

**TECHNICAL SPECIFICATION OF VESSEL TYPE A
(LANDING CRAFT TANK) (SEA WORTHY)**

Part-1

Ser	Description	Proposed Technical Specification	Remarks
1.	Type of the Vessel	Landing Craft Tank (LCT), Sea Worthy	
2.	Name and complete address of Local Agent	Details to be mentioned	
3.	Name and complete address of Manufacturer/ Shipbuilder	Details to be mentioned	
4.	Origin of Shipyard	Bangladesh	
5.	Year of Production	Building will start after completion of the contract.	
6.	Classification	<p>a. The construction of the vessel must be supervised and certified by a full member of IACS with full class notation (+ HULL. MACH. PAINT).</p> <p>b. Following certificates shall be issued by Class/the competent authorities and shall be furnished with the vessel:</p> <ol style="list-style-type: none"> (1) Stability and Inclination Book, Class approved. (2) Classification Certificate of Hull, Safety. (3) Construction Certificate (Class). (4) Life Saving Certificate (Class). (5) Safety plan and Fire Fighting Plan (Approved by Class). (6) Certificate of Classification (Class). (7) Builder Certificate (Builder). (8) Load Line Certificate (Class). 	
7.	Mission Profile	The LCT will be deployed in riverine, coastal and sea areas primarily for Riverine operation and troops transfer and secondly, to render fast humanitarian and rescue aid to disaster areas. LCT should operate for 15 days at a go. Therefore, the technical definition of the LCT, selection of equipment and integral logistic systems are to be provided accordingly to facilitate operations, training, administration and disaster management tasks.	

Part-2

Ser	Description	Proposed Technical Specification	Remarks
8.	Material	Shipbuilding grade IACS certified mild steel. The specification and thickness of the plates and sections will be in accordance with the requirement of the CS but not less than the contractual requirement where specifically mentioned.	
9.	Anti Corrosive Fittings	As per CS requirement.	
10.	Dimension in Meter		
	a. Length	Expected range: 65m To 75m.	
	b. Breadth (Moulded)	Minimum 13.5m, Maximum 16m.	
	c. Car Deck	a. Car deck should be such that it should comfortably accommodate 8xMain Battle Tanks (MBT). Dimension of each tank is 9.76 m x 3.66 m x 3.20 m (L x B x H). Adequate clearance on all sides is to be ensured for easy parking of the tanks. Weight of each MBT to be considered as 50T. b. The Car deck should be covered having a head room clearance of 5 m (minimum) which allow the artillery gun and gun tower to be parked easily.	
	d. Depth (Moulded)	As per design (To be mentioned)	
	e. Draft (loaded & Considering Trim)	Maximum 3 m.	
	f. Forward Draft & Aft Draft	To be mentioned.	
	g. Air Draft (Unloaded)	Maximum 9m (With folded mast) Note: At all loading condition the ship must be with positive trim.	
11.	Displacement (Dead load + Live load)	As per design (To be mentioned).	
12.	Sea State	Operate at Sea State-4	Supplier should submit all as papers confirming capability of operating at sea state-4
13.	Stress at Car Deck Plate	Minimum allowable stress 10 Ton/m ²	
14.	Helipad	Helipad facility allowing Safe landing of following light helicopters shall have to be installed in Aft. a. Dauphin AS365N3+ b. Bell 206L4. c. Bell 407GXl.	
15.	Steering	a. Electro Hydraulic Steering system should be provided which shall be located at wheel house. Both joy stick and steering wheels are to be provided. b. In case of an emergency, the manual control will be located at any suitable place co-located with the rudder compartment. c. Make, model and Country of Origin (Group A countries) to be mentioned.	

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16	Detail Design and Drawing of LCT	<p>a. The General arrangement (GA) drawing will be approved by owner to confirm user's convenience within the scope of the contract.</p> <p>b. All required drawings must be approved by IACS member which should fulfill Bangladesh Coastal Waterways' requirements and can operate within minimum 25 nm from coastal area at sea state-4</p> <p>c. The vessel shall be corvette shape and would give combat look and the vessel should have roll on and roll off facility.</p>	
17.	Accommodation and other facilities for officers, crews and transported personnel	<p>a. Accommodation facilities for minimum 20 (Twenty) officers which should include 2 x VIP rooms, 4 x single rooms, 3 x twin bed and 2x4-bed rooms. All cabins shall be fitted with standard marine grade furniture and shall have attached toilets.</p> <p>b. 1xConference room, 1xDining room and 1xGalley for officers have to be provided.</p> <p>c. 40 x Persons' accommodation has to be provided for ship's integral crew and security personnel which should include (minimum) 4xsingle rooms for vessel's integral 1st class marine master, driver and JCOs and 4xtwin bed rooms for integral NCOs. Other rooms may be composed of 6/8/10 Bunk arrangements.</p> <p>d. 4xTwin Bed rooms shall be provided for transported JCOs.</p> <p>e. Cooking, dining, bathing and toilet facilities for ship's integral crews and soldiers shall be provided.</p> <p>f. Additional accommodations for 200x soldiers (minimum) in the under deck area who are to be transported.</p> <p>g. Magazine rooms (minimum 4) in the under deck area for storing arms/ ammunitions.</p> <p>h. Separate cooking, dining, toilet and bathing facilities for the transported soldiers.</p>	

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Ser	Description	Proposed Technical Specification	Remarks
		<p>j. Living area panel and ceiling should be standard marine type along with thermal insulation. All fittings and fixtures should be as per marine grade standard.</p> <p>k. Ceiling and side walls of all toilets and galleys should be covered with SS panels and the floors should be covered with GRP/Ceramic tiles.</p> <p>l. VIP and other Officers' cabins shall be equipped with necessary electronic appliances (reading light, adequate sockets, TV, satellite channel and internet connections, mini fridge, etc all should be marine type A 55 inch TV Should be provided in Conference Room/Ward Room. All dining halls shall be equipped with appropriate sized TV with satellite channel connections, fridge (marine type) and micro wave ovens.</p> <p>m. There will be main fridge plant. Which should be capable for vegetable room and meat/fish room.</p> <p>n. 2x Laundries for officers and ship's integral crews having required washing machine, driers and ironing facilities are to be provided. Make and model, origin, placement and capacity of these facilities shall be approved by client</p> <p>p. Insulation plan, accommodation and furniture fitting plans and drawings shall have to be approved by client.</p> <p>q. Following are to be included:</p> <p>(1) Capacity of conference room, dining hall and cook house.</p> <p>(2) Number, capacity and quality of refrigerators and micro wave ovens.</p> <p>(3) Layout plan and quality of furniture.</p>	

