

**TECHNICAL SPECIFICATIONS FOR DESIGN, FABRICATION, TESTING,  
COMMISSIONING AND SUPPLY OF MULTIPURPOSE FIRE TENDER VEHICLE  
(WATER AND FOAM) FOR MAZAGON DOCK SHIPBUILDERS LTD (QTY: 01 NO.)**

1. Mazgaon Dock Shipbuilders Ltd, Mumbai is intending to buy a Fire Tender Vehicle of **IS:10460** reference standard. The **Summary of Specifications** are as follows whereas Detailed Scope of work is elaborated in succeeding paragraphs hereunder.

(a)	Material of Outer Paneling	14 Gauge Aluminum Sheets.
(b)	Material of Roof top	04 mm Aluminum Chequered plate.
(c)	Engine	Tata 1923 of 18 Ft Deck length. Minimum modifications are to be undertaken on the original chassis.
(d)	BS Norms	BS-VI or latest norms.
(e)	Pump	Firefly Make pump or equivalent.
(f)	Pump Control	Smart Governor along with Manual governor (near Pump).
(g)	High Pressure Nozzle	01 No. to be provided of Firefly Make or equivalent.
(h)	Make of Power Take Off Unit	Fire Hawk Make / VAS make.
(i)	Water Tank	Material : SS 316L, 05 MM at bottom & remaining 04 mm Thick, Capacity : 5000 Ltrs.
(j)	Foam Tank	Material : SS 316L, 04 mm Thick, Capacity : 400 Ltrs.
(k)	Monitor	01 No. to be provided of TFT / ELKHART / POK / AKRON. The Monitor should have foam induction / throwing option.
(l)	Ladder	Trussed Type.
(m)	Levelling	All Connections / lines to be labeled with engraved steel plate appropriately.
(n)	Piping	All piping used in construction of pumping system has to be of Cupro Nickel (Cu-Ni) material of appropriate grade for good strength. If for some reasons, providing Cu-Ni piping is not feasible, Stainless Steel (SS316) Material be used.
(o)	Misc Points	(i) Railing / Securing Bracket provided for both sides exterior of the vehicle has to be of metallic material. Rubber / Plastic shall not be used.
		(ii) The Door Glass opening closing system is to be of mechanical rolling type.
		(iii) Butterfly arrangement to be provided for cover of Radiator at the front of the vehicle. Nut Bolt arrangement is not to be provided.

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		(iv)	Multipurpose Handles provided for various purposes at the exterior of the vehicle body, are to be of strong metallic type.
		(v)	Mechanical recoiling arrangement are to be provided for high pressure hose reel.
		(vi)	Inside Equipment Lockers, Multiple racks are to be provided for stowage. The Coaming of such racks are to be 10 mm Height.
		(vii)	Provision / enclosed space as well as hanging arrangement are to be provided in the Vehicle's cabin for stowing BA Sets. 04 Sets need to be hanged inside the enclosed space with suitable securing arrangement.
		(viii)	01 Light bar with Siren are to be provided with independent wiring for both these systems. The controls of both these sounding device is to be within the reach of driver.
		(ix)	Press Type Locks of high quality are to be provided for all doors of the vehicles. 01 spare set for each of lock is to be supplied along with the vehicle.
		(x)	The underside of the vehicle is to be applied with anti-rust treatment before delivery of the vehicle. The same shall be in addition to initial treatment provided by chassis supplier.
		(xi)	Holders for Couplings, Nozzles Adaptors and other fittings to be installed inside the Lockers (Minimum 04 Nozzles, 04 Male / female adaptors & for Foam Guns). Velcro securing arrangements of different sizes are to be provided for other fire equipment stored in the vehicle.
		(xii)	A dedicated locker is to be provided for storing first aid fire extinguishers. 04 Extinguishers, one each of Water, CO2, Foam and DCP are to be stored in this locker. Velcro Securing arrangement as well as suitable metallic securing brackets are also to be provided for all extinguishers.
		(xiii)	A camera for facilitating safe reversing of the vehicle is to be provided. The video quality of camera / display should be clearly visible even during sunlight conditions. The size of the display is to be (minimum) 7 inch.
		(xiv)	Electronic water and foam level indicators are to be provided in addition to Glass tube indicators.
		(xv)	02 Nos. Dedicated Hydrant to tank Connection with NRV (with Blank cap) is to be provided. The vehicle should be able to simultaneously induct water from a charged hydrant and able to supply water for firefighting.
		(xvi)	A brass Bell is be provided at the back of vehicle and not in the Cabin at the Front of Vehicle.

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		(xvii) 02 Fans need to be installed in the Vehicle's cabin, in addition to the blower.
		(xviii) Bumper of the body is to be as supplied originally by the chassis vendor. No modifications are allowed in the Bumper. Towing (front & aft) is to be connected with the main chassis.
		(xix) Heavy Duty Hinges of the Doors of all the doors are to be of sturdy construction needed for higher durability. Minimum 03 hinges are to be provided.
		(xx) All the Vehicle servicing as per the OEM manual are to be completed timely before delivery of the vehicle. However, it is to be ensured that the last full servicing of the vehicle is to be undertaken near the delivery date of the vehicle and be undertaken at Mumbai.
		(xxi) All Nut Bolts / Jubilee Clips used anywhere in the construction of the vehicle are to be of Stainless Steel only.

2. The detailed SCOPE OF WORK includes Design, Fabrication, Testing, Commissioning and Supply of Multipurpose Fire Tender (Water and Foam) along with supply of equipment's and accessories as per details enumerated in succeeding paragraphs.

3. **ENGINE & CHASSIS SPECIFICATION:** Tata 1923 of 18 Ft Deck Length, BS VI.

4. **WATER TANK CONSTRUCTION:**

- (a) The water tank of 5000 liters capacity and manufactured with SS316-L (bottom 05 mm & remaining sheet of 4 mm) thickness for sides as well as for baffles of preferable nut & bolt construction, is to be fitted on the chassis so as to allow full flow of water to the pump. The tank mounting shall be with proper load distribution on the axles and suitably baffled and corrugated plates shall be used to prevent surge when the vehicle is braking, cornering or accelerating. 450 mm size inspection man hole with cover marked "WATER" on the top of tank shall be provided. 250 mm dia cleaning hole fitted with 25 mm drain pipe with a valve and plug below the tank. 75 mm bore, over flow pipe fitted to down below the chassis frame and away from wheels, shall be fitted. Tank to pump suction inlet incorporating a 100 mm quick action spherical valve and also 50 mm pipe connecting the tank for filling the water tank fitted with 02 Nos. 63 mm instantaneous hydrant connection (brass with blank cap) shall be provided / fitted. Limber Holes are to be provided at suitable locations between the baffles.
- (b) The plumbing between the pump and hose reel shall have a clear unobstructed waterway of not less than 25 mm throughout without any obstruction.

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- (c) Water and foam level indicators shall be fitted at the rear of vehicle for indication of available levels. Electronic water and foam level indicators are to be provided in addition to Glass tube indicators.
- (d) **LIFTING ARRANGEMENTS:** The entire tank will be separate and distinct assembly which can be removed off separately for repair work by means of four lifting lugs provided on top of the tank.
- (e) **INSTALLATION:** The tank will be mounted on three heavy cross bearers & six chairs to counter act the stresses caused by chassis flexion so as to effectively sustain atleast 06 tons of total weight. The gravity of the tank will be kept as low as possible (within the limit specified by the chassis manufacturer) for greater stability of the vehicle. The tank will be secured to the chassis by means of "U" SS bolts with aluminum packing block. Ballata (Anti chaff) packing will be provided between chassis and the tank mountings.

5. **FOAM TANK CONSTRUCTION:**

- (a) The foam tank of 400 liters capacity manufactured with SS316L of min 4 mm thickness throughout shall be provided with welded construction. Filling line of 150 mm fitted with a removable strainer made of material, which does not damage with constant contact of foam compound, shall be fitted for quick filling directly into the tank from drums. The tank shall be provided with baffles and removable sump fitted with a drain valve. The draw off of foam compound shall be positioned in the center of the sump with suitable material strainer, mesh, size and adequate strainer so that foreign matter or sludge does not clog the system. The chequered plate of the roof on top of foam tank shall be of removable type without any leak from its joint. Automatic venting to be provided separately for easiness while filling or producing the foam. Vent shall not be incorporated with the cap and its dedicated purpose shall be for venting only. Draw off tube connected to the foam proportionator or inductor shall be such that 6 % with varying foam output is ensured. Proper angle support to be provided inside the tank to avoid undulation.
- (b) A stainless steel male threaded opening of 100 mm with stainless steel female 100 mm blank cap is to be provided on top of the foam tank. It is essential that rubber sealing washer provided in the blank cap is always in position to make it air tight.
- (c) The associated plumbing of the tanks shall have a clear and unobstructed passage of not less than 50 mm throughout, should be of easily dismantlable type for internal cleaning, and be provided with means of through flushing off, after use. The same should not form 'U' bend or abrupt angle at any portion and be capable of being drained easily without dismantling the tank.
- (d) **Lifting Arrangements:** The entire tank will be separate and distinct assembly which can be removed off separately for repair work by means of two lifting lugs provided on top of the tank.



6. **FIRE PUMP: -**

(a) The pump shall be of FIREFLY make or equivalent, High low pressure type CE certified complying EN 1028 and confirming to following features shall be mounted on the appliance. High-Low pressure type fire pump shall be mounted at the rear of the vehicle driven by vehicle engine through a power take off of suitable ratio to ensure maximum rated hydraulic efficiency of the pump. The pump shall be compact and of modular design having one suction inlet of not less than 140 mm with round threads as per IS 902 with a removable strainer and Two 63 mm & One 38 mm deliveries with hose pressure relief arrangement shall be fitted with instantaneous delivery coupling as per IS 901. The discharge manifold shall have inbuilt provision for monitor and tank filling piping. The entire high-pressure section of the pump shall be made of stainless steel.

(b) The low/normal pressure centrifugal impeller shall be made up of stainless steel (CF-08) and shall be dynamically balanced. The normal pressure pump casing shall be made of Stainless steel (CF-08) as per IS-6603. The high-pressure impeller of regenerative type shall be made up of stainless steel (CF-08); both the low- and high-pressure impellers shall be mounted on a single stainless steel (SS-431) shaft. Pump delivery manifold & outlets shall be made of stainless steel (CF-08). The pump shaft shall be held in heavy duty ball/roller bearings running in oil bath. The pump shall have a self- adjusting mechanical carbon seal.

(c) The pump shall be capable of simultaneous high & low-pressure operations and operation of high pressure shall be controlled by an easily accessible single changeover lever. There shall be two outlets for high pressure of not less than 1.00-inch size.

(d) The pump shall have an inbuilt pressure relief valve to control the high pressure within specified limits and a suitably sized thermal relief valve shall also be provided to ensure that the pump water temperature does not exceed 60°C while operating under closed discharge conditions.

**(e) The pump shall be able to perform the following duties-**

- (i) Low pressure- 3000 lpm @ 10 bar when tested at a suction lift of 3.0 mtrs at NTP conditions
- (ii) High pressure 400 lpm @ 40 bar
- (iii) Maximum outlet low pressure - 17 bar
- (iv) Maximum outlet high pressure - 54 bar
- (v) Deep lift test from 7 meter
- (f) The entire pump assembly with all its fittings and priming system shall be hydraulically tested at 21.0 bar for not less than five minutes.
- (g) All the above tests shall be carried out at pump manufacturer's facility.



