698-07e1).

Special cases that may require modified designs include:

- 1) foundation soils with a low bearing capacity,**
- 2) areas with the water table close to the foundation, or**
- 3) submerged foundations.**

Note: Densely graded aggregates may require the use of a whacker type compactor in lieu of the plate compactor.

TIP

Engineers who specialize in segmental retaining walls are easily found and they are your friend when it comes to your wall. For very nominal fees, the engineer will assure that your wall is designed properly. Also, the engineer will provide estimated quantities of EverLoc™, drainage aggregate, geogrid, etc., so you can have a very accurate cost estimate of your project. Need help finding a specialty engineer?---call our HELPLINE.

3) EverLoc™ Segmental Retaining Wall Units:

EverLoc™ blocks are concrete masonry units that are used to create the mass necessary for structural stability—while also providing durability and an architecturally attractive wall. EverLoc™ units are required to meet or exceed the minimum values set forth in these American Society for Testing and Materials (ASTM) Specifications: ASTM C140-09, ASTM C1372-09 and ASTM C1262-09 (where applicable). All EverLoc™ units are manufactured in conformance with these industry standards and specifications to assure that the units delivered to your project are uniform in weight, dimensional tolerances, strength, and durability.



EverLoc™ Units

All EverLoc™ units shall be installed at the proper elevation and orientation as shown in the approved construction plans or as directed by the qualified designer. The completed wall erection shall be within plus or minus 1.25 inches, measured over a 10 foot distance, in either a horizontal or vertical direction—as compared to the design line and grade control.

The first course of EverLoc™ units shall be placed on the leveling pad. The units shall be checked for level and alignment. The first course is the most important to insure accurate and acceptable results. The installer should ensure that the units are in full contact with the base. Units are placed side by side for the full length of the wall. Alignment may be done by means of a string line or offset. Each unit should be checked with a level side-to-side and front-to-back—then adjusted accordingly.

Use drainage aggregate to fill any openings in the open cores of and between EverLoc™ units as required.

Typically, fully 50% of the time needed to build a 6' wall will be spent on the first, base course. Any error, like a high or low spot, will carry up through successive courses. By getting the base course perfect, the rest of the wall will go fast and easy.

TIP

Whenever possible, use a laser level to establish positioning of two far reaching units. Pull a string between the two units to aid in leveling successive units. Simply using a handheld, bubble-type level could result in significant variations in horizontal control.

4) Drainage Pipe

The drainage pipe shall meet one of the following standards:

- 1) ASTM F758-95(2007)e1 for Smooth-Wall PVC Pipe or**
- 2) ASTM F405-05 for Corrugated Polyethylene Pipe.**

The drainage collection pipe shall be installed to maintain a gravity flow of water to outside of the reinforced soil zone.

The drainage collection pipe should daylight into a storm sewer manhole or to a sloped area lower than the pipes behind the walls.

The collection drain pipe just behind the first course of EverLoc™ units (or embedded in the leveling pad below the first course of EverLoc™ units) should be a minimum of 4 inches in diameter.

From the collection drain pipe, “T” off every 40 feet with a lateral drain pipe that will exit through the wall to daylight. A mandatory lateral drain pipe through the wall must be installed at the lowest point of the wall.

While a 4" square hole will allow these drainage pipes to travel through the EverLoc™ block, a 4" circular hole will add to the finished appearance of the project. Circular blades that fit drills are commercially available.



Drainage Pipe Placement

5) Drainage Aggregate:

Drainage aggregate fill is free-draining granular material placed directly behind the wall to facilitate the removal of groundwater and minimize the buildup of hydrostatic pressure on the wall.

The drainage aggregate forms a continuous drainage column behind the wall (similar to a drain chimney). This allows all water to fall and flow out through the drainage pipes. This prevents or minimizes any water flowing out through the wall and down the face. When this happens, the face of the wall gets stained which can be quite unsightly.

It is also used to fill the hollow cores of the EverLoc™ units to increase the weight and shear capacity without introducing any lateral forces against the wall structure. These hollow cores, filled with drainage aggregate, also aid in the removal of groundwater.

In some cases, a geotextile filter is installed between the drainage aggregate fill and the retained soil to protect the drainage fill from clogging with fine aggregates. This also provides insurance that micro fines will not find their way through the wall and stain the face as discussed above.

The drainage aggregate shall be placed to a minimum thickness of 12 inches measured from the back of the EverLoc™ unit, or as otherwise shown on the plans. Carefully place drainage aggregate behind and up to the height of the EverLoc™ unit to create the drainage column.

Install geotextile if required. Drainage geotextile shall be woven or non-woven fabric with: 1) AOS of 70 - 100, 2) a minimum grab tensile strength of 110 pounds, and 3) a minimum weight of 4 ounces/square yard (or as recommended by the designer).

The drainage aggregate shall be a clean 1 inch minus crushed stone or granular fill of this specification:

Sieve Size Percent Passing

1 inch (25.4 mm)	100%
3/4 inch (19 mm)	75—100%
No. 4 (4.75 mm)	0—60%
No. 40 (420 micron)	0—50%
No. 200 (75 micron)	0—5%



Drainage Aggregate (Inside and behind units)

TIP

It is best to run a plate compactor over the EverLoc™ units once the drainage aggregate, infill soil, and retained soil has been placed. Always compact front to rear - from the face of the wall towards the retained soil.

6) Infill Soil:

The infill soil is the compacted select fill soil placed behind the drainage aggregate for a gravity wall system. Compact the infill soil in 6 to 8 inch lifts and compacted to a minimum 95% of Standard Proctor Density (ASTM D698-07e1).

NOTE: NEVER attempt to compact more than 6 to 8 inches per lift—full compaction cannot be obtained with deeper lifts, even with clean drainage aggregate.

7) Retained Soil:

Retained soil is the undisturbed soil for cut walls (or the common backfill soil) that is compacted behind the drainage aggregate.

The retained soil shall be placed behind the infill or reinforced soil as shown in the construction plans in 6 to 8 inch compacted lifts; then compacted to a minimum 95% of Standard Proctor Density (ASTM D 698-07e1).

Only hand operated compaction equipment shall be allowed within 3 feet of the back of the EverLoc™ wall face. Place infill soil in front of the EverLoc™ units to lock the base course in place. Compact the drainage aggregate, infill soil, and retained soil.

8) Soil Reinforcement:

When EverLoc™ walls require soil reinforcement, it is normally required on multiple levels extending from the face of the wall back into the compacted reinforced soil mass. Geosynthetic reinforcement material must be certified to meet the requirements of ASTM D 4595-09 or ASTM D6637-01(2009).

Common brands of soil reinforcement (geogrid) include Huesker, Mirafi, Synteen and Strata.

The soil reinforcement shall be installed at the proper elevation and orientation as shown in the approved construction plans or as directed by the engineer. Additionally, the geosynthetic reinforcement shall be installed in accordance with the manufacturer's recommendations.

Cut geosynthetic reinforcement to design length L as shown on the plans and install with design strength direction perpendicular to the wall face. Seams or *contacting* overlaps of geosynthetic reinforcement parallel to the wall face are not permitted. When an overlap is needed, separate the layers of grid with a minimum of 3" of aggregate. Adjacent sections shall be butted in a manner to assure 100% coverage after placement.

Geosynthetic reinforcement should be installed under nominal tension. Apply a nominal tension to the reinforcement and maintain it by staples, stakes, or hand tensioning. The tension applied may be released after the geosynthetic reinforcement has been covered and held in place with soil fill.

Before placing the geosynthetic reinforcement in between the EverLoc™ block, first fill inside the hollow cores and between EverLoc™ units (drainage aggregate)—as required by the specifications stated previously in this guide.

The reinforced soil zone shall be placed, as shown in construction plans, in 6 to 8 inch lifts and compacted to a minimum 95% of Standard Proctor Density (ASTM D698-07e1).

Soil shall be placed, spread and compacted in such a manner that eliminates the development of wrinkles and/or movement of the geosynthetic reinforcement. Only hand operated equipment should be allowed within 3 feet of the back of the wall units.

Reinforced Soil Fill Aggregates shall be a 1 inch minus crushed stone or granular fill of this specification:

Sieve Size Percent Passing

1 Inch (25.4 mm)	100%
No. 4 (4.75 mm)	20-100%
No. 40 (420 micron)	0-60%
No. 200 (75 micron)	0-35%

NOTE: Drainage aggregate may also be used for the reinforced soil fill aggregate.

Compaction sequence: Always begin compaction directly behind the wall and then proceed with compaction farther and farther away from the wall to the rear of the compacted area.

