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## A study of equivalent strength and effects of brace type of multi-story steel braced frames

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In recent years, the terrible earthquake events that were not expected in the design procedure have occurred in the world. So, it is necessary to estimate the seismic performance accurately. In this paper, it is focused on the energy absorbing efficiency of steel braced frames. Braces in a steel framed structure show the complicated and unstable behavior because many kinds of buckling and fractures are combined. Evaluation method of restoring force characteristics and capacity have been studied in enormous past researches, however, there are some problems to adopt for design procedure. Also the response characteristics of steel braced frames are affected by the interaction between frames and braces and by the brace type. This paper suggests the analytical method to evaluate the energy absorbing efficiency of steel braced frames as equivalent strength. The equivalent strength is formulated with yield shear coefficient of the frame and slenderness ratio of the brace. Also, to verify the applicability of multi-story steel braced frames, response analysis of two types of 5-story steel braced frames (X-brace, K-brace) were conducted. As compared with energy absorbing efficiency of the response analysis result, it is confirmed that the equivalent strength can be accuracy of plus or minus 20% or so.

### Biography

Takayuki Kinoshita has completed his Bachelor of Engineering degree in 2016. He has been a Master's student at Tokyo University of Science and investigated about Steel Structural Engineering. In research activities, he submitted some papers to academic journals of architectural institute of Japan.

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