

Application of Flexi-Wall in Noise Barriers Renewal

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Abstract : This paper presents an experimental study on structural performance of an innovative noise barrier consisting of poly-block, light polyurethane foam (LPF) and polyurea. This wall system (flexi-wall) is intended to be employed as a vertical extension to existing sound barriers in an accelerated construction method. To aid in the wall design, several mechanical tests were conducted on LPF specimens and two full-scale walls were then fabricated employing the same LPF material. The full-scale walls were subjected to lateral loading in order to establish their lateral resistance. A cyclic fatigue test was also performed on a full-scale flexi-wall in order to evaluate the performance of the wall under a repetitive loading condition. The result of the experiments indicated the suitability of flexi-wall in accelerated construction and confirmed that the structural performance of the wall system under lateral loading is satisfactory for the sound barrier application. The experimental results were discussed and a preliminary design procedure for application of flexi-wall in sound barrier applications was also developed.

Keywords : noise barrier, polyurethane foam, accelerated construction, full-scale experiment

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