TIP

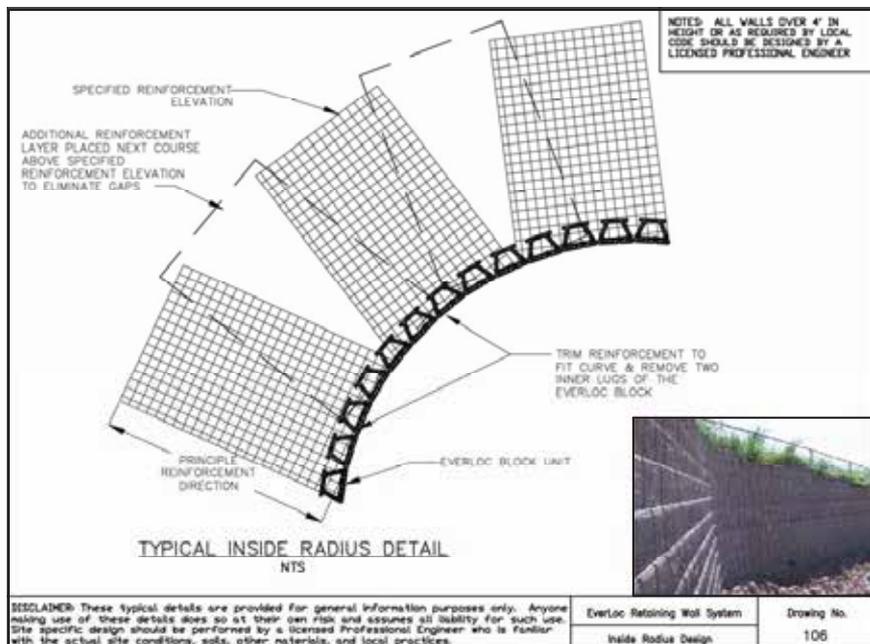
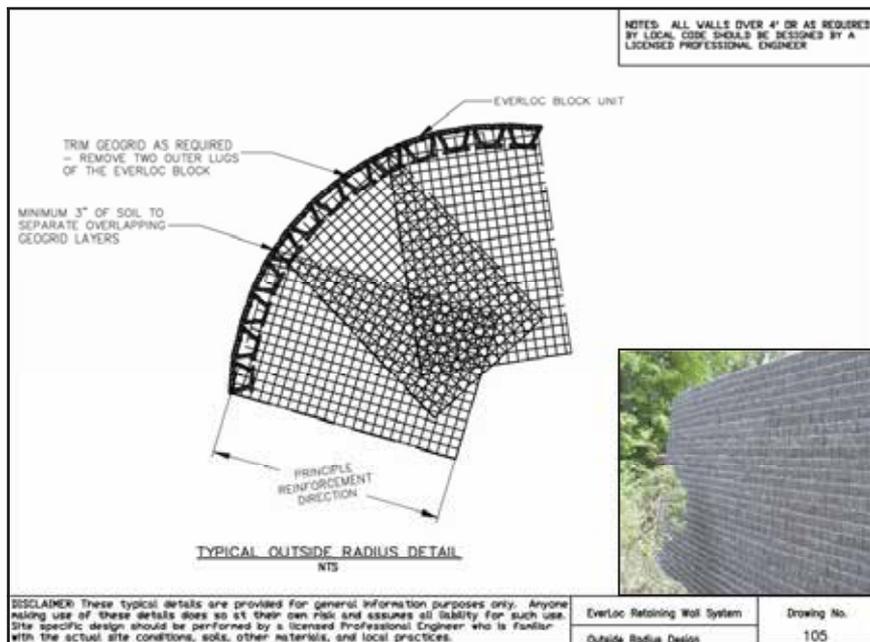
Only use hand operated compaction equipment, such as a vibratory plate compactor, within 3 feet of the back of the wall face.

Tracked construction equipment shall not be operated directly on the geosynthetic reinforcement. A minimum backfill thickness of 6 inches is required prior to operation of vehicles over the geosynthetic reinforcement. Turning of vehicles should be kept to a minimum to prevent displacing the fill and damaging the geosynthetic reinforcement. Sudden breaking and sharp turns should be avoided.

Follow the guidelines to placement of reinforcement at corners and curves – refer to the following drawings, 105 & 106.

TIP

Geosynthetic reinforcement should be placed over connecting lugs. This ensures more complete connection in addition to keeping the unit true and plumb.



Installing Successive Courses of EverLoc™ Units:

If the base course has been successfully installed and is true, installing each successive course becomes easier and faster.

- 1) Ensure that the compacted drainage aggregate and infill soil is level with the top of the EverLoc™ units already placed. It is permissible and recommended to run the plate compactor on top of EverLoc wall units as each course is compacted.**
- 2) Sweep all debris off top of EverLoc™ units.**
- 3) Place and move EverLoc™ units to engage shear lugs and establish proper setback.**
- 4) As No.3 is being done, a good technique is to interlock each new block with lugs in the groove, then slide the block left or right as it is being placed—this helps any concrete “crumbs” to fall out of the way and to keep the wall level.**
- 5) Check alignment and levelness of units and adjust as needed. (If the base course is true, alignment and levelness are not hard to maintain. But always correct any observed unevenness immediately. If ignored, the unevenness will continue and become more noticeable as the wall gets higher. A 3 lb to 5 lb rubber mallet is a great tool for this step.)**
- 6) Place drainage aggregate, infill soil, and retained soil, with geogrid if required, as stated previously and per the designer's and/or the manufacturer's specifications.**
- 7) Compact all drainage aggregate, infill, and retained soil on each lift!! Allow the plate compactor to run over the full lift including the EverLoc wall unit.**

Capping and Finish Grading:

Install EverLoc™ cap units.

The contractor shall provide finished grade at the top and bottom of the EverLoc™ wall as shown on the plans and provide for positive drainage of water away from the EverLoc™ system. Where the backfill above the wall slopes to the wall face, the contractor shall provide a swale to collect surface runoff and direct its flow away from the wall (around the ends of the wall).

EverLoc™ wall caps are recommended to be glued in place with a suitable construction adhesive (such as PL Premium by Loctite®) to prevent the accidental removal by vandals, etc.

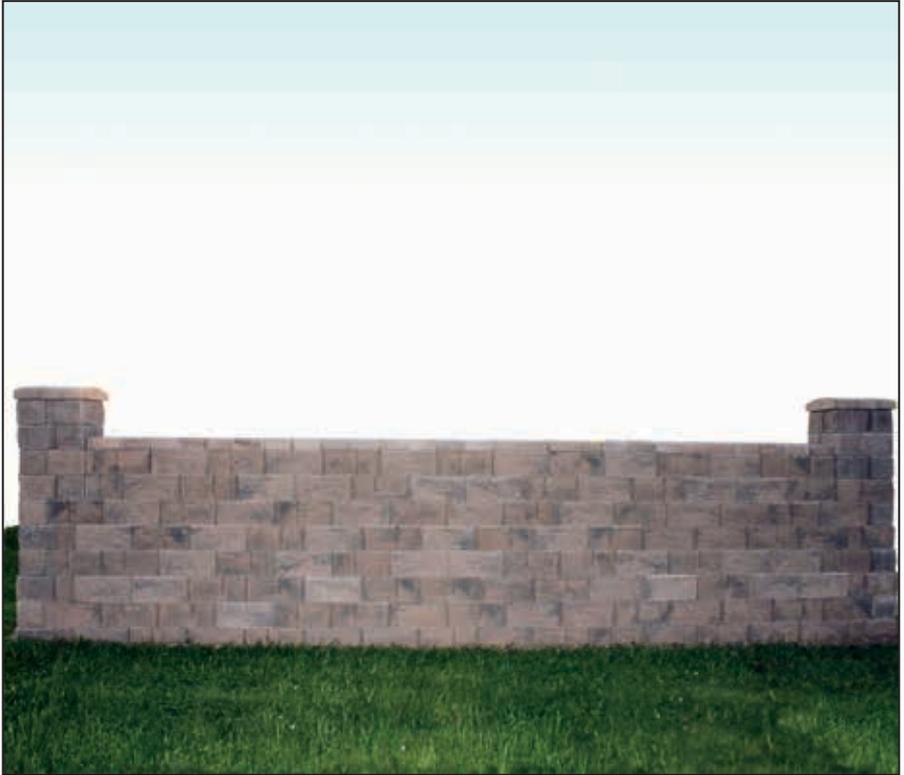
The contractor shall provide a minimum of 1 foot low permeable soil to cap to the EverLoc™ system to minimize infiltration of surface water into the EverLoc™ drainage and reinforced soil zone. After topsoil placement, vegetate slopes above and around all wall terminations.



