عنوان مقاله:

THE DETERMINATION OF MODIFICATION FACTOR FOR OUTRIGGER BRACED STRUCTURES USING TIME HISTORY ANALYSIS

محل انتشار:

هفتمین کنفرانس بین المللی زلزله شناسی و مهندسی زلزله (سال: 1394)

تعداد صفحات اصل مقاله: 8

نویسندگان:

Sohrab FALLAHI - *In Earthquake Engineering, E.S.S. Consulting Engineers, Tehran, Iran*

Armen ASSATOURIANS - *Ph.D. in Structural Dynamics and Earthquake Engineering, Yerevan Project Co, Yerevan, Armenia*

خلاصه مقاله:

According to developments in construction of highrise buildings both in Iran and developing countries, more concentration and studies on seismic behaviour of these types of structures are required. Due to a large variety of highrise buildings, current research is carried out on a special type of above mentioned buildings, which is composed of a steel braced welded structure equipped with outrigger bracings both on roof and mid height levels. Outrigger braced highrise structures are assumed to be a basic solution for overturning problem by outbreaking the total outer structure of highrise buildings. This system is much more effective than the conventional braced frame structures for buildings ranged from 40 to 60 stories high. First the computational method for modification factor and related effective parameters are briefly described in this research. Then a total of 8 two dimensional frames (ranging from 20 to 60 stories high) equipped with outrigger bracings of various types both on roof and mid height levels are modelled. Then the assumed finite element models are analysed and designed according to Iranian 2800 seismic code taking into account the site specifications and Sa=0.25g , Sa=0.35g spectral acceleration levels. Afterwards, by using accelerograms recorded on soil types 1,2,3 & 4 (due to 2800 code), and after scaling them to Sa=0.25g & Sa=0.35g, a total of 1280 linear and nonlinear Time History analyses are carried out on the above mentioned 2D models, using Sap 2000 ver. 16.1.1 finite element software. By performing a “Modal Push-over Analysis” on each model and by using achieved results of above mentioned analyses, the ductility and overstrength reduction factors are computed for each model and related records. Finally, the modification factors are calculated for both “Ultimate state” and “Working stress” design methods respectively.

کلمات کلیدی:

Accelerogram, Nonlinear Analysis, Modification Factor, Overstrength, Outrigger Bracing