HYDERABAD METRO RAIL PROJECT

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BACKGROUND

Financing of metro and suburban rail projects has always defied an easy solution. Full recovery of user charge to make it a self-sustaining and stand-alone business has not been possible due to lack of users' paying capacity. By and large, this is the experience of metro systems across the globe. On the other hand, mass transportation of people in the urban centres and agglomerations for commuting to workplace and for other activities can be done only through an efficient metro rail system.

Wherever large masses are to be moved, rail-based system is the only solution. This is more so in a country of the size of a continent like India with large metropolises and urban settlements. Such projects, however, require large investments and there is an all-round shortage of funds. As a result, the cities have faced unbridled and unplanned growth of other means of transport, creating chaotic congestion and environmental disaster.

A significant step to find a practical solution was taken by the Government of Andhra Pradesh for the twin cities of Hyderabad and Secunderabad. It involved public-public partnership between Ministry of Railways, Government of India, and the State Government of Andhra Pradesh to implement low-investment, high-yielding rapid transit system as phase-I, using existing railway network. This was to be followed by implementation of new corridors as phase-II with public-private partnership. The phase-I of the project has since been successfully commissioned and is operational, and phase-II is in an advanced stage of the award of concession.

An effort has been made in this paper to examine the gains of phase-I of the project and learn lessons therefrom. The paper also gives details of the process of PPP implementation of a Metro Project through PPP structure. It may be mentioned that Hyderabad Metro Rail Project is the second such project that is being implemented through public-private partnership, the first one being the Varsova-Andheri-Ghatkopar Metro Project in Mumbai.

POLICY INITIATIVE

In the present global economy of post-industrial era, cities are the centres of economic growth and there is an intense competition among them to emerge as

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investment destinations. The attraction of a city is decided by its 'quality of life', which, in turn, depends on, *inter alia*, a safe, reliable, quick and comfortable public transportation system. Recognizing this, the National Urban Transportation Policy of GoI (April 2006) laid special emphasis on creation of good public transportation systems and discouragement of private vehicles in Indian cities. GoI announced liberal financial grants in the form of Viability Gap Funding (VGF) for metro rail projects up to 20 percent of the project cost, and allowing up to another 20 percent by the respective state governments.

RATIONALE OF THE HYDERABAD PROJECT

With about 7.5 million population, Hyderabad urban agglomeration is growing at a rapid pace. Apart from being the centre of pharma and other traditional industries, it is now fast emerging as a major IT/ITES, biotech and tourism hub. Its strategic geographical location, image as a multilingual cosmopolitan city, absence of physical barriers for growth in all directions, and the investment-friendly policies of the government are making Hyderabad an attractive investment destination and a buoyant urban settlement.

However, the rapid growth of the city, rising income levels, and lack of good public transportation system is resulting in a phenomenal increase in personal vehicles, causing frequent traffic jams and high pollution levels. Thus, to provide good transportation infrastructure and to address the increasing traffic problems in the city, a phased approach has been adopted.

APPROACH

Phase I of the project is based on strengthening the existing rail infrastructure which passes through densely populated areas. It also involves multimodal integration by developing a feeder network and efficient road services from the major centres in the city to the nearest rail nodes. The project would provide immediate relief and would serve as a precursor to the larger and more comprehensive project to be undertaken in Phase-II.

DEVELOPMENT PLAN

Phase I: The phase I involves optimization of existing rail infrastructure by infusing additional inputs which are pre-requisites for running frequent suburban train services, such as automatic signalling, electrification of track, use of multiple units as rolling stock, etc. Ten new service stations were proposed to be developed for improving the accessibility and reach of the project. New stretches of Lingampally-Hyderabad, Secunderabad-Falaknuma were identified for this phase.

It may be mentioned that an urban/suburban rail transportation project has to face quite a few problems. The project does not generate operating surplus. Further, the benefits accruing to the economy do not flow to the project developer. There is also no rail-road integration, in terms of feeder buses, common ticketing, etc. Furthermore, city planning and location of economic activities do not take into account the availability of transportation facilities, leading to a huge disconnect.

