

ALL INDIA INSTITUTE OF MEDICAL SCIENCES

(Transport Office, Ansari Nagar, New Delhi-110029)

Tender Enquiry

No.F.10-01/Purchase of Buses/Tpt./16-17

Dated:-16.05.2016

TENDER FOR SUPPLY OF FULLY BUILT,30-40 SEATER, A.C.- CNG Buses (Euro-IV)

LAST DATE OF SUBMISSION : 06.06.2016 at 11.00 A.M.

DATE OF TECH. BID OPENING : 06.06.2016 at 11.30 A.M.

On behalf of the Director, AIIMS, Ansari Nagar, New Delhi-110029, the Chief Technical Officer (Transport), All India Institute of Medical Sciences, New Delhi invites sealed Tender by post/per bearer in Two Bid System (namely, 'Technical bid' and 'Financial bid') for **06 buses** that comply with the required specifications which are attached herewith (Annex.-1).

The tenders are required to deposit EMD of Rs. 3,00,000/- (Three Lakhs only) through a Demand Draft/Pay order/ Bank Guarantee drawn in favour of the Director AIIMS, New Delhi-29, before submission of the quotations, failing which the same will not be considered.

The bidders should specifically super-scribe the Technical Bid and Financial Bid separately on the top left corner of the outer envelope & marked tender **No.F.10-01/Purchase of Buses/Tpt./16-17**.

Relevant literature/original catalogue should be submitted along with the technical bid failing which tender would not be considered.

Bidder has to clarify each specification parameter of its product, whether the offered model / product is meeting the requisite specifications or not. If not, the bidder has to indicate their parameter specification.

The Bidder shall be required to comply with all the latest provisions of the Central Motor Vehicle Act (MVA), the Central Motor Vehicle Rules (CMVR), the Delhi Motor Vehicle Rules, along with all amendments therein and other statutory and legal requirements as applicable on the date of delivery.

In financial bid, the price of the bus shall include a complete break-up showing the basic price, excise duty, other levies, sales tax, packing charges, forwarding charges, freight and insurance charges, and other charges, if any, shall also be given.

The bid should reach the undersigned by **11.00 A.M. on 06.06.2016**.

Sd/-

(Adarsh Kumar Sharma)

Chief Technical Officer (Transport)

Transport Office (Main Garage), AIIMS

TECHNICAL SPECIFICATIONS FOR FULLY BUILT EURO IV AC CNG BUS

1.0 Introduction

- 1.1 The fully built Bharat Stage IV AC bus shall conform to the Specifications set out in this Schedule.
The minimum Technical Specifications have been set out meeting the guidelines of the Urban Bus Specifications as notified by the Ministry of Urban Development, Govt. of India.
- 1.2 The word “bus” shall mean the Staff Bus to be used for the AIIMS, Delhi.
- 1.3 The word “bus” shall also mean a bus operating on Compressed Natural Gas (CNG) suitable for operations in city conditions.
- 1.4 The bus shall meet all applicable The Central Motor Vehicles Rules, 1989 (hereinafter referred to as “CMVR”) norms for safety and emissions applicable on the date of manufacture and the CMVR notified/amended up-to-date.
- 1.5 The bus design shall be energy efficient, environmentally friendly, and safe and secured for transportation of Students, Nurses, Staff and Doctors besides the following main attributes amongst others:
 - (a) Passenger comfort & safety
 - (b) Reliable and Durable Design
 - (c) Ergonomically designed driver’s work area
 - (d) Ease of repair and maintenance
 - (e) Aesthetically designed interiors and exteriors
 - (f) Ease of boarding and alighting
- 1.6 Where there is conflict between the requirement as per any Applicable Law and the requirement set out in the relevant manufacturing codes such as Bus Code AIS 052, superior/ higher standard shall prevail. Also any specifications superior to the ones set out as Minimum Technical Specifications shall meet requirements of the contract.

