

AUTOMOTIVE INDUSTRY STANDARD

**Specific Requirements for
Double Deck Buses**

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ON BEHALF OF
AUTOMOTIVE INDUSTRY STANDARDS COMMITTEE

UNDER
CENTRAL MOTOR VEHICLE RULES – TECHNICAL STANDING COMMITTEE

SET-UP BY
MINISTRY OF ROAD TRANSPORT and HIGHWAYS
(DEPARTMENT OF ROAD TRANSPORT and HIGHWAYS)
GOVERNMENT OF INDIA

October 2016

Status chart of the Standard to be used by the Purchaser for updating the record

Sr.	Corrigenda	Amendment	Revision	Date	Remark	Misc.

General Remarks:

INTRODUCTION

The Government of India felt the need for a permanent agency to expedite the publication of standards and development of test facilities in parallel when the work on the preparation of the standards is going on, as the development of improved safety critical parts can be undertaken only after the publication of the standard and commissioning of test facilities. To this end, the erstwhile Ministry of Surface Transport (MOST) has constituted a permanent Automotive Industry Standards Committee (AISC) vide order No.RT-11028/11/97-MVL dated September 15, 1997. The standards prepared by AISC will be approved by the permanent CMVR Technical Standing Committee (CTSC). After approval, the Automotive Research Association of India, (ARAI), Pune, being the Secretariat of the AIS Committee, has published this standard. For better dissemination of this information ARAI may publish this document on their Web site.

The Code of Practice for Bus Body Design and Approval, i.e. AIS-052 (Rev. 1) has been formulated and published. The testing and approval for body building of buses shall be in accordance with AIS-052 (Rev.1), which is under implementation. AIS-052 (Rev.1) has provided details about construction of buses suitable for seating and standee passengers. At the same time, there is need for framing guidelines for the construction of Double Deck Buses in India, especially for the safety and comfort of passengers traveling in Double Deck Buses. Presently some of the states have expressed interest to deploy Double Deck Buses for the purpose of tourism. In several countries there are many Double Deck Buses plying on the roads for tourism purposes as well as inter- city transportation. Under the circumstances, the 44th Automotive Industry Standards Committee (AISC) meeting held on 19th Dec. 2015, it was decided that suitable guidelines for Double Deck Buses be drawn as separate adjunct standard to cover the specific requirements for Double Deck Buses over and above the applicable requirements stipulated in the code of practice for bus body design and approval, i.e. AIS-052 (Rev. 1), as amended from time to time.

Involving all the concerned stakeholders, like associate members from SIAM, Test Agencies, Bus Body Builders and fleet operators, convenership was entrusted to CIRT to formulate the standard for Double Deck Buses and which would be considered as a special category.

Accordingly, a draft standard was prepared and put up in 45th CMVR TSC meeting held on 20th Feb 2016 for deliberations. The committee deliberated and requested to present the status in the next meeting.

The AIS-139 Draft (DF1) was discussed in 1st meeting of AISC for Vehicles with GVW of more than 3.5 tonnes held at CIRT on 29th April 2016. The comments received on the standard were discussed and it was decided that necessary changes shall be incorporated in the finalized version of the standard. Further, the matter was put up to 52nd meeting of AISC held on 4th May 2016 at ARAI. CIRT was requested to send Draft (DF1) incorporating corrections to the AISC Secretariat in a week's time. Detailed presentation on finalized draft along with notification was presented to JS, MoRTH on 5th July 2016. Accordingly Finalized Draft was hosted on MoRTH and ARAI website for comments till 12th August 2016.

Finalized draft was presented in 46th meeting of CMVR-TSC held at GARC Chennai, on 29th July 2016 and approved by committee.

The Composition/s of the AISC panel, Automotive Industry Standards Committee (AISC) for Vehicles with GVW of more than 3.5 tonnes and Permanent Automotive Industry Standards Committee (AISC) for Vehicles with GVW of less than 3.5 tonnes responsible for preparation of this standard are given in Annexure-II, III & IV respectively.