The above issues were addressed while structuring Phase-I of the project. This phase envisaged an investment of Rs. 69.96 crore for development of fixed rail infrastructure and another Rs. 90 crore for acquisition of rolling stock. This investment was to be equally shared between railways and the state government. Subsequently, this investment could be translated into equity stake by both the partners into a joint venture corporation. Most importantly, the state government agreed to subsidize the operational losses.

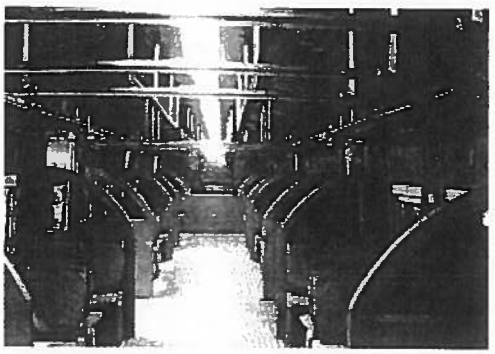
The multimodal integration was to be achieved with the provision of adequate facilities of bus shelters, bus bays and bus routing for transfer of passengers at the railway stations. A common ticket for bus and train journeys was to be issued. In addition, directed investment was to be made on the road corridor along the rail corridor to spur economic activity in the catchment area, to help increase the transport demand, and to improve ridership and financial viability.

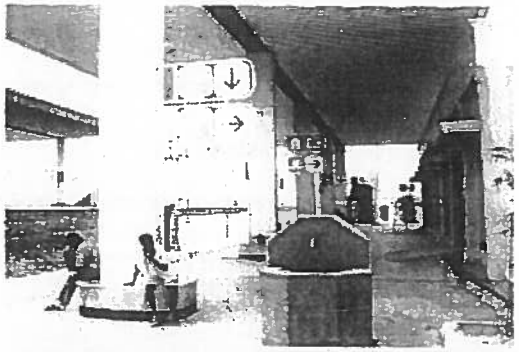
Implementation of the Project

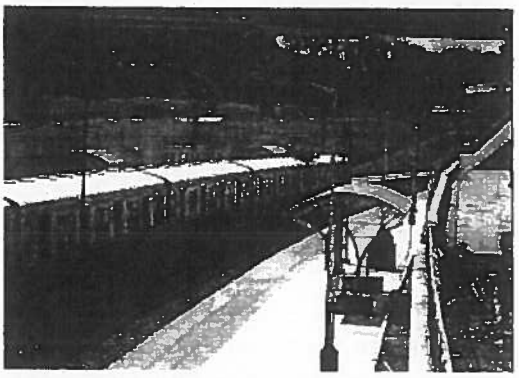
The phase 1 of the project commenced on 1st November 2001 and the first train was run on August 9, 2003. The project design was innovative in the sense that it had been conceptualized as a commuter rail service with the look and feel of a metro. Since finances were the main constraint, and so was the constraint of sharing the infrastructure of the existing railway system, the project design attempted to bring out a fresh look by introducing a low-cost but standardized infrastructure.

Ten new stations were constructed at the following locations: Chandanagar, Borabanda, Hi-Tec city, Bharatnagar, Fatehnagar, Balkampet, Sanjivayya Park, James Street, Necklace Road, and Lakdikapul. All these stations have been built as simple and low-cost stations but functionality and aesthetic principles have not been compromised. Eco-friendliness is another aspect that these stations represent. The stations have been designed on a modular basis and can handle expanded volumes comfortably. Approach roads to stations have been developed/ upgraded to improve accessibility. Circulation areas have been improved at Malakpet, Sitaphalmandi, Jamia Osmania, Yakatpura and Dabripura stations. New stations have been planned with large parking and circulating areas.

