BACKGROUND ON THE DEVELOPMENT OF THE BRT PROJECT

A. Concerned with the rising pollution caused by motor vehicles and the accident rates in Delhi, the Government of Delhi set up a Committee on Sustainable Transport chaired by the Chief Secretary in 2002. This Committee submitted its report in October 2002 and its main recommendations were as follows (Appendix 1):

"*a. Public Transport Policy*
Inter-se priority should be accorded in descending order to:

- *Mass transport,*
- *Non-Motorized Transport (NMT) namely bicycles, cycle-rickshaws, pedestrians etc.,*
- *Intermediate Public Transport (IPT) namely auto-rickshaws, taxi etc., and*
- *Personalized motor transport.*

b. Priority bus lanes be immediately implemented on five identified corridors"

B. Following the above report the Government of Delhi set up a Core Group in 2003 to monitor the implementation of the recommendations of the Committee. The core Group consisted of the following members: Chief Secretary: Chairperson, Pr.Secretary (Finance),Pr. Secretary to Chief Minister, Commissioner MCD, Secretary Planning, Chairman-cum-Managing Director, Delhi Transport Corpn., Jt. Commissioner of Police (Traffic), Engineer in Chief (PWD), Pr. Secretary-cum Commissioner Transport, O.S.D. to Chief secretary, Sh. B. I. Singal, Consultant. This core group met three times and presentations were made to the Chief Minster and the Cabinet.

C. This was followed by a provision of Rs. 100 crores under plan scheme 'Development of Alternative mode of Transport' in annual plan of 2004-2005. A decision was taken by the government to construct the first corridor on the stretch Ambedkar Nagar – Masjid Moth – Mool Chand – Sunder Nagar – Appu Ghar – Delhi Gate – Lal Quilla – ISBT.

D. To implement this scheme the Government appointed RITES Ltd. as the Project Management Consultant and established an Delhi Integrated Multi Modal Transit System (DIMTS) as Joint Venture of Government of National Capital Territory of Delhi with the Infrastructure Development Finance Company Ltd.

E. RITES Ltd. took professional advice to develop conceptual guidelines and design details for the BRT system from Transportation Research & Injury Prevention Programme of the Indian Institute of Technology Delhi and prepared a detailed proposal for the above mentioned corridor.

F. The Transport Department of the Government of Delhi organised an International Workshop "Bus Rapid Transit Delhi" in December 2005 to evaluate the deigns proposed. This was attended by all stakeholders (65 including 4 international experts specially invited for the purpose). The designs were approved and

recommendations presented to the Chief Minister of Delhi. The executive summary and final recommendations are included in the Appendix 2.

G. In parallel the Government of India announced a National Urban Transport Policy in 2005 which states that:

- "*Encouraging integrated land use and transport planning in all cities so that travel distances are minimized and access to livelihoods, education, and other social needs, especially for the marginal segments of the urban population is improved."*
- *"Bringing about a more equitable allocation of road space with people, rather than vehicles, as its main focus."*
- *"Enabling the establishment of quality focused multi-modal public transport systems that are well integrated, providing seamless travel across modes"*
- *"Encourage greater use of public transport and non-motorized modes by offering Central financial assistance for this purpose*."

H. Finally the proposal for construction of the first corridor was approved by the Government of Delhi in 2006 since it had gone through a long process of evaluation and it satisfied national and local government recommendations.

I. Finally the Chief Minister laid the foundation stone of the project on 4th October 2006.

APPENDIX 1

New Delhi 22.10.2002

SALIENT FEATURES OF THE REPORT OF THE COMMITTEE ON SUSTAINABLE TRANSPORT

The main recommendations are:

a. Public Transport Policy

Inter-se priority should be accorded in descending order to:

- Mass transport,
- Non-Motorized Transport (NMT) namely bicycles, cycle-rickshaws, pedestrians etc.,
- Intermediate Public Transport (IPT) namely auto-rickshaws, taxi etc., and
- Personalized motor transport.

b. Priority bus lanes be immediately implemented on five identified corridors:

