

Multi-Utility Tunnels

Old-fashioned or Necessary?

an element of the wider

Analysis of Environmental Engineering Factors that create the Potential for Improving the Technical State of the Underground Infrastructure of Urban Areas.

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ABSTRACT

In 2000, the urban population of the planet exceeded 50%. It is considered that the number of people living in cities will rise, which is in line with the observations of the last decade. Hence it is said that the twenty-first century will be a period of the dynamic and unpredictable development of cities. This will result in a greater than ever need to use the underground space in urban areas because of the need to not only put in such space the network infrastructure, but also the structures of communication and all kinds of technical objects. Today one of the main obstacles when implementing new investments are the elements

of underground pipeline infrastructure. Their poor technical condition and location makes the construction of underground tunnels, pedestrian crossings and underground garages difficult or even impossible.

The development of trenchless technology and its dissemination have created new possibilities for building multi-utility tunnels. This is in order to meet the increasing demand for underground space in urban areas. In addition to the traditional approach of laying a network within multi-utility tunnels, there are advantages of using the tunnels for crossing rivers and other obstacles, as well as in the case of rebuilding the network infrastructure for the preparation of underground space for other functions (e.g., underground garages). The above considerations raise the need for a new approach to the problem of the widespread use of multi-utility tunnels in cities in order to expand their underground multi-functional infrastructure.

In addition, placing the network in multi-utility tunnels increases the reliability of its operation and allows for the repair of pipes without trenches and the obstruction of traffic. As a result, considering the lower costs of a network's operation and the lower social costs of cities resulting from the lack of communication obstacles for investments, more expensive multi-utility tunnels are technically and economically viable when taking into account their lifetime.