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SPECIFIC REQUIREMENTS OF DOUBLE DECK BUSES

1.0 SCOPE

The standard lays down the Specific Requirements for Double Deck Buses over and above the requirements laid for buses in “AIS-052 (Rev.1), (as amended from time to time), - Code of Practice for Bus Body Design and Approval”. This will apply to vehicles with equivalent seating capacity of 13 passengers and above excluding driver meant for Double Deck application. These requirements are being laid down for the following reasons.

- (i) To maximize safety and minimize severity of injuries.
- (ii) To take care of specific needs related to passengers travelling by Double Deck Buses.
- (iii) To provide higher capacity buses to enhance the efficiency and effectiveness of passenger transport.

1.1 REFERENCES

- 1.1.1 AIS-052 (Rev. 1), as amended from time to time, Code of Practice for Bus Body Design & Approval
- 1.1.2 AIS-023 Automotive Vehicles - Seats, their Anchorages and Head Restraints for Passenger Vehicles of Categories M2, M3 & Goods Vehicles of Category N – Specifications
- 1.1.3 ECE R107 Uniform provisions concerning the approval of category M2 or M3 vehicles with regard to their general construction

2.0 DEFINITIONS

In addition to those mentioned in AIS-052 (Rev.1), as amended from time to time.

- 2.1 **"Low Floor Vehicle"** means a vehicle in which at least 35 percent of the area available for standing passengers (or in its forward section in the case of articulated vehicles, or in its lower deck in the case of Double Deck vehicles) forms an area without steps and includes access to at least one service door.
- 2.2 **"Double Deck Vehicle"** means a vehicle where the provided spaces for passengers are arranged, at least in one part, in two superimposed levels and spaces for standing passengers are not provided in the upper deck.
- 2.3 **"Double Deck Articulated Vehicle"** means a vehicle which consists of two or more rigid sections which articulate relative to one another; the passenger compartments of each section intercommunicate on at least one deck so that passengers can move freely between them; the rigid sections are permanently connected so that they can only be separated by an operation involving facilities which are normally only found in a workshop.

- 2.4 **"Vehicle without roof"** means a vehicle without roof over all or part of its deck. In the case of a Double Deck vehicle this shall be the upper deck. Space for standing passengers shall not be provided on any deck without roof, independently of the type of vehicle.
- 2.5 **"Intercommunication staircase"** means a staircase which allows communication between the upper and lower decks.
- 2.6 **"Half staircase"** is a staircase from the upper deck which terminates in an emergency door.

3.0 CATEGORISATION OF DOUBLE DECK BUSES

Double Deck Buses are special purpose buses which are designed and constructed specially for seated on both deck (lower & upper) and optionally standee passengers on lower deck. Double Deck Buses shall be basically of category “Type IV” as per clause No. 2.0 of AIS-052 (Rev.1), as amended from time to time.

Double Deck Buses can be of following configuration

Special Type as per Bus Code	Type of Structure	Basic requirements as per Bus Code AIS-052 (Rev.1), (amended from time to time)	Roof Structure
Type IV	Double Deck Buses	Type I	With roof
			Without roof
		Type II	With roof
	Type III		
	Double Deck Articulated Buses	Type I	With roof
			Without roof
Type II		With roof	
Type III			

Illustration: Double Deck Bus Type IV/Type I Roof Type: Means Double Deck Bus complying to the specialized requirements of category Type IV and complying to the general requirement of category Type I and having roof structure.

4.0 GENERAL, TECHNICAL AND SAFETY REQUIREMENTS

All the general and technical requirements shall be as described and stipulated in Bus Body Code AIS-052 (Rev. 1), as amended from time to time. Provided that following specific requirements applicable to Double Deck Buses have been complied.

4.1 Number of Service Doors

- 4.1.1 In case of Double Deck Bus there shall be two service doors on lower deck.

