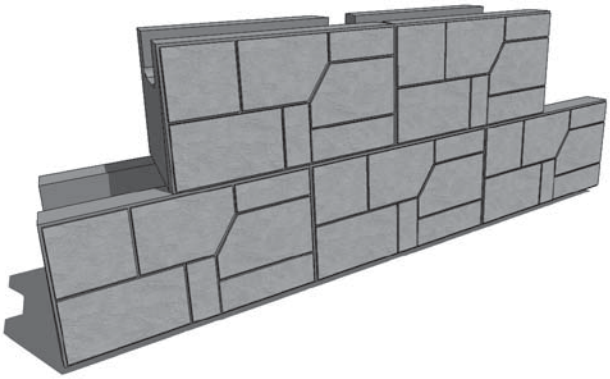
MAGNUMSTONE™

Gravity Wall

A force to be reckoned with…

Gravity (SRW) segmental retaining wall systems are structures lower in height that use the MagnumStone unit weight combined with gravel core infill to resist earth pressures behind and on top of the wall. The 2"/unit (4.5 degree or 1"/vertical foot) batter or setback of the MagnumStone wall along with proper soil conditions below and behind the wall provide the stability of the structure. For walls 4.0ft (1.2m) and taller a qualified engineer should be consulted.



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Gravity Wall

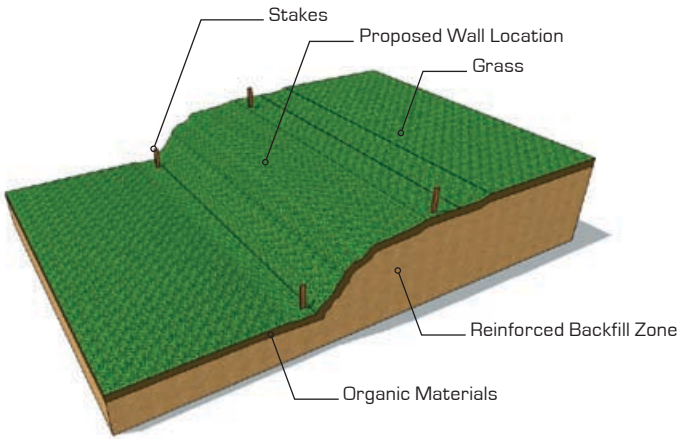
> > > STEP 1
PLANNING

· Mark the bottom and top of the wall excavation location with spray paint or stakes

· Establish proper elevation bottom and top of wall before excavating

· **Organic Materials** should not be used in **Reinforced Backfill Zone**

· Store and protect **Reinforced Backfill Materials** from inclement weather during construction



> > > STEP 2
EXCAVATION

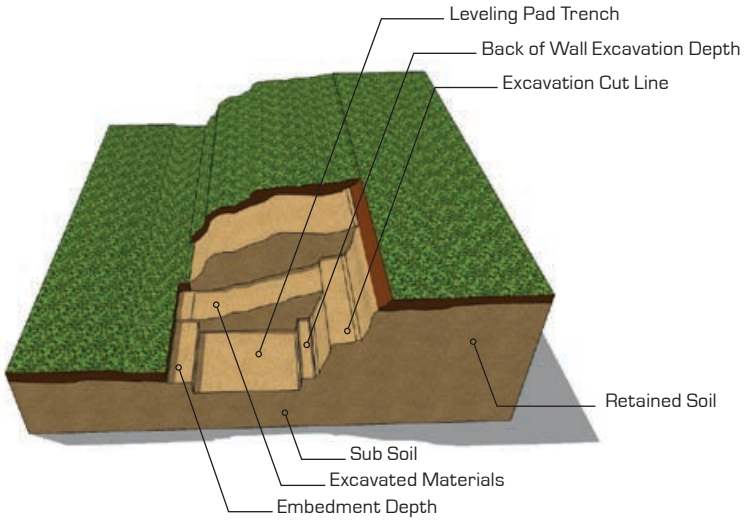
· Excavate and prepare **Sub Base Leveling Trench** 6" below first course

· **Leveling Pad Trench** is approximately 3.5' to 4' wide

· Normal wall **Burial Depth** or **Embedment Depth** is 6" to 12"

· Excavate cut line to a 2 to 1 slope or greater

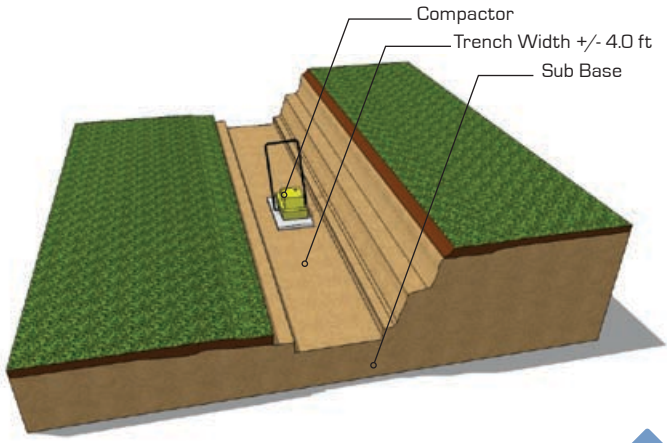
· Back of wall excavation depth into the bank should be 12" beyond the back of the **Sub Base Leveling Trench**



> > > STEP 3
SUB BASE COMPACTION

· Compact **Sub Base** to **95% Standard Proctor Density** or greater

· Remove any **Organic** or poor soils in the **Sub Base** and replace with proper **Reinforced Fill Materials** before compacting



