

Contents

1 Scope	3
2 Legislation, standards and codes.....	5
2.1 Legislation	5
2.1.1 The Health and Safety at Work Act 1974	5
2.1.2 The Management of HASAW Regulations 1999.....	5
2.1.3 The Work at Height Regulations 2005	5
2.1.4 The Building Regulations 2010	6
2.1.5 The Building &c.(Amendment) (Wales) Regulations 2013	6
2.1.6 The Building (Scotland) Regulations 2004	7
2.1.7 The Building Regulations (Northern Ireland) 2012.....	7
2.1.8 The Regulatory Reform (Fire Safety) Order 2005	7
2.1.9 The Fire Safety (Scotland) Regulations 2006	7
2.1.10 The Fire Safety Regulations (Northern Ireland) 2010	7
2.2 Standards and codes.....	7
3 Hazards associated with access installations	11
3.1 Falling.....	11
3.2 Tripping/slipping.....	12
3.3 Entrapment in case of fire	12
3.4 Hazards arising from proximity to plant	13
3.5 Exhaustion	13
3.6 Objects falling onto personnel below	13
4 Access design	15
4.1 Decision making between permanent and temporary access	15
4.1.1 The required frequency of access.....	15
4.1.2 Suitability for permanent access installation.....	15
4.1.3 Evaluation of permanent versus temporary access	16
4.2 Basic design	16
4.3 Design method for factory stairs	18
4.4 Steel stairs	19
4.5 Concrete stairs.....	19
4.6 Timber stairs	20
4.7 Stairways subject to differential movement	20
4.8 Loading.....	21
4.8.1 Loading for stairs, platforms and walkways	21
4.8.2 Horizontal loads on parapets and handrails	21
5 Factory stairways	23
5.1 General.....	23
5.2 Clear width	23
5.3 Pitch.....	23
5.4 Steps.....	23
5.5 Treads	24
5.6 Risers	25
5.7 Stringers	25
5.8 Landings	25
5.9 Gates and doors opening on to stairways	26
5.10 Toe or kicking plates	26
5.11 Balustrades and handrails	26
5.12 Headroom.....	26
5.13 Design	26
5.13.1 Stresses.....	26
5.13.2 Spiral stairways	27
5.13.3 Exposed stairways.....	27

6 Fixed ladders	29
6.1 General	29
6.2 Self-closing landing safety gates	29
6.3 Width	29
6.4 Pitch	29
6.5 Stiles	30
6.6 Rungs	30
6.7 Clearances	31
6.8 Safety equipment	31
7 Steel companion-way ladders	33
7.1 General	33
7.2 Height	33
7.3 Width	33
7.4 Pitch	33
7.5 Stringers	33
7.6 Treads	33
7.7 Handrails	33
7.8 Clearance	34
7.9 Safety gates	34
8 Ramps	35
8.1 General	35
8.2 Fork lift trucks	35
8.3 Kerbs and guardrails	35
8.4 Surfacing	35
8.5 Steel ramps	35
8.6 Stepped ramps	36
9 Platforms and walkways	37
9.1 General	37
9.2 Width	37
9.3 Headroom	37
9.4 Toe plates (kicking plates)	37
9.5 Flooring	38
9.6 Handrails	38
9.7 Fixings	38
9.8 Vertical loads and deflections	38
10 Fire escapes	41
10.1 General	41
10.2 Statutory requirements	41
11 Handrails and balustrades and barriers	43
11.1 General	43
11.2 Loading	44
11.3 Handrail standards	44
11.4 Handrails	46
11.5 Balustrades and panic barriers	47
11.6 Materials and finishes	47
11.7 Self-closing safety gates	47
12 Ladders for access to high structures	49
12.1 General	49
12.2 Materials	49
12.2.1 General	49
12.2.2 Connections	50
12.3 Stiles	50
12.3.1 Steel	50
12.3.2 Materials other than Steel and ladder Loading	50

12.3.3 Width between stiles	50
12.3.4 Stile Extensions.....	50
12.3.5 Jointing of stiles	50
12.3.6 Stile Fixing	51
12.4 Rungs	51
12.4.1 Spacing	51
12.4.2 Fixing to stiles	51
12.4.3 Loading.....	51
12.4.4 Rung Material	51
12.5 Hoops and fall arrest systems.....	52
12.6 Platforms.....	52
12.6.1 Spacing or height between platforms.....	52
12.6.2 Rest platforms	52
12.6.3 Work platforms	52
12.6.4 Obstructions at head of ladder.....	52
12.6.5 Ladder line	52
12.7 Finish	53
12.7.1 General.....	53
12.7.2 Protection	53
13 Inspection and maintenance	55
13.1 Inadequate initial design/installation.....	55
13.2 Deterioration and physical damage.....	55
13.3 Int. removal of components for operational/maintenance purposes	56
13.4 Changes to premises upon which the original assessments were made	57
Appendix A	59
Appendix B	63
Figures	65
References	91

Figures

Figure 1 Pitch range of the various means of access between levels	65
Figure 2 Pitch and proportions for ladders, companion-way ladders, stairways and ramps	66
Figure 3 Concrete stairs	67
Figure 4 General arrangement of steel stairway with straight landing.....	68
Figure 5 General arrangement of steel stairway with 180° landing	69
Figure 6 Study of feet positions to determine various stair details	70
Figure 7 Tread set out	71
Figure 8 Tread types	71
Figure 9 Landing and stringer details	72
Figure 10 Stringer base details.....	73
Figure 11 Flat toe plate details	73
Figure 12 Stairs, ladders and companion-way ladders (EEMUA 105 Recommendations)	74
Figure 13 Hoop dimensions	75
Figure 14 General arrangement of ladder fitted with safety hoops	76
Figure 15 Ladder details.....	77
Figure 16 Top rung alternatives.....	79
Figure 17 Ladder access to platform through floor.....	79
Figure 18 Raised handrail or three quarter cage for narrow landings.....	80
Figure 19 General arrangement of steel companion-way ladder	81
Figure 20 Ramps.....	82
Figure 21 Typical fire escape staircase	83
Figure 22 Handrail layout	84
Figure 23 Handrails - basic dimensions and jointing details	85
Figure 24 Handrail standards	86
Figure 25 Attachment of handrail standards	87
Figure 26 Balustrade arrangements	88
Figure 27 Safety gate	89

Tables

Table 1 Factors affecting choice of means of access or escape	17
Table 2 Structural materials.....	18
Table 3 Medium duty handrail standards 0.36 kN/m, minimum base width 65 mm, minimum bolt size 16 mm	46
Table 4 Heavy duty handrail standards 0.74 kN/m, minimum base width 75 mm, minimum bolt size 20 mm, three or four bolts preferred.....	46
Table 5 Aluminium alloys	50
Table 6 Slip resistance of floor and tread finishes.....	59
Table 7 Optimum dimensions for stairways incorporating Building Regulations Document K:2013	60