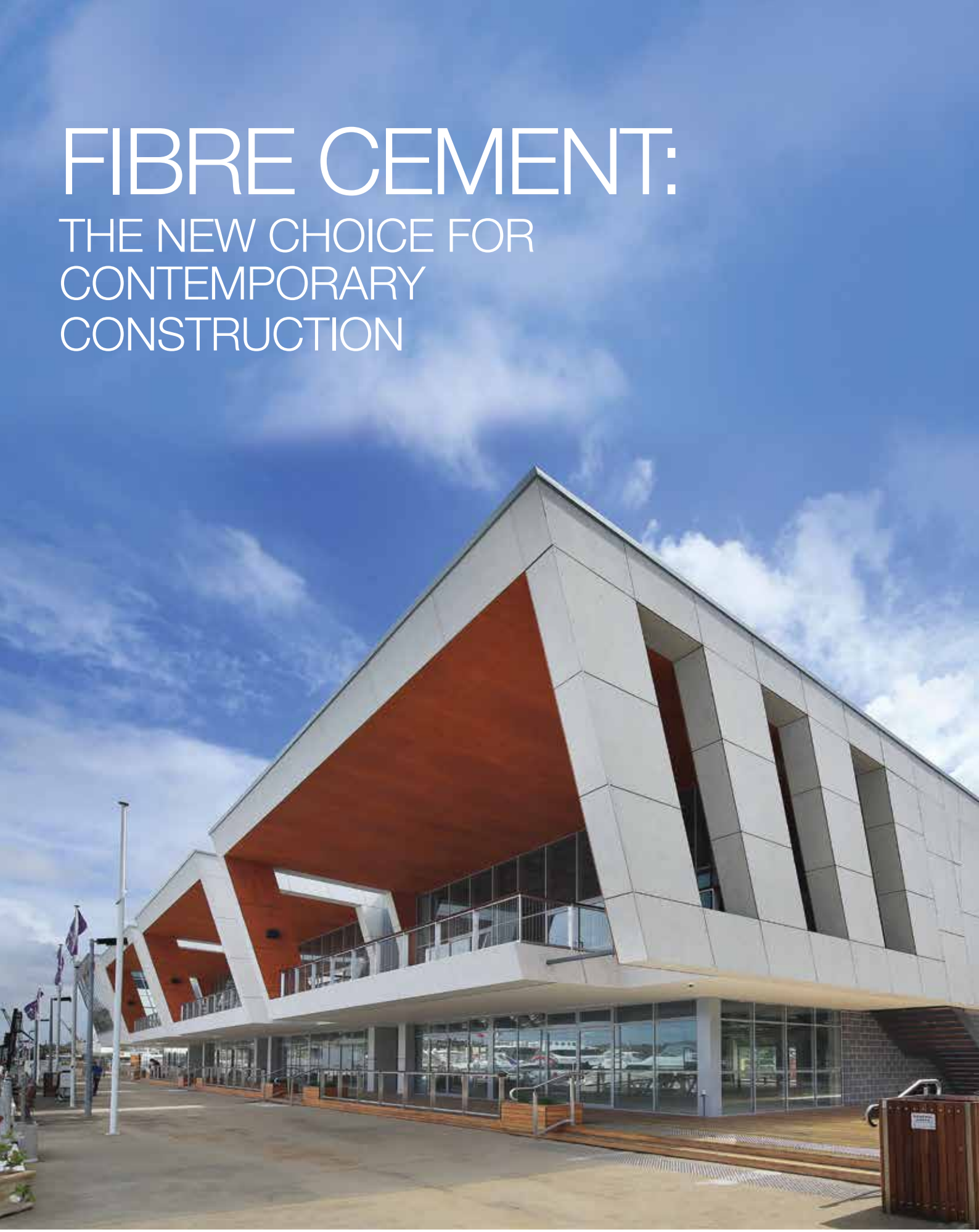
FIBRE CEMENT:

THE NEW CHOICE FOR CONTEMPORARY CONSTRUCTION



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INTRODUCTION

In 2017, the Australian construction industry reported its first major sign of growth in three years. According to the Australian Constructors Association's Construction Outlook survey, the total value of major project work across the country rose by 7.1% in 2017-18, and will rise by another 6.8% in 2018-19.[1] Prompted by growing populations and the rapid densification of Australian cities, the boom is only projected to continue, bringing with it a host of unique challenges.

In the face of projected sustained growth, the industry demand for fast, efficient construction materials that don't compromise on performance or aesthetics is increasing. Architects and builders are searching for alternatives to conventional materials that respond to the current construction climate; in light of the recent controversy surrounding aluminium composite panels (ACP) cladding in buildings that have subsequently caught fire, the industry is particularly focused on alternative cladding solutions.

