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Site Response Analysis and Site-Specific Response Spectra

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This bulletin is to inform owners and engineering professionals on EGBC's practice advisory for the use of site response analysis.

Summary

Richmond soil is underlain by liquefiable sands and is therefore classified as Site Class F in accordance with Table 4.1.8.4.A of the British Columbia Building Code 2018. A site-specific response analysis (SRA) is generally required unless the provision of Sentence 4.1.8.4.(8) is met, where the building has a fundamental period of vibration equal to or less than 0.5 s.

A SRA can minimize the number of unknowns at a specific site, and can lead to potential savings in the overall construction. However, a high degree of caution must be exercised when performing a SRA and adjusting code-based design spectral values to reflect local site conditions.

The Engineers and Geoscientists British Columbia (EGBC) published version 1.1 of Practice Advisory on "SITE RESPONSE ANALYSIS AND SITE-SPECIFIC RESPONSE SPECTRA" on February 11, 2022 and recommended design professionals to use a site-specific response spectrum that is not less than 80% of the code-specified response spectrum for new buildings. For Site Class F, the design spectral response spectrum should not be less than 80% of that determined for Site Class E.

Application Requirements

The aforementioned EGBC practice advisory is to be followed for all building permit applications where a site-specific response analysis is carried out. The structural and seismic design of the building shall use a design spectral response acceleration at any period that is not less than 80% of the code-specified S_a value for Site Class E.

References

- EGBC, Guidelines & Practice Advisories, (www.egbc.ca/app/Practice-Resources/Individual-Practice/Guidelines-Advisories).

Should you have any questions, comments, or suggestions concerning this bulletin, please reference the Bulletin number and email building@richmond.ca or call the Building Approvals General Inquiries line at 604-276-4118.