

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

Ser	Description	Required Technical Specification	Remarks
1.	Type of the Vessel	LCT (Landing Craft Tank)	
2.	Name and Complete Address of Manufacturer/Builder	To be mentioned	
3.	Origin of Shipyard	Bangladesh	
4.	Year of Production	Building will start after completion of the contract	
5.	Classification	The construction of the vessel must be supervised and certified by a full member of IACS. Compliance certificate to be given on main items including hull, superstructure, engine, steel plate and steel sections, generators, pumps, cables, paints and shall be approved by IACS.	
6.	Material	Shipbuilding quality IACS certified mild steel. The quality and thickness of the plates will be in accordance with the requirement of the CS but not less than the contractual requirement where specifically mentioned.	
7.	Anti Corrosive Fittings	Marine grade standard	
8.	Dimension in Meter		
	a. Length	Minimum 65m	
	b. Maximum Breadth (Moulded)	As per design	
	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. b. The Car deck should be covered having a head room clearance of 4.6m (minimum).	
	d. Depth	As per design (Minimum 3.5 m)	
	e. Draft (loaded)	Maximum 1.80 m	
	f. Air Draft	Maximum 11.0 m	
9.	Displacement (Dead load + Live load)	As per design (Minimum 1200 Ton)	
10.	Stress at Car Deck Plate	Minimum allowable stress 10 Ton/m ²	
11.	Steering	a. Steering will be done both hydro electrically and manually which should be located at wheel house. b. In case of an emergency, the manual control will be located at any suitable place collocated with the radar compartment. c. Country of Origin (Group A) to be mentioned.	There should have arrangement to synchronize and communication with both systems.
12.	Details Design and Drawing of LCT	a. The General Arrangement (GA) drawing will be approved by owner to confirm user's convenience within the scope of the contract. b. All drawings must be approved by IACS member which will be further approved by the appropriate authority/DOS to fulfil the Bangladesh Inland Waterways requirements.	

RESTRICTED

Ser	Description	Required Technical Specification	Remarks
13.	Accommodation and other facilities for crews and transported personnel	<p>a. Accommodation facilities for 20 (twenty) officers which should include 2 (two) VIP accommodations, 4xsingle rooms, 3xtwin bed and 4x4bed accommodations. All cabins should have attached toilet facilities.</p> <p>b. 1xConference room, 1xDining room and 1xGalley for officers have to be provided.</p> <p>c. 40xPerson's accommodation has to be provided for ship's integral crew and security personnel which should include 4xsingle rooms for 1st class marine master/drivers and JCOs and 4xTwin bed accommodation for NCO'S. Other accommodations may be 6/8/10 Bunks arrangements.</p> <p>d. Cooking, dining and toilets facilities for ship's integral crews and soldiers.</p> <p>e. Additional accommodation for 150x soldiers (minimum) who need to be transported.</p> <p>f. Magazine Rooms (minimum 4).</p> <p>g. Separate cooking, dining and toilet facilities for the transported soldiers.</p> <p>h. Living area panel and ceiling should be standard marine type along with thermal insulation. Fitting and fixture should be as per marine grade standard.</p> <p>j. Toilet and Galley should be SS panel and ceiling with GRP /ceramic tiles floor.</p> <p>k. Insulation plan, accommodation and furniture fitting drawing should be submitted for approval.</p> <p>l. Followings to be included: (1) Capacity of conference room, dining hall and cook house. (2) No of refrigerators. (3) Quality of furniture.</p>	
14.	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 given by owner (user unit).</p>	
15.	<u>Loading/Unloading/Ramp facilities</u>		
	a. Dimension of Ramp	Bow and aft ramp should be sufficiently strengthened for loading/unloading of 60 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 Ramp	04 (Four) Numbers. The location of 2 x ramps should be at the aft & bow side to facilitate heavy duty. 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).	
	c. Ramp Operation	Hydro electrical	
	d. Personnel Embarkation/ Disembarkation	One personnel embarkation /disembarkation facility (preferably brow) each should be provided on port & starboard side of the LCT. The hydraulic door may be offered.	

