Assessment of the state and condition of damaged buildings and structures affected by land subsidence

J. A. ORTIZ¹, F. A. ALONSO², J. PACHECO¹, M. E ZERMEÑO¹, G. ARAIZA¹ & E. MENDOZA¹

¹ Dept. of Construction and Structures, Autonomous University of Aguascalientes, Av. Universidad 940 (module 108), 20100 Aguascalientes, Ags., Mexico
aortiz@correo.uaa.mx

² School of Engineering, Autonomous University of Chiapas, Blvd. Belisario Domínguez Km. 1081, 29000 Tuxtla Gutiérrez, Chis., Mexico

Abstract Soil fracturing due to land subsidence is a frequent problem in many countries when the water extraction exceeds the natural recharge of aquifers. The effect of soil fracturing due to subsidence may provoke severe damages and compromise the structural stability of buildings. The objective of this paper is to present the development of a methodology of inspection and evaluation, in order to estimate the state of the condition of damaged structures with the purpose of establishing a diagnosis of its structural state. This methodology allows standardizing of the criteria for the inspection and evaluation tasks, which means that the diagnoses issued by inspectors will be more regular. In this way, more reliable and better supported recommendations will be issued regarding the structural safety of houses and the necessary tasks to be done, concerning the reinforcing, rehabilitating, repairing, dislodging or demolition of the structures.

Key words land subsidence; structural pathology; evaluation