High Priority Corridors for Bus Priority Schemes

S. No.	Corridor	Length (Kms.)
1	Nangloi - Peeragarhi - Punjabi Bagh - Anand Parbat - Rani Jhansi Road - Link Road - Gole Market - Shivaji Terminal	20
2	Azadpur - Wazirpur Industrial Area - Punjabi Bagh - Raja Garden - Naraina Vihar - Dhaula Kuan - Moti Bagh - South Extn. - Mool Chand - LSR - Nehru Place	32
3	Jehangirpuri - Azadpur - Rana Pratap Bagh - Malka ganj - St. Stephen's Hospital - Mori Gate - Old Delhi Sly. Stn.	12
4	Dr. ambedkar Nagar - Masjid Moth - Mool Chand - sunder Nagar - Appu ghar - delhi gate - Lal Quilla - ISBT	19
5	Anand vihar - Karkarduma chowk - Swasthya Vihar - Lakshmi Nagar - ITO - Bara Khamba Road - Shivaji Terminal	15
		98 = 100 km.

These five priority corridors have been selected out of fourteen identified corridors where such schemes could be introduced in a phased manner.

- Financial implications : Rs. 250 crores
- Planning period : 6 to 9 months
- Final implementation Period : Within 1 year

c. Electric Trolley Bus (ETB) should be implemented on following corridors:

S. No.	Corridor	Length (Km.)
1	Hari Nagar Clock tower, Lajwanti Garden - Kirby Place, Dhaula Kuan - SP Marg - Willingdon Cresent - Talkotora Stadium - Central Sectt.	16
2	Badarpur - Sarita Vihar - Ashram Chowk - Humayun's Tomb - sunder Nagar - Pragati Maidan	16

- Financial Implications : Rs. 160 crores*
- Planning period : 1 year
- Final implementation period : Within 2 years

* An ETB has a carrying capacity of about hundred passengers and an average load factor of about 55%.

** The total cost of the project will include electrical power supply, a collection system and maintenance depot, modification to road surface, existing electricity poles and other utility services and signals at intersections. The Trolley bus itself costs approximately Rs. 60-70 lakhs at April 2002 prices.

*** The total capital cost of modern ETB including modifications to fixed infrastructure for dedicated bus ways, has been tentatively estimated at Rs. 5 crores per route km. OM cost per passenger, however, is much lower than metro (and even a regular bus) and works out to 69 paise per passenger km.

d. LRT with a narrow vehicle of say 1.8 to 2.0 m width appears to be an appropriate choice of mass transit for the narrow roads in the walled city of Delhi (chandni chowk - Khari Baoli - shraddha Nand Bazaar - Delhi Gate - chawri Bazaar area). A traam system (an earlier version of LRT) was operating in this area some time back.

If taken up, a feasibility study for implementation of LRT for the walled city will be necessary. After preparatory works have been completed and feasibility ascertained, the actual implementation is likely to take two years.

- Financial implications : Rs. 150 Crores
- Planning period : 1 year (after establishing feasibility)
- Implementation Period : 2 years

e. An integrated Metropolitan Transport Authority (INTA) should be set up not only for setting fares and tariffs but also to provide provisioning and common services for bus, metro and commuter rail as well as IPT modes. There should be one authority for all modes of transport.

f. Pending the setting up of IMTA, a Delhi Transport Planning Group (DTPG) should be constituted. The DTPG may be supported by a technical cell of qualified and trained professionals from all concerned departments.

APPENDIX 2

EXECUTIVE SUMMARY AND FINAL RECOMMENDATIONS OF THE WORKSHOP ON BUS RAPID TRANSIT DELHI

A Workshop "Bus Rapid Transit – Delhi" was sponsored by the Transport Department of the Government of the National Capital Territory of Delhi on 12-13 December 2005 in Delhi. The objectives of the Workshop were to ensure that:

- The designs prepared by the RITES/TRIPP (IIT Delhi) team conform to international best practices for the first Bus Rapid Transit (BRT) corridor from Ambedkar Nagar to Delhi Gate.
- The designs are suitable for special conditions obtaining in Delhi.
- The designs have in principle approval of all the stakeholders in Delhi.

