PAS 170-1:2017

BSI Standards Publication

Vehicle security barriers – Low speed impact testing

Part 1: Trolley impact test method for bollards

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Foreword

Publishing information

This PAS was sponsored by the UK Government's Centre for the Protection of National Infrastructure (CPNI). Its development was facilitated by BSI Standards Limited and it was published under licence from The British Standards Institution. It came into effect on 31 July 2017.

Acknowledgement is given to the following organizations that were involved in the development of this PAS as members of the steering group:

- ATG Access;
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Use of this document

It has been assumed in the preparation of this PAS that the execution of its provisions will be entrusted to appropriately qualified and experienced people, for whose use it has been produced.

Presentational conventions

The provisions of this standard are presented in roman (i.e. upright) type. Its methods are expressed as a set of instructions, a description, or in sentences in which the principal auxiliary verb is "shall".

Commentary, explanation and general informative material is presented in smaller italic type, and does not constitute a normative element.

Contractual and legal considerations

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

Compliance with a PAS cannot confer immunity from legal obligations.

Introduction

For many years, CPNI has been working in conjunction with BSI, impact test facilities and vehicle security barrier (VSB) manufacturers to develop technical specifications for the testing and deployment of a full range of VSBs. Such VSBs are a means of providing proportionate protection against vehicle borne threats to key infrastructure, secure events and crowded places. The technical specifications have been developed through an extensive programme of full-scale vehicle impact tests using commercially available vehicles from passenger cars to large goods vehicles at prescribed impact speeds.

The purpose of the PAS 170 series is to provide a quick and inexpensive way of evaluating a vehicle security barrier product, under dynamic impact from an impact trolley. The purpose of PAS 170-1 is for the testing of bollards designed to meet the vehicle threat posed by criminality and accidental impacts (from low speed passenger vehicles). Sites at which a bollard tested to this PAS might be installed are car parks and retail outlets, for example.

PAS 170-1 is not intended to replace any element of the full-scale vehicle impact test methods, e.g. IWA 14-1 or PAS 68. Test methods such as IWA 14-1 and PAS 68 have been created to be used for testing VSBs which have been designed to mitigate the terrorist vehicle-borne threat using unmodified commercially available vehicles. Critical national infrastructure sites are examples of where VSBs might be installed.

Where a test item is tested against PAS 170-1 and meets the specified requirements, it can:

a) provide reassurance that the test item design could offer impact resistance against a low speed N1G (2 500 kg) vehicle (as specified in IWA 14-1:2013), based on its performance against an impact trolley travelling at a low speed, which is acting as a surrogate (though this would not be a guarantee of performance); and

b) encourage the manufacturer to consider progressing to a full-scale vehicle impact test method (see **3.7**), e.g. those given in IWA 14-1 or PAS 68, to determine the impact resistance against higher speed vehicles than those speeds covered in PAS 170-1 (see **3.6**).

NOTE PAS 69 and IWA 14-2 cover guidance for the selection, installation and use of VSBs, and their application, respectively.

1 Scope

This PAS describes a method for testing the performance of a single bollard, when subjected to a single impact using a 2 500 kg impact trolley at a speed of 16^{+3}_{-1} km/h or 32^{+3}_{-1} km/h.

PAS 170-1 does not cover testing the performance of blockers, planters or street furniture.

It is not equivalent to a full-scale vehicle impact test method. It does not cover the performance of a test item or its control apparatus when subjected to: blast explosion, ballistic impact, manual attack with the aid of tools or electrical manipulation/attack through a control system.

This PAS is for use by manufacturers, distributers or specifiers of bollards.

*NOTE Full-scale vehicle impact test method is defined in **3.7**.*