7. **PUMP PRIMING SYSTEM-(E-PRIMATIC):**

- (a) The pump as supplied by OEM i.e. Firefly (or equivalent OEM), shall be fitted with inbuilt twin piston reciprocating type priming system capable of priming the pump from 7 meters in not more than 24 seconds when tested with the 100 mm suction hose at sea level & at NTP conditions.
- (b) The entire priming system shall be constructed in stainless steel construction and shall be actuated by an electromagnetic clutch. Arrangement shall be made to actuate the primer by pressing a single button only when it is needed, however the primers shall disengage automatically at a pump discharge pressure of not more than 0.8 bar. The primer deactivation shall be controlled directly by a pump pressure sensing device.

8. **BALANCED FOAM PROPORTIONING SYSTEM**

- (a) The pump shall be fitted with automatic balanced foam proportioning system made of Gunmetal/Stainless Steel supplied by the pump manufacturer i.e. Firefly make (or equivalent OEM), to be installed and tested on the pump. This system shall provide a water / foam solution at a guaranteed foam percentage, independent of the water flow rate. The proportional RTP (round the pump) shall automatically maintain the set percentages as the water flow varies. The system shall be suitable for all commercially available protein fluorocarbon and AFFF (aqueous film forming foam) compounds.
- (b) The system shall be based on round the pump foam system wherein water will be diverted from the pump body, and back to the suction tube, through an induction manifold, venturi action induces a constant percentage of foam concentrate into the water flow.
- (c) The system shall be designed to induce 1%, 3% or 6% of foam into the water flow (Class A foam at 1% and Class B foam at 3% or 6%) so that water/foam mixture can be available through the pump deliveries and monitor individually or simultaneously. The metering device shall be calibrated in such a way that it shall be able to induce 1%,3% or 6% of foam into the system as per the requirement. The proportional shall be installed in such a way that it will not be liable to mechanical or other failure and shall not have any external links or drives which are prone to wear and tear which may disturb the calibrated settings.
- (d) The system shall operate with water flow rates of 200 to 3000 lpm and shall supply the foam concentrate from the vehicle's foam tank or an external foam container.
- (e) Foam Proportioning System: Around the pump foam proportioning system with foam induction device duly calibrated for 1- 6% along with manual foam induction 5-point selector valve shall be provided near the pump.

**Note: The following piping shall be carried out by the pump installer for proper functioning of the system:**

- (i) The foam feed lines to the system shall be provided with control valves and a flushing connection for each foam feed.
- (ii) Non return valves shall be fitted to the foam inlets to prevent the possibility of water being back feed into the foam tanks when there is pressurized suction).



9. **PUMP COVER:** The fire pump installed should be covered by 'MCD' make/brand or equivalent shutter type window and the same is to be in such a way that it should not cover the foot rest at rear side i.e. the rear standing accommodation for crew should be free from any obstruction.

10. **POWER TAKE OFF UNIT (PTO):**

- (a) Brand new Power-take-off of Fire Hawk Make / VAS make should be provided. Power-Take-off (PTO) should be capable enough to transmit the required power to pump to perform the desired output as specified in EN-1028. Power-Take-off (PTO) torque should be compatible to run the Pumps having EN-1028 certified.
- (b) The Power Take Off unit shall be heavy duty and shall be able to transfer a throughput torque of 10,000 Nm (7200 lbft) maximum PTO torque at the pump end shall be between 700 to 1000Nm and the weight of the assembly shall not exceed 100kgs with its flanges fitted. The PTO shall have a desired input to output ratio, so as to keep the engine rpm within the maximum torque range specified by the chassis/engine manufacturer.
- (c) The main casing shall be made in light aluminium alloy and shall be heat treated for additional strength, the bearing holders however shall be made in cast iron, the gears shall be helical and shall be ground for noiseless operation. The gear shifting shall be of single lever type only and multiple linking to engage /disengage the pump side shall not be allowed. There shall be inbuilt self-locking arrangement to keep the unit firmly in the gear selected. The PTO shall have inbuilt water cooling arrangement to enable the usage of PTO in harsh environments on continuous basis.
- (d) The max. operating temperature of the oil shall not exceed 85 to 90-degree C when the PTO is tested for endurance test with cooling arrangement. The PTO unit shall have provision to judge the oil level reasonably and shall have be fitted with a magnetic drain plug along with breather and oil filter cap. Oil seals used shall be of highest quality and rotary seals / water slingers shall be used over & above the oil seals to prevent dust/water entering into the oil seals. The gear shifting shall be achieved pneumatically with the aid of vehicle's air tank and an illuminated indication shall be given near the driver to indicate the completion of PTO engagement. A rope type flexible manual over ride for gear shifting shall also be provided near the driver's seat in case of loss of air pressure. The design of the PTO shall be such that all the gears/oil seals/bearings etc on the drive and driven side can be removed from the casing in situ (without taking the PTO down from the vehicle), this is particularly important to reduce the down time of the vehicle under maintenance.
- (e) Operation/workshop maintenance manual depicting all the spares and dismantling/assembly procedure shall be supplied by the PTO manufacturer.



11. **COOLING SYSTEM:** Indirect cooling system of open circuit type consisting of a special heat exchanger shall be provided on the chassis to enable full power output during the pumping out without any overheating and hot water discharge.

12. **WATER CUM FOAM MONITOR:**

- (a) Water cum Foam monitor having capacity of 3000 LPM shall be mounted on the top of the vehicle between the driver cabin and water tank. There shall be suitable platform fabricated on the water tank covered with 4mm aluminium chequered plate for the operation of monitor. The monitor shall be TFT / Elkhart / POK / Akron make with nozzle having facility to change jet & spray operation at nozzle itself.
- (b) The monitor shall rotate 360 degree left and right and also move up and down. The monitor shall be made from light alloy and shall be hard coated from inside to avoid abrasion and corrosion. **Nozzle shall be Hard Teflon Coated and anodized so as to have 15% less friction, should have sliding O-ring seals, and resistant to wear and breakdown (chemicals, salt, corrosion). It's like anodizing on steroids.**
- (c) The monitor shall have horizontal reach of minimum 60 mtrs when supplied with water at a pressure of 8 kg/cm<sup>2</sup>. The monitor shall be flange mounted with 80 mm butterfly valve of AUDCO or L&T make provided at the bottom of monitor. The monitor pipeline shall be 'C' class galvanized pipe of 80 mm dia with suitable flanges. The monitor shall be hydrostatically tested to the pressure of 16 kg/cm<sup>2</sup>. The monitor pipeline shall be supported suitably to avoid vibrations and cracking.

13. **HIGH PRESSURE HOSE REEL:** One No. 20 mm x 30 meter length kink free high pressure wire braided hose reel, terminating in a high-pressure gun (being provided as per specifications at para 14 below). The same should have provisions for foam attachments, have working pressure of hose not less than 50 Kg/Cm<sup>2</sup> and shall be fitted at the rear of the vehicle along with facilitating the use of high pressure section of the fire pump. Plumbing between the pump and hose reel shall have clear and unobstructed waterway of not less than 25 mm throughout without any restriction. Hose reel to be provided with a mechanical hose rewinding arrangement with suitable handle for smooth / easy / effortless for securing of hose on hose reel after use.

14. **HIGH PRESSURE NOZZLE: - (M/s FIREFLY Make or equivalent)**

- (a) High pressure Fog / Jet Gun of Firefly Make or equivalent, with foam extension shall be made of high strength hard anodized light Aluminium Alloy. It shall be able to adjust the discharge jet pattern into four operational conditions: -
  - (i) Full Jet.
  - (ii) 30° Narrow Spray.
  - (iii) 60° Wide Spray.
  - (iv) 120° self-protection water shield.





- (b) The change over for different spray patterns shall be accomplished in split seconds merely by rotating the grip. The design of the gun shall allow the draining/flushing of the impurities up to 5.0 mm during operation. The gun shall have specially designed wear resistant stainless steel piston valve.
- (c) The gun shall have inbuilt shock absorbing abilities which shall absorb the water hammer effect to ensure safety to the hose, hose reel and the pump.
- (d) Flow Rate – In High Pressure mode not more than 120 LPM at 35 Kg/cm<sup>2</sup>.
- (e) Throwing range – up to 22-25 mtrs. (when operating with water only).
- (f) Inlet connection – Leak proof ball bearing type rotary coupling with ¾" BSP connection

15. **WATER & FOAM PIPING:** All piping shall be sized so as to have minimum pressure drop & achieve the required pressure & flow at various locations. All pipe fitting and valves shall be of anticorrosive material. All piping shall be designed for 10% over the maximum pressure encountered in the pipe. The piping shall be flanged for ease of maintenance. All lines shall be hydraulically tested at 1.5 times of the design pressure and in no case the test pressure shall not be below 18kg/Cm<sup>2</sup>. Proper support shall be provided for rigidity and avoid vibration of the lines. Lines less than 38mm size shall be socket welded and above 50mm size shall be butt welded with full penetration wells. The draw off pipe position in such a way that the sludge shall not pass on to foam piping. All bolting and complete piping shall be Cupro-Nickel as far as possible. If the same is not feasible due to any acceptable reason, the same are to be of SS 316 only. The CuNi piping shall be of composition of 'Copper – 70% & Nickel 30 %' for High pressure piping whereas 'Copper – 90% & Nickel 10 %' for others). The gauge for the piping shall be of 2.5 mm throughout.

16. **RAIN WATER DRAIN:** The tank top should be designed with slope so that no water stagnated on the aluminum sheet. Rain water / water, from washing on the tank top should drain easily through drain pipe. The U shape channel drain is also to be provided around driver's cabin so as the rain water is collected and drained towards the aft of the vehicle.

17. **PICKUP TUBE:** External connection for pick up tube assembly is to be provided to enable inducting foam liquid into the pump assembly.

18. **CONTROL PANELS:**

- (a) Pump operating control panel shall be adequately illuminated, spaced properly, marked for easy operation, lever operated valves made of CS with Teflon seats shall be provided at the rear side of fire tender. All other controls such as PA system, locker lights, search light etc., shall be provided in the cabin, which shall be within the reach of Driver's seat (if possible). Operating instruction plate (metallic) shall be marked on all control panels. The PA System shall be of Grand / Ahuja make.

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(b) The Systems of the vehicle are to be suitable labeled with SS tallies. Some of the Labels (but not limited to these only) are Level indication for water tank, foam tank, compound gauge, Normal pressure gauge, High pressure gauge, auxiliary throttle control for the engine, cooling water circuit control, Hydrant to Tank connection for water filling, delivery outlets of the pump along with blank cap and chain, suction inlet of pump with blank cap and chain, operating instruction plate; flushing out instruction plate, control for water tank to pump valve, control for flushing out piping, Pump to Hose reel, Hydrant to Hose reel, Pump to Monitor, Light point for pump panel, Drain valve, Foam Tank to pump, pump primer etc., and are to be fitted. The pump shall be fitted with Smart Control panel comprising following features:

- (i) Digital Pump hour meter.
- (ii) Analogue Vacuum (compound) gauge.
- (iii) Analogue Low and high pressure gauges.
- (iv) Oil temperature warning light.
- (v) Electronic Water tank & Foam level indicator.

19. **CONTROL PANELS:**

(a) Adequate illuminated pump operating control panel should be provided on the rear side of the Fire Tender. All controls of the system shall be spaced properly & marked for easy operation. All valves shall be of lever operated type and to be made of CS with Teflon seats. All controls like Electrical Siren, PA system should be provided at drivers cab in front of the Officer's Chair. All control panels shall have clearly written operating instruction plate.

