

Thursday, 12th October 2006

IFE Annual Conference ~ Enfield, Co. Meath, Ireland



Disabled Accessibility

Current Legal Requirements, Important Implications for Fire Engineering
& Future Developments



Dedicated WebPage



shortcut: www.evacuation-for-all.eu



Some International Developments

- ◆ **NIST WTC 1 & 2 Final Report (2005/USA)**
New Benchmark for Fire Engineering - 30 Recommendations in Chapter 9
- ◆ **Use of Elevators/Lifts during a Fire (2003/EU)**
European Lift Manufacturers' Association ?!?!
- ◆ **'Fire Safety for People with Disabilities' (2004/Canada)**
Fire Services Training Pack - Betty Dion Enterprises
- ◆ **'Safe Evacuation-for-All in Cultural Buildings' (2006/Sweden)**
Book recently published - Elena Siré, with Staffan Bengtson & Lena Kecklund
- ◆ **Dutch Home Office 'Risks for Disabled People in Emergencies'**
3 Phases - Information Search / Identifying Research Needs / Guidelines
- ◆ **UN Convention on the Rights of Persons with Disabilities (2006)**
Art.11: " States Parties shall take all necessary measures to ensure the protection and safety of persons with disabilities in situations of risk, "



Disabled Accessibility Requirements (Ireland)

◆ Building & Building Control Regulations

Parts M, K, B & D **Disability Access Certificates** Fire Safety Certificates
Adequate Access far stronger than previous *Reasonable Access*

◆ Safety at Work Legislation (EU & Ireland)

Workplaces Must be Accessible including EICT's

◆ 2005 Disability Act & Equality Law

Local Authorities Must **Accessibility Audits** (of all) **Implementation Plans**
.... including 'people' issues management, personnel, promotions, etc.
Very Wide Scope of 'Disability' Definition in Equality Law

◆ Miscellaneous

EU Road Tunnels Directive 2004/54/EC <i>"shall take into account"</i> [people with reduced mobility & disabled people]
EU Public Procurement Directive 2004/18/EC <i>"should, whenever possible"</i>
Ireland's Implementation of EU Directive <i>"shall, as far as practicable"</i> [accessibility criteria for all persons who are likely to use particularly those who have disabilities]



Disability Access Certificates (DAC's) & Complaints

DEHLG Sectoral Plan under the 2005 Disability Act

2.5.2 Under the proposed DAC system, the local building control authority must confirm that *the design of a proposed new non-domestic building or new apartment block complies with Part M*, before development work commences.

2.6.2 The 2005 Bill will also *prohibit the occupation, opening or operation of a new building where the relevant design lacks a Disability Access Certificate (DAC)*. The local building control authority will have the power to seek a High Court injunction to enforce this prohibition. This will represent a huge financial penalty to those commissioning new buildings ; and a much greater deterrent than conviction and fine in the courts.

2.6.3 If any person, including a person with a disability, considers that a particular *building which was provided post 1 June 1992* does not comply with Part M of the Building Regulations, *a complaint to that effect may be made to the Building Control Authority* for the area. The authority is expected to investigate such complaints and take any necessary follow-up enforcement action.



Technical Control of Construction

Building Bye-Laws (Dublin, Pre-1992) Functional, Performance & Prescriptive Requirements	Current National Building Control Regulations Functional Requirements
Application for 'Building Bye-Law Approval'	Application for a Fire Safety Certificate
All - Mandatory Site Inspection at Application Stage	
All - Building Control Officer Evaluates Application for Compliance with Building Bye-Laws	Fire Prevention Officer Confirms Compliance of Application with Part B (2nd. Schedule of Building Regulations) ... on the Basis of a Compliance Report Submitted with Application [de facto, TGD B is operated as 'deemed to satisfy']
All - Must Have 'Approval' Before Construction	
All - Mandatory Site Inspection at Foundation Level	
All - Mandatory Site Inspection at Drainage Level	

Architect's Opinion on Compliance with Building Regulations ?

[may or may not have been involved with project during construction]

Solicitor's Examination of Paperwork ?



Local Authority Obligations (2005 Disability Act)

*" ensuring effective **access for all** "*

*" promote **universal access** to public spaces, buildings and services "*

*" access to passenger transport promoting an **accessible barrier-free pedestrian environment** "*

DEHLG Sectoral Plan under the 2005 Disability Act

1. Each Local Authority will, within six months of the approval of this plan by the Oireachtas, carry out an **Accessibility Audit** of all roads and streets, pavements and pedestrian crossings, public buildings, public parks, amenities and open spaces, heritage sites, public libraries and harbours within its control and identify the remedial action necessary to make them accessible.
2. Each Local Authority will, within three months of completing the accessibility audit, draw up an **Implementation Plan**. The accessibility of routes to and from, and the physical interface with, public transport will be improved.
3. Local Authorities will **Consult** with organisations representing persons with disabilities.



Local Authority Obligations (2005 Disability Act)

4. Local Authorities will also ensure that, as far as practicable, *New Services or Built Facilities* are accessible to persons with disabilities.
5. Each Local Authority will prepare a *Yearly Progress Report* on its performance in relation to its Implementation Plan in its Annual Report.
6. Local Authorities will develop appropriate mechanisms for *Disability Proofing Decision-Making* of their Councils, where not already in place.
7. To bring a new focus to addressing the needs of people with a disability, a *National Housing Strategy for People with Disabilities* will be developed.
8. The *Disabled Persons Grant Scheme* will be reformed to improve the equity of the scheme.

Disability Proofing at All Levels in an Organization ?
Performance Indicators for Setting Targets & Measuring Progress ?





Uniformity, Competence, Product 'Fitness for Use' ?



