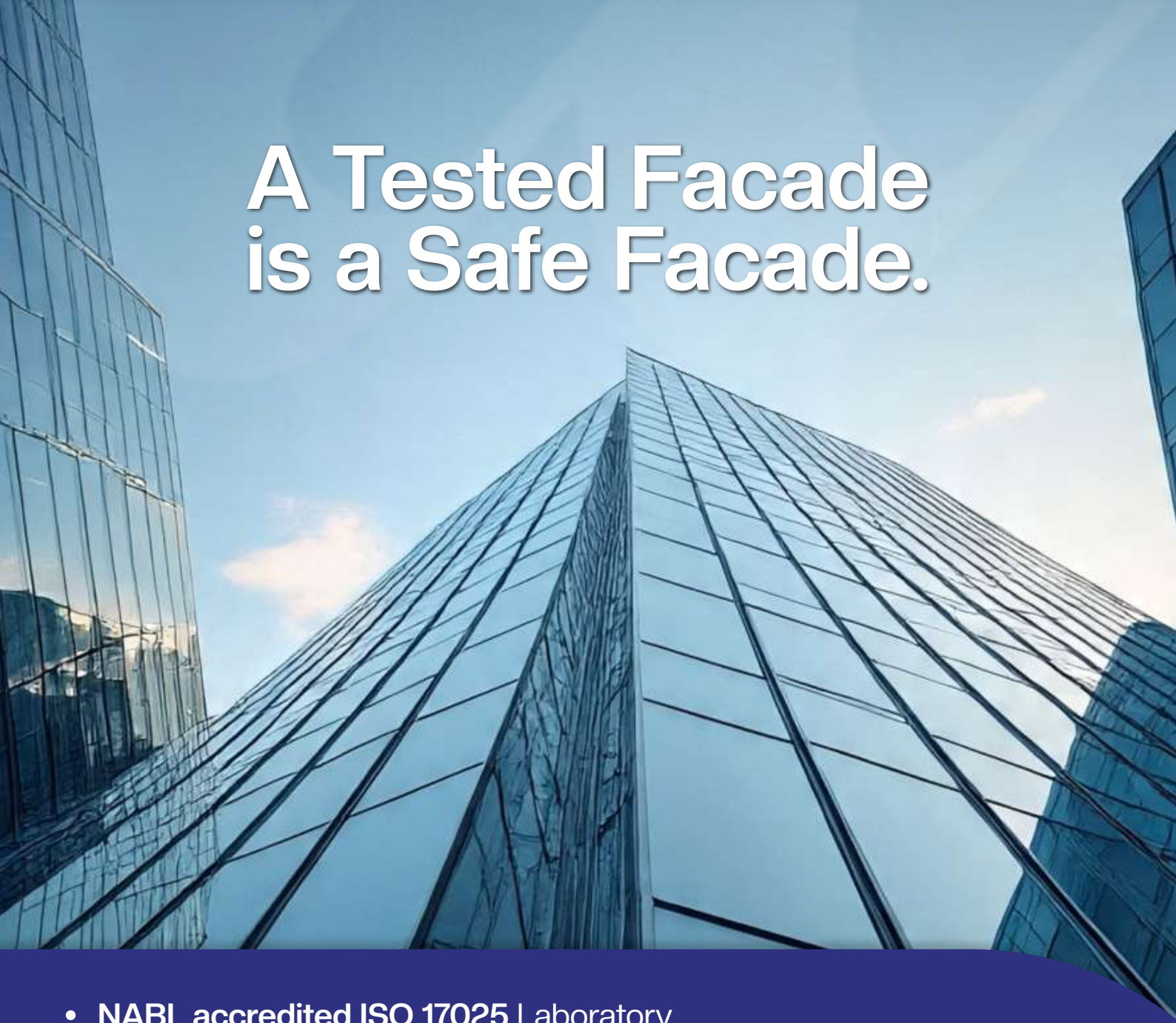


A Tested Facade is a Safe Facade.