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Ser	Description	Proposed Technical Specification	Remarks
18.	Self Defense Facilities	<p>a. At loaded condition the whole LCT should have a 360 degree firing arc around it, without any obstruction by using 4 (Four) or more number of 14.5 mm AAMG.</p> <p>b. The AAMG posts are to be manufactured and installed by supplier.</p> <p>c. The locations of the AAMG posts are to be shown on the GA drawing.</p> <p>d. Foundation drawings and AAMG are to be approved by owner.</p>	
19.	Loading/Unloading/Ramp Facilities		
	a. Dimension of Ramps	Bow and aft ramp should be sufficiently strengthened for loading/unloading of 50 Ton Vehicles. Starboard and port side ramps should be sufficient to load 25 Ton vehicles. The ramp door should be operated by hydraulic ramp/winch using hydraulic power pack.	
	b. Quantity of Ramps	04 (Four) Numbers. The location of 2 x ramps should be at the aft & bow side to facilitate both loading and unloading. Starboard & port side ramps should be sufficient for B vehicles and light tanks/APCs (25T capacity). The vehicles should be able to embark, park and disembark fast, without any difficulty and on both directions (Roll on-Roll off).	Bow (50 T) Aft (50 T) Starboard (25T) Port (25 T)
	c. Ramp Operation	<p>a. Electro Hydraulic winch system with minimum two interconnected power packs.</p> <p>b. For emergency, mechanical /manual option for opening and closing all the ramps are to be installed (Winch, block or other applicable system).</p> <p>c. Country of origin: Group A.</p> <p>d. Make and model: To be mentioned.</p>	
	d. Personnel Embarkation/ Disembarkation	<p>a. One personnel embarkation/ disembarkation facility (preferably brow) each should be provided on port & starboard side of the LCT.</p> <p>b. The door should be hydraulic electrically operated along with mechanical system as back up.</p>	Port Side Starboard Side
	e. Excavator (1x long boom)	<p>a. <u>Weight</u>. Maximum 20 Ton.</p> <p>b. <u>Height</u>. Maximum 9 feet.</p> <p>c. <u>Working Radius</u>. Minimum 50 feet.</p> <p>d. <u>Origin</u>. Group A Countries.</p> <p>e. <u>Make and Model</u>. To be mentioned.</p> <p>f. <u>Bottom Reaching distance</u>. Minimum 15 feet.</p>	

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Ser	Description	Proposed Technical Specification	Remarks
20.	Propulsion Unit		
	a. Main Engine		
	(1) Number of Engines	Minimum 02 (Two) Numbers.	
	(2) Make and Model	To be mentioned.	
	(3) Type	Marine Diesel Engine.	
	(4) Country of Origin	Group A Countries.	
	(5) Country of Manufacturer	Group A Countries.	
	(6) Country of Assembly	Group A Countries.	
	(7) Horse Power with rated rpm	a. To be mentioned but not less than 1600 BHP (each), the power needed to attain contractual speed (as mentioned in Ser 30). b. Engine power output curve against various rpm along with fuel consumption rate is to be provided with the offer.	
	(8) Number of Cylinders	To be mentioned.	
	(9) Engine Controls	Hydraulic and Electrical.	
	(10) Engine Starting	Electric and Air.	
	(11) Bore and Stroke	To be mentioned.	
	(12) Displacement	To be mentioned.	
	(13) Minimum Torque with rpm	6100 NM at 1900 RPM (Minimum)	
	(14) Cooling System	Water cooled (Hybrid). The type of cooling water pump is to be mentioned (Self-driven or general service pump will be used).	
	(15) Year of Production	Not earlier than year of production of the ship	
	(16) Engine Test Bench Report and Certificate	Engine Test Bench Report (for each model) prepared by manufacturer during production of engine must be produced and submitted to the inspection team (duly signed and stamped by the manufacturer). For other engines mentioning engine number of the same model must be certified confirming the engine Test Bench Report by the manufacturer (duly signed and stamped).	
	(17) Engine Operation	The speed of the engines has to be controllable both from local position and from the wheel house.	

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Ser	Description	Proposed Technical Specification	Remarks
	b. Gear Box		
	(1) Make & Model	To be mentioned.	
	(2) Country of Origin	Group A Countries.	
	(3) Country of Manufacture	Group A Countries.	
	(4) Year of production	Not before the year of contract.	
	(5) Rotation of Stern	Conventional.	
	(6) Clutch	To be capable to engage/disengage the main engines from the gear boxes both from local position and from the wheel house.	
	c. Propeller		
	(1) Make & Model	FPP (Fixed Pitch Propeller). Make, model and country of manufacture to be mentioned.	
	(2) Country of Origin	Group A Countries.	
	(3) Number of Blades	To be mentioned	
	(4) Diameter	To be mentioned.	
	(5) Material	To be mentioned.	
	(6) Number of propellers	Minimum 02 (Two) Numbers.	
	(7) Size of propeller	To be mentioned.	
	(8) Length of shaft	To be mentioned.	
	(9) Protective structure from ground or other obstacles	Skeg and sole piece are to be fitted. Details may be mentioned as applicable.	
21.	Generator Set		
	a. Main Generator Set		
	(1) Make & Model	To be mentioned. Mnufacturer of the generator must be the manufacturer of the engine of generator.	
	(2) Type	Continuous duty (24 hours x 7 days) Marine Generator.	
	(3) Country of Origin	Group A Countries.	
	(4) Country of Assembly	Group A Countries.	
	(5) Country of Manufacturer	Group A Countries.	
	(6) Number of Main Generators	02 (Two) numbers.	
	(7) Cooling System	Details to be mentioned.	

