

**RETURN BIDS TO:**  
**RETOURNER LES SOUMISSIONS À:**  
**Bid Receiving Public Works and Government  
Services Canada/Réception des soumissions  
Travaux publics et Services gouvernementaux  
Canada**  
**Pacific Region**  
**401 - 1230 Government Street**  
**Victoria, B.C.**  
**V8W 3X4**  
**Bid Fax: (250) 363-3344**

## REQUEST FOR PROPOSAL DEMANDE DE PROPOSITION

**Proposal To: Public Works and Government  
Services Canada**

We hereby offer to sell to Her Majesty the Queen in right of Canada, in accordance with the terms and conditions set out herein, referred to herein or attached hereto, the goods, services, and construction listed herein and on any attached sheets at the price(s) set out therefor.

**Proposition aux: Travaux Publics et Services  
Gouvernementaux Canada**

Nous offrons par la présente de vendre à Sa Majesté la Reine du chef du Canada, aux conditions énoncées ou incluses par référence dans la présente et aux annexes ci-jointes, les biens, services et construction énumérés ici sur toute feuille ci-annexée, au(x) prix indiqué(s).

**Comments - Commentaires**

<b>Title - Sujet</b> Fab &Del 6.1-6.4m Cabin Launch	
<b>Solicitation No. - N° de l'invitation</b> 5P438-140652/A	<b>Date</b> 2015-01-13
<b>Client Reference No. - N° de référence du client</b> 5P438-140652	
<b>GETS Reference No. - N° de référence de SEAG</b> PW-\$XLV-175-6640	
<b>File No. - N° de dossier</b> XLV-4-37183 (175)	<b>CCC No./N° CCC - FMS No./N° VME</b>
<b>Solicitation Closes - L'invitation prend fin at - à 02:00 PM on - le 2015-02-13</b>	<b>Time Zone Fuseau horaire</b> Pacific Standard Time PST
<b>F.O.B. - F.A.B.</b> <b>Plant-Usine:</b> <input type="checkbox"/> <b>Destination:</b> <input checked="" type="checkbox"/> <b>Other-Autre:</b> <input type="checkbox"/>	
<b>Address Enquiries to: - Adresser toutes questions à:</b> Elkington, J.R.	<b>Buyer Id - Id de l'acheteur</b> xlv175
<b>Telephone No. - N° de téléphone</b> (250) 363-3391 ( )	<b>FAX No. - N° de FAX</b> (250) 363-3960
<b>Destination - of Goods, Services, and Construction:</b> <b>Destination - des biens, services et construction:</b> PARKS CANADA SEE HEREIN	

**Instructions: See Herein**

**Instructions: Voir aux présentes**

**Vendor/Firm Name and Address**

**Raison sociale et adresse du  
fournisseur/de l'entrepreneur**

**Issuing Office - Bureau de distribution**

Public Works and Government Services Canada - Pacific  
Region  
401 - 1230 Government Street  
Victoria, B. C.  
V8W 2Z4

<b>Delivery Required - Livraison exigée</b> See Herein	<b>Delivery Offered - Livraison proposée</b>
<b>Vendor/Firm Name and Address</b> <b>Raison sociale et adresse du fournisseur/de l'entrepreneur</b>	
<b>Telephone No. - N° de téléphone</b> <b>Facsimile No. - N° de télécopieur</b>	
<b>Name and title of person authorized to sign on behalf of Vendor/Firm (type or print)</b> <b>Nom et titre de la personne autorisée à signer au nom du fournisseur/ de l'entrepreneur (taper ou écrire en caractères d'imprimerie)</b>	
<b>Signature</b>	<b>Date</b>

Solicitation No. - N° de l'invitation

5P438-140652/A

Amd. No. - N° de la modif.

Buyer ID - Id de l'acheteur

xlv175

Client Ref. No. - N° de réf. du client

5P438-140652

File No. - N° du dossier

XLV-4-37183

CCC No./N° CCC - FMS No/ N° VME

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## ANNEX A - STATEMENT OF WORK

### A1. VESSEL:

- a. 6.1 – 6.6 meter Aluminum Cabin Launch: Field Operations vessel
- b. Configured as an open back Cabin Launch with forward cuddy.

### A2. ABBREVIATIONS

ABYC	American Boat and Yacht Council
AC	Alternating Current
ASTM	American Society for Testing and Materials
CFM	Contractor Furnished Material
<b>CSA</b>	<b><i>Canadian Shipping Act</i></b>
CSA	Canadian Standards Association
COLREGS	Collision Regulations
DC	Direct Current
GPS	Global Positioning System
GSM	Government Supplied Material
ISO	International Organization for Standardization
PVC	Polyvinylchloride
TA	Technical Authority (As defined by the Contract)
TCMS	Transport Canada Marine Safety
UV	Ultraviolet
VHF	Very High Frequency

### A3. LIST OF REFERENCE DOCUMENTS

REFERENCE	TITLE
ASTM F1166	Standard Practice for Human Engineering Design for Marine Systems, Equipment and Facilities
TP 1332	Construction Standards for Small Boats
TP 13430	Standard For Tonnage Measurement of Ships
TP 14070	Small Commercial Vessel Safety Guide
ISO 12217	Small Craft – Stability and Buoyancy Assessment and Categorization
ISO 6185	Shipbuilding and Marine Structures – Inflatable Boats
Canada Shipping Act	Small Vessel Regulations
Canada Shipping Act	Collision Regulations (COLREGS)
ABYC	American Boat and Yacht Council Standards
Canadian Standards Association (CSA) CSA W47.2-M1987	Certification of Companies for Fusion Welding of Aluminium
(CSA) C22.2 No. 183.2-M1983 (R1999)	Standards for DC Electrical Installations on Boats

#### A4. PWGSC SMALL CRAFT SOLICITATION INFORMATION

<p><b>a.</b> General Information: This vessel is intended to be built based on stock small working or commercial vessel hull forms with a minimum of customization as indicated herein. Prototype hulls will not be considered for this procurement. A number(500) of proven hulls must be shown to have been produced and be in service for the Contractor to indicate suitability of the hull for this procurement. Bidders must submit brochures, photographs, references, builder's plates, hull identification numbers confirming multiple builds, etc. as applicable.</p>	
<p>Annex A Section A5, TECHNICAL SPECIFICATION is divided into four parts:  Part 1 Article 1 General Description of Vessel Role and Function  Part 2 Articles 2-9 Contractor Design and Construction Practices  Part 3 Articles 10-16 Vessel Particulars  Part 4 Articles 17-20 Outfitting and Equipment  Part 1 provides a brief description of the vessel's role and function. Part 2, Contractor Design and Construction Practices provides general information on a wide range of construction practices, standards, vessel shipping and packaging, etc. Part 3, Vessel Particulars, cover the next layer of vessel description, physical construction and arrangement. Part 4, Outfitting and Equipment, covers the vessel's fitted equipment such as electronics, propulsion, steering and trailer (if required).</p>	
<p><b>c. Use of the Specification for bidding purposes:</b> The Bidder is to mark an <b>(X)</b> at each <b>BOLD</b> header signifying that the specification has been read and that any proposal offered will meet, or exceed the required compliance with the written specification. The bidder must agree to comply with the specification even if offering an option.</p>	<p><b>X</b></p>
<p><b>d.</b> Bidders may make notations in the appropriate column (For Example "See note 1, 2, 3, etc.") to refer to any optional proposals that have been entered onto the page(s) at the end of Annex A, Statement of Work. <b>Any cost differences resulting from modifications proposed by the bidder must only be included in Annex I Appendix 1 table b.</b></p>	<p><b>X</b>  e.g. see note 1)</p>

#### A5. TECHNICAL SPECIFICATION

## **Table of Contents**

- 1.0 General Description of Vessel Role and Functions
- 2.0 General Marine Construction Practices
- 3.0 Material and Construction Technicalities
- 4.0 Warranty Service and Parts
- 5.0 Documentation
- 6.0 Quality Assurance
- 7.0 Test and Trials
- 8.0 Packaging and Shipping
- 9.0 Trailer Information

## **Vessel Particulars**

- 10.0 Physical Characteristics
- 11.0 Operational Performance
- 12.0 Environmental Conditions
- 13.0 Vessel Configuration
- 14.0 Construction Standards
- 15.0 Construction Drawings and Data
- 16.0 Construction and Finish

## **Outfitting and Equipment**

- 17.0 Outfitting Detail
- 18.0 Propulsion
- 19.0 Steering
- 20.0 Trailer Specification
- 21.0 Additional Requirements

### **1.0 General Description of Vessel Role and Functions**

#### **1.1 Mission Statement: Use of small craft within Haida Gwaii Region**

Parks Canada buys, manages and operates numerous small craft in support of its Departmental programs and other missions. The requirement is for one Aluminium Cabin Launch in the 6.2 to 6.4 meter range. This vessel will be used as one of the primary inshore field activity support platforms for programs essential to fulfilling Parks Canada's operational mandate within Gwaii Haanas. The vessel will provide inshore capabilities and support for field activities and research operations.

