

Experimental evaluation of structural behavior of steel member affected by the presence of gusset plate

Global enhancement of seismic performance of passive-controlled structures Part 2

The majority of experimental studies on damage-controlled structures have tested isolated dampers or simple subassemblies which neglect the influence of the framing components and the gusset-plate on the system performance. In this paper, cyclic loading tests of six frame subassemblies with the gusset-plate connection to investigate effects of the presence of the gusset-plate on structural behavior of the beam. The gusset-plate led to increase in initial elastic stiffness and yield strength of the beam. Meanwhile, damage to beam-column joint panel subjected to high shear stress was decreased by the gusset-plate. Finally, based on the cyclic loading tests of the beam with the gusset-plate connection, the simplified analysis model considering the gusset-plate working as a knee brace was proposed.