All access roads to the nearest commercial centres have been substantially improved to increase the comfort of commuting to these areas. Bus bays have been built and relocated to improve multimodal interaction. Robust, convenient and aesthetic seating areas in these stations have been designed as shown in the following illustrations.

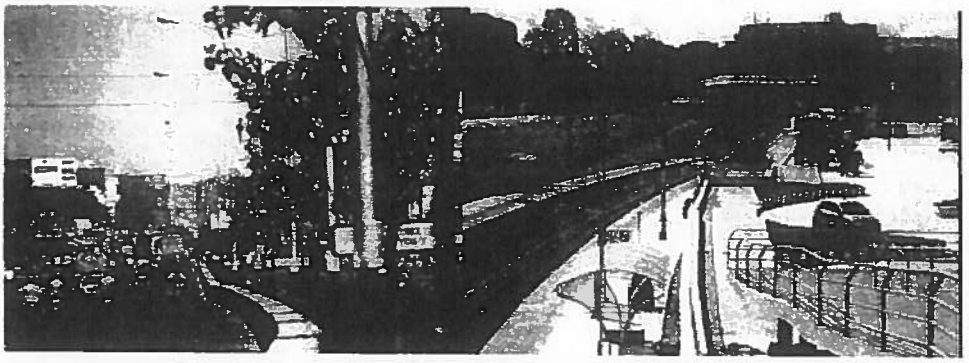






Simple, cost-efficient and aesthetic signages have been developed for the station areas. All the station buildings have been designed with platforms made of vacuum de-watered concrete with a band of chequered tiles (with anti-skid properties) in the entraining/detraining areas. Apart from functionality, the red coloured tiles set against grey concrete pavement have an aesthetic appeal. The outside end of the platforms has been left unpaved and hardy flowering plants have been arranged to enhance the ambience.

EMUs as are in use in Mumbai, Chennai and Delhi have been planned, but with an improved look. Interiors have been substantially upgraded with a host of features,



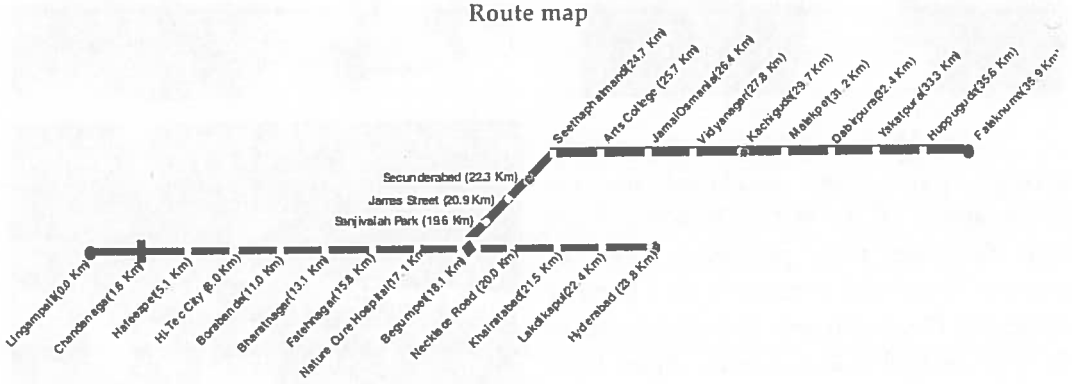
such as comfortable seats, brushed steel interior panelling, audio announcements, etc. Exterior has also been redesigned by doubling the size of windows and with attractive colour schemes. The trains, though not state-of-the-art, have appealed to the people in a big way.

Net effect of these stations and trains is validated by the fact that most of the Telugu movies have at least one scene shot in an MMTS station or train or both.

