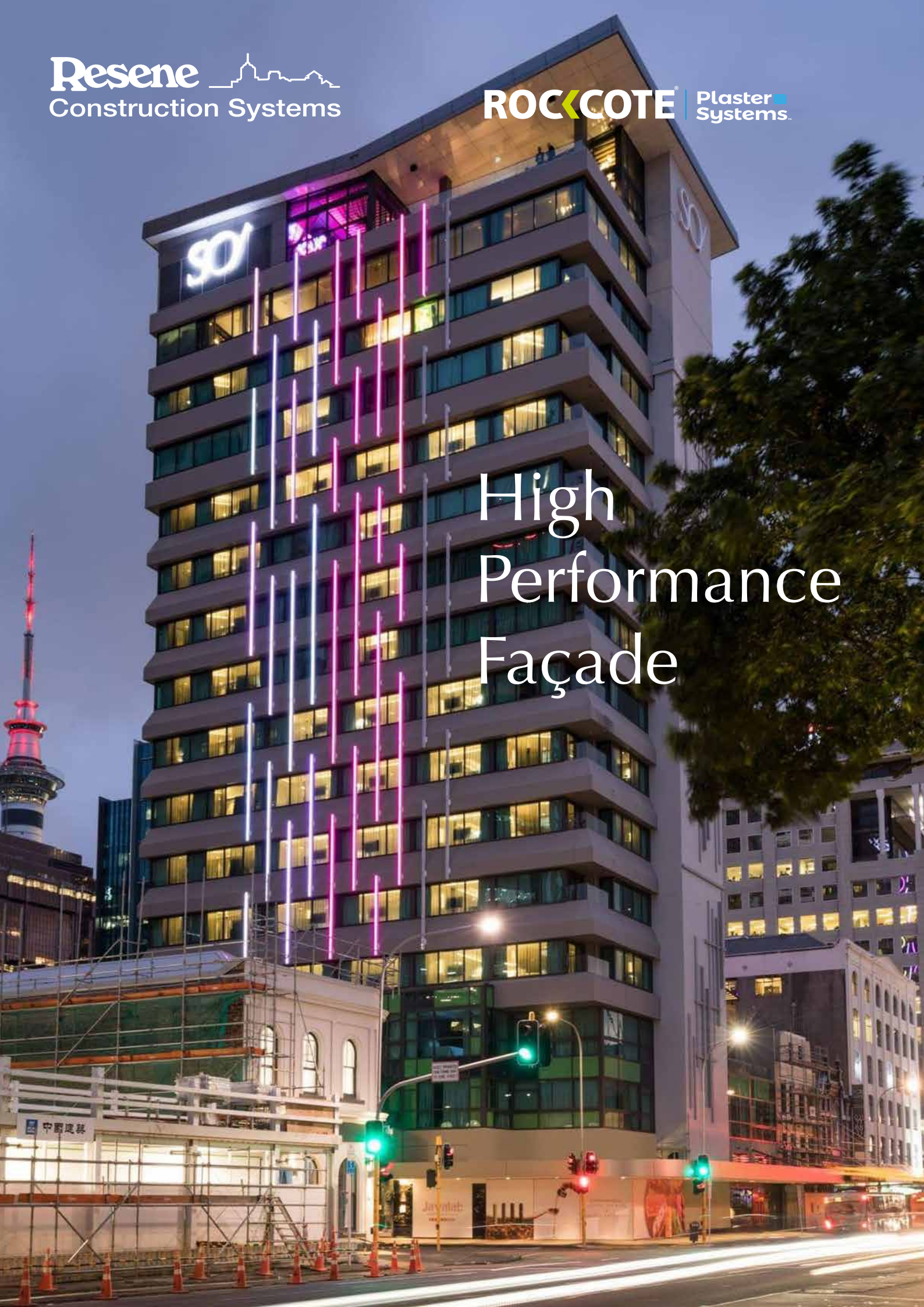
Resene
Construction Systems

ROCKCOTE Plaster Systems

High Performance Façade



Construction Systems

Façade

Flooring
Specialist finishes
Re-Strengthening

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Construction Systems

Rydges Hotel Wellington Airport

Next Level

BRANZ Scope for external facades is being raised for buildings up to 25 metres

The demand for mid-rise buildings is increasing, in response to an overall push for medium density housing. This is particularly relevant in Auckland with this type of construction encouraged in the Auckland unitary plan, as well as considerable recladding requirements for remediating leaky buildings.

