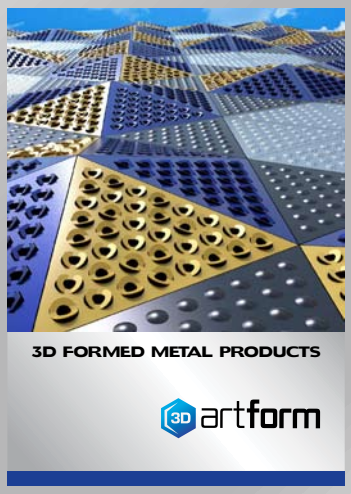
DESIGN, ENGINEERING & INSTALLATION SYSTEMS

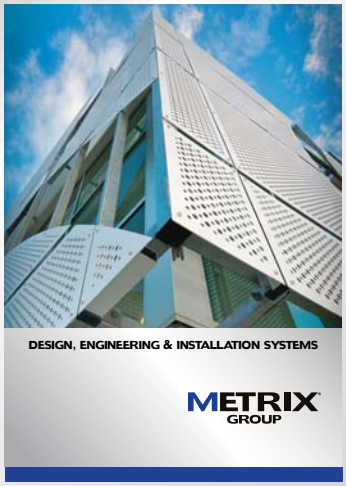
2ND EDITION

METRIX®
GROUP

DESIGN, ENGINEERING & INSTALLATION SYSTEMS

Welcome to the 2nd edition of the Metrix® Design, Engineering & Installation Systems Guide. Servicing over 10,000 architects, designers, builders, and contractors, this comprehensive manual makes specifying perforated metal products easy. It covers technical information on product design, customisation, specification, installation systems and substrates.

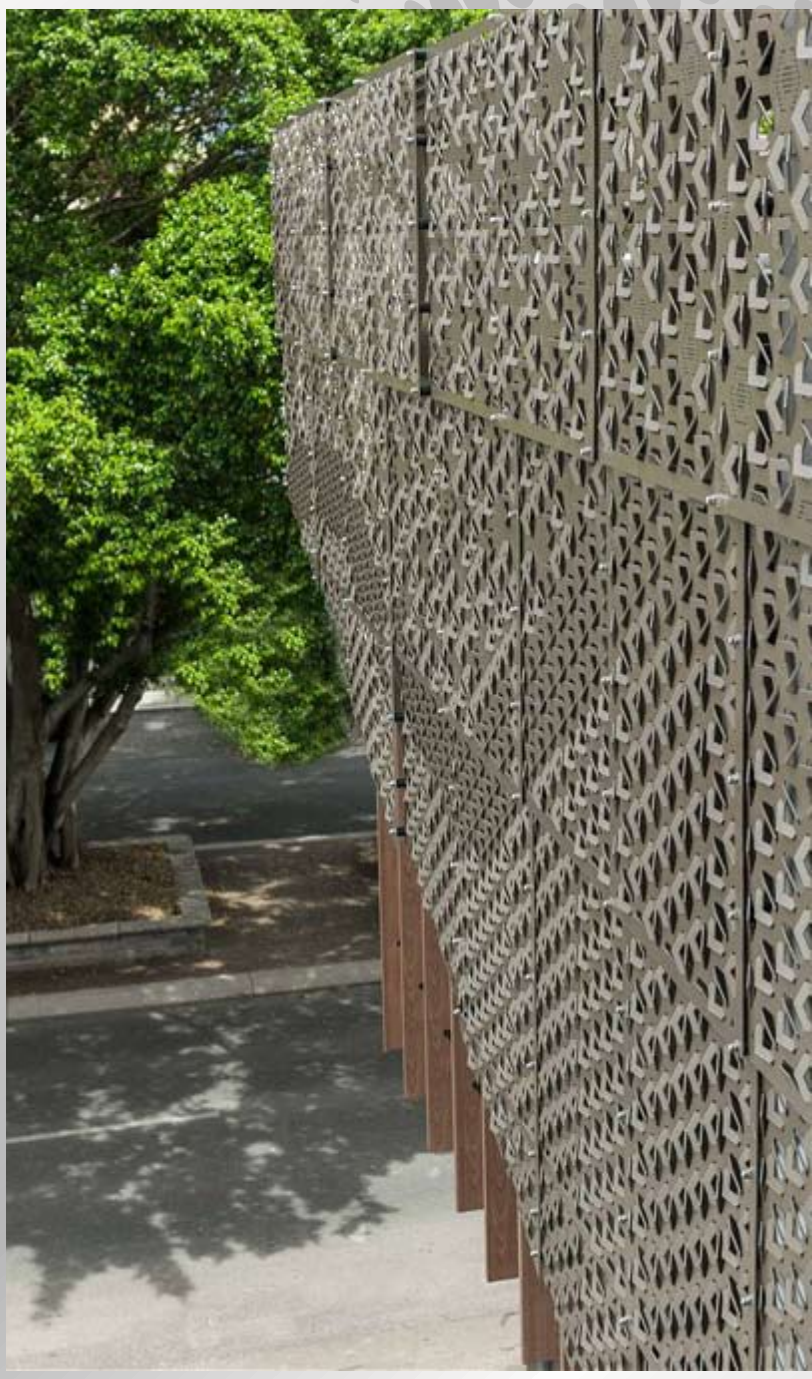




Disclaimer

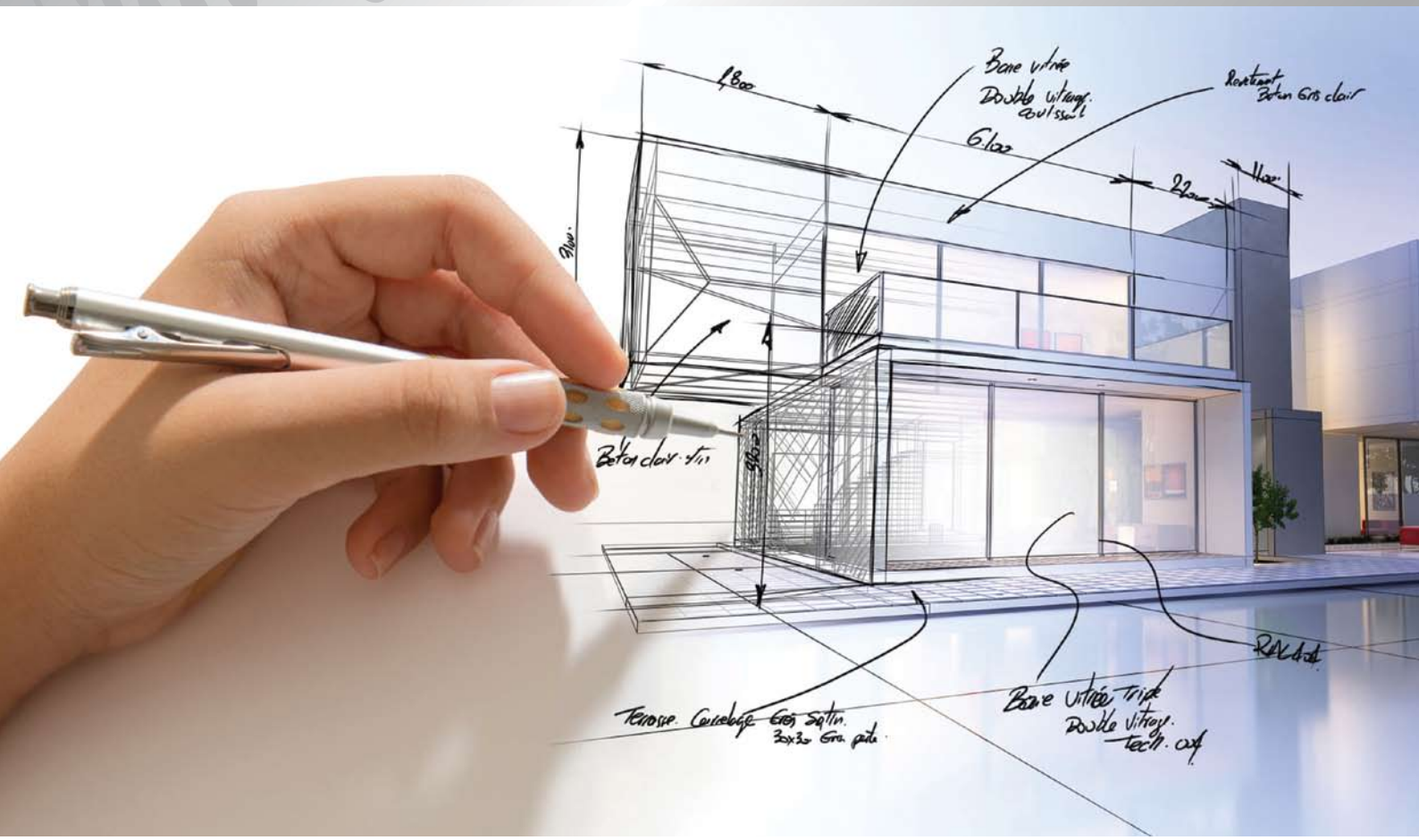
The information, charts and tables included in this manual have been prepared for use by Metrix Group® and their customers and clients and relate to products manufactured by Metrix Group®. The information cannot be assumed to apply to similar products of other manufactures.