Finished EverLoc™ Wall

INSTALLING FENCE WALLS:

EverLoc's rock solid fence walls provide beauty as garden and sitting walls. Taller fence walls provide privacy. Fence walls also serve as superior sound barriers and can effectively block the noise from a busy street.



Fence



Sitting Wall

EverLoc's fence walls use the same components as a parapet wall, only a fence wall is installed free standing (instead of on top of a retaining wall). Fence walls can be straight or serpentine (curved).

No extra equipment or skills are required to build an EverLoc fence wall. Installation is similar to normal retaining walls.

EverLoc's fence wall is simple---it's created essentially by building 2 parallel retaining walls back to back, so they "lean" toward each other, and then come together (with full back-to-back contact) on the top course. As the wall gets taller, by design it automatically gets wider at the base—creating a strong, rock solid, maintenance-free wall with no extra structural strength needed (no posts!).

Since the total fence is made of 2 walls built back to back, aside from getting a proper footer installed, the whole secret to easy installation lies in proper spacing between the front and back walls when the first course is laid. If these 2 items are done correctly—footer and spacing—the rest of the wall is simply “stack and fill.” And then top it with the exclusive WeatherDome fence cap with its arched design for superior weather resistance.

To build an EverLoc fence wall, simply size and install a proper footer (as discussed on Page 8). The size of the footer will be determined from the spacing (discussed below). The footer should be at least 6” wider and longer on all 4 sides than the footprint of the planned fence wall. Use crusher run.

SPACING BETWEEN FRONT AND BACK WALLS OF FENCE:

- 1** The front and back walls of the total fence wall each have a $\frac{3}{4}$ ” setback (just like EverLoc’s retaining wall).
- 2** The top course of the completed fence wall will have the backs of the front and back units touching back-to-back with full surface contact.
- 3** The 2nd course down from the top will be spaced 1½” apart ($\frac{3}{4}$ ” x 2). The 3rd course down from the top will be spaced another 1½” apart for a total of 3”; and so on.
- 4** Each subsequent course down from the top will spread out an additional 1½”.
- 5** So, a 40” fence wall (5 courses above grade and a 6th course embedded) would require the base course (the embedded course) to be spaced 7½”—this is the distance between the backs of the parallel walls that make up the fence wall. This space is filled with #57’s as the wall is built.
- 6** Best practice is to allow slightly more space (5%) than required on the embedded base course—the designed tolerances of EverLoc allow the fence units to be adjusted inward if necessary, but they cannot move outward.

INSTALLATION STEPS:

- 1 Install and compact footer with dense grade aggregate (crusher run).**
- 2 Carefully lay 1st course of block maintaining common elevation and parallel lines between the front and back walls of the fence. Embed this course with crusher run to the top of the block.**
- 3 Compact the embedded course fully around and between the block. Run the plate compactor over the block.**
- 4 Stack and fill (with #57's) subsequent courses to the top of the fence. Tap the block with a rubber mallet to help the #57's settle.**
- 5 Install the WeatherDome cap to complete wall. Secure permanently with glue (PL Premium by Loctite® or equal).**

Fence walls are filled with drainage aggregate (#57's) to add mass and prevent bees from nesting.

See page 51 for a detailed drawing of a typical EverLoc fence wall.

INSTALLING PARAPET WALLS:

EverLoc's parapet walls allow the retaining wall to be extended above grade for beauty, safety, or privacy.



Parapet Wall

EverLoc's exclusive parapet walls are easy to install. Their installation is similar to normal retaining wall installation and no extra skills or equipment are needed.

Parapet walls can be serpentine or straight, just like EverLoc's retaining walls.



Serpentine Parapet Wall

Built to code height of 44", an EverLoc parapet wall forms a traffic barrier strong enough to stop an automobile at parking lot speeds. Yet, in the event of such an accident, EverLoc parapet walls are fully repairable back to original appearance.

Parapet walls offer a new way to finish the top of a retaining wall (as opposed to the traditional flat cap). EverLoc's parapet walls can be any height from a single course above grade on up to whatever height is desired (walls above 4' should be reviewed by the project engineer).

Even a short parapet wall (1 or 2 courses) provides an attractive berm alongside a yard, driveway, or parking area—providing assurance that vehicles, bikes, mowers, or children's toys don't go over.

All EverLoc parapet walls are designed to be capped with the exclusive WeatherDome cap, providing a beautiful and functional arch profile for superior weather resistance.

Parapet wall installation requires only the simple addition of a second footer behind the top of the retaining wall.

See "Installing Fence Walls" above for spacing and other information—the same procedures apply to the parapet wall. Sketch a cross-section of your planned parapet wall and determine the size of footer needed.

INSTALLATION STEPS:

- 1 First, stop the retaining wall one course short of the top course. From here on up, EverLoc Fence units will be used.**
- 2 Then, create a footer for the back wall of the parapet. Trench out an 8" deep space for the footer behind the retaining wall, line the trench with filter cloth, add 8" of dense graded aggregate (crusher run) and compact.**
- 3 Place Fence units on top of retaining wall units to begin the front wall of the parapet.**
- 4 See "Installing Fence Walls" above and follow the instructions for spacing.**

- 5 Lay the first course of the back parapet wall. Assure that the back wall of the parapet is level and parallel with the front wall and spaced correctly.**
- 6 Embed the bottom course of the back parapet wall by filling in on all sides (with crusher run) and compacting with plate compactor. Run the plate compactor over the EverLoc fence units.**
- 7 From this point, simply stack and fill (with 57's) the rest of the parapet wall. Occasionally tapping the block with a rubber mallet will help the 57's settle.**
- 8 The final touch is to permanently secure the WeatherDome caps in place with glue (PL Premium by Loctite® or equal).**

See page 51 for detailed drawing of typical parapet wall.

INSTALLING COLUMN INSETS:

EverLoc's column insets add character, definition, and style to any EverLoc wall—retaining walls, parapet walls, or fence walls.



Column Insets

Column insets can vary in height depending on the owner's preference. A common and economical inset consists of 5 courses, with 3 courses embedded in the wall and 2 courses (and cap) rising above the wall (pictured above).

This 5 course column inset provides a nice degree of relief as the column “emerges” from the wall. Column insets can be used to accent corners, the ends of walls, or can be spaced at intervals to provide an attractive, stately look to the entire wall.

Taller walls look better with taller column insets. The deeper (lower) the column is started in the wall, the more the column will project, adding more relief or definition to the whole wall.

EverLoc’s exclusive WeatherDome caps finish the column inset with a color matched cap with superior weather resistance.

INSTALLATION STEPS (for 5 course inset in retaining wall):

- 1 Column insets are built with the standard, 2 face EverLoc corner unit, 4 to a course. Using hammer and chisel, tap the top lugs off the corners to be used.**
- 2 Also tap the lugs off the wall block onto which the column will set.**
- 3 Establish a “mini” footer to take the weight of the rear of the column—remove enough drainage aggregate to make room for 8” deep footer. Line this space with filter cloth—then fill and compact with crusher run.**
- 4 Lay the first course of 4 corners, using either all right or left hand units. Align the front of the column vertically with the wall unit below. Do not maintain the normal $\frac{3}{4}$ ” setback but align vertically.**
- 5 Maintain vertical alignment on each course and secure each course with glue (PL Premium by Loctite® or equal).**
- 6 Lay the subsequent 4 courses on top, alternating between left and right hand corners on each course.**
- 7 Cap the column with EverLoc WeatherDome cap.**
- 8 Use glue to secure the cap permanently.**

See page 55 for detailed drawing of typical column inset.

INSTALLING FREE STANDING COLUMNS:

The EverLoc column can be built free standing as in the picture below:



Free Standing Columns

Columns are built with EverLoc's standard 2-face corner unit and then capped with the exclusive WeatherDome cap.

Each course of the column is comprised of 4 corners—either all right hand units or all left hand units. Each course is then alternated between left hand and right hand units—to produce a beautiful column with proper joint spacing.

