

# Supplementary guidance on the design of stairs to help achieve compliance with the Building Regulations



Comhshaol, Pobal agus Rialtas Áitiúil  
Environment, Community and Local Government



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## 1.0 Introduction

Stairs serve many different functions in a building e.g. a mean of escape, a means of access for ambulant disabled people or an effective and simple means of vertical circulation, or sometimes a combination of these. Functional requirements and guidance on compliance for stairs are given in various Parts of the Building Regulations namely:

- Part K (Stairways, Ladders, Ramps and Guards) for stairs in general,
- Part B (Fire Safety) for escape, and
- Part M (Access and Use) for stairs suitable for ambulant disabled people.

Designers should refer to the relevant Part and accompanying TGD when designing stairs.

- Technical Guidance Document K (Stairways, Ladders, Ramps and Guards) contains the primary guidance document on stairs design in an overall sense when the stairs is located within (or immediately outside) a building.
- Technical Guidance Document B (Fire Safety) considers, inter alia the stairs design criteria that need to be addressed with respect to safe egress and is very much dependent on the building purpose group, building occupancy level, etc.
- Technical Guidance Document M (Access and Use) in the context of stairs has an objective to provide independently accessible approach to the main entrance(s) of a building and means of circulation around a building

Where works are carried out in accordance with the TGDs, this will, prima facie, indicate compliance with the relevant parts of the Second Schedule to the Building Regulations (as amended).

## 2.0 Purpose of this guidance

The choice of stairs is crucially dependent on the designers understanding of the function of the stairs under consideration i.e. approach, access, circulation, egress or any combination of these. This supplementary guidance document was developed as a tool to assist building professionals readily determine some of the key criteria of stairs design and expresses the individuality of some of the key stairs design criteria.

The Technical Guidance Documents give guidance on minimum standards. Those involved in the design and construction of buildings should have also have regard to the principles of Universal Design and consider making additional provisions where practical and appropriate.

## 3.0 How to use the supplementary guidance

The guide is presented in 3 tables.

- Table 1 deals with external stairs outside a building other than a dwelling.
- Table 2 deals with internal stairs in a building other than a dwelling.
- Table 3 deals with both internal and external stairs in an about dwellings.

Compliance with this supplementary guidance **does not** confer immunity from compliance with the Building Regulations (or any other Regulations).

Should you notice anything incorrect with the tables or require further clarification please email [buildingstandards@environ.ie](mailto:buildingstandards@environ.ie)

## 4.0 Further reading

C722 Safer stairs in public places - assessment of existing stairs - CIRIA (2013)

Refurbishing stairs in dwellings to reduce the risk of falls and injuries – BRE TRUST (2013)

