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Analysis of Steel Beam-Column Joints Under Seismic Loads

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Abstract : Adapazarı railway car factory, the only railway car factory of Turkey, was constructed in 1950. It was a steel design and it had filled beam sections and truss beam systems. Columns were steel profiles and box sections. The factory was damaged heavily on Izmit Earthquake and closed. In this earthquake 90% of damaged structures are reinforced concrete, the others are %7 prefabricated and 3% steel construction. As can be seen in statistical data, damaged industrial buildings in this earthquake were generally reinforced concrete and prefabricated structures. Adapazari railway car factory is the greatest steel structure damaged in the earthquake. This factory has 95% of the total damaged steel structure area. In this paper; earthquake damages on beams and columns of the factory are studied by considering TS648 'Turkish Standard Building Code for Steel Structures' and also damaged connection elements as welds, rivets and bolts are examined. A model similar to the damaged system is made and high-stress zones are searched. These examinations, conclusions, suggestions are explained by damage photos and details.

Keywords : column-beam connection, seismic analysis, seismic load, steel structure
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