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Research on Combined Construction Technology for Cross-Subway Tunnels in Underground Spaces

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Research**Tunnel Engineering—Article****Research on Combined Construction Technology for Cross-Subway Tunnels in Underground Spaces**

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ABSTRACT

Given the increasingly notable segmentation of underground space by existing subway tunnels, it is difficult to effectively and adequately develop and utilize underground space in busy parts of a city. This study presents a combined construction technology that has been developed for use in underground spaces; it includes a deformation buffer layer, a special grouting technique, jump excavation by compartment, back-pressure portal frame technology, a reinforcement technique, and the technology of a steel portioning drum or plate. This technology has been successfully used in practical engineering. The combined construction technology presented in this paper provides a new method of solving key technical problems in underground spaces in effectively used cross-subway tunnels. As this technology has achieved significant economic and social benefits, it has valuable future applications.

1. Introduction

Urban rail transit (URT) plays a key role in promoting economic development, improving the ecological environment, optimizing city structure, and sustaining city development. As an important part of urban infrastructure, URT development is directly linked to urban layout and

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