#### **1.2 Utilization:** Vessel must be capable of transporting (4-6) crew, supplies, and equipment to field sites in various weather and sea conditions encountered around Gwaii Haanas between April and September.

The requirement is for an ISO classification for 'C' service. It is desirable that this vessel have a high-speed capability of at least 25-35 knots with specified engine horsepower rating. The boat will be based out of the Field Operations facilities during the field season and trailered to land storage during the winter months for annual maintenance and storage.

<b><u>CONTRACTOR DESIGN AND CONSTRUCTION PRACTICES</u></b>	
<b><u>General Marine Construction Practises: As applies to;</u></b> <b><u>Vessel's Specific Construction and equipment, found in Section 10 onward.</u></b>	
<b>2.0</b>	Unless stated otherwise all components, equipment and material must be Contractor furnished material, (CFM).
<b>2.2</b>	<b>Ergonomic Design – General:</b> Hazardous operating conditions must be prevented by arranging machinery and equipment in a safe manner; providing guards for all electrical, mechanical and thermal hazards to personnel; and providing guards or covers for any controls that might accidentally be activated by contact of personnel human engineering factors considered in design must include accessibility, visibility, readability, crew efficiency and comfort for a range of physiques for individuals from approx. 150 to 190 cm (5 ft. to 6' 4") in height, wearing cold weather clothing and equipment which must be accessible for use, inspection, cleaning and maintenance per ASTM F1166-88.
<b>2.3</b>	<b>Vibration</b> 1. The boat and all components must be free of local vibration that could endanger boat personnel, damage boat structure, machinery or systems, or interfere with the operation or maintenance of boat machinery or systems. 2. Mounts for movable components, including items moved for stowage, towing or transport must be provided with resilient material as necessary to prevent rattling. 3. Loosening of fasteners under vibration must be prevented by the use of self-locking measures, as applicable.
<b>2.4</b>	<b>Equipment Protection:</b> The Contractor is responsible for the care of all equipment. All parts, especially those having working surfaces or passages intended for lubricating oil, must be kept clean and protected during manufacture, storage, assembly and after installation. Equipment must at all times be protected against dust, moisture or foreign matter and must not be subject to rapid temperature changes or extremes in temperature.
<b>2.5</b>	<b>Site Cleanliness:</b> During construction, all chips, shavings, refuse, dirt and water must be removed at the completion of the work shift or sooner. The Contractor must ensure measures are taken to avoid wear and damage incident to construction, and to prevent corrosion or other deterioration. Equipment subject to freezing must be kept drained, except during test and trials. Equipment must be kept clean and protected from the environment prior to installation.
<b>2.6</b>	<b>Facilities (Painting and FRP facilities only):</b> The Contractor must have a shop capable of maintaining temperature and humidity. It should be capable of maintaining temperature between 16°C and 25°C., and should be capable of maintaining relative humidity below 70 percent.
<b>3.0</b>	<b><u>Material and Construction Technicalities</u></b>
<b>3.1</b>	<b>Structural Integrity</b> - All structures and components (hull, deck, collar, console, seating, etc.) must be of sufficient strength to withstand, when in a Maximum Load condition per <b>builders' conformity plate</b> , the lateral and vertical impact loading that equates to the conditions of the operational profile and mission requirements.
<b>3.2</b>	<b>Materials – General</b> 1. Environmental Exposure; All materials must be corrosion resistant and suitable for use in a salt-water environment as detailed in the Environmental Conditions portion of

<p>the Performance Requirements. All materials normally subjected to sunlight must resist degradation caused by ultraviolet radiation.</p> <p>2. Direct contact of electrolytically dissimilar metals is not allowed. Electrolytic corrosion must be prevented by insulating dissimilar materials from each other with gaskets, washers, sleeves, or bushings of suitable insulating material.</p> <p>Aluminium alloy types 5086, or dual rated 5086/5083 H116/321 must be used for plate; aluminium alloy 6061-T6 (anodized grade), suitable for type 5356 filler alloy, must be used for extruded shapes and welded tubing and pipe, (type 6063 for bending). Stiffened transverse bulkheads or lightened plate frames may use type 5052 to facilitate braked tabs. Specialized use of type 6061 T6 plate in fresh water for high strength delta pads is allowed. Non-hull structural items of trim and outfit such as hatch frames, castings, deck components with braked elements, consoles, and hardware items may be of other aluminium alloys suitable for commercial saltwater marine use such as type 5052 or 6063. Thin hull topside plate, from chine to deck edge, must be alloy 5086 if .15 or .16 plate, with shallow or 45 degree embossed strakes, if required. Thicker topsides will not be embossed. Thinner topsides plate may be alloy 5052 if strakes embossed or braked sheer deck used or cabin elements.</p> <p>4. Stainless Steel: Stainless steel plate type 316 must be used for all stainless steel applications except as noted. Alloy 316L must be used in welded underwater components.</p> <p>5. FRP and Resins, if any.</p> <ol style="list-style-type: none"> <li>Minimum laminating material specification must include gel coats and skin-out of isophthalic resins with a barrier coat wash of the skin-out prior to main laminate and coring materials, which can be laid in GP resins. DCPD resins must not be used.</li> <li>Fibre materials to be standard mat / rovings, or “stitch” combined materials, some of which may use Carbon or Kevlar strands. NO “chopper” materials to be used.</li> <li>Coring materials to be vacuum bagged and to be designed for usage in these specified vessels. Suitable core materials such as ‘Termanto’, ‘Klege-cell’, and ‘Core-cell’ are acceptable and Balsa or wood, plywood, and non-structural foam materials must not be used, unless specifically required, for example, transom core.</li> </ol>	
<p><b>3.3 Fasteners</b></p> <ol style="list-style-type: none"> <li>All fasteners must be of corrosion resistant materials.</li> <li>Cadmium plated parts and fasteners, including washers, must not be used.</li> <li>Direct attachment of alloys containing copper to aluminium is not permitted except for an electrical bonding strap, with contact bolt and separating isolation washer.</li> <li>No fasteners must be directly threaded into aluminium alloys, except with adequate bolt or insert sizes, minimum 1/4” diameter, tapped into a suitable alloy type, and thickness, such as 1/4” 6061, with the use of thread adhesive type material. Aluminium or Stainless steel washers or backing plates must be used as appropriate.</li> <li>Where nuts will become inaccessible after assembly of the vessel, nuts must be captured, or tapped inserts used, to allow reassembly and prevent backing off. Unless otherwise specified, self-locking nuts must be installed to prevent loosening of fasteners due to shock and vibration, and adequate thread showing as required.</li> <li>Fasteners in deck traffic areas must be flush-mounted, flat head, round, or oval head, machine screws to eliminate tripping and snagging hazards.</li> </ol>	
<p><b>3.4 Construction Procedures:</b> Hulls must be fabricated as per the requirements quoted in Construction Standards, Sec 14, and requirements of Vessel Particulars.</p>	
<p><b>3.4.1 Main Hull and Appendages - Hull Form and flotation.</b></p> <ol style="list-style-type: none"> <li>Hull shape must not impede water flow to the propulsion units and must direct spray</li> </ol>	

