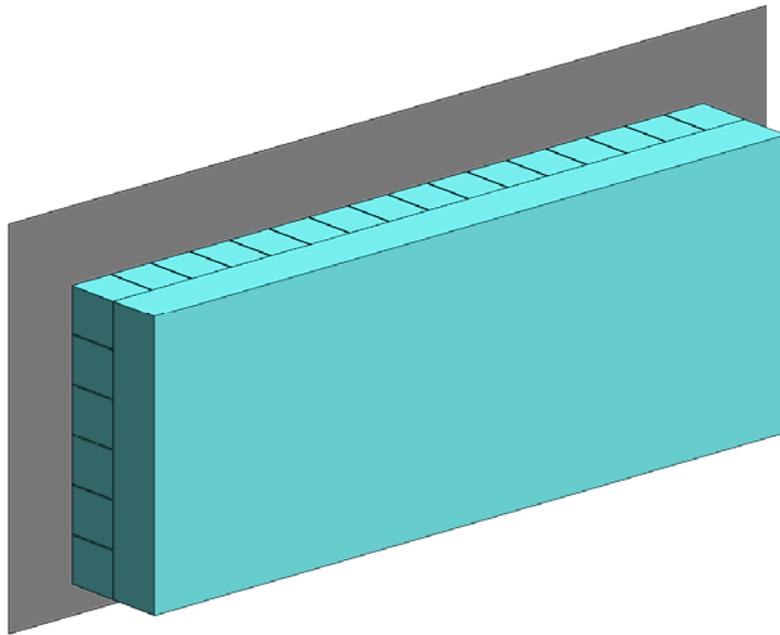


# Full Width Deformable Barrier (FWDB) Version 1.0



## Development Report

March 2008

This barrier is currently being developed by TRL Limited (Transport Research Laboratory) and as such no formal specification has been released yet.

### Barrier Characteristics

- The barrier is made up of two layers of honeycomb material fixed to a aluminium back plate, and then mounted onto a loadcell wall.
- The barrier is mounted 80mm off the ground
- The front honeycomb layer is 1000mm x 750mm with a depth of 150mm
- The rear honeycomb layer is made up of 96 individual blocks (16 columns x 6 rows). Each block is 120mm x 120mm with a depth of 150mm