Liability of Individuals & Organizations

- ◆ **Legal Requirements Far From Being Coherent**
Compare 'People with Disabilities' (Part M, Building Regulations) ;
Definitions : 'Disability' (1998 Employment Equality Act / 2004 Equality Act).
- ◆ **Status of Guidance in TGD's B-M & Adequacy ?**
Sweden's Building Regulations would offer Ireland a better model
- ◆ **Disability Access Certificates (DAC's) & Public Complaints**
- ◆ **2005 Disability Act ?** (*"local authority obligations are onerous" dehlgl*)
- ◆ **Uniform Interpretation & Application of Law**
Computer Software 'Tool' Necessary ?
- ◆ **Implementation & Product 'Fitness for Intended Use' ?**
Part D, Building Regulations & Section 16, 2005 SHW at Work Act
- ◆ **Competence ? Education & Training ?**

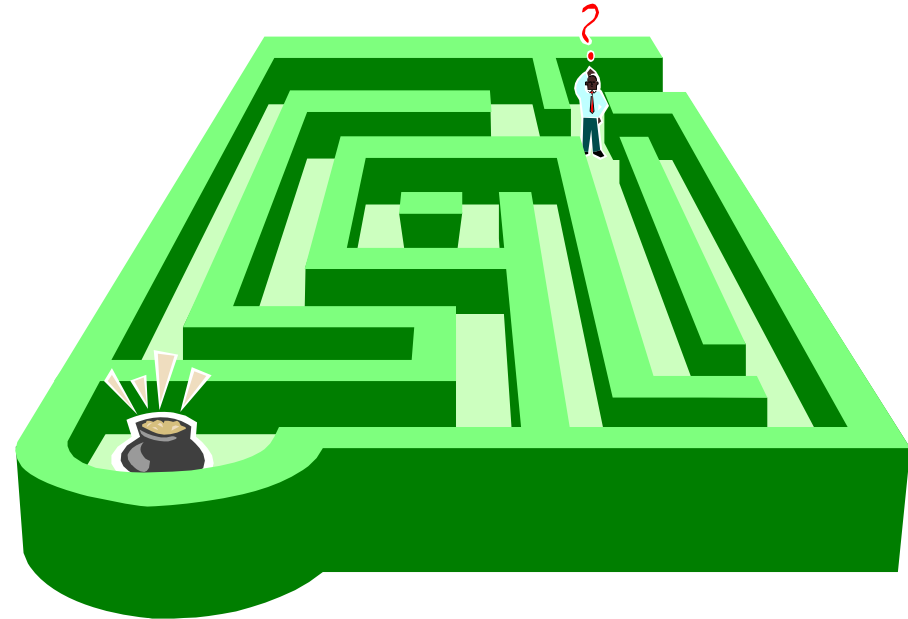


Evacuation Exercise in Dublin Shopping Centre

January 2002



- ◆ Building 'Understandability' ?
- ◆ Personal Orientation ?
- ◆ Relationship with Exterior ?
- ◆ Clear, Standard Signage ?
- ◆ Use of Elevators/Lifts in Fire ?
- ◆ Use of Escalators/Travelators ?
- ◆ Safe Evacuation Staircases ?



"where is the final exit ?"

Building Design for Evacuation

[NIST WTC 1 & 2 Final Report / Recommendation 18(3). NIST recommends that **evacuation routes** should have consistent layouts, and be 'intuitive and obvious' for all building users, including visitors, during evacuations.]



'Accessibility' of a Building

Includes

- **Approach** to the building from the site boundary ;
- **Entry** through principal entrance(s) ;
- **Health, Safety, Convenience & Comfort In Use**, including thermal comfort, indoor air quality, protection from fire, etc ;
- **Egress** under normal conditions ;
- **Evacuation in the Event of a Fire**, or other emergency ;
- **Removal** from the vicinity of the building back to the site boundary ;

and

- Each stage of a **Work Process**, at every organization level, in places of work ;
- Use of **Electronic, Information & Communication Technologies (EICT's)**, at a minimum those permanently fixed in or to the building ;

and

- **Management, Services & Attitudes of People** in the building ;
- **Recruitment/Employment/Promotion/Training Practices** of organizations.



'Accessibility-for-All' Matrix

Built, Virtual & Social Environments		People with Activity Limitations (2001 WHO ICF)				
		All Users incl. children & frail, older people & women in the later stages of pregnancy, etc.	People with Disabilities / People with Impairments (2006 UN Disability Convention)			
			Visual Impairment	Hearing Impairment	Physical Function Impairment	Mental / Cognitive Impairment
1. Buildings	i List A	Building Priorities - See the 2004 Rio Declaration on Sustainable Social Development, Disability & Ageing				
	ii List B					
	iii List C					
2. Street Pavements & Public Circulation Space						
3. Means of Transport	a Buses					
	b Taxis					
	c Trains					
4. Transport Interchange						
5. Miscellaneous						



'People with Activity Limitations'

[2001 WHO ICF]

Those people, of all ages, who are unable to perform, independently and without aid, basic human activities or tasks - because of a health condition or physical / mental / cognitive / psychological impairment of a permanent or temporary nature.

- wheelchair users ;
 - people who experience difficulty in walking, with or without aid, e.g. stick, crutch, calliper or walking frame ;
 - frail, older people ;
 - the very young (people under the age of 5 years) ;
 - people who suffer from arthritis, asthma, or a heart condition ;
 - the visually and/or hearing impaired ;
 - people who have a cognitive impairment disorder, including dementia, amnesia, brain injury, or delirium ;
 - women in the later stages of pregnancy ;
 - people impaired following the use of alcohol, other 'social' drugs, e.g. cocaine and heroin, and some medicines ;
 - people who suffer any partial or complete loss of language related abilities, i.e. aphasia ;
 - people impaired following exposure to environmental pollution and/or irresponsible human activity ;
- and
- people who panic in a fire situation or other emergency ;
 - people, including firefighters, who suffer incapacitation as a result of exposure, during a fire, to poisonous or toxic substances, and/or elevated temperatures.





