

Annexure-A

**FORMAT FOR MOBILE DENTAL VAN**

**TECHNICAL SPECIFICATIONS**

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**A) General Box Body Specifications**

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- d) Straight Hand Piece
- e) Scalar

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- e) Audio-Video display equipment

**A. BODY SPECIFICATIONS:-**

**1. General Body Specifications**

A Dental container designed as a insulated box type re-locatable structure. This dental container mounted on the truck Chassis with u bolts. The body construction should be made of 50-60 mm thick sandwich panels and Aluminum extrusions, for the joinery. The body construction should be, single piece and joint less without the use of cam locks, and glued together with sealant of appropriate grade without the use of rivets. The support infrastructure like water, power generation, waste disposal etc should be under the chassis. The outer surface of the medical container should have no rivets for joining the walls, the walls to be joined together with Silicon Adhesives using aluminium channel framework of material AI6082 T6. The overall dimension of the container should be as per the RTO regulations and the technical limitations of the chassis design, however it should be about 7 ft wide x 7.5 ft high x 20 ft long.

**2. Sandwich panel Material Specifications.**

Medical containers should be made of sandwich panels of 50 to 60 mm total thickness using aluminium – Extruded polyethylene – aluminium, or fiberglass re-enforced polyester (GRP) – extruded-polyethylene-PPGI (1mm) or GRP-structural honeycomb-PPGI (1mm) sandwich panels, made using high pressure vacuum bonding process on a vacuum table. The exterior sheet of the sandwich panel should be single piece and joint less. The panels are joined together using aluminium extrusions and corner locking details, which lock the sections among each other, Medical Containers will have maximum 1.8 W/m<sup>2</sup>K thermal conductivity. The Medical Shelter should be designed and made according to international standards. The medical aspect of the design requires joint less surfaces and disinfected interiors. Installation of equipments are premade using internal embedded wall and floor mounts, and with minimal external perforations where germs can accumulate. MS reinforcement should runs vertically all along the side of the body spaced with 48” centres or as required for placement and anchoring of equipments. The use of medical grade materials and designs would be preferable. Details of materials should be as per standard norms. Aluminium sheet used for the exterior surface should be

single piece and joint less. The aluminium sheet should be 1.5 to 2mm thick with no undulations of the surface. The GRP should be 1.5 to 2mm thick Gel Coated from Lamilux, Polydet or Pecolite or from reputed manufacturers, with standard physical and mechanical properties.

The PPGI should be minimum 1mm thick. The honey comb panels should have 8mm to 10mm cell size on Polypropylene material.

### **3. Interior body Specifications**

Medical Container should be made of sandwich panels of 50 to 60 mm total thickness. The inner wall should be smooth and with no visible joinery. The inner partition walls and table tops should be made of hygienic and disinfectable materials. They should be easy to clean with hot or cold water. The panels edges should be covered with stainless Steel formed sections for aesthetic appeal. The use of wood should be avoided to preserve natural resources. The containers when closed should have a noise level of 55 dB inside, the total number of seats inside would be for at least 6 to 8 members (based on final approved design and space availability) excluding the driver cabin with adequate gangway. Seats should be made of High Density Moulded Polyurethane Foam of at least 40 kg/m<sup>3</sup> with head rest and foldable arm and leg space with foldable tray with latch. Provision for a continuous seat (bench type, dual purpose, mainly seating but in emergency may be used as a bed i.e. if required). Driver / Co – driver shall be comfortable with head and hand rest and comply with the standard quality and norms. Retractable/ Foldable prescription writing table in Dental Clinic and Patient/passenger cabins.

