



# SPECIFICATIONS FOR SUPER LUXURY BUS BODIES - 2018

## 1.0 GENERAL DESIGN:

The general design shall be a streamlined body with Passenger service door on LHS side in front of front wheel with pneumatically operated in-swing door/JK door and Luxury Passenger Seats with reclining back facing forward in 2X2 pattern.

## 2.0 REGULATION:

The general appearance, structure, seat layout etc., shall be in accordance with respective drawings. The bus body design should comply with the provisions of latest Central Motor Vehicle Rules, Bus Body code AIS:052, Andhra Pradesh Motor Vehicle Rules and any other statutory requirement that may come in to force during execution of fabrication work order. The coach interior shall meet the standard of IS: 15061-2002 or latest amended one.

2.1 The firms must possess Bus Body Accreditation Certificate issued by CIRT/ARAI/or any other Agency approved by GOI.

## 3.0 MAIN DIMENSIONS: (ALL DIMENSIONS ARE IN MILLIMETERS)

SL NO	CHASSIS MODEL DESCRIPTION	AL 222"WB	TATA 218"WB	EICHER 230"WB
1	Wheelbase	5639	5545	5840
2	Rear overhang	3383 (60%)	3327 (60%)	3387(58%)
3	Overall length	10952	10802	11127
4	Overall width	2590	2590	2590
5	Pillar centre (std)	1680	1680	1680
6	rail height from Skirt level	1550	1550	1550
7	rail height from waist level	1108	1108	1108
8	Interior saloon clear height (Minimum)	2020	2020	2020
9	Clear aperture of passenger service door (minimum when measured from the edge of door flap)	650	650	650
10	Clear aperture of Driver door	800	800	800
11	Seating capacity	36+1Driver	36+1Driver	36+1 Driver

4.0 **DRAWINGS:** The list of drawings to be followed are shown at ANNEXURE- I

5.0 **MATERIAL:** The fabrication of bus bodies shall be as per the specifications and recommended sources / brands of material mentioned at ANNEXURE-II.

## **6.0 CHASSIS POSITIONING:**

- 6.1 All chassis received by the firm for fabrication of bus bodies should be kept safely in a covered area. The chassis should not be kept open to atmosphere with out any protection to avoid damage to chassis and its units due to rain, dust and heat.
- 6.2 Before commencement of bus body fabrication all important units of chassis viz. Alternator, self-starter, radiator, tyres, batteries, air cleaner, air cleaner indicator, power steering reservoir, fuse boxes, electrical relays, brake pipe lines, filters, clutch reservoir and Instrument cluster should be protected by providing suitable covering to prevent from damages that may occur due to welding, drilling, cutting, hammering, riveting, falling of metal scrap or dust during the course of fabrication. Driver seats, steering wheel, hand brake valves etc., shall also be protected from any damage or paint spray.
- 6.3 Chassis number on long members and identification plates provided by the chassis manufacturer shall be properly covered and protected before commencing the fabrication work.
- 6.4 The Ashok Leyland and TATA chassis are supplied with following items as OE fitment.

1. Cabin floor on RH side
2. Bulk head structure (AL)
3. Out riggers on RHS(AL)
4. Anti-sag channel (TATA)
5. Engine bonnet
6. Knitted Driver seat
7. Head lights 24v E2 with relays
8. Front indicators E2
9. Tail Lamps E2
10. Battery cut off switch
11. Wiper motor with twin blades/linkages
12. Washer tank with pipes(TATA)
13. Reflective warning triangles with stands
14. Wheel stoppers
15. Spare wheel carrier cage type
16. First aid kit
17. Tools as per CMVR
18. Rear view mirrors with brackets ( E2 plus 1 small mirror)
19. Electrical horn
20. ELR safety belt E1

## **7.0 PROTECTIVE TREATMENT:**

- 7.1 All Mild Steel components, including rolled sections except GI tubes and sheets used for fabrication shall be PRE-TREATED WITH COLD PHOSPHATING PROCESS to a high quality as per IS-3618. After the above process, all components shall be applied with anti corrosive Zinc phosphate epoxy primer paint "Rust-o-Cap" (part no.24570608320) of M/s. Asian Paints or '60 BT PRIME GREY' of M/s. Akzo Nobel, to a thickness of 40 to 50 microns before assembly. After assembly of structure and completing the welding work, all the joints shall be carefully cleaned, ground and applied with Epoxy primer without any time delay and then complete body structure shall be applied with the above anticorrosive paint once again fully.

7.2 After completion of body assembly, bitumen based anti-corrosive, abrasive resistance and sound deadening property coating of the make as specified in materiel specifications shall be applied on the under floor body frame members and chassis.

**8.0 BODY STRUCTURE:**

**8.1 Aluminium components:**

All Aluminium extruded sections should be of Alloy designation 64430, 63400 and 65032, condition WP as per IS: 733 - 1983.

All Aluminium sheets shall conform to alloy designation 19000, condition H2 of IS: 737 of 1986.

8.2 Chart no. CB18CTG132 and Drg.no. CB18AEG112 (sheet 1&2) containing the details of specifications of Aluminium extruded sections and sheets to be used, shall be followed.

**8.3 Other Mild Steel structural members:**

Galvanized steel sheets should be as per grade 175 of IS: 277- 1985. Rolled sections should be as per IS - 2062 of 2006. The structural joints shall be by bolting, MIG welding and combination of both. The welding should be full length of joint. After welding, slag to be removed and ground to smooth finish to avoid sharp edges and then Epoxy primer to be applied without any time delay. Under any circumstances, arc welding should not be used.

8.4 All bolts used shall be of sizes reckoned in Metric system. The bolts shall be of high tensile hexagonal head bolts of fine thread, conforming to property clause 8.8 of IS: 1367 of 1979. The nuts of approved anti-vibrate type such as Nyloc conforming to IS: 1364 of 1983 shall be used. All bolts nuts and washers should be galvanized. All bolts nuts and washers should be galvanized. Each bolt and nut shall be provided with a flat washer. A spring washer should accompany every tapped bolt. The approved brands of bolts are TVS / STL / UNBRAKO/ IMPERIAL FASTENERS.