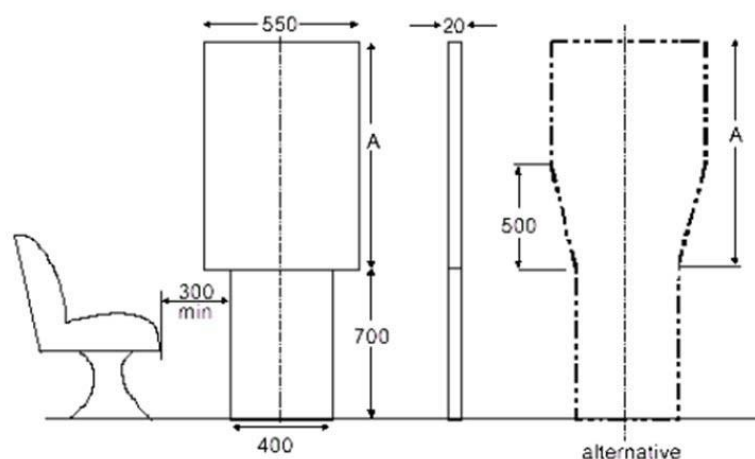
4.2 Emergency Exits

- 4.2.1 In case of Double Deck Buses minimum two emergency exits shall be provided for upper deck as well as lower deck other than escape hatches.
- 4.2.2 Each intercommunication staircase shall be considered to be an exit from the upper deck of a Double Deck vehicle.
- 4.2.3 All persons accommodated in the lower deck of a Double Deck vehicle shall, in an emergency situation, have access to the exterior of the vehicle without having to enter the upper deck.
- 4.2.4 The upper deck gangway of a Double Deck vehicle shall be connected by one or more intercommunication staircases to the access passageway of a service door or to the lower deck gangway within 3 m of a service door:
- 4.2.4.1 At least one and one-half staircases shall be provided in the case of vehicles of Type I category.
- 4.2.5 In the case of a vehicle without a roof, the exits on the deck without a roof shall be such as to fulfill those prescriptions that are not incompatible with the absence of the roof.

4.3 Intercommunication Staircase of a Double Deck Bus

- 4.3.1 The minimum width of any intercommunication staircase shall be so designed as to permit the free passage of the single door access template as defined in Figure 1 given below. The panel shall be moved starting from the gangway of the lower deck up to the last step, in the probable direction of motion of a person using the staircase.

Figure 1



- 4.3.2 Inter communication staircases shall be so designed, that, during heavy braking of the vehicle moving in the forward direction, there is no danger of a passenger being projected downwards.

This requirement is considered to be fulfilled if at least one of the following conditions is met:

- 4.3.2.1 No part of the staircase is forward descending;
- 4.3.2.2 The staircase is equipped with guards or a similar provision;

- 4.3.2.3 There is an automatic device in the upper part of the staircase which prevents the use of the staircase when the vehicle is in motion; this device shall be easily operable in an emergency.
- 4.3.2.4 It shall be verified, by use of the cylinder defined at clause 2.2.6.2 of AIS-052 (Rev.1), as amended time to time, that access conditions from the gangways (upper and lower) to the staircase are adequate.

4.4 Escape Hatches

- 4.4.1 In the case of Double Deck Buses, escape hatches to be provided as described in Bus Body Code AIS-052 (Rev. 1), as amended time to time. However in case of buses without roof there is no need of providing escape hatches.

4.5 Gangway

- 4.5.1 The gangway(s) of a vehicle shall be so designed and constructed as to permit the free passage of a gauging device consisting of two co-axial cylinders with an inverted truncated cone interposed between them, the gauging device having the dimensions shown in Figure 2.

The gauging device may come into contact with strap hangers, if fitted, or other flexible objects such as seat belt components and move them easily away.

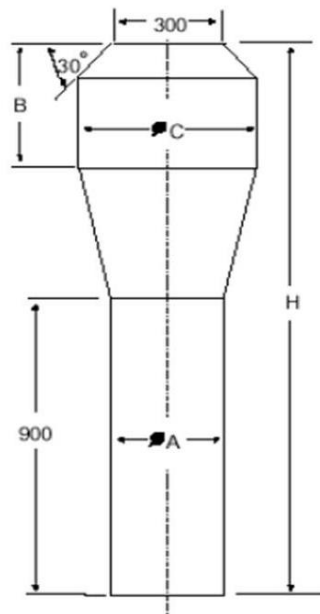
In vehicles of Type I, the gauging device according to, Figure 2 shall not come into contact with any monitor or display device mounted from the ceiling above the gangway.