The invited foreign experts examined the design details of the BRT corridor from Ambedkar Nagar to Delhi Gate, and they visited the corridor all the way to ISBT. The details were discussed with all the participants at the Workshop and then the experts finalised their observations and recommendations in consultation with all the stakeholders present at the workshop. The final observations and recommendations were approved by consensus by the participants and presented to Shmt. Sheila Dikhsit, Chief Minister Government of the National Capital Territory of Delhi, at the Valedictory Session of the Workshop on 13th December 2005.

OBSERVATIONS

1. Global cities of the 21st century are reprogramming road space for more effective and broader purposes.
2. This implies a clear priority for pedestrians, non-motorized transport and public transit.
3. Road based public transport provides the most effective connectivity for a majority of city residents.
4. Details matter. It is essential not to cut corners in the planning and implementation of the BRT system – institutional, technology, route planning, network planning, operations, and financial resources.
5. This is the first step of a network strategy – just like in computer systems the power is in the efficiency of the network system. People throughput matters, not vehicle throughput.
6. It does not matter how many vehicle lanes there are or the total width. What matters is the effective width available for vehicles. The proposed cross section by eliminating the choke points increases the effective width available.

RECOMMENDATIONS

Cross-section design

7. The cross section designs of the corridor have been worked out in great detail, with international practice adapted to local needs. Some more attention needs to be given to pedestrian approach, crossing and circulation in stations.
8. Asphalt paving runs the risk of rutting with high flows of heavy buses. Surface materials should be chosen carefully.

Intersection design

9. Continued planning of BRT stations and configurations should minimise difficulties of pedestrian circulation and passenger transfer. This implies that stations should be as close to intersections as possible.
10. Transit stations should be located in the heart of their target service areas.

Passenger information systems

11. There are plans for introducing passenger information systems. However, the present plans do not give enough importance to include ITS applications right from the beginning. This should take advantage of the excellent expertise available in India.

Corridor

12. Extension of the corridor from Delhi Gate to ISBT is an opportunity to revitalise and restore this globally unique and valuable historic site as well as a transportation need.
13. The BRT can be configured to complement other modes even in the same corridor.
14. BRT is a very flexible technology in terms of cross section and configuration. Maximum advantage should be taken of this flexibility in future network planning. Upgrades can be phased.
15. You need to develop the institutional and operational frameworks NOW, not later, to best ensure successful implementation

LIST OF PARTICIPANTS

Mr. M.K. Chaudhari A.R.A.I
Dr. Thilothan R Kolanu Area Chairman- Environment Administrative Staff College of India
Mr. Amitabh Bajpai President AITS - India
Mr. R.C. Pankaj Director Proj. AITS - India
Ms. Nirupama Sekhri Dir. Projects AITS - India
Ms. Parvati Tampri Project Coord. AITS - India
Mr. Anuj Agrawal Executive Director Allianz Securities Ltd.
Dr. Arvind S Bhardwaj Hd. Advised Engg. Ashok Leyland
Mr. G Vishwanathan Ashok Leyland
Dr. S Gangopadhyay Head - TP&E Central Road Research Institute
Dr. D Mukhopadyay Central Road Research Institute
Dr. H.H. Suthar Central Road Research Institute
Mr. Nitin Warrier Res. Associate Centre for Environment Plannign and Technical Univ.
Mr. Arjun Joshi Dy. Planner Centre for Environment Planning and Technical Univ.
Prof. H.M. Shivanand Swamy Centre for Environment Planning and Technical Univ.
Mr. Chirag Shah Centre for Science & Environment
Mr. D Sanyal CRAFTS Ltd
Mr. Sandeep Singh Planning Officer Delhi Development Authority
Mr. S.K. Tyagi Delhi Metro Rail Corp.
Mr. P.C. Hota DCP - Traffic (SR) Delhi Traffic Police
Mr. A.K. Singh ACP-T/TE Delhi Traffic Police
Mr. Ravinder Soni Inspr. TE Delhi Traffic Police
Mr. A.S. Lakra Chief GM Delhi Transport Corporation
Mr. A Majumdar CMD Delhi Transport Corporation
Mr. V.K. Sehgal DY. CGM Delhi Transport Corporation
Mr. Ashok Khurana DTTDC
Mr. Jose Kurrian Chief Engineer DTTDC
Ms. Shylaja Iyengar Business Manager Geodesic Techniques Pvt Ltd