(b) Further following instruments are also to be provided on rear side on/near control panel:

**Electronic Control Panel:**

7" TFT LCD Touch Screen Electronic Throttle Control with integrated Water and or Foam Level display shall have vehicles' CANBUS integration. The Panel shall govern and display Engine RPM and Pump Pressure with Auto-Idling interlock for Low Water Level. RPM operation shall be controlled by 3 numbers of separate 22 mm. IP65 push button illuminated switches for "RPM-Up, RPM-Down and IDLE" and IP65 Enclosure. Pump Service Alert shall be displayed. Display language in English for ease of operation. Control Panel shall be NABL approved IP65 certified.

(c) The Authority Letter from the OEM/Authorized Dealer shall be attached with the Technical Bid.

**(Note: The bidder should clearly mention the make & model of the equipment for the above application along with technical literature at the time of bidding along with OEM authorization letter).**



20. **BODY WORK AND STOWAGE:**

- (a) Cabin shall accommodate Officer, Driver with adjusting seats and 4 crew members seat in a suitable compartment without partition. The seats shall be of the wear & walk away type so that when the crew disembarks from the vehicle the BA sets shall easily come off the seats with them. The provision shall also be made to store BA Set / Cylinder on overhead area. Sufficient Hooks to be provided to Hang the Fire Suits / Helmets at the Cabin aft wall. The underneath of the seats shall provide box type storage arrangement.
- (b) 32 mm x 32 mm x 3 mm thick GI Square tubes for super structure of cabin, 10-gauge aluminum sheets for exterior paneling and 3mm thick aluminium chequered plate for on all lockers, 3 mm chequered plate for cabin floors and top roof shall be used. The superstructure of equipment locker shall be fabricated in corrosion free aluminum extrusion profile frame work with SS nut - bolt system and without welding. All lockers shall be labeled as per the drawing. Lockers shall be fitted with heavy duty "MCD" make brand shutters and lights for illumination during dark hours.
- (c) **Number / Types of Lockers:** The locker requirement is for stowing, carrying the 15 x 30 m long 3-layer delivery hose pipe rolls in two lockers on officer side, two lockers for carrying branch pipes, couplings, breechings (collecting, dividing), foam branch pipes, collecting heads, fireman axe etc. Stowing arrangement for the 15 hoses is to be provided in such a way that 06 Nos Hoses are stowed in flaked position, whereas the remaining 09 Hoses stowing arrangement is of rolled position type. Suitable Velcro / Other fitting are to be provided in all storing arrangement being fitted so as to secure the items firmly in position. One locker on officer side after Water tank for keeping miscellaneous items is to be provided. The Minor suggestion for modifications if any, as provided during inspection by MDL Reps are to be incorporated. All the lockers shall be provided lamps (LED) with switches near the lamp with master switch in driver's cabin.
- (d) **Water Tightness:** All lockers and cabin will be tested for water tightness / weather proofing. All the doors will be sealed by means of rubber beading.

21. **PUBLIC ADDRESS EQUIPMENT:** Battery operated Flat LED lighting bar with programmable flash patterns, multi tone hooters, mike / amplifier with loud speaker system shall be fitted with controls within the reach of driver's seat. Perimeter lights on left, right back side of fire tender shall be fitted in RED & BLUE LED with different programmable flash pattern as well as without flashing pattern whenever they are required to be used as working lights.

22. **LADDER GALLOWS:** Gallows shall be provided with locking system to carry a 10.5 m long trussed type aluminium extension ladder which can be released without difficulty from a reasonable accessible position, embedded with rollers to permit easy withdrawal by one man.



23. **STANDING SPACE FOR CREW WHILE ON MOVE:** Standing space will be provided at rear side of the tender for firemen having width of 430mm. Strong grab rails and supports to be provided at the rear side of the vehicle. The grab/hand rail should be of 38mm diameter fixed with outer body of the vehicle. The rails should be of corrugated / lined S.S material, to provide more strength and grip.

24. **FIXED LADDERS:** Fixed ladders of heavy duty stainless steel are to be provided at both sides (rear side) of the tender to reach tank top. The Ladder rungs should be lined by welding suitably to avoid slippage.

25. **ELECTRICAL SYSTEM:**

(a) Common fuse box shall be fitted in the driver's cabin at accessible location with spare fuse carrying facility. All the wiring shall be compatible with chassis wiring, fixed properly, not exposed to atmosphere, protected against heat, oil, physical injury and laid in conduits wherever necessary.

(b) All equipment's shall be fitted with individual lights controlled by a master switch located near driver's dash board and control for siren in front of driver's seat. Reverse light, reverse horn shall be fixed and guarded properly against damage. Two (02) Nos of fog lamps shall be fitted on front bumper. In situ trickle type battery charger and red pilot lamp when battery being charged from external supply shall be fitted.

(c) Tools required for normal routine maintenance i.e. 1 set Flood beam located at suitable location, tail lamps (stop and trail) - 1set, rear reflectors - 1 set, are to be provided.

(d) All wiring used, is to be of M/s Polycab make or equivalent.

26. **TRICKLE CHARGER:** Trickle charger having 01 No. capacity of 250 volts having capacity to charge 12 V battery along with pilot lamp to indicate whether the battery is being charged. This is required to be fitted at appropriate location on the water tender.

27. **FIRE BELL:** Hand operated 250 mm fire bell of brass material (electroplated) to be fitted at suitable place at the rear side of vehicle as per IS:928-1984.

28. **WORKMANSHIP AND FINISH:** All parts of the fire tender shall be of good workmanship and shall have streamlined finish. The fire tender shall be painted in fire red colour conforming to shade No.536 of IS: 5-1978\*. The paint shall conform to IS: 2932-1974. The fire tender shall be painted with Polyurethane Paint of Kapci / DUPONT or any equivalent make with thickness of 0.12 to 0.21 mm using double coat spray painting on outside. Two coats of anticorrosive (red oxide) primer shall be applied on the fire tender before painting in order to increase its life. Necessary certificates / documentation in respect of the paints used is to be produced / submitted. All the piping shall be painted red, foam piping yellow and water foam piping with yellow and red strip. Fire Tender shall be marked as mentioned below in bilingual format.



29. **PAINTING:** The cross members of driver cum crew cabin, rear body shall be painted with two coats of Anticorrosive paint. The complete external and internal aluminium paneling of driver cum crew cabin and rear body shall be painted with two coats of Aluminium primer paint. The internal painting of cabin lockers etc. shall be done with two coats of Grey Synthetic enamel paint made by ICI Dulux / Asian or any equivalent enamel paint. Necessary certificates / documentation in respect of the paints used is to be produced / submitted. The specified service lettering of "Mazagon Dock Shipbuilders Limited" in Hindi & English shall be painted on both sides of vehicle in "Golden Yellow" colour. Location of the lettering shall be confirmed with Mazagon Dock Shipbuilders Limited. The "LOGO" of the MDL shall be painted on both sides of vehicle in approved colours at suitable place in consultation with Mazagon Dock Shipbuilders Limited.

30. **MARKING:** The fire tender shall be clearly and permanently marked with the following, engraved on a SS metal plate attached in the driver's cabin and also near the pump operating control panel: -

- (a) Manufacturer's name & trade mark.
- (b) Year of Manufacture.
- (c) Capacity of Pump in LPM, Water & Foam tank in Liters.
- (d) Max. Pump running time @ 8Kg pressure with full fuel tank.
- (e) Flow Diagram for Water-Foam Piping separately.
- (f) Engine & Chassis Nos.
- (g) Tyre pressure to be maintained.

31. **INSTRUCTION BOOK, ACCESSORIES AND EQUIPMENT:** Instruction Book or Books – Three (03) sets of Instruction books for Equipment, Pump, PTO and accessories for the guidance of the user, including both operating and normal maintenance procedure shall be supplied. The book(s) shall include illustrated spare parts giving reference numbers of all bearing parts and components.

32. **SPECIFICATION AND DRAWINGS:** Full detailed specifications of the body, detailed drawing of the body, showing details of construction, water tank drawing showing baffles, valve arrangement, mounting arrangement, P.T.O. mounting drawing etc. are to be submitted by the vendor for approval prior commencing construction. The successful tenderer will have to submit three copies of detailed drawing showing detailed dimensions, stowage arrangement fittings, water tank, etc. which shall be approved by Mazagon Dock Shipbuilders Limited before commencement of fabrication work. The successful tenderer will also have to submit a 'Quality Assurance Plan' (QAP) for approval.

33. **R.T.O. REQUIREMENTS & INSURANCE:** The fire tender shall conform in all respect of the provisions contained in the M.V. Act 1988 and M.V. Rules 1989 or to any other statute modifications or re-enactments thereon from time to time. All the equipment necessary for RTO's clearance shall be provided on fire tender. Permanent registration of the vehicle shall be in the name of Mazagon Dock Shipbuilders Limited at RTO Mumbai by the bidder. Bidder shall provide Insurance for the above complete vehicle for a period of 365 days from the date of supply.



34. **WARRANTY:** The successful tenderer will have to furnish a maintenance guarantee, undertaking for service, repairs, replacement, maintenance etc. against any defects in the material used, body construction, Engine, Pump, P.T.O., Accessories etc. for 365 days commencing from the date of supply at MDL, on stamp paper. Also other equipment, material and material of construction or accessories original guarantee / warranty certificates shall be submitted separately.

35. **DELIVERY:** Delivery of the complete vehicle up to Mazagon Dock Shipbuilders Limited, Dockyard Road, Mumbai – 400010, is under the scope of supplier within 240 days after placement of order. The collection of the chassis from the dealer of chassis manufacturer shall also to be taken by tenderer directly after inspection by Mazagon Dock Shipbuilders Limited. The responsibility of vehicle will be upon the tenderer while vehicle is being transported and when under fabrication work.

36. **ACCEPTANCE TESTS:** The acceptance tests as per para 37 & 38 shall be undertaken to the complete satisfaction of MDL user dept without any extra cost. The design of the fire tender shall be such that it shall not affect the chassis characteristic as specified by the chassis manufacturer such as speed, turning circle, acceleration etc. Any modification in the chassis is not permitted. The stability of the tender shall be such that when under fully equipped & laden condition, if the surface on which the tender stands is tilted to either side, the point at which over turning occurs shall not pass at an angle of 27 degrees from horizontal. The rating of pump shall be as per Para 6. The priming shall be tested as per condition described in primer construction (Para 7). The bidder shall perform all in-house tests satisfactorily as per IS 10460-1983.

37. **FINAL ACCEPTANCE TEST / INSPECTION:**

- (a) Road test
- (b) Stability test
- (c) Pump test
- (d) Primer test
- (e) Water Foam Monitor
- (f) Hose Reel Performance Test
- (g) PTO
- (h) Equipment's / accessories test / inspection.

Note: During pump testing all water, diesel, foam compound used is also in the scope of vendor.

38. **INSPECTION STAGES:**

- (a) **1<sup>st</sup> Stage:** Chassis inspection at the dealer's venue.
- (b) **2<sup>nd</sup> Stage:** After completion of super structure, mounting of Pump, PTO and before mounting of tanks.
- (c) **3<sup>rd</sup> Stage:** Mounting of Water, Foam tanks, sheet metal work before painting.
- (d) **4<sup>th</sup> Stage:** Final inspection and acceptance tests.



39. **METALLIC SOP PLATES:** - Separate Standard Operating Procedures (SOPs) for each of the operation such as Operation of Pump Delivery, High Pressure Hose Reel, Monitor, Priming System, Foam System etc are to be provided and fitted near the pump. All the Valves / levers etc are to be serially marked with numbers for this purpose and step by step procedure should be clearly engraved on a metal sheet. The size of the Font should be clearly legible. A spare engraved plates are to be supplied along with the vehicle for future use.