- **NABL accredited ISO 17025** Laboratory
- **BIS Recognized Laboratory** for **Windows IS 18648, Glass IS 2553** Part 1, 2, 3 and for **Perimeter Fire Barriers** (Smoke Seals) as per **IS 18190**

- **34 Years** of testing experience
- Over **4500 projects** tested
- **6 laboratories** across Asia
- Accredited in **5 countries**

Locations:

- **Chennai** - Gummidipoondi
- **Mumbai** - Panvel

Winwall™

SAFE FACADE. SAFER WORLD.

Global Leaders in Facade Testing Services

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Introduction

As India takes its place among the developed nations, there is a need to build larger, better and complicated structures to accommodate the growing demand for corporates, hotels, airports, hospitals and residential apartments, which arise as a result of such development.

To cater to this demand of premium space architects, consultants, developers etc., are bringing the latest technology from world over to build bigger, taller and more complicated structures.

To ensure that these complex structures are safely clad with the right materials, energy efficient and perform to established standards, it is important that facade systems are tested before they are installed.

About Winwall India

Winwall Technology India Private Limited (WTIPL) is a ISO 17025 NABL Accredited laboratory established to conduct performance testing on aluminium curtain wall facades, windows, doors, handrails and also them as per the standards. WTIPL is a joint venture set up by Winwall Technology Pte Ltd, Singapore one of South East Asia's oldest and respected facade testing labs with over 26 years of experience in this field. It caters to the growing market in India and Srilanka.

