

**15 -ാം കേരള നിയമസഭ**

**7 -ാം സമ്മേളനം**

**നക്ഷത്ര ചിഹ്നം ഇല്ലാത്ത ചോദ്യം നം. 2087**

**09-12-2022 - ൽ മറുപടിയ്ക്ക്**

**കെ.എസ്.ആർ.ടി.സി. -സിഎഫ് - പുതിയ ഇലക്ട്രിക് ബസ്സുകളുടെ ഗുണനിലവാരം**

ചോദ്യം		ഉത്തരം	
ശ്രീ . ഐ .സി .ബാലകൃഷ്ണൻ		ശ്രീ ആന്റണി രാജു (ഗതാഗത വകുപ്പ് മന്ത്രി)	
(എ)	<p>കെ.എസ്.ആർ.ടി.സി. സിഎഫ് പുതിയ ഇലക്ട്രിക് ബസ്സുകൾ വാങ്ങുന്നതിനു മുന്നോടിയായി മാനേജ്മെന്റ് വിദഗ്ധ സമിതിയെക്കൊണ്ട് പരിശോധിച്ചിട്ടുണ്ടോ; എങ്കിൽ സമിതിയിലെ അംഗങ്ങളുടെ വിശദാംശങ്ങൾ വ്യക്തമാക്കാമോ; ടി ഇലക്ട്രിക് ബസ്സുകൾ വാങ്ങുന്നതിന് മുൻപ് ഗുണനിലവാരം പരിശോധിച്ച വിദഗ്ധ സമിതിയുടെ റിപ്പോർട്ട് ലഭ്യമാക്കാമോ;</p>	(എ)	<p>ഉണ്ട്. അംഗങ്ങളുടെ വിശദാംശങ്ങൾ ചുവടെ ചേർക്കുന്നു.</p> <p>1.) Prototype evaluation 1st സമിതി അംഗങ്ങൾ</p> <p>a. എക്സിക്യൂട്ടീവ് ഡയറക്ടർ (മെയിന്റനൻസ് &amp; വർക്ക്)</p> <p>b. അസിസ്റ്റന്റ് വർക്ക്സ് മാനേജർ (മെയിന്റനൻസ്), കണ്ണൂർ</p> <p>c. മാനേജർ (മെയിന്റനൻസ് &amp; വർക്ക്)</p> <p>2) Prototype evaluation 2nd സമിതി അംഗങ്ങൾ</p> <p>a. ഡെപ്യൂട്ടി ജനറൽ മാനേജർ (KSRTC-SWIFT)</p> <p>b. അസിസ്റ്റന്റ് വർക്ക്സ് മാനേജർ (RID), സെൻട്രൽ വർക്ക്സ്.</p> <p>c. മാനേജർ (മെയിന്റനൻസ് &amp; വർക്ക്)</p> <p>3) Pre delivery Inspection സമിതി അംഗങ്ങൾ</p> <p>a. കൺട്രോളർ ഓഫ് പർച്ചേയ്സ് &amp; സ്റ്റോക്ക്</p> <p>b. അസിസ്റ്റന്റ് ഡിപ്പോ എഞ്ചിനീയർ, സെൻട്രൽ വർക്ക്സ്</p> <p>റിപ്പോർട്ട് അനുബന്ധമായി ചേർക്കുന്നു.</p>
(ബി)	<p>കെ.എസ്.ആർ.ടി.സി.- സിഎഫ് ഇലക്ട്രിക് ബസ്സുകൾ വാങ്ങിയതിന് ശേഷം കെ.എസ്.ആർ.ടി.സി.- സിഎഫ് കമ്പനി ബസ്സുകളുടെ ഗുണനിലവാരം വിദഗ്ധ സമിതിയെക്കൊണ്ട് പരിശോധിച്ചിട്ടുണ്ടോ; എങ്കിൽ റിപ്പോർട്ടിന്റെ പകർപ്പും വിദഗ്ധ സമിതി അംഗങ്ങളുടെ വിശദാംശങ്ങളും വ്യക്തമാക്കാമോ?</p>	(ബി)	<p>കെ.എസ്.ആർ.ടി.സി.-സിഎഫ് ഇലക്ട്രിക് ബസ്സുകൾ വാങ്ങിയതിനുശേഷം പ്രസ്തുത ബസ്സുകൾ കെ.എസ്.ആർ.ടി.സി.യിൽ നിന്നുള്ള ഉദ്യോഗസ്ഥർ ടെണ്ടർ വ്യവസ്ഥകൾ പ്രകാരമുള്ള നിലവാരം പരിശോധിക്കുകയും റിപ്പോർട്ട് സമർപ്പിക്കുകയും ചെയ്തിട്ടുണ്ട്. (റിപ്പോർട്ടിന്റെ പകർപ്പ് അനുബന്ധമായി ചേർക്കുന്നു.)</p> <p>ദർഘാസ് വ്യവസ്ഥ പ്രകാരം ടി ബസ്സുകളുടെ മൂന്നു മാസത്തെ പ്രവർത്തന നിലവാരം പരിശോധിക്കുന്നതിന് കെ.എസ്.ആർ.ടി.സി.യിലെയും കെ.എസ്.ആർ.ടി.സി.-സിഎഫിലെയും ഉദ്യോഗസ്ഥരെ ഉൾപ്പെടുത്തി ഒരു സമിതിയെ നിയോഗിക്കുകയും ടി സമിതി ബസ്സുകളുടെ പ്രവർത്തനം വിലയിരുത്തുകയും ചെയ്തിട്ടുണ്ട്. (പകർപ്പ് ഉള്ളടക്കം ചെയ്യുന്നു)</p>

ടി സമിതി വിലയിരുത്തിയതിൽ ഈ ബസ്സുകൾ താഴെ സൂചിപ്പിച്ചിട്ടുള്ള പ്രധാന പരാമീറ്ററുകൾ തൃപ്തികരമായി പിൻതുടരുന്നുവെന്ന് ബോധ്യപ്പെടുത്തിയിട്ടുണ്ട്.

Sl. No.	Criteria	As per NIT	Performance Complied Y/N
1	Range of the bus in single charge	>120 Kms	Yes
2	Charging Time	Charging time not to exceed 2 hrs 30 minutes, for full charge.	Yes (Average 1 Hr 10 Mins. to 1 Hr 40 Minutes)
3	Energy Consumption	<1.0 KWh	Yes (0.48 to 0.77 KWh)

കൂടാതെ ഈ ബസ്സുകൾക്ക് മറ്റു വിധത്തിലുള്ള ഗുരുതരമായ തകരാറുകൾ ഒന്നും തന്നെ കാണപ്പെടുന്നില്ല എന്നും റിപ്പോർട്ടിൽ സൂചിപ്പിക്കുന്നു.