### Material Characteristics

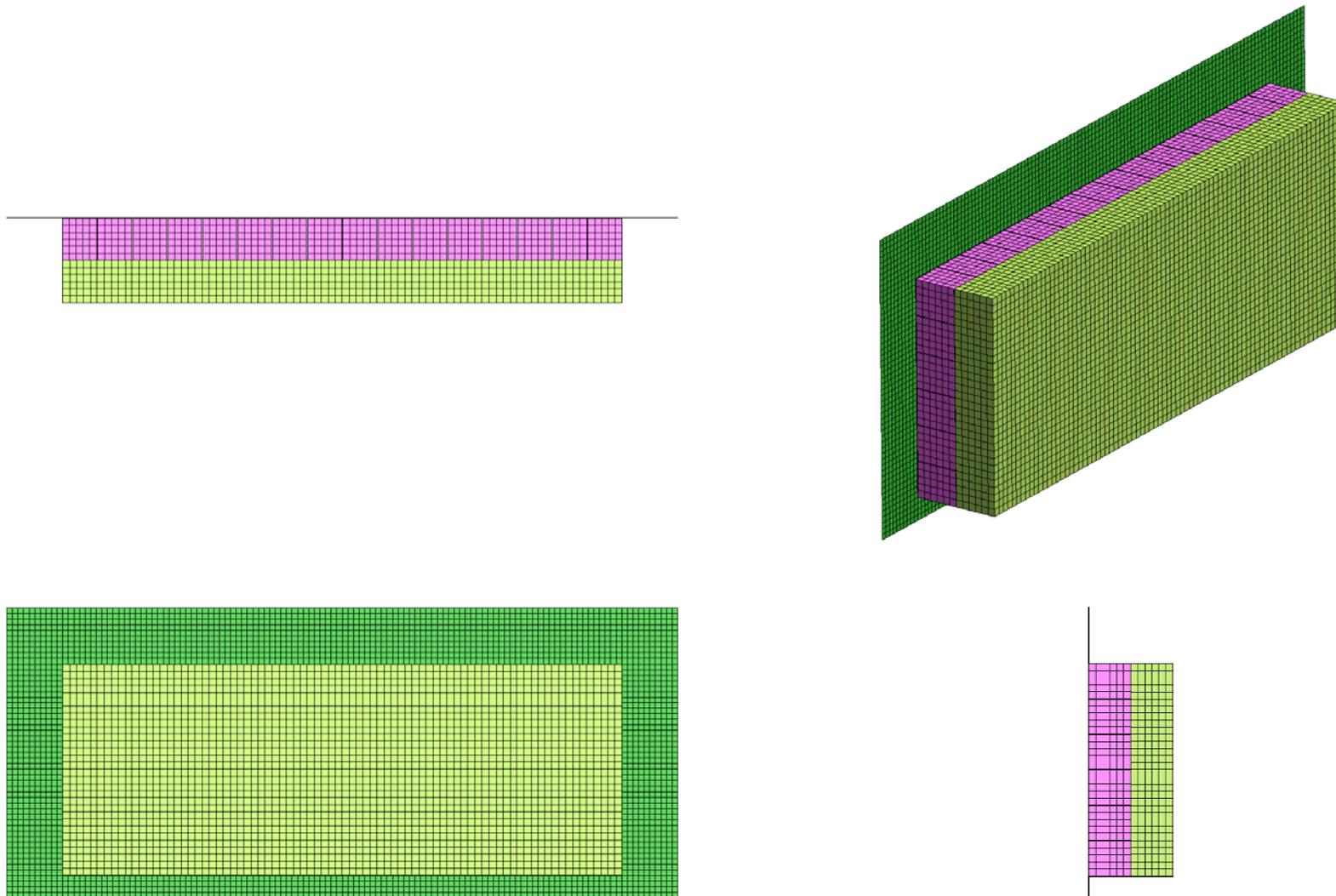
- The front honeycomb layer should have a crush strength of 0.34 N/mm<sup>2</sup>.
- The rear honeycomb layer should have a crush strength of 1.71 N/mm<sup>2</sup>

### Calibration Procedure

There is no calibration test specified for this barrier at the moment.

Figure 1.1 – FWDB barrier model

FWDB Barrier Model



The two test that have been selected for correlating the barrier are described below:

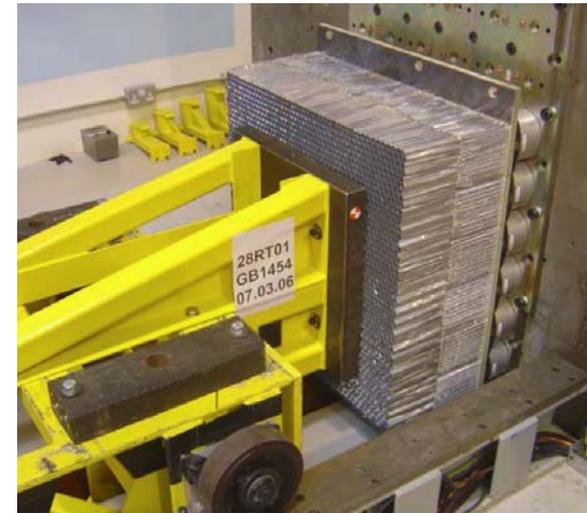
### Condition A – Flat Wall Impact

This test involves a flat wall impact into a section of barrier. The velocity of the impactor was 17km/h with a mass of 140kg. Figure 1.2 shows the deceleration characteristic of the barrier obtained from the analysis compared with test. The curves have been normalized to unity.

