

INTRODUCTION AND DISCUSSION OF POST-EARTHQUAKE QUICK INSPECTION METHOD FOR DAMAGED BUILDINGS IN JAPAN

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Just after a severe earthquake, we must take measures to avoid secondary damages due to aftershocks. Buildings damaged by the main shock are likely to collapse and pose a danger to inhabitants. Therefore, we need to inspect them in the affected area after the earthquake quickly and inform the inspection results to the residents. Other than such “post-earthquake quick inspection”, we execute various inspections of buildings for different purposes. Figure 1 describes the recovery process from an earthquake disaster. Besides, in Figure 2, we categorize the assessments of buildings, which we should perform after the earthquake.

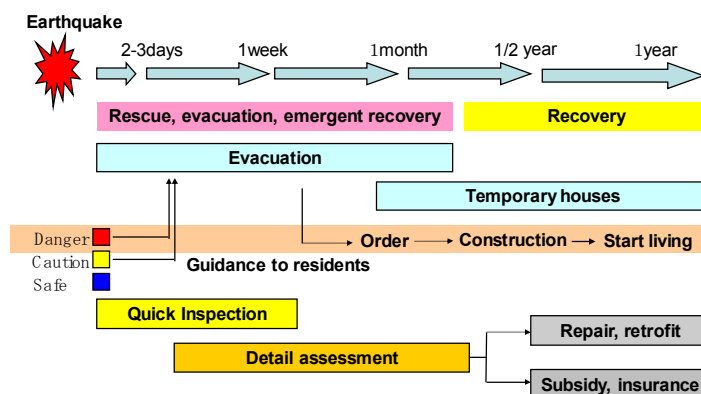


Figure 1. Recovery process from an earthquake disaster.

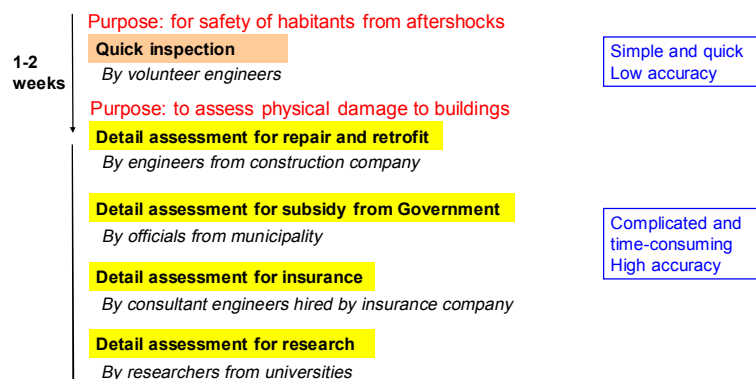


Figure 2. Damage assessment methods.

In this paper, the authors introduce the post-earthquake quick inspection method (QI) in Japan and discuss how we implement it effectively, showing an implementation example in the 2016 Kumamoto earthquake. The technical manual for the QI is published by the Japan Building Disaster Prevention Association (1998). Also, the implementation organization, which also operate training system of inspectors, is established by the association of municipalities and so on.

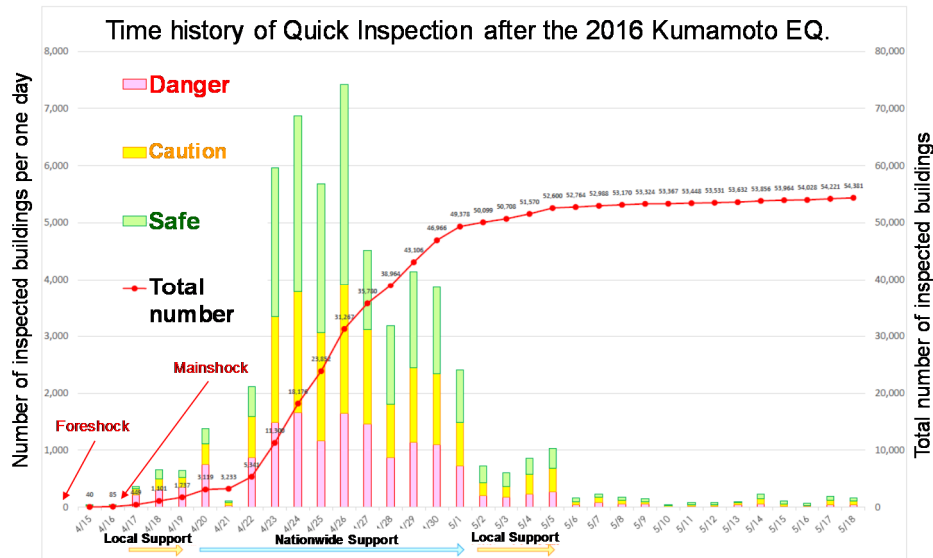


Figure 3. Statistic of post-earthquake quick inspection in the 2016 Kumamoto earthquake (NILIM, 2016).

Figure 3 shows the statistic of QI in the 2016 Kumamoto earthquake. In this earthquake event, the foreshock with Mw 6.2 struck on 4.14 before the mainshock with Mw 7.0 on 4.16. Hence, they started the QI since 4.15. In this figure, the local support means that of the support by the prefectures in the Kyushu Island, where Kumamoto prefecture locates, and the nationwide support implies that of all Japan. The number of inspected buildings increased rapidly after getting nationwide support. They almost completed the QI about two weeks later after the mainshock. This result showed us the implementation organization is essential for the QI. Unfortunately, several residents died from the collapse of the building. Some researchers pointed out that the collapsed buildings had already been damaged by the foreshock, and their seismic performance was degraded. To prevent such damages, we need to develop the method to evaluate the residual seismic performance of buildings after an earthquake more rapidly by using a sensing system and so on.

REFERENCES

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