ടി കമ്പനിയുടെ 30 ഇലക്ട്രിക് ബസ്സുകൾ ഹിമാചൽ പ്രദേശ് ട്രാൻസ്പോർട്ട് കോർപ്പറേഷന് ജൂൺ 2019-നുള്ളിൽ വിതരണം ചെയ്തുവെന്നും ഇവ തൃപ്തികരമായി പ്രവർത്തിക്കുന്നുവെന്നും റിപ്പോർട്ട് ലഭ്യമാക്കിയിട്ടുണ്ട്.

ഈ ബസ്സുകൾക്ക് കേന്ദ്ര മോട്ടോർ വാഹന നിയമം 1989 ലെ നിബന്ധനകൾക്ക് വിധേയമായി കേന്ദ്ര ടെസ്റ്റിംഗ് ഏജൻസി ആയ iCAT (International Centre for Automotive Technology) പരിശോധിച്ച് Type approval സർട്ടിഫിക്കറ്റ് നൽകിയിട്ടുള്ളതാണ്. കേരളാ മോട്ടോർ വാഹന വകുപ്പ്, പ്രസ്തുത സർട്ടിഫിക്കറ്റ് പരിശോധന വിധേയമാക്കിയാണ് കേരളത്തിൽ ഈ വാഹനം രജിസ്റ്റർ ചെയ്തിട്ടുള്ളത്.

സെക്ഷൻ ഓഫീസർ

**Report on three months' performance of 25 Nos. electric buses commissioned from 01.08.2022.**

The Chairman & Managing Director constituted the following committee to evaluate the three months' performance of these 25 buses commenced operation from 01.08.2022:

1. General Manager (Finance), KSRTC - Chairman
2. Chief Engineer, KSRTC - Member
3. Executive Director (M&W) - Member
4. Executive Director (Operations) - Member
5. Executive Director (Technical) - Member
6. DGM(Technical), KSRTC SWIFT - Member
7. Asst.Exec.Engineer (Electrical) - Member

The Committee during its first meeting held on 10.11.2022, decided to obtain the performance reports from Thiruvananthapuram City and Peroorkada Depots where the buses are allotted.

The reports from both the depots are received and the Committee convened a meeting on 14.11.2022, observed the following:

1. The buses are performing according to the following NIT conditions according the major performance criteria stipulated:

Sl.No.	Criteria	As per NIT	Performance Complied Y/N
1	Range of the bus in single charge	>120 Kms	Yes
2	Charging Time	Charging time not to exceed 2 hrs 30 minutes, for full charge.	Yes (Average 1 Hr 10 Mins. to 1 Hr 40 Minutes)
3	Energy Consumption	<1.0 KWh	Yes (0.48 to 0.77 KWh)

2. There are no major repeated breakdowns recorded other than some failures including door functioning and observed that many of the defects are happened in the initial stage of operation and the manufacturer has taken steps to avoid such failures. However, it is decided that a notice shall be served to the manufacturer to avoid such failures and to ensure the operations without any breakdowns.

3. The A.Ex.E (Electrical) submitted a report that the chargers supplied along with the buses are satisfactorily performing as per the set performance criteria in the NIT.

Hence, the Committee after detailed discussions recommended the following:

Since the buses at present are performing according to the criteria set in the NIT and no serious drawbacks/failures reported regarding the performance of the 25 Electric Buses with Chargers, commenced operation from 01.08.2022 and evaluated the performance upto 31.10.2022, the Committee recommends that the balance payment due to M/s PMI Electromobility Solutions Pvt. Ltd shall be made with the condition that if any major drawbacks/failures noted further to this payment, the suitable amount may be deducted from the further payment applicable to the balance 25 buses.

1. General Manager (Finance), KSRTC

2. Chief Engineer, KSRTC

3. Executive Director (M&W)

4. Executive Director (Operations)

5. Executive Director (Technical)

6. DGM(Technical), KSRTC SWIFT

7. Asst.Exec.Engineer (Electrical)

- Chairman

- Member

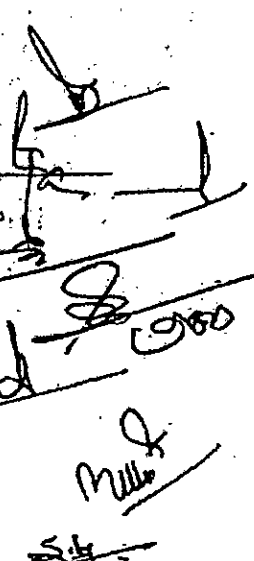
- Member

- Member

- Member

- Member

- Member



The block contains seven handwritten signatures, each corresponding to a member of the committee listed on the left. The signatures are written in black ink and are somewhat stylized. The first signature is the largest and most prominent, followed by several smaller ones. The last signature is written in a different style, possibly indicating a different role or a specific member.

KS117

KL-15A 242A

**KERALA STATE ROAD TRANSPORT CORPORATION**  
**INSPECTION REPORT OF NEW FULLY BUILT ELECTRIC BUSES**  
**FROM PMI**

**PURCHASE ORDER NO. ....dated.....**

Date Of inspection : 21/07/22

Chassis No : MB926EL00EL251670

Motor No : 7ILR001041D9A0059

Invoice NO& date : PM16/2022-23/466 14/6/22

Present Odometer Reading : 62km

Over all Body condition : OK

Paint Appearance : OK

Cleanness : OK

Brake System Make : WABCO

Steering Make : FOTON

ECU No : HCP021122107001

Fuel type : EL

Battery No (Heavy Duty) :  
1. 36 C1  
2. 36 C2  
3. 36 C3  
4. 36 C4  
5. 36 C5

Battery No(12 v) :  
1. A5A2D0052767D25-KS02334  
2. A5A2D0134297D25-KS02346

Alternator Make : NIL

Starter Make : NIL

Wiper Motor Make : DAATEX

Fire Extinguisher capacity & No : 4kg 2ND

Destination Board	CHEMITO 3 NO
Size	1000 x 300 mm
Passenger doors accessories make	SATHAM
Passenger seats & Nos	30+D
Air Conditioner	NIL
Luggage Box	NIL
Courier Box	NIL
Fuel Tank capacity	NIL
Urea Tank Capacity	NIL
Spare wheel carrier	NIL
P A system	NIL
Electric horn	GEYUE
Camera	YES
Night Lamps	CHEMITO 4+1 (R)
VLTD	YES
Music system	GIAGIAN
TV	YES
Ignition key	NIL
Luggage box key	YES
Courier box key	NIL
Battery box key	NIL
Urea Tank key	YES
Driver door key	NIL
	YES

Tyre make size & No

255/70R 22.5

JTH JETWAY

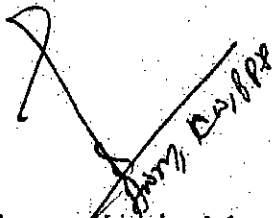
1. F.L. 921/U 0033 0522
2. F.R. 920/P 37260422
3. R.L.O. 922/P 36810422
4. R.L.I. 923/P 92960422
5. R.R.O. 944/U 57440522
6. R.R.I. 925/P 07936422
7. Spare wheel 926/C 0157092122

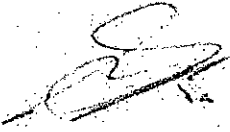
Items in tool kit...

