



KEYSTONE® RETAINING WALLS

For DIY projects



Creating captivating homes and landscapes

Welcome to Firth Keystone® Retaining Wall Range

Creating captivating homes and landscapes

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Firth Keystone Retaining Walls

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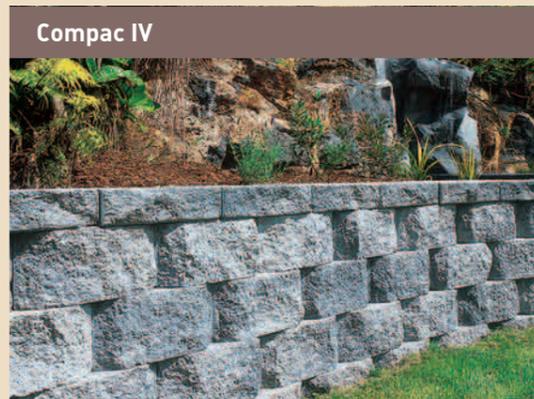
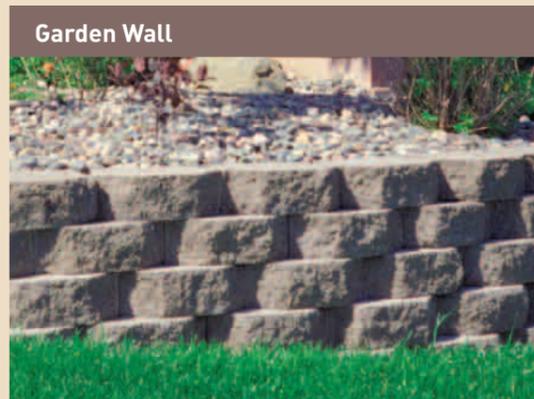
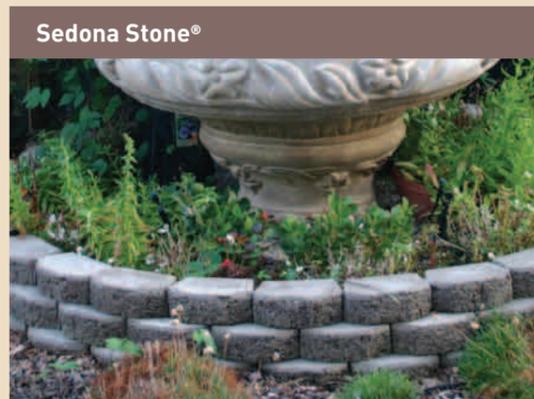
How to Section

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Keystone® Retaining Wall System™

For over two decades Keystone Retaining Wall Systems have set the bar for excellence, innovation, and technology within the retaining wall industry.

Firth is proud to bring you this cutting edge retaining wall system. With elegant designs and exceptional performance, the Keystone Landscape range is lightweight, easy to handle and requires no special tools. Keystone products are perfect for the DIYer, offering virtually endless design possibilities and distinctive style that will enhance any landscape or home.



Cover images: Top - Country Manor
Bottom left - Garden Wall, Bottom right - Sedona Stone

How to choose a wall

	Country Manor**	Garden Wall	Sedona Stone	Compac IV**
Max height domestic	0.6m near vertical 0.9m with batter setback	0.9m	0.5m	1.2m*
Straight wall	✓	✓	✓	✓
Curved walls	✓	✓	✓	✓
Near vertical	✓	✗	✗	✓
Battered/Setback	✓	✓	✓	✓
Corners	✓	✗	✗	✓
Step option	✓	✗	✗	✓
Block face size	Various	Medium	Small	Large
Per m ²	8.6 sets	33.3 units	50 units	11 units

Maximum domestic height in good soil measured from base to top of the wall. Maximum domestic height assumed good soil and gravity conditions, where seismic performance is important, in high seismic zones, reduce maximum height by one module.
*Height recommended for non specific design. We recommend contacting Firth should you require any further advice.
**Country Manor & Compac IV can be built higher when designed by a suitable, qualified engineer & combined with soil reinforcement.

Simple as 1, 2, 3...

- Step 1:** Gather ideas from what's on offer within this brochure.
- Step 2:** Use the table above to select the most suitable product for your particular application.
1. Determine the height you want to achieve.
2. Determine the design you want, curved, straight corners etc.
- Step 3:** Select your colour choice. It's important to view actual product when making your final choice as the printed colour may vary in colour to the actual product. Check at your local Firth stockist.
- Step 4:** Choose to DIY or engage a contractor. Refer to page 14 for tips on installing a retaining wall.