People Are Different & React Differently to Incidents

- They must be '**Skilled**' for evacuation to a '**Place of Safety**'
- Warnings must be timely, informative, and be understandable
- **Panic** exists **Standard Movement Times** do not exist

[NIST WTC 1 & 2 Final Report / Footnote 39. NIST found that the average surviving occupant in the WTC Towers descended stairwells at about half the slowest speed previously measured for non-emergency evacuations.]



Fire Engineering Objective

During and after the process of independent evacuation to a '**Place of Safety**' which is distant from a fire building, or partial evacuation to a '**Place of Relative Safety**' within the building, for example, an *Area of Rescue Assistance*, or **Protection in Place**, for example, in the case of health facilities - the individual *Health, Safety and Welfare* of those people involved, including firefighters, should be assured.

Building Design in general, and Fire Engineering in particular, must begin with this Objective; it can not be grafted on afterwards.

Compare with Requirement M1, Building Regulations

*'Adequate provision shall be made to enable people with disabilities to **safely and independently** access and use a building.'*



Building Accessibility Performance

Minimum 5% of Building Occupants - at all levels, and as individuals or groups - are readily identifiable as '**People with Activity Limitations**' **Visitors ?**

A Disability Quota is required for **Accessibility Implementation**

Building Entrance & Reception Areas should be obviously 'accessible' for all Impairment Groups - establishes the **Accessibility Design Language** for the building

Maximum Credible User Scenario (Fire)

In parallel with 'Maximum Credible Fire Scenario' (NIST WTC 1 & 2 Final Report) the concept of **Maximum Credible User Scenario** represents user conditions which are severe but reasonable to anticipate.

The **Number of People Using a Building** increases, on occasions which cannot be specified, to **120% of calculated maximum building capacity** and **10% of People Using the Building** (occupants, visitors and other users) have an **Impairment** (visual or hearing, physical function, mental or cognitive, some not being identifiable).

[On 9-11 in New York - Approximately 8% of WTC building occupants were people with disabilities]



2005 NDA Review of Part M, Building Regulations

Recommendation 24

" The new Centre of Excellence in Universal Design should actively promote British and European Standards and Codes of Practice such as BS 8300:2001 and **BS 5588:Part 8**."

British Standard 5588 : Part 8 : 1999

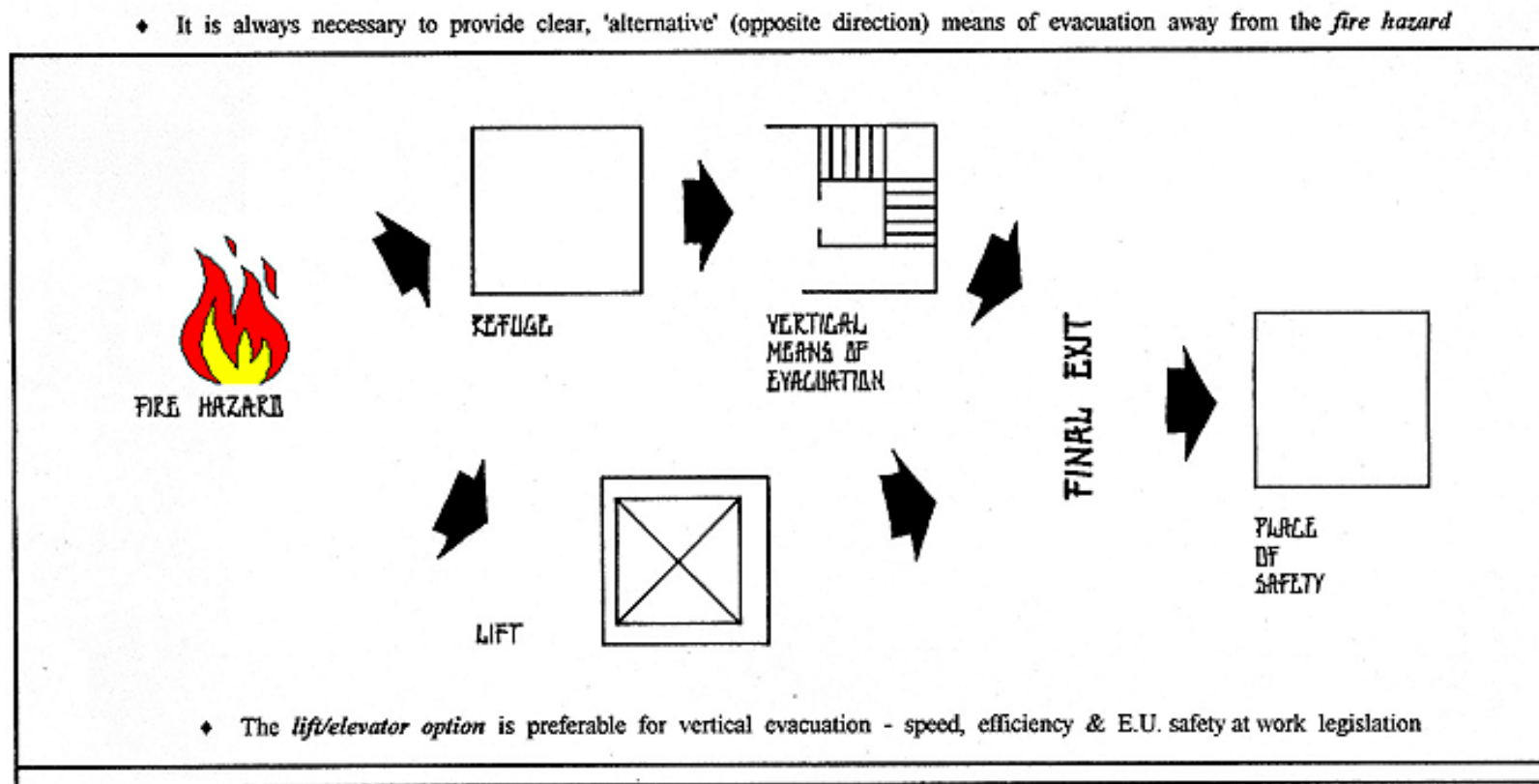
Fire Precautions in the Design & Construction of Buildings. Part 8. Code of Practice for Means of Escape for Disabled People.