INSTALLATION STEPS:

- 1 Prepare a proper footer as discussed above and elsewhere in this manual. The footer should have 8" of compacted dense grade aggregate (crusher run). The footer shall be at least 6" wider than the footprint of the column on all sides.**
- 2 The footer should extend below the frost line and needs to be deep enough so the bottom of the column will be embedded (buried) to prevent tilting (#4 below).**
- 3 Prepare corner units by tapping the lugs off with chisel and hammer. Separate left hand from right hand corners.**
- 4 Embed at least one course below grade for tilting resistance. For columns 3-6 feet tall, embed at least 2 courses.**
- 5 For the 1st course, select 4 corners, all right (or left) hand units.**
- 6 Maintain all 4 units at the exact same elevation and assure all 4 units are perfectly level.**
- 7 If the column is to have a light installed on top, introduce the wiring up through the middle of the column.**
- 8 Fill all embedded courses in and around the block with crusher run. Run the plate compactor around and over the block. Compacted crusher run should be level with the tops of the blocks. This locks the base course and anchors the column.**
- 9 Using glue (PL Premium by Loctite® or equal), add the 2nd course, using all left (or right) hand units. Each course shall be glued in this manner. Use a rubber mallet to tap each unit into perfect alignment.**

(While an adequate amount of glue needs to be used, too much glue can "float" the top unit and possibly allow it to "float" out of perfect alignment. Too much glue can also be "squished" out from between the stacked block onto exposed faces. Be careful to keep glue away from the exposed faces—construction adhesives are very difficult to remove.)

- 10** Now gently fill the 2nd course with #57's. (Note: If the 2nd course is embedded, repeat #8 above.) Be gentle so as not cause the 2nd course to move out of alignment (Once the glue sets, this is not a problem.).
- 11** Proceed with stacking, gluing, and filling subsequent courses until the column is at full height. As each unit is placed, use the rubber mallet to tap each unit into proper alignment. (If electric lighting is planned, continue to bring the wire up through the middle.).
- 12** If lighting is to be installed, drill the hole for the light mount in the center cap unit. Then be sure to lace the wire through the hole before gluing this unit in place.
- 13** Finish the column by gluing the exclusive WeatherDome column cap onto the top course. The column cap is color matched to the column and is provided as a 3-piece ensemble. 2 of the 3 cap units have rounded edges—these are installed on the outside. The piece without rounded edges goes in the middle.
- 14** As the 3-piece cap ensemble is installed, install all 3 pieces promptly and make sure they are aligned properly—before the glue sets! Beware of glue “flotation” discussed above and do not allow the cap units to move (float) out of position until the glue has set.
- 15** Once the glue sets, a permanent, maintenance-free column is yours for a lifetime.
- 16** Best practice on column building says to go slow, avoid excessive glue, and maintain alignment. Going slow allows the glue to set on each course—so that work on higher courses cannot accidentally misalign courses already in place below.

INSTALLING RADIUS WALLS:

An advantage of all Everloc walls is the ease of turning an inside or outside radius—no field cutting (sawing) is needed.



Outside Radius (810T Units)

By design, the EverLoc Traditional (with 60/40 face) creates an upscale random appearance with 2 shapes in the wall. Or, better, add the EverLoc Full (full face) in a 50/50 blend to your wall, and the random look is expanded to an attractive 3 shape random wall (at no extra cost!). *See the picture on the next page.*



Outside Radius (810Traditional and Full Units)

By virtue of the random appearance, as the radius wall goes up and the block drift off bond (due to the setback of each course), the appearance of the wall simply becomes—desirably—more random.

So, the appearance of your wall takes care of itself with the random array of different shapes.

Once the block drift over to only a 1/3 bond (6" overlap), simply slip EverLoc's 6" wide 833 Utility unit into the wall—and keep laying. NO saw cutting is required.

See page 44 for detailed drawing of typical outside radius and page 45 for inside radius.

INSTALLING “No-saw” CORNERS:

One of the best features of the EverLoc system is the 90° corners. Easy to install and highly functional, EverLoc corners provide the only finished outside corner in the retaining wall industry—and with NO sawing or field cutting.



Corner with Utility

EverLoc corners offer the following superior features:

- 1 EverLoc's unique 2-piece corner system provides a stronger corner and puts each course back on bond with no sawing or field cutting.**
- 2 EverLoc corners interlock—making perfect positioning and vertical alignment easy and true.**

- 3 The outside edge of every EverLoc corner is finished, eliminating the ragged edge of common split-face corners.**

INSTALLATION STEPS:

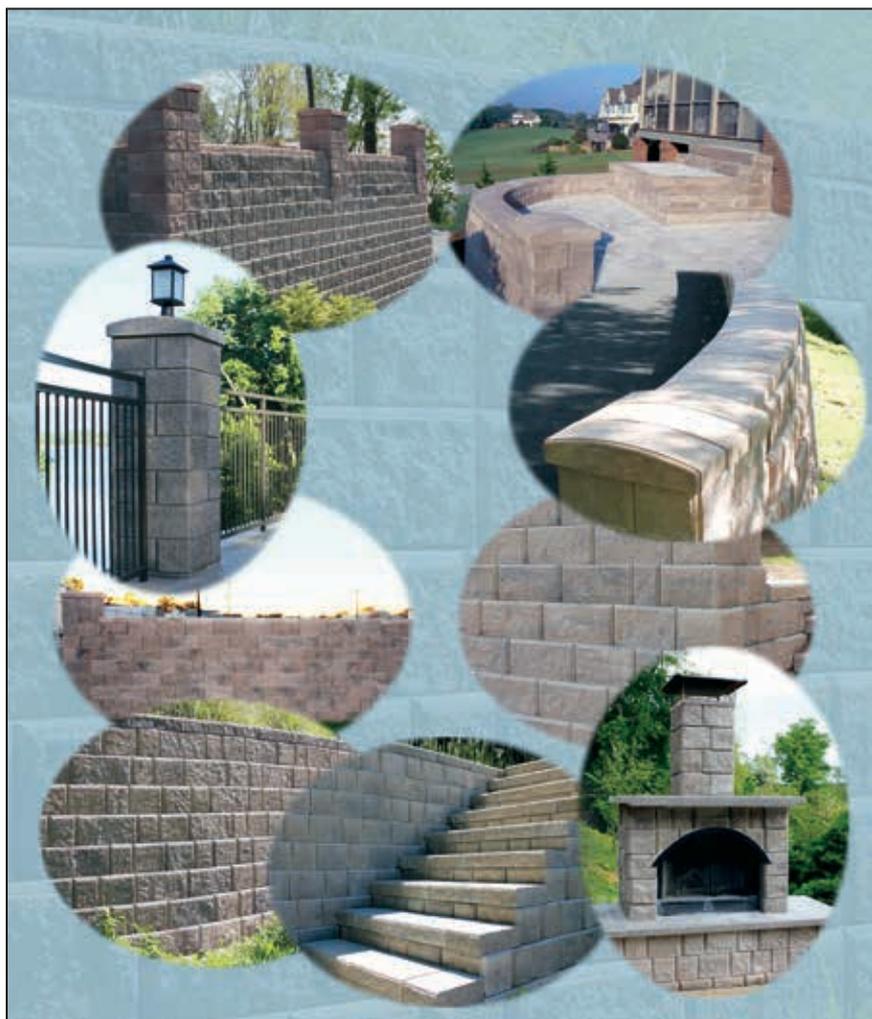
- 1 Each corner is created with EverLoc's unique 2 piece system consisting of the Corner and the 833 Utility.**
- 2 Each Corner has 2 exposed faces—one 12" long and one 9" long, alternating between left and right hand models.**
- 3 Place the first corner on the footer (leveling pad). Place the 833 Utility next to the 12" face of the corner.**
- 4 Lay regular wall units out from each side of the corner assembly.**
- 5 On the 2nd course, select the opposite hand corner and position it on top of the first course. This unit will interlock with the unit below it. (The Corners are not slotted, so tap off the lug(s) on the stretcher block below for full surface contact.).**
- 6 Again, install the 833 Utility next to the long side of the Corner (the 12" side) and continue laying stretchers.**
- 7 Best practice says to start your project at the corner and then build your walls out in both directions from the corner.**

See pages 46 and 47 for detailed drawing of EverLoc's 2-piece corner system.

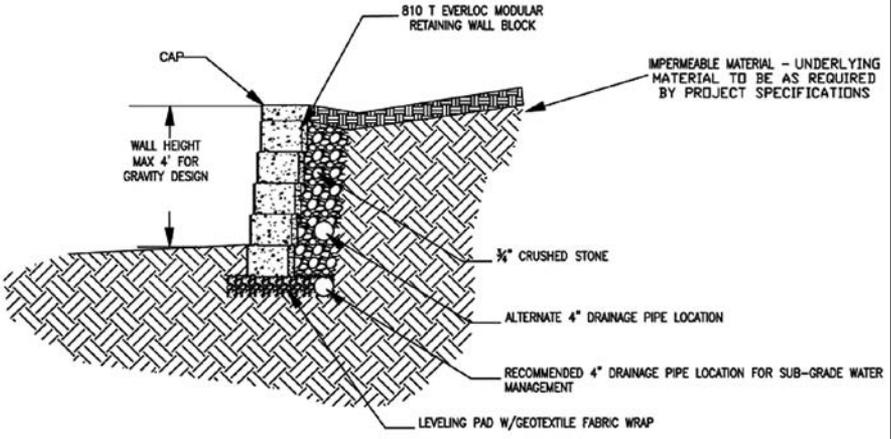
ADDITIONAL DETAILS

Additional details for inside/outside corners, inside/outside radius, stair construction, shoreline installations, and other special installation situations are shown in detail—see pages 40 through 56 for this information.