Fibre cement cladding is one such alternative solution, and is well suited to the demands of high-speed contemporary construction. Fibre cement offers significant aesthetic and performance benefits in comparison with conventional cladding – alongside significant peace of mind – and heralds a new age of versatile, durable, and rapid construction. In this whitepaper, we outline the benefits of fibre cement and outline how it can be used to elevate the façade of your next project and meet stringent industry compliance requirements.

WHAT IS FIBRE CEMENT?

Though their popularity has gained ground in contemporary construction, fibre cement products in fact date back to the late 19th century.[2] In pursuit of a product that was water resistant, lighter than brick, cheaper than slate, and better than sheet metal, Austrian inventor Ludwig Hatschek spent 7 years experimenting with different material combinations, eventually settling on a combination of cellulose, reinforcing fibres, cement, and water.[3]

The resulting slurry was fed through a modified paper machine – essentially, a series of cylindrical rotating sieves – and gradually deposited onto a continuous belt that allowed for layers of the material to be built up to the desired thickness. Over the years, the composition of fibre cement has been refined to maximise efficiency and performance: it is now a combination of sand, cement, and cellulose fibres.

This mixture of natural materials is formed into panels using a Hatschek Machine, a series of different sized rollers that ensure uniform width and thickness. The panels are then finished via a process known as autoclaving – which bonds materials together using steam[4] – or air curing.

The refinement of fibre cement products coincides with its growing popularity around the world, with market forecaster Research and Market projecting that the global fibre cement market will grow from US$11 billion in 2017 to US14.2 billion in 2022.[5]

Fibre cement is available in two main options: non-compressed and compressed. Non-compressed fibre cement is cured to enhance its strength and durability, and is ideal for residential applications. Compressed fibre cement is manufactured under extreme pressures, resulting in a high-density product that is extremely durable.