**9.0 PARTICULARS OF IMPORTANT STRUCTURAL MEMBERS:**

All structural members should be in GI tubular sections, pressed sections or rolled sections as mentioned below:

Sl.no.	Description	Material
1	Cross bearers & runners	Rolled steel channel ISMC 100x50x6 mm
2	Anti sag bar	Rolled steel channel ISMC 75x40x6
3	Floor longitudes	Pressed inverted 'U' section 25x50x25 in GI 3 mm thick
4	Pillars, Stump pillars and horizontal supports	GI rectangular tubes 60x40x3 mm and GI Square tubes 40x40x2 mm
5	Roof sticks	GI square tubes 40x40x2 mm
6	Roof longitudes	GI square tubes 40x40x2 mm, Pressed 'Z' section 30 X 40X 30X2 mm thick sheet
7	Crib rail	GI 40x40x3 mm
8	Cant rail	GI rectangular tubes 60x40x3mm thick
9	Waist rail	GI rectangular tubes 60x40x3 mm thick
10	Intermediate rail	GI square tubes 40x40x2 mm thick
11	Gussets for saloon, cabin under frame and roof structure	GI Triangular formed gussets 40x40x2 mm thick

12	Skirt rail	GI rectangular tubes 40x20x2mm thick
13	Step edge beading	Indal 5701 section
14	Body side beading	Hindalco SP-6551 section
15	Window sections a) Window guide b) Sweep rubber section	a) Hindalco 6482 section b) 'T' section c) 'F' section d) Hindalco 2691 section
16	Hatrack beading	Hindalco SP-4850 section
17	Flap door stiffener	Hindalco SP-4822 section
18	Flap door hinge	Hindalco SE- 9390, SE- 9389 sections
19	Steel rod for door hinges	EN 430 bright grade
20	Tapping plates	6 mm thick GI

## 10.0 PRECAUTIONS:

10.1 "NEGATIVE TOLERANCES" are not allowed either for Alu. Extruded sections or Aluminum sheets and GI sheets/tubes. However, tolerances within the limits of IS standards may be allowed subject to prior approval of Chief Mechanical Engineer (Chassis and Bodies) and cost recovery.

10.2 All welding shall be done with MIG welding process only. Under any circumstances, arc welding shall not be allowed. Welding of Stainless steel components shall be done with TIG welding process only with same grade SS filler rod.

10.3 The following workmanship must be carefully followed during the fabrication.

- I. All castings must be truly formed and free from blow holes
- II. All bolts and rivets should be well fastened
- III. Thorough water test shall be carried out before fixing the interior ceiling using pressurized water spray system. The fabricator shall equip water leak test facility conforming to IS: 11865-1982 at the firm for conducting leak test in two stages i.e., before fixing the interior ceiling and before dispatch of vehicle. At all stages the coach shall be water leak proof.
- IV. All welded joints must be chipped and well ground to get a smooth surface finish. *All the welded joints shall be applied with Epoxy primer anti-corrosive paint immediately without any time delay to prevent the start of corrosion.*
- V. Sharp corners shall be grounded and made smooth.
- VI. Wherever pitch for rivets / bolts is not specified, it shall be 100 mm.
- VII. Bolt ends shall protrude at least 2 to 3 threads length above the nuts
- VIII. Roof stick, roof longitude, floor longitude and waist rail members shall butt properly at mating joints and shall not have gaps at the joints.
- IX. All tapping bolts such as grab rail, handles and assist rail bolts etc., shall be tightened using thread lock adhesive of approved makes.
- X. All fixed glasses shall be provided with ceramic coating of suitable width on periphery.
- XI. There shall not be any air pockets, wrinkles in laying vinyl and edges of mat are to be hot welded at all the mat joints.

- XII. All the FRP profiles shall be of Fire Retardant grade and to comply with the provisions of IS:15061 - 2002 or latest. The layup of FRP profiles shall be as detailed below:

Lay up Details:

- a. Two coats of ISO UV FR grade Gel coat and surface mat 30
- b. CSM 420 mat layer with ISO FR grade resin
- c. WR 610 mat layer with ISO FR grade resin
- d. CSM 420 mat layer with ISO FR grade resin
- e. WR 610 mat layer with ISO FR grade resin
- f. Permitted pigments and additives
- g. Grey primer coat
- h. Suitable reinforcements at all points of fastening
- i. Front bumper reinforcement

#### **11.0 CAB UNDERFRAME STRUCTURE:**

- 11.1 The Ashok Leyland 222” WB chassis will be supplied with OE cab floor, bulk head structure, out riggers, driver seat and engine bonnet. The cab under frame shall be fabricated as per the Drg.S2260UF18118. The OE structure shall be retained and modified accordingly to suit the fabrication.
- 11.2 For TATA 218” WB chassis the front cowl panel shall be removed and bulkhead should be cut to suite the dash structure. The remaining portion of cabin floor shall be retained and fabricated as per the Drg.no. S1860UF18318.
- 11.3 The Eicher 230” WB chassis will be supplied with out FES, cab floor, out riggers, driver seat and engine bonnet but bulk head structure. The cab under frame shall be fabricated as per the Drg.no.S3058UF18218. The OE structure shall be retained and modified accordingly to suit the fabrication.
- 11.4 In all AL and EICHER buses an Anti-sag bar in 3-pieces in ISMC 75x40x6 mm connecting both A pillars and chassis frame shall be provided. In TATA buses the OE anti-sag bar ends shall be connected to ‘A’ pillars on both sides duly making suitable changes.
- 11.5 Out riggers in M.S. angles 50x50x6 mm shall be provided connecting ‘B’ (2<sup>nd</sup>) pillars to the chassis long members by means of clamps made of M.S flat 50x6 mm.
- 11.6 The dashboard frame shall be covered with suitably designed and contoured FR- grade FRP mould of 3 mm thick. Flap doors with suitable auto hinges, steel collapsible handles and tower bolts shall be provided at air cleaner, power steering reservoir, instrument panel etc., to facilitate easy maintenance and access.

#### **12.0 BODY FRAME STRUCTURE:**

The bus body frame structure should be fabricated as per the following drawings.

Ashok Leyland 5639-mm (222”) WB chassis -S2260SL18116 and S2260SR18117.

TATA 5545 mm (218”) WB chassis - S1860SL18316 andS1860SR18317.

Eicher 5840 mm (230 “) WB chassis -S3058SL18216 and S3058SR18217.

- 12.1 Cant rail joint shall be provided with box type reinforcement formed by welding of two GI pressed U sections of 17x27x17x2 mm in 300 mm length and to be plug welded on both sides.
- 12.2 1<sup>st</sup> pillars on both sides are to be formed to match the shape of front wind screen glass profile.
- 12.3 Fuel oil tank mouth shall be provided with an opening of size 250 mm x 250 mm, flap with suitable auto hinges, collapsible handles and locking arrangement.
- 12.4 GI tapping plates of 150 mm length in 30x6 mm flat shall be provided wherever necessary for fixing body components such as grab rail, assist rail, partition, windows and hat rack etc.,
- 12.5 **Chassis long member cutting is not allowed and they shall be retained as supplied by the manufacturer as shown in the respective drawings while fabricating the rear luggage booth.**
- 12.6 Hat racks to be fabricated as per respective drawings. Hat rack on right side is to be fabricated up to driver partition.
- 12.7 On left hand side, side luggage booth shall be provided within wheel base with MSL 40X40X6mm, GI 25X40X25X2 mm pressed section and 40x6 mm MS flats. Luggage booth flooring shall be 2mm Alu. Chequered sheet riveted with MS rivets.

