Structural Engineers Registration Ltd

Certification Performance Criteria Guidance

B4.6 Superstructure – Principal Load-bearing Elements

Revision A

Performance Criteria

Certifiers shall satisfy themselves that adequate details have been prepared for all principal load-bearing structural elements, including structural frames, beams, columns walls, floors, roofs, and that sufficient calculations have been prepared in accordance with an acceptable methodology to demonstrate the adequacy of the design and that there is evidence that the design and details have had the appropriate level of checking.

Where Schedule 1 has been used Certifiers must satisfy themselves that adequate details for the elements have been prepared, that sufficient preliminary calculations have been undertaken or that there is other justification to demonstrate the adequacy of the solution proposed and that an adequate performance specification has been prepared.

Background

The Technical Handbook states:

'In order to be safe, a building should be capable of resisting all loads acting on it as a result of its intended use and geographical location. To achieve this, the structure of a building should be designed with margins of safety to ensure that the mandatory functional standard has been met.'

The principal load bearing elements are those structural elements which ensure that all applied loadings are transmitted through the structure down to their foundations. Such elements will include beams, columns, walls and structural elements within walls, floors, roofs, etc.

Guidance

Calculations for the principal loadbearing elements should be carried out in accordance with the Codes and Standards listed in the Technical Handbooks accompanying the Regulations. Where design methodologies have been used which are not based on these then Certifiers must be satisfied that the alternative approach still meets the standard required by the regulations and clearly demonstrate how they have satisfied themselves in this regard.

All principal load-bearing elements must be clearly shown and described on the Warrant Plans and should be consistent with the design calculations. Checklists 1 and 2 in the Procedural Guidance document list typical minimum requirements, but care must be taken when the structure is outwith the standard checklists to see that the information provided is adequate.

The output from structural calculations must be properly reflected in the drawings and details submitted to the local authority in support of the warrant application.

The level of checking undertaken will depend on a wide range of factors which include the complexity of the design and the risk associated with structural failure. For more detailed guidance refer to SER Guidance Note 11, 'Guidelines for Checking the Structural Design of Buildings'.

Examples of Major Non-conformances

Absence of or grossly inadequate evidence of the Certifier's review of the design of superstructure.

The design of any of the principal loadbearing elements clearly does not meet the requirements of Standards 1.1 and 1.2.

Absence of or grossly inadequate suitably checked structural calculations, load/span tables, test certification or other justification for the design of any primary loadbearing element, or for any other important elements of structure.

Absence of or grossly inadequate details for superstructure elements on the warrant drawings.

Absence of or grossly inadequate performance specification and details on the warrant plans, where either precast concrete floors, precast concrete staircases or timber roof trusses were included on Schedule 1.

Absence of or grossly inadequate calculations, etc. to justify the preliminary design shown on the warrant plans where either precast concrete floors and staircases or timber roof trusses were included on Schedule 1.

Absence of or grossly inadequate evidence to demonstrate that a review of a third party's finalised design for any pre-cast concrete floors or timber roof trusses had been carried out by the Certifier before an interim or final Form Q was signed.

Examples of Improvement Issues

Insufficient evidence of the Certifier's review of the design of superstructure.

Insufficient evidence to show that the design and details have been checked.

Inadequate or insufficient details on the building warrant plans.

Inadequate or insufficient structural calculations, load/span tables, test certification or other justification for the design of any primary loadbearing element of structure.

Inadequate performance specification and details on the warrant plans, where either precast concrete floors, or timber roof trusses were included on Schedule 1.

Insufficient calculations, etc. to justify the preliminary design shown on the warrant plans where either precast concrete floors or timber roof trusses were included on Schedule 1.

Insufficient evidence to demonstrate that a review of a third party's finalised design for any precast floors or roof trusses had been carried out by the Certifier before an interim or final Form Q was signed.

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