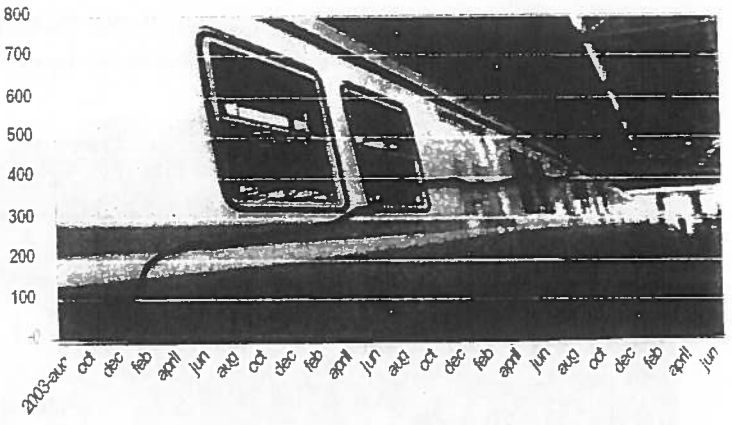
Post-Implementation Scenario

MMTS services were commissioned essentially on two routes as given below:

Route map



The project had a 'false' start with two critical stations in the central business district (CBD) not being commissioned on the proposed date, with connectivity to few important stations such as Hi-tec city not being in a proper shape, and with only skeletal services being run initially. Also, there was lack of coordination with the bus services and its patronage was far from flattering. Still, the desire and necessity for more services and the satisfaction level with the service, apart from the frequency of service, could not have been more encouraging, as was revealed in a study conducted by Hendrik, a Dutch student from the University of Utrecht.



Notwithstanding the 'false' start, the project has become increasingly popular. The ridership profile vindicates the project concept and the need for more services. It may be seen from the graph above that apart from the general increasing trend, the ridership increases substantially whenever new services are introduced. Right now, there is an expressed need to enhance the services as has been brought out in many forums. However, introduction of additional services has now hit a bottleneck as the originally planned 18 EMU rakes were reduced to 9 rakes as a short-sighted measure on the plea that ridership would be stagnant. Efforts are now on to find additional rakes. Yet again, faulty implementation is hindering the maximization of the potential of this project.

Relative Analysis of Options on Rail-Based Mass Transit Options

Though it would be foolhardy to compare this project with a modern metro, a relative analysis of both as urban transit options can be made to understand the cost benefit of such systems and plan future urban transportation systems in the country, recognizing the prevailing resource crunch.

No doubt, DMRC is a world class facility, but it comes with a heavy cost. Debt servicing obligation of the metro after the moratorium ends is very much a cause for concern, given the current ridership patterns. Replication of such expensive systems in the Indian scenario becomes extremely difficult on account of the strain they cause on the public finances.

Comparison between MMTS, Hyderabad and DMRC, Delhi

Parameters	Cities	
	Hyderabad	Delhi
City population in lakhs (2001)	63	138
Commuter trips (in lakhs)	69	110
	MMTS	DMRC*
Cost (Rs crore)	120*	10,500
Trains per day	87	1000
Commuters (in thousands)	75	385
Occupation per train	862	385
Occupation per coach	143.66	96
Eff.(ø) of Rupee spent (investment per commuter carried (Rs lakhs))	0.16	2.73
Revenue per day (Rs lakhs)	2.5	40

** Study conducted by M. Ravi Babu, GM /RITES*

Economic strength of Indian cities has not yet achieved the required robustness to fund and sustain such huge investments. Given the imperative of rail-based mass transit systems for many of our cities, alternate viable options need to be considered. MMTS Hyderabad is only one step in this direction. Instead of waiting for long periods of time for the fructification of high-cost metros, steps at optimizing the existing rail infrastructure may be thought of as the first stage. In the second stage, building new MRTS alignments with appropriate technology (judicious mix of indigenous and imported technology components) would enable the development of high-quality systems at substantially low costs.

As the capital cost is brought down substantially, there would be a concomitant improvement in viability and hence the systems would become amenable to active proliferation with the least stress on public finances. If the projects are developed in a comprehensive manner duly integrating them with the urban development proposals with the attendant activities such as development of townships bundled in, there is a very good potential for generating financial viability as well.

