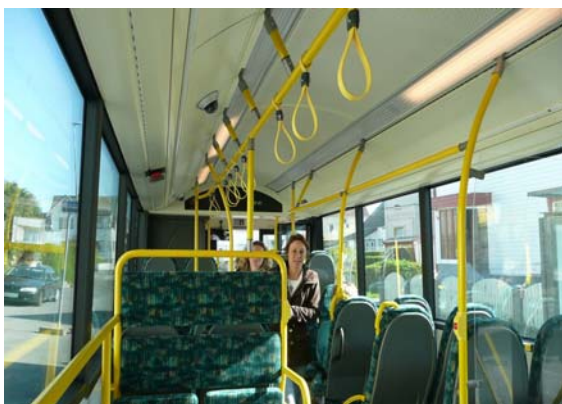


# URBAN BUS SPECIFICATIONS



सत्यमेव जयते

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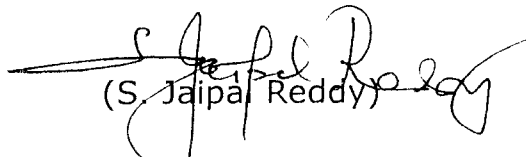
### **MESSAGE**

An efficient, effective, eco-and consumer-friendly Urban Transportation—without which cities can become immobile—is the need of the country in this century. If the look and feel of public transport is not improved substantially and on an urgent basis across various cities; to a level that it can be sold to public as a branded product, urban mobility shall become a serious dampener to the economic growth.

We, in the Ministry of Urban Development, are constantly exploring different possibilities to improve the urban mobility and accessibility which would make commuting for residents of cities with population of five lakh plus and state capitals, to start with, easy and smooth.

I am confident that this handy reference on urban bus-specifications would serve the purpose of educating people about efforts collectively being made by the Government, Industry and Academia to improve urban bus-based transportation.

I sincerely compliment those who were instrumental in shaping this reference booklet, which I earnestly hope would assist us in transforming the city bus-services in cities in our country.

  
(S. Jaipal Reddy)

## PREFACE

Transport is a major issue in most cities of India. With only about 25 of the large cities offering some form of organized city bus service, most other cities depend on informal intermediate public transport facilities. In the large cities, limited supply and poor quality of service has resulted in decline in patronage of Public Transport and led to large scale motorization. As a result, the problems of congestion, safety and pollution have become acute, besides adding global warming through increased GHG emissions. Despite increasing investments in road infrastructure, clean fuel policies, and the construction of flyovers, travel conditions for an average citizen remain a concern. Further, planning and development of road infrastructure, regulations for private or public vehicles, licensing procedures, and operations of state transport undertakings continue to be done in piece-meal manner and in isolation, which also add to the problem.

2. Improved public transport services are necessary to ameliorate these problems as bus system plays a major role in all the motorized trips in any city as per the global experience. However, most of the City/ State Road Transport Undertakings operating on a fare based revenue model have neither been in a position to meet the demand nor the service quality. They have also not set rates at a level to meet their cost of operations. Accordingly, for city bus service, the buses are procured or permitted which can be sustained from fare box revenue alone, resulting in buses that are not passenger friendly. The demand from the average passenger is in terms of quality of service, safety, reliability, efficiency and comfort. Thus there is a mismatch between the expectations and the actual availability of public transport. Therefore, it would be essential that quality buses are introduced for city transport. This would not only change the mind set of people about buses but also help in improving the image of the city.

3. Unfortunately in India, there is hardly any advancement in this field even after 60 years of independence. The present city buses (public or private) continue to suffer from poor brand image, mostly remain non user friendly, continue to be ergonomically poorly designed, unfit for physically challenged persons, fuel inefficient, non ITS enabled and low on passenger comfort. With the focus on having a responsive public transport and passenger friendly facilities, through these urban bus specifications, it is intended to lay down minimum recommended specifications across the country to facilitate introduction of ITS enabled modern city bus service in cities so that the idea can be sold to the public as a branded product and people can take pride in traveling by public transport. Broadly modern buses should be sleek and ergonomically designed, should facilitate level boarding and alighting, have comfortable seating and suspension, advanced passenger information system, vehicle information and tracking systems, should be passenger and disabled friendly and have electronic fare collection, among other requirements.

4. One of the immediate questions which would come to everybody's mind is whether such specifications would turn out to be costly and hence unsustainable. What is perhaps required is, a paradigm shift in the whole thinking towards public transport. While the fares need to be reasonable, the intention is not to increase the fares. In fact a two pronged strategy is required to introduce such modern buses on sustainable basis, one to augment revenue from sources besides fares and second, to reduce the cost of these buses as well as public transport through either waiving off or drastically reducing the taxes at the State level and city level. The State Governments and the urban local bodies should set up a dedicated urban transport fund as envisaged in the National Urban Transport Policy-2006 to not only meet the investment needs for urban transport infrastructure but also to help in keeping the fares low. In fact, the city level dedicated urban transport fund can also be used to set up a fare contingency fund to meet the difference between public fare and the technical fare payable to the private operator (for the operational sustainability).

