



The New Metro of Oporto: A variety of bridge projects

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Summary

The construction of the new Metro of Oporto was one of the largest infrastructure projects developed in Portugal in the last decade. A light train system, with a large part at ground surface in addition to the underground network was shown to be the most technical and economically convenient option. A variety of bridge projects were developed for this new network, from new long viaducts, upgrade of an old masonry bridge and “last but not least” the railroad addition to the 19th century Luiz I bridge. The design of these bridges were developed by the authors in a turnkey design and built contract. The study of construction and erection schemes was included in the design, namely to insure stability during the retrofitting of Luiz I bridge keeping the roadway traffic in the lower deck.

Keywords: railway bridges, Metro trains, steel-concrete composite decks, masonry bridge, upgrading Luiz I bridge.

1. The Oporto Metro Network

The Metro project was developed as a public electric railway transportation system for the main Oporto city. It is an underground transportation system in the centre of the city and at ground surface in suburbs.

There are five lines with seven services as shown in table 1. The metro network crosses six municipalities of the metropolitan area with 68 stations distributed along 60 km of railway, 8 km of which under the ground.

Table 1 *Metro of Oporto: 60 km - 7 services*

Line	Stations
	Senhor de Matosinhos – Gondomar
	Póvoa de Varzim – Estádio do Dragão
	Trofa – Estádio do Dragão
	Parque Maia – Santo Ovídio
	Belchior Robles – Casa da Música
	Casa da Música – Santo Ovídio
-	Funicular dos Guindais