



Code of Practice for

# Safety at Sports Grounds



*Department of Education  
January, 1996*



An Roinn Oideachais  
Department of Education

Code of Practice for  
**Safety at  
Sports Grounds**

DUBLIN:  
PUBLISHED BY THE STATIONERY OFFICE.

To be published through any Bookseller, or directly from the  
GOVERNMENT PUBLICATIONS SALE OFFICE,  
SUN ALLIANCE HOUSE, MOLESWORTH STREET, DUBLIN 2.

(Pn 2298)

€12.70

© Government of Ireland 1996

Designed by Brian Kelly Design Associates  
Photography by Sportsfile  
Printed by Cahills Printers Ltd.

# Contents

	Page
<b>1 INTRODUCTION</b>	<b>1</b>
1.1 Historical Context	1
1.2–1.3 European Convention	1
1.4 Guidelines issued by UEFA	2
1.5–1.6 Scope and Status of the Code of Practice	2
1.7–1.10 General Principles of the Code of Practice	2
1.11–1.20 Implementation of Code of Practice Requirements	3
1.21–1.24 Using the Code of Practice	5
1.25 The Problems	6
(i) Underfoot conditions	6
(ii) Crowd pressures	6
(iii) Emergency evacuation	7
(iv) Fire	7
(v) Structural failure	7
1.26 Overcoming the Problems	7
(i) Good Ground Management	7
(ii)-(iii) Improving safety by new design	7
(iv)-(v) Care and maintenance	8
(vi) Fire precautions	8
1.27–1.28 Allocation of Fixtures	8
1.29 Advertising of Major Events	9
1.30 Relevance of Code to Other Events	9
<b>2 GROUND MANAGEMENT RESPONSIBILITY/ EMERGENCY PLANNING</b>	<b>11</b>
2.1 General Duty	11
2.2–2.4 Safety Policy	11
2.5–2.6 Event Controller	12
2.7–2.8 Safety Officer	13
2.9 Ground Regulations	14
2.10 Fire Safety	14
2.11 Code of Practice for the Management of Fire Safety in Places of Assembly	14
2.12 Code of Practice for Fire Safety of Furnishings and Fittings in Places of Assembly	14
2.13–2.16 Preliminary Planning for Major Events	15
2.17–2.20 Emergency Planning	16
2.21–2.22 Staffing	17
2.23 Medical and First-Aid Provision	17
2.24 General Maintenance	17
2.25 Transport Arrangements	17
2.26–2.28 Summary of Management Responsibilities	18



<b>3</b>	<b>ROLE OF GARDA SÍOCHÁNA</b>	23
3.1	General	23
3.2–3.3	Pre-Event Notification and Meeting	23
3.4–3.6	All-ticket Event	25
3.7–3.13	Planning	25
3.14	Post Event Meeting	28
<b>4</b>	<b>TRAFFIC MANAGEMENT</b>	29
4.1–4.4	Traffic Management Plan	29
4.5–4.7	Garda Cordon	30
4.8–4.12	Public Transport	31
<b>5</b>	<b>SPECTATORS WITH DISABILITIES</b>	33
5.1–5.3	General	33
5.4	People with Impaired Hearing	34
5.5–5.6	People with Impaired Vision	34
5.7	People with Impaired Mobility	34
5.8	Use of Lifts in an Emergency	35
5.9	Existing Venues	36
<b>6</b>	<b>GENERAL FABRIC AND STRUCTURAL MATTERS</b>	37
6.1–6.4	General	37
6.5–6.6	Headroom	38
<b>7</b>	<b>INSPECTIONS AND TESTS</b>	39
7.1–7.3	Annual Inspections	39
7.4–7.7	Other Inspections	40
7.8	Deformation/Damage	40
7.9–7.10	Records	41
<b>8</b>	<b>INGRESS</b>	43
8.1–8.6	Turnstiles	43
8.7–8.8	Entrances and Entry Routes	45
8.9	Signposting	45
8.10	Programmes	45
8.11–8.12	Crowd Build-up	45
8.13	Pre-match Entertainment	46
8.14	Forgeries	46
8.15	Ticket Touts	46

<b>9</b>	<b>EGRESS</b>	47
9.1–9.2	General	47
9.3–9.9	Exit Routes/Systems	47
9.10–9.13	Egress Time	48
9.14	Signposting	49
9.15–9.25	Exit Routes	49
<b>10</b>	<b>STAIRWAYS AND RAMPS</b>	55
10.1–10.4	General	55
10.5	Disposition of Stairways	56
10.6–10.14	Construction of Stairways	56
10.15–10.20	Access to Stairways	60
10.21	Discharge from Stairways	63
10.22–10.24	Ramps	63
<b>11</b>	<b>TERRACES AND VIEWING SLOPES</b>	65
11.1–11.3	General	65
11.4–11.7	Terrace Steps	66
11.8–11.12	Gangways	66
11.13	Lateral Gangways	67
11.14–11.16	Radial Gangways	67
11.17–11.20	Division of Spectator Accommodation	67
11.21	Crush Barriers	68
11.22–11.29	Viewing Slopes	68
11.30	Terrace to Touchline Distance	69
<b>12</b>	<b>CRUSH BARRIERS, GUARDRAILS AND OTHER GUARDING</b>	71
12.1–12.2	Dimensions and Design Features	71
12.3–12.5	Spacing of Crush Barriers	73
12.6	Crush Barrier Configuration where Barriers are not Continuous	74
12.7–12.19	Strength of Crush Barriers, Guardrails and Handrails with Guarding Function	75
<b>13</b>	<b>COVERED STANDING AND SEATED ACCOMMODATION</b>	79
13.1–13.3	General	79
13.4–13.6	Exits	80
13.7–13.9	Gangways	80
13.10	Balustrading	81
13.11–13.15	Seating	81
13.16	Appraisal of Structures against Disproportionate Collapse	83
13.17	Replacement or Strengthening of Weak Structural Elements	83

<b>14</b>	<b>TEMPORARY STANDS AND OTHER TEMPORARY STRUCTURES</b>	85
14.1–14.2	General	85
14.3–14.7	Structural Design	86
14.8–14.9	Siting	87
14.10–14.15	Erection	87
14.16–14.19	Management during Use	89
14.20–14.21	Dismantling	89
14.22–14.30	Tents/Marquees and other such Structures	89
<b>15</b>	<b>FIRE SAFETY</b>	93
15.1–15.2	General	93
15.3–15.12	Minimising Fire Risk	94
15.13–15.18	Prevention or Retardation of Fire Growth/Spread	96
15.19–15.24	Fire Warning	96
15.25	Emergency Lighting	97
15.26–15.30	Fire-fighting Equipment	97
15.31–15.32	Emergency Procedures and Staff Training	98
15.33–15.34	Means of Escape	98
15.35–15.37	Fire Protection for Stairways and Passages	99
15.38–15.44	Emergency Evacuation Time	99
15.45–15.46	Access for Emergency Vehicles	100
15.47	Access Routes to the Pitch for Emergency Services	101
<b>16</b>	<b>COMMUNICATIONS</b>	103
16.1	General	103
16.2–16.4	Central Control Room	103
16.5	Spectator Reaction to Emergency Situations	104
16.6–16.8	Public Address System	104
16.9	Fire Detection (fire alarm systems)	105
16.10–16.13	Co-ordination of Emergency Communications	105
16.14–16.15	Back-up Provision	106
16.16	Closed Circuit Television	106
<b>17</b>	<b>ELECTRICAL INSTALLATION, AUXILIARY POWER AND EMERGENCY LIGHTING</b>	109
17.1	Artificial Lighting	109
17.2–17.7	Electrical Installation	109
17.8–17.16	Emergency Lighting	110
17.17	Public Address System	111

<b>18</b>	<b>STEWARDING</b>	113
18.1–18.6	General	113
18.7–18.9	Identification	114
18.10	Professional Security	114
18.11–18.12	Basic Duties	115
18.13	Age and Fitness	116
18.14–18.21	Training	116
<b>19</b>	<b>CROWD BEHAVIOUR</b>	119
19.1	General	119
19.2–19.4	Crowd Movement	119
19.5–19.10	Segregation	120
19.11	Removal of Troublemakers	121
19.12	Refreshments	121
19.13	Distribution of Tickets at High Risk International Matches	121
19.14	Commencement Time of Matches	121
<b>20</b>	<b>PITCH PERIMETER FENCE/WALL</b>	123
20.1	General	123
20.2–20.6	Access to the Playing Area	123
20.7	Strength	124
20.8–20.13	Pitch Barrier Fences	125
<b>21</b>	<b>ASSESSMENT OF SAFE HOLDING CAPACITY</b>	127
21.1–21.4	General	127
21.5–21.6	Entry Capacity	128
21.7–21.19	Holding Capacity	129
21.20–21.22	Exit Capacity	135
21.23–21.24	Emergency Exit Capacity	136
21.25	Safe Holding Capacity	138
<b>22</b>	<b>RECOMMENDED FLOW RATES</b>	139
<b>23</b>	<b>MEDICAL FACILITIES, FIRST-AID AND AMBULANCES</b>	141
23.1–23.2	General	141
23.3	Doctors	141
23.4	First-Aid Staff	142
23.5	Accommodation for Medical and First-Aid Staff	142
23.6–23.7	Ambulances	143
23.8	Parking and Access for Emergency Vehicles	144
23.9	Arrangements with Hospital(s)	144



<b>24</b>	<b>SANITARY ACCOMMODATION</b>	145
24.1–24.3	Toilet Provision	145
24.4–24.6	Location of Toilets	146
24.7–24.8	Maintenance	146
24.9	Disposal of Waste	146
24.10–24.12	Drinking Water	147
<b>25</b>	<b>EXTERNAL HAZARDS</b>	149
25.1	Aircraft Restrictions	149
25.2	Transport of Hazardous Substances	149
<b>26</b>	<b>LEGISLATION</b>	151
26.1	Fire Services Act, 1981	151
26.2	Ease of Escape Regulations	152
26.3	Temporary Structures	152
26.4	The Local Government (Planning and Development) Acts, 1963-1993.	152
26.5	Safety, Health and Welfare at Work Act, 1989	152
26.6	Civil Liability	153
26.7	Sale of Food	153
26.8	Casual Trading Acts	154
26.9–26.11	Criminal Justice (Public Order) Act, 1994.	154
26.12	Litter Control	155
26.13	Legal Advice	155
<b>APPENDICES</b>		
<b>APPENDIX A</b>	<b>GROUND MANAGEMENT RESPONSIBILITY: WRITTEN SAFETY POLICY</b>	157
1	General	157
2	Provisions of the Safety Policy	157
<b>APPENDIX B</b>	<b>TESTING AND INSPECTION OF CRUSH BARRIERS, GUARDRAILS AND OTHER STRUCTURAL CROWD CONTROL ELEMENTS</b>	159
1	Objective	159
2	Personnel and Equipment	159
3	Records	159
4	Inspections	160
5	Testing	160
6	Test Method	160
7	Bedding-in Cycle	161
8	Proof Cycle	161
9	Further Considerations	161

<b>APPENDIX C</b>	<b>TESTS AND INSPECTIONS: GENERAL</b>	163
1	Before each Event	163
2	After each Event	164
3	Annually	164
<b>APPENDIX D</b>	<b>STEWARDING</b>	165
1	Selection of Stewards	165
2	Main duties of Stewards	165
3	Training of Stewards	166
4	Identification and Supervision	167
5	Emergency Procedures–Stewards Role	167
<b>APPENDIX E</b>	<b>GROUND REGULATIONS</b>	169
<b>APPENDIX F</b>	<b>GROUND EMERGENCY PLAN</b>	171
1	Introduction	171
2	Definition of Serious Emergency	172
3	Definition of Key Personnel	172
	3.1 Event Controller	172
	3.2 Emergency Controller	172
4	Activation of Plan	172
5	Function of Local Authority, Gardaí, and Health Board	173
6	Ground Management	173
7	Telephone Numbers	173
8	Evacuation Arrangements	173
8.1	General	173
8.2	Mortuary Facilities	174
8.3	The Disaster Area	174
8.4	Fatalities	174
8.5	Public Address System	174
8.6	Potential Disaster	174
8.7	Doctors	175
8.8	Central Control Room	175
8.9	Responsibility	175
8.10	Stewards	175
8.11	Flexibility of Plan	175
8.12	Availability of Plan	176
8.13	Review of Plan	176
8.14	Exercises	176
<b>APPENDIX G</b>	<b>GLOSSARY</b>	
	Liaison Committee	177
	Local Authorities	177
	Health Boards	177
	Lateral Gangway	177
	Radial Gangway	177

	Stairway	178
	Viewing Accommodation	178
	Place of Safety	178
	Fire Door	178
	Fire Resistant	178
	Flammable	178
	Combustible	178
<b>APPENDIX H</b>	<b>LOCATIONS VISITED BY THE WORKING PARTY</b>	<b>179</b>
<b>APPENDIX I</b>	<b>SUGGESTED COMMUNICATIONS SCHEME</b>	<b>181</b>
	<b>INDEX</b>	<b>183</b>

# ***Acknowledgements***

The Department of Education wishes to acknowledge gratefully the permission granted by the Controller of Her Majesty's Stationery Office, to use the "Guide to Safety at Sports Grounds" (known as the Green Guide) in the preparation of this Code of Practice.

The approval of The Institution of Structural Engineers, London to use their publication, "Appraisal of Sports Grounds", is also acknowledged with thanks.

## **The Department is grateful for the assistance of the following in the preparation of the Code:**

Bohemians Football Club  
Chief Fire Officers' Association  
Co. Cork GAA Board  
Co. Meath G.A.A. Board  
Co. Roscommon G.A.A. Board  
Cumann Lúthchleas Gael  
Department of the Environment  
Department of Health  
Department of Justice  
Dublin Corporation  
Dún Laoghaire-Rathdown County Council/ Dún Laoghaire Corporation  
Eastern Health Board  
Eolas/Forbairt  
Fire Safety Standards Committee, National Standards Association of Ireland  
Football Association of Ireland  
Garda Síochána  
Gar Holohan and Associates  
Gilroy Mc Mahon Architects  
Health and Safety Authority  
Horgan Lynch and Partners  
Institution of Structural Engineers, Republic of Ireland Branch  
Irish Rugby Football Union  
Malachy Walsh & Partners  
Michael Slattery & Associates  
Mid-Western Health Board  
Munster Council, GAA  
National Rehabilitation Board  
North Eastern Health Board  
Ove Arup and Partners  
Seamus Monahan & Partners (Ireland)  
Shelbourne Football Club  
Southern Health Board  
Ulster Council, GAA



**The Department also wishes to acknowledge the assistance of the following organisations in the UK:**

Brent Borough Council, London  
City of Westminster, London  
Crystal Palace Football Club, London  
Department of the Environment, London  
Football Licensing Authority, London  
Greater Manchester Exhibition and Event Centre  
Greater Manchester Fire and Civil Defence Authority  
Greater Manchester Police  
Health & Safety Executive, London  
Home Office, London  
London Fire Brigade and Civil Defence Authority  
Manchester City Council  
Manchester City Football Club  
Steer Davies Gleave  
Wembley Stadium Limited, London

# **Foreword**

## **BACKGROUND TO THE PREPARATION OF THE CODE OF PRACTICE FOR SAFETY AT SPORTS GROUNDS**

1. Following the tragedy at Hillsborough Football Stadium in 1989, the Government appointed the Committee on Public Safety and Crowd Control, under the Chairmanship of the Honourable Mr. Justice Liam Hamilton, to look at all aspects of Public Safety and Crowd Control at major public events, with particular reference to sporting events, music festivals and concerts. The Committee completed its report in February 1990.
2. One of the main recommendations of this Committee was that a formal Code of Practice for Safety at Sports Grounds be prepared. The Government decided that the Minister of State at the Department of Education should have responsibility for dealing with the Committee's key proposals which include the preparation of the Code of Practice. A Working Party was appointed under the auspices of the Department to prepare the Code. The composition of the Working Party was as follows:-

Mr. Paddy Quinlan, Chairman,  
Principal Officer,  
Dublin Corporation.

Mr. Leo Crehan,  
Senior Building Surveyor,  
Dublin Corporation.

Chief Supt. Michael Francis,  
Fitzgibbon Street Garda Station.

Mr. Con Haugh,  
Principal Officer,  
Department of Education.

Mr. Tom McDonald,  
Chief Fire Officer,  
Dun Laoghaire Corporation.

Mr. Denis Wall,  
Senior Executive Structural Engineer,  
Dublin Corporation.

Mr. Marc Howard was Secretary to the Working Party and  
Ms. Eileen Connaire was Acting Secretary.

3. The Committee on Public Safety and Crowd Control recommended that the core of the Formal Code of Practice should be the amalgamation of the U.K. "Guide to Safety at Sports Grounds", (known as the "Green Guide"), the relevant parts of the Committee's Report and any relevant Building Regulations.
4. The Guide to Safety at Sports Grounds, which operates in Britain as a voluntary code, was first produced in 1973 and was essentially based on the technical report produced by the Technical Support Group to the Wheatley Inquiry. The Guide was amended and extended in the light of subsequent reports including the 1985 Popplewell Report. Following re-examination of the Guide in the light of recommendations by the Taylor inquiry into the tragedy at Hillsborough in 1989, the third edition incorporating further changes was published in 1990.
5. In preparing this Code of Practice, the Working Party has taken account of the European Convention on Spectator Violence and Misbehaviour at Sports Events and in particular at Football Matches.
6. The Working Party, in the preparation of the Code of Practice, has also taken into account the Report of former Chief Justice Thomas Finlay on Violence at Lansdowne Road on the occasion of the Ireland v. England Soccer International on 15th February, 1995.
7. **Legal Obligations**  
Compliance with this Code of Practice does not, of itself, confer immunity from legal obligations on Ground Managements or Organisers of events. The Department of Education and the authors of the Code will not be held responsible for any loss, damage or injury arising in the context of the implementation of the recommendations of the Code of Practice.



# ***Introduction***

## ***Historical Context***

- 1.1 Fortunately, serious accidents at sports grounds resulting in injuries on a large scale are few. But, as demonstrated at Burnden Park in 1946, Ibrox Stadium in 1971, Valley Parade in 1985, Hillsborough in 1989 and Bastia, Corsica in 1992, the potential for disaster at a crowded sporting event is such that it is essential for Ground Management to ensure reasonable safety at their grounds. This applies to all grounds irrespective of the nature of the event and was particularly evident at Lansdowne Road on 15th February, 1995.

## ***European Convention (Recommendations)***

- 1.2 Ireland became a Party to the European Convention on Spectator Violence and Misbehaviour at Sports Events and in particular at Football Matches in 1986. The Convention was introduced following concern at the Council of Europe about the extent of violence and misbehaviour amongst spectators attending sports events, and in particular football matches. It lays emphasis on the responsibilities of both public authorities and the independent sports organisations to prevent and combat spectator violence and misbehaviour. The Convention issued documents which relate to the following subject matters.
- A Comprehensive Report on Measures to Counter Hooliganism, approved in Resolution No. 3 of the 6th Conference of European Ministers responsible for Sport (Reykjavik – 1989).<sup>1</sup>
  - Recommendations on Guidelines for the Control of Ticket Sales at High-risk Matches, 1989.<sup>2</sup>
  - Recommendations on the Promotion of Safety in Sports Stadia, 1991 (No. 1/91). This document relates mainly to:<sup>3</sup>
    - (a) fire preventive measures,
    - (b) structural questions,
    - (c) crowd management,



- (d) responses to emergency situations (this governs co-ordination and communication among all services concerned).
  - Recommendation No 1/93 to Parties on measures to be taken by the organisers of Football matches and the public authorities.<sup>4</sup> This contains guidelines for an agreement in the form of a standard checklist of measures to be taken, to be concluded between organisers of matches and public authorities, defining their obligations, responsibilities and different roles. The standard checklist can be adapted where necessary to meet local conditions and events other than matches within the framework of FIFA and UEFA competition.
- 1.3 Copies of documents issued on behalf of the European Convention, as listed in 1.2 above, should be obtained by the Public Authorities and various Sports Associations for use by their respective officials and representatives who are concerned with improving public safety and crowd control at sporting events.

### ***Guidelines issued by Union des Associations Européennes de Football (UEFA)***

- 1.4 Specific guidelines issued by UEFA<sup>5-6</sup> relating to crowd safety and security measures in and around stadia were taken into account in the preparation of this Code of Practice. Copies of these guidelines should be procured by the Public Authorities for use by their officials.

### ***Scope and Status of the Code of Practice***

- 1.5 The Code of Practice, which is a voluntary Code, will apply to all grounds with a holding capacity of 20,000 spectators or more. Managements of grounds at this level will be expected to comply with all the guidelines contained in the Code of Practice. Where grounds do not meet these guidelines measures should be taken within a reasonable time scale to remedy safety defects.
- 1.6 In grounds of lesser capacity, Ground Management, which has primary responsibility for the safety of spectators, should apply the relevant criteria contained in the Code to ensure safety at the ground, enlisting professional expertise where necessary.

### ***General Principles of the Code of Practice***

- 1.7 The problem of crowd safety at sports grounds is complex and cannot be solved simply by ensuring that individual components of a ground, such as stairways, passages or sections of terracing, are satisfactory in themselves. The inter-relationships of these and other components are

critical: none of them can be considered in isolation without consideration of its effects on the others. They should all be compatible and combine to form a balanced unit.

- 1.8 It is accepted that the safety standards outlined in the Code of Practice could be more easily achieved at newly designed grounds or where major reconstruction of existing grounds is planned. While it is also accepted that existing grounds could have difficulties in meeting all of the standards set out in the Code, nevertheless, Ground Management should endeavour to meet the guidelines provided in the Code within a reasonable timescale.
- 1.9 The safety of the public in places of assembly is the responsibility of those who organise the event and who administer or own the ground or venue in which it is held. This arises from the common law duty of care owed by those in charge of the venue to the patrons who pay to attend the event. It is the responsibility of Ground Management to ensure that standards and requirements for safety at sport events are strictly observed before, during and after the event.

Where Ground Management has leased the ground to another body, the division of responsibilities between Ground Management and the Promoter of the event should be clearly defined, agreed and recorded before the event; this must include public liability and other relevant insurances. In this Code of Practice the persons responsible for safety at the sports ground will be referred to as Ground Management.

- 1.10 The detailed provisions set out in this document are intended to provide guidance for some of the more common situations. In other situations, alternative ways of demonstrating compliance with the Code may be appropriate. There is no obligation to adopt any particular solution set out in this guidance document. The use of alternative design solutions, standards, systems or methods to those outlined in this document is acceptable, provided an equivalent level of safety is achieved.

### ***Implementation of Code of Practice Requirements***

- 1.11 It is recognised that cognisance will have to be taken of the practical and economic implications which are likely to arise if existing grounds are to be brought up to the achievable standards set out in this Code of Practice. The variety of type, function and layout of sports grounds and the inter-relationship of different components means that a flexible approach should be maintained to take account of the individual nature of grounds. The Code does not attempt to provide a universal standard but sets achievable standards.
- 1.12 The practical approach would be for grounds to aim for the implementation of the Code's criteria on a phased basis. Ground Management should be allowed a reasonable time to comply with the



requirements of the Code, thereby spreading the burden of cost over a period where this is necessary and justified. Certain requirements may be of such a nature that they should have immediate effect. It is intended that there will be consultation with the relevant controlling authority<sup>7</sup> on the question of lead-in time for alteration.

- 1.13 The primary concern must be to improve the standards of sports grounds to a reasonable and adequate standard required for the protection of life. Where improvements are necessary the controlling authority<sup>7</sup> should consider an approach based on arrangements agreed between the authority and Ground Management. The approach could be as indicated below.
- 1.14 The controlling authority should identify existing deficiencies in the grounds, dividing them into those matters which require (a) urgent attention because of the serious risk of injury or death they pose to patrons and (b) those which can be tackled over a reasonable period of time. Such an assessment must always be based on the fundamental principle of the protection of life.
- (a) Those deficiencies which require urgent attention may be of two types:-
- (i) those which are so serious that they require immediate attention, and
  - (ii) those which can be rectified quickly without undue cost or dislocation. Many of these will be in the areas of management and good housekeeping (as outlined in Chapter 2 and Appendix A) e.g., proper checking of means of escape, training of staff, disposal of waste, storage of flammable materials, maintenance of equipment, etc. These can be achieved at little or no cost and can result in a substantial improvement in the overall safety of the ground; and
- (b) In the case of deficiencies which are not a serious risk to life and can be tackled over a period of time, the controlling authority<sup>1</sup> could seek to agree with the Ground Management a programme of works which includes target dates for completion of the various elements – the time period would, of course, vary but could extend up to 1st January, 2003, depending on the circumstances of the particular case.
- 1.15 In the absence of a satisfactory response from the Ground Management to an approach from the controlling authority<sup>7</sup> or where the Ground Management deviates to a significant extent from the agreed programme, or where, for some reason, a serious risk to life becomes apparent in a premises during the currency of the agreed programme it is a matter for the controlling authority<sup>7</sup> to take appropriate action.

- 1.16 Any safety related decision should be properly recorded with supporting documentation and adhered to. If the requirements of the Code or alternative safety arrangements agreed with the controlling authority cannot be achieved, a reduction of the numbers of spectators, compared to the number who would otherwise be accommodated, will be required.
- 1.17 The Code is aimed primarily at safety in existing sports grounds and attempts to take account of the constraints and difficulties which are present in these grounds. It is not a design brief for new construction work or reconstruction work at sports grounds, but the standards achieved in such work should not be lower than those set out in the Code. New work should conform to the Building Regulations, 1991.<sup>8</sup> The scope of new design work should lead to higher standards of safety and amenity than those which can be achieved at grounds already built.
- 1.18 Developments consisting of the making of a material change in the use of land or the carrying out of works need planning permission under the Local Government (Planning and Development) Acts, 1963 to 1993,<sup>9</sup> unless the development has exempted development status under those Acts or their associated regulations.
- 1.19 The Institution of Structural Engineers publication "Appraisal of Sports Grounds",<sup>10</sup> is a useful document and should be taken into consideration in the management and design of sports grounds. It supplements this Code and provides more detailed technical advice.
- 1.20 The guidance outlined in this Code is without prejudice to the operation of other legislation.<sup>8-16</sup>

### ***Using the Code of Practice***

- 1.21 The Code is an aid to professional judgement and common sense, not a substitute. The principles referred to in Paragraphs 1.7–1.20 should be kept in mind by Ground Management and, where applicable, by the Local Authority, the Gardaí and the Health Board, when applying the Code to an individual ground.
- 1.22 Although some of the safety standards are likely to apply to all sports grounds irrespective of the number of spectators present, it is nevertheless important to relate the Code to the needs of each individual ground. The required safety standard to be attained should relate to the maximum number of spectators who are to be admitted to the ground or parts of it and who can be safely held therein. For example, a stadium with a holding capacity of many thousands is likely to pose significant crowd pressure risks particularly if it is full or nearly full. To accommodate such a crowd safely may necessitate substantial remedial work.



- 1.23 There are grounds where the physical layout could give rise to serious safety problems if a particularly attractive fixture were to be staged there. Such a fixture could give rise to a temporarily increased capacity through the use of temporary stands, etc. Ground Management must consult the Local Authority, the Gardaí, and the Health Board, at least two months before the event, or a shorter period agreed with these bodies, specifying the nature of the event and present their proposals based on the Code of Practice to provide adequate safety at this type of occasional fixture. The onus should then be on the Ground Management to ensure that approved measures are taken to comply with safety requirements for the particular event and have such measures completed in good time to allow one week for inspection before the event takes place. Alternatively, consideration might be given to accepting a much smaller number of spectators who, properly dispersed, could be accommodated safely without having to incur costly repairs, improvements or alterations.
- 1.24 A safe holding capacity for each section of the ground, based on viewing accommodation and the entry/exit routes, should be predetermined. This will require the preparation of detailed plans drawn to a suitable scale to enable a proper assessment to be carried out (see Chapters 8, 9 & 21).

### **The Problems**

- 1.25 There are essentially five types of safety problem to be considered within a ground and its immediate surroundings, all of which are inter-related:-
- (i) **Underfoot conditions:** The first hazard is tripping or falling which may have serious consequences for the individual concerned, but which can also lead to a serious incident involving others. This type of problem can be remedied by proper care and maintenance and attention to good building practice.
  - (ii) **Crowd pressures:** The second type involves crowd pressures and is potentially the more serious. Care must be taken to avoid overcrowding, to restrain surges and similar pressures on the terraces, and to ensure free movement throughout the entry/exit systems.

When large crowds are present and densities are high, pressures build up within the crowd either through motion or swaying which make it difficult, or even impossible, for individuals to control their own movements. Under these conditions crowd pressure can escalate to a dangerous level and if a person stumbles or falls the crowd cannot adapt to avoid them or to stop to help. Since this type of danger arises from crowd pressures its remedy lies in the removal, restraint and/or control of these pressures. These dangers arise particularly on terraces and in entry/exit routes.

- (iii) **Emergency evacuation:** The third type of safety problem cannot be divorced from the second and in some way is an extreme version of it. The danger arises from emergency situations which can develop following, for example, an outbreak of crowd disorder or fire. The orderly evacuation of large crowds may, under emergency conditions, become a serious problem.
- (iv) **Fire:** The fourth is the risk from fire, particularly where there is a large crowd in a confined area of an elevated covered stand where spectators are in the upper levels, the materials and construction of which might in themselves constitute a fire risk. (See Chapter 15).
- (v) **Structural failure:** The fifth is the risk of structural failure, whether through design faults, structural inadequacies or accidental overloading.

### 1.26 **Overcoming the Problems**

- (i) **Good Ground Management:** The importance of good ground management cannot be emphasised too strongly. (See Chapter 2). Much of this Code contains advice on matters which should form part of the general upkeep and maintenance of sports grounds. A well maintained and well-run venue makes commercial sense and may attract more events and a greater number of spectators.
- (ii) **Improving safety by new design:** New design work can provide an opportunity to enhance spectator safety which should be given the highest priority when deciding upon the design, layout, materials and loading of new buildings, or alterations in a ground. Close attention should be paid to new and existing exits and exit routes, slip-resistant surfaces, lighting and ease of maintenance. All parts of the viewing areas should always have a clear, unobstructed view of the playing area and designs should take account of the need to facilitate effective stewarding, which plays an important role in controlling crowd movement. (See Chapter 18).
- (iii) New design work also offers the chance to improve amenities and standards of comfort for spectators. Attention to decor, careful planning of catering or other refreshment areas, pre-match entertainment and curtain-raisers, can encourage spectators to arrive in good time, influence the use of different ingress and egress routes and may contribute towards improving crowd behaviour. Such standards should apply throughout all parts of the ground. In the redesign of existing grounds or in the design of new grounds, consideration should be given to features which would make the grounds readily adaptable for other uses, e.g., pop concerts. (See Code of Practice for Safety at Outdoor Pop Concerts and Other Outdoor Musical Events.)<sup>17</sup>



- (iv) **Care and maintenance:** Although controlling crowd numbers may serve to reduce some risks to an acceptable level, remedial work is likely to be necessary to overcome others. Obvious defects such as trip hazards (particularly at the head of stairs or steps), defective crush barriers, loose or weak handrails or guard-rails and obstructed exits or exit routes, should be rectified as part of a continuous programme of remedial care and maintenance of a ground.
  
- (v) Structures should be sound (See Chapter 6) and inspected by suitably qualified persons (See Chapter 7). Design, layout and signposting of entrances, exits, entry and exit routes require particular attention so as to ensure that they can cope safely with the number of spectators who will use them. (See Chapters 8 and 9). Attention should be paid to the condition of terraces, viewing slopes (See Chapter 11) and crush barriers. (See Chapter 12). Broken, uneven terraces can cause stumbling. Crush barriers serve to break up crowd pressures and help control movement from the terraces by regulating the rate of arrival at exits to suit their capacity, and encourage the formation of orderly queues.
  
- (vi) **Fire precautions:** Proper precautions should be taken to minimise the risk of fire. Accumulation of litter is a prime potential source of fire but can be eliminated by regular inspections, good housekeeping, maintenance and safe practices in the care and storage of flammable materials. The nature and type of materials used in the construction of covered areas and stands will strongly influence the safety measures required in them.

### ***Allocation of Fixtures***

- 1.27 The standards of comfort and capacity for spectators varies considerably from ground to ground as do the ease of access and departure from the grounds and their environs. This variety of standards does not inhibit most grounds from catering quite adequately for most of the fixtures normally hosted by them.

However, as the safety of crowds attending major sporting events must be of paramount importance it is considered that the main criteria for allocating a major fixture, where a capacity crowd is anticipated, must be the ability of the venue, safely and efficiently, to take in, accommodate and discharge such a crowd without undue delay. Major sporting bodies should regard the ability of a venue to cater in comfort and safety for a capacity attendance as being the prime consideration in allocating such a fixture, and it is recommended that the sporting bodies would adopt this approach as a matter of policy.

- 1.28 It is accepted that the scheduling of a fixture, particularly the time of commencement, can sometimes be critical in the matter of crowd safety and crowd control. Occasionally, there are commercial pressures on the organisers to schedule fixtures at times which suit broadcasting companies. As crowd safety is of paramount importance, it is recommended that representatives of the sporting bodies should consult with the Gardai and take cognisance of their expertise. There must, however, be a good reason for altering the day, venue or time of an event. (See Paragraph 2.16).

### ***Advertising of Major Events***

- 1.29 It is now the practice of the larger sports bodies to place advertisements in the national press prior to major sports events drawing patrons attention to a number of provisions which would be likely to enhance their safety. This is considered a useful practice and should be continued and extended.

### ***Relevance of Code to Other Events***

- 1.30 While primarily designed for Sports events, certain elements of the guidance in this Code may be useful in assessing safety aspects at other events where large crowds have to be accommodated.



## **References**

1. Comprehensive Report on Measures to Counter Hooliganism, approved in Resolution No. 3 of the 6th Conference of European Ministers responsible for Sport (Reykjavik – 1989), Clearing House, Council of Europe, Brussels.
2. Recommendations on Guidelines for the Control of Ticket Sales at High-Risk Matches, 1989, Clearing House, Council of Europe, Brussels.
3. Recommendations on the Promotion of Safety in Sports Stadia, 1991 (No. 1/91), Clearing House Council of Europe, Brussels.
4. Recommendation No.1/93 To Parties on Measures to be taken by the organisers of Football Matches and the public authorities, Clearing House, Council of Europe, Brussels.
5. Order and Security in the Stadia – Final Ties and High Risk Matches (Category A Matches) binding instructions to avoid crowd disturbances, 7th Edition, 1991, Union des Associations Européenes des Football, Berne.
6. Order and Security in the Stadia (Category B Matches) binding instructions and recommendations to avoid crowd disturbances, 7th Edition, 1991, Union des Associations Européenes des Football, Berne.
7. **Controlling Authority** – The Committee on Public Safety and Crowd Control (February, 1990) proposed that a National Authority for Safety at Sports Grounds be established to monitor and oversee the operation and implementation of the Code of Practice, to perform an inspectorate function at certain sports grounds and to make recommendations to the appropriate Minister as to what action should be taken against grounds not complying with the Code of Practice or critical parts of it.  
  
Pending consideration of this proposal it is recommended that Ground Managements voluntarily comply with the Code of Practice in consultation with the Local Authority, Gardaí and Health Board.
8. Building Regulations, 1991, and subsequent amendments Stationery Office, Dublin.
9. Local Government (Planning and Development) Acts 1963-1993, and associated Regulations, Stationery Office, Dublin.
10. Appraisal of Sports Grounds, Institution of Structural Engineers, London, 1991.
11. Fire Services Act, 1981, Stationery Office, Dublin.
12. Fire Safety in Places of Assembly (Ease of Escape) Regulations, 1985, Stationery Office, Dublin.
13. Fire Authorities (Emergency Operations) Regulations, 1987, Stationery Office, Dublin.
14. Safety, Health and Welfare at Work Act, 1989, Stationery Office, Dublin.
15. Building Control Act, 1990, and subsequent amendments Stationery Office, Dublin.
16. Building Control Regulations, 1991, Stationery Office, Dublin.
17. Code of Practice for Safety at Outdoor Pop Concerts and Other Outdoor Musical Events, Stationery Office, Dublin, 1996.

# **Ground Management Responsibility/ Emergency Planning**

*Effective ground management is an essential element in achieving safety. Ground Management should constantly seek to improve safety standards.*

## **General Duty**

- 2.1 Responsibility for safety at the ground lies with Ground Management. The Local Authority, the Gardaí and the Health Board have a vital role to play in assisting Ground Management to meet this responsibility and, in certain circumstances, may have to insist on measures being taken in order to achieve reasonable standards of safety. However, this does not absolve Ground Management of their primary responsibility for the safety of spectators in the ground.

## **Safety Policy**

- 2.2 To ensure the safety of those who attend events, Ground Management must devote time, effort and resources to safety management at the ground, both in its normal use or for any special event. There should be a written Safety Policy for spectators and employees covering the safety objectives and the means of achieving them. This Policy should reflect the requirements under Section 12 of the Safety, Health and Welfare at Work Act, 1989<sup>1</sup> and should be known to and understood by all staff and voluntary workers who may be involved in ground operations. The Safety Policy should be kept under review by management and revised as necessary. Appendix A summarises issues which should be addressed by the written Policy.
- 2.3 In the event that the anticipated attendance at any major event is likely to be more than 80% of the agreed capacity the event should be made an all ticket event if this is considered necessary by the Garda Authorities.