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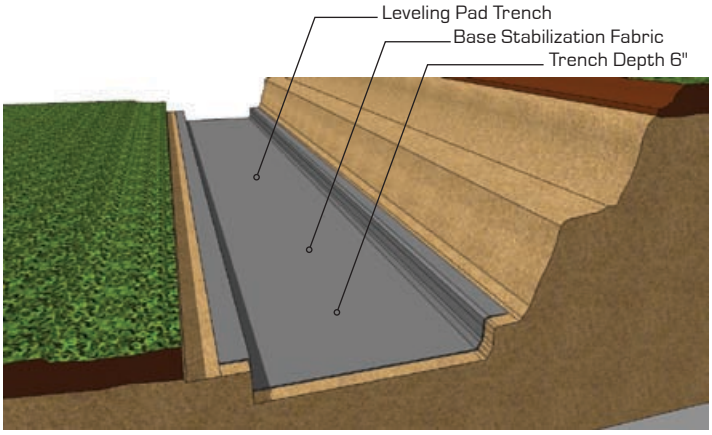
Gravity Wall

> > > STEP 4
BASE STABILIZATION

· (Optional) place 5' to 6' wide **Base Stabilization Fabric** on top of leveling pad trench

· **Base Stabilization Fabrics** will help prevent sub base materials from mixing with the gravel base leveling pad during compaction

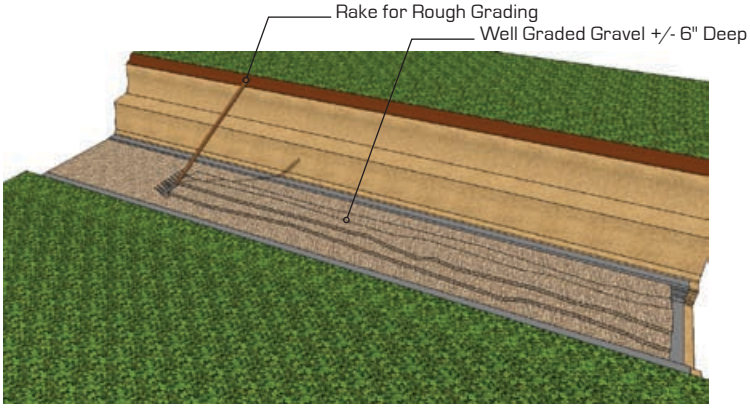
· Fabric also provides extra **Structural Bearing Stability** to the base leveling pad



> > > STEP 5
ROUGH LEVELING PAD

· Place well graded gravel on top of fabric in the leveling pad trench approximately 6" deep

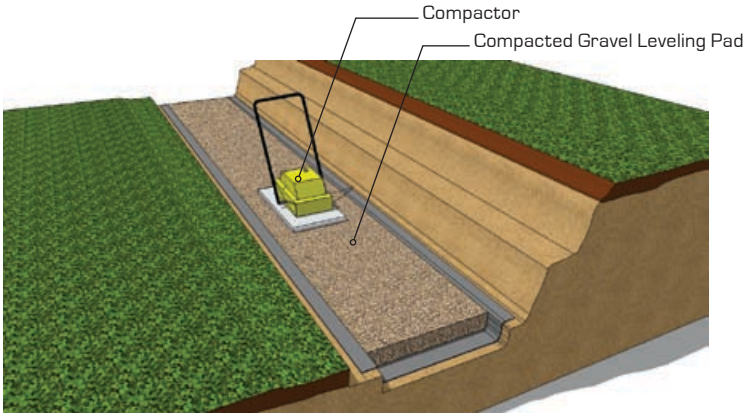
· Rough grade gravel with a rake close to finish base elevation



> > > STEP 6
COMPACT LEVELING PAD

· **Compact Gravel Leveling Pad** to **95% Standard Proctor Density** or greater

· Correct **Moisture Content** in the gravel will help in reaching proper compaction



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> > > STEP 7
LEVEL SCREED PIPES

· Place first 4' long **Screed Pipe** across the trench at one end of the wall or at the lowest elevation

· Scratch a trench for the pipe in the compacted gravel with a chipping hammer

· Use a 2' level or **Laser Level** to set the **Screed Pipe** to the proper level

· Gravel is added underneath and around the **Screed Pipe** to support while leveling

· Place the second **Screed Pipe** across the trench approximately 9' from the first **Screed Pipe**

· Level the second **Screed Pipe** to the same elevation as the first **Screed Pipe** by using a 4' level on top of a **Screed Board, Straight Edge** or with a **Laser Level**

· Continue to place and level **Screed Pipes** the full length of the trench leveling pad or until reaching a base elevation change

> > > STEP 8
EXTRA GRAVEL

· Place or remove extra **Well Graded Gravel** level to the top of the **Screed Pipes** as needed

· (If more than 1 ½ inches of loose gravel is added, repeat the compaction steps again before screeding)

> > > STEP 9
SCREEDING LEVELING PAD

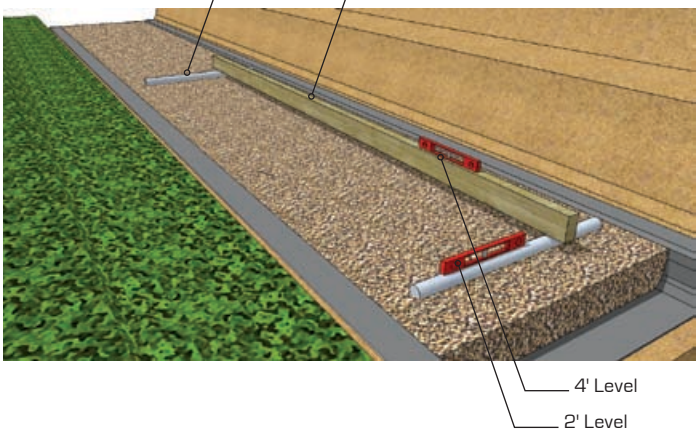
· **Screed** the gravel leveling pad with a **Screed Board** or **Straight Edge** across the trench on top of two **Screed Pipes**

