

A FRESH LOOK AT  
DRY STONE WALLING:  
THE EMERGENCE OF  
MODULAR CONSTRUCTION



## INTRODUCTION

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Dry stone walling is one of the oldest methods for constructing walls, fences, and loadbearing facades. In Australia, its usage dates as far back as 6,000 years;<sup>1</sup> the method being so central to our national construction history that many have called for the heritage listing and protection of areas where this has been used, such as Australia's longest continuous dry stone wall located in mid-north South Australia. The enduring popularity of dry stone wall over time and across cultures is a testament to its strength, durability, and distinctive aesthetic.

However, traditional dry stone construction is not without its limitations. Particularly in today's cost and time-driven construction industry, the main drawbacks of stone are its cost inefficiency, requirement of specialist skills and a significant time commitment to build, and its perceived design inflexibility. Often, dry stone construction is incorrectly thought of as a material suitable only for limited use in heavy walls, fences, or bridges. In response to these concerns, the architecture and construction industry has developed new, modular technology that streamlines the costs and labour entailed in stone wall construction and enhances its versatility. In this whitepaper, we explore the benefits of modular dry stone wall construction in comparison with traditional loose stacked alternatives.

## UNDERSTANDING DIFFERENT TYPES OF DRY STONE WALL CONSTRUCTION

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**Loose stone** dry stone wall construction is where crates of the selected small stone pieces are supplied to site for a stonemason to trim and lay with a cementitious adhesive onto a concrete wall structure. This process is extremely time consuming, as considerable time is required to trim the pieces of stone to fit neatly and precisely together.

A crafted stonemason is required to create high quality, good-looking walls. As loose stone dry stone construction is not a trade or skill covered in modern technical education areas, there is a serious shortage of quality tradespeople with the required skills, which in turn leads to extremely high labour costs for applications.

**Modular** construction, on the other hand, uses pre-formed modules comprising multiple stones set into a continuous concrete mortar panel. These panels are then affixed directly to the desired surface – such as an existing wall, pillar, or façade – with cementitious adhesives.

As the modules are attached as a single unit, they ensure quick and easy construction alongside a consistent, neat appearance. The standard shape and size of the modules significantly streamlines the specification and installation process, eliminating the need for specialist installation skills and minimising material waste.

“ Modular systems offer significant time and labour savings in comparison with conventional dry wall construction underlay performance. ”





## WHY CHOOSE MODULAR CONSTRUCTION?

In comparison with traditional dry wall construction, modular construction offers three key benefits: cost efficiency, fast and efficient construction, and broadened market potential due to increased design flexibility.

### Cost Efficiency

A major drawback of traditional dry stone walls is their cost in terms of both material and labour requirements. A standard 1.5m tall dry stone wall can cost up to \$400 – 500 per m<sup>2</sup><sup>ii</sup> a metre, and a 3m length of the same wall may require a full day of labour by an experienced craftsperson.<sup>iii</sup>

Conversely, modular stone walls allow rapid construction with a reduced skill requirement and have an estimated average cost of \$100 - 160 per m<sup>2</sup><sup>iv</sup>. Modular systems also offer a significant cost advantage over traditional dry stone walls as they allow for the precise specification of material quantities and minimal wastage.

The standard size and shape of the modules makes it easy to calculate the volume required to cover the desired area, and ensures that adequate materials can be specified from the outset, eliminating the unexpected costs of discovering a material shortfall during installation.

Additionally, the comparatively low cost of modular stone wall construction results in a high degree of scalability that makes the construction method ideal for large scale projects. Modular stone walls are a cost efficient means of delivering high quality stone walls that cover large areas or are part of large scale hospitality or commercial projects.

### Speed and Efficiency of Construction

As discussed above, modular systems offer significant time and labour savings in comparison with conventional dry wall construction by eliminating the need for a specialist stonemason or bricklayer. There is a growing scarcity of stonemasons qualified and experienced in constructing loose dry stone walls, and this scarcity has dramatically increased the labour costs entailed with hiring such stonemasons. Modular stone walls, on the other hand, can be installed by any construction professional.

