

# *Considerations for Persons with Reduced Mobility*

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# Who am I ...?

- Fire Strategist
  - Chartered Fire Engineer and Mathematician
  - Started at Fire Research Station and Uni of Greenwich with CFD modelling
  - Initial developer of STEPS evacuation model
  - More than 15 years involved with tunnels
  - Heathrow Cargo Tunnel ... HS2 Tunnels
- PIARC Working Group 3 – Human Factors in Tunnel Safety

# Agenda

- Introduction
- Legislation
- Disabilities
- General Guidance
- Road Tunnels
- Request

# PIARC WG 3 - Human Factors in Tunnel Safety

- Current Cycle – Report to be issued:

*‘Improving Safety in Road Tunnels through Real-Time Communication with Users’.*

- Next Cycle – Report being proposed:

*‘General Principles to be adopted for Persons with Reduced Mobility’.*

# UN Convention on the Rights of Persons with Disabilities - 2006

- Starting point of the report.
- Article 9 of this text, relating to accessibility, especially states that:  
*'To enable persons with disabilities to live independently and participate fully in all aspects of life, States Parties shall take appropriate measures to ensure to persons with disabilities access, on an equal basis with others, to the physical environment, to transportation [...], both in urban and in rural areas. These measures, which shall include the identification and elimination of obstacles and barriers to accessibility, shall apply to, inter alia: buildings, roads, transportation and other indoor and outdoor facilities [...].'*

# Disabled Discrimination Act 1995

*'An Act to make it unlawful to discriminate against disabled persons in connection with employment, the provision of goods, facilities and services or the disposal or management of premises; to make provision about the employment of disabled persons; and to establish a National Disability Council.'*

- Replaced by the Equality Act

# Equality Act 2010

*‘An Act to make provision to ... have regard to the desirability of reducing socio-economic inequalities; to reform and harmonise equality law and restate the greater part of the enactments relating to discrimination and harassment related to certain personal characteristics;...; to require the exercise of certain functions to be with regard to the need to eliminate discrimination and other prohibited conduct;...; to increase equality of opportunity...’*

- Three requirements that need to be addressed by *‘taking such steps as it is reasonable ... to avoid the disadvantage’*:
  1. A provision
  2. A physical feature
  3. An auxiliary aid



# Equality Act 2010 (continued)

Includes reference to:

- Removing the physical feature in question,
- Altering it,
- Providing a reasonable means of avoiding it,
- A feature arising from the design or construction of a building,
- A feature of an approach to, exit from or access to a building,
- A fixture or fitting, or furniture, furnishings, materials, equipment or other chattels, in or on premises, or
- Any other physical element or quality.





# Disabilities

## Impairments

- Motor
- Visual
- Hearing
- Intellectual and psychological

## People with Reduced Mobility

- Wheelchair users
- Pregnant women
- Elderly people
- People with children
- People of small stature

