





# PROCUREMENT TECHNICAL SPECIFICATIONS

## FULLY FURNISHED ARMOUR BODY FOR MOBILE STANDBY COMMAND POST VEHICLE (BEML MSCPV 4x4)

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(Govt. of India Undertaking)  
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1. Document Number:		GA/3073/PTS/ MSCPV/1076 Rev0	
2. Title: <b>Procurement Technical Specifications of 'Armour Body Kit' for MOBILE STANDBY COMMAND POST VEHICLE (BEML MSCPV 4x2).</b>	3.Report Date:		4. Pages:
	29 Aug 2019		27
	5. Type of report:		
	Procurement Technical Specifications (PTS)		
	6. Link reference		
			None
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11. Abstract:			
This Technical specification document identifies and defines the functional and physical characteristics of 'Armour Body Kit' for Mobile Standby Command Post Vehicle (BEML MSCPV 4x2)'.			
12. Security Classification: RESTRICTED		13. Copy Number:	


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## 1. Introduction:

The Mobile Standby Command post (MSCP) vehicle should be Bullet proof protection meeting NIJ level 4 Standard. The Body shall be built on 4x2 vehicle Chassis. The built-up MSCP will house 11 personnel (including Driver & Co-Driver) and sophisticated electronic equipments, UPS, Data Racks etc along with the air-Conditioners for thermal management of the electronic equipment & crew housed inside the MSCP

## 2. Project Requirement:

MSCPV is to be developed on indigenous 4x2 Truck chassis. The vehicle is bullet proofed meeting NIJ Level 4 standard in a manner to conceal the occupants completely from the threats. The vehicle operating temperature is from -20°C to +55°C.

The scope of work is to design, build, fabricate and supply 05 Nos bullet proof hull on 4x2 chassis supplied by M/s BEML as per the technical and general requirement described in this document.

The complete design documents (including 3D models & 2D drawings), pneumatic and electrical schematic diagram pertaining to bullet proof body to be submitted to BEML for Approval. The Procurement items to be pre-approved by BEML.

One Number body to be developed at vendor premises and after final approval 04 Nos to be supplied to BEML in the form of kit for integration at BEML premises. Definition of Kit items to be mutually agreed after the approval of first proto.

## 3. Vendor Qualification Requirements:

- i) The Armouring firm should have prior experience for armoring upto NIJ Level - 4 or Technological tie up / JV with a reputed international company having relevant experience upto NIJ Level - 4. Relevant Documents to be attached along with projects performed of similar nature.
- ii) In house Design and Simulation studio with Catia / Solid Works etc. for 3D design facility with qualified engineers for designing the armoured vehicle. (Copy of valid licences from software supplier to be enclosed).

- iii) Company should have adequate Automobile background with HMC / VMC machining facilities for manufacturing different parts, hinges, etc. for the fabricated capsule.
- iv) In house testing facility such as hardness, Hinge strength, welding strength, leakage test (rain test) should be there with the vendor.

#### 4. Technical Requirements:

The Body shall be consisting of 3 Work areas, Viz. the Driver Cabin, control room and Equipment compartment. Lightweight construction shall be the hallmark of bodybuilding.

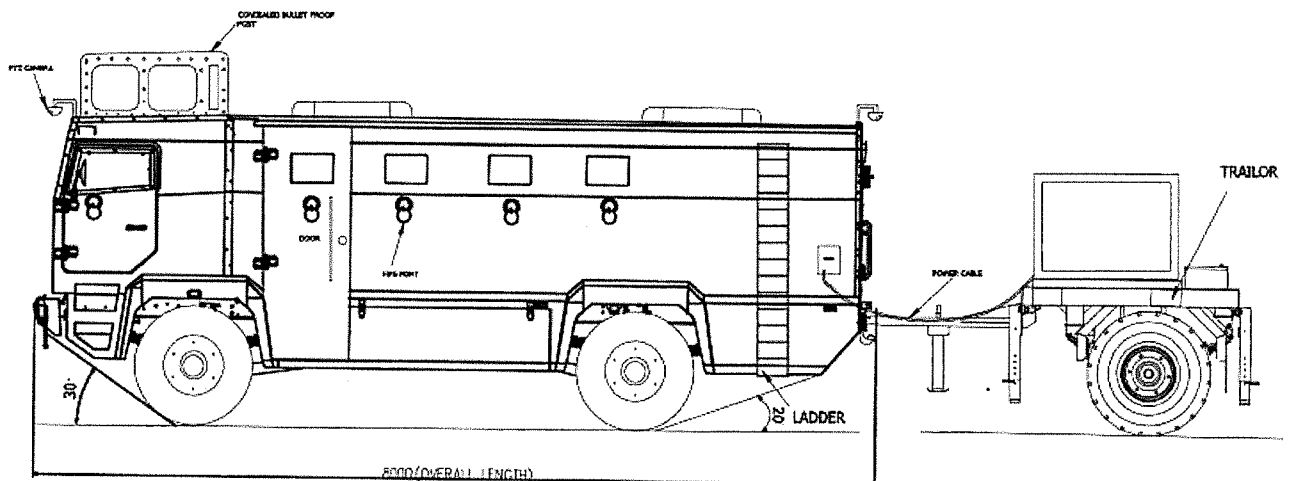
The Best Quality Raw Materials, Fittings and Hardware should be used for Construction of the body. The fabrication, assembly and finishing work should be carried out using proven engineering practices and use of Tools, Jigs and Fixtures as far as Possible.

