Wind Fragility for Soundproof Wall with the Variation of Section Shape of Frame

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Abstract: Recently, damages due to typhoons and strong wind are on the rise. Considering this issue, we evaluated the performance of soundproofing walls based on the strong wind fragility by means of numerical analysis. Among the components of the soundproof wall, aluminum frame was the most vulnerable member, thus we have considered different section of aluminum frame in the determination of wind fragility. Wind load was randomly generated using Monte Carlo Simulation method. Moreover, limit state was based on the test standard of road construction soundproofing wall. In this study, the strong wind fragility was determined by considering the influence factors of wind exposure category, soundproof wall's installation position, and shape of aluminum frame section. Results of this study could be used to determine the section shape of the frame that has high resistance to the wind during construction of the soundproofing wall.

Keywords : aluminum frame soundproofing wall, Monte Carlo simulation, numerical simulation, wind fragility

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