- Bottle Jack - 12.5 Ton - 1 Nos.
- warning triangle - 1 Nos.
- wheel spanner - 1 Nos.
- Jack liver - 1 Nos.
- F Hub spanner - 1 Nos.
- R Hub spanner - 1 Nos.
- Combination spanner (set) - 13 Nos.
- hamer - 1 Nos.
- Speed driver - 2 Nos.
- adjustable spanner - 2 Nos.

- monkey plier - 1 Nos.
- valve tube repair tool - 1 Nos.
- Flank key - 2 Nos.
- air pressure gage - 1 Nos.
- wheel chock - 2 Nos.
- Triangle key - 1 Nos.
- Square key - 1 Nos.
- deflector qpyon - 1 Nos.

Documents/ records

  
Assistant Works Manager

  
Works Manager /c  
MECHANICAL ENGINEER (W)

2087  
A-2/10/21

PROTO INSPECTION OF FULLY BUILT NON-AC ELECTRIC BUS

The Purchase order for 50 numbers of 9 mtrs fully built non ac electric bus was placed with M/s PMI electro mobility Pvt Ltd, vide purchase order no, SRA/01/001003/2021, dtd 24/12/2021. As per clause number 2.14 of the NIT the successful tenderer shall start delivery of the offered model of bus compliant all statutory requirements and specifications as per NIT within 60 days from the issuance of purchase order and according to clause 2.10, the entire quantity shall be supplied within 6 months including prototype inspection from the date of purchase order.

During the inspection of the technical committee on 17/04/2022 at the factory of M/s PMI Electro mobility solutions Pvt Ltd, the manufacturer has not provided a bus complying clause No: 2.14, for inspection though the inspection was carried out with prior confirmation.

The committee expressed displeasure on not providing bus as per specification for inspection.

The representatives of the company demonstrated one fully built AC electric bus manufactured for some other client, and informed that the features of the bus shall be similar to the buses to be delivered to Kerala SRIC except AC

The bus was inspected as per Appendix -I, specification of NIT and the observations were recorded against each clause where ever applicable.

12/4/2022  
Mechanical Engineer  
Dy. of Executive Director (M&T)  
ME i/c of ED (T)  
12/04/2022  
12/04/2022




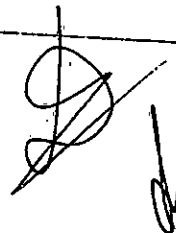


SL. NO	CHARACTERISTICS	SPECIFICATION DETAILS	COMPLIANCE STATUS
1)	Type of buses	ELECTRIC BUS TYPE I	yes
2)	Type of application	CITY	yes
3)	Range in Single Charge for 80% soc as per AIS 040, CMVR 124) Throughout the entire 5 year period.	120 km(minimum)	Range not evaluated.
4)	Energy Consumption	<1.0 Kwh/ Km	Not evaluated
5)	Charging Device	It should be supplied by bidder Fast charger - 50%	Not applicable at present
6)	No. of charging Device	One charging device for every two bus	Not applicable at present
7)	Length of buses	8500mm to 9500mm	8350 mm
8)	Floor height	400MM preferred upto 650 mm	900 mm ( as per appendix I
9)	Overall width	2600 (maximum)	2460 mm
10)	Overall height	3800 (maximum)	2920 mm
11)	No. of seats	30 +1D (minimum)	30+1D
12)	Type of seat	City bus	yes
13)	No. doors	2 nos.	yes
14)	Front Door-1	At front ahead/behind axle (Power operated - Driver controlled)	yes
15)	Center door	Between axles- 1000 mm wide for rapid movement of passengers (Power operated - Driver	1030 mm wide ( 720 mm width in open condition). Power operated- driver controlled.

*[Signature]*  
2/4/2021



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*[Signature]*

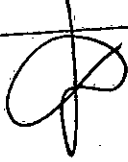

		controlled)	
16)	Positions of door controls	Should be on dashboard for driver control and emergency switch inside & outside of doors as per AIS 052	Yes
17)	Power operated service door- construction & control system of a power operated service door to be such that a passenger is unlikely to be injured/ trapped between the doors	As per AIS 052	Yes
18)	Front Suspension	Weveller /Air suspension	Air Suspension
19)	Rear suspension	Air suspnsion	Air Suspension
20)	Steering system	Power assisted	Yes
21)	Charging mode	AC Charging (Suitable for fast charging also)	Yes
22)	Electric Horn	24 V as per IS.1884:1993 Matched Pair (Low & High tone)	Yes
23)	Braking system	Power assisted disc/drum brakes	4 wheel disc brake
24)	Anti-skid anti-locking brake system (ABS)	As per CMVR required	yes
25)	Public Information System	Required as per AIS052	Yes
26)	Speed limiting device	There shall be provisions for limiting the vehicle speed at any value as per relevant KMVR and as required by	Speed limiting is programmed ECU.

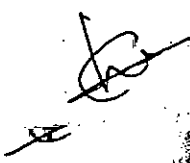
  
12/4/2022

		KSRTC.	
27)	Tyres	Radial/Tubless Tyre - 6 +1. (As per type approval)	255/70R 22.5
28)	Front overhang	As per CMVR	yes
29)	Rear overhang	As per CMVR	yes
30)	Emergency doors/exits or apertures (numbers) and dimension in mm	As per AIS 052	Not inspected bus being a/c shall have to provide as per AIS 052.
31)	Design type approval	As per AIS 052	Not applicable
32)	Bus structure- materials specs etc.	GI/Anti corrosion treated ERWCR Steel Materials as per Type approval	Structural inspection not made, shall have to provide as per NIT.
33)	Maximum first step height	400mm	390 mm
34)	Grab rails, Centre posts and passenger slings	Stainless steel pipe of 32mm & 2mm thick for Grab rail, Centre post and should provide passenger slings at necessary points.	Ensure as per AIS 052
35)	Footstep	Lower footstep should have retractable facility for differentially disabled	No accessibility to differentially abled.
36)	Panel beading	As per AIS 052	To be confirmed
37)	Roof grab rail brackets	As per AIS 052	To be confirmed
38)	Floor material	As per AIS 052	To be confirmed
39)	Front windscreen (laminated) glass:	Single piece laminated safety glass, with PVB film interlayer as per IS 2553 (part-2)-1992/ latest	To be confirmed
	Glass Fitment	Front wind shield glass shall	Pasted type provided instead of