<p>and waves away from onboard personnel.</p> <ol style="list-style-type: none"> <li>2. Watertight and Tank Bulkheads: The hull design must be such that a sufficient number of compartments, or amount of flotation, including hull compartments, and / or low smoke and flame spread flotation foam, or fire retardant flotation, or flotation devices, will allow for adequate stability and positive buoyancy in a flooded condition. See references to vessel certification, re: TP 1332 / ISO testing.</li> <li>3. <b>Stowage</b> : Weather tight stowage for small items of equipment must be provided in void spaces beneath seats, and where practicable, inside console(s). All exterior stowage compartments must be lockable, secured by positive means and operable by gloved or insensitive hands.</li> </ol>	
<p><b>3.5 Painting and Preservation</b></p> <ol style="list-style-type: none"> <li>1. Fibreglass components must have a coloured gel-coat finish on all exterior surfaces. Gelcoat to be applied at 20-22 mil thicknesses. Finish colour(s) as per Vessel Particulars.</li> <li>2. Aluminium components must have a painted finish, or powdercoat, on all specified exterior and interior surfaces, comprised of suitable etch, primers, and topcoat per the Vessel Particulars. Typical single coat paint systems can be applied in the 5 to 7-mil thickness range per coating set. Typical system components would be: a) etch-primer; b) two coats of primer; and c) minimum two topcoats. Powdercoat finishes will typically finish at 2 to 3 mils thickness.</li> <li>3. Prior to delivery the Contractor must ensure that all non-painted exposed alum. is free of cosmetic blemishes, including all construction marks, scratches, gouges and stains.</li> </ol>	
<p><b>3.6 Propulsion:</b> Unless otherwise specified, propulsion motor(s) will be supplied and installed, per Outfitting section 18.</p> <ol style="list-style-type: none"> <li>1. <b>Run-in operation:</b> The Engines must be installed and operated in accordance with the engine manufacturer's recommendations. The use of engine manufacturer's approved accessories and equipment is required except for outboard motor control cables (which must be heavy duty Morse 33C Supreme Red-Jacket ® cables, with manufacturer's cable ends installed, <b>or manufacturer's best quality cable sets</b>). Equipment and components must not be used, or trials performed on the engines that would, in any way, void the engine manufacturer's warranties. <b>See Section 7.3 also.</b></li> <li>2. <b>Warranty:</b> All components of the propulsion system must be warranted by the original equipment manufacturer for the standard term, sourced by GSM or as Contractor Furnished Material (CFM). The standard warranty period is one year.</li> <li>3. <b>Impellers:</b> Unless otherwise specified, propellers or jet impeller(s) must be as per Sec 18. Contractor must record in the trials report and equipment lists, the appropriate pitch and diameter to meet the Performance Requirements as determined by the Contractor developed design check, and trials. Impellers must be CFM.</li> </ol>	
<p><b>3.6.5 Hydraulic Steering Systems</b></p> <ol style="list-style-type: none"> <li>1. Steering system must be remote hydraulic with self-contained oil reservoir, and replaceable seals on the rams, unless propulsion system builder requires alternate steering arrangement per Section 19</li> <li>2. Hydraulic hoses must be of sufficient size and length to prevent pulsing. Hoses must be suitable for use in an exposed marine environment complete with stainless steel fittings.</li> </ol>	
<p><b>3.7.0 Electrical System</b></p> <ol style="list-style-type: none"> <li>1. The electrical system design, component selection and installation must be in accordance with Canadian Standards Association C22.2 NO. 183.2-M1983 (R1999) "Standards for D.C. Electrical Installations on Boats", or ABYC 'E' as referenced by TP1332. All electrical equipment and hardware must be installed in accordance with</li> </ol>	



<p>the manufacturer's specifications. AC systems will be called up in sec. 17, Outfitting.</p> <ol style="list-style-type: none"> <li>2. All fitted electrical equipment must be capable of operating simultaneously with any other fitted electronics equipment without causing interference to any electronic equipment or to the magnetic compass.</li> <li>3. Galvanic corrosion is to be controlled by installation of an effective bonding and grounding systems with galvanic isolation. Cathodic protection is to be effected by installation of sufficient anodes positioned so as to minimise cathodic currents per ABYC and TP1332.</li> </ol>	
<p><b>3.7.1 Twelve (12) volt DC distribution system</b> must be provided to power the engine starting and boat service loads including:</p> <ol style="list-style-type: none"> <li>1. Navigation, interior, and exterior lighting.</li> <li>2. Electrical equipment.</li> <li>3. Instrumentation.</li> <li>4. Bilge Pumps.</li> </ol>	
<p><b>3.7.2 Batteries and Switches</b></p> <ol style="list-style-type: none"> <li>1. Batteries must be marine grade, 12 V, deep cycle maintenance free, and with the ability to cross connect for twin-engine start up of either engine from either battery. Some engine packages may require larger capacity for injection systems, see Sec.17, Outfitting.</li> <li>2. Battery switch must be Certification Agency, (CE, CSA, USCG, etc.) approved and must be mounted to prevent snagging or accidental switching.</li> <li>3. Battery compartment must be weather tight and fitted with a suitable means of gas venting including for 'sealed' batteries.</li> </ol>	
<p><b>3.7.3 Power Distribution:</b> Cables for all electrical distribution must be ample in size for the particular service, of marine grade tinned boat cable.</p>	
<p><b>3.7.4 Cabling Installation</b></p> <ol style="list-style-type: none"> <li>1. Cables must be grouped into wiring harnesses wherever possible. All wiring harnesses must be routed below decks or side decks. All below deck cabling must be through conduit pipe.</li> <li>2. Cabling / conductors passing through watertight boundaries, decks, bulkheads or other exposed surfaces must be installed to maintain watertight integrity of the structure. Cable entry into watertight enclosures must be through watertight marine glands of suitable size. All electrical equipment must be readily accessible for performing maintenance.</li> <li>3. Cables and conductors must be supported with clamps or straps at least every 18 inches on horizontal runs and every 14 inches on vertical runs.</li> <li>4. Cabling / conductors passing through structures without watertight glands, must be protected against chafing by the use of abrasive resistant grommets.</li> <li>5. Routing cables through foamed spaces must be avoided wherever possible. Cables that must be routed through foamed spaces must be run in PVC conduit pipe. The pipe must be arranged in a manner that prevents water from becoming entrapped in the pipe.</li> </ol>	
<p><b>3.7.5 Control and Monitoring Systems: Gauges and Indicators</b></p> <ol style="list-style-type: none"> <li>1. Unless otherwise specified, gauges must be analogue-style, or Engine Manufacturers' digital equipment. Gauges must be sized and installed so they are readily visible by the operator.</li> <li>2. All gauges must be backlit with an adjustable dimmer. Lighting for gauges and lighting for compass must use separate dimmers.</li> <li>3. Propulsion control system installation must include single-lever combined engine control, for each engine, to be located at the operator's position on the starboard side of the control station. Controls must conform to engine manufacturer's recommendations</li> </ol>	