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Next Level

- Multi storey projects - the new norm
- Unitary plan - Auckland
- More people living on smaller construction footprint

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Commercial Façade

Building façades are one of the largest, most important elements in the overall aesthetic and technical performance of a building.

Façade Engineering is the art and science of resolving aesthetic, environmental and structural issues to achieve the effective enclosure of buildings.

Façade engineers must consider aspects such as the design, certification, fabrication and installation of the building facades with regards to the performance of materials, aesthetic appearance, structural behaviour, weathertightness, safety and serviceability, security, maintenance and build ability.

Building façades are considered to be one of the most expensive and potentially the highest risk element of any major project. Historically building façades have the greatest level of failure of any part of a building fabric and the pressure for change and adaptation due to environmental and energy performance needs is greater than any other element of a building. As a consequence façade engineering has become a science in its own right.

Commercial Façade

BCA's / Local Councils require façade engineers to review and sign off on exterior façades outside the scope of 3604, ie Specific Designed Buildings.

Façade engineers contribution to a project

- Performance led design.
- Excellence in design
- Risk control
- Driving cost out
- Continuity through fabrication and installation stages
- Attention to quality as the design becomes a physical reality
- Verifying performance
- Cladding performance when the occupants move into the building
- Troubleshooting when problems occur

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System Redundancy

- Pressure equalised Cavity
- Façade Engineer sign off
- Registered Contractor installation
- Product performance
- Testing

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System Redundancy

- Drainage joints placed every second level of building height to drain incidental moisture ingress as early as possible.

Pressure equalisation

The dominant principle in achieving weathertight systems that protect the structure and internal elements.

- Pressure equalization as a concept is simple:
  when the outside air pressure is transferred to an air space behind the exterior cladding, the cladding is exposed to a near-zero pressure differential.

- Wall assemblies must comprise three basic components :

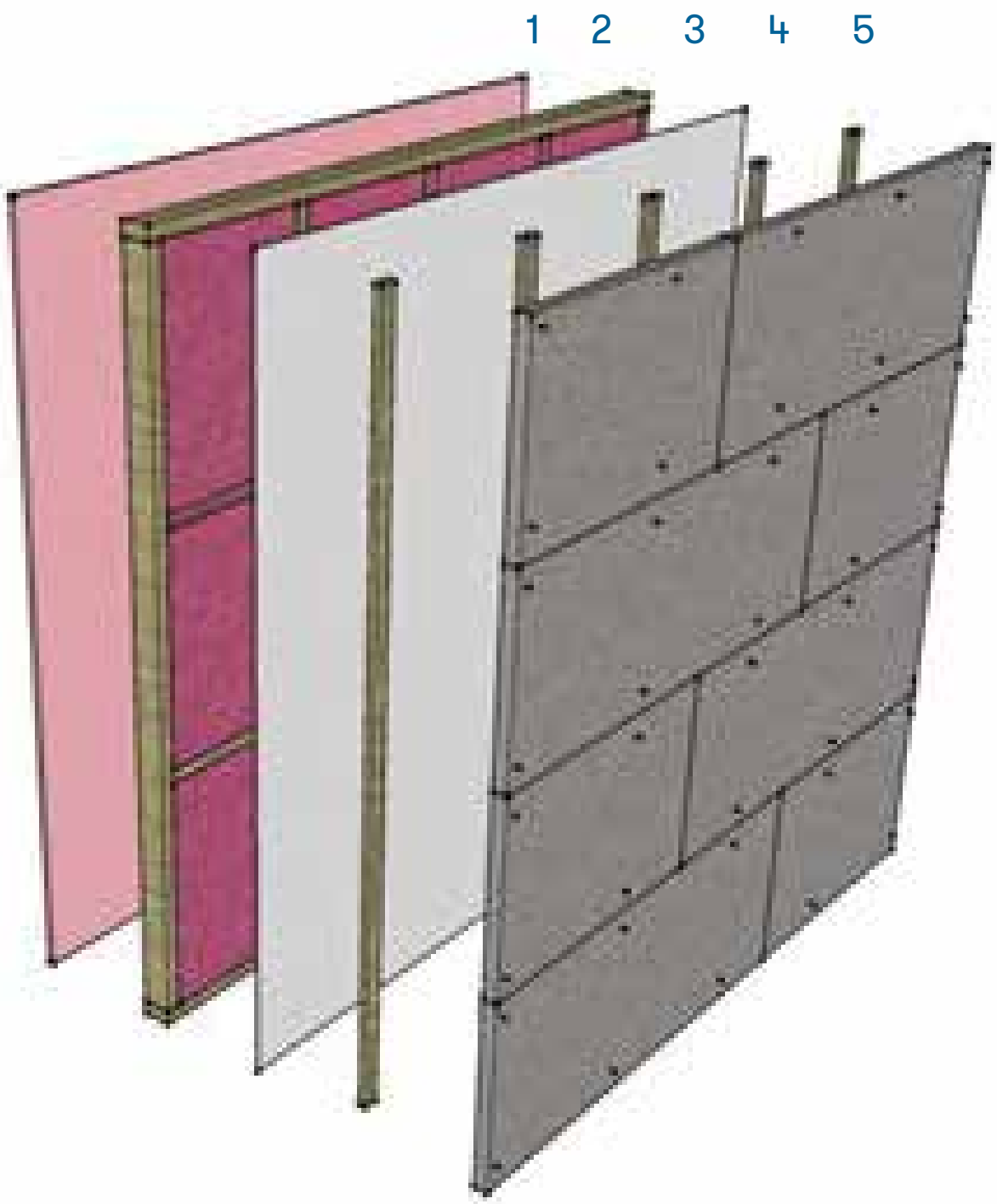
1. A rainscreen i.e. RCS INTEGRA cladding
2. A compartmented air chamber
   ie 20mm cavity vented to the outside
3. An air barrier system

