REPORT

Report Number

PSL7831

Date of Issue

26th of February 2024

Client

Harris Brick Safety Systems

Customer order Nº

0004

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1.0 Objective.

To carry out the proof load application of the Harris Brick Safety System 'Brick Bud' in accordance with the customers specification. The 'Brick Bud' is designed to be secured against any surface using the OEM approved anchors and to be freestanding against any newly jointed brick or block surface.

The purpose of the following report is to determine what simulated load bearing could be applied to the surface of a newly jointed Brick and Block wall before total or catastrophic failure occurred. Loadings will be factored to the area applied and presented uniformly across the entire area in cyclic loads until failure or a point deemed unsafe to proceed.

All readings taken throughout testing were in Kilograms Force (KGf) and converted into KGfm^2 and into pressure which holds an equivalent on the Beaufort scale in m/s. This report does not account for gusts or bursts of wind which may cause a rocking effect put monitor the results of prolonged periods of high wind velocity directly on a facing wall. All 'Brick Buds' were set up and constructed by Harris Brick Safety Systems.

Test Parameters

Temperature: 5°C
Average Wind Speed: 1.1m/s
Wind Speed Gusts: 2m/s
Direction: North to South
Brick Wall direction: East to west
Dimensions: 2m(H) X 3m(W)
Block wall direction: East to west
Dimensions: 2m(H) X 3m(W)
Mortar Cure time: 15 hours
Retardant delay: 5 day (3/5)
Simulated wind loading area: 2m^2
Floor Fixings: Hilti HUS 6 X 45

2.0 Name of Reporting Company.

Plant and Safety Ltd
Strathleven House
Val of Leven Industrial Est
Dumbarton
G823PD
Tel: 0330 113 7920

3.0 Accreditation Reference.

ISO 9001: 2015

4.0 Date of Report.

19th July 2023

5.0 Engineers in attendance

Daniel Marson
Lewis Behai

6.0 Description

Harris Brick Safety System 'Brick Bud'
Material: GRP, Glass Reinforced Plastic.
Fixing used: Hilti HUS 6 x 45

7.0 Report Type

Report of findings from proof load application.

8.0 Equipment involved.

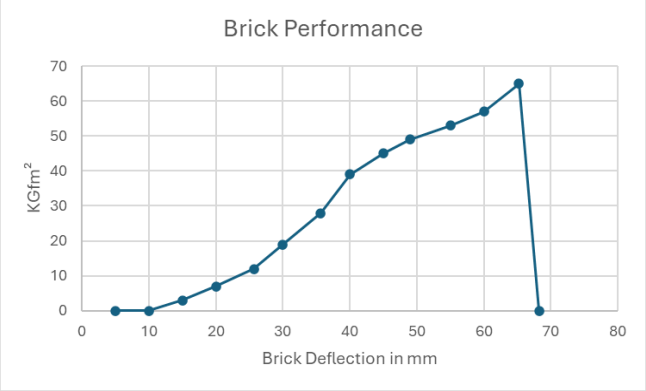
Calibrated Guage 0-1000psi
Hydraulic Pump 10000psi
Hydraulic cylinder 5000kg @10000psi
Stringline
Laser level
Calibrated laser measure 0-25m
Balustrade test frame

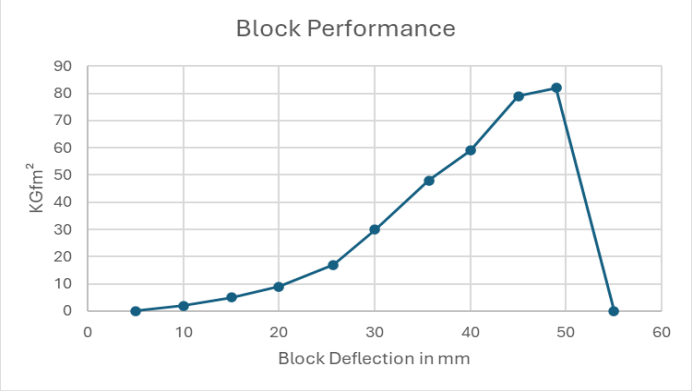
9.0 Findings

Brick and Block Wall

The brick and block walls were configured with two off 'Brick Buds' located at the extremities of the wall at 3000mm centres. A reaction frame was drilled and bolted into the ground on the opposing side of the 'Brick Bud' system and a section of 2m x 2m 18mm plyboard placed in the most central position against the wall and between the reaction frame. A second circular 18mm marine plyboard (1000mm radius) was placed in front of the reaction frame and held into position whilst the hydraulic ram was energised.
String line and measuring equipment were setup on the same side of the 'Brick Bud' at 3 locations and measurements taken every 5kgf increments until failure. The following details were the results of both tests.

Incriments in KGfm^2	Beaufort Scale	Brick def avg (mm)	Block def avg(mm)
5		0	0
10		0	2
15		3	5
20		7	9
25.7	8	12	17
30		19	30
35.64	9	28	48
40		39	59
45		45	79
48.96	10	49	82
55		53	0
60		57	
65.22	11	65	
68.25	12	0	





The results of both tests although concluded at different values demonstarte that the 'Brick Bud' was seen to improve the stability and strength of of newly jointed wall against results of previously tested unsupported sections. Both walls were taken to a point where stability was no longer mainatined and the walls collapsed as a result.

For each test the final loadings and defelction measusrments were recorded and and reverse calculated to ascertain the highest loading achieved against the beaufort scale during test.The results of this test should be used in conjunction with the FEA report and other OEM findings to develop a factor of safety that should clearly outline the safe use and installation of the equipment with a reccomended upper limit threshold. Where the 'Brick Bud' has maintained a safe load distribution up to the figures given above it shall still remain the responsibility of the user to ensure that the right amount of equipment is installed.

BRICK BUD for Brick application

Harris Brick Safety System 'Brick Bud' for use on Brick walls upto 2000mm in height and 3000mm in width achieved a failure loading of 65.50kgfm² equivilant to Beafort Scale 11.

BRICK BUD for Block application

Harris Brick Safety System 'Brick Bud' for use on Block walls upto 2000mm in height and 3000mm in width achieved a failure loading of 50kgfm² equivilant to Beafort Scale 10.