  
  
12/11/2022



		be fixed by EPDM Rubber beading. Beading less fitment is not acceptable in case of front glass.	EPDM beading type to be rectified as per NIT.
	Size & design of glass	Standard designs and also as per table 22 of AIS 007	_____
40)	Rear windscreen glass	Single piece flat toughened glass- IS:2553 (part-2)-1992/latest	To be ensured
	Glass Fitment	Shall be fixed by EPDM rubber beading.	Pasted type provided instead of EPDM beading type to be rectified as per NIT.
	Size of glass	Standard designs as per the Proto-type approved by KSRTC should be supplied in the entire supply of buses for each variant of buses.	_____
41)	Side windows:	Flat two piece design- top fixed and bottom sliding toughened tinted glass. As per AIS 068	Being A/c fixed type provided, shall be modified as per NIT
42)	Glass specifications	Toughened tinted glass IS 2553 (part-2)-1992/latest	_____
	Glass thickness:	As per AIS 052	_____
	Colour of glass	As per CMVR 100	_____
43)	Rear view mirrors	As per AIS 052	_____
44)	Fitment of Rear view mirror	Stainless steel C-brackets, Left side rear view mirror should be visible to driver through Front Wind Screen	MS Brackets provide, shall be modified as per NIT.

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		glass(Compulsory)	
45)	Mirrors right/left side exterior /interior:	Convex as per AIS 001 & 002. Interior mirror with double curvature	_____
46)	Seat layout	2 x 2	Two set of transverse seats provided(3 seater-1 and 2 seater 1)
47)	Seat area /seat space per passenger (width* depth)	As per AIS 052	_____
48)	Seat pitch-minimum	As per AIS 052	_____
49)	Seat back rest height	As per AIS 023	_____
50)	Passenger seating	As per AIS 052 & AIS 023.	_____
51)	Seat materials	Cushioned seat with PU foam covered with artificial Leather upholstery [ Compliance of Flammability requirements as per IS 15061:2002 ]	_____
52)	Seat frame structure material	Powder Coated ERWCR steel tube.	Moulded-seat provided not as per NIT
53)	Back rest-Materials	As per AIS052 with back rest, head support and seat cushion [compliance of flammability requirement IS15061:2002]	_____
54)	Orientation of seats	All seats should be fitted forward looking	Two set of transverse seats provided (3 seater-1 and 2 seater 1)- shall be as per NIT
55)	Number of seats	Minimum 30 +1D	Yes
56)	Seat back rest	Required, Fixed type	_____
57)	Sun visor	Required (Good quality	Yes

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		durable and easily operatable)	
58)	Seat belts & their anchorage	As per AIS 052. should be provided to all seats where there is no provision for grab support in front.	To be confirmed
59)	Driver seat	AIS 023 and AIS 052	
60)	Driver's working space	As per AIS 052, also proper air ventilation facility to be provided for driver with bottle holding clamp facility.	
61)	Corrosion prevention treatment	As per clause 3.17 of AIS 052	
	Internal surfaces of structural members		
	External surfaces of structural members		
	After drilling holes/welding		
62)	Primer coating	As per clause 3.17 of AIS 052	
63)	Body Painting:	PU Paint to be used	
64)	Body Colour and Design	Will be given by KSRTC	
65)	Electrical system, electrical cables and conductor cross section	BIS marked, copper conductors with fire retardant insulation as per IS/ISO: 6722:2006. Conductor cross-section varying as per circuit requirements, minimum cross-section 0.5 sq mm.	
66)	Fuse	As per AIS 052	

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67)	Isolation switches for electrical circuits where RMS value of voltage exceeds 100 volts	As per AIS 052	_____
		As per AIS 052	
68)	Location of cables away from heat sources	As per AIS 052	_____
69)	Type approval of circuit diagram as per standards related to electric equipment/wiring	As per AIS 052	_____
70)	Battery (starting battery) cut - off switch (isolator switch):	Shall be positioned near driver seat for easy and quick operation by driver.	_____
71)	Wind screen wiper:	As per table 22 of AIS 007	_____
72)	Wiper motor:	Variable speed with time delay relay as per AIS 11	_____
73)	Wiper arm/blade:	As per AIS 019/AIS 011	_____
74)	Power ports for ETM charging	Requires one ETM charging point with ETM holder in driver cabin. DC to AC converter should be provided.	_____
75)	Lighting- internal & external and illumination	As per AIS 052 and all interior lights should be LED Type, OE fitting preferred in case of head lamp and tail lamp.	_____
76)	Dash board lighting/control lighting	As per AIS 052	_____
77)	Driver seat belt & anchorage duly type	As per CMVR & AIS 052 conforming to AIS 005 & 015	_____

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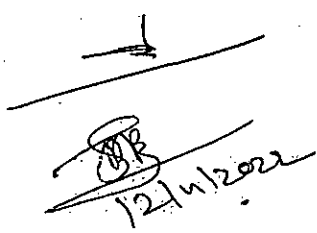
	approved.		
78)	Fire extinguisher:	As per AIS 052/CMVR/KMVR	
79)	First aid box:	Required -1Nos (Fixed metallic box as per provision of CMVR	
80)	Handholds:	As per AIS 052, fixed type preferred.	
81)	Stanchions:	As per AIS 052/CMVR.	
82)	Window guard rails:	As per AIS 052/CMVR.	To be provided
83)	Entrance/exit guard/step well guard:	As per AIS 052, step well guards as per Type Approval.	
84)	Emergency exit doors, warning devices etc.	As per AIS 052 /CMVR No seats shall be fitted obstructing the free access to emergency door. One grab rail to be provided above the emergency door. Foot rest cum guard to be provided in front of seats behind emergency door.	Emergency exit to be provided as per NIT
85)	Front/rear door, step well lights, door open sign	LED bulb as per AIS 008	
86)	Towing device front/rear	AS per CMVR & IS 9760-ring type	Provided in Front only
87)	Warning triangle	As per AIS 052/CMVR	
88)	Bumpers-front and rear	As per AIS 052, Detachable type, easily removable in order to have access to repair the	