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Ser	Description	Proposed Technical Specification	Remarks
	(8) Output Capacity	<p>a. The capacity of each generator should be as such that each of them can individually take full load of the LCT. However they shall be synchronized as per factors determined by classification society (CS). Also the generator will be with parallel in facility. The capacity will be as per electric load calculation with 10% surplus power for future expansion.</p> <p>b. Both the generators shall be operated at the same time in a synchronized manner to meet up additional demand in an emergency/ special occasion. Special Panel/Switch boards are to be installed to facilitate additional connection.</p> <p>c. Output Power: (1) Prime: Prime power shall be for unlimited time. (2) Stand by: To be mentioned (3) Voltage: For 3 phase and single phase to be mentioned. (4) Frequency : To be mentioned (5) No of Wire: 4 wire (6) Power Factor: Not less than 0.8</p> <p>d. The Electric load table of the LCT is to be provided.</p>	
	(9) Engine Make & Model	To be mentioned.	
	(10) Engine Output HP with rated rpm	To be mentioned.	
	(11) Alternator Make and Model	To be mentioned.	
	(12) Prime and Standby output power of Alternator	To be mentioned.	
	(13) Noise Suppression System	Details to be mentioned	
b. Harbor Generator			
	(1) Make & Model	To be mentioned.	
	(2) Type	To be mentioned.	
	(3) Type of fuel	Diesel.	
	(4) Cooling System	To be mentioned.	
	(5) Country of Origin	Group A Countries.	
	(6) Country of Manufacturer	Group A Countries.	
	(7) Country of Assembly	Group A Countries.	
	(8) Output Capacity	<p>a. Should be sufficient to take the domestic load (covering all lights, fans, blowers of the vessel and AC in VIP cabins and 4x single officers' cabins) including wheel room when the LCT is in Harbor.</p> <p>b. Output Power: (Details to be mentioned) (1) Prime: To be mentioned (2) Stand by: To be mentioned</p>	

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Ser	Description	Proposed Technical Specification	Remarks
		(3) Voltage: For 3 phase and single phase to be mentioned. (4) Frequency: To be mentioned (5) No of wire: 4 Wire (6) Power Factor: Not less than 0.8	
	(9) Engine Make & Model	To be mentioned.	
	(10) Engine Output HP with rated rpm	To be mentioned.	
	(11) Alternator Make and Model	To be mentioned.	
	(12) Prime and Standby output power of Alternator	To be mentioned.	
	(12) Noise Suppression System	Details to be mentioned.	
22.	Air Conditioning Facilities	a. Two Central AC unit (Each capable of carrying whole load of ship). b. For Conference room, VIP room and offrs accommodation rooms additional split AC. c. Make & model (Group A Countries origin) of air conditioning units should be mentioned specifically with the offer. d. Capacity: To be mentioned.	
23.	Electric Distribution System	Marine grade standard.	
24.	Pump Sets: All pumps should be marine type pump Group A. body and impeller: Bronze, Insulation, Rating: IP 55 for centrifugal pumps.		
	a. General Service Pump		
	(1) Make & Model	To be mentioned.	
	(2) Country of Origin, Manufactures and Supply	Group A Countries.	
	(3) Capacity	(1) Should be sufficient for (general service, engine cooling, sanitary etc) Minimum 50m ³ /hr. (2) To be mentioned.	
	(4) Details of Pump	To be mentioned.	
	(5) Number of Pumps	Minimum 2. (Design should be able to handle multipurpose operation of the pumps in case of fire fighting, ballasting operation, cleaning & bilge operation).	
	(6) Hydrophore	Water distribution throughout the LCT would be produced by required number of hydrophores each having a capacity of 1m ³ /hr with a tank of 100 liters. Make, Model and country of manufacture to be mentioned.	
	b. Fresh Water Pump		
	(1) Make & Model	To be mentioned.	
	(2) Country of Origin, Manufactures and Supply	Group A Countries	
	(3) Capacity	3000 ltr/hr (minimum).	
	(4) Details of Pump	To be mentioned.	
	(5) Number of Pumps	Minimum 3 (One for emergency).	

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Ser	Description	Proposed Technical Specification	Remarks
	(6) Hydrophore	Water distribution throughout the LCT would be produced by required number of hydrophores each having a capacity of 1m ³ /hr with a tank of 100 liters. Make, Model and country of manufacture to be mentioned.	
	c. Fire Pump	a. <u>Origin</u> . Group A Countries b. <u>Number of pumps</u> . Minimum 02 (Two) c. <u>Details of pumps</u> . To be mentioned d. <u>Capacity</u> . Minimum 50 m ³ /hr. e. GS pumps should also be able to act as fire pumps when required. Standard maritime fire safety regulations must be complied with. f. One additional diesel driven fire pump should be installed at a convenient location. Make, Model and country of manufacture to be mentioned.	
	d. Sanitary Pump		
	(1) Make & Model	To be mentioned.	
	(2) Country of Origin, Manufactures and Supply	Group A Countries.	
	(3) Capacity	To be mentioned.	
	(4) Details of Pump	To be mentioned.	
	(5) Number of Pumps	To be mentioned.	
	e. Bilge Pump		
		a. <u>Make and Model</u> . To be mentioned. b. <u>Country of Origin, Manufactures and Supply</u> . Group A Countries. c. <u>Capacity</u> . Minimum 50 m ³ /hr. d. <u>Details of Pump</u> . To be mentioned. e. <u>Number of Pumps</u> . Minimum 01(one).	
	f. Sea Water Pump (for ballasting)		
		a. <u>Make and Model</u> . To be mentioned b. <u>Country of Origin, Manufactures and Supply</u> . Group A Countries. c. <u>Capacity</u> . Minimum 50 m ³ /hr. d. <u>Details of Pump</u> . To be mentioned. e. <u>Number of Pumps</u> . Minimum 01(one). f. GS pump should be able to handle with ballasting operation.	
	g. RO Pump/System		
		a. Make and Model. To be mentioned b. <u>Country of Origin, Manufactures and Supply</u> . Group A Countries. c. <u>Capacity</u> . Minimum 200 ltr/hr. d. <u>Details of Pump</u> . To be mentioned. e. <u>Number of Pumps</u> . Minimum 01(one).	
25.	Type of fuel	Diesel	