Estimating charts are shown on pages 57 and 58.



NOTES: ALL WALLS OVER 4' IN HEIGHT OR AS REQUIRED BY LOCAL CODE SHOULD BE DESIGNED BY A LICENSED PROFESSIONAL ENGINEER.



(In areas allowed by design engineer)

810 T GRAVITY WALL DETAIL

N.T.S.



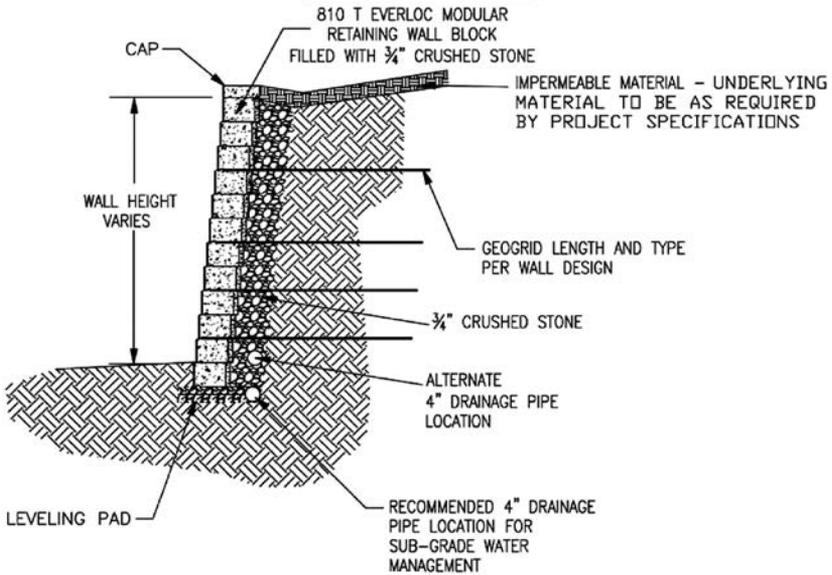
DISCLAIMER: These typical details are provided for general information purposes only. Anyone making use of these details does so at their own risk and assumes all liability for such use. Site specific design should be performed by a licensed Professional Engineer who is familiar with the actual site conditions, soils, other materials and local practices.

EverLoc Retaining Wall System

Gravity Wall Design

Drawing No.
101

NOTES: ALL WALLS OVER 4' IN HEIGHT OR AS REQUIRED BY LOCAL CODE SHOULD BE DESIGNED BY A LICENSED PROFESSIONAL ENGINEER.



**810 T
RETAINING
WALL DETAIL**

N.T.S.



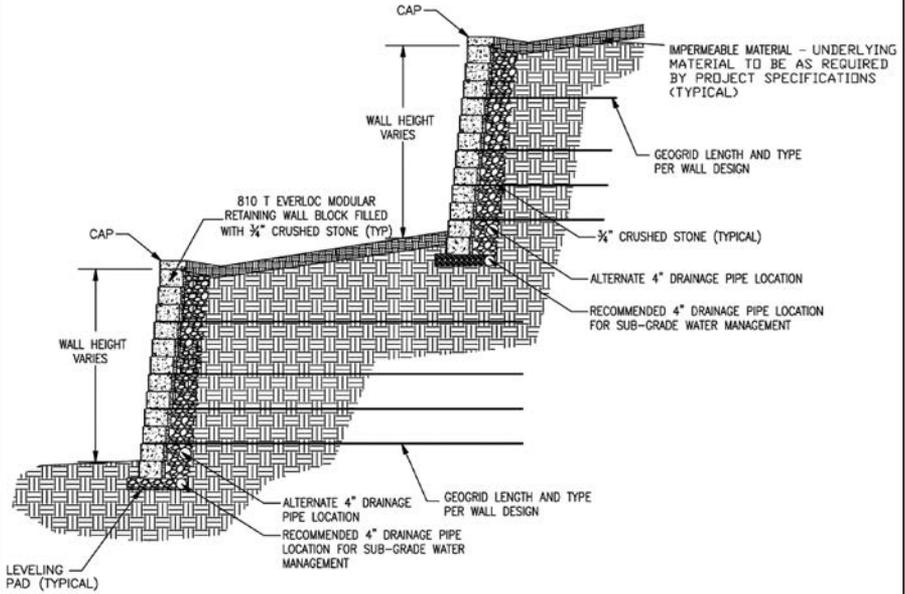
DISCLAIMER: These typical details are provided for general information purposes only. Anyone making use of these details does so at their own risk and assumes all liability for such use. Site specific design should be performed by a licensed Professional Engineer who is familiar with the actual site conditions, soils, other materials and local practices.

EverLoc Retaining Wall System

Reinforced Wall Design

Drawing No.
102

NOTES: ALL WALLS OVER 4' IN HEIGHT OR AS REQUIRED BY LOCAL CODE SHOULD BE DESIGNED BY A LICENSED PROFESSIONAL ENGINEER.



**810 T
TIERED
WALL DETAIL**

N.T.S.



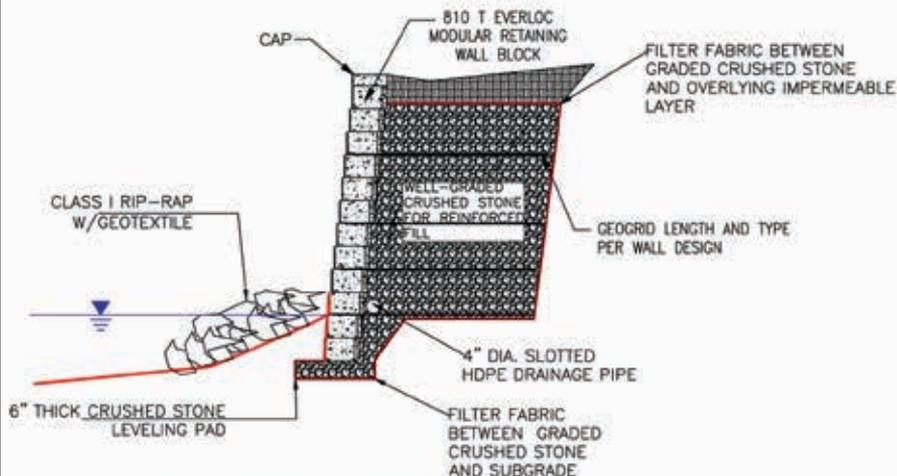
DISCLAIMER: These typical details are provided for general information purposes only. Anyone making use of these details does so at their own risk and assumes all liability for such use. Site specific design should be performed by a licensed Professional Engineer who is familiar with the actual site conditions, soils, other materials and local practices.

EverLoc Retaining Wall System

Tiered Wall Design

Drawing No.
103

NOTES: ALL WALLS OVER 4' IN HEIGHT OR AS REQUIRED BY LOCAL CODE SHOULD BE DESIGNED BY A LICENSED PROFESSIONAL ENGINEER.



TYPICAL
SHORELINE
PROTECTION
DETAIL

N.T.S.



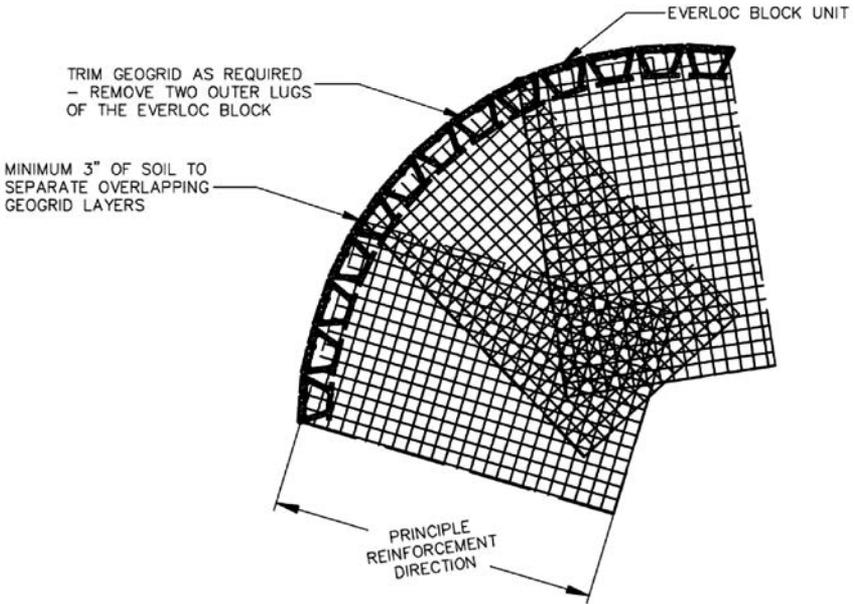
DISCLAIMER: These typical details are provided for general information purposes only. Anyone making use of these details does so at their own risk and assumes all liability for such use. Site specific design should be performed by a licensed Professional Engineer who is familiar with the actual site conditions, soils, other materials and local practices.