And don't forget...check with your council!

Before you start any landscaping or building project, it's important you make sure the finished job will comply with the appropriate building codes and council regulations. For full information on the regulations applying in your area, call the engineer's office at your local council.

Country Manor®

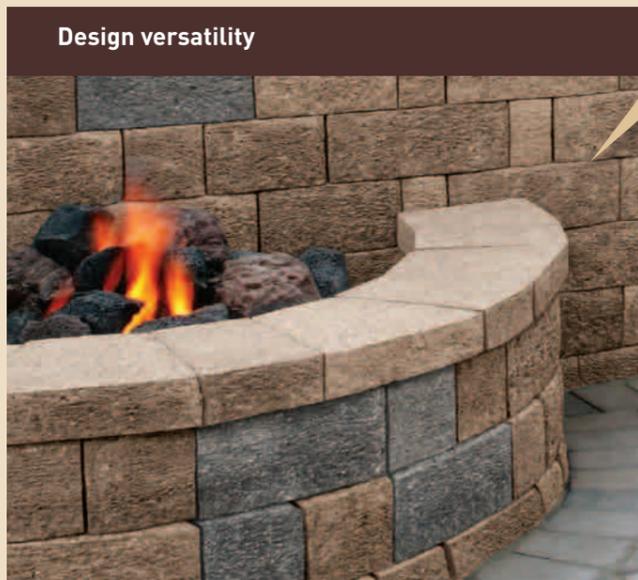
Creating captivating homes and landscapes

Random and rugged in appearance, these high strength concrete modules conjure images of Old European estate walls adding character to any project.

Features

- KeyKut finish features textured sides to each unit
- Packed in sets (large, medium, small)
- Free standing wall applications up to 600 mm high
- Build near vertical, battered setback walls
- Endless design options
- Three fibreglass pin positions for even greater design versatility

Design versatility



Different size blocks create a natural appearance. Mix and match colours available from the Firth range.

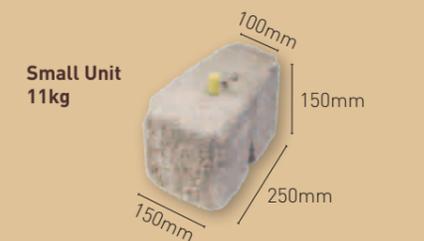
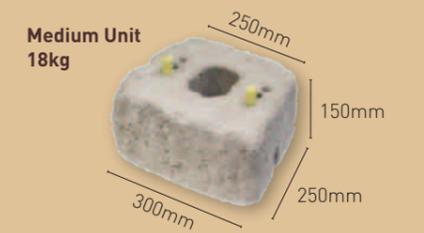
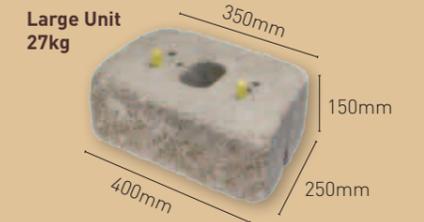
Perfect for stairs option.



Units

8.6 sets per m²
3.3 caps per lineal metre

3 units sold as a set - Set 56kg



Fibreglass Pin



Colours



Always view actual product to ensure colour

Country Manor[®]

Creating captivating homes and landscapes

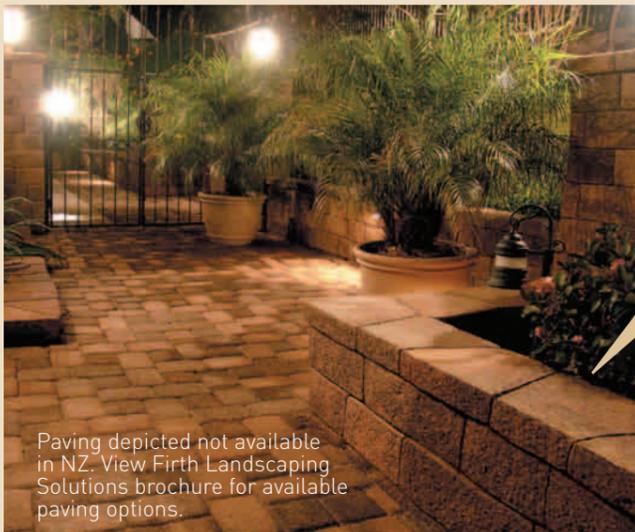
Design versatility



Create columns and freestanding walls up to 600mm high.

