

Detail shown is conceptual only and should not be used for construction without the seal of a local qualified engineer.

## NO SLOPE OR SURCHARGE (WALL HAS A LEVEL TOE AND CREST, AND NO LOADS)

	CLAY AND SILT SOIL $\phi = 26^\circ$ $\gamma = 120$ pcf (19 kN/cubic meter)	SILTY/CLAYEY SAND SOIL $\phi = 30^\circ$ $\gamma = 120$ pcf (19 kN/cubic meter)	CLEAN SAND AND GRAVEL SOIL $\phi = 34^\circ$ $\gamma = 120$ pcf (19 kN/cubic meter)
H			
2.0 FT. (600mm)	NO REINFORCEMENT REQUIRED 	NO REINFORCEMENT REQUIRED 	NO REINFORCEMENT REQUIRED 
3.0 FT. (900mm)		NO REINFORCEMENT REQUIRED 	NO REINFORCEMENT REQUIRED 
4.0 FT. (1200mm)			NO REINFORCEMENT REQUIRED 
5.0 FT. (1500mm)			
6.0 FT. (1800mm)			
7.0 FT. (2100mm)			
8.0 FT. (2400mm)			

These estimating charts were developed for use with the following reinforcements: Mirafi 2XT or stronger, Huesker 30 or stronger, Strata 150 or stronger, and Synten SF 20 or stronger.

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### SURCHARGE (LOAD ON THE WALL)

	CLAY AND SILT SOIL $\phi = 26^\circ$ $\gamma = 120$ pcf (19 kN/cubic meter)	SILTY/CLAYEY SAND SOIL $\phi = 30^\circ$ $\gamma = 120$ pcf (19 kN/cubic meter)	CLEAN SAND AND GRAVEL SOIL $\phi = 34^\circ$ $\gamma = 120$ pcf (19 kN/cubic meter)
2.0 FT. (600mm)			NO REINFORCEMENT REQUIRED
3.0 FT. (900mm)			
4.0 FT. (1200mm)			
5.0 FT. (1500mm)			
6.0 FT. (1800mm)			
7.0 FT. (2100mm)			
8.0 FT. (2400mm)			

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## 3:1 (HORIZONTAL TO VERTICAL) CREST SLOPE

	CLAY AND SILT SOIL $\phi = 26^\circ$ $\gamma = 120$ pcf (19 kN/cubic meter)	SILTY/CLAYEY SAND SOIL $\phi = 30^\circ$ $\gamma = 120$ pcf (19 kN/cubic meter)	CLEAN SAND AND GRAVEL SOIL $\phi = 34^\circ$ $\gamma = 120$ pcf (19 kN/cubic meter)
H			
2.0 FT. (600mm)		NO REINFORCEMENT REQUIRED	NO REINFORCEMENT REQUIRED
3.0 FT. (900mm)			NO REINFORCEMENT REQUIRED
4.0 FT. (1200mm)			
5.0 FT. (1500mm)			
6.0 FT. (1800mm)			
7.0 FT. (2100mm)			
8.0 FT. (2400mm)			

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# 42 DIAMOND PRO™ ESTIMATING CHARTS