CONTENTS



36 Abbott St Cairns QLD

METRIX DESIGN STUDIO



Benefits

Design excellence

Engineering solutions

Installation systems

Samples

How the design studio works

STEP 1

Inquiry

Client contacts Metrix Group and discusses the project budget, design intent, product type, project size, location, and specific design requirements.

STEP 2

Engagement

Metrix architectural specialist provides a design proposal that outlines the design and engineering services the company can provide.

STEP 3

Design Brief

Client design meeting clarifying specific project requirements including design, engineering, installation systems, building code requirements and samples.

Fire resistant

Building code compliant

Acoustic performance

Australian made

STEP 4

Concept Design

Concept design is created showcasing custom designed product, installation system, and engineering requirements to meet project building code requirements.

STEP 5

Documentation

Client is provided with documentation including project render showing custom façade, installation system, engineering, and product specification. Physical samples are manufactured.

STEP 6

Manufacture

The façade system is manufactured as per design documentation meeting all building code and engineering requirements.

METRIX DESIGN STUDIO

STEP 1

Client Design Brief

An iconic façade that blends the building's contemporary design with the region's famed natural beauty.

Create the look of a forest canopy and foliage without using obvious images of gumnuts, leaves and branches. Create the feel of light through the rainforest.

Any part of the façade accessible to the public must be non-climbable to meet building code regulations.

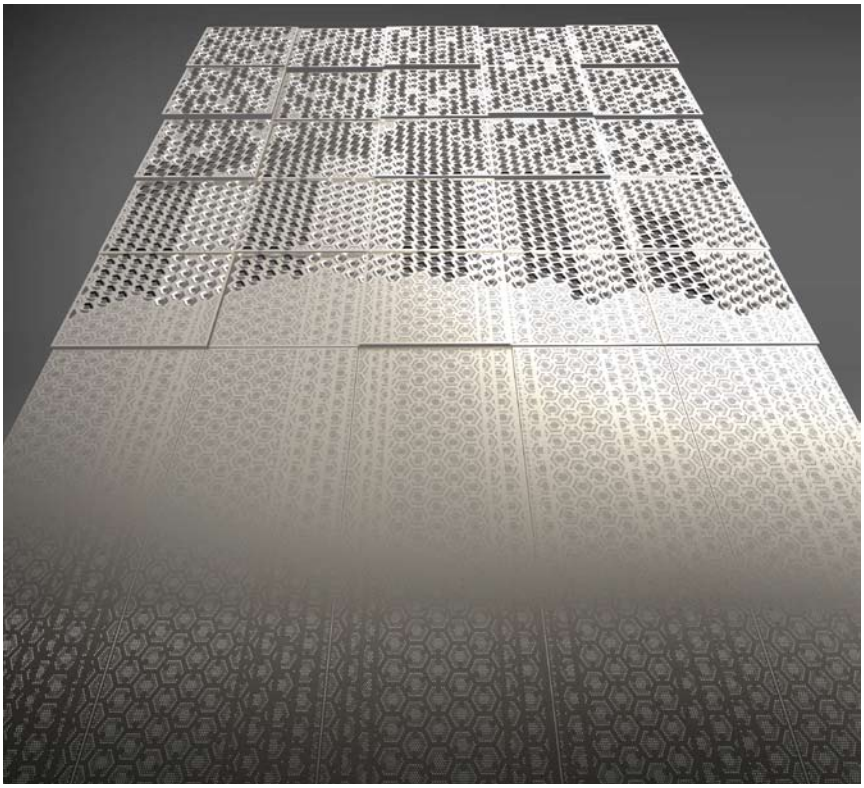
STEP 2

Concept Design

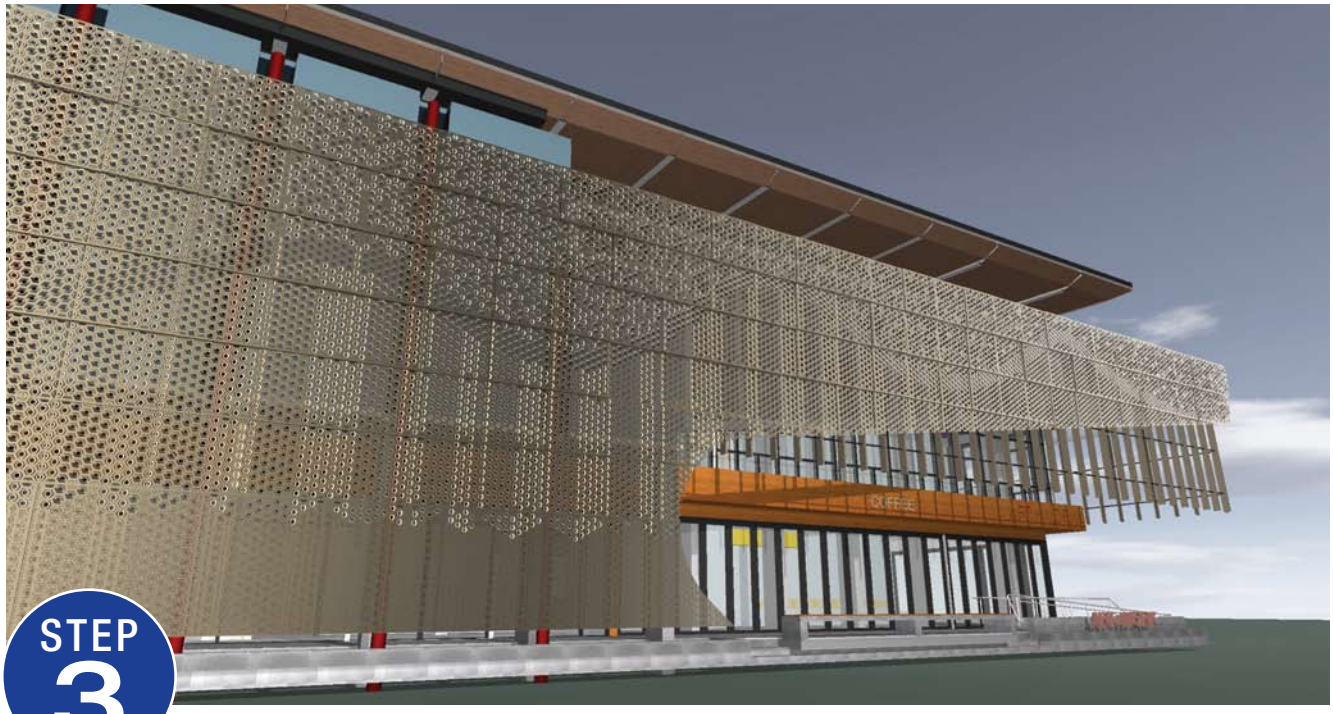
The custom façade design featured 3D rotated forms with matching 2D perforated images to meet non-climbable requirements.