- 2.4 Ground Management should obtain regular, periodic reports on safety measures taken and on progress on those in hand. They should ensure that they are made aware of details of any incident, however minor, (which might suggest underlying problems) and the action taken to rectify them. Such details should be kept in written form and, together with the Safety Policy statement on safety, should be available for inspection by the Local Authority, the Gardaí, the Health Board and the Health and Safety Authority.

### **Event Controller**

- 2.5 An Event Controller should be appointed by Ground Management. S/he should be of sufficient competence with relevant experience, status and authority to take full responsibility on the day of the event for all matters relating to the event including safety at the ground. Appointments to the position of Event Controller, or Deputy Event Controller (see Paragraph 2.6) at venues in regular use should be for at least a twelve month period.

S/he should be easily identifiable by her/his clothing, and should be known to staff and Gardaí on duty at the event. S/he will be assisted inside the stadium by the Gardaí, Stewards and all other personnel whether paid or voluntary, but retains control unless a serious emergency occurs, at which time s/he hands over responsibility to the Emergency Controller (See Appendix F, Paragraph 3.2). S/he should, at all times, have facilities for immediate contact with the Safety Officer, the Chief Steward and the Emergency Services.

Among the responsibilities of the Event Controller are:-

- (a) having overall responsibility for the management of the event;
  - (b) being involved in the event-planning meetings with the relevant authorities, i.e., Local Authority, Gardaí, Health Board, etc.;
  - (c) ensuring the provision of adequate personnel for the event (stewards, gatemen, stilesmen);
  - (d) remaining at Central Control Room before, during and immediately after an event; and
  - (e) conducting a debriefing report on the event and attending other post-event meetings.
- 2.6 Ground Management should also appoint a Deputy Event Controller of equal status, experience and competence to the Event Controller. The Deputy Event Controller should be in a position to take over the responsibilities of the Event Controller if the latter is unable to function, for example, through illness. The Event Controller or Deputy should be in attendance at a Central Control Room when an event

takes place. The sole duty of that person during the course of the event would be to ensure that all of the elements which contribute to the comfort and safety of the patrons are interacting efficiently. All staff should be aware of the location of the Central Control Room, know the identity of the Event Controller and be familiar with lines of communication.

## **Safety Officer**

- 2.7 A Safety Officer should be appointed for each sportsground and have sufficient status, competence and authority to take responsibility for safety at the ground (including the equipment and materials and the up-keep of the first-aid room) and be able to authorise and supervise safety measures. On the occasion of each event the Safety Officer is subject to the authority of the Event Controller.

The Safety Officer should ensure that the various safety aspects of the stadium are made to comply with safety requirements. There should be clearly defined procedures for the planning and management of safety within and around the ground. S/he should be competent in safety management and site safety. The Safety Officer should have clearly defined specified functions and powers and her/his reporting relationships to senior management of the ground should be clearly defined.

Her/his duties will extend over the year and s/he should be involved in all aspects of safety contained in this Code of Practice. S/he should be present at all event planning meetings and post event meetings and be also present at the event to ensure compliance with all safety arrangements.

S/he should be in direct radio contact with the Central Control Room and the Event Controller and will require a deputy at the event to ensure the whole stadium is controlled from a safety viewpoint. Safety should be her/his sole responsibility.

In smaller grounds the duties of the Event Controller and the Safety Officer may be carried out by the same person.

- 2.8 A programme of checks, inspections, tests, training and remedial work should be drawn up so as to eliminate or minimise the potential risks to spectators. The Safety Officer should be responsible for ensuring that such inspections are carried out on all structures, installations and equipment so that they are safe and fit for the purpose for which they were intended. The details of any remedial work carried out, including the dates of completion, should be recorded. Adequate resources to carry out these tasks should be made available.



## **Ground Regulations**

- 2.9 Each major ground should adopt clearly defined Ground Regulations and this will be an important factor in maintaining safety and order inside stadia and arenas. The Ground Regulations should be clearly posted within the grounds, at turnstiles and be referred to on tickets and on match programmes issued for events. A set of standard Ground Regulations which should be adopted by Grounds Management are attached at Appendix E. The Ground Regulations will be of considerable assistance in providing the Gardaí with clear parameters for fulfilling their role inside the ground in coming to the assistance of stewards.

## **Fire Safety**

- 2.10 Management should ensure that structural fire protection of buildings is adequate, and that fire warning systems are correctly installed and properly maintained in accordance with manufacturers' instructions or Irish, British or other equivalent European standards. Suitable fire-fighting equipment must be provided and maintained to the standards specified in this Code. (See Chapter 15).

## **Code of Practice for the Management of Fire Safety in Places of Assembly<sup>2</sup>**

- 2.11 Ground Management should carefully study the Code of Practice for the Management of Fire Safety in Places of Assembly. The Code gives advice to those who control places of assembly as to how they can fulfil their responsibilities under the Fire Services Act, 1981.<sup>3</sup> Ground Management is required to carry out an immediate comprehensive review of its own practices in the light of the requirements of that Code of Practice and to take action to remedy any deficiencies. The Code applies to grandstands, sports pavilions, stadia and tents or marquees to which the public are admitted.

Attention is also drawn to the Fire Safety in Places of Assembly (Ease of Escape) Regulations, 1985<sup>4</sup> relating to exits from places of assembly. Breaches of these regulations can lead to fines of up to £10,000 or 2 years imprisonment.

## **Code of Practice for Fire Safety of Furnishings and Fittings in Places of Assembly<sup>5</sup>**

- 2.12 This document contains recommendations for people in control of premises on the means by which seating, curtains, floor coverings, stage scenery, decorations and similar items can be made more fire resistant and should be studied carefully by all Ground Managements.

The objective is to reduce the risk of fire in places of assembly through carelessness with small ignition sources such as cigarettes and matches and to retard the spread of fire when it occurs.

### **Preliminary Planning for Major Events**

- 2.13 It is essential that the Local Authority, the Gardaí and the Health Boards should receive early notification of major once-off events or indeed any major event. Responsibility for such notification rests with Ground Management. (See Paragraph 1.23). A formal Liaison Committee should be established of representatives of Ground Management, the Gardaí, the Local Authority, the Health Board and the Transport Authorities. The purpose of this Committee is to carry out the necessary planning for the event and to conduct pre-event planning meetings. These meetings should be summoned and chaired by Ground Management. Event Planning Meetings dealing with the safe running of major events are a critical part of the process for ensuring public safety at these events. The Event Controller or her/his deputy, the Safety Officer or her/his deputy should also be members of the Liaison Committee<sup>6</sup> and be present at these meetings. Accurate minutes of all meetings should be kept and circulated to all present on the day following the meetings by the Chairman.
- 2.14 Event Planning Meetings should enable an Event Safety Plan dealing with all aspects of safety for the event, including segregation of supporters, inside and outside the grounds (where necessary), to be drawn up and agreed. A Post Event Meeting of the Liaison Committee<sup>6</sup> should be held to review the operation of the plan and to formulate any changes considered necessary from experience of the event. Experience has proved that such post event meetings provide invaluable information to those preparing future plans. All such meetings should take place soon after the event is over. A record of all such meetings should be made and retained.
- 2.15 Special arrangements should be made for meetings between Supervisory Stewards, the personnel they recommend and officers of the Gardaí who will be respectively in charge of units which will have to liaise particularly closely on the day of the event. Accurate minutes of all meetings should be kept and circulated to all present on the day following the meetings.<sup>6</sup>
- 2.16 Commencement times should be decided by agreement between the Gardaí and Ground Management. In the event, however, of a failure to agree, the security requirements must dominate and it must be open to the Gardaí to veto any particular commencement time in addition to recommending the most suitable one. In deciding commencement times, regard should be had to the possibility of supporters arriving into the country and departing on the same day.<sup>6</sup>



It may not always be possible to comply with this recommendation as FIFA/UEFA may decide that two or more international matches should be played at the same time. If, as a consequence of this, security implications are likely to arise, or are foreseen, then:-

- (i) only a limited number of visiting supporters should be allowed to travel, or
- (ii) the match may have to be played at a neutral or different venue.

### **Emergency Planning**

- 2.17 A Major Emergency is any event which, usually, with little or no warning, causes or threatens (a) death or injury; (b) serious disruption of essential services or (c) damage to property, the consequences of which are beyond the normal capabilities of the Gardaí, the Local Authority and the Health Board.
- 2.18 Major emergency plans, which are the responsibility of the Local Authorities, Gardaí and Health Boards, have been prepared to ensure that where certain incidents occur (or are likely) which could result in casualties, there would be a co-ordinated response from the emergency services and from the hospitals to which casualties are brought, including special arrangements for access of emergency services.
- 2.19 While the Major Emergency Plans are generic in character and designed to deal with all kinds of emergencies, it is essential that sports grounds which stage major events should have their own Ground Emergency Plan as recommended by the Committee on Public Safety and Crowd Control.<sup>7</sup>

The events held at these grounds often attract very large crowds to a basically confined area and in the unfortunate event of a serious disaster or emergency occurring, it will be essential that there be a clear definition of responsibilities in order to ensure an immediate and decisive response to the emergency.

Responsibility for the drafting of a plan for these individual stadia rests with the Ground Management. It is advisable to have consultation with the Local Authority, the Chief Superintendent in charge of the local Garda division, and the Health Board. The plan should be drawn up on the basis of guidelines in Appendix F.

- 2.20 Copies of the Ground Emergency Plan should be kept at each ground and made available to all who are concerned with its application.

### **Staffing**

- 2.21 While the public are in the ground, the Event Controller should ensure that sufficient staff are on duty to cover entrances, exits (including any emergency exits) and other strategic points or areas.
- 2.22 Staff training, particularly for stewards in carrying out both their normal duties and ensuring that they are aware of their role in an emergency situation, should be given high priority. All staff should be capable of undertaking the duties allocated to them. They should be informed, in writing, of their duties, how to effect them and from whom to seek advice if in doubt. The Event Controller should nominate suitably qualified personnel to deal with such queries, matters or difficulties on the day. These instructions should be available for inspection. The Safety Officer should also carry out active supervision and organise emergency drills to maintain standards. (See Chapter 18).

### **Medical and First-Aid Provision**

- 2.23 The provision for health facilities in the ground, including medical, nursing, first-aid, ambulance staff and equipment, vehicles and communications, should be made by Ground Management in accordance with Chapter 23 of this Code and in agreement with the Health Board.

### **General Maintenance**

- 2.24 General repair and maintenance should be undertaken with spectator safety in mind; litter should not be allowed to accumulate. Repairs should be carried out without delay.

### **Transport Arrangements**

- 2.25 The means of transport to and from major events can play a significant role in the smooth running of the event. There should be liaison between sporting bodies and the promoters of other major events in order to avoid unnecessary duplication of events which can place unreasonable demands on transport systems, the Gardaí, the Local Authority and the Health Board. Advance notice of the event to the relevant rail and bus authorities is essential.

At the Liaison Committee Event Planning Meeting (See Paragraph 2.13) transport authorities should discuss scheduled times of arrival and departure of trains and buses transporting spectators to the venue. Where there are facilities for trains and buses to halt close to the venue, transport authorities should heed requests from the Gardaí that passengers should not be allowed to disembark during a specified period.



This period may be up to three quarters of an hour before and up to six minutes after the commencement of the game. This is particularly relevant where a level crossing and/or train station is adjacent to the ground and it is necessary in order to prevent a build-up of patrons at the turnstiles just before the event is due to commence. Similarly, where there are railway lines close to the venue, transport authorities should heed any Garda request to alter schedules for the purposes of the safety of spectators attending the venue.

At the end of an event, trains and buses transporting spectators from the venue should not commence operation until at least 10 minutes after the event has ended.

### ***Summary of Management Responsibilities***

2.26 A summary of management responsibilities is given in the following paragraphs. For convenience it has been divided into two categories: administrative responsibilities and technical responsibilities.

2.27 **The administrative responsibilities are as follows:**

- (i) appoint an Event Controller and a Deputy for each event;
- (ii) appoint a Safety Officer and a Deputy;
- (iii) prepare, in consultation with the Local Authority, the Gardaí and the Health Board, emergency plans for:-
  - (a) stopping or delaying an event,
  - (b) various emergency situations including fire,
  - (c) possible crowd disturbance,
  - (d) coping with an exceptionally large number of spectators arriving late at the ground, and
  - (e) the failure of any detection, warning, lighting or communications system or other equipment;
- (iv) give prior notification of major events to the Local Authority, the Gardaí and the Health Board and the relevant voluntary aid organisations and Civil Defence;
- (v) arrange Event Planning Meetings of the Liaison Committee<sup>6</sup> as outlined at paragraph 2.13.
- (vi) prepare Ground Regulations as indicated at Paragraph 2.9;
- (vii) prepare Event Safety Plans for major events as indicated in Paragraphs 2.13 and 2.14;
- (viii) take necessary fire prevention and precaution measures;

- (ix) consult the Local Authority about emergency evacuation, fire risk and provision of fire-fighting equipment;
- (x) consult the Local Authority, Gardaí and Health Board on access for emergency vehicles;<sup>6</sup>
- (xi) ensure that exit gates are staffed at all times when the public are in the ground and ensure that such gates are not secured in such a manner that they cannot be easily and immediately opened from the inside in an emergency. (See Paragraph 9.19); entrances around the stadium for Emergency Services, including the Gardaí, should be identified and agreed in advance;
- (xii) store safely and away from public areas any flammable materials and any accumulations of combustible waste which cannot be cleared from the ground before the next event;
- (xiii) provide medical, first-aid facilities and staff in accordance with Chapter 23;
- (xiv) consult with the Gardaí and arrange adequate policing and Garda facilities and ensure that, where the Gardaí are to be present at the ground, there is a clear understanding of the division of duties and responsibilities between them;
- (xv) recruit, train and deploy stewards and organise and carry out emergency evacuation drills using those staff;
- (xvi) ensure that all gangways and exit routes are unobstructed and capable of being used to their full capacity at all times when the public are in the ground;
- (xvii) provide directional flow, exit and emergency exit signs;
- (xviii) before each event:-
  - (a) check the ground for any accumulations of combustible litter, especially below stands and in exit routes, and for any source of potential missiles, and
  - (b) ensure that there are sufficient stewards for the event;
- (xix) after each event:-
  - (a) carry out a general visual inspection for signs of damage, and
  - (b) arrange Post Event Meeting of Liaison Committee (See Paragraph 2.13 and 2.14) to review the operation of the plan and to formulate any changes considered necessary from experience of the event; and
- (xx) keep records of:-
  - (a) attendance figures,
  - (b) all inspections and tests, any defects noted and the remedial/other action taken,

- (c) any accident or reported incident which might have led to an accident, and
- (d) staff training and emergency evacuation drills.

**2.28 The technical responsibilities are as follows:**

- (i) draw up and keep updated plans of the ground; maintain the general fabric of the ground, and arrange an annual detailed inspection;
- (ii) arrange an annual inspection of all guarding and crush barriers and ensure a representative sample is tested, (keeping a record of those tested and results of the tests);
- (iii) maintain and test all electrical installations for emergency lighting, communications and fire warning/detection and fire-fighting equipment in accordance with the relevant Irish, British or other equivalent European Standards and Codes of Practice;
- (iv) devise a clear system of communications inside and outside the ground (including direct communication with the Central Control Room); and
- (v) before each event:-
  - (a) test the operation of exit doors and gates,
  - (b) test lighting, communications and fire warning/detection systems,
  - (c) check security of any container used for storage of combustible material, and
  - (d) check the operation of the turnstiles and metering system.



## **References**

1. Safety, Health and Welfare at Work Act, 1989, Stationery Office, Dublin.
2. Code of Practice for the Management of Fire Safety in Places of Assembly, Stationery Office, Dublin, 1991.
3. Fire Services Act, 1981, Stationery Office, Dublin.
4. Fire Safety in Places of Assembly (Ease of Escape) Regulations, 1985, Stationery Office, Dublin.
5. Code of Practice for Fire Safety of Furnishings and Fittings in Places of Assembly, Stationery Office, Dublin, 1989.
6. Report of former Chief Justice Thomas Finlay, Violence at Lansdowne Road, Ireland v England, 15th February, 1995, Stationery Office, Dublin.
7. Committee on Public Safety and Crowd Control: Report, February, 1990, Stationery Office, Dublin.



## **Role of the Gardaí Síochána**

*Sporting events can have a major impact on public order, inside and outside stadia. It is vital that Ground Management keep the Gardaí fully informed of planned events.*

### **General**

- 3.1 The Garda Síochána are responsible for security, public order and traffic control, outside grounds at major events. Their prepared plans shall include arrangements for:-
- (i) policing outside the stadium;
  - (ii) policing on main routes used by spectators travelling to and departing from the event; and
  - (iii) policing inside the grounds at football matches and other events in accordance with prepared plans and arrangements made by Ground Management and organisers of such events. Responsibility for orderly control of crowds and public safety within such grounds rests with Ground Management and organisers of events.

### **Pre-Event Notification and Meeting**

- 3.2 It is the responsibility of Ground Management to inform the Chief Superintendent of the local Garda division that a major event is to take place. The Chief Superintendent should take part in the Event Planning Meeting. (See Paragraph 2.13). The Chief Superintendent should ensure that the following matters are included on the agenda:-



- (i) agreement on the commencement time of events<sup>1</sup> (See Paragraph 1.28 and 2.16);
- (ii) the expected attendance and a breakdown of the various types of supporters;
- (iii) previous history in relation to conduct, etc., of supporters;
- (iv) segregation of various supporters, if necessary;
- (v) arrangements made by the organisers for controlling the event including stewarding and controlling any possible outbreak of spectator violence;
- (vi) the benefits accruing from an event terminating in daylight rather than in darkness, if applicable;
- (vii) a joint survey of the venue and environs;
- (viii) car parking facilities;
- (ix) arrangements relating to V.I.P.'s attending the event;
- (x) the restrictions, if any, on admittance to the venue, e.g., cash only at stiles, all-ticket or a combination of both; and
- (xi) arrangements for the delaying or stopping of the event.

It is essential that the representative of Ground Management/Promoter of the Event attending this meeting has the necessary authority to make any decisions on behalf of the organisation including, in particular, whether an event should be all-ticket. Accurate minutes of all meetings should be kept and circulated to all present on the day following the meetings.

**3.3** Having assessed the overall situation it is then the responsibility of the Gardaí to formulate an operational plan of action catering for provision of the necessary personnel and equipment to police the event. Garda personnel and equipment requirements may differ in respect of each specific event. However, consideration should be given to:-

- (i) search and continuous security of the venue for a period prior to the event;
- (ii) security of the venue during the event and until after the crowd has departed; and
- (iii) ordinary policing of the general area from the expected time of arrival of the various supporters which, in some instances, may be the day prior to the event.

### **All-ticket Event**

- 3.4 Should the anticipated attendance of any major event be more than 80% of the agreed capacity, the event should be made all-ticket if this is considered necessary by the Garda Authorities.

Where an international match is particularly sensitive, and/or troublesome supporters are expected, the event should be made all-seater with tickets dedicated by seat, if considered necessary by the Gardaí. Ground Management should ensure that tickets are disposed of according to agreed procedures. In situations where there is a deviation from these procedures, Ground Management should inform all concerned, including the Garda authorities.

- 3.5 If the event is all-ticket, consideration should be given by Gardaí to:
- (i) erecting crowd control barriers on approach roads to the surrounding area of the stadium;<sup>2</sup>
  - (ii) prohibiting the parking of vehicles within the barriered area;
  - (iii) checking of tickets at barriers to prevent build up of people without tickets trying to gain access to the stadium; and
  - (iv) relieving patrons of alcohol, poles, or offensive weapons which may become a factor in creating a breach of the peace.
- 3.6 If requested by the Gardaí, the organisers of the event should allocate competent stewards in sufficient numbers for the checking of tickets at barriers erected by, and under the control, of the Gardaí. These stewards should also be equipped with loud-hailers and other equipment suitable for communicating information to the general public.

### **Planning**

- 3.7 Gardaí involved in crowd control and safety arrangements at major events have vital responsibilities which may require critical decisions to be taken at very short notice. Accordingly, the Plan should:-
- (i) permit the Officers in charge of personnel to familiarise themselves beforehand with their duties and various areas of responsibility in connection with the event;
  - (ii) enable a conference of Garda Officers involved to be held;
  - (iii) allow such Officers an opportunity to visit the venue in order to familiarise themselves in detail with the layout of the ground and surrounding area;



- (iv) acquaint the Officers concerned beforehand with proposed strategies for implementation of Garda policy in policing the event;
  - (v) allow Garda personnel in charge of individual sections of the grounds the opportunity to obtain a detailed knowledge of the layout of the grounds;
  - (vi) provide for use of closed circuit television monitoring; and
  - (vii) arrange meetings between relevant Garda officers and supervisory stewards. (See Paragraph 2.15).
- 3.8 The organisers of the event may consider that a special Garda presence inside the ground is necessary in order to support Ground Management in discharging its primary responsibility for the safety of spectators. The Chief Superintendent of the local Garda Division may give his consent to the deployment of the Gardaí for this purpose in accordance with the relevant regulations applicable to the Garda Síochána under the description, "duty of a non-public nature". The organisers of the event and the Chief Superintendent shall agree beforehand on the numbers and disposition of the Gardaí required at each such event. In the event of disagreement between the parties on the numbers and disposition of the Gardaí so required, the views of the Chief Superintendent will prevail.
- 3.9 Apart from their responsibility as law enforcement officers, keeping public order as peace officers, preservation of life and protection of property, Gardaí on duty inside grounds have the additional responsibility of assisting stewards to carry out their duties. Ground Management must provide the Gardaí with clear parameters for fulfilling their role in assisting stewards. The Garda Authorities should clarify the terms under which Garda services are supplied on non-public duty when requested to do so by the Ground Management and/or Promoter of the Event, including outlining the chain of command, their duties and deployment within the grounds. As public safety is at risk, there should be no ambiguity between individual stewards and Gardaí in relation to each others roles. Written agreement on these issues, including the terms of the ground regulations, between Ground Management and the relevant Chief Superintendent of the Gardaí, is necessary.
- 3.10 Whenever the number of spectators present in any section of the ground has reached the agreed capacity, that section should be closed down to further entry of spectators by the Event Controller who shall immediately notify the relevant Garda Officer of his decision. This may result in ticket holders not gaining entry to the ground.

If admission to the ground is by ticket only, separate cash-takings at stiles should not be allowed. If admission to sections of the ground is by ticket and cash is taken at stiles for admission to other sections,



care should be taken not to allow combined sales to exceed the agreed capacity. An example of this situation would be at an event where the stand seats are reserved for ticket holders and admission to terraces is by cash taken at stiles.

The Garda Officer shall keep himself fully briefed on the rate of capacity occupancy of the various sections of the grounds as spectators file in, by using the equipment referred to in Chapter 16. This aspect of control is regarded as vital in the interests of public safety. In the event of the Ground Emergency Plan being activated the Senior Garda Officer present will assume the role of Emergency Controller, unless the circumstances of the emergency dictate otherwise. (See Appendix F).

- 3.11 The Ground Emergency Plans should be carefully studied, practised and circulated to all services concerned, including stewards by Ground Management. This will save time, energy and limit casualties and damage. Ground Management has the responsibility for the provision of emergency gates in perimeter fencing, and the provision and briefing of stewards on the operation of these gates in the event of an emergency.

The Garda Officer in charge of Gardaí on duty at such sectors has a vital role to play in this connection and he should receive full co-operation from Ground Management and the Event Controller in order to familiarise himself and his personnel with those arrangements.

- 3.12 If it is considered that the nature of the event may lead to unruly behaviour or an outbreak of spectator violence, the Plan will take this factor into account. It may be necessary to deploy a reserve force of uniformed Gardaí of sufficient strength and/or the Public Order Unit. Arrangements with Ground Management will provide for filling and monitoring of terraces with the objective of preventing, or at least minimising, any such outbreak.

There should be written agreement between Ground Management and Gardaí setting out their respective responsibilities for all aspects of crowd control at events. These provisions are necessary when spectator violence or unruly behaviour, albeit rare at sporting events in Ireland, is anticipated, particularly at top security international matches.<sup>1</sup>

Operational decisions, some of which will not be anticipated, are difficult to allow for in an "agreement". Nevertheless, it is recognised that the duties and responsibilities of all concerned must be clearly defined as far as possible. The recording of minutes of meetings and the procedures outlined in Paragraph 3.2 of the Code should ensure that there is no ambiguity between individual stewards and Gardaí in relation to each other's roles. Until the stage has been reached that an emergency situation pertains, and control has been handed over to

the Gardaí, responsibility for the safety of the public rests with the Event Controller. Detailed planning, resulting in documented clear plans, is required, with appropriate written orders.

- 3.13 In the case of any international football match which is considered to be a top priority match from the point of view of security and in which there are grounds for believing that some form of targeted or intended violence is planned the following recommendations of the Finlay Report should apply:
- (i) any offer of an intelligence co-ordinator or police observers from the visiting country should be accepted and availed of;<sup>1</sup>
  - (ii) intelligence received from a foreign police force in relation to likely violence at the match should be appropriately edited to preserve necessary confidentiality and subsequently given in writing by the Gardaí to the Ground Management and made available for appropriate meetings;<sup>1</sup>
  - (iii) It should be made quite clear to the Garda Síochána, stewards and security personnel, with regard in particular to the portion of the stand available to the visiting fans, that if they cannot, within a reasonable time of their arrival, be brought to some form of order, sitting down prior to the match, or at least in the place where their seats are, that it is a significant potential hazard and should be dealt with as such. If such an eventuality develops the Event Controller must take the decision to delay the commencement of the event until the potential hazard has abated. (See Appendix F, Paragraph 8.6).

### **Post Event Meeting**

- 3.14 Experience has proved that such Post Event Meetings provide invaluable information to those preparing future plans. All such meetings should take place soon after the event is over. A record of all such meetings should be made and retained. The Garda Officers should hold their own Post Event Meeting on the policing of the event prior to the Post Event Meeting of the Liaison Committee referred to in Paragraph 2.14.

### **References**

1. Report of former Chief Justice Thomas Finlay, *Violence at Lansdowne Road, Ireland v. England*, 15 February, 1995, Stationery Office, Dublin.
2. Criminal Justice (Public Order) Act, 1994, Stationery Office, Dublin.



# **Traffic Management**

*Good traffic management will facilitate the free flow of patrons to and from the stadium and will require careful planning.*

## **Traffic Management Plan**

- 4.1 A Traffic Management Plan should be prepared by the Gardaí in consultation with Ground Management, the Local Authority, the Health Board and transport authorities. (Section 91 of the Road Traffic Act, 1961/1968<sup>1</sup> detailed at the end of the Chapter outlines the relevant statutory provision).
- 4.2 The purpose of the Plan is to allow free flow of traffic around the ground and, if considered necessary, around the village, town or city centre, or part thereof, and to minimise the intrusion on local residents.
- 4.3 The intention should be to minimise the use of cars in the vicinity of the event. Publicity material should advise against using a car and, if possible, the following alternatives should be put in place:-
  - (i) the provision of a feeder bus system from city or town centre locations with a reduced fare which will encourage people to use public transport; and
  - (ii) the provision of safe parking facilities at the city, town centre or other suitable areas away from the ground with feeder buses taking people to and from the venue.



- 4.4 The significant elements in traffic management are:-
- (i) diversion of traffic around the ground and the areas outlined in 4.2 above;
  - (ii) special arrangements for routine transport of hazardous substances in these areas;
  - (iii) parking restrictions and designation of tow-away areas;
  - (iv) designation of pedestrian zones;
  - (v) approach routes for bus traffic;
  - (vi) designation of bus and car parks with suitable lighting, if appropriate;
  - (vii) operation of Garda checkpoints on approach routes so as to control approaching traffic, to prevent unauthorised traffic and to prevent unauthorised or illegal traders from entering the cordoned area;
  - (viii) designation of routes for emergency vehicles; and
  - (ix) designation of routes to hospital(s)/medical centres.

A drawing should be prepared to illustrate the Traffic Management Plan. It should be made available to the Ground Management, Local Authority, Health Board and all others concerned in the organisation of the event.

### **Garda Cordon**

- 4.5 Areas inside the Garda cordon should be pedestrianised.<sup>2</sup> No vehicles other than emergency vehicles should be allowed past the Garda barriers unless displaying a Garda pass. Local residents, drivers of work and emergency vehicles and appropriate officials of the Local Authority and statutory agencies who may have occasion to pass within the restricted area should be provided with such passes indicating the registration number of the vehicle. (See Paragraph 9.8).
- 4.6 Diversionary routes should be identified in the Plan. Parking of vehicles should be strictly prohibited along the diversionary route(s). The co-operation of the Automobile Association should be requested with regard to the erection of No Parking signs, Information signs, Tow-Away signs and Diversionary signs showing the routes to major towns or other major locations in advance of the event. Any vehicle found parked illegally may be removed, on direction of the Gardaí, to a place designated for that purpose at the event in question. The diversion(s) may also be used by Emergency Vehicles and, therefore, it

### **Traffic Management**

---

is of paramount importance that such route(s) be kept clear of all vehicular obstruction at all times.

- 4.7 Adequate parking facilities should be arranged by Ground Management, in consultation with the Gardaí for both buses and cars outside the Garda barriers. Ground Management in consultation with the Gardaí, must make provision for suitable parking of coaches, (preferably off-street), the number of which can be in excess of one hundred. The location of coaches can have a significant bearing on crowd control, with particular reference to the effect of troublemakers on local residents.

### **Public Transport**

- 4.8 The Plan should include the provision of additional public transport services to facilitate the transport of patrons to and from the venue.
- 4.9 Traffic arrangements should receive widespread publicity in the national and local media so as to ensure that patrons are made aware of the approved routes, parking arrangements and availability of public transport. The broadcast of traffic plan details by "AA Road Watch" or other such programmes on radio and television should be encouraged. It should be the responsibility of the Promoter, following consultation with the Gardaí, Local Authority and Health Board, to publish the agreed plan.
- 4.10 Traffic arrangements should take into account the need of the Local Authority and Health Board to maintain emergency services, both in respect of the event itself and the local resident population.
- 4.11 There should be liaison between organisers of major events in order to avoid unnecessary duplication. Duplication of events can place intolerable demands on transport systems, Local Authority, Gardaí and Health Board resources. Adequate advance notice should be given to the Transport Authorities.
- 4.12 Traffic arrangements should provide for a satisfactory access and exit system in order to service any emergency situation that may arise at the venue. Invariably, this will form part of the Ground Emergency Plan.

## **References**

1. Road Traffic Act, (as amended by the Road Traffic Act, 1968), Stationery Office, Dublin. (See Note 1 below).
2. Criminal Justice (Public Order) Act, 1994, Stationery Office, Dublin.

### **Note 1**

The text of Section 91 is as follows:

- (1) For the purpose of preserving order in relation to traffic where there is an event attracting a large assembly of persons or when there is traffic congestion or a fire, flood or similar occurrence, a member of the Garda Síochána in uniform may do all or any of the following things: divert, regulate and control traffic and regulate and control the parking of vehicles.
- (2) The powers conferred by subsection (1) of this section shall, in particular, include power to do all or any of the following things by oral or manual direction or by the use of portable signs of such size, form and colour and having such significance as may be prescribed:
  - (a) prohibit the passage of traffic;
  - (b) indicate the direction in which traffic is to proceed;
  - (c) prohibit the parking of vehicles;
  - (d) indicate places for the parking of vehicles or as stands for public vehicles and regulate their use;
  - (e) make any other prohibitions or indications which he considers necessary for preventing obstruction or disorder in traffic.
- (3) A person who contravenes a direction given by a member of the Garda Síochána under this section or who contravenes a prohibition, restriction or requirement indicated by a sign referred to in subsection (2) of this Section shall be guilty of an offence.
- (4) Notwithstanding any other provision of this Act, a person may, for the purposes of this section, act temporarily as a parking attendant subject to his having being authorised so to do by an officer of the Garda Síochána.



## ***Spectators with Disabilities***

*Provision should be made at all grounds for the safe accommodation of people with disabilities.*

### **General**

- 5.1 The safety measures set out in the Code of Practice should not be construed in such a way as to place undue restrictions on people with disabilities.

All provisions should be installed so as to maximise the independence of people with disabilities, thus reducing dependence on able-bodied people who may not be readily available in an emergency.

- 5.2 Special attention should be paid to the needs of disabled persons who at present are inhibited in their choice of activity and freedom of access by features which can be avoided at little or no cost when buildings and their surroundings are designed. With increasing awareness and education these obstacles can be removed without difficulty during alterations or renovation of a sports ground, including stands and ancillary accommodation.
- 5.3 Access requirements for physically disabled persons, the elderly and children should be incorporated in the design of sports grounds and stands. Such premises should be accessible to all disabled persons, including wheelchair users, whether they be members of the public or employees. Useful guidance has been published by the Football Stadia Advisory Design Council in the U.K.<sup>1</sup>

The attention of Ground Management is drawn to the Building Regulations, 1991 and the supporting Technical Guidance Document M "Access for Disabled People".<sup>2</sup>

### ***People with Impaired Hearing***

- 5.4 Although people with impaired hearing may experience difficulty in hearing messages broadcast on a system designed for those with normal hearing (See Chapter 16), a hearing impairment does not mean that in all cases a person is insensitive to sound and that they do not have a sufficiently clear perception of all conventional alarm signals. Where this is not the case it is reasonable to expect spectators, who have been alerted to prepare for evacuation, to warn those with impaired hearing. Where they exist, electronic boards and television monitors should be used to give information on evacuation.

### ***People with Impaired Vision***

- 5.5 Signposting (See Paragraphs 8.9 and 9.14), especially fire or other safety signs, should be sited so that, as far as possible, they can be easily seen and readily distinguishable by those with impaired vision or colour perception. Reference should be made to the National Rehabilitation Board's publication, *Access for the Disabled 1: Minimum Design Criteria*.<sup>3</sup>
- 5.6 Prior to the event there should be an information announcement (audio and visual, by signposting, public address or by video screen) informing spectators of safety precautions, exits, etc., for normal and emergency evacuation of the stands and ground.

### ***People with Impaired Mobility***

- 5.7 Ideally, the following design criteria for stadia should apply to all new stadia projects or renovation works and should be taken into account as far as possible, in existing stadia:
- (i) There should be independent access to sufficient wheelchair spaces in selected areas which afford good viewing conditions. Other facilities such as toilets, etc., should be available and accessible;
  - (ii) In the case of new spectator stands and major alterations to existing ones, the Building Regulations must be complied with. These regulations include requirements in relation to access for the disabled and technical guidance regarding meeting these requirements has been published. Depending on the scale of the development, it may also be necessary to obtain a fire safety certificate before commencement. National Rehabilitation Board guidelines will also be relevant;



- (iii) From a safety viewpoint it is undesirable that anyone whose mobility is severely impaired should occupy standing accommodation; occasionally they may wish to occupy seated accommodation. Therefore, arrangements should exist to meet such wishes wherever it is possible to do so, for example, by the provision of wheelchair spaces in selected areas of the accommodation. Such provision should take account of the sightlines available from the allocated areas to ensure that occupants have an unrestricted view;
- (iv) Wherever possible, there should be more than one entrance/exit for those with impaired mobility. Although movement to and from accommodation at ground level is relatively easy for wheelchair users, consideration should be given to the means by which they can be accommodated elsewhere without prejudicing their safety or the safety of others;
- (v) Where a person leaves a wheelchair in order to occupy a seat, provision should be made for the wheelchair to be readily accessible without causing an obstruction in a gangway or exit route. Those who remain in a wheelchair should be accommodated so as not to obstruct the movement of others. The location should be able to accommodate an accompanying person;
- (vi) Facilities should be made available for disabled passengers to disembark and depart. A route from a parking space to a building must be level or ramped and unimpeded by steps;
- (vii) Pedestrian routes in open areas or between buildings must be free from obstructions and pathways must be wide enough to accommodate wheelchairs. Surfaces must be slip resistant; and
- (viii) Special provision may have to be made for the admission (often at pitch level) of vehicles used by people with impaired mobility. These vehicles should be parked so as to ensure that access to the ground by emergency vehicles and means of escape are not compromised.

### ***Use of Lifts in an Emergency***

- 5.8 A lift should not be used as a means of escape from a stand unless it is an evacuation lift or firefighting lift. Such a lift should be operated under the direction and control of an appointed steward, who has been designated with specific responsibility for its use in an evacuation using an agreed evacuation procedure.

The provisions of BS 5588: Part 8: 1988<sup>4</sup> which specify the facilities that need to be incorporated in an evacuation lift, should be followed.



## **Existing Venues**

- 5.9 It is accepted that it may not be possible to apply the Code fully in all existing grounds/stadia. In these circumstances alternative ways of meeting its objectives should be sought. Useful advice will be found in Chapter 2 of the document "Guide to Fire Precautions in Existing Places of Entertainment and Like Premises"<sup>5</sup> and advice is also available from the National Rehabilitation Board.

