EVALUATION OF LEVEL OF RISK FOR STRUCTURAL MOVEMENT USING EXPANSION POTENTIAL

John D. Nelson, Ph.D., P.E. F.ASCE ¹, Kuo-Chieh Chao, Ph.D., P.E. M.ASCE ², Daniel D. Overton, P.E. F.ASCE ³, and Jesse Dunham-Friel, E.I.T. A.M.ASCE ⁴


ABSTRACT

The expansion potential (EP) of a soil or sedimentary bedrock formation defines the severity of risk related to slab or foundation movement due to heave of expansive soil or bedrock. Common practice is to categorize the risk potential solely on the basis of the percent swell that a soil sample exhibits in the consolidation-swell test. However, calculations of heave take into account both percent swell and swelling pressure. Therefore, assessment of risk must consider both of those factors. A risk factor termed “Expansion Potential”, EP, considering both percent swell and swelling pressure is defined in this paper.

Values of EP computed using a database collected from results of numerous consolidation-swell tests show good correlation between predicted heave and EP. The use of EP will provide a more accurate description of the actual risk of the potential for slab or foundation movement. Measurements of slab and foundation actual movement are presented and correlated to EP. These results confirm the conclusions drawn on the basis of computation for uniform soil profiles.

¹ Professor Emeritus, Colorado State University and Principal Geotechnical Engineer, Engineering Analytics, Inc., 1600 Specht Point Road, Suite 209, Fort Collins, Colorado, 80525; e-mail: jnelson@enganalytics.com
² Senior Geotechnical Engineer, Engineering Analytics, Inc., 1600 Specht Point Road, Suite 209, Fort Collins, Colorado, 80525; e-mail: gchao@enganalytics.com
³ Principal Geotechnical Engineer, Engineering Analytics, Inc., 1600 Specht Point Road, Suite 209, Fort Collins, Colorado, 80525; e-mail: doverton@enganalytics.com
⁴ Geotechnical Engineer, Engineering Analytics, Inc., 1600 Specht Point Road, Suite 209, Fort Collins, Colorado, 80525; e-mail: jdunham-friel@enganalytics.com

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