<p>for commercial use.</p> <ol style="list-style-type: none"> <li>The Operator's position must be fitted with a lanyard style emergency shut down switch as well as the following:</li> <li>Bilge Pump operation indication for each compartment so equipped.</li> <li>High water alarm for the engine installation space and every other space serviced by a bilge pump.</li> <li>Engine space heat/ heat-rise sensor required for inboard engines, and fire alarm panel.</li> <li>Allowance required for at least one additional input, if a single integrated alarm panel used</li> </ol>	
<p><b>3.7.6 Piping, Tanks and Ventilation Systems</b></p> <ol style="list-style-type: none"> <li>Flexible Connections - Where flexible connections are required for steering and fuel systems, suitable hose with permanently crimped, detachable reusable type fittings must be used.</li> <li>Fuel Tanks must be hydrostatically tested, or air tested to 20 kPa (3.0 p.s.i). and be labelled per the requirements of TP1332. See Sec. 18.</li> <li>Fittings and clamps must be stainless steel. per the requirements of TP1332.</li> <li>Each watertight Hull compartment is to have its own 12V DC bilge pump, plumbed to discharge overboard from the compartment, as per TP1332.</li> <li>Enclosed compartments with gasoline engine or tanks spaces must have passive and powered ventilation.</li> </ol>	
<p><b>3.8 Fire Suppression - Inboard Engine Configuration If Applicable</b></p> <p><b>Inboard Engine installations will require fire suppression, sound insulation, and heat sensor(s) with alarm panel in accordance with TP 1332 / TC regulations.</b></p>	
<p><b>3.9 Navigation Equipment (COLREGS)</b></p> <p><i><a href="http://www.tc.gc.ca/acts-regulations/GENERAL/C/csa/regulations/010/csa014/csa14.html">http://www.tc.gc.ca/acts-regulations/GENERAL/C/csa/regulations/010/csa014/csa14.html</a></i></p> <ol style="list-style-type: none"> <li>Navigation lighting fixtures must be of such a design as to resist the effects of vibration and moisture and must be provided with adequate protection from damage.</li> <li>Particular COLREGS rules to note (vessels under 12 M.); Rules 22, 23, and Annex 1, rules 2, 9, and 10. (<b>NOTE:</b> The lights must be installed parallel to the "Normal Load" waterline that often may not be parallel to the deck.)</li> <li>The navigation lights must be mounted so as not to interfere with night vision .</li> <li>The navigation lights must be permanently mounted.</li> <li>The Contractor must supply and install an electric horn that ensures the requirements of the Collision Regulations, Rule 32 are met, i.e. with a standard small vessel 'horn' audible 0.5 NM. The horn must be installed on the vessel exterior with the 'horn' facing forward. (See Section 13.6.)</li> <li>A Magnetic Compass must be mounted near the centreline of the helm station, in easy view of the operator when facing forward. Deviation card development is an Owner responsibility.</li> </ol>	
<p><b>4.0 Warrantv and Service Provisions:</b></p>	
<p><b>4.1 Components and Equipment Support :</b> All components and all mechanical, auxiliary, electronic and electrical equipment installed on the boat, with the exception of the collar, must be supportable by parts and service in Canada within 30 days. All components and equipment must be current models.</p>	
<p><b>4.2 Spare Parts:</b> To facilitate replacement and inter-changeability of parts, as well as maintenance procedures and operator training wherever practicable the Contractor must standardize on selection of equipment, fittings and fabrication methods within all boats supplied, if multiple vessels are built in one contract.</p>	
<p><b>4.3 Parts and Service Depot(s)</b></p> <p>Contractor's parts depots must be capable of efficiently supplying all of the Client service</p>	

<p>area for this vessel, with spare parts for all components of the vessel and warranty service for all components of the vessel. It is recognized that many equipment items will have their own manufacturer's warranty cards for owner registration. Contractors must have a factory authorized service representative capable of call back response in all regions of Canada within <b>48</b> hours of receiving a service call.</p> <p>BUILDERS will find that a service relationship with marine repair and service companies in every region will provide clients reassurance of service availability. All warranty work must follow the requirements for service shops to get approval for work to ensure cost recovery. Clients will be responsible for costs above the approved levels.</p>	
<p><b>5.0 Documentation</b></p>	
<p><b>5.1</b> Technical Publications General: The Contractor must provide, upon delivery of the vessel, one (1) hard copy and one (1) electronic copy per vessel produced for the operator of the vessel, plus one (1) hard copy and one (1) electronic copy for the Technical Authority, shipped to the same address as identified for invoicing: of a comprehensive owner/operator manual that provides a physical and functional description of the craft, its machinery and equipment, as well as delivery testing and sea-trial result documentation. The manual should include but not be limited to sections such as: General Information, Technical Information, and an Initial Spare Parts List.</p> <p><b>See also section 7.8 for the listing of Deliverables, with each delivered vessel.</b></p>	
<p><b>5.2 General Information Section:</b> The General Information Section must include a description of the arrangement and function of all structures, systems, fittings and accessories that comprise the boat, with illustrations as appropriate:</p> <ol style="list-style-type: none"> <li>1. Operating procedures.</li> <li>2. Basic operating characteristics (such as temperatures, pressures, flow rates, etc.)</li> <li>3. Installation criteria and drawings, assembly and disassembly instructions with comprehensive illustrations showing each step.</li> <li>4. Recommended planned maintenance.</li> <li>5. Complete troubleshooting procedures.</li> </ol>	
<p><b>5.3 Technical Information Section:</b> The technical manual should include a complete set of detailed owner / operator instructions, drawings (Section 15), parts lists and supplemental data for all components of the boat (whether acquired from external sources or custom-manufactured).</p> <ol style="list-style-type: none"> <li>1. The list must include the name, part number and serial number if applicable of the parts, items or components and must indicate the supplier (name, address, phone number, email address) of this part, equipment or component and in which part of the specification the item appears.</li> <li>2. Hull; including hull data, hull and deck equipment serial or manufacturer's numbers, including tank test reports, Life Saving Appliances, lifting gear, extinguishers, etc. TEST and TRIAL results, and certification notices, instructions, and warranty cards that distribute with equipment.</li> <li>3. Engine(s) and propulsion manuals: including engine and propulsion serial numbers.</li> <li>4. Electronics manuals, (if applicable): including model and serial numbers.</li> <li>5. Collar, if any; including collar materials and glue materials and product sheets, and procedures necessary for onboard repair of the collar, including a materials repair kit.</li> <li>6. Regulatory and Stability information: as required per TP 1332, which references ABYC, TC publications, or ISO12217 that further references ISO 6185 for RIBs. ISO 11812 for drainage times of cockpits, and ISO 11216 for hatch and portal watertightness are required as well, for example.</li> </ol> <p><b>NOTE: Stability and ISO operation class calculations MUST be calculations on</b></p>	

<p><b>Maximum Load, if specified in Sec 14., which may lead to dual certification on the builder's plate as the calculations must be done for the Normal Load as well as it will result in a higher, (rougher sea states and higher wind) ISO operating classification, for SAR emergencies and extreme duty usage.</b></p> <p>7. Contractor to fill out Simplified Method of <b>Tonnage Measurement</b>, TC form 4a.</p> <p>8. <b>NOTE: Builder</b> is encouraged to use the "Small Vessel Detailed Compliance Report" sheets as a check off sheet for hull and equipment and list the name/ Company of the person checking the data in the "Authorised Representative" space on P. 7 of the form. <b><a href="http://www.tc.gc.ca/eng/marinesafety/svcp-menu-3633.htm">http://www.tc.gc.ca/eng/marinesafety/svcp-menu-3633.htm</a>.</b></p>	
<p><b>5.4 Initial Spare Parts List:</b> The Technical manual must also include a list of recommended initial onboard spare parts to be stocked for the craft. At a minimum this list must include the following items (as applicable):</p> <ol style="list-style-type: none"> <li>1. Propulsion: Propeller / impeller, filters, water pump impeller, starting battery, throttle and shift cables, any special engine tools.</li> <li>2. Electrical: fuses, light bulbs, electrical panel breakers;</li> <li>3. Boat Structures and Fittings: Miscellaneous commonly used fasteners.</li> </ol>	
<p><b>6.0 Quality Assurance:</b> <b>The basic reference to ISO 900x compliance is as per the contract document.</b></p>	
<p><b>7.0 Test and Trials:</b></p>	
<p><b>7.1</b> The Contractor must inspect and test the following items, as required, for adherence to the contract requirements and proper operation (proper operation means that the equipment can be started, operated, connected together and demonstrated to function in a normal fashion, as applicable). All discrepancies must be corrected prior to delivery.</p> <ul style="list-style-type: none"> <li>- The required inspections and tests are minimums and are not intended to supplant any controls, examinations, inspections or tests normally employed by the Contractor to assure the quality of the boat:</li> </ul> <ol style="list-style-type: none"> <li>1. Weight</li> <li>2. Construction Quality</li> <li>3. Lifting Gear</li> <li>4. Propulsion Engines including Starting and Controls</li> <li>5. Steering System</li> <li>6. Fuel System</li> <li>7. Electrical System</li> <li>8. Electronics</li> </ol>	
<p><b>7.2 Sea Trials – General:</b> The Technical Authority must be notified no less than 48 hours prior to sea trials. The Technical Authority reserves the right to witness or decline attendance of sea trials, or to require the Inspector to attend. Absence of the Technical Authority, or Inspector at sea trials does not relieve the Contractor of its responsibility to conduct and record sea trials. Sea trial results must be forwarded to the Contract and Technical Authorities prior to delivery of the vessel. The Technical Authority will inform the Inspector of trials so they may attend.</p>	
<p><b>7.3 Sea trials</b> must be conducted by the Contractor to demonstrate the boat and its equipment conform to the requirements as stated in the Contract and the Performance Requirements. All expenses incident to the trials must be borne by the Contractor, including fuel unless otherwise specified. A crew provided by the Contractor must operate the vessel during sea trials. All Sea Trial instrumentation and equipment must be furnished and operated by the Contractor. Trial instrumentation, where applicable, is not to replace the boat's instruments (e.g., engine tachometer, pressure gauges, thermometers). The Contractor</p>	

