Proposal of Modeling Method for Segment Joints Using Element Experiments for Shield Tunnel and Its Application to Structural Analysis

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Full-scale bending tests of segment joints for shield tunnels are important for understanding and properly evaluating the behavior of joint sections. However full-scale tests are costly and time-consuming. Therefore, numerical analysis is expected to complement these tests. This study proposes a modeling method for segment joints. This method is based on behavior observed in full-scale joint bending experiments using a three-dimensional FEM analysis. Firstly, a model case of railway shield tunnels was established. Secondly, a series of steps was demonstrated, from setting rotation characteristics with finite element analysis to analyzing the frame structure of the shield tunnel, illustrating the usefulness of this study.