The 3D installation system designed for this project provided additional depth to the façade.

The Abbott Street concept design had to be engineered to meet Cairns cyclonic requirements.



ABBOTT STREET CAIRNS CASE STUDY



STEP 3

Documentation

Client is provided with the project render showing custom façade and installation system, and physical samples of the façade panels.

The approved façade is overlaid on the building and drawn and documented with custom installation system.

Approved design engineered to meet Cairns cyclonic requirements.

STEP 4

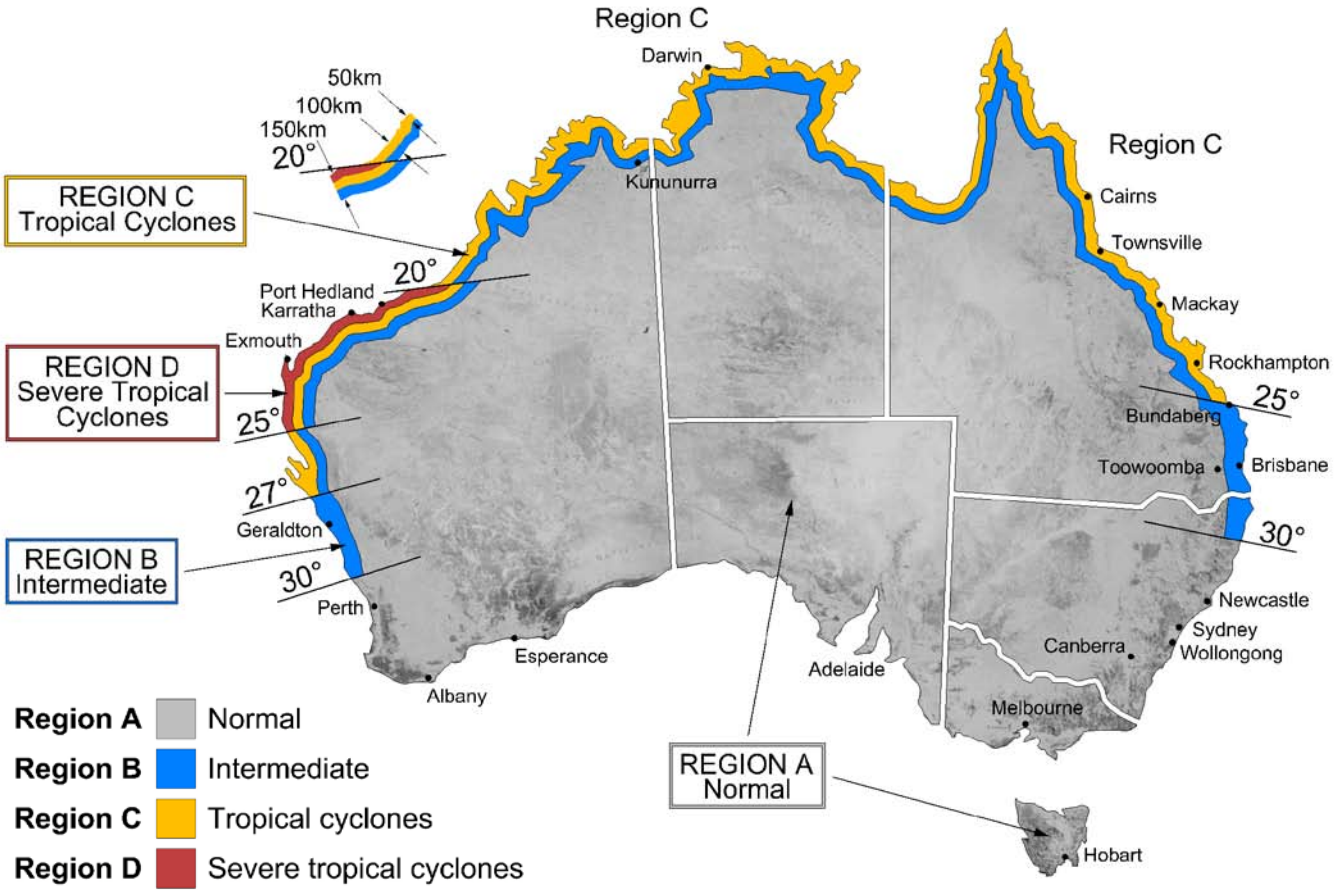
Manufacture

The façade system is manufactured as per design documentation, meeting all building code and engineering requirements.

Metrix Group works with the nominated builder, outlining installation method details. The façade is installed by the builder.

The completed project is pointed up as an iconic building by local media.

Wind & Cyclone Regions of Australia



The perforated façade for each project has to be engineered to suit each project's specific requirements. Below are the 6 steps that have to be addressed for every project.

How a project is engineered

STEP 1

Geographic location

This determines which cyclone region applies to the project.

Region A - normal
Region B - intermediate
Region C - tropical cyclones
Region D - severe tropical cyclones

STEP 2

Height of building and terrain conditions

Building height and terrain density influence the wind rating.

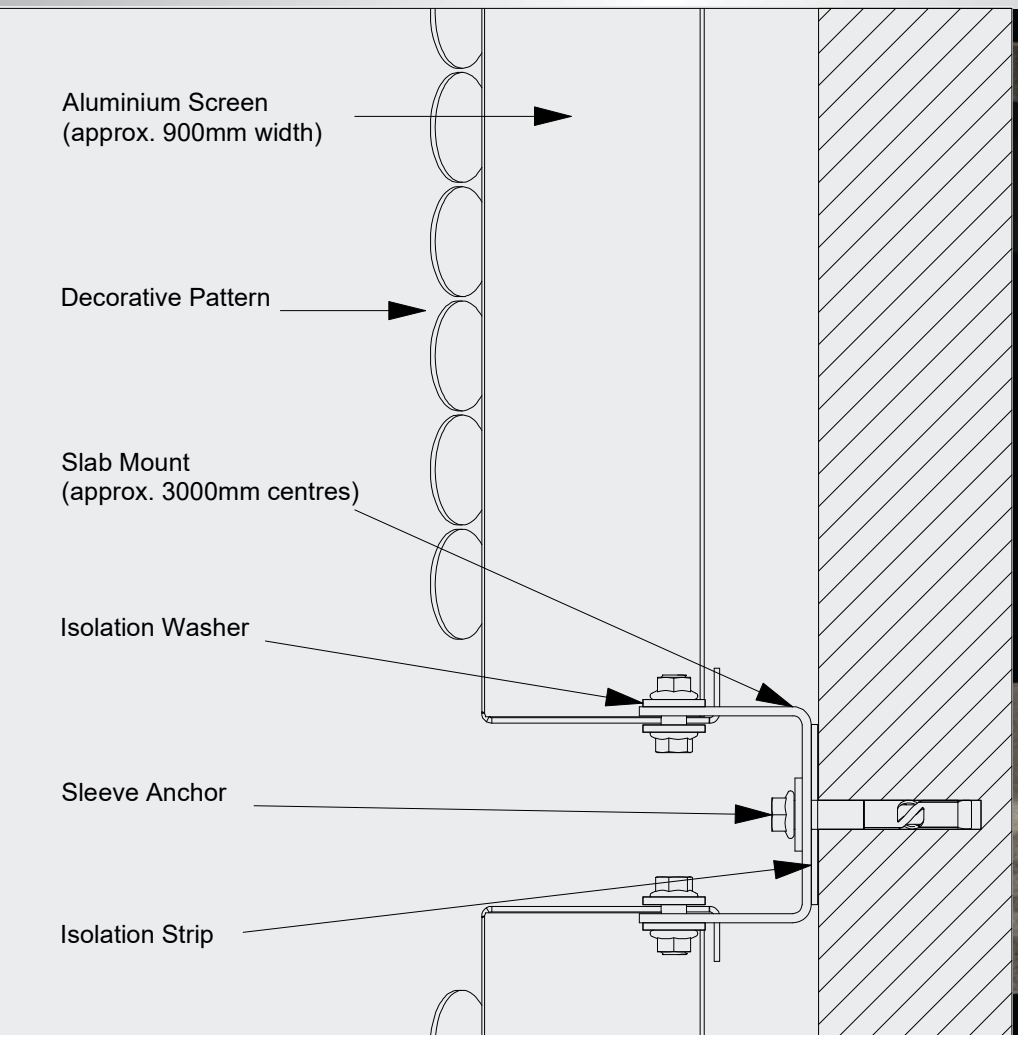
Up to 10 metres in height, above 10 metres, low density, medium density, high density terrain.

