

Evaluation of Wind Fragility for Set Anchor Used in Sign Structure in Korea

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Abstract : Recently, damage to domestic facilities by strong winds and typhoons are growing. Therefore, this study focused on sign structure among various vulnerable facilities. The evaluation of the wind fragility was carried out considering the destruction of the anchor, which is one of the various failure modes of the sign structure. The performance evaluation of the anchor was carried out to derive the wind fragility. Two parameters were set and four anchor types were selected to perform the pull-out and shear tests. The resistance capacity was estimated based on the experimental results. Wind loads were estimated using Monte Carlo simulation method. Based on these results, we derived the wind fragility according to anchor type and wind exposure category. Finally, the evaluation of the wind fragility was performed according to the experimental parameters such as anchor length and anchor diameter. This study shows that the depth of anchor was more significant for the safety of structure compare to diameter of anchor.

Keywords : sign structure, wind fragility, set anchor, pull-out test, shear test, Monte Carlo simulation

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