## **References**

1. Designing for Spectators with Disabilities, Football Stadia Advisory Design Council, London, 1992.
2. Building Regulations, 1991: Technical Guidance Document M: Access for Disabled People, Stationery Office, Dublin.
3. Access for the Disabled 1: Minimum Design Criteria, National Rehabilitation Board, Dublin, 1988.
4. BS 5588: Fire precautions in the design and construction of buildings, Part 8: 1988: Code of practice for means of escape for disabled people, British Standards Institution, London.
5. Guide to Fire Precautions in Existing Places of Entertainment and Like Premises, HMSO, London, 1990.

## **General Fabric and Structural Matters**

*All components, installations and structures such as terraces, stands, stairs, barriers and pylons, should have the strength and durability to perform properly their required functions. They should be maintained in such condition and arranged in such a manner as to operate effectively.*

### **General**

- 6.1 The design and construction of buildings and installations should be in accordance with good engineering and building practice, as set out in the relevant Irish, British or other equivalent European standards, specifications and Codes of Practice. They should be properly maintained and repaired by suitably qualified persons. Specialist advice from suitably experienced chartered engineers should be sought to assess the safety and strength of load-bearing elements such as crush barriers (See Chapter 12), brick/block walls, etc., (See Paragraph 11.20), in buildings and installations. (See also Paragraph 13.16).
- 6.2 In addition to its self weight and any other permanent loads the structure should be designed to withstand loading from crowds and their movement in accordance with BS 6399.<sup>1</sup> This should include, where appropriate, an allowance for dynamic effects.
- 6.3 Walls, including boundary walls, perimeter walls and fences which are to withstand crowd pressures, should be designed and maintained to withstand such pressures safely. Allowance should be made for forces simultaneously and independently induced by other factors, e.g., wind forces or attached installations.
- 6.4 Useful guidance on Stadium Roofs has been published by the Football Stadia Advisory Design Council in the U.K.<sup>2</sup>

## **Headroom**

- 6.5 Exit routes should have a minimum headroom of 2.4 metres. Other parts of the ground used by the general public should have minimum headroom of not less than 2 metres.
- 6.6 Precautions should be taken to prevent people from climbing on to roofs, pylons, hoardings and other structures. Where possible, such structures should be fitted with unclimbable devices, e.g., stout barriers or close-boarded enclosures. Spikes, barbed wire, etc., should only be installed above the minimum headroom specified in paragraph 6.5 and preferably at a minimum height of 2.4 metres from the base. Spikes or other similar devices should not be installed on pitch perimeter fences unless there are a sufficient number of gates in the fences to permit evacuation onto the pitch in an emergency situation.

## **References**

1. BS 6399: Loading for buildings: Part 1: 1984: Code of Practice for dead and imposed loads,  
Part 2: 1995: Code of Practice for wind loads.  
Part 3: 1988: Code of Practice for imposed roof loads, British Standards Institution, London.
2. Stadium Roofs, Football Stadia Advisory Design Council, London, April, 1992.



## ***Inspections and Tests***

*Inspections of the stadium and tests of the installation should be carried out by suitably qualified persons on behalf of the Ground Management to ensure that the safety standards are maintained.*

### ***Annual Inspections***

- 7.1 A detailed inspection of the ground, including all components and installations, should be arranged annually by Ground Management in order to ensure that load-bearing elements are capable of withstanding the pressures to which they are likely to be subjected and that they are fit for their intended purpose. (See also Paragraphs 6.1 – 6.4). Inspections should be carried out by a Chartered Engineer with experience of design or appraisal of structures. Where possible, the same engineer should be appointed to carry out successive inspections for a period of years to ensure familiarity with the grounds and to ensure continuity in dealing with Local Authorities.
- 7.2 Engineers commissioned to assess structural safety of buildings may find the appraisal techniques recommended by the Institution of Structural Engineers in the publication "Appraisal of Existing Structures"<sup>1</sup> of assistance. Hard and fast rules on the extent to which a structural appraisal is necessary for individual buildings are difficult to lay down; much will depend upon the type of installation, its size, condition, materials used in construction and standard of maintenance. A full appraisal is unlikely to be necessary unless defects are identified or are evident from the analysis of information on the structure and visual inspection. (See also Paragraphs 13.16 and 13.17).

- 7.3 Inspection and testing of crush barriers, guardrails and other guarding should be carried out in accordance with Chapter 12 and Appendix B of this Code.

### ***Other Inspections***

- 7.4 Warning, detection, lighting and public address systems are vulnerable to vandalism, and this should be borne in mind when installing them. All automatic fire detection and fire warning, emergency lighting, auxiliary power systems and public address systems should be tested at least one week before an event and again before the public are admitted on the day of the event. Attention is drawn to requirements set out in Appendix C in the Code of Practice for the Management of Fire Safety in Places of Assembly.<sup>2</sup> In the case of systems which comply with I.S. 3217<sup>3</sup> and I.S. 3218<sup>4</sup> the testing shall be in accordance with the specified weekly inspection/test.
- 7.5 Turnstiles and metering systems should be tested before each event prior to the admission of spectators in order to ensure that they are in proper working order.
- 7.6 There should be contingency plans in case any of these systems is not operating properly and cannot be rectified before the event. Such plans should be formulated, in consultation with the Local Authority and the Gardaí, for the use of acceptable substitute measures or the closure of relevant areas of spectator accommodation until the fault is remedied.
- 7.7 Before an event, steps should be taken to ensure that the ground does not contain any accessible items which could be used as missiles.

### ***Deformation/Damage***

- 7.8 Following each event, a general visual inspection of the ground should be made for signs of damage which might create a potential danger to the public. Particular attention should be paid to the condition of terraces, viewing slopes and stairways. Crush barriers and balustrades should be examined for deformation or any other overt signs of weakness. The fire precaution measures should also be inspected for damage. Alarm and other electrical installations should be checked to ensure continued compliance with the relevant Irish, British or equivalent European standards. Turnstiles should be checked for damage which might impair their efficiency.

## **Records**

- 7.9 A Safety Register of all inspections and tests (including fire safety matters) should be kept by the Safety Officer and maintained together with a record of remedial action taken. The required level of competence of those carrying out the tests should be specified and the record of the results certified by those carrying out the work together with their qualifications and status should be retained.
- 7.10 Appendix C provides a tabulation of tests and inspections and their frequency of operation.

## **References**

1. Appraisal of Existing Structures, Institution of Structural Engineers, London, 1989.
2. Code of Practice for the Management of Fire Safety in Places of Assembly, Stationery Office, Dublin, 1991.
3. I.S. 3217: 1989, Code of Practice for Emergency Lighting, National Standards Authority of Ireland, Dublin.
4. I.S. 3218: 1989, Code of Practice for Fire Detection and Alarm Systems for Buildings – System Design, Installation and Servicing, National Standards Authority of Ireland, Dublin.



## Ingress

*Spectators entering the ground should be counted accurately and their number controlled in order to ensure that overcrowding does not occur.*

*Spectators should be admitted at a rate which is compatible with the dispersal arrangements for them inside the ground.*

### Turnstiles

- 8.1 The number and location of turnstiles control not only the rate of admission but, to a large extent, the dispersal of spectators within a ground to the particular sections. Sufficient turnstiles should be provided in order to admit spectators at a rate whereby no unduly large crowds are kept waiting for admission and yet at a rate no faster than the arrangements for distributing spectators within the ground permit.

Serious consideration should be given to the design and security of turnstiles to prevent fraudulent entry. Otherwise the agreed capacities will inevitably be exceeded.

- 8.2 Central metering of turnstiles should become a standard feature at major venues to facilitate the accurate monitoring of admission to grounds and sections of grounds having particular regard to terraced areas. Where a section is served by a bank or banks of turnstiles, arrangements must ensure that the metering system is capable of recording the total number of patrons admitted by all the turnstiles in that section. The total number should be readily available at any given

time so that appropriate action can be taken once a pre-determined figure (i.e., a figure which is less than the safe holding capacity for the section) has been reached. This is especially important if a capacity or near capacity crowd is expected or if a particular section of a ground is known to be more popular than others or likely to be required to accommodate an unusually high number of spectators for a particular event (See Paragraph 11.19).

- 8.3 A major impediment to the accurate control and monitoring of spectator admission to major sporting events is the practice of allowing the admission of an adult and juvenile or child on one ticket or after the payment of one admission charge. This invariably leads to a distortion of the information on numbers admitted to the ground and can have serious safety implications when a significantly higher number of people are actually in the ground than turnstiles admittances indicate. Accordingly, the major sporting organisations should adopt and enforce a firm policy of one ticket-one person, one admission charge – one person. This is a basic safety requirement.

In addition, recorded attendance figures should reflect all the paying patrons and complimentary ticket holders.

- 8.4 The correlation between each section of the viewing accommodation in the ground and the turnstiles serving it should be such as to ensure that all spectators intended to be admitted to that accommodation, and who are to pass through the turnstiles, can do so within one hour.

If that cannot be achieved, the capacity of the viewing accommodation in that part of the ground should be reduced accordingly, or the number of turnstiles increased. (See Chapter 21).

Where, due to pre-match entertainment or curtain raisers, it is likely that spectators will arrive over an extended period, the one hour notional period may be increased to a maximum of two hours.

- 8.5 The maximum rate at which spectators can pass through turnstiles will depend on a variety of factors such as the design and age of the equipment, the ability of the operator and the ticketing arrangements. The rate of admission at each turnstile will depend greatly upon local circumstances. The through-put or flow-rate through turnstiles should be measured at least once a year and recorded. Where a recorded flow-rate is less than 600 persons per turnstile per hour the actual figure should be used for calculation purposes stipulated in Paragraph 8.4. The maximum upper figure for calculation purposes should not exceed 600 persons per hour.
- 8.6 While this Chapter concentrates on the use of turnstiles the use of alternative systems and technologies for the controlling of spectator entry is not precluded.



## **Entrances and Entry Routes**

- 8.7 Entry and exit are often by means of a common route and in such cases the considerations which apply to exit routes therefore apply also to entry routes. (See Paragraphs 9.3 to 9.9). These routes should not be obstructed either inside or outside the ground. Amenities such as refreshment kiosks, hospitality tents or toilets should be located away from the area of the turnstiles, entry and exit routes.
- 8.8 Entrances to each part of the ground should, where practicable, be designed and located so as to allow for the even distribution of spectators and to prevent local pressure building up outside the ground. They should be sited so that the flow of people from them is evenly distributed to the viewing accommodation. Where this distribution is uneven and gives rise to congestion at an entrance, consideration will have to be given to changing the turnstile arrangements or siting them in order to encourage better use of under-used entrances. Additional or alternative measures should also be taken; for example, improved sign-posting and increased stewarding either inside or outside the ground.

## **Signposting**

- 8.9 Clear, comprehensive signposting should be provided in order to show the routes to different parts of the ground. Tickets (where issued) should clearly identify the location of the accommodation for which they have been issued. Information on the ticket should correlate with the information provided both inside and outside the ground. Colour coding of tickets should be considered and retained ticket stubs should contain information which will help guide spectators once they are inside the ground. Large scale wall maps showing location, including "you are here" indicators, should also be considered.

## **Programmes**

- 8.10 Programmes should include a plan of the ground indicating the entry/exit routes to or from different parts of the ground and their destination and the siting of the various emergency and other services.

## **Crowd Build-up**

- 8.11 Dangerous overcrowding can be caused if spectators are able to force their way into a ground already full or nearly full by scaling or breaking through boundary walls, fences or gates. To avoid this danger, such walls, fences and gates should be of appropriate height and strength to prevent unapproved access and should not provide



the opportunity for hand or foot holds which might assist climbing. They should be inspected regularly and kept in an adequate state of repair.

- 8.12 At the preplanning stage contingency plans should be drawn up with the Gardaí in order to deal with situations where unduly large crowds have gathered outside grounds. Local knowledge of the ground and crowd patterns should be taken into account in drawing up contingency plans, which may include the provision of additional entrances. However, under no circumstances should there be uncontrolled admission into the ground. Stewards should be in place to direct spectators to areas of the ground where there is spare capacity. In the event of a large build up of spectators before the event, arrangements should be made for the opening of the gates before the official opening time.

### ***Pre-match Entertainment***

- 8.13 The use of pre-match entertainment or preliminary events help considerably in encouraging patrons to come early to major events, thereby preventing last minute congestion at entrances. Such pre-match entertainment is strongly recommended to avoid late surges at the entrances.

### ***Forgeries***

- 8.14 Forged tickets, if undetected, can cause serious overcrowding on terraces, and can cause serious congestion outside entrances. It is a matter that requires a lot of attention by Gardaí and Ground Management. It is in the best interests of Ground Management, Gardaí and the general public that thoroughly secure systems of ticket production and distribution should be designed and put in place. The various sporting organisations should co-operate in these matters by exchanging information on forgeries coming to their notice and on the best methods known to them for overcoming such problems. Usually, the sporting organisations are victims of the same groups of forgers. It is recommended that a small representative group of people with expertise in ticket production and distribution from the various sporting organisations should be formed to meet regularly to consider the matter and collate information on systems of prevention and detection of forgeries.

### ***Ticket Touts***

- 8.15 The unscrupulous activities of ticket touts can lead to problems at sporting events, e.g., undermine carefully planned segregation of supporters, etc. Grounds Management/Promoters should have proper ticket circulation arrangements in place so as to minimise the possibility of tickets falling into the hands of ticket touts.

## Egress

*There should be a smooth, unimpeded passage through an exit system and a continuous flow of people from one element to the next until they reach the boundary of the ground.*

### General

- 9.1 It is generally recognised that a significant risk to crowd safety may arise when the crowd is leaving the ground. Pressures can build up within a departing crowd; such pressures can and must be contained and controlled by careful attention to the detailed design of barriers (Chapter 12), stairways (Chapter 10), gangways (Chapter 11) and exits.
- 9.2 Guidance relating to egress from covered stands and seated accommodation is given in Paragraphs 13.4 to 13.6.

### Exit Routes/Systems

- 9.3 A smooth free flow through an exit route to the outside is best achieved by controlling the crowd flow at the beginning of the route, so that departing spectators are held back in a relatively safe place, for example, on viewing accommodation, enabling access to the exit route at a calculated rate. The capacity of the first element of the exit route from the viewing accommodation should be no greater than any subsequent element. Furthermore, the total capacity of the first elements of the exit route from the viewing accommodation (e.g., the vomitories) should be no greater than the sum of the exit capacities available at any subsequent stage in the exit route (e.g., all exits from any intermediate concourse). The exit route will then be able to accommodate spectators throughout its length and discharge them at a rate compatible with that at which they enter into the route. Continuous flow in an egress route will depend on the width of the



available public streets being not less than the total final exit width. In this chapter the terms continuous flow or free flow mean that the flow rates as recommended in Chapter 22 can be maintained.

- 9.4 If there is any deviation from the recommended guidelines which creates a potential danger, that section of the ground should be closed. Until remedial action has been taken, a reduction should be made accordingly in the safe holding capacity of the section of the ground it serves, i.e., the exit route is excluded from the capacity calculations.
- 9.5 The minimum width of an exit route should be 1.1 metres. For capacities of exit routes see Paragraphs 21.20 to 21.24.
- 9.6 Exit systems should ensure that, in the event of an incident which blocks the usual exit route, spectators will be able to use an alternative exit route or routes. In appropriate cases, forward evacuation on to the pitch can form part of the emergency evacuation route (See Paragraph 15.42), and the pitch may be considered as a temporary place of safety.
- 9.7 There should be no "bottleneck" effect causing people to converge on a narrower means of access or egress. This will slow down the rate at which people can pass through the entire exit system and cause them to pack more closely together.
- 9.8 Because of the dangers of serious congestion and crowd agitation which could be caused by traffic on approach routes to grounds, it is particularly important that the Gardaí should ensure that any roadway leading directly to the stadium which is required as an emergency vehicle access or key pedestrian ingress/egress route is kept free of moving traffic and that no vehicles are parked so as to impede emergency vehicles – especially at times when crowds are in, entering or leaving the ground. (See Paragraph 4.5).
- 9.9 The size and shape of the areas immediately outside the stadium to provide for the approach, access and egress of spectators, whether on foot or by motorised vehicle, should be such as to allow continuous flow of spectators. All types of access and egress routes should be clearly indicated.

### **Egress Time**

- 9.10 Sufficient exits from each section of viewing accommodation should be provided so that all spectators can leave that area and pass into a free flowing exit route system within 8 minutes or less. This applies to both standing and seated areas even though spectators normally vacate seated accommodation in a more leisurely fashion.

- 9.11 Calculation of exit capacity is shown in Paragraphs 21.20 to 21.24, using the maximum recommended flow rates given in Chapter 22.
- 9.12 The exit routes available for use by spectators in an emergency are, in many instances, the same as those used by them in normal circumstances – for example from the upper tiers of a stand. If the capacity of these emergency exit routes is considered insufficient for evacuation purposes the number of spectators occupying the accommodation will have to reflect that emergency exit capacity.
- 9.13 In some cases, exit routes which do not form part of the normal egress routes may be made available as part of the emergency evacuation route. For example, the playing area or perimeter track may be used and in these circumstances the pitch can be regarded as a temporary holding area. In such circumstances, there should be exits of adequate capacity from the playing area or perimeter track.

### **Signposting**

- 9.14 A comprehensive system of signposting which clearly indicates routes to the various parts of the grounds, and to exits from the grounds, should be provided. Signs relating to fire safety and other safety signs should be in accordance with S.I. No. 132 of 1995, Safety, Health and Welfare at Work (Signs) Regulations, 1995<sup>1</sup> and with BS 5499: Part 1: 1990<sup>2</sup> and BS 5378: Part 1: 1980<sup>3</sup>. Exit gates themselves should be clearly signposted, preferably using illuminated signs in accordance with S.I. No. 132 of 1995, Safety, Health and Welfare at Work (Signs) Regulations 1995 and with BS 5499: Part 2 and BS 5499: Part 3: 1990. Where the requirements conflict, the Irish regulations will take precedence.

Directional signs should be provided to encourage crowds in any particular section to flow in one direction when leaving the ground and should, wherever practicable, provide information on the destination of the exit route (e.g., North Avenue) so as to reassure people using them, especially if they are evacuating the premises.

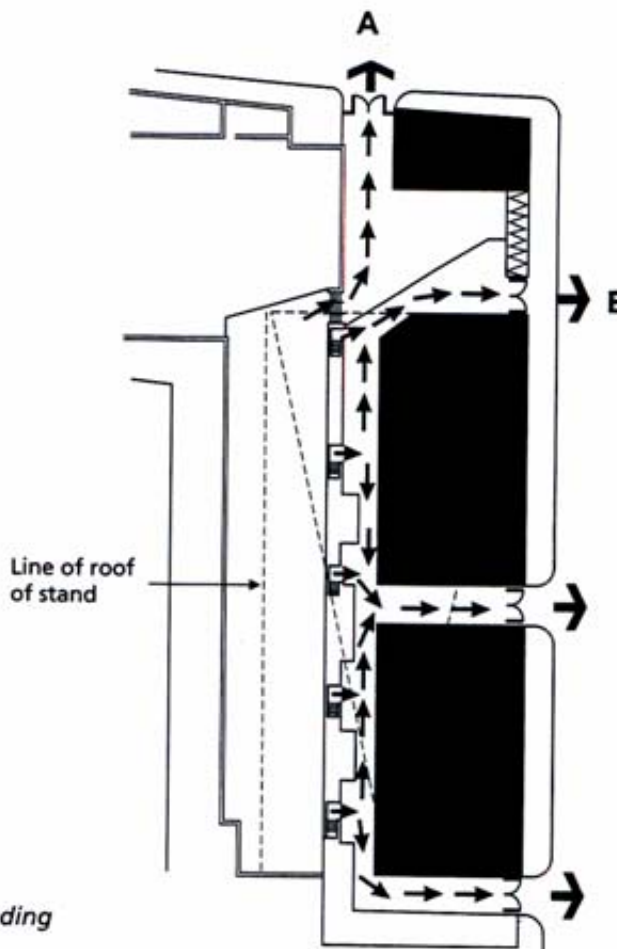
### **Exit Routes**

- 9.15 Exit routes should be kept clear of obstructions. In particular, no catering or sales outlets, hospitality tents or toilet facilities should be situated in such a way that they, or any queue they attract, obstruct an exit route. Unauthorised sales stands for various forms of refreshments, quite often set up in or very near to exit routes, should be prohibited. In the event of evacuation being necessary in an emergency this type of activity could cause a serious obstruction on exit routes which could be a threat to the safe evacuation of the crowd. This would also refer to the street area immediately outside the stadium.



- 9.16 Where there is a simple exit route, i.e., a direct passage from the accommodation area to the exit gate from the ground, every part of that route should be able to accommodate the flow from the terrace or stand exit.
- 9.17 For a more complex exit system which combines a number of exit routes and/or offers a choice of alternative routes to exits, the system should be analysed in the form of a network in order to check that the capacity and location of the various elements of the system are sufficient to ensure a free flow of spectators to the final exits from the ground. Where branching of routes gives spectators a choice of paths, the proportion of the crowd likely to use each path should be derived from local knowledge, e.g., the exit closest to a railway or bus station may be likely to attract a higher proportion of spectators.
- 9.18 Grounds which have complex exit systems should have illustrated plans of the network system which serves each section, identifying the capacity of the routes within the system and clearly showing them on the plans. These plans should be kept with the drawings of the section of the ground to which they relate. Any changes to the ground which affect the entry/exit routes should be identified on the network plan. An example of a network plan is given in Figures 9a and 9b hereunder. Other examples are contained in Chapter 21.
- 9.19 Ground Management must ensure that, while the premises is in actual use as a place of assembly:-
- (i) subject to clause (ii) hereunder, all escape routes are kept unobstructed and immediately available for use;
  - (ii) doors, gates and other like barriers across escape routes are not secured in such a manner that they cannot be easily and immediately opened by persons in the place of assembly; and
  - (iii) all chains, padlocks and other removable fastenings for securing doors, gates or other like barriers are removed and kept in a place where they may be readily inspected by an authorised person for the purpose of section 22 of the Fire Services Act, 1981.<sup>4</sup>
- Sub-paragraphs (i), (ii) and (iii) above are extracts from the Fire Safety in Places of Assembly (Ease of Escape) Regulations, 1985.<sup>5</sup>
- 9.20 Consideration could also be given to the question of having electronically opening gates installed. These can be opened from a central control point or by means of a fail-safe mechanism through pressure.
- 9.21 All exit doors on an exit route should always be capable of opening outwards so that crowds can escape in an emergency without obstruction. This is particularly important for doors within covered stands and at the foot of stairways.

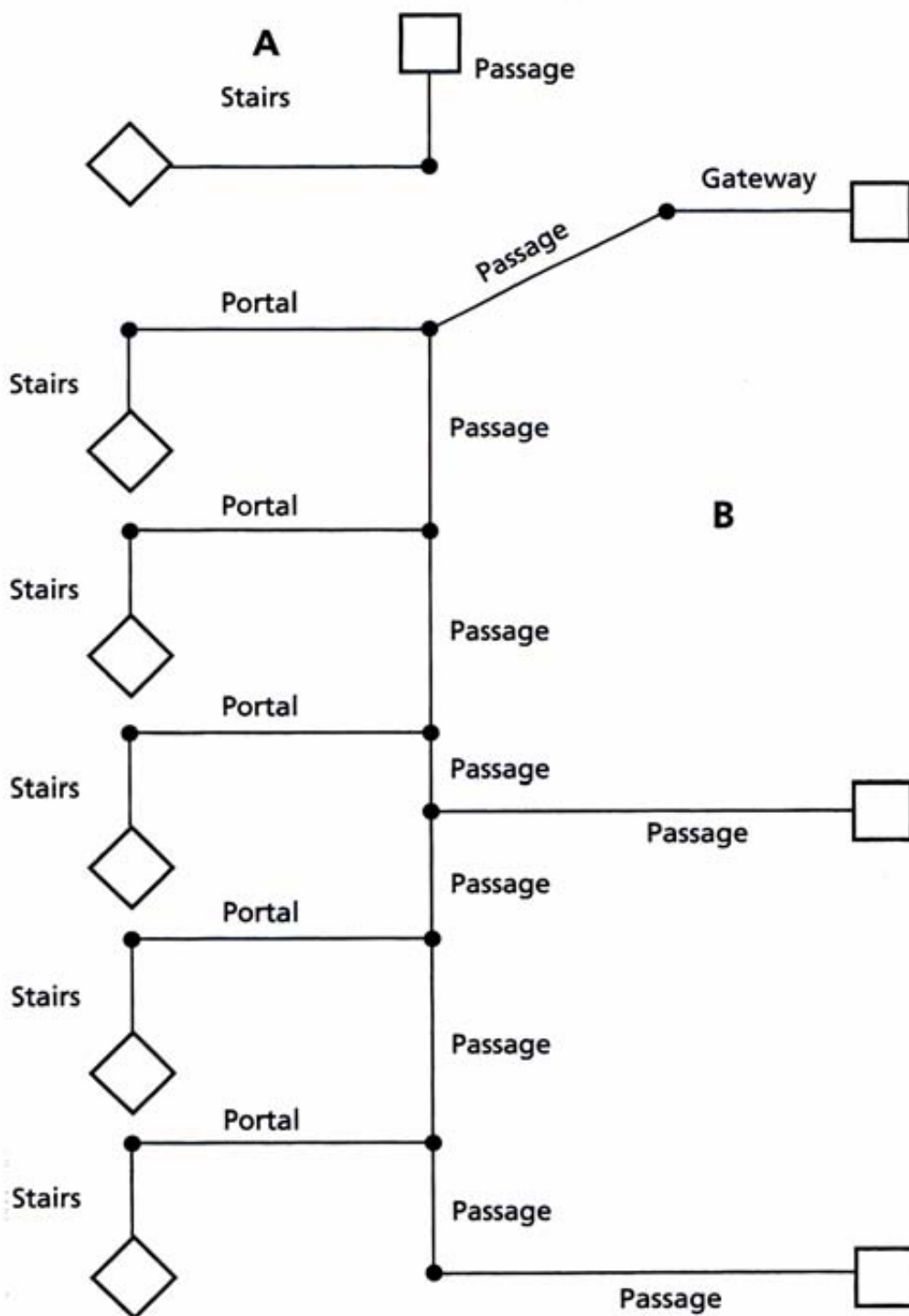
- 9.22 All doors on a normal exit route should be secured in the fully open position before the end of play. When open, no door should obstruct any gangway passage, stairway or landing.
- 9.23 All exit gates from the ground should open outwards. Where this is impracticable, for example, because they would cause an obstruction on a public highway, the gates should be re-sited (i.e. put further back) within the exit route they serve, or provision made for two-way opening. Where practicable, exit gates should be sited adjacent to entrances. There should be no obstructions and no changes in level at exit doors.
- 9.24 Sliding or roller-shutter gates should not be used; they are incapable of being opened when pressure is exerted in the direction of crowd flow and have mechanisms or runways which are vulnerable to jamming.
- 9.25 Facilities should be provided in order to enable people, for whatever reason, to leave the ground at any time. For this purpose, a number of reversible turnstiles or, preferably, pass doors, so operated as to limit the opening to the passage to one person at a time, should be provided. Reversible turnstiles are not acceptable as a means of escape from a ground and should not form any part of, or be installed into, the normal or emergency exit system of the ground.



**Figure 9a:** Exit Systems Leading from Enclosure and Stand



Figure 9b: Exit Systems A and B represented on a Network Plan.



**Note:**

- Each element within the network should be analysed in order to assess the exit capacity. (See Chapter 21).

## **References**

1. S.I. No. 132 of 1995, Safety, Health and Welfare at Work (Signs) Regulations, 1995, Stationery Office, Dublin.
2. BS 5499: Fire safety signs, notices and graphic symbols,  
Part 1: 1990: Specification for fire safety signs,  
Part 2: 1986: Specification for self-luminous fire safety signs,  
Part 3: 1990: Specification for internally-illuminated fire safety signs,  
British Standards Institution, London.
3. BS 5378: Safety signs and colours, Part 1: 1980: Specification for colour and design,  
British Standards Institution, London.
4. Fire Services Act, 1981, Stationery Office, Dublin.
5. Fire Safety in Places of Assembly (Ease of Escape) Regulations, 1985, Stationery Office, Dublin.



## ***Stairways and Ramps***

*The disposition and construction of stairways and ramps should be such as to help provide a smooth and unimpeded ingress and egress for spectators under all conditions set out in Chapters 8 and 9.*

### **General**

- 10.1 For the purpose of this section the term “stairway” has the meaning given to it in the Glossary (Appendix G). A “stairway” is distinct from a radial gangway on a terrace or in a stand. Guidelines on terrace gangways are given in Paragraphs 11.8 to 11.12 and on stand gangways in Paragraphs 13.7 to 13.9.
- 10.2 Movement on stairways, especially downwards, poses a considerable potential risk to crowds both in normal circumstances such as at the end of an event, or in an emergency. The effects of stumbling, pushing, jostling, and congestion are potentially dangerous, if as a result, the crowd suddenly surges forward. Similarly, if sections of the crowd decide, without warning, to change direction the resultant turmoil can have serious consequences. Steep ramps can cause or exacerbate uncontrolled forward movement and lead to an accident.
- 10.3 Stairways should, therefore, minimise hazards by having uniformity of width, going and risers, secure footing and a suitable gradient. They should be wide enough to allow free movement but also provide everyone, insofar as it is possible, with access to a handrail. The head of the stairway should be so designed that flow onto it is uniform across its width in order that crowd pressures cannot easily be generated. Flights should not provide long, uncontrolled paths through which crowd pressures and surges can be created. Adequate separation should be provided between channels so that there is no overspill from one channel to another.

- 10.4 Fire protection of stairways and passages is dealt with in Paragraphs 15.35 to 15.37.

### ***Disposition of Stairways***

- 10.5 Stairways should be carefully positioned to take advantage of natural light and ventilation. Where the natural lighting is deficient the stairway should be adequately lit by artificial lighting. (See Chapter 17).

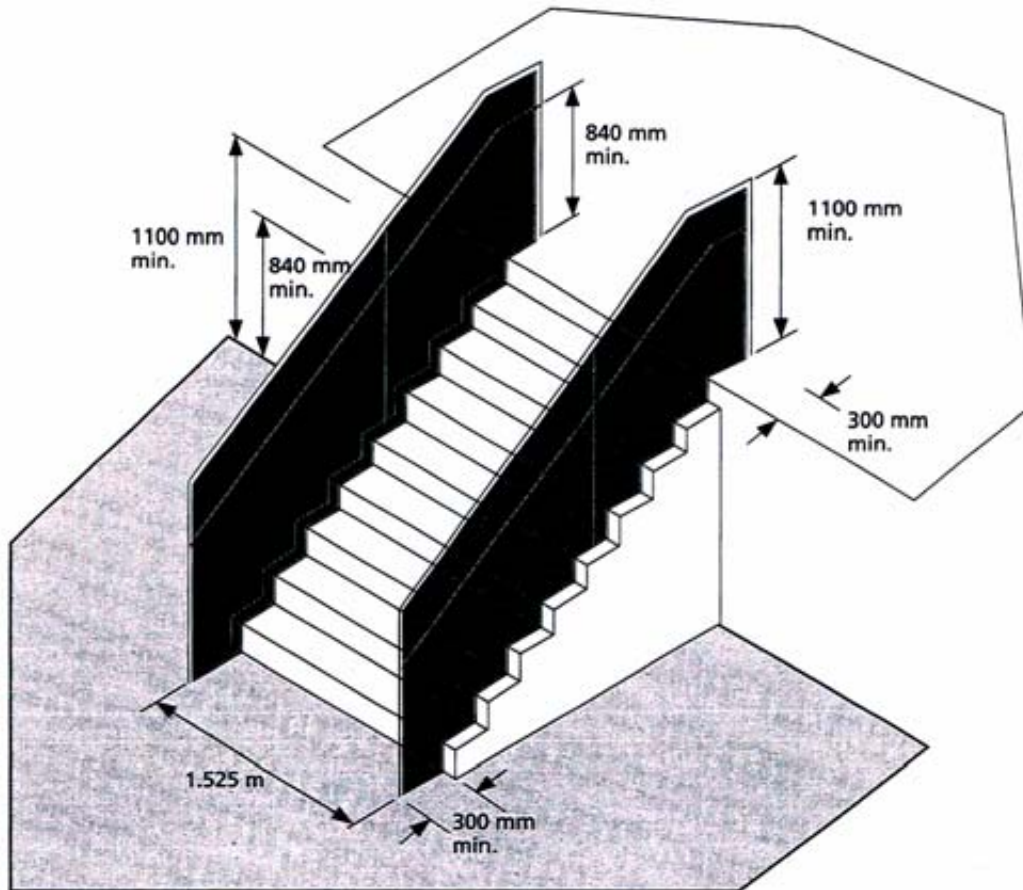
### ***Construction of Stairways***

- 10.6 The width, rise and going of the steps should be uniform within each stairway, and, ideally, should be uniform throughout the entire exit system.
- 10.7 Stair treads should be provided with slip-resistant surfaces and durable edgings. Adequate drainage should be provided.
- 10.8 Open risers should not be used.
- 10.9 On any stairway the preferred going of treads should be 300mm but not less than 280mm; and preferred height of risers should be 150mm but not more than 180 mm. Stairways should:-
- (i) be without winders;
  - (ii) be in flights of not more than 16 steps; and
  - (iii) make at least one change in direction of at least 30° between flights if there are more than 24 risers in consecutive flights.
- 10.10 The going of the landing between flights should not be less than the width of the channel of the flight.
- 10.11 Guarding and handrails should be provided on both sides of all stairs and landings. Where next to open wells or spaces, such guarding should conform to Building Regulation requirements but should be not less than 1.1 metres in height (measured vertically from the nosing of the step, or the surface of the landing). The guarding and handrails should have a strength equivalent to that of the crush barriers of the weaker type, described in Chapter 12, (i.e. 3.4 kN/metre width design force, 4.1 kN/metre width test load).
- 10.12 The minimum width of a stairway or stairway channel should be 1.1 metres. The maximum width of a stairway channel should be 1.65 metres. Consideration will have to be given to dividing existing stairways wider than 1.65 metres but which do not exceed 2.2 metres, taking account of the extent to which they comply with the other stairway requirements of the Code. Stairways of 2.2 metres or more should be divided into channels having a width of between 1.1 metres and 1.65 metres (See Examples at Figure 10a-10d hereunder).



- 10.13 Handrails should project not more than 100mm and should be provided on both sides of all stairways, steps and landings at a height of not less than 840mm (measured vertically from the line at the step nosing or the surface of the landing). All handrails should extend by at least 300mm beyond the top and bottom of any ramp or risers of the staircase. Where guarding to a stairway consists of a guardrail, it will be necessary to provide a handrail at a suitable level beneath the top of the guarding as in Figure 10a hereunder.
- 10.14 The strength of the handrails (including supports) used to divide a stairway into channels should be as described in Chapter 11, i.e. 3.4 kN/metre width design force or 4.1 kN/metre width test load for handrails at right angles to the direction of the crowd flow; 2.2 kN/metre width design force or 2.7 kN/metre width test load for handrails parallel to the direction of the flow. Where handrails are performing the function of guarding (as in Figure 10a hereunder), the handrail should have the strength required of guarding.

Figure 10a: Stairway 1.525m

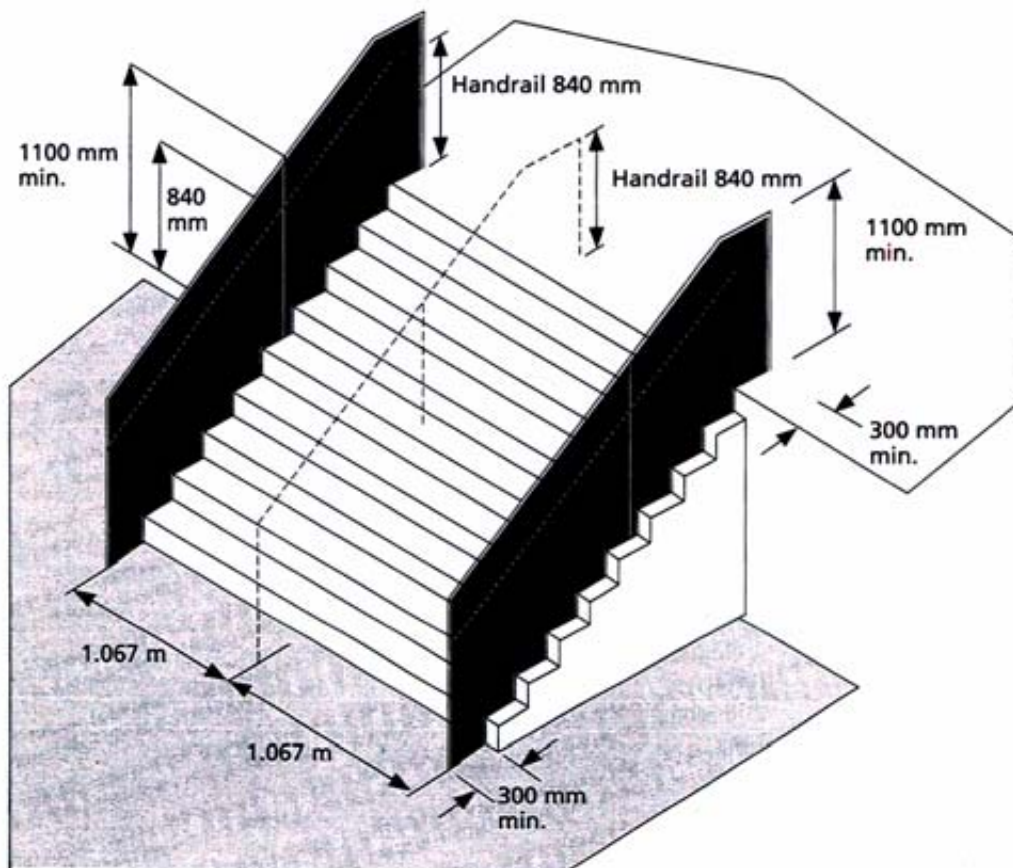


**Notes:**

- No central rail considered desirable because the stairway width is under 1.65 metres.
- Handrails at each side should extend at least 300mm beyond the top and bottom risers of the stairways.
- Flow rate calculation reflects actual width:-  $\frac{1.525}{0.55} \times 40 = 111$  per min.
- Guarding should be so constructed that a 100mm diameter sphere cannot pass through any openings in the guarding and that it will not be readily climbable by children.