In our Submission, dated 1999-10-27, to Minister Noel Dempsey T.D.

Regrettably, it must now be finally and clearly stated, for public record, that the guidance offered in Technical Guidance Document B, concerning the protection of disabled people from fire in buildings, is entirely inadequate. Use of the British Standard which is referenced in TGD B (BS 5588 : Part 8), while it introduced some innovative and badly needed fire engineering concepts at the time of its publication, must now also be thoroughly reviewed in Ireland. The Standard's drawings, for example, are dangerous and inept. Furthermore, some of the contents of the Technical Guidance Document and the British Standard actually conflict with other provisions of the Irish Building Regulations.

No Proper Response Has Ever Been Received From DEHLG.





Principles of Evacuation to a 'Place of Safety'





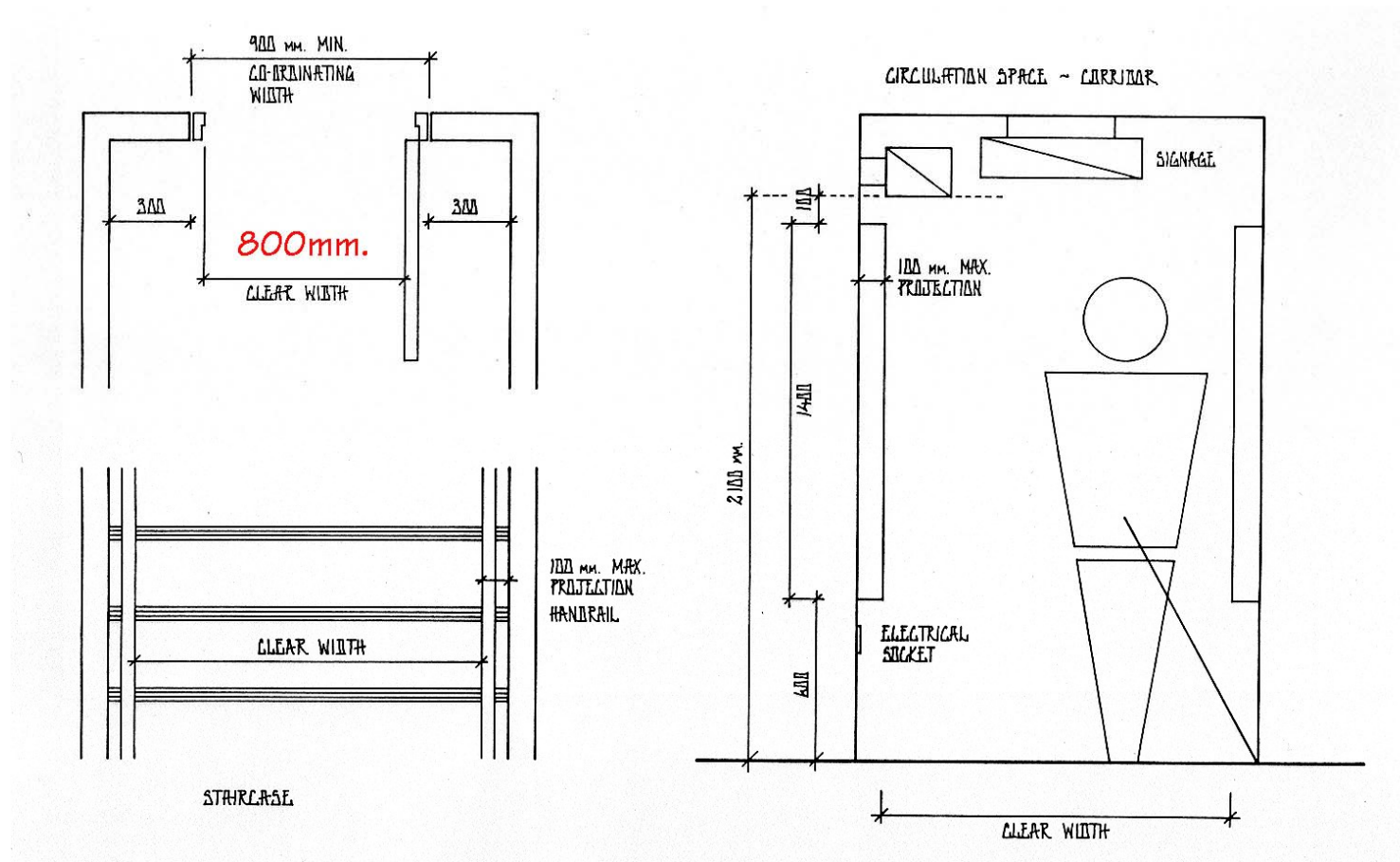
Clear & Alternative

Evacuation Routes

(includes people with activity limitations)

[Alternative & Protected Means of Attack for Firefighters]