In vehicles of Type II and Type III, the gauging device according to Figure 2 may come into contact with any monitor or display device mounted from the ceiling above the gangway provided the maximum force necessary to move any such monitor or display device out of the way, when applying the gauging device along the gangway in both directions, does not exceed 20 Newton. After being moved out of the way, the monitor or display device shall remain in the retracted position.

- 4.5.2 Forward limitation of the gangway (dimensions in mm)
 - 4.5.2.1 If there is no exit forward of a seat or row of seats
 - 4.5.2.2 In the case of forward-facing seats, the front edge of the cylindrical gauge defined in paragraph 4.5.1. above shall reach at least until the transverse vertical plane tangential to the foremost point of the foremost front row seat back and be retained in that position. From this plane, it shall be possible to move the panel shown in, Figure 3, in such a way that starting from the contact position with the cylindrical gauge, the panel side facing the exterior of the vehicle is displaced forwards a distance of 660 mm.
 - 4.5.2.3 In the case of sideways facing seats, the forward part of the cylindrical gauge shall reach at least the transversal plane which coincides with a vertical plane passing through the centre of the forward seat (Figure 3).

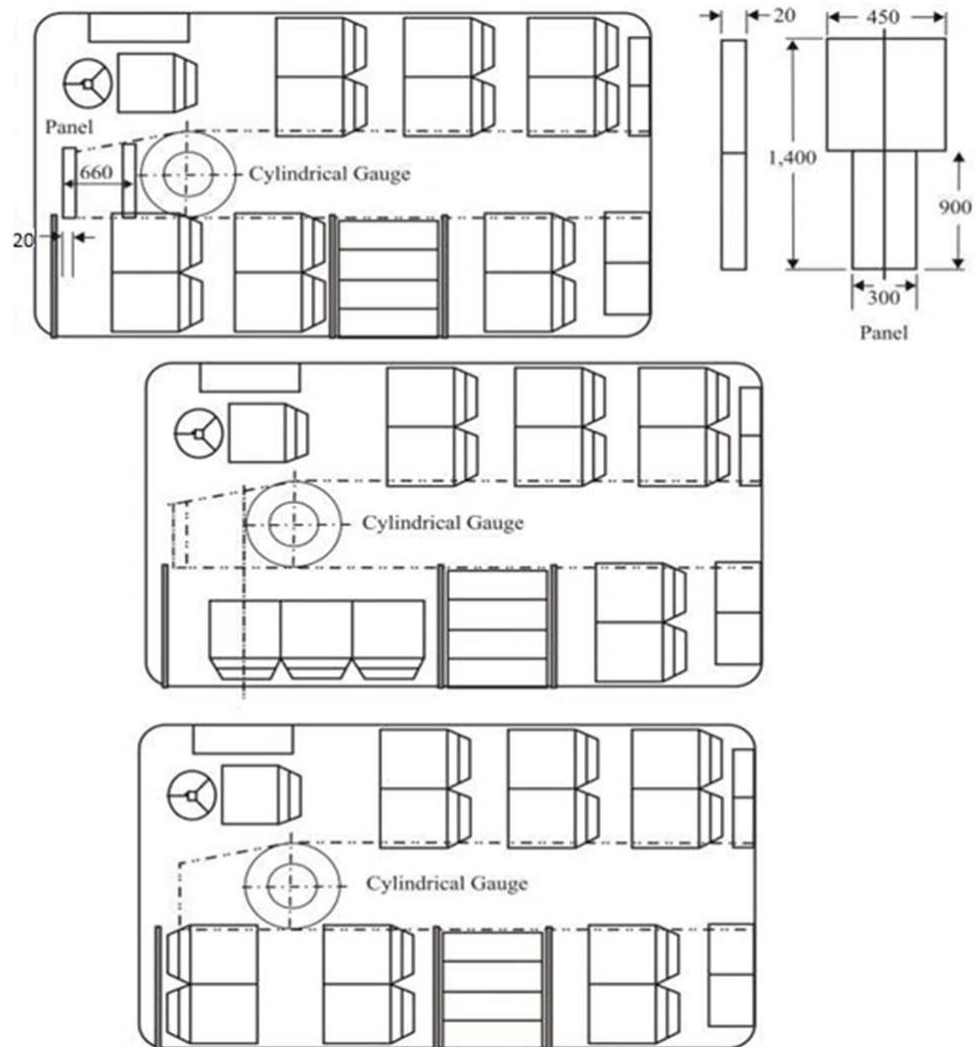
- 4.5.2.4 In the case of rearward facing seats, the forward part of the cylindrical gauge shall reach at least the transverse vertical plane tangential to the face of the seat cushions of the forward row or seat (Figure 3).