Reliable, rugged, Long Life Fittings such as hinges, Locks, Handles, doorstoppers, etc, must be used. Import of Quality Fittings may also be explored.

#### 4.1. Body Design

##### 4.1.1. Outer design

The outer design of the body is Monocoque or uparmoured/chasis based concepts of bullet proofing, it should have add on bullet proofing for upgrading ballistic protection which is demand specific requirement. (Informative Picture as shown below)



\*\*Trailer with DG set is shown for reference only and it is not in scope of supply

#### 4.1.2. Space:

The Vehicle shall be consisting of 3 Work areas, Viz.

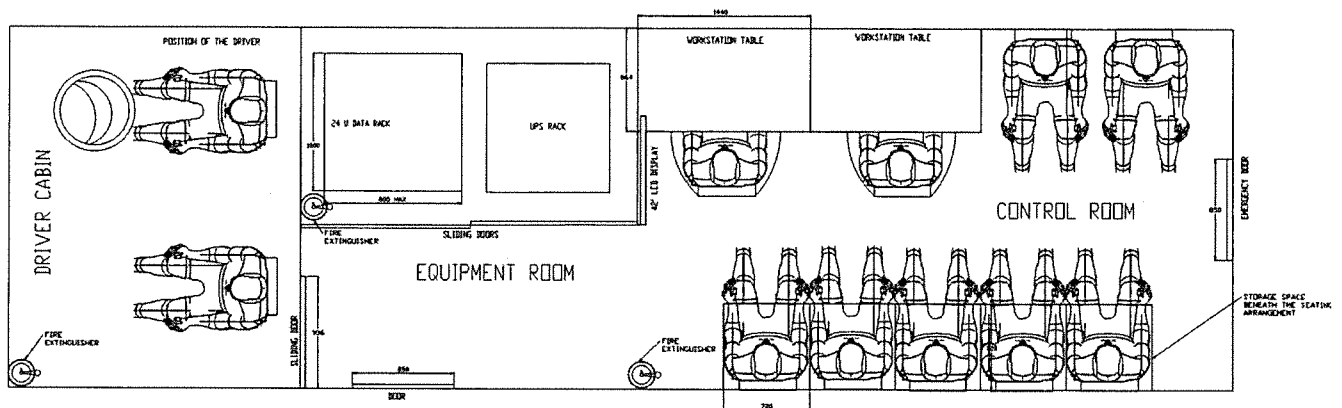
1. Driver Cabin,
2. Control room
3. Equipment compartment.

The control room is the main working area of MSCPV which includes display monitor, workstations etc. Special attention has to be paid to enhance the aesthetics of the control room. This zone shall be thermally and acoustically insulated.

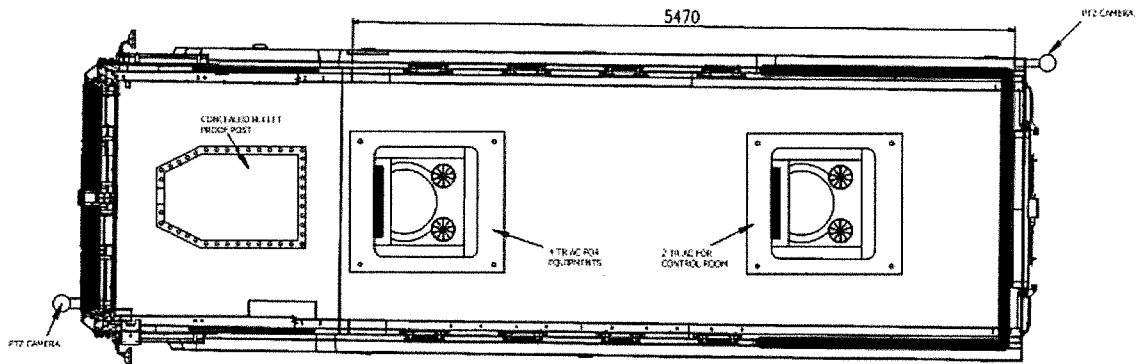
Two roof mounted Air conditioning systems of capacity 2.0 TR for control room as well as for Driver Cabin and 4.0 TR for equipment room are to be installed for cooling of equipment and also for the crew comfort.

2.0 TR AC should run by either by power of the vehicle or by DG power so that it should be possible to run 2.0 TR in static or in mobile condition. The 4.0 TR AC, Electronic equipment etc. should run on DG set (mounted on Trailer).

The Equipment room houses the ups rack, 24U Data rack & storage accessories. For acoustic insulation the walls and roof shall be lined with 50mm thick glass wool and secured by perforated Aluminium Sheet.



