



Guidance Note 12

Guidance on the use of the Building Risk Group Matrix

Revision C

Introduction

Many of the decisions that a Certifier will take while undertaking the certification of the design of buildings structures are based on an assessment of the consequences of failure. *BS EN 1990:2002 Eurocode - Basis of Structural Design* proposes in Appendix B Table B1 three consequence classes, which are based on the consequences of failure or malfunction of the structure and gives examples of buildings in the various classes.

The *Technical Handbooks* use the above methodology in Section 1.2 where in Table 1.1 they assign buildings to four Risk Groups for the purpose of assessing the measures required to protect buildings from disproportionate collapse.

SER have refined this methodology for the purpose of determining the level of checking required and for determining the elements which may be included on Schedule 1 and have assigned buildings to five Risk Groups as shown in the following Building Risk Group Matrix. This matrix should be used to determine the Risk Group to which the building belongs.

Guidance Note 11 gives guidelines for checking the structural design of buildings and notes that the Certifier should determine the appropriate Design Check level for the project or part of the project.

The Risk Group is a key piece of information that will be required to be input when generating the certificate of design and will be one of the factors considered when assessing the frequency and timing of audits.

There are likely to be circumstances where the Building Risk Group taken from the matrix is difficult to determine or where it appears to be inappropriate, for example:

1. Where the building under consideration does not obviously fall into one of the building types listed in the matrix.
2. For a warrant application where there are multiple buildings which would fall into differing Risk Groups, the Risk Group to be selected when generating the certificate should be determined by the Certifier as that most appropriate taking account the relative sizes and importance of the buildings. If the most onerous Risk Group is NOT selected, then the Certifier must ensure that the checking regime and the Schedule 1 items for any particular building are those appropriate to the Risk Group for that particular building.

For example, where the warrant application covers a development comprising a number of houses and a care home the Certifier may select RG1A or RG1B as that Risk Group is appropriate to the houses which form the major part of the development. If the care home is classed as Risk Group 2A the Certifier must ensure that the design is appropriately checked and that the only items appropriate to RG2A are included on Schedule 1.

3. For minor alterations to buildings in Risk Group 3, which do not affect the primary structure of the building.
4. For buildings which are structurally straightforward, such as steel portal-framed buildings used as Factory (Class 1) or Storage (Class 1).

In these circumstances the Certifier may choose to follow the principles set down in *BS EN 1990:2002 Eurocode - Basis of Structural Design* to determine the most appropriate Risk Group.

If the decision is to accept a lower Risk Group, the reasons for deviating from the guidance in the matrix must be recorded in both the project and certification records.

Notwithstanding the above, the Risk Group to be used when assessing the measures required to protect buildings from disproportionate collapse should be determined from the Table 1.1 in the *Technical Handbooks*.

Building Risk Group Matrix

Risk Group	Building type	Check level req'd	Minimum requirement for checking drawings, calculations and specifications	Scope of structural check	Permitted Schedule 1 items	Certification options that can be used
RG1A	Single houses, extensions to houses or alterations to houses of not more than 2 storeys, without basement storeys, with a ground floor area of no greater than 200m ² and generally of loadbearing wall construction; developments of not more than five detached, semi-detached or terraced houses of not more than 2 storeys, without basement storeys, where each building has a ground floor area of no greater than 200m ² and is generally of loadbearing wall construction; new houses of 3-storeys, without basement storeys, with a ground floor area of no greater than 200m ² and generally of loadbearing wall construction where the third storey is constructed wholly within the roof and its floor is generally at eaves level	DCL1 – Simple Check	<p>The design will be subject to a simple check.</p> <p>This may be a self-check and may be carried out by the Certifier who is also the designer.</p> <p>A formal record of the self-check should be kept and made available for audit.</p>	<p>Checks will take the form of a design review comprising:</p> <ul style="list-style-type: none"> Principles and primary design features Checking of sample calculations Review of SI data and bearing capacity assumptions and foundation design Detailed scrutiny of stability and loading assumptions. In the case of alterations, a review of the condition assessment of the existing building Provisions for disproportionate collapse requirements. A check of the warrant application plans and specification A check that the works will not affect the stability, cause damage or affect the serviceability of adjacent or adjoining buildings 	<ol style="list-style-type: none"> Piling Vibro stone or concrete columns Precast foundation systems Precast concrete floor units Precast concrete stairs Timber roof trusses Steelwork connections Protective barriers Glazing 	1,2,3,4,5
	Carports, conservatories, and greenhouses					
	Domestic garages and other small single leaf buildings not more than 1 storey					
	Agricultural and related buildings					

Risk Group	Building type	Check level req'd	Minimum requirement for checking drawings, calculations and specifications	Scope of structural check	Permitted Schedule 1 items	Certification options that can be used
RG1B	Houses or extensions to houses of more than 2 storeys, but not exceeding 4 storeys; houses or extensions to houses with a ground floor area of more than 200m ² ; houses or extensions to houses of skeletal or of non- traditional construction; developments of more than five detached, semi-detached or terraced houses; alterations to houses of 2 or 3 storeys to create an additional storey within the roof	DCL2 – Simple Check	The design will be subject to a simple check by individuals who were not involved in the preparation of the design calculations. The Certifier may also be either a designer or a checker.	Checks will take the form of a design review comprising: <ul style="list-style-type: none"> • Principles and primary design features • Checking of sample calculations • Review of SI data and bearing capacity assumptions and foundation design • Detailed scrutiny of stability and loading assumptions. • In the case of alterations, a review of the condition assessment of the existing building • Provisions for disproportionate collapse requirements. • A check of the warrant application plans and specification • A check that the works will not affect the stability, cause damage or affect the serviceability of adjacent or adjoining buildings 	<ol style="list-style-type: none"> 1. Piling 2. Vibro stone or concrete columns 3. Precast foundation systems 4. Precast concrete floor units 5. Precast concrete stairs 6. Timber roof trusses 7. Steelwork connections 8. Protective barriers 9. Glazing 	1,2,3,4