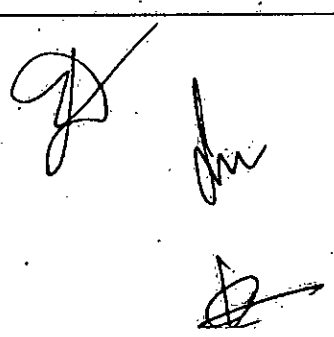
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		aggregates.	
89)	Luggage Box / Courier Box	As per AIS 052 and mutually agreed by the KSRTC and bidder with scope for maximum space for the provision of courier transportation.	Required as per NIT
90)	Electronic Ticketing Machine (ETM) Box	Electronic ticket machine (ETM)/Ticket rack box: one box with lock and key should be provided to keep it safely under the conductor seat.	Required as per NIT
91)	Roof hatch	2 nos. to be provided (Front-1No- openable to front and Rear-1No- openable to rear)	To be provided
92)	Mobile Charging unit	5 Nos. (minimum) of mobile charging unit should be provided. if the charging unit is away from the seat then sufficient lock and key facility to be provided.	To be provided.
93)	Stay box for crew	To be provided with locking facility and accessible from driver cabin. It should be enough spacious to keep the essentially belongings of crew.	To be provided.
94)	Warranty	The Fully Built ELECTRIC Bus offered should have a warranty for a period of 2	_____


  
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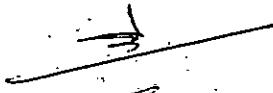
Years/ 2 Lakh Km which ever comes earlier, in respect of Chassis parts, Traction motor, battery pack for vehicle propulsion, and any other related systems and Body Building Materials and all kinds of consumables required to run the bus. i.e, aggregate and bus body items provided in these buses due to defective design, material or workmanship from the date of registration of the vehicle.(Only normal wear of tyres, accident repairs of body, bus washing are excluded from warranty)


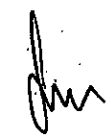

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Destination Board

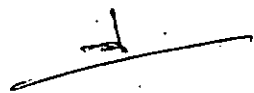

Alpha Numeric Display Technology- Amber coloured LED based electronic display system in English Hindi and Malayalam. (Comply as per AIS 052 and CMVR). Vertically scrolling/falling type preferred, Front 1800 x 330mm size, Rear 1200 x 330 Single control for both destination boards and control unit in Driver Cabin and one board of dimensions 1800 x

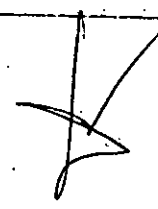


900 mm 3 nos provided.(Front, Left and Rear provided). Prefer Full length Front and Right-side destination board. Shall be provide as per annexure -E.

  
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		330mm size at the top behind the driver cabin. All boards should easily programmable and should compatible with the PIS system.	
96	Driver Cabin Separation	Should be separated from passenger saloon as per AIS 052 Stainless steel tube structure, fencing type. This separation should not restrict the driver seat position adjustments.	Partial cabin separation provided in the inspected A/c bus. To be provided as per NIT ( Full separation required)
97	Driver Cabin Fan	A suitable good quality durable fan to be provided in the driver cabin to fan the driver.	yes
98	Accessories	Fully equipped tool kit containing Tommy bar, Wheel spanner, Screw driver (heavy duty), cutting pliers, pipe wrench and Hydraulic Bottle Jack 10 Ton (Minimum Capacity).	To be provided
99	Bus Chargers	One charging unit should be supplied for every 2 buses, and installed at the location suggested by KSRTC.	_____
100	Proper access to repair and maintenance points of various vehicle	There shall be easy and quick access to all under chassis components which require	_____

  
  
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		... maintenance such as suspension, steering, brake, electric motors, battery etc.	
101	Paneling Materials	As per AIS 052( Table 22 of AIS007)	
102	Conductor bell	String type required	
104	Positioning of switches	All light control switches shall be positioned on the right side top of the driver seat.	
105	Conductor seat	Shall be provided separately as independent seat near the rear foot board.	
106	Vehicle location tracking device and emergency button	Complying AIS 140 and as approved by KMVD with IRNSS, models with minimum 5 panic buttons necessary software shall also be supplied for Vehicle Tracking, Energy consumption monitoring, PIS and other performance reports and must be integrated with KSRTC applications.	
107	Certifications	Comply with a) CMVR and KMVR requirements b) Type approval certificate by any authorized agency in CMVR 126 c) Compliance to strength of super structure- AIS 031 d) Compliance to Bus Body	To be provided

  
  
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Code AIS 052 & ITS AIS:140 e) Compliance of flammability requirements as per IS 15061:2002 f) Certificate issued by ARAI
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The above are only the observations of the committee on the A/c bus produced before the committee, however this shall not meet the specifications and requirements as per the Purchase order issued by Kerala SRTC.

Representatives of M/s PMI Electro mobility Solutions:

1. Mr: Dev Ashish Palai - Vice President, Design & Development

2. Mr: Sanjay Nagpal - Vice President, Business & Development

3. Mr: Kishan Singh - Manager Design & Development

*Kishan Singh*  
12/04/2022

Representatives of Kerala SRTC Inspection Team:

1. Chandra Babu- R- Executive director ( Technical)

2. Predhueraj. S -AWM - Kannur

3. Shibu..S - Manager (M&W)

*Chandra Babu*  
12/4/22

*Predhueraj S*  
12/4/2022  
*Shibu S*  
12/4/22

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PROTO INSPECTION OF FULLY BUILT NON-AC ELECTRIC BUS ON  
12.05.2022 AT PMI ELECTROMOBILITY PVT LTD.

The Purchase order for 50 numbers of 9-mtrs fully built non ac electric bus was placed with M/s PMI electro mobility Pvt: Ltd, vide purchase order no; SRA/01/001003/2021, dtd 24/12/2021. As per clause number 2.14 of the NIT the successful tenderer shall start delivery of the offered model of bus complaint all statutory requirements and specifications as per NIT within 60 days from the issuance of purchase order and according to the P.O, the entire quantity shall be supplied within 6 months including prototype inspection from the date of purchase order.

The technical committee constituted vide order No.SRA1/001003/2021 dt.09.05.2022 inspected the prototype vehicle bearing chassis no. MD926EL00EE251670 on 12/05/2022 at the factory of M/s PMI Electromobility Pvt Ltd, Dharuhera, Rewari, Haryana.

The bus was inspected as per Appendix -I, specification of NIT and the observations were recorded against each clause where ever applicable.

SL. NO	CHARACTERISTICS	SPECIFICATION DETAILS	COMPLIANCE STATUS
1)	Type of buses	ELECTRIC BUS TYPE I	YES
2)	Type of application	CITY	YES
3)	Range in Single Charge for 80% soc as per AIS 040, CMVR 124)	120 km(minimum)	Trial run made for 124 Kms and consumed 54% battery charge.