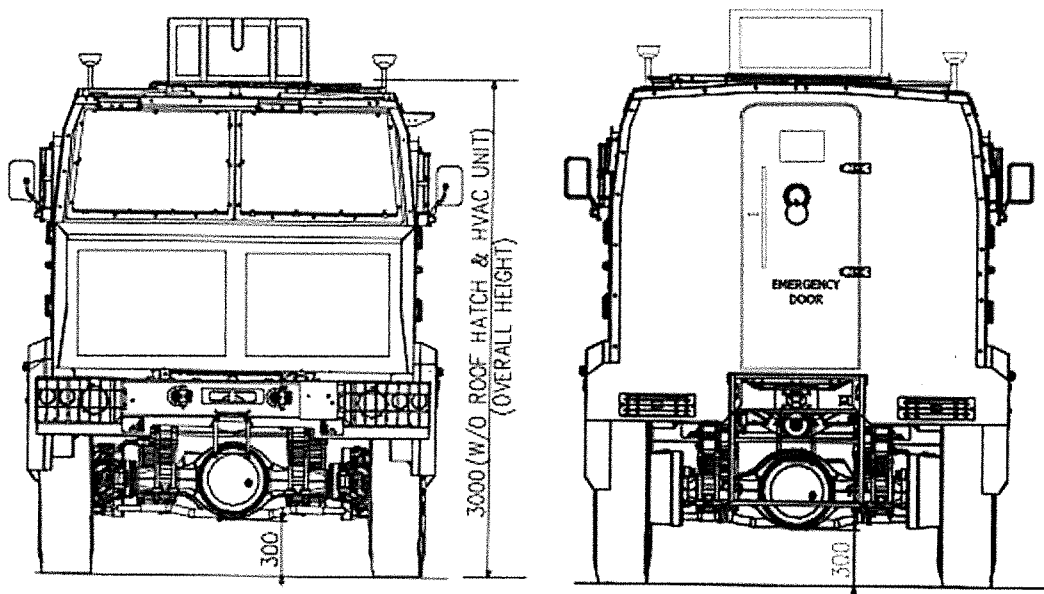
*Plane View*



Top View

\*Note: This is for illustrative purpose only, however seating configuration can be rearranged based on customer requirement.

Racks (UPS & Data Rack) are to be mounted on the Shock absorbers. These shall provide adequate isolation for the delicate electronic equipment from the shocks and vibrations that may be encountered in terrain.



Front & Rear View

Provision for mounting two PTZ cameras placed diagonal on top of the vehicle with 360 degree rotation capability to provide all round coverage.

Provision for attaching Trailer to be provide at the rear end of the vehicle.



#### **4.2. Armouring**

***MSCPV to be designed for protection level as specified in this document yet provision to be made for uparmouring or upgrading the protection levels.***

Complete Armoured vehicle should be aesthatic in nature for both exterior and Interior design.

Modified interior trimming, blending closely with the original interior fit and finish of the original cabin or as per design of chassis.

**4.2.1. Top:** Ballistic protection against NIJ Level IV (Refer NIJ Standard 0108.01)

**4.2.2. All Sides:**Ballistic protection against NIJ Level IV (Refer NIJ Standard 0108.01).

**4.2.3. Bottom Under Carriage:** Crew and Troops should be protected against simultaneous blast of 02 hand grenades HE36(Put together) directly under the vehicle.

#### **4.3. Glass, Windshield and side Glass:**

**4.3.1.** The vehicle should have Bullet proof tinted windows of reputed make meeting Ballistic protection against NIJ Level IV (Refer NIJ Standard 0108.01) and in order to deny outsiders from looking inside the vehicle and allow personnel seated inside to have a clear external view.

**4.3.2.** One window of minimum size 400mmx300mm must be provided in the rear of vehicle.

**4.3.3.** The front Windscreen should be in maximum two parts. It should enhance clear external view for driver and Co-driver.

**4.3.4.** Defogging and wind shield washer capacity to be provided for windshield in Driver cabin.

**4.3.5.** No gaps are permitted between opaque armor or between opaque to transparent armor transition points. Opaque armor joining or meeting on the same plane should be overlapped.

**4.3.6.** Door overlap system with a right angle spall return, should meet transparent armor.

**4.3.7.** Opaque armor should be afforded a smooth protective paint coat, without seam seal, to allow for the inspection of armoring materials before trimming.

- 4.3.8. Attachment points of armoring materials should be reinforced to meet after armoring mass to accommodate increased vibration and stress. Fixation shall preclude dislodgement by ballistic, explosive device or vehicle collision.
- 4.3.9. The passenger compartment ergonomics and trim should not distract from the integrity of the vehicle, or vice versa.
- 4.3.10. Vendor should provide all records of Armour material inspection and corresponding to their IS/International standard at the time of final inspection of proto vehicle.
- 4.3.11. All transparent armour should meet Ballistic protection against NIJ Level IV (Refer NIJ Standard 0108.01)


**4.4. Access:**

The body should be provided with the following accesses.

- 4.4.1. Two doors on either side in Driver Cabin.
- 4.4.2. One door in the rear facilitating emergency exit/entry of troops.
- 4.4.3. One door at the left side for loading and unloading of stores/equipment and also for easy movement of troops.
- 4.4.4. Suitable mechanism to be provided for all doors, so that it is not be possible to open the doors from outside when locked from inside.

**4.5. Gun Ports**

- 4.5.1. One each in the doors of driver and co-driver.
- 4.5.2. Minimum Four side port holes (each side) to fire personal weapon.
- 4.5.3. One port on the rear door
- 4.5.4. Port holes should have sufficient security arrangements so that they can be locked and are operable from inside only. They should not be able to be manipulated from the outside.
- 4.5.5. All the small arms can be fired easily through firing ports from inside the crew cabin with a reasonable visibility of the target in front.
- 4.5.6. Minimum four side windows and two at the rear door with Gun ports lockable from inside is provided on both sides of vehicle.

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#### 4.6. HVAC

The Air conditioning effectiveness post armouring under different temperature and at different vehicle velocity will be tested. Vendor to test the Air Conditioning performance in presence of BEML rep and provide the test report.

#### 4.7. SMOKE EXTRACTION SYSTEM

The vehicle should have a smoke extraction system from inside of cabin, which should be integrated with engine air intake system to extract smoke / fumes from cabin within 3 minutes.

Smoke suction system from internal cabin to be operable from engine to be provided.

