

# *The Regency Wall System*

"The Genuine Natural Stone Retaining Wall"

*By Earthworks, Inc.*

## THE REGENCY WALL SYSTEM ST. LOUIS COUNTY MASTERPLAN

### INDEX OF DRAWINGS:

Sheet 1	Title and Index
Sheet 2	Applications and Design Information
Sheet 3	Specifications
Sheet 4,5,6	Typical Details
Sheet 7	Standard Design - Horizontal Backfill
Sheet 8	Geogrid Design - Horizontal Backfill
Sheet 9	Standard Design - Sloping Backfill
Sheet 10	Geogrid Design - Sloping Backfill
Sheet 11	Standard Design - Tiered Wall
Sheet 12	Geogrid Design - Tiered Wall

Aspen Consultants  
Edward T. Austin, P.E.  
293 Northwest Blvd  
Fenton, MO 63026  
636/349-2225

Earthworks, Inc.  
4287 N Hwy 51  
Perryville, MO 63775  
573/547-9097  
573/547-6067 fax

**COVER SHEET**

Sheet 1 of 12

Date: April 2009

## APPLICATION

The Regency natural stone retaining wall system is a gravity wall structure and can also be constructed as a geogrid reinforced structure. Design of these structures uses well established guidelines that are readily available. Consult Earthworks for additional details regarding design, appearance, and aesthetic considerations.

## STANDARD DESIGN PROCEDURE

The following design tables established for the construction of natural stone gravity walls are based upon generally accepted soil parameters in the St. Louis County, Missouri area. The contractor shall review the site conditions and the soil present at the proposed location of the walls prior to construction to determine if the actual conditions match the assumed parameters. All soil parameters assumed in the design are well drained, long term strength conditions. Frost heave and settlement need to be addressed if warranted by conditions. Also, special precautions are necessary for walls constantly in contact with water, i.e. near or at rivers, lakes, and ponds.

External Sliding = 1.5

Overturning = 1.5

Bearing Capacity = 1500 psf

## MINIMUM FACTORS OF SAFETY CALCULATED

Three typical geometric cases were selected for these tables. The first case is a typical retaining wall with horizontal backfill, the second case is a 3:1 sloping backfill, and the third case is a tiered wall. The horizontal backfill layout is designed with 100 lb per sf surcharge. The following is a summary of the design parameters used and the minimum factors of safety which the tables are based on.

## SOIL PROPERTIES:

	Friction Angle (degrees)	Unit Weight (#/cf)	Cohesion (#/sf)
Retained Backfill	28	120	0
Foundation Soil	28	120	0

Friction Angle - degrees

Unit Weight - lbs per cf

Cohesion - lbs per sf

Earthworks, Inc.  
4287 N. Hwy 51  
Perryville, MO 63775  
573/547-9097  
573/547-6067 fax

## **APPLICATION**

Sheet 2 of 12

Date: April 2009

## **SPECIFICATIONS - St. Louis County Masterplan**

### **Materials**

**Retaining wall units** shall be Regency natural stone block units as manufactured by Earthworks. The units are 12" tall x 12" or 18" deep x various widths. The cap units are 5" or 6" tall x 12" deep. The stone used for the Regency blocks is a durable limestone that is free of fissures.

**The leveling pad** shall be constructed of well graded crushed limestone similar to 1" minus.

**The drainage rock** shall be free draining rock such as 3/4" clean crushed limestone.

**The geogrid** shall be Miragrid 2XT or Stratagrid SG150.

### **Wall Foundation**

Foundation soil shall be excavated as required for the leveling pad to the depths and locations shown on the plan sheet. The exposed foundation soil shall be observed prior to construction to verify that the exposed material is suitable for a net design bearing pressure of 1500 psf and that the base of the excavation is free of loose soil, uncompacted fill, water, or frozen material. Undercut any unsuitable soil. Undercut areas shall be filled with crushed limestone and compacted to at least 95% of the material's standard Proctor maximum dry density.

Construct the crushed rock leveling pad to lines and grades shown on the plans.

### **Wall Construction**

Install the first course of units on the leveling pad. Install the next course in a running bond stack. Joints of the units shall overlap the joints of the units below by a minimum of 12". The units shall be placed side-by-side with gaps at the face of wall less than 1" between the blocks. Backfill units and continue construction. The wall may be capped with a 12" wall block or a 5" tall or 6" tall block.

The geogrid reinforced walls shall be constructed as shown in the details. The geogrid shall be installed with the strength direction perpendicular to the wall face. Pull the geogrid out to eliminate wrinkles. Backfill with drainage rock extending to the end of the geogrids. Do not operate construction equipment directly on the geogrid.

During backfill placement the 3 foot zone directly behind the wall shall be limited to the use of hand operated compaction equipment only.

