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COMPRESSIVE FAILURE MECHANISM OF DFORMED CONCRETE TUNNEL LININGS DUE TO A VERTICALLY CONCENTRATED LOAD

Wei HE[1)] and Zhishen WU[1)]

1) Dept. of Urban & Civil Eng., Ibaraki University

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Concrete tunnels subjected to the ground pressure usually show a compressive failure mode. Moreover, due to an unbalanced soil constraint, deformed tunnels under an additional concentrated load will show more complicated compressive failure behavior with the propagation of multiple concrete cracks. Therefore for a better understanding of compressive failure mechanism of deformed tunnels, a parabolic compressive softening model and the concept of compressive fracture energy are introduced and discussed in this paper. It is found that the final failure, load-carrying capacity and structural deformation behavior of deformed concrete tunnels depend on the compressive behavior of concrete significantly.

Key Words: ground pressure, cracking, compressive behavior, parabolic compressive softening model

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