#### 4.8. Gross Vehicle Weight and Armoured Hull Weight:

Sl No	Description	Approx Weight (kg)
1.	Vehicle drive away Chassis	6,000
2	Mobile Standby Command Post * (Furnished Armour Body)	8,500
3	Equipment racks,UPS with batteries & modules mounted inside racks	850
4	Cable, drums, ladders & earthing accessories etc.	350
5	Miscellaneous (I/O panels, PDP, mounting bracket, etc.	100
6	2 TR +4TR AC Units With Accessories*	500
7	Total Weight (Approx)	16,300

Max. 16,500 kg after bullet proofing.

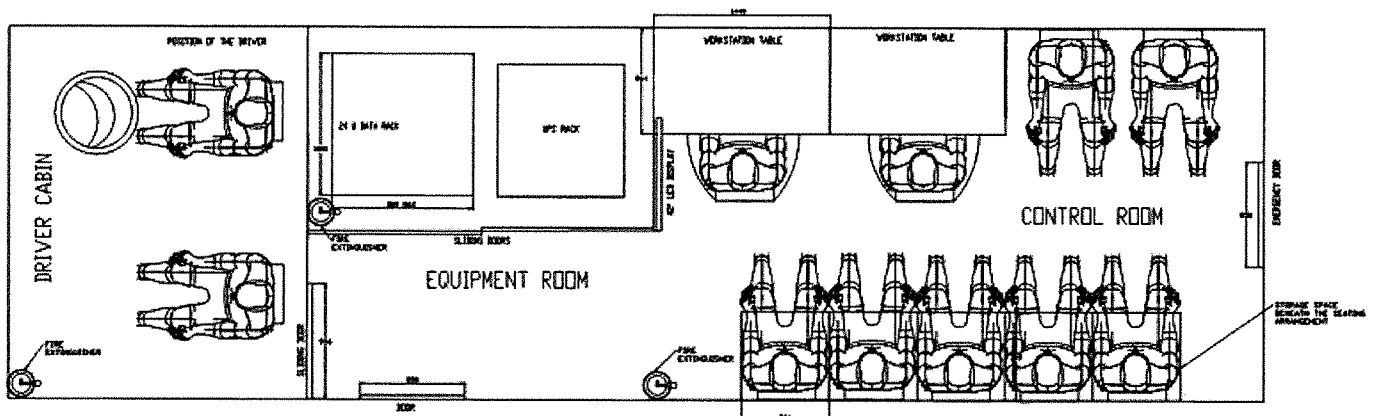
**4.9. Tow Pin & D-Shackles:** 1 No Tow Pin and 2 Nos D-Shackles at front as well as two hooks at rear should be provided as per standard towing practices of Defence Vehicles. There should be four strong hooks integral to the body of the vehicle to fix chains ropes for assisting in recovery operation of a fallen off road vehicle. The hooks to be strong enough to pull the entire GVW of 16,500 kg at a speed of 10 kmph minimum.

**4.10. Provision Spare Wheel:** Provision of one one spare wheel to be provided as MSCPV or as decided by the indenter depending upon prevailing CMVR norms for special purpose armoured vehicles category and class. There must be some mechanical/electrical assisting arrangement for easy mounting and dismounting (i.e lowering and lifting) of spare wheel.

## 5. BODY WORK

### 5.1. INTERIOR DESIGN:

Interior design and construction of crew compartments of MSCPV should specifically cater for proper cushioning of all the hard surfaces and protrusions. Special care to be given during designing the interior surface of the crew compartments to avoid any protrusions near or above the head area of troops.



### **5.1.1. DRIVER CABIN**

- 5.1.1.1.** The cabin should have panoramic view.
- 5.1.1.2.** The cabin should have two seats – One for the driver and the other for the operator. Seats and seat belts should be CMVR approved for driver and co-driver seats.
- 5.1.1.3.** The seats should be of adjustable type with both up/ down and fore/ aft adjustments. The seat and backrest should be comfortably padded with cushions lined with leather cloth. Two numbers of sun – visors should be provided, one for the driver and the other for the Co-driver. The co- driver seat should be foldable to the front so as to provide the entry and exit of personnel into the control room.
- 5.1.1.4.** USB charging points should be provided.
- 5.1.1.5.** Proper arrangement should be provided so as to reach Concealed bullet proof post to fire in case of emergency.
- 5.1.1.6.** Lowest possible floor level should be achieved for the cabin to give maximum possible head room. Minimum headroom of 1800mm should be maintained in the cabin. The step over the driver's foot control should be provided with rubber mat.
- 5.1.1.7.** One electric double horn should be provided.
- 5.1.1.8.** Provision for mounting the toolbox must be provided either inside or outside the cabin.
- 5.1.1.9.** The cabin should have two doors, one from the driver side and the other on the opposite side. Aluminium anodised Tower bolts should be provided for both doors in addition to the locking arrangement. The padding of interiors of doors should be of hard board covered with leather/Polyurethane material. A sliding door of width 650mm min to be provided in the driving cabin for the entry into the control room.
- 5.1.1.10.** Two electrically operable rear view mirrors should be provided on each side.
- 5.1.1.11.** A key box should be provided in the cabin for placing all the keys pertaining to the van body. The keys shall have plastic/ metallic marking tags. The position of the keys in the key box shall be stencilled.
- 5.1.1.12.** The position of the driver is in right side.
- 5.1.1.13.** Two No's of Utility Points (230V A.C) to be provided in the drivers Cabin, suitably positioned behind the Co-driver's Seat.

**5.1.1.14.** The Glass panes on the door shall facilitate clear view of traffic of the vehicle in the immediate vicinity of the vehicle.