i.e. Building underlay - which could be either rigid or flexible.
High performance façades require a rigid underlay.

Pressure equalisation

- In theory, pressure equalization means a zero air pressure differential at all times across the rain screen, i.e., a complete elimination of the driving force for pressure-induced water penetration.
- All our exterior façade systems include these items.

High performance façade testing


1
2
3
4
5

INTEGRA-High performance Façade

1. Internal Linings
2. Structure
3. Rigid Air Barrier
4. Cavity
5. INTEGRA Façade system

AS/NZ 4284 Testing a brief history

AS/NZS 4284 developed from the need to assess cladding systems designed to manage the ingress of water, rather than relying on a continuous layer to provide weathertightness.

This started with the drained-jointed cladding systems developed in the 1980s for high-rise commercial buildings.

A test method was needed that could cope with the concept of pressure equalisation and the management of exterior water, rather than simply its exclusion.

AS/NZS 4284 provides a means of assessing the weathertightness, airtightness and structural deflection of a section of a building façade.

A section of the AS/ NZS 4284 test was used as the Verification Method (VM) for weathertightness in the Building Code Clause E2/VM1.
This is the current BRANZ weathertightness test to prove compliance as an alternative solution.

AS/NZ 4284 testing is the toughest test to pass in terms of façade testing in NZ.

If any individual section of the test criteria fails all sections of the test fail.