### **13.0 CABIN AND BODY MOUNTING:**

- 13.1 The OE Cabin mountings shall be retained. The remaining portion of cabin floor connecting 1<sup>st</sup> -cross bearer and OE floor shall be fabricated as per Drg.no. S2260UF18118 for Ashok Leyland 5639 mm (222”), S1860UF18318 for TATA 5545 mm (218”) WB and S3058UF18218 for Eicher 5840 mm (230”) WB chassis. The saloon gangway shall be made in line with cabin floor.
- 13.2 The body should be mounted on the chassis web duly providing 6 mm (inverted pressed “L” type) MS plate as per the size shown in the respective drawings over the chassis long members. These “L” plates shall be bolted together at every cross bearer mounting to Long member web with M12x 50 H.T. bolts at least 4 nos. per plate. OE holes on the chassis long members shall only be picked up for mounting this plate. Wherever the holes are not matching holes shall be drilled on the web 40 mm below the top level of long member with prior approval. Over these plates, cross bearers in ISMC 100x50 channels shall be provided as per the respective drawings. At rear wheels the cross bearers shall be fastened with 16 mm dia. “U” bolts of approved make and with 150mm x 6 mm thick base plate welded to the bottom of cross bearer. Spacers made of Alu. casting shall be placed between bottom flanges of chassis long member and “U” bolts. The “U” bolts are to be made out of EN-15/14B steel as per IS 5517-1978 (Tensile strength 80 kg/Sq.mm minimum). The “U” bolts should be galvanized and fitted with galvanized nyloc nuts as per drg.no. CB18UBG114. The length of bolt shall suit the depth of chassis long member and should not project more than 6 mm after tightening the nuts.
- 13.3 The body mounting must be easily detachable from the chassis during major overhauls.

### **14.0 CABIN AND SALOON FLOOR:**

- 14.1 The cabin and saloon floor shall be laid with 12 mm thick polymer impregnated compressed chequered plywood of FR grade conforming to IS: 3513 (Part -3)-1989. The Plywood should be bolted to the under frame members with CSK self tapping screws of 6 mm size (for steel application) at a pitch of 200 mm. The floor plywood should be overlaid with 2.0 mm thick non-skid safety vinyl mat of approved make and design as per IS-3462 of 1986 with good quality adhesives of approved brands with minimum joints, without gaps and air bubbles. The edges of the vinyl mat shall be welded with hot air welding process. Alu. step edge beading of Isuzu type with insert shall be provided along the edges of step

- well, gangway and at rear raised floor. Aluminium 'L' beading shall be provided along the edges of vinyl mat. The flooring shall be made dust proof.
- 14.2 The wheel arch frames shall be covered with 0.5 mm stainless steel sheet before laying 12 mm compressed plywood and Vinyl mat.
- 14.3 Trap door of 580x 520 mm must be provided in cabin flooring above gearbox. One more trap door of size 860 X 520 mm shall be provided in gangway above rear axle for maintenance. Trap doors in floor shall be finished with vinyl mat and Alu. Fluted strip. Sunken type steel collapsible handle to be provided to lift the trap door.
- 14.4 Side luggage booth floor shall be provided with 2 mm Alu. Chequed sheet. One trap door on rear transverse wall (facing air bellows) shall be provided with 2 mm Alu. Sheet with southco locks and sealing rubber in between Alu. Chequed sheet and bottom structure. The vertical panelling of the booth and finishing of out riggers in side luggage booth is to be done with 0.91 mm GI sheet with hammer tone paint.
- 15.0 BODY PANELING:**
- 15.1 Truss Panel:  
The interior portion of body side from waist to floor to be provided with 3 mm hylam sheet of FR grade in approved shade/design pasted with PU sealants to the structural members.
- 15.2 All pillar finishers covering vertical and horizontal members should be in 0.70mm PVC laminated GI sheet as per the design and source approved by APSRTC. Plastic buttons and screw caps for metal shall be used for fixing finishers on the pillars.

The mud wings should be in Stainless steel sheet 0.5 mm thick formed to suit the wheel arch and to be bolted to transverse angle at wheel arch. While providing mud wings care shall be taken to avoid damages to air bellows of suspension system.

Dash cabin vertical portion i.e., front truss panel at pedals and side truss panel from front end to driver door pillar shall be covered with 0.5 mm stainless steel sheet of scotch brite finish and 430 grade.

- 15.3 Thermocole insulation of FR grade with 40 mm thick shall be provided between exterior and interior panels of body side structure between waist rail to floor and roof.
- 15.4 **Stretch panel:**
- i. The exterior body from waist to floor level (660 mm) to be in 0.91-mm skin pass quality G.I. sheet and shall be laid horizontally in single piece by stretching in a fixture by applying load and then welded rigidly to the rearmost pillar and rear pillar of entrance door and driver door. There should not be any wrinkles or waviness or rattling in the stretch panel after welding.
  - ii. The top edge of the stretch panel to be sealed with P.U. sealant to avoid leakage of water to the structure. P.U. sealant shall also be applied on the structural members for bonding the stretch panel to the structure.
  - iii. Approved brands of P.U. sealants are: Sikaflex, Total seal, 3M, Anabond and Henkel.
- 15.5 **Side Modular panels:**
- i. The exterior body below stretch panel up to skirt rail shall be in 1.6 mm thick Alu. Sheet i.e., at front wheels, rear wheels and rear of rear wheels. All flap doors including rear luggage booth door shall be in 2.0 mm thick Alu. sheets.
  - ii. All the wheel arches shall be provided with FRP wheel fenders in 3 mm thick.

- iii. The top edge of 2.0 mm thick Alu. panel flap doors to be provided with hinges in Hindalco SE9389 and SE9390 and bonded with P.U. sealants of approved make. The hinge sections shall be joined together with a stainless steel rod of 6.35 mm dia confirming to 430 brite grade. Flap doors should be reinforced duly pasting the Hindalco SP4822 with P.U. sealants along the four edges. The hinge at top should be welded to this stiffener before pasting. The Alu. hinges should be fastened to the bottom side of tube 60x40x3 mm at floor level duly providing tapping plate of 3 mm thick GI with M6 screws. P.U sealant shall also be applied for bonding hinges to the structural members while fastening. The flap shall also be reinforced with 2 mm thick Alu. Pressed top hat profile of 150 mm in two rows duly pasting with P.U. sealants for provision of locks, blinkers etc., and proper reinforcements shall be given for fixing of locks, stay rods etc., Dust proof door rubber of EPDM quality to be provided for these doors along the edges. These panels shall be pre formed to match the body profile. There should not be any play in hinges. All flap doors shall be provided with stay rods in SS rod of 10 mm dia. 480 mm long with holding clips. All flap doors shall be provided with 2 nos. door locks of 'Southco' type powder coated in black colour on both sides. FRP covers in 2 mm thick shall be provided for these locks on inner side of flap door to avoid ingress of dust.
- iv. The battery box, spare wheel carrier, HSD oil tanks and Air tanks etc., i.e., the area within wheel base should be provided with these flap doors.