### **Protection of Work**

The surface of the wall backfill shall be graded at the end of each day of work to provide positive surface drainage away from the wall. Grading shall include proper contouring of fills in adjacent areas to prevent the flow of surface water into the reinforced earth zone.

The design of the walls are based on conditions and loads imposed on the wall at completion of the project. Prior to project completion, the wall is vulnerable to damages caused by construction activity adjacent to the wall. Of particular concern is the use of grading and pavement construction equipment on the retained backfill at the top of the wall. Only equipment with a weight not exceeding one ton can be used in the 3 foot zone directly behind the back of the wall face.

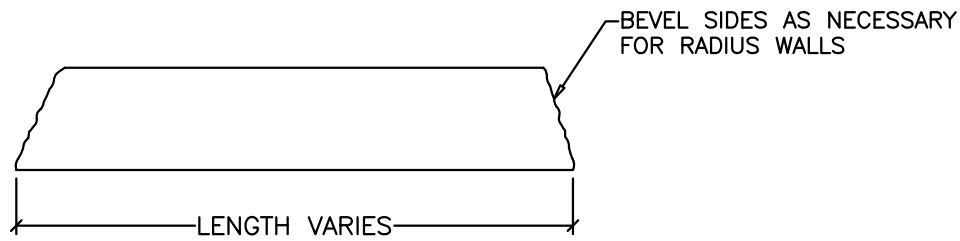
The soil in front of the walls shall be protected from future erosion.

Earthworks, Inc.  
4287 N. Hwy 51  
Perryville, MO 63775  
573/547-9097  
573/547-6067 fax

