

Construction & Steel Structure

September 22-24, 2016 Las Vegas, USA

Repair method of damaged steel framed structures and ultimate seismic state of repaired steel frames

Takumi Ito and Kenjiro Mori
Tokyo University of Science, Japan

Recently, a lot of building structures have been experiencing severe natural disasters, and it was reported that various types of terrible collapse mode occurred. There are many discussions about repairability and recovery on damaged buildings over the world. In particular, there has been focused on new keyword “Resilience” in any field including structural engineering. In Japan, a technical guideline for repairing damaged buildings have been established. However, the applicability and feasibility of repair method and recovery has not been well reported. Herein, to investigate the recovery and ultimate seismic state of repaired steel framed structures, experimental and analytical studies are conducted. Herein, the actual repairing technique for steel framed structure is suggested. During experimental study, the damaged steel member is reproduced by loading tests with consideration of past reports of mega-earthquake disasters. The damaged portion was repaired by proposed method by use of steel-cover plate technique. After this repair process, the loading test was done again. The recovery of structural performance was estimated by comparison of original and repaired state. From the test results, it is confirmed that the strength and ductility improved after repair. Furthermore, the analytical model and restoring force characteristics of repaired steel member are suggested by observation of ultimate behavior during loading test. Here, the purpose on seismic design is to guarantee the overall failure mode formation on frames. So, the structural demand of strength and rigidity and column-to-beam strength ratio on repaired state are discussing analytically.

Biography

Takumi Ito has completed his Dr Eng from The University of Tokyo on 2004. He was Assistant Professor in The University of Tokyo during 2004-2008, and he is now Associate Professor in Tokyo University of Science (TUS). He was a Chair, Secretariat and Member of many research committee in Architectural Institute of Japan. He has already submitted a lot of paper related to structural engineering and participated the international conference as oral presenter or organized session chair.

t-ito@rs.kagu.tus.ac.jp

Notes: