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THE ROME UNDERGROUND RAILWAY: PRESENT SITUATION AND PROJECTS FOR THE FUTURE

In the lively debate on possible solutions to the urban traffic and transport problems, attention must be paid not only to the various solutions but also to the instruments necessary and priorities required for each of them.

One opinion is that ease of access to the city centre is essential, while others uphold the need to plan suburban centres of administration, i.e. to move towards decentralization (1).

A few positions have become so widely accepted that they are practically dogmatic. They are, in effect, that:

- a) the urban traffic problem is not the same thing as the problem of excluding private traffic from city centres (2);
- b) there is urgent need to improve and extend the use of public transport;
- c) rail transport is more functional than road transport (3);

(1) To solve the urban traffic problem, one suggestion is to intervene on the events giving rise to it and to move the public administration offices and commerce facilities to the suburbs where broad roads can be built; on the contrary, others stress the difficulties of upsetting the present urban situation and the risk involved in turning the city centre into a museum. Therefore the latter are looking for a solution that on the one hand could discourage the use of private cars and on the other hand could improve the public transport system (e.g. non-stop routes in between the two termini or two or more non-stop sections).

(2) At several international meetings and symposia agreement has been expressed with this statement, see e.g. AA.VV. *Man and transport*. Tokyo International Symposium, October 1973; and Atti del XXII Convegno Internazionale delle Comunicazioni, Ist. Internazionale delle Comunicazioni, Genova, October 1974.

(3) All experts on transport problems are agreed, in particular, that privileging automobile transport means:

- d) an indispensable condition is efficient co-ordination of the various types of public transport (national and regional railway systems, underground lines and "surface" transport);
- e) this co-ordination necessitates improving and extending the existing railway system and, in particular, providing functional "interchange junctions" to permit of easy interchange between different means of transport (4).

A technical solution to the mobility requirement of the public is available (5). If, however, we take into consideration political aspects of the problem, no project obtains general consent. Not only does the problem affect global decision on urban organization, but also the question of geographical and therefore social priorities (6).

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- a) not satisfying the transport demand of a lot of people (A.C. DICK, *Planning for transport*, International Symposium on Transportation and Environment, University of Southampton, 1973, underlines that even in economically prosperous communities with a high proportion of cars to inhabitants, one fifth of the families will always be without a car;
 - b) reducing once again the space available for moving around the city centres. C. BOLOGNINI, *Il contributo delle ferrovie alla soluzione del problema dei movimenti nei territori metropolitani*, XXII Convegno Internazionale delle Comunicazioni, I.I.C. Genova, 1974, states that a car size of average for each person carried, takes a space which is from eight to eleven times larger than that of a means of public transport;
 - c) intensifying the problem of petrol consumption (according to G. DOBIAS, *L'énergie dans les transports terrestres*, in "Transport" nr. 192, 1974, fuel consumption is seven times greater for a car than for the bus and the latter is twice as high as that of rail transport; according to R. MARSH, *The future of transportation in Britain*, in "The planner", Vol. 60, nr. 7, 1974, on the contrary trains equate buses, but both are 25 times more effective than cars).

(4) See the records of the already mentioned Symposium and about Rome in: GIUNTA REGIONALE LAZIO, *I pubblici trasporti*, in "Atti della seconda Conferenza Regionale dei Trasporti", Regione Lazio, Roma, 1978; see also several interventions at the debate-conference on the Roman railway ring summarized in the article: *Un treno uso tram*, in "L'automobile", nr. 106, Roma, 1979.

(5) In the last few years researches into urban traffic forecasts have multiplied; they are carried out through expert costs profits analyses and with the help of simulation models for urban traffic. The only attempt made in this field for Rome is from C. TRANI and G. ROSSETTI, *Roma, Piano regolatore, Metropolitana e trasporti pubblici coordinati*, published into two instalments on the review "Autostrade", nr. 1-2, 1974. The correlations for the study of movement departure points are based on projections up to 1985 from data obtained in a statistical survey by the Rome City Council in 1964. More recent data are in a "white book" from MINISTERO DEI TRASPORTI, *I trasporti in Italia*. Istituto Poligrafico dello Stato, Roma, 1977.

(6) R. DUNPHY in *Transit accessibility as a determinant of automobile ownership*, Highway Research Record, nr. 472, 1974, states that the mobility demand itself is the result of previous choices on transport policy, and in the preface to the quaderno *Il traffico a Roma*, edited by P. SAGONA, Etas Compas, Milano, 1969, it is stated that "the traffic is in direct relation with the utilization of space and with the activity carried out.

The above considerations are pertinent to any remarks about the Rome underground, which becomes of vital interest in 1959, precisely when the difficulties of private motor travel (cost in fuel consumption and time, pollution, overcrowding of traffic) begin to make themselves felt (7).

The section operating before 1959 — until 1980 the only one still working (Roma Termini-Eur Laurentina) — was planned and almost built (about 60%), before the second world war to link the main railway station of the city to the “Esposizione” area (8); in fact it was planned to serve, mainly, the visitors to the “Esposizione”. The total length of the line is 11.33 Km with only 5.6 Km underground; there are 11 stations: Termini, Cavour, Colosseo, Circo Massimo, Piramide, Garbatella, San Paolo, Magliana, Eur Marconi, Eur Fermi, Laurentina. In this sense even the route chosen is particularly satisfactory: it runs through San Pietro in Vincoli, Colosseo, Circo Massimo, Terme di Caracalla, Piramide di Caio Cestio, Basilica di San Paolo.

For several years, along its route, there was a growth of densely populated areas and, in recent years, the Eur Fermi station became an “interchange junction” (the first built) between public and private transport — coming from the Pontina, Cristoforo Colombo and Ardeatina highways — and the railway.

The underground route Termini-Eur Laurentina is shown in the 1965 General Town Plan as “B” line; in fact it is a penetration, in the inner city, of the San Paolo-Lido di Ostia railway, running through densely populated areas (Torrino, Acilia, Vitinia). It is run by the Azienda Consortile Trasporti Laziale (A.Co.Tra.L.) who are responsible for the running of two local railways: Roma-Fiuggi-Alatri and Roma-Civitacastellana-Viterbo, that serve to complete the metro railway network.

Act nr 1145. 1959 fixes the financial contribution for the construction of the first line of Rome’s underground (“A” line). The thirty years required for the elaboration and approval of this project has given rise to much criticism although obstacles which have delayed and even brought the work to a standstill have been partly responsible. One of the basic difficulties was the splitting up of the responsibility for the work among various organizations and institutions.

(7) In fact it was in the decade 1960-70 that the energy crisis gave rise to a reduced consumption demand and, at the same time, the environment protection consciousness arose; the latter leads to a reduction of the polluting sources and to respect for artistic and natural beauties, avoiding the building of large parking areas.

(8) The engineer who built this line provides a detailed description of this section and of the processes used for its construction, in U. PERRONE, *La ferrovia metropolitana di Roma*, Istituto Poligrafico dello Stato, Rome, 1955.

According to the act the Transport Department had to carry out the civil engineering work and the Rome City Council was responsible for the whole network.

The concession for the construction was entrusted by the Transport Department to the S.A.C.O.P. company for the southern section Termini-Anagnina and to the Metrroma company for the northern section Termini-Via Ottaviano, in November 1963 and December 1968 respectively. From 1971 even though the concession for rolling stock was dated October 1974 Rome City Council entrusted to a single company, INTERMETRO, the whole of the "A" line equipment.

This splitting up of areas of responsibility seriously hampered progress and besides it was necessary to pass new legislation for each modification proposed (9).

However progress was delayed even by technical problems encountered (for example the discovery of ancient buried river beds: Almone in the Termini-Anagnina section), and Acqua Sallustiana in the Termini-Via Ottaviano section, and by inevitable delays caused by the discovery of the remains of ancient monuments: Diocletian's villas under Piazza della Repubblica.

The completed construction works of the two sections were ready only in 1976 and in 1977 respectively (at a total cost of 60 thousand million lire) and it was at this point that the lack of coordination told most seriously.

The Society responsible for handling the mechanical work and rolling stock found it necessary to modify constructions already completed: the engine sheds, the southern terminal station and other structures (10).

These further changes are still being effected (they will be finished by the end of 1979). The "A" line began operation in February 1980 managed for the first six months by the Intermetro and the Acotral.

This first underground line, with a total length of 13.981 kilometres and with 21 stations — terminal stations included — will link the southeastern suburbs of the city with the city centre and the north-western districts; it crosses some particularly congested nodes (P.zza San Giovanni; P.zza Vittorio Emanuele; P.zza della Repubblica) and admite of easy access to the "B" line at the intersection station of Piazza dei 500.

(9) In addition to the above mentioned 1959 act, the following legislation concerns the underground: nr. 1042, December 29, 1969; nr. 493, October 16, 1975; nr. 82, February 19, 1978.

(10) This alteration was very expensive (ten thousand millions lire) and Rome City Council asked the Transport Department for support: the bill passed and became law on February 1st, 1978.

Starting from the southern terminus (Osteria del Curato), the line follows via Tuscolana as far as Piazza Colli Albani and passes along the via Appia axis serving the following districts: Don Bosco, Appio Claudio, Tuscolano, Appio Latino. Then it crosses the city core as far as Termini railway station and Piazzale Flaminio; after crossing the Tiber it continues along the direction given by Viale Giulio Cesare as far as the Via Ottaviano crossing (11) (see FIG. 1).