Ser	Description	Required Technical Specification	Remarks
16.	Propulsion Unit		
	a. Main Engine		
	(1) Number of engines	03 (Three) Numbers	
	(2) Make and Model	To be mentioned	
	(3) Type	Marine Diesel Engine	
	(4) Country of Origin	USA, Canada, UK, Austria, Belgium, Denmark, Finland, Germany, France, Hungary, Italy, Ireland, Netherlands, Sweden, Norway, Switzerland, Spain, Japan, Australia, Turkey and South Korea	Group A Country
	(5) Country of Manufacturer	USA, Canada, UK, Austria, Belgium, Denmark, Finland, Germany, France, Hungary, Italy, Ireland, Netherlands, Sweden, Norway, Switzerland, Spain, Japan, Australia, Turkey and South Korea	
	(6) Horse Power with rated rpm	a. To be mentioned but not less than the power required to attain contractual speed (as mentioned in Ser 24). b. Engine power output curve against various rpm along with fuel consumption rate is to be provided with the offer.	
	(7) Number of Cylinders	08 (Eight) Cylinders (minimum).	
	(8) Engine Controls	Hydraulic/Electrical	
	(9) Engine Starting	Electric/ Air	
	(10) Bore and Stroke	To be mentioned	
	(11) Displacement	To be mentioned	
	(12) Minimum Torque with rpm	To be mentioned	
	(13) Cooling System	Water Cooled (open or hybrid). The type of cooling water pump is to be mentioned (Self-driven or General Service pump will be used).	
	(14) Year of Production	Maximum 01(one) year before the contract	
	(15) Engine Test Bench Cert	To be provided during acceptance trial	
	(16) Engine Operation	The speed of the engines have to be controllable both from local position and from the wheel house.	
	b. Gear Box		
	(1) Make & Model	To be mentioned	
	(2) Country of Origin	USA, Canada, UK, Austria, Belgium, Denmark, Finland, Germany, France, Hungary, Italy, Ireland, Netherlands, Sweden, Norway, Switzerland, Spain, Japan, Australia, Turkey and South Korea	
	(3) Rotation of Stern	Conventional	
	(4) 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)	
	(2) Country of Origin	USA, Canada, UK, Austria, Belgium, Denmark, Finland, Germany, France, Hungary, Italy, Ireland, Netherlands, Sweden, Norway, Switzerland, Spain, Japan, Australia, Turkey and South Korea	
	(3) Number of Blades	To be mentioned	
	(4) Diameter	To be mentioned	
	(5) Material	To be mentioned	
	(6) Number of propellers	03 (Three) 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.	

RESTRICTED

Ser	Description	Required Technical Specification	Remarks
17.	<u>Generator Set (03 x Generator)</u>		
	a. <u>Main Generating Set</u>		
	(1) Make & Model	To be mentioned	
	(2) Type	To be mentioned	
	(3) Country of Origin	USA, Canada, UK, Austria, Belgium, Denmark, Finland, Germany, France, Hungary, Italy, Ireland, Netherlands, Sweden, Norway, Switzerland, Spain, Japan, Australia, Turkey and South Korea	
	(4) Output Capacity	a. To be mentioned. The capacity of each generator should be such that, it can individually take full electrical load of the LCT and there is at least 20% surplus. b. The electric load table of the LCT is to be provided with the offer.	
	(5) Engine Make & Model	To be mentioned	
	(6) Engine Output HP with rated rpm	To be mentioned	
	(7) Air conditioning facilities	All wheel room, Engine monitor compartment, officers' cabins, officers' dining hall and conference room should be provided with air conditioning facilities. Make & model (preferably of Group A countries origin) of air conditioning units should be mentioned specifically with the offer.	
	(8) Electric Distribution System	Marine grade standard	
	b. <u>Harbour Generator</u>		
	(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	USA, Canada, UK, Austria, Belgium, Denmark, Finland, Germany, France, Hungary, Italy, Ireland, Netherlands, Sweden, Norway, Switzerland, Spain, Japan, Australia, Turkey and South Korea	
	(6) Output Capacity	It should be sufficient enough to take the domestic load (50kw minimum) when LCT is in harbour.	
(7) Engine Make & Model	To be mentioned		
(8) Engine Output HP with rated rpm	To be mentioned		
18.	<u>Pump Sets</u>		
	a. <u>General Service Pump</u>		
	(1) Make & Model	To be mentioned	
	(2) Country of Origin	USA, Canada, UK, Austria, Belgium, Denmark, Finland, Germany, France, Hungary, Italy, Ireland, Netherlands, Sweden, Norway, Switzerland, Spain, Japan, Australia, Turkey and South Korea	
	(3) Capacity	(1) Should be sufficient for (general service, engine cooling, sanitary etc). (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).	
	b. <u>Fresh Water Pump</u>		
	(1) Make & Model	To be Mentioned.	
	(2) Country of Origin	USA, Canada, UK, Austria, Belgium, Denmark, Finland, Germany, France, Hungary, Italy, Ireland, Netherlands, Sweden, Norway, Switzerland, Spain, Japan, Australia, Turkey and South Korea	
	(3) Capacity	2000 ltr/hr compatible with the water treatment plant.	
	(4) Details of Pump	To be mentioned	
(5) Number of Pumps	Minimum 2		

