Use of Evacuation Simulation to Develop a Disaster Management Plan in Super Tall Buildings

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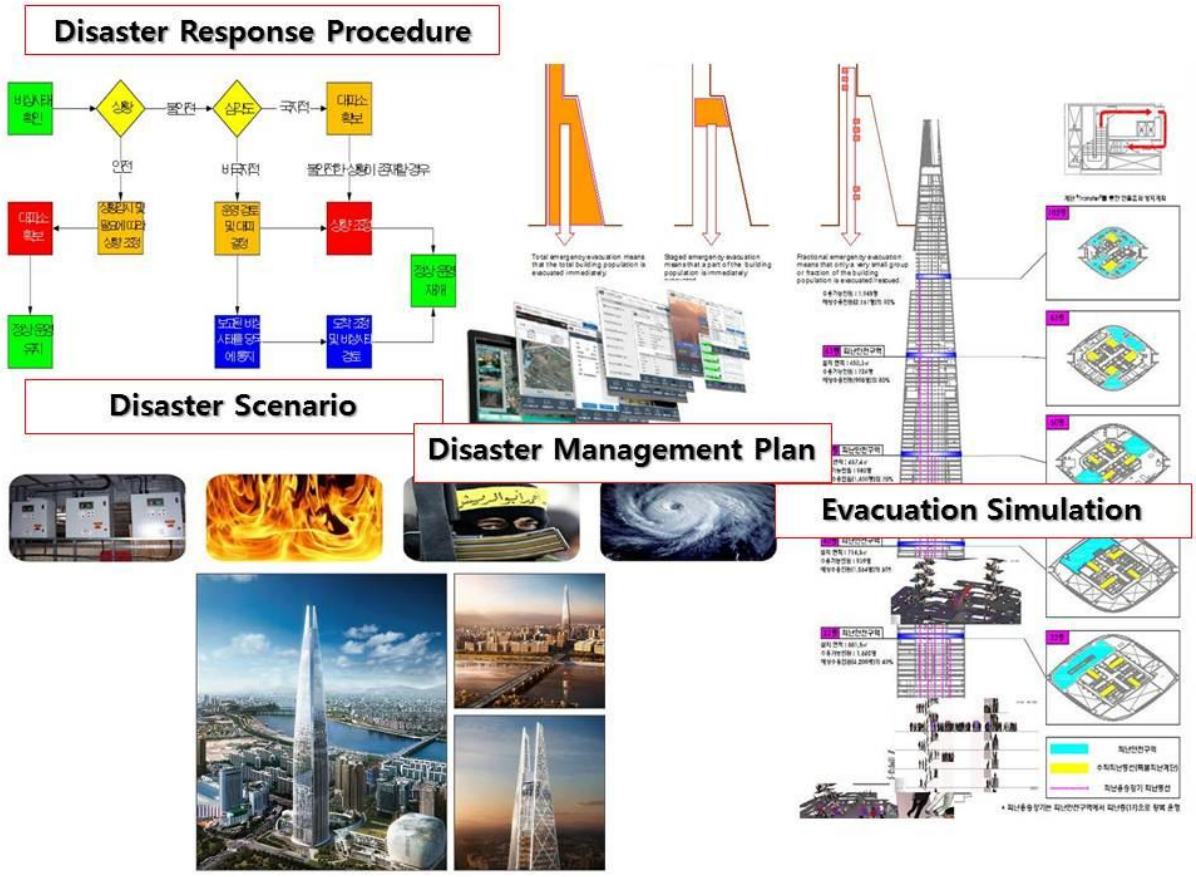
Due to progress of structural construction technologies, we can build super tall buildings over 100 floors with scientific efficient process at the present day. This kind of super tall building occupied by over 10,000 people is not just a tall building but a small or medium scale city. However super tall building is designed with enhanced fire and life safety features for fire protection and security systems, and exiting design, if an emergency situation fails to suppress and mitigate in the initial stages occurs, the event will become a disaster cause major casualties and property loss. Therefore, well-organized disaster management and response plan with innovative evacuation model analysis that will assist in evacuating building occupants is suggested to be developed starting from building design phase.

Disaster scenarios are generally categorized 4 areas: Human, Weather, Building system failure and Terrorism related disaster. Based on each scenario, evacuation concepts, total/staged evacuation and elevator assisted evacuation should be considered and determined in the planning stage including timed analysis. As an original purpose, evacuation simulation, Pathfinder is applied to obtain confident and quantitative time measurement. After completion of analysis, detail emergency management procedure of responders and commanders will be developed. At this point, Pathfinder is also suggested to utilize emergency responders' movement to identify issues of response based on occupants' evacuation and help to optimize management procedures.

This disaster management planning approach has been applied in a 123 stories super tall building expected open in the end of 2015 located in Seoul, Korea. The purpose of this paper is to provide overview of Pathfinder simulation application and propose a creative utilization to develop a disaster management plan in a super tall building project.



If you have any question or comment related to this paper, please feel free and contact via email: cdc4111@kfubis.com