40. **DIRECTIONAL ARROW MARKINGS** All the System pipelines are to be marked with arrows and suitable labels such as "To Tank", "From Tank", "To Monitor" etc are to be provided throughout the relevant pipings /systems.

41. **OEM / AUTHORISED DEALER AUTHORITY LETTERS:** - Bidder must submit OEM / Authorised Dealer Authority Letter mentioning the tender reference number confirming the specifications for the following Equipment: -

- (a) Engine & chassis.
- (b) Fire pump.
- (c) Power take off unit.
- (d) Water cum foam monitor.
- (e) High pressure nozzle.
- (f) Wiring.
- (g) Three layered firefighting delivery hose.
- (h) Fire Fighting Suit.
- (i) BA Sets.
- (j) Smoke Cutting Torch.

42. **LIST OF ACCESSORIES / EQUIPMENT'S TO BE SUPPLIED ALONG WITH THE FIRE TENDER VEHICLES ARE AS LISTED BELOW:**

<b><u>Sl. No.</u></b>	<b><u>Description</u></b>	<b><u>Qty</u></b>	<b><u>Unit</u></b>
(a)	Trussed Type Double Extension Ladder 10.5 Mtr.	1	No.
(b)	PVC heavy duty Suction Hose of 100 mm dia complete with copper alloy round thread Male female coupling to suit the pump inlet and strainer. Length - 7 mtr.	1	No.
(c)	<p><b><u>Three Layered Firefighting Delivery Hose of Following Specifications: -</u></b></p> <p><u>Technical Specification for Type -2 Elastomeric Outer Coating Rubber Lined Delivery Hose</u></p> <p>1. Under this contract, the successful tenderer has to comply to following Technical Specifications: - GENERAL</p> <p>a. Supplier should have OEM or authorize vendor of OEM and Inner lining shall be of EPDM which is generally smooth and practically free from pitting and outer coating of Elastomeric Rubber for protection against mildew and some oils.</p>	15	30 mtr Length each

*Q/mmp*

	<p>b. Externally applied elastomeric covering of the reinforcement shall be smooth and free from pitting and other imperfections.</p> <p>c. Instantaneous male/ female couplings of SS-304 shall conform to IS 903: 1993 (Latest amendments) with pull type lug on female coupling.</p> <p>d. Fire Fighting Delivery Hose (Type 2) shall confirm to relevant IS Standard i.e. IS 636 Type -2, UL and CE approved.</p> <p>e. Each fire hose shall be clearly and permanently marked as per relevant standards of UL and ISI</p> <ul style="list-style-type: none"> <li>• Type of the Hose</li> <li>• Size of the hose</li> <li>• Length of the Hose</li> <li>• Name of Manufacture or Trade mark or both</li> <li>• Month and Year of manufacture</li> <li>• The words "Service Test to ____ psig (kPa)," where ____ is the appropriate pressure BIS certification mark</li> <li>• Each length of Hose shall be marked with the Standard Mark.</li> </ul> <p>f. Each coupling shall be clearly and permanently marked with the following Information: -</p> <ul style="list-style-type: none"> <li>• Manufacturer's name and trade mark.</li> <li>• Size</li> <li>• Year of Manufacture.</li> <li>• Each coupling shall be marked with the BIS Standard.</li> </ul>	10	15 mtr length each
	<p>2. CHARACTERISTICS</p> <p>a. Fire Fighting Delivery Hose Internal Diameter shall be 63 millimetre ( 2 ½" )</p> <p>b. Material of Hose</p> <ul style="list-style-type: none"> <li>* Inner Lining Should be EPDM</li> <li>* Outer Coating Should be Elastomeric Coating – Reddish Colour</li> </ul> <p>c. Material of Male Female Coupling as per BIS 903- 1993 (Latest Amendments) Stainless Steel.</p> <p>d. Material of washer and seat washer Rubber washer conforming to IS 937:1981 or latest amendments</p>	10	5 mtr length each
	<p>3. HOSE TO COUPLING CONNECTIONS</p> <p>a. Copper wire (about 16 gauges) to be wound in double layer binding machine wound on Internal Diameter size pair of male and female parts.</p>	06	50 mtr Length each
	<p>4. Test for Fire Hose as per IS 636 (Latest amendments)</p> <p>a. Review mill test certificate for materials of Fire Hose &amp; Coupling as per specification</p> <p>5. Test for Coupling</p> <p>a. Hydraulic Test and Requirement of coupling should be as per IS 903:1993 (latest amendments)</p> <p>6. Documents to be submitted by the bidder along with the bid.</p> <p>a. BIS Approval Certificate along with CML License number, UL approval certificate along with File No, NABL Test Report for Hose &amp; Coupling.</p> <p>7. Documents to be submitted by the bidder along with the bid.</p> <ol style="list-style-type: none"> <li>1. Vendor shall submit Manufacture test certificate as evidence for having used materials for various components as per specifications</li> <li>2. BIS Approval Certificate along with CML License number</li> <li>3. UL Approval Certificate stating Elastomeric Outer Coating</li> </ol> <p><b>Total 41 in Nos Hoses are to be provided (of various lengths)</b></p>		
(d)	<p>Fire Fighting Suit of following Specifications: -</p> <p>NOMEX(R) firefighting suit of 3 layers consisting of jacket, trouser, gloves, boots and helmet as per below specifications: -</p> <p>(1) NOMEX(R) firefighting suit of 3 layers consist of jacket, trouser, gloves, boots and helmet.</p> <p>(2) Outer shell: NOMEX(R) rip stop construction for greater abrasion resistance</p> <p>(3) Moisture Barrier: Resistant to water penetration and liquid chemicals</p>	05	Nos.



	<p>(4) Thermal liner: FR felt attached to FR face cloth</p> <p>(5) Reflective Tape: Tested to EN 471</p> <p>(6) Standard: EN 469/NFPA</p> <p>(7) Style - Jacket</p> <ul style="list-style-type: none"> <li>* Two side pocket with flap and one radio pocket on chest</li> <li>* Front zipper extending to collar</li> <li>* Lace intact at waist</li> <li>* 5 CM wide retro- reflective trim, one trim around the chest, one trim around the waist and one trim each around the sleeves.</li> </ul> <p>(8) Trouser:</p> <ul style="list-style-type: none"> <li>* Pass through pocket on both sides</li> <li>* Fly zipper</li> <li>* Adjustable braces</li> <li>* Reflective trim near knees</li> <li>* Elastic intake on back</li> <li>* Fireman helmet - As per EN443</li> <li>* Fireman hand gloves - waterproof and fire resistant</li> <li>* Fireman boots - As per EN345-2</li> </ul> <p>(9) Size: Large/ Extra Large. Size chart for all fire suits as well as Fire Boots offered should be submitted. Sizes shall be chosen in consultation with MDL fire department prior to stitching.</p> <p>(10) Packing:</p> <ul style="list-style-type: none"> <li>i) Each complete suit including Coat, Gloves, Helmet, Boots shall be packed in a good quality aesthetically designed bag with zipper.</li> <li>ii) Stainless steel box with locking arrangement for stowage of each aesthetically designed bag.</li> </ul> <p>(11) Certificate of assurance from the fabric/fibre/raw material manufacturer i.e. Brand owner of outer shell fabric as well as Moisture Barrier lining should also be submitted regarding genuinity of the raw material used by the Vendor/OEM for the manufacture of offered Fire Suit model.</p> <p>(12) Mannequin Burn Test Report for the offered model of Fire Coat and Trouser showing less than 33% burn injury for extreme flame testing process.</p> <p>(13) Test certificate of cloth to be submitted from lab shall have 11B.</p> <p>(14) Obtain approval of user department for:</p> <ul style="list-style-type: none"> <li>(a) Sample of cloth NOMEX(R) prior to stitching</li> <li>(b) Sample after stitching the fire suit.</li> </ul>		
(e)	<p>BA Sets of following Specifications: -</p> <p>Make: Interspiro</p> <p>Model: SPIROMATIC 90 U,</p> <p>STANDARDS- EN 137 Type 2, Make Body - Natural Rubber, Inner Mask - Natural Rubber, Visor - Heat Resistant Polycarbonate, Breathing Valve - Heat Resistant Polyamide, Membrane - Natural Rubber, Cylinder - Composite</p>	05	No.



	CYLINDER -Single 6 – liter, 300 bar, Composite cylinder, Dimensions (h/w /d) 200 / 600 / 300mm, Weight 4.5kg  Note: OEM to Commission the All Ba Sets at MDL, Mumbai (for user dept).		
(f)	Suction strainer for item (see IS:907/65-7)	1	No.
(g)	Dividing Breaching made of light alloy (see IS:5131-1969-9)	1	Nos.
(h)	Suction Wrench (IS:4643-1968)	2	Pair
(i)	Long line, 06 mm circumference, 150 m long , Polypropylene	1	Lengths
(j)	Long line, 12 mm circumference, 150 m long , Polypropylene	2	Lengths
(k)	Hose Bandages, rubberized [see IS:5612 (Part-1)-1977-13]	6	Nos.
(l)	Hydrant valve key & bar [see IS:910/80-15]	4	Set
(m)	Adaptor double female inst. Pattern 63mm	2	Nos.
(n)	Adaptor double female inst. Pattern 38 mm	2	Nos.
(o)	Adaptor double male inst. Pattern 63mm	2	Nos.
(p)	Adaptor double male inst. Pattern 38 mm	2	Nos.
(q)	First aid box for 10 persons	1	No.
(r)	Rubber gloves (in case) [see IS:4770/68-19]	15	Pairs
(s)	Axe large [see IS:703/1966-20]	5	No.
(t)	Crow bar [see IS:704/1968-22]	5	No.
(u)	Sledge Hammer, 6.5kg [see IS:841/68-23]	5	No.
(v)	Screw Jack - 20 ton	1	No.
(w)	Fire Hook [see IS:927/1981-25]	5	Nos.
(x)	Tool kit - Bosch GSB 550 Mechanical Kit Professional	2	Nos.
(y)	Stretcher (Latest)	02	Nos.
(z)	Telescopic Metallic Fire Hook, Light Weight, minimum length – 3.5 Mtrs	02	Nos.
(aa)	Spare Locks for all the doors	01	Set
(ab)	Spare Metallic SOP plates	01	Set
(ac)	<b>Smoke Cutting Torch</b> of following Specifications: -  Body shall be made of Polycarbonate which is resistant to flame, heat and shock. Shall have laser pointer. Min. power output 10W with 1300 lumens. 3 Modes light control high/middle/low having rechargeable battery pack with battery power remaining indicator. Beam distance shall be min 300m. The torch shall have a hard metal yellow protruding part to penetrating smoke and break the window for escaping. Torch shall have one self-defense alarm function & rescue alarm function, if the user does not move for 10-15 sec it shall send rescue signals with strong flashing lights and alarm sound of 90dB. Battery capacity shall be min. 2,600mah with using time 1.5hr to 8hrs. IP67 approved. The Bidder must upload OEM / Authorised Dealer Authority Letter mentioning the tender reference number confirming the specifications as mentioned above	05	Nos.



**Confirmation of being manufacturer of offered product  
(Compliance to Serial no. xiii (m) (i) of Para 4 of General Terms and Conditions on GeM) – To be  
submitted by MSE bidders.**

M/s. ....

Sr. No.	Item Description	Whether Manufacturer of Offered Product (Yes / No)
1	Design, Fabrication, testing, Commissioning and Supply of Multipurpose Fire Tender (Water & Foam) along with supply of equipment's & Accessories as per details mentioned in the Technical specification/Gem bid.	