**5.1.2. CONTROL ROOM:**

**5.1.2.1.** This is the main working area of MSCP

**5.1.2.2.** All the electronic equipment's for wireless communications, monitoring & control panels, etc., are located in this room. Special attention has to be paid to enhance the aesthetics of the equipment room. This zone shall be air conditioned with A.C units of 2 TR Capacity roof mount units.

**5.1.2.3.** A sliding door partition separates the equipment room & the control room.

**5.1.2.4.** A storage space cum seating with foam padding and leather cover shall be provided (720mm (L) 720mm (W) and 500H) for 9 seats and 2 table to be provided for workstation(refer floor drawing of MSCP).

**5.1.2.5.** The sliding door of the control room provide a clear opening of 650mm (W) x 1700mm (H) to enable entry and exit for persons from the driver cabin to Control Room.

**5.1.2.6.** The control room is provided with the space for 42" display monitor.

**5.1.2.7.** The control room is provided with sledge hammer and rifle rack.

**5.1.3. EQUIPMENT ROOM**

**5.1.3.1.** The equipment racks are to be mounted on floor at its respective dimensional locations as mentioned in the drawing. All the drilling & tapping to be done as per requirement.

**5.1.3.2.** The equipment room includes the UPS, Data Rack and other accessories. Provision shall be made for supporting and anchoring these items on the vehicle. For acoustic & thermal insulation the walls and roof shall be lined with 50mm thick glass wool and secured by perforated Aluminium Sheet.

**5.1.3.3.** Sliding doors to be provided for access to the equipment room.

**5.1.3.4.** Adequate number of hooks to be provided on the walls for hanging Lightweight items and for lashing loose articles. The points for lashing shall be anchored rigidly to the super structure in consultation with BEML.

#### **5.1.4. MAIN BODY CONSTRUCTION**

**5.1.4.1. Base Frame:** Shall be made up of Steel channels and sections of adequate strength. Reinforcements shall be provided at locations for mounting equipment racks UPS, furniture and other accessories. Blind tapped holes shall be provided for fastening these items. The base frame shall be clamped on to the Chassis by High tensile U- Clamps. (M16 or Higher)

**5.1.4.2.** Provision to mount two number of Omni directional antenna, insertion tubes to be provided on the top of vehicle (details will be provided later) and two air Conditioners on the roof Structure. It shall also safely withstand the wind forces generated on the antenna. The deployed conditions at a wind speed of 50km/Hr. (Maximum dislocation allowed is 0.5 Deg).

**5.1.4.3.** The roof structure shall have appropriately located members for supporting and riveting the antenna base frame.

**5.1.4.4.** The complete frame structure shall be fully pre-treated i.e. degreasing. De-rusting and phosphating following by one coat of metal primer and one coat of synthetic enamel grey. The frontage of structure shall be symmetrical with respect to vertical and shall not be skewed. Suitable taper or curvature may be introduced to enhance the styling.

#### **5.1.5. FLOORING**

**5.1.5.1.** The flooring should be level within +/- 5mm and constructed using 19mm marine plywood with rubber spray on the lower side and 2mm vinyl flooring on the top.

**5.1.5.2.** All joints and all corners shall be covered with aluminium flat/fluted strip to ensure that the flooring shall not peel off at any place. Alternatively, all joints could be hot air welded, and the edges along the walls shall have aluminium beadings. Clearance holes should be made in the wooden floor, panels and in the vinyl flooring at mounting points.

**5.1.5.3.** Three steps each approximately 600mm (L) X250mm (W) for access to vehicle from side door to be provided. The first step shall be at an approximate Height of 350mm from Ground .Necessary clearances should be made in the wooden floor, panels and in the vinyl flooring where such holes are provided. All tappings should have at least 10mm depth .The holes should be blind or sealed at the bottom, to avoid water ingress due to splashing. Rubber mats are to be provided on steps leading to the equipment room, these shall be held in position by recesses or retainers on the steps.

#### **5.1.6. PANELLING**

**5.1.6.1. ExteriorPanelling:** Exterior of the vehicle has to be made by bullet proof panels of rating NIJ Level 4.

**Material sample to be drawn from the raw materials and to be tested as per above mentioned standard at accredited / approved lab and Raw material from the same heat to be used for build all the five body.**

**5.1.6.2.** Provision should be made to drain off water from roof and all the doors and the entire vehicle should be rain proof.

**5.1.6.3.** The Vehicle shall be subjected to a rain test of 3"/Hr. for 30 Minutes, and no leakage inside the van is acceptable. It is suggested that extra care is taken in the design of bodywork to prevent entry of water and dust under extremes of weather encountered in Indian conditions. This test shall precede the inside panelling and is done in the presence of BEML Representatives.

**5.1.6.4.** Interior panelling should be done using ABS panels with carpeting bonded to panels. Joints if any should be finished with slim extruded & polished Aluminium beadingwith PVC inserts. Aluminium chequered panels may be used for a height of 6" from floor.

**5.1.6.5.** Anti-drumming compounds (two coats) should be applied on inner face of panels before riveting the body may make better proposals if any to enhance looks and avoid waviness.



**5.1.6.6.** The roof shall have provision for mounting PTZ cameras, Concealed bullet proof post and air conditioners fixing at locations indicated in the drawing. Provision shall also be made for mounting Antenna on roof and routing of the cables in to the equipment room.