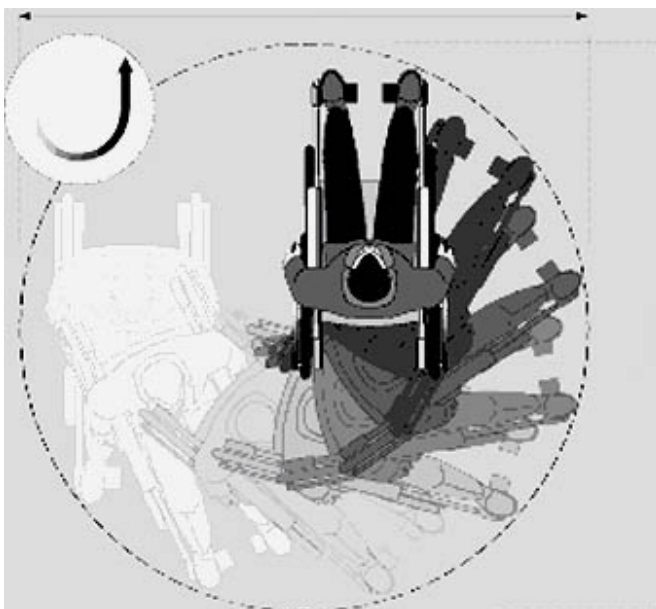


Harmonization of 'Clear Widths' Very Necessary



Continuous Re-Assessment of Accessibility

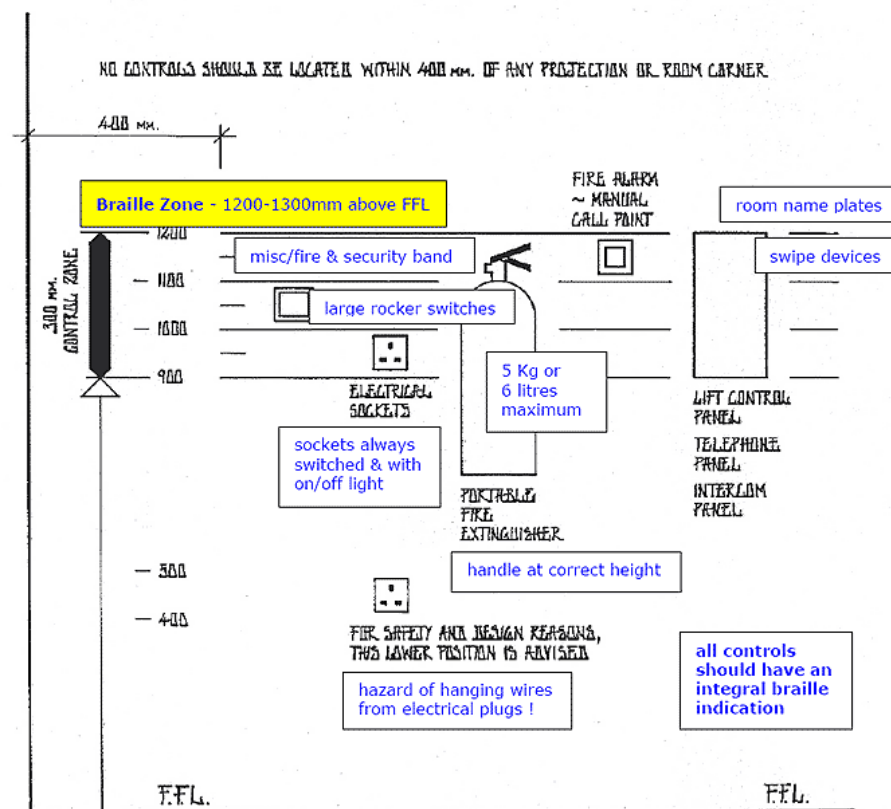
[Legislation & Standards: Maximum Interval of 5 Years]