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Ser	Description	Proposed Technical Specification	Remarks
26.	Air Compressor (with complete accessories)	<p>a. Minimum 02 (two) sets are to be placed in engine room in case of air started engines country of origin, make, model, storage tank capacity, etc are to be mentioned.</p> <p>b. 02 Portable light weight air compressors are to be provided to assist in cleaning/maintenance operations. Discharge Pressure: Minimum 3000 PSI. Country of origin (Group A), make, model and other relevant data are to be mentioned.</p> <p>c. Both storage tank capacity should be compatible with the engine operation.</p>	
27.	Engine Room Ventilation	Blower for sufficient ventilation for different closed compartments has to be provided. Qty, make, Model and country of manufacture to be mentioned.	
28.	Fuel Consumption	To be mentioned. Fuel consumption curve at different rpm is to be provided.	
29.	Desired Cruising Range in Nautical Miles	Minimum 5000 (Five thousand) nautical miles at cruising speed/year	
30.	Speed of the LCT	<p>a. <u>Maximum Speed</u>: 18 (Eighteen) knots at full loaded condition.</p> <p>b. <u>Trial Speed</u>: The likely trial speed must be mentioned with supporting calculation by the supplier, as per CS requirement.</p> <p>c. <u>Cruise Speed</u>: Minimum 12 (twelve) knots at full loaded condition.</p> <p>d. <u>Economic Speed</u>: +/- 10% of cruising speed.</p>	
31.	Sewage Tank	Should comply with Department of Shipping (DOS) and CS requirement.	
32.	Tank Capacity		
	a. Fuel Tank Capacity	<p>a. Minimum 160 ton</p> <p>b. Should be sufficient for continuous operation up to 15 days.</p> <p>c. Supporting calculation to be provided.</p> <p>d. Water compensating tank to be provided.</p> <p>e. Required centrifuge to be provided.</p>	
	b. Fuel Service Tank	10,000 liters (Minimum).	
	c. Lubrication Oil along with reserve tank and fuel-oil transfer pump	Relevant data are to be mentioned.	

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	d. Fresh Water Facilities	a. Minimum 80,000 liters. b. Reverse Osmosis (RO) plant for capacity of 30 ton/day can be installed to meet up water requirement. c. Make, model and country of origin should be group A for RO Plant. d. Quality of raw water: Any subsurface river or seawater with minimum impurities ppm 25000. It should be incorporated with UV and active carbon filter. Minimum 3 years consumable chemical and spares to be provided with plant.	
33.	Navigation Equipment (Other navigation equipment's may be offered after consulting with the user unit).		
	a. Magnetic and Gyro Compass: Tabletop with 175 mm card dia with 7-inch dial. b. Gyro Compass: IMO approved, settling time is less than 30 Minute. Roll pitch angle should be around 45-degree, Static error less than 0.1-degree. Dynamic error < 0.5 degree, settle point error < 0.1 degree, NMEA 0183 connectivity compatible.	To be confirmed	Basic parameters may be put in point form
	(1) Make & Model	To be mentioned.	
	(2) Country of Origin, Manufacture and Assembly.	Group A Countries.	
	(3) Number	01 (One)	
	c. Echo Sounder: IMO type approved echo sounder complying IMO resolutions A. 224 (Vii), MSC. 74 (69) Annex 4 Capable of storing history for at least 12 hours and dedicated sd card slot should be available 9-inch 480x800 pixel display. Output power should be 1 KW RMS Accuracy should be minimum 2.5% of depth Effective range should be minimum 0.1 m	To be confirmed	Basic parameters may be put in point form
	(1) Make & Model	To be mentioned.	
	(2) Country of Origin, Manufacture and Assembly.	Group A Countries.	

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Ser	Description	Proposed Technical Specification	Remarks
	(3) Effective Range	To be specified.	
	(4) Number	01 (One)	
	(5) Any other information	Details to be mentioned.	
d. <u>Forward Looking Echo Sounder</u>			
	(1) Make & Model	To be mentioned.	
	(2) Country of Origin	To be mentioned (Group A Countries).	
	(3) Effective Range	To be mentioned (Minimum 0.25 meters)	
	(4) Number	To be mentioned.	
	(5) Major Technical parameter	Details to be mentioned.	
	e. <u>GPS:</u> 7 inch (800x480 resolution) display NMEA 2000 connectivity compatible. Cold start time should be less than 90s and satellite reacquisition time 5 sec. Horizontal accuracy 3 m minimum 32 receiver channels. GPS update rate should be 10 Hz.	To be confirmed.	Basic parameters may be put in point form
	(1) Make & Model	To be mentioned.	
	(2) Country of Origin, Manufacture and Assembly.	Group A Countries.	
	(3) Position Accuracy	To be mentioned.	
	(4) Speed Accuracy	Details to be mentioned.	
	(5) Map and Memory and Global area coverage. (Required Map Coverage is for Bangladesh and Grid Ref System to be available)	Details to be mentioned.	
	(6) Number	01 (One).	
	(7) Type of Display	To be mentioned.	
	(6) Any other information	Details to be mentioned.	
	f. <u>RADAR:</u> 64 NM range and 24-inch dome radar 60 rpm operation at close range up to 2 NM. Minimum range should be 6 meter.	To be confirmed.	a. Mod b. To be decided by BofO
	(1) Brand	To be mentioned.	
	(2) Make & Model	To be mentioned.	
	(3) Country of Origin	Group A Countries.	
	(4) Country of Manufacture	Group A Countries.	
	(5) Country of Assembly	Group A Countries.	
	(6) Name of Manufacturer with complete address	Details to be mentioned.	
	(7) Year of Production	Not before the year of contract	
	(8) Effective range for vessel/Boat, etc.	To be specified (Minimum 48 nautical miles).	
	(9) Minimum and Maximum range for vessel/Boat	Minimum 0.001 (NM) (Maximum 64 (NM) range to be mentioned)	
	(10) Radar Cross Section (RCS)	Details to be mentioned.	
	(11) Number of Radar	02 (Two)	