Mr. Niloy Roy Business Manager Geodesic Techniques Pvt Ltd
Mr. B.S. Rawat Dy. Director Govt of NCTD
Mr. Abhijit Sarkar Sect. To Minister (T&P) Govt of NCTD
Ms. Mehali Patel Dy Manager Gujarat Infrastructure Dev. Board
Mr. Vikram Sethi Dy Manager Gujarat Infrastructure Dev. Board
Dr. Pawan Maini Director Halcrow Consulting India Pvt Ltd
Mr. Sheel Chandra Sr. GM Holtec Consulting Pvt Ltd.
Mr. S.R. Holkar Addl. GM Holtec Consulting Pvt Ltd.
Mr. Deepak Darda IBI Group
Mr. Lee Scott Sims Director IBI Group
Mr. Uday B Kapre Director Mathur & Kapre Associates Pvt Ltd
Mrs. Sonia Kapre Consultant, PWD Mathur & Kapre Associates Pvt Ltd
Mr. J.D. Grover Mico technologies (I) Ltd
Mr. Parag Sapra Mico technologies (I) Ltd
Mr. Mohammad Raoofi Ministry of Interior & HCUTC
Mr. O.P. Agarwal OSD- MRTS Ministry of Urban Development
Mr. Sanjeev K Lohia Ministry of Urban Development
Mr. G.P. Ranchandani EEC Plgn. Municipal Corporation of Delhi
Mr. Krishan kumar Jt. Dir. Plgn. Plg.. Dept., GNCTD, Delhi
Mr. Deepak Sengupta Dy. Dir. Plgn. Plg.. Dept., GNCTD, Delhi
Mr. Pradeep Sachdeva Director Pradeep Sachdeva Design Associates
Mr. Vidya Tongbram Pradeep Sachdeva Design Associates
Mr. Vishwesh Vishwanathan Pradeep Sachdeva Design Associates
Mr. Ranvir Singh Spdt. Eng.- Circle -V Public Works Department
Mr. A.K. Arora G.M RITES Ltd
Mr. Piyush Kansal Addl. GM RITES Ltd
Mr. Pankaj Kumar RITES Ltd
Mr. Rajneesh Porwal Manager RITES Ltd
Mr. Sanjay Rastogi G.M (UT) RITES Ltd
Mr. A.P. Sharma RITES Ltd
Mr. A.K. Sharma GM/ UT RITES Ltd
Ms. Anjalee Aggarwal National Coord. Samarthya
Mr. Sanjeev Sachdeva Prog. Coord. Samarthya
Mr. Sanjay Gupta Dept. of Transport Plagn. School of Planning & Architecture
Prof. Manoj Mathur School of Planning & Architecture
Prof. Pradip K Sarkar Prof. Dept. of Transport Planning School of Planning & Architecture
Mr. Chander Gupta Reg. Manager, N.India Sutlej Motors Ltd.
Mr. Kulwant S Wilkhu Dir Engg. & Mktg. Sutlej Motors Ltd.
Mr. S.R. Agrahari Chief Manager- R&D Swaraj Mazda Ltd
Prof. Hermann Knoflacher Technical University of Vienna
Mr. Alan Hoffman The Mission Group
Mr. N Balachandran Spl. Commissioner Transport Department, GNCT Dellhi
Mr. B.M. Batish Executive Engineer Transport Department, GNCT Dellhi
Mr. Anil Chhikara MLO Projects Transport Department, GNCT Dellhi
Mr. Surpreet Gill Dy. Commissioner Transport Department, GNCT Dellhi
Mr. Virrender Kumar Jt. Commissioner Transport Department, GNCT Dellhi
Mr. Amit Kumar Information Officer Transport Department, GNCT Dellhi
Mr. Vijay S Madan Commissioner Transport Department, GNCT Dellhi
Mr. Bharat I Singal Advisor Transport Department, GNCT Dellhi
Mr. A.K. Srivastava Addl. Director Transport Department, GNCT Dellhi
Mr. Sandeep Gandhi Consultant TRIPP- IIT Delhi
Prof. Dinesh Mohan TRIPP- IIT Delhi
Dr. Geetam Tiwari TRIPP- IIT Delhi
Mr. Palash Srivastava Asst. VP Wilbur Smith Associates Pvt Ltd