2.0 General Design Features

- 2.1 Bus shall be of full forward control and right hand drive design. The bus shall be designed to carry commuters inside the NCR area with ease of boarding and alighting especially for Nurses, Student & Doctors.
- 2.2 The bus design shall be eco-friendly, energy efficient, safe, and comfortable with exhaust emissions maintained at specified levels (**Bharat Stage IV or Euro-IV**) subject to meeting additional requirement, if any & further improved standard as applicable on the date of manufacture as imposed by law). Also Bus and their aggregates will have to comply with rules and regulations on safety and emission regulations as may be notified by the Government for compliance on the date of manufacture or registration of the vehicle as the case may be. To ensure compliance, type approval certificate for complete bus as per

specifications laid herein from approved test agency under CMVR will be necessary along with complete compliance to all safety standards for CNG as prescribed under CMVR.

- 2.3 The bus design and the buses shall meet the entire statutory requirement besides the one prescribed herein and type approval certificate of compliance from the approved test agency for the complete bus as per specifications laid herein/in CMVR will have to be produced.
- 2.4 The material used in the construction of buses shall be as per Bureau of Indian Standards (BIS)/ Automotive Industry Standards (AIS) specifications. In absence of above specifications, Association of State Road Transport Undertakings (ASRTU) specifications could be followed. Wherever Indian standards are not available, internationally acceptable standards may be referred /followed.
- 2.5 The bus shall be so designed to maintain operational stability requirement as per Bus Code. Interior noise and pass by noise of the vehicle shall confirm to BIS: 12832:1989 or latest and BIS: 3028:1998, 10399:1998.
- 2.6 Fire safety: The bus shall be designed and manufactured with all applicable fire safety regulations under CMVR (including AIS 024) and for safety for CNG Buses including piping location and layout, location of rubber hose, location of exhaust, sealing from CNG gas entering passenger compartment in case of leakage, catalytic converter location, prescribed upholstery material, fire retardant cable, connectors ect. These provisions shall also include the use of fire retardant material , fire detection, escape of gases in case of any leakage, fire walls and facility for passenger evacuation (doors, windows and escape latches) as per statutory requirements besides bus code. Flammability requirements of fire retardant material shall comply with IS 15061 to be certified by the test agency.

3.0 Engine

- 3.1 Compressed Natural Gas (CNG) fuelled engine with electronic ignition system and catalytic convertor as per CMVR with Bharat Stage-IV, capable of delivering adequate horse power to obtain desired performance in respect of defined acceleration levels and emission norms. The engine should have adequate horsepower not only to propel the bus but also to carry the load of air conditioning system fitted in the bus, 40 passengers (assuming an average weight of 68 Kg per passenger), CNG cylinders, bus tare weight etc. As the bus is required for operation in NCR services, engine should be capable of delivering adequate horsepower at lower RPM levels with a high torque over a large RPM range particularly on the lower side. The engine shall be designed to operate for not less than 4, 50,000 km without major failure. The location of the engine shall be at the **front** in the buses.

3.2 The engine should be suitably designed to operate optimally under Delhi’s peak summer heat and dust. Maximum rise in temperature at steering should not be more than 4 degrees beyond ambient temperature during peak summers.

3.3 Speed Limiting Device

Maximum speed of bus will be limited to 40 km/hr or as described in the city of Delhi through **engine software** of ECU at the time of manufacturing stage itself duly certified by test agency.

3.4 **Bus dimensions and other specifications**

Sr.	Description	Specifications
1	Overall length	Upto 12000 mm(Minus 100mm tolerance)
2	Overall Width	As per CMVR
3	Overall height	As per CMVR
4	Ground clearance within the wheel base	As per CMVR/Bus Code
5	Rear overhang	Maximum 60%
6	Front overhang	Maximum 40%
7	Turning clearance	As per IS-9435 and IS-12222 or latest
8	Ramp over angle	As per IS: 12218 or latest
9	Departure angle	As per IS: 12218 or latest
10	Approach angle	As per IS: 12218 or latest
11	Seating capacity	Seating capacity shall be 30-40 nos. (excluding driver)
12	Crash-worthiness Requirements	As per CMVR
13	Warning Triangle	As per CMVR
14	Life cycle Requirement (Driver Train and Body structure)	Design of adequate capacity to take care of maximum GVW & crush loading expected during life span of the bus of minimum 10 year or 6,50,000 kms. Whichever is later.

