

**Long-Term Deformation Prediction of PC Box Girder Bridges
Using Strain Analysis Incorporating Moisture Diffusion**

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In concrete structural design, shrinkage and creep are commonly evaluated using prediction formulas that predict these properties based on concrete mix proportions and climatic conditions, and these formulas are applied to analyses such as the long-term deflection of PC box girders. Although these methods can predict deflection with relatively high accuracy through fiber analysis, they rely on simplified assumptions for drying conditions and therefore cannot sufficiently account for detailed environmental conditions. The authors developed a strain analysis program that focuses on internal moisture behavior in concrete. By applying the analytical results to fiber analysis, it was shown that factors such as ambient relative humidity and water exposure on structural members significantly influence the long-term deformation of PC box girders.