#### **5.1.7. INSULATION FOR WALLS & FLOORS**

PE foam sheets (40mm thick) shall be used for thermal and acoustic insulation between the outer and inner panels of the body. Two layers of 20mm thick shall be used with joints in the two layers being laterally displaced to avoid straight joints. PE foam must be packed tightly to avoid air gaps. 3mm PE insulation should be used before riveting panels on to structural members. As the inner panel drapes down to the floor, an air gap shall be formed. The Cable strays are to be located in the gaps so formed


#### **5.1.8. PARTITIONS**

The three work areas are separated by partitions. The frame for partition walls shall be part of the super structure. The partition between the driver cabin and control room shall be up of ply boards ABS/FRP wall lining .For acoustic insulation, the face towards the equipment room shall be lined with 50mm thick glass wool and secured by perforated Aluminium Sheet. Wood panelling (19mm, thick, one side teak) to be laid over the perforated Aluminium sheet.

The construction of the remaining area shall be similar to the partition between the driver cabin and the control room.

#### **5.2. Windows**

The vehicle should have bullet proof NIJ level 4 tinted windows of reputed make in order to deny outsiders from looking inside the vehicle and allow person seated inside to have a clear external view. Firing ports as indicated in the figure should be provided.

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### **5.3. Electrical**

**5.3.1.** Most of the equipment works on 230V AC. All wires and cables wiring will be provided by Vendor. The Vendor is responsible for routing of the cables and providing termination boxes for powering the equipments.

**5.3.2.** The electrical circuitry of external and internal lamps and controls is to be finalised and executed by the vendor. Copper wires of appropriate gauge and PVC insulation of reputed make and confirming to BIS specifications shall be used.

**5.3.3.** Lamps: The Following lamps with fittings are to be provided.

**5.3.3.1.** Two LED Lamps in Control Room.

**5.3.3.2.** Two LED Lamps in Equipment room.

**5.3.3.3.** One LED lamp in the Driver cabin.

**5.3.3.4.** Side lamps for the Vehicle.

**5.3.3.5.** One Lamp on the roof to illuminate the antenna.


**5.3.3.6.** Two spotlights with dimmer switches to be provided over the Seating area.

**5.3.3.7.** One lamp to light up the steps powered by vehicle battery and operated by a two –way switch (one near the door and approachable from ground and the other in the drivers cabin) is to be provided.

**5.3.3.8.** Two types of external lights are provided one is emergency light and other one is turntable flood light and One Lamp to light up rear side of the racks

**5.3.4.** Apart from the above, one lamp each in drivers cabin, Control room, and Equipment room, working off the vehicle battery should automatically be switched on, in the event of A.C failure. The supply shall be distributed through adequate number of minicircuit breakers, housed in a control panel preferably on DIN rails.

**5.3.5.** Arrangements to be made to mount PTZ cameras for 360 degree rotation capability.

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## 6. Air Conditioning

Air conditioning system will be installed by the supplier of the A/C system at Body builder's premises. Necessary mounting provisions, cut-outs for ducting and installation shall be provided by the body builder. Full co-operation should be extended for fitment of A/C system during intermediate stages of the body building work. Any modifications in the body or special features that may be necessary for optimization of the a/c system performance should be provided by the body builder.

Procurement & fitment of the A.C Units [2TR (control room), 4TR (equipment room) is of the body builder's scope of supply.

## 7. Painting& Colour Scheme

The armoured body should be externally painted with Polyurethane matt black (37038 of FED-STD-595c), after pre processing and primer painting.

## 8. Additional Requirements:


### 8.1. Fire Extinguishers/Other Accessories:

Three Nos. of fire extinguishers (type: ABC – stored pressure type) and of 2 Kg capacity with wall mounting brackets and conforming to IS 13849 shall be provided by the vendor. One each shall be fixed in the driver cabin, control room and Equipment room. The body builder should provide standard/ mandatory fittings like mudguards, trailer hooks, front toe hooks, first aid box, etc.

### 8.2. Battery charger

One battery charger of 12 V is to be provided to charge the vehicle battery. This shall be located in the cabin and clamped to the vehicle body. The vendor shall also execute the wiring from 230V supply and to battery.

### 8.3. Ladder : One Ladder to be permanently fitted at the side near the rear end.

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#### **8.4. General Regulatory Requirements**

- 8.4.1.** The Vehicle shall conform to the THE CENTRAL MOTOR VEHICLES RULES, 1989 for overall dimensions.. The Max. Height of the Vehicle is limited to 4.5M max (Including all exposed fitments on the roof top).
- 8.4.2.** The Built up body shall have provision for earthing of M10 or above on at least two sides along the length of the vehicle.

#### **8.5. Accommodation of changes**

This being highly customised bodywork where mid-course changes in design are likely due to unforeseen technical complexities, the body builder is expected to be accommodative and have a flexible approach to accomplish the task to the satisfaction of BEML and its Customer.

- 8.6. Shock mounts:** For placing racks and other instruments shock mounts should be provided.

#### **8.7. Miscellaneous**

- 8.7.1. Fire Extinguisher** - Min 5 Kg of ABC Type
- 8.7.2. Stretcher** - Stretcher inside the cabin
- 8.7.3. Water container** - Capacity 100 Litre
- 8.7.4. Side mirrors** - Two side mirrors
- 8.7.5. Hooks**
- 8.7.5.1. Towing Hooks** - Requisite towing at the rear to hook up trailer towing generator. The trailer can be easily attached or detached to the hook with a pin.
- 8.7.6. Rotating search light** - Four search lights with guard on the top of the vehicle
- 8.7.7. Mounting Provision for Cameras** - Mounting arrangement to mount two ptz cameras on either end of the vehicle to provide all round 360 degree Coverage is provided
- 8.7.8. Display arrangement** - Arrangement to mount 42" display on wall is provided.
- 8.7.9. Mounting of equipment-** 6 helical wire rope isolator shock mounts to mount 19" 24u rack of 800w x 1000d (4 at the bottom and 2 at the back) is provided

and also proper provision in the vehicle is made to accommodate rack on shock mounts.