Figure 2



Type of buses		Diameter of the upper cylinder (C) (mm)	Diameter of the lower cylinder (A) (mm)	Height of upper cylinder (B) (mm)	Overall Internal height (H) (mm)	Height of Lower Cylinder (mm)
I	LD	550	450 ²	500	1,800 ⁴	1,020 ⁴
	UD	550	450 ²	500	1,680	900
II	LD	550	350	500	1,800 ⁴	1,020 ¹
	UD	550	350	500	1,680	900
III	LD	450	300 ³	500	1,800 ⁴	1,020 ⁴
	UD	450	300 ³	500	1,680	900

- The height of the upper cylinder and herewith the overall height may be reduced by 100 mm in any part of the gangway to the rear of:
 - A transverse plane situated 1.5 m forward of the centre line of the rear axle (foremost rear axle in the case of vehicles with more than one rear axle), and
 - A transverse vertical plane situated at the rear edge of the service door or of the rearmost service door if there are more than one service door.
- The diameter of the lower cylinder may be reduced from 450 mm to 400 mm in any part of the gangway to the rear of the most forward of the following two planes:
 - A transverse vertical plane situated 1.5 m forward of the centre line of the rear axle (foremost rear axle in the case of vehicles with more than one rear axle); and
 - A transverse vertical plane situated at the rear edge of the rearmost service door in between the axles. For the purpose of the above, each rigid section of an articulated vehicle shall be considered separately.
- 220 mm in the case of laterally movable seats.
- The overall height of the gauging device may be reduced (by reducing the height of the lower cylinder):
 - From 1,800 mm to 1,680 mm in any part of the gangway of the lower deck to the rear of a transverse vertical plane situated 1,500 mm forward to the centre of the rear axle (foremost rear axle in the case of vehicles with more than one rear axle);
 - From 1,800 mm to 1,770 mm in the case of a service door which is situated forward the front axle in any part of the gangway situated between two transverse vertical planes situated 800 mm forwards and behind the centre line of the front axle.

Figure 3: Forward limitation of the gangway (dimensions in mm)

- 4.5.3 On vehicles of Type III the seats on one side or on both sides of the gangway may be movable laterally, it being then possible to reduce the width of the gangway to a figure corresponding to a lower cylinder diameter of 220 mm, on condition that the operation of a control on each seat, readily accessible to a person standing in the gangway, shall be sufficient to cause the seat to return easily and, if possible, automatically, even when it is loaded, to the position corresponding to a minimum width of 300 mm.
- 4.5.4 On articulated vehicles, the gauging device defined in paragraph 4.5.1. above shall be able to pass unobstructed through the articulated section on any deck where the two sections permit through passage by passengers. No part of the soft covering of that section, including parts of bellows, shall project into the gangway.
- 4.5.5 Steps may be fitted in the gangways. The width of such steps shall not be less than the width of the gangway at the top of the steps.
- 4.5.6 Folding seats allowing passengers to sit in the gangway shall not be permitted. Folding seats shall, however, be permitted in other areas of the vehicle so long as they do not obstruct the passage down the gangway of the gangway test gauge when in the open (seating) position.

4.5.7 Laterally-sliding seats which in one position encroach on the gangway shall not be permitted except on vehicles of Type III and subject to the conditions prescribed in paragraph 4.5.3. above.

