In the near future, the occurrence of extreme ground motions exceeding the structural design level is predicted, and these ground motions may cause collision to the retaining wall when the motions input to base-isolated structures. Previous research has revealed that the horizontal resistance of the retaining wall including the backfill has a major impact on the structure's collision response. Although several evaluation methods of horizontal resistance of retaining wall by fiber model were proposed and the validation of evaluation methods were insufficient.

Based on this background, I proposed the simple modeling method for lateral resistance of elastic retaining wall and the collision analysis model using it in the previous paper. Continuing from the previous paper, this paper verifies the applicability of the simple modeling method for lateral resistance of retaining wall and collision analysis model for the retaining wall with elasto-plastic characteristic, and aims at the development to the structural design and analysis method for extreme ground motions.

As the results of verification, the lateral resistance of retaining wall and the structure's collision response correspond well with the simple modeling method and the 3D-FEM analysis results, and this method is very useful.