### **4. Floor Specifications.**

The Flooring is made of Steel Reinforcement sandwich panel of 50 – 60 mm thick, with 1mm Galvanized Steel coated Steel sheet (PPGI) at the bottom and 20 mm thick marine ply board on top surface. Marine Grade plywood (as per IS: 710), The layers are bonded at very high pressure. The whole floor is vacuum Bonded and offers extremely high strength and insulation. It can take a load of 2000 Kg/Sq ft. and thermal Conductivity is 22mW/mK. The floor should have internal steel framework for mounting floor mounted medical equipments. Medical Containers bottom floor will have appropriate strength and structure, to allow container to be installed, fixed onto truck chassis and trailer, and de-installation from truck chassis and trailer and will comply with ISO 1161 and ISO 1496 standards. For carrying the container to destinations. Medical Containers floor will be coated with Homogenous Vinyl Flooring of min 2mm thickness. Operating Room Medical Containers if any will have anti - static coating complying with DIN VDE MED-GV standards.

**5. Roof Specification.**

The roof made of MS Tube Reinforced Sandwich panels of 50 to 60 mm thick, as per the specifications of panels mentioned in Para 2. The inside surface should be PPGI 1 mm thick with 47 – 57 mm EPE foam filled core having a density of 35 – 40 kg/m<sup>3</sup>. The MS reinforcement runs vertically all along the side of the body spaced with 48” centres. The outside wall surface is GRP or aluminium single piece without joinery. It should take a load of 100Kg/Sq ft.

**6. Interior Partition wall specifications.**

The inner partition walls and table tops should be made of hygienic and disinfectable materials, they should be easy to clean with hot or cold water, the panels edges should be covered with stainless steel formed sections for aesthetic appeal. The internal partition wall between the passenger cabin and Dental Clinic cabin should be of either sliding type or door type with a glass window in centre. It should be tightly secured. Communication window between driver and patient/passenger cabins should be possible.

**7. Cabinet Specifications**

The cabinets and storage compartments should be made of powder coated steel of min 18 gauge thickness, They should have a vision window, so that materials kept inside can be seen. Adequate number of such storage should be given under the table and overhead. They should be lockable and should not open during transport. The Latches should be easy to grip and with magnetic locking. The drawers should be of Medical grade Mobile drawers with Silicone rollers. The clinical cabinetry for storage should be separate for Dental Instruments, Dental Consumables and Dental Equipments. Hence the size, number and location should planned accordingly and can be finalized after approval in both the passenger and as well as clinical compartment.

**8. Doors & Windows Specifications**

Medical Containers doors opening to outside will provide easy entrance and exit of hospital units, suitable for mission and easily passage of equipment and materials used in the hospital. Doors will be in appropriate dimensions minimum 800 mm in width and minimum 1900 mm in height, water and dust proof. Doors will have slide lock and lock will be opened from both sides. The windows should be sliding type so that they can be opened as required to get fresh air and light inside, the size of windows should be min 2ft wide by 1.5ft high. Medical Containers inner and outer surfaces will be insulated to be moisture and waterproof. Door will have a mechanism to hold the door in open position. There will be foldable steps on the Medical Container outside wall in order to climb to the roof.

## **9. Countertops Specifications**

The table countertops should be made of scratch resistant materials or stainless steel of grade 304, the edges should be covered with a SS channel for aesthetic and hygienic conditions. The table thickness should be min 25 mm. They should be made in such a way that cleaning and washing with hot or cold water should not be a problem.

## **SELECTION OF VEHICLES CHASSIS:**

The length of the chassis would be between 18-25 feet and should be registered under the Ambulance/Passenger/Transport/Goods Category. The wheel base of the chassis should be between 3600 – 4200mm. the chassis should have a type approval certificate from government recognized centers like ICAT/VRD/ARAI/CIRT. The vehicles should have diesel engine abiding to Bharat/Euro IV norms of the Department of Road Transport.

## **B. Electrical Fittings Specifications**

### **ELECTRICAL SYSTEM:**

- i. It would include External Power Source (Shore Power). Generator (5KV). Alternating Current Supply (AC) and Direct Current Supply (DC) i.e. from Vehicle battery or additional battery.
- ii. All cables used shall be BIS marked. Copper conductors with fire retardant PVC insulation and able to withstand working temperature upto 70 Degree Celcius shall be used.
- iii. All the cables shall be ducted and secured at suitable places in such a manner that during normal use of vehicle the cables are not subjected to any tension, stretching, cutting, abrasion or chaffing.
- iv. Electrical cables shall be internally concealed and located such that no part can make contact with any fuel line or exhaust system subjected to excess heat.
- v. Suitable special insulation shall be provided where such electrical circuits are necessary, Non-conductive insulated backing for all switch boards.

