



Test façade mock-up: structural deflection under wind load (design)

Test façade mock-up for structural deflection under design wind load with an interactive checklist—fully commentable and ready to export as PDF/Excel—for verifiable, documented serviceability performance.

Project:

Date:

Filled by:

Pre-Test Documentation

1	Approve a written test plan defining Pdesign (kPa), positive/negative load cases, ramp/hold durations, and roles.
2	Verify acceptance criteria for maximum and residual deflection per approved project specifications and authority requirements.
3	Cross-check mock-up drawings, BOM, and anchor schedules match the built specimen; note any authorized deviations.
4	Record valid calibration certificates for pressure transducers and displacement sensors; log serial numbers and expiry dates.
5	Conduct a safety briefing; establish an exclusion zone with barriers and signage; confirm PPE compliance for all attendees.

Mock-Up Preparation

6	Inspect mullions, transoms, glazing, and anchors for damage or looseness; rectify issues before testing and photograph conditions.
7	Torque structural fasteners using a calibrated wrench per manufacturer instructions; record measured torque within specified range.
8	Seal chamber interfaces and perimeter gaps with temporary gaskets/tape to prevent unintended leakage affecting pressure stability.
9	Mark sensor target points at member midspans and quarter points per the instrumentation plan; capture a marked layout sketch.
10	Measure baseline plumbness and level using a laser level; record initial offsets as the zero reference condition.

Instrumentation and Calibration

11	Mount LVDTs or laser displacement sensors on rigid, independent frames; confirm probe alignment within $\pm 1^\circ$ to surface normal.
12	Connect sensors to a data logger; set channel names by location and sampling rate ≥ 10 Hz for all channels.
13	Zero all displacement channels at rest; confirm zero drift within ± 0.1 mm over 2 minutes; save baseline trend.
14	Verify pressure system capacity $\geq 1.2 \times P_{\text{design}}$; confirm transducer accuracy within $\pm 1\%$ F.S.; upload calibration record.
15	Run a trial load of 0.10–0.20 kPa; check linear sensor response without noise spikes > 0.05 mm; export plot.

Load Application and Monitoring	
16	Confirm chamber sealing by holding 0.20 kPa for 2 minutes; ensure stability within ± 0.02 kPa; store the hold plot.
17	Apply positive pressure steps to 50%, 75%, and 100% Pdesign at ≤ 0.10 kPa/s; ensure continuous data logging.
18	At Pdesign, hold for 10 minutes; capture peak out-of-plane deflection at each sensor; compare with acceptance criteria.
19	Release to zero pressure; monitor 5 minutes for recovery; calculate residual deflection at steady state for each channel.
20	Repeat the full sequence for negative pressure (suction); verify no abnormal behavior; record observer notes with timestamps.
21	Visually inspect during peak loads for cracking, fastener slip, or glass edge contact; take high-resolution photos or video.
22	Record ambient temperature and relative humidity with a calibrated meter; log values alongside pressure and deflection timelines.

Post-Test and Acceptance	
23	Compute deflection ratios per project method; verify compliance with serviceability criteria per approved project specifications.
24	Assemble a report with plots, peak/residual tables, photos, and calibration certificates; obtain engineer review and sign-off.
25	Log nonconformances where limits are exceeded; assign corrective actions and due dates; track to closure.
26	De-instrument and restore the mock-up; remove temporary seals; make safe; capture close-out photographs of all test areas.

Comments:

Filled by:

Signature:

Introduction	How to use this checklist
Test façade mock-up for structural deflection under design wind load establishes a consistent, instrumented process to validate façade serviceability before field installation. This checklist focuses on curtain wall deflection testing at design wind pressure using a sealed pressure chamber, calibrated differential pressure transducers, and displacement sensors such as LVDTs or laser gauges. The scope is limited to structural deflection behavior of the mock-up assembly (mullions, transoms, anchors, and interfaces) under positive and negative pressure; it excludes air or water penetration testing. By controlling ramp rates, hold times, and sensor sampling, teams capture maximum and residual deflection to compare against serviceability criteria per approved project specifications and authority requirements. Clear documentation—plots, photos, calibration records, and sign-offs—reduces disputes, prevents cracking or fastener slip, and protects warranties. Use this interactive page to plan, run, and record the test effectively—tick items, leave comments, and export the full record as PDF/Excel with a secure QR code.	1. Preparation: Confirm the test plan, Pdesign, acceptance criteria, tools (torque wrench, LVDTs/laser gauges, data logger, pressure transducer), seals, and PPE. Verify calibrations are current and the chamber, blower, and power supply are service-ready. 2. Open the checklist in interactive mode. Enter project, specimen ID, Pdesign, date/time, and responsible roles. Attach drawings and the approved test plan for reference before starting physical setup. 3. Assign items to team members. Tick each step upon completion, capturing photos, plots, and calibration certificates. Use structured fields to record measurements, ramp rates, hold times, and acceptance outcomes. 4. Use comments to capture observations (e.g., noise spikes, visible distress) and decisions. Mention teammates with @names and link data files or external plots for traceability. 5. Export: Generate a paginated PDF/Excel package including ticked items, comments, photos, plots, and signatures. The export embeds a QR code for authenticity and quick retrieval. 6. Sign-Off: Collect digital signatures from the test engineer, contractor, and client representative. Distribute the final report and archive it with version control for future audits.