<p>must furnish all necessary hardware and fittings and must install the measuring devices. After satisfactory completion of the trials, all instrumentation must be removed and all systems restored. The Contractor must provide calibration data certifying the accuracy of the instrumentation for the tests.</p> <p>The Contractor is required to run the vessel during builders' trials until the engine(s) have accumulated the operation hours sufficient for the initial engine service by the engine supplier, or for 10 hours, whichever is least, and to have a manufacturers' service agent perform the service and provide an initial service report.</p>	
<p><b>7.4 The Contractor must submit a Test &amp; Trials Plan</b>, including a description of all of the acceptance trials to be performed. As a minimum, the following trials must be conducted: The vessel must operate in the Normal Loaded Condition, per Sec 10.</p> <ol style="list-style-type: none"> <li>1. Speed Trials - The speed trials must be done over a course at least one nautical mile in length. Two runs must be made over the course, one in each direction with the speeds for the two runs averaged. The use of GPS data (averaged) is acceptable.</li> <li>2. Endurance Trial - During the endurance trials, it must be demonstrated that all parts of the propulsion system are in full operation. All systems must be operated to check for proper installation. Fuel consumption can be calculated using manufacturers' data.</li> <li>3. Astern Propulsion - The vessel must be operated and manoeuvred using astern propulsion to establish the astern performance. During the backing performance tests the throttles must be set to provide approximately 1/3 of the rated engine horsepower.</li> <li>4. Steering Gear; Tests must be conducted on the steering gear to demonstrate the adequacy of the steering system under all operations. Manoeuvring tests must be performed to ensure that the boat meets the stated Basic Performance requirements, per Sec 11. Manoeuvring trials must be conducted in the Normal Operating Condition.</li> <li>5. Lifting Gear Load Test; Vessel and bridle or lift frame may be tested at 150% of normal load condition, as specified in the Vessel Particulars; to lift and hold without deformation of the lift points or associated hull. Lift points to be recessed flush with deck, certified for load, or located under side or stern decks out of walkways, and certified for load .</li> <li>6. Stern towing arrangement: Testing bollard pull to design capacity in a direct astern load. Data from previous test to same standard, for same post and construction accepted</li> <li>7. At the conclusion of sea trials each boat must be thoroughly cleaned and inspected. Outboard engine cooling systems must be flushed through with fresh water. The Contractor must repair any damage to the vessel or ancillary equipment resulting from sea trials, to the satisfaction of the Inspection Authority.</li> </ol>	
<p><b>7.5 Final Inspection and Acceptance</b> (PWGSC Acceptance Document) for delivery; Final Inspection must not be performed until all tests have been satisfactorily completed with data available for review. The boat must be ready for delivery in all respects, except for final preparation for shipment. The Contractor must provide personnel, as required, to resolve questions and to demonstrate equipment operation maintenance accessibility, removal and installation. The Contractor must document the results of the final inspection and submit these results to the Inspection Authority; a copy of the trial results must be shipped with the deliverables for each boat, per 7.6/ 7.7.</p>	
<p><b>7.6 Stability</b> examination per TP1332, from ISO standards 12217 which for RIBs delegates to ISO 6185, or by ABYC, or by TP 7301, requires the Contractor to record all stability/ structural, calculation and trial results and provide a copy for each boat produced, to be placed in the technical manual. See Sec. 14 Standards. The stability trial of the first of a series of vessels can be used for all identical vessels.</p> <p><b>Stability and ISO operation class calculations MUST be calculations on Maximum Load, if specified, which may lead to dual certification on the builder's plate as the calculations must be done for the Normal Load as well as it will result</b></p>	



	<b>in a higher, (rougher sea states and higher wind) ISO operating classification, for SAR emergencies and extreme duty usage.</b>	
<b>7.7</b>	<b>Trial Records</b> - The Contractor must maintain records of testing for each boat for a minimum of two years. The Contractor must prepare a trials check sheet that certifies that each test has been completed. The check sheet must indicate the actual weight of the boat in Light Condition, per section 10. The check sheet must also indicate the Normal Loaded weight and the date for the 150% “normal load” lifting gear test, if required. This check sheet must be included with the deliverables of each vessel.	
<b>7.8</b>	<p><b><u>Standard Deliverables:</u></b> Required with each completed vessel, one manual and one CD per vessel delivered plus one manual and one CD for the client department TA. Items 2 to 4 may be collected in separate clear sleeves.</p> <ol style="list-style-type: none"> <li>1. A detailed operator manual must be provided for all equipment, and systems, per Sec 5. This may be developed using equipment instruction sheets and manuals.</li> <li>2. Sea Trial results, and shop testing sheets, including Builders’ technical data, per Sec 5.</li> <li>3. Acceptance Certificates, and compliance sheets or certificates distributed with equipment, per <b>Sec. 5.3.2-5.</b></li> <li>4. Regulatory Compliance data, including ISO, ABYC, or TC calculation sheets for stability, drainage, watertightness, tonnage, or Builder’s flotation tests, per <b>Sec 5.6-7.</b></li> <li>5. Vessel drawings; The Annex A Specification calls for the submission of Preliminary drawings and the “As Fitted” update of drawings must be included in the manuals.</li> <li>6. <b>The initial inspection of the vessel(s) after delivery, by Owner / Department Self Inspector, will establish TP 1332 / ISO compliance, using SVCP self inspection.</b></li> <li>7. The Contractor is encouraged to fill in their vessel Data using the SVCP Detailed Compliance Report forms, as an assistance to the client self-inspector who will complete the application for Small Vessel Registry.</li> </ol>	
<b>7.9</b>	<p><b><u>Vessel Registry – TP1332 Compliance :</u></b> Completed by the department self-inspector.</p> <ol style="list-style-type: none"> <li>1. <b>NOTE:</b> Regarding Documentation for vessel entry in the Small Vessel Registry. The Contractor should inform the Client TA as soon as they have deposited the payment on the final invoice, as this will determine when the Client department can fill out the new TC Form 19 registration for the vessel and get their O.N. assigned. The Client TA or financial authority will distribute a copy of the PAID invoice/bill of sale for the end user files. Regarding the establishment of full payment occurring before registration, for the present PWGSC will consider that full payment and partial taxes have been made, and that PWGSC is withholding any warranty holdback amount from the builder, (taxes unpaid), against warranty performance, on our contract to acquire a vessel, until it is used for warranty work or released by PWGSC, (and paid by the Client Department at the end of the Warranty Holdback Period, typically 90 days).</li> </ol>	
<b>8.0</b>	<b><u>Packaging and Shipping:</u></b> Shipping other than Towing on Trailer	
<b>8.1</b>	Prior to shipping, the boat must be cleaned throughout, preserved and covered (shrink wrap), secured on the boat trailer if any, or chocked as required, in accordance with this section.	
<b>8.2</b>	Bilges must be dry and free of oil and debris and the fuel tanks must be drained.	
<b>8.3</b>	The propulsion system must be preserved in accordance with the manufacturer’s recommendations for storage of up to one year in an environment that will be subjected to freezing temperatures.	

