

SUMMARY INFORMATION OF NEW FINDINGS OF THE THESIS

Thesis: “Behavior of sub-rectangular tunnels under seismic loading”

Major: Underground Construction Engineering Code: 9580204

Doctoral student: Pham Van Vi Course: 2019 - 2022

Scientific supervisors:

1: Asso. Prof. Dr. Do Ngoc Anh

2: Prof. Dr. Daniel Dias

Training institution: Hanoi University of Mining and Geology

SUMMARY OF NEW CONCLUSIONS SUMMARY OF THE THESIS

A numerical model in the FDM method was developed for the case of sub-rectangular tunnels when being subjected to seismic loading. The model has been used to investigate the influence of parameters such as soil Young’s modulus, maximum horizontal acceleration and lining thickness on the sub-rectangular tunnel behavior under seismic loading, a special attention is paid to the soil-lining interface conditions.

A new quasi-static loading scheme applied in the Hyperstatic Reaction Method (HRM) for sub-rectangular tunnels under seismic loading was also proposed. It requires a very small calculation time and the accuracy has been validated based on the comparison with the results obtained from the FDM model for several cases.

The results of this thesis are useful for scientists, providing alternative approaches for the preliminary design of sub-rectangular tunnels subjected to seismic loading.

Hanoi, 16 May 2022