Study on Evacuation Safety of Subway Station Platform in Fire

Tomoko Suzuki (K110610)

Keywords: Subway, Evacuation safety, Fire Escape Simulator

Subway is one of the important means of transportation in the urban area. Recently the Tokyo Metro Fukutoshin Line is opened to traffic in June 2008 and the several commercial facilities have been developed in the subway stations. The space configuration of subway stations have also gotten complex and diverse. While the convenience of subway stations is improved, the risk for evacuation in fire might be raised by increasing of the passengers. This study aims to grasp the actual conditions of the subway station in Tokyo on the measures for fire safety and to evaluate the evacuation safety in the platform fire by predicting the time to evacuation and the smoke filling time.

First, examine case studies from a Japanese newspaper article database subway fire in the past. In the 2009 article from 1968, it was confirmed that the 7 subway fire. Overseas, Fire was caused by the burning of a wooden escalator at King's Cross Station in U.K. And In South Korea had led to the catastrophe of the vehicle due to fire arson fires at the platform. Although it had not resulted carefully in Japan, the small-fire of several affairs had occurred. Not a little, Even if station take very seriously the fire safety measures, Shows that there is a risk of fire.

Next, in order to know the present condition of the refuge safety in case of the fire of the subway station building of Tokyo certain stations, For the Tokyo certain stations whole line, " The number of the exits on the home of each station (stairs, ticket gate) ", " The number of stands ", "The style of a home (a relative type or an island type)", "The number of passengers on the 1st” , and "The number of passengers on the 1st per home 1 access " were researched. It was comparing each station, even if the fire should have occurred, the high-risk station has been grasped.

Next, In order to extract a route to a certain line and to perform the case study of the refuge safety of an individual subway station home, investigation about " Measurement of the amount of passing ", "Calculation of the level ingredient speed of escalator ", " Calculation of burning velocity ", and "The kind of firefighting equipment in a platform " was researched. Using the results of this survey, conducted a case study to evaluate the fire safety evacuation model K of Tokyo certain stations.