- 8.7.10. Shock mounts of type : "CB 1400-20-I2" make : Aeroflex.
- 8.7.11. Equipment Racks 19" 24U 1000mm depth rack is provided to stack servers and other it hardwares.
- 8.7.12. Cabling All cabling arrangements related to power distribution, it hardware connectivity provided.
- 8.7.13. Firing Post on Roof Proper arrangement is made to reach bullet proof post.
- 8.7.14. Internal Doors - Sliding door is provided to enter control room from driver cabin.
- 8.7.15. Sliding door to be provided to enter equipment room from control room.
- 8.7.16. Rear Door - Emergency Door for entrance/exit from rear side.
- 8.7.17. Connector - One number connector to plug-in 25KVA genset to be provided at rear of the vehicle.
- 8.7.18. Side Door Hinged Side Door on left side for Entry & Exit of Personnel

**8.8. Spares and Maintainance Characteristics:** The accessories/fitments/spares and techincal expertise of automobile should be easily available in the indian market at various places. The supplier of the hull should certify to this effect and enclose a list of such all India Locations. Ballistic material should be fixed in such a way that engine/other parts/assemblies are easily repaired/dismounted for repairs.

## **9. Technical Literature:**

Following literatures are to be furnished by the firm at the time of supply limited to the scope of supply

- Spare Parts Catalogue.
- Workshop or repairs manual.
- Operators Manual.
- Service Manual with maintenance schedules and consumable specifications.
- Manufacturers Recommended List of Spares.
- Special Maintenance Tools and Special Maintenance Equipment.
- Training Aids and Charts.

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- Any other literature as required by user/Inspection agency

## 10. Scope of Work and Supply / List of Deliverables

10.1. Built up Body with doors, glass windows, ventilation panels, Storage boxes, hatch panels, Fans A.C Units with Duct in fitted up condition as per our specifications/requirements with mounting provisions for the following items/sub-assemblies mentioned below:

- 10.1.1. Equipment Racks fitted with shock mounts
- 10.1.2. PDP( Power distribution Panel)
- 10.1.3. Two A.C Units
- 10.1.4. Chairs and workstation furniture
- 10.1.5. Provision for mounting 42" Display, Power panel.
- 10.1.6. Electrical cable ducts
- 10.1.7. A.C Ducts
- 10.1.8. Storage accessories.
- 10.1.9. Camera mounting kit.
- 10.1.10. Roof top lamp
- 10.1.11. AC Remote pendants.
- 10.1.12. Earthing pegs & lightning arrestor base.
- 10.1.13. Provision for Antennas mounting atop the vehicle.
- 10.1.14. Side lamps - 6 Number.
- 10.1.15. Rear Lamps -4 Number.
- 10.1.16. Electrical lamps as per the specifications.
- 10.1.17. 15 Amp/5 Amps Electrical switch boxes with two sockets/Unit - 6 Number.
- 10.1.18. Compact wall mount Fans-4 No's.

- 10.1.19. Ventilation Panels in equipment room -2 No's
- 10.1.20. Fire extinguishers -3 No's
- 10.1.21. Water Can with mounting bracket -5Lts
- 10.1.22. Aluminium Sliding partition doors with sliding frame, units & accessories.
- 10.1.23. First Aid Kit with mounting arrangement -1 Number
- 10.1.24. Supply one set of Special Maintenance Tools (SMT), Special Test Equipment (STE) and Manufacturers Recommended List of Spares (MRLS)
- 10.1.25. Technical Documentation as listed at sl no. 6 above.
- 10.1.26. Support during Proto development and trials - The firm should depute technical team and assist/participate along with BEML team at its own cost

#### **11. Warranty terms:**

Supplier to provide the warranty of 24 Months from the date of supply for the Body and its accessories.


The supplier should provide a warranty 05 years for BP Glass. As far as the visibility criteria of the BP Glass are considered, it should be minimum 70% visibility. supplier shall submit a certificate from the accredited labs to the effect that the BP glass has got a minimum visibility of 70%. The firm has to guarantee that in case the visibility of the BP glass does become less than 70% within a period of 3 years without the BP glass having suffered any visible mechanical damage, the firm replaces the BP glass at free of cost excluding wear and tear.

#### **12. Product Support:**

##### **12.1 CAMC (Comprehensive Annual Maintenance Contract):**

CAMC for 6 years from the end date of warranty period. CAMC includes keeping the installed equipment free of contact with vegetation/free of limitations imposed due to vegetation growth and/or weather.

- (a) The CAMC shall cover maintenance of the supplied and installed armoured body and sub-systems and individual equipment as per BOQ.