4.0 Cooling System

4.1 Heavy-duty radiator and other subsystems of cooling system should be capable of efficiently dissipating heat from the CNG engine system. Engine should be cooled by a water based pressure type cooling system with thermostat that does not permit boiling or coolant loss during the operations.

5.0 Transmission System

- 5.1 Minimum 5 forward speeds and one reverse with suitable ratios Gear box with manual operation shall be provided with gross input power, gross input torque & related speed compatible with engine.
- 5.2 The propulsion system and drive train shall provide power to enable the bus to meet the defined acceleration, top speed and gradability requirements, and operate all propulsion driven accessories.

6.0 Suspension

The bus shall be fitted with Semi Elliptic Multi Leaf Spring suspension system at the rear.

7.0 Steering

Hydraulic power assisted recirculating ball type steering shall be provided.

8.0 Braking System

- 8.1 The braking system shall be full be full pneumatic type with fail-safe dual circuit having four-way protection valve, auto slack adjuster, with non-asbestos brake lining. The friction material shall be non-asbestos type having temperature and wear characteristics suitable for intensive city operation. The buses shall also be provided with hand operated pneumatic flick valve type parking brakes at rear wheels. The air pressure line shall be treated for corrosion resistance.
- 8.2 In the event of failure of the engine and or loss of air in the system, adequate provision should be there for obtaining effectiveness of services brake system and or for deactivating the spring actuated brakes.

9.0 Wheels and Tyres

The bus shall be fitted with Nylon PR tyres of size that may bear the load when bus is fully loaded and tyres conforming to AIS-044 part I with wheel rims of corresponding size conforming to AIS/BIS: 10694 (part 3)-1991 or latest. The bus shall be supplied with 6 sets of tyres (two on front and four on rear wheels) fitted on the bus plus one set as spare Stepney in all respect. The tyres shall be fresh from factories and shall not be more than six months old at the time of delivery.

10.0 CNG Cylinders and Their Mountings

- 10.1 The CNG cylinders shall conform to BIS and shall be duly approved by Department of Explosive and fulfill all other statutory requirements. There should be adequate capacity to facilitate daily operation of over 200 KMs per filling of CNG in cylinders of the bus at initial gas settled pressure of 200 Bar at 15 degree Celsius.

10.2 All CNG system items shall conform to the relevant CMVR/CCOE, Government of India/ BIS/ AIS024 & 028 and other applicable standards for the NCR/ Delhi.

11.0 Under Frame and Structure

- 11.1 The entire surface of bus under floor and sides exposed to the ground shall be covered with appropriate corrosion prevention and flame retardant paint coating for protection against harmful effects of water, mud etc. The wheel housings shall be constructed to contain tyre bursts during operation and be flame retardant in case of tyre fire.
- 11.2 Sufficient clearance for air circulation shall be provided around the tyres, wheels and brakes to preclude over heating when the bus is operating.
- 11.3 The bus construction shall be of as defined in Bus Code with the super structure fabricated using steel tubing (ERW- Rectangular/ Square Sections) conforming to BIS 4923-1985 or latest.

12.0 Panelling

- 12.1 The bus exterior side panels shall be fitted with stretched steel sheet at waist level. The exterior front-end paneling shall be of steel sheet while roof, rear and skirt paneling shall be of aluminium.
- 12.2 Anti-drumming compound shall be applied on inner side (enclosed surfaces) of entire paneling.
- 12.3 All structures shall be thermally insulated with flame retardant Polyurethane or glass wool of minimum 40 Kgs/m³ densities.
- 12.4 Rain gutters shall be provided to prevent water flowing from the roof onto the passenger door, driver's side window, and exterior mirrors. When the bus is decelerated, the gutters shall not drain onto the Windshield, or driver's side window, or into the door boarding area. Cross sections of the gutters shall be adequate for proper operation.
- 12.5 Interior paneling (sides and roof) shall be of ABS sheet as per national/ international standards with vibration reduction and insulation.