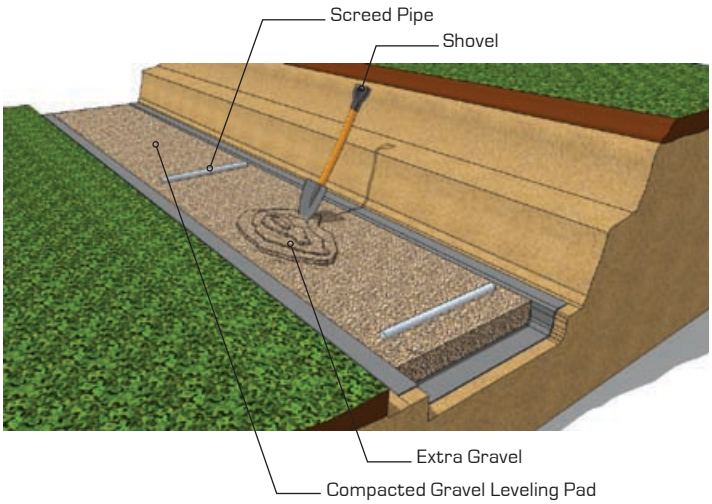
· The coarser the gravel the more back and forth the screeding action when drawing the **Screed** across the leveling pad

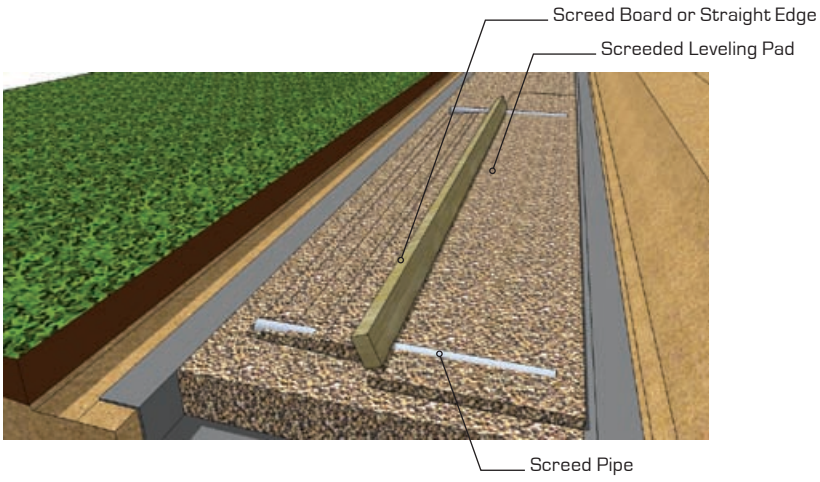
· Too much pressure on the screed straight edge may dislodge the level of the screed pipes while screeding

· A second screed pass may be needed to insure an accurate level has been achieved

· Continue to screed the leveling pad until completing the full length of the trench or up to the first elevation change







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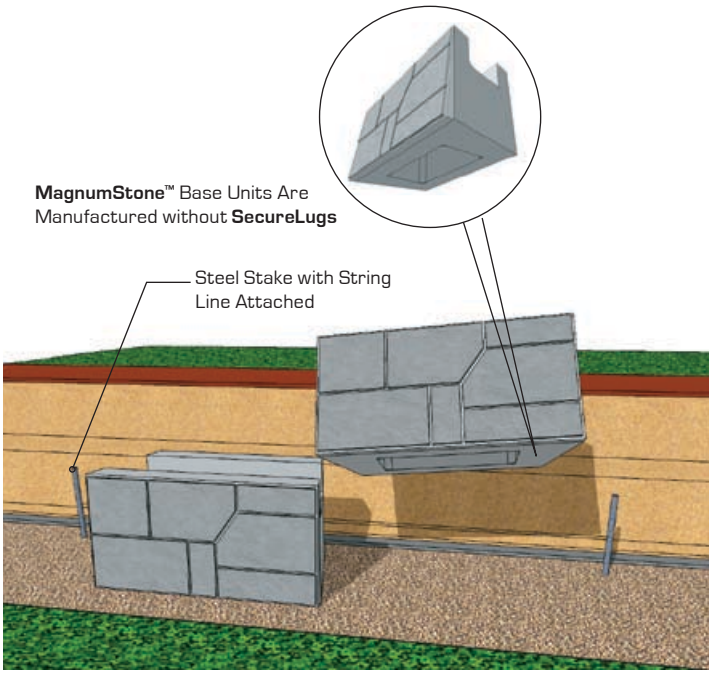
> > > STEP 10
REMOVED SECURELUGS

· **MagnumStone**™ base units, placed on the leveling pad, are manufactured without **SecureLugs**

· Place each unit on top of the leveling pad in such a way as not to disturb the level gravel



> > > STEP 11
LAY FIRST COURSE

· Remove the **Screed Pipes** from the leveling pad

· Place a steel stake at either end of the leveling pad to establish the back of the first course of units

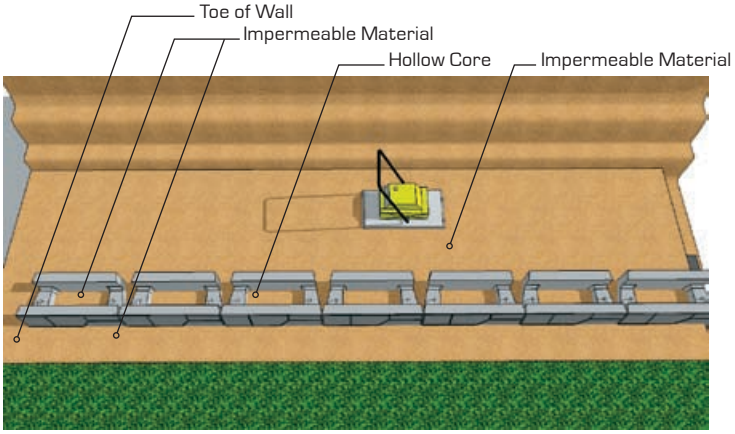
· Secure tightly a string line to the stakes at either end which will provide the guide to line up the back of each **MagnumStone**™ base unit

· The distance of the string line between the steel stakes may vary due to heavy winds

> > > STEP 12
IMPERMEABLE FILL

· Backfill behind, in front **(toe of wall)** and in the hollow cores of the units with **Impermeable Materials** up to the desired level of the **Perforated Drain Pipe**

