

Studying the Effect of Length and Material Properties of Knee Element on Behavior Factor of Knee Bracing System using Nonlinear Static Analysis

[Mahmoud Edalati [Corresponding Author, Assistant Professor, Civil Engineering Department, Faculty of Engineering, Ilam University, Ilam, Iran

[Farid Alidadi [- Student, Civil Engineering Department, Faculty of Engineering, Ilam University, Ilam, Iran

[Arash Karimipour [- Student, Civil Engineering Department, Faculty of Engineering, Ilam University, Ilam, Iran

چکیده :

In a knee brace system, at least one end of the diagonal member is connected to a small knee element instead of being connected to the beam-column intersection. The ductility in a knee bracing frame (KBF) is due to the knee element yielding in shear. On the other hand, the required lateral stiffness in such frames is provided by a diagonal member. Yielding of the knee element during a strong earthquake would ensure overall system stability without damaging the main structural components. Thus, reconstruction of the earthquake-resistant system would be easier and more economic. Considering the increased ductility and energy damping requirements set forth for building structures in seismic zones, the authors studied in the paper the effects of the length and properties of the materials used in knee bracing systems. To obtain reliable modeling and analysis results, first a suitable sample was selected from among the credible test models used in world renowned research centers and, subsequently, this sample was modeled by ANSYS software. Then, modeling accuracy was established by comparing corresponding load-deformation curves. Finally, by varying the knee member length and material properties, numerous models were generated in the ANSYS environment. Ultimately, such characteristics as ductility, behavior coefficient, ultimate strength, energy absorption, etc. were calculated and the relevant tables and curves produced

کلید واژه : Knee brace, knee member , element, materials properties, ductility, behavior coefficient, nonlinear static analysis

[برای دریافت اطلاعات بیشتر اینجا را کلیک کنید](#)