**Note:**

1. As per Serial no. xiii (m) (i) of Para 4 of General Terms and Conditions on GeM, EMD exemption is applicable for those offered items of which the MSE bidder is a manufacturer. For the remaining products/items, MSE bidder shall not be eligible for exemption of EMD.
2. Above confirmation shall be duly filled (Yes or No) for each item by the bidder and it shall be uploaded along with the Part 1 bid.
3. Each page to be duly signed with stamp by bidder's authorized representative.

Person

Signature & Stamp of Authorized

**Enclosure-3**

**Certificate from principal manufacture  
(applicable for Non OEM bidders)**

**Ref. ATC Clause No. 4 (a) (iii)**

M/s. .... confirms that we are original manufacture of the tendered item vide **GeM Tender GEM/2025/B/6765488** and agree to supply the tendered items as per TSP within 240 days from the GeM contract.

Signature & Stamp of Bidder

OEM

Signature & Stamp of

**Official Secret Act 1923**  
(ILLUSTRATIVE FORMAT)

**SECTION 2(B) : "PROHIBITED PLACE"**

It is defined as the place of any work of Defence Dockyard and other so belonging or occupied and used for the purpose of building, repairing, making or storing any ammunitions of war. For the purpose of the above definition, sketch includes any photograph or other mode of representing any place or thing.

**SECTION 3 : "PENALTIES FOR SPYING"**

If any per unlawfully –

- a) approaches, inspects, passes over or is in the vicinity of any clear place; or
- b) make any sketches intended to be directly or indirectly useful to an enemy; or
- c) obtains, collects, records or communicates to any other person any secret official code.

Shall be liable for imprisonment of 14 years in case of Defence Installation.

**SECTION 4 : "COMMUNICATION WITH FOREIGN AGENTS"**

If Any person has been in communication with or attempted to communicate with foreign agents regarding the vital information of any "PROHIBITED PLACE" would be guilty of violating the provisions of this Act.

**SECTION 5 : "WRONGFUL COMMUNICATION OF INFORMATION"**

If any person having in his possession or control any official document;

a) Willfully communicates to any person, other than a person, who is authorised to communicate it.

b) Used the information in his possession for the benefit of any foreign power.

c) Retain in his possession when he has no power to retain it

d) Fails to take reasonable care of it. Shall be guilty of an offence under this Act.

**SECTION 6 : "UNAUTHORISED USE OF UNIFORMS"**

If any person for the purpose of gaining admission or of assisting any other person to gain admission to a "PROHIBITED PLACE" wears uniforms without lawful authority shall be guilty of offence under this Section.

**SECTION 7 : "INTERFERING WITH OFFICERS OF POLICE"**

No person in the vicinity of any "PROHIBITED PLACE" shall abstract any Police Officer engaged on guard, sentry or similar duty. If any person move in the provisions of this section, shall be punishable with imprisonment, which may extend up to 3 years.

**SECTION 8 : "DUTY OF GIVING INFORMATION"**

It shall be duty of every person to give on demand to a superintendent of Police or any other Police Officer not below the rank of Inspector, any information in his power relating to an offence under this Act. If any person fails to give such information, shall be punishable with imprisonment to 3 years or fine or with both.

**SECTION 9 : "INCITEMENT"**

Any person who attempts to commit or debate the commission of an offence under this Act shall be punishable with the same punishment and be liable to be proceeded against in the same manner as if he had committed such offence.

**SECTION 10 : "PENALTY FOR HARBOURING SPIES"**

If any person whom he knows or has reasonable grounds for supposing to be person who is about to commit or who has committed offence under this Act shall be guilty of offence under this Section.

**SECTION 11 : "SEARCH WARRANTS"**

If a presidency Magistrate, Magistrate First Class or Sub-Divisional magistrate is satisfied with the information that there is reasonable ground for suspecting that an offence under this Act has been

or is about to be committed, he may grant search warrant to any Police Officer to enter at any time any premises to force to search premises or the places.

**Enclosure-5**

**Turnover Detail**

S.No	Financial Years	Turnover Amount (INR)	Relevant document to be attached (Yes/No)
1	FY 2021-2022		
2	FY 2022-2023		
3	FY 2023-2024		

**NOTE:** - It shall be as per the annual report (audited balance sheet and profit and loss account) of the relevant period, duly authenticated by a Chartered Accountant/Cost Accountant in India or equivalent in relevant countries.

For details refer Commercial Pre-qualification under ATC in GEM Bid.

**Signature & Stamp of the Authorized Person of bidder**

No. P-45021/2/2017-PP (BE-II)-Part(4)Vol.II  
Government of India  
Ministry of Commerce and Industry  
Department for Promotion of Industry and Internal Trade  
(Public Procurement Section)

Vaniya Bhawan, New Delhi  
Dated: 19 July, 2024

To

All Central Ministries/Departments/CPSUs/All concerned

**ORDER**

**Subject: Public Procurement (Preference to Make in India), Order 2017–  
Revision; regarding.**

Department for Promotion of Industry and Internal Trade, in partial modification [Paras 2, 3, 5, 10 & 13] of Order No.P-45021/2/2017-B.E.-II dated 15.6.2017 as amended by Order No.P-45021/2/2017-B.E.-II dated 28.05.2018, Order No.P-45021/2/2017-B.E.-II dated 29.05.2019, Order No.P-45021/2/2017-B.E.-II dated 04.06.2020 and Order No.P-45021/2/2017-B.E.-II dated 16.09.2020 hereby issues the revised 'Public Procurement (Preference to Make in India), Order 2017' dated 19.07.2024 effective with immediate effect.

**Whereas** it is the policy of the Government of India to encourage 'Make in India' and promote manufacturing and production of goods and services in India with a view to enhancing income and employment, and

**Whereas** procurement by the Government is substantial in amount and can contribute towards this policy objective, and

**Whereas** local content can be increased through partnerships, cooperation with local companies, establishing production units in India or Joint Ventures (JV) with Indian suppliers, increasing the participation of local employees in services and training them,

**Now therefore the following Order is issued:**

1. This Order is issued pursuant to Rule 153 (iii) of the General Financial Rules 2017.
2. **Definitions:** For the purposes of this Order:  
'Local content' means the amount of value added in India which shall, unless otherwise prescribed by the Nodal Ministry, be the total value of the item procured (excluding net domestic indirect taxes) minus the value of imported content in the item (including all customs duties) as a proportion of the total value, in percent.

**Explanatory notes for calculation of local content given above**

- a. Imported items sourced locally from resellers/distributors shall be excluded from calculation of local content.
- b. The license fees/royalties paid/ technical charges paid out of India shall be excluded from local content calculation.

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- c. Procurement/Supply of repackaged/refurbished/rebranded imported products as understood commonly shall be treated as reselling of imported products and shall be excluded from calculation of local content. The definition of repackaged/refurbished/rebranded imported products is as follows;

'Refurbishing' means repair or reconditioning of an imported product does not amount to manufacture because no new goods come into existence.

'Repackaging' means repacking of imported goods from bulk pack to smaller packs would not ordinarily amount to manufacture of a new item.

'Rebranding' means relabeling or renaming or change in symbol or logo/makes or corporate image of a company/organization/ firm for an imported product would amount to rebranding.

- d. To ensure that imported items sourced locally from resellers/distributors are excluded from calculation of local content, procuring entities to obtain from bidders, the cost of such locally-sourced imported items (Inclusive of taxes) along with break-up on license/royalties paid/technical expertise cost etc. sourced from outside India. For items sold by bidder as reseller, OEM certificate for country of origin to be submitted.
- e. For contracts involving supply of multiple items, weighted average of all items to be taken while calculating the local content.

'Class-I local supplier' means a supplier or service provider, whose goods, services or works offered for procurement, meets the minimum local content as prescribed for 'Class-I local supplier' under this Order.

'Class-II local supplier' means a supplier or service provider, whose goods, services or works offered for procurement, meets the minimum local content as prescribed for 'Class-II local supplier' but less than that prescribed for 'Class-I local supplier' under this Order.

'Non - Local supplier' means a supplier or service provider, whose goods, services or works offered for procurement, has local content less than that prescribed for 'Class-II local supplier' under this Order.

'L1' means the lowest tender or lowest bid or the lowest quotation received in a tender, bidding process or other procurement solicitation as adjudged in the evaluation process as per the tender or other procurement solicitation.

'Margin of purchase preference' means the maximum extent to which the price quoted by a "Class-I local supplier" may be above the L1 for the purpose of purchase preference.

'Nodal Ministry' means the Ministry or Department identified pursuant to this order in respect of a particular item of goods or services or works.

'Procuring entity' means a Ministry or department or attached or subordinate office of, or autonomous body controlled by, the Government of India and includes Government companies as defined in the Companies Act.



'Works' means all works as per Rule 130 of GFR- 2017, and will also include 'turnkey works'.

**2A. Special treatment for items covered under PLI Scheme**

The manufacturers manufacturing an item under PLI scheme shall be treated as deemed Class II local supplier for that item unless they have minimum local content equal to or higher than that notified for Class-I local supplier for that item, provided the manufacturer has received incentive from the concerned PLI Ministry for the item. The above shall be applicable for the specific time period only, as notified by concerned PLI Ministry.

**3. Eligibility of 'Class-I local supplier'/ 'Class-II local supplier'/ 'Non-local suppliers' for different types of procurement**

(a) In procurement of all goods, services or works in respect of which the Nodal Ministry / Department has communicated that there is sufficient local capacity and local competition, only 'Class-I local supplier', as defined under the Order, shall be eligible to bid irrespective of purchase value.

(b) Only 'Class-I local supplier' and 'Class-II local supplier', as defined under the Order, shall be eligible to bid in procurement undertaken by procuring entities, except when Global tender enquiry has been issued. In global tender enquiries, 'Non-local suppliers' shall also be eligible to bid along with 'Class-I local suppliers' and 'Class-II local suppliers'. In procurement of all goods, services or works, not covered by sub-para 3(a) above, and with estimated value of purchases less than Rs. 200 Crore, in accordance with Rule 161(iv) of GFR, 2017, Global tender enquiry shall not be issued except with the approval of competent authority as designated by Department of Expenditure.

(c) For the purpose of this Order, works includes Engineering, Procurement and Construction (EPC) contracts and services include System Integrator (SI) contracts.

**3.1 Mandatory sourcing of items, with sufficient local capacity and competition, from Class-I local suppliers in SI/EPC/Turnkey Contracts/Service Tenders**

- a. The items, notified as having sufficient local capacity and competition, shall mandatory be sourced from Class-I local suppliers in SI/EPC/Turnkey Contracts/ Services tenders. This provision will be applicable only for those items which have been notified by the Nodal Ministry as Class I i.e. having sufficient local capacity and competition, with specific HSN codes."
- b. Notwithstanding above, if in any project, it is considered that it is not practically feasible to source such items from Class I local suppliers, it may take relaxation from such stipulation with the approval of Secretary of the administrative Ministry/ Department concerned or with the approval of the Competent Authority specified by the Administrative Ministry/Department, on case-specific basis.

**3A. Purchase Preference**

(a) Subject to the provisions of this Order and to any specific instructions issued by the Nodal Ministry or in pursuance of this Order, purchase preference shall be given to 'Class-I local supplier' in procurement undertaken by procuring entities in the manner specified here under.