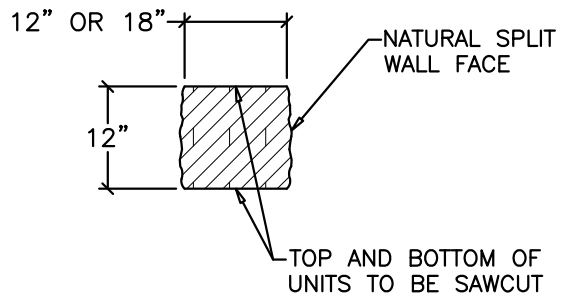
## **SPECIFICATIONS**

Sheet 3 of 12

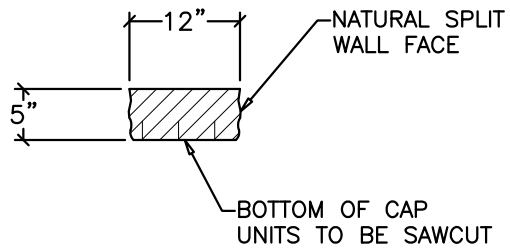
Date: April 2009



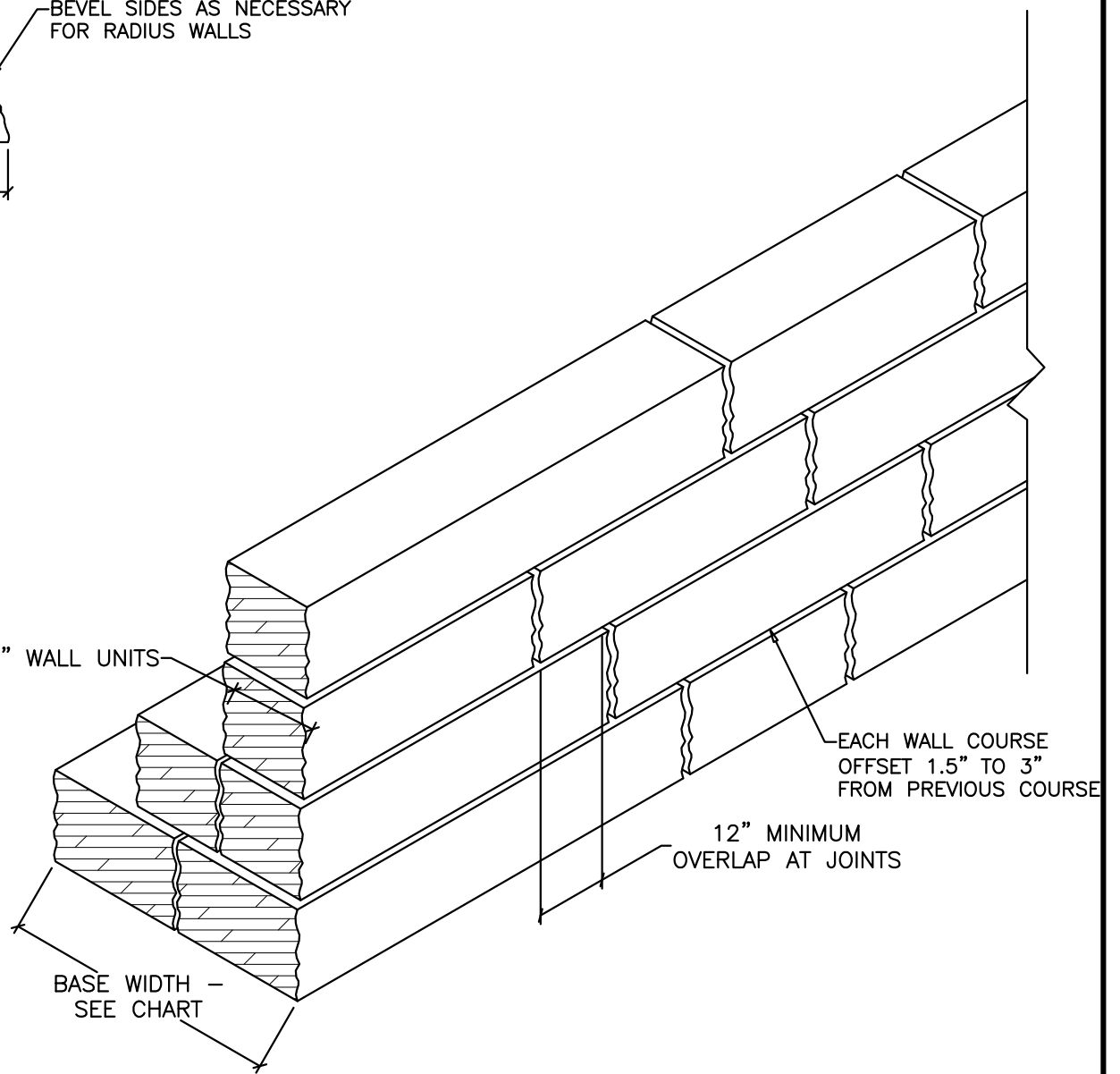
PLAN



WALL UNIT SECTION