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	Throughout the entire 5 year period.		
4)	Energy Consumption	<1.0 Kwh/ Km	Not evaluated
5)	Charging Device	It should be supplied by bidder Fast charger – 50%	Not applicable at present
6)	No. of charging Device	One charging device for every two bus	Not applicable at present
7)	Length of buses	8500mm to 9500mm	8540 mm
8)	Floor height	400MM preferred upto 650 mm	900 mm
9)	Overall width	2600 (maximum)	2490 mm
10)	Overall height	3800 (maximum)	2900 mm
11)	No. of seats	30 +1D (minimum)	30+1D
12)	Type of seat	City bus	yes
13)	No. doors	2 nos.	yes
14)	Front Door-1	At front ahead/behind axle (Power operated – Driver controlled)	yes
15)	Center door	Between axles- 1000 mm wide for rapid movement of passengers (Power operated – Driver controlled)	1041 mm wide ( 720 mm width in open condition). Power operated- driver controlled.
16)	Positions of door controls	Should be on dashboard for driver control and emergency switch inside & outside of doors as per AIS 052	Yes
17)	Power operated service door- construction &	As per AIS 052	Yes

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Munir

Munir  
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dimension in mm

1)	Design type approval	As per AIS 052	Copy Enclosed
2)	Bus structure- materials specs etc.	GI/Anti corrosion treated ERWCR Steel Materials as per Type approval	As per Type Approval
33)	Maximum first step height	400mm	380 mm
34)	Grab rails, Centre posts and passenger slings	Stainless steel pipe of 32mm & 2mm thick for Grab rail, Centre post and should provide passenger slings at necessary points	Provided Powder Coated Ribbed Aluminium with Slings. Needs to be modified with Stainless Steel Pipes as per NIT.
35)	Foot step	Lower foot step should have retractable facility for differentially disabled	Fitted on rear door.
36)	Panel beading	As per AIS 052	As per Type Approval
37)	Roof grab rail brackets	As per AIS 052	As per Type Approval
38)	Floor material	As per AIS 052	As per Type Approval
39)	Front windscreen (laminated) glass:	Single piece laminated safety glass, with PVB film interlayer as per IS 2553 (part-2)-1992/ latest	Yes
	Glass Fitment	Front wind shield glass shall be fixed by EPDM Rubber beading. Beading less fitment is not acceptable in case of front glass.	Complied
	Size & design of glass	Standard designs and also as per table 22 of AIS 007	As per Type Approval

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	Rear windscreen glass	Single piece flat toughened glass- IS:2553 (part-2)-1992/latest	Yes
	Glass Fitment	Shall be fixed by EPDM rubber beading.	Pasted type provided as per Type Approval.
	Size of glass	Standard designs as per the Proto-type approved by KSRTC should be supplied in the entire supply of buses for each variant of buses.	Yes
41)	Side windows:	Flat two piece design- top fixed and bottom sliding toughened tinted glass. As per AIS 068	Yes
42)	Glass specifications	Toughened tinted glass IS 2553 (part-2)-1992/latest	Yes
	Glass thickness:	As per AIS 052	As per Type Approval
	Colour of glass	As per CMVR 100	As per Type Approval
43)	Rear view mirrors	As per AIS 052	Yes
44)	Fitment of Rear view mirror	Stainless steel C-brackets, Left side rear view mirror should be visible to driver through Front Wind Screen glass(Compulsory)	MS Brackets provided, shall be modified as per NIT from the 2 <sup>nd</sup> bus.
45)	Mirrors right/left side exterior /interior:	Convex as per AIS 001 & 002. Interior mirror with double curvature	Yes
46)	Seat layout	2 x 2	Two set of transverse seats provided (3 seater-1 and 2 seater 1)

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47)	Seat area /seat space per passenger (width* depth)	As per AIS 052	As per Type Approval
48)	<del>Seat pitch minimum</del>	<del>As per AIS 052</del>	<del>As per Type Approval</del>
49)	Seat back rest height	As per AIS 023	As per Type Approval
50)	Passenger seating	As per AIS 052 & AIS 023.	As per Type Approval
51)	Seat materials	Cushioned seat with PU foam covered with artificial Leather upholstery [ Compliance of Flammability requirements as per IS 15061:2002 ]	Yes
52)	Seat frame structure material	Powder Coated ERWCR steel tube	Moulded-seat provided.
53)	Back rest Materials	As per AIS052 with back rest, head support and seat cushion [compliance of flammability requirement IS15061:2002]	City Type Moulded seats are provided without Head Support.
54)	Orientation of seats	All seats should be fitted forward looking	2x2 Layout -10 sets facing front 5 seater on rear-most end- 1. Two set of transverse seats provided (3 seater-1 and 2 seater 1)
55)	Number of seats	Minimum 30 +1D	Yes
56)	Seat back rest	Required, Fixed type	Yes
57)	Sun visor	Required (Good quality durable and easily operatable)	Yes
58)	Seat belts & their anchorage	As per AIS 052. should be provided to all seats where there is no provision for grab support in front.	Yes

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	Driver seat	AIS 023 and AIS 052	Yes
60)	Driver's working space	As per AIS 052, also proper air ventilation facility to be provided for driver with bottle holding clamp facility.	Yes, (Bottle Holder to be provided).
61)	Corrosion prevention treatment		
	Internal surfaces of structural members	As per clause 3.17 of AIS 052	Certificate provided by the Manufacturer (copy enclosed).
	External surfaces of structural members		
	After drilling holes/welding		
62)	Primer coating	As per clause 3.17 of AIS 052	Certificate provided by the Manufacturer (copy enclosed).
63)	Body Painting:	PU Paint to be used	Certificate provided by the Manufacturer (copy enclosed).
64)	Body Colour and Design	Will be given by KSRTC	Yes (Logo & Graphics to be finalized by KSRTC)
65)	Electrical system, electrical cables and conductor cross section	BIS marked, copper conductors with fire retardant insulation as per IS/ISO: 6722:2006. Conductor cross-section varying as per circuit requirements, minimum cross-section 0.5 sq mm.	As per Type Approval
66)	Fuse	As per AIS.052	As per Type Approval