Adequate number of 5 and 15 Amp plug points along with switches with equivalent number and of Standard quality (BIS). Location finalized as per design.

### **1. Generator**

GENERATOR: Honda 65i soundless petrol, 6.5 kva power engine or Similar engine  
Engine: EU 65i or Similar  
Starting Mechanism: Recoil (manual)  
Noise level (db): 52.0  
Cooling system: Air Cooled

Aspiration: Natural

**Fuel Tank**

Fuel Type: Petrol

Fuel Tank Capacity (Litres): 16.0

Runtime per Tankful (hrs): 12.0

**Alternator**

Alternator Frequency (Hz): 50.0

Alternator Voltage (Volts): 220

**Additional Features**

Oil Alert: True

**Dimensions**

Length (mm): 1197.0

Width (mm): 672.0

Height (mm): 758.0

Weight (Kg): 117.0

**2. Air Conditioning.**

Make: Sanden (Japan) or similar, engine driven, roof mounted (Adequate capacity for the cabin volume or travel chamber).

Make: Pioneer or equivalent Split 1.5 ton for Chamber, Generator/Line power/Driven (for dental clinic).

**3. Exterior and Interior Lighting**

Container inside illumination will be according to MIL-STD-1472 standard. All lighting should be LED based for inside and outside. Each Dental Container will have minimum 2 Emergency Lighting Lamp installed to the wall of Medical Container. Emergency Lighting Lamp will be automatically charged directly from Line Power or Generator. Lamps power will be minimum 8 W and will run minimum 4 hours.

**4. Stabilizer/UPS and Voltmeter with adequate Earthing.**

Medical Container will have electric network suitable for equipment contents. Each Container will have power entry panel. Panels will have heavy duty water proof connectors. Connector ends to be levelled down in order to protect water entrance. There will be power distribution panel inside of each Container. Panels will contain appropriate fuses, and lightning protectors. Power Entry Panel will have 2 AC power entry (one for power supply and other for line power) and 1 DC power entry to use truck's 12 or 24 VDC power. Power Entry Panel will have current limits to provide minimum 30% more of all system power requirement in the container. Power

Distribution Panel inside the container will be used to transmit power from power Entry Panel on container. There will be indicated and “Computer Network Cable Raceway” information will be written on the raceway. Distribution Panel will have the minimum specifications and functions given below.

- Main Power Switch/UPS 6 kva for equipment.
- Power Source-Line Power selection switch Interior Switch.
- AC and DC power Ampere meter, AC and DC power Voltmeter.
- AC power frequency meter.
- Circuit Breaker for Equipment and Environmental Conditioning Unit.
- Remote Control Panel for Source
- Each Container will have its own grounding system. Grounding system will have grounding rods, cables in appropriate quantities.
- Electrical conductors shall meet the requirement for flame resistance norms.
- Stabilizer and Voltmeter for adequate specifications matching the equipment on the mobile clinic along with adequate earth leakage circuit breakers.
- The circuit diagram for the BOX shall be type approved. The number of lamps, their position, type and wattage used shall also be type approved.

## **C. Water System Specifications**

### **1. Drinking Water Storage System**

The water dispensing system should be pressurized by using pressure pumps and one 150 litres Fresh Water tank and 150 litres Grey water storage tank. The taps should work like a normal domestic tap. The water supply system is designed to supply water for cleaning and drinking purposes. A grey water storage tank of 150 litres is placed under the carriage. The plumbing is high pressure, polybutylene tubing of ¾ inch dia for water supply and 1 ½ inch dia for drainage. There should be electronic monitoring and control system should be there to prevent dry run or over flowing tanks.

There should be an external water supply tap, which can be used for cleaning the vehicles or washing purpose outside the vehicle. Integrated washbasin for washing hand is provided beside the nursing area. The wash station to be provided with mirror, soap dispenser, towel hanger/ring.