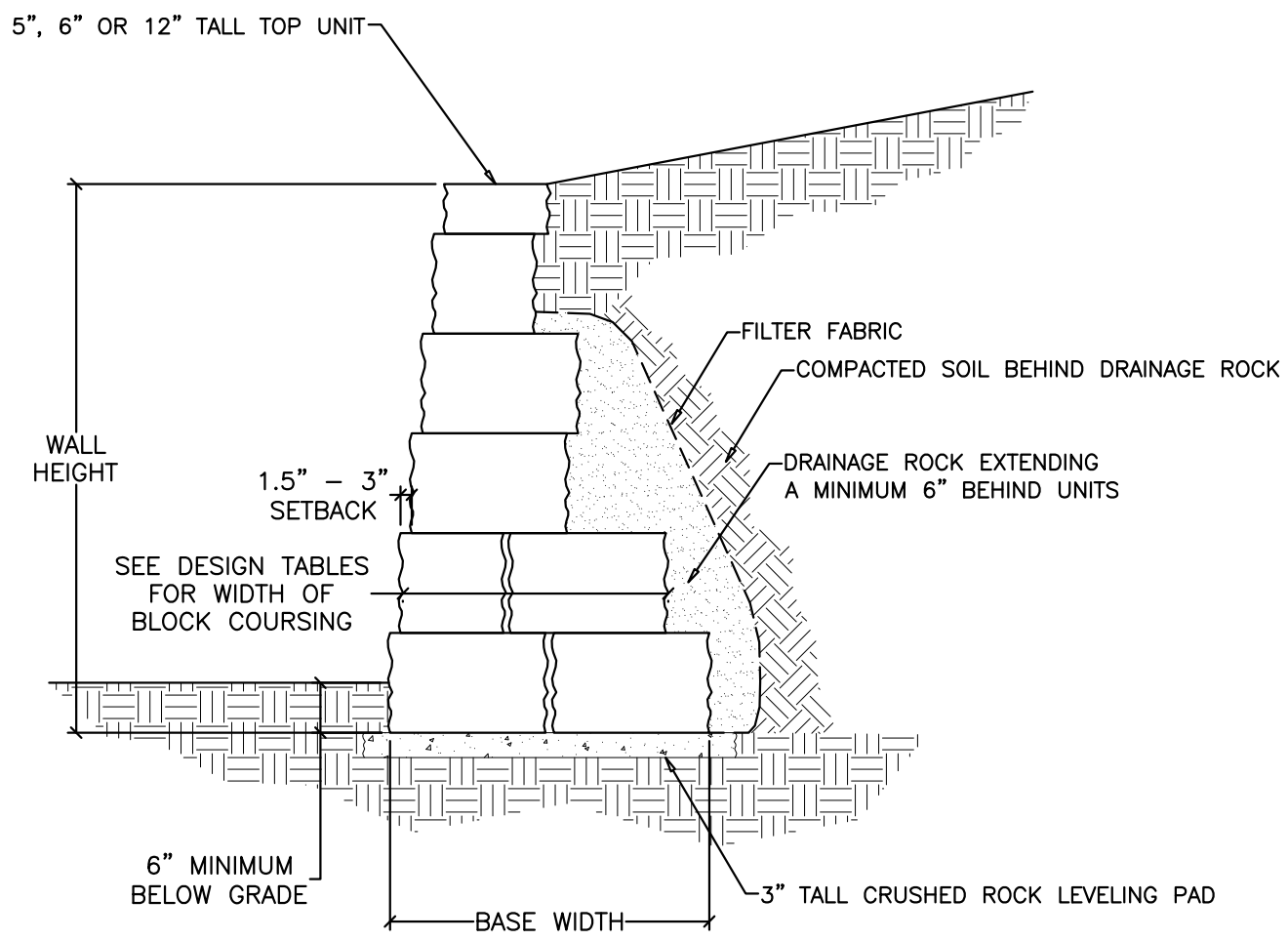


CAP UNIT SECTION



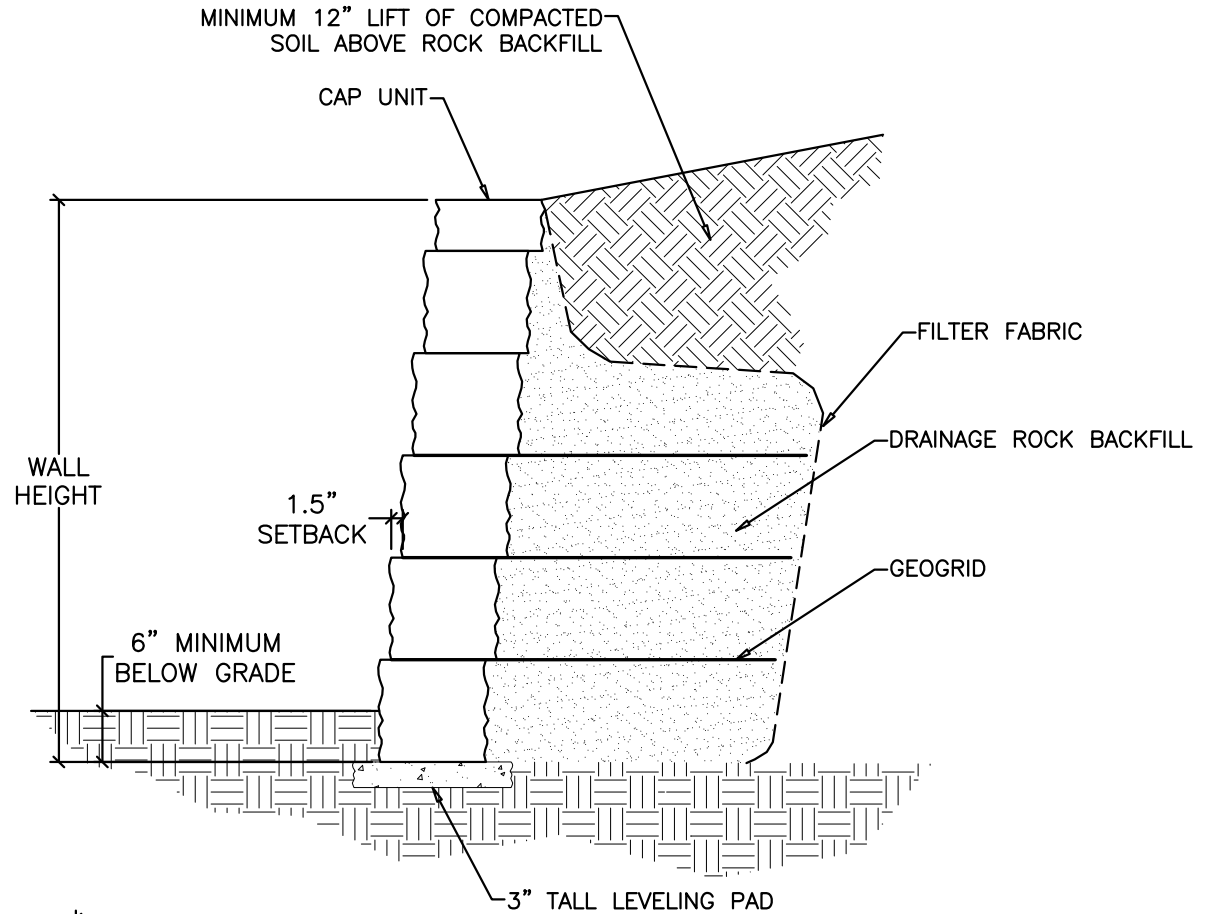
Earthworks, Inc.  
 4287 N. Hwy 51  
 Perryville, MO 63775  
 573/547-9097  
 573/547-6067 fax