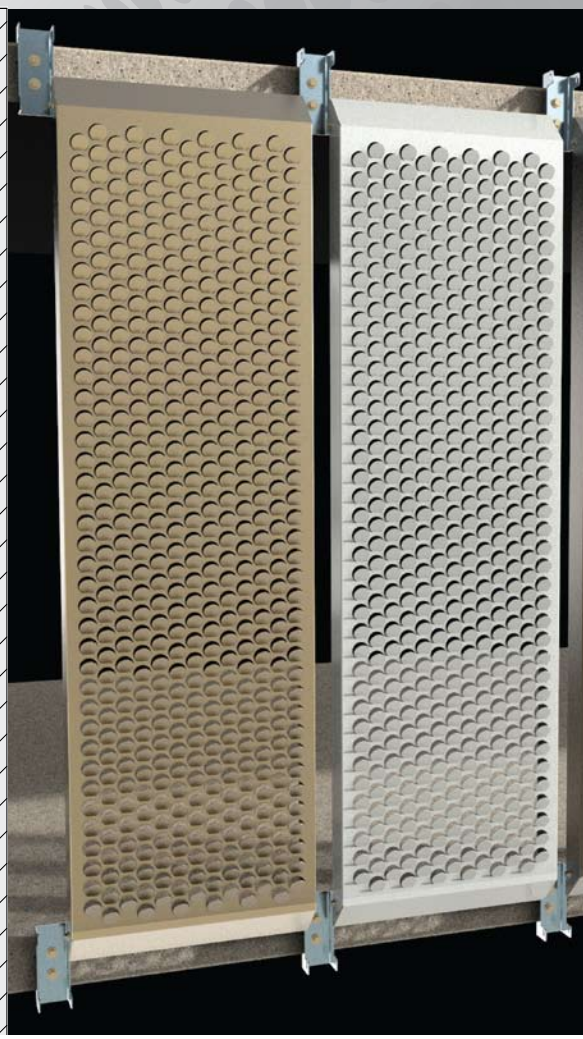
STEP 3

Application of panels

The product application influences the engineering requirements needed.

Carpark cladding, building façade, bridge cladding, operative screens, balustrading, privacy screens, etc.





Once the project's specific requirements have been determined, the product type, pattern, substrate, thickness and installation system can be selected.

STEP 4

Product type and pattern

Select the product type and pattern that meets the project's design requirements.

- 3D Artform
- Perforated Image
- Standard Perforation

Refer individual brochures

STEP 5

Substrate and thickness

Material type and thickness is varied to suit product type, pattern and installation system.

Choose from 5 different substrates.

Refer page 25

STEP 6

Installation systems

The product application and project design intent determines the best installation system to be selected.

Choose from 6 different installation systems.

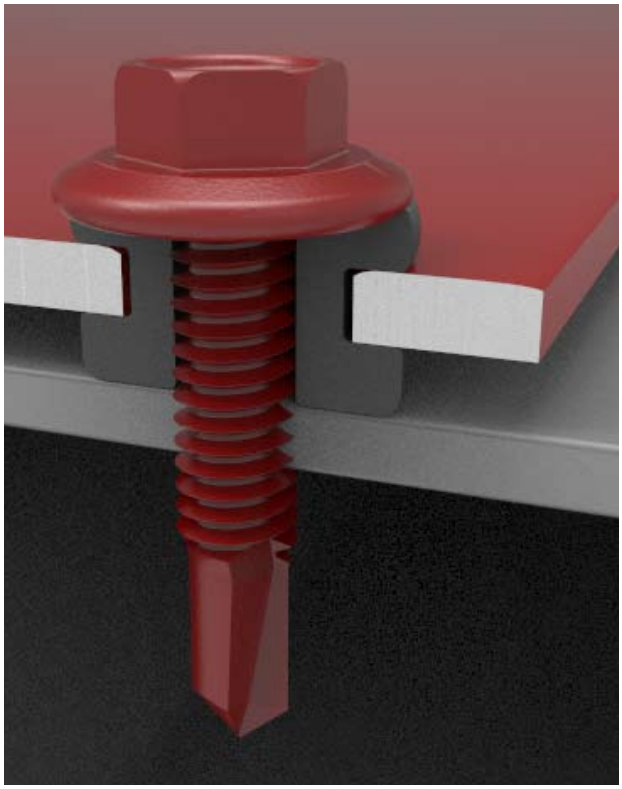
Refer page 11

INSTALLATION SYSTEMS

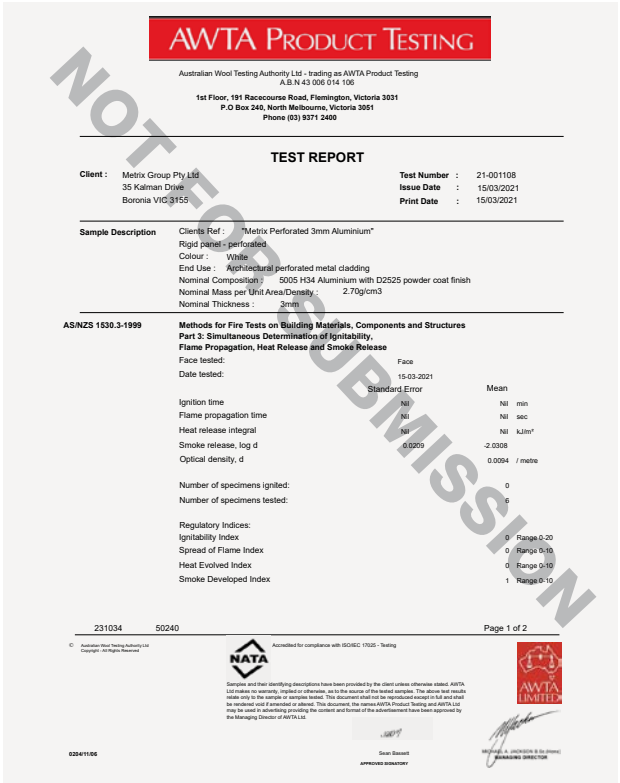
AS/NZS Standard	
✓	AS/NZS 1170.0:2002 Structural design actions general principals
✓	AS/NZS 1170.1:1997 Structural design actions permanent, imposed and other actions
✓	AS/NZS 1170.2:2011 Structural design actions wind actions
✓	AS/NZS 1664.1:1997 Aluminium structures part 1 Limit state design
✓	AS/NZS 1664.2:1997 Aluminium structures part 2 Allowable stress design
✓	AS/NZS 1530.1:1994 Fire resistance and non-combustibility
✓	AS 4036-2006 Corrosion of metals – Dissimilar metals in seawater

Architects and Designers can have peace of mind specifying Metrix proprietary installation systems. All installation systems have been designed and engineered to relevant Australian Standards and the national building code.

All installation systems also incorporate the following important protections.