RESTRICTED

Ser	Description	Required Technical Specification	Remarks
	c. Fire Pump	Minimum 02. GS pumps should also be able to action as fire pumps when required. Standard maritime fire safety regulations must be complied with	
	d. Sanitary Pump		
	(1) Make & Model	To be Mentioned	
	(2) Country of Origin	USA, Canada, UK, Austria, Belgium, Denmark, Finland, Germany, France, Hungary, Italy, Ireland, Netherlands, Sweden, Norway, Switzerland, Spain, Japan, Australia, Turkey and South Korea	
	(3) Capacity	To be mentioned	
	(4) Details of Pump	To be mentioned	
	(5) Number of Pumps	To be mentioned	
	e. Bilge pump	Minimum 01/Compatible with the design	
	f. Sea Water Pump (for ballasting)	Minimum 01. GS pump should also be able to handle with ballasting operation	
19.	Type of fuel	Diesel	
20.	Air Compressor (with complete accessories)	Minimum 2 sets (To be placed in engine room) Country of Origin, make model etc to be mentioned	
21.	Engine Room Ventilation	Blower for sufficient ventilation for different closed compartments has to be provided	
22.	Fuel Consumption	To be mentioned. Fuel consumption curve at different rpm is to be provided	
23.	Desired Cruising Range in Nautical Mile	Minimum 1500 (One thousand five hundred) Nautical miles at maximum cruising speed	
24.	Speed of the LCT	a. Maximum speed: Minimum 15 (fifteen) knots at full loaded condition b. Economic speed: Minimum 10 (ten) knots at full loaded condition	
25.	Effluent Treatment Plant (ETP)	Consumable. Must be non-proprietary (non-brand) item to comply with Marpol regulation	
26.	Tank Capacity		
	a. Fuel Tank Capacity	Minimum 50,000 liters (Sufficient for 100 hours continuous operation at maximum speed in a 15 day's voyage; Supporting calculation is to be provided)	
	b. Lubrication Oil	To be mentioned	
	c. Fresh Water Facilities	Minimum 1,00,000 liters (50,000 liters storage capacity for drinking water and 50,000 liters storage capacity for day to day other uses like ablution, washing etc)	
27.	<u>Navigational Equipment (Other navigational equipment's may be offered after consulting with the user unit)</u>		
	a. <u>Magnetic Compass</u>		
	(1) Make & Model	To be mentioned	
	(2) Country of Origin	USA, Canada, UK, Austria, Belgium, Denmark, Finland, Germany, France, Hungary, Italy, Ireland, Netherlands, Sweden, Norway, Switzerland, Spain, Japan, Australia, Turkey and South Korea	
	b. <u>Eco Sounder</u>		
	(1) Make & Model	To be mentioned	
	(2) Country of Origin	USA, Canada, UK, Austria, Belgium, Denmark, Finland, Germany, France, Hungary, Italy, Ireland, Netherlands, Sweden, Norway, Switzerland, Spain, Japan, Australia, Turkey and South Korea	
	c. <u>GPS</u>		
	(1) Make & Model	To be mentioned	
	(2) Country of Origin	USA, Canada, UK, Austria, Belgium, Denmark, Finland, Germany, France, Hungary, Italy, Ireland, Netherlands, Sweden, Norway, Switzerland, Spain, Japan, Australia, Turkey and South Korea	