Realization of the two planned extensions is now a concrete reality: the first from via Ottaviano to Circonvallazione Cornelia ("A" line for about 3.6 Kms) and the second from Termini to Rebibbia ("B" line for about 19 Kms). the "A" line extension will serve the Aurelio district, the homonymous suburb and Primavalle; four stations are planned: Cipro, Valle Aurelia, Baldo degli Ubaldi, Aurelia Cornelia. The extension of the "B" line, starting from Termini railway station, will cross the city centre going to Piazza Bologna and it will serve the town districts: Nomentano, Tiburtino, Pietralata, Ponte Mammolo, with 10 stations besides the Termini one: Castro Pretorio, Policlinico, Piazza Bologna, Tiburtina, Pietralata, Feronia, Santa Maria del Soccorso, Ponte Mammolo, Rebibbia.

Plan for both extension sections have already been approved and financed, and the entire execution (construction works and equipment) has been entrusted to a single company (Intermetro), which will therefore be the only interlocutor answerable to the various public bodies competent in different sectors (12).

The last two phases for completion of the 1974 Rome Underground General Plan are still at the planning stage, but are already partially financed by the Transport Ministry and have reached the discussion stage with the municipal and regional authorities. In bringing the Rome public transport network into conformity with the indications expressed at international meetings mentioned earlier in this report, they are important enough to merit brief mention here.

The first phase provides for the building of 3 new stretches of the "B" line

(11) There are 21 stations: Anagnina. Cinecittà. Subaugusta. Giulio Agricola. Lucio Sestio. Numidio Quadrato. Porta Furba. Arco di Travertino. Colli Albani. Furio Camillo. Ponte Lungo. Re di Roma. San Giovanni. Manzoni. Vittorio Emanuele. Termini. Repubblica. Barberini. Piazza di Spagna. Flaminio. Lepanto. Ottaviano.

(12) Responsibilities are divided as follows: the Regione Lazio undertakes the project's approval; the Rome City Council is in charge of the attribution of the building and operating licences; the Transport Ministry is responsible for state financing (if requested) and for guarantee of the plant.