The front end fascia consisting of bumper and front grill shall be provided in 4 mm thick FRP profiles with provision for fixing head lights and indicators etc., as per the approved design. Front bumper center piece shall be made detachable. Front grill top piece shall be provided with upward lifting mechanism consisting of two 350 N gas springs of approved makes.

- 15.6 The rear end body shall be as per the Drg.nos. S2260FR18121, S1860FR18321 & S3058FR18212. The rear end body to be covered with 4 mm thick FRP profile in single piece. Rear FRP should be pasted to rear end structure rigidly with PU sealant. The luggage booth flap door shall be in 2 mm single piece Alu. Sheet with proper reinforcements, locks and pneumatic balancers of approved make in 675 mm length and 550 N capacity. The balancers shall have ball joints at both ends.
- 15.7 The FRP profiles developed shall be produced for approval of CME(C&B) before taking up for fabrication and all designs should be unique.
- 15.8 The Interior centre portion of roof between hat rack brackets (with a width of 610 mm), Driver partition on both sides and side truss panels shall be provided with 3 mm ACP. Remaining portion i.e., interior roof, all window finishers, hat rack bottoms shall be provided with 0.70mm thick PVC laminated GI sheet of approved shade and design. The material should conform to IS 15061-2002 in respect of FR grade characteristics and behaviour. The joints shall be provided with decorative beading and insert and plastic ends.

The exterior of roof complete shall be in 0.91 mm G.I. sheet full length of body in two pieces (laid longitudinally) and welded. The overlap joint should be on longitudines, welded together from outside at the joint, full length without any blowholes or burning. Roof joints should be water leak proof. The roof sheet shall be tack welded to roof structural members from inside and all tack welds shall be applied with PU sealant after shower test. The roof joints, i.e., centre joint and front & rear doom joints shall be over laid with weather shield strip of approved make in 100 mm wide and 2 mm thick after shower test.



- 15.9 Every window bay, at waist level shall be provided with pressed 'Z' section of size 20x40x20 mm in 1.22 mm Aluminium sheet overlapping the stretch panel.
- 15.10 The hat rack with brackets in GI rectangle tube 40x20x2 mm and GI formed 'Z' in 2 mm thick shall be provided. The interior width shall not be less than 460 mm. Roof ceiling to hat rack clear opening shall be 240 mm.
- 15.11 The exterior of hat rack bottom shall be welded with 0.91 mm GI sheet and over laid with 0.7 mm PVC laminated GI sheet of approved shade. The interior of hat rack shall be provided with reinforcement of formed 'U' section of 1.6 mm GI sheet and covered with PVC coated GI sheet 0.7 mm thick. Hat rack edges are to be provided with Hindalco SP 4850 beading duly powder coated gray colour. Hat rack ends are to be closed and to be made soft duly providing with foam and fabric covering.

#### **16.0 FOOT BOARD:**

The footboard structure to suite in-swing / JK door shall be fabricated in M.S. angles 40x40x6 mm, 40x40x3 mm and MS flats 40x6 mm in three steps with minimum tread depth not less than 250 mm and tread height not to exceed 250 mm. The step well structure on sides up to dash level and riser portion shall be covered with 0.91 mm GI sheet over laid with 0.5 mm stainless steel sheet of 430 grade and scotch brite finish. The tread portion shall be provided with 12 mm compressed chequered plywood bolted to structural members and overlaid with 2 mm vinyl mat. All the edges of Step well shall be provided with Aluminium beading as per drawing finished with yellow powder coating and PVC insert in yellow colour similar to RKS-21 of M/s RK PROFILES Pvt.Ltd.

#### **17.0 CABIN PARTITION:**

There shall be a full partition separating the saloon from cabin with Jack Knife door. The partition shall be fabricated in tubes 40x20x2 mm, flats 25x6 mm and covered with Hylam sheet of 3 mm thick of approved shades on both sides. The JK door frame shall be provided with male, female and valence rubber profiles for proper sealing. The door shall be provided with locking latch that shall be operable from inside and outside. The door glasses shall be in 1500 mm x 235 size, bronze tinted 5.0mm thick bonded with P.U sealant to flap frame. Suitable finishers with GI 0.91 mm shall be provided on all edges of hylam sheet and glasses from both sides.

The partition is to be provided with one maintenance door, hinged at top side, above the floor trap door on gear box. The door shall be finished with ACP sheet on both sides and finishers on all edges. One steel tower bolt of 6" size is to be fitted on bottom edge to lock the door.

The partition shall have mounting bracket/arrangement for fitment one LED TV of 28" size on saloon side. One sliding window Indal 6482 with 5.0 mm toughened bronze tinted glass shutters of 260 x260 mm is to be provided on partition at suitable location. The wiring cables for TV shall be routed through a PVC conduit of 1" dia provided in partition structure.

#### **18.0 FRONT WIND SHIELD GLASS, SALOON REAR GLASSES AND WINDOWS:**

- 18.1 The cabin front -end shall be fitted with single piece-curved windscreen glass of size 1450x2560 mm as per the drawing no. CB18SG138. The wind shield glass shall be fixed to MS angle frame but not on FRP panel. The windshield glass shall be fitted with EPDM rubber of 50 mm as per sketch CB18ERG122 in MSL 25X25X3 mm angle frame. The curved laminated glass shall be of 7.76 mm minimum thickness with 0.76 mm minimum thickness of PVB interlayer and of

select float quality, WAVE FREE as per IS: 2553(Part-II) - 1992. The approved makes of glasses are IMPACT SAFETY, BANGALORE SAFETY and SOUTH GLASS.

The rear end saloon glass in single piece shall be bonded with P.U. sealant to the rear end FRP profile. The glass shall be of 1760X800mm, 5.0 mm thick, toughened float quality safety bronze tinted glass as per IS:2553 - 1990 & IS:2835 - 1987. Ceramic coating of suitable width shall be provided on periphery.

