

# Projects Underway In Five Turkish Cities

*Construction of five new rapid transit lines is underway or about to start in five Turkish cities. These range from a fully automated heavy metro line in Ankara, to a light metro in Adana, and a light rail line in Bursa. This hive of activity follows a period of relative stagnation when many schemes were delayed or halted due to municipal elections.*

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**B**URSA is the latest Turkish city to opt for a rail rapid transit system to help solve its road congestion problems. A consortium led by Siemens, Germany, with Ansaldo, Italy, and Guris and Tuvasas, Turkey, was awarded a turnkey contract worth more than DM 500 million (\$US 300 million) to build the first phase of a planned 50km light rail network.

Siemens will be responsible for project management and will provide the LRVs (in association with Tuvasas which will be responsible for mechanical work and final assembly), power supply, overhead electrifi-



Test running underway on an elevated section of the new Ankara heavy metro line.

cation, depot and workshop equipment, and will integrate all systems. This amounts to about half the contract value for Siemens. Ansaldo's share is worth about DM 80 million, and will cover signalling, telecommunications, control, data acquisition, and automation equipment, as well as track works. Guris will receive about DM 150 million for the civil works.

The first phase will be 21.5km long. Most of this will be at grade running along the centre of existing roads, although the eastern part of the line will pass through an area which has to be redeveloped which will create a road wide enough to accommodate a light rail line. The 3.7km section through the city centre with three stations will be underground. All 23 stations will have 120m-long central high-level platforms.

A fleet of 48, 30m-long LRVs will be

required. Siemens has offered a design based on the vehicle which it supplied to the German city of Bochum. Each LRV will be able to accommodate between 170 and 190 passengers.

LRVs will operate at 4-minute intervals off-peak, reducing to 2-minute intervals during the peaks. Maximum speed will be 80km/h. The system will have a capacity of 11,000 passengers/h/direction. Construction is expected to take about two and a half years.

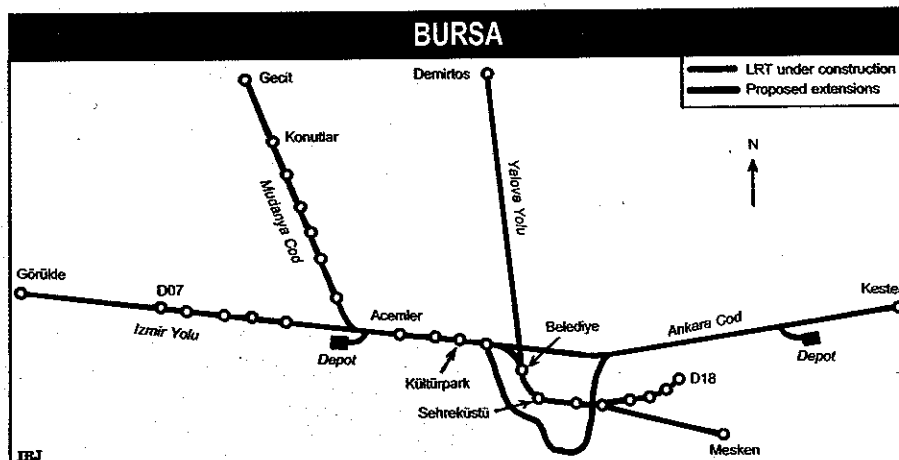
This is the second attempt to build a light rail network in Bursa. Construction was originally planned to start in 1994, but the project was delayed while the newly-elected municipal authority conducted a review.

## Ankara

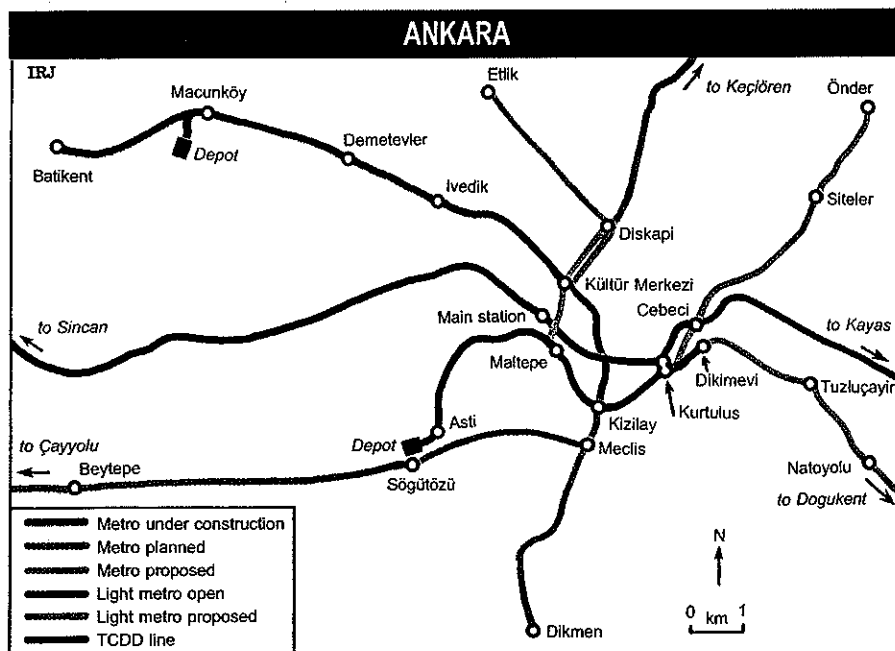
Work is nearing completion in the Turkish capital, Ankara, on the city's second rapid transit line. The first line, an 8.7km light metro line linking Asti with Dikimevi costing DM 520 million, was completed last year by a Siemens-led consortium which included Adtranz, and Breda, Italy.