(b) In the procurement of goods or works, which are covered by para 3(b)

above and which are divisible in nature, the 'Class-I local supplier' shall get purchase preference over 'Class-II local supplier' as well as 'Non-local supplier', as per following procedure:

- i. Among all qualified bids, the lowest bid will be termed as L1. If L1 is 'Class-I local supplier', the contract for full quantity will be awarded to L1.
  - ii. If L1 bid is not a 'Class-I local supplier', 50% of the order quantity shall be awarded to L1. Thereafter, the lowest bidder among the 'Class-I local supplier' will be invited to match the L1 price for the remaining 50% quantity subject to the Class-I local supplier's quoted price falling within the margin of purchase preference, and contract for that quantity shall be awarded to such 'Class-I local supplier' subject to matching the L1 price. In case such lowest eligible 'Class-I local supplier' fails to match the L1 price or accepts less than the offered quantity, the next higher 'Class-I local supplier' within the margin of purchase preference shall be invited to match the L1 price for remaining quantity and so on, and contract shall be awarded accordingly. In case some quantity is still left uncovered on Class-I local suppliers, then such balance quantity may also be ordered on the L1 bidder.
- (c) In the procurement of goods or works, which are covered by para 3(b) above and which are not divisible in nature, and in procurement of services where the bid is evaluated on price alone, the 'Class-I local supplier' shall get purchase preference over 'Class-II local supplier' as well as 'Non-local supplier', as per following procedure:
- i. Among all qualified bids, the lowest bid will be termed as L1. If L1 is Class -I local supplier', the contract will be awarded to L1.
  - ii. If L1 is not 'Class-I local supplier', the lowest bidder among the 'Class-I local supplier', will be invited to match the L1 price subject to Class-I local supplier's quoted price falling within the margin of purchase preference, and the contract shall be awarded to such 'Class-I local supplier' subject to matching the L1 price.
  - iii. In case such lowest eligible 'Class-I local supplier' fails to match the L1 price, the 'Class-I local supplier' with the next higher bid within the margin of purchase preference shall be invited to match the L1 price and so on and contract shall be awarded accordingly. In case none of the 'Class-I local supplier' within the margin of purchase preference matches the L1 price, the contract may be awarded to the L1 bidder.
- (d) "Class-II local supplier" will not get purchase preference in any procurement, undertaken by procuring entities.

**3B. Applicability in tenders where contract is to be awarded to multiple bidders-** In tenders where contract is awarded to multiple bidders subject to matching of L1 rates or otherwise, the 'Class-I local supplier' shall get purchase preference over 'Class-II local supplier' as well as 'Non-local supplier', as per following procedure:

- a. In case there is sufficient local capacity and competition for the item to be procured, as notified by the nodal Ministry, only Class I local suppliers shall be eligible to bid. As such, the multiple suppliers, who would be awarded the contract, should be all and only 'Class I Local suppliers'.
- b. In other cases, 'Class II local suppliers' and 'Non local suppliers' may also participate in the bidding process along with 'Class I Local suppliers' as per provisions of this Order.
- c. If 'Class I Local suppliers' qualify for award of contract for at least



50% of the tendered quantity in any tender, the contract may be awarded to all the qualified bidders as per award criteria stipulated in the bid documents. However, in case 'Class I Local suppliers' do not qualify for award of contract for at least 50% of the tendered quantity, purchase preference should be given to the 'Class I local supplier' over 'Class II local suppliers'/'Non local suppliers' provided that their quoted rate falls within 20% margin of purchase preference of the highest quoted bidder considered for award of contract so as to ensure that the 'Class I Local suppliers' taken in totality are considered for award of contract for at least 50% of the tendered quantity.

- d. First purchase preference has to be given to the lowest quoting 'Class-I local supplier', whose quoted rates fall within 20% margin of purchase preference, subject to its meeting the prescribed criteria for award of contract as also the constraint of maximum quantity that can be sourced from any single supplier. If the lowest quoting 'Class-I local supplier', does not qualify for purchase preference because of aforesaid constraints or does not accept the offered quantity, an opportunity may be given to next higher 'Class-I local supplier', falling within 20% margin of purchase preference, and so on.
  - e. To avoid any ambiguity during bid evaluation process, the procuring entities may stipulate its own tender specific criteria for award of contract amongst different bidders including the procedure for purchase preference to 'Class-I local supplier' within the broad policy guidelines stipulated in sub- paras above.
4. **Exemption of small purchases:** Notwithstanding anything contained in paragraph 3, procurement where the estimated value to be procured is less than Rs. 5 lakhs shall be exempt from this Order. However, it shall be ensured by procuring entities that procurement is not split for the purpose of avoiding the provisions of this Order.

**4A. Exemption in sourcing of spares and consumables of closed systems:**

Procurement of spare parts, consumables for closed systems and Maintenance/ Service contracts with Original Equipment Manufacturer/Original Equipment Supplier/Original Part Manufacturer shall be exempted from this Order.

5. **Minimum local content:** The 'local content' requirement to categorize a supplier as 'Class-I local supplier' is minimum 50%. For 'Class-II local supplier', the 'local content' requirement is minimum 20%. Nodal Ministry/ Department may prescribe only a higher percentage of minimum local content requirement to categorize a supplier as 'Class-I local supplier'/'Class- II local supplier'. For the items, for which Nodal Ministry/ Department has not prescribed higher minimum local content notification under the Order, it shall be 50% and 20% for 'Class-I local supplier'/'Class-II local supplier' respectively.
6. **Margin of Purchase Preference:** The margin of purchase preference shall be 20%.
7. **Requirement for specification in advance:** The minimum local content, the margin of purchase preference and the procedure for preference to Make in India shall be specified in the notice inviting tenders or other form of procurement solicitation and shall not be varied during a particular procurement transaction.
8. **Government E-marketplace:** In respect of procurement through the Government E-marketplace (GeM) shall, as far as possible, specifically mark the items which meet the minimum local content while registering the item for

display, and shall, wherever feasible, make provision for automated comparison with purchase preference and without purchase preference and for obtaining consent of the local supplier in those cases where purchase preference is to be exercised.

**9. Verification of local content:**

- a. The 'Class-I local supplier'/'Class-II local supplier' at the time of tender, bidding or solicitation shall be required to indicate percentage of local content and provide self-certification that the item offered meets the local content requirement for 'Class-I local supplier'/'Class-II local supplier', as the case may be. They shall also give details of the location(s) at which the local value addition is made.
- b. In cases of procurement for a value in excess of Rs. 10 crores, the 'Class-I local supplier'/'Class-II local supplier' shall be required to provide a certificate from the statutory auditor or cost auditor of the company (in the case of companies) or from a practicing cost accountant or practicing chartered accountant (in respect of suppliers other than companies) giving the percentage of local content.
- c. The bidder shall give self-certification for local content in the quoted item (goods/works/services) at the time of tendering. However, at the time of execution of the project, for all contracts above INR 10 Crore, the contractor/ supplier shall be required to give local content certification duly certified by cost/ chartered accountant in practice. For cases where it is not possible to provide certification by Cost/Chartered Accountant at the time of execution of project, the supplier shall be permitted to provide the certificate for local content from Cost/ Chartered Accountant after completion of the contract, within time limit acceptable to the procuring entity. In case the contractor/ supplier does not meet the stipulated local content requirement and the category of the supplier changes from Class-I to Class-II/ Non-local or from Class-II to Non-local, a penalty upto 10% of the contract value may be imposed. However, contract once awarded shall not be terminated on this account.
- d. Decisions on complaints relating to implementation of this Order shall be taken by the competent authority which is empowered to look into procurement-related complaints relating to the procuring entity.
- e. Nodal Ministries may constitute committees with internal and external experts for independent verification of self-declarations and auditor's/ accountant's certificates on random basis and in the case of complaints.
- f. Nodal Ministries and procuring entities may prescribe fees for such complaints.
- g. False declarations will be in breach of the Code of Integrity under Rule 175(1)(i)(h) of the General Financial Rules for which a bidder or its successors can be debarred for up to two years as per Rule 151 (iii) of the General Financial Rules along with such other actions as may be permissible under law.
- h. A supplier who has been debarred by any procuring entity for violation of this Order shall not be eligible for preference under this Order for procurement by any other procuring entity for the duration of the debarment. The debarment for such other procuring entities shall take effect prospectively from the date on which it comes to the notice of other procurement entities, in the manner prescribed under paragraph 9

i below.

- i. The Department of Expenditure shall issue suitable instructions for the effective and smooth operation of this process, so that:
  - i. The fact and duration of debarment for violation of this Order by any procuring entity are promptly brought to the notice of the Member-Convenor of the Standing Committee and the Department of Expenditure through the concerned Ministry /Department or in some other manner;
  - ii. On a periodical basis such cases are consolidated and a centralized list or decentralized lists of such suppliers with the period of debarment is maintained and displayed on website(s);
  - iii. In respect of procuring entities other than the one which has carried out the debarment, the debarment takes effect prospectively from the date of uploading on the website(s) in the such a manner that ongoing procurement are not disrupted.

**10. Specifications in Tenders and other procurement solicitations:**

- a. Every procuring entity shall ensure that the eligibility conditions in respect of previous experience fixed in any tender or solicitation do not require proof of supply in other countries or proof of exports.
- b. Procuring entities shall endeavour to see that eligibility conditions, including on matters like turnover, production capability and financial strength do not result in unreasonable exclusion of 'Class-I local supplier' / 'Class-II local supplier' who would otherwise be eligible, beyond what is essential for ensuring quality or creditworthiness of the supplier.
- c. Procuring entities shall, within 2 months of the issue of this Order review all existing eligibility norms and conditions with reference to sub-paragraphs 'a' and 'b' above.
- d. **Reciprocity Clause**
  - i. When a Nodal Ministry/Department identifies that Indian suppliers of an item are not allowed to participate and/ or compete in procurement by any foreign government, due to restrictive tender conditions which have direct or indirect effect of barring Indian companies such as registration in the procuring country, execution of projects of specific value in the procuring country etc., it shall provide such details to all its procuring entities including CMDs/CEOs of PSEs/PSUs, State Governments and other procurement agencies under their administrative control and GeM for appropriate reciprocal action.
  - ii. Entities of countries which have been identified by the nodal Ministry/Department as not allowing Indian companies to participate in their Government procurement for any item related to that nodal Ministry shall not be allowed to participate in Government procurement in India for all items related to that nodal Ministry/ Department, except for the list of items published by the Ministry/ Department permitting their participation.
  - iii. The stipulation in (ii) above shall be part of all tenders invited by the Central Government procuring entities stated in (i) above. All purchases on GeM shall also necessarily have the above provisions for items identified by nodal Ministry/ Department.
  - iv. State Governments should be encouraged to incorporate similar provisions in their respective tenders.
  - v. The term 'entity' of a country shall have the same meaning as under the FDI Policy of DPIIT as amended from time to time.
- e. Specifying foreign certifications/ unreasonable technical specifications/





brands/ models in the bid document is restrictive and discriminatory practice against local suppliers. If foreign certification is required to be stipulated because of non-availability of Indian Standards and/or for any other reason, the same shall be done only after written approval of Secretary of the Department concerned or any other Authority having been designated such power by the Secretary of the Department concerned.

- f. "All administrative Ministries/Departments whose procurement exceeds Rs. 1000 Crore per annum shall notify/update their procurement projections every year, including those of the PSEs/PSUs, for the next 5 years on their respective website."

**10A. Action for non-compliance of the Provisions of the Order:** In case restrictive or discriminatory conditions against domestic suppliers are included in bid documents, an inquiry shall be conducted by the Administrative Department undertaking the procurement (including procurement by any entity under its administrative control) to fix responsibility for the same. Thereafter, appropriate action, administrative or otherwise, shall be taken against erring officials of procurement entities under relevant provisions. Intimation on all such actions shall be sent to the Standing Committee.