<b>8.4</b>	The battery must be disconnected.	
<b>8.5</b>	A durable warning tag must be wire tied to the steering wheel indicating that the boat has been preserved for shipping and storage and should not be started until the propulsion machinery has been reactivated.	
<b>8.6</b>	Lengthy shipping arrangements must protect the boat hull from deformation from road irregularities producing, due to repeated bouncing, dents in hulls supported on roller assemblies, by the insertion of a temporary bunk to distribute loads.	
<b>8.7</b>	<b>Towed Delivery on the boats' trailer:</b> In local short haul trips in non-freezing weather, <u>only the cleaning and covering provisions <b>may</b> be required</u> , with the approval of the Inspection Authority.	
<b>9.0</b>	<b>Trailer Information: IF required:</b> (See Solicitation Annex 'I' pricing sheet for requested pricing, if any, and section 20 at the end of Vessel Particulars for specific trailer information)	

	<b><u>SPECIFICATION: VESSEL PARTICULARS</u></b>	
<b>10.0</b>	<b><u>Vessel Particulars</u></b>	
	<ol style="list-style-type: none"> <li>1. Length (measured hull including engine pod) between 6.1 and 6.6 meters .</li> <li>2. Breadth overall 2.5 to 2.7 meters</li> <li>3. side height to approx 94 centimeters</li> <li>4. Draft (outboard motor lowered) up to 1 meter</li> <li>5. Draft (outboard motor raised) about 0.8 meter</li> <li>6. Cabin style; aft raked front windows with 66cm wide center window ( patient stretcher capability) walk through. Accessible side decks with minimal walking space and cabin top handrails. Cabin Dimensions: (fwd window to aft end of cabin roof) 2.13 meters L x 2.13 meters W and minimum 1.52 meters head room above deck.</li> </ol> <p><b>Normal Load conditions:</b> (Light loaded vessel is complete vessel; no fuel, load, or personnel)</p> <ol style="list-style-type: none"> <li>a. Crew of 4 = 480kg</li> <li>b. Fuel = 182 litres in one tank, ( 130kg)</li> <li>c. Equipment &amp; supplies = 400 kg</li> </ol>	
<b>10.1</b>	<b>Vessel Tonnage Requirements:</b> Contractor to fill out form 4a Simplified Tonnage Measurement	
<b>11.0</b>	<b><u>Operational Performance</u></b>	
	<ol style="list-style-type: none"> <li>1. Unless otherwise stated, Performance must be for conditions of zero sea state and no wind, in salt water with Normal Load and complement. The craft must be designed and constructed for ease of maintenance and repair, long life, and to be easily supportable by local commercial facilities and suppliers. The craft is expected to have a service life of at least 10 years, with an expected usage of between 250 and 500 hours per year.</li> <li>2. Maximum speed: minimum 25-35 knots with engine horsepower specifications provided.</li> <li>3. Range: 100 nautical miles with 10% reserve at cruising speed.</li> </ol>	
<b>11.1</b>	<b><u>Beaching</u></b>	
	<ol style="list-style-type: none"> <li>1. Capable of beaching on soft (sand, earth or clay) surfaces at a speed of up to 5 knots without damage to the hull.</li> <li>2. Capable of beaching on hard (stone or concrete) surfaces at speeds of up to 3 knots without damage to the hull.</li> </ol>	
<b>11.2</b>	<b><u>Depth under Keel</u></b>	
	<ol style="list-style-type: none"> <li>1. Operate carefully in depths of 1 meter on plane.</li> <li>2. Basic manoeuvring in depths of 0.80 meters with outboard motor trimmed up</li> </ol>	
<b>12.0</b>	<b><u>Environmental Conditions</u></b>	
	<p>Must operate day or night in the following conditions:</p> <ol style="list-style-type: none"> <li>1. Average ambient air temperature range: -5°C to + 30°C</li> <li>2. Average water temperature: 0°C to +20°C.</li> <li>3. Wave heights of up to 2 m</li> <li>4. Wind speeds of 25 - 30 knots.</li> <li>5. Operate in freezing spray or rain while maintaining stability in Beaufort Force 6.</li> </ol>	



<b>13.0</b>	<b><u>Cabin Vessel Configuration</u></b>	
<b>13.1</b>	<p><b>General Arrangement Notes:</b></p> <ol style="list-style-type: none"> <li>1. The cabin, and trunk forward, length must not be more than approx. 65% the interior length of the hull.</li> <li>2. The cabin sides must land on the side deck which must be clear of the sheer allowing access from the cockpit to the side deck and bow. Cabin walls and overhead to be insulated with anti condensation material.</li> <li>3. Minimum side deck width to be approx. 7”.</li> <li>4. The cabin must be open back arrangement.</li> <li>5. The cabin must have continuous aluminum flooring /deck providing at least 1.52 centimetres, (5’) headroom throughout.</li> <li>6. The cabin must be fitted with proven manufacturers' aluminum framed windows (with screens) of Laminated-Tempered Safety glass as follows, and generally per section 16.5:</li> <li>7. Minimum three (3) forward windows with 66cm wide center window walk through and step down into cabin .</li> <li>8. One Aft sliding window assembly on cabin sides with maximum visibility.</li> <li>9. Forward bow section to incorporate a bow roller and anchor locker to store anchor, rope and chain for rode.</li> <li>10. Forward cuddy to be fitted for storage of first aid gear and equipment.</li> </ol>	
<b>13.2</b>	<p><b>General Deck Arrangement - Cabin Vessel</b></p> <ol style="list-style-type: none"> <li>1. There must be at least 4 tie points along the side deck / transom (must accommodate ¾” rope). 2 mid ship, 2 aft on transom corners. Cleats to be welded on cast aluminium approx 8” to 10” in length</li> <li>2. There must be an 8” to 10” anchoring bit / cleat on the bow of the vessel, and a welded aluminum heavy duty anchor roller extending just past the bow, for anchor stowage. Anchor locker in bow with sealed bulkhead per Transport Canada collision Regs. c/w two external drains for wet rope &amp; chain, mounting bracket for anchor to store within locker.</li> <li>3. Small dodger on forward part of cabin roof with a radar arch/stand with 18” clearance. Also on radar arch must be suitable locations for mounting radio antennas.</li> <li>4. There must be side shelves (pockets) below the sheer that will permit the storage of larger items such as pike poles, and other equipment, and access through sole hatches for storage below the decks.</li> <li>5. There must be latched storage lockers below deck in centre isle of cabin</li> <li>6. There must be low profile (fore deck edge) 1” minimum diameter handrails port and starboard at the bow, running aft to the cabin face, and inboard rails on cabin top, near the outboard edge. There must be outboard cockpit rails from the chain gate opening just aft of the cabin, aft to turn at the transom corners P&amp;S to extend minimum 12” toward the transom center. Rail heights will be as required for working vessels as approved by TA, TI, and department inspector. Cockpit railing 36” high from deck made of 1” pipe with quick release chain access to stern, port, and starboard boarding areas. Cockpit railing must be removable (socketed and pin secured) to accommodate loading equipment.</li> <li>7. Contoured Outboard motor pod extending the width of the transom integral to the hull &amp; a continuation of the bottom plate.</li> <li>8. Walk through transom door to access out board engine pod to service motors and propellers, located Stbd side.</li> </ol>	

	9. Spreader light aft for cockpit illumination.	
<b>13.3</b>	<b>Cabin Interior Outfit</b>	
<b>13.3.1</b>	<b>Seating: (Pricing to be entered in Line c of Table I1)</b> <ol style="list-style-type: none"> <li>1. This vessel must be equipped with 2 shock mitigating marine seats: Shock wave seats.</li> <li>2. Shock mitigating seats must be arranged facing forward and be mounted to reinforced deck locations, one on port and one on starboard at the helm. Drink holders to be fitted in reach of each seat.</li> <li>3. 2 upholstered double crew bench style seats located aft of both shock wave seats (seating for two persons on each) running north/south with wall mounted backrests. Bench cushions must be secured on aluminum/seat storage boxes with lockable lids and fabricated to maximize storage.</li> <li>4. There must be enough clearance down the center isle between bench's to lay full length first aid stretcher (0.8 m width)</li> <li>4. There must be side shelves below the sheer running the length of the cabin that will permit the storage of various items and other equipment, and access through sole hatches for storage below the decks aft and in the cabin. (fuel tank will occupy one location or other)</li> </ol>	
<b>13.3.2</b>	<b>Cabin Lighting</b> <ol style="list-style-type: none"> <li>1. The cabin must be equipped with at least 2 overhead surface mount LED white lights, port and starboard.</li> <li>2. The lights must have individual switches.</li> </ol>	
<b>13.3.3</b>	<b>Grab Handles:</b> There must be grab handles positioned as follows: <ol style="list-style-type: none"> <li>1. Two (2) minimum, on aft stiffening frame of cabin structure, vertical, on aft side.</li> </ol>	
<b>13.3.4</b>	<b>Foot Rests:</b> forward bulkhead mounted foot rests can be mounted if required for the operator and port side co-pilots seat.	
<b>13.3.5</b>	<b>Cabin Flooring cock pit decking:</b> All floor/deck covering will be welded aluminum through out	
<b>13.3.6</b>	<b>Interior Finish</b> The exposed aluminium interior of the vessel must be finished in a speckled grey (Granite), Zolotone or equal. The cabin interior down to the sheer line is to be insulated and anti condensation lined. All rough edges and sharp angled corners will be rounded and ergonomically adapted.	
<b>13.4</b>	<b>Interior Utilities</b> <ol style="list-style-type: none"> <li>1. Three (3) 12-volt cigarette lighter-style auxiliary power outlets. One each on port and starboard in cockpit and one near the helm station</li> <li>2. The windshield must have at least two variable speed fans</li> </ol>	
<b>13.5</b>	<b>Dash / Helm Station</b> <ol style="list-style-type: none"> <li>1. The Helm station must be on the starboard side of the vessel.</li> <li>2. The helm will incorporate a steering system, capable of handling the horsepower of the vessel, with manufacturers' engine controls designed for the power unit(s).</li> <li>3. In addition, if not included with above gauge package, drive leg trim gauge, and fuel level gauge must be installed.</li> <li>4. There must be an array of electronic equipment at the helm position, see electronics section 17.2.4.</li> </ol>	