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- (b) The CAMC shall include scheduled preventive maintenance, unscheduled maintenance and ancillary duties that support Vehicle & associated equipments maintenance including supply support, configuration management, technical data verification, system library maintenance, scheduling support, tool control, calibration requirement etc.
- (c) The vendor shall be responsible for maintenance of the armoured body and sub-systems, scheduled replacement of consumables and documentation for operation of equipment.
- (d) The vendor shall formulate guidelines for both Preventive Maintenance and Breakdown Maintenance for the armoured body and sub-systems. A log of the Preventive Maintenance undertaken as per schedule ( daily, weekly and monthly etc) shall be maintained by the contractor.
- (e) The Breakdown Maintenance shall include undertaking repairs through replacement of defective parts/ components and making the vehicle operational. A corrective and preventive action(CAPA) report also should be part of the break down maintenance.
- (f) During the CAMC, the vendor shall maintain the armoured body and sub-system assets at least at 99.5% availability standard.
- (g) The vendor shall have their service centres in the respective locations viz. INS Rajali (Arakkonam), INS Garuda (Kochi), INS Hansa (Goa), INS Dega (Visakhapatnam) and INS Utkrosh (Port Blair) and its qualified personnel deputed on-site at all the locations to undertake maintenance activities of the armoured body and sub-systems.
- (h) During the CAMC period, the vendor shall carry out all necessary servicing/ repairs/ replacements to the armoured body and sub-systems, obsolescence management under CAMC at the current location of the equipment/ system. Prior permission of the customer would be required in case Vehicle or certain components/ sub systems are to be shifted out of location. On such occasions, before taking out the armoured body or components, the vendor should give suitable bank guarantee to customer to cover the estimated current value of item being taken.
- (i) The CAMC shall cover all 'O', 'I' and 'D' level of maintenance of all the NAISS equipment by the vendor.



### **12.2 CAMC Operations.**

- i. On-site CAMC shall be staffed to support a continuous and unhindered operation of the body and sub systems.
- ii. The entire body and sub systems would be operational 24 hrs and seven days a week as any kind of Un-serviceability may lead to compromise of security. The same is to be ensured by the CAMC personnel.
- iii. The vendor CAMC team shall train customer personnel identified by the customer as part of CAMC, at no additional cost, to Operate the armoured body and sub-system assets, prepare the assets for use, shut down the assets and undertake minor maintenance tasks.
- iv. Defect Trend Analysis will be undertaken separately for hardware and software issues. The customer will nominate its representatives and assist the vendor in this process.

### **12.3 CAMC Period:**

The vendor shall provide Comprehensive AMC (i.e., inclusive of all spares, consumables, major preventive maintenance, breakdown maintenance and obsolescence management), post expiry of the Warranty period of two years for a period of **next 06 years** at the negotiated price. After expiry of the aforesaid period of 06 years of CAMC, the vendor must agree to undertake Comprehensive AMC throughout the life cycle of the product (i.e 10 years) under mutually agreed separate contract. The option to enter into AMC after completion of first 06 years of CAMC shall be at the discretion of BEML. BEML reserves its right to terminate the CAMC at any time without assigning any reasons after giving a notice of one month. The vendor shall not be entitled to claim any compensation against such termination. However, while terminating the CAMC, if any payment is due to the Contractor for maintenance services already performed in terms of the CAMC, the same would be paid on pro rata basis per unit.

**12.4** The OEM shall be required to confirm that he is in a position to provide product support in terms of maintenance, material, and spares for a period of minimum 30 years. The OEM must provide at least 2 Years notice to BEML before closing the production line so as to enable "LIFE TIME BUY" of all the material & spares before closure of the production line. All upgrades & modifications carried out on the equipment during the life cycle must be intimated to buyer.

**13. Service:**

Service terms and conditions to be provided by the firm and to be mutually agreed.

**14. Inspection:**

As per BEML terms and conditions mutually agreeable with manufacturer.

**15. Acceptance Criteria**

- 15.1. Vendor should provide panel Certification report from accredited lab for meeting NIJ LEVEL IV protection.
- 15.2. It will be the responsibility of vendor to get the panel certified for NIJ level IV protection before building the MSCP vehicle.
- 15.3. The Protection against hand granade on the floor to be proved by makaing a body sample and subjected to test at TBRL/any othe Indian or international accredited lab, the reponsibility of the test lies with the vendor, however BEML shall provide any assiatnace if necessary
- 15.4. The MSCP will be subjected to tests as per mutually agreed ATP between BEML and Supplier. On Satisfactory completion of this Acceptance, the same will also be offered to Customer at either Supplier premises or at BEML.
- 15.5. Supplier shall participate & support in the Acceptance testing of the MSCP & Subsequent improvements if any, suggested by our Customer after acceptance testing.
- 15.6. Stage wise inspection by BEML will be done as per the BEML's QAP Document. (Quality Assurance Plan document).

#### 16. Delivery Schedule for development of 01 No Proto:

T 0 - Date of placement of PO / LOI

SI No	Description	Schedule
1	Design of Armour Body Hull and submission of 3D Model to BEML	T1 = T0 + 3 weeks
2	Review, Modifications & Finalization of 3D model	T2 = T1 + 0.5 Week
3	Manufacturing of Armoured Body for the purpose of fully furnishing with features described in the PTS document	T3 = T2 + 6Weeks
4	Receipt of driveaway chassis from BEML	T4 = T3 + 1 Week
5	Integration of Armour Body on Chassis at firm's premises and complete furnishing	T5 = T3 + 1.5 weeks
6	Preliminary testing of the fully integrated vehicle at Vendor premises, final painting and despatch to BEML	T6 = T4 + 2 weeks

Project Schedule for Armour Body Fully furnished and integrated on Chassis, tested, painted and despatch to BEML : 14 weeks from the date of PO

Upon approval of proto all 04 Nos kit to be supplied within span of 08 weeks

#### Note:

This Procurement Technical Specifications document is provisional and tentative to be updated at the descretion of BEML and refers to supply of scheduled deliverables required for the proto-development only.

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