**Table 1 External stairs outside buildings (other than dwellings)**

	<b>Part K Stairways, Ladders, Ramps and Guards</b>		<b>Part M Access and Use</b>		<b>Part B Fire Safety</b>	<b>Designer decision required below on function of stairs under consideration.</b>  ↓				
<b>Building Regulations Requirements</b>	K1 Stairways, ladders and ramps shall be such as to afford safe passage for the users of a building.		M1 Adequate provision shall be made for people to access and use a building, its facilities and its environs.		B1 Means of escape in case of fire  B5 Access and facilities for the fire service.					
<b>Application of Building Regulations relating to the provision of external steps/ stairs outside a building:</b>	Requirement K1 <b>DOES NOT</b> apply to steps or access routes outside a building other than where steps are immediately outside the external door of a building.		Applies to: 1. the approach route(s) to the accessible entrance(s) (Refer to 1.1.2 of TGD M 2010 for the defined approach routes); 2. the circulation routes around a building (Refer to 1.1.2 for the defined circulation routes)		<b>Where stairs are provided:</b> • Design for vertical escape; • Make provision for people with disabilities; • Provision for personnel access to buildings for firefighting. Refer to Section 1.2.6 'External Escape Routes' of TGD B for provision of external escape stairways. <sup>g</sup>					
<b>Criteria</b>	<b>TGD K 2014</b>			<b>TGD M 2010</b>		<b>TGD B 2006</b>	<b>Stairs designed for:</b>	<b>Reference/ relevant TGD</b>		
				<b>New buildings Section 1</b>	<b>Existing buildings Section 2<sup>c</sup></b>					
<b>1. Stairs width</b> (For landing width see Note h below)	As required by TGD B or TGD M. See across ⇒			1200 (min) between walls, upstands, strings and 1000 (min) between handrails	As wide as possible but not less than 1000 mm between handrails.	Refer to 1.3.4 and 1.3.5 for determining widths of stairways (but not less than 800 mm). <sup>a</sup>	<b>Egress</b>	B (See across)		
							Approach/ Access/ Circulation	M (See across)		
							Egress + any of above	The wider of B and M		
<b>2. Max rise of flight between level landings</b>	16 rises or 18 rises where going ≥ 350 <sup>b</sup>			1500 mm (max) rise or 18 rises where going ≥ 350 <sup>b</sup>		No additional requirements	<b>Egress</b>	K (See across)		
							Approach/ Access/ Circulation	M (See across)		
							Egress + any of above			
<b>3. Rise (R)</b>	<b>Opt</b>	<b>Max</b>	150 (min) to 180 (max)	150 (min) to 180 (max)	No additional requirements	<b>Egress</b>	K (See across)			
	<b>Semi Public</b>	165				190	Approach/ Access/ Circulation	150 (min) to 180 (max)		
	<b>Public</b>	150				180			Egress + any of above	
<b>4. Going (G)</b>	<b>Opt</b>	<b>Min</b>	300 (min) to 450 (max)	As large as possible but not less than 280	No additional requirements	<b>Egress</b>	K (See across)			
	<b>Semi Public</b>	300				250	Approach/ Access/ Circulation	M (See across)		
	<b>Public</b>	300				280			Egress + any of above	
<b>5. Gait (2R+G)</b>	<b>Min</b>	<b>Opt</b>	<b>Max</b>	No additional requirements		No additional requirements	<b>Egress</b>	K (See across)		
	550	600	700				Approach/ Access/ Circulation			
	Egress + any of above									
<b>6. Open risers</b>	Allowed subject to 16mm (min) overlap of nosing & 100mm (max) gap between treads			Not allowed		No additional requirements	<b>Egress</b>	Allowed		
							Approach/ Access/ Circulation	Not allowed		
							Egress + any of above			
<b>7. Tapered treads</b>	<b>Semi Public</b>	Avoid (unless necessary)		Not allowed		No additional requirements	<b>Egress</b>	K (See across)		
	<b>Public</b>	No allowed					Approach/ Access/ Circulation	Not allowed		
							Egress + any of above			
<b>8. Headroom</b>	≥ 2000			≥ 2100		≥ 2000	<b>Egress</b>	≥ 2000		
							Approach/ Access/ Circulation	≥ 2100		
							Egress + any of above			
<b>9. Handrail provision</b>	<b>&gt; 3 risers</b>	Provide handrails		Both sides of all stairs flight regardless of number of risers. <sup>d</sup>		<b>&gt; 3 risers</b>	Provide handrails	<b>Egress</b>	B (See across)	
	<b>&gt; 1000</b>	Both sides						<b>≤ 1000</b>		one side only
		One side only						<b>&gt; 1000</b>		both sides
	<b>≤ 1000 wide</b>	One side only						<b>&gt; 1800</b>		provide a central handrail <sup>e</sup>

10. Handrail height	Above:	Min	Max	New build	Min	Max	Existing building	Min	Max	No additional requirements	Egress	K (See across)	
	Pitch line	900	1000	Pitch line	900	1000	Pitch line	840	1000		Approach/ Access/ Circulation		
	Intermediate landing	900	1100	Intermediate landing	900	1100	Intermediate landing	840	1100		Egress + any of above	M (See across)	
11. Guarding	Stairs should be guarded at the sides where the total rise is > 600 mm. (See 1.1.18)			No additional requirements						No additional requirements		Approach/ Access/ Circulation/ Egress	K (see across)
12. Tactile hazard warning surfaces	No requirements			Top & bottom landings						No requirements		Egress	No requirements
												Approach/ Access/ Circulation	M (See across)
												Egress + any of above	
13. Visibility	No requirements			All step nosing to incorporate permanently contrasting material on the tread. Illuminance at tread level to be at least 100 lux						Adequate artificial lighting should be provided to all external escape routes (See 1.4.8)		Egress	No requirements
												Approach/ Access/ Circulation	M (See across)
												Egress + any of above	

**Notes:**

<sup>a</sup> Method of measurement as per Para B1.0.10 Methods of Measurement – Width “(iii) a stairway is the clear width between walls or balustrades, (strings and handrails intruding not more than 30 mm and 100 mm respectively may be ignored.”