Wheelchair Turning Circle = 1.8 m x 1.8 m

Minimum Clear Width of All Doorsets = 800mm



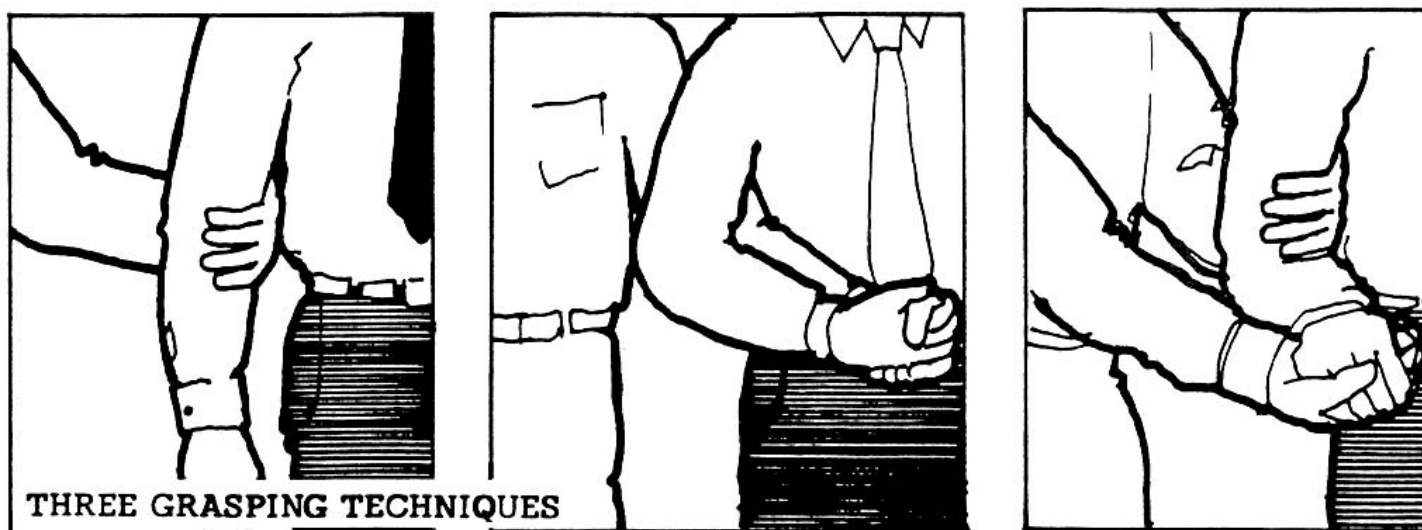


Location & Height of Controls & Equipment



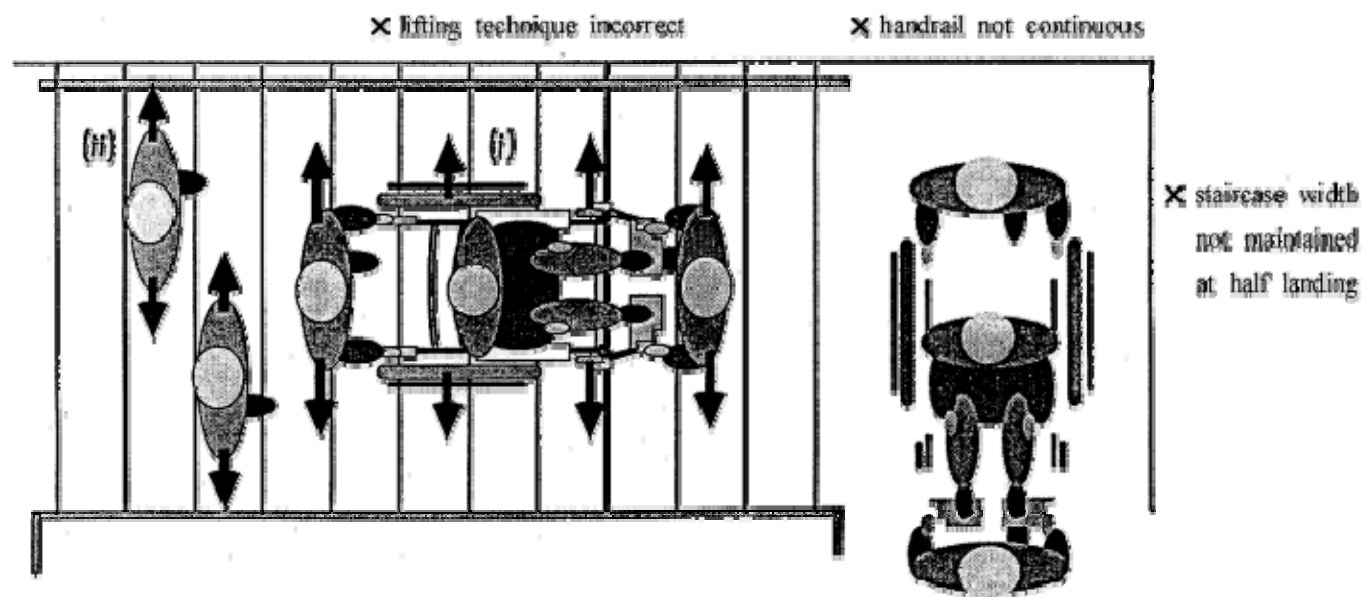
Assisted Evacuation Techniques

Visual Impairment



NRCC Report: 'Evacuation Techniques for Disabled People'. Byron Johnson. March 1983.



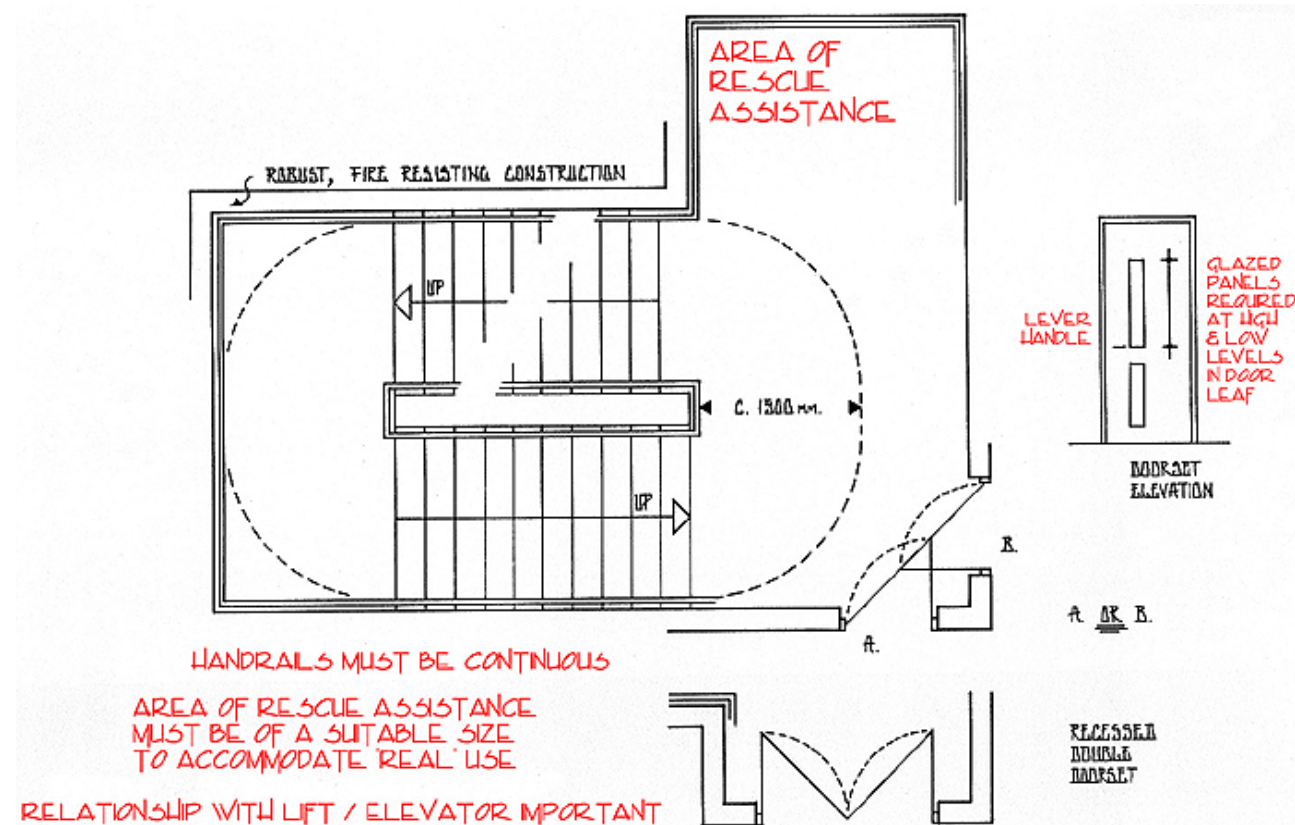


Assisted Evacuation on a Staircase

- (i) **Correct Wheelchair User Assistance** > 1 Assistant Behind + Assistant at Each Side (2)
- (ii) **Correct Assistance for Visually Impaired Person** > Assistant, in Front, Leading

For reliability & flexibility 'Buddy' System Unit comprises 3 people






Staircase for Assisted Evacuation & Contraflow

[NIST WTC 1 & 2 Final Report / Recommendation 17. NIST recommends that stairwell capacity and stair discharge door width should be adequate to accommodate **contraflow** due to emergency access by firefighters/rescue teams.