RESTRICTED

Ser	Description	Required Technical Specification	Remarks
	d. Rader		
	(1) Make & Model	To be mentioned	
	(2) Country of Origin	USA, Canada, UK, Austria, Belgium, Denmark, Finland, Germany, France, Hungary, Italy, Ireland, Netherlands, Sweden, Norway, Switzerland, Spain, Japan, Australia, Turkey and South Korea	
	e. Night Vision Eqpt (Binoculars, Goggles etc)		
	(1) Make & Model	To be mentioned	
	(2) Country of Origin	USA, Canada, UK, Austria, Belgium, Denmark, Finland, Germany, France, Hungary, Italy, Ireland, Netherlands, Sweden, Norway, Switzerland, Spain, Japan, Australia, Turkey and South Korea	
	f. Barometer		
	(1) Make & Model	To be mentioned	
	(2) Country of Origin	USA, Canada, UK, Austria, Belgium, Denmark, Finland, Germany, France, Hungary, Italy, Ireland, Netherlands, Sweden, Norway, Switzerland, Spain, Japan, Australia, Turkey and South Korea	
	g. Anemometer		
	(1) Make & Model	To be mentioned	
	(2) Country of Origin	USA, Canada, UK, Austria, Belgium, Denmark, Finland, Germany, France, Hungary, Italy, Ireland, Netherlands, Sweden, Norway, Switzerland, Spain, Japan, Australia, Turkey and South Korea	
	h. Clear View Screen		
	(1) Make & Model	To be mentioned	
	(2) Country of Origin	USA, Canada, UK, Austria, Belgium, Denmark, Finland, Germany, France, Hungary, Italy, Ireland, Netherlands, Sweden, Norway, Switzerland, Spain, Japan, Australia, Turkey and South Korea	
28.	Furniture and Electric Equipment	Marine Grade Standard	
29.	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	
30.	Anchoring Facility	a. Number of anchors, anchor type, anchor weight, cable length, cable diameter etc are to be mentioned. b. Anchor winch or capstan should be provided to drop or lift anchor. c. Equipment Number Calculation is to be provided.	
31.	Mooring Winch	To be mentioned Necessary Calculation is to be provided in supporting the capacity	
32.	Medical facilities	One cabin with bed, first aid facility, oxygen cylinder and other firsthand treatment facilities to be provided.	
33.	Life Saving Accessories		
	a. Motor Life Boats	a. Minimum 02 (Two) motor life boats have to be provided with a capacity of 10 (ten) persons each . b. The boat should have an out board engine of capacity at least 75 HP . c. Integral boat lowering and lifting arrangement is to be provided. d. The location of the boat and its securing arrangement is to be shown on the GA drawing.	
	b. Life Jacket	Minimum 200 (Two hundred) IACS standard marine life jackets. Life Jacket storing position is to be shown on the GA drawing.	
	c. Life Buoy	Minimum 60 (sixty) . The storing arrangement is to be shown on the GA drawing.	
	d. Life buoy with 27.5 M line	Marine grade IACS standard	
	e. Life buoy with water light	Marine grade IACS standard	
	f. Inflatable life raft for 25 persons	Marine grade IACS standard	
	g. Bench drilling with Elect Motor	Marine grade IACS standard	

RESTRICTED

Ser	Description	Required Technical Specification	Remarks
	h. Flanges	Marine grade IACS standard	
	j. Pyrotechnics	Marine grade IACS standard	
	k. Self igniting light	Marine grade IACS standard	
	l. Life line	Marine grade IACS standard	
	m. 20 Persons buoyant apparatus	Marine grade IACS standard	
	n. Signal light, flags and globes	Marine grade IACS standard	
	p. Any Other equipment (if any)	Marine grade IACS standard	
34.	Communication Equipment		
	a. RTS (Radio Telegraph System)		
	(1) Make & Model	Marine grade IACS standard	
	(2) Country of Origin	USA, Canada, UK, Austria, Belgium, Denmark, Finland, Germany, France, Hungary, Italy, Ireland, Netherlands, Sweden, Norway, Switzerland, Spain, Japan, Australia, Turkey and South Korea	
	b. Inter Communication (Equipment within Bridge Deck, all cabins and troops Accommodation).		
	(1) Make & Model	Marine grade IACS standard	
	(2) Country of Origin	USA, Canada, UK, Austria, Belgium, Denmark, Finland, Germany, France, Hungary, Italy, Ireland, Netherlands, Sweden, Norway, Switzerland, Spain, Japan, Australia, Turkey and South Korea	
	c. CCTV System	To be provided	
	d. VHF		
	(1) Make & Model	As per CS Standard	
	(2) Country of Origin	USA, Canada, UK, Austria, Belgium, Denmark, Finland, Germany, France, Hungary, Italy, Ireland, Netherlands, Sweden, Norway, Switzerland, Spain, Japan, Australia, Turkey and South Korea	
	e. PA Equipment	To communicate with cabins and decks from the bridge and mic for other incoming vessels.	
	f. Walkie Talkie set	To be provided	
35.	Electrical System		
	a. Volt	220 Volt 50 Hz AC system for normal operation and 24 volt DC system for emergency operation.	
	b. Batteries (Volt & Ah)	Volt and Ah to be mentioned. Charging facilities are to be provided for all supplied batteries.	
	c. Alternator (Volt and Amp)	Volt and Amp 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 03(three) main generator sets and 01 (one) harbor generator set.	
	f. Cable	Marine grade standard	
36.	Fire Fighting Equipment		
	a. Foam extinguisher (6kg) for E.R	Marine grade IACS standard	
	b. CO2 extinguisher (9 Liter) for each Galley, Poop deck and bridge deck.	Marine grade IACS standard	
	c. Foam fire extinguisher -25 Liter	Marine grade IACS standard	
	d. Fire extinguisher –Dry Powder (6 kg)	Marine grade IACS standard	
	e. Fire extinguisher –Soda Acid (9 liter)	Marine grade IACS standard	
	f. Fixed CO2 plant in engine room for fire extinguishers.	Marine grade IACS standard	
	g. Smoke detector with sensor in all cabins, troops accommodation, engine room and wheel house	Auto	
	h. Fire alarm	Auto	
	j. Hose pipe (2") with Nozzle, etc.	Marine grade IACS standard	
	k. Fire hose pipe cradle box	Marine grade IACS standard	
	l. Self contained breathing	Marine grade IACS standard	
	m. Fire men out-fit	Marine grade IACS standard	

