

Expansion of the Application Range of the Continuous Welded Rail in the Slab Track

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Additional rail axial force by the thermal expansion of girders occurs in slab tracks on a viaduct. Hence, the limit value of rail compressive axial force and the value of rail gaps caused by rail breakage are examined when designing a continuous welded rail. For the expansion of the applicable range of the continuous welded rail, the consideration of these limit values is necessary. In this study, the stability in the lateral direction in slab tracks were analyzed using a finite element method and its results showed that the limit of the value of rail compressive axial force can be eased. In addition, a vehicle dynamics simulation on rail gaps was developed, and case studies at the time of a vehicle passing rail gaps were carried out to evaluate the dynamic effect of the track and vehicle. As a result of the case studies, we estimate that safety problems will not occur under the conditions included in this study, and results shows the limit of the value of rail gaps of rail breakage can be eased.