- 18.2 Window frames with provision to remove shutter glasses from top side shall be provided between Waist rail to intermediate rail in Hindalco 6482 Alu. Extruded sections. The window aperture shall be 630 mm. For a standard bay of 1680mm the window frame size (outer to outer) shall be 1675x622 mm (curved length). The curved window glasses shall be of size 820 W x 600 H mm and 5.0 mm thick, toughened float quality, safety bronze tinted glass as per IS: 2553 - 1990 & IS: 2835 - 1987. The fixing of windows and glasses shall ensure proper sealing and water leak proof. All window sliding glasses shall be provided with sweep rubber of EPDM quality. Window frames shall be black powder coated. The vertical overlapping portion of window frames on pillars shall be provided with rubber profile packing as shown in the drawing no. CB18ERG122 to ensure water leak proof. The area between intermediate rail to cant rail shall be provided with 1677x 410 mm size 5.0 mm thick, toughened float quality, safety bronze tinted glass as per IS: 2553 - 1990 & IS: 2835 - 1987 with P.U sealant bonding. There shall not be any leakage of water from glasses or window frames. The structural members shall be cleaned thoroughly for dirt & oil before applying sealant.
- 18.3 The edges of all sliding glasses shall be ground, chamfered and polished to smooth surface finish.
- 18.4 The lettering work in Vinyl stickering to be done on the rear end glass from inside as mentioned below:  
"BREAK THE GLASSES IN EMERGENCY FOR EXIT "  
" ఆక్సీజను సమయంలో ఏ అర్థమునైనాను హానిగాకట్టము"
- 18.5 All window frames in Hindalco 6482 with EPDM rubber flock channel shall be secured intact duly providing M6 size CSK screws on tapping plates provided on pillars and top rail. The screws should be 2nos. on each vertical members and 3 nos. on top horizontal frame.
- 18.6 The window shutters to be provided with locks of approved type (Hole center distance shall be 32 mm). The fabricator shall supply one set of locks along with the bus.
- 18.7 Three slots of 50 x3 mm size are to be punched in the window frames sides for draining of water.
- 18.8 Approved makes of EPDM rubber and flock channel are Rubber Extrusions & Moulding/ASP/ALP/any other make approved by APSRTC.

#### 19.0 PASSENGER ENTRANCE AND DRIVER'S DOOR:

- 19.1 The passenger entrance cum exit to be provided with pneumatically operated in-swing door/JK. The door frame shall be made to suit shape of entrance aperture in rectangle tubes 40x20x 2 mm thick covered with 0.91 mm G.I.sheet. Door frame height shall not be less than 2050 mm. Door frame verticals should be provided with side valence and male/female rubbers. The door should have 5.0 thick toughened clear float glasses pasted to the door frame with P.U. sealant. The door rubbers along the edges shall ensure

dust/water leak proof. The actuating mechanism shall be provided with approved make pneumatic air cylinder, bottom and top pivot blocks with thrust bearing at bottom and taper roller bearing at top side. The door actuating mechanism shall be of fail-safe i.e., shall have 'open', 'close' and 'manual' stages.

The in- swing / JK door should have one window at top side with horizontal sliding glasses of 5.0 mm thick toughened bronze tinted glasses and one 5.0 mm thick toughened bronze tinted glass pasted to the doorframe with P.U. sealant.

- 19.2 The bottom of the door shall be provided with brushes PVC / Plastic bristle to clean the tread of 1<sup>st</sup> step.
- 19.3 One PU handle of min. 400 mm length shall be provided on inner side of in-swing door. One assist rail cum grab rail in stainless steel 32 x 2 mm shall be provided from floor to cant rail on right side of foot board wall with suitable brackets
- 19.4 Foot board is to be illuminated with one LED light assembly placed in such a position not to effect the visibility of steps to passenger while boarding or alighting.

**19.5 EMERGENCY DOOR :**

One Emergency door extending from intermediate cant rail to saloon floor on right side shall be provided as per the layout and drawings. The door is to be provided with one horizontal sliding window and one heavy duty lock operable from inside. The location of the emergency door is to be exhibited from inside with vinyl stickers and outer periphery is to be provided with red colour reflective radium sticker. The door shall be provided with one stainless steel railway type latch of 6 mm thick from inside.

**19.6 DRIVER'S DOOR: (DRG.NO. CB18DRS123)**

The driver's cabin door shall be provided from intermediate rail to cabin floor level. The door frame in rectangle tube 40x20x 2 mm shall be covered with 0.5 mm stainless steel sheet for door inside upto waist level and the rest of 0.91mm GI sheet from outside. Door frame should be provided with valence rubber on three sides. The door shall be fitted with two window frame in Hindalco 6482 section/Indal 2691/flock channel etc., One window with vertical sliding glasses of size 510(H)x485(W) and another window at bottom of frame with horizontal sliding glasses of size 260mm(W)x260mm(H). The glasses shall be of 5.0 mm thick toughened safety clear float glasses. The door shall have one heavy-duty door lock of approved make and type with outer handle, one locking latch from inside and dove tail catches. The door shall be fitted with two forged hinges on 'A' pillar with suitable reinforcements. One assist rail of 32 mm dia x 1.6 mm thick in stainless steel of 304 grade and in to be finish shall be provided on the interior side of driver door with suitable Nylon brackets. All the door openings shall be provided with canopy in 0.91 mm GI sheet and finished with black painting.

**20.0 PASSENGER SEATS:**

- 20.1 The seat layout plan and arrangement shall be as per the respective Drg.nos. S2260SG18119 for(AL),S3058SG18219 for (ECH) and S1860SG18319 for (TATA).

- 20.2 **SEATS:** Passenger seats with reclining back supplied by Corporation shall be fitted in the bus with leg mountings on floor longitudes and M8x1.0 Hex.bolts with flat washers and anti-vibrate type nuts.
- 20.3 **DRIVER'S SEAT:** The OE knitted driver seats supplied with chassis shall be retained. The driver seat frame mounting on cabin floor shall match the OE mounting position. One set of extra head rest covers to be provided along with bus.
- 20.4 In case of non -supply of OE knitted driver seat with the chassis, approved make HDPE knitted driver seat shall be fitted. The seat shall have fore and aft, up and down adjustment of 100mm with reclining back and to be fitted 350 mm away from steering wheel edge when the seat is fully forwarded.
- 20.5 The height of driver seat bottom shall be 450 mm when measured in fully lowered position.
- 20.6 There shall be a thigh clearance of 200 to 260mm between steering wheel edge and driver seating position.
- 20.7 The driver seat shall be so located that the center line of driver seat shall be 705 mm away from the center line of body.
- 20.8 The driver seat shall be provided with "ELR" type safety belt of Autoliv/ Rane/other approved make and shall comply the provisions of AIS 05. Middle seat of five seater (facing gang way) and single at front shall be provided with static type seat belts.
- 20.9 One driver berth shall be provided in cabin behind driver's seat. The frame shall be made in GI Square tube 30x30x2 mm with overall size of 1400x480 mm with an extension of 300mm. The rest berth shall be finished with powder coating in black colour. The berth cushion size shall be with 1400X480X50mm P.U. foam mounted on 8 mm plywood and upholstered with 'Ramond Dobby/BMD/RELIANCE' fabric of approved shade. The driver berth bottom area shall be covered with pre-coated GI sheet 0.70 mm.