## 2. Waste water from Dental Units Collection System Specification

The waste water should be collected in a grey water tank placed beside the fresh water tank, this should be emptyable when full. There should be alarm indication when the tank is full and in the eventuality of overflow it should stop further filling of the water tank and also stop water supply to the taps above.

### D. Equipment Details

#### 1. Dental Chair

- (DENTAL CHAIR- Under hanging delivery unit with 5 PROGRAMS. Upholstery, Spittoon and arm are in similar colour for better Aesthetic)
- All the valves are made of metal with chrome.
- Fully electrically operated Dental Chair Unit
- Feather touch control on delivery Unit
- 5 working position (Trendelenburg, Spit & Last Position, Auto return to Zero position)
- 90 degree movable, translucent spittoon bowl made of chemical/mechanical resistant epoxy raw material.
- Anatomic back rest
- Synchronize movement of back rest & seat.
- Air – rotor terminal – 2 nos.
- Air/Motor terminal control – 1 no.
- Three way syringe – 1 no.
- Chair light with 5 Intensity (8000/12000/16.000/20.000/24.000 Lux)
- Lever based movable arm rest for better patient comfort.
- LED based X-Ray Viewer
- Articulated adjustable headrest with seasaw head rest.
- Counter balance flex arm with pneumatic lock.
- Stainless steel instrument tray.
- Seamless upholstery coat.
- Low & High Pneumatic Suction.
- Gas stool for operator.

**2. Micromotor – Marathon or Equiv 01**

**3. Contra Angle Hand Piece – NSK or Equiv 01**

**4. Straight Hand Piece – NSK or Equiv 01**

**5. Scalar Peizon or Equiv 01**

- Autoclavable hand piece @ 135 degree
- Peizon Scaler unit or equivalent compatible with EMS Scaling tips.
- ABC (Auto-boost Control System)



- DURA PEIZON or equivalent with 6 alloy tips.
- 30000 HZ, Absolute Straight LINE ultra sonic OSCILLATIONS PER SECOND.
- Power 0-75 WATT

6). Light Cure Unit Durradent or Equivalent

- 4w LED
- Digital display for timer
- Light intensity 1000m W/cm<sup>2</sup>
- 4 Smart Mode – Fast, Pulse, RAMP, Slow
- 8 mm diameter & 360° rotatable light

7. Autoclave Class B

Class B type for sterilization of the solid appliance

- LCD display of Pressure, Temperature and Time
- Steel Chamber with 23 ltr capacity.
- Micro processor controlled fully automatic, autoclave
- Option of 121 and 134 degree centigrade for sterilization
- Automatic feeding & drainage of water
- Integrated bacteria filter
- Automatic diagnostic and alarm system is installed
- No. of tray 3 no.

8. Compressor:

**Dura Air or Equivalent**

- **Air flow is 150 litres/min**
- Epoxy paint inside the tank
- Automatic cut off switch
- Safety valve, on/off valve and drainage valve
- Oil free & noise less air compressor
- Moisture filter with pressure regulator, pressure gauge & manometer
- Tank capacity 40 litres
- CE, ISO, TUV
- 1 HP

**E. Miscellaneous**

- I. **Fire Extinguishers**, Adequate size, type and number of fire extinguishers in Driver Cabin, Passenger cabin and Dental Clinical area of standard quality BIS marked. All of them should be secured in an extinguisher manufacturer bracket of automotive type and located in full view and in an accessible place and along with details of the manufacturer and necessary certificates.

II. **Exterior Graphic Design of good quality vinyl with eco-solvent type with lamination**, to be finalized after approval covering the entire vehicle. The Exterior Graphic Design would incorporate logo of REGIONAL INSTITUTE OF MEDICAL SCIENCES, IMPHAL along with full wall clinical pictures provided by the institution adequately placed.