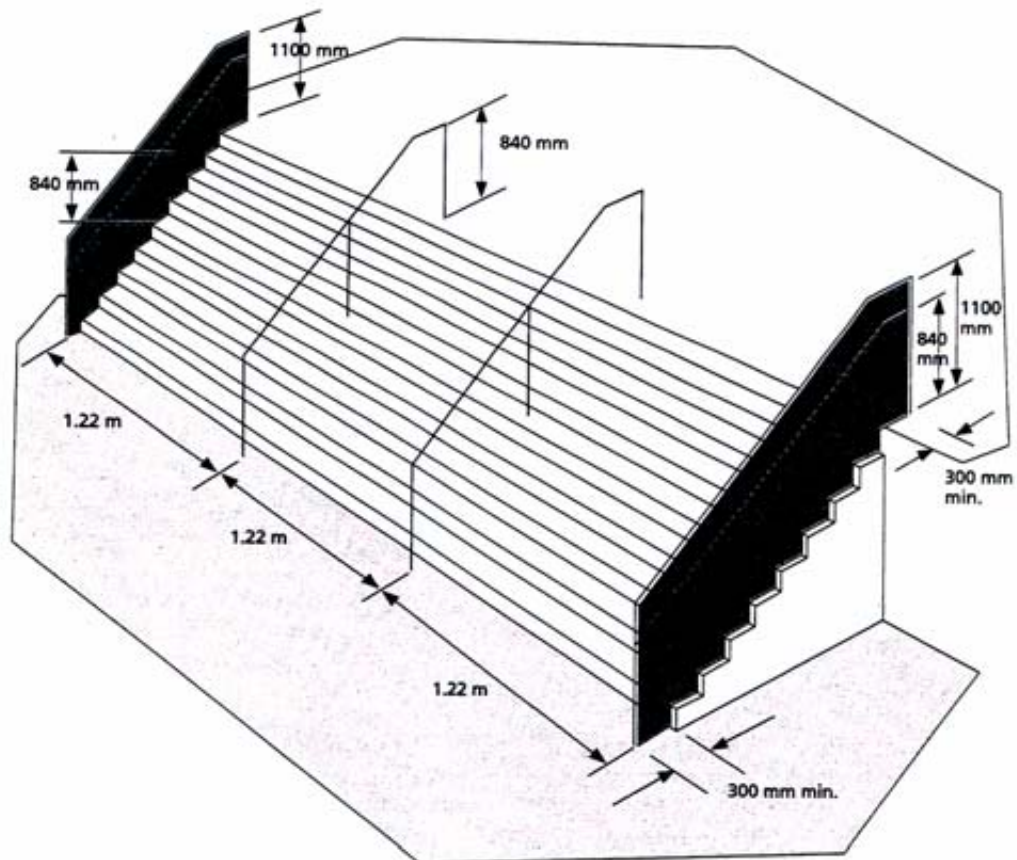
Figure 10b: Stairway 2.134m



**Notes:**

- Consideration is given here to the option of dividing the staircase into two sections of 1.067 metres or accepting it as a single channel stairway. Division would mean that each channel would be less than the recommended minimum of 1.1 metres but in certain circumstances may be judged preferable to having no centre rail at all.
- Factors to take into consideration would include the use of the staircase (i.e. whether or not heavily loaded) its length, number of risers and landings, number of winders.
- Flow rate calculation  $\frac{1.067}{0.55} \times 40 \times 2 = 155$  per minute.
- Handrails should extend at least 300mm beyond the top and bottom riser of the stairways.
- Guarding should be so constructed that a 100mm diameter sphere cannot pass through any openings in the guarding and that it will not be readily climbable by children.

Figure 10c: Stairway 3.66m



**Notes:**

- A 3.66 metre staircase divided into 3 channels of 1.22 metres each.
- Handrails should extend at least 300mm beyond the top and bottom riser of the staircase.
- Flow rate calculation  $\frac{1.22}{0.55} \times 40 \times 3 = 266$  per minute.
- Guarding should be so constructed that a 100mm diameter sphere cannot pass through any openings in the guarding and that it will not be readily climbable by children.

**Access to Stairways**

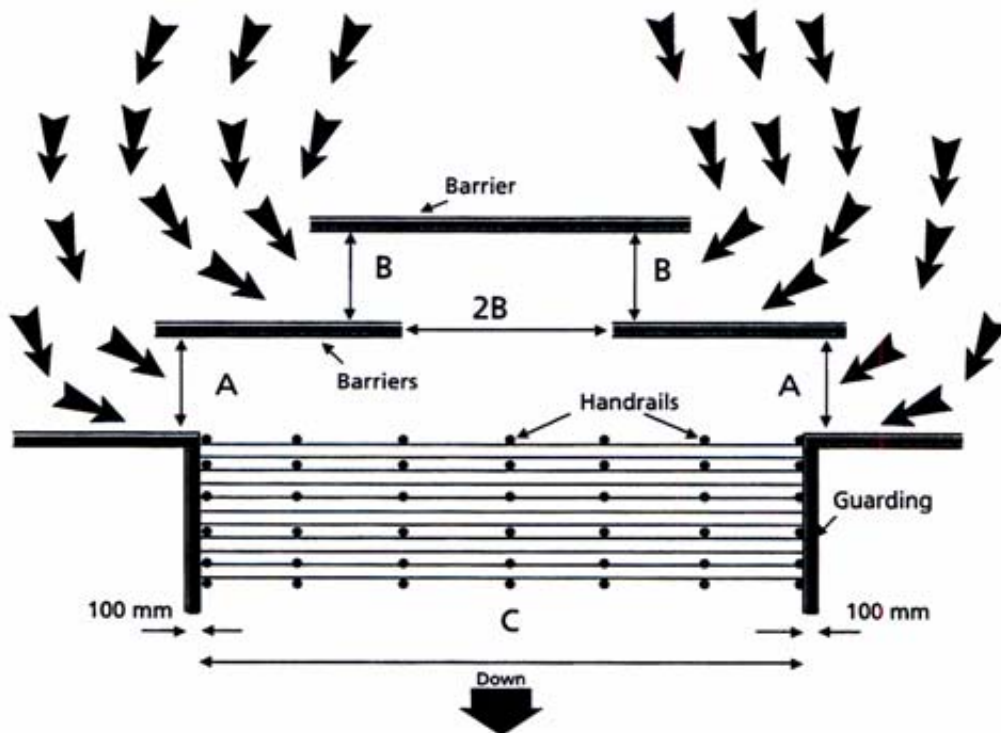
- 10.15 Access to the head of the stairways should be controlled to ensure a free movement of spectators on the stairway.
- 10.16 Where a stairway is divided into channels the access should be designed to secure a uniform flow down each channel.



### Stairways and Ramps

- 10.17 The approach to the head of the stairs should be level and should be so arranged that the spectators converge on the stairway from the front and/or the sides only.
- 10.18 The approach in the direction of the stairway should not be less than 1.1 metres and preferably not more than 3 metres unless access is totally controlled. (See Figure 10d).

**Figure 10d:** Access to Stairways

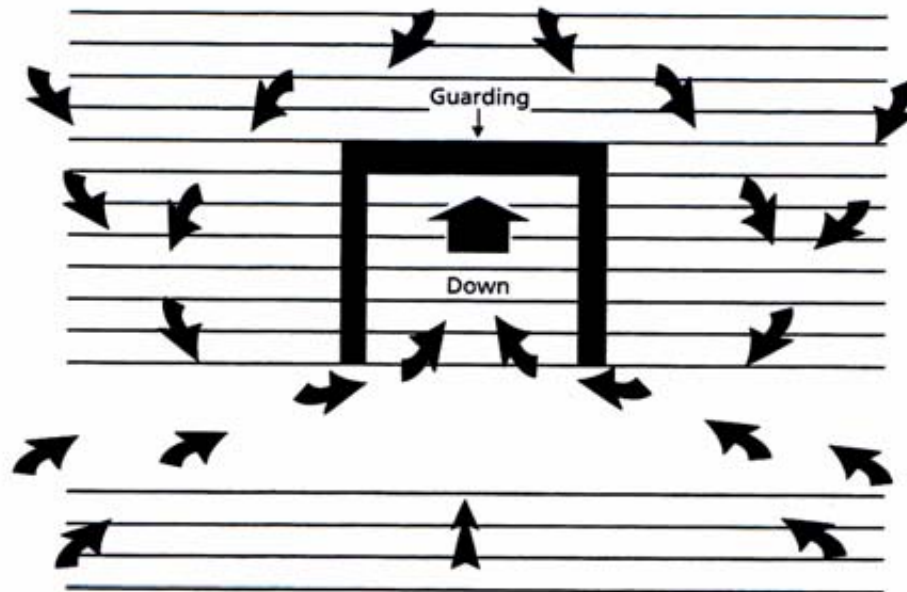


**Notes:**

- Channel width A and channel width B to be not less than 1.1m and not greater than 1.5m.
- The aggregate width of A + B shall not be greater than two-thirds the width of C, i.e.,  $2(A+B)$  not greater than  $\frac{2}{3}C$ .
- The capacity of the stairway would be calculated from width C.

- 10.19 There should be no approach from behind, involving movement around the ends of the balustrades or side walls of the stairway, except where this approach is already controlled by physical means such as by the gangways in the seated areas of the stand. (See Figure 10e).

**Figure 10e:** Approach to Vomitory



**Note:**

- Exits attracting spectators from higher up the terrace should be protected by barriers so that spectators are forced to pass around them and approach from the side.
- 10.20 Where restrictive elements, such as barriers or gateways, are installed in the approach from the terrace to a stairway in order to meet the foregoing provisions, the total width of the passage formed by these elements should not be more than two-thirds the minimum width of the stairway. (See Figure 10d). This is to accommodate the slower flow rate down a staircase as compared with the flow rate on flat areas and through portals. (See Chapter 22).

### ***Discharge from Stairways***

10.21 All exit stairways should discharge either:-

- (i) at ground level and lead directly to a place of safety in the open air, or
- (ii) on to walkways or concourses of adequate dimensions at any level provided these also lead directly to a place of safety in the open air.

### ***Ramps***

10.22 The gradient should preferably be constant and not broken by steps.

10.23 The maximum gradient acceptable should not exceed 1 in 12.

10.24 Ramps installed for wheelchair users should conform to requirements of Part M of the Building Regulations, 1991 and the supporting Technical Guidance Document "Access for Disabled People".<sup>1</sup>

### ***Reference***

1. Building Regulations, 1991: Technical Guidance Document M: Access for Disabled People, Stationery Office, Dublin.



## ***Terraces and Viewing Slopes***

*Arrangements should be made to encourage the even distribution of the crowd; to provide ease of ingress and egress; to control and facilitate movement, particularly if a local emergency should arise during the event; and to prevent the build up of pressures from reaching dangerous proportions.*

### **General**

- 11.1 Crowd safety can be greatly improved on terraces and viewing slopes if measures are taken to contain pressures generated by spectators straining to see the event, by excitement, or by surging.
- 11.2 One of the important parameters in the design of sports grounds is "good viewing". It is essential that the spectator should be able to see the principal object of the sport (such as the football, sliotar, as the case may be). This is also a primary consideration in appraising an existing sports ground. When large crowds are present and densities are high, frustration generated in the crowd from lack of proper visibility of the principal object can cause distress and other emotional reactions with a consequent build-up of pressure within the crowd. Where viewing areas do not afford a satisfactory view of the event, they must be eliminated from capacity calculations.
- 11.3 Useful guidance on terraces has been published by the Football Stadia Advisory Design Council in the U.K.<sup>1</sup>

### **Terrace Steps**

- 11.4 A terrace step should not be less than 280mm or more than 380mm wide. The preferred dimension is 330 mm.
- 11.5 The height of each riser should be between 75mm and 180mm. Seventy-five mm is related to the minimum width of 280 mm. If the riser height is greater than 180 mm, a crush barrier should be provided at the top of each riser.
- 11.6 Gradient ratio is dependent on the particular circumstances of the terrace. Excessive variations in the gradient of a terrace should be avoided. Where such exist, consideration should be given to reducing the number of spectators occupying that area or to the provision of additional crush barriers. Gradients steeper than 1 in 2 are potentially dangerous.
- 11.7 The surface of terrace steps should be even and made of a slip-resistant material. Drainage should be provided to prevent rainwater causing deterioration.

### **Gangways**

- 11.8 For the purpose of this section the terms "radial gangway" and "lateral gangway" have the meaning given to them in the Glossary, Appendix G.
- 11.9 Gangways, both radial and lateral, are necessary in order to channel spectators in an orderly way into and out of the viewing areas. Siting of gangways, crush barriers (See Chapter 12), barriers governing the flow at the head of stairways and handrails dividing stairways (See Chapter 10) should be designed to provide a uniform flow of spectators to each of the exits from the viewing area.
- 11.10 All gangways should be even and free from trip hazards. Surfaces should be slip resistant. They should be painted with a non-slip paint in a conspicuous colour.
- 11.11 Spectators should be instructed by stewards, signs and other means (for example, in programmes and by the public address system) that no standing is allowed in gangways. [See Paragraph 2.27 (xvi)]. If stewarding fails to prevent people from standing on gangways to view events, a reduction in capacity of the particular terrace for future events must be considered as the only apparent satisfactory alternative.
- 11.12 All spectators on the terraces should be within 12 metres of a gangway or exit as measured along a line of unobstructed travel from the viewing position, so that they can move quickly into the exit system. This may be achieved by a pattern of gangways (not less than 1.1 metres wide) linked to the exit system.



### **Lateral Gangways**

- 11.13 Spectators should not be allowed to stand in lateral gangways because this disrupts free movement along them and may obstruct the view of those on the terrace steps behind them causing stretching and straining. It is possible to discourage standing in gangways if they are sunk approximately 150mm and if crush barriers are provided behind but not immediately in front of them.

### **Radial Gangways**

- 11.14 Movement on radial gangways is often disrupted by the presence of spectators using them to view the activity on the playing area. Obstructions of this nature should be prevented in the interests of crowd safety including safe entry and safe egress. Often such gangways are relatively long, downward paths through terraces and spectators standing on them are not protected by crush barriers in the event of a sudden movement forward. Radial gangways should, therefore, be kept clear. It may be helpful to sink them approximately 150mm and to interrupt an otherwise continuously descending gangway by turns along lateral gangways.
- 11.15 Any balustrading wall, fence or gate at the foot of radial gangways should be of the same height as crush barriers and should be as strong as those of the stronger type, i.e., 5.0 kN/metre width design force, or 6.0 kN/metre width test load. (See also Chapter 12).
- 11.16 Radial gangways should not contain winders. Where the gangway is stepped the going should be uniform and the step dimensions should be compatible with those for the terrace which they serve. (See Paragraphs 11.4 and 11.5).

### **Division of Spectator Accommodation**

- 11.17 A ground should be divided into separate areas/sectors in order to prevent migrations by spectators which might cause dangerous overcrowding. Each division must have its own safe holding capacity and be served by turnstiles or other arrangements which keep a tally of the number of people admitted. Each division of a ground, for example, each end or side, should be self-contained with its own entrances, exits and toilet/refreshment facilities. Consideration should be given to providing suitable access from one division to another for use in an emergency but such access will not normally be taken into account in any exit capacity calculations.
- 11.18 Each of the divisions should be subdivided by such means as crush barriers and gangways, arranged so as to minimise the sway and surge of spectators and to discourage lateral movement. If a terrace or viewing slope is sub-divided into sections by structural means such as



fences or railings, arrangements at the ground must be such as to ensure that these sub-divisions cannot be filled beyond their safe holding capacity. This means, in effect, that they will need to be self-contained divisions of viewing accommodation. (See also Paragraph 19.3).

- 11.19 Certain parts of a ground can be more popular than others. Therefore, considerable care is needed to ensure that any concentration of spectators does not exceed the safe holding capacity for the particular area in question. Well trained stewards should be provided to check, monitor and marshal spectators in such areas. If the number of spectators are seen to be too dense in a particular division, even if crowd capacity is calculated in accordance with the Code, the capacity should be reduced at future events in the light of experience.
- 11.20 Railings, fences, etc., between divisions of the ground should be of the strength of the crush barriers. Brick/block and similar solid structures lacking sufficient mass or tensile strength are not suited to withstand horizontal pressures, and where used to divide spectator accommodation, should be subject to regular structural appraisal by suitably experienced chartered engineers in order to ensure they are fit for their intended purpose. (See Paragraph 7.1). This should be taken into account in assessing safe holding capacity of a particular section of the ground. Guidance on Safe Holding Capacity for Terraces is given in Chapter 21.

### **Crush Barriers**

- 11.21 Detailed advice on crush barriers is given in Chapter 12.

### **Viewing Slopes**

- 11.22 Viewing slopes, i.e., non-stepped sloping areas providing standing accommodation for spectators, can be dangerous and are not recommended. Where they exist Ground Management should aim at removing such features. However, where such slopes are in use, careful attention must be given to safety aspects, and the guidance in the paragraphs hereunder should be followed.
- 11.23 The holding capacity of a viewing slope will depend on the gradient and depth of the slope, the nature of its surface and the underfoot conditions. The presence of crush barriers will also be a factor in this assessment.
- 11.24 No viewing slope should have a gradient steeper than 14°, i.e., 1 in 4. Viewing slopes with gradients less than 10° will provide poor sightlines for spectators, with resulting crowd movement, and will accommodate fewer spectators. Where a viewing slope has a gradient of less than 8°, the depth of slope taken for capacity calculation purposes should be a maximum of 5 metres.

### ***Terraces and Viewing Slopes***

---

- 11.25 The depth of a viewing slope, i.e., the distance from the bottom of the embankment to the top of the embankment, should not exceed 21m. Where the depth exceeds 7m, a reduction in crowd density will be required, unless crush barriers are provided.
- 11.26 The design and installation of crush barriers should be similar to those on terracing, as indicated in Chapter 12. Where crush barriers are provided, the maximum horizontal distance between them should not exceed 7m.
- 11.27 Where the embankment falls away to the rear it should be sloped in a manner which ensures safety from falling and ease of departure in an emergency. A continuous barrier should be provided at the top of the slope.
- 11.28 It is essential that the surface of a viewing slope should be smooth and even throughout. Where the slope is grassed, the grass must be cut, and cuttings removed, prior to each event.
- 11.29 Guidance on safe holding capacity for viewing slopes is given in Chapter 21.

### ***Terrace to Touchline Distance***

- 11.30 The minimum recommended distance between the bottom of the terrace or viewing slope and the playing area is 3 metres where the terrace gradient is 25°. Where the gradient is shallower than this, it may be advisable to increase this distance so as to enable spectators to obtain a clear view.

### ***Reference***

- 1. Terraces: Designing for Safe Standing at Football Stadia, Football Stadia Design Council, London, 1993.



CHAPTER  
**12**

## **Crush Barriers, Guardrails and other Guarding**

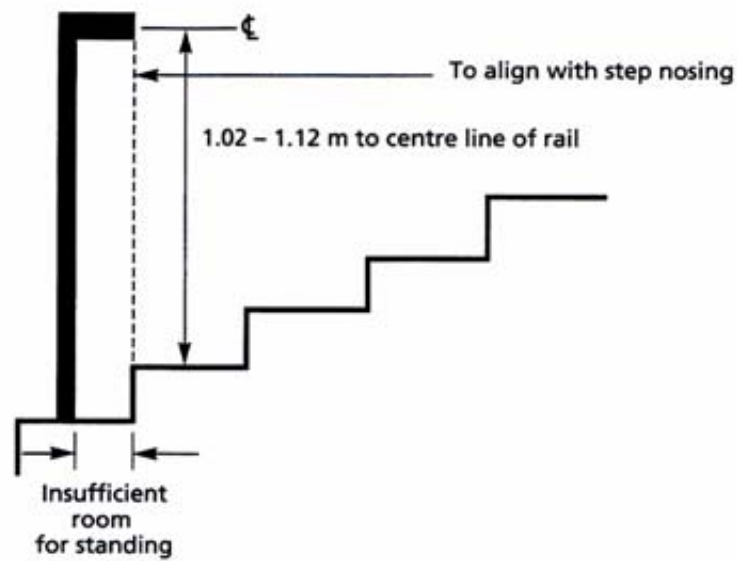
*Many of the hazards arising from crowd pressure on terraces can be eliminated by provision of well constructed, correctly positioned and properly mounted crush barriers which physically control and contain crowd movement. Handrails and other protective guardrails of the correct specification are essential in regulating safe passage of spectators through entry/exit routes.*

### **Dimensions and Design Features**

- 12.1 In order to locate the top rail against that part of the body most able to tolerate pressure the height of crush barriers should be between 1.02 metres and 1.12 metres above the nosing of the step or standing area immediately behind the barrier, with a preferred height of 1.1 metres (See Figures 12a and 12b).



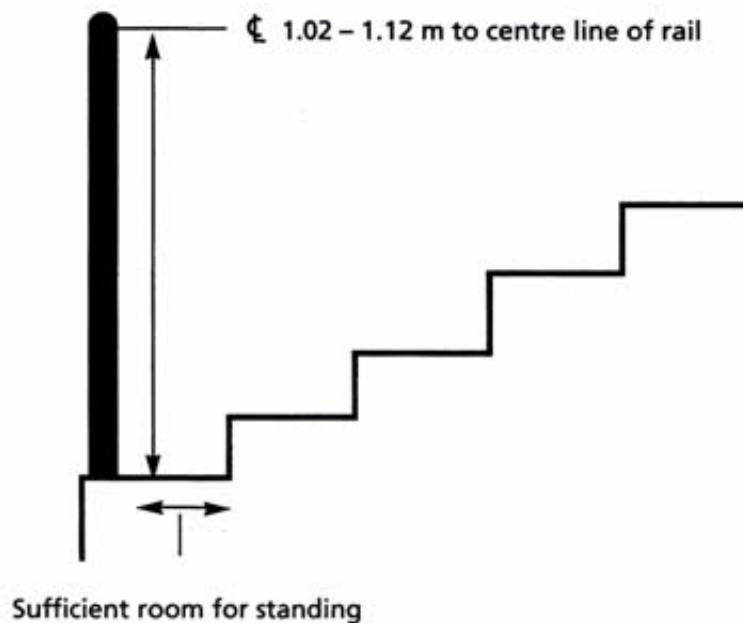
**Figure 12a:** Crush barrier height



**Note:**

- Height of crush barrier is measured from the step immediately behind the barrier where there is insufficient room for standing on the step on which the barrier is installed.

**Figure 12b:** Crush Barrier Height



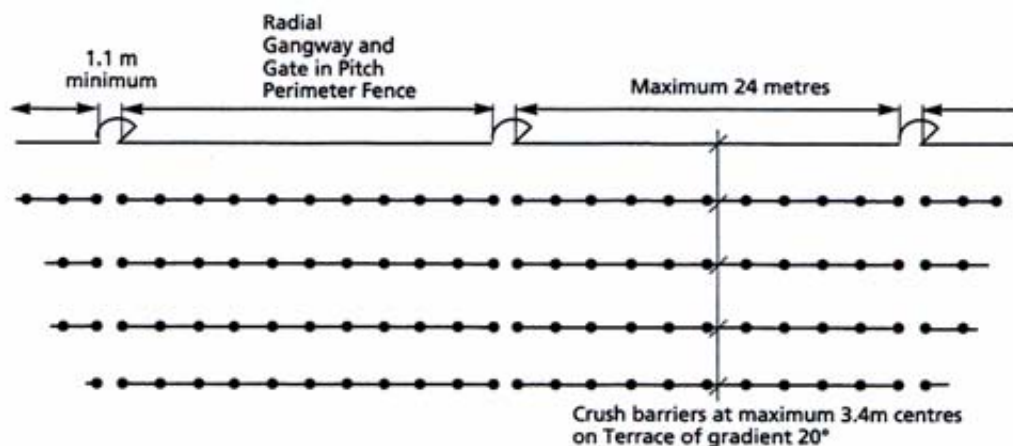
12.2 Crush barriers should be designed so that there are no sharp projections or edges. Although a barrier with a top rail of 50mm diameter tube has been used at many sports grounds, research has shown that there are advantages in the use of a rectangular hollow section of 100mm vertical depth.

### **Spacing of Crush Barriers**

12.3 The maximum distance between rows of crush barriers will be dependent on the gradient of the terrace or viewing slope. Paragraphs 12.6 to 12.19 give details of the spacing and strength of crush barriers.

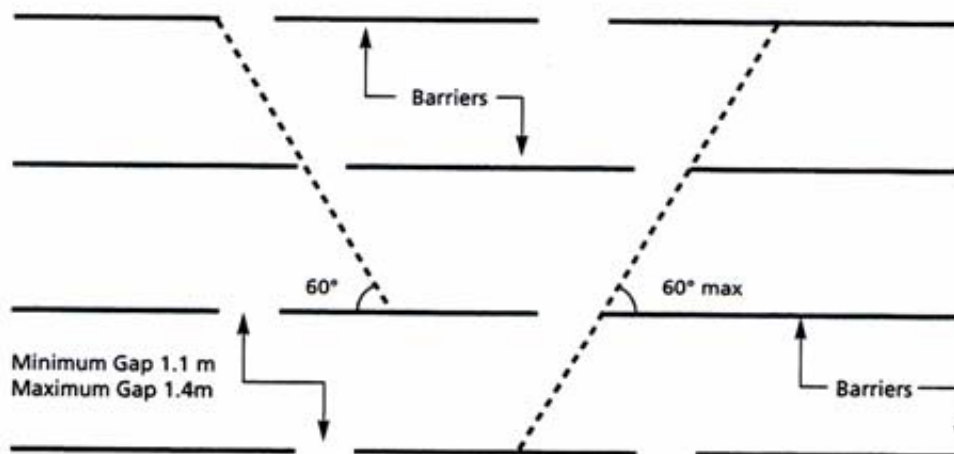
12.4 Ideally, crush barriers should be provided along the full width of a terrace, with gaps only at the radial gangways. An example of crush barrier configuration is shown at Figure 12c.

**Figure 12c:** Typical Layout of Radial Gangways and Pitch Perimeter Fence Gates.



12.5 Where it is not practicable for such barriers to be continuous between radial gangways, the alignment of gaps in successive rows of barriers on a terrace should form an angle of less than 60 ° to the barriers. There should be no more than 2 consecutive gaps in any line. These gaps should be at least 1.1 metres and not more than 1.4 metres in width. (See Figure 12d).

**Figure 12d:** Arrangement of Gaps between Crush Barriers.



Crush barrier configuration where barriers are not continuous

### Crush Barrier Configuration where Barriers are not Continuous

- 12.6 The maximum distance between crush barriers should not exceed the distances shown in Column A of Table 12-1 for various terrace gradients. At the distances specified, crush barriers should conform to the higher strength requirements for crush barriers set out in Table 12-2, (i.e. 5.0 kN/metre width design force or 6.0 kN/metre width test load). Column B of Table 12-1 sets out the maximum distances between crush barriers which conform to the lower strength requirements of Table 12-2 (i.e. 3.4 kN/metre width design force or 4.1 kN/metre width test load). Interpolation may be made between these figures.

**TABLE 12-1**

Terrace Gradient			Maximum horizontal distance between crush barriers	
	Step riser:	Step width:	A	B
05° i.e.	1	: 11.4	5.0 m	3.3 m
10°	1	: 5.7	4.3 m	2.9 m
15°	1	: 3.7	3.8 m	2.6 m
20°	1	: 2.7	3.4 m	2.3 m
25°	1	: 2.1	3.1 m	2.1 m

Gradients in excess of 1 in 2 are potentially hazardous and should be avoided. (See Paragraph 11.6).



### **Strength of Crush Barriers, Guardrails and Handrails with Guarding Function**

- 12.7 The structural integrity of crush barriers, guardrails and handrails with a guarding function is a major factor in ensuring safety. A 25% representative sample of all crush barriers, guardrails and handrails, from each part of the ground including stands, etc., should be tested annually. Thereafter, the testing of barriers should take place annually so that all barriers are tested on a phased basis over 4 years. (See Appendix B).
- 12.8 All barriers should be visually inspected each year for signs of wear, distortion, corrosion or other signs of weakness. If, from such inspections and the records of earlier inspections and tests, there is any doubt as to the integrity of a barrier it should be tested. This test should be in addition to the 25% representative sample.
- 12.9 Existing crush barriers, guardrails and handrails with a guarding function should be capable of resisting the forces indicated in the "test load" column of Table 12-2 when applied in a test as described in Appendix B. Where existing crush barriers and handrails fail to meet these test conditions, they should be replaced or strengthened. Barriers and handrails so strengthened should be re-tested in accordance with Appendix B.
- 12.10 New crush barriers, guardrails and handrails with a guarding function should be designed to resist safely a horizontal force as indicated in the "design load" column in Table 12-2 hereunder applied as a static load acting on the top rail of the barrier or handrail at right angles to the longitudinal axis. The foundations of new barriers or handrails should be designed to resist the overturning moments and sliding forces, induced by the forces described in the "design load" column hereunder, with a factor of safety of 2.
- 12.11 New crush barriers designed and constructed in accordance with the provisions of this Chapter will have satisfied the strength requirements and will not therefore require sample testing for 4 years from the date of installation. Such barriers should not form part of the 25% representative sample described in paragraph 12.7. They should however be inspected annually in accordance with paragraph 12.8.

**TABLE 12-2**  
**Table of strengths for crush barriers and handrails**

	Design Load for New Barriers	Test Load for Existing Barriers
Crush barriers spaced in accordance with the distances in Column A of Table 12-1	5.0 kN/metre width	6.0 kN/metre width
Crush barriers spaced in accordance with the distances in Column B of Table 12-1	3.4 kN/metre width	4.1 kN/metre width
Handrails at right angles to the direction of flow	3.4 kN/metre width	4.1 kN/metre width
Handrails parallel to the direction of flow	2.2 kN/metre width	2.7 kN/metre width

- 12.12 Crush barriers and other obstacles meant to protect players and/or spectators from possible violence should be designed so as not to slow down or make difficult the entry or exit of spectators.
- 12.13 All crush barriers failing to meet the test criteria should be repaired or renewed prior to the next event taking place. If this is not possible the areas in question should be taken out of use until safe.
- 12.14 Any works of strengthening and refurbishment carried out as a result of a failure must be re-tested and logged before being opened to the public.
- 12.15 All new or renewed work should be designed to comply with the Code for loading capabilities and to the relevant structural codes of practice and, if supervised by a chartered suitably experienced engineer, need not be tested on completion.
- 12.16 In cases where terrace crush barriers are removed for special events or any other reason they should be reinstated under the supervision of a chartered engineer to ensure that they are in full compliance with the standards set out in the Code.
- 12.17 It is important that crowd pressures cannot be generated so as to cause injury to those spectators pressed against the barrier and it is of paramount importance that collapse of barriers under crowd pressure does not occur. It should be recognised, however, that on terraces, viewing slopes and elsewhere maximum pressures will occur when all spectators contribute simultaneously to the build-up of pressure. It is important therefore that no undersized crush barriers are permitted.

- 12.18 Appendix E of the publication "Appraisal of Sports Grounds"<sup>1</sup> provides professional guidance on the scientific background to barrier design for a proper appraisal.
- 12.19 Where barriers are sub-standard either with regard to strength or height, or in any other way do not comply with the Code, they should be considered ineffective in the capacity calculations. Where any barriers are so sub-standard as to offer a significant risk to safety they should be replaced or such areas should be taken out of use.

### ***Reference***

1. Appraisal of Sports Grounds, Institution of Structural Engineers, London, 1991.



CHAPTER  
**13**

## **Covered Standing and Seated Accommodation**

*The general safety considerations for covered stands are similar to those for other parts of the ground but with the additional need to safeguard spectators against the greater risk of fire  
(See Chapter 15).*

### **General**

- 13.1 Covered stands may consist of seated accommodation only or may contain a mixture of both seated and standing areas. In considering the safety of spectators attending major sporting or other events a move towards all seater stadia would have obvious advantages. Each spectator would have an identified position, a high level of comfort would be provided, the capacity of the ground would be more easily settled and the problems normally associated with terraces, such as crowd movement, etc., would be eliminated. A move towards all seater stadia would have enormous financial implications for the major sporting bodies, would most likely significantly reduce ground capacities and would have to be viewed as a long term aspiration. However, there is no reason to believe that terraces cannot remain a perfectly safe area for viewing major sporting events. Adherence to the guidelines contained in this Code of Practice, including guidelines on stewarding, and a sensible approach to determining terrace capacities should ensure that terraces are safe and reasonably comfortable places from which to view events.
- 13.2 The opportunity provided by new design work should be taken to enhance the comfort and amenities for spectators. This is particularly relevant to redevelopment of major grounds. New work should conform to the Building Regulations.<sup>1</sup> Useful guidance has been published by the Football Stadia Advisory Design Council in the U.K.<sup>2</sup>

- 13.3 All spectators should have a clear, unobstructed view of the whole of the playing area. Designs should ensure that sightlines are such that spectators are encouraged to remain seated (where seats are installed) and do not have to strain or stretch to view the playing area. Seating which does not provide a clear and unobstructed view should not be used. This is part of the function of the Safety Officer who should regularly examine seating and particularly so after any alterations or repairs, however minor, have taken place. Stands should protect as many spectators as possible from the elements. Exits and exit routes (which will also serve as entrances and entry routes) should be based on the principles set out in Chapters 8 and 9.

### **Exits**

- 13.4 There is generally a less hurried departure from seated accommodation in stands than from terraced accommodation at the end of an event. Moreover, spectators are induced by the layout of the seats to form orderly queues. Even so, attention should be paid to the points hereunder as well as to the other structural considerations in respect of stairways, entrances/exits and, where appropriate, density levels and crush barriers.
- 13.5 There should be sufficient exits to allow for the orderly evacuation of all the spectators. This may entail a reduction in safe holding capacity. (See Paragraphs 21.20–21.25). Egress/evacuation time used to calculate the exit requirements will depend, to a large extent, on the fire hazard present, (See Paragraphs 15.38–15.44) but should be no longer than 8 minutes. (See Paragraphs 9.10–9.13).
- 13.6 Seats and gangways should be so positioned as to provide ready access to exits. No spectator in any part of the seated area should have to travel more than 30 metres from their seat via the nearest gangway to the nearest exit from the viewing area measured along the line of the seatway and gangway.

### **Gangways**

- 13.7 Gangway requirements for standing accommodation are set out in Paragraphs 11.8 to 11.16. Gangways for seated accommodation should have a slip resistant surface. They should be of sufficient width for the seats served and should be not less than 1.1 metres wide without projections.
- 13.8 Any stepped side gangway (i.e. with viewing accommodation on one side only) should be provided with a hand-rail fixed to the guarding as in Figure 10a. The handrail and guarding should conform to the strength requirement of Table 12-2.



- 13.9 The going and riser of a stepped gangway in seated accommodation should be uniform. However, given the constraints imposed by the design process in achieving optimum sightlines, some minimal variation in the riser height may be required and each case should be considered on its merits. Gangways should not contain winders. They need not contain intermediate landings, and the provisions of Paragraph 10.9 (ii) and (iii), relating to the number of steps and changes in direction are not relevant. If, because of site constraints and viewing requirements, the gangways of a stand would result in step dimensions outside those set out in Paragraph 10.9, additional compensatory measures should be provided, as necessary, in order to ensure safe movement on them. For example, some form of hand-hold should be provided.

### **Balustrading**

- 13.10 Those sections of balustrading at the foot of gangways or stairways should be as strong as crush barriers of the stronger type. Other balustrading which will not be subject to pressure from mass crowd movement should conform to normal requirements of the Building Regulations.<sup>1</sup>

### **Seating**

- 13.11 All seats should be securely fixed in position. The use of tip-up seats allows more circulation space, the automatic type being preferable.
- 13.12 The minimum space allotted to each seated person should be 460mm wide (500mm for seats with arms) and 610mm deep. But for comfort these measurements should be increased to 550mm and 760mm respectively. In existing grounds the space allocated to each person may be marginally less than 460mm. wide (e.g. an imperial measurement of 18 inches may have been used when seats were fitted) and this should not be regarded as a deficiency.
- 13.13 To enable people to move freely between rows of seats there should be at least 305mm between perpendiculars from the foremost projection of one seat and the back of the seat in front of it, i.e., the clear seatway or "clearway". The minimum 305mm is included in the 610mm and 760mm depth measurement of the seating area (See Figure 13a).

