Barracuda JAMES TAYLOR

Test Preface

Test Report No. N950-22-18408

Wind Resistance

The following preface is intended to provide some 'background' to this particular test, its purpose, relevance to 'real world' façade performance and an accurate interpretation of the results.

The Barracuda system will be subjected to wind loads during its service life.

We wanted to prove that the Barracuda system could withstand the sorts of wind loads that it might be subjected to.

This is a test that many will be familiar with, it's one of the CWCT standard 'Sequence B' tests and is usually conducted on a recently built test panel.

Please note that the Barracuda system has also been 'cyclic wind load tested' during 60 year long term durability testing (Test Report No. N950-24-18683).

Because brick slip systems have mortar in their joints, it's vital that any test panel is configured so that it exhibits 'real world' deflections. Mortar (regardless of type) is relatively inflexible. It's not mastic! Brick slip systems are most commonly attached to backing walls constructed from lightweight metal studwork. Lightweight metal studwork backing walls, in the real world, when designed, supplied and constructed, fully economised for a real construction project will exhibit significant deflections. If the backing wall designer understands that a relatively brittle material like render or a brick slip system will be attached to their backing wall, they will probably design on the basis that allowable mid-span deflections do not exceed one three hundred and sixtieth of their vertical stud span (height) L/360. If the backing wall is 3 metres high then allowable mid span deflections are 8.5mm. If the backing wall deflects 8.5mm when subjected to a positive wind pressure and 8.5mm when subjected to a negative wind pressure then the middle (mid-height) of 3 metre high area of brick slip cladding might be pushed and pulled through a total deflection range of 17mm.

If the test panel is too stiff and doesn't deflect in a representative fashion when wind load tested, you don't adequately test whether, what in most cases is a small cross section of mortar, will actually 'stay put'. Will the mortar crack? Will it start to break up in the joints? Might there be some mortar loss from the joints? Might vulnerable retaining nibs break away from the brick slips? If the test panel is artificially stiff, 'ultimate' brick slip security isn't adequately tested.

We made sure that we attached our Barracuda system to a lightweight metal stud backing wall that had been engineered to represent the sort of fully economised backing wall construction that would be found on a typical real large scale construction project.

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Please refer to Tables 6 and 7 within Test Report No. N950-22-18408

Measured deflections exhibited by the metal studwork ‘mid-span’ (deflection gauge No. 5) reveal that the stud travelled through a total deflection range of 22mm, comfortably exceeding the theoretical total deflection range limits to which the studwork should be designed (17mm).

Very importantly, the wind resistance test panel was configured so that it incorporated brick heights that represented the extremes of those allowed by BS EN 771-1. (58mm to 70mm).

In order to test brick slips that were 58mm and 70mm high, brick slips were carefully fabricated (cut and bonded), ensuring that their original top and bottom surfaces were retained.

In order to create a worse than ‘worst case’, brick slips 58mm high and 70mm high were incorporated into the impact test panel in greater relative theoretical quantity proportions than allowed by BS EN771-1.

Bricks, and the brick slips which are cut from them, also come in numerous shape types, bricks with large frogs, large core holes, numerous smaller core holes and of course ‘solid’ bricks etc. The bricks can be any clay material type, extruded, pressed or handmade.

In order to represent this range of brick shape types and brick manufacturing techniques, nine different brick types were selected and incorporated into the impact test panel.

These were;

Brick Type 1. – Wienerberger Sandalwood Yellow Multi
Brick Type 2. – Michelmersh Charnwood Light Victorian Red
Brick Type 3. – Ibstock Leicester Red Stock
Brick Type 4. – Ibstock Chesterton Multi Red Smooth
Brick Type 5. – Blockley Windermere Grey Solid
Brick Type 6. – WienerbergerOlde Ivory Stock
Brick Type 7. – Wienerberger Smeed Dean London Stock
Brick Type 8. – Ibstock Aldridge Anglian Red Multi Rustic
Brick Type 9. – Michelmersh Haddley Brindle Wirecut

Please see test panel drawings appended to the test report for locations/distribution of the different brick types.

Testing carried out in accordance with the CWCT Standard Test Methods for Building Envelopes: 2005/BS EN 13116: 2001

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Please read the test report thoroughly, it's always important to read beyond just the 'Summary and Classification of Results'. We would always encourage you to, because we are entirely confident that a detailed examination of the test results and accompanying photographs reveals a depth and quality of performance that comfortably exceeds the classification and is genuinely market leading.

Wind Resistance – Serviceability ± 2400 pascals = Pass

Wind Resistance – Safety ± 3600 pascals = Pass

Despite serviceability impairing performance being permissible after application of the safety test pressure, absolutely no damage at all was evident to any of the brick slips or mortar joints. Not a single hairline crack!

The results demonstrate an exceptionally high level of wind resistance and general robustness.