EverLoc Retaining Wall System

Shoreline Protection Wall Design

Drawing No.
104

NOTES: ALL WALLS OVER 4' IN HEIGHT OR AS REQUIRED BY LOCAL CODE SHOULD BE DESIGNED BY A LICENSED PROFESSIONAL ENGINEER.



TYPICAL
OUTSIDE RADIUS
DETAIL

N.T.S.



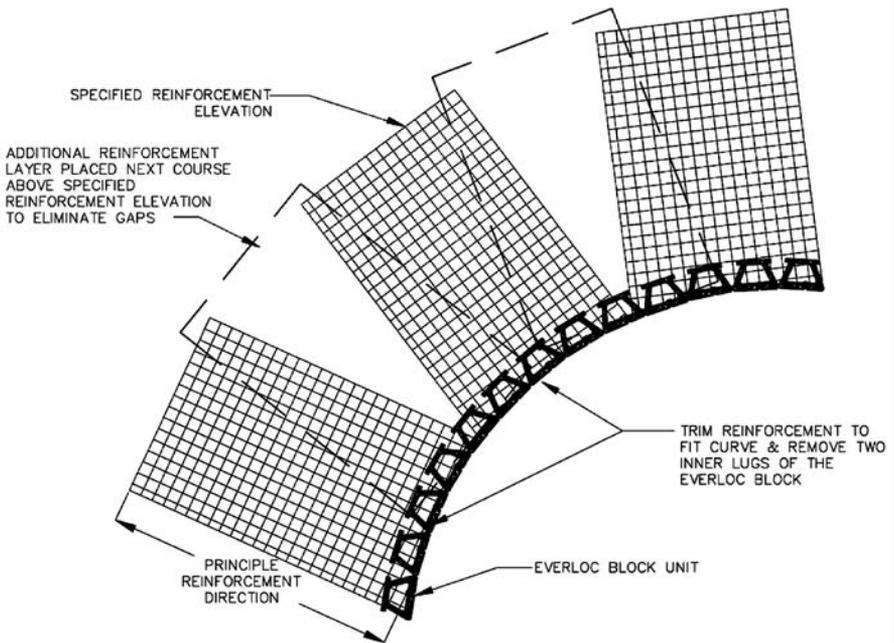
DISCLAIMER: These typical details are provided for general information purposes only. Anyone making use of these details does so at their own risk and assumes all liability for such use. Site specific design should be performed by a licensed Professional Engineer who is familiar with the actual site conditions, soils, other materials and local practices.

EverLoc Retaining Wall System

Outside Radius Design

Drawing No.
105

NOTES: ALL WALLS OVER 4' IN HEIGHT OR AS REQUIRED BY LOCAL CODE SHOULD BE DESIGNED BY A LICENSED PROFESSIONAL ENGINEER.



TYPICAL
INSIDE RADIUS
DETAIL

N.T.S.



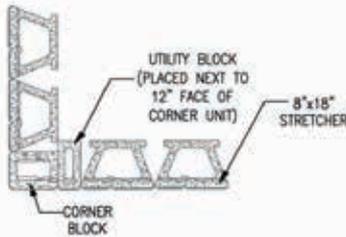
DISCLAIMER: These typical details are provided for general information purposes only. Anyone making use of these details does so at their own risk and assumes all liability for such use. Site specific design should be performed by a licensed Professional Engineer who is familiar with the actual site conditions, soils, other materials and local practices.

EverLoc Retaining Wall System

Inside Radius Design

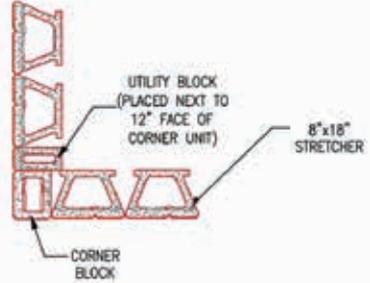
Drawing No.
106

NOTES: ALL WALLS OVER 4' IN HEIGHT OR AS REQUIRED BY LOCAL CODE SHOULD BE DESIGNED BY A LICENSED PROFESSIONAL ENGINEER.



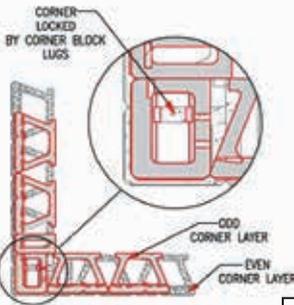
810 T EVEN CORNER
DETAIL

N.T.S.



810 T ODD CORNER
DETAIL

N.T.S.



810 T SERIES
CORNER
ASSEMBLY
DETAIL

N.T.S.



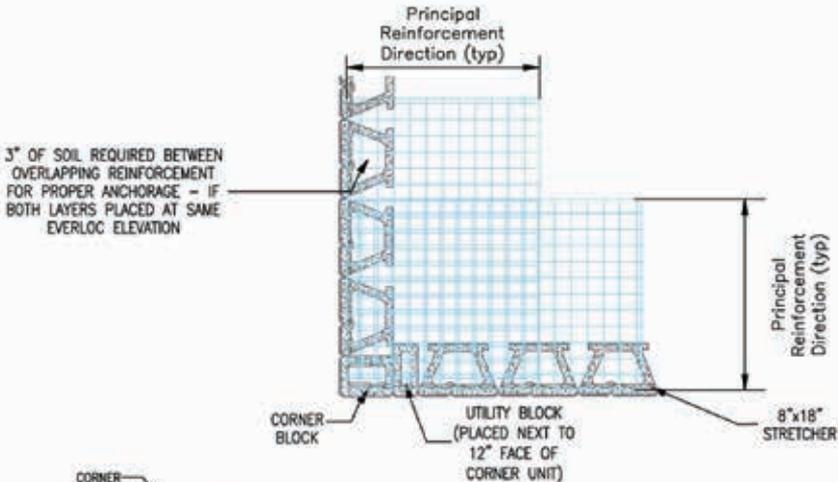
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EverLoc Retaining Wall System

810 Corner Detail

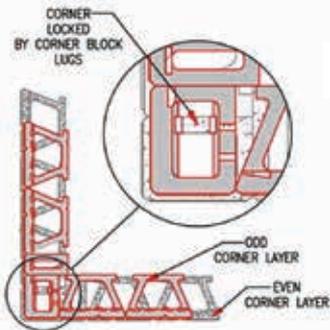
Drawing No.
107

NOTES: ALL WALLS OVER 4' IN HEIGHT OR AS REQUIRED BY LOCAL CODE SHOULD BE DESIGNED BY A LICENSED PROFESSIONAL ENGINEER.



**810 T GEOGRID CORNER
DETAIL**

N.T.S.



**810 T SERIES
CORNER
ASSEMBLY
DETAIL**

N.T.S.



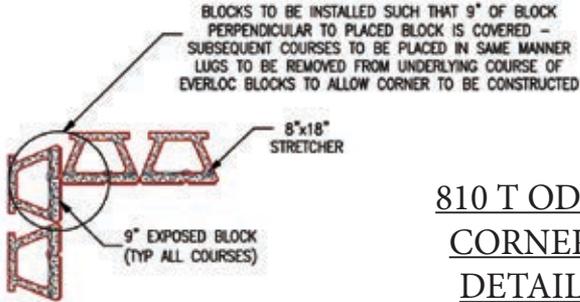
EverLoc Retaining Wall System

810T Outside Reinforced Corner

Drawing No. 108

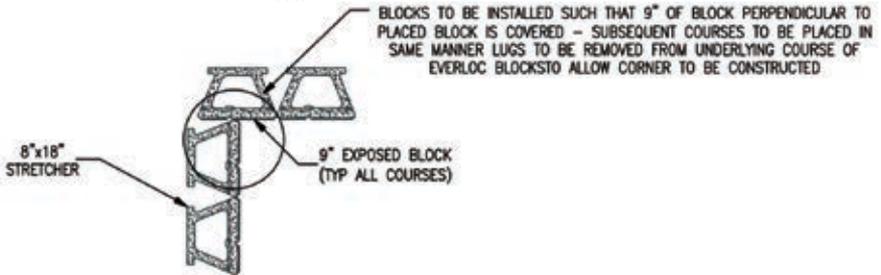
DISCLAIMER: These typical details are provided for general information purposes only. Anyone making use of these details does so at their own risk and assumes all liability for such use. Site specific design should be performed by a licensed Professional Engineer who is familiar with the actual site conditions, soils, other materials and local practices.