4.5.8 The surface of gangways shall be slip-resistant.

4.5.9 Slope of gangway

The slope of the gangway shall be applicable as per AIS-052 (Rev.1), as amended from time to time.

4.6 Handrails or handholds for intercommunication staircases in Double Deck Buses

4.6.1 Suitable handrails or handholds shall be provided at each side of all intercommunication staircases. These shall be positioned between 800 mm and 1,100 mm above the tread edge of each step.

4.6.2 The handrails and/or handholds to be provided shall be such that they include a grasping point available to a person standing on the lower or upper deck adjacent to the intercommunication staircase, and at any of the successive steps. Such points shall be situated vertically between 800 mm and 1,100 mm above the lower deck or each above the surface of each step.

4.6.3 For the position appropriate to a person standing on the lower deck, not more than 400 mm inwards from the outer edge of the first step.

4.6.4 For the position appropriate to a particular step, not outwards from the outer edge of the step considered, and not more than 600 mm inwards from the same edge.

4.7 Guarding of Step wells for upper deck

4.7.1 On the upper deck of a Double Deck vehicle, the intercommunication staircase well shall be protected by an enclosed guard having a minimum height of 800 mm measured from the floor. The lower edge of the guard shall not be more than 100 mm from the floor.

4.7.2 The front windscreen ahead of passengers occupying upper deck front seats of a double-deck vehicle shall be provided with a padded guard. The higher edge of that protection shall be situated vertically between 800 mm and 900 mm above the floor where the passenger's feet rest.

4.7.3 The riser of each step in an intercommunication staircase of a Double Deck vehicle shall be closed.

4.8 Free Height and intrusion over seating position

4.8.1 In case of Double Deck Buses free height over seating position for upper deck shall be 850 mm.

4.9 Fire Extinguisher

4.9.1 In case of double deck for upper deck as well as lower deck: Minimum two nos. of fire extinguishers shall be provided - Minimum capacity shall be 2kg. - Total capacity shall be 10 kg.

4.10 Passenger Compartment Lighting

- 4.10.1 In the case of a Double Deck vehicle without a roof, at least one lighting device shall be provided as near as practicable to the top of every staircase.
- 4.10.2 Adequate lighting arrangement shall be provided for clear visibility on the floor (Gangway and seat row area) for passenger movement.

4.11 Vision and Communication Aid

In the case of a vehicle without a roof, the driver shall be provided with a visual means, such as a mirror, periscope or video camera/monitor, to enable the behavior of passengers in the area without a roof to be observed. In addition, an intercommunication system shall be provided to enable the driver to communicate with these passengers.

4.12 Passenger protection in case of upper deck without roof shall have

- 4.12.1 A continuous front panel over the full width of that part of the vehicle that does not have a roof, with a height of not less than 1,400 mm from the general level of the floor adjacent to the front panel;
- 4.12.2 A continuous protection around the side and rear of that part of the vehicle that does not have a roof, with a height of not less than 1,100 mm at the sides and 1,200 mm at the rear of the vehicle, measured from the general level of the floor adjacent to the panels. The protection shall consist of continuous side and rear panels with a height of not less than 700 mm from the general level of the floor adjacent to the panels, combined with one or more continuous guard rail(s) that fulfils the following characteristics:
 - (a) No dimension of its section shall be less than 20 mm, or more than 45 mm;
 - (b) The size of any aperture between a guard rail and any adjacent guard rail or panel shall not exceed 200 mm;
 - (c) It shall be firmly attached to the structure of the vehicle;
 - (d) Doors at exits shall be considered to form part of this protection.

5.0 TYPE APPROVAL AND COP PROCEDURE

- 5.1 Type Approval and COP procedure requirements shall be as per Chapter 7 of AIS: 052 (Rev.1), as amended from time to time, applicable for Double Deck Buses by considering specific requirements stipulated in this standard.
- 5.2 Additional information which is to be furnished by the vehicle manufacturer / bus body builder specific to Double Deck Buses shall be as given in Annexure I along with Table 22 of AIS 007 Rev.5, referred in AIS:052 (Rev.1), as amended from time to time.