Winwall has its testing labs in

- Singapore
- Kualalumpur
- Panvel
- Ho chin min
- Bangkok
- Chennai



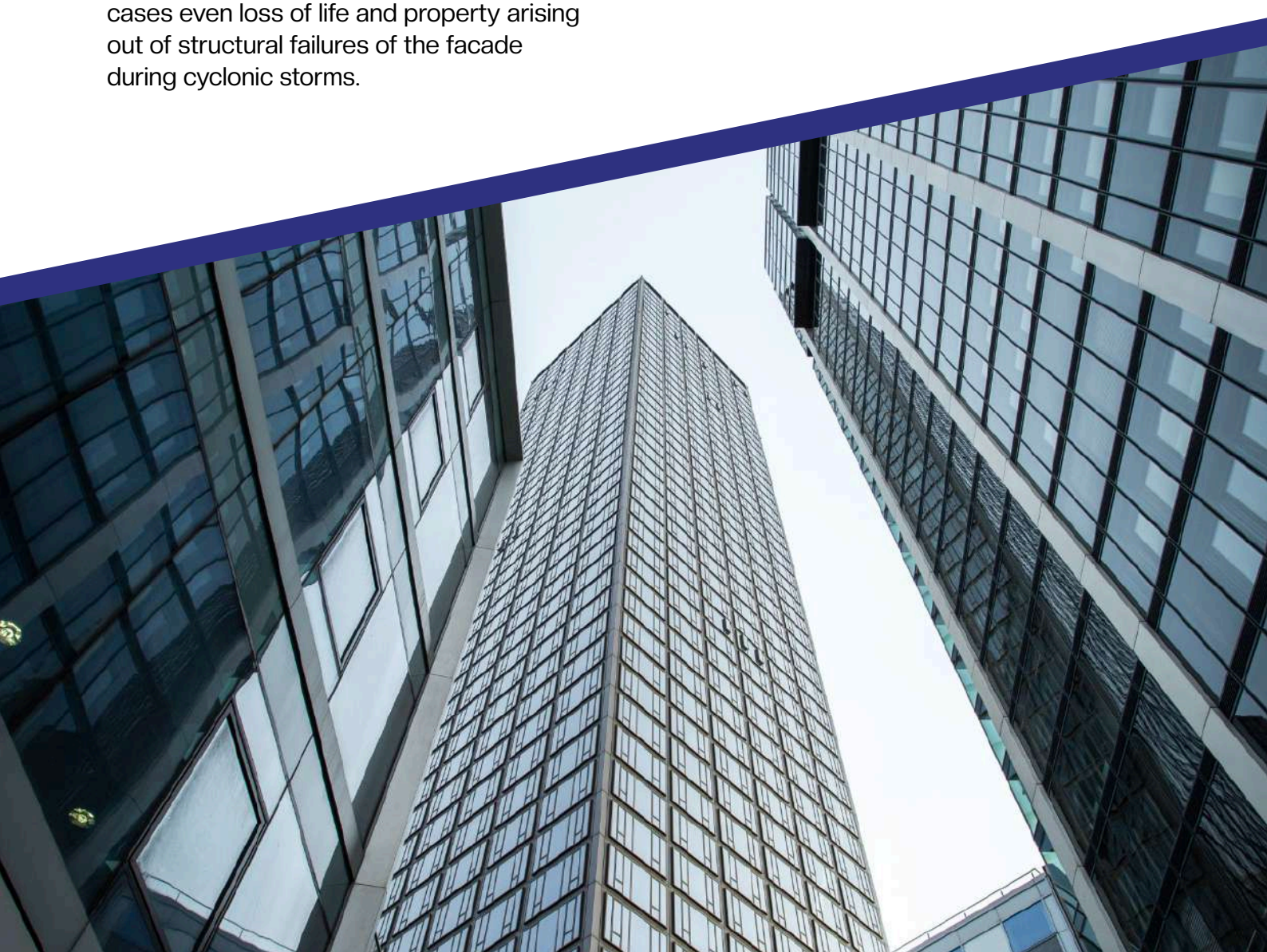
The Importance of Facade Testing

Windows and curtain walls generally represent as much as 50% to 100% of the exterior cladding of large buildings and they are the determining elements in the performance of the vertical building envelope. They also form a critical and important architectural feature of a building and represent a significant portion of the overall cost.

Modern buildings today are required to be not just aesthetically pleasing but also function to a very high performance standards. The facades act effectively as a barrier between the external and internal environments. Failure of the facades to meet the standards results in heavy energy wastage due to uncontrolled leaks of air-conditioning, damages to the interior furniture due to water leaks and in some cases even loss of life and property arising out of structural failures of the facade during cyclonic storms.

Thus the primary reasons for testing of curtain walls, windows and doors are as follows

- Ensure safety of the public and the occupants of the building
- Validate and evaluate design of facade
- Check for fabrication errors
- Rectify all faults before final production
- Save cost and time
- Ensure a Quality Facade



Scope of Activities

Winwall India restricts its scope of activity to conducting performance testing of facades, doors, windows and hand rails both in the lab and at the site and does not involve itself in consulting or facade design.

Curtain Wall Doors & Windows are tested as per **ASTM, AS NZ, BS EN, IS** and **AAMA** which are the most common standards used the world over.

It will also focus on testing of facade for fire resistance as per **NFPA 285**

Winwall will offer both testing at the lab to check and validate the design of a facade (offsite) and field testing to check consistency of fabrication and installation (onsite).

Curtain Walls / Doors & Windows

- **Air Infiltration and Exfiltration** (ASTM E283, AS/NZS 4284, EN 1026 and BS EN 12153)
- **Thermal Cycling / Condensation Analysis** (AAMA 501.5)
- **Structural Performance** (ASTM E330, AS/NZS 4284, EN 12211 and BS EN 12179)
- **Static Water Penetration** (ASTM E331, AS/NZS 4284, EN 1027 and BS EN 12155)
- **Dynamic Water Penetration** (AAMA 501.1)
- **Cyclic Water Penetration** (ASTM E547 and AS/NZS 4284)
- **Lateral Movement (Seismic Test)** (AAMA 501.4 and AS/NZS 4284)
- **Proof Load** (ASTM E330, BS EN 12179 and AS/NZS 4284)
- **Impact Resistance** (BS 12600 / BS EN 13049)
- **Building Maintenance Unit Load** (BMU) (AS/NZS 4284)
- Perimiter Fire Barrier Testing as per **IS18190 AND ASTM E 2307**
- **Controlled Dismantle**

Scope of Activities

Handrail & Balustrade Systems

- Balustrade performance - (ASTM E2353 / ASTM E935)
- Anchorages - (ASTM E488)

Glass Testing

- Heat Strengthened, Toughened, DGU and Float Glass as per IS 2553-1, 2 & 3, IS 16982, IS 6506, IS 17346, IS 17004 and IS 14900