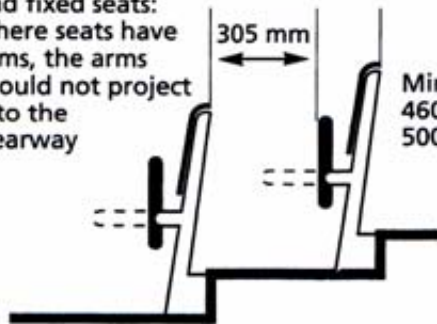
Reference should be made to Building Regulations Technical Guidance Document B<sup>3</sup> for further guidance.



**Figure 13a: Minimum Dimensions for Seating.**

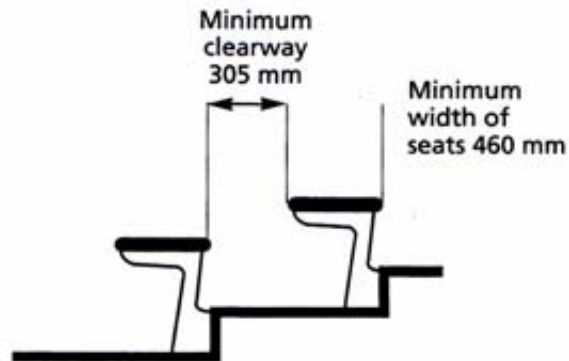
Minimum seating dimensions  
seats with backs

Minimum clearway  
(305 mm) for tip-up  
and fixed seats:  
where seats have  
arms, the arms  
should not project  
into the  
clearway



Minimum width of seats:  
460 mm without arms  
500 mm with arms

Minimum seating dimensions  
Seats without backs



13.14 The number of seats in a row should not exceed:-

- (i) 14 where there is a gangway at one end only; and
- (ii) 28 where there is a gangway at both ends.

In existing sports grounds, a slight increase in the number of seats in a row, may be acceptable to the controlling authority provided the requirements of Paragraph 13.6 are complied with.

13.15 The statutory requirements in regard to the fire safety aspects of spectator stands are covered by the provisions of the Fire Services Act, 1981<sup>4</sup> and the Fire Safety in Places of Assembly (Ease of Escape) Regulations, 1985.<sup>5</sup> Stands of timber construction should be critically examined in accordance with the appraisal strategy set out in the publication "Appraisal of Sports Grounds"<sup>6</sup> and in consultation with the Local Authority. It is also recommended that existing stands should be examined from a structural viewpoint by appropriate technical personnel on an annual basis.

### ***Appraisal of Structures against Disproportionate Collapse***

- 13.16 Where a large crowd is gathered in a confined area, it is necessary to check that sports grounds structures would not collapse in a disproportionate manner. "Appraisal of Sports Grounds" gives advice on dealing with such a condition and also advice on the appraisal of such structures including the replacement or strengthening of weak structural elements.

The engineer must, therefore, recognise this factor in the design and appraisal of grandstand structures and special attention should be paid to dynamic performance, fatigue life, load factors, low-temperature performance of welds, the effects of corrosion, etc. Where any doubt exists regarding the adequacy of a primary element it must be either enhanced in strength or secondary structures should be introduced as necessary to distribute loading to adjacent members. These considerations are especially important in the assessment of the adequacy of long-standing structurally light constructions, and for structures where some degradation of initial strength is evident from corrosion or other effects. (See Paragraph 6.1).

### ***Replacement or Strengthening of Weak Structural Elements***

- 13.17 Where either the survey or subsequent testing or appraisal shows an element to be unsatisfactory, it should either be replaced or be suitably strengthened. Such considerations may well require the installation of temporary support until such time as the permanent remedial work can be undertaken. All such temporary works should be designed and constructed with the location and nature of usage in mind and be reasonably proof against vandalism. Adequate access will need to be provided to undertake these measures, so that they can be correctly effected and inspected prior to commissioning.

### ***References***

1. Building Regulations, 1991, Stationery Office, Dublin.
2. Seating: Sightlines, Conversion of Terracing and Seat Types, Football Stadia Advisory Design Council, London, 1991.
3. Building Regulations, 1991: Technical Guidance Document B: Fire, Stationery Office, Dublin.
4. Fire Services Act, 1981, Stationery Office, Dublin.
5. Fire Safety in Places of Assembly (Ease of Escape) Regulations, 1985, Stationery Office, Dublin.
6. Appraisal of Sports Grounds, Institution of Structural Engineers, London, 1991.



## ***Temporary Stands and other Temporary Structures***

*All relevant principles for securing safety contained in this Code apply to temporary structures in respect of which there are also the following additional considerations.*

### **General**

- 14.1 The nature of temporary stands and other temporary structures, whether covered or otherwise, used to accommodate spectators and others at a sports ground is likely to vary considerably as will the materials used in their construction. Some may be erected for a single event only. Even so there is no justification for accepting a lower standard of safety in such structures than elsewhere within the sports grounds, and the design and erection of temporary structures should be in accordance with good engineering and building practice, should pay particular regard to public safety and should satisfy all relevant Irish, British or other equivalent European standards and specifications. Guidance regarding the design and erection of temporary stands is contained in "Temporary Demountable Structures: Guidance on Procurement, Design and Use".<sup>1</sup>
- 14.2 Existing legislation<sup>2</sup> specifies that temporary stands and other temporary structures, including stages, erected for the purpose of providing sitting or standing accommodation for spectators shall be safely constructed or secured to the satisfaction of the Local Authority. Ground Management should undertake to ensure that the design and erection of these structures on site will be carried out under the supervision of a suitably experienced chartered engineer who should certify, prior to the event, that the works have been carried out in accordance with relevant standards. There is a serious danger of a tragedy occurring where these facilities are used by a large gathering of the public, if these structures are erected without such supervision. A minimum of one month's notice to the Local Authority is essential to ensure that adequate criteria are adhered to in their erection and that proper fire and structural standards are applied.



## **Structural Design**

- 14.3 All temporary structures should be capable of withstanding any load or force to which they may be subjected and account should be taken of any external factors such as wind forces. In addition to its self weight and any other permanent loads the structure should be designed to withstand loading from crowds and their movement in accordance with BS 6399.<sup>3</sup> Temporary stands are particularly vulnerable to overloading and this should be taken into account in the design.

Failure of any one support member or connection should not render the structure unstable, cause local collapse or give rise to progressive collapse. Frames should be so designed that they are firmly locked into position and cannot be tampered with by unauthorised persons.

- 14.4 The design should include an allowance for dynamic effects. Dynamic loads will be significant when any crowd movement (swaying, dancing, jumping, rhythmic stamping, etc.) is synchronised. Movement of the crowd can generate both horizontal and vertical loads. If the synchronised movement excites a natural frequency of the structure, resonance will occur. Resonance can greatly amplify structural response.

Where significant dynamic loads are to be expected safety may be achieved by either ensuring that the structure will withstand the anticipated dynamic loads or by avoiding resonance effects. Where it is necessary to prevent significant vertical response, such as for pop concerts, the fundamental vertical frequency should be greater than 8.4Hz when the stand is empty. Also, in these circumstances, a fundamental horizontal frequency greater than 4Hz when the stand is empty should prevent any significant horizontal response.

- 14.5 Bracing should be provided in both directions to accommodate horizontal loads of at least 10% of the vertical imposed loads in addition to the wind load, in accordance with BS 5973 : 1993.<sup>4</sup> Bracing members should be included in sufficient numbers so that the absence or removal of up to two adjacent members would not initiate a disproportionate collapse of the structure.
- 14.6 While many of the factors affecting safety in temporary stands are common to the design of permanent stands, there are a number of items that are likely to be of greater importance for those stands classified as temporary, or demountable, or used for special public events such as pop concerts and golf tournaments.

These features include:-

- (i) overall stability;
- (ii) disproportionate collapse in the event of the removal of a component;
- (iii) dynamic response;

- (iv) unusual crowd movement or misbehaviour;
- (v) effects of repeated use;
- (vi) lack of fit and necessity to detail special components in areas where the layout of the stands and other circumstances prevent standard components being used;
- (vii) effects of added loadings from fabric structures, flagpoles, scoreboards, attached guy wires supporting other structures;
- (viii) presence of adjacent high fire loads; and
- (ix) the provision of suitable non-slip surfaces.

In such circumstances it is necessary to check that the original design is capable of providing an adequate margin of safety.<sup>5</sup>

- 14.7 All temporary stands, whether intended for repeated use or as one-off designs, should have design calculations prepared for all aspects of the structure together with specific design/performance requirements for foundations. Prior to the erection of any stand, the calculations and drawings should be subject to independent design verification by a suitably experienced chartered engineer.

### **Siting**

- 14.8 Choice of location may be limited but factors which need to be considered include: load-bearing capability of the ground, its slope or unevenness, drainage, availability of mains services, access/egress for spectators and for emergency vehicles, overhead power lines, and the proximity of surrounding buildings in the context of the risk of fire.

The condition of the site should be regularly checked to ensure its load-bearing capabilities have not deteriorated; settlement of ground may cause instability and so require repacking and releveling. The site should be prepared and maintained so as to provide an even surface. In order to be accessible for the disabled ground surface should be such as to ensure their mobility and safety at all times.

- 14.9 Means of escape from such temporary stands on evacuation must be direct to an appropriate place of safety. Special care needs to be taken so that in providing sufficient means of egress from a temporary stand or place of assembly that the capacity of means of egress from existing or adjacent structures is not impaired (and vice versa).<sup>4</sup>

### **Erection**

- 14.10 A method statement should be prepared for the erection of the structure. The erection of stands should be carried out by, or under the supervision of, persons experienced and trained in the proper performance of such work, in accordance with the method statement and the drawings and specifications.



- 14.11 Work should be carried out only where lighting is sufficient to allow it to be safely and properly performed and checked. No assembly work should be carried out if there is a risk to members of the public in the vicinity.
- 14.12 The work should be carried out using correct parts, and tools of a proper size and design. Care should be taken with the handling of components to avoid damage or distortion. All components should be closely examined during assembly and dismantling for signs of wear, deformation or other damage, and, where necessary, replaced by sound components of matching material, properties and dimensions. Temporary repairs using makeshift components should not be carried out under any circumstances.
- 14.13 Fixings and handrails for all platforms, stairways, etc., must be adequate. Care should also be taken to ensure that all components are correctly aligned; they should not be bent, distorted or otherwise altered to force a fit. Inspections should be carried out to detect possible corrosion on all elements of the structure, and to ensure that the fire separation of the construction from other structures is sufficient.
- 14.14 Inspections should ensure that the structure has been erected in accordance with the drawings. The following matters need particular attention:
- (i) all standards should be provided with base plates and spreaders as required, and suitable restraints where these are required to prevent overturning, according to the design or site conditions;
  - (ii) bracing must be provided as detailed;
  - (iii) the seating should be adequately secured and the spaces behind seats should be limited to prevent small persons falling from the stand;
  - (iv) all fixings and connections must be provided and tightened as required by the specification; and
  - (v) the use of non-standard components should be avoided. Where unforeseen site constraints require non-standard components in boundary/edge situations, the adequacy of the construction should be checked against the design to ensure that the system's stability has not been compromised; the drawings should be revised accordingly.
- 14.15 Erection of the stand should be completed no later than 24 hours before the stadium is opened to the public. Upon completion, a suitably experienced chartered engineer appointed by Ground Management, should certify that the stand has been erected in accordance with the specification and drawings. This certificate should be submitted to the Local Authority no later than 12 hours before the public are allowed enter the stadium.



### **Management during Use**

- 14.16 Good management is essential to ensure that proper safeguards are taken to ensure reasonable safety to spectators. The Safety Officer should monitor the event to ensure that the stand is used as planned and safety is not being jeopardised. The public should not be admitted to the stand until the Safety Officer is satisfied that the erection of the stand has been certified and that the use of the stand complies fully with the design criteria.
- 14.17 Access by spectators to this type of temporary stand should be on the basis of one person one ticket and this procedure should be strictly enforced. The number of spectators and their distribution throughout the stand must not exceed the numbers for which the stand has been designed.
- 14.18 Particular attention must be paid to stewarding and communications. The area around and under the structure should be secured to prevent unauthorised access.
- 14.19 Where temporary stands are left in place for a series of events over a period of time, the stand should be inspected before each event and certified as in 14.15 above. Regular inspections should also be carried out to ensure that litter does not accumulate beneath the seating.

### **Dismantling**

- 14.20 Dismantling should be carried out by, or under the supervision of, persons experienced and trained in the proper performance of such work. No dismantling work should be carried out while members of the public are in the vicinity.
- 14.21 Care should be taken with the handling of components to avoid damage or distortion using tools of proper size and designs.

### **Tents/Marquees and other such Structures**

- 14.22 There is a growing trend of providing hospitality tents at various sporting and other events at sports grounds and elsewhere. The siting of such tents should be such as not to cause any problem for crowds entering or exiting from stands or terraces or endanger the safety of patrons in any way. Additionally, vehicles servicing such tents should not be parked in positions where they are likely to endanger the safety of the crowd. Special care should be taken in selecting the appropriate position for these tents so that they do not affect the networking arrangements for the dispersal of the crowd attending the event. The siting of such tents should be discussed with the Local Authority and the Health Board before the tent is erected.

- 14.23 These types of structures can present special structural stability problems. Tents should be capable of withstanding all forces to which they may be subjected, particularly wind (including uplift so caused) and those caused by the build up of snow or heavy rain. Persons responsible for designing and erecting such structures should take cognisance of the advice given in Chapter 9 of "Appraisal of Sports Grounds".<sup>6</sup> Particular care should be taken in regard to the use of kitchens, heating and gas installations in tents and marquees.
- 14.24 Special fire safety problems are also presented by these structures. Persons responsible for designing and erecting such structures should take cognisance of the advice given in Chapter 13 of the "Guide to Fire Precautions in Existing Places of Entertainment and Like Premises".<sup>7</sup> With respect to flammability standards therein, it is recommended that BS 7157<sup>8</sup> be used in ascertaining the acceptability of the material used in the tent; existing tents which comply with BS 3120<sup>9</sup> may be acceptable to the Local Authority in the short term.
- 14.25 Supporting poles or structures, guy ropes and stays should be used as necessary and correctly formed and secure anchorages should be made to ensure that the tent is stable and maintains its correct shape.
- 14.26 The stability of the main tent poles and supporting structure should be independent of the sheeting fabric, i.e., any tearing or defect occurring in the fabric should not result in the collapse of all or any part of the main structure.
- 14.27 Particular attention should be paid to the main supporting poles or structures and top braces of large tents where they have to be raised to a considerable height. Damage or distortion to these members could considerably weaken the structure. Where such damage does occur, the members should be replaced or repairs or modifications carried out so as to bring them up to full working strength.
- 14.28 Where solid frames or units, e.g., doors, are linked to a tent structure they should be rigidly formed and adequately braced, and care should be taken that they do not overstress local areas of the tent.
- 14.29 Foundations to poles or frames should be properly prepared and subjected to regular checks as should wire bracing or guys, the tension of which should be re-adjusted as necessary.
- 14.30 Emergency arrangements should be made for the dismantling, either partial or total, of a tent should abnormal conditions arise that could lead to any collapse or distortion. Where such work affects the stability of the tent or the safety of members of the public in any way, the work should not commence until the immediate area has been cleared of all but essential staff.



## **References**

1. Temporary Demountable Structures: Guidance on Procurement, Design and Use, Institution of Structural Engineers, London, 1995.
2. Public Health Acts Amendment Act, 1890, HMSO, London (See Note 1 below).
3. BS 6399: Loading for buildings: Part 1: 1984: Code of Practice for dead and imposed loads,  
Part 2: 1995: Code of Practice for wind loads,  
Part 3: 1988: Code of Practice for imposed roof loads, British Standards Institution, London.
4. BS 5973: 1993, Access and working scaffolds and special scaffold structures in steel, British Standards Institution, London.
5. Dickie, J.F., & Tomlinson, G.R.: "Demountable Grandstands", Structural Engineer Review, 1, 1988.
6. Appraisal of Sports Grounds, Institution of Structural Engineers, London, 1991.
7. Guide to Fire Precautions in Existing Places of Entertainment and Like Premises, HMSO, London, 1990.
8. BS 7157: 1989, Method of test for ignitability of fabrics used in the construction of large tented structures, British Standards Institution, London.
9. BS 3120: 1959, Specification for performance requirements of flameproof materials for clothing and other purposes, British Standards Institution, London (See Note 2 below).

### **Note 1:**

Section 53 of the Local Government (Sanitary Services) Act, 1948 has extended the terms of Section 37 of the Public Health Acts Amendment Act of 1890 to every sanitary district whether urban or rural.

### **Note 2:**

Although this standard has been withdrawn, testing facilities to check compliance are provided by Forbairt.

*Safety from fire is achieved by measures which will minimise the risk and restrict the rate of early growth and later spread of fire; provide and protect escape routes; segregate higher fire risk areas; provide fire detection and warning; and assist fire-fighting operations.*

### **General**

- 15.1 The type of spectator accommodation which is more at risk from fire is the covered stand. Although new buildings should conform to current Building Regulations requiring structural protection from fire, existing structures will vary considerably according to age, condition and materials used in construction. It may be difficult, therefore, in some cases, to improve the fire resistance of an existing structure to any significant extent. But it should be done, wherever practicable, even though in some cases substantial alterations may be needed to provide reasonable protection from fire. A fire safety appraisal strategy should be developed for such structures in consultation with the Local Authority. Guidance on the fire safety appraisal of existing stands is contained in the publication "Appraisal of Sports Grounds".<sup>1</sup> For general purposes, further guidance is available in the Code of Practice for the Management of Fire Safety in Places of Assembly.<sup>2</sup>
- 15.2 Where new stands are concerned there is greater opportunity to incorporate comprehensive measures for fire safety and to consider properly the impact of each measure on the others. Design features for new stands should include the following:-



- (i) adequate structural resistance to fire;
- (ii) fire resisting separation of the viewing accommodation from other parts of the building;
- (iii) internal finishes which have low spread of flame characteristics;
- (iv) low flammability and fire risk potential in fixtures and fittings, including seating, partitioning and any other fixed or removable contents, including cushions;
- (v) contents which are not capable of being easily dismantled or moved to block exit routes;
- (vi) no inaccessible places where litter can collect;
- (vii) a fire warning system, including, where appropriate, automatic fire detection;
- (viii) as far as possible, storerooms or other storage areas should not form part of the stand building; where this is unavoidable, such storerooms should be provided with fixed fire extinguishing systems appropriate to the fire risk and should not be accessible from public areas;
- (ix) alternative, fire separated escape routes which keep people well clear of the smoky gases produced by a fire and planned in such a way as to avoid the use of the playing area as an escape route;
- (x) the protection of later stages of escape routes so that a continuing fire does not pose any significant threat to them;
- (xi) a roof geometry which should restrict smoke and flame travel along the underside of the roof; and, where appropriate;
- (xii) the provision of smoke ventilation within structures.

### **Minimising Fire Risk**

- 15.3 One potential cause of fire arises from the accumulation of waste paper, event programmes, food and drink cartons, etc., dropped by spectators. Such waste can be easily set alight by smokers' materials and the resulting fire may then spread to the structure or the fittings of the building. All parts of the ground should, therefore, be inspected before and after each event; any accumulation of litter should be cleared away and taken from the ground without delay or kept in a fire-resistant container or room pending removal. Sufficient litter bins should be provided and arrangements made for their frequent emptying during an event. The Safety Officer has the responsibility for overseeing and discharging these basic requirements as part of his functions.
- 15.4 Smoking should be discouraged in stands which are constructed of, or contain, combustible or flammable items or materials.

- 15.5 A common feature of stands is the existence of voids under the seating and under the flooring itself. These can become a resting place for litter. Seating arrangements should, wherever possible, be such that floor surfaces are accessible for the removal of litter. Voids beneath the floor of the viewing accommodation which are unusable, e.g., where the viewing area is built on a slope, should, if practicable, be filled with a non-combustible material. Alternatively, they should be either completely sealed off to stop litter accumulating in them, or entirely open in order to allow easy access for inspection and removal of combustible waste.
- 15.6 Upholstered seating should comply with the recommendations of the Code of Practice for Fire Safety of Furnishings and Fittings in Places of Assembly.<sup>3</sup>
- 15.7 If it is necessary to store hazardous materials, such as fuels (whether in containers or within fuel tanks and in machinery), fertilizers, weed killers and paints, they should be kept in a fire resistant room.
- 15.8 Stores used for materials should be provided with access direct from the open air and be well away from public areas and kept locked when not in use. They should be separated from any other part of the building by a construction having a fire resistance of at least 1 hour. When the store has a depth of 6 metres or more, alternative means of escape therefrom should be provided. (See Paragraph 15.2(viii) and 15.7).
- 15.9 The appropriate public authorities should ensure that the use and supply of gas, electricity and other highly flammable substances is in accordance with the appropriate legislation for public outdoor places of the size and capacity of the stadium under consideration. Special care should be taken to ensure the safe use of any fuel or power supply used for cooking or heating. In particular LPG cylinders should be stored in accordance with I.S. 3213: 1987.<sup>4</sup> LPG Cylinders are not favoured near grandstands. They should be located externally, vented and secure from vandalism, or in the case of open storage, vandal proof.
- 15.10 Any highly flammable substance should be stocked only if strictly necessary for the functioning of the facility and such substances should be stored well away from spectators and players, in accordance with the existing regulations on the storage of such substances.<sup>5</sup>
- 15.11 Areas of high fire risk, e.g., kitchens, boiler houses, generators, enclosed or underground car parks, etc., should be separated from high life risk areas by imperforate fire resisting construction to the standard required by the Building Regulations.
- 15.12 Guidance regarding furniture and furnishings including seating is contained in the Code of Practice for Fire Safety of Furnishings and Fittings in Places of Assembly.<sup>3</sup>



### **Prevention or Retardation of Fire Growth/Spread**

- 15.13 It is vital to ensure that, in the event of a fire, the arrangements for escape are preserved by restricting the rate of growth in its early stages. Combustible materials used for fixtures and fittings or stored in the building should be kept to a minimum.
- 15.14 The viewing accommodation of a stand or other building should be separated from adjacent accommodation or void used for other purposes by a construction which has a fire resistance of at least a \_ hour or to the standard required by the Building Regulations, whichever is the greater. This requirement is necessary so that any fire underneath, or in an adjacent area, cannot easily break through into the viewing accommodation. The route from the exit from that accommodation (i.e., the vomitory exit) should be separated from other internal areas by a construction which has at least one hour fire resistance. (See Paragraph 15.37). In such circumstances, fire doors, which may disrupt the movement of spectators into the exit route, are unlikely to be necessary on the vomitory exit even if such doors are needed elsewhere in order to protect the exit route.
- 15.15 Walls and ceiling linings within viewing accommodation, together with ceiling linings beneath the floor of that accommodation, should have a flame spread classification of not less than Class O when tested in accordance with BS 476: Part 6.<sup>6</sup>
- 15.16 Most measures which reduce the rate of fire growth in its early stages will also serve to restrict the fire spread in its later stages. For some roof configurations, venting systems may offer a means of reducing the spread of fire (including movement of flames under the roof) and hot smoky gases. However, the science of fire and smoke venting is complex and advice from the Local Authority should be sought on whether this would be advantageous in a particular case. Further advice on roof venting can be obtained in the publication "Appraisal of Sports Grounds".
- 15.17 Flammable roof material must not be used. Where it exists it should be replaced by non-combustible materials. Where this is not practicable, it should be underdrawn with non-combustible board.
- 15.18 Where the roofs of buildings are close together or connected to each other, smoke or flame should not be allowed to spread from one to another. Unless this risk is eliminated by fire prevention measures, there should be a break in the roof wide enough to prevent that spread.

### **Fire Warning**

- 15.19 All buildings to which the public or staff have access and which might pose a fire risk should be provided with an electrical fire warning

system to alert staff. The system should be designed to accommodate the emergency evacuation procedure of the ground and should be approved by the Local Authority. The fire warning system should be capable of indicating to the central control point where the fire is located. The system should conform with I.S. 3218: 1989<sup>7</sup> in terms of its components, installation and maintenance.

- 15.20 When considering the specification of a new system, I.S. 3218: 1989 should be used. Attention is drawn to the provisions for life safety. The modern computer based analogue addressable systems are easily maintained and have considerable self-checking ability. They have an inherent capability to provide information giving the precise location of the device which detected the fire. This is essential for safe first-aid, fire-fighting, rapid discovery of false alarms or to convey sufficient information for the control centre to activate the most suitable strategy to deal with the problem. Such systems should be considered for major facilities.
- 15.21 The Central Control Room and, where necessary, other selected positions in the ground should have facilities to call the fire brigade and other emergency services. (See Chapter 16). A line of responsibility for contacting the emergency services should be established.
- 15.22 The area underneath the spectator accommodation should have a system for detecting fire. Automatic fire detection (AFD) systems in unoccupied areas, conforming to I.S. 3218: 1989 in terms of its components, installation and maintenance, should be considered. The alarm signal should be automatically communicated to the Central Control Room.
- 15.23 Fire detection equipment should be tested regularly in accordance with the advice given in the Irish, British or other equivalent European standards specification.
- 15.24 Where areas of high fire risk such as large storerooms and enclosed or underground car parks are situated under viewing accommodation, consideration should be given to providing an automatic fire extinguishing system, installed in accordance with the relevant part of BS 5306<sup>8</sup>, instead of an AFD system. Activation of the system should be automatically communicated to the Central Control Room.

### ***Emergency Lighting***

- 15.25 Emergency lighting is dealt with in Paragraphs 17.8 to 17.16.

### ***Fire-fighting Equipment***

- 15.26 Advice should be sought from the Local Authority on the type, amount and siting of fire-fighting equipment. At some larger grounds



it may be necessary to provide a suitable water supply for fire-fighting in the form of hydrants. Fire-fighting equipment should be manned at all times when the event is in progress to prevent vandalism.

- 15.27 For "first-aid" fire-fighting by members of the staff, consideration should be given to providing hydraulic hose-reels conforming to BS 5306: Part 1. These should be installed in suitable locations (e.g. adjacent to stairways, exits and entrances) and in sufficient numbers to provide adequate protection to the whole floor area.
- 15.28 Where hose-reels are not provided, portable fire extinguishers should be installed in sufficient numbers to give adequate cover. The number and type will depend upon the size, layout, fire separation and risk in each structure. Fire extinguishers should conform to I.S. 291: 1986.<sup>9</sup>
- 15.29 Fire blankets conforming to BS 6575<sup>10</sup> and suitable fire extinguishers conforming to BS 5423<sup>11</sup> should be kept in all catering facilities.
- 15.30 Fire-fighting equipment should be located so that it cannot be vandalised but is readily accessible to staff in the event of a fire.

### ***Emergency Procedures and Staff Training***

- 15.31 It is essential that plans should be made for dealing with emergencies, including fire. [See Paragraph 2.27 (iii)].
- 15.32 Sufficient staff should be trained in the use of the fire-fighting equipment provided and/or in the action they should take in the event of fire. The Local Authority's advice should be sought on the content of the proposed training programme.

### ***Means of Escape***

- 15.33 "Means of escape" is the structural means whereby a safe route is provided for people to travel from any point in a structure to a place of safety without outside assistance. In existing accommodation, the means of escape in the event of an emergency will usually be the same as the normal exit routes but there may be an additional route of forward escape on to the playing area and then out of the ground.

All exit routes for use in an emergency should be clearly signposted (See Paragraph 9.14) and should be capable of being safely and effectively used at all times when the ground is occupied.

- 15.34 All exit routes should be sited so that people using them will be least affected by the fire or its products, for example smoke, toxic gases, and heat. Initial travel should, if possible, be downwards. This is

because in the event of fire, its dangerous products will travel upwards and accumulate densely at the highest points. Further stages of the exit routes should be so arranged as to take people progressively further away from the fire, along a route where they cannot be significantly affected by the fire or its products. There should be more than one exit route from a viewing area and the exit system should be such that any blockage in one exit does not prevent access to an alternative.

### **Fire Protection for Stairways and Passages**

- 15.35 Where a stairway, passage or any other part of a protected exit route passes up, down or through a stand or other building used by spectators, unless it is in the open air, it should be in a fire resistant enclosure separated from the remainder of the stand by a structure having fire resistance of not less than one hour. Such exit routes should discharge to a place of safety in the open air. (See also Paragraph 10.21).
- 15.36 The surface finish of walls and ceilings of all of the above emergency exit routes should be of a standard corresponding to Class O as defined in the Building Regulations Technical Guidance Document B.<sup>12</sup>
- 15.37 Any door forming part of the enclosure to an exit route should be self closing and have a fire resistance of not less than one hour. (See also Paragraph 15.14).

### **Emergency Evacuation Time**

- 15.38 The evacuation time is an arbitrary time which, together with the maximum flow-rate figure, is used to determine the capacity of the exit route(s) providing the means of escape from the viewing accommodation in an emergency. (See Paragraph 15.33). This emergency exit capacity is a factor in calculating the number of spectators that can be accommodated. (See Paragraphs 21.23–21.25).
- 15.39 The emergency evacuation time will depend largely on the level of fire risk present in the accommodation. Spectator accommodation which has, for any reason, the potential for rapid fire spread should have an exit capacity based on an evacuation time of not more than 2½ minutes.

An increase in this time may be acceptable where the possibility of rapid fire spread is reduced by the provision of fire safety measures (either active or passive systems) and the emergency exit routes are not vulnerable to a fire occurring within the building. For example, an open concrete terrace or a stand which incorporates the fire safety design features described in Paragraph 15.2, where spectators are not totally enclosed and can move into protected exit routes, or exit



routes in the open air, would normally have an exit capacity based on an 8 minute calculation.

(See Paragraph 9.10). Decisions regarding the appropriate evacuation time should be based on the fire safety appraisal strategy previously referred to in Paragraph 15.1.<sup>1</sup>

- 15.40 The conditions within a particular ground may call for interpolation between the times referred to in Paragraph 15.39. The aim should always be to introduce measures which will minimise the risk of an outbreak and spread of fire rather than rely on an emergency exit capacity calculated on the basis of a 2½ minute criterion as a solution. In all cases, the advice of the Local Authority should be sought.
- 15.41 Advice on the calculation of the number of exits required for internal areas of a stand or other building occupied by spectators, for example, a restaurant or bar, is contained in the publication "Guide to Fire Precautions in Existing Places of Entertainment and Like Premises".<sup>13</sup>
- 15.42 Where the playing area or perimeter track is accessible to spectators and is considered as a part of the exit route, exits onto it from the viewing accommodation can be taken into account when calculating the capacity of that exit system. Where there is a pitch perimeter fence, wall or moat, it should have access points in accordance with Paragraph 20.2 to 20.6 which can serve as emergency exits for that purpose.
- 15.43 Where the playing surface of a pitch is made of synthetic materials, advice from the Local Authority should be sought to establish if it can be properly considered an emergency exit route in the event of a fire. The reason for this is the possibility that some forms of artificial turf might, in themselves, constitute a hazard in the event of fire because of flamespread and fumes, etc., caused by decomposition of the material as a result of heat radiation and ignition.
- 15.44 If the playing area is wholly surrounded by covered accommodation with no breaks in the roofing (See Paragraph 15.18) it may not be suitable for evacuation in the event of fire and the advice of the Local Authority should be sought.

### **Access for Emergency Vehicles**

- 15.45 Adequate roads for emergency vehicles should be provided so that speedy and direct access can be obtained to all buildings within the ground. Wherever possible, these access routes should be separate from those used by spectators entering and leaving the ground or, alternatively, provide for the parking of emergency vehicles so that routes used by crowds are not seriously obstructed. The Local Authority, Gardaí, and Health Board should be consulted about the suitability of access roads and access to the ground.

- 15.46 Where practicable and necessary, roads within 500 metres of the ground should be kept entirely free of parked vehicles so as not to delay or obstruct emergency vehicles.

### ***Access Routes to the Pitch for Emergency Services***

- 15.47 If possible, suitable entry to the pitch should be provided so that ambulances and other emergency services can enter the playing area if an emergency arises. This should be the aim of all Ground Management arrangements. If this is not possible arrangements should be made to bring the emergency services as near as possible to the playing area. Inside the ground an access route to the pitch should be identified and kept free of spectators.

### ***References***

1. Appraisal of Sports Grounds, Institution of Structural Engineers, London, 1991.
2. Code of Practice for the Management of Fire Safety in Places of Assembly, Stationery Office, Dublin, 1991.
3. Code of Practice for Fire Safety of Furnishings and Fittings in Places of Assembly, Stationery Office, Dublin, 1989.
4. I.S. 3213: 1987, Code of Practice for Storage of LPG Cylinders and Cartridges, National Standards Authority of Ireland, Dublin.
5. Dangerous Substances Acts, 1972; Dangerous Substances (Amendment) Act, 1979; and Orders and Regulations made thereunder, Stationery Office, Dublin.
6. BS 476: Fire tests on building materials and structures, Part 6: 1989: Method of test for fire propagation for products, British Standards Institution, London.
7. I.S. 3218: 1989, Code of Practice for Fire Detection and Alarm Systems for Buildings – System Design, Installation and Servicing, National Standards Authority of Ireland, Dublin.
8. BS 5306: Fire extinguishing installations and equipment on premises, Part 1: 1976: Hydrant systems, hose reels and foam inlets, British Standards Institution, London.
9. I.S. 291: 1986, The Use, Siting, Inspection and Maintenance of Portable Fire Extinguishers, National Standards Authority of Ireland, Dublin.
10. BS 6575: 1985, Specification for fire blankets, British Standards Institution, London.
11. BS 5423: 1987, Specification for portable fire extinguishers, British Standards Institution, London.
12. Building Regulations, 1991: Technical Guidance Document B: Fire, Stationery Office, Dublin.
13. Guide to Fire Precautions in Existing Places of Entertainment and Like Premises, HMSO, London, 1990.



## **Communications**

*There should be a communications system capable of clearly relaying essential messages to both staff and spectators in all parts of the ground, inside and outside, in both normal and emergency conditions.*

### **General**

- 16.1 Precise requirements for communications will depend on the nature of the ground and the numbers of people present. Professional advice and expertise should be sought, and, in general, the communications system should be determined after consultation with the Local Authority, Gardaí, and Health Board. The system should conform to relevant Irish, British or other equivalent European standards or Codes of Practice. It should be in good working order, capable of coping with all emergencies and should have an override facility. It should provide central control and, where necessary, selected positions in the ground with the facility to call the emergency services. It is the responsibility of Ground Management to provide and operate the necessary equipment for this purpose as well as providing competent staff, suitably trained in its use.

### **Central Control Room**

- 16.2 Owners of stadia should provide a Central Control Room at grounds with a capacity to accommodate 35,000 spectators and upwards. The Central Control Room, from which the communications system should operate, should command a good view of the entire ground supported by closed circuit television. The playing areas, surrounding spectator viewing and circulation areas as well as entrances, exit areas and the approaches to the stadium should be included in this view. A strong preference would be for a control room with a direct view of the whole ground. The Control Room should contain the facility to

communicate quickly with staff, the public and the emergency services. It should have a personal radio control base, closed circuit television monitors, external telephones and internal telephones (land lines) connected with various offices and other sectors to facilitate communication of messages concerning public safety. There should be a system in place that would indicate clearly to the Central Control Room the rate of occupancy by spectators of various sectors of the ground. Preference would be for electronic equipment. The Event Controller and her/his staff should be responsible for the operation of the communications system.

A suggested Communications Scheme is outlined in Appendix I.

- 16.3 Access to the control room should be limited to the:-
- (i) Event Controller or her/his deputy;
  - (ii) Senior Garda Officer;
  - (iii) Public Address Announcer;
  - (iv) Technical Operators; and
  - (v) any other person the Event Controller considers necessary.
- 16.4 There should be inter-communication between the Central Control Room, all turnstiles or banks of turnstiles and all entry and exit gates used by the public. (See also Chapter 8). Metering systems to record all admissions should be installed at turnstiles and, to ensure that ground capacities are not exceeded, arrangements should be made for Central Control Room personnel to be informed immediately a predetermined number of spectators has been admitted through each turnstile, or bank of turnstiles, serving each section of the ground. (See Chapter 8).

### ***Spectator Reaction to Emergency Situations***

- 16.5 In dealing with any emergency situation it is important to recognise the way people behave. The seriousness and extent of the effect of an emergency has been found to depend considerably on the reactions and patterns of activity of people associated with the emergency or fire situation.<sup>1</sup> For example, there is no basic awareness amongst the public of the speed with which fire spreads. There is a strong tendency, therefore, to stand and watch a fire, even in enclosed areas. Management must be aware of this weakness in perception and have measures capable of overcoming it.<sup>2</sup>

### ***Public Address System***

- 16.6 A reliable public address system should be provided and directly linked to the Central Control Room. In the event of mains failure, provision should be made for an alternative power supply for a minimum of



3 hours. Wiring should be routed through areas of low fire risk or be of a fire-resisting type. Emergency use of the system as part of the fire warning system means that it will also need to comply with I.S. 3218<sup>3</sup>. Reference should also be made to BS 7443.<sup>4</sup> It must be protected against accidental damage and interference by unauthorised persons. Consideration should be given to the practicalities of giving localized messages, in order that only the area affected by the emergency need be evacuated. Particular attention should be given to ensuring that communications on the public address system can reach patrons outside the ground. Useful guidance has been published by the Football Stadia Advisory Design Council<sup>5</sup> and by the Sound and Communications Industries Federation.<sup>6</sup>

- 16.7 It is especially important to minimize any delay to the start of the evacuation. In this context, clear, authoritative and planned instructions that tell people simply and directly that there is a need to evacuate the area and giving them direct instructions on how to do this are needed. It is important that exit routes and gates are clearly identified by visible and intelligible signs.
- 16.8 The communication should not include the word 'panic' or implicitly suggest it in the form of a request to 'keep calm'. Clear directions should be given to tell people what to do. If the public address messages can be routed, then localized information can be given and advantage taken of reducing the numbers to be moved to a minimum in the first instance.