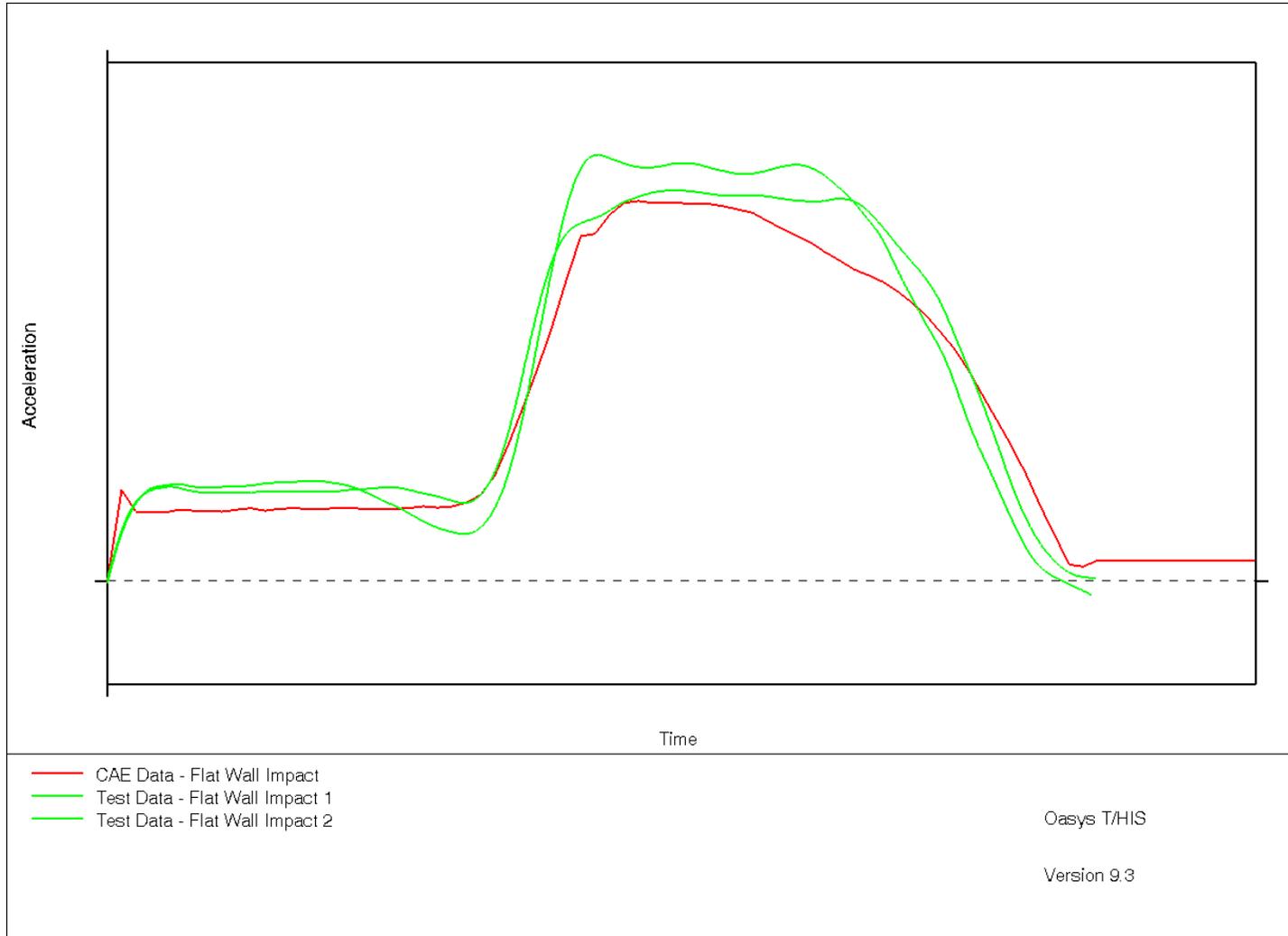
### Condition B – TRL Sled Test

This test involves a 500mm x 500mm plate impact into the barrier. The velocity of the impactor was 40km/h with a mass of 762kg. Figure 1.3 shows the deformation. Figure 1.4 shows the deceleration characteristic of the barrier obtained from the analysis compared with test. The curves have been normalized to unity.