11. **Assessment of supply base by Nodal Ministries:** The Nodal Ministry shall keep in view the domestic manufacturing / supply base and assess the available capacity and the extent of local competition while identifying items and prescribing the higher minimum local content or the manner of its calculation, with a view to avoiding cost increase from the operation of this Order.
12. **Increase in minimum local content:** The Nodal Ministry may annually review the local content requirements with a view to increasing them, subject to availability of sufficient local competition with adequate quality.
13. **Manufacture under license/ technology collaboration agreements with phased indigenization:** While notifying the minimum local content, Nodal Ministries may make special provisions for exempting suppliers from meeting the stipulated local content if the product is being manufactured in India under a license from a foreign manufacturer who holds intellectual property rights and where there is a technology collaboration agreement / transfer of technology agreement for indigenous manufacture of a product developed abroad with clear phasing of increase in local content.

13A. In procurement of all goods, services or works in respect of which there is substantial quantity of public procurement and for which the nodal ministry has not notified that there is sufficient local capacity and local competition, the concerned nodal ministry shall notify an upper threshold value of procurement beyond which foreign companies shall enter into a joint venture with an Indian company to participate in the tender. Procuring entities, while procuring such items beyond the notified threshold value, shall prescribe in their respective tenders that foreign companies may enter into a joint venture with an Indian company to participate in the tender. The procuring Ministries/Departments shall also make special provisions for exempting such joint ventures from meeting the stipulated minimum local content requirement, which shall be increased in a phased manner.

14. **Powers to grant exemption and to reduce minimum local content:** The administrative Department undertaking the procurement (including

procurement by any entity under its administrative control), with the approval of their Minister-in-charge, may by written order, for reasons to be recorded in writing,

- a. reduce the minimum local content below the prescribed level; or
- b. reduce the margin of purchase preference below 20%; or
- c. exempt any particular item or supplying entities from the operation of this Order or any part of the Order.

The Administrative Department, while seeking exemption under this para, shall certify that such an item(s) has not been notified by Nodal Ministry/ Department concerned under para 3 (a) of the Order.

A copy of every such order shall be provided to the Standing Committee and concerned Nodal Ministry / Department. The Nodal Ministry / Department concerned will continue to have the power to vary its notification on Minimum Local Content.

15. **Directions to Government companies:** In respect of Government companies and other procuring entities not governed by the General Financial Rules, the administrative Ministry or Department shall issue policy directions requiring compliance with this Order.
16. **Standing Committee:** A standing committee is hereby constituted with the following membership:  
Secretary, Department for Promotion of Industry and Internal Trade - Chairman  
Secretary, Commerce—Member  
Secretary, Ministry of Electronics and Information Technology—Member Joint  
Secretary (Public Procurement), Department of Expenditure—Member Joint  
Secretary (DPIT)—Member-Convenor

The Secretary of the Department concerned with a particular item shall be a member in respect of issues relating to such item. The Chairman of the Committee may co-opt technical experts as relevant to any issue or class of issues under its consideration.

17. **Functions of the Standing Committee:** The Standing Committee shall meet as often as necessary, but not less than once in six months. The Committee
  - a. shall oversee the implementation of this order and issues arising therefrom, and make recommendations to Nodal Ministries and procuring entities.
  - b. shall annually assess and periodically monitor compliance with this Order
  - c. shall identify Nodal Ministries and the allocation of items among them for issue of notifications on minimum local content
  - d. may require furnishing of details or returns regarding compliance with this Order and related matters
  - e. may, during the annual review or otherwise, assess issues, if any, where it is felt that the manner of implementation of the order results in any restrictive practices, cartelization or increase in public expenditure and suggest remedial measures
  - f. may examine cases covered by paragraph 13 above relating to manufacture under license/ technology transfer agreements with a view to satisfying itself that adequate mechanisms exist for enforcement of such agreements and for attaining the underlying objective of progressive indigenization

g. may consider any other issue relating to this Order which may arise.

18. **Removal of difficulties:** Ministries /Departments and the Boards of Directors of Government companies may issue such clarifications and instructions as may be necessary for the removal of any difficulties arising in the implementation of this Order.
19. **Ministries having existing policies:** Where any Ministry or Department has its own policy for preference to local content approved by the Cabinet after 1<sup>st</sup> January 2015, such policies will prevail over the provisions of this Order. All other existing orders on preference to local content shall be reviewed by the Nodal Ministries and revised as needed to conform to this Order, within two months of the issue of this Order.
20. **Transitional provision:** This Order shall not apply to any tender or procurement for which notice inviting tender or other form of procurement solicitation has been issued before the issue of this Order.



(Himani Pande)

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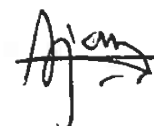
**Enclosure-9**

## 1. Scope of Work:

- To develop consciousness and to create an awareness amongst the sub-contractor and their employees/workman regarding the general procedures and practices for safe conduct of their work at all times.
- This brings out procedures, standard practices etc. and would serve as the reference material to all Sub-Contractors.
- This document is only for providing guidance to the sub-contractors and does not replace the safety rules detailed in Factory Acts 1948 and Maharashtra Factory Rule 1963 as amended till date.

## 2. General Safety Guidelines:

- 1.1 The Contractor shall ensure that his employees/workmen subject themselves to medical examinations required under the law and keep a record of the same. (As per the "Factory Acts 1948" and the Maharashtra Factory Rules 1963 as amended till date).
- 1.2 Workers and supervisors engaged in the work shall be competent and undergone Safety training by MDL Safety section before deployment on job inside the MDL.
- 1.3 Contractor should go through MDL safety manual and follow the safety procedures wherever applicable.
- 1.4 The contractor must observe all safety precautions in connection with the work performed by him. No job should be undertaken where question of safety remains unanswered.
- 1.5 The Contractor shall not permit any employee/workmen to enter the work area under the influence of alcohol.
- 1.6 Smoking is strictly prohibited.
- 1.7 Fishing is not permitted in the yard.
- 1.8 Report promptly any situation affecting the safety of any person.
- 1.9 All stairways, Platforms and Walkways must be kept clean at all the times.
- 1.10 Make proper use of all safety devices and guards provided.
- 1.11 All employees shall wear personal protective equipment as appropriate while working.
- 1.12 The workmen of the contractor must wear fire retardant boiler suit/overall while working in MDL premises. The Sub-contractor shall be required to provide their workmen with Boiler suits of suitable colour with name of the contractor on the boiler suits in prominent letters.
- 1.13 The contractor should ensure that First Aid boxes are provided at the work place.
- 1.14 Do not leave tools/items on the floor or where they can fall on people below.
- 1.15 On completion of work in any location, the contractor must ensure that the place is left in a clean state and all scrap is disposed to nearby appropriate scrap bins.
- 1.16 All storage container must be clearly marked indicating the nature of contents.
- 1.17 No one except Driver (Operator) is allowed to ride/drive Jumbo/forklift/Powered trolleys/Crane etc.



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1.18 The contractor should ensure that adequate fire extinguishing arrangements are provided.

1.19 Action by person noticing Fire:

- Attempt to extinguish the fire with available fire-fighting equipment nearby.
- Operate fire alarm system or inform to fire station.

1.20 In order to ensure safety in all hazardous jobs such as excavation, work at height, fragile roof, work in confined spaces, on-board welding and gas cutting, electrical works etc., safety permit should be taken from authorize person.

### 3. Personnel Protective Equipment and other Safety Accessories:

All the contractors' employees shall wear the PPE's and other safety accessories relevant to the work. All safety equipment/accessories should confirm to the relevant Indian or International Standards e.g. ISI, BS, DIN, EN-ISO, ANSI and CE. The PPE matrix is as detailed below:

Sl. No.	Description of Activity	PPE's & Other essential Safety accessories to be used
1	Welding/Gouging	Boiler Suit, Helmet, Hand Gloves, Leg Guard, Face Shield with glass, Leather Aprons, Leather Sleeves, Skull Cap, Safety Shoe, Mask, ear plug etc.
2	Gas Cutting/Gas Welding	Boiler Suit, Helmet, Hand Gloves, Leg Guard, Cutting Goggle with glass, Leather Aprons, Skull Cap, Safety Shoe, Spark Light, ear plug, Tip Cleaner, Mask, Flash back arrestor etc.
3	Blasting & Painting	Boiler Suit, Helmet, Hand Gloves, Goggle, Leather Sleeves, Safety Shoes, Respiratory Mask, Apron, Ear Plug etc.
4	Manual Lifting	Boiler Suit, Helmet, Hand Gloves, Safety Shoe etc.
5	Working at Height	Boiler Suit, Helmet, Hand Gloves, Safety Shoe, Full Body Safety Harness etc.
6	Working on Fragile Roof	Helmet, Hand Gloves, Safety Shoe, Full Body Safety Harness, Scrawling Board, Duck Ladder, Lifeline system etc.
7	Working in Confined Spaces	Boiler Suit, Helmet, Hand Gloves, Safety Shoe, Respiratory Mask, Portable light, ear plug, Multi Gas Detector, Fume extractors etc.
8	Material Movement/Lifting/Turning	Boiler Suit, Helmet, Hand Gloves, Safety Shoe, Slings/Tackles/Shackles, Mask etc.

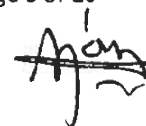
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Sl. No.	Description of Activity	PPE's & Other essential Safety accessories to be used
9	Grinding	Boiler Suit, Helmet, Hand Gloves, Face Shield, Skull Cap, Safety Shoe, Mask, Ear Plug etc.
10	Machining	Boiler Suit, Helmet, Hand Gloves, Face Shield/Google, Safety Shoe, Mask, Ear Plug etc.
11	Civil Construction	Boiler Suit, Helmet, Hand Gloves, Safety Shoe, Gum boots, Mask, Ear Plug etc.

#### 4. Safety Guidelines:

##### 4.1 Safety during Cutting & Welding:

- 4.1.1 Electrode Welding Holders, Gas Cutting Torches, Pressure Gauges, Welding Cables, Gouging torches, Gas Cutting Hoses etc. shall be of good quality confirming to relevant IS or EN standards with the relevant IS or EN stamping.
- 4.1.2 All welding and cutting operations must be carried out by qualified personnel while working inside the yard.
- 4.1.3 Welding machine should be properly earthed and secured.
- 4.1.4 Portable oven used on job should run with 110V power supply only.
- 4.1.5 Flash back arrestors shall be used for both on the cylinder/pipeline end as well as the cutting torch end. The flash back arrestor shall confirm to the relevant IS or EN standards with the relevant IS or EN stamping.
- 4.1.6 The Cylinders shall be kept upright during use and transportation. All industrial gas cylinders shall have Cylinder Cap/Guard for protection.
- 4.1.7 All Industrial gas cylinders shall be properly secured during use and storage.
- 4.1.8 When the cylinders are not in use, the valves must be closed. Prior to fitting the regulator, the valve should be opened slightly to blow away any dust or grit from the valve.
- 4.1.9 Metal wires shall not be used for connecting gas hoses with gas cutting torches, pressure gauges/regulators and for joining gas hoses with connectors.
- 4.1.10 The firm must ensure that the welding cables and gas hoses are well maintained and replaced if required.
- 4.1.11 All welding cables shall be fully insulated and periodically check for cuts and any damages.
- 4.1.12 Only Spark lights shall be used to ignite flame while using gas cutting/welding torches.



