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Structural Performance of a Bridge Pier on Dubious Deep Foundation

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Abstract : The study of the structural behavior of a support/pier of an elevated viaduct in Mexico City is presented. Detection of foundation piles with uncertain integrity prompted the review of possible situations that could jeopardy the structural safety of the pier. The objective of this paper is to evaluate the structural conditions of the support, taking into account the type of anomaly reported and the depth at which it is located, the position of the pile with uncertain integrity in the foundation system, the stratigraphy of the surrounding soil and the geometry and structural characteristics of the pier. To carry out the above, dynamic analysis, spectral modal, and step-by-step, with elastic and inelastic material models, were performed. Results were evaluated in accordance with the standards used for the design of the original structural project and with the Construction Regulations for Mexico's Federal District (RCDF-2017, 2017). Comments on the response of the analyzed models are issued, and the conclusions are presented from a structural point of view.

Keywords : dynamic analysis, inelastic models, dubious foundation, bridge pier
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