13.0 Paints

All the structural members of the bus shall be treated for corrosion prevention internally as well as externally and painted wherever required. Polyurethane (PU) painting conforming to BIS: 13213-1991 or latest shall be used for painting of the bus. Colour shade shall match to the shades as per BIS: 5-1378 or latest.

14.0 Colour Schemes

Exterior, interior colour schemes and logo/ graphics to be applied and will be as per the requirement & approved by AIIMS.

15.0 Service Doors

- 15.1 One service door of 720 mm-750 mm wide aperture (without flaps) of double jack knife type shall be fitted at the middle of the bus as per provisions of the Bus Code.
- 15.2 Access door shall be provided with heavy-duty hinges as per bus code and heavy-duty sealing to avoid ingress of dust into the passenger compartment.

16.0 Guard/ Guard Rails

Where seated passengers are likely to be thrown into the service door entrance/ exit area as a result of heavy braking, suitable guard shall be provided. The guarding shall be as per the provisions of the Bus Code.

17.0 Windows

- 17.1 The window shall be in single piece fixed glass type design to avoid ingress of dust and water and shall have proper/ efficient drainage system. The toughened glass wherever used in the body shall be 4.8 mm to 5.3 mm thick. The size and shape of the glasses shall enable even the standees to have maximum outside view without kneeling.
- 17.2 The width and height of windows shall meet the requirement as per the Bus Code.

18.0 Emergency Exit

The emergency exit shall also be provided to meet the requirement as per the Bus Code/ CMVR.

19.0 Floor/ Steps

The floor level of the bus shall be at maximum height of 900 mm from the ground level in unladen condition. There will be entry +2 steps at the entrance/ exit doors, which shall meet the requirement as per Bus Code. The floor shall be fitted with fire retardant marine board of minimum 12 mm thickness conforming to BIS 710-1976 or latest and shall be fire retardant as per BIS 5509-2000 or latest. The Marine Board floor shall be covered with anti-skid type silicon grain material of minimum 3 mm thickness, meeting Indian/ International standards. Adequate sealing shall be provided in the floor to prevent ingress of dust, gases, water etc. The anti-skid type silicon grain material shall have features for non accumulation of dust.

20.0 Gangways

The minimum height and minimum width of gangway shall be 1900 mm and 450 mm respectively as per the provisions of the Bus Code and would meet the statutory requirements.

21.0 Handrails and Handholds

The handrails and handholds (Strap hangers) shall be provided as per provision of bus code. The surface of handrails and handholds shall be slip-resistant. Depending upon the size of the bay (i.e. between two consecutive roof hand rail brackets), minimum 2 to 4 handholds per bay shall be provided so that every standee is able to grab a hand hold. Hand holds shall comply with AIS 046.

22.0 Passenger Seats

- 22.1 The passenger seats shall be front facing, comfortable, durable and maintenance free of 'PP-LD' (Polypropylene Low Density)/ LDPE moulded construction meeting the performance requirements of AIS023 and other requirements as per the Bus Code. The PP-LD/ LDPE moulded seat shall be appropriately fitted with moulded flame retardant Polyurethane (PU) cushion for seat and back rest as per Bus Code. The seats shall be upholstered with waterproof expanded vinyl coated fabric to match the seat and interior décor conforming to IS 8698 of Class-A, Grade-I, Type-A. The seat cushion shall be provided with vent holes appropriately. Suitable integral type seat hand grab rails shall be provided, one on top of backrest and one at the back of the backrest, for seated passengers.
- 22.2 The seating area, space per passenger (total width X depth) shall be 400x350 mm (AIS 052).
- 22.3 The seating lay out should be in 2x2 layouts meeting the bus code requirements.

23.0 Driver's Work Area

- 23.1 A driver door of not less than 1600 mm height and 650 mm wide, with maximum space for sliding window using the material like glazing and glass.
- 23.2 Driver's seat- The driver's seat with head restraint shall meet the requirements of AIS 023.
- 23.3 Driver partition- The driver partition shall be provided as per the Bus Code.