5. There has to be a paradigm shift in the institutional mechanism as well as for the operation and management system for the city bus service. The investment requirements for introduction of modern ITS enabled buses are of the order of Rs. 38,000 crore in the 11<sup>th</sup> Five Year Plan. As such, while continued participation of the said transport undertakings could be envisaged to some extent, considering the magnitude of investment requirement, the only way to establish an adequate and efficient modern ITS enabled bus transportation system in the city is to make investments in such a system attractive for the private sector and to rely on public-private partnership. This can be done by setting the standards of service and laying down the fares that are affordable and bidding out the routes. The public private partnership should be in the form of setting up of professional umbrella public bodies that have the capacity to make scientific assessment of the demand on various routes and contract services that can be properly monitored. These umbrella public bodies should also manage common facilities like bus stations, bus depots, terminals, central office and control centre etc. and provide for the maintenance facilities, which the private players can use on payment basis. Such umbrella bodies should have representation from all the major operators and stake holders including traffic police.

6. The present permit system only promotes penny war on the road and has no in-built mechanism for quality control, adherence to safety standards, taking care of passenger comfort etc. As such, the bus operations need to be corporatised through concessions being awarded to bidders who have a minimum fleet size, say 25 buses. For efficient operations as well as cross subsidization, a number of routes need to be bundled for bidding. Small operators can participate by forming cooperatives, so that they can fulfill the criterion of minimum size of fleet. Whether on public private partnership or public sector model, the city transport should be managed by a SPV which looks after

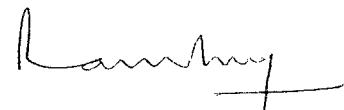
only the city transport. The existing routes will also need to be rationalized and fresh time table got prepared. All these information would need to be made available to public through dynamic and static passenger information system. There should also be an effective and ongoing mechanism of getting regular feedback from the bus passengers on services, quality, need for improvement etc. The studies for any route rationalization, preparation of DPRs etc. would be eligible for support up to 80% of the total cost as grant (50% in case of DPRs) from Ministry of Urban Development, Government of India under the new scheme of urban transport planning.

7. Though these bus specifications envisage only low floor/semi low floor buses to facilitate level boarding and alighting in case of city bus service and BRTS, certain BRTS may have specific requirements which may permit even high floor buses, if the BRTS is a closed system and is similar to the metro railway where the rolling stock moves only in the fixed corridors.

8. As already brought out in my D.O. letter No.K-14011/39/2007-UT dated 25.10.2007 to all Chief Secretaries, these specifications have been drafted by MoUD in consultation with SIAM, IIT Delhi, ARAI Pune, M/s Urban Mass Transit Company, and some of the companies / corporations associated with bus operations, viz. ICTSL/Indore, DIMTS/Delhi, BMTC/Bangalore and all the bus manufacturers in India. While, framing these specifications, care has been taken that Bus Body code framed by Ministry of Road Transport and Highways is not violated.

9. The comments received from various States and stake holders, in writing as well as during the Conference on 16<sup>th</sup> January, 2008 in Delhi, Ministry of Heavy Industries, Government of India, Department of Road Transport and Highways, Government of India have also been suitably incorporated. Some common standard specifications for urban buses would help in bringing down the cost of modern buses to enable providing high quality public transport at affordable cost.

10. We do hope and expect that these Urban Bus Specifications though recommendatory in nature, will be adopted by all the States and cities for city bus service and also for all new procurements in view of the need to provide quality public transport systems in all cities.



(Dr. M. Ramachandran)  
Secretary (Urban Development)  
Government of India

Dated 14-11-08

**Government of India**  
**Ministry of Urban Development**  
**Urban Transport Division**

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**RECOMMENDATORY URBAN BUS SPECIFICATIONS**

Sl. No.	Parameters	Details	Recommended Specifications	
			Standard Bus( Type I Bus as per AIS 052 )	Mini / Midi Buses
1	Doors	Minimum Width of Service Doors	<ol style="list-style-type: none"> <li>1. At least one door will be 1200 mm ( to facilitate easy access for physically challenged persons) and the other door could be 650mm</li> <li>2. Doors mandatory</li> <li>3. Type of Door opening : Preferably in swinging</li> </ol>	Mini 650mm Midi 800 mm ( length 8 m) Layout to maximise the standee passenger <ul style="list-style-type: none"> <li>• Doors mandatory</li> <li>• Type of Door opening : Preferably in swinging</li> </ul>
2	Windows	Minimum Width of Windows (clear vision zone)	550 mm	450 mm
		Minimum Height of Windows	550 mm	450mm
		Type of Window	The window panes shall be sliding type for all buses <b>except</b> AC buses. In AC buses there shall be provision for adequate ventilation in case of AC failure	The window panes shall be sliding type for all buses <b>except</b> AC buses. In AC buses there shall be provision for adequate ventilation in case of AC failure

