Verification of Finite Element Analysis Accuracy through Collision Test Using an Actual Railway Carbody Structure and a Dump Truck

Tomohiro OKINO　　Keisuke NAGATA　　Jun-ichi TAKANO

It is impractical to conduct collision tests with the actual train unit to design the crash safety structure. Consequently, numerical simulation is effective and it is important to validate the analytical accuracy. Therefore, the authors conducted the collision test of a full size partial stainless-steel carbody structure of a railway leading vehicle and a typical large dump truck. In addition to the test, FE analysis was conducted under the same conditions as the experimental test in order to compare the numerical result with the experimental one. As a result, the numerical result was in agreement with the experimental result. Finally, using the FE analysis, the authors estimated the impact deformation and fracture behavior of the railway carbody under the actual level-crossing accident.