Risk Group	Building type	Check level req'd	Minimum requirement for checking drawings, calculations and specifications	Scope of structural check	Permitted Schedule 1 items	Certification options that can be used
RG2A	Houses of 5 storeys	DCL2 – Simple Check	The design will be subject to a simple check by individuals who were not involved in the preparation of the design calculations. The Certifier may also be either the designer or the checker.	Checks will take the form of a design review comprising: <ul style="list-style-type: none"> Principles and primary design features Checking of sample calculations Review of SI data and bearing capacity assumptions and foundation design Detailed scrutiny of stability and loading assumptions. In the case of alterations, a review of the condition assessment of the existing building Provisions for disproportionate collapse requirements. A check of the warrant application plans and specification A check that the works will not affect the stability, cause damage or affect the serviceability of adjacent or adjoining buildings 	<ol style="list-style-type: none"> Piling Vibro stone or concrete columns Precast foundation systems Precast concrete floor units Precast concrete stairs Timber roof trusses Steelwork connections 	1,2,3,4
	Flats and maisonettes not more than 4 storeys					
	Hotels not more than 4 storeys					
	Shared residential accommodation, residential care buildings and other residential buildings all not more than 4 storeys					
	Offices not more than 4 storeys					
	Factories (Class 2) and industrial buildings not more than 3 storeys					
	Shops and enclosed shopping centres not more than 3 storeys and each storey area of not more than 2000m ²					
	Single storey educational buildings					
	Assembly buildings (other than educational buildings), entertainment buildings and other buildings accessible to the general public all not more than 2 storeys and each storey area not more than 2000m ²					

Risk Group	Building type	Check level req'd	Minimum requirement for checking drawings, calculations and specifications	Scope of structural check	Permitted Schedule 1 items	Certification options that can be used
RG2B	Flats and maisonettes more than 4 storeys but not more than 15 storeys	DCL3 – Intermediate Check	<p>The design will be subject to a more detailed check of the calculations than would be the case for a Simple Check.</p> <p>This may be undertaken by individuals who are members of the design team but who were not involved in the preparation of the design calculations.</p> <p>The Certifier may also be either a designer or a checker.</p>	<p>The intermediate check should cover the same criteria as the simple check however a more extensive check of design calculations should be made. Particular attention should be paid to critical or key elements and lightweight cladding assemblies.</p>	<ol style="list-style-type: none"> 1. Piling 2. Vibro stone or concrete columns 3. Precast foundation systems 4. Precast concrete floor units 5. Precast concrete stairs 6. Timber roof trusses 7. Steelwork connections 	1,2,3,4
	Hotels, shared residential accommodation, residential care buildings and other residential buildings all more than 4 storeys but not more than 15 storeys					
	Educational buildings; more than 1 storey but not more than 15 storeys					
	Shops and enclosed shopping centres not more than 3 storeys and with each storey area more than 2000m ² or more than 3 storeys but not more than 15 storeys					
	Hospitals not more than 3 storeys					
	Offices more than 4 storeys but not more than 15 storeys					
	Assembly buildings (other than educational buildings), entertainment buildings and other buildings accessible to the general public all not more than 2 storeys and all with each storey area more than 2000m ² but not more than 5000m ²					
	Open sided car parks and storage building (Class 2) not more than 6 storeys					

Risk Group	Building type	Check level req'd	Minimum requirement for checking drawings, calculations and specifications	Scope of structural check	Permitted Schedule 1 items	Certification options that can be used
RG3	Every domestic building not covered in Risk Groups 1A, 1B, 2A and 2B	DCL4 – Extended Check	Third party checking: a detailed check with reference to the drawings but not the original calculations to be undertaken by a person or team who has not been involved with any aspect of the original design.	This category of building requires a full design check which should be undertaken by a team who have not been involved in preparing the original design. The checking team should be provided with the drawings and specifications and should undertake analysis and design calculations without reference to the design assumptions or calculations made by the design team. The team undertaking the check shall also independently check that the works will not affect the stability, cause damage or affect the serviceability of adjacent or adjoining buildings.	NONE	1,2,3,4
	Every non- domestic building not covered in Risk Groups 1A, 1B, 2A and 2B					
	Grandstands accommodating more than 5,000 spectators					
	Storage building (Class 1), Factories (Class 1)					

The nomenclature of the Risk Groups 1, 2A, 2B and 3 are synonymous with the consequence classes in Table A.1 – Categorisation of consequence classes of *BS EN 1991-1-7: 2006*.

In determining the number of storeys in a building, basement storeys may be excluded provided such basement storeys fulfil the robustness of Risk Group 2B buildings.

For buildings intended for more than one type of use the Risk Group should be that pertaining to the most onerous Risk Group, subject to 2 in the narrative above.

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