It may be necessary to advise the public of the cause of the emergency and give an assurance of their re-entry before the event is restarted in order to persuade them to move. The promotion of the earliest possible movement, both by rapid decision taking in the control centre and by convincing the public of the need for evacuation, is of the first importance for crowd safety. Failure of one loudspeaker should not result in the failure of the set of speakers.

### ***Fire Detection (fire alarm systems)***

- 16.9 A monitored automatic fire-detection system is needed to enable reliable early detection and to commence evacuation procedures. This must register in the Central Control Room where the public-address system is situated. To prevent potentially dangerous confusion, this system should not be audible to the general public.

### ***Co-ordination of Emergency Communications***

- 16.10 Management should be in a position to take an overview of the stadium and have a clear understanding of the requirements and co-ordination of the emergency services and possible conflicts. The principles and responsibility within this communication process should be recorded in a written agreement between the Ground Management, the Local Authority, Gardaí, and Health Board.

- 16.11 Important announcements relating to crowd safety should be preceded by a loud signal to catch the attention of the crowd despite a high level of noise in the ground. This signal, followed by the voice-over transmission should be different to, and distinct from, any other signals which may be in general use on the system. This arrangement should be prominently displayed in every programme sold for every event.
- 16.12 The public address equipment should be installed so that broadcast messages can be heard under reasonable conditions (including emergencies) by all persons of normal hearing in any part of the ground to which the public has access. Installation should conform to the relevant guidance contained in BS 6259: 1982<sup>7</sup>. The power supply to the system should be such as to enable it to continue to operate in an emergency, such as fire or a failure of the mains supply, for up to 3 hours.
- 16.13 The Emergency Services, Gardaí and Ground Management should have adequate communications systems which are safeguarded against disturbance by noise in the stadium.<sup>8</sup> (See Paragraph 16.2). Gardaí and Supervisory Stewards should be equipped with radios fitted with ear-pieces to avoid blocking-out or misinterpretation of messages. They should be able to communicate with each other when necessary and especially amid the noise created by rioters.

### ***Back-up Provision***

- 16.14 Loud hailers should be available for the use of stewards and Gardaí in all parts of the ground for directing or instructing spectators. Loud hailers should have rechargeable batteries and should be on permanent float charge. The number of such loud hailers should be agreed between the Event Controller and the Gardaí and users should be properly briefed as part of emergency procedures.
- 16.15 Any Garda radio facilities available for the maintenance of law and order should augment, and not be regarded as a substitute for, the ground communication system.<sup>8</sup>

### ***Closed Circuit Television***

- 16.16 Consideration should be given to the installation of Closed Circuit Television with recording facilities in order to monitor turnstiles (inside and outside the ground) ingress/egress routes, concourse areas, terraces and any other area where there is likely to be a crowd build-up.



## **References**

1. Canter, D. (ed): Fires and human behaviour, 2nd edit., David Fulton, London, 1990.
2. Canter, D.: Studies of human behaviour in fire; empirical results and their implications for education and Design, Building Research Establishment, Garston, 1985.
3. I.S. 3218: 1989, Code of Practice for Fire Detection and Alarm Systems for Buildings – System Design, Installation and Servicing, National Standards Authority of Ireland, Dublin.
4. BS 7443: 1991, Sound systems for emergency purposes, British Standards Institution, London.
5. Stadium Public Address Systems, Football Stadia Advisory Design Council, London, 1991.
6. Code of Practice for the assessment, specification, maintenance and operation of sound systems for emergency purposes at sports grounds and stadia, Sound and Communication Industries Federation, Slough, 1991.
7. BS 6259: 1982, Code of practice for planning and installation of sound systems, British Standards Institution, London.
8. Report of former Chief Justice Thomas Finlay, Violence at Lansdowne Road, Ireland v. England, 15th February, 1995, Stationery Office, Dublin.

CHAPTER  
**17**

## **Electrical Installation, Auxiliary Power and Emergency Lighting**

*The electrical installation at a sports ground should be adequate for normal and emergency situations. Auxiliary power should be available and be sufficient to enable emergency lighting, the Public Address system, CCTV and other electrically powered safety installations to function for at least 3 hours after the failure of the normal supply*

### **Artificial Lighting**

- 17.1 Where the natural lighting in any section of the ground accessible to the public is deficient, adequate artificial lighting should be provided. If the ground is to be used after dark, all parts accessible to the public should be provided with means for adequate lighting to enable them to see their way into, within and out of the ground safely. These provisions are particularly important in relation to entry and exit routes and stairways used by the public. Emergency lighting should be provided and should comply with I.S. 3217: 1989.<sup>1</sup>

### **Electrical Installation**

- 17.2 All electrical installations should comply with the edition of the National Rules for Electrical Installations of the Electro-Technical Council of Ireland<sup>2</sup> current at the date of installation. Installations fitted prior to the E.T.C.I.'s National Rules should comply with the I.E.E.'s Wiring Regulations<sup>3</sup> applying at date of installation. The E.T.C.I.'s completion certificate (or the I.E.E.'s where appropriate) for the installation should be retained by the Ground Management.



- 17.3 The installation should be regularly inspected and a completion certificate as prescribed in the E.T.C.I.'s National Rules for Electrical Installation should be retained. The interval between inspections should be no longer than five years, and all defects or faults should be promptly repaired.
- 17.4 A diagram of the main distribution system should be mounted on a wall close to the main control point. Diagrams of the entire electrical installation indicating main switching, main fusing, local switching and fusing, cable sizes and runs, etc., should be retained on the premises. Each item of control gear should be clearly labelled to indicate the circuits which it controls.
- 17.5 All control gear, cables and conductors should be sited to ensure that, as far as practicable, they are inaccessible to the public. Cables and conductors should be enclosed throughout in a protective covering of material which has sufficient strength to resist mechanical damage, e.g., armoured cables, cables protected by screwed metal conduit or metal trunking, MICS, etc.
- 17.6 The base of any floodlighting tower should be earthed in accordance with BS 6651<sup>4</sup> which also contains advice on bonding and earthing for lightning protection. Protection against lightning strike in accordance with BS 6651 should be made for all floodlighting towers, multi-level stands and other high structures.
- 17.7 A qualified electrician should be present at all major events.

### ***Emergency Lighting***

- 17.8 Emergency lighting for use in the event of a failure of the general lighting should be provided in all buildings accessible to the public or staff and along all exit routes with exit signs clearly illuminated. Installation should be in accordance with I.S. 3217: 1989. The system should be completely separate from the normal lighting system and should be of the maintained type. Unless two entirely independent supplies can be obtained from outside sources, the emergency circuits should be connected to a source of power located on the premises, e.g. storage batteries or a diesel generator with a delay of not more than 5 seconds, with suitable changeover facilities.
- 17.9 The system should be capable of maintaining the necessary level of illumination for a period of 3 hours from the time of failure of the normal supply.
- 17.10 The emergency lighting system should operate automatically on the failure of the normal lighting.
- 17.11 Emergency lighting systems should be tested regularly in accordance with I.S. 3217: 1989.

- 17.12 These requirements relate to grounds where light levels and usage dictates that there is a requirement for such facilities but if night time events are proposed these requirements are essential.
- 17.13 As some major fixtures are now played under floodlights, a standby generator should be installed at all major venues where night time events may occur, in order to minimise panic in the event of the mains electricity supply failing. It should provide power to lighting fittings to bring the level of illumination on the stand and terrace areas to 10 lux and on exit stairways and passages to 20 lux in the event of mains supply failure. It should also provide power to medical equipment rooms, fire detection systems, public address systems, CCTV and other lighting fittings which are part of the emergency lighting system. The circuitry should be so arranged to enable the stand and terrace lighting to be switched on manually in the event of any problem. When an event is in progress the generator should be running, thus being available for the immediate take up of the load in the event of mains supply failure.
- 17.14 If a power failure occurs consideration should be given to the cancellation of the event. If the auxiliary power supply is capable of supplying the entire load for the ground for at least 3 hours it may be possible to continue a fixture or event provided it is scheduled to finish and the ground cleared within this period and no other emergency situation exists. To supply such a load a generator rather than a central battery system is likely to be required.
- An additional back up emergency power supply will be necessary if an event is to continue. Ground Management should take into account the needs of the ground in deciding the type of power provision and make contingency plans for the failure of the power supply.
- 17.15 Auxiliary power equipment should be located in a secure room to which the public does not have access. The room should be of fire resisting construction of a standard of not less than 1 hour.
- 17.16 All equipment should be installed, maintained and tested in accordance with the manufacturer's instructions and relevant Irish, British or other equivalent European standards.

### **Public Address System**

- 17.17 Where the public address system is part of the fire warning system it should conform to I.S. 3218.<sup>5</sup> (See Paragraph 15.19 and Paragraph 16.6). Auxiliary power will, in such circumstances, be needed to ensure the continued use of the system in the event of fire or other emergency.



## **References**

1. I.S. 3217: 1989, Code of Practice for Emergency Lighting, National Standards Authority of Ireland, Dublin.
2. National Rules for Electrical Installations, Electro-Technical Council of Ireland, Dublin, 1988.
3. Regulations for electrical installations, Institution of Electrical Engineers, London, 1981.
4. BS 6651: 1992, Code of practice for protection of structures against lightning, British Standards Institution, London.
5. I.S. 3218: 1989, Code of Practice for Fire Detection and Alarm Systems for Buildings – System Design, Installation and Servicing, National Standards Authority of Ireland, Dublin.

*Good stewarding is critical to the safety and well-being of spectators, Ground Management should provide the resources to ensure the availability of trained and competent stewards.*

### **General**

- 18.1 In the interests of public safety, formal standards should be established for stewarding at all major sporting events. Effective stewarding should:-
- (i) permit easy access to and egress from the ground;
  - (ii) prevent overcrowding in sections of the ground;
  - (iii) reduce the likelihood and incidence of disorder;
  - (iv) help disperse spectators in such a way as to reduce crowd pressure; and
  - (v) provide the means to investigate, report and take early action in an emergency.
- 18.2 The major sporting organisations and promoters of major open air events should employ a core of professionally trained and, if necessary, paid stewards who would have specific responsibility for the supervision of teams of stewards and for manning all critical areas of grounds or arenas. It is felt that particular emphasis should be placed on using this category of steward on terraces where they should be used to man emergency exits and emergency gates in the perimeter fencing and to ensure that gangways are kept clear. These stewards should also be responsible for manning emergency exits from stands and from the ground itself.



- 18.3 Stewards should be suitably interviewed before appointment.
- 18.4 All stewards should be selected and trained on the basis that their primary role is to STEWARD and not to spectate.
- 18.5 Ground Management should consider the use of the Civil Defence in assisting with crowd control operations at major sporting events.
- 18.6 Special arrangements should be made for meetings to be held between Supervisory Stewards, such of their personnel as they suggest and officers of the Gardaí who will be respectively in charge of units which will have to liaise particularly closely on the day of the match.<sup>1</sup>

### **Identification**

- 18.7 All stewards should be readily identifiable, by the wearing of colour-coded, numbered surcoats/bibs distinctive from those worn by Gardaí, fire and ambulance services. Such surcoats/bibs should be worn outside normal dress, even in inclement weather. Armbands alone are not acceptable. Supervisory Stewards should ensure that these special items of clothing are worn for the duration of the event.
- 18.8 Stewards should not be engaged to perform special operations, security or stewarding dressed only in civilian attire and not wearing appropriate identifiable clothing as already stipulated. This will ensure that full responsibility is more easily established in the event of any breach of public order or other emergency occurring.
- 18.9 A register should be prepared with the name and address of each steward, including stewards employed by professional security firms. The number on the register should correspond to the number, which should be clearly shown, on the front and back of the surcoats/bibs worn by each steward. This register should be made available to the Gardaí before the event.

Supervisory Stewards should ensure that stewards are present and remain at their locations for the duration of the event. If stewards have to vacate their locations, as a result of a disturbance, they should re-assemble at a designated area already agreed.

### **Professional Security**

- 18.10 Whenever a professional security firm is engaged by the Ground Management for stewarding or security purposes, a copy of the relevant document setting out full details of the proposed operation and methodology of achieving objectives should be supplied by Ground Management at the Event Planning Meeting to the appropriate Chief Superintendent of the Gardaí. A situation should never be allowed to arise where a professional security firm is

engaged by Ground Management without apprising the Chief Superintendent of the local Gardaí.

### **Basic Duties**

18.11 Staffing levels and stewarding requirements will vary depending upon the size and configuration of the ground and the nature of the event and crowd levels, but there are a number of basic duties which stewards are called upon to carry out. These are:-

- (i) to control and/or direct spectators who are entering or leaving the ground and to help achieve an even flow of people to the viewing areas;
- (ii) to recognise crowd densities, signs of crowd distress and crowd dynamics so as to help ensure safe dispersal of spectators on the terraces or viewing slopes;
- (iii) to patrol the ground to deal with any emergencies, e.g., raising alarms or tackling the early stages of fires;
- (iv) to staff entrances, exits to and from the viewing accommodation and other strategic points, especially exit doors and exit gates from the ground;
- (v) to assist Gardaí as appropriate, or as requested, with crowd control;
- (vi) to undertake specific duties in an emergency;
- (vii) on request of Gardaí, to assist at barriers checking tickets and giving information to patrons approaching the venue; and
- (viii) to give immediate access to Gardaí and other emergency services, in the event of an emergency and also when requested by the Gardaí.<sup>1</sup>

Stewards should not engage in behaviour that might be interpreted by the supporters of either team as partisan behaviour, e.g., clapping, cheering bouts of good play or scores.

A more detailed check list of the kind of duties which stewards are liable to undertake is given at Appendix D. It should be borne in mind that this is not necessarily an exhaustive list of duties.

18.12 Management should appoint a Chief Steward responsible for co-ordinating the responsibilities of all stewards. The Chief Steward should attend Garda pre-event and post-event meetings. Control of stewards should be organised from a central point with an efficient means to communicate with them. (See also Chapter 16). The Chief Steward should be directly accountable to and report directly to the



Event Controller. To facilitate this essential aspect an efficient means of communication must be established and maintained between them.

Each sector of the ground should be in the charge of a Supervisory Steward. There should be deck stewards, vomitory stewards and stewards for general duties as specified. Every steward should have a clearly defined role with a clear understanding of her/his control and reporting functions within the managerial structure. The Chief Steward and Event Controller are each required to perform different functions and have different roles. One person cannot fulfil the duties of both posts.

### **Age and Fitness**

- 18.13 Stewards should be fit, active and not less than 18 years and, ideally, not over 55 years of age. They should be fully capable of carrying out the duties allocated to them. Stewards should be fully informed in writing of their duties and responsibilities and should carry a general check list.

### **Training**

- 18.14 In view of the critical input stewarding has to the safety and comfort of patrons at major events, the training of stewards should be put on a formal footing with the establishment of a specific training course for stewards. The actual content of such a course should have a strong input from the Gardaí and could be run under the auspices of an appropriate training authority. It is desirable that a common training manual outlining guidelines, procedures and advice on stewarding should be made available.
- 18.15 A system should be set up in which the Gardaí could cooperate in the training of a specialised body of professional stewards/security personnel to be employed at high risk or other major matches. The possibility of a joint enterprise by such organisations as the FAI, GAA and IRFU for this purpose, as indicated in Paragraph 18.2, should be contemplated. Where necessary, use should be made of available experience and training capacity outside Ireland.<sup>1</sup>
- 18.16 Duties and responsibilities of stewards should be agreed with the Gardaí and form part of any written understanding or statement of intent agreed with the Gardaí. (See Chapter 3). Stewards should receive pre-match briefing and should be made aware, as necessary, of all arrangements and any contingency plans. For logistical reasons, the role of the Gardaí in the training of stewards can be more effectively carried out by training Supervisory Stewards and/or instructors who can then engage in more widespread training of stewards. The various sporting organisations should nominate suitable personnel for this training.

- 18.17 Effective training and supervision should be provided by management so that all stewards, whether regular or casual, know what their duties are, how to carry them out and why they are so doing. This is especially important in emergencies when it is essential that stewards and their supervisors are fully aware of, and have practised in, the part they are to play in the plans drawn up with the emergency services. Exercises should be carried out before the start of, and mid-way through, the year so as to ensure that emergency procedures operate smoothly. A record should be kept of the duration of the exercise, details of the instructions given and by whom. At least 14 days' notice of the intention to hold such exercises should be given to the Local Authority, the Gardaí, and the Health Board.
- 18.18 Sporting organisations should arrange annual training seminars for stewards to include instructions on crowd control, dealing with emergencies, fire-fighting and first-aid.
- 18.19 While the training seminars must be under the direction of the Chief Executive of the particular organisation, it is desirable that there should be an input from the Local Authority, Gardaí, and Health Board.
- 18.20 The Safety Officer should be concerned with, and should have a major input into, training.
- 18.21 Stewards having special responsibilities in relation to first-aid, fire-fighting, crowd control and communications should receive additional specialised training in those disciplines. They should receive training in the use of any particular piece of equipment which they are required to use and be familiar with its operation.

### **Reference**

1. Report of former Chief Justice Thomas Finlay Violence at Lansdowne Road, Ireland v. England, 15th February, 1995, Stationery Office, Dublin.



## **Crowd Behaviour**

*If a disorderly element among the crowd is anticipated additional safety measures may be needed to contain and minimise any potential disruption, to identify, isolate quickly and remove the offenders and to prevent their re-entry on future occasions.*

### **General**

- 19.1 While disorder at sporting events in Ireland is rare, it is nevertheless necessary to make plans to counteract any possible violence at high risk events. The assessment of the magnitude of the risk and the steps to be taken to counteract it, is a matter for consideration by Ground Management and Gardaí at the Event Planning Meeting. (See Paragraph 2.13).

### **Crowd Movement**

- 19.2 No absolute guarantee of the avoidance of violence can be achieved at high risk matches. However, if the provisions of this Chapter and other relevant Chapters of this Code are taken into account in the preplanning of the event, the danger of violence will be greatly minimised.
- 19.3 Each section of the ground should be assessed for its safe limiting capacity which should be specified and recorded. This may be less than the safe holding capacity depending on the potential hazard associated with the particular event. Arrangements should be made to ensure it is not exceeded. Each section should be self-contained, serviced by its own entrances/exits, refreshment facilities and toilets and have facilities to keep a reliable count of spectators admitted therein.

- 19.4 Proposals which entail changes in the configuration of the viewing accommodation or entry/egress to and from it, (e.g., for the purposes of segregation) should be acted upon by Ground Management only after full account has been taken of their effect on safe movement, evacuation arrangements and safe holding capacity. This should be done in consultation with the Local Authority and Gardaí.

### **Segregation**

- 19.5 Rival supporters at certain matches may have to be segregated but segregation is not advocated where crowd disorder is not foreseen as a problem.
- 19.6 Where segregation is deemed necessary, Ground Management, in consultation with the Gardaí should select an area in the stadium which would most facilitate segregation, both within the stadium and on the approach roads to it. Transport arrangements (arrival/departure) of visiting supporters must be taken into consideration when plans are being formulated to give effect to the terms of this Paragraph.
- 19.7 In selecting an area in the stadium for visiting supporters a neutral or sterile zone should be provided within the ground so that rival supporters are not physically close to each other. Alternatively, rival spectators may also be separated by accommodating them in opposite ends of the ground. The arrangements for admitting spectators into the ground, whether by tickets purchased in advance or through payment at the turnstiles, should be drawn up in consultation with the Gardaí, and must be carefully controlled to ensure that, as far as possible, the segregation is effective and known troublemakers are excluded.
- 19.8 For the purpose of segregating the visiting supporters from each other so as to create relatively small groups and for the purpose of segregating them from the home or rival supporters, sufficient stewards should be strategically placed in the stand. They should be supported by Gardaí in uniform, where necessary.<sup>1</sup> These stewards must be clearly identifiable, as indicated in Paragraph 18.7 and should be additional to all other stewards deployed in that particular area.
- 19.9 This segregation should be achieved, not only by a cordon of stewards and Gardaí, but also by a sufficient vacant area between blocks of visiting/home or rival supporters.<sup>1</sup>
- 19.10 Segregation arrangements may also have to include measures which deter spectators from invading the pitch or playing area. At the same time the arrangements will need to provide for the Gardaí to have effective access to the viewing accommodation in the event of an outbreak of violence.



However, where the playing area is accessible for evacuation in an emergency, any structural means used to deter unauthorised encroachment onto the pitch must allow for such access. (See also Chapter 20).

### ***Removal of Troublemakers***

19.11 There should be adequate vehicular access for the unobtrusive removal of troublemakers. (See also Paragraphs 15.45 and 15.46 on access for Emergency Vehicles). Ground Management should ensure that appropriate accommodation is provided for the Garda Reserve and Public Order Units, following consultation with the Chief Superintendent, Garda Síochána, having responsibility for policing the event. The Gardaí may require temporary facilities and accommodation for the safe detention of persons arrested at the event. This accommodation should be provided by Ground Management after consultation with the appropriate Garda Officer.

### ***Refreshments***

19.12 Containers such as glasses, bottles or cans can become dangerous missiles and should not be used for the sale of refreshments. All refreshments should be served in soft containers. Adequate receptacles should be available for rubbish disposal and collection. (See Paragraph 15.3). Alcohol should not be available for sale inside grounds or arenas hosting major sporting events where it is considered that the consumption of alcohol could become a factor leading to public disorder or crowd disruption.

### ***Distribution of Tickets at High Risk International Matches***

19.13 Regard should be had to the terms of the recommendations contained in the Finlay Report<sup>1</sup> when planning for the distribution of tickets and, in particular, the allocation of tickets to visiting supporters attending high risk international matches.

### ***Commencement Time of Matches***

19.14 The commencement time of such events should be reached by agreement between the Gardaí and Ground Management as indicated in Paragraph 2.16 of this Code of Practice.

### ***Reference***

1. Report of former Chief Justice Thomas Finlay, Violence at Lansdowne Road, Ireland v. England, 15th February, 1995, Stationery Office, Dublin.

## ***Pitch Perimeter Fence/Wall***

*A pitch perimeter fence/wall may not only delineate the playing area from the spectator accommodation but may have to serve as a crush barrier, and in some situations will serve as a means to discourage or prevent access to the playing area except in an emergency.*

### **General**

- 20.1 The type, strength and height of a pitch perimeter fence or wall will vary according to its location and required function. At one extreme, at a certain type of ground or small stadium used by very few spectators, there may be no need for a perimeter fence or wall at all; or if such a wall or fence exists, it may need to consist of little more than a rail to mark the playing area. At the other extreme, some major stadia may have a fence which prevents access to the pitch in normal circumstances, (See also Paragraph 19.10) but allows for access in an emergency.

### **Access to the Playing Area**

- 20.2 Any pitch fence or wall, whatever its height, which delineates the spectator area from the playing area restricts or impedes access to the pitch. The extent of the restriction depends upon the nature of the wall or fence. While the perimeter fence is normally provided to prevent unauthorised crowd invasion of the playing area, it must also be possible to evacuate spectators onto the pitch in case of an emergency.



- 20.3 A number of escape gates (minimum width 1.1 metres) in the perimeter fence around the playing area should be provided to allow for access to the pitch if evacuation becomes necessary. These gates should be clearly identifiable to the crowd by painting with a distinct colour and marked "EMERGENCY EXIT". The gates should align with radial gangways and should be not less than the width of these gangways. Such gates should be secured in such a way as to ensure that they can be easily and immediately opened. Each gate and each section of removable fencing should be manned at all times by stewards or other personnel who should be in direct contact with the Gardaí located on the terraces. A lever system for opening such gates is strongly recommended.
- 20.4 The number of gates in the perimeter fencing at major grounds would depend on the configuration and structure of the ground as well as many other factors. Before each event, each gate should be checked to ensure that it can be easily and immediately opened if required. All chains, padlocks, etc., for securing doors, gates or other like barriers should be removed.<sup>1</sup> All gates should open onto the playing area and should not be obstructed by advertising hoardings, seating or other objects. The threshold level of gates should not be higher than the pitch level.
- 20.5 There are other aspects which should be seriously considered in regard to the safe control of perimeter fencing at major grounds. One aspect would be the use of fencing or sections of fencing capable of prompt removal or opening in the event of an emergency requiring immediate access to the pitch. Another aspect would be the use of electronically operated gates, (with a fail-safe facility), which allows the opening of gates in perimeter fencing to be operated from the Central Control Room.
- 20.6 As an additional precaution, consideration should be given to the provision of suitable equipment wherever pitch barrier fencing is installed so that, if necessary, sufficient fencing can be removed in order to release any trapped spectators. Suitable equipment, such as bolt cutters, may be necessary. Precautions should be taken to ensure that such equipment does not come into the possession of unauthorised persons. Trained operators provided by the Ground Management should be available in order to use the equipment. The nominated senior Garda officer will decide when such equipment is to be used.

### **Strength**

- 20.7 If spectators can lean on the perimeter fence or wall it should be deemed a crush barrier and fulfil the conditions of height and strength specified in Chapter 12. However, if the fence is of solid construction its height may be more than 1.12 metres. This is because the pressures acting on a person forced against such a fence are distributed over a large area of the body, unlike the situation with a normal crush barrier, where the pressures are localised.

### **Pitch Barrier Fences**

- 20.8 The term "pitch barrier fence" in the following paragraphs means any pitch fence or wall which exceeds the maximum recommended height of a crush barrier (1.12 metres) measured from the spectator accommodation side of the fence or wall.
- 20.9 Pitch barrier fences are usually associated with standing areas rather than seating areas and (with some exceptions) are not generally considered necessary when seating accommodation extends to the level of the playing area.
- 20.10 The necessity for a pitch barrier fence will depend on individual circumstances, such as a danger of pitch invasions or other disorder from a certain part of the ground, the extent to which stewarding and policing is felt to be able to deal with any attempted encroachment of the pitch and availability of alternative solutions.
- 20.11 Where a pitch barrier fence is installed it should not impair visibility of the playing area. If sightlines from a terrace are obscured congestion may be caused, for example because spectators are unwilling to move forward, or seated spectators are induced to stand up. If such problems are not resolved satisfactorily, consequential reductions in capacity should result. (See Chapter 21).
- 20.12 All pitch barrier fences must contain gates or openings as described in Paragraph 20.2 to 20.6. If a terrace is sub-divided by structural means (See Paragraph 11.17 and Paragraph 19.10) each section must have its own gate or gates leading onto the pitch.

There must be sufficient pitch gates in each such section capable of evacuating all the spectators in that section onto the playing area within the emergency evacuation time set for that section of the viewing accommodation. (See Paragraphs 15.38 – 15.44 and also Chapter 21, Example D).

- 20.13 Terraces should not descend to a pitch barrier fence (See Figure 20a). A walkway between the fence and the terrace should be created and reserved solely for use by Gardaí, Stewards and the Health Board. In order to achieve this it may be necessary to take out of use or remove completely one or two rows of terracing. The walkway would need to be protected by continuous crush barriers in order to discourage access except in an emergency via authorised points, (i.e. radial gangways).

Ideally, a walkway should be designed and constructed in a manner that would prevent its use as a spectator viewing area.





## **Assessment of Safe Holding Capacity**

*To assess the number of spectators which can be safely accommodated, account should be taken of the features of the individual ground, its configuration, general condition, intended use and any deviations from the Code's provision. A maximum safe holding capacity, in terms of seats or persons, should be established for each stadium and for each sector of a stadium.*

### **General**

- 21.1 The arrangements for determining crowd capacities, etc., at major sporting and other events are crucial to public safety. It is vital in the interests of public safety that Ground Management comply with the Code in determining the safe holding capacity for the stadium.
- 21.2 The previous sections of the Code give guidelines and safety considerations for individual features of a ground. This section describes a method of calculating the number of spectators that can be safely accommodated when taking into account interactions between these individual features and where there are deviations from the guidelines. It may be necessary to calculate various safe holding capacities if the ground is used for more than one activity.
- 21.3 The calculations should be attached to a plan of the ground and should be available with such details as exits, stands, terraces, stairways, passages, kiosks, seats and barriers. A scale of 1:200 should be used for this purpose. The plan should be cross referenced and attached to the calculations. This plan should be available for inspection by the relevant controlling authority.



- 21.4 In order to calculate the safe holding capacity of the ground, each sector of the ground, whether terrace, viewing slope or stand, will have to be assessed individually.

For each sector of the ground, the following capacities shall be calculated separately:-

- (i) the entry capacity, i.e., the capacity of the entry route to the sector;
- (ii) the holding capacity, i.e., the capacity of the sector to provide viewing accommodation;
- (iii) the exit capacity, i.e., the capacity of the normal exit route from the sector; and
- (iv) the emergency exit capacity, i.e., the capacity of the emergency exit route from the sector.

The safe holding capacity of the sector will be the *least* of these four capacity calculations.

The safe holding capacity of the ground can then be obtained by summation. Care should be taken in the calculations to ensure that the effects of overlapping are taken into account, where two or more sectors share the same entry/exit system.

In the following paragraphs, each of the above capacity calculations is considered, with worked examples, concluding with an example on overall assessment.

### **Entry Capacity**

- 21.5 The number of turnstiles may determine how many spectators can be accommodated in the viewing accommodation if they cannot pass through them in the specified time as outlined in Paragraph 8.4.

#### **Example A: Entry Capacity**

- 21.6 Net available viewing area 76 metres × 16 metres = 1,216 square metres.

(See Fig. 21a).

No pre-event entertainment provided; single match programme.

Number of turnstiles serving the area = 6

Measured turnstile rate exceeds 600.

Maximum acceptable rate for calculation purposes = 600.

Entry Capacity = 600 X 6 = 3,600

## Holding Capacity

- 21.7 The holding capacity of seated accommodation will be determined by the number of individual seats, or, where bench seating is used, by dividing the bench length by the minimum seat width of 460mm.
- 21.8 An even distribution of spectators on a terrace or viewing slope is likely to be difficult to achieve notwithstanding the measures described in this Code because spectators may prefer to gather in a certain part or parts of the viewing area. This pattern of crowd dispersal and any other relevant factors should be taken into consideration when assessing the holding capacity for a particular area.
- 21.9 In all cases the calculation of the holding capacity of the standing area should take into account only those parts of the viewing accommodation from which the whole of the playing area can be seen excluding gangways, stairways and landings (i.e., the "available viewing area" for calculation purposes). If the positioning and/or width of the gangways do not meet the criteria of Paragraphs 11.8 to 11.16 a commensurate reduction should be made to the available viewing area.
- 21.10 For terraces, the maximum allowable holding capacity is calculated using an occupancy factor of 0.21m<sup>2</sup>/person. (This is equivalent to a density of approximately 47 persons per 10m<sup>2</sup>). The maximum should only be applied where crush barriers conform to the specifications in Chapter 12 and the terrace is in good condition.
- 21.11 For viewing slopes, the maximum allowable holding capacity will vary, depending on the gradient and depth of the slope, as indicated in Table 21-1 below. No viewing slope should have an occupancy factor less than 0.4m<sup>2</sup>/person. (This is equivalent to a density of 25 persons per 10m<sup>2</sup>).

**TABLE 21-1**  
**Occupancy Factor (m<sup>2</sup>/person)**

Slope Gradient	Depth of Slope	
	Up to 7m	21m
8°	0.5	1.0
10°	0.45	0.9
12°	0.4	0.8
14°	0.5	1.0

**Note:** Interpolation may be made between these figures. Where crush barriers are provided as recommended, (see Paragraph 11.26), the figures for slopes up to 7m depth can be applied throughout.



- 21.12 Where conditions of the terrace or viewing slope materially deviate from the recommended guidelines, an appropriate increase must be made in the occupancy factors indicated above, depending on the particular circumstances of each ground.
- 21.13 The holding capacity of the standing area is calculated by dividing the area available for standing by the appropriate occupancy factor. The following formula may be used:

$$\text{Holding Capacity (Number of persons)} = \frac{A}{OF}$$

where "A" is the area available for standing in square metres and "OF" is the occupancy factor.

**Example B(i): Holding Capacity of Terrace**

- 21.14 Barriers and pitch perimeter wall conform to the Code's recommendations on construction, height, strength and spacing.

Net available viewing area: 76 metres X 16 metres = 1,216 square metres (excluding designated gangways).

Condition and drainage of terraces good.

Occupancy factor determined at 0.21m<sup>2</sup> per person.

$$\text{Holding Capacity: } \frac{1,216}{0.21} = 5,790$$

**Example B(ii): Holding Capacity of Sub-standard Terrace**

- 21.15 Gross area of the viewing accommodation for standing:-

76 × 16 = 1,216 square metres.

Condition of terrace: acceptable but:-

- (i) some unevenness caused by repair work;
- (ii) some cracking and rough surface in places;
- (iii) no gangways.

Required gangway provision (See Figure 21a) determined as:

1 lateral gangway at rear leading to exit stairways:

i.e., 1 at 1.1 metres by 76 = 83.6 sq. metres

4 radial gangways:

i.e., 4 at 1.1. by 14.9 = 65.6 sq. metres

Total 149.2

Available viewing area:  $1,216 - 149.2 = 1,066.8$  sq. metres

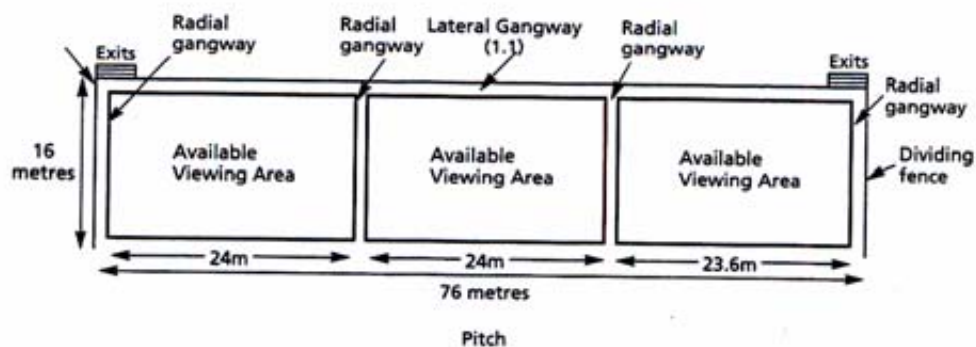
Occupancy factor determined at  $0.33\text{m}^2/\text{person}$  to allow for underfoot conditions.

$$\text{Holding Capacity: } \frac{1,066.8}{0.33} = 3,232$$

**Note:** Figure of 3,232 is below 3,600 quoted in Example A. Therefore, any upgrading of terracing to accommodate more than 3,600 spectators would also require installation of additional turnstiles and improvements (if any) to entry routes.

**Figure 21a:** Available Viewing Area and Gangway Position of Standing Accommodation.

(See Example B(ii))



**Note:**

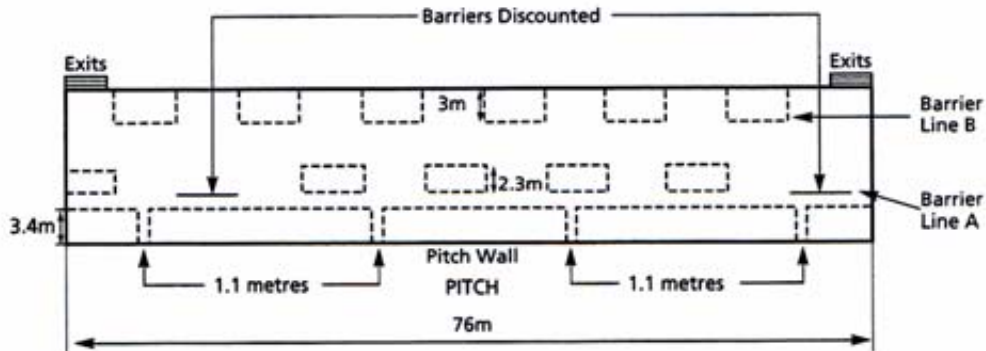
All spectators are within 12 metres of gangway or exit.

- 21.15 If the crush barriers meet the height and strength criteria set down in Chapter 12 but do not conform to the distances laid down in Table 12-1, or if the gaps between them are greater than those described in Paragraph 12.6 and Figure 12d, the holding capacity of the viewing area is calculated from the provision of crush barriers. The total length of crush barriers (including the pitch wall or fence if it serves as, and meets the requirements of, a crush barrier) should be measured. This figure is then multiplied by either the recommended distance between the barriers (See Chapter 12, Table 12-1) or the actual distance, whichever is the lesser. This establishes the notional available viewing area (See Figure 21b). This area is then divided by the occupancy factor determined for that area.