<b>DETAILS</b>
Sheet 4 of 12
Date: April 2009

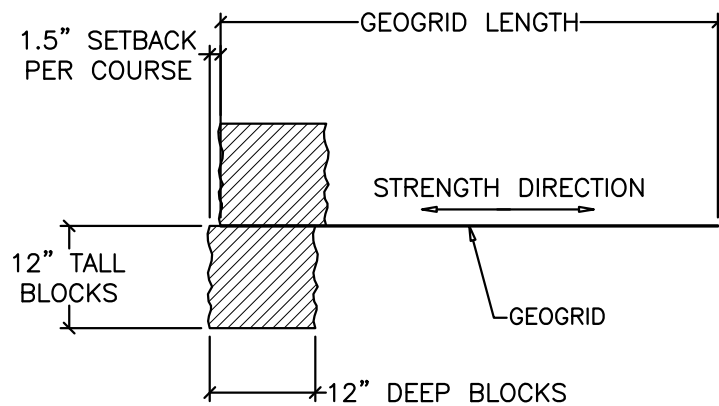


TYPICAL SECTION

Earthworks, Inc. 4287 N. Hwy 51 Perryville, MO 63775 573/547-9097 573/547-6067 fax	<b>TYPICAL SECTIONS</b>
	Sheet 5 of 12
	Date: April 2009



TYPICAL GEOGRID SECTION



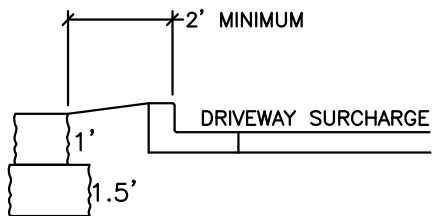
CONNECTION DETAIL

Earthworks, Inc.  
 4287 N. Hwy 51  
 Perryville, MO 63775  
 573/547-9097  
 573/547-6067 fax

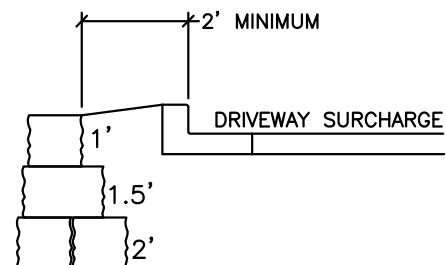
**TYPICAL SECTIONS**

Sheet 6 of 12

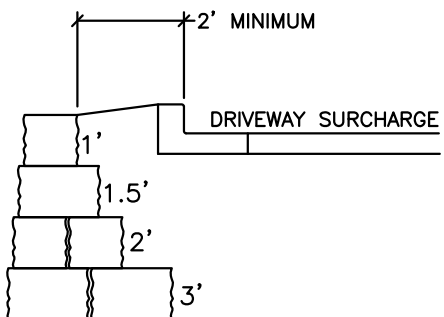
Date: April 2009



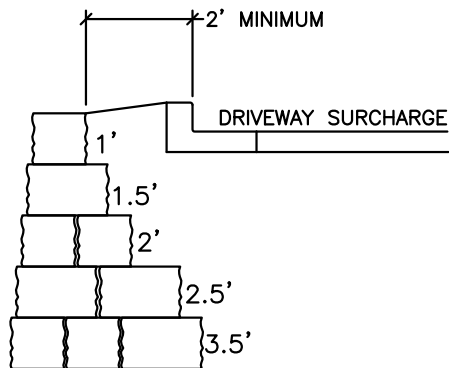
**2' TALL WALL**



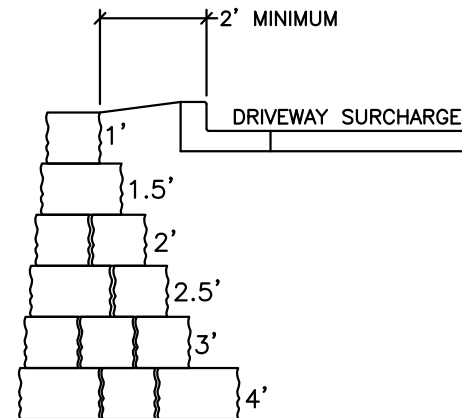
**3' TALL WALL**



**4' TALL WALL**



**5' TALL WALL**



**6' TALL WALL**

**TYPICAL SECTION – DRIVEWAY SURCHARGE**

NOT TO SCALE

X' = WIDTH OF BLOCK  
AT EACH WALL COURSE

Earthworks, Inc.  
4287 N. Hwy 51  
Perryville, MO 63775  
573/547-9097  
573/547-6067 fax

