

Case studies: London Underground

Cherier Lebbon



TfL: London Underground Ltd 'George' Platform to Train Access Ramp

The 'George' platform hump has been developed to make 68 London Underground stations accessible to wheelchair users and other people who would benefit from 'step free access' from the platform onto the train. It was imperative that the solution be an economic generic design meeting stringent safety regulations, on-site construction time limitations and could be adapted for all sites.

Transport for London's (TfL) Marketing, Communications and Corporate Design department set up a team of in-house product designers and engineers who worked in close collaboration with external design teams from London Underground Ltd (LUL) and Reed Design Associates.

A variety of groups were consulted prior to the briefing process including the Disabled Person Transport Advisory Committee (DIPTAC) and the Department of the Environment, Transport and the Regions. This user focused research is seen as an essential part of the design and development process by TfL.

The Triggers

The passing of the 1995 UK Disability Discrimination Act put pressure on TfL to provide reasonable access to its services for all types of disabled people. Another trigger was TfL's need to increase non-peak travel and it was recognised that there was synergy between these two objectives, making stations more accessible for wheelchairs and mothers with prams could be a good way to increase off-peak travel.

TfL's response was to brief its designers to make underground stations more accessible to travellers with limitations such as wheelchair users, people with shopping trolleys or parents with wheeled buggies. The solution had to make the tube a real alternative to taking a cab or using a car. A survey identified that 68 stations – 25% of the entire Underground system could be opened up to disabled travellers if the problem of level access to carriages could be solved.

Process – specifying and developing the ‘George’ access ramp

‘George’ had to provide pragmatic, expedient and economic step free access from the train interior to platform. It had to be adaptable to all sites, robust to withstand heavy traffic at peak travel times but each component had to be light enough to be carried by a single person, making installation possible within the five hour time frame available overnight.

The solution was modular – a monocoque design of 500 x 500mm panels, configured as required by each station. Glass Re-enforced Concrete tiles, were developed to include a tactile strip, white line for platform edges, or with yellow lines indicating “please stand behind this line”, along with straight, right and left handed slopes. Each component can be carried by one person and the whole structure will fit into the a Transit Van as a single load. Each supply and installation will cost no more that £10,000. Rigorous testing was carried out to ensure the designs met various pragmatic tests, ensure the gaps could not trap stiletto heels, Coke cans, cigarettes, dropped tickets etc., or encourage vermin. The solution was thoroughly tested with potential users at briefing, concept, design detailing and prototype stages. Many user groups were consulted before the brief was finalised, a scenario-based research method was used to capture intuitive reactions to various alternatives.

The external consultation on the prototype trials was carried out with Royal National Institute for the Blind and other national disability groups, the Ministry for Transport and the Regions, the Greater London Authority and local disability groups for the exercise. The team took on broad anxieties, concerns, issues and praise and built these into the specification.

Design Benefits

- Each component weighs less than 20kg, can be carried by one person, meeting health and safety regulations
- The materials meet fire regulations, slip resistance tests and crowd loadings.
- The minimum raised/dropped step between the carriage and the platform has a limit of 50mm and a drop or rise of 75mm, as agreed with disability organisations.
- The solution accounts for island platform layouts and curved platforms.
- Tolerances meet the needs of :
 - large wheel wheelchairs, sports wheelchairs;
 - buggies – all types;
 - suitcases, wheeled bags;
 - sight impairment;
 - ambulant disabled.
- The 14.5 metre ramp with a 1:20 slope conforms to LUL engineering standards, as well as European Union and British Standards for wheelchair ramps
- Can be added to a platform so that the same train door and car will always be in line with the ramp.