· Compact the impermeable materials behind, in front and in the hollow cores of the units



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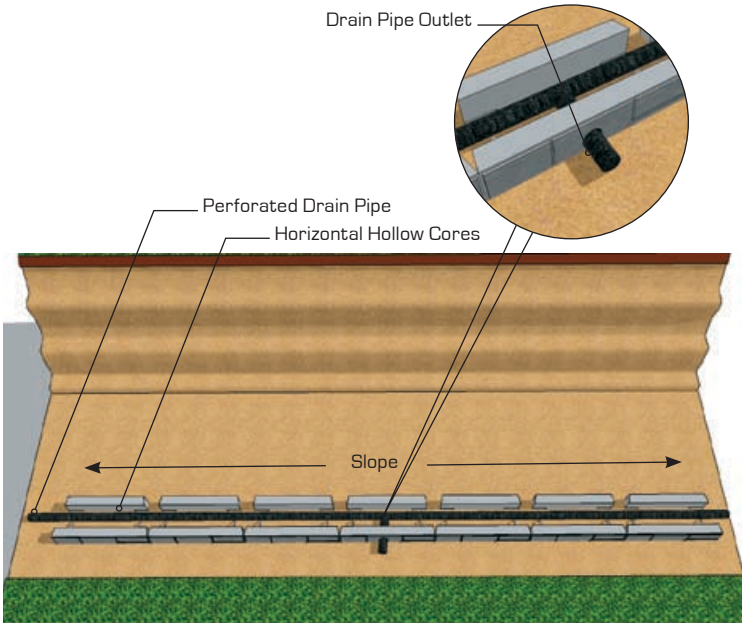
> > > STEP 13
DRAIN PIPE OUTLET

· **Perforated Drain Pipe** should have adequate slope to drain water in the right direction towards each **Drain Pipe Outlet**

· **Drain Pipe Outlet** can be every 30 or 50 feet

· **Perforated Drain Pipe**, laid in the **Horizontal Cores**, can be a **Sock Wrapped** system to help prevent fines from migrating into the pipe



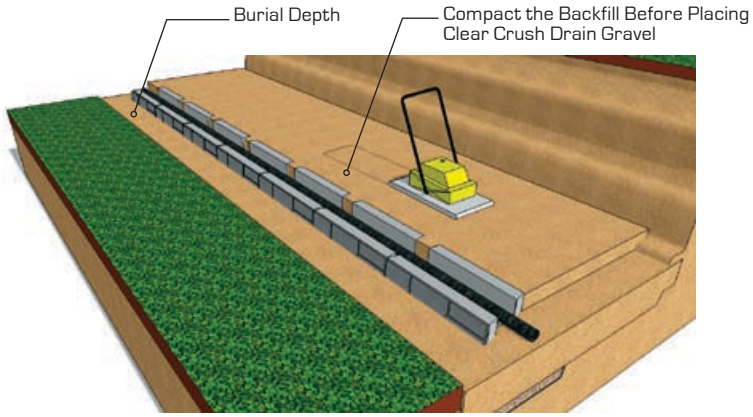
> > > STEP 14
BACKFILL

· Place and compact **Backfill Materials** in maximum **Lifts** of 8"

· **Lifts** may be less than 8" depending on the type of soil or size of equipment

· Each **Lift** should be compacted to **95% Standard Proctor** or greater

· The correct **Moisture Content** in the **Backfill Materials** will help in reaching proper **Compaction Density**



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> > > STEP 15
DRAINAGE GRAVEL

· **Clear Crush Drain Gravel** is placed in the vertical and horizontal hollow cores after placing and compaction of the backfill materials

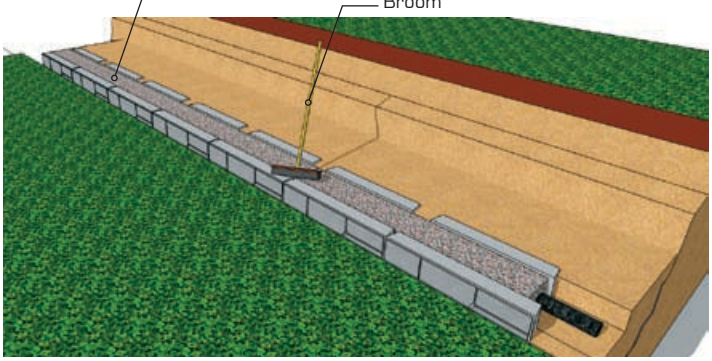
· The **Clear Crush Drain Gravel** should be 2" below the top of units to allow for **SecureLug** connection

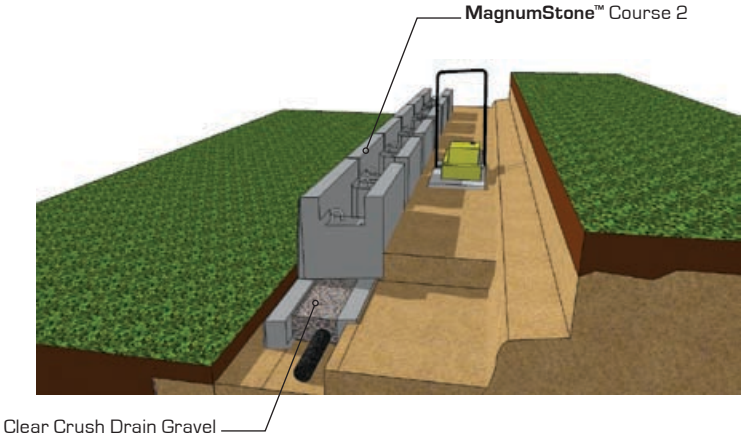
· **Clear Crush Drain Gravel** does not need to be compacted

· Sweep the top of the **MagnumStone**™ units clean of all rock and dirt before placing second course of **MagnumStone**™ units

· Make sure the **Backfill Materials** directly behind the wall are placed flush to the top of the units