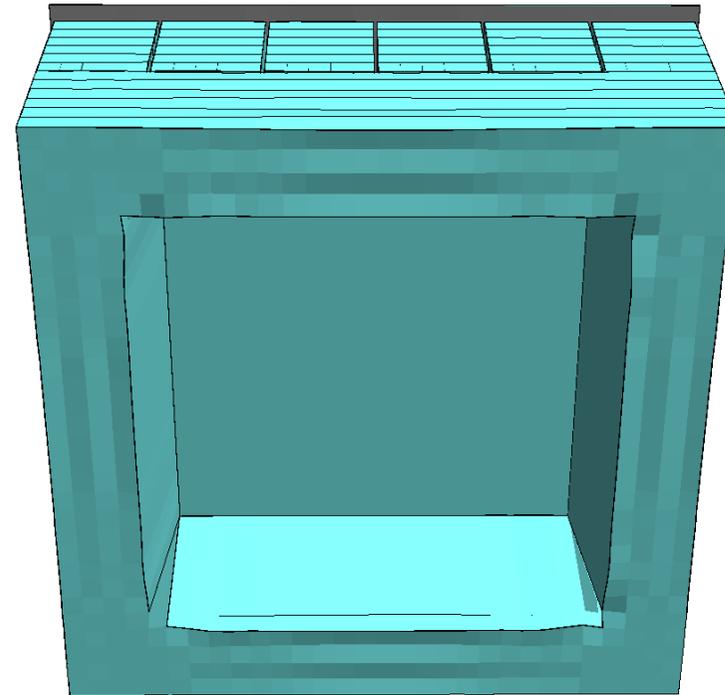
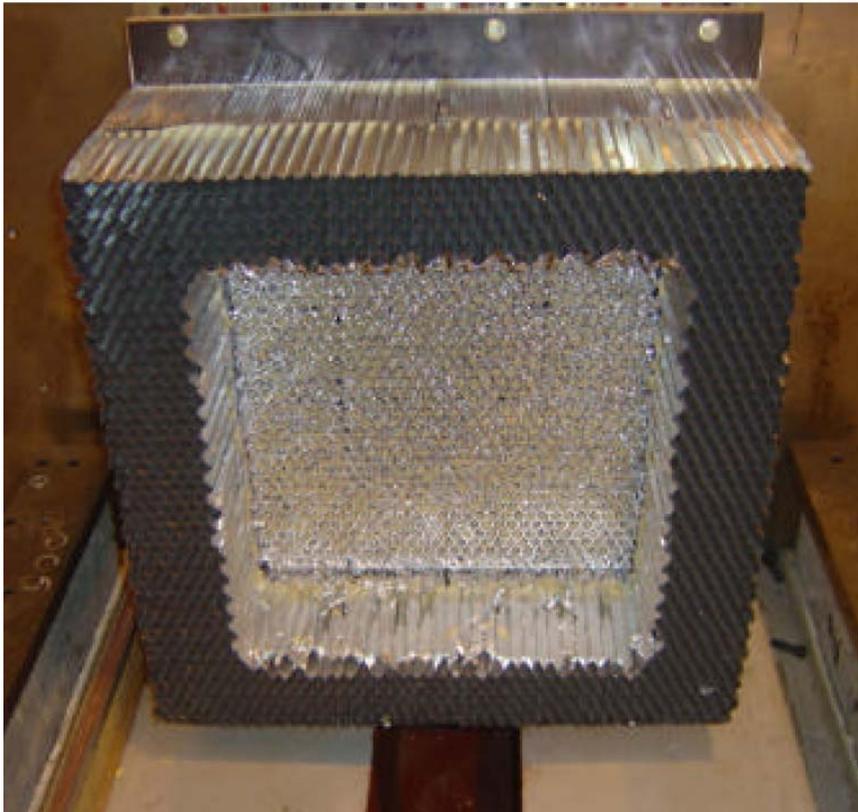
The test results used in this correlation have been taken from a number of reports published by TRL Limited (Transport Research Laboratory)