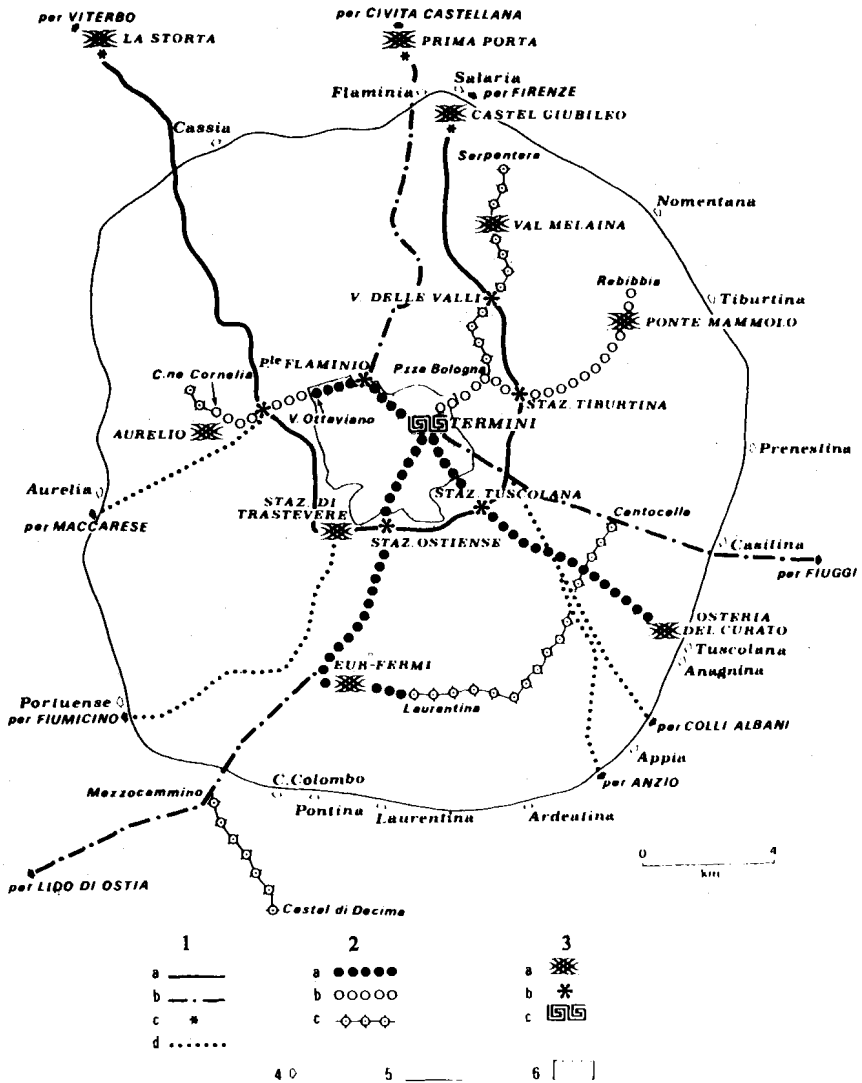


Fig. 1: THE ROME UNDERGROUND RAILWAY

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|---|---|
| 1.a national railway lines to be developed | 3.a train + bus interchange junctions |
| 1.b local railway lines to be developed | 3.b train + underground interchange junctions |
| 1.c development boundary | 3.c central station |
| 1.d local railway lines with no development project | 4. main highways |
| 2.a underground lines operating | 5. ring road (Grande Raccordo Anulare) |
| 2.b underground lines already approved and financed | 6. city centre |
| 2.c underground lines planned | |

(with priority over the "C" line envisaged in the 1965 General Town Plan). They are:

- P.zza Bologna-Val Melaina (4.5 Kms) following the route indicated in the 1965 General Town Plan as extension from Termini to Monte Sacro, with the addition of prior construction of a section from Piazza Bologna to Rebibbia, a diversion from the line serving the Trieste, Monte Sacro, Talenti and Val Melaina districts;
- Val Melaina-Serpentara (about 4 Kms);
- Laurentina Station-Via Ardeatina (about 3 Kms).

This phase also provides for improvement and transformation of the two local railways Roma-Fiuggi-Alatri over a route of about 18 Kms from Termini to Borgata Finocchio, and Roma-Civitacastellana-Viterbo between P.zzale Flaminio to Prima Porta. These lines, like that from Roma to Ostia Lido, will become surface metropolitan lines and the management of them like that of the Underground proper will be entrusted to A.Co.Tra.L.

The final phase has 4 objectives:

- a) by means of a new Metropolitan line ("D" line of the General Plan) to link the Centocelle district with Via Ardeatina and Laurentina station (about 11 Kms);
- b) to build a branch-line of the Roma-Ostia Lido railway, from Mezzocamino to Spinaceto, Castel di Decima, to serve the residential districts that have developed perpendicular to the existing line;
- c) to make the ring section of the State Railways network that runs round 3/4 of the urban perimeter of the city into a rapid and frequent circular service, taking in the 4 main stations (Tiburtina, Ostiense, Trastevere, San Pietro) to coincide with the interchange junctions required to integrate the various types of public transport: national railway network, regional, local and metropolitan networks, urban and extra-urban road transport (buses and private cars coming from the main traffic routes) (see fig. 1).

The siting and realization of these interchange junctions is, in fact, one of the most delicate problems in the planning of public transport systems. Transport co-ordination must tend not only to facilitate access to the city centre, but also to improve traffic between the various suburbs (suburb to suburb

traffic has had an increase rate of 5-6% in recent years) and between the municipalities of the urban belt independently of their connections with the city.

The approach to urban traffic problems today is different from that suggested by the 1965 General Town Plan. Twenty years ago, to allow vehicular traffic to flow fairly freely through the entire metropolitan area, it was planned to build three suburban centres of administration in the suburbs (EUR, Centocelle, Pietralata) and an 8-lane highways surrounded by the Grande Raccordo Anulare (ring road) (see fig. 1).

It is necessary to reduce to a minimum the difficulties passengers meet when they have to change means of transport at the "interchange junctions" by building multistorey stations and usign conveyers.

However to encourage the use of public transport it is necessary to ensure that the service is faster and more comfortable.

On February 20, 1980, the "A" line of the Rome Underground began operation. At first, it served an average of about 250,000 passengers per day. Today, after six years of operation, 26 trains carry an average of 450,000 passengers per day with a frequency that varies from 2'15" to 3'30" according to the passenger loads at peak hours.

The "B" line, in operation since 1955, carries about 130,000 passengers per day. Seven trains are in operation throughout the day, with 6-minute intervals between trains during rush hours.

The difference between the 2 lines is such that it might be said while the "A" line attempts to meet the needs of passengers, on the "B" line it is the passengers who accomodate to fit what the service offers. There are differences, too, in the distribution of peak travelling times on the 2 lines over the day.

The construction of the extension of the "B" line from Termini to Rebibbia, and of the first interchange junction, began in 1982 and so far (to date) about 60% of the whole project described in this essay has been completed. However, as soon as the extension is completed, it will be necessary to modernize the old Termini-Laurentina section of the line. It will be essential, in fact, to be able to use the same rolling stock and the same plant over the entire route, and it will be opportune to adapt the service to suit the real requirements of users.

This article, first published in 1979, now appears for the first time in international edition. However, all the considerations made are still valid. The projects and development programmes of the Rome underground network are unchanged from those presented in the previous edition. This brief addition to that article preludes further considerations to appear in a future publication.