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	(12) Display Unit	Minimum 12-inch display.	
	(13) Display Resolution	Minimum 800 x 1280 resolution.	
	(14) Frequency Band	X band 9.4 to 9.5 GHZ.	
	(15) Band width	10 MHz, 3 MHz	To be decided by BofO
	(16) Sweep Band width	Should be maximum 48MHz.	
	(17) Scan Rate and RPM	Scan rate is 24, 36 rpm type. Details to be mentioned.	To be decided by BofO
	(18) Transmission Power	25 W	
	(19) Collision avoidance technology	Should be integrated.	
	(20) Reverse polarity protection	Should be present.	
	(21) Alarm Type	Audio and Visual alarm system would be available.	
	(22) Antenna Type	4 ft Open array scanner, Elevation 23 ^o typ and Azimuth 2 ^o typ. Details to be mentioned.	To be decided by BofO
	(23) Power supply system	Details to be mentioned.	
	(24) Software	To be provided.	
	(25) Any other information	Details to be mentioned.	
g. Night Vision Binoculars			
	(1) Brand	To be mentioned.	
	(2) Make & Model	To be mentioned.	
	(3) Country of Origin	Group A Countries.	
	(4) Country of Manufacture	Group A Countries	
	(5) Country of Assembly	Group A Countries	
	(6) Name of manufacturer with complete address	Details to be mentioned.	
	(7) Year of Production	Not before the calendar year of contract.	
	(8) Number	02 (two) Numbers.	
	(9) Generation	Minimum 3 rd Gen II Type or above.	
	(10) Field of View	Details to be mentioned.	
	(11) Detection Range	a. Minimum 200 m at Star light night	
		b. Minimum 300 m at Moon light night.	
		c. Minimum 100 m at dark night.	
		d. Minimum 100 m at IR condition.	
	(12) Resolution	To be mentioned.	
	(13) FOM (Figure of merit)	To be mentioned.	
	(14) Minimum time required before operation	To be mentioned.	
	(15) Accidental Light Exposure safety Sys (Auto Shutdown)	To be available.	
	(16) Maximum operational endurance (Hour)	Details to be mentioned.	
	(17) Power source (Electric or Battery)	Details to be mentioned (Brand, Model, Volt, Amp, Country Origin and Manufacture).	
h. Barometer			
	(1) Make & Model	To be mentioned.	
	(2) Country of Origin	Group A Countries.	
	(3) Number	01 (One)	
	(4) Major technical parameters	Details to be mentioned.	
j. Anemometer (Marine Type)			
	(1) Make & Model	To be mentioned.	
	(2) Country of Origin, Manufacture and Assembly.	Group A Countries.	
	(3) Number	01 (One)	
	(4) Major technical parameters	Details to be mentioned.	

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Ser	Description	Proposed Technical Specifications	Remarks
	k. Clear View Screen		
	(1) Make & Model	To be mentioned.	
	(2) Country of Origin, Manufacture and Assembly.	Group A Countries.	
	(3) Major technical parameters	Details to be mentioned.	
	I. Rear Viewing Camera with LED Monitor	<p>a. One LED monitor to be fitted at the wheel house which should show the clear image in all weather condition of the vessel's rear side supported by 4 x cameras.</p> <p>b. Camera:</p> <p>1. <u>Origin.</u> Group A Countries</p> <p>2. <u>Make and model:</u> To be mentioned.</p> <p>c. LED Monitor:</p> <p>1. <u>Origin.</u> Group A Countries</p> <p>2. <u>Make and model:</u> To be mentioned.</p>	
34.	Furniture and Electric Equipment	Marine grade standard which should be approved by the user unit before installation.	
35.	Anti Slip Surface	Deck to be built of marine type IACS Certified steel checkered plates with a thickness of 10 (Ten) mm or contractual requirement or CS requirement, whichever is higher.	
36.	Anchoring Facility	<p>a. Number of anchors minimum 3 (In Bow 2 and Aft 1), anchor type, anchor weight, cable length, cable diameter, etc are to be mentioned. Ship rope to be provided as per requirement.</p> <p>b. Anchor winch or capstan should be provided to drop or lift anchor.</p> <p>c. Equipment number calculation is to be provided.</p> <p>d. Manual/mechanical option for winch operation beside hydraulic System must be incorporated for emergency.</p> <p>e. Winch and anchors should be provided both at the bow and aft side of the vessel.</p> <p>f. Bollards are to be placed at appropriate locations (covering bow, aft and mid ship sections both at port and starboard sides if feasible).</p>	
37.	Mooring Winch	To be mentioned. Necessary calculation is to be provided in supporting the capacity.	
38.	Medical facilities/Sick Bay : A cabin with 4x beds (Including bunks), cabinets (for preservation of medicine and other first aid facilities), oxygen cylinder, Cardiac and minor surgery instrument with necessary first aid treatment facilities and required other furniture shall have to be provided.		
	a. Cabin with 4x beds (Including bunks)	Details to be mentioned.	
	b. Cabinets (for preservation of medicine and other first aid facilities)	Details to be mentioned.	
	c. Oxygen Cylinder	Type- To be mentioned.	
		Country of origin- To be mentioned.	
		Country of Manufacture- To be mentioned.	
		List of accessories- List to be submitted.	
	d. Cardiac and minor surgery instrument with necessary first aid treatment facilities	Details to be mentioned.	
	e. Required other furniture shall have to be provided	Details to be mentioned.	