**Figure 21b:** Notional Available Viewing Area when Crush Barriers do not Conform.

(See Example B(iii))



**Example B(iii): Holding Capacity of Terrace with Sub-standard Crush Barriers.**

21.16 Gross area of the viewing accommodation for standing:-

$76 \times 16 = 1,216$  square metres. Terrace steps conform to dimensions of Chapter 11: drainage and condition good.

Terrace gradient  $20^\circ$  (1 in 2.7)

Crush barrier configuration as in Figure 21b.

Working load of pitch wall established by test meets the higher strength of Table 12-2, Chapter 12.

Crush barriers consist of 12 at 6 metres in length plus 1 at 3 metres in length.

Test/inspection of two barriers (See Figure 21b) reveal sufficient doubts as to their integrity and are discounted for calculation purposes. (See Paragraph 12.19).

Remaining barriers in Line A (See Figure 21b) have a safe working load (established by test) of the lower strength of Table 12-2, Chapter 12.

Barriers in Line B have safe working load (established by test) of the higher strength of Table 12-2, Chapter 12.

Calculation of (notional) available viewing area:-

- (i) Pitch Wall: 76 metres less 4 exits at 1.1 = 71.6 metres. Recommended crush barrier distance (for higher strength) on a gradient of  $20^\circ = 3.4$  metres (actual distance from pitch wall to crush barriers: 5 metres). Notional available viewing area is, therefore,  $71.6 \times 3.4 = 243.4$  square metres.

- (ii) Crush barriers: Line A = 4 at 6 metres plus 1 at 3 metres = 27 metres. Recommended distance between barriers (for lower strength) is 2.3 metres (actual distance 8 metres). Notional available viewing area is therefore

$$27 \times 2.3 = 62.1 \text{ square metres.}$$

Crush barriers: Line B = 6 at 6 metres = 36 metres. Recommended distance between barriers (for higher strength) is 3.4 metres. Actual distance behind barriers is 3 metres. Notional available viewing area is, therefore,

$$36 \times 3 = 108 \text{ square metres.}$$

Total notional available viewing area:

$$\begin{array}{r} 243.4 \\ 62.1 \\ \hline 108.0 \\ \hline 413.5 \end{array}$$

Occupancy factor determined at 0.21m<sup>2</sup>/person

$$\text{Holding Capacity} = \frac{413.5}{0.21} = 1,969$$

**Note:** Average occupancy factor for standing area as a whole would, therefore, equate to:

$$\frac{1,216}{1,969} = 0.61\text{m}^2/\text{person}$$

- 21.17 Terraces or viewing slopes at older grounds which are not used for major sporting fixtures and which are attended by very few spectators may not have crush barriers at all; or if they do their installation may be random and not meet the specifications of Chapter 12. The holding capacity in such circumstances has to be assessed on the conditions prevailing at the ground. All relevant factors have to be considered, e.g., underfoot condition, the dispersal of the crowd at fixtures. The holding capacity of the viewing slope will be limited and the average crowd density will be low.

### **Example B(iv): Holding Capacity of Viewing Slope**

- 21.18 Length of viewing slope: 76m  
Depth of viewing slope: 7m  
Net area of standing accommodation:  $76 \times 7 = 532\text{m}^2$

Slope: 12°

Barrier provided at top of slope.

Underfoot conditions good.

Occupancy factor determined at 0.4m<sup>2</sup>/person (Table 21-1).

$$\text{Holding capacity} = \frac{532}{0.4} = 1,330$$



**Example B(v): Holding Capacity of Sub-standard Viewing Slope**

- 21.19 Length of viewing slope: 76m  
Depth of viewing slope: 14m  
Net area of standing accommodation:  $76 \times 14 = 1064\text{m}^2$   
Slope:  $14^\circ$   
No crush barriers provided.  
No barrier provided at top of slope.  
Underfoot conditions fair.  
Occupancy factor determined at  $1.0\text{m}^2/\text{person}$  to allow for conditions.  
Holding Capacity =  $\frac{1064}{1.0} = 1064$

**Exit Capacity**

- 21.20 General considerations to be taken into account when assessing the adequacy of exit systems are set out in Chapter 9. The capacity of each exit route within the exit system can be calculated for each element in that route (i.e., each gangway, doorway, stairway, exit, etc.) the number of persons who can pass the limiting point in that element in 8 minutes. (i.e., Egress Time, See Paragraph 9.10). For exit systems in multi-tiered stands detailed computer simulation may be required in order to take full account of the merging of pedestrian flows from different areas of the viewing accommodation.

The calculation is made as follows:

$$\frac{\text{Width of element}}{\text{Unit width (.550)}} \times \text{appropriate flow rate} \times 8 \text{ mins.}$$

(See Chapter 22).

- 21.21 Where an element in the exit system is less than 1.1 metre wide that element should be omitted from the calculation.

**Example C: Exit Capacity**

- 21.22 Net available viewing area of terrace:  $76 \times 16 = 1,216$  square metres excluding designated gangways.  
Holding capacity =  $\frac{1,216}{0.21} = 5,790$  (See Example B(i))

Exit capacity consists of 2 stairways in each corner of the terrace leading to a concourse at the rear, converging on 1 exit gate in the centre. (See Figure 21c).

Analysis of exit capacity allowing a minimum of 8 minutes for spectators to pass through a fixed point, using flow rates given in Chapter 22.

Stairways = 3.327 metres. These are divided into two channels of 1.1 metres and one channel of 1.127 metres.

Each stairway capacity is therefore:

$$\frac{3.327}{.550} \times 40 \times 8 = 1,936$$

The capacity of the passage or concourse at the rear of the terrace is measured at its narrowest points. (See Figure 21c). In zone A the distance measured is 3.05 metres. Exit capacity at this point is calculated as:

$$\frac{3.05}{.550} \times 60 \times 8 = 2,662$$

In zone B the narrowest point is measured as 4 metres. Exit capacity at this point is calculated as:

$$\frac{4.0}{.550} \times 60 \times 8 = 3,491$$

The exit gate is measured as 4.88 metres.  
The exit capacity of the gate is calculated as:

$$\frac{4.88}{.550} \times 60 \times 8 = 4,259$$

From the above calculations it can be seen that:-

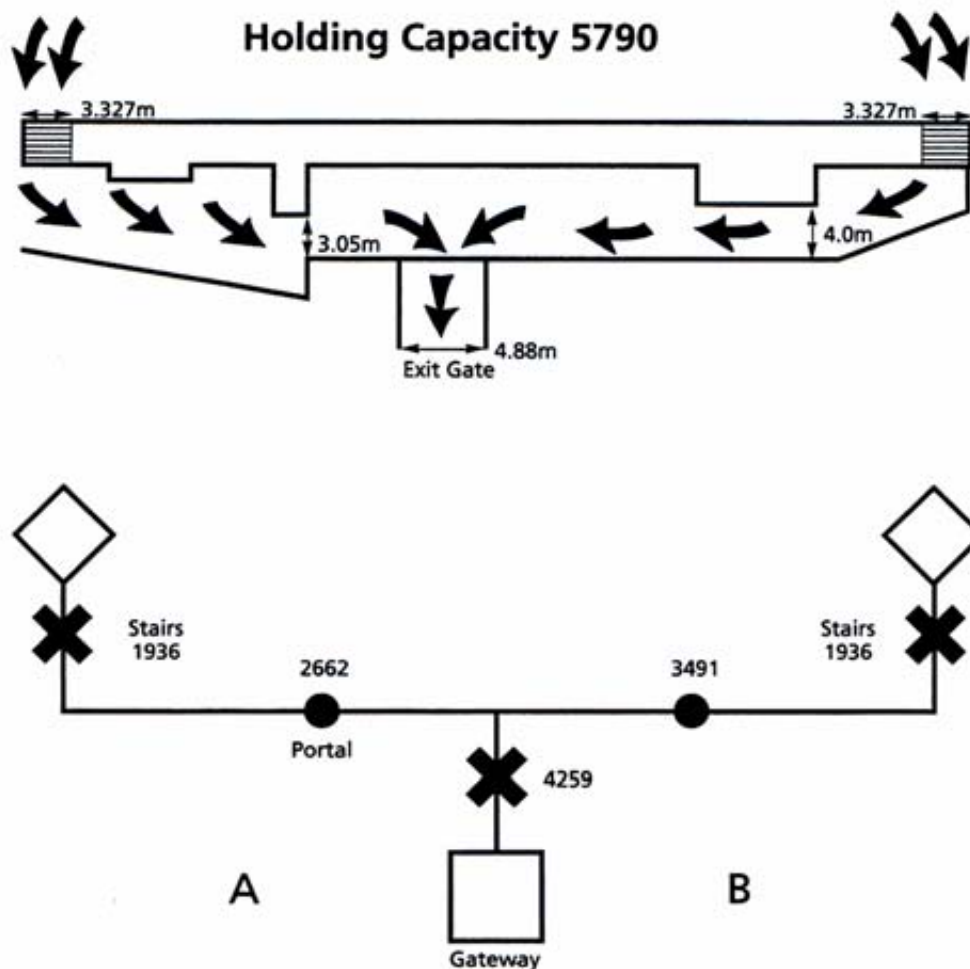
- (i) capacity of exit staircases =  $1,936 \times 2 = 3,872$
- (ii) capacity of concourse =  $2,662 + 3,491 = 6,153$
- (iii) capacity of gateway = 4,259

Exit capacity is therefore 3,872, the lowest of these three figures. If staircase capacity at (i) is increased to more than 4,259 the restricting element in the exit system will be gateway (iii) provided that the restricting elements on the concourse (ii) can also accommodate the increase.



**Figure 21c: Assessment of Exit Capacity.**

(See Example C).



### Emergency Exit Capacity

21.23 The capacity of the emergency exit system is the number of people who can pass through the designated emergency exit route in the appropriate emergency evacuation time. (See Paragraphs 15.38 to 15.44).

It is calculated in the same way as that of the exit system but using the relevant emergency evacuation time and the exit routes to the playing area and thereafter to outside the ground available for use in an emergency.

### Example D: Emergency Exit Capacity

21.24 Details as in Example C assuming that:-

- (i) high fire risk situation-emergency evacuation time is judged to be 2½ minutes;
- (ii) normal exit route is available for use in an emergency;
- (iii) (a) additional emergency exit routes to the playing area are available by means of 4 gangways at 1.1 metres each. (See Figure 21d); and  
(b) the final exit route from the playing area equals or exceeds this provision.

$$\text{Staircase: } \frac{3.327}{.550} \times 40 \times 2\frac{1}{2} = 605$$

$$\text{Portal: } \frac{3.05}{.550} \times 60 \times 2\frac{1}{2} = 832$$

$$\text{Portal: } \frac{4.00}{.550} \times 60 \times 2\frac{1}{2} = 1,091$$

$$\text{Gateway: } \frac{4.88}{.550} \times 60 \times 2\frac{1}{2} = 1,331$$

$$4 \text{ Gangways at } 1.1 = \frac{4.4}{.550} \text{ metres} \times 60 \times 2\frac{1}{2} = 1,200$$

Capacity of the normal exit system is governed by the staircases:

$$605 \times 2 = 1,210$$

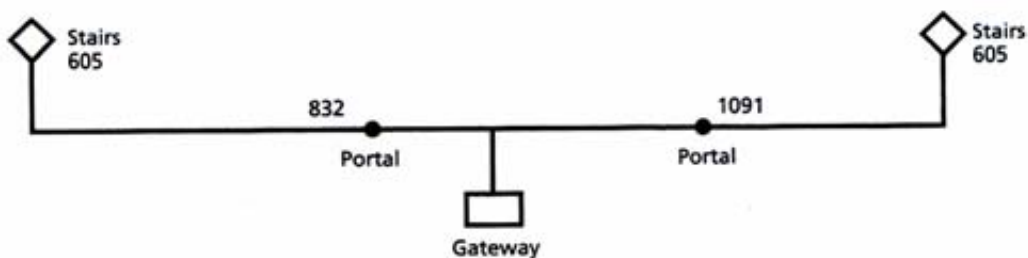
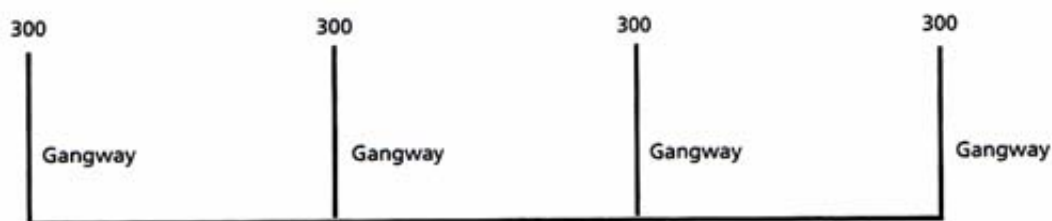
Capacity of the exit system to pitch = 1,200

$$\text{Emergency Exit Capacity} = 1,210 + 1,200 = 2,410$$



**Figure 21d: Emergency Exit Routes.**

(See Example D).



**Example E: Safe Holding Capacity**

21.25 From the above examples, if one considers Examples A, B(i), C + D as applying to the same terrace, the following figures emerge:

- A: Entry capacity : 3,600;
- B (i): Holding capacity : 5,790;
- C: Exit capacity : 3,872; and
- D: Emergency exit capacity : 2,410.

The **safe holding capacity** for the terrace, therefore, is 2,410, i.e., the **least** of the four capacity calculations.

## ***Recommended Flow Rates***

*Flow rates are designed to assist in the calculation of safe holding capacity.*

- 22.1 The flow rates quoted below are the maximum rates and are for purposes of calculation only. They assume that movement is through an exit width of at least 1.1 metres (i.e., a double unit width) and that underfoot conditions comply with those recommended elsewhere in the Code. If, in an individual case, it is evident from studies of crowd movement at a ground that a lesser flow rate is actually achieved from those mentioned, the actual rate should be used for calculation purposes.
- 22.2 From stands and all stairways a flow rate of 40 persons per minute per unit of exit width (i.e., 550 mm) should be used.
- 22.3 From terraces (including covered terraces) and the ground generally a flow rate of 60 persons per minute per unit of exit width should be used.



## ***Medical Facilities, First-Aid and Ambulances***

*There should be a standard approach to the provision of medical and first-aid facilities at major events. Clear lines of responsibility must be placed on Ground Management to ensure first-aid services are provided.*

### **General**

- 23.1 The measures described elsewhere in this Code will, if followed, help to prevent a serious accident, but for Ground Management to discharge fully their safety responsibilities, they should ensure that proper medical services, including first-aid and contingency medical provision, are available in case there is an accident. In all cases, Ground Management should make an agreement with the Health Board in order to determine the required health facilities on site at the event. This will include medical, nursing, first-aid, ambulance staff and equipment, vehicles and communications. It is recommended that an ambulance service will be provided at any ground where a crowd of over 5,000 is expected.
- 23.2 Plans to deal with crowd control at the ground and in the surrounding areas should have regard to the necessity to ensure that emergency medical and ambulance services to the public are maintained.

### **Doctors**

- 23.3 The following standard approach to the provision of medical services at sports grounds are recommended:

- (i) At any event where the number of spectators is expected to exceed 5,000, a doctor should be designated as Ground Medical Officer. S/he should have experience and training in the treatment of casualties and special training in cardio-pulmonary resuscitation and in the use of automatic/advisory or manual defibrillators. Extra doctors should be provided if required by the Health Board. The doctor(s) should operate in close consultation with the Health Board as there is a vital relationship in their responsibilities.
- (ii) The Ground Medical Officer should be responsible for checking before and during the event that the necessary equipment and drugs are available. S/he should have direct contact with the Central Control Room.
- (iii) The doctor should (a) be at the ground at least an hour before the start of the event, (b) remain until half an hour after the end, and, (c) be made aware of the location and staffing arrangements of the medical/first-aid rooms and details of the ambulance cover.
- (iv) The doctor should be located in an approved position known to the Central Control Room, the Gardaí, Local Authority, Health Board and Stewards. S/he should be immediately contactable.
- (v) Medical staff should wear distinctive clothing and should be issued with a non transferable pass for the event.

### ***First-Aid Staff***

- 23.4 At each event a minimum of one person trained in first-aid per 2,500 spectators should be present. The responsibility for securing the attendance of first-aid personnel lies with Ground Management of the event who should agree with the Health Board in advance on the level of training required.

Where voluntary aid organisations services such as the Red Cross, Order of Malta, St. John Ambulance, etc., are utilised, these organisations should agree with the Health Board in order to ensure that their activities are fully integrated with the Health Board's plans.

### ***Accommodation for Medical and First-Aid Staff***

- 23.5 (i) Properly equipped first-aid points should be provided at all grounds. In large stadia there should be at least two such rooms – one on either side of the ground, if possible. The position of the first-aid point(s) should be indicated on the match/event programme. The number and location of such centres should be agreed with the Health Board, taking into account the type and nature of the event.



- (ii) Any room set aside for this purpose should be large enough to contain a couch with enough space for people to walk around, a sink providing hot and cold water and drinking water, a work-top, and sufficient room to store stretchers, blankets and pillows. The recommended minimum size is fifteen square metres. Where the capacity of the ground, calculated in accordance with this Code of Practice, exceeds 15,000 the size of accommodation should, ideally, be increased to at least twenty-five square metres and an additional couch should be provided. Care should be taken to ensure that the doorway is large enough to allow access for a stretcher or a wheelchair. Toilets and other facilities should be suitable for the handicapped.
- (iii) First-aid rooms should have heating, lighting, ventilation and electric sockets. The room(s) should be signposted throughout the ground and located in such a position that it is accessible to both spectators and emergency vehicles, especially ambulances. A telephone line should be installed allowing internal and external communication.
- (iv) The first-aid room should contain suitable storage for first-aid materials and equipment, the nature of which should be agreed with the Health Board. This equipment should include adequate oxygen supplies. The Safety Officer should have the responsibility for provision of the equipment and materials and the up-keep of the first-aid room. These facilities should be available at any time for inspection by officers of the Health Board.

## **Ambulances**

23.6 Ground Management should make arrangements in agreement with the Health Board for the provision of at least one fully equipped ambulance, either from the Health Board or elsewhere, to be in attendance at all events with an anticipated crowd of 5,000 or more. The need for the deployment of additional ambulance(s) should be determined and agreed with the Health Board. The Ambulance provision for events with a capacity greater than 5,000 people should include at least one ambulance equipped and crewed to deal with cardiac emergencies. The following provides a general guide for the ambulance service provision which, in most cases, would be considered reasonable:

<b>Expected Attendance</b>	<b>Ambulance Provision</b>
(i) 5,000 to 25,000	1 Accident and Emergency Ambulance.
(ii) 25,000–45,000	As in (i) above plus deployment of a major incident/equipment vehicle.
(iii) 45,000 +	1 Control Unit.  As in (i) above plus 1 additional ambulance.

- 23.7 Ambulances may be provided by either the Health Board or the Voluntary Services such as the Red Cross, Order of Malta, St. John Ambulance, but, in all cases, the provision should be by agreement with the Health Board who must receive adequate notice of the event and whose responsibility it is to activate the Health Board's Major Emergency Plan if circumstances dictate. Ambulances should be in attendance at the event at least one hour before the event, during the event and half an hour afterwards.

### ***Parking and Access for Emergency Vehicles***

- 23.8 Special separate parking areas for emergency vehicles should be available and be located so as to give them easy and quick access to the inside of the ground, including First-Aid Points. They should be spacious enough to allow manoeuvring as well as parking, taking into account the number of vehicles required for the capacity of the ground and the shape of the emergency areas. Requirements with regard to access for emergency vehicles and access routes to the pitch for emergency vehicles are contained in Paragraphs 15.45 to 15.47.

### ***Arrangements with Hospital(s)***

- 23.9 Prior notice of the event should be given to the Health Board by Ground Management so that adequate hospital facilities/ medical centres can be arranged for casualties. It may also be necessary to provide an off site medical centre where there is no acute hospital within a reasonable distance.



## ***Sanitary Accommodation***

*Experience would tend to suggest that although the provision of an adequate number of toilets is important, the siting of toilet blocks, their distribution, maintenance and supervision is of paramount importance.*

### **Toilet Provision**

- 24.1 Toilets in sports grounds should conform to Health Board and Local Authority requirements. In the case of male patrons, adequate and suitably constructed urinals are the main requirement. There is an increasing number of females attending sporting events and this factor should be taken into account when assessing the required sanitary accommodation. While the existing number of toilets may be adequate for events expected to attract a moderate number of spectators, it will be necessary to examine what extra sanitary accommodation is necessary in the event of a major fixture. This may entail the provision of extra temporary sanitary accommodation for such events. Useful guidance has been published by the Football Stadia Design Council in the UK.<sup>1</sup>
- 24.2 Prior to the event an attempt should be made to identify the proportion of males and females who are likely to attend. For guidance purposes, an approximate ratio of 70% male to 30% female is considered to be the likely division of the sexes at sporting events. However, this differs greatly depending on the nature of the event. This should govern the distribution of toilets between sexes. The number and positioning of toilets and the division between the sexes including toilet accommodation for the disabled, must be agreed with the Local Authority and Health Board in accordance with Part G of the Building Regulations.<sup>2</sup>

- 24.3 Wash hand-basins and hand-drying facilities should be provided in consultation with the Local Authority and the agreement of the Health Board.

### **Location of Toilets**

- 24.4 Toilet block sites should be located where they are conspicuous to patrons, easily accessible, on ground which is dry and likely to remain so. Steep approaches should be avoided as these become impossible to negotiate when wet. A suitable non-slip surface, adequately drained, should be provided at each location. Toilet blocks should be equidistant from all parts of the ground and should be well signposted and illuminated for evening use. Chemical toilets are only acceptable when main drainage is not available.
- 24.5 Care should be taken to ensure that the location of toilets does not obstruct escape routes. Clear notices, i.e., ("Ladies", "Gents"/"Mná", "Fir") showing the position of sanitary accommodation should be provided around the ground. Sanitary facilities for the disabled must be provided in proximity to wheelchair accommodation.
- 24.6 In areas which are likely to become particularly congested clear notices should be provided to indicate the nearest alternative sanitary accommodation for male and female patrons. Stewards should be aware of these locations.

### **Maintenance**

- 24.7 Of primary importance is a high standard of structure, maintenance and supervision to reduce the risk of breakdown under the immense usage by large crowds. Sufficient staff with appropriate equipment should be available for emergency repairs.
- 24.8 Each block should be provided with a supervisor to marshal crowds and provide cleaning and servicing. Responsibility for routine cleaning should be clearly designated. This applies especially to chemical toilets where regular clearance by suction appliances is required.

### **Disposal of Waste**

- 24.9 Ideally toilets should discharge to an existing disposal system where available. Otherwise temporary drainage arrangements may be acceptable to the Local Authority subject to adequate soil condition, no pollution of ground water or water courses and eventual safe disposal. In accordance with Section 3 of the Local Government (Water Pollution) Act, 1977<sup>3</sup>, pollution of ground water or surface water should not be caused or permitted.



## **Drinking Water**

- 24.10 Sufficient drinking water outlets should be provided. A minimum of one drinking point per 1,000 persons is recommended. Drinking water should be from the mains supply. Where mains water is not available or where the continuity of supply is uncertain, stored water may be used. Stored water should be properly protected, supervised and sampled for potability in accordance with the Local Authority requirements and in agreement with the Health Board.
- 24.11 Wells and borings can be used where quantity of yield is adequate and they comply with the Drinking Water Regulations<sup>4</sup> in relation to the quality of water. The minimum amount of stored water required for drinking is 4.5 litres per person, per day.
- 24.12 Drinking water should be dispensed through standpipes with spring loaded taps and adequate waste drainage. A suitable non-slip surface, adequately drained, should be provided at each location. These facilities should be conveniently accessible throughout the stadium.

## **References**

1. Toilet Facilities at Stadia – Planning, Design and Types of Installation, Football Stadia Design Council, London, 1993.
2. Building Regulations, 1991, Stationery Office, Dublin.
3. Local Government (Water Pollution) Act, 1977, Stationery Office, Dublin, 1977.
4. European Communities (Quality of water intended for human consumption) Regulations, 1988, Stationery Office, Dublin.

## ***External Hazards***

*Safety from External Hazards is achieved by prevention of risk.*

### ***Aircraft Restrictions***

- 25.1 In recent years a practice has developed whereby light aircraft and helicopters fly over sports grounds and other venues, while major fixtures are underway, trailing advertising or promotional banners. This could be potentially hazardous for crowds attending these events. Any mishap with an aircraft could lead to major casualties in the stadium due to the numbers congregated in a relatively confined area thereby leading to a totally avoidable major emergency. Such fly-overs should be prohibited in the interests of public safety. The use of large advertising balloons directly over grounds or anchored to adjoining land could, if they collapsed, lead to serious crowd panic and consequently, should be prohibited. While the banning of flights over sports grounds is a matter for the Department of Transport, Energy and Communications, the banning of large balloons, positioned in or over the ground is under the control of Ground Management.

### ***Transport of Hazardous Substances***

- 25.2 The movement of hazardous substances close to stadia by road or rail while a major event is in progress should be avoided. There is serious potential for disaster in the event of an accident and, consequently, it is recommended that the movement of such substances should be planned to avoid coinciding with major fixtures if the substances are routed past a stadium. Ground Management and the transport authorities should consider this matter at the Event Planning Meeting in order to ensure that this does not occur in the period during which the spectators are in the grounds.



*A summary of brief excerpts from some existing legislation is designed as guidance to Management and the General Public in order to secure improved safety, health and welfare standards.*

### **Fire Services Act, 1981<sup>1</sup>**

- 26.1 The primary legislation governing fire safety in Ireland is the Fire Services Act, 1981. A Fire Authority can serve a fire safety notice which may prohibit the use of a building or a part of a building until specified precautions are taken to the satisfaction of the Fire Authority. This Act places a duty on every person having control over such premises to take all reasonable steps to guard against the outbreak of fire on such premises and to ensure, as far as reasonably possible, the safety of persons on the premises in the event of fire. A person who fails to fulfil his statutory obligations in this regard is guilty of an offence for which the maximum fine is £10,000 or imprisonment for a term not exceeding two years or both penalties at the discretion of the Court.

In addition, where the Fire Authority considers that the risk to persons in the event of fire is sufficiently serious it may apply to the High Court for an Order restricting or prohibiting the use of the land or building until specified measures have been taken to reduce the risk to a reasonable level.

## **Casual Trading Acts**

- 26.8 The provisions of the Casual Trading Act, 1995<sup>9</sup> which repeals the Casual Trading Act, 1980 with effect from 1st May, 1996 apply to persons who carry out casual trading, i.e. selling goods at a place (including a public road) to which the public have access as of right or any other place that is a casual trading area.

## **Criminal Justice (Public Order) Act, 1994<sup>10</sup>**

- 26.9 The Act provides inter alia for:-
- (a) the updating of the law in relation to public order offences; and
  - (b) the implementation of certain recommendations made by the Committee on Public Safety and Crowd Control.<sup>11</sup>
- 26.10 Part III of the Act (Sections 20, 21 and 22) is along the lines of recommendations made by the aforesaid Committee in relation to giving the Gardaí power to control access to certain events and to allow for surrender and seizure of intoxicating liquor, etc. Section 20 provides for definitions for this part of the Act. Section 21 provides for the erection by Gardaí of barriers on any road, street, lane or alley not more than one mile from the venue in which an event is taking place. A Garda has power to divert persons and where possession of a ticket is required for entrance to the event, to prohibit people who have no tickets from passing the barrier. Section 22 provides the Gardaí with powers to search a person going to an event for intoxicating liquor and to seize any such liquor, disposable container or any other article which could be used to cause injury.
- 26.11 The Sections of the Act relating to public order offences are designed to ensure good order. The terms of the Sections have implications for the general public, the Gardaí, Ground Management and Event Controllers as well as stewards and others concerned with public safety. Under the Act, the definition of "public place" includes-
- (a) any highway,
  - (b) any outdoor area to which, at the material time, members of the public have or are permitted to have access, whether as a right or as a trespasser or otherwise, and which is used for public recreational purposes,
  - (c) any cemetery or churchyard,
  - (d) any premises or other place to which, at the material time, members of the public have, or are permitted to have access, whether as of right or by express or implied permission, or whether on payment or otherwise, and



- (e) any train, vessel or vehicle used for the carriage of persons for reward.

The Act should be consulted for matters relating to the preservation of public order.

### **Litter Control**

- 26.12 New statutory provisions to give Local Authorities additional powers to set down specific litter prevention and control requirements to be observed by the Promoters of events are currently being examined by the Department of the Environment and will be outlined in a new Litter Bill.

### **Legal Advice**

- 26.13 The guidance expressed in this Chapter does not purport to amount to legal interpretation or legal advice. Promoters/Grounds Management are advised to consult their legal advisors on such matters beforehand.

### **References**

1. Fire Services Act, 1981, Stationery Office, Dublin.
2. Fire Safety in Places of Assembly (Ease of Escape) Regulations, 1985, Stationery Office, Dublin.
3. Public Health Acts Amendment Act, 1890, HMSO, London.
4. Local Government (Sanitary Services) Act, 1948, Stationery Office, Dublin.
5. Local Government (Planning and Development) Acts, 1963-1993, and associated Regulations, Stationery Office, Dublin.
6. Safety, Health & Welfare at Work Act, 1989, Stationery Office, Dublin.
7. Food Hygiene (Amendment) Regulations, 1989, Stationery Office, Dublin.
8. Health Act, 1947, Stationery Office, Dublin.
9. Casual Trading Act, 1995 will repeal the Casual Trading Act, 1980 with effect from 1st May, 1996, Stationery Office, Dublin.
10. Criminal Justice (Public Order) Act, 1994, Stationery Office, Dublin.
11. Committee on Public Safety and Crowd Control: Report, February, 1990, Stationery Office, Dublin.

# ***Ground Management Responsibility: Written Safety Policy***

## **1. General**

The Safety Policy for spectator safety is, in effect, an extension of that drawn up by management in respect of staff, to which the terms of the Safety, Health and Welfare at Work Act, 1989<sup>1</sup> refers. It should be made clear that it is the duty of all employees to ensure, as far as they are able, that all activities which take place at the ground are conducted in such a way that, as far as is practicable, the safety of everybody at the ground is assured.

## **2. Provisions of the Safety Policy**

The policy should identify the safety objectives and the means of achieving them and should include at least the following:-

- 2.1 organisation/structure for implementing safety;
- 2.2 arrangements to monitor the policy (at all levels);
- 2.3 crowd management, to include:-
  - (a) ingress – identification of entry points and direction therefrom to each section of viewing accommodation;
  - (b) egress – identification of exit routes from the viewing accommodation and thereafter;
  - (c) accommodation – occupancy level, division, seating and crush barrier requirements;
- 2.4 stewarding, to include determination of minimum numbers, location, training and supervision;
- 2.5 inspection and safety audits, to include identification, tests, checks of structural elements;
- 2.6 communications:-
  - (a) to the public both inside and outside the ground; and
  - (b) Internal – Local Authority – Garda – Health Board;



- 2.7 fire precautions;
- 2.8 first-aid/medical provision;
- 2.9 Ground Emergency Plan (in association with the Local Authority, Gardaí, and Health Board); and
- 2.10 maintenance of records – attendances, incidents, inspections and tests measures taken.

### ***Reference***

- 1. Safety, Health and Welfare at Work Act, 1989, Stationery Office, Dublin.

# ***Testing and Inspection of Crush Barriers, Guardrails and Other Structural Crowd Control Elements***

## **1. Objective**

- 1.1 The objective of visual inspections and physical testing is to ascertain the condition and strength of the crush barriers, guardrails, handrails with a guarding function and other elements in order to establish that they comply with the requirements of the Code and that they are adequate to carry out their required function – i.e., that they will safely withstand the pressures generated by the movement of spectators during entry, viewing and egress. A factor of approximately 20% over and above the design load is used for the test load (see Table 12-2, Chapter 12). The criteria for strength of guardrails and barriers, etc., envisage the most robust nature of spectator movement and actions.

## **2. Personnel and Equipment**

- 2.1 The inspections and testing should be carried out by, or under the supervision of, a competent, suitably experienced chartered engineer. The engineer will be responsible for ensuring that the inspections and testing are properly carried out and that all results are accurately recorded. The engineer must be satisfied that equipment used for the tests is suitable for the purpose and is used in the correct manner. The equipment used should be capable of a level of accuracy of  $\pm 5\%$  of the test force. The deflection measuring equipment should be calibrated and be capable of a level of accuracy of  $\pm 0.5$  mm.

## **3. Records**

- 3.1 Detailed records should be made and kept of all observations, loadings, deflection/recovery readings, etc., in respect of each structure inspected and tested. The record should include a standard record sheet identifying each barrier tested and inspected, its location (including cross-reference to the plan), date of inspection and comments and state clearly whether the barrier, guardrail, etc., has passed or failed.



#### **4. Inspections**

- 4.1 All crush barriers and guardrails, etc., should be inspected annually taking due account of comments recorded from previous inspections. (See Paragraph 7).
- 4.2 Any visible defects, such as corrosion, cracks, holes, misalignment, undue distortion, missing bolts or fittings, should be noted and their potential effect on the integrity and strength of the structure assessed in order to determine whether its condition is fit for its intended purpose.
- 4.3 If it is considered that members or connections, due to the nature of their construction, have hidden defects such as corrosion, further investigations should be made. This may involve partial dismantling, if it can be done without detriment to the structure itself.
- 4.4 Particular attention should be paid to areas where corrosion or damage could result in a loss of performance, i.e., water traps.
- 4.5 Should inspections result in any doubt as to the integrity or potential strength of the barrier or guardrail, etc., it should be tested in accordance with the Code or deemed to have failed.

#### **5. Testing**

- 5.1 Testing should be undertaken annually on a 25% representative sample of crush barriers and guardrails, etc., throughout all parts of the ground. Each year the sample should be different so that all crush barriers and handrails are tested at least once every 4 years. The 25% sample does not include any which, following inspection, are tested as a result of doubts as to their integrity.
- 5.2 The method of physical testing should be as outlined hereunder.

#### **6. Test Method**

- 6.1 The test is in two parts: bedding-in cycle and proof cycle. In each part an evenly distributed force is applied horizontally on the top rail of the barrier or guardrail at right angles to the longitudinal axis and is applied in increments. Crush barriers and guardrails must comply with the requirements of both parts of the test in order to be considered satisfactory for further continued use.
- 6.2 The deflection measuring equipment should be properly set up on a firm part of the terrace, stairway, etc., unaffected by any movement of the barriers or guardrail. The deflection in the horizontal plane should be measured at the anticipated location of maximum deflection, e.g., at the centre of a barrier or guardrail span (when testing the rail) or the top of the upright (if testing the upright).

## **7. Bedding-in Cycle**

- 7.1 In order to allow for the bedding-in of the test equipment and any frictional restraints, the barrier or guardrail should be loaded up to its design service load. (See Table 12-2, Chapter 12). The bedding-in force should be applied in at least 5 equal increments. Deflections should be monitored at each increment of the load cycle. The maximum force should be maintained for 5 minutes.
- 7.2 The barrier or guardrail may be considered to have completed this part of the test satisfactorily if, on removal of the force, the recovery is at least 75% of the maximum deflection as measured from the original position prior to loading or if the permanent deflection is less than 2 mm. If the barrier or guardrail fails to achieve this level of recovery it shall be considered to have failed the test unless there is a satisfactory explanation for the results.

## **8. Proof Cycle**

- 8.1 The proof cycle is to consist of two consecutive applications of the proof force, the interval between the applications should be as short as practicable but long enough to enable complete unloading.
- 8.2 The magnitude of the proof force is given in the "test load" column of Table 12-2 in Chapter 12.
- 8.3 Each of the two applications of proof force should consist of 5 equal increments, the full proof force being maintained for 5 minutes for each application. A record should be kept of any deflection during loading, maintained loading, or unloading. (See Paragraph 3 above).
- 8.4 If, on removal of the force after the second application, the recovery is at least 95% of the maximum deflection or the permanent deflection is less than 2mm (as measured from the barrier position at the start of the proof test cycle – i.e., after the bedding-in cycle), the barrier or guardrail should be considered to have satisfied the proof cycle loading requirement.

## **9. Further Considerations**

- 9.1 Wherever possible, comparison should be made with the performance of other crush barriers of a similar type and with the performance of the same barrier in previous tests. This will establish whether there are indications of a reduction in overall performance which might indicate a developing weakness requiring special attention or more frequent testing and/or inspection than the minimum.



- 9.2 If, at any time during the procedure, and notwithstanding that the barrier or guardrail has satisfied the test requirements, doubt arises for any reason (including such matters as corrosion, cracking of the terracing, stairway, etc., or distortion of connections) as to the safety of the barrier or guardrail, a detailed investigation should be carried out. Unless the results of this investigation remove the doubt as to the safety of the barrier or guardrail, the barrier or the guardrail, as the case may be, should be deemed to have failed.

