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BS 8300 - the research behind the Standard

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Space Requirements for Wheeled Mobility
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In 1989 the BSI published PD 6523 'Information on access and movement within and around buildings and on certain facilities for disabled people'. This document recommended the development of a more comprehensive British Standard to replace BS 5810 and BS 5619 and serve as a basis for the replacement of the then Building Regulation Document M (1985). One important recommendation was that the Standard should be based on a systematic analysis of disabled people's needs in using buildings and on validated research concerning disabled people's use of building features. Since much of the information then available was incomplete, often contradictory and not based on the results of properly conducted research, a recommendation was made that a comprehensive research programme should be carried out.

In 1996 the Department of the Environment, Transport and the Regions (DETR) commissioned the required research to be undertaken by Robert Feeney Associates (RFA) over a period of four years. Initially the project concentrated on measuring basic characteristics of disabled people in respect of reach, space requirements, body size and capabilities such as visual acuity. The major part of the research however was concerned with determining disabled people's requirements through experimental trials, with respect to the various user features within buildings. This included items such as ramps, doorways and corridors, toilets, steps and stairs. Based on the initial research however, other items such as car parking space, auditoria layout and lobbies were dealt with using CAD analysis.

The trials were conducted in RFA's own laboratory or at centres where large numbers of disabled people could be easily recruited as participants in the trials.

The main purpose in the trials was to ensure as far as possible that representative samples of sufficient size were included in order that the results were valid, reliable and accurately addressed the needs and capabilities of disabled people. To this end sampling frames were employed to ensure the RFA sample truly reflected those described in larger national surveys of disabled people such as that carried out by the British Government (OPCS 1994).

The fundamental principle behind the experimentation was that the results should demonstrate what proportions of people are accommodated with the different levels of demand presented in building access and use. In this way the cost, practicality or utility of a design solution can be weighed against the proportion of people who might be accommodated. For example in investigating the space requirements of wheelchair users when carrying out tasks such as turning from a corridor to go through a doorway, the proportion of people who were accommodated with different corridor and door widths was determined through experimental trials using wheelchair users with wide ranging functional disabilities.

Such an approach was similarly used to investigate a whole range of features associated with building access and use.

A similar approach was used to determine basic characteristics and capabilities of disabled people in relation to tasks involved in building access and use. One fundamental characteristic in this respect is that of the reach capabilities of disabled people. This was determined experimentally by measuring the reach capability of 150 ambulant disabled people and 150 wheelchair users using a specially constructed rig. The results are expressed in a series of contours that show the reach around the body (from a specific reference point) for different proportions (expressed as percentages) of the samples.

This 'percentage' approach draws on the traditional ergonomics approach employing the use of percentiles to describe the distribution of human characteristics and capabilities in relation to human-environment interface design. However the percentile approach cannot be used with disabled people because of the skewed distribution of such characteristics and capabilities within that population.

In all the trials, objective as well as subjective measures were used. Objective measures included measurements of the space required to carry out activities, measurements of the level of incline different disabled people could successfully climb as well as measurements of their reach and body sizes.

Subjective measures were also employed to support those measured objectively. For example in determining the comfortable range of heights of features such as toilet seats, wash basins and grab rails, participants were asked to make judgements on the suitability of the various heights employed, on a 5-point ease-difficult scale.

One limitation of the research was the lack of any adequate sampling frame for visually impaired people. This proved a serious handicap for example when attempting trials with screen displays and signs. While the OPCS (1994) survey included visually impaired people, the criteria used to allocate levels of severity did not accurately reflect the level of tasks visually impaired people face when using buildings.

The RFA research results were used as a basis for the development of BS 8300:2001 'Design of buildings and their approaches to meet the needs of disabled people – Code of practice'.

BS 8300 is comprehensive and a more than adequate replacement of previous Standards that have been in operation for nearly 30 years. It is also a validated research based Standard.

References

OPCS. 1994. The prevalence of disability among adults. OPCS Surveys of Disability in Great Britain, Report 1. OPCS: Social Survey Division. HMSO, London, UK

BS 8300:2001. Design of buildings and their approaches to meet the needs of disabled people – Code of practice. BSI, London, UK

PD 6523. 1989. Information on access and movement within and around buildings and on certain facilities for disabled people. BSI, London, UK