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Ser	Description	Proposed Technical Specification	Remarks
39.	Life Saving Accessories		
	a. Specification of Equipment	The number, specification and positioning of all life saving equipment shall qualify marine grade standard (IACS or relevant most appropriate authority) and their origin should be of group A countries.	
	b. Motor Life Boats	<p>a. Minimum 02 (Two) motor life boats have to be provided with a capacity of 10 (ten) persons each. Make, Model and country of manufacture-Gp A.</p> <p>b. Each boat should have an out board engine of capacity at least 75 HP. Make, Model and country of manufacture to be mentioned.</p> <p>c. Integral boat lowering and lifting arrangement is to be provided.</p> <p>d. The location of the boats and their securing arrangement is to be shown on the GA drawing.</p>	
	c. Life Jacket	Minimum 400 (Four hundred) IACS standard marine life jackets to be provided which will be distributed all over the vessel. Life jacket storing positions to be shown in GA drawing. Make, Model and country of manufacture to be mentioned.	
	d. Life Buoy	Minimum 60 (sixty). The storing arrangement shall be distributed All over the vessel which has to be shown in GA drawings. Make, Model and country of manufacture to be mentioned.	
	e. Life buoy with 27.5 M line	<p>1. Quantity to be mentioned.</p> <p>2. Location to be shown in GA drawings. Make, Model and country of manufacture to be mentioned.</p>	
	f. Life buoy with water light	<p>1. Quantity to be mentioned.</p> <p>2. Location to be shown in GA drawings. Make, Model and country of manufacture to be mentioned.</p>	
	g. Inflatable life raft for 25 persons	<p>1. Quantity to be mentioned</p> <p>2. Location to be shown in GA drawings. Make, Model and country of origin and manufacture to be mentioned.</p>	
	h. Bench drilling with Electric Motor	Quantity to be mentioned.	
	j. Flanges	Quantity to be mentioned.	
	k. Pyrotechnics	Quantity to be mentioned.	
	l. Self-igniting light	Quantity to be mentioned.	
	m. Life line	Quantity to be mentioned.	
	n. 20 Persons buoyant apparatus	<p>1. Quantity to be mentioned.</p> <p>2. Location to be shown in GA drawings.</p>	
	p. Signal light, flags and globes	Quantity to be mentioned	
	q. Breathing Apparatus (BASCA)	<p>1. Minimum 06 (Six) or as per standard safety regulations (whichever is more).</p> <p>2. To be used by individual on duty at critical places like engine room, galley etc. in case of fire. Make, Model and country of manufacture to be mentioned. .</p>	
	r. Any Other equipment	Quantity, Location, Origin, Make and Model, numbers or any other relevant data are to be provided.	

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Ser	Description	Proposed Technical Specification	Remarks
40.	Communication Equipment		
	a. Specification of all Communication Equipment	All Communication Equipment should qualify the requirement of Marine Grade standard (IACS or relevant most appropriate authority standard) and their origin should be Group A countries.	
	b. RTS (Radio Telegraph System)		
	(1) Make & Model	To be mentioned.	
	(2) Country of Origin, Manufacture and Assembly	Group A Countries.	
	(3) Number	To be mentioned.	
	c. Intercom System		
	(1) Make & Model	To be mentioned.	
	(2) Country of Origin, Manufacture and Assembly	Group A Countries.	
	(3) Capacity of exchange	To be mentioned.	
	(4) Number of connections	To be mentioned.	
	(5) Number of Intercom Sets	To be mentioned	
	d. CCTV System with Display (Day & Night)		
	(1) Make and Model i. Camera ii. Display iii. NVR/DVR	To be mentioned	
	(2) Country of Origin, Manufacture and Assembly	Group A Countries.	
	(3) Type of Camera	To be mentioned	
	(4) Resolution of Camera	To be mentioned	
	(5) List of other items/ Accessories	To be mentioned	
	(6) Number of Connections	16 Numbers (Minimum)	
	e. VHF (To be compatible with owner's organization std Model:XV -3088,RF-13, TR 6000 and Thales PRC 9210)		
	(1) Make & Model	To be mentioned.	
	(2) Country of Origin, Manufacture and Assembly	Group A Countries.	
	(3) Frequency Range	To be specified.	
	(4) RF Power Output	To be specified.	
	(5) Communication Range (Minimum requirement from Vessel to Vessel minimum 10 KM and Vessel to Base minimum 25 KM)	a. From Vessel to Vessel on Move: To be mentioned. b. From Vessel to Base: To be mentioned.	

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Ser	Description	Proposed Technical Specification	Remarks
	f. HF (To be compatible with owner's organization std TR 2400, TRC 9310-3AP and PRC 2090)		
	(1) Make & Model	To be mentioned	
	(2) Country of Origin, Manufacture and Assembly	Group A Countries	
	(3) Frequency Range	To be specified	
	(4) RF Power Output	To be specified	
	(5) Communication Range (Minimum requirement from Vessel to Vessel minimum 30 KM and Vessel to Base all over Bangladesh)	a. From Vessel to Vessel on Move: To be mentioned. b. From Vessel to Base: To be mentioned.	
	g. PA Equipment		
		a. <u>Make and Model</u> . To be mentioned. b. <u>Origin</u> . Group A Countries. c. <u>Number</u> . 01 (One) d. <u>Purpose</u> . To make announcement to all the cabins, decks and other common places from the bridge and also to communicate with other incoming vessels using mic. e. <u>Capacity (watt)</u> . To be mentioned.	
	h. Walkie-Talkie Set (VHF/UHF) Complete with Accessories		
	(1) Make & Model	To be mentioned.	
	(2) Country of Origin, Manufacture and Assembly	Group A Countries.	
	(3) Frequency Range	To be specified.	
	(4) RF Power output	To be specified.	
	(5) Communication Range	To be specified.	
	(6) Number of Sets	24 (Twenty four).	
	j. Machinery Communication System (MCS) between engine room and Wheel Room	Details to be mentioned.	
41.	Electrical System		
	a. Volt	Both 3 (Three) and Single Phase, Volt 50 Hz AC system for normal operation and 24 volt DC system for emergency operation.	
	b. Batteries (Volt & Ampere)	Volt and Ampere to be mentioned. Charging facilities are to be provided for all supplied batteries.	
	c. Alternator (Volt and Ampere)	Volt and ampere to be mentioned.	
	d. Starter (Volt & KW)	Volt and KW to be mentioned.	
	e. Power Distribution System	Proper power distribution system is to be provided with distribution panel and change over facility between 02 (two) main generator sets and 01 (one) harbor generator set.	

