Development of Ballastless Track with Super-fine Particle Cement

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In order to reduce the daily maintenance works and costs of the existing ballasted track, a paved track, a grouted ballasted track and many types of ballastless track have been developed so far. However, the improvement of the existing ballasted track into these developed tracks entails the costly replacement of the existing sleepers and ballast. If the existing ballast is reused for the improvement method, it is necessary to select a grout with high permeability and integrate sleepers and ballast with the selected grout. In order to achieve this, we focused on superfine-particle cement paste, which is mainly used as grouting material for soil and has not yet been applied to railway track construction up to now. In this study, we have carried out the filling performance test of grout materials and cyclic loading test for full-scale track models. As a result of the tests, we have confirmed that the method of improving the ballasted track with superfine-particle cement paste shows a good effect on reduction of settlement of the track.