THE PERFORMANCE BENEFITS OF FIBRE CEMENT

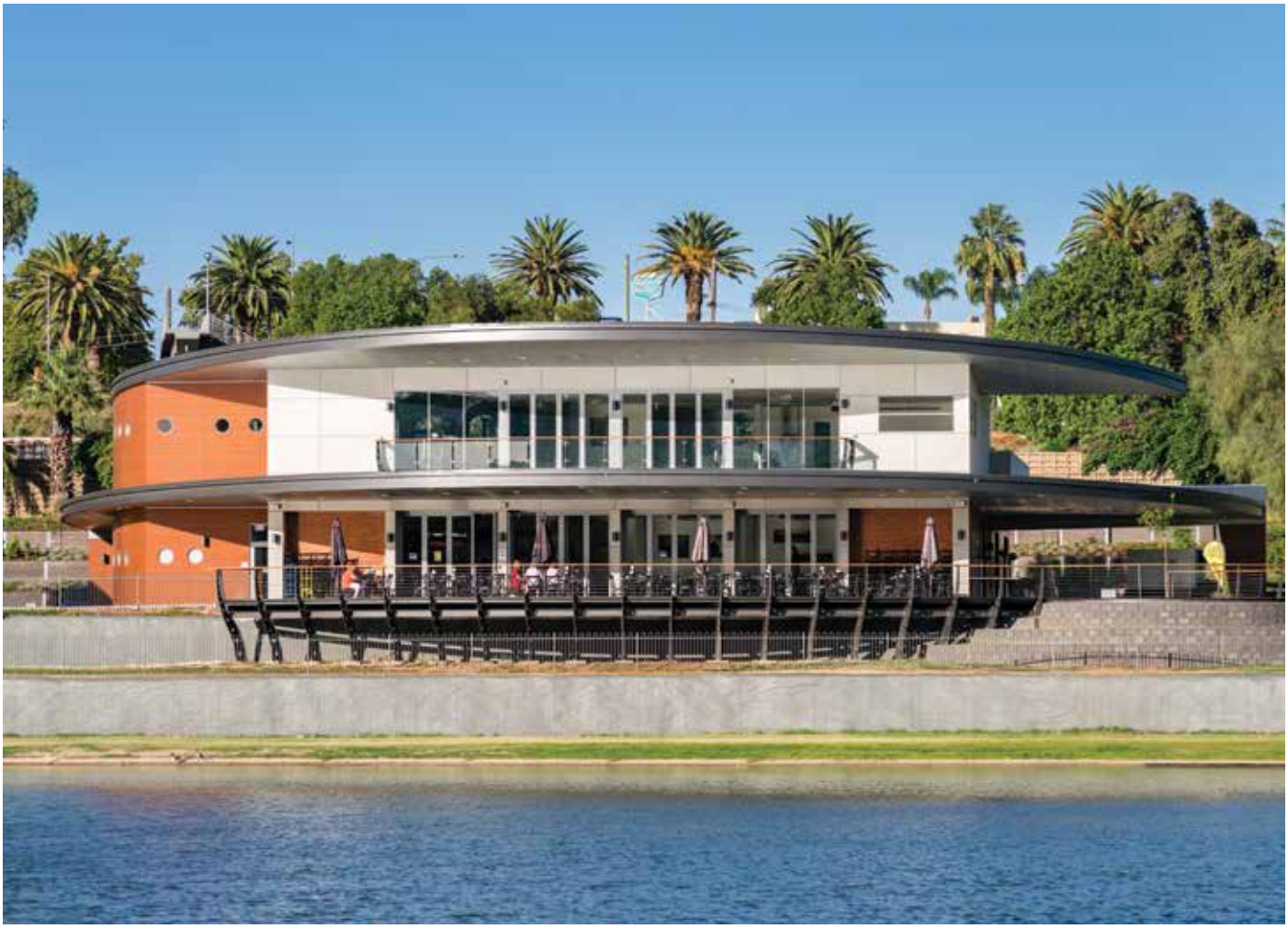
Durability

A key factor in fibre cement's growing popularity is its high durability, or ability to perform for extended periods when exposed to stresses including weather conditions, impact, and general wear and tear. Studies have found that fibre cement can perform at a satisfactory level for over 18 years in humid, subtropical climates.[6] This characteristic makes it the ideal cladding material for the harsh Australian climate, which is often humid and hot.

Furthermore, the ABC has reported that the intensity and frequency of Australian rain events will increase in future, placing water resistant construction materials in even greater demand. Unlike solid natural timber, fibre cement will not rot or warp when exposed to moisture or even rain, with studies showing minimal change in autoclaved fibre cements exposed to natural weathering for up to 5 years.[7]

Fibre cement allows the transmission of water vapour in and out of a building envelope, allowing the building to 'breathe' and reducing the risk of condensation. Beyond this, fibre cement will not corrode, unlike metal or steel products.

Fibre cement is also resistant to termites and other pests. This is a major advantage in Australia, where termites cause an estimated $100 million in damage each year and attack 1 in 5 homes.[8] In this regard, specifying a fibre cement facade can prevent the significant costs and labour that a termite infestation down the track may incur. Fibre cement – particularly compressed fibre cement – also provides far greater impact resistance than common aluminium cladding products, making it the ideal choice for commercial facades and public spaces.



Fire Performance

In the wake of numerous high profile residential tower fires around the world and controversy surrounding non-compliant, highly combustible ACP cladding in Australia, fire performance is extremely topical. In particular, Australian designers and specifiers are seeking passive fire protection methods that do not contribute to the spread of fire.

The Lacrosse building fire in Australia highlighted how costly poor material selection for facades may be: it is estimated that the bill for replacing flammable, non-code compliant cladding on Australian buildings may run into the billions.[9] Fibre cement cladding is well suited to providing passive fire protection as it performs well in the face of active flames.

According to testing performed by the Building Research Association of New Zealand (BRANZ), fibre cement will not allow flame spread, and will contain damage in the region directly exposed to flames.[10] BRANZ also reports that fibre cement panels add negligible radiant heat to an already burning fire.[11]

Crucially, fibre cement can be used where non-combustible materials are required by the BCA, in accordance with the NCC Volume 1 Section C1.9 and Volume 2 Section 3.7.1.2. Fibre cement is one of the recommended cladding materials for walls, fascias, and doors in BAL-29 zones,[12] and can also achieve a BAL-40 rating as part of a fire performance system.

Solutions for Insulation and Acoustic Systems

In today's busy commercial environments and high-density multi-residential apartments, acoustic control is an increasingly central concern. Managing the spread of excessive noise between adjoining tenancies has become a major design goal, and designers and specifiers are consequently seeking materials that provide acoustic insulation benefits without additional products or treatments. The high-density composition of fibre cement boards in a facade system makes them ideal for reducing noise. This is particularly beneficial in facades, where proper acoustic management can prevent the noise of pedestrian and vehicular traffic entering a buildin