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Ser	Description	Proposed Technical Specification	Remarks
	f. Cable	Marine grade standard as required qty.	
	g. Shore connection cable with accessories	One set shore connection cables, each having length of 500 meters to be provided along with all accessories and connection facilities. The origin of two cables to be of group A countries or any reputed company from Bangladesh. The capacity of these cables should be sufficient as per harbor load calculation.	
42.	Fire Fighting Equipment.		
	a. Specification of Equipment	All Fire Fighting Equipment should qualify the requirement of Marine Grade standard (IACS or relevant most appropriate authority laid down standard) and their origin should be Group A countries.	
	b. Foam extinguisher (6kg) for E.R	Quantity to be mentioned. Make, Model and country of manufacture to be mentioned.	
	c. CO2 extinguisher (9 liter) for each Galley, poop deck and bridge deck.	Quantity to be mentioned. Make, Model and country of manufacture to be mentioned.	
	d. Foam fire extinguisher-25 Liter	Quantity to be mentioned. Make, Model and country of manufacture to be mentioned.	
	e. Fire extinguisher - Dry powder (6kg)	Quantity to be mentioned. Make, Model and country of manufacture to be mentioned.	
	f. Fire extinguisher - Soda Acid (9 Liter)	Quantity to be mentioned. Make, Model and country of manufacture to be mentioned.	
	g. Fixed CO2 plant in engine room for fire extinguishers	Quantity to be mentioned. Make, Model and country of manufacture to be mentioned.	
	h. Smoke detector with sensor in all cabins, troops accommodation, engine room and wheel house.	Should operate automatically and quantity to be mentioned. Make, Model and country of manufacture to be mentioned.	
	j. Fire alarm	Should operate automatically and quantity to be mentioned.	
	k. Hose pipe (2") with Nozzle, etc.	Quantity to be mentioned.	
	l. Fire hose pipe cradle box	Quantity to be mentioned.	
	m. Self contained breathing Fire hose pipe cradle box	Quantity to be mentioned.	
	n. Fire men out-fit.	Quantity to be mentioned.	
	p. Fire blanket	Quantity to be mentioned.	
	q. Safety lamp	Quantity to be mentioned.	
	r. Fire bucket-Standard size	Quantity to be mentioned.	
	s. Fire axe's	Quantity to be mentioned.	
	t. Sand box	Quantity to be mentioned.	
	u. Scoop	Quantity to be mentioned.	
	v. Thermal Imagery Camera (TIC)	Minimum 2xTIC having origin of group A countries are to be provided to allow fire fighting in smokey environment.	
	w. Fire Hydrant	Quantity to be mentioned.	

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Ser	Description	Proposed Technical Specification	Remarks
43.	Prelim Drawing/Document		
	a. GA Plan with Principal Particulars	To be submitted by participants and approved by CS and owner.	
	b. Mid-Ship Section Drawing	To be submitted during contract and approved by CS and owner.	
	c. Lines Plan	To be submitted.	
	d. Stability Calculation as per Coastal Shipping Ordinance.	To be submitted.	
	e. Drawing of the Slipway including capacity of winch	To be submitted.	
	f. Catalogue for each equipment mentioned in the bid document	To be submitted.	
	g. Fuel consumption at cruising speed demonstrated with engine curve.	To be submitted.	
	h. Engine and machineries catalogue	To be submitted.	
	j. CD of offered document and Drawings/Calculation	To be submitted	
	k. Tank Capacity Plan	To be submitted-(Minimum 15 days)	
	l. Docking/ Undocking Plan	To be submitted	
44.	Other required items	Bollards, Fairleads, Navigational Lights, Ship's Siren and Horn, Navigational Shapes, Electrical Cables, FS Wire Ropes, and Mooring (manila) Ropes with winch, Metal Chains, etc are to be provided to meet the requirements of standard operation of the LCT. The supplied items should meet the requirement of the length of LCT.	
45.	Paint Scheme	<p>a. Paint scheme including thickness of each layer should be done as per Marine Grade standard (with epoxy paint).</p> <p>b. The quality, suitability, and durability of paints should be certified from IACS or the most appropriate authority.</p> <p>c. Color should be applied as per user's requirement.</p>	
46.	Standard Tools List for different level of Maintenance	List to be provided	
47.	Operational Temperature	(0-50) degree Celsius.	
48.	Maintenance	Details to be mentioned	
49.	ISO Certificate	Manufacturer must submit ISO certificate	
50.	Any Other (if required)	To be mentioned.	

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Notes: Following information/documents are to be supplied:	
a.	Details of working principle.
b.	Functional and users training in country to be provided the supplier using Foreign/local experts. Operation, repair, maintenance and inventory control training will be provided by supplier at his own cost for the first set of crews/maintenance related personnel from the country of origin.
c.	Provision of supply of major spares for minimum 15 (Fifteen) years.
d.	Provision of supply of fast and slow moving spares for minimum 15 (Fifteen) years. .
e.	Model validity for the major equipment used in LCT for minimum 10 (Ten) years.
f.	Docking undocking plan to be provided with the offer.
g.	List of spares, Special Service tools (SST) and Special Service Material (SSM) to be mentioned. Simulation and model test to be ensured after the contract and the laboratory cost to be borne by the supplier/local agent.
h.	Owner's operation manual for all the equipment and Necessary repair manual for all the equipment and updated spare parts' catalogue for all the equipment are to be supplied.
j.	After sales service: Shipbuilders Should provide after sale service free of cost within warranty period and with cost after warranty period. Certificate to be provided by shipbuilder and local agent in this regard during offer.
k.	10% fast moving spare parts are to be supplied as per DGDP contract requirement.
l.	The Tenderer/Bidder/Manufacturer shall have to submit necessary document in favor of experience for construction of LCT or similar nature vessels.
m.	Any other relevant technical information should also be enclosed.
n.	The supplier is to provide a certificate mentioning that all materials and equipment which will be used for the construction of the LCT will be new and without any defect.
p.	Suppliers/manufacturers must provide the offer with the necessary data/information as mentioned in required technical specifications. (For example: mentioning "will comply", "will be complied as per tender document", "yes", etc will not be accepted).
q.	For maintenance items like engine, generator, steel plate and steel section, pump, RO pump, sig equipment RADAR costing more than Tk 1 Crore pre-shipment inspection (PSI) to be conducted by the supplier in the manufacturing countries as per policy of ITD Dte. Representative from user unit and inspecting authority in terms of three or more members must be ensured during all type of inspections.
r.	Clarification will be sought either electronically or physically by presentation before contract. Tender document to be appropriately and fully filled up as instructed. Any deviation from the required technical specifications will not be accepted and the submitted "Tender document" will be considered as non-responsive.
s.	The supplier should be a well reputed ship builder. In support of this, last five years' production details and turn over details are to be provided with the offer along with all supporting documents.
t.	All drawing to be approved by classification society (CS) and model testing to be completed before keel Laying from Group A countries.
u.	GA drawing and model testing to be completed by three months after the signing of contract.
v.	Manufacturing facilities of the manufacturer will be verified physically prior to signing of the contract by the BofO.