Metrix Corroguard™ dissimilar metal corrosion protection. Page 22



AWTA PRODUCT TESTING

Australian Wool Testing Authority Ltd - trading as AWTA Product Testing
A.B.N 43 006 014 106
1st Floor, 191 Racecourse Road, Flemington, Victoria 3031
P.O Box 240, North Melbourne, Victoria 3051
Phone (03) 9371 2400

TEST REPORT

Client : Metrix Group Pty Ltd
35 Kalman Drive
Boronia VIC 3155

Test Number : 21-001108
Issue Date : 15/03/2021
Print Date : 15/03/2021

Sample Description
Clients Ref : "Metrix Perforated 3mm Aluminium"
Rigid panel - perforated
Colour : White
End Use : Architectural perforated metal cladding
Nominal Composition : 5005 H34 Aluminium with D2525 powder coat finish
Nominal Mass per Unit Area/Density : 2.70g/cm3
Nominal Thickness : 3mm

AS/NZS 1530.3-1999 — Methods for Fire Tests on Building Materials, Components and Structures Part 3: Simultaneous Determination of Ignitability, Flame Propagation, Heat Release and Smoke Release

Face tested: Face
Date tested: 15-03-2021

	Standard Error	Mean	
Ignition time	Nil	Nil	min
Flame propagation time	Nil	Nil	sec
Heat release integral	Nil	Nil	kJ/m²
Smoke release, log d	0.0209	-2.0308	
Optical density, d		0.0094	/ metre
Number of specimens ignited:		0	
Number of specimens tested:		6	

Regulatory Indices:

Ignitability Index	0	Range 0-20
Spread of Flame Index	0	Range 0-10
Heat Evolved Index	0	Range 0-10
Smoke Developed Index	1	Range 0-10

231034 50240 Page 1 of 2

NATA Accredited for compliance with ISO/IEC 17025 - Testing

Samples and their identifying descriptions have been provided by the client unless otherwise stated. AWTA Ltd makes no warranty, implied or otherwise, as to the source of the tested samples. The above test results relate only to the sample or samples tested. This document shall not be reproduced except in full and shall be rendered void if amended or altered. This document, the names AWTA Product Testing and AWTA Ltd may be used in advertising providing the content and format of the advertisement have been approved by the Managing Director of AWTA Ltd.

0204/11/06

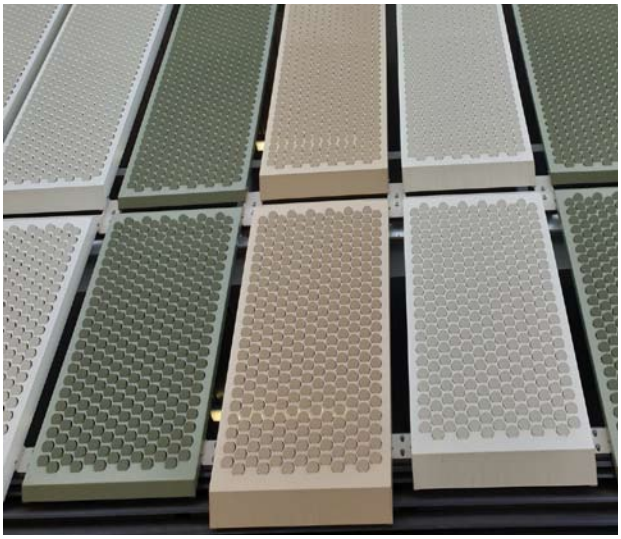
Sean Bassett
APPROVED SIGNATORY

MICHAEL A. JACKSON B Sc (Hons)
MANAGING DIRECTOR

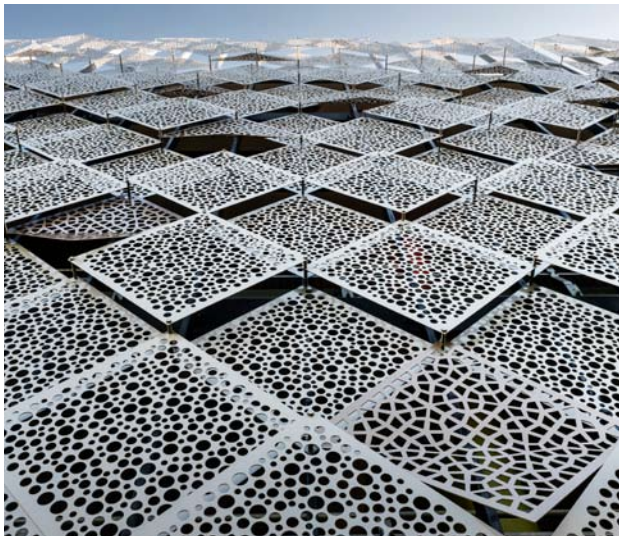
Fire resistance and non-combustibility certification. Page 23

INSTALLATION SYSTEMS

The CF4000 is a concealed installation system that is quick and easy to install. Page 12



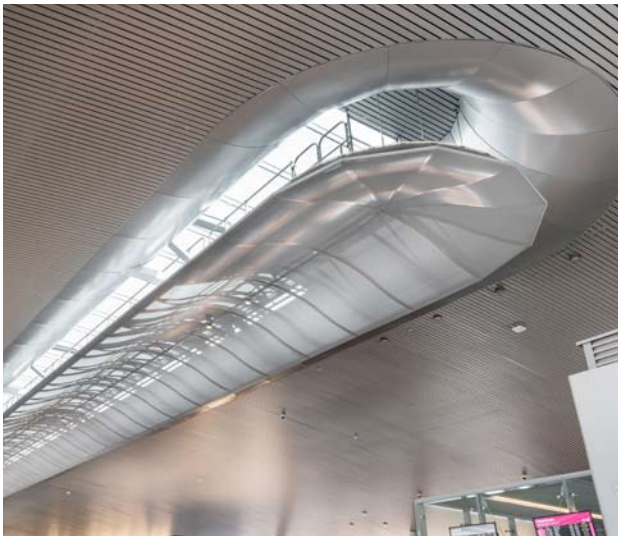
The SS3000 installation system spans up to 3.3 metres eliminating any support structure. Page 14



The varying panel depth of the TS1200 system creates a 3-dimensional effect. Page 16

The DD600 installation system is designed to display multiple pictures or patterns. Page 18

The FF600 installation system offers flexibility in panel size and shape. Page 20



Custom installation methods are designed for unique applications.

CF4000 INSTALLATION SYSTEM

Features & Benefits

- Concealed installation system
- Quick & easy installation
- Panel width up to 900mm
- Panel span up to 3600mm
- Varied panel depth 50-150mm
- Metrix Thermal expansion system
- Metrix Corroguard dissimilar metal corrosion protection
- Engineered in accordance with AS/NZS 1170 & AS/NZS1664
- Fire resistance and non-combustibility AS/NZS 1530.1:1994