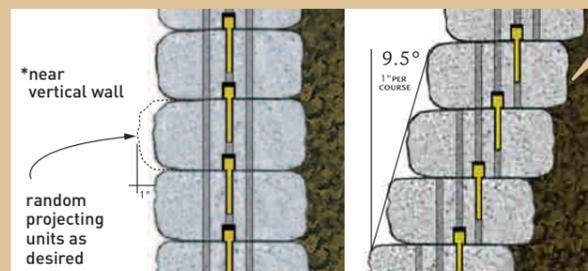
The KeyKut finish creates a rugged appearance adding character to any project.

Three pin positions for near vertical, battered setback or random options.



Due to the printing process colours and textures may vary between images depicted and actual product.

3 pin positions for even greater design versatility



Garden Wall

Creating captivating homes and landscapes

Garden Wall has the natural look of quarried stone and earth tone colours allowing it to blend in with any landscape. Perfect for landscape walls, tree rings, patio, or lawn edging and garden or flower borders.

Features

- Large size block 18kgs
- Interlock system makes for easy installation
- Build curved, straight or terraced walls
- Easy to install
- Split-Face finish

Curved Wall



Battered/Setback Wall



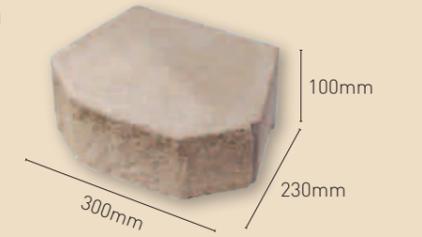
Interlocking system makes for ease of installation.

Larger blocks add character and enhance landscapes.



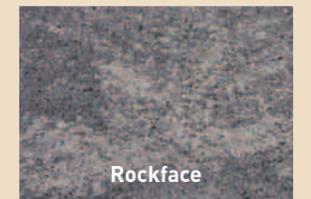
Units 33.3 units per m²

18kg



3.3 x units per lineal metre

Colours



Rockface



Sandstone



Granite*

Always view actual product to ensure colour

*Made to order, check for minimum quantities

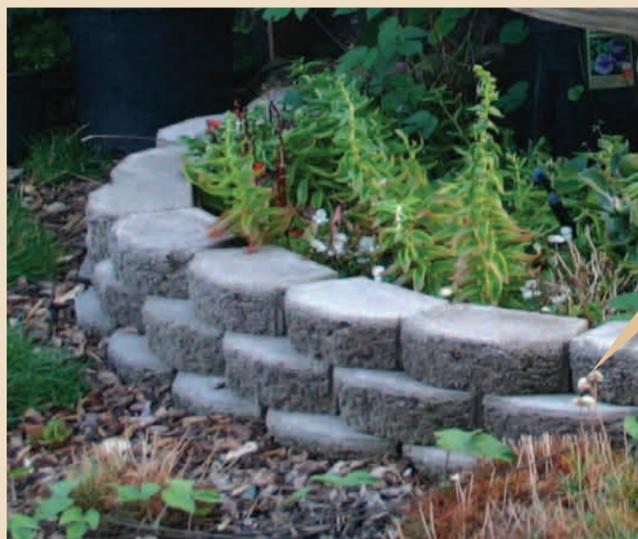
Sedona Stone[®]

Creating captivating homes and landscapes

Ideal for finishing your lawn edge, decorative tree rings, planters or raised garden beds.

Features

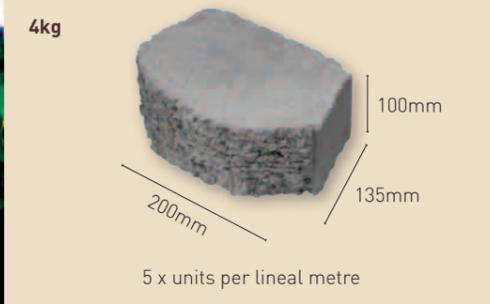
- Light weight, weighs approx 4kgs
- Build straight, curved or terraced walls
- KeyKut finish
- Secure interlock system, no tools required
- Easy to install



The KeyKut finish creates a rugged appearance adding character to any project.

Use Sedona Stone to define garden edges.