<sup>b</sup> In places of assembly to which large numbers of people have resort, there should be no more than two consecutive flights each having a maximum of twelve risers, without a change in direction of at least 30° between flights;

<sup>c</sup> Section 2 provides additional guidance on the minimum provisions for certain elements and features of existing buildings where it is not practicable to achieve the provisions set out in Section 1.

<sup>d</sup> If width between handrails > 2000 mm then divide stairs into channels not less than 1000 mm and not > 2000 mm.

<sup>e</sup> In such a case the stairway width on each side of the handrail needs to be considered separately for the purpose of assessing stairway capacity.

<sup>g</sup> External escape stairways should be sufficiently protected from the weather and is adequately protected from a fire in the building (see 1.3.9 TGD B).

<sup>h</sup> Top and bottom landings should be level and at least as great as the smallest width of the flight determined by Criteria 1.

**Table 2 Internal stairs in buildings (other than dwellings)**

		<b>Part K Stairways, Ladders, Ramps and Guards</b>		<b>Part M Access and Use</b>		<b>Part B Fire Safety</b>		<b>Designer decision required below on function of stairs under consideration.</b>  ↓			
<b>Building Regulations Requirements</b>		K1 Stairways, ladders and ramps shall be such as to afford safe passage for the users of a building.		M1 Adequate provision shall be made for people to access and use a building, its facilities and its environs.		B1 Means of escape in case of fire  B5 Access and facilities for the fire service.					
<b>Application of Building Regulations relating to the provision of internal stairs.</b>		ALL internal stairs (as required) must comply with Part K.		At least one set of stairs suitable for ambulant disabled people should be provided to access all floors above or below entrance level.		<b>Where stairs are provided:</b> <ul style="list-style-type: none"> <li>• Design for vertical escape;</li> <li>• Make provision for people with disabilities;</li> <li>• Make provision for personnel access to buildings for firefighting.</li> </ul>					
<b>Technical Guidance Documents</b>											
<b>Criteria</b>	<b>TGD K 2014</b>			<b>TGD M 2010</b>		<b>TGD B 2006</b>		<b>Stairs designed for:</b>	<b>Reference/ relevant TGD</b>		
				<b>New buildings Section 1</b>	<b>Existing buildings Section 2<sup>c</sup></b>						
<b>1. Stairs width</b> (For landing width see Note f below)	As required by TGD B or TGD M (if stairs suitable for ambulant disabled people)			1200 (min) between walls, upstands, strings and 1000 (min) between handrails.		As wide as possible but not less than 1000 mm between handrails.		Refer to 1.3.4 and 1.3.5 for determining widths of stairways (but not less than 800 mm <sup>a</sup> ).		Circulation/ Egress/ Both	B <sup>a</sup> (See across)
										Ambulant disabled only	M (See across)
										Any combination of above	The wider of B <sup>a</sup> and M
<b>2. Max rise of flight between level landings</b>	16 risers <sup>b</sup>			1800 (max)		No additional requirements		Circulation/ Egress/ Both	16 risers <sup>b</sup>		
								Ambulant disabled only	1800 (max) <sup>b</sup>		
								Any combination of above			
<b>3. Rise (R)</b>		<b>Opt</b>	<b>Max</b>	150 (min) to 180 (max)		No additional requirements		Circulation/ Egress/ Both	K (See across)		
	<b>Semi Public</b>	165	190					Ambulant disabled only	150 (min) to 180 (max)		
	<b>Public</b>	150	180					Any combination of above			
<b>4. Going (G)</b>		<b>Opt</b>	<b>Min</b>	300 (min) to 450 (max)	As large as possible but not less than 250	No additional requirements		Circulation/ Egress/ Both	K (See across)		
	<b>Semi Public</b>	300	250					Ambulant disabled only	M (See across)		
	<b>Public</b>	300	280					Any combination of above			
<b>5. Gait (2R+G)</b>	<b>Min</b>	<b>Opt</b>	<b>Max</b>	No additional requirements		No additional requirements		Circulation/ Egress/ Both	K (See across)		
	550	600	700					Ambulant disabled only			
	Any combination of above										
<b>6. Open risers</b>	Allowed subject to 16mm (min) overlap of nosing & 100mm (max) gap between treads			Not allowed		No additional requirements		Circulation/ Egress/ Both	K (See across)		
								Ambulant disabled only	Not allowed		
								Any combination of above			
<b>7. Tapered treads</b>	<b>Semi Public</b>	Avoid (unless necessary)		Not allowed		No additional requirements		Circulation/ Egress/ Both	K (See across)		
	<b>Public</b>							Not Allowed	Ambulant disabled only	Not allowed	
	Any combination of above										
<b>8. Headroom</b>	≥ 2000			≥ 2100		≥ 2000		Circulation/ Egress/ Both	≥ 2000		
								Ambulant disabled only	≥ 2100		
								Any combination of above			