Part-3

Ser	Nomenclature/Description	Dte to provide info to the committee	Remarks
51.	Training Require		
	a. User Training	To be provided (As per requirement of Engr Dte) by the manufacturer authorized/certified employees on navigation machinery radio equipment & maintenance.	
	b. Operation, Repair and Maintenance Training	To be provided (As per requirement of EME Dte).	
	c. Inventory Con and Mgt Aspect (Ord)	To be provided (As per requirement of Ord Dte)	

Part-4

52.	Repair and Maintenance Require List Spares		
	a. Analyzer, measuring & testing/ fault finding and diagnostic set.	List to be provided (As per requirement of EME Dte)	
	b. SST	List to be provided (As per requirement of EME Dte)	
	c. SSM	List to be provided (As per requirement of EME Dte)	
	d. <u>Pubs.</u>	List to be provided (As per requirement of EME Dte)	
	(1) Owners/operators manual in English (book type) including CD/DVD.	List to be provided (As per requirement of EME Dte)	
	(2) Workshop/repair manual in English (book type) including CD/DVD.	List to be provided (As per requirement of EME Dte)	
	(3) 100% update master spare parts catalogue in English (book type) including CD/DVD.	List to be provided (As per requirement of EME Dt7)	
	(4) Complete and updated master spare parts price catalogue/list in English(book type) including CD/DVD.	List to be provided (As per requirement of EME Dte)	

Part-5

53.	List of spares	List to be provided (As per requirement of EME Dte). Minimum 5 yrs fast moving parts & filter to be provided.	
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Part-6

54.	Tools list for different IVI of Maintenance	List to be provided by (As per requirement of EME Dte). Tools must be main of manufacturer made.	
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Part-7

55.	Final aspects	To be provided (As per requirement of Ord Dte)	
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Ser	Phase of work	FY	Payment	Remarks
56.	Payment Terms			
	a. Contract Signed	2020-2021	Nil	Contract to be signed in local Currency
	b. Estimated unit Cost	-	65.00 Cr	
	c. Keel Laying (With CS vetted design)	2021-2022	15%	15 % of Total Value
	d. 50% Hull Completion	2022-2023	20%	35 % of Total Value
	e. Major Machineries at Yard (Supplier's Premises) Part-I		15%	
	f. Major Machineries at Yard (Supplier's Premises) Part-II	2024-2024	15%	50 % of Total Value
	g. Launching		15%	
	h. Delivery		10%	
	j. Acceptance (1 year service)		10%	
Total=			100.00%	
Notes: Following information/documents are to be supplied:				
a. Details of working principle.				
b. Function and users training in country to be provided the supplier using Foreign/local experts. Operation, repair, maintenance and inventory control training will be provided by supplier at his own cost for the first set of crews/maintenance related personnel from the country of origin.				
c. Provision of supply of major spares for minimum 15 (Fifteen) years.				
e. Model validity for the major equipment used in LCT for minimum 10 (Ten) years.				
f. Docking undocking plan to be provided with the offer.				
g. List of spares, Special Service tools (SST) and Special Service Material (SSM) to be mentioned. Simulation and model test to be ensured after the contract and the laboratory cost to be borne by the supplier/local agent.				
h. Owner's operation manual for all the equipment and Necessary repair manual for all the equipment and updated spare parts catalogue for all the equipment are to be supplied.				
j. After sales service: Shipbuilders Should provide after sale service free of cost within warranty period and with cost after warranty period. Certificate to be provided by shipbuilder and local agent in this regard during offer.				
k. 10% fast moving spare parts are to be supplied as per DGDP contract requirement.				
l. The Tenderer/Bidder/Manufacturer shall have to submit necessary document in favor of experience for construction of LCT or similar nature vessels.				
m. Any other relevant technical information should also be enclosed.				
n. The supplier is to provide a certificate mentioning that all materials and equipment which will be used for the construction of the LCT will be new and without any defect.				
p. Suppliers/manufacturers must provide the offer with the necessary data/information as mentioned in required technical specifications. (For example: mentioning "will comply", will be complied as per tender document", "yes", etc will not be accepted).				
q. For maintenance items like engine, generator, steel plate and steel section, pump, RO pump costing more than tk 1 crore pre-shipment inspection (PSI) to be conducted by the supplier in the manufacturing countries as per policy of ITD Dte. Representative from user and inspecting authority in terms of three of three or more members must be ensured during all type of inspections.				
r. Preliminary stability book has to be submitted with drawing before keel laying.				
s. Before keel laying following things have to be submitted.				
(1) Model testing report.				
(2) Approved Complete GA drawing.				
(3) Preliminary Stability Booklet.				
(4) Midship section drawing.				
(5) Lines plan drawing.				
(6) Longitudinal construction drawing.				
(7) Machinery layout drawing.				
(8) Ship propulsion power Calculation.				
(9) Total electric load Calculation.				
(t) At least 25% of hull construction material should be available at yard at the time of keel laying.				
(u) All gadgets and life saving accessories must be CS Approved.				