Fire Propagation

- As per standard NFPA 285

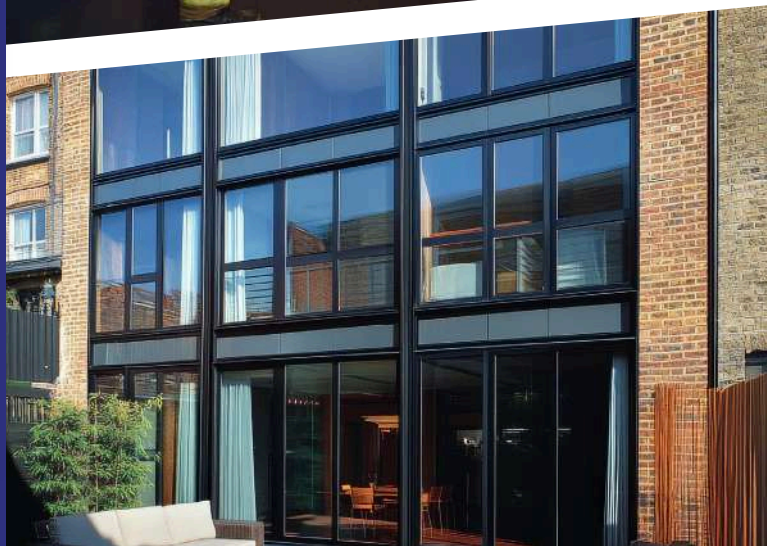
Windows and Doors

- Hardware operating and life cycle testing as per BS EN 12046 Part 1 & 2, BS EN 13115, BS EN 12400, BS EN 13126 Part 2, 4, 6, 7, 15, BS EN 1935









Test Methodologies

The glass curtain walls sample must incorporate all the essential components which are part of the end product, These includes - aluminium profiles, glass panels, hardware, gaskets, sealants, fastners and any other elements.

Minimum Three Bays Wide
To incorporate a central bay and all junction details

Minimum Two Floors High
Ensuring full representation of vertical performance

Expansion / Stack Joint
At least one expansion or stack joint must be included

Vision & Spandrel Sections
One spandrel section, one vision section, and openable sash with all necessary hardware

Air Infiltration Test ASTM E 283

Energy efficiency of a facade is checked by accurately measuring the flow of air through the facade/window or door at specified differential pressure. The more the air flow the more energy is leaking through the system. Checking the air infiltration during the test and reducing the quantum of air leak will give the occupants huge savings in cooling costs.





Static Water Penetration Test ASTM E 331

The objective of a well designed facade is to keep the rain water out of the building even during severe storms. Water entering through the curtain wall damages false ceiling, expensive interiors and also can lead to short circuits in the electrical system.

Thorough evaluation of the facade system to prevent water infiltration means no damage to furnishings and interiors. The pass criteria is clear - **no water leak on the interior surface during the test.**





Dynamic Water Penetration Test AAMA 501.2

The same quantum of water is sprayed on the mock up sample and a **cyclonic turbulence is created using a aircraft engine** to simulate real life conditions.

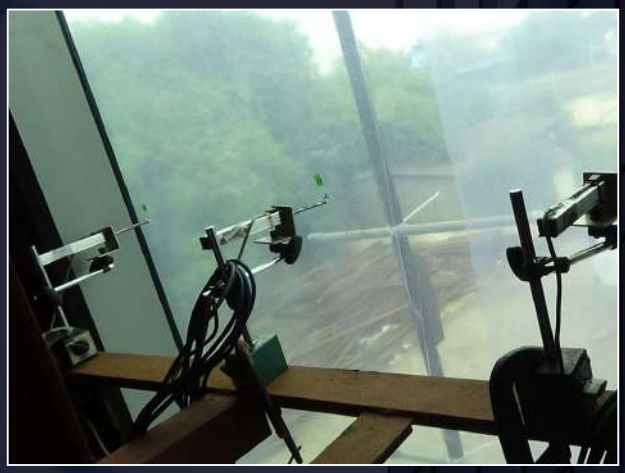
No water penetration through the sample is allowed.

Structural & Seismic Performance Testing

Structural Performance Test ASTM E 330

The ability of the facade to withstand the onslaught of severe wind loads means more safety for the occupants and others around the building. The facade is tested for maximum wind-loads and the deflections of all critical elements are measured for both positive an negative pressure.

Further on a safety test is conducted where the mock up sample is tested for **150% of the design** load both positive and negative pressure.