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810 T ODD
CORNER
DETAIL

N.T.S.



810 T EVEN
CORNER
DETAIL

N.T.S.

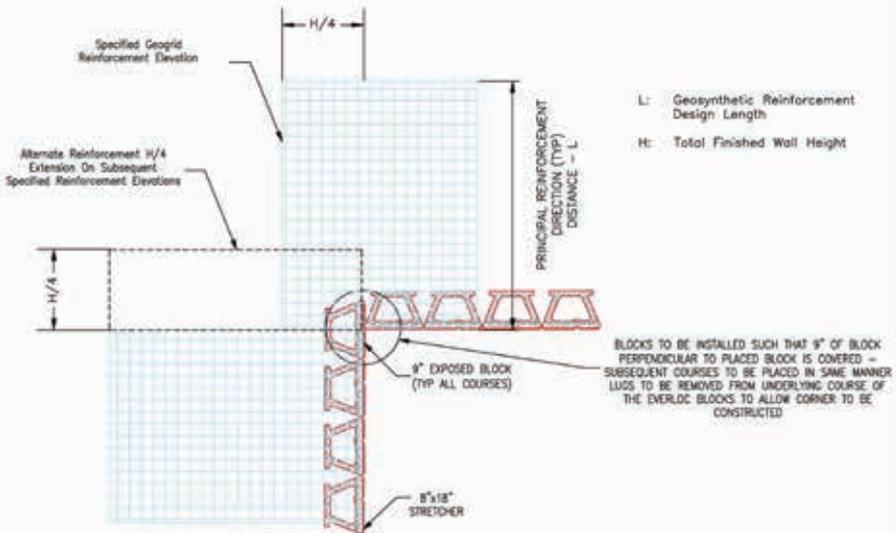
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EverLoc Retaining Wall System

810 Corner Detail- Inside

Drawing No.
109

NOTES: ALL WALLS OVER 4' IN HEIGHT OR AS REQUIRED BY LOCAL CODE SHOULD BE DESIGNED BY A LICENSED PROFESSIONAL ENGINEER.



**810 T ODD
CORNER
DETAIL**

N.T.S.

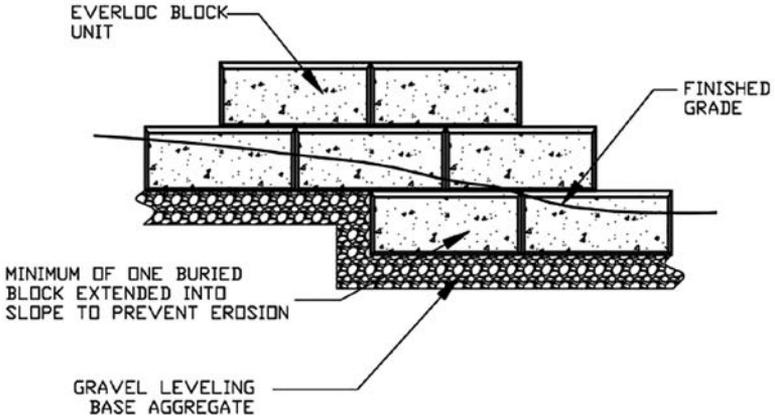
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EverLoc Retaining Wall System

810 Inside Reinforced Corner

Drawing No.
110

NOTES: ALL WALLS OVER 4' IN HEIGHT OR AS REQUIRED BY LOCAL CODE SHOULD BE DESIGNED BY A LICENSED PROFESSIONAL ENGINEER.



BASE STEP DETAIL

N.T.S.



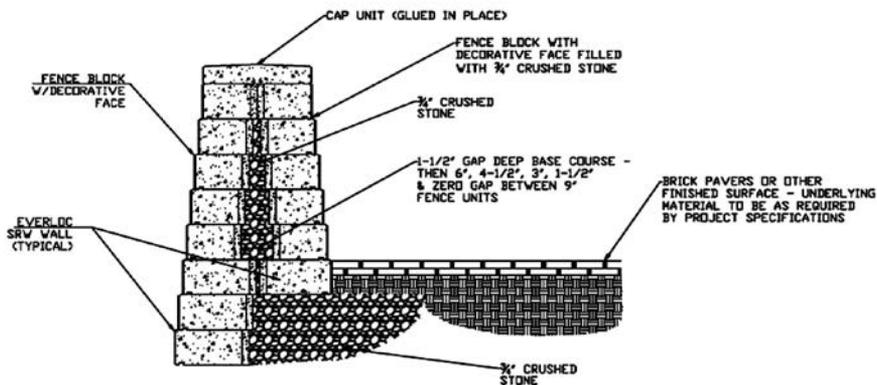
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EverLoc Retaining Wall System

810 T Base Step Detail

Drawing No.
111

NOTES: ALL WALLS OVER 4' IN HEIGHT OR AS REQUIRED BY LOCAL CODE SHOULD BE DESIGNED BY A LICENSED PROFESSIONAL ENGINEER.



810T PARAPET/ FENCE DETAIL

N.T.S.



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EverLoc Retaining Wall
System

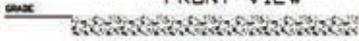
810 T Parapet Wall
Design

Drawing No.
112

NOTES: ALL WALLS OVER 4' IN HEIGHT OR AS REQUIRED BY LOCAL CODE SHOULD BE DESIGNED BY A LICENSED PROFESSIONAL ENGINEER.



FRONT VIEW



1 INSTALL BASE COURSE



FRONT VIEW



3 INSTALL FIRST LANDING WITH CAPS



FRONT VIEW



2 CREATE RETURN WALLS



FRONT VIEW



4 CREATE SECOND TIER

5 REPEAT LANDING PROCESS AGAIN SEE DETAIL #3

STAIR DETAIL

N.T.S.



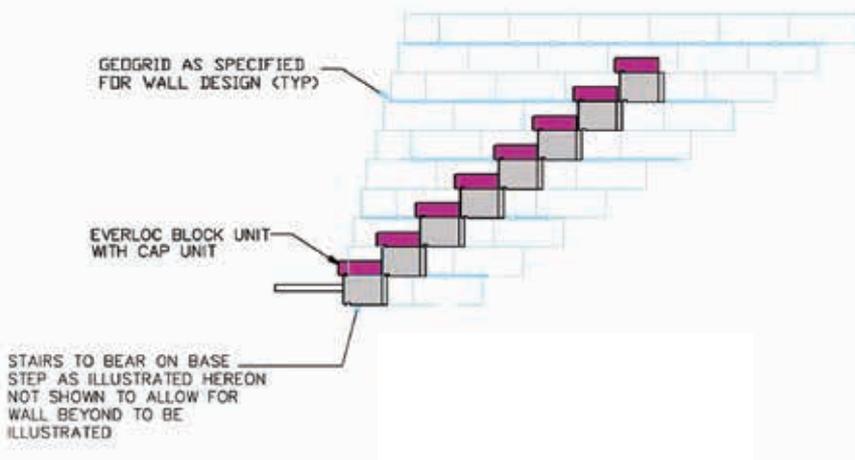
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EverLoc Retaining Wall System

Stair Detail

Drawing No. 113

NOTES: ALL WALLS OVER 4' IN HEIGHT
OR AS REQUIRED BY LOCAL CODE
SHOULD BE DESIGNED BY A LICENSED
PROFESSIONAL ENGINEER.



PROPOSED STAIRWAY

NOT TO SCALE

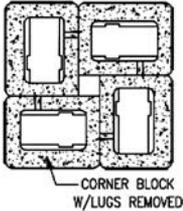
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EverLoc Retaining Wall
System

Stair Detail - Elevation
View

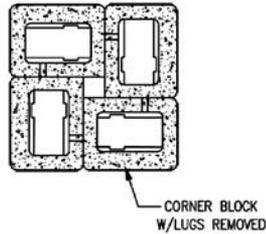
Drawing No.
114

NOTES: ALL WALLS OVER 4' IN HEIGHT OR AS REQUIRED BY LOCAL CODE SHOULD BE DESIGNED BY A LICENSED PROFESSIONAL ENGINEER.