6.0 CHECKLIST

- 6.1 Check list limited to specific provisions applicable for Double Deck Buses as per subject standard shall be as per attached Annexure I. Subject checklist will be adjunct checklist to checklist Table 22 of AIS 007 (Rev. 5) as referred in AIS:052 (Rev. 1), as amended from time to time.

ANNEX I

INFORMATION ON TECHNICAL SPECIFICATIONS SPECIFIC TO DOUBLE DECK BUSES

(To be submitted by the Vehicle Manufacturer/Body Builder to the Test Agency)
(Along with Table 22 of AIS 007 (Rev. 5))

1.0	Details of Body	
1.1	Special Category as per cl. 2.0 of AIS-052 (Rev.1), (as amended from time to time): Type IV -	
	Type I (with/without roof) / Type II / Type III* * (applicable type to be selected from above)	
1.2	No. of seats	
	a) Upper Deck	
	b) Lower Deck	
1.3	No. of standee passengers on lower deck (applicable for Type I and Type II)	
1.4	Location of intercommunication Staircase	
1.5	Location of Half Staircase	
1.6	No. and Location of service doors for lower deck	
1.7	Seat Layouts for	
	a) Upper Deck	
	b) Lower Deck	
1.8	No. of emergency exits:	
	a) Upper Deck	
	b) Lower deck	
1.9	Size and No. of escape hatches:	
1.10	Passenger Protection details (applicable for upper deck without roof)	
	a) Front panel over the full width of the vehicle	
	b) Continuous protection around side and rear of the vehicle	
1.11	Vision and communication aid (applicable for double deck without roof)	
	a) Details of Vision aids	
	b) Details of communication aids	

Test Agency	Vehicle Manufacturer/Body Builder	Document No. (indicating also revision status)
Signature	Signature	
Name	Name	
Designation	Designation	
Date	Date	Sheet No. of_

ANNEX II
(See Introduction)
COMPOSITION OF AISC PANEL*

Convener	
Shri S. N. Dhole	Central Institute of Road Transport (CIRT)
Members	Representing
Shri D. P. Saste	Central Institute of Road Transport (CIRT)
Shri A. Akbar Badusha/ Shri V. P. Rawal / Shri K B Patil	The Automotive Research Association of India (ARAI)
Shri H N Bhalerao / Shri Ullas Babu	Association of State Road Transport Undertakings (ASRTU)
Shri S. A. M. Shaikh	Vehicles Research & Development Establishment (VRDE)
Shri. S. Ravishankar/ Shri V Faustino	SIAM (Ashok Leyland Ltd.,)
Shri. K. Naga Raju/ Shri V.G. Kulkarni	SIAM (M & M Ltd , Truck & Bus Division)
Shri Shrikant Joshi/ Shri S.S. Bhole	SIAM (Tata Motors Ltd.)
Shri Girish S. Kodolikar	SIAM (Force Motors Ltd)
Shri Karthik Sarma/ Shri Arun Uchila	SIAM (Volvo Buses India Pvt. ltd)
Shri Deepak Vashista/ Shri Sachin Bhat	SIAM (SML Isuzu Ltd)
Shri Atul Pahade	SIAM (VE Commercial Vehicles Ltd)
Shri Uday Harite	Automotive Component Manufacturers Association
Shri Z A Mujawar	Automotive Consultant (Independent)
Shri Uddhav Kate / Shri Sunil B.Kolhe	Maharashtra SRTC
Shri M.C.Kelageri/ Shri F.C.Hiremath	Karnataka SRTC, Central office
Shri G.K.Nittali	North West KRTC, Central Office
Shri Shridhar Kalmadi	Corona Bus Manufacturers Pvt. ltd
Shri K. Srinivas Reddy / Shri Anudeep Kotte	Veera Vahana Udyog Pvt. Ltd.,
Shri K.S.Wilkhu	Indian Association of Bus Manufacturers (IABM)
Shri Prasanna Patwardhan	Maharashtra Rajya Truck, Tempo , Tankers and Bus Vahatuk (MRTTTBV) Mahasangh
Shri Anil Garg/ Shri. Deepak Naik/ Shri Ramesh Manien	School Bus Owners Association, Maharashtra
Shri Haresh Tank/ Shri Ashok Kumar Rai	Collaborative Advance Research for Transportation (CART)
Shri Jayant Dixit / Shri G.L.Sharma	Shree Damodar Coach Crafts Pt. Ltd., Goa/ Shree Damodar Coach, Bangalore
Shri V. Radhakrishnan / Shri A. Martin Raj	S.M. Kannappa Automobiles P ltd
Shri P V Kamat	M G Automobiles Pvt. Ltd
Shri Prabhu Salageri	VRL Logistics Ltd.