## ***Tests and Inspections: General***

As indicated in Chapter 2 and Chapter 7, regular and detailed inspections of the ground are a necessary and important function of Ground Management. The following provides a tabulation of tests and inspections referred to in the text of the Code:-

### **1. *Before each event***

- 1.1 Check the operation of exit doors and gates, including mechanisms securing them, to ensure that they can be opened immediately in an emergency.
- 1.2 Test all automatic fire detection and fire warning, emergency lighting, public address and other communication systems 24 hours before an event.
- 1.3 Inspect and test turnstiles and monitoring systems to make sure they are in proper working order.
- 1.4 Check that the ground does not contain any accessible items which could be used as missiles.
- 1.5 Check that there are no accumulations of combustible waste and remove any hazardous materials from the premises, if possible, or make sure they are safely stored well away from public areas.
- 1.6 Check that all entry/exit routes are clear of obstruction and free from trip hazards, that surfaces are not slippery and that all such routes can be safely and effectively used.
- 1.7 Check that directional signs are in place and illuminated (where appropriate).
- 1.8 Ensure that sufficient numbers of trained stewards and first-aid staff are present.
- 1.9 Ensure that first-aid equipment and materials are maintained at the required level.



## **2. After each event**

- 2.1 Carry out a general visual inspection for signs of damage which might create a potential danger to the public and take remedial action.
- 2.2 Clear away litter and inspect the ground to ensure that there are no accumulations of combustible waste.

## **3. Annually**

- 3.1 Check the stewarding arrangements to ensure that all stewards have sufficient and effective training.
- 3.2 Test, by carrying out exercises, that emergency procedures operate smoothly.
- 3.3 Arrange detailed inspection of the ground, including boundary walls, fences, gates and all components and installations.
- 3.4 Arrange the visual inspection of all crush barriers, guardrails, handrails with a guarding function and other structural elements.
- 3.5 Arrange the physical testing of a 25% representative sample of crush barriers, guardrails, handrails with a guarding function and other structural crowd control elements. All elements should, therefore, be tested at least once every 4 years.
- 3.6 Carry out a visual inspection of boundary walls, fences and gates.

# ***Stewarding***

***(See Chapter 18)***

## **1. *Selection of Stewards***

- 1.1 Stewards, both professional and voluntary, should be selected on the basis of their dedication to the job of stewarding. They should be fit, active and not less than 18 years of age and ideally not over 55 years of age.
- 1.2 Stewards should be physically and mentally capable of performing their duties.

## **2. *Main duties of Stewards***

The following are the main duties of Stewards:-

- 2.1 Control and direct spectators who are entering or leaving the ground.
- 2.2 Assist the diversion of spectators to other parts of the ground, including the closing of turnstiles when the capacity for any area has been reached.
- 2.3 Prevent overcrowding by ensuring that crowd limits in various parts of the ground are complied with and that gangways and exits are kept clear.
- 2.4 Monitor the crowd throughout for signs of distress and take action in accordance with written instructions.
- 2.5 Prevent, in so far as is possible, standing on seats and the climbing of fences and other structures. (Where, by virtue of the scale of the incident, stewards are unable to prevent such activity, they should immediately report the matter to their Supervisory Steward or the nearest Garda).
- 2.6 Patrol the stadium to deal with emergencies such as raising alarms and extinguishing fires.



- 2.7 Control entrances, all exit and perimeter fence gates and other strategic points, while the ground is in use.
- 2.8 Be aware of the location of firefighting and medical equipment in the area.
- 2.9 Recognise potential hazards and suspect packages and report such findings immediately to the Supervisory Steward or to the nearest Garda.
- 2.10 Comply promptly with any instruction given in an emergency by a Garda Officer, the Event Controller, the Safety Officer, or the Chief Steward.
- 2.11 Assist in the prevention of breaches of ground regulations.
- 2.12 Identify and investigate any incident or occurrence among spectators and report findings to the Chief Steward.
- 2.13 Assist in the prevention of pitch invasion.
- 2.14 Report to the Chief Steward any damage or defect likely to cause injury or danger to persons in attendance.
- 2.15 Undertake duties relating to emergency and evacuation procedures.
- 2.16 Keep all gangways and designated sterile areas clear.
- 2.17 Ensure that all approaches and emergency exits are kept clear and that vehicles are correctly parked.
- 2.18 Maintain their position at their place of duty under the direction of the Supervisory Steward who, if it is considered necessary, can arrange for a replacement.

### **3. *Training of Stewards***

- 3.1 All stewards should be trained to deal with any emergency relating to fire or evacuation and be fully conversant with any methods or signals used to alert staff that an emergency has arisen. (See Paragraphs 18.14–18.21).
- 3.2 Stewards should be provided with written instructions outlining the action to be taken in cases of emergency.
- 3.3 Stewards should be given practical instruction and training appropriate to their responsibility.
- 3.4 Stewards should not be employed unless they have been trained.

#### **4. Identification and Supervision**

- 4.1 All stewards should be clearly identifiable with colour-coded numbered surcoats/bibs;
- 4.2 Stewards should be under the direct control of Supervisory Stewards whose identity is made known to the Gardaí.
- 4.3 Garda Liaison Officers should be appointed to deal directly with the Supervisory Steward for each section of the ground.
- 4.4 Supervisory Stewards should be in contact with Central Control either by way of the ground's own radio system, personal radio or by suitably located telephones.
- 4.5 Each steward should be given a written summary of the tasks, duties and responsibilities of the particular post to which s/he is allocated.
- 4.6 Strict emphasis should be placed on supervision, ensuring that stewards remain at their assigned posts while the event is in progress.

#### **5. Emergency Procedures – Stewards Role**

- 5.1 Formal emergency procedures at each ground should be prepared in accordance with Ground Emergency Plan.
- 5.2 Stewards should be fully aware of their responsibilities in an emergency.
- 5.3 Ground Management should prepare written instructions of actions to be taken in an emergency which should be readily available to all staff and stewards, and should be made available to the Gardaí.
- 5.4 A record should be kept of the training received by stewards and should include:-
  - (i) date and time of instruction or exercise;
  - (ii) duration of instruction or exercise;
  - (iii) name of Instructor;
  - (iv) names of those receiving instruction; and
  - (v) nature of the instruction or exercise.
- 5.5 Apart from the practical instruction, staff and stewards should receive verbal instruction from a competent person on a regular basis and, in particular, before each major event.
- 5.6 As part of training of stewards reference should be made to the Code of Practice for the Management of Fire Safety in Places of Assembly<sup>1</sup>.



## **Reference**

1. Code of Practice for the Management of Fire Safety in Places of Assembly, Stationery Office, Dublin, 1991.

## ***Ground Regulations***

1. All persons entering this ground are admitted only subject to the following Ground Regulations and to the Rules and Regulations of the (relevant Association/Organisation). Entry to the ground shall be deemed to constitute unqualified acceptance of all these Rules and Regulations.
2. Fireworks, smoke canisters, bottles, glasses, cans, flags, banners, poles and other similar articles or containers, including anything which could or might be used as a weapon, are not permitted within the ground, and any person in possession of such an article or container may be refused entry or ejected from the ground.
3. The consumption of intoxicating liquor is permitted only in authorised places and spectators are not permitted to bring alcohol into the ground/arena.
4. The unauthorised climbing of floodlight pylons, stands or other buildings in the ground is forbidden.
5. Unnecessary noise such as that from the use of radio sets and behaviour likely to cause confusion or nuisance of any kind, including foul or abusive language, is not permitted in any part of the ground.
6. Under no circumstances is it permitted to throw any object onto the pitch.
7. Unauthorised persons are not permitted to enter upon the field of play.
8. Any person who fails to comply with the instructions from a steward may be ejected from the ground.
9. In general, the right of admission is reserved to the Ground Management.
10. The Ground Management reserves the right to refuse admission to or eject any person who refuses to be searched by a member of the Garda Síochána.
11. Any person who remains in a gangway may be ejected from the ground.
12. The Ground Management reserve the right for its servants or agents to remove from the ground/arena any person who does not comply with the Ground Regulations or whose presence in the ground could reasonably be construed as constituting a source of danger, nuisance or annoyance to other spectators.



13. All persons in the grounds are reminded of their obligations under Section 18(3) of the Fire Services Act, 1981<sup>1</sup> to ensure that their behaviour does not present a danger from fire to any one using the premises.

### ***Reference***

1. Fire Services Act, 1981, Stationery Office, Dublin.

# **Ground Emergency Plan**

## **1. Introduction**

- 1.1 Ground Management should prepare a Ground Emergency Plan to deal with a serious emergency at the ground with the advice of the Local Authority, Gardaí and the Health Board.
- 1.2 The Ground Emergency Plan should be prepared within the overall context of the Major Emergency Plans of the Local Authority, the Gardaí, and Health Board and fit into the details of these plans.
- 1.3 It is suggested that the core of the Ground Emergency Plan should follow closely on the guidance set out hereunder which is based on the Report of the Committee on Public Safety and Crowd Control<sup>1</sup>.
- 1.4 When drafting a Ground Emergency Plan account should be taken of the terms of the Fire Safety in Places of Assembly (Ease of Escape) Regulations, 1985<sup>2</sup>, the Code of Practice for the Management of Fire Safety in Places of Assembly<sup>3</sup> and all relevant legislation for the time being in force.
- 1.5 Account should also be taken of the recommendations and guidance set out in this Code of Practice.
- 1.6 The Plan should be prepared for events such as football and hurling games and be adjusted to cater for concerts or other events where the playing area is occupied by patrons, stage, lighting, sound equipment, etc.
- 1.7 In the preparation of the Plan it may be necessary to prepare variations of the Plan, e.g., Plan A, Plan B, etc., to cater for evacuation from various sections of the ground, depending on which section of the ground the emergency occurs, and the escape routes available. Each plan would require appropriate crowd and traffic management plans to be activated in the event of a serious emergency.
- 1.8 Systems should be in place to test, review, revise and update the Plan in the light of experience. This should be carried out in consultation with representatives of the Local Authority, the Gardaí, and the Health Board.



- 1.9 The Ground Emergency Plan should be part of an overall Management Plan for events held in the ground covering details included in this Code of Practice.

## **2. Definition of Serious Emergency**

A serious emergency is defined as any event causing or threatening to cause death or injury to patrons at a sports ground resulting from serious crowd disorder, major fire, collapse of a section of a stand or terrace, toxic chemical spillage on the roads or railway lines adjacent to the venue, explosion, bomb threat or other unforeseen event necessitating partial or total evacuation of the stadium.

## **3. Definitions of Key Personnel**

### **3.1 Event Controller**

This is the person who has overall responsibility for management of an event. S/he is assisted inside the stadium by the Gardaí, Stewards and all other personnel, whether paid or voluntary, but retains control unless a serious emergency occurs, at which stage s/he hands over to the Emergency Controller.

### **3.2 Emergency Controller**

The Emergency Controller is the Senior Garda Officer present who will take over control of the entire operation until or unless other emergency services, i.e., Health Boards and Fire Authorities are present, in which case each service will exercise control over its own operations.

## **4. Activation of Plan**

The Emergency Controller will activate this Plan after consultation with the Event Controller. Should the Event Controller and the Garda Officer disagree when the Garda Officer considers the risk to life or breach of the peace to be so great, that it is imperative to implement the Ground Emergency Plan, the Garda Officer can over-rule the Event Controller. It must be emphasised that public safety is of paramount importance in arriving at such decisions. The Garda Officer will notify the Communications Room and Garda Divisional Headquarters immediately of the activation of the Plan. All messages shall begin with the following statement:

"This is (Name & Rank of Garda Officer), A Serious Emergency has occurred/is imminent at (Name of Venue). The Ground Emergency Plan is now in operation".

## **5. Function of Local Authority, Gardaí and Health Board**

The functions of the Local Authority, the Gardaí, and the Health Board are as set out in the Major Emergency Plans of these authorities.

## **6. Ground Management**

The functions of the Ground Management are to:-

- (i) place all facilities in the ground at the disposal of the Emergency Controller;
- (ii) provide areas suitable for collection of casualties, first-aid treatment, etc.;
- (iii) provide an information centre on the site for use of the Gardaí and other agencies;
- (iv) provide drawings of the stadium for the Emergency Controller;
- (v) place all available personnel at the disposal of the Emergency Controller;
- (vi) provide adequate medical staff in ground;
- (vii) provide suitable first-aid facilities;
- (viii) provide suitable areas for casualties;
- (ix) provide mortuary facilities;
- (x) provide sufficient stretchers; and
- (xi) provide an adequate communications system.

## **7. Telephone Numbers**

The emergency plan should contain an Index setting out the telephone numbers of the contact officers in the various services. This Index can be based on the telephone numbers included in the Major Emergency Plans of the Local Authority, the Gardaí, and the Health Board.

## **8. Evacuation Arrangements**

### **8.1 General**

As indicated at Paragraph 1.7 above it may be necessary, because of the nature of the ground, to have two or more Plans to deal with an emergency at event. (An amended Plan will be required for evacuation at Pop Concerts at the same venue<sup>4</sup>). These Plans should be outlined on a drawing and should indicate in what direction patrons



would be evacuated depending on the location of the disaster. The plans should indicate the exits through which the public would be channelled and Garda arrangements on the surrounding roads or streets.

These arrangements should indicate where Garda barriers would be erected and the direction in which the public would be dispersed. It should also set out the area and the roads to be kept clear of traffic to allow access and egress for Emergency Services.

Inside the ground the emergency routes must be kept clear at all times. If the plan includes evacuation onto the pitch all gates opening onto the pitch must be manned at all times. Evacuation should proceed without creating or adding to a panic situation.

**8.2 Mortuary Facilities**

The Plan should indicate where mortuary facilities will be available. Such facilities should be in more than one location to ensure their availability irrespective of the point of origin of the emergency.

**8.3 The Disaster Area**

Gardaí and Stewards should seal off the area of the disaster to enable rescue workers, ambulance crews and fire tender crews do their work. Members of the public and the media should be kept outside the disaster zone.

**8.4 Fatalities**

Identification of dead bodies should be made and the location in which the bodies are found should be noted. Ground Management should provide plastic type body bags to hold human remains, as well as duplicate labels, gloves, markers, etc.

**8.5 Public Address System**

Full use should be made of the Public Address System to inform and direct the crowd. Messages broadcast should be decided by the Event Controller on the advice of the Garda Officer in charge. Messages should be kept short.

**8.6 Potential Disaster**

If, before or during a game, a serious situation is seen to be developing where crowds cannot gain access and the timing of the commencement of the game could cause serious danger – the Event Controller should have the facility to delay the start of the game. S/he would inform the referee as quickly as possible to avoid serious danger. In certain circumstances the responsibility of stopping the match may fall upon the Garda Officer in charge. In the event of a situation arising where it is necessary to open a gate to allow access to patrons to prevent death or serious injury, it must first be established that there is room in the relevant section of the ground to take the extra crowd and that, once inside, they are moved to a part of the

ground where there is room to accommodate them without danger to themselves and to those already in that section of the ground. This matter should be highlighted at the briefing session before the event.

**8.7 Doctors**

A Doctor experienced in casualty work should be designated the Ground Medical Officer for the duration of a major event. S/he should be responsible for checking before and during the event that the necessary equipment and drugs are available.

S/he should wear distinctive clothing and be located in a specific designated seat/location which should be known to the Event Controller, the Local Authority, Gardaí, Health Board, and Stewards.

**8.8 Central Control Room**

In the event of the Central Control Room being put out of commission an alternative Control Room with appropriate facilities should be designated in the Plan. In drawing up a plan additional telephone lines may have to be sought from Telecom Eireann by the Gardaí if facilities (presently) available are out of order or inadequate.

**8.9 Responsibility**

Emergency matters outside the ground are the responsibility of the statutory authorities. Within the ground the Event Controller has responsibility to ensure that all stewards:-

- (i) are aware of the Ground Emergency Plan;
- (ii) act under the Chief Steward as a team to evacuate the crowds away from the area of disaster; and
- (iii) are aware of the exact location of all exits and fire hydrants, etc.

The Event Controller also has the responsibility to ensure that all exit gates are manned.

**8.10 Stewards**

The ground should be divided into zones. Ground Management should operate the rank structure among stewards. Stewards should wear distinctive clothing. A Supervisory Steward should be responsible for each zone and should be in a position to put the relevant Emergency Plan into operation at short notice. S/he should have responsibility to instruct stewards under her/his control and insist on instructions being carried out in the event of an emergency.

**8.11 Flexibility of Plan**

As the nature of a disaster, or the part of the stadium it might strike can vary, the areas to be evacuated, location of mortuaries, etc., will require flexibility in the Plan.



**8.12 Availability of Plan**

A copy of the Plan statement, including maps, should be made available by Ground Management to all officials, Stewards and Gardaí engaged on duty in the Ground. The Local Authority and the Health Board should also be provided with copies of the Plan.

**8.13 Review of Plan**

The Ground Emergency Plan should be reviewed at regular intervals and at least every three years.

**8.14 Exercises**

In accordance with Paragraph 1.8 of this Appendix it is suggested that the Ground Emergency Plan should be tested at least once each year.

**References**

1. Committee on Public Safety and Crowd Control: Report February 1990, Stationery Office, Dublin.
2. Fire Safety in Places of Assembly (Ease of Escape) Regulations, 1985, Stationery Office, Dublin.
3. Code of Practice for the Management of Fire Safety in Places of Assembly, Stationery Office, Dublin, 1991.
4. Code of Practice for Safety at Outdoor Pop Concerts & Other Outdoor Musical Events, Stationery Office, Dublin, 1996.

## ***Glossary***

### **Liaison Committee**

A planning committee for major events composed of representatives of Ground Management and/or the Promoter of the Event, the Gardaí, the Local Authority ( including the Fire Authorities), the Health Board ( including the Ambulance Service), the Transport Authorities, the Event Controller or her/his deputy and the Safety Officer or her/his deputy.

### **Local Authority**

The bodies responsible for the administration of a wide range of services at local level. The Local Authority's area of responsibility includes Planning, Engineering Services, Fire and Building Control and references to the Local Authority in the Code of Practice should be taken to include such services, where appropriate.

### **Health Boards**

Boards established under the provisions of the Health Act, 1970, responsible for the administration of the health services in the State. The role of the Health Board is to:-

- (i) maintain normal emergency medical and ambulance cover for the local resident population;
- (ii) provide medical, ambulance and first-aid cover for all participants;
- (iii) be prepared to respond to a major accident;
- (iv) advise on all health matters including food hygiene and to monitor and implement the relevant statutory regulations;
- (v) provide all health services as outlined in the Major Emergency Plan.

### **Lateral Gangway**

Channel for the passage of spectators through viewing accommodation running across the slope parallel with any terracing or seat rows.



**Radial Gangway**

Channel for the passage of spectators through viewing accommodation running with the slope between any terrace steps or seat rows. The gangway will be stepped between tiered seating.

**Stairway**

Part of a building or structure which is not a radial gangway but which comprises at least one flight of steps, including the landings at the head and foot of steps and any landing in between flights.

**Viewing Accommodation**

Gross area of that part of the ground or building in the ground provided for spectators to view the event.

**Place of Safety**

A place where a person is no longer in danger from fire or other emergency.

**Fire Door**

A door or shutter, provided for the passage of persons, air or objects, which together with its frame and furniture as installed in a building is intended when closed to resist the passage of fire and/or gaseous products of combustion, and is capable of meeting specified performance criteria to those ends.

**Fire Resistant**

Ability of a component or construction to resist fire for a stated period of time when subjected to a standard test.

**Flammable**

Able to burn with a flame.

**Combustible**

Able to burn.

APPENDIX

**H**

## ***Locations Visited by the Working Party***

Croke Park, Dublin

Dalymount Park, Dublin

Dr. Hyde Park, Roscommon

Kerins O'Rahilly G.A.A. Ground, Tralee

Landsdowne Road Rugby Stadium, Dublin

Maine Road Football Stadium, Manchester

Páirc Charmáin, Wexford

Páirc Tailteann, Navan

Páirc Ui Chaoimh, Cork

Royal Dublin Society Show Grounds, Dublin

Selhurst Park, London

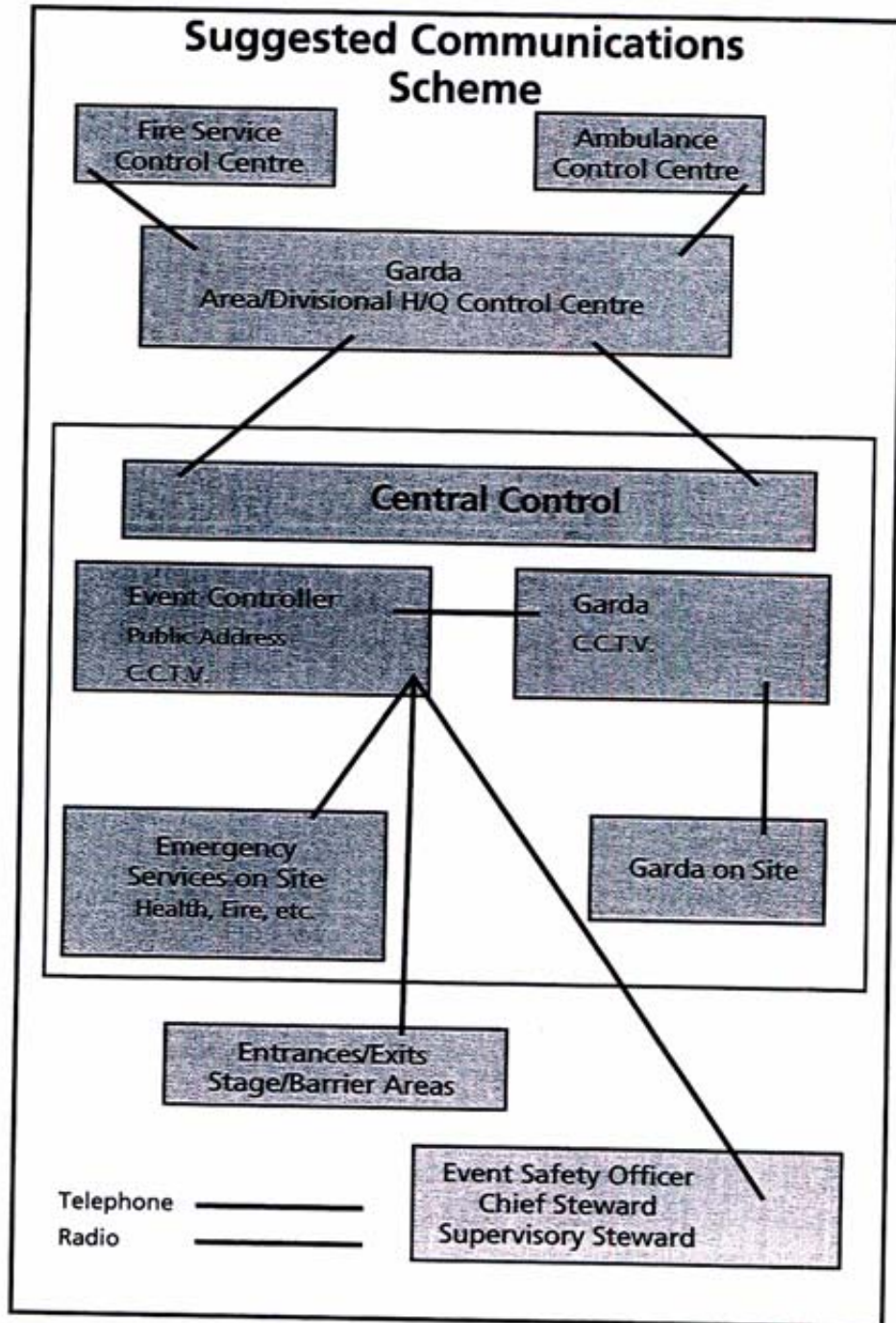
St. Tighearnach's Park, Clones

Semple Stadium, Thurles

Tolka Park, Dublin

Wembley Stadium, London







# **Index**

<b>Access</b>	
Between sections of viewing accommodation	11.17
For emergency vehicles	2.27(x), 15.45-15.47, 23.8
From viewing accommodation	9.3, 9.7, 13.6, 14.17, 19.10
To playing area	9.6, 15.42, 15.47, 19.10, 20.1-20.6, 20.12-20.13
To stairways	10.15-10.18
For disabled persons	5.3, 5.6, 23.5 (ii)
<b>Advance planning</b> (see also contingency planning)	2.13 – 2.14, 7.6
<b>Alcohol</b>	19.12, Appendix E( Par. 3)
<b>Allocation of fixtures</b>	1.27-1.28
<b>Ambulance cover</b>	23.6-23.7
<b>Annual inspection</b>	2.28 (ii), 7.1 – 7.3
Crush barriers etc.	Appendix C(Par. 3) 12.7 – 12.11 Appendix B
<b>Auxiliary power</b>	Chapter 17
<b>Balustrading</b>	10.19, 11.15, 13.10
<b>Building Regulations</b>	1.17, 10.11, 10.24, 13.2, 13.10, 15.1, 15.36
<b>Capacity</b> (See also Holding capacity and Safe holding capacity)	
General	1.5-1.6
Calculation of	Chapter 21
Emergency Exit	15.38, 21.23-21.24
Exit route	9.11 – 9.13, 9.17 – 9.18, 15.42



<b>Care and maintenance</b>	1.26(iv)-(v)
<b>Casual Trading Acts</b>	26.8
<b>CCTV</b>	16.2, 16.16, 17.13
<b>Central Control Room</b>	2.5-2.7, 2.28(iv) 15.19-15.22, 15.24, 16.2-16.4, Appendix F(Par. 8.8)
<b>Commencement time</b>	1.28, 2.16, 3.2(i), 19.14
<b>Communications</b>	
Duty to maintain and test systems	2.28 (iii, iv, v), Appendix C
General	Chapter 16
Land lines	16.2
<b>Contingency plans</b>	2.27 (iii), 7.6, 8.12, 15.31
For power failure	17.8, 17.13
Stewards	18.16
<b>Crowd behaviour</b>	
Advance planning	19.1
Contingency plan	2.27 (iii), 8.12
Effect of new designs	1.8, 1.26(iii)
Forced admission	8.11
Problem of evacuation	1.25 (iii)
Segregation	19.5-19.10
<b>Crush barriers</b>	
Distance between	12.3-12.6, Table 12-1
Function of	1.26 (v), Chapter 12
Height of	12.1
Inspection/testing of	2.28 (ii), 7.3, 7.8, 12.7-12.19, Appendix B
Qualification for inspection/testing	6.1
Strength of	12.7-12.19, Table 12-2
<b>Disabled spectators</b>	Chapter 5
Impaired hearing	5.4
Impaired mobility	5.7
Impaired vision	5.5-5.6
Use of lifts	5.8
Wheelchairs	5.7(iii), (iv), (v), (vii)
<b>Division of spectator accommodation</b>	11.17-11.20
<b>Egress</b>	Chapter 9

Exit Capacity Calculations	21.20-21.24
For disabled spectators	5.7(iv)
From stands	13.4-13.6
Routes	9.3-9.9, 9.15-9.25
Signposting of	9.14
Time	9.10-9.13
<b>Electrical</b>	
Earthing	17.6
Emergency lighting	17.1, 17.8-17.16
Installation/inspection	2.28 (iii),
<b>Electronic boards</b>	5.4
<b>Emergency</b>	
Emergency Controller	3.10, Appendix F( Par. 3.2)
Evacuation time	15.38-15.44
Lighting	7.4, 17.1, 17.8-17.16
Plan/procedures (See Advance and Contingency Planning)	2.17-2.20, Appendix F,
Vehicle access	2.27(x), 5.7(viii), 14.8, 15.45-15.47
<b>Entry</b>	
See Ingress	
<b>Evacuation</b>	
Consultation over	2.27(ix)
Covered accommodation	13.4-13.6
Exit route(s) for	9.3-9.13, 9.15-9.25
Means of escape	15.33-15.34
Staff training	2.27(xv, xx)
Time	9.10-9.13, 15.38-15.44
For playing area	15.42, 19.10, 20.12,
Use of lifts for	5.8
<b>Event Controller</b>	2.5-2.6, 3.10-3.11, 3.14, 16.2-16.3, 16.14, 18.12, Appendix D( Par. 2.10) Appendix F( Par. 3.1)
<b>Exit</b>	
See also Egress	
Calculations	21.20-21.24
Capacity	9.10-9.13, 9.17-9.18, 15.38-15.42
Doors	2.28(v), 9.29, 9.21-9.22, Appendix C
Gates	2.27(xi), 2.28(v), 9.19-9.20, 9.23-9.24



Pass doors	9.25
Routes/systems	9.3-9.9, 9.15-9.25
Signposting of	9.14
Times	9.10-9.13
<b>Fire safety</b>	Chapter 15
Doors	15.14, 15.37, Appendix G
Fire-fighting equipment	15.26-15.30
Means of escape	15.33-15.34
Minimising fire risk	15.3-15.12
Protection of stairways and passages	15.35-15.37
Resistance	15.1, 15.8, 15.11, 15.14, 15.35, 15.37
Risk	1.25(iv), 1.26 (vi), 2.27(ix), 15.19, 15.24
Separation	15.14
Smoke venting	15.16
Staff training	15.31-15.32
Storage of flammable/hazardous material	15.7-15.8, 15.10
Upholstered seating	15.6
Warning systems	2.10, 2.27(iii), 2.28(v), 7.4, 15.2 (vii), 15.19-15.20, 16.6, Appendix C( Par.1.2)
<b>First-aid</b>	2.23, Chapter 23
<b>Flow rate</b>	
Calculations using	21.20-21.24
Details of: Recommended	Chapter 22
<b>Gangways</b>	
Access to playing area	20.3
Definition of	Appendix G
Keeping clear	2.27(xvi), Appendix D, Par. 2.16
In covered accommodation	13.7-13.9
On terraces/viewing slopes	11.8-11.16, 11.18
<b>Garda Síochána</b>	
Role of	Chapter 3
<b>Gates</b>	
Checking/inspection	Appendix C) Pars.1.1 and 3.3)
Opening of	2.27(xi), 9.19-9.20, 9.23
Pitch gates	20.3-20.4

<b>General principles of the Code</b>	1.7-1.10
<b>Gradient</b>	
In gangways	13.9
Ramps	10.22-10.24
Viewing slopes/terraces	11.6, 11.23-11.24, 12.6, Table 12-1
<b>Ground management</b>	
Responsibilities of	Chapter 2, Appendix A, C
<b>Guardrails/Handrails</b>	
Strength of	12.7-12.19
Inspection/testing of	2.28(ii), 7.3, Appendix B, C
Maintenance of	1.26(iv)
<b>Holding capacity</b>	
Assessment of	Chapter 21
Examples of calculations	21.6-21.25
<b>Ingress</b>	Chapter 8
CCTV for	16.16
For disabled spectators	5.7(iv)
Entrance/entry routes	8.7-8.8
General	1.25(iii)
Signposting	8.9
Turnstiles	8.1-8.6
<b>Inspections/Tests</b>	
Electrical	2.28(iii)
Before and after event	2.27(xviii-xix)
Crush barriers	2.28(ii), 7.3, 7.8, 12.7-12.11, Appendix B
General	Chapter 7, Appendix C
Records of	2.27(xx), 7.9
Safety Officer duty	2.8
<b>Judgement and Common Sense</b>	1.21
<b>Lateral Gangways</b>	See Gangways
<b>Legislation</b>	Chapter 26
<b>Liaison Committee</b>	2.13 – 2.14, 2.27(v), xix(b), Appendix G



<b>Lighting</b>	
Artificial	17.1
Emergency	7.4, 17.8-17.16
Improving by new design	1.26(ii)
Maintain/test	2.28(iii)
Provision on stairways	10.5
<b>Litter</b>	
Check for litter	2.27(xviii), Appendix C
Control	26.12
Fire risk	15.3
General Maintenance	2.24
Voids	15.5
<b>Management responsibilities</b>	Chapter 2, Appendix A
<b>Means of escape</b>	
Definition	15.33
Exit routes for	15.34
From Stores	15.8
Reversible turnstiles	9.25
Use of lifts	5.8
<b>Medical</b>	2.23, Chapter 23
<b>New design work</b>	1.8, 1.17, 1.26(ii) – (iii), 13.2
<b>Occupancy factor</b>	Chapter 21
<b>Openings in pitch fences/walls</b>	20.2-20.6
<b>Overcrowding</b>	1.25(ii), 8.11-8.12, 11.17, Appendix D
<b>Perimeter fences</b>	Chapter 20
Barrier fences: definition of	20.8
Barrier fences: height of	20.7
Barrier fences: spikes on	6.6
Openings/gates	20.2-20.6
Staffing of	Appendix D
Strength of	20.7
<b>Pitch</b>	
Access to	19.10, 20.2-20.6,
Evacuation on to	9.6, 15.42-15.44
Invasion of	19.10, Appendix D
<b>Places of safety</b>	10.21, 15.33, 15.35
Definition of	Appendix G

<b>Programmes</b>	
Contents of	8.10, 11.11
<b>Public address system</b>	7.4, 11.11, 16.6-16.8, 16.12, 17.17, Appendix F(Par. 8.5)
<b>Radial gangways</b>	See gangways
<b>Ramps</b>	
Provision of	5.7, 10.2, 10.22-10.24
<b>Records</b>	
Maintenance of	2.27(xx), Appendix A
Of inspections and tests	7.9-7.10, 12.8
<b>Refreshments</b>	19.3, 19.12
<b>Risers</b>	
Of Gangways	13.9
Of stairways	10.8-10.9, 10.13
Of terraces steps	11.5
<b>Safe holding capacity</b>	1.24, 9.4, 13.5, 19.3, Chapter 21
<b>Safety Officer</b>	2.7-2.8, 2.22, 2.27, 23.5(iv), Appendix D
<b>Safety policy</b>	2.2-2.4, Appendix A
<b>Sanitary accommodation</b>	Chapter 24
<b>Seated accommodation</b>	Chapter 13
General	13.1-13.3
Egress from	9.10, 13.4-13.6
Fire risk	15.2(iv), 15.5-15.6
Movement in	13.13
Seating	13.11-13.15
<b>Segregation</b>	19.5-19.10
<b>Signposting</b>	1.26(v), 5.5, 8.9, 9.14
<b>Smoking</b>	15.4
<b>Staffing</b>	
Exit gates	2.27(xi)
Stewarding	Chapter 18, Appendix D
Training	2.27(xv), 15.31-15.32, 18.14-18.21

<b>Stairways</b>	
Access/approach to	10.15-10.20
Channelling of	10.12, Figures 10a, 10b, 10c
Definition of	Appendix G
Dimensions of	10.6-10.10
Disposition of	10.5
Fire protection of	15.35-15.37
Guarding on	10.11-10.14
Handrails	10.13
Movement on	10.2-10.3
<b>Status of Code of Practice</b>	1.5-1.6
<b>Stewarding</b>	
Age and Fitness	18.13, Appendix D
Identification of	18.7 – 18.9
Summary of duties	18.11, Appendix D
Training	2.22, 2.27(xv), 15.32, 18.14 – 18.21, Appendix A, C, D
<b>Sub-divisions</b>	11.18
Gates	20.12
<b>Summary of management responsibilities</b>	2.26-2.28
<b>Temporary structures</b>	
Stands	Chapter 14
Tents/marquees	14.22-14.30
<b>Terraces</b>	
Holding capacity of	Chapter 21
Crowd pressures on	1.25(ii), 11.1-11.2
Condition of	1.26(v), 7.8, 11.1-11.7
Division of	11.17-11.20, 19.5-19.10
Gangways	11.8-11.16
Gradient	11.6, Table 12-1
Monitoring of (by C.C.T.V.)	16.16
Movement on	1.26(v), 11.8-11.16, 19.2-19.4
Provision of crush barriers	Chapter 12
Steps	11.4 – 11.7
Stewarding of	18.2
<b>Tickets</b>	2.3, 3.4-3.6, 8.3, 8.9
All-ticket event	3.4 – 3.6
Forged	8.14
Sales	19.7
Touts	8.15



<b>Traffic Management</b>	Chapter 4
<b>Training</b>	See also staffing and stewarding
Of Doctor	23.3(i)
Of first-aid staff	23.4
Of Stewards/staff	2.22, 2.27(xv), 15.32, 18.14-18.21, Appendix A, Par. 2.4, Appendix D, Par. 3
<b>Turnstiles</b>	8.1-8.6, 19.7
Flow rate	8.4-8.5
Inspection/testing	2.28(v)(d), 7.5, 7.8, Appendix C(Par. 1.3)
Location/operation	8.1-8.5, 9.25, 11.17
Metering	8.2, 16.4
<b>Using the Code of Practice</b>	1.21-1.24
<b>Viewing accommodation</b>	
Admission to	8.1-8.6
Capacity calculation	Chapter 21
Changes to	19.4
Closure of	7.6
Definition of	Appendix G
Division of	11.17-11.20
Egress/evacuation from	9.10-9.13, 15.38-15.44
Entrance to	8.7-8.8
Exits from	9.3-9.9, 13.4-13.6, 20.2-20.6, 20.12-20.13
Fire detection for	15.22-15.23
Fire separation of	15.14
Means of escape from	15.33
Signposting to/from	8.9, 9.14
Sightlines of	13.3
Terraces/viewing slopes	Chapter 11
<b>Viewing slopes</b>	
Crush barriers	11.23
Gradient	11.24
Holding Capacity	Chapter 21
Inspection	7.8
<b>Voids</b>	
Fire risk of	15.5
<b>Wheelchairs</b>	5.7
<b>Winders</b>	
In gangways	11.16, 13.9
In stairways	10.9





AN ROINN DEPARTMENT OF  
OIDEACHAIS EDUCATION

ISBN 0-7076-2338-3



9 780707 623382