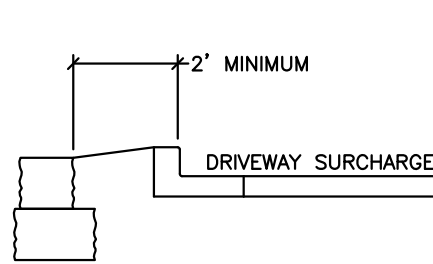
**HORIZONTAL GRADE**

Sheet 7 of 12

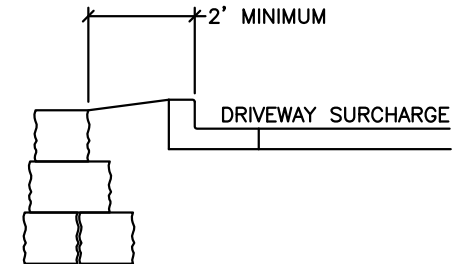
Date: April 2009

**NOTES:**

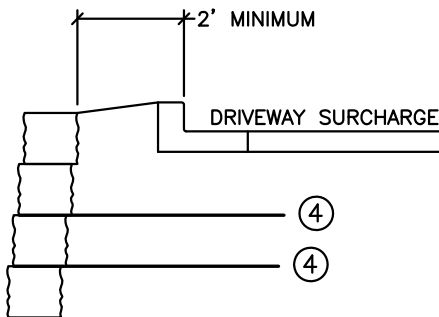
1. ALL GEOGRIDS TO BE MIRAGRID 2XT OR STRATAGRID SG150.
2. SWIMMING POOLS TO BE LOCATED A MINIMUM 8' BEHIND WALL UNITS.
3. WALL HEIGHT MEASURED FROM TOP OF LEVELING PAD.
4. SEE TYPICAL SECTION DETAIL FOR BACKFILL REQUIREMENTS AND CONSTRUCTION NOTES.



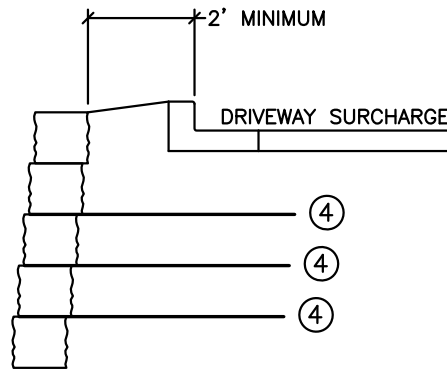
**2' TALL WALL**



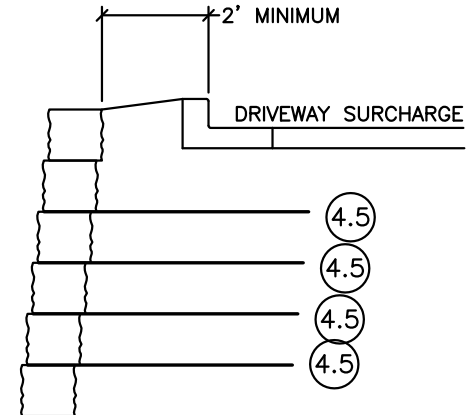
**3' TALL WALL**



**4' TALL WALL**



**5' TALL WALL**



**6' TALL WALL**

**TYPICAL SECTION – DRIVEWAY SURCHARGE**

NOT TO SCALE

(X) = LENGTH OF GEOGRID IN FEET

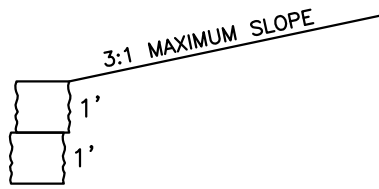
Earthworks, Inc.  
 4287 N. Hwy 51  
 Perryville, MO 63775  
 573/547-9097  
 573/547-6067 fax