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- 4.1.13 All cutting equipment should be removed/shifted from compartments and confined spaces to open decks during breaks and at end of shift.
- 4.1.14 Gas hoses shall be disconnected from the manifold/cylinder after stoppage of work on the day.
- 4.1.15 All welding and cutting operations carried on in confined spaces shall be adequately ventilated to prevent the accumulation of toxic materials or possible oxygen deficiency.

#### **4.2 Safety while Material Handling/Lifting and Turning:**

- 4.2.1 All lifting slings/tackles/shackles shall be tested and certified with competent Authorities and shall be visually checked periodically for fitness for use.
- 4.2.2 All lifting equipment must be tested once in a year.
- 4.2.3 Use correct lifting hooks, ensure they are load tested.
- 4.2.4 Avoid manual handling operations as far as possible to minimize the risk of injury.
- 4.2.5 Position the lifting hook over the load as to prevent the load swinging when it is raised.
- 4.2.6 Ensure only competent persons are allowed to operate cranes.
- 4.2.7 Crane operators must only take Instruction from designated rigger.
- 4.2.8 Crane should not be left unattended unless all loads have been removed.
- 4.2.9 Leather gloves should be worn when working with sharp materials or when handling rigging equipment.
- 4.2.10 Crane/Rigging equipment shall not be loaded in excess of its recommended safe working load.
- 4.2.11 All employees shall be kept clear of loads about to be lifted and of suspended loads. No employee shall be allowed under a suspended load.
- 4.2.12 The proper methods of securing the load, attaching the load to the hook, lifting the load, handling of the load during the movement of the load and lowering and placement of load should be used.

#### **4.3 Safety while working on height:**

Working at height means working on 1.8 meters or above height (i.e. working on platform, stage, scaffolding).

- 4.3.1 Before starting work ensure that the supervisor is available at site and he has got the work permit issued by the authorised person.
- 4.3.2 Use a sufficient supply of sound staging material and appliances for the construction of scaffolding.
- 4.3.3 All planks and other materials intended to be used for staging shall be carefully examined before being taken into use.

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- 4.3.4 The Contractor shall ensure the use of sufficiently strong scaffolding with sufficiently strong hand railings during the execution of the job.
- 4.3.5 The Contractor shall ensure the use of scaffoldings at construction site by his personnel working at height, fabricated as per standard drawing for scaffolding. If the scaffolding as per the standard drawing is not found suitable at site, the Contractor shall make necessary modification to strengthen the same.
- 4.3.6 All planks forming staging shall be securely fastened to prevent them from slipping.
- 4.3.7 All staging to be used in connection with the operation shall be inspected before use, and thereafter at regular intervals.
- 4.3.8 There should not be any gaps in the working platform.
- 4.3.9 Stages suspended by ropes or chains shall be secured as far as possible to prevent them from swinging.
- 4.3.10 Hand rails with mid rails at one meter and half meter height should be ensured for the working platform.
- 4.3.11 Access ladders shall be provided to reach the working platform.
- 4.3.12 All ladders must be provided with non-skid shoes.
- 4.3.13 Regular inspection of scaffolding and staging are to be carried out.
- 4.3.14 While working on such job every workman must wear Full Body Safety Harness.
- 4.3.15 For any civil engineering job, the Contractor will provide adequate support before casting or any superstructure and provide approach, scaffolding etc., in such a manner that is safe, easy for movement of men, women and materials.

#### **4.4 Hand Tools and Power Tools:**

- 4.4.1 Tools shall be manufactured from the best materials by reputed tool companies with confirming to and stamped by the relevant Indian or International Standards e.g. IS, DIN, EN-ISO, ANSI and CE.
- 4.4.2 All power hand tool like grinder, weld flux remover etc. used onboard or inside the workshop must be run on either 110V power supply or by compressed air.
- 4.4.3 All compressed air hose must have standard/hose coupling for fittings.
- 4.4.4 Compressed air tools, while under pressure, must not be left unattended.
- 4.4.5 All connections to air tools shall be made secure before turning on air pressure.
- 4.4.6 When working at elevated location, all tools should be placed in tool box to prevent loose tools being dropped from the heights.



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- 4.4.7 Wooden shaft must be of correct size and securely fixed to the hammer head with fitting wedges. The face of hammers should be kept clean and in good condition (Not mushroomed).
- 4.4.8 A file must be used with proper handle fitting and to maintain files when clogged with filings clean out the teeth with a file card or fine wire brush.
- 4.4.9 When using a screwdriver, make sure that the blade fits the slot in the screw properly. Too large or too small a blade will damage the screw and not work efficiently.
- 4.4.10 Select the correct hacksaws blades to carried out work and blade should always be correctly tensioned in the frame. After use when the hacksaw is to be stored, the tension on the blade should be released.
- 4.4.11 Always select a spanner which exactly fits the nut or bolt head, never use packing pieces to make the spanner fit. Piece of pipe or similar device must not be placed over the end of spanners as extensions to increase the torque.
- 4.4.12 All electrical hand tools shall be of double insulated and fiber body type.
- 4.4.13 The RPM of grinding machine should be lower than the RPM of the grinding disk/wheel.
- 4.4.14 Do not use a portable power tool (such as saw, grinder and drill) unless its dangerous parts have been effectively guarded.
- 4.4.15 Electrical tools shall not be used where there is hazard of flammable vapours, gases, or dusts without a valid Hot Work Permit.
- 4.4.16 Do not use compressed air/Oxygen to clean off overalls or clothing.

5. **Electrical Safety:**

- 5.1 The Contractor shall engage qualified, experienced and competent electricians and other electrical personnel while working on electrical lines (which may be High Tension, Medium Tension and Low Tension electrical lines) for safe execution of Contract.
- 5.2 The electricians and other electrical personnel must possess requisite certificate issued from competent authority.
- 5.3 The Contractor shall ensure proper earthing of all electrical equipment/machinery prior to start of the machine.
- 5.4 The Contractor shall also ensure daily examination of the earthing of equipment/machinery prior to start of the job in order to avoid electrical hazards.
- 5.5 The Contractor shall ensure use of proper cable (may be welding cable or power cable or control cable). The joints of the cables shall be perfectly insulated.
- 5.6 The Contractor shall also ensure the use of proper plugs & sockets.
- 5.7 Use of rubber hand gloves during monsoon season is very essential.
- 5.8 Repair and routine maintenance of electrical equipment shall be carried out by trained and qualified electricians.

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5.9 In case of Electrical work contract, the contractor shall have valid electrical License issued by PWD or any Govt. organization or shall have a valid MOU with the licensed contractor.

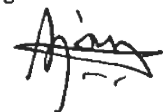
5.10 For onboard work, only 110V AC supply will be provided.

#### **8. Safety while Working on Fragile Roof and Pitched Roof:**

- 8.1 Do not step on any sheet without obtaining proper safety training.
- 8.2 Before starting work (i.e. before climbing on the access ladder) ensure that the supervisor is available at site and he has got the work permit issued by the authorised person.
- 8.3 Intimation shall be given to shop In-charge along with height permit, before going to roof of workshop.
- 8.4 Use suitable and sufficient access ladders, cat ladders, crawling boards, duck ladders etc. and fix them properly on the roof.
- 8.5 Use Full Body Safety Harness and anchor them properly with the anchorage points on the roof or to the lifeline available on roof or fall protection device.
- 8.6 Never step directly on any part of the roof. Always walk or step only on the ladders.
- 8.7 It is not safe anytime to walk on purlins. Do avoid it. Do not run on roof.
- 8.8 It is necessary to walk on ladders (and not on roof directly) while transporting these sheets on roof.
- 8.9 While working on the roof, ensure that no loose items are dropped down.
- 8.10 Always use suitable and strong ropes for taking sheets from ground to the roof.
- 8.11 Never leave any loose items (tools, cut sheets, broken sheets) on the roof after the work is over.
- 8.12 Never use any electrical equipment without proper earthing.
- 8.13 Ensure sufficient illumination while you are working on the fragile roof.

#### **9. Safety while working in Confined Spaces:**

- 9.1 Before starting work ensure that the supervisor is available at site and he has got the work permit issued by the authorised person.
- 9.2 Prepare adequate emergency arrangements before the work starts.
- 9.3 Testing the air is necessary to check before starting the work that it is free from both toxic and flammable gas/vapours and that it is fit to breathe. Testing should be carried out by a competent person using a suitable gas detector which is correctly calibrated.
- 9.4 Proper ventilation arrangement should be made before starting the work.
- 9.5 Adequate light arrangement should be available.
- 9.6 Use only 110V power supply while working in confined space.
- 9.7 When work is being carried out in a confined space, another person should be assigned to outside the confined space to maintain communication with the worker inside. Sufficient number of rescue personnel should also be made available outside the confined space. These persons need to be properly trained in rescues, physically fit and readily available to carry out rescue tasks, and capable of using any rescue tools.



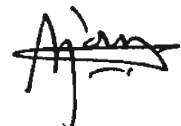
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#### 10. Safety while Blasting and Painting Operations:

- 10.1 Suitable blasting suits and hoods with coolant tube shall be used while carrying out blasting operations.
- 10.2 Immediate removal of spillage. Good housekeeping standards must be maintained at all times.
- 10.3 The contractor shall ensure that paint handed over to it for usage is safely stored in a suitable container.
- 10.4 Never allow Naked flames - matches - cigarettes -in the same area where paint is being applied or stored.
- 10.5 Airless spray must always be earthed as static electricity can develop within the system and be the cause of explosion.
- 10.6 All couplings must be of a close fit, especially on high pressure equipment. Replace damaged hoses.
- 10.7 The contractor shall ensure that its personnel have minimum contact of paint with skin.
- 10.8 Hand Gloves, Safety Shoes and eye protection must always be worn during work.
- 10.9 Usage of a suitable barrier cream on exposed skin must be considered.
- 10.10 Air fed hood/mask or respirator in confined spaces must be used.
- 10.11 Safe access and adequate lighting must be ensured.
- 10.12 Blasting proof, light and portable lamps shall be provided for the blasting operations inside of tanks and compartments.
- 10.13 The area where blasting or painting is being carried out must be provided with proper, visible safety barriers or signs.
- 10.14 Tarpaulins and other coverings should be used to cover dry dock channels / pump pits, compressor house, nearby electrical installation, machines and equipment which may otherwise be affected by blasting or painting operations.
- 10.15 Cleaning of the slipway, dry-dock, surrounding areas, machines and equipments, etc. of dust immediately after blasting has taken place.
- 10.16 Removal of spent/excess and reusable grits and empty paint drums.

#### 11. Safety at Civil Construction Sites

- 11.1 The rock blaster should be a qualified and competent person for carrying out blasting work.
- 11.2 Before blasting, sufficient warning should be given to enable the people working in the area to get off the danger zone at least 10 minutes before the blasting starts.
- 11.3 Care should be taken that the blasting point is free of detonating gas, inflammable objects, sparking or damage wiring system, stray currents.
- 11.4 Underground utilities (such as water pipelines, sewers, gas mains, electrical conduit system) should be located and protected, wherever necessary, before the start of excavation.





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- 11.27 Adequate protection should be provided for all electrical wiring laid on floor which may be crossed over by construction machinery or by the workmen.
- 11.28 Suitable warning signs should remain displayed at conspicuous places to alert the workers of the potential dangers and to protect them from the risks of electrical accidents.
- 11.29 All necessary rescue equipment such as life buoys and life jackets should be provided and kept available for use at any time while working in and around water bodies.
- 11.30 Dispose all wastes, and unwanted materials must be disposed of at a designated place.
- 11.31 Do not leave planks with nails on passageways.

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