CASE STUDY

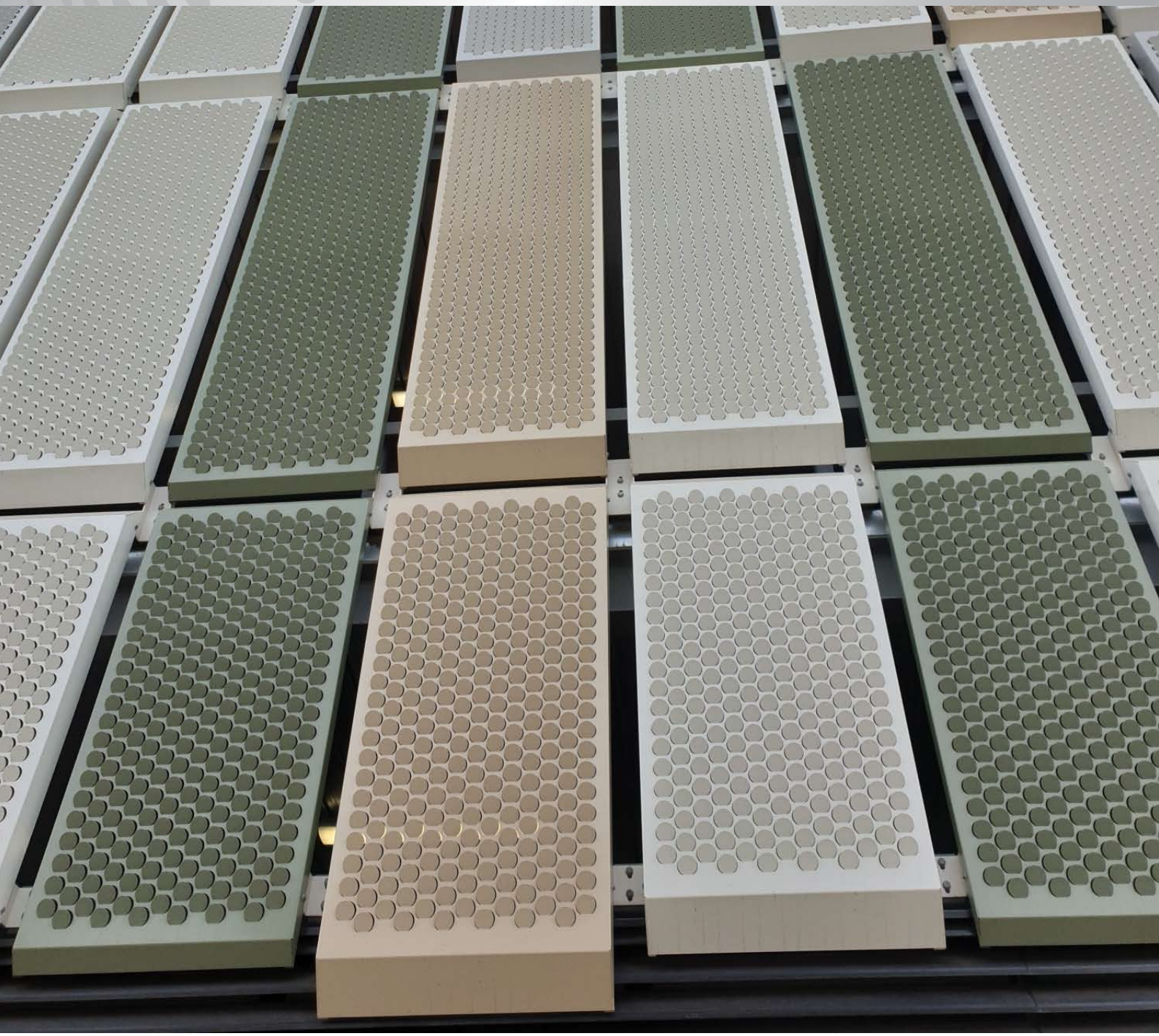
Woolworths Norwest Carpark NSW

The new Woolworths Norwest Carpark features 4 levels of multi deck carpark comprising 1,068 secure car parking spaces with a tennis court on top of the new building and a new adjacent loop road and associated landscaping. The Metrix® Hexagon M28-33 pattern with it's 72% open area was selected to meet the projects high ventilation requirements.

Product:

Metrix® Hexagon M28-33 pattern with 72% open area, on 3mm Aluminium with Dulux Eternity Chain Pearl and Dulux Eternity Pewter Pearl powder coat finishes. Installed with Metrix CF4000 installation system.

SS3000 INSTALLATION SYSTEM



Features & Benefits

- Cost effective with no support framing
- Quick & easy installation
- Panel width up to 900mm
- Panel span up to 3300mm
- Varied panel depth 50-150mm
- Metrix Thermal expansion system
- Metrix Corroguard dissimilar metal corrosion protection
- Engineered in accordance with AS/NZS 1170 & AS/NZS1664
- Fire resistance and non-combustibility AS/NZS 1530.1:1994

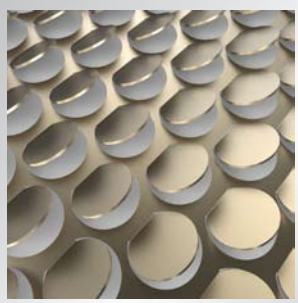
CASE STUDY

The Queen Elizabeth Hospital Carpark SA

The 3D Disk profile was used to provide the ultimate combination of adequate ventilation & light spill control from inside the building. The incorporation of both 50mm & 100mm deep cassettes and 6 different powder coat colours provided undulations & a sense of movement across the facade.

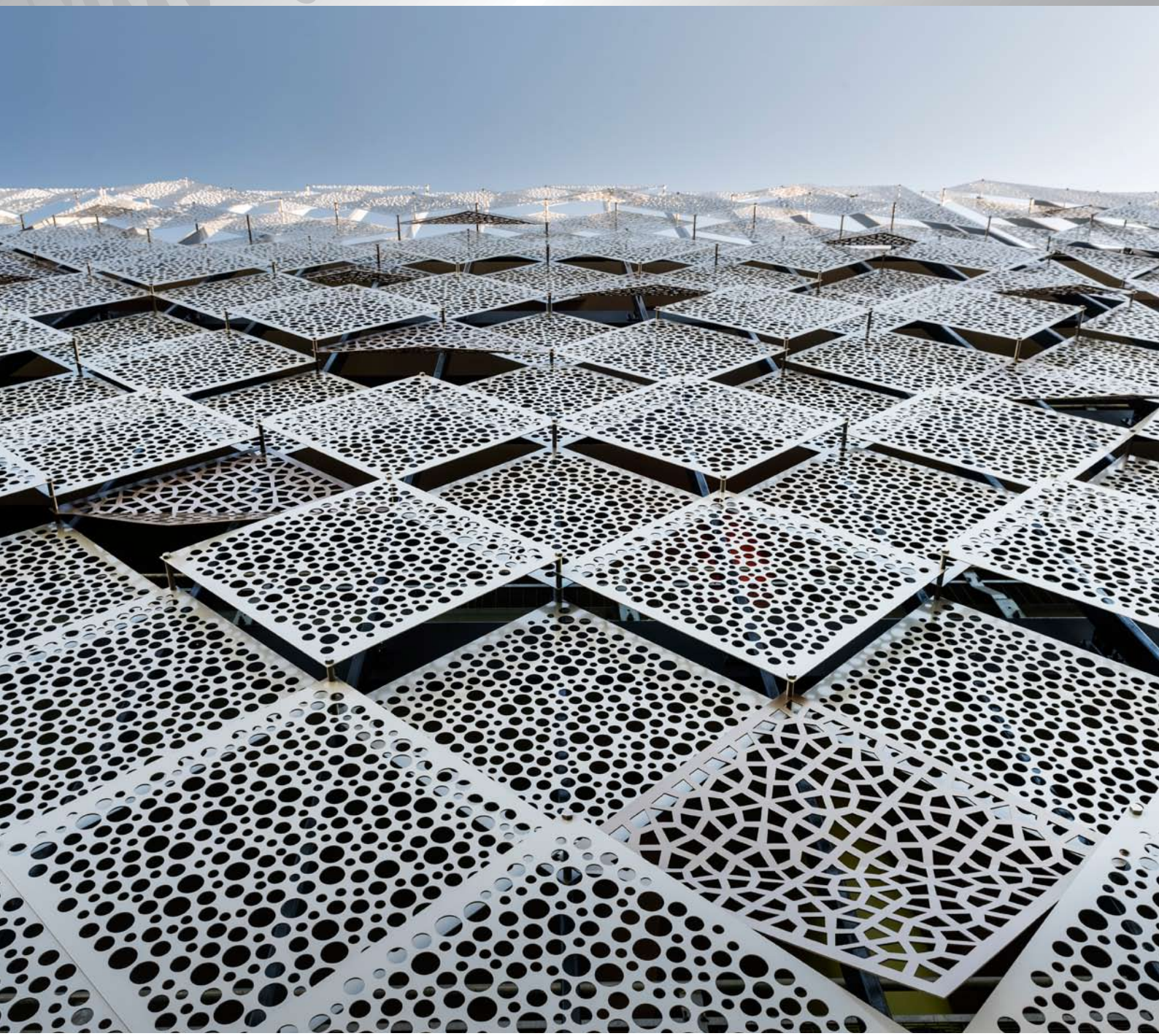
Product:

Metrix® 3D Disk pattern with 60% open area, 13% visibility on 3mm Aluminium with Dulux Duratec Shale Grey, Paperbark, Sandstone, Pale Eucalypt powder coat finishes. Installed with Metrix SS3000 installation system.