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## NO SLOPE OR SURCHARGE

CLAY AND SILT SOIL F = 26kn g = 120 pcf (19 kN/cubic meter)	SILTY/CLAYEY SAND SOIL F = 30kn g = 120 pcf (19 kN/cubic meter)	CLEAN SAND AND GRAVEL SOIL F = 34kn g = 120 pcf (19 kN/cubic meter)
<p>NO SLOPE OR SURCHARGE</p> <p>REINFORCED SOIL ZONE</p>	<p>NO SLOPE OR SURCHARGE</p> <p>REINFORCED SOIL ZONE</p>	<p>NO SLOPE OR SURCHARGE</p> <p>REINFORCED SOIL ZONE</p>
<p>4 COURSES 2' 6" - 2' 8" (800mm)</p> <p>NO REINFORCEMENT REQUIRED &lt; 4 COURSES</p>	<p>4 COURSES 2' 6" - 2' 8" (800mm)</p> <p>NO REINFORCEMENT REQUIRED &lt; 4 COURSES</p>	<p>4 COURSES 2' 6" - 2' 8" (800mm)</p> <p>NO REINFORCEMENT REQUIRED &lt; 4 COURSES</p>
<p>6 COURSES 3' 9" - 4' 0" (1200mm)</p> <p>4.5' (1350mm) 4.0' (1200mm)</p>	<p>6 COURSES 3' 9" - 4' 0" (1200mm)</p> <p>4.5' (1350mm) 4.0' (1200mm)</p>	<p>6 COURSES 3' 9" - 4' 0" (1200mm)</p> <p>4.0' (1200mm) 4.0' (1200mm)</p>
<p>8 COURSES 5' 0" - 5' 4" (1600mm)</p> <p>5.5' (1650mm) 4.0' (1200mm) 4.0' (1200mm)</p>	<p>8 COURSES 5' 0" - 5' 4" (1600mm)</p> <p>5.0' (1500mm) 4.0' (1200mm) 4.0' (1200mm)</p>	<p>8 COURSES 5' 0" - 5' 4" (1600mm)</p> <p>4.5' (1350mm) 4.0' (1200mm) 4.0' (1200mm)</p>
<p>10 COURSES 6' 3" - 6' 8" (2000mm)</p> <p>6.0' (1800mm) 5.0' (1500mm) 5.0' (1500mm)</p>	<p>10 COURSES 6' 3" - 6' 8" (2000mm)</p> <p>5.5' (1650mm) 4.5' (1350mm) 4.5' (1350mm)</p>	<p>10 COURSES 6' 3" - 6' 8" (2000mm)</p> <p>5.0' (1500mm) 4.0' (1200mm) 4.0' (1200mm)</p>
<p>12 COURSES 7' 0" 6" - 8' 0" (2400mm)</p> <p>7.0' (2100mm) 6.0' (1800mm) 5.0' (1500mm) 5.0' (1500mm)</p>	<p>12 COURSES 7' 0" 6" - 8' 0" (2400mm)</p> <p>6.5' (1950mm) 5.0' (1500mm) 5.0' (1500mm) 5.0' (1500mm)</p>	<p>12 COURSES 7' 0" 6" - 8' 0" (2400mm)</p> <p>6.0' (1800mm) 5.0' (1500mm) 5.0' (1500mm) 5.0' (1500mm)</p>
<p>14 COURSES 8' 9" - 9' 4" (2800mm)</p> <p>8.0' (2400mm) 7.0' (2100mm) 6.0' (1800mm) 6.0' (1800mm) 6.0' (1800mm)</p>	<p>14 COURSES 8' 9" - 9' 4" (2800mm)</p> <p>7.0' (2100mm) 6.0' (1800mm) 6.0' (1800mm) 6.0' (1800mm) 6.0' (1800mm)</p>	<p>14 COURSES 8' 9" - 9' 4" (2800mm)</p> <p>6.5' (1950mm) 6.0' (1800mm) 6.0' (1800mm) 6.0' (1800mm) 6.0' (1800mm)</p>

These estimating charts were developed for use with the following reinforcements: Mirafi 2XT or stronger, Huesker 35 or stronger, Strata 200 or stronger, and Synten SF 35 or stronger.

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SURCHARGE

CLAY AND SILT SOIL	SILTY/CLAYEY SAND SOIL	CLEAN SAND AND GRAVEL SOIL
<p>II</p> <p>F = 2600 g = 120 pcf (19 kN/cubic meter)</p> <p>100 PSF (5 kPa) SURCHARGE</p> <p>REINFORCED SOIL ZONE</p>	<p>II</p> <p>F = 3000 g = 120 pcf (19 kN/cubic meter)</p> <p>100 PSF (5 kPa) SURCHARGE</p> <p>REINFORCED SOIL ZONE</p>	<p>II</p> <p>F = 3400 g = 120 pcf (19 kN/cubic meter)</p> <p>100 PSF (5 kPa) SURCHARGE</p> <p>REINFORCED SOIL ZONE</p>
<p>4 COURSES</p> <p>2' 6" - 2' 8" (800mm)</p>	<p>4 COURSES</p> <p>2' 6" - 2' 8" (800mm)</p>	<p>4 COURSES</p> <p>2' 6" - 2' 8" (800mm)</p>
<p>6 COURSES</p> <p>3' 9" - 4' 0" (1200mm)</p>	<p>6 COURSES</p> <p>3' 9" - 4' 0" (1200mm)</p>	<p>6 COURSES</p> <p>3' 9" - 4' 0" (1200mm)</p>
<p>8 COURSES</p> <p>5' 0" - 5' 4" (1600mm)</p>	<p>8 COURSES</p> <p>5' 0" - 5' 4" (1600mm)</p>	<p>8 COURSES</p> <p>5' 0" - 5' 4" (1600mm)</p>
<p>10 COURSES</p> <p>6' 3" - 6' 8" (2000mm)</p>	<p>10 COURSES</p> <p>6' 3" - 6' 8" (2000mm)</p>	<p>10 COURSES</p> <p>6' 3" - 6' 8" (2000mm)</p>
<p>12 COURSES</p> <p>7' 6" - 8' 0" (2400mm)</p>	<p>12 COURSES</p> <p>7' 6" - 8' 0" (2400mm)</p>	<p>12 COURSES</p> <p>7' 6" - 8' 0" (2400mm)</p>
<p>14 COURSES</p> <p>8' 9" - 9' 4" (2800mm)</p>	<p>14 COURSES</p> <p>8' 9" - 9' 4" (2800mm)</p>	<p>14 COURSES</p> <p>8' 9" - 9' 4" (2800mm)</p>