**21.0 REAR LUGGAGE BOOTH:**

A luggage booth at rear end shall be provided across the width of the body and also on right side in rear most bay (in 'L' shape ) as indicated in the respective drawings. Two ISJC 75X40 Channels extending from rear end structure, connected to chassis long members by two ISJC 75X40 Channels placed vertically and welded to web mounting plates of last cross bearer. Remaining booth floor shall be fabricated in M.S. angles 40x40x3 mm. The booth top frame work shall be with floor riser in GI Sheet 2.0 mm thick 'Z' section and 280 mm height on last cross bearer and 4 nos.of GI formed 'U' section longitudes of 25x75x25 in 3 mm thick. Two rows of top hat sections of same size shall be provided in transverse direction to support the five seat assembly leg mountings and bolting.

Booth interior vertical sides shall be provided with 0.91 mm GI sheet with hammer tone paint. Top side frame except five seater bottom, is to be provide with 0.91 mm GI sheet. Booth floor shall be covered with 2 mm Alu Chequered sheet. Five seater bottom area shall be laid with 12 mm compressed chequered plywood. 2 mm chequd sheet shall be provided with rubber dust proof and MS solid revits. Step edge beading Indal 5701 shall be provided along the edges of riser.Booth flap door in Alu. Sheet 2 mm shall be provided with two 675 mm

length, 550 N telescopic balancers of approved makes and 'Southco' type flap door locks on both sides. Booth flap shall be provided with door seal rubbers to make it dust/ water leak proof. The balancers shall have ball joints at both ends.

## **22.0 SPAREWHEEL CARRIER:**

One cage type spare wheel carrier shall be provided on LHS behind rear wheels. The OE spare wheel carrier if supplied with the chassis is of cage type, it shall be located as shown in the structural drawing. The carrier shall be mounted on chassis duly providing the vertical and horizontal supports in ISJC 75X40 Channel, gussets.

If the chassis are not supplied with cage type carrier, the firm shall provide one such spare wheel carrier. The centre line of spare wheel shall be at 1800 mm away from the center of rear wheels. Care shall be taken to avoid fouling of spare tyre with any of the chassis units / spares under any circumstances. The spare wheel carrier area is to be provided with one flap door similar to side luggage booth. The spare wheel carrier shall accommodate 10.00RX20 tyre.

## **23.0 BATTERY BOX:**

The battery box under the saloon floor as per the layout drawing on LH side shall be fabricated in M.S. angle 40x40x6 mm and MS flat 40x6 mm. The batteries shall be mounted on a PUSH and PULL type cradle that shall accommodate two 12V batteries of size 521Lx292Wx248H mm. The cradle shall have bush and pin mounting mechanism on LH side corner and castor wheel of good quality on RH side inner corner for swinging out the cradle. Locking arrangement shall also be provided for cradle to arrest movement while in operation. Panelling of inside walls is to be done with 0.91 mm GI sheet and the bottom of the box shall be provided with 12 mm compressed chequered plywood. Complete inner surface is to be over laid with 0.5 mm stainless steel sheet. The bottom of the batteries in cradle shall be provided with 12 mm-compressed plywood and acid resistant rubber mat. Batteries shall be provided with suitable clamping, wood packing to prevent vibrations when the vehicle is in operation. One cut out is to be done on longitudinal wall for passage of battery cables and is to be provided with grommet of EPDM quality. Four rows of full-length battery cables without joints shall be connected to the battery cut-off switch terminals. The terminals and cables should be firmly clipped in position and soldered.

## **24.0 LUGGAGE CARRIER: (DRG.NO. CB18LCS135)**

24.1 A luggage carrier as per drawing (4 bays) shall be fabricated and mounted on the roof at rear portion of body. The side horizontal railing of luggage carrier frame shall be in MS angles 25x25x3 mm and vertical supports at every 840 mm of same angle. The exterior of frame shall be covered with 1.22 mm Alu. sheet. All corners of the luggage frame shall be rounded off. Luggage carrier floor transverse members shall be fabricated in MS angles 40x40x6 mm as per roof profile and shall be mounted on the top hat supports provided at every roof stick at luggage carrier area. The luggage carrier floor shall be covered with 2mm Allu. chequered sheet riveted to the floor members. The luggage carrier mounting shall consist of MS angle 40x40x6 - 100 mm long brackets welded to the luggage frame and bolted to the top hat base plate. The luggage carrier top hat base plates shall be applied with P.U.sealant while fixing on the roof supports to avoid water leakage and shall be provided with 100 mm wide weather shield strip along the edges.

24.2 A fixed access ladder in ERW pipes 25 ODx2 mm thick, 300 mm wide shall be provided from luggage carrier frame to top level of luggage booth flap. In addition to this one detachable ladder with hooks shall be provided from ground level to fixed ladder. The pitch of rungs shall be 300 mm.

## 25.0 ELECTRICAL WIRING AND OTHER FITMENTS:

25.1 The earth-return system of wiring should be used. All automotive cables used shall be of approved make and brand conforming to IS: 2465 - 1984 quality covered with PVC sleeve as per IS: 1951-1961. Wherever the cables have to pass through roof and side structures PVC conduits of ½” dia shall be provided. There shall not be any loose or hanging cables, and if they pass through holes in panels or structural members other than roof and side structures, rubber grommets shall be provided in such panels and structural members and shall be securely clipped as near as practicable to such rubber grommets to avoid chaffing.

25.2 Wiring shall be provided with suitable connectors for all lighting and audio/video points including additional tapping points for any future requirements. The saloon wiring shall be provided through wire casing fitted along the side wall in hat racks and there shall not be any need to strip major panelling of body to carry out repairs. Any wiring, which has to run along the chassis frame shall be securely, clipped to ensure that there shall be no chaffing with any of the moving parts. Further care shall be taken to route such wiring in such a way that it is not subjected to splashing of oil, water, mud etc.

25.3 The battery main cable of size 398/0.40 mm shall be provided as required duly using good quality lugs with proper soldering, bolting and insulation etc. There shall be no joint in battery cables.

25.4 The saloon and cabin areas are to be provided with 6 nos. (Out of which 2 no's with in-built night lamps of blue colour) and 1 no of LED roof light assemblies respectively. The assemblies shall be of approved make and specifications as per the Annexure:II. The location of the lights shall be as per the lay out.