9. Handrail provision	> 3 risers	Provide handrails		Both sides of all stairs flight regardless of number of risers <sup>d</sup>						> 3 risers	Provide handrails	Circulation/ Egress/ Both	B (See across)
	≤ 1000 wide	one side only								≤ 1000	one side only	Ambulant disabled only	Both sides <sup>de</sup>
	> 1000	both sides								> 1000	both sides	Any combination of above	
										> 1800	In additon provide a central handrail <sup>e</sup>		
10. Handrail height	Above	Min	Max	Above:	Min	Max	Above	Min	Max	No additional requirements	Circulation/ Egress/ Both	K (See across)	
	Pitch line of flight	900	1000	Pitch line of flight	900	1000	Pitch line of flight	840	1000		Ambulant disabled only	M (See across)	
	Intermediate landing	900	1100	Intermediate landing	900	1000	Intermediate landing	840	1100		Any combination of above		
11. Guarding	Stairs should be guarded at the sides where the total rise is > 600 mm. See 1.1.18 for further details			No additional requirements						No additional requirements		Circulation/ Egress/ Ambulant disabled	K (See across)
12. Tactile hazard warning surfaces	No requirements											Circulation/ Egress/ Ambulant disabled	No requirements
13. Visibility	No requirements			All step nosing to incorporate permantly contrasting material on the tread. Illuminance at tread level to be at least 100 lux						Adequate artificial lighting should be provided to all internal escape routes (See 1.4.8)		Circulation/ Egress/ Both	B (See across)
												Ambulant disabled only	M (See across)
												Any combination of above	Both B & M

**Notes:**

<sup>a</sup>Method of measurement as per Para B1.0.10(c) Methods of Measurement – Width “(iii) a stairway is the clear width between walls or balustrades, (strings and handrails intruding not more than 30 mm and 100 mm respectively may be ignored.”

<sup>b</sup> In places of assembly to which large numbers of people have resort, there should be no more than two consecutive flights each having a maximum of twelve risers, without a change in direction of at least 30° between flights;

<sup>c</sup> Section 2 provides additional guidance on the minimum provisions for certain elements and features of existing buildings where it is not practicable to achieve the provisions set out in Section 1.

<sup>d</sup> If width between handrails > 2000 then divide stairs into channels not less than 1000 and not > 2000 mm.

<sup>e</sup> In such a case the stairwaywidth on each side of the handrail needs to be considered separately for the purpose of assessing stairway capacity.

<sup>f</sup>Top and bottom landings should be level and at least as great as the smallest width of the flight determined by Criteria 1.