· Make sure the **Backfill Materials** are well compacted and level as possible

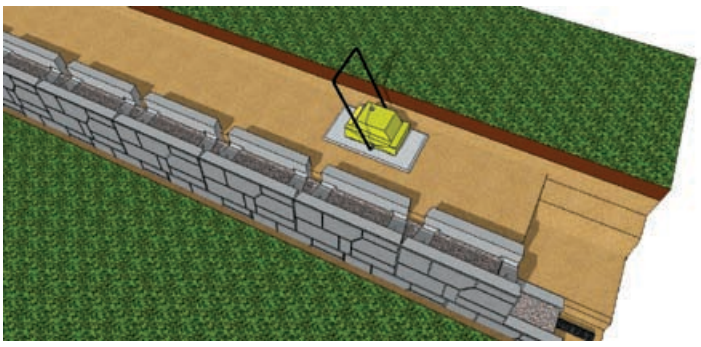




> > > STEP 16
CONTINUE INSTALLATION

· Continue to install each course of units following the same steps as above

· Install and compact **Backfill Materials** in 8" **Lifts** until wall is complete



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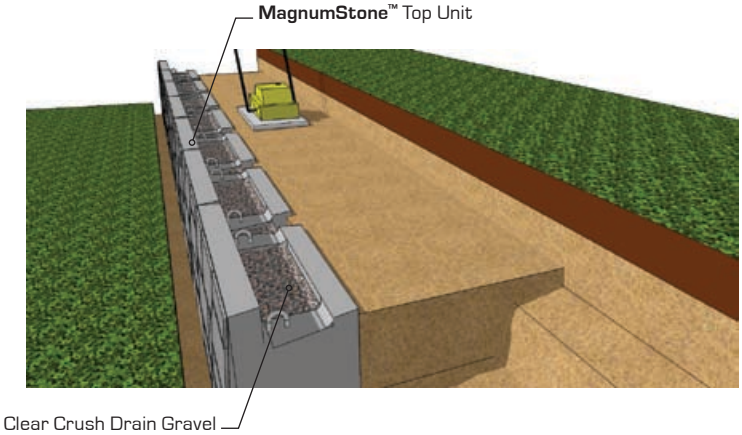
Gravity Wall

> > > STEP 17
TOP OF WALL UNITS

· Complete the top of the wall with **MagnumStone™ Top Units**

· **MagnumStone™ Top Units** are manufactured with the back panel 8" lower than the front face panel

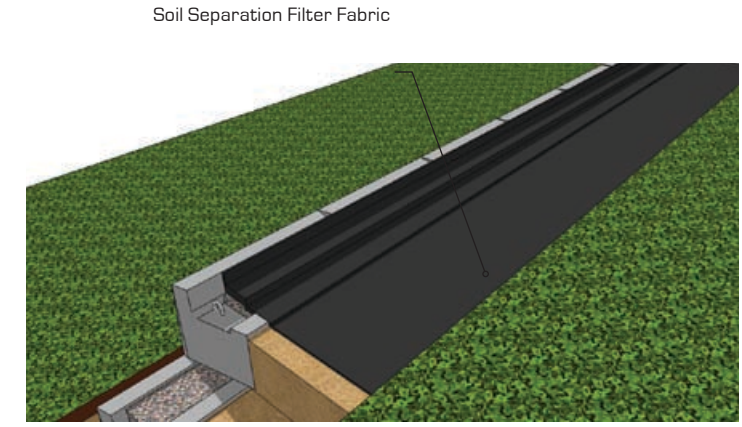
· The **Clear Crush Drain Gravel** and backfill materials will be placed flush to the top of lowered back panel. There are times when more than 8" of top soils may be required



> > > STEP 18
SOIL SEPARATION FABRIC

· Place a 6 ft wide **Soil Separating Filter Fabric** on top of the backfill and drainage gravel and against the back of the last units before placing the planting soils

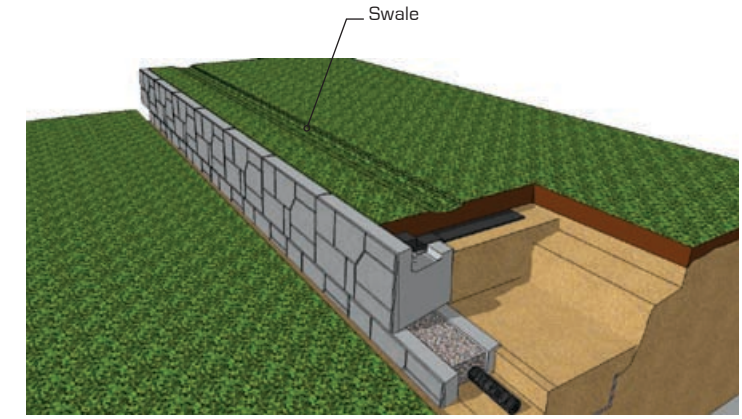
· The fabric will prevent planting soil fines from staining the face of the wall and migrating into the **Clear Crush Drain Gravel** (Angular Aggregate free of fines)



> > > STEP 19
FINAL GRADING

· Insure that final grading is done on top and bottom of the wall

· Make sure to protect newly placed planting soil from erosion during heavy rains or surface runoff