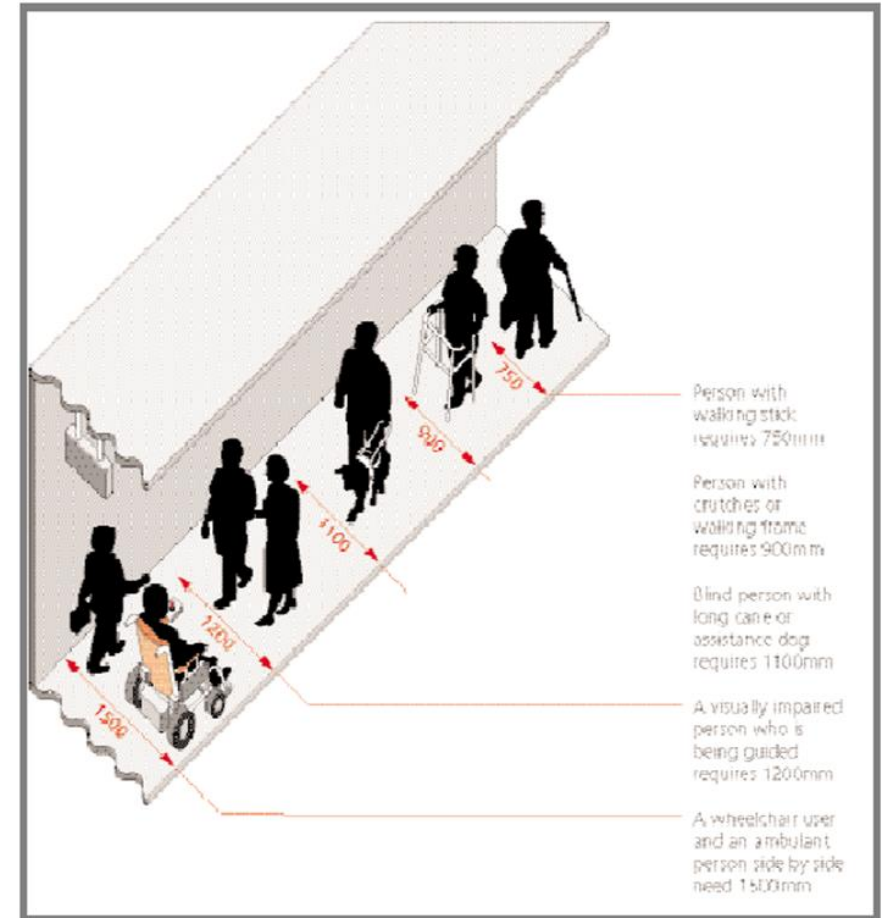
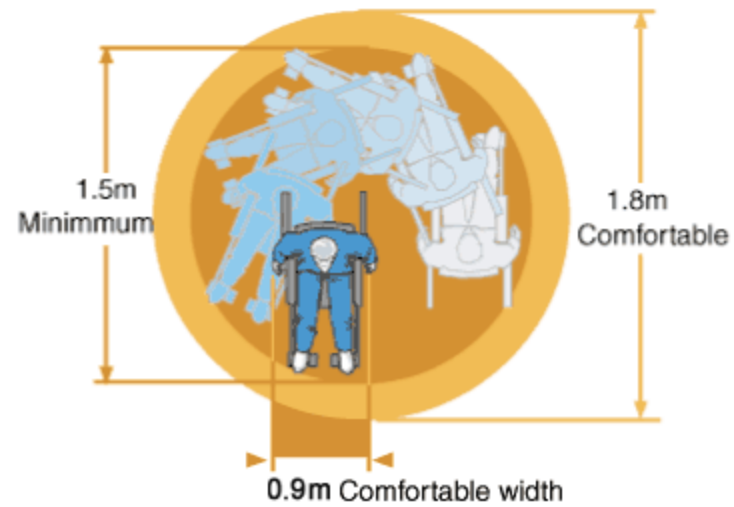
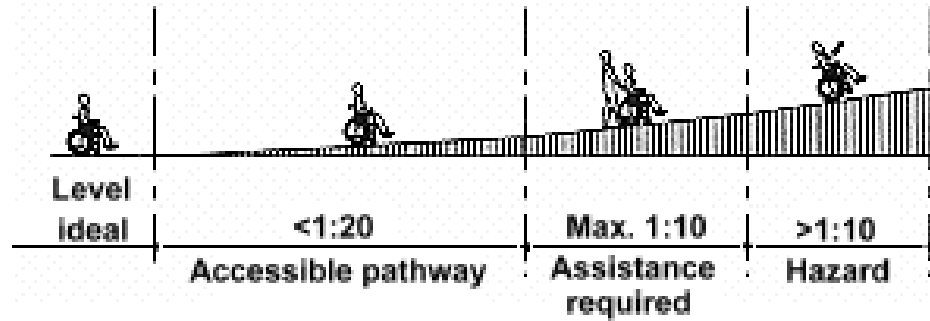


# Disabled in the UK

- 9.4 million disabled people in England
  - ~ 1 in 20 children are disabled
  - ~ 1 in 5 working age adults
  - ~ 1 in 2 people over state pension age
- ~ 1.2 million wheelchair users in the UK (~ 2% of UK population)



# General Guidance



# Road Tunnels

- It is a roadway; not a facility open to the public.
- Equipped with specific safety equipment.
- Incidents:
  - Raising an alarm
  - Evacuation
- Accessibility of safety equipment.



# Raising an Alert

- Consider:
  - opening the door
  - bringing the wheelchair out
  - getting into it
  - moving along the roadway
- Accessibility professionals - *persons in wheelchairs prefer to remain inside their vehicle when they consider the situation to be hazardous.*



# Evacuation

- Move within the tunnel to the emergency egress route.
- Move along the emergency route.
- Communication within the secure area.
- Facilities within the rescue area.



# Safety Facilities

- Signage and Alarm systems
- Communication devices
- Emergency stations
- Emergency exits
  - Door opening
  - Widths





# Request

- Your experience
- Your facilities
- Your contributions
- Your assistance





# Thank You

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