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**Table 3 Dwellings**

	<b>External Stairs</b> <i>*(See Notes 4 for Requirements of Part B Fire Safety)</i>						<b>Internal Stairs</b> <i>*(See Notes 1 to 3 for Requirements of Part B Fire Safety)</i>					
<b>Building Regulations Requirements*</b>	<b>Part K Stairways, Ladders, Ramps and Guards</b>			<b>Part M Access and Use</b>			<b>Part K Stairways, Ladders, Ramps and Guards</b>			<b>Part M Access and Use</b>		
<b>Application of Building Regulations and provision of stairs.</b>	Requirement K1 <b>DOES NOT</b> apply to steps or access routes outside a building other than where steps are immediately outside the external door of a building.			Where it is not practicable to provide the required level, gently sloped or ramped approach to a dwelling entrance from the point of access, a stepped approach may be used.			<b>All</b> internal stairs in a dwelling must comply with Part K.			Where there is no habitable room at entry level, the stairway providing access to the storey containing the main living room should comply with the following:		
<b>Criteria</b>	<b>Technical Guidance Document</b>						<b>Technical Guidance Document</b>					
	<b>TGD K 2014</b>			<b>TGD M 2010 Section 3 (Dwellings)</b>			<b>TGD K 2014</b>			<b>TGD M 2010 Section 3 (Dwellings)</b>		
<b>1. Stairs width (mm)</b> (For landing width see Note 5 below)	800 (min) between handrails			900 (min) between handrails			800 (min) between handrails			900 (min) between handrails		
<b>2. Max rise of flight between level landings</b>	16 No. risers			1800 mm (max)			16 No. risers			1800 mm (max)		
<b>3. Rise (R)</b>	<b>Optimum</b>	<b>Max</b>		100 (min) to 150 (max)			<b>Optimum</b>	<b>Max</b>		≤ 175		
	175	220					175	220				
<b>4. Going (G)</b>	<b>Optimum</b>	<b>Min</b>		≥ 280			<b>Optimum</b>	<b>Min</b>		≥ 280		
	250	220					250	220				
<b>5. Gait (2R+G)</b>	<b>Optimum</b>	<b>Min</b>	<b>Max</b>	No additional requirements			<b>Optimum</b>	<b>Min</b>	<b>Max</b>	No additional requirements		
	600	550	700				600	550	700			
<b>6. Open risers</b>	Allowed subject to 16mm (min) overlap of nosing & 100mm (max) gap between treads			No additional requirements			Allowed			No additional requirements		
<b>7. Tapered treads</b>	Avoid unless necessary (See 1.1.6)			Avoid unless necessary (See 3.1.2.5 (f))			Avoid unless necessary (See 1.1.6)			Avoid unless necessary (See 3.3.2.2 (f))		
<b>8. Headroom</b>	2000 (min)			2100 (min)			2000 (min) <sup>6</sup>			No additional requirements		
<b>9. Handrail provision</b>	> 3 risers	Provide handrails		<b>Where &gt; 3 risers</b>	continuous both sides		> 3 risers.	Provide handrails		Where 3 or more risers provide continuous handrail both sides		
	≤ 1000	one side only					≤ 1000	one side only;				
	> 1000	both sides		<b>Where going ≥ 750</b>	handrails need not be provided.		> 1000	both sides				
<b>10. Handrail height</b>	<b>Above:</b>	<b>Min</b>	<b>Max</b>	<b>Above:</b>	<b>Min</b>	<b>Max</b>	<b>Above:</b>	<b>Min</b>	<b>Max</b>	<b>Above:</b>	<b>Min</b>	<b>Max</b>
	<b>Pitch line of flight</b>	900	1000	<b>Pitch line of flight</b>	900	1000	<b>Pitch line of flight</b>	900	1000	<b>Pitch line of flight</b>	900	1000
	<b>Intermediate landing</b>	900	1100	<b>Intermediate landing</b>	900	1100	<b>Intermediate landing</b>	900	1100	<b>Intermediate landing</b>	900	1100
<b>11. Guarding</b>	Stairs should be guarded at the sides where the total rise is > 600 mm. See 1.1.18 for further details			No additional requirements			Stairs should be guarded at the sides where the total rise is > 600 mm. See 1.1.18 for further details			No additional requirements		

**Notes:**

- For dwelling houses with no floors more than 4.5m above ground level (Purpose Group 1(a)) refer to 1.5.2 of TGD B for additional considerations on stairway design.
- For dwelling houses with one floor more than 4.5m above ground level (Purpose Group 1(b)) refer to 1.5.3 of TGD B for additional considerations on stairway design.
- For dwelling houses with more than one floor more than 4.5m above ground level (Purpose Group 1(b)) refer to 1.5.4 of TGD B for additional considerations on stairway design.
- For Duplex dwellings, Purpose Group 1(c) refer to 1.3.9 of TGD B for specific requirements for external escape stairs.
- Top and bottom landings should be level and at least as great as the smallest width of the flight determined by Criteria 1.
- In the conversion of a loft where space is limited, headroom measured at the centre of the stairs should be not less than 1.9 m but may reduce to not less than 1.8 m at the side of the stairs.