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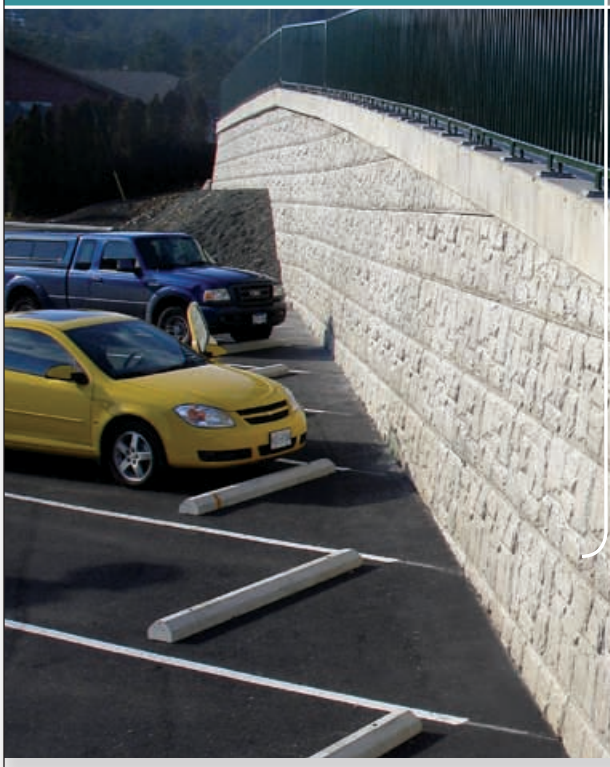
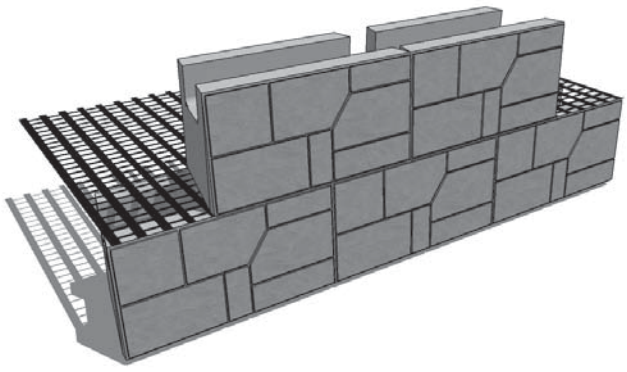
Geogrid Wall



Where gridlock is a good thing…

Creating a StoneLedge reinforced wall system, involves the use of geogrids for reinforcement. StoneLedge walls 3.5ft (1.07m) and higher will require reinforcements to withstand the active pressures that may be behind and on top of the wall. Parking lots, roadways, or positive slopes above walls for example, require the use of reinforcement to help resist the increased pressure behind the wall. Geogrid used with the appropriate lengths, layers, and compacted backfill materials will resist these active forces above and behind the wall.



MAGNUMSTONE™

Geogrid Wall

> > > STEP 1
PLANNING

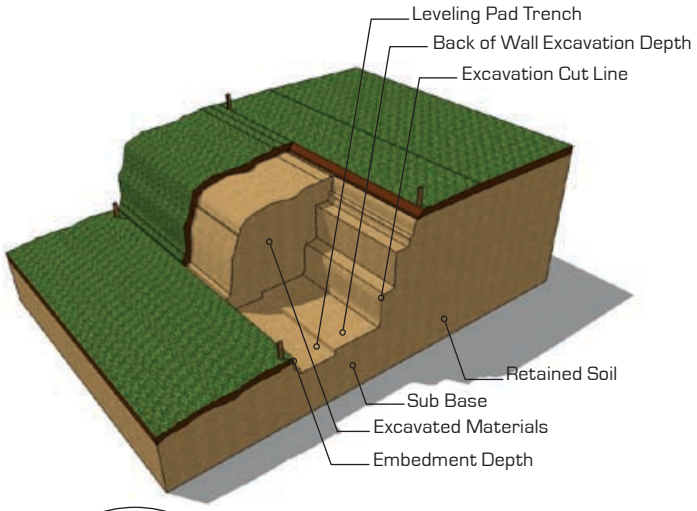
· Excavate and prepare **Sub Base Leveling Trench** 6" below first course

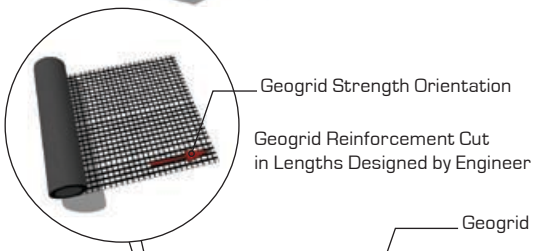
· **Leveling Pad Trench** is approximately 3.5' to 4' wide

· Normal wall **Burial Depth** or **Embedment Depth** is 6" to 12" or one block (for more information refer to design manual)

· Excavate cut line to a 2 to 1 slope or greater

· Back of wall excavation depth into the bank at the base of the wall should be from the face of wall to the designed length of **Geogrid**





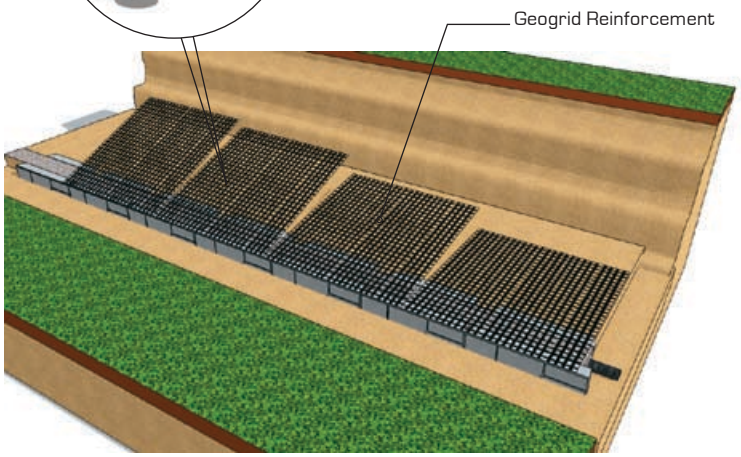
> > > STEP 2
CUT GEOGRID

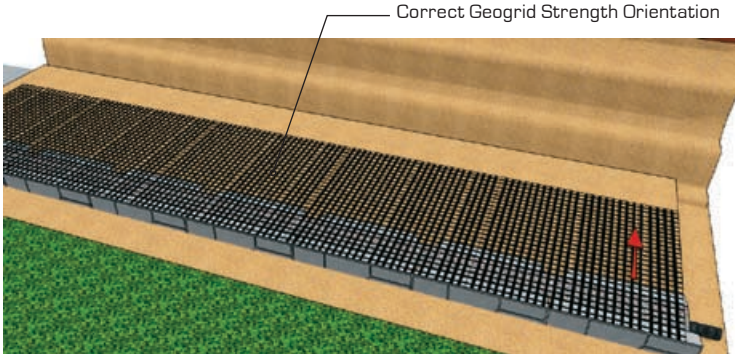
· Cut **Geogrid Reinforcement** to the length specified in the design