Phase II: Government of Andhra Pradesh has approved the development of metro rail in three high-density traffic corridors spanning over 67 km, at an estimated cost of Rs. 8,482 crore to be carried out as public-private partnership project. The details of the corridors are:

(1) Miyapur – L. B.Nagar (29.87 km having 27 stations)

(2) Jubliee Bus Station – Falaknuma (14.78 km having 16 stations)

(3) Habisiguda – Shilparamam (21.74 km having 20 stations)

Salient Features of the Project

- It is an elevated metro rail, with two tracks (up and down lines) on a deck erected on pillars generally in the central median of the road, without obstructing the road traffic;
- The gauge (distance between two rails) adopted is standard gauge (1435 mm); rails will be continuously welded to minimize noise levels; power supply will be through third rail bottom collection;
- Stations will be located at an average interval of 1km; elevated stations will have passenger access through staircases, escalators and lifts;
- With a maximum speed of 80 kmph, the average speed of the trains will be 34 kmph – an international standard for MRT systems;

- With a frequency of 3 to 5 minutes during peak hours, the system is expected to carry about 16.75 lakh passengers per day by 2011 and 23.75 lakh by 2021;
- The travel time by metro rail from one end to another would be 45 minutes for line I (Miyapur-L.B.Nagar – 30 km) against 1 hr 50 minutes by bus; 22 minutes for line II (Jubilee Bus Station-Falaknuma-15 km) against 1 hr.10 minutes by bus; and 36 minutes for line III (Habisiguda-Shilparmam-22 km) against 1 hr. 22 minutes by bus;
- Adequate parking space and circulating areas will be provided as far as possible for multimodal integration at the stations;
- Coaches will be air-conditioned with automatic door-closers and many other safety features;
- Signalling system would ensure safety and specified speeds through Automatic Train Control (ATC), Automatic Train Protection (ATP) and Automatic Train Operation (ATO);
- Telecommunication facilities will be state-of-the-art, facilitating continuous communication between the central control, train drivers and station masters;
- Good inter-modal integration will be provided at all the rail terminals, bus stations, and the MMTS (existing joint venture of GoAP and Railways) stations;
- Safety mechanism and safety certification of the project will be as per GoI guidelines based on the recommendations of Committee on Safety Certification of Guided Urban Transit Systems (currently under preparation); and
- The project will be implemented under the Metro Rail Act, to be enacted by GoAP, on the basis of the model Metro Rail Act being prepared by GoI.

Selection Process

On the basis of a global Expression of Interest – cum – Request for Qualification (EOI-cum-RFQ), five international consortia of companies have been short-listed by GoAP. After the "Empowered Institution" of Government of India considering the project for financial assistance under the VGF scheme and allowing GoAP to proceed with "further short-listing of bidders", Technical Proposal documents were issued to all the pre-qualified bidders in May 2007. The last date for receipt of Technical Proposals from the bidders was July 23, 2007. Bids have to be evaluated on 'pass/fail' basis,

depending upon their conformity or otherwise to the performance criteria (mostly output oriented), technical specifications and safety standards indicated in the TP documents.

Those who qualify in the Technical Proposals would be given the RFP (Financial bid documents; Model Concession Agreement; Manual of Specifications and Standards; & State Support Agreement). The Model Concession Agreement is now under final stages of approval. The bidders have to submit their financial bids thereafter. The bidder who seeks the least financial assistance in the form of VGF will be selected as the BOT developer for the project.

Financial Issues

The project cost is expected to be about Rs.8,482 crore. Of this amount, grant/VGF will be Rs. 3,277 crore (39%); equity Rs.1,638 crore (19%); and debt Rs.3,567 crore (42%). In the VGF, with an upper limit of 40 percent of the project cost, 20 percent of the project cost will be borne by the Government of India and the remaining (as decided through competitive bidding) will be borne by GoAP. In the equity, 11 percent will be contributed by GoAP. Thus, the cash outgo for GoAP is estimated to be about Rs.1,818 crore (Rs.180 crore towards 11 percent equity and Rs.1,638 crore for the VGF portion) over a period of about 5 years. However, efforts will be made to get additional grant from the Government of India under JNNURM scheme to reduce GoAP's burden.