Units 50 units per m²



Colours



Rockface



Sandstone

Always view actual product to ensure colour

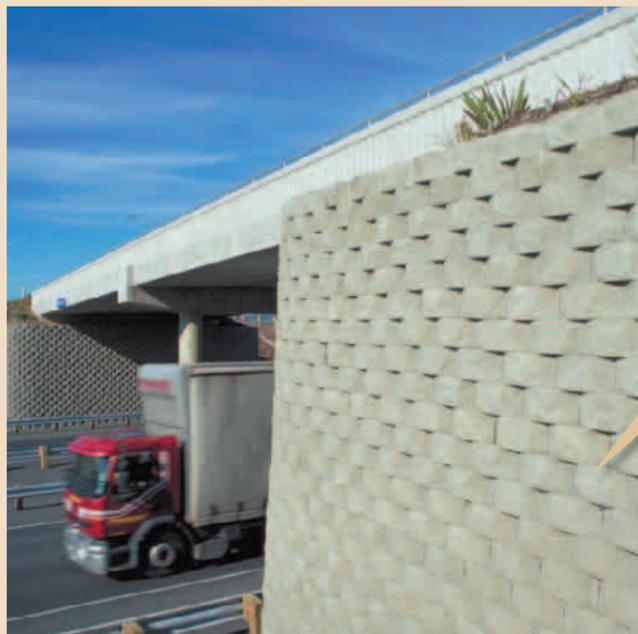
Compac IV

Creating captivating homes and landscapes

Although the Compac IV range is predominantly designed for commercial applications, the large and rugged units are also popular in residential landscaping applications.

Features

- Near vertical or two battered setback options
- Units available in a Split-Face finish
- 2 x fibreglass pin positions per unit provides accurate alignment between each row/unit
- Tri-Face/Bevelled or Straight-Face unit options



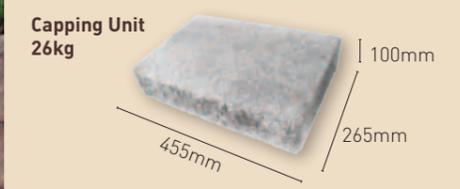
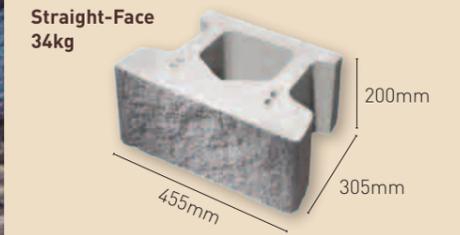
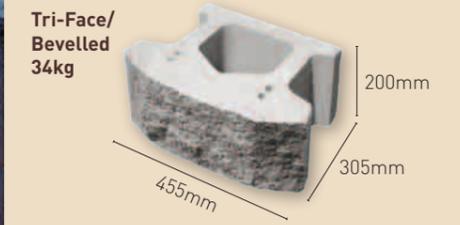
Fibreglass pin connection system allows for improved connection strength between unit, geogrid and accurate alignment of each row/unit.



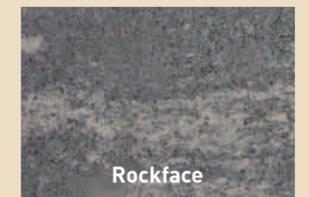
Compac IV can be built higher when specifically designed by a suitable, qualified engineer and combined with soil reinforcement.



Units 11 units per m²
2.19 caps per lineal metre



Colours



Always view actual product to ensure colour
*Made to order, check for minimum quantities

How to Section

How to Build a Country Manor Wall

Step 1: Prepare the Base Levelling Pad

Remove all the surface vegetation and debris. Do not use this material as backfill. After selecting the location and length of the wall, excavate the base trench to the designed width and depth (minimum 500mm x 300mm). Start the levelling pad at the lowest elevation along the wall alignment. Step up in 150mm increments with the base as required at elevation changes in the foundation. Level the prepared base with 150mm of well-compacted granular fill (gravel, road base, 10-20mm of crushed stone). Compact to 95% New Zealand Standard Compaction or greater, it should be well-graded and damp not wet. Do not use PEA GRAVEL or SAND for levelling pad.