· **Geogrids** are manufactured in two directions Uni-axial or Bi-axial. Uni-axial grid has one direction of strength and that direction has to be oriented perpendicularly to the face of the wall during installation. Bi-axial grid can be laid in two directions, perpendicular and lengthwise to the face of wall (ensure that the lengthwise direction is still in accordance to the length specified by the Engineer's design)

· **Correct geogrid orientation, strength and length is crucial to the success of the wall project**

· Each **Geogrid** length should be laid parallel and adjacent to each other but never overlapping





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MAGNUMSTONE™

Geogrid Wall

> > > STEP 3
LAY GEOGRID

· Place the **Geogrid** as far forward on the **MagnumStone**™ units as possible without revealing it on the face

· Place the next course of **MagnumStone**™ units on top of the lower units and **Geogrid** at a half bond to the lower units

· The two **SecureLugs** will fit securely into the hollow cores of the two units below and lock the **Geogrid** into the gravel core

· The gravel in the lower units will be recessed 2" or more to allow for the **SecureLugs** connection

· Complete the installation of units on the **Geogrid Reinforced** courses

· Make sure each unit is installed against the unit next to it leaving no gaps between unit joints

· Use stakes or backfill materials to maintain the tension of the **Geogrid** during backfilling

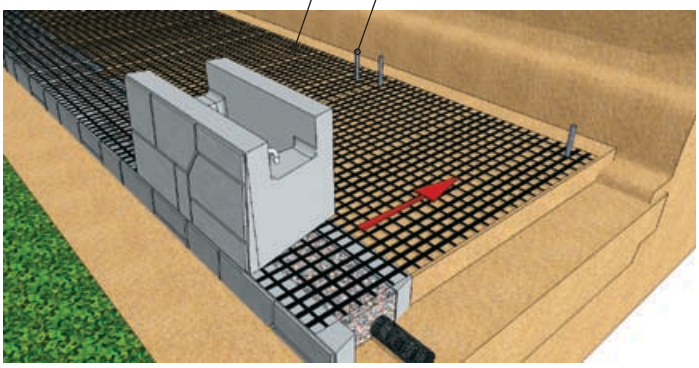
· Do not drive equipment directly on top of **Geogrid**

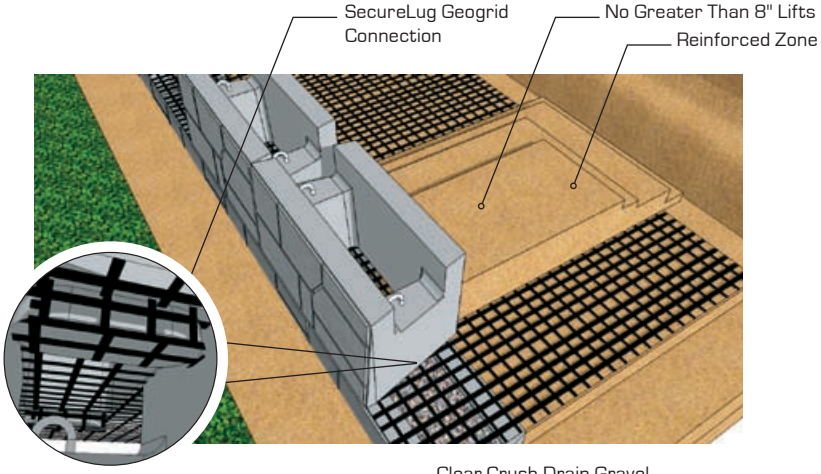
> > > STEP 4
REINFORCED BACKFILL

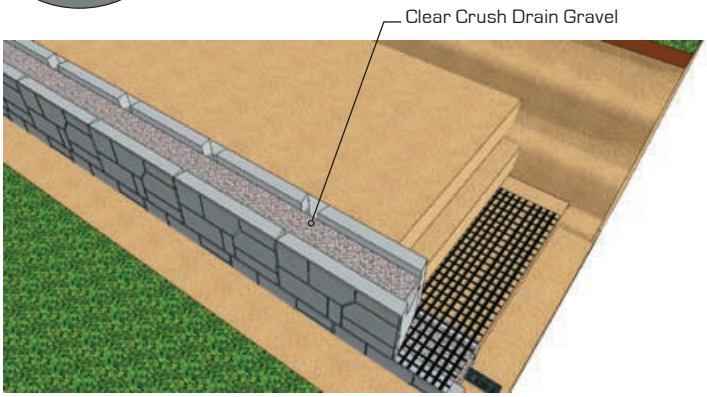
· **Backfill** the **Reinforced Zone** by placing materials from the back of the wall towards the end of the **Geogrid**

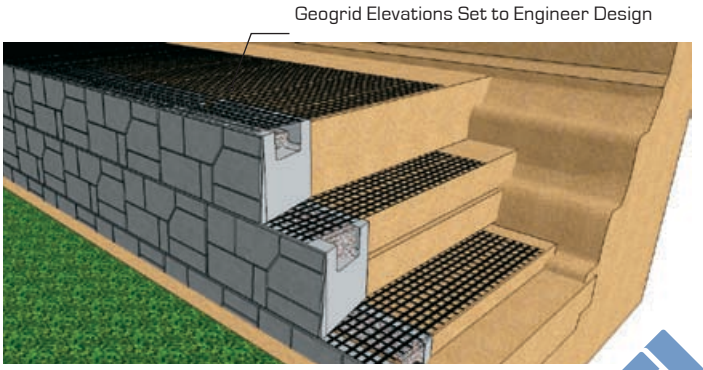
· Install drainage gravel in the cores after placing and compacting backfill materials