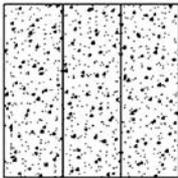
FOUR UNIT - LEFT-END COLUMN DETAIL

N.T.S.



FOUR UNIT - RIGHT-END COLUMN DETAIL

N.T.S.



THREE 7.67" X 23" DOMED CAP UNITS

N.T.S.



7.67" X 23" DOMED CAP UNIT

N.T.S.



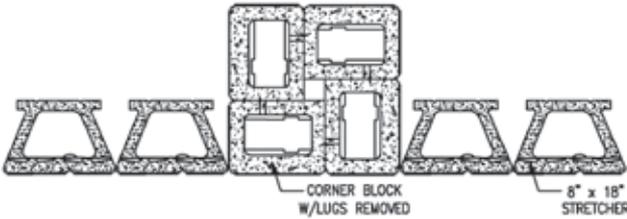
DISCLAIMER: These typical details are provided for general information purposes only. Anyone making use of these details does so at their own risk and assumes all liability for such use. Site specific design should be performed by a licensed Professional Engineer who is familiar with the actual site conditions, soils, other materials and local practices.

EverLoc Retaining Wall System

Column Detail

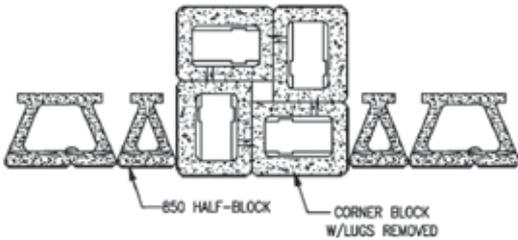
Drawing No.
115

NOTES: ALL WALLS OVER 4' IN HEIGHT OR AS REQUIRED BY LOCAL CODE SHOULD BE DESIGNED BY A LICENSED PROFESSIONAL ENGINEER.



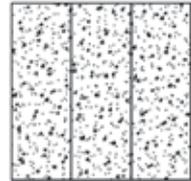
FOUR UNIT - LEFT-END
COLUMN DETAIL FIRST ROW

N.T.S.



FOUR UNIT - RIGHT-END
COLUMN DETAIL
SECOND ROW - W/SETBACK

N.T.S.



THREE 7.67" X 23"
DOMED CAP UNITS

N.T.S.



7.67" X 23" DOMED
CAP UNIT

N.T.S.



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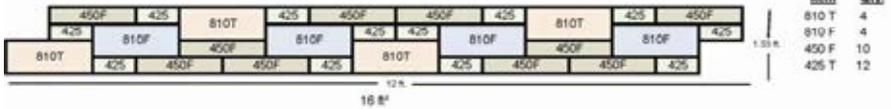
EverLoc Retaining Wall System

In-Line Column Detail

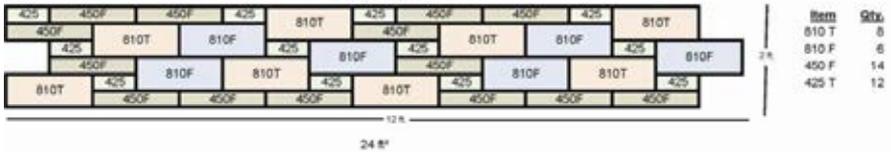
Drawing No.
116

EverLoc™ Aztec Patterns

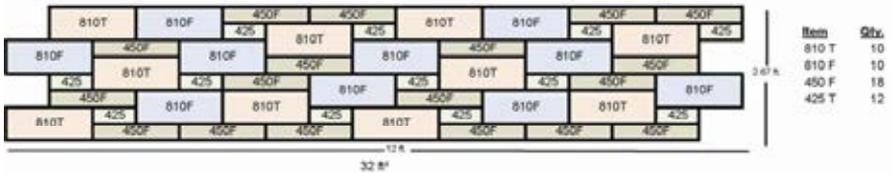
2 Course



3 Course



4 Course



The two course pattern is recommended for curved walls. This reduces the amount of push or runout due to setback of each course.

Consult a Civil Engineer for walls requiring geogrid fabric for placement and pattern type.

EVERLOC™ RETAINING WALL SYSTEMS – ESTIMATING CHART No. 1

810 FULL/TRADITIONAL UNITS – SG350 GEOGRID

NCMA Method 3RD Edition (2009) - STATIC CONDITIONS

Geogrid Elev (E) ft	Geogrid Length (L) ft		E		L		E		L		E		L		Properties
Height of Retaining Wall (H) ft	6	8	6	8	10	10	15	15	20	20					
	4.67	6.0	6.00	7.0	8.67	9.0	12.00	13.0	18.00	16.0					For all soils: $\phi = 30\text{deg}$ $\gamma = 120\text{ lb/ft}^3$ Loading conditions: $\Phi_{\text{cr}} = 3\text{ft}$ $q_c = 250\text{ lb/ft}^2$
	3.33	5.0	4.00	6.0	3.33	7.0	6.67	9.0	8.00	14.0					
	2.00	5.0	2.00	6.0	2.00	7.0	4.67	9.0	6.00	14.0					
	0.67	5.0	0.67	6.0	0.67	7.0	2.00	9.0	2.00	14.0					
	4.67	7.0	6.00	8.0	6.67	8.0	14.00	25.0	19.33	18.0					For all soils: $\phi = 30\text{deg}$ $\gamma = 120\text{ lb/ft}^3$ Loading conditions: $\beta = 25\text{deg}$
	3.33	5.0	4.00	6.0	3.33	7.0	12.00	13.0	18.00	16.5					
	2.00	5.0	2.00	6.0	2.00	7.0	10.00	11.0	16.00	15.0					
	0.67	5.0	0.67	6.0	0.67	7.0	8.00	10.0	14.00	14.0					
	4.67	7.0	7.33	9.0	6.67	8.0	12.00	12.0	18.00	16.0					For all soils: $\phi = 30\text{deg}$ $\gamma = 120\text{ lb/ft}^3$ Loading conditions: $\beta_{\text{cr}} = 5\text{ft}$ $\Phi_{\text{cr}} = 5\text{ft}$ $\beta = 25\text{deg}$ $q_c = 250\text{ lb/ft}^2$
	3.33	6.0	4.00	6.0	3.33	7.0	8.67	10.0	16.00	16.0					
	2.00	6.0	2.00	6.0	2.00	7.0	6.67	9.0	14.00	16.0					
	0.67	6.0	0.67	6.0	0.67	7.0	4.67	9.0	12.00	16.0					

Important Note: This chart is NOT to be used for construction. It is for information purposes only. Designs for construction must be completed by a competent engineer and must be appropriately stamped and sealed.

REFERENCES

1. - J.R. Collin, R.R. Berg, and M. Meyers, *Segmental Retaining Wall Drainage Manual*, 1st Edition, National Concrete Masonry Association, 2002.
2. M.R. Simac, R.J. Bathurst, R.R. Berg, and S.E. Lothspeich, *Design Manual for Segmental Retaining Walls (Modular Concrete Block Retaining Wall Systems)*, 2nd Edition, Third Printing, National Concrete Masonry Association, 2002.
3. M.R. Simac and J.M. Simac, "Specifying Segmental Retaining Walls," *Landscape Architecture*, March 1994.
4. ASTM C1372-09, *Standard Specification for Dry-Cast Segmental Retaining Walls Units*, ASTM International, 2009.
5. ASTM C140-09a, *Standard Test Methods for Sampling and Testing Concrete Masonry Units and Related Units*, ASTM International, 2009.
6. ASTM F758-95(2007)el, *Specification for Smooth-Wall Poly(Vinyl/Chloride) (PVC) Plastic Underdrain Systems for Highway, Airport and Similiar Drainage*, ASTM International, 2007.
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8. ASTM D4595-09, *Standard Test Method for Tensile Properties of Geotextiles by the Wide-Width Strip Method*, ASTM International, 2009.
9. ASTM D6637-01(2009), *Standard Test Method for Determining Tensile Properties of Geogrids by the Single or Multi-Rib Tensile Method*, ASTM International, 2009.
10. *Design Manual for Segmental Retaining Walls*, NCMA Publication Number TR 127B, National Concrete Masonry Association, Third printing, November, 2009.

MORE STYLES - MORE OPTIONS WITH

EVERLOC™
RETAINING WALLS



810 Traditional



810 Full



810 Traditional/Full blend



450 Traditional



450 Full



450 Traditional/Full blend



Aztec



Fence/Parapet



Column



Fireplace

EverLoc™ Retaining Walls

P O Box 160

2522 Swords Creek Road

Swords Creek, VA 24649

Ph: 877-622-9255

Fax: 276-873-5688

www.EverLocRetainingWalls.com