**HORIZONTAL GRADE**

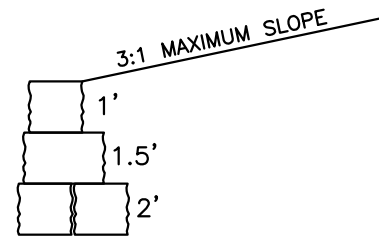
Sheet 8 of 12

Date: April 2009

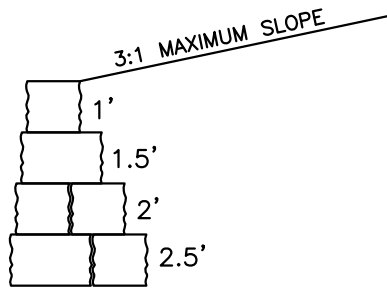




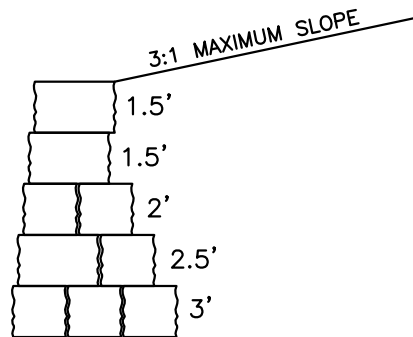
**2' TALL WALL**



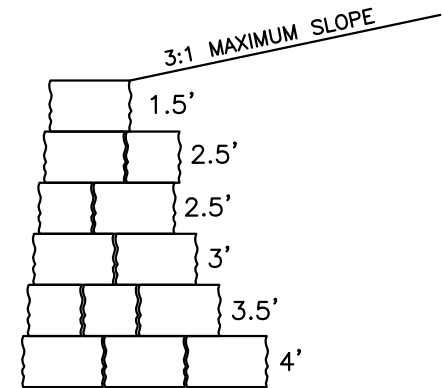
**3' TALL WALL**



**4' TALL WALL**



**5' TALL WALL**



**6' TALL WALL**

**TYPICAL SECTION – SLOPING FILL**

NOT TO SCALE

X' = WIDTH OF BLOCK  
AT EACH WALL COURSE

Earthworks, Inc.  
4287 N. Hwy 51  
Perryville, MO 63775  
573/547-9097  
573/547-6067 fax

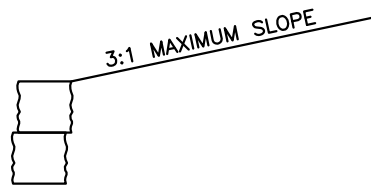
**SLOPING GRADE**

Sheet 9 of 12

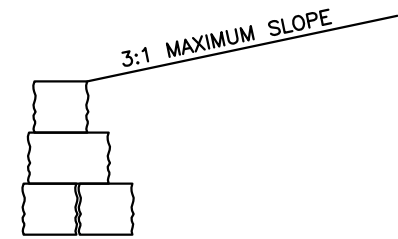
Date: April 2009

NOTES:

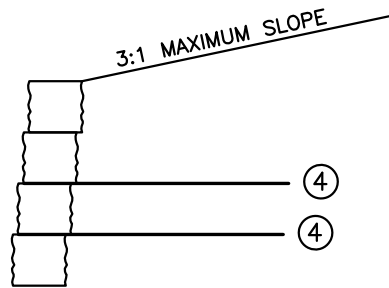
1. ALL GEOGRIDS TO BE MIRAGRID 2XT OR STRATAGRID SG150.
2. SWIMMING POOLS TO BE LOCATED A MINIMUM 8' BEHIND WALL UNITS.
3. WALL HEIGHT MEASURED FROM TOP OF LEVELING PAD.
4. SEE TYPICAL SECTION DETAIL FOR BACKFILL REQUIREMENTS AND CONSTRUCTION NOTES.



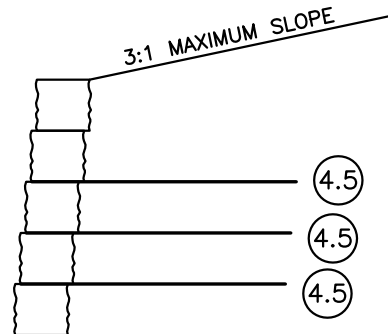
2' TALL WALL



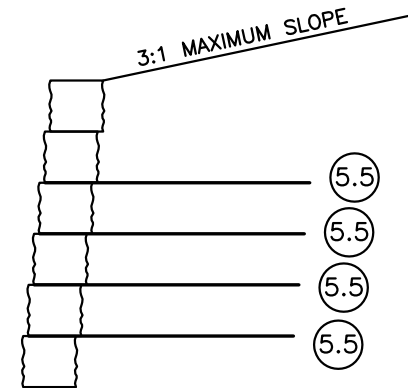
3' TALL WALL



4' TALL WALL



5' TALL WALL



6' TALL WALL

**TYPICAL SECTION – SLOPING FILL**

NOT TO SCALE

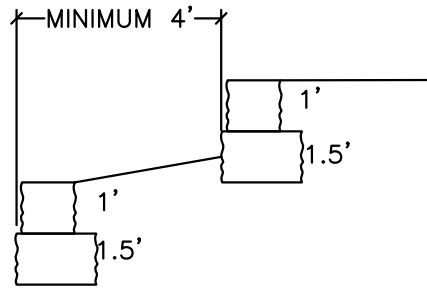
⊗ = LENGTH OF GEOGRID IN FEET

Earthworks, Inc.  
 4287 N. Hwy 51  
 Perryville, MO 63775  
 573/547-9097  
 573/547-6067 fax