Drawing not to scale

TS1200 INSTALLATION SYSTEM



Features & Benefits

- Quick & easy installation
- Tiles can feature different patterns
- Tiles up to 1200 x 1200mm
- Panel depth can vary up to 150mm
- Metrix Thermal expansion system
- Metrix Corroguard dissimilar metal corrosion protection
- Engineered in accordance with AS/NZS 1170 & AS/NZS1664
- Fire resistance and non-combustibility AS/NZS 1530.1:1994

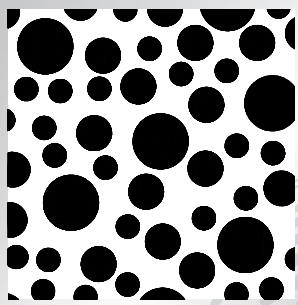
CASE STUDY

Crown Casino WA

Crown Casino car park used Metrix® Atomic panels installed at varying depths to create a subtle and effective 3 dimensional element. The 20° fold on the custom feature panels provides an interesting highlight.

Product:

Metrix® Atomic M70/50/30 pattern with 46% open area, on 5mm Aluminium with Dulux X15 Metropolis Silver Glow Pearl Gloss and Precious Champagne Kinetic powder coat. Installed with Metrix TS1200 installation system.



Drawing not to scale

DD600 INSTALLATION SYSTEM

Features & Benefits

- Cost effective with no support framing
- Panel can feature 2 patterns
- Quick & easy installation
- Panel width up to 900mm
- Panel span up to 3300mm
- Metrix Thermal expansion system
- Metrix Corroguard dissimilar metal corrosion protection
- Engineered in accordance with AS/NZS 1170 & AS/NZS1664
- Fire resistance and non-combustibility AS/NZS 1530.1:1994

CASE STUDY

22 Walker St Townsville QLD

22 Walker Street is a unique façade that showcases two different images on the same panel. This is created by inserting folds in the panel giving two different viewing perspectives.

Product:

Metrix® Custom Picture Perforation
on 4mm Aluminium with Dulux Anotec Silver Grey powder coat finish. Installed with Metrix DD600 installation system.

FF600 INSTALLATION SYSTEM

Features & Benefits

- Flexibility in panel size and shape
- Large panel size up to 3600 X 1500mm
- Metrix Thermal expansion system
- Metrix Corroguard dissimilar metal corrosion protection
- Engineered in accordance with AS/NZS 1170 & AS/NZS1664
- Fire resistance and non-combustibility AS/NZS 1530.1:1994

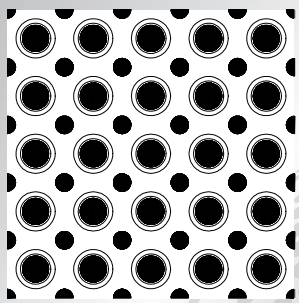
CASE STUDY

Motorama Moorooka QLD

The eye catching contrast between clad and unclad areas ensures the Motorama Moorooka façade stands out. This interesting building showcases architectural innovation at its best.

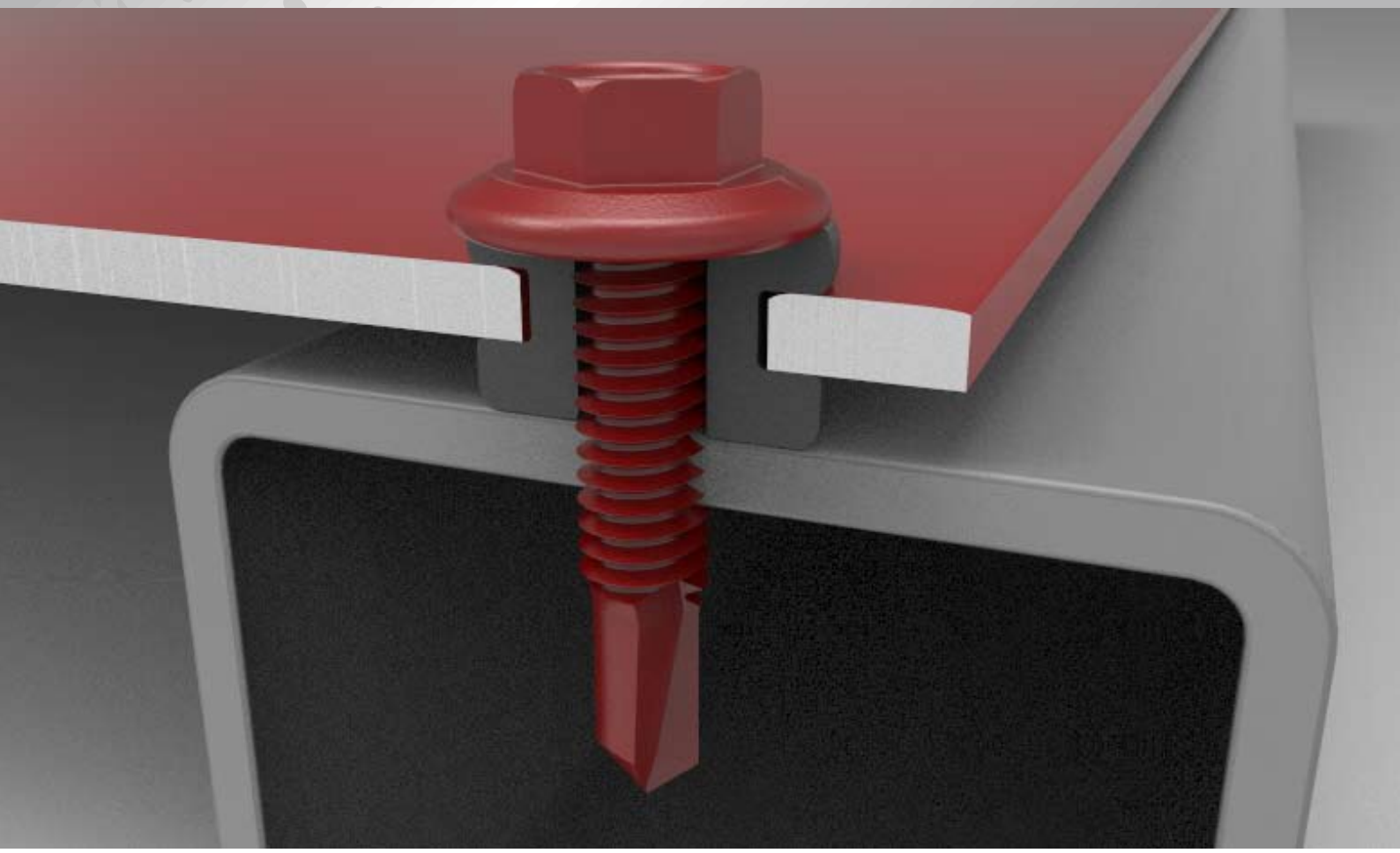
Product:

Metrix® Tread Perf M19/12.7-42
pattern with 24% open area, on 3mm Aluminium with White powder coat finish.
Installed with Metrix FF600 installation system.



Drawing not to scale

METRIX CORROGUARD DISSIMILAR METAL PROTECTION



Dissimilar metal protection

Galvanic corrosion is caused when two differing metals come in contact with one another in the presence of an electrolyte. This results in weakening the structural integrality of the panel/framing and shortening the life of the coating. This is overcome with Metrix Corroguard insolating grommets or washers.

Note if dissimilar metal protection is not provided this will void the powder coat manufacturers warranty.

Sound Isolation

Panels bolted to a frame will transfer vibrational frequencies directly through the panel framing and any attached structure. Metrix Corroguard insolating grommets fitted between screens and framing also assist with isolating and absorbing structure borne vibrations.

Thermal expansion

All panels need allowance for thermal expansion and traction. Failure to do so can result in panels buckling and installations shearing or failing. Metrix Corroguard insolating grommets fitted between screens and framing provide sufficient expansion and contraction to alleviate this problem.

