

Suburban rail arrives at last

Mexico City should shortly see the launch of its first suburban rail service. Although the city enjoys the benefits of an extensive and expanding metro network, commuter rail services to the suburbs have long been missing.

This changed in August 2005 when a consortium led by Spanish company CAF was awarded a 30-year turnkey concession to establish and operate a suburban rail service over the 27 km route from Buenavista, once the city's long-distance passenger train terminal, to Cuautitlán. Other companies in the consortium are OHL, Indra, Alcatel, Elecnor and Ineco. Spanish infrastructure manager ADIF is involved as a consultant.

The consortium beat offers from other groups that included a proposal from Alstom, Hermes and ICA. A key factor in the winning bid was the low level of fares, with a tariff of just 9.49 pesos for the longest trip and 4.14 pesos for the shortest.

Busy corridor

The route lies along a densely-populated corridor with intermediate stations at Fortuna, Tlalnepantla, San Rafael, Lechería and Tultitlán. Interchange will be available at Buenavista with metro Line B and at Fortuna with Ferrería station on Line 6. At Buenavista major redevelopment entails erection of a raft over new platforms built on the site of the former FNM terminus and construction of a bus station.

The concession includes extensions between Cuatitlán and Huehuetoca (21 km), where work is expected to start this year, between Lechería and Jaltocan (21 km) and between San Rafael and Tacuba (10 km). These projects are all due to start within five years and be completed during the first 10 years of the concession, taking the total length of the network to 79 km.

Forecasts suggest that the route will ultimately be used by 100 million people a year. Trains will initially run at 6 min intervals in peak hours, offering an end-to-end journey time of 23 min. This will give a capacity of 30 000 passengers/h in each direction.

The railway has been modernised and upgraded, with 12 level crossings replaced by bridges. There is an elevated section at Vallejo and a tunnel at Barrientos. A significant part of the civil engineering is being managed by Mexico's transport and communications ministry. The rest of the work is the responsibility of the concessionaire which is building the stations, reconstructing the terminal at Buenavista, and supplying and installing electrical and mechanical equipment. This includes 25 kV 50 Hz electrification,

together with modern signalling and train protection equipment. Substations are located at Vallejo and Tultitlán, and a maintenance depot has been built at Pantaco. The entire alignment will be fenced to prevent trespassing.

CAF is supplying 20 three-car trainsets derived from its Class 447 design for RENFE commuter services in Spain, and much of the fleet was on site by late January, with test running in progress.

Designed for an extra car to be added later, the air-conditioned EMUs are of motor-trailer-motor formation, and up to three sets will be able to operate in multiple. Power from the catenary is fed to a transformer carried on the trailer car, which supplies two IGBT inverters on each motor car, with each inverter providing output to two asynchronous traction motors. Rheostatic braking is provided, together with a regenerative capability.

Delivery

The first train was delivered last year and a presentation was made to Transport Secretary Fernando Maldonado Hernández in early November. Speaking to organisations involved in the project, the Transport Secretary said that this would be the first of several suburban rail schemes in and around Mexico City.

During 2006 CAF, Alstom, Bombardier and Siemens expressed interest in the second and third phases of Mexico City's programme to upgrade and electrify routes for suburban services. Totalling 162.5 km, they include Jardines de Morelos to Martín Carrera, Ciudad Azteca to Lechería, Tecamac to Palomas and Martín Carrera to Santa Anita. Total investment in these projects would amount to 7.3bn pesos.

As the concessionaire for the first line, CAF has invested 6.7bn pesos in the project, which has involved raising the funding and setting up a project management and delivery organisation.

CAF's experience of turnkey projects includes a share in the consortium responsible for the Guadalmetro scheme in Sevilla, Spain. This 35-year concession is Spain's first privately-funded metro project. CAF also has considerable experience in Mexico as it has supplied rolling stock for the Mexico City metro.

The suburban scheme was initially delayed by a retendering process in the early stages of the project, when the target date for opening was late 2006. ☞

Principal data for CAF suburban trains for Mexico City

Gauge mm	1 435
Body length, end car mm	25 900
Body length, centre car mm	25 485
Overall width mm	3 009
Height above rail top mm	3 769
Door opening mm	1 300
Maximum speed km/h	130
Acceleration m/s ²	1.0
Power supply	25 kV 50 Hz