25.5 LED destination board of size 270X960 mm supplied by APSRTC shall be fitted at front.

25.6 All OE electrical items shall be retained and kept in working condition.

25.7 One radial type wiper machine of 80W capacity with twin blades of 815mm length of approved make shall be provided for front windshield glass below the front waist rail on left side. The mounting bracket (formed 'L' in MS 6 mm plate) shall be welded to the structural members in such a way that it shall not interfere while removing radiator.

25.8 One single tone Air horn of approved make shall be provided. In addition to the OE electrical horn one more electrical horn conforming to type -3 of IS 1884-1993 shall be provided. The noise levels of these horns should be between 93 dBA to 112dBA.

25.9 Piano switches and sockets of in approved make and shade as per IS: 9433 - 1980, 230Vx5 Amps shall be used for switch board, cell charging points. Switches are to be located on top side of driver door, making a cut-out in the hylam sheet of inner cabin panel. Non metallic shielding is to be provided in side structure behind the switches to avoid any short circuit. A 12-pole disc type fuse box with independent fuse designated for every electrical circuit shall be fitted on switch board provided at cant level. The current carrying capacity of a circuit shall be 1.5 times the load current of that electrical circuit. Maximum current carrying capacity of a circuit shall not exceed 15 Amps. The fuses used shall conform to IS -4063 /1982. Switches are to be

- located on a non metallic/ wooden box. All switches / fuses shall be provided with metallic plate labels for indication.
- 25.10 Cable ends shall be suitably crimped with lugs/soldered so as to withstand vehicle vibrations. The inter connections shall be made through couplers/ junction boxes / terminal blocks only. Weather proof connectors shall be used for connecting cables which are exposed to atmosphere to avoid water/moisture ingress during use.
- 25.11 The fabricator shall supply electrical wiring harness diagram of the bus along with the vehicle.
- 25.12 The OE head lights supplied with the chassis shall be retained in case of AL chassis and two more head lights of 8” dia of Hella/Lumax make shall be provided. The OE head lights supplied with the TATA and Eicher chassis shall be returned back. Total four round type head lights (two with parking lamp shall be provided. Head lamp assemblies shall be fitted at a distance not more than 400 mm from the extreme outer edge body and not more than 1200 mm height from the ground
- 25.13 Front direction indicator lamps LED type of 2” dia shall be provided below 1500 mm height on the outer edge of body in amber colour. In addition to this, four more direction indicator lamps of LED type in amber colour shall be provided on the lateral side of the body at wheels and below 1500 mm height from the ground.
- 25.14 Height marker lamps of LED type in white colour at front and in red at rear shall be provided. The marker lamps shall be above windshield glass at front and above cant level at rear on maximum possible outer edges. Care shall be taken to prevent water entry from these lamps.
- 25.15 The tail lamps mounting shall not exceed 1500 mm from ground, 400 mm from the outer edge. The LED type tail lamps of 5” dia, two in red, two in amber and two in white colour shall be provided. The red colour lights shall have individual circuits for parking and brake lights.
- 25.16 Two fog lamps shall be provided in front bumper.
- 25.17 Rear number plate shall be provided with LED light strip for illumination.
- 25.18 One 5 Amps 3-pin socket with piano switch and fuse shall be provided on dash board with 24 V connection for connecting TIMS.
- 25.19 One reverse gear horn/alarm (4 tone) shall be provided with noise level not more than 100 dBA if not supplied with the chassis.
- 25.20 OE battery cut-off switch supplied with chassis shall be provided with separate fuse control. In case of non supply of battery cut-off switch along with the chassis, IGSA-552 or part no. LP-134/3 of Lucas TVS India Services Ltd., make shall be fitted in driver’s cabin with a label “Battery Cut-off switch”. The battery cut-off switch to be located 300mm above the cabin floor on 3 mm GI Sheet provided in side structure.
- 25.21 Six speakers of approved make and brand speakers (5 in saloon hat rack and one in cabin) with separate switch control shall be provided. The speaker provided in cabin is to be provided with volume control.
- 25.22 One Pure sine wave type of Power inverter of Aargee /MG solar powertronics make with 600VA capacity shall be provided in the driver’s cabin. One power switch shall be provided on partition in cabin for tapping power for TV & cell charging. The inverter is to be fitted on cabin floor beneath the co-driver rest berth with suitable bracket and clamps. Ahuja make DPA- 370 Model or Sony make Digital Media Player of DSX-A100U model shall be provided. Provision for fixing 28” LED TV shall be made on cabin partition on saloon side.
- 25.23 Six LED type light assemblies are to be provided for illumination of Battery box (one), side luggage booth (two), for spare wheel carrier (one) and in rear luggage booth (two).

- 25.24 Provision shall be made at partition to charge two cell phones at a time. One sunken type pouch with steel lining and wood beading on periphery is to be provided on partition with modular 5 pin sockets and switches.
- 25.25 REMI make one electric fan Of 24Vx 8” dia. shall be provided in cabin for driver.
- 25.26 Power for connecting Wiper, Indicators, Fog lamps shall be drawn from the sockets with male/female connectors.
- 25.27 Never connect the circuits with twists & knots. Never tap power by slashing the main harness.

**26.0 BODY PAINTING AND COLOR SCHEME:**

The exterior body to be painted with approved make & brand Polyurethane paints. The body under frame and chassis shall be painted with anti-corrosive, sound deadening and abrasive resistance bitumen based black paint. The exterior painting process shall consist of carefully cleaning and etching followed by surface levelling with polyester putty application, P.U primer surface coats, finish coat and glaze coat as per the recommendations of paint manufacturer. The quality of painting process and gloss should be of superior class. The bus should be painted in a booth with baking arrangements for superior finish and longer life.

Approved PU paint brands are ‘Deltron’ of ASIAN PPG, ‘Glasurit’ of BASF (Wuerth), ‘Imron 9100’ of Dupont (Axalta) and ‘Sikkens’ of AKZO-NOBEL and Nax Ultima of Nippon.

- 26.1 Colour Scheme shall be as per APSRTC approved scheme. The colour scheme may be modified or changed at the time of execution of bus body fabrication as per the orders of Chief Mechanical Engineer (C&B).
- 26.2 Lettering and Sticker work is to be done as detailed below:
- APSRTC monogram is to be provided as per SKETCH1516
  - APSRTC website ‘online ticket booking: [www.apsrtcinline.in](http://www.apsrtcinline.in)’ is to be provided on rear end Glass in radium sticker with Times New Roman font on Rear end FRP in two rows.
  - Front wind screen glass is to be provided with sun control film up to 300 mm from top side edge.
  - ‘APSRTC’ in white radium sticker with Times New Roman font in 6” size is to be provided on front wind screen glass on top side.
  - Labeling is to be done red vinyl sticker for battery box, luggage booth, diesel tank, air cleaner and spare wheel.
  - Seat nos. as per lay out are to be exhibited in red vinyl sticker on hat rack beading.
  - ‘Suswagatham’ and ‘Happy Journey’ are to be provided in Vinyl sticker of suitable colour at top side of entrance door and on driver partition respectively.
  - A slogan in Telugu shall be exhibited as follows on the partition wall.