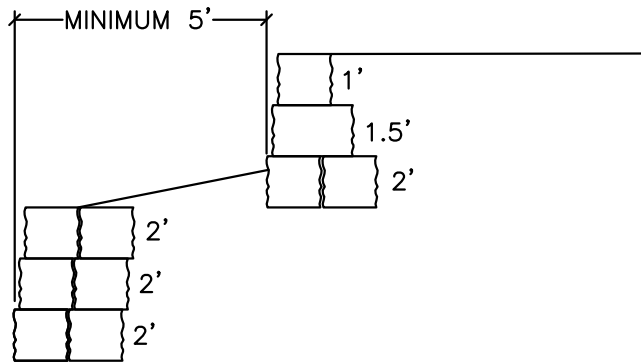
**SLOPING GRADE**

Sheet 10 of 12

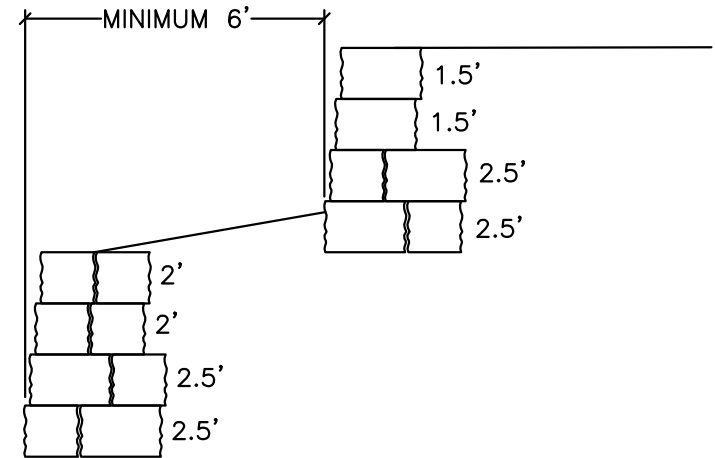
Date: April 2009



**2' TIERED WALLS**



**3' TIERED WALLS**



**4' TIERED WALLS**

X' = WIDTH OF BLOCK  
AT EACH WALL COURSE

**TYPICAL SECTION – TIERED WALLS**  
NOT TO SCALE

Earthworks, Inc.  
4287 N. Hwy 51  
Perryville, MO 63775  
573/547-9097  
573/547-6067 fax

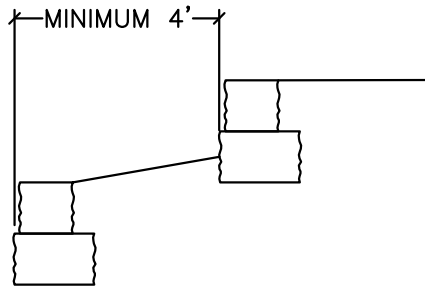
**TIERED WALL**

Sheet 11 of 12

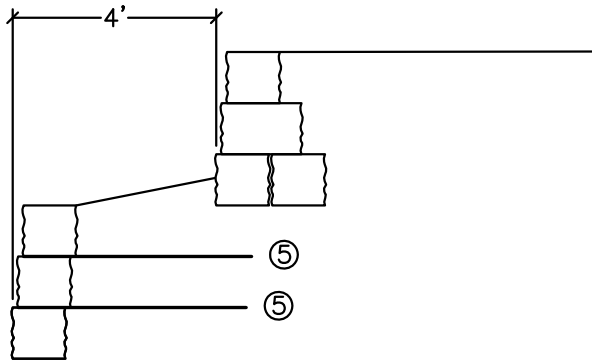
Date: April 2009

NOTES:

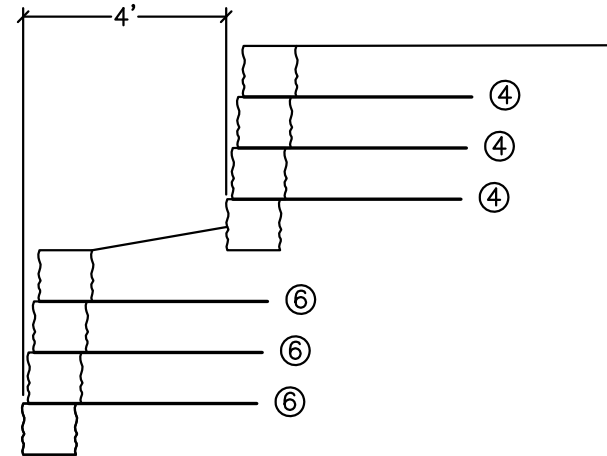
1. ALL GEOGRIDS TO BE MIRAGRID 2XT OR STRATAGRID SG150.
2. SWIMMING POOLS TO BE LOCATED A MINIMUM 8' BEHIND WALL UNITS.
3. WALL HEIGHT MEASURED FROM TOP OF LEVELING PAD.
4. SEE TYPICAL SECTION DETAIL FOR BACKFILL REQUIREMENTS AND CONSTRUCTION NOTES.



**2' TIERED WALLS**



**3' TIERED WALLS**



**4' TIERED WALLS**

(X) = LENGTH OF GEOGRID IN FEET

**TYPICAL SECTION – TIERED WALLS**  
NOT TO SCALE

Earthworks, Inc.  
4287 N. Hwy 51  
Perryville, MO 63775  
573/547-9097  
573/547-6067 fax

**TIERED WALL**

Sheet 12 of 12

Date: April 2009