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	Isolation switches for electrical circuits where RMS value of voltage exceeds 100 volts	As per AIS 052	As per Type Approval
		As per AIS 052	
68)	Location of cables away from heat sources	As per AIS 052	Yes
69)	Type approval of circuit diagram as per standards related to electric equipment/wiring	As per AIS 052	As per Type Approval
70)	Battery (starting battery) cut - off switch (isolator switch):	Shall be positioned near driver seat for easy and quick operation by driver.	Yes
71)	Wind screen wiper:	As per table 22 of AIS 007	Yes
72)	Wiper motor:	Variable speed with time delay relay as per AIS 11	Yes
73)	Wiper arm/blade:	As per AIS 019/AIS 011	Yes
74)	Power ports for ETM charging	Requires one ETM charging point with ETM holder in driver cabin. DC to AC converter should be provided.	Location to be modified and to be placed behind the Driver Seat.
75)	Lighting- internal & external and illumination	As per AIS 052 and all interior lights should be LED Type, OE fitting preferred in case of head lamp and tail lamp.	Yes
76)	Dash board lighting/control lighting.	As per AIS 052	Yes
77)	Driver seat belt & anchorage duly type approved.	As per CMVR & AIS 052 conforming to AIS 005 & 015	Yes

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8)	Fire extinguisher:	As per AIS 052/CMVR/KMVR	2 Nos. 4 Kg each provided
79)	First aid box:	Required -1Nos (Fixed metallic box as per provision of CMVR	Yes
80)	Handholds:	As per AIS 052, fixed type preferred.	Yes
81)	Stanchions:	As per AIS 052/CMVR.	Yes
82)	Window guard rails:	As per AIS 052/CMVR.	Yes
83)	Entrance/exit guard/step well guard:	As per AIS 052, step well guards as per Type Approval.	Yes, Additional Grab handles to be provided on rear doors.
84)	Emergency exit doors, warning devices etc.	As per AIS 052/CMVR. No seats shall be fitted obstructing the free access to emergency door. One grab rail to be provided above the emergency door. Foot rest cum guard to be provided in front of seats behind emergency door.	Provided as per Type Approval.
85)	Front/rear door, step well lights, door open sign	LED bulb as per AIS 008	Yes
86)	Towing device front/rear	AS per CMVR & IS 9760-ring type	Provided in Front only.
87)	Warning triangle	As per AIS 052/CMVR	Will be supplied along with the bus.
88)	Bumpers-front and rear	As per AIS 052, Detachable type, easily removable in order to have access to repair the	Yes

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		aggregates.	
89)	Luggage Box / Courier Box	As per AIS 052 and mutually agreed by the KSRTC and bidder with scope for maximum space for the provision of courier transportation.	Provided behind rear seat but the Size to be increased.
90)	Electronic Ticketing Machine (ETM) Box	Electronic ticket machine (ETM)/Ticket rack box: one box with lock and key should be provided to keep it safely under the conductor seat.	The charging socket to be included in the ETM Box behind the driver seat.
91)	Roof hatch	2 nos. to be provided (Front-1No- openable to front and Rear-1No- openable to rear)	Yes
92)	Mobile-Charging unit	5 Nos-(minimum) of mobile charging unit should be provided. if the charging unit is away from the seat then sufficient lock and key facility to be provided.	Yes
93)	Stay box for crew	To be provided with locking facility and accessible from driver cabin. It should be enough spacious to keep the essentially belongings of crew.	To be provided in front of the Rear Door by the shifting the position of Fire Extinguisher to the side wall.
94)	Warranty	The Fully Built ELECTRIC Bus offered should have a warranty for a period of 2	To be executed by the Manufacturer.

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		Years/ 2 Lakh Km which ever comes earlier, in respect of Chassis parts, Traction motor, battery pack for vehicle propulsion, and any other related systems and Body Building Materials and all kinds of consumables required to run the bus. i.e., aggregate and bus body items provided in these buses due to defective design, material or workmanship from the date of registration of the vehicle. (Only normal wear of tyres, accident repairs of body, bus washing are excluded from warranty)	
95	Destination Board	Alpha Numeric Display Technology- Amber coloured LED based electronic display system in English Hindi and Malayalam (Comply as per AIS 052 and CMVR). Vertically scrolling/falling type preferred, Front 1800 x 330mm size, Rear 1200 x 330 Single control for both destination boards and control unit in Driver Cabin and one board of dimensions 1800 x	900 x 290 mm 3 nos provided. (Front, Left and Rear provided).

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		330mm size at the top behind the driver cabin. All boards should easily programmable and should compatible with the PIS system.	
96	Driver Cabin Separation	Should be separated from passenger saloon as per AIS 052 Stainless steel tube structure, fencing type. This separation should not restrict the driver seat position adjustments.	Provided with Powder Coated Ribbed Aluminum Fencing.
97	Driver Cabin Fan	A suitable good quality durable fan to be provided in the driver cabin to fan the driver.	yes
98	Accessories	Fully equipped tool kit containing Tommy bar, Wheel spanner, Screw driver (heavy duty), cutting pliers, pipe wrench and Hydraulic Bottle Jack 10 Ton (Minimum Capacity).	Demonstrated the Tool Kit, Jack and accessories as per NIT and to be provided along with the bus.
99	Bus Chargers	One charging unit should be supplied for every 2 buses, and installed at the location suggested by KSRTC.	To be provided as per the direction from KSRTC.
100	Proper access to repair and maintenance points of various vehicle	There shall be easy and quick access to all under chassis components which require	Yes

*M. H. M. / 15/12/22*

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*Smiths / 12/5/22*

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	components	repair and maintenance such as suspension, steering, brake, electric motors, battery etc.	
101	Paneling Materials	As per AIS 052 (Table 22 of AIS007)	As per Type Approval
102	Conductor bell	String type required	To be Provided
104	Positioning of switches	All light control switches shall be positioned on the right side top of the driver seat.	Yes
105	Conductor seat	Shall be provided separately as independent seat near the rear foot board.	To be earmarked by KSRTC.
106	Vehicle location tracking device and emergency button	Complying AIS 140 and as approved by KMVD with IRNSS; models with minimum 5 panic buttons necessary software shall also be supplied for Vehicle Tracking, Energy consumption monitoring, PIS and other performance reports and must be integrated with KSRTC applications.	Yes, Star Telematics.
107	Certifications	Comply with a) CMVR and KMVR requirements b) Type approval certificate by any authorized agency in CMVR 126 c) Compliance to strength of super structure- AIS 031 d) Compliance to Bus Body	Type Approval Certificate from iCAT Enclosed.

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	Code AIS 052 & ITS AIS:140 e) Compliance of flammability requirements as per IS 15061:2002	
	f) Certificate issued by ARAI	

Subject to the above suggested modifications, the Prototype Bus Model is in order as per the NIT.

