EN1317 is the current European standard for Road Restraint Systems.

All safety restraint systems offered by Extrudakerb are tested and certified to meet the requirements of EN1317.


Extrudakerb / Britpave barrier are high performance systems providing high levels of containment but with a low working width and a Class B Impact Severity level.

**Containment**

Containment provides an indication of the magnitude of vehicle impact that a safety restraint system can withstand without failure.

EN1317 provides a variety of vehicle crash tests with differing vehicle type, mass, speed and angle of impact.

The higher the containment level the greater the barrier’s ability to restrain and redirect an errant vehicle.

Extrudakerb / Britpave Concrete Step Barrier (CSB) and Steel Step Barrier (SSB) systems were tested and certified to have a Containment Levels Class H2 and N2.

The Working Width of the barrier system is also measured during crash test and a working width relates to a containment level. CSB and SSB have working widths of W2 at H2 containment and W1 at N2 containment.
Extradakerb / Britpave Barrier Systems

Working Width
Working Width provides an indication of the environment within which a safety barrier operates at a given Containment Level.

EN1317 provides a variety of vehicle crash tests with differing vehicle type, mass, speed and angle of impact and at each crash the Working Width will be measured.

The Working Width of the safety restraint system is defined as the greater of:

- the measurement of the footprint of the safety restraint system
- the measurement of the dynamic deflection of the safety restraint system when impacted
- the measurement of vehicle overhang at impact

The H2 containment test shows that even at this high level of impact dynamic deflection is zero.

The centre of gravity of the bus does not cross the centreline of the barrier and the vehicle is safely re-directed.

As Britpave CSB and SSB are available in a number of sizes the working width of the system varies.

Impact Severity Level
Impact severity provides an indication of the collision consequences for vehicle passengers following impact with a road restraint system.

Three measurements are taken during an EN1317, TB11 (900kg car) crash test: one being a measurement of Acceleration Severity Index (ASI), another Theoretical Head Impact Velocity (THIV) and the third Post-Impact Head Deceleration (PHD).

Road restraint systems are classified only by the recorded ASI measurement. However both THIV and PHD must be recorded at measurements below defined safe thresholds.

Britpave Concrete Step Barrier (CSB) and Steel Step Barrier (SSB) systems were tested and certified to have an Impact Severity Class B.

For many years ASI has, in some parts, been considered to be the only measure of a road restraint systems safeness and performance level; with containment and working width ignored.

Recently world renowned experts are beginning to question this. Richard Sturt, Director at Ove Arup & Partners recently published paper in the International Journal of Crashworthiness concludes that in fact although ASI did show a correlation with injury risk, the level chosen for the boundary between class B and C barriers in EN1317 does not provide significant discrimination between higher and lower risk of injury.

<table>
<thead>
<tr>
<th>Impact Severity Class</th>
<th>ASI</th>
<th>Other Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>≤ 1.0</td>
<td>THIV ≤ 33 km/h</td>
</tr>
<tr>
<td>B</td>
<td>≤ 1.4</td>
<td>PHD ≤ 20g</td>
</tr>
<tr>
<td>C</td>
<td>≤ 1.9</td>
<td></td>
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</tbody>
</table>