## RECOMMENDATORY URBAN BUS SPECIFICATIONS

3	Guard Rails		<ul style="list-style-type: none"> <li>- All School buses shall be provided with minimum of two guard rails</li> <li>- The first guard rail shall be provided at a height of 75 mm from the lower window sill</li> <li>- The distance between two guard rails shall be 75 to 100 mm.</li> <li>- Guard rail for other types of buses may not be provided if the lower edge of the window sill is at least 200 mm above the uncompressed top of the seat cushion</li> <li>- Guard Rails are not applicable for ACX buses</li> </ul>	<ul style="list-style-type: none"> <li>- All School buses shall be provided with minimum of two guard rails</li> <li>- The first guard rail shall be provided at a height of 75 mm from the lower window sill</li> <li>- The distance between two guard rails shall be 75 to 100 mm.</li> <li>- Guard rail for other types of buses may not be provided if the lower edge of the window sill is at least 200 mm above the uncompressed top of the seat cushion</li> <li>- Guard Rails are not applicable for ACX buses</li> </ul>
4	Emergency Exits	No. of Emergency Exits & Dimension(min.)	At least 1 Emergency doors/ Exits or apertures Dimension –1250 mm x 550 mm (for emergency window – - min 4000 cm <sup>2</sup> )	At least 1 Emergency doors/ Exits or apertures Dimension –1250 mm x 550 mm (for emergency window - - min 4000 cm <sup>2</sup> )
5	Steps	Maximum Height of first step from ground	400 mm	400 mm
		Maximum Height of Other Steps	250 ( 300 if door behind rear axle) mm max for Type – I	250 ( 300 if door behind rear axle) mm

## RECOMMENDATORY URBAN BUS SPECIFICATIONS

6	# Maximum Floor Height	The floor height shall be measured at any one of the service doors of the vehicle in unladen condition ( reference point to be specified by the manufacturers)	650 mm ( 35 % of total floor area min. ) or 400 mm ( 35 % of total floor area)	650 mm in the entrance area (35 % of standee area of floor area)
7	Gangway	Minimum Height	1900 mm	1750 mm (for standee) 1500 mm (for non-standee)
		Minimum Width	450 mm	450 mm 300 mm (for non-standee)
8	Seats	Seat Layout	1x 1 or 2x0 in low floor area 2x2 in the higher floor area	2 x 1 2x2 (for non-standee bus)
		Seating Area/Space Per Passenger (Total Width X Depth)	400x350 mm (AIS 052)	400x350 mm (AIS 052)
		Seat spacing ( AIS 023 )	650 mm - Type I	As per AIS 023

# For special applications like Bus Rapid Transit System where “closed system of operation is planned, high floor buses may be used with the overall aim of providing level boarding and alighting by raising the floor height of bus stations.

9	Destination Board	Minimum No. of Destination Board in line with AIS 052	Min. Height of Destination Board: 220 mm Min. width of Destination Board : 1800 mm for front & 900 mm for rear and service door side. – Location front top left hand corner	Min. Height of Destination Board: 220 mm Min. width of Destination Board : 800 mm  – Location front top left hand corner
		Illumination of destination board	Required	Required
		Internal Destination Board	Required	Required
10	Pad Material		In line with AIS 052 : preferably no padding (plastic moulding seats )	In line with AIS 052 : preferably no padding (plastic moulding seats )



## RECOMMENDATORY URBAN BUS SPECIFICATIONS

11	Upholstery		In line with AIS 052 : preferably no padding (plastic moulding seats )	In line with AIS 052 : preferably no padding (plastic moulding seats )
12	Other Features	Headrest	Not required	Not required
		Stanchion	As per ECE R 36 ( AIS 046 to be aligned)	As per ECE R 36 ( AIS 046 to be aligned)
		Seat Arm	Not required	Not required
		Magazine Pouch	Not required	Not required
		Individual Seat Row Fans	Not required	Not required
		Air Conditioning	Optional	Optional
		Reading Lights	Not required	Not required
		Cabin Luggage Carrier	Not required	Not required
		Audio visual system in line with AIS 052	Required	Required
13	Standing Capacity		To be determined on the basis of seat layout as per the bus code	
14	Sitting / Standing Ratio		Not required	Not required
15	Power Steering		Required	Required
16	Transmission i.e. Automatic / Manual		<ul style="list-style-type: none"> <li>• <i>Automated manual gear shift / power assisted gear shift / automatic transmission / manual-Optional</i></li> </ul>	<ul style="list-style-type: none"> <li>• <i>Automated manual gear shift / power assisted gear shift / automatic transmission / manual - optional</i></li> </ul>
17	Seat Belts Requirement		Not required other than driver	Not required other than driver