III. **Accessories**

- i. **Biomedical Waste**, colour coded collection units with pedal type concealed bins in the Dental Clinical area with clean lids (Red, Yellow and Black bins).
- ii. **Roof Ladders** should be provided as per design.
- iii. **First Aid Kit** should be provided
- iv. **Computer System:** latest version
- v. **Socket Extensions and cables**, 15 meter cable of adequate load bearing capacity and of standard BIS quality shall be provided to charge the battery/supply power from the AC source.
- vi. **Other Accessories**, Soap Dispensers, towel and apron hangers, dust free blinds or curtains in Passenger and Dental Clinic Cabins, Dust bins (at Least 2), Public Addressing system in Driver cabin with overhead microphone and siren.

IV. Comprehensive Maintenance Guarantee for 3 years should be provided

V. **SEATING ARRANGEMENT**

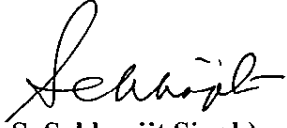
The total number of seats would be for at least 6 – 8 members excluding the driver and Co Driver. Seats should be made of High Density Polyurethane Foam with head rest.

VI. **Audio Video Display Equipment:**

Information Display Panel (IDP), 42", LED with thin client and input devices (with wireless mouse and keyboard)

**Total Cooling Power is over 22,000 BTU**

- |                                    |          |
|------------------------------------|----------|
| * Refrigerator Samsung/LG or equiv | 80L      |
| * PA System                        | 30 Watt. |

  
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Annexure-A

**II) Digital Panoramic with Cephalometric X-Ray Specifications:-**

- 1) Description of Function:-
  - 1.1) Capable of digital imaging of both panoramic and cephalometric X-Rays.
- 2) Operational Requirements:-
  - 2.1) System with Panoramic as well as Cephalometric X –Ray is required with all the accessories.
  - 2.2) Should cater to all types of patients including adult, pediatrics, standing, sitting and wheel chair patients.
- 3) Technical Specifications:-(minor variations may be considered)
  - 3.1) Based on DC current
  - 3.2) Focal spot is 0.4/0.5 mm according to IEC 336/1993 specifications.
  - 3.3) Inherent filtration: 2.5 mm AL equivalent.
  - 3.4) Tube voltage min range 60 kV to 80 kV
  - 3.5) Tube current min range 5 mA to 10 mA
  - 3.6) Exposure time –Panoramic -10-15 secs, Cephalometric- 0.5-20 secs
  - 3.7) Pixel size-96-99  $\mu$ m
  - 3.8) Image resolution-5-9 lp/mm
- 4) System Configuration- Accessories, spares and consumables:
  - 4.1) Standard Intel Quad Core desktop with original windows software, 4 GB RAM, 500 GB Hard disk, 20 inch TFT monitor, 1 KVA UPS, DVD –RW and suitable film printer.
  - 4.2) X-Ray unit should be supplied with lead apron, thyroid collar and gonadal shield.
- 5) Power Supply:
  - 5.1) Power input to be 220 -240 VAC, 50 Hz fitted with Indian Plug
  - 5.2) Five KVA Servo Voltage Stabilizer of appropriate ratings meeting ISI Specifications (Input 160-260V and output 220-240 V and 50 Hz).
- 6) Standards, Safety and Training:
  - 6.1) Should be FDA/CE approved product.
  - 6.2) Manufacturer /supplier should have ISO certification for quality standards.
  - 6.3) Electrical safety for dental X-Ray unit confirming to standards for electrical safety IEC - 60601/ IS-13450.

**III) Dental X-Ray Unit for RVG Compatible Specifications:-**

- 1) Mains: 230 V ,
- 2) Power Consumption: 1150 VA,
- 3) High Tension : 65/70 KVP
- 4) Tube current: 84,
- 5) Tube Focus : 1.5 mm (IEC)
- 6) Digital timer with timing from 0.2 sec to 2.9 sec in 10 P mode adjustable @ 0.1 sec
- 7) In RVG mode timing from 0.02 sec to 0.29 sec adjustable @ 0.1 sec.
- 8) Remote control.
- 9) Automatic Voltage stabilizer in built for trouble free operation from 185 V to 260V.

  
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