Step 2: Install the Base Course

Place the first course of Country Manor units end to end (with front corners touching) on the prepared base. The long groove (receiving channel) on the unit should be placed down and the three pin holes should face up, as shown. Make sure each unit is level – side to side and front to back. Levelling the first course is critical for accurate and acceptable results. For alignment of straight walls, use a string line aligned on the unit pin holes for accuracy. Minimum embedment of base layer is 150mm below grade.



Step 3: Install the Fibreglass Pins

Place the shouldered fibreglass pins into the holes of the Country Manor units (note: place one pin only per each grouping of three holes). Place pins in the middle hole for near vertical alignment or the holes nearest the embankment for a 9.5 degree setback per course. According to the wall requirements and design, the front pin hole (towards the face of the wall) can be used randomly to allow a forward projection of a specific unit for accent and variation in the wall appearance.



Step 4: Install Fill and Compaction

Once the pins have been installed, provide 10-20mm crushed stone drainage fill behind the units to a minimum width of 300mm. Fill open spaces between units and open cavities/cores with the same drainage material. Proceed to place backfill in maximum of 150mm layers (lifts) and compact to 95% Standard Proctor with the appropriate compaction equipment. Do not use heavy ride-on compaction equipment within 1m from the back of the wall. Do not use a jumping or ramming type of compaction. Insufficient drainage may lead to instances of efflorescence.



Step 5: Install Additional Courses

Place the next course of Country Manor units over the fibreglass pins, fitting the pins into the long receiving channel recess of the units above (note: some removal of debris in the pin holes and channel may be necessary prior to placement). Push the units toward the face of the wall until they make full contact with the pins. If pins do not connect with channel but align with open core of upper unit, place drainage fill in core to provide unit interlock with pin. For near vertical alignment, centre the unit above over the centre placed pins below. Note: For straight line walls, unit faces can be alternated to create a more random look.



Step 6: Capping the Wall

Continue all steps until ready to place the wall cap. Clean off the last course in preparation for the cap or coping to finalise the wall. With units dry and clean, use construction adhesive for a mechanical bond. Install the 75mm capping unit, architectural precast concrete or cut stone as a coping element. Cap may be flush or overhanging as required by aesthetics and design.



How to Build a wall with Garden Wall or a Sedona Stone

Step 1: Prepare the Site

Start by digging a shallow trench 100mm deep x 300mm wide. Cut through and remove and sod, roots or large rocks. For organic loam soils, dig 100mm deeper and add a levelling pad of sand or gravel, it should be well-graded and damp not wet. Compact and level the soil to receive the first course of Garden Wall.



Step 2: Set the Base Course

Place and level the first Garden Wall unit. Level each additional unit on the base course as you place it, making sure that the outside edges touch. If your wall contains both straight and curved areas, start with a straight area and build into the curves. Complete the base course before proceeding with the second course.



Step 3: Stack and Fill

Starting with the straight areas first, begin placing the second course. Centre each Garden Wall unit, on the seams of the course below in a running bond pattern as shown. Now proceed to the next layer, backfilling as you go. For drainage behind the wall, clean gravel or crushed stone is recommended.



Helpful Hints



Garden Wall

Terraced retaining walls will let more light into an area rather than one, high wall.



Garden Wall

Raised beds showcase plants and are better for vegetable gardens in particular, as they improve drainage.



Country Manor

Always use low pressure water to clean your concrete retaining walls.



Country Manor

And don't forget... check with your council!