Area of Rescue Assistance

(also known as a 'refuge', or a 'refuge area' )

A building space directly adjoining, and visible from, a main vertical evacuation route - robustly and reliably protected from heat, smoke and flame during and after a fire - where people may temporarily wait *with confidence* for further information, instructions, and/or rescue assistance, without obstructing or interfering with the evacuation travel of other building users.

*An Area of Rescue Assistance is a 'Place of Relative Safety';
it is not a 'Place of Safety'*



Building Users / Fire Incident / No Explosion Hazard



Place of Safety :

Any location beyond a perimeter which is [100] metres from the fire building or a distance of [10] times the height of such building, whichever is the greater

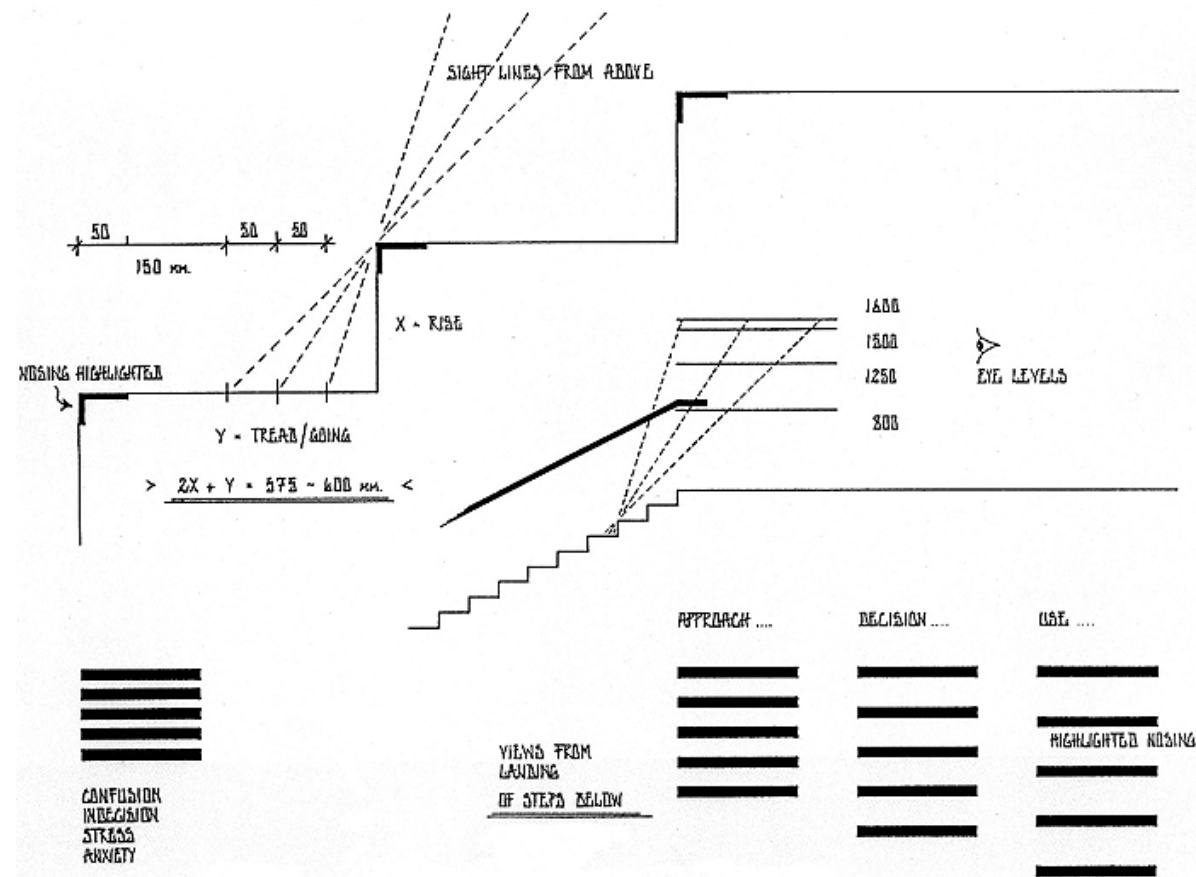
and

where necessary and effective medical care and attention can be provided, or organized, within one hour of injury