* At the time of approval of this Automotive Industry Standard (AIS)

ANNEX III
(See Introduction)

Composition of AISC for Vehicles with GVW of more than 3.5 Tonnes *

Sr. No.	Composition	
1	Director, Central Institute of Road Transport (CIRT)	Chairman
2	Representative from Automotive Research Association of India (ARAI)	Member
3	Representative from the Dept. of Heavy Industry, Ministry of Heavy Industry & Public Enterprises (DHI, MoHI & PE)	Member
4	Representative from ministry of Road Transport & Highways (MoRTH)	Member
5	Representative from Ministry of Petroleum & Natural Gas (MoPNG)	Member
6	Representative from Ministry of Environment, Forest & Climate Change & (MoEF & CC)	Member
7	Representative from Bureau of Indian Standards (BIS)	Member
8	Representative from National Automotive Testing, Research and Infrastructure project (NATRiP)	Member
9	Representative from Vehicle Research & Development Establishment (VRDE)	Member
10	Representative from International Centre of Automotive Technology (ICAT)	Member
11	Representative from Indian Institute of Petroleum (IIP)	Member
12	3 Representatives from Society of Indian Automobile Manufacturers (SIAM)	Members
13	2 Representatives Automotive Component Manufacturers Association (ACMA)	Members
14	2 Representatives from State Transport Department on rotation on bi annual basis	Members
15	Representative from Association of State Road Transport Undertakings (ASRTU)	Member
16	Representative from Indian Construction Equipment Manufacturers Association (ICEMA)	Member
17	Representative from Tractors Manufacturers Association (TMA)	Member
18	3 Representatives from Association/Organizations of Bus Body Builders, Truck Body Builders and Trailer Builders	Members
19	2 Representatives from Associations/ Organizations of Fleet Operators of Buses and Trucks, respectively	Members
20	Representative from Central Institute of Road Transport (CIRT)	Member Secretary

* At the time of approval of this Automotive Industry Standard (AIS)

ANNEX IV
(See Introduction)
COMMITTEE COMPOSITION *
Automotive Industry Standards Committee

Chairperson	
Mrs. Rashmi Urdhwareshe	Director The Automotive Research Association of India, Pune
Members	Representing
Representative from	Ministry of Road Transport and Highways (Dept. of Road Transport and Highways), New Delhi
Representative from	Ministry of Heavy Industries and Public Enterprises (Department of Heavy Industry), New Delhi
Shri S. M. Ahuja	Office of the Development Commissioner, MSME, Ministry of Micro, Small and Medium Enterprises, New Delhi
Shri Shrikant R. Marathe	Former Chairman, AISC
Shri N. K. Sharma	Bureau of Indian Standards, New Delhi
Director/ Shri D. P. Saste (Alternate)	Central Institute of Road Transport, Pune
Director	International Centre for Automotive Technology, Manesar
Director	Indian Institute of Petroleum, Dehra Dun
Director	Vehicles Research and Development Establishment, Ahmednagar
Representatives from	Society of Indian Automobile Manufacturers
Shri T. R. Kesavan	Tractor Manufacturers Association, New Delhi
Shri Uday Harite	Automotive Components Manufacturers Association of India, New Delhi

Member Secretary
Shri A. S. Bhale
General Manager
The Automotive Research Association of India, Pune

* At the time of approval of this Automotive Industry Standard (AIS)