Structural Engineers Registration Ltd

Certification Performance Criteria Guidance

B4.7 Superstructure – Stability Elements

Revision A

Performance Criteria

Certifiers shall satisfy themselves that adequate details have been prepared for all stability elements, including bracing, shear walls, moment resisting frames, 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.

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 stability elements are those structural elements which ensure that the building is capable of resisting applied lateral loading. Such elements will include bracing, shear walls, moment resisting frames, racking panels, etc.

Guidance

Calculations for the stability elements should be carried out in accordance with the Codes and Standards listed in the Technical Handbooks accompanying the Regulations. They should also take into account the recommendations in Institution of Structural Engineers' publication 'Stability of Buildings Parts 1 and 2: General philosophy and framed bracing'. 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 stability elements must be clearly shown on the Warrant Plans and should be clearly identified as being required for the stability of the building by either a clear description or an appropriate key notation.

There may be instances where a new building relies on an existing building for its stability and in such cases this must be clearly identified as a note on the warrant plans.

The design calculations for the stability elements should be consistent with the methodology used in the stability analysis and the output from structural calculations must be properly reflected on the warrant plans.

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 stability elements clearly does not meet the requirements of Standards 1.1 and 1.2.

Absence of or grossly inadequate suitably checked structural calculations for any stability element.

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

Members used to provide stability of the building are not shown on the warrant plans. (Lack of identification of members as stability elements is an improvement issue)

Examples of Improvement Issues

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

Inadequate or insufficient details on the building warrant plans.

Inadequate or insufficient structural calculations for the design of any stability element.

Members used to provide stability of the building are not identified as stability elements on the warrant plans, e.g., Internal, and external racking/shear walls, bracing, moment-frames.

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