The second line is a fully-automated 14.5km heavy metro which will run from Kizilay, where it will connect with the light metro, northwest to the rapidly-growing suburb of Batikent. Work started on the \$US 600 million project in March 1993 following the award of a contract to the Ankara Metro Consortium led by SNC Lavalin, Canada, with Bombardier.

The line will open in the autumn. It has 12 stations, and consists of 7.1km underground,



The first phase of Bursa's proposed 50km LRT network will be 21.5km long.



The heavy metro line, from Batıkent to Kızılay, will open in the autumn.

4.1km on the surface, and 34km elevated. The depot is located near Macunköy. This has 8.5km of storage tracks, plus workshops, and offices.

The line is electrified at 750V dc third rail. It has automatic train control based on Alcatel's Seltrac moving block signalling. An inductive loop laid along the guideway will provide two-way communication between the train and lineside equipment, and locate the trains.

All 108 metro cars, which are based on a design for Toronto, have been delivered and are formed into 36 three-car trains for testing and trial running. Each three-car set has a motor car at each end and a trailer in the centre. Six-car trains carrying up to 2000 passengers each can be operated in peak periods.

The metro was designed in 1995 to carry about 35,000 passengers/h/direction in the peak. However, Ankara is growing rapidly to the northwest and it is expected that the

peak-hour forecast of nearly 60,000 passengers/h/direction by 2015 will be exceeded much earlier than this. When asked whether this would cause capacity problems, Mr John Hansen, of Ankara Metro Consortium, replied: "No, because with ATO we can reduce the headways. We will open with 2-minute headways, but we can reduce this to 90 seconds without any difficulty, and we can reach 60 seconds if we have to."

By the end of January, the ATC system had been tested over 80% of the track and final testing prior to trial service running was underway. "Testing and commissioning has required an increase in personnel to ensure that as soon as a subsystem installation is completed, the final testing can follow rapidly," Hansen told IRJ. "The operation and maintenance side of the project is being staffed up and a major training programme has been established for the personnel who will be operating the system. Final recruiting is now being completed by the operating



One of the trains supplied by Breda, Italy, in service on the Ankara light metro.

company for service operations."

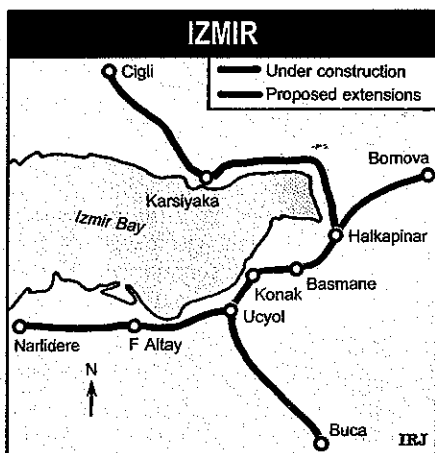
EGO, which operates bus and metro services in Ankara, has ambitious plans to extend the heavy and light metro lines. The priority is likely to go to an 18km extension to the heavy metro from Kızılay southwest to Çayyolu.

## Izmir

The 2500-year-old trading city of Smyrna, now known as Izmir, is Turkey's third largest city and is growing rapidly: by 2010 the population is expected to reach about 3.5 million. Construction of the first light metro line of a planned 50km network is well advanced and should open in stages next year.

A \$US 420 million contract, funded through a mixture of export and commercial credits, was awarded in June 1994 to a consortium led by Adtranz, Sweden, with ABB Construction, and Yapi Merkezi. This was for a 9km line from Basmane to F Altay. However, this was soon altered. The Uçyol-F Altay section was dropped in favour of a section in the eastern part of the city from Basmane to the residential suburb of Bornova.

The line now being built is 11.5km long with 10 stations. Bornova station is underground, but the rest of line to Basmane is either at grade or elevated. The remainder of



The first section of the Izmir light metro will open next spring.



Adtranz is supplying a fleet of 45 articulated cars for the Izmir light metro.