Barracuda JAMES TAYLOR

Test Preface

Test Report No. N950-24-18684

Impact Resistance (Un-Mortared)

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 (and other comparable brick slip systems) are mortared after the brick slips have first been ‘fitted’ into the system. Mortar is typically injected into the joints between the brick slips after a suitably large area of brick slips (viable for mortaring) have been installed. This means that the system might be left for a period of time, exposed to the potential of impacts, in this partially built ‘temporary’ un-mortared state.

We wanted to prove that the Barracuda system could ‘safely’ withstand the sort of impacts that it might be subjected to, whilst in this partially built ‘temporary’ un-mortared state.

It’s worth just exploring the environment in which these particular impacts might take place. Because the system is not yet mortared, its construction is not complete, so, we are considering impacts that might take place in the context of a ‘construction site’ environment.

It is envisaged that impacts might arise from, for example;

Construction personnel accidentally tripping and falling against the un-mortared façade. This might occur whilst walking, working or manoeuvring around access scaffolding or potentially walking or working at ‘ground level’. These would typically be ‘soft body’ impacts.

Construction personnel accidentally impacting the façade with the ends of scaffold tubes during scaffold alterations/erection/removal. These would be ‘hard body’ impacts.

Construction personnel accidentally impacting the façade due to the careless handling of materials. Maybe knocking the façade with the corner of some difficult to handle sheathing/board materials or similarly whilst handling long lengths of material like sub-structure extrusions or flashings/trims etc. These would typically be ‘hard body’ impacts.

Most construction sites should have measures in place that reduce the risks to construction personnel that might arise from the façade being impacted during the construction process. The wearing of PPE, the use of debris netting, scaffold toe boards and the implementation of exclusion zones below elevated work locations etc.

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Testing was carried out in accordance with CWCT Technical Notes 75 and 76.

In this instance, serviceability impact energies aren't of any relevance. The Barracuda system is being tested in its 'temporary' un-mortared state. Its construction is not yet completed so it is not yet 'serviceable'.

We elected to subject the Barracuda system to the largest safety impact energies stipulated within TN75/76.

These are;

Soft Body – 500J
Hard Body – 10J

Very importantly, the 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). Of particular interest were the smallest bricks allowable (58mm in height) as these should be the most difficult for the system to 'hold onto'.

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

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

The test panel was subjected to 18 No. 500J soft body impacts ad 18 No. 10J hard body impacts.

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.

The 500J soft body impact is a big impact, it has the 'heft' to temporarily deflect almost all rainscreen/brick slip wall constructions quite noticeably. Our principal interest was; could the Barracuda system successfully retain all of the brick slips or would some (particularly, potentially the really small 58mm bricks) be ejected from the system as the rails rapidly recovered from their temporarily deflected state?

Please refer to Table 3 within Test Report No. N950-24-18684

All of the brick slips were successfully retained by the Barracuda system.
No damage was observed. All impact test results are classified as **Negligible Risk**.

The 10J hard body impacts are typically really problematic for a 'brittle' material like fired clay. CWCT Technical note 75 makes specific reference to this. We felt certain that the 10J hard body impact energy would, without the presence of the mortar, crack the brick slips. So, our principal interest was; could the Barracuda system successfully retain the cracked brick slips?

Please refer to Table 4 within Test Report No. N950-24-18684

All of the brick slips were successfully retained by the Barracuda system.
Typically the brick slips cracked as expected. The mass of any falling particles was just 4g (the maximum allowable for the categorisation achieved is 50g). All impact test results are classified as either **Negligible Risk** or **Low Risk**.