

RAILWAY TRANSPORT SYSTEM PUERTO CABELLO - LA ENCRUCIJADA VENEZUELA

Employer: IAFE Instituto Autónomo de Ferrocarriles del Estado
Contractor: Consorcio Grupo Contuy, with IMPREGILO S.p.A. Partner (33.33%)
Construction period: July 2002 - April 2008

The section Puerto Cabello – La Encrucijada (Cagua) is part of a more multi-modal and articulated transportation network of freights and passengers. It will encourage, through an integrated way, the various transport requirements and modalities through the creation of commercial centres and logistic hubs, therefore to be considered as meeting point of transports on wheels, rail and maritime transports (Interports). During the first stage of works, the above said section will connect the principal port of the country (Puerto Cabello) to the industrial, agricultural and food poles of Valencia and Maracay. The next step of the project will be a rail connection between the cities of San Juan de Los Morros, Calabozo and Cabruta, which is the principal port of the river transportation network Orinoco–Apure. This new rail line will be connected, in the next future, with the rail line section Caracas–Tuy Medio, which is part of the Central Region Railway Transport System.



The new rail line network, which develops for approx. 109.81km, crosses the mountainous section of the route with 15 tunnels (total length 27.97km). Sections concerned by embankments are more than 67.23km in length, mostly in semi-hilly areas (earthmoving works volume over 14,500,000m³), why bridges and viaducts are more than 78 (total length 14.61km), allowing therefore a direct route without any interference. The new double track rail section design followed the international standards, with international gauge of 1.435m allowing a maximum speed comprised between 140 and 180 km/h.

In order to meet the passenger's needs it has been foreseen the construction of seven rail stations, why for goods and freight services (supply, distribution and commercialisation of goods) as well for rolling stock maintenance service specific warehouses and workshops will be constructed.

Main project technical features relevant to the project civil works

The project foresaw the construction of the following structures:

- Fifteen tunnels, for an overall length of 27.97km, having an excavation cross-section varying from 86 to 104m².
- Twenty-six bridges and fifty-two viaducts, for an overall length of 14.61km. Bridges structures are made of steel beams with an upper concrete deck.

The construction of the new rail line has also required more than 82,000m² of diaphragm walls with tie-rods. More than 68,000m of anchors and bars have been utilised together with 218,000m of tie rods (20 to 60 tons).

Main quantities:	Excavation works volume	3,400,000 m ³
	Embankment	11,060,000 m ³
	Concrete works volume	160,000 m ³
	Underground excavation works	2,445,000 m ³
	Tunnel concrete lining works	483,000 m ³