RESTRICTED

Ser	Description	Required Technical Specification	Remarks
37.	n. Fire blanket	Marine grade IACS standard	
	p. Safety lamp	Marine grade IACS standard	
	q. Fire Bucket-Standard size	Marine grade IACS standard	
	r. Fire axe's	Marine grade IACS standard	
	s. Sand box	Marine grade IACS standard	
	t. Scoop	Marine grade IACS standard	
37.	Prelim Drawing/Document		
38.	a. GA Plan with Principal Particulars	To be submitted by participants	
	b. Mid-Ship Section Drawing	To be submitted during contract and approved by Owner	
	c. Lines Plan	To be submitted	
	d. Stability Calculation as per Inland Shipping Ordinance (ISO)-2001/2005.	To be submitted	
	e. Drawing of the Slipway including cap 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	
38.	Other required items	Bollards, Fairleads, Navigational Lights, Navigational Shapes, Electrical Cables, FS Wire Ropes, and Mooring (manila) Ropes with winch etc are to be provided to meet the requirements of standard operation of the LCT.	
39.	Paint Scheme	a. Paint scheme including thickness of each layer should be done as per IACS standard (with epoxy paint). b. Colour should be as per user's requirement.	
40.	Standard Tools List for different level of Maintenance	List to be provided	
41.	Operational Temperature	Details to be mentioned	
42.	Maintenance	Details to be mentioned	
43.	ISO Certificate	Manufacturer must submit ISO Certificate	
44.	Any Other (if required)	To be mentioned	
	Notes: Following information's/documents to be supplied along with the offer:		
	a. Details of working principle.		
	b. Functional and users training in country to be provided by Foreign/Local expert. 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 min 15 (fifteen) years.		
	d. Provision of supply of fast and slow moving spares for min 15 (fifteen) years.		
	e. Model validity for the major equipment used in LCT for minimum 10 (ten) years.		
	f. List of spares, Special Service Tools (SST)/Special Service Material (SSM) to be mentioned. Necessary repair manual and parts' catalogue to be provided.		
	g. 10% fast moving spare parts to be supplied as per DGDP contract.		
	h. The Tendered/Bidder/Manufacturer shall have to submit necessary document in favour of experience for construction of LCT.		
	j. Any other relevant technical information should also be enclosed.		
	k. 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.		
	l. 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).		

RESTRICTED

Ser	Description	Required Technical Specification	Remarks
	m. For maintenance items like engine, generator, steel plate & steel section, pump, cable, paints etc costing more than 01 (one) Crore, pre-shipment inspection (PSI) and onstage inspection to be conducted by the supplier.		
	n. No clarification will be sought either electronically or physically by presentation. 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.		
	p. The supplier should be a well reputed ship builder. In support of this, last five year's production details and turnover details to be provided with the offer.		
	q. Capability of manufacturing facilities of the Manufacturer will be verified physically prior to signing of the contract by the users.		