“ఈ బస్సు మనందరిది !

దీనిని పరిశుభ్రంగా వుంచుదాం !! ”



**27.0 MISCELLANEOUS FITTINGS TO BE PROVIDED:**

- 27.1 Two fiber handles shall be provided at bottom level of front windshield glass.
- 27.2 Two fully adjustable rear view mirrors of convex type conforming to latest CMVR Rules shall be fitted on either side of body at cant level with 'Marcopolo' type brackets provided with ABS covers duly extending forward. The rear view mirrors shall be so located to have at least 2500 mm wide vision from the body line of vehicle when viewed from driver seat.
- 27.3 Provision shall be made for easy removal and fitment of air cleaner during the maintenance duly providing flap doors.
- 27.4 One size of 500mm X 500mm Roof hatch with lid, EPDM U rubber sealing, and holding mechanism shall be provided in driver cabin above driver seat.
- 27.5 In the event of any premature failure or improper workmanship the firm should send technical persons within 72 hours of intimation for body repair.
- 27.6 Two fire extinguisher of approved make and dry chemical type 2.0 kg capacity conforming to IS: 2171 of 1985 suitable for 'B & C' class of fires shall be provided with suitable MS clamping arrangement one in cabin and another below the rearmost centre seat in saloon.
- 27.7 Conductor's buzzer with bell switches 6 nos. to be provided.
- 27.8 One roller type sun visor 24" width shall be provided in driver cabin
- 27.9 Rubber mud splashguards of size 560x457 mm for rear and front wheels to be provided. Mud wings shall be fitted with bolt and nuts in order to facilitate for removing and refitting during the maintenance.
- 27.10 First aid box in Stainless steel and size 300x200x100 mm with leather straps and locking arrangement shall be provided in driver's cabin. First aid medicine kit containing the items mentioned under Rule 138(4)(d) of the latest M.V.Rules shall be provided in the box.
  - a. Antiseptic cream of 0.5 % centrimide I.P.  
in non greasy base 5 mg -- 2 pcs.
  - b. Sterile Surgical Gauge dressing -- 1 pack of 4 pcs.
  - c. Wash proof plaster -- 5 pcs.
  - d. Sterile elastic plaster - Size: 6 cm x 30 cm -- 1 pc.
  - e. Gauge rolled - Size:7.5 cm x 2.5 mt. -- 3 pcs.
  - f. Elastic bandage for wounds and Burns  
Size: 8 cm x 1.5 mt. -- 1 pc.
- 27.11 All lettering work shall be done as per the guidelines in vinyl / radium stickers. Seat nos. with letter size 25Hx6TH shall be provided in radium white stickers on the edge of hat rack beading as per the seat layout details.
- 27.12 Colour shades painted on the bus shall be displayed along with color codes and make on a sheet of 150x150mm size to be fixed in driver cabin.
- 27.13 One footstool of size 450x150mm shall be provided in the driver cabin at foot control pedals.
- 27.14 The entrance door, emergency door and driver's door shall be provided with water drain canopies at cant level in 0.91 mm G.I.sheet and to be finished with black powder coating.
- 27.15 One assist rail of 32 mm dia x 1.6 mm thick in stainless steel of 304 grade and in to be finish shall be provided left side of cabin extending from floor to a height of 1500 mm following the side pillar and then horizontally landing on driver partition.

- 27.16 Suitable Nylon sockets shall be used for fitment of all assist rails.
- 27.17 Front destination box provision shall be made in front FRP dash board with LED light illumination. Two nos. 2mm acrylic sheet boards of size 660x200 mm shall be accommodated in the provision given for destination box. LED destination board of size 270X960 mm supplied by APSRTC shall be fitted at front.
- 27.18 Tapping of compressed air for windscreen wiper, and air suspension should be taken from port no.24 of system protection valve or auxiliary tank with proper unions, 'T' joints Metallic pipeline of 5.0-mm dia. with copper coated interior shall be used for tapping air. The pipeline shall be firmly clamped in position.
- 27.19 All unutilized chassis components to be returned at the time of delivery of bus.
- 27.20 One attendant seat with collapsible bottom cushion (size:400X400X50), fixed back (size: 400x300mm) and safety belt shall be provided in the cabin. The frame shall be made in SS sq.tube 30x30x1.6 mm. The cushions shall be with 40 mm P.U. foam mounted on 8 mm plywood and upholstered with 'Ramond Dobby/Sarckle/BMD/Reliance' fabric of approved shade.
- 27.21 Retro-Reflective Conspicuity Marking tapes of Diamond grade 50 mm wide conforming to AIS: 90 and approved by STA, Govt.of A.P shall be bonded to the body sides as per the sketch provided. The cumulative length of tapes provided shall not be less than 80% of length of that side. These tapes shall be white in colour at front, yellow on sides and in red at rear of the body.
- 27.22 Driver's cabin shall be suitably ventilated. Below dash structure one Alu.disc ventilator shall be provided.
- 27.23 Cabin rear view mirror supplied along with chassis to be provided.
- 27.24 Guard rail to be provided in SS of size 25x1.6 mm in side luggage booths
- 27.25 G.I. sheet of 0.50 mm thick shall be provided inside the bonnet
- 27.26 4 nos grab rails (2 nos on LH and 2 nos on RH) to be provided on hat rack with 25mm X 1.6mm SS tube. Length of each grab rail is 1680 mm.
- 27.27 One SS handle of 200 mm size to be provided on outer side of driver door.
- 27.28 Landing plat form for luggage carrier shall be provided.
- 27.29 2 nos CC Cameras, DVR & accessories supplied by APSRC shall be provided. One camera shall be facing the road and another saloon.
- 27.30 Stainless steel sheets, tubes, pipes etc. should be of Jindal /any other make approved by APSRTC.
- 27.31 Head light assemblies should be fitted to a rigid frame welded to front end structure and should not be mounted on front FRP facia.
- 27.32 The firm has to return the 50 NM TVS make wiper supplied by M/S TML with new vehicle.
- 27.33 Provision of two inspection doors with locks and sealing rubber shall be provided for attention of air suspension bellows.
- 27.34 Crash guard of 40X40X2 mm GI for front bumper shall be provided.
- 27.35 USB wiring harness for crystal model seats to be provided in both sides of saloon and rear with Alu. Extruded section of INDAL 2735 with suitable connectors.