**Representatives of M/s PMI Electro-mobility Solutions:**

1. Sh. Sunil Mittal - Vice President, Operations *Sunil Mittal*  
12/5/22
2. Sh. Ajay Joshi - General Manager *Ajay Joshi*  
12/5/22
3. Sh. Kishan Singh - Manager, Design & Development *Kishan Singh*  
12/5/22

**Representatives of Kerala SRTC Inspection Team:**

1. Sh. R. Prithviraj - Asst. Works Manager, KSRTC *Prithviraj*  
12/5/22
2. Sh. Ullas Babu - DGM(Technical), KSRTC SWIFT Ltd *Ullas Babu*  
12/5/22
3. Sh. S. Shibu - Manager (M&W), KSRTC *Shibu*  
12/5/22

**PRE-DELIVERY INSPECTION OF 9 M NON-AC ELECTRIC BUSES AT DHARUHERA PLANT OF M/S  
PMI ELECTROMOBILITY SOLUTIONS PRIVATE LIMITED ON 08.06.2022**

In continuation to the prototype inspection of 9m non ac electric bus on 12.5.22, certain deviations from the NIT were pointed out through e mail on 20.5.22. Out of the 14 points raised 9 points are accepted by M/s PMI for rectification/ modification and balance 5 deviations has been accepted/ agreed by KSRTC. The joint inspection details as observed are.

Inspected bus	Chassis Number
KSRTC 1	MD926EL00EE251670 (Proto)
KSRTC 2	MD926EL00EF251691

After inspection of buses, production line process was verified & observed busses in Production process.

During the joint discussion, it was committed by M/s PMI to dispatch all 25 buses by 24<sup>th</sup> June 2022, & Rest 25 buses by 24<sup>th</sup> of August 2022.

SI No.	CHARACTERISTICS	SPECIFICATION AS PER NIT	DEVIATION OBSERVED DURING PROTOTYPE EVALUATION	PMI REMARKS	REMARKS OF THE INSPECTION TEAM
1	Grab rails, Centre posts and passengers	Stainless steel pipe of 32 mm & 2 mm thick for Grab rail, Centre post and should	Provided Powder Coated Aluminum Slings, needs to be	OK, Stainless steel pipes as required in NIT will be provided	Under Fitment

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*08/06/22*  
*ED(T) 18/6/2022*

	sling		provide passenger slings at necessary points.	modified with Stainless Steel Pipes as per NIT.		
2	Glass Fitment		Shall be fixed by EPDM rubber beading	Pasted type provided as per type approval.	Front windshield glass is fitted in EPDM rubber profile, whereas rear windshield has been pasted with sealant to enhance the aesthetics of the rear side of the bus. As per Clause No 40, Appendix -I of the NIT Glass can either be pasted / can be fitted in Rubber.	Accepted by KSRTC No action required
3	Fitment of Rear-view mirror		Stainless steel C-brackets, left side rear view mirror should be visible to drive through Front Wind Screen glass (Compulsory)	MS Brackets provided, shall be modified as per NIT from the 2nd bus.	Will be modified from the Second Bus	SS brackets used, Verified

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4	Seat layout	2X 2	Two set of transverse seats provided (3 seater-1 and 2 seater-1)	Seat Layout has been designed for convenience of standee passengers & this arrangements provides more space for passengers who are getting deboarded from the bus & same Layout also has been approved in TYPE APPROVAL of the PROTO by ICAT.	Accepted by KSRTC. No action required
5	Seat frame structure material	Powder Coated ERWCR steel tube	Molded seat provided	Especially designed in Europe, approved by ARAI PUNE, cantilever powder coated ERWCR base frame with molded cushioned seats are provided which will make maintenance inside of the bus very easy & provides lot of space for placing luggage. (Test	Accepted by KSRTC. No action required

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					reports submitted to Inspection TEAM)	
6	Back rest Materials	As per AIS052 with back rest, head support and seat cushion (Compliance of flammability requirement IS 15061:2002).	City Type Molded seats are provided without Head Support		Especially designed in Europe, approved by ARAI PUNE, cantilever powder coated ERWCR base frame with molded cushioned seats are provided for comfortable journey. As per AIS 052 Type 1 city buses head rest is not mandatory.	Accepted by KSRTC. No action required
	Orientation of seats	All seats should be fitted forward looking	2 X 2 Layout- 10 sets facing front 5- seater on rear most end -1. Two set of transverse seats provided (3- seater-1 and 2 seater-1)		Seat Layout has been designed for convenience of standee passengers & this arrangements provides more space for passengers who are getting deboarded from the bus & same Layout also has been approved in TYPE APPROVAL of the	Accepted by KSRTC. No action required

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					PROTO by ICAT	
8	Driver's Working space	As per AIS 052, also proper air ventilation facility to be provided for driver with bottle holding clamp facility	Yes, (Bottle holder to be provided)		Bottle Holder will be provided in Driver cabin in all the buses including proto	Provided, Verified
9	Power ports for charging ETM	Requires one ETM charging point with ETM holder in driver cabin. DC to AC converter should be provided.	Location to be modified and to be placed behind the Driver Seat.		As per suggestion of the Inspection team, Location modified, will be replicated in all the buses.	Modified, Verified
10	Luggage Box/ Courier Box	As per AIS 052 and mutually agreed by the KSRTC and bidder with scope for maximum space for the provision of courier transportation	Provided behind rear seat but the Size to be increased.		As per suggestion of the Inspection team, Size of the rear box will be increased & will be replicated in all the buses	Provided with increased size 900-L x 200-B x 300-H mm

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11	Electronic Ticketing Machine (ETM) Box	Electronic Ticket Machine (ETM) / Ticket rack box: one box with lock and key should be provided to keep it safely under the conductor seat	The charging socket to be included in the ETM Box behind the driver seat.	As per suggestion of the Inspection team, Location modified, will be replicated in all the buses.	Modified, Verified
12	Stay box for crew	To be provided with locking facility and accessible from driver cabin. It should be enough spacious to keep the essentiality belongings of crew	To be provided in front of the Rear Door by the shifting the position of Fire Extinguisher to the side wall.	As per suggestion of the Inspection team, Location of Fire Cylinder shifted to the side wall & one additional box with lock & key arrangements provided, will be replicated in all the buses.	Location of Fire Extinguisher shifted, additional Box provided. 500 L x 250 B x 185 H mm
13	Driver Cabin Separation	Should be separated from passenger saloon as per AIS 052 Stainless steel tube structure, fencing type. This	Provided with Powder Coated Ribbed Aluminum Fencing.	Tube fencing will be provided to separate the driver area in all the buses.	Stainless Steel Fencing provided

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		separation should not restrict the driver seat position adjustments			
14	Conductor bell	String type required	To be provided	As per suggestion of the Inspection team, will be mounted on roof in all the buses.	Provided, Verified.

*Prithviraj*  
R. PRITHVIRAJ  
CPS. KSRTC

*Vineethraaj*  
VINEETHRAJ R. V  
ADE KSRTC

*Rajeev Nair*  
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