FIRE RESISTANCE & NON-COMBUSTIBILITY

AWTA PRODUCT TESTING

Australian Wool Testing Authority Ltd - trading as AWTA Product Testing
A.B.N 43 006 014 106

1st Floor, 191 Racecourse Road, Flemington, Victoria 3031
P.O Box 240, North Melbourne, Victoria 3051
Phone (03) 9371 2400

TEST REPORT

Client : Metrix Group Pty Ltd
35 Kalman Drive
Boronia VIC 3155

Test Number : 21-001108
Issue Date : 15/03/2021
Print Date : 15/03/2021

Sample Description

Clients Ref : "Metrix Perforated 3mm Aluminium"
Rigid panel - perforated
Colour : White
End Use : Architectural perforated metal cladding
Nominal Composition : 5005 H34 Aluminium with D2525 powder coat finish
Nominal Mass per Unit Area/Density : 2.70g/cm3
Nominal Thickness : 3mm

AS/NZS 1530.3-1999

Methods for Fire Tests on Building Materials, Components and Structures
Part 3: Simultaneous Determination of Ignitability,
Flame Propagation, Heat Release and Smoke Release

Face tested: Face
Date tested: 15-03-2021

	Standard Error	Mean	
Ignition time	Nil	Nil	min
Flame propagation time	Nil	Nil	sec
Heat release integral	Nil	Nil	kJ/m²
Smoke release, log d	0.0209	-2.0308	
Optical density, d		0.0094	/ metre

Number of specimens ignited:	0
Number of specimens tested:	6

Regulatory Indices:

Ignitability Index	0	Range 0-20
Spread of Flame Index	0	Range 0-10
Heat Evolved Index	0	Range 0-10
Smoke Developed Index	1	Range 0-10

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Sean Bassett
APPROVED SIGNATORY

MICHAEL A. JACKSON B.Sc (Hons)
MANAGING DIRECTOR

0204/11/06

SHEET SIZES

Thickness & sheet size	Aluminium 5005	Mild Steel	Galvanised Steel	Stainless Steel 304	HW350/ Corten
0.60 X 1200 X 2400		✓*	✓*	✓*	
0.70 X 1200 X 2400				✓*	
0.80 X 1200 X 2400			✓*		
0.90 X 1200 X 2400		✓*	✓*	✓*	
1.00 X 1200 X 2400	✓		✓*		
1.20 X 1200 X 2400	✓	✓*	✓*	✓*	
1.20 X 1200 X 3000	✓	✓*	✓*		
1.20 X 1500 X 3000	✓		✓	✓*	
1.50 X 1200 X 2400	✓	✓*	✓	✓*	
1.50 X 1500 X 3000	✓	✓*	✓*	✓*	
1.60 X 1200 X 2400	✓	✓*	✓*	✓*	✓*
1.60 X 1500 X 2400	✓	✓*	✓*		
1.60 X 1200 X 3000	✓	✓*	✓*		✓*
1.60 X 1500 X 3000	✓	✓*	✓*	✓*	
2.00 X 1200 X 2400	✓	✓*	✓*	✓*	✓*
2.00 X 1500 X 2400	✓	✓*	✓*	✓*	
2.00 X 1200 X 3000	✓	✓*	✓*		
2.00 X 1500 X 3000	✓		✓*	✓*	
2.50 X 1200 X 2400	✓	✓*	✓*		
2.50 X 1500 X 2400	✓	✓*			
2.50 X 1200 X 3000	✓	✓*	✓*		
2.50 X 1500 X 3000	✓	✓*			
3.00 X 1200 X 2400	✓	✓*	✓*		✓*
3.00 X 1500 X 2400	✓	✓*			
3.00 X 1200 X 3000	✓	✓*			✓*
3.00 X 1500 X 3000	✓	✓*			
3.00 X 1200 X 3600	✓				
3.00 X 1500 X 3600	✓				
4.00 X 1200 X 2400	✓				
4.00 X 1200 X 3000	✓				
4.00 X 1500 X 3000	✓				
4.00 X 1200 X 3600	✓				
5.00 X 1200 X 2400	✓				
5.00 X 1500 X 3000	✓				

* Sheet is oversize 2440 x 1220, 3050 x 1220, 2440 x 1505, 3050 x 1505.

Additional sheet sizes may be available on a project basis please contact Metrix Group® for availability.

SUBSTRATES

Mild Steel

Economical substrate option, only suitable for interior use.

Galvanised Steel

Has added protection from galvanised surface coating.
Only recommended for interior use.

Aluminium

Light weight and suitable for both interior and exterior requirements, this is the most popular substrate for all applications.

Stainless Steel

Premium product that is very strong and durable.

HW350/Corten

Oxidised finish on Steel substrate. Giving a rusted appearance.

Product	Application		Surface finish		Material density
Substrate	Interior	Exterior	Powdercoat	Anodising	
Mild Steel	✓		✓		7.85
Galvanised Steel	✓		✓		7.85
Aluminium	✓	✓	✓	✓	2.71
Stainless Steel	✓	✓	✓		8.18
HW350/Corten		✓			8.20

How to calculate the weight of a solid panel

Weight = Length X Width X Thickness X Density

Example: A sheet of 2.400 X 1.200 X 3mm thick aluminium X 2.71 density of aluminium = 23.4kg

How to calculate the weight of a perforated panel

Weight = (Length X Width X Thickness X Density) – Open area

Example: (A sheet of 2.400 X 1.200 X 3mm thick aluminium X 2.71 density of aluminium) – 41% = 13.8kg

NB: Please note this formula calculates an approximate weight and should be used as a guide only, margin size, finishing choice, etc will alter the weight slightly. Metrix Group® accepts no responsibility for any errors in calculations.

FINISHES

Powder Coating

Powder-coat, once oven cured, becomes a solid and tough coating which adheres to the surface of properly pre-treated substrate. Powder coatings can be made in a multitude of colours, with various lustres, textures and special effects. The great range of colour options make powdercoating a versatile and popular choice.

Features and Benefits

- Low cost.
- Large colour range.
- Can be applied to a range of different substrates.
- Custom colours are available made to order.

Anti Graffiti Powder Coat

An anti graffiti powder coating that allows the removal of permanent markers and spray paint.

Features and Benefits

- Can be applied to a range of different substrates.
- Allows easy removal of most forms of graffiti.
- Excellent solvent resistance.
- Custom colours are available made to order.

Classic Oxide™

A new powder coat colour that has been created as an alternative to the popular weathering steel, best known under the trademark of Corten®.

Features and Benefits

- Finish has consistent tone and texture.
- Can be applied to a range of different substrates.
- Don't need to wait 2-3 months for the panels to oxidise.
- Doesn't stain the surrounding area with oxidisation run off.
- Doesn't need a sealer coating when being used in an internal application.
- When applied to aluminium, it offers a light weight alternative, resulting in reduced structural requirements for the cladding substructure, lowering the building cost.

Aluminium Anodising

Aluminium anodised finishes result in the controlled formation of an oxide layer which is much harder, more durable and about a thousand times thicker than the thin oxide layer naturally formed. It has excellent tolerance in coastal environments and is available in a range of different colours.

Features and Benefits

- Excellent tolerance in coastal environments.

Disadvantages

- Clamp marks.
- High cost.
- Colour variation.

SPECIFICATION

Specification

Metrix Group (product / pattern) on (thickness / substrate) with (colour and surface coating) with (mm) unperforated boarders. Material tension levelled to industry standard. Fixed with Metrix (installation system) complete with corrosion protection. Installed by Metrix certified contractor as per manufacturer's instructions.

Supplied by

Metrix Group

P: 1300 792 493

E: sales@metrixgroup.com.au

Example Specification

Metrix Group **Round Hole 60° M30-38.5** on **3mm Aluminium** with **Interpon D2525 Monument satin powder coat finish** with **50mm** unperforated boarders. Material tension levelled to industry standard. Fixed with Metrix **FF600 installation system** complete with corrosion protection. Installed by Metrix certified contractor as per manufacturer's instructions.

Supplied by

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For technical information including acoustic test reports, fire test data, specification sheets, installation systems, finishes and samples visit www.metrixgroup.com.au or contact us on 1300 792 493.

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