To make the project financially viable, the concessionaire will be allowed to develop real estate over the Metro Rail facilities at the three depots and above the parking/circulating areas at about 33 stations, where such development is feasible. The built-up area so developed (constructed by the concessionaire at his own cost) can only be let out for rental during the BOT period. After the BOT period, the developed properties will have to be transferred to GoAP along with other assets of the project, as per the terms of the agreement. It is expected that with property development, the internal rate of return (IRR) of the project will be 10.62 percent and return on equity (ROE) will be 14.06 percent at 100 percent of the projected ridership, i.e., 15.77 lakhs per day in the year 2011.

It may be pointed out that the project is highly sensitive to ridership numbers and the experience world over is that in actual practice the traffic materialization has been short of the projections. While no guarantees are being given for the traffic projections, well structured incentives for public transportation and dis-incentives for private vehicles will have to be gradually introduced to make the metro rail project financially sustainable (as is the practice all over the world).

Legal Issues

(i) *State support for the agreement:* The state will provide support to the agreement in a number of ways. It will extend to the concessionaire free access to site for building and operating the project; apart from allowing him access to all necessary infrastructure facilities like water, electricity, etc. at commercial rates. It will give the concessionaire the necessary applicable permits and also provide him police assistance and traffic management assistance on payment of charges. Besides, it will comply with the obligations envisaged in the concessionaire agreement and will not levy any additional toll, fee, charge or tax on MRTS facility.

(ii) *Fare structure:* The proposed fare structure is Rs.8/- as the minimum and Rs.19/- as the maximum. The weighted average fare per trip works out to Rs.12/- in the year 2010. Fare escalation will be once in 2 years, with upto 50 percent of WPI linked increase.

(iii) *Force majeure events* consist of non-political events (Acts of God etc), indirect political events (war, industry-wide, nation-wide, state-wide strike beyond 7 days, etc.) and political events (change in law, compulsory acquisition of project assets by government, unlawful refusals by the government, etc). While in the case of non-political and indirect political events, the Force Majeure costs are to be borne by the respective parties, in the case of political Force Majeure events, the costs have to be reimbursed to the concessionaire (if the concession period is not extended).

(iv) *Substitution agreement:* Substitution agreement envisages the lenders to substitute the concessionaire in the event of his default. The selection of a new concessionaire would need the approval of GoAP. If no substitute is found by the lenders, GoAP can select another concessionaire.

All the clauses in the Model Concession Agreement are being refined by the Planning Commission and the final version of the Model Concession Agreement will be issued to the bidders who get qualified in the Technical Proposals.

PROGRESS SO FAR

Five international consortia have been pre-qualified as prospective bidders for the BOT Project. These consortia are:

(1) Essar Constructions (ECL) + SREI (Kolkata) + Singapore MRT + SEC+STE of Singapore.

(2) Magna Allmore (Malaysia) + Siemens (Germany) + Emirates Trading Agency (ETA - Dubai) + Nagarjuna Constructions (NCC).

(3) Reliance Energy (Anil Ambani group) + Bombardier (Canada).

(4) GVK + Gammons + Alstom (France) + IDFC

(5) Navabharat + Maytas + Ital Thai (ITD – Thailand) + IL & FS

The detailed project reports were prepared by DMRC as Prime Consultants for the project. These reports were reviewed by M/s. Span-Semaly Consultancy Consortium. An SPV by the name Hyderabad Metro Rail Ltd (HMR) has been formed to co-ordinate and monitor the progress of the project. It will be a single-window agency. Meanwhile, the alignment and station locations have been frozen and the land required for the project has been identified. The process for issue of RFP and receipt of financial bids is in progress.