24.0 Heating, Ventilation and Air conditioning (HVAC) climate control system

- 24.1 The HVAC system shall be provided for heating as well as cooling of the interior whole compartment of the bus as per the environment condition of the NCR/Delhi Intercity operation.
- 24.2 The bidder shall design the air conditioning system of appropriate size, type and capacity as per the operating/ environmental condition of Delhi.
- 24.3 The noise level of AC system shall be as required under the Central Motor Vehicle Rule (CMVR)/AIS/any other Indian standards, if any and as applicable for the NCR/Delhi.

25.0 Dashboard Instrumentation and Control System

The bus shall have ergonomically designed molded type dash board and instrument panels. All the dashboard controls and instrumentation system shall be as per the Bus Code.

26.0 Roof /Escape Hatch

In addition to emergency exits, at least one escape hatch will be fitted in the roof as per the bus code.

27.0 Rear-view Mirrors- Interior and Exterior

Rear-view mirrors shall be provided on both sides of the bus to enable driver to have clear side/rear views. One interior rear-view mirror shall also be fitted for viewing saloon area by the driver. Installation and performance requirements of the rear-view mirrors shall conform to AIS 001 and AIS 002.

28.0 Sun Visor

29.0 Electric Horn

30.0 Towing Device

31.0 Wind Screen Wipers

32.0 Fire Extinguishers

33.0 First Aid Kit

34.0 Fog Lamps

35.0 Front & Rear FRP Bumpers

36.0 Driver/Passengers Fans-(24 Volt DC, 200mm dia) on each side pillar.

37.0 GPS Box

A provision shall be made at a suitable location for the fitment of GPS box so that a suitable GPS could be installed in future.

38.0 Wind Screen- Front and Rear

Windscreen glasses shall meet the requirements of BIS 2553: Part II-1992 or latest and that of CMVR and Bus Code. The glazing used for fitment of glasses shall be Ethylene Propylene Dien Monomer (EPDM) rubber of black colour and appropriate adhesive material.

39.0 Battery, Alternator, Self-starter

- 39.1 The battery system shall be 24V, minimum 150 Amps-hour capacity, low maintenance type lead acid batteries.
- 39.2 A heavy duty battery cut-off switch shall be provided near the driver seat on side paneling at appropriate level for disconnecting the power supply.
- 39.3 The bus shall have 24 Volts D.C double pole wiring for all its electrical equipments except in unavoidable circumstances.
- 39.4 An adequate capacity alternator of 24V D.C with consistent output to take care of high idling periods in city operation shall be provided.
- 39.5 A pre-engaged type 24V D.C self-starter of adequate capacity with relay shall be fitted in the bus.

40.0 Electrical equipment and wiring

All cabling shall be as per the provisions of the Bus Code/ CNG safety requirements as provided in CMVR.

41.0 Lights and Lighting System

- 41.1 Interior saloon lighting shall be LED light of high power cool white or equivalent with illumination level in line with AIS: 052.
- 41.2 All the lights, their wattage and lighting systems shall conform to the requirements of Bus Code, CMVR and other relevant AIS standards and shall be arranged aesthetically.
- 41.3 Lights shall be provided for illuminating exit/entrance door area. These lights shall illuminate the outside area up to at least one meter when door/doors is/are opened.
- 41.4 A well-lighted bus registration number plate shall be fitted at rear as per the provisions of CMVR.
- 41.5 Switches shall be fitted on the right hand side of the instrument panel through evenly loaded circuits and fuses as per the Bus Code.
- 41.6 A reverse buzzer shall be installed at the rear of the bus to sound intermittently when reverse gear is engaged.
- 41.7 A suitable light shall also be provided in the engine compartment for ease of maintenance/ emergency repairing.

42.0 Pollution Under Control (PUC) Certificate Holder

A suitable holder with clear acrylic sheet cover shall be provided in driver cab near driver seat at appropriate level for fixing of PUC certificate.