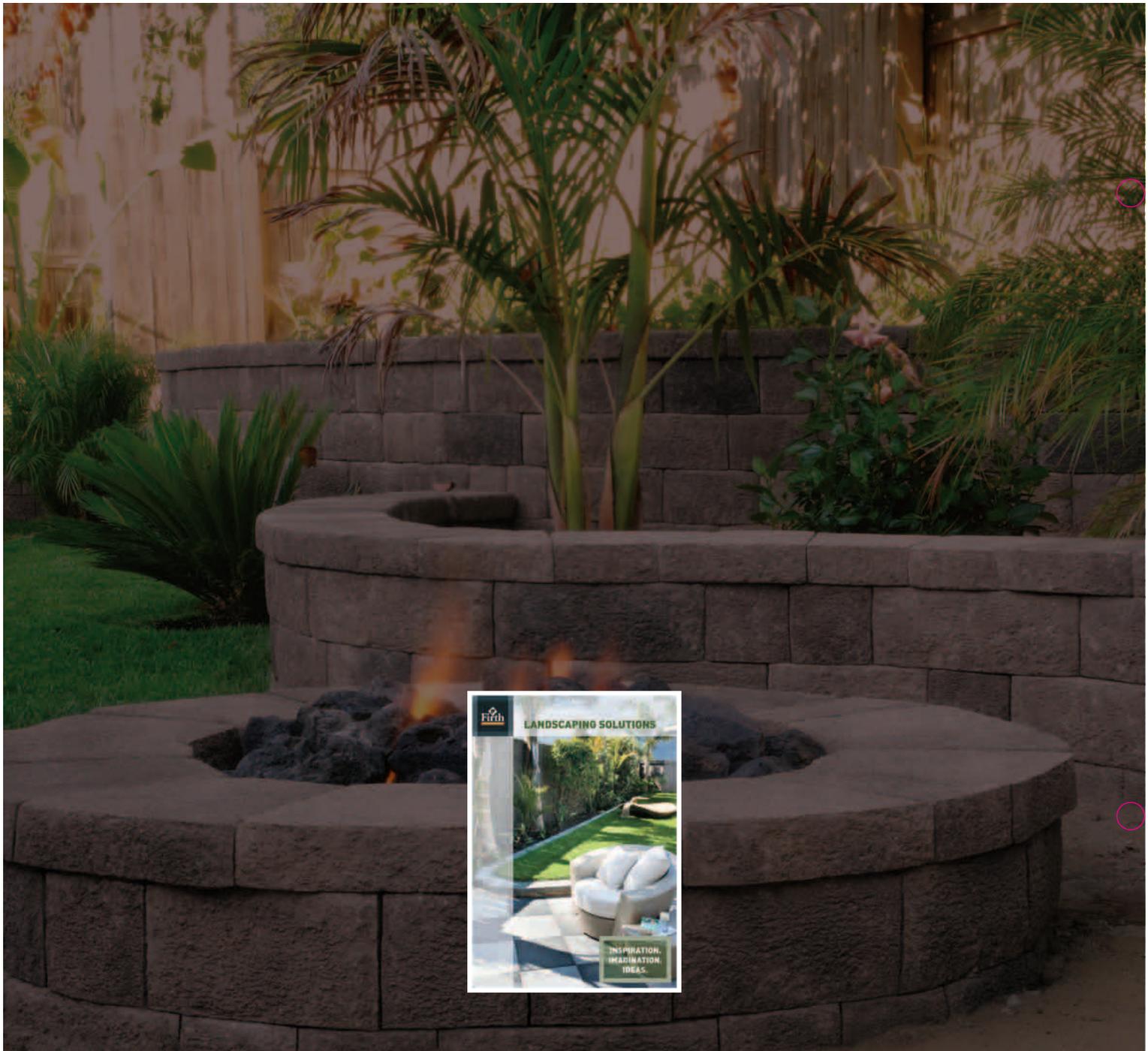
Before you start any landscaping or building project, it's important you make sure the finished job will comply with the appropriate building codes and council regulations. For full information on the regulations applying in your area, call the engineer's office at your local council.

For more great ideas and design plans go to www.firth.co.nz

Depending on the site and soil conditions; concrete retaining products may also display a "whitening" otherwise known as efflorescence. This is purely aesthetic. To minimise potential for efflorescence ensure adequate drainage is provided behind the wall as per step 4.

For further information about efflorescence please refer to the CCANZ (Concrete & Cement Association of New Zealand) information Bulletin: IB 44

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CONCRETE AND MASONRY PRODUCTS: A SUSTAINABLE BUILDING OPTION AND SOLUTION

- | | |
|--|---|
| <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Manufacturing plants operating in compliance with relevant legislation <input checked="" type="checkbox"/> All products manufactured according to ISO9001 <input checked="" type="checkbox"/> Strong focus on reducing transport impacts <input checked="" type="checkbox"/> Masonry products manufactured according to Lean principles <input checked="" type="checkbox"/> Greenstar and environmental product options available <input checked="" type="checkbox"/> Environmental Management Plans operative at all sites | <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Effective acoustic barrier and fire resistant <input checked="" type="checkbox"/> Longer and effective building life <input checked="" type="checkbox"/> Demolished concrete can be recycled, reused or as clean fill <input checked="" type="checkbox"/> Passive solar heated thermal mass provides energy efficiencies <input checked="" type="checkbox"/> Highly durable, low maintenance <input checked="" type="checkbox"/> Rainwater and process water reused in most products |
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