Modular systems also allow for the installation of multiple stones at once. This is significantly faster than conventional methods, which require stones to be laid individually in a labour-intensive and time-consuming process. The installation process is further streamlined by the fact that modules are supplied in flat or corner configurations that enable fast, simple, mess-free installation.

### Market Potential

Due to the above characteristics, modular systems are an economic solution for both commercial and residential applications. They can be used to accentuate features in outdoor environments by adding colour, texture, and dimension unmatched by other cladding materials, whilst posing a cheaper alternative to loose stacked natural stone.

The high degree of design flexibility resulting from a variety of available colours and finishes makes modular systems suitable for a broader range of applications than conventional dry stone walls: modular systems can be used in homes, offices, hospitality environments, healthcare facilities, and more with ease.

## KEY CONSIDERATIONS WHEN SPECIFYING MODULAR STONE WALL SYSTEMS

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There are three key considerations to keep in mind when specifying modular stone wall systems:

### Application

At the design stage, a professional should be consulted to advise on the most appropriate product and adhesive for the desired application. Certain installation contexts – for example, pool surrounds and other wet environments – may require enhanced performance characteristics or specific products, and it is crucial to the longevity and integrity of the wall that the correct system is specified.

### Substrate Characteristics

As modular systems are adhered directly to a wall, pillar, or other vertical surface, it is imperative that this substrate is appropriate and suitably prepared. To accommodate a modular stone system and form a strong bond with the modules, a substrate must be smooth and flat. Prior to installation, the substrate must be thoroughly cleaned to remove any surface contaminants that may interfere with the modular system, including paint, sealer, release agents, and other surface treatments.

### Fixing Requirements

Modules interlock with one another and are affixed to the substrate using a strong adhesive. In low-height installations, this bond will usually suffice to keep the wall strong and upright. When building at heights above 2m, however, mechanical fixings such as metal ledges are recommended to support the upper modules and prevent buckling or sagging.



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## DÉCOR STONE

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Since 1975, DécoR Stone has led the Australian decorative stone wall cladding and flooring products sector. Reimagining traditional stone construction for the modern age, the company is the leading distributor of high quality, innovative products for the local market. Over the years, DécoR Stone has retained a strong focus on customer relations, teamwork, and leadership, earning a reputation as providers of high quality products delivered with exceptional customer service. The company supplies stone for projects around the country, with good stock levels maintained in their Melbourne, Sydney, and Brisbane warehouses.

DécoR Stone's expansive product range includes a number of modular stone wall solutions that offer unrivalled ease of installation and design flexibility. Combining the traditional charm and aesthetic of stacked stone walls with efficient contemporary construction, DécoR Stone modular systems are a durable, cost efficient alternative to traditional dry wall construction. To fabricate the stone modules, natural stone is sourced from China and machine cut into blocks of the required size. These blocks are then split to achieve the textured finish of stacked stone and glued into a panel, which is docked and trimmed to the required module size.

Modules in the DécoR Stone range are available in two profiles: flat and preformed corner. Both types of module can be easily installed with a notched trowel and appropriate adhesive, and are precision-cut to ensure a neat, sharp joint. The preformed corner modules are specifically constructed to eliminate complex and time consuming mitre cutting at corner joints, thus significantly streamlining construction times.

DécoR Stone modular systems are supplied in a selection of natural stone colours. From cool grey to warm gold or arctic white, the natural stone modules quickly and easily transform outdoor and retaining walls, pillars, water features, and other vertical surfaces.

## REFERENCES

- <sup>i</sup> The Dry Stone Walls Association of Australia, Inc. "Home." The Dry Stone Walls Association of Australia, Inc. Accessed February 01, 2018. <http://dswaa.org.au/dry-stone-walls/form-and-function/>.
- <sup>ii</sup> Figures based on market price at the time of writing.
- <sup>iii</sup> Ibid.
- <sup>iv</sup> Figures based on market price at the time of writing.