	<ol style="list-style-type: none"> <li>There must be a dash-mounted magnetic compass, see section 13.6.5.</li> <li>All lights switches and the master switch control panel must be within easy reach of the helmsmen.</li> <li>The vessel must be equipped with heavy-duty marine commercial grade pantograph windshield wipers, one per forward side windows. The center walk through window does not require one. The switches for the wipers must allow for intermittent operation.</li> <li>Space to be provided for additional installations; eg. For trim tab controls, if required.</li> </ol>	
<b>13.6</b>	<b>Navigation Lighting and Equipment</b>	
	<ol style="list-style-type: none"> <li>The Contractor must supply and install an electric horn that meets the requirements of the Collision Regulations. The horn must be operated by a spring-loaded switch located on the operators' console.</li> <li>Navigation lights must be permanently fitted to the cabin with protected wiring and must be waterproof. The fitting of a combined navigation sidelight lantern on the bow will not be acceptable.</li> <li>The fixtures must be of such a design as to resist the effects of vibration and must be provided with adequate protection from damage which may occur when lying alongside a vessel or a pier. (The Hella NaviLED Series of lights, including the NaviLED 360 all-round light, and NaviLED side lights meet this requirement.)</li> <li>Non-white navigation lighting must be wired together on a separate breaker of the 12 volt DC electrical system and all around (folding) Mast /Anchor light showing clear above the radar scanner must be on a separate switch. Two switches to be provided, labelled: Nav 1 (masthead / anchor) and Nav 2 (side (running)lights)</li> <li>Magnetic Compass: The Contractor must provide and install a direct read compass, with light. (The Ritchie B 51 series meets this requirement.)</li> </ol>	
<b>13.7</b>	<b>Exterior Equipment</b>	
	<ol style="list-style-type: none"> <li>Transom deck drainage scuppers must be of a size to allow sufficient drainage of forward and aft sections of exposed deck surfaces per TP 1332 and ISO.</li> <li>Locking fuel filler accesses, must be provided.</li> <li>An access ladder to be arranged over the cockpit side or from the motor pod to allow entry or retrieval of personnel from the water.</li> <li>Rear cockpit transom weather tight access doors must be provided to access battery panel and batteries.</li> </ol>	
<b>14.0</b>	<b>Construction Standards</b>	
	<ol style="list-style-type: none"> <li>Transport Canada Marine Safety Regulation TP 1332 "Construction Standards for Small Vessels", which incorporate references to <b>ABYC</b> standards for equipment such as fuel tanks and fuel systems, as well as tank space ventilation, and ISO standards for stability, loading capacity, etc. as delegated to ISO 12217  <a href="http://www.tc.gc.ca/MarineSafety/Directorate/TP/tp1332/tp1332e.htm">http://www.tc.gc.ca/MarineSafety/Directorate/TP/tp1332/tp1332e.htm</a></li> <li>Canadian Standards Association C22.2 NO. 183.2-M1983 (R1999) "Standards for D.C. Electrical Installations on Boats <b>and ABYC 'E' electrical standards.</b>"</li> <li>Canadian Standards Association (CSA) CSA W47.2-M1987; Certification of Companies for Fusion Welding of Aluminium</li> </ol>	
<b>15.0</b>	<b>Construction Drawings and Data</b>	

	<ol style="list-style-type: none"> <li>1. The following, "As Fitted", dimensioned drawings must be produced for manuals to record the vessel particulars.</li> <li>2. Lines Plan with approximately eight sections through hull.</li> <li>3. Vessel midship section showing the console / operating position in the deck.</li> <li>4. Plan and Profile, general arrangement, including systems elements like tanks.</li> <li>5. Systems drawings presented on as many sheets as required for clarity covering Bilge, Fuel, Electrical, Fire fighting, and Driveline or mechanical drawing as required.</li> </ol>	<p style="text-align: center;">*</p> <p>Prelim Req'd for Bid Eval</p>
<b>16.0</b>	<b><u>Hull and Deck: Construction and Finish</u></b>	
<b>16.1</b>	<b>Hull and Deck:</b> The hull, and deck, must be constructed of Aluminium per Materials section 3.2. Mil Certificates are required for all aluminium used in the fabrication. The cockpit deck, gunwales, foredeck, and swim grid must be coated with a non-slip material. Deck non-skid patches must be painted, dark grey material.	
<b>16.2</b>	<b>DEAD RISE:</b> The hull must be 18-20 degree deadrise V style monohull with a reverse chine flat. Transom has a flat delta at centre with an 18 to 20 degree (per side) bend up off the delta, and a down angled chine to create approx 4"(aft) x full length reverse chine, which can narrow in the forward hull approaching the stem.	
<b>16.3</b>	<ol style="list-style-type: none"> <li>1 Vessel to have a continuous exterior welded hull, deck, and cabin. Framing welds must be continuous in areas subject to vibration in the vicinity of machinery bed plates and bow areas subject to impact.</li> <li>2 The hull is to have a minimum 3/8" thick 'delta pad' keel with interior vertical stiffener on the centerline, from the stem bar of minimum 3/8" thick plate to the motor transom,</li> <li>3 The hull and decks are to be transversely framed and longitudinally stringered, with minimum 1/4" bottom and chine plating and minimum 3/16" side plating.</li> </ol>	
<b>16.4</b>	<b>Deck:</b> Deck wells or cockpits must be self-draining, by means of non-return freeing ports in the transom, or aft end of the cockpit, or deck well. The sheer side deck forward to aft, and transom top is to have floatation foam installed approx 100 sq. inch section all around the vessel. Multiple recessed tiedowns built into the deck to secure cargo will be evenly spaced in the cockpit deck.	
<b>16.5</b>	<b>Windows:</b> are to be laminated tempered glass, and carry the manufacturers' marks confirming construction. Forward windows close above wet decks are to be minimum 3/8" tempered glass. Side windows can be minimum 1/4" thick laminated, safety glass.	
<b>16.6</b>	<b>Stowage:</b> <ol style="list-style-type: none"> <li>1. Reserved for Open Deck storage boxes, if required.</li> <li>2. Arrangements must be provided for safe, secure and accessible stowage of exterior equipment and an anchor and cable, on heavy duty bow roller with rode in self draining anchor locker accessed by watertight hatch in collision compartment bulkhead, per section 13.</li> </ol>	
<b>16.7</b>	<b>Tie Downs:</b> Port and Starboard trailering tie down points to be incorporated in transom. Two stainless steel tie-downs may be fitted.	
<b>16.8</b>	<b>Bow Eye:</b> A fitting is to be designed and incorporated into the construction of the stem that allows for the bow line and or trailering hook to be attached to the bow and which must not protrude from the line of the stem, unless faired into the transition	