THE AESTHETIC BENEFITS OF FIBRE CEMENT

Design flexibility

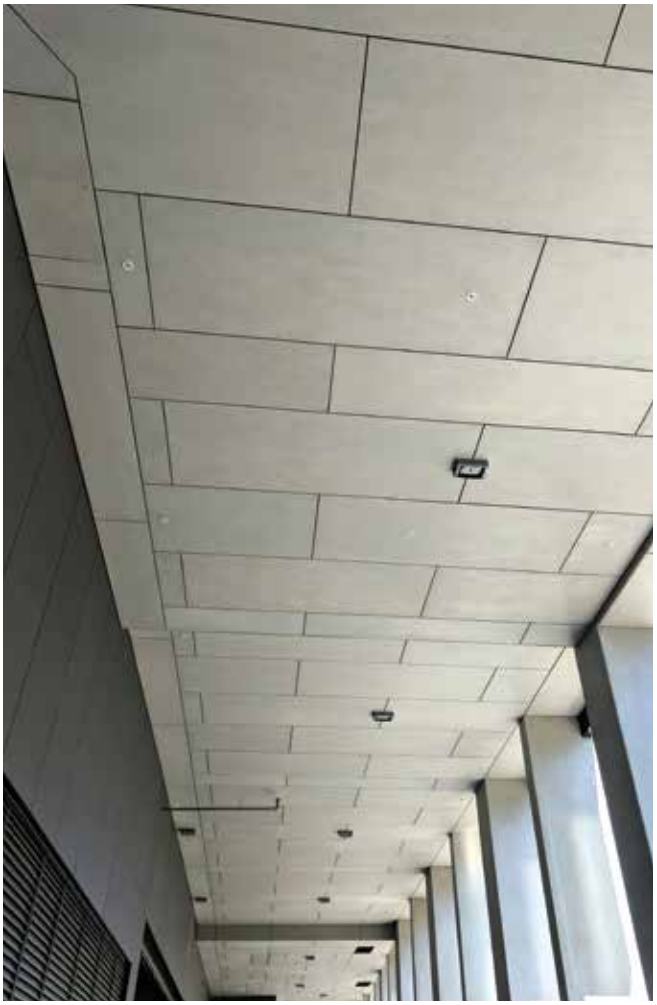
Fibre cement is as versatile as it is durable. Fibre cement panels can be used for vertical and horizontal applications including facades, fascias, and bargeboards, allowing for a consistent finish across building planes and elements.

The ease with which it can be machined makes fibre cement suitable for the increasingly complex shapes and angles appearing in contemporary construction: fibre cement can be machined to virtually any size and shape without compromising on performance. The large format sheets also enable large-scale patterning and the creation of striking facades.

Versatile aesthetic

Because it is a wholly manufactured material, prefinished fibre cement cladding is available in a breadth of colours and surface finishes that is unmatched by brick, natural timber, and other conventional cladding materials.

Fibre cement can even mimic other natural materials such as timber or concrete, combining the desired finish with the performance and easy construction of fibre cement while offering lower maintenance levels than the original material, especially timber.



USHERING IN A NEW AGE OF CONSTRUCTION

Beyond its performance and aesthetic benefits, fibre cement also marks a crucial turning point in overall design and construction culture. The rising popularity of fibre cement reflects a global shift toward pre-finished construction, which offers rapid, precise installation regardless of the project or tradesperson.

Additionally, it aligns with a growing preference for scalability as a consequence of population growth and high-density development. Fibre cement is perfect for building at heights or large scales, in contrast with conventional materials – such as brick – that may be too inflexible and cumbersome for these applications.

Fibre cement is also well suited to the sustainability focus of today's construction industry. One of the most energy efficient materials on the market, fibre cement consumes less energy during assembly and construction than all other cladding materials, except timber.[13]

CEMINTEL®

A subdivision of CSR, one of Australia and New Zealand's most trusted building products companies, Cemintel is a leading provider of fibre cement products to the Australasian market. Driven by a strong focus on sustainability, innovation, and industry education, CSR has earned a reputation for delivering cutting edge solutions that effortlessly combine style and functionality.

In line with this, Cemintel provides an exhaustive range of lightweight, durable fibre cement systems for use in external facades, internal linings, and flooring and ceiling systems. Cemintel advocates for a fresh, exciting new future of construction that avails of the latest material and manufacturing technologies to produce efficient, striking architecture. It has a large range of prefinished product options, which are becoming increasingly popular in contemporary construction.

BARESTONE™

Blending effortlessly with any outdoor environment and weathering with grace, Cemintel BareStone™ is the ideal prefinished panel system for contemporary facade design. Offering unrivalled design flexibility, the lightweight cladding product combines a striking raw, modern finish with a high degree of machinability that allows for a variety of shapes and sizes.

By choosing BareStone™, designers can rest assured that they are selecting a durable, water resistant, and highly versatile solution for their facade that will stand the test of time and exposure without compromising in performance or appearance.

Paired with the Cemintel ExpressWall framing system, BareStone™ brings together the best of contemporary construction and aesthetics. The durability and sleek look of concrete are combined with a rapid, easy construction method that is well suited to complex building forms.

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