## RECOMMENDATORY URBAN BUS SPECIFICATIONS

18	Anti Lock Breaking System (ABS)		Not required	Not required
19	Suspension type for Front / Rear		Air suspension (In BRT buses the level of floor should be same irrespective of load using any technology )	Normal suspension
20	Acceleration		Acceleration – 1 m/sec/sec in full load (Max for passenger, min for design) 0-30 kmph in 10 sec or less  Max Speed : 30-90 kmph	Acceleration – 1 m/sec/sec in full load (Max for passenger, min for design) 0-30 kmph in 10 sec or less  Max Speed: 30-90 kmph
21	Engine Location		Optional ( can be decided by the manufacturer)	Optional (can be decided by the manufacturer)
22	Side Facing Seats		Optional	Optional
23	Door Closing Requirements for Bus Movement		<b>Mandatory</b>	<b>Mandatory</b>
24	Fire Extinguisher		Required	Required
25	Gear Shifting Position	Column / Floor	Column or floor	Column or floor
26	Kneeling requirements		Optional (where provided, kneel down height – 200 mm)	Not required
27	Approach Angle (Min)		Min. 8 <sup>o</sup>	Min. 8 <sup>o</sup>
28	Departure Angle(Min)		Min. 8 <sup>o</sup>	Min. 8 <sup>o</sup>
29	Passenger Compartment Internal Height (Rear Axle Floor Area)		1900 mm in non low floor area (1700 mm in case of rear saloon area of Rear Engine bus)	1750 mm (for standee) 1500 mm (for non standee)

## RECOMMENDATORY URBAN BUS SPECIFICATIONS

30	Type of Floor	Sloping / Plain	Sloping or plain (Plain – not applicable to low floor buses)	Sloping or plain (Plain – not applicable to low floor buses)
31	Steps on Floor	Yes / No	optional	optional
32	Maximum Floor Slope		Max. 6% ( As per AIS 052)	Max. 6% ( As per AIS 052)
33	Low Floor Area	(% of total floor area)	35 %	35 %
34	Floor Surface		Anti Skid floor surface	Anti Skid floor surface
35	Requirement for passenger with limited mobility	Wheel Chair Anchoring	In bus with 400 mm floor height	Not required
		Priority Seats	At least 2	At least 2
		Stop Request	On every pillar	On every pillar
		Manual Ramp	<ol style="list-style-type: none"> <li>1. Required for bus with 400 mm floor height</li> <li>2. For 650 mm floor height ramp required to enable wheel chair entry from BRT station at 400 mm platform</li> </ol>	For 650 mm floor height ramp required to enable wheel chair entry from BRT station at 400 mm platform
36	Life cycle Requirements	Drive Train	Life of bus – 10 years or as mandated by local legislation -AMC by Manufacturers / as per manufacturer’s recommendations - Refurbishing of body every 5 years - Change of drive train at 500, 000 km	Life of bus – 10 years or as mandated by local legislation - AMC by Manufacturers/ as per manufacturer’s recommendations - Refurbishing of body every 5 years - Change of drive train at 500, 000 km
		Body Structure		
37	ITS Related Requirements	Ticketing	Bus architecture should be compatible with ITS	Bus architecture should be compatible with ITS
		Smart Card	Required	Required
		Passenger Information Systems	Required (Audio-visual)	Required (Audio-vidual)
		Vehicle Tracking Systems	Bus architecture should be compatible with vehicle tracking system	Bus architecture should be compatible with vehicle tracking system

## **RECOMMENDATORY URBAN BUS SPECIFICATIONS**

38	Lighting		(Fog lamp to be categorically provided in Northern region buses ) As per AIS 052	(Fog lamp to be categorically provided in Northern region buses ) As per AIS 052
39	Crash-worthiness Requirements		As per CMVR	As per CMVR
40	Warning Triangle		As per CMVR	As per CMVR
41	Driver's working space		As per Bus Body Code AIS:052	As per Bus Body Code AIS:052
42	Rear View Mirrors		As per CMVR (AIS:001 & AIS:002)	As per CMVR (AIS:001 & AIS:002)
43	Safety Glass		As per CMVR	As per CMVR

# TRANSFORMING CITY