	at the main chine. The fitting must be of a non-corroding material and of sufficient strength to allow for towing the vessel at a speed of 20 knots in calm water in the normal loaded condition, on an even keel, without damaging the vessel or causing chafing of the towline. Stainless steel ferule lining recommended for integral welded aluminium eye.	
<b>17.0</b>	<b><u>OUTFITTING and EQUIPMENT</u></b>	
<b>17.1</b>	<p><b>Lifesaving Emergency Equipment:</b> The following items must be supplied and provided with stowage / securing arrangements (as appropriate for each item). All fittings, Contractor supplied, must be heavy duty, corrosion resistant stainless steel fittings. All items must be readily accessible.</p> <ol style="list-style-type: none"> <li>1. Fire extinguishers ( Class 5BC1, marine type) minimum one (1) extinguisher</li> <li>2. Boat hook, 8 feet long (retractable)</li> <li>3. Two (2) paddles</li> <li>4. Anchor (Danforth 16#, w/ 30 ft 5/16" chain and 300 ft. of Herzog ½" anchor line)</li> <li>5. Mooring lines, four (4) X 20'X 5/8" braided nylon line with eye spliced into one end.</li> <li>6. Four (4) Polyform G3 fenders cobalt blue.</li> <li>7. One manual bilge pump</li> <li>8. One life buoy with floating heaving line not less than 15 meters</li> <li>9. One watertight flashlight/with spare</li> <li>10. Pyrotechnics Type A quantity: 3, Type B or C quantity: 3</li> <li>11. Re boarding device if vessel freeboard is above 0.5 meters</li> </ol>	
<b>17.2</b>	<b>Electrical system</b>	
	The electrical system is to be of the marine type and generally protected from a salt water environment. All wires are to be of the marine type, with tinned copper strands (UL 1426) and are to be identified on the electrical drawing provided by the Contractor. The system's distribution is to be operated by way of panel(s) with min. 10 circuit breakers for additional electronic devices. All circuit breakers are to be clearly identified. Galvanic bonding and Cathodic (anode) protection required for vessel.	
<b>17.2.1</b>	<p><b>Batteries</b></p> <p>The boat is to be equipped with dual deep-cycle batteries with a selector on/off switch and connected in accordance with the motor manufacturer's technical specifications. Additional battery needs to be noted as below.</p> <p>The batteries are to be of marine quality equipped with rollover caps and a capacity to adequately service engines and ancillary vessel loads. An additional (smaller) emergency radio battery is required, with charging circuit.</p> <p>One battery; 24M-800 in box for outboard, and one house battery 12 volt deep cycle and box will be mounted in the transom with access door. Two battery switches, two circuit breakers and battery isolator are required.</p>	
<b>17.2.2</b>	<b>Wipers:</b> wipers with pantograph arms are to be installed on fore windows. They are to be activated individually by a variable speed switch located on the operator's console.	
<b>17.2.3</b>	<p><b>Electrical Utilities:</b></p> <ol style="list-style-type: none"> <li>1. A spotlight (at least 1 million candlepower) must be mounted on the radar arch or stand, to clear the dodger. Its direction must be readily controlled by the helmsman.</li> </ol>	
<b>17.2.4</b>	<b>Navigation Electronics</b>	

	<p>This vessel must be <b>configured</b> for and provided services to install the following electronics navigation package, with displays located across the forward dash, in addition to the Colregs required equipment. Arrangement to be approved by the owner's TA, if supply and installation proposal exercised.</p> <ol style="list-style-type: none"> <li>1. Multifunction display will be Raymarine GPS/Radar/chartplotter/depth sounder (E120W) combination unit with Raystar 125 GPS, DSM 300 and AIS 250 integration and sea talk connectivity.</li> <li>2. Integration between GPS Receiver, Plotter, AIS and GMDSS VHF radio.</li> <li>3. The combination unit system will be mounted within easy reach and view of the helmsman.</li> <li>4. One programmable ICOM Radio(Parks Canada supplied) one ICOM IC-M604 VHF radio with loud hailer will be installed within easy reach and view of the helmsman.</li> <li>5. Externally Mounted EPIRB (Parks Canada supplied)</li> </ol>	
<b>18.0</b>	<b><u>Propulsion</u></b>	
	<p>Unless otherwise specified, propulsion will be one GSM, 150 HP Yamaha Outboard (based on hull size propulsion rating), and one GSM 9.9 hp longshaft (port side) auto control/start with helm station steering capability via "Panther" electric steering, or similar.</p> <ol style="list-style-type: none"> <li>2. Motors must be mounted in accordance with manufacturer's recommendations.</li> <li>4. Contractor to supply and install equipment included in the manufacturers' standard or digital gauge package for the specified engine(s).</li> <li>5. Contractor to supply and install any of the following equipment functions included in the manufacturers' standard and optional gauge package for the specified engine: All gauges must be backlit with an adjustable dimmer. Lighting for gauges and lighting for compass must use separate dimmers. Unified electronic gauge displays encouraged. <ol style="list-style-type: none"> <li>a. Tachometer for engine,</li> <li>b. Water pressure gauge,</li> <li>c. Trim gauge,</li> <li>d. Controls, cables,</li> <li>e. Ignition harness</li> <li>f. Hour meter for engine,</li> <li>g. Volt meter</li> </ol> </li> <li>6. Main engine controls should be electronic if available for the selected engine.</li> </ol>	
<b>18.1</b>	<b><u>Fuel Systems</u></b>	
	<ol style="list-style-type: none"> <li>1. Fuel systems must meet with all requirements of TP 1332 "Construction Standards for Small Vessels", which reference the ABYC standards</li> <li>2. The vessel must be fitted with one (1) fuel tank with baffles, to be located under the deck for a total capacity of no less than 182 litres.</li> <li>3. There must be aluminum inspection hatches (8") in the deck, to allow access to the fuel pickups, fuel shutoff valve at tank, vent and fill connections, and tank level indicators.</li> <li>4. There must be aluminum inspection hatch in contoured out board engine sponson/pod</li> <li>4. Arrangements must be provided for fuel tank and associated lines, vent, fill, and on / off selector manifold, using three way valves, to be fitted to the boat</li> <li>5. Fuel lines from the inboard shutoff valve or manifold to the outboard motor(s) to be protected against chafing and wear.</li> </ol>	



	6. A Racor 320R-RAC-01 fuel / water separator filter must be mounted “in-line” to engine with easy access to drain the sediment bowl. 7. Fuel shutoff valves are to be installed at fuel tank outlets and be easily accessible by vessel operators. Near the filters and engines, additional ‘service’ fuel shutoff valves to be located, to facilitate engine or filter service, 8. Lockable Fuel fills to be located at aft cabin bulkhead location. 9. The Fuel tank space will require flow through ventilation per TP1332 and ABYC. 10. The Fuel tank space must have a fume detector, Marine Tech 2” or equal.	
<b>19.0</b>	<b>Steering</b>	
	1. Steering systems must be hydraulic with a maximum of 3.5 turns from hard over to hard over. (The SeaStar® and / or Uflex steering systems, depending on vessel horsepower, meet this requirement). Particular propulsion systems may have their own equipment for steering, or other requirements for steering which must be adhered to, eg. Jet steering systems. 2. All hydraulic steering hoses must be routed below deck and all hoses must be routed so that there are no pinch or chafing points on the hoses. 3. The wheel / console connection must be of robust construction, to eliminate fore and aft or lateral movement of wheel / steering shaft fixture. 4. The Steering wheel must be stainless steel and may be rubber or plastic covered or The Steering wheel must be stiff enough that during rough water operations there is no flexing of the wheel and the wheel should be padded to provide a comfortable non-slip surface for the operator to grip. (Momo Marine steering wheels meet these requirements)	
<b>20.0</b>	<b>Trailer Specification</b>	
	Must be rated at least 20% over the anticipated ‘normal load’ weight of the boat, and to be specified as follows: 1. 4800 lb, net carry capacity galvanized, welded modular frame, tandem axle trailer; 2. SS disc brakes and electric /hydraulic braking system; 3. SS wheel bearing protectors; 4. 2 5/16" ball size; 5. submersible lighting, with all wiring heat shrunk, and loomed where exposed, 7-prong round wiring plug; 6. 15", 6-bolt galvanized rims with equivalent size spare on vertical mount bracket and lug wrench; 7. manual two speed hand winch with brake, with nylon winch strap and hook installed, with front bow-eye to trailer turnbuckle; 8. heavy duty adjustable v-block roller under the forefoot; 9. swivel mount jack with wheel; 10. full length stand on fenders; 11. Bunks must be installed; 12. rear hooks for attaching tie-downs to boat; one pair of rear ratchet tie downs; and 13. Must have horizontal side loading guides aft.	
<b>21.2</b>	<b>Tow Post:</b> Socket removable stern tow post capable of towing 2500 lbs.	
	<b>BIDDER NOTES:</b>	