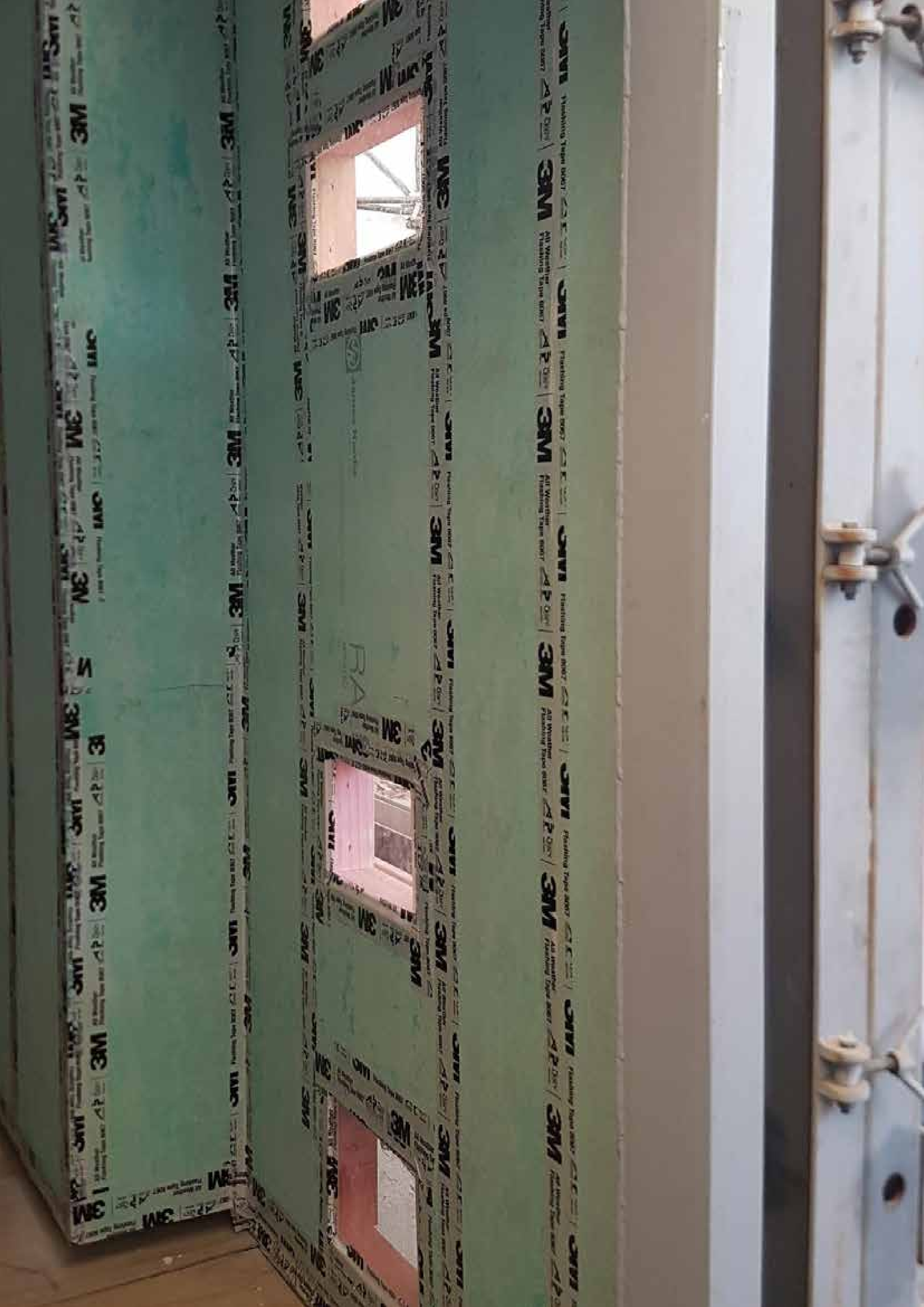
Façade engineers can design ‘specific’ wind pressures into the test.


Bostik
Bostik

AS/NZ 4284 - RCS INTEGRA Façade test

Helfens Façade lab in Wellington

2 storey


3M

AS/NZ 4284 - RCS INTEGRA Façade test

Helfens Façade lab in Wellington

Inside the booth

AS/NZ 4284 - RCS INTEGRA Façade test

Helfens Façade lab in Wellington
Full seismic testing
Air Pressure / Water testing

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AS/NZ 4284 - RCS INTEGRA Façade test

Helfens Façade lab in Wellington

Test results
Completed 4284 - PASS

Seismic deflection
SLS (serviceable limit state) 10 mm
ULS (ultimate limit state) 21 mm

Air Pressure
Negative pressure 3.9kpa
397.6kg of load per m2 of wall area
252 + km/hr

Positive pressure 2.7kpa
265.1kg of load per m2 of wall area
201.6 km/hr

Critical components

Rigid air barrier

100% air sealed rigid air barrier system -

- Pipes
- Fenestrations
- Window air seals (not simply foam)

AS/NZ 4284 - RCS INTEGRA Façade test

Helfens Façade lab in Wellington

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Taranaki St

Next Level Projects

9 levels
INTEGRA cavity based façade system
installed over ‘rigid underlay’

Rydges Hotel Wellington Airport

Next Level Projects

24.5 meters

INTEGRA cavity based façade system
installed over ‘rigid underlay’

Harrison Road, Ellerslie, Auckland

Next Level Projects

4 levels

Apartment reclad - 2005

3 blocks, 5 levels

- Recessed Joinery
- GRAPHEX insulated façade on 20mm cavity over rigid underlay
- 0.9mm powder coated aluminium drainage joint flashing

Stadium Gardens, Thorndon Quay, Wellington

Next Level Projects

5 levels

Monotek cavity based façade system installed over ‘rigid underlay’

Finished with the Rockcote Fibre cement Sheet Finishing System

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Premium construction systems for all your building projects

ROCKCOTE® Plaster Systems™