سیویلیکا - ناشر تخصصی مقالات کنفرانس ها و ژورنال ها
گواهی ثبت مقاله در سیویلیکا
CIVILICA.com

عنوان مقاله:

Predicting Low Cycle Fatigue Life through Simulation of Crack in Cover Plate Welded Beam to Column Connections

محل انتشار:

مجله مکانیک کاربردی محاسباتی, دوره 48, شماره 1 (سال: 1396)

تعداد صفحات اصل مقاله: 14

نویسندگان:

Mehdi Ghassemieh - *Full Professor and corresponding author, College of Engineering, School of Civil Engineering, University of Tehran,Tehran, Iran*

Moein Rezapour - *Graduate Student, College of Engineering, School of Civil Engineering, University of Tehran, Tehran, Iran*

Ashkan Thaghinia - *Graduate Student, College of Engineering, School of Civil Engineering, University of Tehran, Tehran, Iran*

خلاصه مقاله:

This paper presentsa low cycle fatigue life curve by simulating a crack in a cover plate welded moment connection. Initiation of ductile fracture in steel is controlled by growth and coalescence ofmicro-voids. This research useda numerical method using finite element modeling and simulation of ductile crack initiation by a micromechanical model. Therefore, a finite element model of a cover plate welded moment connection was developed in ABAQUS software, and a FORTRAN subroutine was used in order to simulate cracking in the connection model. Thus, each crack location and the number of cycles to initiate the crack weredetected. Utilizing cyclic void micromechanicalmodelofgrowth analysis, which is a technique to predict fracture in a ductile material, six different cover plate connections (divided in three categories) were modeled in the steel moment frame,and then their critical points to trigger the crack were identified. Finally, for the cover plate moment connection, considering the constant amplitude of loading curves data and in order to present the low cycle fatigue life prediction, displacement versus the number of half cycles diagram is produced

کلمات کلیدی:

Low cycle fatigue, Cyclic void growth modeling, Cyclic loading, Cover plate moment connection

لینک ثابت مقاله در پایگاه سیویلیکا:

https://civilica.com/doc/705184