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3:1 CREST SLOPE

CLAY AND SILT SOIL	SILTY/CLAYEY SAND SOIL	CLEAN SAND AND GRAVEL SOIL
<p>II F = 2600 g = 120 pcf (19 kN/cubic meter)</p>	<p>II F = 3000 g = 120 pcf (19 kN/cubic meter)</p>	<p>II F = 3400 g = 120 pcf (19 kN/cubic meter)</p>
<p>4 COURSES 2' 6" - 2' 8" (800mm)</p>	<p>4 COURSES 2' 6" - 2' 8" (800mm)</p> <p>NO REINFORCEMENT REQUIRED &lt; 4 COURSES</p>	<p>4 COURSES 2' 6" - 2' 8" (800mm)</p> <p>NO REINFORCEMENT REQUIRED &lt; 4 COURSES</p>
<p>6 COURSES 3' 9" - 4' 0" (1200mm)</p>	<p>6 COURSES 3' 9" - 4' 0" (1200mm)</p>	<p>6 COURSES 3' 9" - 4' 0" (1200mm)</p>
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Concrete block walls, like everything else on a property, require care and maintenance. With any newly built retaining wall, there are maintenance aspects that are important to watch for after the wall is completed. Provide this information to the property owner when a project is complete.

Basic wall maintenance areas:

- Site grading
- Surface treatments
- Wall performance
- Weed growth
- Salt spray

## SITE CONSIDERATIONS

Every newly built retaining wall has soils or backfills placed behind, and sometimes below, the wall and compacted during construction. Some extra settling is quite common after the wall is completed. Inspecting the wall each spring for any unusual or excessive settling can save you from a potentially large problem.

All retaining walls should be designed and built to route water around or over the wall face. Once an area behind the wall begins to settle, water goes to work to enlarge that area. If a low spot is neglected behind a wall, each new rainfall will collect water and work its way down behind the wall. If the area behind the wall is flat, this can create a pool above the wall, and this pooling effect turns the soils soft. If the wall wasn't designed or engineered to hold up the added weight, a blowout could occur.

Preventing this problem is easy. Inspect walls each spring. Look for low spots and areas that have settled. Pull back the landscape mulch or sod on the surface and add enough fill to bring the drainage back to its proper level. This will ensure a lifetime of performance from the wall.

## LANDSCAPE MAINTENANCE

Once a new retaining wall is completed, the surface areas surrounding the wall that were disturbed during construction are typically finished with some type of landscape treatment. This might include paving, landscape plantings, mulch, sod or seed for turf, or some ground cover. These surface treatments provide an important function for the wall, as they capture and route the water from each rainfall.

These surface treatments will need to be checked each spring until they are completely established. Walk the site carefully, and look for areas that aren't in proper condition. Replace bad sod, reseed bare areas, and work with the ground covers to encourage growth and coverage. Look for areas of erosion, ruts and channels on the surface, and relandscape as necessary. A little work each spring in the areas surrounding the retaining wall will prevent erosion from becoming a problem and will also enhance the landscape around the wall.

## WEED GROWTH

As with concrete and asphalt pavement, a segmental retaining wall can let an occasional weed grow in its face. By plucking the odd weed that may have found its way into the wall, walls can be kept weed-free. Walls may also be sprayed once annually just like lawns.

## WALL INSPECTION

Retaining walls are made to last a long time. The concrete units are designed and produced to handle tough winter weather and long, hot summers. They won't rot or decay.

Each spring, complete an inspection of the actual wall. Take a few minutes to check out the wall, including the blocks and caps. Begin by looking for any movement in the wall from the previous season. If drainage or erosion problems are not corrected, some wall movement could occur.

If a soft spot was not properly compacted at the wall base, you could see some minor settling of the wall. Minor settling will not hurt the structural integrity of the wall. However, if it happens, it is possible to unstack the blocks in that area, raise the settled spot at the wall base and restack the blocks.

Check walls each spring for bulges or rotation. Again, this can only happen if the wall was not properly installed, but it is prudent to watch over the wall performance. At the sign of any significant forward movement or rotation, get a professional contractor or qualified engineer to evaluate the movement and determine the cause.



Avoid deicing salt spray to help extend the life of any wall.

### SALT SPRAY

In northern climates, use of deicing salts around a wall could cause surface damage to the blocks or caps. Look for pockmarks or spalling on the blocks in areas where salts are used for winter ice control.

Avoid using salt deicers on or around retaining or Free Standing Walls. If deicers are used in areas around walls, contact a local building materials outlet for a deicer that will not harm concrete. In cases where salt spray may exist, design the wall in such a manner that snow melt and snowbanks containing the salted snow are directed away from the wall.

### MAINTENANCE TIPS

Follow these simple maintenance steps to ensure long-term performance from concrete block:

- Thoroughly inspect the wall every year.
- Correct any settling or grading problems around the wall.
- Maintain the landscape surfaces around the wall.
- Take notice of any wall movement — settling, bulging or rotation — and then take proper corrective measures.
- Control any weed growth as necessary.
- Avoid use of salts as deicers around the wall.



Inspect walls every spring and maintain the landscape to maximize the life of any installation.

## EFFLORESCENCE

There is a chance that a few weeks or months after a wall installation, a white haze may appear on the surface of the blocks. This is known as efflorescence. There is no reason to be concerned because the blocks are experiencing a natural process. The condition will usually correct itself with time and exposure to the elements.

### THE CHEMISTRY OF EFFLORESCENCE

All concrete products contain cement which produces lime or water-soluble calcium oxide. Lime can also be in the aggregates or soil. Although concrete segmental retaining wall blocks are solid, strong and very dense, they contain millions of microscopic capillaries that run from the interior to the surface. Moisture from rain, sprinkler systems or dew enters these microscopic capillaries. Calcium oxide inside the block reacts with the water in the capillaries and forms calcium hydroxide. This rises to the surface, reacts with the carbon dioxide in the air and forms a white haze of calcium carbonate. When moisture on the surface evaporates, the white haze of efflorescence becomes visible.

### ELIMINATING EFFLORESCENCE

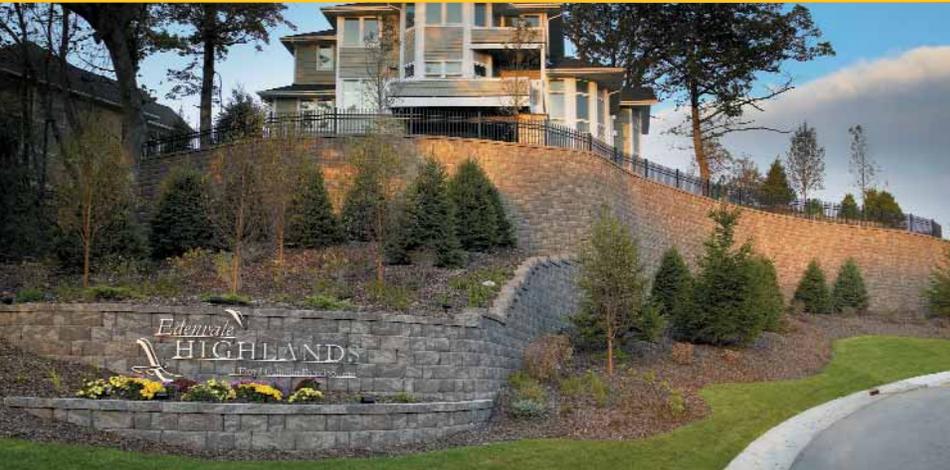
Most producers of segmental retaining wall blocks put chemical additives in the concrete to reduce the likelihood of efflorescence. In most cases, they do the job. However, completely eliminating the chance of efflorescence isn't possible because it's a natural by-product of hardened concrete. It will stop when no more calcium hydroxide is available to move to the surface.

### REMOVING EFFLORESCENCE

There are cleaners available that can remove efflorescence. Consult your dealer to find an appropriate cleaner. Cleaning should be performed immediately after efflorescence has appeared. It may reappear as long as the chemical reaction continues, and cleaning may need to be done until efflorescence has stopped.

Most cleaners contain acid and detergents; be sure to follow all label directions and environmental regulations. Careless or improper cleaning can result in injury, damage and discoloration on the surface of the concrete block. Always conduct a test in a small, inconspicuous area before applying any cleaner to the entire wall.





For complete installation instructions, refer to the *Installation Video* or contact your local licensed Anchor Wall Systems manufacturer or Anchor Wall Systems.

In the United States, Anchor Wall Systems products are backed by a Limited Warranty. For a complete copy of the Anchor Wall Systems Warranty, visit your local distributor or manufacturer or contact Anchor Wall Systems at 1-877-295-5415 or [www.anchorwall.com](http://www.anchorwall.com).

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