Lateral Movement (Seismic Test) AS/NZ 4284

Since the facade is a continuous glazing and the brackets are fixed outside the RCC slab, a seismic test is done to check the ability of the facade to accommodate the **interstory drift** which happens due to the impact of windloads on the building structure.





150%

Safety Load Test

Mock-up tested at 150% of design load for both positive and negative pressure

2

Pressure Directions

Mock-up tested at 150% of design load for both positive and negative pressure

100%

Deflection Measured

All critical elements measured for deflection under maximum wind load



Thermal Cycling and Condensation Test AAMA 501.5/ AAMA 1503

The effects of extreme cold and hot weather on the facade is tested by simulating the lowest and highest recorded temperature in the zone where the project is located. The impact of such extreme weather conditions on the aluminium profiles, gaskets and sealings is checked by a repeat of air infiltration and static water penetration test. This test can also help in vericreates any condensation on the glass panels.

CERTIFICATION

National Accreditation Board for Testing and Calibration Laboratories

NABL

CERTIFICATE OF ACCREDITATION

WINWALL TECHNOLOGY INDIA PRIVATE LIMITED

has been assessed and accredited in accordance with the standard

ISO/IEC 17025:2017

"General Requirements for the Competence of Testing & Calibration Laboratories"

for its facilities at

GAT NO. 121/2, GODREJ WOODS RD, KHANAVALE VILLAGE, PANVEL, RAIGAD, MAHARASHTRA, INDIA

in the field of

TESTING

Certificate Number: TC-15106

Issue Date: 14/12/2024 Valid Until: 13/12/2028

This certificate remains valid for the Scope of Accreditation as specified in the annexure subject to continued satisfactory compliance to the above standard & the relevant requirements of NABL.
(To see the scope of accreditation of thislaboratory, you may also visit NABL website www.nabl-india.org)

Name of Legal Entity: Winwall Technology India Private Limited

Signed for and on behalf of NABL

N. Venkateswaran
Chief Executive Officer



National Accreditation Board for Testing and Calibration Laboratories

NABL

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"General Requirements for the Competence of Testing & Calibration Laboratories"

for its facilities at

NO. 567-A, S.R. KANDIGAI ROAD, GUMMIDIPOONDI, CHENNAI, THIRUVALLUR, TAMIL NADU, INDIA

in the field of

TESTING

Certificate Number: TC-7687

Issue Date: 22/09/2025 Valid Until: 21/09/2029

This certificate remains valid for the Scope of Accreditation as specified in the annexure subject to continued satisfactory compliance to the above standard & the relevant requirements of NABL.
(To see the scope of accreditation of thislaboratory, you may also visit NABL website www.nabl-india.org)

Name of Legal Entity: WINWALL TECHNOLOGY INDIA PRIVATE LIMITED

Signed for and on behalf of NABL

Anita Rani
Director

Chakravarthy T. Kannan
Chief Executive Officer

Onsite Testing (Field Testing)

Doors & Windows
On-Site Testing as per **ASTM E 1105**

Curtain Walls and Skylights
On-Site Testing as per **AAMA 501.2, ASTM E 1105**

Once the mock up sample installed at the lab has been tested and it passes all the laid down specification the design of the system stands validated. However in order to ensure that the workmanship and the installation procedures are strictly adhered to by the contractor, an onsite water penetration test is conducted as per AAMA 501.2 for curtain walls and as per ASTM E 1105 for sliding doors.

This test is done on **1 to 5**% of the glazed area in stages as the installation process begins at site.

By using in an independent testing agency to conduct a water test at site on random locations during installation the building owner can ensure that the recommended fabrication and installation process is adhered to by the facade contractor.

Conducting this during the early stages of installation any shortcomings which may have crept in either knowingly or unknowingly subsequent stages of installation.

> It is important for al parties involved in this process to realize that even though performance testing is not mandatory, doing a test eliminates the smallest possibility of failure in the facade thus preventing loss to property and human life.



Onsite - Hose Test for Curtain wall



Onsite - Impact Test



Onsite - Hose Test for Skylight

Handrail Testing



Lab Handrail Test



Onsite - Handrail Test

Hardware Testing for Durability











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