· Install and compact backfill materials in **Lifts** no greater than 8" until wall is complete









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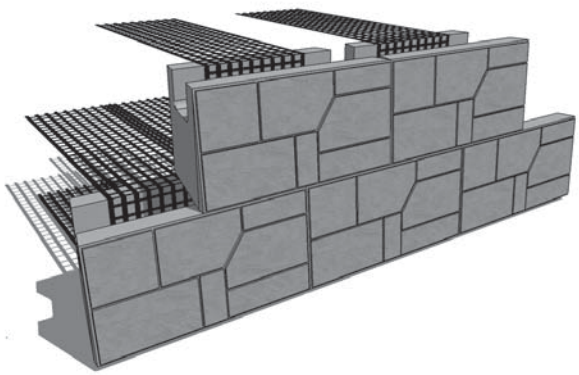
Positive Connection



Be more than sure, be positive…

One single length of geogrid is wrapped through the hollow core providing equal length reinforcement at the bottom and top of a single MagnumStone™ unit. The geogrid wrapped hollow core is then filled with gravel making this the ultimate geogrid positive connection.

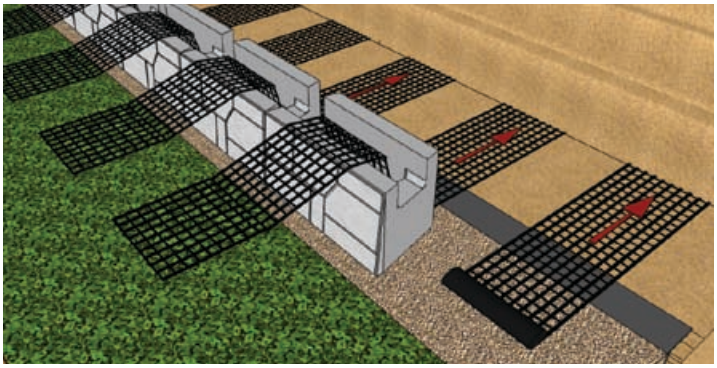
MAGNUMSTONE™

Positive Connection

> > > STEP 1
LAY FIRST COURSE

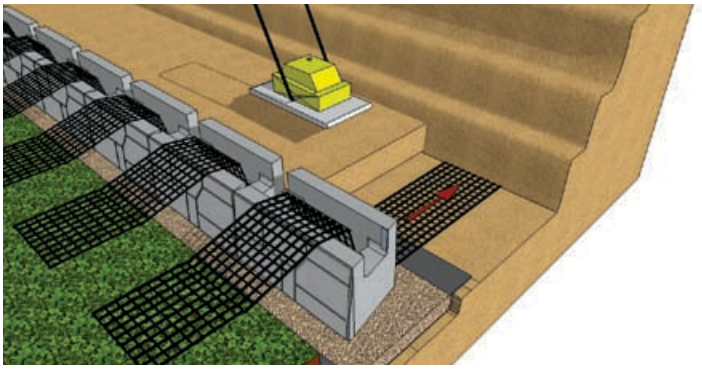
· **Geogrid** positive reinforcement will be cut in 24" wide strips and twice the length specified in the design plus 2' for the unit height. (if specified **Geogrid** length is 10' the length will be 22' long)

· Place the base units vertical open core over the half rolled length of **Geogrid**. Make sure the **Geogrid** is placed to the correct design length, perpendicular and centered to the unit before placing **MagnumStone™**



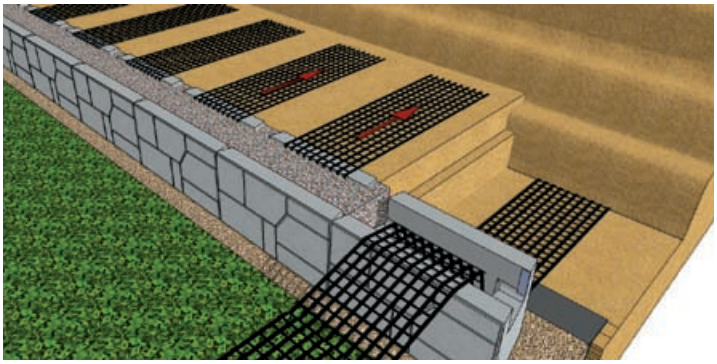
> > > STEP 2
COMPACT BACKFILL

· Backfill and compact the **Reinforced Zone** by placing materials from the back of the wall towards the end of the **Geogrid**. Install and compact **Backfill Materials** in 8" **Lifts**



> > > STEP 3
WRAP GEOGRID

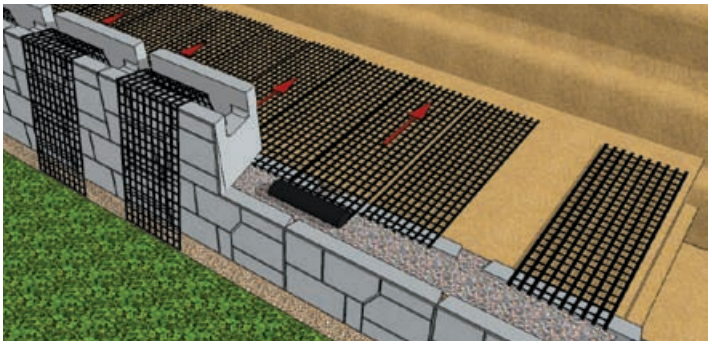
· Pull rolled **Geogrid** out of the vertical core and place perpendicular to top of first unit on top of compacted backfill. Tension **Geogrid** before installing drainage gravel. Install the **Clear Crush Drain Gravel** 2" below the top of units to allow for **Securelug** connection



> > > STEP 4
LAY SECOND COURSE

· Place the second **MagnumStone™** units vertical open core over the second layer of half rolled **Geogrid**. Make sure **Geogrid** is placed to the correct design length perpendicular to the unit and centered to the two adjacent **Geogrid** strips before placing the unit

· Repeat above steps for each course of **MagnumStone™** Positive Reinforced Wall



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