**Flat Wall Impact**

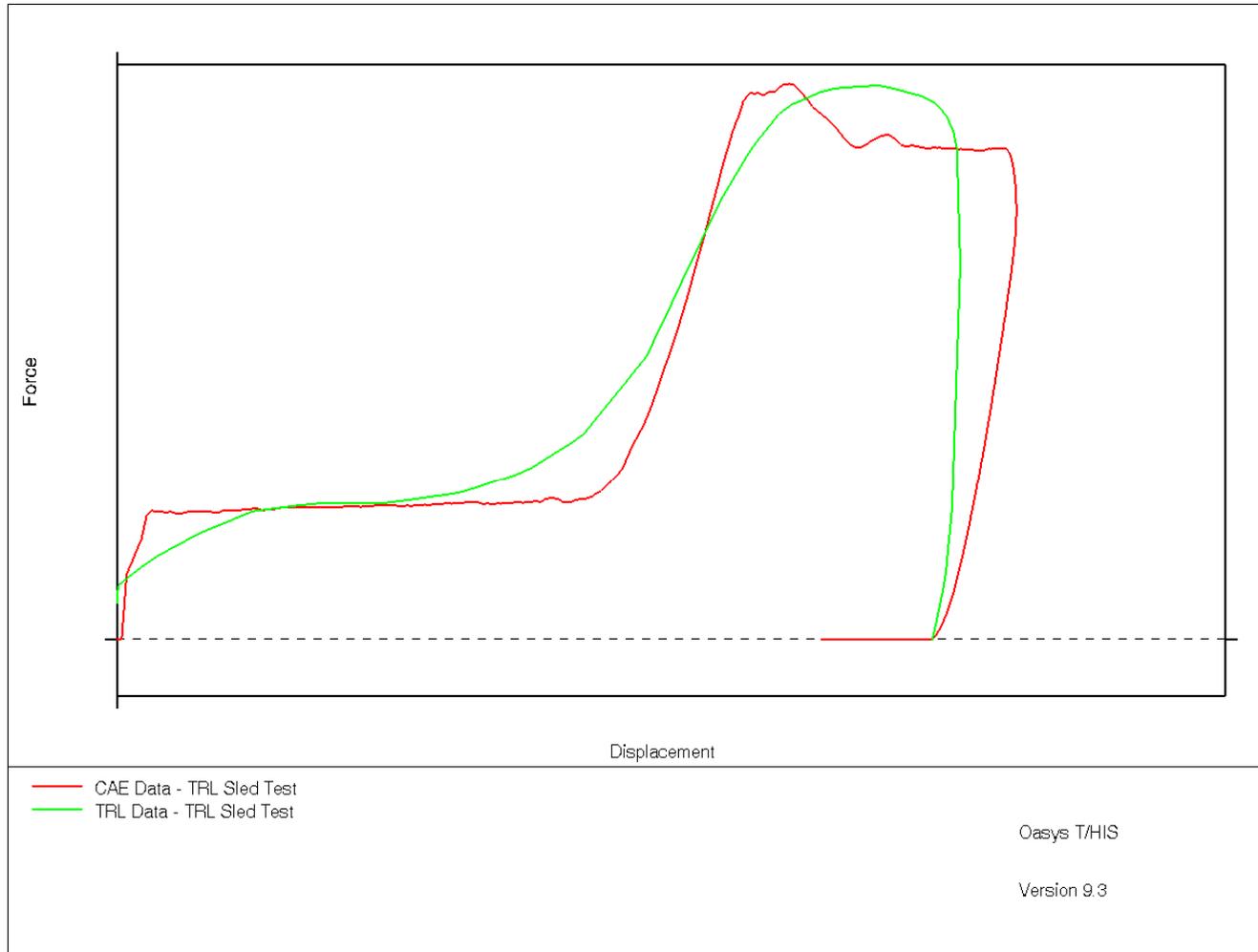


**TRL Sled Impact**



Test data courtesy of TRL Limited (Transport Research Laboratory)

TRL Sled Impact



Test data courtesy of TRL Limited (Transport Research Laboratory)

The FWDB model is developed by Cellbond Composites in association with Arup.



[www.cellbond.com](http://www.cellbond.com)



[www.arup.com](http://www.arup.com)

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