and

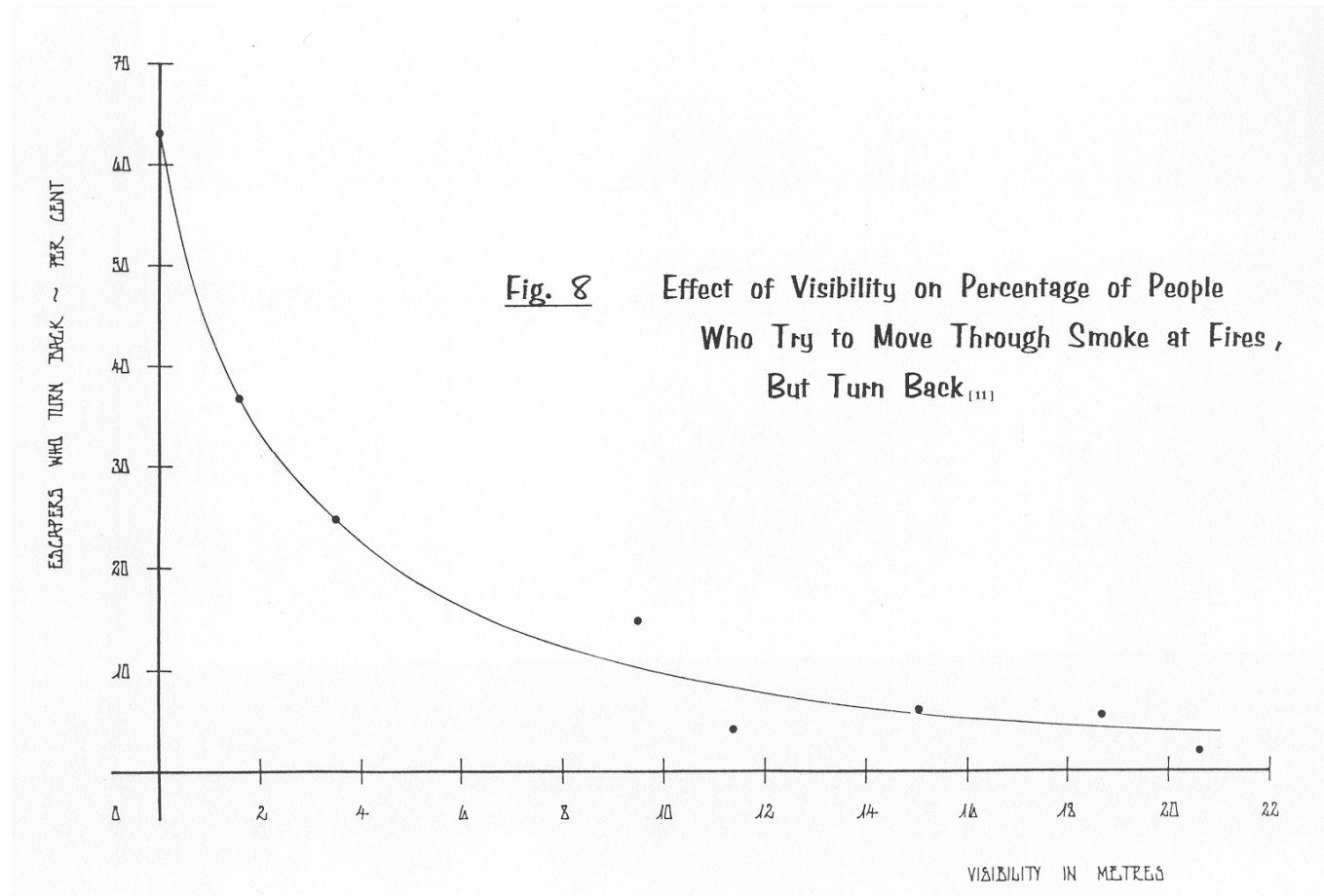
where people can be identified.





Stair Design for Safety & Assisted Evacuation





Smoke & Visibility - Some People Will Turn Back



Panic

A sudden overwhelming feeling of anxiety, which may be of momentary or prolonged duration.

Anxiety is the normal response of the human body to recognised danger. Numerous reflexes are involved. The supply of blood to the muscles is greatly increased, partly because the heart beats more rapidly and strongly, and partly because the blood vessels of the muscles dilate while those of many other organs constrict, diverting the flow of blood to where it is most needed. The muscles themselves are tensed. Breathing is deeper and more rapid. The mind becomes more alert, and the pupils dilate, admitting more light to the eyes.

Research On This Subject Necessary but in Ireland ?



Consultation

UN Disability Convention Art.4.3: " In the development and implementation of legislation and policies , and in decision-making processes concerning issues relating to persons with disabilities, States Parties shall closely consult with and actively involve persons with disabilities,"

Informed Consent

[UN OHCHR, 1991]

Consent freely obtained - without threats or improper inducements - after appropriate disclosure to a person of relevant, adequate and easily assimilated information in a form (e.g. oral, written, braille) and language understood by that person.

Personal Representative

A person charged, under European Union* or national law, with the duty of representing another person's interests in any specified respect, or of exercising specified rights on that person's behalf
- and including the parent or legal guardian of a minor unless otherwise provided for by European Union or national law.

* Where European Union law exists, it is superior to the national laws of the Union's Member States.



Protection from Fire in Buildings

Personal Check List for People with Activity Limitations

1. Upgrade 'My' understanding of **Accessibility**
Ease of independent approach, entry, evacuation and/or use of a building and its services and facilities, by all of the building's potential users ~ with an assurance of individual Health, Safety and Welfare during the course of those activities ;
2. Be assertive (not aggressive) with regard to 'My' own self-protection ;
3. Concerning 'My' safety - demand that management actively engages in **Meaningful Consultation** - and receives your **Informed Consent** ;
4. Be familiar with the **Fire Defence Plan** for the building, and know 'My' part well ;
5. Be *skilled* in evacuation to a **Place of Safety** ;
6. Be involved, and participate directly in safety procedures.



Protection from Fire in Buildings

Must-Do List for Concerned Organizations & Groups

1. Upgrade 'Our' understanding of **Accessibility**, & its vocabulary
Ease of independent approach, entry and/or use of a building and its services and facilities, by all of the building's potential users ~ with an assurance of individual Health, Safety and Welfare, and group Wellbeing, during the course of those activities ;
2. Be assertive (and aggressive) with regard to the availability of proper **Data & Statistics** - we must clearly identify 'Our' problem ;
3. Produce a working statement of an **Individual's Rights** - on 1 Page (!) ;
4. Issue clear guidelines on **Reliable Advocacy** ;
5. Be involved, and participate directly in the development of design, structural and fire safety **Building Codes & Standards** ;
6. Demand resources to **Monitor Implementation** and **Target Research**.



Conclusion

Good Fire Engineering Practice involves much more than 'cost-effective' compliance with the minimum performance criteria established in Technical Guidance Document B.

Issues such as

- Particular attention being paid to the protection of people with activity limitations from fire - because of their greater difficulties during and after evacuation ;
- Resistance to Progressive Collapse in Fire ;
- Safety of Firefighters/Rescue Teams ;
- Protection of Property & the Natural Environment ;
- Sustainable Human & Social Development ;

.... should be incorporated in an effective **Fire Engineering Code of Ethics** using as a basis

**World Federation of Engineering Organizations (WFEO)
2001 Model Code of Ethics**

