

A STABLE FAÇADE STARTS WITH PROPER COORDINATION BETWEEN THE PANEL LAYOUT AND SUPPORTING STRUCTURE

A high-quality adhesive bond is an essential part of a durable façade system. However, even the best adhesive system cannot compensate for structural errors in the design and build-up of the façade.

When façade panels, façade strips or natural stone cladding are used, attention should not be limited to the panel type and adhesive connection. The layout of the cladding, the backing boards and the aluminum supporting structure must be designed as one integrated system.

Proper coordination ensures uniform load transfer, prevents unwanted stress and contributes to a stable and durable façade.

The Panel Layout Determines How Loads Are Transferred

Wind loads, the dead weight of the cladding and movements caused by temperature differences are transferred through the adhesive bond to the supporting structure.

When the layout of the façade panels or strips is not properly aligned with the position of the aluminum profiles, considerable differences may occur in the loads acting on the individual support points.

As a result, one profile may be subjected to significantly higher loads than another. This may lead to:

- uneven loading of the aluminum profiles;
- local stress concentrations;
- deformation of the supporting structure;
- unwanted movement of the façade panels;
- an increased risk of damage to joints, panels or adhesive bonds.

By coordinating the panel layout with the supporting structure during the design phase, loads can be distributed more evenly.

Avoid Structurally Linking Large Façade Areas

A staggered or irregular panel layout can be architecturally attractive. From a structural perspective, however, such a layout requires additional attention.

When panels bridge several backing-board fields, joints or supporting profiles, large sections of the façade may unintentionally begin to function as one interconnected area.

This can become problematic when the underlying structural components need to move independently. Differences in temperature, moisture exposure, deflection or material behavior may then be transferred through the façade cladding.

This can result in high internal stress within the façade system.

The basic design principle should therefore be that the cladding layout must not unnecessarily restrain the natural movement of the substructure. Expansion joints and board joints should be respected throughout the complete façade build-up.

An Adhesive Bond Should Accommodate Movement, Not Prevent It

An elastic adhesive system is well suited to absorbing limited movement between the façade panel and the supporting structure. However, the adhesive bond must be correctly designed and applied.

When panels completely bridge structural joints and are rigidly bonded on both sides, movement in the underlying structure may be transferred directly into the panel. The adhesive bond is then subjected not only to wind loads and dead weight, but also to imposed deformation from the substructure.

This is particularly relevant for natural stone, ceramic materials and other relatively rigid or brittle cladding products. These materials may withstand high compressive loads, but they are more sensitive to bending and stress concentration.

Installing Natural Stone Across Cement-Board Joints

When natural stone panels are installed across the joints of cement-based backing boards, the stone and adhesive bond should not be allowed to fully connect the two boards structurally.

A practical solution is to omit the adhesive bond locally on one side of the board joint. The natural stone panel remains structurally supported on one side, while the other side can move relative to the backing board.

This allows movement to occur in the backing boards without transferring the full movement into the natural stone.

This detail helps to:

- limit stress build-up in the natural stone;
- reduce the risk of cracking or breakage;
- minimize unwanted tensile loads in the adhesive bond;
- allow movement of the backing boards;
- improve the durability of the complete façade system.

The local omission of the adhesive bond must always form part of a carefully prepared bonding and support plan. The panel must remain sufficiently supported to safely transfer all relevant loads.

Limit the Unsupported Overhang

The position of façade panels or façade strips in relation to the edges of the backing boards is also important.

If too much of the panel extends beyond the supported area, a lever effect is created. This rapidly increases bending stresses in the panel and loads in the adhesive bond.

As a practical design rule, the unsupported overhang should not exceed one-third of the width of the panel or façade strip.

For example, with a façade strip measuring 300 mm in width, the unsupported section should not exceed approximately 100 mm.

This rule helps maintain sufficient support and limits stress concentrations around board edges and joints. Depending on the material, panel thickness, wind load and project-specific conditions, a smaller overhang may be required.

Design the Complete Façade as One System

A reliable façade is not created by assessing individual components separately. The cladding, adhesive bond, backing boards, aluminum profiles, mechanical fasteners and building structure continuously influence one another.

The following aspects should therefore be carefully coordinated:

- the dimensions and positions of the façade panels;
- the direction and center-to-center spacing of the aluminum profiles;
- the position of joints in the backing boards;
- expansion joints in the building structure;
- permitted panel overhangs;
- the position and length of the adhesive beads;
- expected thermal and moisture-related movement;
- wind loads and the dead weight of the cladding.

The earlier these elements are combined in the design process, the lower the risk of costly adjustments during installation.

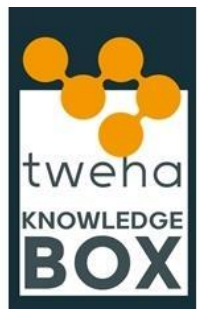
The Value of Technical Preparation

A properly designed bonded façade system offers important advantages. Loads are distributed evenly, visible mechanical fixings are unnecessary, and the cladding can be designed with greater architectural freedom.

These benefits can only be achieved when the design and installation are fully aligned. Technical preparation should therefore not be regarded as an additional cost, but as an investment in:

- predictable installation;
- reduced failure costs;
- a longer service life;
- a stable and consistent façade appearance;
- reliable load transfer;
- greater certainty for the architect, contractor and client.

TWEHA® Supports More Than Just the Adhesive Product



TWEHA® does more than supply high-quality adhesive systems for ventilated façade cladding. We also support distributors, designers and façade specialists in the technical development of the complete bonded façade system.

With practical application guidelines, technical documentation, test procedures and project-specific support, we help assess critical design choices at an early stage.

Because a durable bonded façade does not begin when the adhesive is applied.

It begins with a well-considered design.

TWEHA®, 2026