

Discussion on the Impact Issues in Urban by Earthquake Disaster Cases

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Abstract : There are more than one thousand times a year of felt earthquakes in Taiwan. Because earthquakes are disaster threats to urban infrastructure, they often disrupt infrastructure services. For example, the highway system is very important to transportation infrastructure; however, it is vulnerable to earthquakes and typhoons in Taiwan. When a highway system is damaged by disaster, it will create a major impact on post-disaster communications and emergency relief and affect disaster relief works. In a study case on September 18th, 2022, the Taitung Chihshang earthquake, with a magnitude of 6.8 on the Richter scale with a depth of 7 km, caused one death; 171 people were injured and had a significant urban infrastructure impact. Hualien and Taitung areas have a large number of surface ruptures, road disruptions due to the collapses, over ten cases of bridges failure or closed, partial railroad section service shutdown, building collapses, and casualties. Taitung Chihshang earthquake, the peak ground acceleration is 585 gal (cm/s^2), and the seismic intensity is Level 6 Upper(6+) in Chishang, Taitung County. After the earthquakes, we conducted on-site disaster investigation works in the disaster area; the disaster investigation works included a public and private building survey, a transportation facility survey, a total of ten damaged bridges, and one railroad station damaged were investigated in this investigation. The results showed that the affected locations were mainly concentrated along the Chihshang fault and the Yuli fault in the Huatung Longitudinal Valley. We recorded and described the impact and assessed its influence region in terms of its susceptibility to and the consequences of earthquake attacks. In addition, a lesson is learned from this study regarding the key issues after the Taitung Chihshang earthquake.

Keywords : earthquake, infrastructure, disaster investigation, lesson learned

Conference Title : ICDEM 2023 : International Conference on Disaster and Emergency Management

Conference Location : Tokyo, Japan

Conference Dates : July 17-18, 2023